GIS Based Master Plan for **Baramulla Town- 2047** Jammu and Kashmir

Inception Report

Submitted to:

Housing and Urban Development Department (HUDD), Government of UT of Jammu and Kashmir

Through - AMRUT 2.0 State Mission Directorate

Submitted by:

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1 Abbreviations & Glossary

Abbreviation	Full Form
AADT	Annual Average Daily Traffic
AMRUT	Atal Mission for Rejuvenation and Urban Transformation
CBOs	Community-based organisations
DCHB	District Census Handbook
GIS	Geographic Information System
GPS	Global Positioning System
J & K	Jammu and Kashmir
Km	Kilometre
m	Meter
MoHUA	Ministry of Housing and Urban Affairs
MoRTH	Ministry of Road Transport & Highways
MSL	Mean Sea Level
MSW	Municipal Solid Waste
M Cl	Municipal Council
NAPCC	National Action Plan on Climate Change
NGOs	Non-Government Organisations
NH	National Highway
NRSC	National Remote Sensing Centre
OG	Outgrowth
PWD	Public Works Department
SAPCC	State Action Plan on Climate Change
SDGs	Sustainable Development Goals
SH	State Highway
SOI	Survey of India
Sq. Km	Square Kilometre
ULB	Urban Local Body
URDPFI	Urban and Regional Development Plans Formulation and Implementation
UT	Union territory

1.1 AMRUT 2.0 terms

AMRUT 2.0 mandates specific components for GIS-based master plan preparation to ensure holistic, evidence-based urban development. These compulsory elements include digital base maps, sectoral analysis, stakeholder surveys, and structured planning outputs.

Mandatory Components

- **Geo-referenced Base Map Creation:** Development of digital base maps at defined scales, integrating satellite imagery, GPS (Global Positioning System) survey, and ground truthing for spatial accuracy.
- **Urban Database:** Compilation of thematic maps and urban spatial databases detailing land use, infrastructure, population, utilities, and environmental assets.
- **Sector-wise Data Analysis:** Detailed analysis of city sectors (water supply, sanitation, transport, green spaces, economy, social infrastructure, etc.) based on standardized GIS layers and attribute data.
- **Demand Assessment & Issue Identification:** Identification of development issues, assessment of future requirements, and projection of urban growth and infrastructure needs.
- **Stakeholder Consultation & Social Surveys:** Use of mobile apps and field surveys to collect social and economic data; public participation integrated into planning proposals.
- **Draft and Final Master Plan:** Preparation of draft plans with proposed land uses, development strategies, utility networks, and regulatory controls; final plans submitted after public feedback and government review.
- **Capacity Building:** Training programs for administrators, planners, and technicians in GIS technology, master plan formulation, and data management.
- **Monitoring and Implementation**: Mechanisms for ongoing review, transparent implementation, and linkage to project funding and reforms.

1.2 GIS and planning-related terms

These terms provide foundational understanding for comprehending AMRUT 2.0 objectives and GIS-based urban master planning.

- **GIS:** (Geographical Information System), a computer-based system for capturing, analysing, and visualizing spatial and geographic data for planning and management.
- **Georeferencing:** The process of aligning spatial data (maps, images) to real-world coordinates for accurate analysis.
- **Thematic Layers:** Map layers representing specific themes such as land use, infrastructure, hydrology used to analyse and plan urban spaces.
- **Spatial Analysis:** Techniques applied to GIS data to understand spatial relationships and patterns, aiding decision-making in urban planning.
- **Cadastral Data:** Detailed records and maps of land parcels including boundaries, ownership, and usage.

- **Digitisation:** Conversion of analogue data (paper maps, plans) into digital format compatible with GIS.
- **Remote Sensing:** Acquisition of information about the Earth's surface using satellite or aerial imagery for mapping and monitoring.
- **Base Map:** The foundational map layer showing key geographic features upon which additional thematic layers are added.
- **Ground Truthing:** Verifying GIS or remotely sensed data on site to ensure accuracy and validity.

Source: SPAB

2. Executive Summary

2 Executive Summary

Baramulla City, situated in the northwestern part of the Kashmir Valley along the banks of the Jhelum River, is a historic urban centre renowned for its strategic geographic location, vibrant cultural heritage, and pivotal role as a gateway to North Kashmir. As one of the oldest and most prominent urban settlements in the valley, Baramulla has historically served as a commercial, cultural, and administrative hub. Its unique setting amidst fertile alluvial plains and forested hills gives it a strong agricultural base—particularly in horticulture such as apple and pear orchards and allied agro-industries—while its position on the key Srinagar–Uri National Highway corridor makes it a vital transit and trade node. With its expanding urban footprint and rapidly increasing population, Baramulla City faces mounting pressures on housing, transportation, public services, and ecological systems. This calls for a comprehensive and forward-looking Master Plan to manage growth, strengthen

infrastructure, and ensure environmentally sustainable urban development aligned with regional and national urban policies.

The GIS-Based Master Plan for Baramulla City is envisioned as a strategic framework to guide sustainable growth, infrastructure development, and socio-economic transformation through an integrated spatial planning approach. Leveraging advanced GIS technology, the plan synthesizes spatial datasets with updated information on demography, land use, transportation, utilities, environmental assets, and economic activities. Formulated in accordance with AMRUT 2.0 and national urban development missions, the plan emphasizes digital base map preparation, thematic mapping, robust primary and secondary surveys, and active stakeholder engagement to ensure inclusivity, accuracy, and community ownership. Its key objectives include promoting sustainable land use and compact urban form; improving road connectivity, public transport, and pedestrian networks; enhancing water supply, sewerage, solid waste management, stormwater drainage, healthcare, and educational infrastructure; safeguarding cultural and natural heritage; and building resilience to disasters and climate change impacts. The plan also seeks to stimulate local economic diversification by strengthening agro-based industries, tourism, handicrafts, and cross-border trade linkages.

The planning methodology adopts a multi-phased and participatory approach to ensure timely, high-quality outcomes. Data acquisition from authentic sources and creation of a preliminary GIS database will be undertaken during Months 1 and 2, followed by extensive field surveys and ground-truthing exercises in Month 3. In Month 4, digital base maps, thematic layers, and spatial analyses will be prepared, which will form the foundation for the Draft Master Plan. Months 5 and 6 will focus on stakeholder consultations, iterative revisions, and integration of feedback, leading to the preparation of the Final Master Plan, reporting, and dissemination in Month 7. This phased and structured timeline ensures quality deliverables, timely completion, and continuous stakeholder engagement throughout the process.

Baramulla's unique strengths that shape this Master Plan include its strategic gateway location linking North Kashmir with Srinagar and cross-border trade routes toward Uri and Muzaffarabad; its historic cultural legacy as an ancient trade and religious centre with sites of archaeological and heritage significance; its rich natural setting with proximity to forested hills, the Jhelum River, and renowned tourist spots like Gulmarg that enable eco-tourism and heritage tourism opportunities; its robust horticultural economy serving as a major apple-

producing and agro-trade centre in the valley; and its emergence as an educational and healthcare hub for the surrounding districts. With strong recommendations, sectoral strategies, and an actionable implementation roadmap, the GIS-Based Master Plan is designed to transform Baramulla City into a smart, resilient, and liveable urban centre—one that preserves its ecological and cultural heritage while fostering innovation, economic growth, and improved quality of life for its citizens.

Source: topographic-map.com/

3. INTRODUCTION

3 Introduction

Baramulla is the administrative centre of Baramulla district in Jammu and Kashmir, located about 55 km northwest of Srinagar and positioned along the historic Jhelum River. The name “Baramulla” is derived from the Sanskrit words *Varaha* (boar) and *Mula* (molar or deep gorge), referencing the ancient legend of the river’s passage through a narrow gorge near the town. Nestled at the foothills of the Pir Panjal Range, Baramulla has long served as the traditional gateway to the Kashmir Valley from the north and west, giving it strategic geographic and economic importance. Its location along the Srinagar–Uri National Highway further enhances its role as a vital transit and trade node linking the valley with Uri, Muzaffarabad, and other cross-border regions.

Rich in history and culture, Baramulla has been an important centre of trade, spirituality, and learning for centuries. It was historically visited by eminent travellers and spiritual figures, including Mughal Emperor Akbar and Xuan Zang, and has long been known for its religious harmony and cultural diversity. The town’s economy has a strong agricultural base, particularly in horticulture, with extensive apple and pear orchards and allied agro-processing activities

that contribute significantly to the regional economy. Baramulla also holds growing significance as an educational and healthcare hub for northern Kashmir, attracting people from surrounding rural areas for services and opportunities.

The region's attractions include scenic riverfront landscapes, forested hills, and proximity to famous tourist destinations such as Gulmarg, as well as historic religious sites like Khanpora Shrine and St. Joseph's Church. The city's urban fabric is supported by a network of adjoining settlements and municipal wards, sustaining vibrant traditions, handicrafts, and a rich cultural heritage.

The GIS-based Master Plan aims to facilitate data-driven decision-making, optimize land use, enhance urban infrastructure, and promote resilient, inclusive, and sustainable development in line with national urban missions such as AMRUT 2.0 and the guidelines of the Ministry of Housing and Urban Affairs (MoHUA). The plan will serve as a dynamic tool to guide future growth, infrastructure provision, environmental management, and stakeholder collaboration, ensuring Baramulla's transformation into a smart, liveable, and well-governed urban centre that preserves its cultural and ecological legacy while embracing economic modernization.

3.1 Background of the Project

3.1.1 Context of AMRUT 2.0 and City's Inclusion

The Atal Mission for Rejuvenation and Urban Transformation (AMRUT) 2.0 is a flagship urban development initiative by the Government of India aimed at enhancing infrastructure and service delivery in mid-sized cities and towns. It emphasizes water supply, sewerage, green spaces, sustainable urban transport, and climate resilience. Baramulla's inclusion under AMRUT 2.0 presents an opportunity to access central funding, technical expertise, and policy support to upgrade its urban infrastructure and governance framework. This aligns with the broader mission to develop liveable, resilient, and economically vibrant urban centres across the country.

3.1.2 Need for GIS-based Master Plan

As Baramulla continues to expand in both population and spatial extent, traditional planning approaches are increasingly inadequate to address the growing complexities of urban development, infrastructure management, and environmental sustainability. A Geographic Information System (GIS)-based Master Plan offers a modern, spatially driven framework that integrates diverse datasets—including land use, transportation networks, utilities,

demographics, and environmental assets—into dynamic, interactive maps and actionable analytical tools. This approach supports evidence-based decision-making, enables more efficient resource allocation, and fosters better coordination among government agencies, service providers, and local stakeholders. Moreover, GIS technology allows for real-time monitoring, spatial modelling, and scenario analysis, which are essential for enhancing climate resilience, strengthening disaster preparedness, and advancing smart city initiatives in Baramulla.

3.1.3 Alignment with SDGs, National and State Policies

The development of Baramulla's GIS-based Master Plan aligns closely with the United Nations Sustainable Development Goals (SDGs), especially SDG 11, which advocates for inclusive, safe, resilient, and sustainable cities. It also supports related goals on clean water (SDG 6), affordable energy (SDG 7), and climate action (SDG 13). At the national level, the Master Plan is integrated with frameworks such as the National Action Plan on Climate Change (NAPCC), AMRUT guidelines, and the Smart Cities Mission. At the state level, it synchronizes with Jammu & Kashmir's State Action Plan on Climate Change (SAPCC) and urban development priorities, ensuring comprehensive policy coherence. This alignment guarantees that urban growth in Baramulla follows sustainable, inclusive, and climate-resilient pathways.

3.2 Objectives

3.2.1 Preparation of GIS-enabled Master Plan as per MoHUA guidelines

The primary objective is to develop a GIS-enabled Master Plan for Baramulla town that complies with the Ministry of Housing and Urban Affairs (MoHUA) guidelines. This involves integrating spatial data and thematic information to create an evidence-based and dynamic urban plan. The GIS Master Plan will facilitate planning for land use, infrastructure development, service delivery, and sustainable urban growth by leveraging technology to enhance accuracy, visualization, and decision-making.

3.2.2 Digital base map preparation and thematic layers

Preparation of a comprehensive digital base map is a foundational step in this process. The base map will include key physical and administrative features such as roads, railways, water bodies, drainage systems, boundaries (city, wards, districts), and existing infrastructure. Over this base map, multiple thematic layers will be created, representing detailed land use

classifications, transportation networks, environmental features, socio-economic data, and utility services. These layers enable spatial analysis and scenario modelling, supporting targeted interventions and resource optimization.

3.2.3 Stakeholder engagement plan

An effective stakeholder engagement plan is essential to ensure inclusive, participatory, and transparent planning. This plan outlines the identification and involvement of key stakeholders including local government bodies, community members, utility agencies, civil society organizations, and private sector. Continuous stakeholder involvement will enhance plan relevance, ownership, and implementation success. This integrated approach aligns with contemporary urban planning practices and MoHUA mandates to develop smart, resilient, and inclusive cities through advanced GIS technology and participatory processes.

3.3 Scope of Work

For AMRUT 2.0 compliance, thematic maps must be detailed enough to provide actionable insights for urban planning, infrastructure development, and service delivery. The required level of detail includes:

- **Land Use and Land Cover:** Detailed classification distinguishing residential, commercial, industrial, institutional, recreational, vacant, and agricultural lands, along with subcategories where relevant.
- **Infrastructure Networks:** Comprehensive mapping of water supply systems (pipelines, reservoirs, treatment plants), sewerage networks, stormwater drainage, electricity grids, roads, public transportation routes, and waste management facilities.
- **Socioeconomic and Demographic Data:** Spatial representation of population densities, slum/locality boundaries, household service coverage, and vulnerable communities.
- **Environmental Features:** Detailed mapping of water bodies, green spaces, floodplains, forested areas, and pollution-prone zones to support sustainability and disaster resilience planning.
- **Hazard and Risk Zones:** Identification of flood risk areas, landslide-prone zones, seismic fault lines, and other disaster-relevant features with precise boundaries.

3.3.1 GIS Base Map Preparation

The foundational step involves preparing a detailed and accurate GIS base map for Baramulla city. This includes acquiring high-resolution satellite imagery, Survey of India (SOI) toposheets, cadastral maps, and Urban Local Body (ULB) data. These datasets are digitized, georeferenced, and integrated into a spatial database. The base map captures essential physical and cultural features such as roads, railways, water bodies, administrative boundaries, built-up areas by parcel, topography, landmarks, and utilities. The scale and content of the base map are

designed to suit the planning requirements, ensuring it serves as a reliable framework for overlaying thematic layers.

3.3.2 Thematic Mapping

Multiple thematic layers will be developed over the GIS base map, representing specific urban attributes. These include land use/land cover classification, transportation networks, socio-economic zones, environmental features (like green spaces and water bodies), infrastructure networks (water supply, sewerage, electricity), disaster risk zones, and public amenities. These thematic maps will be prepared through remote sensing image interpretation, existing data integration, and field validation, providing a comprehensive spatial understanding of urban dynamics.

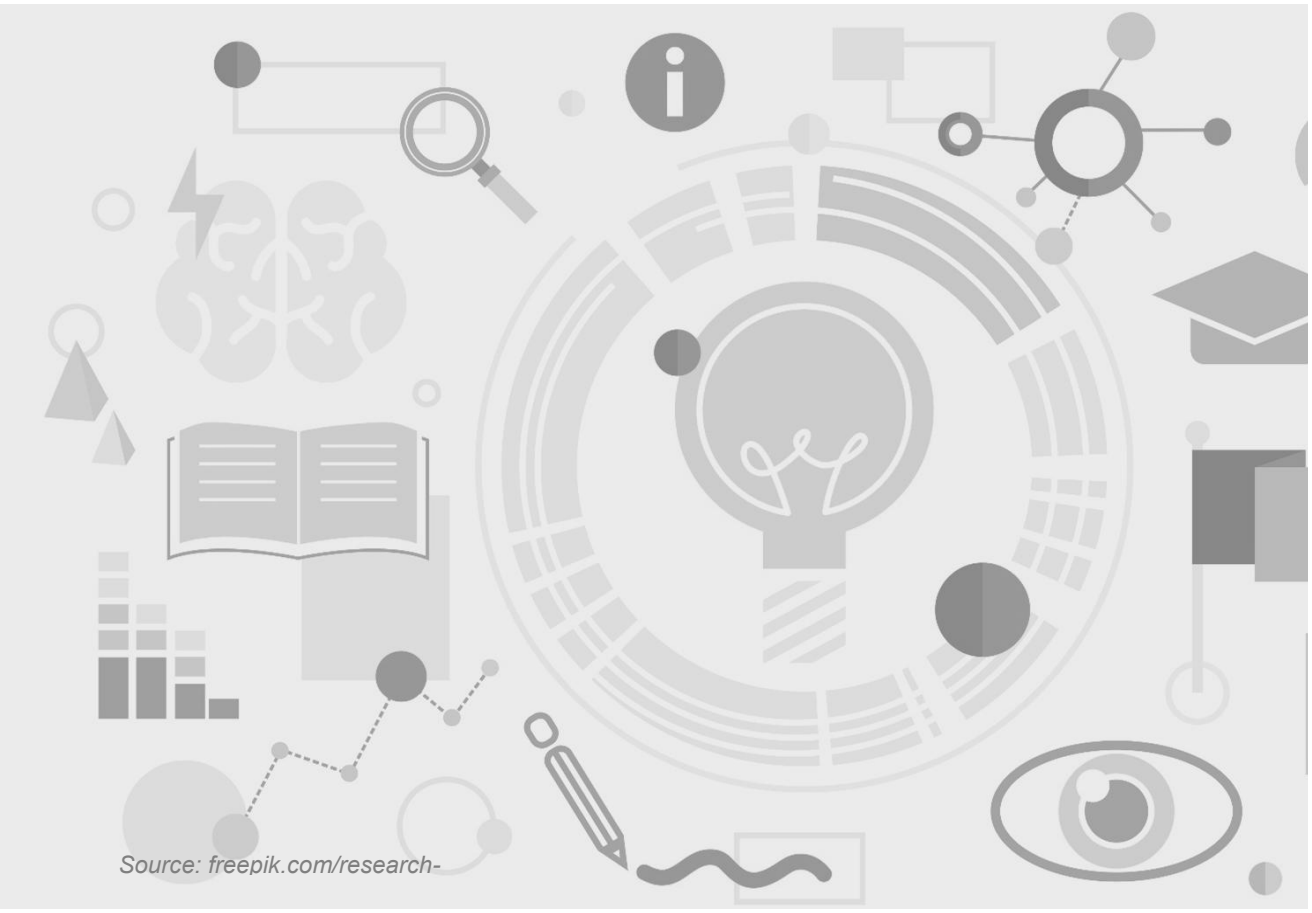
3.3.3 Spatial Analysis

Using spatial analysis techniques within the GIS environment, planners will analyse patterns, relationships, and trends relevant to Baramulla's urban development. This includes accessibility analysis for services, identification of infrastructure gaps, land suitability analysis, risk assessment for disaster-prone areas, and scenario modelling for future growth. The integration of diverse spatial datasets allows for evidence-based planning decisions aimed at sustainable and resilient urban growth.

3.3.4 Draft and Final Plan Preparation:

Based on insights from thematic mapping and spatial analysis, a draft Master Plan will be formulated outlining land use proposals, infrastructure development strategies, zoning regulations, and sustainability measures. The draft plan will undergo stakeholder consultations and iterative refinements. The final GIS-enabled Master Plan document will include detailed maps, policy frameworks, implementation guidelines, and monitoring mechanisms, aligning with national (MoHUA, AMRUT 2.0) and state policies for comprehensive urban transformation.

This Scope of Work ensures a rigorous and integrated planning process leveraging GIS technology to support Baramulla's sustainable and inclusive urban development.



4. METHODOLOGY

4 Methodology

4.1 Process for Ground Truthing Survey and Data Analysis

The methodology illustrated in the diagram adopts a structured approach to survey and data analysis for urban planning by integrating both primary and secondary surveys. Primary surveys comprise comprehensive assessments of traffic patterns, road infrastructure, public utilities, and built-up areas, capturing details such as traffic volume, road widths, bottlenecks, water and sewerage layouts, building characteristics, and municipal solid waste. Secondary surveys complement this by collecting vital data from existing sources, including census records, urban local body and public works department records, utility data, and information from other governmental departments. These diverse datasets are synthesized through meticulous implementation phases—planning, preparation, execution, and data processing—followed by digitization, data entry, thematic mapping, and analytical review. The process culminates in detailed reporting, enabling evidence-based, holistic, and actionable master plan development.

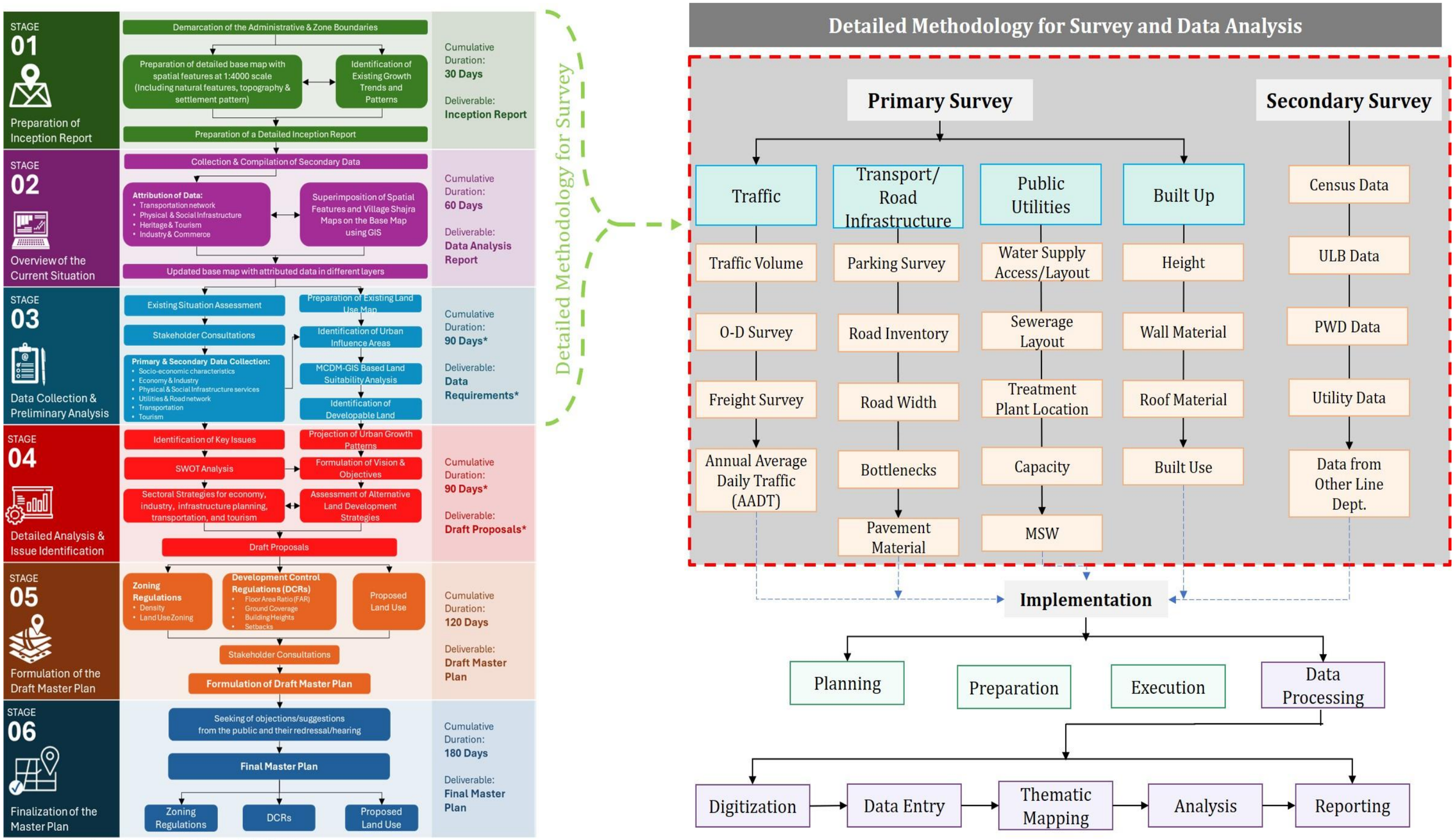


Figure 4.1-1: Methodology for data collection and analysis

Source: Author

4.2 GIS Database Development Approach

4.2.1 Sources: Open-source satellite imagery, SOI data, drone survey (if applicable), ULB data

The GIS database for Baramulla will consolidate data from multiple reliable sources to ensure comprehensive coverage and accuracy. This includes open-source satellite imagery such as Landsat or Sentinel data, Survey of India (SOI) topographic maps for detailed geographic features, and drone surveys where feasible for high-resolution, localized mapping. Urban Local Body (ULB) data will provide official records on land parcels, infrastructure, municipal boundaries, and utility networks, forming a critical base layer for the GIS repository.

4.2.2 Digitisation and georeferencing process

Collected analogue data such as paper maps, cadastral plans, and infrastructure layouts will be digitized through scanning and vectorization, converting them into geographic data layers compatible with GIS software. Georeferencing involves aligning these scanned images or maps with real-world coordinates using control points to ensure spatial accuracy. Remote sensing images will be processed and classified to extract relevant thematic layers like land use, vegetation, or water bodies. This spatial data is then compiled into an integrated GIS database, organized into layers representing various physical, social, and infrastructural variables.

4.2.3 Accuracy standards

To ensure reliability, the GIS database development will adhere to strict accuracy standards. Georeferenced data will maintain spatial accuracy within the acceptable range defined by local urban planning norms usually within a few meters for large-scale planning. Image resolution and ground control points for georeferencing are carefully selected to minimize errors. Field verification and ground truthing will complement remote sensing data to validate and correct attribute information, thereby improving overall data quality. Metadata documenting data sources, accuracy, and lineage will be maintained to support transparency and future updates. This structured GIS database approach enables precise mapping, spatial analysis, and scenario modelling essential for effective urban planning and sustainable development of Baramulla City.

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4.3 Survey Plan

A comprehensive survey plan for Baramulla City involves the systematic collection of both primary and secondary data to support effective urban planning. Secondary data is gathered from reliable sources including Urban Local Body records, the Census of India, departments such as the Ministry of Road Transport & Highways (MoRTH), Public Works Department (PWD), and utility service providers to create a robust baseline of demographic, infrastructure, and service information. Complementing this, primary surveys are conducted in the field to understand existing realities related to traffic flows, socioeconomic conditions, land use, and physical infrastructure. These primary data collection efforts use structured questionnaires, field observations, geotagging, and interviews to fill gaps and validate secondary data, ensuring a nuanced understanding of local circumstances. This dual approach will support evidence-based decision-making for master plan development, resource allocation, and sustainable growth in Baramulla City.

4.3.1 Team Mobilization

Table 4.3-1: Team involved in project

Sl. No	Name	Position
1	Dr. Ashfaque Alam	Team Lead Expert in urban planning, land management, and governance
2	Dr. Mayank Dubey	Dy. Team Lead Specialist in urban mobility and infrastructure planning
3	Dr. Paulose N.K	Dy. Team Lead Expert in spatial analysis, climate studies, and Environment
4	Dr. Nikhil Ranjan Mandal	Specialist in housing and urban planning
5	Dr. Gayatri Nanda	Expert in urban design and landscaping
6	Dr. Adithya Bandari	Specialist in utilities, services, and GIS
7	Project Assistants	Total 07
8.	Field Enumerators	Total 10

Source: SPAB

For conducting the detailed ground truthing survey and collecting both primary and secondary data, a structured team composition has been defined as shown in Table XYZ. The entire process will be supervised by the Principal Investigator (PI), who will ensure adherence to

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survey protocols, quality standards, and methodological consistency. The PI will be supported by thematic experts and technical specialists in areas such as transportation, road engineering, public utilities, and land use planning. These experts will periodically review field outputs, validate data formats, and provide technical guidance to maintain accuracy and reliability.

For each town, two to three Project Assistants will be designated to coordinate fieldwork. They will act as the link between the central planning team and field enumerators, handling the scheduling of surveys, briefing of teams, allocation of grids, and day-to-day monitoring. They will also conduct spot checks to ensure that data collection follows the prescribed formats and accurately reflects ground conditions.

The Field Enumerators will carry out on-site surveys within the assigned grids and traffic nodes, using structured formats and GPS-enabled tools to gather data on traffic, road infrastructure, public utilities, and built-up characteristics. They will also collect relevant secondary data from local offices and institutions. Their daily progress will be reviewed by the Project Assistants, who will compile and submit the data for expert scrutiny.

This tiered structure ensures systematic coordination and quality assurance, with field enumerators collecting data on the ground, project associates managing operations, and the PI with domain experts overseeing the entire process.

4.3.2 Primary Survey

The primary survey methodology for the Baramulla Planning Area has been designed to ensure comprehensive, on-ground data collection across four critical thematic domains: traffic, road infrastructure, public utilities, and built-up characteristics. To achieve a high level of spatial detail, the entire planning area has been systematically divided into 96 grids, each measuring 1.00 km by 1.25 km (1.25 sq.km). This grid-based approach enables detailed coverage down to the individual building level. Out of these 96 grids, around 20 to 30 are located within the core or dense built-up area and will be surveyed in greater detail, while the remaining grids cover predominantly agricultural land, water bodies, or sparsely developed areas and will require relatively less intensive coverage. Each dataset collected during the survey will be geo-referenced to its respective grid, thereby ensuring seamless spatial integration during subsequent GIS-based analysis.

Traffic surveys will form a major component of this methodology. These will include traffic volume counts, origin-destination (O-D) surveys, and freight movement studies to capture the intensity and nature of vehicular flows. The data collected will be processed to estimate the Annual Average Daily Traffic (AADT), which will serve as a key parameter in planning road capacities and designing junction improvements. Several potential nodes and junctions have been preliminarily identified across the planning area for conducting these traffic surveys. However, the exact number and location of these traffic survey points will be finalized after a preliminary reconnaissance (reckon) field visit to ensure coverage of all major movement corridors and activity centres. The road infrastructure survey will focus on creating a comprehensive inventory of all roads within the planning area. This will involve recording the widths of carriageways and rights-of-way, assessing the type and condition of pavement materials, noting the presence of shoulders, medians, and footpaths, and identifying existing bottlenecks and critical junctions. Such data will be crucial for assessing the adequacy and quality of the current road network and for planning future improvements. The mapping of public utilities will involve a detailed assessment of water supply, sewerage, and municipal solid waste (MSW) management systems. For water supply, data will be collected on sources, treatment plants, pipe network layouts, service coverage, and household-level access. Sewerage surveys will map the alignment of sewer lines, house connections, manholes, treatment or disposal systems, and the capacities of existing treatment plants. Similarly, the MSW survey will document the collection system, storage points, transfer stations, and final disposal sites. These surveys will help identify gaps, inefficiencies, and infrastructure deficits in service delivery. Finally, the built-up area survey will record detailed building-level information, including building heights (number of floors), wall and roof construction materials, and the functional use of buildings—whether residential, commercial, institutional, industrial, or mixed-use. This dataset will form the foundation for land use classification, density analysis, and the formulation of building regulations.

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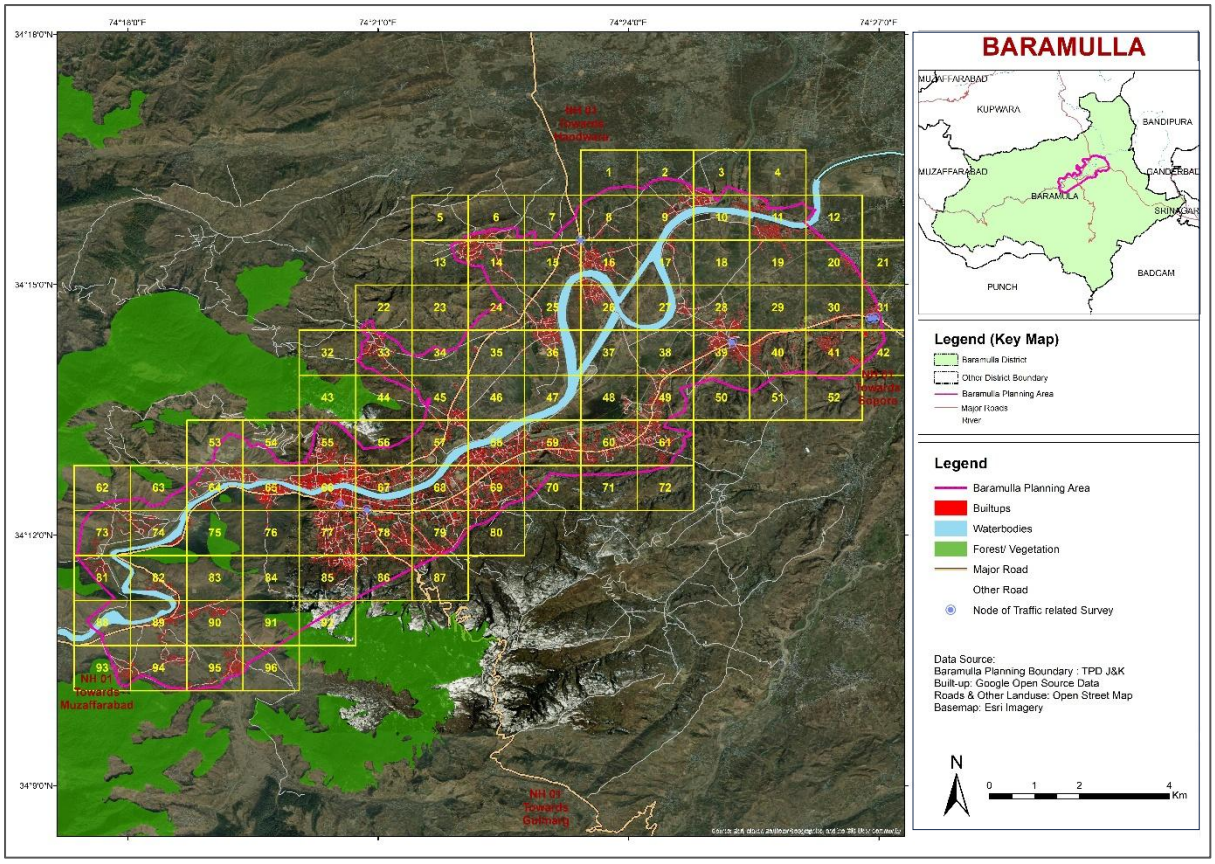
Map 4.3-1: Basemap of Baramulla Planning Area with Survey Grids



Source: Mentioned on Map

4.3.3 Secondary Survey

The secondary survey involves collating authoritative data from existing sources to complement and validate primary findings. Key data sources include census documents providing demographic and socio-economic statistics; records from Urban Local Bodies (ULBs) detailing governance, municipal boundaries, and service delivery; and Public Works Department (PWD) databases documenting infrastructure assets and maintenance. Utility agencies supply up-to-date information on water, electricity, and other essential services, while further inputs from other departmental records round out the data landscape. This secondary information is systematically processed, digitized, and entered into the planning database, allowing for efficient thematic mapping, analytical synthesis, and comprehensive reporting. By leveraging both current field data and reliable institutional records, the

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methodology ensures a holistic, nuanced understanding of Baramulla city's urban framework, in line with AMRUT 2.0 guidelines and best practices in urban planning.

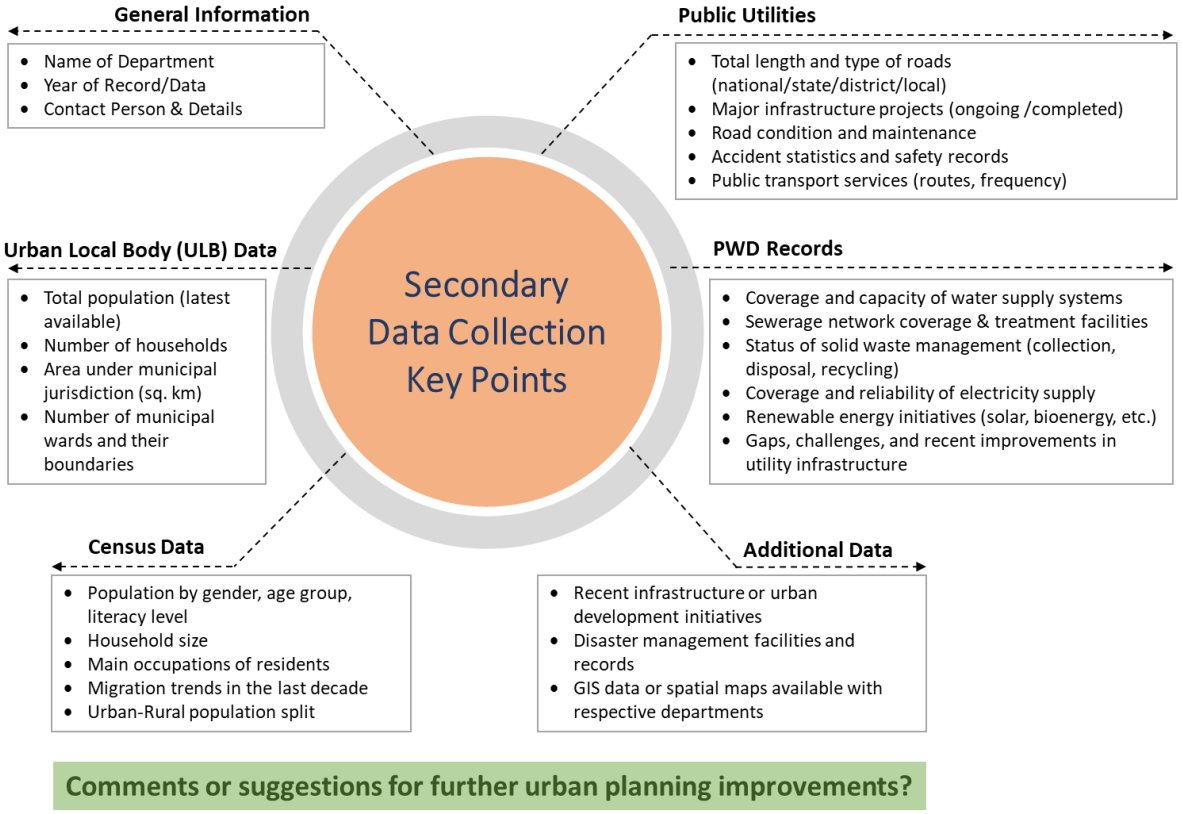

Figure 4.3-1: Secondary data required for Master Plan process

Source: SPAB

The provided secondary data collection questionnaire aligns with the AMRUT 2.0 guidelines. AMRUT 2.0 emphasizes evidence-based urban planning through robust data collection and analysis to improve infrastructure, basic services, and governance. The questionnaire covers critical domains specified in AMRUT 2.0, including population and demographic analysis, municipal area management, infrastructure, utility services (water, sewerage, roads, transport, waste management, electricity), and environmental features. These questions support preparation of development plans, identification of service gaps, and design of solutions in line with AMRUT 2.0's objectives of improving quality of life, resilience, and inclusivity in urban areas.

4.4 Stakeholder Consultation

Stakeholder consultation is an essential part of the master plan process, ensuring that diverse community needs, expert perspectives, and institutional priorities are integrated into urban development strategies. It involves identifying key stakeholders such as residents, community

organizations, local businesses, professional bodies, and government agencies and engaging them through public meetings, workshops, surveys, and collaborative working groups. This participatory approach enables planners to gather insights, review development scenarios, balance competing interests, and incorporate valuable feedback directly into the draft and final master plan documents, thereby fostering transparency, trust, and public ownership of urban transformation outcomes.

4.5 Work Plan and Timeline

The 26-week project begins with initial studies—team mobilisation, base maps, and demographic-economic analysis—ending with an Inception Report by week 4. Weeks 4–12 cover baseline analysis of land use, infrastructure, demographics, and socio-economic aspects, leading to a Data Analysis Report. From weeks 12–15, future requirements, issues, and potentials are assessed. Weeks 15–22 focus on drafting proposals, land use plans, transport networks, and development regulations, submitted as the Draft Master Plan. Weeks 22–24 involve public feedback, and by week 26, the Final Master Plan is submitted.

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Tasks	Weeks																									Submissions
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	
Team Mobilisation																											
Regional setting Map																											
Initial Base map preparation																											
Initial Demographic Analysis																											
Salient features of city Economy business, andcommerce																											
Updation of Methodology																											
Data Collection Action Plan																											Inception Report
Baseline Analysis																											
Identification and delimitation of urbanisable																											
Land use suitability analysis																											
areas of influence based on flow of goods and services																											
Demographic profile of the town																											
Existing tourist flows and projections																											
Population projections																											
Assessment of land requirements																											
Analysis of Industian base and Potential																											
Analysis of commercial base and Potential																											
Mapping of Street Vending activities																											
Mapping of Socio economic facilities																											
Assessment of Traffic and Transportation Characteristics																											
Assessment of sanitaion infrastructure																											
Assessment of facade, urban landscape, streetscape																											
Tourism and Agriculture activites																											Date analysis report:
Projected Requirements, Issues & Potentials																											
Projections of socio-economic aspects																											
Estimation of Land Requirements																											
SWOT analysis																											
Selection of an Optimal Development Scenario																											Projected Requirements, Issues/Problems, Potentials an
Draft Proposals and Draft Master Plan																											
Comprehensive Land Use Allocation Plan																											
Transportation network Plan for the Horizon period																											
Proposals for socio economic development																											
Draft Implementation strategy																											
Draft proposals																											
Institutional framework																											
Existing landuse map																											
Proposed landuse Map																											
Draft Urban Area Map																											
Draft Development Control Regulations																											Draft Master Plan
Seeking of objections/suggestions from the general public and their addressal / hearing thereof																											Seeking of objections/suggestions from the general public and their addressal / hearing thereof
Final Master Plan																											Final Master Plan

Figure 4.5-1: Work Plan Gantt Chart

Source: SPAB

5. AREA PROFILE

5 Study Area Profile

Jammu and Kashmir, situated in the northernmost part of the Indian subcontinent, holds a distinct geopolitical and geographic significance. Historically one of India's largest princely states, its boundaries have been shaped by international frontiers as well as diverse neighbouring regions. To the east lies Ladakh, now a separate Union Territory, while to the south it shares borders with Himachal Pradesh and Punjab.

The Union Territory (UT) of Jammu and Kashmir came into existence on 31st October 2019, following the enactment of the Jammu and Kashmir Reorganisation Act, 2019. It follows a dual-capital system, with Srinagar serving as the summer capital and Jammu as the winter capital. The UT spans an area of 16,309 square miles (42,240 sq. km.) and, as per the 2011 Census, has a population of 12,367,013.

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Administratively, the Union Territory is divided into 20 districts and Baramulla being one of the districts. It is situated in central part of Jammu and Kashmir. Baramulla city that is part of Baramulla tehsil, is the district headquarter town/city.

5.1 City Overview

Baramulla city, often referred to as the “Gateway of Kashmir,” is a prominent urban centre in the northern part of Jammu and Kashmir. Situated on the banks of the Jhelum River, approximately 51–56 km northwest of Srinagar, it serves as the administrative headquarters of Baramulla district. The city occupies a strategic location on the historic route connecting the Kashmir Valley with Muzaffarabad and Rawalpindi, which historically established it as a hub of trade, travel, and cultural exchange.

Figure 5.1-1: Jhelum River in Baramulla

Source: KashmirLife.net

Geographically, Baramulla city is uniquely positioned at the highest point of the Jhelum River, with the old town located on the north (right) bank and the new town on the south (left) bank. This spatial division reflects both the city’s historical legacy and its modern urban growth. Today, Baramulla functions as a key commercial, educational, and service centre, linking the

surrounding rural hinterlands with larger markets while embodying the socio-economic fabric of the Kashmir Valley.

5.1.1 Location

Baramulla district is the largest district in the entire valley both with reference to the population and area. The district is situated at 34.1980° N Longitude and 74.3636° E Latitude, extending over an area of 4190 km² (Baramulla, 2010). It is bounded by Srinagar district and Ganderbal district in the east to the line of control in the West and from Kupwara district in the north and Bandipora district in the northeast to Poonch district in the south, Budgam district in the southwest and Muzaffarabad District in the West, refer figure 5.1-2.

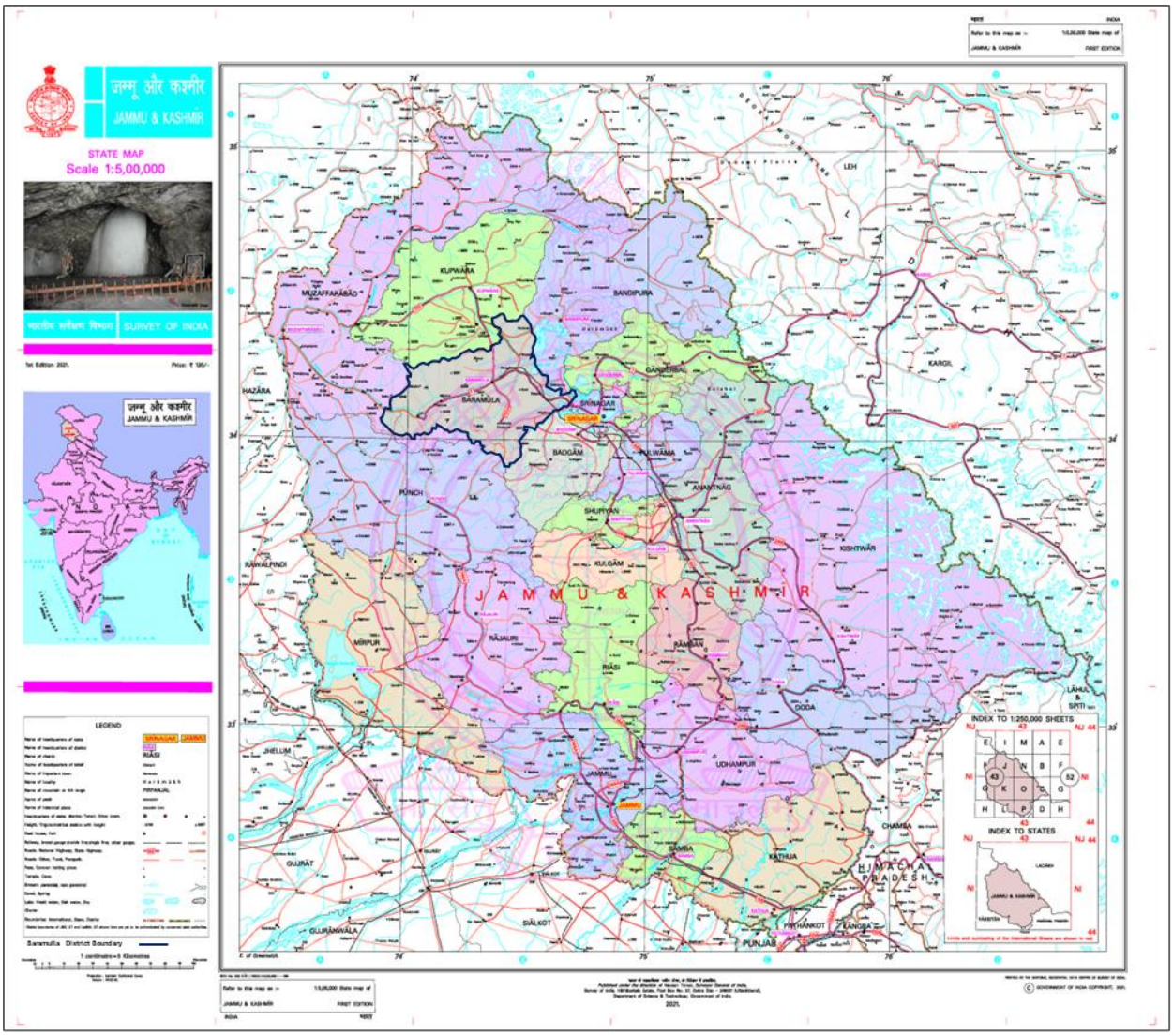

Figure 5.1-2: Location of Baramulla District in Jammu and Kashmir (UT)

Source: Survey of India

As per Census 2011, Baramulla district has 8 Sub-division (Tehsils), 7 Statutory towns and 518 villages. Baramulla being one the tehsil located centrally within the district. Tehsil has only one statutory town, Baramulla city, which is located at the centre of the tehsil.

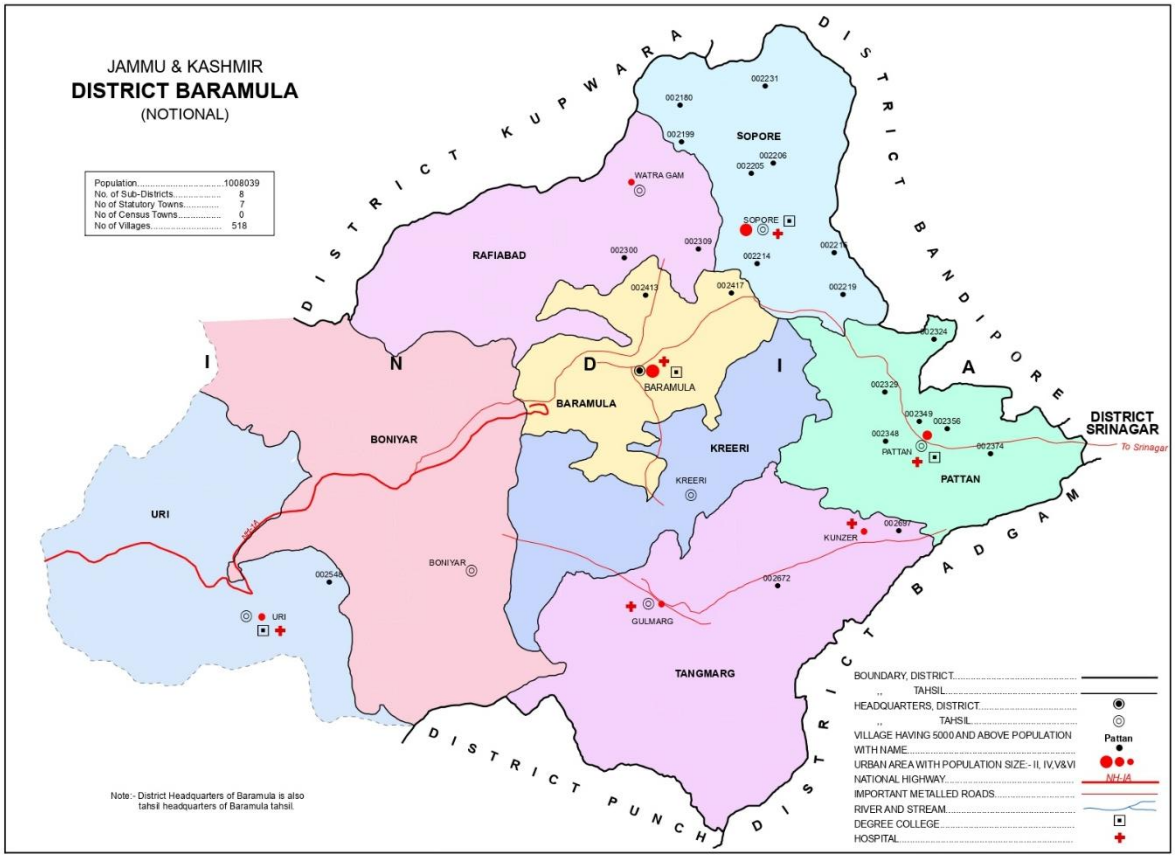

Figure 5.1-3: Baramulla District, Jammu and Kashmir (UT)

Source: Baramulla DCHB, Census of India 2011

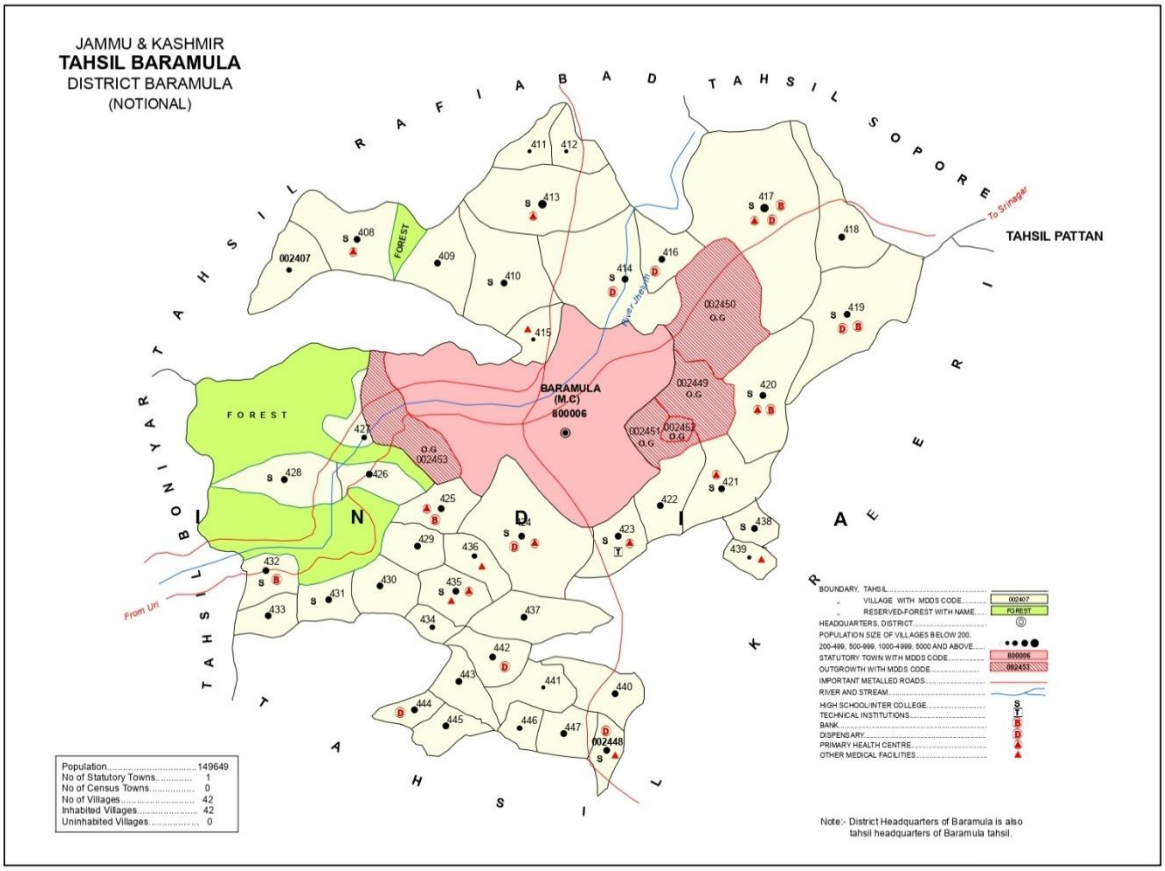

Figure 5.1-4: Baramulla Tehsil, Baramulla District (Jammu and Kashmir (UT))

Source: Baramulla DCHB, Census of India 2011

Baramulla is a prominent city in the northern part of Jammu and Kashmir, situated on the banks of the Jhelum River, about 51-56 km northwest of Srinagar. The city serves as the administrative headquarters of Baramulla district, which is the largest by population and area in the valley. The city is historically divided into two parts: the old town on the northern (right) bank of the river and the newer town on the southern (left) bank.

5.1.2 History

The Union Territory of Jammu & Kashmir has a long and significant historical background. Its modern political identity originated with the Treaty of Amritsar, signed on 16 March 1846, through which the British transferred control of Kashmir to Maharaja Gulab Singh, the Dogra ruler of Jammu. Already in possession of Ladakh, Maharaja Gulab Singh thus established a unified territorial entity comprising Jammu, Kashmir, and Ladakh, laying the foundation of the princely state.

Following India's Independence in 1947, Jammu & Kashmir was one of the princely states where British paramountcy lapsed. The then ruler, Maharaja Hari Singh, formally acceded to

the Union of India by signing the Instrument of Accession on 26/27 October 1947, thereby securing the state's integration with India. Over subsequent decades, key constitutional developments further defined its governance structure. The Constitution of Jammu and Kashmir, adopted in 1956, reaffirmed its position as an integral part of India. Later, through constitutional amendments in 1965, the designations of Sadar-i-Riyasat and Prime Minister were replaced with Governor and Chief Minister, respectively, aligning the state's political framework with that of other Indian states.

A major milestone in its recent history was the enactment of the Jammu and Kashmir Reorganisation Act, 2019, which came into effect on 31 October 2019. Through this legislation, the erstwhile State of Jammu and Kashmir was reorganised into two Union Territories—Jammu & Kashmir and Ladakh. At present, The Union Territory of Jammu & Kashmir consists of 20 districts, including Baramulla district in the Kashmir Valley, and functions with Srinagar as its summer capital and Jammu as its winter capital.

5.1.2.1 District History

Baramulla, historically known as Varamulla, is as old as the Kashmir Valley itself, with origins traced back to the legendary draining of the ancient Satisaras Lake. Mentioned in Rajatarangini, the district has long served as the traditional gateway to Kashmir, strategically located along the Jhelum River. Over centuries, Baramulla became a seat of religious, cultural, and political importance under Hindu, Buddhist, Mughal, Pathan, Sikh, and Dogra rulers. Its geographical position made it a focal point for invasions and military campaigns, earning it the title "Panipat of Kashmir". Despite repeated destruction, it retained its role as a centre of trade, culture, and spiritual life

5.1.2.2 City History

The city of Baramulla was founded by Raja Bhimsina around 2306 B.C. and developed as the main entry point to the valley, with a watch station at Drang to receive visitors. During the Buddhist era, Baramulla reached its zenith with settlements at Hashikopora and Kanispora, where viharas and cultural landmarks were established under rulers such as Haskha and Kanishka. Religious significance deepened over time, with Hindu shrines, Buddhist viharas, the shrine of Muslim saint Syed Janbaz Wali (15th century), and the Sikh Gurdwara commemorating Guru Hargobind, making the city a symbol of composite culture. The Mughals, particularly Akbar and Jahangir, frequently halted here on their journeys to Kashmir, further elevating its prominence.

However, Baramulla's strategic location also exposed it to repeated invasions and conflicts during medieval and later periods, from internecine Kashmiri battles to raids by Bambas, Khakhas, Pathans, and eventually the tribal attack of 1947. These invasions led to cycles of destruction and decline, diminishing its stature as a prosperous trading centre. In modern times, while Baramulla has been reduced to a smaller border town, it continues to be remembered as the historic gateway of Kashmir and an important cultural landmark in the valley's evolution.

5.1.3 Regional Context

Jammu and Kashmir union territory is in the northern part of India, characterized by the diverse geography, ranging from the Himalayas to fertile valleys. It shares its border with Ladakh (UT) from the Northeast and east, Himachal Pradesh from the Southeast, Punjab from the South and an international border with Pakistan from West. At present, Baramulla remains a vital centre for business, education, and administration in northern Kashmir. The district is bordered by Kupwara (north), Budgam and Poonch (south), Srinagar and Bandipora (east), and the Line of Control (west). The famous tourist resort Gulmarg is within its bounds, and Baramulla enjoys improved connectivity via roads and a railway link to Srinagar and beyond. Baramulla's landscape is marked by a blend of historical significance, diverse demography, and its continued role as a key urban centre in the Kashmir Valley.

Baramulla's strategic location made it a crucial centre of power for rulers entering Kashmir, with Mughal emperors like Akbar and Jahangir traditionally passing through the city and being greeted with grand festivities. The city has also been a symbol of religious and social harmony, hosting prominent figures from various faiths—including Sufi saints, Sikh gurus, and Buddhist monks—reflecting efforts to promote integration and loyalty. During the 1947 invasion, Baramulla's importance as a first major target underscored its military and political significance. Following Jammu and Kashmir's accession to India, Baramulla's role shifted from a vibrant border trading hub to a garrison town near the Line of Control, profoundly altering its commercial and political standing.

Baramulla's strategic location made it a flourishing commercial hub, attracting merchants, artisans, and religious leaders from afar and driving the growth of surrounding settlements, thereby strengthening Kashmir's economy. However, this prosperity declined sharply after 1947, when new borders transformed the city from a vital trade gateway into a border town,

severing long-standing trade routes and altering its economic landscape. In summary, Baramulla's accessible position shaped Kashmir's trade and cultural exchanges for over two millennia, establishing the Kashmir Valley as a significant crossroads of civilization.

5.1.3.1 Connectivity

The region is primarily connected by roadways, including national highways (NH) and state highways. NH-44 connects the north south corridor of India, which is also the longest NH in the country connects states such as Punjab, Haryana, Delhi, Uttar Pradesh, Rajasthan, Madhya Pradesh, Maharashtra, Telangana, Andhra Pradesh, Karnataka, and Tamil Nadu.

Road: NH-1 connects Baramulla city to NH 44 in Srinagar city and further with other part of India.

Rail: Jammu-Baramulla Line including Udhampur-Srinagar-Baramulla Rail Link (USBRL) is fully operational as of June 2025, connecting Kashmir Valley with the rest of India. The entire railway link boasts several engineering marvels including Chenab Bridge, Anji Khad Bridge and the Pir Panjal Railway Tunnel.

Air: Srinagar Internation Airport is only 60-65 Km towards south of Baramulla city. Other than this Jammu Airport (Jammu Civil Enclave) is a domestic airport 300 km away towards the Baramulla.

5.1.3.2 Geographical Setting

Baramulla city is located within the Kashmir Valley, strategically positioned along the banks of the Jhelum River. The river enters the city from the northeast and flows towards the southwest, shaping the settlement pattern and contributing to the city's historical and economic importance including agriculture.

5.1.4 Settlement patterns

Jammu and Kashmir's physiographic diversity is matched by a considerable variety of human occupation. In the plains and foothills of the southwestern region, colonization movements from the Punjab areas over a long period of time have produced numerous agricultural settlements. In the dun regions and lower valleys of the foothills, where alluvial soils and the availability of water for irrigation make agriculture possible, the population is sustained by crops of wheat and barley, which are gathered in the spring (rabi) harvest, and of rice and corn (maize), gathered in the late summer (kharif) harvest; livestock also are raised. The upper sections of the valleys support a sparser population that depends on a mixed economy of corn,

cattle, and forestry. Herders migrate to higher pastures each spring to give their flocks the necessary forage to produce milk and clarified butter, or ghee, for southern lowland markets. In winter the hill dwellers return to lower areas to work in government-owned forests and timber mills. Agricultural hamlets and nucleated villages predominate throughout union territory; cities and towns such as Jammu and Udhampur function essentially as market centres and administrative headquarters for the rural populations and estates in the vicinity.

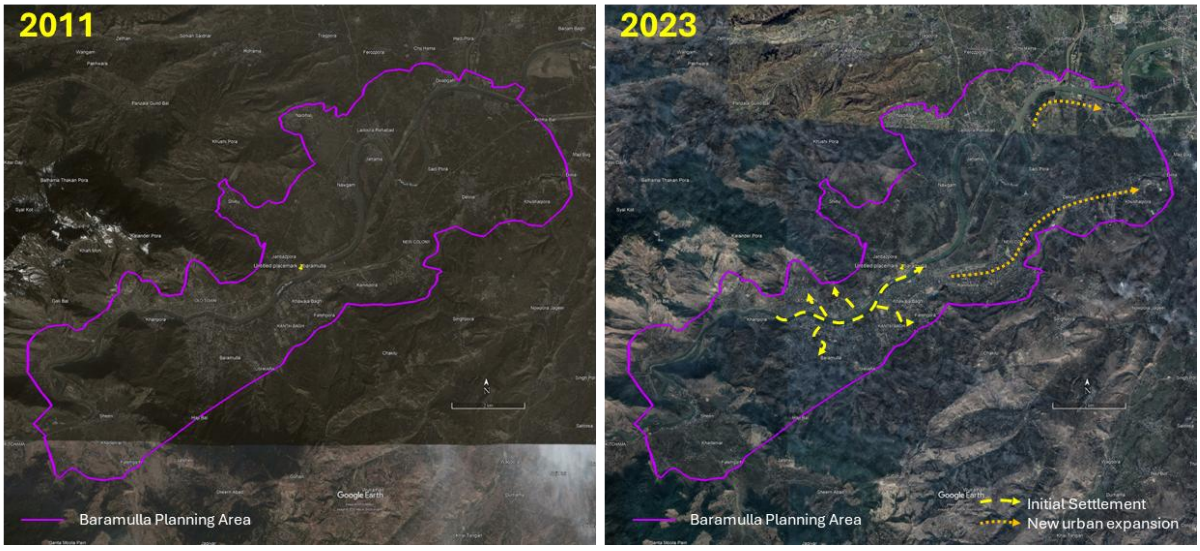

Figure 5.1-5: Settlement pattern in Baramulla Planning area

Source: Source: Boundaries from TPD J&K superimposed on Google earth imagery

5.2 Demographic and Socio-Economic Overview

Demography is the statistical study of human populations, focusing on aspects such as population size, composition, distribution, and changes over time due to births, deaths, migration, and aging. Socio-economy, on the other hand, refers to the social and economic characteristics and dynamics of a population, including factors such as income, education, occupation, family structure, and quality of life. In urban planning and development, analysing demography and socio-economic data helps planners understand the composition and needs of a community, which guides informed decision-making for resource allocation, infrastructure development, and social services.

Data for demography and socio-economy in towns like Baramulla is typically sourced from comprehensive and standardized official databases such as the Census of India. The 2011 Census serves as the most recent and reliable baseline because it systematically collected detailed information about population structure, occupational patterns, literacy rates, household characteristics, and other socio-economic indicators across all geographic units in

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the country. Using census data ensures authenticity, comparability, and accuracy for planning and reporting, making it invaluable for master plan preparation and policy formulation.

5.2.1.1 District Demography

As per 2001 census, Baramulla district had a population of 8,53,344. Males constituted 51% of the population and females 49%. According to the 2011 census, Baramulla district has a population of 10,08,039 with the sex ratio being 885 females for every 1,000 males. Its population growth rate over the decade 2001-2011 was 20.34%. Baramulla district has a literacy rate of 66.93% with male literacy 77.35% and female literacy 55.01%.

5.2.1.2 City Demography

As per the census of India 2011, city is divided into 21 municipal wards, numbered Ward 1 to Ward 21, which together form the core statutory urban area of the city. In addition to these municipal wards, the census also recognizes five adjoining settlements as outgrowths (OGs) of Baramulla due to their close physical proximity and functional linkage with the main town. These outgrowth wards are (Ward 22), (Ward 23), (Ward 24), (Ward 25), and (Ward 26). Together, these outgrowths and municipal wards constitute the larger urban agglomeration of Baramulla, making up a total of 26 census-designated wards.

Baramulla has a total population of 71,434 persons residing in 11,725 households, with an average household size of about six members. The core municipal area accommodates the majority of the population, housing 58,053 persons across 9,476 households, while the five outgrowth settlements — Fateh Pora, Kanis Pora, Gotiyar, Frastahar, and Takia Sultan — together account for 13,381 persons in 2,249 households. The city's overall sex ratio stands at 847 females per 1,000 males, showing a marked gender imbalance, particularly in the municipal core where the sex ratio drops to 818, compared to a much more balanced 978 in the outgrowth areas. This pattern suggests that male-dominated migration is likely contributing to the demographic structure of the urban centre. The population composition shows an extremely low proportion of Scheduled Castes (91 persons, about 0.13%) and Scheduled Tribes (50 persons, about 0.07%), indicating that the city is predominantly inhabited by other social groups. Within the municipal area, Ward 1 (7,341 persons), Ward 17 (5,634 persons), and Ward 10 (4,965 persons) are the most populous, while Ward 3 (1,170 persons) is the least populated. In the outgrowths, Kanis Pora is the largest settlement with 6,019 persons, while Gotiyar is the smallest with 1,414 persons. Overall, the demographic profile of Baramulla reflects a densely populated municipal core, a smaller but steadily growing periphery, a skewed sex ratio, and a negligible presence of SC/ST communities.

Table 5.2-1: Demography of Baramulla (M Cl + OG)

Ward	HH	Population	Male	Female	SC Population	ST Population
Municipal Council (M Cl)						
Ward 1	535	7341	6292	1049	91	17
Ward 2	345	1917	967	950	0	0
Ward 3	223	1170	583	587	0	0
Ward 4	206	1238	642	596	0	0
Ward 5	191	1277	620	657	0	0
Ward 6	340	1832	944	888	0	0
Ward 7	289	1638	774	864	0	0
Ward 8	249	1448	717	731	0	0
Ward 9	481	2963	1499	1464	0	0
Ward 10	787	4965	2485	2480	0	0
Ward 11	422	2668	1346	1322	0	0
Ward 12	320	2011	1042	969	0	0
Ward 13	416	2162	1073	1089	0	20
Ward 14	715	3901	1987	1914	0	0
Ward 15	494	2752	1410	1342	0	0
Ward 16	711	3884	1976	1908	0	7
Ward 17	1050	5634	2877	2757	0	0
Ward 18	376	2031	1056	975	0	0
Ward 19	263	1315	642	673	0	0
Ward 20	520	2801	1388	1413	0	0
Ward 21	543	3105	1591	1514	0	5
Total (M Cl)	9476	58053	31911	26142	91	49
Outgrowth (OG)						
Fateh Pora (OG) WARD 22	330	1973	996	977	0	0
Kanis Pora (OG) WARD 23	1015	6019	3042	2977	0	1
Gotiyar (OG) WARD 24	241	1414	706	708	0	0
Frastahar (OG) WARD 25	300	1751	887	864	0	0
Takia Sultan (OG) WARD 26	363	2224	1135	1089	0	0
Total (OG)	2249	13381	6766	6615	0	1
Baramulla (M Cl + OG)	**11725**	**71434**	**38677**	**32757**	**91**	**50**

Source: Census of India, 2011

5.2.2 Literacy Rate

Table 5.2-2: ward-wise literacy rate of Baramulla (M Cl + OG)

Ward	Literate Population	Literacy Rate (%)	Male Literate	Male Literacy Rate (%)	Female Literate	Female Literacy Rate (%)
Ward 1	6764	96.23%	6017	98.40%	747	81.73%
Ward 2	1250	77.35%	667	84.86%	583	70.24%
Ward 3	831	80.52%	431	85.86%	400	75.47%
Ward 4	776	76.38%	425	82.85%	351	69.78%
Ward 5	776	74.05%	400	79.52%	376	68.99%
Ward 6	1124	74.68%	608	80.00%	516	69.26%
Ward 7	1069	76.25%	531	80.70%	538	72.31%
Ward 8	976	75.48%	511	80.09%	465	70.99%
Ward 9	1799	74.22%	961	81.65%	838	67.20%
Ward 10	3113	72.45%	1745	81.54%	1368	63.42%
Ward 11	1753	76.48%	1001	86.52%	752	66.26%
Ward 12	1205	70.22%	680	78.70%	525	61.62%
Ward 13	1592	81.47%	869	89.87%	723	73.25%
Ward 14	2703	79.95%	1411	83.20%	1292	76.68%
Ward 15	1912	80.61%	1045	87.16%	867	73.91%
Ward 16	2909	86.40%	1599	93.67%	1310	78.92%
Ward 17	3833	76.95%	2180	86.65%	1653	67.06%
Ward 18	1532	85.02%	844	91.64%	688	78.09%
Ward 19	1092	92.39%	548	94.97%	544	89.92%
Ward 20	1835	74.44%	998	82.62%	837	66.59%
Ward 21	2241	83.37%	1234	91.07%	1007	75.54%
Fateh Pora (OG) WARD 22	1252	72.71%	707	80.99%	545	64.19%
Kanis Pora (OG) WARD 23	4047	75.91%	2225	83.46%	1822	68.37%
Gotiyar (OG) WARD 24	903	73.06%	524	84.24%	379	61.73%
Frastahar (OG) WARD 25	1177	76.83%	642	82.73%	535	70.77%
Takia Sultan (OG) WARD 26	1333	71.17%	719	77.31%	614	65.11%
Total (M Cl + OG)	49797	79.60%	29522	87.28%	20275	70.57%

Source: Census of India, 2011

5.2.3 Occupational Structure

Agriculture remains the backbone of Baramulla's economy, with most of the rural population engaged in farming, horticulture—particularly the cultivation of apples, walnuts, and pears—and related allied activities. Trade and services form an important sector in the region's towns, especially in Baramulla city, which serves as a commercial hub providing employment in small-

scale trading, retail, education, healthcare, and markets. Government employment is also significant, encompassing roles in teaching, administration, police, and various public sector jobs, primarily concentrated in semi-urban and urban areas. Traditional artisan work, including carpet weaving, shawl-making, and wood carving, continues to contribute to the local economy, though it is in decline. Emerging occupational trends include a growing shift toward construction, transportation, and tourism, fuelled by improvements in infrastructure and connectivity within the district.

Table 5.2-3: Ward-wise workers population of Baramulla (M Cl + OG)

Name	Total Worker	Total Worker (%)	Total Male Worker (%)	Total Female Worker (%)
Ward 1	5769	78.59%	90.29%	8.39%
Ward 2	423	22.07%	37.95%	5.89%
Ward 3	364	31.11%	50.60%	11.75%
Ward 4	308	24.88%	43.93%	4.36%
Ward 5	233	18.25%	35.16%	2.28%
Ward 6	474	25.87%	47.03%	3.38%
Ward 7	398	24.30%	44.57%	6.13%
Ward 8	492	33.98%	52.30%	16.01%
Ward 9	675	22.78%	40.69%	4.44%
Ward 10	1334	26.87%	46.80%	6.90%
Ward 11	803	30.10%	50.52%	9.30%
Ward 12	569	28.29%	48.08%	7.02%
Ward 13	697	32.24%	49.86%	14.88%
Ward 14	1070	27.43%	42.43%	11.86%
Ward 15	710	25.80%	44.18%	6.48%
Ward 16	1141	29.38%	45.95%	12.21%
Ward 17	1633	28.98%	47.17%	10.01%
Ward 18	626	30.82%	47.06%	13.23%
Ward 19	381	28.97%	42.52%	16.05%
Ward 20	804	28.70%	47.55%	10.19%
Ward 21	957	30.82%	45.76%	15.13%
Fateh Pora (OG) WARD 22	464	23.52%	43.17%	3.48%
Kanis Pora (OG) WARD 23	1710	28.41%	46.88%	9.54%
Gotiyar (OG) WARD 24	353	24.96%	42.92%	7.06%
Frastahar (OG) WARD 25	402	22.96%	41.26%	4.17%
Takia Sultan (OG) WARD 26	556	25.00%	46.43%	2.66%
Total (M Cl + OG)	23346	32.68%	52.84%	8.88%

Source: Census of India, 2011

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5.2.3.1 Urban Baramulla

Urban residents in Baramulla are primarily engaged in government jobs, services such as education, healthcare, retail, small-scale commerce, and transportation, with less direct dependence on agriculture. Literacy rates and educational attainment are higher in urban areas due to better access to schools, colleges, and professional training, which enhances job opportunities, especially for women and youth. Urban populations also benefit from improved healthcare and infrastructure, including greater availability of hospitals, clinics, paved roads, reliable electricity, and digital connectivity, all contributing to better health outcomes and diverse employment options. Additionally, urban living standards are elevated by access to municipal services such as waste management and piped water, resulting in generally lower child mortality and poverty rates compared to rural areas.

5.2.3.2 Rural Baramulla

In rural areas of Baramulla, most residents rely heavily on agriculture for their livelihoods, with traditional farming, horticulture, and livestock rearing being the primary occupations, often characterized by low productivity and income instability. Educational opportunities and literacy levels are uneven, particularly for women, as many villages face challenges due to limited school infrastructure and long travel distances. Healthcare access is basic or limited, frequently marked by shortages of specialists and essential medicines. Although road connectivity and electrification are improving, some villages still experience inadequate infrastructure. Persistent rural poverty stems from economic dependence on agriculture, low mechanization, climate and political instability, and weaker support services such as roads, electricity, healthcare, and education. The social structure in rural areas is marked by larger families, traditional norms, and stable yet less diversified livelihoods, with increasing migration among youth to towns and cities in search of better employment opportunities.

5.2.4 Tourism- Places of interest

5.2.4.1 Ushkura, Ancient Buddhist Site

Ushkura is an ancient Buddhist site near Baramulla in Jammu and Kashmir, India. Baramulla is located on the Jhelum River around 55 km from the capital city Srinagar. It was an important trading centre during British rule, as it formed the western entrance to the Kashmir Valley.

According to Hindu purans, the Kashmir Valley was once a lake known as Satisaras (Parvati's Lake in Sanskrit). Ancient Hindu textbooks relate that the lake was home to the demon Jalodbhava (meaning "originated from water") until Lord Vishnu took the form of a boar and struck the mountain at Varahamula. This created an outlet for the water to flow out of the lake. Baramulla was called Varahamulaksetra or Varahaksetra in the old days. Originally, it was a suburb of Huviska pura (modern Ushkur). Associated with the Adivaraha, the Wild boar incarnation of Lord Vishnu was considered very pious. In the ninth and tenth centuries, there were many temples and monasteries during the reign of Lalitaditya Muktapida, Queen Sugandha, and Ksemagupta, when the worship of Vishnu flourished there.

Figure 5.2-1: Ushkura Buddhist Site in Baramulla

Source: SPAB

5.2.4.2 Parihaspora

Parihaspora is an old town situated near the district of Baramulla at 26 km from Srinagar. This town was the capital of Kashmir during the Shankervarman Regime. It was found in the 8th century AD by the king of Kashmir, Lalityaditya Muktapid. The most popular feature of this place is the ancient archaeological monuments present at the Parihaspora Pattan and the Pattan Bazaar. Apart from these monuments, the town also houses few remains of a Buddhist Stupa and monastery.

Figure 5.2-2: Parihaspora, an old town near Baramulla

Source: Baramulla.nic.in

5.2.4.3 Gulmarg

Gulmarg is located 60 KMs away from Srinagar which is an hour and half journey by car. Gulmarg has attracted millions of tourists throughout its existence with the scenic beauty of the Himalayan Mountains in the backdrop. One of the main attractions in Gulmarg is the Gulmarg Gondola, the Highest Cable Car in the world. The 1st phase of the Gondola takes tourists to the height of 8530 ft

Figure 5.2-3: Gulmarg, a famous tourist place near Baramulla

Source: Source: Baramulla.nic.in

to Kongdori Station, and the second stage of the Gondola goes up to the height of 12293 ft. Tourists can enjoy horse Riding and can go riding to the magnificent “Strawberry Valley” , Leopards Valley and ride up to “Kongdori” to see the frozen lake of “Al- Pathar”.

5.2.4.4 Ziyarat Baba Reshi Shrine

The Ziarat of Baba Reshi is a popular shrine of Baramulla, situated near the Alpather Lake at 13 km from Gulmarg and belongs to saint Baba payam-Din. Baba payam-Din was a well-known Muslim saint as well as a courtier of the king of Kashmir, Zain-ul-Abidin. This shrine is that very site where Baba payam-Din died in 1480 after spending his days in prayer and meditation.

Figure 5.2-4: Ziyarat Baba Reshi Shrine in Baramulla

Source: Baramulla.nic.in

The main feature of this shrine is the grave of Baba payam-Din, covered with a sheet of cloth decorated with unique workmanship. The shrine is popular for granting the boons to its devotees. Devotees that get their boons granted, revisit this shrine, to make grateful offering in honour to the great saint.

5.2.4.5 Wular Lake

Wular Lake is the 2nd largest fresh-water lake of Asia, situated on the foothills of Haramuk Mountain. It is spread in a total area of 200 square km covering almost 24 km in length while its breadth is 10 km. The lake lies between the towns of Sopur and Bandippore, in Sangrama, near Baramulla Road. Main source of water for Wular Lake is River Jhelum. This lake also has a small island in its centre called the ‘Zaina Lank’. This island was constructed by King Zainul-Abi-Din. Wular Lake is also said to be a remnant of Satisar Lake that existed in ancient times. The premises of this lake also form a popular sunset point.

Figure 5.2-5: Wular Lake in Kashmir Valley

Source: Baramulla.nic.in

6 Physical and Environmental Characteristics

6.1.1 Climate

The climate of Baramulla is generally moderate, marked by cool summers and cold winters. The hottest month is July, with mean maximum and minimum temperatures of approximately 30°C and 17°C, respectively. Winters, especially between December and February, can be quite severe, with mean maximum temperatures around 2°C and minimums that may dip to -8°C. The region receives an average annual rainfall of about 560mm, contributing to its high relative humidity and maintaining consistent soil moisture throughout the year. Precipitation is distributed relatively evenly, resulting in no particularly dry months, and the area enjoys plentiful water supply for both irrigation and domestic needs (World Weather Online).

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6.1.2 Topography

Figure 5.2-1: Jhelum River and hill around river in Baramulla city

Source: Author

Baramulla city is situated in the northwestern part of the Kashmir Valley within Jammu and Kashmir, lying along the banks of the Jhelum River amidst a diverse topographical setting. The city itself occupies a relatively flat alluvial valley floor at an average elevation of about 5,000 to 5,200 feet, making it suitable for dense human settlement and agriculture. To its west and southwest, the terrain rises abruptly into the rugged outer spurs of the Pir Panjal Range near areas like Hilan, Nagnari, and Boniyar, where elevations exceed 7,000 feet and reach up to 10,000 feet, forming steep ridges and narrow valleys drained by hill streams. In contrast, the eastern and northeastern surroundings toward Sopore, Kreeri, and Singhpora Kalan feature gently rolling uplands with moderate elevations between 5,000 and 6,000 feet, representing the alluvial terraces of central Kashmir. Northwest of the city, the Jhelum River flows through a constricted gorge-like corridor toward Uri, bordered by steep ridges. This sharp contrast between the low-lying valley floor and the encircling hills strongly influences the spatial pattern of settlement, transport routes such as NH1, and agricultural land use around Baramulla.

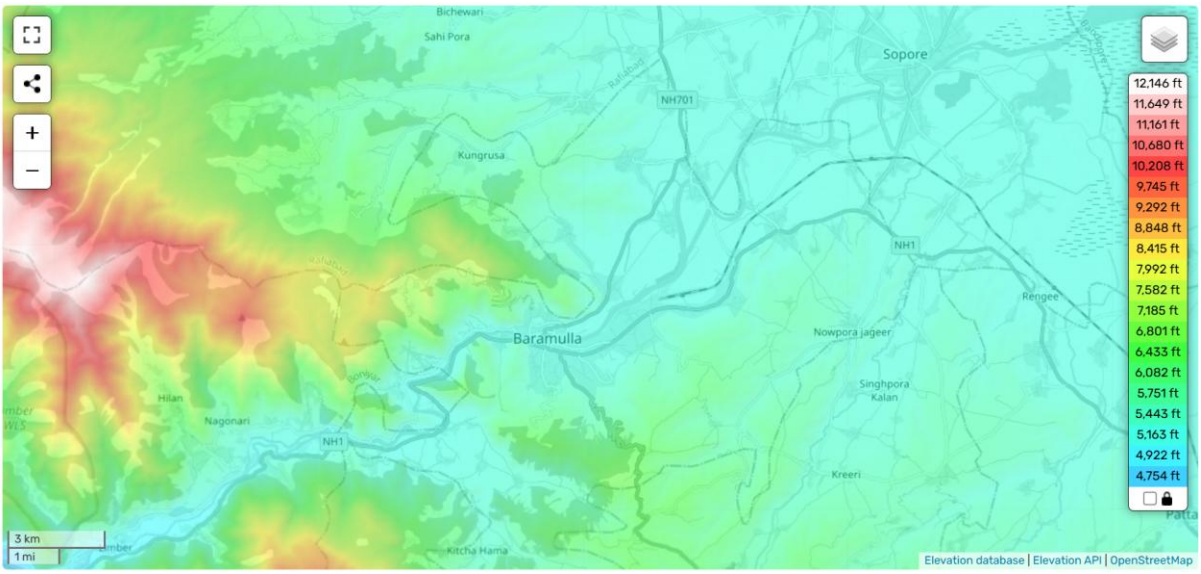

Figure 5.2-2: Topography of Baramulla and its surrounding areas

Source: topographic-map.com/ accessed on 12 September 2025

6.1.3 Hydrology

The Jhelum, Chenab, Indus, and Tawi rivers are primary waterways of Himalayan origin flowing through the region. These rivers play vital roles in irrigation, hydropower, cultural heritage, and settlement patterns. Additionally, Himalayan-fed rivers like the Ganges and Yamuna originate in the broader region, though they do not flow directly through Jammu & Kashmir. The state also houses numerous lakes such as Manasbal, Dal, Nageen, and Wular, contributing to its rich network of over 1,000 water bodies.

The Jhelum River in Baramulla: The Jhelum flows directly through Baramulla, shaping its geography, supporting agriculture, enabling trade, and offering transport routes. Its floodplains have historically nurtured settlement growth and economic activity along its banks.

Figure 5.2-3: Jhelum River in Baramulla town

Source: SPAB

Figure 5.2-4: Boating and Fishing in Jhelum River in Baramulla city

Source: SPAB

6.2 Existing Infrastructure Snapshot

A. **Transport:** Baramulla city is witnessing continuous upgradation of its road network, with widening and macadamisation of major urban and link roads to improve intra-city mobility and regional connectivity. Strategic projects are enhancing links to Srinagar and Uri. Plans emphasize introducing eco-friendly construction materials, improving road safety features, and promoting public transport to reduce congestion and vehicular emissions.

B. **Water Supply:** The city's potable water supply relies on surface water sources from the Jhelum River and nearby streams. Ongoing augmentation projects and pipe network replacements aim to improve coverage and ensure continuous, safe drinking water for all households, especially in growing peripheral areas.

C. **Sewerage:** Baramulla is developing sewerage infrastructure to improve urban sanitation. Current projects focus on laying underground sewer lines and setting up treatment facilities to prevent pollution of the Jhelum River and enhance public health conditions.

D. **Solid Waste Management:** Municipal authorities operate door-to-door waste collection and have earmarked dumping and segregation sites. Efforts are underway to introduce scientific waste processing and recycling units to reduce open dumping and improve cleanliness within the city.

E. **Healthcare:** Baramulla is served by the Government Medical College Baramulla, district hospital, and several primary health centres. Healthcare planning includes modernizing facilities, expanding maternity and pediatric care, and enhancing coverage under schemes like Ayushman Bharat to achieve universal access to quality healthcare.

F. **Education:** The city hosts government and private schools, higher secondary institutes, and colleges like Government Degree College Baramulla. Education initiatives emphasize smart classrooms, ICT labs, vocational training, and inclusivity in line with National Education Policy 2020 to build a future-ready workforce.

G. **Agriculture/Irrigation:** Though urbanizing, surrounding areas of Baramulla depend on irrigation from the Jhelum River canals and karewa streams for apple, paddy, and maize cultivation. District plans promote drip and sprinkler systems, high-yield seeds, farm mechanization, and e-marketing to enhance productivity and farmer incomes.

H. **Urban Development:** Urban development efforts in Baramulla focus on implementing the Master Plan with modern civic amenities, housing colonies, and green public spaces. Plans prioritize scientific waste management, 100% household tap water coverage, rainwater harvesting, and smart city features to create a sustainable, liveable urban environment.

6.3 Government and society

6.3.1 Constitutional framework

The constitutional framework governing Baramulla city, like the rest of the Union Territory of Jammu and Kashmir, has undergone major changes in recent years. Until August 2019, Jammu and Kashmir enjoyed special status under Article 370 of the Indian Constitution, which granted it significant autonomy with its own constitution and legislative assembly. The former state operated under its own set of laws, had a governor appointed by the Government of India, and an elected Chief Minister heading a bicameral legislature comprising the Legislative Assembly and Legislative Council. While this legislature controlled most state matters, defence, foreign affairs, and communications remained under the jurisdiction of the central government.

In August 2019, the Government of India abrogated Article 370 and reorganized the state into two separate Union Territories—Jammu and Kashmir and Ladakh—effective from October 31, 2019. This reorganization ended the region's special autonomy and brought it under the direct jurisdiction of the central government. Today, Baramulla city functions under the

administrative framework of the Union Territory of Jammu and Kashmir, which has a legislative assembly and is headed by a Lieutenant Governor appointed by the President of India, with an elected Chief Minister and council of ministers responsible for local governance and policymaking.

Baramulla District is part of the and functions within its constitutional and administrative framework, with governance overseen by district-level officers appointed by the Union Territory government. town serves as the district headquarters, housing key government offices and acting as the central hub for local administration, urban governance, and delivery of public services. The local urban body manages civic services including water supply, sanitation, solid waste management, and urban planning in accordance with the Union Territory's legal provisions. This governance structure integrates district and town more directly with the central government's administrative mechanisms, enabling coordinated oversight and comprehensive development planning within the national framework.

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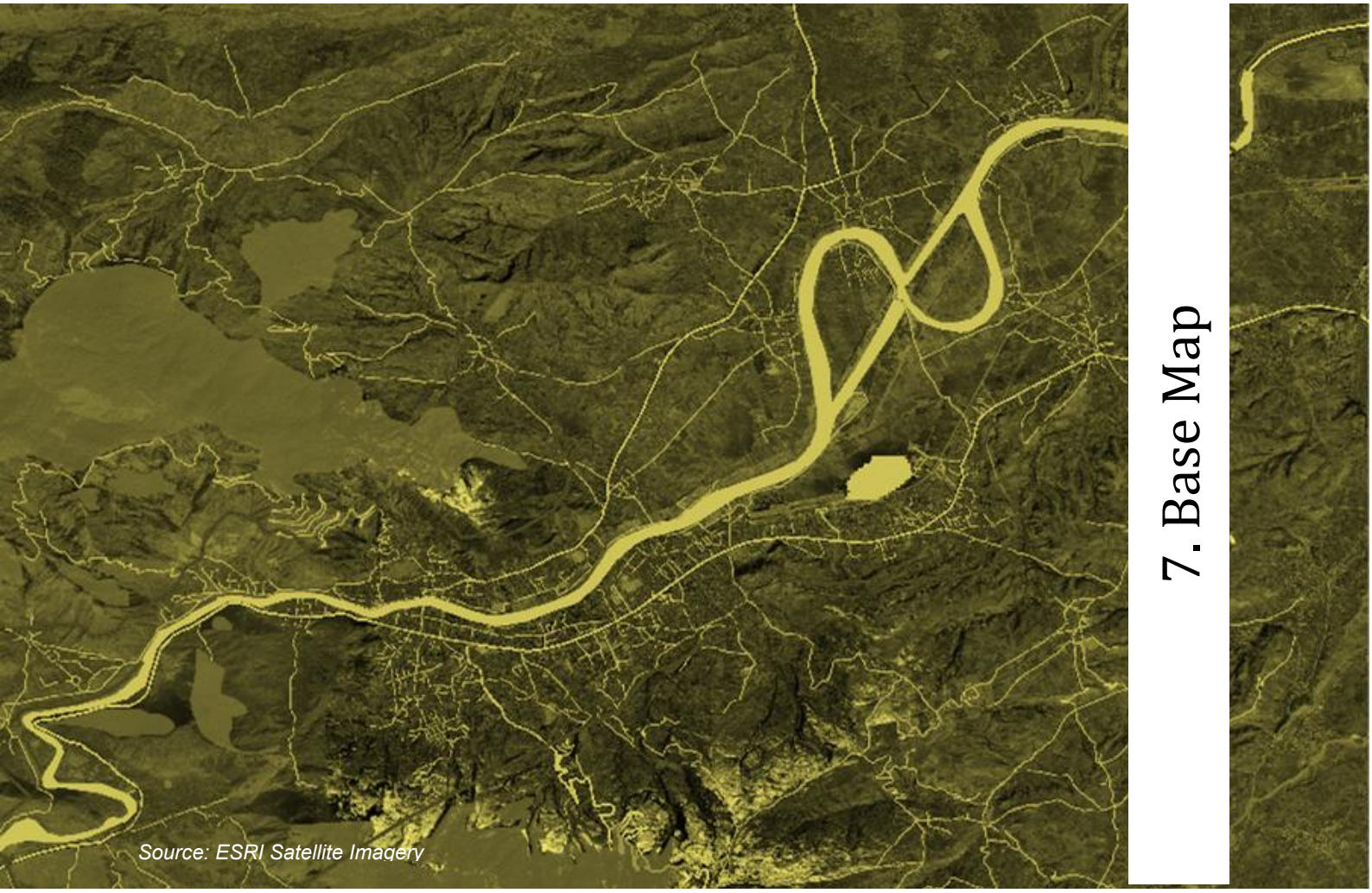


7. Base Map

7 Base Map Preparation

The Base Map Preparation process in ArcGIS software with the planning boundary as a reference involves several key steps foundational for detailed master plan development. Initially, the planning boundary is digitized or imported as the spatial extent within which all subsequent mapping and analysis occur. This boundary acts as the reference frame restricting the area for detailed data collection and visualization. Within this boundary, key features such as buildings, water bodies, and the road network are digitized with high accuracy to develop land cover/land-use map. This is done by creating vector layers representing these land cover types through manual digitization using high-resolution satellite imagery in ArcGIS. These layers form the core urban infrastructure and landscape features required for urban planning.

7.1 Baramulla Planning Area

The Baramulla Planning Area spans approximately 6535 hectares, encompassing both the dense urban core along the river and the surrounding rural and forested landscapes. This strategic location along the river has shaped the settlement pattern, road network, and natural environment visible in the map.

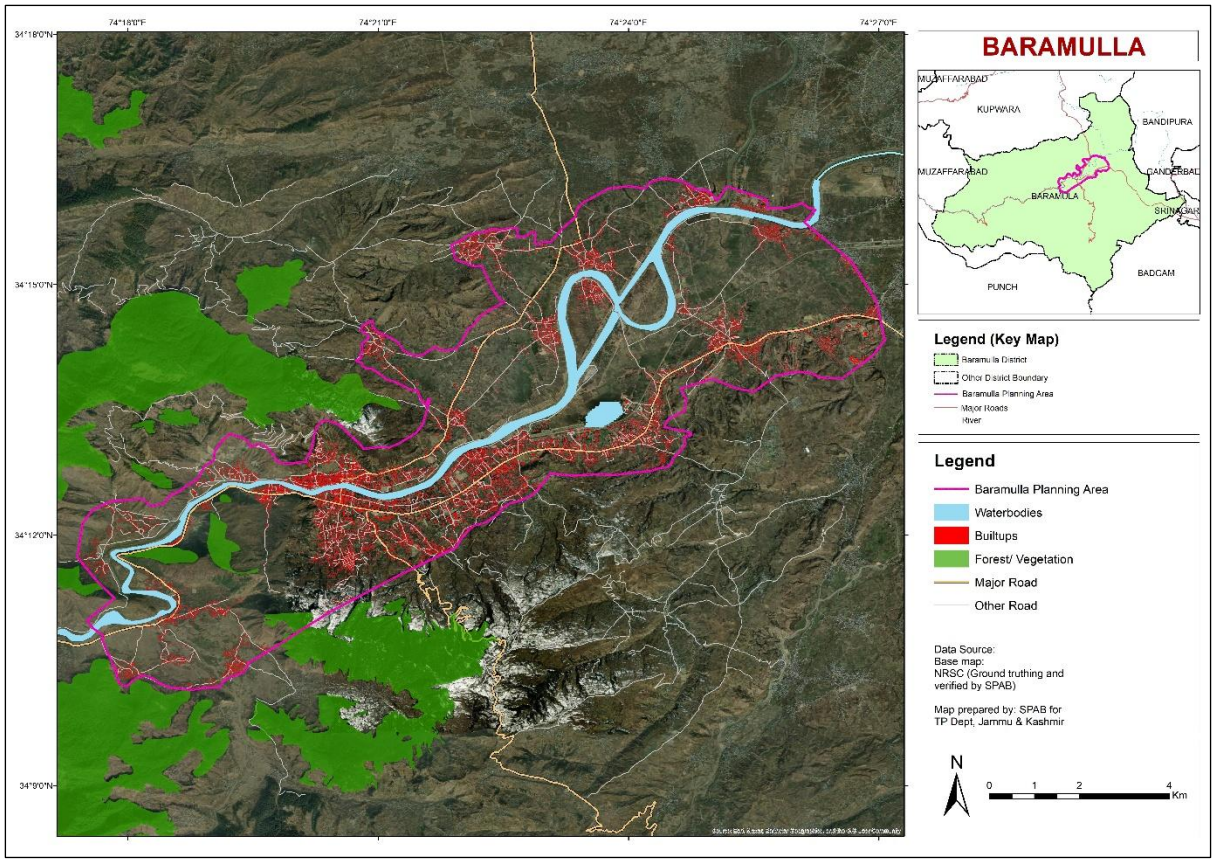
The Jhelum River is the most dominant physical feature running through the heart of the planning area. It enters from the eastern side, meanders across the centre, and exits from the southwestern corner. This river valley forms the main urban corridor, with settlements lining both banks. In addition to the river, a notable small waterbody is present to the south of the river within the central part of the planning area, adding to the blue network of the city. Smaller rivulets and streams can also be seen feeding into the Jhelum, reflecting the city's close dependence on surface water sources.

The built-up areas, shown in red on the map, are highly concentrated along both banks of the river. The old town on the north bank is more compact and densely clustered, while the new town on the south bank exhibits a more linear and planned pattern of development. The densest urban areas lie near the central section of the river, gradually thinning out toward the peripheries. These built-up areas extend along major transportation routes, reflecting the city's growth pattern guided by river proximity and road connectivity.

Surrounding the urban core, large patches of forest and vegetation are visible, marked in green on the map. These are especially prominent along the western and southern boundaries of the planning area, forming extensive green belts and covering the hill slopes around the city. This vegetation acts as a natural buffer, providing ecological balance and forming a visual edge to the built-up area. The contrast between the densely settled river corridor and the forested periphery gives Baramulla a distinct landscape character.

The road network is another defining physical feature. Major roads, shown as brown lines, run primarily in an east–west direction roughly parallel to the Jhelum River, linking the old and new towns and facilitating regional connectivity. Smaller local roads form a fine-grained network in the built-up core, branching out like a web toward the outskirts. This pattern shows how transportation aligns closely with the river's course and the settlement's linear expansion along the valley floor.

Map 7.1-1: Base map of Baramulla Planning Area



Source: Mentioned on Map

Note: Further detailing of base map such as agriculture area, forest, vacant land, etc. will be done before going ground truthing survey

Following the inception report submission, the process extends to digitizing other land cover types like agriculture, vacant lands, and forest areas. These are also mapped using polygon layers and classified according to their usage or vegetation type. This phase adds environmental and peripheral land use details to the base map, essential for holistic urban ecosystem and expansion planning.

Buildings and roads are digitized as polygons and polylines respectively in the map 7.1-1, while water bodies are polygon features.

Overall, the Base Map is a comprehensive, geo-referenced spatial database within ArcGIS that integrates physical, infrastructural, and environmental features bounded by the planning area. It serves as the foundational layer onto which thematic maps, spatial analyses, and master plan proposals are developed. This GIS workflow ensures accurate spatial referencing and holistic visualization essential for informed urban decision-making.

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