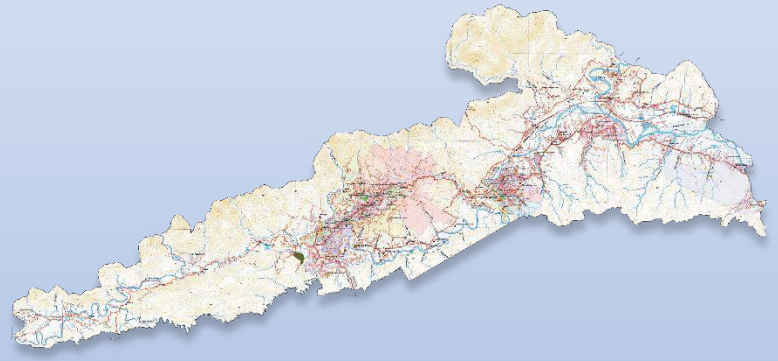
Atal Mission for Rejuvenation and Urban Transformation



GIS Based Master Plan

ITANAGAR CAPITAL REGION

Arunachal Pradesh

ARUNACHAL PRADESH

Presented By

नगर नियोजन एवं शहरी स्थानीय निकाय विभाग

Department of Town Planning & ULB's

अरुणाचल प्रदेश सरकार/Govt. of Arunachal Pradesh

ईटानगर/Itanagar

Sub scheme:

GIS Based Master Plan

ITANAGAR CAPITAL REGION

Arunachal Pradesh

Date of awarding the work	July 2017
Signing of Agreement	August 2017
Submission of Inception report	September, 2017
1st CERC & Stake Holders Meeting	June , 2019
Submission of Draft Master Plan	August,2019
2nd CERC & Stake Holders Meeting	Sept, 2020
Submission of Final Draft Master Plan	October, 2020
Project Cost for the Master Plan component	Rs.98,32,500
Payment Received so far	Rs. 80,00,000
Balance to be Received	Rs.18,32,500

Contents

- **Introduction**
- Field survey and Data Analysis
- Population projections
- Gap Analysis
- Vision
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- Future and Sectoral Landuse Proposals
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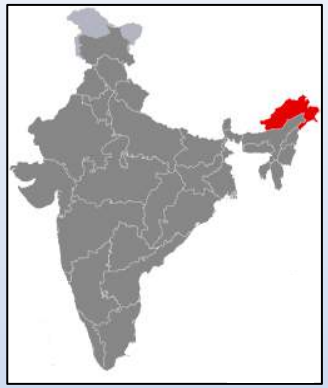
Location Map



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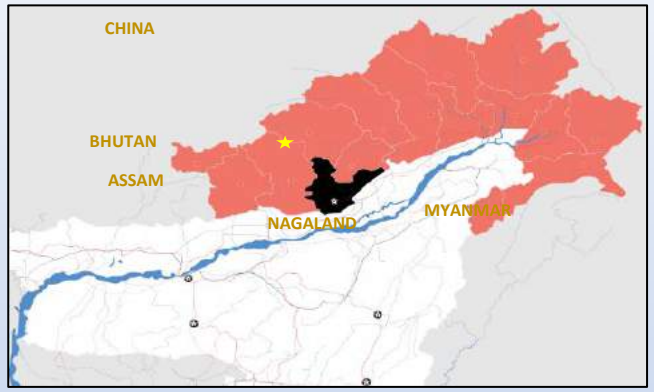


Arunachal Pradesh

Itanagar Capital Region Boundary

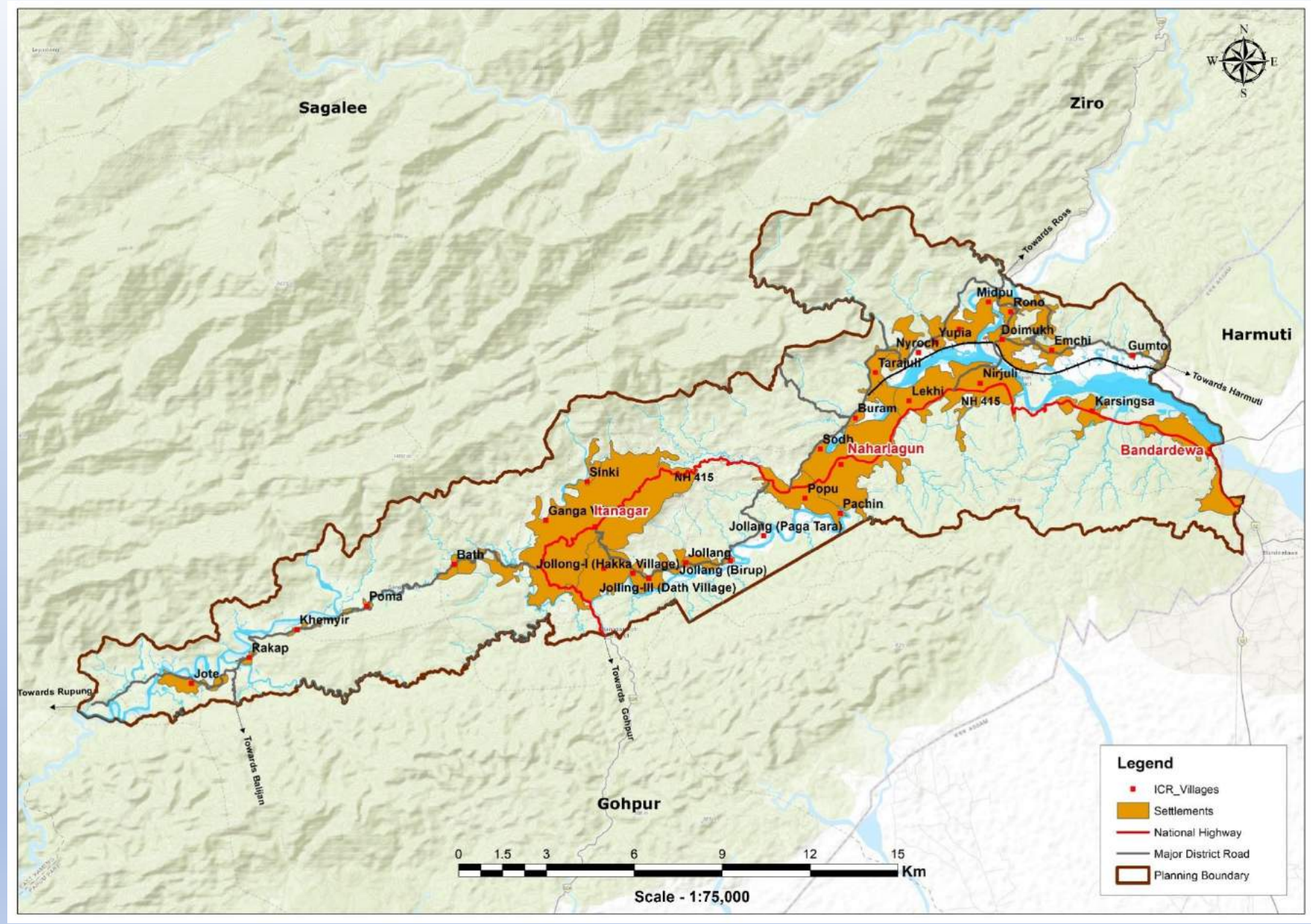
Towns & Villages in ICR

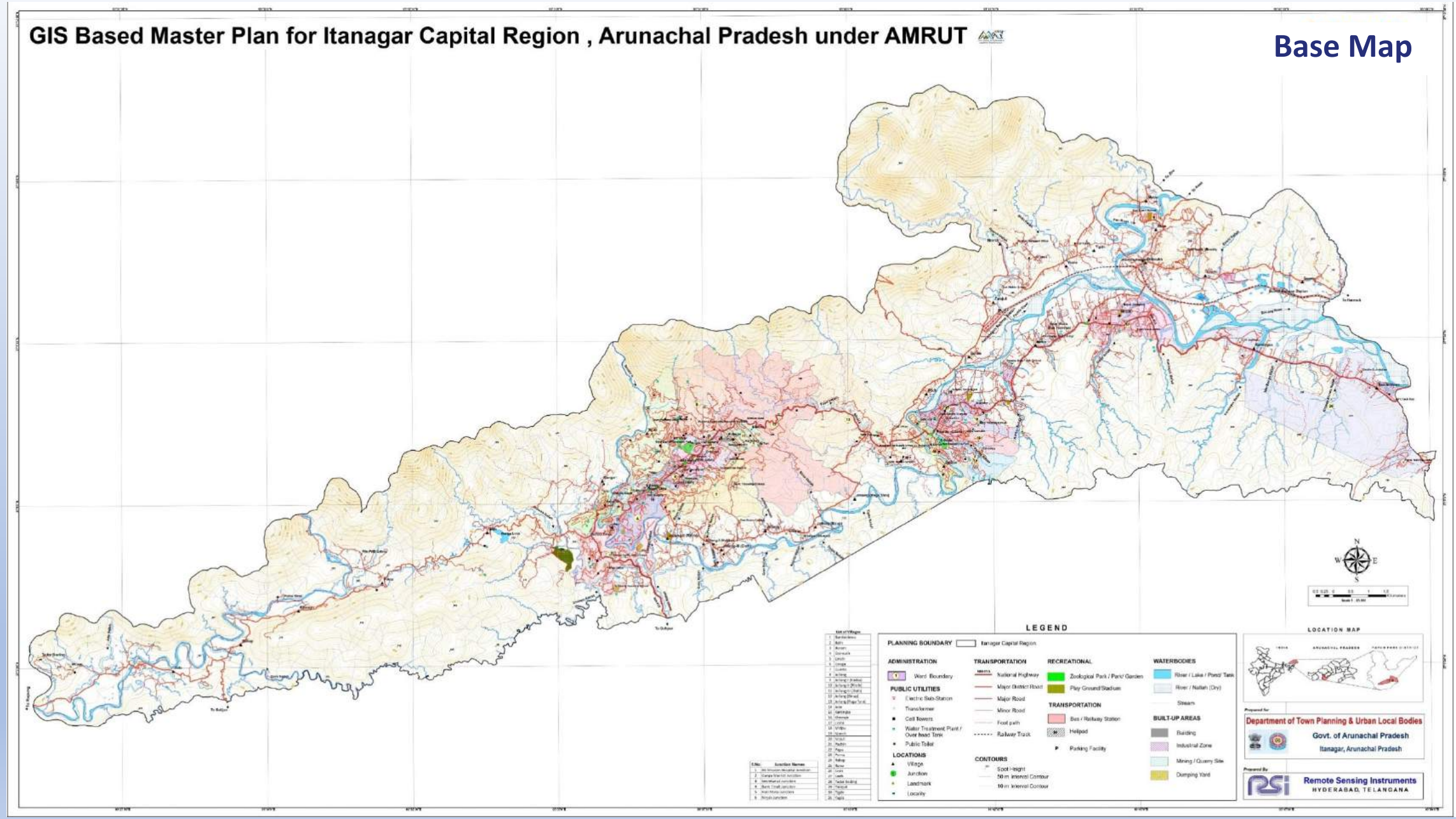
TOWNS	VILLAGES
Itanagar, Naharlagun and Banderdewa	Karsingsa, Nirjuli, Emchi, Gumto, Doimukh, Rono, Tigdo, Yupia, Tarajuli, Buram, Jollang, Chimpu, Ganga, Bath, Poma, Khemyir, Rakap, Niroch, Jote, Pappu Nalla

Population Details (2011 census)

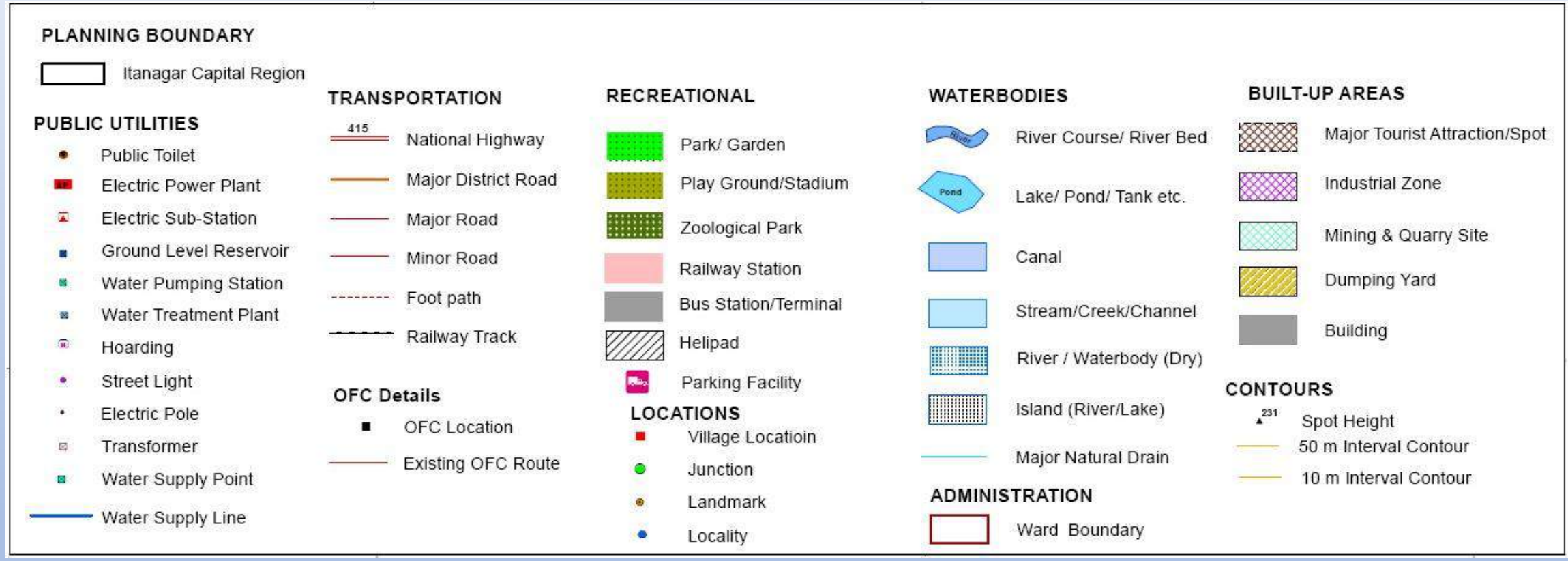
	Itanagar	Naharlagun	ICR
Total	59,490	36,158	1,10,767
Households	13,465	7,735	24,182
Sex ratio	950	998	951
Population (0-6)	7,624	4,809	14,423
Workforc	23,013	12,554	40,701
Literacy	44,172	26,329	81,319

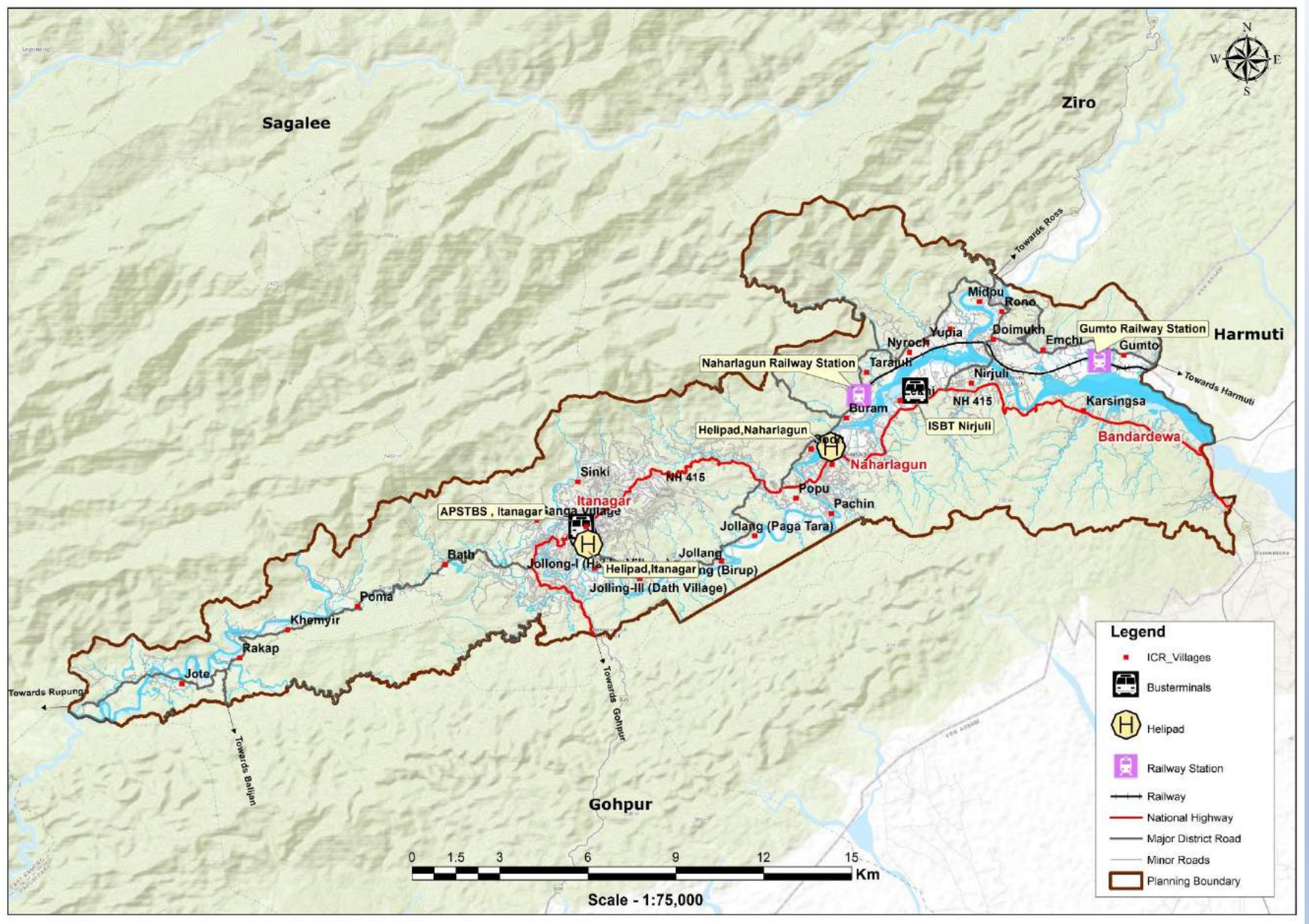
Village Settlements in ICR area





Basemap Legend





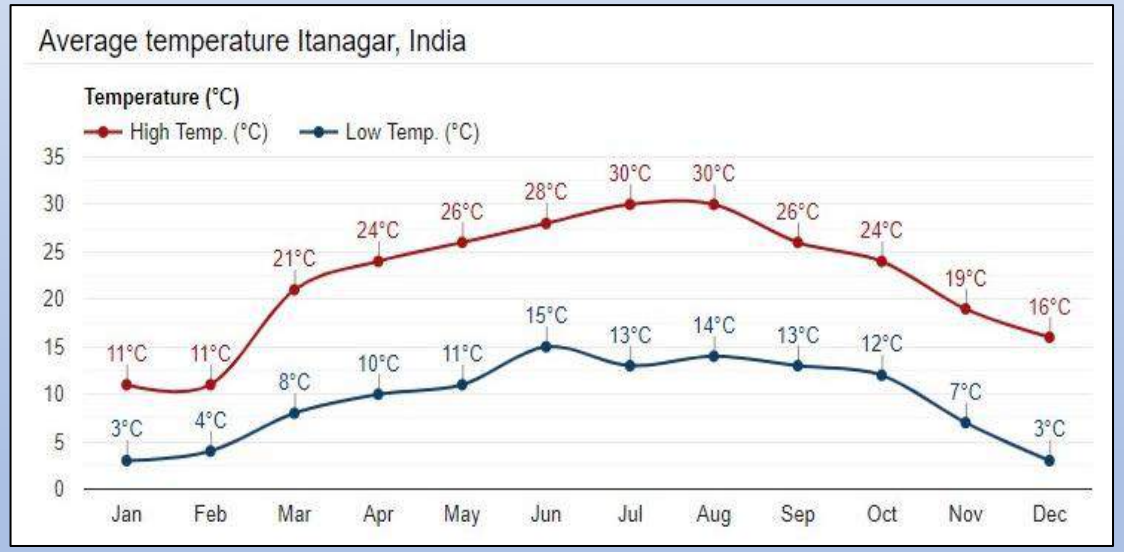
Regional Connectivity Itanagar Capital Region

Modes of Transit

- Naharlagun Railway station
- Helipad in Naharlagun
- ISBT, Nirjuli
- APSTBS, Itanagar

Climate - Topography

Papum Pare district is characterized by **low to high relief hills and corrugated landform**. The general trend of ridges is from North East to South West and the Siwalik hills from hogback topography. General altitude in major part of the district ranges from **1000 to 2000 m above MSL.**



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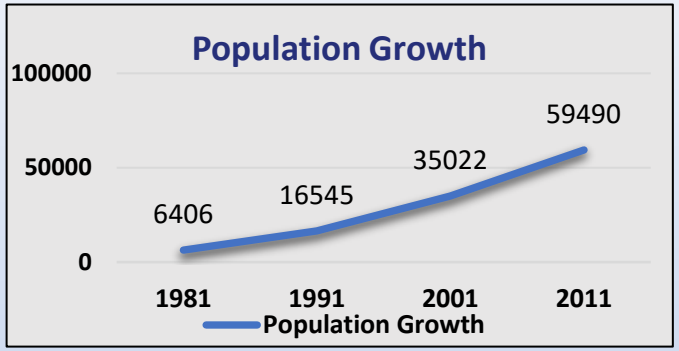
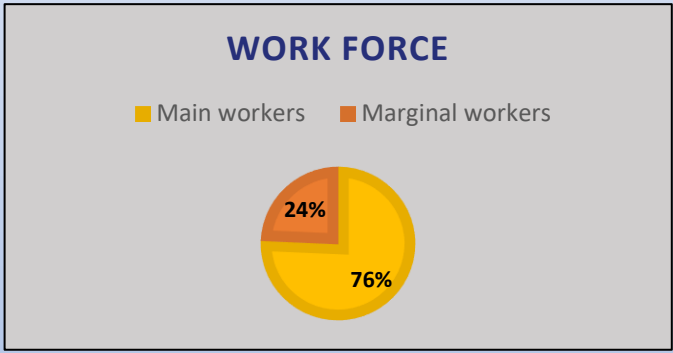
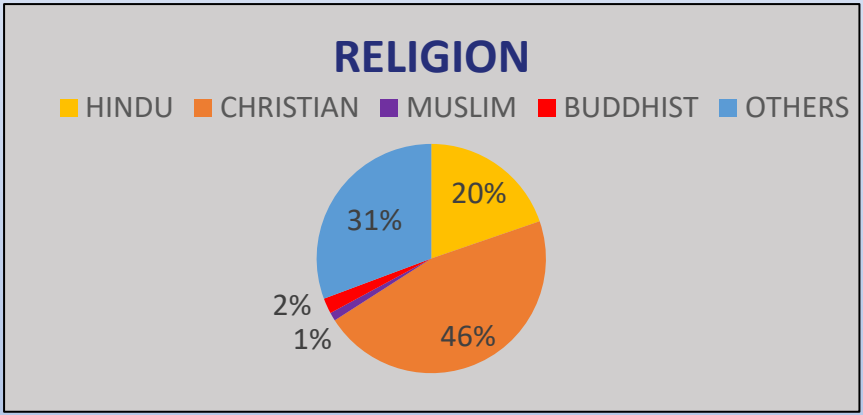
Field survey and Data Analysis

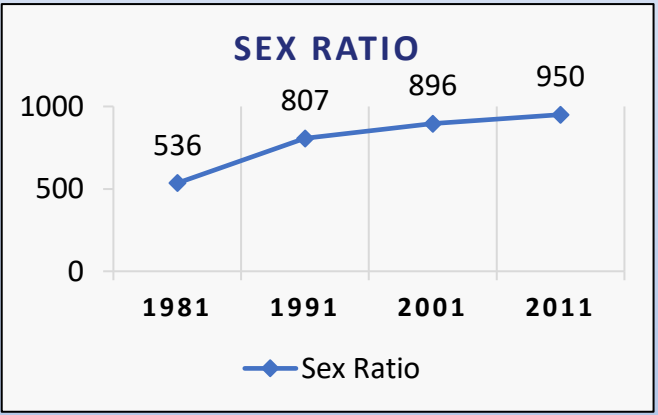


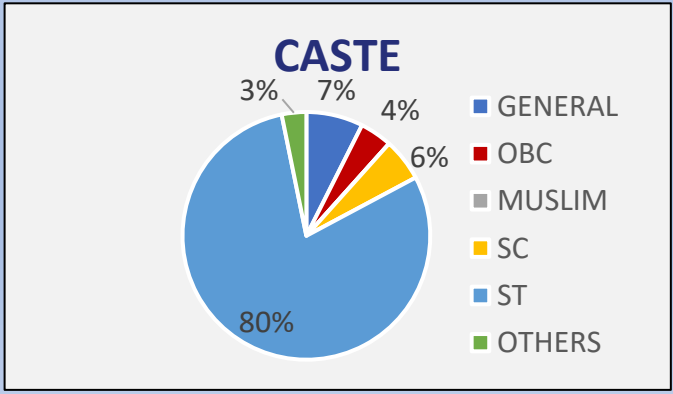
ITANAGAR

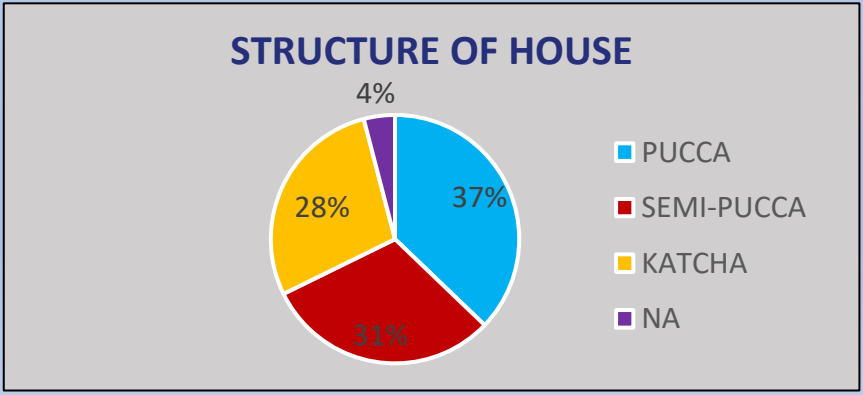
- The population growth is at an exponential rate and the sex ratio is 536 in year 1981 which increased to 950 in 2011 showing positive growth.
- Male population is higher than female. Male population is 52% and female population is 48%.

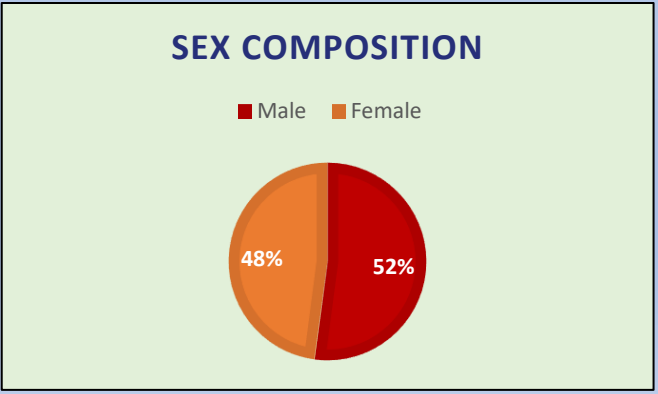












Field survey and Data Analysis

ITANAGAR

Transportation

- Total Road length is 280 km
- NH-415 (ROW-30) passes through the ICR.
- City level public transport is not available but in the mornings a regional bus service connects the city and the railway station IPT autos and Tata sumo vehicles are used to commute through the city.
- APSTS buses and private buses serve on the routes with high trip demand.
- Intersections are Non-signalized
- Parking facility is available in prominent locations.
- Designated footpaths or walkways are available in very few stretches.
- 10 footbridges are available for crossing.

Electricity supply

- Source- Hydro electricity power plant provides 24/7 electricity supply.
- Electricity required 27.2 MU
- 99% of electricity supply coverage through out the city.
- The street lights are working on solar energy.
- Potential for solar and other renewable sources

Sanitation and Solid Waste Management

Sanitation

- 280 km of drain length along the roads.
- 1.25 lakh residents in the ICR generates 14 MLD of sewerage per day.

Solid Waste management

- ICR generates 80 tons of solid waste per day
- Door to door collection is done by an NGO/SHGs for 30 wards.
- Recycling site is established but it is not functional.
- Karsingsa a dumping yard is 25 Km away from Itanagar with an area of 20.24Ha.

Sectoral Analysis

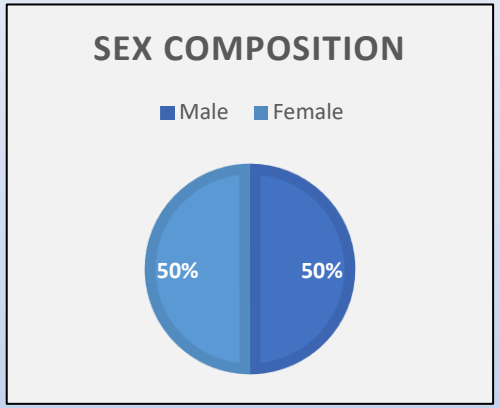
Water Supply

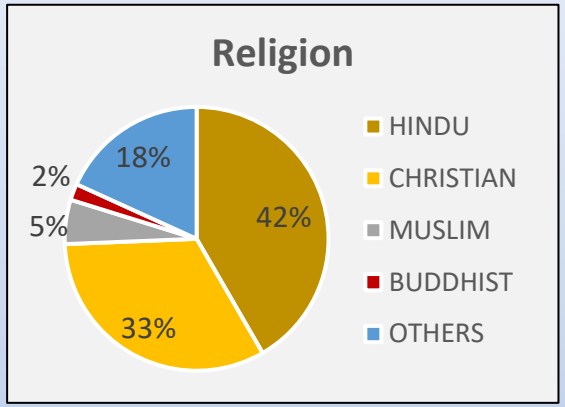
- Source Senki river (7MLD) and kankar river dam (3MLD) and hydro- electric dam
- Existing water supply is 130 LPCD.
- Water supply coverage is 55.5%(PHED)
- Non revenue water (NRW)- 25% to 35%
- Quality of water is regular tested.
- No water metering
- No rain water harvesting

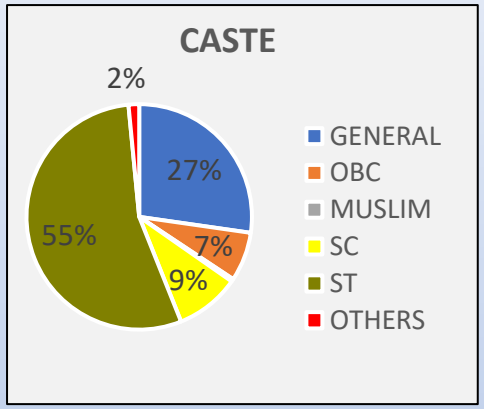
Source- Itanagar Master plan 2011, smart city proposal and primary survey

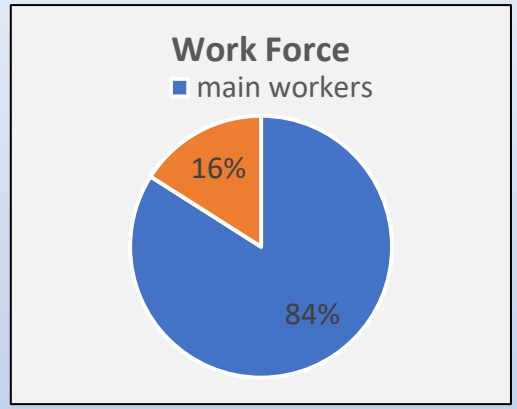
Field survey and Data Analysis

NAHARLAGUN

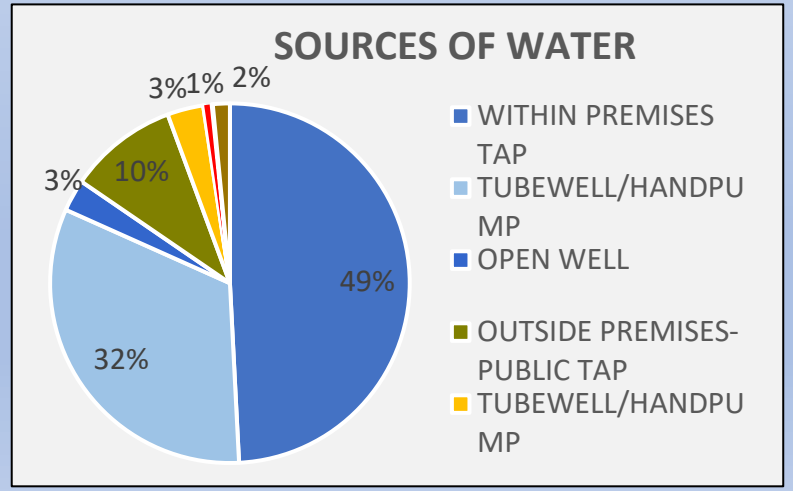


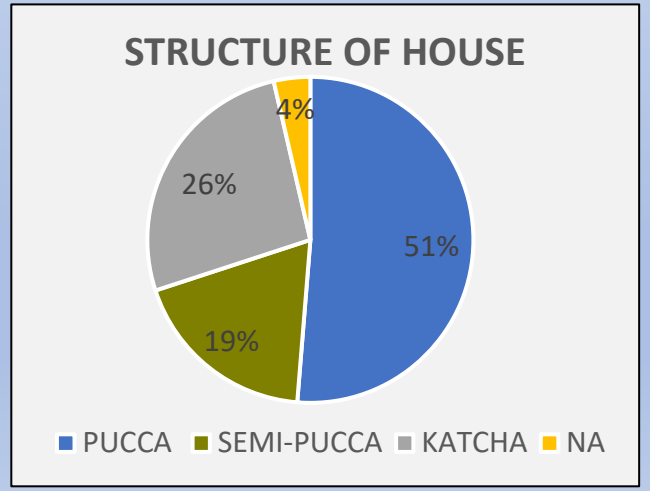


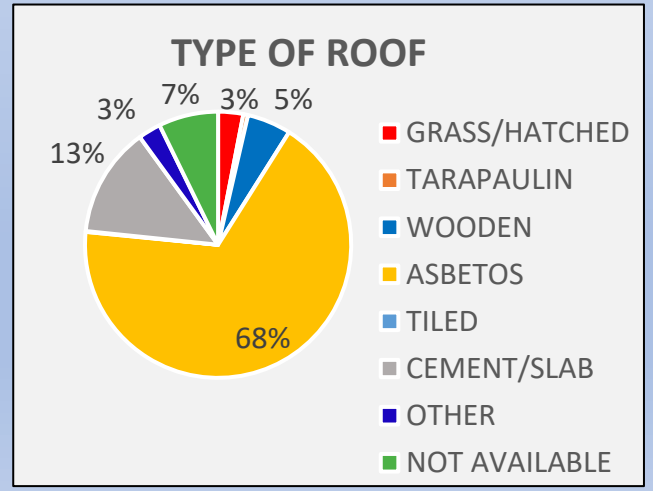




Existing Situation

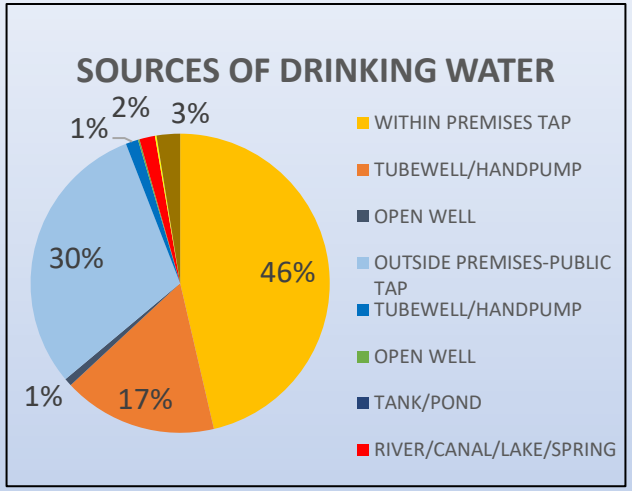


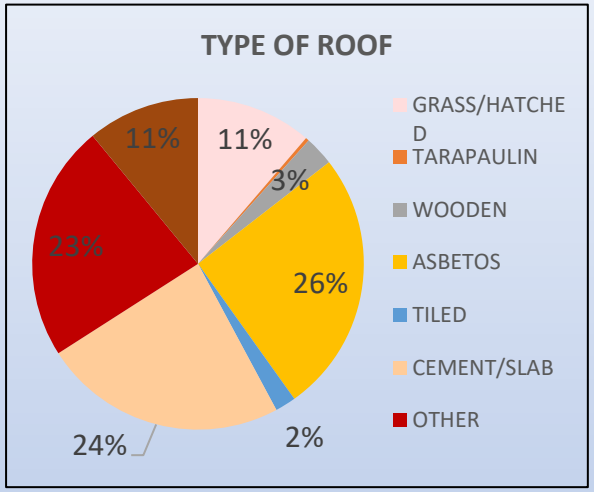


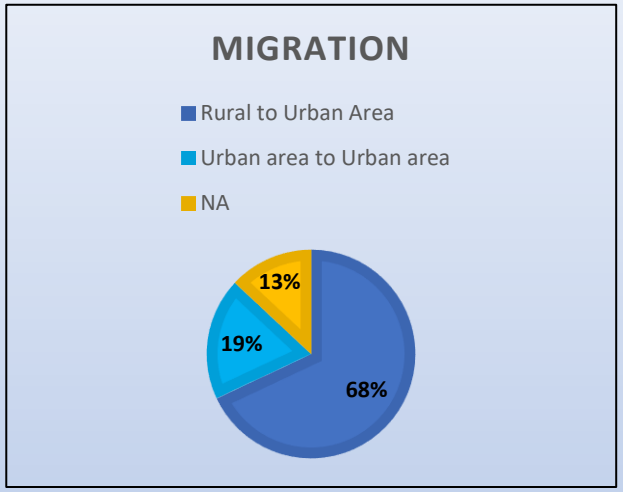


Field survey and Data Analysis

ITANAGAR CAPITAL REGION







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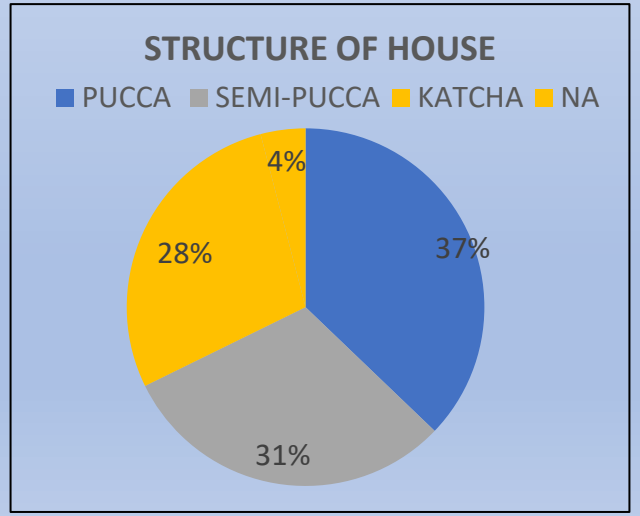
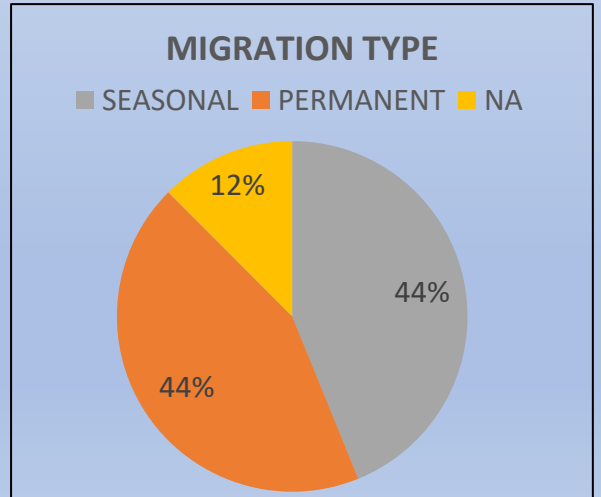
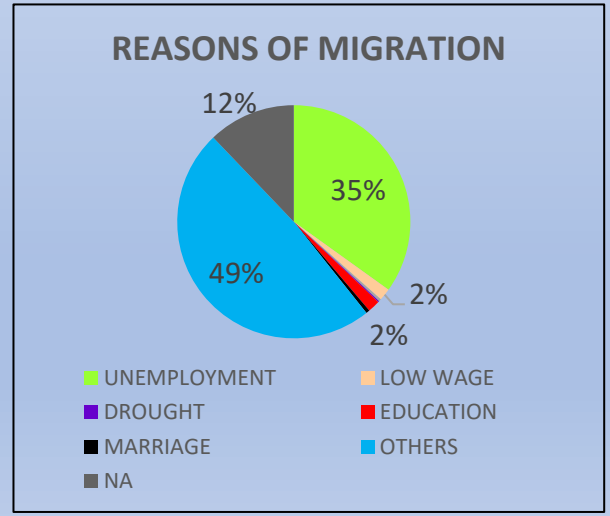
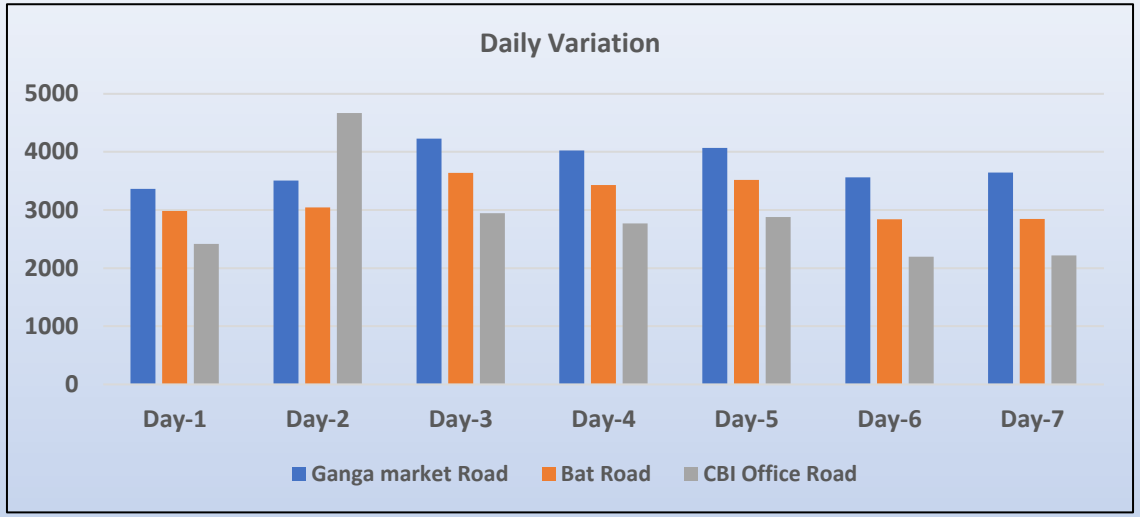


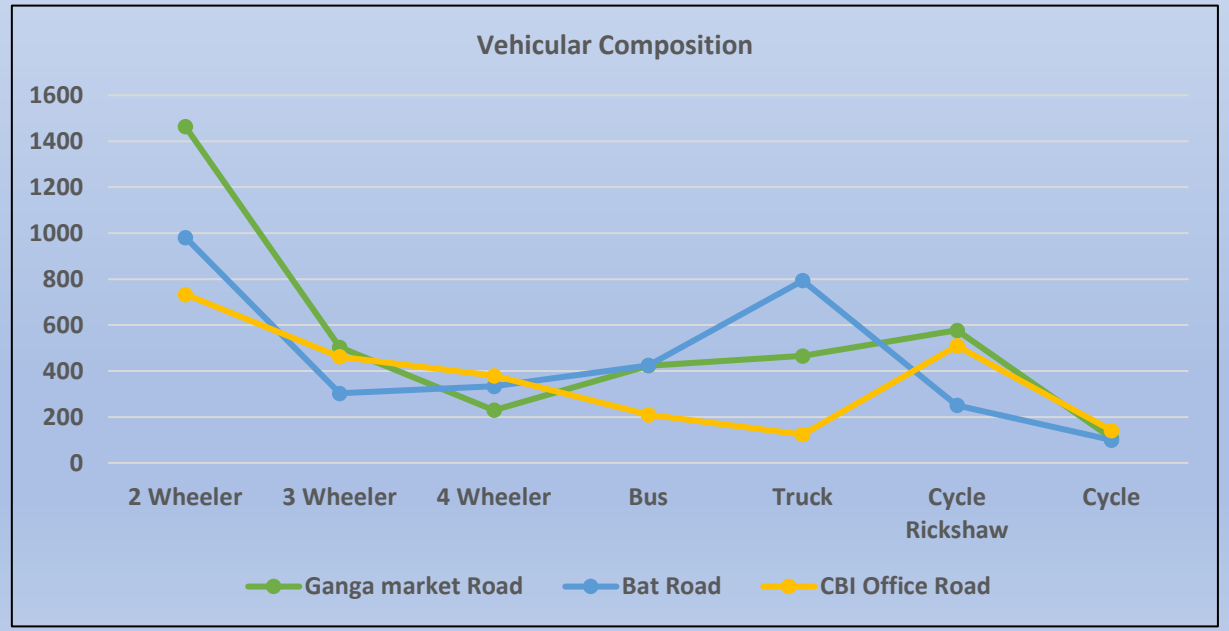


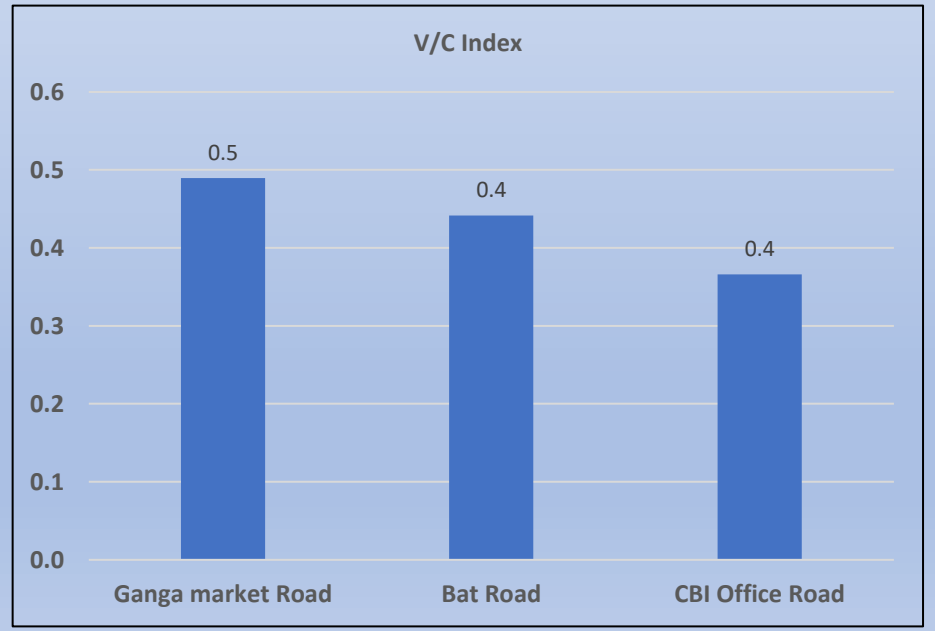


Field survey and Data Analysis

RK Mission Hospital Junction

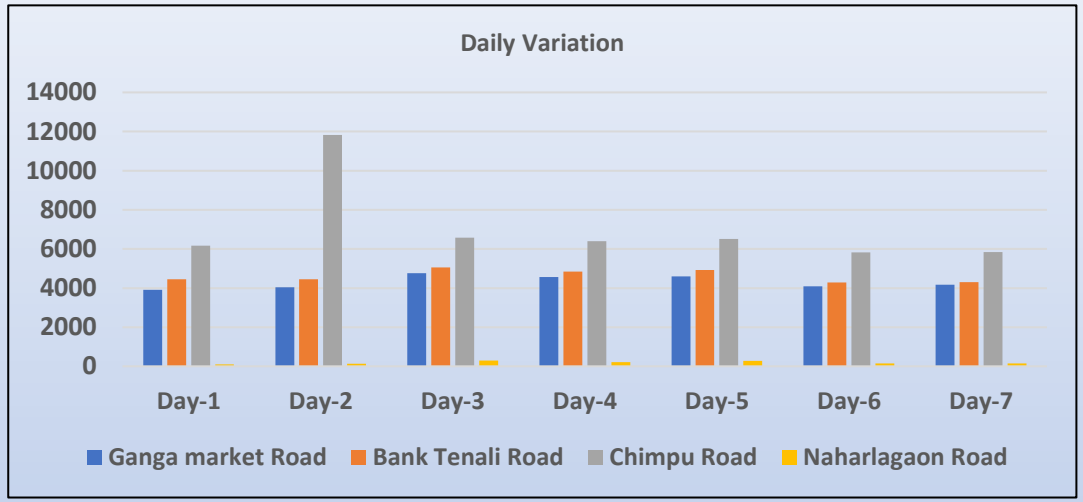


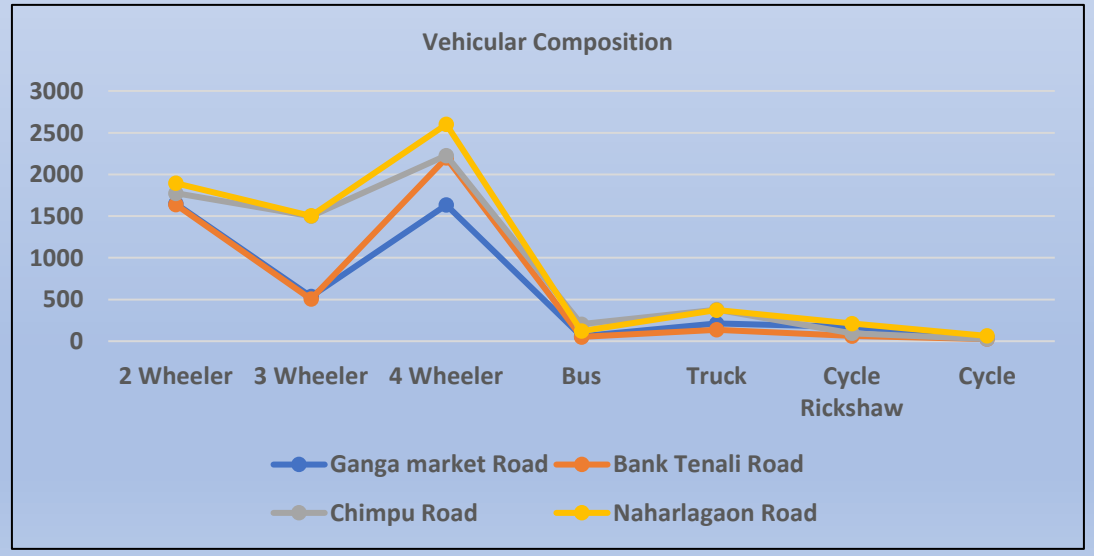


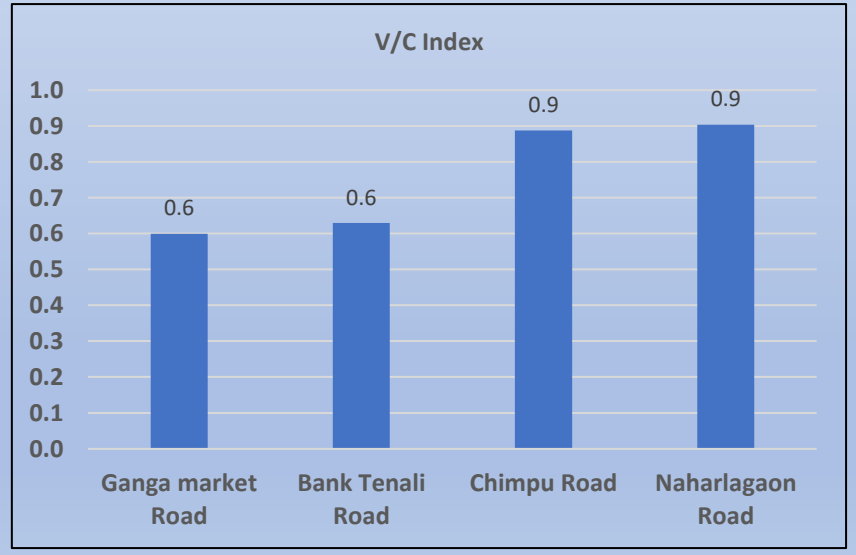


Field survey and Data Analysis

Ganga Market Junction

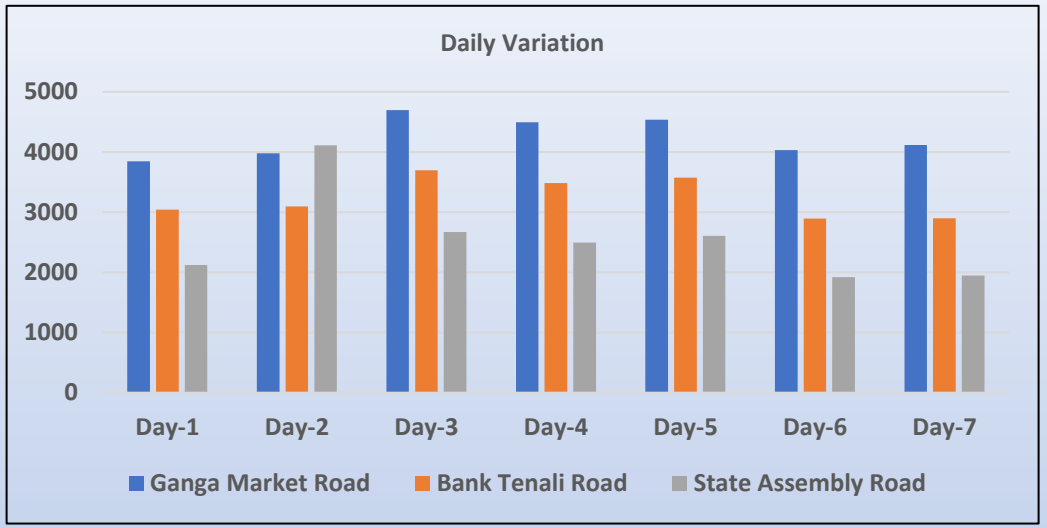


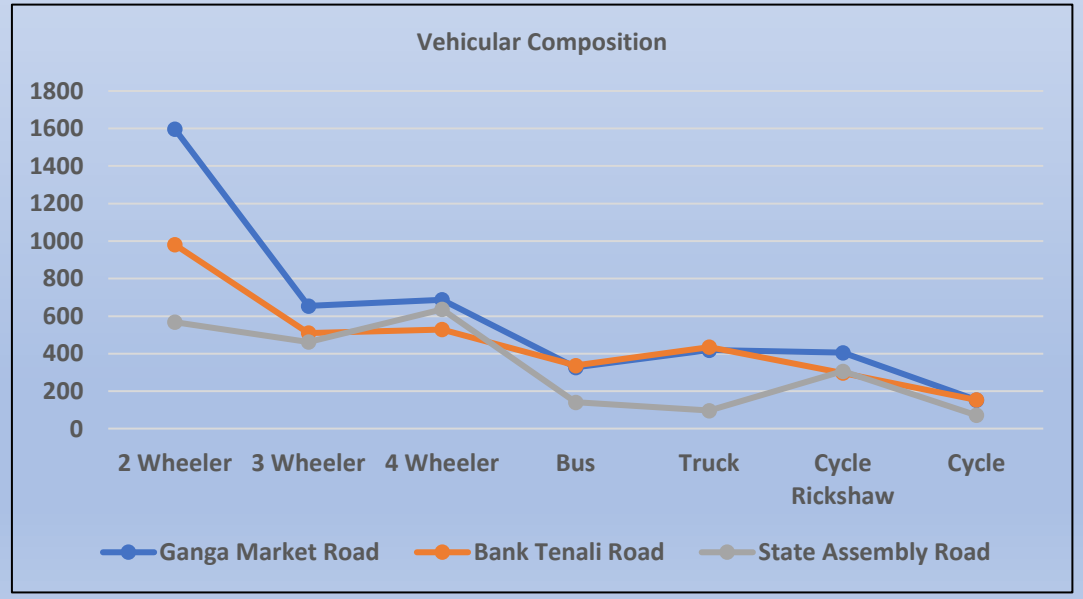


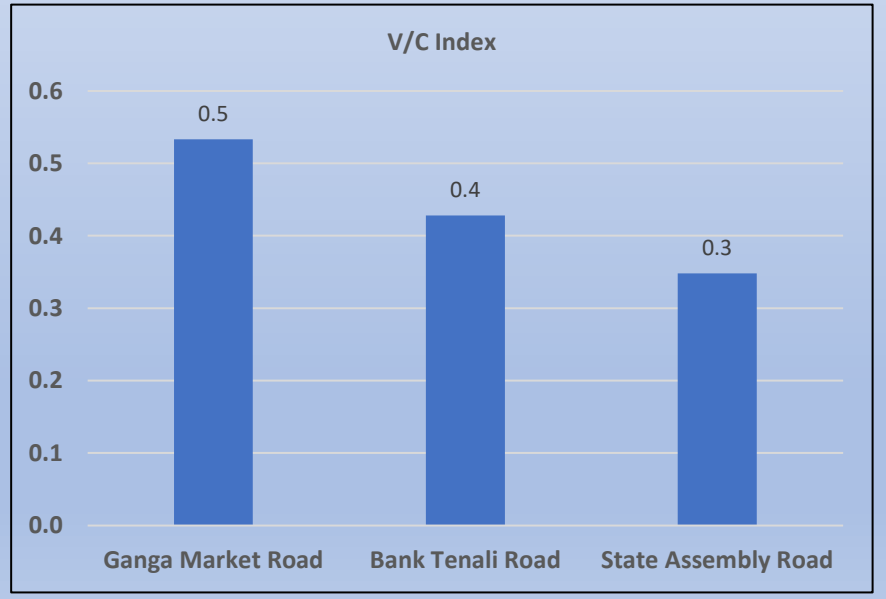


Field survey and Data Analysis

Secretariat Junction

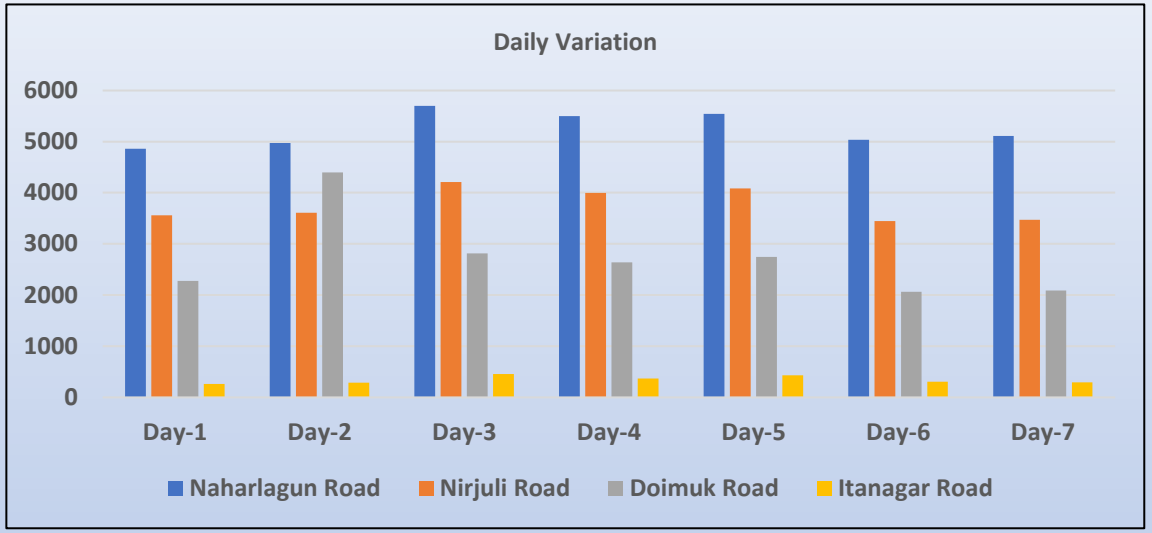


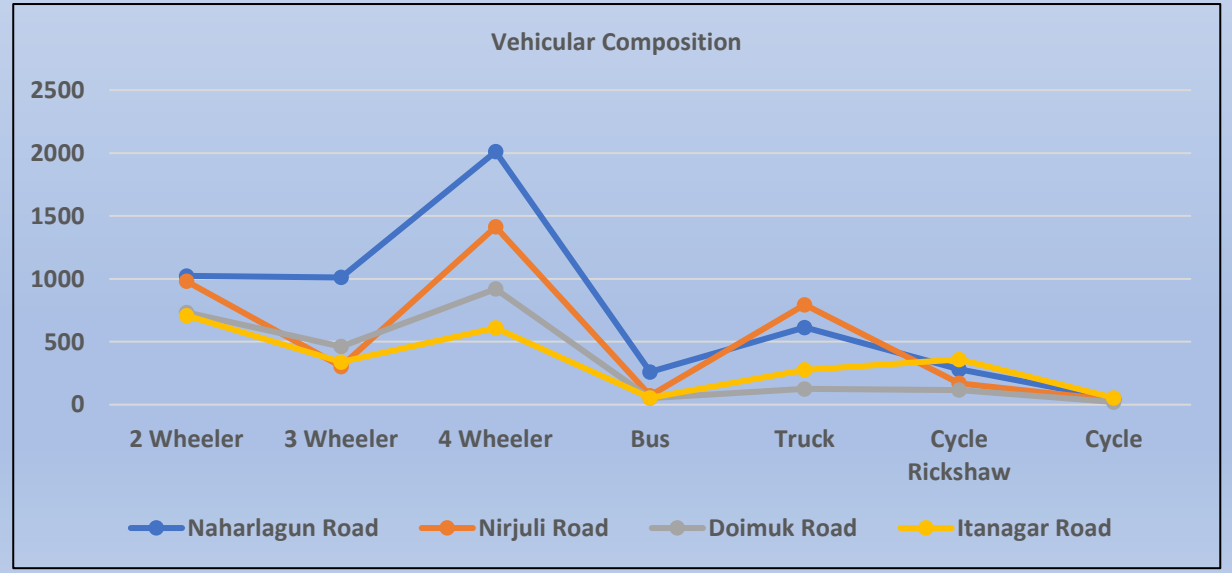


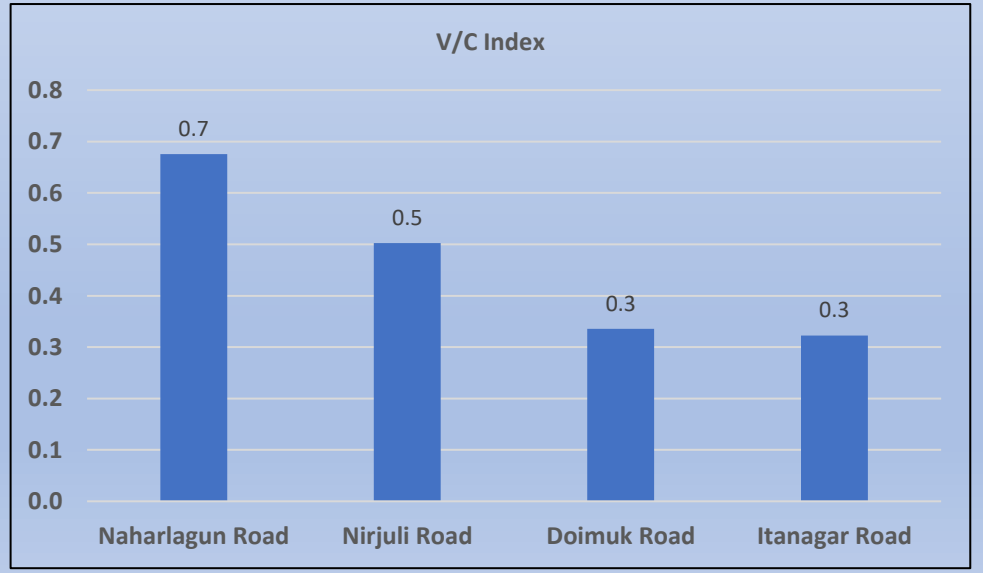


Field survey and Data Analysis

Bank Tinali Junction

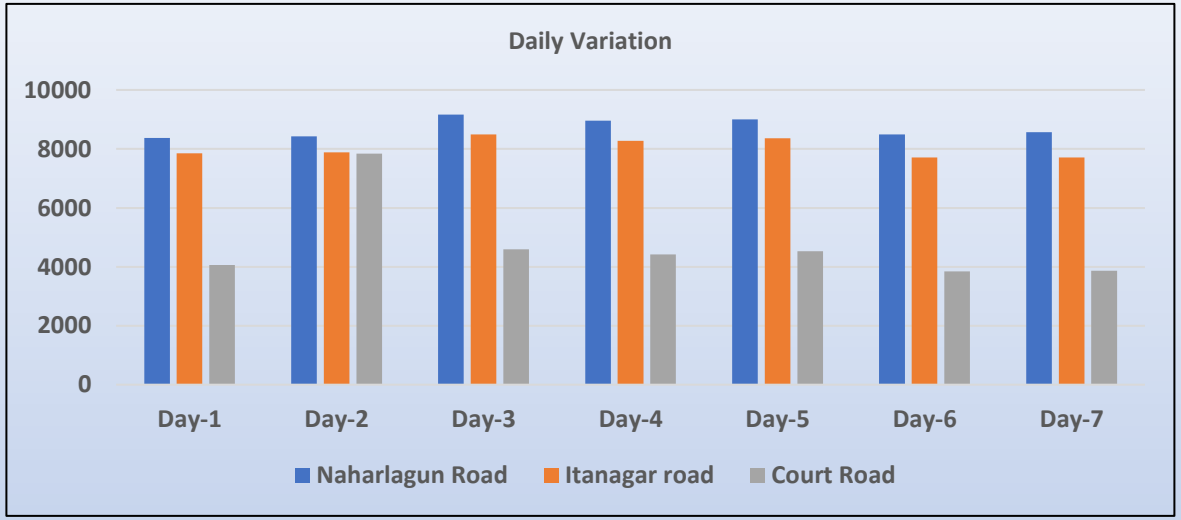


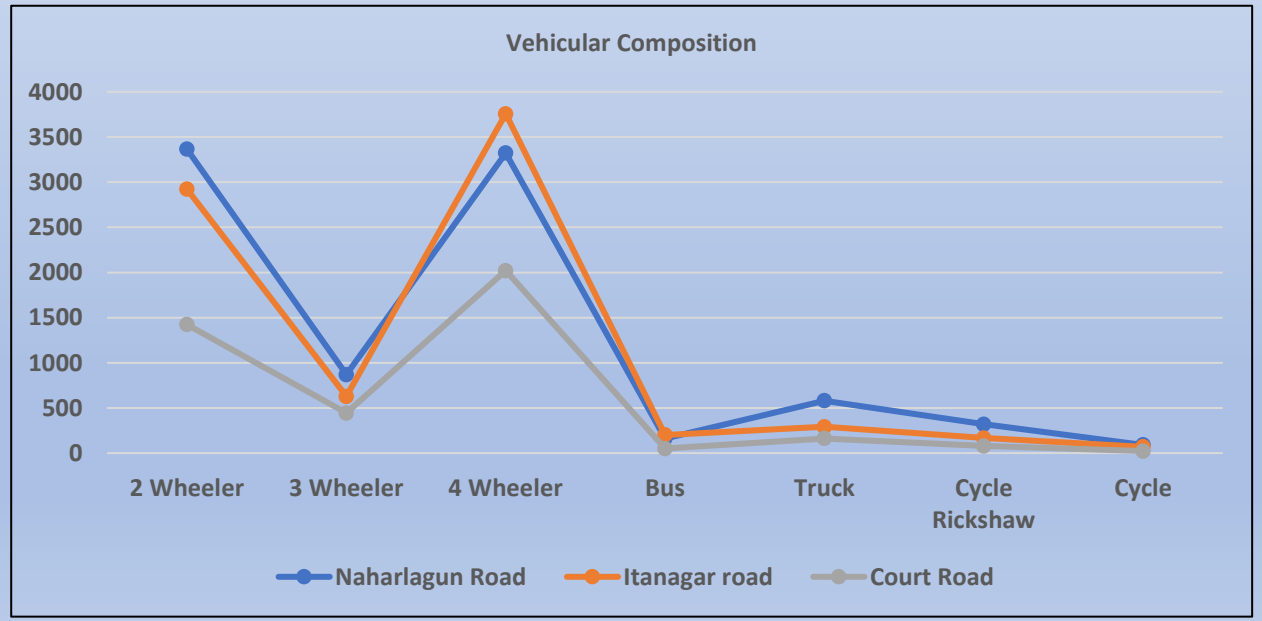


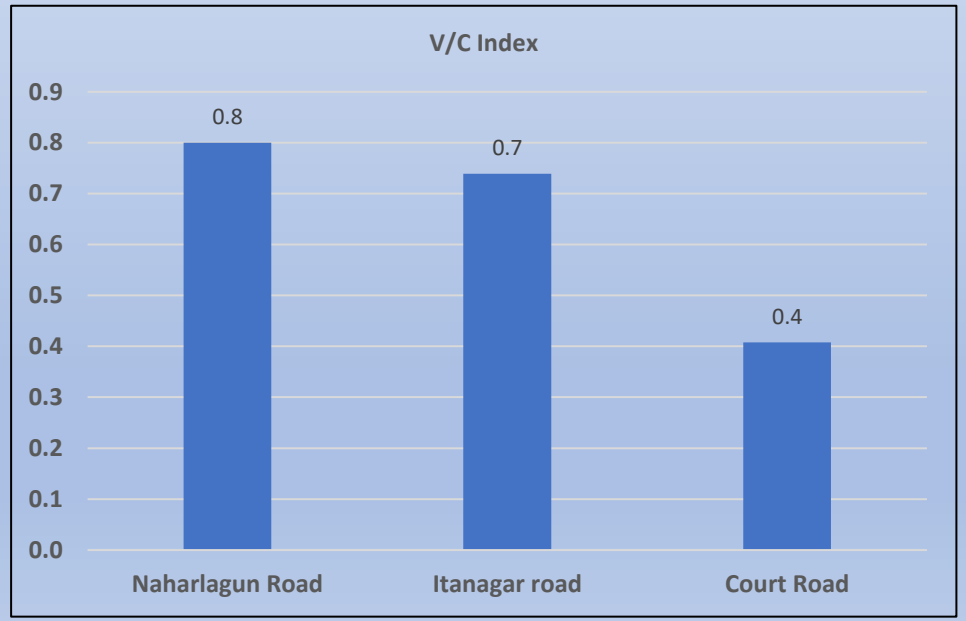


Field survey and Data Analysis

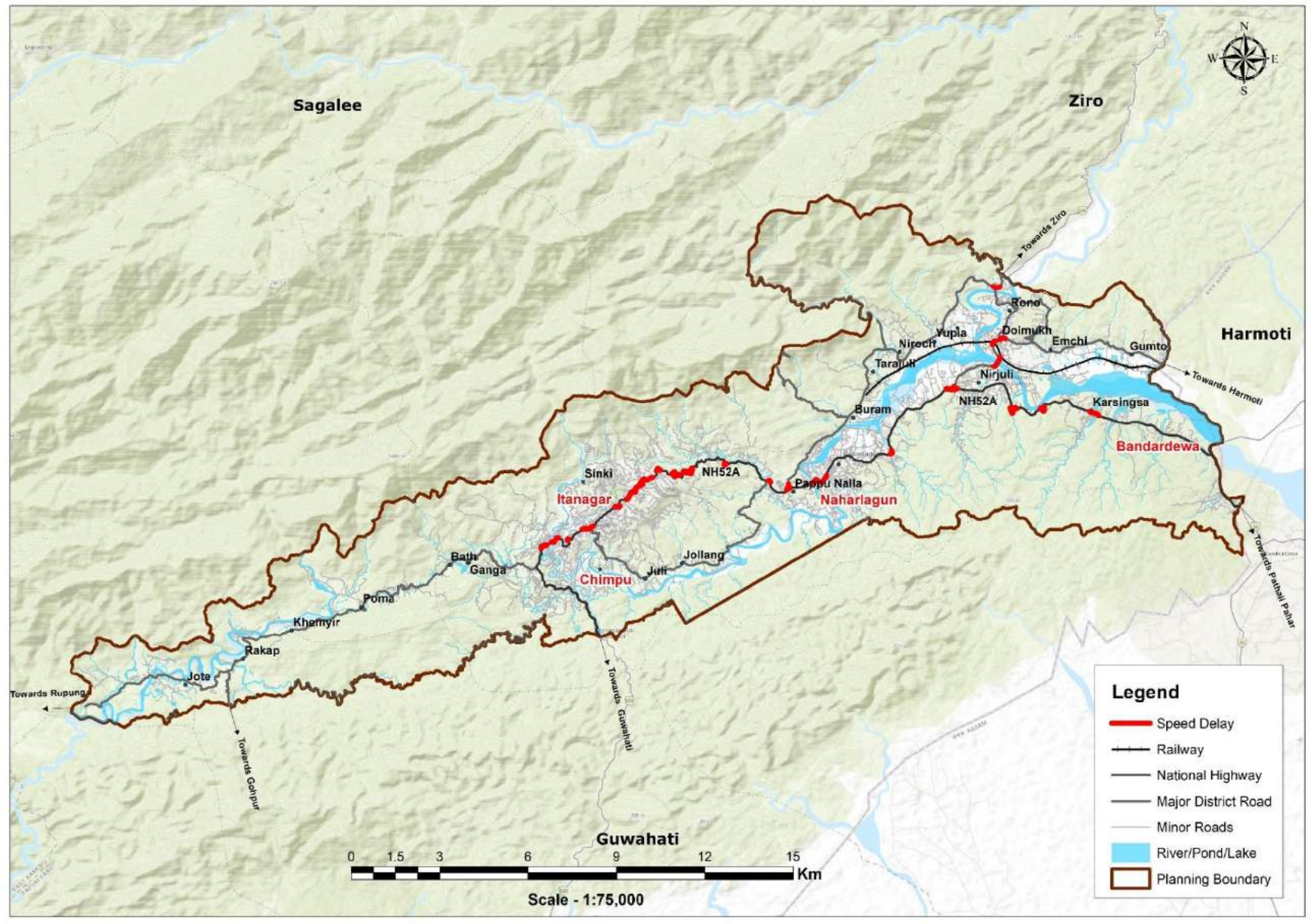
Hathi Matha Junction







Speed and Delay Map



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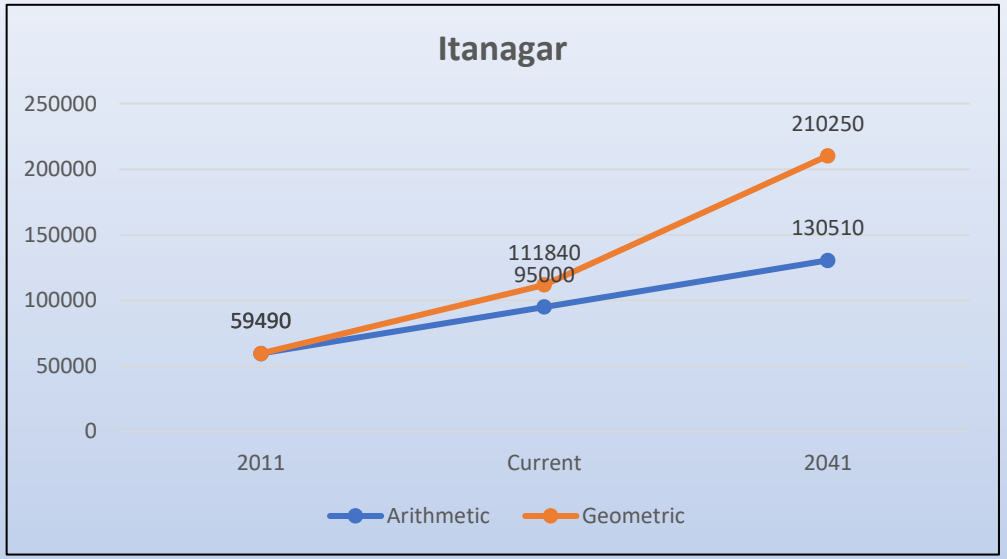
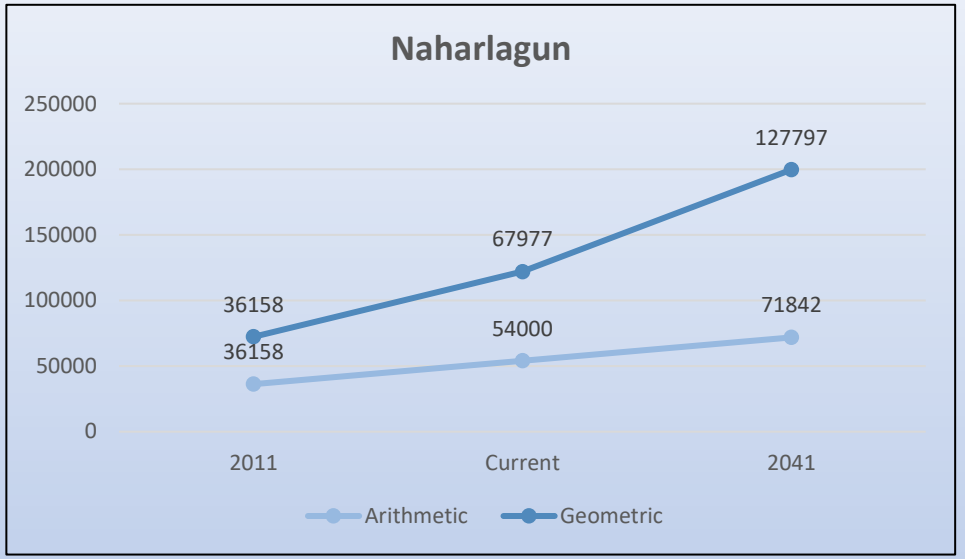
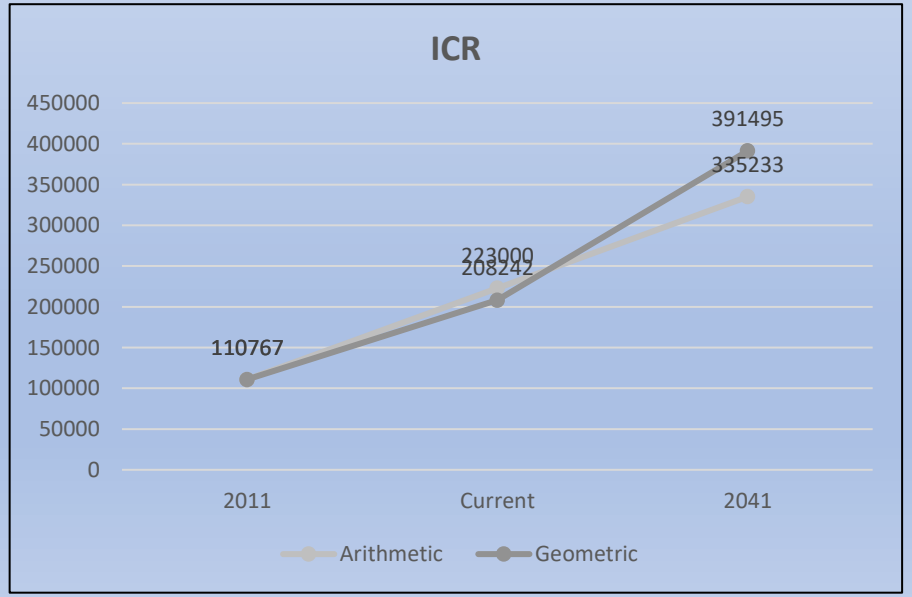
Population Projections





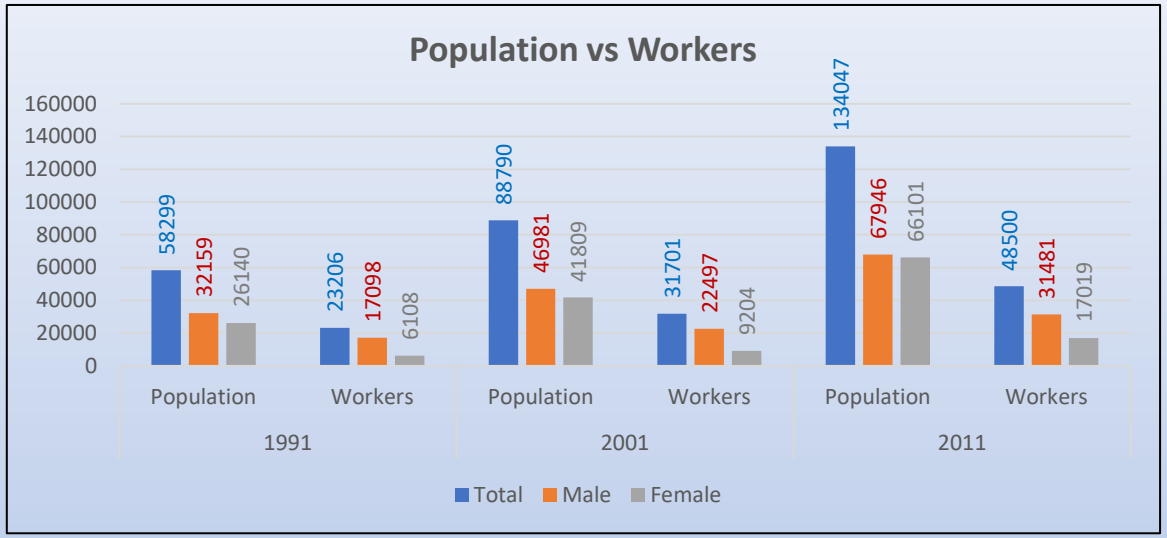
Itanagar	Arithmetic	Geometric
2011	59490	59490
Current	95000	111840
2041	130510	210250

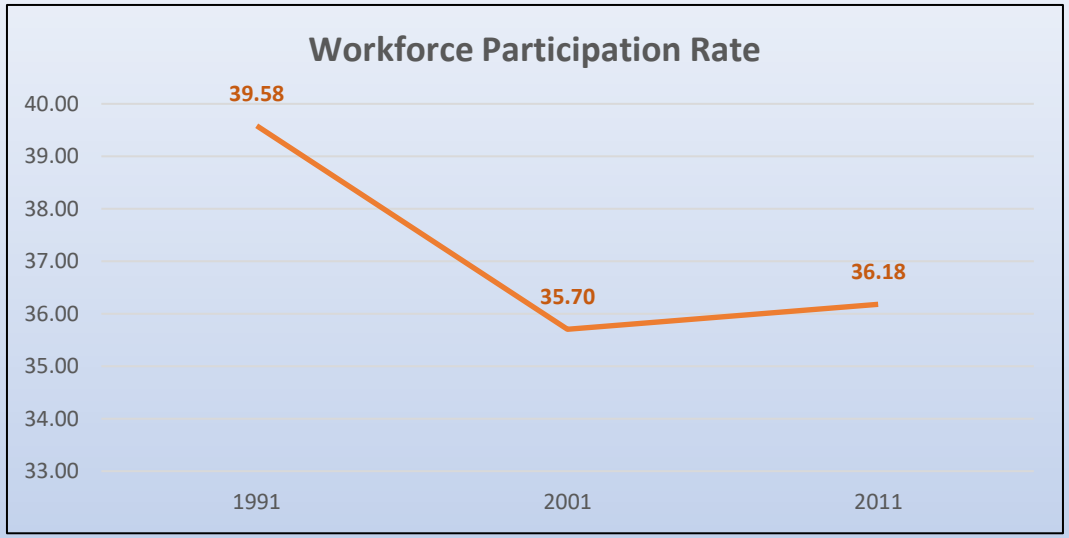


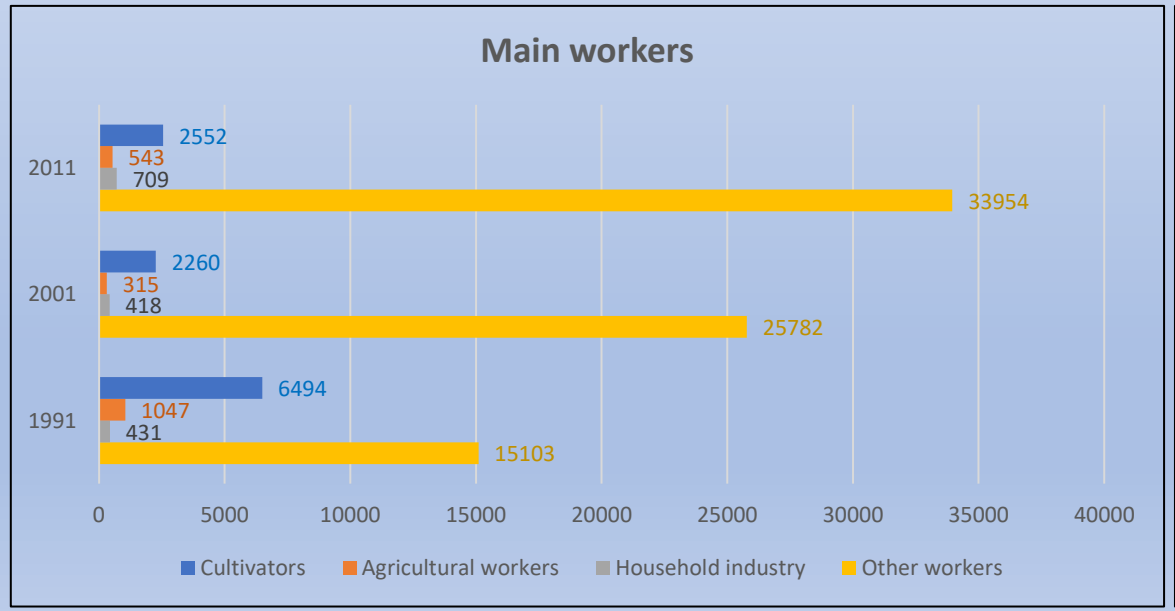
Naharlagun	Arithmetic	Geometric
2011	36158	36158
Current	54000	67977
2041	71842	127797

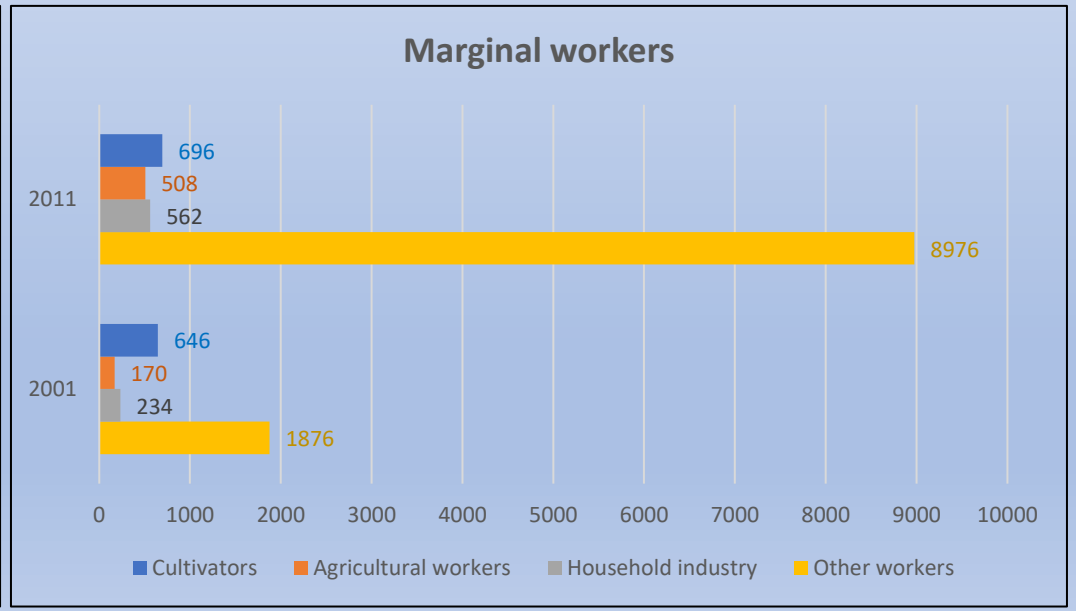
ICR	Arithmetic	Geometric
2011	110767	110767
Current	223000	208242
2041	335233	391495

Employment Rates – ICR area









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Gap Analysis

Infrastructure Deficiency

S.No	Infrastructure	Benchmark Value	Itanagar			Naharlagun			Recommendations
			Projected Population 2038	Existing	Gap	Projected Population 2038	Existing	Gap	
1	**Water Supply**		2,10,250			1,27,797			
a	Coverage of water supply connections	100 %.		46%	54%		42%	58 %	Rehabilitation of old water supply systems, including treatment plant
b	Per capita supply of water	135 lpcd		80lpcd	55 lpcd		70 lpcd	65 lpcd	Special water supply arrangement for difficult areas.
c	Extent of metering of water connections	100%		0%	100 %		0%	100 %	
d	Extent of Non-Revenue Water	20%		20%	0 %		20%	0 %	
e	Continuity of water supply	24 hours		2-3 hrs	21 hours		2-3 hrs	21 hours	
f	Efficiency in redressal of customer complaints	80%		20%	60 %		20%	60 %	
i	Quality of water supplied	100%		-	N/A		-	N/A	Rejuvenation of water bodies specifically for drinking water supply.
j	Cost recovery in water supply services	100%		70%	30 %		70%	30 %	

S.No	Infrastructure	Benchmark Value	Itanagar			Naharlagun			Recommendations
			Projected Population 2038	Existing	Gap	Projected Population 2038	Existing	Gap	
2	**Waste water management (Sewerage & Sanitation)**								
a	Coverage of toilets	100%		92%	8%		85%	15%	
b	Coverage of waste water network services	100%		0%	100%		0%	100%	Rehabilitation of old sewerage system treatment plants
c	Collection efficiency of waste water network	100%		0%	100%		0%	100%	Transportation and treatment in a cost-effective manner
d	Adequacy of waste water treatment capacity	100%	2,10,250	0%	100%	1,27,797	0%	100%	Mechanical and biological cleaning of sewers and septic tank
e	Quality of waste water treatment	100%		0%	100%		0%	100%	
f	Extent of reuse and recycling of waste water	20%		0%	100%		0%	100%	Recycling of water for beneficial purposes and reuse of wastewater.
i	Extent of cost recovery in waste water management	100%		0%	100%		0%	100%	
j	Efficiency in redressal of customer complaints	80%		0%	100%		0%	100%	
k	Efficiency in collection of sewerage related charges	90%		0%	100%		0%	100%	

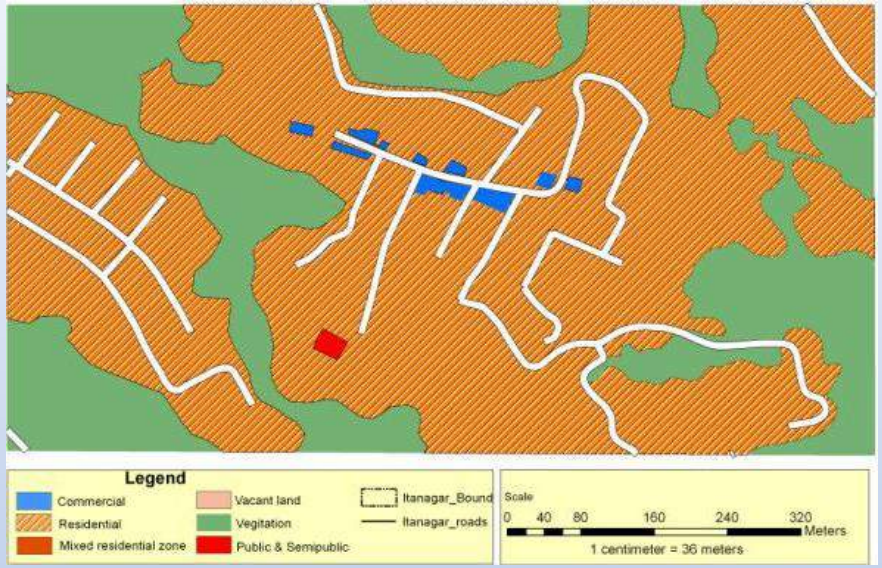
S.No	Infrastructure	Benchmark Value	Itanagar			Naharlagun			Recommendations
			Projected Population 2038	Existing	Gap	Projected Population 2038	Existing	Gap	
3	**Solid Waste Management**								
a	Household level coverage of SWM services	100%		30%	70%		25%	75%	100% Door to Door Collection
b	Efficiency of collection of municipal solid waste	100%		30%	70%		20%	80%	Regular cleaning of the Litter Bins
c	Extent of segregation of municipal solid waste	100%		25%	75%		15%	85%	
d	Extent of municipal solid waste recovered	80%		0%	80%		0%	80%	
e	Extent of scientific disposal of municipal solid waste	100%	**2,10,250**	0%	100%	**1,27,797**	0%	100%	Promotion of Backyard Composting and Vermicomposting
f	Extent of cost recovery in SWM services	100%		10%	90%		10%	90%	
i	Efficiency in redressal of customer complaints	80%		0%	80%		0%	80%	
j	Efficiency in collection of SWM related user related charges	90%		0%	90%		0%	90%	
4	**Storm Water Drainage**								
a	Coverage of Storm water drainage network	100%		49.70%	51.30%		30%	70%	Construction and improvement of drains and storm water drains in order to reduce and eliminate flooding
b	Incidence of water logging / flooding	Zero		-	-		-	-	

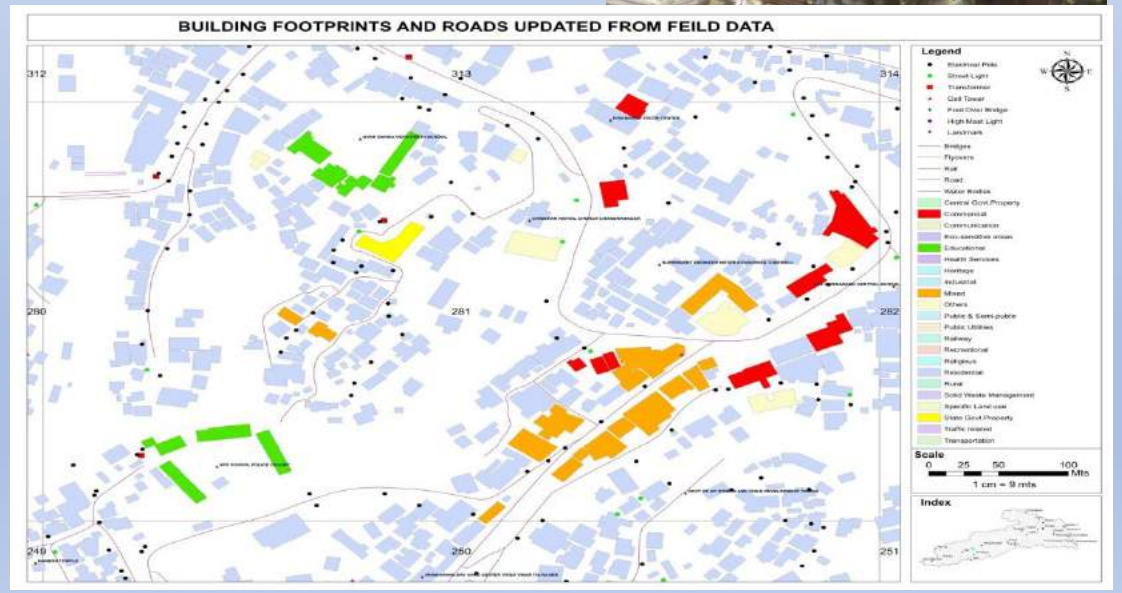
Gap Analysis – ICR area

Sector	Existing Demand	Existing supply	Proposed Demand
Percapita water supply	135 LPCD	80 LPCD	135 LPCD
Water Supply	43.5 MLD	27.5 MLD	72 MLD
Sewerage	No network	No network	5 MLD
SWM	80 MT	60 MT	210 MT
Electricity	27 MW		36 MW
Health	7	20	47
Education	75	101	162

Summary of Surveys

- Infrastructure surveys
- Socio-economic surveys
- Landuse surveys
- Traffic Volume count
- Origin – Destination survey
- Speed & Delay survey
- Road Inventory survey
- Pedestrian survey
- Parking survey





Households Survey (Socio –economic survey)

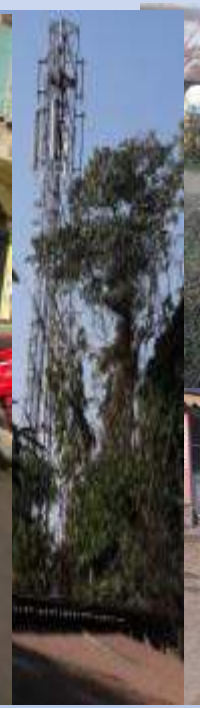








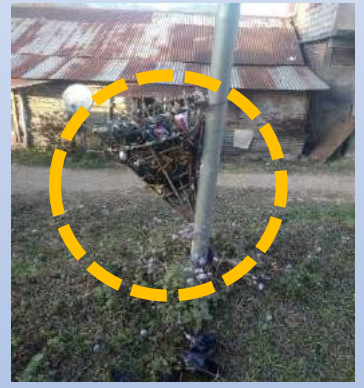




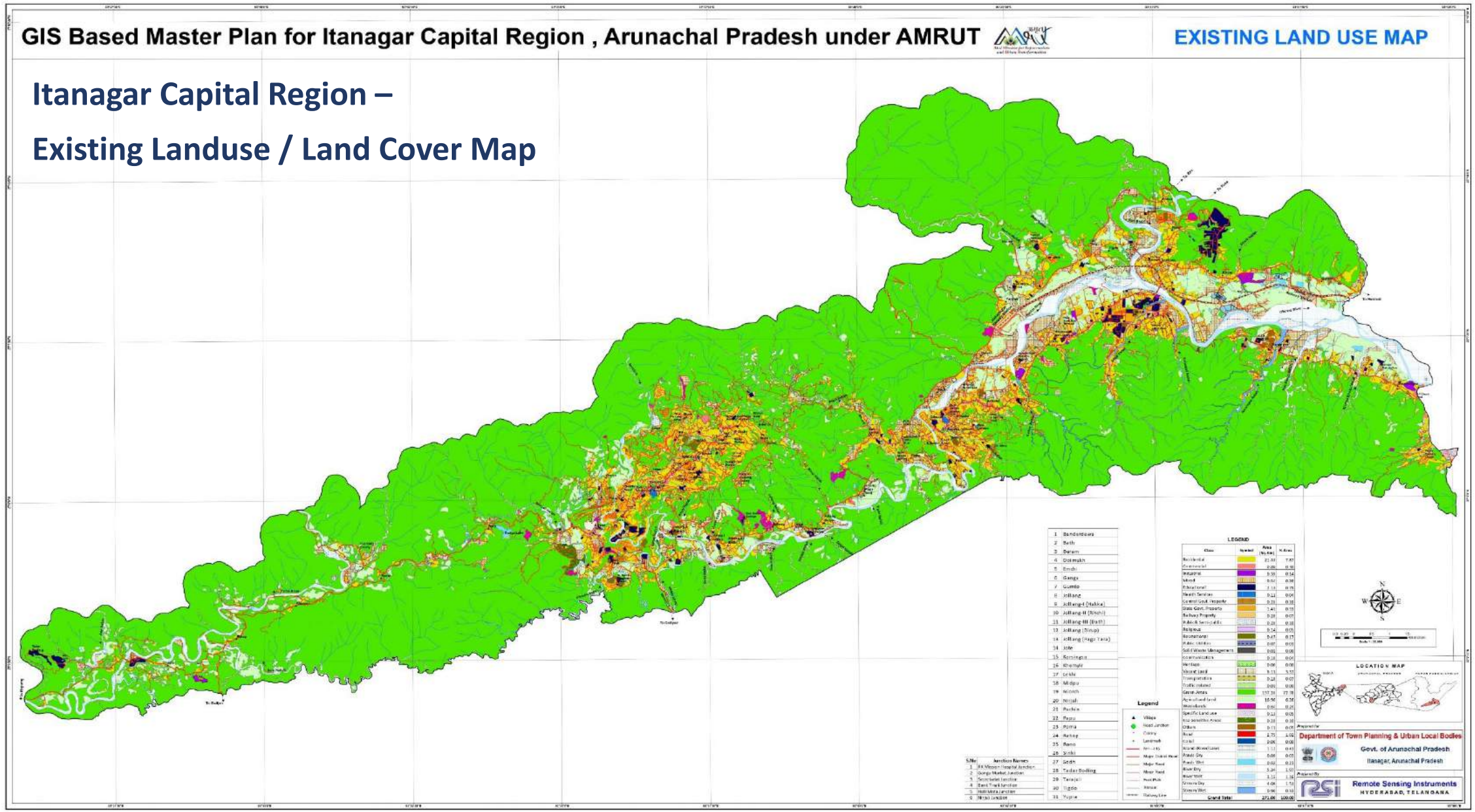
Existing Water supply system

Existing Road Condition

Solid waste dumping



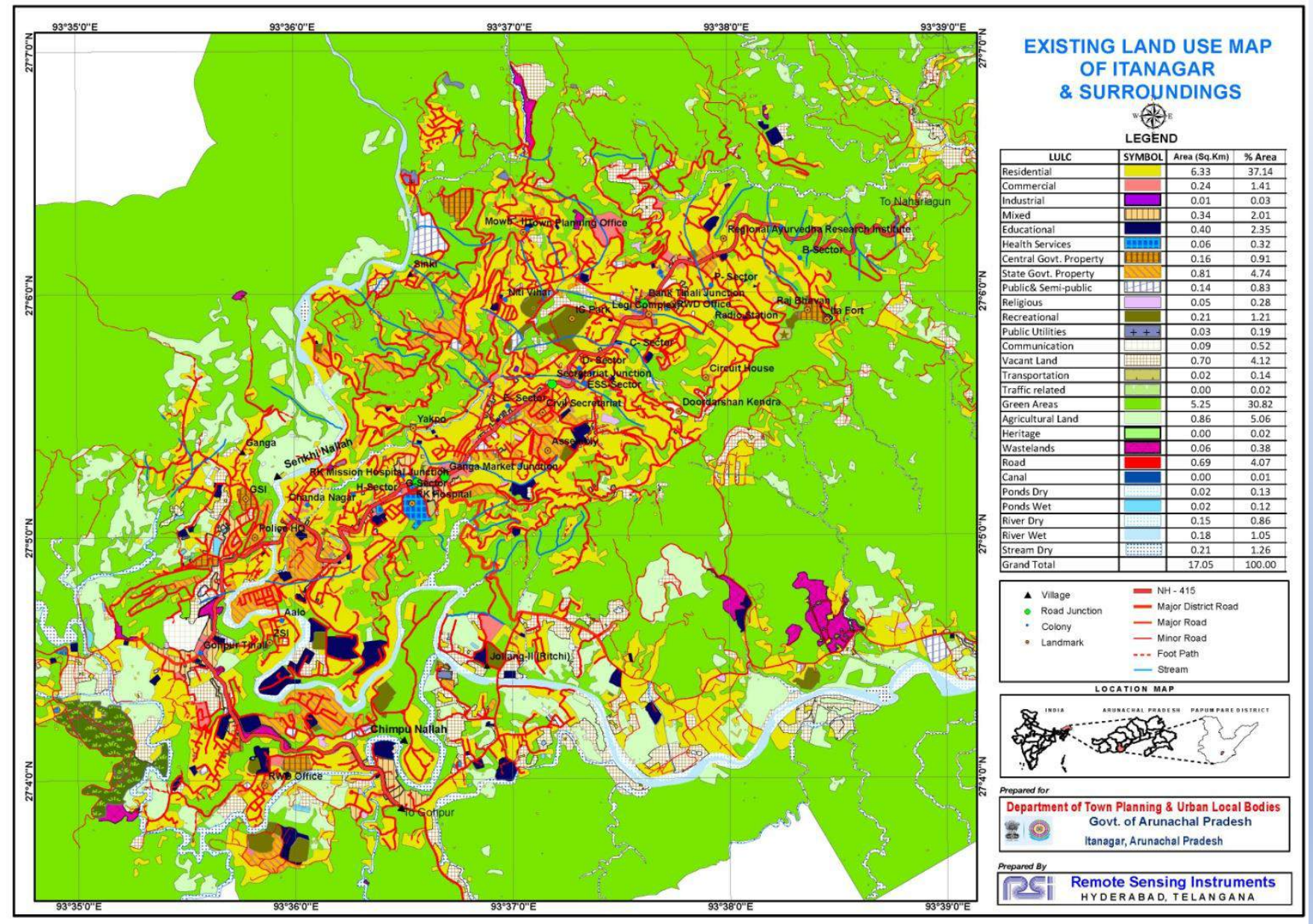
Education facilities


GIS Based Master Plan for Itanagar Capital Region , Arunachal Pradesh under AMRUT
EXISTING LAND USE MAP
Itanagar Capital Region –
Existing Landuse / Land Cover Map
LEGEND
LOCATION MAP
Department of Town Planning & Urban Local Bodies
Govt. of Arunachal Pradesh
Itanagar, Arunachal Pradesh
Remote Sensing Instruments
HYDERABAD, TELANGANA

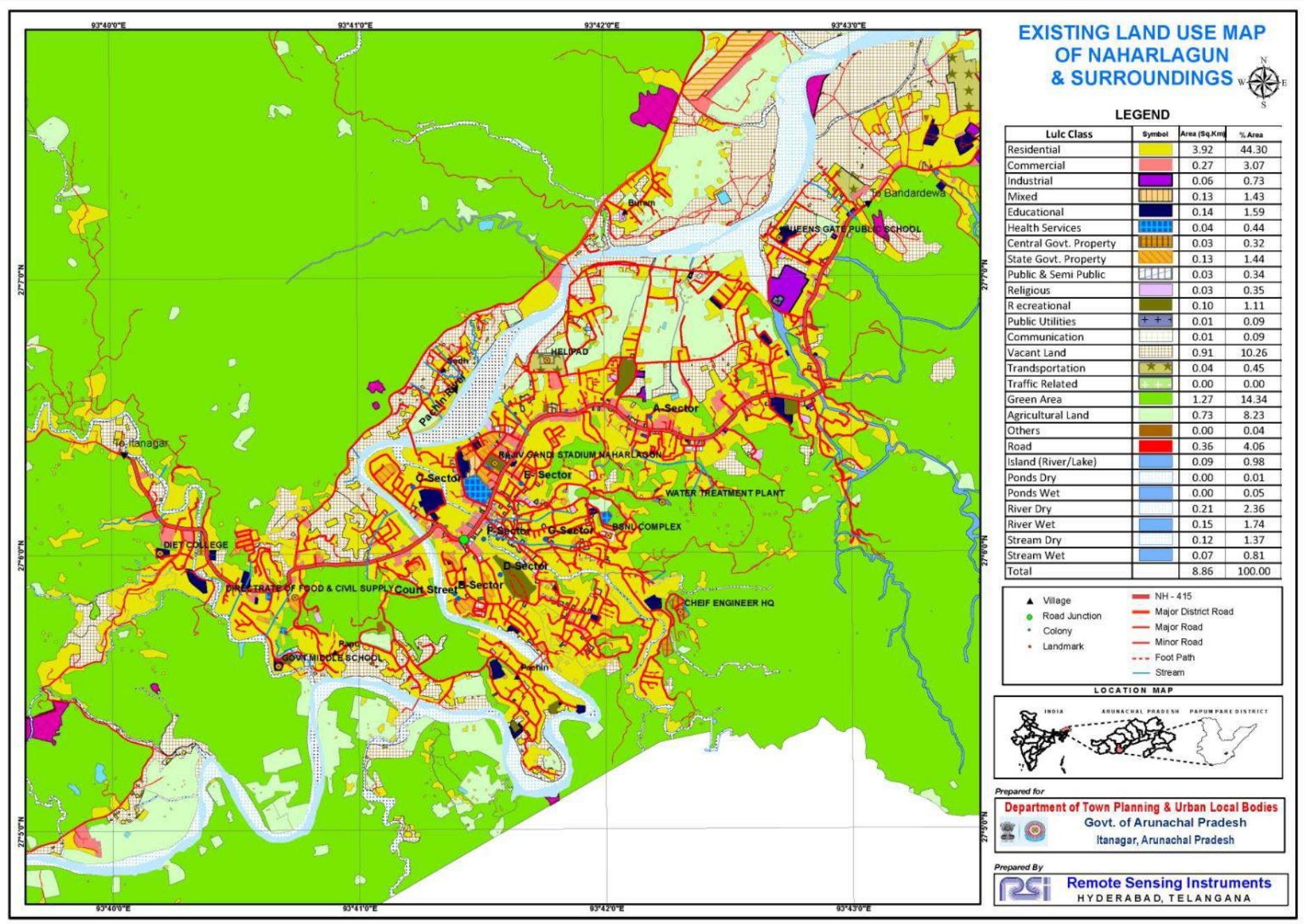
Existing landuse map Legend

CLASS	GEOMETRY	SYMBOL	AREA (Sq.Km)	AREA %
Residential	Polygon		21.30	8.26
Commercial	Polygon		0.78	0.3
Industrial	Polygon		0.38	0.15
Mixed	Polygon		0.55	0.21
Educational	Polygon		2.09	0.81
Health Services	Polygon		0.10	0.04
Central Govt.Property	Polygon		0.25	0.10
State Govt.Property	Polygon		1.68	0.65
Railway Properties	Polygon		0.10	0.00
Public & Semi Public	Polygon		0.24	0.09
Religious	Polygon		0.14	0.06
Recreational	Polygon		0.47	0.18
Public Utilities	Polygon		0.06	0.02
Solid Waste Management	Polygon		0.01	0.00
Communication	Polygon		0.10	0.04
Heritage	Polygon		0.00	0.00
Slum	Polygon		----------	----------
Vacant Land	Polygon		9.17	3.56
Transportation	Polygon		0.35	0.14
Traffic Related	Polygon		0.01	0.00
Rural	Polygon		----------	----------
Green Areas	Polygon		124.44	48.25
Agricultural Land	Polygon		16.97	6.584
Wet Lands	Polygon		----------	----------
Waste Lands	Polygon		0.64	0.25
Specific Land Use	Polygon		0.02	0.01
Eco-Sensitive Areas	Polygon		0.28	0.11
Others	Polygon		0.13	0.05
Water Bodies	Polygon		15.16	5.88
Road	Polygon		2.73	1.06
National Highway	Line	NH-415	----------	----------
Rail	Line		----------	----------
Bridges	Line		----------	----------

ITANAGAR – Existing Landuse/ Land Cover Map



NAHARLAGUN – Existing Landuse/ Land Cover Map



Developmental challenges

- Integrated planning and development of these settlements is therefore, necessary keeping in view future growth. **The pattern of development in the Capital Region is linear, with poles/ nodes of commercial and related activities along the NH 52A**.
- **Pressures of urban expansion and resultant land necessities have caused a spillover of urban activities on ecologically fragile hill slopes. Some of these areas are part of the Wild Life Sanctuary or Reserved Forest**.
- The Region is concentrated into a small area where all major activities take place. In the past 10 years, it is observed that there has been **very little growth in the outward direction**. However, there is **increase in density within the core region of the ICR. The city is not growing outward because of the lack of connectivity and poor coverage of basic infrastructure.**

SWOT Analysis

WATER SUPPLY			
Strengths	**Weaknesses**	**Opportunities**	**Threats**
-Availability of ground water sources sufficient to cater the population of horizon year 2041 in the urban area. -The water from bore wells is of potable quality.	-No coverage with metered connection. 54% of total Population doesn't have pipe water supply. -Intermittent water supply for duration of 4 hours a day. -Inadequate power supply to supply water for longer period of time. -The existing water pipelines are more than 10 years old. -Shortage of technical manpower both at ULB and state level.	-100% metering will lead to 100% collection of water taxes, thereby increasing the revenue. -Improvement in quality of water supply. -Per capita supply of 135 lpcd with adequate pressure in town, especially in outer areas.	-Pollution concerns in ICR due to the presence of soap and other industries and lack of proper sewerage and solid waste management system. -Untreated sewage disposal to open areas and surface water sources will result in water pollution.

SWOT Analysis

SEWERAGE			
Strengths	**Weaknesses**	**Opportunities**	**Threats**
-Topography of the town to provide easy passage to sewage.	-Current system is unplanned and constructed in a haphazard manner. -Large-scale investment is required. -No sewage treatment plan.	-People are aware about the problems due to lack of sewerage network.	-Sewage is getting mixed with storm water drains polluting natural water bodies. -Limited resources available for ULB

STORM WATER DRAINAGE			
Strengths	**Weaknesses**	**Opportunities**	**Threats**
-Topography of the town to provide easy passage to storm water -Town is generally free from major water logging and flooding.	-Dumping of solid waste in drains resulting in clogging -Discharge of untreated sewage into storm water drains and then into ponds and Nallah -Absence of storm water drainage in squatter settlements	-Opportunity to use natural drains as recreational spots -Opportunity to practice rain water harvesting	-Pollution of natural drains and ponds by untreated sewage -Construction of storm water drains in narrow streets and squatter settlements is challenging -Huge investment is required for the development of storm water drains

SWOT Analysis

SOLID WASTE MANAGEMENT			
Strengths	**Weaknesses**	**Opportunities**	**Threats**
-Due to high percentage of organic waste, setting up of compost plant or vermin compost or manure pits would be successful -Willingness of citizens to pay -Availability of Land for setting up infrastructure	-No door to door collection of waste -Open dumping of waste -No segregation of waste -Dumping of waste in drains -No recycling methods are adopted	-Manure pits or compost plants can be developed -Recycling can be practiced -Collection of user charges can be a source of income for ULB	-Environmental degradation -Ignorance of public on solid waste management

POWER SUPPLY			
Strengths	**Weaknesses**	**Opportunities**	**Threats**
-Initiatives are taken towards electrifying all households within the municipal area	-Adjoining villages have poor electrification -Heavy investment is required	-100% electrification can have a positive impact in overall living conditions of the people of Chakulia. -Solar power can be used in villages that are not well electrified	-Theft in the sector, especially for unmetered connections

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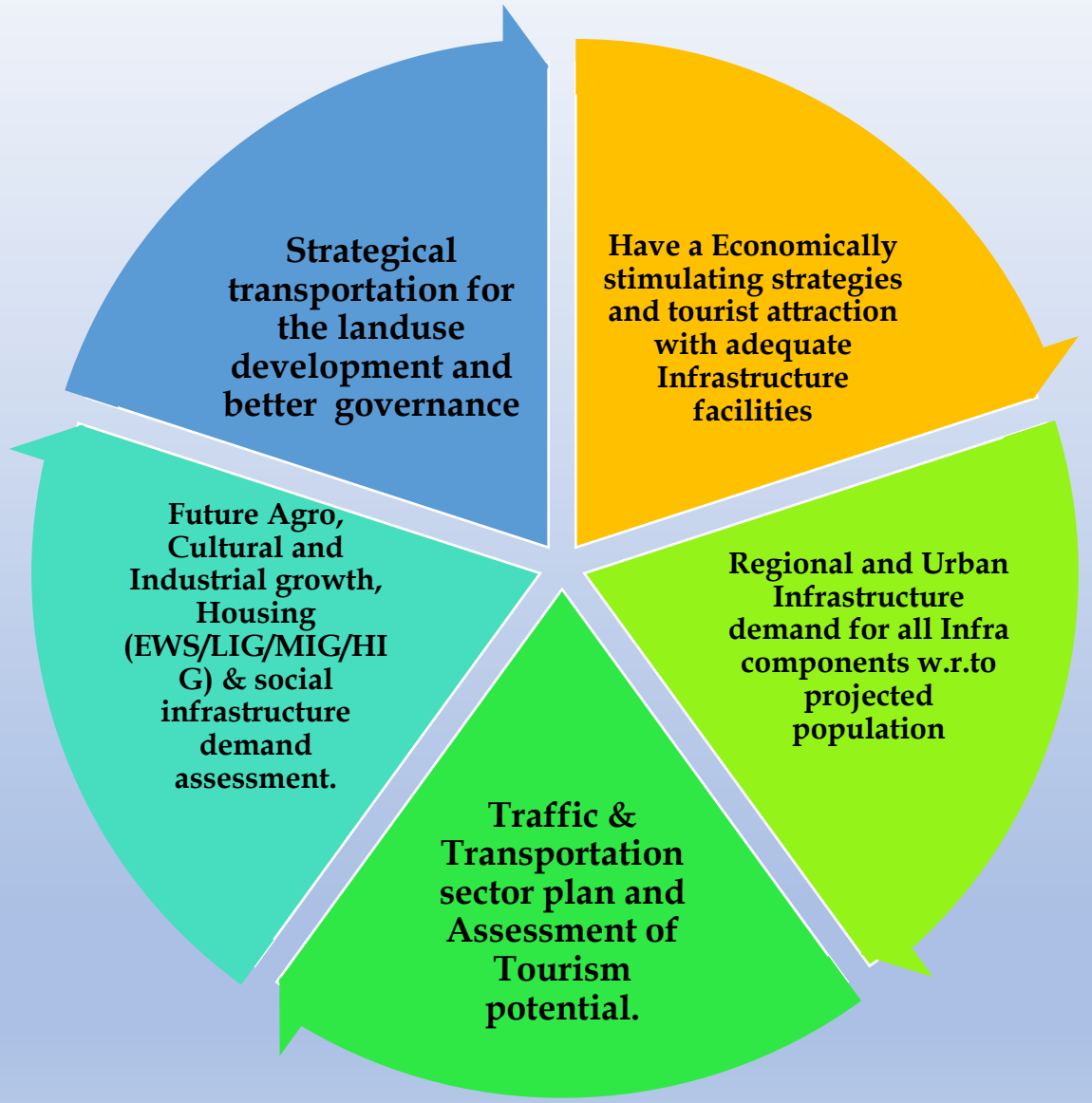
VISION



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Comment proposed Date	Comments proposed by	Comments received	Action taken
25th June, 2019	CERC members	Rotary/roundabout proposal near Bank Tinali junction has an obstruction for the implementation. There is an old monument in the proposed redesign that needs prior approval.	Incorporated in the Bank Tenali Junction proposals
		Additional alternate routes in the ICR region. – Karsingsa to Juli road, Hollongi to Naharlagun via Chimpu road, Y-international road to DTCP office.	Incorporated in the New roads proposals
		Provision of spaces for commercial hubs not only along the road but also in some dedicated areas of the region.	Incorporated in the Commercial areas map proposals
		River front development along with a cultural hub and commercial hub.	Incorporated in the Tourism proposal
		Public transit facilities – government and private owned services sufficiency, transport planning, provision of necessary bus shelters.	Incoporated in the Transportation map
26th June, 2019	Departmental and Stakeholder`s meeting	Existing parking lots and proposals for necessary best parking spaces along the corridors.	Incoporated in the Transportation & Parking map
		Solid waste dumpsite alternate site.	Incorporated in the proposed SWM map
		Telecom network representation on the map.	Incorporated in the Base map
		Bus bay – public transit.	Incorporated Ganga market Junction proposals
		Green spaces and zones provision in the ICR region.	Incorporated in theTourism proposals
		Health care – 250 bed hospital in ICR region.	Incorporated in the proposed landuse map
July, 2019	Departmental review	Addition of point location data, proposed link roads, bridges and demarcation of conservation areas	Incorporated in the future landuse map
June, 2020	Departmental review	Incorporation of Water supply network map, Optical fiber grid map and Ward boundary maps	Incorporated in Basemap, Existing and Proposed Landuse maps

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Transportation Development Proposal

Road widening

- Road widening Rama Krishna Mission Junction Stretch of 4.1 kms.
- Road widening Hati Matha Junction Stretch of 3.4 kms.
- Road widening Banderdewa Junction Stretch of 2.8 kms.

Development of new roads

- By pass road from Rakap to Karsingsa
- Interconnection road from Bath village to Bypass road
- Hakka village to Donyi Polo
- Itanagar to Tarajuli
- Two road interconnections in the Itanagar city

Footpaths

- Provision of footpaths of 1.8 mts wide along Ganga Market road in Itanagar
- Provision of footpaths of 1.8 mts wide along Hathi Mata stretch in Naharlagun
- Provision of footpaths of 1.8 mts wide along Nirjuli stretch
- Provision of footpaths of 1.8 mts wide along Bandardewa stretch

Inter connecting bridge

- Inter connecting bridge linking Naharlagun railway station road and National highway-415

Flyover

- Provision of flyover at Bank tenali and Ganga Market

Mono Rail/Cable Car

Alternative routes

- Alternative route from Itanagar to Near Pappu Nalla via Juli Basti Road
- Alternative route from Pappu Nalla to Rono basti via Yupia and Kula Camp
- Alternative route from Nirjuli to Bandar dewa via Doimukh, Emchi and Gumto

Junction improvement

- Rama Krishna mission hospital junction
- Ganga Market junction
- Secretariat junction
- Bank Tinali junction
- Hathi matha junction
- Nirjuli junction

Transportation Development Proposal

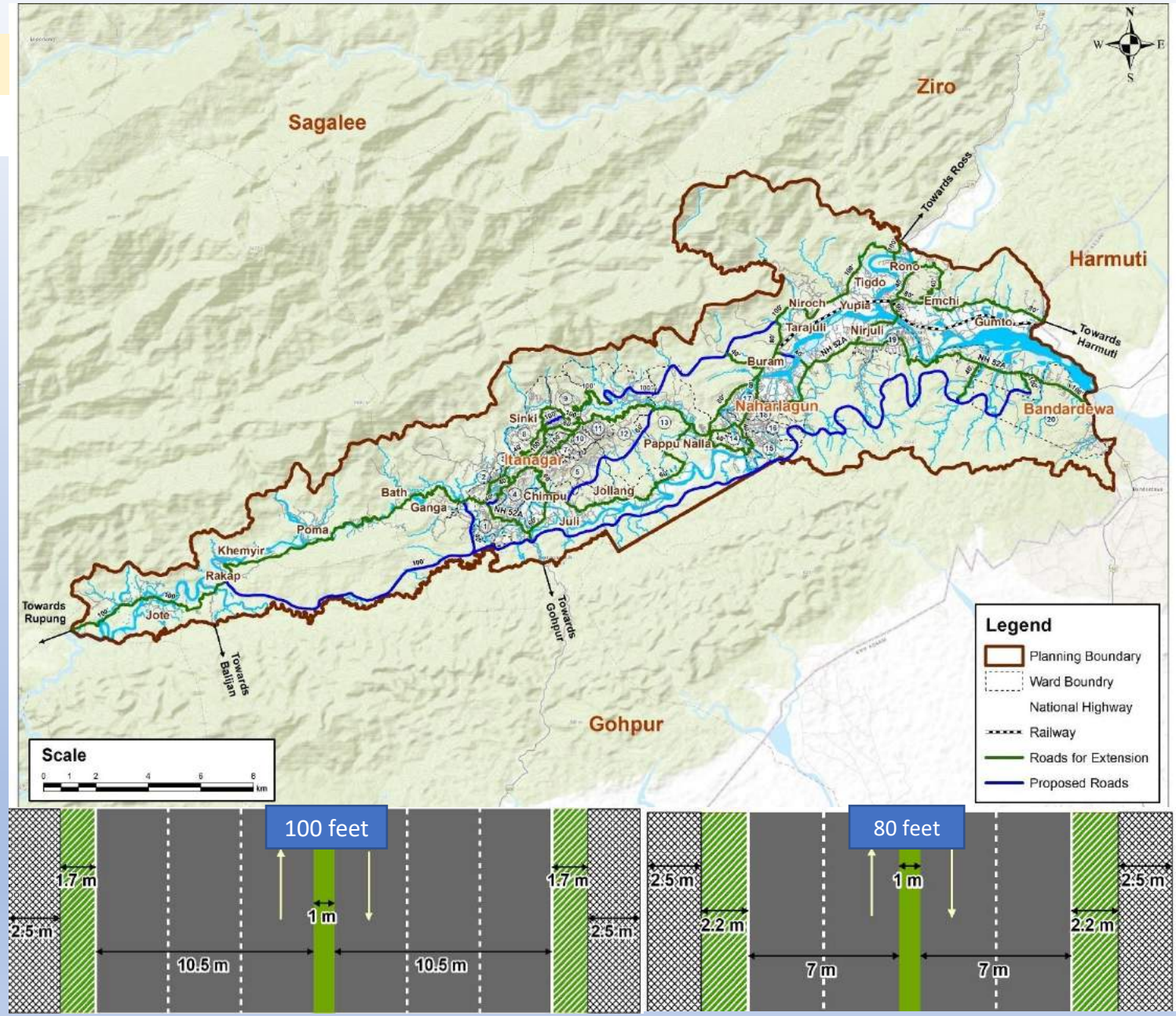
Road widening

The proposed stretches of road for the extension/widening are-

1. Rama Krishna Mission Hospital stretch
2. Hathi Matha Junction stretch
3. Banderdewa Junction stretch
4. Interconnecting roads

- 125.4 kms of total existing roads are proposed to be widened

The length of the proposed road widening, is to maintain the carriageway of 100 feet of the total road with 3 lanes on either directional arms of the road..



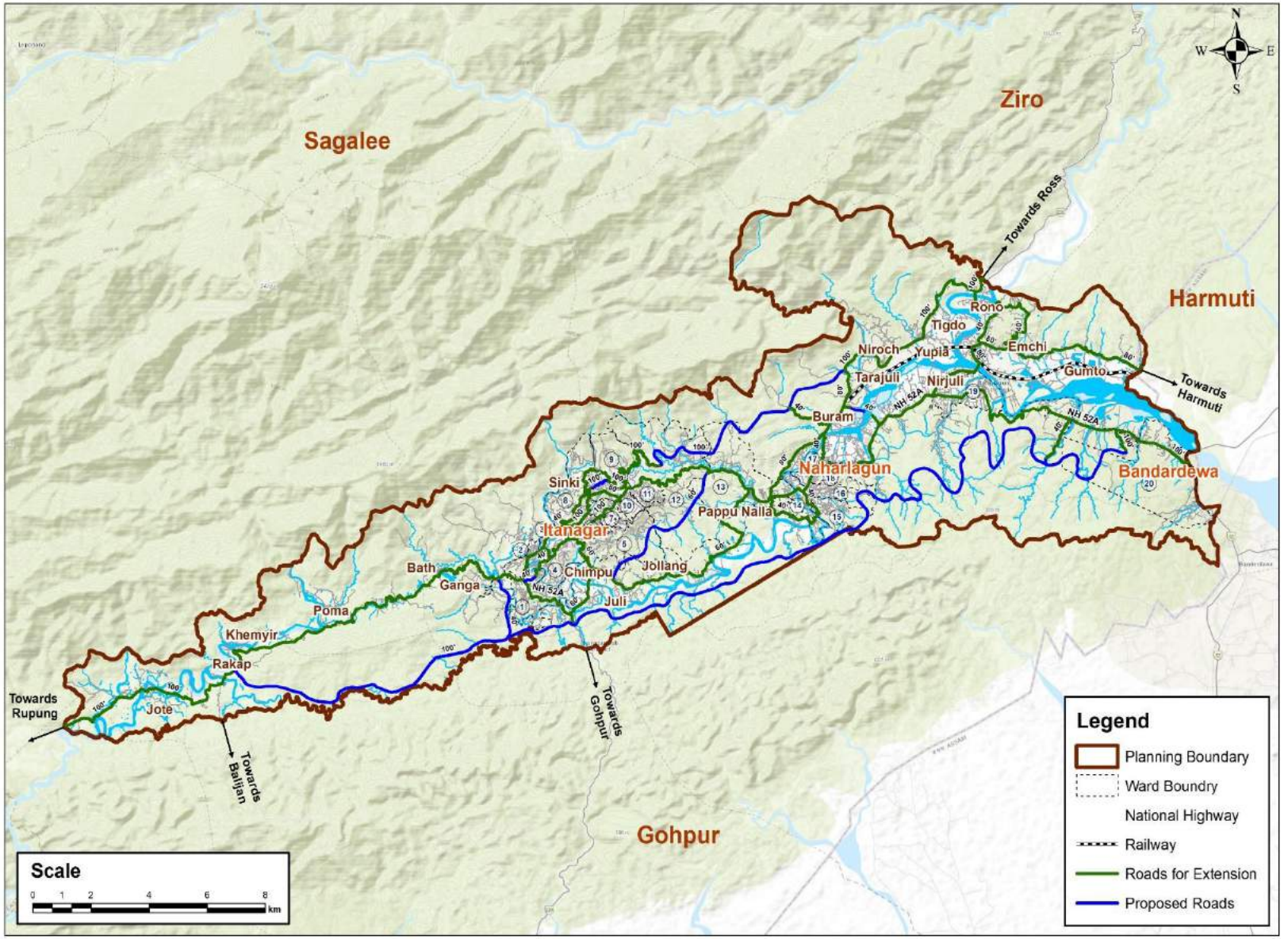
Transportation Development Proposal

Development of New Roads

A total stretch of 61.4 kms of new roads are proposed to be developed in the ICR region.

The proposed five stretches of road widening are

1. By pass road from Rakap to Karsingsa – 42 kms
2. Interconnection road from Bath village to Bypass road – 2.15 kms
3. Hakka village to Donyi Polo – 5.43 kms
4. Itanagar to Tarajuli – 9.41 kms
5. Two road interconnections in the Itanagar city – 0.35 kms



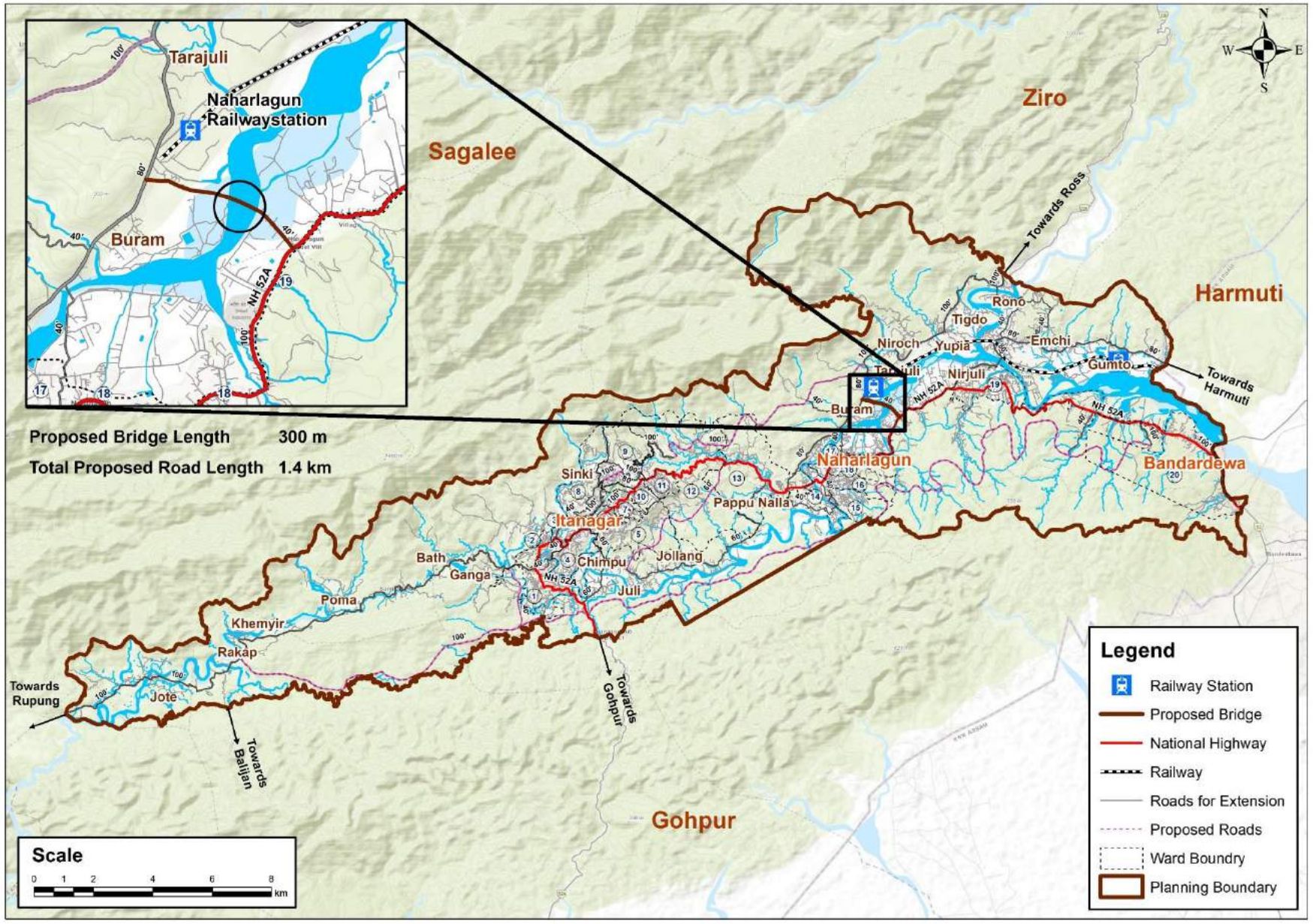
Transportation Development Proposal

Interconnecting Bridge

Proposition of Interconnecting bridge

Bridge to be provided connecting to railway station and state highway 415, which reduces the traffic flow and is convenient to enter into the city from railway station. Alternative routes have been identified along NH 415.

	EXISTING	PROPOSED
DISTANCE	8 kms	1.4 kms
TIME	1 hour 40 minutes	Less than 30 minutes



Transportation Development Proposal

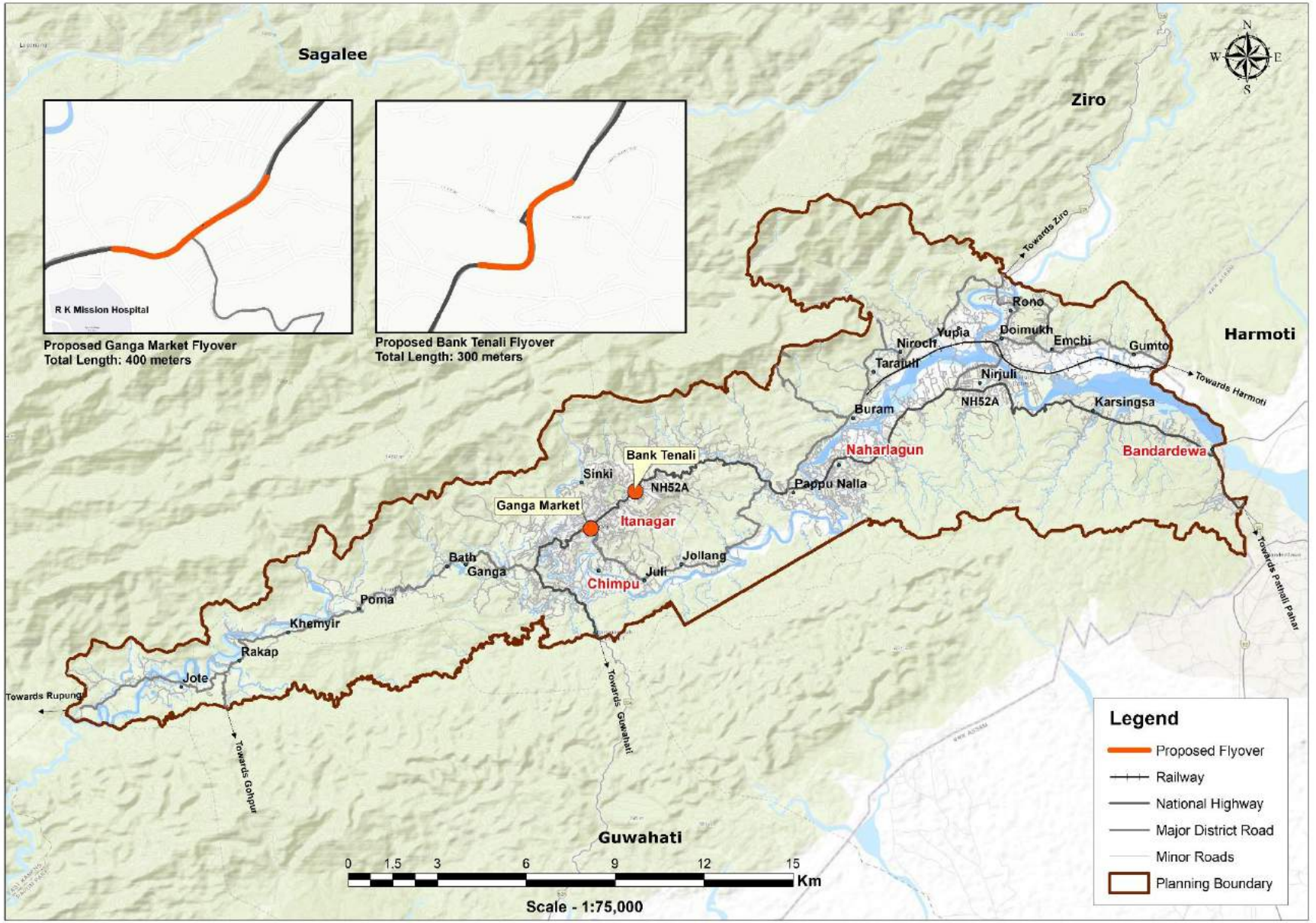
Flyover

Proposing Flyover at Ganga Market and Bank Tenali

To regulate the traffic stress on the roads and maintain uninterrupted traffic flow in the major junctions of the city, construction of flyovers is proposed in the two major junctions of the ICR regions i.e.

Ganga market junction – 400 mts flyover

Bank Tinali junction – 300 mts flyover

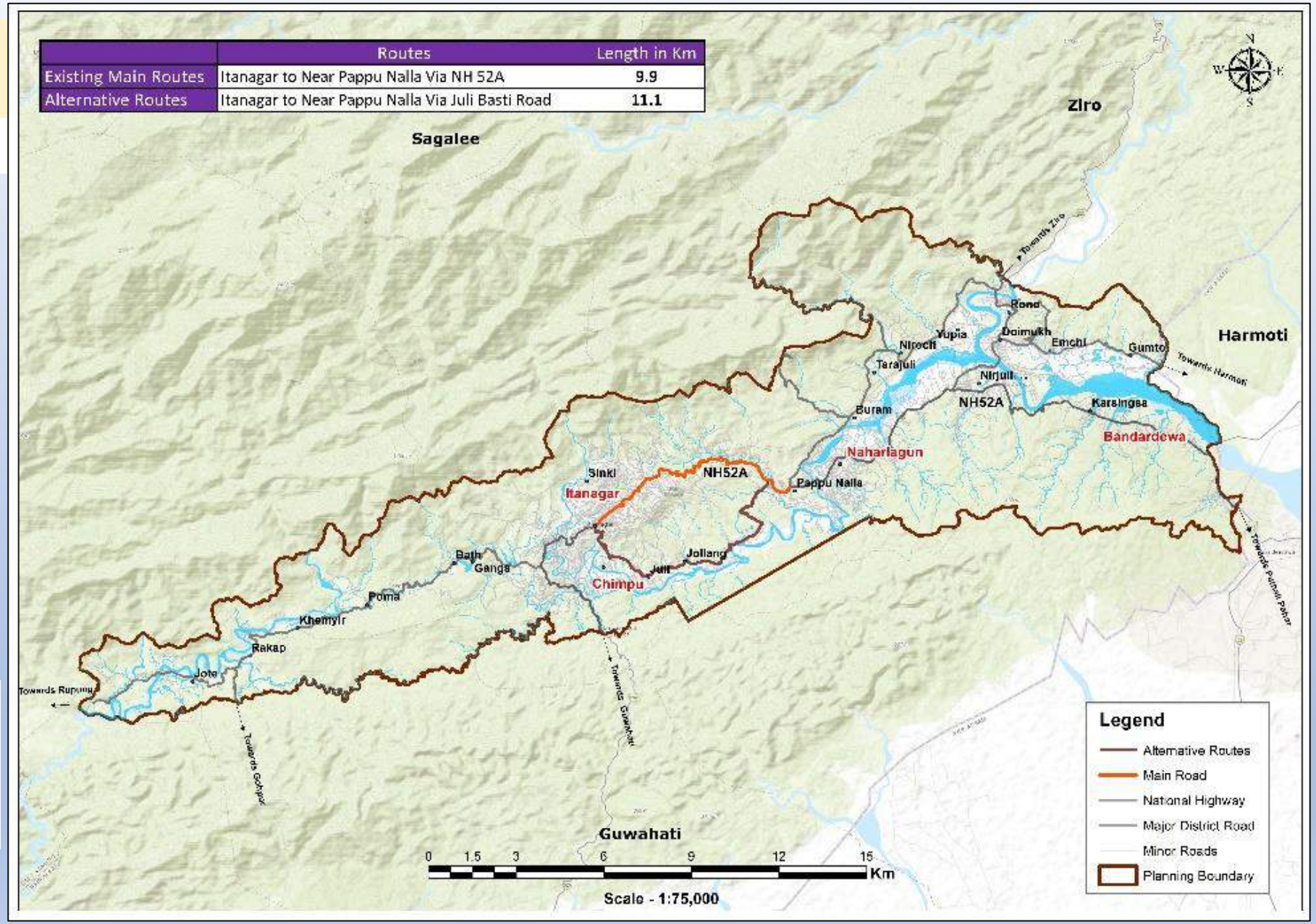


Transportation Development Proposal

Alternative Route Proposal - 1

Alternative Route 1 : Itanagr to near Pappu Nalla Via Juli Basti Road

	EXISTING	PROPOSED
DISTANCE	9.9 km	11.1
TIME	35 mins	40 minutes

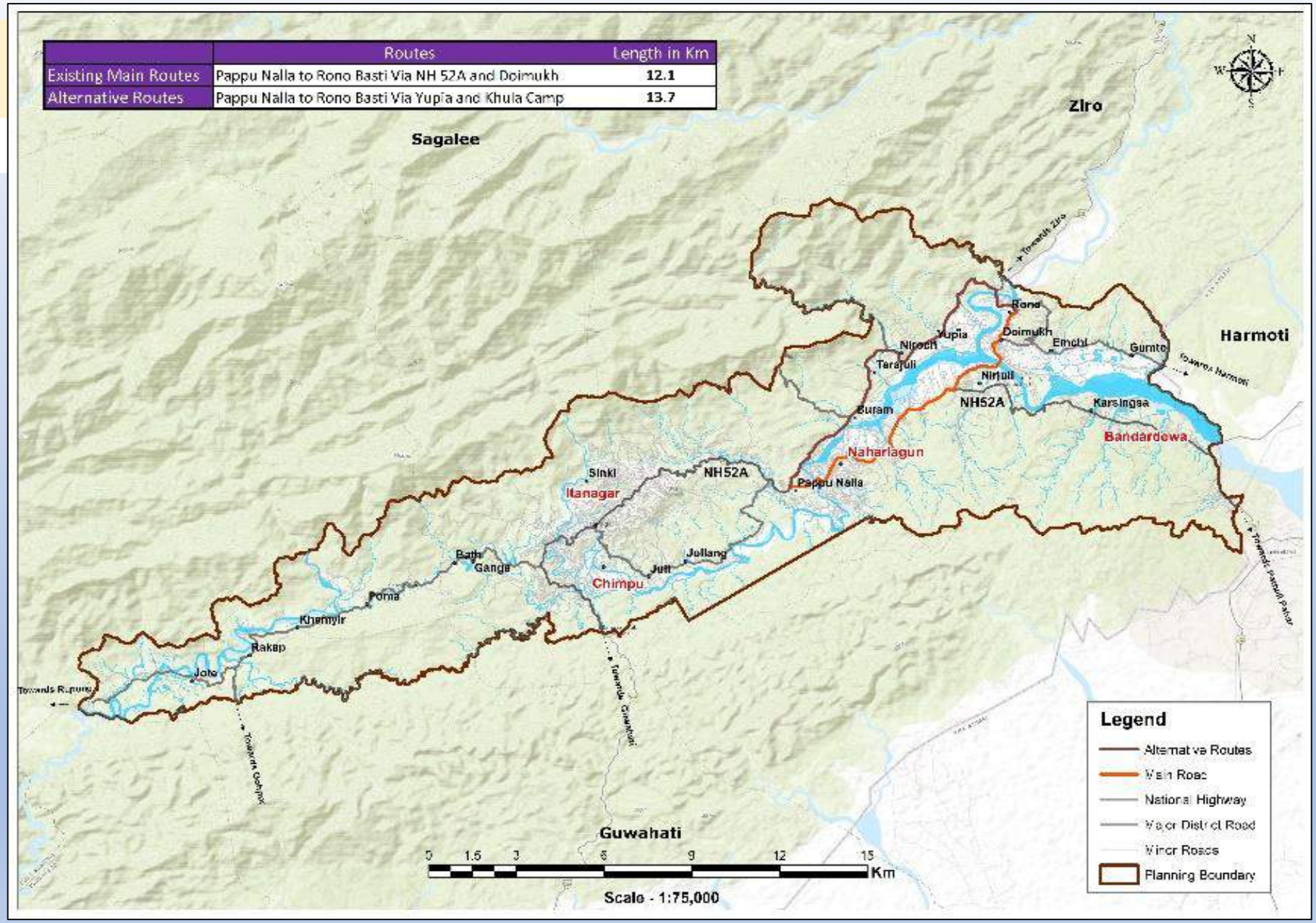


Transportation Development Proposal

Alternative Route Proposal - 2

Alternative Route 2 : Pappu Nalla To Rono Basti via Yupia and Khula Camp

	EXISTING	PROPOSED
DISTANCE	12.1	13.7
TIME	40 minutes	45 minutes

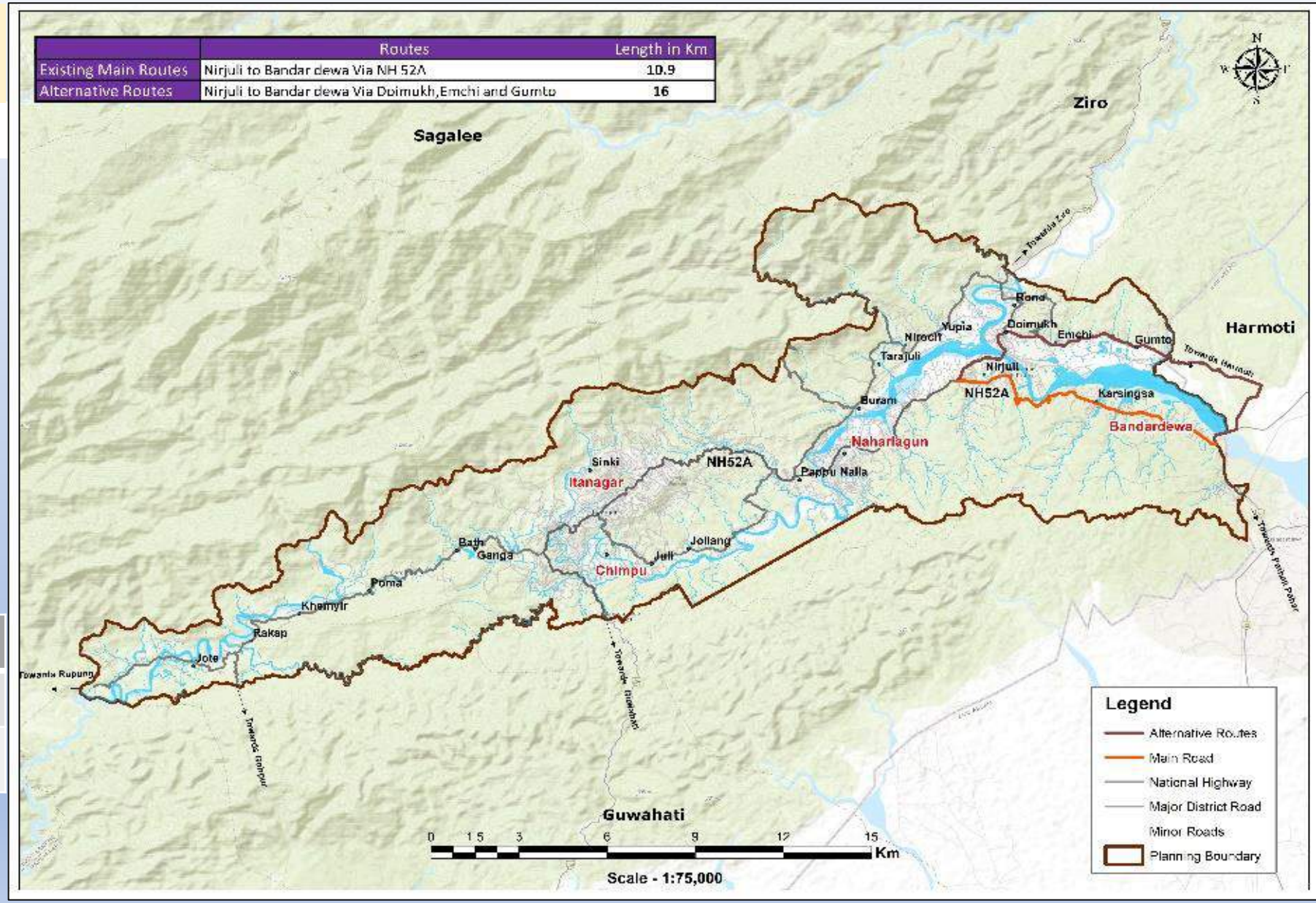


Transportation Development Proposal

Alternative Route Proposal - 3

Alternative Route 3 : Nirjuli to Bandar dewa via Doimukh, Emchi and Gumto

	EXISTING	PROPOSED
DISTANCE	10.9 kms	16kms
TIME	40 mins	45 mins



Transportation Development Proposal

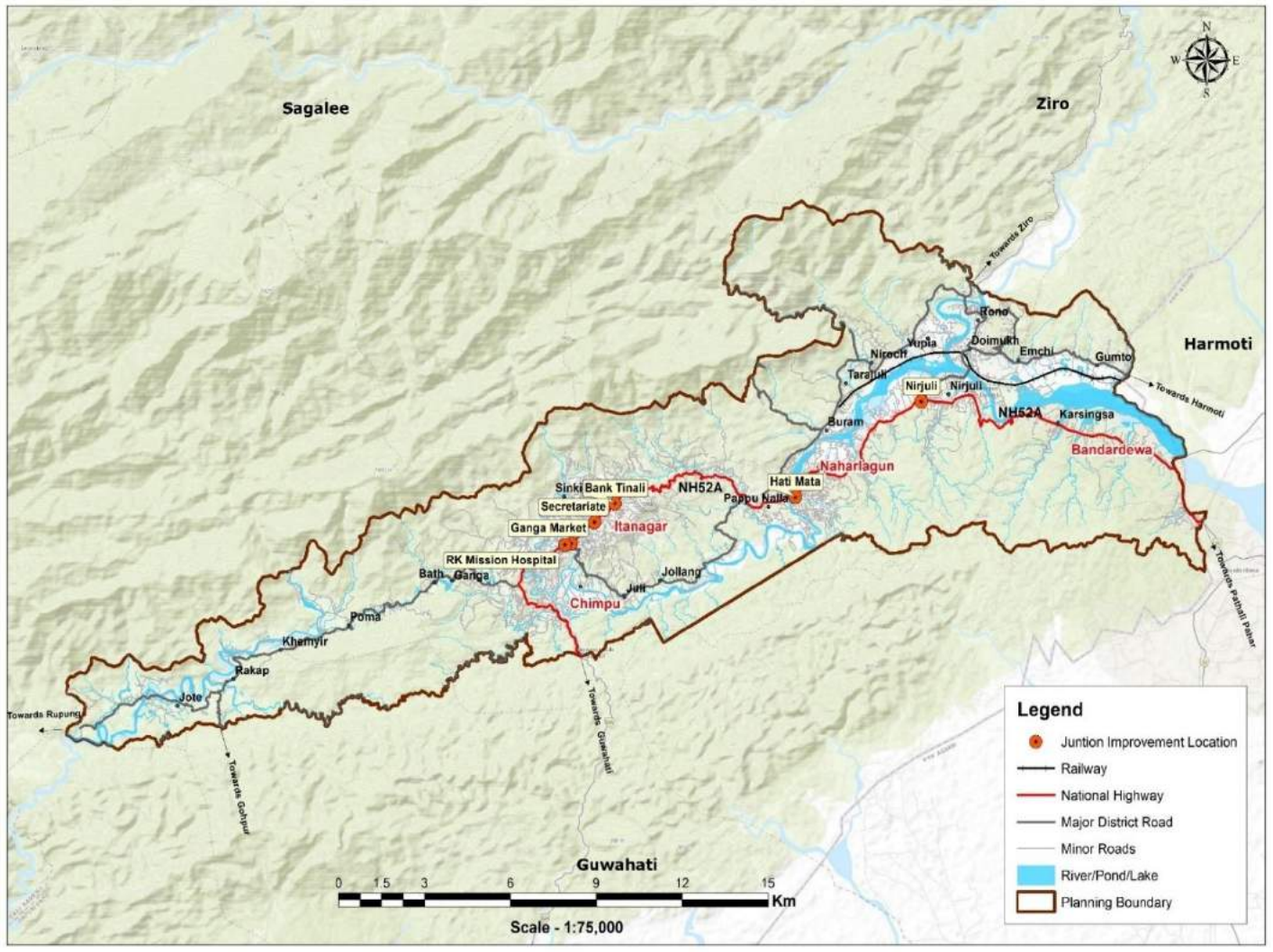
Junction Improvement

The **Junction improvement** is to be done for six major junctions in ICR region i.e.

- Rama Krishna Mission
- Ganga Market
- Secretariat Junction
- Bank Tinali
- Hathi Matha
- Nirjuli Jnction

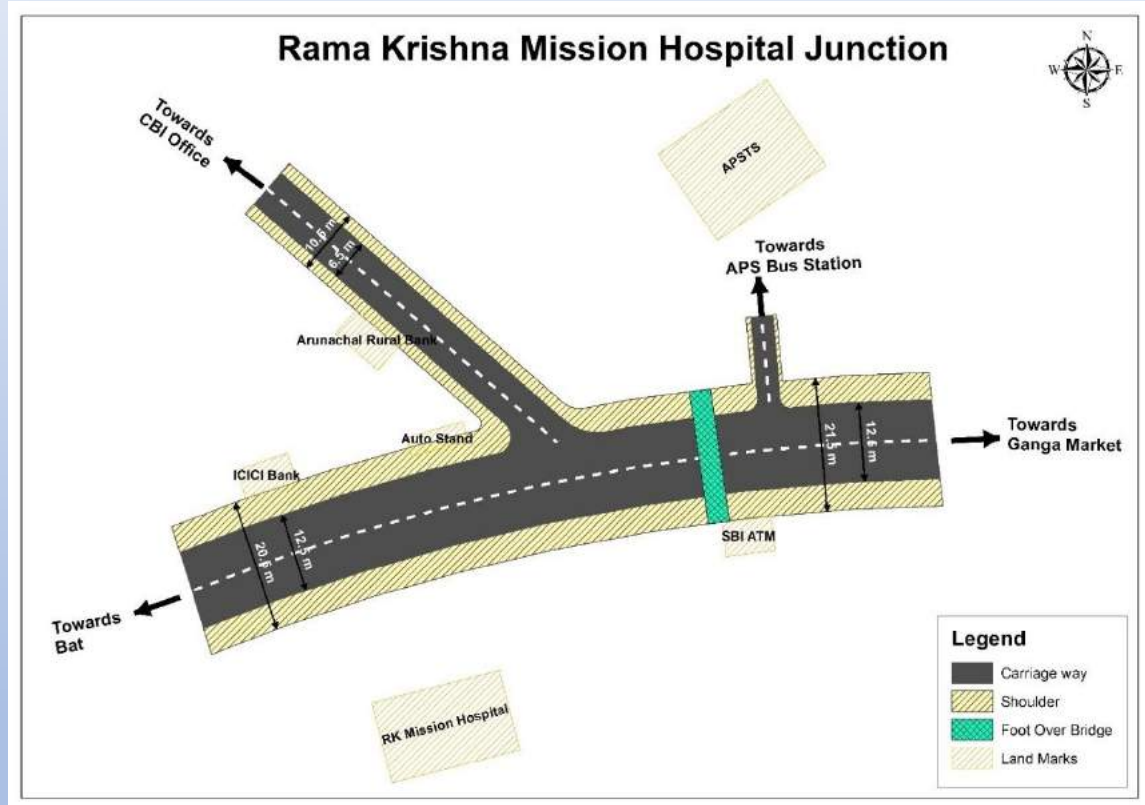
The proposed changes in the existing junction are :

- Maintenance of **carriageway of 7 mts** on each side of the National highway corridor.
- A **median of 0.5 mts** separating the traffic on the National highway corridor.
- **Footpath of 1.8 mts on either sides** of all the roads to cater for the pedestrians and physically handicapped/disabled citizens.
- A **high mast light** at the intersection.
- **Zebra-crossing lines** at all the arm intersection points of the junction.
- **Traffic signals** at the intersection of the roads.
- **Traffic islands** near the intersection point.
- **Free left** near the intersection.
- **Bus bay** on the **Secretariat arm** of the junction with 0.5 mts median separating it from the main traffic flow on the National Highway corridor.
- Geometric changes to the traffic islands

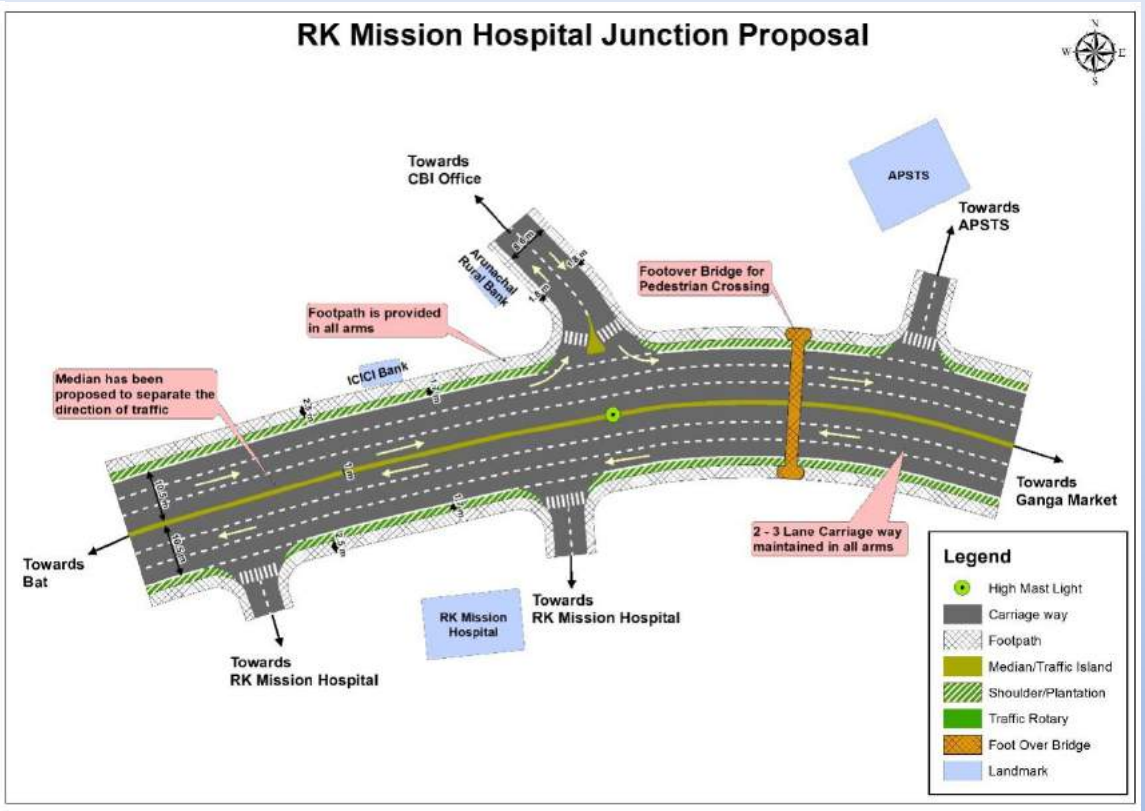


Master Plan Proposals

Provision of Footpaths at **Rama Krishna Mission Hospital Junction**



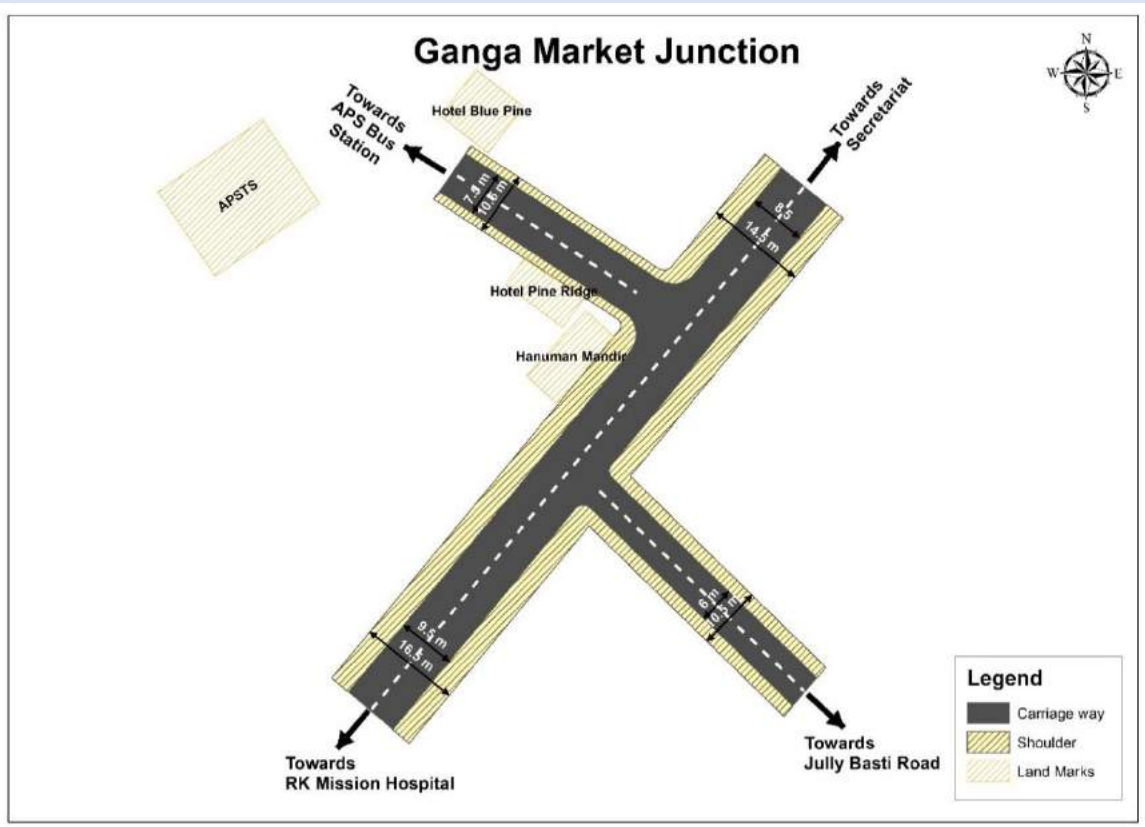
Existing Junction



Proposed Junction

Master Plan Proposals

Provision of Footpaths at **Ganga Market Junction**

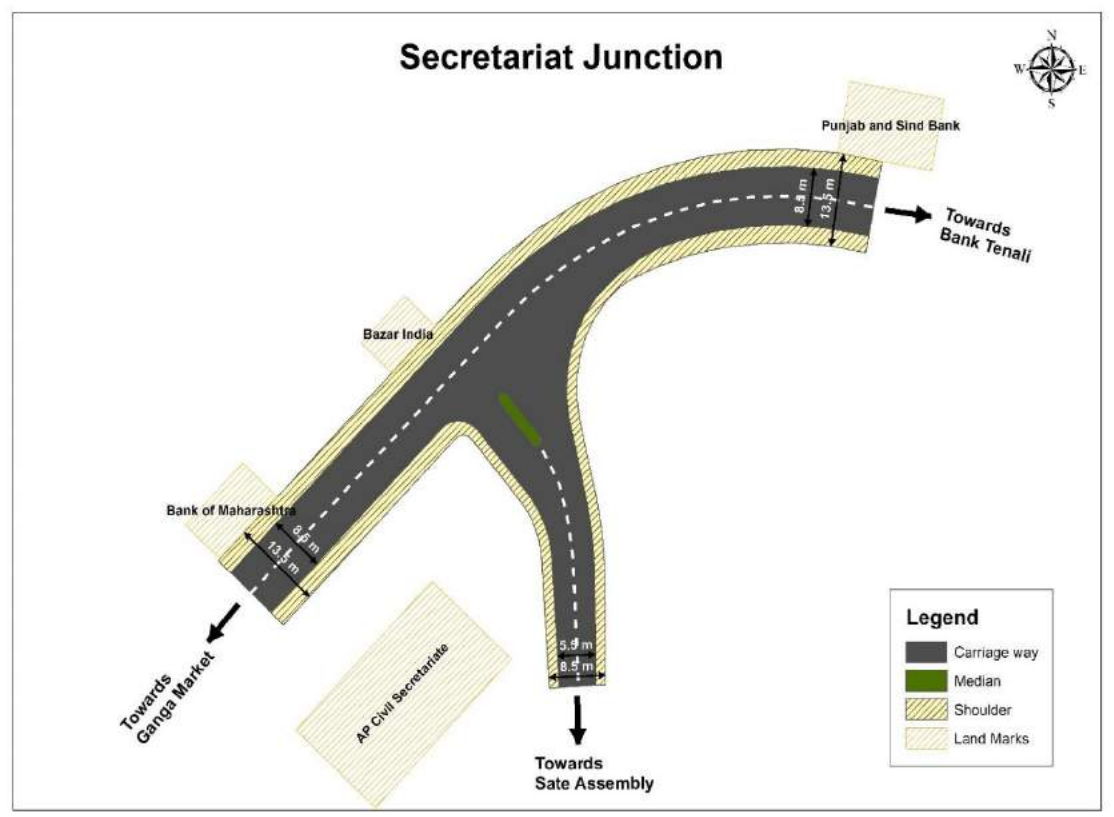


Existing Junction

Proposed Junction

Master Plan Proposals

Provision of Footpaths at **Secretariat Junction**

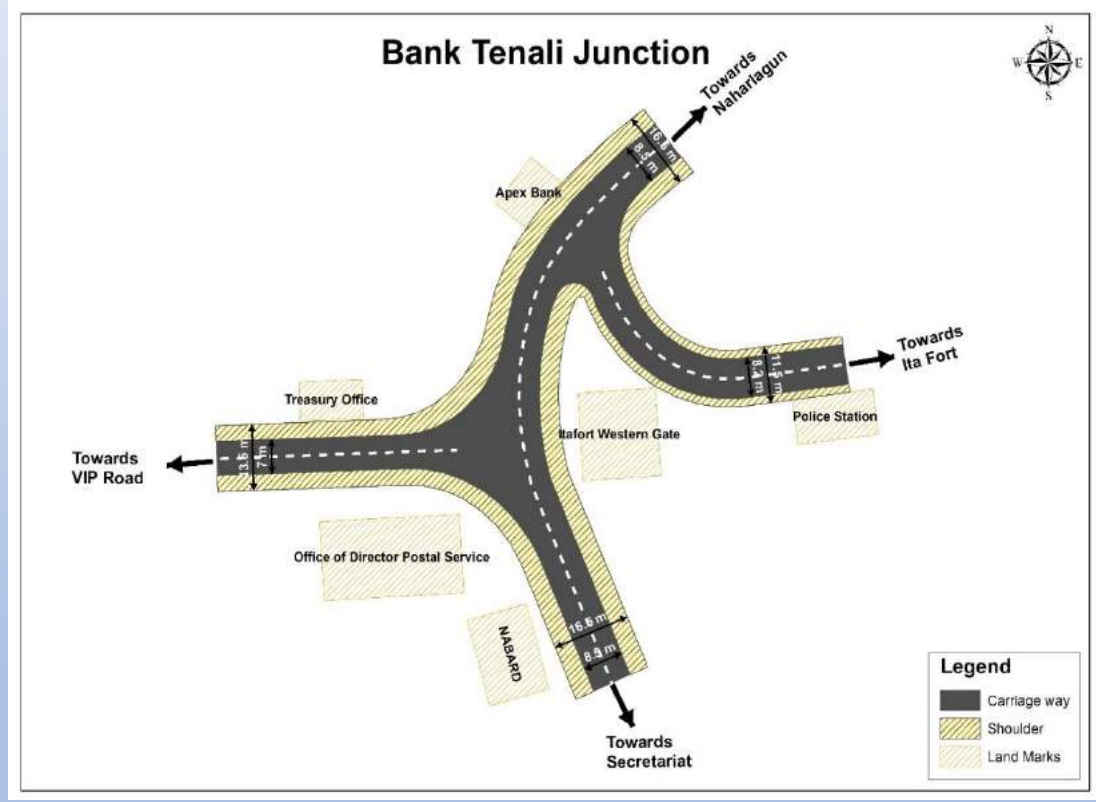


Existing Junction

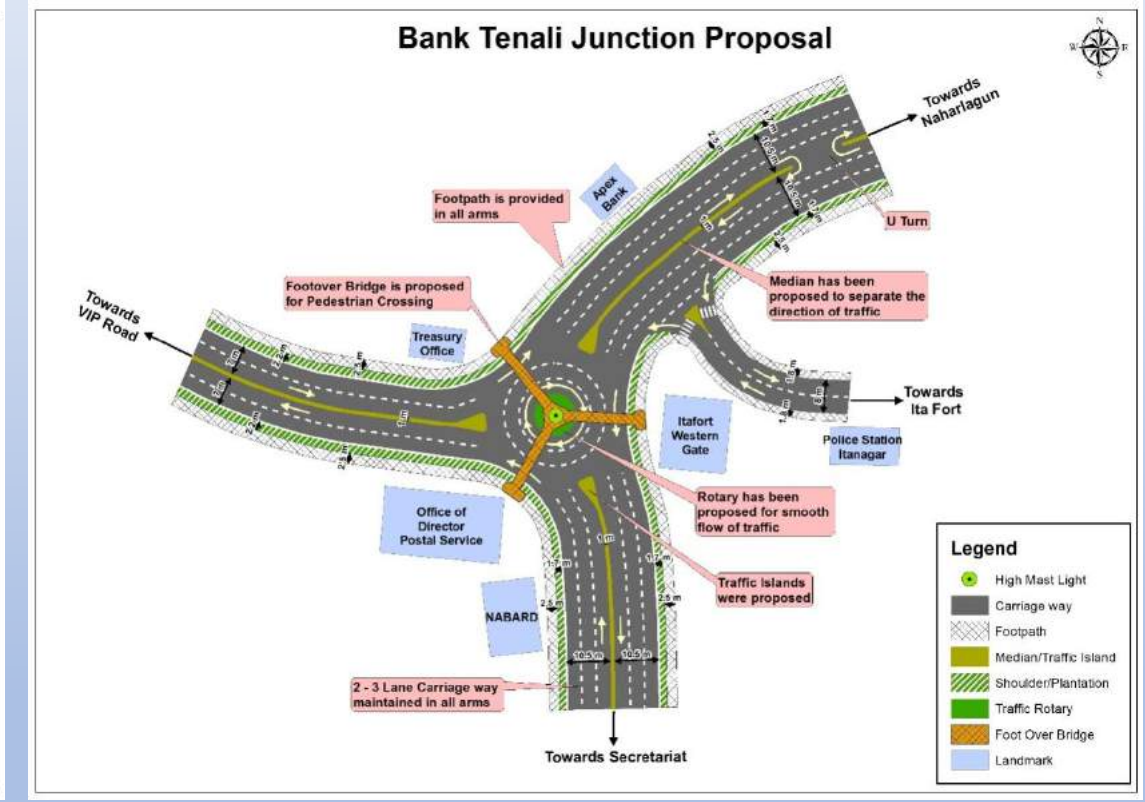
Proposed Junction

Master Plan Proposals

Provision of Footpaths at **Bank Tenali Junction**



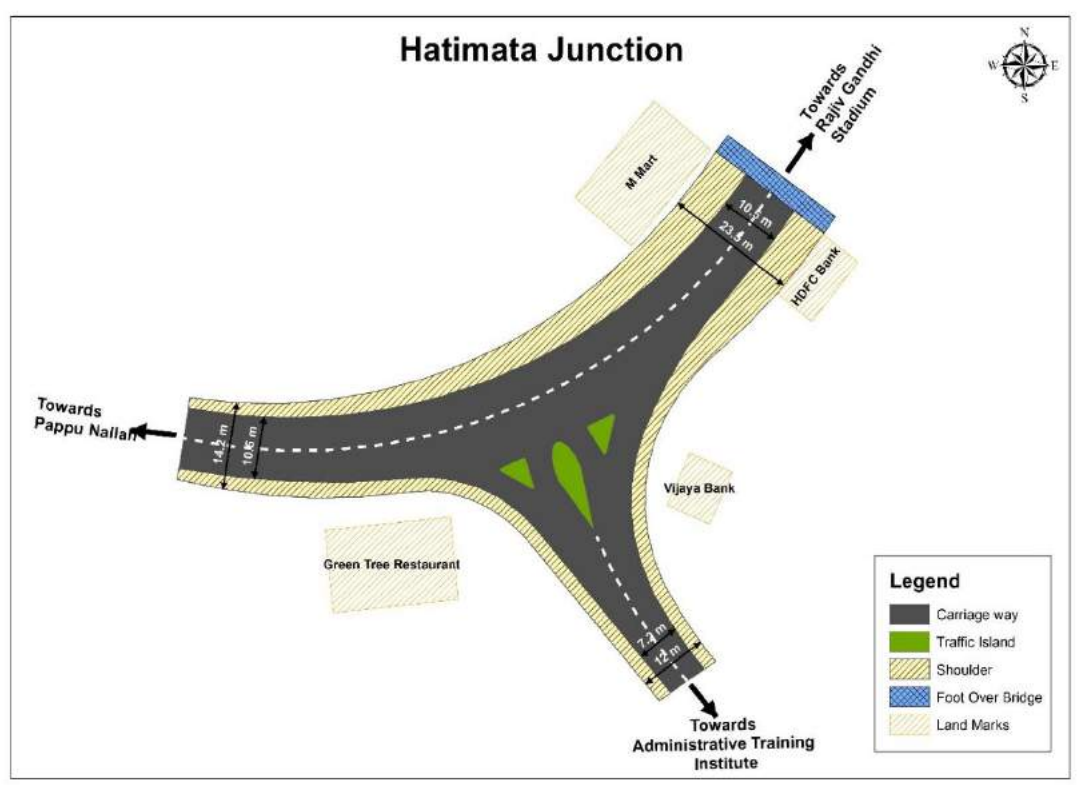
Existing Junction



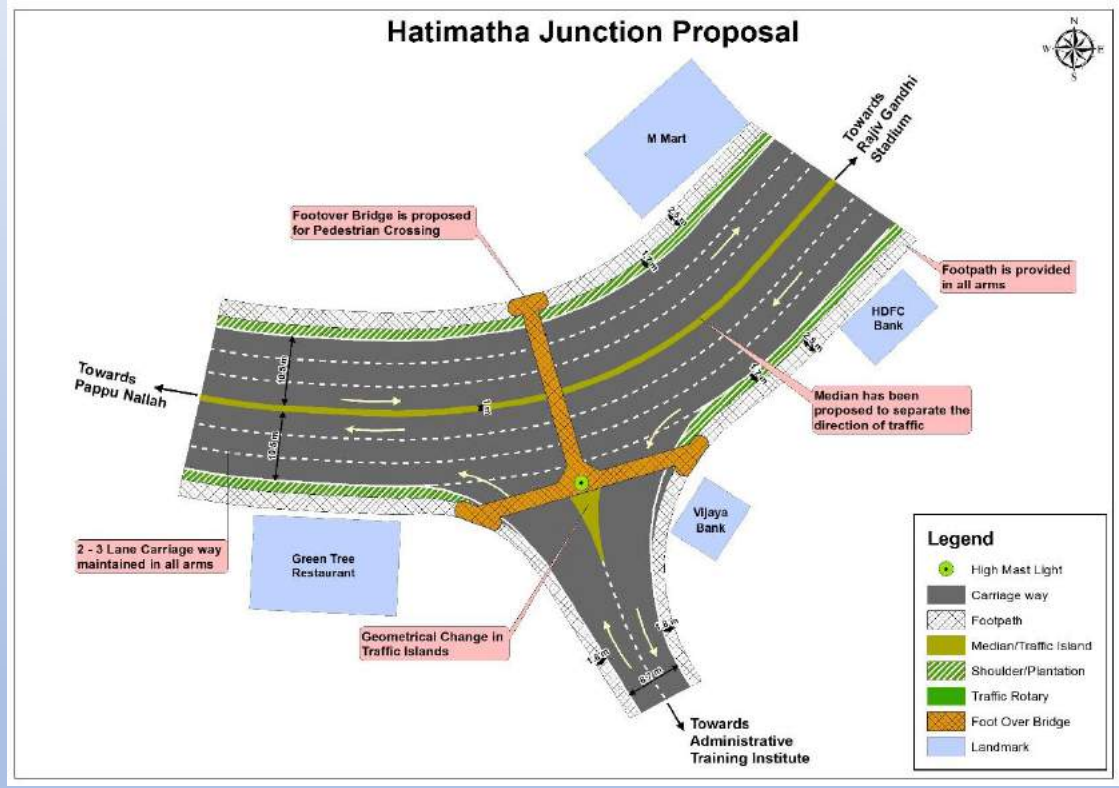
Proposed Junction

Master Plan Proposals

Provision of Footpaths at **Hati matha Junction**



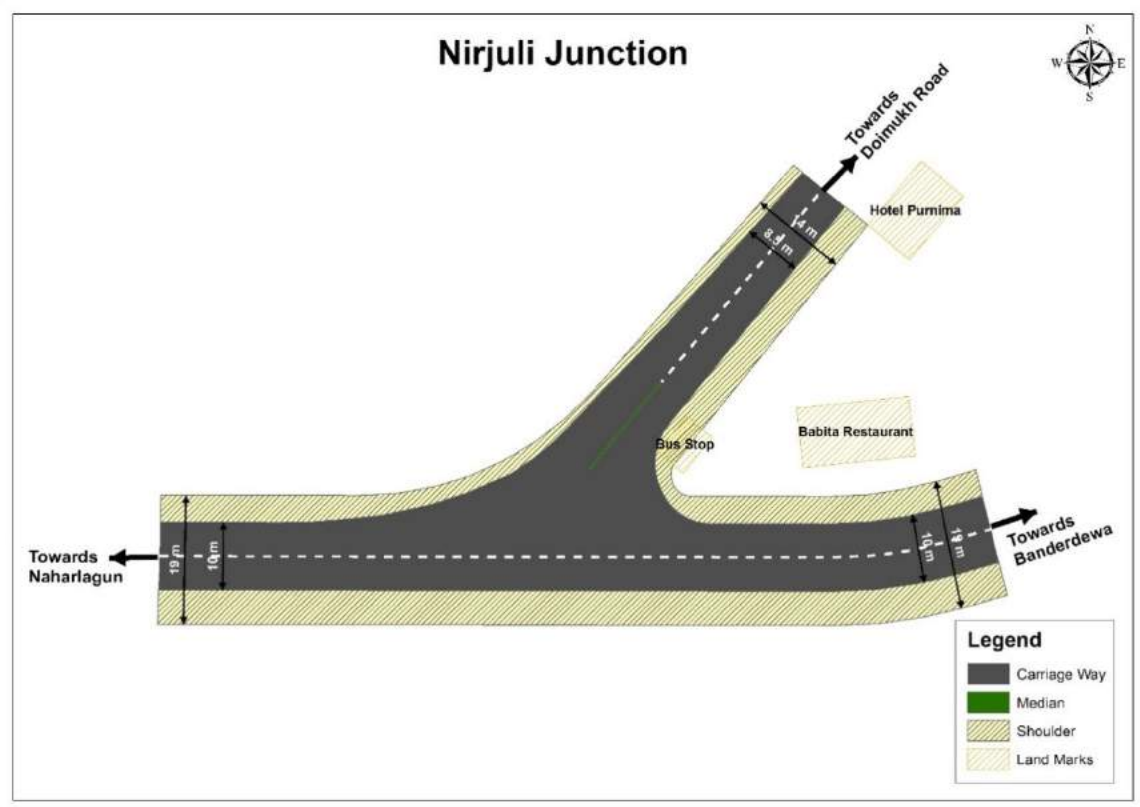
Existing Junction



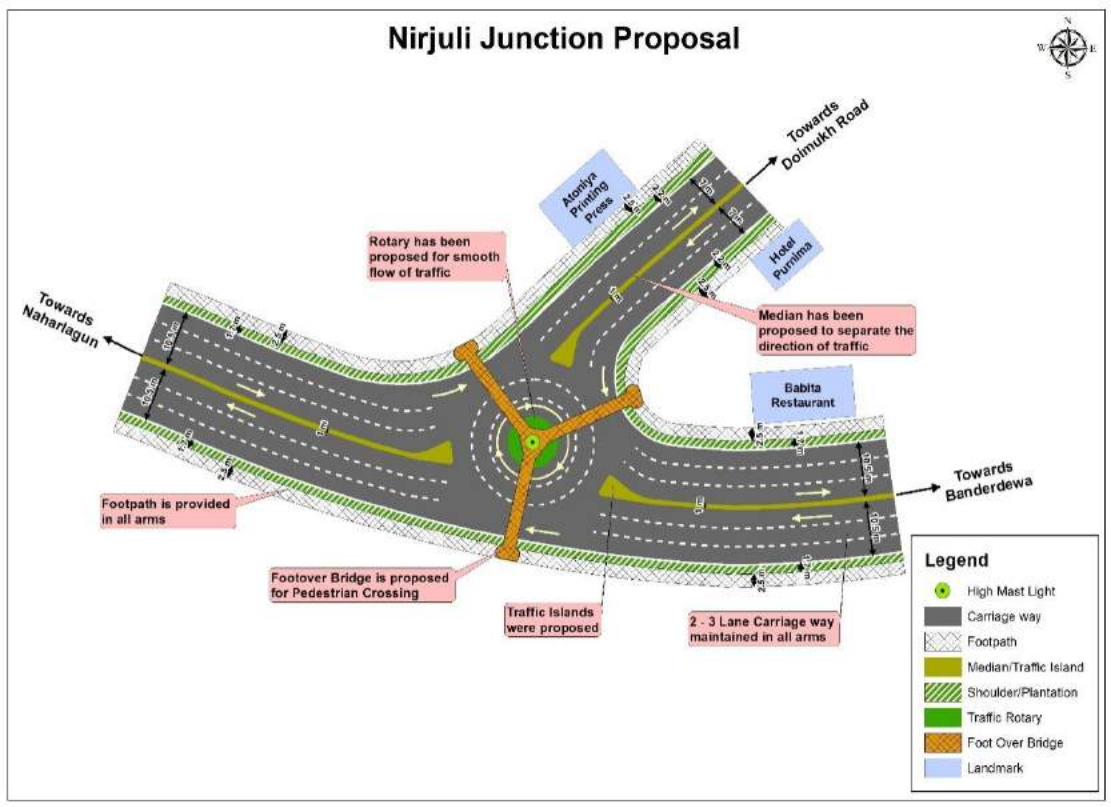
Proposed Junction

Master Plan Proposals

Provision of Footpaths at **Nirjuli Junction**



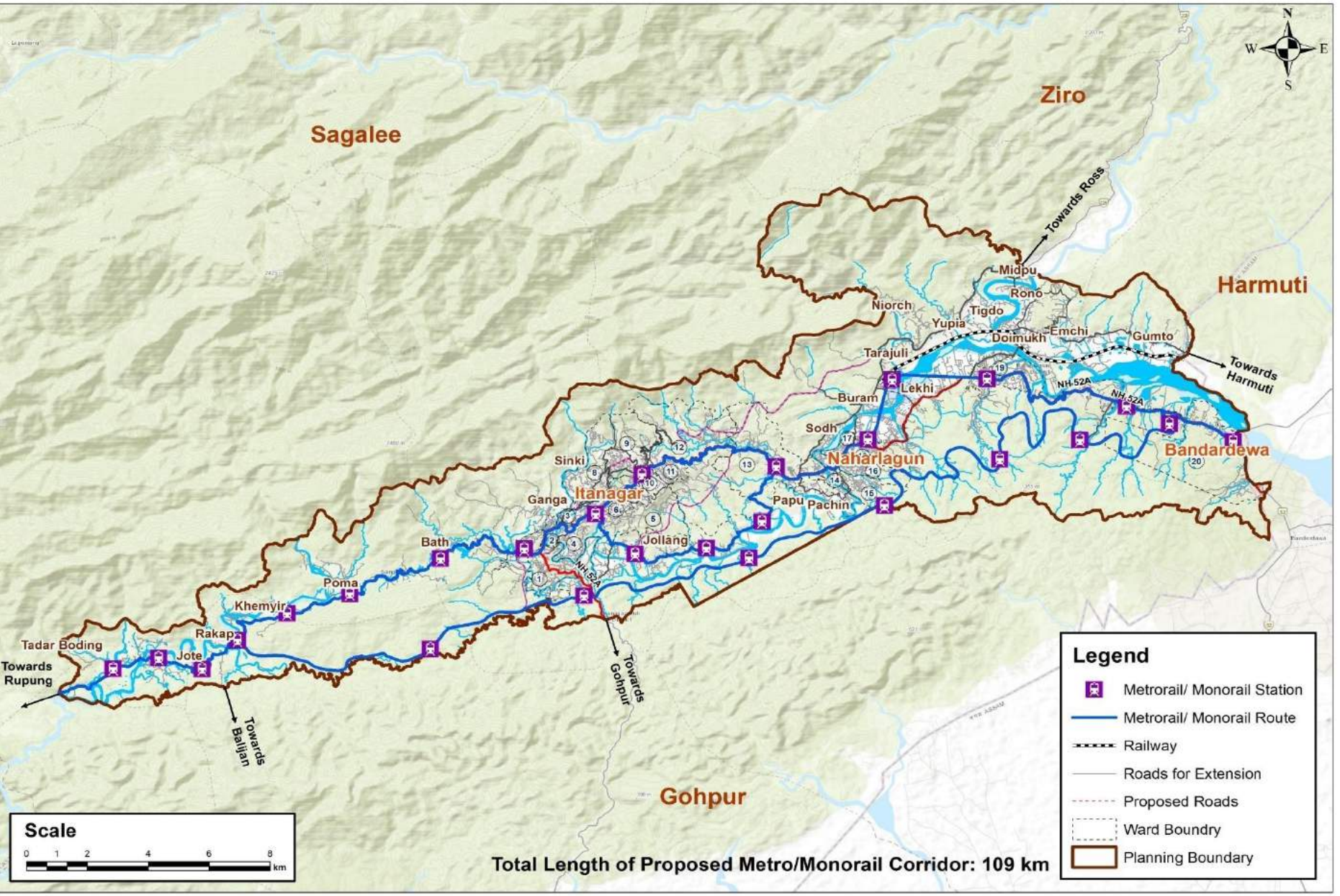
Existing Junction



Proposed Junction

Transportation Development Proposals

Metro rail / Mono rail network



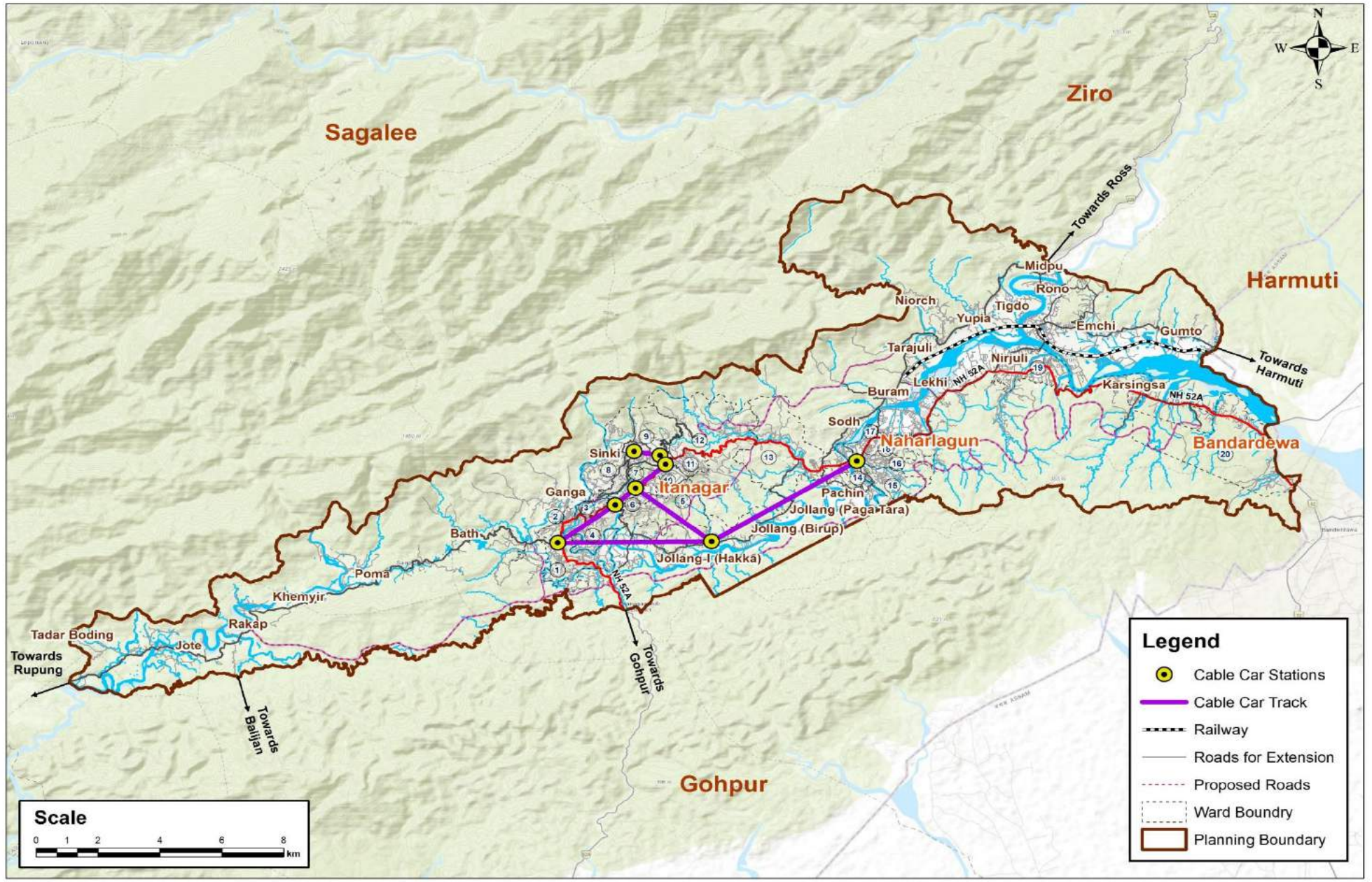
Metro rail/Mono rail transit system

- Jote to Banderdewa via Itanagar, Naharlagun, Tarajuli.
- Itanagar to Naharlagun via Jollang and Pappu nallah.
- Rakap to Karsingsa along the proposed By pass road

- **Total network length is 109 kms**

Transportation Development Proposals

Cable car Transit network



Cable car transit system –

Itanagar, Ganga lake, Jollang, Naharlagun

Sectoral Proposals

- **Housing**
  - Scope of residential expansion near Chimpu and Jule basthi, Railwaty station and Helipad in Naharlagun
- **Sewerage & Drainage**
  - Provision of STP at Naharlagun 4 mld
  - Developing drainage network in Itanagar and Naharlagun
- **Solid waste Management**
  - Conversion of Dump yard into a Landfill.
- **Tourism**
  - Development of Ganga lake as Eco-tourism area
  - Promotion of Art and Cultural hub
  - Adventure park near Nirjuli bus terminal
  - Sports center
- **Commercial**
  - Developing commercial corridor along NH-415 and other major commercial areas.
- **Industrial area**
  - Provision Industrial area near Helipad
- **Public & Semi Public**
  - Provision of Police station near Jote

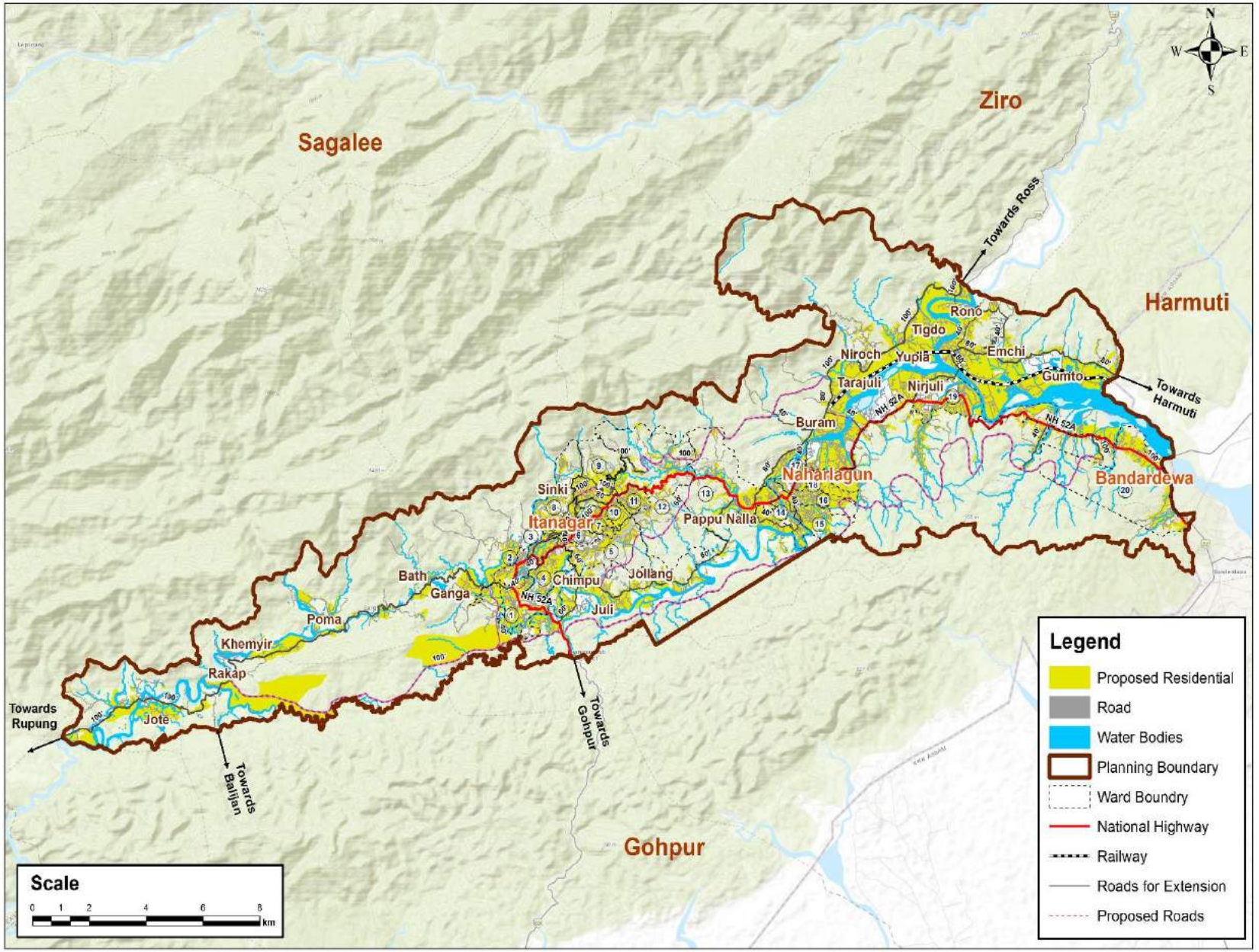
Sectoral Proposals

Housing

Expansion of Residential areas

- There are **24,182 households for a population of 1,10,767 as per 2011 census** of total ICR region.

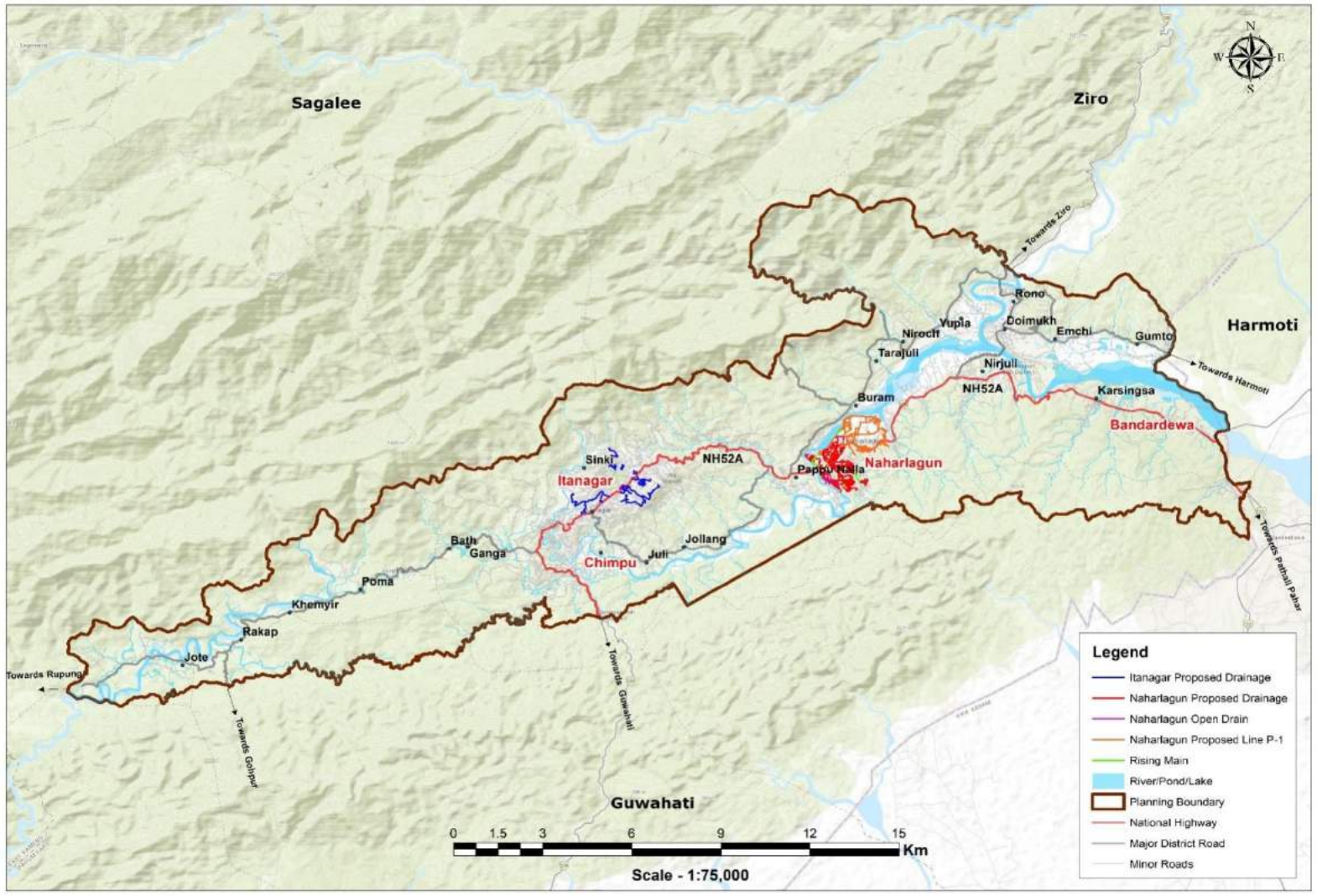
Region	Population 2011	Existing capacity	Proposed capacity
Itanagar	59490	86770	102540
Naharlagun	36158	53620	69780
ICR	110767	284540	403520



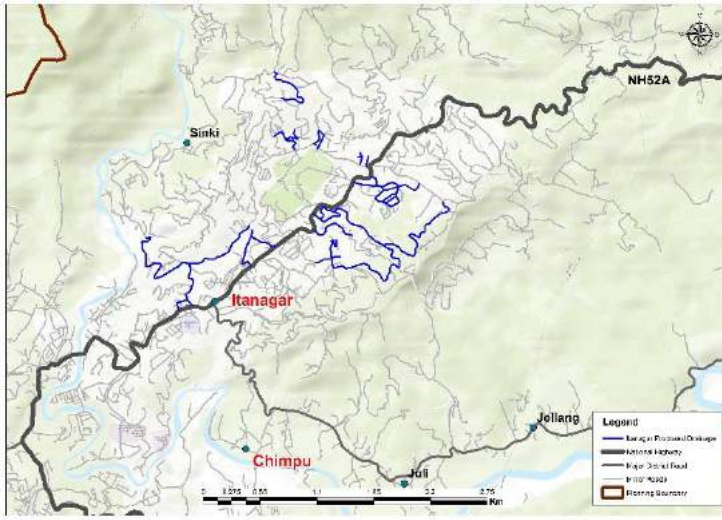
Sectoral Proposals

Drainage

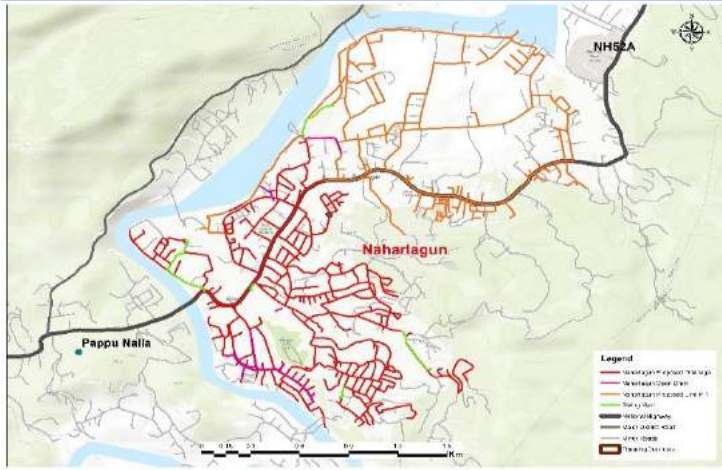
Proposed Drainage Network



Itanagar Proposed Drainage Network



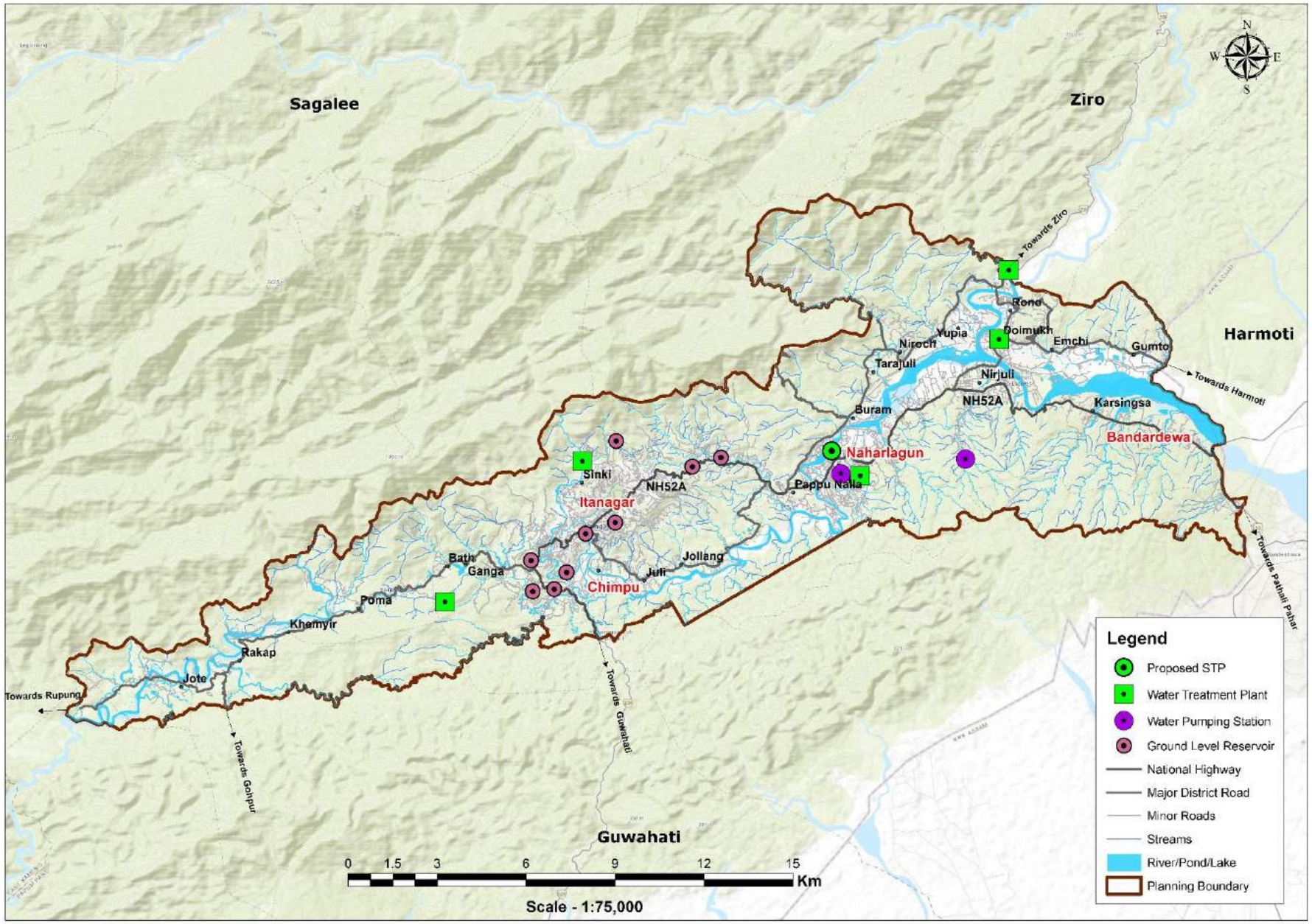
Naharlagun Proposed Drainage Network



Sectoral Proposals

Proposed Sewage Treatment Plant

- There is no sewerage system in the town.
- The proposed location of the 4 MLD Sewage Treatment Plant is identified near the Dikrong River to facilitate easy disposal post treatment of the sewage.
- The site is proposed taking into consideration of the terrain and topography of the region.



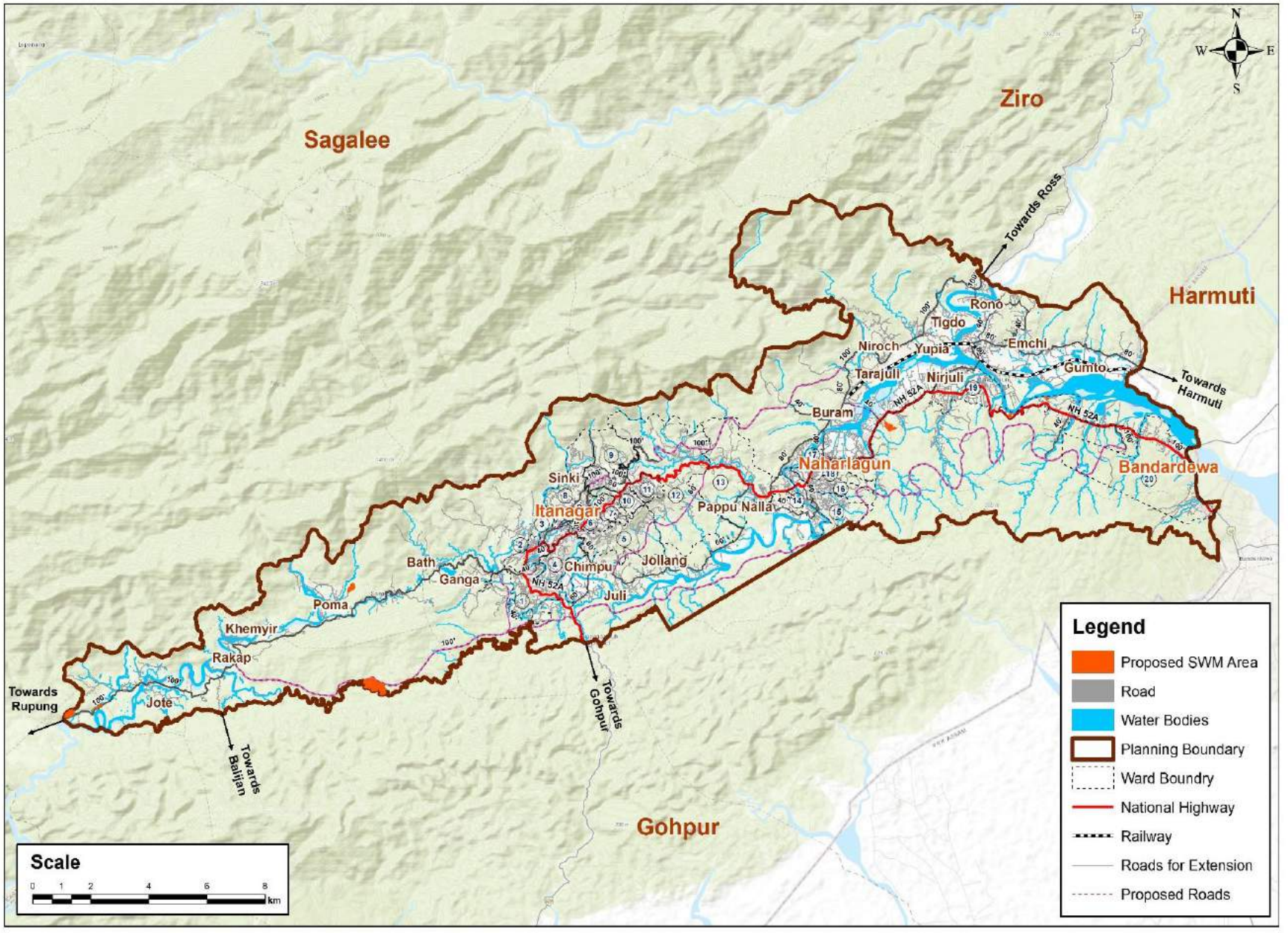
Sectoral Proposals

Solid Waste Management

Conversion of Dump yard into a Landfill

- There are 2 landfills – **1 each at Karsingsa** and **Chimpu.** As of now, the solid waste collected is dumped at site, which **does not meet the standards** of a site to be used for dumping solid waste.

- It is advisable **to construct an engineered landfill with a buffer of 250m** by remediating the legacy waste in the existing dumping yard and process the daily waste generated in the city



Development of Ganga Lake

Ganga Lake is to be developed as the major tourist attraction in ICR by **providing activities like boating and developing landscape designed park around the lake.**

Protection and Conservation of Lakes & water bodies

- Protecting and conserving the valleys
- Proper Guidelines to be prepared for developments adjoining lakes and water bodies.
- Dikrong river development

Promote Art and Culture

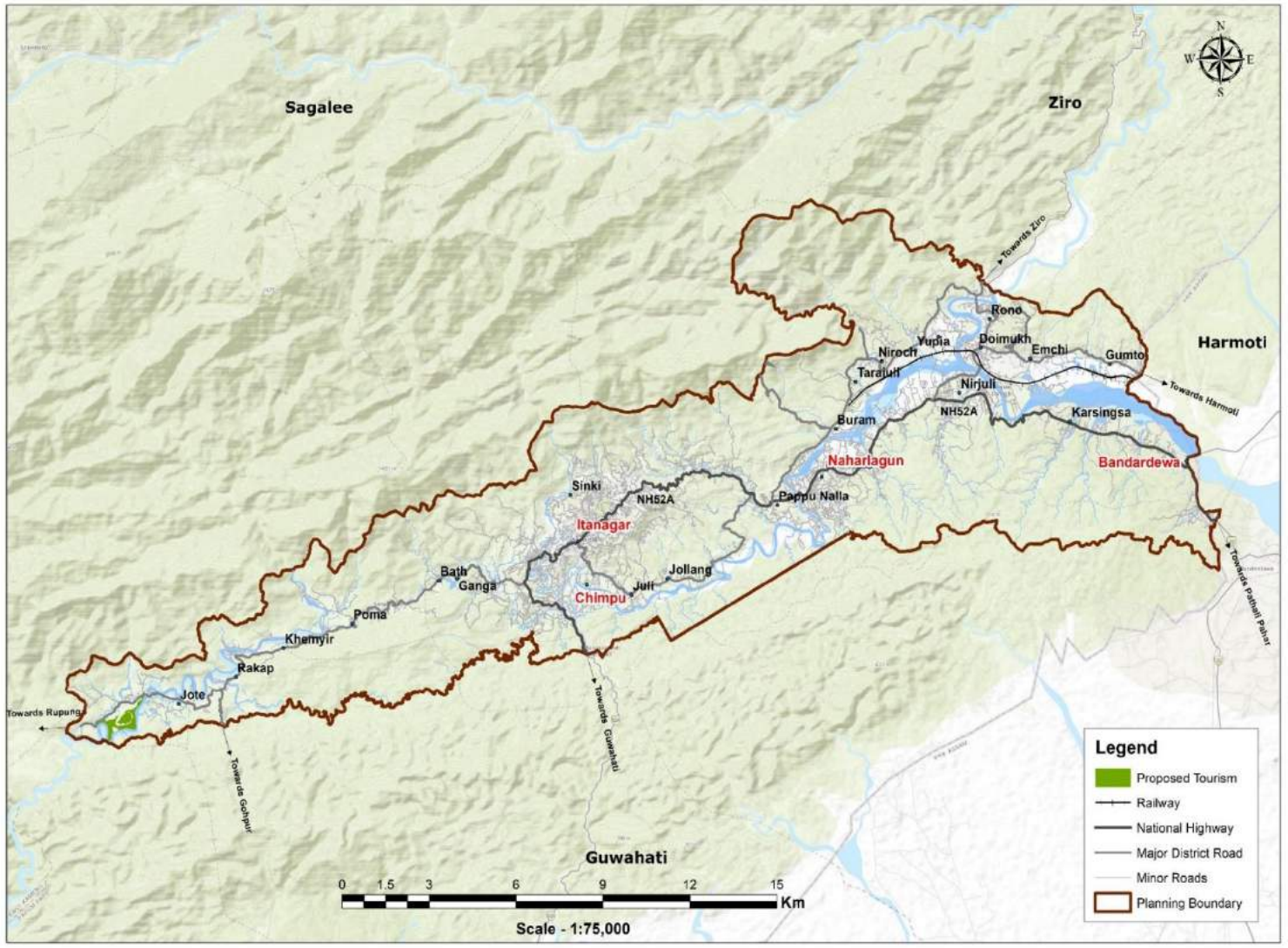
- Attracting tourist by a museum showing Itanagar cultural and art & crafts.
- Creating awareness and organizing programs or events about Itanagar tribal and their culture attracts tourists and generate economy.

Adventure Park

- Water skiing
- Canoeing
- Para Gliding
- Camping
- Eco-tourism
- Bird tourism
- Fishing
- Water rafting

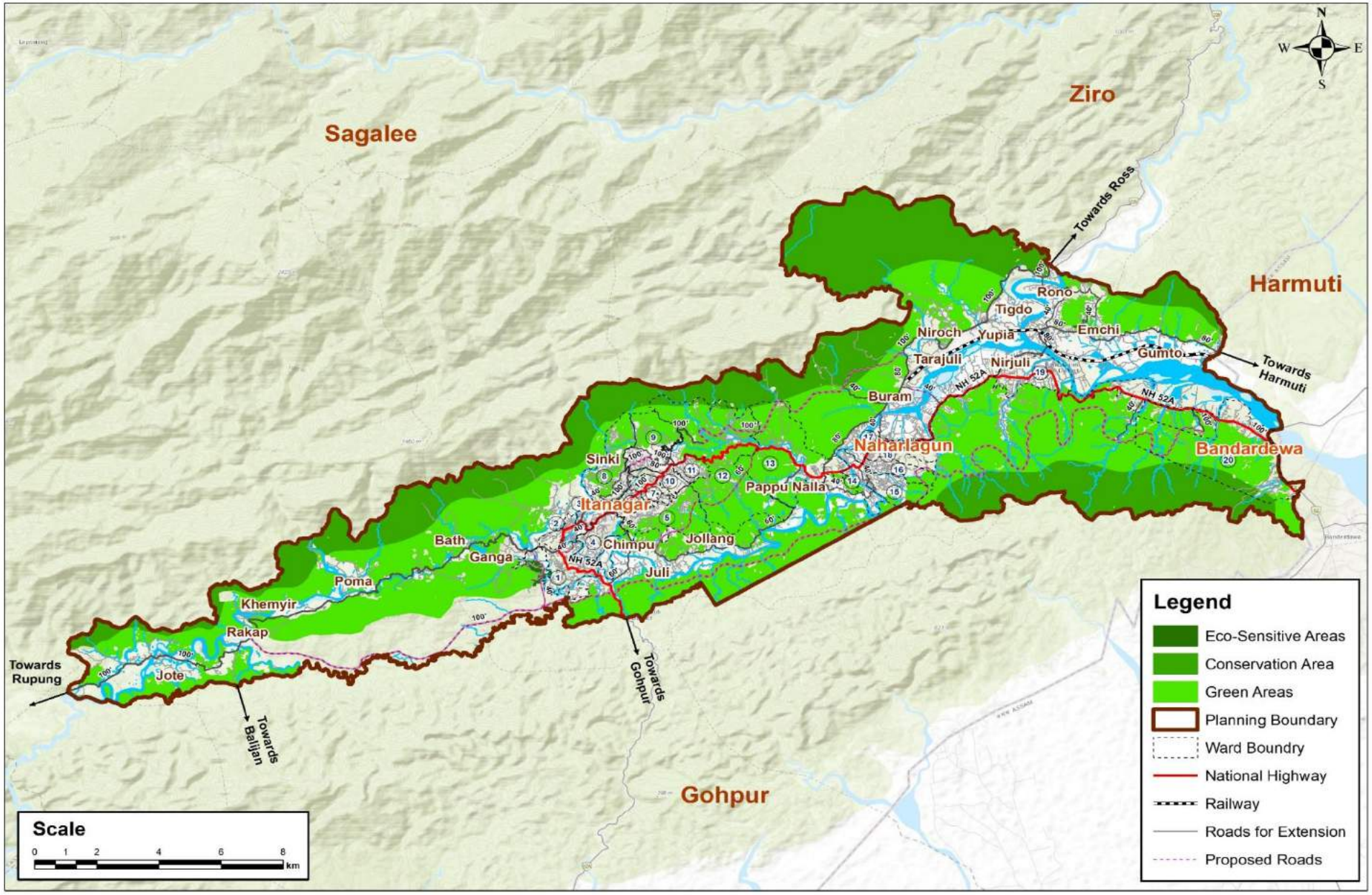
Sectoral Proposals

Tourism



Sectoral Proposals

Conservation and Green Areas



TOURISM

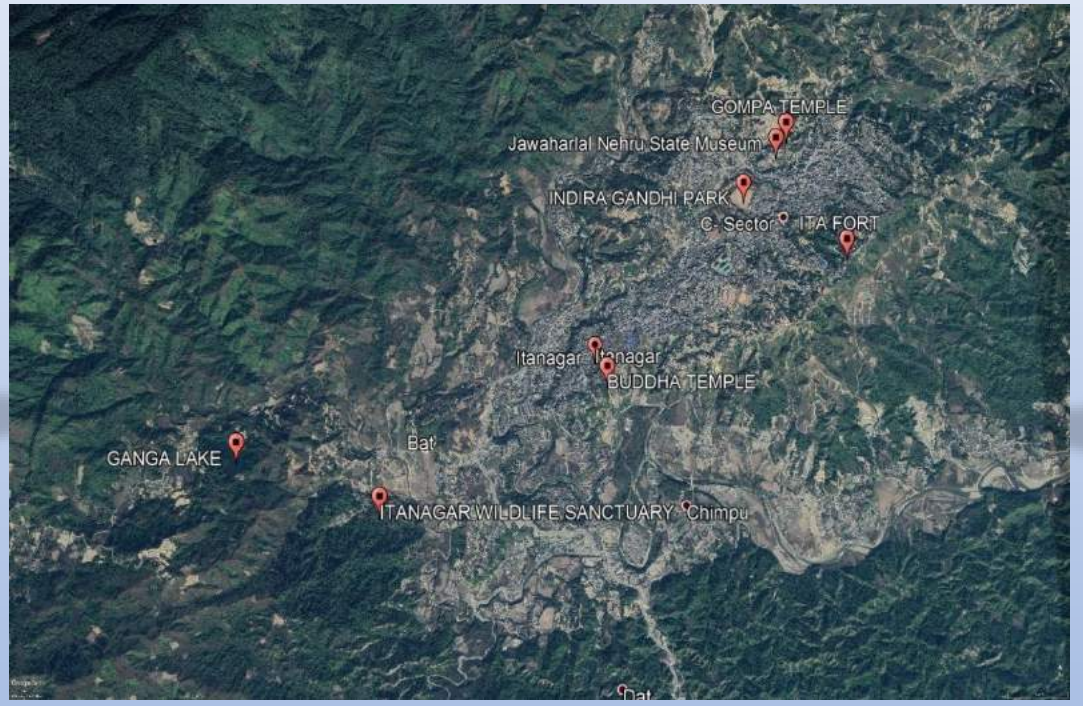
BUILT HERITAGE

Itafort 'the fort of bricks'

Gompa

Jawaharlal Nehru Museum

Buddha Temple



NATURAL HERITAGE

Indira Gandhi Park

Geykar Sinyik (Ganga Lake)

Itanagar Wildlife Sanctuary

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TOURISM PROPOSALS

- Enhance tourism by connecting the surrounding tourist attraction and develop them into leading to the whole. Capture the foreign and domestic tourists during the lean periods by promoting events at the ecotourism sites.
- Village and wildlife tourism
- Sports center
- Recreation and relaxation
- Adventure, Eco lodging and eco treks
- Built heritage and cultural/ethnic heritage.
- Religious and spiritual
- Promote events and festivals (Wildflower Festival, Steamboat Hot Air Balloon Rodeo, Tribal Festival, tribal Dances, Ziro Music Festival

PROMOTE CRAFTS AND AGRO INDUSTRIES

Itanagar art and crafts- wall paintings, traditional costumes made of natural vegetable and herbal dye yarns, and attractive utility items made of cane and bamboo.

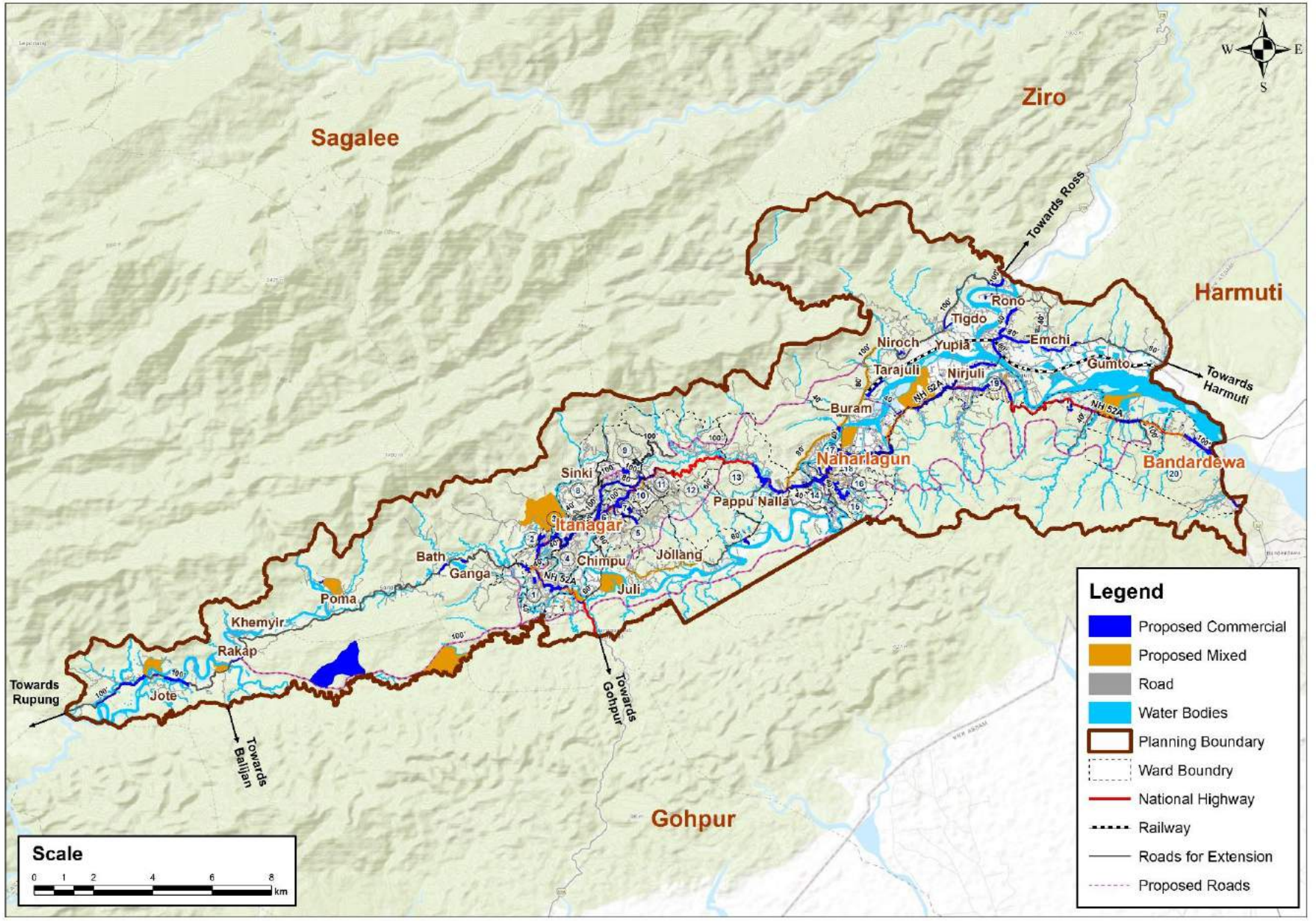
Agro based products are rice, maize, millet, wheat, pulses, sugarcane, ginger, oilseeds, cereals, potato, and pineapple. The main crops are rice, maize, millet, wheat, pulses, sugarcane, ginger and oilseeds, apples and oranges, sweet potatoes, brinjal, ginger, chilies, pumpkin, cucumber and local cowpea etc.

Sectoral Proposals

Commercial

Developing commercial corridor along NH-415 and other major commercial areas in ICR

- **Presently** only **79 hectares or 190 acres of land is under commercial** usage in the ICR region.
- A total of **301.6 hectares or 745 acres of land is proposed** under future commercial landuse in the future landuse map of the ICR region.
- The major commercial pockets are situated in Itanagar and Naharlagun, but the total NH-415 corridor is proposed as commercial corridor to develop economic activities in the ICR region

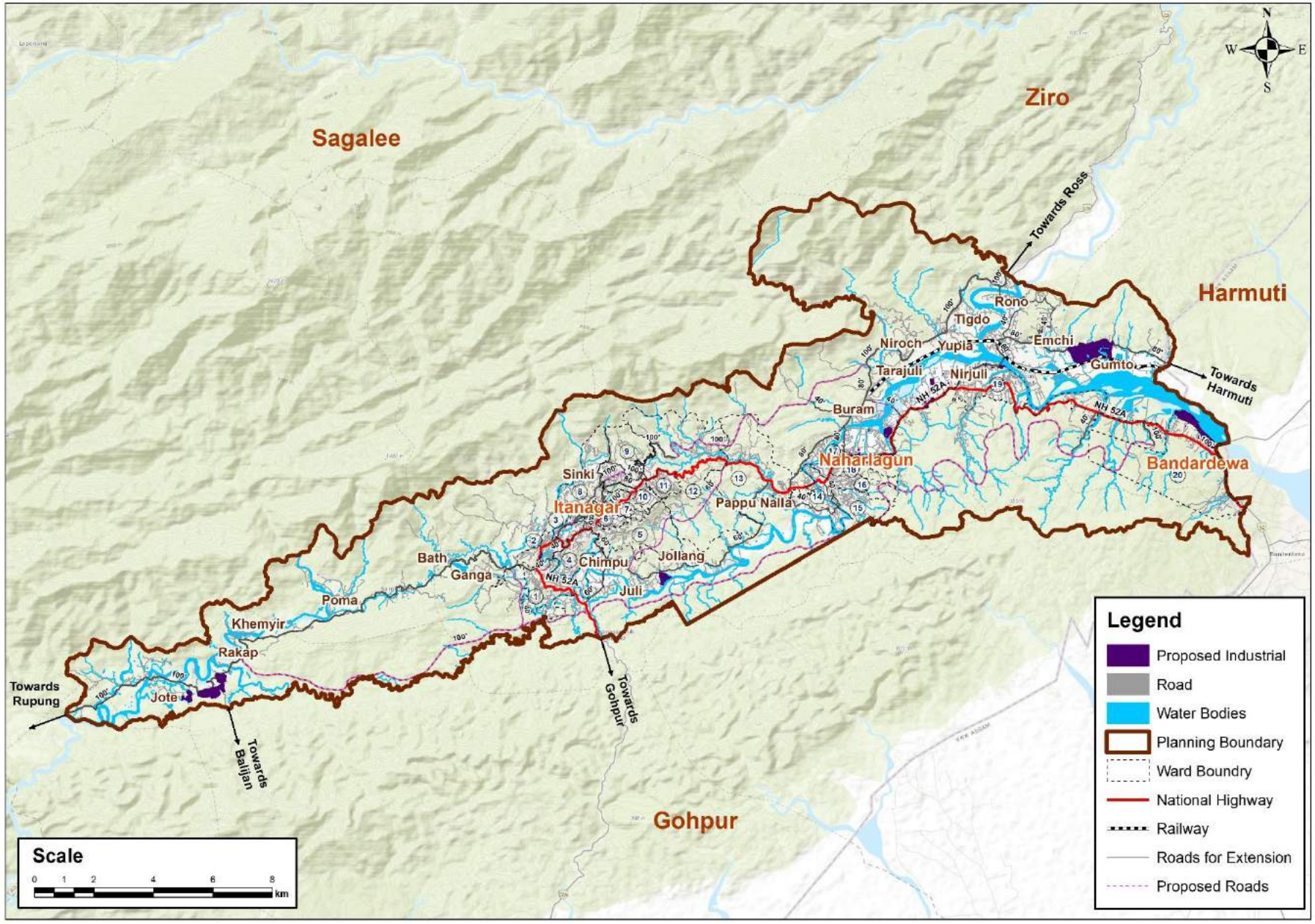


Sectoral Proposals

Industry

Allocating area for Industrial purposes

The proposed industrial regions are allocated near **Jote, Juli, Jollang and Karsingsa areas**, which are logistically connected and situated fairly far from the settlements of the region.



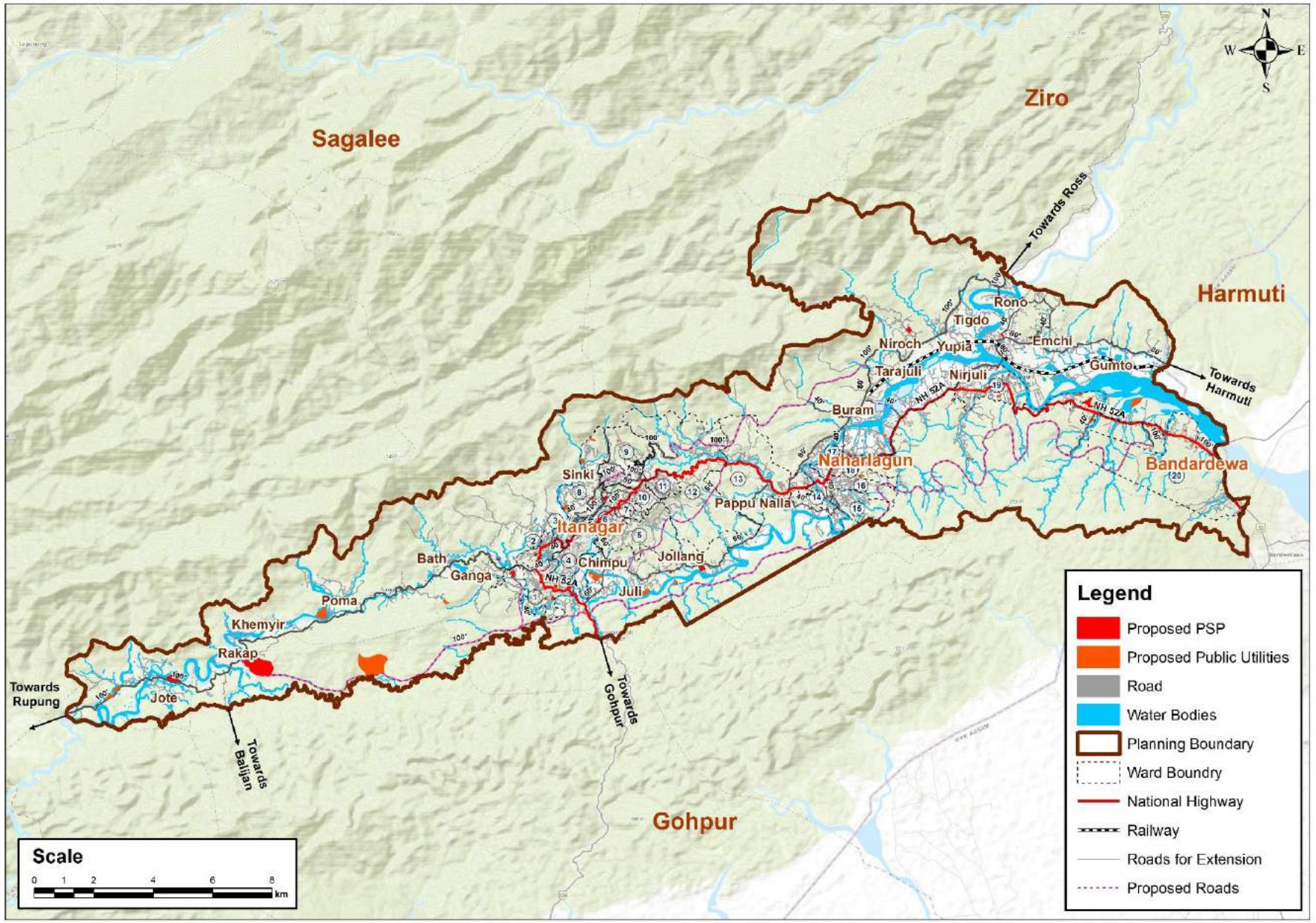
Sectoral Proposals

Public and Semi Public

Proposing Police Station

There are six police stations in the ICR region that are catering for the total population of 1,10,767.

A new police station is proposed near Jote area in the ICR region.

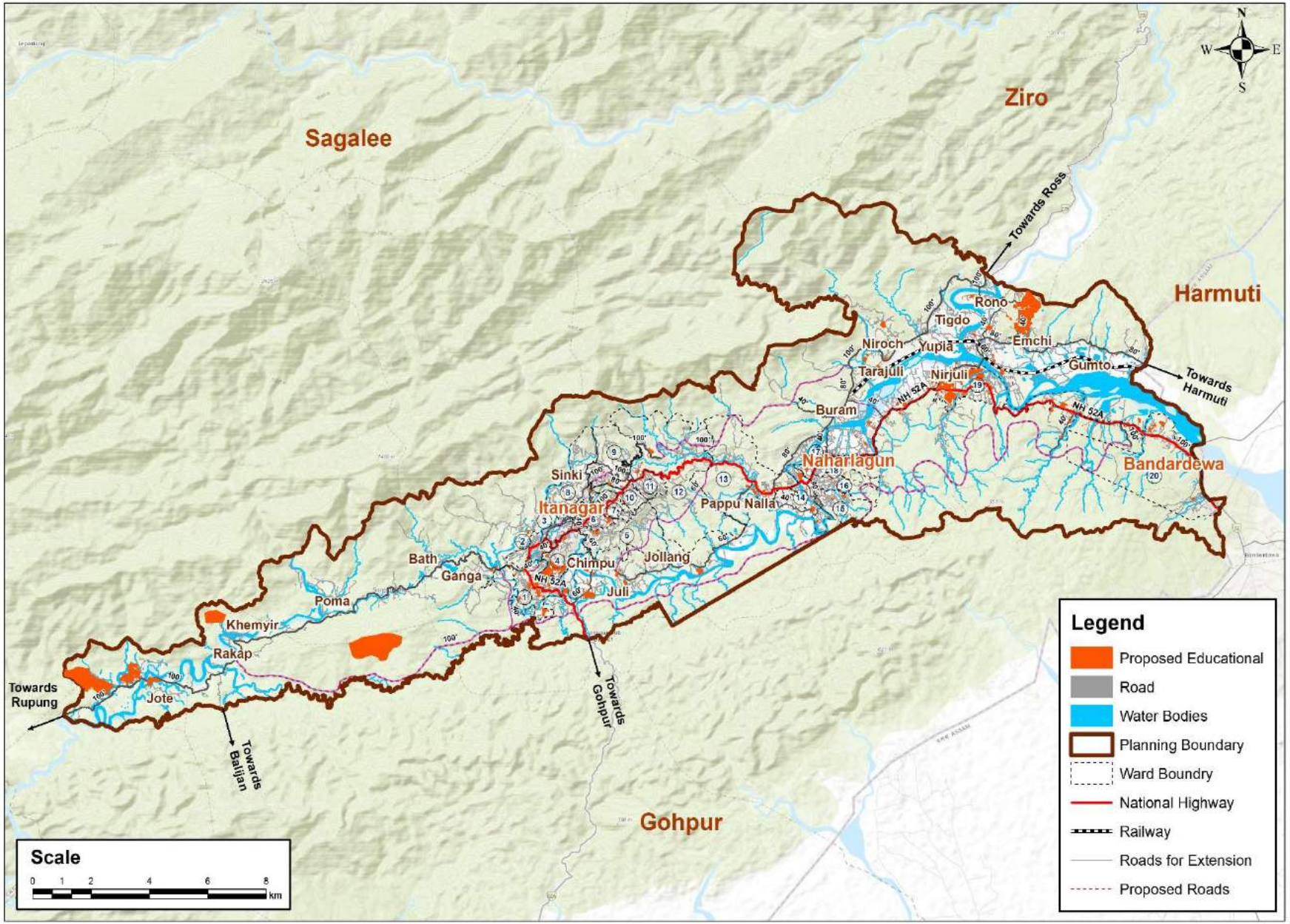


Sectoral Proposals

Educational

Allocating area for Educational purposes

- 44,172 people are literate
- 23,997 are male and 20,175 are female
- Literacy rate of Itanagar town is 74.25%
- Male literacy is around 90.51 %
- Female literacy rate is at 79.58 %.
- The proposed educational regions are allocated near Jote, Juli, Jollang, Nirjuli, Poma, Emchi and Chimpu areas, which are logistically connected and situated fairly far from the settlements of the region.

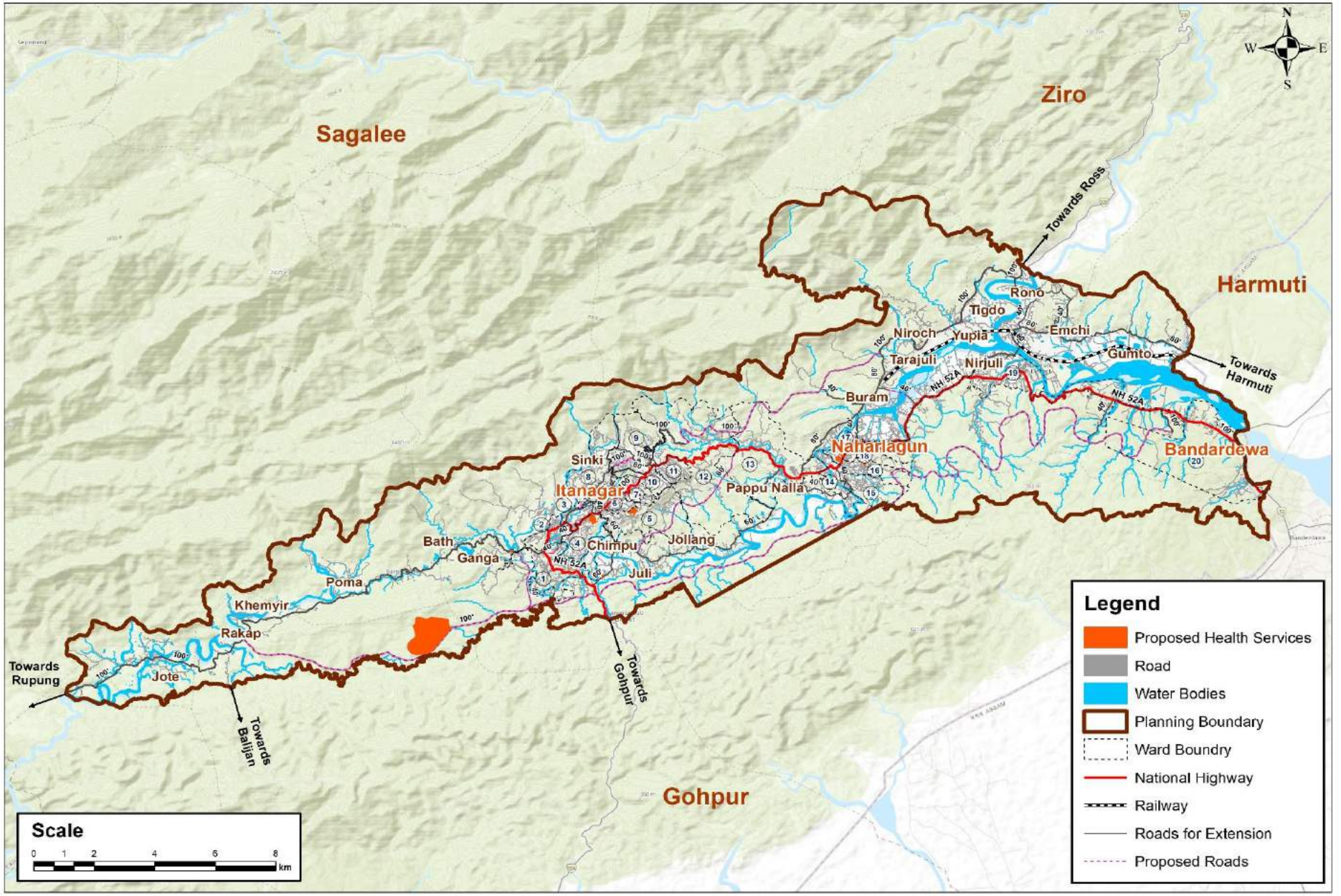


Sectoral Proposals

Health

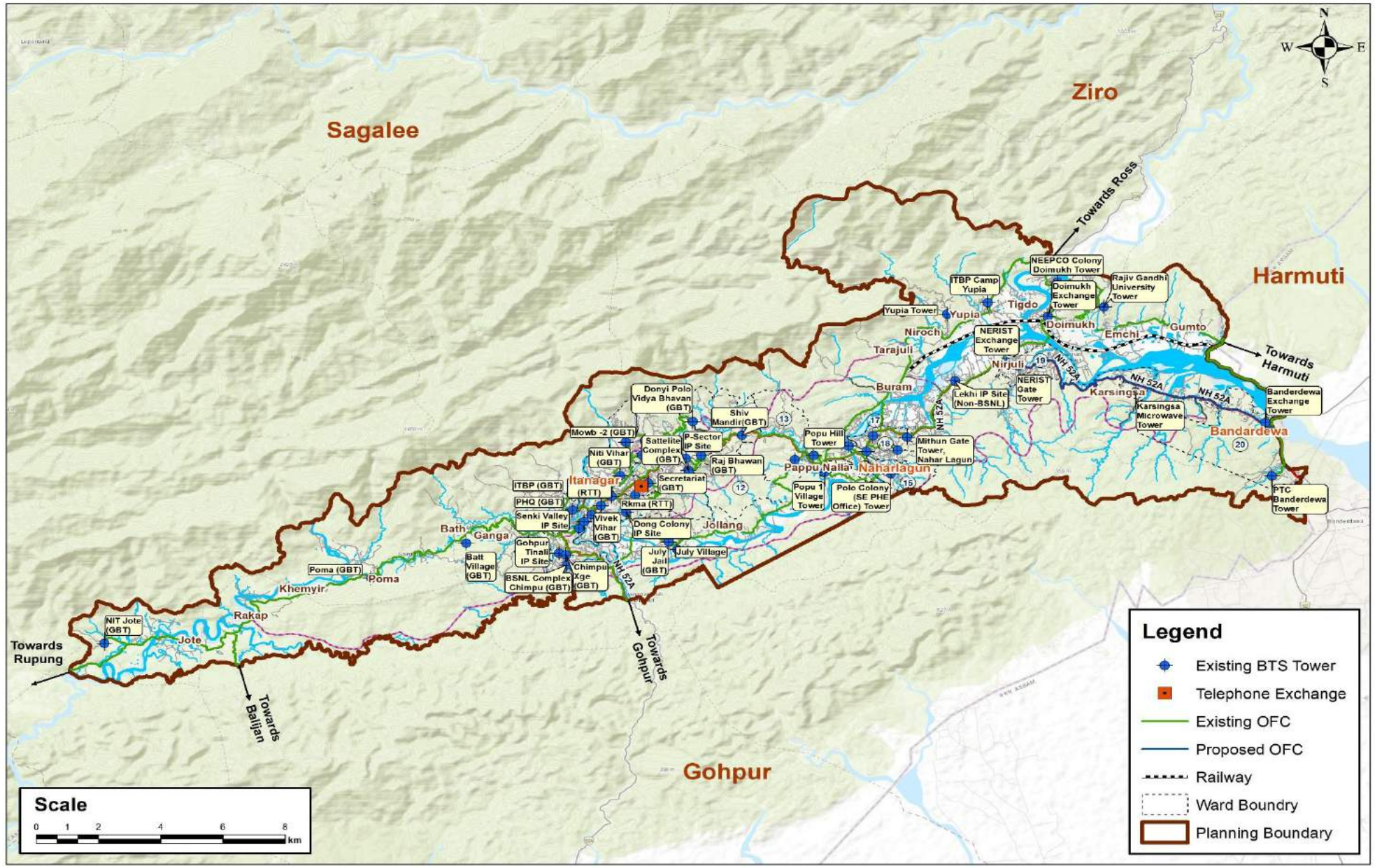
Allocating area for Health purposes

The proposed health regions are allocated near **Poma, Chimpu, Itanagar and Naharlagun areas**, which are logistically connected and situated fairly far from the settlements of the region.



Sectoral Proposals

Optical Fiber Grid

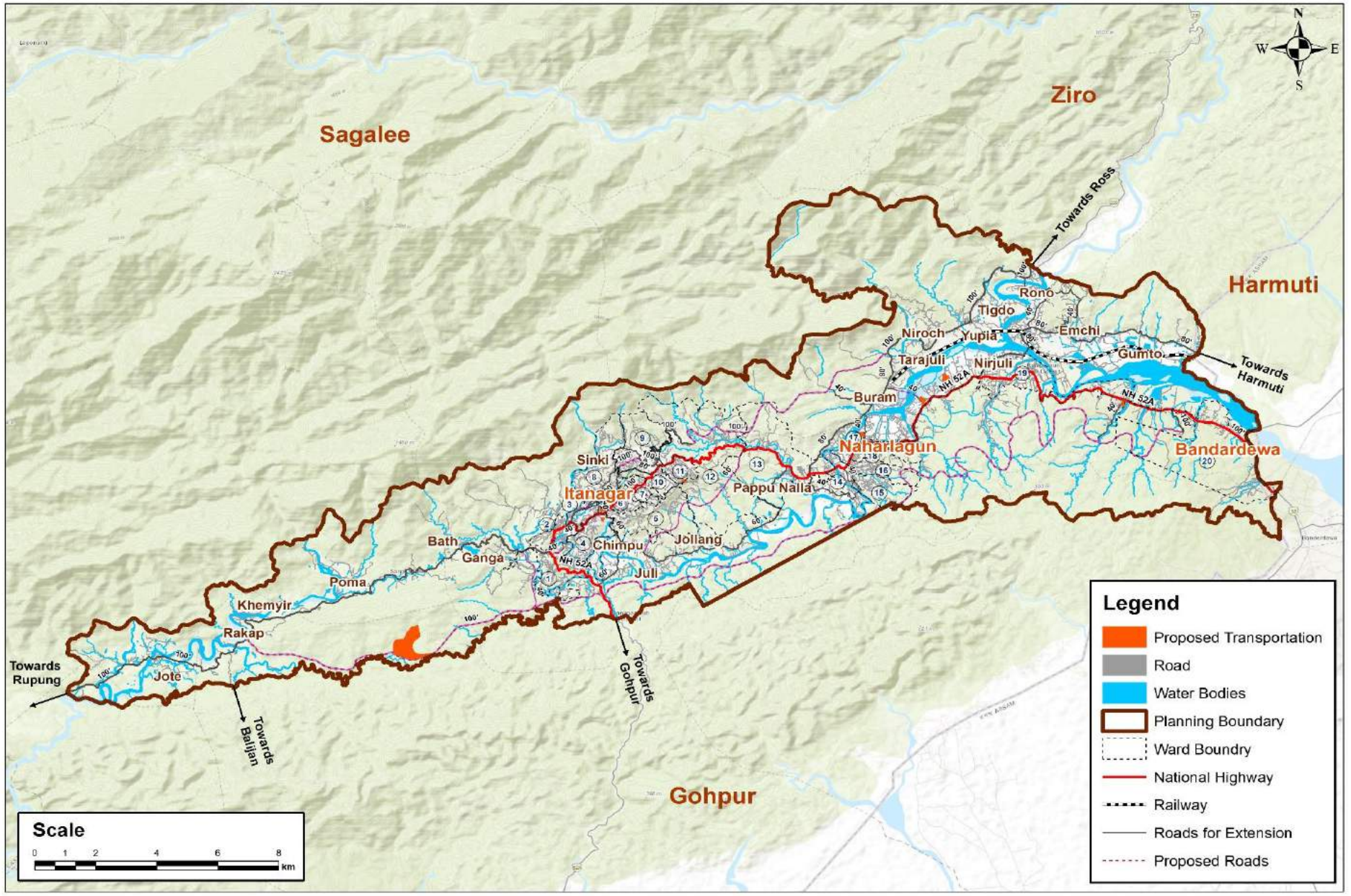


Sectoral Proposals

Freight and Parking facilities

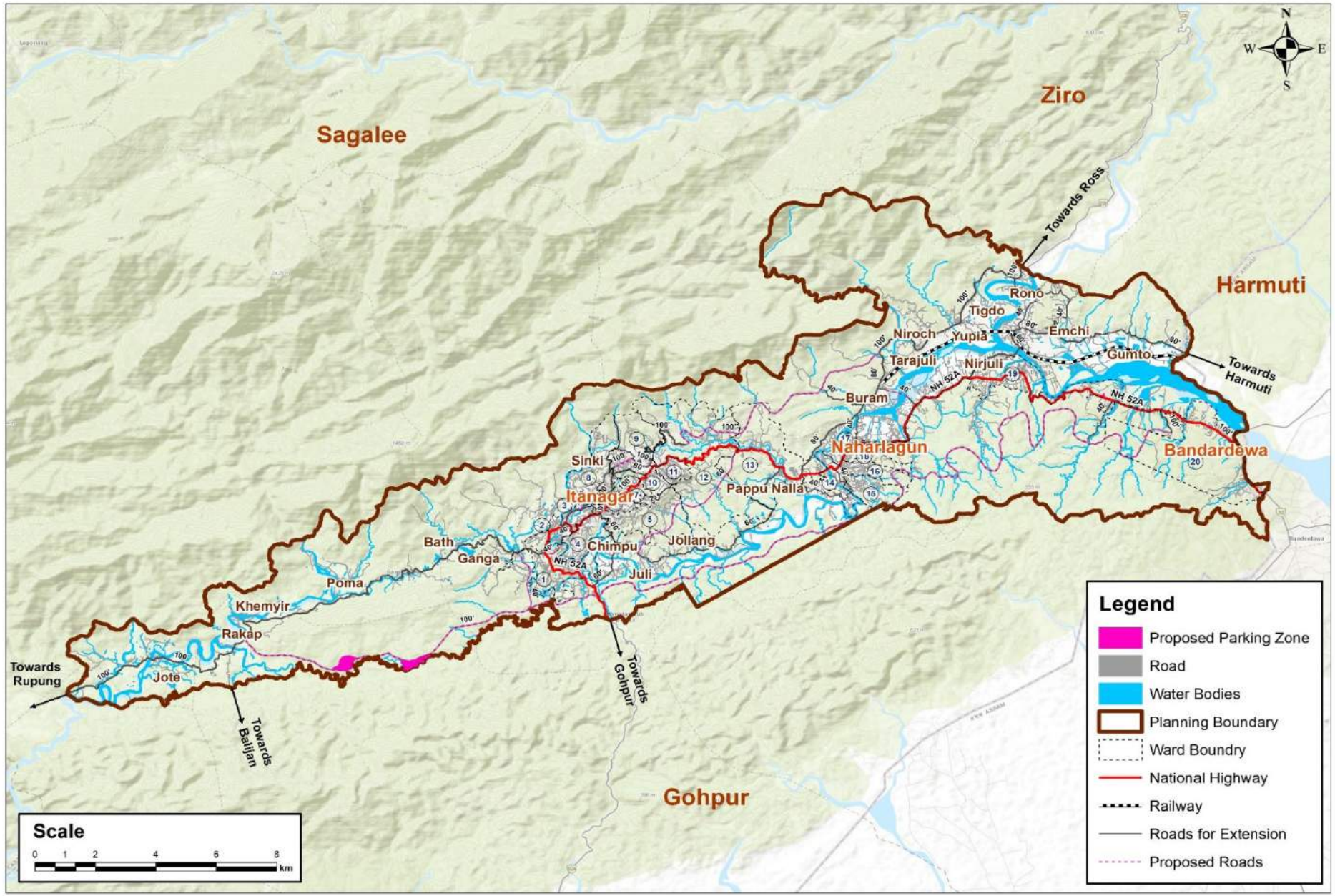
Allocating area for Freight and Parking facilities

The proposed Freight and Parking facilities are allocated near Poma area, which is far from the settlements of the region.



Sectoral Proposals

Freight and Parking facilities



Proposed Spatial Planning

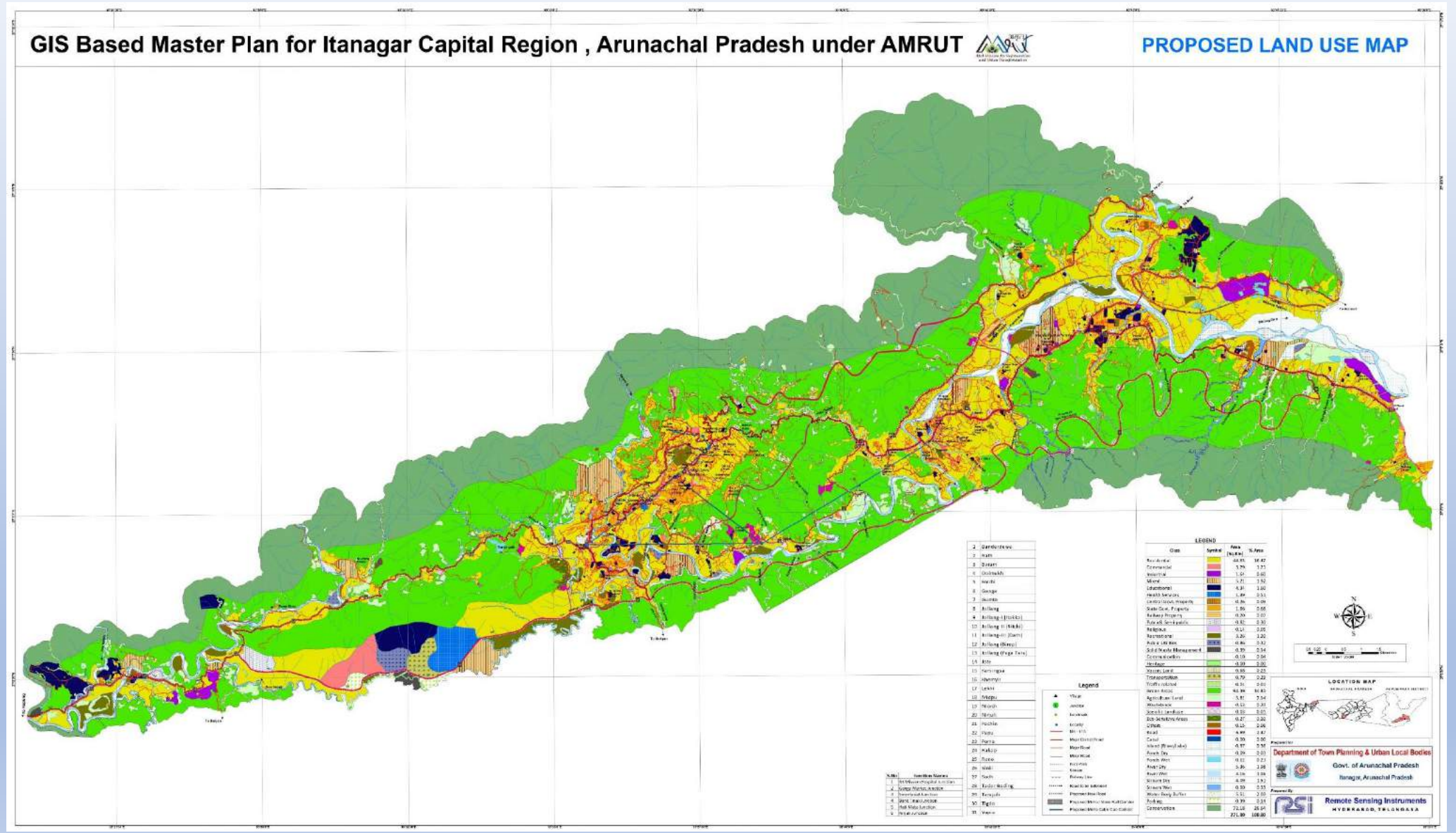
City wise

ICR Landuse	Standard %	Existing		Proposed	
		Sq. kms	%	Sq. kms	%
Residential	43 - 48	21.38	7.89	44.63	16.47
Commercial	4 - 6	1.34	0.49	8.49	3.13
Industrial	7 - 9	0.39	0.14	1.64	0.61
Public & Semi-Public	6 - 8	4.98	1.84	16.34	6.03
Water bodies	Adjust	15.31	5.65	20.7	7.64
Green areas	12-14	214.96	79.32	170.1	62.77
Roads	10 - 12	2.95	1.09	7.88	2.91
Vacant & Waste lands	Adjust	9.70	3.58	1.21	0.45

Itanagar Landuse	Standard %	Existing		Proposed	
		Sq. kms	%	Sq. kms	%
Residential	43 - 48	6.46	37.88	9.62	56.41
Commercial	4 - 6	0.24	1.40	0.67	3.91
Industrial	7 - 9	0.01	0.03	0.01	0.07
Public & Semi Public	6 - 8	0.69	4.06	0.89	5.24
Recreational	12 -14	0.21	1.21	0.46	2.69
Transportation & Communication	10 - 12	0.81	4.73	1.36	8.00

Naharlagun Landuse	Standard %	Existing		Proposed	
		Sq. kms	%	Sq. kms	%
Residential	43 - 48	4.05	45.72	5.79	65.38
Commercial	4 - 6	0.27	3.07	0.51	5.74
Industrial	7 - 9	0.06	0.73	0.07	0.84
Public & Semi Public	6 - 8	0.25	2.81	0.25	2.85
Recreational	12 -14	0.10	1.11	0.10	1.11
Transportation & Communication	10 - 12	0.41	4.60	0.61	6.93

Itanagar Capital Region - Proposed Landuse/ Land Cover Map

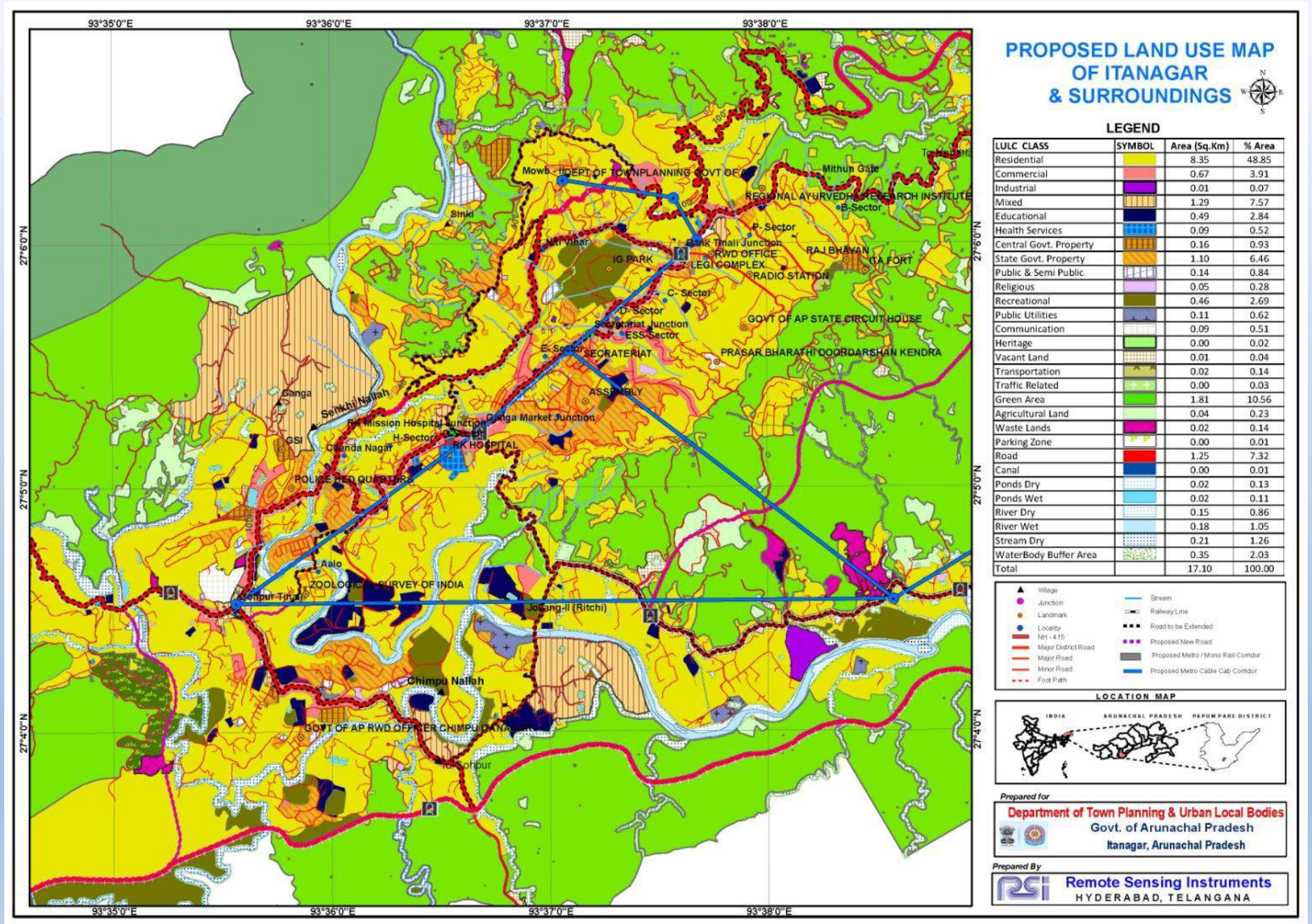


Proposed landuse map Legend

CLASS	GEOMETRY	SYMBOL	Area (Sq.Km)	% Area
Residential Area	Polygon		44.63	17.28
Commercial Area	Polygon		3.29	1.27
Industrial Area	Polygon		1.64	0.63
Mixed Area	Polygon		5.21	2.02
Educational Area	Polygon		4.35	1.68
Health Services	Polygon		1.39	0.54
Central Govt. Property	Polygon		0.26	0.10
State Govt. Property	Polygon		1.86	0.72
Railway Property	Polygon		0.20	0.08
Public & Semi Public	Polygon		0.82	0.32
Religious	Polygon		0.14	0.05
Recreational Area	Polygon		3.26	1.26
Public Utilities	Polygon		0.86	0.33
Solid Waste Management	Polygon		0.39	0.15
Communication	Polygon		0.10	0.04
Heritage	Polygon		0.00	0.00
Vacant Land	Polygon		0.66	0.26
Transportation	Polygon		0.79	0.30
Traffic Related	Polygon		0.01	0.01
Conservation Area	Polygon		59.36	22.98
Green Area	Polygon		94.40	36.54
Agricultural Land	Polygon		5.81	2.25
Wastelands	Polygon		0.53	0.21
Specific Land use	Polygon		0.03	0.01
Eco-Sensitive Area	Polygon		0.27	0.10
Others	Polygon		0.15	0.06
Parking Zone	Polygon		0.39	0.15
Road	Polygon		6.67	2.58
Canal	Polygon		0.00	0.00
Island (River/Lake)	Polygon		0.97	0.38
Ponds Dry	Polygon		0.09	0.04
Ponds Wet	Polygon		0.62	0.24
River Dry	Polygon		5.34	2.07
River Wet	Polygon		3.09	1.19
Stream Dry	Polygon		4.02	1.56
Stream Wet	Polygon		0.90	0.35
Water Body Buffer Area	Polygon		5.84	2.26

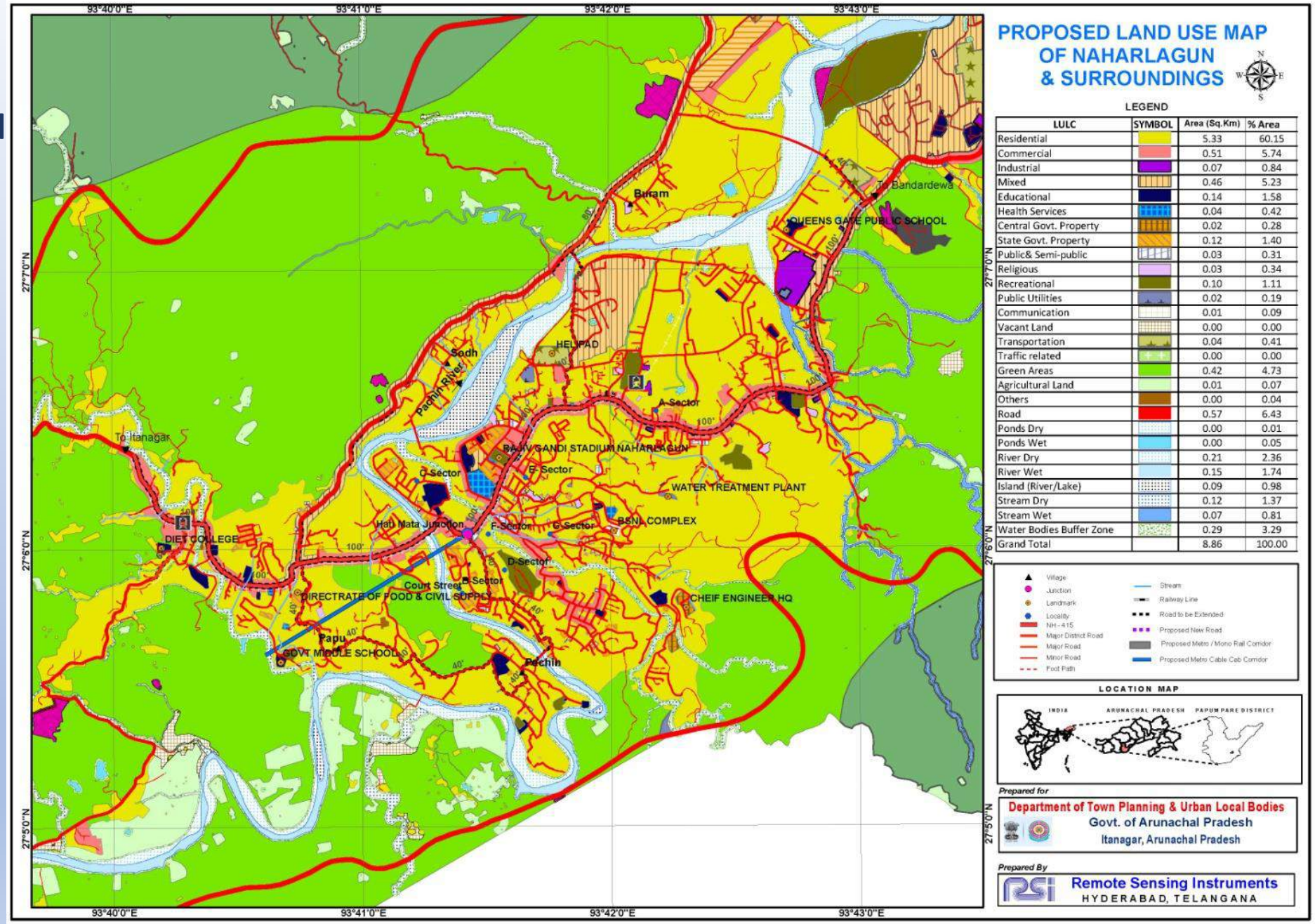
ITANAGAR

Proposed Landuse/ Land Cover Map



NAHARLAGUN

Proposed Landuse/ Land Cover Map



Contents

- Introduction
- Field survey and Data Analysis
- Population projections
- Gap Analysis
- Vision
- CERC review and comments
- Future and Sectoral Landuse Proposals
- **Innovative reform proposals**

Innovative reform proposals

Critical Development proposals for ICR Master plan

- Development of major road intersection junctions into pedestrian friendly zones
- Development of new roads and alternate approach routes to the existing roads
- Development of water front area with adventure park
- Development of Ganga lake into a Tourist destination
- Inclusion of the Picnic/Outdoor activities into special recreational landuse zones in the Buffer regions of the Eco-sensitive and Green areas

WAY FORWARD

- ✓Publication and Notification of Master Plan
- ✓Enforcement and Implementation of Master Plan
- ✓Identification and Decision making on which proposals to Implement on Priority
- ✓Prepare Suitability/Feasibility/DPR for the Proposal
- ✓Tender for Implementation
- ✓Reaching Finish Line is the Actual Success of Master Plan

Regards

नगर नियोजन एवं शहरी स्थानीय निकाय विभाग

Department of Town Planning & ULB's

अरुणाचल प्रदेश सरकार/Govt. of Arunachal Pradesh

ईटानगर/Itanagar