



# Study of Challenges Faced by Six Towns of Uttarakhand

(Nainital, Almora, Haldwani, Mussoorie, Pauri and Champawat)

Report

**NAINITAL TOWN**

September, 2024



**State Institute of Urban Development**

**Dr. R. S. Tolia Uttarakhand Academy of Administration, Nainital**

# **Study of Challenges Faced by Six Towns of Uttarakhand (Nainital, Almora, Haldwani, Mussoorie, Pauri and Champawat) Research Project Report - Nainital Town**

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## **FOREWORD**

It is a matter of satisfaction that the State Institute of Urban Development (SIUD) is publishing this research study, a collaborative effort between the State Institute of Urban Development (SIUD), Dr. R.S. Tolia Uttarakhand Academy of Administration, Nainital, and the School of Planning and Architecture (SPA), New Delhi. This study covers six prominent towns of Uttarakhand—Nainital, Mussoorie, Almora, Pauri, Champawat, and Haldwani—and focuses on three crucial urban sectoral areas: Solid Waste Management, Urban Transportation & Parking, and Water Availability & Supply.

Uttarakhand's hilly towns face unique urban challenges due to their geographical constraints, fragile ecosystems, increasing pressures of urbanization, and tourist inflows. These challenges are further exacerbated by fast-changing land use patterns and the impacts of climate change. Addressing these issues requires well-researched, practical, and sustainable solutions. The findings of this study provide valuable insights that will assist Urban Local Bodies (ULBs), policymakers, and planners in devising effective strategies for urban management in the region.

I take this opportunity to commend the dedicated efforts of the research team from SPA, New Delhi, and SIUD, Nainital, for their meticulous fieldwork, stakeholder consultations, and data-driven analysis. Their work will serve as an important reference document for urban development practitioners in Uttarakhand and beyond.

I am confident that this study will contribute significantly to the ongoing discourse on sustainable urbanization in the Himalayan region and inspire further research and action toward resilient and efficient urban management.

(B. P. Pandey)

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## MESSAGE

I am pleased to note that the State Institute of Urban Development (SIUD), Dr. R.S. Tolia Uttarakhand Academy of Administration, Nainital, in collaboration with the School of Planning and Architecture (SPA), New Delhi, has undertaken an important research study on the challenges faced by six towns of Uttarakhand — Nainital, Almora, Haldwani-Kathgodam, Mussoorie, Pauri and Champawat. This study focuses on three critical urban issues: Solid Waste Management, Urban Transportation & Parking, and Water Availability & Supply. Urbanization in hilly regions presents unique challenges that require innovative and sustainable solutions. The recommendations from this study will undoubtedly contribute to policy formulation, improved urban governance, and enhanced quality of life for residents of these towns. Addressing these issues effectively demands collaboration between Urban Local Bodies, related Parastatal Organisations, the Private Sector, and communities. I am also delighted that the State Institute of Urban Development is publishing this research study, which will serve as a valuable resource for Urban Local Bodies (ULBs), policymakers, and urban planners and will enable them to develop informed strategies that are key to ensuring that our towns become more liveable, sustainable, and resilient. I extend my best wishes to the Dr. R.S. Tolia Uttarakhand Academy of Administration, SIUD Nainital, and SPA New Delhi for their commendable efforts in addressing the pressing urban challenges of Uttarakhand.

  
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## **ACKNOWLEDGMENT**

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Further to the Stakeholder's meeting on 25<sup>th</sup> April 2024, meeting on 15<sup>th</sup> May 2024 and post study workshop on 30<sup>th</sup> August 2024, the valuable suggestions made have been duly incorporated.

**13<sup>th</sup> September 2024**

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## CONTENTS

<b>CONTENTS .....</b>	<b>1</b>
<b>LIST OF IMAGES.....</b>	<b>3</b>
<b>LIST OF TABLES .....</b>	<b>4</b>
<b>LIST OF FIGURES.....</b>	<b>6</b>
<b>LIST OF MAPS.....</b>	<b>8</b>
<b>ABBREVIATIONS USED.....</b>	<b>9</b>
<b>CHAPTER 1. INTRODUCTION .....</b>	<b>11</b>
<b>CHAPTER 2. OBJECTIVES OF THE RESEARCH PROJECT .....</b>	<b>13</b>
<b>CHAPTER 3. SCOPE OF WORK .....</b>	<b>15</b>
<b>CHAPTER 4. METHODOLOGY .....</b>	<b>17</b>
4.1. DATA COLLECTION TOOLS.....	19
4.2. DATA ANALYSIS PLAN.....	19
<b>CHAPTER 5. UTTARAKHAND – A PROFILE .....</b>	<b>21</b>
5.1. OVERVIEW .....	21
5.2. PHYSICAL FEATURES AND TOPOGRAPHY .....	27
5.3. DEMOGRAPHY AND SOCIO-ECONOMIC PROFILE.....	32
5.3.1. <i>Demography</i> .....	32
5.3.2. <i>Social and Cultural Aspects</i> .....	33
5.3.3. <i>Economic Profile</i> .....	33
<b>CHAPTER 6. NAINITAL TOWN .....</b>	<b>36</b>
6.1. OVERVIEW .....	36
6.2. PHYSICAL FEATURES AND TOPOGRAPHY .....	38
6.3. DEMOGRAPHY AND SOCIO-ECONOMIC PROFILE.....	41
6.3.1. <i>Demography</i> .....	41
6.3.2. <i>Social and Cultural Aspects</i> .....	42
6.3.3. <i>Economic Profile</i> .....	42
6.4. DISCUSSIONS AND THE DATA PROVIDED BY THE OFFICIALS MET DURING THE FIELD VISIT AND STAKEHOLDER CONSULTATION MEETING HELD ON 25 <sup>TH</sup> APRIL 2024 IN NAINITAL .....	43
6.5. POST STUDY WORKSHOP HELD ON 30 <sup>TH</sup> AUGUST, 2024 .....	44
6.6. CURRENT SITUATION .....	46
6.5.1. <i>Tourist Footfall of Nainital Town</i> .....	51
<b>CHAPTER 7. NAINITAL TOWN: SOLID WASTE MANAGEMENT .....</b>	<b>57</b>
7.1. SYSTEM INFRASTRUCTURE .....	57
7.1.1. <i>Present Situation of Garbage Dumping in NPP, Nainital</i> .....	60
7.1.2. <i>Process of Solid Waste Management in Nainital Town</i> .....	63
a) Step 1- Waste Generation.....	63
b) Step 2: Waste Collection .....	65
c) Step 3: Waste Segregation .....	69
d) Step 4: Waste Treatment .....	70
e) Step 5: Waste Disposal .....	72
7.1.3. <i>Potential Health Hazards</i> .....	72

7.2. PRESENT GOVERNMENT POLICIES FOR SOLID WASTE MANAGEMENT IN NAINITAL TOWN .....	72
7.3. ISSUES/ CHALLENGES.....	73
7.4. POSSIBLE SOLUTIONS/SUGGESTED PROJECTS .....	77
<b>CHAPTER 8. URBAN TRANSPORTATION AND PARKING IN NAINITAL TOWN .....</b>	<b>85</b>
8.1. SYSTEM INFRASTRUCTURE .....	85
8.1.1. <i>Present connectivity</i> .....	86
8.1.2. <i>Present Parking Situation in NPP, Nainital</i> .....	89
8.2. PRESENT GOVERNMENT POLICIES FOR URBAN TRANSPORTATION AND PARKING IN NAINITAL TOWN .....	99
8.3. CHALLENGES FACED .....	99
8.4. POSSIBLE SOLUTIONS .....	102
<b>CHAPTER 9. WATER AVAILABILITY AND SUPPLY IN NAINITAL TOWN.....</b>	<b>109</b>
9.1. SYSTEM INFRASTRUCTURE .....	109
9.1.1. <i>Process of water supply in Nainital Town</i> .....	112
a) Step-01: Collection of Water.....	112
b) Step-02: Intake and Treatment of Water .....	112
c) Step-03: Storage of Treated Water .....	115
d) Step-04: Distribution of Water.....	115
9.1.2. <i>Demand and Supply of Water</i> .....	119
9.1.3. <i>Water Tariff</i> .....	120
9.2. TOURISM AND WATER SUPPLY .....	122
9.3. PRESENT GOVERNMENT POLICIES FOR WATER SUPPLY IN NAINITAL TOWN.....	122
9.4. WATER SUSTAINABILITY .....	122
9.5. ISSUES/CHALLENGES .....	123
9.6. POSSIBLE SOLUTIONS/SUGGESTED PROJECTS FOR WATER AVAILABILITY AND SUPPLY IN NPP, NAINITAL.....	126
<b>ANNEXURE A .....</b>	<b>131</b>
DETAILS OF DOCUMENTS COLLECTED FROM VARIOUS DEPARTMENTS IN NAINITAL TOWN.....	131
<b>ANNEXURE B.....</b>	<b>161</b>
QUESTIONNAIRE FOR DATA COLLECTION ON SOLID WASTE MANAGEMENT OF NAINITAL TOWN .....	161
QUESTIONNAIRE FOR DATA COLLECTION ON URBAN TRANSPORT AND PARKING OF NAINITAL TOWN .....	167
QUESTIONNAIRE FOR DATA COLLECTION ON WATER SUPPLY OF NAINITAL TOWN .....	171
<b>ANNEXURE C.....</b>	<b>177</b>
OFFICIALS MET IN NAINITAL TOWN .....	177
LIST OF STAKEHOLDERS/PARTICIPANTS ATTENDED THE STAKEHOLDER CONSULTATION MEETING HELD ON 25 <sup>TH</sup> APRIL, 2024 IN NPP NAINITAL: .....	178
<b>ANNEXURE D .....</b>	<b>179</b>
POSTER OF STAKEHOLDER CONSULTATION MEETING HELD ON 25 <sup>TH</sup> APRIL 2024 IN NPP, NAINITAL.....	179
<b>BIBLIOGRAPHY.....</b>	<b>181</b>

## List of Images

Image 1: Uttarakhand State Flower, Bird, Animal and Tree Image .....	21
Image 2: Images of Stakeholder Consultation Meeting Held on 25 <sup>th</sup> April 2024 in Nainital.....	43
Image 3: Images of Major Market Areas of Nainital Town.....	50
Image 4: Existing Condition of the Garbage Bins in Nainital Town .....	58
Image 5: Existing Situation of Garbage Dumping Areas in Nainital Town .....	60
Image 6: Existing Situation of Littering and Dumping of HH Waste in to the Storm Water Drains Network of Nainital Town .....	62
Image 7: Images of Some of the Vehicles used for Transportation of Solid Waste in Nainital Town....	66
Image 8: Existing Situation of Dumping-cum-Transfer Ground i.e. Metropole Parking Area an Active Parking in the Town.....	68
Image 9: Images of different models of Fully Automatic OWC Machine with in-vessel.....	79
Image 10: Nearest Bus Station: Tallital Bus Station, Thandi Sadak, Tallital, Nainital, Near NH-109, within 2 km radius of Nainital Town (10 minutes away).....	87
Image 11: Nearest Railway Station: Kathgodam Railway Station, Kathgodam, 36 km away from NPP, Nainital (1 hour 30 minutes away).....	87
Image 12: Nearest Airport: Pant Nagar Airport Approx. 70 km away from NPP, Nainital (2 hours away) .....	87
Image 13: Existing Parking Areas for Off Season Parking in Nainital Town/Permanent Parking Areas: 92	
Image 14: Image of an example of Single Stack Automated Car Parking.....	105
Image 15: Image of Nainital Town situated along Naini Lake .....	109
Image 16: Image of Naini Lake before and after the landslide of 1880 .....	110
Image 17: Geo-Tagged Images of Tubewells located in Nainital Town shared by the UJS, Nainital ...	113
Image 18: Images of Water Pipeline Network in Nainital Town .....	118

## List of Tables

Table 1: Data Collection Tools .....	19
Table 2: Overview of the State of Uttarakhand, India (Census 2011) .....	26
Table 3: Overview of Nainital Town.....	37
Table 4: Overview of Nainital Town.....	47
Table 5: List of Major Market Areas in Nainital Town and Their Location .....	49
Table 6: Annual Tourist Footfall of Nainital Town from the Year 2011 to 2023 as per the Tourism Department of Nainital, Uttarakhand .....	51
Table 7: Monthly Tourist Footfall of Nainital Town from the year 2011 to 2023 as per the Tourism Department Nainital, Uttarakhand .....	52
Table 8: Variations in Tourist Footfall of Nainital Town during Peak Tourist Season i.e. for the Month of May and June from the Year 2011 to 2023 as per the Tourism Department Nainital, Uttarakhand ....	53
Table 9: Variations in Tourist Footfall of Nainital Town during Rainy Season i.e. for the Month of July and August from the Year 2011 to 2023 as per the Tourism Department Nainital, Uttarakhand .....	54
Table 10: Comparative Analysis of NPP, Nainital (as per Census 2011) and NPP, Nainital (at present, 2024), as per the Data Provided by the Officials Met (as attached in Annexure C) during Field Visit in the Month of March 2024 and the Discussions during the brainstorming session of Stakeholder Consultation Meeting Held on 25 <sup>th</sup> April 2024 .....	54
Table 11: Existing infrastructure for Solid Waste Management (SWM) in NPP Nainital Town .....	57
Table 12: Activities/Duties Undertaken by the NPP, Nainital and the Private Agency as per the Solid Waste Management (SWM) Contract.....	59
Table 13: Overview of waste generated in NPP Nainital.....	64
Table 14: Duties/Responsibilities of Sanitation Workers Appointed by the Private Agency for Solid Waste Management in NPP, Nainital. ....	65
Table 15: Details of Vehicles Provided by the NPP, Nainital to the Private Agency for Collection and Transportation of Solid Waste Generated in the Town .....	66
Table 16: Solid Waste Collection .....	67
Table 17: List of User Charges Charged by NPP, Nainital for Door-To-Door Solid Waste Collection in the Town.....	68
Table 18: Overview of Solid Waste Segregation Practises in NPP, Nainital for SWM.....	69
Table 19: Issues/Challenges Identified for SWM in NPP Nainital.....	73
Table 20: Possible Solutions/Suggested Projects to address the Issues/Challenges faced in Nainital Town for Solid Waste Management (SWM).....	77
Table 21: Details of Major Road Network of Nainital Town .....	85
Table 22: Overview of Present Connectivity of NPP, Nainital .....	87
Table 23: Parking Situation of NPP, Nainital.....	90
Table 24: Tourist parking in Peak season .....	96
Table 25: Issues/Challenges Identified for Urban Transport and Parking in NPP, Nainital.....	99
Table 26: Possible solutions/Suggested Projects for Urban Transport and Parking in Nainital Town. ....	102
Table 27: Water Pumping in Nainital Town by tubewell and gravity sources as per the log-sheet (in MLD) as per the UJS, Nainital.....	116
Table 28: Comparative Analysis of Average Water Supply in between the Year 2006-2017 and the Year 2018-2023 .....	117
Table 29: Water Supply Component in NPP, Nainital.....	119

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Table 30: Comparative Analysis of Benchmark (as per CPHEEO) and Existing Situation of Water Availability and Supply (as per ULBs) in NPP, Nainital.....	120
Table 31: Minimum Charges (Water Price) ₹ Per Month as per the Annual Assessment of Building for Water Supply in Urban Residential Area by the UJS, Nainital .....	121
Table 32: Water Price Rates for Metered Domestic Water Connections (₹ per Kilo Liter Per Month) by UJS .....	121
Table 33: Water Price Rates (Non-Domestic Metered Connections) ₹ Per Kilo Liter by the UJS .....	122
Table 34: Issues/Challenges Identified for Water Availability and Supply in NPP, Nainital .....	123
Table 35: Possible solutions/Suggested Projects for Water Availability and Supply in NPP, Nainital .	126

## List of Figures

Figure 1: Objectives of the Research Project .....	13
Figure 2: Methodology Stage Chart .....	17
Figure 3: Methodology Flow Chart .....	18
Figure 4: Percentage of Area Distribution of Uttarakhand (Census 2011).....	27
Figure 5: Population-Split of Uttarakhand (Census 2011).....	32
Figure 6: Comparative Analysis of the Average Literacy Rate of Uttarakhand and the Urban Areas of Uttarakhand (Census 2011).....	32
Figure 7: Comparative Analysis of the Average Male and Female Literacy-Rate of Urban Areas of Uttarakhand (Census 2011).....	33
Figure 8: Comparative Analysis of the Sex-Ratio of Urban Areas of Uttarakhand and the State of Uttarakhand (Census 2011).....	33
Figure 9: Working Population Split and Distribution of Main Workers in Uttarakhand (Census 2011)	34
Figure 10: Population distribution of all the Towns in Nainital Tehsil and the Male-Female Population of Nagar Palika Parishad, Nainital as per Census 2011 .....	41
Figure 11: Comparative Analysis of Sex-Ratio of Nagar Palika Parishad, Nainital and Nainital District as per Census 2011.....	41
Figure 12: Comparative Analysis of Average Literacy Rate of Nagar Palika Parishad, Nainital and Nainital District as per Census 2011 .....	42
Figure 13 Demography of Working Population of NPP, Nainital (Census 2011) .....	42
Figure 14: Annual Tourist Footfall of Nainital Town from the Year 2011 to 2023 as per the Tourism Department of Nainital, Uttarakhand .....	51
Figure 15: Monthly Tourist Footfall of Nainital Town from the year 2011 to 2023 as per the Tourism Department Nainital, Uttarakhand .....	52
Figure 16: Variations in Tourist Footfall of Nainital Town during Peak Tourist Season i.e. for the Month of May and June from the Year 2011 to 2023 as per the Tourism Department Nainital, Uttarakhand	53
Figure 17: Variations in Tourist Footfall of Nainital Town during Rainy Season i.e. for the Month of July and August from the Year 2011 to 2023 as per the Tourism Department Nainital, Uttarakhand .....	54
Figure 18: Flowchart of Solid Waste Management (SWM) In NPP, Nainital .....	63
Figure 19: User Charges by the NPP, Nainital for Solid Waste Collection in the Town.....	68
Figure 20: Waste Management Hierarchy as per the Swachh Bharat Mission-Urban.....	78
Figure 21: Stormwater Drains Network of Nainital Town .....	110
Figure 22: Water Balance Factor of Naini Lake as per the scientific report by UCOST .....	111
Figure 23: Flowchart of Process of Water Supply System in NPP, Nainital .....	112
Figure 24: Comparative Analysis of Water Pumping in Nainital Town by Tubewell & Gravity Source as per Log-sheet (Unit in MLD) from Year 2006 to 2024.....	117
Figure 25: Comparative Analysis of Average Water Supplied through Pumping in Nainital Town by Tubewells and Gravity Sources as per the Logsheet Maintained by the UJS, Nainital (in MLD).....	118
Figure 26: Ward Boundaries Details by Nagar Palika Parishad, Nainital .....	131
Figure 27: List of Revised Boundaries of the Nainital Municipality, July 23, 1926.....	136
Figure 28: Details of roads handed over from Public Works Department .....	138
Figure 29: Description length of roads by Nagar Palika Parishad, Nainital .....	141
Figure 30: List of Internal Roads of Nainital City Inside Municipality Limit .....	146
Figure 31: List of such roads owned by the Municipality whose maintenance work will be done by the Public Works Department. ....	149

Figure 32: List of Roads to be Inspected on Sher-Ka-Danda Hill ..... 150

Figure 33: Sher-Ka-Danda Drainage System..... 151

Figure 34: District Nainital month wise tourist statistics from year 2011 to 2021 ..... 155

Figure 35: Baranala System, Nainital..... 156

Figure 36: Tariff for water Supply in Nainital ..... 157

## List of Maps

Map 1: Location Map of all the Six Towns Highlighted on the Thematic Map of the State of Uttarakhand .....	11
Map 2: Thematic Map of India Highlighting the Location of the State of Uttarakhand and its Administrative Division, Location of: Airport, Industrial Estates, Hydel Projects and Wildlife Sanctuaries.....	21
Map 3: Thematic Map of the State of Uttarakhand's Administrative Division .....	22
Map 4: Road Network Map of Uttarakhand .....	23
Map 5: Major Railway Stations in the Garhwal and Kumaon Region of Uttarakhand .....	24
Map 6: Major Airports in Uttarakhand .....	25
Map 7: Terrain Map of Uttarakhand .....	28
Map 8: Climate Classification of Uttarakhand.....	29
Map 9: Earthquake Zonation Map for the State of Uttarakhand .....	30
Map 10: Uttarakhand State: Major River Basins .....	31
Map 11: Location Map of Nagar Palika Parishad, Nainital in Nainital District, Uttarakhand, India .....	36
Map 12: Geographical Location of Nainital Town in Uttarakhand .....	38
Map 13: Climatic Classification Map of Uttarakhand Highlighting the Climatic Conditions of Nainital Town.....	39
Map 14: Location of Nainital Town in Earthquake Zonation Map of Uttarakhand .....	40
Map 15: Nagar Palika Parishad (NPP), Nainital Boundary Map (1995-2011).....	46
Map 16: Location of Main Market Areas in Nainital Town.....	49
Map 17: Location of the Three Sites Consisting of 12 Compost Pits in Nainital Town.....	71
Map 18: Location of Dumping-cum-Trenching Ground, Haldwani cum Kathgodam from Dumping-cum-Transfer Ground, Nainital.....	72
Map 19: Existing Major Road Network of Nainital Town .....	86
Map 20: Location of Bus Station, Bus Stand and Bus Stop in Nainital Town.....	88
Map 21: Location of Congestion Points in Nainital .....	89
Map 22: Location of Parking Areas in Nainital Town .....	91
Map 23: Location Map of Present Parking and Stopping Points/Additional Parking Provided by the Authorities in NPP, Nainital during On-Season .....	97
Map 24: Location Map of Proposed Additional Parking along with the Provided Additional Parking during On-Season and Present/Existing Parking in NPP, Nainital .....	98
Map 25: Major Road and Transportation Projects Proposed in Nainital as per the City Development Plan: Nainital .....	103
Map 26: Location Map of Pumping Station in Nainital Town .....	113

## Abbreviations Used

ADB	Asian Development Bank
BPL	Below Poverty Line
CPHEEO	Central Public Health and Environmental Engineering Organization
DCHB	District Census Handbook
GoI	Government of India
GIS	Geographic Information Systems
HH	Household
IoT	Internet of Things
kL	Kilo Litre
Km	Kilo Meter
MLD	Million Litres per Day
MSWM	Municipal Solid Waste Management
MTPD	Metric Tonnes Per Day
NA	Not Available
NH	National Highway
NP	Nagar Panchayat
NPP	Nagar Palika Parishad
OHT	Over Head Tank
PJNU	Pey Jal Nigam Uttarakhand
PPH	Persons Per Hectare
PPP	Public Private Partnership
PWD	Public Works Department
SC	Schedule Caste
ST	Schedule Tribe
SWM	Solid Waste Management
TCPO	Town and Country Planning Organization
ToR	Terms of Reference
UCOST	Uttarakhand State Council for Science & Technology
UJS	Uttarakhand Jal Sansthan
ULB	Urban Local Body

# Chapter 1.

## Introduction

## Chapter 1. Introduction

This Final Report is for Nainital Town as required in the Terms of Reference (ToR). It contains details related to each of the three sectors i.e. a) Solid Waste Management b) Urban Transport and Parking and c) Water Availability and Supply, Methodology, detailed Plan of Action, Timeframe for completing the tasks, State Profile, and Town Profile.

The Map 1 below shows the location of the study-area i.e. all the six towns namely: Nainital, Almora, Haldwani, Mussoorie, Pauri and Champawat in the state of Uttarakhand.

Map 1: Location Map of all the Six Towns Highlighted on the Thematic Map of the State of Uttarakhand



Source: Base Map: (*Maps of India, 2024*)

## **Chapter 2.**

# **Objectives of Research Project**

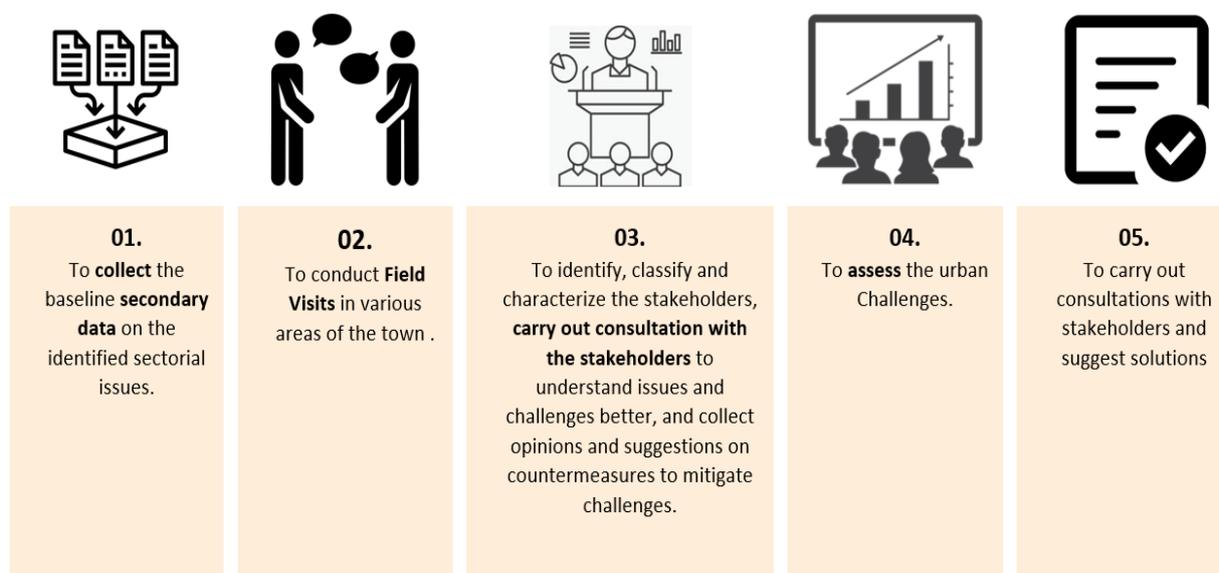
## Chapter 2. Objectives of the Research Project

The broad focus of the research study is to analyse and understand the current situation and the issues related to the Municipal Solid Waste Management (MSWM), the Urban Transportation and Parking and Water Availability and Supply in selected towns of Uttarakhand Viz. Nainital, Almora, Haldwani, Mussoorie, Pauri and Dehradun. The SPA Delhi shall conduct a comprehensive study to provide actionable recommendations to improve the sectoral areas.

### **The objectives of the Research Project are:**

1. To collect the baseline secondary data on the identified sectorial issues.
2. To identify, classify and characterize the stakeholders, carry out consultation with the stakeholders to understand issues and challenges better, and collect opinions and suggestions on counter measures to mitigate challenges.
3. To assess the urban Challenges.
4. To carry out consultations with stakeholders and suggest solutions.

Figure 1: Objectives of the Research Project



## **Chapter 3.**

# **Scope of Work**

### Chapter 3. Scope of Work

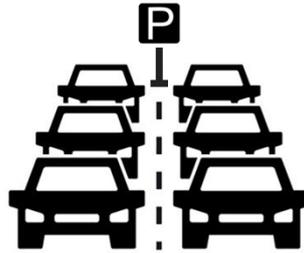
This report relates to the following sectors:

- a) Solid Waste Management.
- b) Urban Transport and Parking.
- c) Water Availability and Supply.



A.

Solid Waste Management



B.

Urban Transport and Parking



C.

Water Availability and Supply

The present issues related to the above-mentioned sectors in Nainital Town are identified in this report. Along with this a Stakeholder Consultation Meeting was also conducted on 25<sup>th</sup> April, 2024. Further, a Post Study Workshop has also been conducted on 30<sup>th</sup> August 2024. After the brainstorming sessions in the Stakeholder Consultation Meeting appropriate possible solutions and suggestions for improvement have been prepared and recommended in this report based on the feedback provided by the officials for Nainital Town.

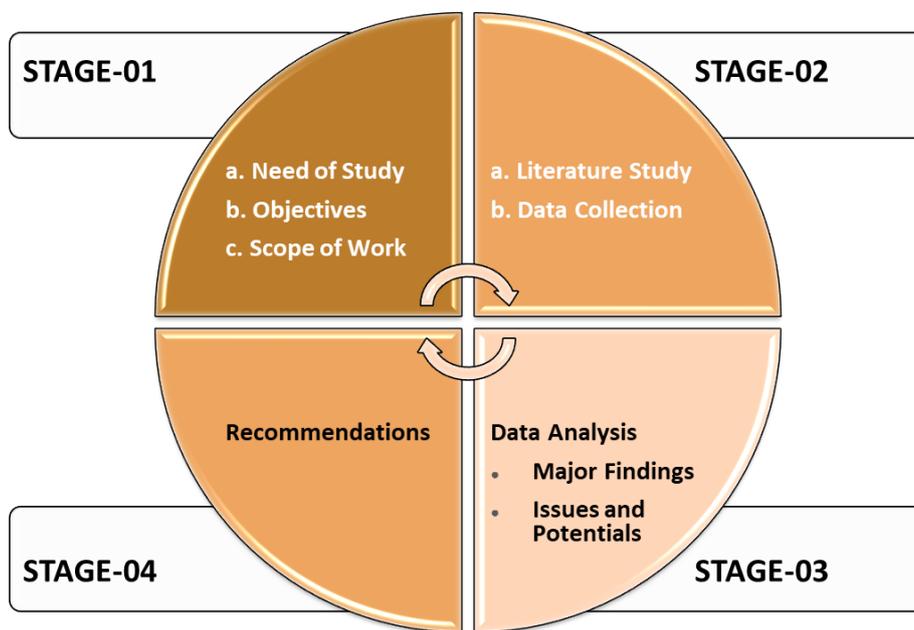
# Chapter 4.

# Methodology

## Chapter 4. Methodology

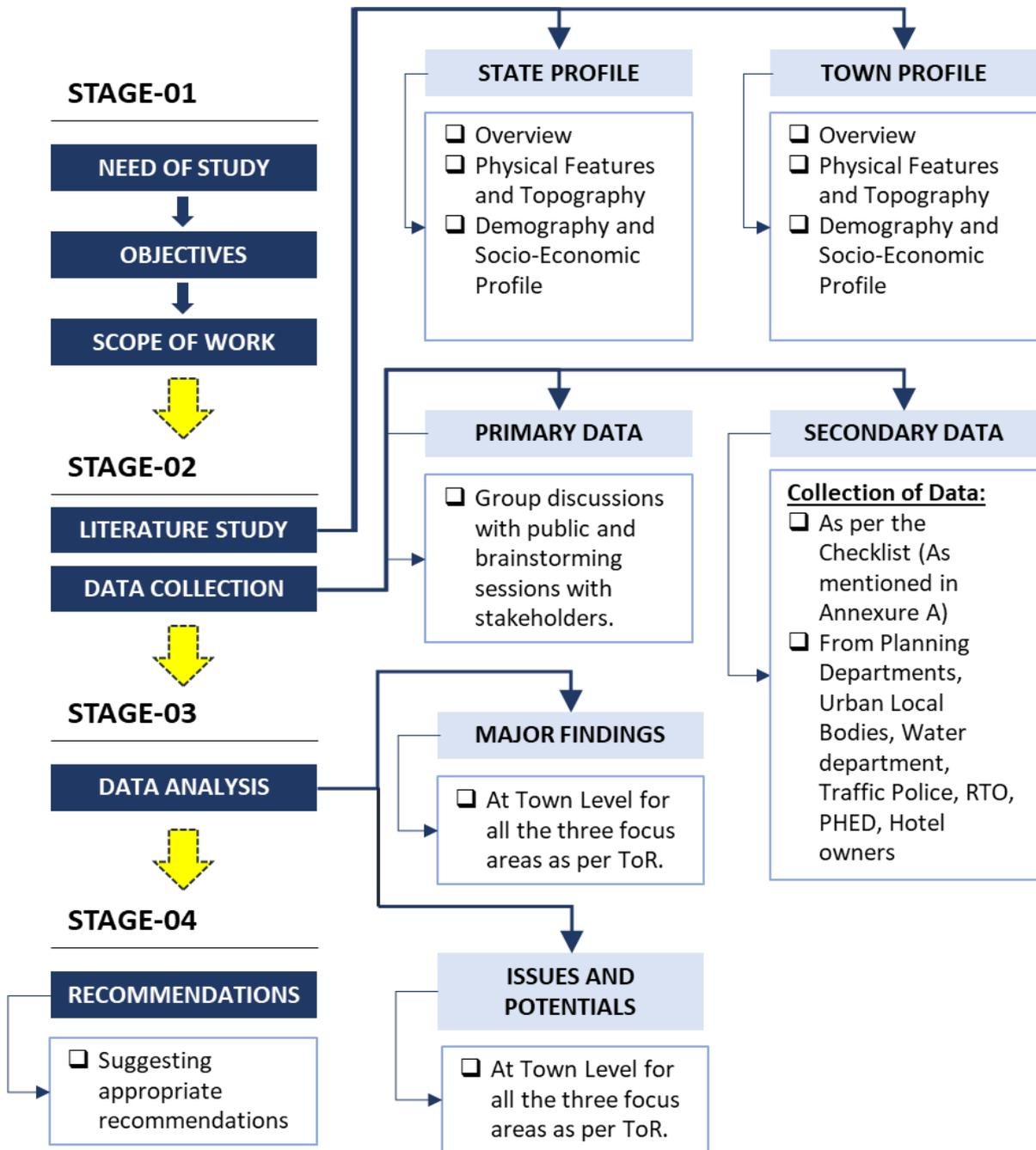
The Research Project Methodology is divided into four stages namely Stage-01, Stage-02, Stage-03 and Stage-04, as shown in Figure 2. Stage-01 consists of: the Need of Study, the Objectives defined and the Scope of Work as mentioned in the ToR. Stage-02 consists of Literature Study and Data Collection for the Research Project for the parameters mentioned in the Scope of Work. Stage-03 consists of the Data Analysis based on the Major Findings and Issues and Potentials Identified and the final Stage-04 consists of the possible solutions and suggestions for improvement along with appropriate recommendations based on the previous stages and brainstorming sessions with the stakeholders in the stakeholder consultation meeting, held on 25<sup>th</sup> April 2024 for Nainital Town as well as the Post Study Workshop held on 30<sup>th</sup> August 2024.

Figure 2: Methodology Stage Chart



The detailed work-flow for the above-mentioned Methodology Stage Chart is described in Figure 3 below.

Figure 3: Methodology Flow Chart



#### 4.1. Data collection tools

Table 1: Data Collection Tools

<b>Primary Data</b>	<ul style="list-style-type: none"> <li>Group discussions with public and brainstorming sessions with stakeholders.</li> </ul>
<b>Secondary Data</b>	<ul style="list-style-type: none"> <li>Collection of data from TCPO, Uttarakhand, Nagar Palika Parishad, PWD, Traffic Police, Police Department, RTO, Uttarakhand Jal Sansthan, Uttarakhand Payjal Nigam, Hotel owners, Tourism Department, NGOs and other Government offices Identified.</li> <li>Government Websites and Reports available.</li> </ul>

#### 4.2. Data Analysis Plan

The data analysis is further divided into three parts:

##### First stage:

- Detailed analysis of all the data collected for each town.
- Comparative data analysis for each town for the three focus areas as per ToR.
- Providing inferences as per the above study.

##### Second stage:

- Identifying the major findings driven from the inferences of the first stage
- Identifying Issues and potentials

##### Third stage:

- Prepare implementable action plans
- To assess the identified issues and potential and suggest appropriate recommendation.

# Chapter 5.

## Uttarakhand – A Profile

## Chapter 5. Uttarakhand – A Profile

### 5.1. Overview

Formerly called Uttaranchal, Uttarakhand at present is the 27<sup>th</sup> State of India. It was formed on 9<sup>th</sup> November 2000 out of the Hills Districts of Uttar Pradesh and is the 19<sup>th</sup> largest State of India with respect to its geographical area. It is also known as the “Devbhoomi” (The Land of Gods) because of its various holy places and shrines. It is popular for its scenic beauty, cultural heritage and simplicity of its people. A great tourist destination because of its religious significance and natural beauty. It pilgrimages to the sacred Char Dhams of Uttarakhand: Sri Gangotri, Sri Yamunotri, Sri Badrinath and Sri Kedarnath. The State flower is Brahma Kamal, State Bird is Monal, State Animal is Musk Deer and State Tree is Buransh (Rhododendron) as shown in Image 1.

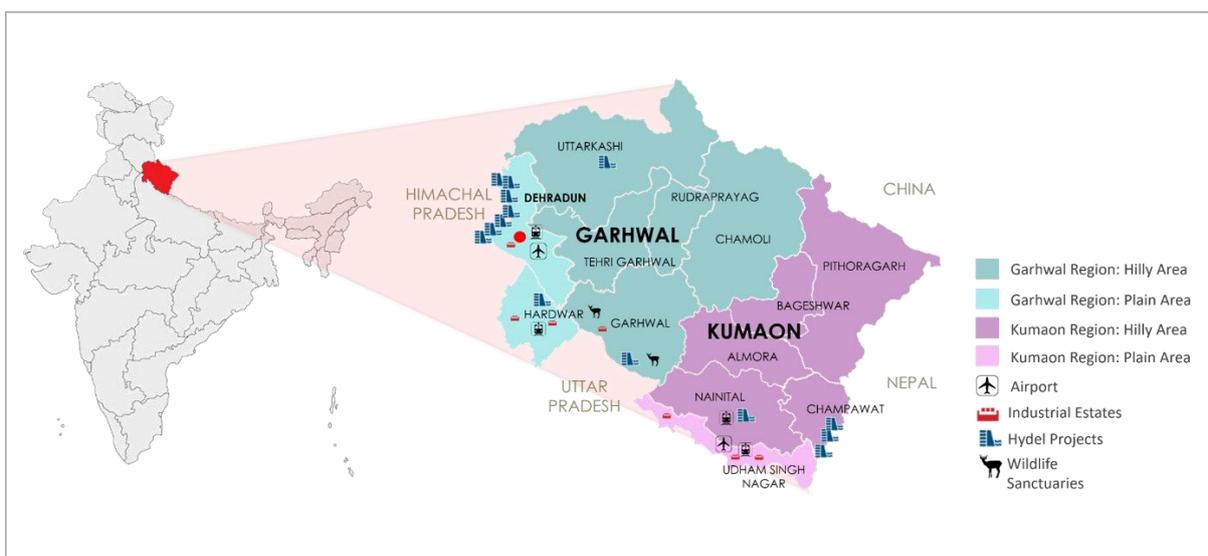
Image 1: Uttarakhand State Flower, Bird, Animal and Tree Image



Source: (Google Images, 2024)

As shown in Map 2, Uttarakhand is situated on the Northern part of India and located on the foothills of the Himalayan Mountain ranges. The state lies in between 28°43' – 31° 27' N Latitudes and 77°34' – 81° 02' E Longitudes. It has a land spread over an area of around 53,483 sq. km. Uttarakhand is at a distance of 355 km from Delhi, NCT of India.

Map 2: Thematic Map of India Highlighting the Location of the State of Uttarakhand and its Administrative Division, Location of: Airport, Industrial Estates, Hydel Projects and Wildlife Sanctuaries



Source: Base Map: (Google Images, 2024) and (Thematic Map Library, Uttarakhand.org, 2024)

As shown above in Map 3, the State of Uttarakhand shares international and inter-state boundaries. It shares its boundaries with China in the North, Nepal in the East, Himachal Pradesh in the West and Uttar Pradesh in the South. The state is broadly divided into two main regions known as Garhwal and Kumaon. It further comprises 13 districts namely Dehradun (State Capital), Haridwar, Udham Singh Nagar, Uttarkashi, Tehri Garhwal, Pauri Garhwal, Nainital, Champawat, Rudraprayag, Chamoli, Almora, Bageshwar and Pithoragarh.

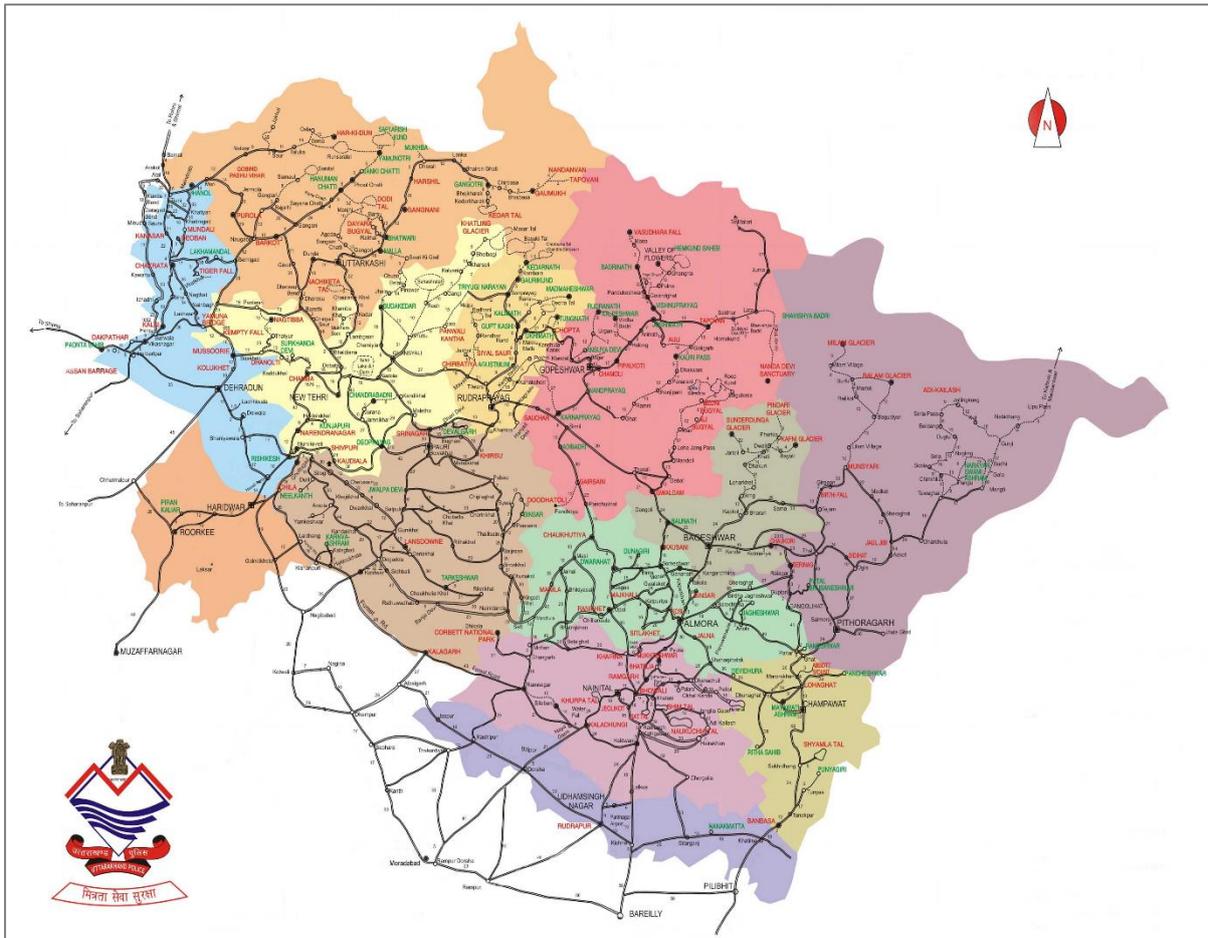
Map 3: Thematic Map of the State of Uttarakhand's Administrative Division



Source: Base Map: (Thematic Map Library, Uttarakhand.org, 2024)

As shown in Map 4, the State provides major connectivity through its road network. As per the (Public Works Department, Government of Uttarakhand, 2024), the State exhibits a huge network of roads consisting National Highways of 2,091.34 km road length, State Highways of 4,516.91 km road length, Major District Roads of 2,113.17 km road length, Other District Roads of 2,714.60 km road length, Village Roads of 23,953.58 km road length, Light Vehicle Road of 536.68 km road length and Bridle Roads/ Border Tracks of 3,580.25 km road length. There are more than 1000 major bridges in the State. Uttarakhand Transport Corporation (UTC) is the public sector passenger road transport corporation that provides bus services in the State.

Map 4: Road Network Map of Uttarakhand

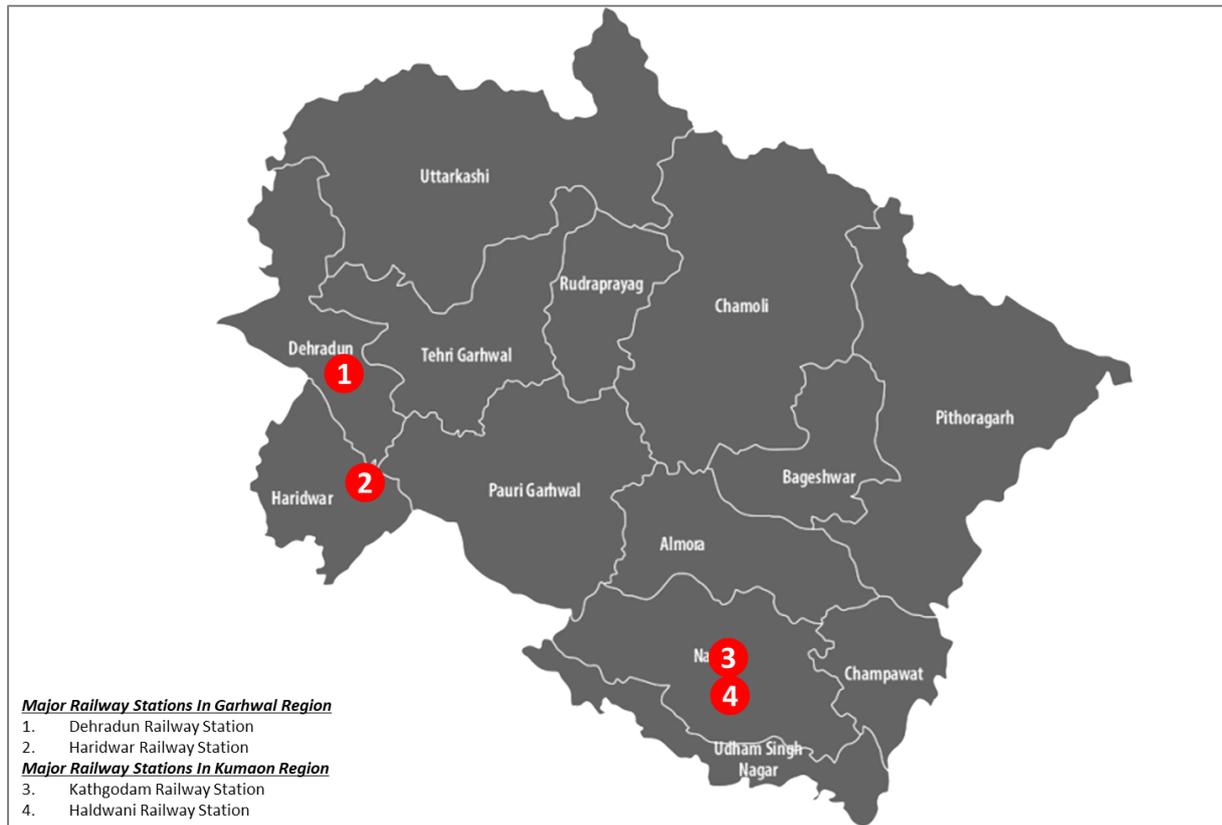


Source: (Traffic Directorate Uttarakhand Police, 2024)

As per (Traffic Directorate Uttarakhand Police, Government of Uttarakhand, 2024), approximately 86% of the geographical area of the State consists of hills due to this the State has a very limited railway network (345 km), largely confined to the plains.

As shown in Map 5, major railway station in the Garhwal Region is situated in Dehradun (one of the main heads of the Northern Railway region) and Haridwar. While major railway station in the Kumaon Region is at Kathgodam (the last terminus of the broad-gauge line of the North East Railways) and Tanakpur. Other railway junctions include Pantnagar, Lalkuan, Haldwani, Roorkee, Rishikesh, Kotdwara, Ramnagar and Rudrapur.

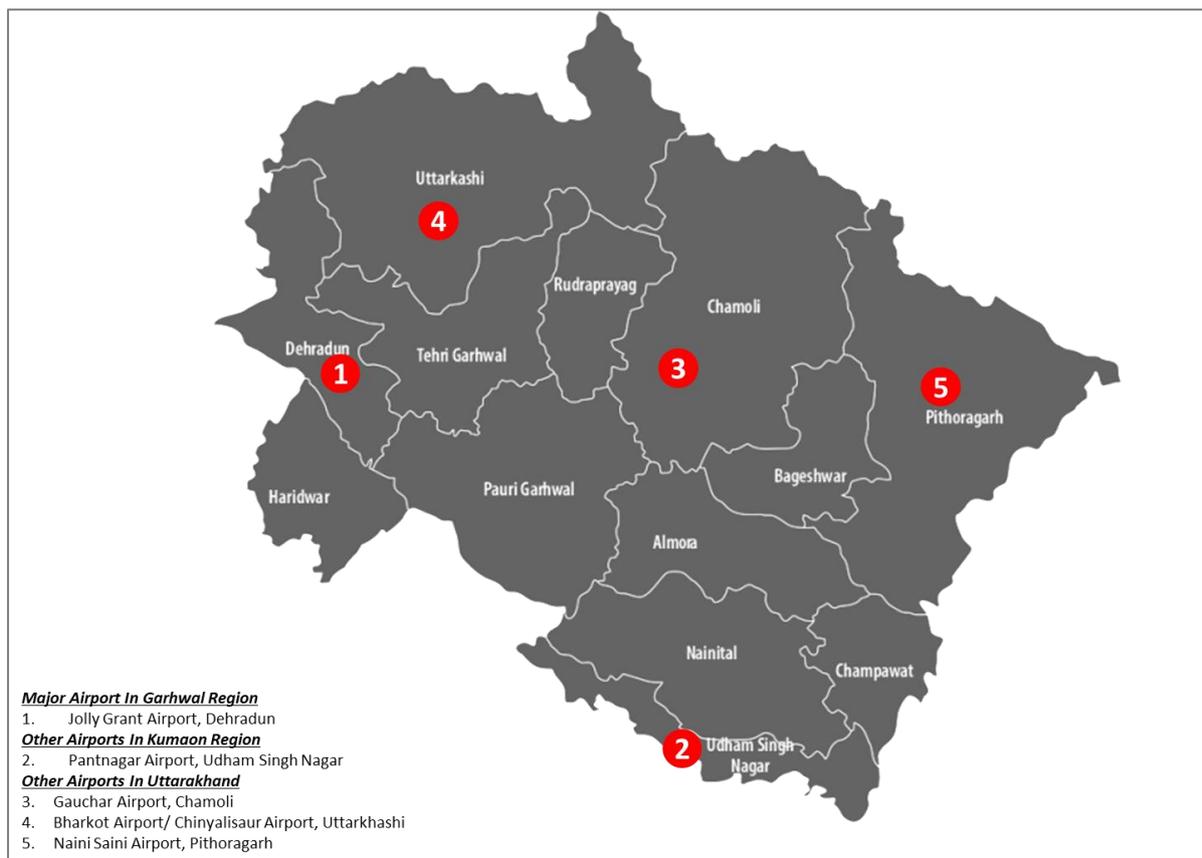
Map 5: Major Railway Stations in the Garhwal and Kumaon Region of Uttarakhand



Source: Basemap: (Google Images, 2024)

As per the (euttaranchal, 2011), the State has a total of five airports. Out of these five, two are major domestic airports, namely: Jolly Grant Airport (primary airport) in Dehradun District and Pant Nagar airport in Udham Singh Nagar District. The Gauchar Airport in Chamoli District is operated by the Indian Army and provides helicopter services for the Char Dham Yatra. The Bharkot Airport or the Chinyalisaur Airport in Uttarkashi District is presently used as an Advanced Landing Ground (ALG) by the Indian Airforce. The Naini Saini Airport in Pithoragarh District is used for authoritative utilize. The primary airport (Jolly Grant Airport) of the State is located at a distance of 35 km from Dehradun town. The Map 6 below shows the location of all the five airports in Uttarakhand.

Map 6: Major Airports in Uttarakhand



Source: Basemap: (Google Images, 2024)

The following Table 2, shows the detailed overview for the State of Uttarakhand.

Table 2: Overview of the State of Uttarakhand, India (Census 2011)

<b>GEOGRAPHICAL LOCATION</b>	
Country	India
Situated on	Northern part of India on the foothills of Himalayan Mountain Range
State	Uttarakhand
State Capital City	Dehradun
Latitude	28°43' – 31° 27' N
Longitude	77°34' – 81° 02' E
Geographical Area (Total)	53,483 sq. km.
Geographical Area (Urban)	
Geographical Area (Rural)	
Total Forest Area	38,000 sq. km.
Average elevation (ASL)	1,938 m
Surrounded by	North: China East: Nepal West: Himachal Pradesh South: Uttar Pradesh
<b>POPULATION DATA</b>	
Total Population	100,86,292 (100%)
Total Urban Population	30,49,338 (30%)
Total Rural Population	70,36,954 (70%)
Male Population (Total)	51,37,773 (100%)
Male Population (Urban)	16,18,731 (32%)
Male Population (Rural)	35,19,042 (68%)
Female Population (Total)	49,48,519 (100%)
Female Population (Urban)	14,30,607 (29%)
Female Population (Rural)	35,17,912 (71%)
Population Density (Overall)	189 per sq. km.
Population Density (Urban)	
Population Density (Rural)	
Population Growth-Rate (2011) (%)	18.81
Average Literacy Rate (%) (Overall)	78.82
Average Literacy Rate (%) (Urban)	84.45
Average Literacy Rate (%) (Rural)	76.31
Male Literacy Rate (%) (Overall)	87.40
Male Literacy Rate (%) (Urban)	89.05
Male Literacy Rate (%) (Rural)	86.62
Female Literacy Rate (%) (Overall)	70.01
Female Literacy Rate (%) (Urban)	79.25
Female Literacy Rate (%) (Rural)	66.18
Sex-Ratio (female per thousand male) (Overall)	963
Sex-Ratio (female per thousand male) (Urban)	884
Sex-Ratio (female per thousand male) (Rural)	1,000

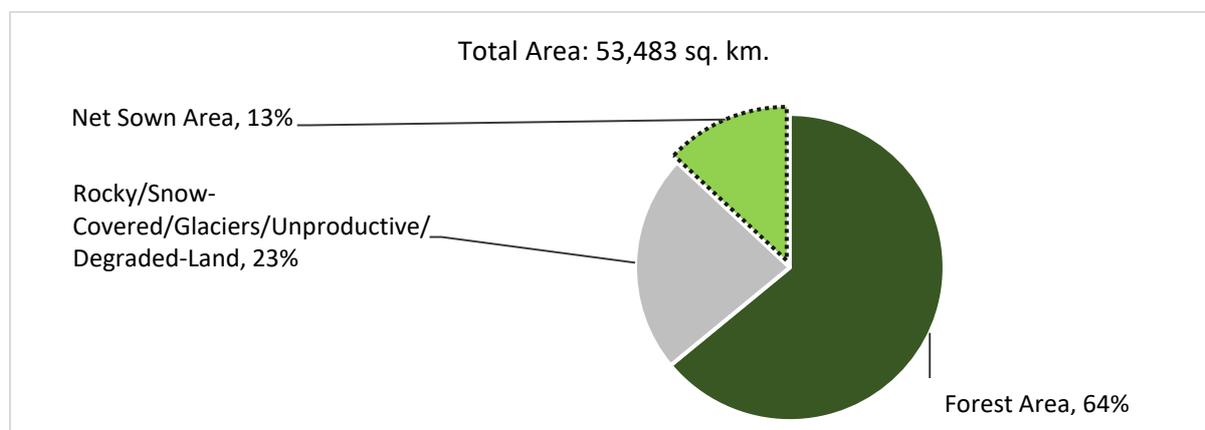
ADMINISTRATIVE SET UP	
Number of Divisions	2 Garhwal Division Kumaon Division
Number of Districts	13
Number of Tehsils	110
Number of Sub-Tehsils	18
Number of Development Blocks	95
Number of Nyaya Panchayats	662
Number of Gram Panchayats	7796
Number of Census Villages	16,793
Number of Nagar Nigam	9
Number of Nagar Palika Parishad	42
Number of Nagar Panchayats	52
Number of Cantonment Board	9
Number of Census Towns	41
Number of Industrial Townships	02
Number of Development Authority	14
Number of Lok Sabha Constituency	05
Number of Rajya Sabha Constituency	03
Number of Vidhan Sabha Constituency	70

Source: (Census India, 2011), (State Disaster Management Plan, Volume-1, 2020-21) and (Uttarakhand At A Glance , 2021-22)

## 5.2. Physical Features and Topography

The State is rich in natural resources like water and forests with many glaciers, rivers, dense forests land, snow-clad mountain peaks and 175 rare species of aromatic and medicinal plants. As shown in Figure 4, out of the total geographical area (53,483 sq.km.) of the State, almost 64% of the total geographical area of the state is under forests, 23% is under permanent snow cover, glaciers and steep slopes and only 13% area is available under the net sown area in the State.

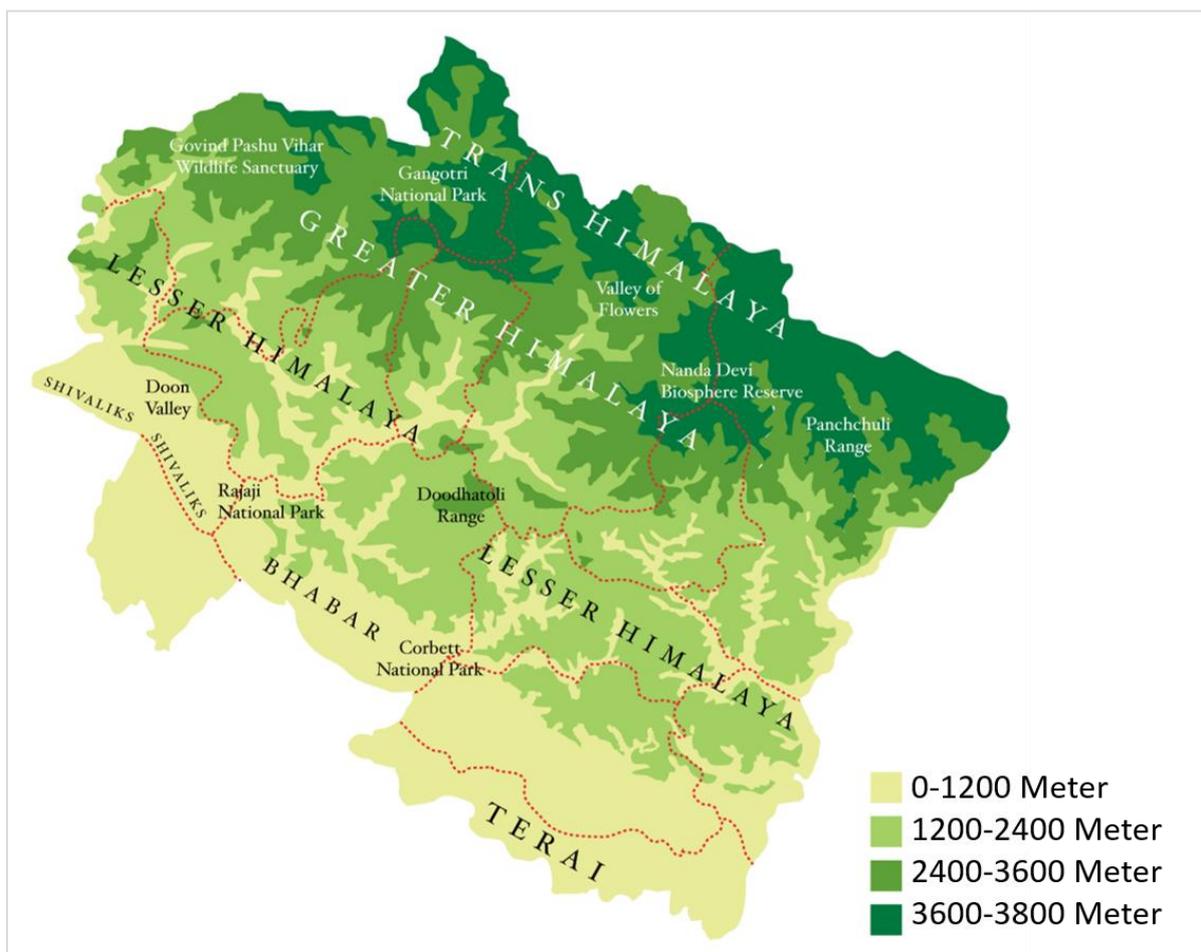
Figure 4: Percentage of Area Distribution of Uttarakhand (Census 2011)



Source: (District Census Handbook, 2011)

As shown in Map 7, being a part of the Western Himalayas, Uttarakhand’s terrain is categorised into four altitudes namely: 0-1200 meters (Terai, Bhabar and Shivalik), 1200-2400 meters (Lesser Himalaya), 2400-3600 meters (Greater Himalaya) and 3600-3800 meters (Trans Himalaya). There is a huge geographical range within the State which sometimes acts as a major constraint for the overall development of the state as around 86% of the State is hilly terrain. As per the (Government of Uttarakhand: State Profile), the State is rich in mineral deposits like limestone, marble, rock phosphate, dolomite, magnesite, copper, gypsum, etc.

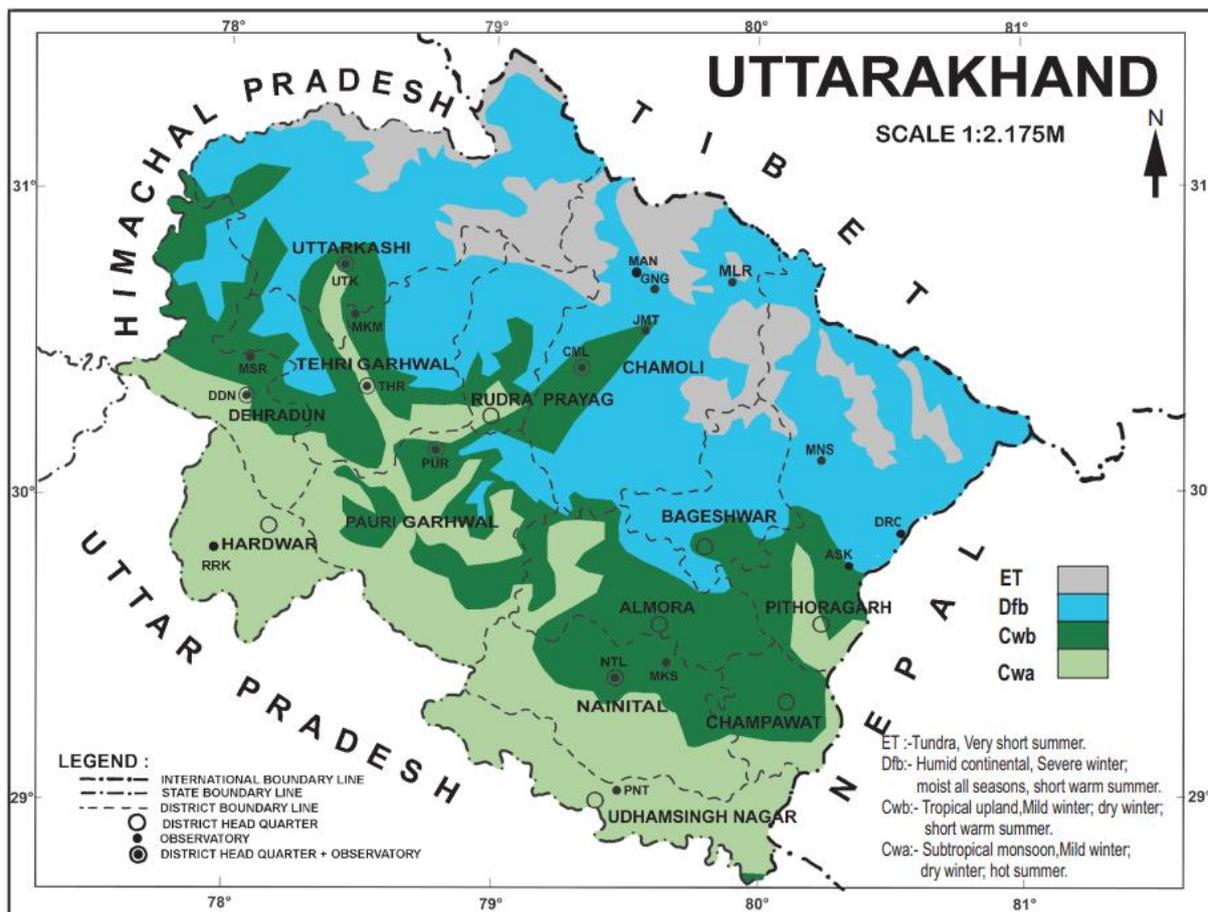
Map 7: Terrain Map of Uttarakhand



Source: (Thematic Map Library, Uttarakhand.org, 2024)

As shown in Map 8, the State has all the major climatic zones varying from hot and sub-tropical at the lower elevations to cold alpine climate (summers are cool and winters are harsh) at higher elevations. Warm and cool temperate climate persists over the areas in between. Due to this vivid range of climatic conditions the State has a variety of horticulture, floriculture and agriculture.

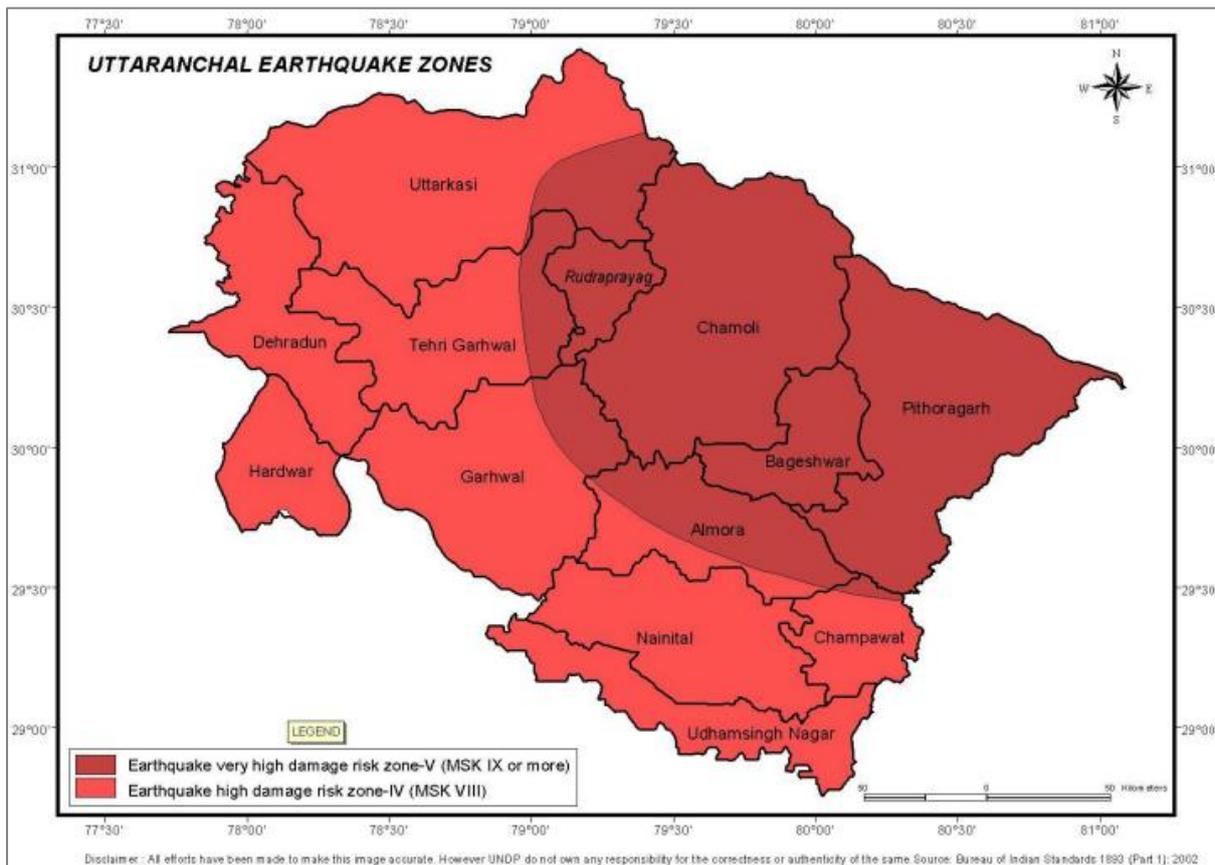
Map 8: Climate Classification of Uttarakhand



Source: (Climate of Uttarakhand, 2014)

As per (State Disaster Management Plan, Volume-1, 2020-21), as the State falls under the Zone IV and V of Earthquake Zonation Map, Uttarakhand is prone to natural disasters. It frequently faces natural disasters like earthquakes, landslides, cloudburst, flash floods, floods, avalanches, droughts, lightening, forest fires, cold waves and hailstorms. Apart from these man-made disasters like Industrial Disasters and weather hazards like Western Disturbances (during winters) also affects the State. Map 9 below, depicts the Earthquake Zonation Map for the State of Uttarakhand.

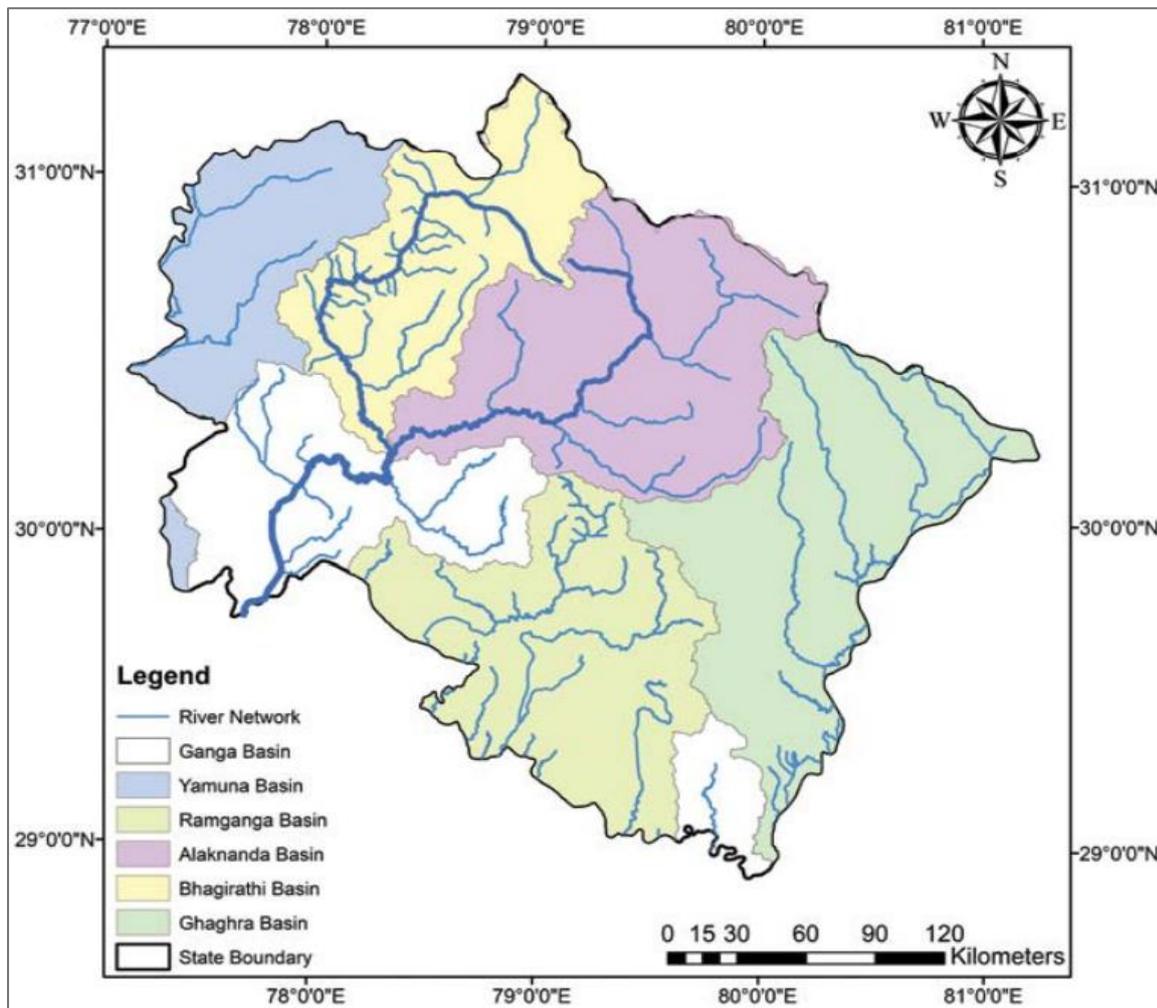
Map 9: Earthquake Zonation Map for the State of Uttarakhand



Source: (Disaster Mitigation & Management Centre, Uttarakhand Secretariat)

As shown in Map 10, the State has 6 major river basins namely: Alaknanda basin, Bhagirathi basin, Sharda basin, Ramganga basin, Ganga basin and Yamuna basin.

Map 10: Uttarakhand State: Major River Basins



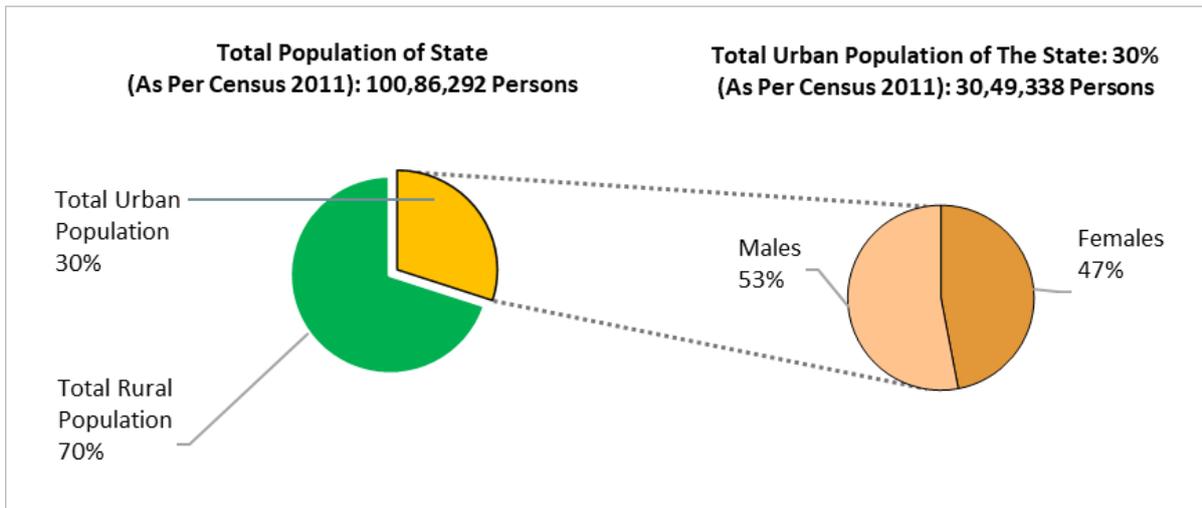
Source: (*Uttarakhand River Atlas, National Mission for Clean Ganga, Ministry of Jal Shakti, Department of Water Resources, River Development & Ganga Rejuvenation, Government of India, 2021*)

### 5.3. Demography and Socio-Economic Profile

#### 5.3.1. Demography

As shown in figure below according to the (Census India, 2011) approx. 30% (30,49,338) of the total population (100,86,292) of the State resides in the urban area. Out of the total urban population (30,49,338), 53% (16,18,731) is the male population and 47% (14,30,607) is the female population.

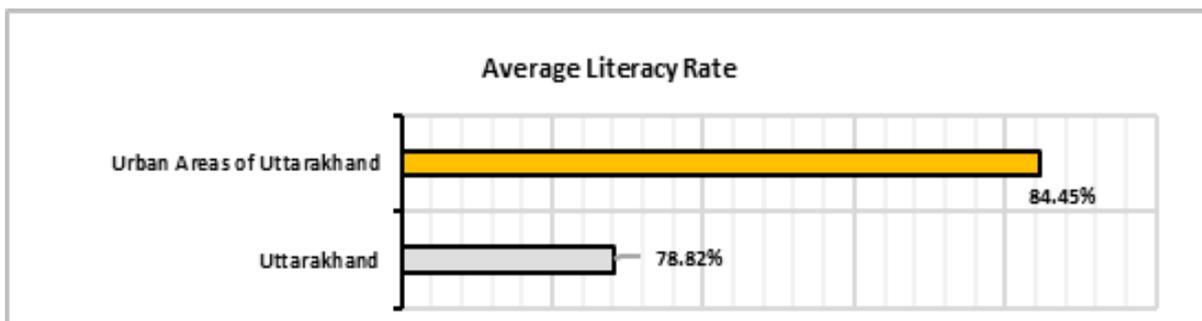
Figure 5: Population-Split of Uttarakhand (Census 2011)



Source: (Census India, 2011)

As shown in Figure 6, according to the (Census India, 2011), the Urban Area of Uttarakhand has an Average Literacy Rate of 84.45% which is higher than the Average Literacy Rate of the State i.e. 78.82%.

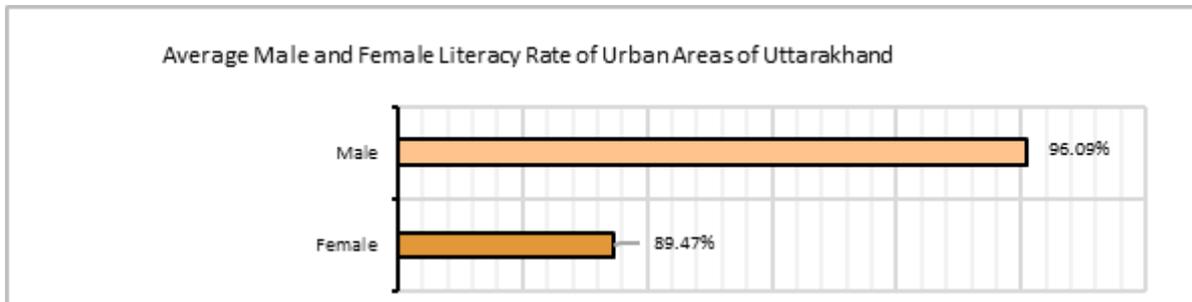
Figure 6: Comparative Analysis of the Average Literacy Rate of Uttarakhand and the Urban Areas of Uttarakhand (Census 2011)



Source: (Census India, 2011)

As shown in Figure 7, according to the (Census India, 2011), the Urban Areas of Uttarakhand has higher Average Male Literacy Rate (96.09%) than the Average Female Literacy Rate (89.47%).

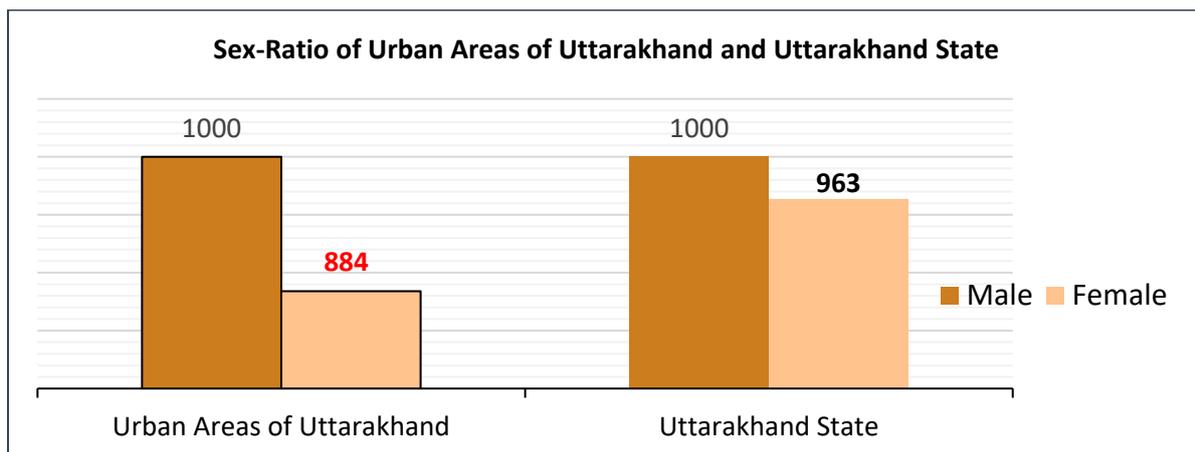
Figure 7: Comparative Analysis of the Average Male and Female Literacy-Rate of Urban Areas of Uttarakhand (Census 2011)



Source: (Census India, 2011)

As shown in Figure 8, the urban area has an average sex-ratio of 884 females over 1000 males which is lower than the average sex-ratio of the State i.e. 963 females per 1000 males.

Figure 8: Comparative Analysis of the Sex-Ratio of Urban Areas of Uttarakhand and the State of Uttarakhand (Census 2011)



Source: (Census India, 2011)

### 5.3.2. Social and Cultural Aspects

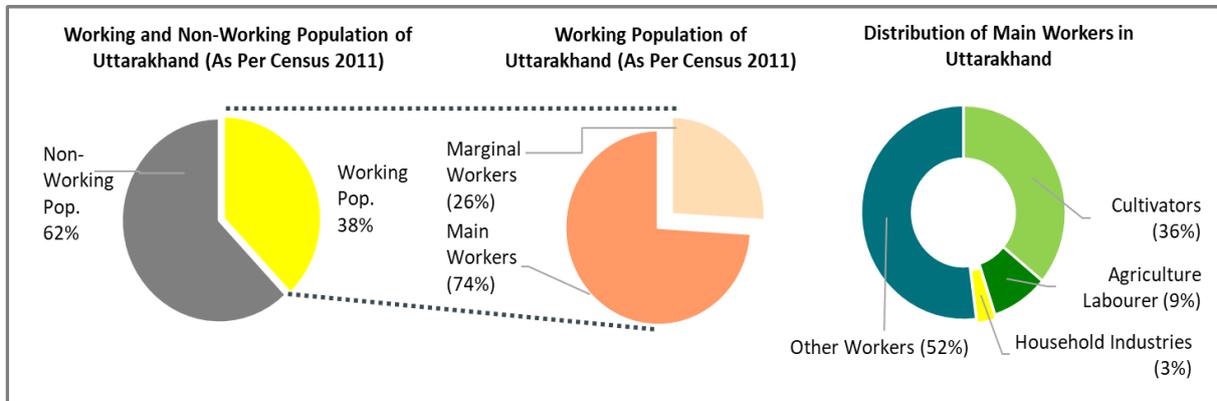
As per the (Census India, 2011), Uttarakhand has a Hindu majority with 82.97% of Hindu population followed by 13.95% of Muslim population, 2.34 % Sikh population, 0.37% of Christian population, 0.15% of Buddhist population, 0.09% of Jain population, 0.01% of Other Religions population and 0.12% of population with No Religion Stated. Major languages spoken in the State are Hindi and Sanskrit with Hindi being the official language of the State.

### 5.3.3. Economic Profile

As shown in Figure 9, according to the (Census India, 2011), around 38% (38,72,275) of the total population of the State (i.e. 100,86,292) is working population. Out of the total working population (38,72,275) around 74% (28,70,624) are Main Workers (of which 72% are males while only 28% are females) and 26% (10,01,651) are Marginal Workers. Out of the total Main Workers, 36% are Cultivators, 9% are Agriculture Labourer, 3% works in the Household Industries and 52% are engaged as Other Workers. While 62% (62,14,017) of the total population of the State is the Non-Working

Population. As per the (State Horticulture Mission, Govt. of Uttarakhand , 2024), agriculture is a predominant sector in the state economy and it contributes around 23.4% in the State Domestic Product (GDP).

Figure 9: Working Population Split and Distribution of Main Workers in Uttarakhand (Census 2011)



Source: (Census India, 2011)

# Chapter 6.

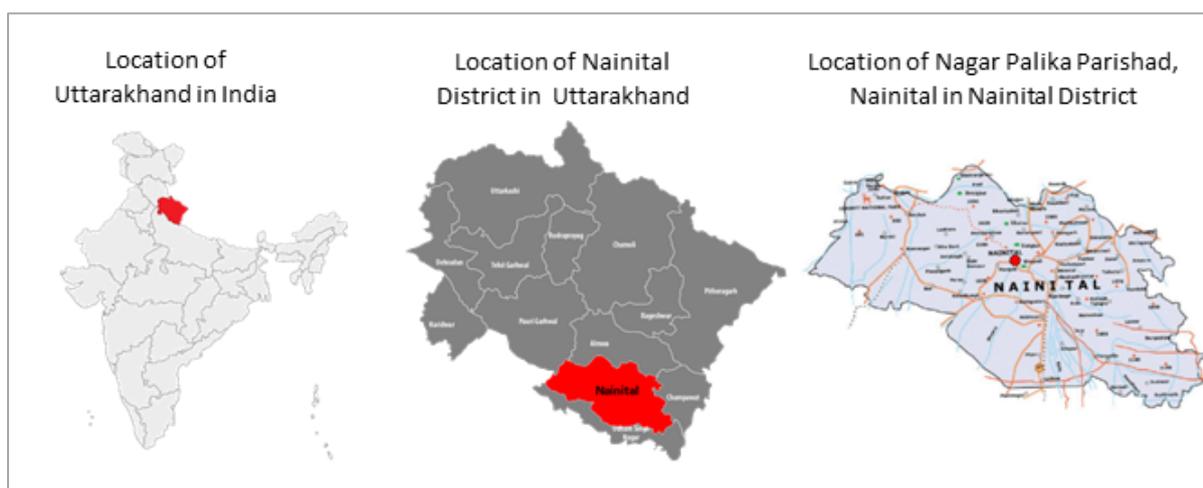
## Nainital Town

## Chapter 6. Nainital Town

### 6.1. Overview

As shown in Map 11, Nainital Town is Located in the Kumaon Division of Uttarakhand, India. It falls in the Nainital Tehsil of the Nainital District in the State of Uttarakhand India. A beautiful lake-hill town situated around the Naini Lake: a natural lake i.e. 1,432m long, 420m wide and 20m deep (Asian Development Bank, 2015). Naini lake covers about 4.6% of the total area of the Town (11.73 sq. km.) i.e. 0.54 sq. km. (City Development Plan: Nainital Revised under Jawaharlal Nehru National Urban Renewal Mission (JNNURM), 2007). Named as the Switzerland of India this Town is centred around mountain lake and surrounded by seven hill sand sow-capped peaks. Thus, making it famous for its natural beauty and breath-taking views of the hills surrounding the lake.

Map 11: Location Map of Nagar Palika Parishad, Nainital in Nainital District, Uttarakhand, India



Source: (Google Images, 2024)

Historically, the town holds an important mythological reference as one of the 64 'Shakti Peeths' and hence derives its name from it. The Town also used to be the summer capital of erstwhile Uttar Pradesh. At present, Nainital Town is the headquarters of Nainital Lake District and Kumaon Mandal (Kumaon Region of Uttarakhand).

Some major attraction places are Naina Devi Temple, Snow View Point (highest point) and Nanda Devi (highest peak). The town also accommodates many important state-offices including the High Court and various well-known institutions like Dr. R. S. Tolia Uttarakhand Academy of Administration (ATI), Aryabhata Research Institute of Observational Sciences (ARIES), Office of Kumaon Mandal Vikas Nigam and Kumaon University, etc. Thus, making Nainital Town one of the most popular hill stations of India and inducing a huge tourist footfall around the year i.e. approximately 25 Lakhs per annum.

As per (Census India, 2011), The Nainital Municipal Board was formally constituted in 1845. It was the second Municipal Board of North Western Provinces. At present, Nainital town has Nainital Nagar Palika Parishad (Municipality) consisting 13 wards.

The following Table 3 shows a comprehensive overview of Nainital Town as per the Census of India 2011.

Table 3: Overview of Nainital Town

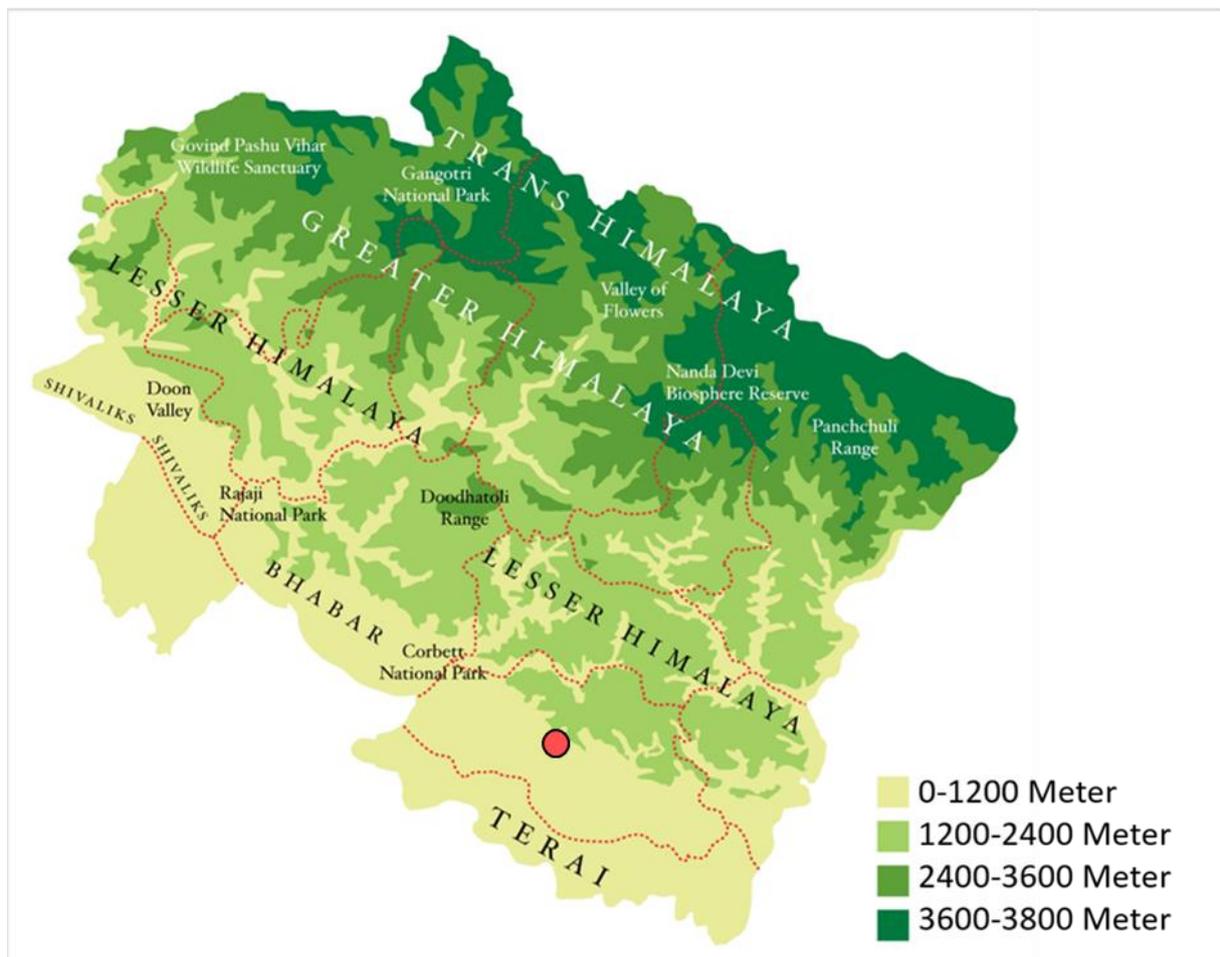
<b>GEOGRAPHICAL LOCATION</b>	
District	Nainital
Tehsil	Nainital
Town	Nainital
Latitude	29°00'N - 29°05'N
Longitude	80°14'E - 78°80'E
Geographical Area of Nainital Nagar Palika Parishad	11.73 sq. km.
Average elevation of district headquarters (ASL)	1,938 m
<b>POPULATION DATA (2011 CENSUS)</b>	
Total Population of Nainital Nagar Palika Parishad	41,377
Male Population of Nainital Nagar Palika Parishad	21,648
Female Population of Nainital Nagar Palika Parishad	19,729
Population Density of Nainital Nagar Palika Parishad (persons per km <sup>2</sup> )	3,527
Average Literacy Rate of Nainital Nagar Palika Parishad (%)	92.93
Male Literacy Rate of Nainital Nagar Palika Parishad (%)	96.09
Female Literacy Rate of Nainital Nagar Palika Parishad (%)	89.47
Sex-Ratio of Nainital Nagar Palika Parishad (female per thousand male)	911
<b>ULB</b>	
Nainital Nagar Palika Parishad	13 Wards

Source: (City Development Plan: Nainital Revised under Jawaharlal Nehru National Urban Renewal Mission (JNNURM), 2007), (District Census Handbook Nainital, 2011) and (Census India, 2011)

### 6.2. Physical Features and Topography

As shown in Map 12, as per the (District Census Handbook, 2011), geographically Nainital Town falls in the Lesser Himalayas region (1200-2400m) and sub-micro region of Nainital-Siwalik region. It has a long chain of low hills. Entirely built of Siwalik sediments. The high ranges have dense mixed jungles mainly of banj. While pine and sal (shorea robusta) can be seen on the low ranges. Kosi is the main river and the Town falls in the Ramganga Basin and sub-micro region of Kosi Basin.

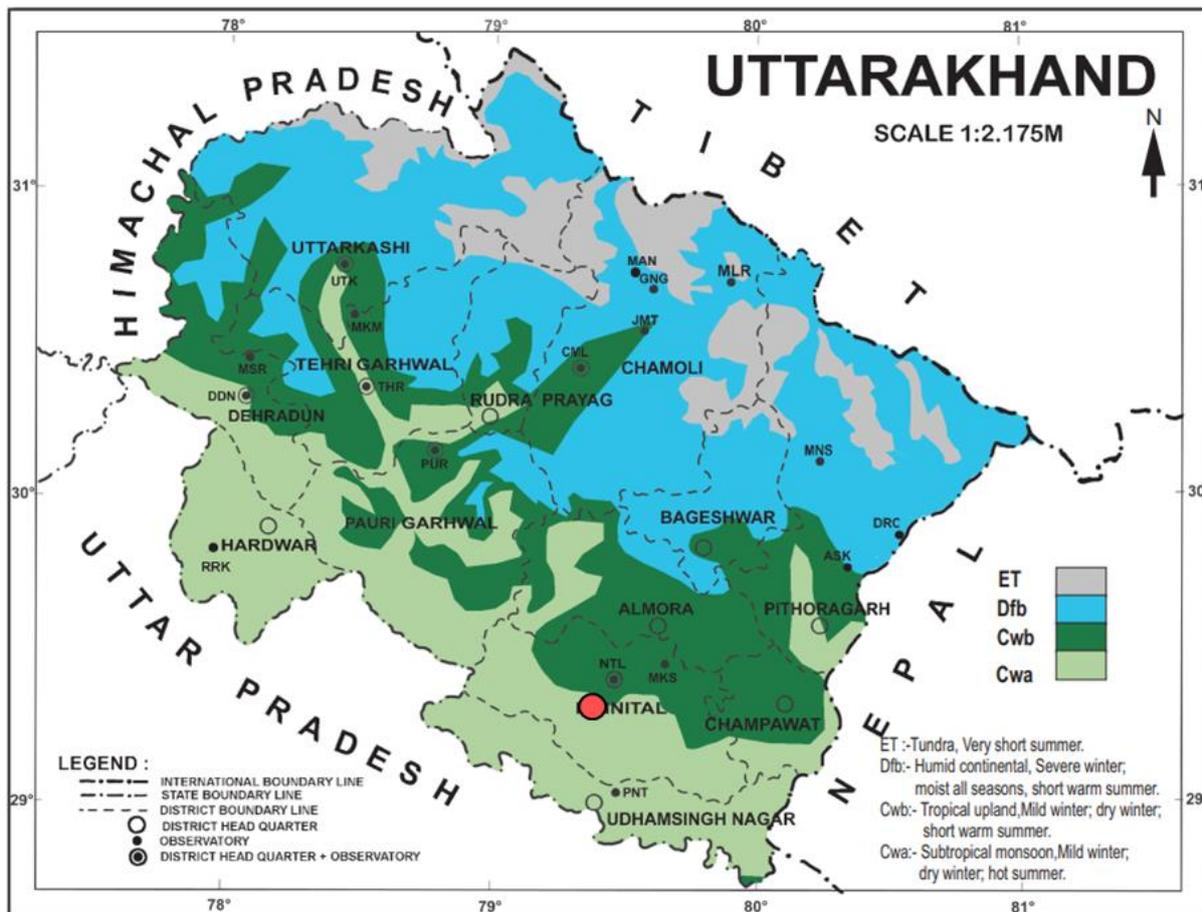
Map 12: Geographical Location of Nainital Town in Uttarakhand



Source: (Thematic Map Library, Uttarakhand.org, 2024)

As shown in Map 13, as per (City Development Plan: Nainital Revised under Jawaharlal Nehru National Urban Renewal Mission (JNNURM), 2007), Nainital experiences temperatures ranging from 28°C to 7°C. It is colder than the rest of the hilly areas of the Kumaon Division. It receives heavy rainfalls due to the prolonged and early onset of monsoon than the plain areas of the region. During winter the rainfall creates a considerable fall in the temperature of the town.

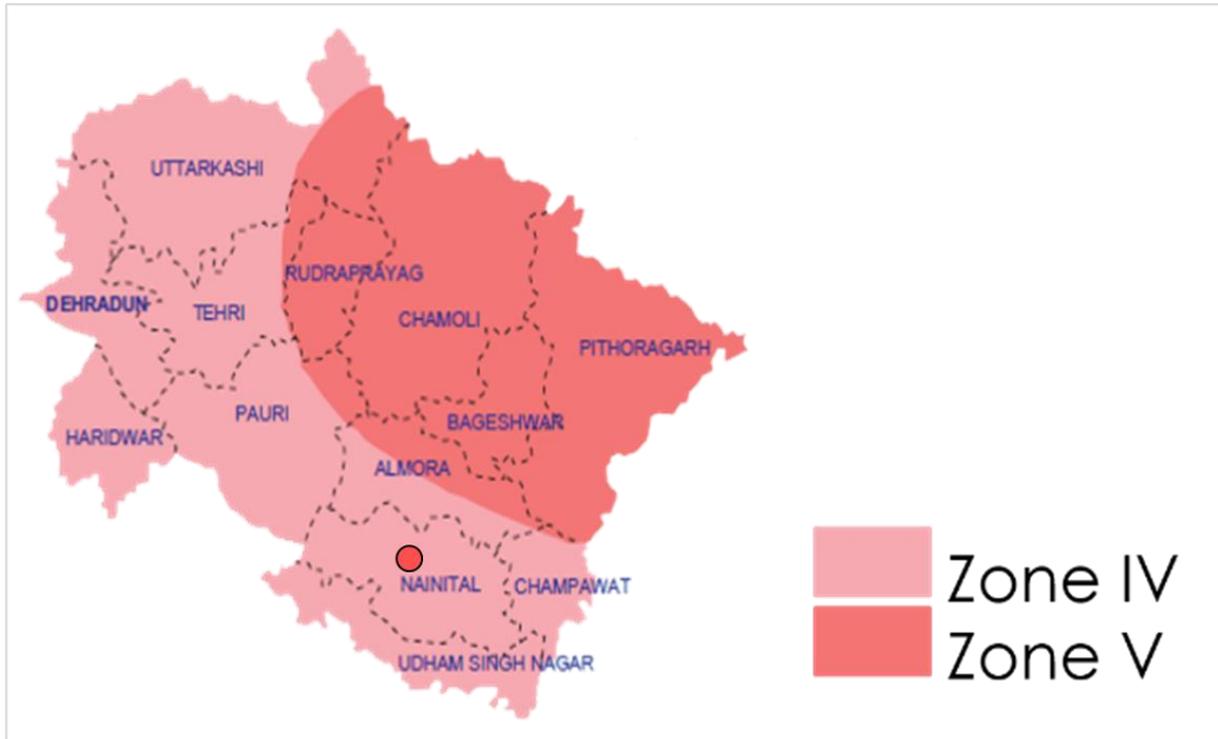
Map 13: Climatic Classification Map of Uttarakhand Highlighting the Climatic Conditions of Nainital Town



Source: Basemap: (GoI, Climate of Uttarakhand)

As shown in Map 14: Location of Nainital Town in Earthquake Zonation Map of Uttarakhand, Champawat Town falls in the Zone IV of the Earthquake prone zone i.e. the second most vulnerable zone prone to earthquakes and disasters.

Map 14: Location of Nainital Town in Earthquake Zonation Map of Uttarakhand



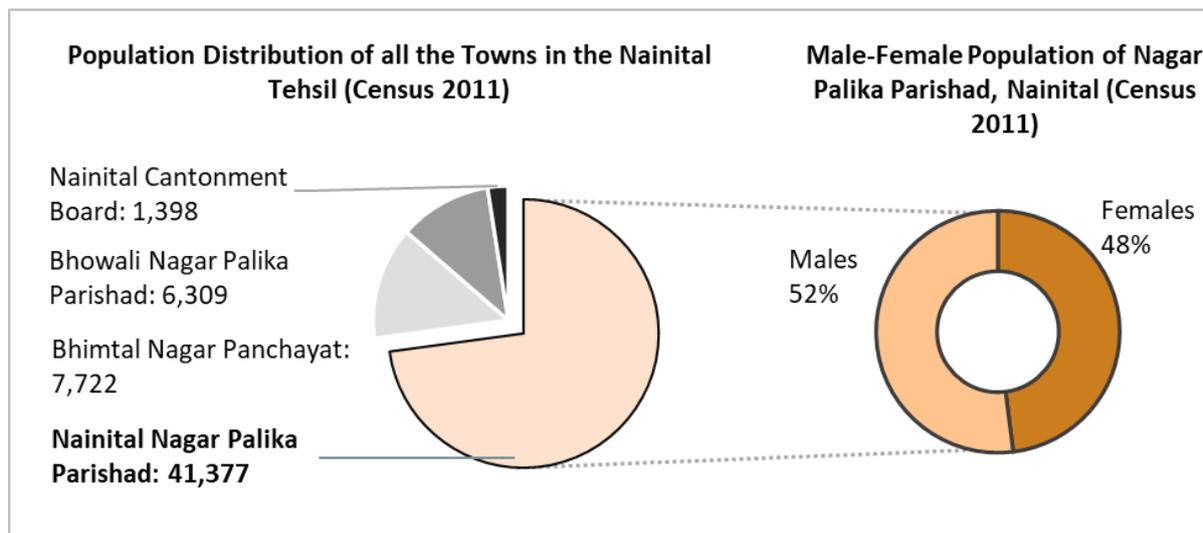
Source: (Thematic Map Library, Uttarakhand.org, 2024)

### 6.3. Demography and Socio-Economic Profile

#### 6.3.1. Demography

As shown in Table 13, as per the (Census India, 2011), Nagar Palika Parishad (NPP), Nainital has a total population of 41,377 persons. Out of which 52% (21,648) is the male population and 48% (19,729) is the female population in the Town.

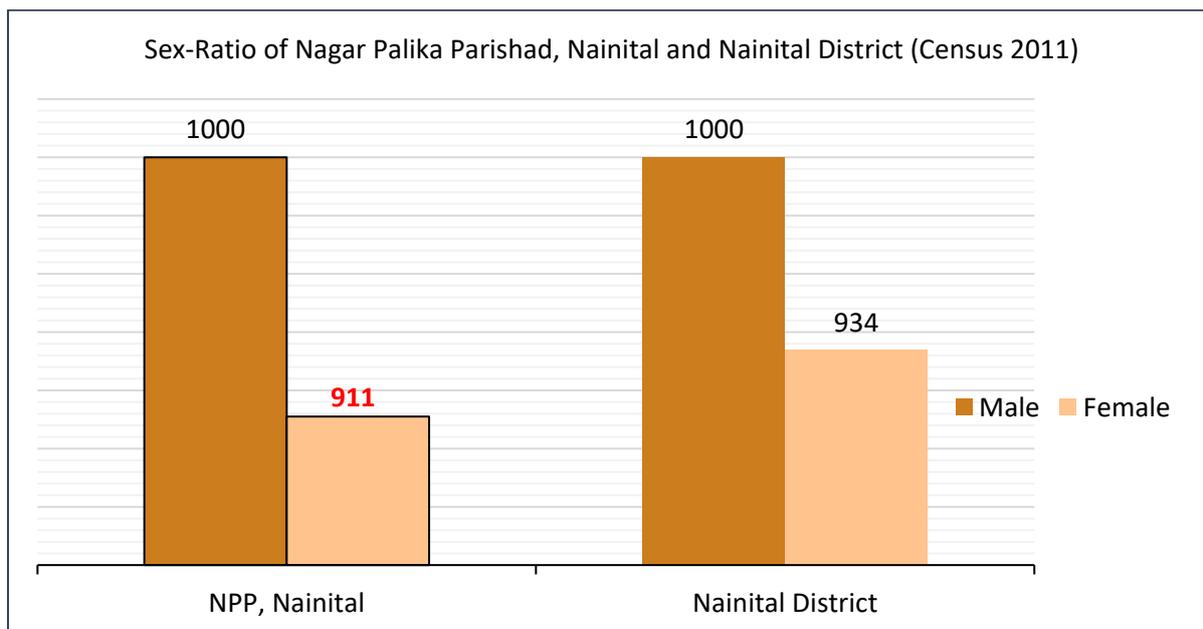
Figure 10: Population distribution of all the Towns in Nainital Tehsil and the Male-Female Population of Nagar Palika Parishad, Nainital as per Census 2011



Source: (Census India, 2011)

As shown in Figure 11, Nainital Town 911 females per 1000 males. Thus, making the sex-ratio of Nainital Town to be lower than the sex-ratio of Nainital District i.e. i.e. 934 females per 1000 males.

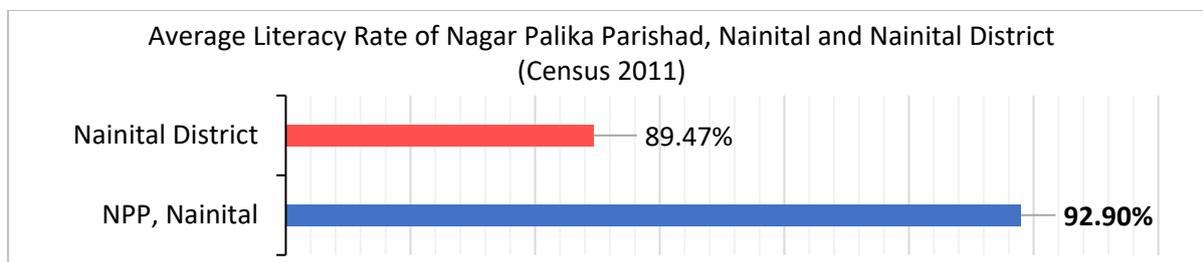
Figure 11: Comparative Analysis of Sex-Ratio of Nagar Palika Parishad, Nainital and Nainital District as per Census 2011



Source: (Census India, 2011)

As shown in Figure 12, the average literacy rate of Nainital Town (92.90%) is higher than the average literacy rate of Nainital District (89.47%).

Figure 12: Comparative Analysis of Average Literacy Rate of Nagar Palika Parishad, Nainital and Nainital District as per Census 2011



Source: (Census India, 2011)

### 6.3.2. Social and Cultural Aspects

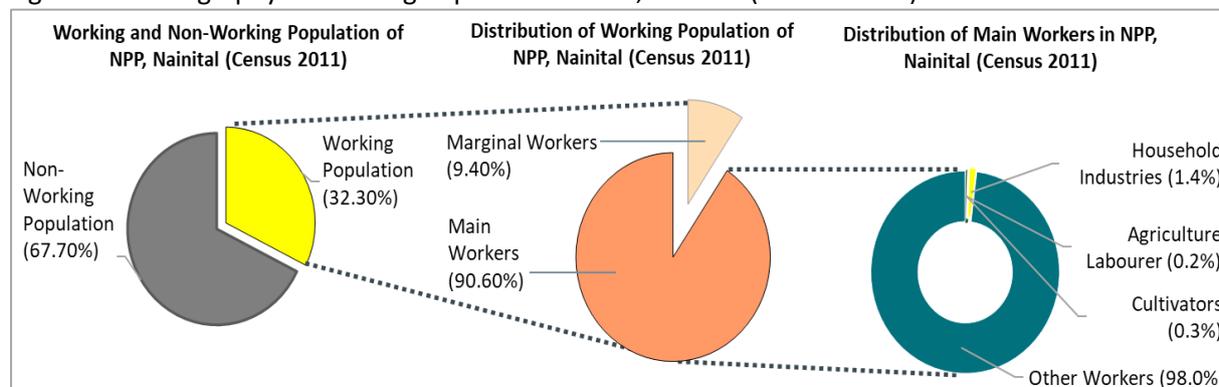
As per (Census India, 2011), in NPP, Nainital out of the total population (41,377) of the town 28% (11,583) of population is Schedule Caste (SC) and 1% (280) of population is Schedule Tribe (ST).

As per the (Census India, 2011), NPP, Nainital has a Hindu majority with 85.61% of Hindu population followed by 11.91% of Muslim population, 0.92% of Christian population, 0.75 % Sikh population, 0.77% of Buddhist population, 0.01% of Jain population, 0.00% of Other Religions population and 0.02% of population with No Religion Stated.

### 6.3.3. Economic Profile

As shown in Figure 13, according to the (Census India, 2011) around 32.30% of the total population of NPP, Nainital is the engaged in working activities. Thus, making the total working population to be 13,385 persons. Out of this total working population, 90.60% of the population are Main Workers (employed or earning more than 6 months) i.e. 12,129 persons (81% males and 19% females) and the remaining 9.4% of the total working population are Marginal Workers (working for less than 6 months) i.e. 1,256 persons (76% males and 24% females). Out of the total Main Workers, 0.3% are Cultivators, 0.2% are Agriculture Labourer, 1.4% works in the Household Industries and 98.0% are engaged as Other Workers. While the remaining 67.7% of the total population of the NPP, Nainital is the Non-Working Population i.e. 27,992 persons.

Figure 13 Demography of Working Population of NPP, Nainital (Census 2011)



Source: (Census India, 2011)

#### 6.4. Discussions and the Data provided by the Officials Met during the Field Visit and Stakeholder Consultation Meeting held on 25<sup>th</sup> April 2024 in Nainital

As shown in Image 2 below, a Stakeholder Consultation Meeting was held on 25<sup>th</sup> April 2024 in Nainital. This meeting was attended by 13 stakeholders/participants as mentioned in the list attached in Annexure C.

Image 2: Images of Stakeholder Consultation Meeting Held on 25<sup>th</sup> April 2024 in Nainital



Source: (Stakeholder Consultation Meeting, 2024)

Based on the feedback provided by the Officials during the brain storming session of the Stakeholder Consultation Meeting, possible solutions and suggested projects are recommended in this final report for improvement of each parameter i.e. a) Solid Waste Management, b) Urban Transport and Parking and c) Water Availability and Supply in Nainital Town.

6.5. Post study workshop held on 30<sup>th</sup> August, 2024





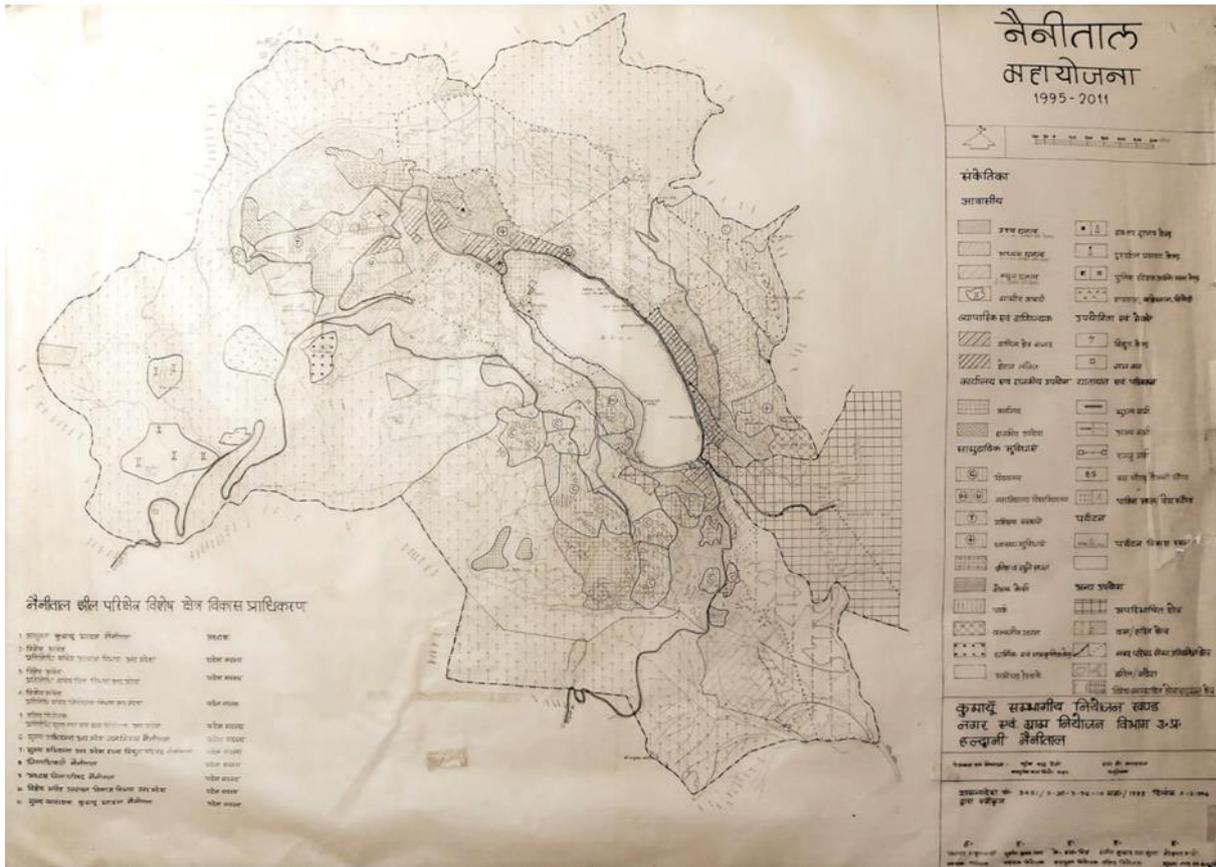
Source: (Post Study Workshop, 2024)

6.6. Current Situation

As per the discussion with the officials of NPP, Nainital and the data collected as attached in Annexure A, at present the total area of the town has not increased since 2011 and has a total area of 11.73 sq. km. (Census India, 2011) . While the total number of wards have increased from 13 to 15. The Map 15 below shows the boundary map of NPP, Nainital for the year 1995 to 2011.

(Uttarakhand State Council for Science & Technology (UCOST), Government of Uttarakhand, 2017)

Map 15: Nagar Palika Parishad (NPP), Nainital Boundary Map (1995-2011)



Source: (District Level Development Authority, 2024)

As per the discussions with the officials met (attached in Annexure C, at present, the total number of households (HHs) in NPP, Nainital has increased from 9,329 (Census India, 2011) to 12,211 HHs (Nagar Palika Parishad, Nainital, 2024) with an increase in the average household (HH) size from 4 to 5. This figure provided by the officials is used to calculate the total population of NPP, Nainital for the year 2024. Therefore, the calculated total population of NPP, Nainital is total number of HHs multiplied by the average HH size in the town, i.e.

$$\text{Calculated Total Population (2024)} = \text{Total Number of HHs in the Town (2024)} \times \text{Average HH size of Town(2024)}$$

$$\text{Calculated Total Population (2024)} = 12,211 \times 5 = 61,055 \text{ Persons}$$

Thus, the calculated Total Population of NPP, Nainital for 2024 is taken to be 61,055 Persons i.e. approximately 47.5% increase from the population in 2011 (41,377 persons).

As shown in Table 4, at present the 15 wards of NPP, Nainital are names as Ward 01-Staff House, Ward 02-Sher ka Danda, Ward 03-Rajbhavan, Ward 04-Hari Nagar, Ward 05-Snow View, Ward 06-Narayan Nagar, Ward 07-Sukha Tal, Ward 08-Ayarpatta, Ward 09-Upper Mall, Ward 10-Nainital Club, Ward 11-Sri Krishnapur, Ward 12-Sainik School, Ward 13-Awagadh, Ward 14-Mallital Bazaar and Ward 15-Tallital Bazaar.

Table 4: Overview of Nainital Town

<b>Overview of Nainital Town</b>	
<b>Area of Nainital Town (2024) (in sq. km.)</b>	<b>11.73</b>
<b>Total number of wards in Nainital Town (2024)</b>	<b>15</b>
Ward 01	Staff House
Ward 02	Sher ka Danda
Ward 03	Rajbhavan
Ward 04	Hari Nagar
Ward 05	Snow View
Ward 06	Narayan Nagar
Ward 07	Sukha Tal
Ward 08	Ayarpatta
Ward 09	Upper Mall
Ward 10	Nainital Club
Ward 11	Sri Krishnapur
Ward 12	Sainik School
Ward 13	Awagadh
Ward 14	Mallital Bazaar
Ward 15	Tallital Bazaar
<b>Total population in Nainital Town (as per Census 2011) (persons)</b>	<b>41,377</b>
<b>Population in each ward of Nainital Town (as per Census 2011):</b>	
Ward 01	5,831
Ward 02	2,365
Ward 03	2,409
Ward 04	2,482
Ward 05	3,172
Ward 06	3,597
Ward 07	3,481
Ward 08	3,364
Ward 09	4,027
Ward 10	3,543
Ward 11	2,479
Ward 12	2,317
Ward 13	2,310
<b>Average HH Size (Census 2011)</b>	<b>4</b>
<b>Average HH Size (NPP, 2024)</b>	<b>5</b>
<b>Calculated Population (Number of HHs X Average HH Size) in each ward of Nainital Town (2024)</b>	
Ward 01: Staff House	5,500
Ward 02: Sher ka Danda	3,950
Ward 03: Rajbhavan	3,795
Ward 04: Hari Nagar	3,005
Ward 05: Snow View	4,575

Ward 06: Narayan Nagar	3,650
Ward 07: Sukha Tal	3,950
Ward 08: Ayarpatta	4,375
Ward 09: Upper Mall	4,650
Ward 10: Nainital Club	4,605
Ward 11: Sri Krishnapur	3,520
Ward 12: Sainik School	3,575
Ward 13: Awagadh	3,200
Ward 14: Mallital Bazaar	4,265
Ward 15: Tallital Bazaar	4,440
<b>Calculated Total Population (Total Number of HHs X Average HH Size) in Nainital Town (as per NPP, Nainital, 2024) (persons)</b>	<b>61,055</b>
<b>Floating Population of Nainital Town (2024)</b>	<b>More than 25 Lakhs per Annum</b>
<b>Total number of HHs in Nainital Town (2024)</b>	<b>12,211</b>
<b>Households (HHs) in each ward of Nainital Town (2024)</b>	
Ward 01: Staff House	1100
Ward 02: Sher ka Danda	790
Ward 03: Rajbhavan	759
Ward 04: Hari Nagar	601
Ward 05: Snow View	915
Ward 06: Narayan Nagar	730
Ward 07: Sukha Tal	790
Ward 08: Ayarpatta	875
Ward 09: Upper Mall	930
Ward 10: Nainital Club	921
Ward 11: Sri Krishnapur	704
Ward 12: Sainik School	715
Ward 13: Awagadh	640
Ward 14: Mallital Bazaar	853
Ward 15: Tallital Bazaar	888
Name of department responsible for Solid Waste Management in Nainital Town	Nagar Palika Parishad (NPP), Nainital
Name of department responsible for Water Supply in Nainital Town	Uttarakhand Jal Sansthan (UJS), Nainital
Name of department responsible for Construction and Maintenance of Water Distribution Network Pipeline in Nainital Town	Pey Jal Nigam Uttarakhand (PJNU), Nainital
Name of department responsible for Construction and Maintenance of Road Network in Nainital Town	Public Works Department (PWD), Nainital

Source: (Nagar Palika Parishad, Nainital, 2024), (District Census Handbook Nainital, 2011), (Pey Jal Nigam Uttarakhand, Nainital, 2024), (Uttarakhand Jal Sansthan, Nainital, 2024), (Tourism Department, Nainital, 2024), (PWD, Nainital, 2024), (Traffic Police, Nainital, 2024), (Police Department Nainital, 2024), (District Level Development Authority, 2024), (Census India, 2011), and (SPA, New Delhi, 2024) primary survey

As mentioned in Table 5, there are five major market areas in Nainital Town i.e. Mall Road Market located along Mall Road, Bara Bazar in Mallital, Vegetable Market in Mallital, Tibetan and Bhotia Market in Ayarpatta near Naini Lake, Tallital Market located on Nainital-Bhowali Road and Sukha Tal Market/Anda Market on Sukha Tal Road.

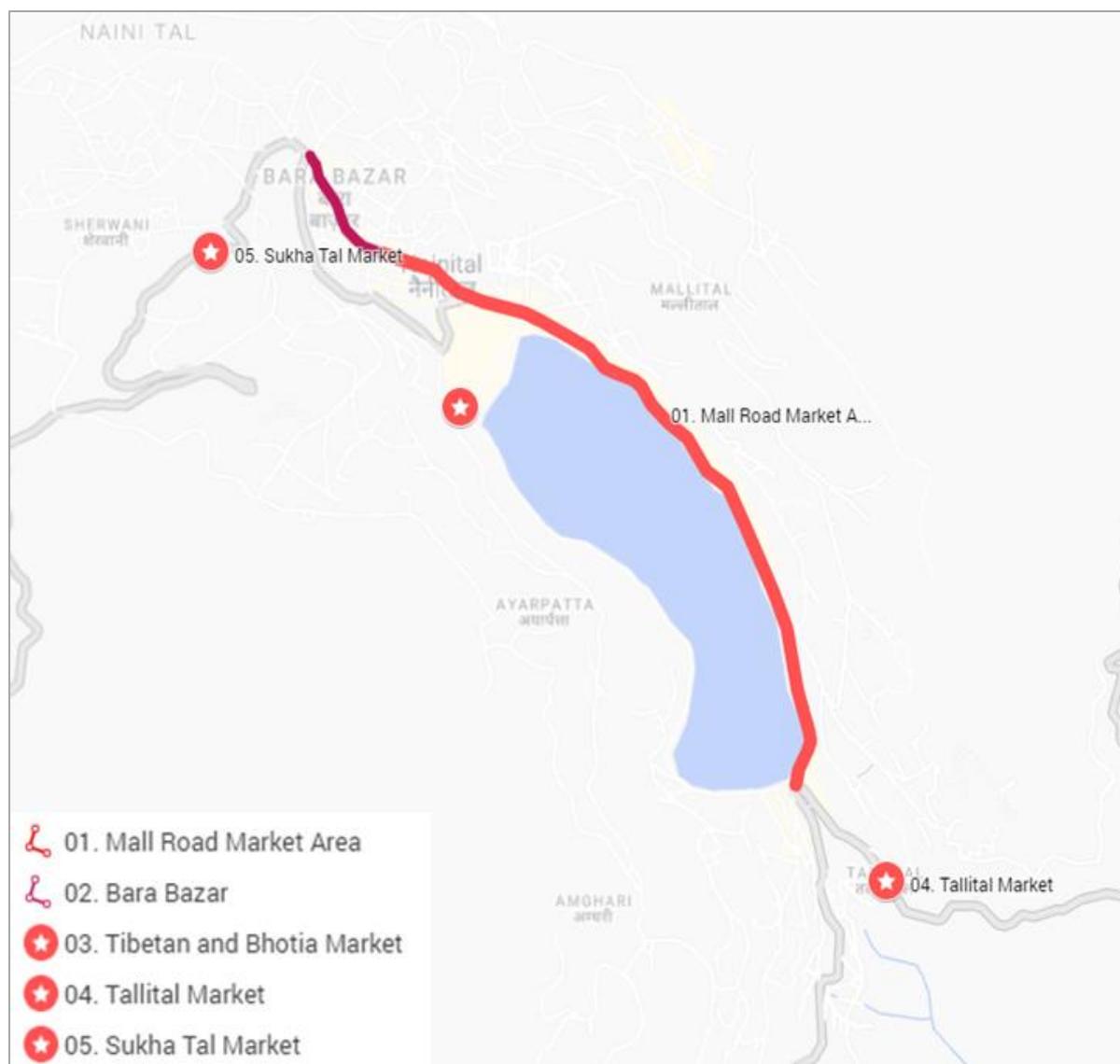
Table 5: List of Major Market Areas in Nainital Town and Their Location

Major Market Areas in Nainital Town and Their Location		
S.No.	Market Areas	Location
1	Mall Road Market	Along Mall Road
2	Bara Bazar	Mallital
3	Tibetan and Bhotia Market	Ayarpatta near Naini Lake
4	Tallital Market	Nainital-Bhowali Road
5	Sukha Tal Market/Anda Market	Sukha Tal Road

Source: (Nagar Palika Parishad, Nainital, 2024)

The Map 16 below shows the location of all the five major market areas in Nainital Town.

Map 16: Location of Main Market Areas in Nainital Town



Source: (Google My Maps, 2024)

The following Image 3 below shows the all the five major market areas of Nainital Town.

Image 3: Images of Major Market Areas of Nainital Town



01. Mall Road Market Area



03. Tibetan and Bhotia Market



02. Bara Bazar



04. Tallital Market



05. Sukha Tal Market/Anda Market

Source: Source: (SPA, New Delhi, 2024) primary survey

**6.5.1. Tourist Footfall of Nainital Town**

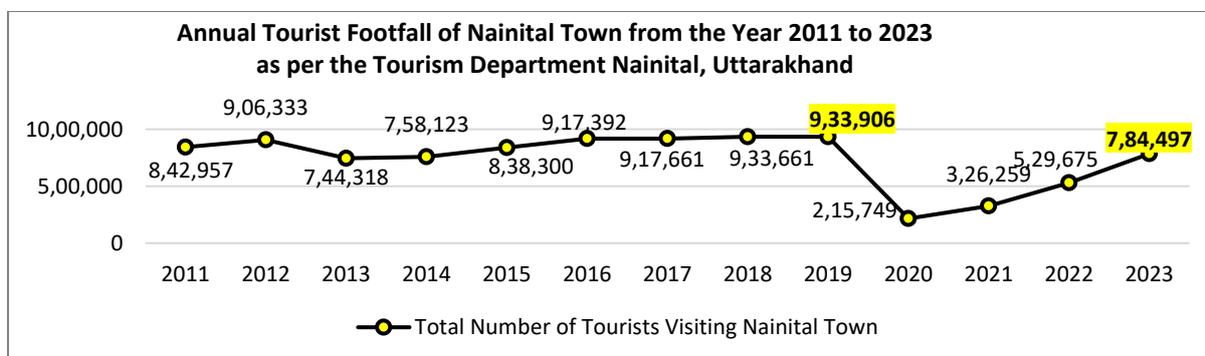
As shown in Table 6, according to the data provided by the Tourism Department, Nainital, Uttarakhand and Dr. R. S. Tolia Uttarakhand Academy of Administration (ATI), Nainital, Uttarakhand, on an average, annually more than 7 lakh tourists visit Nainital Town. The maximum number of tourists experienced in the Town was in the year 2019 i.e. 9,33,906 number of tourists since 2011 to 2023. In the year 2020 the number of tourists reduced to 2,15,749 persons only. This sudden dip in the number of tourists visiting the Town was experienced due of COVID-19. But after COVID-19, since 2021 the number of tourists visiting Nainital Town has increased from 3,26,259 (in 2021) to 7,84,497 (in 2023). Therefore, it can be concluded that within 3 years the annual number of tourists experienced by the Town has increased exponentially. If not taken into consideration this number might even cross the highest number of tourists experienced in the past.

Table 6: Annual Tourist Footfall of Nainital Town from the Year 2011 to 2023 as per the Tourism Department of Nainital, Uttarakhand

Annual Tourist Footfall of Nainital Town from the year 2011 to 2023 as per the Tourism Department Nainital, Uttarakhand	
Year	Total Number of Tourists Visiting Nainital Town
2011	8,42,957
2012	9,06,333
2013	7,44,318
2014	7,58,123
2015	8,38,300
2016	9,17,392
2017	9,17,661
2018	9,33,661
<b>2019</b>	<b>9,33,906</b>
2020	2,15,749
2021	3,26,259
2022	5,29,675
<b>2023</b>	<b>7,84,497</b>

Source: (Tourism Department, Nainital, Uttarakhand, 2024), (Dr. R. S. Tolia Uttarakhand Academy of Administration (ATI))

Figure 14: Annual Tourist Footfall of Nainital Town from the Year 2011 to 2023 as per the Tourism Department of Nainital, Uttarakhand



Source: (Tourism Department, Nainital, Uttarakhand, 2024), (Dr. R. S. Tolia Uttarakhand Academy of Administration (ATI))

As shown in Table 7, according to the data provided by the Tourism Department, Nainital, Uttarakhand and Dr. R. S. Tolia Uttarakhand Academy of Administration (ATI), Nainital, Uttarakhand,

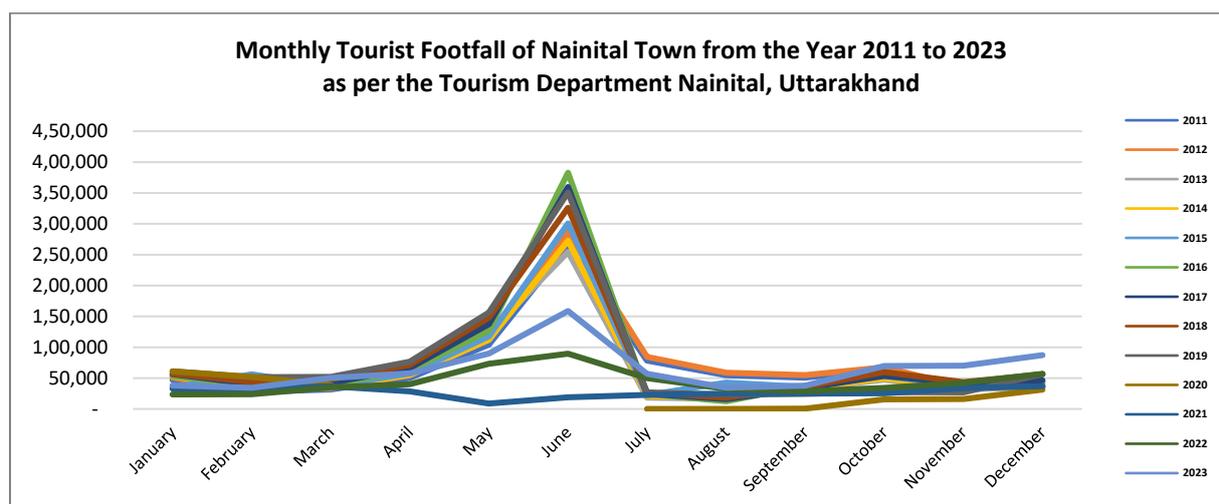
there is a huge influx in the number of Tourists in Nainital Town during summer season i.e. in the months of May and June. Thus, making these two months as the peak tourist season for Nainital Town. Since 2011 to 2023 the average number of tourists experienced in the month of May is more than 1 Lakh, while for the month of June it is recorded to be even more than 2 Lakhs. Whereas, the least number of tourists experienced are in the month of August with the average number of 26,579 tourists i.e. even less than 30,000 persons.

Table 7: Monthly Tourist Footfall of Nainital Town from the year 2011 to 2023 as per the Tourism Department Nainital, Uttarakhand

Monthly Tourist Footfall of Nainital Town from the year 2011 to 2023 as per the Tourism Department Nainital, Uttarakhand												
Year	Month											
	Jan.	Feb.	Mar.	Apr.	May	June	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
2011	47,024	27,496	31,596	50,312	1,04,280	2,64,793	78,327	54,494	50,699	65,042	33,056	35,838
2012	50,754	29,606	33,903	54,700	1,12,667	2,85,998	84,482	58,837	54,748	67,439	35,819	37,380
2013	54,730	33,701	37,491	59,815	1,21,757	2,54,506	18,288	16,353	32,864	47,376	31,679	35,758
2014	53,002	32,913	34,324	55,119	1,12,007	2,72,641	20,700	19,606	34,504	49,370	34,542	39,395
2015	34,894	56,181	37,109	57,488	1,17,695	3,00,683	22,410	42,840	35,636	53,424	37,407	42,533
2016	53,285	37,919	39,788	62,224	1,26,992	3,82,748	24,336	12,392	37,566	56,213	39,403	44,526
2017	56,462	40,219	42,035	66,254	1,37,497	3,59,682	24,495	15,777	33,835	53,598	41,539	46,268
2018	57,078	43,416	48,098	71,303	1,48,082	3,25,950	26,126	18,172	36,017	59,676	43,457	56,286
2019	61,053	51,600	52,007	76,690	1,56,283	3,50,829	26,998	22,999	24,698	27,306	26,969	56,474
2020	60,766	52,109	39,175	-	-	-	57	118	575	15,505	16,125	31,319
2021	32,918	31,987	36,709	28,411	8,779	18,872	22,898	24,775	24,974	25,407	33,583	36,946
2022	23,538	23,946	34,850	40,201	73,120	89,561	49,840	32,589	28,809	34,097	42,215	56,909
2023	37,960	34,299	50,100	57,636	89,888	1,58,721	56,971	34,471	37,688	69,491	70,083	87,189

Source: (Tourism Department, Nainital, Uttarakhand, 2024), (Dr. R. S. Tolia Uttarakhand Academy of Administration (ATI))

Figure 15: Monthly Tourist Footfall of Nainital Town from the year 2011 to 2023 as per the Tourism Department Nainital, Uttarakhand



Source: (Tourism Department, Nainital, Uttarakhand, 2024), (Dr. R. S. Tolia Uttarakhand Academy of Administration (ATI))

As shown in Table 8, according to the data provided by the Tourism Department, Nainital, Uttarakhand and Dr. R. S. Tolia Uttarakhand Academy of Administration (ATI), Nainital, Uttarakhand, during the peak tourist season in Nainital Town the maximum number of tourists experienced are in

the month of June i.e. almost 2 times the number of tourists in the month of May. Therefore, it can be concluded that the authorities can predict the maximum number of tourists visiting the town according to the number of tourists visited in the month of May and formulate suitable action plans to manage the tourist influx accordingly.

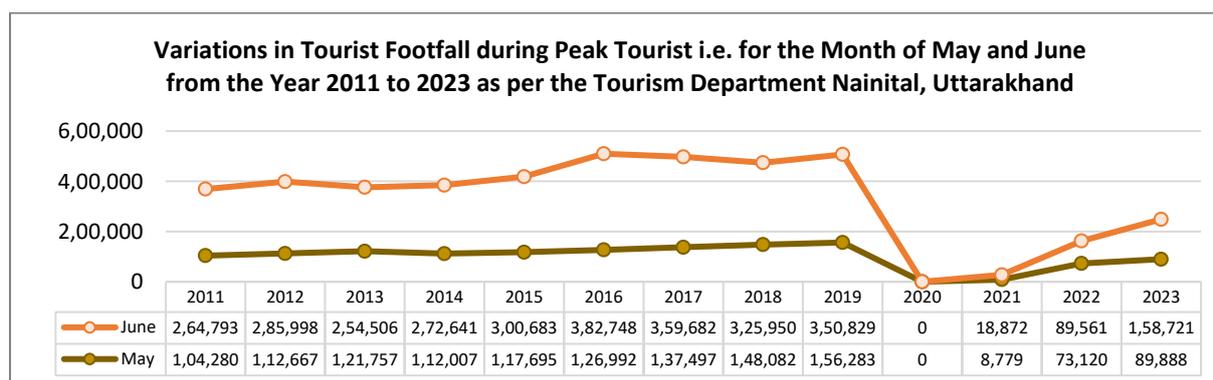
Table 8: Variations in Tourist Footfall of Nainital Town during Peak Tourist Season i.e. for the Month of May and June from the Year 2011 to 2023 as per the Tourism Department Nainital, Uttarakhand

Variations in Tourist Footfall of Nainital Town during Peak Tourist i.e. for the Month of May and June from the Year 2011 to 2023 as per the Tourism Department Nainital, Uttarakhand		
Year	Month	
	May	June
2011	1,04,280	2,64,793
2012	1,12,667	2,85,998
2013	1,21,757	2,54,506
2014	1,12,007	2,72,641
2015	1,17,695	3,00,683
2016	1,26,992	3,82,748
2017	1,37,497	3,59,682
2018	1,48,082	3,25,950
2019	1,56,283	3,50,829
2020	-	-
2021	8,779	18,872
2022	73,120	89,561
2023	89,888	1,58,721

Source: (Tourism Department, Nainital, Uttarakhand, 2024), (Dr. R. S. Tolia Uttarakhand Academy of Administration (ATI))

The Figure 16 below shows the comparative analysis of the tourist footfall for the peak tourist season i.e. for the month of May and June from 2011 to 2023 as per the Tourism Department, Nainital, Uttarakhand.

Figure 16: Variations in Tourist Footfall of Nainital Town during Peak Tourist Season i.e. for the Month of May and June from the Year 2011 to 2023 as per the Tourism Department Nainital, Uttarakhand



Source: (Tourism Department, Nainital, Uttarakhand, 2024), (Dr. R. S. Tolia Uttarakhand Academy of Administration (ATI))

As shown in Table 9 below, according to the data provided by the Tourism Department, Nainital, Uttarakhand and Dr. R. S. Tolia Uttarakhand Academy of Administration (ATI), Nainital, Uttarakhand, during the onset of the rainy season i.e. the months of July and August the Town experiences decrease in the number of tourists, as many of the popular activities in Nainital, such as boating on

Naini Lake, trekking, and sightseeing, are heavily weather-dependent. Thus, limiting the options for tourists. Moreover, it is more challenging to drive on the hilly terrains of Uttarakhand during rainy season due to the limited infrastructure and increase in the number of accidents.

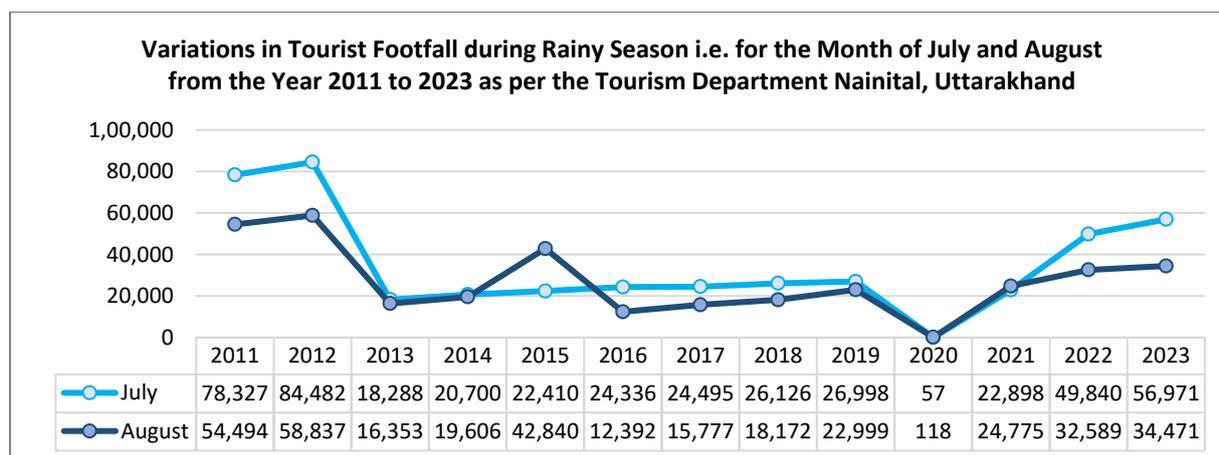
Table 9: Variations in Tourist Footfall of Nainital Town during Rainy Season i.e. for the Month of July and August from the Year 2011 to 2023 as per the Tourism Department Nainital, Uttarakhand

Variations in Tourist Footfall of Nainital Town during Rainy Season i.e. for the Month of July and August from the Year 2011 to 2023 as per the Tourism Department Nainital, Uttarakhand		
Year	Month	
	July	August
2011	78,327	54,494
2012	84,482	58,837
2013	18,288	16,353
2014	20,700	19,606
2015	22,410	42,840
2016	24,336	12,392
2017	24,495	15,777
2018	26,126	18,172
2019	26,998	22,999
2020	57	118
2021	22,898	24,775
2022	49,840	32,589
2023	56,971	34,471

Source: (Tourism Department, Nainital, Uttarakhand, 2024), (Dr. R. S. Tolia Uttarakhand Academy of Administration (ATI))

As shown in the Figure 17 below it can be concluded that the number of tourists in the month of August gradually decrease from the number of tourists in the month of July.

Figure 17: Variations in Tourist Footfall of Nainital Town during Rainy Season i.e. for the Month of July and August from the Year 2011 to 2023 as per the Tourism Department Nainital, Uttarakhand



Source: (Tourism Department, Nainital, Uttarakhand, 2024), (Dr. R. S. Tolia Uttarakhand Academy of Administration (ATI))

Table 10: Comparative Analysis of NPP, Nainital (as per Census 2011) and NPP, Nainital (at present, 2024), as per the Data Provided by the Officials Met (as attached in Annexure C) during Field Visit in the Month of March 2024 and the Discussions during the brainstorming session of Stakeholder Consultation Meeting Held on 25<sup>th</sup> April 2024

Present Scenario as per the Discussion and the Data Provided by the Officials Met During Field Visit and Stakeholder Consultation Meeting			
Overview	As Per Census (2011)	As Per NPP, Nainital, 2024	Inferences
Area of NPP, Nainital	11.73 sq. km.	11.73 sq. km.	<ul style="list-style-type: none"> <li>There has been no increase in the area of Town, while the Number of Wards has increased from 13 to 15.</li> </ul>
No. of Wards in NPP, Nainital	13	15	
Total Population of NPP, Nainital	41,377 Persons	Calculated Total Population of NPP, Nainital = (Number of HHs) X (Avg. HH Size) = (12,211) X (5) = 61,055 Persons	<ul style="list-style-type: none"> <li>The existing total population of the NPP, Nainital was not available (as per the discussions with the officials met).</li> <li>According to the data provided by the officials, the calculated total population is 61,055 persons.</li> <li>Therefore, there has been an increase of 47.5% in the total population of NPP, Nainital.</li> </ul>
Total Number of Households (HHs)	9,329	12,211	<ul style="list-style-type: none"> <li>There has been 31% of increase in the total number of Households (HHs).</li> </ul>
Average HH Size	4.5	5	<ul style="list-style-type: none"> <li>The Average HH size has increased from 4.5 to 5.</li> </ul>
Population Density of NPP, Nainital	35.2 PPH	52.05 PPH	<ul style="list-style-type: none"> <li>There has been approx. 48% of increase in the population density i.e. from 35.2 person/hectare to 52.05 person/hectare.</li> </ul>
Tourists Visiting Nainital Town	In the Year 2011: 8,42,957  Average Number of Tourists Per Day: 2,309 Tourists	In the Year 2023: 7,84,497  Average Number of Tourists Per Day: 2,149 Tourists	<ul style="list-style-type: none"> <li>Maximum number of tourists per day in June, 2016: 12,758, June 2017: 11,989, June, 2019: 11,694 and June, 2023: 5,291.  Even though on an average Nainital Town experience more than 2,000 tourists, the maximum number in the month of June can rise up to more than 12,000 per day.</li> <li>The number of tourists visiting the town are increasing exponentially after COVID-19 and might be more than 9Lakhs per annum in the near future.</li> </ul>

Source: (Nagar Palika Parishad, Nainital, 2024), (Tourism Department, Nainital, 2024), (Traffic Police, Nainital, 2024), (Police Department Nainital, 2024), (District Level Development Authority, 2024), (Census India, 2011), (SPA, New Delhi, 2024) primary survey

# **Chapter 7.**

## **Nainital Town:**

### **Solid Waste Management (SWM)**

## Chapter 7. Nainital Town: Solid Waste Management

### 7.1. System Infrastructure

The Solid Waste Management (SWM) in Nainital Town is the responsibility of the ULB: Nagar Palika Parishad, Nainital. As per the discussions with the officials met (as mentioned in Annexure C) the Table 11 below, shows the existing system infrastructure for the SWM in NPP, Nainital.

Table 11: Existing infrastructure for Solid Waste Management (SWM) in NPP Nainital Town

<b>System Infrastructure Provided by NPP, Nainital</b>	
<b>Community Bins</b>	
Total Number of Dustbins	<b>160</b>
Total Number of Large Dustbins	70
Ward Wise Number of Large Dustbins (on an average)	4-5
Total Number of Small Twin-Bins/Small Dustbins	90
Ward Wise Number of Small Twin-Bins/Small Dustbins (on an average)	6
<b>Staff Appointed by NPP, Nainital</b>	
<b>Total Number of Sanitation Workers Appointed for Cleaning of Roads and Streets</b>	<b>239</b>
Wards Wise Number of Sanitation Workers Appointed for Cleaning of Roads and Streets (on an average)	16
<b>Frequency of Cleaning of Roads and Streets for Commercial and Residential Areas by the Staff Appointed by NPP, Nainital</b>	
During Off-Season	Two times a day <ul style="list-style-type: none"> <li>• Morning: 06:00 am to 10:00 am</li> <li>• Evening: 02:00 pm to 05:00 pm</li> </ul>
During Tourist-Season	Three times a day (Morning, Evening and at Night) <ul style="list-style-type: none"> <li>• Morning: 06:00 am to 10:00 am</li> <li>• Evening: 02:00 pm to 05:00 pm</li> <li>• Night: 05:00 pm to 08:00 pm</li> </ul>
<b>Garbage Pick-Up Vehicles Provided by the NPP, Nainital to the Private Agency for Solid Waste Collection and Transportation</b>	
Garbage Pick-up Trucks (Dumper Trucks) (with 10 m <sup>3</sup> capacity each)	3 numbers =3X10 =30 m <sup>3</sup> capacity
Partitioned Auto-Tippers (with 3 m <sup>3</sup> capacity each)	12 numbers =12X3 =36 m <sup>3</sup> capacity
<b>Staff Appointed by Private Agency</b>	
<b>Total Number of Workers (Door-To-Door Collection)</b>	<b>36</b>

Source: (Nagar Palika Parishad, Nainital, 2024)

As shown in Table 11, there are total 160 community dustbins in the Town. Out of these 70 are large dustbins with an average of 4 to 5 dustbins in each ward. While the remaining 90 are small twin-bins/small dustbins with an average of 6 dustbins in each ward of the Town.

Majority of the dustbins are semi-covered or completely open i.e. do not have any lid on them. Image 4 below shows the existing condition of dustbins in the Town.

Image 4: Existing Condition of the Garbage Bins in Nainital Town



Source: (SPA, New Delhi, 2024) primary survey

For cleaning and sweeping of roads the NPP, Nainital has appointed a total number of 239 sanitation workers with an average number of 16 sanitation workers in each ward. These sanitation workers clean/sweeps the streets and roads of the commercial and residential areas in the Town. The frequency of cleaning/sweeping of streets and roads during off-season in the commercial and residential areas is twice a day (i.e. from 06:00 am to 10:00 am in the morning and 02:00 pm to 05:00 pm in the evening) while during on-season it is three times a day (i.e. from 06:00 am to 10:00 am in the morning, 02:00 pm to 05:00 pm in the evening and 05:00 pm to 08:00 pm at night) every day on a regular basis. Nainital Town experiences tourist season for six months i.e. April, May, June, July, December and January. The peak of tourist season is experienced in the month of June.

As per the discussion with the officials met (as mentioned in Annexure C), Nainital Town the Table 12 below, consists of a brief description of the activities/duties undertaken by the NPP, Nainital and the Private Agency as per the contract for the Solid Waste Management in between them.

Table 12: Activities/Duties Undertaken by the NPP, Nainital and the Private Agency as per the Solid Waste Management (SWM) Contract

S.No.	Activity	Done By/ Given To	
		NPP, Nainital	Private Agency
1	Door-To-Door Collection of Solid Waste from all the 15 wards (Every-day, Every Morning)	-	Yes
2	Segregation at Source of Solid Waste Collected from Door-to-Door	-	Yes
3	Transportation of Waste after Segregation to the Locations allocated by the NPP, Nainital	-	Yes
4	Storing Segregated Wet Waste at one location in Plastic Bags	-	Yes
5	Composting of organic waste	Yes	Yes
6	First Right on Waste Material and Fertilizer produced after composting	Yes	-
7	Selling Rights of Compost generated for generation of money	Yes	-
8	Taking care solid the solid waste is not burned in open	-	Yes
9	Hiring of workers and supervisors for collection and segregation of dry and wet waste	-	Yes
10	Providing Salary to the workers and supervisors hired for collection and segregation of dry and wet waste	-	Yes
11	Providing Equipment, Safety Masks, Uniforms, ID Cards and Insurance to the workers and supervisors hired for collection and segregation of dry and wet waste	-	Yes
12	Providing Buckets and Plastic Bags for manual door-to-door collection of solid waste	-	Yes
13	Providing Vehicles, Small Dustbins, Big Dustbins etc. for Door-To-Door Collection	Yes	-
14	Provision of fuel and vehicle repairs up to Rs 5000	-	Yes
15	User Charge collection for Solid Waste Collection	-	Yes
16	Deposition of User Charge Collected to	Yes	-
17	Public Awareness Programme for MSWM	-	Yes

Source: (Nagar Palika Parishad, 2024)

According to the contract between the NPP, Nainital and the Private Agency, the Private Agency is responsible for the door-to-door collection, segregation at source of solid waste collected from door-to-door, transportation of waste after segregation to the locations allocated by the NPP, Nainital, storing of segregated wet waste at one location in plastic bags, taking care that the solid waste is not burned in open, hiring of sanitation workers for for collection and segregation of dry and wet waste, providing salary to the workers and supervisors hired for collection and segregation of dry and wet waste, providing equipment, safety masks, uniforms, ID cards and insurance to the sanitation workers and supervisors hired for collection and segregation of dry and wet waste, providing up to ₹5,000/- for fuel and vehicle repairs and collecting the user charge for Solid Waste Management in NPP, Nainital and conducting public awareness programmes for Municipal Solid Waste Management (MSWM). While the NPP, Nainital is responsible for composting of segregated wet waste with the help provided by the Private Agency, selling the fertilizer produced after composting for generation of money, providing buckets, plastic bags, vehicles, small dustbins, big dustbins etc. for collection of solid waste to the Private Agency and deposition of the user charge collected by the Private Agency for solid waste management in Town.

**7.1.1. Present Situation of Garbage Dumping in NPP, Nainital**

As shown in Image 5, in NPP, Nainital the garbage generated is being dumped in the following six areas i.e. common garbage bins provided by the Nagar Palika Parishad Nainital, waste collection vehicles provided by the NPP, Nainital to the Private Agency for the collection of solid waste, vacant land parcels, openly littered around the garbage bins, garbage dumping-cum-transfer ground: Metropole Parking Area i.e. an active parking area. Apart from this the garbage is also dumped in the drains and along the road by the residents and the tourists visiting Nainital Town. Thus, making all these locations as Garbage Vulnerable Points and developing a potential for future health hazard in the town.

Image 5: Existing Situation of Garbage Dumping Areas in Nainital Town



**1. Common Garbage Bins**



2. Waste Collection Vehicle



3. Vacant Land Parcel



4. Open Littering Around the Garbage Bin



6. Drains



5. Metropole Parking Area



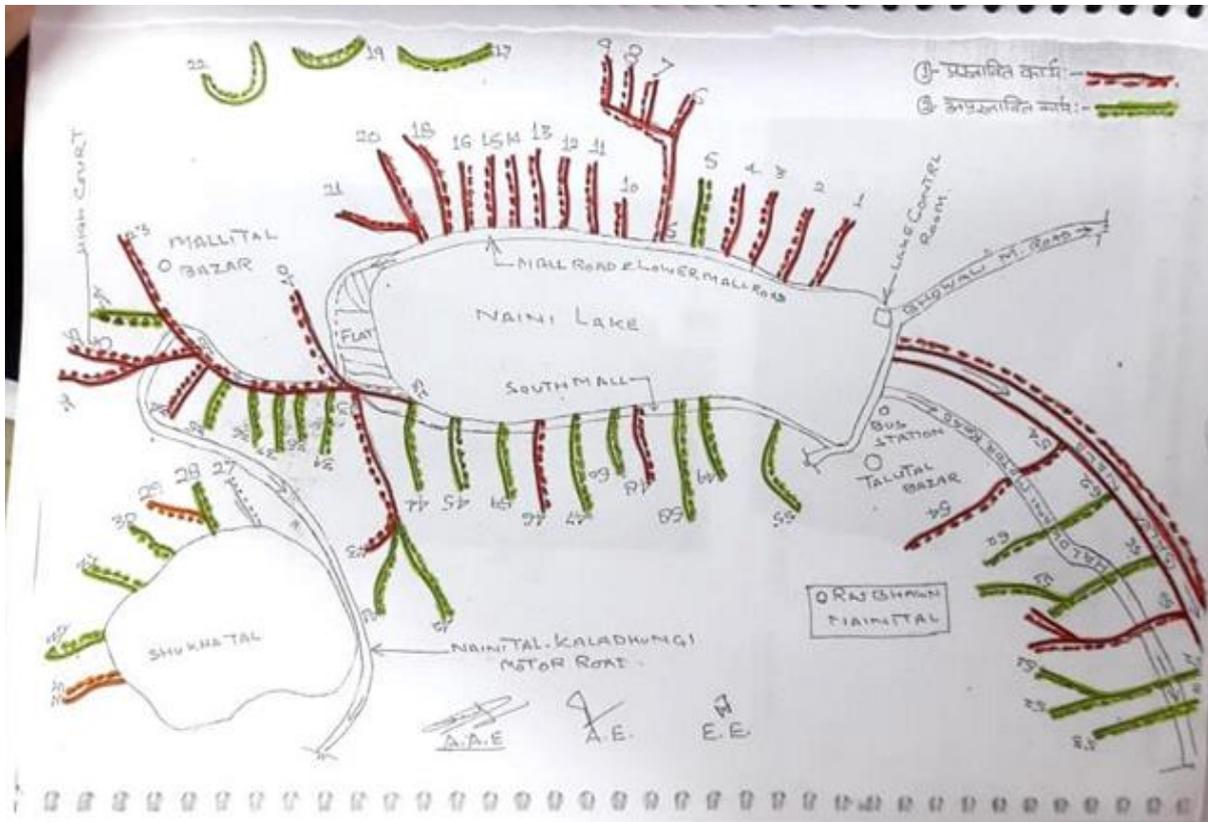
7. Road Side

Source: (SPA, New Delhi, 2024) primary survey

Despite the imposition of fine ranging from ₹500/- to ₹5,000/- if caught by the NPP, Nainital, the residents of the Town directly dump the untreated household waste in to the storm water drains and the open drains of the Town. To prevent the Town from any hazardous situation because of the

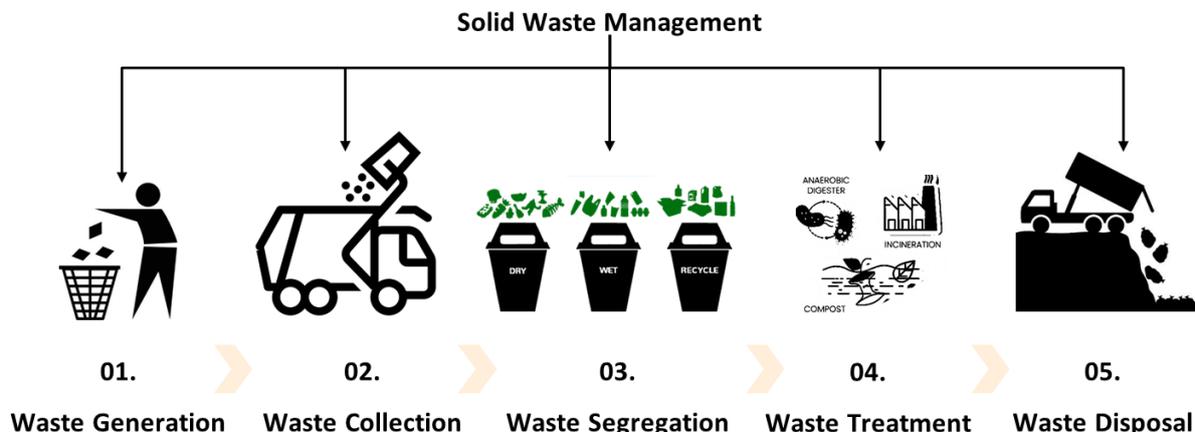
chocking of drains or stormwater drains during the monsoon season, the NPP, Nainital and the UJS, Nainital respectively, does regular cleaning of the drains and stormwater drains in the month of May i.e. before the onset of monsoon season on an annual basis.

Image 6: Existing Situation of Littering and Dumping of HH Waste in to the Storm Water Drains Network of Nainital Town



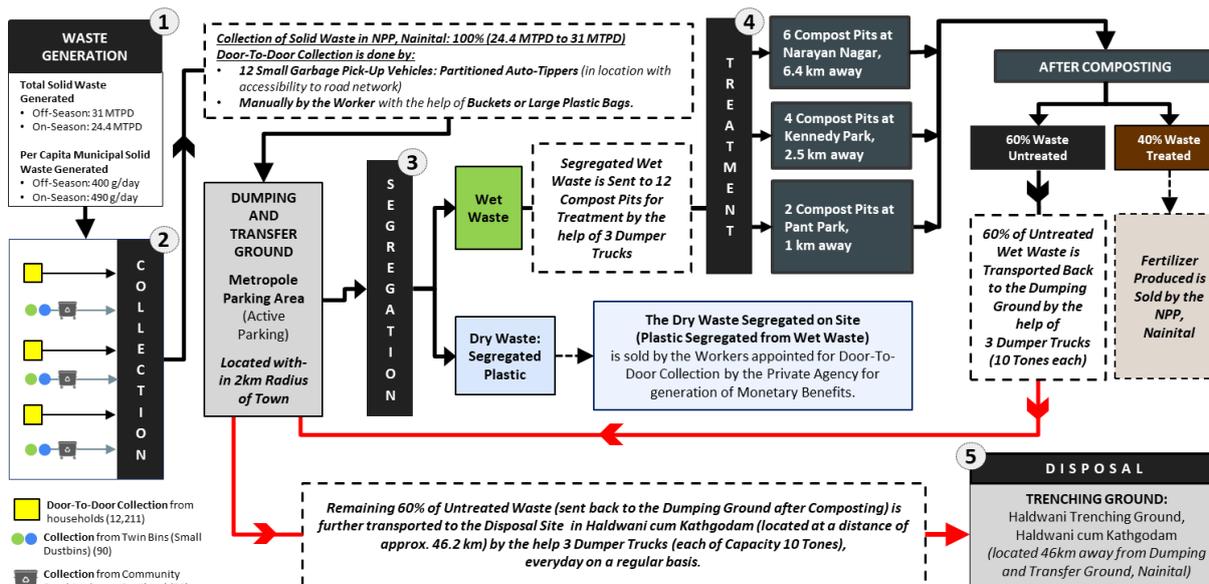
Source: Mr. Ashok Kumar Verma, Former Executive Engineer, NPP, Nainital, (SPA, New Delhi, 2024) primary survey

7.1.2. Process of Solid Waste Management in Nainital Town



As per the discussions with the officials met (as mentioned in Annexure C) the Figure 18 below represents the flowchart for Solid Waste Management (SWM) in Nainital Town.

Figure 18: Flowchart of Solid Waste Management (SWM) In NPP, Nainital



Source: (SPA, New Delhi, 2024) based on data provided by (Nagar Palika Parishad, Nainital, 2024)

As mentioned in the flowchart the SWM in NPP, Nainital can be broadly divided into five steps namely: Step-01: Waste Generation, Step-02: Waste Collection, Step-03: Waste Segregation, Step-04: Waste Treatment and Step-05: Waste Disposal.

a) Step 1- Waste Generation

As shown in Table 13, as per the discussions with the officials met (as mentioned in Annexure C), the major sources of solid waste generation in the town are the residential and commercial areas. The total volume of solid waste collected from Nainital Town by the NPP, Nainital is 24.4 MTPD (during

off-season) and 31 MTP (during on-season). A variation of about 27% is observed in the total solid waste generated in Nainital Town during on-season.

Table 13: Overview of waste generated in NPP Nainital

Solid Waste Generation	As Per the Discussion with The Officials of NPP, Nainital (2024)	Inferences
Solid Waste Generated (MTPD)	<ul style="list-style-type: none"> <li>• <b><u>Total Waste Generated during Off-Season:</u></b> 24.4 Metric Tonnes Per Day (MTPD)</li> <li>• <b><u>Total Waste Generated during On-Season/Tourist Season:</u></b> 31 Metric Tonnes Per Day (MTPD)</li> <li>• <b><u>On-Season/Tourist Season is Experienced for Six Months:</u></b> Summers: April, May, June, July Winters: December, January</li> </ul>	<ul style="list-style-type: none"> <li>• The Total Solid Waste Generated in NPP, Nainital ranges from <b>24.4 MTPD</b> (during off-season) to <b>31 MTPD</b> (during Tourist-season).</li> <li>• On an average <b>27% increase</b> is observed in the total solid waste generated in Nainital Town during tourist season.</li> <li>• <b><u>The Tourist season is for six months i.e. for the following months in:</u></b> <b>Summers:</b> April, May, June, July <b>Winters:</b> December, January</li> <li>• The Peak of Tourist Season is experienced during the Month of June.</li> </ul>
Per Capita MSW Generation (g/day)	<ul style="list-style-type: none"> <li>• <b><u>Off-Season:</u></b> 400 g/day</li> <li>• <b><u>On-Season:</u></b> 490 g/day</li> </ul>	<ul style="list-style-type: none"> <li>• There is an <b>increase of 22.5%</b> in the total solid waste generated per capita per day in NPP, Nainital during the tourist season i.e. for the months of April, May, June, July, December and January.</li> </ul>
Segregation at Source Level	<ul style="list-style-type: none"> <li>• Two Dustbins were distributed in each HH of the NPP, Nainital by the ULB to promote segregation of Dry and Wet Waste at Source Level.</li> </ul>	<ul style="list-style-type: none"> <li>• Despite the distribution of two-dustbins in each HH by the NPP, Nainital for segregation of dry and wet waste at source level <b>no segregation at source level</b> can be seen in the town by the people.</li> </ul>

	<ul style="list-style-type: none"> <li>Installation of Twin-Bins by the NPP, Nainital in the town to promote wet and dry waste segregation by the tourists visiting the town.</li> </ul>	<ul style="list-style-type: none"> <li>Tourists do not use the Twin-Bins for segregation of dry and wet waste in the NPP, Nainital. Thus, leading to <b>no segregation of waste.</b></li> </ul>
<b>Segregation of Solid Waste after collection in the Dumping-cum-Transfer Ground i.e. Metropole Parking Area (an Active Parking Area)</b>	<ul style="list-style-type: none"> <li>NPP, Nainital has appointed a Private Agency to collect, segregate, transport and dispose the solid waste generated in NPP, Nainital.</li> </ul>	<ul style="list-style-type: none"> <li>The workers appointed by the private agency segregates the dry waste (plastic, plastic bags, plastic bottles) and wet waste from the total solid waste collected in the dumping-cum-transfer ground i.e. Metropole Parking Area before treatment and disposal of waste.</li> <li>The Metropole Parking Area is also being used as an active parking space by the residents. Thus, making the access of the vehicle difficult due to the constant collection, dumping, segregation and transportation of the waste.</li> </ul>

Source: (Nagar Palika Parishad, Nainital, 2024)

## b) Step 2: Waste Collection

As per the discussions with the officials met (as mentioned in Annexure C), the NPP, Nainital has appointed a Private Agency on contract basis (annually renewed on performance basis) for collection, transportation, segregation and disposal of solid waste generated in the Town. This private agency has further appointed a total number of 36 sanitation workers for door-to-door solid waste collection. These workers include supervisor, drivers and helpers.

The Table 14 below, shows the duties/responsibilities assigned to these sanitation workers for the collection and management of the solid waste generated throughout the town.

Table 14: Duties/Responsibilities of Sanitation Workers Appointed by the Private Agency for Solid Waste Management in NPP, Nainital.

S.No.	Sanitation Worker Appointed	Duties/Job Responsibility
01.	Supervisors	To <b>manage</b> the entire process of door-to-door collection throughout the Town.
02.	Drivers	To <b>drive and collect</b> the solid waste generated throughout the Town in the garbage pick-up vehicles provide by the NPP, Nainital, from the areas with proper road network accessibility.
03.	Helpers	To <b>manually collect</b> the solid waste from the areas with limited or zero road network accessibility in the buckets or large plastic bags provided

		by the NPP, Nainital.
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Source: (Nagar Palika Parishad, Nainital, 2024)

The sanitation workers (drivers and helpers) collect 100% of the solid waste generated in the town i.e. 24.4 to 31 Metric Tonnes Per Day (MTPD) every-day in the morning in between 06:00 am to 10:00 am on a regular basis. Door-to-door collection is done from all the households (12,211 HHs), the commercial areas and 160 community dustbins (70 large dustbins and 90 small dustbins/twin bins) in the Town either by the help of vehicles (from areas with road network accessibility) provided by the NPP, Nainital or manually (from areas with limited or zero road network accessibility) by the help of buckets or large plastic bags provided by the NPP, Nainital.

As shown in Table 15, the NPP, Nainital has provided a total of 15 number of garbage pick-up vehicles to the Private Agency with 3 dumper trucks of 10m<sup>3</sup> capacity each (3X10=30m<sup>3</sup>) and 12 Partitioned Auto-Tippers of 3m<sup>3</sup> capacity each (12X3=36m<sup>3</sup>).

Table 15: Details of Vehicles Provided by the NPP, Nainital to the Private Agency for Collection and Transportation of Solid Waste Generated in the Town

Type of Vehicles Provided for Transportation of Solid Waste to the Private Agency by the NPP, Nainital (Garbage Pick-Up Trucks)	Number of Vehicles Provided (B)	Capacity of Each Vehicle (m <sup>3</sup> ) (A)	Total Capacity (m <sup>3</sup> ) (C = AXB)
Dumper Trucks	3	10	30
Partitioned Auto-Tippers	12	3	36
<b>Total</b>	<b>15</b>		<b>66</b>

Source: (Nagar Palika Parishad, Nainital, 2024)

The Image 7 below shows the garbage pickup vehicles provided by the NPP, Nainital to the Private Agency for the collection and transportation of the solid waste generated in the town.

Image 7: Images of Some of the Vehicles used for Transportation of Solid Waste in Nainital Town



Source: (SPA, New Delhi, 2024) primary survey

As mentioned in Table 16, from the garbage collection vehicle collects garbage from the roadside community bins/garbage bins, major commercial areas, hotels and the kitchen wastes of hospitals and institutes. While, door-to-door collection takes place in the residential areas. NPP, Nainital does not collect the waste from hospitals and institutes separately.

Table 16: Solid Waste Collection

Areas Collected-From	Collection Methods	Frequency of collection of Solid Waste
Community Bins (small and large)	Garbage Collection Vehicles of NPP, Nainital	Once Every Morning (6 am to 10 am)
Residential Areas	Door to Door Collection	Once Every Morning (6 am to 10 am)
Major Commercial Areas	Garbage Collection Vehicles of NPP, Nainital	Twice Daily: Morning (6 am to 10 am) and Evening (2 pm to 5 pm)
Hotels	Garbage Collection Vehicles of NPP, Nainital	Once Every Morning (6 am to 10 am)
Hospital Kitchen-Waste	Garbage Collection Vehicles of NPP, Nainital	Once Every Morning (6 am to 10 am)
Hospital Waste (other than	Private hired agency by the	-

Kitchen-Waste)	hospitals themselves.	
Institute Kitchen-Waste	Garbage Collection Vehicles of NPP, Nainital	Once Every Morning (6 am to 10 am)
Institute Waste (other than Kitchen-Waste)	Private hired agency by the hospitals themselves.	-

Source: (Nagar Palika Parishad, Nainital, 2024)

The medical waste generated is collected, treated and disposed-off or incinerated by the respective hospital authorities by themselves within the hospital premises or by the help of another private organizations on contractual-basis. The institutes also hire separate private agency to dispose-off the waste other than kitchen waste generated by them.

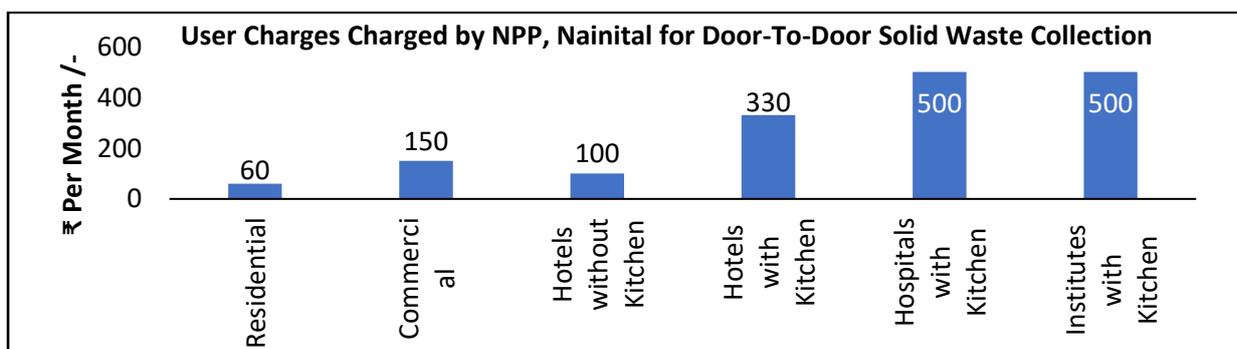
As shown in the Table 17 below the NPP, Nainital charges ₹60/- per month for door-to-door collection of solid waste from the residential areas, ₹150/- per month from commercial areas, ₹100/- per month from the hotels without kitchen, ₹330/- per month from the hotels with kitchen, ₹500/- per month from the hospitals with kitchen and ₹500/- per month from the institutes with kitchen.

Table 17: List of User Charges Charged by NPP, Nainital for Door-To-Door Solid Waste Collection in the Town

List of User Charges Charged by NPP, Nainital for Door-To-Door Solid Waste Collection	
Area	Charges (in INR)
Residential	60/- Per Month
Commercial	150/- Per Month
Hotels without Kitchen	100/- Per Month
Hotels with Kitchen	330/- Per Month
Hospitals with Kitchen	500/- Per Month
Institutes with Kitchen	500/- Per Month

Source: (Nagar Palika Parishad, Nainital, 2024)

Figure 19: User Charges by the NPP, Nainital for Solid Waste Collection in the Town



Source: (Nagar Palika Parishad, Nainital, 2024)

As shown in the Image 8, after the solid waste is collected from various sources it is transported to the dumping-cum-transfer ground i.e. Metropole Parking Area an active parking in the town located within 2km radius of Nainital Town.

Image 8: Existing Situation of Dumping-cum-Transfer Ground i.e. Metropole Parking Area an Active Parking in the Town



Source: (SPA, New Delhi, 2024) primary survey

**c) Step 3: Waste Segregation**

As shown in Table 18, according to the discussions with the officials met (as mentioned in Annexure C) the NPP, Nainital has distributed two dustbins in each HH under its jurisdiction as an initiative to promote source level segregation of dry waste and wet waste and have installed twin bins (small community dustbins) across the town especially at the major market areas to promote segregation of dry and wet waste. However, at present there is no practise of segregation at source level, only central level segregation of dry waste (plastic, plastic bags and plastic bottles) and wet waste is done by the sanitation workers hired by the Private Agency at dumping-cum-trenching ground. This practise of no at-source level segregation of waste reduces the overall efficiency of waste management in the Town.

Table 18: Overview of Solid Waste Segregation Practises in NPP, Nainital for SWM

Overview of Solid Waste Segregation in NPP, Nainital		
<b>Segregation at Source Level</b>	<ul style="list-style-type: none"> <li>Two Dustbins were distributed in each HH of NPP, Nainital by the ULB to</li> </ul>	<ul style="list-style-type: none"> <li>Despite the distribution of two-dustbins in each HH by the NPP, Nainital for segregation of dry and wet</li> </ul>

	<p>promote segregation of Dry and Wet Waste at Source Level.</p> <ul style="list-style-type: none"> <li>• <b>Installation of Twin-Bins</b> by the NPP, Nainital in the town to promote wet and dry waste segregation among the tourists in town and stop them from open littering.</li> </ul>	<p>waste at source level <b>no segregation at source level</b> is practiced by the residents of Nainital Town.</p> <ul style="list-style-type: none"> <li>• Tourists do not dump the dry and wet waste separately in the Twin-Bins installed by NPP, Nainital for segregation of dry and wet waste. Thus, leading to <b>mixing of waste</b>.</li> </ul>
<p><b>Central Level Segregation:</b></p> <p><b>Segregation of Solid Waste after collection at the Dumping-cum-Transfer Ground i.e. Metropole Parking Area located within 2 km radius of Nainital Town</b></p>	<ul style="list-style-type: none"> <li>• NPP, Nainital has appointed a private agency to collect, segregate, transport and dispose the solid waste generated in NPP, Nainital.</li> </ul>	<ul style="list-style-type: none"> <li>• The dumping-cum-transfer ground is being used for central level segregation of the dry waste and wet waste by the sanitation workers on the <b>Metropole Parking Area</b>.</li> <li>• The Segregated Dry Waste (Plastic, Plastic Bottles, Plastic Bags) is sold by the Sanitation Workers appointed for Door-To-Door Collection by the Private Agency to generate some monetary benefits.</li> <li>• <b>The Metropole Parking Area is also being used as an active parking area in the town.</b> Thus, <b>making it difficult to access the site</b> for parking due to the constant collection, dumping, segregation and transportation of the waste.</li> </ul>

Source: (Nagar Palika Parishad, 2024)

**d) Step 4: Waste Treatment**

The segregated dry waste is further sold by the sanitation workers appointed by the Private Agency for door-to-door collection for generation of some monetary benefits. While the remaining segregated wet waste is sent for “waste to compost” treatment to 12 compost pits located at three different sites from the dumping-cum-trenching ground.

As shown in Map 17, 6 compost pits are in Narayan Nagar situated 6.4 km away, 4 compost pits are in Kennedy Park situated at 2.5 km away and 2 compost pits are in Pant Park situated 1 km away from the dumping-cum-trenching ground, Nainital.

Map 17: Location of the Three Sites Consisting of 12 Compost Pits in Nainital Town



Source: (Google My Maps, 2024)

After the completion of the composting process approximately 40% of the segregated wet waste is converted into fertilizer. Thus, reducing the waste to 60% from 100%. The fertilizer created is further sold by the NPP, Nainital. While the remaining 60% of the untreatable waste is again collected and transported back to the dumping-cum-trenching ground by the help of 3 dumper trucks (each with a capacity of 10 metric Tonnes) by the sanitation workers appointed by Private Agency hired for SWM.

Some-other solid waste treatment proposed by the NPP, Nainital are:

- Solid Waste Management Plant in Bhowali, located at a distance of 13 km from the NPP, Nainital. As per the discussions with the officials met (as mentioned in Annexure C) this plant will treat the solid waste collected from the 5 ULBs located nearby Bhowali including NPP, Nainital and will add as a solution to the existing limited infrastructure for solid waste treatment in the Town.

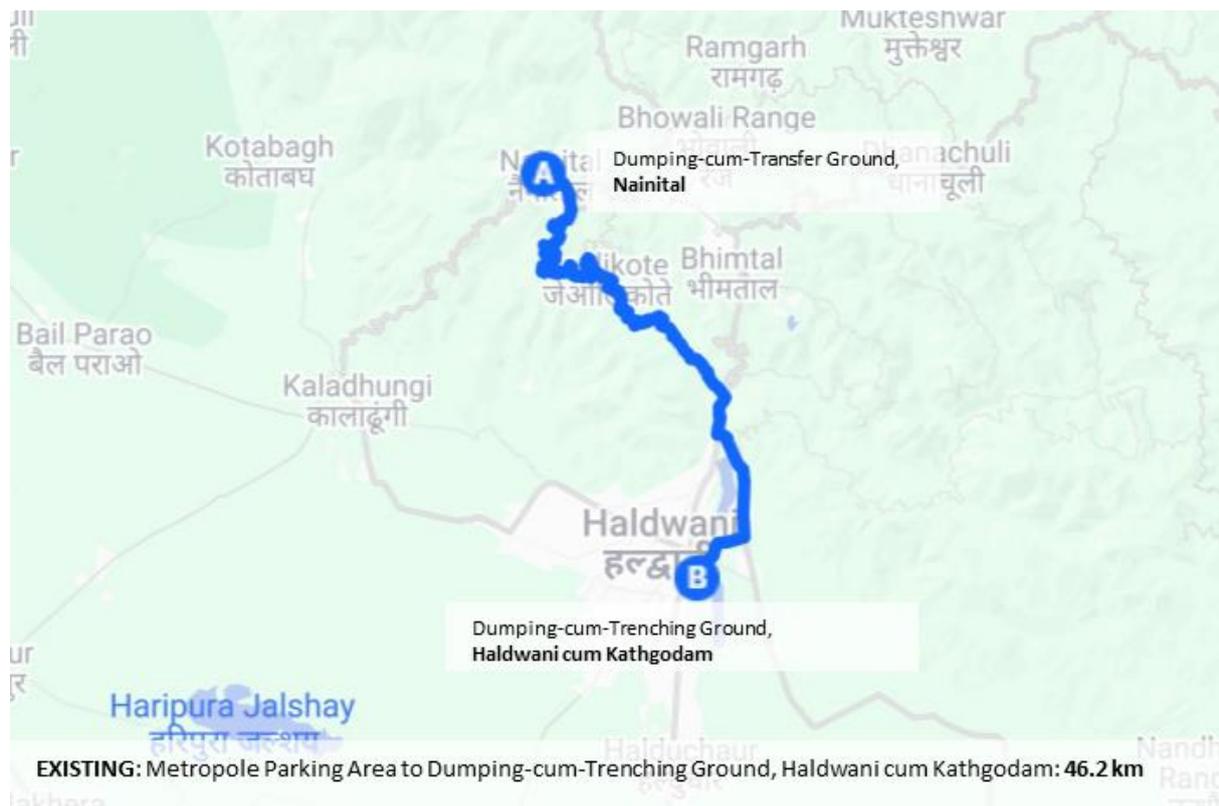
In this plant project “Plastic to Hexene Oil” is also proposed. This will help to convert the segregated plastic (dry waste) collected in bulk from the 5 different ULBs including Nainital, into hexene oil. The hexene oil produced will be further sold by the respective ULBS for generation of economy.

- Under the Pilot Project “Mission Butterfly” a scalable project is proposed based on the model developed by the Kumaon University to convert segregated “Plastic into Graphene”. The graphene produced will be sold by the NPP, Nainital for economy generation.

### e) Step 5: Waste Disposal

As shown in Map 18, according to the discussions with the officials met (as mentioned in Annexure C), the remaining waste collected back on the dumping-cum-transfer site after the treatment of wet waste is transported to the Dumping-cum-Trenching Ground at Haldwani cum Kathgodam, located at a distance of 46.2km away from the dumping-cum-transfer ground of Nainital Town. This reduced waste for its final disposal is transported by the help of three dumper trucks (10 Tonne capacity each) by the sanitation workers appointed by the Private Agency.

Map 18: Location of Dumping-cum-Trenching Ground, Haldwani cum Kathgodam from Dumping-cum-Transfer Ground, Nainital



Source: (Google Maps, 2024)

#### 7.1.3. Potential Health Hazards

As per the discussions with the officials met (as mentioned in Annexure C), the workers in prolonged close-contact with the solid waste has develops serious skin diseases and issues related to lungs. Apart from this in the past no other health hazards have been reported in the Town. To overcome this issue the NPP, Nainital has appointed Sanitation Inspector for regular inspection and monitoring of the use of safety equipment mandatory provided to the sanitation workers by the Private Agency. To further control the outbreak of vector borne diseases fogging is done on a regular basis during the summers and monsoon season by the NPP, Nainital.

#### 7.2. Present Government Policies for Solid Waste Management in Nainital Town

Solid Waste Management Rule 2016 and Swatch Bharat Mission 2.0 are the only policies implemented in NPP, Nainital for SWM in the Town.

### 7.3. Issues/ Challenges

The Table 19 below highlights the issues/challenges identified along with the inferences for SWM in NPP, Nainital.

Table 19: Issues/Challenges Identified for SWM in NPP Nainital

S.No.	Issues/Challenges	Inferences
01.	 <p><b>Geographical Constraints</b></p>	<ul style="list-style-type: none"> <li>• The Supreme Court of India on March 1995 has ordered a <b>complete ban on new construction of multistoried group housing and commercial complexes</b> in the Town. While <b>building of small residential houses on flat areas could be permitted</b>. This has resulted in limiting the growth of geographical area of the Town.</li> <li>• Since 2011, the <b>area of Nainital Town has remained the same i.e. 11.73 sq.km</b>. While the number of <b>wards and population has increased from 13 to 15 and 41,377 persons to 61,055 persons</b>. Thus, <b>increasing the population density</b> of the Town and adding on more pressure to the existing SWM infrastructure of the Town.</li> <li>• The <b>hilly terrain of Nainital Town</b> poses logistical <b>challenges</b> for waste collection and transportation as: <ul style="list-style-type: none"> <li>▪ The garbage in Nainital Town is <b>collected</b> at the <b>dumping-cum-transfer ground</b> i.e. Metropole Parking Area (an active parking area) for central level segregation of dry and wet waste.</li> <li>▪ After this, the segregated wet waste is <b>transported from the dumping-cum-transfer ground to the 12 respective compost pits located at three different sites</b> at a distance of 6.4km, 2.5km and 1km away from the dumping-cum-transfer ground.</li> <li>▪ Further, <b>after the completion of composting process the remaining untreated wet waste (60%) is again transported back to the dumping-cum-transfer ground from the respective three sites</b>.</li> <li>▪ Then for the <b>final disposal</b>, the collected untreated wet waste is <b>transported to the SWM Plant in Haldwani cum Kathgodam</b> i.e. located <b>46 km away</b> from the <b>dumping-cum-transfer ground</b> of Nainital Town.</li> </ul> </li> <li>• The <b>geographical constraints</b> add to limited movement of the vehicles used for transportation and collection of solid waste. Difficult terrain and remote location make it even more challenging and costly to implement efficient waste collection and disposal services. Thus, reducing the efficiency of SWM in Nainital Town.</li> </ul>

02.		<b>Tourist Influx</b>	<ul style="list-style-type: none"> <li>• Nainital experiences a surge in its floating population for <b>six months of tourist season</b> i.e. May, June, July, August, December and January.</li> <li>• Even though on an average Nainital Town experience <b>more than 2,000 tourists per day on an average</b>, the maximum number in the month of June can rise up to more than <b>12,000 per day</b> as well.</li> <li>• Maximum number of tourists per day in June, 2016: 12,758, June 2017: 11,989, June, 2019: 11,694 and June, 2023: 5,291.</li> <li>• This leads to a <b>substantial increase</b> in the total solid waste generated (i.e. of about <b>31MTPD</b> during <b>On-Season</b> from <b>24.4 MTPD</b> during <b>Off-Season</b>) and the per capita solid waste generated (i.e. of about <b>490g/day</b> during <b>On-Season</b> from <b>400g/day</b> during <b>Off-Season</b>). Thus, <b>straining the existing municipal solid waste management infrastructure</b>.</li> <li>• While the <b>peak tourist season</b> is experienced only for the month of <b>June</b>, the Town still needs to plan immediate measures for all the six months as the number of tourists visiting the town are increasing exponentially after COVID-19 and might be more than 9Lakhs per annum in the near future.</li> </ul>
03.		<b>Lack of Door-to-Door Collection and Household-level segregation in NPP, Nainital</b>	<ul style="list-style-type: none"> <li>• In NPP, Nainital there is <b>currently no door-to-door waste collection system</b>. Additionally, the <b>waste management system lacks a household-level segregation process</b>. This means that <b>waste is not collected directly from individual households</b>, and there are <b>no specific protocols for separating different types of waste</b> at the <b>household level</b> before it is collected.</li> <li>• NPP, Nainital have <b>distributed twin-bins</b> in each <b>HH</b> under its jurisdiction as an initiative <b>to promote source level segregation</b> of dry waste and wet waste.</li> <li>• Despite the distribution of the twin-bins in each household by the NPP, Nainital, due to inadequate awareness and unwillingness of the residents, <b>absence of source-level segregation practices</b> is observed in the Town. Thus, <b>resulting in mixing of waste</b>.</li> <li>• The <b>lack of at-source level segregation</b> practises results in the landfilling of recyclable materials and organic waste, reducing the overall efficiency of waste management efforts and <b>leads to higher waste disposal rates</b>.</li> </ul>

04.		<b>Financial Challenges Facing SHGs in NPP, Nainital</b>	<ul style="list-style-type: none"> <li>The Self-Help Groups (SHGs) have made significant <b>contributions to community waste management and resource recovery efforts</b>, but they are <b>currently facing a challenge</b> due to the <b>non-receipt of payments from the NPP, Nainital</b>. This financial shortfall threatens to undermine their ability to sustain and expand their valuable services.</li> </ul>
05.		<b>Limited Recycling Facilities</b>	<ul style="list-style-type: none"> <li>Nainital lacks sufficient infrastructure for recycling of waste. At present only the Dry-Waste (i.e. plastic, plastic bags, plastic bottles, cardboard and paper) is being segregated by the Sanitation Workers appointed by the Private Agency (hired on contract basis for SWM by the NPP, Nainital).</li> <li>The segregated dry waste is sold by these sanitation workers to generate some monetary benefits out of it.</li> </ul>
06.		<b>Limited Solid Waste Treatment Facilities in the Town</b>	<ul style="list-style-type: none"> <li><b>Vermicomposting is not feasible</b> in Nainital Town due to temperature constraint. The minimum temperature required for Vermicomposting is 28°C. While, the average temperature in Nainital ranges in between 28°C to 7°C. Thus, making it <b>difficult to execute organic composting in the Town</b>.</li> <li>The present composting techniques being used by the ULB consumes a lot of time for its completion due to the temperature constraint. Thus, resulting in slowing down the entire process of treatment of solid waste done to reduce the amount of final waste to be disposed.</li> <li>This further results in adding up to the existing legacy-waste of the town and reduces the efficiency of SWM of the Town.</li> </ul>
07.		<b>Illegal Dumping and Littering</b>	<ul style="list-style-type: none"> <li>Despite imposition of fine (ranging from ₹500/- to ₹5,000/-) and the efforts to provide waste collection services, illegal dumping and littering is common in Nainital.</li> <li>Improper disposal of waste in public spaces and natural areas not only detracts from the town's aesthetic appeal but also poses environmental and health hazards.</li> <li>Construction activity has led to an increase in <b>construction debris</b>, which is frequently being <b>dumped near water channels</b>. This continuous dumping is <b>polluting the water and contributing to a decline in water quality. This also blocks the drains</b></li> </ul>

		<b>Public Health Concerns</b>	<ul style="list-style-type: none"> <li>Littering attracts pests such as rodents and insects, which can spread diseases among people and pose health risks to residents, tourists, and wildlife.</li> </ul>
08.		<b>Stray Animal Interference</b>	<ul style="list-style-type: none"> <li>Stray animals, particularly dogs and cattle, often dig through community dustbins bins and scatter garbage across streets. This leads to sanitation issues.</li> </ul>
		<b>Waste Contamination</b>	<ul style="list-style-type: none"> <li>Stray animals may consume or come into contact with harmful materials within the waste, leading to health risks for both humans and animals.</li> </ul>
09.		<b>Environmental Impacts</b>	<ul style="list-style-type: none"> <li>Improper solid waste management practices contribute to environmental pollution, soil and water contamination. It degrades the natural beauty.</li> <li><b>Excessive use of plastic in NPP</b> is a significant environmental concern due to its impact on ecosystems and human health. Plastics, particularly single-use.</li> </ul>
10.		<b>Non-Renewal of MSWM Contract</b>	<ul style="list-style-type: none"> <li>The contract between the Private Agency and NPP, Nainital has not been Renewed since March,2023. This leads to lack of a functional waste management system.</li> </ul>
11.		<b>Policy and Governance Issues</b>	<ul style="list-style-type: none"> <li>Weak enforcement of waste management regulations, limited funding and resources hinder effective solid waste management in Nainital Town.</li> </ul>

#### 7.4. Possible Solutions/Suggested Projects

A Stakeholder Consultation Meeting was held on 25<sup>th</sup> April 2024 with NPP Nainital. Based on the feedback provided by the official's possible solutions and suggested projects for improvement are proposed for Nainital Town in Table 20 below.

Table 20: Possible Solutions/Suggested Projects to address the Issues/Challenges faced in Nainital Town for Solid Waste Management (SWM)

S.No.	Possible Solutions/Suggested Projects
<b>01.</b>	<b>Geographical Constraints</b>
	<p><b><u>It is proposed that:</u></b></p> <p>a) <b>The NPP, Nainital should identify appropriate locations in Nainital Town and:</b></p> <ol style="list-style-type: none"> <li>i. <b>Establish additional waste collection points</b> for areas with limited or zero road connectivity to ease waste collection by the sanitation workers in difficult terrains.</li> <li>ii. <b>Relocate the dumping-cum-transfer ground</b> from an active parking area (i.e. Metropole Parking Area) to another suitable location to <b>minimize the travel cost</b> of the vehicles used for transportation of solid waste i.e.: <ul style="list-style-type: none"> <li>▪ From all the collection points to the dumping-cum-transfer ground.</li> <li>▪ From the dumping-cum-transfer ground to the respective three sites (consisting 12 compost pits) located at a distance of 6.4 km, 2.5 km and 1 km, respectively.</li> <li>▪ From all the three sites again back to the dumping-cum-transfer ground.</li> <li>▪ From the dumping-cum-transfer ground to the SWM Plant in Haldwani cum Kathgodam situated at a distance of 46 km.</li> </ul> </li> </ol>
<b>02.</b>	<b>Tourist Influx</b>
	<p><b><u>It is proposed that:</u></b></p> <p>a) <b>The State Government of Uttarakhand should undertake the following:</b></p> <ol style="list-style-type: none"> <li>i. Limit the <b>number of tourists entering Nainital Town</b> to help to manage the solid waste generation fluctuation experienced during the tourist season for six months i.e. May, June, July, August, December and January. Especially for the month of June.</li> <li>ii. <b>Impose Solid Waste Management Cess on all the tourists</b> visiting/entering Nainital Town.</li> </ol> <p>b) <b>The NPP, Nainital should undertake the following:</b></p> <ol style="list-style-type: none"> <li>i. <b>Maintain and regularly submit the digital records to the State Government of Uttarakhand</b> for the amount of the Solid Waste Management Cess collected and the number of Tourists entering Nainital Town.</li> <li>ii. <b>Appoint extra workforce</b> (on contract basis) along with the existing sanitation workers to meet the on-ground requirement for solid waste management in the Town during the six months of tourist season i.e. for May, June, July, August, December and January.</li> </ol> <p><b><u>These sanitation workers should be delegated at the major market areas and other crowded areas like:</u></b></p> <ul style="list-style-type: none"> <li>▪ Mall Road Market located along Mall Road,</li> <li>▪ Bara Bazar in Mallital, Vegetable Market in Mallital,</li> </ul>

	<ul style="list-style-type: none"> <li>▪ Tibetan and Bhotia Market in Ayarpatta near Naini Lake,</li> <li>▪ Tallital Market located on Nainital-Bhowali Road and</li> <li>▪ Sukha Tal Market/Anda Market on Sukha Tal Road.</li> </ul> <p>This will help in managing the solid waste generated by the tourists at the major market areas during on-season.</p>
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**03. Lack of Segregation Practices**

	<p><b>It is proposed that:</b></p> <p>a) <b>NPP, Nainital on PPP model should collaborate with local NGOs, SHGs, Government Institutes, the Private Agency hired for SWM (on contract basis) and other willing volunteers to:</b></p> <ol style="list-style-type: none"> <li>I. <b>Establish door-to-door waste collection system by appointing Baini Sena</b> (a Group of local Women responsible for maintaining cleanliness by managing collection and ensuring hygiene) the role of this group in <b>waste management by collecting user charges</b> from households and <b>educating residents about proper waste segregation.</b></li> <li>II. <b>Distribute Color-coded Garbage Bags to each HH and shops in the Town at door-to-door level</b> for segregating different types of waste. For example, <b>blue bin for recyclables, green for compostable and black for non-recyclables.</b></li> <li>III. Ensure that these bins are <b>clearly labeled and include guidelines in native language</b> for proper use.             <ol style="list-style-type: none"> <li>i. . This initiative will help to <b>induce behavioral sensitization</b> among the residents of the Town for dry and wet waste <b>segregation at source level.</b></li> <li>ii. <b>Build and Implement Awareness Campaigns and Workshops at Community Level.</b>  <i>These Campaigns and Workshops should be conducted at door-to-door level to:</i> <ul style="list-style-type: none"> <li>✓ <b>Promote Waste Minimization.</b></li> <li>✓ <b>Educate people about the importance of segregation of dry and wet waste.</b></li> <li>✓ <b>Educate people about the waste management hierarchy as shown in the figure below.</b></li> </ul> </li> </ol> </li> </ol>
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Figure 20: Waste Management Hierarchy as per the Swachh Bharat Mission-Urban



Source: (CPHEEO, MoHUA, 2018)

**04. Financial Challenges Facing SHGs in NPP, Nainital**

	<p><b>As per the NPP, Nainital:</b></p> <p>a) It is crucial to <b>first engage in dialogue with NPP, Nainital to understand and resolve the payment delays.</b> Additionally, <b>implementing a clear and timely payment system,</b> with defined terms and regular follow-ups, can ensure that SHGs receive their due compensation.</p>
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<b>05.</b>	<p><b>Limited Recycling Facilities</b></p> <p><u>As per the NPP, Nainital:</u></p> <p>b) <b>“Plastic to Hexene Oil”</b> project under the <b>proposed SWM Plant at Bhowali</b> (located at a distance of 13 km from NPP, Nainital) adds as a solution to the existing deficiency of recycling infrastructure. This project will help to produce Hexene Oil from the segregated plastic collected from the total solid waste generated by the ULB. The Hexene Oil produced will be further sold by the respective ULB for economy generation.</p> <p>c) Under the Pilot Project <b>“Mission Butterfly”</b> a scalable <b>project is proposed based on the model developed by the Kumaon University to convert segregated “Plastic into Graphene”</b>. The graphene produced will be sold by the ULB for economy generation.</p> <p><b><u>The above may be implemented. Further alongwith this it is proposed that:</u></b></p> <p>a) <b>NPP, Nainital on PPP model</b> should collaborate with <b>local NGOs, SHGs, Government Institutes, the Private Agency</b> hired for SWM (on contract basis) and other <b>willing volunteers to Build and implement</b> Awareness Campaigns and Workshops at <b>Community Level</b>.</p> <p><i><u>The Campaigns and Workshops should be conducted at community level to promote the 3R Approach:</u></i></p> <ul style="list-style-type: none"> <li>✓ <b>“Reduce”:</b> Methods available to help <b>reduce the total waste generated in the Town</b> by reducing the waste generated at HH Level.</li> <li>✓ <b>“Reuse”:</b> Options available for <b>re-purposing or reuse of items for more than once</b> at HH level.</li> <li>✓ <b>“Recycle”:</b> Information about <b>recycling options available at HH level</b>.</li> </ul> <p><i>This initiative will help to responsibly manage the waste generated by the residents at HH level.</i></p>
<b>06.</b>	<p><b>Limited Solid Waste Treatment Facilities in the Town</b></p> <p><u>As per the NPP, Nainital:</u></p> <p>a) The <b>proposed SWM Plant at Bhowali</b> (located at a distance of 13 km from NPP, Nainital) adds as a solution to the existing limited infrastructure for solid waste treatment facilities in the Town. This project will help to treat the segregated solid waste collected from 5 different ULBs including Nainital.</p> <p><b><u>The above may be implemented. Further alongwith this it is proposed that:</u></b></p> <p>a) <b>The NPP, Nainital should undertake the following:</b></p> <p style="padding-left: 20px;">i. <b>Install fully automatic Organic Waste Converter (OWC) Machines especially the in-vessel and compact model for mechanical composting</b> as shown in the image below, to promote <b>“Waste to Compost”</b> facilities for SWM.</p> <p>Image 9: Images of different models of Fully Automatic OWC Machine with in-vessel</p>



Source: (Google Images, 2024)

**The fully automatic in-vessel Organic Waste Convertor (OWC) Machines:**

- ✓ Have an in-vessel system (i.e. composting occurs in an enclosed environment) and treats all the waste in its treatment chamber.
- ✓ Provides better control over temperature, moisture and aeration.
- ✓ Do not require any associated equipment such as curing racks. Thus, making it compact and feasible.
- ✓ Produces compost that can be mixed with soil and used for various purposes like landscaping and organic farming.
- ✓ Do not require any skilled labour and can be easily operated by unskilled labour with minimal training as well.
- ✓ Have ergonomic design and built-in safety features.
- ✓ Are suitable for both medium and large-scale composting.

- ii. **Suggest appropriate number** of Mechanical Composting Machines, Waste Transfer Stations and MRF Centre required in the Town for MSWM.
- iii. **Identify and propose suitable locations/sites in the Town** for Mechanical Composting Machines, Waste Transfer Station and MRF Centre.
- iv. **Collaborate with local NGOs, SHGs, Government Institutes, the Private Agency** hired for SWM (on contract basis) and other **willing Volunteers on PPP model to build and implement Awareness Campaigns and Workshops at Community Level.**

**These Campaigns and Workshops should be conducted at door-to-door level to undertake the following:**

- ✓ Provide information about the **“Waste to Compost systems”** as per the, **Swachh Bharat Mission-Urban: Advisory on On-Site and Decentralized Composting of Municipal Organic Waste**, by CPHEEO, MoHUA, 2018, for:
  - **Individual HHs, Small Communities, Apartments up to 10HHs,**
  - **Medium Sized Communities, Apartments, RWAs for 11-300 HHs, Medium Sized Offices, medium Hotels, Resorts, medium Schools, Canteens, Marriage Halls, etc.**

<b>07.</b>	<b>Illegal Dumping /Littering of Garbage and Public Health Concerns Because of It</b>
	<b><u>It is proposed that:</u></b>

	<p>a) <b>The NPP, Nainital on PPP model should collaborate with local NGOs, SHGs, Government Institutes, the Private Agency hired for SWM (on contract basis) and other willing volunteers along with the Police Department to:</b></p> <ul style="list-style-type: none"> <li>i. <b>Increase monitoring</b> during tourist season to stop illegal dumping/littering of waste in the Town. Especially in the major market areas.</li> <li>ii. <b>Impose high penalties and fines</b> on the people (tourists or residents) identified by the monitoring teams on-ground.</li> </ul> <p>b) <b>The NPP, Nainital should undertake the following:</b></p> <ul style="list-style-type: none"> <li>i. <b>Garbage-vulnerable points should be identify</b> and install <b>cameras and loudspeakers for announcements</b> related to SWM at those places.</li> <li>ii. <b>Monitor the regular cleaning</b> of roads and <b>collection of garbage</b> from the community dustbins during tourist season.</li> <li>iii. <b>Maintain Digital Records</b> of the penalties/fines collected for illegal dumping/littering of garbage by the respective teams, on a regular basis.</li> <li>iii. <b>Implement pest control measures</b> to alleviate public health concerns arising from pests such as rodents and insects attracted by the littering of waste.</li> <li>iv. <b>Establish dedicated areas for proper disposal of construction waste</b>, ensuring they are far from waste sources to prevent contamination.</li> <li>v. <b>Implement and enforce strict regulations</b> regarding waste management during construction. Heavy penalties should be applied to violators who illegally dump debris near water channels.</li> <li>vi. <b>Promote recycling and reuse of construction debris</b>, NPP, Nainital can <b>make Cost-effective materials such as recycled aggregates for concrete</b>, which can replace natural sand and gravel in new construction projects. <b>Crushed bricks and concrete can be used as base materials for roads, pathways, or in landscaping</b>. Additionally, waste wood can be processed into particleboard or used for fuel, while metals can be recycled into new steel or aluminum products.</li> </ul>
<p><b>08.</b></p>	<p><b>Stray Animal Interference and Waste Contamination Caused by Them</b></p>
	<p><b><u>It is proposed that:</u></b></p> <p>a) <b>The NPP, Nainital should undertake the following:</b></p> <ul style="list-style-type: none"> <li>i. <b>Proactively implement and monitor</b> animal control measures, such as Sterilization Programmes.</li> <li>ii. <b>Monitor and ensure</b> collection of garbage on a regular basis from the community dustbins in the town.</li> <li>iii. <b>Install animal-proof waste containers</b> to mitigate waste contamination caused by stray animals.</li> </ul>
<p><b>09.</b></p>	<p><b>Environmental Impacts</b></p>
	<p><b><u>It is proposed that:</u></b></p> <p>a) <b>The State Government of Uttarakhand should undertake the following:</b></p> <ul style="list-style-type: none"> <li>i. Construct “Thaila ATM” in the neighborhood level for bags is an innovative designated to combat plastic waste by providing reusable cloth bags in exchange for old or plastic bags. This will offer residents a convenient way to exchange their plastic bags for eco-friendly alternatives.</li> </ul>

	<p>a) <b>The NPP, Nainital should undertake the following:</b></p> <ol style="list-style-type: none"> <li>i. <b>The NPP, Nainital should collaborate with restaurants and cafes</b> to run “garbage cafes” that <b>offers either meal or incentive money</b> to people <b>in exchange for a certain amount of plastic waste</b>. For example, individuals can get a <b>full meal or money by giving 1 kg of plastic waste</b> or a <b>substantial snack by contributing 500 grams</b>. This will help to tackle plastic waste and providing Food security.</li> <li>ii. <b>The NPP, Nainital on PPP model should collaborate with local NGOs, SHGs, Government Institutes, the Private Agency</b> hired for SWM (on contract basis) and <b>other willing volunteers to:</b></li> <li>iii. <b>Promote sustainable waste management practices</b> to mitigate environmental impacts.</li> <li>iv. <b>Build and implement environmental awareness campaigns/workshops</b> like Clean-Up Drives in public spaces, market areas, near the Naini Lake and other tourist spots to maintain cleanliness and to spread awareness among the people for better SWM practices to reduce its impact on the environment. Additionally Awareness about SWM should be spread by working with faith leaders and Spread awareness through WhatsApp groups.</li> <li>v. <b>Develop Green Infrastructure like</b> rain gardens, permeable pavements, bioswales, etc. to manage stormwater runoff and reduce pollution.</li> </ol>
<b>10.</b>	<b>Non-Renewal of MSWM Contract</b>
	<p><b><u>It is proposed that:</u></b></p> <p>a. The NPP, Nainital should undertake the following:</p> <ol style="list-style-type: none"> <li>i. <b>Renew the SWM contract</b> with the Private Agency <b>on time</b> to maintain a functional MSWM System in the Town on performance basis.</li> <li>ii. <b>Evaluate the work done</b> by the Private Agency (hired on contract basis) on monthly basis to determine the best course in action for renewal of the contract.</li> </ol>
<b>11.</b>	<b>Policy and Governance</b>
	<p><b><u>It is proposed that:</u></b></p> <ol style="list-style-type: none"> <li>i. <b>The State Government of Uttarakhand should undertake the following:</b></li> <li>ii. <b>Impose strict policy norms</b> for the use of plastic in the State. To reduce the plastic waste produced the State Government should completely ban the sales of plastic bottles of less than 1 liter in volume.</li> <li>iii. <b>Implement Extended Producer Responsibility (EPR) Schemes</b> to hold producers responsible for the end-of-life management of their products, encouraging them to design sustainable products.</li> <li>iv. <b>Strengthen Regulatory Framework</b> by enhancing coordination among relevant stakeholders and allocating adequate resources essential for addressing the SWM challenges faced by the ULBs in the hilly State of Uttarakhand.</li> <li>v. <b>Conduct surprise visits and inspections</b> to evaluate the on-ground progress of the projects by the ULBs on a regular basis.</li> <li>vi. <b>The NPP, Nainital should undertake the following:</b></li> <li>vii. <b>Strengthen Awareness Programmes by Building and Implementing respective</b></li> </ol>

	<p>Programmes/campaigns/workshops required for effective SWM in Nainital Town. Respectively, teams should be formed under the suggested Programmes/campaigns/workshops and a Nodal Officer should be appointed to each team by the NPP, Nainital.</p> <p><u>The Nodal Officer appointed should:</u></p> <p>viii. <b>Strictly Monitor</b> the Implementation of the work assigned to their respective teams.</p> <p>ix. <b>Maintain an Annual Progress Report</b>, comprising the details of the on-ground progress of the respective teams and submit them to the State Government of Uttarakhand.</p> <p>x. <b>Encourage volunteering participation</b> among the residents by awarding a “Participation Certificate” sanctioned by the State Government of Uttarakhand to all the individuals of the respective teams.</p> <p>xi. <b>Encourage School students to participate in Awareness Programmes/workshops/campaigns by organizing special-activities in schools</b> every day for an hour. To promote this initiative and spread awareness among other student’s T-shirts should be printed and distributed to school students for the same. School can integrate engaging, hands-on activities into their curriculum, such as <b>organizing interactive workshops, classroom discussions, and projects focused on waste segregation, recycling and composting.</b> Students can participate in <b>practical exercises like best out of waste and once a month all students will clean the town and school will provide refreshment and prizes to the students for cleaning the town.</b></p>
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# Chapter 8.

## Urban Transport and Parking

## Chapter 8. Urban Transportation and Parking in Nainital Town

### 8.1. System Infrastructure

As shown in Table 21 below, Nainital Town accommodates one National Highway i.e. NH-109 and one State Highway i.e. SH-41. This is the only major road network present in the Town that provides inter-state and intra-state connectivity.

Table 21: Details of Major Road Network of Nainital Town

S.No.	Road Network	Connects Nainital Town With
01.	<b>NH-109 From South West Direction: Bareilly-Nainital Road</b>	<b><u>Inter-State:</u></b> <ul style="list-style-type: none"> <li>Lucknow, Bareilly and other parts of Uttar Pradesh (UP), Delhi, Rajasthan, Haryana.</li> <li>Other parts of India</li> </ul>
02.	<b>NH-109 Towards South-East Direction: Nainital-Bhowali Road</b> (Joining Jyolikot–Almora–Ranikhet–Karanprayag near Bhowali)	<b><u>Intra-State:</u></b> <ul style="list-style-type: none"> <li>Almora, Pithoragarh, Bageshwar and Garhwal Region of Uttarakhand State.</li> <li>Other important tourist places of Kumaon Region e.g. Mukteshwar, Kaushani, Ranikhet, Munsiyari, etc.</li> </ul>
02.	<b>SH-41 From North-West Direction to South-East Direction terminating at Tallital, Nainital connecting with NH-109: Nainital Road</b> (Joining Doraha–Bajpur–Kaladhungi–Nainital Road)	<b><u>Intra-State:</u></b> <ul style="list-style-type: none"> <li>Dehradun, Haridwar, Garhwal region of Uttarakhand.</li> </ul> <b><u>Inter-State:</u></b> <ul style="list-style-type: none"> <li>Moradabad, Dhampur, Najibabad and to other-Western Part of UP, Punjab, Haryana.</li> </ul>

Source: (City Development Plan: Nainital Revised under Jawaharlal Nehru National Urban Renewal Mission (JNNURM), 2007), (Google Maps, 2024)

The NH-109 from the South-West direction also known as the Bareilly-Nainital Road provides road connectivity from Delhi, Rajasthan, Haryana, Lucknow, Bareilly and other parts of Uttar Pradesh (UP) and India to Nainital Town.

The NH-109 towards the South-East direction that joins Jyolikot–Almora–Ranikhet–Karanprayag near Bhowali, also known as the Nainital-Bhowali Road provides connectivity of Nainital Town with Almora, Pithoragarh, Bageshwar, Garhwal Region of Uttarakhand State, Moradabad, Dhampur, Najibabad and to other-Western Part of UP, Punjab and Haryana.

The SH-41 also known as the Nainital Road joining Doraha–Bajpur–Kaladhungi–Nainital Road from the North-West direction connects Nainital Town with Dehradun, Haridwar, Garhwal region of Uttarakhand, Moradabad, Dhampur, Najibabad and to other-Western Part of UP, Punjab, Haryana. The SH-41 runs across throughout the Town connecting the Nainital High Court Road, Bara Bazar Road, Mall Road (along the Naini Lake) and then further terminates at Tallital, Nainital towards the South-East direction and connects with the NH-109 in the South.

As shown in Map 19, major part of the area of Nainital Town is connected through SH-41 that further towards the south is connected with the NH-109.

Map 19: Existing Major Road Network of Nainital Town



Source: (Google Maps, 2024) and (SPA, New Delhi, 2024) primary survey

As per the discussions with the officials met (as mentioned in Annexure C) there is no hierarchy of road in the Nainital Town due to geographical constraints and difficulty in maintenance of the infrastructure. The Town comprises of 142.022 km length of internal road network. Out of this a major share of internal road network is maintained by the NPP, Nainital i.e. 134.474 km length. While only 5% of the internal road network i.e. 7.544 km is maintained by the PWD, Nainital.

As per the (City Development Plan: Nainital Revised under Jawaharlal Nehru National Urban Renewal Mission (JNNURM), 2007), the traffic carrying capacity of these roads is less due to limited widths, intense land use and encroachments. Majority of the roads have steep gradients. None of these roads have proper road geometry, proper signages and traffic signals, appropriate number of street lights, guard rails, side protection barrier, road reflectors, road markings, appropriate turning radius, etc. for easy and safer flow of traffic and pedestrian movement. Thus, making it difficult to manage free movement of traffic and even more dangerous for the pedestrian movement during the rainy season. Thus, the Town require redesigning of the entire road geometry with proper signages, road signals, street lights, barriers, road side reflectors, footpaths, side protection barrier, etc. to promote easy flow of traffic and encourage pedestrian movement along the road.

### **8.1.1. Present connectivity**

To travel from the major cities of India to Nainital Town, road network is the most convenient and easy to access medium. Bus, shared taxis, local cabs, personal vehicles, railways and airways are the possible modes of transportation to reach Nainital Town.

As shown in Table 22, the Town has one major bus station known as Tallital Bus Station. It is located at the Thandi Sadak, Tallital near the NH-109, Nainital. The nearest railway station is Kathgodam Railway Station, situated at a distance of 36 km from the Town. While Pantnagar Airport located at a

distance of 70 km from the Town is the only domestic airport in function for the entire Kumaon region of Uttarakhand State.

Table 22: Overview of Present Connectivity of NPP, Nainital

Road Network	Railways	Airways
<ul style="list-style-type: none"> <li>Nainital Town has 1 Major Bus Station known as Tallital Bus Station located at Thandi Sadak, Tallital, near NH-109.</li> </ul>	<ul style="list-style-type: none"> <li>The nearest railway station for Nainital Town is Kathgodam Railway Station, Kathgodam.</li> </ul>	<ul style="list-style-type: none"> <li>The only Airport for the entire Kumaon Regions is the Pantnagar Airport in Pantnagar.</li> </ul>
<p>Image 10: Nearest Bus Station: Tallital Bus Station, Thandi Sadak, Tallital, Nainital, Near NH-109, within 2 km radius of Nainital Town (10 minutes away)</p>  <p>Source: (Google Images, 2024)</p>	<p>Image 11: Nearest Railway Station: Kathgodam Railway Station, Kathgodam, 36 km away from NPP, Nainital (1 hour 30 minutes away)</p>  <p>Source: (Google Images, 2024)</p>	<p>Image 12: Nearest Airport: Pant Nagar Airport Approx. 70 km away from NPP, Nainital (2 hours away)</p>  <p>Source: (Google Images, 2024)</p>

Source: (Nagar Palika Parishad, Nainital, 2024), (PWD, Nainital, 2024), (Traffic Police, Nainital, 2024), and (SPA, New Delhi, 2024) primary survey

At present the entry of buses is completely prohibited inside the Municipal Boundary of the Town due to limited road widths and overtourism in the Town. The buses reaching to Nainital Town from other States of India or other parts of the State of Uttarakhand are allowed to only drop-off the respective passenger at the bus stops/stands or bus station located on the outer periphery of Nainital Town i.e. Tallital Bus Station/Roadways Bus Stand located at Thandi Sadak, Tallital, near NH-109, Nainital Bus Stand located at Tallital on NH-109 and Sukhatal Bus Stop located at Nainital-Kaladhungi Road, on SH-41.

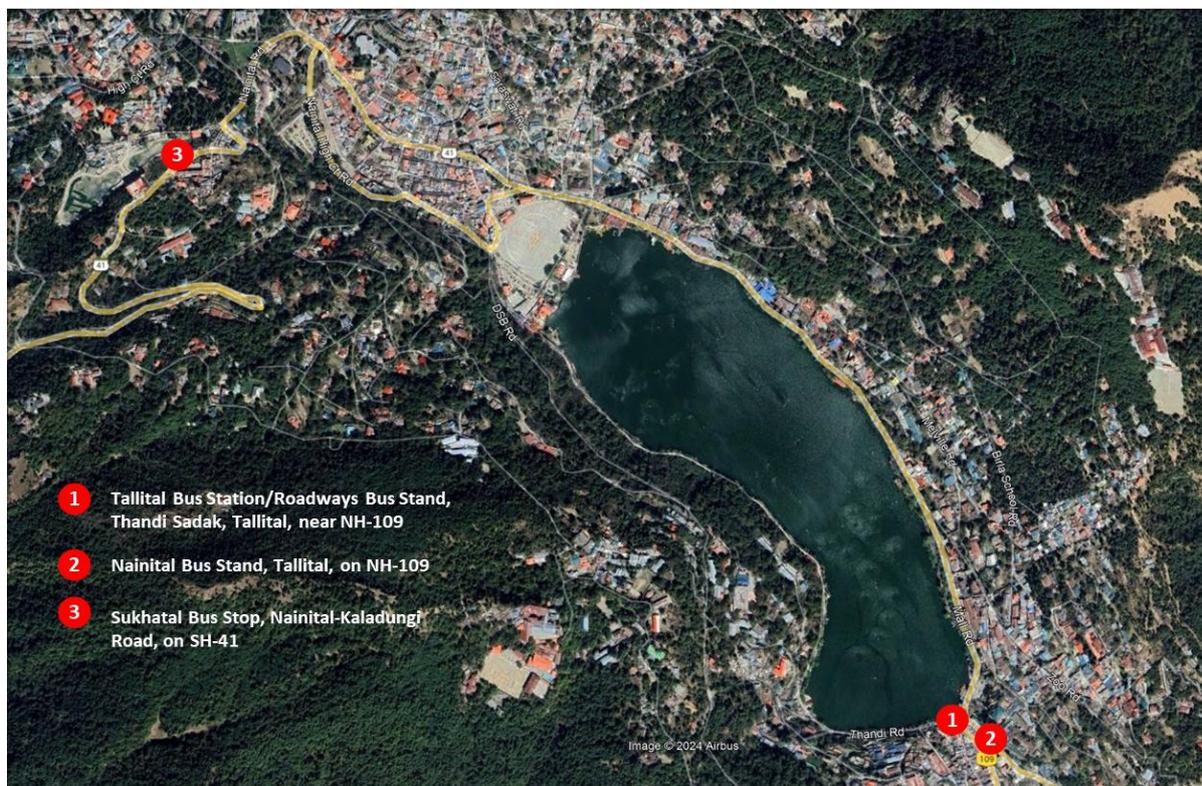
The respective buses are then parked at the Tallital Bus Station, located at Thandi Sadak, Tallital in Nainital, near the NH-109. Tourists travelling through buses to Nainital Town from their respective drop-off (i.e. Bus Stand/Stop or Tallital Bus Station) further needs to book a personal cab or shared taxi or taxi-bike to enter inside the town to reach to their respective locations within Nainital Town.

To commute within the Town personal cabs, shared cabs or taxi-bikes are available. Apart from this e-rickshaws are also available in the Town. Due to the steep gradient of roads these rickshaws are only available along the Mall Road (i.e. one of the major market areas of the Town) with lesser gradients of road.

**School buses are also not allowed inside the Municipal Boundary of the Town** to help in managing the easy flow of traffic by the ULBs. The students travel to school by the help of personal vehicles, car-pooling, private cabs, shared cabs, taxi-bikes or by the private cabs provided by the schools.

The Map 20 shows the location of bus station, bus stand and bus stop situated on the outer periphery of the Nainital Town i.e. Tallital Bus Station/Roadways Bus Stand located at Thandi Sadak, Tallital, near NH-109, Nainital Bus Stand located at Tallital on NH-109 and Sukhatal Bus Stop located at Nainital-Kaladhungi Road, on SH-41.

Map 20: Location of Bus Station, Bus Stand and Bus Stop in Nainital Town



Source: (SPA, New Delhi, 2024) primary survey, (Google Maps, 2024), (Traffic Police, Nainital, 2024)

Although buses are completely prohibited to enter inside the Town due to limited road widths and to manage the traffic congestion for free flow of traffic inside the Town, Nainital Town still faces extreme traffic congestion due to the limited road widths, no proper road geometry and the increased number of personal vehicles especially during the tourist season.

Even though buses are easily available to reach Nainital Town majority of the tourists prefer personal vehicles to reach Nainital Town. The possible reason for increased number of personal vehicles by the tourists in Nainital Town could be the following:

- a. Prohibition of entry of buses inside the town: buses are not allowed to enter into the town due to limited road widths. This step was taken to encourage easy movement of traffic inside the town. But due to limited availability of viable options for transportation inside the town some high value VIP tourists travelling for leisure to Nainital Town find it incontinent and difficult to travel through public transport in Nainital Town.
- b. Lack of Intermediate Public Transport (IPT) facility in the Town: Only e-rickshaws are available for trips along the mall-road in the Town.
- c. Huge discrepancy in the rates of fare charged by the taxi owners or taxi union: as the fare of the taxis is not fixed by the ULBs and is charged as per the taxi owner or by the taxi union of the Town. It leads to discrepancy in the fare charged from the user and has huge variations in them.

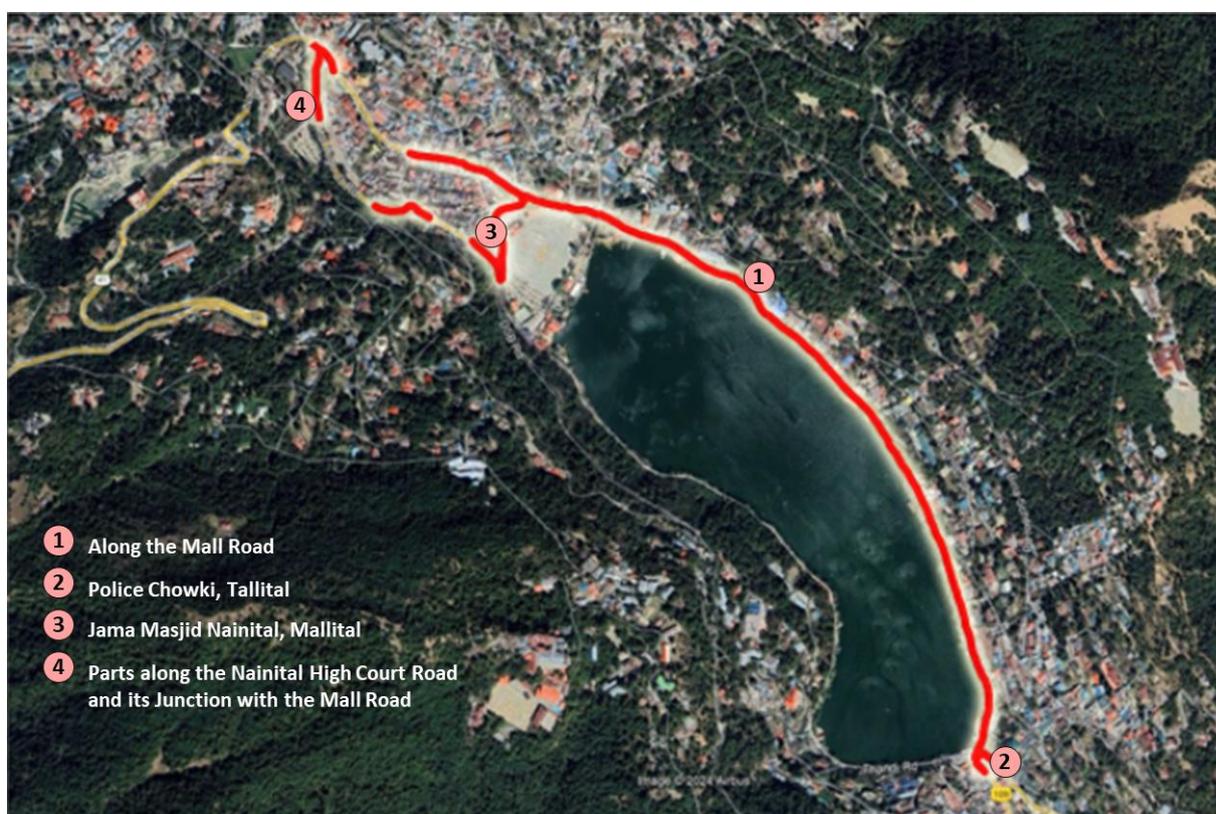
Ultimately, encouraging the tourists from the other parts of the State of Uttarakhand and from the adjacent States to use their own vehicles to visit Nainital Town.

- d. No Economically feasible options available for the daily floating population of the Town. The residents along with the daily floating population of Nainital Town prefers to use their personal vehicles to avoid paying surged taxi-prices or any discomfort while facing the daily traffic congestion.

As shown in Map 21, as tourist flock in the town, traffic congestion occurs at following four locations in the town:

01. The Mall Road Area
02. Police Chowki, Tallital
03. Jama Masjid Nainital, Mallital
04. Certain parts of the Nainital High Court Road.

Map 21: Location of Congestion Points in Nainital



Source: (SPA, New Delhi, 2024) primary survey

Lack of parking facilities in the Nainital High Court also adds on to the existing congestion on the Nainital High Court Road. Also, apart from this forest fires also plays a very vital role in disrupting the traffic flow of the Town.

### 8.1.2. Present Parking Situation in NPP, Nainital

As shown in Table 23, at present there are total 9 major existing parking areas in Nainital Town with total vehicle capacity of 1,000 vehicles. Out of these 8 are surface parking with total capacity of 880 vehicles while 1 is under construction multi-level parking (with 3 levels) with a carrying capacity of 120 vehicles respectively.

Table 23: Parking Situation of NPP, Nainital

Parking Situation in NPP, Nainital			
S.No.	Type of Parking	Parking Areas	Capacity (No. of Vehicles)
<b>Existing Off-Season Parking:</b>			
1	Surface Parking	<b>Metropole Parking Area:</b> One of the Main Parking Area in of the Town. Also being used as Dumping-cum-Transfer Ground for SWM in the Town.	120
2		<b>DSA Parking/Flat Parking</b> Located in Mallital near Naini Lake	210
3		<b>Ashoka Parking, Mallital</b>	80
4		<b>Sukhatal Parking, near Naina Range</b>	150
5		<b>NPP, Nainital Parking</b>	Up-to 20 Vehicles
6		<b>On-Road Parking</b> near B. D. Pandey Hospital	100
7		<b>On-Road Parking</b> near High Court Road Area	150
8		<b>Commercial Vehicle Parking/Taxi Parking:</b> Mall Road Toll Tax Parking Area or Taxi Union Parking. Taxi Union or Local Cabs Park their vehicles along the Mall Road Toll-Tax situated at the Mall Road Market Area.	50
9	Multi-Level Parking	<b>Under Construction: Multi-Level Parking (3-Levels)</b> on SH-41	120
<b>Total (a)</b>			<b>1,000</b>
<b>On-Season Private Vehicle Stopping Points/Additional Parking Areas Provided</b>			
A	Surface Parking	<b>Narayan Nagar Parking</b>	500
B		<b>Rusi By-Pass Bend:</b> Vehicles from entering to Nainital from Haldwani are parked here	1,500
C		<b>Sariyatal Neighbourhood Area at Rusi By-Pass:</b> Vehicles entering Nainital from Kaladhungi are parked here	1,500
<b>Total (b)</b>			<b>3,500</b>
<b>Proposed Additional Parking Area for Tourist Season/On-Season</b>			
i	Surface Parking	<b>Vehicles Entering to Nainital Via Bhowali</b>	500
<b>Total (c)</b>			<b>500</b>
<b>Total Existing Permanent Parking and Additional Parking Available during On-Season (t=a+b)</b>			<b>=1,000 + 3,500 =4,500</b>
<b>Total Existing Permanent Parking + Additional Parking Available during On-Season + Proposed Additional Parking for On-Season Grand Total (T=a+b+c)</b>			<b>=1,000 + 3,500 + 500 =5,000</b>

Source: (Traffic Police, Nainital, 2024), (Police Department Nainital, 2024), (Nagar Palika Parishad, Nainital, 2024), (Stakeholder Consultation Meeting, 2024)

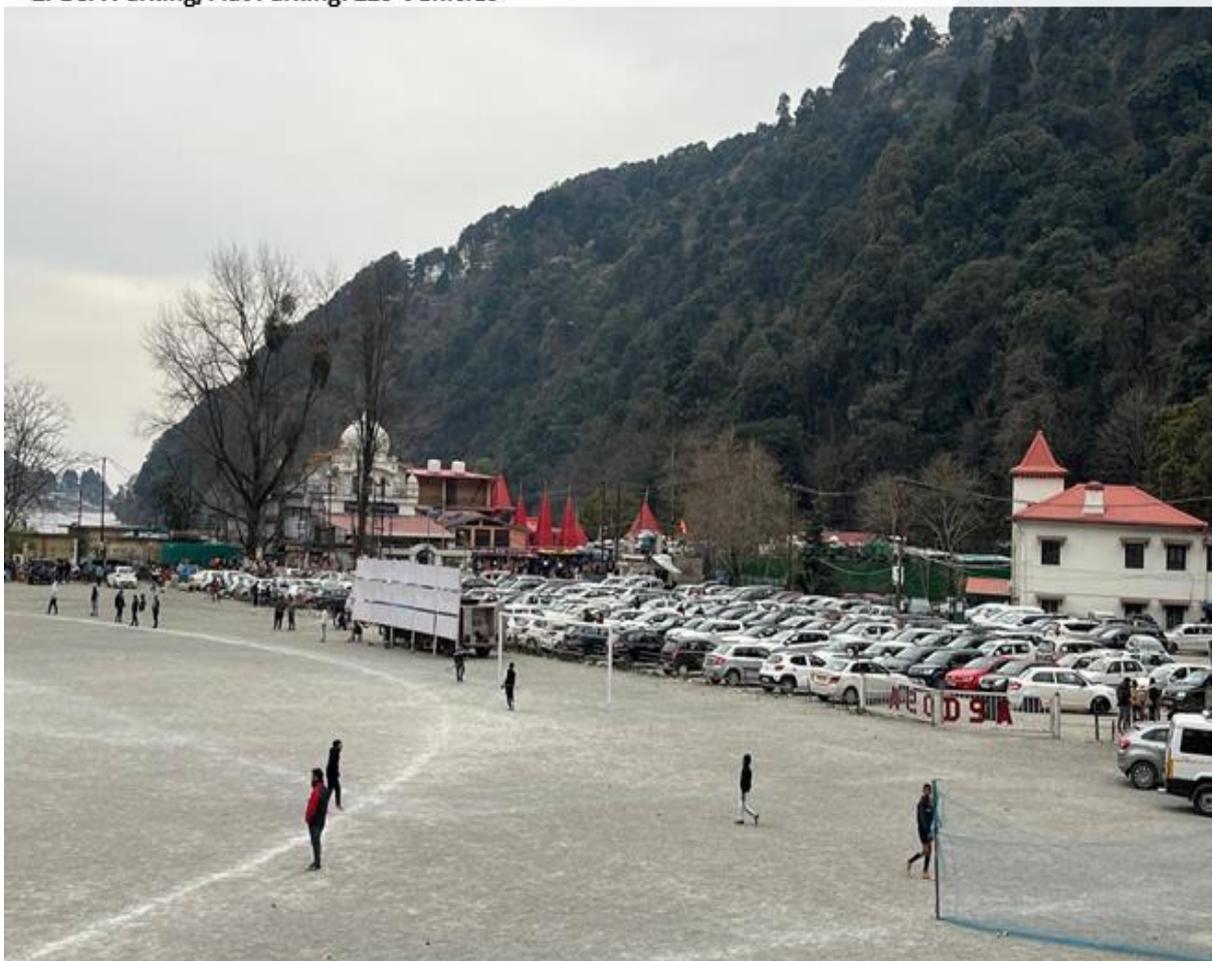


Image 13: Existing Parking Areas for Off Season Parking in Nainital Town/Permanent Parking Areas:

**1. Metropole Parking/Anda Parking: 120 Vehicles**



**2. DSA Parking/Flat Parking: 210 Vehicles**



3. Ashoka Parking, Mallital: 80 Vehicles



4. Sukhatal Parking Area, Near Naina Range: 150 Vehicles



**5. NPP, Parking: Up-to 20 Vehicles**



**6. On-Road Parking near B. D. Pandey Hospital: up-to 100 Vehicles**



**7. On-Road Parking near High Court Road Area: up-to 150 Vehicles**



**8. Commercial Vehicle Parking: Mall Road Toll Tax Parking Area or Taxi Union Parking: 50 Vehicles (Taxi)**



**9. Under Construction: Multi-Level Parking: 3-Levels, on SH-41: 120 Vehicles**



9. Under Construction: Multi-Level Parking: 3-Levels, on SH-41: 120 Vehicles



Source: (Google Images, 2024), (Google Maps, 2024), and (SPA, New Delhi, 2024) primary survey

The 8 surface level parking in the Town are Metropole Parking Area (also being used as dumping-cum-transfer ground for SWM in the Town) located on Ayarpatta, on Nainital High Court Road with 120 vehicle capacity, DSA Parking/Flat Parking located in Mallital near Naini Lake with 210 vehicle capacity, Ashoka Parking, Mallital with 80 vehicle capacity, Sukhatal Parking, near Naina Range with 150 vehicle capacity, NPP, Nainital Parking located near NPP, Nainital Office with up-to 20 vehicle capacity, On-Road Parking near B. D. Pandey Hospital with 100 vehicle capacity, On-Road Parking near High Court Road Area with 150 vehicle capacity and Mall Road Toll Tax Parking Area or Taxi Union Parking for commercial vehicles/taxi with 50 vehicle capacity. Apart from these there is 1 under construction multi-level parking with 3-levels is located on SH-41 with 120 vehicle capacity.

***b) Additional parking provided during On-Season/On-Season Private Vehicle Stopping Points:***

As shown in Table 24, according to the discussions with the officials met (as mentioned in Annexure C), there is limited parking in Nainital Town that gets easily exhausted during the peak tourist season. To avoid such situation into creating more traffic congestion in the Town, on the order of the High Court the NPP, Nainital in collaboration with the Police Department, Nainital (Mallital and Tallital) and Traffic Police Department, Nainital stops the private vehicles entering the Town at three different locations i.e. A) Narayan Nagar Parking Area, B) Rusi By-Pass Bend and C) Sariyatal Neighbourhood Area at Rusi By-Pass. An additional parking of 500 vehicle capacity, 1,500 vehicle capacity and 1,500 vehicle capacity is further provided on these respective locations i.e. Narayan Nagar Parking, Rusi By-Pass Bend and Saiyatal Neighbourhood Area at Rusi By-Pass for the tourists to park their vehicles.

Table 24: Tourist parking in Peak season

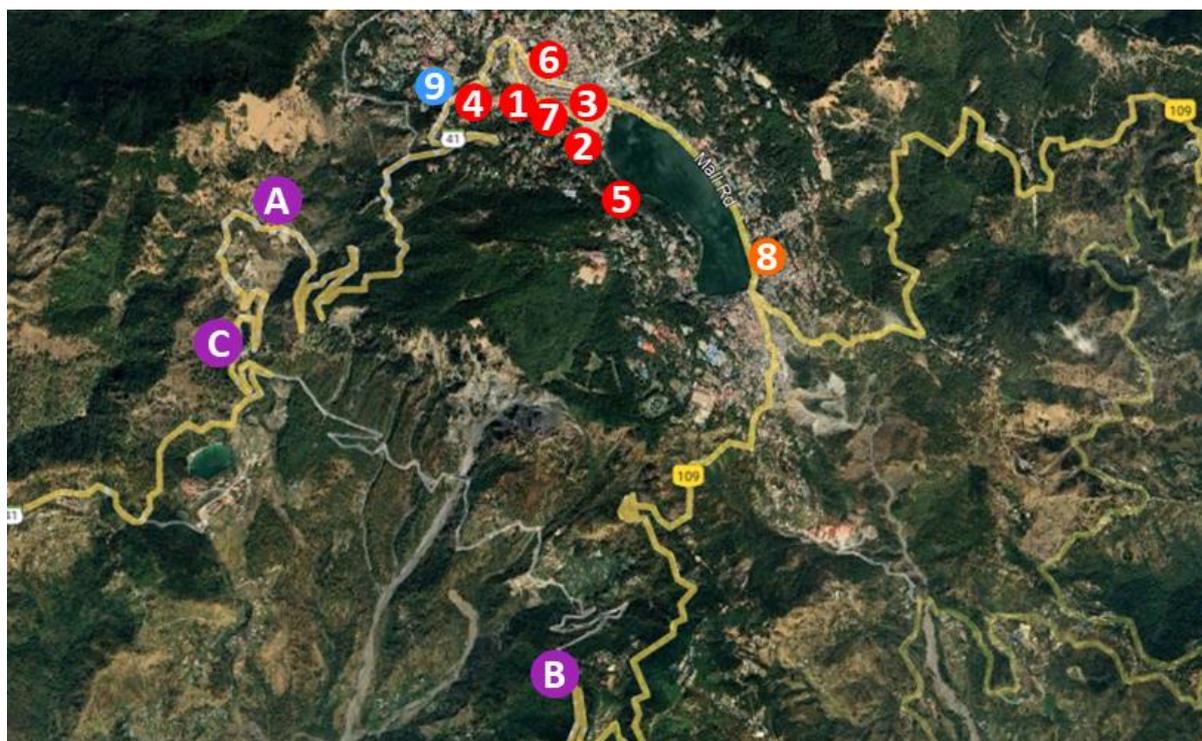
S.No.	Stopping Points/Additional Parking (Name and Location)	Vehicles Entering From	Distance from Nainital (in km)	Capacity (No. of Vehicles)
1.	<b>A) Narayan Nagar Parking,</b> Narayan Nagar, SH-41	<ul style="list-style-type: none"> <li>Other States of India like:               <ol style="list-style-type: none"> <li>Uttar Pradesh,</li> <li>Delhi,</li> <li>Rajasthan</li> <li>Haryana, Punjab etc.</li> </ol> </li> <li>Traffic diverted from Haldwani cum Kathgodam via Kaladhungi, Uttarakhand.</li> </ul>	Approximately 7.6 km	500
2.	<b>B) Rusi By-Pass Bend</b> Ranibagh-Nainital Road and Bareilly-Nainital Road, NH-109	<ul style="list-style-type: none"> <li>Other States of India like Uttar Pradesh and Delhi.</li> <li>Haldwani cum Kathgodam, Haldwani, Uttarakhand</li> </ul>	Approximately 9.2 km	1,500
3.	<b>C) Sariyatal Neighborhood Area at Rusi By-Pass</b> Near Sariyatal Lake, SH-41	<ul style="list-style-type: none"> <li>Other States of India like:               <ol style="list-style-type: none"> <li>Uttar Pradesh,</li> <li>Delhi,</li> <li>Rajasthan</li> <li>Haryana, Punjab etc.</li> </ol> </li> <li>Kaladhungi, Uttarakhand</li> </ul>	Approximately 8 km	1,500

Source: (Nagar Palika Parishad, Nainital, 2024), (Police Department Nainital, 2024), (Traffic Police, Nainital, 2024), (Stakeholder Consultation Meeting, 2024)

After parking their private vehicles at the respective three stopping-points/additional parking areas, the tourists are ferried from there to Nainital Town with the help of shuttle service provided by the ULBs. At present, in NPP, Nainital there are around 10 shuttle buses with 15-20 passenger capacity.

The Map 23 below shows the location of three stop parking locations for private vehicles during tourist season along with the existing off-season parking.

Map 23: Location Map of Present Parking and Stopping Points/Additional Parking Provided by the Authorities in NPP, Nainital during On-Season



**On-Season Private Vehicle Stopping Points/Additional Parking Areas:**

- A** Narayan Nagar Parking: 500 Vehicles
- B** Rusi By-Pass Bend: Vehicles from entering to Nainital from Haldwani are parked here
- C** Sariyatal Neighborhood Area at Rusi By-Pass: Vehicles entering Nainital from Kaladhungi are parked here

**Off-Season Parking:**

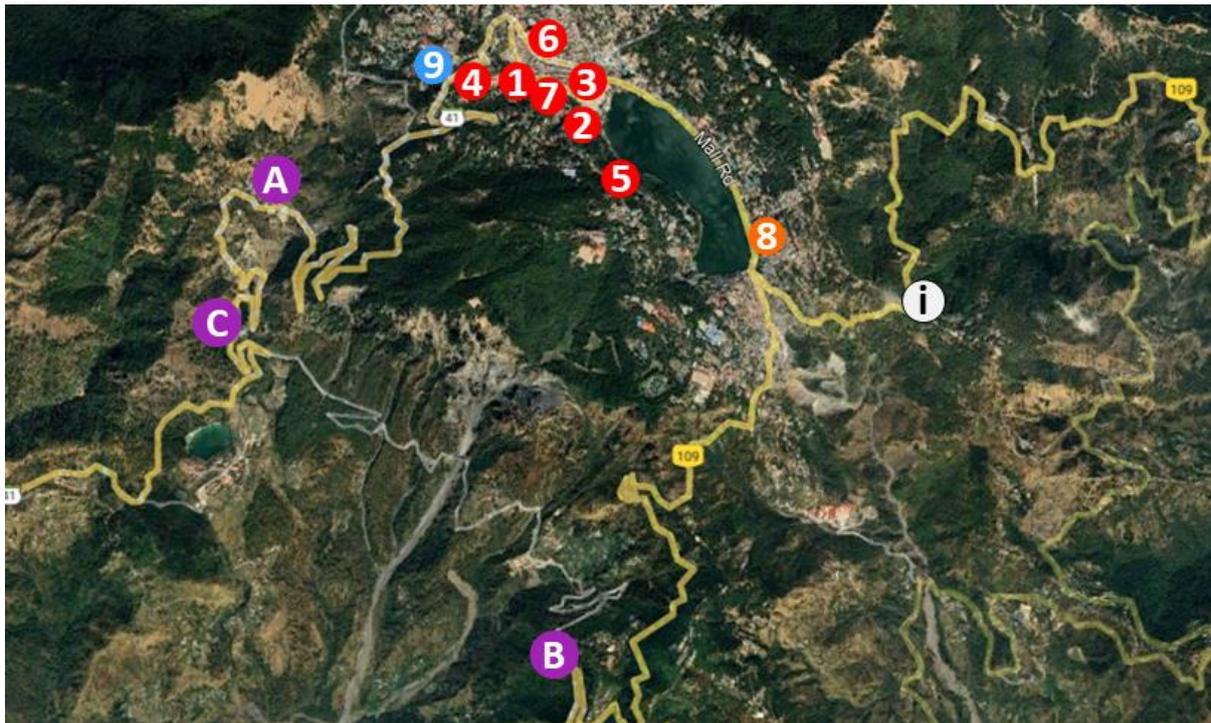
- 1** Metropole Parking/Anda Parking, Ayarpatta: 120 Vehicles
- 2** DSA Parking/Flat Parking, Mallital: 210 Vehicles
- 3** Ashoka Parking, Mallital: 80 Vehicles
- 4** Sukhatal Parking Area, Near Naina Range: 150 Vehicles
- 5** NPP, Nainital Parking: Up to 20 Vehicles
- 6** On-Road Parking near B. D. Pandey Hospital: up-to 100 Vehicles
- 7** On-Road Parking near High Court Road Area: up-to 150 Vehicles
- 8** Commercial Vehicle Parking: Mall Road Toll Tax Parking Area or Taxi Union Parking: 50 Vehicles (Taxi)
- 9** Under Construction: Multi-Level Parking: 3-Levels, on SH-41: 120 Vehicles

Source: (Nagar Palika Parishad, Nainital, 2024), (PWD, Nainital, 2024), (Tourism Department, Nainital, 2024), (Police Department Nainital, 2024), (Traffic Police, Nainital, 2024), (Stakeholder Consultation Meeting, 2024) (Google Maps, 2024), and (SPA, New Delhi, 2024) primary survey

**c) Proposed Additional Parking Area for Tourist Season/On-Season:**

As per the discussions with the officials met and the manage the (as mentioned in Annexure C), to manage the escalating parking demand during peak tourist season NPP, Nainital in collaboration with the Police Department, Nainital (Mallital and Tallital) and Traffic Police Department, Nainital has proposed another additional stopping point with additional parking for 500 vehicles for traffic entering to Nainital from Bhowali at NH-109, Nainital-Bhowali Road situated approximately 3.1 km away.

Map 24: Location Map of Proposed Additional Parking along with the Provided Additional Parking during On-Season and Present/Existing Parking in NPP, Nainital



**Proposed Additional Parking Area for On-Season :**

- ⓪ Vehicles Entering to Nainital Via Bhowali: 500 Vehicles

**On-Season Private Vehicle Stopping Points/Additional Parking Areas:**

- A** Narayan Nagar Parking: 500 Vehicles
- B** Rusi By-Pass Bend: Vehicles from entering to Nainital from Haldwani are parked here: **1,500 Vehicles**
- C** Sariyatal Neighbourhood Area at Rusi By-Pass: Vehicles entering Nainital from Kaladhungi are parked here: **1,500 Vehicles**

**Off-Season Parking:**

- 1** Metropole Parking/Anda Parking, Ayarpatta: **120 Vehicles**
- 2** DSA Parking/Flat Parking, Mallital: **210 Vehicles**
- 3** Ashoka Parking, Mallital: **80 Vehicles**
- 4** Sukhatal Parking Area, Near Naina Range: **150 Vehicles**
- 5** NPP, Nainital Parking: **Up to 20 Vehicles**
- 6** On-Road Parking near B. D. Pandey Hospital: **up-to 100 Vehicles**
- 7** On-Road Parking near High Court Road Area: **up-to 150 Vehicles**
- 8** Commercial Vehicle Parking: Mall Road Toll Tax Parking Area or Taxi Union Parking: **50 Vehicles (Taxi)**
- 9** Under Construction: Multi-Level Parking: 3-Levels, on SH-41: **120 Vehicles**

Source: (Nagar Palika Parishad, Nainital, 2024), (PWD, Nainital, 2024), (Police Department Nainital, 2024), (Traffic Police, Nainital, 2024), (Stakeholder Consultation Meeting, 2024) (Google Maps, 2024), and (SPA, New Delhi, 2024) primary survey

## 8.2. Present Government Policies for Urban Transportation and Parking in Nainital Town

At present for urban transport and parking there is no State Level or any other specific policy being implemented in NPP, Nainital.

## 8.3. Challenges Faced

The Table 25 below highlights the issues/challenges identified along with the inferences for urban transport and parking in NPP, Nainital.

Table 25: Issues/Challenges Identified for Urban Transport and Parking in NPP, Nainital

S.No.	Issues/Challenges	Inferences
01.	 <b>Limited Road Infrastructure</b>	<ul style="list-style-type: none"> <li>The Town accommodates one SH-41 and one NH-109 along with 142.022 km length of internal road network.</li> <li>There is <b>no hierarchy of roads present in Nainital Town due to geographical constraints and difficulty in maintenance of the infrastructure.</b></li> <li><b>None of these roads have</b> proper road geometry, proper signages and traffic signals, appropriate number of street lights, guard rails, side protection barrier, road reflectors, road markings, appropriate turning radius, etc. for easy and safer flow of traffic and pedestrian movement. Thus, making these roads even <b>more dangerous during the rainy season.</b></li> </ul>
	 <b>Infrastructure Maintenance</b>	<ul style="list-style-type: none"> <li>Maintaining the existing road infrastructure in hilly terrain like Nainital can be challenging and costly.</li> <li>Landslides, road erosion, forest fires and other natural factors frequently disrupt transportation routes, leading to temporary closures and detours, further complicating travel plans for locals and tourists alike.</li> </ul>
02.	 <b>Lack of Public Transport Options</b>	<ul style="list-style-type: none"> <li><b>Nainital Town lacks a reliable and efficient public transportation system</b> because of the following reasons: <ul style="list-style-type: none"> <li><b>Lack of Intermediate Public Transport (IPT) facility in the Town:</b> Only e-rickshaws are available for trips along the mall-road in the Town.</li> <li><b>Huge discrepancy in the rates of fare charged by the taxi owners or taxi union:</b> as the fare of the taxis is not fixed by the ULBs and is charged as per the taxi owner or by the taxi union of the Town. It leads to discrepancy in the fare charged from the user and has huge variations in them. Ultimately, encouraging the tourists from the other parts of the State of Uttarakhand and from the adjacent States to use their own vehicles to visit Nainital Town.</li> <li><b>No Economically feasible options available for the</b></li> </ul> </li> </ul>

			<p><b>daily floating population</b> of the Town. The residents along with the daily floating population of Nainital Town prefers to use their personal vehicles to avoid paying surged taxi-prices or any discomfort while facing the daily traffic congestion.</p> <ul style="list-style-type: none"> <li>While taxis and e-rickshaws are available, they are not sufficient to cater to the needs of the growing tourist population. Thus, creating more reliance on private vehicles among the tourists and exacerbating congestion and parking issues.</li> </ul>
03.		<b>Seasonal Variation in Traffic</b>	<ul style="list-style-type: none"> <li>Nainital experiences a significant influx of tourists during the six months of tourist season i.e. April, May, June, July, December and January. Especially in the month of June with maximum number of up-to 12,000 tourists per day (in the past). This sudden surge in visitors overwhelms the existing transport and parking infrastructure, resulting in chaotic traffic conditions and inadequate parking facilities.</li> </ul>
04.		<b>Traffic Congestion</b>	<ul style="list-style-type: none"> <li>Nainital has narrow and winding roads due to its hilly terrain. This makes traffic congestion a common issue, especially during peak tourist seasons. The limited road capacity exacerbates the problem, leading to traffic jams and delays.</li> <li>Although, buses are completely prohibited to enter inside the Town due to limited road widths and to manage the traffic congestion for free flow of traffic inside the Town. The Town still faces extreme traffic congestion due to increased number of personal vehicles entering the Town during peak tourist season, especially in the month of June.</li> <li>As tourist flock in the town, traffic congestion occurs at following four locations in the town: <ol style="list-style-type: none"> <li>The Mall Road Area</li> <li>Police Chowki, Tallital</li> <li>Jama Masjid Nainital, Mallital</li> <li>Certain parts of the Nainital High Court Road.</li> </ol> </li> <li>Lack of parking facilities in the Nainital High Court also adds on to the existing congestion on the Nainital High Court Road.</li> </ul>
05.		<b>Parking Shortage</b>	<ul style="list-style-type: none"> <li>The Supreme Court of India on March 1995 has ordered a complete ban on new construction of multi-storeyed group housing and commercial complexes in the Town. While building of small residential houses on flat areas could be permitted. This has resulted in limiting the growth of geographical area of the Town and <b>restricted</b></li> </ul>

			<p><b>construction of new structures</b> in the Town.</p> <ul style="list-style-type: none"> <li>• <b>At present, in NPP, Nainital Construction of:</b> <ol style="list-style-type: none"> <li><b>Light structure model for parking is allowed.</b></li> <li><b>Single storey parking is allowed.</b></li> <li><b>Multi-Level parking is not allowed.</b></li> </ol> </li> <li>• The town suffers from a severe shortage of parking spaces, particularly in the main tourist areas.</li> </ul> <p>As a result, visitors often struggle to find parking spots, leading to haphazard parking on roadsides, which further congests traffic flow and poses safety hazards.</p>
06.		<b>Regulatory Issues</b>	<ul style="list-style-type: none"> <li>• Inadequate enforcement of parking regulations and traffic rules exacerbates the transport and parking problems in Nainital.</li> <li>• Illegal parking, encroachments on roadsides, and lack of designated parking zones contribute to the chaos on the streets</li> </ul>
07.		<b>Environmental Concerns</b>	<ul style="list-style-type: none"> <li>• The increasing number of vehicles in Nainital Town contributes to traffic congestion along with air and noise pollution.</li> <li>• This will have detrimental effects on the local environment and public health.</li> </ul>

#### 8.4. Possible Solutions

A Stakeholder Consultation Meeting was held on 25<sup>th</sup> April 2024 with NPP, Nainital. Based on the feedback provided by the official's possible solutions and suggested projects for improvement are proposed for Nainital Town in the Table 26 below.

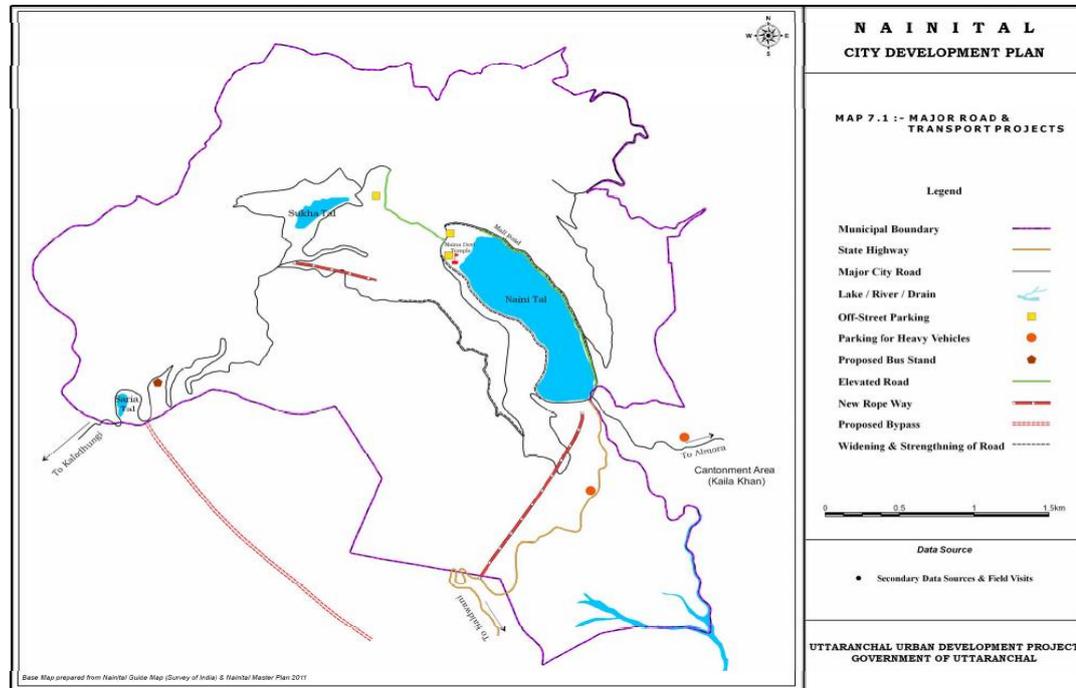
Table 26: Possible solutions/Suggested Projects for Urban Transport and Parking in Nainital Town

S.No.	Possible Solutions/Suggested Projects
<b>01.</b>	<b>Limited Road Infrastructure and Infrastructure Maintenance</b>
	<p><b>The</b> (City Development Plan: Nainital Revised under Jawaharlal Nehru National Urban Renewal Mission (JNNURM), 2007) <b>has proposed the following:</b></p> <p>a) <b>New roads are proposed:</b> covering Nallah no. 23 from Flats (near masjid) up-to Telephone Exchange junction.</p> <p>b) <b>Elevated Road:</b> elevated 2-lane road with footpath parallel to lower Mall and by passing the existing structure through Lake.</p> <p><b>The above may be implemented. Further alongwith this it is proposed that:</b></p> <p>a) <b>The NPP, Nainital should undertake the following:</b></p> <ol style="list-style-type: none"> <li>i. <b>Re-design</b> the complete road geometry of Nainital Town and <b>install appropriate number of</b> proper signages, traffic signals, street lights, guard rails, side protection barrier, road reflectors, road markings, turning radius, etc. For easy and safer flow of traffic and pedestrian movement.</li> <li>ii. <b>Develop and maintain</b> non-motorized transport pathways to encourage pedestrian movement.</li> <li>iii. <b>Prepare a Risk Assessment and Planning Report based on:</b> <ul style="list-style-type: none"> <li>✓ <b>Geological Survey:</b> to identify landslide-prone areas and assess soil stability and construct retaining walls, rock bolts and gabions to stabilize slopes.</li> <li>✓ <b>Seismic Hazard Mapping:</b> to evaluate seismic risks and identify vulnerable road sections and retrofit existing road structures to withstand earthquakes.</li> <li>✓ <b>Fire Risk Analysis:</b> to identify areas susceptible to forest fires, focusing on sensitive road segments and create firebreaks along roads near forest areas.</li> </ul> </li> <li>iv. <b>Install Integrate Seismic Sensor</b> to detect soil movement and signs of potential landslides and provide early warning signs of earthquakes.</li> <li>v. <b>Install infrared cameras and satellite monitoring</b> for early detection of forest fires.</li> </ol> <p>b) The NPP, Nainital in collaboration with the Police Department, Nainital and the Traffic Police Department, Nainital <b>should regularly inspect and maintain these road structures.</b></p>
<b>02.</b>	<b>Lack of Public Transport</b>
	<p><b>The</b> (City Development Plan: Nainital Revised under Jawaharlal Nehru National Urban Renewal Mission (JNNURM), 2007) <b>has proposed the following:</b></p> <p>a) <b>Bus Stand:</b> can be located on Kaladhungi Road near Char Khet Village. location will be appropriate as proposed by-pass joining Haldwani Road and Kaladhungi Road will</p>

be about 2-3 kms from Proposed Bus Stand.

- b) **New Ropeways:** proposed at Harinagar–Hanumangarhi–Tallital; Kilburg–Barapathar–Tiffin Top. Along with this a circular Ropeway surrounding the lake at an elevated level connecting zoo, tiffin top etc. as shown in Map 25 below.

Map 25: Major Road and Transportation Projects Proposed in Nainital as per the City Development Plan: Nainital



Source: (City Development Plan: Nainital Revised under Jawaharlal Nehru National Urban Renewal Mission (JNNURM), 2007)

- c) **Intermediate Public Transport:** introducing low pollution light good vehicles for intra city movement and good vehicles for inter-city movement e.g. between Bhowali, Bhimtal, Sattal, Nakuchiatl and Nainital etc.

**The above may be implemented. Further alongwith this it is proposed that:**

- a) **The NPP, Nainital** should decrease the reliance on private vehicles through enhancing the Public Transportation in Nainital Town by:
  - i. **Developing efficient Intermediate Public Transport (IPT) Solutions** like mini-buses with fixed routes covering key areas including popular tourist areas, residential areas and commercial zones.
  - ii. **Developing Multi-Modal Integration:** Integrate different modes of transport (e.g., buses, shuttles, taxis) to offer seamless travel experiences for tourists
  - iii. **Standardizing and regulating taxi fare:** Establish a standardized fare structure for taxis, including base fares and per-km charges and **install a digital fare meter system in all the registered taxi and develop a mobile app for fare payment and complaints** to ensure transparent and consistent fare.
  - iv. **Forming a regulatory body in collaboration with the Traffic Police Department, Nainital** to supervise fare regulation, monitor compliance and address disputes.

	<p>v. <b>Introducing Subsidized Passes</b> on monthly or weekly basis for frequent travelers including residents and the daily floating population.</p> <p>b) <b>The NPP, Nainital</b> should launch <b>Public Awareness campaigns</b> to inform residents and tourists about the New Fare Regulations and Digital System.</p> <p>c) <b>The NPP, Nainital</b> should work with local businesses and tourist attractions to offer discounts and incentives for pass holders to encourage public transport in the Town.</p>
<b>03.</b>	<b>Seasonal Variation in Traffic</b>
	<p><b><u>It is proposed that:</u></b></p> <p>a) <b>The NPP, Nainital</b> should undertake the following:</p> <ol style="list-style-type: none"> <li><b>Develop a regional tourism plan</b> to alleviate transport and parking issues in tourist areas like Nainital <b>by diverting the tourist population to lesser-known nearby destinations</b>. By promoting alternative tourist spots around Nainital, such as <b>Bhimal or Mukteshwar</b>, the influx of visitor to Nainital town can be <b>reduced, distributing the traffic load more evenly across the region</b>. This alleviates congestion, reduces the strain on parking facilities and minimizes overcrowding in peak areas.</li> <li><b>Introduce</b> dedicated tourist buses for sightseeing to reduce the number of private vehicles in town.</li> <li><b>Offer Tourist Passes</b> that provide unlimited access to public transport within a specified duration, to reduce the use of private vehicles in the Town.</li> <li><b>Identify and develop Park-and-Ride facilities</b> with affordable parking and integrated shuttle services with adequate security and amenities like toilet facilities to address the sudden surge in tourists during tourist season especially for the peak tourist season i.e. for the month of June.</li> <li><b>Promote public transport</b> usage through campaigns, incentives, and improved service reliability, to reduce the number of private vehicles entering the Town during the tourist season.</li> <li><b>Coordinate between different transport service providers</b> to ensure smooth integration and scheduling of traffic in the Town.</li> </ol>
<b>04.</b>	<b>Traffic Congestion</b>
	<p><b><u>The</u></b> (City Development Plan: Nainital Revised under Jawaharlal Nehru National Urban Renewal Mission (JNNURM), 2007) <b>has proposed the following:</b></p> <p>a) <b>One - Way, Clockwise Traffic Movement</b> by creating a loop starting from Municipal Council Junction, Masjid, Metropole Hotel, Telephone Exchange, State Guest House (Nainital Club), Mohan Co., B D Pandey Hospital and back to Municipal Council Junction as one-way in the clockwise direction. To remove the congestion near these areas.</p> <p>b) <b>Traffic Restrictions on the Mall Road Area</b> by 'No Vehicle' Period on Mall Road, 2 – Way Rickshaw movement may be allowed on lower Mall Road.</p> <p><b><u>The above may be implemented. Further alongwith this it is proposed that:</u></b></p> <p>a) <b>The NPP, Nainital in collaboration with the Police Department and Traffic Police Department</b> should undertake the following:</p> <ol style="list-style-type: none"> <li>At the entry of the Mall Road, an <b>online camera system or any such advanced digital system should be installed</b> so as to correctly capture the number of incoming and outgoing vehicles so as to enable better management.</li> <li><b>Conduct detailed traffic studies and create a digital database on a daily basis to</b></li> </ol>

	<p>identify maximum number of vehicles the Town can accommodate <b>and limit the number of vehicles</b> entering the Town accordingly.</p> <ul style="list-style-type: none"> <li>iii. <b>Conduct Traffic Surveys</b> to identify the peak traffic hours for all the four critical congestion areas i.e. The Mall Road Area, Police Chowki, Tallital, Jama Masjid Nainital, Mallital and certain parts of the Nainital High Court Road and then further <b>create Traffic Diversion Plans</b> to implement traffic diversions during those peak traffic hours to eliminate traffic congestion.</li> <li>iv. <b>Identify and establish one-way traffic systems</b> in areas with bottleneck situations during traffic hours (like the one being used at Mall-Road at present) to streamline traffic movement.</li> <li>v. <b>Introduce Time-Based Restrictions on vehicular entry</b> in the Town to regulate traffic flow during peak hours.</li> <li>vi. <b>Create a Rapid Response Unit:</b> to establish dedicated teams for identification of areas with extreme traffic congestion and monitor free flow of traffic through regular patrolling on them and penalizing the defaulters entering wrong lane.</li> </ul>
<p><b>05.</b></p>	<p><b>Parking Shortage</b></p>
	<p><b><u>It is proposed that:</u></b></p> <ul style="list-style-type: none"> <li>a) <b>The NPP, Nainital in collaboration with the Police Department and Traffic Police Department should undertake the following:</b> <ul style="list-style-type: none"> <li>i. <b>Install single stack automated car parking wherever required in parking areas which are flat.</b> This can also be done on the parking areas provided by the authorities during tourist season i.e. Narayan Nagar, Rusi-By Pass Bend and Sariyatal Neighbourhood Area at Rusi By-Pass. This will help to increase the existing parking capacity from 500 to 1,000 in Narayan Nagar Area and from 1,500 to 3,000 in Rusi By-Pass Bend and Sariyatal Neighbourhood Area at Rusi By-Pass respectively.</li> </ul> <p>Image 14: Image of an example of Single Stack Automated Car Parking</p>  <p style="text-align: right;"><i>Source: (Google Images, 2024)</i></p> </li> <li>ii. <b>Enforce parking restrictions in critical areas</b> like High Court Road and B.D. Pandey Hospital.</li> </ul>

	<ul style="list-style-type: none"> <li>iii. <b>Identify and develop</b> suitable locations for constructing light structure models for additional parking infrastructure on the outskirts of the Town for peak tourist season with appropriate drinking water and toilet amenities.</li> <li>iv. <b>Implement Digital Parking/Smart Parking System</b> to provide real-time information on parking availability.</li> <li>v. All the hotel booking websites should be connected to a <b>digital/portal/electronic system</b> wherein along with the hotel room booking, the parking slots can also be booked and paid for this will enable better parking management.</li> <li>vi. <b>Acquire and deploy</b> a fleet of shuttle buses to provide regular, economical and reliable service during the tourist season from the peripheral parking to Nainital Town.</li> </ul> <ul style="list-style-type: none"> <li>b) <b>The NPP, Nainital under PPP Module</b> should collaborate with private entities for funding and managing parking facilities.</li> <li>c) <b>The NPP, Nainital should promote</b> peripheral parking and shuttle services through signage and information campaigns.</li> <li>d) <b>Surge pricing should be introduced for parking by the NPP, Nainital.</b></li> </ul>
<b>06</b>	<b>Regulatory Issues</b>
	<p><b><u>The</u></b> (City Development Plan: Nainital Revised under Jawaharlal Nehru National Urban Renewal Mission (JNNURM), 2007) <b><u>has proposed the following:</u></b></p> <ul style="list-style-type: none"> <li>a) Independent consultants (to conduct study for 5 years).</li> <li>b) Development traffic education modules.</li> <li>c) Development of traffic Training Park.</li> <li>d) Traffic education programme for 10 years.</li> <li>e) Mall Road to be declared as Zero Tolerance Zone.</li> <li>f) Parking Restrictions to be strictly enforced with increased police patrol.</li> <li>g) All roads to be cleared of encroachments. No fresh encroachments – even minor ones such as encroaching upon drain/ footpaths to be allowed.</li> <li>h) No overtaking to be allowed on Mall Road.</li> <li>i) Rickshaws to be heavily challaned for overtaking and moving outside designated rickshaw lane.</li> <li>j) Creation of a special traffic cell from local agencies to monitor and implement traffic control and road development measures.</li> <li>k) Innovative and more comfortable rickshaw design to be explored.</li> </ul> <p><b><u>The above may be implemented. Further alongwith this it is proposed that:</u></b></p> <ul style="list-style-type: none"> <li>a) <b>The NPP, Nainital</b> should conduct regular inspections and periodic reviews of public transport systems and infrastructure.</li> <li>b) <b>The NPP, Nainital in collaboration with the Police Department and Traffic Police Department should undertake the following:</b> <ul style="list-style-type: none"> <li>i. Deploy dedicated parking enforcement teams to <b>conduct regular patrols and</b></li> </ul> </li> </ul>

	<p><b>issue fines.</b></p> <ul style="list-style-type: none"> <li>ii. <b>Use Digital Systems</b> to collect and analyze data on transport usage and performance.</li> <li>iii. <b>Acquire and install automated ticketing and surveillance systems.</b></li> <li>iv. <b>Integrate surveillance footage with enforcement actions</b> and traffic management systems.</li> <li>v. <b>Develop and launch</b> a mobile app with user-friendly features for reporting violations.</li> <li>vi. <b>Implement strict enforcement of speed limits through patrols and automated systems.</b></li> </ul> <p>c) <b>The NPP, Nainital in collaboration with local NGOs, SHGs, Government Institutes and other willing volunteers should gather Public Feedback</b> from Local Residents and Tourists to assess satisfaction and identify areas for improvement.</p>
<b>07.</b>	<b>Environmental Concerns</b>
	<p><b><u>It is proposed that:</u></b></p> <p>a) <b>The NPP, Nainital should undertake the following:</b></p> <ul style="list-style-type: none"> <li>i. <b>Encourage Electric Vehicle (EV) Adoption</b> by providing incentives and infrastructure support as per the area feasibility.</li> <li>ii. <b>Identify and Designate Low-Emission Zones</b> in the Town where only EVs and low-emission vehicles are allowed.</li> <li>iii. <b>Offer Subsidies or Tax Incentives</b> for the purchase and use of EVs and hybrid vehicles to the local residents.</li> <li>iv. <b>Install EV charging stations at key locations</b>, including public parking areas and tourist spots.</li> <li>v. <b>Develop policies and incentives for EV adoption</b>, including reduced parking fees and tax benefits.</li> <li>vi. <b>Set up emission testing centers</b> and create a compliance monitoring system.</li> <li>vii. <b>Develop and enforce</b> policies for noise control, including fines for non-compliance.</li> <li>viii. <b>Provide incentives</b> for residents and tourists who participate in pollution reduction activities, such as using public transport or EVs.</li> <li>ix. Implement eco-friendly shuttle services connecting peripheral parking areas to the Town.</li> </ul> <p>b) <b>NPP, Nainital in collaboration with local NGOs, SHGs, Government Institutes and other willing volunteers to undertake the following:</b></p> <ul style="list-style-type: none"> <li>i. Conducting Campaigns to educate local residents about the benefits of switching to electric and low-emission vehicles and the impacts of air and noise pollution and to promote eco-friendly practices.</li> <li>ii. Engaging the community through programs that encourage carpooling, walking, and cycling.</li> </ul>

# Chapter 9.

## Water Availability and Supply

## Chapter 9. Water Availability and Supply in Nainital Town

### 9.1. System Infrastructure

As shown in the Image 15 below, Nainital Town is in a valley situated around a kidney shaped lake known as “Naini Lake”. Naini Lake as per the Hindu scripture “Skand Puran” was known as “Tririshi Sarovar” and holds an important significance of being one of the “64 Shakti Peeths”.

As per the (Uttarakhand State Council for Science & Technology (UCOST), 2017) Naini Lake is a natural lake surrounded by seven hills named as Ayarpata (2,235 m), Deopata (2,273 m), Handi Bandi (2,139 m), Cheena Peak (2,611 m), Alma (2,270 m), Laria Kanta (2,481 m) and Sher-k-Dand (2,217 m) and is one of the major tourist attraction points of Nainital Town. this natural lake is situated near the border of the Sub-Himalayan Zone, restricted to a narrow belt of 5 km to the north of the Krol thrust comprising slates, marls, sandstones, limestones and dolomites with a few small intrusive dykes. It is located approximately 1,937 m above the sea level, the lake is 1.43 km long and 0.45 km wide and has 27.3 m of depth.

Image 15: Image of Nainital Town situated along Naini Lake



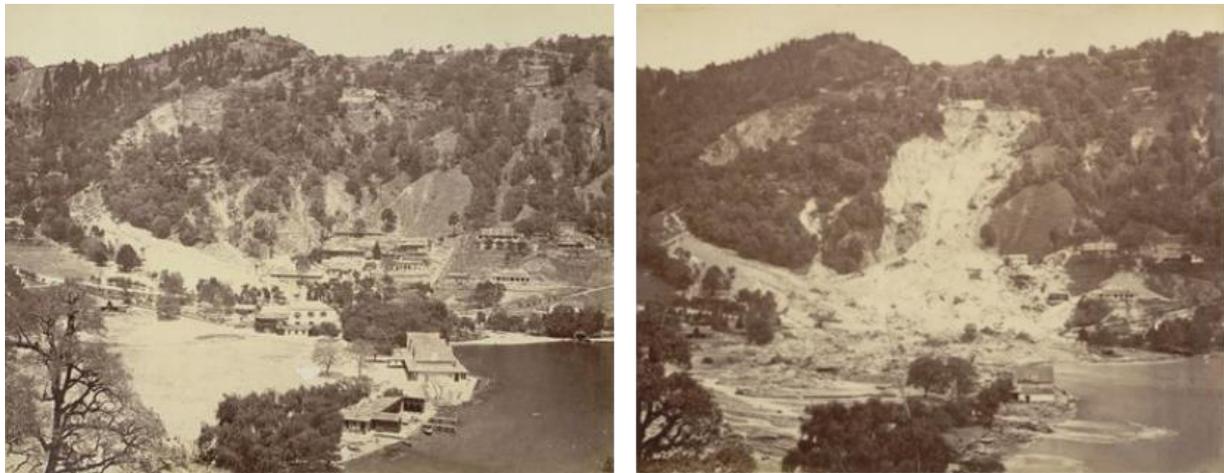
Source: (Uttarakhand State Council for Science & Technology (UCOST), 2017)

As per the (Uttarakhand State Council for Science & Technology (UCOST), 2017), the main outlet of the Naini Lake is situated at the Ballia Nala that flows towards the south-east direction and steep Naina peak on the North-West direction. The slopes around Naini Lake have been and are highly vulnerable to landslides and mass movement.

Landslides, subsidence and soil erosion is very common in Nainital Town particularly at the periphery of Naini Lake due to several factors like geological movements, structure, lithology, water seepage,

soil cover, vegetation cover, weather, climate change and deposition of silt in and around the Naini Lake. As per the (Government of Uttarakhand, 2018) in 1880 Nainital Town was hit by shocking landslide that had a causality of 151 people. The Image 16 below shows the before and after condition of Naini Lake after the landslide of 1880.

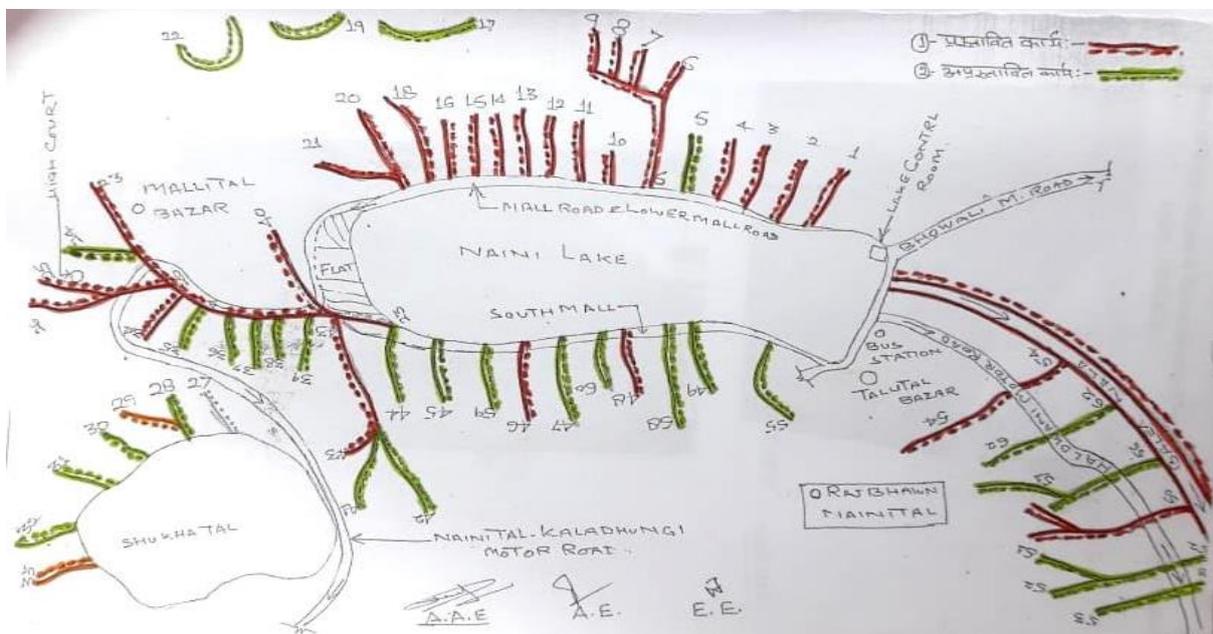
Image 16: Image of Naini Lake before and after the landslide of 1880



Source: (Government of Uttarakhand, 2018)

It was because of this event that proper storm water drainage system was built in Nainital along with the implementation of strict building bye-laws. Figure 21 below shows the storm water drainage network created to prevent any future hazards in the Town.

Figure 21: Stormwater Drains Network of Nainital Town



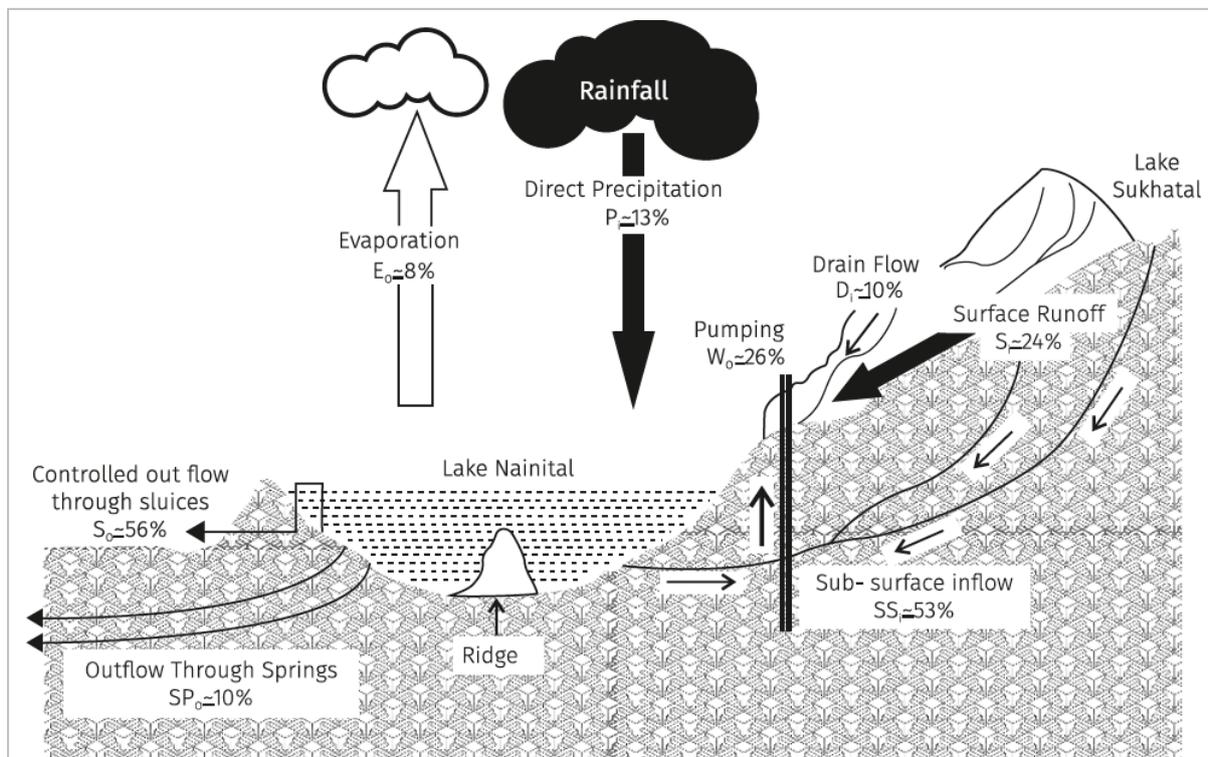
Source: Mr. Ashok Kumar Verma, Former Executive Engineer, NPP, Nainital

Naini Lake functions as a catchment area, collecting water from its surrounding geographical region and channelling it into the lake. Naini Lake is replenished through features such as hillside slopes, natural spring water, natural rainfall, surface runoff, stormwater drains, during monsoon season the

subsurface inflow through Sukhatal Lake (the underground leaching of water leads to minimizing the volume of water flowing towards the Naini Lake) and sediment traps.

As shown in Figure 22, according to the scientific report by the (Uttarakhand State Council for Science & Technology (UCOST), 2017) in Naini Lake has folds and fractures that move the ground water towards these areas. The main ways water enters and exit the lake are through these underground channels (inflow) and natural springs (outflow), with some water being pumped out by tubewells. Rain and streams contribute a smaller amount of water directly to the lake surface. Evaporation losses of the lake are small components flowing through direct precipitation and drains. The amount of water lost through evaporation is balanced by the outflow through springs, creating a natural water cycle.

Figure 22: Water Balance Factor of Naini Lake as per the scientific report by UCOST



Source: (Uttarakhand State Council for Science & Technology (UCOST), 2017)

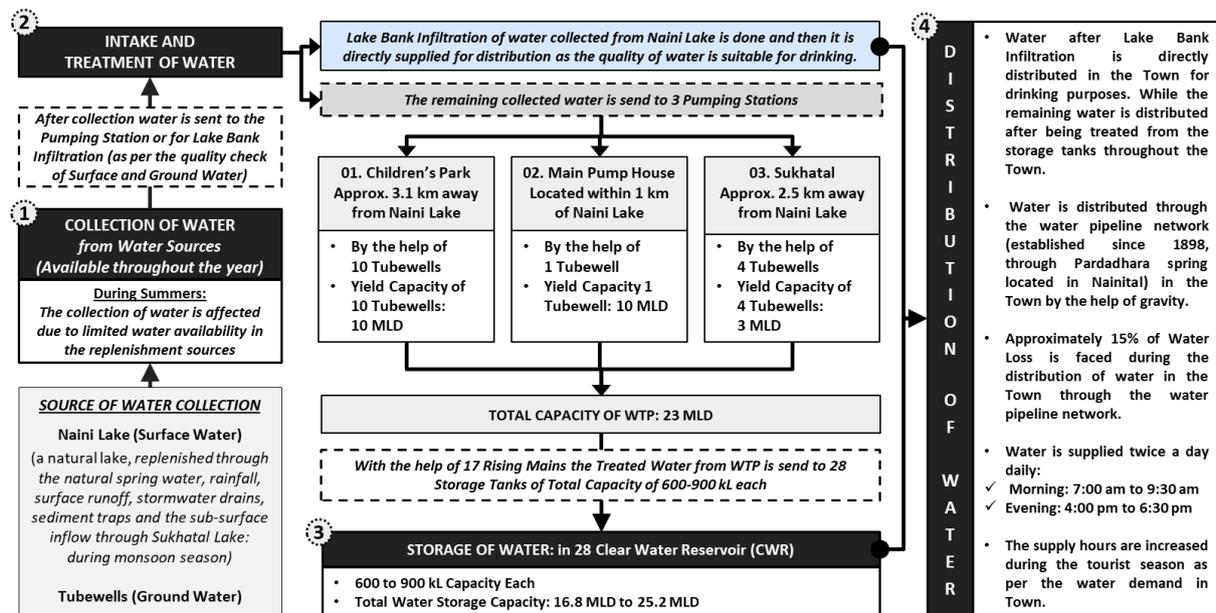
Uttarakhand Jal Sansthan (UJS), Nainital and Pey Jal Nigam Uttarakhand (PJNU), Nainital collectively handle the water supply and construction of water distribution network in the Town as per the demand of water in NPP, Nainital. UJS, Nainital supplies water in the Town while PJNU, Nainital is in-charge of for the construction and maintenance of the water distribution network pipeline for NPP, Nainital.

As per the (City Development Plan: Nainital Revised under Jawaharlal Nehru National Urban Renewal Mission (JNNURM), 2007), it was in 1898 that piped water was introduced in the Town through Pardadhara spring located in Nainital Town and gravity flow system was the original method of distribution of water in the Town. Gradually, tubewells, borewells and infiltration wells were installed near the “Flats” areas, along the periphery of Naini Lake and at present piped water supply system is the main source of water in the Town.

9.1.1. Process of water supply in Nainital Town

Figure 23 below depicts the flowchart of the process of water supply system in Nainital Town. The process can broadly be divided into four steps namely step-01: collection of water, step-02: intake and treatment of water, step-03: storage of treated water and step-04: distribution of water.

Figure 23: Flowchart of Process of Water Supply System in NPP, Nainital



Source: (SPA, New Delhi, 2024) based on data provided by (Uttarakhand Jal Sansthan, Nainital, 2024), (Pey Jal Nigam Uttarakhand, Nainital, 2024)

a) Step-01: Collection of Water

The main source of water in the town is Naini Lake i.e. ground water. Further tubewells have been installed in different locations near the lake by the authorities for collection of water. This natural source of water is available throughout the year and faces extreme pressure during the tourist season (i.e. May, June, July, August, December and January), especially in the month of June. During summers the collection of water from these sources is affected due to limited amount of water availability in the replenishment sources.

b) Step-02: Intake and Treatment of Water

The water collected is tested for drinking water quality check. The water matching closest to the water quality check as per the standard norms set by the authorities is sent for Lake Bank Infiltration.

While the remaining water is sent for treatment to the 3 Pumping Stations and Water Treatment Plants (WTPs) (by the help of 15 tubewells) located at Children's Park (by the help of 10 tubewells), Main Pump House (by the help of 1 tubewell) and Sukhatal (by the help of 4 tubewells), situated at a distance of 30.1 km, 1 km and 2.5 km from Naini Lake.

The yield capacity of 10 tubewells at the Children's Park is 10 MLD, 1 Tubewell at the Main Pump House is 10 MLD and 4 Tubewells at the Sukhatal is 3 MLD respectively. The total capacity of the WTPs is 23 MLD.

The Map 26 below, shows the existing location of the Pumping Stations from Naini Lake in Nainital Town.

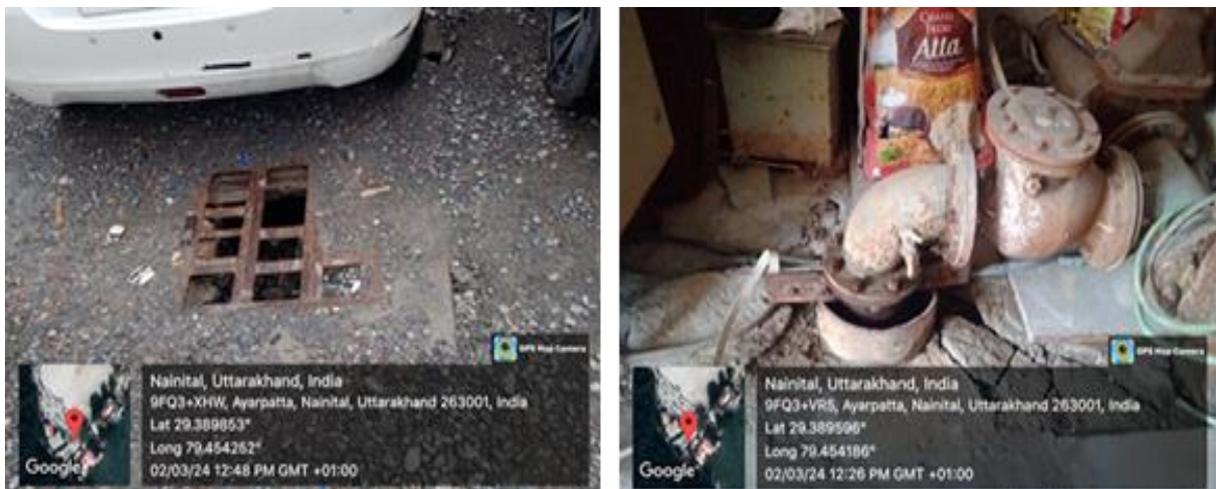
Map 26: Location Map of Pumping Station in Nainital Town

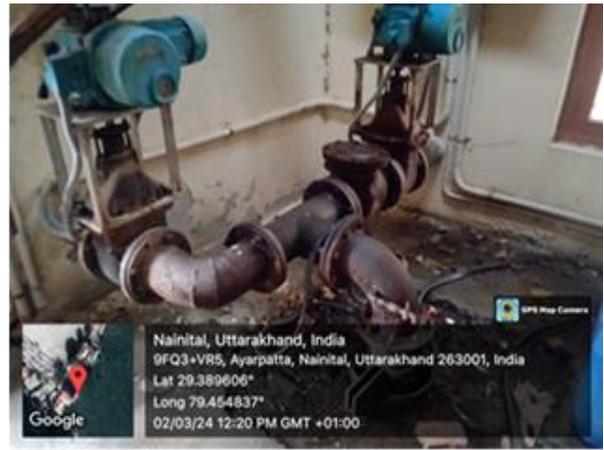


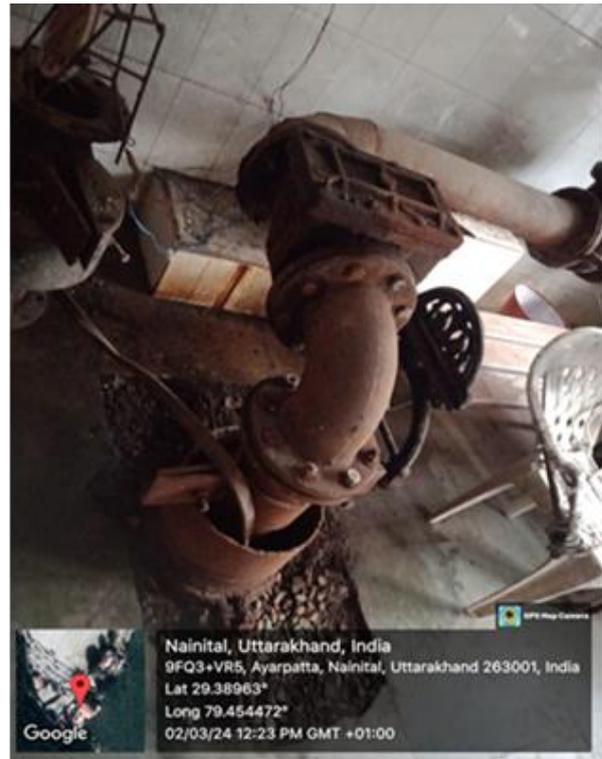
Source: (Google Maps, 2024),

Image 17 below shows the geo-tagged images of the existing tubewells in Nainital Town shared by the UJS, Nainital during the field visit conducted in the month of March, 2024.

Image 17: Geo-Tagged Images of Tubewells located in Nainital Town shared by the UJS, Nainital







Source: (Uttarakhand Jal Sansthan, Nainital, 2024)

### c) Step-03: Storage of Treated Water

By the help of 17 rising mains the treated water from the three WTPs is transported to 28 storage tanks i.e. Clear Water Reservoir (CWR) located at various locations in the Town. These Tanks has a capacity of approximately 600 to 900 kL each i.e. having a total capacity of in the range of 16.8 t 25.2 MLD.

### d) Step-04: Distribution of Water

The distribution of water in Nainital Town can be broadly divided into 2 main categories:

- i) Distribution of Water after Lake Bank Infiltration: Water is directly distributed in the Town after Lake Bank Infiltration for drinking purposes.
- ii) Distribution of Water from the CWRs: The drinking water is distributed in the Town after treatment from the 28 CWRs situated at different locations in the Town.

The water is distributed through the water pipeline network (established since 1898, through Pardadhara spring, located in Nainital) in the Town by the help of gravity. Approximately 15% of water loss is faced during the distribution of water in the Town through the water pipeline network by the authorities.

As shown in Table 27, according to the log sheet maintained by the UJS, Nainital for water pumping in the Town by tubewell and gravity sources, in the past the water supplied in the Town reached to the maximum limit of 19.5 MLD (during the peak tourist season i.e. in the month of June in the year 2015), this resulted in exhausting the natural resources of water. Thus, it was in 2018 that extreme measures were taken to control the situation by the authorities and rationing of water for off-season and on-season was implement to 8 MLD and 9 MLD. Thus, helping the authorities to maintain the water balance in the Town and encouraged its residents to store and save water for future usage.

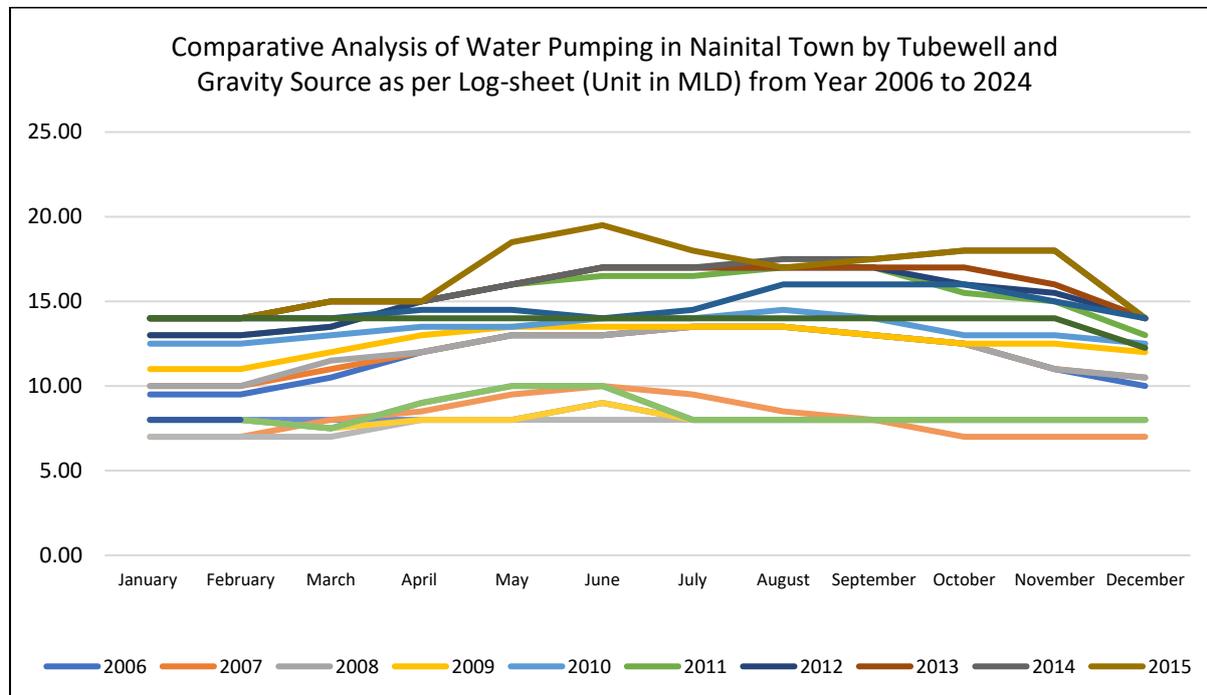
Table 27: Water Pumping in Nainital Town by tubewell and gravity sources as per the log-sheet (in MLD) as per the UJS, Nainital.

Water Pumping in Nainital Town by Tubewell & Gravity Source as per Log-sheet (Unit in MLD) as per UJS, Nainital																			
Month	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Dec.	10.00	10.50	10.50	12.00	12.50	13.00	13.00	13.00	14.00	14.00	14.00	12.25	8.00	7.00	8.00	8.00	8.00	8.00	8.00
Nov.	11.00	11.00	11.00	12.50	12.50	13.00	15.00	15.50	16.00	16.00	15.00	14.00	8.00	7.00	8.00	8.00	8.00	8.00	8.00
Oct.	12.50	12.50	12.50	12.50	13.00	15.50	16.00	17.00	18.00	18.00	16.00	14.00	8.00	7.00	8.00	8.00	8.00	8.00	8.00
Sep.	13.00	13.00	13.00	13.00	14.00	17.00	17.00	17.00	17.50	17.50	16.00	14.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00
Aug.	13.50	13.50	13.50	13.50	14.50	17.00	17.00	17.00	17.50	17.00	16.00	14.00	8.00	8.50	8.00	8.00	8.00	8.00	8.00
Jul.	13.50	13.50	13.50	13.50	14.00	16.50	17.00	17.00	17.00	18.00	14.50	14.00	8.00	9.50	8.00	8.00	8.00	8.00	8.00
Jun.	13.00	13.00	13.00	13.50	14.00	16.50	17.00	17.00	17.00	19.50	14.00	14.00	9.00	10.00	8.00	9.00	10.00	10.00	10.00
May	13.00	13.00	13.00	13.50	13.50	16.00	16.00	16.00	16.00	18.50	14.50	14.00	8.00	9.50	8.00	8.00	10.00	10.00	10.00
Apr.	12.00	12.00	12.00	13.00	13.50	15.00	15.00	15.00	15.00	15.00	14.50	14.00	8.00	8.50	8.00	8.00	9.00	9.00	9.00
Mar.	10.50	11.00	11.50	12.00	13.00	13.50	13.50	15.00	15.00	15.00	14.00	14.00	8.00	8.00	7.00	7.50	7.50	7.50	7.50
Feb.	9.50	10.00	10.00	11.00	12.50	13.00	13.00	14.00	14.00	14.00	14.00	14.00	8.00	7.00	7.00	8.00	8.00	8.00	8.00
Jan.	9.50	10.00	10.00	11.00	12.50	13.00	13.00	14.00	14.00	14.00	14.00	14.00	8.00	7.00	7.00	8.00	8.00	8.00	8.00

Source: (Uttarakhand Jal Sansthan, Nainital, 2024), (Dr. R. S. Tolia Uttarakhand Academy of Administration (ATI))

As shown in Figure 24, gradually as per the requirement the rationing has been increased and decreased by the authorities. Thus, inducing the sense of water storage among the residents of the Town and helping to manage the supply of water.

Figure 24: Comparative Analysis of Water Pumping in Nainital Town by Tubewell & Gravity Source as per Log-sheet (Unit in MLD) from Year 2006 to 2024



Source: (Uttarakhand Jal Sansthan, Nainital, 2024), (Dr. R. S. Tolia Uttarakhand Academy of Administration (ATI))

As shown in Table 28 below the average water supplied from the year 2006-2017 has been rationed from 15.33 MLD (maximum amount of water supplied) to 9.33 MLD (maximum amount of water supplied).

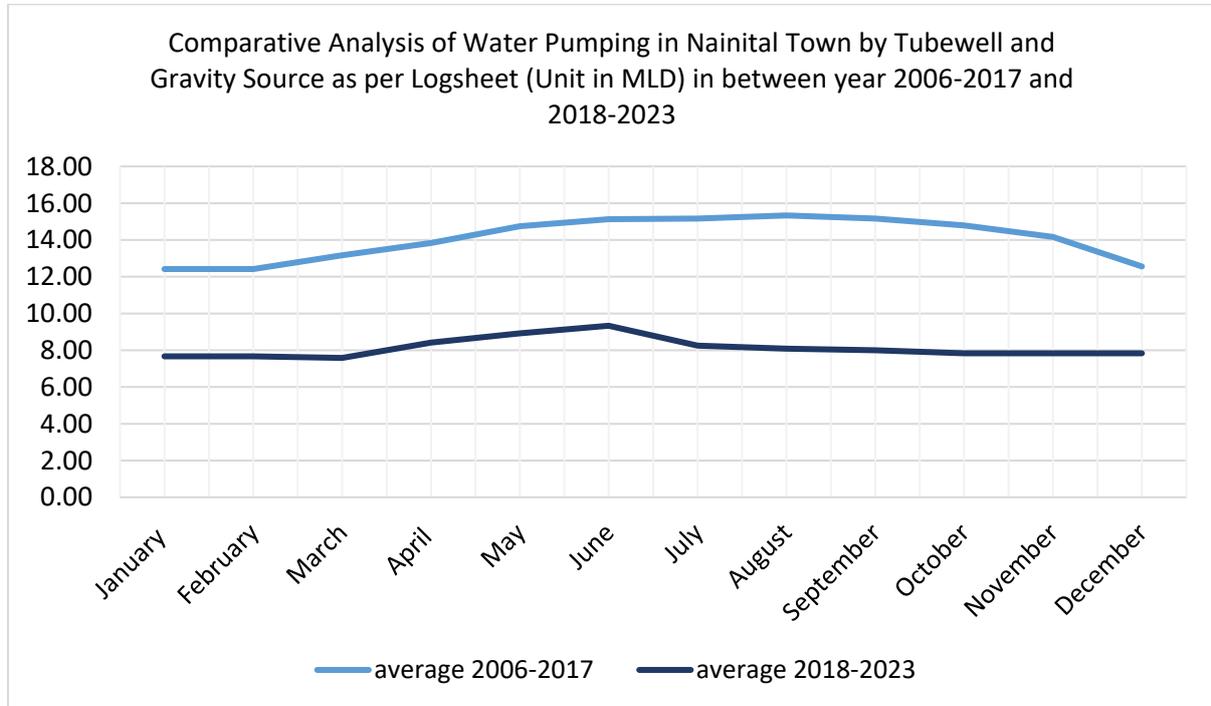
Table 28: Comparative Analysis of Average Water Supply in between the Year 2006-2017 and the Year 2018-2023

Month	Average Water Supply from the Year 2006-2017 (MLD)	Average Water Supply from the Year 2018-2023 (MLD)
January	12.42	7.67
February	12.42	7.67
March	13.17	7.58
April	13.83	8.42
May	14.75	8.92
June	15.13	<b>9.33</b>
July	15.17	8.25
August	<b>15.33</b>	8.08
September	15.17	8.00
October	14.79	7.83
November	14.17	7.83
December	12.56	7.83

Source: (Uttarakhand Jal Sansthan, Nainital, 2024), (Dr. R. S. Tolia Uttarakhand Academy of Administration (ATI))

Figure 25 depicts the graphical representation of the comparative analysis of the average water supplied through pumping of water from the tubewells and gravity sources as per log sheet maintained by the UJS, Nainital from the year 2006-2017 and the year 2018-2023. The rationing of water has clearly reduced the overextraction of water from the natural resources of the Town.

Figure 25: Comparative Analysis of Average Water Supplied through Pumping in Nainital Town by Tubewells and Gravity Sources as per the Logsheet Maintained by the UJS, Nainital (in MLD)



Source: (Uttarakhand Jal Sansthan, Nainital, 2024), (Dr. R. S. Tolia Uttarakhand Academy of Administration (ATI))

The Image 18 below consists of some images of the water pipeline network in Nainital Town as taken in the month of March, 2024.

Image 18: Images of Water Pipeline Network in Nainital Town



Source: (SPA, New Delhi, 2024) primary survey

As per the Table 29 below, UJS, Nainital has 20-25 number of community-taps with 1-2 community taps in each ward and it owns 2 water tankers with a water capacity of 3kL each. These water tankers are provided by the authorities to the residents of the Town on request as per the demand to meet the water scarcity faced (if any), for the community functions, etc. in the Town.

Table 29: Water Supply Component in NPP, Nainital

Water Supply Component		
Water Supply Component	Number	Inferences
Hand pumps (in NPP, Nainital)	-	<ul style="list-style-type: none"> <li>There is total <b>20-25 Community Taps</b> in NPP, Nainital. Approx. 1-2 Community Taps are available in each ward of the Town.</li> <li><b>UJS, Nainital owns 2 Water Tanker with 3 kL Capacity each and hires Water Tankers as per requirement during summers when water of the Natural Water Source dries out.</b></li> </ul>
Community Taps (in NPP, Champawat)	<b>20-25</b> (1-2 in each Ward)	
Water Tankers	<b>Owned: 2</b> <b>Capacity: 3 kL each</b> <b>Hired: As per requirement</b>	
Length of pipeline in NPP, Nainital	-	

Source: (Uttarakhand Jal Sansthan, Nainital, 2024)

### 9.1.2. Demand and Supply of Water

As per the discussions with the officials met (as mentioned in Annexure C) at present UJS, Nainital is supplying 8 MLD of water for 8 MLD of water demand for the beneficiary population of Nainital Town during off season and 10 MLD of water for 10 MLD of water demand during on-season. Thus, there are no existing water demand-supply gap in the Town at present.

In Nainital Town water is supplied twice a day, daily in the morning from 7:00am to 9:30am and in the evening from 4:00 pm to 6:30 pm. The supply hours are increased during the tourist season as per the water demand of the Town.

As shown in Table 30, according to the officials met (as mentioned in Annexure C) 100% of the town has pipeline coverage. Therefore, meeting the benchmark set by CPHEEO. The water is supplied two times a day during off season for 2.5 hours i.e. in the morning from 7:00 to 9:30 am and in the evening from 4:00 to 6:30 pm. To meet the additional water demand during the tourist-season the authorities increase the timings of water supply in the Town as per the on-ground requirement in the Town.

Table 30: Comparative Analysis of Benchmark (as per CPHEEO) and Existing Situation of Water Availability and Supply (as per ULBs) in NPP, Nainital

<b>NPP, Nainital: Water Supply: Existing Situation (As per the Discussions with the Officials Met)</b>			
<b>Indicator</b>	<b>Benchmark (as per CPHEEO)</b>	<b>Existing (as per UJS, Nainital and PJNU, Nainital)</b>	<b>Inferences (based on discussions with the Officials met and the Data Provided by them)</b>
<b>Per Capita Water Supply</b>	135 LPCD	No Existing Gaps	<ul style="list-style-type: none"> <li>Water Supplied               <ol style="list-style-type: none"> <li>Off-Season: 08 MLD</li> <li>On-Season: 10 MLD</li> </ol> </li> <li>Water Demand               <ol style="list-style-type: none"> <li>Off-Season: 08 MLD</li> <li>On-Season: 10 MLD</li> </ol> </li> <li>Thus, No Existing Gaps</li> </ul>
<b>Gap in Water Supply</b>	0 LPCD	0 LPCD	
<b>Water Coverage (Area Covered)</b>	100 %	100 %	<ul style="list-style-type: none"> <li>UJS, Nainital covers 100% of the total area with pipeline connections.</li> </ul>
<b>Water Supply Coverage (Population Served)</b>	100 %	98 %	<ul style="list-style-type: none"> <li>UJS, Nainital covers 98% of the total population serviced with piped water supply connections at present.</li> </ul>
<b>Continuity of Water Supply</b>	24/7 Hours/Day	5 Hours/Day	<ul style="list-style-type: none"> <li>In NPP, Nainital water is supplied Twice a Day (Daily) for 2.5 hours in morning and evening i.e. 7:00 am to 9:30 am and 4:00 pm to 6:30 pm.</li> <li>During peak tourist season the timings of water supply is increased to meet the water demand.</li> </ul>
<b>Extent of metering of Water Connection</b>	100 %	-	<ul style="list-style-type: none"> <li>To understand the extent of metering of watering connection and non-revenue water in the Town it is important to do the metering of all the piped water connections in the Town.</li> </ul>
<b>Extent of Non-Revenue Water</b>	20 %	-	

Source: (Uttarakhand Jal Sansthan, Nainital, 2024)

### 9.1.3. Water Tariff

Throughout the State of Uttarakhand, the Uttarakhand Jal Sansthan charges fixed rates based on:

01. Annual Building Assessment used to assess building tax, or
02. As per the consumption of water supplied in buildings with water meter connections.

As shown in Table 31, the water tariff based on the annual assessment of residential building is divided into 9 slabs. Further, the amount for water consumption charged per month is according to the method of water distribution used i.e. through gravity, low head or high head. The lowest

amount is charged for distribution through gravity while the highest is charged for distribution through high head due to the power consumed for distribution of water supply. The annual assessment certificate is provided by the NPP, Nainital i.e. ULB of the Town.

Table 31: Minimum Charges (Water Price) ₹ Per Month as per the Annual Assessment of Building for Water Supply in Urban Residential Area by the UJS, Nainital

Minimum Charge (Water Price) ₹ Per Month as per the Annual Assessment of Building for Water Supply in Urban Residential Area				
S.No.	Annual Assessment of Building	Effective Rates as on Date 01-04-2023		
		Gravity	Low Head	High Head
01.	Up-to ₹360	176.40	186.20	199.92
02.	₹361 to ₹2,0000	186.20	199.92	215.60
03.	₹2,0001 to ₹3,500	219.52	235.20	264.60
04.	₹3,501 to ₹6,000	327.00	357.52	407.66
05.	₹6,0001 to ₹8,000	390.22	407.66	488.32
06.	₹8,0001 to ₹10,000	455.62	488.32	521.02
07.	₹10,001 to ₹12,000	488.32	521.02	566.80
08.	₹12,001 to ₹14,000	521.02	566.80	599.50
09.	More than ₹14,001	708.50	763.00	817.50

Source: (Uttarakhand Jal Sansthan, Nainital, 2024)

To register for the Annual Assessment of Building the owner needs to declare the number of floors, area of their house and the HH size. Apart from this a mandatory one-time registration fees of ₹6,000/- is also charged by UJS. For people belonging to the BPL category this mandatory fees for one-time registration are reduced from an amount of ₹6,000/- to only ₹100/- by the UJS.

The Table 32: Water Price Rates for Metered Domestic Water Connections (₹ per Kilo Liter Per Month) by UJSTable 32 below shows the standard water tariff for the consumption of water supplied in residential buildings with meter connections, is charged per month based on the amount of water consumed per kilo Liters per month. The amount of water consumed by the beneficiary is based on readings recorded from the water meter installed by the UJS at the beneficiary's house. Further, the amount for water consumption charged per month is according to the method of water distribution used i.e. through gravity (₹10/- per kL per month), low head (₹13.75/- per kL per month) or high head (₹15.63/- per kL per month). The lowest amount is charged for distribution through gravity while the highest is charged for distribution through high head due to the power consumed for distribution of water supply.

Table 32: Water Price Rates for Metered Domestic Water Connections (₹ per Kilo Liter Per Month) by UJS

Water Price Rates (Domestic Metered Connections) in ₹ Per Kilo Liter Per Month				
S.No.	Description	Effective Rates as on Date 01-04-2023		
		Gravity	Low Head	High Head
01.	Urban Area	10.00	13.75	15.63

Source: (Uttarakhand Jal Sansthan, Nainital, 2024)

As shown in Table 33, the water tariff for the consumption of water supplied in non-domestic buildings with meter connections, is charged per month based on the amount of water consumed per kilo Liters per month. The amount of water consumed by the beneficiary is based on readings recorded from the water meter installed by the UJS at the beneficiary's registered building with

meter connection. Further, the amount for water consumption charged per month is according to the method of water distribution used i.e. through gravity, low head or high head. The lowest amount is charged for distribution through gravity while the highest is charged for distribution through high head due to the power consumed for distribution of water supply.

Table 33: Water Price Rates (Non-Domestic Metered Connections) ₹ Per Kilo Liter by the UJS

Water Price Rates (Non-Domestic Metered Connections) ₹ Per Kilo Liter				
S.No.	Description	Effective Rates as on Date 01-04-2023		
		Gravity	Low Head	High Head
01.	<b>Nagar Palika Parishad</b>			
A	Special Category and Industrial Area	31.25	39.00	46.88
B	Other Business Establishments	27.50	31.25	41.25
C	Other government and institutional Area/Cantonment Area	26.25	30.00	41.25
02.	<b>Nagar Panchayat</b>	26.25	26.25	41.25

Source: (Uttarakhand Jal Sansthan, Nainital, 2024)

## 9.2. Tourism and Water Supply

The hotels and guest house in Nainital Town meets the additional water demand by the help of water storage or as per request: water tankers provided by the UJS, Nainital. UJS, Nainital owns 2 water tanker with a capacity of 3kL and hires water tankers over additional requirements. Apart from this the water rationing encourages the residents to store water and limit the exploitation of water for commercial use.

## 9.3. Present Government Policies for Water Supply in Nainital Town

Rationing of water from 19.5 MLD to 8 MLD has been implemented by the NPP, Nainital to control the water supply in the Town and limit the exploitation of water resources.

As per the (UUSDA, Gov. of Uttarakhand, 2024) along with the existing infrastructure of Nainital, “about 107 Km water supply network, 6000 House service connection, 22 water reservoir of total capacity of 9456 kL, a softening plant having capacity of 1 MLD and 4 tube wells and other construction works had been executed in Nainital Town”.

## 9.4. Water Sustainability

As per the UCOST report in the catchment area of Naini Lake the evaporation loss of water is only 8% i.e. a very small component compared to the water input from the direct precipitation and drains. To supply water in the Town and compensate for the evaporation losses, sub-surface outflow is managed through springs located on the downstream side. Thus, balancing the water table of the town.

**9.5. Issues/Challenges**

The Table 34 below, highlights the issues/challenges identified along with the inferences for water availability and supply in NPP, Nainital.

Table 34: Issues/Challenges Identified for Water Availability and Supply in NPP, Nainital

S.No.	Issues/Challenges	Inferences
01.	 <p><b>Dependency on Natural Sources</b></p>	<ul style="list-style-type: none"> <li>NPP, Nainital heavily relies on the Naini Lake for its water supply. That has been resulting in the over-extraction of water from the lake in the past.</li> <li>Naini Lake experiences seasonal fluctuations in water availability, with dry periods leading to water shortages, especially during the summer season. Erratic rainfall patterns and inadequate storage capacity exacerbate these challenges, requiring efficient water management strategies.</li> <li>Naini Lake is replenished through features such as hillside slopes, natural spring water, natural rainfall, surface runoff, stormwater drains, during monsoon season the subsurface inflow through Sukhatal Lake (the underground leaching of water leads to minimizing the volume of water flowing towards the Naini Lake) and sediment traps.</li> </ul> <p>These limited replenishment sources add on the existing pressure to maintain the water level of Naini Lake to meet the future water demand of the residents and the floating population.</p> <ul style="list-style-type: none"> <li>Moreover, being a catchment area for the storm water drainage network the lake is vulnerable to pollution due to the direct littering of waste in the storm water drain channels by the residents or tourist.</li> <li>Over-extraction and environmental degradation, affecting both water quality and quantity.</li> </ul>
02.	 <p><b>Water Quality Issues</b></p>	<ul style="list-style-type: none"> <li>The direct discharge of untreated waste water into the Naini Lake is leading to the pollution of the natural water source.</li> <li>Construction activity has led to an increase in construction debris, which is frequently being dumped near water channels. This continuous dumping is polluting the water and contributing to a decline in water quality. This also blocks the</li> </ul>

			<p>drains</p> <ul style="list-style-type: none"> <li>• Apart from this, silt deposition due to heavy rains also adds up the pollution of the natural water resource.</li> <li>• Surface water collected from Naini Lake is treated only through the lake infiltration bank by the local authorities and then is directly supplied for drinking in the Town. The direct discharge of untreated waste water and silt deposition due to heavy rains is difficult to manage though this treatment method. Thus, the water collected required proper treatment before supplying it into the Town as Naini Lake is the only major source of water available in the Town.</li> </ul>
03.		<b>Population Growth and Urbanization</b>	<ul style="list-style-type: none"> <li>• The increasing population and tourist influx in NPP, Nainital might lead to potential ground water shortage and service interruptions in the near future if the rationing of water is not monitored properly.</li> </ul>
04.		<b>Infrastructure Limitations</b>	<ul style="list-style-type: none"> <li>• As the water pipelines in the Town are way back from the pre-independence era, they are not mapped. While some water pipelines are open, majority of the water pipelines laid in the Town are underground. Thus, making it even more difficult in the hilly Town of Nainital to trace or identify any water leakages or fault in water pipeline network.</li> <li>• This ultimately leads to increase in the contamination of water supplied and low water pressure and increases the inefficiency.</li> <li>• Moreover, without the existing water supply network map it is difficult to prepare future solutions for expansion of water supply network in the Town.</li> </ul>
05.		<b>Trained Professionals</b>	<ul style="list-style-type: none"> <li>• Lack of trained professionals to treat the leakage and contamination of water supplied (if any) through underground water pipeline network.</li> </ul>
06.		<b>Climate Change Impacts</b>	<ul style="list-style-type: none"> <li>• Climate change is likely to worsen existing water challenges in Nainital Town.</li> <li>• Increased temperatures, changing precipitation patterns, and melting glaciers in the Himalayas can further stress water resources, leading to more frequent and</li> </ul>

			severe water shortages.
07.		<b>Water Governance and Management</b>	<ul style="list-style-type: none"> <li>• It is important to do the metering of water connections in the Town and to generate the data on the extent of metering in the Town to understand the existing situation of the extent of non-revenue of water connection in the Town. This will help to manage the water theft (if any) in the Town by the residents or floating population of the Town. Moreover, it will also be beneficial to implement sustainable solutions to manage the existing perishable water resource of the Town.</li> <li>• Effective governance and management of water resources are critical for addressing Nainital's water supply challenges.</li> <li>• Coordination among government agencies, local authorities, community groups, and other stakeholders is necessary to develop and implement sustainable water management practices and policies.</li> <li>• As per the Uttarakhand Home Stay Policy 2018, Home Stays are not to be treated as commercial activity and therefore, water charges need to be at domestic tariff rates. However, the Jal Sansthan has been charging commercial rates on account of the pressure from the Hotel Associations.</li> </ul>

### 9.6. Possible Solutions/Suggested Projects for Water Availability and Supply in NPP, Nainital

A Stakeholder Consultation Meeting was held on 25<sup>th</sup> April 2024 with NPP, Nainital. Based on the feedback provided by the official's possible solutions and suggested projects for improvement are proposed for Nainital Town in the table below.

Table 35: Possible solutions/Suggested Projects for Water Availability and Supply in NPP, Nainital

S.No.	Possible Solutions/Suggested Projects
<b>01.</b>	<b>Dependency on Natural Sources</b>
	<p><b><u>It is proposed that:</u></b></p> <p>a) <b>The UJS, Nainital and PJNU, Nainital in collaboration should undertake the following:</b></p> <ol style="list-style-type: none"> <li>i. Conduct a detailed assessment of all water resources in terms of capacity and quality on a periodic basis so that withdrawal and replenishment is done in a balanced manner so as to maintain sustainability.</li> <li>ii. <b>Develop a comprehensive Water Management Plan</b> that includes efficient distribution systems, real time monitoring of water levels, and predictive modelling for water demand.</li> <li>iii. <b>Implement Water Conservation Practices</b> such as Rainwater Harvesting in residential, commercial, public buildings, community parks, etc.</li> <li>iv. <b>Identify suitable sites for Groundwater Recharge Points</b> and construct recharge wells on them.</li> <li>v. <b>Invest</b> in increasing storage capacity by identifying suitable locations and building new reservoirs to enhance the existing water storage capacity to store surplus water during peak tourist seasons.</li> </ol> <p><b><u>These practises will help to achieve the following:</u></b></p> <ul style="list-style-type: none"> <li>✓ Recharging the groundwater and reducing the reliance on natural source of water i.e. Naini Lake in Nainital Town.</li> <li>✓ Stop and regulate the over-extraction of water form Naini Lake.</li> </ul>
<b>02.</b>	<b>Water Quality Issues</b>
	<p><b><u>It is proposed that:</u></b></p> <p>a) <b>The UJS, Nainital and PJNU, Nainital in collaboration should undertake the following:</b></p> <ol style="list-style-type: none"> <li>i. <b>Develop a Comprehensive Wastewater Treatment and Sediment Management System</b> that includes: <ul style="list-style-type: none"> <li>✓ Ecological Restoration of Naini Lake.</li> <li>✓ Upgradation of the Lake Infiltration Bank Treatment.</li> </ul> <p>This will help to improve water quality, restore habitats, and enhance natural filtration.</p> </li> <li>ii. <b>Implement and enforce strict regulations</b> regarding waste management during construction. <b>Heavy penalties should be applied to violators who illegally dump debris near water channels</b></li> <li>iii. <b>Water Recycling Plants should be installed so that wastewater can be recycled</b></li> </ol>

	<p>and used again.</p> <p>iv. <b>Upgrade Wastewater Treatment Plants</b> to ensure all sewage and wastewater undergo proper treatment before being discharged into the lake.</p> <p>v. <b>Implement</b> measures to protect and enhance natural replenishment sources like hillside slopes, natural springs and stormwater drains. This includes afforestation, erosion control, and maintaining natural habitats.</p>
<b>03.</b>	<b>Population Growth and Urbanization</b>
	<p><b><u>As per the UJS, Nainital:</u></b></p> <p>a) Rationing of water from 19.5 MLD to 8 MLD has been implemented by the local authorities to control the over-extraction and misuse of water by the residents and tourists. This also helps in promoting water conservation among the residents and tourists.</p> <p><b><u>The above may be implemented. Further alongwith this it is proposed that:</u></b></p> <p>a) <b>The UJS, Nainital in should develop an Efficient Water Management Strategy</b> for peak tourist season, especially for the month of June along with water rationing.</p> <p>b) <b>The UJS, Nainital and PJNU, Nainital on PPP model should collaborate</b> with the <b>local NGOs, SHGs, Government Institutes</b> and <b>other willing volunteers</b> to <b>conduct Water Conservation Campaigns</b> to overcome any possible future water crisis (if any) due to overtourism or overextraction of water.</p>
<b>04.</b>	<b>Infrastructure Limitations</b>
	<p><b><u>It is proposed that:</u></b></p> <p>a) <b>PJNU, Nainital</b> on an urgent basis <b>should prepare upgraded GIS Map</b> of the existing water supply pipeline network of Nainital Town to easily trace and tackle any issue related to water leakages and prevent water contamination in the future.</p> <p>b) <b>PJNU, Nainital</b> should do <b>regular inspections</b> and <b>regularly repair</b> any damages or issues in the existing pipeline network in the Town to prevent water contamination and pressure drop in the piped water supply in the Town.</p> <p>c) <b>PJNU, Nainital</b> and <b>UJS, Nainital</b> should <b>undertake the following:</b></p> <p>i. <b>Prepare and Maintain Digital Records</b> of the maintenance schedule of the water supply pipeline network in the Town for easy monitoring and future expansions of the water pipeline network in the Town.</p> <p>ii. <b>Develop and Implement Emergency Water Supply Plans</b> for future water shortages (if any) including temporary water supply measures and distribution strategies.</p>
<b>05.</b>	<b>Trained Professionals</b>
	<p><b><u>It is proposed that:</u></b></p> <p>a) <b>The State Government of Uttarakhand</b> in collaboration with the ULBs should establish Think Tanks for on-ground technical assistance to the local authorities.</p> <p>b) <b>UJS, Nainital</b> and <b>PJNU, Nainital</b> should develop and implement:</p> <p>✓ <b>Capacity Building and Training Programmes</b> among the local government</p>

	<p>employees.</p> <ul style="list-style-type: none"> <li>✓ <b>Knowledge Dissemination Programmes</b> among the local government employees and the local residents.</li> </ul>
<b>06.</b>	<b>Climate Change Impacts</b>
	<p><b><u>It is proposed that:</u></b></p> <p>a) <b>UJS, Nainital and PJNU, Nainital in collaboration should undertake the following:</b></p> <ul style="list-style-type: none"> <li>i. <b>Develop Climate-Resilient Water Supply Infrastructure</b> like Dual-Piping Systems to separate potable and non-potable water, allowing for efficient use of treated wastewater and harvested rainwater for non-drinking purposes.</li> <li>ii. <b>Conduct Water Usage Audits</b> for major water users to identify inefficiencies and recommend conservation measures.</li> <li>iii. <b>Implement Integrated Water Resource Management (IWRM)</b> by: <ul style="list-style-type: none"> <li>✓ <b>Developing and Implementing Plans</b> to protect and manage the catchment areas to enhance groundwater recharge.</li> <li>✓ <b>Preparing Hydrological Models</b> to predict and plan for future water availability and demand under various climate scenarios.</li> <li>✓ <b>Establishing Water Allocation Policies</b> for equitable and sustainable water allocation among different users, considering future climate impacts.</li> <li>✓ <b>Developing Early Warning Systems</b> for floods and water shortages using real-time data and forecasting tools.</li> </ul> </li> </ul>
<b>07.</b>	<b>Water Governance and Management</b>
	<p><b><u>It is proposed that:</u></b></p> <p>a) <b>UJS, Nainital and PJUNU, Nainital should undertake the following:</b></p> <ul style="list-style-type: none"> <li>i. <b>Install Smart Water Management System by:</b> <ul style="list-style-type: none"> <li>✓ <b>Installing Smart Meters</b> and developing a system for accurate data collection to monitor water usage and detect non-revenue water connections.</li> <li>✓ <b>Internet of Thing (IoT) Integration devices to monitor</b> water pressure, flow and quality across the distribution network.</li> <li>✓ <b>Installing Automated Leak Detection Systems</b> for automated detection and reporting of leaks or abnormal water usage patterns.</li> <li>✓ <b>Develop a Monitoring System</b> for underground water levels.</li> <li>✓ <b>Enforcing Strict Regulations</b> on training for system operation and maintenance.</li> </ul> </li> <li>ii. <b>Prepare Water Usage Data Analysis Report</b> to understand consumption</li> </ul>

	<p>patterns, detect anomalies, and support decision-making for water management.</p> <p>iii. <b>Enhanced Stakeholder Coordination Mechanism</b> by establishing committees that include representative from government agencies, local authorities, community groups and other stakeholders to facilitate communication and coordination.</p> <p>iv. <b>Enforce Strict Regulations and Penalties</b> on industries, businesses and households to prevent the direct discharge of untreated wastewater into the lake.</p> <p>b) <b>UJS, Nainital and PJNU, Nainital on PPP model should collaborate with the Police Department, local NGOs, SHGs, Government Institutes and other willing volunteers to:</b></p> <p>i. <b>Identify Defaulters and Implement Strict Fines</b> for littering waste in the Storm Water Drainage System of Nainital Town.</p> <p>ii. <b>Build and Implement Awareness Campaigns and Workshops</b> at Community Level to educate people about:</p> <ul style="list-style-type: none"> <li>✓ Rainwater Harvesting System and its benefits to reduce dependency on Naini Lake and promote conservation of water.</li> <li>✓ Community Based Water Management Initiatives.</li> </ul> <p>c) <b>Water Tariff for Home Stays</b> – The problem of tariff needs to be resolved and Home Stays should be charged only the domestic / residential water rates.</p>
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# Annexure A

## Annexure A

## Details of documents collected from various departments in Nainital Town

Figure 26: Ward Boundaries Details by Nagar Palika Parishad, Nainital

नगर पालिका परिषद, नैनीताल (जनपद नैनीताल)

क्र०सं०	वार्ड का नाम	वार्ड की सीमा	वार्ड में सम्मिलित मौहल्लो के नाम
1	2	3	4
1	स्टाफ हाऊस	<p>पूरब- सनवाल स्कूल के नाले से एजहिल के बगल से बिरला चुंगी तक</p> <p>पश्चिम- शिफ्ट के बगल से स्टाफ आऊस अमरालय के आगे तक</p> <p>उत्तर- बिरला चुंगी चौराहे से स्टाफ आऊस रोड शिफ्ट भवन के आगे तक</p> <p>दक्षिण- बी०डी० पाण्डे चौराहे से शान्तिनिकेतन नाले तक</p>	स्टाफ हाऊस, मार्शल कॉटेज, पॉपुलर के पीछे का क्षेत्र, चार्टन लॉज, आदि।
2	शेर का डोंडा	<p>पूरब- रामजे अस्पताल के आगे सड़क से कपूरलौज के आगे नाले से ऊपर बाउण्ड्री सीमा तक</p> <p>पश्चिम- सनवाल स्कूल के बगल से एजहिल के पिछे नाले-नाले एजहिल के ऊपर बिरला चुंगी तक।</p> <p>उत्तर- बिरला चुंगी से बिरला स्कूल के पिछे कपूर लौज के पी० न० 2,3,4, तक</p> <p>दक्षिण- सी०आर०एस०टी० के पीछे राजपूरा के आगे रोड मिडिल चीना माल होते हुए रामजे अस्पताल के आगे नाले तक</p>	विडला क्षेत्र, स्टानले, राजमहल, सनवाल स्कूल, स्प्रिंग कॉटेज, डरफिन लौज, शान्ति निकेतन, टूरिस्ट होम, बोकोटेज, राकेश कुटीर, लोवर डोंडा, गुरुनिवास, रोविला लॉज, राजपुरा, जुबलीग्रोव, देवी लॉज, रतन कॉटेज, मगावली, रामजे परिसर, सिमेन्ट हाउस, बिरला चुंगी राजपुरा, एजहिल, पुराना राजभवन, आदि।
3	राजभवन	<p>पूरब- अयारपाटा की सीमा</p> <p>पश्चिम- एन०बी०पी० 15, 16, 17 तक</p> <p>उत्तर- अयारपाटा प्रौसपैक्ट रोड</p> <p>दक्षिण- हल्द्वानी मोटर रोड</p>	<p>राजभवन, लौगव्यू केकलैण्ड फेरीभिला, जौयाभिला, फेरीहोल, फेरी लॉज, जिलाधिकारी निवास, ऑल सेन्ट, सैन्ट जोसफ डलहौजी काटेज अरविन्द आश्रम वियानालॉज, टिपनटॉप, पूरन पार्क, वियाना लॉज, लौगव्यू आदि।</p>

4	हरीनगर	पूरब- भवाली रोड कॅन्ट सीमा पश्चिम- गुफा महादेव उत्तर- तल्लीताल माल रोड चौहरा तक दक्षिण- कृष्णापुर	नयाबाजार, धोबीघाट, परिसर, हरीनगर तेजकुटी, रईस होटल, रहमत मंजिल, अशोक होटल आदि।
5	स्नोव्यू	पूरब- बिरला चुंगी पश्चिम- एम0बी0 11 से निचे धूप की कोठी के आगे नाले तक उत्तर - नगरपालिका दक्षिण- बिरला चुंगी स्टाफ हाऊड रोड शिफ्ट के ऊपर	ओक लॉज, ओक कॉटेज, ब्रेसार्ड, ताराहौल, ताराकॉटेज, सेन्टक्लाउड, स्नोव्यू, व्यासविला, आल्माहाउस, आल्माकाटेज, आल्मालौज, स्नोव्यू मंदिर परिसर, रोपवे स्टेशन, आदि।
6	नारायण नगर	पूरब- बुर्खिल चौराहे के नाले से आरिफ केंस्ट्रल होटल के पिछे रोड तक पश्चिम- नारायण नगर के बगल में अन्तिम सीमा तक उत्तर- वन क्षेत्र चीना चुंगी तक दक्षिण- प्रोसपैक्ट लॉज रोड तक	नारायण नगर, प्रसादाभवन, गोपाला सदन, मेलरोज, पॉलिटैक्निक, यूथक्लब, कमीश्नर आवास, हांडी-भाड़ी, ए0टी0आई0, बलरामपुर, श्री बहादुर सिंह जी-का क्वार्टर, फारेस्ट चौकी, सत्यनारायण मंदिर परिसर, महाधिवक्ता कार्यालय, मनकापुर एल्सकोर्ट स्विस् होटल, आरिफ होटल, साई मंदिर आदि।
7	सूखाताल	पूरब- इलाहाबाद बैंक के आगे से निचे नाले तक पश्चिम- पेस रोड से ए0टी0आई0 नाले से ग्रिल लैण्ड से होते हुए कालादुंगी चौराहे, तक। उत्तर- ए0टी0आई0 के आगे रोड होते हुए बुर्खिल चौराहे से नैनीताल क्लब होते हुए इलाहाबाद बैंक तक दक्षिण- कालादुंगी चौराहे से विमल कुंज के आगे रोड होते हुए अरोमा होटल के बगल से पुरानी शराब भट्टी के बगल में नाले तक	कुमाऊँ विश्व विद्यालय परिसर, मन्नुमहारानी होटल, सुखाताल, चर्च, बालिका स्कूल, एसडेल, मेट्रोपॉल, रॉयल होटल, कॉरोनेशन होटल, इलाहाबाद बैंक, पौनी सराय, संचार विभाग, टी0आर0सी0 परिसर आदि।



8	अयारपाटा	<p>पूरब- झील।</p> <p>पश्चिम- राजभवन वार्ड की सीमा तक।</p> <p>उत्तर- सूखाताल वार्ड की सीमा तक।</p> <p>दक्षिण- फासी गधरे से ऊपर राजभवन रोड तक।</p>	<p>नैना देवी, न0पा0प0</p> <p>नैनीताल परिसर,</p> <p>स्ट्रावरी लॉज, तिब्बती</p> <p>मार्केट, केन फिल्ड,</p> <p>अरोमा होटल, विमल</p> <p>कुंज, दी हाइव, बिष्ट</p> <p>भवन, डिग्री कॉलेज,</p> <p>हेमन्त निवास, फाँसी</p> <p>गधेरा कम्पाउण्ड, पम्प</p> <p>हाउस सहदेव भवन</p> <p>आदि।</p>
9	अपरमाल	<p>पूरब- तल्लीताल रिक्सा स्टेण्ड से एम0ब0 पीलर -1 से चिड़ियाघर तक</p> <p>पश्चिम- सनवाल स्कूल के आगे से होते हुए सी0आर0एस0टी0 के पीछे मेविला रोड से ऊतर मिडिल चीना मालरोड होते हुए रामजी व्यू कपरलौज के आगे तक।</p> <p>उत्तर- सी0आर0एस0टी0 के पीछे राजपूरा के आगे रोड मिडिल चीना माल होते हुए रामजे अस्पताल के आगे नाले तक</p> <p>दक्षिण- पंत चौराहे से लोअर मालरोड होते हुए तल्लीताल रिक्सा स्टेण्ड केन्टोमेन्ट की सीमा के बगल से चिड़िया घर तक</p>	<p>पूर्ण मालरोड, चर्च,</p> <p>मेविला, गुरुनिवास,</p> <p>लोवर डॉडा, अपर</p> <p>डॉडा, मेघदूत होटल,</p> <p>प्रशान्त होटल,</p> <p>एलफिस्टन होटल,</p> <p>पंजाब होटल, कपूर</p> <p>लॉज, चिड़ियाघर</p> <p>परिसर, पुस्तकालय</p> <p>आदि।</p>
10	नैनीताल क्लब	<p>पूरब- मोहन को चौराहे से अमरालय होटल तक।</p> <p>पश्चिम- नैनीताल क्लब से रूकुट के बगल में चीना मालरोड से नाले तक।</p> <p>उत्तर- अपर चीना मालरोड होते हुए ब्रेसाइड के चूनाधारा रोड के ऊपर देव सिंह की दुकान से धूप की कोठी आगे नाले तक</p> <p>दक्षिण- मोहनको चौराये से नैनीताल क्लब से चीना बाबा मंदिर तक</p>	<p>वैलडौफ, गार्डन हाउस,</p> <p>नैनीताल क्लब परिसर,</p> <p>स्प्रिंग फील्ड, पिलग्रिम,</p> <p>आदि।</p>

11	श्री कृष्णापुर	<p>पूरब- धर्मशाला से रहीस होटल की रोड से बलियानाला से दुर्गापुर अन्तिम सीमा तक</p> <p>पश्चिम- हल्द्वानी रोड से हनुमानगढ़ होते हुए नीचे दुर्गापुर अन्तिम सीमा तक</p> <p>उत्तर- हल्द्वानी रोड से आगे चुंगी के ऊपर हिलव्यू रोड से होते हुए रोडवेज कार्यालय के पिछे धर्मशाला चौराहे तक</p> <p>दक्षिण- दुर्गापुर के आगे पि०न० 19, 20, 21, 22 अन्तिम सीमा तक</p>	<p>दुर्गापुर, कृष्णापुर, जेल, सिपाईधर</p> <p>जी०आई०सी० स्कूल, जी०जी०आई०सी०, रोडवेज कार्यालय, काठबांस, गंगाकाटेज, गुफा महादेव, हनुमानगढ़ आदि।</p>
12	सैनिक स्कूल	<p>पूरब- नैनीताल क्लब से सीधे रूकुट के बगल नाले से पीलर नं० 11 के आगे सीमा तक</p> <p>पश्चिम- चीना चुंगी के नीचे रोड रोड होते हुए अपर माल, जुगली हाल के आगे शेरवानी रोड आरइफ कैस्ट्रल होटल तक।</p> <p>उत्तर- चीना चुंगी से आउन्ड्री लाईन होते हुए पीलर नं० 11 के आगे तक।</p> <p>दक्षिण- नैनीताल क्लब से कंपनी बाग के आगे रोड बुर्खिल चौराहे के नाले से आरिफ कैस्ट्रल होटल के पिछे रोड तक</p>	<p>चीना हाउस, हंस निवास, मेलरोज, पंत सदन, बुकहिल, सैनिक स्कूल, दीना लॉज, आदि।</p>
13	आवागढ़	<p>पूरब- सनवाल स्कूल से शान्तिनिकेतन के नाले तक</p> <p>पश्चिम- मोहन को चौराहे से अमरालय होटल तक।</p> <p>उत्तर- अमरालय सड़क से बी०डी०पाण्डे चौराहा तक</p> <p>दक्षिण- किंग प्रेस से माल रोड के आगे सनवाल स्कूल के आगे नाले तक।</p>	<p>पॉपुलर परिसर, बी०डी० पाण्डे, स्टेट बैंक, आवागढ़ परिसर, कॉमर्शियल भवन, हॉर्थडन, गार्डन हाउस, प्रेम भवन आदि।</p>

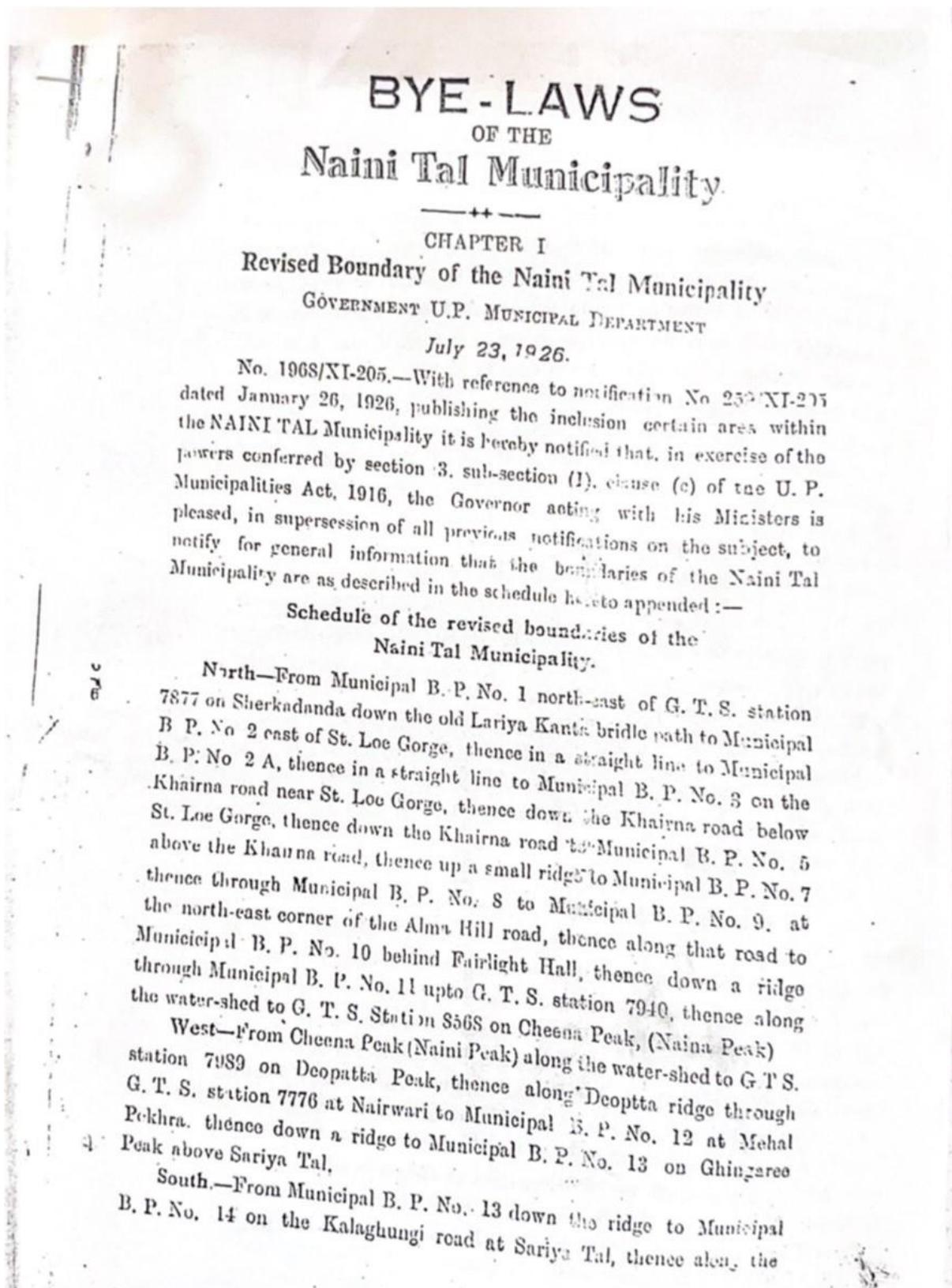


14	मल्लीताल बाजार	<p>पूरब- कंपनीबाग</p> <p>पश्चिम- इलाहाबाद बैंक से नाले तक</p> <p>उत्तर- गोलघर चौराहे से इलाहाबाद बैंक के गेट तक</p> <p>दक्षिण- बड़ा नाले से पवनी सराय पंप आउस रोड से मस्जित से कंपनी बाग तक</p>	<p>मल्लीताल बाजार, जय लाल साह बाजार, गाड़ी पडाव, शारदासंघ, कमेटी लाईन, सफाई कर्मचारी आवास, मस्जिद, पुलिस स्टेशन, कंपनी बाग, आर्य समाज, गोलघर, मोहनको, राम सेवक समा, मिनिसुपल मार्केट, बेकरी कम्पाउण्ड, रजाक्लब, आदि।</p>
15	तल्लीताल बाजार	<p>पूरब- तल्लीताल स्टेशन से रोड़ हल्द्वानी रोड़ धर्मशाला तक</p> <p>पश्चिम- फासीगधेरे हो हौक्सडेल होते हुए जिलाधिकारी निवास के आगे धर्मशाला रोड तक</p> <p>उत्तर- फासी गधेरे से स्टेशन तक</p> <p>दक्षिण- हौक्सडेल होते हुए पी0डब्लू0डी0 रोड होते हुए जि जिलाधिकारी निवास के आगे फासी गधेरे तक</p>	<p>नैनीताल तहसील, तल्लीताल बाजार, हिमालय होटल, पुलिस लाईन, वर्डस आई व्यू, रोजीविला, चिनाखान लाईन, बाजार हाउस, कलेक्ट्रेट परिसर, जिला जजी कार्यालय, पी0डब्लू0डी0 परिसर, प्राधिकरण परिसर, हौक्स डेल, सिचाई विभाग परिसर, पश्चिमी वृत्त वन विभाग आदि।</p>



Source: (Nagar Palika Parishad, 2024)

Figure 27: List of Revised Boundaries of the Nainital Municipality, July 23, 1926



( ३ )

## NAINI TAL MUNICIPALITY

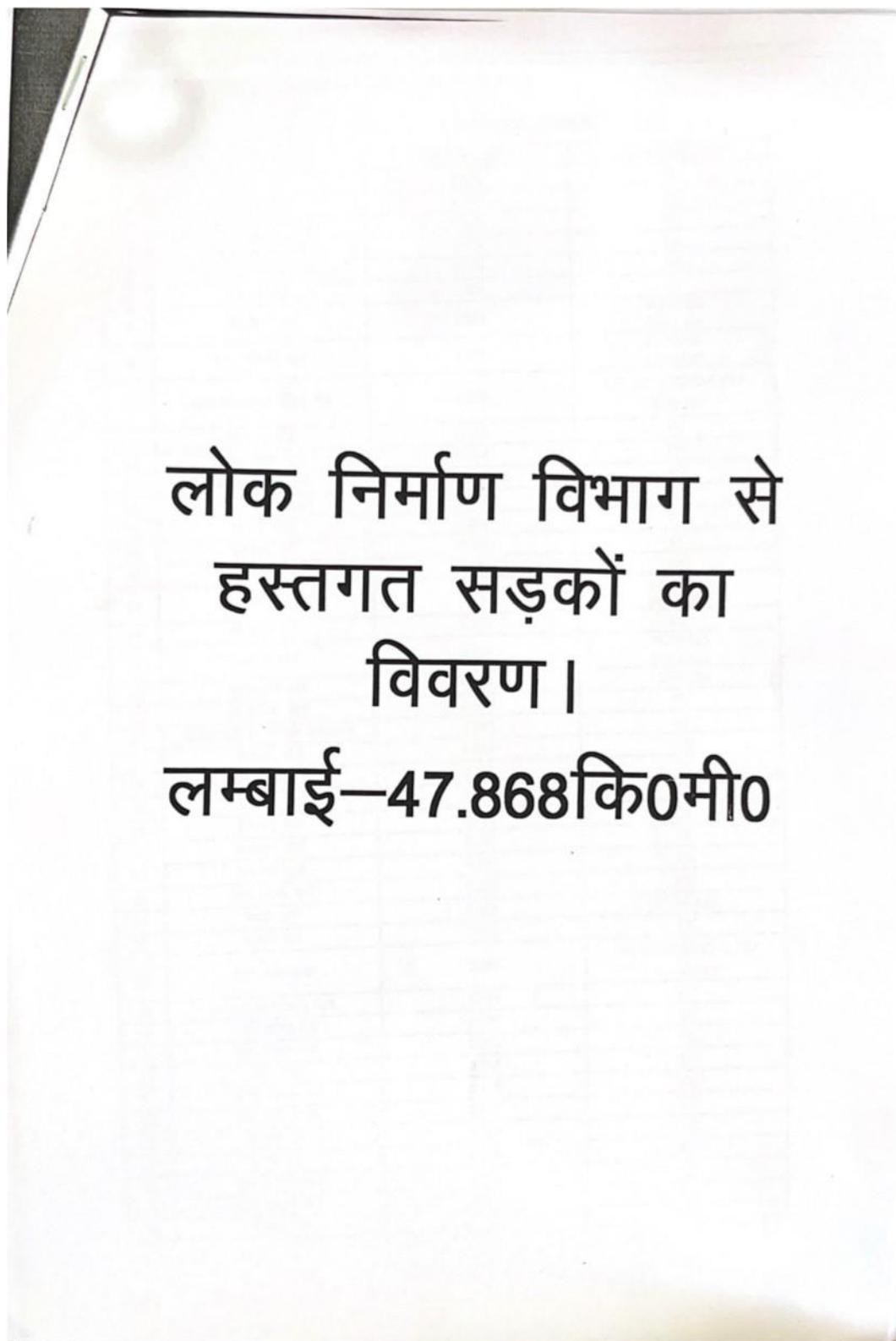
water-shed through G. T. S. station 7468 and Municipal B. P. No. 15 to Municipal B. P. No. 16 on the south of the tunnel draining Government House grounds, thence in a straight line to Municipal B. P. No. 17 on the left bank of the Nehal Nadi Runsi village boundary pillar, thence in a straight line to Municipal B. P. No. 18 on Manora upper crag, thence in a straight line to the western edge of the cart-road to Municipal B. P. No. 18 A, thence along the western and southern edge of the said road to Municipal B. P. No. 18 B, at mile 6 at Baldia Khan opposite the road leading to Patwa Danger, thence across the road to Municipal B. P. No. 18 C, and thence along the northern and eastern edge of the said road back to Municipal B. P. No. 18 D, exactly opposite the Municipal B. P. No. 18 A, thence along the watershed to Municipal B. P. No. 19 near G. T. S. station 6431, thence down the ridge through Municipal B. P. No. 20 to Municipal B. P. No. 21 on the Haldwani old bridle path above the stream from Manora, thence down that stream to its junction with the Ballia ravine, Municipal B. P. No. 22.

East.—From the junction of these streams up the right bank of the Ballia ravine to Cantonment B. P. No. 13, thence across the stream and up the left bank of the Ballia ravine to Cantonment B. P. No. 13 A opposite the Dharamsala, the boundary line runs along the southern edge of the Motor Road to Bhowali touching the northern boundaries of Tara Lodge, Pyare Lodge, Mile 2, Cemetery upto mile 4, then crossing the road, it runs back along the northern edge of the Motor Road touching C. B. P. 3 Mile 3, C. B. P. 2, the piggery (old) upto C. B. P. 13-A (i. e. to say the Motor Road to Bhowali from C. B. P. 13 to Mile 4), thence in a straight line to Cantonment B. P. No. 13 B, at the junction of two roads, thence along the north edge of the cart-road to its junction with the Mall, thence along the eastern edge of the Mall to Cantonment B. P. No. 15 near junction with Middle Cheena Mall, thence across the Middle Cheena Mall to Cantonment B. P. No. 16, thence along the northern edge of Cantonment road to below Advantage Cottage, thence along the southern boundary of the Upper and Lower Danda House Estate through Cantonment boundary pillars to G. T. S. station 6966 on the Sherkadanda ridge, thence up the ridge to Municipal B. P. No. 32, thence east in a straight line to Municipal B. P. No. 24, thence north in a straight line to Municipal B. P. No. 25, thence west in a straight line to Municipal B. P. No. 26, thence up the ridge through G. T. S. station No. 7869 on Sherkadanda to Municipal B. P. No. 1, north-east of that station.

Noti. No 3135-  
H/XI-A-617-53  
dated. February  
7, 1965.

Source: (Nagar Palika Parishad, 2024)

Figure 28: Details of roads handed over from Public Works Department



## LIST OF INTERNAL ROADS OF NAINITAL CITY INSIDE MUNICIPALITY LIMIT

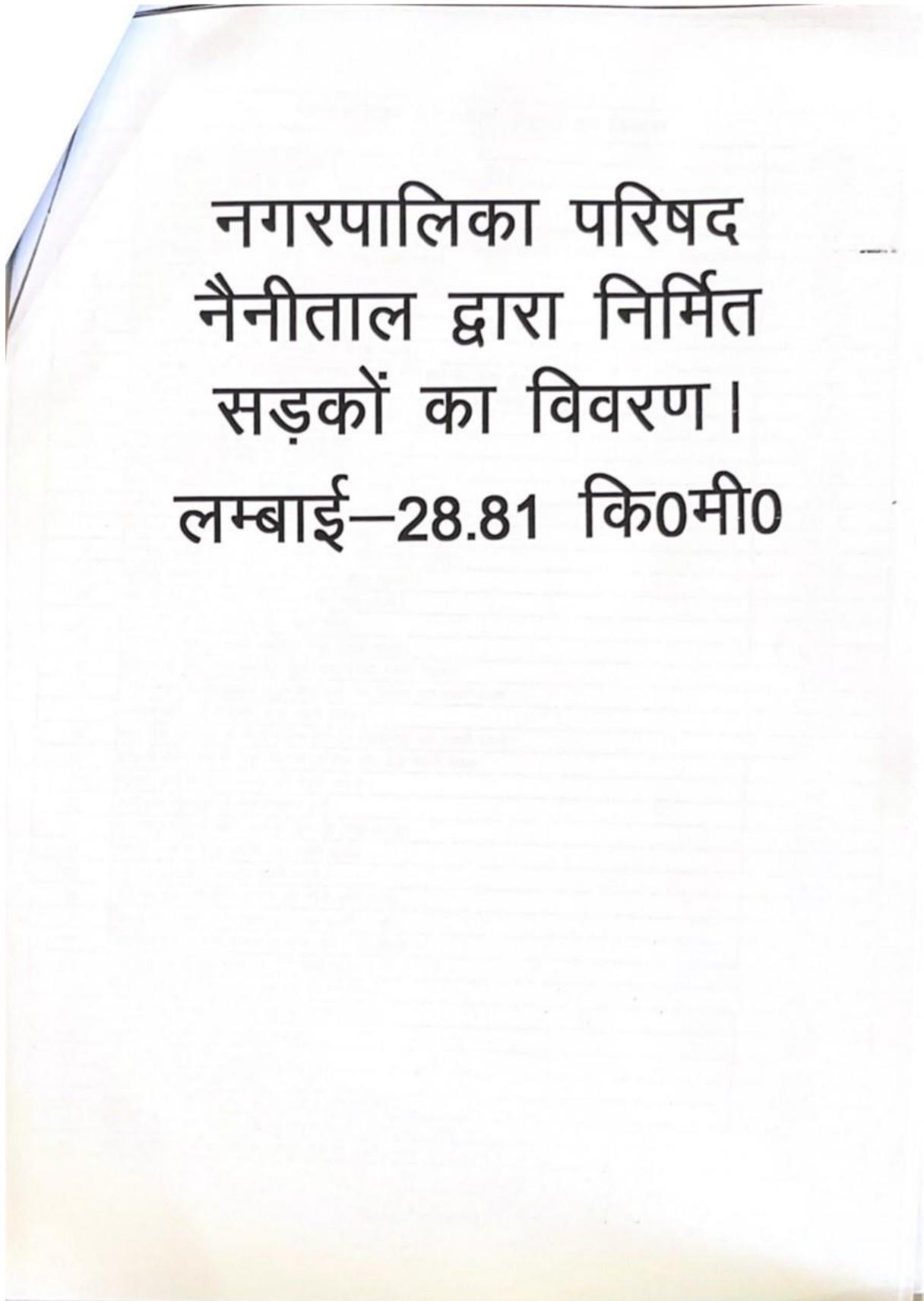
Sl. No.	NAME OF ROAD	LENGTH (KM.)	TYPE OF SURFACE
1	चार्टन रोड	0.382	CC
2	मेवीला रोड	1.311	CC
3	रामजे अस्पताल मार्ग	0.128	CC
4	मिडिल चीना मार्ग	2.373	PC
5	अल्मोडा (पिंदल मार्ग) ह0वा0 मार्ग	0.753	PC
6	लायल रोड	0.201	CC
7	कैलविन मार्ग	1.386	PC=0.286 CC=1.100
8	सिप्रिग फिल्ड मार्ग	1.197	PC=0.200 CC=0.997
9	अपर कालादूगी मोटर रोड	1.200	MS OVER SDBC=0.903 CC=0.297
10	मालडन रोड	0.400	CC
11	अपर चीना माल	5.244	CC
12	ब्लैथ कॉटेज मार्ग	0.932	CC
13	सेन्ट आसीफ मार्ग	0.386	CC
14	चार्टन लॉज	0.884	CC
15	स्लेनको मार्ग	0.222	CC
16	स्नोम्यू मार्ग	1.159	CC
17	स्टेफोल्ड मार्ग	0.747	CC=0.547 MS=0.200
18	मेलरोज मार्ग	0.350	CC
19	ब्रेवरली मार्ग	0.555	PC=0.185 CC=0.370
20	सुखाताल मार्ग	0.182	CC=0.182
21	बो कॉटेज मार्ग	0.500	CC
22	मेवीला रोड से मेवीला कम्पाउन्ड	0.200	CC
23	सेन्ट लू मार्ग	0.539	CC
24	स्टाफ हाउस मार्ग	0.092	CC
25	पिलग्रिम मार्ग	0.091	CC
26	ब्रेसोइड मार्ग	0.339	CC
27	टगस्टन मार्ग	0.390	CC
28	राजपुरा मार्ग	0.376	CC
29	सेवन ओक मार्ग	0.229	CC
30	रैमजे मार्ग	0.453	CC=0.453
31	औवरो रोड	0.732	CC
32	अपर अयारपाटा	2.667	MS OVER SDBC=0.750 CC=1.917
33	मिडिल अयारपाटा मार्ग	1.265	CC
34	गर्नी हाउस रोड	0.137	CC
35	डल हाउस रोड	0.975	CC
36	पोप रोड	0.168	CC
37	गैलोवे हाउस रोड	0.192	CC
38	एण्ड क्लिफ रोड	0.442	CC
39	वैलस्ले रोड	0.792	CC
40	फुलर रोड	0.198	CC
41	डोनाल्डबाद रोड	0.442	CC
42	ईटन हाउस रोड	0.213	CC
43	बेल्यू रोड	0.472	CC

	काठमाडौं रोड	0.320	CC
	काठमाडौं रोड	0.305	Brick Khadanja
	काठमाडौं रोड	0.914	Stone Khadanja
	काठमाडौं रोड	3.322	Stone Khadanja
	काठमाडौं रोड	1.295	Stone Khadanja
	काठमाडौं रोड	1.494	Stone Khadanja
	काठमाडौं रोड	0.838	Stone Khadanja
	काठमाडौं रोड	1.403	Stone Khadanja
	काठमाडौं रोड	0.152	Stone Khadanja
	काठमाडौं रोड	1.365	Kaccha
	काठमाडौं रोड	1.067	Stone Khadanja
	काठमाडौं रोड	0.630	Stone Khadanja
	काठमाडौं रोड	1.000	CC=0.700 Kaccha=0.300
	काठमाडौं रोड (ठंडी सड़क)	1.676	MS OVER SDBC=0.250 Kaccha=1.426
	काठमाडौं रोड	0.191	Kaccha
	<b>TOTAL</b>	<b>47.868</b>	

*(Handwritten signature)*

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Figure 29: Description length of roads by Nagar Palika Parishad, Nainital



## नगरपालिका क्षेत्रान्तर्गत सड़कों का विवरण

क्र.सं.	सड़क का नाम	ला० (मी०)
1	इन्द्रा फार्मसी मल्लीताल से पिछाड़ी बाजार सड़क नेशनल होटल तक।	225.00
2	तल्लीताल इन्द्रा फार्मसी से थाने तक बाजार सड़क।	207.30
3	तल्लीताल रामजे सड़क।	54.87
4	जोशी मिष्ठान भण्डार से रामजे सड़क तक पैदल मार्ग।	80.80
5	जोशी मिष्ठान भण्डार से पिछाड़ी बाजार तक पक्की सड़क।	30.48
6	इम्पायर होटल के पास से नेशनल होटल तक सीढ़ी सड़क।	28.96
7	नया बाजार के आगे पैदल सड़क पक्की।	112.80
8	नया बाजार के पीछे पैदल सड़क पक्की।	112.80
9	नेशनल होटल से लकड़ी टॉल तक की सड़क पक्की।	41.15
10	हल्द्वानी मोटर मार्ग से तल्लीताल पर्दाधारा लकड़ी टॉल तक की सड़क पक्की।	164.63
11	तल्लीताल थाने से नया बाजार तक की दोनों तरफ की पैदल सड़क पक्की।	91.46
12	तल्लीताल थाना मोटर गैराज धर्मशाला वाली पक्की सड़क।	137.19
13	कपूर इण्डस्ट्रीज से हरिनगर चौपालय तक।	152.43
14	कपूर इण्डस्ट्रीज के पीछे की सड़क दोनों तरफ पक्की।	106.70
15	हरिनगर स्वीपर्स क्वार्टर मिल हाउस तक की पक्की सड़क।	54.87
16	प्राईमरी पाठशाला से कमेटी लाईन हरिनगर तक सीढ़ीवाली सड़क।	137.19
17	हरिनगर भेड़ीखाना से बकरी कसाई खाना तक।	45.73
18	हरिनगर कमेटी लाईन से नया बाजार तक पैदल सड़क पक्की।	274.39
19	प्राईमरी पाठशाला से मस्जिद तक पैदल सड़क पक्की।।	51.82
20	तेल गोदाम कुली क्वार्टर से ड्रटका शॉप तक पक्की।	76.21
21	डिस्पेन्सरी से तेल गोदाम तक पक्की सड़क।	30.48
22	मस्जिद से स्वीपर क्वार्टर धोबीघाट तक पक्की सड़क।	76.21
23	मस्जिद के पीछे पी०डब्ल्यू०डी० कुली क्वार्टर तक पक्की सड़क।	91.46
24	बलियानाला पी०डब्ल्यू०डी० कुली क्वार्टर से नया बाजार तक पक्की सड़क।	259.14
25	नेशनल होटल से धोबीघाट तक पक्की सड़क।	198.17
26	कार्ट रोड टॉल बार से मोटर गैराज होते हुए डिस्पेन्सरी तक पक्की सड़क।	304.87
27	हल्द्वानी मोटर मार्ग से मोती सिंह के कोयला टाल तक पक्की सड़क।	21.34
28	सिपाही धारा से गुफा महादेव की पक्की सड़क।	64.00
29	तल्लीताल कृष्णापुर से गुफा महादेव तक।	152.43
30	तल्लीताल हल्द्वानी मोटर मार्ग से कृष्णापुर सीढ़ी सड़क।	152.43
31	सिपाही धारा से रईस होटल तक पक्की सड़क।	152.43
32	रईस होटल स्वीपर क्वार्टर कच्ची सड़क।	91.46
33	शमशान घाट चौकीदार क्वार्टर की दोनों तरफ सड़क।	170.73
34	भवाली मोटर मार्ग से शमशान घाट तक पक्की सड़क।	274.39
35	शमशान घाट लकड़ी गोदाम से फॉल तक कच्ची सड़क।	45.73
36	कार्ट रोड से सिपाही धारा तक की पक्की सड़क।	243.90
37	सिपाही धारा से मिश्रा भवन तक की पक्की सड़क।	106.70
38	गंगा कॉटेज से हल्द्वानी मार्ग तक की पक्की सड़क।	51.82
39	काठबांस पेल डिपो तक पक्की सड़क।	30.48
40	रामनी पेल डिपो की पक्की सड़क।	137.19
41	तल्लीताल शराब भट्टी सड़क।	21.34
42	हल्द्वानी पैदल मार्ग से हरनगर तक की पक्की सड़क।	45.73
43	मिडिल चीना माल स्टोनले गेट से बिड़ला स्वीपर क्वार्टर की सड़क।	1006.09
44	लेक यू मिडिल चीना माल से राजपुर तक की पक्की सड़क।	536.58

45	जुबली ग्रीव सड़क सिल्वर्टन होटल से जुबली ग्रीव तक पक्की सड़क।	271.34
46	राजपुरा पेल डिपो सड़क।	36.58
47	पॉपुलर्स रोड रिक्शा स्टैण्ड से शान्ति निकेतन तक पक्की सड़क।	170.73
48	पॉपुलर्स पेल डिपो तक की कच्ची सड़क।	65.54
49	वैलवैडियर रोड बड़ीदा बैंक से चार्टन लॉज तक की पक्की सड़क।	222.56
50	कहाला गार्डन लिंक सड़क कच्ची।	349.08
51	कहाला गार्डन से पुरानी चुगी तक खैरना सड़क कच्ची।	914.63
52	पुराना गर्वमेण्ट हाउस सड़क आल्मा हाउस तक।	954.26
53	स्नोव्यू नई सड़क घाड़ों के जाने वाली।	228.65
54	स्नोव्यू समर हाउस सड़क।	39.63
55	सैंट जू शौचालय सड़क।	47.25
56	देवपाटा पेल डिपो सड़क।	134.14
57	चीना टॉल बार से चीना अपर मिडिल माल तक।	533.53
58	आल्मा हाउस से कहाला गार्डन लिंक सड़क।	1524.39
59	नारायणनगर स्वीपर क्वार्टर सड़क।	91.46
60	पिटरिया टॉल बार से कालादुगी मोटर मार्ग तक की सड़क पक्की।	1533.53
61	पिटरिया टॉल बार से बारह पत्थर टोलबार तक लिंक सड़क।	533.53
62	नारायण नगर से पिटरिया स्वीपर क्वार्टर तक की सड़क पक्की।	170.73
63	नारायण नगर मोटर सड़क से सड़ियाताल तक की सड़क।	635.67
64	बारह पत्थर टोलबार से सड़ियाताल तक की सड़क।	2557.92
65	पिटरिया सड़क से नैरवाड़ी सड़क।	1615.85
66	गोलघर से इलाहाबाद बैंक गेट तक बाजार सड़क रामलीला स्टेट तक पक्की सड़क।	282.01
67	गोलघर से मोहन को तक पीछे बाजार की सड़क।	176.82
68	गाड़ी पड़ाव से गोलघर तक की खड़ी सड़क पक्की।	70.12
69	अनुपम होटल से मार्केट गेट तक बाजार सड़क।	195.12
70	लोअर कालादुगी सड़क से सब्जी मण्डी तक की खड़ी सड़क (कुड़ाघर से)	102.13
71	गाड़ी पड़ाव से प्राईमरी स्कूल जय लाल साह बाजार सड़क।	149.39
72	गाड़ी पड़ाव न्यू ट्रिस्ट होटल व आम शौचालय तक पक्की सड़क।	53.35
73	भटियार गली (पुरानी शराब भट्टी)।	33.53
74	शारदा संघ से गोलघर सीढ़ी सड़क पक्की।	57.92
75	शराब भट्टी सड़क।	59.45
76	मार्केट कम्पाउण्ड की सड़कें।	198.17
77	सदर लाईन स्वीपर क्वार्टर कमेटी लाईन स्टाफ क्वार्टर पक्की सड़कें।	286.58
78	पलेट एरिया की सड़कें।	730.18
79	लेक साईड गार्डन पाथ।	152.43
80	प्राईमरी पाठशाला लोअर कालादुगी रोड से बड़ा बाजार।	50.30
81	मल्लीताल गौशाला सड़क।	60.97
82	वैमरली रोड से गोपाला सदन तक जाने वाली सड़क।	104.00
82-अ	वैमरली रोड से वैमरली कॉटेज को जाने वाली सड़क।	48.00
83	मैलरोल वैमरली रोड से मैलरोज जुगली हॉल तक की सड़क जो चीना हाउस के बीच से गुजरती है।	468.00
84	सैनिक स्कूल के गेट से किलबरी रोड तक सड़क।	128.00
85	एशटेल स्कूल से नगरपालिका स्वीपर क्वार्टर तक सड़क।	88.00
86	इलाहाबाद बैंक से रॉयल होटल कम्पाउण्ड को जाने वाली सड़क।	64.00
87	नारायणनगर स्कूल सड़क।	28.82
88	कैलबरी मोटर मार्ग से चीना चुगी सड़क।	187.50
89	बच्चों निवास से जुबली हॉल तक सड़क।	94.51
90	खैरना से जुबली हॉल सड़क।	22.86

91	जुबली हॉल सड़क से हंस निवास ।	9.75
92	एशाडेल कम्पाउण्ड सड़क ।	74.08
93	सूखाताल स्टेशन से अधिकारी निवास ।	170.23
94	बेकरी कम्पाउण्ड की सड़क ।	97.25
95	अण्डा मार्केट से रजा बलब सड़क ।	28.96
96	इन्द्रा मार्केट सड़क ।	28.35
97	गाड़ी पड़ाव से जय लाल साह बाजार तक सड़क ।	39.63
98	रमपुरिया लाईन सड़क ।	25.30
99	गाड़ी पड़ाव न्यू स्टॉल सड़क ।	6.09
100	रमपुरिया लाईन की गलियां ।	22.86
101	कमेटी लाईन सीढ़ी सड़क	25.91
102	कमेटी लाईन गलियां सड़क ।	50.30
103	मल्लीताल मीट मार्केट की सड़क ।	8.23
104	डस्ट बिन से मोहन-को को जाने वाली सड़क ।	36.43
105	गोलघर से रामलीला स्टेज सड़क ।	193.00
106	घोर गली सड़क ।	70.00
107	एस0आई0 बार्डर सड़क ।	27.00
108	लो इन्कम ग्रुप सड़क ।	19.00
109	आवागढ़ बैंक सड़क ।	238.00
110	एस0आर0 हास्टेल सड़क ।	420.00
111	कैनिंग हाउस सड़क ।	127.00
112	मल्ला कुष्णापुर सड़क ।	171.50
113	केकलैण्ड सड़क ।	157.00
114	लोअर डांडा हाउस सड़क ।	89.00
115	लेक ब्यू सड़क ।	213.00
116	चार्टन लॉज सड़क ।	116.00
117	गुरु निवास कम्पाउण्ड की सड़क ।	90.00
118	बिलायत कॉटेज सड़क ।	178.00
119	लेण्ड एण्ड समर हाउस पाथ	40.00
120	टिफिन टॉप डोरथी सीट पाथ	70.00
121	मैलरोज मल्होत्रा की दुकान से भण्डारी निवास तक बड़ी सड़क	80.00
122	मैलरोज शर्मा आवास से किशोरी भवन	15.00
123	प्रोस्पेक्टस लॉज बुद्धीबल्लम के निवास से गंगनाथ मंदिर तक	135.00
124	ओमकार टलर से बिलायत कॉटेज सड़क	211.00
125	सिप्रिंग फील्ड सड़क से बोरा भवन से नाले तक सड़क	126.00
126	रुकुट नाले/पुल से निधान्त स्कूल तक सड़क	150.00
127	पिलग्रिम लॉज सड़क ।	80.00
128	कुर्नाघल कार्यालय से प्रेम सरोपर होटल के पीछे होतु हुए पाठक भवन से चार्टन लॉज तक ।	290.00
129	ब्रेसार्ड स्कूल गेट से सेंट ब्लाउड लाल कोठी तक सड़क ।	350.00
130	बिडला रोड से टाबस कम्पाउण्ड तक	110.00
131	मठताल कालादुंगी सड़क से एस0 के0 निवास तक ।	60.00
132	पौनी सराय से पेंटर गोदाम तक ।	10.00
133	लोअर कालादुंगी सड़क से कोर्णाक होटल पानी की टंकी तक सड़क ।	56.00
134	स्टोनले मिडिल चीना माल से मंगायली रामधन्द्र के घर तक सड़क ।	60.00
135	छाताल गायत्री निवास से कपूर लॉज तक सड़क ।	50.00
136	अपर डांडा सड़क लिंक रोड ।	172.00
137	लॉन ब्यू गेट से टी0एस0 रौतेला भवन तक सड़क ।	156.00

	पुलिस चिकित्सालय से जॉय विला तक सड़क।	
139	मिल हाउस बड़े नाले के किनारे से हरिनगर सुलभ तक	
140	बारापत्थर हनुमान मंदिर सड़क।	198.00
141	तःताल स्टोनले कम्पाउण्ड में स्टोनले भवन से जल स्रोत तक कच्ची सड़क	90.00
142	मःताल ओक लॉज में मुख्य सड़क पानी की टंकी से श्री कठायत के आवास तक सड़क।	39.00
143	एःटीःआईः सड़क स्विस् होटल से मनकापुर तक सड़क।	270.00
144	कृष्णापुर गोलघर से श्री लीला जोशी के आवास तक सड़क।	126.00
	कुल लम्बाई मी० में	143.00
	कुल लम्बाई कि०मी० में	15.00
		28808.91
		28.81

Source: (Nagar Palika Parishad, 2024)

Figure 30: List of Internal Roads of Nainital City Inside Municipality Limit

LIST OF INTERNAL ROADS OF NAINITAL CITY INSIDE MUNICIPALITY LIMIT

S NO.	NAME OF ROAD	LENGTH (KM.)	Average Width (M.)	TYPE OF SURFACE
Village road (motorable)				
1	लोअर माल रोड	1.435	5.950	MS OVER SDBC
2	अपर माल रोड	1.725	8.000	MS OVER SDBC
3	अपर कालाढूरी मोटर रोड	1.989	6.400	MS OVER SDBC=1.692 CC=0.297
4	रत्न-डन मोटर रोड	0.735	5.800	MS OVER SDBC
5	नैनीताल कालाढूरी मोटर रोड	2.140	5.800	MS OVER SDBC
TOTAL		8.024		
Village road (L.V.R)				
1	चार्टन रोड	0.382	5.220	CC
2	भंगोला रोड	1.311	3.430	CC
3	रामजे अस्पताल मार्ग	0.128	4.780	CC
4	मिडिल चीना मार्ग	2.373	3.260	PC
5	अल्मोडा (पंदल मार्ग) एडवाय 10 मार्ग	0.753	3.620	PC
6	लायल रोड	0.201	4.000	CC
7	कैलाशिन मार्ग	1.386	4.820	PC=0.286 CC=1.100
8	रिग्न फिन्ड मार्ग	1.197	3.360	PC=0.200 CC=0.997
9	माल्डन रोड	0.400	3.000	CC

लेक फ्रिज चुगी से गेट हाउस बरब गेट  
तल्लीताल डाट (गोपी मूर्ति से पास) स्टेट बैंक मल्लीताल  
नरिन्दर तिराहे से एरवोडीआई0, मोहन को0, चीना याया, मनु महारानी, ए0टीआई0 होते हुए पालिडेगिनक तक  
मरिजद तिराहे से अण्डा मार्केट होते हुए चीना याया चौराहे तक  
मनु महारानी से बारापत्थर

एरवोडीआई0 मल्लीताल से अनारलय होटल (बन्धु नवन के पास) चार्टन लॉज रोड पर मिलती है  
नैनीताल अल्मोडा पंदल मार्ग (बू रोड)से स्थिति खाती ली के घर से प्रारम्भ होकर जिला पंचायत कार्यालय से होते हुए सी0आर0एरवोडी0 कॉलेज के पास कैलाशिन मार्ग में मिलती है।  
मिडिल चीना मार्ग में बेलवाल होटल से प्रारम्भ होकर रामजे हास्पिटल तक तल्लीताल रिक्शा स्टैण्ड से प्रारम्भ होकर गोरी होटल, बैलकम होटल, भोटिया बेंच होते हुए चूना धारा के ऊपर चार्टन लॉज रोड मार्ग में मिलती है।  
अपर माल रोड में एमिलियन होटल से प्रारम्भ होकर मिडिया घर तक जाती है।  
अपर चीना मार्ग से प्रारम्भ होकर स्पोन्सू मार्ग में मिलती है।  
मल्लीताल रिक्शा स्टैण्ड से प्रारम्भ होकर सी0आर0एरवोडी0, डॉ गंगोला के आवास, भोटिया बेंच होते हुए बिल्ला चुगी के पास अपर चीना रोड में मिलती है।  
द्वैथ कॉलेज रोड में आरामशिन के पास से प्रारम्भ होकर बोहरा जनरल स्टोर के पास अपर चीना मार्ग पर मिलती है।  
मिडिल चीना मार्ग से प्रारम्भ होकर रामनीला ग्राण्ड 7 नो से होते हुए श्रीमती तुलसी कठायत के घर के ऊपर चार्टन लॉज मार्ग में मिलती है

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10	अपर चीना माल	5.244	3.780	CC	नैनीताल टाकी क्लबवरी मोटर मार्ग से सीनिक स्कूल ऊपर से प्रारम्भ होकर विडला चूरी होते हुए भगवती तक जाता है।
11	स्वैथ कोटेज मार्ग	0.932	3.050	CC	चीना बाबा चौराहे से प्रारम्भ होकर धूप की कोठी होते हुए सीनिक स्कूल के ऊपर नैनीताल टाकी क्लबवरी मोटर मार्ग में मिलती है।
12	रोट आसीफ मार्ग	0.386	3.600	CC	विडला चूरी से प्रारम्भ होकर विडला स्कूल के गेट तक।
13	घाटन लॉज	0.884	3.860	CC	गाहन कोठे चौराहे से प्रारम्भ होकर घुना घरा होते हुए श्रीमती दुलती कठायरा के घर के ऊपर अपर चीना मार्ग में मिलता है।
14	स्लेनको मार्ग	0.222	2.860	CC	रिप्रिज फील्ड मार्ग में आरामशीन के पास से प्रारम्भ होकर अमरावतय होटल (बन्ध भवन के पास) घाटन लॉज रोड पर मिलती है।
15	स्पोम्बू मार्ग	1.159	3.780	CC	नैनीताल टाकी क्लबवरी मोटर मार्ग के टाकी बन्द से प्रारम्भ होकर विडला चूरी पर अपर चीना मार्ग में मिलता है।
16	स्टेफोल्ड मार्ग	0.747	3.760	CC=0.547 MS=0.200	होटल वैदिलियन से प्रारम्भ होकर सीनिक स्कूल के ऊपर नैनीताल टाकी क्लबवरी मोटर मार्ग में मिलता है।
17	भेत्तरोज मार्ग	0.350	3.500	CC	होटल शेरवानी लॉज शार्ड बाबा मन्दिर के पास से प्रारम्भ होकर सीनिक स्कूल के पास स्टेफोल्ड मार्ग में मिलता है।
18	ब्रेवर्ली मार्ग	0.555	3.900	PC=0.185 CC=0.370	मोहन लाल साह बालिका विद्या मन्दिर (कुर्नावल बैंक) के पास से प्रारम्भ होकर शेरवानी होटल होते हुए नैनीताल टाकी क्लबवरी मोटर मार्ग में मिलता है।
19	सो कोटेज मार्ग	0.500	3.800	CC	मिडिल चीना रोड (शेडिया बन्द) से प्रारम्भ होकर तारा हॉल कम्पाउण्ड के पास अपर चीना मार्ग में मिलता है।
20	मेरीला रोड से मेरीला कम्पाउण्ड	0.200	4.220	CC	पूर्व सांसद श्री महेन्द्र सिंह माल के घर से प्रारम्भ होकर शिव मन्दिर के पास मिलती है।
21	सेन्ट लू मार्ग	0.539	3.850	CC	विडला चूरी से प्रारम्भ होकर सो कोटेज रोड में मिलती है।
22	रटाफ हाऊस मार्ग	0.092	3.350	CC	सो कोटेज मार्ग से प्रारम्भ होकर गाहन रोड में मिलती है।
23	मिलग्रिम मार्ग	0.091	4.200	CC	घाटन लॉज मार्ग से घुना घरा के पास से प्रारम्भ होकर पूर्व विधायक जन्मवाल जी के मदन के ऊपर से होते हुए सिंग फील्ड मार्ग में मिलती है।
24	बेरोस्टड मार्ग	0.339	3.600	CC	अपर चीना मार्ग 7 नं० से प्रारम्भ होकर स्पोम्बू मार्ग में मिलती है।
25	टगरटन मार्ग	0.390	2.900	CC	मेरीला रोड होटल अनामिका से प्रारम्भ होकर मिडिल चीना मार्ग में मिलता है।
26	राजपुरा मार्ग	0.376	3.050	CC	अपर माल रोड से नानक होटल से प्रारम्भ होकर मेरीला रोड होते हुए राजपुरा कम्पाउण्ड में मिलती है।
27	रोशन ओक मार्ग	0.229	2.800	CC	नैनीताल क्लब के पास से प्रारम्भ होकर रत्नको मार्ग में मिलती है।
29	TOTAL इस्ट लेगन मार्ग	29.390 1.800		MS OVER SDBC MS OVER SDBC	

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30	रेनले मार्ग	0.853	MS OVER SDBC=0.400 CC=0.453	MS OVER SDBC=0.400 CC=0.454
31	औकरो रोड	0.732	CC	CC
32	अपर अयारपाटा	2.667	MS OVER SDBC=0.750 CC=1.917	MS OVER SDBC=0.750 CC=1.918
33	मिडिल अयारपाटा माल	1.265	CC	CC
34	मर्नी हाउस रोड	0.137	CC	CC
35	उत हाउस रोड	0.975	CC	CC
36	पोप रोड	0.168	CC	CC
37	गैलिंगे हाउस रोड	0.192	CC	CC
38	एण्ड विल्फ रोड	0.442	CC	CC
39	पैलरले रोड	0.792	CC	CC
40	ओसले रोड	0.610	MS OVER SDBC	MS OVER SDBC
41	फुल्लर रोड	0.198	CC	CC
42	डोनाल्डगार रोड	0.442	CC	CC
43	ईटन हाउस रोड	0.213	CC	CC
44	वेल्थ्यू रोड	0.472	CC	CC
45	साउथ बुड रोड	0.320	CC	CC
46	डररुम हाउस रोड	0.305	CC	CC
47	अयारपाटा रोड	0.914	Brick Khadanja	Brick Khadanja
48	मैकडोनल्ड साइडल रोड	3.322	Stone Khadanja	Stone Khadanja
49	अयारपाटा हिल रोड	1.295	Stone Khadanja	Stone Khadanja
50	प्रारंपेट रोड	1.494	Stone Khadanja	Stone Khadanja
51	लैण्डस एण्ड रोड	0.838	Stone Khadanja	Stone Khadanja
52	टाकी मार्ग	1.403	Kaccha	Kaccha
53	चीना लॉज मार्ग	0.152	Kaccha	Kaccha
54	अल्गोडा पेंदल मार्ग	1.365	Kaccha	Kaccha
55	चीना वेस्ट	1.067	Kaccha	Kaccha
56	चीना ईस्ट	0.630	Kaccha	Kaccha
57	बारापथर से कन्नरतान मार्ग	1.000	CC=0.700 Kaccha=0.200	CC=0.700 Kaccha=0.301
58	सालथ माल रोड (हंडी सड़क)	1.676	MS OVER SDBC=0.250 Kaccha=1.426	MS OVER SD:3C=0.250 Kaccha=1.427
59	वियाना लॉज रोड	0.191	Kaccha	Kaccha
	<b>TOTAL</b>	<b>27.930</b>		
	<b>NET TOTAL</b>	<b>65.344</b>		

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Source: Nagar Palika Parishad, Nainital

Figure 31: List of such roads owned by the Municipality whose maintenance work will be done by the Public Works Department.

पालिका के स्वामित्व वाले ऐसे मार्गों की सूची जिनके रखरखाव का कार्य लो0नि0वि0 द्वारा किया जायेगा

S NO.	NAME OF ROAD	LENGTH (KM.)	TYPE OF SURFACE	Year of Renewal
1	लोअर माल रोड	1.435	MS OVER BC	03/2016
2	अपर माल रोड	1.725	MS OVER BC	05/2015
3	अपर कालाढूगी मोटर रोड (मस्जिद तिराहे से मोहन को0 होते हुए मनुमहारानी तक का प्रभाग)	0.539	MS OVER BC	03/2016
4	ग्लैन्डन मोटर रोड	0.735	MS OVER BC	03/2016
5	ईस्ट लैगन मार्ग	1.800	MS OVER BC	10/2015
6	रैगजे मार्ग (जिलाधिकारी कार्यालय से राजभवन तक का प्रभाग)	0.450	MS OVER SDBC	03/2016
7	अंसले रोड	0.610	MS OVER SDBC	03/2016
8	साउथ माल रोड (तल्लीताल डॉट से फॉर्सी गधेरे तक का प्रभाग)	0.250	MS OVER SDBC	03/2013
	कुल योग	7.544		

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Source: (Nagar Palika Parishad, 2024)

Figure 32: List of Roads to be Inspected on Sher-Ka-Danda Hill

( 63 )

*List of roads to be inspected on Sher-ka-danda Hill.*

Number.	Name of road,	Length of road in feet.	Length of road- side drains.	Remarks.
1	Middle Cheena Mall (from North Mall near Talli Tal boat-house to Charlton Lodge Road).	7,750	4,404	
2	Bough Cottage Road (from Colvin road to Upper Cheena Mall).	1,400	1,400	
3	Melville Road (from Mission School to Primrose).	4,800	634	
4	Upper Cheena Mall (from Woodstock to Almora Road).	17,200	11,340	Part in Baranala system. Total length given here.
5	Colvin Road (from Poplars to St. Leo Gorge) ..	5,150	5,470	
6	St. Leo Road (from Bough Cottage Road to Maldon House Road).	800	800	
7	Maldon House Road (from Staff House to Charlton Lodge Road).	1,050	815	
8	Rajput Road (from North Mall to Dudley Groove).	1,200	090	
9	Lyal Road (from Snow View Road to Upper Cheena Mall).	500	500	
U10	Staff House Road (from Bough Cottage Road to St. Leo Road).	250	250	
U11	Deas side Road (from Alma House Road to Snow View).	350	350	
12	Alma Road (from Alma House to Upper Cheena Mall).	750	562	
13	Snow View Road (from St. Leo Gorge to Upper Cheena Mall).	3,800	3,500	
14	Charlton Lodge Road (from Waverley Hotel to Upper Cheena Mall).	2,900	2,910	
15	Charlton Road (from North Mall to Charlton Lodge Road).	1,000	850	
16	Springfield Road (from Naini Tal Club to Upper Cheena Mall).	2,300	2,300	
17	Pilgrim Road (from Charlton Lodge Road to Springfield Road).	800	300	
U18	St. Asaph Road (from St. Leo Gorge to Oak Openings).	1,800	850	
U19	Glencoe Road (from Charlton Lodge Road to Springfield Road).	700	850	
U20	Seven Oaks Road (from Glencoe Road to Upper Kaladhungi Road).	750	1,100	
U21	Tunstall Hall Road (from Melville Road to Middle Cheena Mall).	1,300	817	
22	Ramsay Hospital Road (from Middle Cheena Mall to the gate of Rohilla Lodge).	350	35	
23	North Bridle Road (from Soldiers' Boat-house, Talli Tal, to Flats).	4,650	450	
		62,740	40,580	
<i>Provincial Road.</i>				
1	The North Mall from Motor Parao Talli, Tal, to Upper Kaladhungi Road).			
2	Upper Almora Road (from Talli Tal Post Office to its junction with Naini Tal Rangarh Road).			

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Source: (Nagar Palika Parishad, 2024)

Figure 33: Sher-Ka-Danda Drainage System

( 64 )

J. SHER-KA-DANDA DRAINAGE SYSTEM.—This system comprises all the drains of Sher-ka-danda from Lake bridge to Upper Bazar.

Drain no.	Length of drain.	Width of drain.	Depth of drain.	Section of masonry.	Year of construction.	Kind of masonry.		Condition of masonry.		By whom construct. ed.	Remarks.
						In bed.	In sides.	In bed.	In sides.		
U 1 ..	665	3 to 7	1½ to 3½	1½	1880	Lime masonry.	Lime masonry.	Good	Good	Mr. Willcocks.	
(a) ..	673	1½ to 3	1 to 1½	1½	1905	Do ..	Do ..	Do	Do	}	
(b) ..	251	1½	1	1½	1905	Do ..	Do ..	Do	Do		
(c) ..	612	1½ to 2½	1 to 1½	1½	1905	Do ..	Do ..	Do	Do		
U 2 ..	1,237	1½ to 3	1 to 2½	1½	1905	Do ..	Do ..	Do	Do	Mr. Coole.	
(a) ..	810	1	1	1½	1905	Do ..	Do ..	Do	Do	}	
(b) ..	59	1	1	1	1905	Do ..	Do ..	Do	Do		
(c) ..	218	2	1½	1½	1905	Do ..	Do ..	Do	Do		
U 3 ..	375	1 to 2	2 to 1½	1½	1899	Do ..	Do ..	Do	Do	}	
(a) ..	165	1	1	1	1899	Do ..	Do ..	Do	Do		Mr. Wildeblood.
U 4 ..	510	3	2	1½	1880	Do ..	Do ..	Do	Do	}	
(a) ..	226	1½	1½	1½	1880	Do ..	Do ..	Do	Do		
U 5 ..	373	4	2	1½	1850	Do ..	Do ..	Do	Do	Mr. Willcocks.	
U 6 ..	1,500	2 to 5	2	1½	1880	Do ..	Do ..	Do	Do	}	
(a) ..	61	1	1	1	1880	Do ..	Do ..	Do	Do		
(b) ..	147	3	1½	1½	1932	Do ..	Do ..	Do	Do		Mr. Willmott.
(c) ..	203	2 to 3	1½ to 2	1½	1830	Do ..	Do ..	Do	Do	}	
(d) ..	536	2	2½	1½	1880	Do ..	Do ..	Do	Do		
(e) ..	875	2	1½	1½	1880	Do ..	Do ..	Do	Do		
(f) ..	10	3	1	1½	1880	Do ..	Do ..	Do	Do		
U 7 ..	1,475	2	1½	1	1856	Do ..	Do ..	Do	Do	}	
(a) ..	631	1½	1	1	1895	Do ..	Do ..	Do	Do		
8 ..	1,569	2	1½	1	1896	Do ..	Do ..	Do	Do		Mr. Willmott.
(a) ..	157	1½	1	1	1896	Do ..	Do ..	Do	Do	}	
9 ..	1,516	1	1½	1	1896	Do ..	Do ..	Do	Do		
(a) ..	239	2	1½	1	1896	Do ..	Do ..	Do	Do	}	
(b) ..	71	1½	1	1	1856	Do ..	Do ..	Do	Do		
10 ..	407	2½	3	1½	1890	Do ..	Do ..	Do	Do	}	
(a) ..	226	1½	1½	1	1880	Do ..	Do ..	Do	Do		
11 ..	2,459	3 to 4	1½ to 3	1½	1878, 1880 or 1903	Do ..	Do ..	Do	Do	Mr. Willcocks, Mr. Wildeblood and Mr. Willmott.	
(a) ..	62	1	1	1	Do	Do ..	Do ..	Do	Do	Ditto.	
U 12 ..	801	3	1	1	1880	Do ..	Do ..	Do	Do	Mr. Willcocks.	
13 ..	2,036	1½ to 4	1½ to 2	1½	1883 and 1907	Do ..	Do ..	Do	Do	Mr. Willcocks and Mr. Coole.	
(a) ..	910	1½	1½	1½	1866	Do ..	Do ..	Do	Do	}	
(b) ..	788	1½	2	1	1896	Do ..	Do ..	Do	Do		
(c) ..	489	3	1½	1	1895	Do ..	Do ..	Do	Do		
(d) ..	75	1½	1	1	1896	Do ..	Do ..	Do	Do		
(e) ..	15	1½	1½	1	1890	Do ..	Do ..	Do	Do		

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{ 65 }

SHER-KA-DANDA DRAINAGE SYSTEM.—This system comprises all the drains of Sher-ka-danda from Lake bridge to Upper Bazar—(continued).

Drain no.	Length of drain.	Width of drain.	Depth of drain.	Section of masonry.	Year of construction.	Kind of masonry.		Condition of masonry.		By whom constructed.	Remarks.
						In bed.	In sides.	In bed.	In sides.		
13 (f) ..	468	2	1	1	1896	Lime masonry.	Lime masonry.	Good	Good		
(g) ..	1060	1½	1½	1	1896	Do ..	Do ..	Do ..	Do ..		
(A) ..	60	1½	½	1	1896	Do ..	Do ..	Do ..	Do ..		
(i) ..	182	1	1	1	1896	Do ..	Do ..	Do ..	Do ..		
(j) ..	183	1	1	1	1896	Do ..	Do ..	Do ..	Do ..		
(k) ..	78	1	1	1	1896	Do ..	Do ..	Do ..	Do ..		
(l) ..	68	1	1½	1	1896	Do ..	Do ..	Do ..	Do ..		
(m) ..	20	1	1	1	1896	Do ..	Do ..	Do ..	Do ..		
(n) ..	468	1½	1	1	1896	Do ..	Do ..	Do ..	Do ..		
(o) ..	50	1	1	1	1896	Do ..	Do ..	Fair..	Fair		
14 ..	2,865	1½ to 5	1½ to 2	1½	1890	Do ..	Do ..	Good	Good	Mr. Wildeblood.	The toe has subsided and concrete lining cracked.
(a) ..	1,535	1½	1	1	1896	Do ..	Do ..	Do ..	Do ..		
(b) ..	182	1½	1	1	1896	Do ..	Do ..	Do ..	Do ..		
(c) ..	85	1½	1	1	1896	Do ..	Do ..	Do ..	Do ..		
(d) ..	44	1	1	1	1896	Do ..	Do ..	Do ..	Do ..		
(e) ..	48	1	1	1	1896	Do ..	Do ..	Do ..	Do ..		
(f) ..	90	1	1	1	1896	Do ..	Do ..	Do ..	Do ..		
(g) ..	98	1	1	1	1896	Do ..	Do ..	Do ..	Do ..		
15 ..	510	2	2	1½	1896	Do ..	Do ..	Do ..	Do ..	Mr. Oliphant.	
(a) ..	50	1½	1½	1½	1896	Do ..	Do ..	Do ..	Do ..		
(b) ..	120	1	1	½	1896	Do ..	Do ..	Do ..	Do ..		
(c) ..	740	1½	1½	1½	1896	Do ..	Do ..	Do ..	Do ..		
(d) ..	402	1	1	1	1896	Do ..	Do ..	Do ..	Do ..		
16 ..	2,224	1½ to 4	1½ to 4	1½	1890	Do ..	Do ..	Do ..	Do ..	Mr. Willcocks.	
(a) ..	1,415	1 to 3	1 to 2	1½	1890	Do ..	Do ..	Do ..	Do ..		Mr. Willcocks &
(b) ..	238	1	1	½	1890	Do ..	Do ..	Do ..	Do ..	Mr. Coode.	
(c) ..	334	1½	1½	1	1890	Do ..	Do ..	Do ..	Do ..	Mr. Willcocks.	
(d) ..	110	1	½	½	1893	Do ..	Do ..	Do ..	Do ..		Mr. Wildeblood.
(e) ..	183	1	1	½	1896	Do ..	Do ..	Do ..	Do ..	Mr. Willcocks.	
(f) ..	235	3	1½	1½	1890	Do ..	Do ..	Do ..	Do ..		Mr. Willcocks.
(g) ..	332	1 to 1½	1 to 1½	1	1896	Do ..	Do ..	Do ..	Do ..	Mr. Wildeblood.	
(h) ..	612	1½	1	1	1896	Do ..	Do ..	Do ..	Do ..		Mr. Willcocks.
(i) ..	240	1½	1½	1	1896	Do ..	Do ..	Do ..	Do ..	Mr. Willmott	
(j) ..	88	1½	1	1	1903	Do ..	Do ..	Do ..	Do ..		Mr. Willcocks & Mr. Willmott.
(k) ..	835	2 to 3	1½ to 2	1½	1890	Do ..	Do ..	Do ..	Do ..	Mr. Willmott.	
(l) ..	66	1½	1½	1½	1903	Do ..	Do ..	Do ..	Do ..		Mr. Willmott.
(m) ..	57	2	1½	1	1903	Do ..	Do ..	Do ..	Do ..		

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{ 66 }

1. SHER-KA-DANDA DRAINAGE SYSTEM.—This system comprises all the drains of Sher-ka-danda from Lake bridge to Upper Bazar—(continued).

Drain no.	Length of drain.	With of drain.	Depth of drain.	Section of masonry.	Year of construction.	Year of masonry.		Condition of masonry.		By whom constructed.	Remarks.
						In bed.	In sides.	In bed.	In side.		
Dt. forward	88,191										
18	2,500	2' to 6'	1½ to 3	1½	1880	Lime masonry.	Lime masonry.	Good	Good	Mr. Willcocks.	
(a) ..	510	1½	1½	1	1880	Do ..	Do ..	Do ..	Do ..		
(b) ..	552	2	1½	1½	1896 & 1903	Do ..	Do ..	Do ..	Do ..	Mr. Wildeblood and Mr. Willmott.	
(c) ..	65	2	1½	1½	1896 & 1903	Do ..	Do ..	Do ..	Do ..		
(d) ..	370	1½	1½	1	1903	Do ..	Do ..	Do ..	Do ..	Mr. Wildeblood.	
(e) ..	123	1	1	1	1896	Do ..	Do ..	Do ..	Do ..		
(f) ..	870	1½ to 2	1 to 1½	1	1895	..	..	..	..	..	This drain does not exist.
(g) ..	..	..	..	..	..	Do ..	Do ..	Do ..	Do ..	Mr. Willcocks and Mr. Wildeblood.	
(h) ..	510	2	2	1½	1880 & 1896	Do ..	Do ..	Do ..	Do ..		
(i) ..	..	..	..	..	..	..	..	..	..	..	This drain does not exist.
(j) ..	118	1½	1	1	1896	Do ..	Do ..	Do ..	Do ..	Mr. Wildeblood.	
(k) ..	38	1	1½	1	1893	Do ..	Do ..	Do ..	Do ..		
(l) ..	830	1½	1½	1½	1896 & 1903	Do ..	Do ..	Do ..	Do ..	Mr. Willmott.	
(m) ..	83	1	1	1	1895	Do ..	Do ..	Do ..	Do ..		Mr. Wildeblood.
20	2,524	1 to 5	2 to 2½	1½	1880	Do ..	Do ..	Do ..	Do ..	Mr. Willcocks.	
(a) ..	45	1	1	1	1880	Do ..	Do ..	Do ..	Do ..		
(b) ..	270	1	1	1	1896	Do ..	Do ..	Do ..	Do ..	Mr. Wildeblood.	
(c) ..	255	1	1	1	1896	Do ..	Do ..	Do ..	Do ..		
(d) ..	490	1½	1½	1	1896	Do ..	Do ..	Do ..	Do ..	Mr. Wildeblood.	
(e) ..	160	1	1	1	1896	Do ..	Do ..	Do ..	Do ..		
(f) ..	430	1½	1½	1	1896	Do ..	Do ..	Do ..	Do ..	Mr. Willcocks and Mr. Willmott.	
(g) ..	300	1½	1½	1	1896	Do ..	Do ..	Do ..	Do ..		
(h) ..	200	1½	1½	1	1896	Do ..	Do ..	Do ..	Do ..	Mr. Willcocks.	
(i) ..	15	1½	1½	1	1880	Do ..	Do ..	Do ..	Do ..		
(j) ..	600	1½ to 4	1½ to 3	1½	1880	Do ..	Do ..	Do ..	Do ..	Mr. Willcocks.	
(k) ..	26	1	1	1	1880	Do ..	Do ..	Do ..	Do ..		
(l) ..	185	1½	1½	1	1880	Do ..	Do ..	Do ..	Do ..	Mr. Wildeblood.	
(m) ..	119	1	1	1	1896	Do ..	Do ..	Do ..	Do ..		
(n) ..	339	1 to 1½	1 to 1½	1	1896	Do ..	Do ..	Do ..	Do ..	Mr. Willcocks and Mr. Willmott.	
(o) ..	285	1	1	1	1880 & 1902	Do ..	Do ..	Do ..	Do ..		
(p) ..	190	1½	1½	1	1896	Do ..	Do ..	Do ..	Do ..	Mr. A. C. Mukerjee	
(q) ..	190	1½	1½	1	1890 & 1902	Do ..	Do ..	Not do.	Not do.		Mr. Willcocks and Mr. Willmott.
21	9,810	1½ to 10	1 to 4	2	1903						

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{ 67 }

SHER-KA-DANDA DRAINAGE SYSTEM.—This system comprises all the drains of Sher-ka-danda from Lake bridge to Upper Bazar—concluded.

Drain no.	Length of drain.	Width of drain.	Depth of drain.	Station of masonry.	Year of construction.	Kind of masonry.		Quantity of masonry.		By whom constructed.	Remarks.
						In bed.	In sides.	In bed.	In sides.		
(a) ..	108	1½	1½	1	1860	Lime masonry.	Lime masonry.	Not do.	Not do.	} Mr. Wildeblood.	
(b) ..	85	1½	1½	1	1896	Do ..	Do ..	Do ..	Do ..		
(c) ..	263	1½ to 2	1½ to 2	1	1880	Do ..	Do ..	Do ..	Do ..	Mr. Willcocks.	
					1896 & 1902	Do ..	Do ..	Do ..	Do ..	Mr. Willmott and Mr. Wildeblood.	
(d) ..	103	1	1½	2	1896	Do ..	Do ..	Do ..	Do ..	} Mr. Wildeblood.	
(e) ..	71	1	1	½	1896	Do ..	Do ..	Do ..	Do ..		
(f) ..	775	1 to 1½	1 to 1½	1	1896 & 1903	Do ..	Do ..	Do ..	Do ..	Mr. Willmott.	
(g) ..	154	1	1	1	1880	Do ..	Do ..	Do ..	Do ..	} Mr. Willcocks.	
(h) ..	1,867	1½ to 3	2	1½	1880	Do ..	Do ..	Do ..	Do ..		
(i) ..	..	..	..	..	..	..	..	..	..	..	
(j) ..	314	1½	1½	1	1896	Do ..	Do ..	Do ..	Do ..	} Mr. Wildeblood.	
(k) ..	655	1½	1½	1	1896	Do ..	Do ..	Do ..	Do ..		
(l) ..	1,180	1 to 2	1 to 2½	1½	1880	Do ..	Do ..	Do ..	Do ..	} Mr. Willcocks. and Mr. Wildeblood.	
(m) ..	678	1 to 2	1½ to 2	1½	1880 & 1896	Do ..	Do ..	Do ..	Do ..		
(n) ..	722	1	1 to 1½	1	1880	Do ..	Do ..	Do ..	Do ..	Mr. Willcocks.	
(o) ..	93	1½	1	1	1903	Do ..	Do ..	Do ..	Do ..	Mr. Willmott.	
(p) ..	196	1½	1	1	1896	Do ..	Do ..	Do ..	Do ..	Mr. Wildeblood.	
21 (q) ..	58	2	1½	1½	1880	Do ..	Do ..	Do ..	Do ..	Mr. Willcocks.	
(r) ..	100	1½	1	1	1903	Do ..	Do ..	Do ..	Do ..	} Mr. Willmott.	
(s) ..	50	1½	1	1	1903	Do ..	Do ..	Do ..	Do ..		Mr. Willcocks.
(t) ..	547	1½ to 8½	2	1½	1880	Do ..	Do ..	Do ..	Do ..	} Mr. Willmott.	
(u) ..	18	1½	1	1	1903	Do ..	Do ..	Do ..	Do ..		
(v) ..	810	1½ dia.	..	1	1900	Do ..	Do ..	Do ..	Do ..	} Mr. A. C. Mukerjee.	
(w) ..	76	1	1	1	1903	Do ..	Do ..	Do ..	Do ..		
(x) ..	48	1	1	1	1903	Do ..	Do ..	Do ..	Do ..		
(y) ..	200	1½	1½	1	1928	Do ..	Do ..	Do ..	Do ..		
Total ..	64,252										

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Source: (Nagar Palika Parishad, 2024)

Figure 34: District Nainital month wise tourist statistics from year 2011 to 2021

जनप्रद नैनीताल की वर्ष 2011 से 2021 तक माह वार पर्यटक सांख्यिकी

माह	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
जनवरी	47024	50754	54730	53002	34894	53285	56462	57,078	61053	60766	32918
फरवरी	27496	29606	33701	32913	56181	37919	40219	43,416	51600	52109	31987
मार्च	31596	33903	37491	34324	37109	39788	42035	48,098	52007	39175	36709
अप्रैल	50312	54700	59815	55119	57488	62224	66254	71,303	76690	.	28411
मई	104280	112667	121757	112007	117695	126992	137497	1,48,08	156283	.	8779
जून	264793	285998	254506	272641	300683	382748	359682	3,25,95	350829	.	18872
जुलाई	78327	84482	18288	20700	22410	24336	24495	26,126	26998	57	22898
अगस्त	54494	58837	16353	19606	42840	12392	15777	18,172	22999	118	24775
सितम्बर	50699	54748	32864	34504	35636	37566	33835	36,017	24698	575	24974
अक्टूबर	65042	67439	47376	49370	53424	56213	53598	59,676	27306	15505	25407
नवम्बर	33056	35819	31679	34542	37407	39403	41539	43,457	26969	16125	33583
दिसम्बर	35838	37380	35758	39395	42533	44526	46268	56,286	56474	31319	36946
योग	843815	906333	744218	758123	815805	873395	917661	933661	933906	215749	326259

Total May 23 - 401  
May

Source: Tourism Department, Nainital

Figure 35: Baranala System, Nainital

( 68 )

## II.—Baranala System.

1. *Boundaries*.—This system includes the whole of the area from the Lake westwards, lying between the Lower Kaladhungi Road and the Cheena Ridge up to drain no. 23, the eastern boundary being formed by drain no. 23 up to where it crosses the Upper Kaladhungi Road, from where the boundary runs along the latter road to the lake.

Branches of drain no. 23 and the tributaries of Baranala are to be taken as belonging to this system.

2. *Roads and side drains*.—See separate list, page 126.

3. *Provincial drains*.—See separate list, pages 127 to 130.

4. *Dangerous area*.—Included in Sher-ka-danda System dangerous area.

5. *Affected localities*.—(1) Hillsides above and below the Hermitage Road.

(2) Overhanging masses of rock on the Cheena Hill from where slips occur above Oak Park.

(3) Portion of Glenlee spur in this area.

6. *Protective works*.—(a) Adit below St. Helens near branch "n" of drain no. 23.

(b) Protective wall and trenches above Upper Cheena Mall at the junction with Tonnochy Road.

(c) Protective breast walls above Upper Cheena Mall near Oak Park.

(d) Barriers above Upper Cheena Mall.

(e) Underpinning walls on Hermitage Road.

*Observation works*.—(1) Observation at Jesmond Villa and Tonnochy.

(2) Pillar on Blythe Cottage spur.

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Source: (*Nagar Palika Parishad, 2024*)

Figure 36: Tariff for water Supply in Nainital

## उत्तराखण्ड जल संस्थान

दिनांक 01-04-2023 से प्रभावी दरें

1- न्यूनतम प्रभार (जलमूल्य) ₹ प्रतिमाह घरेलू नगरीय क्षेत्र की जलापूर्ति हेतु भवन के वार्षिक मूल्यांकन पर :

क्र० सं०	भवन का वार्षिक मूल्यांकन	दिनांक 01-04-2013 को प्रभावी दरें (मूल दरें)			मूल दरों का 96/118 प्रतिशत			01-04-23 से प्रभावी दरें		
		गुरुत्व	लोहेड	हाईहेड	गुरुत्व	लोहेड	हाईहेड	गुरुत्व	लोहेड	हाईहेड
1	₹ 360.00 तक	90.00	95.00	102.00	86.40	91.20	97.92	176.40	186.20	199.92
2	₹ 361.00 से 2000.00 तक	95.00	102.00	110.00	91.20	97.92	105.60	186.20	199.92	215.60
3	₹ 2001.00 से 3500.00 तक	112.00	120.00	135.00	107.52	115.20	129.60	219.52	235.20	264.60
4	₹ 3501.00 से 6000.00 तक	150.00	164.00	187.00	177.00	193.52	220.66	327.00	357.52	407.66
5	₹ 6001.00 से 8000.00 तक	179.00	187.00	224.00	211.22	220.66	264.32	390.22	407.66	488.32
6	₹ 8001.00 से 10000.00 तक	209.00	224.00	239.00	246.62	264.32	282.02	455.62	488.32	521.02
7	₹ 10001.00 से 12000.00 तक	224.00	239.00	260.00	264.32	282.02	306.80	488.32	521.02	566.80
8	₹ 12001.00 से 14000.00 तक	239.00	260.00	275.00	282.02	306.80	324.50	521.02	566.80	599.50
9	₹ 14001.00 से अधिक	325.00	350.00	375.00	383.50	413.00	442.50	708.50	763.00	817.50

2- जलमूल्य (घरेलू न्यूनतम प्रभार) (₹ प्रतिमाह) नगरीय एवं ग्रामीण, :-

क्र० सं०	मीटर साइज (एम.एम.)	दिनांक 01-04-2013 को प्रभावी दरें (मूल दरें)			मूल दरों का 150 प्रतिशत			01-04-23 से प्रभावी दरें		
		गुरुत्व	लोहेड	हाईहेड	गुरुत्व	लोहेड	हाईहेड	गुरुत्व	लोहेड	हाईहेड
1	20	380.00	450.00	520.00	570.00	675.00	780.00	950.00	1125.00	1300.00
2	25	600.00	750.00	900.00	900.00	1125.00	1350.00	1500.00	1875.00	2250.00

3- जलमूल्य न्यूनतम प्रभार (₹ प्रतिमाह) जहां भवन का वार्षिक मूल्यांकन नहीं है तथा ग्रामीण क्षेत्र की घरेलू जलापूर्ति :

क्र० सं०	विवरण	दिनांक 01-04-2013 को प्रभावी दरें (मूल दरें)			मूल दरों का 96/118 प्रतिशत			01-04-23 से प्रभावी दरें		
		गुरुत्व	लोहेड	हाईहेड	गुरुत्व	लोहेड	हाईहेड	गुरुत्व	लोहेड	हाईहेड
1	एक टॉटीयुक्त जल संयोजन	55.00	60.00	67.00	52.80	57.60	64.32	107.80	117.60	131.32
2	दो टॉटीयुक्त जल संयोजन	67.00	75.00	90.00	64.32	72.00	86.40	131.32	147.00	176.40
3	तीन टॉटीयुक्त जल संयोजन	90.00	112.00	135.00	106.20	132.16	159.30	196.20	244.16	294.30
4	चार टॉटीयुक्त या उससे अधिक	112.00	135.00	150.00	132.16	159.30	177.00	244.16	294.30	327.00

## 4- जलमूल्य दरें (अघरेलू मीटरयुक्त संयोजन) ₹ प्रति किलोलीटर :

क्र० सं०	विवरण	दिनांक 01-04-2013 को प्रभावी दरें (मूल दरें)			मूल दरों का 150 प्रतिशत			01-04-23 से प्रभावी दरें		
		गुरुत्व	लोहैड	हाईहैड	गुरुत्व	लोहैड	हाईहैड	गुरुत्व	लोहैड	हाईहैड
1	नगरपालिका परिषद क्षेत्र									
क	विशेष श्रेणी एवं औद्योगिक	12.50	15.60	18.75	18.75	23.40	28.13	31.25	39.00	46.88
ख	अन्य व्यवसायिक प्रतिष्ठान	11.00	12.50	16.50	16.50	18.75	24.75	27.50	31.25	41.25
ग	अन्य सरकारी, अर्द्ध सरकारी एवं संस्थागत प्रतिष्ठान / छावनी परिषद्	10.50	12.00	16.50	15.75	18.00	24.75	26.25	30.00	41.25
2	नगर पंचायत क्षेत्र/म्यूनियो बहुउद्देशीय	10.50	10.50	16.50	15.75	15.75	24.75	26.25	26.25	41.25
3	ग्रामीण क्षेत्र	10.50	10.50	16.50	15.75	15.75	24.75	26.25	26.25	41.25

## 5- जलमूल्य न्यूनतम प्रभार ₹ प्रतिमाह (15 एम.एम. मीटर अघरेलू जलापूर्ति हेतु) :

क्र० सं०	विवरण	दिनांक 01-04-2013 को प्रभावी दरें (मूल दरें)			मूल दरों का 150 प्रतिशत			01-04-23 से प्रभावी दरें		
		गुरुत्व	लोहैड	हाईहैड	गुरुत्व	लोहैड	हाईहैड	गुरुत्व	लोहैड	हाईहैड
1	नगरपालिका परिषद क्षेत्र									
क	विशेष श्रेणी एवं औद्योगिक	415.00	550.00	700.00	622.50	825.00	1050.00	1037.50	1375.00	1750.00
ख	अन्य व्यवसायिक प्रतिष्ठान	380.00	450.00	520.00	570.00	675.00	780.00	950.00	1125.00	1300.00
ग	अन्य सरकारी, अर्द्ध सरकारी एवं संस्थागत प्रतिष्ठान / छावनी परिषद्	375.00	425.00	485.00	562.50	637.50	727.50	937.50	1062.50	1212.50
2	नगर पंचायत क्षेत्र/म्यूनियो बहुउद्देशीय	235.00	315.00	350.00	352.50	472.50	525.00	587.50	787.50	875.00
3	ग्रामीण क्षेत्र	175.00	195.00	235.00	262.50	292.50	352.50	437.50	487.50	587.50

## 6- जलमूल्य मीटरयुक्त घरेलू जल संयोजन हेतु (₹ प्रति किलोलीटर प्रतिमाह) :-

क्र० सं०	परिक्षेत्र	दिनांक 01-04-2013 को प्रभावी दरें (मूल दरें)			मूल दरों का 150 प्रतिशत			01-04-23 से प्रभावी दरें		
		गुरुत्व	लोहैड	हाईहैड	गुरुत्व	लोहैड	हाईहैड	गुरुत्व	लोहैड	हाईहैड
1	नगर क्षेत्र	4.00	5.50	6.25	6.00	8.25	9.38	10.00	13.75	15.63
2	ग्रामीण क्षेत्र	3.10	4.70	6.25	4.65	7.05	9.38	7.75	11.75	15.63

## 7(अ) घरेलू श्रेणी के सीवर संयोजनों वाले भवनों के लिये निर्धारित सीवर संयोजन शुल्क (चार्ज) प्रतिमाह प्रतिसंयोजन :-

क्र० सं०	भवन का निर्धारित वार्षिक मूल्यांकन	दिनांक 01-04-2013 को प्रभावी दरें (मूल दरें)	मूल दरों का 96/150 प्रतिशत	01-04-23 से प्रभावी दरें
1-	₹ 360.00 तक	12.00	11.52	23.52
2-	₹ 361.00 से 2000.00 तक	18.00	17.28	35.28
3-	₹ 2001.00 से 3500.00 तक	27.00	25.92	52.92
4-	₹ 3501.00 से 6000.00 तक	30.00	45.00	75.00
5-	₹ 6001.00 से 8000.00 तक	35.00	52.50	87.50
6-	₹ 8001.00 से 10000.00 तक	40.00	60.00	100.00
7-	₹ 10001.00 से 12000.00 तक	45.00	67.50	112.50
8-	₹ 12001.00 से 14000.00 तक	50.00	75.00	125.00
9-	₹ 14001.00 से ऊपर	60.00	90.00	150.00

## 7(ब) सीवरशीट शुल्क (अघरेलू श्रेणी) प्रति शीट प्रतिमाह :-

क्र० सं०	विवरण	दिनांक 01-04-2013 को प्रभावी दरें (मूल दरें)	मूल दरों का 150 प्रतिशत	01-04-23 से प्रभावी दरें
1-	सीवर शीट शुल्क	27.00	40.50	67.50

8- विकास शुल्क

परिक्षेत्र	गुरुत्व						लोहैड						हाईहैड					
	दिनांक 01-04-13 को प्रभावी दरें (मूल दरें)		मूल दरों का 150 प्रतिशत		01-04-23 से प्रभावी दरें		दिनांक 01-04-13 को प्रभावी दरें (मूल दरें)		मूल दरों का 150 प्रतिशत		01-04-23 से प्रभावी दरें		दिनांक 01-04-13 को प्रभावी दरें (मूल दरें)		मूल दरों का 150 प्रतिशत		01-04-23 से प्रभावी दरें	
	दरें प्रतिवर्ग मीटर खाट एरिया पर	न्यूनतम प्रभार	दरें प्रतिवर्ग मीटर खाट एरिया पर	न्यूनतम प्रभार	दरें प्रतिवर्ग मीटर खाट एरिया पर	न्यूनतम प्रभार	दरें प्रतिवर्ग मीटर खाट एरिया पर	न्यूनतम प्रभार	दरें प्रतिवर्ग मीटर खाट एरिया पर	न्यूनतम प्रभार	दरें प्रतिवर्ग मीटर खाट एरिया पर	न्यूनतम प्रभार	दरें प्रतिवर्ग मीटर खाट एरिया पर	न्यूनतम प्रभार	दरें प्रतिवर्ग मीटर खाट एरिया पर	न्यूनतम प्रभार	दरें प्रतिवर्ग मीटर खाट एरिया पर	न्यूनतम प्रभार
नगरीय	11.00	1100.00	16.50	1650.00	27.50	2750.00	15.00	1500.00	22.50	2250.00	37.50	3750.00	22.00	2200.00	33.00	3300.00	55.00	5500.00
ग्रामीण	4.00	400.00	6.00	600.00	10.00	1000.00	7.25	725.00	10.88	1087.50	18.13	1812.50	11.00	1100.00	16.50	1650.00	27.50	2750.00
विकास शुल्क (सीवर व्यवस्था)																		
नगरीय	11.00	1100.00	16.50	1650.00	27.50	2750.00	15.00	1500.00	22.50	2250.00	37.50	3750.00	22.00	2200.00	33.00	3300.00	55.00	5500.00
ग्रामीण	4.00	400.00	6.00	600.00	10.00	1000.00	7.25	725.00	10.88	1087.50	18.13	1812.50	11.00	1100.00	16.50	1650.00	27.50	2750.00

9- मीटर किराये की दरें प्रतिमाह ( ₹ में )

क्रमांक	मीटर साईज (एम.एम.)	दिनांक 01-04-2013 को प्रभावी दरें (मूल दरें)	मूल दरों का 150 प्रतिशत	01-04-23 से प्रभावी दरें
1	15	7.50	11.25	18.75
2	20	9.00	13.50	22.50
3	25	12.00	18.00	30.00
4	32	13.00	19.50	32.50
5	40	15.00	22.50	37.50
6	50	22.00	33.00	55.00
7	80	30.00	45.00	75.00
8	100	45.00	67.50	112.50
9	150 और उससे अधिक	60.00	90.00	150.00

10- औद्योगिक, व्यावसायिक, भवन निर्माण आदि हेतु जलमूल्य की न्यूनतम दरें :

न्यूनतम प्रभार (अधरेत्नू) (₹ प्रतिमाह) :

क्र० सं०	मीटर साईज (एम.एम.)	दरें	विशेष श्रेणी एवं औद्योगिक			अन्य व्यावसायिक प्रतिष्ठान			अन्य सरकारी, अर्द्धसरकारी एवं संस्थागत प्रतिष्ठान			म्युनिसिपल बहुउद्देशीय			छात्रों परिसर		
			गुरुत्व	लोहैड	हाई हैड	गुरुत्व	लोहैड	हाई हैड	गुरुत्व	लोहैड	हाई हैड	गुरुत्व	लोहैड	हाई हैड	गुरुत्व	लोहैड	हाई हैड
1	20	दिनांक 01-04-13 को प्रभावी दरें	1047	1196	1346	1047	1196	1346	523	598	673	523	598	673	523	598	673
		मूल दरों का 150 प्रतिशत	1571	1794	2019	1571	1794	2019	785	897	1010	785	897	1010	785	897	1010
		01-04-23 से प्रभावी दरें	2618	2990	3365	2618	2990	3365	1308	1495	1683	1308	1495	1683	1308	1495	1683
2	25	दिनांक 01-04-13 को प्रभावी दरें	2243	2542	2691	2243	2542	2691	1121	1271	1346	1121	1271	1346	1121	1271	1346
		मूल दरों का 150 प्रतिशत	3365	3813	4037	3365	3813	4037	1682	1907	2019	1682	1907	2019	1682	1907	2019
		01-04-23 से प्रभावी दरें	5608	6355	6728	5608	6355	6728	2803	3178	3365	2803	3178	3365	2803	3178	3365
3	50	दिनांक 01-04-13 को प्रभावी दरें	4037	4485	4934	4037	4485	4934	4037	4485	4934	4037	4485	4934	4037	4485	4934
		मूल दरों का 150 प्रतिशत	6056	6728	7401	6056	6728	7401	6056	6728	7401	6056	6728	7401	6056	6728	7401
		01-04-23 से प्रभावी दरें	10093	11213	12335	10093	11213	12335	10093	11213	12335	10093	11213	12335	10093	11213	12335
4	80	दिनांक 01-04-13 को प्रभावी दरें	4934	5980	7027	4934	5980	7027	4934	5980	7027	4934	5980	7027	4934	5980	7027
		मूल दरों का 150 प्रतिशत	7401	8970	10541	7401	8970	10541	7401	8970	10541	7401	8970	10541	7401	8970	10541
		01-04-23 से प्रभावी दरें	12335	14950	17568	12335	14950	17568	12335	14950	17568	12335	14950	17568	12335	14950	17568
5	100	दिनांक 01-04-13 को प्रभावी दरें	6429	8522	10764	6429	8522	10764	6429	8522	10764	6429	8522	10764	6429	8522	10764
		मूल दरों का 150 प्रतिशत	9644	12783	16146	9644	12783	16146	9644	12783	16146	9644	12783	16146	9644	12783	16146
		01-04-23 से प्रभावी दरें	16073	21305	26910	16073	21305	26910	16073	21305	26910	16073	21305	26910	16073	21305	26910
6	150	दिनांक 01-04-13 को प्रभावी दरें	9419	11213	13010	9419	11213	13010	9419	11213	13010	9419	11213	13010	9419	11213	13010
		मूल दरों का 150 प्रतिशत	14129	16820	19515	14129	16820	19515	14129	16820	19515	14129	16820	19515	14129	16820	19515
		01-04-23 से प्रभावी दरें	23548	28033	32525	23548	28033	32525	23548	28033	32525	23548	28033	32525	23548	28033	32525

11- जल स्तम्भ शुल्क :-

क्र० सं०	विवरण	दिनांक 01-04-2013 को प्रभावी दरें (मूल दरें)	मूल दरों का 102 प्रतिशत	01-04-23 से प्रभावी दरें
1-	जल स्तम्भ शुल्क	10.00	10.20	20.20

Source: (Uttarakhand Jal Sansthan, Nainital, 2024)

## Annexure B

**Annexure B****Questionnaire for Data Collection on Solid Waste Management of Nainital Town**

A. Solid Waste Management	
<b>General Information (Data Required):</b>	
Contact Person (Designation, Department)	
Name of Town	
Area of Town (Municipal Boundary)	
Total Number of Wards in the Town	
Total Population of Town	
Population of Each Ward	
Floating Population of Town	
Total Number of Households in the Town	
Total Number of Households in each Ward	
Average Household (HH) size in Town	
Name of Department responsible of Solid Waste Management in the Town	
<b>Current Solid Waste Management Situation:</b>	
<p><b>1.</b> What is the estimated daily/weekly/monthly volume of Solid Waste Generated in the Town?</p>	
<p><b>2.</b> What are the Major Sources of Solid Waste Generation in the Town?</p> <p>a) Residential</p> <p>b) Commercial</p> <p>c) Industrial</p> <p>d) Medical</p> <p>e) Any Other (Please Mention)</p>	
<p><b>3.</b> Are there any seasonal variations in the Solid Waste Generation patterns?</p> <p>a) Yes</p> <p>b) No</p> <p><b>If YES, please specify in details.</b></p>	
<p><b>4.</b> What are the Garbage Dumping Areas in the Town?</p> <p>a) Garbage Bins</p>	

<ul style="list-style-type: none"> <li>b) Road Side</li> <li>c) Open Land</li> <li>d) Waste Vans</li> <li>e) Any Other (Please Mention)</li> </ul>
<p><b>5.</b> What is the frequency of Solid Waste Collection in the Town?</p> <ul style="list-style-type: none"> <li>a) Once a Day</li> <li>b) Every Alternative Day</li> <li>c) Once a Week</li> <li>d) Once a Month</li> <li>e) Other (Please Mention)</li> </ul>
<p><b>6.</b> What are the current methods used for Solid Waste Collection in the Town?</p> <ul style="list-style-type: none"> <li>b) Door to Door by Department</li> <li>c) Door to Door by Private Organization</li> <li>d) Individual</li> <li>e) Any Other (Please Mention)</li> </ul>
<p><b>7.</b> Are there any separate Collection Systems for Recyclable and Non-Recyclable Waste?</p> <ul style="list-style-type: none"> <li>a) Yes</li> <li>b) No</li> </ul> <p><b>If YES, please describe in details.</b></p>
<p><b>8.</b> Is there any segregation of Waste at Household Level?</p> <ul style="list-style-type: none"> <li>a) Yes</li> <li>b) No</li> </ul>
<p><b>9.</b> Are there any Methods used for Waste Segregation at Source-Level in the Town?</p> <ul style="list-style-type: none"> <li>a) Yes</li> <li>b) No</li> </ul> <p>If YES, what are the methods used? Please describe in details.</p>
<p><b>10.</b> Is the Medical Waste Collected Separately?</p> <ul style="list-style-type: none"> <li>a) Yes</li> <li>b) No</li> </ul> <p>If NOT, then how is the Medical Waste or Hazardous Waste separated from the Solid</p>

Waste Collected? Please describe in Details.
<p><b>11.</b> Is the Medical Waste Incinerated?</p> <p>a) Yes</p> <p>b) No</p> <p><b>If YES, please mention the location of the Incineration Site(s) in town?</b></p>
<p><b>12.</b> Which are the Major Markets in the Town? Kindly name them and mention their location(s).</p>
<p><b>13.</b> What is the amount of Waste Generated from these Major Markets?</p>
<p><b>14.</b> How is the Waste collected and transported from these Major Markets?</p>
<p><b>15.</b> How the Waste from these Major Markets treated? Kindly mention in details.</p>
<p><b>16.</b> Where is the Waste from these Major Markets disposed? Kindly mention in details.</p>
<p><b>17.</b> What is the Total Number of Sweepers in:</p> <p>a) Town</p> <p>b) Each Ward</p>
<p><b>18.</b> What is the Total Number of Garbage Bins in:</p> <p>a) Town</p> <p>b) Each Ward</p>
<p><b>19.</b> Are all the Garbage Bins in the Town covered?</p> <p>a) Yes</p> <p>b) No</p> <p><b>If NOT, then kindly provide the number of Uncovered Garbage Bins in:</b></p> <p>a) Town</p> <p>b) Each Ward</p>
<p><b>20.</b> What are the Timings of Cleaning the Roads and Streets of the Town? (Please Specify the Time as Well)</p> <p>a) Early Morning At _____ a.m.</p>

<p>b) Afternoon At _____ p.m.</p> <p>c) Evening At _____ p.m.</p> <p>d) Late At Night At _____ p.m.</p> <p>e) If NOT, Please Specify the Reason.</p>
<p><b>21.</b> What is the frequency of cleaning the roads and streets in the Town?</p> <p>a) Once Every Day</p> <p>b) Once Every Week</p> <p>c) Once Every Month</p> <p>d) Other (Please Mention in Details)</p>
<p><b>22.</b> What is the Total Volume of the Solid Waste Collected from the Town?</p>
<p><b>23.</b> How is the Solid Waste transported to the Disposal Site? Describe in details.</p>
<p><b>24.</b> How many waste-management vehicles are used for the transportation of Solid Waste to the Disposal Site?</p>
<p><b>25.</b> What are the types of waste-management Vehicles used for the collection and transportation of Solid Waste to the Disposal Site?</p> <p>a) Garbage Trucks</p> <p>b) Auto-Tippers</p> <p>c) Garbage Cycle Rickshaw</p> <p>d) Pushcart</p> <p>e) Any Other (Please Mention)</p>
<p><b>26.</b> What amount or percentage of Solid Waste collected from the Town is Treated before its disposal?</p>
<p><b>27.</b> What are the Treatment Facilities Available and Proposed for Solid Waste Management of the Town? Kindly mention in details.</p>
<p><b>28.</b> Where is the Solid Waste Collected from the Town Disposed-Off? Kindly, mention the number of disposal site(s) and specify the location(s) for each site.</p>
<p><b>29.</b> What is the Current Capacity of Solid Waste Disposal Site(s)? (*Please provide details for each Site as well)</p>

<p><b>30.</b> Are there any methods/system adopted by the department for sorting and processing of waste before disposal?</p> <p>a) Yes</p> <p>b) No</p> <p><b>If YES, please describe in details.</b></p>
<p><b>31.</b> Are there any designated recycling centers or facilities for composting of the Solid Waste?</p> <p>a) Yes</p> <p>b) No</p> <p>If YES, please specify its location.</p>
<p><b>32.</b> What is the current condition of the existing Solid Waste Management Infrastructure in the Town? Please describe in details.</p>
<p><b>33.</b> What are the potential health risks associated with exposure to waste, including open dumping sites or uncollected waste?</p>
<p><b>34.</b> Are there any reported cases of vector-borne diseases or other health issues linked to inadequate waste management?</p> <p>a) Yes</p> <p>b) No</p> <p><b>If YES, please mention in details.</b></p>
<p><b>35.</b> Is fogging regularly done in the town?</p> <p>a) Yes</p> <p>b) No</p>
<p><b>36.</b> Are there any Government Policies for Solid Waste Management in the Town?</p> <p>a) Yes</p> <p>b) No</p> <p><b>If YES, please describe them in details.</b></p>
<p><b>37.</b> What challenges are faced by the Department in managing Solid Waste effectively? Please describe in details.</p>

<p><b>38.</b> What challenges are faced by the Department to ensure public participation in Solid Waste Management? Please describe in details.</p>
<p><b>39.</b> What are the challenges faced by the Department for Solid Waste Management during the tourist season? Please describe in details.</p>
<p><b>40.</b> Is there any additional information or feedback you would like to provide regarding solid waste management in the Town?</p>
<b>MAPS AND PLANS REQUIRED:</b>
<b>City Development Plan</b>
<b>Municipal Boundary Map</b>
<b>Treatment facilities available &amp; proposed, their capacity &amp; location Map</b>
<b>Location and Network Maps of Drains and Nallahs in the Town</b>

**Questionnaire for Data Collection on Urban Transport and Parking of Nainital Town**

<b>B. Urban Transport and Parking</b>	
<b>Name of Town</b>	
<b>Area of Town (Municipal Boundary)</b>	
<b>Population of Town</b>	
<b>Floating Population of Town</b>	
<b>Number of Households</b>	
<b>Average Households Size</b>	
<b>Name of department responsible for Water Supply in the town</b>	
<p>1. What is the length of road network in the town?</p>	
<p>2. What is the coverage of road network in the town? (% Area covered )</p>	
<p>3. How many bus stops are there in the town and what is their location? Please specify.</p>	
<p>4. What is the location of railway station? How many stations are there for connectivity of the town?</p>	
<p>5. How many city buses are registered for public transport?</p>	

<p>6. How many registered school buses are there?</p>
<p>7. How many autos and taxis are registered for public transport?</p>
<p>8. How many parking lots are there in the town?</p>
<p>9. Where do the local people of the town do parking for their personal vehicle?</p>
<p>10. Where do tourist vehicles get parked? Is there any common parking available to tourists?</p>
<p>11. What is the tourist (number) influx in peak tourism months? Please specify month wise data.</p>
<p>12. What is the peak tourism season? And how many vehicles enter the town limits in that season?</p>

**13. What are the major markets? Kindly name the markets.**

**14. How many parking are available in above stated market areas?**

**15. What is the most congested area during the peak tourism season in the town?**

**16. What is the cause of congestion in that area?**

- a) Increase in Vehicle
- b) Increase in pedestrians
- c) Any other, please specify.

**17. Is there any committee formed to cater traffic needs during peak season of tourism? Please mention name.**

**18. Is the police force increased for the ease of traffic and mobility during peak tourism? If yes, by how many number of police officers?**

19. Are there any Government registered Car Rental/ Taxi Services/ Taxi Union offices in the town? If yes, please mention the office location.

**20. Please provide with Road Network Map of the town.**

**21. Please provide with Map of city, Municipal boundary.**

22. What are the challenges faced by the department of Transport in managing the traffic and parking effectively? Please describe in details.

**Questionnaire for Data Collection on Water Supply of Nainital Town**

<b>C. WATER SUPPLY</b>	
<b>Name of Town</b>	
<b>Area of Town (Municipal Boundary)</b>	
<b>Population of Town</b>	
<b>Floating Population of Town</b>	
<b>Number of Households</b>	
<b>Average Households Size</b>	
<b>Name of department responsible for Water Supply in the town</b>	
<p><b>1. What is the source of water in the town?</b></p> <p>a) Ground water resources</p> <p>b) Surface Water Resources</p> <p>c) Other (please specify):</p>	
<p><b>2. Is the above source of water available all throughout the year? Please mention its location and distance.</b></p>	
<p><b>3. What is the demand and supply of water for the entire town as per the population? (In million litres/ day (MLD))?</b></p>	
<p><b>4. What is the coverage of Water Supply (% Area covered, %population serviced)</b></p>	
<p><b>5. How many Water Treatment plants are there for supplying water in town? (existing &amp; proposed)</b></p>	

<p><b>6. What is the capacity of Water Treatment Plant for daily water production? (MLD)</b></p>
<p><b>7. What amount of water gets wasted during daily distribution of water from Water Treatment Plant? (MLD)</b></p>
<p><b>8. What is the source of drinking water supply in the households?</b></p> <ul style="list-style-type: none"><li>a) Wells</li><li>b) Municipal connection</li><li>c) Hand pump</li><li>d) Tanker</li><li>e) Bore well</li><li>f) Others (please specify):</li></ul>
<p><b>9. What is the number of individual house tap connections in the town?</b></p>
<p><b>10. For how many hours water is supplied daily to tap connections?</b></p>
<p><b>11. What is the timing of water supply for household supply?</b></p> <ul style="list-style-type: none"><li>a) Morning: ___ am to ___ am</li><li>b) Evening: ___ pm to ___ pm</li><li>c) Other (please specify):</li></ul>

<p><b>12. What is the daily frequency of water supply for household supply?</b></p> <p>a) Once a day                  b) Twice a day                  c) There is no fixed supply schedule                  d) Other (please specify):</p>				
<p><b>13. How many households do not have access to tap water connections?</b></p>				
<p><b>14. What is the source of water supply for household with no water connection?</b></p>				
<p><b>15. How many community taps are there?</b></p>				
<p><b>16. Where are those community taps located in the town?</b></p>				
<p><b>17. How much are users in following land-use charged for water per month by municipal authority?</b></p>	<p><b>Residential</b></p>	<p><b>Commercial</b></p>	<p><b>Industrial</b></p>	<p><b>Irrigation</b></p>
<p><b>18. Is rainwater harvesting compulsory in residential land use?</b></p> <p>a) Yes                  b) No</p>				
<p><b>19. Is rainwater harvesting compulsory in industrial/commercial land use?</b></p> <p>a) Yes                  b) No</p>				

<p><b>20. How many slums are there in the town?</b></p>
<p><b>21. How is water supplied in the slums?</b></p>
<p><b>22. When tourism season is on peak, what is the additional water demand for the town?</b></p>
<p><b>23. How is the additional water demand fulfilled in peak tourism season in the town?</b></p>
<p><b>24. What is the emergency water arrangement? Like tankers for example, are there any other such arrangements?</b></p>
<p><b>25. Are there any water supply related Policies &amp; Programs at urban level? If yes, please describe in detail.</b></p>
<p><b>26. What is the status of implementation of the policies and programs at urban level? Please describe.</b></p>
<p><b>27. What are the challenges faced by the department of Water Supply in managing the supply in town the effectively? Please describe in details.</b></p>

**28. Suggestions for Improvement:**

- a) More reliable supply
- b) Better water quality
- c) Improved infrastructure (pipes, pumps, etc.)
- d) Enhanced water pressure
- e) Better conservation efforts
- f) Other (please specify):

**29. Do you have any additional comments or suggestions related to water supply within the municipality?**

**30. Maps and Plan Required: Water Supply Network Plan**

## **Annexure C**

**Annexure C****Officials Met in Nainital Town**

S.No.	Name	Designation	Department	Contact Details (Mobile No., Email ID)
1	Mr. Bhagwati Prasad Pandey, IAS (Retd.)	Director General	Dr. Raghunandan Singh Tolia	9968696699 <a href="mailto:directoracademy@hotmail.com">directoracademy@hotmail.com</a>
2	Mr. Manoj Pande	Urban Development Cell, In-Charge	Uttarakhand Academy of Administration	9897510978 <a href="mailto:urbandevp.uaoa@gmail.com">urbandevp.uaoa@gmail.com</a> <a href="mailto:manojpande64@gmail.com">manojpande64@gmail.com</a>
3	Mr. Rahul Anand (IAS)	Executive Officer	Nagar Palika Parishad, Nainital	9430056694
4	Mrs. Pooja Arya	Executive Officer-II		9997638831 <a href="mailto:nppnainital@gmail.com">nppnainital@gmail.com</a>
5	Mr. Himanshu	Information Assistant		8650096006
6	Mr. Uday Veer	SI, Solid Waste Management		8057976465
7	Mr. P. S. Manral	Assistant Writer	Tourism Department, Nainital	7060038437
8	Traffic Police on-Duty		Traffic Police Department, Mallital	-
9	Mr. Ramesh Bohra	Station Officer	Traffic Police Department, Tallital	-
10	Mr. Naresh Kohli	Head Constable		8958373100
11	Mr. Dalip Singh Bisht	Assistant Engineer	Uttarakhand Jal Sansthan, Nainital	9412375804
12	Hem Upadhyay	Junior Engineer	District Level Development Authority, Nainital	6396707953
13	Mr. Rajesh Verma	Toll Tax Manager	Private Company Employee, Reports to Nagar Palika Parishad, Nainital	9412983201

**List of Stakeholders/Participants attended the Stakeholder Consultation Meeting held on 25<sup>th</sup> April, 2024 in NPP Nainital:**

S.No.	Name	Designation	Department	Contact Details	
				Email	Number
1	Prof. Dr. P. S. N. Rao	Research Project Co-ordinator	SPA, New Delhi	<a href="mailto:drpsnrao@hotmail.com">drpsnrao@hotmail.com</a> <a href="mailto:psnrao.dr@gmail.com">psnrao.dr@gmail.com</a>	7042227021
2	Shri Manoj Pande	Urban Development Cell, In-Charge	Dr. R. S. Tolia Uttarakhand Academy of Administration	<a href="mailto:urbandevp.uaoa@gmail.com">urbandevp.uaoa@gmail.com</a> <a href="mailto:manojpande64@gmail.com">manojpande64@gmail.com</a>	9897510978
3	Dr. Mahesh Kumar	Joint Director ATI			9411159842
4	Shri Rahul Anand (IAS)	Executive Officer	Nagar Palika Parishad, Nainital	<a href="mailto:nppnainital@gmail.com">nppnainital@gmail.com</a>	9430056694
5	Mrs. Pooja Arya	Executive Officer-II		<a href="mailto:nppnainital@gmail.com">nppnainital@gmail.com</a>	9997638831
6	Shri Ramesh Bohra	Station Officer	Traffic Police Department, Tallital	<a href="mailto:rameshbohra71@gmail.com">rameshbohra71@gmail.com</a>	9411112870
7	Shri Sandeep	Add. SI		-	-
8	Shri Singh	TSI	Kotwali	-	8273170183
9	Shri Dalip Singh Bisht	Assistant Engineer	Uttarakhand Jal Sansthan, Nainital	<a href="mailto:eeujsntl@gmail.com">eeujsntl@gmail.com</a>	9412375804
10	Shri L. M. Tewari	TDO KMVN	KMVN	<a href="mailto:kmvn@yahoo.com">kmvn@yahoo.com</a>	8650002516
11	Shri Deepak Pandey	Business Manager	KMVN Ktd.	<a href="mailto:deepakpandeybdmkmvn@gmail.com">deepakpandeybdmkmvn@gmail.com</a>	9758066176
12	Shri Govind Singh Representative of DLDA	Data Entry Operator	District Level Development Authority, Nainital	-	7302207633
13	Mrs. Anjul Bhatt	Research Associate	SPA, New Delhi	<a href="mailto:anjulbhatt.ab@gmail.com">anjulbhatt.ab@gmail.com</a>	9560235150

**Annexure D**Poster of Stakeholder Consultation Meeting Held on 25<sup>th</sup> April 2024 in NPP, Nainital

**INVITATION TO  
STAKEHOLDER CONSULTATION**

**25<sup>th</sup> APRIL 2024, THURSDAY  
03:30 PM to 05:30 PM**

**Venue:  
NAINITAL-  
Dr. Raghunandan Singh Tolia,  
Uttarakhand Academy of Administration (ATI),**

**Chair:**  
**Shri Rahul Anand, IAS**  
Executive Officer (EO),  
Nagar Palika Parishad, Nainital

**Moderator:**  
**Prof. Dr. P. S. N. Rao,**  
Research Project Coordinator,  
SPA, New Delhi

S.NO.	DEPARTMENTS/ORGANIZATIONS INVITED
01	Dr. Raghunandan Singh Tolia Uttarakhand Academy of Administration (ATI)
02	Nagar Palika Parishad, Nainital
03	Tourism Department, Nainital
04	Traffic Police Department, Tallital
05	Uttarakhand Jal Sansthan, Nainital
06	District Level Development Authority, Nainital

**TOPICS TO BE COVERED**

Solid Waste management

Urban Transport and Parking

Water Supply

# Bibliography

## Bibliography

- Asian Development Bank. (2015). *Infrastructure Development Investment Program for Tourism - Tranche 3*.
- Census India. (2011). Retrieved from [www.censusindia.co.in](http://www.censusindia.co.in).
- (2007). *City Development Plan: Nainital Revised under Jawaharlal Nehru National Urban Renewal Mission (JNNURM)*.
- Climate of Uttarakhand*. (2014). Additional Director General of Meteorology (Research), India Meteorological Department, Government of India.
- CPHEEO, MoHUA. (2018). *Swachh Bharat Mission-Urban: Advisory on On-Site and Decentralised Composting of Municipal Organic Waste*.
- Disaster Mitigation & Management Centre, Uttarakhand Secretariat. (n.d.). *State Disaster Management Action Plan for the State of Uttarakhand*.
- (2011). *District Census Handbook*. Government of India.
- (2011). *District Census Handbook Nainital*. Government of India.
- District Level Development Authority, N. (2024, March 2024). (A. Bhatt, & S. Kakani, Interviewers)
- Dr. R. S. Tolia Uttarakhand Academy of Administration (ATI). (n.d.).
- (n.d.). *Draft Master Plan of Champawat 2041*. SPA New Delhi.
- euttaranchal*. (2011). Retrieved from [myroots.euttaranchal.com](http://myroots.euttaranchal.com).
- G.B. Pant National Institute of Himalayan Environment, . A. (2019). *Environment Plan Champawat*. Government of Uttarakhand.
- Gol. (2011). *District Census Handbook, Champawat*.
- Gol. (n.d.). *Climate of Uttarakhand*. India Meteorological Department, Gol.
- Google Images*. (2024). Retrieved from [www.google.com](http://www.google.com).
- Google Maps*. (2024). Retrieved from [www.google.com:https://www.google.com/maps/@29.3395322,80.088487,14.52z?entry=ttu](http://www.google.com:https://www.google.com/maps/@29.3395322,80.088487,14.52z?entry=ttu)
- Google My Maps*. (2024). Retrieved from <https://www.google.com/maps/d/u/0/>
- Government of Uttarakhand. (2018). *Strategic Plan for Risk Reduction: Nainital City*.
- Government of Uttarakhand: State Profile*. (n.d.). Retrieved from [uk.gov.in](http://uk.gov.in).
- (n.d.). *Handbook of Service Level Benchmarking*. Ministry of Urban Development, Gol.
- Maps of India*. (2024). Retrieved from [www.mapsofindia.com](http://www.mapsofindia.com).
- Nagar Palika Parishad, Champawat. (2024, March 2024). (A. Bhatt, & S. Kakani, Interviewers)
- Nagar Palika Parishad, N. (2024). (S. Anjul, Interviewer)

- Nagar Palika Parishad, Nainital. (2024, March 2024). (A. Bhatt, & S. Kakani, Interviewers)
- Nainital District, Government of Uttarakhand.* (2024). Retrieved from [nainital.nic.in](http://nainital.nic.in).
- Pey Jal Nigam Uttarakhand, Nainital. (2024). Discussion on the Questionnaire on Water Supply for Nainital Town. (A. Bhatt, & S. Kakani, Interviewers)
- Police Department Nainital. (2024). (A. Bhatt, & S. Kakani, Interviewers)
- Post Study Workshop. (2024, August 30).
- Primary Survey (March 2024).
- Public Works Department, Government of Uttarakhand.* (2024). Retrieved from [pwd.uk.gov.in](http://pwd.uk.gov.in).
- PWD, Nainital. (2024, March). Discussion on Questionnaire on Urban Transport and Parking for Champawat Town. (A. Bhatt, & S. Kakani, Interviewers)
- RTO, Tanakpur. (2024, March). Discussion on Questionnaire on Urban Transport and Parking for Champawat Town. (A. Bhatt, & S. Kakani, Interviewers)
- SPA, New Delhi. (2024).
- Stakeholder Consultation Meeting. (2024, April 25).
- (2020-21). *State Disaster Management Plan, Volume-1.* State Disaster Management Authority (SDMA), Uttarakhand .
- State Horticulture Mission, Govt. of Uttarakhand .* (2024). Retrieved from [shm.uk.gov.in](http://shm.uk.gov.in).
- Thematic Map Library, Uttarakhand.org.* (2024). Retrieved from [uttarakhand.org](http://uttarakhand.org).
- Tourism Department, Nainital. (2024). (A. Bhatt, & S. Kakani, Interviewers)
- Tourism Department, Nainital, Uttarakhand. (2024).
- Traffic Directorate Uttarakhand Police. (2024). Retrieved from [uttarakhandtraffic.com](http://uttarakhandtraffic.com): [https://uttarakhandtraffic.com/UserFiles/images/traffic-police/uttaranchal\\_road-map.jpg](https://uttarakhandtraffic.com/UserFiles/images/traffic-police/uttaranchal_road-map.jpg)
- Traffic Directorate Uttarakhand Police, Government of Uttarakhand.* (2024). Retrieved from [uttarakhandtraffic.com](http://uttarakhandtraffic.com).
- Traffic Police, Nainital. (2024). (A. Bhatt, & S. Kakani, Interviewers)
- Urban Development Department, Government of Uttarakhand. (2007). *Revised City Development Plan: Nainital under JNNURM .*
- Uttarakhand At A Glance .* (2021-22). Directorate of Economics and Statistics, Department of Planning.
- Uttarakhand Jal Sansthan, Champawat. (2024, March). Discussion on the Questionnaire on Water Supply for Champawat Town. (A. Bhatt, & S. Kakani, Interviewers)
- Uttarakhand Jal Sansthan, Nainital. (2024, March). Discussion on the Questionnaire on Water Supply for Nainital Town. (A. Bhatt, & S. Kakani, Interviewers)

- (2021). *Uttarakhand River Atlas, National Mission for Clean Ganga, Ministry of Jal Shakti, Department of Water Resources, River Development & Ganga Rejuvenation, Government of India*. Centre for Ganga River Basin Management and Studies.
- Uttarakhand State Council for Science & Technology (UCOST). (2017). *A Report on Naini Lake*.
- Uttarakhand State Council for Science & Technology (UCOST), Government of Uttarakhand. (2017). *A Report on Naini Lake*.
- Uttarakhand Tourism Development Board (UTDB)*. (2024). Retrieved from [uttarakhandtourism.gov.in](http://uttarakhandtourism.gov.in).
- Uttarakhand Tourism Development Board, Champawat. (2024, March). Discussion on Questionnaires on Solid Waste Management, Urban Transport and Parking and Water Supply for Champawat Town. (A. Bhatt, & S. Kakani, Interviewers)
- (n.d.). *Uttarakhand Tourism Development Master Plan 2007-2022*.
- Uttarakhand Tourism*. (2023, January 16). Retrieved from <https://uttarakhandtourism.gov.in/destination/almora>
- Uttarakhand, T. P. (n.d.). *uttarakhandtraffic.com*. Retrieved from [https://uttarakhandtraffic.com/UserFiles/images/traffic-police/uttaranchal\\_road-map.jpg](https://uttarakhandtraffic.com/UserFiles/images/traffic-police/uttaranchal_road-map.jpg)
- UUSDA, Gov. of Uttarakhand. (2024). *Uttarakhand Urban Sector Development Agency (UUSDA)*. Retrieved from [uusdip.org](https://uusdip.org): [https://uusdip-](https://uusdip.org/uusdip-)



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