Draft Report

Being Submitted to: Town Planning Department
Government of Manipur
Submitted By- School of Planning and Architecture, Bhopal

March 2023

MASTER PLAN FOR GREATER IMPHAL - 2043



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Acronyms

AMRUT	Atal Mission for Rejuvenation and Urban Transformation
AH	Asian Highway
CPHEEO	Central Public Health and Environmental Engineering Organisation
IMC	Imphal Municipal Corporation
IPT	Intermediate Para transit
MSRTC	Manipur State Road Transport Corporation
NH	National Highway
PHED	Public Health and Engineering Department
PWD	Public Works Department
PT	Public Transport
ROW	Right of Way
SH	State Highway
URDPFI	Urban and Regional Development Plans Formulation & Implementation

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GOVERNMENT OF MANIPUR

SECRETARIAT: MAHUD DEPARTMENT

NOTIFICATION

Imphal, the ……., 2022

No. …….. - In exercise of the powers conferred by Sub-Section (1) of Section 23 of the Manipur Town & Country Planning Act, 1975 (Manipur Act 11 of 1975), the Governor of Manipur is pleased to publish the following notice regarding the publication of the Draft Master Plan of Greater Imphal – 2043 A.D.

NOTICE FOR PUBLICATION OF THE DRAFT MASTER PLAN

FOR GREATER IMPHAL

1. It is notified that the Draft Master Plan for Greater Imphal – 2043 A.D. prepared under Section 22 of the Manipur Town & Country Act, 1975 for the area indicated in the schedule below is hereby published.
2. Any person or persons affected by the Draft Master Plan may submit their objection or opinion in writing to the Chief Town Planner, Manipur, Imphal within two months from the date of publication.
3. Copy of the Draft Master Plan can be viewed and downloaded from the Town Planning Department Website https://www.tpmanipur.mn.gov.in.

Section 0: Schedule

DRAFT MASTER PLAN FOR GREATER IMPHAL – 2043 A.D.

0.0 SCHEDULE

0.1 SITUATION AND AREA

STATE	:	MANIPUR
DISTRICT	:	IMPHAL EAST & WEST DISTRICT
AREA FOR GREATER IMPHAL	:	151.38 Sq.km. (Approx.)

0.2 TOWNS/ VILLAGES INCLUDED IN THE MASTER PLAN FOR GREATER IMPHAL:

The Master Plan for Greater Imphal covers the following villages of Imphal East Sub-Division and Imphal West Sub-Division in addition to the Imphal Municipal Area.

Imphal East: Luwangsangbam, Asheiloklen, Matai, Achanbigei, Khabam, Lamlongei, Kontha Ahallup, Meitei Kairang, Konsam Leikai, Lairikyengbam Leikai, Laipham Siphai (Part), Khurai Sajor Leikai, Thongam Leikai, Laishram Leikai, Moirang Kampu, Bashikhong, Top Dusara (18), Laingampat, Ningthoubung, Khurai Chingambam Leikai, Khaidem Leikai, Kongkham Leikai (23), Porompat, Top Khongnangkhong, Top Naoriya, Kshetrigao, Naharup, Kongba Nongthomgbam Leikai, Ganga Pat, Keikhu Hao, Thangbrijao, Uchekon Khunou, Uchekon, Nandeibam Leikai, Khongman, Torban, Thongju, Kitna Pannung, Loumanbi, Wangkhei Loumanbi, Takhok Awang, Bamon Kampu, Machahal, Kiyamgei (68), Khomidok, Kairang Muslim, Lilong Hao, Heingang, Soibam Leikai (Part), Kongkham Leikai (Part), Takhok Makha, Keirao Makting, Kiyamgei (50), Kodompokpi (Part).

Imphal West: Ghari, Langjing Achouba, Takyel Khongbal, Bijoy Govinda (Part), Lamjaotongba, Sagolband (Part), Sangaiprou (84), Langthabal Kunja (Part), Langthabal Mantrikhong, Meitram, Malom Tulihal, Malom Tuliyaima, Ningombam, Langthabal Lep, Mongsangei, Sangaiprou(45), Heinoukhongnembi, Naoriya Pakhanglakpa, Maibam Leikai, Sorokhaibam Leikai, Ahongshangbam Leikai, Oinam Thingel, Laiphrakpam Leikai, Naorem Leikai, Oinam Leikai, Changangei, Tabungkhok.

DESCRIPTON OF BOUNDARIES:

North: Imphal River, village boundaries of Heingang and Kairang along the foothills, northern boundary of Khomidok, Laishram Leikai and Moirang Kampu village.

East: Iril River.

South: Southern boundaries of Keirao Makting, Takhok Pankha, Kiyamgei Pangal, Lilong Hao, Kiyamgei (western boundary), MU Campus, Langthabal Lep, Ningombam, Imphal Airport, road leading from south-eastern corner of Imphal Airport to Tiddim Road via Mekola Bazaar.

West: Western boundaries of Meitram, Malom Tulihal, Malom Tuliyaima, Changangei, Tabungkhok, Langjing, Langol Hill upto Imphal river near Khonghampat.

Section 1: Introduction

1.1 Background

Imphal is the only Class I City in the State of Manipur and is the centre for cultural traditions, festivals, and commerce. Imphal Municipal Corporation, which is spread over an area of 34.75 Sqkm, has a total population of 2,68,243 as per Census 2011 spread over East and West Imphal Districts. The Imphal Urban Agglomeration which also takes into account the fringe areas fhave a total population of 2, 77,196 (Census 2011). The city of Imphal is located at the longitude 93.57^{o} E and latitude 24.50^{0} N.

The Greater Imphal region had a master plan prepared in 1994 for the horizon year of 2011 and a city development plan prepared under JNNURM to direct the growth of the city and its corresponding infrastructure requirements. This exercise of preparation of GIS Based Master Plan for Greater Imphal for horizon year 2043 will further enhance the development of the city and its surrounding areas and will aid in its functioning as the state capital and regional centre for administrative, social and cultural activities.

1.2 Study Area

Imphal is the capital city of Manipur situated at the centre of the valley region of the state. The valley area constitutes only 10% of the total area of the state (PopulationU.com) whereas Imphal constitutes 42.13% of the total urban population in Manipur (Census 2011). Imphal is connected with Myanmar in the east and Nagaland in the north by NH 39. NH 53 connects Imphal with Cachar district of Assam at the west meeting NH 39 at the city centre. Imphal is a low-rise low-density city.

The literal meaning of 'Imphal' is collection of houses. The name is derived from two words i.e., Yum means house and phal means to gather. In consideration of the city's natural beauty, George Evans and Anthony Brett- James in their book "Imphal" described it as 'a flower on the lofty heights'. The importance of the city emerged right from the 1st Century A.D. with the appearance of Nongda Lairen Pakhangba as the Supreme Administrative Authority. The concept of capital city was an extension of the significance of Kangla which was the seat of political and military power of Ningthouja dynasty which was strongly supported by agricultural economy.

A new shape of Imphal city as a social, cultural, political and religious centre was first formulated by King Khuiyoi Tompok, the successor of King Pakhangba. He drained out all the swampy areas of Imphal and transformed such areas into cultivations. In addition to this, he also dredged the beds of major rivers in order to give a systematic flow of water. This work was continued by his successive rulers. Thus, Imphal became an important area for the development of economic and agricultural activities. The economic

activities of the Imphal City were tremendously strengthened during the reign of King Khagemeba with the opening of market facilities. Then, in course of time, more market facilities were opened at different places of Imphal which eventually produced a remarkable positive economic impact to the State.

The 'British Reserve Area' which comprised of areas of the erstwhile royal citadel and palace together with an area of 4.74 junction kilometres comprising of residences, market, and some portion of Thangmeiband and Khurai forms the nucleus of the modern Imphal town. The municipal administration of the area was supervised by British political agent. In the year 1907, when Churachand became the ruler of the State, the responsibilities of the administration were transferred to 'Manipur State Durbar'. The outbreak of the Second World War had put Manipur into the communication map of the world. Modern amenities, mechanized transport, aeroplanes and all types of vehicles had come to Manipur. Since then, Imphal has undergone transformations with the introduction of modern facilities as process of modernization.

The Municipal administration of Imphal is of recent origin. Traditional division of Imphal was into four quarters viz. Khwai, Khurai, Yaishkul and Wangkhei. In due course of time, the municipal services were first introduced in the 'British Revenue Areas' only and administere by the 'Town Fund Committee' since 1915. But, Imphal was not yet officially declared as a town. The Census of India 1931 described Imphal as "not a town in the strictest sense of the word but rather a collection of villages grouped around the palace of the ruler". Till 1947, the British political agent with his committee of five members looked after the municipal services. During 1947-49, The Manipur State Council appointed a Committee with a civilian Chairman who carried on the municipal organization. Just after the integration into India, the Chief Secretary to the Government of Manipur was made the Ex-Officio Chairman of the Imphal Town Fund.

In 1956, the Government of Manipur adopted the Assam Municipality Act, 1923 and the Town Committee was converted into Imphal Municipality in 1956 covering a municipal area of 3.10 junction kilometres. During 1959-60 the municipal area was extended covering 17.5 junction kilometres. In 1972, the municipal area was divided into 26 wards. Now, Imphal municipal area is administered by Imphal Municipal Corporation.

1.3 Review of the Greater Imphal Master Plan 2011

1.3.1 Introduction

To understand the present physical structure of the city, it is important to understand the past planning efforts for the Greater Imphal area. The Greater Imphal Master Plan of 2011 was published in the year 1994 to streamline the growth of the capital town of Manipur. Following sections contain reviews in terms of development strategies, urban form, issues and proposals.

1.3.2 Development Strategies as Envisaged in 1994

The Master Plan for Greater Imphal 2011, focused on the spatial distribution of various functions, road network, community facilities and employment of the city. The city of Imphal had a mono-centric development wherein the public activities are mostly concentrated in the centre and the existing radial roads converge at the central location at the Kangla Western Gate. The guidelines in the master plan were to improve the existing situation of the city and also to give a direction to the growth of city.

The plan intended to decongest the central area by proposing a sub-city centre towards the south of the central area at the major nodal point on NH 39. A new capitol complex was proposed at the foothills of the Langol Hills to accommodate new Secretariat, High Court and other state level facilities. In recent times, there have been a few government construction projects undertaken in the Langol area. Also, there was a proposal for the expansion of the zoological garden in the area. Many recreation facilities icluding rowing, parks and playgrounds, improvement of natural reservoir, etc. were proposed in the Master Plan of 2011.

1.3.3 Urban Form of Imphal as Envisaged in 1994

The urban form of Imphal and the development pattern was guided by natural features like hills and rivers, etc. To achieve a rational and efficient physical structure of the city, the Greater Imphal Master Plan 2011 was formulated to achieve the future desired form and structure of the city.

The development of the city was proposed to be majorly low rise, with transformation of rural character in some of the zones to urban character and higher density development at certain locations of concentration (high-rise buildings) including at the central area. It was also proposed to maintain the vernacular character of the region and also to provide differentiated spaces for different activities in such a way to enforce the particular function to take place. The planning and design guideline of the city was proposed to establish a hierarchy of activities along with the interrelationship of building mass and open spaces.

The master plan suggested the need for Imphal city to have a properly defined central area to cope with future demands. It also talked about regulating the haphazard growth in the immediate surroundings of the core area. The residential area was envisaged to have a low rise and low density development and the concentration of high rise buildings in the core area for the economic and visual impact of the place.

1.4 Envisaged Institutional Framework in 1994 - Key Agencies

The key agencies identified for implementation of the Imphal Master Plan 2011 included:

1. Town Planning Department, Govt. of Manipur
2. Planning and Development Authority, Govt. of Manipur
3. Imphal Municipal Corporation
4. P.W.D., Govt. of Manipur
5. P.H.E.D., Govt. of Manipur
6. Department of Trade Commerce and Industries, Govt. of Manipur
7. Department of Transport, Govt. of Manipur
8. Manipur State Road Transport Corporation (MSRTC), Manipur
9. Department of Agriculture, Govt. of Manipur
10. Rural Development and Panchayati Raj Department, Govt. of Manipur
11. Social Welfare Department, Govt. of Manipur
12. Department of Education, Govt. of Manipur
13. Manipur State Power Company Ltd., Govt. of Manipur
14. Department of Sericulture, Govt. of Manipur
15. Forest Department, Govt. of Manipur
16. Directorate of Settlement and Land Records, Govt. of Manipur

1.5 Conclusion

When observed now, one finds that many of the proposals made in the Imphal Master Plan 2011 for the horizon period of 1994 – 2011, did not fructify. One of the most prominent such case is the then proposed intercity byepass. This proposal was intended to decongest the traffic from the core city area by diverting the inter-city traffic. The proposed sub- city centre towards the south of the central area at the major nodal point on NH 39 has come up with the High-court area and State Assembly as a part of capitol complex area development. Also, the proposed relocation of the cantonment area from the Kangla Fort emerged as one of the key developments as the fort area is now a popular tourist destination.

While largely, the development since 1994 in the planning area has followed the provisions of the Imphal Master Plan 2011, there is some non-fulfilment as well.

Presently the times have changed and there are new needs, new planning paradigms and new aspirations of the citizens. The Greater Imphal Master Plan 2043 will serve the purpose of taking care of these new needs, with a different planning paradigm to meet the new aspirations of its citizenry.

Section 2: Goals, Methodology & Approach

2.1 Introduction

The main purpose of the master plan is to present policies and proposals to achieve a desired standard of living commensurate with current aspirations of the people. The GIS Based master plan for Greater Imphal, 2043 indicates a judicious use of land as a resource for its optimum utilization using the regulatory provisions contained in the plan. The main aim of the plan is creation of an efficient physical structure within which urban activities can take place and at the same time provide a good environment for living.

2.2 Vision, Goals and Objectives

In order to achieve the vision, it was important to formulate goals and objectives which are achieved through this Master Plan. The goals for this plan are formulated considering the vision, existing scenario and a continuity of the goals of the previous plan. The goals are further elaborated into 'objectives' based on each sector which guides the plan formulation.

2.2.1 Vision

The vision for the city is "To make Imphal a Sustainable Regional Growth Center and Gateway to Asia through appropriate land, infrastructure, and environment management".

2.2.2 Goals

The goals of GIS based Master Plan for Greater Imphal, 2043 are:

i. Reinforce infrastructure of Imphal to act as a state centre for administration, marketing and cultural activities and a logistic node for international trade (with South East Asia through Myanmar by being on the Asian Highway network)

ii. Achieve an efficient utilization of urban land through town planning schemes, densification through TOD and by providing sufficient space for postulated economic growth

iii. Conserve natural reserve and heritage areas

iv. Provide adequate social infrastructure and utilities for all

v. Ensure physical accessibility to transport and communication infrastructure and develop inclusive, vibrant and healthy neighborhoods

2.2.3 Objectives

The goals are elaborated by task objectives required for the achievement of goals. These are:

LANDUSE

a. Provide adequate and organized spaces for all urban activities including economic activities for projected population.

b. Provide special activity zones for specialized type of activities and list incompatible uses

c. Develop alternative Business District for office spaces and commercial functions.

d. Develop new locations for city / regional level cultural activities

e. Develop strategies for natural reserve(s) and heritage buildings/ precincts of national, local and religious importance

f. Provide services and destinations that support neighbourhood level local living

HOUSING

e. Plan for housing at population densities that make local services and transport viable

f. Conduct location suitability analysis for various developments within the region (e.g. housing, industrial, etc.)

TRANSPORT

g. Improve regional access between the district headquarters, cities and other urban/rural centres and other states,

h. Plan for providing access to quality public transport that connects people to work places and higher-order services

i. Suggest measures to improve the existing road network with respect to speed, congestion, accessibility, and parking

j. Suggest ways to shift non- local trips to regional corridors (studying the regional and local travel demand along the major corridors)

k. Evaluate provisions for non- motorised trip users and identify key interventions to promote active mobility

l. Identify major trip attracting zones and suggest interventions for demand management (parking and public transport)

m. Suggest measures to reduce dependency on private modes for mobility by assessing public and shared transport service with respect to their coverage

n. Suggest measures for sustainable freight management in the Greater Imphal region

o. Improve regional access and communication linkage between the cities and other urban/rural centres, district headquarters and other states

PHYSICAL INFRASTRUCTURE

p. Extend the water supply system to cover areas proposed to be developed during the plan period

q. Propose expansion of existing coverage of sewage system and solid waste collection system

SOCIAL INFRASTRUCTURE

r. Propose local level amenities within neighbourhoods to make them self sufficient for daily living

s. Identify additional requirement of social amenities based on present and future population

GREEN SPACES AND WATER BODIES

t. Plan for high-quality public realm and open spaces

u. Develop areas under recreational open spaces

The preparation of such an integrated plan requires detailed information on land use patterns, population characteristics, economic characteristics, transportation characteristics, housing characteristics, community facilities, utility services and infrastructure. Apart from using data and information available in government records, visual surveys, opinion surveys (of various government departments) were conducted to acquire such information. GIS based information was provided by NRSC (National Remote Sensing Centre) which was confirmed and rectified through a detailed ground truthing survey conducted for the re-delineated Greater Imphal Planning area.

2.3 AMRUT Guidelines & Approach

The government of India launched AMRUT in 2015 as Centrally Sponsored Scheme. Under this scheme, 500 cities are selected for using Remote Sensing and GIS techniques for the preparation of the Development Plan. Among these 500 cities, Imphal is the only city selected from Manipur. The prime objectives of this scheme are:

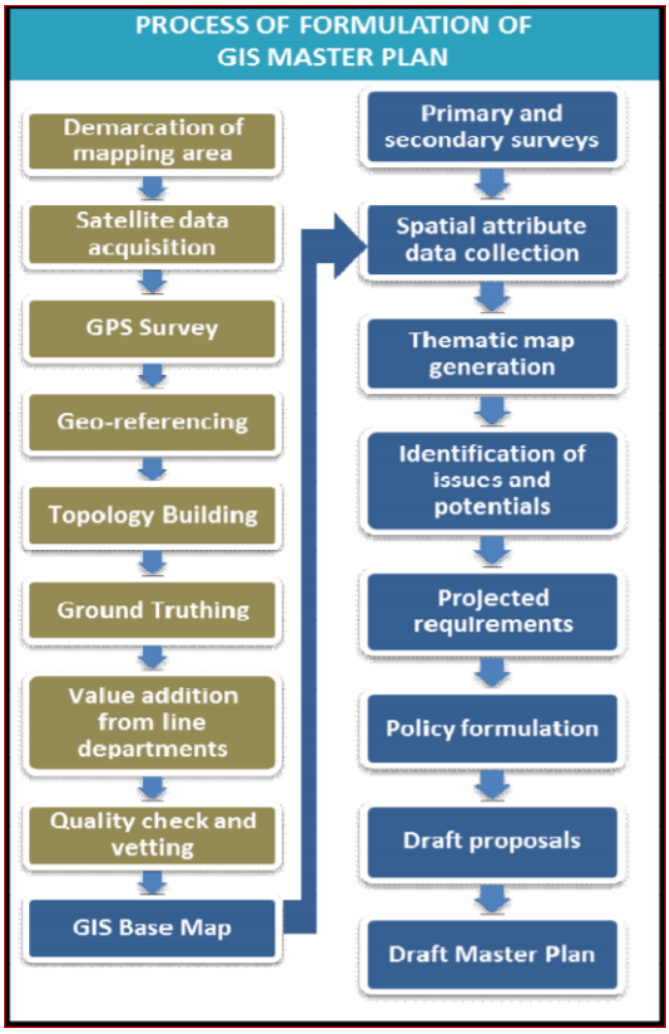
- Preparation of geo-referenced base map and land use map using Remote sensing techniques.

- Under AMRUT, GIS-based services are used for the preparation of Development Plan for the selected cities.

The GIS-based Master Plans will help in different types of urban planning exercises, e.g. preparation of master plan (Refer Fig. 2.1), development plan, zonal plan, utility plan, infrastructure plan, etc. to be

simplified by using IT tools. The National Remote Sensing Centre (NRSC) provides Q-GIS on Bhuvan Portal, which is open source software and tools to prepare different types of plans. This was made available for all AMRUT cities on the Bhuvan Portal.

Figure 2.1: Process of Formulation of GIS based Master Plan under AMRUT



Source: AMRUT Reform Agenda

The GIS based master plan approach is different from the conventional approach as it uses the high resolution satellite images as base maps, unlike the conventional approach which uses topographic maps. The GIS based approach helps in easy data updation and analysis as it is done through GIS which integrates the data statistically and spatially.

The existing studies are fully integrated with the future planning proposals and the periodic revision of the plan is very simple, cheap, and less time consuming as compared to the conventional approach, as earlier everything was done manually.

2.4 Methodology Adopted for Plan Preparation

2.4.1 Approach of Master Plan

The current master plan is prepared with the 20 minute neighborhood concept which is all about 'living locally'- giving people the ability to meet most of their daily needs within a 20-minute walk from home, with access to safe cycling and local public transport options (Refer: Fig. 2.2). Research shows that 20 minutes is the average maximum time people are willing to walk to access daily needs locally. This represents an 800m walk from home to a destination and back again. This is adopted in many cities across the world like Melbourne (Australia) and London (United Kingdom). Imphal is the fastest growing city in Manipur and is expected to support approx 9 lakh people by 2043. Although, 20-minute nieghbourhood will be implement in overall Imphal but it will intensively implement along the TOD zones along major corridors. The city's growth, in combination with climate change, presents complex challenges to ensure Imphal becomes more sustainable as it grows.

Figure 2.2: Features of 20 Minute Neighbourhood as Adopted for Imphal Master Plan 2043



Source: Adopted from Melbourne 20 minute neighbourhoods concept

The approach adopted for the preparation of Master Plan for Greater Imphal is the GIS based approach as envisaged under AMRUT. The most crucial information for formulation of Master Plan is an accurate and updated Base Map of the planning area, showing roads and building layouts, spatial extent of

development and information on the use of each parcel of land which is prepared using remote sensing imagery by NRSC and further validated by ground truthing/ verification at the city.

Geographic/urban feature is classified and further sub-classified based on its use & attributes. For cities in plain terrain or rolling terrain, ortho-rectified satellite images are used to capture the features in 2-dimention. For cities in high relief hilly areas, stereo image data is used to capture the features in 3-dimension.

2.4.2 Process

The process or methodology for the preparation of the Master Plan includes review of the previous planning efforts and critically analyzing it. It also includes data collection from different sources, primary surveys and analysis of data to extract inferences. The next step included preparation of strategy for the current master plan and the formulation of the policies and proposal by assessing the gaps and deriving the demands for the future. Policies and proposals include proposals for landuse zoning, urban services both physical and social and policies in terms of the general development regulations for regulating and promoting the development activities within the Greater Imphal Planning area.

For the purpose of 20 minute neighborhood concept adopted for this master plan, the Greater Imphal planning area has been divided into various zones and sub zones. The analysis of different aspects such as land use, facilities and services, population, households, workforce, literacy rate, education facilities, health facilities, recreational areas and open spaces, etc. are analysed at sub zonal levels. This helps analyzing the existing situation of the various sub zones and the lack of various services (gap identification). The gaps are then met through proposals and strategies.

2.4.3 Proposed New Planning Zones

The Greater Imphal Planning area of 2011 was divided into 7 zones and 48 sub zones. With the revision of boundary for the Master Plan for 2043, the zonal boundaries are also revised taking into consideration the previous boundary, extended area, roads and physical features. Also the number of sub zones is increased to 51. Since, these zones and subzones are made on the basis of physical features and the major roads, some zones have more than two wards/ villages and some zones have a part of ward/ village.

Table 2.1 indicates the number of sub zones in each zone as per new boundary of Greater Imphal planning area for the horizon year 2043.

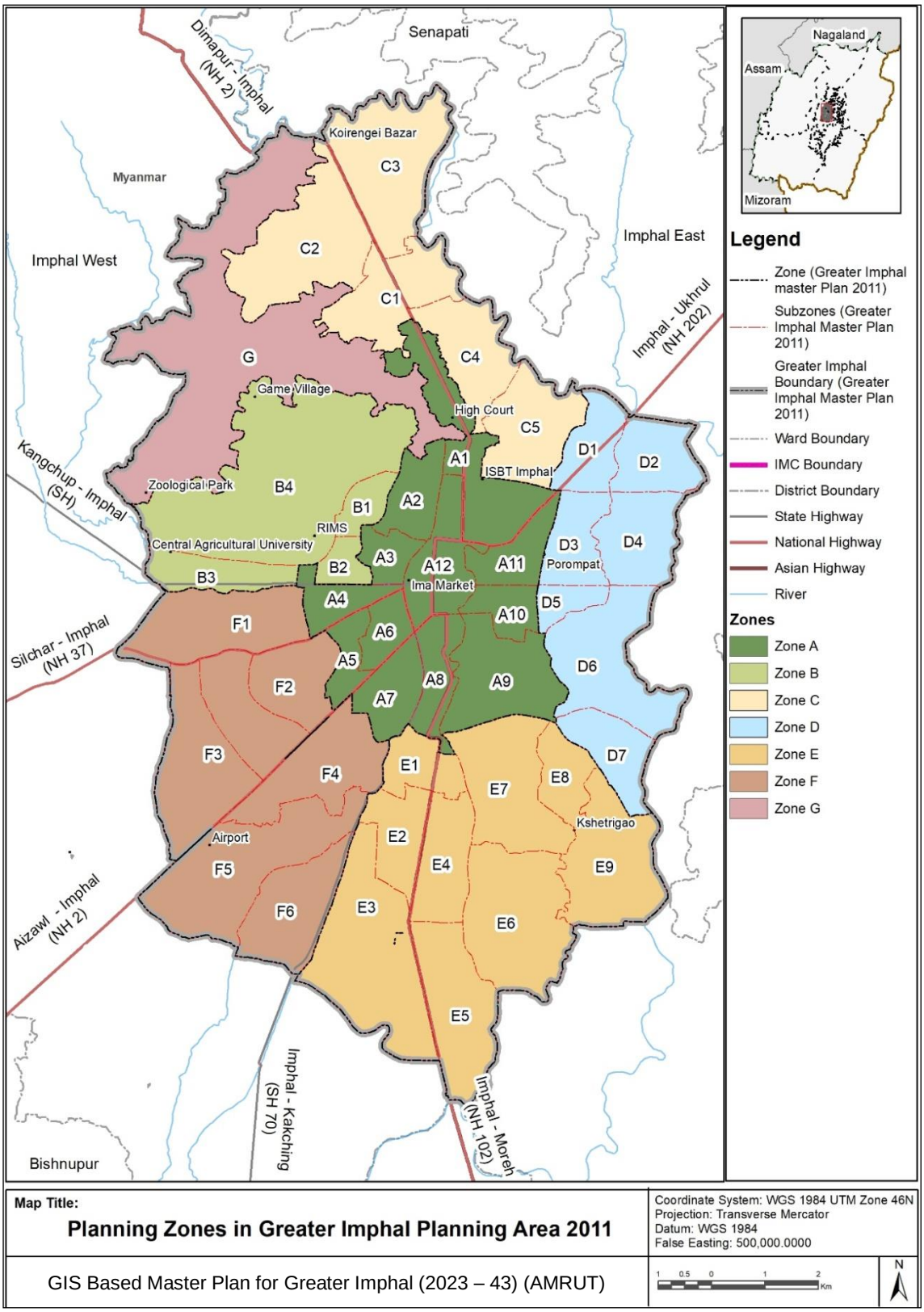
Maps numbered as 2.1, 2.2 and 2.3 show the geographical location, and boundary of municipal wards and villages of the zone and subzone as per Greater Imphal Master Plan, 2011 and 2043.

Table 2.1: Planning Zones and Sub-zones in Greater Imphal Planning Area, 2043

Planning Zones	Total Number of Sub-Zones
Zone A	12
Zone B	4
Zone C	7
Zone D	7
Zone E	11
Zone F	9
Zone G (Langol Hill Reserve Forest)	1
Total	**51**

Note:
The list of wards and villages as per 2011 and 2043 boundary is attached in annexure 2.1.

Map 2.1: Planning Zones and Subzones as per Greater Imphal Master Plan 2011



Source: Town Planning Department, Manipur

Considering the suggestions received, a new boundary of the Greater Imphal Planning area has been delineated. According to this, there is a shift in the perimeter with the addition of six new villages and removal of part of 3 villages (i.e. Langthabal Kunja, Langthabal Mantrikhong and Langjing Part 1) from the previous boundary given in Imphal Master Plan 2011. The six new villages are Khomidok, Kyamgei Muslim, Kairang muslim, Heingang, Takhok Makha and Keirao Makting.

The Greater Imphal Area, now covers an area of 151.6 sqkm, and consists of:

- Imphal Municipal Corporation*
- 16 Census Towns
- 5 Out-Growths
- 56 villages and part of 1 village.
- Langol Hill Reserve Forest

**Note – The status 'Imphal Municipal Council' has changed to 'Imphal Municipal Corporation' in the year 2014*

The revised planning boundary along with zones and sub- zone boundary is indicated in the Map 2.3

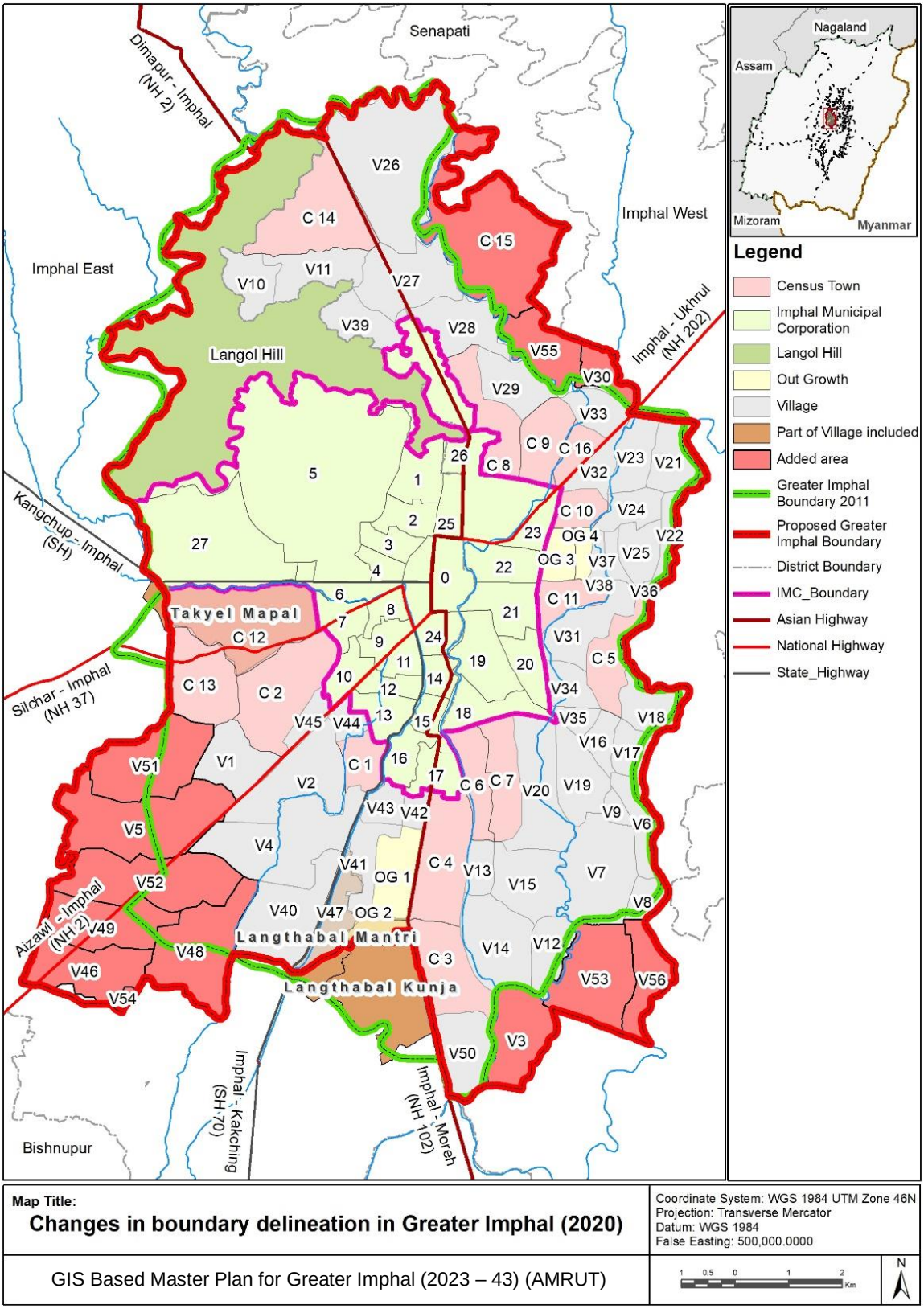
2.4.3 Aspects Covered

The Master Plan 2043 of Greater Imphal Planning area covers the aspects of accessibility and sustainability with the 20-minute neighborhood concept. It talks about the promotion of town planning schemes and other regulations within the planning area. The sectors covered within the master plan include landuse, social and physical infrastructure, housing, industries, transportation, community facilities, heritage, open spaces and water bodies.

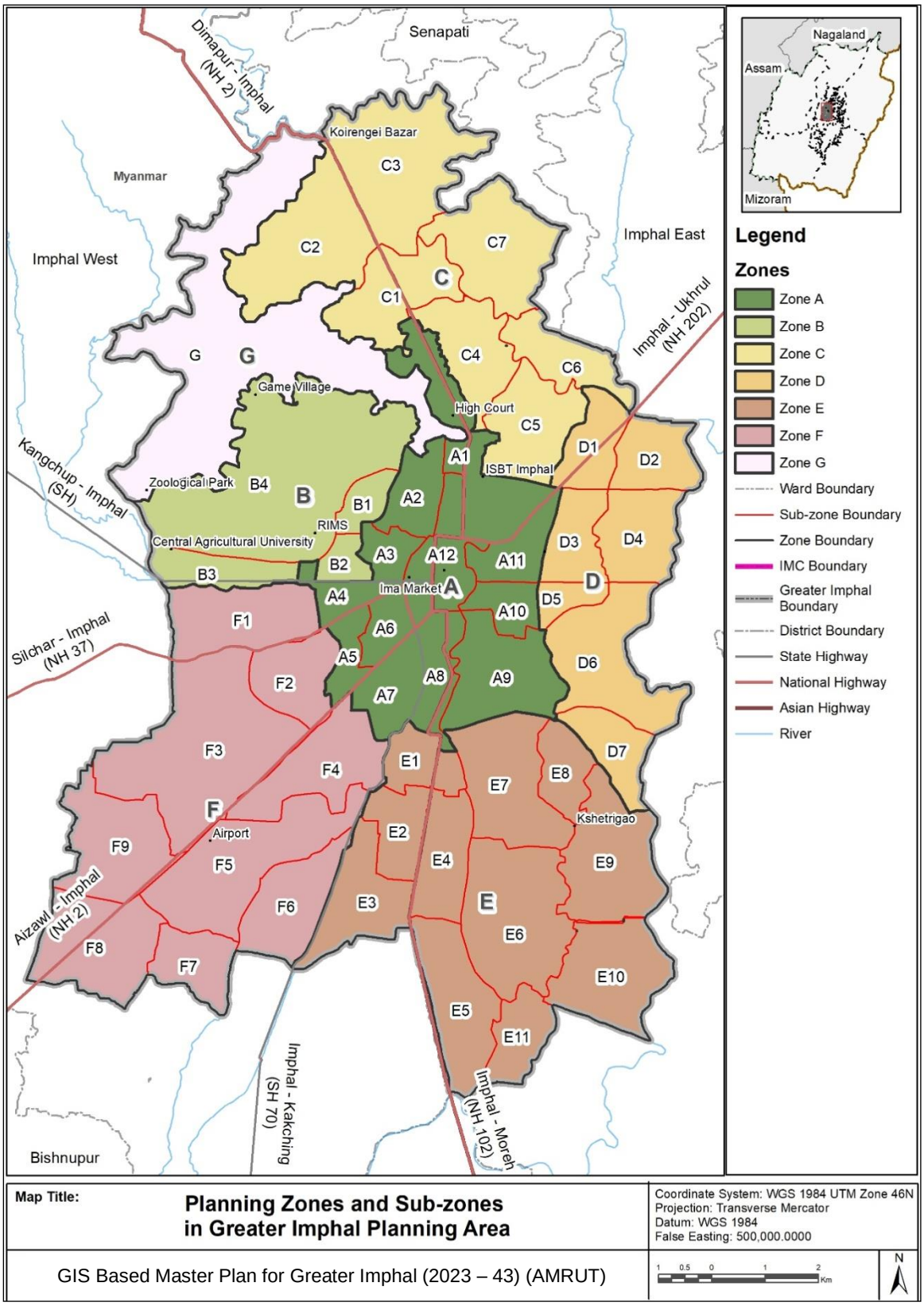
2.5 Summary

The GIS based Master Plan 2043 for Greater Imphal Planning Area is introducing the concept of 20 minute neighborhoods and town planning schemes. Various gaps and issues will be identified in each sector which will be resolved through proposals as discussed in further sections. The boundary of Greater Imphal planning area was revised to incorporate certain surrounding areas within the planning jurisdictions. The planning area is further divided into zones and sub zone and each parameter is evaluated at sub zone and zone levels.

Map 2.2: Changes in Boundary Delineation of Greater Imphal



Map 2.3: Planning Zones and Sub-zones in Greater Imphal Planning Area 2043.



Section 3: Regional Context

3.1 Introduction

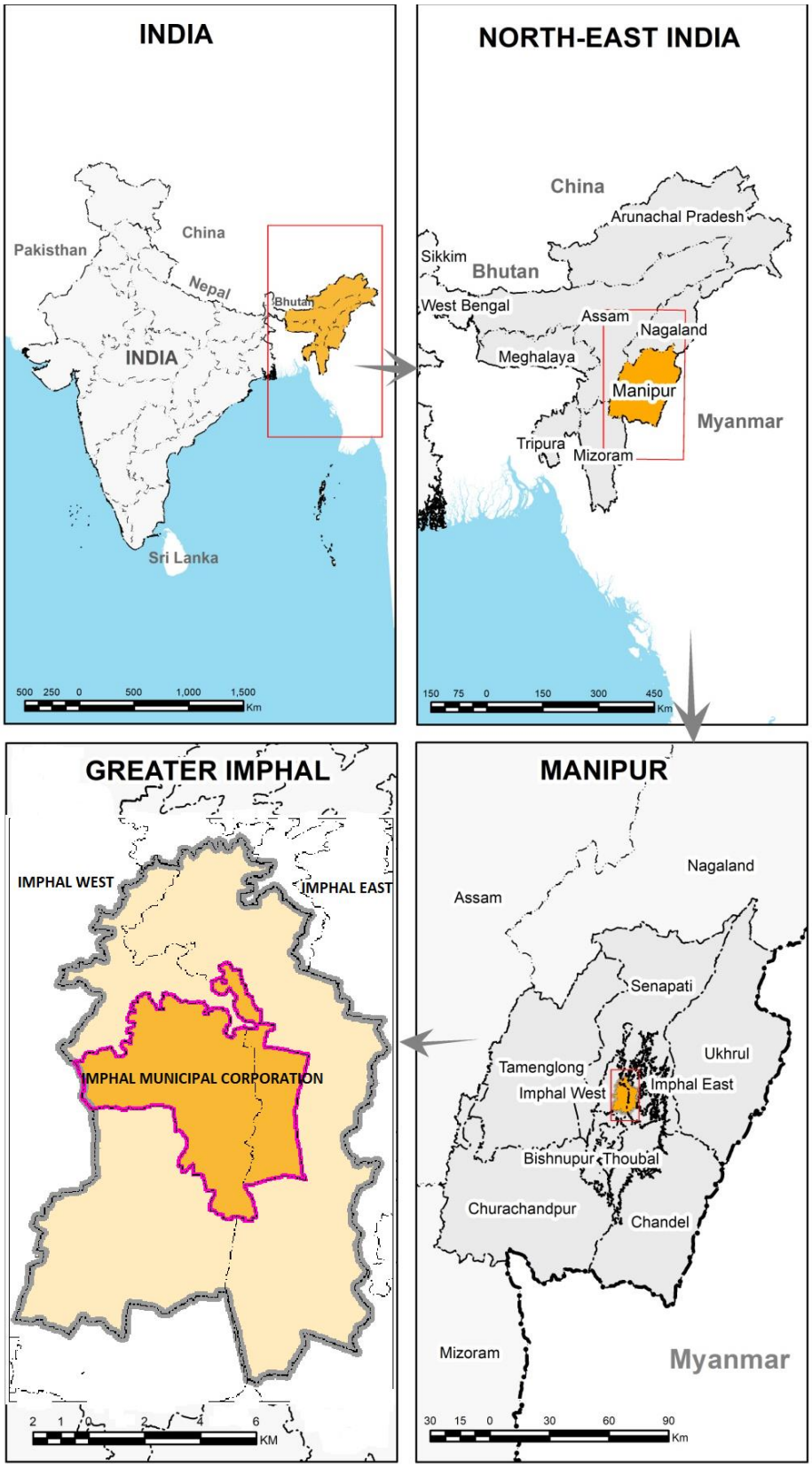
The North East region of India, which is generally known as the 'Seven Sisters of India', includes seven states, namely Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland and Tripura. Ministry of Development of North Eastern Region, Government of India, also includes the State of Sikkim under the umbrella of this region owing to its proximity to the area and similar type of development needs. Excluding the state of Sikkim, the region covers a total area of over 2, 62,230 sqkm (7.9% of India's territory) and a population of 4.4 crores (3.2% of India's population), according to the 2011 Census of India information. Geographically, this region also shares an international border with foreign nations, namely, Bangladesh, Bhutan, China, Myanmar, and Nepal. North East is linked to the rest of the country by a narrow corridor in West Bengal by National Highway 31 known as 'Chicken's Neck' or 'Siliguri Corridor'.

Over 220 ethnic indigenous groups (scheduled tribes) are there in this region, specifically in Arunachal Pradesh, Manipur, Meghalaya, Mizoram and Nagaland. The Government of India has formulated policies, such as 'Act East Policy' and 'Hydrocarbon Vision 2030 for Northeast India' for accelerating the development of this region. One of the objectives of the 'Act East Policy' is to increase the interaction of the North-Eastern Indian states with other neighbouring countries. The 'Hydrocarbon Vision 2030 for Northeast India' of the Ministry of Petroleum and Natural Gas, Govt. of India, aims to outline steps to leverage the hydrocarbon sector for the development of the region in Guwahati, to establish the North-East as the dominant hydrocarbon hub at the forefront of the country's energy economy, to explore hydrocarbon linkages and to explore trade opportunities with Bangladesh, Myanmar, Nepal, and Bhutan.

Manipur is one of the landlocked Border States in the north-eastern part of the country and has an international boundary of about 352 km with Myanmar in the southeast. It is bounded by Nagaland in the north, Assam in the west, and Mizoram in the south (Map 3.1). It has a total area of 22327 sqkm. It lies between 23^0 49' 45.530" N to 25^o 42' 1.456" N latitude and 92^0 58' 23.422" E to 94^o 43' 35.553" E longitude (Map 3.1). Manipur is geographically divided into two parts: the centrally situated valley and the surrounding hills.

Imphal is comprised of parts of Imphal East and Imphal West districts. It is the only Class I city which accommodates 9.8% of the total population while accounting for only 3.7% area of the state.

Map 3. 1: Location and Administrative Boundary of Manipur and Imphal Valley



Source: Administrative Atlas, Census of India

3.2 Regional Setting

Being the capital city of the state of Manipur, Imphal is well-developed and well connected by road transportation system.

Road: Road transport has been the only means of communication for the development of the State as there are no inland Waterways. Manipur has very recently been connected with Railways. All development activities, so far have been primarily dependent on the road transport facilities. National Highways are i) NH 2, ii) NH 37 and iii) NH 102 criss-cross the state connecting all districts. Imphal is joined by NH 2 with Nagaland in the north, in the west with Assam by NH 37 and Mizoram in the south by NH 2. It connects with an international border with Myanmar by Asian Highway (NH 2) through the border town Moreh. The Asian highway within Manipur state is a part of NH2 and NH 102 (Map 3.2). There is bus connectivity from Imphal to Ukhrul, Senapati, Bishnupur, Moreh, Kohima, Dimapur, and Guwahati.

Air: Imphal Airport is the second largest airport in the North Eastern Region. Imphal is connected to major cities, including Aizawl, Guwahati, Kolkata, Silchar, Bengaluru and New Delhi.

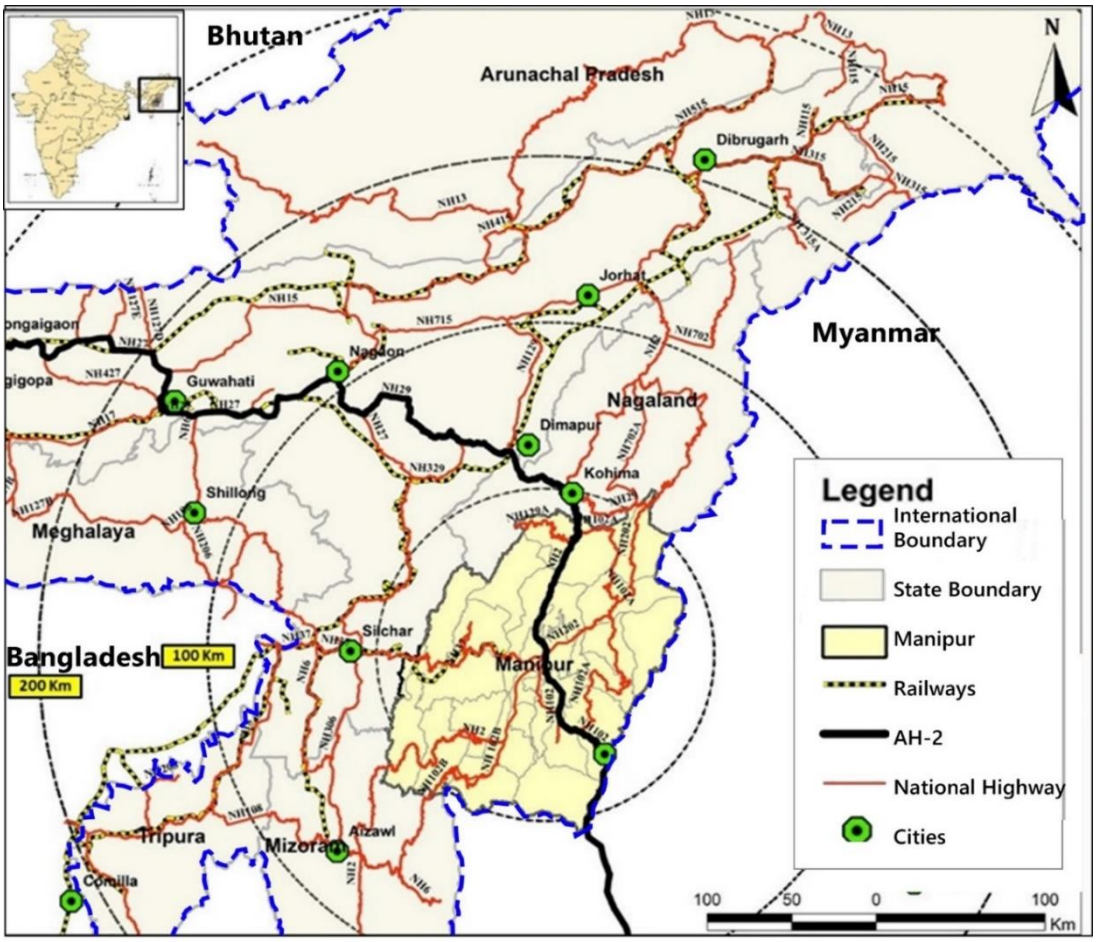
Railways: Manipur has a newly established Railway Station at Jiribam, located on the western edge of the state. This railway access in Manipur is under the process of extension to western part of Greater Imphal area (at Yurembam, Imphal West) which will serve the city in near future.

3.3 Historical Background

Manipur is a small state of India situated in the north eastern region. Due to its existing natural geo-topographical position, it is widely regarded on the easternmost outpost of Indian culture and civilization and also the gateway to the south-east Asia. At present, it covers a small area of 22,327 junction kilometers i.e., 0.7% of the total area of India. It is a landlocked area which lies in between the two junctions of India-Myanmar-Bangladesh in the South and India-Myanmar- China in the north. It has a long border line of 854 kilometers. Out of which 352 kilometers are the international boundary with Myanmar in the east and south-east.

Manipur's history can be traced to the earliest pre-historic periods. Manipur witnessed its unique process of historical identity from the first century A.D. Manipur has a distinctive political, social and historical identity of its people and the place. Right from the earliest period of time, Manipur has been known by different names.

Map 3. 2: Manipur in Regional Context

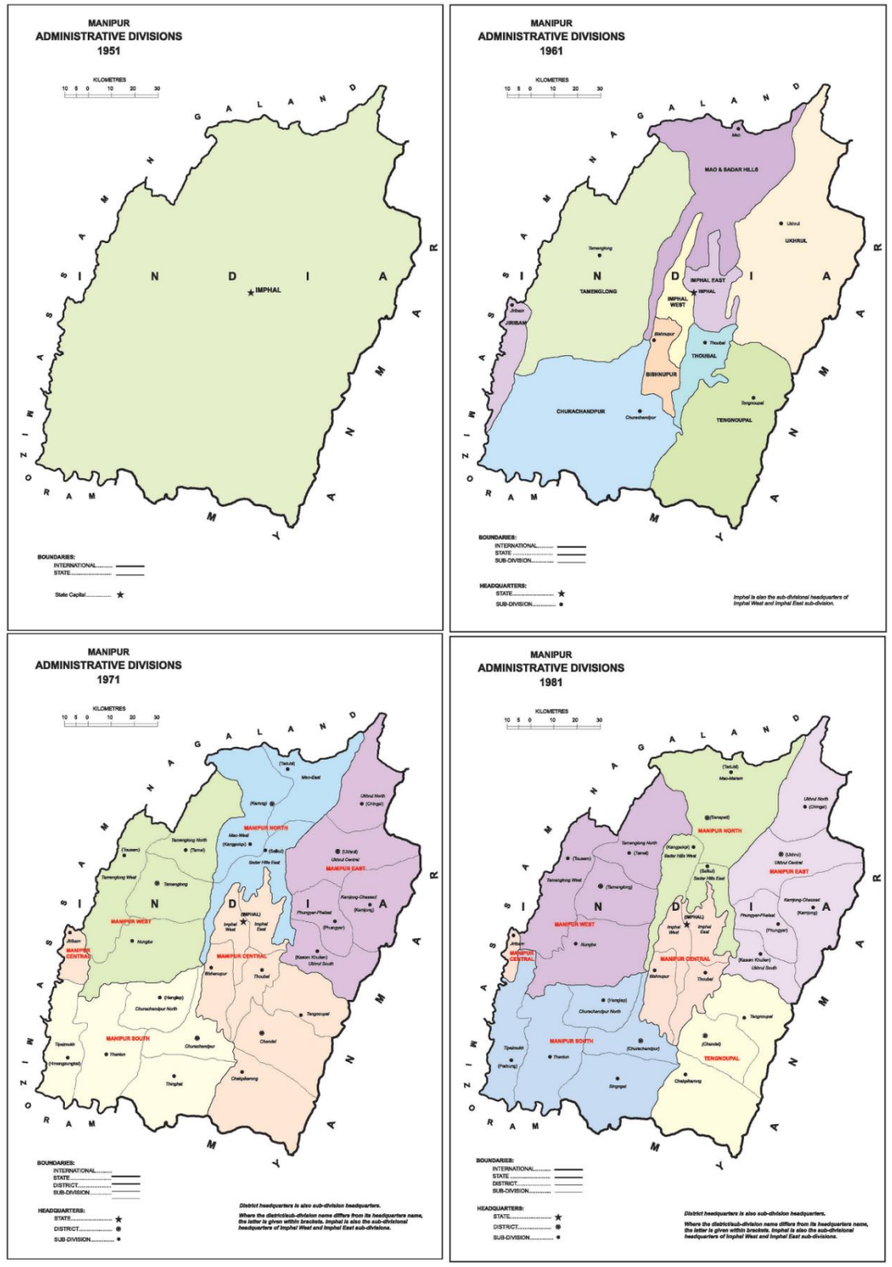


Source: Prepared at GIS platform based on Google Map

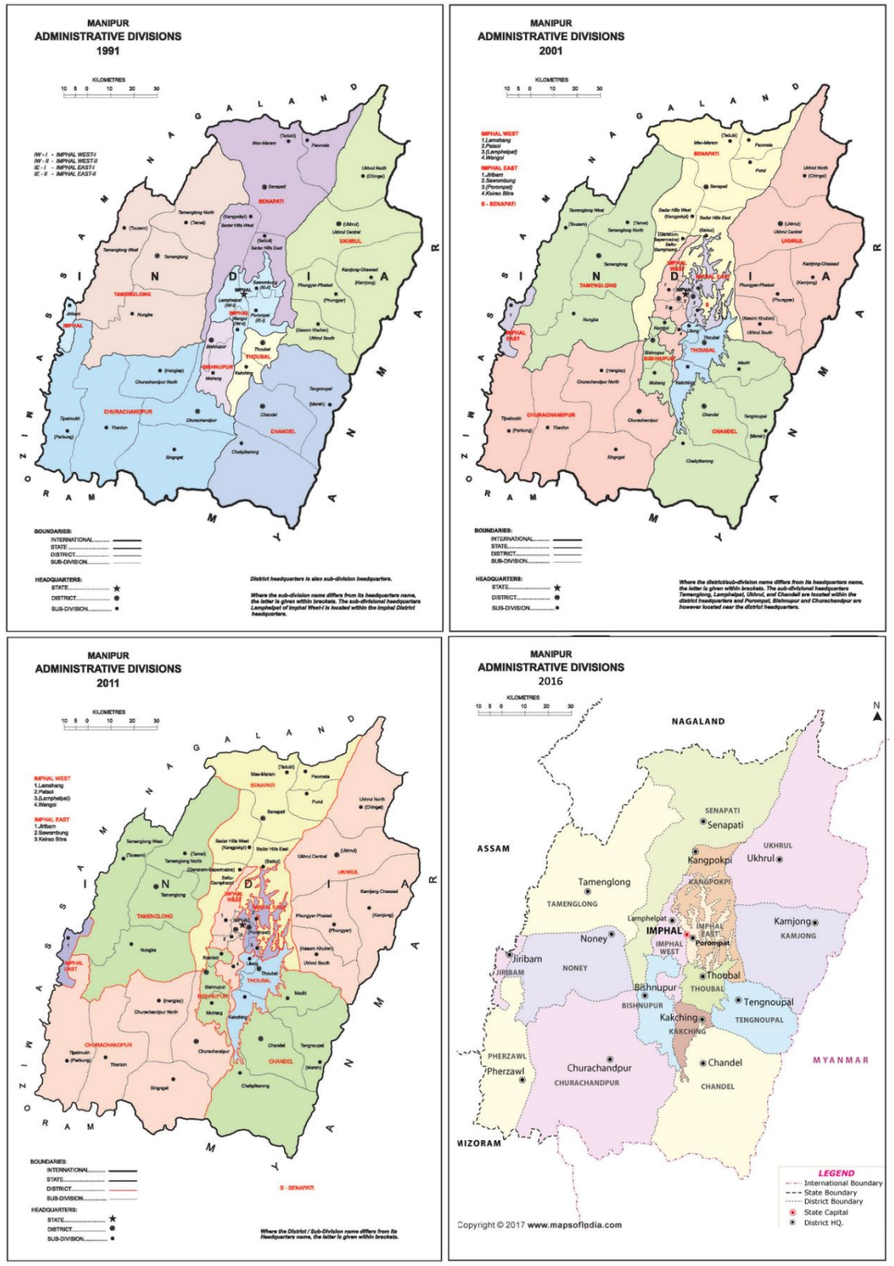
During the long period of Manipur's political, social and cultural journey, there have been significant changes in the basic outlook and mindset of the people of this place. Some of this includes the emergence of Hinduism as the state religion, the outbreak of Seven Years devastation 1819-1826 A.D. and the Anglo-Manipur war in 1891. These events led to changes in the distinctive identity of Manipur which had systematically flourished right from the earliest period of time.

From the year 1947 after the exit of the British, Manipur began a new journey of its life with a new political status as a constitutional monarchy. But due to the then political environment marred by a cloud of confusion and uncertainty, it was again compelled to merge into the political boundary of Indian Union on 15th October 1949. Since then, Manipur is enjoying a new political status as a political unit within the framework of the constitution of India. Administrative division of Manipur from 1951 to 2016 is given in Map 3.3 and Map 3.4.

Map 3. 3: Administrative Division Map of Manipur (1951-1981)



Map 3. 4: Administrative Division Map of Manipur (1991-2016)



Source: Administrative Atlas, Census of India

3.4 Physical Environment

3.4.1 Physiography

Manipur can be characterized in two distinct physical regions –the area of hilly region and valley region (Map 3.5). These two areas are distinct in respect of physical features, flora and fauna. The capital lies in an oval-shaped valley of approximately 700 junction miles (2,000 sqkm) surrounded by mountains and is at an elevation of 790 meters (2,590 ft.) above mean sea level. The general slope of the valley is from north to south.

3.4.2 Drainage

Manipur comprises 1820 sqkm of flat alluvial valley and 20.507 sqkm of hilly terrain with Loktak Lake in the valley. The National Wetland Inventory and Assessment published by the Space Application Centre reported that Manipur has 15 major rivers/streams having 166.77 sqkm of the total area i.e., about 0.75 % of the total geographical area of the state. About 90% of the drinking water supply in Imphal is from the three major rivers namely Imphal River, Nambul River and Iril River (Map 3.6).

3.4.3 River Basin & Wetlands

There are three major river basins of Manipur state (Refer map 3.6).

Barak river basin – The basin consists of Irang river, Maku river, Tuivai river etc., with the catchment of 9042 sqkm. The flow direction of rivers is towards the west.

Manipur river basin – The basin consists of eight major rivers that are Imphal River, Iril River, Nambul River, Sekmai River, Chakpi River, Wangjing River, Thoubal River and Khuga River with the total catchment area of 6332 sqkm. Origin of these rivers is from the surrounding hills and it flows towards the valley from north to south.

Chindwin/Yu River basin– This basin consists of the Imphal River and some of its tributaries. It originates from the Ukhrul district, having a catchment area of 5488 sqkm, and it passes through the Chandel district, joining the Chindwin River. The flow direction of rivers is towards the East.

As per the survey done by MARSAC, there are 17 lakes and 2 ox-bow lakes in the state. In Imphal and Thoubal districts, there are the largest numbers of lakes present. There are many small lakes present in the state that are termed as Pat (lakes). In different districts, there are about 134 swampy and waterlogged marshy wetlands. These areas are in the low-lying areas situated either in the vicinity of the

lake or in the peripheral area of the lake. Waterlogged areas recorded are 69 in Imphal valley, 40 in Thoubal and 21 in Bishnupur district.

3.4.4 Lakes

Loktak Lake is listed as one of the distinguished wetlands of international importance under the Ramsar Convention for Ramsar Sites in 1990. Besides its cultural importance of the incarnation of Moirang Shayon in the history of Manipur, Loktak Lake is a source of generating hydro electrical power, irrigation and water supply. Government of Manipur has set up the Loktak Development Authority (LDA) under "The Manipur Loktak Lake (Protection) Act, 2006 (Manipur Act 3 of 2006)" with the objective to provide for administration, control, protection, improvement, conservation and development of the natural environment of the Loktak Lake and for matters connected with as incidental thereto

3.4.5 Natural Vegetation & Biodiversity

Manipur has a wide range of forests where 90 percent of the total forest covers 17,233 sqkm (State of Forest, Manipur, 2017), which is 77.20 percent of the state's total geographical area (India State of Forest, 2017). There are 6 (six) major forest types in the state, namely Tropical Wet Evergreen Forest, Tropical Moist Deciduous Forests, Sub-Tropical Pine Forest, Tropical Dry Deciduous Forest, Montane Wet Temperate Forest and Sub-Alpine Forest.

There are 34 Biodiversity hotspots as per the United Nations International Conservation classification, of which 3 are located in India that are i) Western Ghats Hotspot ii) Indo-Myanmar Biodiversity Hotspot and iii) Eastern Himalayan Biodiversity Hotspot. Manipur belongs to the Indo Myanmar Biodiversity Hotspot and has rich, diverse floral and faunal species (Manipur Statistical Handbook, 2017).

Manipur biodiversity includes 4000 angiosperm species, 430 medicinal plant species, 34 edible fungi species, 500 orchid species and 55 species of bamboos, 40 endemic rice cultivars, 160 fish species and 21 species of migratory aquatic birds.

The Shirui Lily (Lilium mackliniae Sealy), the only terrestrial lily confined to Shirui Kashong peak only in Ukhrul District, holds the distinction of being the state flower. Manipur is also the only hotspot on the earth on which ‘Sangai’ the Brow antlered Deer (Cervus eldi eldi), presently known as Rucervus eldii and locally called ‘Sangai’, is found (Manipur Statistical Handbook, 2017).

3.4.6 Climate

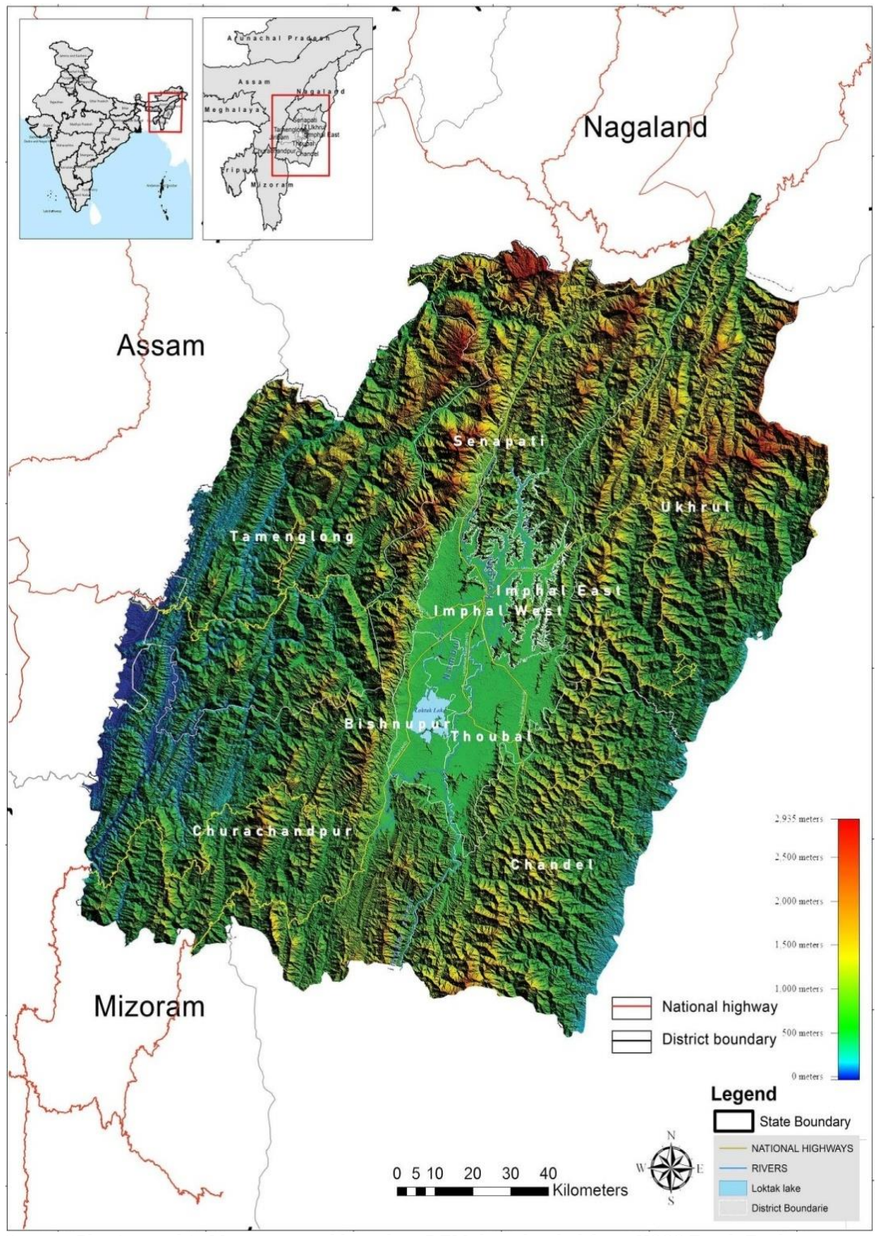
Although the state has a small geographical area, Manipur represents a wide range of climate viz., Temperate, Sub-tropical and Tropical climate. The climate of Manipur is largely influenced by the topography of this hilly region which defines the geography of Manipur. Lying 790 meters above sea level, Manipur is wedged between hills on all sides. This north-eastern corner of India enjoys a generally amiable climate, though the winters can be colder. The maximum temperature in the summer months is 32-degree celsius. In winter, the temperature often falls below zero, bringing frost. Snow sometimes falls in some hilly regions. The coldest month is January, and the warmest July (Department of Town Planning, Government of Manipur). The state is drenched in rains from May until mid-October.

It receives an average annual rainfall of 1467.5 mm. However, the rain distribution varies from 933 mm in Imphal to 2593 mm in Tamenglong (Department of Town Planning, Government of Manipur).

3.4.7 Soil

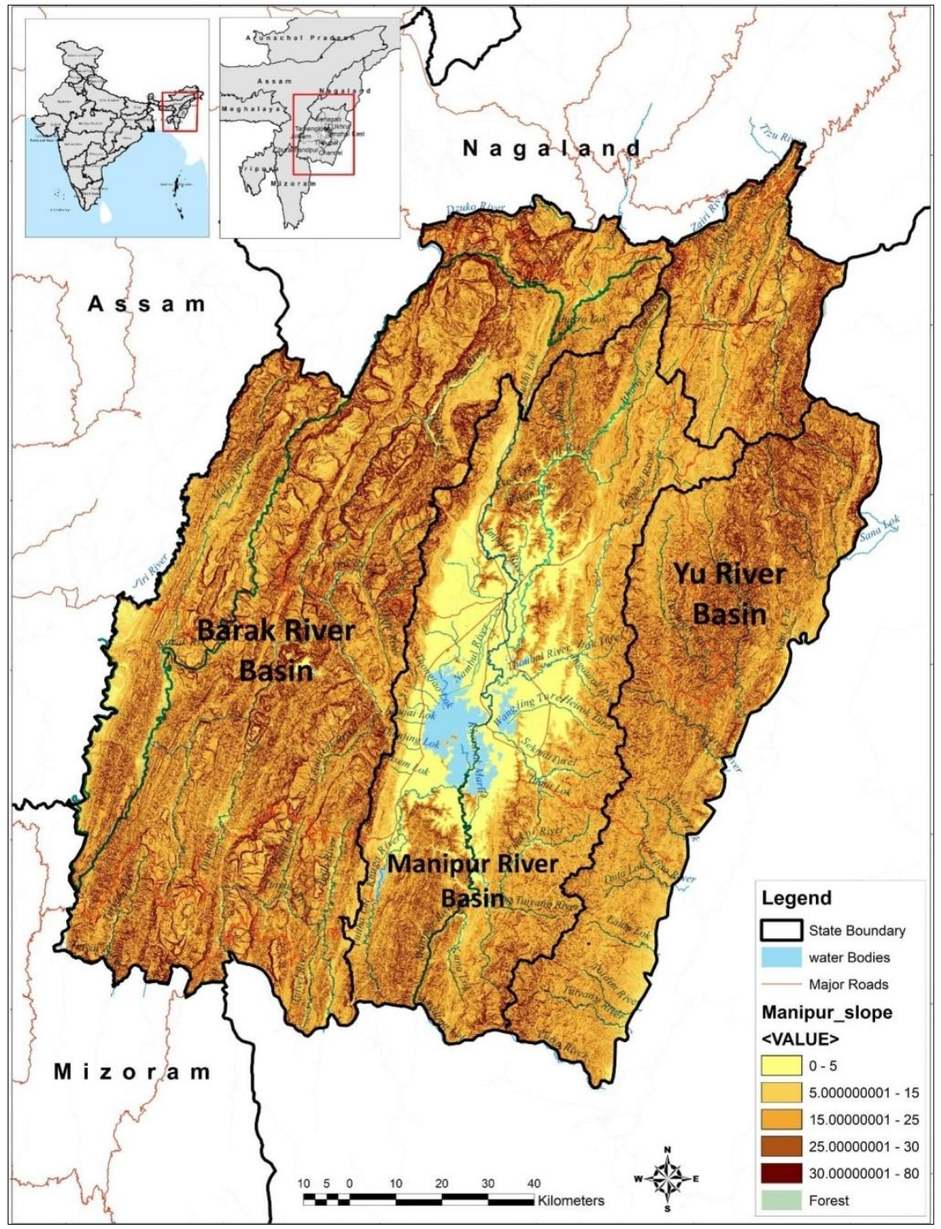
In Manipur, the soil cover can be divided into two broad types, the red ferruginous soil in the hill area and the alluvium in the valley. Most of the area in the valley part is covered by fluvial soil.

Map 3. 5: Physiographic Map of Manipur



Source: Physiographic Map prepared based on DEM downloaded from USGS Earth Explorer

Map 3. 6: Drainage Basins in Manipur



Source: Slope and Drainage Basin has been obtained from DEM downloaded from USGS Earth Explorer

3.4.8 Natural Disaster

Manipur is located in seismic zone V of India, the most susceptible region to earthquakes (Seismic Zones -India 2001). It continues to experience small tremors off and on. Based on the past trend, seismologists have predicted that a major earthquake in the north-east region of India is almost overdue. Low to moderate intensity earthquakes are reported regularly here. The state of Manipur has weathered dozens of major earthquakes, the earthquake in 1988 being the strongest (M7.2) in recent times. In western Manipur, most of the earthquakes are shallow, but some have larger depths, especially those reported in the eastern parts and along or across the Myanmar border. Areas in central Manipur are especially vulnerable to damage during earthquakes as they lie in the Imphal Valley, the lowest point of which lies the Loktak Lake.

3.5 Regional Demographic Profile

3.5.1 Population

The population of Manipur as per the 2011 Census is 28.6 lakh consisting of 14.4 lakhs males and 14.2 lakhs females. In absolute terms, the population of Manipur has increased by 5.62 lakhs during the decade 2001-2011. The decadal growth rate in 2011 over 2001 was found to be 24.50 %. The district-wise distribution of population has been provided in table 3.1. Among all 9 districts of Manipur in 2011, 4 valley districts viz. Imphal East, Imphal West, Bishnupur and Thoubal contained 57% of the total state population.

Table 3.1a): District wise Population of Manipur (2011) (Population in lakh)

District	Total Population	Rural Population	Urban Population	Urbanisation (%)
Senapati	4.8	4.72	0.08	1.67
Tamenglong	1.40	1.21	0.19	13.57
Churachandpur	2.74	2.56	0.18	6.57
Ukhrul	1.84	1.57	0.27	14.67
Chandel	1.44	1.27	0.17	11.81
Bishnupur	2.38	1.5	0.88	36.97
Thoubal	4.22	2.71	1.51	35.78
Imphal West	5.18	1.95	3.23	62.36
Imphal East	4.56	2.73	1.83	40.13
Manipur State	28.56	20.22	8.04	29.20

Source: Office of the Registrar General of India, 2011

In 2016, Manipur government created seven new district by bifurcating above existing district listed in table 3.1 a). The newly created districts are as follows:

Table 3.2 b): Newly formed District of Manipur (

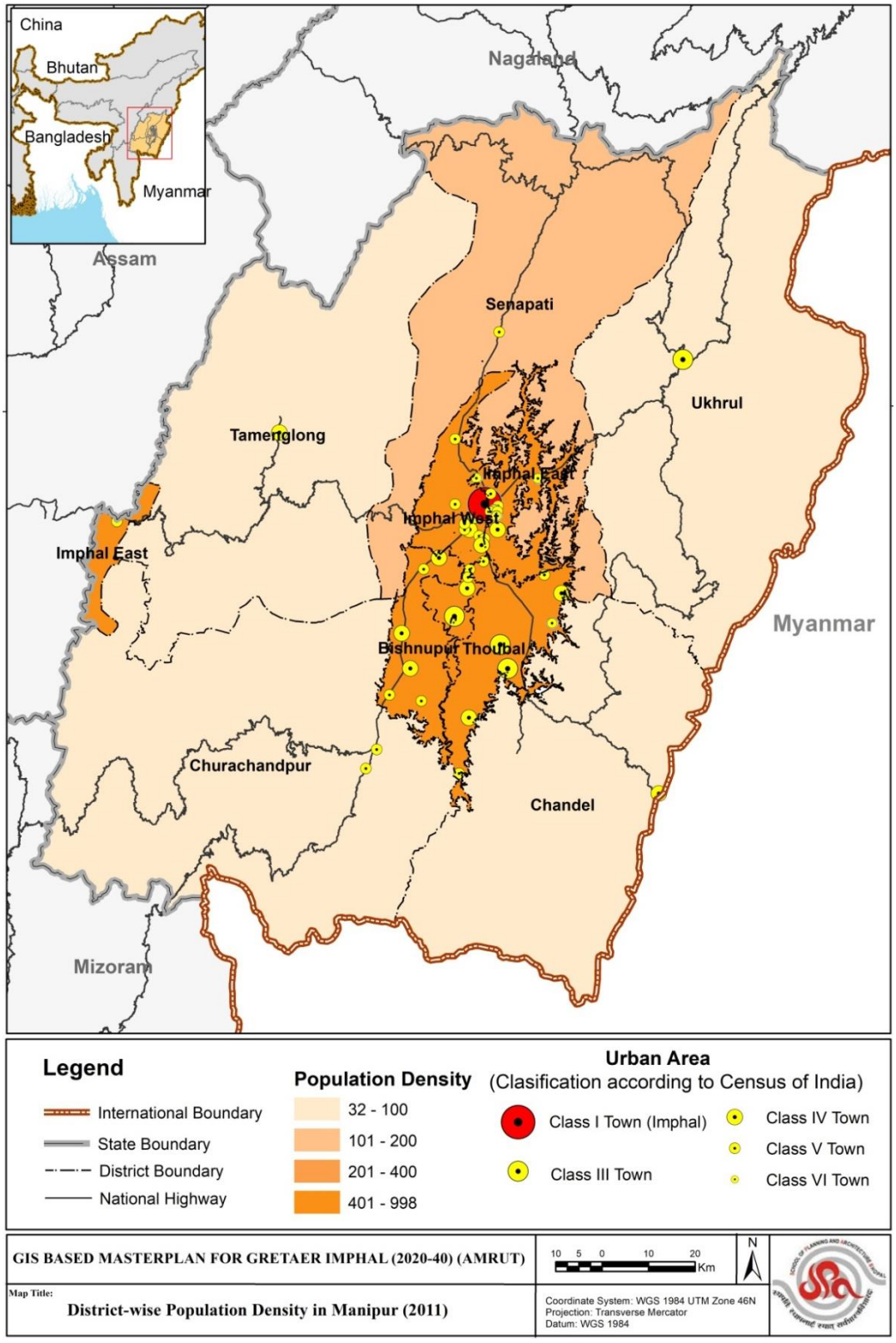
)

Existing Districts (till 2016)	New District	Population (Census 2011)
Imphal East	**Imphal East**	
	Jiribam District	
Senapati District	**Senapati District**	
	Kangpokpi District	
Thoubal District	**Thoubal District**	
	Kakching District	
Chandel District	**Chandel District**	
	Tengnoupal District	
Ukhrul District	**Ukhrul District**	
	Kamjong District	
Churachandpur District	**Churachandpur District**	
	Pherzawl District	
Tamenglong Distrcit	**Tamenglong Distrcit**	
	Noney District	

Source: Manipur Gazette, Government of Manipur , 2016.

The density of population of Manipur is 128 persons/sqkm in year 2011 as against 103 persons/sqkm in 2001 Census. Analysing the spatial pattern of population density, it is observed that the valley districts consist of more population density than the hilly districts. Among the 9 districts of Manipur (Census 2011), 4 districts which form the valley region of Manipur, consists of the highest population density. Imphal, the capital city of Manipur and the only Class I city in Manipur, is in the northern portion of this valley area. Most urban centres are situated in these four valley districts, reflecting in their rate of urbanisation (Map 3.7).

Map 3. 7: District wise Population Density of Manipur (2011)

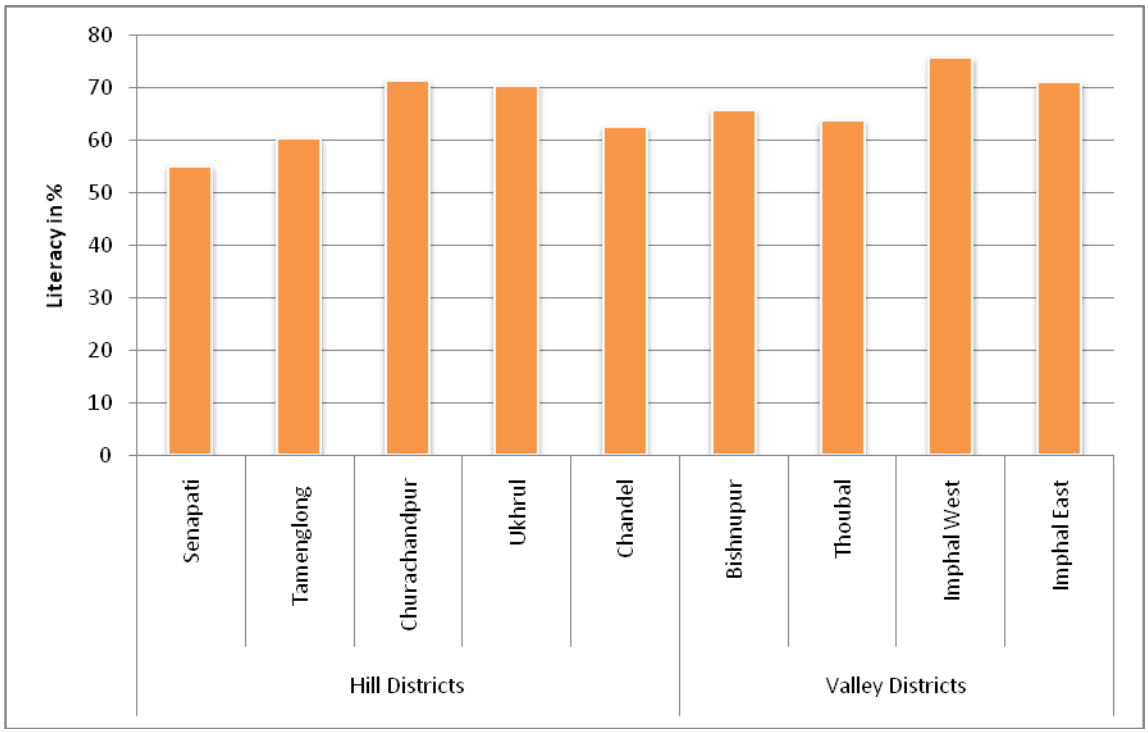


Source: Census of India 2011 and Administrative Atlas, Census of India, 2011.
Note: District Boundary of 2011 has been use as the population data is of 2011

3.5.2 Literacy

Manipur has a literacy rate of 76.9%, (Census 2011), which is more than the national average of 74%. Positive change has been observed during last two-decades in the literacy rate of Manipur, i.e., literacy level has increased from 66.6% in 2001 to 76.9% in 2011, which is a positive sign. Among districts, there is no sharp difference between hill and valley districts in terms of literacy. Imphal West district, which is the most urbanised district in Manipur and contains part of Imphal City, the capital of Manipur, has the highest literacy rate (Figure 3.1).

Figure 3. 1: District wise Literacy in Manipur (2011)



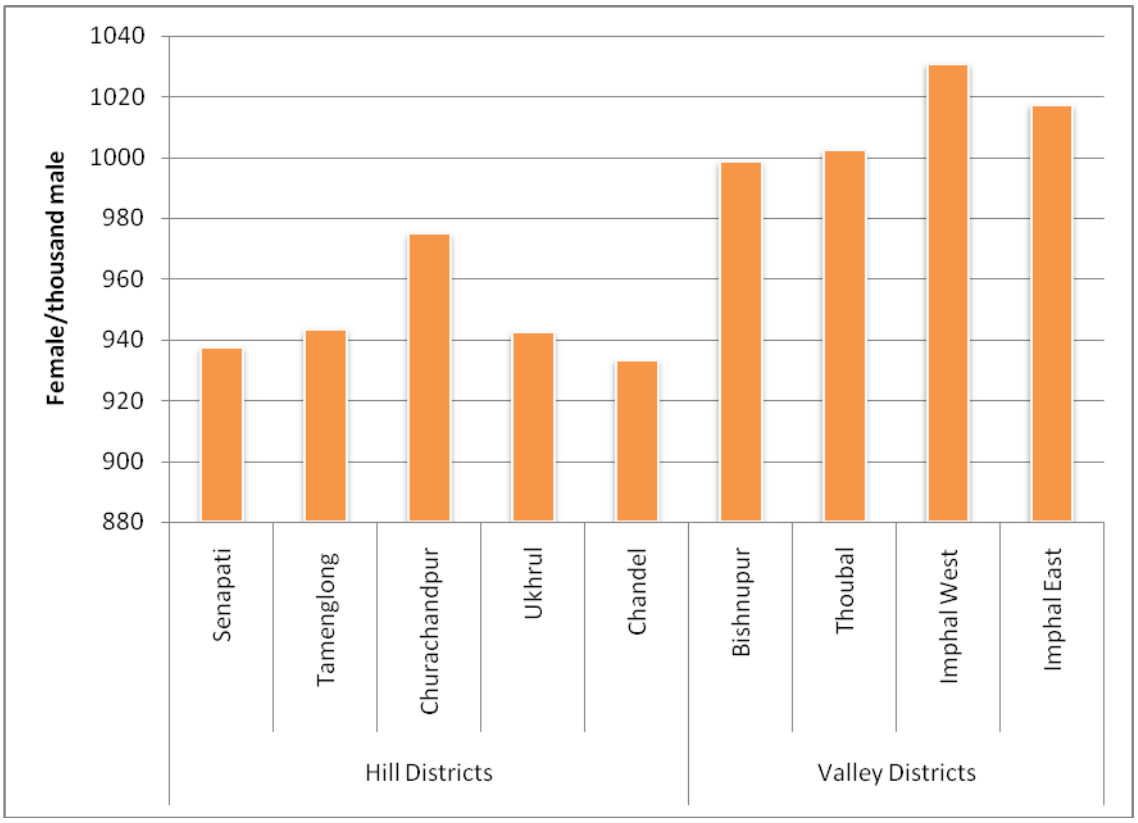
Source: Primary Census Abstract, Census of India, 2011

3.5.3 Sex Ratio

According to the 2011 census, the state of Manipur has 14,38,586 males, 14,17,208 females, which indicates a sex ratio of 985 females per 1000 males and it is much higher than the national average of 940. Among the districts of Manipur, Imphal West has the highest sex ratio of 1031 females per 1000 males followed by Imphal East, which has 1017 females per 1000 males. Unlike these two districts, Chandel and Senapati have comparatively lower sex ratios of 933 and 937 females per 1000 males. Overall, there is a sharp difference in the sex ratio for hill districts and valley districts. Although the valley

districts are mostly urbanised districts in the state and most of them contains sex ratio more than 1000 females/thousand male (Figure 3.2).

Figure 3. 2: Sex Ratio in Manipur (2011)



Source: Primary Census Abstract, Census of India, 2011

3.5.4 People Groups

As per the 2011 Census, the share of SC and ST population of Manipur is 3.40% and 40.8%, as against national average of 16.2% and 8.2% respectively, which reflects a much larger share of ST population in the state than the national average. Regarding the distribution of SC and ST populations, the proportion of the ST population is high in hill districts whereas the proportion of the SC population is high in valley districts. The share of the SC population is high in the districts of Thoubal and Bishnupur, situated in the valley area. All the hilly districts contain more than 85% of the ST population due to the presence of the tribal communities in the forests, and among them, Tamenglong district contains 95.72% ST population of its total population. (Table 3.2)

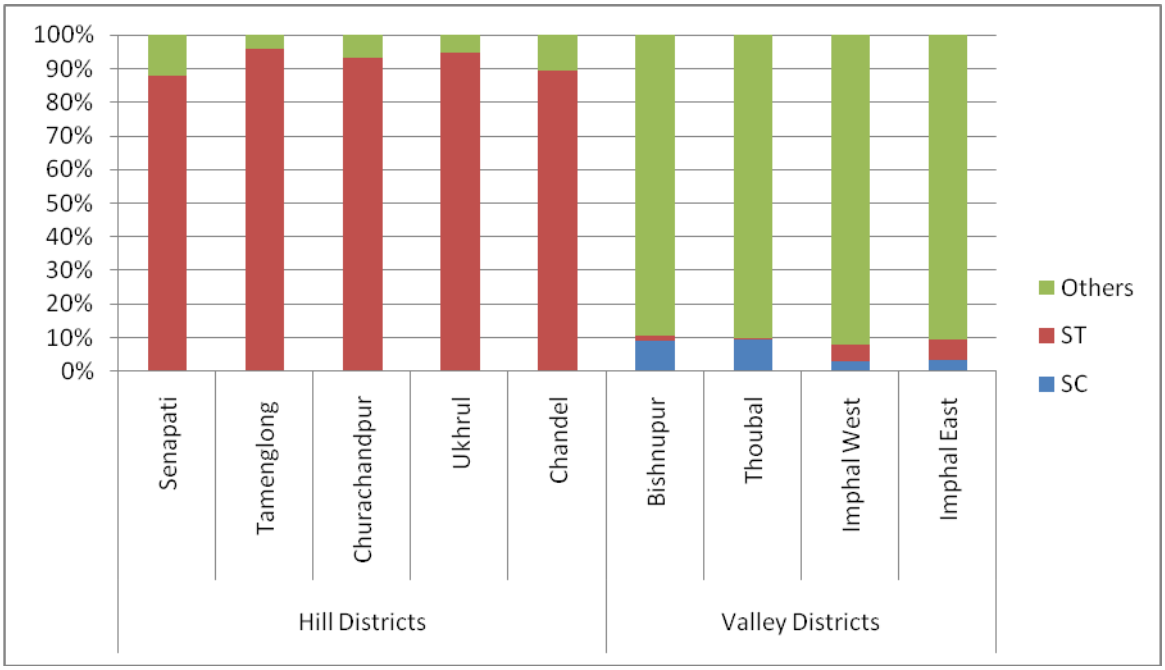
Table 3. 3: District wise Caste Composition in Manipur

District	SC (%)	ST (%)	Others (%)
Senapati	0.21	87.49	12.30
Tamenglong	0.02	95.72	4.26
Churachandpur	0.16	92.94	6.89
Ukhrul	0.13	94.35	5.51
Chandel	0.37	88.97	10.65
Bishnupur	9.31	1.38	89.30
Thoubal	9.61	0.43	89.95
Imphal West	3.19	4.66	92.14
Imphal East	3.47	6.06	90.46

Source: Primary Census Abstract, Census of India, 2011

In Manipur, 33 tribal groups are recognized by the Government of India as Scheduled Tribes (STs), seven Scheduled Castes (SCs), and the Meiteis, the Pangans, and 'others' as separate population categories. (Figure 3.3)

Figure 3. 3: District-wise Caste Composition in Manipur



Source: Primary Census Abstract, Census of India, 2011

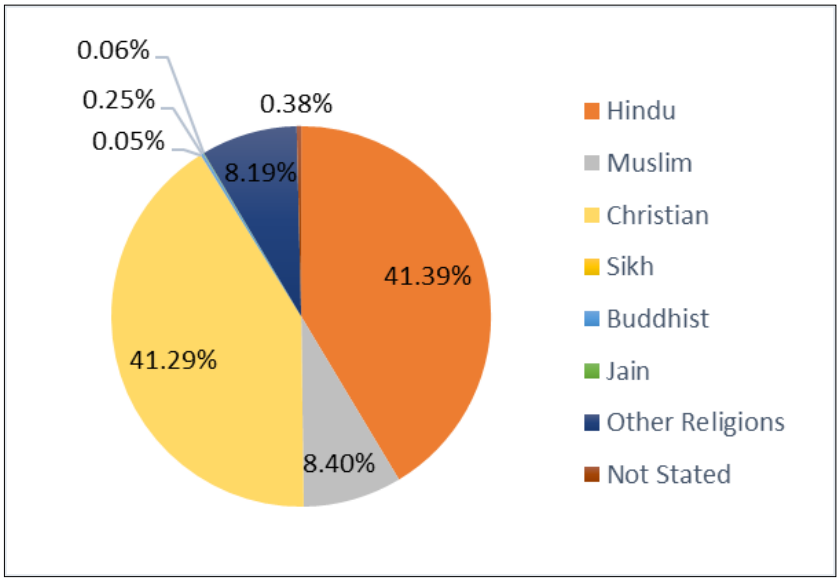
3.5.5 Local Communities & Religious Composition

Manipur is a place of pluralistic society. The population of this place is constituted by various ethnic groups of people. Every ethnic group of people and other communities have enjoyed the privilege to

exercise their social and cultural activities being a part of the social fabric of the Manipuri society. Any type of communication is done through the Manipuri language as the lingua franca.

Right from the earliest historical period, the people of Manipur had an opportunity to witness the activities of various religious principle and ideologies. Before the coming of Hinduism, the people of this place have enjoyed the activities and principles of primordial religion which the Christian people used to call as animism. In fact, the principle of ancestor worship was the religious life of people. Then, Hinduism was emerged as the state religion during the beginning of 18th century. The people of the surrounding hill areas also practiced their own primordial religion. Then after the establishment of contact with the British Colonial Administrators, the Christian Missionary activities began to penetrate into the hill areas. Ultimately, Christianity became an important religious life of these people (Fig. 3.4). The Muslim communities also had the opportunity to enjoy their religion practices. Thus, Manipur is a nice place for all the people who has a strong desire to practice their respective religious believe freely.

Figure 3. 4: Population Distributed as per Religion in Manipur

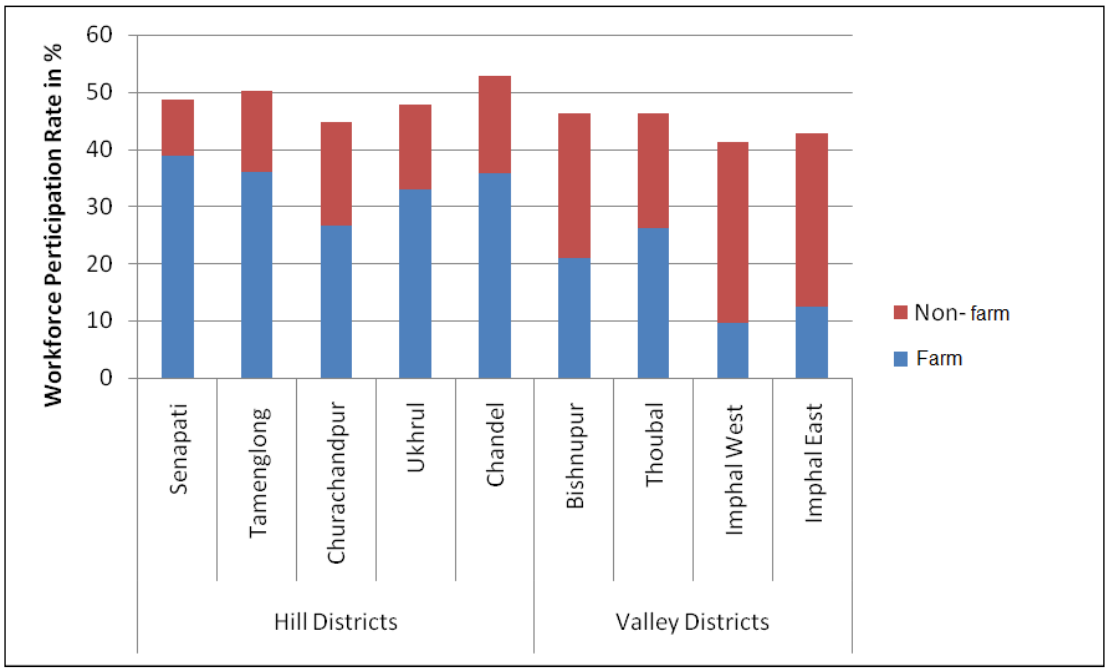


Source: Primary Census Abstract, Census of India, 2011

3.5.6 Workforce Participation

The workforce participation rate in Manipur is 45.09, which is much higher than the national average of 25.51 (Census, 2011). While analysing the distribution, it is observed that there is not much deviation among hill districts and valley districts regarding workforce participation rate (Map 3.8). Imphal East and Imphal West district has a low workforce participation rate because of the prevailing urban economy in most part of the two districts.

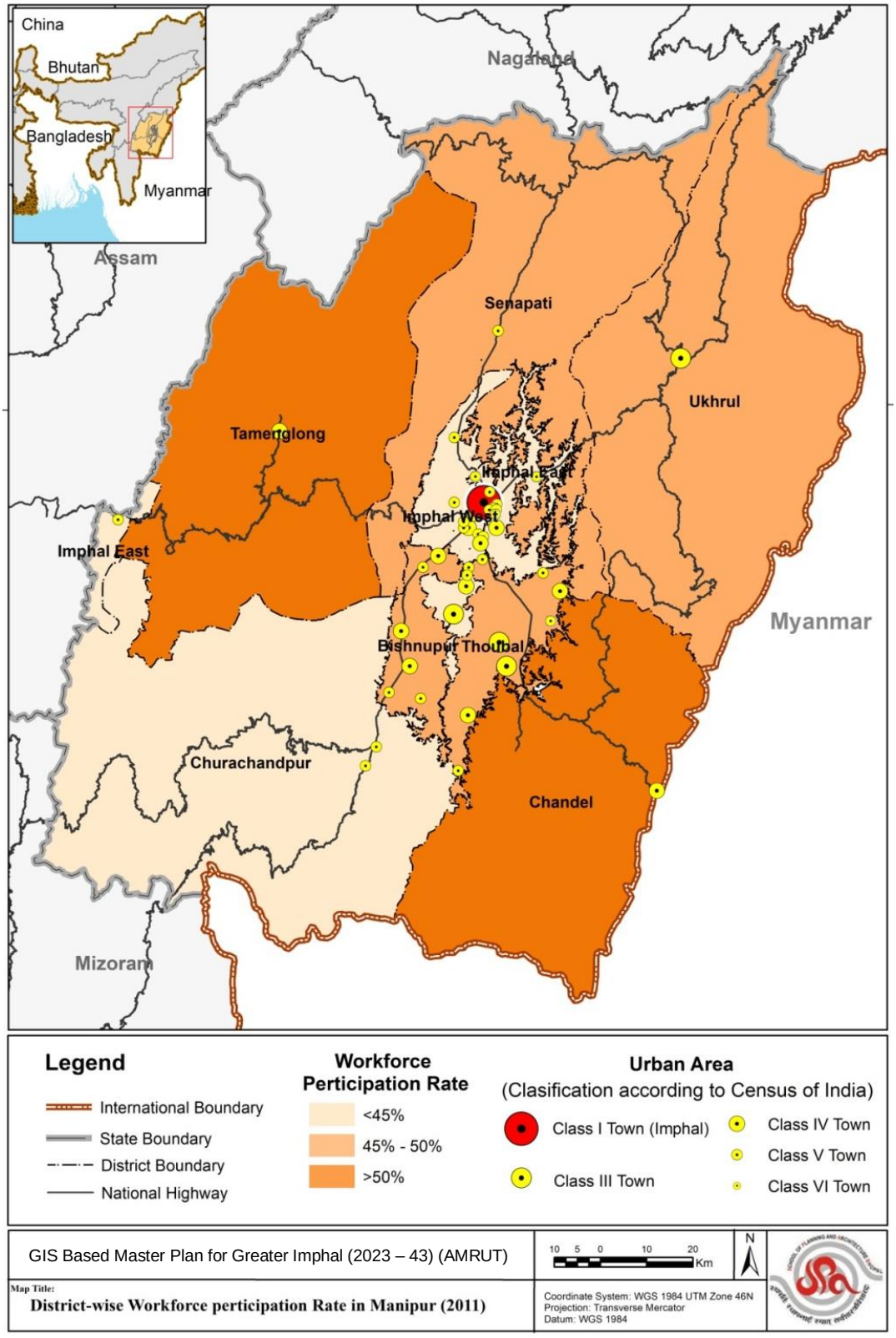
Figure 3. 5: District-wise Workforce Participation in Manipur, 2011



Source: Census of India, 2011

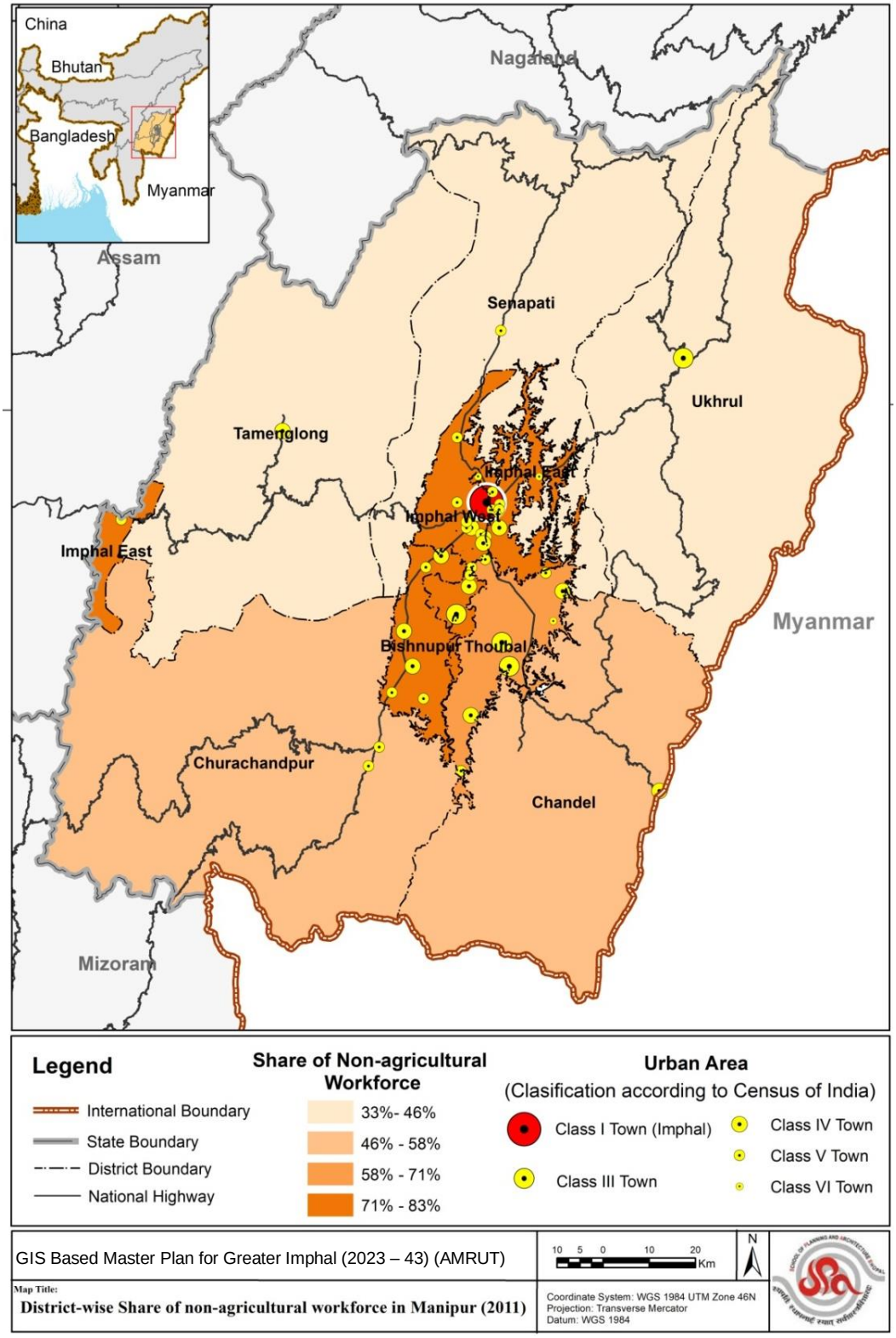
Regarding the composition of the workforce, it is found that the valley districts have more proportion of non-farm workforce (Map 3.9 and Figure 3.5). It is mainly because most of the towns and cities are located in the valley area of Manipur, which contributes to an increase in non-farm economic activity. Thus, the concentration of workforce happens where the concentration of towns and cities area more. Imphal, the capital city of Manipur and the only Class I city in Manipur located in the northern portion of the valley area, covering the partially area of Imphal East and Imphal West district, contributes highly to increase of the non-farm workforce. Hence these two districts have a major share of the non-farm workforce.

Map 3. 8: District wise Workforce Participation Rate in Imphal (2011)



Source: Census of India 2011 and Administrative Atlas, Census of India, 2011.

Map 3. 9: District wise share of Non-Farm workforce in Imphal (2011)



Source: Census of India 2011 and Administrative Atlas, Census of India, 2011

3.5.7 Observations

It has been observed that the state of Manipur ranks more than the national average in terms of sex ratio and workforce participation but lacks in terms of literacy rate. The state also has a very high share of SC/ST population as compared to national average indicating high tribal population in the region. The variations are also observed between the hill and valley districts of the state.

3.6 Regional Economic Profile

The economy of the state is primarily dependent on agriculture in terms of the population dependent on it. Agriculture provides employment to about 52 percent of the total workforce in Manipur although in terms of contribution to State value addition tertiary sector leads the economy, which accounts for 64 percent share in State Value Addition of Manipur. The state's location is in a hilly terrain with a small valley portion bounded by an international border has provided unique opportunities and limitations in terms of economy.

3.6.1 Gross State Domestic Product at Market Prices (GSDP)

The GSDP of Manipur at Market Prices from 2011-12 to 2019-20 at current and constant (2011-12=100) prices are presented in table 3.3.

Table 3. 4: Gross State Domestic Product of Manipur at Market Prices, 2011-12 to 2019-20

Year	At current prices		At constant (2011-12=100) prices	
	GSDP (Rs. In lakhs)	Annual Growth Rate (%)	GSDP (Rs. In lakhs)	Annual Growth Rate (%)
(1)	(2)	(3)	(4)	(5)
2011-12	12.91	-	12.91	-
2012-13	13.74	6.42	12.99	0.61
2013-14	16.18	17.75	14.11	8.64
2014-15	18.13	12.03	15.24	8.00
2015-16	19.53	7.73	16.42	7.73
2016-17	21.29	9.03	17.08	4.01
2017-18	25.79	21.11	18.75	9.77
2018-19	27.39	6.20	18.26	(-)2.61
2019-20 (Q)	31.30	14.27	20.13	10.20

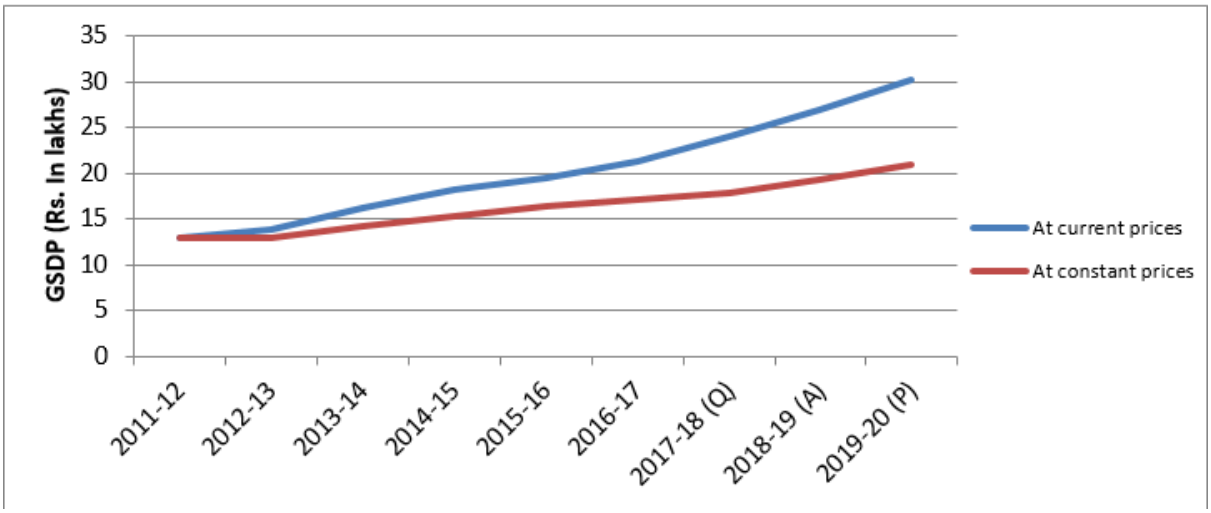
Q: Quick Estimates

Source: Directorae of Economics & Statistics, Manipur

Table 3.3 reveals that the GSDP of Manipur at Market Prices in absolute terms is continuously increasing over the years (Figure 3.6). The exponential growth rates from 2011-12 to 2019-20 is

worked out to be 10.59% and 6.02% for current and constant (2011-12) prices, respectively, which is higher than the national average of 4.2%.

Figure 3. 6: GSDP of Manipur at Current and constant Price (base year 2011-12)



Q: Quick Estimates A: Advance Estimates P: Projected Estimates

Source: Economic Survey, Manipur 2019-20, Directorate of Economics & Statistics, Government of Manipur

3.6.2 Net State Domestic Product (NSDP) at Market Prices

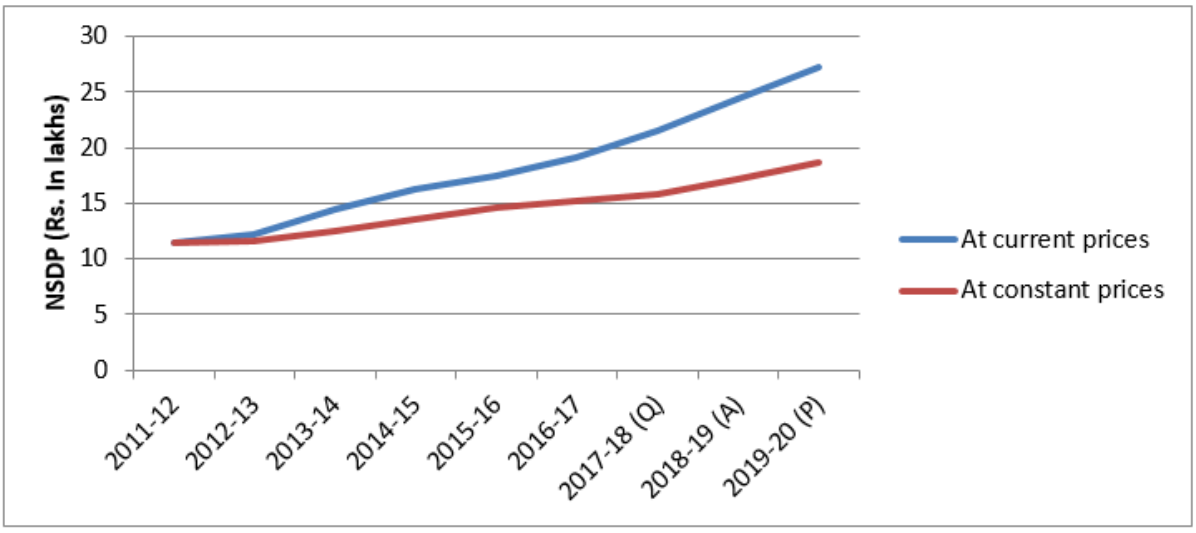
NSDP at Market Prices is the value of all goods and services produced in the State during a specified period, after making adjustments for the Consumption of Fixed Capital (CFC). The revised NSDP at Market Prices at current and constant (2011-12=100) prices are presented in table 3.4.

Table 3. 5: Net State Domestic Product of Manipur at Market Prices, 2011-12 to 2019-20

Year	At current prices		At constant (2011-12=100) prices	
	NSDP (Rs. In lakhs)	Annual Growth Rate (%)	NSDP (Rs. in lakhs)	Annual Growth Rate (%)
(1)	(2)	(3)	(4)	(5)
2011-12	11.50	-	11.50	-
2012-13	12.18	5.97	11.51	0.12
2013-14	14.43	18.47	12.51	8.72
2014-15	16.27	12.71	13.61	8.75
2015-16	17.49	7.48	14.63	7.49
2016-17	19.13	9.37	15.20	3.87
2017-18	23.56	23.13	16.87	10.98
2018-19	24.84	5.45	16.19	(-)4.02
2019-20 (Q)	28.35	14.14	17.76	9.65

Source: Directorae of Economics & Statistics, Manipur

Figure 3. 7: NSDP of Manipur at Current and constant Price (base year 2011-12)



Q: Quick Estimates A: Advance Estimates P: Projected Estimates

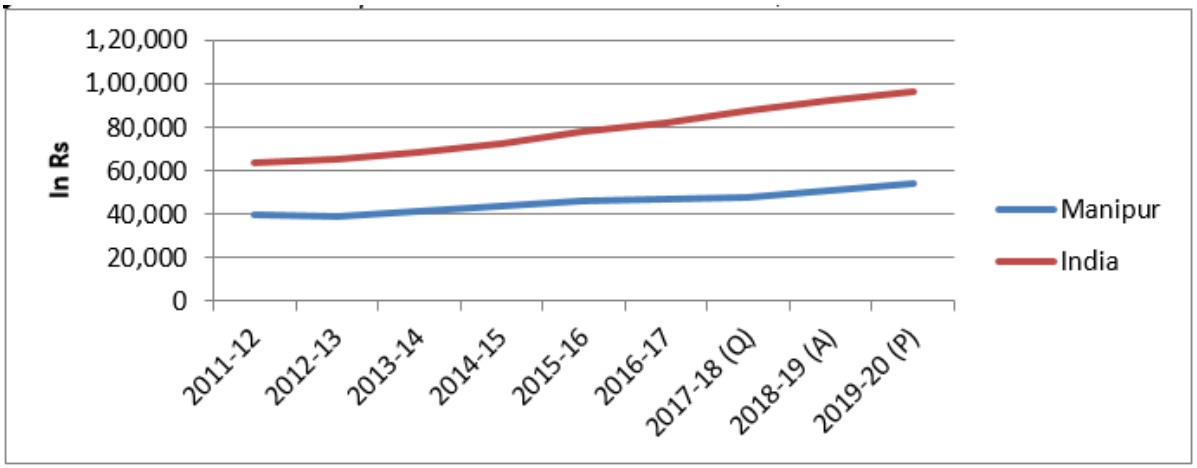
Source: Economic Survey, Manipur 2019-20, Directorate of Economics & Statistics, Government of Manipur

As shown in table 3.4, the NSDP of Manipur at Market Prices at constant prices is projected to increase from Rs. 11, 50, 107 lakhs in 2011-12 to Rs.18, 60,690 lakhs in 2019-20 with an exponential growth rate of 6.01% in Figure 3.7.

3.6.3 Income

The Per Capita Income of Manipur at current and constant (2011-12=100) prices in 2019-20 are estimated to be Rs. 79,296 and Rs. 54,099 respectively, showing an increase of 9.66% and 6.12% over the previous year. The trend of PCI of Manipur and India at constant prices is presented in Figure 3.8.

Figure 3. 8: Trend of Per Capita Income at Constant Price, 2011-12 to 2019-20



Q: Quick Estimates A: Advance Estimates P: Projected Estimates

Source: Economic Survey, Manipur 2019-20, Directorate of Economics & Statistics, Government of Manipur

3.6.4 Economic Sectors

Although in terms of population dependent on, agriculture appears as dominating sector, but in terms of contribution to economy, the tertiary sector appears as the dominating sector. Sectoral contribution by major sectors of Gross and Net SDP at basic prices are presented in table 3.5 and Figure 3.9.

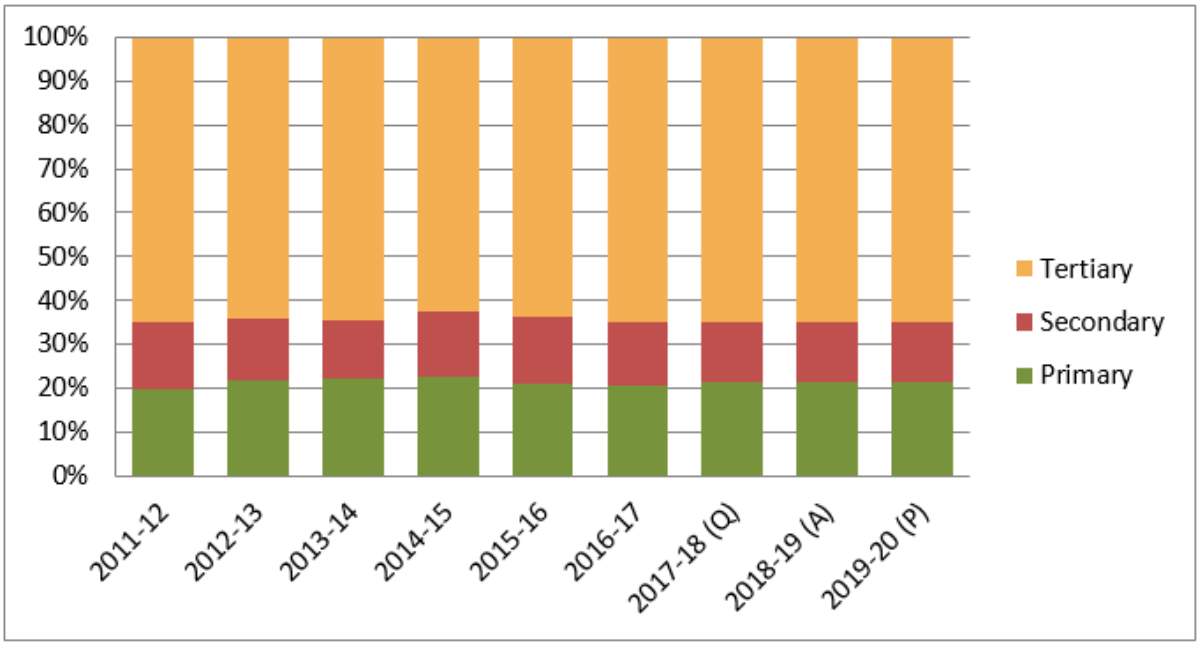
Table 3. 6: Contribution of Gross and Net State Value Added by major sectors at current prices in percentage, 2011-12 to 2019-20

Year	GSVA (%)			NSVA (%)		
	Primary	Secondary	Tertiary	Primary	Secondary	Tertiary
(1)	(2)	(3)	(4)	(5)	(6)	(7)
2011-12	19.77	15.40	64.84	20.39	14.89	64.72
2012-13	21.65	14.01	64.34	22.34	13.39	64.27
2013-14	22.02	13.54	64.44	22.69	12.85	64.45
2014-15	22.41	14.87	62.72	23.06	14.65	62.30
2015-16	20.89	15.52	63.59	21.45	15.44	63.11
2016-17	20.54	14.29	65.17	21.04	14.02	64.94
2017-18	26.90	13.30	59.80	27.92	13.11	58.97
2018-19	27.61	9.78	62.61	28.90	9.15	61.95
2019-20 (Q)	25.01	9.92	65.07	26.15	9.35	64.50

Q: Quick Estimates A: Advance Estimates P: Projected Estimates

Source: Directorae of Economics & Statistics, Manipur

Figure 3. 9: Contribution of Gross State Value Added by major sectors at current prices in percentage, 2011-12 to 2019-20



3.6.5 Indo Myanmar Border Trade

The opening of the Border Trade between India and Myanmar was an important achievement during the Eighth Five Year Plan period. The Indo-Myanmar Border Trade was inaugurated in 12th April, 1995 by the then Union Minister of State for Commerce as a follow-up measure of the Trade Agreement signed between India and Myanmar on the 21st Jan., 1994 at New Delhi. Subsequently, exchange of 22 items has been allowed by the residents across the border. There is a need to boost the trade potential across the border by creating an adequate infrastructure for promoting export-oriented industrial units. To facilitate the trade, trade centers are being constructed at Moreh and another at Imphal.

The Director-General of Foreign Trade has permitted the bilateral/border trade along with the Indo-Myanmar border as per the prevailing customary practices for the commodities, namely, mustard/rapeseed, pulses and beans, fresh vegetables, fruits, garlic, onion, chillies, spices (excluding nutmeg, mace, cloves, cassia & cinnamon), bamboo, minor forest products (excluding teak), betel nuts and leaves, food items for local consumption, tobacco, tomato, reed broom, sesame, resin, coriander seeds, soya beans, roasted sunflower seeds, *Katha*, ginger etc. The main items of exports are wheat flour, bleaching powder, fenugreek seeds, ani seeds, cumin seeds, soyabean nuggets (*soyabari*), dry chillies, incense sticks (*agarbati*), rose powder, pea, garlic, dry buffalo offal etc., while the import items are betel nuts, turmeric, red kidney bean (*rajma*), *kuth* roots, gram, resin, reed-brooms, dry ginger etc.

Further, in order to promote trade link with South East Asia, the Central and State Government have undertaken measures in consonance of the Government of India's Act East Policy as given below:

a) Setting up of an Integrated Check Post

b) Organizing the first Industrial Expo-2016 during 4th April to 10th April, 2016 where about 600 Units from Manipur, Assam, Nagaland and Meghalaya participated.

c) Establishment of a Multi Storied Shopping Complex at Moreh to facilitate marketing of various products and produces of Manipur, India and other Asian countries through Myanmar.

d) Regular participation in India International Trade Fair (IITF), since 1981, which is platform to showcase the unique products of the state at the National and International level.

e) Construction of Manipur Trade and Expo Centre at Lamboikhongnangkhong under ASIDE Scheme of Ministry of Commerce, Government of India, having multipurpose facilities for organizing Exhibitions, Trade Fairs, Craft Bazaar and for conducting any International Events.

3.6.6 Observations and Way Forward

It has been observed that the per capita income of the state is lower than that of national average. Also majority of the population is engaged in primary sector. Hence, to increase the standard of living and per capita income, the share of workforce in tertiary sector should be increased which will also require approriate knowledge and skill development.

Section 4: Greater Imphal

4.1 Introduction

The GIS based Master Plan for 2043 is prepared for the Greater Imphal Planning Area that covers parts of Imphal East and Imphal West districts of the valley regions of Manipur.

4.1.1 Spatial Extent of Greater Imphal

The area demarcated for development of Greater Imphal in 1994 was 82.89 sqkm, whereas the total area for Greater Imphal Master Plan was 135.29 sqkm. It includes parts of Imphal East and Imphal West districts. The planning area for Greater Imphal Master Plan, 2043 is approx 150 sqkm which has been revised in 2020.

Greater Imphal is bounded by natural features such as rivers, natural drains, hillocks, etc. (Refer: Map 4.1). The Greater Imphal Master Plan is bounded in the north by Imphal River and Northern boundary of konsam Leikai and Laishram Leikai villages; in the east by the villages beyond Iril River; in the south by Southern boundaries of Machahal, Takhok Awang, Loumanbi, Bashikhong, Kiyamgei, Langthabal Kunja, Langthabal Lap, Ningombam and Meitram villages; and in the west by western boundary of Meitram, Malom Tuliahal, Malom Tuliyaima, mongsangei, Ghari, Langjing Part – I, Langjing Part-II and Langol Hills upto Imphal river near Khonghampat.

4.1.2 Proposed Boundary of Greater Imphal Planning Area for Master Plan 2043

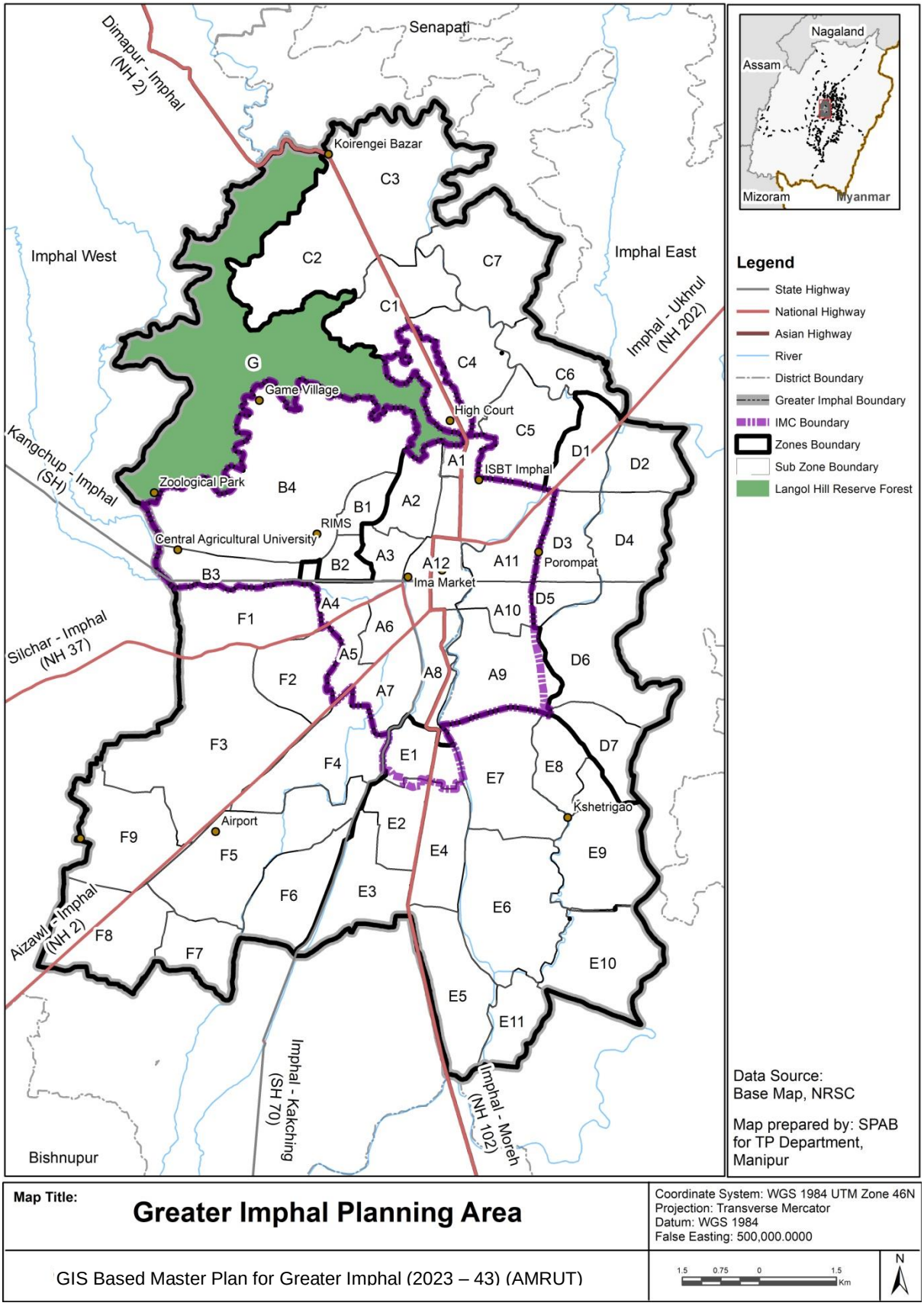
In the proposed boundary of the Greater Imphal, there is a shift in the perimeter with the addition of five new villages on account of the growth direction of the city. The five new villages are Khomidok, Kairang Muslim, Heingang, Takhok Makha and Keirao Makting. In the north-eastern part of the planning area, the villages adjoining the Marjing hills are proposed to be merged in the planning area. In the south-eastern boundary, two new villages are added in the Irilbung area within the earlier defined boundary of Iril River.

4.1.3 Jurisdiction of Greater Imphal Master Plans (2011 and 2043)

The Master Plan for Greater Imphal 2011 consisted of the Imphal municipality, 77 villages and the Langol Hill. For the Master Plan 2043, some villages are added to the existing boundary of Greater Imphal Planning Area, in which three villages i.e., Khomidok, Kairang Muslim and Heingang are added in the north-eastern side of the city and two villages i.e., Takhok Makha and Keirao Makting, towards the south-eastern part of the city. The Greater Imphal Planning Area is divided into 7 zones and 51 sub- zones consisting of various wards of Imphal Municipal Corporation, villages, census towns and out-growths within the planning area.

List of these zones and sub-zones comprising of the ward(s)/ village(s) or census town or out-growth is available as annexure 5.1 Annexure 5.1 also lists population data for each of these administrative units. The zone and sub-zones are being treated as planning zones only.

Map 4. 1: Greater Imphal Planning Area, 2043



4.2 Physical Environment

4.2.1 Physiography

Imphal is located more or less within the geographical centre of the Manipur Valley. The valley is generally flat elongated and tapering towards south surrounded on all sides by hillocks (about 1500 to 2000 m altitude) and constituting a closed basin with an outlet to the south. The average elevation of the valley is 793 m above mean sea level.

The growth pattern of Imphal city is influenced by its physiographic character. The major growth of the town has taken place towards south, particularly along the highways. The growth towards the north, east and north- west directions is restricted by hills. The growth towards the east is restricted by low lying areas. Imphal river, Nambul river and Kongba river running in north-south direction have numerous tributaries through the town and are mainly responsible for the scattered development of the city. The town is below the high flood level of Imphal river and hence there are embankment roads on both sides of the river to protect the settlement from seasonal floods.

4.2.2 Climate

The climate of Imphal is salubrious. The city is located at the longitude 93.57^0 east and latitude 24.50^0 north longitude. Though the temperature of Imphal in higher than that for an elevation of 2600 feet due to reflection of heat from the surrounding mountains, the valley enjoys a cool and pleasant climate. The average temperature in summer ranges between 20^0C and 30^0C and in winter between 5^0C and 23^0C. Rainfall occurs during the period of April-October. The average annual rainfall is 1413 mm.

4.2.3 Flora & fauna

Natural vegetation covers about 26% of the valley. Tropical semi evergreen (bamboo), sub-tropical pine, tropical moist deciduous and dry temperate vegetation overlooking the valley is the main types of natural vegetation. Cultured vegetation in the form of paddy cultivation and vegetables has a wide range of coverage. Paddy cultivation covers majority of the land.

Various species of birds are seen in the lake area. The forest areas are also the places where various types of birds and other animals are seen. Domestic birds, animals and cattle are very common in Imphal area.

Section 5: Demographic Profile

5.1 Introduction

Due to the geographic advantage of the Greater Imphal planning area being located in the valley region and the availability of infrastructure, migration from the neighboring hill districts and the other valley happens leading to a healthy rate of urbanisation.

In 2011, the Imphal Municipal Council had 27 wards under its jurisdiction. The population of the municipal area is about 2.68 lakhs covering an area of 34.87 sqkm. The status of 'Imphal Municipal Council' changed to 'Imphal Municipal Corporation' in the year 2014 without any change in its geographical area. The total population of Greater Imphal planning area as per 2011 census is 5.26 lakhs in total area of 151.55 sqkm as shown in Table 5.1. Accordingly, the density of population within the municipality is 81 persons per hectare and it is about 35 persons per hectare in the Greater Imphal planning area.

Table 5.1: Demographic Details of Imphal MC, Non-Municipal area & Planning Area

	Imphal Municipal Corporation	Non-Municipal Area	Greater Imphal Planning Area
Number of Ward/Census Town/Out-Growth/Villages	27 wards	16 Census Town 05 Out-Growth 56 Villages	27 wards 16 Census Town 05 Out-Growth and 56 Villages
Total Area (sqkm)	34.87	111.68	151.55
Total Population (lakh)	2.68	2.58	5.26
Male Population (lakh)	1.38	1.31	2.69
Female Population (lakh)	1.45	1.12	2.57
Total Households	61,281	46,609	1,07,890
Population Density (pph)	81	20	35
Literacy Rate (%)	81.28	77.26	79.51
Sex Ratio	1052	1033	1044

Source: Census of India, 2011

Note – The status 'Imphal Municipa Council' has changed to 'Imphal Municipal Corporation' in the year 2014

5.2 Population Trends

The total population of Greater Imphal Planning region in 1991 census was 3.84 lakhs which experienced an 18% decadal growth rate, expanding to 4.55 lakhs in 2001. In the next decade it grew at 15% encompassing it to 5.26 lakhs in 2011 census, whereas the Manipur state grew at the rate of 25% with and an overall total population of 29 lakhs. The population and growth rates for Imphal Municipal Corporation, Non- municipal area, Greater Imphal Planning area and Manipur state is tabulated in Table

5.2 and 5.3 respectively for years 1961 to 2011 as per census and graphically it is represented by Figure 5.1.

Table 5. 2: Population in Greater Imphal, Imphal Municipal Corporation and Non-Municipal Area

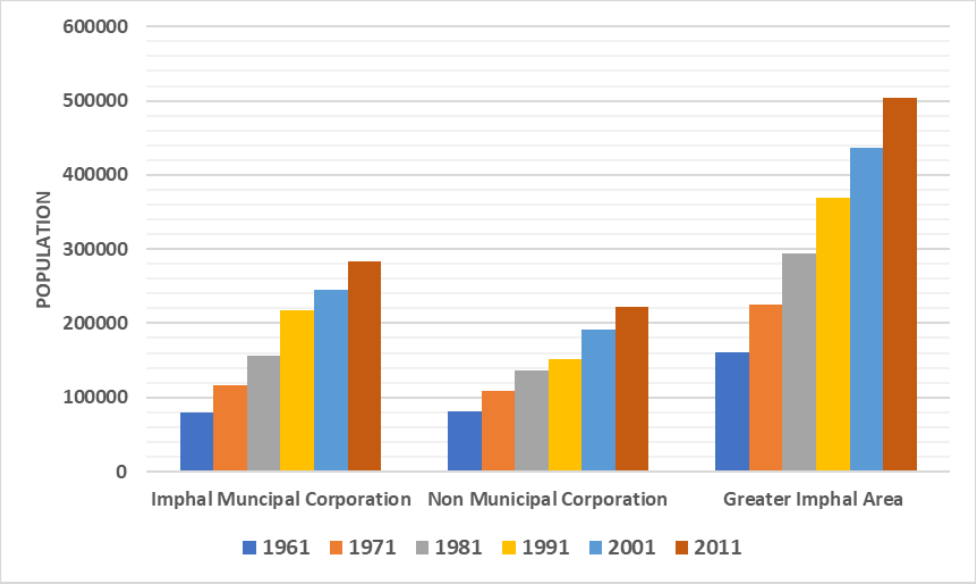
Year	Imphal Municipal Corporation (in lakh)	Non-Municipal Area (in lakh)	Greater Imphal Planning Area (in lakh)	Manipur State (actual figure)
1961	0.79	0.81	1.60	780037
1971	1.16	1.09	2.25	1072753
1981	1.57	1.37	2.93	1420953
1991	2.16	1.67	3.84	1837149
2001	2.44	2.10	4.55	2293896
2011	2.68	2.58	5.26	2855794

Source: Census of India, 1961-2011

Table 5. 3: Population Growth Rates

Year	Population Growth Rate (%)			
	Imphal Municipal Corporation	Non-Municipal Area	Greater Imphal Planning Area	Manipur State
1961- 71	46.8	34.6	40.6	37.53
1971- 81	35.3	25.7	30.2	32.46
1981- 91	37.6	21.9	31.1	289.29
1991- 2001	13.0	25.7	18.5	24.86
2001- 11	16.0	15.7	15.6	24.50

Figure 5. 1: Population in Greater Imphal, Imphal Municipal Corporation and Non-Municipal Area



Source: Census of India, 1991, 2001 and 2011

5.3 Population Density

According to Census 2011, the gross population density for Greater Imphal is worked out to be 35 persons per hectare. Sub zones A3, A4, A5, A6, A7, A11 and E1 have population densities more than 150 persons per hectare as per 2011 population (Table 5.6). The medium and low-density pattern of population in various wards and villages of the Greater Imphal reveals that residential houses are scattered. There are vast land patches that are unsuitable for residential settlements due to the undulating nature of the soil, presence of natural barriers like ponds, tanks, canals, hills etc. Table 5.4 and Figure 5.2 tabulates the population densities for Imphal Municipal Corporation, Non- municipal area and Greater Imphal Planning area for 1991, 2001, 2011.

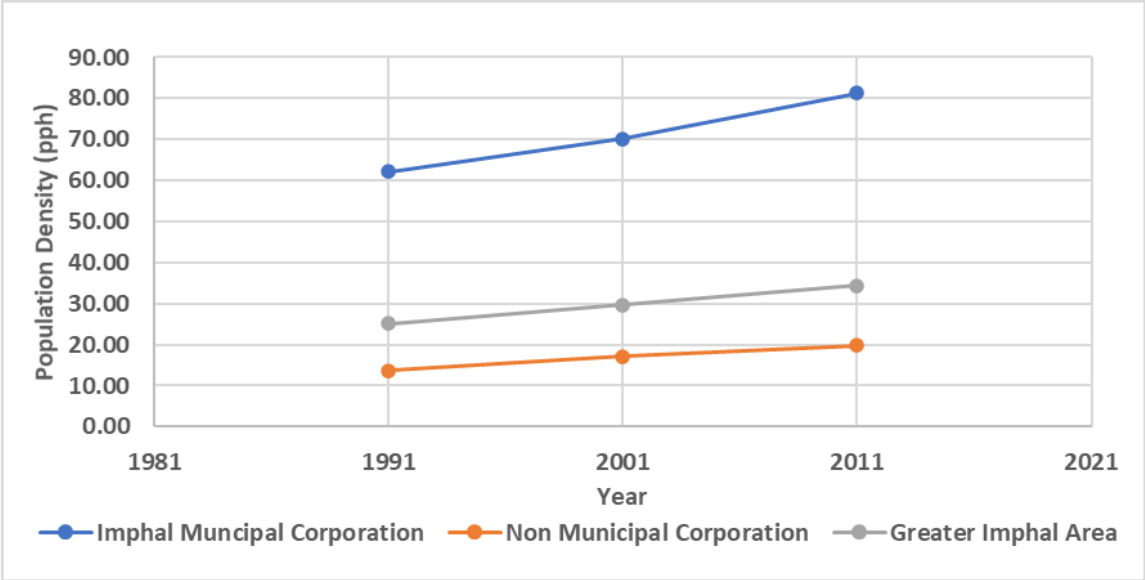
Table 5. 4: Population Density Greater Imphal Planning Area

Area	1991 (in pph)	2001 (in pph)	2011 (in pph)
Imphal Municipal Corporation	62	70	81
Non-Municipal Area	14	17	20
Greater Imphal Planning Area	25	30	35

Source: Census of India, 1991, 2001 and 2011

(Note – The status 'Imphal Municipal Council' has changed to 'Imphal Municipal Corporation' in the year 2014)

Figure 5. 2: Population Density in Greater Imphal Planning Area

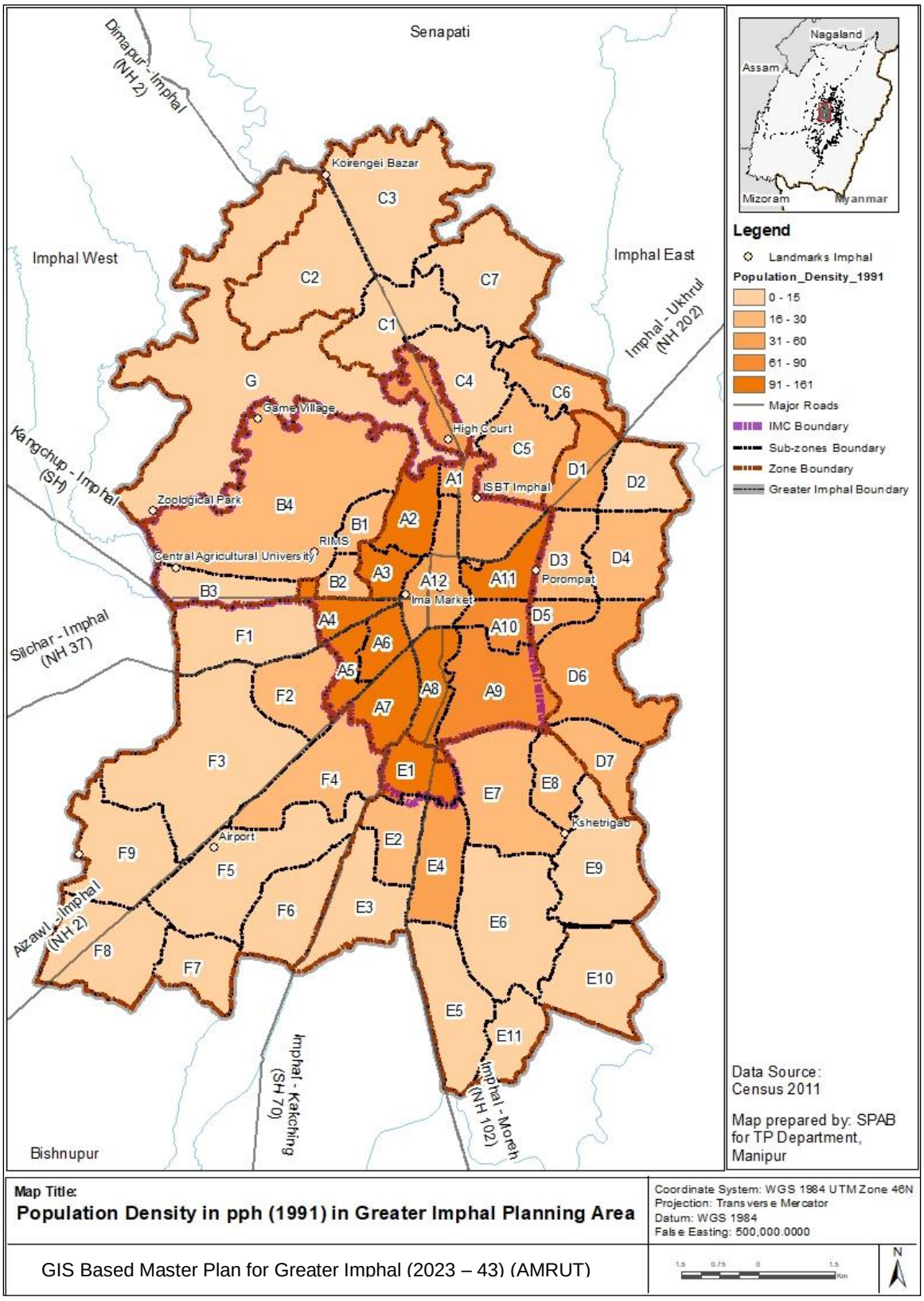


Source: Census of India, 1991, 2001 and 2011

Maps 5.1, 5.2 and 5.3 show the population densities within the Greater Imphal planning area (sub- zone wise) over the years 1991, 2001 and 2011. It reveals that the core area (Imphal municipal corporation area) has a density of more than 90 pph whereas in the peripheral areas it is as low as 10 persons per hectare. It is observed that the density is increased in sub zones of Zone D and E.

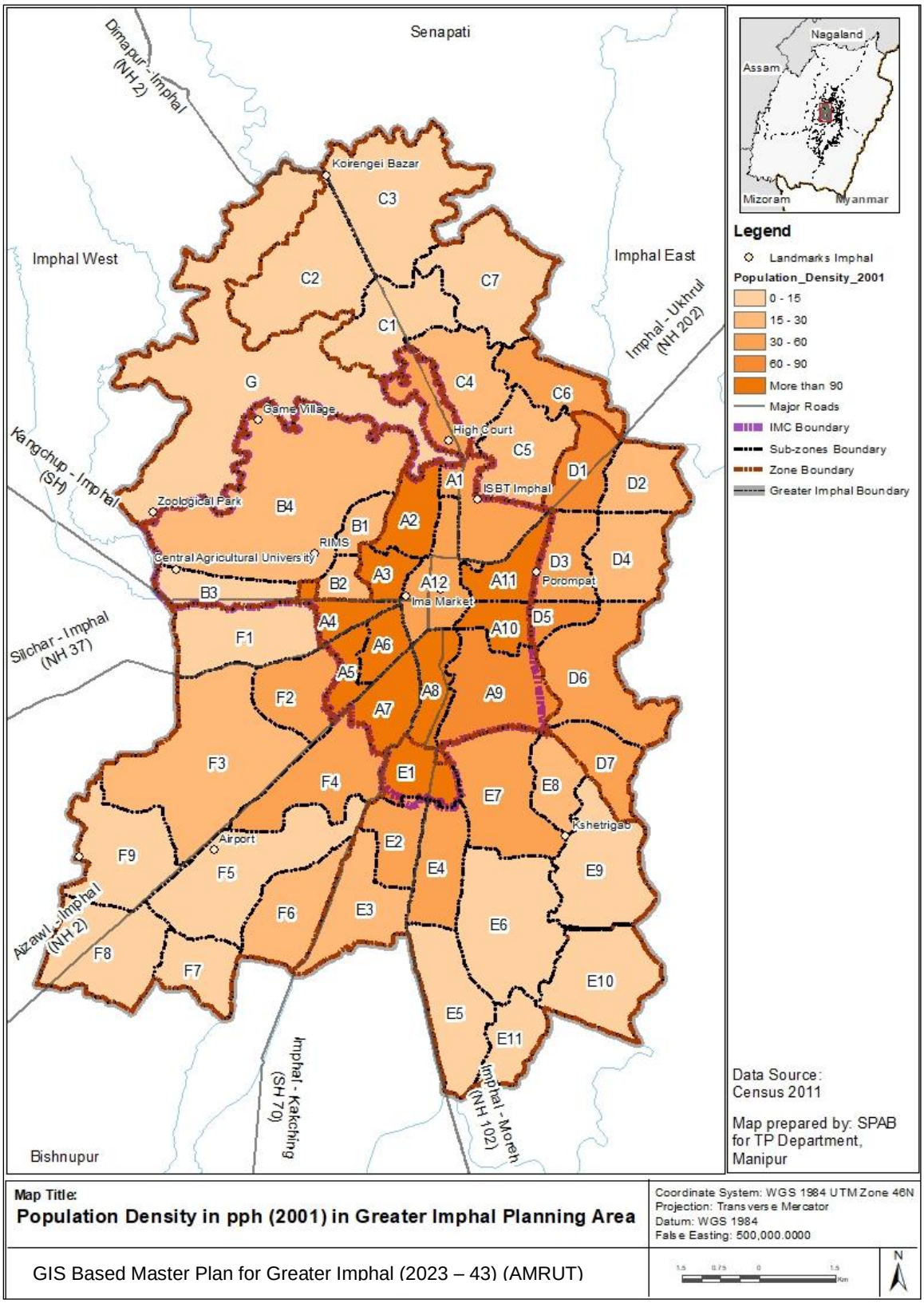
Note:
The data used for the preparation of maps 5.1, 5.2 and 5.3 is attached in annexure 5.2
The ward and village wise population density is attached in Annexure 5.3 and 5.4.

Map 5. 1: Population Density in Greater Imphal Planning Area (1991)



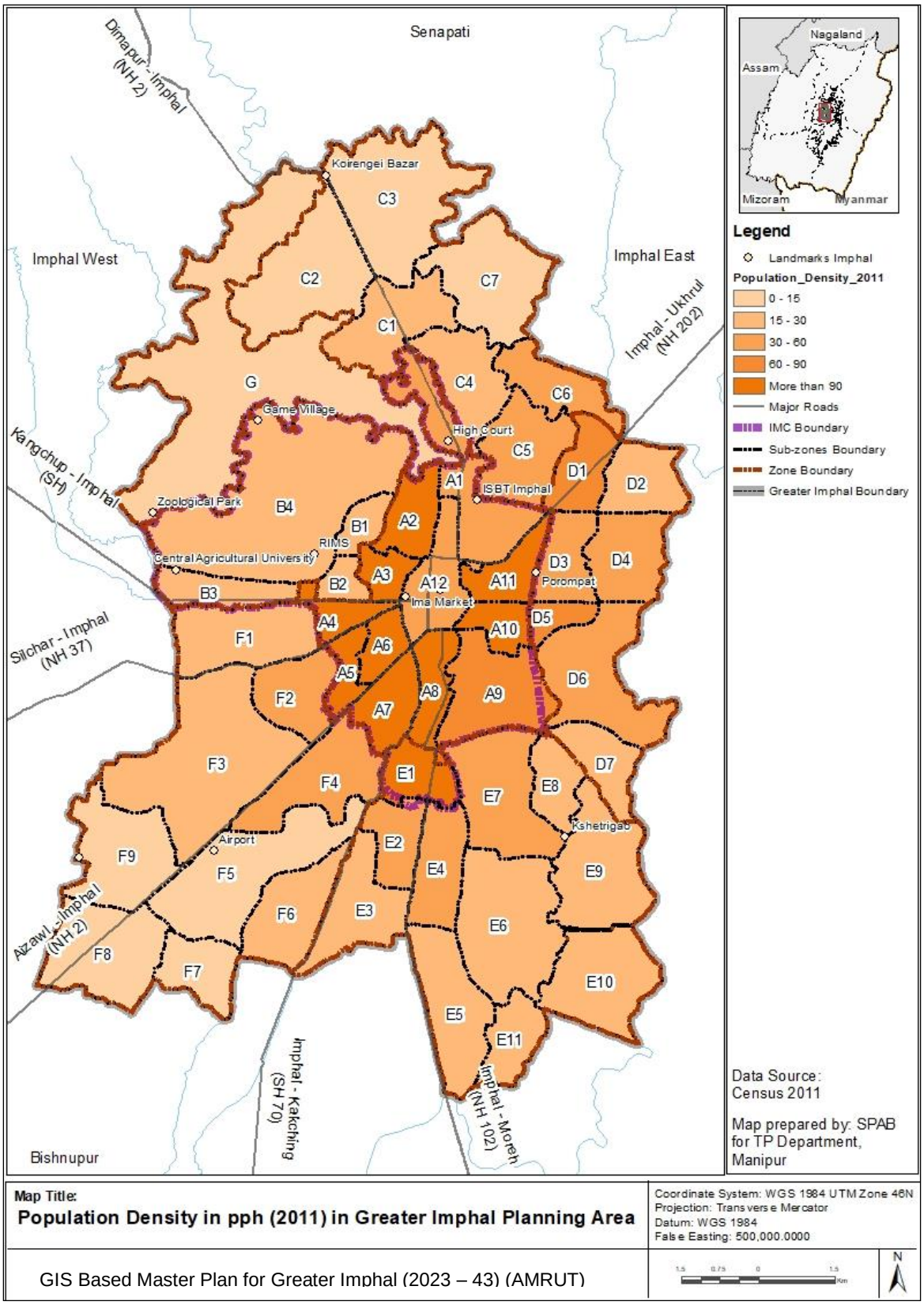
Source: Census of India, 1991

Map 5. 2: Population Density in Greater Imphal Planning Area (2001)



Source: Census of India, 2001

Map 5. 3: Population Density in Greater Imphal Planning Area (2011)



Source: Census of India, 2011

5.4 Sex Ratio

According to the 2011 census, Greater Imphal has 246937 males, 257685 females, i.e., a sex ratio of 1044 females per 1000 males.

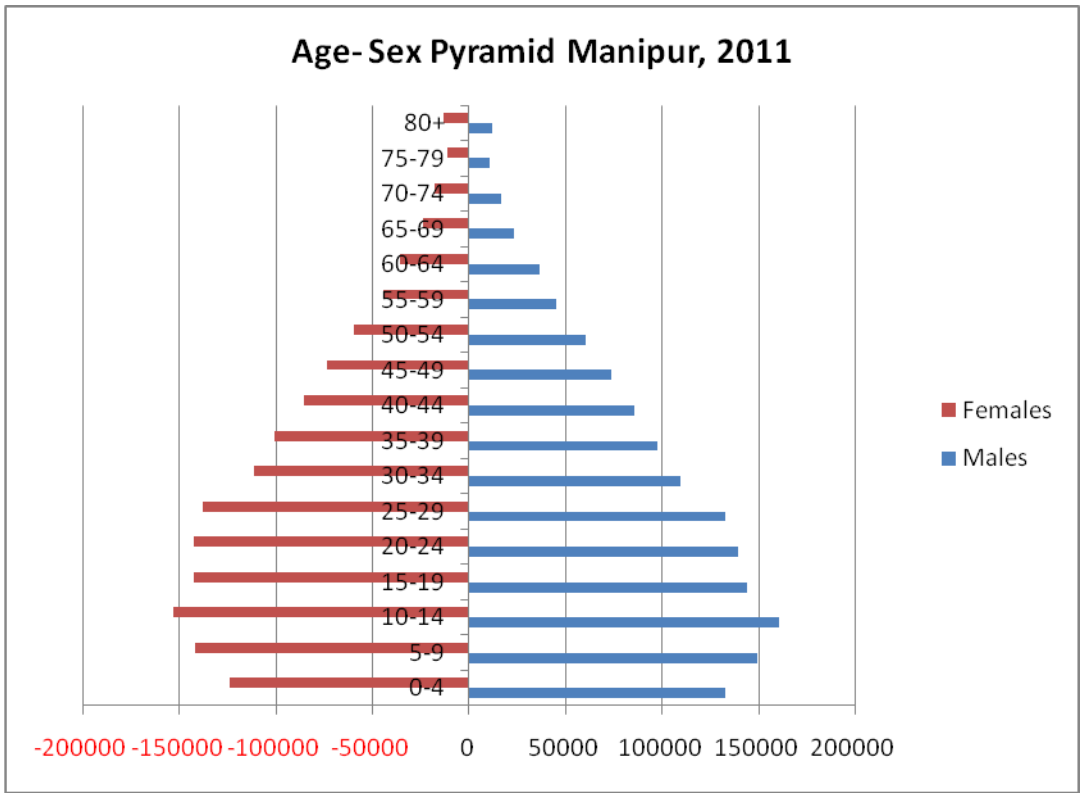
Table 5. 5: Sex Ratio Greater Imphal Planning Area (Females / Thousand Males)

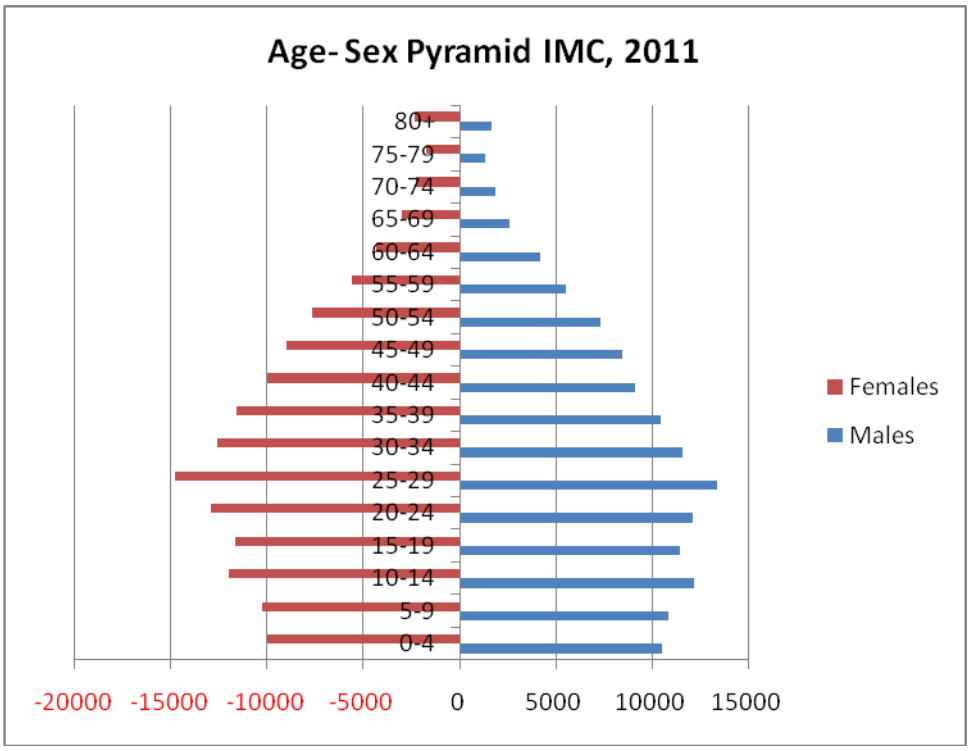
Area	1991	2001	2011
Imphal Municipal Corporation	965	1019	1052
Non-Municipal Area	1001	1006	1033
Greater Imphal Planning Area	979	1013	1044

Source: Census of India, 1991, 2001 and 2011

It is observed that the sex ratio of Imphal Municipal Corporation and that of Greater Imphal planning area is more than the national average of 943 females per thousand males.

Figure 5. 3: Age- Sex Pyramid for Manipur state and Imphal Municipal Corporation, 2011





The age- sex pyramid (figure 5.3) for the state reflects that it has high young population aged below 20 and the share of population decreases as the age increases whereas within the municipal corporation, it has the highest population in the age group of 25 to 29 years indicating higher share of population in the working age group thereby reflecting the need for employment opportunities.

5.5 Literacy Rate

The literacy rate of Greater Imphal planning area is 79% and that of IMC is 81% which is gradually increasing for both IMC and Greater Imphal Area, implying accessibility to educational facilities. It is observed that the literacy rate in Greater Imphal planning area is more than the national average of 74% as shown in table 5.6.

Table 5. 6: Literacy Rate in Imphal Greater Imphal Planning Area

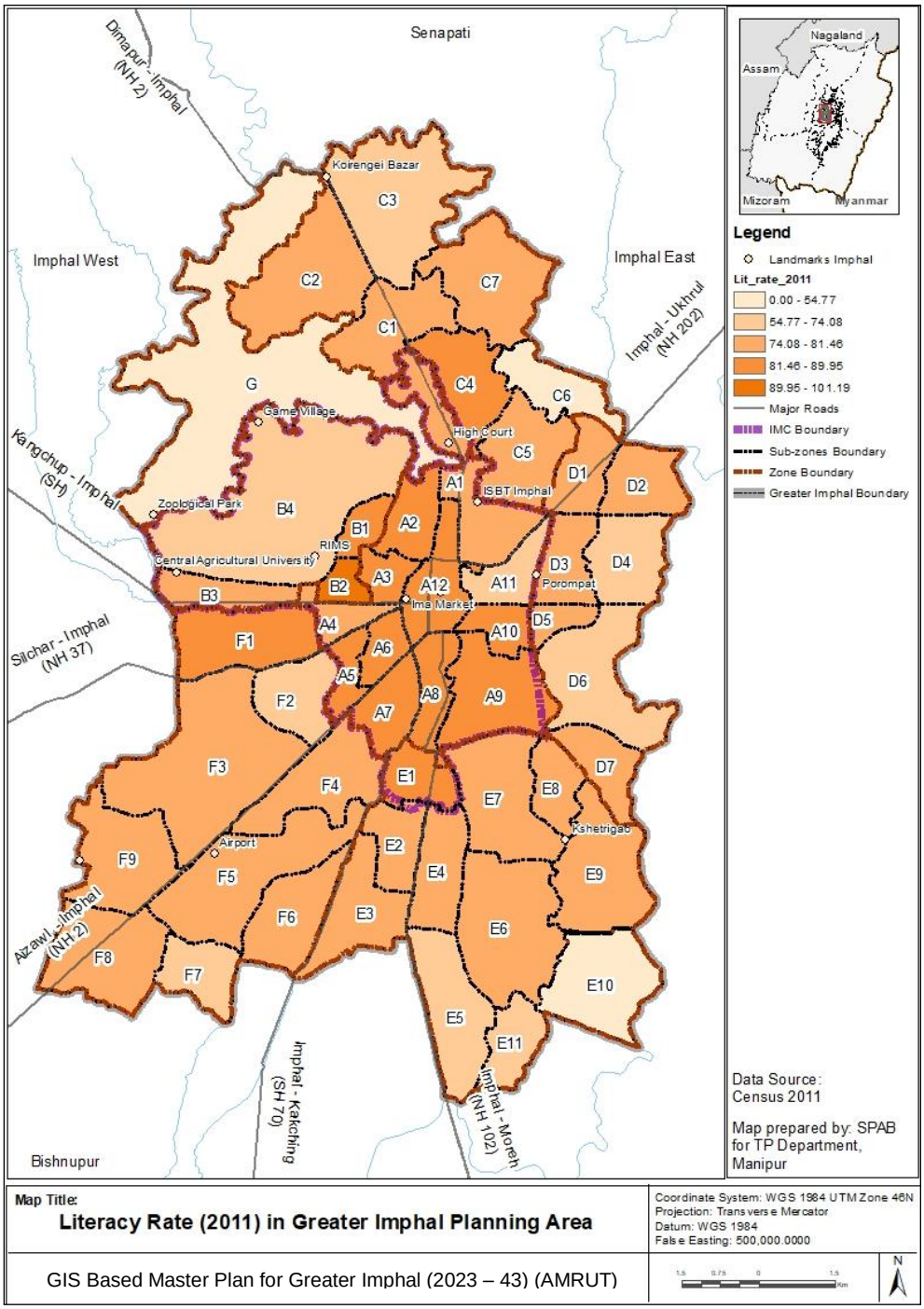
Area	1991 (in %)	2001 (in %)	2011 (in %)
Imphal Municipal Corporation	70.99	78.82	81.28
Non-Municipal Area	60.48	71.04	77.26
Greater Imphal Planning Area	66.66	75.40	79.51

Source: Census of India, 1991, 2001 and 2011

Maps 5.4 shows the distribution of literate population across the Greater Imphal planning area within each subzone. It is observed that within IMC, sub zones B2 (Ward 5) has the highest literacy rate and sub zone B4 (Ward 27) shows the lowest literacy rate.

Note:
The data used for the preparation of maps 5.4 is attached in annexure 5.5.
The ward and village wise literacy rate is attached in Annexure 5.3 and 5.4.

Map 5. 4: Literacy Rate in Greater Imphal Planning Area



Source: Based on Census of India, 2011

5.6 Zone- wise Analysis

5.6.1 Population and Population density

The Greater Imphal planning area is divided into 7 zones and the demographic profile was also studied at zonal level to understand the demographic characteristics of each zone. Table 5.7 tabulates the population and population densities of zones A to G in the Greater Imphal Planning Area.

Table 5. 7: Zone wise Population and Population density

Planning Zones	Zone Population (Census 2011)	Average Gross* Population Density (PPH)	Average Net** Development Density (PPH)
Zone A	223860	131	135
Zone B	35394	25	40
Zone C	43414	20	40
Zone D	62345	46	65
Zone E	94281	39	60
Zone F	67249	21	47
Zone G (Langol Hill Reserve Forest)	0	0	0
Total	**526543**	35	72

*Note: * The gross population density is calculated taking the total area into consideration*

***The net development density is calculated considering the population and only the built up area(building footprint as in GIS database)*

Note:
The sub zone wise population distribution is attached in Annexure5.1.

5.7 Population Projection

To estimate the future population within the Greater Imphal Planning Area, population was projected in two ways for years 2021, 2031 and 2041:

1. Based on trend line method (which indicates the business-as-usual situation), Table 5.8.
2. Geometric increase method (which at times reflects a higher rate and thereby may include induced growth due to growth in infrastructure and economic opportunities) Table 5.9.

Table 5. 8: Population Projection based on Trend line method

Census Population			Method	Projected Population		
1991	**2001**	**2011**		**2021**	**2031**	**2041**
3,84,847	4,55,532	5,26,543	Linear Increase	**5,72,330**	**6,40,310**	**7,08,290**
			Polynomial increase	**5,74,970**	**6,46,910**	**7,20,434**

Table 5. 9: Population projection based on Geometric increase method

Census Population			Projected Population		
1991	**2001**	**2011**	**2021**	**2031**	**2041**
3,84,847	4,55,532	5,26,543	**6,25,080**	**7,47,791**	**9,02,302**

The population projected using the Geometric Increase Method is used for further calculations as it includes both businesses as usual growth and induced growth through employment & migration which is 9.02 lakhs for Greater Imphal Planning area.

Projections based on geometric increase method were also done for each zone and sub zone for the years 2021, 2031 and 2041 based on census data of 1991, 2001 and 2011. (Table 5.10)

Table 5. 10: Zone wise projected population

Zone	Population		Projected Population			Population Density 2041 (based on projected population of 2041) (pph)
	2001	**2011**	**2021**	**2031**	**2041**	
A	1,95,245	2,23,860	2,56,977	2,95,567	3,40,636	132
B	28,076	35,394	46,100	60,631	80,695	26
C	36,920	43,414	53,706	67,197	85,073	21
D	55,801	62,345	73,650	87,359	1,04,073	47
E	82,283	94,281	1,07,550	1,23,414	1,42,455	39
F	57,207	67,249	87,098	1,13,622	1,49,370	64
G	0	0	0	0	0	0
Total	**4,55,532**	**5,26,543**	**6,25,080**	**7,47,791**	**9,02,302**	

Source: Census of India, 2001 & 2011 and estimated by author
Note: Sub zone wise population projection is attached in Annexure 5.6

5.8 Observation and Way Forward

The population projection figure being adopted for Greater Imphal planning area for 2043 is 9.02 lakhs which is based on Geometric Increase Method. This method includes a rate of growth that includes both 'business as usual' growth and 'induced growth' arising out of government interventions. Further

calculations for gaps and future requirements of infrastructure and land uses are undertaken for this projected population.

Section 6: Land use (2020)

6.1 Existing Landuse

6.1.1 Landuse 2020

The landuse for the year 2020 was prepared through the remote sensing data from NRSC and validated through ground truthing survey on 29 classes of land-use as per AMRUT standards and guidelines. To arrive at a rationale for future spatial structure and land use patterns, it is necessary to study the existing land use to identify the existing spatial structure. The breakup of existing land use for greater Imphal for the year 2020 is given in Table 6.1 and shown in Figure 6.1. The spatial distribution of land use is shown in Map 6.1.

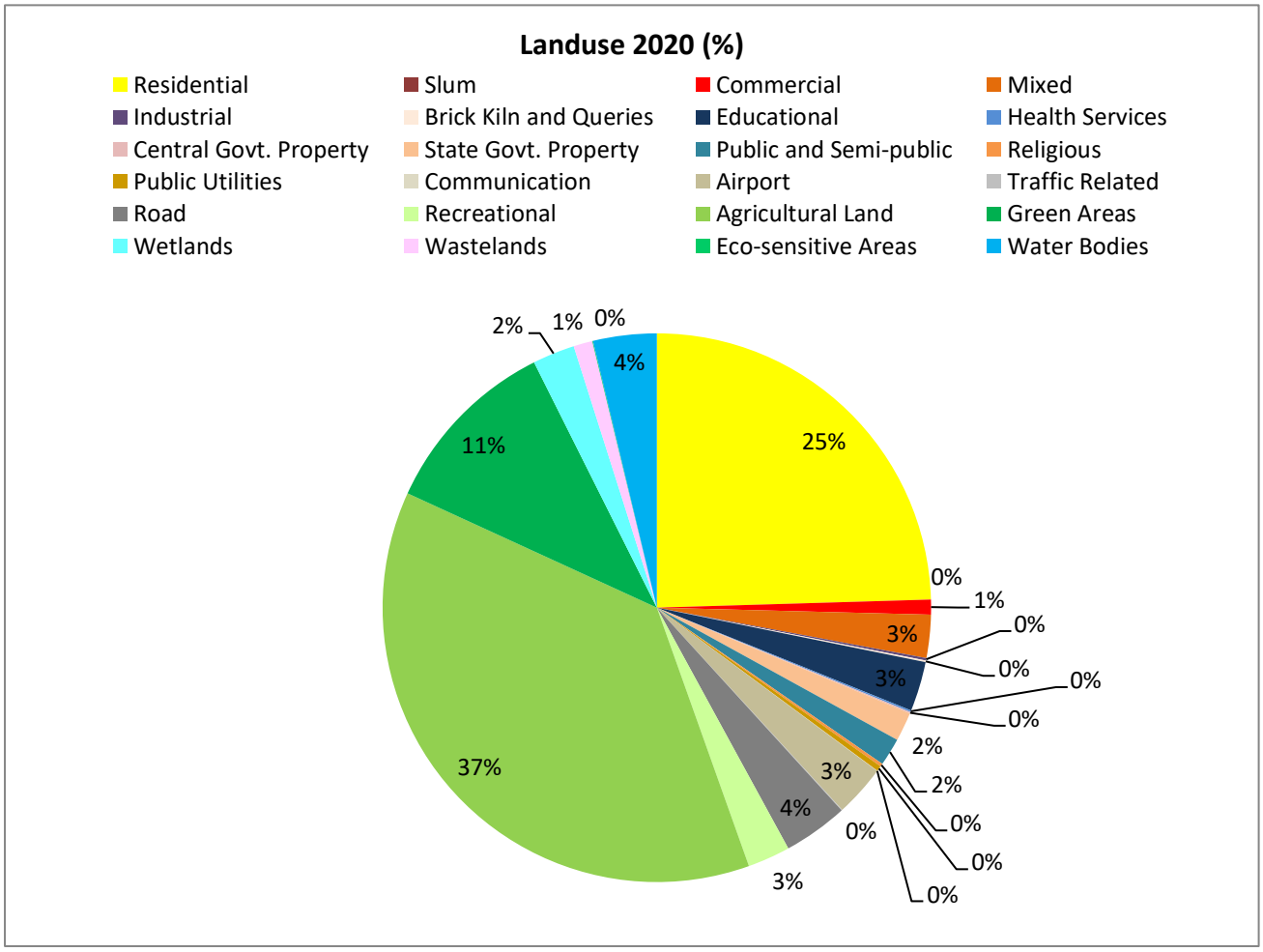


Figure 6. 1: Existing Land use Composition (2020)

Source: Primary Survey based on data provided by NRSC.

Agriculture has the highest share of land use in the Greater Imphal area as most of the peripheral areas have not yet experienced the expansion of built up. Residential is the next dominant land use class which occupies about 24% of the total area of Greater Imphal. The residential area is spread across the core area particularly within the Imphal Municipal Corporation except in north-west portion of IMC, which is a low-lying area. The built- up is also spread along the Imphal-Kangochup Road, Imphal Aizawl road (NH 2), Imphal-Kakching Road (SH 70) and Imphal-Moreh Road (NH 102) in the west, south-west and southern direction of the Greater Imphal region, respectively. In the eastern direction, the residential areas are mostly restricted by the Kongba River. In the northern direction, Imphal-Dimapur Road (NH 2) and Imphal River have little impact on the spread of residential land use in a linear pattern. The urban sprawl is restricted by Langol Hill and the existence of cantonment areas in the north- west direction.

The Greater Imphal planning area has a low share of industrial landuse and recreational areas as observed from table 6.1. Green areas such as the Langol Reserved Forest, occupy a large portion of planning area, i.e., 9.35% of total area of Greater Imphal situated in the north-west of the Greater Imphal area and Langthabal which situated in the southern part of the Greater Imphal area.

Table 6. 1: Land use 2020 in Greater Imphal Planning Area (2020)

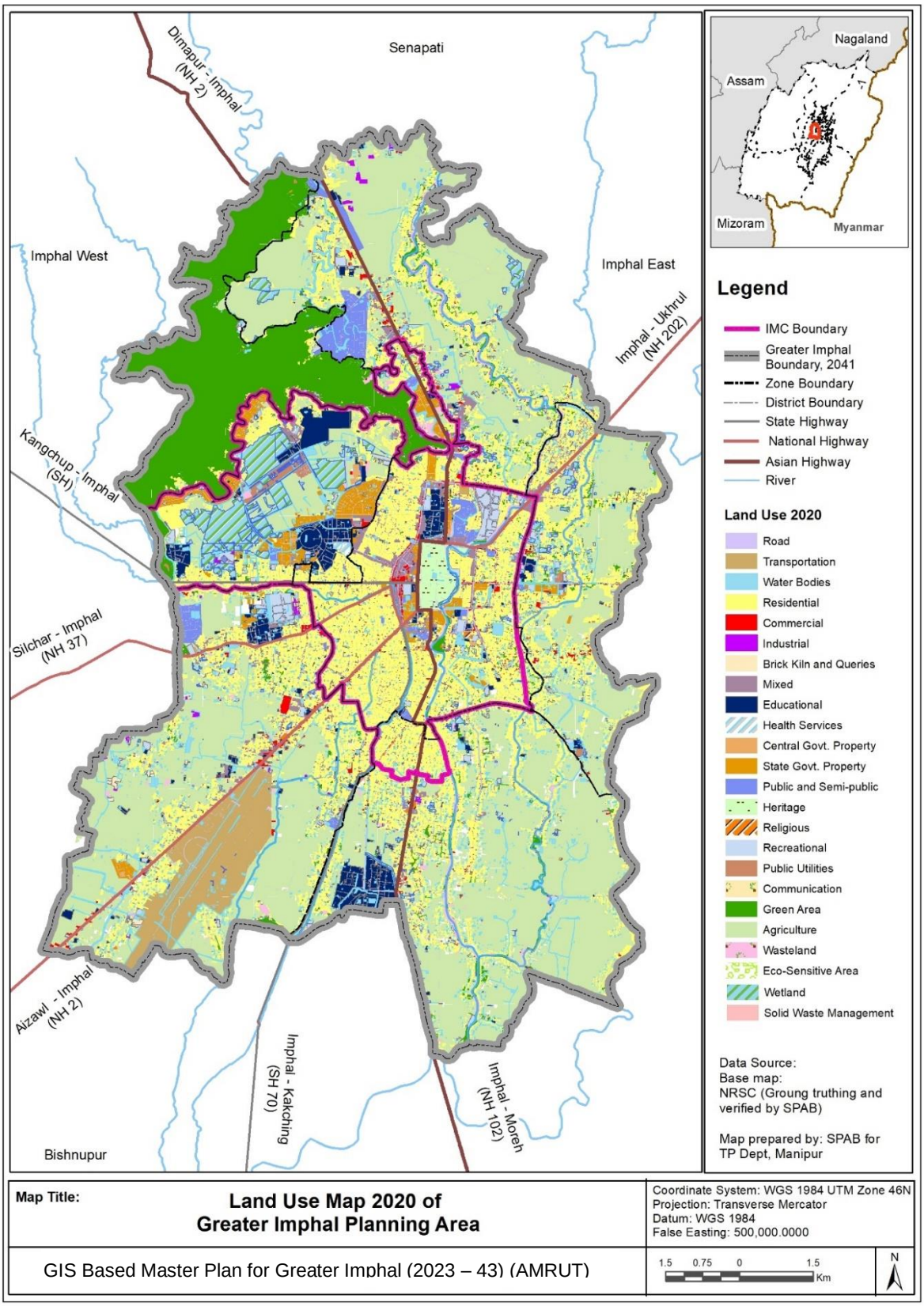
Sl. No	Land Use Class	Area (Ha)	Percentage to total Area (%)
1	**Residential**	3694.011	24.19
2	**Commercial**	132.27	0.87
3	**Mixed**	382.17	2.50
4	**Industrial**	21.45	0.14
5	**Brick Kiln and Queries**	14.80	0.10
6	**Educational**	441.41	2.89
7	**Health Services**	15.27	0.10
8	**Central Govt. Property**	12.49	0.08
9	**State Govt. Property**	256.32	1.68
10	**Public and Semi-public**	246.80	1.62
11	**Religious**	26.78	0.18
12	**Public Utilities**	47.97	0.31
13	**Communication**	2.74	0.02
14	**Heritage**	0.02	0.00
15	**Solid Waste Managemnt**	77.63	0.51
16	**Airport**	457.51	3.00
17	**Traffic Related**	9.31	0.06
18	**Road**	573.77	3.76
19	**Recreational**	377.46	2.47
20	**Agricultural Land**	5616.53	36.77
21	**Green Areas**	1621.68	10.62
22	**Wetlands**	374.48	2.45
23	**Wastelands**	168.23	1.10
24	**Eco-sensitive Areas**	6.62	0.04

25	**Water Bodies**	563.54	3.69
	Total	**15138**	**100**

Source: Primary Survey based on data provided by NRSC.

Note: Based on the boundary submitted to NRSC by Town Planning Department, Government of Manipu

Map 6. 1: Existing Land use (2020)



Source: Primary Survey based on data provided by NRSC.

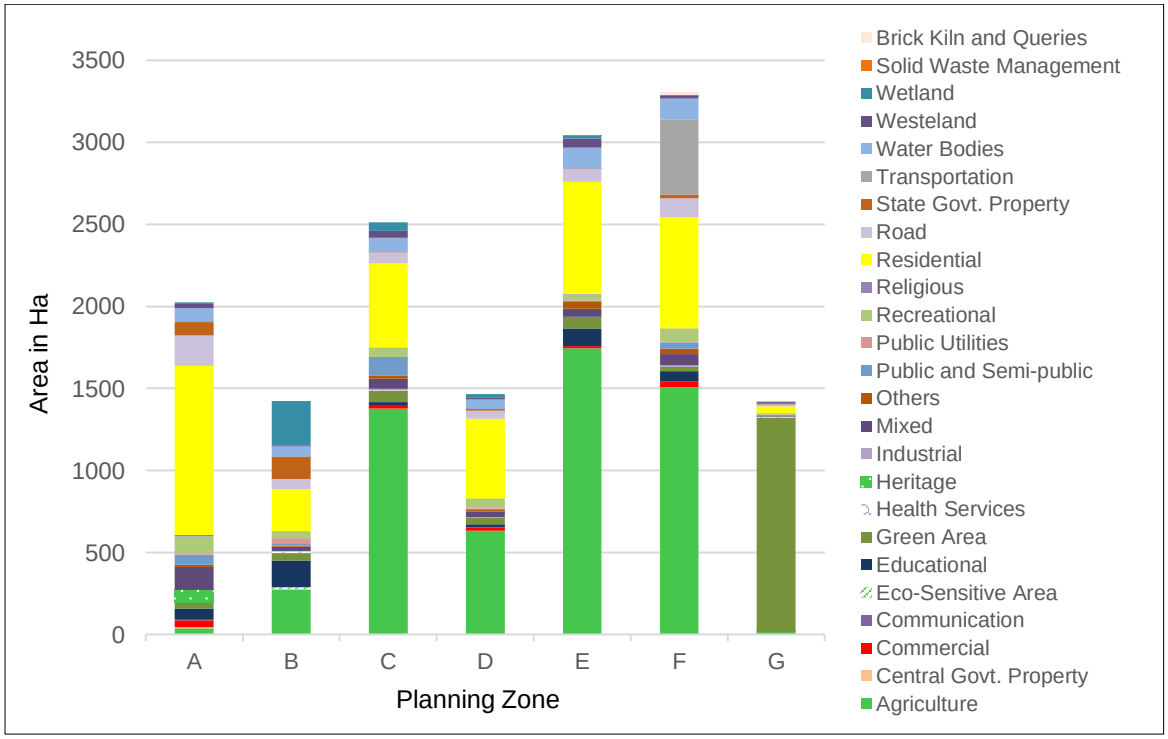
6.1.2 Zone wise Analysis

Detailed landuse analysis for each zone is undertaken to understand the predominant characteristic of each zone as shown in Figure 6.2. In terms of land use composition, each planning zone has a unique nature. The predominant characteristic of the zones is tabulated in table 6.2.

Table 6. 2: Zone Character and Area

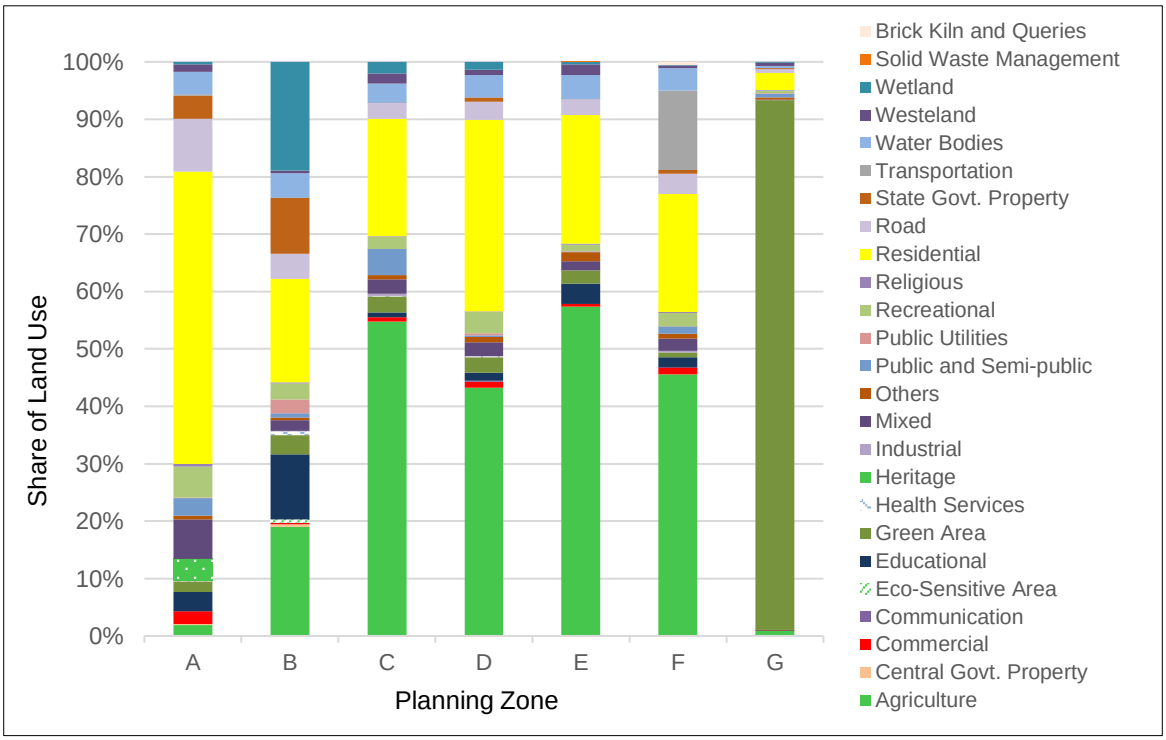
Zone	Character	Area (Ha)
A	Multifunctional cum heritage Zone (City center)	2015.76
B	Wetland Zone with Central institutes	1354.41
C	Farm house and public facility zone, Potential residential growth zone	2501.24
D	Residential and Education zone with low lying areas and Farmlands, Potential residential growth zone	1444.59
E	Educational Zone, Potential residential growth zone	3063.89
F	Transportation Zone, Potential freight hub zone	3303.92
G	Reserve Forest & Hill Area	1411.37

Figure 6. 2: Planning Zone wise distribution of land use (in Ha)



Source: Primary Survey based on data provided by NRSC.

Figure 6. 3: Planning Zone wise land use composition (%)



Source: Primary Survey based on data provided by NRSC.

Landuse for each zone was also analysed based on the 7 categories as per 2011 Master Plan and URDPFI guidelines tabulated in Table 6.3.

Table 6. 3: Zone wise Landuse based on URDPFI Classification

Landuse/ Zone	A	B	C	D	E	F	G
Residential	50.84%	18.02%	20.46%	33.37%	22.42%	20.53%	3.01%
Commercial	9.05%	2.19%	3.23%	3.39%	1.98%	3.27%	0.06%
Industrial	0.07%	0.14%	0.36%	0.02%	0.04%	0.67%	0.00%
Public and Semi-Public	10.94%	25.33%	5.48%	3.16%	3.82%	3.82%	1.03%
Road	9.41%	4.37%	2.71%	3.17%	2.73%	17.33%	0.61%
Parks and Recreational open spaces	11.47%	6.35%	5.04%	6.47%	3.61%	3.34%	92.86%
Agricultural and hills	8.22%	43.61%	62.72%	50.42%	65.40%	51.04%	2.42%

The land use for each zone and sub zone has been analysed below along with the essential facilities and services in terms of their presence and the area occupied by them, required for a 20-minute neighborhood concept to be implemented.

6.1.2.1 Zone A

Zone A forms the core area of the Greater Imphal region, has the largest share of residential, commercial and mixed land use. All the National Highways and State Highways, which are playing the role of development axis of the Greater Imphal Region converges at the Kangla Fort, situated at the centre of zone A. The main commercial centre, i.e., Ima Market, is also situated at the centre of this zone which serves not only the Greater Imphal Region but the entire state of Manipur. Hence this zone is characterised by the predominance of residential, commercial and mixed land use and can be seen in Map 6.2.

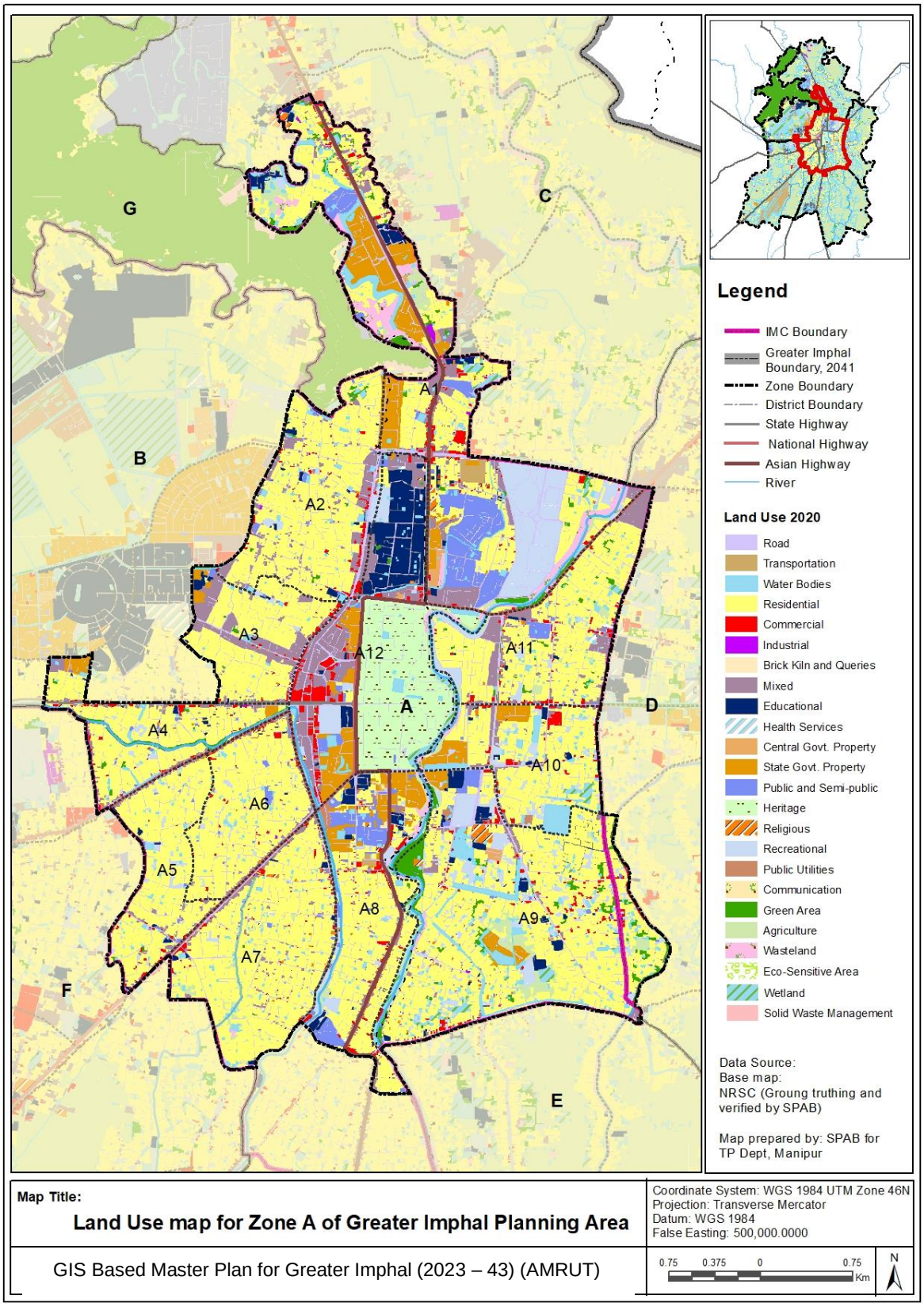
For a 20-minute neighbourhood, each sub zone is analysed with the presence and absence of essential services and facilities. Table 6.3 tabulates the percentage of total area of sub zone under each facility.

Table 6. 4: Percentage of land under each Facility for services in Zone A

Services	Percentage (%) of Land											
	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12
Police Station								1.00				
Education Facility	1.02	0.83	0.83	0.67	0.49	0.21	0.36	1.30	0.71	0.51	0.12	2.13
Medical Facility	0.05	0.01	0.21	0.12		0.15	0.01	0.05	0.06	0.10	0.27	0.11
Religious	0.24	0.19	0.11	0.19	0.04	0.09	0.34	0.48	0.45	0.22	0.07	0.06
Community Hall	0.05	0.30	0.23	0.52	0.50	0.43	0.12	0.19	0.14	0.12	0.04	0.06
Cremation / Burial ground	0.01		0.01	0.04			0.00	0.03	0.01		0.01	
OHT/ Ground level reservoir								0.04				
Water Pumping station								0.01	0.01	0.14		
Mixed industrial	0.01		0.04	0.03	0.01		0.02				0.06	
Mixed commercial	0.04		0.05	0.04			0.01				0.06	0.17
Mixed residential	1.22	1.74	2.68	1.99	1.94	1.70	2.35	1.84	0.82	1.04	2.63	4.10
Commercial service/retail shopping	0.18	0.90	0.94	0.25	0.40	0.41	0.67	0.38	0.35	0.28	0.26	1.75

From table 6.4 it is observed that the services are fairly distributed within the sub- zones of Zone A. Mixed commercial is available only in 6 sub-zones out of 12 sub-zones.

Map 6. 2: Land use Map for Zone A



Source: Based on Ground Truthing Survey

6.1.2.2 Zone B

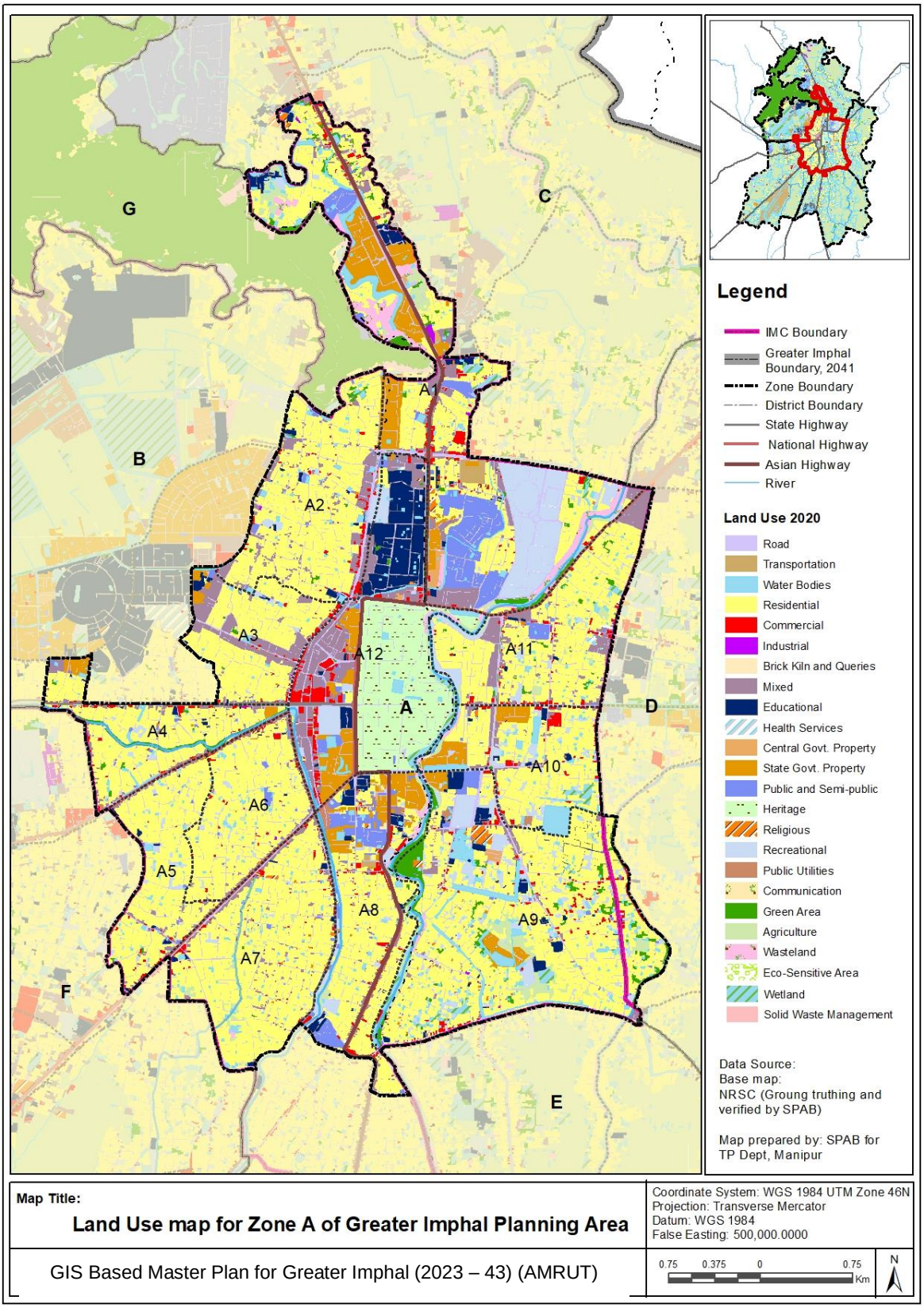
Zone B covers an area in the north-western portion within the Imphal Municipal Corporation area bounded by Langol Hill in the northern direction. This zone has not experienced much spread of residential land use because most of its area is low lying area. This zone is primarily composed of institutional land use including Regional Institute of Medical Sciences (RIMS), Zoological Park, Central Agricultural University and NIT Manipur as represented in Map 6.3. Regarding residential use, apart from private individual residential use, Game Village, which is composed of government quarters, caters large population.

Table 6. 5: Percentage of land under each Facility for services in Zone B

Services	Percentage (%) of Land			
	B1	B2	B3	B4
Police Station	1.37		0.03	
Education Facility	1.99	1.46	1.82	0.58
Medical Facility	1.13	7.61		0.13
Religious	0.42	0.02	0.02	0.10
Community Hall	0.18	0.53	0.25	0.03
Cremation / Burial ground	0.002			0.001
OHT/ Ground level reservoir				0.02
Water Pumping station				
Mixed industrial		0.06	0.03	0.005
Mixed commercial	0.09		0.02	0.09
Mixed residential	0.09	1.70	0.31	0.09
Commercial service/retail shopping	0.02	0.23	0.09	0.03

From table 6.5 it is observed that the services are fairly distributed within the sub- zones of Zone B. However, there is no water pumping station in any sub-zones and mised commercial is not available in one sub zone.

Map 6. 3: Land use Map for Zone B



Source: Based on Ground Truthing Survey

6.1.2.3 Zone C

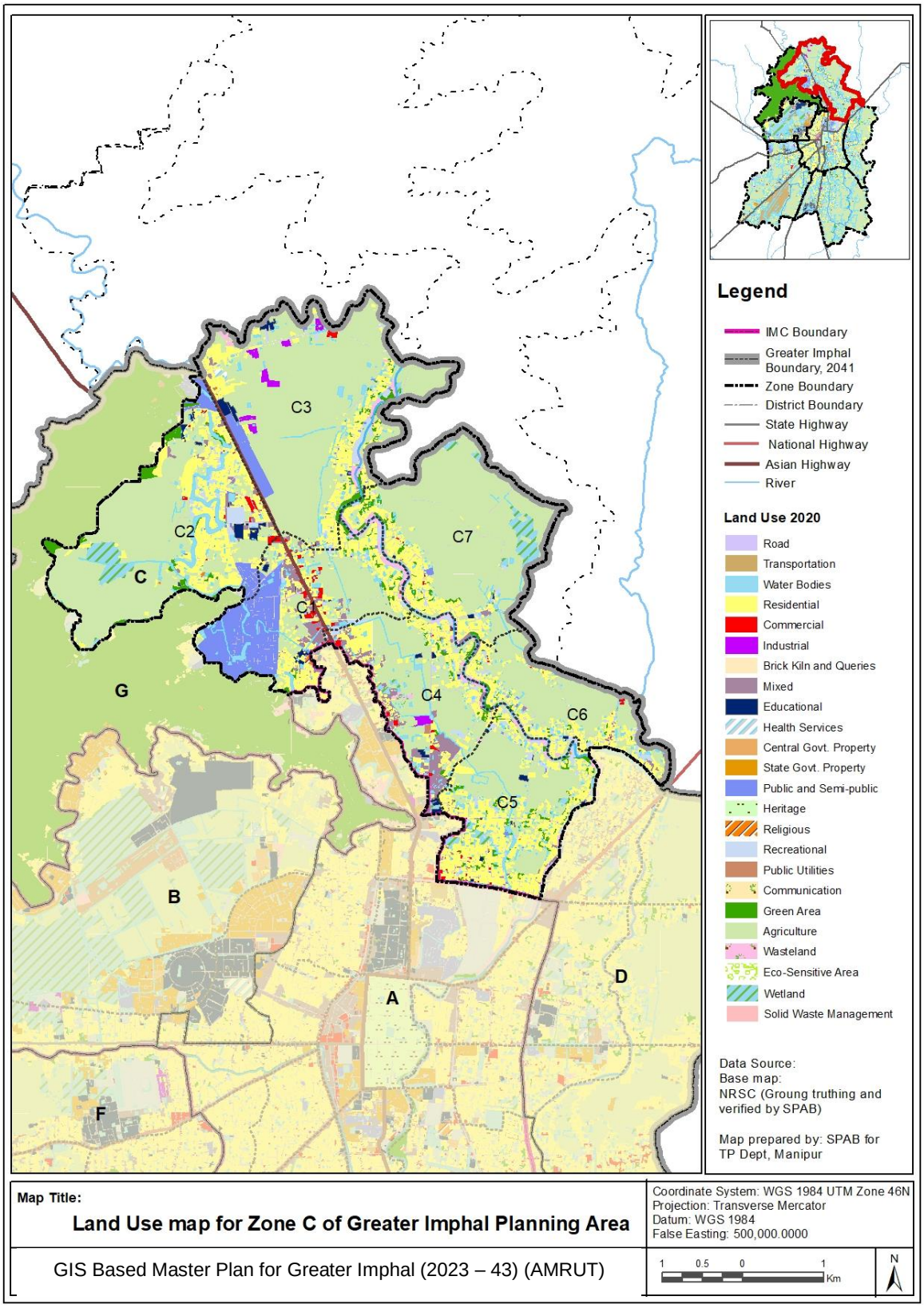
Zone C is located in the northern portion of the Greater Imphal region, bounded by Langol Hill in the western direction, Imphal River in the north and eastern direction, and Imphal Municipal Corporation in the southern direction. Imphal Dimapur Road (NH 2) plays as the axis road of this zone. Residential along with little commercial land use, is concentrated along the NH 2. The Imphal River also plays a role in concentrating population along its riverside and makes a narrow strip of residential land use along the riverside. The rest of the area of this zone is under agricultural land use as shown in Map 6.4.

Table 6. 6: Percentage of land under each Facility for services in Zone C

Services	Percentage (%) of Land						
	C1	C2	C3	C4	C5	C6	C7
Police Station							
Education Facility	0.36	0.25	0.21	0.36	0.18	0.05	0.11
Medical Facility			0.09	0.01	0.03		
Religious	0.03	0.03	0.01	0.02	0.08	0.05	
Community Hall	0.07	0.04	0.10	0.06	0.16	0.02	0.04
Cremation / Burial ground							
OHT/ Ground level reservoir							
Water Pumping station							
Mixed industrial							0.07
Mixed commercial	0.03						
Mixed residential	0.30	0.11	0.06	0.17	0.15	0.17	
Commercial service / retail shopping	0.15	0.03	0.02	0.07	0.11	0.11	0.05

Table 6.6 shows that there are no burial grounds, OHT, police stations and water pumping stations in zone C. Other services are evenly distributed within the sub zones. Mixed commercial is not available in sub-zone C7.

Map 6. 4: Land use Map for Zone C



Source: Based on Ground Truthing Survey

6.1.2.4 Zone D

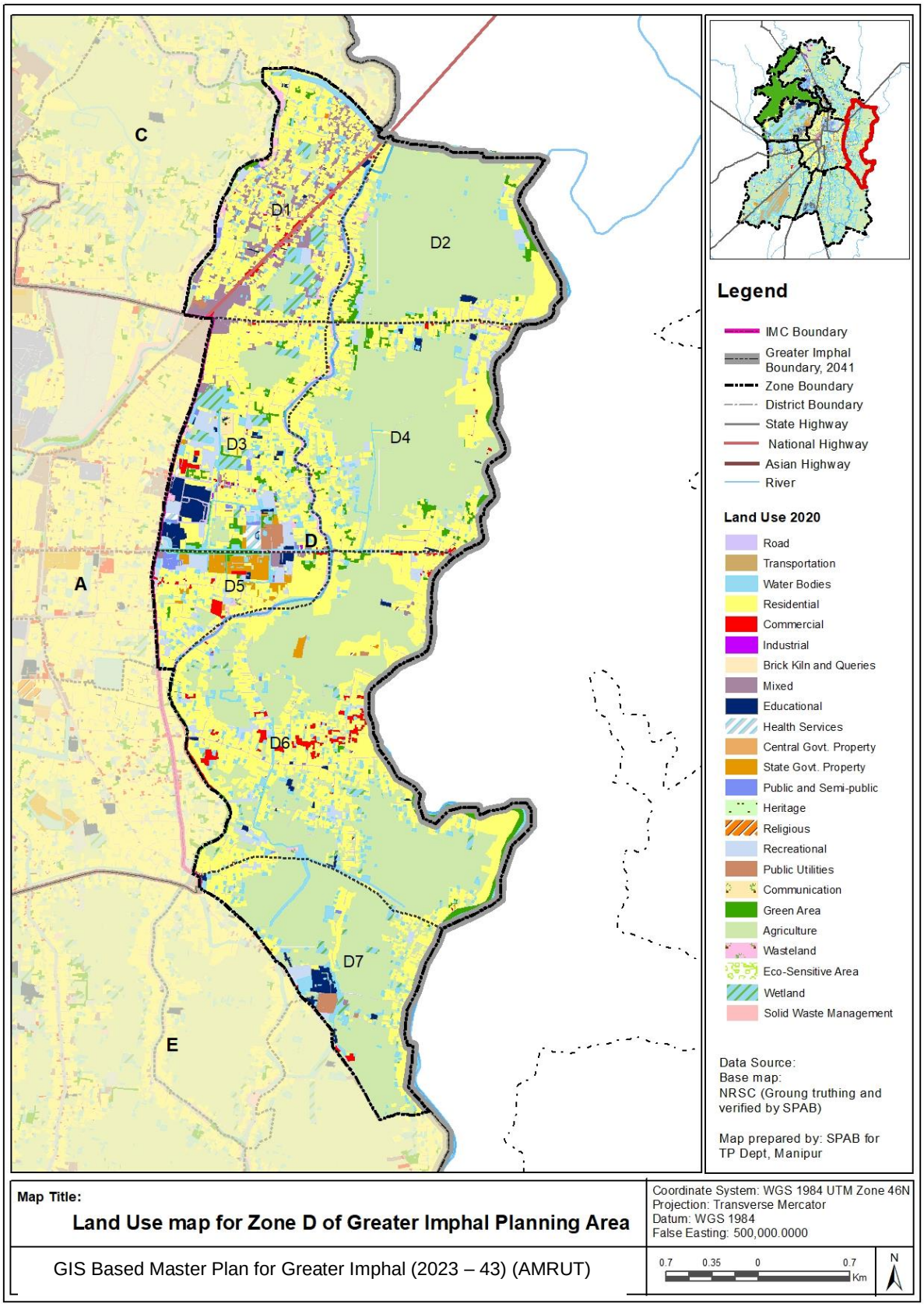
Zone D is situated in the western part of the Greater Imphal region bounded by the Iril River in the east and Imphal Municipal Corporation in the western direction. No major road is going through this zone except for Imphal-Ukhrul Road which aligns through the northern edge of zone D. The western portion of the zone is under the predominance of residential land use, which is mostly bounded by Kongba River in the east. A narrow strip of residential land use is observed along the Iril River in the Map 6.5 and along the roads which go across the Kongba River till Iril River. Rest of the areas of the zone mainly composed of agricultural use and areas under water bodies.

Table 6. 7: Percentage of land under each Facility for services in Zone D

Services	Percentage (%) of Land						
	D1	D2	D3	D4	D5	D6	D7
Police Station			0.13		0.75		
Education Facility	0.22	0.13	2.57	0.14	0.15	0.20	0.41
Medical Facility	0.01	0.002	0.26	0.002	0.04		
Religious	0.06		0.02			0.08	0.01
Community Hall	0.12	0.02	0.14	0.03	0.07	0.04	0.02
Cremation / Burial ground							
OHT/ Ground level reservoir			0.21	0.01			0.01
Water Pumping station						0.02	
Mixed industrial	0.02						0.08
Mixed commercial	0.37	0.01	0.43	0.09	0.26	0.03	0.06
Mixed residential	0.66	0.02	0.65	0.16	0.05	0.06	
Commercial service/ retail shopping	0.36	0.01	0.32	0.08	2.00	0.06	0.04

From table 6.7 it is observed that the services are fairly distributed within the sub- zones of Zone D, however, there is no cremation/burial ground. Mixed commercial is not available in sub-zone D7.

Map 6. 5: Land use Map for Zone D



Source: *Based on Ground Truthing Survey*

6.1.2.5 Zone E

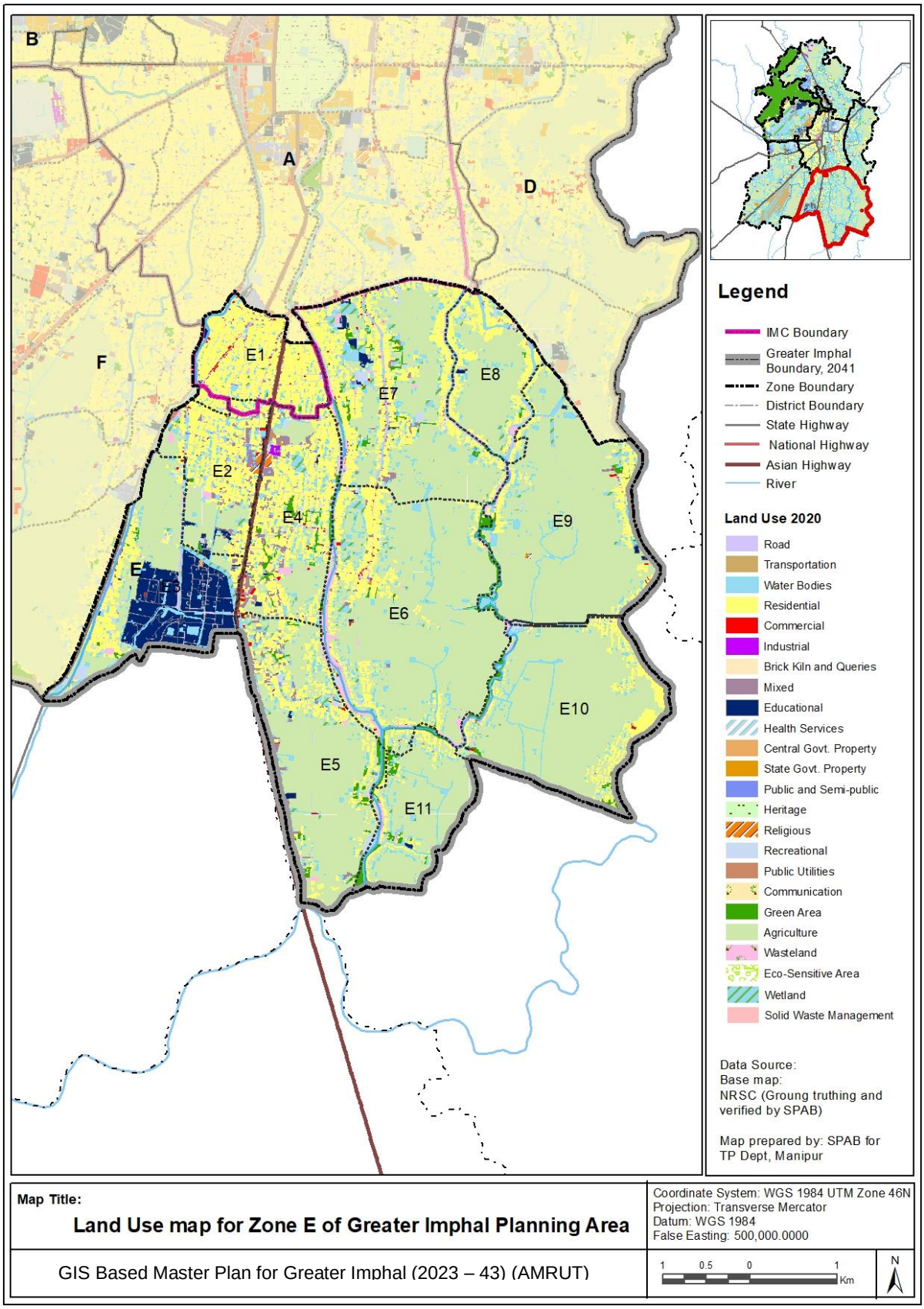
Zone E is located in the southern part of the Greater Imphal Region. Imphal Moreh Road (NH 102) plays as an axial road of this zone. NH 102 has a major role in developing residential land use along with its alignment. Apart from NH 102, Imphal-Kakching Road (SH 70), Nambul River, Imphal River and Kongba River has a major role in the concentration of settlement along its alignment. Manipur University covers a large portion of the area, situated in the western portion along NH 102 of the zone as shown in Map 6.6. The zone is bounded by Langthabal Hill in the southern direction, which contains green areas in the form of forest. The rest of the area of the zone is mainly under agricultural use.

Table 6. 8: Percentage of land under each Facility for services in Zone E

Services	Percentage (%) of Land										
	E1	**E2**	**E3**	**E4**	**E5**	**E6**	**E7**	**E8**	**E9**	**E10**	**E11**
Police Station											
Education Facility	0.26	0.69	0.18	0.02	0.12	0.05	0.42	0.08	0.03	0.02	0.08
Medical Facility	0.02		0.01				0.01				
Religious	0.15	0.11	0.003	0.03	0.02	0.01	0.08	0.01	0.02	0.02	0.07
Community Hall	0.15	0.24	0.09	0.21	0.09	0.02	0.10	0.02	0.03		
Cremation / Burial ground											
OHT/ Ground level reservoir			0.01								
Water Pumping station											
Mixed industrial	0.01	0.01	0.001	0.09	0.01		0.004				
Mixed commercial	0.20	0.14	0.22	0.11	0.04	0.03	0.22		0.01	0.02	0.01
Mixed residential	1.80	0.79	0.19	0.51	0.06	0.01	0.23	0.02	0.01	0.01	0.004
Commercial service/ retail shopping	0.01	0.07	0.07	0.04	0.03	0.01	0.01		0.01		0.004

From table 6.8 it is observed that the services are fairly distributed within the sub- zones of Zone D, however, there is no cremation/burial ground, no police station and water pumping station. Mixed commercial is not available in sub-zone E8

Map 6. 6: Land use Map for Zone E



Source: Based on Ground Truthing Survey

6.1.2.6 Zone F

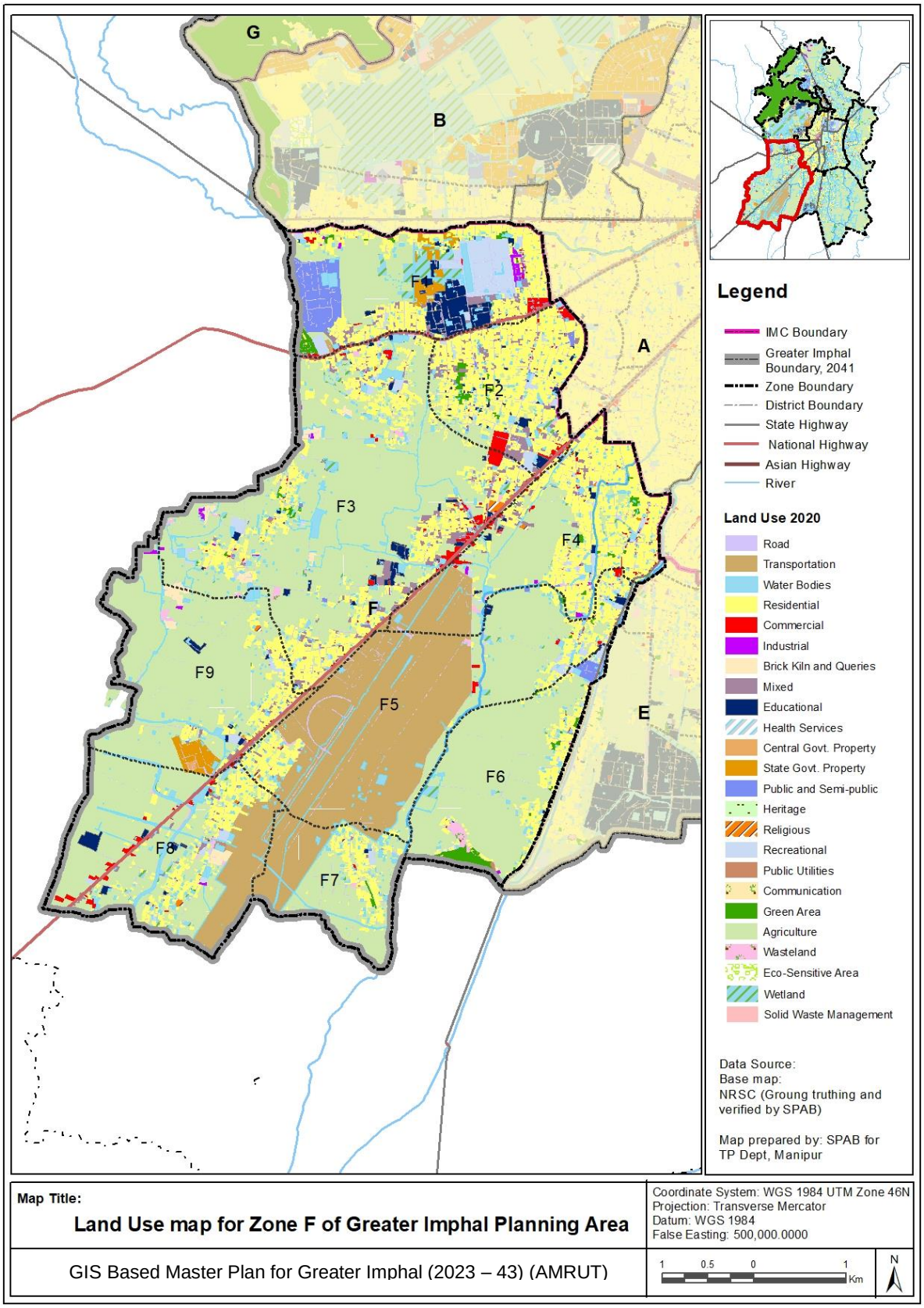
Zone F is situated in the south-western portion of the Greater Imphal region bounded by the Nambol River in the west and Imphal Municipal Corporation in the northern direction. Imphal-Aizawl Road (NH 2) and Imphal-Silchar road (NH 27) plays as axis of this zone and have major role to concentrate residential land use along its alignment. Commercial areas are mainly concentrated along NH 2 in the Map 6.7. The Airport is located in the southern portion of this region, covering a large portion of the area. The rest of the area is primarily under agricultural use.

Table 6. 9: Percentage of land under each Facility for services in Zone F

Services	Percentage (%) of Land								
	F1	F2	F3	F4	F5	F6	F7	F8	F9
Police Station			0.0003						
Education Facility	1.84	0.59	0.37	0.50	0.15	0.02	0.05	0.13	0.16
Medical Facility	0.002	0.01	0.03	0.06		0.01			0.01
Religious	0.03	0.13	0.08	0.16	0.05	0.01	0.11	0.05	0.04
Community Hall	0.08	0.19	0.07	0.12	0.004	0.02	0.06	0.02	0.06
Cremation / Burial ground	0.002	0.02	0.001					0.001	
OHT/ Ground level reservoir	0.02								
Water Pumping station	0.001							0.004	
Mixed industrial	0.003	0.002							
Mixed commercial		0.01	0.001						
Mixed residential	0.22	0.69	0.17	0.63	0.03	0.03	0.08	0.08	0.17
Commercial service /retail shopping	0.17	0.44	0.11	0.29	0.01	0.004	0.02	0.10	0.06

From table 6.9 it can be seen that F4, F5 and F6 lack in facilities and services. Also there is a lack in medical facilities within F5, F7, and F8.

Map 6. 7: Land use Map for Zone F



Source: *Based on Ground Truthing Survey*

6.1.2.7 Zone G

Zone G, which is the Langol Hill area, is mainly composed of Reserve Forest. Although the existence of residential areas has been observed in the southern 51 portion, along the Game Village area and agricultural use has been observed in the north-eastern portion of the zone. (Refer Table 6.10)

Table 6. 10: Percentage of land under each Facility for services in Zone G

Services	Percentage (%) of Land
	G
Police Station	
Education Facility	0.01
Medical Facility	0.005
Religious	0.02
Community Hall	0.007
Cremation / Burial ground	0.001
OHT/ Ground level reservoir	
Water Pumping station	0.01
Mixed industrial	
Mixed commercial	
Mixed residential	0.003
Commercial service/ retail shopping	0.006

6.1.3 20-Minute Neighbourhoods

For neighbourhoods to be sustainable, the sub zones were assessed in terms of essential landuses such as residential, commercial, mixed, public and semi-public, public utilities, educational, health services, religious, communication, traffic and transportation, and recreational.

It is observed that residential and commercial land uses are fairly distributed across the sub zones indicating that all the sub zones have residential settlements and can be seen in Table 6.11. Also the sub zones have connectivity through roads as indicated by presence of land use in each sub zone. But the sub zones

lack other transportation facilities such as bus stops, taxi/ auto/ cycle rickshaw stands etc which is due to the absence of dedicated public transport within the city.

Within the public and semi- public landuse class, some of the sub zones lack health services which is discussed in detail in Section 11. The sub zones also lack recreational facilities within them which necessitate a requirement of recreational facilities within the sub zones. The details of which is further discussed in Section 12.

To achieve 20-minute neighbourhoods, it is necessary that Zonal Development plans for planning zones and and local development plans for sub-zones are prepared.

Table 6. 11: Sub zone wise share of essential Landuses

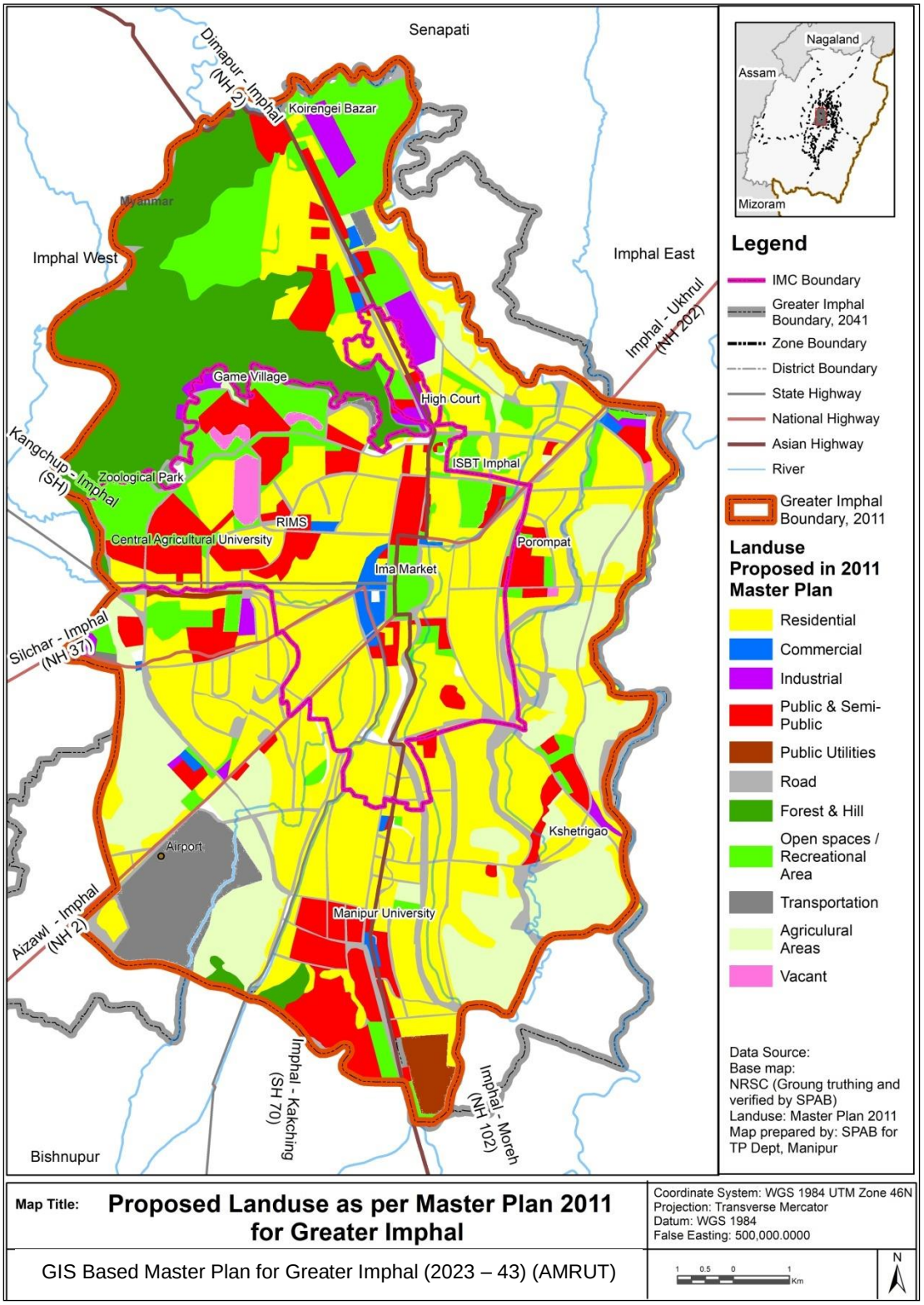
Sub Zone	Total Area	Area under Landuse (%)													
		Residential	Commercial	Mixed	Industrial	Public and Semi-public							Recreation	Transportation	
		Residential	Commercial	Mixed	Industrial	Public and Semi-public	Public Utilities	Educational	Health Services	Religious	Communication	Traffic Related	Recreational	Road	Transportation
A1	**368.69**	29.13	29.13	6.18	0.23	9.47	0.02	2.25	0.06	0.55	0.02		11.34	10.64	0.93
A2	**158.58**	69.44	69.44	9.88	0.04	1.01		1.73	0.02	0.24			1.52	8.80	
A3	**88.83**	64.08	64.08	19.16		0.72		1.66	0.03	0.20			0.86	6.80	
A4	**93.91**	63.94	63.94	5.80	0.06	0.83		0.95	0.00	11.47	0.01	0	1.62	11.47	
A5	**92.31**	78.13	78.13	4.13	0.04	0.89	0.01	1.21		0.11			3.36	8.55	
A6	**96.20**	80.05	80.05	3.54	0.05	1.53		0.27		0.28			2.05	8.64	
A7	**164.08**	79.58	79.58	3.93		0.30	0.05	0.70	0.01	0.59		0.1	0.78	8.71	
A8	**153.73**	45.98	45.98	3.52	0.01	8.42	0.83	3.72	0.05	0.61	0.03	0.59	4.21	11.15	0.51
A9	**337.17**	192.86	192.86	1.86	0.04	1.04	0.18	2.97	0.02	1.18	0.03		7.92	6.48	
A10	**105.78**	54.33	54.33	4.11		0.09	0.44	1.56	0.04	0.33			7.29	8.04	
A11	**145.00**	63.59	63.59	12.41	0.06	1.60		0.45	0.45	0.12	0.04		4.72	8.10	
A12	**220.46**	0.91	0.91	13.41		1.26	0.01	15.41	0.12	0.11			3.60	25.66	
B1	**83.53**	1.32	1.32	7.44		0.76		20.59		0.71		0.08	1.97	11.61	0.03
B2	**70.28**	47.02	47.02	3.12	0.06	0.99		26.49	9.75	0.01			0.61	7.92	
B3	**170.79**	42.82	42.82	1.93	0.70	0.76	0.63	9.33		0.01	0.01		6.72	5.28	

B4	**1093.32**	13.57	13.57	1.35	0.06	0.72	3.02	9.97	0.22	0.16	0.04		2.46	3.45	
C1	**304.50**	22.37	22.37	6.06	0.02	25.62		0.95		0.28			1.50	4.27	
C2	**485.64**	19.87	19.87	1.46		3.11		1.29		0.07			2.44	2.15	
C3	**547.37**	12.46	12.46	0.30	1.23	3.16		0.98	0.24	0.02			1.63	2.01	
C4	**266.80**	21.46	21.46	10.99	0.80	0.10	0.30	1.54	0.02				2.38	2.89	
C5	**299.15**	38.50	38.50	0.72	0.01	0.32		0.60	0.04	0.15			3.30	3.98	
C6	**200.61**	27.79	27.79	1.73		0.00		0.27		0.05			3.1	3.37	
C7	**390.26**	12.67	12.67	0.33		0.32		0.18					1.54	1.74	
D1	**178.36**	50.98	50.98	14.76	0.05	0.36	0.35	0.46	0.01	0.09			1.98	6.30	
D2	**191.16**	17.76	17.76	0.20				0.34					3.39	1.12	
D3	**181.80**	43.96	43.96	2.55	0.12	0.95	1.54	5.97	1.46	0.05	0.89		7.42	4.99	
D4	**259.45**	27.95	27.95	0.26	0.01	0.07	0.02	0.44	0.01		0.01		0.70	2.21	
D5	**73.45**	48.85	48.85	1.78	0.01	2.03		1.39			0.03		11.14	5.40	
D6	**404.45**	35.65	35.65	0.14		0.10	0.06	0.47		0.18			2.29	2.60	
D7	**168.86**	17.83	17.83	0.14		0.06	1.34	2.60		0.01			1.99	2.12	
E1	**145.58**	75.99	75.99	2.83	0.02	0.37		0.55		0.15			2.27	7.99	
E2	**159.69**	47.70	47.70	6.30	0.04	0.70	0.67	2.24		1.02			1.99	4.66	0.02
E3	**271.82**	14.21	14.21	0.79		0.16		34.62		0.01			2.28	4.83	
E4	**214.60**	49.26	49.26	7.53	0.54	0.26	0.35	0.55	0.54	0.73	0.01		1.65	6.61	0.01

E5	**317.29**	16.54	16.54	2.57	0.01	0.26		0.45		0.04			0.72	1.94	
E6	**498.23**	13.00	13.00	0.27		0.04		0.08		0.04			0.44	1.37	
E7	**381.46**	29.00	29.00	1.12		0.21		1.23		0.14	0.01		2.18	2.54	
E8	**146.17**	25.94	25.94	0.40		0.14		0.45		0.01			0.88	2.50	
E9	**387.83**	8.14	8.14	0.23		0.06		0.31		0.09			0.48	1.22	
E10	**352.25**	10.67	10.67	0.04				0.04		0.03			0.62	1.07	
E11	**159.05**	9.04	9.04	0.02				0.26		0.15			0.53	1.28	
F1	**323.49**	23.73	23.73	3.84	0.84	10.12		8.80		0.09			11.28	5.25	0.26
F2	**214.90**	62.78	62.78	7.69	0.04	0.77		3.22		0.19			2.85	6.61	
F3	**762.64**	19.60	19.60	3.25	0.37	0.18	0.03	1.40		0.32	0.01		1.41	3.58	0.46
F4	**322.77**	42.30	42.30	2.40	0.24	0.19	0.07	0.96		0.33			2.25	5.02	
F5	**508.81**	9.87	9.87	0.31	0.01	0.08	0.01	0.42		0.11			1.22	2.48	58.04
F6	**266.55**	11.67	11.67	0.04	0.02	1.43	0.20	0.20		0.01			1.33	1.73	
F7	**172.51**	13.52	13.52	0.16		0.06		0.11		0.12			0.60	2.37	29.38
F8	**368.61**	12.47	12.47	0.88	0.05	0.04	0.17	1.59		0.19			0.90	2.22	16.87
F9	**352.23**	8.51	8.51	1.06	0.24	0.10	0.13	0.71		0.13			0.62	2.82	0.76
G	**1417.40**	3.01	3.01	0.06		0.67	0.04	0.05	0.02	0.03			0.52	0.61	

6.2 Land use proposals as per 2011 Master Plan

Map 6. 8: Proposed Land use as per Master Plan 2011 for Greater Imphal



Source: Town Planning Department, Government of Manipur

6.3 Changes in land use

6.3.1 Land use Change (1981-2020)

Change in land use can be traced back since 1981, at the time of preparation of the Master plan for Greater Imphal 2011. A comparative analysis of change in land use (from 1981-2020) has been shown in table 6.12. An analysis of the deviation of proposed land use in the Master Plan for Greater Imphal 2011 vs. existing land use of 2020 has been shown in the Table 6.12. The change is calculated based on the land use in 1981 (as given in Master Plan 2011) and the existing landuse (as per ground truthing survey 2020)

Table 6. 12: Change in Land use (1981 – 2020)

Land Use Class	Area (in ha)						
	Land use (1981)	Allocated Land use for 2011	Land use (2020)	Land use (2043)	Change in Land Use (1981-2020)	Deviation from proposed Land use in Master Plan 2011 and Land use 2020	
					Area	Area	%
Residential	3353	5139.04	3694.01	5187.69	341.01	-1445.03	-28.12
Commercial	57	106.24	514.44	1898.40	457.44	408.20	384.23
Industrial	73	206.66	36.25	310.37	-36.75	-170.41	-82.46
Public and Semi-Public	771	1197.84	1022.99	961.06	251.99	-174.85	-14.60
Road	394	1183.92	1037.59	1314.46	643.59	-146.33	-12.36
Parks and Recreational open spaces	152	455.01	377.46	447.11	225.46	-77.55	-17.04
Agricultural and Hills	8729	5240	7238.21	4079.09	-1490.79	1998.21	38.13
Total	13529	13528.72	13920.95	14198.18			

Source: Data for Land use 1981 and Allocated Land use for 2011 is from Master Plan of Greater Imphal 2011 and data of Land use 2020 is obtained from Primary Survey based on data provided by NRSC.

Note: Based on the boundary of Master plan for Greater Imphal, 2011

After analysing the pattern of land use change in the last three decades (from 1981 to 2020), it is found that the commercial land use has grown sharply and recorded a 384% increase from the land area under commercial in 1981. While comparing the proposed land use in Master Plan for Greater Imphal 2011 with the existing land use in 2020, it is found that commercial area has grown higher than the proposed land allocation in the Master Plan 2011 for commercial use.

On the other hand, the area under industrial use has reduced in 2020 compared to that in 1981. While in the master Plan 2011, it was proposed to increase the area under industrial use, but the area under industrial use has decreased by 82%.

The area under residential use increased at a much lesser rate than it was planned in the Master plan 2011. A deviation of -28% has been observed for residential land use between areas proposed for residential land use in Master Plan 2011 vs. existing areas under residential use in 2020.

Area under public and semi-public use has been increased highly as the Master Plan 2011 proposed a new Secretariat complex in the North West region of the planning area. The area under roads saw a very little growth as the ring road proposal in Master Plan 2011 did not fructify till date.

The area under parks and recreational open spaces has increased as compared to land use in 1981. In this context, it is to be noted that the area under Sports Complex and Stadium, which was earlier in the category of parks and recreational open spaces before it was built, now comes under the category of Public and Semi-public after it has been built. Thus, a large amount of area under these two sub classes got reduced from the category of park and recreational open spaces, although the function of these spaces has not changed, rather upgraded to a higher level.

6.3.2 Observations

From the analysis of overall land-use dynamics, it is clear that the focus of upcoming new land use is towards commercial land use, which has shown sharp growth beyond the planned amount of growth in the Master Plan 2011. Among the several negative sides, the decline in area under Industrial land use seems to have a major concern. There has been a marginal increase in the area under parks and recreational open spaces as it was proposed in the master Plan 2011.

6.3.3 Zone- wise Analysis

A zone wise land use analysis and comparison of Proposed land use as per 2011 master plan and Exiting land use of 2020 was carried out to understand the distribution of land use and changes at zonal level in the Table 6.13. It was observed that the boundaries of Zones C, E and F have increased from 2011 Master plan to Current master plan. Hence the land use distribution for these zones was done based on the 2011 boundary and also based on current (2043 Master plan) boundary.

It was observed that in Zone A, the recreational landuse in 2020 increased by 10.97% from what was proposed in 2011, this can be attributed to the conversion of Kangla fort for recreational purposes which were under military. The public and semi- public landuse is less as 10.94% as compared to 2011.

Landuses in Zones B and G were close to the proposed landuse of 2011 master plan, except public and semi- public and recreational landuse which has shown a major change. Also, there was no change in their boundaries.

The boundary of Zone C changed from 2011 to 2020, changes were not observed if observed within the 2011 boundary. Whereas minor changes in residential and agricultural landuses are observed within the new boundary.

In Zone D there are variations in the residential and agricultural landuses, indicating more residential development in 2020 as proposed in 2011 on the agricultural land.

The boundaries of zones E and F are also changed with the new boundary. It was seen that changes in landuse were observed if observed within the old boundary of 2011. With the new boundary the landuse is close to what was proposed in 2011 master plan.

Table 6. 13: Zone- wise Land use Comparison

Zone		Land use (%)						
		Residential	Commercial	Industrial	Public and Semi-Public	Road	Parks and Recreational open spaces	Agricultural, hills and other uses
A	Proposed in 2011	55.70%	4.70%	0.10%	16.30%	9.20%	0.50%	13.50%
	Existing Situation 2020 (as per 2011 boundary)	50.84%	9.05%	0.07%	10.94%	9.41%	11.47%	8.22%
B	Proposed in 2011	16.10%	1.10%	0.10%	18.80%	4.60%	0.80%	58.60%
	Existing Situation 2020 (as per 2011 boundary)	18.02%	2.19%	0.14%	25.33%	4.37%	6.35%	43.61%
C	Proposed in 2011	19.60%	1.00%	0.30%	7.80%	3.00%	0.60%	67.70%
	Existing Situation 2020 (as per 2011 boundary)	19.50%	1.10%	0.30%	7.70%	3.00%	0.60%	68.70%

	Existing Situation 2020 (as per additional area in new boundary)	20.46%	3.23%	0.36%	5.48%	2.71%	5.04%	62.72%
D	Proposed in 2011	32.90%	1.00%	0.00%	2.30%	3.30%	0.40%	60.20%
	Existing Situation 2020 (as per 2011 boundary)	33.37%	3.39%	0.02%	3.16%	3.17%	6.47%	50.42%
E	Proposed in 2011	25.40%	0.90%	0.10%	4.70%	3.10%	0.20%	65.70%
	Existing Situation 2020 (as per 2011 boundary)	24.80%	1.70%	0.00%	4.40%	3.10%	0.20%	66.50%
	Existing Situation 2020 (as per additional area in new boundary)	22.42%	1.98%	0.04%	3.82%	2.73%	3.61%	65.40%
F	Proposed in 2011	25.40%	1.40%	0.40%	20.80%	3.90%	0.30%	47.80%
	Existing Situation 2020 (as per 2011 boundary)	24.60%	1.10%	0.30%	18.40%	3.80%	1.50%	46.60%
	Existing Situation 2020 (as per additional area in new boundary)	20.53%	3.27%	0.67%	3.82%	17.33%	3.34%	51.04%
G	Proposed in 2011	2.90%	0.00%	0.00%	1.00%	0.60%	0.00%	95.50%
	Existing Situation 2020 (as per 2011 boundary)	3.01%	0.06%	0.00%	1.03%	0.61%	92.86%	2.42%

Note: The new proposed boundaries of Zones C, E and F has additional areas included after 2011 boundary.

6.4 Direction of Growth (1985 – 2020)

The direction of growth has been analysed for the Greater Imphal area in terms of expansion of built-up areas, net development densities and change in built- up area density.

6.4.1 Growth of Built- up areas

Through the analysis of built- up growth from 1985 to 2020, it has been observed that most of the expansion of built-up happened in the northern and south-western portion, along NH 2 (now converted in Asian Highway) as shown in Table 6.14.

Asian Highway (NH 2) has acted as an axis of development in terms of expansion of built-up in the northern and southern directions towards Dimapur and Aizawl respectively. (Map 6.9 and 6.10)

Table 6. 14: Zone wise growth of built-up in Greater Imphal

Zone	Built- up Area (in Ha)				Built- up growth in % (1985-2020)
	1985	2005	2010	2020	
A	1907.6	1914.5	1914.5	1934.2	1.4
B	514.6	577.4	589.7	720.31	39.5
C	487.1	527.4	581.9	830.22	70.4
D	901.0	912.4	915.6	929.1	3.12
E	1380.2	1413.9	1420.2	1539.0	11.5
F	1445.4	1475.8	1536.7	1856.3	28.4
G	19.4	27.8	33.5	100.2	416.1
Total	**6655.3**	**6849.2**	**6992.1**	**7778.7**	**16.9**

Source: Built up area obtained through digitisation on Google Earth base map.

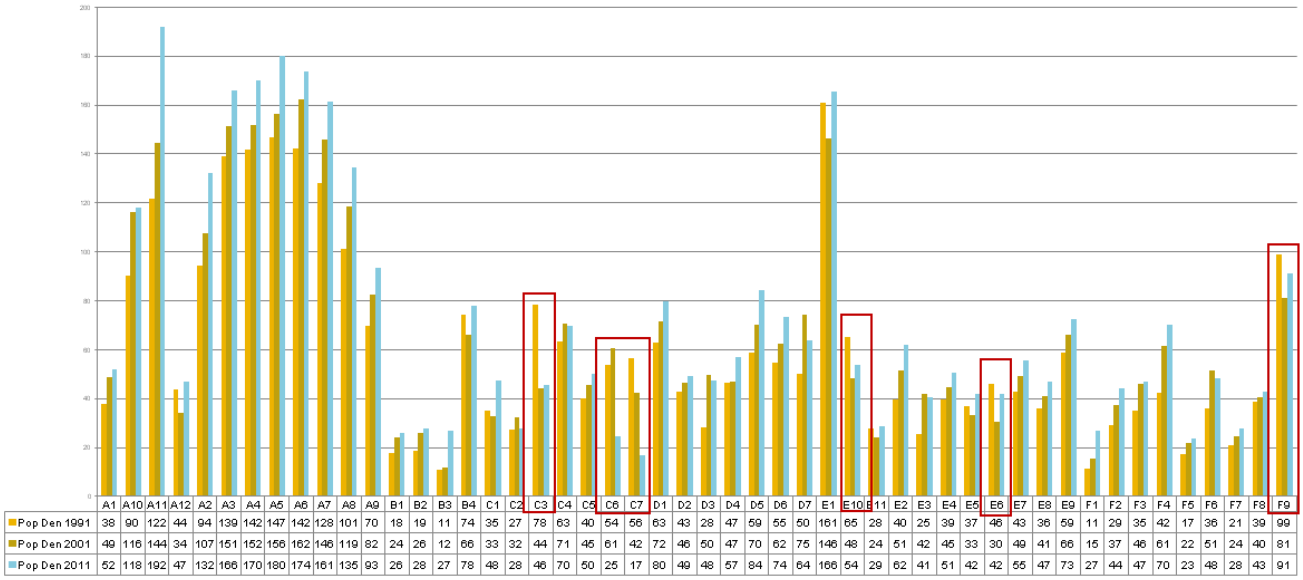
From table 6.14, it is observed that Zone B has experienced a massive expansion of built-up due to the establishment of new institutional areas like NIT in the recent past. Apart from the National Highways, the foothill areas of Langol Hill, around Game Village has experienced massive growth of built-up in the last decade. The Langol hill area within the Greater Imphal area is covered by Reserve Forest and many of these built-up areas in the foothill area came at the cost of forest area.

6.4.2 Net Development Density

The net development density is calculated considering the population and only the built up area (building footprint as in GIS database) to understand the distribution of population with respect to the built- up.

The densities were mapped for 1991, 2001 and 2011 to understand the trend of population growth and built- up area development (see figure 6.4).

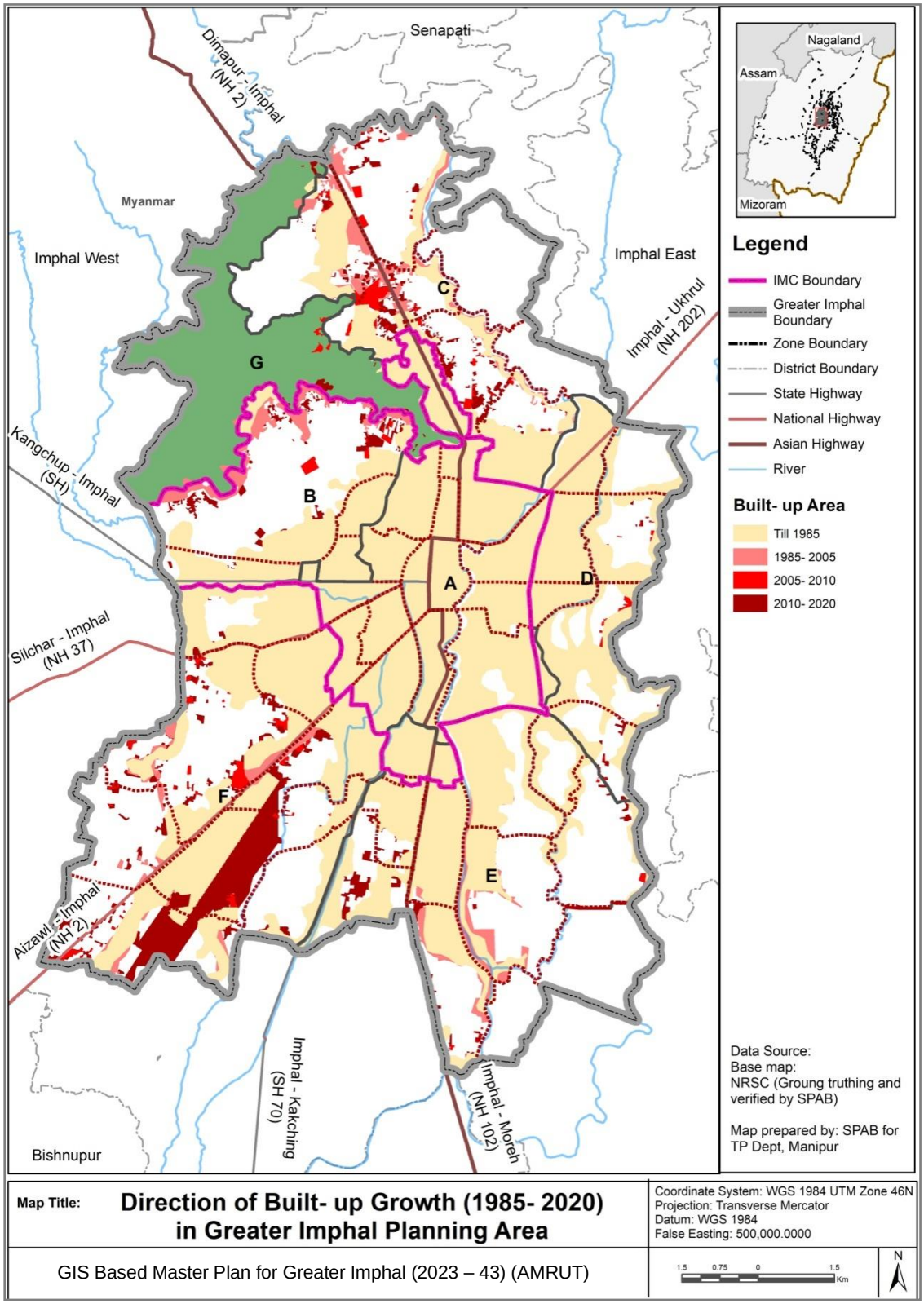
Figure 6. 4: Net Development Density in Greater Imphal Planning Area- Sub zone wise



	A1	A10	A11	A12	A2	A3	A4	A5	A6	A7	A8	A9	B1	B2	B3	B4	C1	C2	C3	C4	C5	C6	C7	D1	D2	D3	D4	D5	D6	D7	E1	E10	E11	E2	E3	E4	E5	E6	E7	E8	E9	F1	F2	F3	F4	F5	F6	F7	F8	F9
Pop Den 1991	38	90	122	44	94	139	142	147	142	128	101	70	18	19	11	74	35	27	78	63	40	54	56	63	43	28	47	59	55	50	161	65	28	40	25	39	37	46	43	36	59	11	29	35	42	17	36	21	39	99
Pop Den 2001	49	116	144	34	107	151	152	156	162	146	119	82	24	26	12	66	33	32	44	71	45	61	42	72	46	50	47	70	62	75	146	48	24	51	42	45	33	30	49	41	66	15	37	46	61	22	51	24	40	81
Pop Den 2011	52	118	192	47	132	166	170	180	174	161	135	93	26	28	27	78	48	28	46	70	50	25	17	80	49	48	57	84	74	64	166	54	29	62	41	51	42	42	55	47	73	27	44	47	70	23	48	28	43	91

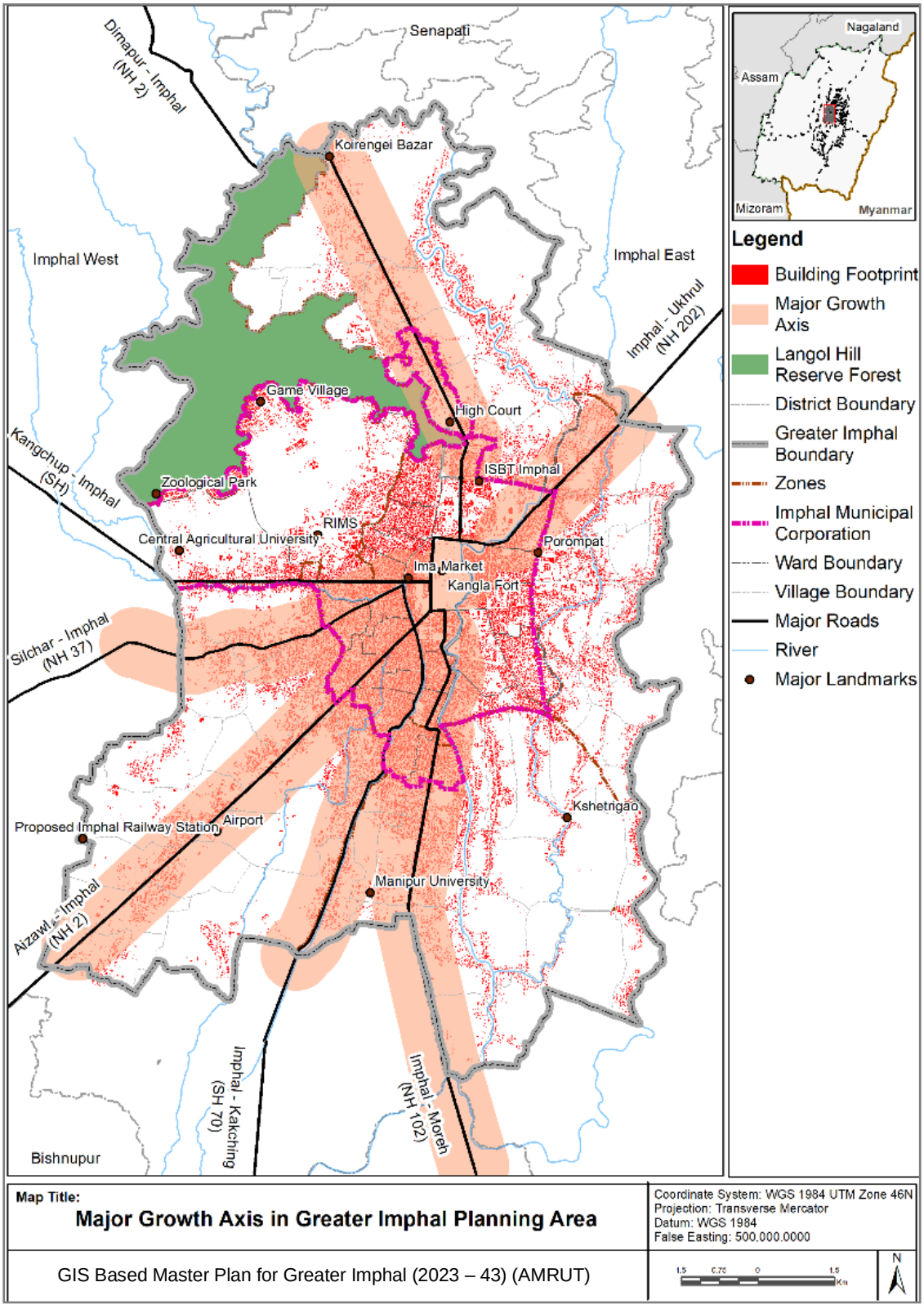
The major trend observed from 1991 to 2011 is the increase in net development densities in sub-zones except for C3, C6, C7, E6, E10 and F9 which indicates more urban sprawl in these sub zones.

Map 6. 9: Growth Direction of Built- up Growth



Source: Built up area obtained through digitisation on Google Earth base map

Map 6. 10: Major Growth Axis



Source: Author Generated using NRSC base map

6.4.3 Change in Built-up Area Density

The built- up area density was calculated for the years 1985, 2005, 2010 and 2020 by calculating the percentage of built-up area with respect to the total area of the zone in Table 6.15. It was observed that **Zone A** being the core area zone, did not experience any change in the built- up area density, whereas **Zone B** lying adjacent to it experienced change between 1985 and 2005 and 2010 and 2020.

Zone C grew between years 2005 and 2010 and also has the second lowest built- up area density after **Zone G** which is a forest area. **Zone D** has the highest built- up area density after zone A, which does not change significantly over the years (1985- 2020).

Zone E shows the least change in built- up area density after zone D whereas on the other hand **Zone F** shows a significant increase in the built- up area between 2010 and 2020 making it the zone with most recent growth because of the construction of airport. Map 6.11 shows the change in built- up area densities of various zones over the years 1985 to 2020 and table 6. 14 tabulate the data used.

Table 6. 15: Zone wise built- up area % in Greater Imphal

Zone	Total Area (Ha)	Built- up area (%)				Change in Built- up Area %		
		1985	2005	2010	2020	1985-2005	2005-2010	2010-2020
A	2015	95.8	95.8	95.8	95.8	0.0	0.0	0.0
B	1355	37.6	45.8	47.2	50.9	8.1	1.5	3.7
C	2450	20.4	24.9	26.9	30.5	4.5	2.0	3.6
D	1440	64.6	64.6	65.3	66.0	0.0	0.7	0.7
E	3040	42.1	44.7	45.1	46.6	2.6	0.3	1.6
F	3310	42.9	45.0	46.5	57.6	2.1	1.5	11.1
G	1415	0.7	2.1	2.8	3.7	1.4	0.7	0.8

Source: Built up area obtained through digitisation on Google Earth base map.

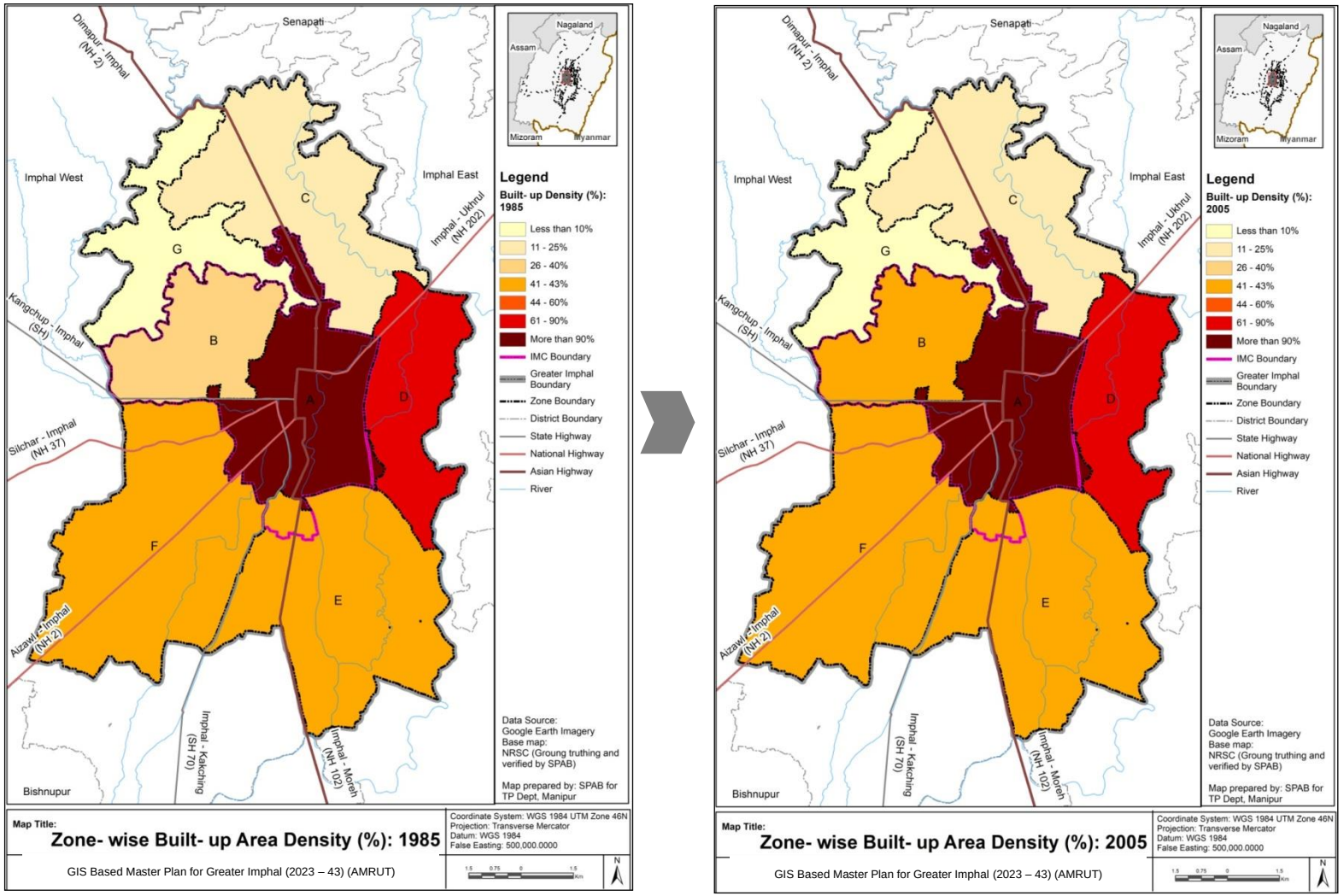
6.4.4 Sub zone wise Built- up Density

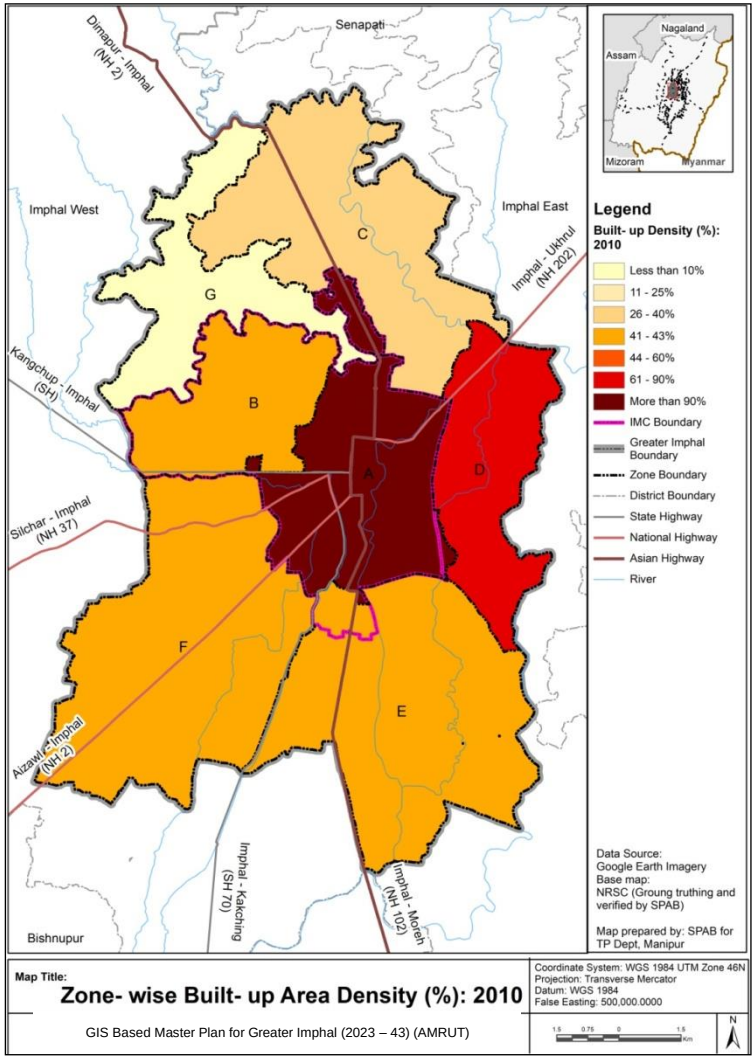
The built- up area density was calculated for the years 1985, 2005, 2010 and 2020 by calculating the percentage of total built-up area with respect to the total area of the sub zone and mapped in Map 6.12

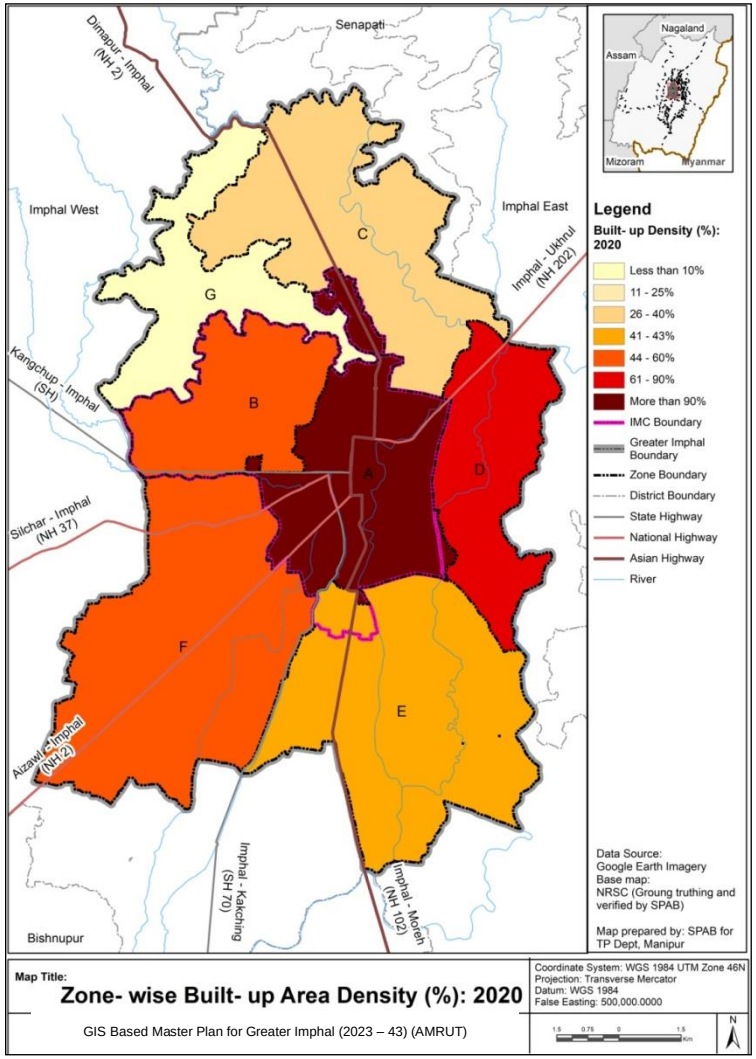
It was observed that the built- up density changed along NH2, towards Dimapur in North and towards Aizawl in south west (sub zone C2, C4, E3, F5, F7, F8).

Note:
The data used to prepare Map 6.11 and 6.12 is attached in annexure 6.1 and 6.2 respectively.

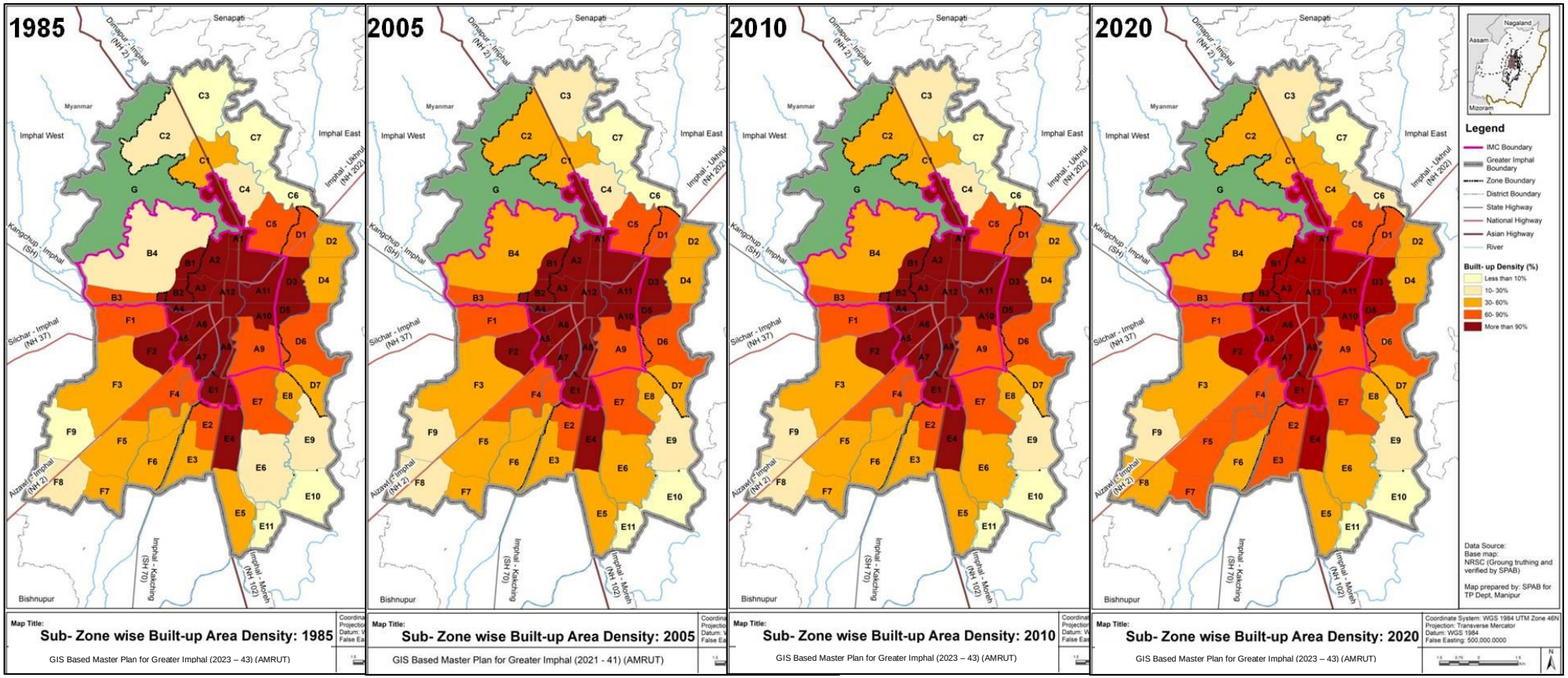
Map 6. 11: Built- up Area Density (1985- 2020)




Senapati
Dimapur - Imphal (NH 2)
Nagaland
Assam
Mizoram
Myanmar
Imphal West
Imphal East
Imphal - Ukhrul (NH 202)
Kangchup - Imphal (SH)
Silchar - Imphal (NH 37)
Aizawl - Imphal (NH 2)
Imphal - Kakching (SH 70)
Imphal - Moreh (NH 102)
Bishnupur
A
B
C
D
E
F
G
Legend
Built- up Density (%): 2010
Less than 10%
11 - 25%
26 - 40%
41 - 43%
44 - 60%
61 - 90%
More than 90%
IMC Boundary
Greater Imphal Boundary
Zone Boundary
District Boundary
State Highway
National Highway
Asian Highway
River
Data Source:
Google Earth Imagery
Base map:
NRSC (Groung truthing and verified by SPAB)
Map prepared by: SPAB for TP Dept, Manipur
Map Title:
Zone- wise Built- up Area Density (%): 2010
GIS Based Master Plan for Greater Imphal (2023 – 43) (AMRUT)
Coordinate System: WGS 1984 UTM Zone 46N
Projection: Transverse Mercator
Datum: WGS 1984
False Easting: 500,000.0000
1.5 0.75 0 1.5 Km
N


Senapati
Dimapur - Imphal (NH 2)
Nagaland
Assam
Mizoram
Myanmar
Imphal West
Imphal East
Imphal - Ukhrul (NH 202)
Kangchup - Imphal (SH)
Silchar - Imphal (NH 37)
Aizawl - Imphal (NH 2)
Imphal - Kakching (SH 70)
Imphal - Moreh (NH 102)
Bishnupur
A
B
C
D
E
F
G
Legend
Built- up Density (%): 2020
Less than 10%
11 - 25%
26 - 40%
41 - 43%
44 - 60%
61 - 90%
More than 90%
IMC Boundary
Greater Imphal Boundary
Zone Boundary
District Boundary
State Highway
National Highway
Asian Highway
River
Data Source:
Google Earth Imagery
Base map:
NRSC (Groung truthing and verified by SPAB)
Map prepared by: SPAB for TP Dept, Manipur
Map Title:
Zone- wise Built- up Area Density (%): 2020
GIS Based Master Plan for Greater Imphal (2023 – 43) (AMRUT)
Coordinate System: WGS 1984 UTM Zone 46N
Projection: Transverse Mercator
Datum: WGS 1984
False Easting: 500,000.0000
1.5 0.75 0 1.5 Km
N

Map 6. 12: Sub zone wise Built- up Density



Source: Author Generated Google Earth Imagery

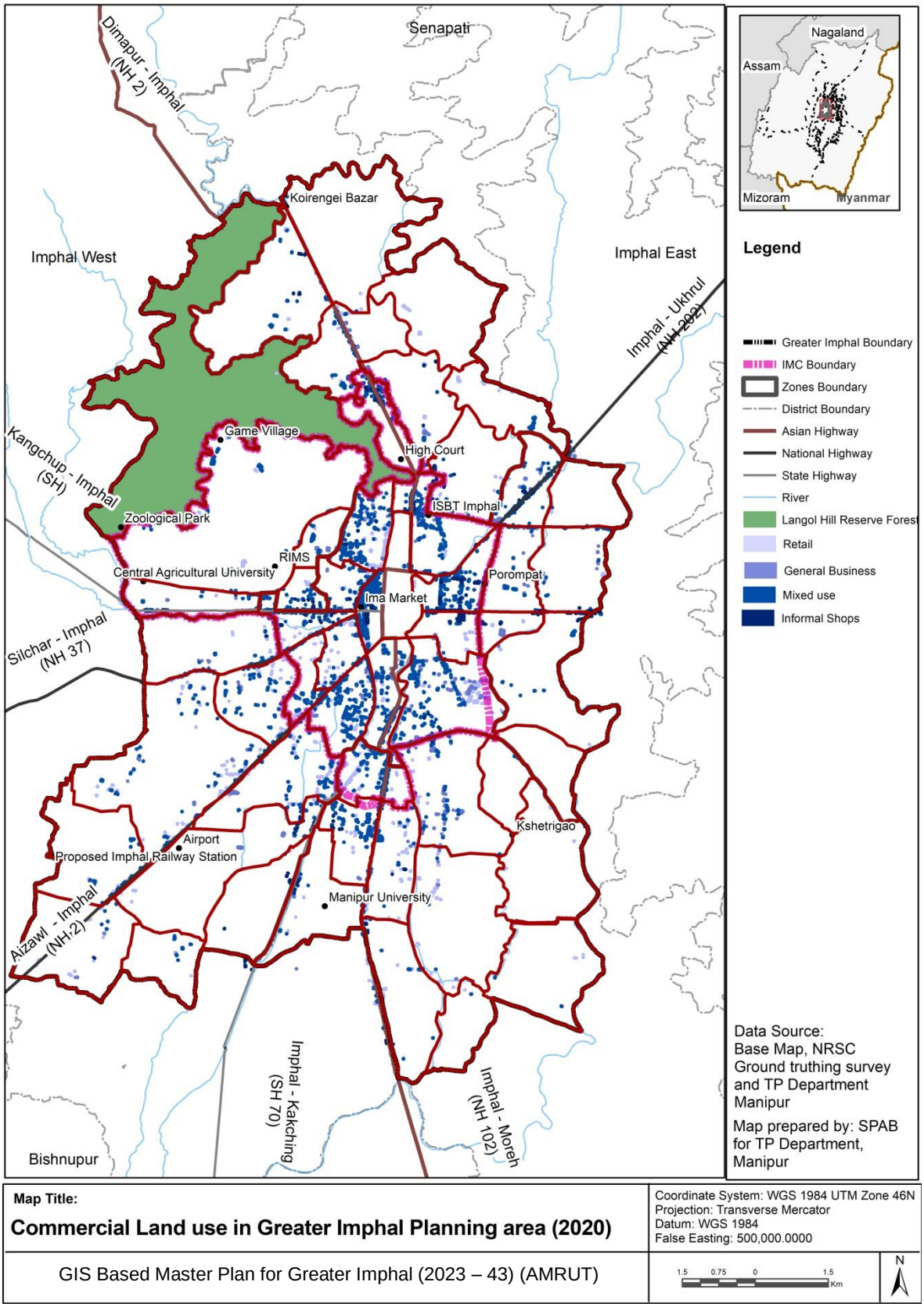
6.4.3 Growth of Commercial Areas

To identify the new locations where commercial areas are growing up, a comparative analysis of the distribution of commercial areas in 2010 and 2020 in the Greater Imphal area was carried out.

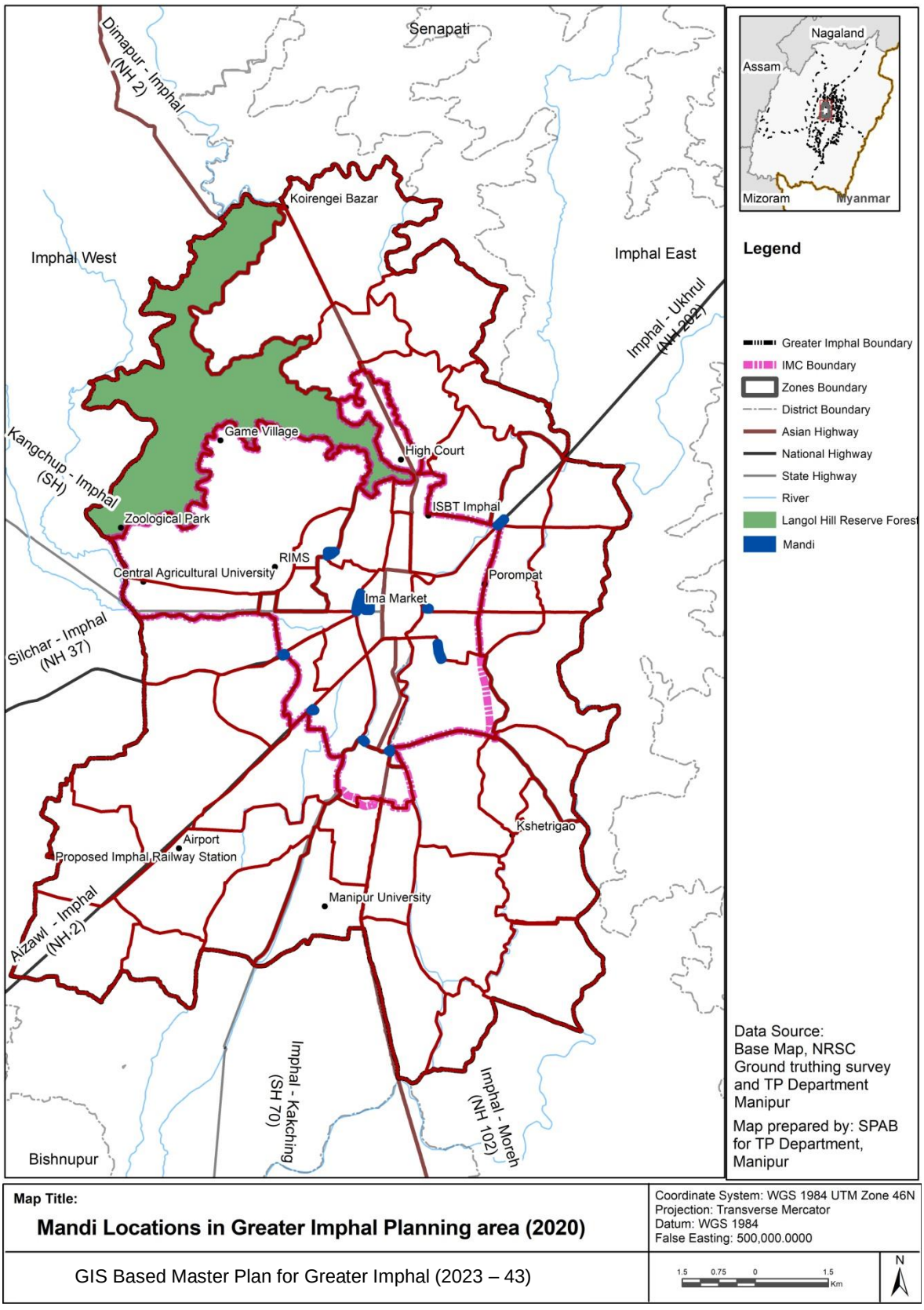
Commercial areas in the form of commercial and mixed land use were mostly concentrated at Ima Market and its nearby areas. Apart from Ima Market, Thangmeiband Road, RIMS Road, Wangkhei Road and New Checkon Road had commercial areas along its alignment. In-between 2010-2020 commercial area has expanded among several new areas in the Greater Imphal area. The South-western portion, particularly Zone E and Zone F, is the most dynamic area in terms of the growth of commercial and mixed land use. A major concentration of new commercial and mixed land use happened along Imphal-Aizawl Road (NH 2) and Imphal-Moreh Road (NH 102).

Most of the major roads in Zone A have experienced development of commercial and mixed land-uses prior to 2010. After 2010, mixed land use appeared along the minor roads of zone A. Zone C is the next most dynamic zone in terms of the development of new commercial and mixed areas. The Imphal-Dimapur Road (NH 2) acts like the spine for this zone. It caters to most of the commercial and mixed land use area along its alignment. Most of the newly developed commercial areas are outside the Imphal Municipal Corporation area, along NH2. The eastern part of the Greater Imphal area, particularly Zone D and Zone E have not experienced the growth of commercial area in the last decade. Only along Imphal-Ukhrul Road (NH 202) and Lamlong-Tinsid Road, there are new developments of commercial and mixed land use. The absence of any Major Road (except for NH 202) in this region is the reason why it has not experienced much development of commercial areas in the last decade. Moreover, development in terms of overall built-up area, is majorly composed of residential land use, and is somewhat restricted by Kongba River in the East. Map 6.13 depicts the locational distribution of commercial landuse including mixed landuse (commercial). Map 6.14 depicts the location of wholesale markets (Mandi) in Imphal.

Map 6. 13: Commercial Land use



Map 6. 14: Location of Wholesale markets (Mandi)



6.4.3.1 Observations

- Analysing spatial pattern of land use dynamics in the Greater Imphal area, it is clear that the NH 2 plays as a major axis in the land use dynamics.
- The major direction of growth is towards the northern and south-western direction along NH 2. On the other hand, the western portion of Greater Imphal has not experienced much of expansion of built up and change in land use. Among the several issues, the Langol Hill area, which is entirely covered by forest, is facing the issue of deforestation.
- Mandi areas overtime have grown and the capacity is saturated as of now considering the built and un-built spaces available. The activities are putting stress on the adjoining roads. It is required that new areas for whole sale markets are identified so as to decongest the existing areas as well to accommodate growth that will happen with population growth and rising demands.

6.5 Observations and Way Forward

Deviations were observed in the existing landuse of 2020 from the proposed landuse of Master Plan 2011. Some of these are as follows:

- Residential landuse was observed to be only 24.4% whereas the previous Master Plan (2011) proposed it to be 38%. The projected population of 2011 in the 2011 Master plan was 6.27 lakhs whereas the population of Greater Imphal planning area as per census 2011 is 5.26 lakhs which is less than the projected population by 16%, whereas the residential development is short by 12%. This indicates that the residential development is highly spread across the planning area.
- The industrial landuse was observed to be only 0.2% in the planning area and 0.1% in the municipal area which is very low as compared to the proposed 1.5% and the benchmark (URDPFI Guidelines, 2015) of 4%. This also indicates a low share of secondary sector within the city-regional economy as also discussed in Section 7.3.
- Land under Roads and transportation is only 6.8% whereas the Imphal Master Plan 2011 proposed it to be 8%. This low share of transport landuse results into many mobility challenges like non-uniformity in road width, lack of infrastructure provision for shared mobility, parking and freight operations.
- The parks and recreational open spaces had a low share of landuse in the Master plan of 2011 as compared to the benchmarks. The existing (observed landuse 2020) share of parks and recreation open spaces landuse is higher than the proposed land use as per Mater Plan 2011. The AMRUT guidelines aim at increasing the amenity value of cities by developing greenery and well-maintained open spaces.
- Commercial landuse increased from the proposed landuse by 2.6% indicating more of individual commercial establishments and lack of developer led commercial complexes within the planning region.

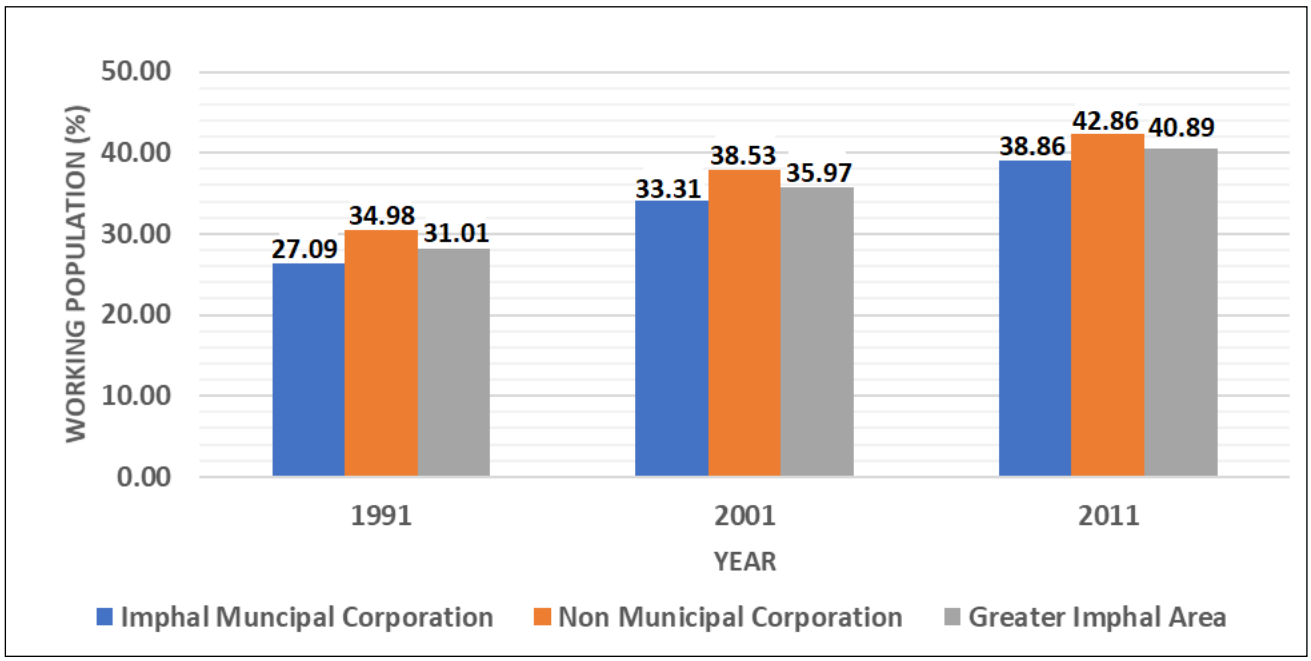
Section 7: Economic Profile

7.1. Work Force Participation

Greater Imphal Region has experienced an increase in workforce participation rate over the last three decades for both Imphal Municipal Corporation area and the Non-municipal Corporation area as due to the similar increase in population (Figure 7.1). The workforce participation rate of Imphal Municipal Corporation area is lower than that of non-municipal area of the Greater Imphal planning area. Within the IMC area, the maximum workforce participation rate is found in wards along the Imphal-Moreh Road (NH 102) whereas for non-municipal area highest workforce participation is found in villages along Imphal-Moreh Road (NH 102) and Imphal-Aizawl Road (NH 2), particularly in Lamlongei, KhaidemLeikai, Uchkeckon, Keikhu Hao, Machahal, Basihkhong, KitnaPanung, Ningombam and Malom Tulihal.

Note:
The data used to prepare Maps 7.1 and 7.2 is attached in annexure 7.1 and 7.2.

Figure 7. 1: Working Population in Greater Imphal Planning Area



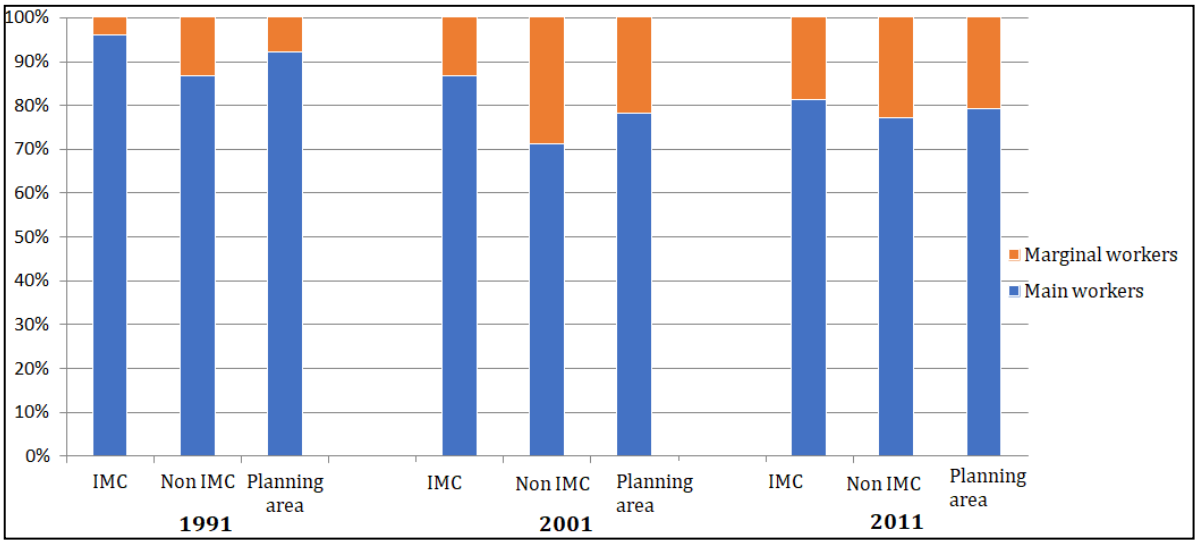
Source: Census of India, 1991, 2001 and 2011

Through the analysis of the main and marginal workforce, it is observed that the percentage of main workers is declining whereas the share of the marginal workers, regardless of the IMC area or non-IMC area is increasing from 1991 to 2011, indicating the increase in temporary nature of employment. (Table 7.1)

Table 7. 1: Working population in Greater Imphal Planning Area, 1991- 2011

Area	Working Population (%)			Main working population (%)			Marginal Workers (%)		
	1991	**2001**	**2011**	**1991**	**2001**	**2011**	**1991**	**2001**	**2011**
IMC	27.09	33.31	38.86	95.87	86.55	81.20	4.13	13.45	18.80
Non IMC	34.98	38.53	42.86	89.32	71.06	77.17	10.68	28.94	22.83
Planning area	31.01	35.97	40.89	92.20	78.09	79.06	7.80	21.91	20.94

Figure 7. 2: Share of Main Workers and Marginal workers in Greater Imphal Planning Area



Source: Census of India, 1991, 2001 and 2011

The four-fold classification of Main working population by census of India for municipal and non-municipal area indicates in the Figure 7.2 that the share of others category is highest in both. For the municipal area it is as high as 93% whereas for non- municipal area it is 80% because of primary activities. (Table 7.2)

Table 7. 2: Category wise share of working population in Greater Imphal Planning Area, 2011

Area	Cultivators (%)	Agricultural Labourers (%)	Household Workers (%)	Others (%)
IMC	0.60	0.91	5.50	93.00

Non IMC	7.72	2.60	8.93	80.75
Planning Area	3.98	1.71	7.12	87.19

The workers detail for Imphal municipal area was further analysed based on the 21-fold classification of workers as per 2011 census, grouped together into eight-fold classification: i.) Administrative services; ii.) Trade & Commerce, Hotels and Recreation Services; iii.) Manufacturing & Household industries; iv.) Transport, storage and communication; v.) Construction; vi.) Other services; vii.) Agriculture activities; and viii.) Other primary activities.

The share of these categories is tabulated in Table 7.3. It was observed that administrative services have the highest share of main workers because of Imphal being the administrative headquarters of Manipur. The next category in the share is trade and commerce along with hotels and recreation facilities which will further increase with the construction of Asian highway and the railway station.

Table 7. 3: Share of Main workers in IMC, 2011

Categories	Main Workers (%)
Administrative Services[1]	39.09
Trade & Commerce, Hotels, Recreation Services[2]	29.00
Manufacturing and Household Industries	12.42
Transportation, Storage & Communication[3]	6.11
Construction	5.03
Other Services[4]	4.75
Other Primary Activities[5]	2.11
Agriculture Activities	1.49

Note:

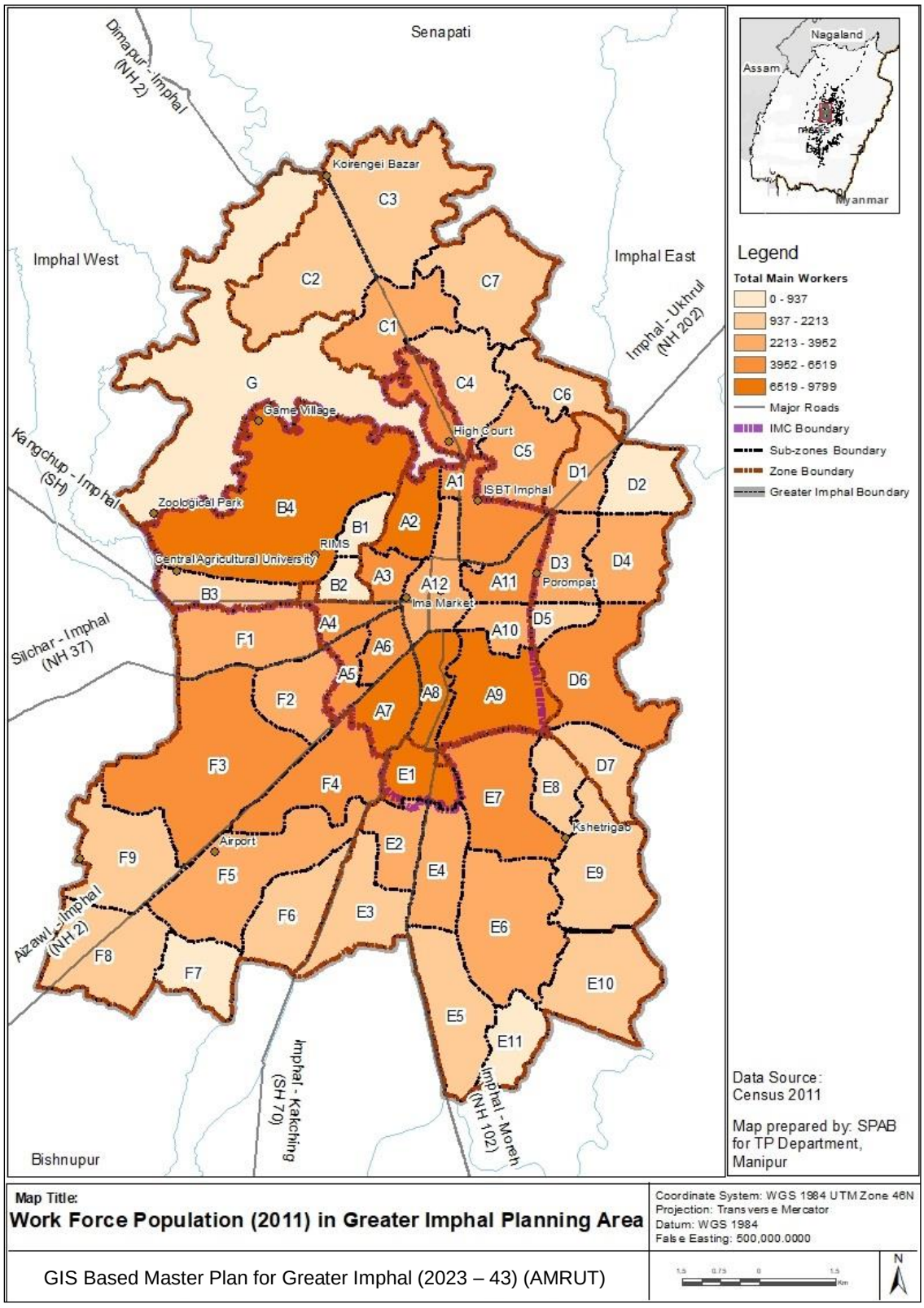
1. *includes Administrative and support service activities, Public Administration and Defense, Compulsory Social Security, Education, Human Health and Social Work activities*
2. *includes Wholesale and Retail Trade (Repair of motor vehicles and motor cycles)- HHI & non HHI, Accommodation and food service activities, Arts, Entertainment and recreation, Other Service Activities, Activities of Households as Employers: Undifferentiated Goods and Services, Activities of Extra-Territorial Organisations and Bodies- HHI & non HHI*

3. *includes Transportation and Storage, Information and Communication- HHI & non HHI*
4. *includes Electricity, Gas, steam and Air conditioning Supply, Water Supply; (Sewerage, Waste Management and remediation activities), Financial and Insurance activities, Professional, Scientific and Technical activities, Real Estate activities*
5. *includes Plantation, Livestock, Forestry, Mining and Quarrying*

The workforce participation rate has been presented in Map 7.1 and Map 7.2 which is at sub zone level in Greater Imphal Planning Area and ward level in the Imphal Municipal Corporation for the year 2011.

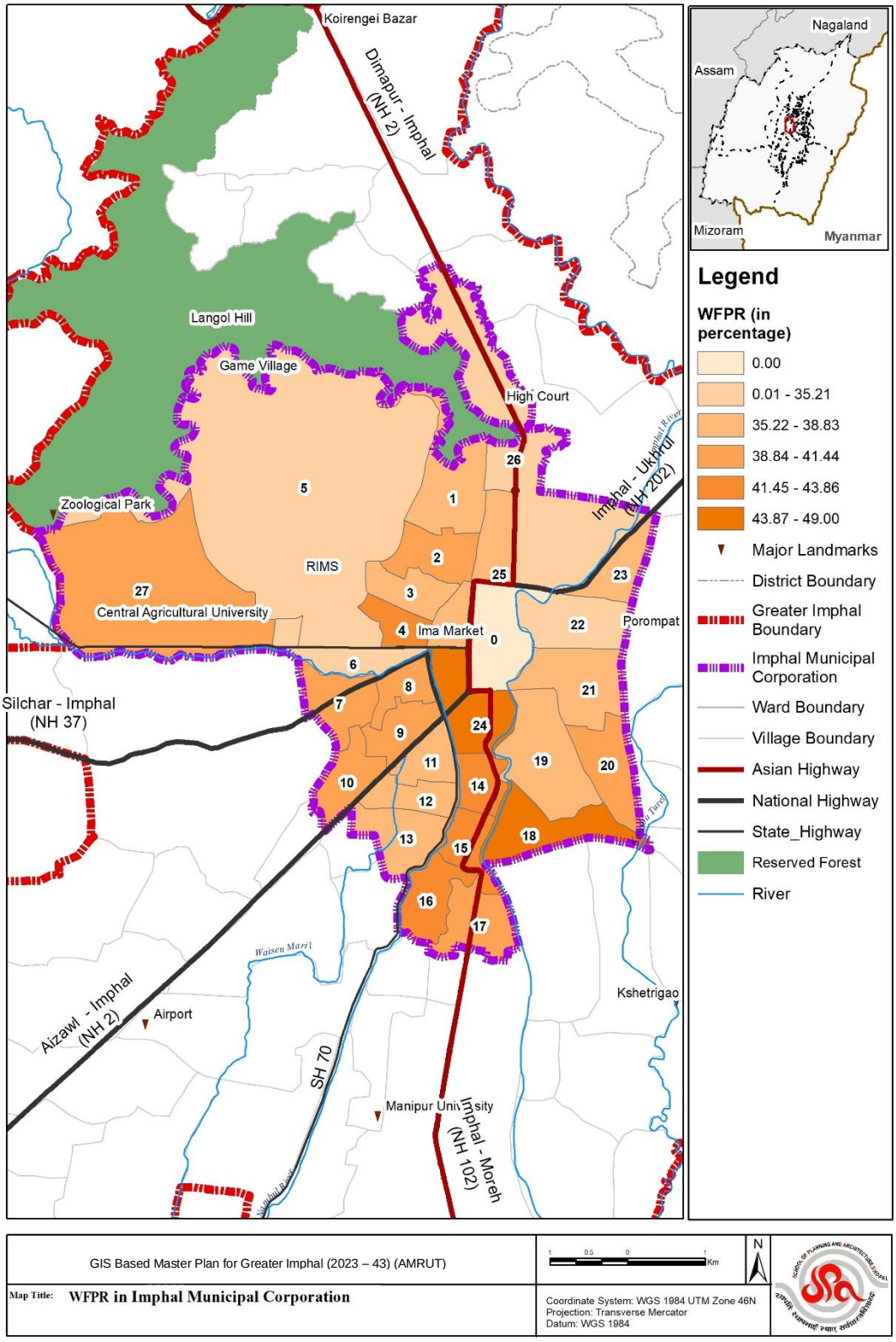
Note:
The data used to prepare Maps 7.1 and 7.2 is attached in annexure 7.1 and 7.2.

Map 7. 1: Main Workers' Population in Greater Imphal Planning Area



Source: Workforce Participation Rate calculated based on data from Census of India, 2011

Map 7. 2: WFPR in Imphal Municipal Corporation



Source: Workforce Participation Rate calculated based on data from Census of India, 2011

7.2 Zone- wise Analysis

The total working population along with main and marginal workers has been calculated and tabulated zone wise in table 7.4.

Note:
Sub zone wise data is tabulated in Annexure 7.3 and 7.4.

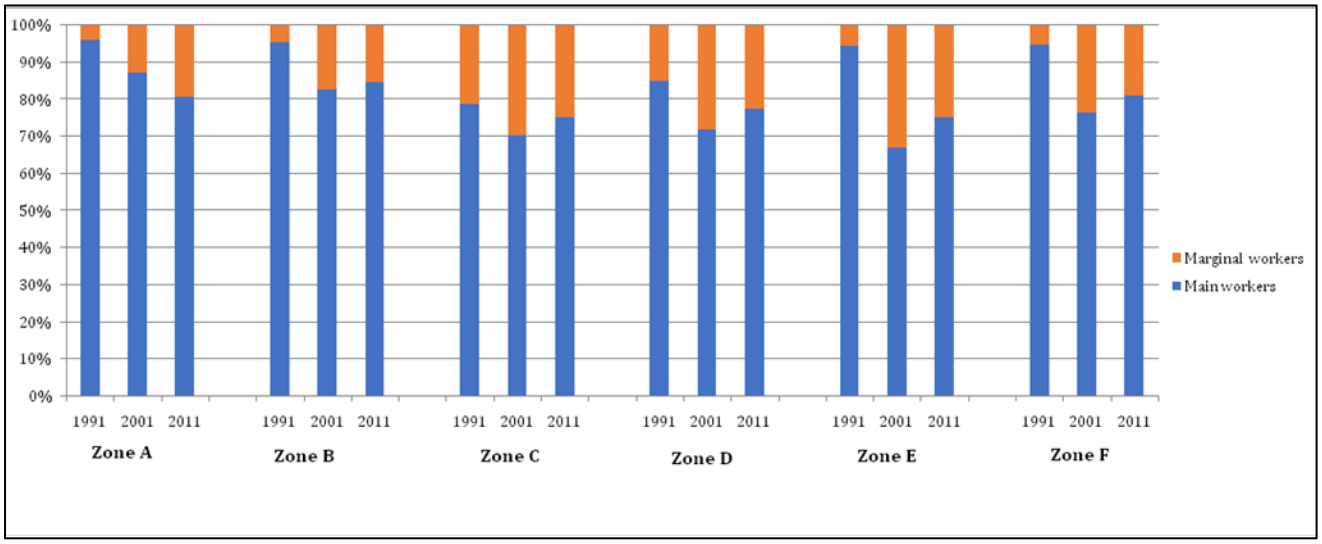
Table 7. 4: Zone wise working population, 2011

Sub-Zones	Population	Total Workers	Total Main Workers	Total Marginal Workers
ZONE-A	223858	88595	71512	17083
ZONE-B	35394	12159	10305	1854
ZONE-C	43414	18338	13772	4566
ZONE-D	62346	25530	19796	5734
ZONE-E	94281	41064	30807	10257
ZONE-F	67248	29631	24032	5599
ZONE-G	Langol Reserve Forest			

Source: Census of India, 2011

From figure 7.3 it has been seen that the share of marginal workers have increased over the years in all the zones reflecting the change in nature of employment. The percentage of increase is different in each zone with highest in Zone A and least in Zone C.

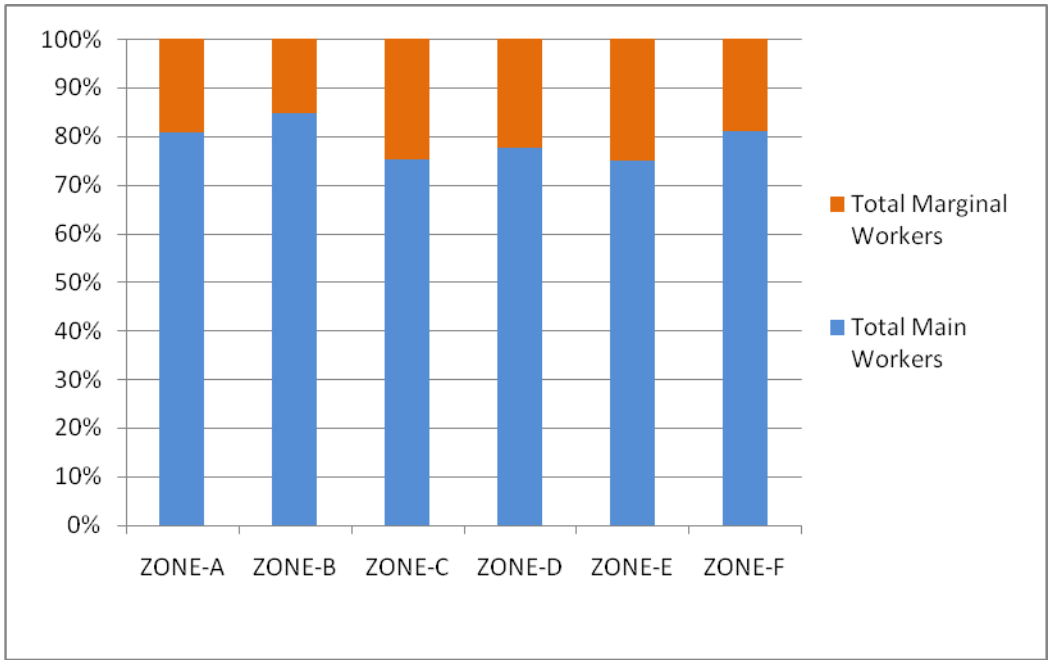
Figure 7. 3: Share of Main Workers and Marginal workers, 1991- 2011(Zone- wise)



Source: Census of India, 1991, 2001, 2011

From figure 7.4, it is observed that Zone C has the highest share of marginal workers in the Greater Imphal planning area followed by Zone E.

Figure 7. 4: Zone wise share of Main Workers and Marginal workers, 2011



Source: Census of India, 1991, 2001, 2011

7.3 Main Working Population

Census of India classifies main workers into four categories viz. agricultural laborers, household industry workers and others. The type of workers that come under others category include factory workers, plantation workers, those in trade, commerce, business, transport, mining, construction, political or social work, all government servants, municipal employees, teachers, priests, entertainment artists, etc., all persons who work in any field of economic activity, other than cultivation, agriculture labour or household industry, are covered in this category.

The share of workers in this fourfold classification as per census is depicted in figure 7.5. It is observed that the share of workers of others category has increased during 1991 to 2011 and the share of other three categories of workers have decreased in the same period.

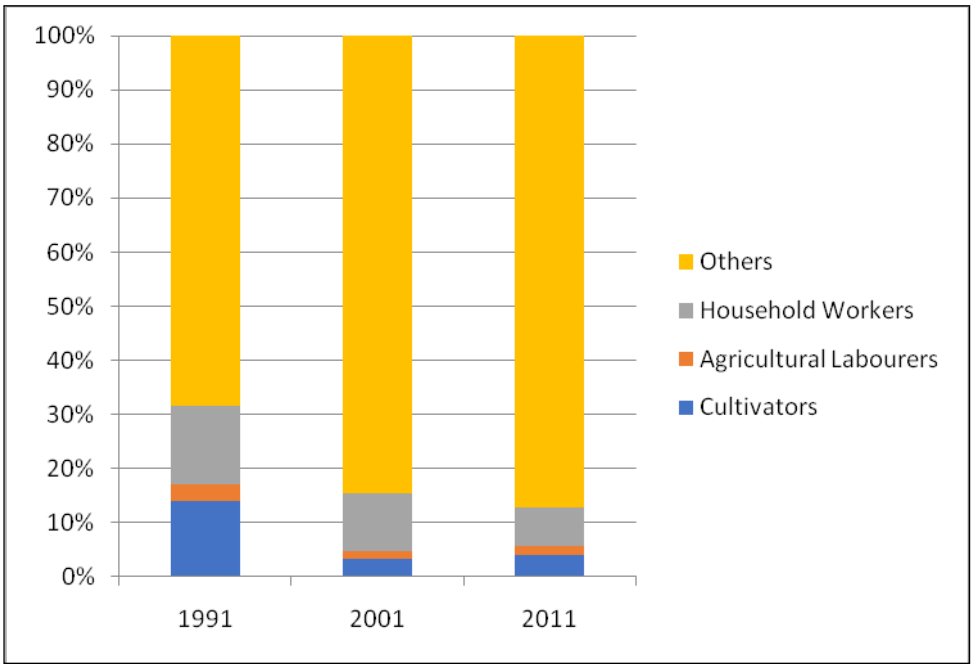
Table 7. 5: Category wise working population in Greater Imphal Planning Area, 1991-2011

	Cultivators	Agricultural Labourers	Household Industry orkers	Others	Total working population
1991	15350 (13.9%)	3482(3.16%)	15852(14.41%)	75344(68.48%)	110028
2001	4109(3.21%)	1858(1.45%)	13820(10.80%)	108173(84.54%)	127960
2011	6768(3.98%)	2908(1.71%)	12124(7.12%)	148424(87.19%)	170224

Source: Census of India 1991, 2001, 201

It is also observed that the workers of others category generate the maximum employment in the Greater Imphal planning area (Table 7.5). This includes activities such as trade and commerce, transport and communication, tourism, administration, other services, etc.

Figure 7. 5: Category-wise share of working population in planning area, 1991-2011



Source: Census of India 1991, 2001, 201

Note:
The share of working population of each category zone wise is discussed further and sub zone wise details are attached in Annexure 7.5.

7.3.1 Workers in 'Others' category

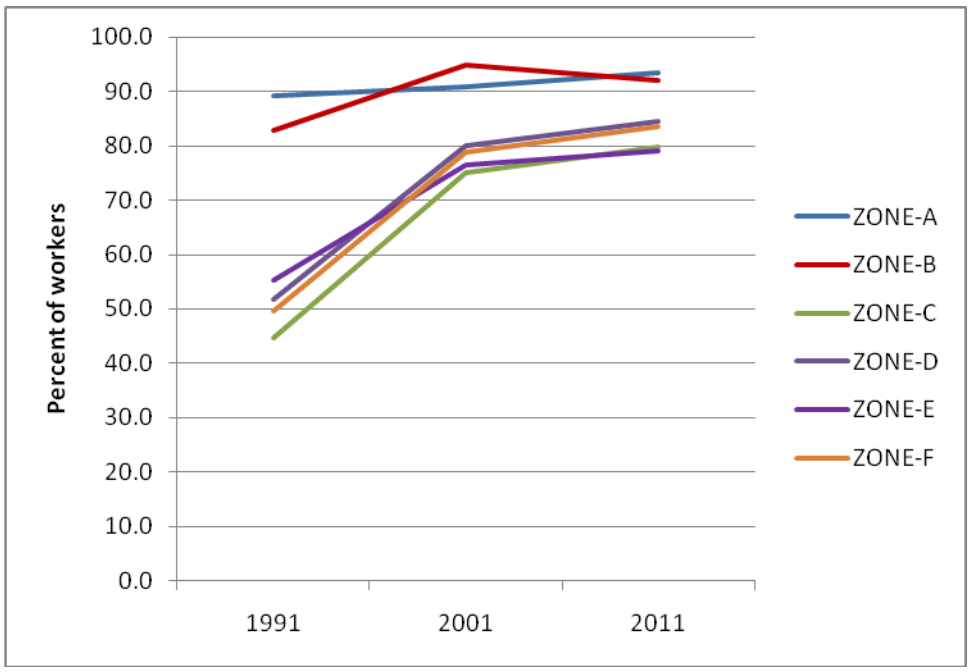
Zone wise the population working in others category (i.e. doing work other than agricultural labors, cultivators, or household industry workers) is tabulated in table 7.6 and represented in figure 7.6. Zone A has the highest share of population working in the other category over decades except in 2001 when Zone B had the highest share. The share of population has increased in every zone from 1991 to 2011 but the percent of increase is highest in Zone C and lowest in Zone A.

Table 7. 6: Share of workers in others category

Zone	Workers in Others category (%)		
	1991	2001	2011
ZONE-A	89.3	90.9	93.4
ZONE-B	82.8	94.8	92.1
ZONE-C	44.6	75.0	79.9
ZONE-D	51.8	80.1	84.6
ZONE-E	55.3	76.3	78.9
ZONE-F	49.6	78.8	83.4

Source: Census of India 1991, 2001, 2011

Figure 7. 6: Zone- wise workers in Others category



Source: Census of India 1991, 2001, 2011

From table 7.3, it was observed that after administrative services; trade and commerce, hotels and recreational services have the highest share of workers in Imphal municipal area. The city has a potential to further increase trade and recreational activities with the construction of the railway station and the new Asian Highway (AH 1). This infrastructure will enhance the activities such as trade and commerce, tourism, recreation, sports and culture. These new economic engines will further attract more workers in future. The tourism potential of the region is further discussed in the following sections.

7.3.2 Household Industry Workers

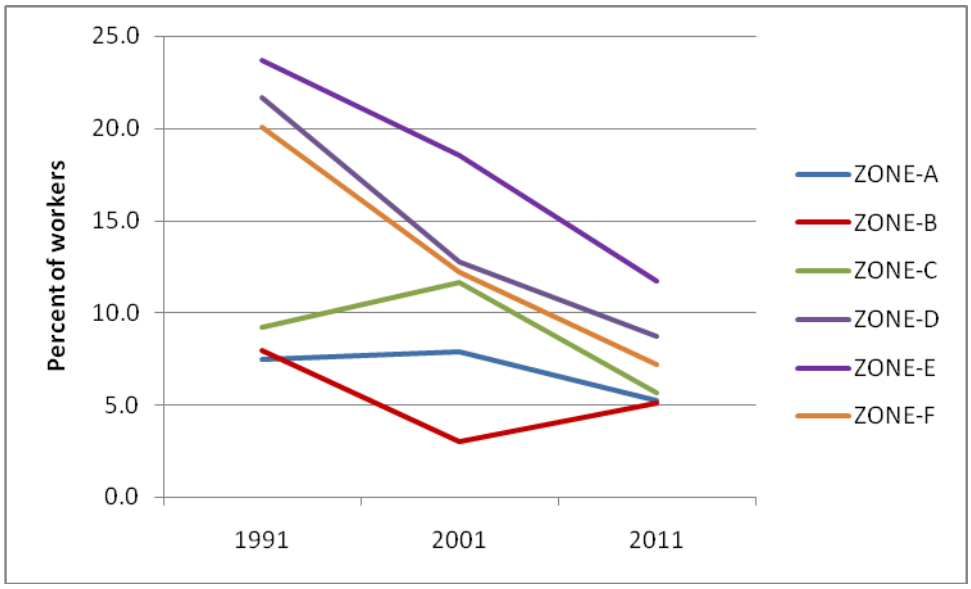
Imphal has a great number of household industries of handloom and handicrafts items. The working population involved in household industries is tabulated in table 7.7 and represented through figure 7.7. Zone E has the highest share among all the zones. The share of household industry workers has decreased from 1991 to 2011 in all the zones due to the modernization of tools and techniques.

Table 7. 7: Share of Household Category

Zone	Workers in household category (%)		
	1991	2001	2011
ZONE-A	7.4	7.9	5.2
ZONE-B	8.0	3.0	5.1
ZONE-C	9.2	11.6	5.7
ZONE-D	21.7	12.8	8.7
ZONE-E	23.7	18.6	11.7
ZONE-F	20.1	12.2	7.2

Source: Census of India 1991, 2001, 2011

Figure 7. 7: Zone wise household industry workers



Source: Census of India 1991, 2001, 2011

7.3.3 Cultivators and Agriculture Labourers

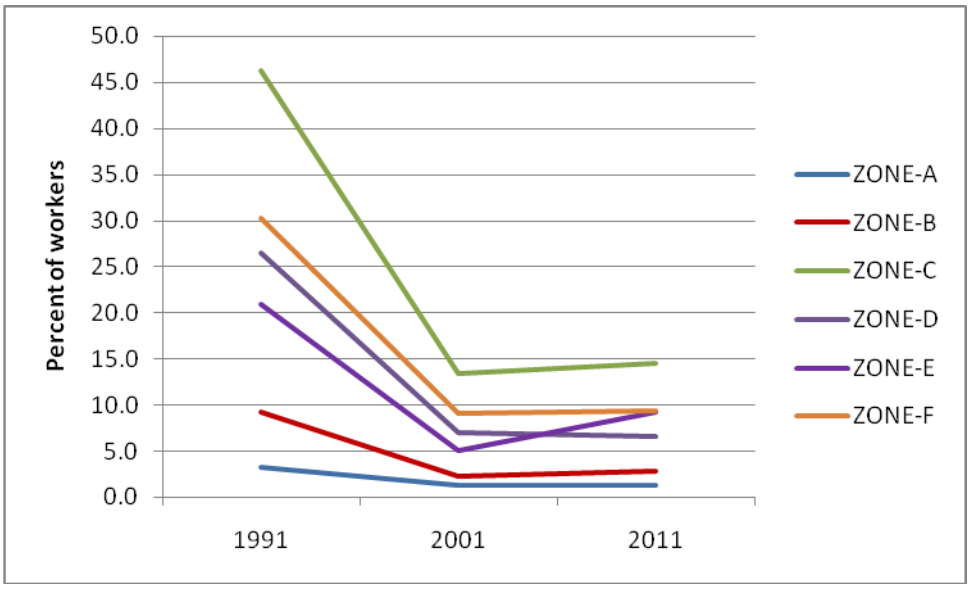
Cultivators and Agriculture Labourers category has the second highest contribution in the working population after the other category workers. The share of working population involved in this category is tabulated in table 7.8 and represented through figure 7.8. It is seen that Zone C has the highest share of population in the primary sector followed by Zone F. The share of population in primary sector has decreased over the years in each zone and it decreased highest in Zone C and least in Zone A.

Table 7. 8: Share of workers in Cultivators and Agricultural labourers category

Zone	Workers in Cultivators and Agriculture Labourer Category (%)		
	1991	2001	2011
ZONE-A	3.3	1.3	1.3
ZONE-B	9.2	2.2	2.8
ZONE-C	46.3	13.4	14.4
ZONE-D	26.5	7.1	6.7
ZONE-E	21.0	5.1	9.3
ZONE-F	30.3	9.0	9.4

Source: Census of India 1991, 2001, 2011

Figure 7. 8: Zone- wise workers in Cultivators and Agriculture Labourer Category



Source: Census of India 1991, 2001, 2011

7.4 Tourism

Tourism plays an important role in employment generation as well as in increasing the GDP of the region. Being the centre of all road transportation routes and having the only Airport in Manipur, Imphal has the locational advantage and potential for tourism development. The various tourist spots in and around the Greater Imphal Planning area which have the potential to be developed and attract tourist have been discussed. The spots mainly fall under the categories of eco-tourism, culture tourism, medical tourism and religious tourism.

7.4.1 Tourist Spots

7.4.1.1 Eco-tourism spots

- **Loktak Lake** - Located 48 km from Imphal, is the largest freshwater lake in India's North-East. The lake has small floating islands called 'phumdis' associated with various aspects of the life of the local inhabitants. The local dwellers live in the backdrop of the shimmering r waters of the Lake, labyrinthine boat routes and colourful water plants. The Sendra Tourist Home at Loktak with an attached cafeteria is sought after by the tourists.
- **KeibulLamjao National Park** - The only floating National Park in the world, the KeibulLamjao National Park located on the Loktak Lake is the last natural habitat of the "Sangai", the dancing deer of Manipur. A glimpse of the deer in this unique wetland ecosystem is a must for any wildlife enthusiast. Other wildlife to be seen include Hog Deer, Otter, a host of water fowls and migratory birds, the latter usually sighted during November to March. The Forest Department of Manipur maintains watchtowers and two rest houses within the park.

- **SaduChiru Waterfalls** - About 20 km from Imphal beside the Tiddim Road (NH150) is a picturesque site famous for its perennial waterfall at a scenic foothill. There are three waterfalls altogether. This is a newly opened tourist spot.
- **Manipur Zoological Garden** - The Manipur Zoological Garden serves as a home to numerous endangered and rare species. Because of this uniqueness, the zoo is often called the Jewel Box of Manipur.

7.4.1.2 Culture tourism spots

- **Ima Market** - A unique all-women market, with more than 3000 women who run the stalls. It is split into two sections on either side of a road. Vegetables, fruits, fishes and household groceries are sold in one section and exquisite handlooms and household tools in the other.

7.4.1.3 Heritage tourism spots

- **Shaheed Minar** - The indomitable spirit of the patriotic Meitei and tribal martyrs, who sacrificed their lives while fighting against the British in1891, is commemorated by this tall Minar at Bir Tikendrajit Park in the heart of Imphal city.
- **Kangla Fort** - The seat of Manipur's power till 1891, the historical embodiment of Manipuri Rulers and the people of Manipur, Kangla has a special place in the hearts and minds of the people of Manipur. The old Govindajee temple, outer and inner moat and other relics are perfect reflections of the rich art and architectural heritage of Manipur.
- **Manipur State Museum** - This Museum near the Polo Ground has a fairly good collection and display of Manipur's tribal heritage and a collection of portraits of Manipur's former rulers. Particularly interesting are the costumes, arms & ammunitions, relics and historical documents on display.
- **War Cemetery** - Commemorating the memories of the British and Indian soldiers who died during World War II, the war cemetery is managed by the Commonwealth War Graves Commission. Serene and well maintained, the War Cemetery carries little stone markers and bronze plaques recording the sacrifices of those gallant soldiers.
- **INA Memorial** - The INA Museum, which has a collection of letters, photographs, badges of ranks and other war memorabilia, reminds the visitors of the noble sacrifices made by the INA soldiers under the charismatic leadership of Netaji Subhas Chandra Bose.
- **Mutua Museum** - This Museum is a part of Cultural heritage Complex located at Andro village (about 26 km) from the capital. Here artifacts of the State and from all over the North East are housed, such as pottery collection, rare coins, rare manuscripts of the state, paintings, basketries, bell metals, jewellery, wood carving etc. There are exact replicas of the houses from different tribes and groups of the state like Poumai, Kabui, Meitei, Kuki, Tangkhul, etc.
- **Nupi Lal Memorial Complex** - This memorial complex is dedicated to the memory of several Manipuri women, who fought brilliantly for justice against the British on December 12, 1939. The word Nupi Lal in Manipuri means women's war. The memorial complex houses sculptures portraying Manipuri women fighting against the British officials and is worth as to visit. As the story goes, what began as an agitation against the oppressive policies of the rulers of Manipur and the British government, later turned into a

movement for Manipur's constitutional and administrative reform. During Nupi Lal, agitations and protest rallies were held by the women traders in Manipur's Ima Keithel Market. The historical movement paved the way for economic and political reforms in the state during the early 40s.

- **R.K.C.S. Art Gallery, Keishamthong** - RKCS Art Museum and Gallery is a prestigious art institution in the Indian Northeastern state of Manipur, Exhibiting historical, art and culture of Manipur through paintings. These paintings are original paintings of Manipur's legendary Artist Rajkumar Chandrajit Sana (RKCS). RKCS have also been mentioned in the Limca Book of Records, 1994 and have received several prestigious awards. This Gallery known as RKCS Art Gallery becomes one of the most important tourist destinations in Manipur and valuable asset for future Generation.

7.4.1.4 Religious tourism spots

- **Shree Govindajee Temple** - A historic Vaishnavite Centre adjoining the royal palace of Manipur's former Maharajas', the Govindajee temple is one of the most popular destinations for tourists. Twin domed shrine, a paved courtyard, and a large raised congregation hall form a perfect backdrop for priests who descend the steps to accept offerings from devotees in the courtyard. The shrine is adorned with the idols of Lord Krishna and Radha which are flanked by idols of Balaram and Jagannath at right and left sides of the presiding deity. Early hour prayer (Aarti) is a must for devoted followers, exuding spiritual fervor and ecstasy.

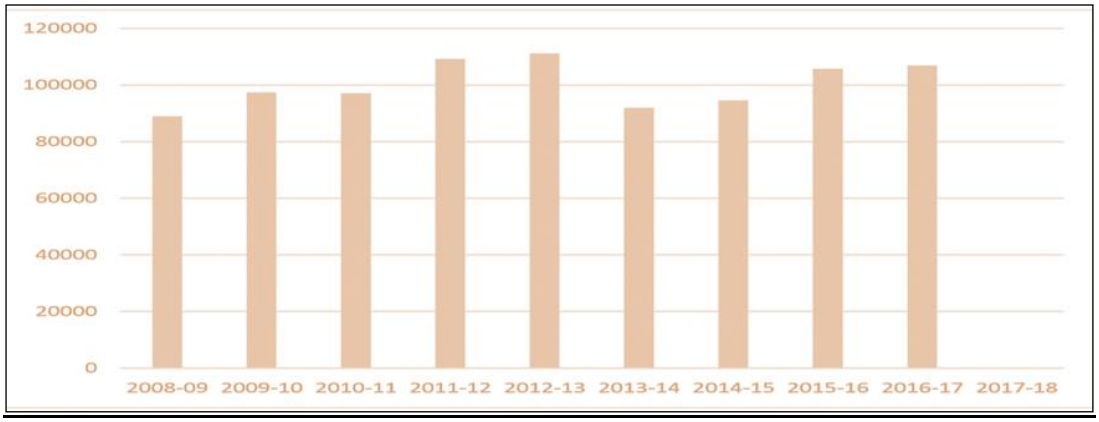
7.4.1.5 Medical tourism

- **JNIMS Hospital** - The Jawaharlal Nehru Institute of Medical Sciences (JNIMS) is a premier state-funded medical college and hospital located in Porompat, Imphal East. It was established in 1989. The hospital is well-equipped with technology and nursing facilities and lower cost of treatment to cater to the visiting patient tourists.
- **RIMS Hospital** – Regional Institute of Medical Sciences was established in 1972. The treatment provided at RIMS attracts patients from other states like Mizoram and Nagaland and neighboring countries with underdeveloped facilities like Myanmar, Laos, and Vietnam. Map 7.3 shows the locations of the major tourist spots in the Imphal Valley region.

7.4.2 Tourist Footfall

7.4.2.1 Domestic tourist footfall

Domestic tourist footfall in the Imphal valley increased from 88934 in 2008 to 106856 in 2017. However, the footfall decreased in the years 2012 and 2014 (Figure 7.9). This decrease is largely attributed to the insurgent attacks prevalent in the region.



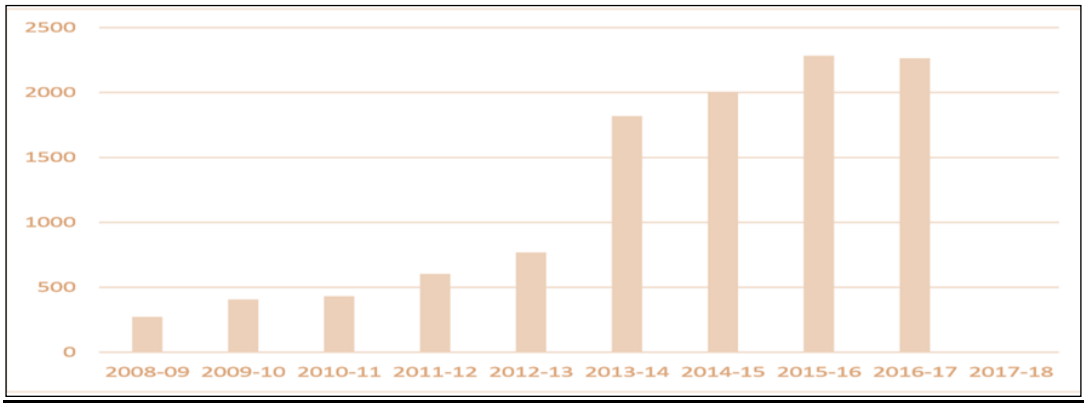
Source: Statistical Yearbook of Manipur, 2018

Figure 7. 9: Domestic Tourist Footfall in the Imphal Valley region

7.4.2.2 Foreign tourist footfall

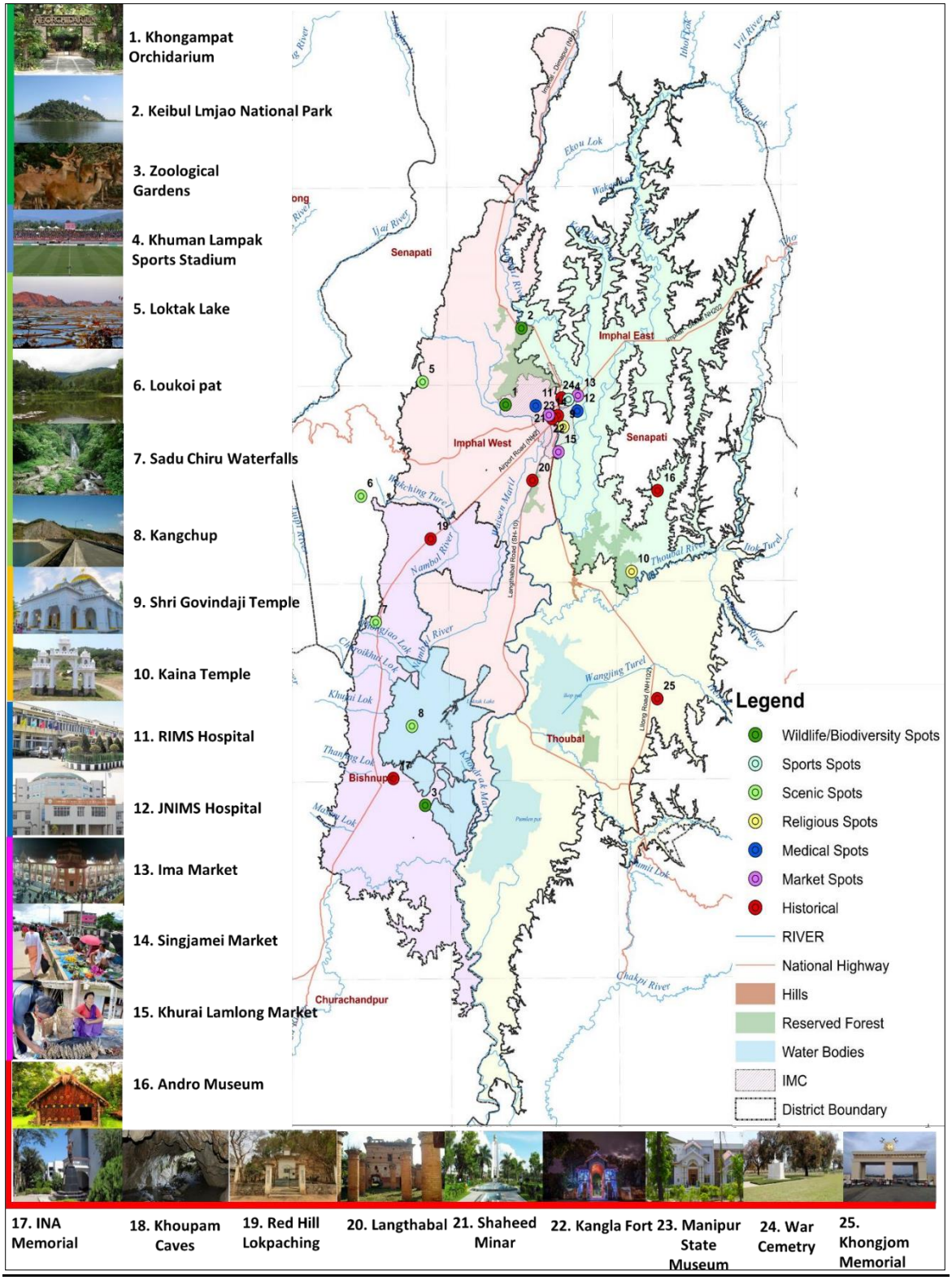
Foreign tourist footfall was gradually increasing from 271 in 2008 to 2878 in 2017 (Figure 7.10). The main reason for the small number of foreign tourists visiting the area is the insurgent attacks which happen quite frequently there. Because of this, road blockades and bandhs (strike) also occur, making Imphal Valley Region quite unwelcoming for a tourist.

Figure 7. 10: Foreign Tourist Footfall in the Imphal Valley Region



Source: Statistical Yearbook of Manipur, 2018

Map 7. 3: Location of Tourist Spots in Imphal Valley Region



Source: Department of Tourism, Government of Manipur

7.5 Industries

There are no heavy industries within the Greater Imphal area. Only Micro and small scale industries are there in very few numbers. Industries related to agriculture and food processing like Oil Mill, Rice Mill, spices processing and packaging are in majority in number (Table 7.10).

The contribution of industry in generating employment is very less at the present time. The share of secondary sector in workforce participation is 11.9% and 13.1% for Imphal West and Imphal East District respectively whereas looking for only Industrial workers, the share of the industrial worker to the total workforce is only 2.5% and 1.9% for Imphal West and Imphal East District respectively. The industrial profiles of Imphal east and Imphal west districts have been discussed in further sections and locations of industries has been shown in map 7.4. It is to be noted that the Greater Imphal planning area covers two districts namely Imphal east and Imphal west but the area of planning region is less than that of combined area of districts.

7.5.1 Industrial Scenario of Districts

A brief industrial scenario of the two districts within the Greater Imphal Planning area is discussed below table 7.9.

Table 7. 9: Industrial Scenario

	Imphal east	Imphal West
Total industrial units (nos.)	987	968
Registered Medium & Large units	0	2
Estimated average number of daily worker employed in small scale industries	9726	10331
Employments in large and medium industries	0	12
Number of industrial area	2	1

Source: Brief Industrial Profile of Imphal East District by MSME-Development Institute and District Industrial Potential Survey Report Of Imphal West District 2014-15.

Note:
The list of Industrial establishments and related employment in Imphal east and Imphal West District (2020) is attached in annexure 7.

7.5.1.2 Industrial Clusters

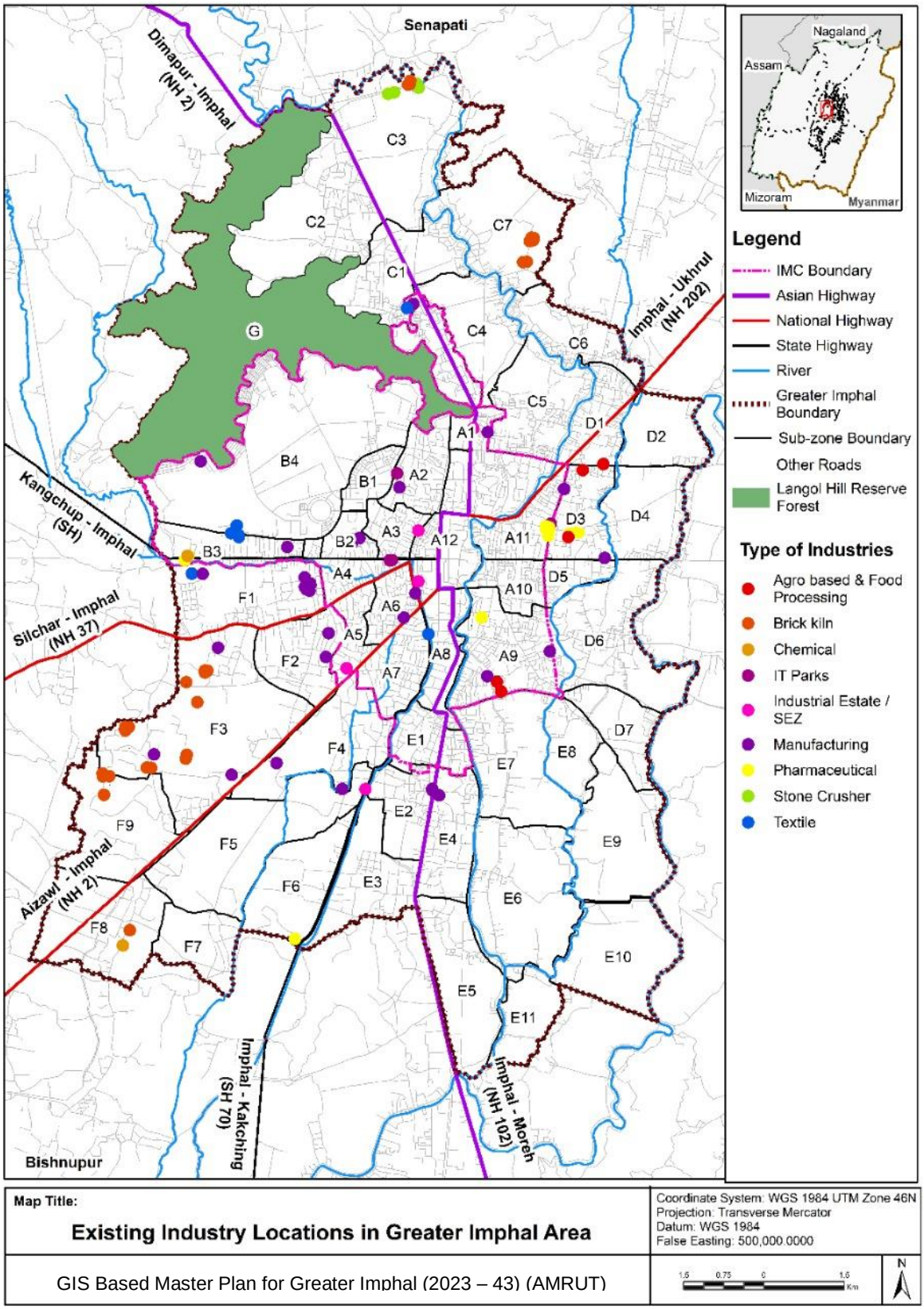
Table 7. 10: Industrial Clusters within Greater Imphal Planning area

Name of cluster	Principal Products Manufactured	No of functional units	Employment
Taobungkhok, Wangkhei area, Kongba & Changagei Handloom Cluster	Bed Cover, Khudei arangba ,Phaneck, Saree and causal, curtain, Quill etc.	22 units of handloom weaver cluster	9547 persons
Greater Imphal Jewellery Cluster, Porompat Imphal, East District,	Ear –ring, Ring, Necklace ,Bangle, Chain, Marriage set, Jewellery etc.	70 (Household units)	505 person
Food processing, Embroidery , Readymade Cluster	Pine apple squash, Jam Jelly, Veg Pickles etc.	37 units	150 nos.

Source: Data received from Directorate of Trade Commerce & Industries, MSME Section, 2022.

The Taobungkhok & Changagei Handloom Cluster is reported. But there are many handloom and handicrafts clusters In Imphal East and Imphal west districts, such as at Khurai, Sagolband, Bamon Kambu, Bamon Likai, Kongba, Bashikhong, Rungbi, Iroisemba in Imphal East and at Keishamthong, Langthabal Kunja, Liong, Keishampat Top Leirerk, Porompat, Konthoujam, and Nigonmthong in Imphal west districts as shown in above table 7.10.

Map 7. 4: Location of Industries in Greater Imphal



Source: Ground Truthing Survey, 2020

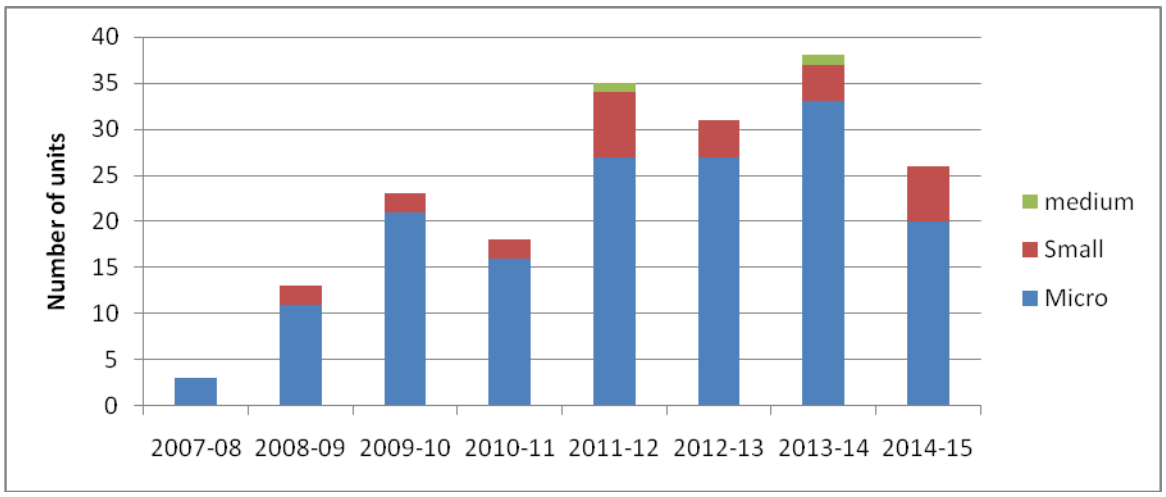
Major Exportable items in Imphal East: Handloom and textiles products

Major Exportable items in Imphal West: Handloom & Handicraft, Bamboo shoot fresh in brine/canned, dry fermentation bamboo shoot, Mushroom, canned and fermented dry fish, Ginger oil oleoresin and Ginger lime, Lemon Juice and concentrate passion fruit, Pineapple fruit pulp.

As there is no heavy industry as such, MSMEs are the only sector of industry found in the Greater Imphal area. The trend of MSME in terms of number of units, employment, investment and production has been shown in Figure 7.11 and 7.12.

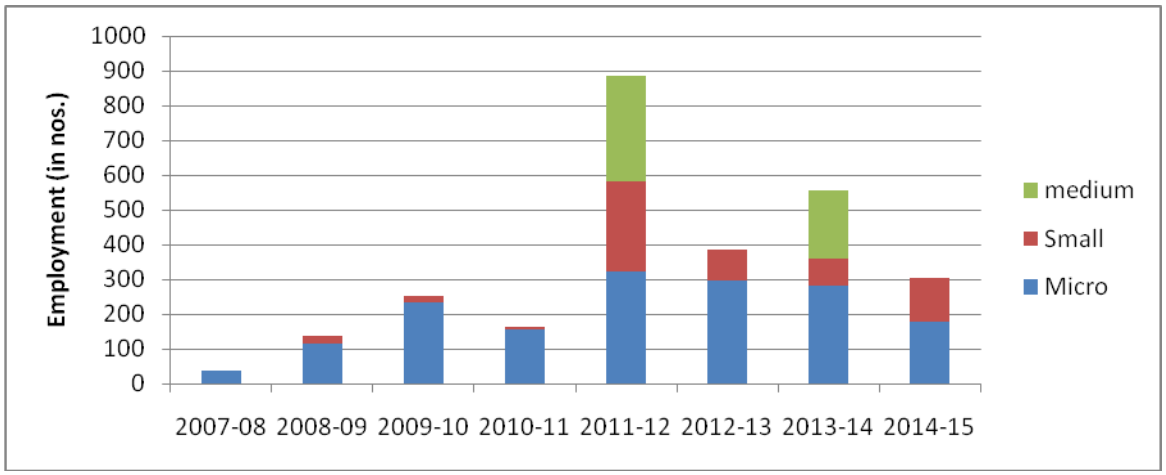
From the trend analysis, it is clear that the pattern of growth is not positive over the entire time period of 2007-08 to 2014-15; rather it went declining from the year 2011-12. The number of units though has not decreased at in a much higher rate, but a sharp decline has been observed in terms of investment after the year 2011-12 and its impact is visible in production and employment.

Figure 7. 11: Number of units of MSME in Imphal West District (2007-08 – 2014-15)



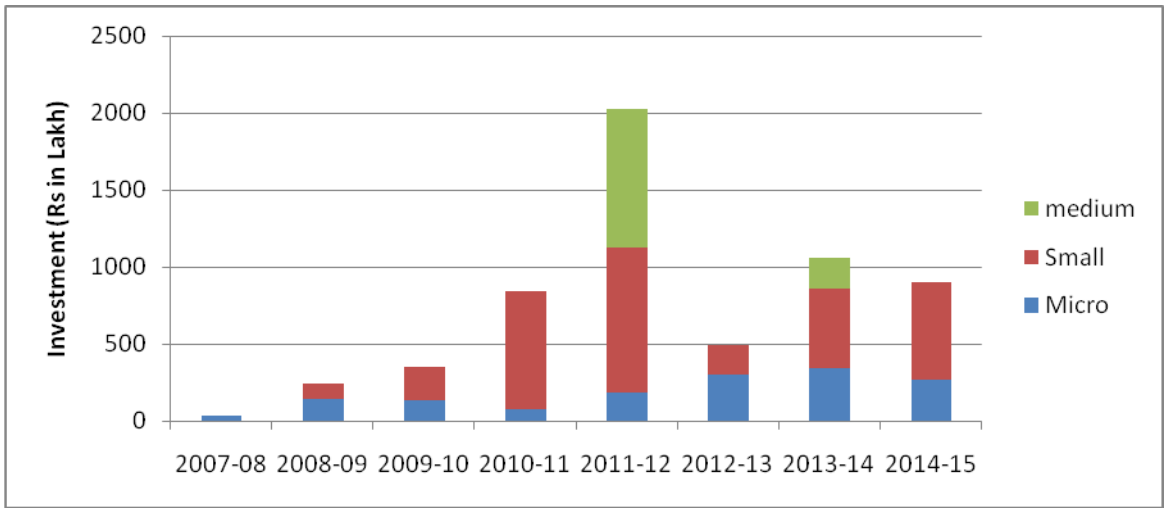
Source: District Statistical Handbook, Imphal West, 2018

Figure 7. 12: Employment in MSME in Imphal West District (2007-08 – 2014-15)



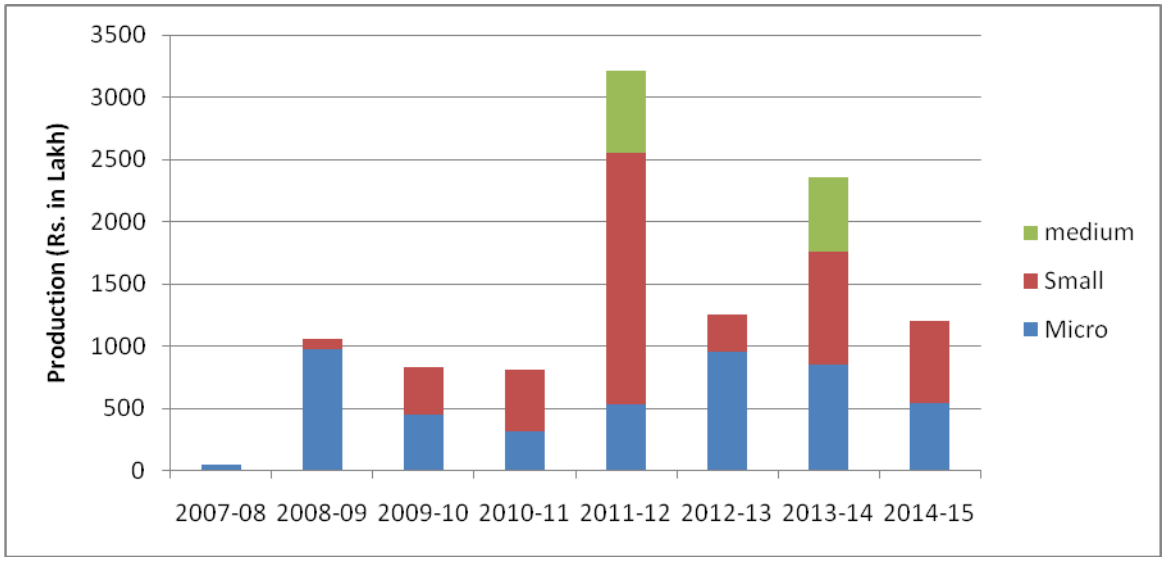
Source: District Statistical Handbook, Imphal West, 2018

Figure 7. 13: Investment in MSME in Imphal West District (2007-08 – 2014-15)



Source: District Statistical Handbook, Imphal West, 2018

Figure 7. 14: Production in MSME in Imphal West District (2007-08 – 2014-15)



Source: District Statistical Handbook, Imphal West, 2018

7.5.1.3 Industrial Areas/ Parks

The existing status of industrial areas in the districts of Imphal East and Imphal West is tabulated in Table 7.11.

Table 7. 11: Existing status of Industrial areas

District	Name of Industrial Area	Land acquired (Ha)	Land Developed (Ha)	No. of plots	No. of allotted plots	No. of vacant plots	No. of units in production
Imphal West	Industrial estate Takyelpat	3.31	3.31	58	58	Nil	39
Imphal East	Food Park, Nilakuthi	12.88	12.88	58	58	Nil	20
	Industrial growth centre at Napet palli	Land acquisition in progress					

Source: Data received from Directorate of Trade Commerce & Industries, MSME Section, 2022.

7.5.1.4 Handloom and Handicrafts

Handloom and handicraft sector is a major contributor in the economy of the state in general and Greater Imphal in particular. The following table 7.12 tabulates the data on handloom/handicraft establishment & person employed in Imphal east and Imphal west districts according to the 6th Economic Census.

Table 7. 12: Existing status of Handloom/ Handicraft establishment

District	Handloom/Handicraft Establishment		Persons Employed	
	Rural	**Urban**	**Rural**	**Urban**
Imphal East	5176	6848	6413	9470
Imphal West	9781	4280	11475	5531

Source: Statistical Handbook Of Manipur 2017

7.5.2 Government Initiatives

The Manipur Industrial Development Corporation Ltd. (MANIDCO) is responsible for industrial development in the state. Other important corporations include Manipur Handloom & Handicrafts Development Corporation Ltd. (MHHDCL), Manipur State Information Technology Society (MSITS), Manipur Electronic Development Corporation Ltd. (MANITRON) & Manipur Food Industries Corporation Ltd. (Ministry of Industries, 2018).

The major government projects related to industries have been discussed to understand the future industrial development within the region in the below Table 7.13.

Table 7. 13: Government initiatives, (Manipur Science & Technology Council, 2018)

Infrastructure	Description
Nilakuthi Food Park	The food park is constructed on a land area of about 30 acres at Nilakuthi. The Manipur Food Industries Corporation Ltd. is the implementing agency. The park will host 49 food processing units for which common facilities will be provided. The total project cost is estimated to be US$ 5.3 million (revised).
Integrated Infrastructural Development Project (IID)	The Government of India has sanctioned the IID project at Moreh. The State Government proposes to set up an Integrated Infrastructure Development Centre (IIDC) in and around Imphal, under the Centrally Sponsored Schemes.

Export Promotion Industrial Park (EPIP)	The Government of India has approved the EPIP project at Khunuta Chingjin in the Kakching sub-division of Thoubal district at a project cost of US$ 3.1 million.
Trade centers	The Government of India had sanctioned US$ 0.4 million for construction of 2 trade centres, 1 at Moreh & another at Imphal. Construction of both the trade centres is complete
Industrial growth center	The Government of India has approved 1 industrial growth centre project at Lamlai-Napet with a total project cost of US$ 6.2 million. The government has invited an expression of interest from the entrepreneurs/units/organisations that are planning/willing to set up industrial units within the proposed centre. As of June 2015, the growth centre is in the construction phase

7.5.2.1 Programs and Policies

Various programs, policies and schemes have been implemented by the government in order to promote industrial development. They are discussed in brief below.

1. The Industrial and Investment Policy of Manipur, 2017 (IIPM, 2013)

The State Government has introduced this Policy with various components being offered such as, incentives, improved infrastructure facilities, supply of quality power, and credit flow from Bank and Financial institutions, better market linkages and to boost investor confidence. The policy is to provide an investor friendly environment for rapid industrial development in Manipur, to generate more employment opportunities and to have significant increase in the State Domestic Product, to explore and enhance the resource base of the State. The incentives provided under the Industrial & Investment Policy of Manipur, 2017 can be accessed from Directorate of Trade, Commerce and Industries website www.dcimanipur.gov.in.

2. North East Industrial Development Scheme (NEIDS), 2017

On 21st March, 2018 Government of India has approved North East Industrial Development Scheme (NEIDS). The scheme covers manufacturing and service sector. It will give encouragement to MSME in manufacturing, services. Information technology is leveraged to process and approve proposals and release of payment.

Incentives available under NEIDS, 2017

i. Central Capital Investment Incentive for Access to Credit: Reimbursement of 30% of investment on plant and machinery.
ii. Central Interest Incentive: Interest incentive at 3% on working capital for first 5 years.
iii. Central Comprehensive Insurance Incentive: Reimbursement of 100% insurance premium on insurance of building and plant and machinery for first 5 years.

iv. GST Reimbursement: Reimbursement of central share of GST on finished products.
v. Income Tax Reimbursement: Reimbursement of central share of IT for first 5 years.
vi. Transport Subsidy: On finished goods transported through Inland waterways, railways, or scheduled airlines
vii. Employment Incentives: Additional 3.67% of employer's contribution to EPF

3. North East Industrial and Investment Promotion Policy, 2007

The Scheme covers eight North Eastern States including Sikkim. The scheme provides incentives to all new as well as existing units which go for industrial expansion located anywhere in this region and which commence commercial production within 10 years from the date of notification of NEIIPP, 2007 for a period of 10 years from the date of commercial production.

4. North Eastern Region Textiles Promotion Scheme

The North East Region Textile Promotion Scheme (NERTPS) is an umbrella scheme implemented in project mode to promote textiles industry in the North East Region by providing infrastructure, capacity building and marketing support to the industry. The scheme covers all sectors and sub-sectors of the value chain of textiles, handloom, handicrafts, sericulture, jute etc.

7.5.3 Issues Related to Industrial Growth

- High cost of transportation of raw materials and finished products.
- Lack of training.
- Lack of awareness of various development schemes.
- Insufficient marketing facility
- Non-availability of timely credit to MSMEs.
- Lack of capital of investors

7.5.4 Potential Locations for Industrial Growth

It was observed that the secondary sector is lagging in terms of workforce employment within the Greater Imphal planning area. So, to enhance the industrial sector, suitable locations were identified for future industries. This was done by conducting locational suitability analysis on Arc GIS using weighted overlay of 6 important parameters was conducted. These parameters are; (i) road accessibility, (ii) railway accessibility, (iii) airport accessibility, (iv) distance from electric substations, (v) proximity to built- up areas, (vi) landuse. These parameters are assigned weights depending upon how important a particular parameter is when locating industries as shown in Table 7.14, like waste land is given highest priority among landuse and areas such as forests, water bodies, built- up are restricted area.

Table 7. 14: Criteria for Suitability Analysis along with assigned weights

Criteria	Sub-Criteria	Level of Suitability	Scoring	Weightage
Road Accessibility	0-500	Very High	1	20%
	500-1000	High	2	
	1000-2000	Moderate	3	
	2000-4000	Less	4	
	>4000	Very Less	5	
Railway Accessibility	0-1000	Very High	1	20%
	1000-2000	High	2	
	2000-5000	Moderate	3	
	5000-10000	Less	4	
	>10000	Very Less	5	
Airport accessibility	0-1000	Very High	1	5%
	1000-2000	High	2	
	2000-5000	Moderate	3	
	5000-10000	Less	4	
	>10000	Very Less	5	
Distance from Electricity Sub Stations	0-500	Very High	1	10%
	500-2000	High	2	
	2000-4000	Moderate	3	
	4000-7000	Less	4	
	>7000	Very Less	5	
Proximity to built up areas	>2000	Very High	1	20%
	1000-2000	High	2	
	500-1000	Moderate	3	
	250-500	Less	4	
	<250	Very Less	5	
Landuse	Waste Land	Very High	1	25%

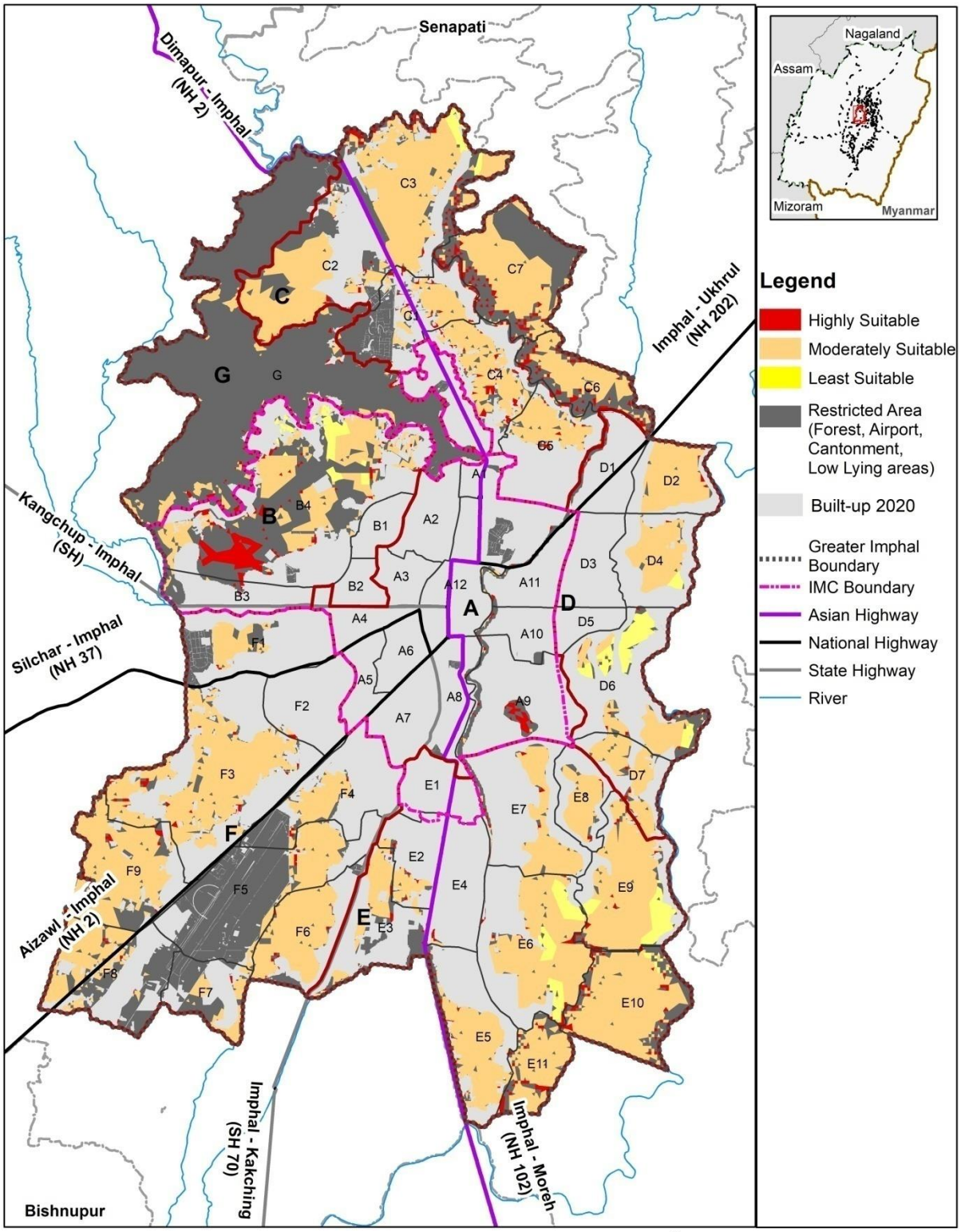
	Agriculture	Low	5	
	Forest	Restricted	0	
	Rivers	Restricted	0	
	Ponds	Restricted	0	
	Built up areas	Restricted	0	
TOTAL				100%

The final output of the weighted overlay is depicted in Map 7.5. To identify locations for industries, locational suitability output and the location of existing industries (Map 7.6) (including household industries) has been analysed to get the final location. The outcome of suitability analysis shows four categories of locational suitability for industries which include areas highly suitable for development, moderately suitable, least suitable and areas restricted for future industrial development. Area under each suitability category is tabulated in table 7.15.

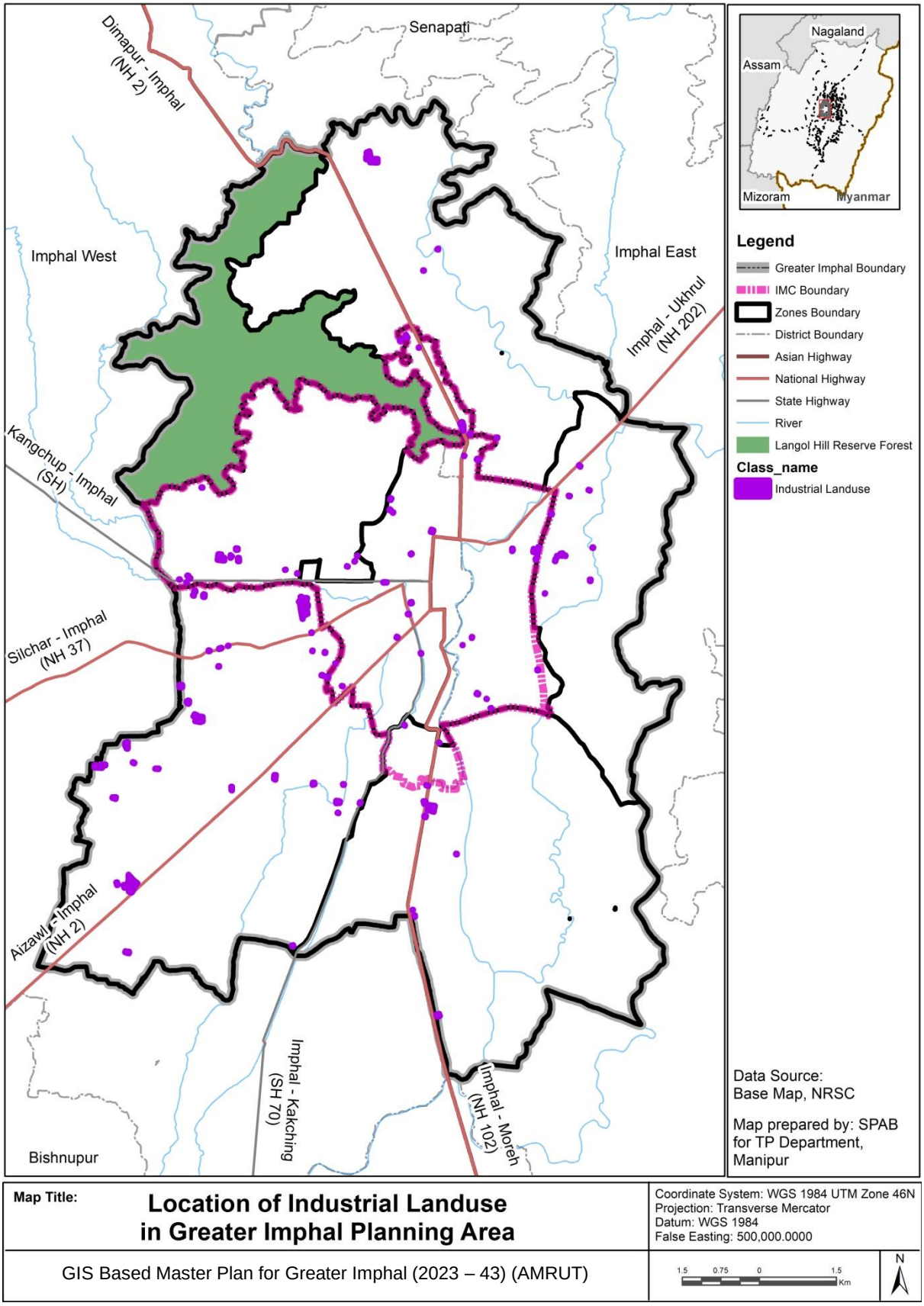
Table 7.15: Area under suitability categories

Category of Suitability	Area (Ha)
Highly Suitable	817.5
Moderately Suitable	5105
Least Suitable	275.8

Map 7. 5: Locational Suitability for industries in Greater Imphal Planning area



Map 7. 6: Location of Industrial landuse in Greater Imphal Planning Area



7.6 Observations and Way Forward

- The Greater Imphal planning area has a large section of workforce as marginal workers indicating the temporary nature of employment which needs to be relooked by increasing employment opportunities.
- Administrative services have the highest share because of Imphal being the administrative headquarters of Manipur.
- Tertiary sector should be further boosted in terms of tourism as the region has immense tourism opportunities which can be leveraged to strengthen the economy of Greater Imphal planning area.
- Secondary sector employs lowest share of people, this calls for a need to enhance the industrial development in the region. Sub zones A9 and B4 have highly suitable areas for industrial development as per locational suitability analysis. Moderatly suitable areas are also available in many locations including at F3 and F9 which lie in between the airport and upcoming railway station.
- The Greater Imphal region lacks employment diversity.

Section 8- Transportation

8.1 Introduction

Imphal is experiencing rapid growth in urban population and is one of the highly dense urban centres in the northeast region of India. The growth has been largely clustered in the central area of the Greater Imphal and ribbon development along the radial corridors has been observed.

The transportation sector includes physical infrastructure like road network, street furniture, intersections, etc. and services like public transport and parking. The network characteristics were collected through network inventory surveys, traffic volume studies and speed profiling surveys. The data collected for network characteristics include link length, lane configuration, average speed, traffic saturation etc. Public Transport (PT) Network data collected through primary surveys includes route mapping of PT and Intermediate Public Transport (IPT) services in the Greater Imphal region. The accessibility levels of PT and IPT in sub zones of greater Imphal have also been studied.

8.2 Regional Linkages

The Greater Imphal region is well connected with road and air services. The city is expected to be connected through railway network by 2022. The intra state passenger transport is mostly dependent upon private and unorganised operators. Majority of these services start from Ima market and operate with poor LOS. The inter-state travel is facilitated through airport at Imphal, rail heads in Dimapur and Guwahati and a bus terminal (ISBT) near high court. The transport infrastructure of Greater Imphal ihas shown in Map 8.1.

Road Transport: Road transport is the principal means of transportation for Imphal as there are no provisions for inland Waterways or Railways till 2021. The Imphal - Dimapur road (National Highway No. 2), Imphal - Aizawl Road or Airport Road (National Highway 2), Imphal – Ukhrul road (National Highway 202), Imphal – Moreh road (National Highway 102) and Imphal - Silchar road (National Highway 37) are the national highways, which connect Imphal, the capital of Manipur, with neighboring States of Assam, Nagaland, Mizoram and beyond. These roads have an average carriageway of 7 m to 9 m and are generally saturated for traffic operations. The Greater Imphal region is connected with international border of Myanmar by Asian Highway (NH 2 and NH 102) through the border town Moreh. The ISBT (Inter state Bus Terminal) for the Greater Imphal region is located at Khuman Lampak, Kabo Leika. Buses to Ukhrul, Senapati, Bishnupur, Moreh, Kohima, Dimapur, and Guwahati are operated from there.

Railways:

The state of Manipur is connected by Indian Railways upto the city of Jiribam on the western side of Imphal. The 111 km long connection between Jiribam and Imphal through Tupul is under construction and is expected to be functional from 2022. The link is proposed to be extended upto Moreh town in future.

The Imphal railway station located 12km from Imphal city centre is under construction. The new railway line connects Jiribram to Imphal. It includes 8 new stations, 62 km of tunnels, 11 major bridges, and 134 minor bridges, 4 roads over bridges and 12 roads under bridges. With the completion of the railway line, the state capital will find a place in country's railway map. The Jiribam–Imphal line will be extended to Moreh on the India–Myanmar border in future.

Airport:

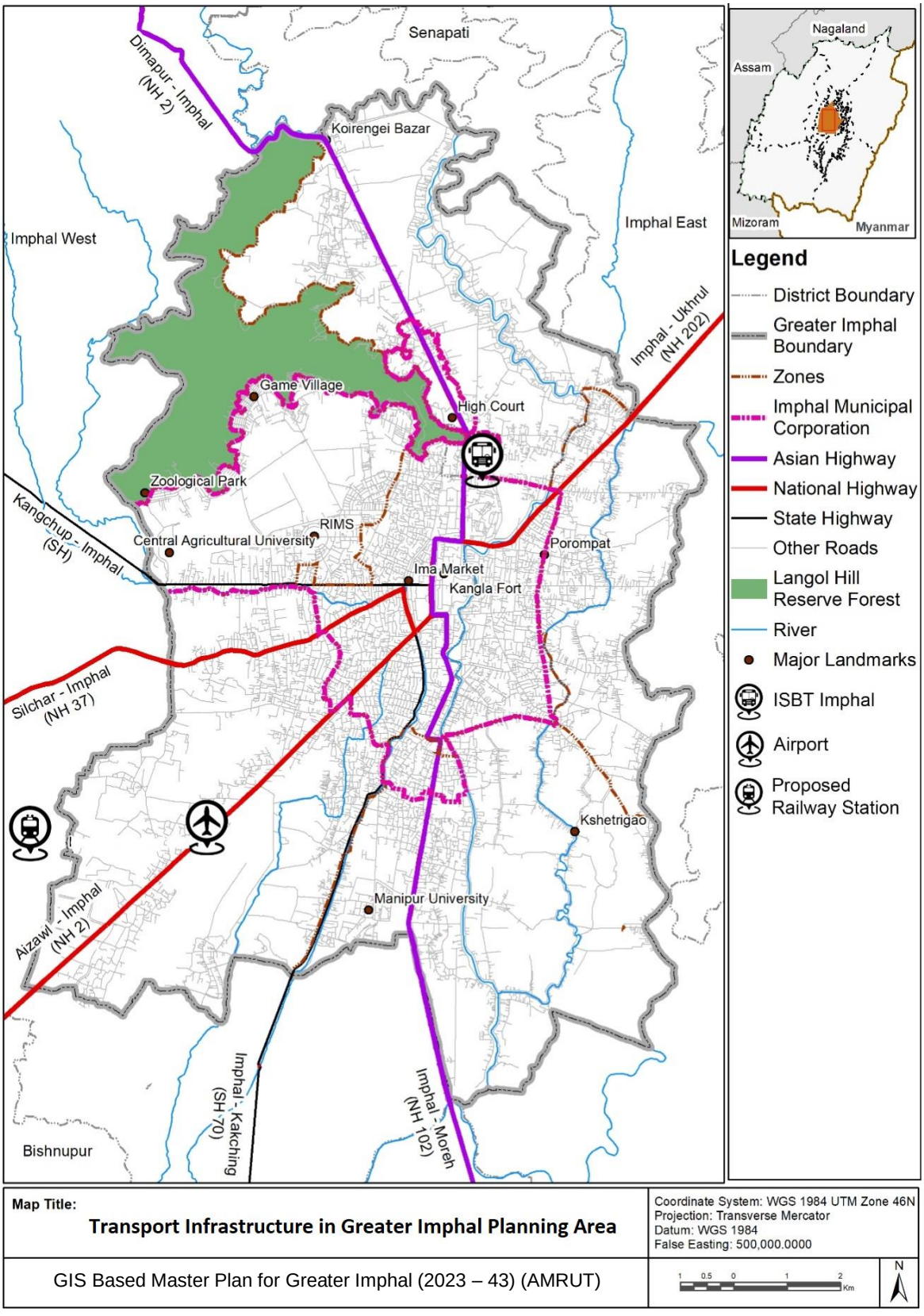
The Tulihal Airport or the Imphal Airport is also called Bir Tikendrajit International. It is the second international airport in north-east India and is also the third busiest. The existing airport, catering to domestic traffic is located towards the south-west direction of the Greater Imphal Planning Area. It is the only commercial airport in Manipur. AirAsia India, Air India, IndiGo and Alliance Air are airlines which operate here. Imphal is connected with many cities by direct commercial flights including Aizawl, Guwahati, Kolkata, Silchar, Bengaluru and New Delhi.

Inter-state Bus Terminal:

There is one Inter-state Terminal in Imphal city. Inter-state Bus terminal is known as ISBT and situated near Khumanlampak stadium. Bus services to Ukhrul, Senapati, Bishnupur, Moreh, Kohima, Dimapur, Guwahati and other destinations are operated from this terminal. Being located near core of the city, the buses navigate through the core city network causing more congestion on the already saturated network. The location of ISBT is very well suited for multi-modal integration terminal and is highly accessible by multiple modes of transportation.

Map 8.9 shows the location of the ISBT, airport and proposed railway station.

Map 8. 1: Transport infrastructure in the Greater Imphal Planning Area



8.3 Urban Road Network

The total road network coverage in the Greater Imphal planning area is approximately 1325.21 km, out of which 513.03 km of roads lie within Imphal Municipal Corporation (IMC) area. All the National Highways are connected to the city's radial road network system and due to absence of a bypass or ring road, the regional traffic passes through the city centre. Table 8.1 highlights the length of roads within planning area of Greater Imphal.

Table 8. 1: Road Network in Greater Imphal Planning Area

Road Network Classification	Length with in Greater Imphal Planning Area
National Highway	31.81 km (2.4%)
State Highway	21.50 km (1.6%)
Major District Road	88.04 km (6.6%)
Other District Roads	403.66 km (30.4%)
Village Roads	780.21 km (58.8%)
TOTAL	**1325.21 km**

Source: Based on data provided by NRSC

As per the land use proposal of Imphal Master Plan 2011, a total of 8.7% of Greater Imphal Planning area was proposed under transport landuse. Although the ground truthing survey in 2020 revealed that only 6.8 % of land is under transportation landuse. This low share of transport landuse results into many mobility challenges such as non-uniformity in road width, lack of infrastructure provision for shared mobility, parking and freight operations.

The urban roads are generally classified based upon functional hierarchy. The following six classes of urban roads and streets have been recommended (IRC 86-2018) -

- Urban Expressway: An urban expressway is an urban arterial highway for high-speed regional passenger and goods traffic from inter-city highways/ expressways to connect to other inter-city highways entering the city at specific locations. These are full access control roads and have divided carriageways for high-speed travel. Also provided with grade separators at intersections and service roads on both sides.

- Arterial Road: Road/street primarily for through traffic, usually on a continuous route. Arterial roads facilitate mobility across the city and connect to long distance destinations within/outside the city, while providing safe NMT facilities. On-street parking shall be

prohibited or restricted, except when there is space available for a service lane with parking. Safety for pedestrians will be ensured by providing segregated at-grade level.

- Sub Arterial Road: Road/street primarily for through traffic usually on a continuous route but offering somewhat lower level of traffic mobility than the arterial road. These are larger collector streets meant for movement through neighbourhoods and to connect to arterial roads.
- Collector Street: A Street for collecting and distributing traffic to/ from local streets and also for providing access to arterial/sub arterial roads. They shall be designed with dedicated footpaths. Various speed reduction measures are used to limit vehicle speeds to less than 40 kmph and ensure safety of NMT users.
- Local Street: Street primarily for access to residence, business or other abutting property. Its primary function is providing access to properties and not through movement of traffic. Local streets may not have a dedicated footpath and can be designed as shared space that gives priority to NMT modes. Various traffic calming elements are adopted to ensure that vehicle speeds are below 20 kmph, safe for intermingling of pedestrians, cyclists, and motor vehicles.
- NMT Streets and Greenways: All motorised traffic will be prohibited, using barriers and enforcement of regulations to prevent their entry and encroachment of NMT space. Such streets will be designed in compliance with universal accessibility guidelines, with bicycle parking, and access for emergency response vehicles

8.3.1 Hierarchy of Roads in Greater Imphal Planning Area

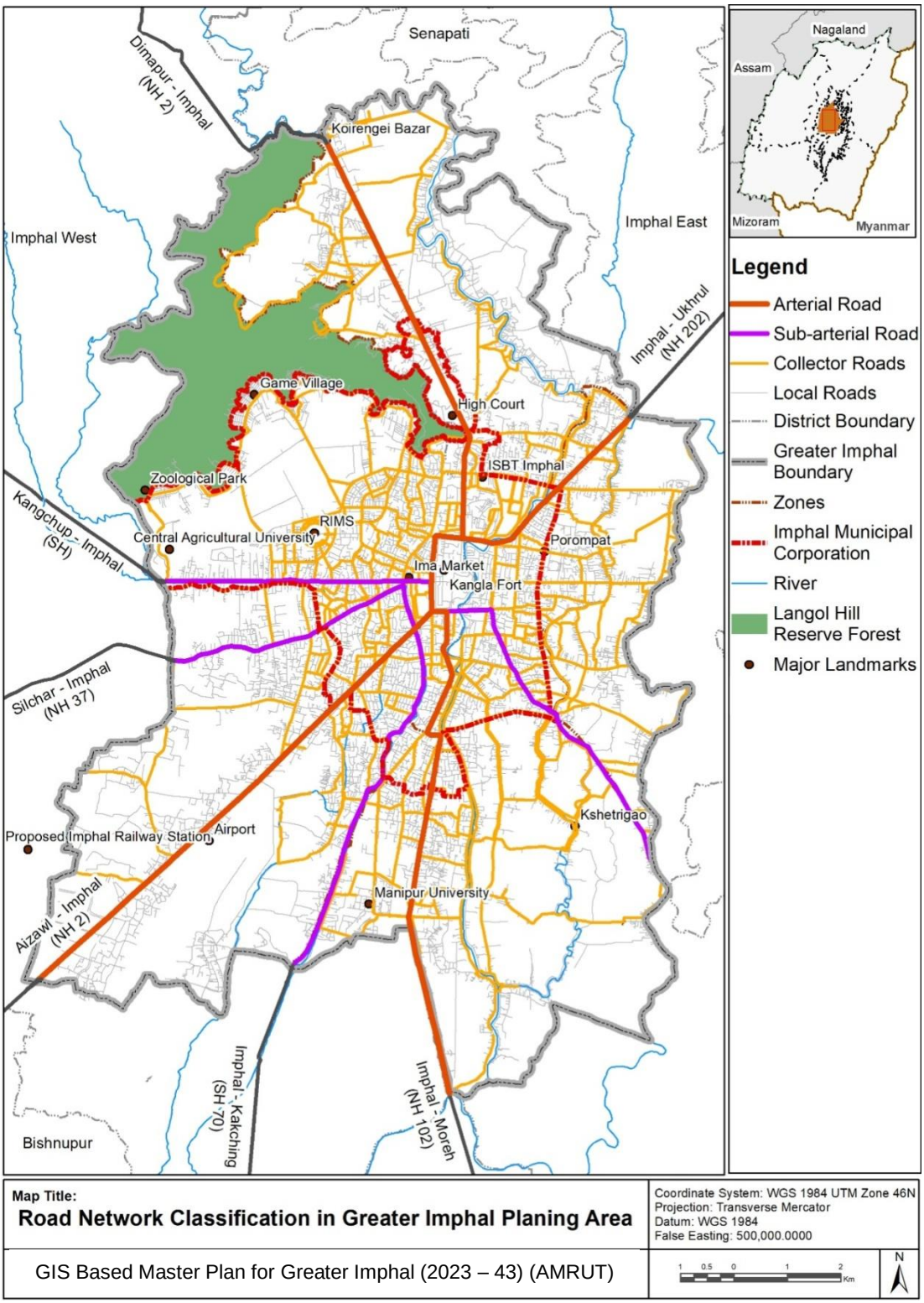
The corresponding classification of urban roads by the above-mentioned hierarchy reveals that around 2.6% of the road network gets classified as arterial roads. The hierarchy wise share of each road classification within planning area of Greater Imphal is presented in Table 8.2 and is illustrated in Map 8.2.

Table 8. 2: Road Network hierarchy in Greater Imphal Planning Area

Road Hierarchy	Lanes	Length (in km)	Percentage
Arterial Road	2,4,8	32.72	2.6%
Sub-arterial Road	2,4	25.1	1.9%
Collector Road	1,2,4	326.6	24.6%
Local Road	1	940.7	70.9%
Total		1325.21	100%

Source: Based on Ground Truthing Survey

Map 8. 2: Road Network Classification in Greater Imphal Planning Area



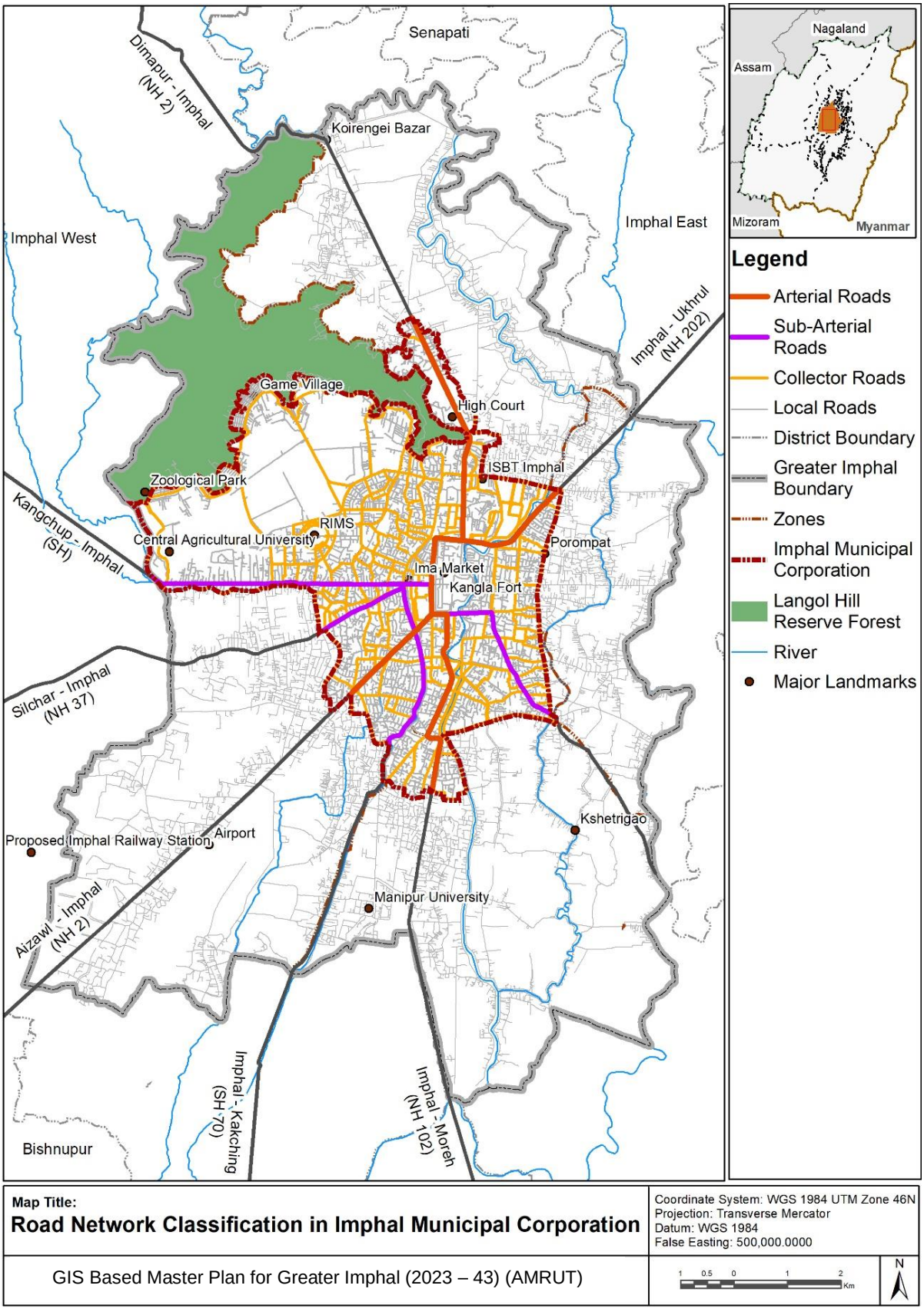
8.3.2 Hierarchy of Roads in Imphal Municipal Corporation

The core of the planning area i.e., the Imphal Municipal Corporation area is very well connected through a combination of arterial, sub-arterial and collector roads. In IMC, about 2.9% of roads get classified as arterial roads. It is to be noted that many of these roads form part of NH/SH network. Another 2.6 % of the road network functions as sub-arterial roads whereas the collector and local roads account for the rest 93%. The hierarchy wise share of each road classification within Municipal Corporation of Imphal is presented in Table 8.3 and is illustrated in Map 8.3.

Table 8. 3: Road Network in Imphal Municipal Corporation

S. No.	Road Type	Length (in km)	Lanes	Percentage of Roads
1.	Arterial road	14.68	2, 4, 8	2.9
2.	Sub- Arterial Road	13.43	2, 4	2.6
3.	Collector	158.35	2, 4	30.9
4.	Local roads	326.57	-	63.6
5.	Total	513.03		100

Map 8. 3: Road Network Classification in Imphal Municipal Corporation



Map Title: **Road Network Classification in Imphal Municipal Corporation**	Coordinate System: WGS 1984 UTM Zone 46N Projection: Transverse Mercator Datum: WGS 1984 False Easting: 500,000.0000
GIS Based Master Plan for Greater Imphal (2023 – 43) (AMRUT)	1 0.5 0 1 2 Km N

8.3.3 Elements of Right of Way (R.O.W.) and Cross Sections

The R.O.W. cross-sections are important to identify the challenges and potential solutions for improved mobility. The carriageway and other elements of the Right of Way (R.O.W.) need to be planned for considering the variations in road hierarchy, lane configuration, surrounding land use, parking demand and traffic saturation. Classified by hierarchy, some of the critical cross-sections with the indicative land use along them in the Greater Imphal Planning area are shown in figures 8.1, 8.2, 8.3 with their respective locations in the map 8.4.

Map 8. 4: Cross Section Locations on Major Corridors in Grater Imphal Planning Area

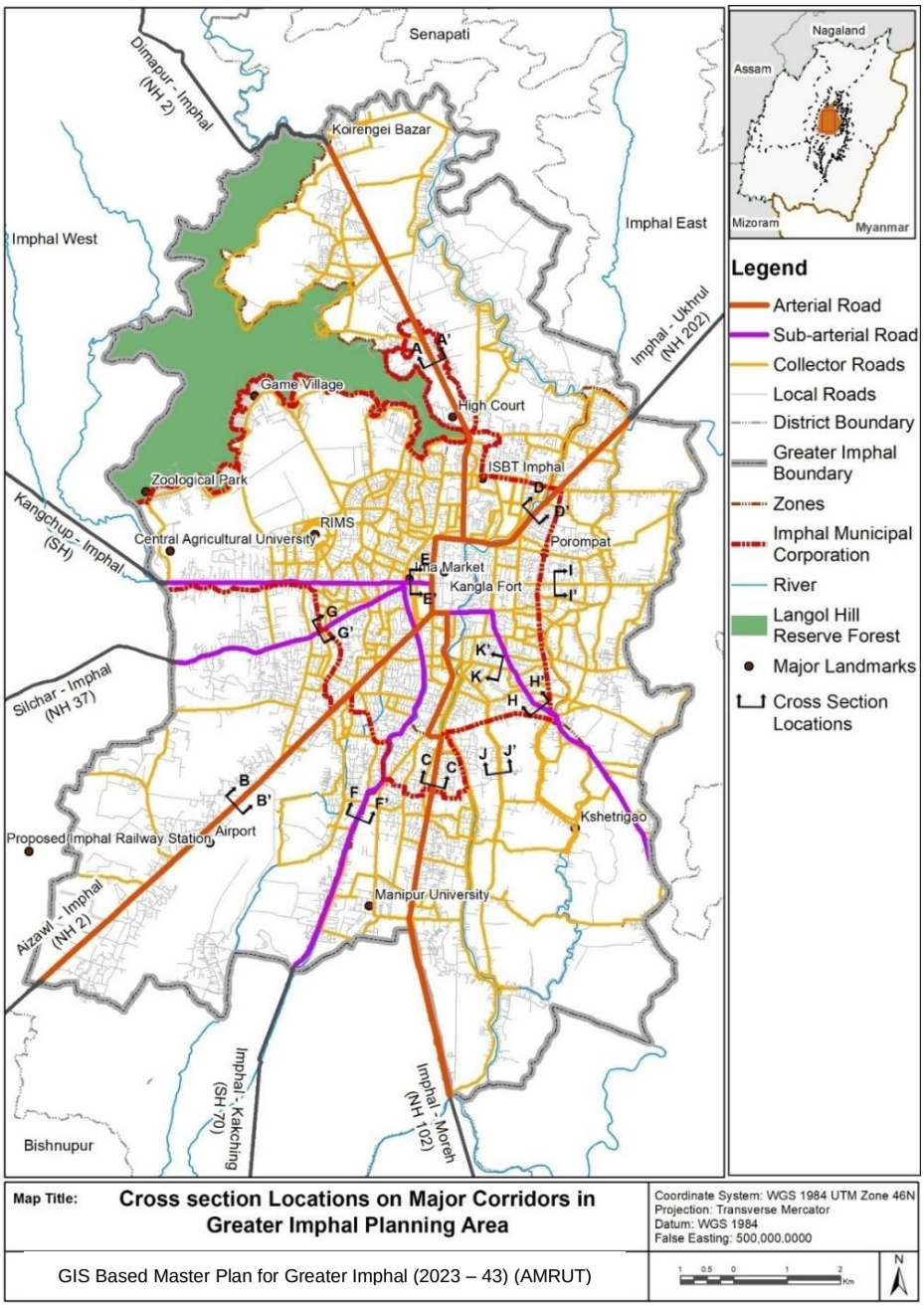
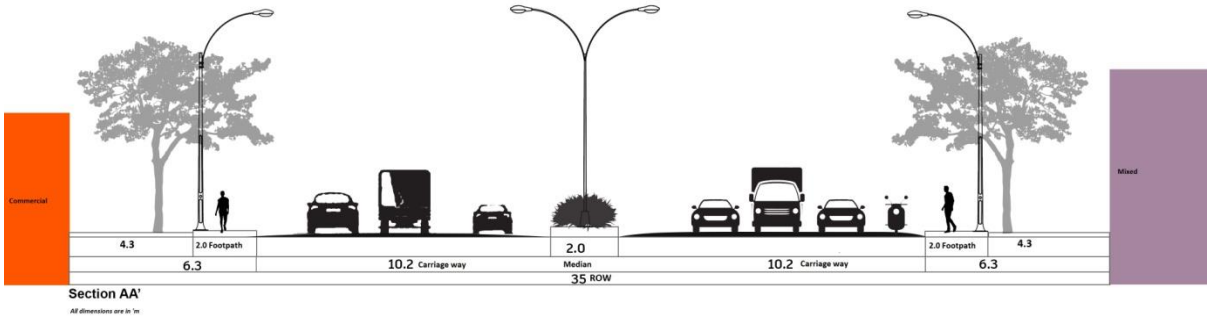
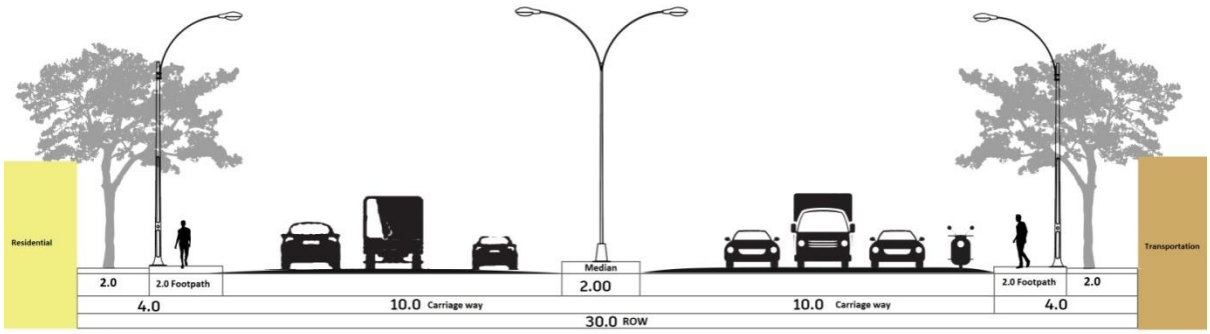


Figure 8. 1: Selected arterial road cross sections in Greater Imphal Planning Area



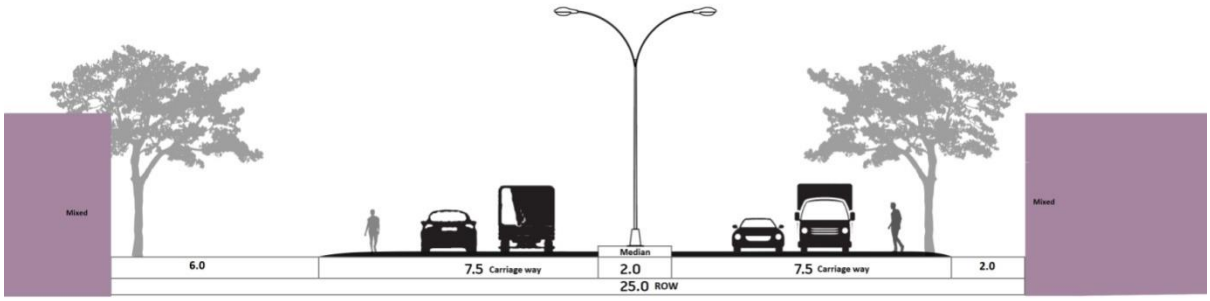
Section AA'

All dimensions are in 'm



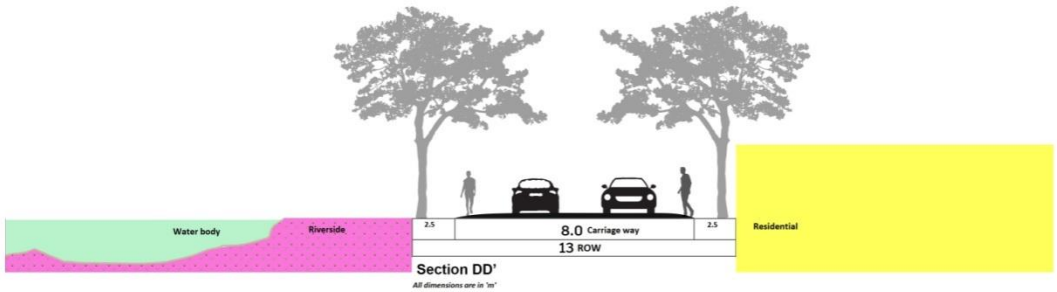
Section BB'

All dimensions in 'm'



Section CC'

All dimensions are in 'm'



Section DD'

All dimensions are in 'm'

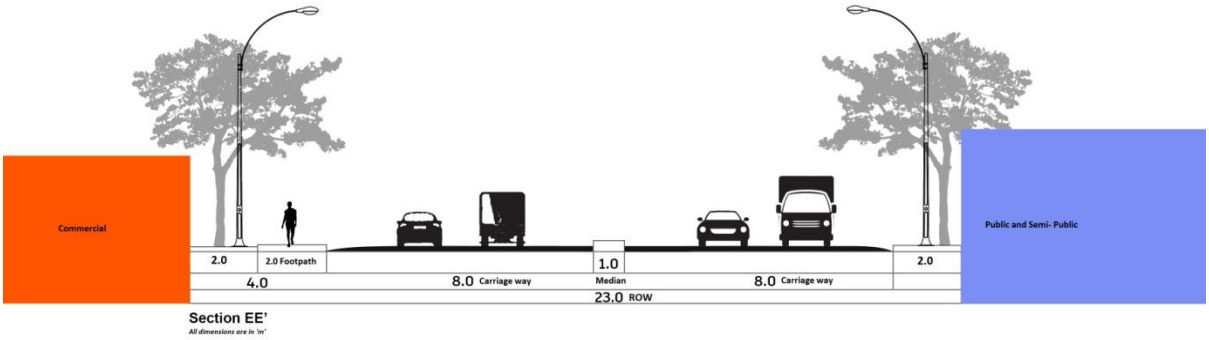
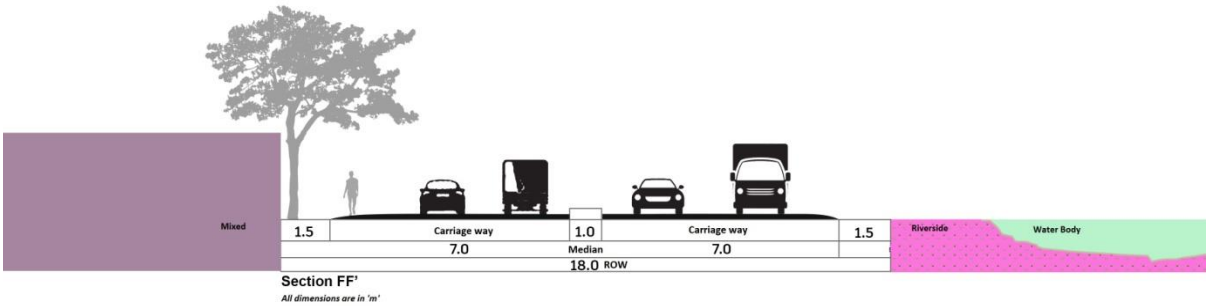
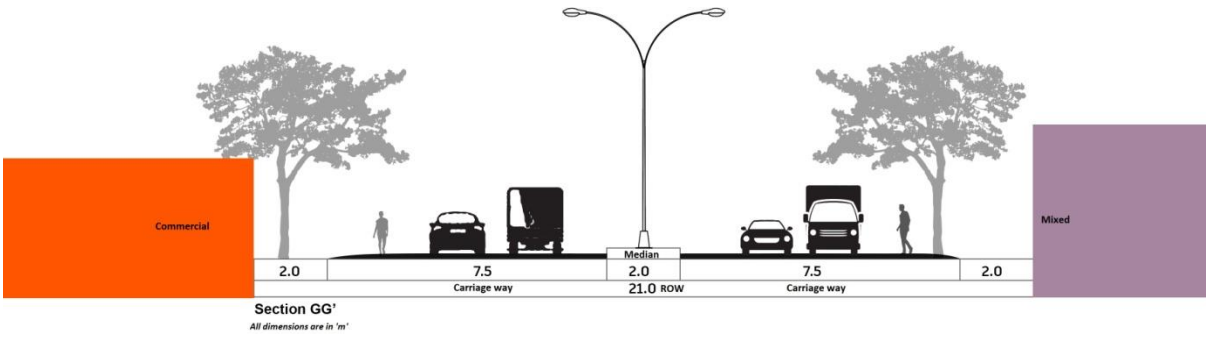


Figure 8. 2: Selected sub-arterial road cross sections in Greater Imphal Planning Area





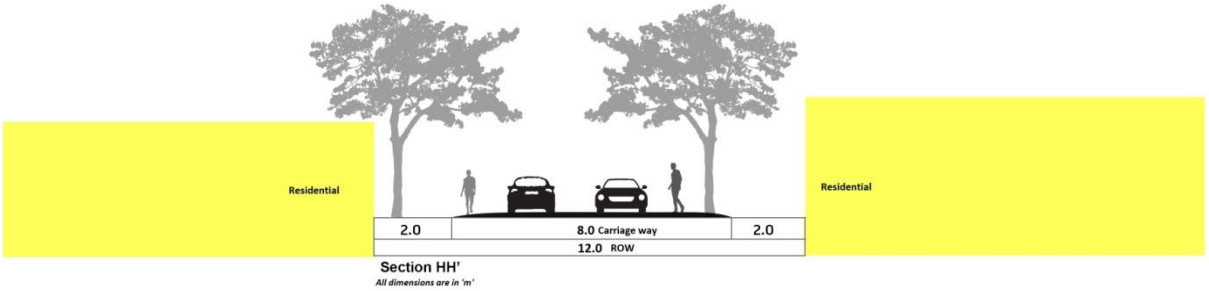
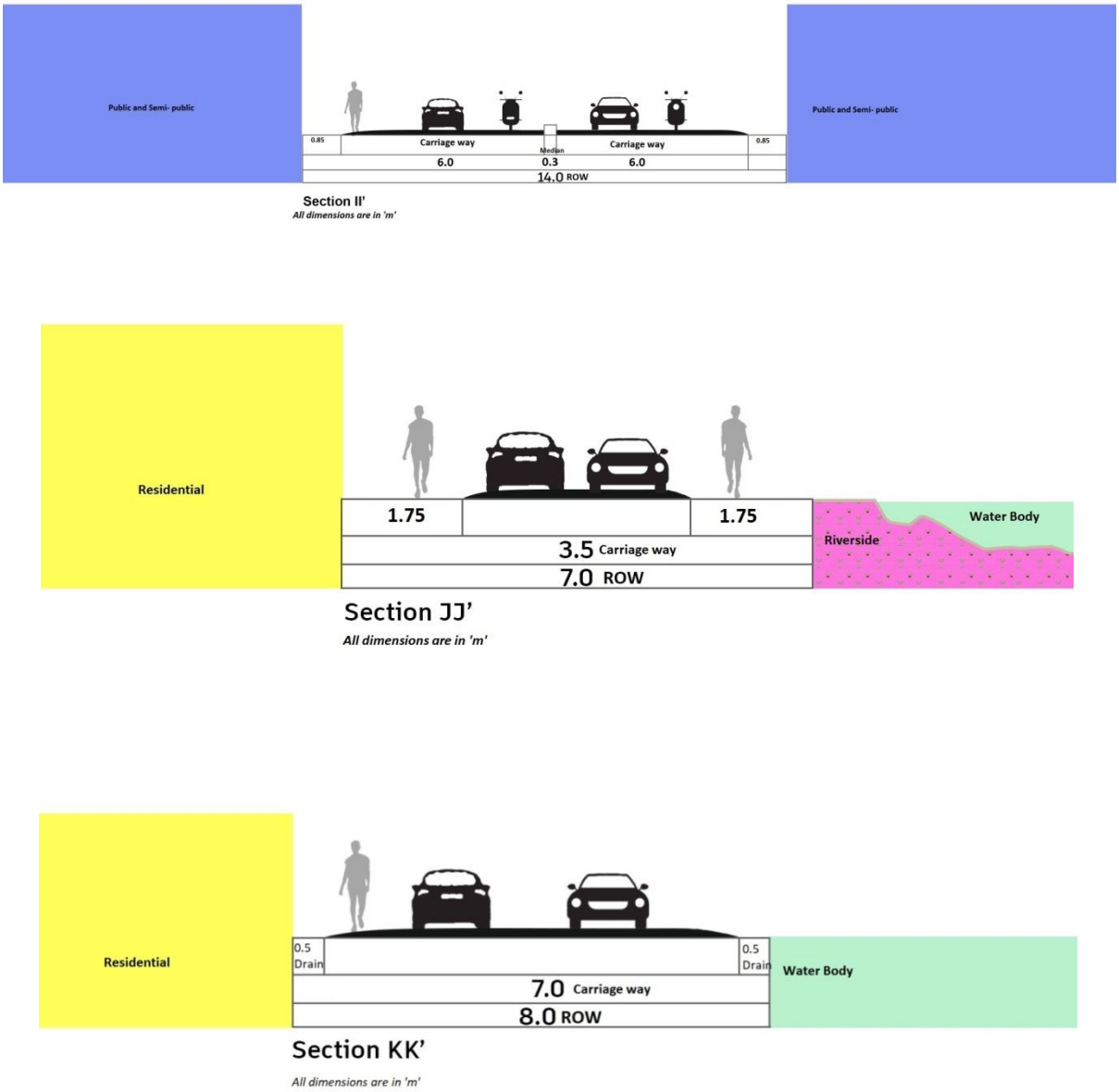


Figure 8. 3: Selected collector road cross sections in Greater Imphal Planning Area



Source : Based on Primary Data Collection

The road corridors are observed to have suitable R.O.W. availability generally although the LOS and capacity gets determined by the occurrence of bottleneck sections. Such locations shall be identified and provisions for uniform and continuous corridor shall be ensured. Major challenges such as non uniformity in ROW (35m to 13m) across road hierarchy, lack of equitable road space distribution and non continuity and uniformity in provisions for NMT, shared mobility, vehicles and other ROW users are observed along the various corridors.

8.4 Zones and Sub-zones Connectivity

The Greater Imphal planning area is divided into 7 spatial zones. The connectivity to these 7 zones is evaluated through access through highest hierarchy corridor. Among all the seven zones, only zone G is not connected by either of arterial or sub-arterial roads as it is a reserve forest and a host to diverse and rich natural environment.

It is also observed that although Zone B is located towards western side of the Greater Imphal planning area, it is only connected by sub arterial hierarchy of road, whereas this is the zone where government housing is coming up. Improved accessibility without compromising upon the environmental indicators may help in improving tourism, horticulture and agrarian economy. Following tables 8.4, 8.5 document hierarchy wise connectivity of corridors in zones and sub zones.

Table 8. 4: Zones and their connecting linkages in Greater Imphal Planning Area

Zones	Connecting Linkage Road Classification
Zone A	Arterial
Zone B	Sub-Arterial
Zone C	Arterial
Zone D	Arterial
Zone E	Arterial
Zone F	Arterial
Zone G	Collector

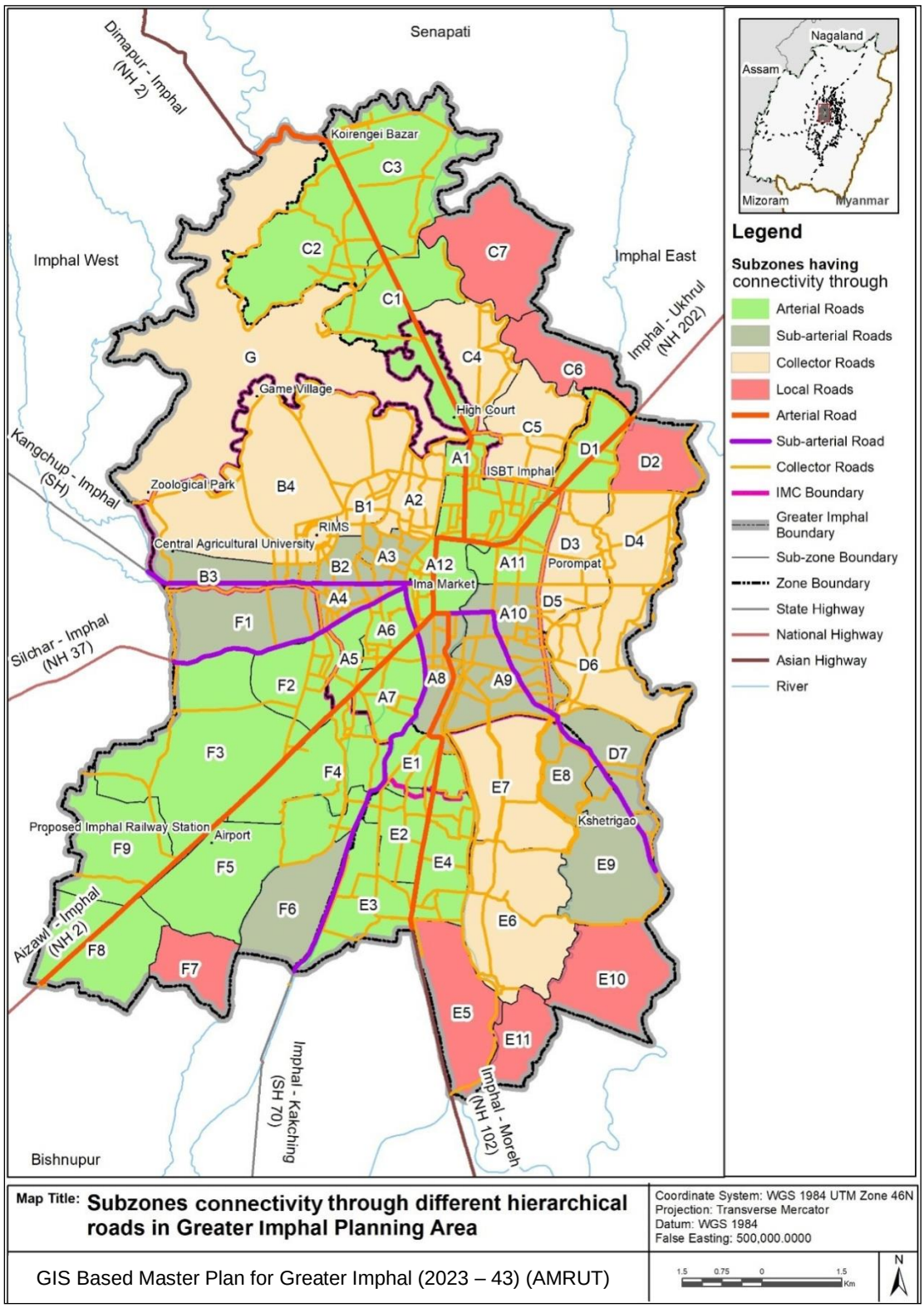
Source : Based on Primary Data Collection

Sub zones B3 and F1 are upcoming pockets for industrial and freight operations. Improved access through corridors leading to Kangchup and Silchar may improve the mobility of the region.

Table 8. 5: Subzone and their connecting linkages

Connecting Linkage Road Classification	Sub-zones
Arterial	A1, A5, A6, A7, A8, A11, A12, C1, C2, C3, D1, E1, E2, E3, E4, F2, F3, F4, F5, F8 and F9
Sub Arterial	A3, A4, A10, B2, B3, D7, E8, E9, F1 and F6
Collector	A2, B1, B4, C4, C5, D3, D4, D5, D6, E6, E7 and G
Local roads	C6, C7, D2, E5, E10, E11 and F7

Map 8. 5: Sub zone connectivity through different road hierarchy in the Greater Imphal planning area.



Source: Based on Primary Data Collection

8.5 Road Infrastructure

8.5.1 Existing Road Condition

PWD and NHIDCL are the nodal agencies responsible for providing necessary road infrastructure in their respective jurisdiction. The provisions outside the Imphal Municipal Corporation boundary are coming up at a slow pace, due to which most of the roads are still kuccha except for the highways. As per the ground truthing survey conducted in 2020 it was observed that in Greater Imphal planning area 60 percent of roads get classified as all-weather roads whereas remaining 40 percent road network is still unpaved. Following table 8.6 and Map 8.6 illustrates upon the distribution of all-weather roads and gravel & unpaved roads in the Greater Imphal planning area.

Table 8. 6: Existing Road Condition in Greater Imphal Planning Area

Road Condition	Length (in km)	Percentage
All Weather Roads (Bituminous and Concrete)	794.96 km	60%
Gravel and Unpaved Roads	530.25 km	40%
Total	**1325.21 km**	**100%**

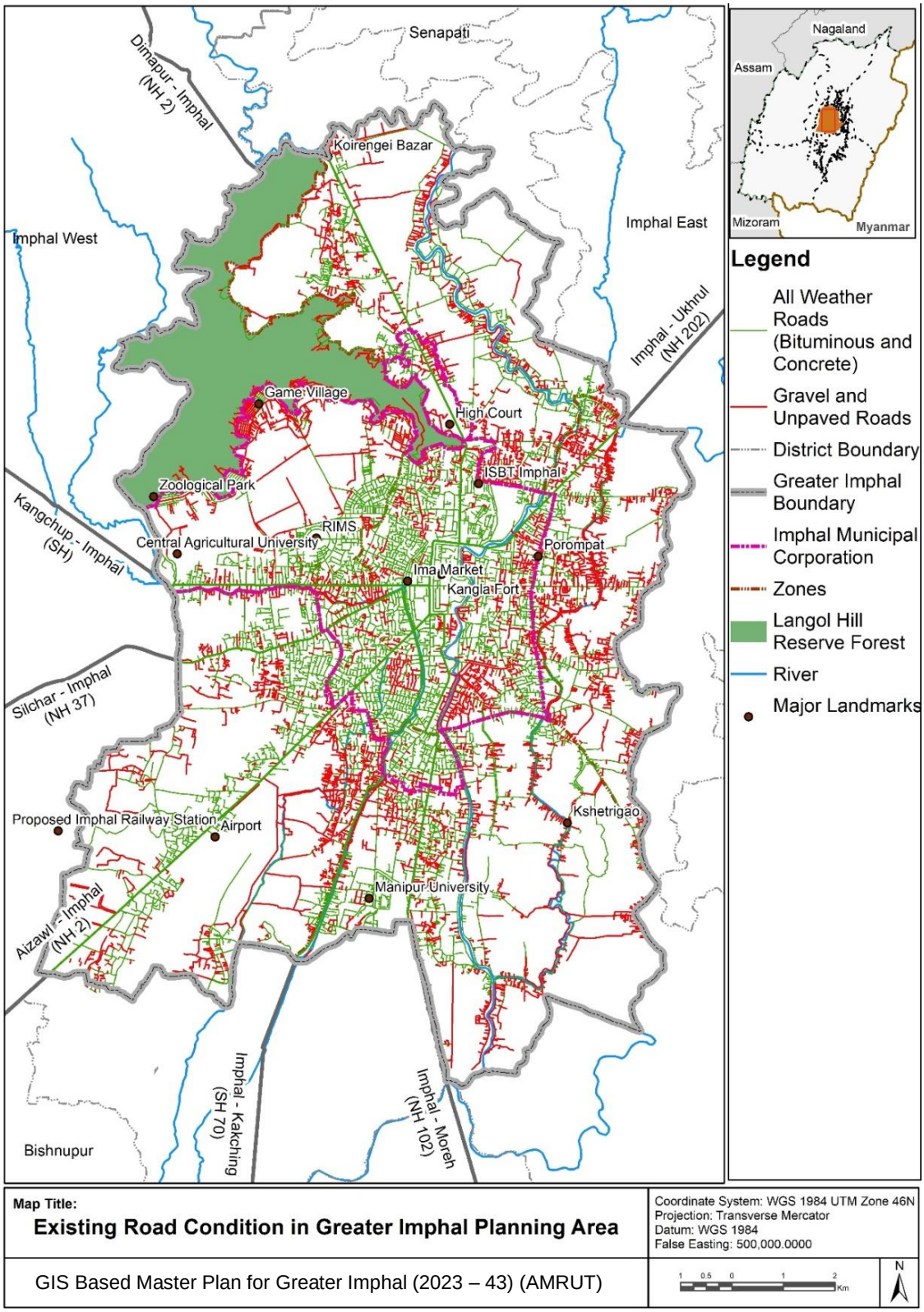
Source : Based on Primary Data Collection

The zone wise classification of roads as depicted in table 8.7 and Map 8.6 shows that Zone C and D are observed to have major share of gravel and unpaved roads. Based upon resources available, phase wise approach may be adopted for developing all corridors as all weather roads.

Table 8. 7: Zone wise classification of roads

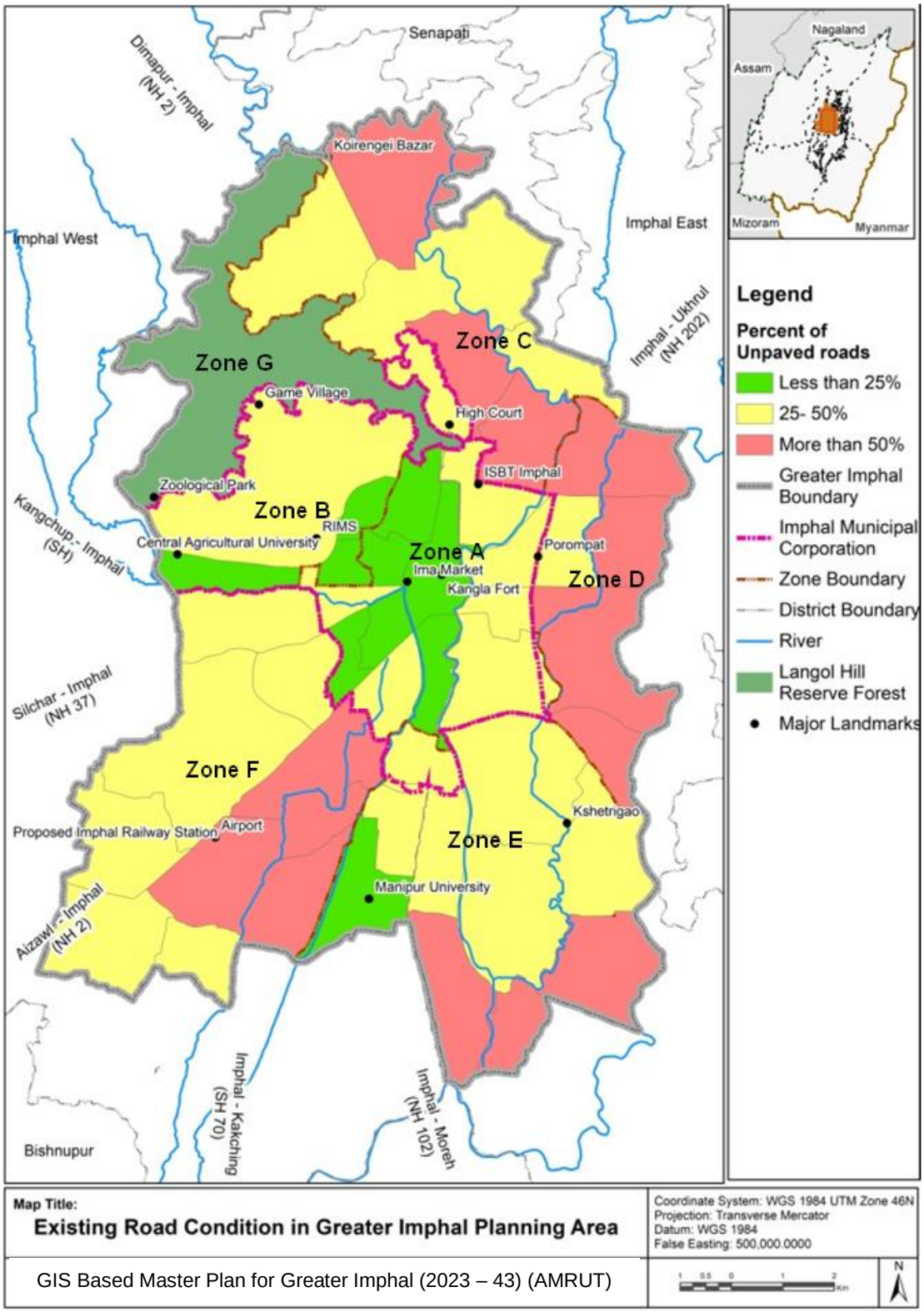
Zone	Percentage (%) of total Road Length		Total Road length (km)
	All Weather	Unpaved	
A	70.88	29.12	346.18
B	62.02	37.98	126.05
C	53.49	46.51	179.39
D	46.32	53.68	153.12
E	61.88	38.12	244.22
F	58.51	41.49	247.84
G	29.41	70.59	28.12

Map 8. 6: Road network classified by condition in Greater Imphal Planning Area



Source : Based on Primary Data Collection

Map 8. 7: Sub zone wise classification of roads within Greater Imphal Planning area



Source : Based on Primary Data Collection

Note: The data used to prepare Map 8.7 is attached in annexure 8.1.

8.5.2 Bridges and Flyovers

Bridges and grade separators are critical in ensuring continuous and uniform mobility along the corridors. The hill topography and frequent occurrence of cross drains has resulted into multiple bridges in the Greater Imphal planning area.

Bridges - At present there are 77 major and minor bridges. There are 68 bridges across the rivers at various locations within the Greater Imphal planning area. The other nine are major roadway bridges over the major rivers passing through Greater Imphal Area.

Flyover - There is only one existing flyover in the city near Ima market towards Kangchup Imphal state highway. It is evident that the congestion level continues to increase at both of the approaches of the flyover.

The following tables 8.8, 8.9 and Map 8.8 document the bridges and flyovers in the Greater Imphal planning area.

Table 8. 8: Existing Bridges in Greater Imphal Planning Area

Bridges	Number
Total Bridge	77

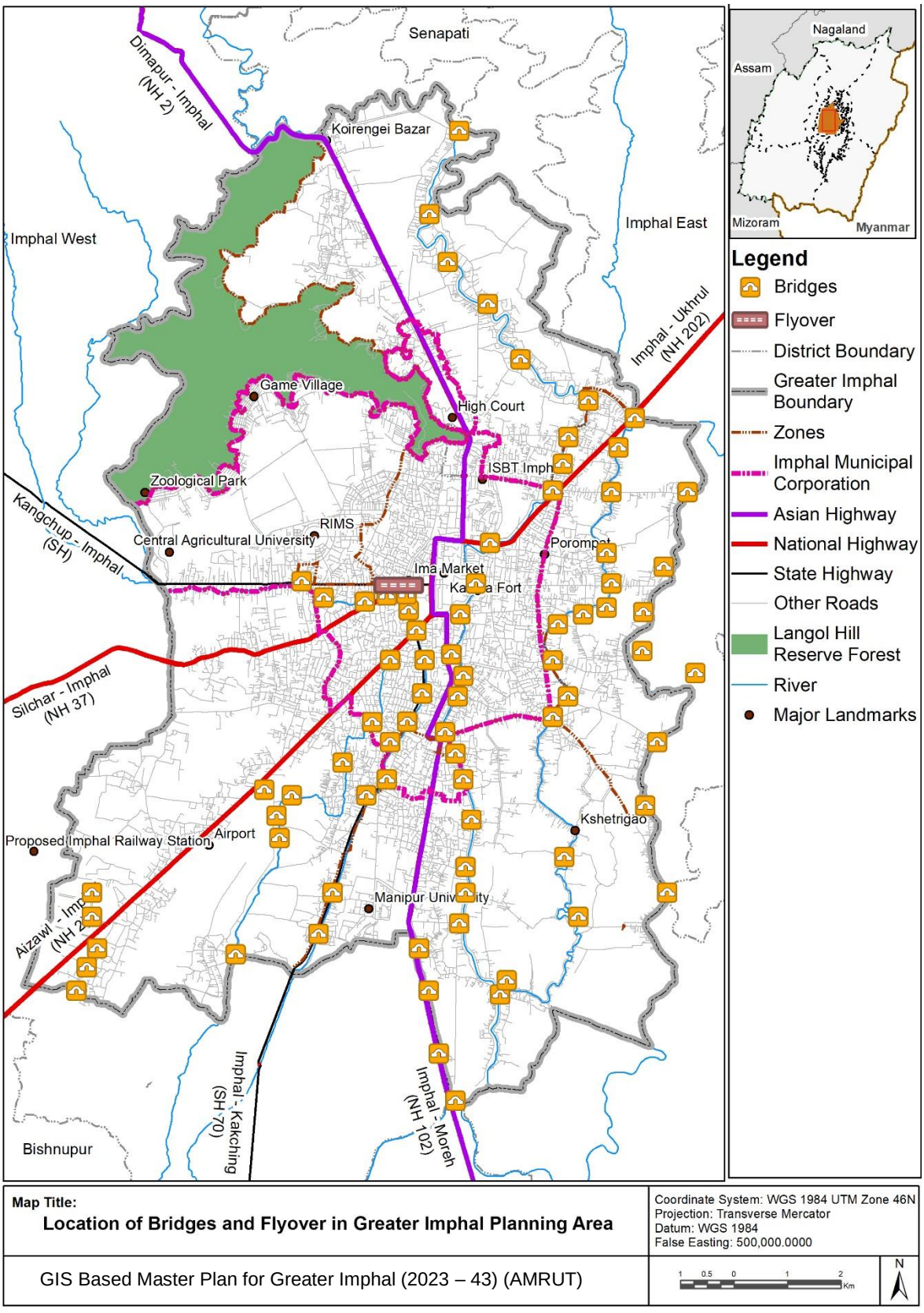
Source : Based on Primary Data Collection

Table 8. 9: Existing Flyover in Greater Imphal Planning Area

Flyover	Number	Location	Length (in km)
Flyover	1	Ema Market	0.65

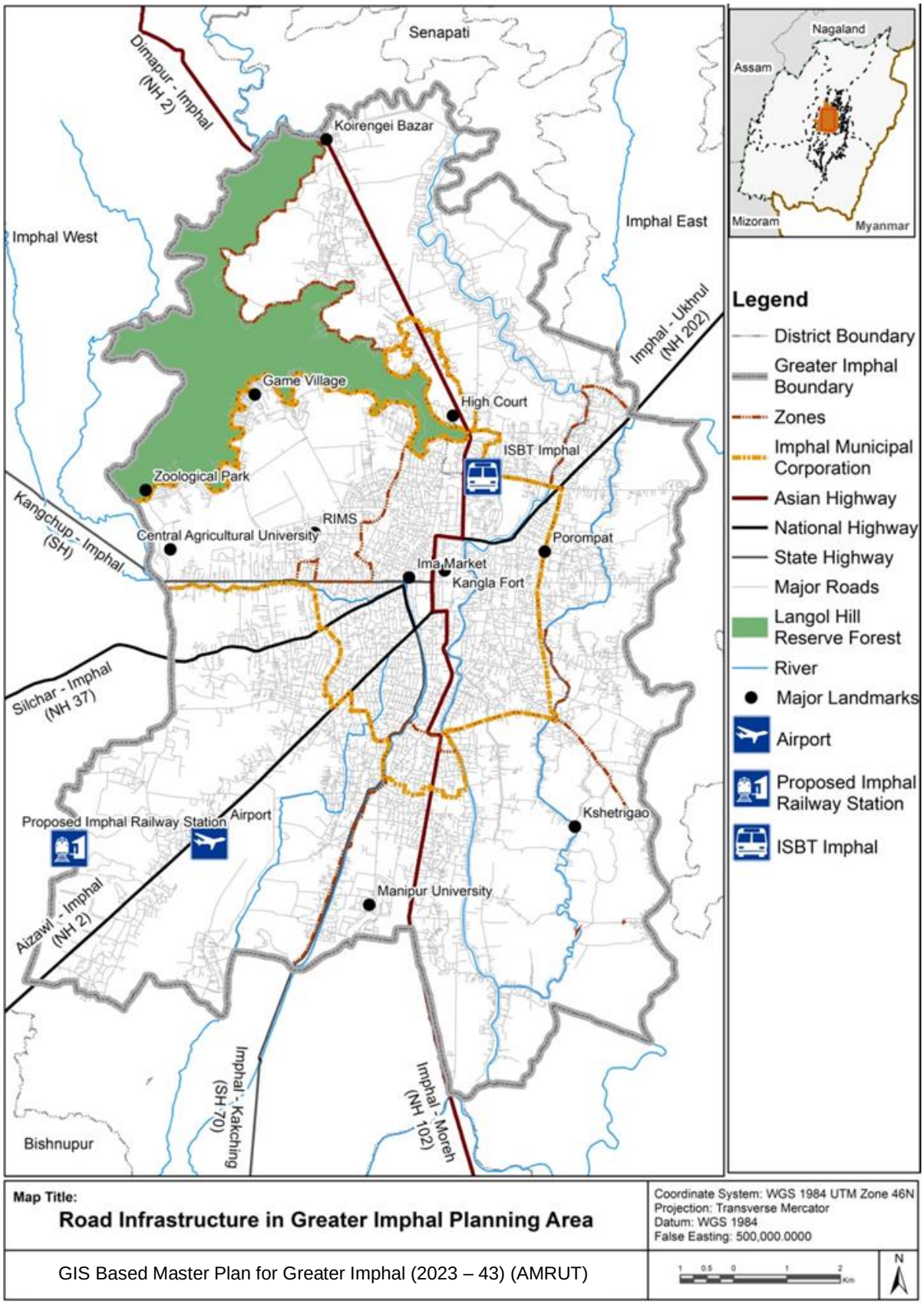
Source : Based on Primary Data Collection

Map 8. 8: Existing Bridges and Flyover in Greater Imphal Planning Area



Source : Based on Primary Data Collection

Map 8. 9: Transport hubs within Greater Imphal Planning Area



8.5.3 Bye Pass/ Ring Road Corridors

The radial road network converging in and around city core (Ima market area) is largely responsible for regional traffic entering and thereafter congesting the already saturated urban road network. To counter this challenge, multiple agencies and documents have suggested a ring road alignment around the Imphal city. The spatial alignment and details of these corridors are detailed out in the following table 8.10 and Map 8.10.

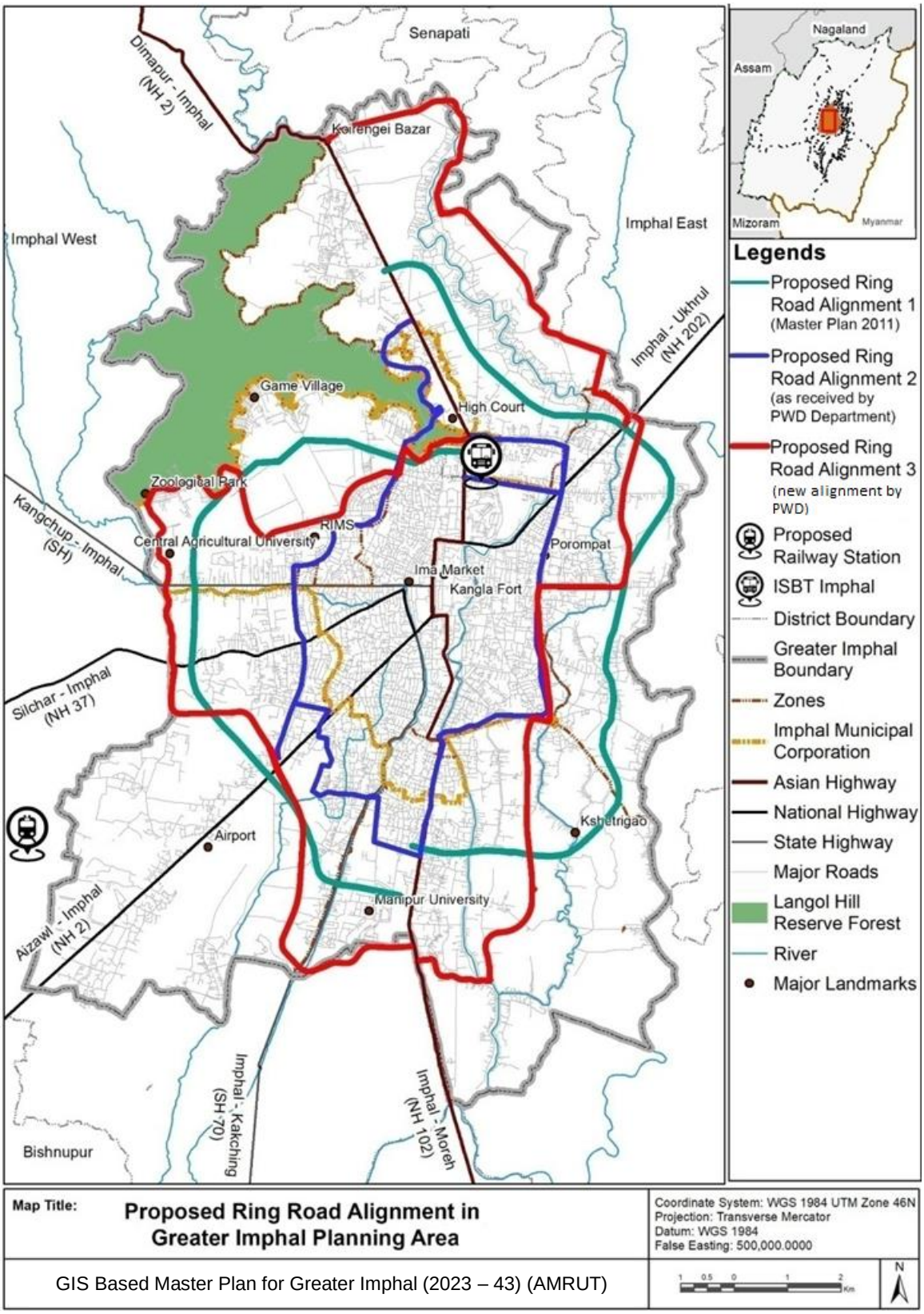
Table 8. 10: Ring Road proposals prepared by different organisations

Road Name	Agency/ Document	Length (in km)	Remarks
Proposed Ring Road Alignment1	Master Plan 2011	32.71	• Primarily circumventing the municipal boundary • Almost parallel alignment along the western bank of Imphal river in the northern part of the city • Around 5 km of alignment is along the already congested NH02 (ISBT to Koirengei)
Proposed Ring Road Alignment 2	PWD Department	30.02	• Primarily along the municipal boundary • The alignment bye-passes the high court and cantonment area (along NH 02)
Proposed Ring Road Alignment 3	PWD Department	59.48	• Primarily circumventing the municipal boundary • Almost parallel alignment along the eastern bank of Imphal river in the northern part of the city • Around 5 km of alignment is along the already congested NH02 (ISBT to Mantripukhri) • May improve accessibility to trans – river region (with high ecological and tourism potential)

Source: Master Plan 2011, PWD Department Manipur and Town Planning Department Manipur

Note: The area required for the laying of ring road will depends upon the land availability. Only the length is mentioned in the above table not the total area which will be acquired for the construction of ring road.

Map 8. 10: Proposed Ring Road Alignments within Greater Imphal planning area



8.6 Traffic Volume

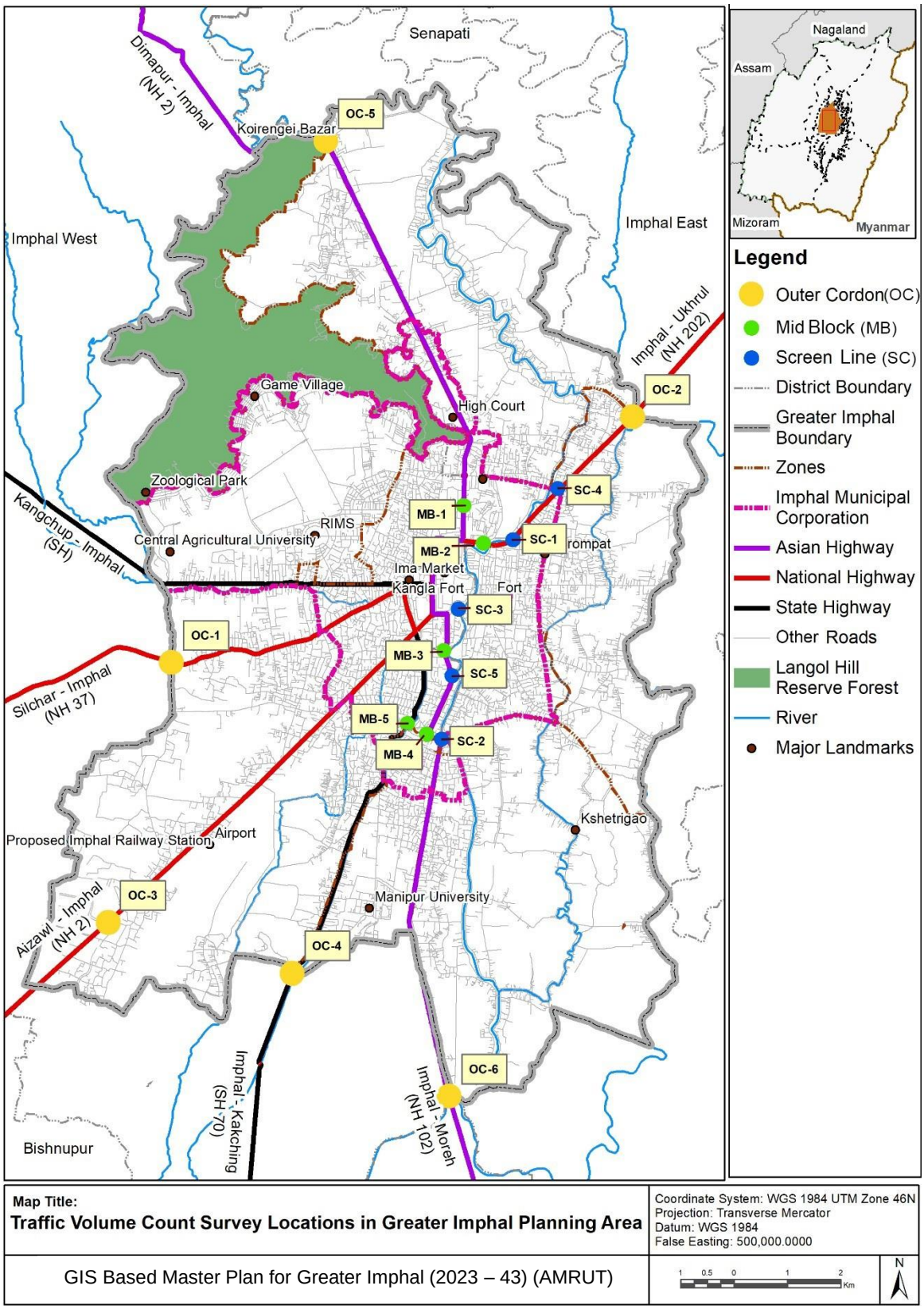
Traffic surveys are an essential task to assess the quantum and composition of traffic on the roads. The traffic survey for Greater Imphal was carried out on **(6)** Outer Cordon Locations, **(5)** Mid-Block locations and **(5)** Screen line locations to understand the traffic flow and saturation along the major roads.

Following table 8.11 and Map 8.11 documents the various survey locations of primary data collection.

Table 8. 11: Traffic Volume Count Survey Location

Outer-Cordon (OC)	Mid-Block (MB)	Screen Line (SC)
Imphal Jessami Road (OC - 2)	Minuthong – North AOC (MB - 2)	Singjamei Keithel (SC – 2)
Keishamphat Airport Road (OC - 3)	Porompat – GPO (MB - 3)	Sanjenthong Bridge (SC – 3)
Mayai Lambi Road (OC - 4)	Moirangkhom – GPO (MB - 4)	Lamlong Bridge (SC – 4)
Imphal Dimapur Road (OC - 5)	Elang Leikai – Keishampat (MB - 5)	Thumbu Thong Bamon (SC – 5)
Indo-Myanmar Road (OC - 6)		

Map 8. 11: Traffic Volume Count Survey Location in Greater Imphal Planning Area



8.6.1 Outer Cordon Traffic

Outer Cordon Surveys were conducted on 6 locations across Greater Imphal planning area as represented in following table 8.12. It is to be noted that the peak hour volume throughout the Greater Imphal planning area is considered to be 10% of the daily traffic based upon the representative sampling in the region.

The data so collected was compared with traffic survey and analysis report for Imphal ring road project by PWD, Manipur. It was observed that the reported flow data was comparable across majority of outer cordon points and mid blocks with exception of OCP – 5 (Dimapur- Imphal). The AADT of base year 2021-22 is revised to around 47000 PCU which translates into approximately 4700 PCU for Peak hour. Therefore, the corresponding level of service and saturation rate are further degraded.

Table 8. 12: Outer Cordon Points

Sr. No.	Road Name	Lanes	Daily Traffic Vehicle (24 hours)	Daily Traffic PCU (24 hours)	Derived Peak Hour Traffic (10% of 24-hour traffic)	V/C Ratio	Average Speed (kmph) (ATP)	LOS
OC 1	Uripok Kangchup Road	2-Lane (Two way)	26662	29453	2945.3	0.41	31	B
OC 2	Imphal Jessami Road	2-Lane (Two way)	30235	31524	3152.4	0.87	33	E
OC 3	Keishamphat Airport Road	6 - Lane Divided (Two way)	34447	39534	3953.4	0.45	36	C
OC 4	MayaiLambi Road	2-Lane (Two way)	19054	19255	1925.5	0.11	32	A
OC 5	Imphal Dimapur Road	4 - Lane Divided (Two way)	45000	47000	4700	1.30	24	Saturated
OC 6	Indo-Myanmar Road	2-Lane (Two way)	33641	41257	4125.7	0.57	32	C

Source : Based on Primary Data Collection

The majority of the outer cordon points are observed to be already saturated or nearing it during peak hour traffic conditions. The share of regional trips, heavy freight vehicles and regional public transport is as high as 30 to 50%.

The highest daily traffic volume was observed along Dimapur- Imphal highway (NH-2), which was 47000 PCUs. Based upon IRC 106:1990, the Level of service (LOS) was observed to be alarming at Imphal Jessami Road, Indo-Myanmar Road, Keishmphat Airport Road and Dimapur-Imphal (NH-2). For the free flow of traffic, the outer cordon points should be planned free from the bottlenecks and side friction.

8.6.2 Mid-Block Traffic

Mid-Block surveys were conducted on 5 locations in Imphal, as shown in following table 8.13.

The highest daily volume of traffic was observed along Imphal-Jessami Road and Chingamakhe - Mu Road, which were 51918 and 46795 PCUs, respectively. As per the IRC 106:1990, the Level of service along three of the selected corridors was observed to be in the range of B and F, signifying high congestion. Low speeds along these stretches validate the high saturation and congestion at these locations.

Table 8. 13: Mid-Block Points

Sr. No.	Location	Lanes	Daily Traffic Vehicle (24 hours)	Daily Traffic PCU (24 hours)	Derived Peak Hour Traffic (10% of 24-hour traffic)	V/C Ratio	Average Speed (kmph) (ATP)	LOS
MB 1	Khongnang Karak – North AOC	6 - Lane Divided (Two way)	42932	42661	4266.1	1.18	14	F
MB 2	Minuthong – North AOC	6 - Lane Divided (Two way)	52642	51918	5191.8	0.72	19	D
MB 3	Porompat – GPO	4 - Lane Divided (Two way)	48503	47861	4786.1	0.55	16	C
MB 4	Moirangkhom – GPO	6 - Lane Divided (Two way)	47655	46795	4679.5	0.65	22	D
MB 5	Elang Leikai – Keishampat	4 - Lane Divided (Two way)	32663	34938	3493.8	0.40	19	B

Source : Based on Primary Data Collection

8.6.3 Screen Line Traffic

Screen line surveys were conducted for 5 locations consisting of various Bridges in Imphal, as shown in following table 8.14.

The highest daily traffic volume was observed along Sanjenthong Bridge with 54422 PCUs,. As per the IRC 106:1990, all the screen line locations are heavily congested apart from Singjamei Bridge which is operating at LOS B.

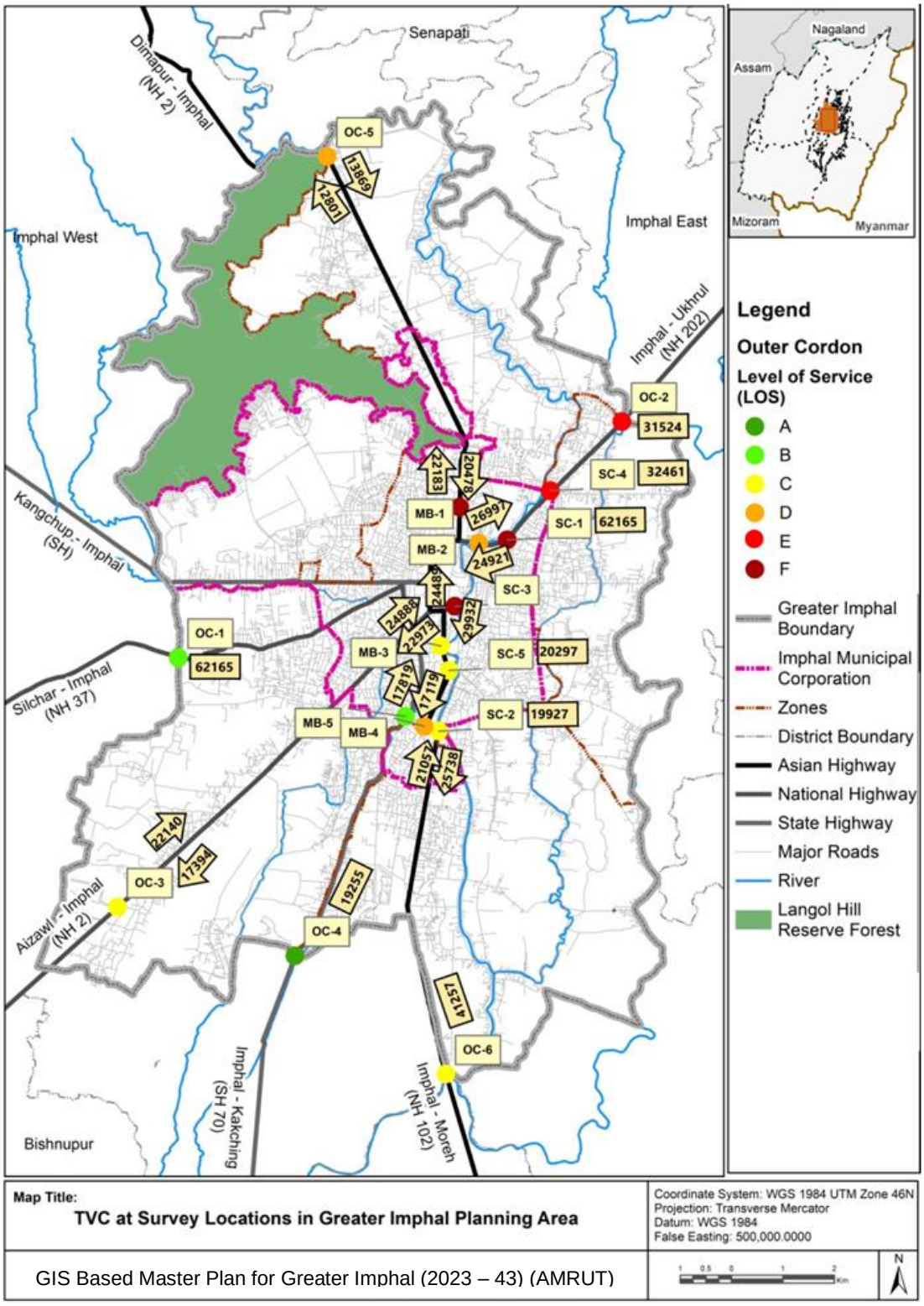
Table 8. 14: Screen line Points

Sr. No.	Road Name	Lanes	Daily Traffic Vehicle (24 hours)	Daily Traffic PCU (24 hours)	Derived Peak Hour Traffic (10% of 24-hour traffic)	V/C Ratio	Average Speed (kmph) (ATP)	LOS
SC 2	Singjamei Bridge	4 - Lane Undivided (Two way)	23294	19927	1992.7	0.5	24	C
SC 3	Sanjenthong Bridge	4 - Lane Divided (Two way)	66114	54422	5442.2	1.5	26	F
SC 4	Lamlong Bridge	2-Lane (Two way)	38473	32461	3246.1	0.9	24	E
SC 5	Thumbu Thong Bamon	2-Lane (Two way)	25563	20297	2029.7	0.5	18	C

(Source : Based on Primary Data Collection)

Map 8.12 illustrates the direction wise traffic, LOS and location of various locations of study.

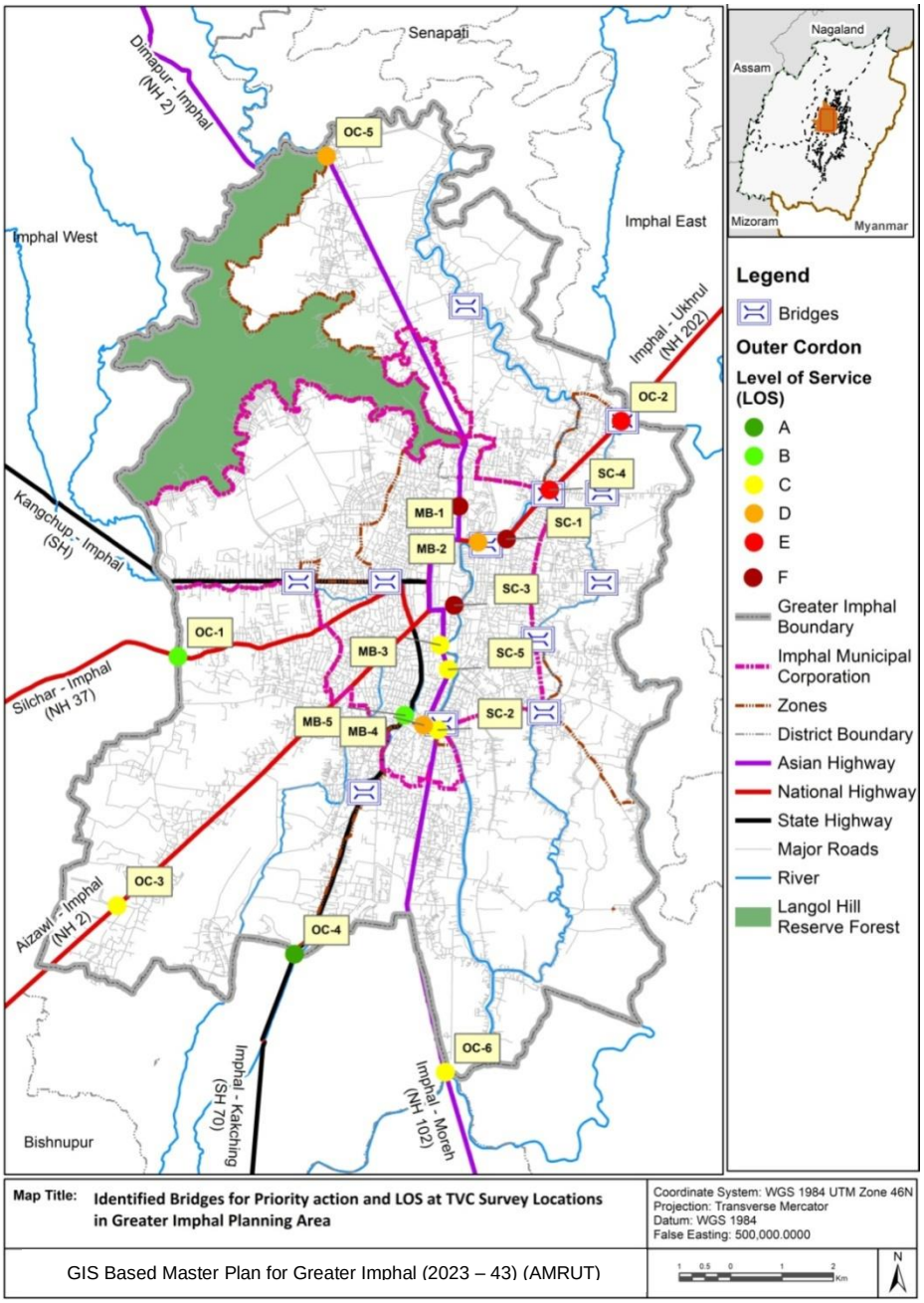
Map 8. 12: Level of Service (LOS) along Outer Cordon, Mid-Blocks and Screen Lines in Greater Imphal Planning Area



Source : Based on Primary Data Collection

The screen line locations which are mostly bridges are observed to be already saturated. As the city expands, the existing bridges should be enhanced in number and quality. Based on the hierarchy of roads to which the bridges connect, certain bridges were identified for up gradation in future for unhindered mobility. Identified bridges and bottleneck points need to be widened for ensuring uniformity in carriageway which can be integrated with the road improvements. The following map 8.13 shows the locations of indentified bridges for priority actions to avoid bottleneck scenario.

Map 8. 13: Identified Bridges for priority action



8.6.4 Projected Traffic

The future traffic demand is estimated for the next 10 years considering the existing traffic of 2020- 2021 along with the city vehicle registration rates; state GDP or the economic growth and the regional traffic demand based on the regional traffic growth rate.

The projected growth rate is taken as 7% compound annual growth rate (CAGR) for total traffic.

Figure 8. 4: Adopted economic growth rate and traffic growth rate %

Category	Parameter	2001–2015	2016–2020	2021–2025	2026–2030	2031–2035	2035–2039
Economic Growth Rates	GDP, India	7.3	7.7	6.5	5.5	4.5	3.5
	GDP per capita, India	5.7	6.4	5.2	4.5	3.6	2.7
	GDP per capita, Manipur	3.2	3.7	3.2	2.9	2.4	1.9
	GDP per capita, West Bengal	5.2	5.8	4.8	4.1	3.3	2.5
Traffic Growth Rates	Car	10.0	8.3	7.8	6.2	5.0	4.0
	Two-wheeler	12.7	9.7	8.7	6.9	5.5	4.5
	Bus	12.4	6.2	5.9	4.7	3.8	3.0
	Trucks	13.4	6.6	6.3	5.4	4.6	4.0

GDP = gross domestic product.
Source: Asian Development Bank estimates.

Source: Asian Development Bank estimate

Map 8.14 represents the base year (2020- 2021) traffic for the major corridors as shown, whereas Map 8.15 shows the calculated traffic for the horizon year of 2031 for the same corridors. The traffic is projected for next 10 years to understand the travel demand within the Greater Imphal planning region. The traffic is assumed to grow at incremental rate.

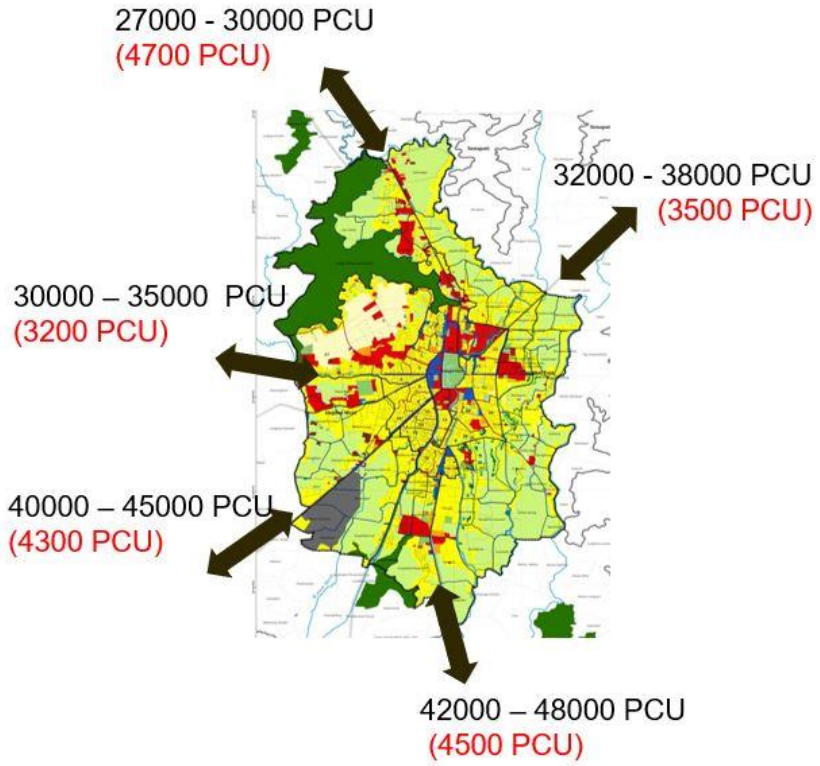
Highest traffic is observed in the southern corridors, one along the Asian highway and other along NH2 towards Aizawl.

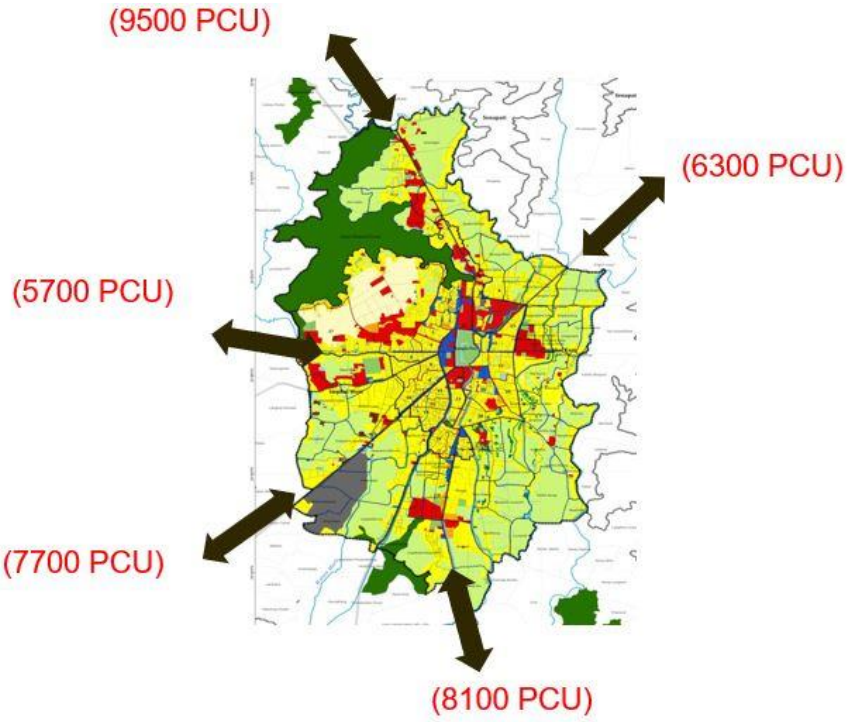
Map 8. 14: Base Year Traffic (2020- 21)

Map 8. 15: Horizon Year Traffic (2031)

*Note: * Approximate AADT – Annual Average Daily Traffic (projected from primary data)*

- Derived Peak hour Flow





8.6.5 Speed Studies

The study revealed the speed and delay characteristics along the existing road network which helps in identifying the bottleneck locations and their probable causes.

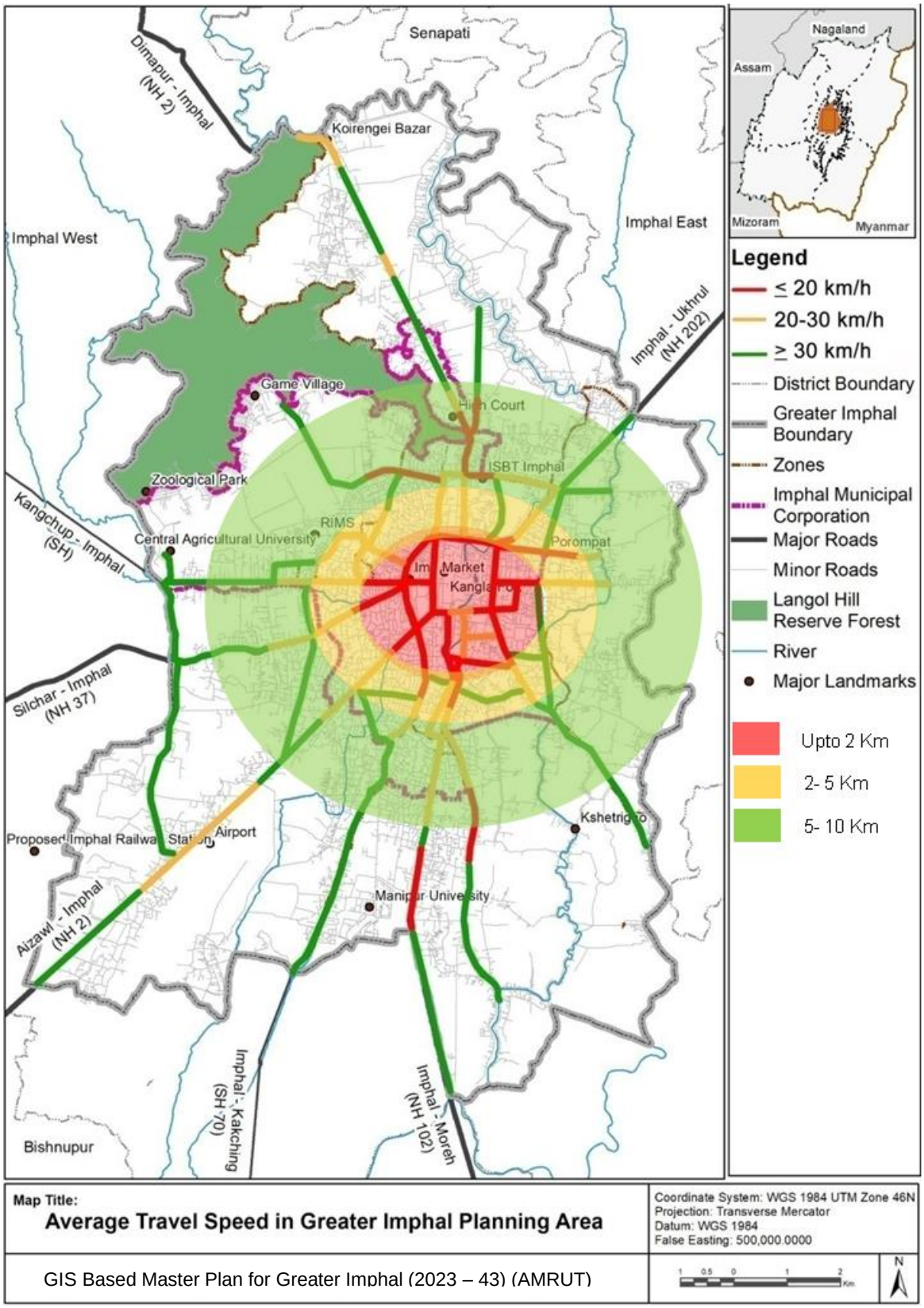
The average journey speed was observed to be around 24 Kmph with the bottleneck areas such as Ima Market, Manipur University, New Secretariat Area and Mantripukhri area etc. The lowest journey speed was observed to be less than 20 kmph during peak hours. The following Table 8.15 and map 8.16 document the average speed along the selected corridors in the Greater Imphal planning area.

Stretches with low speeds overlap with roads having reduced carriageway and on street parking like – Ima Market, Manipur University, New Secretariat Area, Mantripukhri area.

Table 8. 15: Average Travel Speed in Greater Imphal Planning Area

Road Name	Type	ROW (m)	Type	Average Speed (km/h)
Imphal - Aizawl Road	National Highway 2	40	Arterial	34
Imphal - Silchar Road	National Highway 37	13	Arterial	27
Imphal -Dimapur Road	National Highway 2	38	Arterial	31
Imphal - Moreh Road	National Highway 102	33	Arterial	25
Imphal – Ukhrul Road	National Highway 202	30	Arterial	24
Imphal – Kakching Road	National Highway 137A	20	Sub- Arterial	35
Imphal - Kangchup Road	State Highway 37	15	Sub- Arterial	24

Map 8. 16: Average Travel Speed in Greater Imphal Planning Area



Source: Generated from real time data collected through Google Maps

8.7 Non-Motorised Transport (NMT) Infrastructure

NMT refers to dedicated or shared space for cycle and pedestrian movement. Footpath is available along the major arterial road and roads around CBD area. A total network of around 34.3 km is observed to have footpath. Table 8.16 and map 8.17 documents the availability of footpath classified by road hierarchy within the Greater Imphal planning area.

The road network where footpath is available was observed to be mostly encroached resulting into challenges in mobility and deteriorated LOS. It shall be noted that 13% of the total trips made in the planning area are only walk trips whereas all other trips also have some walk component. This high share of walk trips coupled with need of universal accessibility is challenged by limited availability of footpath along the higher hierarchy corridors.

Table 8. 16: Existing Footpath in Greater Imphal Planning Area

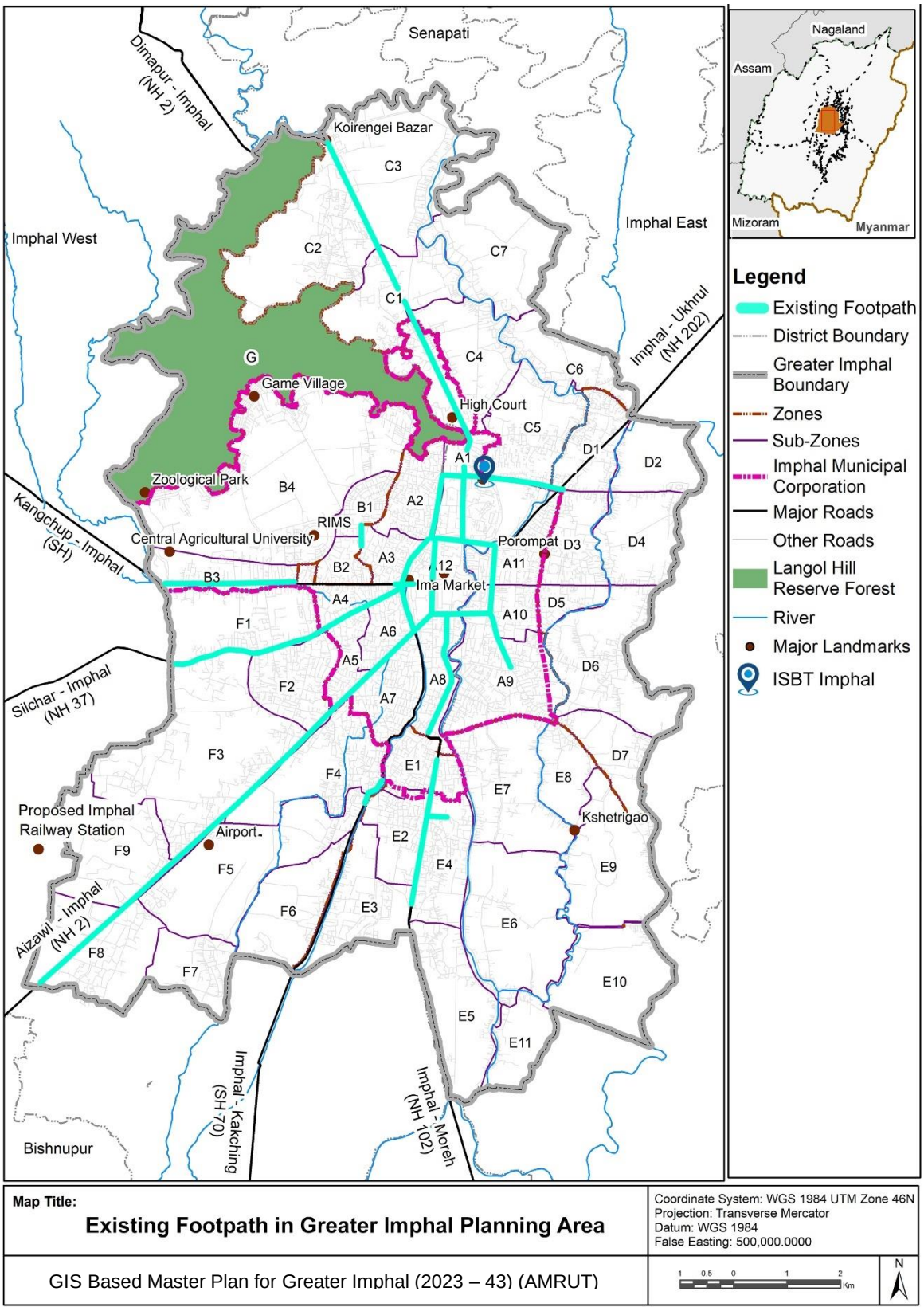
Footpath	Road Length (in km)	Percentage
Present	32.3	17.35 %
Absent	154.2	82.65 %
Total (Arterial, Sub-Arterial and Collector)	**186.5**	**100%**

Source : Based on Primary Data Collection

Based upon the travel desire studies, it was observed that the majority of the arterial and sub-arterial corridors have high share of bicycle movement. These stretches have absolutely no preference for these NMT users resulting into unsafe conditions and thereby catalysing the mode shift to other unsustainable modes. Map 8.18 illustrates upon the corridors with high share of bicycle trips.

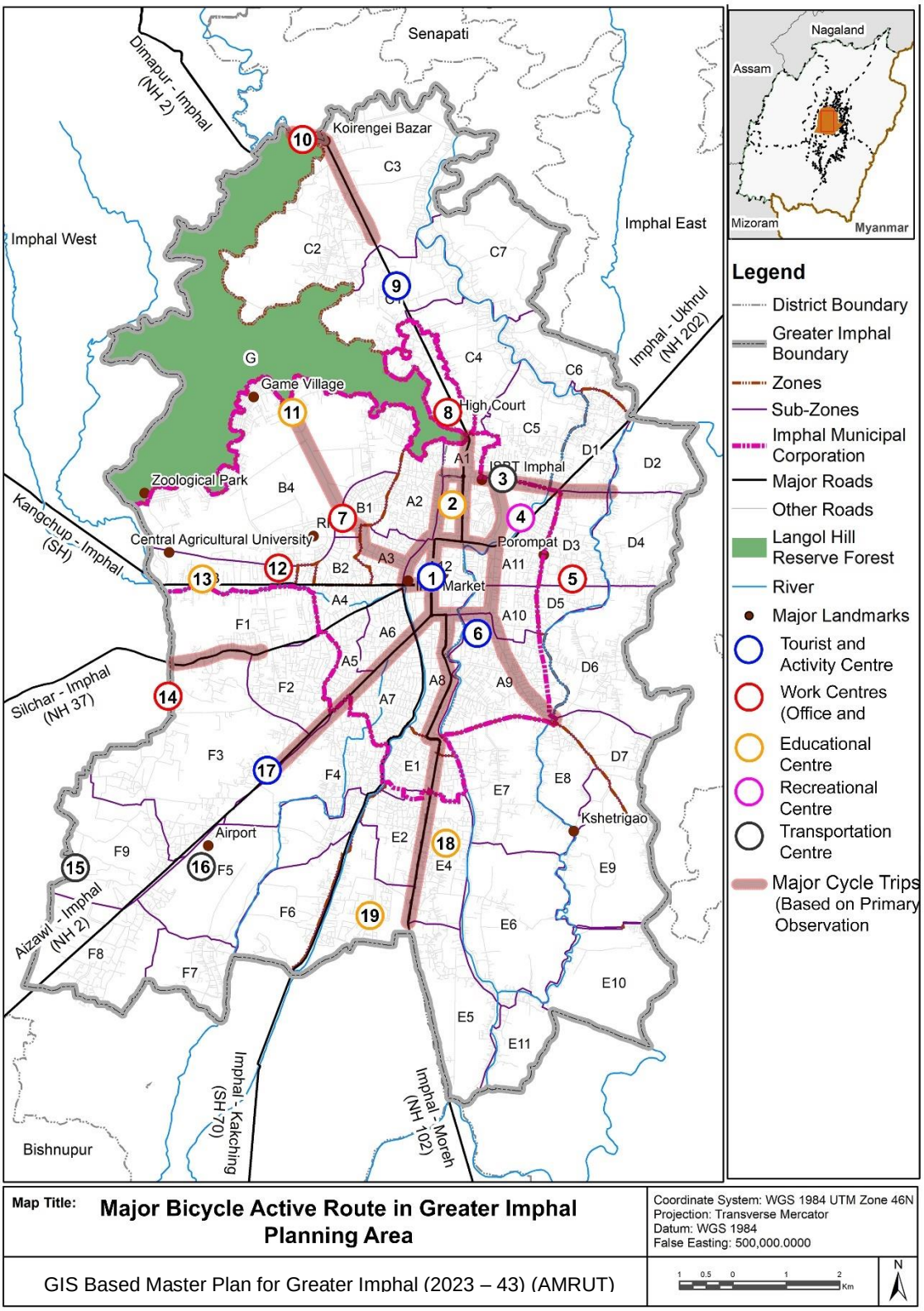
Heavy bicycle movement was observed along higher hierarchy streets during the peak hours. The predominant trip purpose was noted to be educational and work. The average journey speed was 12 – 18 kmph and is comparable to average vehicular journey speed. The lack of parking and absence of (dedicated/ shared) cycle lanes along higher hierarchy roads are the major hurdles in promoting bicycle usage within the planning region.

Map 8. 17: Existing Footpath in Greater Imphal Planning Area



(Source : Based on Primary Data Collection)

Map 8. 18: Major Cycle Route in Greater Imphal Planning Area



Source : Based on Primary Data Collection

8.8 Major trip attracting landmarks

This study plays a vital role in identifying the major trip attraction locations within the planning area. The identification of major landmarks enables us to understand the flow and quantum of traffic within the planning region. The major trip attracting landmarks were delineated based on: Major network (hierarchy); Establishment clustering (non residential landuse); and Parking demand.

Estimation of pockets/ landmarks which have high trip attraction rates helps in planning for infrastructure and services demand at a localised centroid for the city. Based upon the alignment of major travel networks, landuse (establishments), commanding non residential trips and high parking demand sites, 19 landmarks have been identified in and around the planning area of Imphal.

It is observed that core area of the Imphal city is attracting majority trips and therefore mobility solutions not only need to respect the radial nature of travel demand but shall also explore options of reflecting non local trips. It shall also be noted that zone 14 – labeled as 'upcoming industrial and large scale commercial areas' is important for envisioning the future mobility solutions.

These landmarks can help in strategising the distribution and coverage of public services/ amenities with localised development approach. PT routes/ retail commercial outlets (including hawking and vending), PSP amenities, place-making centroids, public Wi-Fi zones, etc. are few to begin with.

Table 8.17 and map 8.19 document the major trip attracting landmarks in the Greater Imphal planning area. It was observed that the trip attracting locations are concentrated in the core-area and along highways

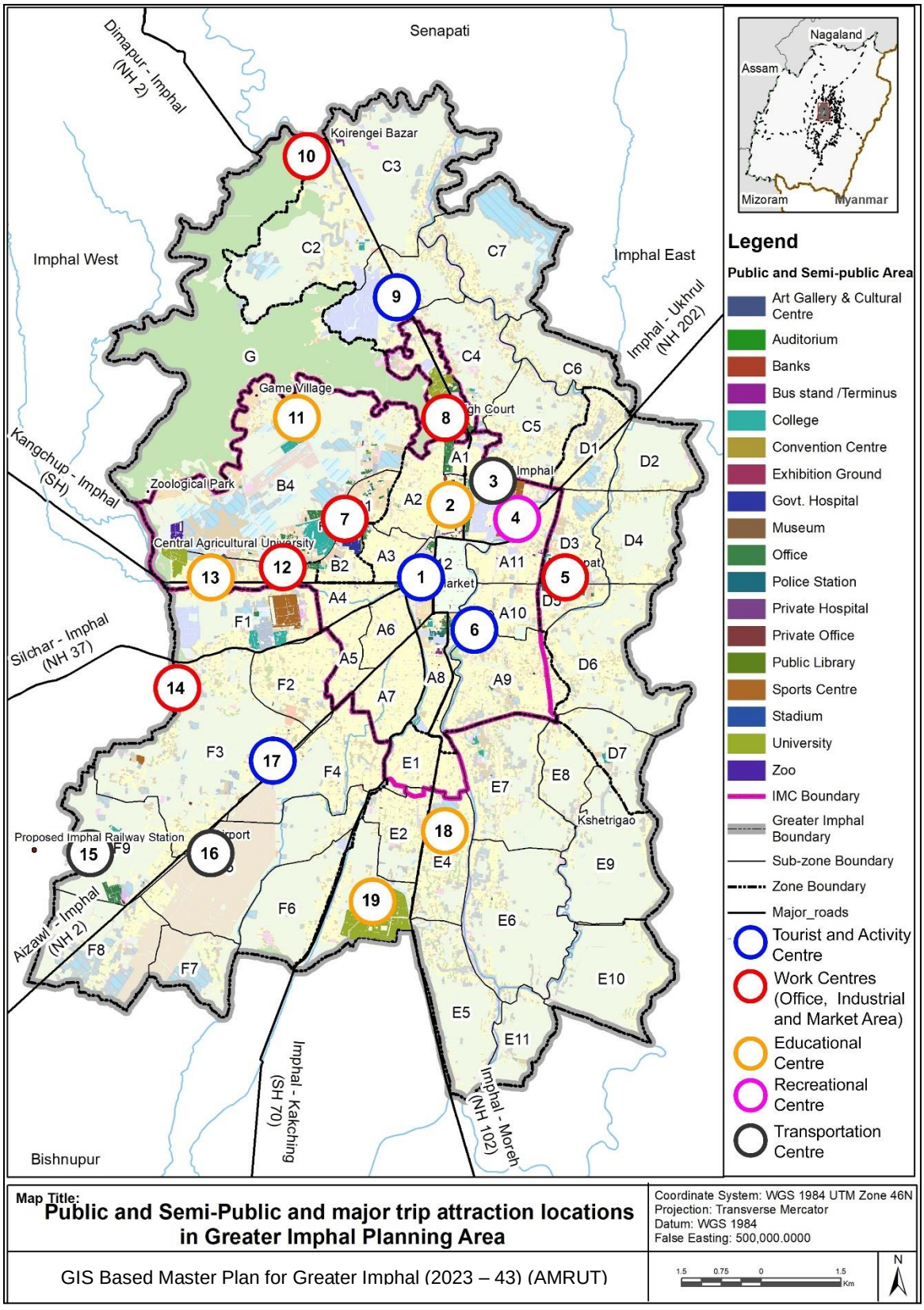
Table 8. 17: Major Trip Attraction Location in Greater Imphal Planning Area

Sr. No.	Location
1.	Heritage sites (Kangla Fort, Shaheed Minar and Polo Ground) as well as Ima Market, most populated attraction point in the Greater Imphal Area.
2.	DM University, an educational hub.
3.	ISBT, main stop for road connectivity to Other States.
4.	Stadium area, most important recreational space for Imphal.
5.	Imphal East DC Complex, Porompat
6.	RIMS, Medical zones with supporting medical office area.

7.	Government offices (like High court, Civil Secretariat, IT Park etc.), Proposed nuclei for the Imphal.
8.	Mantripukhri, New upcoming large scale commercial centres.
9.	Nilakuthi Food Park, an Industrial zone with heavy vehicle movements on Asian Highway.
10.	NIT and SHRI educational area
11.	Imphal West DC Complex, Lamphel
12.	Agriculture University, a central level educational area and Zoological park acting as recreational and tourist spot.
13.	Proposed Imphal Railway Station
14.	BirTikendrajit International Airport
15.	Manipur University, an educational centre.
16.	Govindaji Temple, a hindu temple
17.	Hapta Kangjeibung, one of the world's oldest polo ground.
18.	City Covention Center, A multipurpose plus exhibition hall

Source : Based on Primary Data Collection

Map 8. 19: Major trip attracting Locations in Greater Imphal Planning Area



Source : Based on Primary Data Collection

8.9 Parking

Parking in Imphal mainly consists of on-street parking as designated off-street parking locations are absent. Imphal Municipal Corporation regulates parking in Imphal.

Parking demand is heavily influenced by surrounding land use. Each land use attracts and generates different levels of traffic and hence, generates different level of parking demand. Parking demand was integrated with land use survey of surrounding plots to calculate parking demand standard for each land use. Thangal Bazar, Keishampat Junction and Gandhi Road stretch have use dominated by mixed use and commercial use. Governor Road stretch is dominated by public and semi-public use (office area) whereas Airport Road stretch was dominated by commercial and transport use. The table 8.18 illustrates the parking stretches within the Imphal Municipal Corporation area.

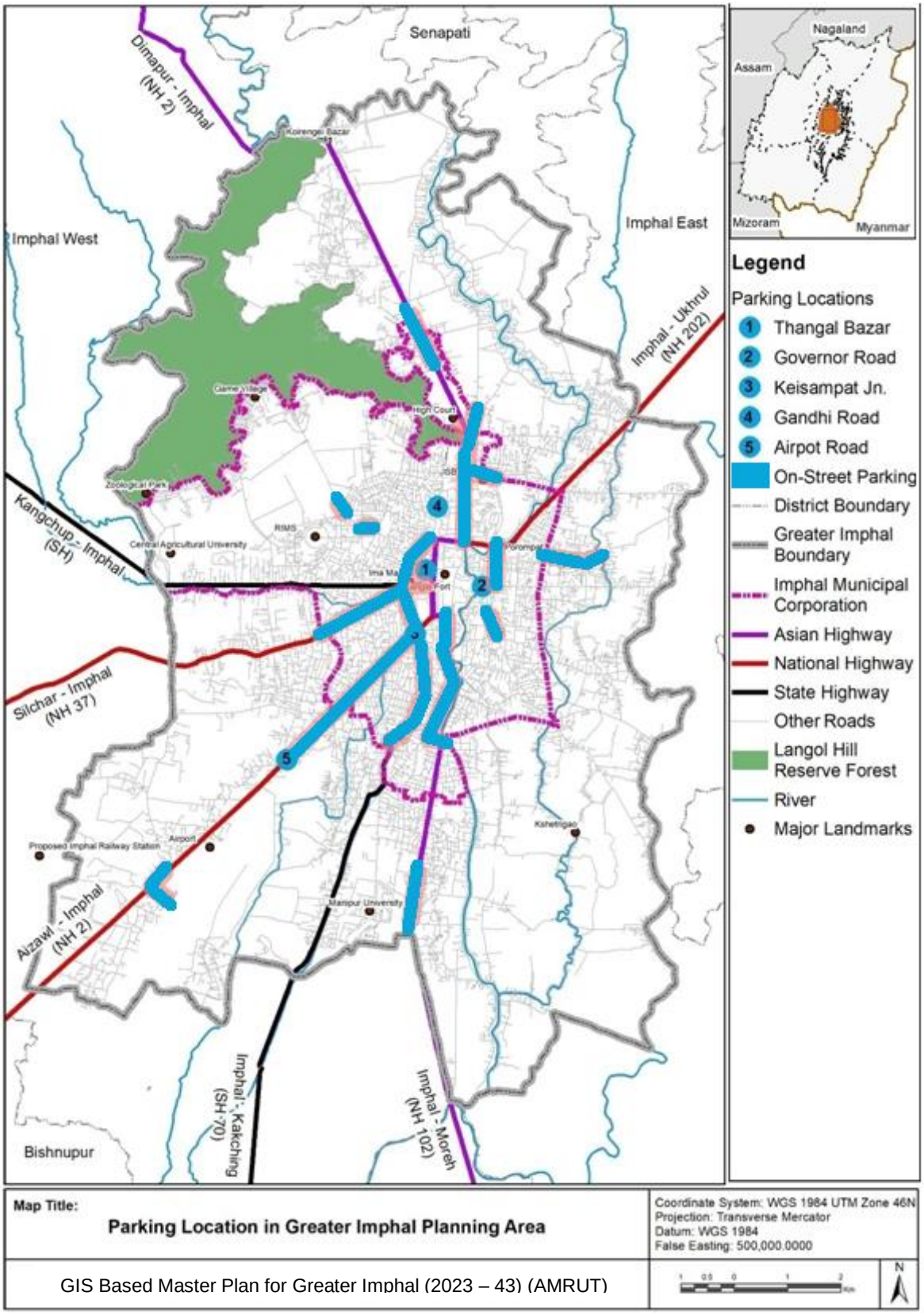
Table 8. 18: Parking Characteristics in Greater Imphal Planning Area

Location	Landuse	Parking Stretch (m)	Approximate parking supply (ECS)
Thangal bazaar	Mixed	400	200
Governor road	Public and Semi-public	460	230
Keishampat	s	500	250
Gandhi road	Mixed	350	175
Airport road	Transport use and Commercial	250	125

Source : Based on Primary Data Collection

It was observed that lack of identified parking facilities have resulted currently in on street parking issues and the extents form a ribbon. Map 8.20 highlights the major on street parking stretches (ribbon), whereas Map 8.21 shows the trip attracting locations or locations with high parking demand in relation to the on-street parking locations. It was observed that there is heavy parking along the road at identified locations and low parking charges. The on- street parking around major landmarks causes reduced carriage way and increased congestion, Increased delay for vehicular operations and Encroached footpath and street furniture causing reduced mobility for NMT users.

Map 8. 20: Parking Location in Greater Imphal Planning Area



Map 8. 21: Parking Locations with major trip attracting locations in Greater Imphal Planning Area

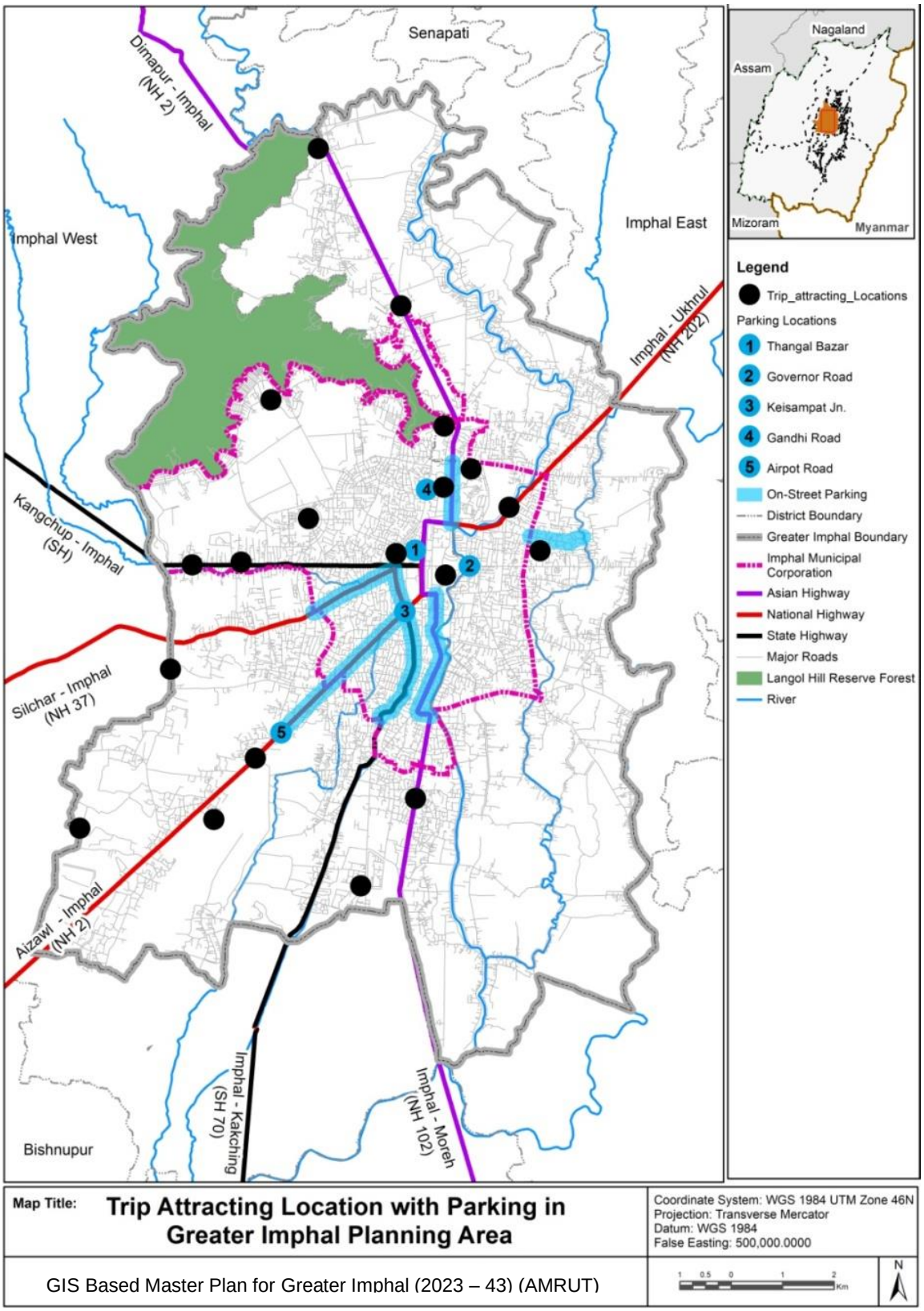


Figure 8. 5: Existing Parking in Greater Imphal Planning Area



Source: Based on Primary Data Collection

8.10 Shared Mobility

8.10.1 Inter-City Para Transit Services in Greater Imphal Planning Area

Due to the absence of a formalised public transport in Grater Imphal, shared autos and Magic vans are functioning as the intermediate public transport system in Greater Imphal Planning Area and is the predominant mode of public transport for the city.

Shared autos and Magic vans in Imphal also serve in the areas that are inaccessible by bus. The minimum fare for passenger trips is Rs.20 and for hired trips is Rs 80. There are about 19 shared auto routes and 14 Tata magic routes in the city. Majority of auto (3+1 & 6+1 capacity) serves the area near IMA market and Kangla fort.

Table 8. 19: Physical characteristics of Autos in Greater Imphal Planning Area

Physical Characteristics	Inter-city Auto	Tata Magic
Vehicle Capacity	6+1D	7+1D
Total No. of Routes	19	14
Av. Route Length (Km)	19	29
Trips per day	14	10
Approximate Total ridership	2600	

Source : Based on Primary Data Collection

8.10.2 Intra-City Para Transit Services in Greater Imphal Planning Area

In Imphal, Para Transit is the backbone of the urban mobility. The Para Transit system consists of smaller passenger vehicles operating on fixed or flexible routes and schedules, according to the travel demand. According to primary survey, para transit caters to around 35% of the total trips. The mode share within planning area is represented in the Figure 8.6 and 8.7.

The share of para transit is increasing due to lack of alternative means of public transport, easy access to vehicle registration and uncontrolled entry of vehicles into the city. With increasing role of para transit, the role of city buses has become negligible. At present, most public transport requirements are met through auto rickshaws, e-rickshaws and Tata Magic vans.

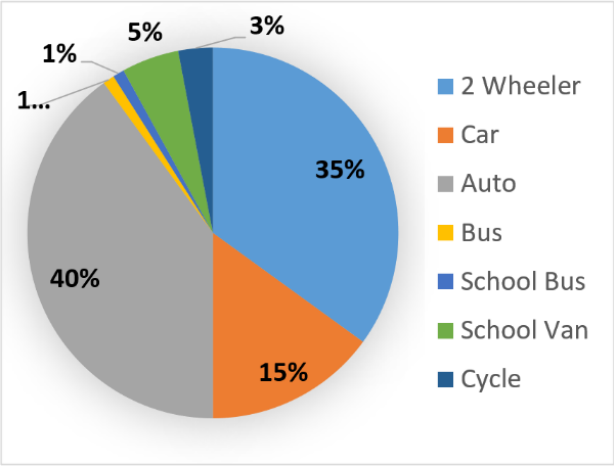


Figure 8. 6: Modal Share of all trips in Greater Imphal Planning Area (Without Walk)

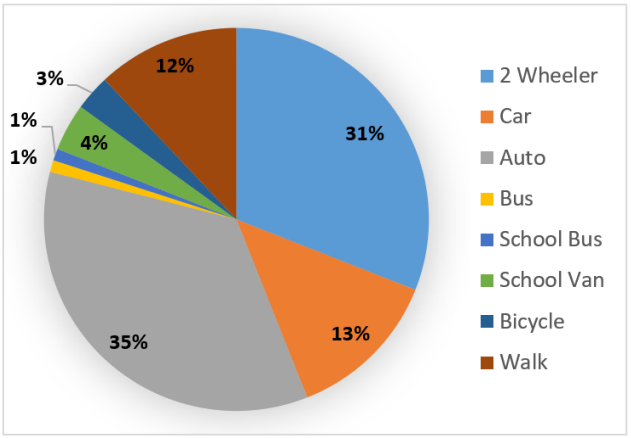


Figure 8. 7: Modal Share of all trips in Greater Imphal Planning Area (With Walk)

Source: Based on Primary Household Survey by SPA Bhopal students, 2019

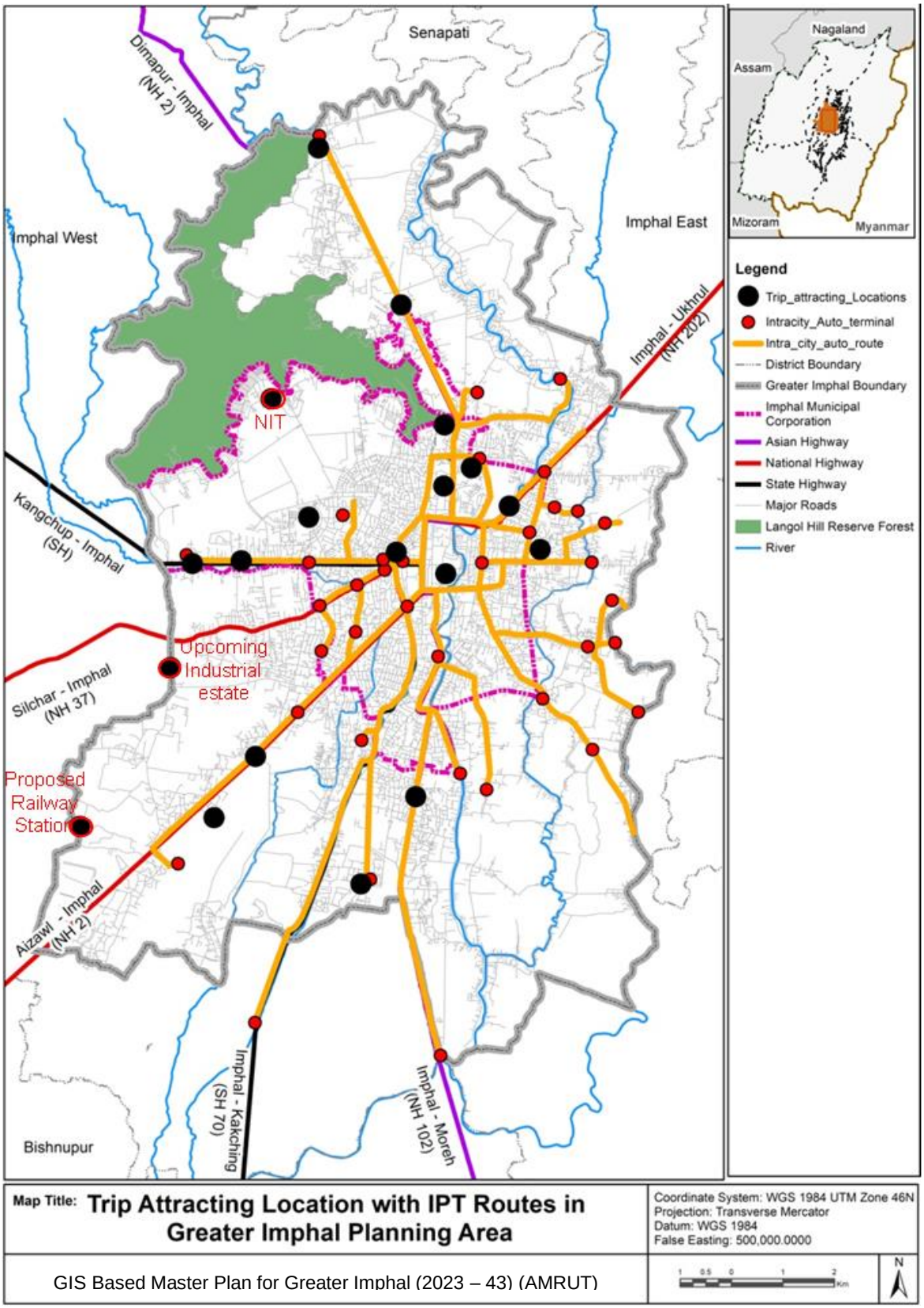
The residents of the study area are dependent on para transit system, for their daily transport demand. This demand is met by the services from shared autos running on dedicated routes along with hired autos and E- rickshaws. The 7-seater shared auto rickshaw (Vikram), 3-seater auto rickshaws and E-rickshaws are the main modes of para transit.

Vikram autos operate as shared services, and thus act as pseudo public transport in the absence of organized public transport. It can be noted that Vikram autos are popular because of their economy although they are rated poorly in terms of emissions and environmental impact. Shared autos generally operate on dedicated routes. Shared autos operate on over 42 routes for about 6 hours a day covering around 64% of the major road network. The maximum number of routes is available on the stretch between Ema Keithel and Irilbung, with minimum route length of 2 km and a maximum of 12 km. Most of the routes are overlapping along Lilong road, Dimapur road and Irilbung road.

8.10.3 IPT Coverage

The IPT coverage was mapped (Map 8.24) along with the major trip attracting locations to identify unserved areas (if any) among the major trip generation points. This will help in identifying new routes for the para transit services. It was observed that para transit services should be extended towards the western side of the planning area approaching the proposed railway station, upcoming industrial estate and NIT.

Map 8. 22: IPT Coverage with Major Trip attracting Locations



8.10.4 Shared Mobility Accessibility

As discussed above, shared auto services are operating on over 42 routes for about 6 hours a day covering 64% of the major road network of Greater Imphal Planning Area. After considering the zone and subzone boundaries, directly accessible subzones are listed in the table 8.23. Among these subzones, B4 and F1 are spatially near to the core area, but still do not have direct accessibility to the intra-city para-transit services.

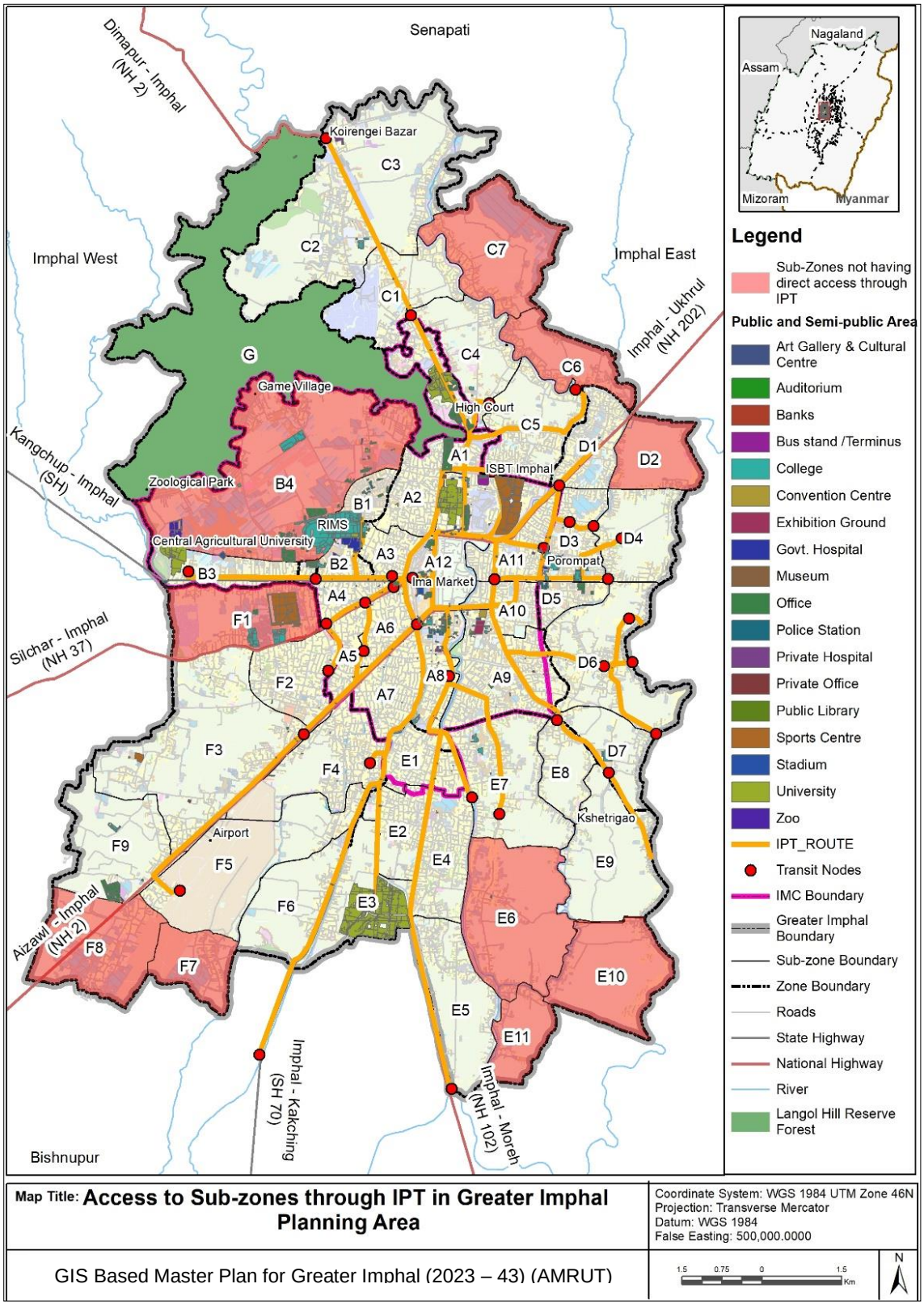
Apart from these, subzones from peripheral area such as C6, C7, D2, E6, E10, E11, F7 and F8 are also unserved. Map 8.25 shows the geographical location of direct accessible and inaccessible subzones through para transit services in Greater Imphal Planning area.

Table 8. 20: Access to Sub-zone through IPT service in Greater Imphal Planning Area

Sr. No.	Zone	Subzones having direct access through IPT	Subzones not having direct access through IPT
1.	Zone A	A1, A2, A3, A4, A5, A6. A7, A8, A9, A10 and A11	----
2.	Zone B	B1, B2 and B3	B4
3.	Zone C	C1, C2, C3, C4 and C5	C6 and C7
4.	Zone D	D1, D3, D4, D5, D6 and D7	D2
5.	Zone E	E1, E2, E3, E4, E5, E7, E8 and E9	E6, E10 and E11
6.	Zone F	F2, F3, F4, F5, F6 and F9	F1, F7 and F8
7.	Zone C	----	G (Langol Hill Reserve Forest)

Source : Based on Primary Data Collection

Map 8. 23: Access to Sub-zones through IPT in Greater Imphal Planning Area

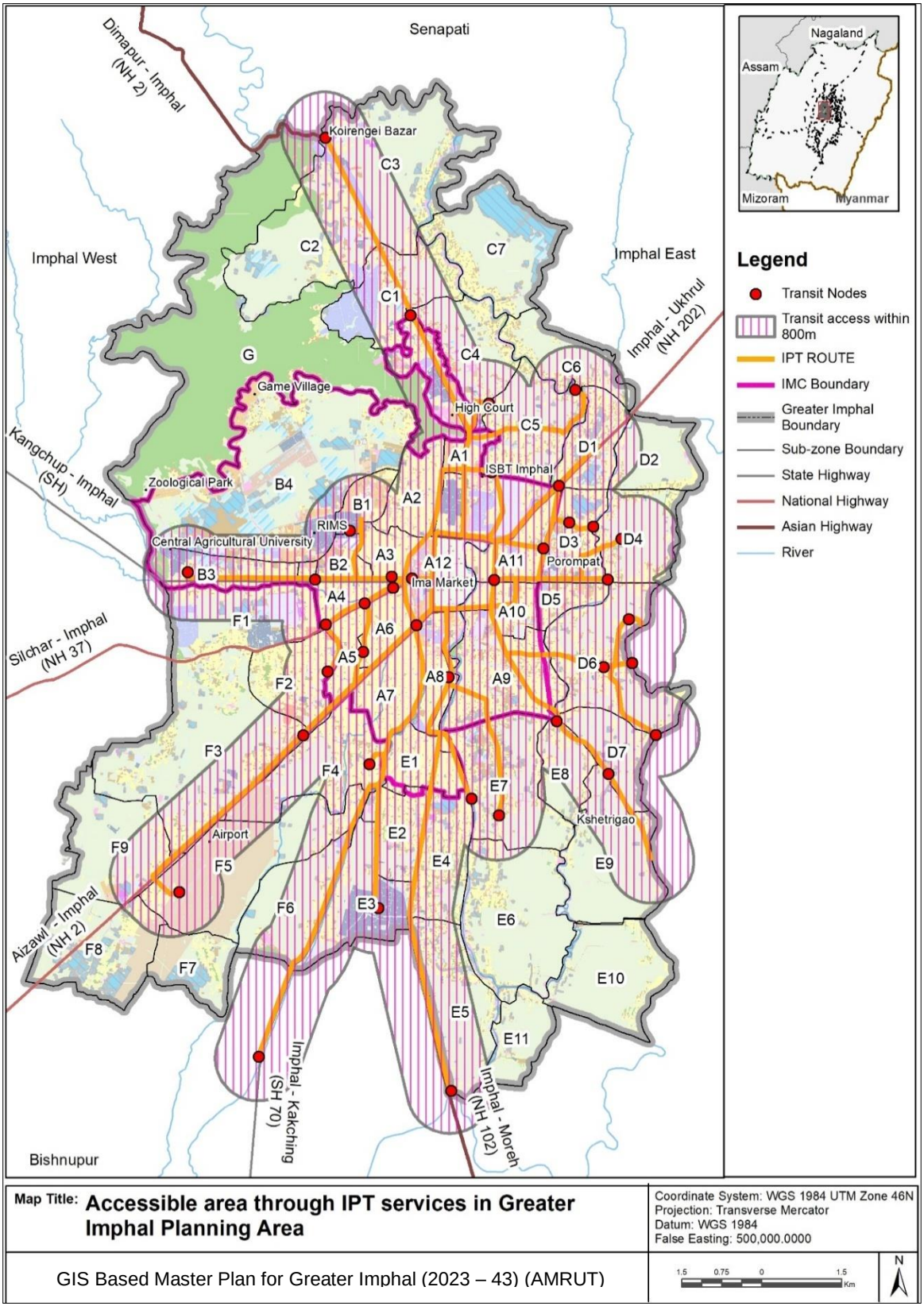


In terms of distance to para transit serviced corridors, zones and subzones have been classified into different accessibility level, depending upon the percentage of area being served within walkable zone of 800m radius. These subzones and zones are listed in table 8.24 with their level of accessibility criteria and Map 8.26 shows their spatial location in Greater Imphal Planning Area. Map 8.27 shows access to Sub-zones through IPT in Greater Imphal Planning Area

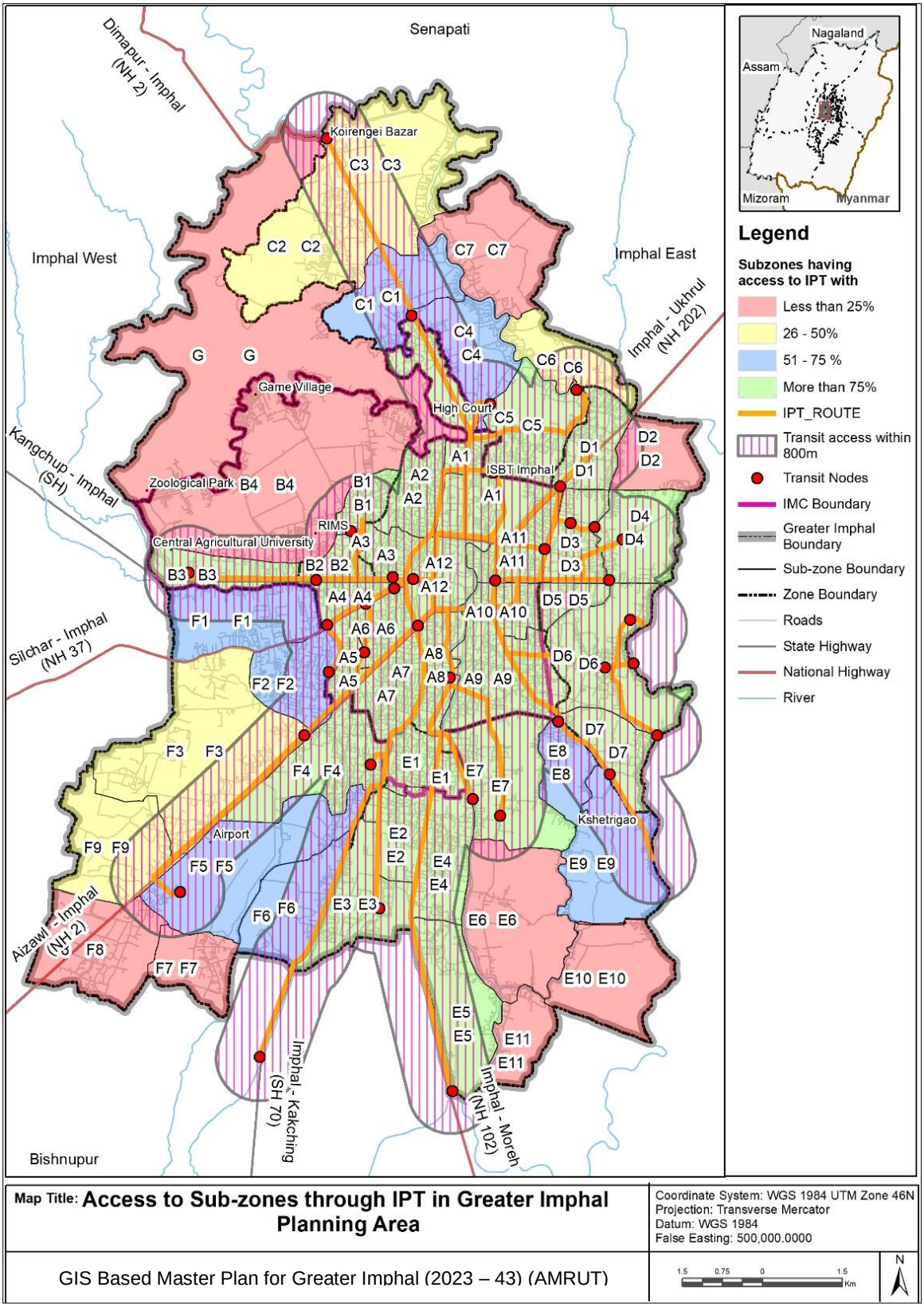
Table 8. 21: Access to Zones and Sub-zones through IPT in Greater Imphal Planning Area

Zones	Sub-Zones	Subzone Access to IPT (PC)
Zone A	A1, A2, A3, A4, A5, A6, A7, A8, A9, A10, A11, A12	More than 75%
Zone B	B4	Less than 25%
	B1, B2, B3	More than 75
Zone C	C7	Less than 25%
	C2, C3, C6	26% - 50%
	C1, C4	51% - 75 %
	C5	More than 75%
Zone D	D2	Less than 25%
	D1, D3, D4, D5, D6, D7	More than 75%
Zone E	E6, E10, E11	Less than 25%
	E8, E9	51% - 75 %
	E1, E2, E3, E4, E5, E7	More than 75%
Zone F	F7, F8	Less than 25%
	F3, F9	26% - 50%
	F1, F2, F5, F6	51% - 75 %
	F4	More than 75%
Zone G	G (Langol Hill Reserve Forest)	Less than 25%

Map 8. 24: Accessible area through IPT service in Greater Imphal Planning Area



Map 8. 25: Access to Sub-zones through IPT in Greater Imphal Planning Area



8.10.5 Public Transport Demand and IPT Accessibility

To establish the public transport demand of a subzone, two factors namely the population density and the built- up density was considered. The population density will reflect the residential population whereas the built- up density will reflect the floating population in institutional and commercial areas. The factors were given different scores as tabulated in table 8.25.

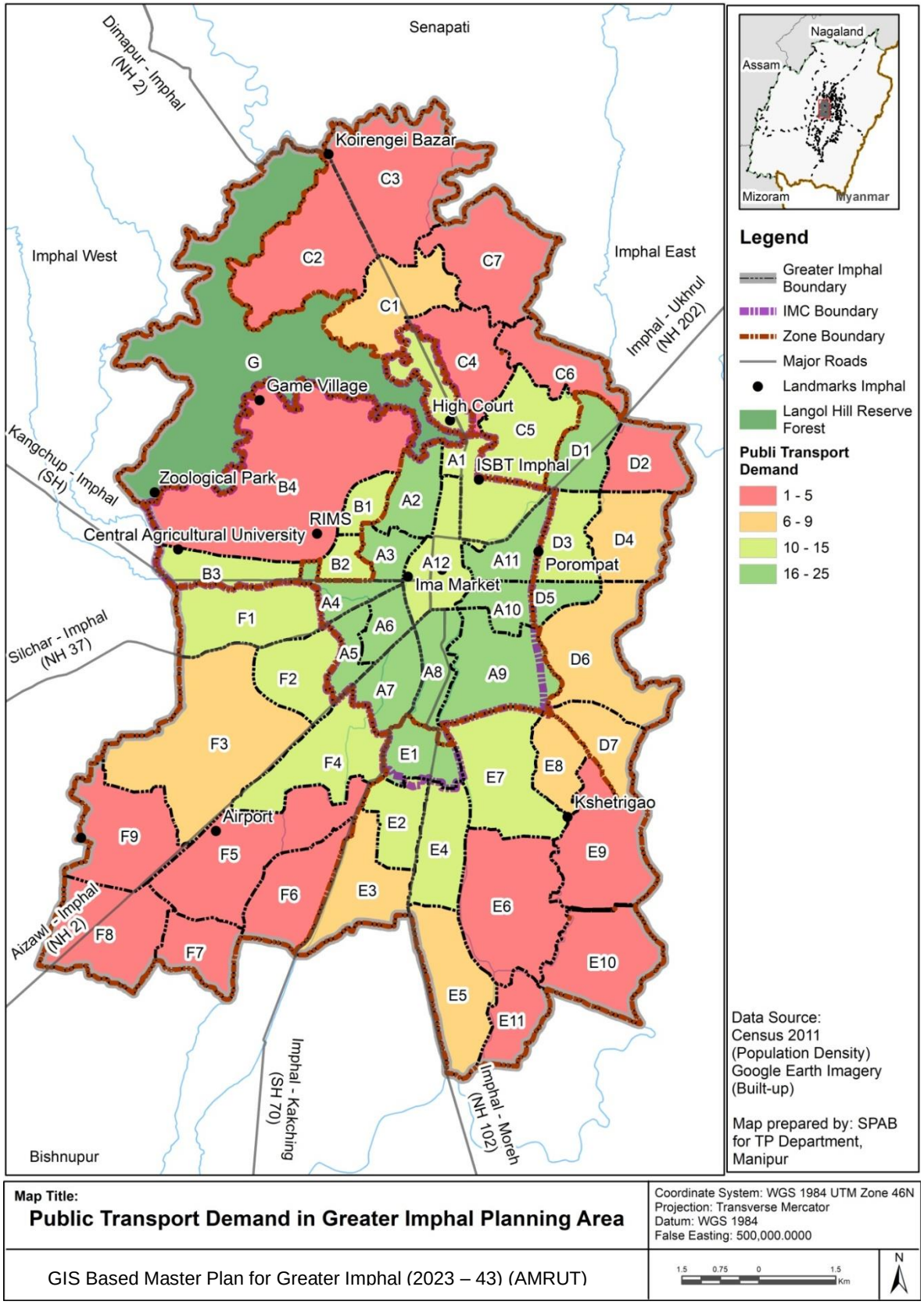
Table 8. 22: Scores for population density and built- up density

Population Density (pph)	**Score**	**Built-up density (%)**
0- 15	1	0- 20
16- 30	2	21- 40
31- 60	3	41- 60
61- 90	4	61- 80
More than 90	5	More than 80

To calculate the final score of the sub zone, the individual scores of population density and built-up density was multiplied. Hence higher the score of a sub- zone, higher the public transport demand.

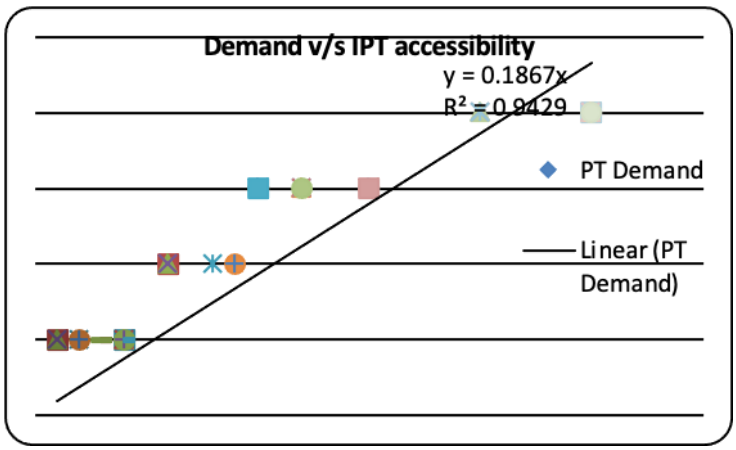
The final public transport demand score of the sub zones is attached in annexure 8.2 and depicted in map 8.28. This was validated with the IPT accessibility discussed above to identify sub zones with high public transport demand and low accessibility or vice versa.

Map 8.28: ***Public Transport Demand in Greater Imphal Planning area***



It was observed that the sub zones with high public transport demand are more than 75% accessible to para transit serviced corridors. There were certain aberrations where sub zones have high accessibility irrespective of low demand. These are D4, D6, D7, E3, E9, F5 and F6.

Figure 8. 8: Demand versus IPT accessibility



8.11 Strategic Corridors and Nodes

In order to identify various strategic corridors and junctions within the planning area, different parameters such as land use and trip attracting locations; travel speed of major corridors, IPT routes, LOS of major roads and on- street parking locations (refer map 8.29) were overlapped.

Map 8.30 reflects major corridors and junctions that need improvement within the planning area in terms of ROW, parking and public transport. These corridors act as the major spine of the city and if improved, will solve the majority of mobility problems within the Greater Imphal planning area.

The map also marks major junctions that need improvement for better functioning of the corridors. The list of major junctions is given in table 8.26. These corridors and junctions should be given priority for further mobility plan.

Map 8. 29: Overlaying of different parameters for identification of Major Nodes and Linkages

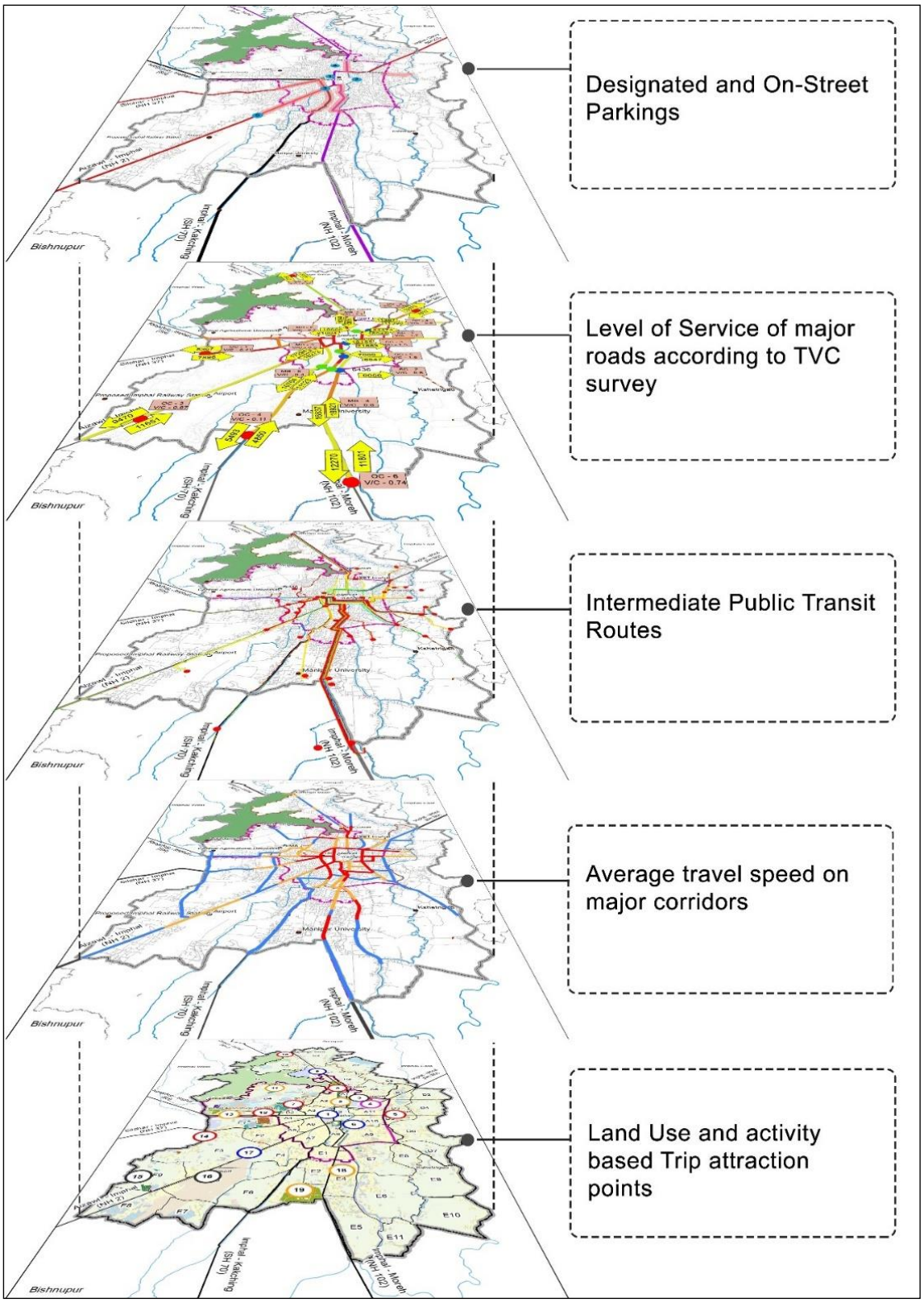
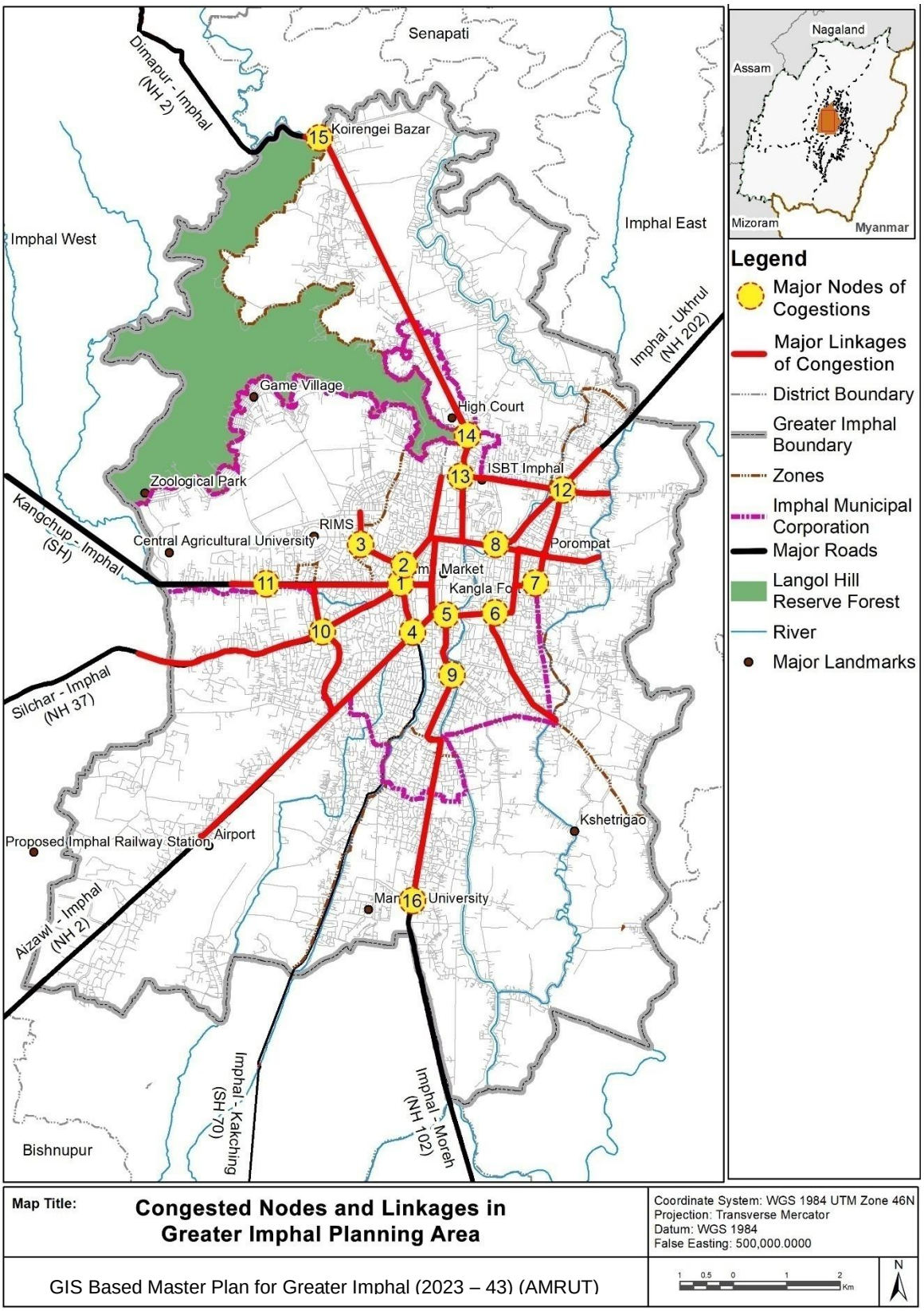


Table 8. 26: Major Congested Junctions' Name in Greater Imphal Planning Area

Sr. No.	Name
1.	Ema Market Junction
2.	Khoyathong Junction
3.	RIMS Junction
4.	Keishampat Junction
5.	Head Post Office Junction
6.	New Checkon Junction
7.	LairikyengbamLeikai Junction
8.	JNIMS Hospital Junction
9.	PHE Department Junction
10.	TeraKeithel Junction
11.	Naoremthong Bazar Junction
12.	Lamlong Bazar Junction
13.	ISBT Junction
14.	High Court Junction
15.	Koirengei Bazar
16.	Manipur University Junction

Map 8.30: Congested Nodes in Greater Imphal Planning Area



8.12 Observations and Way Forward

The major challenges identified with respect to mobility in the greater Imphal planning region include-

- The radial form of regional and arterial corridors are getting converged around the CBD (Ima market) area. This is leading to high congestion and corresponding delays for regional and local trips.

- The absence of bye pass or ring corridor not only delays the heavy vehicle movement through the city but is also responsible for roadside (on shoulder) parking of freight vehicles.

- As the arterial corridors are catering to local and regional traffic both, lack of uniformity and continuity in Right of Way (ROW) of such corridors is leading to bottleneck situations. The Level of service (LOS) is observed to be further deteriorated with abutting commercial and PSP land use, as on street parking reduces the effective carriageway.

- NMT (non motorised transport) provisions like pedestrian walkway, cycle tracks and street furniture including Public Transport stops/ shelters are observed to be missing along the major roads.

- The mobility in the city is highly dependent upon private modes as the share and accessibility of PT / IPT (public or intermediate public transport) is limited to few sub-zones of the city. Further, standardisation of PT/ IPT operations using variables like tariff, frequency, routes and coverage is essential for improved service.

- Multimodal integration at major road, air and rail (upcoming) terminals shall be considered to improve LOS of public transport operations.

Section 9: Housing

9.1 Introduction

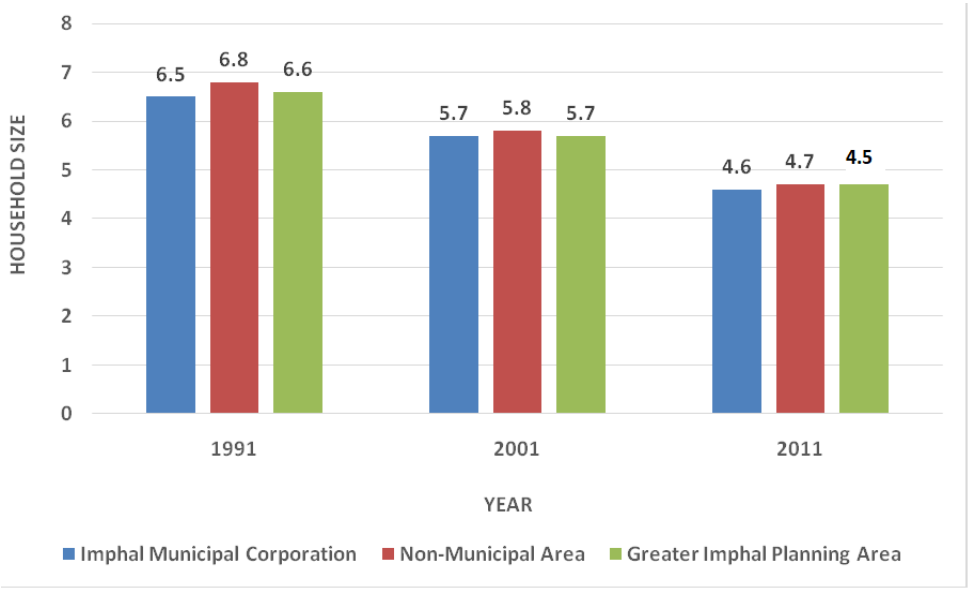
Shelter is the most basic need of human being after food and clothing that needs to be addressed on priority. It not only provides shelter to a household but also fulfils all basic utilities and needs of each member of the family. Since Imphal is the most important urban centre in Manipur, the need of the rapidly growing population in Greater Imphal is of great concern in and around the major working centres. This chapter examines the present housing scenario, housing need, housing structure, housing issues and related strategies.

9.2 Existing Situation Analysis

9.2.1 Existing Households

The current housing scenario for the city has been worked out through the number of households and existing population for each of the IMC, Non-IMC and Greater Imphal Planning Area. The Figure 9.1 shows the past trend of Household Size within IMC, Non-IMC and Greater Imphal Planning Area for the years 1991, 2001 and 2011.

Figure 9. 1: Household size for IMC, Non-IMC and Greater Imphal Planning Area



Source: Census of India, 1991, 2001 and 2011

The table 9.1 gives the details about the population, number of households and the household size for the IMC, Non-IMC and Greater Imphal Planning Area for the years 1991, 2001 and 2011. It has been observed

that with the passage of time the household size is declining in the Greater Imphal planning area including the IMC and non-municipal areas (or villages) from 6.6 in 1991 to 4.5 in 2011. The decrease in HH size is an indication of out migration from the city.

Table 9. 1: Population, Number of Households and Household Size of Greater Imphal Planning Area, 1991-2011

Administrative Area	Population			Number of Households			Average Household Size		
	1991	2001	2011	1991	2001	2011	1991	2001	2011
IMC	204571	230825	283350	31684	40725	61004	6.5	5.7	4.6
Non-Municipal Area	180275	224707	258300	26684	38791	54750	6.8	5.8	4.7
Greater Imphal Planning Area	384846	455532	526543	58368	79516	115754	6.6	5.7	4.5

Source: Census of India 1991, 2001 and 2011;

9.2.2 Household Density

Household density for the Greater Imphal Planning Area has been calculated for 1991, 2001, and 2011 for the various sub zones. The household densities of various zones is tabulated in table 9.2 and sub zone wise household density for 1991, 2001, 2011 is depicted through Maps 9.1, 9.2, 9.3.

Note:
The data used to prepare maps 9.1, 9.2, 9.3 is attached in annexure 9.1, 9.2, 9.3.

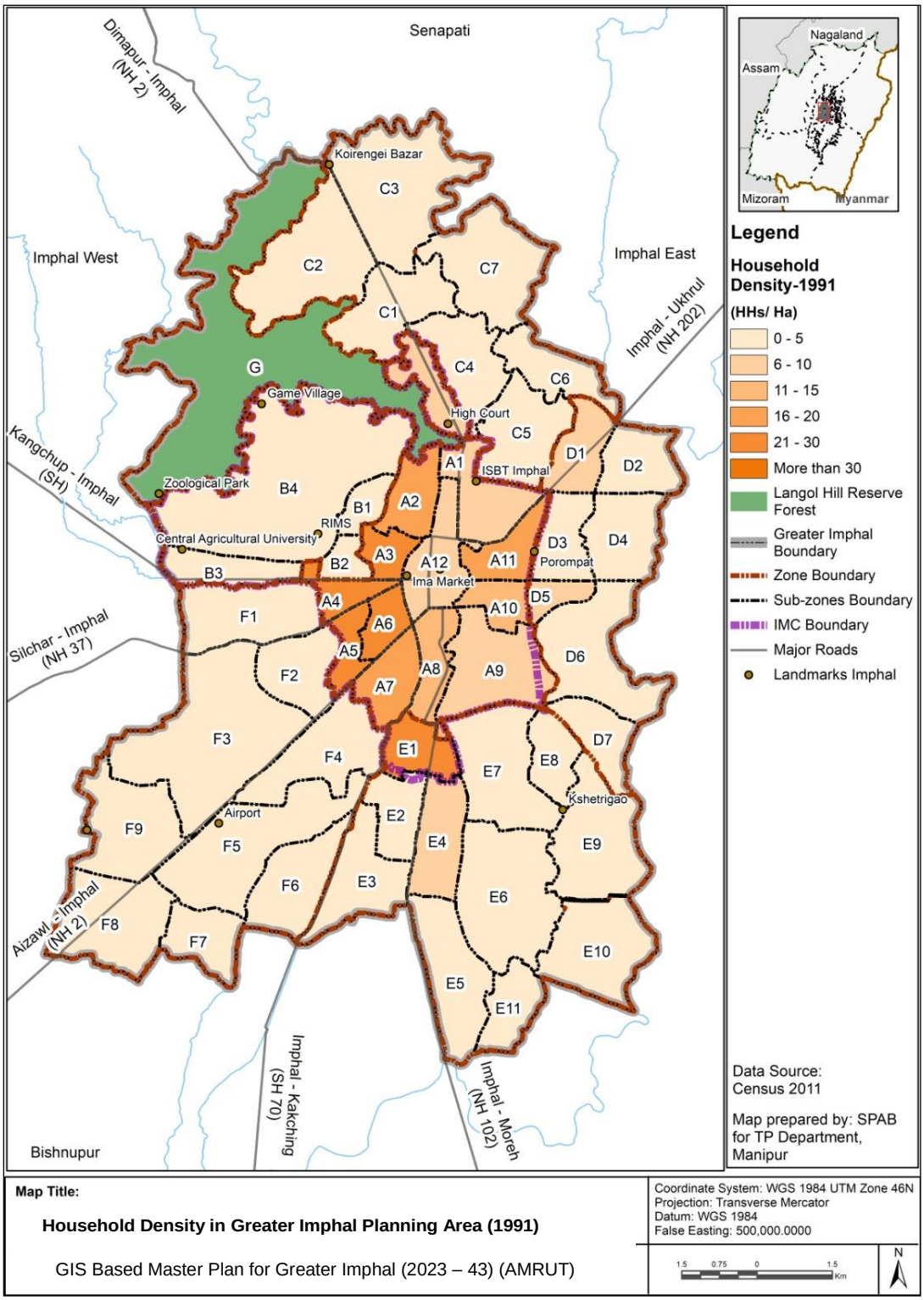
Table 9. 2: Zone wise household density (2011)

Sub-Zones	Households (HHs)	Household Density 2011 [HHs/Ha]
Zone-A	48884	24
Zone-B	7153	5
Zone-C	8940	4
Zone-D	12581	9
Zone-E	20752	7
Zone-F	14354	4

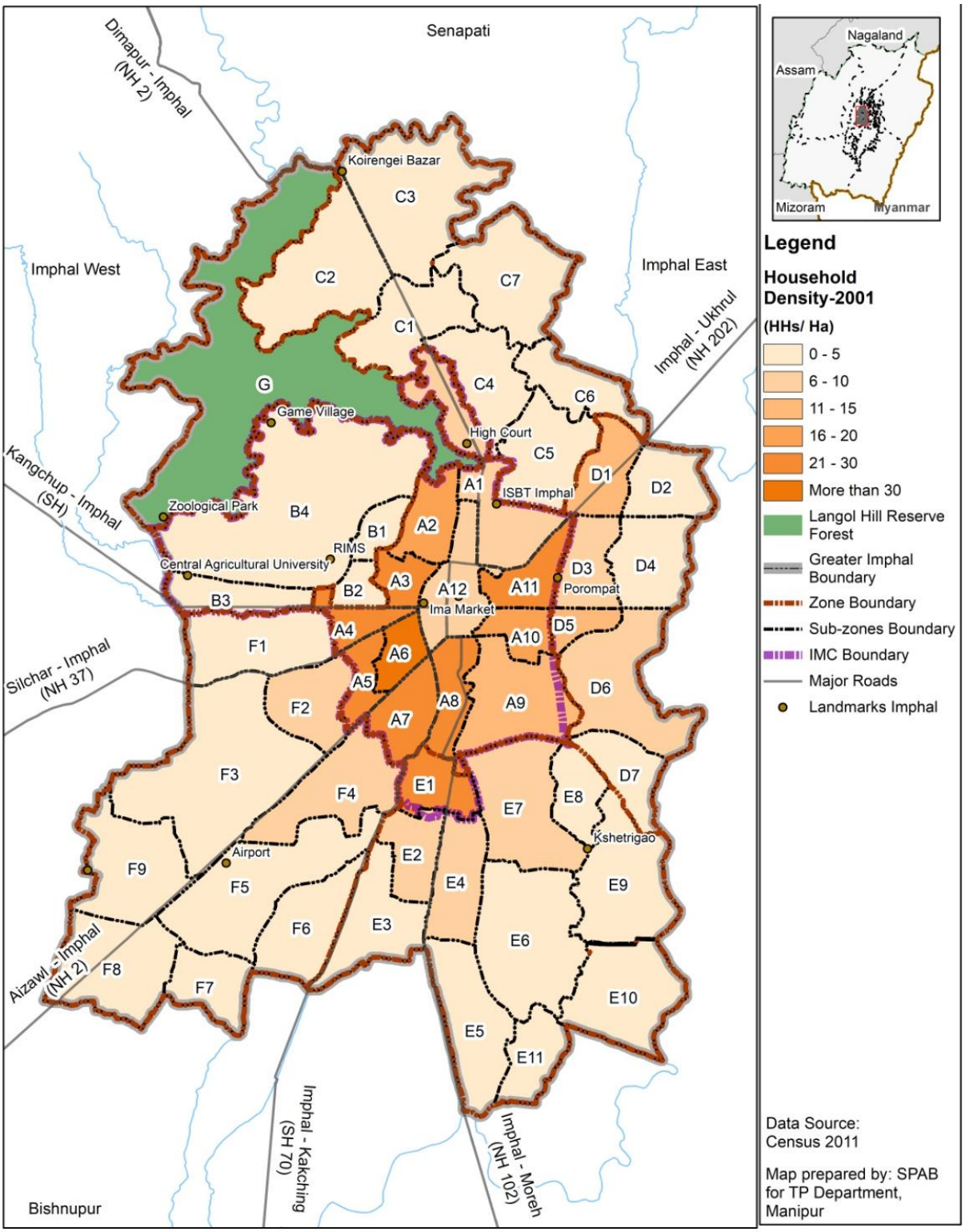
Source: Census of India, 2011

From table 9.2 it was noticed that Zone A has the highest density of 24 households per hectare and it is least in Zone C and F (4 HHs/ ha). Within the sub zones it is as high as 42 HHs/ ha in A5 and A6. From maps 9.1 to 9.3, it shows that the household densities have increased over time in the sub zones mainly near the municipal corporation boundary.

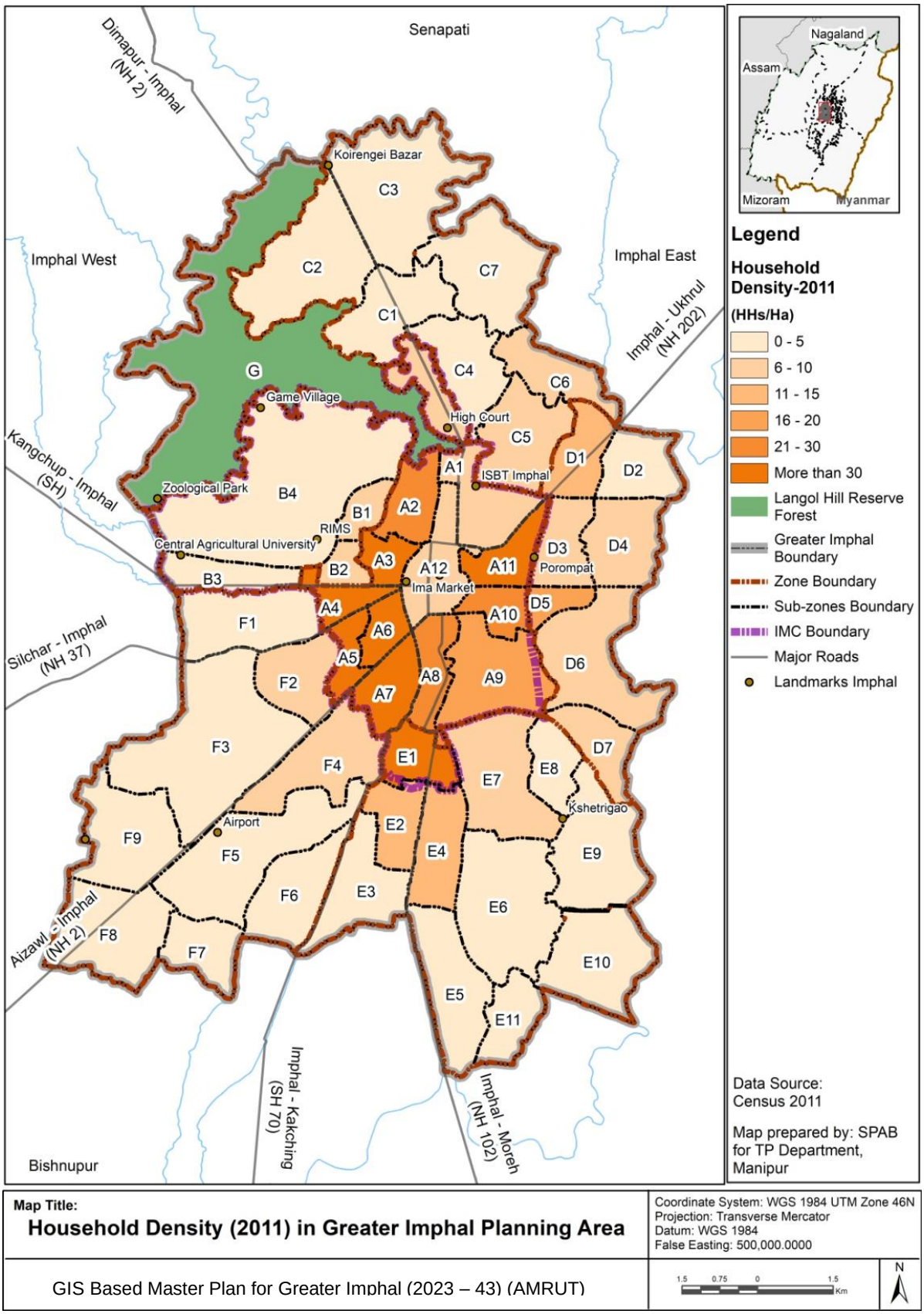
Map 9. 1: Household Density in Greater Imphal Planning Area (1991)



Map 9. 2: Household Density in Greater Imphal Planning Area (2001)



Map 9. 3: Household Density in Greater Imphal Planning Area (2011)



9.2.3 Housing Stock

As per census 2011, 80% of the houses are used for wholly residential use and 2% for residence cum other use within the IMC area. Only 17% of the total census houses have non residential usage, as tabulated in table 9.3.

The growth in the city is taking place in the Northern and South-western direction with major development of planned and unplanned colonies. In Greater Imphal Planning Area, area under residential use has slightly increased, from 3353 hectares in 1981 to 3,523 hectares in 2020, indicating the extent of the urban sprawl. The percentage distribution of residential area is 23.24% in 2020, which is on a lower side than prescribed standards, which range from 40 % to 45 %. There are no designated slum pockets in Imphal Municipal Corporation.

Table 9. 3: Census houses used as residence and residence cum other use in IMC

Total no. of households (HHs)	Total no. of occupied census houses	Occupied census house used as		
		Residence	Residence- cum-other use	Other non residential use
61004	73139	58564 (80%)	1933 (2%)	12449 (17%)

The ownership status of the houses within the Greater Imphal planning area is tabulated in table 9.4 which indicates that 15% of the houses are rented within the municipal corporation area and it is only 1% in the non municipal area. This is because houses are owned by the people in the villages rather than living on rent unlike in the city.

Table 9. 4: Ownership Status in Imphal Municipal Corporation, Non-Municipal Area and Grater Imphal Planning Area

Administrative Area	Owned	Rented	Any others
IMC	47758 (83.6%)	8879 (14.5%)	1127 (1.8%)
Non - Municipal Area	49982 (91.2%)	623 (1.1%)	1037 (1.8%)
Greater Imphal Planning Area	97736 (89%)	9502 (9%)	2161 (2%)

Source: Census of India 2011

9.2.4 Housing Structure

Housing structure has been analysed based on two components – i) Building Height and ii) Building Structures. The building height and structure of the houses were captured during the field survey in 2020.

Building Height – Majority of the building have one or two floors with some exceptions up to 8 floors. This is due to the reason that the majority of the buildings are residential. The 8-floored buildings are located in Zone A, while only 2 in Zone C, and 4 in Zone E (Table 9.5 and Map 9.4).

Table 9. 5: Building Height of IMC, Non-IMC and Greater Imphal Planning Area

Floors	No. of buildings (in the year 2020)						
	Zone A	**Zone B**	**Zone C**	**Zone D**	**Zone E**	**Zone F**	**Zone G**
No Data	588	138	555	0	0	640	31
Ground (G)	31353	9255	13418	15258	21083	21785	1092
(G) +1	15702	1791	2391	2974	5937	3909	65
(G) +2	5838	532	681	613	1288	1069	13
(G) +3	1763	75	103	126	207	150	1
(G) +4	488	13	17	14	22	20	0
(G) +5	107	3	0	3	5	2	0
(G) +6	37	1	2	0	0	3	0
(G) +7	7	0	2	0	4	0	0

Source: Ground truthing survey, 2020

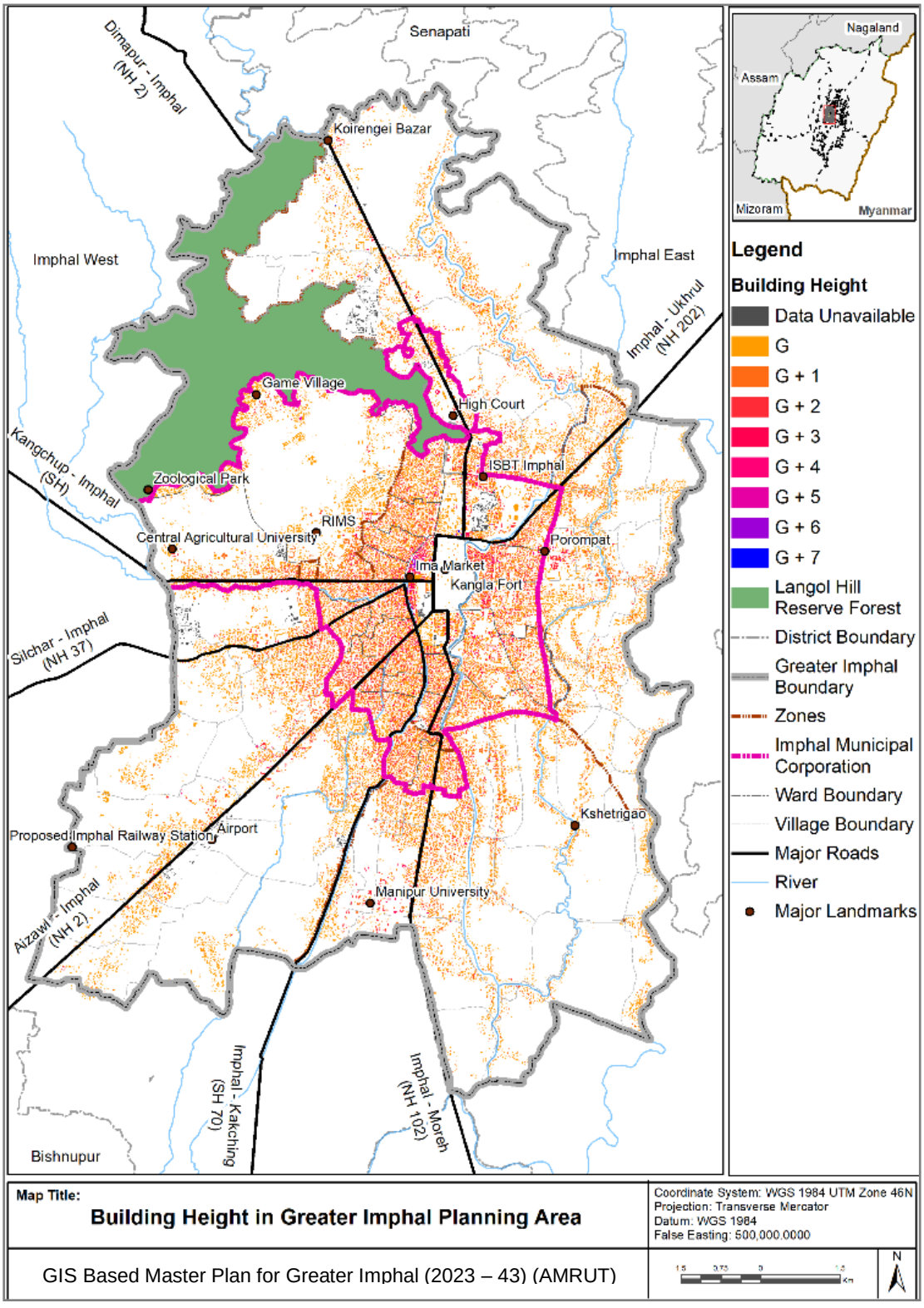
Building structure - Zone A has mainly Pucca houses, Zone B has Semi-pucca houses (as some part of it is near the forest area and the hilly areas of Zone G) while Zones C to G have mainly Kuccha houses. One common thing in all of these houses is the sloppy roof which is due to its climatic conditions (Table 9.6 and Map 9.5).

Table 9. 6: Building Structure of IMC, Non-IMC and Greater Imphal Planning Area

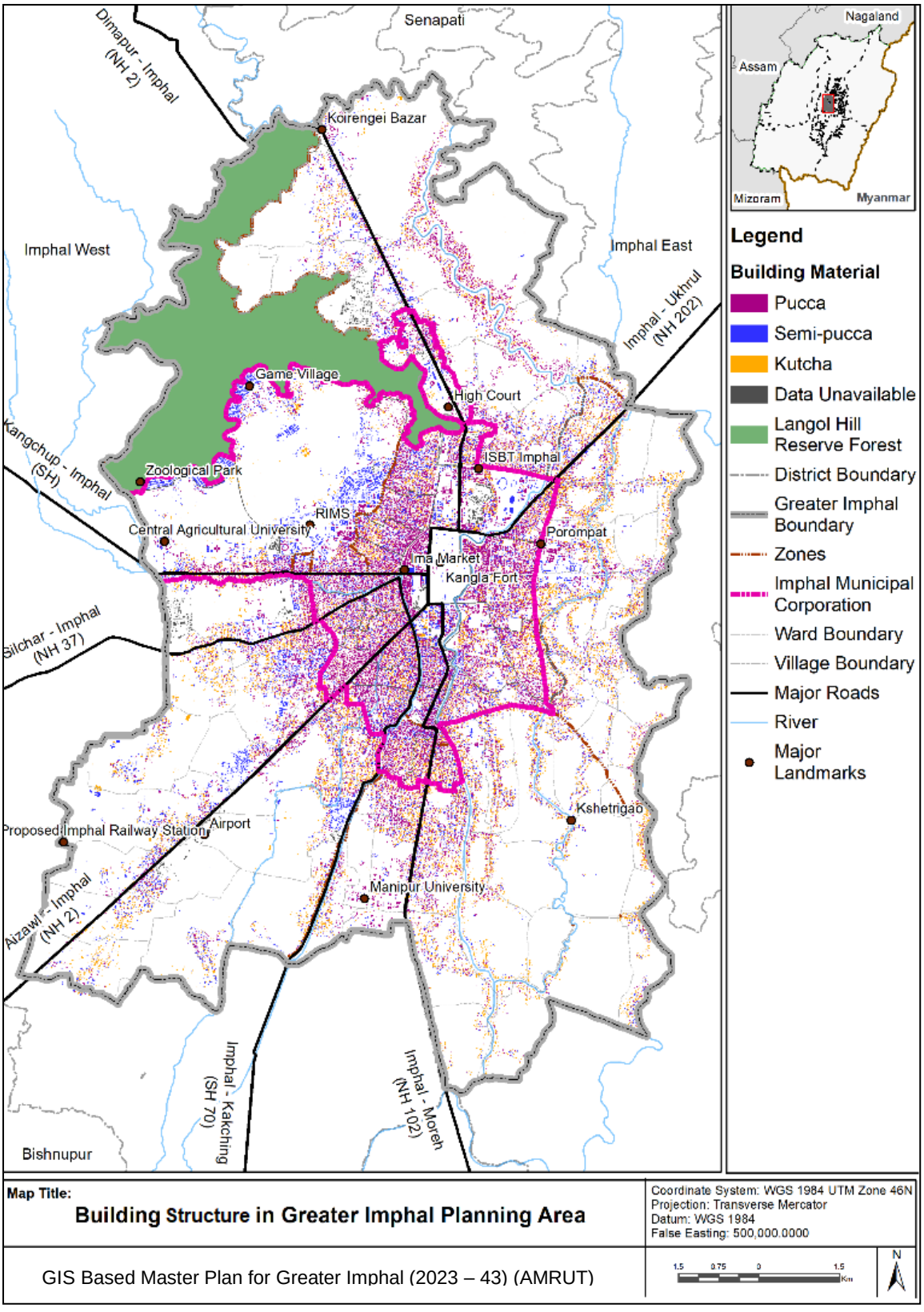
Structure	Zone A	Zone B	Zone C	Zone D	Zone E	Zone F	Zone G	Total
Kuccha	15212 (35%)	2940 (47%)	6924 (50%)	10591 (71%)	14031 (62%)	12078 (61%)	697 (80%)	62473 (51.3%)
Pucca	27638 (64%)	3244 (51%)	6304 (46%)	4263 (29%)	8638 (38%)	7161 (36%)	137 (16%)	57385 (47.1%)
Semi-Pucca	588 (1%)	138 (2%)	555 (4%)	0	0	640 (3%)	31 (4%)	1952 (1.6%)
Total	43438	6322	13783	14854	22669	19879	865	121810

The spatial locations of the above data are represented through Maps 9.4 and 9.5.

Map 9. 4: Building Height in Greater Imphal Planning Area



Map 9. 5: Building Structure in Greater Imphal Planning Area



9.3 Existing Housing Need Assessment

The total housing need for Greater Imphal Planning Area was calculated based on the quantitative and qualitative housing shortage in 2011 for the municipal corporation area and new housing required based on the projected population for 2043. It is assumed that there is no quantitative housing shortage in non municipal area i.e. villages.

9.3.1 Quantitative Housing Shortage

The census 2011 data was analysed to estimate the quantitative housing shortage for Imphal Municipal Corporation area for 2011. The shortage was estimated based on the Number of census houses and No. of Residential Occupied census houses.

- Total no. of HHs: 61004
- Total no. of residential occupied census houses: 58564+1933= 60497
- **Quantitative Housing Shortage as of 2011 in IMC area: 61004 – 60497= 507**

The quantitative housing shortage as of 2011 in IMC area is calculated to be 507 houses, although possibility cannot be ruled out that some HHs have more than one census house at their disposal. Also it does not rule out the possibility of some HHs not having access to shelter if above is the case. Since the non IMC area is village area, it is assumed that there is no quantitative housing shortage in non IMC area. Also the data for IMC is 2011 data which is old, so this shortage might be reduced with the implementation of government aided housing schemes.

9.3.2 Qualitative Housing Shortage

The qualitative housing shortage was analysed based on the condition of residential census houses as per census 2011 within IMC area. Table 9.7 tabulates the data for the condition of residential census houses. The data for building structure is discussed in the previous section 9.2.3.

Table 9. 7: Census houses based on conditions within the IMC

Total no. of houses	Condition of census houses (In IMC area)		
	Good	Livable	Dilapidated
60497	37767 (62%)	20398 (33%)	2332 (5%)

Source: Census of India 2011

The qualitative housing shortage in Greater Imphal Planning area includes:

- 64,425 dwelling units out of which 62,473 are kuccha houses and 1952 are semi- pucca houses. Zone E has the maximum kuccha houses (14,031) and Zone F has highest number semi-pucca (640) houses (as per ground truthing survey, 2020).
- 2332 dilapidated houses in IMC area as per Census 2011 (assuming they are not counted in the kuccha and semi- pucca category)
- **Total: 66757**

The qualitative shortage of kuccha and semi pucca housing can be fulfilled through government aided housing schemes.

The dilapidated houses can be declared unsafe for living by the municipality based on their condition or the property owners can be contacted for their up gradation/ improvement.

9.3.3 Rental Housing

It was observed from table 9.4 that, 15% of the houses are rented houses in municipal corporation area. When looked at the migrant population within the IMC, it was seenin the table 9.8 that 1.6% of total population is migrant population from outside the state within IMC. Hence, required dwelling units for migrant population of outside the state is calculated as 1052 houses approx with assuming the HH size as 4.5.

Since people from other states are not entitled to purchase house/ property in Imphal, therefore it is likely that there will be a rise in rental housing together with rise in economic and employment opportunities. This is already taken care of through housing need which will not necessarily be met only through house ownership.

Table 9. 8: Total Migrants within IMC as per Census 2011

Total Population		**2,83,350**
Subtotal Migrants		**77,204**
Intra-state Migration	**72,469**	**93.87%**
Intra -District Migration	**51,726**	
Inter-District Migration	**20,743**	
Other states	**4,357**	**5.64%**
Other countries	**362**	**0.47%**
Unclassifiable	**16**	**0.02%**
Subtotal migrants from outside state	**4,735**	**6.13%**

9.3.4 Housing Need for 2043

The housing need for 2043 is calculated based on the projected population for 2043 and subtracting the existing number of households. The table 9.9 summarizes the housing requirement for IMC, Non-IMC and Greater Imphal Planning Area. The total housing requirement for the year 2043 for entire Greater Imphal Planning Area will be 83,502 households.

Table 9. 9: Housing Requirement Projections in IMC, Non-IMC and Greater Imphal Planning Area

Administrative Area	Projected Population 2043	Increase in Population	Increase in Household	Housing requirement
IMC	4,21,331	1,37,981	29,995	**29,995**
Non-Municipal Area	4,80,971	2,22,671	47,376	**47,376**
Greater Imphal Planning Area	9,02,302	3,75,759	83,502	**83,502**

Source: Census of India 1991, 2001 and 2011; and Estimated by author

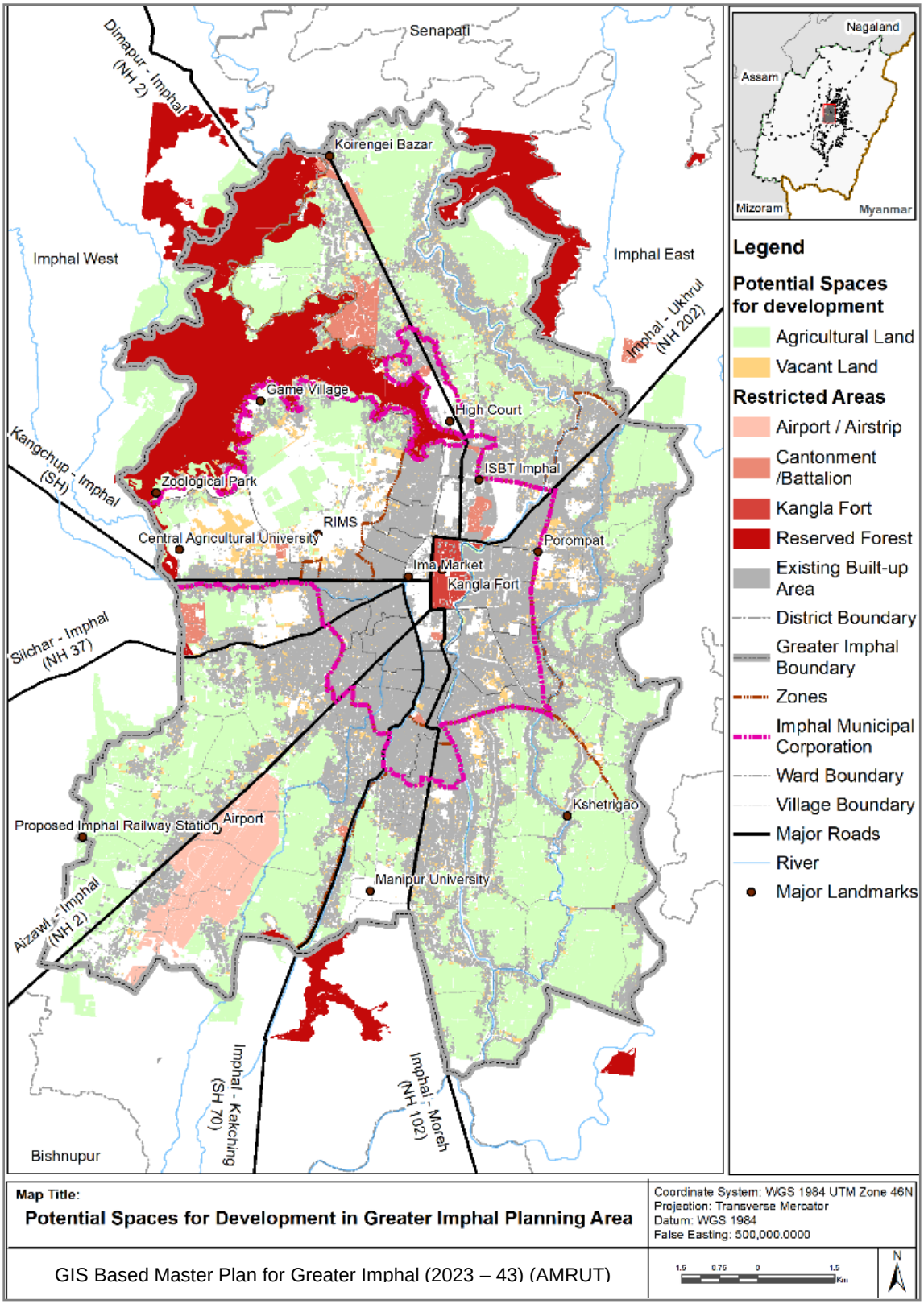
9.4 Residential Development Potential

To understand the future development potential area within Greater Imphal area, potential vacant spaces are identified along with existing and potential urban growth directions, and the locational suitability for housing was conducted as well.

9.4.1 Potential Areas for Development

The potential green spaces for development include agriculture areas in the Greater Imphal Planning Area. Areas with restricted development are also mapped like the reserve forest and Kangla fort area to understand locations with restricted development. (Map 9.6)

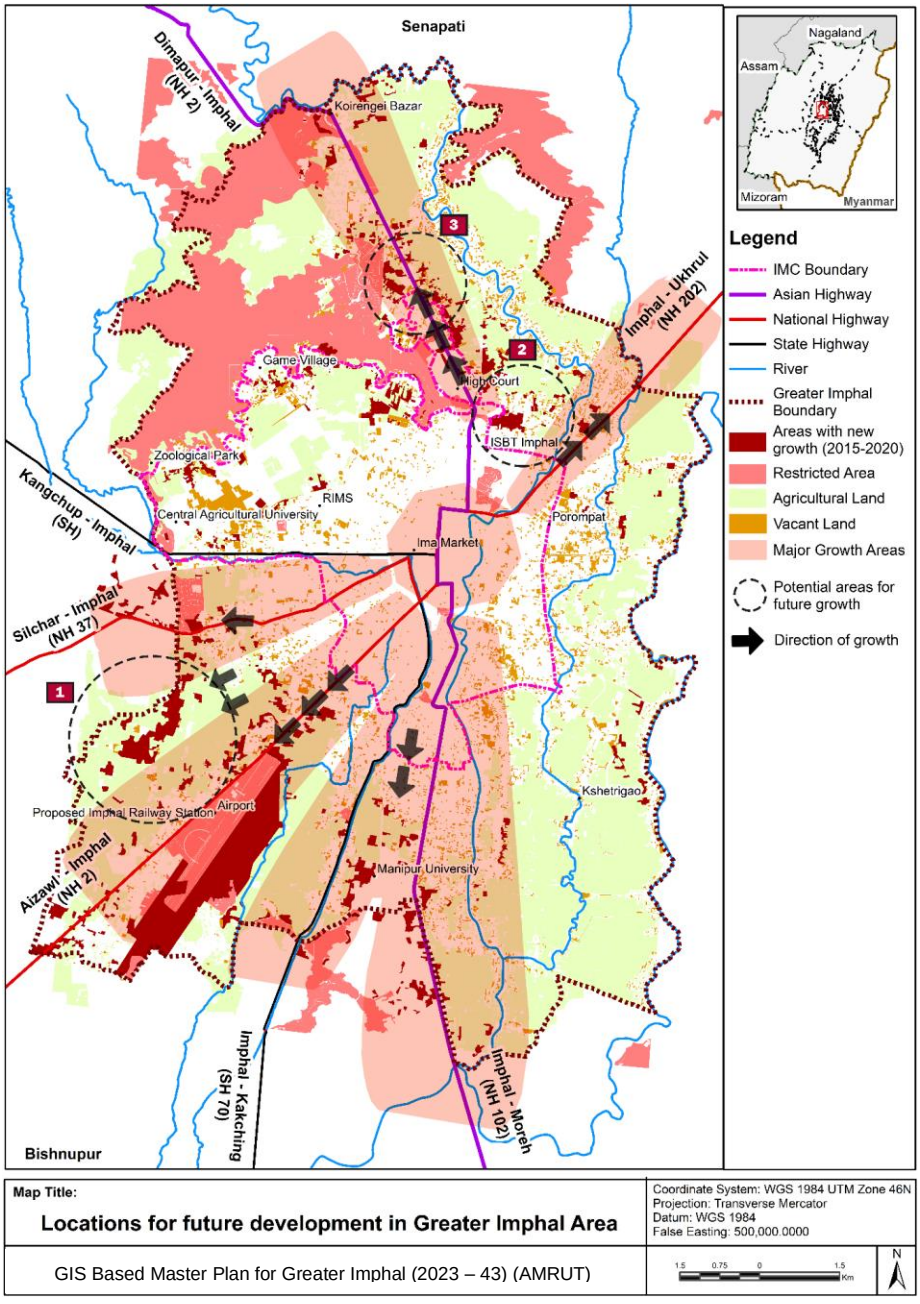
Map 9. 6: Potential Green Spaces for development in Greater Imphal Planning Area



9.4.2 Identification of areas for future growth - 2043

Areas for future growth were identified by analysing the existing built-up area and to identify locations which can be further developed to fulfill the housing requirements and to cater projected population in the future. After the analysis, three locations have been identified after overlapping recent built up with major growing areas. First one is identified near new proposed railway station and existing airport, second one is in close proximity to ISBT Imphal and High Court area and last one is along Asian Highway in the northern part of the Greater Imphal Planning Area. (Map 9.7)

Map 9. 7: Locations identified for future development in Greater Imphal Planning Area

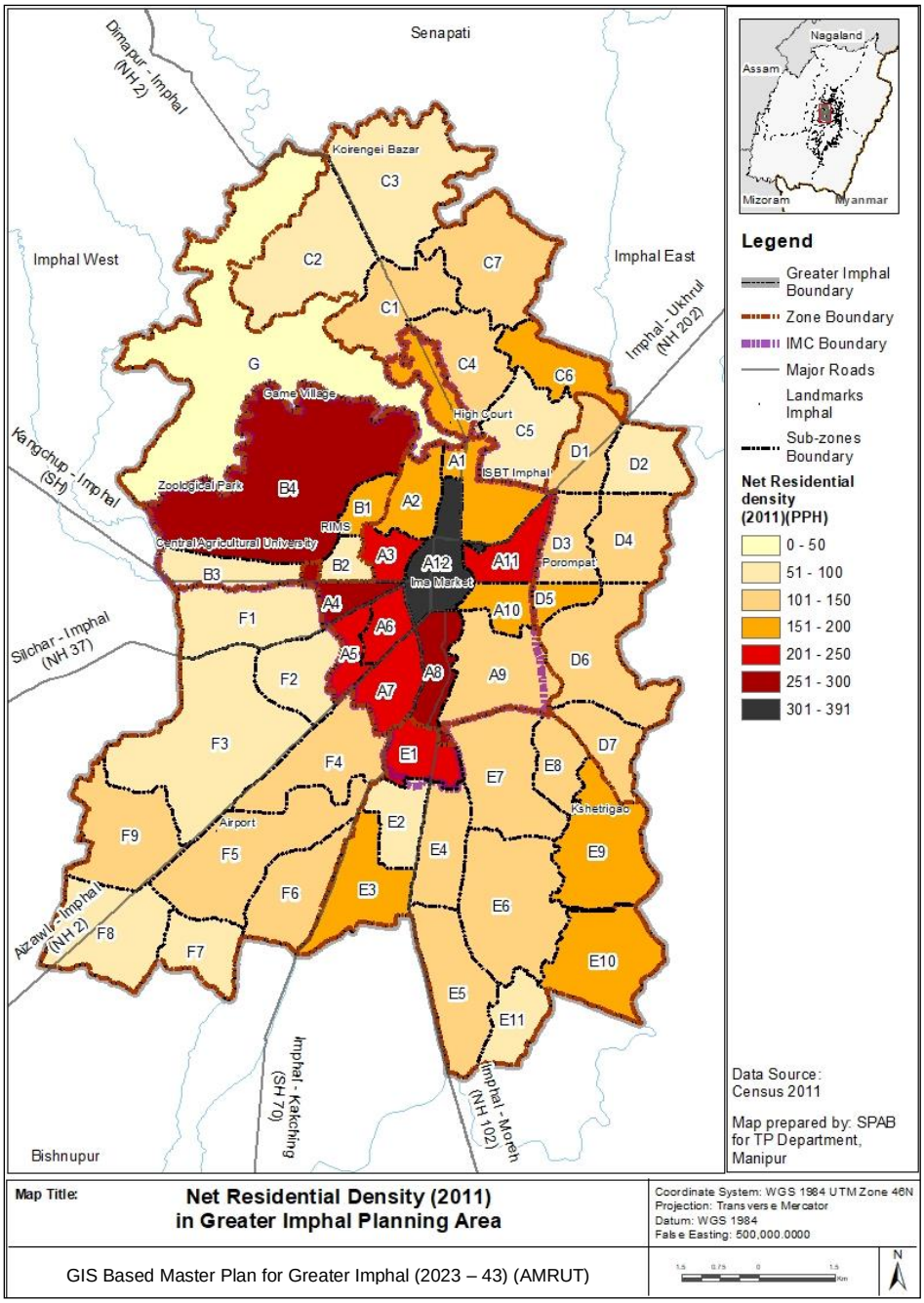


9.4.3 Net Residential Density

The net residential density for each sub zone is calculated based on the area under residential landuse in each sub zone and its 2011 population as per census. It is observed that the residential density is higher on the eastern side of the planning area in zone C, D and E as compared to the western side (zone F and G). The sub zone wise net residential density is depicted through Map 9.8.

Note:
The data used to prepare Map is attached in annexure 9.4.

Map 9. 8: Net Residential Density, 2011



9.4.4 Suitability Analysis

For identifying suitable land for housing, locational suitability on Arc GIS using weighted overlay analysis of 8 important parameters was conducted. These parameters are; i) Nearness to higher order roads, ii) Nearness to Airport, iii) Nearness to Railway Station, iv) Nearness to Schools, v) Nearness to Hospitals, vi) Nearness to Work Stations, vii) Nearness to locations with High Aesthetic value and viii) Nearness to Electrical Sub-stations and ix) Nearness to Wetlands. These parameters are assigned weights depending upon how important a particular parameter is when locating lands for housing as shown in Table 9.10. After the weighted overlay analysis of these parameters based on their identified criteria and suitable weights various factors such already built-up areas, low lying areas, areas along drainage basin and restricted areas are subtracted to avoid undesirable output.

Table 9. 10: Criteria for Suitability Analysis along with assigned weights

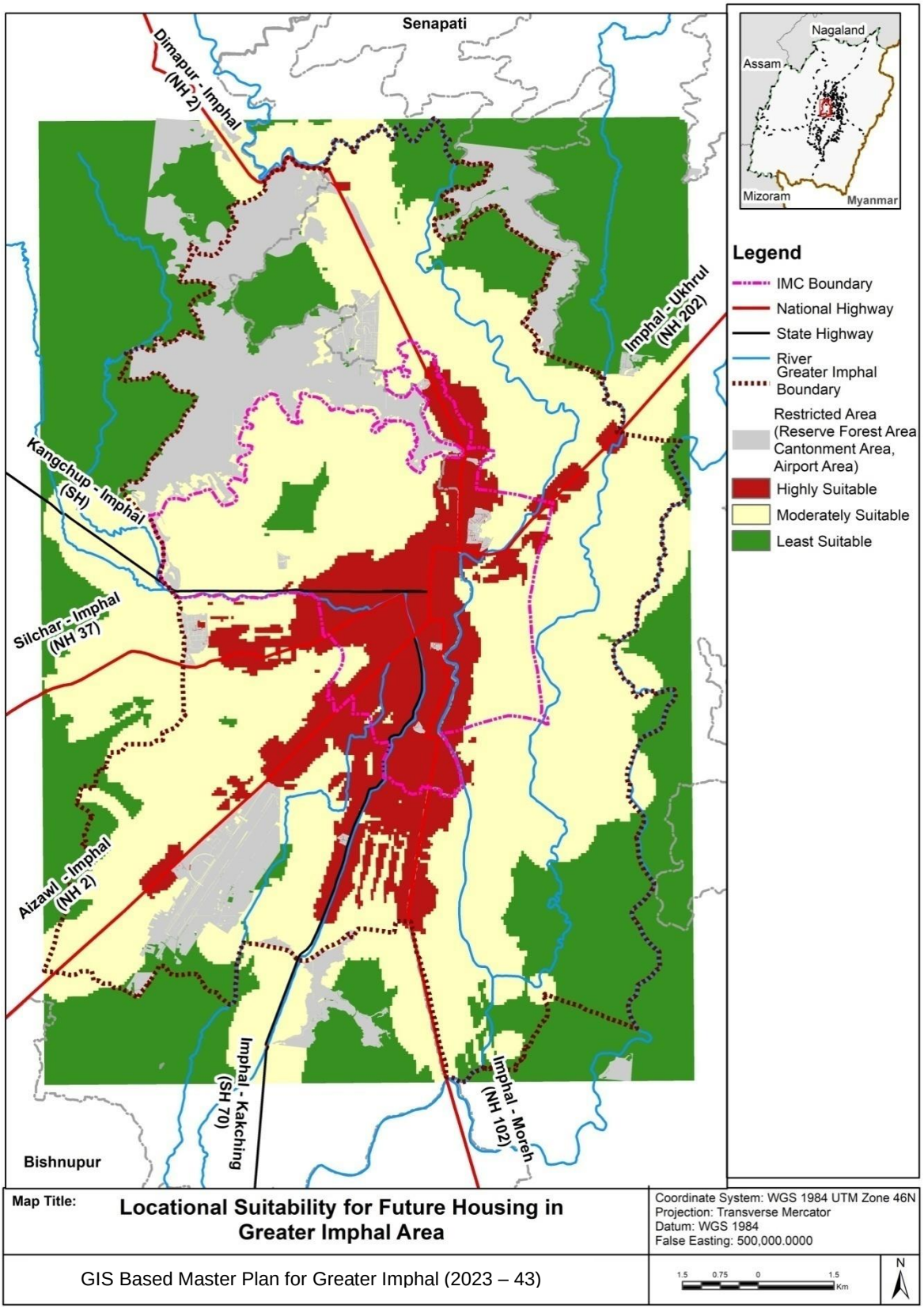
Criteria	Sub-Criteria	Level of Suitability	Ranking	Weights (in %)
Nearness to high order roads	< 250 m	Very High	1	24
	250 m–500 m	High	2	
	500 m–750 m	Moderate	3	
	750 m–1000 m	Less	4	
	> 1000 m	Very Less	5	
Nearness to Airport	< 250 m	Very Less	5	10
	250 m–500 m	Less	4	
	500 m–750 m	Moderate	3	
	750 m–1000 m	High	1	
	> 1000 m	Very High	2	
Nearness to Railway	< 250 m	Very Less	5	10
	250 m–500 m	Moderate	3	
	500 m–750 m	High	2	
	750 m–1000 m	Very High	1	
	> 1000 m	Less	4	
Nearness to Schools	< 300 m	Very High	1	11
	300-500 m	High	2	
	500-700m	Moderate	3	

	700-900 m	Less	4	
	> 900m	Very Less	5	
Nearness to Hospitals	< 400 m	Very High	1	10
	400-700 m	High	2	
	700-1000 m	Moderate	3	
	1000-1300 m	Less	4	
	> 1300m	Very Less	5	
Nearness to Work Stations	<1500m	Very High	1	15
	1500-3000m	High	2	
	3000-5000m	Moderate	3	
	5000-10000m	Less	4	
	>10000m	Very Less	5	
Location with High Aesthetic Value	<500m	Very High	1	10
	500-1500m	High	2	
	1500-3000m	Moderate	3	
	3000-5000m	Less	4	
	>5000m	Very Less	5	
Nearness to Electrical Sub-Stations	< 200 m	Very High	1	10
	200-500 m	High	2	
	500-1000 m	Moderate	3	
	1000-2500 m	Less	4	
	>2500 m	Very Less	5	
			TOTAL	**100**

The outcome of the above analysis is shown in Map 9.9 that shows three categories of locational suitability for housing which include areas highly suitable for housing development, moderately suitable and least suitable for future housing development.

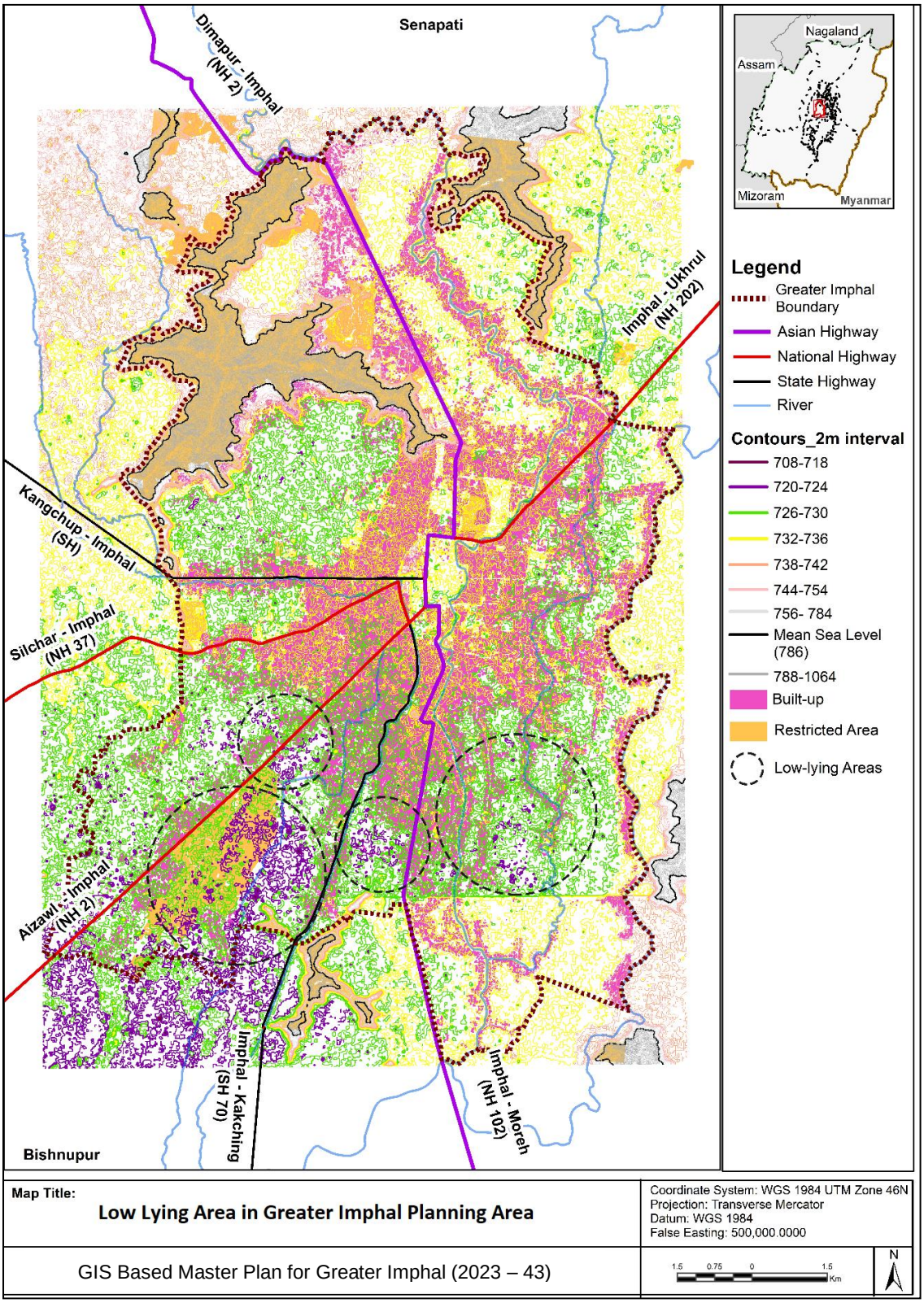
After the above analysis, environmentally restricted layers like low lying areas, areas along drainage basin were identified to get the desired output.

Map 9. 9: Locational Suitability for Housing in Greater Imphal Planning Area



9.4.5 Identification of low-lying areas

Map 9. 10: Low-lying areas in Greater Imphal Planning Area



Map 9.10 shows the low-lying areas (Elevation-720-724m) that have been identified in the Greater Imphal Area where future development should be avoided. These low-lying areas lie in the southern part of the delineated area covering majorly agriculture fields and airport. After overlapping contours with existing built-up, it is concluded that the construction was done after giving absolute importance to these areas.

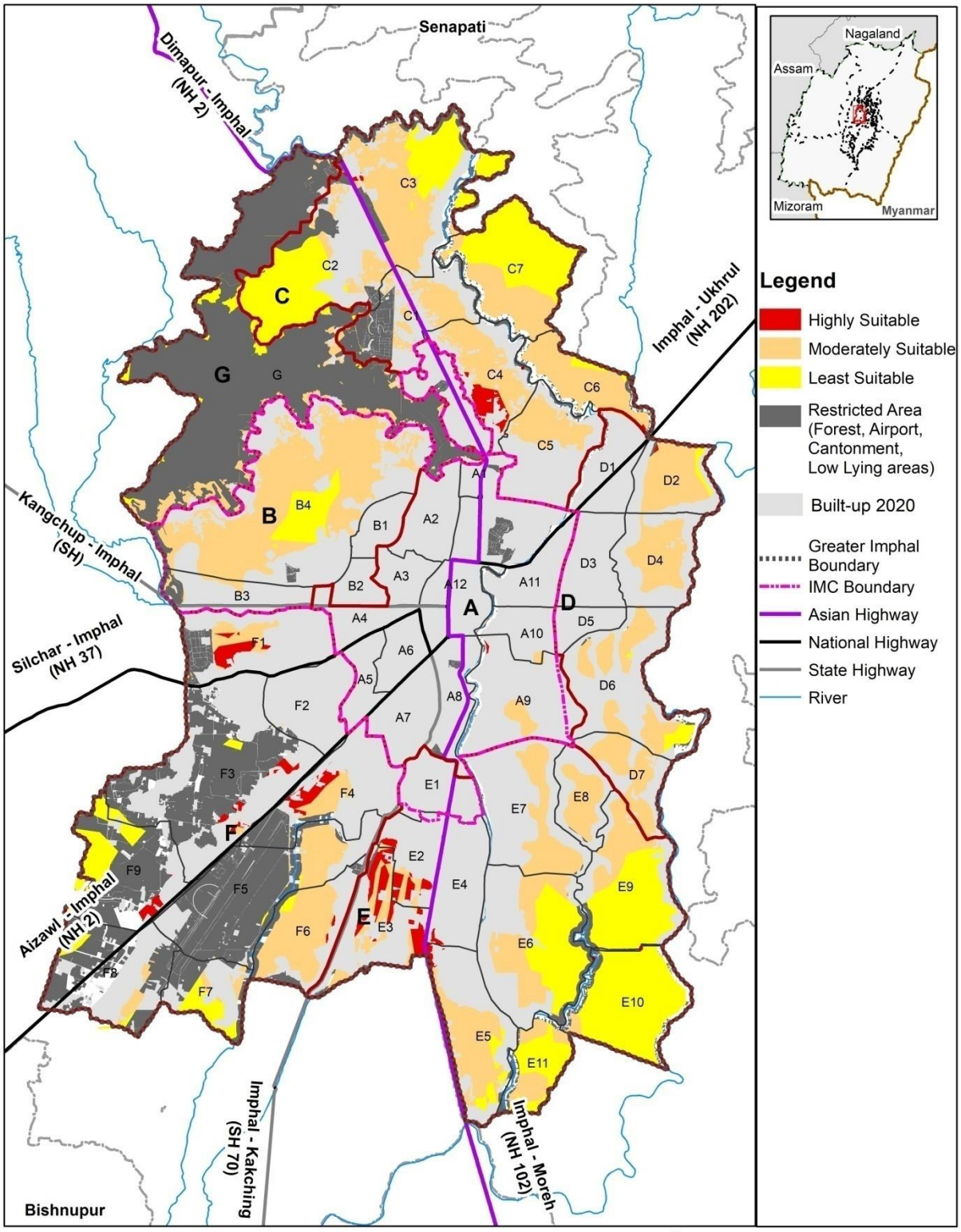
9.5 Suitable Location for Future Housing

After the weighted overlay analysis in GIS, environmentally and administratively restricted layers like low lying areas, reserve forest, cantonment areas, airport areas and already built- up areas were removed to get the final locations suitable for future housing. The suitability was categorised as areas highly suitable, moderately suitable and least suitable for housing location. Area under each suitability category is tabulated in table 9.11 and Map 9.11 represents the locations of highly suitable areas for housing.

Table 9. 11: Area under suitability categories

Category of Suitability	Area (Ha)
Highly Suitable	177
Moderately Suitable	5461
Least Suitable	7046

Map 9. 11: Locational Suitability for Future Housing in Greater Imphal Planning Area



9.6 Observations and Way Forward

- Residential land use covers 24.79% of the Greater Imphal Planning area, and mixed use residential is 0.64% for year 2020 as per remote sensing data.
- As per census 2011, 15% are rented houses within the municipal corporation whereas it is 9% in the total planning area.
- As per the ground truthing survey, 51% of the houses are kuccha in the planning area and 1.6% are semi pucca houses.
- Based upon census 2011 and primary data 2020, it seems that There is a quantitative housing shortage of 507 houses within the IMC area a qualitative housing shortage of 66757 houses within the Greater Imphal planning area. The qualitative shortage can be fulfilled through PMAY housing scheme for both urban and rural areas.
- The future need of housing for the projected population of 2043 is 83502 houses, assuming that the observed household size (4.6) of census 2011 will remain constant between 2001 and 2043.
- As per Locational suitability analysis for future housing, Zones C, E and F have high suitable areas for future development and land for the incorporation of town planning schemes.
- Total highly suitable land available is 200 hectares approx.

Section 10: Physical Infrastructure

10.1 Introduction

The physical infrastructure includes components like water supply, sewage system, solid waste and electricity supply. The existing situation and demand for 2043 of each component has been analysed in this section.

10.2 Water Supply

The water supply arrangement for Imphal town was introduced about 108 years back in a skeleton form. The water supply was restricted to public stand-posts only up to 1965 except a few individual connections given to selected people with a gradual increase in population. Several augmentations of the water supply system were introduced since 1965, but the distribution system was inadequate, causing inequitable distribution to most areas. Therefore, a distribution network for water supply for the Imphal Municipal Corporation was approved by the Ministry of Urban Development (CPHEEO), New Delhi, under AMRUT in a phased manner.

10.2.1 City Water Sources

The existing water supply systems in the Imphal city are mainly dependent on surface water sources, which account for more than 90% of the water sources in Imphal. Currently, four sources of water are being used for meeting the demand of the Greater Imphal Planning Area. The sources are Singda Dam, Leimakhong River, Imphal River and Iril River (Map 10.1). Imphal River supplies raw water to 10 existing WTPs, while Iril River supplies raw water to four existing WTPs. Both these rivers flow through the city. Singda Dam, Leimakhong River and Polok River are located to the west of the city and supply raw water to Singda WTP, Kangchup WTP and Kangchup Extension WTP. Table 10.1 shows output of each water source. There are currently 13 water supply zones established in Imphal city. These zones have been assigned areas on the basis of each source and treatment plant and also with a view to facilitate operation. The Urban Circle of the PHED operates 11 water supply zones and the Rural Circle (Imphal West Division) is responsible for the rest, namely, Ghari WTP zone and Lamjaotongba WTP zone.

Table 10. 1: Water supply sources in Greater Imphal

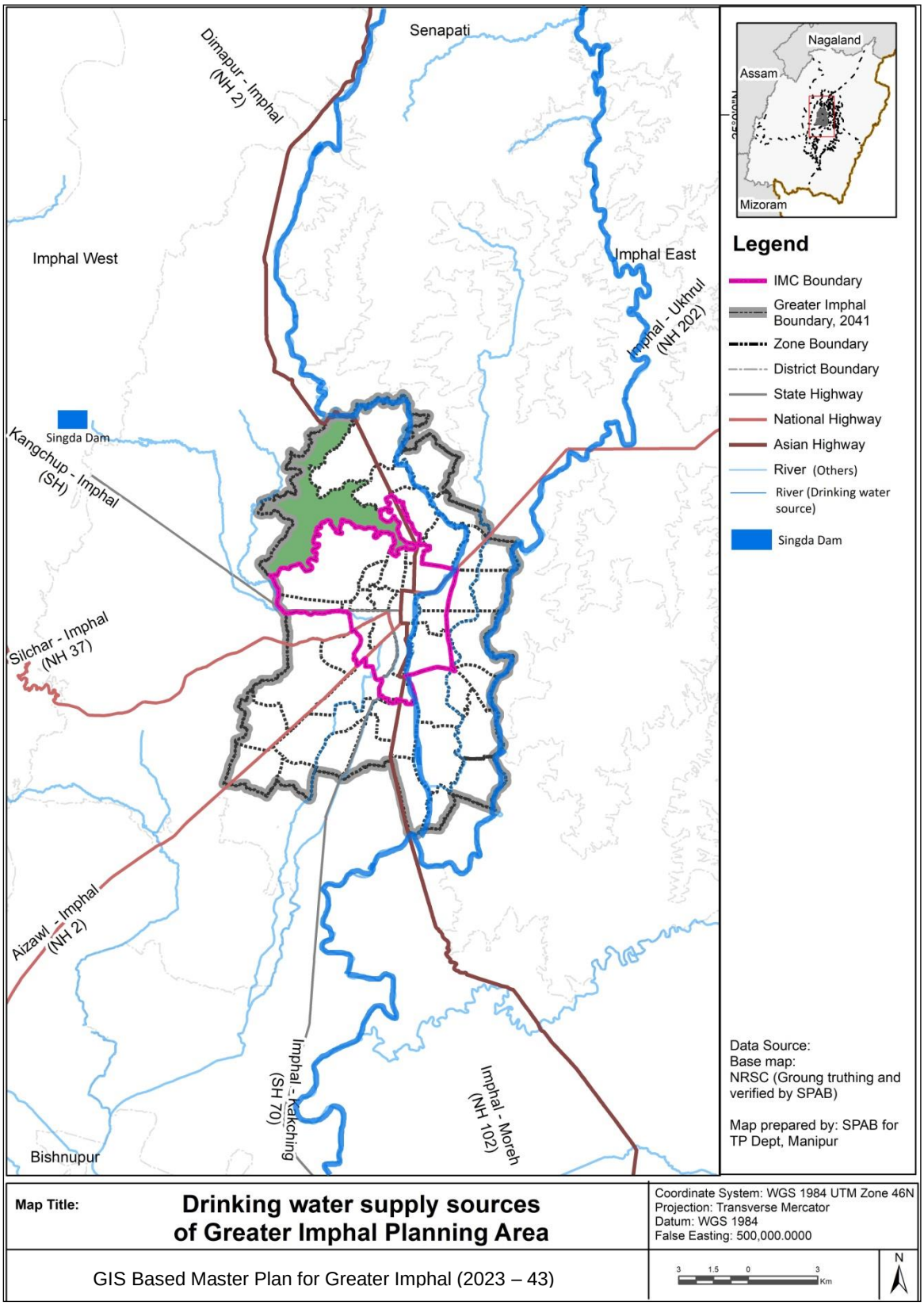
Source Name	Source Output (MLD)	
	MLD	%
Imphal river	49.50	41
Iril river	23.15	19
Singda Dam	18.16	15
Leimakhong river	14.53	12
Polok river	9.08	7
Potsangbam Groundwater Source	6.81	6
Total	121.23	100

Source: Preparatory Survey On Imphal Water Supply Imrovement Project Final Report,2015 by Japan International Cooperation Agency

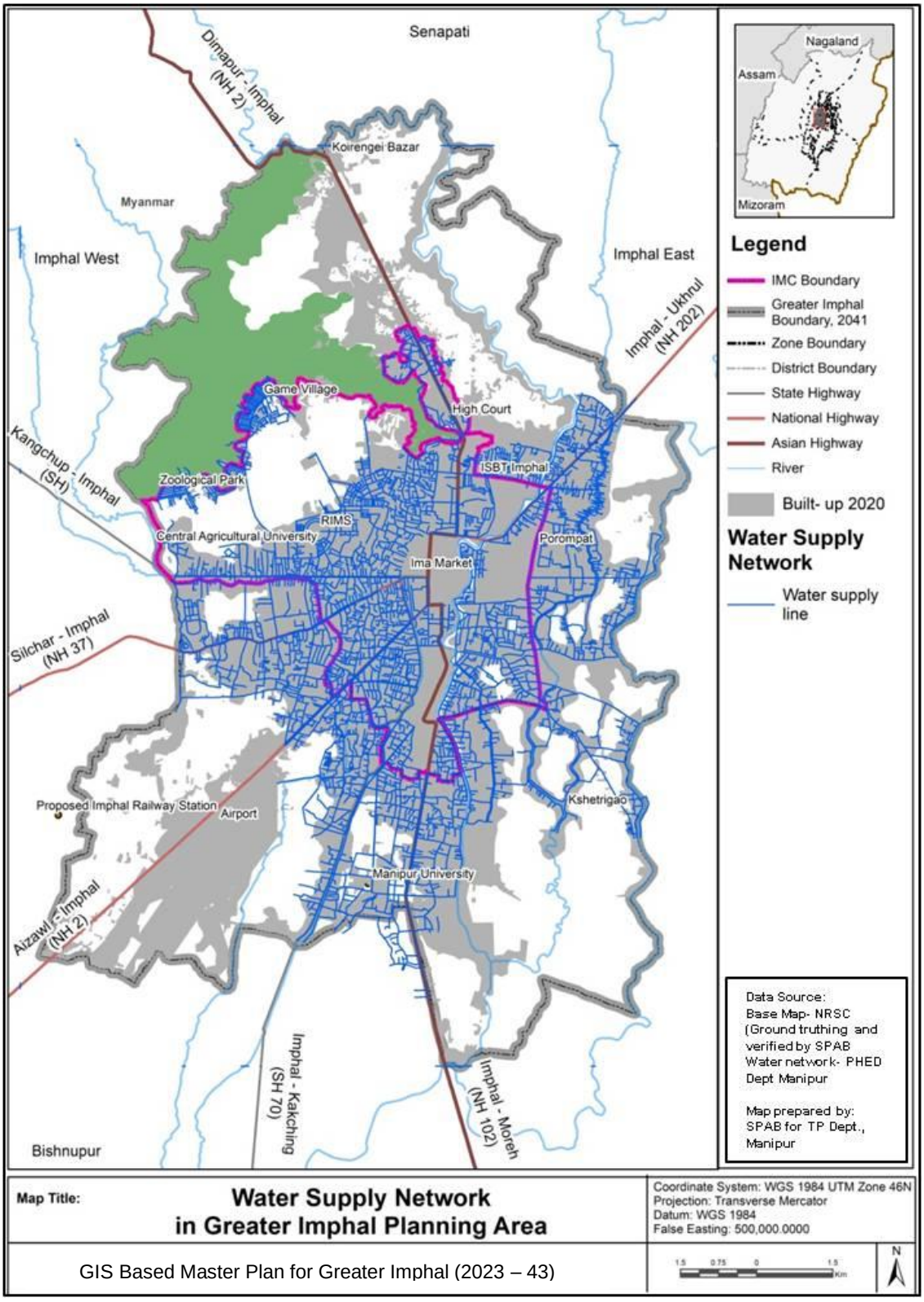
10.2.2 Water Distribution System

The total length of water supply pipeline in the Imphal Municipal area and the Greater Imphal area are 350 km (approx.) and 600 km (approx.), respectively. Water is not supplied though gravity in the present water supply system, some are gravity fed from either high level service reservoirs located over hills or elevated overhead tanks fed from the water treatment plants either by gravity or through pumping. In many water supply zones, supply is through direct pumping from zonal/service reservoirs. Since these service reservoirs are located in a few areas, therefore the zonal supply system is incorporated. The entire distribution networks are further divided into 25 subzones with 13 zonal reservoirs, 16 clear water reservoirs, and 7 overhead tanks (OHTs). Refer map 10.2.

Map 10. 1: Sources of Drinking water in Greater Imphal Planning Area



Map 10. 2: Water distribution Network in Greater Imphal Planning Area



Source: Water Supply Maintenance Division I & II, PHED Manipur

10.2.3 Drinking Water Demand Estimation

According to the forecasted population of the Greater Imphal area for 2043 (IMC area and Non- IMC area), considering the base year as 2011 and water consumption standards by CPHEEO and URDPFI guidelines (recommended water supply levels for cities with piped water supply), a demand estimation is made. For the analysis, 200 LPCD for IMC area and 90LPCD for Non-IMC area are considered for per capita consumption.

Depending upon the standards by CPHEEO, projected decadal water demand for the Imphal Municipal area as well as Non-Municipal area (table 10.2).

Table 10. 2: Water demand for the population of 2043 in Greater Imphal Planning Area

Sub-Zone	Population		Water Demand (MLD)	
	2011	**2043**	**2011**	**2043**
IMC	283351	446937	56.67	89.39
Non-IMC	243192	455365	21.89	40.98
Greater Imphal Planning area	**526543**	**902302**	**78.56**	**130.37**

Source: CPHEEO standards

10.2.4 Water Treatment Plant

There are 14 water treatment plants with total capacity of 121.23 MLD, receiving water from the rivers Imphal, Iril, Leimakhong stream, Pollock river and Singda Dam. Most of these plants are of conventional type with aeration, coagulation, flocculation, clarification, filtration (rapid sand / pressure filters). With the maximum possible water supply (assuming 100% efficiency of the system), the current supply of drinking water within the Greater Imphal area is 116 1pcd below the standard of basic water supply benchmark CPHEEO as shown in table 10.3.

Table 10. 3: Water Treatment Plants with their capacities

Sl. No.	**Name of the Water Supply Scheme**	**Location of Water Treatment Plant**	**Status of Production (MLD)**
			Installed Capacity
A	Existing Scheme		
1	Kangchup	Kangchup hill	14.53
2	Kangchup (Extension)	Kangchup hill extension	9.08

3	Singda	Singda dam near Kangchup - Imphal west	18.16
4	Minuthong	Minuthong - Imphal west	1.14
5	Chinga	Chinga hill rock - Imphal west	4.5
6	Canchipur	Canchipur - Imphal west	15.89
7	Porompat	Porompat - Imphal east	16.34
8	Koirengei	Koirengei - Imphal east	15.89
9	Ningthempukhri	Ningthempukhri - Imphal east	4.54
10	Khuman lampak	Khuman lampak - Imphal east	4.54
11	Awang Potsangbam	Potsangbam — Imphal east	6.81
12	Irilbung	Irilbung Hill Range - Imphal east	6.81
13	Old Thambuthong	Old Thambuthong - Imphal east	2
14	Moirangkhom	Loklaobung	1
15	Chingkheiching (yet to be commissioned)	Chingkheiching	45
		Total Capacity in MLD	166.23

Source: Preparatory Survey On Imphal Water Supply Imrovement Project Final Report,2015 by Japan International Cooperation Agency

Table 10. 4: Amount of treated water with respect to sources

Sl. No.	Source	Installed Capacity to treat in MLD	Present Output in MLD
1	Imphal River	49.50	39.21
2	Singda, Leimakhong	23.15	17.77
3	Iril River	27.69	20.04
4	Polok river	9.08	6.81
5	Ground water	6.81	5.81
Total		**121.23**	**95.00**

Source: Preparatory Survey On Imphal Water Supply Imrovement Project Final Report,2015 by Japan International Cooperation Agency

The treatment capacities of the water treatment plans are sufficient for the present scenario. (Refer Table 10.4)

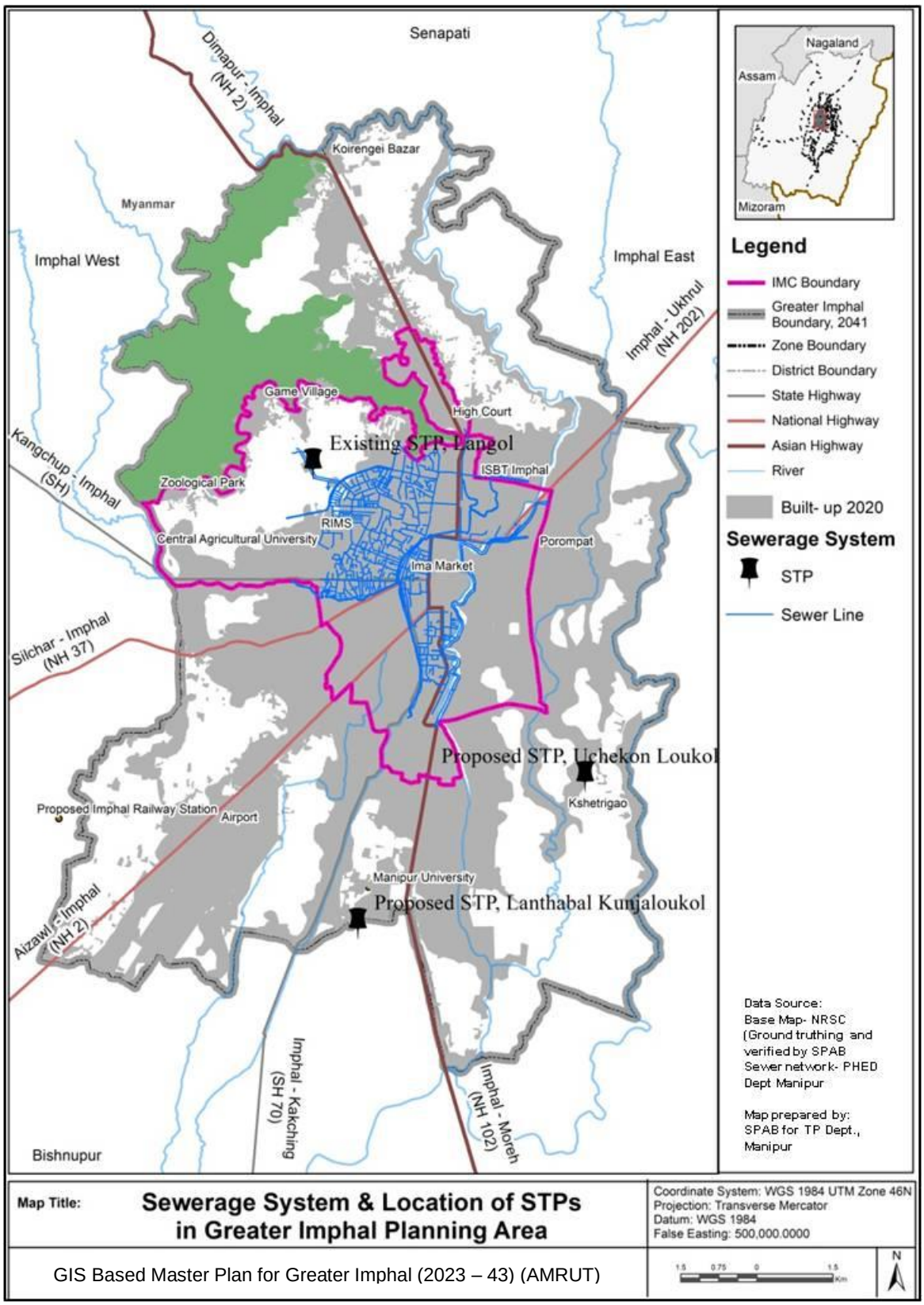
10.3 Sewerage

The sewerage network within Imphal Municipal Corporation is proposed as depicted in the Map 10.3. It is observed that the network is spread across zones A & B. Other areas within the Greater Imphal Planning Area have on-site systems. Under PHED, Imphal Sewerage Project Phase-I was commissioned on June 2020, covering 11 municipal wards with a target population of 2.59 lakh by 2031. Imphal sewerage Phase-I comprised of one STP of 27 MLD, 5 nos. of Pumping station and 69.44 km of sewer network.

Integrated sewerage system for Imphal city Phase-II aims to cover the remaining 16 IMC wards and 4 nos. of Outgrowth with a target population of 3.84 lakh by 2054. Imphal sewerage Project Phase-II comprises of construction of three nos. of STP with a total installed capacity of 49 MLD: (i) 6MLD STP at Lamphelpat (ii) 27 MLD STP at Langthabal Kunja and (iii) 16 MLD STP at Uchekon Loukol, 21 nos. of Pumping station and 277 km of Sewer network.

The waste water generated in piped sewer systems is approx 80% of the water supplied in the area. As target water supply by 2043 is 130 MLD, there would be a requirement of treatment of 104 MLD. But the treatment capacity will reach 76 MLD after completion of phase II project as mentioned above. There will be additional 28 MLD. It is proposed that the additional waste water is treated with the help of decentralized systems and on-site systems.

Map 10. 3: Sewerage Network in Imphal Municipal Corporation



Source: PHED Dept., Manipur

10.4 Electricity

At present, Greater Imphal gets its power supply from the Grid through T & D networks at different voltage levels. There are total of 28 locations for substations in Greater Imphal Area. Besides these sub-stations, a vast network of transmission and distribution at 11/0.4 KV level is spread over the entire Greater Imphal Area for catering power to all the consumers.

The electrical power in Greater Imphal Planning area is supplied from the following 33/11 kV sub stations under Manipur State Power Company Ltd.

Table 10. 5: Electric sub stations in Greater Imphal Planning Area

Name of 33/11 kV sub station	Capacity (MVA)
Kongba	20
Khuman Lampak	40
Nilakuthi	20
Napetpalli (Lamlai)	10+5*
Sagolmang	6.3
Sangaipat	20
JNIMS	10
Mantripukhri	10
Chingarel	10
Urup (Langdum)	3.15
Usoipokpi	3.15
Porompat	10
Sanjenbam	10
GIS (Pishum)	20
Iroinsemba	25
Yurembam	15
Mongsangei	20
Mayang Imphal	6.3
Imphal P/H	15
Lamphel	20
Airport	2
Kangla	10
Kakwa	10

Sangaiprou	20
Sekmai	10
Mayang Langjing	3.15
Wangoi	10
Top- Khongnangkhong	10
Total	**374.05**

**Note: Proposed to be augmented through scheme under REC Revamped Distribution Sector Scheme (RDSS), 2021*

The electricity demand for 2043 was calculated based on the National Electricity Policy, 2005 with per day demand of 2.74 kWh pcpd. The calculation is done sub zone wise as tabulated in table 10.5.

The electricity demand for the Greater Imphal planning area is tabulated in table 10. 6.

Table 10. 6: Electricity demand for the population of 2043 in Greater Imphal Planning Area

Sub-Zone	Population		Electricity Demand (kWh pcpd)	
	2011	**2043**	**2011**	**2043**
IMC	283351	446937	776381.74	1224607.38
Non-IMC	243192	455365	666346.08	1247700.10
Greater Imphal Planning area	**526543**	**902302**	**1442727.82**	**2472307.48**

The projected electricity demand for the year 2043 is 24, 72,307.48 kWh pcpd which is 1, 03,012.812 kWh. The present power system in the Greater Imphal area can meet the power demand upto 3, 74,050 kW which is 3.64 times the projected power demand of the year 2043.

To evacuate the projected power reliably to core Imphal area, the following 33kV Ring Main lines are proposed (under REC) to be replaced by HTLS (High tension Low Sag) conductor which has more than 2 times current capacity that the existing ACSR Panther conductor.

i. 33kV line from Yurembam to Mongsangei

ii. 33kV line from Mongsangei to Khuman Lampak via Kongba

iii. 33kv line from Yurembam to Khumam Lampak via Iroinsemba

iv. 33kV line from Kangla to Imphal power house.

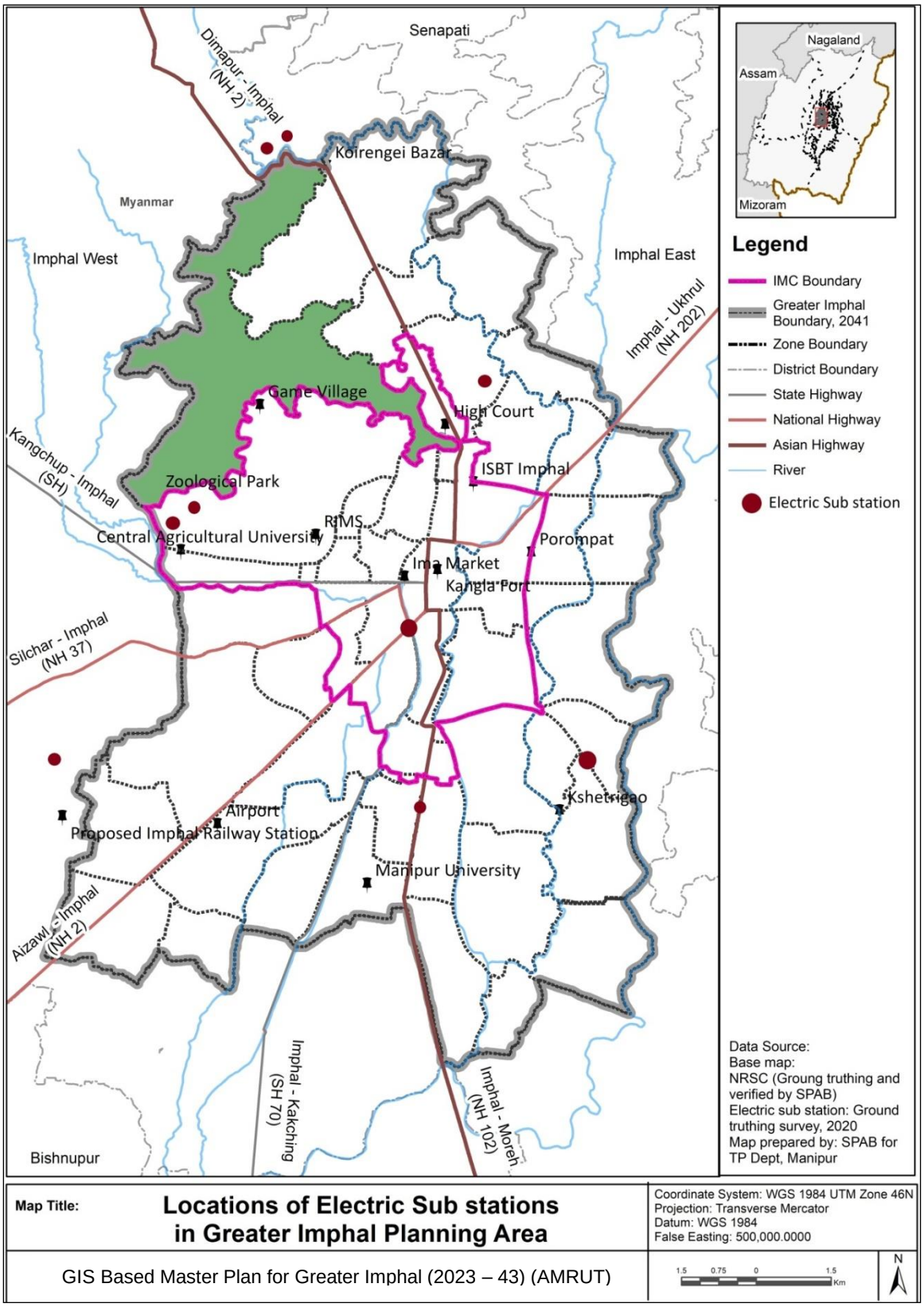
Also in addition to the existing 33kV lines in the Greater Imphal area, the following lines are proposed to be strung though scheme under REC Revamped Distribution Sector scheme (RDSS).

i. 33kV D/C line on Double poles with Panther conductor from Mongsangei to Imphal power house (new).

ii. 33kV D/C line on Double poles with Panther conductor from Mongsangei to Kakwa (new)

iii. 33kV D/C line on Double poles with HTLS conductor from 132/33 kV substation at Yaingangpokpi to 33/11 kV substation at Khuman Lampak (reconductoring). (Refer Map 10.4)

Map 10. 4: Electric Substations in Greater Imphal Planning Area



Source: Ground Truthing Survey, 2020

10.5 Solid Waste Management

During the 1990s, there was no proper solid waste disposal system in Imphal city. The solid waste generated at individual houses in certain areas was dumped in the roadside bins, wherefrom the wastes are collected and transported by trucks for disposal to a dumping ground located at the North of the city. But the main issue was that the solid wastes generated in the main market area are dumped in the Naga Nullah on the backside of the market, which creates a stagnant pool all along the year. (Refer Map 10.5)

According to the data received, currently total of 158 tons per day (TPD) of Municipal Solid Waste is generated within the municipal corporation area. Out of this, 128 TPD is collected and a total of 90TPD is treated. The solid waste is collected from door to door and 38% of the waste is segregated at source. There is a plant facility at Lamdeng for recycling of waste and capacity of converting 60TPD of waste to energy and generate 1MW of power. 100TPD is converted to compost.

Other than this, a total of 0.7 TPD of bio-medical waste, 1.17 TPD of hazardous waste and 22.7 TPD of plastic waste is generated, while only 0.65 TPD of this bio-medical waste is being treated.

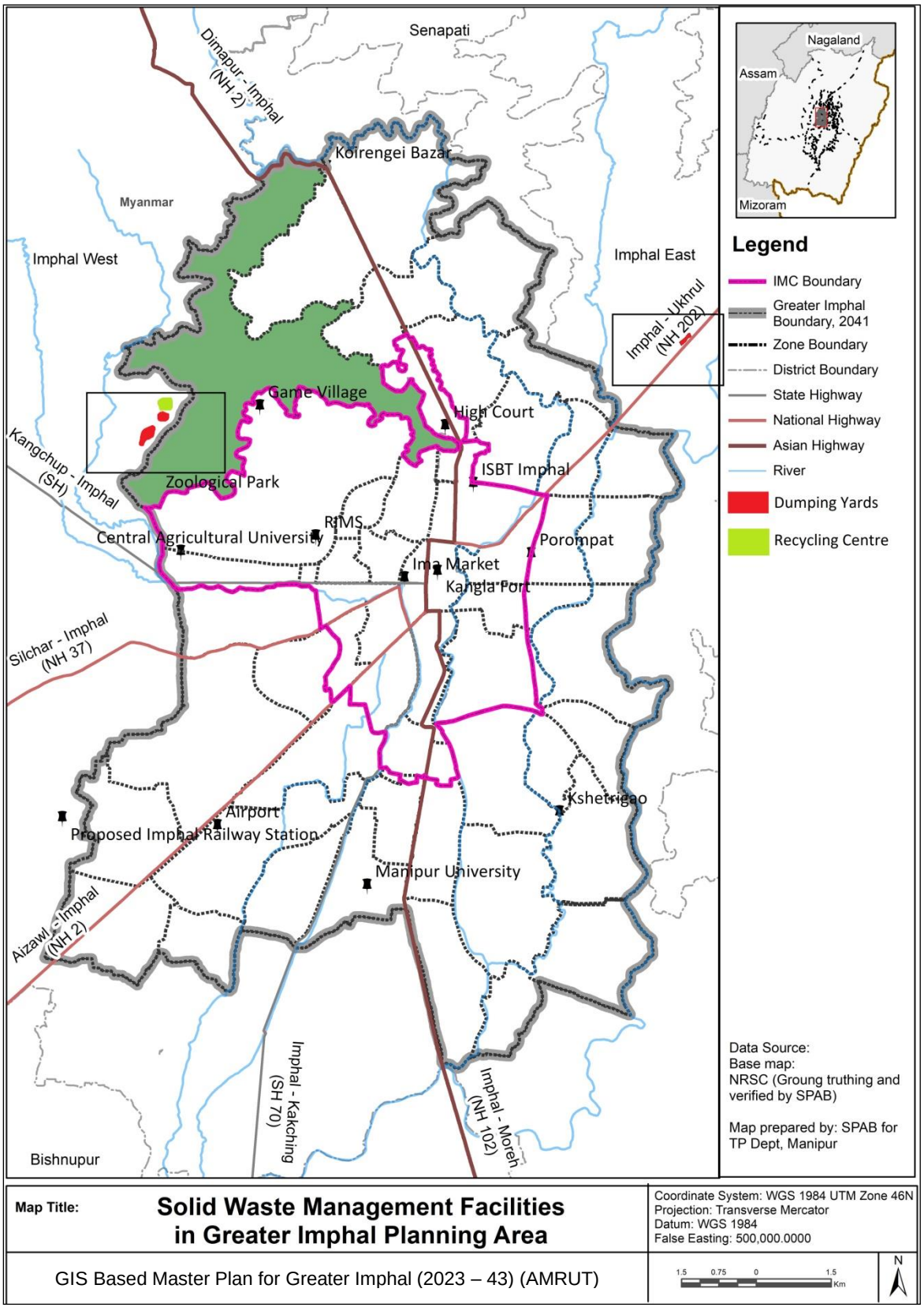
There are no solid waste management facilities in the village area. So, the villagers are managing by constructing small pits for bio-degradable waste in their locality.

The solid waste generation demand for 2043 was calculated based on the Solid waste Management Rules, 2016 and CPHEEO guidelines as shown in table 10.7. The per capita waste for municipal corporation area was assumed 400gm/capita/day and100gm/capita/day for rural areas. The calculation is done sub zone wise as tabulated in annexure 10.3.

Table 10. 7: Solid waste generation Demand for the population of 2043 in Greater Imphal Planning Area

Sub-Zone	Population		Solid waste generation Demand (kg/ capita/ day)	
	2011	2043	2011	2043
IMC	283351	446937	**113340.40**	**178774.80**
Non-IMC	243192	455365	**24319.20**	**45536.50**
Greater Imphal Planning area	**526543**	**902302**	**137659.60**	**224311.30**

Map 10. 5: Solid Waste Management Facilities in Greater Imphal Planning Area



Source: Ground Truthing Survey, 2020

10.6 Observations and Way Forward

- The physical infrastructure of the city needs improvement in the area of sewerage and solid waste management.
- By the year 2043 the Greater Imphal planning area will need 130MLD of water for its population (assuming 200 LPCD for IMC area and 90 LPCD for non-IMC area) and the solid waste generation will be 224.3 tons per capita per day. The water treatment capacity needs no further augmentation if the water treatment plant at Chingkheiching is commisioned.
- The city will need areas for water treatment and solid waste dumping and treatment by 2043.
- The sewer network presently is available in Zone A and B (since these zones are a part of Imphal Municipal Corporation) and is need to be extended to other zones. The electricity demand by 2043 will be 2472307.48 kWh pcpd. The master plan can look for renewable energy options to cater to some of this demand.
- The projected electricity demand for the year 2043 is 24, 72,307.48 kWh pcpd which is 1, 03,012.812 kWh. The present power system in the Greater Imphal area can meet the power demand upto 3, 74,050 kW which is 3.64 times the projected power demand of the year 2043.

Section 11: Social Infrastructure

11.1 Introduction

The quality of life in any urban centre depends upon the availability and accessibility to quality social infrastructure. These include facilities pertaining to health, education, sports facilities, socio-cultural activities etc. These are generally planned in terms of population norms with stipulated permissibility conditions and development controls.

This section talks about the education and health care facilities within the Greater Imphal planning area and also the social gathering places, religious places, cremation grounds etc. Mobile network coverage is also mapped within the planning area as it will help in locating future developments.

11.2 Educational Facilities

The status of education facilities in Greater Imphal is validated with the URDPFI guidelines which are guidelines for providing the basic education infrastructure i.e., pre-schools, schools, technical institutes, universities, based on population of the city. The existing infrastructure according to the census data of 2011 for schools, colleges and universities within the planning area are adequate for the existing population in the Greater Imphal area when validated with given standards. Details regarding education facilities are mentioned in table 11.1 and their location are shown in the below map 11.1 and map 11.2 but the existing and estimated educational facilities in Greater Imphal are shown in table 11.2 and table 11.3.

There is one National Institute of Technology, Manipur at Langon covering an area of 138.2 hectares, one Manipur Institute of Technology (MIT) at Takyelpat in an area of 3.98 ha and a Government Polytechnic at Takyelpat covering an area of 3.72 hectares within the Greater Imphal Planning area.

Table 11. 1: Standards for Educational Facilities and Existing Facilities

Category	Based on URDPFI Guidelines		Existing Facilities (Census 2011)
	Population Served per unit	Area Requirement (Ha)	
Pre-Primary School	2500	0.08	108
Primary School	5000	0.40	615
Senior-Secondary School	7500	1.80	62
College	1.25 lakh	5	44

Medical College	10 lakh	15	3
Engineering College	10 lakh	6	2
Technical Institute	10 lakh	4	2
University	-	10 – 60	1

Source: URDPFI Guidelines Vol-I, 2015 and Census 2011

Table 11. 2: Existing and Estimated Educational Facilities in Greater Imphal Area

Sl. No.	Content	Year	Imphal Municipal Corporation	Non Municipal Corporation	Greater Imphal Area
1	**Population as per Census**	1991	2,16,819	1,51,843	3,68,662
		2001	2,44,410	1,91,440	4,35,850
		2011	2,83,230	2,21,392	5,04,622
3	**Primary School as per Census 2011**	2011	112	150	262
4	**Senior Secondary School as per Census 2011**	2011	189	177	366

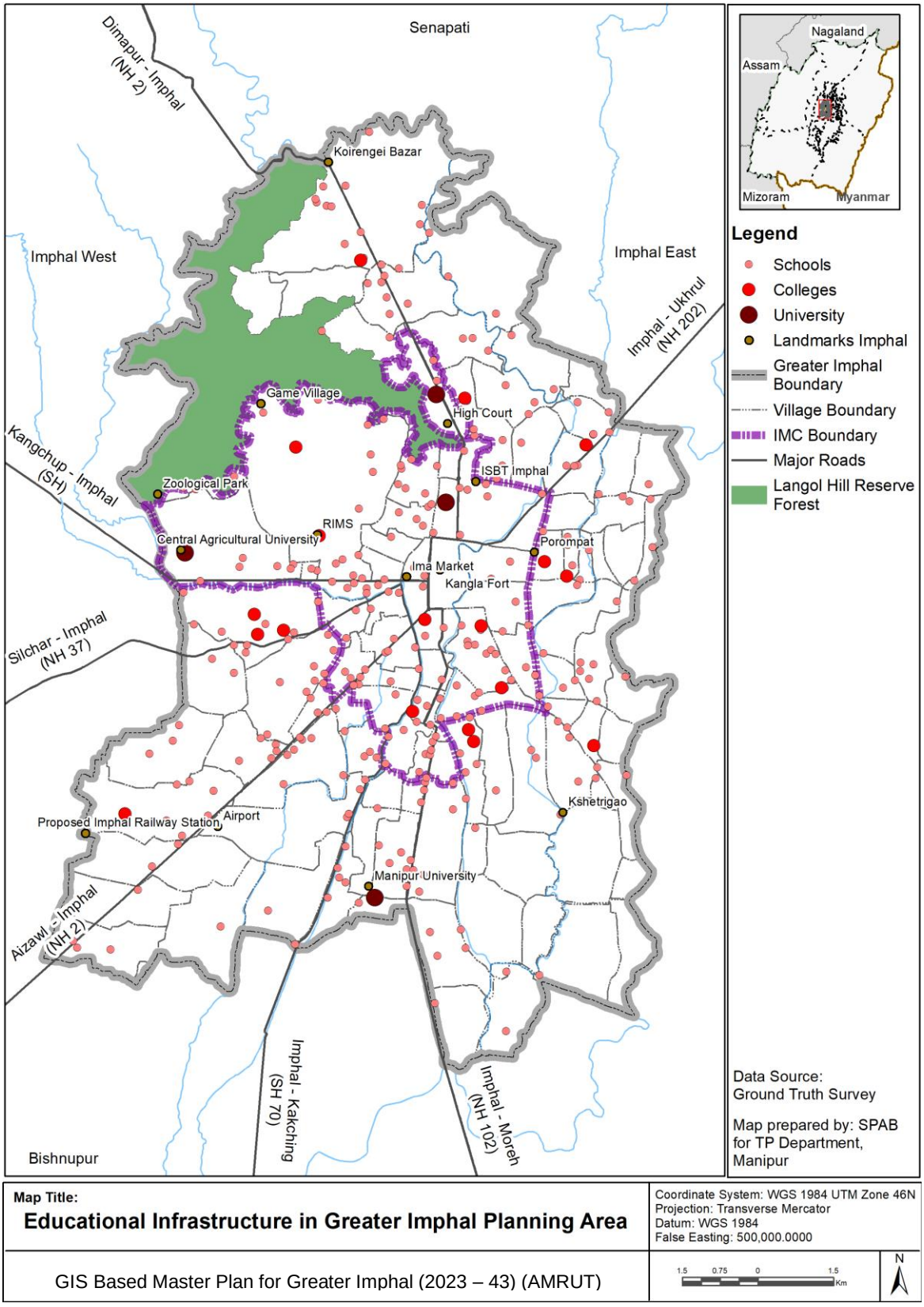
Source: Census of India,1991, 2001 and 2011

Table 11. 3: List of Higher Education Facilities in Greater Imphal

Type	No. of Institutions
Government College	37
Govt. Degree College-Art Only	7
Govt. Degree College-Science Only	7
Govt. Degree College-Commerce Only	2
Govt. Degree College-Art and Science Only	5
Govt. Degree College-Art and Commerce Only	1
Govt. Degree College-Art, Science and Commerce	8
Govt. Degree College-Law	1
Govt.-Medical College	2
Govt.-Engineering College	2
Govt.-Management Institute	1
Govt.-Polytechnic	1
Private College	**10**
Private Degree College-Art Only	3
Private Degree College-Science Only	3
Private Degree College-Art and Science Only	4
Universities	**4**

Source: Census of India ,1991, 2001 and 2011

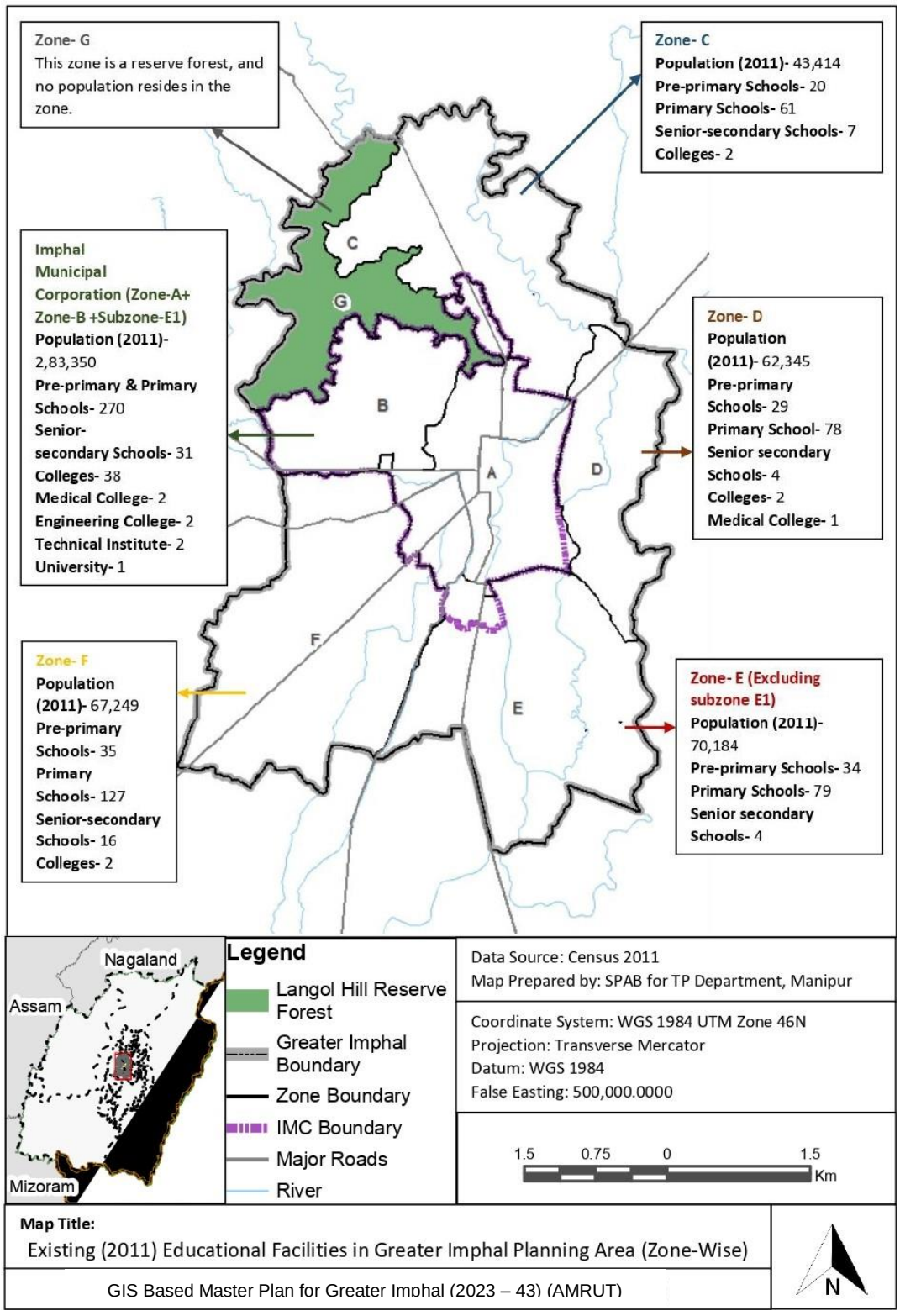
Map 11. 1: Existing Educational Facilities in Greater Imphal Planning Area



Source: Ground Truthing Survey, 2020

11.2.1 Zone wise Analysis

Map 11. 2: Existing Educational Facilities in Greater Imphal Planning Area (Zone-Wise)



Source: Census 2011

Table 11.4: Current Distribution of Education Facilities and Additional Education facilities required - by 2043 (Zone Wise)

Facilities	Population-2043 Space No. of Facilities	4,46,938 Imphal Municipal Corporation (Zone-A+Zone-B+Sub Zone-E1) No. of Facilities				85,073 Zone-C No. of Facilities				1,04,073 Zone-D No. of Facilities				1,16,848 Zone-E (Excluding Sub-zone E1) No. of Facilities				1,49,370 Zone-F No. of Facilities				Zone-G No. of Facilities				9,02,302 TOTAL No. of Facilities			
	Area (Ha)	Existing (Census 2011)	Required (2043)	Additional	Land Required (Ha)	Existing (Census 2011)	Required (2043)	Additional	Land Required (Ha)	Existing (Census 2011)	Required (2043)	Additional	Land Required (Ha)	Existing (Census 2011)	Required (2043)	Additional	Land Required (Ha)	Existing (Census 2011)	Required (2043)	Additional	Land Required (Ha)	Existing (Census 2011)	Required (2043)	Additional	Land Required (Ha)	Existing (Census 2011)	Required (2043)	Additional	Land Required (Ha)
Social Amenities																													
Pre-Primary	0.08	-	179	*1 Not required		20	34	14	1.12	29	41	12	0.96	34	46	12	0.96	35	60	25	2	-	-	-	-	*2 108	*3 181	79	6.32
Primary	0.4	270	89	-	-	61	17	-	-	78	21	-	-	79	23	-	-	127	30	-	-	-	-	-	-	615	*4 359	-	-
Senior-Secondary	1.8	31	60	29	52.2	7	11	4	7.2	4	13	9	16.2	4	17	13	23.4	16	18	2	3.6	-	-	-	-	62	120	58	104.4
Colleges	5	38	4	-	-	2	1	-	-	2	1	-	-	-	1	1	5	2	1	-	-	-	-	-	-	44	7	-	-
Medical Colleges	15	2	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	1	-	-
Engineering Colleges	6	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	1	-	-
Technical Institutes	4	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	1	-	-
University	10 to 60	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1	-	-

***Note**:

***1 -** The requirement of pre-primary schools in Imphal municipal Corporation is met by the primary schools present in the Imphal Municipal Corporation as these primary schools have classes lower than 1 as well.

***2 -** Total existing pre-primary schools are: pre-primary (Zone-C + Zone-D + Zone-E (Excluding Sub-zone E1) + Zone-F + Zone-G).

***3 -** Total pre-primary schools required (2043) does not includes the pre-primary schools required (2043) in Imphal Municipal Corporation.

***4 -** For calculating the total primary schools required, the required (2043) pre-primary schools in Imphal Municipal Corporation are also added.

Table 11.4 represents the proposed distribution of educational facilities by 2043 in different zones. The distribution of educational facilities under different spaces has been worked according to the proposed population by 2043 and URDPFI standards. The analysis of the existing condition reveals that the educational facilities are not evenly distributed in Greater Imphal Planning area. The existing primary schools (Census 2011) are adequate for the future population of 2043 in the Greater Imphal Planning Area whereas the existing senior-secondary schools are not adequate for the population in Greater Imphal Planning Area.

The number of pre-primary schools is fewer in Zones- C, D, E and F. Only Zone-E (Excluding Sub-Zone E1) has fewer colleges as compared to other zones. But if Greater Imphal Planning Area is considered as a whole, it has adequate number of colleges for the future population. The existing medical colleges, engineering colleges, technical institutes and university are adequate for the Greater Imphal Planning Area. Zone G doesn't require any educational facilities as there is no population in the zone. To meet the additional demand of educational facilities by 2043 the required number of the facilities are calculated using the URDPFI guidelines and then the additional facilities is calculated by subtracting the existing (as of 2011) from the required (2043). The additional number of different facilities required is as shown in table 11.4.

Note:
The sub zone wise Distribution of Schools and Additional Schools required - by 2043 is attached annexure 11.1.

The total area required by 2043 for education facilities in Greater Imphal is tabulated in table 11.5. A total of 109.4 Ha of land is required for additional educational facilities in Greater Imphal Planning Area of which 52.2 Ha is required in Imphal Municipal Corporation followed by Zone-E (Excluding sub-zone E1) with 26.6 Ha, Zone-D with 16.2 Ha, Zone-C and Zone-F with 7.2 Ha. Zone-G doesn't require any land for educational facilities because it is a reserve forest and also no population resides in the zone.

Table 11. 5: Area Requirement for Educational Facilities in different Zones

Zones	Area required for Educational Facilities (2043)
Imphal Municipal Corporation (Zone-A+Zone-B+Sub Zone-E1)	52.2 Ha
Zone C	7.2 Ha
Zone D	16.2 Ha
Zone E (Excluding sub-zone E1)	26.6 Ha
Zone F	7.2 Ha
Zone G	-
Total (Greater Imphal Planning Area)	**109.4 Ha**

11.3 Health Care Facilities

The health care infrastructure of Greater Imphal was also analysed based on the existing numbers given in table 11.7 and standards. It has been observed that Greater Imphal area has adequate medical facilities for existing population, but in component-wise analysis with different hierarchies, there are some gaps. Table 11.6 represents the standards of these facilities as per URDPFI guidelines and the existing number of facilities in Greater Imphal Planning Area and Map 11.3 shows the distribution of these facilities under different spaces.

Table 11. 6: **Standards for Medical Facilities and Existing Facilities in Greater Imphal Planning Area**

Category	Based on URDPFI Guidelines		Existing Facilities (Census 2011)
	Population Served per unit	Area Requirement (Ha)	
Dispensary	15,000	0.08 to 0.12	63
Nursing Home, Maternity and Child Welfare Centre	45,000 – 1 lakh	0.20 to 0.30	79
Family Welfare Centre	50,000	0.08	18
Veterinary Hospital	5 lakh	0.2	5
Specialty Hospital (TB)	1 lakh	3.70	3
General Hospital	2.5 lakh	6	7

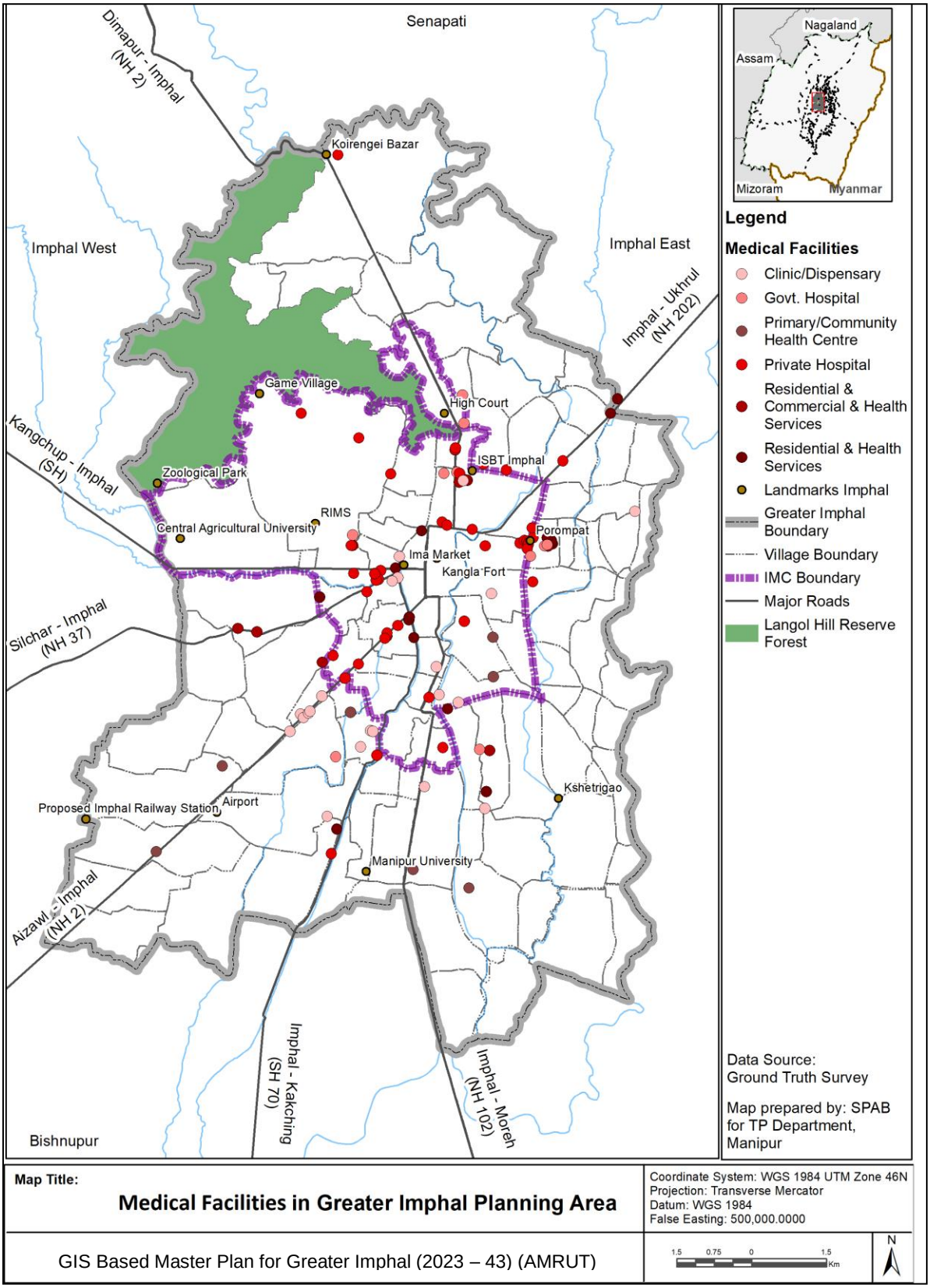
Source: Census 2011

Table 11. 7: Medical Facilities in Greater Imphal Planning Area

Content	Year	Imphal Municipal Corporation	Non-Municipal Corporation	Greater Imphal Area
Census Data (Population)	1991	216819	151843	368662
	2001	244410	191440	435850
	2011	283230	221392	504622
Dispensary/Health Centre (Census 2011)	2011	29	30	59
Nursing home, child welfare and maternity centre (Census 2011)	2011	79	**0**	79
Specialty Hospital (NBC) (Census 2011)	2011	8	1	9
Family Welfare Centre (Census 2011)	2011	18	**0**	18
Veterinary Hospital for pets and animals (Census 2011)	2011	0	4	4
Total Hospitals (Census 2011)	**2011**	**134**	**35**	**169**

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

Map 11. 3: Medical Facilities in Greater Imphal Planning Area



Source: Ground Truthing Survey, 2020

According to table 11.7, non Municipal area does not have any service of Nursing home, Child welfare centre and Maternity Centre and Family Welfare Centre. After analysing the location map (refer map 11.3), many medical facilities are now coming under mixed use with residential as well as commercial land. In the northern part of Greater Imphal, there are no sufficient facilities at the lowest hierarchy (primary health centre) which create maximum demand in that region.

11.3.1 Zone wise Analysis

Map 11. 4: Medical Facilities in Greater Imphal Planning Area (Zone-Wise)

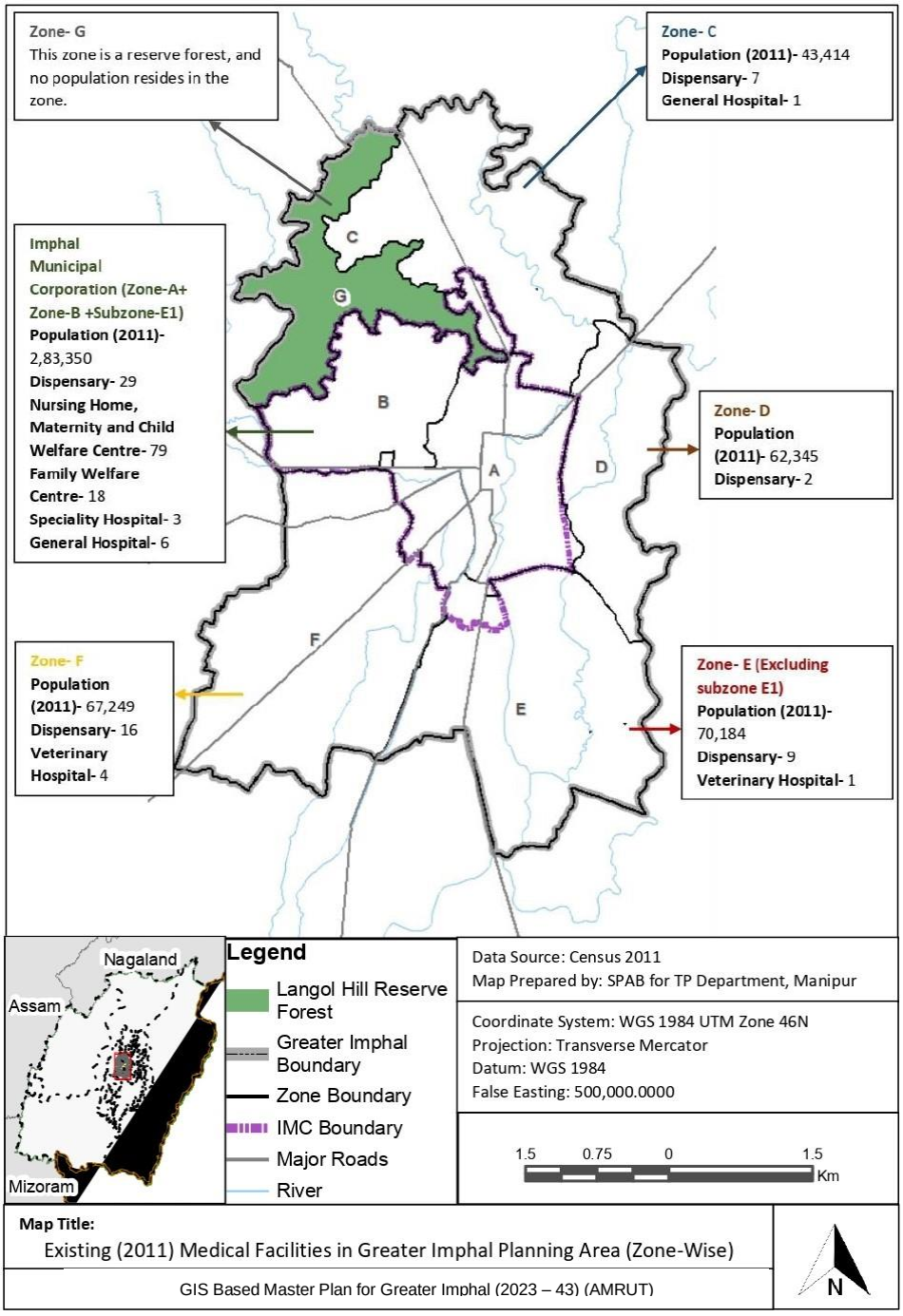


Table 11.8: Current Distribution of Medical Facilities and Additional Medical Facilities Required - by 2043 (Zone Wise)

Facilities	Population-2043 Space No. of Facilities	4,46,938 Imphal Municipal Corporation (Zone-A+Zone-B+Sub Zone-E1) No. of Facilities				85,073 Zone-C No. of Facilities				1,04,073 Zone-D No. of Facilities				1,16,848 Zone-E (Excluding Sub-zone E1) No. of Facilities				1,49,370 Zone-F No. of Facilities				Zone-G No. of Facilities				9,02,302 TOTAL No. of Facilities			
	Area (Ha)	Existing (as of Census 2011)	Required (2043)	Additional	Land Required (Ha)	Existing (as of Census 2011)	Required (2043)	Additional	Land Required (Ha)	Existing (as of Census 2011)	Required (2043)	Additional	Land Required (Ha)	Existing (as of Census 2011)	Required (2043)	Additional	Land Required (Ha)	Existing (as of Census 2011)	Required (2043)	Additional	Land Required (Ha)	Existing (as of Census 2011)	Required (2043)	Additional	Land Required (Ha)	Existing (as of Census 2011)	Required (2043)	Additional	Land Required (Ha)
Healthcare																													
Dispensary	0.08 - 0.12	29	30	1	0.12	7	6	-	-	2	7	5	0.60	9	8	-	-	16	10	-	-	-	-	-	-	63	61	6	0.72
Nursing Home, Maternity and Child Welfare Centre	0.20 – 0.30	79	10	-	-	-	2	2	0.60	-	2	2	0.60	-	3	3	0.90	-	3	3	0.90	-	-	-	-	79	20	10	3.0
Family Welfare Centre	0.08	18	9	-	-	-	2	2	0.16	-	2	2	0.16	-	2	2	0.16	-	3	3	0.24	-	-	-	-	18	18	-	0.72
Veterinary Hospital	0.20	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	4	-	-	-	-	-	-	-	5	2	-	-
Specialty Hospital (TB)	3.70	3	4	1	3.70	-	1	1	3.70	-	1	1	3.70	-	1	1	3.70	-	2	2	7.40	-	-	-	-	3	9	6	22.2
General Hospital	6	6	2	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7	4	-	-

Source: Census 2011 and URDPFI Guidelines Vol-I, 2015

Table 11.8 represents the current distribution of medical facilities and additional required by 2043 in different zones. The distribution of medical facilities under different spaces has been worked keeping in mind the proposed population by 2043 and URDPFI standards. The analysis of the existing condition reveals that the medical facilities are not evenly distributed in Greater Imphal Planning area. Most of these facilities are present in the Imphal Municipal Corporation. The number of existing dispensaries (Census 2011) is fewer in Imphal Municipal Corporation and Zone-D of the Greater Imphal Planning area. Nursing homes and family welfare centres are all clustered in IMC whereas all the other zones have no such facility resulting in longer travel distance to reach the facility.

But if Greater Imphal Planning Area is considered as a whole, it has adequate number of nursing homes and family welfare centres for the future population, but it is not viable for catering the whole area. The existing veterinary hospital and general hospital are sufficient to cater the needs of the future population. Zone G doesn't require medical facilities as there is no population in the zone as shown in map 11.4. To meet the additional demand of medical facilities by 2043 the required number of the facilities are calculated using the URDPFI guidelines and then the additional facilities is calculated by subtracting the Existing (2011) from the required (2043). The additional number of different facilities required is as shown in table 11.9.

Note:
The sub zone wise Distribution of Dispensary and Additional Dispensary required - by 2043 is attached annexure 11.2.

The total area required by 2043 for health care facilities in Greater Imphal is tabulated in table 11.9 below. A total of 26.64 Ha of land is required for additional Healthcare facilities in Greater Imphal Planning Area of which 8.54 Ha is required in Zone-F, followed by Zone-D with 5.06 Ha, Zone-E (Excluding sub-zone E1) with 4.76 Ha, Zone-C with 4.46 Ha and Imphal Municipal Corporation with 3.82 Ha. Zone-G doesn't require any land for healthcare facilities because it is a reserve forest and also no population resides in the zone.

Table 11. 9: Area Requirement for Healthcare Facilities in different Zones

Zones	Area required for Healthcare Facilities (2043)
Imphal Municipal Corporation (Zone-A+Zone-B+Sub Zone-E1)	3.82 Ha
Zone C	4.46 Ha
Zone D	5.06 Ha

Zone E (Excluding sub-zone E1)	4.76 Ha
Zone F	8.54 Ha
Zone G	-
Total (Greater Imphal Planning Area)	**26.64 Ha**

11.4 Socio- Cultural Facilities

Urban social innovation is important for improving the quality of life of people living in local communities. The future of the city will not be built around the industrial plant but should be formed around the creative cultural beginning. Culture lies at the heart of urban renewal and innovation. It is key to what makes cities attractive, creative and sustainable and is in the centre of urban development, evidenced through cultural landmarks, heritage and traditions. Without culture, cities as vibrant life-spaces will not exist in the future. It is the culture that makes the difference.

Greater Imphal area has a unique characteristic of the establishment of community halls in every corner of the city. These halls are generally established with the local clubs, which also perform the operation and maintenance of these structures. The spatial distribution of these structures creates small neighborhood depending upon their culture and localities.

11.4.1 Social Gathering Places

The provision of socio cultural facilities shall correspond to the changing urban demography and work lifestyle. According to URDPFI, for every 15,000 population there should be one unit of community hall which requires an area of 2,000 sq.m. So, there is a requirement of 41 community halls, but according to groundtruthing survey, there are 420 community halls found, which covers an area of 0.23 sqkm Spatial locations of all social gathering places in Greater Imphal are shown in the map 11.5.

There are several community local clubs spread across the city. The local clubs mostly functioning as a sports centre, social service and social upliftment centres. The total area coverage of the clubs is about 3.04 ha of the total planning area of Greater Imphal.

The city has two major exhibition centres in the city, expanding about 8.60 ha. The exhibition grounds are mostly used for State functions and State organised festivals. The two grounds are extensively used during the State Government's annual Sangai festival mainly to promote the tourism sector in the State.

There is only one functional open-air theatre in the city, Bhagyachandra Open Air Theatre (BOAT), for the public under the Directorate of Art & Culture, Govt. of Manipur. The open-air theatre has an expanse of 0.06 ha or 361.2 sq.m area on the ground. BOAT can be availed by private parties

Various types of social gatherings are present in the Greater Imphal Region. Community Hall and clubs are the most common space used for social gatherings in the region. They are centrally spread out in Zone A which has highest number of gathering places. Amusement parks are located in Zone F. (Refer table 11.10).

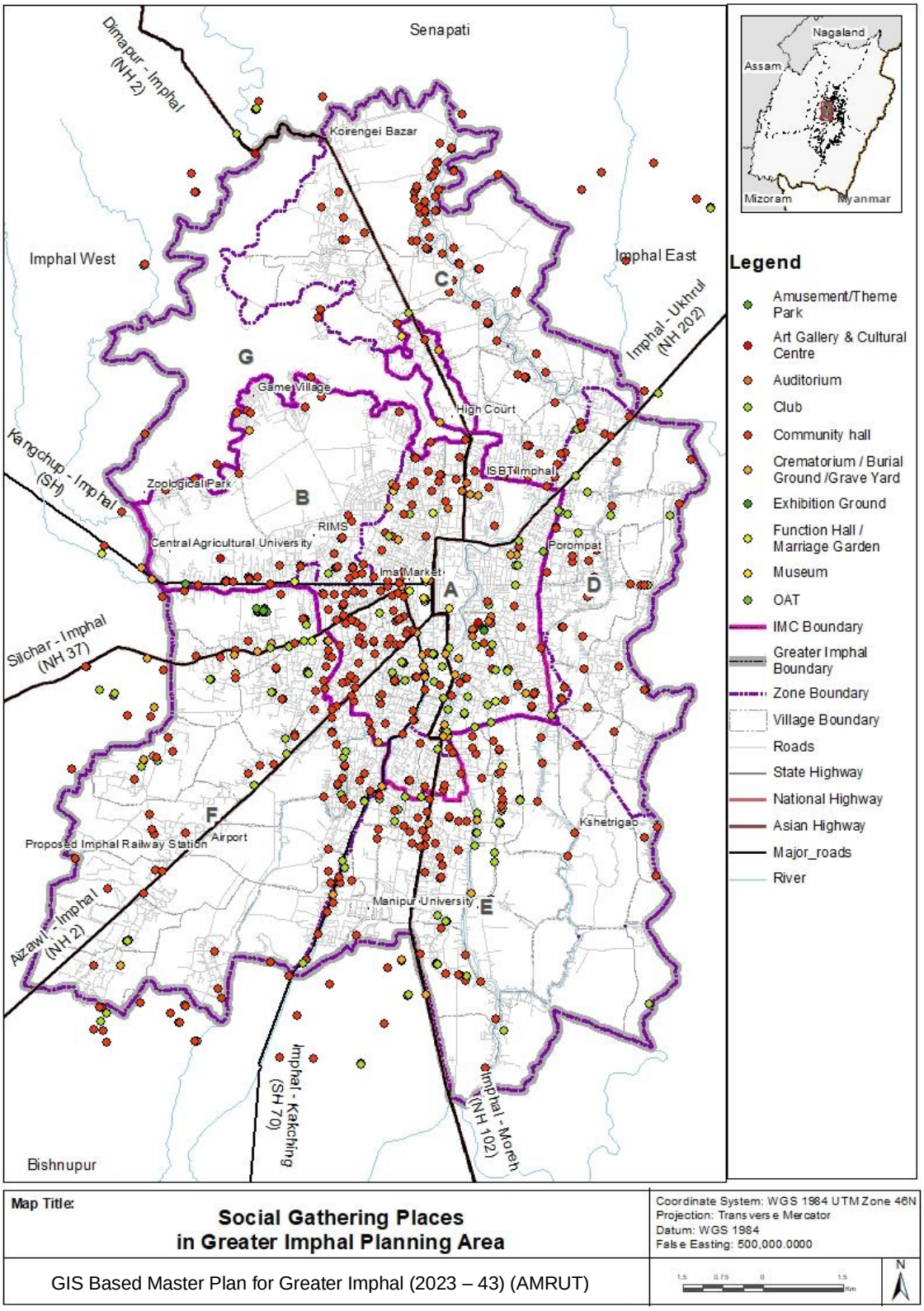
Table 11. 10: Zone wise Social Gathering Places

Zone	Amusement Park	Art Gallery/Cultural center	Auditorium	Club	Community Hall	Exhibition Ground	Function Hall	Museum	OAT	Total
A	0	2	9	43	116	3	5	9	2	**215**
B	1	1	0	1	40	0	1	0	0	**46**
C	0	0	0	1	77	0	0	1	0	**79**
D	0	0	0	11	32	0	0	0	0	**43**
E	0	0	1	30	77	0	0	1	0	**119**
F	12	0	0	24	73	0	1	0	0	**123**
G	0	0	0	0	5	0	0	0	0	**6**
Outside*	0	2	0	19	52	0	1	0	0	**82**
Total	**13**	**5**	**10**	**129**	**472**	**3**	**8**	**11**	**2**	

** Social Gathering Places outside the Greater Imphal boundary*

Source: Ground Truthing Survey, 2020

Map 11. 5: Social Gathering places in Greater Imphal Planning Area



Source: Ground truthing Survey, 2020

11.4.2 Religious Places

Various religious places such as temples, churches, mosques etc have been mapped (refer map 11.6) within the Greater Imphal planning area and their numbers have been analysed zone wise (tabulated in table 11.11).

The number of religious sites in and around the Greater Imphal Region is shown in Table 11.11. Religious sites can be found across the planning area, with the most number temples in Zones A,E, and F, ;most number of Mosque are present in eastern part of the planning area which are spread out in Zone D and E. Churches are located on the North western side in Zone A and B having maximum number.

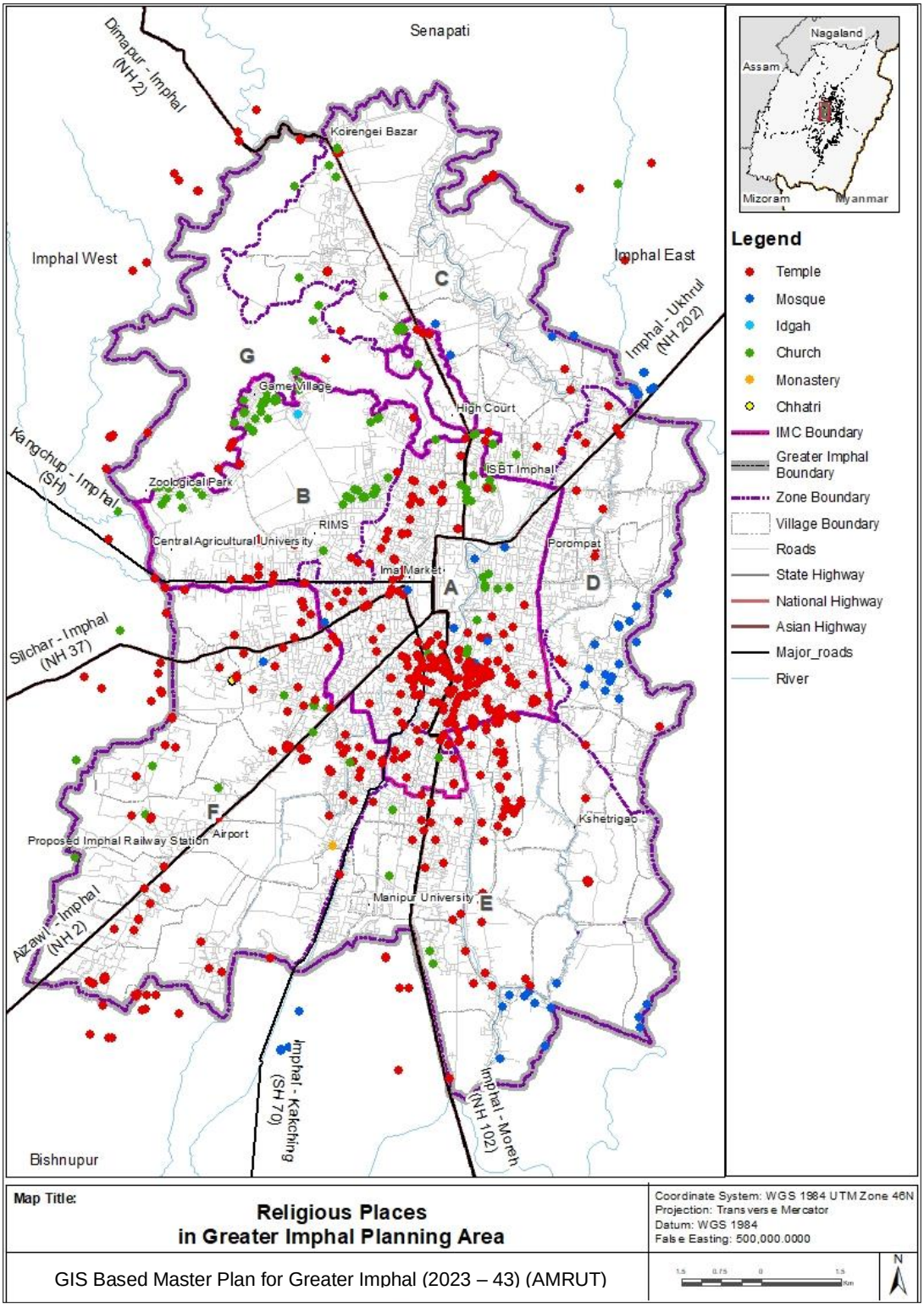
Table 11. 11: Zone wise religious places

Zones	Temple	Mosque	Idgah	Church	Monastery	Chhatri
A	230	7	0	28	0	0
B	22	0	1	53	0	0
C	13	6	0	15	0	0
D	14	16	0	0	0	0
E	89	12	0	5	0	0
F	96	1	0	9	1	2
G	6	0	0	5	0	0
Outside*	59	14	0	5	0	0
Total	529	56	1	120	1	2

**Religious places outside the Greater Imphal boundary*

Source: Ground Truthing Survey, 2020

Map 11. 6: Religious places in Greater Imphal Panning Area



Source: Ground truthing Survey, 2020

11.4.3 Crematoriums & Grave yards

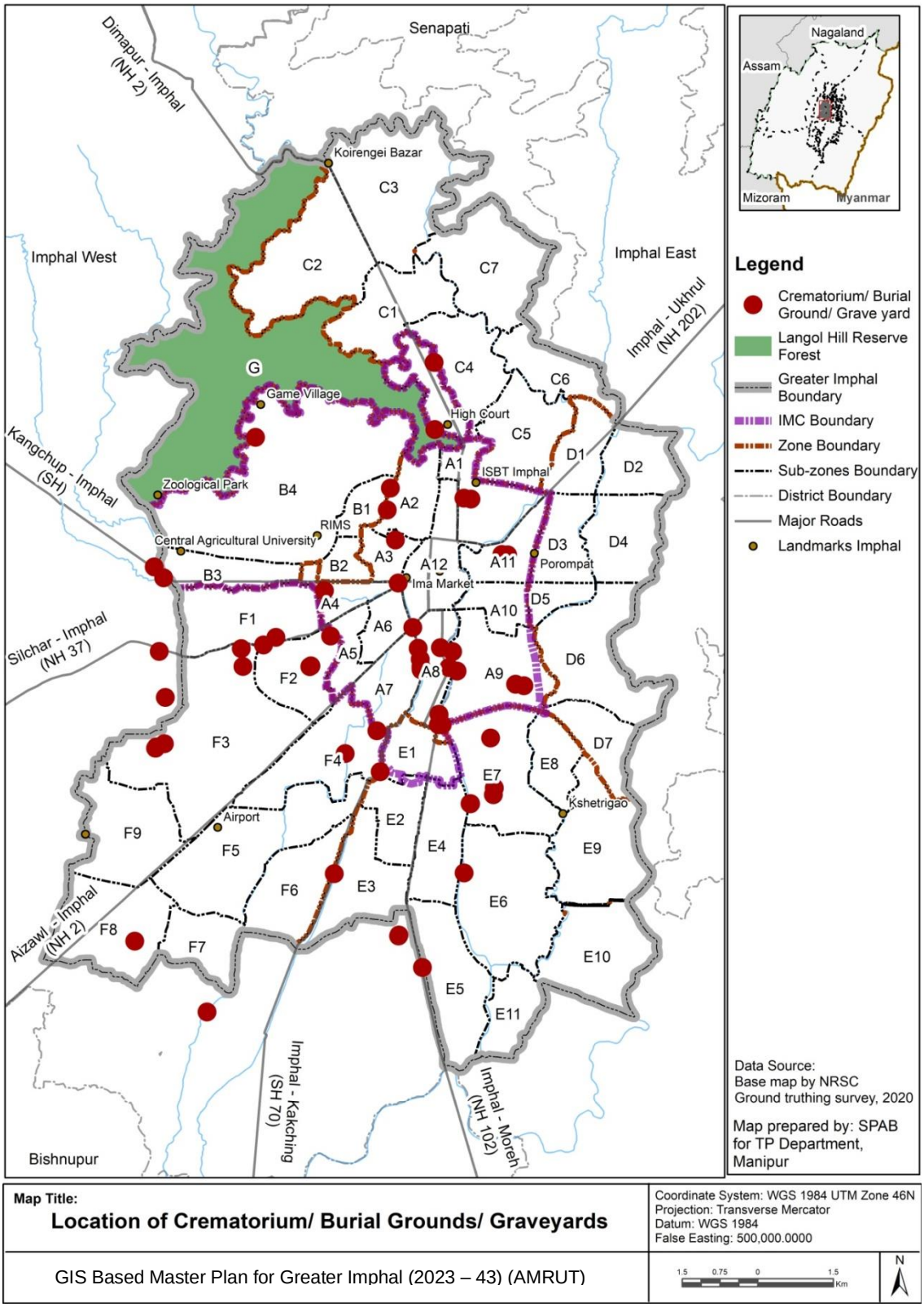
The locations of crematoriums/ burial grounds/ grave yards are also mapped within the Greater Imphal planning area (Map 11.7).

Table 11. 12: Zone wise crematoriums/ grave yards

Zones	Crematorium/ Graveyards
A	23
B	2
C	1
D	0
E	6
F	13
G	1
Outside*	7
Total	53

Table no.11.12 shows the number of crematorium in and around the Greater Imphal Region. Zone A has the highest number followed by zone and F. Zone B, C, D and G have no or very few number of crematoriums. As per URDPFI guidelines, there should be a cremation ground with every 5 lakh population; the Greater Imphal planning area has more than the standards.

Map 11. 7: Location of Crematoriums/ burial grounds/ grave yards in Greater Imphal planning area



Source: Ground truthing survey, 2020

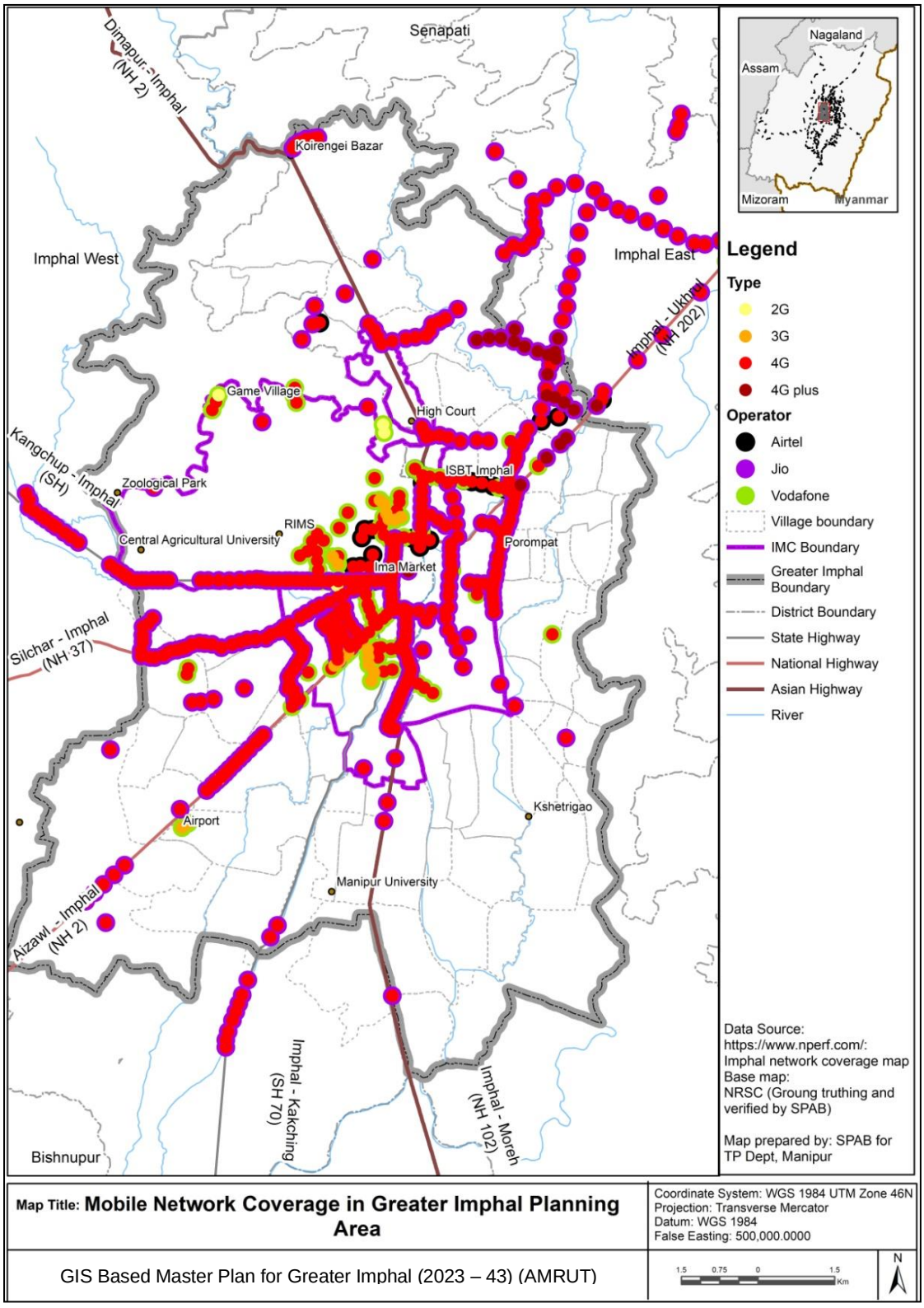
11.4.4 Mobile Network Coverage

The mobile network within the Greater Imphal panning area was mapped (Refer map 11.8) as it helps in locating the mobile towers and areas with good network connectivity. This will be an added benefit for the future development. It is observed that Zone E and Zone G lack network connectivity.

11.5 Observations & Way Forward

- The existing education and health facilities within the Greater Imphal planning area suffice to the current residing population. But with the increasing population the region will need an area of 110 hectare for education facilities and 27 hectares for health care facilities.
- The social gathering places are comparatively low in Zone B and Zone E providing a need to increase recreational spaces in respective zones.
- The religious places are spread across the city with their concentration in different directions, for example mosques are concentrated towards the east whereas churches are concentrated towards the North- west.
- The mobile network within the Greater Imphal planning area is low towards the South- eastern and North- western direction. The location of future services needs to be placed based on this factor. (Refer map 11.8)

Map 11. 8: Mobile Network coverage in Greater Imphal Planning area



Source: Imphal network coverage map, nperf.com

Section 12: Environment

12.1 Green Spaces

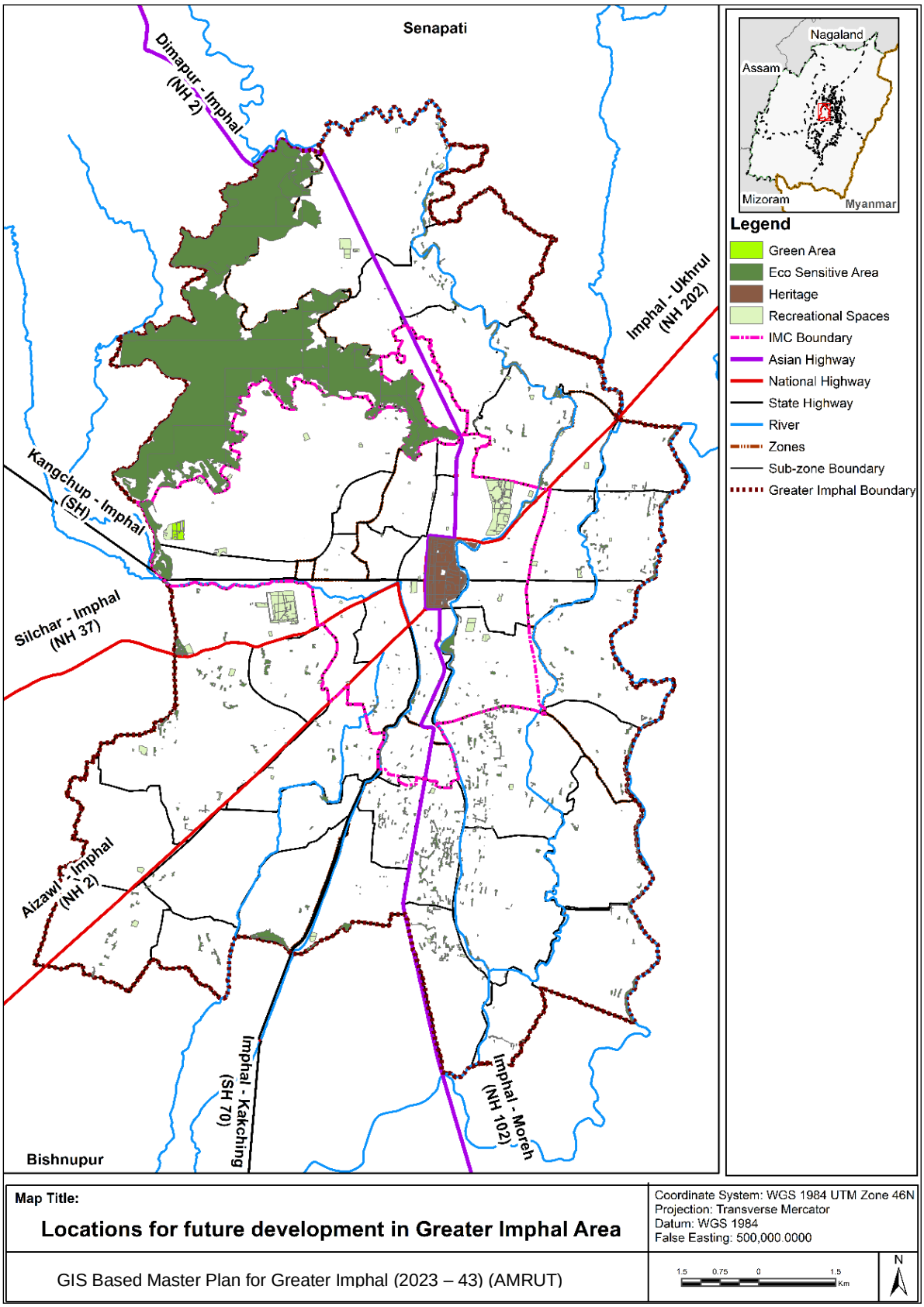
The green spaces considered within the Greater Imphal planning area from the landuse categories are: green areas; eco sensitive areas; and recreational areas. The area under each land use class, zone wise is tabulated below (table 12.1) and represented through Map 12.1.

The open spaces, parks, playground, garden, clubs, exhibition ground, open air theatre and sports centre are considered under the recreational areas of green infrastructure. The existence of dedicated green spaces in the city will enhance the quality of life of its citizens. To further establish the current supply of green spaces, and to further propose or integrate with other facilities, the coverage of these spaces is analysed.

The total coverage area of the park in the planning area is about 5.46 ha. The privately-owned gardens cover only about 0.06ha. The dedicated parks and gardens need major intervention according to the benchmarking set by Governing Bodies. The Kangla Fort expanding over 77.93 ha in the core of the city centre located in Zone A is one of the most prominent green spaces in the region. Forest occupies about 1684.47 ha of the total planning area of Greater Imphal. The Langol hills covering about 1545.25 ha of the total forest area is categorised as Protected Forest under the Indian Forest Act, 1927, located in Zone G.

The recreational space within the Greater Imphal Planning area is less than 1% which is very low as compared to the standards of 10- 12%, according to URDPFI guidelines. Imphal lacks parks and open spaces within the various sub zones as discussed in below sections.

Map 12. 1: Green Spaces in Greater Imphal planning area



The following table (table 12.1) consists of the area under Eco-sensitive area, green areas, and recreational in all the zones. The further subzones information about these landuses is given in the annexure.

Table 12. 1: Zone wise area under Green spaces

Land use	Area under Land use (%)						
	À	B	C	D	E	F	G
Eco-sensitive Areas		0.50					
Green Areas	1.09	2.08	2.46	1.70	6.29	1.19	88.11
Recreational	2.47	0.76	0.43	0.38	0.18	1.25	0.01
Total	**3.56**	**3.34**	**2.89**	**2.08**	**6.47**	**2.44**	**88.12**

12.1.1 Eco sensitive areas

The eco sensitive area is divided into subclasses as Bird sanctuary, Bio-diversity Park, Botanical Garden, Zoo and National Park as per AMRUT guidelines. Only Sub-zone B4 in zone B within the entire planning area has a zoo which consists of an area of 0.66% of the total sub zone B4 area. Below is the table of Eco sensitive areas in the zones and sub zones (Table 12.2).

Table 12. 2: Area under Eco sensitive areas

Zones	Sub-Zone	Area under Landuse (%)							
		Bird sanctuary	Bio-diversity Park	Botanical Garden	Zoo	National Park	Mangrove	Oxbow Lakes	Paleo channels
B	B4				0.66				

Note: The subzones which do not have any of the mentioned above land uses are not included in the table.

12.1.2 Green Areas

The Green areas is divided into five subclasses as Reserved Forest, Protected Forest /Notified forest, Social, Green belt, Tree Clad Area and Tree. Zone G has the maximum percentage of forest area and other zones have tree clad area. Below is the table of Green areas in various zones (Table 12.3).

Note:
The sub zone wise data for green areas is attached in annexure 12.1.

Table 12. 3: Area under Green areas

Zone	Area under landuse (%)					
	Reserved Forest	Protected Forest /Notified forest	Social	Green belt	Tree Clad Area	Tree
A					8.3	
B					0.22	
C					6.7	
D					8.9	
E					18.5	
F					16.6	
G		99.08			0.013	

Source: Ground truthing survey 2020

12.1.3 Recreational Areas

The Recreational areas is divided into nine subclasses as Amusement park, Club, Exhibition garden, Garden, Open air theatre, park, race course, sports center and stadium. The percentage of area occupied by different recreational sub classes in the zones are as follows (table 12.4)

Table 12. 4: Area under Recreational areas

Zones	Area under Landuse (%)							
	Amusement Park	Club	Exhibition Ground	Garden	Open Air Theatre	Park	Sports Centre	Stadium
A		0.5	1.17		0.12	0.01	10.4	1.4
B	0.01	0.26				0.35	0.01	
C		0.05				0.12		
D		0.09				0.09		
E		0.3				0.02		
F	0.55	0.21		0.06		0.17	8.8	

Note:
The sub zone wise data for green areas is attached in annexure 12.2.

The eco- sensitive areas and green areas are naturally occurring features whereas recreational areas under the open spaces categories can be developed and planned for. The area under recreational open spaces in each zone was calculated to understand the deficiencies in each zone (table 12.5). It is observed that area under parks and gardens (at local level) is needed to be increased across zones.

There is a city level exhibition ground, open air theatre and a stadium in zone A. other zones lack these facilities at local level.

Table 12. 5: Area under Recreational open spaces

Zone	Area (Ha)								
	Amusement Park	Club	Exhibition Ground	Garden	Open Air Theatre	Park	Sports Centre	Stadium	TOTAL
A	0	0.97	3.95	0	0.244	0.03	37.36	3.04	46
B	0.02	0.18	0	0	0	1.96	0.08	0	2
C	0	0.12	0	0	0	0.57	0	0	1
D	0	0.2	0	0	0	0.36	0	0	1
E	0	0.78	0	0	0	0.07	0	0	1
F	1.77	0.84	0	0.06	0	0.91	29.73	0	33
G									
Total	2	3	4	0	0	4	67	3	83

12.2 Water Bodies

The ponds over the region serve as a natural local water storage reservoir. Earlier, when the city was devoid of any potable water connection from the State, it served as the only drinking source of water. They also signify religious cultural importance in the area emphasizing the importance of water. The area coverage of water bodies, ponds in the planning area is about 502.95 ha and the total area under water bodies is 3.43%.

The majority of the settlements are along river banks of Imphal River, Kongba River, Iril River and Nambol River. The river bed area covers roughly about 76.85 ha of the total area of Greater Imphal. The Imphal River and Iril River are used as one of the sources of water supply in the region. Table 12.6 represents the area under water bodies in each zone.

Table 12. 6: Zone wise area under water bodies

Landuse	Area under Landuse (%)						
	A	B	C	D	E	F	G
Water Bodies	3.5	4.13	2.86	4.59	4.01	4.01	0.3

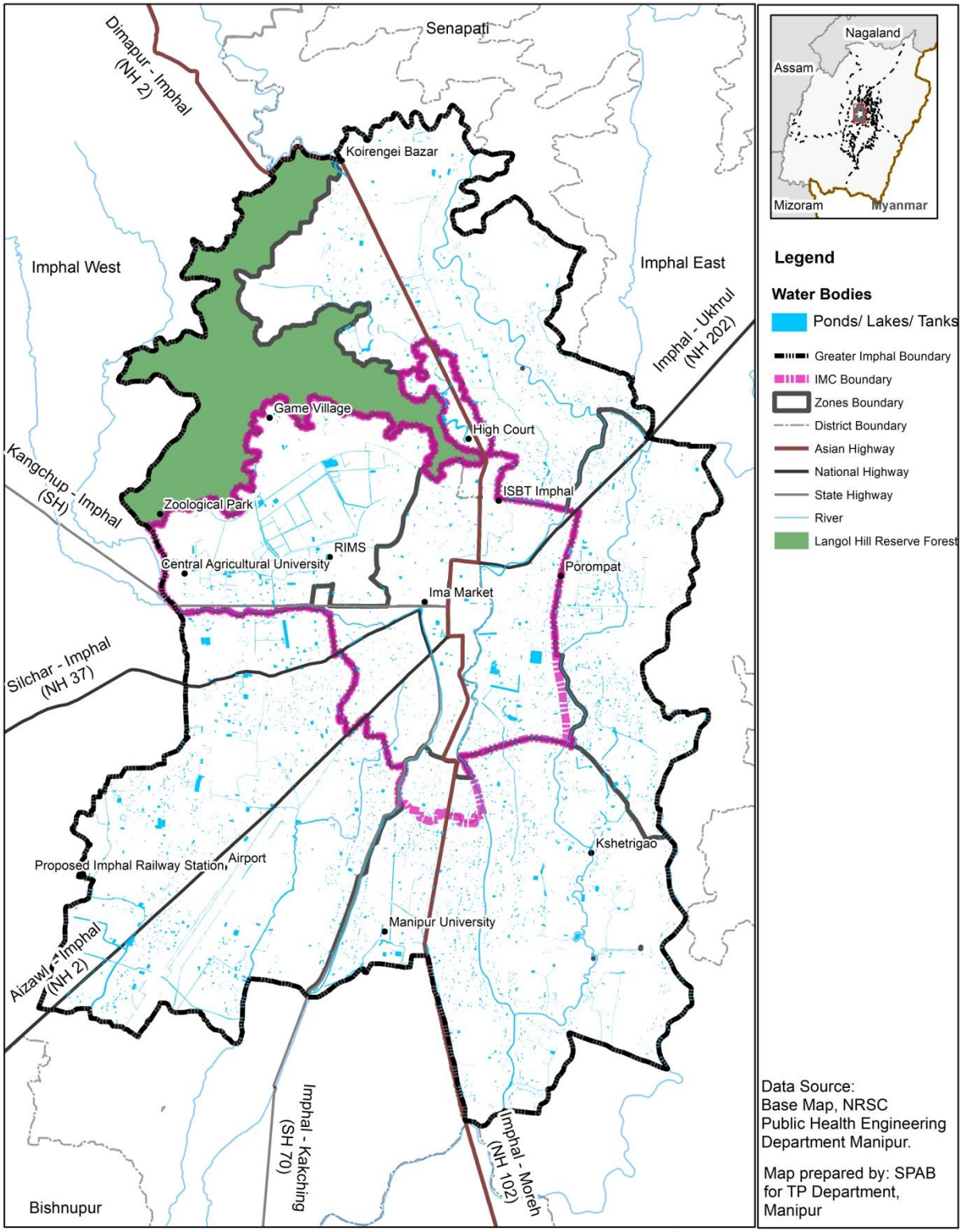
12.2.1 Wetlands and Low lying Areas

Wetlands within the planning area are located in Zone B majorly in sub zone B4. The area under wetlands is now earmarked by the government for the construction of water bodies for an area of approximately 500 hectares.

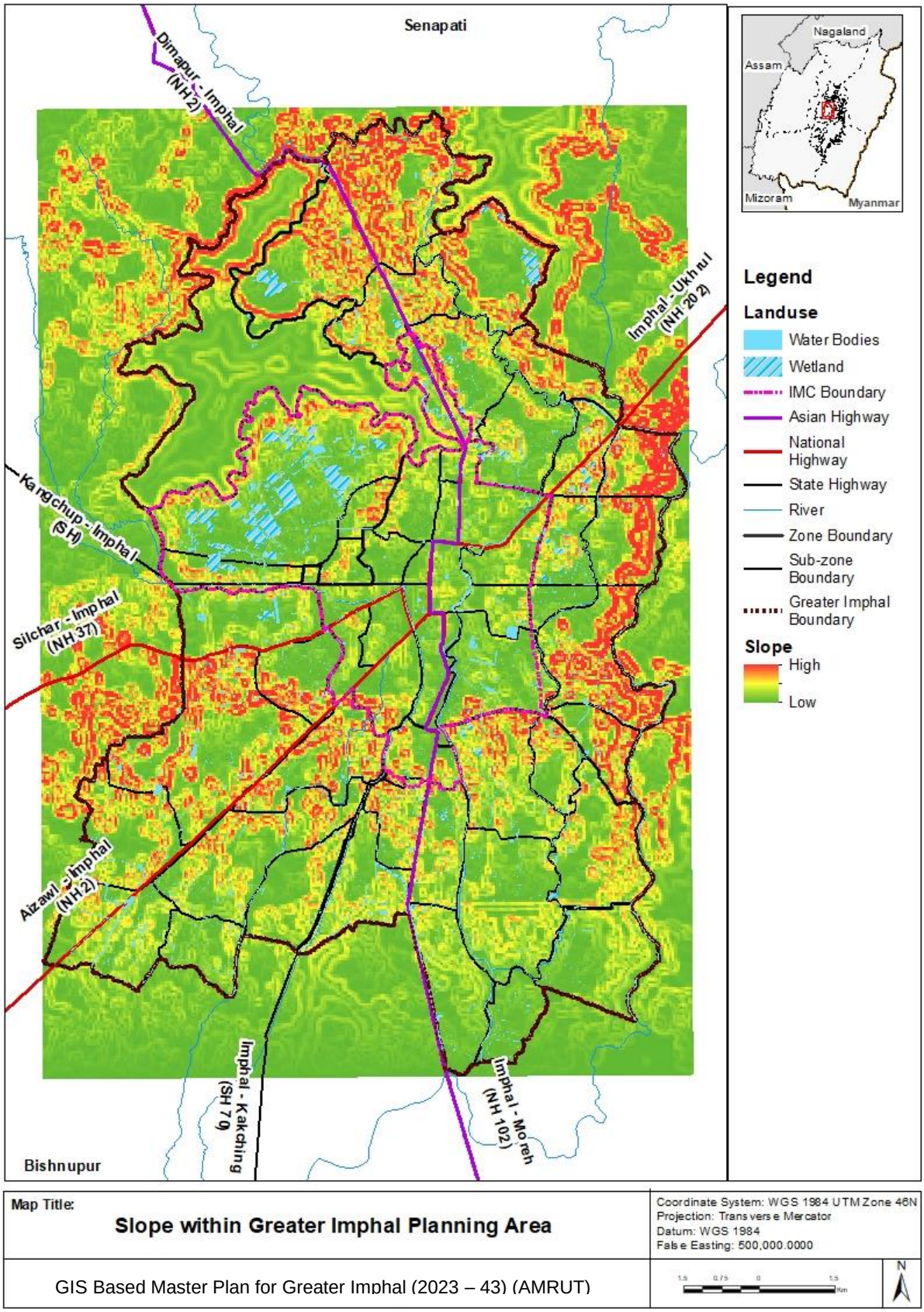
12.3 Observations and Way Forward

- The Greater Imphal planning area lacks recreational open spaces and the area under recreational landuse is very low as compared to the standards.
- The Greater Imphal planning area has large number of ponds and lakes within each zone.

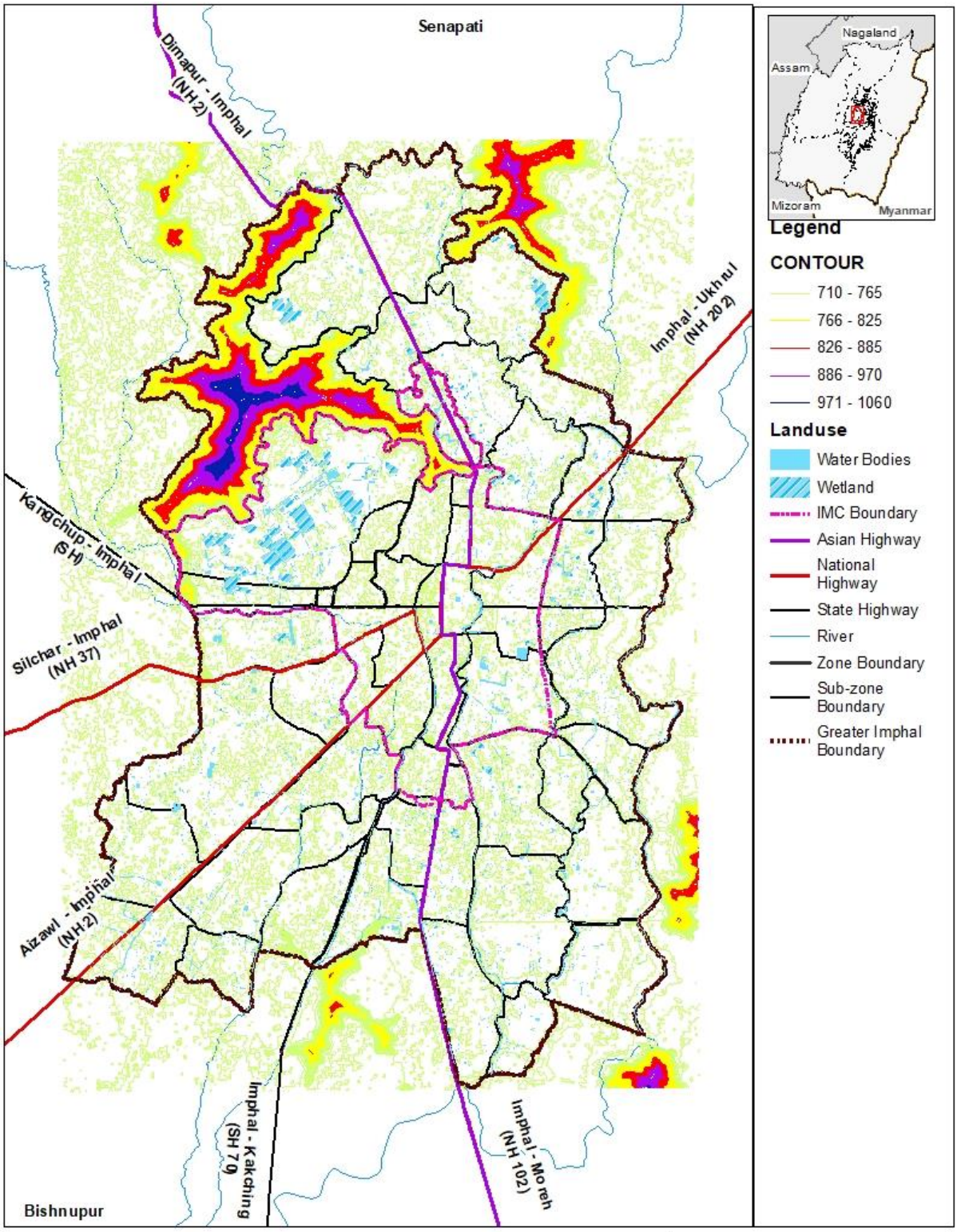
Map 12. 2: Water bodies in Greater Imphal Planning area



Map 12. 3: Slope within Greater Imphal



Map 12. 4: Wetlands and Low lying Areas



Section 13: Heritage and Culture

13.1 Introduction

"Heritage building" means and includes any building of one or more premises or any part thereof and/or structure and/or artefact which requires conservation and / or preservation for historical and / or architectural and / or artisanary and /or aesthetic and/or cultural and/or environmental and/or ecological purpose and includes such portion of land adjoining such building or part thereof as may be required for fencing or covering or in any manner preserving the historical and/or architectural and/or aesthetic and/or cultural value of such building.

"Heritage Precincts" is defined as any space that requires conservation and /or preservation for historical and / or architectural and/or aesthetic and/or cultural and/or environmental and/or ecological purpose. Walls or other boundaries of a particular area or place or building or may enclose such space by an imaginary line drawn around it.

13.2 Heritage area

The heritage area landuse is divided into three subclasses as Monument, Fort and Archaeological Site as per AMRUT standards and guidelines for GIS based master plan. There are few forts in zone A which constitutes total of 0.03% of the area of Greater Imphal. Zone A being in the core city has heritage presence which is missing in other zones. Below is the table of heritage sites in the zones and sub zones (Table 13.1, 13.2).

Table 13. 1: Zone wise area under heritage

Land use	Area under Land use (%)						
	À	B	C	D	E	F	G
Heritage	3.87						

Table 13. 2: Sub zone wise area under Heritage

Zones	Sub-Zone	Area under Landuse (%)		
		Monument	Fort	Archaeological sites
A	**A9**		0.026	
	A11		0.004	
	A12		0.003	

Note: The subzones which do not have any of the mentioned above land uses are not included in the table.

13.3 State Protected Monuments

There are 34* protected historical sites and monuments as per the Manipur Ancient and Historical Monuments and Archaeological Sites and Remains Act of 1976 in the Imphal East and west districts. 28 sites out of 34 are located within the Greater Imphal Planning Area which are being mapped in Map 13.1 to understand their location and to align the future development 200m away from these sites. These sites will be identified under the no development zone by the master plan.

Note:
The list of state protected historical monuments/ sites is attached in annexure 13.1

13.4 Cultural Heritage

Manipur is a mosaic of ancient traditions and rich cultural patterns. In the field of art and culture, the state is best represented by its classical and folk dance forms. Manipuri classical dance is world famous and it is very distinct from other Indian dance forms.

Northeast India is famous not just for its beautiful landscapes and natural resources including flora and fauna but also for its empowered women. A unique symbol of Manipur's culture is the Ima Keithel (which translates to 'mother's market') which is believed to be the largest all-women market in Asia. Ima Keithal has continued to thrive over the years, offering visitors everything from traditional handicrafts and modern clothing to local produce, dried fish and the famous Morok chilli. It is a 500 Year Old Market with over 5000 traders which are all women.



Ima Keithal: It is the largest all-women market in Asia. All the vendors in the market are women who sell items ranging from food, clothing to handicrafts. It is an age old market which defines the culture of Manipur and the representation of women workforce.



Traditional Knowledge System: The traditional knowledge system of Manipur Brick Architecture & Wooden Construction prevalent in Imphal is a reflection of its culture and traditions.



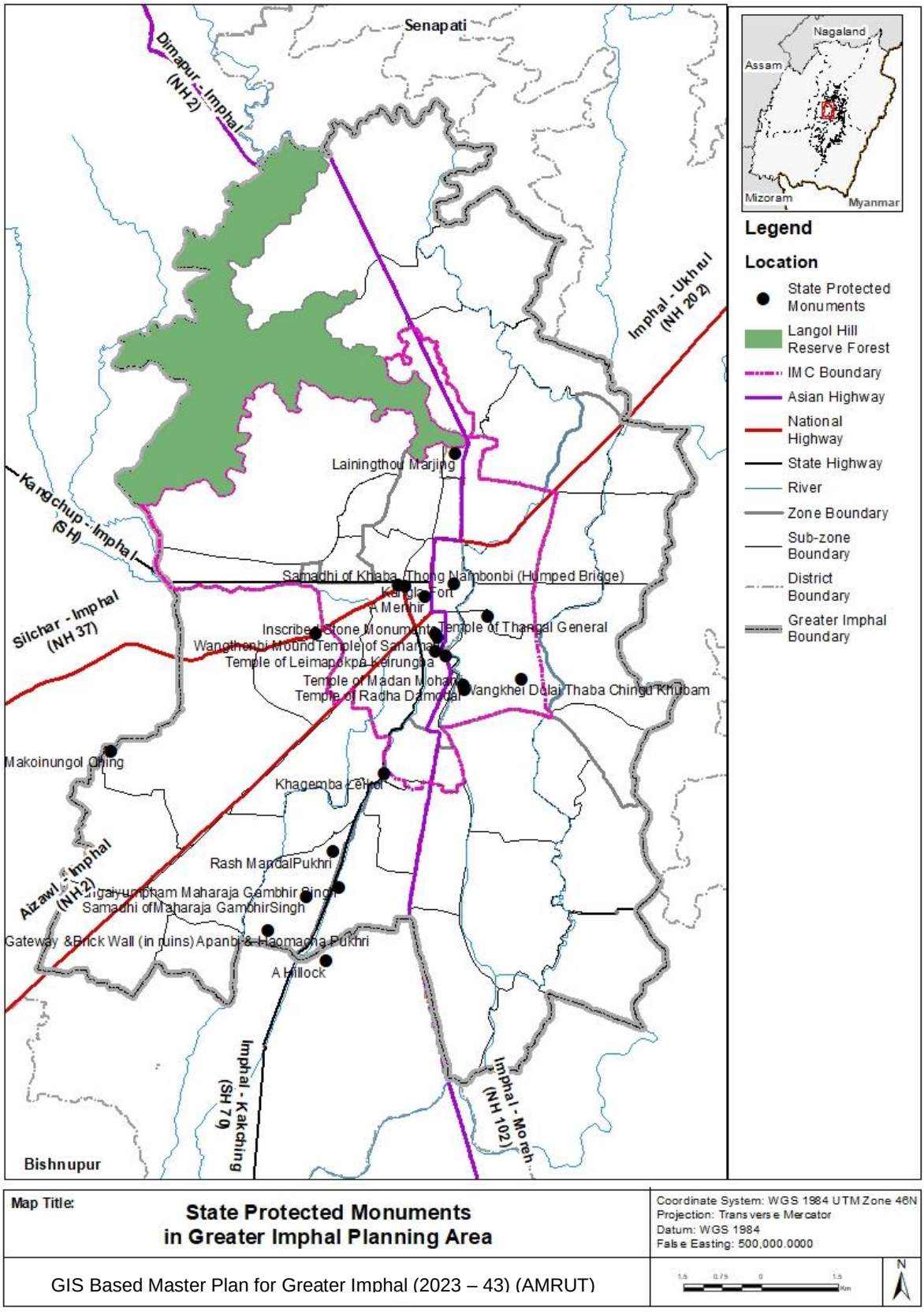
Manipuri Dance and Dress: The Manipuri Dance, also referred to as the Manipuri Raas Leela, is one of the eight major Indian classical dance forms, originating in the state of Manipur.

The Manipuri dress is woven with hand in horizontal line designs.

13.5 Observations and Way Forward

- In terms of built heritage the Greater Imphal planning area has 28 State protected monuments/ sites which need to be conserved and protected as heritage zones.
- Apart from built heritage the region has some important cultural heritage elements which are unique to the state and region that need to be leisured, promoted and developed in order to promote tourism and economy.

Map 13. 1: State Protected Monuments in Greater Imphal Planning Area



Section 14: Issues and Gap Identification

14.1 Introduction

The issues and gaps have been identified in each sector after the analysis of data. This will help in developing the proposals for the master plan. The gaps are identified sector wise in the further sections.

14.2 Landuse

From the perspective of ensuring equitable distribution of all kind of land-uses, the previous Master Plan had proposed a certain distribution of landuse, while the then Ministry of Urban Development (presently: MoHUA), with support from TCPO in 2014, had released the 'Urban & Regional Development Plan Formulation & Implementation Guidelines' also containing benchmark norms for land-use distribution for ensuring the same purpose.

For cases of Indian cities, generally the planning area is beyond the municipal corporation area. The respective state governments, based on their policies and the proposals from the Town (& Country) Planning departments notify a planning area with an extent that covers variable additional area with rural settlements keeping the municipal area at the core.

The applicability of the said guidelines is generally observed in the corporation area only (as the planning area contains large swathes of rural areas). Therefore, in the present context, only the boundary of Imphal Municipal Corporation (IMC) has been considered to see the difference between existing and benchmark/ norms of landuse distribution in the below table 14.1.

This section identifies the gaps in implementation of earlier proposals, as well as attempts to identify issues in terms of deviations from the said benchmarks.

Table 14. 1: Landuse Distribution in Imphal Master Plan area

Landuse	Existing landuse of 1981 as per Master Plan 2011*	Proposed Landuse as per Master Plan for 2011 (%) *	Existing Landuse of 2020 (%)*	Difference between proposed Land-use of Master plan 2011 and existing of 2020 (%)	Benchmark Landuse % (URDPFI Guidelines)	Existing Landuse of IMC area (2020)	Difference between benchmark and existing land use of IMC area (2020)
Residential	24.78%	38.0%	26.0%	-11.9%	48%	39.6%	-8.4%
Commercial	0.42%	0.8%	1.5%	0.7%	2%	3.2%	1.2%

Industrial	0.54%	1.5%	0.2%	-1.3%	4%	0.1%	-3.9%
Public and Semi-Public	5.7%	8.9%	10.3%	1.4%	10%	16.2%	6.2%
Road	2.3%	8.8%	4.0%	-4.7%	6%	7.4%	1.4%
Parks and Recreational open spaces	1.12%	3.4%	0.4%	-3.0%	15%	1.8%	-13.2%
Agricultural, hills and other uses	64.52%	38.7%	57.5%	18.8%	Balance	31.7%	-

**Note: The landuse percentages are based on the Greater Imphal area as per Master plan 2011*

14.2.1 Gaps & Issues in implementation of earlier Landuse proposals

Deviations were observed in the existing landuse of 2020 from the proposed landuse of Master Plan 2011. Some of the gaps in implementation of earlier proposals of landuse & issues in terms of deviations from the benchmarks are as follows:

1. Residential landuse was observed to be only 24% whereas the previous Master Plan (2011) proposed it to be 38%. The projected population of 2011 in the 2011 Master plan was 6.27 lakhs whereas the population of Greater Imphal planning area as per census 2011 is 5.26 lakhs which is less than the projected population by 16%, whereas the residential development is short by 12%.

2. The industrial landuse was observed to be only 0.2% in the planning area and 0.1% in the municipal area which is very low as compared to the proposed 1.5% and the benchmark (URDPFI Guidelines, 2015) of 4%. This also indicates a low share of secondary sector within the city-regional economy as also discussed in Section 7.3.

3. Land under roads and transportation is only 4% whereas the Imphal Master Plan 2011 proposed it to be 8%. This low share of transport landuse results into many mobility challenges like non-uniformity in road width, lack of infrastructure provision for shared mobility, parking and freight operations.

4. The parks and recreational open spaces had a low share of landuse in the Master plan of 2011 as compared to the benchmarks. The existing (observed landuse 2020) share of parks and recreation open spaces landuse is even lower than the proposed land use as per Master Plan 2011. The AMRUT guidelines aim at increasing the amenity value of cities by developing greenery

and well maintained open spaces. Accordingly the proposals include increasing the share of such space in the overall landuse plan.

5. Commercial landuse increased from the proposed landuse by 0.7% indicating more of individual commercial establishments and lack of developer led commercial complexes within the planning region.

For this Master Plan of Greater Imphal Planning Area, the 20 minute neighbourhood concept has been adopted due to its worldwide acceptability in terms of self sufficiency and neighbourhood sustainability. It is also equally applicable in case of pandemics like Covid 19, after which there is a growing concern to make the neighbourhoods self sustainable and adequate for sustaining daily lives. Mixed use neighbourhoods are essential for the easy accessibility and sustainability as identified in the National Urban Policy Framework, 2018. For this purpose the planning area is divided into 52 subzones. Each sub zone is considered as the smallest unit of landuse planning.

For neighbourhoods to be sustainable, the sub zones have been assessed in terms of essential landuses such as residential, commercial, mixed, public and semi- public, public utilities, educational, health services, religious, communication, traffic and transportation, and recreational. Landuses such as residential, educational and traffic and transportation are equitably distributed across the sub zones, even though certain differences were observed between core and peripheral areas.

The sub zones lying within the municipal corporation boundary are considered as urban whereas the sub zones lying outside the municipal boundary are considered to be rural. The following gaps were identified in various sub zones based on the land uses identified and the percentage share of each landuse within the sub zones Refer table 14.2):

a. Sub zones of zone B, C, D, E and F lack health services. The Reforms in Urban Planning Capacity in India report by Niti Aayog recommends creation of healthy cities across the nation by 2030 as the Covid 19 pandemic has revealed a dire need for planning and management of the cities, with a thrust on health aspects. The spatial planning aspect in this context is the presence of health care services landuse within the 20 minute reach of the residents.

b. Public utilities are insufficient in most of the sub zones (70%). The AMRUT mission of GoI aims at providing the basic amenities like water supply, sewerage, etc to improve the quality of life of the people.

c. The Commercial and mixed uses should be increased in Zone C, D, E and F for the sub zones to be more self sufficient in terms of reducing commercial trip lengths.

Table 14. 2: Landuse that are required to be increased in different Sub zones

Landuse	Sub zone	
	Urban Sub zone	**Rural sub zone**
Commercial	-	C7, E8, E10, F5, F6
Mixed	B4	C3, C7, D2, D6, D7, E6, E8, E9, E10, E11, F3, F5, F6, F8
Public and semi- public	A12	, C2, C4, D2, E6, E10, F8, F9
Public utility	A1, A2, A3, A4, A5, A11, A12, B1, B2, E1	C1, C2, C3, C5, C6, C7, D1, D2, D4, D5, E2, E3, E5, E6, E7, E8, E9, E19, E11, F1, F2, F3, F4, F5, F6, F7, F9
Health services	B1, B3	C1, C2, C6, C7, D1, D2, D4, D6, D7, E2, E3, E5, E8, E9, E10, E11, F1, F2, F5, F7, F8, F9
Religious	C7	D2, D4, D5, E3
Communication	A2, A3, A5, A6, A7, A10, A12, B1, B2, , E1,	C1- C7, D1, D2, D6, D7, E2, E3, E5, E6, E8- E11, F1, F2, F4-F9
Recreation	A3, A5, B1,	C6, C7, D2, D5, E8, E9, E10, E11, F5, F6, F7

14.3 Economic Sector

1. Imphal is primarily an administrative town, with recreation and tourism to some extent as observed based on the main workers classification by census.
2. A decline in share of main workers was observed which indicates the increase in temporary nature of employment, as the share of marginal workers increases.
3. The Greater Imphal planning region lacks employment diversity.
4. The share of secondary sector is comparatively low (primarily MSME), this calls for a need to enhance the industrial development in the region.
5. With tourism potential in the region, the tertiary sector should be further boosted in terms of tourism as the region has immense tourism potential which can be leveraged to strengthen the economy of Greater Imphal planning area.

14.4 Transport

1. High congestion and delay for regional and local trips is observed due to the convergence of regional corridors around CBD (Ima Market and Kangla fort) and the absence of bye pass leading to delay in vehicular traffic and entry of heavy vehicles within the city.

2. Lack of equitable road space distribution (space for various users: vehicle, NMT and pedestrian).
3. Lack of uniformity in ROW and continuity of road features (such as median, NMT road space, pedestrian features) along arterial roads leading to bottlenecks and deteriorated LOS.
4. Need for improvement of road geometry at intersections with suitable markings, signage (safety) and appropriate turning channelization.
5. Absence of NMT provisions along major roads.
6. Absence of public transport and limited IPT accessibility within the planning region (in order to reduce road space occupancy by moving vehicles).
7. Need for special activity zones around major transport hubs (ISBT, airport, railway station) for multimodal integration and improved LOS of public transport operations.
8. Absence of dedicated freight hub within the planning region.

14.5 Housing

1. The calculation of quantitative housing shortage based on Number of census houses and No. of Residential Occupied census houses, revealed a shortage of 507 dwelling units within the Imphal municipal corporation area. Although possibility cannot be ruled out that some HHs have more than one census house at their disposal and also it does not rule out the possibility of some more HHs not having access to shelter if above is the case.
2. The qualitative housing shortage based on the building structures within the planning region was estimated to be 66, 757 dwelling units out of which 62, 473 are kuccha houses, 1952 are semi-pucca houses, and 2332 are dilapidated houses in IMC area as per Census 2011. Zone E has the maximum kuccha houses (14,031) and Zone F has highest number semi-pucca (640) houses. The qualitative need of housing can be fulfilled through PMAY housing scheme within the region. The dilapidated houses can be declared unsafe for living by the municipality based on their condition or the property owners can be contacted for their up gradation/ improvement
3. The future need of housing for the projected population of 2043 is 83, 502 dwelling units, assuming that the observed household size of census 2011 (i.e. 4.7) will remain constant between 2001 and 2043.
4. The housing need can me met both through infill and green field development and town planning schemes.

5. As per Locational suitability analysis for future housing, Zones C (C4), E (E2, E3) and F (F1, F4) have high suitable areas for future development and land for the incorporation of town planning schemes.

14.6 Physical infrastructure

1. The total current capacity of the various drinking water sources is 104.25 Mld and the water demand as per 2011 population is 78.56 Mld. By 2043 the water demand will increase to 130MLD indicating the need for identification of new water sources.

2. The total present treatment capacity for water is 81.38 Mld. Based on the current and future demands; the water treatment capacity is sufficient for present scenario but needs to be increased by 50MLD for future context. This calls for a need of establishing new water treatment plants within the planning region.

3. The water supply network is limited to Zone A, B, D and some parts of E and F.

4. There is limited/no coverage of sewage network outside municipal corporation boundary.

5. Inadequate management practice for solid waste management with regard to collection activities. With regard to processing and disposal there is a recycling plant and a waste to energy plant is under construction.

14.7 Social infrastructure

1. The existing education and health facilities within the Greater Imphal planning area suffice to the current residing population. But with the increasing population the region will need an area of 110 hectare for education facilities and 27 hectares for medical facilities.

2. The social gathering places are comparatively low in Zone B and Zone E providing a need to increase recreational spaces in respective zones.

14.8 Green spaces and Water Bodies

1. The URDPFI guidelines recommend minimum 12% of recreational landuse in medium cities, which is less than 1% in the Greater Imphal planning region, leading to limited recreational open spaces.

14.9 Heritage and Culture

1. There are 28 State protected monuments/ sites within the Greater Imphal area which needs to be protected and conserved through this master plan.

2. Other then the built heritage, the cultural heritage of Imphal needs to be leisured, promoted and developed in order to promote tourism and economy.

Section 15: Strategies, Proposals and Recommendations

15.1 Introduction

The GIS Based Master Plan for Greater Imphal for the year 2043 is set to streamline the present and future growth of the city using the basic principle of self-sustaining neighborhoods. A sub zone is considered as the smallest unit of landuse planning and each sub zone is assessed in terms of essential landuses for making it a self-sustaininh neighbourhood. The recommendations for various sectors are based on the strategies related to same. The recommendations and proposals for various sectors are discussed in further sub sections.

15.2 Projections and Future Growth

The population projections and future growth of city is determined based on the past trends within the planning area. The population for 2043 is estimated to be 9.02 lakhs in planning area with a gross population density of 59 persons per hectare.

15.2.1 Population

If the population growth over 1991 to 2011 is maintained over 2011 to 2043, the Municipal area will have a population of 3,97,495 in 2043 and the non municipal area will have a population of 3,10,797 and the total population of the Greater Imphal Planning area will be 7, 08, 292. But due to the developments like the rail connection of Imphal, construction of Asian Highway and policies such as Act East Policy there can be a sudden rise in the population of Greater Imphal. Hence the total population for the greater Imphal Planning area is estimated to be 9.02 lakhs calculated using the geometric increase method, which at times reflects a higher rate and thereby may include induced growth due to growth in infrastructure and economic opportunities.

The natural growth of the population will create serious difficulties in achieving a balanced development within the region. To achieve a more desirable pattern of growth, the growth within the municipal corporation area will have to be controlled by zoning regulations, whereas the growth in non municipal areas will have to be increased through various town planning schemes and transit oriented developments.

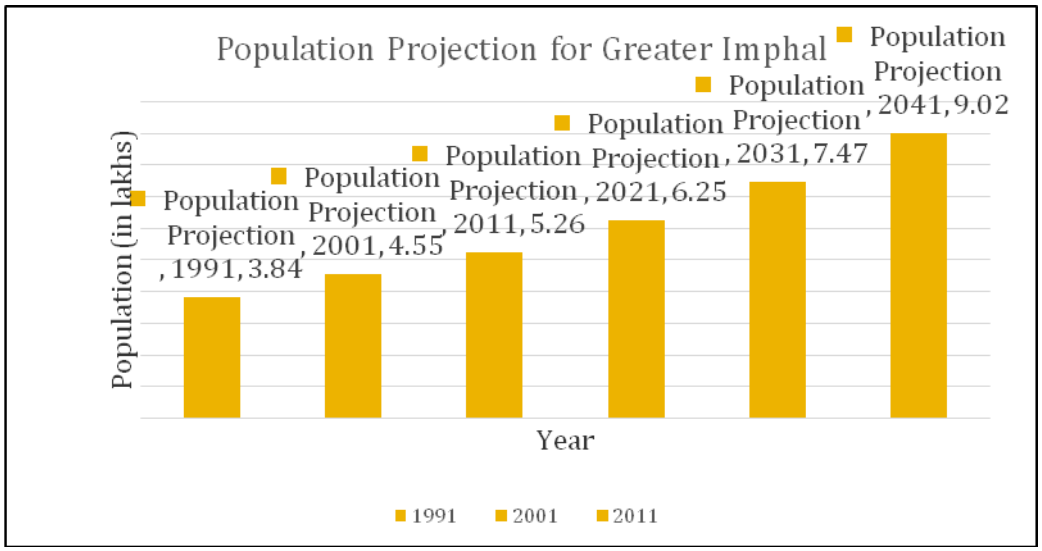


Figure 15. 1: Population Projection for Greater Imphal

15.2.2 Population Density

The gross population densities for the municipal and non municipal areas for 2043 of Greater Imphal planning area based on the projected population, following the similar trend as from 1991 to 2043 are tabulated in table 15.1.

Table 15. 1: Gross Population Density in Greater Imphal

Area	1991 (in pph)	2001 (in pph)	2011 (in pph)	2043 (in pph)(BAU*)
Imphal Municipal Corporation	62	70	81	**128**
Non-Municipal Area	14	17	20	**38**
Greater Imphal Planning Area	25	30	35	**59**

**BAU- Business as usual projection*

The gross population density (59pph) for planning area will be less than the low density zone as per 2011 Master plan, whereas for the municipal area it is close to low density zone (128pph). The strategy adopted for future development includes:

- Densification of IMC area to Gross Town density up to 100 pph, non-municipal areas up to 50 pph and overall planning area regional density of 60 pph.

- The above densities will be achieved through new housing opportunities in non-municipal areas.
- It will be desirable if the population densities within the region are not allowed to exceed the maximum limits as tabulated in table 15.2.

Table 15. 2: Projected Gross Population Density

Projected Gross Population Density (PPH)	
Imphal Municipal Corporation	80- 100
Non-Municipal Area	40- 50
Greater Imphal Planning Area	50- 60

15.3 Future Residential Development

To accommodate the growing population, new areas need to be unlocked as the paddy fields cannot be used for construction with the enactment of the Manipur Conservation of Paddy land and Wetland Act, 2014. Presently the FAR in the region is 2.5 (250, if multiplied by 100)(180 for small plots, 200 for medium plots and 250 for bigger plots). But when a FAR of 1.8 (or 180) is considered, the possibility of total floor space availability will be as follows:

The existing residential buildings in Greater Imphal planning area have floors upto G+8 (few such apartment block type developments). While the majority of them are G, G+1 and G+2 floors. The estimation of building footprint (floor area on ground), occupied by the buildings of different heights is tabulated in table 15.3.

Table 15. 3: Area of Building footprint

	Area of building footprint (in 10000 sq.m.)								Total residential building footprint
No. of floors	G	G+1	G+2	G+3	G+4	G+5	G+6	G+7	
Total footprint area	915.72	429.39	158.97	35.77	6.11	0.75	0.73	0.1	**1547.53**

Since the buildings have more than one floor, the floor area will be multiplied by the number of floors of buildings to achieve the total residential floor area, tabulated in table 15.4 and

map 15.1.

Table 15. 4: Total floor area

	Total floor area (in 10000 sq.m.)								Total floor area
No. of floors	G	G+1	G+2	G+3	G+4	G+5	G+6	G+7	
Residential floor area by using all the floors	915.72	858.77	476.91	143.08	30.55	4.5	5.11	0.8	**2435.44**

The above data is acquired through ground truthing survey conducted in 2020. The total estimated/ projected population that is housed in the 2435.44 (x10000) sum area is 6.25 lacs. Therefore, the per person floor area available is 39 sqm.

The projected population that is to be housed by 2043 is 9.02 lacs. Hence an additional population of 2.77 lacs will need an additional floor space of 1080 (x10000) sqm.

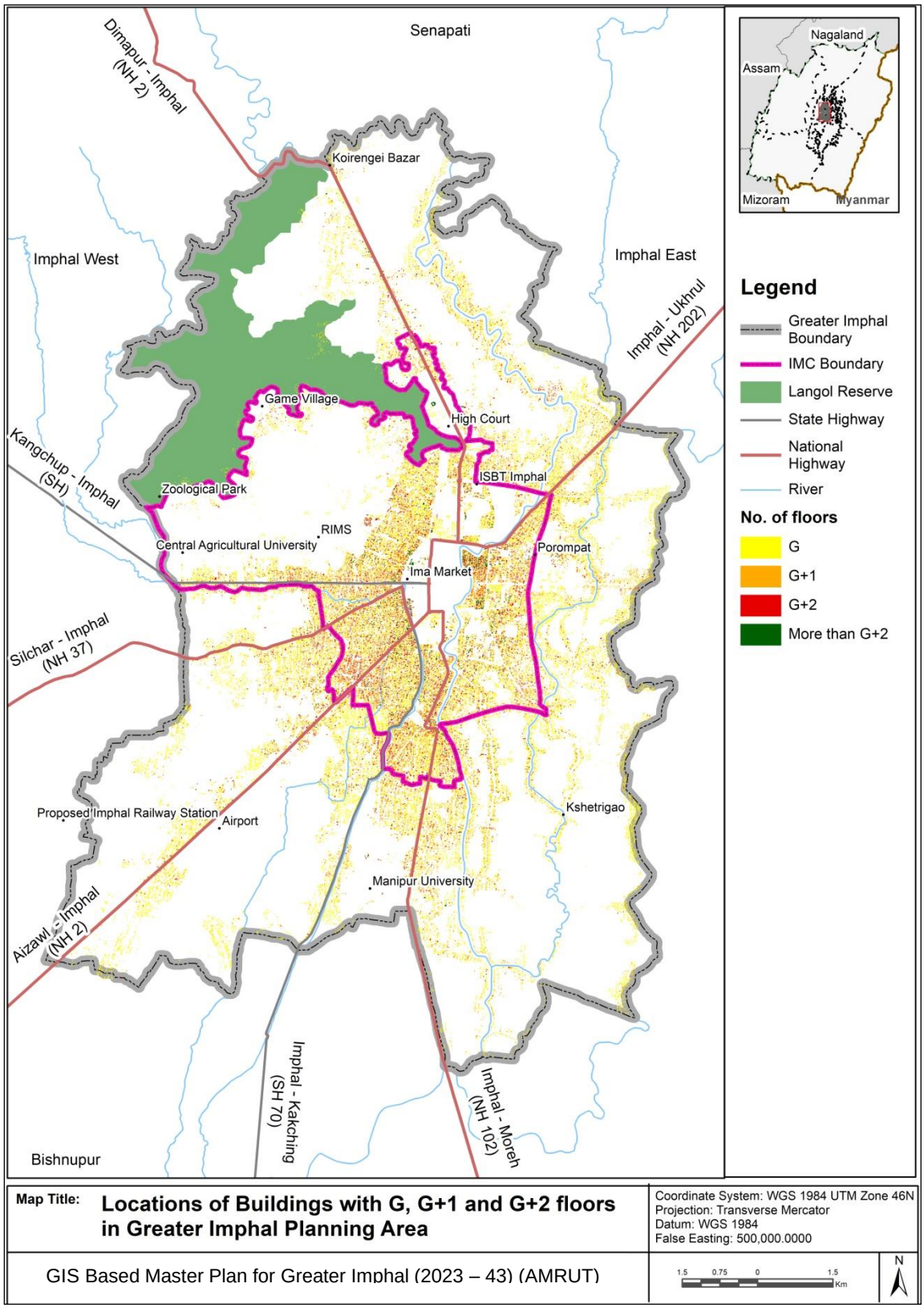
Considering the lowest value of the FAR i.e., 1.8 for the the calculation above in residential plots), with an assumption that the average ground coverage is 60% and there is no change in group housing/ apartments norms, the additional floor area would be as given in table 15.5.

Table 15. 5: Possible Total additional floor area in 10000 sqm assuming consumption of FAR up to 1.8

No. of floors	G	G+1	G+2	G+3	G+4	G+5	G+6	G+7	Additional floor area with full utilization up to FAR 1.8
Additional floor area (10,000sqm)	1831.43	429.39	0	0	0	0	0	0	2260.82

It is not necessary that everybody will construct higher floors, and all this will only increase the supply of rental housing. Hence, additional housing is needed to be provided in the scheme area that is to be developed near the railway station and airport delineated in further sections.

Map 15. 1: Location of G, G+1 and G+2 buildings



15.4 Housing Strategies

- The housing requirement is anticipated by considering the: i) quantitative housing shortage of municipal area, ii) the qualitative housing shortage of planning area and, iii) future housing need for the projected population of Greater Imphal Planning area.
- The quantitative housing shortage within IMC was worked out to be 507 houses (as per Census 2011 data) and the qualitative housing shortage within the Greater Imphal planning area was calculated to be 66757 houses (building materials and access to utility networks). The quantitative and qualitative shortage can be fulfilled through PMAY housing scheme for both urban and rural areas.
- The future need of housing for the projected population of 2043 is 83,502 houses, assuming that the observed household size (4.6) of census 2011 will remain constant between 2011 and 2043. The increased population will be accommodated through increased FAR and newly designated scheme areas, affordable housing areas and TOD areas with mixed land use with higher FAR allocated.

15.5 Transport Strategies

- The future travel demand has been estimated for the year 2031 (in section 8.6.4) to understand the flow of traffic and it conveys that the traffic is highest along the southern corridors of the planning region (NH2 and Asian Highway).
- The regional traffic should not be encouraged on the urban roads to avoid congestion within the city.
- The urban and regional public transport terminals (air, rail, road) to be improved in terms of connectivity and accessibility.
- Equitable road space for all users to be encouraged by redistributing the right of way so as to provide continuous and uniform road links.
- The freight and logistics industry to be promoted by identifying provisions and traffic management techniques.

15.6 Physical Infrastructure Strategies

The existing water supply system is sufficient for the current and projected population but the treatment capacities need to be increased.

The sewage networks are insufficient for the current population. It needs to be upgraded and expanded to cater to the future population needs.

15.6.1 Water Supply Strategies

The water demand will increase to 130 MLD by 2043 for the projected population of 9.02 lakhs assuming a supply of 200 LPCD for IMC area and 90LPCD for rural areas. *(Source: and water consumption standards by CPHEEO and URDPFI guidelines)*

The existing water supply system currently is available in Zones A, B, D and some parts of E. In future it is needed to be expanded in a phased manner as follows:

- Phase 1: towards Airport and railway station (Zone F)
- Phase 2: Zone C

The existing treatment capacities should also be increased by 50MLD for the future population or new locations need to be identified for treatment plants. Also new water intake sources are to be identified which will help in catering the demand of future population.

15.6.2 Sewerage Strategies

The existing sewerage system expands within the municipal corporation area which includes Zones A and B and there is a proposal to expand it to uncovered areas (remaining wards) within municipal corporation (Zone A & B). In future it could be expanded to:

- New scheme area to be developed under the town planning scheme near the railway station and airport.
- In high dense areas

The existing capacities of the STPs need to be increased and other areas except the ones discussed above may continue with the conventional systems of sewage disposal and treatment.

15.6.3 Strategies for Electricity Supply

The projected electricity demand for the year 2043 is 24, 72,307.48 kWh pcpd which is 1, 03,012.812 kWh. The present power system in the Greater Imphal area can meet the power demand upto 3, 74,050 kW which is 3.64 times the projected power demand of the year 2043.hnece the power supply system is sufficient for future.

15.6.4 Strategies for Solid Waste Management

The solid waste generation presently is 158 tons per day which will increase to approx 250 tons per day. Only 56% of the waste generated is treated presently and the treatment facility converts 60 TPD to energy and 100 TPD to compost every day. The capacity of the treatment facility needs to be expanded in future.

15.7 Strategies for Social Infrastructure

15.7.1 Education Facilities

With the increasing population the region will need an area of 110 hectare for education facilities by 2043. The number of each facility required based on the existing facilities and URDPFI Guidelines standards are as follows. (Table 15.6)

Table 15. 6: Adopted Standards, Existing and additional educational Facilities

S. No.	Category	Population Served per unit	Area Requirement (Ha)	Existing Facilities (Census 2011)	Required Facilities (2043)	Additional Number of facilities required
1	Pre-Primary School	2500	0.08	108	181	**79**
2	Primary School	5000	0.40	615	359	**-**
3	Senior-Secondary School	7500	1.80	62	120	**58**
4	College	1.25 lakh	5	44	7	**-**
5	Medical College	10 lakh	15	3	1	**-**
6	Engineering College	10 lakh	6	2	1	**-**
7	Technical Institute	10 lakh	4	2	1	**-**
8	University	-	10 – 60	1	1	**-**

The area requirement for education facilities in different zones is tabulated in table 15.7.

Table 15. 7: Area Requirement for Education Facilities in different Zones

Zones	**Area required for Educational Facilities (2043)**
Imphal Municipal Corporation (Zone-A+Zone-B+Sub Zone-E1)	52.2 Ha
Zone C	7.2 Ha
Zone D	16.2 Ha
Zone E (Excluding sub-zone E1)	26.6 Ha
Zone F	7.2 Ha
Zone G	-
Total (Greater Imphal Planning Area)	**109.4 Ha**

15.7.2 Health care Facilities

With the increasing population the region will need an area of 27 hectares for health care facilities by 2043. The number of each facility required based on the existing requirement and URDPFI Guidelines. (Table 15.8)

Table 15. 8: Adopted Standards, Existing and additional health care Facilities

S. No.	Category	Population Served per unit	Area Requirement (Ha)	Existing Facilities (Census 2011)	Required Facilities (2043)	Additional Number of facilities
1	Dispensary	15,000	0.08 to 0.12	63	69	**6**
2	Nursing Home, Maternity and Child Welfare Centre	45,000 – 1 lakh	0.20 to 0.30	79	20	**10***
3	Family Welfare Centre	50,000	0.08	18	18	**-**
4	Veterinary Hospital	5 lakh	0.2	5	2	**-**
5	Specialty Hospital (TB)	1 lakh	3.70	3	9	**6**
6	General Hospital	2.5 lakh	6	7	4	**-**

** The nursing homes, maternity & child welfare centre in Greater Imphal are concentrated within the municipal corporation area, hence they are required in other zones.*

The area requirement for education facilities in different zones is tabulated in table 15.9.

Table 15. 9: Area Requirement for Healthcare Facilities in different Zones

Zones	Area required for Healthcare Facilities (2043)
Imphal Municipal Corporation (Zone-A+Zone-B+Sub Zone-E1)	3.82 Ha
Zone C	4.46 Ha
Zone D	5.06 Ha
Zone E (Excluding sub-zone E1)	4.76 Ha
Zone F	8.54 Ha
Zone G	-
Total (Greater Imphal Planning Area)	**26.64 Ha**

15.8 Strategies for improving Economic Profile

Based on the share of main workers of IMC based on different categories it was observed that it is primarily an administrative town with recreation and tourism to some extent. The secondary sector is comparatively low (primarily MSME) which may be increased for employment diversification. Also with tourism potential in the region, the employment within the sector has possibility to be increased by 2043. Based on the potential of various sectors, the share of main workers is determined for 2043 as tabulated in table 15.10.

The projection of future employment has been worked out keeping it consistent with the population projection. The total working population in 2043 is estimated to be 45% (maximum) to the total population which is 405900 persons.

The possible change in the employment within various sectors is tabulated in table 15.10.

Table 15. 10: Share of Main workers in IMC, 2011 (8 categories)

Categories	Main workers (%)	
	2011	Possible change (2043)
Administrative Services[1]	39.09	35
Trade & Commerce, Hotels, Recreation Services[2]	29.00	31
Manufacturing and Household Industries	12.42	13.5
Transportation, Storage & Communication[3]	6.11	7.5
Construction	5.03	6.5
Other Services[4]	4.75	5
Other Primary Activities[5]	2.11	1
Agriculture Activities	1.49	0.5

Note:

1. *includes Administrative and support service activities, Public Administration and Defense, Compulsory Social Security, Education, Human Health and Social Work activities*
2. *includes Wholesale and Retail Trade (Repair of motor vehicles and motor cycles)- HHI & non HHI, Accommodation and food service activities, Arts, Entertainment and recreation, Other Service Activities, Activities of Households as Employers: Undifferentiated Goods and Services, Activities of Extra-Territorial Organisations and Bodies- HHI & non HHI*
3. *includes Transportation and Storage, Information and Communication- HHI & non HHI*
4. *includes Electricity, Gas, steam and Air conditioning Supply, Water Supply; (Sewerage, Waste Management and remediation activities), Financial and Insurance activities, Professional, Scientific and Technical activities, Real Estate activities*
5. *includes Plantation, Livestock, Forestry, Mining and Quarrying*

- A decrease in population employed in administrative services is estimated because as the population increase, the share of population employed in administrative service will decrease.

- The trade & commerce, hotels and recreation services is estimated to increase from 29% to 31% with the coming up of new railway station and ADB funded roads.
- It is observed as workforce involved in manufacturing and household industries has increased from 12.42% and 13.5%, although it is positively aligning with the long term vision of strengthening secondary and tertiary sector, a dedicated stimulus to catalyse the manufacturing and household industry sector will also be needed.
- The transportation, storage and communication sector is expected to rise from 6.11% to 7% as the new freight hub and railway station will boost employment in the sector.
- The new population will boost the construction industry and the share of construction sector is expected to rise from 5.03% to 6.5%.
- The employment in agricultural activities and other primary activities have been modified to 0.5% and 1% from 1.5% and 2.11% respectively, as there will be a decrease in agricultural land available which will reduce the agriculture related employment.

15.9 Strategy for Built Form & Spatial Structure

15.9.1 Urban Form

The urban form of a settlement defines its character and identity of the place. It is evolved over time determined by various factors. The existing urban form of Imphal is the result of its natural growth streamlined through the 2011 Master plan. The urban sprawl and its present development pattern are highly guided by its natural features such as rivers, hills, etc.

The future urban form of the city has been envisaged as a low rise development with exceptions in some pockets of TOD and new housing development areas. The proposed development is suggested to maintain its regional character but at the same time provide differentiated spaces for different activities of the future population.

The new capital complex located in Zone B reflects the image of the city as the capital of the state thereby highlighting the administrative character of Imphal. The future development is required to enhance the potentialities of this place.

The residential area surrounding the municipal corporation area would have low-rise low-density development. The new housing areas would be developed through town planning schemes, with high density high rise development. The areas identified along the transit corridors would be high rise development areas.

15.9.2 Spatial Structure

The future structure of Greater Imphal is dependent on the spatial distribution of various functional uses, road network, community facilities, and employment. Imphal was proposed to be poly- centric in the 2011 Master plan as a town centre, a sub- city centre and a capital complex was proposed. The city has a radial road network with the major roads emerging from the centre near the Kangla Fort.

The future structure of the city is proposed to be concentric around the proposed ring road with a poly- nucleated structure. The ring road will connect the major corridors and all the new activities are aligned along the ring road.

15.10 Scheme Area

With the construction of the upcoming railway station in Imphal, it is anticipated that it will lead to large development around that area. Following uses can be integrated around the area using town planning scheme:

- Industrial area, Warehousing /Logistic Hub, Fulfilment Centre
- Transport Hub (2nd ISBT) and Freight hub
- Mixed use Business district and additional Wholesale Trade facilities
- Housing (high-rise)
- Offices and other Commercial areas
- Hospitality sector (hotels, etc.)
- Recreational spaces

The scheme area delineated covers sub zones F8 and F9 (Figure 15.2). The details of the scheme area to be worked out through a local area plan. The Scheme area shall be considered as a TDR receiving zone as indicated in section 15.11.3a. At the same time property owners surrendering land for the purpose of the scheme area shall be eligible to receive TDR if they area not commimg under TP scheme.



Figure 15. 2: Scheme area

15.11 Landuse Proposals

15.11.1 Residential

The new residential areas are identified across the city along with the mixed landuse along the TOD corridor. The residential demand will also be fulfilled with the increased FAR in existing areas. The southern area is proposed to be high density, high-rise development along the ring road. The low density is assigned at the north and east of the region.

The overall gross density for municipal area is proposed to be between 80 and 100 persons per hectares, whereas for non municipal area it is proposed to be between 40 and 50 persons per hectares.

The areas lying along the new ring road are proposed to be developed through town planning schemes. A detailed policy should be prepared at zonal / level (Zonal Area Plan/ Local Area Plan) while the preparation of zonal development plans. Scheme area is proposed to have high density development mainly for the who would be working in the industrial zone which is proposed in the scheme area.

15.11.1a Affordable Housing Location

An area for affordable housing is being designated with significantly high density of 300 persons per Hactare in the subzone B1 and represented in figure 15.3. An affordable housing policy or norms should be developed for implementation of affordable housing schemes.

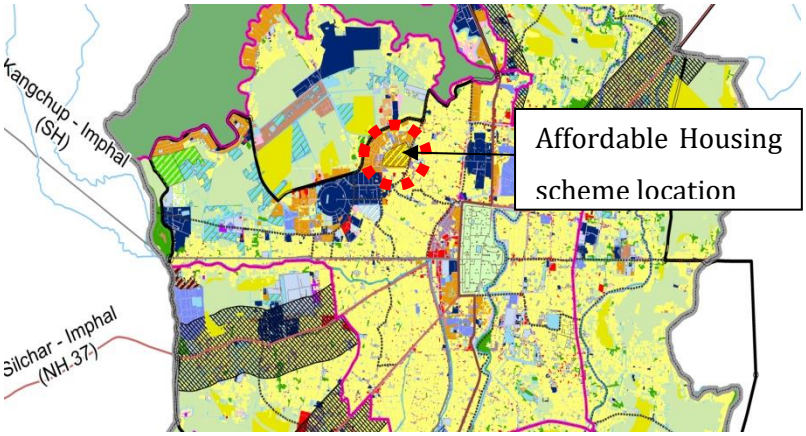


Figure 15. 3: Priority affordable housing area in zone B1

Each residential pocket is envisaged to be developed with the 20 minute neighbourhood concept and supposed to have essential landuses (such as residential, commercial, mixed, public and semi-public, public utilities, educational, health services, religious, communication, traffic and transportation, and recreational).

15.11.2 Commercial

Approximately 180 hectares of additional area has been proposed under commercial use which can be distributed across the sub zones within the planning area especially sub zones C7, E8, E10, F5, F6 which lack commercial landuse. The total area under commercial use will increase to 2% from 0.7 of total area.

15.11.3 Mixed use

A new business district in Zone F (sub zone F1) of 10 Ha with mixed land use is prposed to be developed through TP schemes and be made part of Zonal DP (Figure 15.4). In each sub-zone, proposals are to be made for increasing mixed use by allowing the same in areas with residential land-use. Mixed use comprises of mix of any of the following: residential, commercial, institutional, household industries.

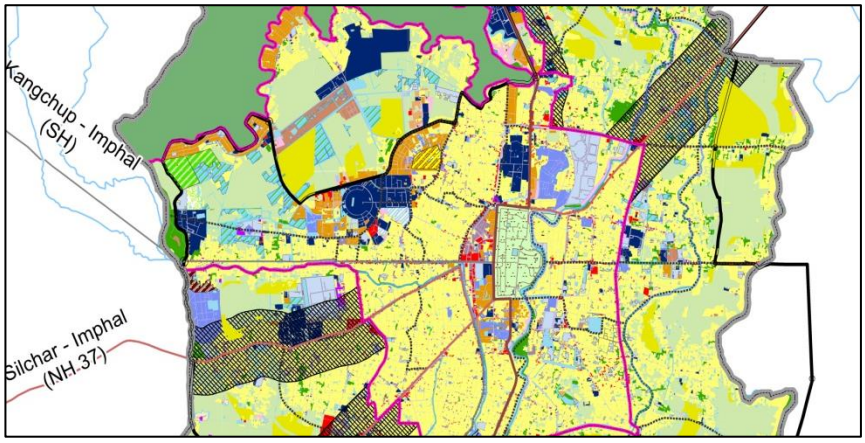


Figure 15. 4: Mixed use Business district in sub Zone F1

15.11.3a TOD Corridors with Mixed use and TDR

The core of the Imphal city is getting saturated and therefore new development is proposed to be concentrated in the outer areas of planning area. The transit corridors radiating from the city along the hihighways are identified for Transit Oriented Development (TOD) (Refer section 15.11.9 as well). Approximately 1424 hectares of total land area has been proposed as mixed land use which includes mixed use development along major transit corridors. These have high potential for land value capture as they will host mix of landuses. The demand of development along the TOD corridor is high and can be met using Transferable development Rights (TDR). TDR is a technique of land development, which separates the development potential of a particular parcel of land from it and allows its use elsewhere within the defined zones of the city. The Imphal municipal corporation jurisdiction shall be identified as Sending / Emanating zone for TDR wheras as the mixed landuse area in TOD corridor will act as Receiving zone for TDR. The sending zones and receiving zones for TDR is represented in Map 15.2.

The base FAR for residential use in the planning area has been proposed as 180, 200 and 250. The property owners from Sending/ Emanating zones can sell/transfer FAR out of the unused FAR to

property owners in receiving zones or they may surrender land free of cost for any of the following uses:

a) In lieu of the Economically Weaker Section (EWS) / Lower Income Group (LIG) flats / dwelling units constructed by the owner/private developers and handed over to the local bodies at fixed price. The TDR certificate shall be issued by the urban local bodies as per the guidelines prescribed in the TDR Policy, 2022.

b) In lieu of land surrendered for Green Space- Parks/ Open Spaces/ Play Grounds, Water Bodies etc, as earmarked in Development/Master Plan.

c) In lieu of land surrendered for Master Plan/ Development Scheme Road including widening of road,

d) In lieu of land surrendered for creating facility for public parking,

e) In lieu of land surrendered for development of City-Level Facilities as earmarked in Master Plan.

f) In lieu of land surrendered for other purposes as specified by Government. In the first phase only Greater Imphal Area will be considered for grant of TDR under this Policy. The State Govt may include more towns to be covered under this policy as and when required.

In receiving zones (TOD corridors), FAR can go upto 3.0 (or 300). The Manipur Municipality Building Bye laws 2018 shall also be amended to include the provisions of TDR.

Although the whole of IMC area has been earmarked as TDR emanating area, the area demarcated for affordable housing or any such area that is earmarked in future for affordable housing by the government shall be a receiving area. Similarly, Bazaar areas, (Commercial areas) within the IMC shall also be receiving area.

Although, the Planning area outside the IMC area (except for TOD area) has not been earmarked as neither receiving area or sending area, any property owner surrendering land free of cost in this area for the uses as stated above, shall also be eligible to receive TDR certificates. This provision shall be extended to all the property owners outside the Greater Imphal Planning Area on whose land the proposed alignment is coinciding.

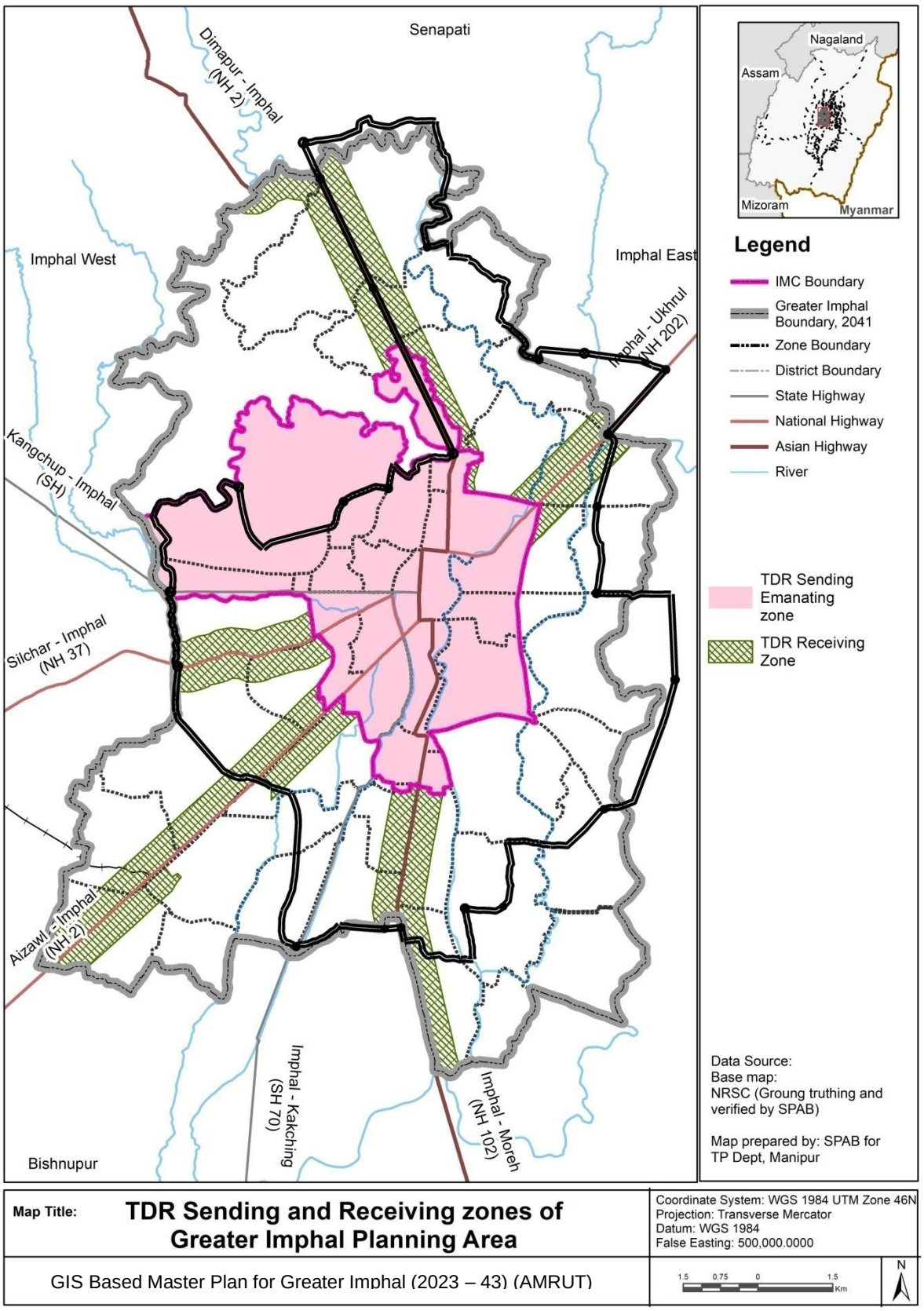
The proposed scheme area outside of the IMC but within the Greater Imphal Planning area shall also be considered as TDR receiving zone.

15.11.4 Industrial

Approximately 140 hectares of additional land has been proposed for industrial use within the scheme area in sub zones F3, F8 and F9. This location was moderately suitable based on the location suitability analysis using GIS. The location is in close proximity to the new ring road making it more accessible for the raw materials and reducing the goods traffic within the city.

The new industrial area can have a variety of service industries such as: Repairing & Maintenance of IT Equipments; Medical Equipments, Households electronic gadgets, Pumps, Motors, Aces, fridge; Servicing in Automobile industries; Hotel & Motel Hospitality/Tourism; Coaching Institutes; Photography and Videography; Medical transcription or new MSMEs such as Bio-technology, Medical Plant processing, Handloom & Handicraft, Jewellery, construction materials, food processing such as potato and banana chips, soya milk pop corn, fruit & vegetable preservations, IT Industry, Mushroom cultivation, processing & packaging of snack foods, cattle feeds, Domestic utensils, packaged drinking water, wooden door/furniture, steel furniture's, paper bags, envelope, readymade garments, surgical cotton & bandages, Agriculture implements & appliances, Rice Mill, Ginger processing (dehydration plant), Passion fruits extraction & packing unit, Bread, bakery and pastries, Stone crushing, Building Materials, Tea Processing Units, Readymade Garments, Ice cream units, Agarbati bamboo sticks, Furniture making, Ayurvedic Medicine, bamboo Mat Door and window frame, Fabrication of grills, iron gates, Agricultural, Pickle making, Fish dry making, Cyber café, Spice Grinding.

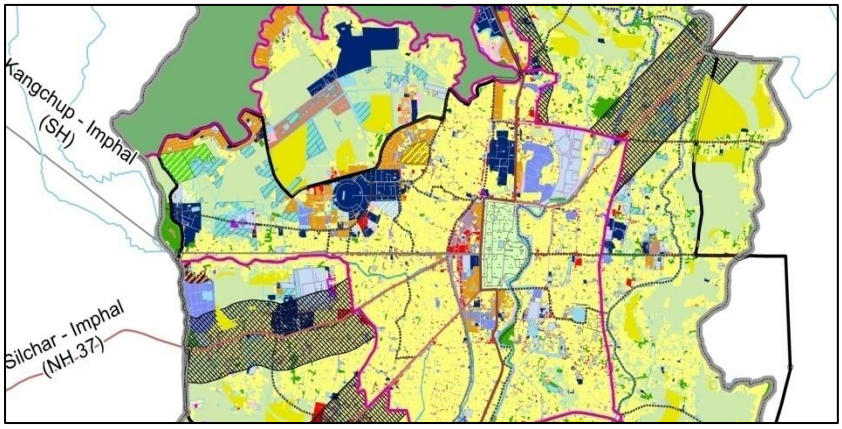
Map 15. 2: TDR Sending and Receiving zones



15.11.5 Public and semi public

An Ethno heritage Park and a Tourism Centre of 28 Ha is proposed in sub zone B4 (near KeibulLamjao National Park and Langol Hill) which can be used for the purpose of promoting handloom and handicrafts and cultural activities to enhance economy and tourism (Figure 15.5). The zone is in close proximity to the proposed ring road, thereby providing connectivity from other parts.

Figure 15. 5: Ethno Heritage Park in sub zone B4



A new business district can be developed near the proposed freight complex within the scheme area, in order to support the functioning of various activities in and around the complex.

15.11.6 Social Infrastructure

An additional area of 110 hectares for education facilities and 27 hectares for health care facilities is required for the projected population of 2043.

15.11.7 Recreation and open Spaces

The area under recreational use has a very low share as compared to the benchmark. While neighbourhood level parks and gardens are proposed at sub zonal level under the 20 minute neighbourhood concept, at city level an exhibition ground and a sports centre is also proposed in order to develop Imphal as a sports and cultural destination.

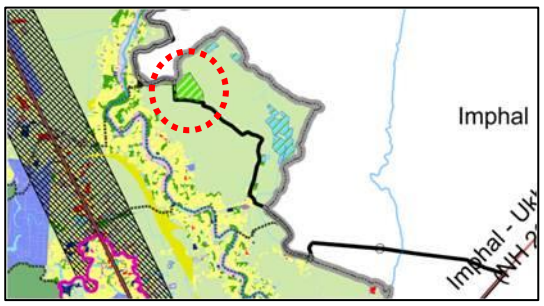
Exhibition ground: an exhibition ground is proposed to enhance cultural activities within the region. An area of 10 hectares should be designated for the particular use. A suitable location

should be identified by the local authorities for the ground which can be used for promoting handicraft and handloom culture of the region.

Sports centre: A regional level sports centre for an area of approximately 10 hectares is proposed in Zone C (sub zone 7), abutting the ring road (Figure 15.6).

Local level sports centres are proposed in different sub zones for a total area of 15 hectares. They should be located in the sub zones not having an existing sports centre (Refer Section 12.1.3 and annexure 12.2).

Figure 15. 6: Sports Centre in sub zone C7



Ethno Heritage Park: An ethno heritage park is being proposed near the tourism and cultural facility centre to show case the culture of different ethnic tribes of Manipur. The park is proposed in Zone B, which is in close proximity to the proposed ring road, thereby providing connectivity from other parts.

15.11.8 Heritage

Heritage zones are identified within the Greater Imphal planning area around the State Protected Monuments. The zones will be declared as 'no development zone' and the area around the site is categorised into prohibited and regulated area. Prohibited area is up to 100m from the site whereas Regulated area is up to 200m from the site.

No development will be allowed within the zone except for the construction/ extension/ maintenance of utilities and services.

Conservation and management of national and state protected monuments, buildings and any development within the regulated and prohibited areas shall be as per relevant Acts/laws. Comprehensive Cultural Resource Management Plan of each area /site including infrastructure

up gradation, visitor amenities etc. shall be prepared and implemented in consultation with the local community

Heritage buildings which are privately-owned and in active use by the occupants. In such buildings, the constituent owners shall be encouraged to conserve such buildings and make adaptive use/ reuse of such assets in conformity with the historic context.

Heritage walks can be organised near the Kangla fort area covering nearby state protected monuments and other places such as Ima market, Samadhi of Khaba, humped bridge, temple of Sanamahi etc.

15.11.9 Transport

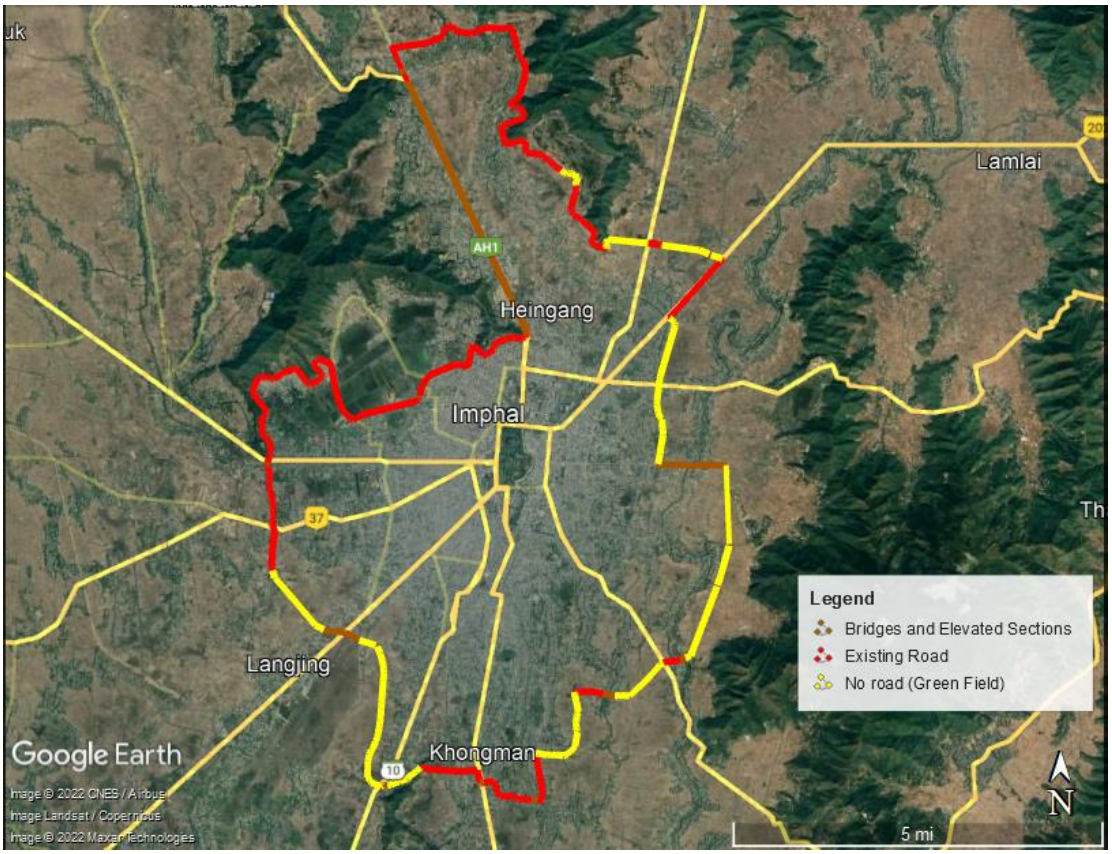
Ring road: A new ring road alignment is proposed connecting all the radial roads keeping into consideration the existing road and built- up along with the latest ring road alignment proposal by the PWD. Based upon the analysis of the existing alignments and review of factors like availability of land, continuity in alignment, retaining the hierarchy and minimizing bridges and culverts; A new composite alignment is presented in Map -15.3.

The key statistics of the suggested ring road alignment are tabulated in table-15.11

Table 15. 11: Key statistics of the suggested ring road alignment

S No.	Head	Details (in km)
1	Network length	62.224
2	Network length along exsisting roads (At Grade)	31.86
3	Network length along exsisting roads & bridges (Grade separated/ Elevated)	9.68
4	Green field network length	20.68
5	Number of interchanges/ major intersections	21
6	Number of bridges/ Culverts/ Flyover/ Underpass	15

Map 15. 3: Suggested alignment for the ring road (Proposed)



The suggested alignment for the ring road as show in map 15.3 is developed considering the following principles:

1. Connecting the major regional coorridors for the city of Imphal beyond outer cordon points so as to bypass regional desire.

2. Developing interchanges at crossing with higher hierarchy corridors so as to mitigate conflicts and delay. This will also improve the capacity of the suggested ring road and the major urban corridors.

3. The alignment shall be planned considering sufficient availability of right of way as the suggested ring road corridor will have atleast 30–40-meter ROW. Stretches where sufficient ROW is not available and alternative alignments are not feasible, it is advisable to elevate (Grade Seperator) the stretch with suitable access management.

Considering the growth and regional stature of the Imphal city, it becomes indispensable to simultaneously plan for local and regional traffic. Therefore, the ring road alignment suggested in the above map can function as a regional bypass corridor. Although considering the rapid spatial

growth of Imphal, this alignment is expected to transform in its function in the long run. Therefore, another outer ring road alignment can be explored. The ring road is divided into 70 links, the detail of each link is tabulated in Table 15.12.

Table 15. 12: Details of New Ring Road

Link No.	Type of Pavement of existing road	Scale of Built- up/ vacant	Length (Km)
1	Fully Paved	Built on both sides along some parts	1.49
2	Bridge		0.1
3	Fully Paved	Built on both sides along some parts	1.59
4	Fully Paved	One side built along some parts	0.59
5	Fully Paved	Built on both sides	2.15
6	Fully Paved	Built on both sides	0.26
7	Fully Paved	Vacant on both side	1.47
8	Fully Paved	Built on both sides along some parts	1.2
9	Fully Paved	Built on one side	0.35
10	culvert		0.1
11	Fully Paved	Built on both sides	0.42
12	Fully Paved	Full on one side & partial on other side	0.97
13	Fully Paved	Full on one side & partial on other side	0.48
14	Fully Paved	Built on both sides	1.56
15	Flyover		3.68
16	Flyover		2.44
17	Fully Paved	Built on both sides	0.18
18	Bridge		0.11
19	Fully Paved	Built on both sides along some parts	0.5
20	Fully Paved	One side built along some parts	2.96
21	Fully Paved	One side built along some parts	3.38
22	Half paved, half unpaved	Vacant on both side	0.46
23	Unpaved	Vacant on both side	0.27
24	Unpaved	Vacant on both side	0.26
25	Unpaved	Vacant on both side	0.16
26	Unpaved	Vacant on both side	0.5
27	No road (Agricultural fields)	Vacant on both side	0.63
28	Unpaved	Built on both sides along some parts	0.7
29	Fully Paved	One side built along some parts	0.18
30	Fully Paved	One side built along some parts	1
31	No road (Agricultural fields)	Vacant on both side	1.11
32	Fully Paved	Vacant on both side	0.27
33	Bridge		0.035
34	No road (Agricultural fields)	Built on both sides along some parts	1.1
35	Bridge		0.042
36	No road (Agricultural fields)	Vacant on both side	0.27
37	Fully Paved	Built on both sides along some parts	1.74

38	No road (Agricultural fields)	Vacant on both side	3.34
39	Flyover		1.53
40	No road (Agricultural fields)	Vacant on both side	1.72
41	Bridge		0.034
42	No road (Agricultural fields)	Vacant on both side	0.9
43	Bridge		0.023
44	No road (Agricultural fields)	Vacant on both side	1.75
45	Bridge		0.12
46	Fully Paved	Built on both sides along some parts	0.38
47	No road (Agricultural fields)	Vacant on both side	1.37
48	Bridge		0.25
49	Fully Paved	One side built along some parts	0.65
50	No road (Agricultural fields)	Vacant on both side	1.37
51	No road (Agricultural fields)	Vacant on both side	0.8
52	Fully Paved	Built on both sides along some parts	0.84
53	Fully Paved	Vacant on both side	0.19
54	Fully Paved	Built on both sides along some parts	0.84
55	Fully Paved	One side built along some parts	0.12
56	Bridge		0.12
57	Fully Paved	Built on both sides along some parts	1.29
58	Bridge		0.1
59	Fully Paved	One side built along some parts	1.54
60	No road (Agricultural fields)	Vacant on both side	0.85
61	Bridge		0.11
62	No road (Agricultural fields)	Built on both sides along some parts	0.27
63	No road (Agricultural fields)	Vacant on both side	0.13
64	No road (Agricultural fields)	Vacant on both side	0.52
65	No road (Agricultural fields)	Vacant on both side	2.42
66	Bridge		0.04
67	No road (Agricultural fields)	Built on both sides along some parts	0.38
68	Under Pass		0.84
69	No road (Agricultural fields)	Vacant on both side	1.75
70	Fully Paved	Built on both sides along some parts	0.93
	Total Ring Road Length (Km)		**62.224**

The total length of the proposed Ring Road is 62.224 Km of which 31.86 Km of road is existing road, 20.68 Km of road is green field development and 9.68 Km of road length is flyover, bridge or underpass.

Freight hub/ consolidation centre: A new freight consolidation centre is proposed of an area around 3 hectares, which should be in close proximity to the ring road and the new railway alignment. The location should be identified taking into consideration the proposed industrial

area, existing state and national highways, proximity to the ring road and new railway alignment within the scheme area identified.

The consolidation centre will serve the traditional purposes of truck depot, truck loading and unloading and also act as a new warehousing unit for other logistics, and e- commerce.

Road Network: The road network follows a radial pattern with major radials emanating from the city. The important radials are the NH-2 (Aizawl-Imphal -Dimapur), NH-202 (Imphal- Ukhrul), NH- 37 (Imphal- Silchar) and NH-102(Imphal- Moreh). The other important radials include Imphal Kangchup road and SH -70 (Imphal-Kakching). It is also proposed to strengthen the major radials by increasing the road right of way from their current widths to accommodate heavy traffic movement. Although ROW shall be reflective of road hierarchy but it has not been considered as the only criterion. Based upon the function of the corridor, the stretch can be functionally classified irrespective of the available ROW. Although if sufficient space is available along the ROW, the following cross sections can be adopted:

It shall be noted that the cross sections should be kept uniform throughout the functional classification. This means fluctuations in ROW shall be avoided by providing uniform cross section as proposed in table 15.13.

Table 15. 13: Proposed ROW

Type	**ROW**	**C/W**	**NMT/Parking/ Hawking**
Arterial	25-30m	4-6 lane divided	Parking and vending wherever ROW permits
Sub arterial	15-20m	2-4 lane undivided	Parking and vending wherever ROW permits
Others (Local/ access)	7-12m	2 lane undivided	Not required

The strategic corridors identified in section 8.11 should be given emphasis in the further mobility plan for Imphal. Various components of transportation such as parking, corridor design, and public transport routes should be aligned along these corridors. Also junction improvement measures should be taken up for the junctions listed in table 8.26.

The pavement material for road network at present is predominantly asphalt (flexible) although it is being proposed to convert complete road network into rigid pavement. Converting the

complete road network into rigid pavement will not only improve the life cycle cost of road network but will also provide with an opportunity to streamline the services and constituents along the Right of Way. Services like electricity, water, sewer, storm water, optical fibres, etc. can be integrated with service duct considering the future demand.

TOD Corridors: The five major radial corridors (toward Silchar, Aizwal, Moreh, Ukhrul and Dimapur) of the city act as primary axis for development and commute for the city. Majority of commercial, institutional and public landuse attractions are located along the same. Therefore, the land value along such corridors is relatively high. This makes these corridors highly suitable for Transit oriented development (TOD). TOD integrates land use and transport planning and aims to develop planned sustainable urban growth centers, having walkable and livable communes with high density mixed land-use. The public transit network along these corridors will further complement the accessibility of such zones. Therfore relatively higher FAR/FSI can be permitted in TOD zones along with identifying the corresponding TDR sending zones.

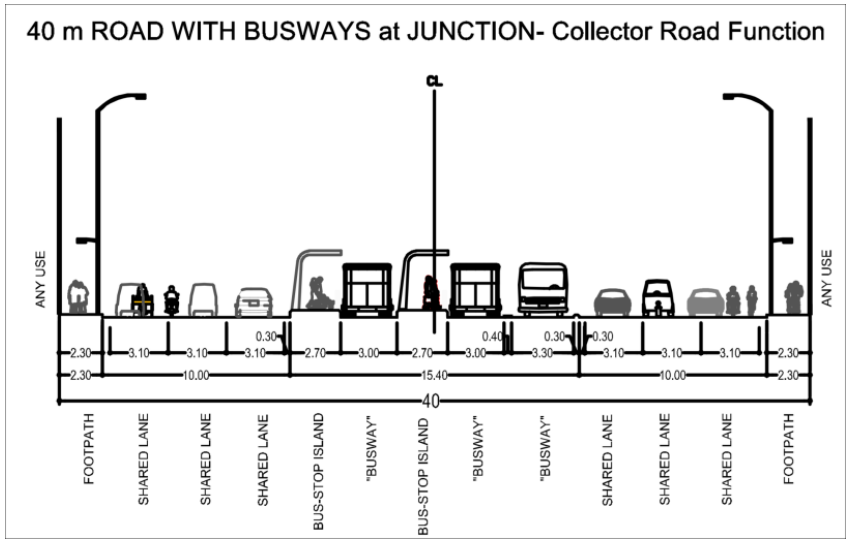
Road Infrastructure Improvement: As discussed in section 8.5.1, the pavement condition of roads within each sub zone is highlighted. There is a relatively lower share of paved roads in zones towards eastern planning boundary. The road improvement measures can be taken up in phases:

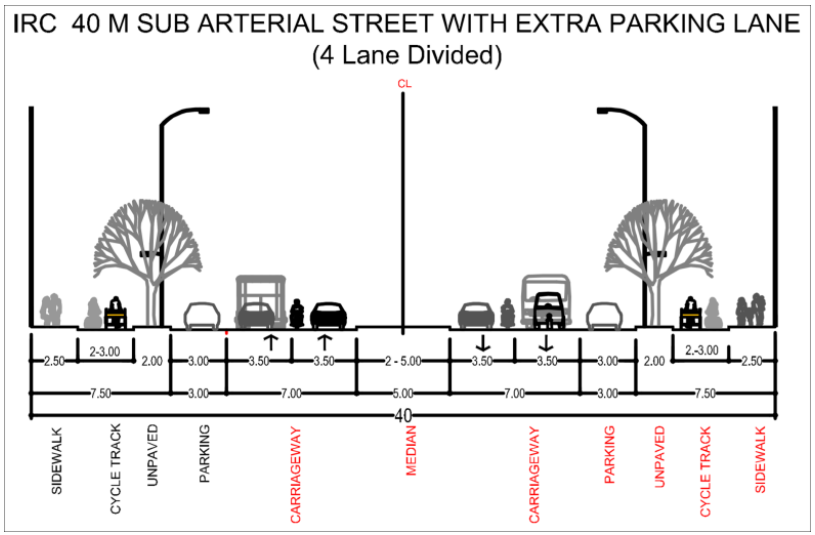
Phase 1: Sub zones with more than 50% of unpaved roads (as per annexure 8.1)

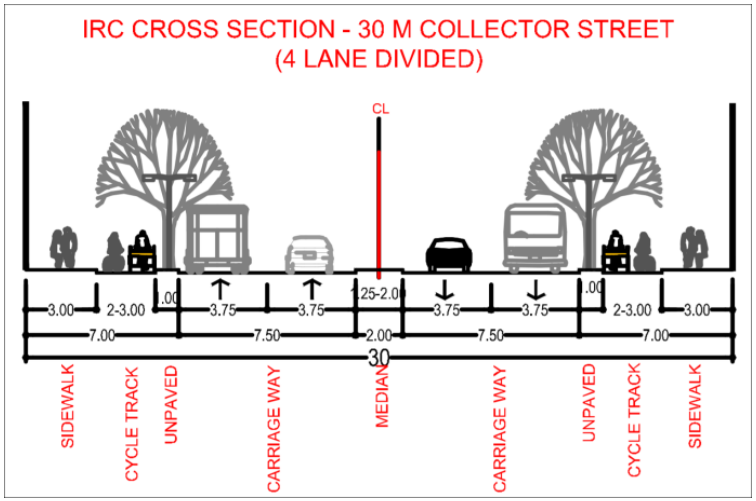
Phase 2: Sub zones with less than 50% of unpaved roads (as per annexure 8.1)

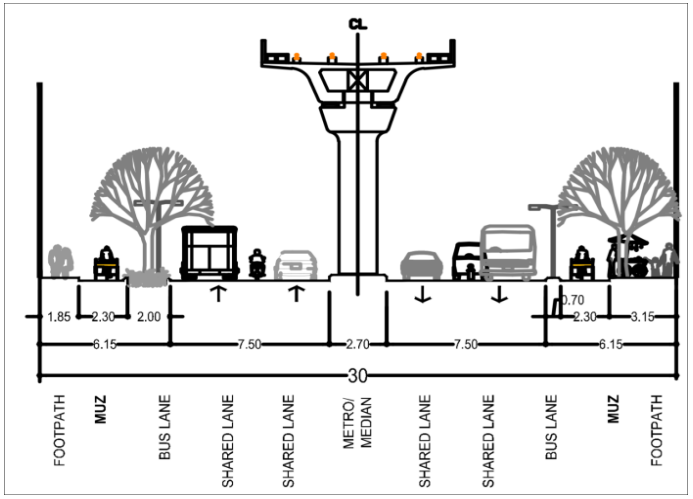
Non- Motorised Transport: The Plan emphasizes on mobility and enhanced access by ensuring that new investments in road infrastructure also cater to the needs of non-motorised transport modes, primarily pedestrians and cyclists. This is demonstrated through design of road right of ways that provide sufficient space for sidewalks and bicycle lanes. It is proposed that each type of road right of way includes sidewalks and bicycle lanes that are shaded by trees and provided street lights. The suggested road cross sections are given in Figure 15.7.

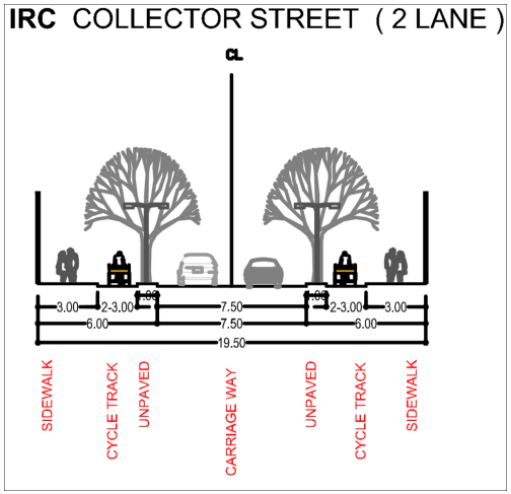
Figure 15. 7: Suggested urban rod cross sections

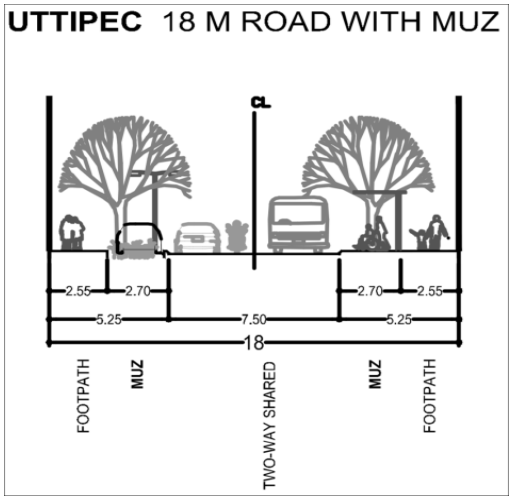





IRC CROSS SECTION - 30 M COLLECTOR STREET
(4 LANE DIVIDED)
CL
3.00
2-3.00
.00
3.75
3.75
.25-2.0
3.75
3.75
.00
2-3.00
3.00
7.00
7.50
2.00
7.50
7.00
30
SIDEWALK
CYCLE TRACK
UNPAVED
CARRIAGE WAY
MEDIAN
CARRIAGE WAY
UNPAVED
CYCLE TRACK
SIDEWALK


CL
1.85
2.30
2.00
0.70
2.30
3.15
6.15
7.50
2.70
7.50
6.15
30
FOOTPATH
MUZ
BUS LANE
SHARED LANE
SHARED LANE
METRO/
MEDIAN
SHARED LANE
SHARED LANE
BUS LANE
MUZ
FOOTPATH


IRC COLLECTOR STREET (2 LANE)
CL
3.00
2-3.00
.00
7.50
.00
2-3.00
3.00
6.00
7.50
6.00
19.50
SIDEWALK
CYCLE TRACK
UNPAVED
CARRIAGE WAY
UNPAVED
CYCLE TRACK
SIDEWALK


UTTIPEC 18 M ROAD WITH MUZ
CL
2.55
2.70
2.70
2.55
5.25
7.50
5.25
18
FOOTPATH
MUZ
TWO-WAY SHARED
MUZ
FOOTPATH

Parking: It shall be noted that the existing on street parking acts as a capacity and flow deterrent along the corridor. Hence the on-street parking should be reluctantly provided at only those locations where suitable ROW is available along with requisite demand. It shall be noted that parking pricing should be planned in such a way that it not only acts as a revenue tool but acts as a parking demand management mechanism. Therefore, the supply of on street parking should be minimum and charged at premium rate.

Suitable off street parking locations such as the ones being proposed near Kangla fort and Keisampat junction (refer figure 15.8 and 15.9) shall be identified near the major trip attracting locations as depicted in Map 8.19, in consultation with concerned stakeholders. The identified locations (Map 8.21) which demand parking shall be planned for off street parking and the on-street parking should be restricted within a suitable buffer zone of 250 to 500m. In exceptional cases, where on street parking is indispensable, the provision can be made but at high premium pricing. The parking within Greater Imphal should be regulated through a new parking policy. Enforcement of such parking provisions and rules become very important in such proposals and therefore executing authorities shall be empowered to enforce such interventions.

Figure 15. 8: Proposed Multi level Parking near Keisampat junction



Figure 15. 9: Proposed Multi level Parking near Kangla Fort



Public Transport: Public transport not only provides access to all sections of society but also reduces congestion and traffic load along corridors. Therefore a complex analysis of public transport demand was carried out based upon land use and trip attracting locations; travel speed of major corridors, IPT routes, LOS of major roads and on- street parking locations as discussed in Section 8.11.

Also, public transport demand was explored based upon the population density and built- up density (Section 8.10.5) and it was observed that majority of demand can be catered through the above mentioned corridors. Therefore, public transport supply with suitable capacity, frequency and schedule shall be operated along these corridors with identified terminals.

It shall be noted that the intra city public transport will only act as complementary mobility system to the regional transport

New ISBT: A new ISBT is proposed outside the core area to avoid the regional buses entering the city and also to provide connectivity to the new railway station and existing airport. The existing ISBT is located at the core and is already saturated. It is good for city public transport and IPT operations but not sufficient for the regional traffic.

The new ISBT need to be located in close proximity to the airport and upcoming railway station with good connectivity to the ring road within the delineated scheme area. A new green field corridor should be developed, if needed to connect it to the ring road. The land allocated should be 2 hectares.

The existing ISBT and the proposed ISBT shall also be integrated with the intra city public transport so as to facilitate multi modal integration.

15.12 Twenty Minute Neighbourhood

The Greater Imphal Planning Area is divided in 51 sub zones and each sub zone is considered as the smallest unit of landuse planning. Each sub zone when assessed in terms of essential landuses (such as residential, commercial, mixed, public and semi- public, public utilities, educational, health services, religious, communication, traffic and transportation, and recreational). Some of the sub zones lacked these essential landuses which a needed for sustainable living. Hence landuses as identified in the table 15.14 are required to be increased in different Sub zones for sustainability and self sufficiency.

Table 15. 14: Landuses required to be increased in different Sub zones for sustainability and self sufficiency.

Landuse	Sub zone	
	Urban	**Rural**
Commercial	-	C7, E8, E10, F5, F6
Mixed	B4	C3, C7, D2, D6, D7, E6, E8, E9, E10, E11, F3, F5, F6, F8
Public and semi-public	A12	C2, C4, D2, E6, E10, F8, F9
Public utility	A1, A2, A3, A4, A5, A11, A12, B1, B2, E1	C1, C2, C3, C5, C6, C7, D1, D2, D4, D5, E2, E3, E5, E6, E7, E8, E9, E19, E11, F1, F2, F3, F4, F5, F6, F7, F9
Health services	B1, B3	C1, C2, C6, C7, D1, D2, D4, D6, D7, E2, E3, E5, E8, E9, E10, E11, F1, F2, F5, F7, F8, F9
Religious	C7	D2, D4, D5, E3
Communication	A2, A3, A5, A6, A7, A10, A12, B1, B2, E1,	C1- C7, D1, D2, D6, D7, E2, E3, E5, E6, E8- E11, F1, F2, F4- F9
Recreation	A3, A5, B1,	C6, C7, D2, D5, E8, E9, E10, E11, F5, F6, F7

15.13 Landuse 2043

The proposed landuse for 2043 as per the AMRUT categories is tabulated in table 15.15.

Table 15. 15: Proposed Landuse, 2043

Land Use Class	Existing Area, 2020 (in ha)	Percentage to total area (%)	Proposed Area, 2043 (in ha)	Percentage to total area (%)
Residential	3694.01	24.40	5187.69	34.27
Commercial	132.27	0.87	113.08	0.75
Mixed	382.17	2.52	1785.33	11.79
Industrial	21.45	0.14	158.51	1.05
Brick Kiln and Queries	14.80	0.10	14.80	0.10
Educational	441.41	2.92	366.73	2.42
Health Services	15.27	0.10	17.06	0.11
Central Govt. Property	12.49	0.08	16.35	0.11
State Govt. Property	256.32	1.69	166.06	1.10
Public and Semi-public	246.80	1.63	248.33	1.64
Religious	26.78	0.18	23.69	0.16
Public Utilities	47.97	0.32	44.21	0.29
Communication	2.74	0.02	0.99	0.01
Airport	457.51	3.02	457.51	3.02
Traffic Related	6.31	0.04	25.64	0.17
Road	573.77	3.79	831.31	5.49
Recreational	377.46	2.49	416.58	2.75
Agricultural Land	5616.53	37.10	2363.85	15.61
Green Areas	1621.68	10.71	1715.24	11.33
Wetlands	374.48	2.47	374.48	2.47
Wastelands	168.23	1.11	197.46	1.30
Eco-sensitive Areas	6.62	0.04	6.85	0.05
Water Bodies	563.54	3.72	530.31	3.50

Heritage	77.63	0.51	77.63	0.51
Solid Waste Management	0.02	0.00	0.02	0.00
Total	**15138.36**	100.00	**15138.68**	100.00

Table 15. 16: Proposed Landuse 2043 based on URDPFI Guideline categories

Land Use Class	Landuse 1981	Percentage to total area (%)	Proposed Area, 2011 (in ha)	Percentage to total area (%)	Existing Area, 2020 (in ha)	Percentage to total area (%)	Proposed Area, 2043 (in ha)	Percentage to total area (%)
Residential	3353	24.8	5139	38	3694.11	24.45	5187.69	34.33
Commercial	57	0.4	106.2	0.8	514.44	3.40	1898.40	12.56
Industrial	73	0.5	206.7	1.5	36.25	0.24	173.31	1.15
PSP	771	5.7	1197.8	8.9	1022.99	6.77	859.72	5.69
Road	394	2.9	1183.9	8.8	1037.59	6.87	1314.46	8.70
Recreation	152	1.1	455	3.4	2025.92	13.41	2155.50	14.27
Agriculture and Hill	8729	64.5	5240	38.7	6729.40	44.54	3472.94	22.99
Total	13529	100	13528.72	100	15060.70	100	15062.03	100

Note – The share of residential area in year 2043 seems to be increased than that of year 2020 because an area of 2195 Ha has been proposed for affordable housing and new residential area. Also, around 1424 Ha an area is proposed within mixed landuse in TOD proposed area and is predominantly resisdential complimented by commercial, industrial and institutional landuse.

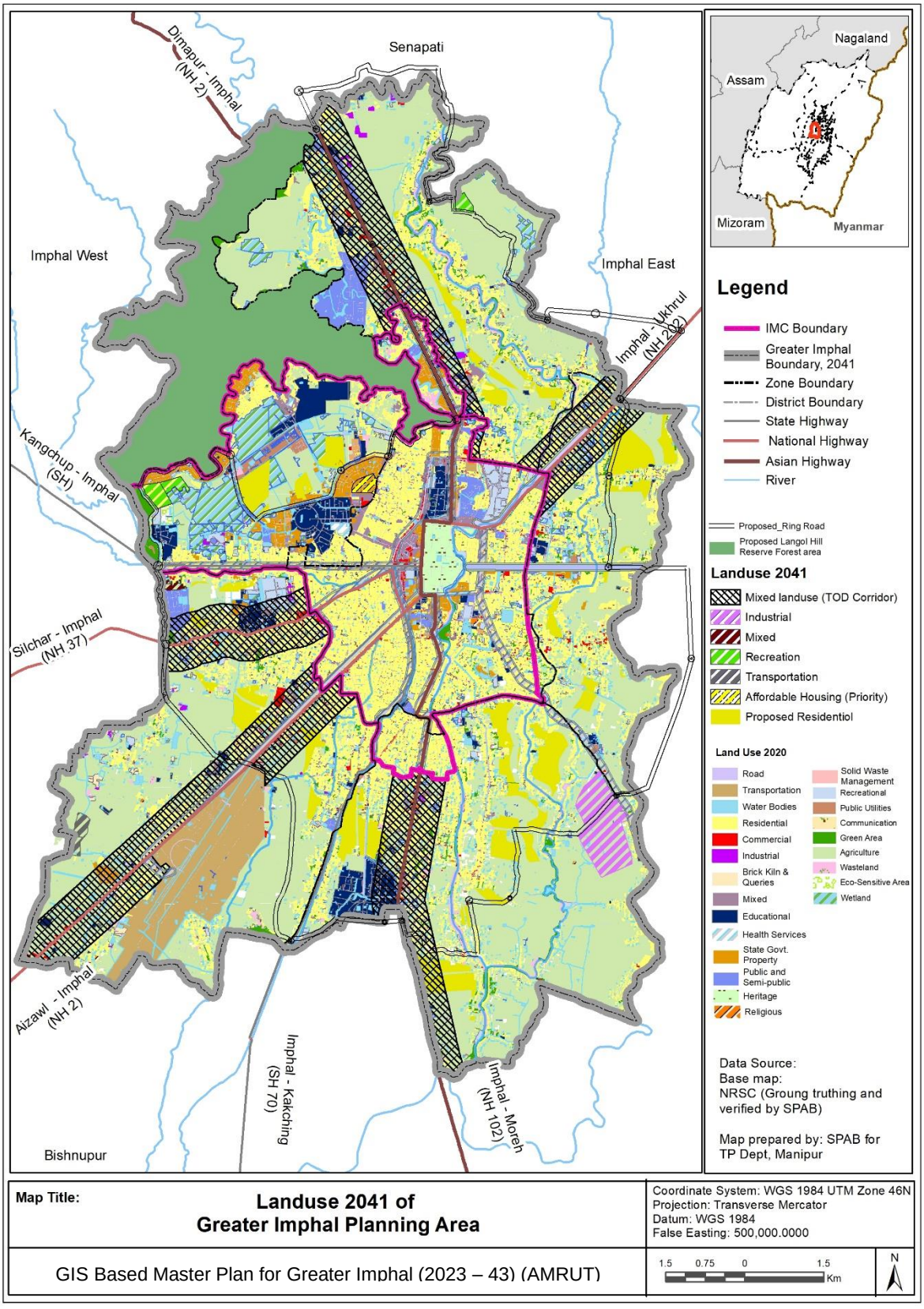
Note - The proposed residential landuse is envisaged to constitute the complementary landuse functions also. The detailed list of permissible activities under each landuse is defined in Section 16 under "Uses regulations''. It shall be further noted that mixed landuse along the TOD corridors is around 2060 Ha. These stretches will primarily host new commercial, institutional and PSP centers.

Note: From total area of Ring Road 272 Ha, around 82Ha area is falling outside the planning boundary.

The mixed landuse category (2043 proposal) constitutes area from other landuses. Therefore the absolute area under each landuse seems to be reduced. The actual area under any landuse shall be read alongwith mixed landuse area.

The landuse plan for 2043 depicted through Map 15.16 integrates new scheme area near the upcoming railway station and airport (sub zone F3 and F9), the sport centre (sub zone C7), new business district (sub zone F1) and the ethno heritage park being proposed in Zone B (sub zone B4). The mixed landuse (TOD zone) have been highlighted along the major radial corridors of the city.

Map 15. 4: Landuse Plan 2043



Section 16: Uses Regulations

16.1 Introduction

Uses/ Zoning regulations play a very important role in controlling the use of land and promoting urban development. They are useful in limiting the use and misuse of land. Zoning regulations form an integral part of a Master Plan as these have been extensively used to control the haphazard nature of development in urban areas.

For the purpose of these regulations, the area covered by the Master Plan is divided into eight zones/ landuses categorised below:

i. Residential Use
ii. Commercial use
iii. Mixed use
iv. Industrial use
v. Public and Semi- public use
vi. Recreational and open spaces use
vii. Road and transportation use
viii. Agriculture & other use

16.2 Regulations for different Uses

The uses permissible within different landuses of planning area shall be considered through appeal to the "sub-committee on zoning appeals". Such uses have been indicated in yellow with '"o" in Table: Sub classes permitted, permissible and prohibited within different landuses of planning area. The minimum size of a plot shall differ from sub-zone to sub-zone of the master plan area based upon landuse and layout. This shall be fixed by the Town Planning Department in consultation with the Planning and Development Authority, Manipur. In case of industrial land use, the plot size, setbacks and other regulations issued from Manipur Industrial Development Corporation Limited (MANIDCO) will be enforced. Provisions of the Imphal Municipal Corporation building bye laws or any bye law enforced in the area shall strictly be followed for fixing the minimum setback from street. A sub-committee may be constituted by the government to examine zoning appeals whenever required.

A consolidated table is prepared for each use and the corresponding activities/ sub classes permitted, permissible and prohibited (Table 16.1). The sub classes are being taken from AMRUT designs and standards for the GIS based master plans of each landuse*.

**Note: The AMRUT categories/ sub classes contain landuse, land cover and natural features. For the purpose of this use regulations table, land cover categories and natural features such as hills, river, rocky gullied etc have been removed.*

Table 16. 1: Sub classes permitted, permissible and prohibited within different landuses of planning area

Sub class/ Landuse	Residential		Commercial	Mixed	Industrial	Road	Public & Semi- Public										Parks & Recreational open Space				Agriculture & other uses				
	Residential	Rural	Commercial	Mixed	Industrial	Transportation	Health Services	Central Govt. Property	State Govt. property	Public & Semipublic	Religious	Education	Public utilities	Solid Waste Management	Communication	Traffic related	Recreational	Heritage	Eco-sensitive areas	Green Areas	Water Bodies	Agricultural	Wetland	Wasteland	Specific land use
Govt. Hospital	0			√			√																		
Private Hospital	0			√			√																		
Diagnostic Centre	0			√			√																		
Clinic/Dispensary	0		√	√			√																		
Nursing Home	0			√			√																		
Primary/ Community Health Care	√			√			√																		
Govt. Office	0		√			√		√	√	√															
Govt. Quarter	√		√	√				√	√	0															
Private Office			√	√		√				√															
Banks	0		√	0						√															
Credit Society	0			√						√															
Foreign Establishment										√															
Police Station/ Police post	0		0		0			√	√	√															
Cantonment/Battalion								√		√															
Jail								√	√	√															
Crematorium Burial Ground /Grave Yard									√	√															
Guesthouse	√		√	√	X	√				0															
Community hall	√		√	√						√															
Dharmashala	√			√						√															
Tourist Facility Centre	0		√	√		√			√	√															
Auditorium			√		√		√	√	√	√		√					√								
Convention Centre					√			√	√	√	√	√													
Museum/ Exhibition center			√		√			√	√	√		√					√	√							
Exhibition Ground	√		√							√	√						√							√	
Public Library	√		√	√			√	√	√	√		√					√								
Art Gallery & Cultural Centre	√		√	√	√			√	√	√	√	√					√	√							
LPG/CNG Gas Booking Office	√		√	√	√					√															
Citizen kiosks/E seva kendra/Ticket Booking &	√		√	√	0	√				√	√						√	√							

	Residential	Rural	Commercial	Mixed	Industrial	Transportation	Health services	Central Govt. property	State Govt. property	Public & Semipublic	Religious	Education	Public utilities	Solid Waste Management	Communication	Traffic related	Recreational	Heritage	Eco-sensitive areas	Green Areas	Water Bodies	Agricultural	Wetland	Waste land	Specific land use
Reservation Office																									
Stock Exchange			√							√															
Disaster Management Centre					√				√	√															
Metrological Station								√		√															
Dhobi Ghat/ Laundry	√		√	√	√					√											√				
Crech/Day Care	√			√			√	√	√	√		√													
Public/Community Toilet	√	√	√	√	√	√	√	√	√	√	√	√					√	√							
Social Welfare Centre	√	√		√			√	√	√	√	√														
Orphanage	√			√			√	√	√	√															
Old Age Home	√			√			√	√	√	√															
Night Shelter	√			√				√	√	√															
Fire Station					√				√	√			√												
ATM	0	0	√	√	0	0	0			√		0	√		0		0								
Temple	√	√	0	0						√	√							√							
Mosque	√	√	0	0						√	√							√							
Idgah	√	√	0	0						√	√							√							
Church	√	√	0	0						√	√							√							
Gurudwara	√	√	0	0						√	√							√							
Monastery	√	√	0	0						√	√							√							
Synagogue	√	√	0	0						√	√							√							
Chhatri	√	√	0	0						√	√							√							
School	√	√	√	√						√		√													
College			√					√	√	√		√													
University			√					√	√	√		√													
Vocational Institute	0		√							√		√													
Anganwari	0		√							√		√													
Training Institute	0		√							√		√													
Water Treatment Plant	0				√					√			√								√		√		
Water Pumping Station	0				√					√			√								√		√		
Ground Level Reservoir	0				√					√			√								√		√		
Sewage Treatment Plant	0				√					√			√	√									√		
Sewage Pumping Station	0				√					√			√	√									√		
Electric Power Plant	0				√					√			√										√		

Electric Sub-Station	0				√					√			√									√	

	Residential	Rural	Commercial	Mixed	Industrial	Transportation	Health services	Central Govt. property	State Govt. property	Public & Semipublic	Religious	Education	Public utilities	Solid Waste Management	Communication	Traffic related	Recreational	Heritage	Eco-sensitive areas	Green Areas	Water Bodies	Agricultural	Wetland	Wasteland	Specific land use
City Gate Metering Stations	0									√			√											√	
Area Regulator Stations	0									√			√											√	
Rain Water Harvesting System	√		√	√	√		√			√		√	√								√			√	
Effluent Treatment Plant	0				√					√			√	√										√	
Garden	√	√		√			√		√	√	√	√					√								
Park	√	√								√	√	√					√								
Play Ground	√	√								√	√	√					√							√	
Club	√		√	√	√						√						√								
Sports Centre	√	√							√	√		√					√								
Gymnasium	0		√	√						√							√								
Swimming pool	√		√														√							√	
Stadium	√		√							√							√							√	
Plantarium			√							√							√							√	
Aquarium			√							√							√							√	
Open Air Theater			√							√							√							√	
Golf Course			√														√							√	
Race Course			√														√							√	
Amusement/Theme park			√														√							√	
Land Fill Site	X								√	√			√	√										√	
Dumping Yard	X								√	√			√	√										√	
Recycling Plant	X									√			√	√											
Garbage Collection Point/Dumper	0	√	√	√	√	√	√			√	√	√	√	√	√		√	√							
Telephone exchange			√					√	√	√			√		√										
Post/Telegraph Office	√	√	√	√				√		√			√		√										
Radio/TV Station								√	√	0			√		√										
Satellite & Telecommunication Centre								√	√	0			√		√										
Public Telephone Booth			√	√			√			0					√										
Cell Tower	√	√	√	√						0					√										
WiFi Hotspot	√	√	√	√	√	√	√			0	√	√			√		√	√							
Farm house	0	√		0													0					0			
Dairy farm	0	√	√																			0			

Poultry farm/Piggery Farm	0	√	√																			0			
Nursery	√	√																		√					

	Residential	Rural	Commercial	Mixed	Industrial	Transportation	Health services	Central Govt. property	State Govt. property	Public & Semipublic	Religious	Education	Public utilities	Solid Waste Management	Communication	Traffic related	Recreational	Heritage	Eco-sensitive areas	Green Areas	Water Bodies	Agricultural	Wetland	Wasteland	Specific land use
Slaughter House			√																						
Dairy Booth	√	√	√																						
Residential/Area colony	√	√		√	X					0															
Township	√			√	X					0															
Housing scheme	√	√		√	X			√	√	0															
Retail	√	√	√	√																					
Wholesale			√	√	√																				
General Business			√	√	√	√																			
Hotel / Lodge /Restaurant			√	√	√	√											0								
Shopping Centre /Mall			√	√		√											√								
Multiplex / Cinema			√	√													√								
Function Hall /Marriage Garden	√		√	√																					
Warehouse			√		√																	√			
Storage Godown			√	√	√																	√			
Resort			√														0					0			
Petrol Pump / LPG filling station			√																			0			
Informal Shop	0	√	√	√																					
Hostel	√		√	√			√				√	√													
Market (Daily &Weekly) / Mandi			√																						
Manufacturing	X		0		√																				
Service	X		0		√																				
Chemical	X				√																				
Pharmaceutical	X				√																				
Textile	X				√																				
IT Parks	0		0		√																				
Industrial Estate /SEZ	X				√																				
Agro based & Food Processing	0				√																	√			
Obnoxious	X				√																				
Cottage andHousehold	0	0		√	√																	√			
Other Industries	X				√																				
Traffic Island						√										√									

Median / Divider						√										√								
Parking Space / Area			0			√										√								

	Residential	Rural	Commercial	Mixed	Industrial	Transportation	Health services	Central Govt. property	State Govt. property	Public & Semipublic	Religious	Education	Public utilities	Solid Waste Management	Communication	Traffic related	Recreational	Heritage	Eco-sensitive areas	Green Areas	Water Bodies	Agricultural	Wetland	Wasteland	Specific land use
Monument								√	√	√	√						√	√							
Fort								√	√								√	√							
Archaeological Site								√	√								√	√							
Bird Sanctuary								√	√								√		√						
Bio-diversity Park								√	√								√		√						
Botanical Garden																	√		√						
Zoo																	√		√						
National Park																	√		√						
Notified Slum																									
Non- notified Slum																									
Squatter / Kachibasti																									
Village / Abadi Area	√	√																				√			
Bus stand /Terminus			√			√			√	√															
Railway Station						√		√		√															
Railway Yard / Siding						√		√		√															
Railway Track Area						√		√		√															
Airport / Airstrip						√		√		√															
Helipad						√																			
Truck Terminus					√	√				√															
Freight Complex					√	√				√															
Taxi Stand			√			√				√															
Auto Stand			√			√				√															
Cycle rickshaw/Cycle /Cart stand			0			√																			
Bus Bay						√																			
Bus Stop	√	√	0		√	√	√				√	√													
Transport Nagar			0			√																			
Reserved Forest																	√		√	√					
Protected Forest / Notified Forest																	√		√	√					
Green belt																			√	√					
Tree Clad Area																	√		√	√					
Crop Land	√																0					√			
Fallow Land																	0					√			

Plantations	√																0			√		√			
Orchards	√																0			√		√			
Horticulture																	0					√			

	Residential	Rural	Commercial	Mixed	Industrial	Transportation	Health services	Central Govt. property	State Govt. property	Public & Semipublic	Religious	Education	Public utilities	Solid Waste Management	Communication	Traffic related	Recreational	Heritage	Eco-sensitive areas	Green Areas	Water Bodies	Agricultural	Wetland	Wasteland	Specific land use
Plant Nursery	√																0					√			
Scrub Land																								√	
Barren land																								√	
Aquaculture																					√				
Brick kiln and queries					√																				
Dam																					√				
Barrage																									
Grazing land																									√
Pastures																									√
Tea/Coffee Garden																	√								√
Meadows																									√
Quarry																									
Mining Area																									√
Aqueduct										√			√												
Lighthouse										√			√												
Residential &Commercial	√		√	√																					
Residential &Household Industry	0			√	√																				
Residential &Educational	√			√								√													
Residential & HealthServices	√			√			√																		
Commercial & Industrial			0	√	√																				
Commercial & Health Services			√	√			√																		
Commercial & Educational			√	√								√													
Commercial & Recreational			√	√																					
Residential & Commercial & Institutional	√		√	√																					
Municipal Asset	0		√							√															
Government Asset								√	√																
Ghats																									√

Legend	
√	Permitted
0	Permissible
X	Prohibited

16.3 Space Standards

The policy on space standards has been based on the analysis of the study of existing situation, manual of standards, previous Master plan and standards obtained in comparable towns of similar characteristics in India.

16.3.1 Residential

Table 16. 2: Plot area wise FAR and Maximum height

Plot Area (sq.m.)	**FAR**	**Maximum height (in m)**	
<90	180	11	G+2
90-150	180	11	G+2
150-500	180	13	G+3
500-1000	200	16	G+4

*Note- income class: Classification of Housing & Urban Development corporation, a Govt. of India Undertaking shall be followed in the fixation of income group for EWS, LIG, MIG & HIG for the particular year in which a particular scheme is to be formulated. (Refer table 16.2)

- Density of dwelling unit — 45 to 60 D.U. per ha.
- *Floor Area Ratio (average) —180 for small plot, 200 for medium plot, 250 for large plots

Note * Floor Area Ratio (FAR) — Floor Area / Plot area (multiplied by 100 if shown as %)

16.3.2 Social Amenities

The guidelines for religious facilities, Education facilities, health care facilities, community facilities, recreation and open spaces are as per URDPFI Guidelines 2014. (Refer table 16.3, 16.4 and 16.5

16.3.3 Commercial

Table 16. 3: Suggested standards for commercial facilities

Type	Average shops/ Restaurant/ Daily Market (sq.m.)	Professional offices, other commercial establishments and offices including wholesale business offices (Sq. m.)	Stores wholesale go-down, warehousing (sq.m.)
Suggested Standards: Average gross	20	15	25

16.3.4 Shopping

Table 16. 4: Recommended standards for shopping facilities

Hierarchy	**Recommended Standards**
Local Centre (Daily/Weekly)	2 to 3 shops/1000 population, with maximum gross floor area 12 sq.m per shop, maximum 1.4 sq.m per hawker.
Zonal Centre	4 to 6 shops and 10 hawkers/1000 population with gross floor area 15 sq.m per shop and 1.5 sq.m per hawker.
City/sub city centre	6 to 8 shops/1000 population with average 15 sq.m to 100sq. m max. Gross floor area per shop.
Wholesale Shops	35 % of area under retail shops

*Note-

Other services and enterprises in city and sub centre levels may occupy upper floors of shops and showrooms.

- For shops maximum 50% ground coverage for single storied development.
- For other commercial purposes maximum 50% ground coverage for 2 storied developments.

Table 16. 5: Land requirement for centres at different level

Type	**Population**	**Land Area**
Convenience shopping centre	5000	0.15 ha
Local centre	15000	0.46 ha
Zonal centre	15000-75000	5- 10 ha

City centre	300000-500000	40ha

16.3.5 Industrial

- Worker's density: Average 80 workers per hectare for small and medium industry.
- Average gross floor area/ employee:
- Service Industry- 15 sq.m.
- Other Industry- 50 sq.m.
- Max ground coverage: 50%
- FAR: 100

16.3.6 Parking

The parking space is measured in terms of equivalent car space (ECS) where 1ECS is equal to 12.5 sq.m. The standards have been referred from the URDPFI Guidelines, 2014.

Type of use	**Parking standard**
Residential	1.5 ECS/ 100sq.m built- up area
Convenience shopping/ service market	2.0 ECS/ 100sq.m of floor area
Community centre/ district centre/ commercial plot/ hotel/ service apartments	3.0 ECS/ 100sq.m of floor area
Community hall	3.0 ECS/ 100sq.m
Recreational club/ auditorium/ sports facility	2 ECS / 100sqm of floor area
Hospitals	2 ECS / 100sqm of floor area
Industrial plots	2 ECS / 100sqm of floor area

16.4 Set-Back Regulations & Height Restrictions

Use/Zone	**Minimum plot size**	**Minimum set back from road**	**Minimum yard width from plot boundary**	**Maximum height**
Residential	minimum size of the plot shall be governed by the	Provisions of the Imphal Municipality		G+7 floors

	proposed residential density of the particular sub-zone	Building Bye-laws shall be followed.		
Commercial	The size of plot will depend on the layout of commercial area and the size of the plot shall be fixed by the Town Planning Department in consultation with the Planning & Development Authority	Provisions of the Imphal Municipality Building. Bye-laws or any bye-laws enforced in the area shall be followed.		
Industrial- Light industry zone	The size of the plot will depend on The layout of the industrial area.	(i) 20 ft. or 6 m from road boundary of Asian highway (ii) 10 ft. or 3 m from road boundary? tar State Highways and other roads.	Rear: 10 ft. or 3 m from plot boundary. Side:-5 ft. or 1.5 m one side (for corner plots side yards equal to front set-back of the side road).	51 ft. or 15.5 m or 4 storeys or height specified in the sub-zone.
Industrial-Medium industry zone	Same as light industry zone	Same as light industry zone	Rear: Same as light industry zone	Same as light industry zone

			Side: 10 ft. or 3 m at one side, (for corner plot's side yards equal to the front set back of the road).	
Public and Semi-public	3000 sq. ft. and the maximum coverage shall be 50 per cent of the total plot area.	The height limitations of any building and side yard and front space shall be determined by the sub-zone in which the area is located.		
Recreation and open spaces				The height limitations of any structure or building from space and side yard shall be determined by the Authority.
Agriculture				

16.4.1 Exceptions and Modifications

Plot of Record: If a plot of official record at the time of adoption of these regulations is smaller than the minimum size specified for the zone in which it is located, and compliance with the yard and other requirements of these regulations is not feasible, the Authority may permit the plot to be used as a plot site, provided the local Authority is satisfied that the yard space and other requirements specified for the zone in which the plot is located and use of the plot will not be detrimental to other properties in zone.

Exceptions to height, yard and setback limits:—The height limitations of these regulations shall not apply to churches, schools, hospital and other public and semipublic buildings, provided that the minimum depth of front and rear yards and the minimum widths of the side yard required in the zone are increased one foot per each foot by which the height of such public and semi-public structure exceeds the height limits in feet/meters prescribed for other structures in the zone.

Chimneys, elevators, Barshaties, plots, spires, tanks and other projections not used for human occupancy may extend above the prescribed heights limits.

Steps or stoops not exceeding 24 junction feet/2.2 sq.m. in area, eaves, cornies and window sills may project into any required yard.

In any zone, on plots less than 60 feet/18.3 meters deep, the rear yard may be reduced 1 per cent for each foot that the plots depth is less than 60 feet/18.3 meters.

In the case of a housing project consisting of a group of two or more buildings to be constructed on a pilot of ground of at least 4 acres not sub-divided into the customary streets and plots and which will not be so sob-divided or where the existing or contemplated streets and plot layouts make it impracticable to apply the requirements of these regulations to each of the building in the project, the planning authority may prescribe for such cases special requirements which shall he is harmony with the character of the neighbourhood and shall ensure a standard of open space at least equal to that which is required by these regulations for other dwelling in the zone in which the project is to be located.

16.5 Preparation of Zonal Development Plans, Sub-Zonal (Local) Development Plans and Town Planning Schemes

After the preparation of the Master Plan, the Town Planning Department shall proceed with the preparation of the Zonal Development Plans and Sub-Zonal (Local) Development Plans simultaneously for each of the planning zones and sub-zones. The zones and the Sub-zones are as indicated in this Master Plan. An area has been identified in section 15.10 of this document as a scheme area in this Master Plan. Further, TOD corridors have also been identified. Town Planning scheme (T.P. scheme) shall be prepared for the identified scheme area or other such areas which may be identified in future during periodic revision of this Master Plan. TOD corridors may be developed through preparion of either T. P. Schemes or Local area plans.

A Zonal Development Plan / Sub zonal Development Plan / Town Planning Scheme may –

a) Contain use plan(s) for the development of the zone and show approximate locations and extents of land uses proposed in the zone/ sub-zone.

b) Specify the standards of population density and building density.

c) Show every area which is required to be declared for re-development.

d) In particular, contain provisions regarding all or any of the following matters, namely:

   i) The division of any site into plots for the erection of buildings;

   ii) The allotment of reservation of land for roads, open spaces, gardens, recreation grounds and other public purposes;

   iii) The development of any area into a township or colony where development may be undertaken;

   iv) The erection of buildings on any site and the restrictions with regard to open spaces to be maintained and for purposes other than erection of buildings;

   v) The alignment of buildings on any site and maintain height and character of buildings;

   vi) The prohibitions or restrictions regarding erection of workshops, warehouses or factories or buildings for particular purposes;

   vii) Any other matter which is necessary for the development of the planning zone/sub-zone/scheme area and control haphazard development.

   For the publication of Zonal Development Plans, Sub-Zonal (Local) Development Plans and Town Planning Schemes, the procedure laid down under Section 22 and 23 of the M.T.C.P. Act, 1975 shall be followed.

16.6 Review of GIS Based Master Plan for Greater Imphal- 2043

The GIS database which has been used for the preparation of this Master Plan shall be updated every year using the data that gets created as and when new constructions are permitted. This will help in remaining behest with latest developments also this GIS database may be used for purpose of property taxation, however after further updation of builtup area and its use.

India is undergoing a major transformation towards urbanization. Manipur and Imphal is no exception. Changes in the urban areas are very rapid and the requirements of the people are also changing rapidly. Hence, there is a need for periodic review of this Master Plan. It is recommended that periodic reviews of this Master Plan are undertaken every five years (during the overall period of 20 years). At the end of each cycle of reviw a revised Master Plan is recommended to be notified.

Annexure

Annexure 2.1: List of Municipal wards and villages under respective Zones and Sub-zones as per 2011 & 2043boundary

Planning Zone	Sub-Zone	Wards and Villages as per 2011 boundary	Wards and Villages as per 2043 boundary
Zone A	A1	Ward No. - 26	Ward No. - 26
	A2	Ward No. - 1, 2	Ward No. - 1, 2
	A3	Ward No. - 3, 4	Ward No. - 3, 4
	A4	Ward No. - 6, 7	Ward No. - 6, 7
	A5	Ward No. - 7, 10	Ward No. - 7, 10
	A6	Ward No. - 8, 9, 10	Ward No. - 8, 9, 10
	A7	Ward No. - 11, 12, 13	Ward No. - 11, 12, 13
	A8	Ward No. - 14, 15, 24	Ward No. - 14, 15, 24
	A9	Ward No. - 18, 19, 20, Kongba Nongthombam Leikai	Ward No. - 18, 19, 20, Kongba Nongthombam Leikai
	A10	Ward No. - 21	Ward No. - 21
	A11	Ward No. - 22, 23	Ward No. - 22, 23
	A12	Ward No. - 0, 24, 25	Ward No. - 0, 24, 25
Zone B	B1	Ward No. - 5	Ward No. - 5
	B2	Ward No. - 5	Ward No. - 5
	B3	Ward No. - 27	Ward No. - 27
	B4	Ward No. - 1, 5, 27	Ward No. - 1, 5, 27
Zone C	C1	Kontha Khabam, Lamlongei	Kontha Khabam
	C2	Asei Loklen, Luwangsangbam, Matai	Matai
	C3	Achanbigei, Heingang	Achanbigei
	C4	Kairang Meitei, Kontha Ahallup, Laipham Siphai	Kontha Ahallup
	C5	Kairang Meitei, Khurai Konsam Leikai, Laipham Siphai, Lairikyengbam Leikai	Khurai Sajor Leikai (CT)
	C6	Kairang Muslim, Khomidok	Kairang Muslim
	C7	Heingang	Heingang (CT)
Zone D	D1	Khurai Konsam Leikai, Khurai Sajor Leikai, Thangjam Leikai	Thangjam Leikai

	D2	Laishram Leikai, Moirang Kampu	Laishram Leikai
	D3	Chingangbam Leikai, Kongkham Leikai (OG), Kongkham Leikai (Part), Porompat Plan Area, Thangjam Leikai	Chingangbam Leikai (CT)
	D4	Khaidem Leikai, Khurai Khongnangkhong, Kongkham Leikai (Part), Laingampat, Ningthoubung, Top Dusara(West)	Laishram Leikai
	D5	Porompat	Porompat (CT)
	D6	Gangapat, Khurai Khongnangkhong, Kongba Nongthombam Leikai, Kshetrigao, Naharup, Top Naoria	Kshetrigao (CT)
	D7	Bamon Kampu, Gangapat, Keikhu Hao, Thangbrijao	Keikhu Hao
Zone E	E1	Ward No. - 16, 17, Maibam Leikai	Ward No.- 17
	E2	Ward No. - 17, Leiphrakpam Leikai, Maibam Leikai, Naorem Leikai (OG), Oinam Leikai	Leiphrakpam Leikai
	E3	Langthabal Kunja (OG), Langthabal Mantrikhong, Naorem Leikai (OG), Oinam Leikai	Langthabal Kunja (OG)
	E4	Thongju	Thongju (CT)
	E5	Kiyamgei, Lilong Hao	Kiyamgei (CT)
	E6	Basihkhong, Kitna Panung, Loumanbi, Wangkhei Loumanbi	Loumanbi
	E7	Khongman, Nandeibam Leikai, Torban (Kshetri Leikai)	Torban (Kshetri Leikai) (CT)
	E8	Nandeibam Leikai, Uchkeckon	Nandeibam Leikai

	E9	Bamon Kampu, Machahal, Takhok Awang, Uchekon Khunou, Uchkeckon	Takhok Awang
	E10	Keirao Makting, Takhok Makha	Keirao Makting
	E11	Kyamgei Muslim	Kyamgei Muslim
Zone F	F1	Langjing Part 2, Takyel Mapal	Langjing Part 2 (CT)
	F2	lamjaotongba, Sangaiprou Maning	Takyel Mapal (CT)
	F3	Changangei, Ghari, lamjaotongba, Langjing Part 2, Sangaiprou Maning, Tabung Hok	Tabung Hok
	F4	Heinoukhongnembi, Naoriya Pakhanglakpa, Sangaiprou Mamang	Sangaiprou Mamang
	F5	Malom Tulihal, Malom Tuliyaima, Mongsangei, Ningombam	Meitram
	F6	Langthabal Lep, Mongsangei	Langthabal Lep
	F7	Ningombam	Ningombam
	F8	Kodompokpi, Malom Tulihal, Meitram	Meitram
	F9	Changangei, Malom Tuliyaima	Malom Tuliyaima
Zone G	G	Langol Hill Reserve Forest	Langol Hill

Source : Census of India 1991, 2001 and 2011

Annexure 5.1: Sub zone wise Population Distribution in 2011

Zone	Sub-zone	Wards/ Villages/ Census Towns	Population (2011)
A	A1	Ward No. - 26	18149
	A2	Ward No. - 1, 2	20478
	A3	Ward No. - 3, 4	14655
	A4	Ward No. - 6, 7	15946
	A5	Ward No. - 7, 10	16637
	A6	Ward No. - 8, 9, 10	16712
	A7	Ward No. - 11, 12, 13	26463
	A8	Ward No. - 14, 15, 24	20372
	A9	Ward No. - 18, 19, 20, Kongba Nongthombam Leikai	27420
	A10	Ward No. - 21	11446
	A11	Ward No. - 22, 23	25383
	A12	Ward No. - 0, 24, 25	10197
B	B1	Ward No. - 5	2175
	B2	Ward No. - 5	1933
	B3	Ward No. - 27	3578
	B4	Ward No. - 1, 5, 27	27708
C	C1	Kontha Khabam	7583
	C2	Matai	4598
	C3	Achanbigei	3918
	C4	Kontha Ahallup	4896
	C5	Khurai Sajor Leikai	9390
	C6	Kairang Muslim	7709
	C7	Heingang	5320
D	D1	Thangjam Leikai	12364
	D2	Laishram Leikai	3184
	D3	Chingangbam Leikai	8247
	D4	Laishram Leikai	7902
	D5	Porompat	6191
	D6	Kshetrigao	19920

	D7	Keikhu Hao	4538
E	E1	Ward No.- 17	24097
	E2	Leiphrakpam Leikai	7503
	E3	Langthabal Kunja (OG)	5855
	E4	Thongju	10836
	E5	Kiyamgei	6074
	E6	Loumanbi	7816
	E7	Torban (Kshetri Leikai)	14086
	E8	Nandeibam Leikai	3657
	E9	Takhok Awang	5823
	E10	Keirao Makting	5920
	E11	Kyamgei Muslim	2614
F	F1	Langjing Part 2	6865
	F2	Takyel Mapal	9329
	F3	Tabung Hok	15174
	F4	Sangaiprou Mamang	15705
	F5	Meitram	5655
	F6	Langthabal Lep	4110
	F7	Ningombam	1713
	F8	Meitram	4293
	F9	Malom Tuliyaima	4404
G	G	Langol Hill	0

Annexure 5.2: Sub zone wise Population Density, 2011

Sub Zone	Population Density (in PPH)			Sub Zone	Population Density (in PPH)		
	1991	2001	2011		1991	2001	2011
A1	36	47	50	D3	28	50	48
A2	94	107	132	D4	26	26	32
A3	139	151	166	D5	59	70	84
A4	142	152	170	D6	35	40	48
A5	147	156	180	D7	21	31	27
A6	142	162	174	E1	161	146	166
A7	128	146	161	E2	30	39	47
A8	100	117	132	E3	14	22	22
A9	61	72	81	E4	38	44	50
A10	83	107	108	E5	14	15	19
A11	112	133	177	E6	12	13	16
A12	43	34	46	E7	28	33	37
B1	18	24	26	E8	19	22	25
B2	19	26	28	E9	12	13	15
B3	9	10	23	E10	10	14	17
B4	17	22	27	E11	11	13	16
C1	12	15	25	F1	9	12	21
C2	7	11	10	F2	28	37	43
C3	6	6	7	F3	12	18	20
C4	15	18	19	F4	27	42	49
C5	25	29	32	F5	8	10	11
C6	22	32	39	F6	11	16	15
C7	11	12	14	F7	7	9	10
D1	56	64	71	F8	8	10	11
D2	15	16	17	F9	9	11	12

Annexure 5.3: Ward Wise Population density and literacy rate, 2011

Name	Area (ha)	No. of HHs	Total Population	Population Density (PPH)	Literacy rate
WARD NO.-0001	107	2292	11342	106	81%
WARD NO.-0002	62	2354	10951	177	81%
WARD NO.-0003	52	1676	7465	144	83%
WARD NO.-0004	37	1639	7190	194	83%
WARD NO.-0005	922	4931	24162	26	81%
WARD NO.-0006	62	1899	8206	132	82%
WARD NO.-0007	64	1978	8340	130	82%
WARD NO.-0008	39	1803	7577	194	85%
WARD NO.-0009	50	1925	8338	167	83%
WARD NO.-0010	64	1787	7974	125	83%
WARD NO.-0011	44	1811	7707	175	84%
WARD NO.-0012	46	1918	8020	174	85%
WARD NO.-0013	70	2452	10736	153	83%
WARD NO.-0014	45	1608	7246	161	86%
WARD NO.-0015	47	1794	7520	160	83%
WARD NO.-0016	65	1632	6872	106	85%
WARD NO.-0017	69	2634	11672	169	81%
WARD NO.-0018	95	1962	8783	92	82%
WARD NO.-0019	129	2095	9874	77	82%
WARD NO.-0020	77	1831	8070	105	82%
WARD NO.-0021	106	2299	11446	108	84%
WARD NO.-0022	90	3128	16048	178	74%
WARD NO.-0023	52	1823	9335	180	71%
WARD NO.-0024	96	1427	8760	91	84%
WARD NO.-0025	94	1489	7043	75	79%
WARD NO.-0026	362	3470	18149	50	79%
WARD NO.-0027	420	2107	9417	22	77%

Annexure 5.4: Village Wise Population density and literacy rate, 2011

Name	Area (ha)	No of HHs	Total Population	Population Density (PPH)	Literacy rate (%)
Achanbigei	484	711	3123	6	74
Bamon Kampu	77	561	2788	36	78
Basihkhong	204	666	3042	15	80
Changangei	334	997	4581	14	79
Chingangbam Leikai (CT)	60	1008	4904	82	78
Gangapat	34	327	1476	43	82
Ghari	129	484	2078	16	77
Heingang	448	1320	6115	14	75
Heinoukhongnembi	39	726	3591	92	78
Kairang Meitei	122	254	1250	10	83
Kairang Muslim	132	569	3593	27	55
Keikhu Hao	48	118	588	12	70
Keirao makting	114	973	5319	47	53
Khaidem Leikai	29	598	2724	95	78
Khomidok	67	744	4116	62	55
Khongman (CT)	127	1425	6096	48	82
Khurai Khongnangkhong	7	444	2028	285	81
Khurai Konsam Leikai	76	901	4162	55	78
Khurai Sajor Leikai (CT)	55	1723	7987	144	80
Kitna Panung	50	596	2546	51	77
Kiyamgei (CT)	185	1154	5336	29	71
Kongba Nongthombam Leikai	66	467	2167	33	79
Kongkham Leikai (Part)	27	193	2659	98	81
Kontha Ahallup	144	468	2183	15	78
Kontha Khabam	200	744	3483	17	77
Kshetrigao (CT)	127	1925	10534	83	67
Laipham Siphai (CT)	164	1094	5268	32	83
Lairikyengbam Leikai (CT)	146	1033	4586	31	81
Laishram Leikai	119	386	1851	16	78
Lamjaotongba (CT)	91	2328	10593	116	75
Lamlongei	254	215	4100	16	46
Langjing Achouba	101	1163	609	6	79
Langjing Part 2	186	130	5451	29	75
Langthabal Kunja (OG) WARD NO.-0010 (Rural MDDS CODE:269936)	40	206	938	24	76
Langthabal Lep	219	733	3528	16	78
Langthabal Mantrikhong	110	568	2564	23	75
Leiphrakpam Leikai	28	389	1759	62	76
Loumanbi	138	40	161	1	70
Luwangsangbam (CT)	90	736	3458	39	80
Machahal	260	99	463	2	70

Maibam Leikai	46	664	3030	65	81
Malom Tulihal	50	504	2879	58	81
Malom Tuliyaima	192	737	3096	16	79
Matai	286	253	1140	4	71
Meitram	117	366	1644	14	74
Moirang Kampu	191	295	1333	7	79
Mongsangei	104	745	3639	35	71
Naharup	316	378	1962	6	75
Nandeibam Leikai	100	772	3375	34	80
Naorem Leikai (OG) WARD NO.-0012 (Rural MDDS CODE:269937)	203	797	3312	16	79
Naoriya Pakhanglakpa (CT)	124	1612	7501	61	79
Ningombam	74	567	2595	35	77
Ningthoubung	265	443	2038	8	76
Oinam Leikai	70	264	1182	17	81
Porompat (CT)	83	1232	6191	75	78
Porompat Plan Area (OG) WARD NO.-0030	78	244	1145	15	78
Sangaiprou Mamang	57	1010	4613	81	78
Sangaiprou Maning	209	652	3126	15	82
Tabung Hok	44	271	2559	58	67
Takhok Awang	242	100	1288	5	64
Takhok Makha	243	277	601	2	76
Takyel (OG)	238	1187	1651	7	80
Takyel Mapal (CT)	317	543	5775	18	77
Thangbrijao	58	284	1454	25	67
Thangjam Leikai	64	271	1291	20	82
Thongju (CT)	217	2296	10836	50	79
Top Dusara(West)	54	404	1942	36	80
Top Naoria	135	891	4385	33	79
Torban (Kshetri Leikai) (CT)	103	1272	5459	53	81
Uchekon Khunou	23	357	1573	68	80
Uchkeckon	126	799	3751	30	81
Wangkhei Loumanbi	157	443	2067	13	78

Annexure 5.5: Sub zone wise Literacy rate of 2011

Sub Zone	Literacy rate (%)	Sub Zone	Literacy rate (%)	Sub Zone	Literacy rate (%)
A1	79.5	**C2**	77.7	**E5**	71.6
A2	85.8	**C3**	70.6	**E6**	78.1
A3	83.0	**C4**	88.0	**E7**	80.0
A4	77.5	**C5**	79.8	**E8**	80.1
A5	82.8	**C6**	54.8	**E9**	78.3
A6	88.0	**C7**	77.4	**E10**	53.9
A7	84.0	**D1**	78.7	**E11**	63.8
A8	82.9	**D2**	78.7	**F1**	86.1
A9	85.9	**D3**	76.5	**F2**	68.0
A10	83.8	**D4**	74.1	**F3**	80.7
A11	72.9	**D5**	77.8	**F4**	78.3
A12	83.8	**D6**	72.3	**F5**	76.7
B1	89.9	**D7**	75.7	**F6**	79.4
B2	101.2	**E1**	82.5	**F7**	70.3
B3	81.5	**E2**	78.4	**F8**	77.6
B4	73.9	**E3**	77.5	**F9**	77.4
C1	78.2	**E4**	78.6		

Annexure 5.6: Sub zone wise Projected Population, 2021-43

		Census Population			Projected Population		
S.No.	**Sub-Zone**	**1991**	**2001**	**2011**	**2021**	**2031**	**2043**
	Zone A	**171891**	**195245**	**223860**	**256977**	**295567**	**340636**
1	A1	13171	16971	18149	21397	25226	29741
2	A2	14654	16653	20478	24227	28662	33908
3	A3	12270	13370	14655	16016	17504	19129
4	A4	13316	14242	15946	17455	19106	20914
5	A5	13547	14440	16637	18451	20463	22694
6	A6	13686	15615	16712	18478	20430	22587
7	A7	21001	23972	26463	29710	33355	37447
8	A8	15305	17942	20372	23507	27124	31297
9	A9	20578	24178	27420	31657	36549	42196
10	A10	8769	11301	11446	13172	15158	17444
11	A11	16069	19079	25383	31954	40226	50639
12	A12	9524	7482	10197	10953	11766	12639
	Zone B	**21568**	**28076**	**35394**	**46100**	**60631**	**80695**
13	B1	1477	2023	2175	2658	3249	3972
14	B2	1313	1798	1933	2363	2888	3530
15	B3	1444	1567	3578	6027	10151	17096
16	B4	17334	22688	27708	35052	44343	56097
	Zone C	**29717**	**36920**	**43414**	**53706**	**67197**	**85073**
17	C1	3608	4404	7583	11156	16414	24148
18	C2	3138	5168	4598	5832	7396	9381
19	C3	3183	3337	3918	4354	4839	5377
20	C4	3717	4491	4896	5626	6465	7430
21	C5	7331	8466	9390	10630	12033	13621
22	C6	4453	6387	7709	10181	13445	17757
23	C7	4287	4667	5320	5928	6605	7360
	Zone D	**45919**	**55801**	**62345**	**73650**	**87359**	**104073**
24	D1	9743	11089	12364	13928	15691	17676
25	D2	2782	2993	3184	3406	3644	3899
26	D3	4917	8600	8247	11166	15118	20469

27	D4	6384	6424	7902	8836	9880	11047
28	D5	4306	5160	6191	7423	8901	10673
29	D6	14287	16320	19920	23534	27805	32850
30	D7	3499	5214	4538	5356	6321	7459
	Zone E	**74312**	**82283**	**94281**	**107550**	**123414**	**142455**
31	E1	23419	21290	24097	24590	25093	25607
32	E2	4786	6214	7503	9401	11779	14758
33	E3	3692	5998	5855	7615	9903	12879
34	E4	8296	9539	10836	12384	14154	16177
35	E5	4409	4801	6074	7149	8415	9905
36	E6	6112	6603	7816	8848	10016	11338
37	E7	10822	12530	14086	16073	18340	20927
38	E8	2818	3203	3657	4166	4745	5406
39	E9	4566	5141	5823	6576	7426	8386
40	E10	3632	4814	5920	7563	9663	12345
41	E11	1761	2149	2614	3185	3880	4727
	Zone F	**41440**	**57207**	**67249**	**87098**	**113622**	**149370**
42	F1	2874	3915	6865	10696	16664	25962
43	F2	6091	7863	9329	11555	14312	17728
44	F3	9127	13548	15174	19760	25732	33508
45	F4	8751	13463	15705	21241	28728	38855
46	F5	3993	5072	5655	6745	8045	9595
47	F6	3066	4376	4110	4864	5756	6811
48	F7	1205	1514	1713	2045	2442	2916
49	F8	3100	3649	4293	5051	5943	6993
50	F9	3233	3806	4404	5140	6000	7002
51	**G**	**0**	**0**	**0**	**0**	**0**	**0**

Annexure 7.1: Sub zone wise Main workers in 2011

Sub-Zone	Total Main Workers		Sub-Zone	Total Main Workers
A1	5477		D1	3669
A10	3249		D2	937
A11	6519		D3	2700
A12	3952		D4	2577
A2	6911		D5	2185
A3	4485		D6	5959
A4	4650		D7	1769
A5	5314		E1	7751
A6	5904		E10	1548
A7	7904		E11	703
A8	7348		E2	2518
A9	9799		E3	1883
B1	678		E4	3578
B2	678		E5	1786
B3	1336		E6	2609
B4	7613		E7	4883
C1	2686		E8	1335
C2	1420		E9	2213
C3	1193		F1	2659
C4	1616		F2	2517
C5	3037		F3	5166
C6	2015		F4	4854
C7	1805		F5	3440
			F6	1564
G	0		F7	595
			F8	1940
			F9	1297

Annexure 7.2: Ward wise Workforce Participation Rate (WFPR) of IMC, 2011

Ward Number	WFPR (in %)	Ward Number	WFPR (in %)
0	0	14	43
1	38	15	44
2	40	16	42
3	38	17	40
4	42	18	48
5	33	19	38
6	35	20	41
7	41	21	37
8	40	22	35
9	41	23	38
10	40	24	49
11	38	25	38
12	39	26	35
13	39	27	41

Annexure 7.3: Sub zone wise Working Population, 2011

Sub-Zones	Population	Total Workers	Total Main Workers	Total Marginal Workers
A1	18149	6390	5477	913
A2	20478	8411	6911	1500
A3	14655	5843	4485	1358
A4	15946	5641	4650	991
A5	16637	6725	5314	1411
A6	16712	7112	5904	1208
A7	26463	10200	7904	2296
A8	20372	8991	7348	1643
A9	27420	11600	9799	1801
A10	11446	4179	3249	930
A11	25383	9140	6519	2621
A12	10197	4363	3952	411
ZONE-A	**223858**	**88595**	**71512**	**17083**
B1	2175	807	678	129
B2	1933	807	678	129
B3	3578	1551	1336	215
B4	27708	8994	7613	1381
ZONE-B	**35394**	**12159**	**10305**	**1854**
C1	7583	3475	2686	789
C2	4598	1915	1420	495
C3	3918	1736	1193	543
C4	4896	2264	1616	648
C5	9390	3839	3037	802
C6	7709	2501	2015	486
C7	5320	2608	1805	803
ZONE-C	**43414**	**18338**	**13772**	**4566**
D1	12364	5304	3669	1635
D2	3184	1367	937	430
D3	8247	3234	2700	534
D4	7902	3280	2577	703
D5	6191	2690	2185	505
D6	19920	7486	5959	1527

D7	4538	2169	1769	400
ZONE-D	**62346**	**25530**	**19796**	**5734**
E1	24097	9886	7751	2135
E2	7503	3077	2518	559
E3	5855	2400	1883	517
E4	10836	5191	3578	1613
E5	6074	2764	1786	978
E6	7816	3771	2609	1162
E7	14086	6243	4883	1360
E8	3657	1840	1335	505
E9	5823	2828	2213	615
E10	5920	2176	1548	628
E11	2614	888	703	185
ZONE-E	**94281**	**41064**	**30807**	**10257**
F1	6865	2920	2659	261
F2	9329	3239	2517	722
F3	15174	6624	5166	1458
F4	15705	5864	4854	1010
F5	5655	4165	3440	725
F6	4110	1817	1564	253
F7	1713	835	595	240
F8	4293	2371	1940	431
F9	4404	1796	1297	499
ZONE-F	**67248**	**29631**	**24032**	**5599**
ZONE-G	**Langol Reserve Forest**			

Annexure 7.4: Sub zone wise workers classification, 1991- 2011

Sub Zones	1991		2001		2011	
	Total Main Workers	Total Marginal Workers	Total Main Workers	Total Marginal Workers	Total Main Workers	Total Marginal Workers
A1	3563	141	4393	613	5477	913
A2	4159	190	5195	854	6911	1500
A3	3110	4	3756	357	4485	1358
A4	3510	199	4067	923	4650	991
A5	3813	77	4445	814	5314	1411
A6	3676	318	5042	509	5904	1208
A7	5177	289	6883	766	7904	2296
A8	3973	23	5210	495	7348	1643
A9	4533	269	7136	1028	9799	1801
A10	2004	21	3747	451	3249	930
A11	3421	320	4548	1390	6519	2621
A12	3179	26	2424	225	3952	411
ZONE-A	**44118**	**1877**	**56846**	**8425**	**71512**	**17083**
B1	258	8	651	72	678	129
B2	258	8	651	72	678	129
B3	550	48	361	334	1336	215
B4	5053	221	5883	1104	7613	1381
ZONE-B	**6119**	**285**	**7546**	**1582**	**10305**	**1854**
C1	1223	397	1236	360	2686	789
C2	1240	5	2026	314	1420	495
C3	1084	242	802	561	1193	543
C4	1055	402	1494	775	1616	648
C5	1992	557	2333	817	3037	802
C6	1386	195	1292	516	2015	486
C7	1494	780	1080	970	1805	803
ZONE-C	**9474**	**2578**	**10263**	**4313**	**13772**	**4566**
D1	3071	326	2807	1328	3669	1635
D2	918	46	853	317	937	430
D3	1682	88	2134	700	2700	534
D4	2344	271	1737	681	2577	703
D5	968	533	1108	597	2185	505
D6	3587	989	3905	1260	5959	1527
D7	1101	189	1319	567	1769	400
ZONE-D	**13671**	**2442**	**13863**	**5450**	**19796**	**5734**

E1	6585	283	6089	1559	7751	2135
E2	1701	89	1662	621	2518	559
E3	1333	223	1212	785	1883	517
E4	2432	229	2484	1922	3578	1613
E5	1726	68	1282	972	1786	978
E6	2370	69	1365	757	2609	1162
E7	3546	53	3505	1007	4883	1360
E8	939	131	1053	291	1335	505
E9	1765	176	1397	1037	2213	615
E10	1586	135	896	1119	1548	628
E11	608	0	342	426	703	185
ZONE-E	**24591**	**1456**	**21287**	**10496**	**30807**	**10257**
F1	1044	43	1525	403	2659	261
F2	309	0	2039	361	2517	722
F3	2258	190	4300	1203	5166	1458
F4	2535	22	3872	1019	4854	1010
F5	2131	159	2676	778	3440	725
F6	1031	49	1110	640	1564	253
F7	397	2	296	385	595	240
F8	1309	39	1353	479	1940	431
F9	1041	172	984	365	1297	499
ZONE-F	**12055**	**676**	**18155**	**5633**	**24032**	**5599**
TOTAL	**110028**	**9314**	**127960**	**35899**	**170224**	**45093**

Annexure 7.5: Sub zone wise Main workers classification, 1991- 2011

Sub Zones	1991				2001				2011			
	Total Cultivators	Total Agricultural Labourers	Total Household Workers	Total Other Workers	Total Cultivators	Total Agricultural Labourers	Total Household Workers	Total Other Workers	Total Cultivators	Total Agricultural Labourers	Total Household Workers	Total Other Workers
A1	149	11	116	3287	42	16	56	4279	54	57	289	5077
A2	268	16	327	3548	55	62	399	4679	60	93	362	6396
A3	59	10	137	2904	3	3	114	3636	24	24	155	4282
A4	63	32	470	2945	14	7	380	3666	11	16	161	4462
A5	72	14	467	3260	18	4	379	4044	12	20	164	5118
A6	10	1	254	3411	5	2	531	4504	35	24	434	5411
A7	19	8	486	4664	9	4	736	6134	24	175	420	7285
A8	2	1	173	3797	10	7	438	4755	31	23	559	6735
A9	199	108	582	3644	95	198	1044	5799	51	55	658	9035
A10	111	57	30	1806	11	10	136	3590	9	70	109	3061
A11	178	58	219	2966	12	99	220	4217	39	30	371	6079
A12	2	1	17	3159	21	7	33	2363	6	6	65	3875
ZONE-A	1132	317	3278	39391	295	419	4466	51666	356	593	3747	66816
B1	5	5	8	240	10	1	15	625	9	14	22	633
B2	5	5	8	240	10	1	15	625	9	14	22	633
B3	123	26	138	263	19	2	25	315	12	12	121	1191
B4	280	117	334	4322	110	15	170	5588	91	130	362	7030
ZONE-B	413	153	488	5065	149	19	225	7153	121	170	527	9487

C1	535	156	75	457	106	71	227	832	82	56	96	2452
C2	621	49	148	422	149	44	181	1652	405	11	57	947
C3	481	92	62	449	219	22	59	502	412	33	74	674
C4	446	39	31	539	164	129	143	1058	173	18	87	1338
C5	412	69	264	1247	63	15	265	1990	74	24	175	2764
C6	646	95	132	513	136	83	206	867	258	89	68	1600
C7	626	116	157	595	124	46	111	799	178	177	224	1226
ZONE-C	3767	616	869	4222	961	410	1192	7700	1582	408	781	11001
D1	624	228	526	1693	163	58	324	2262	100	24	210	3335
D2	319	26	157	416	81	16	219	537	80	38	28	791
D3	406	72	481	723	96	19	177	1842	72	21	234	2373
D4	377	75	928	964	122	37	279	1299	180	27	465	1905
D5	114	4	152	698	16	0	124	968	22	8	185	1970
D6	687	167	617	2116	215	52	518	3120	196	62	542	5159
D7	449	75	105	472	89	24	133	1073	389	99	67	1214
ZONE-D	2976	647	2966	7082	782	206	1774	11101	1039	279	1731	16747
E1	115	37	872	5561	29	29	1072	4959	61	48	649	6993
E2	78	25	621	977	54	48	366	1194	87	85	272	2074
E3	194	71	288	780	132	36	152	892	201	56	230	1396
E4	446	70	764	1152	33	8	643	1800	23	7	490	3058
E5	465	418	425	418	30	8	249	995	189	432	49	1116
E6	211	121	1063	975	105	44	178	1038	383	222	234	1770
E7	177	48	1054	2267	22	18	591	2874	62	34	860	3927
E8	122	47	265	505	20	4	264	765	47	5	292	991
E9	672	67	470	556	69	57	406	865	200	33	420	1560

E10	1084	240	8	254	122	151	23	600	526	40	54	928
E11	293	155	0	160	34	32	7	269	125	12	57	509
ZONE-E	**3857**	**1299**	**5830**	**13605**	**650**	**435**	**3951**	**16251**	**1904**	**974**	**3607**	**24322**
F1	230	48	134	632	78	13	209	1225	83	80	139	2357
F2	23	8	79	199	62	64	316	1597	32	23	241	2221
F3	1139	75	263	781	291	134	477	3398	316	115	220	4515
F4	315	6	420	1794	88	32	448	3304	70	36	157	4591
F5	442	96	620	973	269	40	351	2016	450	83	409	2498
F6	252	45	183	551	105	26	195	784	149	35	198	1182
F7	118	35	114	130	20	35	34	207	359	43	17	176
F8	353	52	471	433	278	17	127	931	191	38	281	1430
F9	333	85	137	486	81	8	55	840	116	31	69	1081
ZONE-F	**3205**	**450**	**2421**	**5979**	**1272**	**369**	**2212**	**14302**	**1766**	**484**	**1731**	**20051**

Annexure 7.6: Industrial establishments and related employment in Imphal east and Imphal West District (2020)

The following table is representative of the list of factories registered under the factories act 1948 as on 06.01.2022; it does not include the informal entities functioning within the Greater Imphal Planning area. Therefore the numbers can be on a lower side. This is only to give an overview of the existing scenario within the planning area.

Sector	Factory Type	Imphal West		Imphal East	
		Worker	Number of units	Worker	Number of Unit
Public	Aviation Fuel Station	20	2	0	0
	LPG Bottling	70	1	0	0
	Oil Depot	60	1	0	0
	Print Press	227	2	0	0
Private	Agarbati	13	2	4	1
	Atta	9	2	3	1
	Auto Work	89	10	11	2
	Bakery			42	1
	Bag	14	1	0	0
	Beson	14	3	0	0
	Brick extruding mc			10	1
	Brick Field	2806	38	1926	31
	Carpentry	11	1	32	3
	Chira			5	1
	Electronics	52	2		
	Embroidery	40	1		
	Flour			161	3
	Food			76	1
	Fruit	34	3	50	2
	Fruit Juice	6	1		
	Green Tea	53	1		
	Hume Pipe	20	1	9	1
	Ice making			3	1
	Iron	167	23	61	10

	Jewellery	35	3		
	LED	10	1		
	LPG cylinder testing	16	1		
	Manufacture Electrical Parts	5	1		
	Meat Processing	13	1		
	Medical equipment			22	1
	Oil Mill	18	6	3	1
	Paint/Thinners			18	1
	PDW	117	5	418	9
	Plastic cutting	16	2		
	Plastic Frames	28	2		
	Plastic Water Tank	49	3		
	Plastic containers	52	5		
	Poultry Feed	102	3	20	1
	Print Press	183	30	16	4
	Print Press News	95	4	0	0
	Pulse			9	3
	Rice Polishing			14	1
	Rice Milling	594	198	573	188
	Soap/Detergent	7	1		
	Solar	40	1		
	Soya			63	1
	Spices	30	5	8	1
	Stone Crush	360	19	255	14
	Water supply			26	3
	Tiles	86	3		
	Tyre retreading	8	1		
	Total	**5569**	**390**	**3850**	**288**

Source: As received by Directorate of Trade Industry and Commerce, Government of Manipur, 2022

Annexure 8.1: Sub zone wise classification of roads

Sub-zone	Percentage of roads		Sub-zone	Percentage of roads	
	All weather	Unpaved		All weather	Unpaved
Zone A			**Zone D**		
A1	73.90	26.10	D1	48.76	51.24
A2	76.32	23.68	D2	28.62	71.38
A3	82.26	17.74	D3	52.43	47.57
A4	63.85	36.15	D4	42.10	57.90
A5	85.08	14.92	D5	49.21	50.79
A6	79.50	20.50	D6	43.64	56.36
A7	72.68	27.32	D7	46.16	53.84
A8	80.82	19.18			
A9	57.39	42.61	**Zone E**		
A10	64.96	35.04	E1	74.32	25.68
A11	59.30	40.70	E2	52.53	47.47
A12	83.66	16.34	E3	77.46	22.54
			E4	64.39	35.61
Zone B			E5	39.11	60.89
B1	91.96	8.04	E6	62.41	37.59
B2	88.64	11.36	E7	62.35	37.65
B3	76.02	23.98	E8	65.42	34.58
B4	53.58	46.42	E9	66.86	33.14
			E10	5.03	94.97
Zone C			E11	0.00	100.00
C1	67.76	32.24			
C2	56.61	43.39	**Zone F**		
C3	44.95	55.05	F1	72.2	27.75
			F2	71.18	28.82
C4	43.46	56.54	F3	68.62	31.38
C5	38.61	61.39	F4	41.57	58.43
C6	65.4	34.60	F5	38.36	61.64
C7	73.30	26.70	F6	44.96	55.04
			F7	54.86	45.14
Zone G			F8	56.61	43.39
G	29.41	70.59	F9	68.76	31.2

Annexure 8.2: Public transport demand scores for sub zones

Sub Zone	Population Density Score	Built-up Density Score	Public Transport demand score		Sub Zone	Population Density Score	Built-up Density Score	Public transport demand score
A1	3	5	15		D4	3	3	9
A2	5	5	25		D5	4	5	20
A3	5	5	25		D6	3	3	9
A4	5	5	25		D7	2	3	6
A5	5	5	25		E1	5	5	25
A6	5	5	25		E2	3	4	12
A7	5	5	25		E3	2	4	8
A8	5	5	25		E4	3	5	15
A9	4	5	20		E5	2	3	6
A10	5	5	25		E6	2	2	4
A11	5	5	25		E7	3	4	12
A12	3	5	15		E8	2	3	6
B1	2	5	10		E9	2	2	4
B2	2	5	10		E10	2	1	2
B3	2	5	10		E11	2	1	2
B4	2	2	4		F1	2	5	10
C1	2	3	6		F2	3	5	15
C2	1	2	2		F3	2	3	6
C3	1	1	1		F4	3	4	12
C4	2	2	4		F5	1	4	4
C5	3	4	12		F6	2	2	4
C6	3	1	3		F7	1	4	4
C7	1	1	1		F8	1	3	3
D1	4	5	20		F9	1	1	1
D2	2	2	4		G	1	1	1
D3	3	5	15					

Annexure 9.1: Sub Zone wise Household density, 1991

Sub-Zones	Households (HHs)	Household Density (HHD)-1991 [HHs/Ha]	Sub-Zones	Households (HHs)	Household Density (HHD)-1991 [HHs/Ha]
A1	**2077**	**6**	**D1**	**1422**	**8**
A2	**2588**	**17**	**D2**	**418**	**2**
A3	**1955**	**22**	**D3**	**678**	**4**
A4	**1928**	**21**	**D4**	**946**	**4**
A5	**2154**	**23**	**D5**	**650**	**9**
A6	**2193**	**23**	**D6**	**2198**	**5**
A7	**3157**	**19**	**D7**	**579**	**3**
A8	**2110**	**14**	Zone-D	6891	5
A9	**3255**	**10**			
A10	**1376**	**13**	**E1**	**3517**	**24**
A11	**2502**	**17**	**E2**	**704**	**4**
A12	**1516**	**7**	**E3**	**545**	**2**
Zone-A	26811	13	**E4**	**1274**	**6**
			E5	**674**	**2**
B1	**270**	**3**	**E6**	**922**	**2**
B2	**270**	**4**	**E7**	**1622**	**4**
B3	**236**	**1**	**E8**	**444**	**3**
B4	**2583**	**2**	**E9**	**757**	**2**
Zone-B	3359	2	**E10**	**603**	**2**
			E11	**279**	**2**
C1	**584**	**2**	Zone-E	11341	4
C2	**474**	**1**			
C3	**501**	**1**	**F1**	**491**	**2**
C4	**649**	**3**	**F2**	**152**	**1**
C5	**1105**	**4**	**F3**	**1082**	**1**
C6	**702**	**4**	**F4**	**1282**	**4**
C7	**754**	**2**	**F5**	**644**	**1**
Zone-C	4769	2	**F6**	**455**	**2**
			F7	**179**	**1**
			F8	**497**	**1**
			F9	**513**	**1**
			Zone-F	5295	2

Annexure 9.2: Sub Zone wise Household density, 2001

Sub-Zones	Households (HHs)	Household Density (HHD)- 2001 [HHs/Ha)	Sub-Zones	Households (HHs)	Household Density (HHD)- 2001 [HHs/Ha)
A1	2844	8	D1	1921	11
A2	3120	20	D2	524	3
A3	2330	26	D3	1503	9
A4	2407	26	D4	1118	5
A5	2688	29	D5	857	12
A6	3020	31	D6	2666	6
A7	4430	27	D7	878	5
A8	3250	21	**Zone-D**	**9467**	**7**
A9	4665	14			
A10	2005	19	E1	3706	25
A11	3191	22	E2	1075	7
A12	1330	6	E3	1045	4
Zone-A	**35280**	**18**	E4	1627	7
			E5	837	3
B1	376	5	E6	1106	2
B2	376	5	E7	2142	6
B3	268	2	E8	571	4
B4	3481	3	E9	935	2
Zone-B	**4501**	**3**	E10	758	2
			E11	328	2
C1	802	3	**Zone-E**	**14130**	**5**
C2	877	2			
C3	542	1	F1	811	3
C4	844	3	F2	1227	6
C5	1421	5	F3	2482	3
C6	959	5	F4	2286	7
C7	882	2	F5	889	2
Zone-C	**6327**	**3**	F6	710	3
			F7	246	1
			F8	605	2
			F9	697	2
			Zone-F	**9953**	**3**

Annexure 9.3: Sub Zone wise Household density, 2011

Sub-Zones	Households (HHs)	Household Density (HHD)- 2011 [HHs/Ha)	Sub-Zones	Households (HHs)	Household Density (HHD)- 2011 [HHs/Ha)
A1	3470	10	D1	2625	15
A2	4531	29	D2	681	4
A3	3315	38	D3	1658	10
A4	3519	38	D4	1588	7
A5	3860	42	D5	1232	17
A6	4085	42	D6	3852	9
A7	6181	38	D7	945	6
A8	4258	28	**Zone-D**	**12581**	**9**
A9	6355	19			
A10	2299	22	E1	5587	38
A11	4951	35	E2	1681	11
A12	2060	9	E3	1331	5
Zone-A	**48884**	**24**	E4	2296	11
			E5	1310	4
B1	493	6	E6	1745	3
B2	493	7	E7	3237	8
B3	843	5	E8	791	5
B4	5324	5	E9	1253	3
Zone-B	**7153**	**5**	E10	1073	3
			E11	448	3
C1	1488	5	**Zone-E**	**20752**	**7**
C2	989	2			
C3	843	2	F1	1536	5
C4	1117	4	F2	1788	8
C5	2002	7	F3	3432	5
C6	1313	7	F4	3348	10
C7	1188	3	F5	1242	2
Zone-C	**8940**	**4**	F6	882	3
			F7	340	2
			F8	820	2
			F9	966	3
			Zone-F	**14354**	**4**

Annexure 9.4: Sub zone wise Net residential Density, 2011

Sub-Zone	Total Area (Ha)	Population 2011	Residential (Area Ha)	Net Residential density (2011)(PPH)
A1	364	18149	112.41	161
A2	156	20478	115.52	177
A3	88	14655	70.48	208
A4	94	15946	61.66	259
A5	92	16637	73.61	226
A6	96	16712	78.66	212
A7	164	26463	132.16	200
A8	154	20372	79.17	257
A9	337	27420	184.05	149
A10	106	11446	69.32	165
A11	143	25383	101.56	250
A12	220	10197	26.06	391
B1	84	2175	14.03	155
B2	70	1933	33.83	57
B3	159	3578	64.48	55
B4	1044	27708	94.41	293
C1	301	7583	65.66	115
C2	470	4598	77.67	59
C3	542	3918	53.68	73
C4	254	4896	45.70	107
C5	293	9390	105.26	89
C6	199	7709	47.76	161
C7	389	5320	42.33	126
D1	174	12364	88.34	140
D2	191	3184	33.81	94
D3	174	8247	73.12	113
D4	244	7902	67.29	117
D5	73	6191	39.46	157
D6	412	19920	145.25	137
D7	169	4538	31.40	145
E1	145	24097	112.04	215

E2	160	7503	76.95	98
E3	272	5855	31.64	185
E4	217	10836	105.90	102
E5	323	6074	53.31	114
E6	499	7816	64.73	121
E7	382	14086	112.37	125
E8	146	3657	35.35	103
E9	388	5823	33.11	176
E10	352	5920	37.82	157
E11	159	2614	41.21	63
F1	324	6865	80.63	85
F2	215	9329	137.99	68
F3	762	15174	153.49	99
F4	323	15705	136.77	115
F5	509	5655	50.31	112
F6	270	4110	31.28	131
F7	174	1713	23.33	73
F8	376	4293	48.22	89
F9	354	4404	31.14	141
G	1415	**0**	36.94	0

Annexure 10.1: Water demand for the population of 2043 in Greater Imphal Planning Area

Sub-Zone	Population		Water Demand (MLD)	
	2011	2043	2011	2043
Zone A	**223860**	**340635**	**44.77**	**68.13**
A1	18149	29741	3.63	5.95
A2	20478	33908	4.10	6.78
A3	14655	19129	2.93	3.83
A4	15946	20914	3.19	4.18
A5	16637	22694	3.33	4.54
A6	16712	22587	3.34	4.52
A7	26463	37447	5.29	7.49
A8	20372	31297	4.07	6.26
A9	27420	42196	5.48	8.44
A10	11446	17444	2.29	3.49
A11	25383	50639	5.08	10.13
A12	10197	12639	2.04	2.53
Zone B	**35394**	**80695**	**7.08**	**16.14**
B1	2175	3972	0.44	0.79
B2	1933	3530	0.39	0.71
B3	3578	17096	0.72	3.42
B4	27708	56097	5.54	11.22
Zone C	**43414**	**85074**	**3.91**	**7.66**
C1	7583	24148	0.68	2.17
C2	4598	9381	0.41	0.84
C3	3918	5377	0.35	0.48
C4	4896	7430	0.44	0.67
C5	9390	13621	0.85	1.23
C6	7709	17757	0.69	1.60
C7	5320	7360	0.48	0.66
Zone D	**62345**	**104073**	**5.61**	**9.37**
D1	12364	17676	1.11	1.59
D2	3184	3899	0.29	0.35
D3	8247	20469	0.74	1.84
D4	7902	11047	0.71	0.99

D5	6191	10673	0.56	0.96
D6	19920	32850	1.79	2.96
D7	4538	7459	0.41	0.67
Zone E	**94281**	**142455**	**11.14**	**15.64**
E1	24097	25607	4.82	5.12
E2	7503	14758	0.68	1.33
E3	5855	12879	0.53	1.16
E4	10836	16177	0.98	1.46
E5	6074	9905	0.55	0.89
E6	7816	11338	0.70	1.02
E7	14086	20927	1.27	1.88
E8	3657	5406	0.33	0.49
E9	5823	8386	0.52	0.75
E10	5920	12345	0.53	1.11
E11	2614	4727	0.24	0.43
Zone F	**67249**	**149370**	**6.05**	**13.44**
F1	6865	25962	0.62	2.34
F2	9329	17728	0.84	1.60
F3	15174	33508	1.37	3.02
F4	15705	38855	1.41	3.50
F5	5655	9595	0.51	0.86
F6	4110	6811	0.37	0.61
F7	1713	2916	0.15	0.26
F8	4293	6993	0.39	0.63
F9	4404	7002	0.40	0.63
G	**0**	**0**	**0.00**	**0.00**

Source: Based on CPHEEO standards and URDPFI Guidelines

Annexure 10.2: Sub zone wise Electricity demand in Greater Imphal Planning Area

Sub-Zone	Population		Electricity Demand (kWh pcpd)	
	2011	2043	2011	2043
Zone A	**223860**	**340635**	**613376.4**	**933339.9**
A1	18149	29741	49728.26	81490.34
A2	20478	33908	56109.72	92907.92
A3	14655	19129	40154.7	52413.46
A4	15946	20914	43692.04	57304.36
A5	16637	22694	45585.38	62181.56
A6	16712	22587	45790.88	61888.38
A7	26463	37447	72508.62	102604.78
A8	20372	31297	55819.28	85753.78
A9	27420	42196	75130.8	115617.04
A10	11446	17444	31362.04	47796.56
A11	25383	50639	69549.42	138750.86
A12	10197	12639	27939.78	34630.86
Zone B	**35394**	**80695**	**96979.56**	**221104.3**
B1	2175	3972	5959.5	10883.28
B2	1933	3530	5296.42	9672.2
B3	3578	17096	9803.72	46843.04
B4	27708	56097	75919.92	153705.78
Zone C	**43414**	**85074**	**118954.36**	**233102.76**
C1	7583	24148	20777.42	66165.52
C2	4598	9381	12598.52	25703.94
C3	3918	5377	10735.32	14732.98
C4	4896	7430	13415.04	20358.2
C5	9390	13621	25728.6	37321.54
C6	7709	17757	21122.66	48654.18
C7	5320	7360	14576.8	20166.4
Zone D	**62345**	**104073**	**170825.3**	**285160.02**
D1	12364	17676	33877.36	48432.24
D2	3184	3899	8724.16	10683.26
D3	8247	20469	22596.78	56085.06

D4	7902	11047	21651.48	30268.78
D5	6191	10673	16963.34	29244.02
D6	19920	32850	54580.8	90009
D7	4538	7459	12434.12	20437.66
Zone E	**94281**	**142455**	**258329.94**	**390326.7**
E1	24097	25607	66025.78	70163.18
E2	7503	14758	20558.22	40436.92
E3	5855	12879	16042.7	35288.46
E4	10836	16177	29690.64	44324.98
E5	6074	9905	16642.76	27139.7
E6	7816	11338	21415.84	31066.12
E7	14086	20927	38595.64	57339.98
E8	3657	5406	10020.18	14812.44
E9	5823	8386	15955.02	22977.64
E10	5920	12345	16220.8	33825.3
E11	2614	4727	7162.36	12951.98
Zone F	**67249**	**149370**	**184262.26**	**409273.8**
F1	6865	25962	18810.1	71135.88
F2	9329	17728	25561.46	48574.72
F3	15174	33508	41576.76	91811.92
F4	15705	38855	43031.7	106462.7
F5	5655	9595	15494.7	26290.3
F6	4110	6811	11261.4	18662.14
F7	1713	2916	4693.62	7989.84
F8	4293	6993	11762.82	19160.82
F9	4404	7002	12066.96	19185.48
G	**0**	**0**	**0**	**0**

Annexure 10.3: Sub zone wise Solid waste generation Demand

Sub-Zone	Population		Solid waste generation Demand (kg/ capita/ day)	
	2011	2043	2011	2043
Zone A	**223860**	**340635**	**134316**	**204381**
A1	18149	29741	7259.6	11896.4
A2	20478	33908	8191.2	13563.2
A3	14655	19129	5862	7651.6
A4	15946	20914	6378.4	8365.6
A5	16637	22694	6654.8	9077.6
A6	16712	22587	6684.8	9034.8
A7	26463	37447	10585.2	14978.8
A8	20372	31297	8148.8	12518.8
A9	27420	42196	10968	16878.4
A10	11446	17444	4578.4	6977.6
A11	25383	50639	10153.2	20255.6
A12	10197	12639	4078.8	5055.6
Zone B	**35394**	**80695**	**14157.6**	**32278**
B1	2175	3972	870	1588.8
B2	1933	3530	773.2	1412
B3	3578	17096	1431.2	6838.4
B4	27708	56097	11083.2	22438.8
Zone C	**43414**	**85074**	**4341.4**	**8507.4**
C1	7583	24148	758.3	2414.8
C2	4598	9381	459.8	938.1
C3	3918	5377	391.8	537.7
C4	4896	7430	489.6	743
C5	9390	13621	939	1362.1
C6	7709	17757	770.9	1775.7
C7	5320	7360	532	736
Zone D	**62345**	**104073**	**6234.6**	**10407.3**
D1	12364	17676	1236.4	1767.6
D2	3184	3899	318.4	389.9
D3	8247	20469	824.7	2046.9
D4	7902	11047	790.2	1104.7
D5	6191	10673	619.1	1067.3
D6	19920	32850	1992	3285
D7	4538	7459	453.8	745.9
Zone E	**94281**	**142455**	**16657.2**	**21927.6**
E1	24097	25607	9638.8	10242.8
E2	7503	14758	750.3	1475.8
E3	5855	12879	585.5	1287.9
E4	10836	16177	1083.6	1617.7
E5	6074	9905	607.4	990.5
E6	7816	11338	781.6	1133.8
E7	14086	20927	1408.6	2092.7
E8	3657	5406	365.7	540.6
E9	5823	8386	582.3	838.6
E10	5920	12345	592	1234.5
E11	2614	4727	261.4	472.7
Zone F	**67249**	**149370**	**6724.8**	**14937**
F1	6865	25962	686.5	2596.2

F2	9329	17728	932.9	1772.8
F3	15174	33508	1517.4	3350.8
F4	15705	38855	1570.5	3885.5
F5	5655	9595	565.5	959.5
F6	4110	6811	411	681.1
F7	1713	2916	171.3	291.6
F8	4293	6993	429.3	699.3
F9	4404	7002	440.4	700.2
G	**0**	**0**	**0**	**0**

Annexure 11.1: Sub zone wise Distribution of Schools and Additional Schools required by 2043

Sub-Zone	Projected population (2043)	Existing Pre-primary Schools (Census 2011)	Pre-primary Schools Required as per URDPFI-2043 (per unit serves 2500 population)	Existing Primary Schools (Census 2011)	Primary Schools Required as per URDPFI-2043 (per unit serves 5000 population)	*Additional Pre-Primary and Primary Schools Required (by 2043)	Existing Senior-Secondary Schools (Census 2011)	Senior-Secondary Schools Required as per URDPFI-2043 (per unit serves 7500 population)	Additional Senior-Secondary Schools Required (by 2043)
Imphal Municipal Corporation (A1, A2, A3, A4, A5, A6, A7, A8 A9, A10, A11, A12, B1, B2, B3 B4, E1)	4, 46, 938	-	179	270	89	-	31	60	29

C1	24148	4	10	12	5	-	0	3	3
C2	9381	2	4	3	2	1	0	1	1
C3	5377	2	2	12	1	-	0	1	1
C4	7430	2	3	5	1	-	0	1	1
C5	13621	4	5	9	3	-	5	2	-
C6	17757	4	7	10	4	-	1	2	1
C7	7360	2	3	10	1	-	1	1	-
D1	17676	6	7	14	4	-	1	2	1
D2	3899	1	2	4	1	-	0	1	1
D3	20469	4	8	7	4	1	0	3	3
D4	11047	4	4	8	2	-	0	1	1
D5	10673	3	4	21	2	-	2	1	-
D6	32850	9	13	15	7	-	1	4	3
D7	7459	2	3	9	1	-	0	1	1
E2	14758	4	6	8	3	-	1	2	1
E3	12879	3	5	3	3	2	0	2	2
E4	16177	5	6	20	3	-	1	2	1
E5	9905	3	4	8	2	-	0	1	1
E6	11338	4	5	14	2	-	1	2	1
E7	20927	6	8	5	4	1	0	3	3
E8	5406	2	2	1	1	-	0	1	1
E9	8386	3	3	16	2	-	0	1	1
E10	12345	3	5	4	2	-	1	2	1

E11	4727	1	2	0	1	2	0	1	1
F1	25962	4	10	8	5	3	0	3	3
F2	17728	5	7	15	4	-	3	2	-
F3	33508	8	13	25	7	-	7	4	-
F4	38855	8	16	28	8	-	2	5	3
F5	9595	3	4	13	2	-	2	1	-
F6	6811	2	3	4	1	-	0	1	1
F7	2916	1	1	4	1	-	0	* 1	-
F8	6993	2	3	21	1	-	1		
F9	7002	2	3	9	1	-	1	1	-
G	0	0	0	0	0	0	0	0	0

***Note:** 1. The requirement of pre-primary schools in Imphal Municipal Corporation is met by the primary schools present in the Imphal Municipal Corporation as these primary schools have classes lower than 1 as well.*

2. To find the required no. of Senior-Secondary Schools for Sub-Zones F7 and F8 their population is taken as a whole because as per URDPFI one Senior-secondary School serves 7500 population and since neither of the sub zone has population near 7500, their population is added to find the required schools (only for senior-secondary).

Annexure 11.2: Sub zone wise Distribution of Dispensary and Additional Dispensary Required by 2043

Sub-Zone	Projected Population (2043)	Existing Dispensary (as of Census 2011)	Dispensary Required as per URDPFI-2043 (per unit serves 15000 population)	Additional Dispensary Required (by 2043)
Imphal Municipal Corporation (A1, A2, A3, A4, A5, A6, A7, A8, A9, A10, A11, A12, B1, B2, B3, B4, E1)	4,46,938	29	30	1
C1	24148	1	2	1
C2	9381	1	*1	-
C3	5377	1		
C4	7430	1	*1	-
C5	13621	1		
C6	17757	1	*2	-
C7	7360	1		
D1	17676	1	1	-
D2	3899	1	*2	1
D3	20469	0		
D4	11047	0	*1	1
D5	10673	0		
D6	32850	0	*3	3
D7	7459	0		
E2	14758	0	1	1
E3	12879	0	1	1

E4	16177	0	1	1
E5	9905	1	*1	-
E6	11338	3		
E7	20927	2	*2	-
E8	5406	0		
E9	8386	3	1	-
E10	12345	0	*1	1
E11	4727	0		
F1	25962	1	2	1
F2	17728	3	1	-
F3	33508	3	2	-
F4	38855	5	3	-
F5	9595	0	*1	1
F6	6811	0		
F7	2916	1	*1	-
F8	6993	1		
F9	7002	2		
G	0	0	0	0

***Note:** To find the required number of dispensary different sub zones are grouped together because as per URDPFI guidelines one dispensary servers a population of 15000 and since some sub zones have less population they are grouped with other sub-zones.*

Source: Census 2011 and URDPFI Guidelines Vol-I, 2015

Annexure 12.1: Sub zone wise area under Green areas

Zone	Sub zone	Area under landuse (%)					
		Reserved Forest	Protected Forest /Notified forest	Social	Green belt	Tree Clad Area	Tree
A	A1					0.39	
	A2					2.57	
	A3					0.1.7	
	A6					0.05	
	A7					0.70	
	A8					2.30	
	A9					2.28	
	A10					0.001	
B	B3					0.03	
	B4					0.19	
C	C1					0.86	
	C3					0.83	
	C4					0.99	
	C5					2.00	
	C6					1.54	
	C7					0.47	
D	D1					1.52	
	D2					0.79	
	D3					0.53	
	D4					2.87	
	D5					0.89	
	D6					0.86	
	D7					1.42	
E	E1					1.93	
	E2					2.82	
	E4					6.85	
	E5					1.85	
	E6					0.98	

	E7					0.40	
	E8					0.98	
	E9					0.66	
	E10					1.49	
	E11					0.57	
F	**F1**					0.28	
	F2					1.66	
	F3					8.95	
	F4					2.77	
	F5					0.35	
	F6					0.22	
	F7					1.53	
	F8					0.88	
G	**G**		99.08			0.013	

Note: The subzones which do not have any of the mentioned above land uses are not included in the table.

Annexure 12.2: Sub zone wise area under Recreational areas

Zones	Sub-Zone	Area under Landuse (%)								
		Amusement Park	Club	Exhibition Ground	Garden	Open Air Theatre	Park	Race Course	Sports Centre	Stadium
A	A1								10.17	
	A2		0.03						0.22	
	A3		0.02							
	A4		0.02							
	A6		0.01							
	A7		0.08							
	A8		0.07							
	A9		0.13	1.17						
	A10		0.04							
	A11		0.10			0.04				
	A12					0.08	0.01			1.38
B	B2		0.26				0.09			
	B3	0.01	0.00				0.09			
	B4						0.17		0.01	
C	C1		0.01							
	C2						0.12			
	C4		0.04							
D	D1		0.03							
	D3		0.04							
	D4		0.01							
	D6		0.01				0.09			
	D7									
E	E1		0.05							
	E2		0.03							
	E3		0.01							
	E4		0.05							
	E5		0.01							

	E6		0.03							
	E7		0.07				0.02			
	E10		0.01							
	E11		0.03							
F	**F1**	0.55	0.01		0.06		0.03		8.43	
	F2		0.03							
	F3		0.04				0.08		0.29	
	F4		0.11				0.06		0.07	
	F5		0.01							
	F8		0.01							

Note: The subzones which do not have any of the mentioned above land uses are not included in the table.

Annexure 13.1: List of state protected monuments/ sites

Code	Historical Site/ Monument	District	Location	Remarks
S-MN-7	Sekta-Kei Mound	Imphal East	Sekta Archaeological Living Museum in Sekta village	Beyond Greater Imphal boundary
S-MN-8	Sacred Fire Place	Imphal East	Andro village	Beyond Greater Imphal boundary
S-MN-9	Temple of Shri Krishna	Imphal East	Brahmapur Guru Aribam Leikai	
S-MN-10	Temple of Thangal General	Imphal East	Wangkhei Palace Compound	
S-MN-11	Andro Inscription	Imphal East	Andro village	Beyond Greater Imphal boundary
S-MN-12	Temple of Madan Mohanji	Imphal East	Nahabam Bamon Leikai	
S-MN-13	Khurai Ahongpung	Imphal East	Telipatti	
S-MN-14	Temple of Radha Damodar	Imphal East	Wangkhei Purana Rajbari	
S-MN-15	Dolai Thaba Chingu Khubam	Imphal East	Wangkhei Yonglan Leirak	
S-MN-16	Kangla Fort (Including Quarter Moat & Kekrupat)	Imphal West	Imphal	
S-MN-17	Temple of Leimapokpa Keirungba	Imphal West	M.S.R.T.C. Compound	
S-MN-18	Temple of Sanamahi	Imphal West	1st Bn. M.R. Compound	
S-MN-19	Samadhi of Maharaja Khaba	Imphal West	Uripok Session Court Compound	
S-MN-20	Samadhi of Maharaja Gambhir Singh	Imphal West	Langthabal village	
S-MN-21	A Menhir	Imphal West	State Museum approach road	
S-MN-22	Inscribed Stone Monuments	Imphal West	1 st Bn. M.R. Compound	
S-MN-23	Inscribed Stone Monuments	Imphal West	Konthoujam Lairema's Compound	
S-MN-24	Rash Mandal Pukhri	Imphal West	Langthabal village	
S-MN-25	Gateway & Brick Wall (in ruins) Apanbi & Haomacha Pukhri	Imphal West	Langthabal village	
S-MN-26	A Hillock	Imphal West	Langthabal village	Beyond Greater

				Imphal boundary
S-MN-27	Inscribed Stone of Maharaja Marjit	Imphal West	Thiyam Leisangkhong,Wangoi	Beyond Greater Imphal boundary
S-MN-28	Thong Nambonbi (Humped Bridge)	Imphal West	Khwairamban Bazar	
S-MN-29	Hicham Yaichampat (Cremation Ground of Bir Tikendrajit)	Imphal West	Yaiskul Janmasthan	
S-MN-30	Sangaiyumpham Maharaja Gambhir Singh	Imphal West	Langthabal village	
S-MN-31	Wangthonbi Mound	Imphal West	Sagolband Tera	
S-MN-32	Lainingthou Marjing	Imphal West	Adimjati, Chingmeirong	
S-MN-33	Makoinungol Ching	Imphal West	Langjing Achouba	
S-MN-34	Lainingthou Sanamahi	Imphal West	Wangoi	Beyond Greater Imphal boundary
S-MN-35	Khagemba Laikon	Imphal West	Heirangoithong	
S-MN-36	Megalithic Monument	Imphal West		Beyond Greater Imphal boundary
S-MN-37	Willong Megalithic Memorial Stones	Imphal West	Willong Khullen village	Beyond Greater Imphal boundary
S-MN-38	Pinoumai Tamartuo	Imphal West		Beyond Greater Imphal boundary
S-MN-39	Lamtol (Khagemba Laikol)	Imphal West		same as S-MN-35
S-MN-40	Sacred Jack Tree	Imphal West	Kaina	Beyond Greater Imphal boundary
	Khongnang Hogaibi	Imphal West	Wahengbam Leikai, NH-53	

Annexure A: Workshops and Surveys Conducted

For the preparation of this master plan, various workshops, surveys, interviews and discussions were conducted throughout the process. The details of each are discussed as follows.

1. Workshop with TCPO Officials:
   Two day training was conducted during the second week of February 2020 (12.02.2020-13.02.2020) for the surveyors on How to conduct a ground truthing survey. The workshop was attended by 28 individual surveyors, 2 planners, 20 student trainees and one trainer. The objective of the workshop was to understand the process and method of conducting a ground truthing survey.
   This workshop was followed by another workshop on how to use the app prepared by SPA for the ground truthing survey. The students and surveyors were given training for the same. These workshops were conducted in the pre Covid-19 period, before the first phase of lockdown was implemented.
   The ground truthing survey was conducted by dividing the area under Greater Imphal Planning area into 770 grids which were sub divided based on the density of buildings as dense, semi- dense and light categories. The classification of grids was based on: Dense: >700 Buildings; Semi-dense: 300-700 Buildings; Light: <300 Buildings. The number of grids under each category were: Dense: 116; Semi-Dense: 318; Light: 336.
   The Phase I survey before lockdown was conducted by 30 ground surveyors, and a total of 13 grids out of 770 were completed.

2. Workshop for Ground Surveyors:
   In Phase II (05.10.2020- 08.12.2020), after lockdown, another workshop was conducted for the newly recruited surveyors on how to use the app and conduct the ground truthing survey.
   The Phase II survey was conducted 40 surveyors who completed the remaining 757 grids.

3. Transportation Surveys:
   The following transport surveys were conducted during 2019- 2020 to understand the transportation scenario within Greater Imphal Planning area.

Survey	Purpose	Data Collected

ROAD NETWORK INVENTORY	• To understand the road network in the city which includes the road width, lanes etc • To take the note of the road infrastructure, pavement pattern, road surface, material, road alignment. • To categorize the land use type along the corridor	• Hierarchy of roads • No. of Lanes • Lane Capacity • Street infrastructure • Traffic-calming measures.
CLASSIFIED TRAFFIC VOLUME COUNTS	• To measure the traffic at prime locations. • To analyze V/C ratio at major roads	• Hourly Traffic Flow, • Hourly Traffic Composition, • Directional Flow
PARKING SURVEY	• To determine the on street parking intensity as well as the problem	• Parking Accumulation, Turnover • Parking demand • Parking volume, supply
IPT SURVEY	• To determine the major routes or location they operate upon with frequency of trips. • To determine occupancy ratio and the fixed transportation charges	• IPT Routes • IPT Stops • Frequency • Operational characteristics
SPEED & DELAY SURVEY *(Conducted through Google real time data)*	• To determine the on road speed and time taken in the arterial roads	• Journey speeds, • Delays

Annexure B: Meetings and Discussions

1. Various open ended discussions were held with the government officials of the following departments:

- District Collectorate,
- Municipal Corporation of Imphal
- Town Planning Department,
- Directorate of Transport of Manipur,
- Imphal Smart Cities Limited
- Manipur Chambers of Commerce and Industries
- District Land Record Department, Imphal
- District Tourism Department
- Line Departments
- NGOs - a) Centre for Research on Environment

  b) Social Development Foundation

  c) Imphal Urban and Rural Development Society

  d) Manipur Development Trust etc

2. Different online meetings were held with the officials of the Town Planning department, Manipur on various aspects, the details of which are attached below:

- Date: February 2020

  Purpose: Regarding the ground truthing survey to be conducted for data collection for the GIS Base Master Plan for Greater Imphal.

- Date: July, 2020

  Purpose: Preliminary discussions with the Chief town planner and Associate town planner of Manipur town Planning Department regarding the existing situation of the study area and relevant data available.

- Date: September, 2020

  Purpose: Discussions regarding deployment of people to Imphal for the ground truthing survey being conducted for the Master plan.

- Date: January 2021

  Purpose: Regarding the progress on spatial attribute data collection and vetting of maps by SPA.

- Date: February 2021
  Purpose: Regarding changes of boundary of the Greater Imphal planning area for the horizon year of 2043.

- Date: November 2021
  Purpose: Discussions on comments and corrections sent by the TP Department on the Data analysis report.

- Date: February 2022
  Purpose: Discussions on comments and corrections on the stage 5 report sent by the TP Department and draft proposals of the GIS based Maser Plan for Greater Imphal.

Being Submitted to:

Town Planning Department, Government of Manipur

Submitted By-

School of Planning and Architecture, Bhopal