



# Study of Challenges Faced by Six Towns of Uttarakhand

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

Report

MUSSOORIE TOWN

December, 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 - Mussoorie 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**

We are thankful to Dr. R. S. Tolia Uttarakhand Academy of Administration, Nainital, Uttarakhand for giving us an opportunity to undertake this research study. We place on record our gratitude to Shri Bhagwati Prasad Pandey, IAS (Retd.), Director General, Dr. R. S. Tolia Uttarakhand Academy of Administration, Nainital, Dr. Mahesh Kumar, Joint Director, Dr. R. S. Tolia Uttarakhand Academy of Administration, Nainital, and Shri Manoj Pande, Programme Director, State Institute of Urban Development (SIUD), Dr. R. S. Tolia Uttarakhand Academy of Administration, Nainital, for their support. We are also thankful to Smt. Ragini Tiwari, Consultant, KRC, DRSTUAoA and Smt. Asha Joshi, Training Manager, SIUD from DRSTUAoA for their support. We also thank all the officers of various organizations for providing us with valuable data and actively participating in the consultations.

Further to the Stakeholder's meeting held on 2<sup>nd</sup> September 2024, the valuable suggestions made have been duly incorporated.

Subsequently, a Post Study Workshop was held at Nainital on 10<sup>th</sup> December, 2024 and the valuable suggestions given have been incorporated.

**24<sup>th</sup> December 2024**

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## Abbreviations Used

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
kL	Kilo Litre
km	Kilo Meter
MLD	Million Litres per Day
MSWM	Municipal Solid Waste Management
MTPD	Metric Tonnes Per Day
NH	National Highway
NP	Nagar Panchayat
NPP	Nagar Palika Parishad
OHT	Over Head Tank
PJNU	Pey Jal Nigam Uttarakhand
PPH	Person 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
UUSDA	Uttarakhand Urban Sector Development Agency
UJS	Uttarakhand Jal Sansthan
ULB	Urban Local Body
KEEN	Keeping The Environment Ecologically Natural
URDPFI	Urban and Rural Development Plan Formulation and Implementation Guidelines 2014, MOHUA, GOI
MOHUA	Ministry of Housing and Urban Affairs

# Chapter 1

## Introduction

## Chapter 1. Introduction

This Final Report is for Mussoorie Town as required in the Terms of Reference (ToR). It contains the proposed Scope of Work under each of the three activities 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)

From all the above-mentioned areas this report is for Mussoorie Town.

# Chapter 2

## Objectives of Research Project

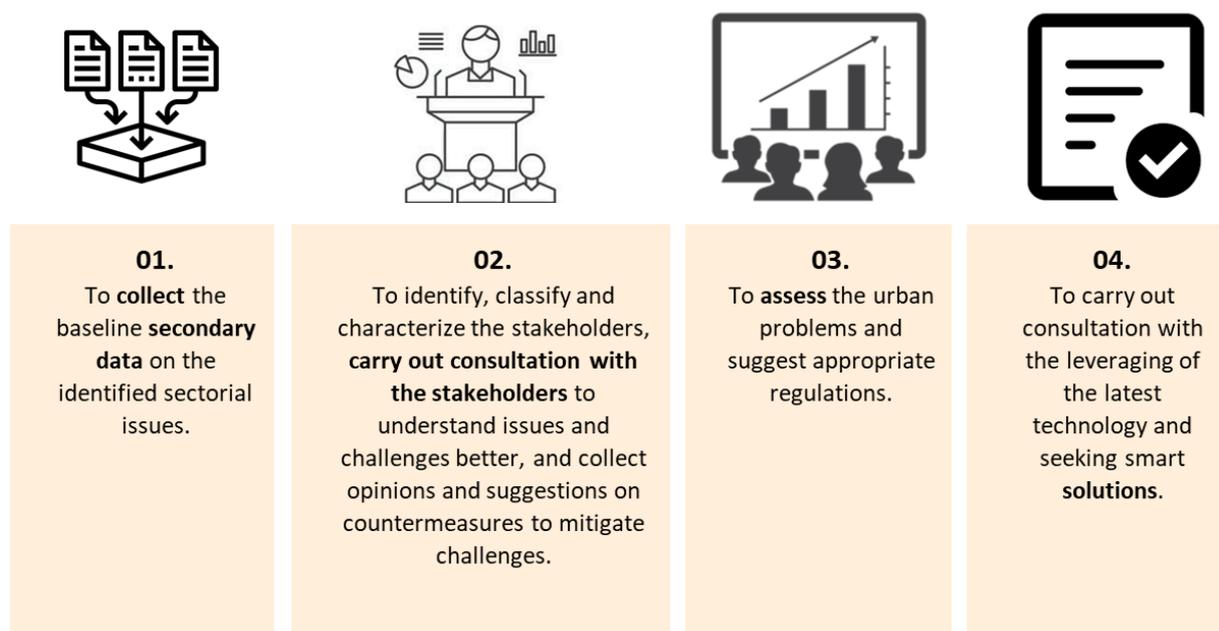
## Chapter 2. Objectives of Research Project

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 Champawat. 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 countermeasures to mitigate challenges.
3. To assess the urban problems and suggest appropriate regulations.
4. To carry out consultation with the leveraging of the latest technology and seeking smart solutions.

Figure 1: Objectives of the Research Project



# Chapter 3

## Scope of Work

### Chapter 3. Scope of Work

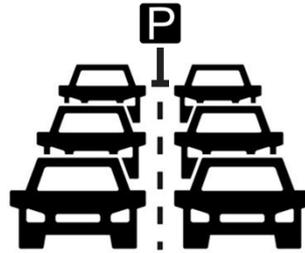
In this report Mussoorie Town will be covered for following parameters as mentioned in ToR.

- 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 parameters in Mussoorie Town are identified in this report. Along with this a Stakeholder Consultation Meeting was also conducted on 02<sup>nd</sup> September, 2024. After the brainstorming sessions in the Stakeholder Consultation Meeting appropriate possible solutions and suggestions for improvement are prepared and recommended in this report based on the feedback provided by the officials for Mussoorie Town.

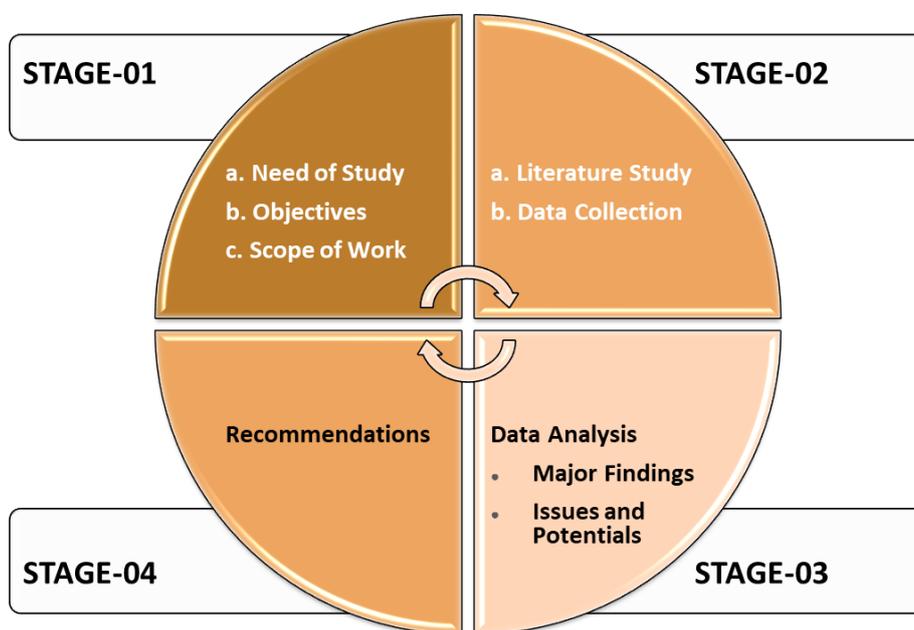
# Chapter 4

## Methodology

## Chapter 4. Methodology

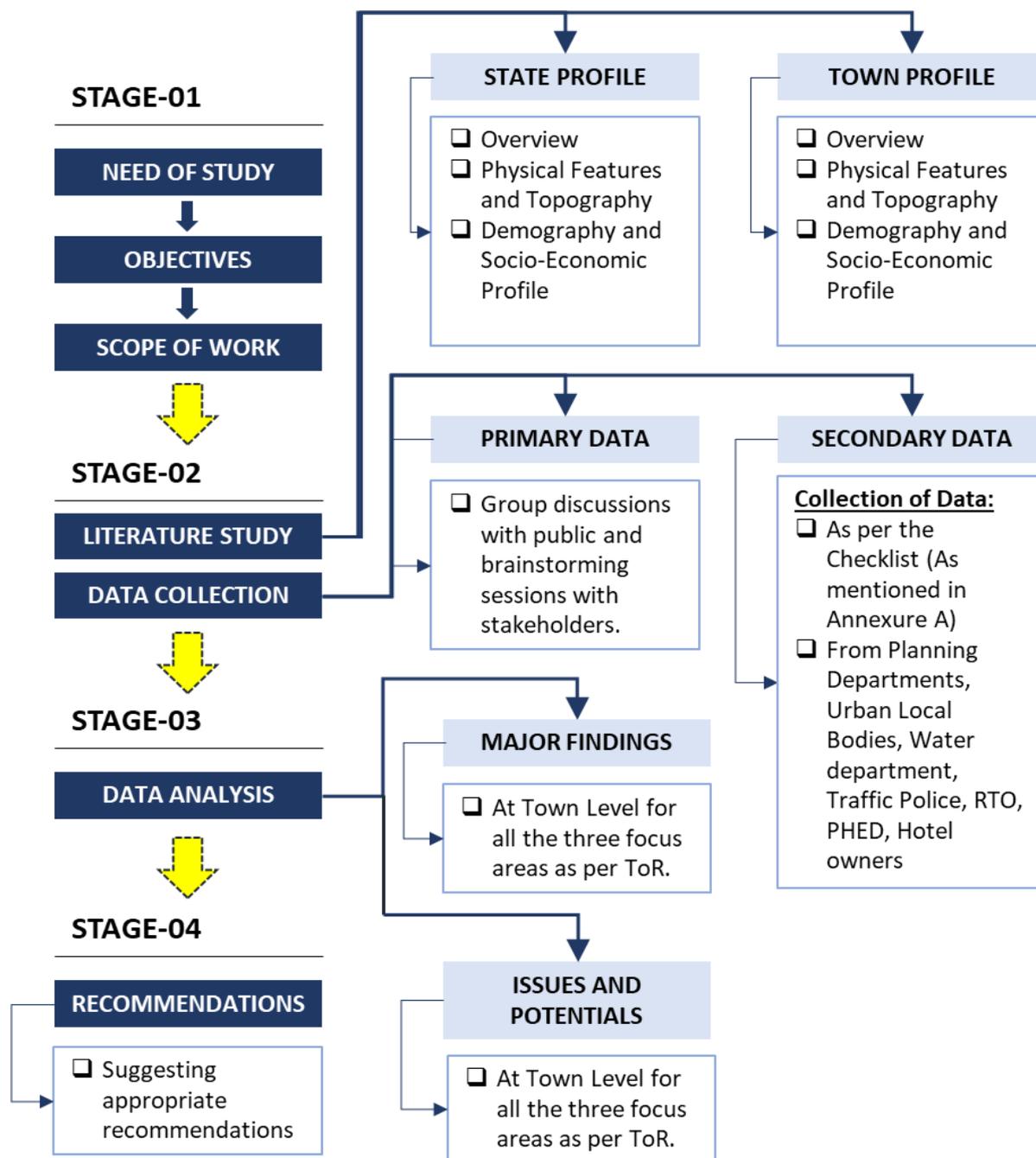
The Research Project Methodology is divided into four stages namely Stage-01, Stage-02, Stage-03 and Stage-04, as shown in Figure 2. Stage-01 consists of: the Need of Study, the Objectives defined and the Scope of Work as mentioned in the ToR. Stage-02 consists of Literature Study and Data Collection 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 stakeholder consultation meeting, held on 02nd September, 2024 for Mussoorie Town.

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, Pey Jal Nigam Uttarakhand, 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 potential

##### 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.

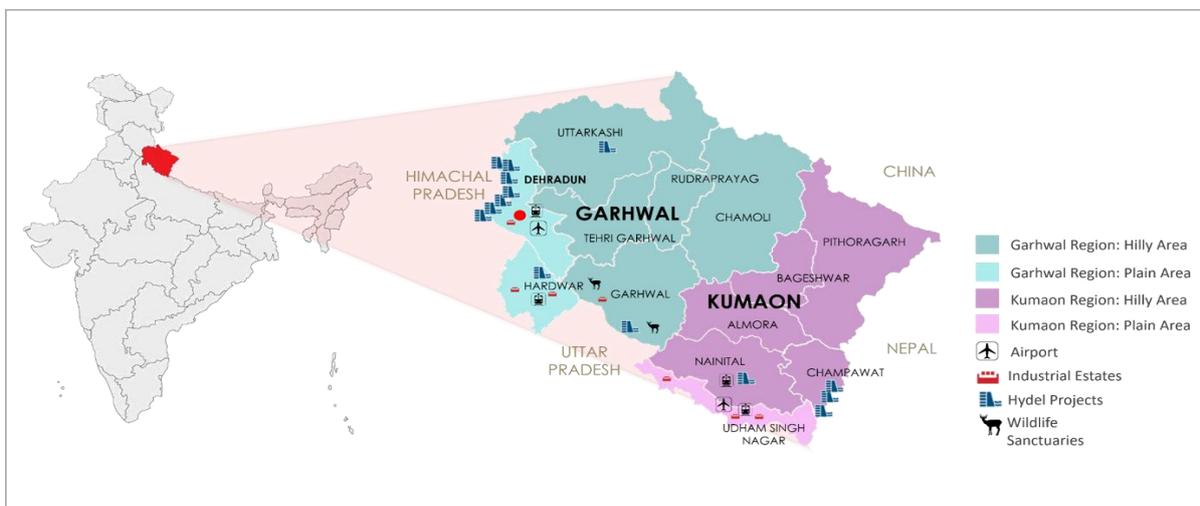
Image 1: Uttarakhand State Flower, Bird, Animal and Tree Image



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.

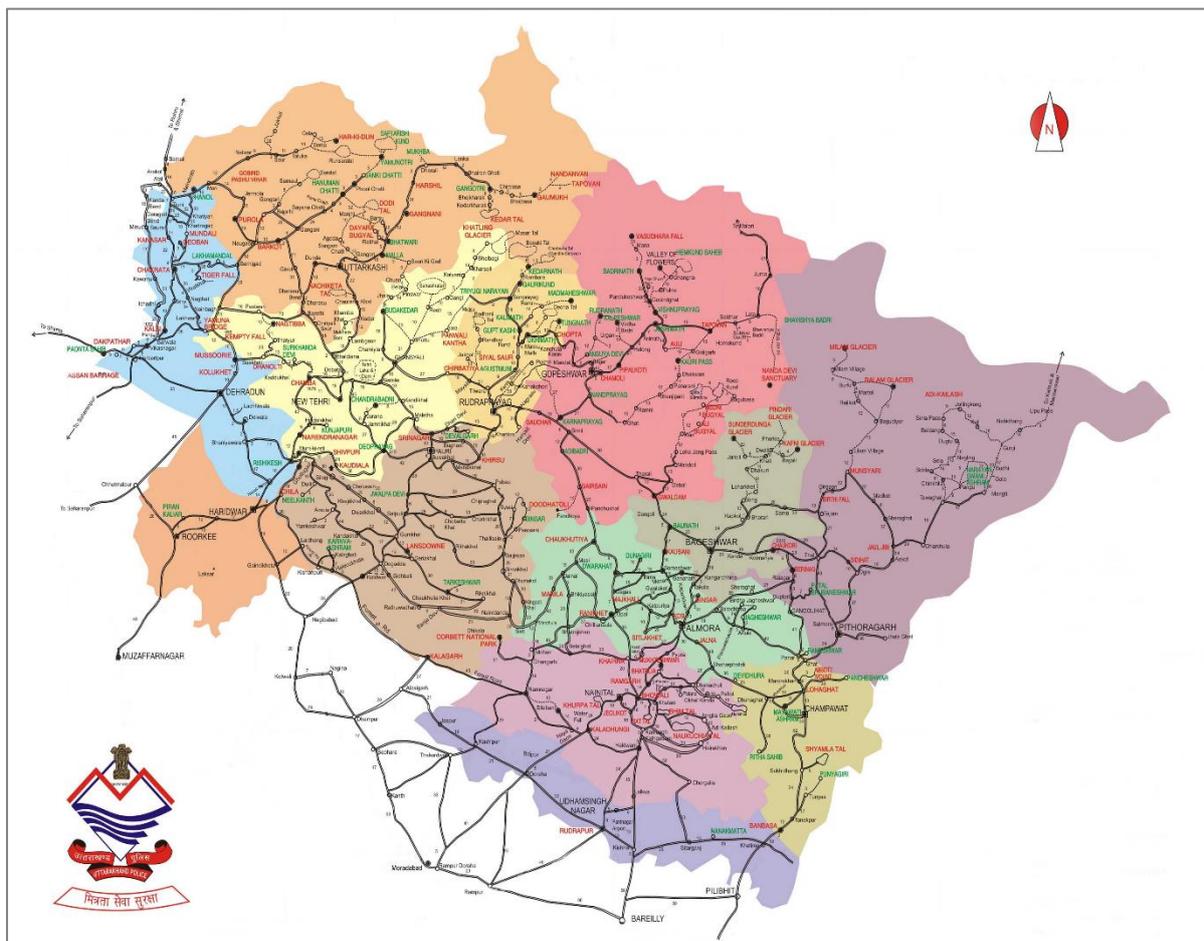
Map 3: Thematic Map of the State of Uttarakhand's Administrative Division



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

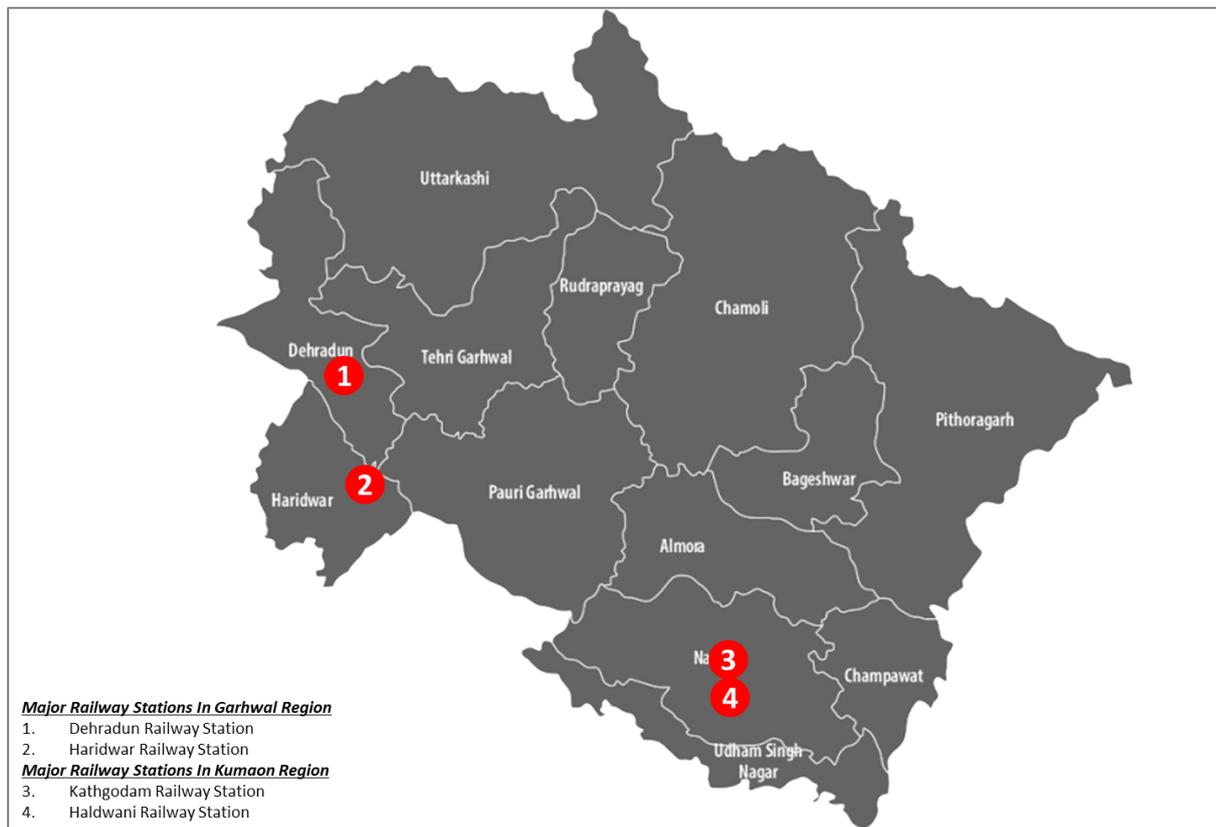


Source: (Traffic Directorate Uttarakhand Police, 2024)

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, Kotdwar, Ramnagar and Rudrapur.

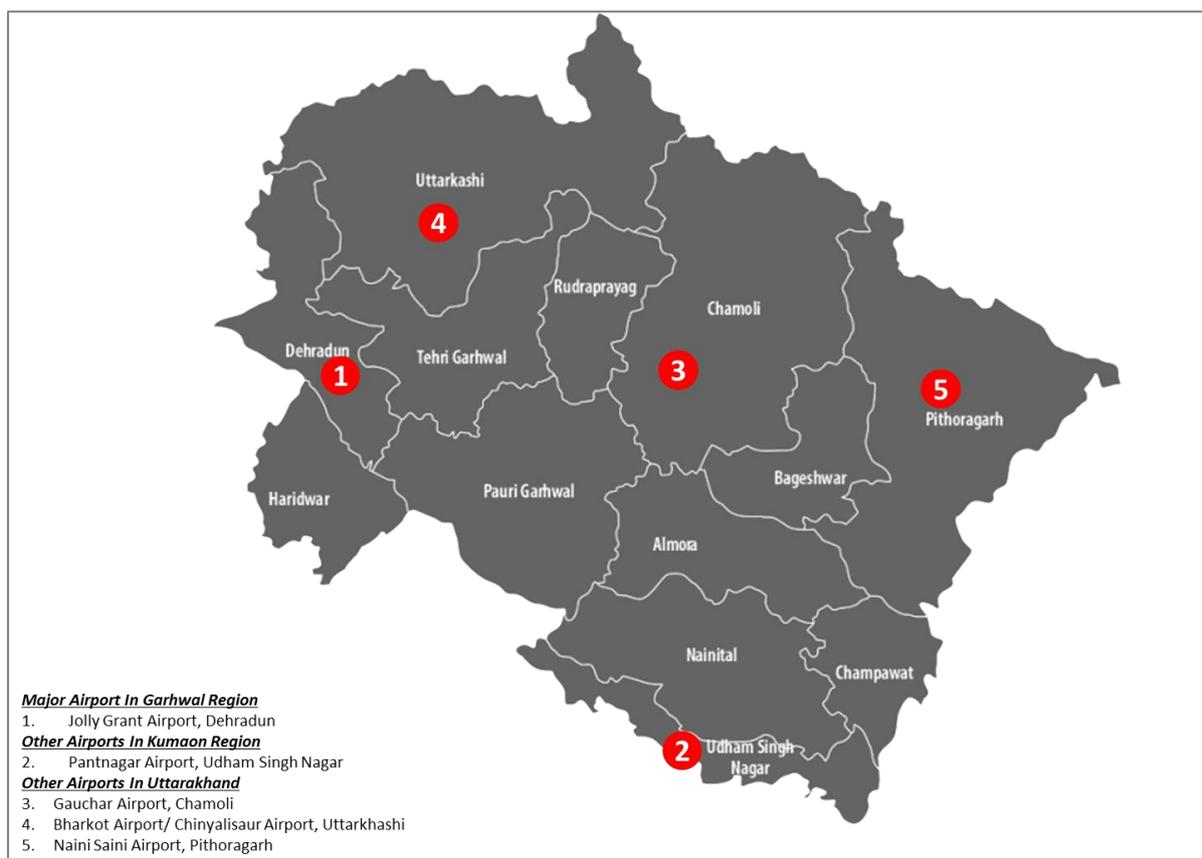
Map 5: Major Railway Stations in the Garhwal and Kumaon Region of Uttarakhand



Source: Base map: (Google Images, 2024), Author

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: Base map: (Google Images, 2024), Author

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

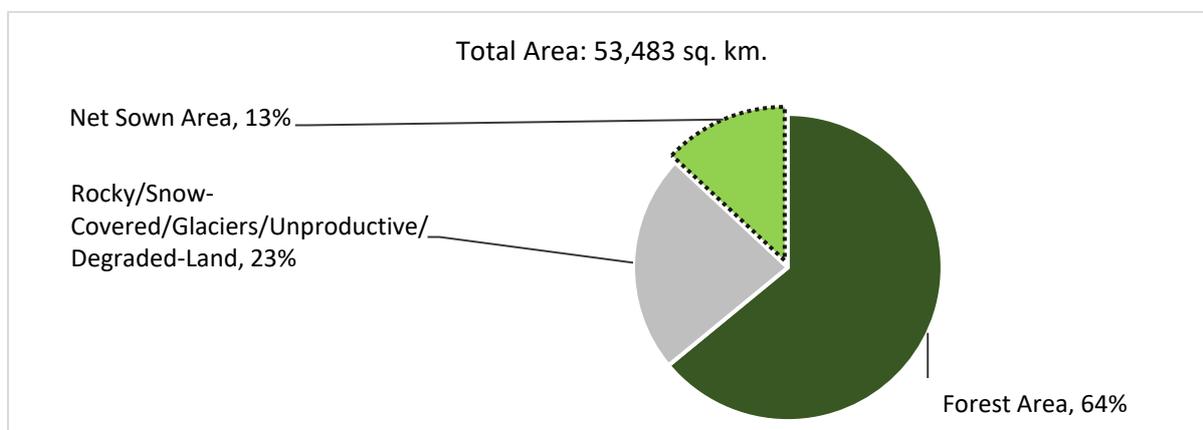
ADMINISTRATIVE SET UP	
Number of Divisions	2 Garhwal Division Kumaon Division
Number of Districts	13
Number of Tehsils	110
Number of Sub-Tehsils	18
Number of Development Blocks	95
Number of Nyaya Panchayats	662
Number of Gram Panchayats	7796
Number of Census Villages	16,793
Number of Nagar Nigam	9
Number 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.

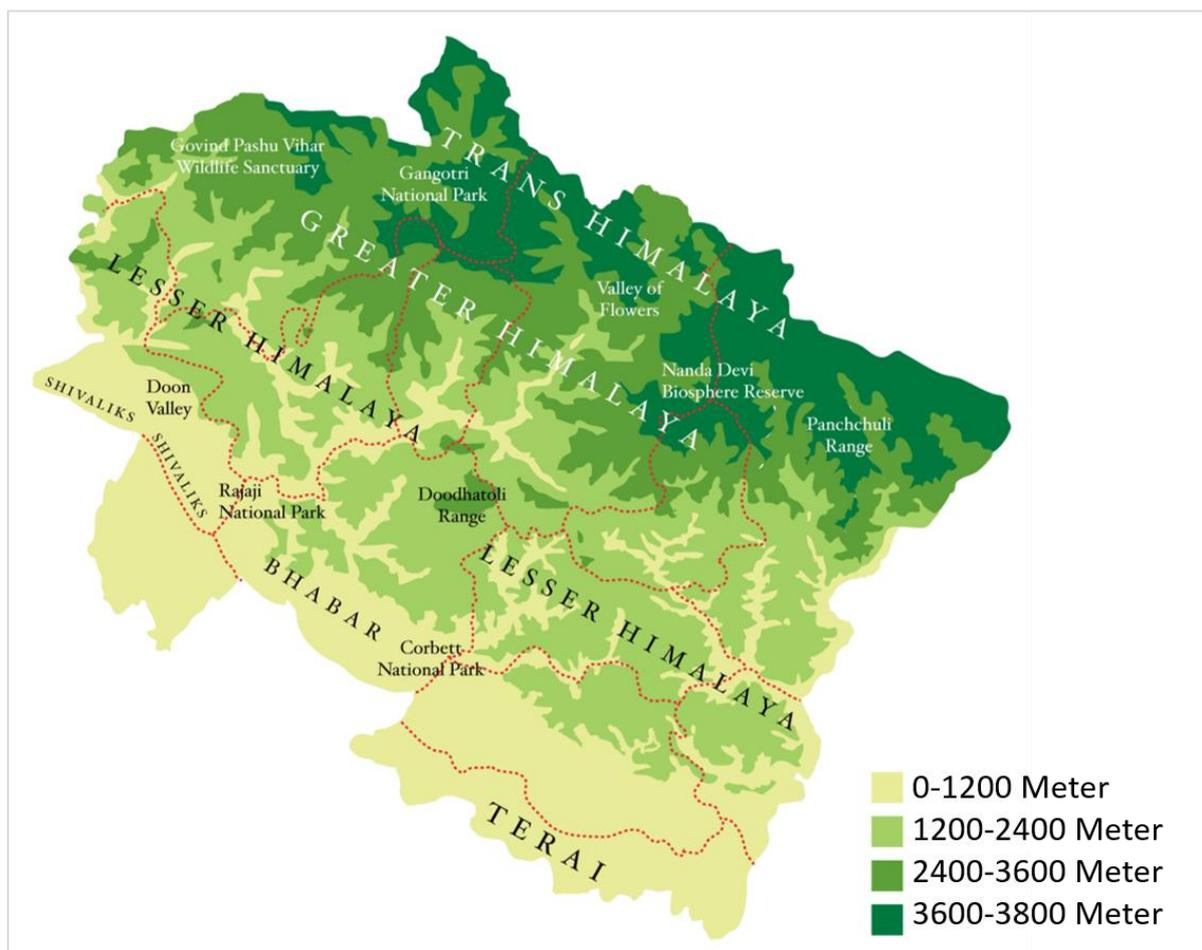
Figure 4: Percentage of Area Distribution of Uttarakhand (Census 2011)



Source: (District Census Handbook, 2011), Author

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.

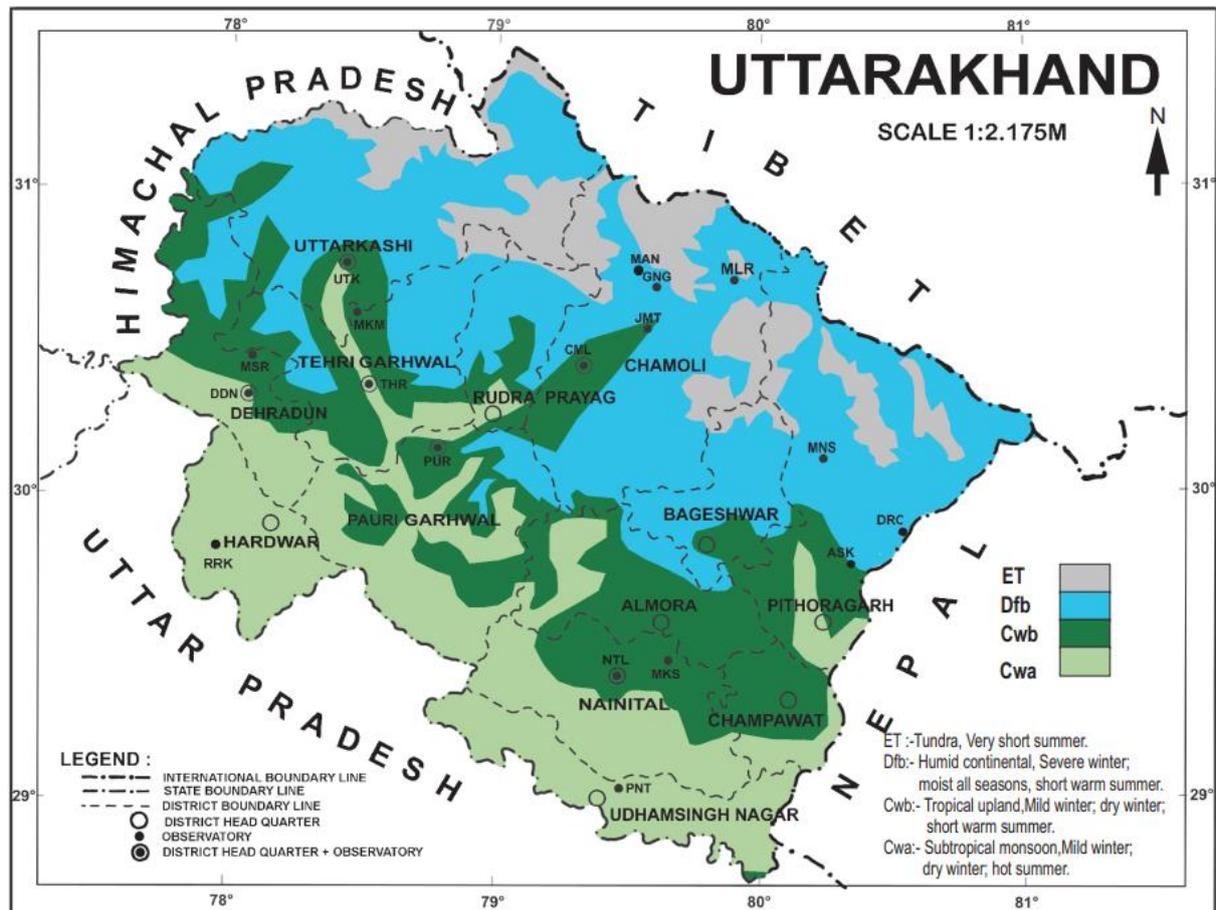
Map 7: Terrain Map of Uttarakhand



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.

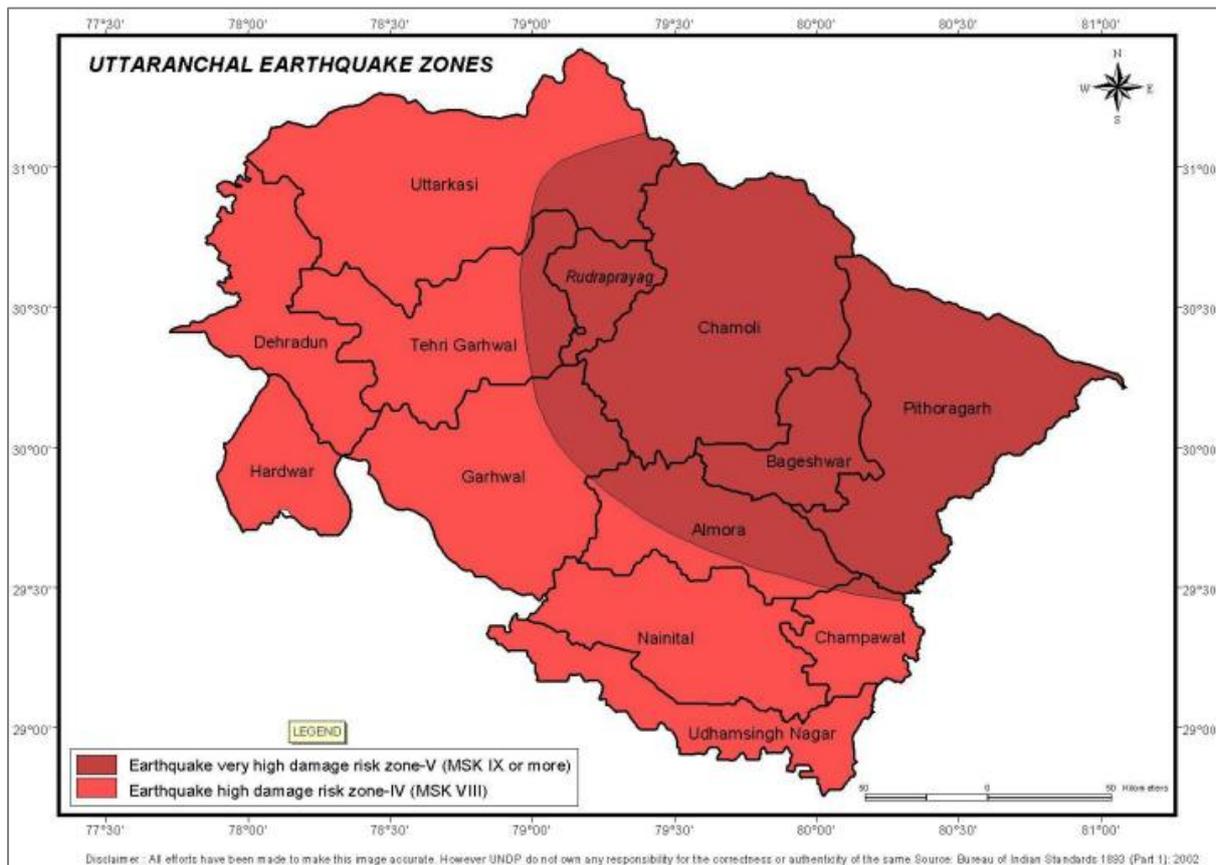
Map 8: Climate Classification of Uttarakhand



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.

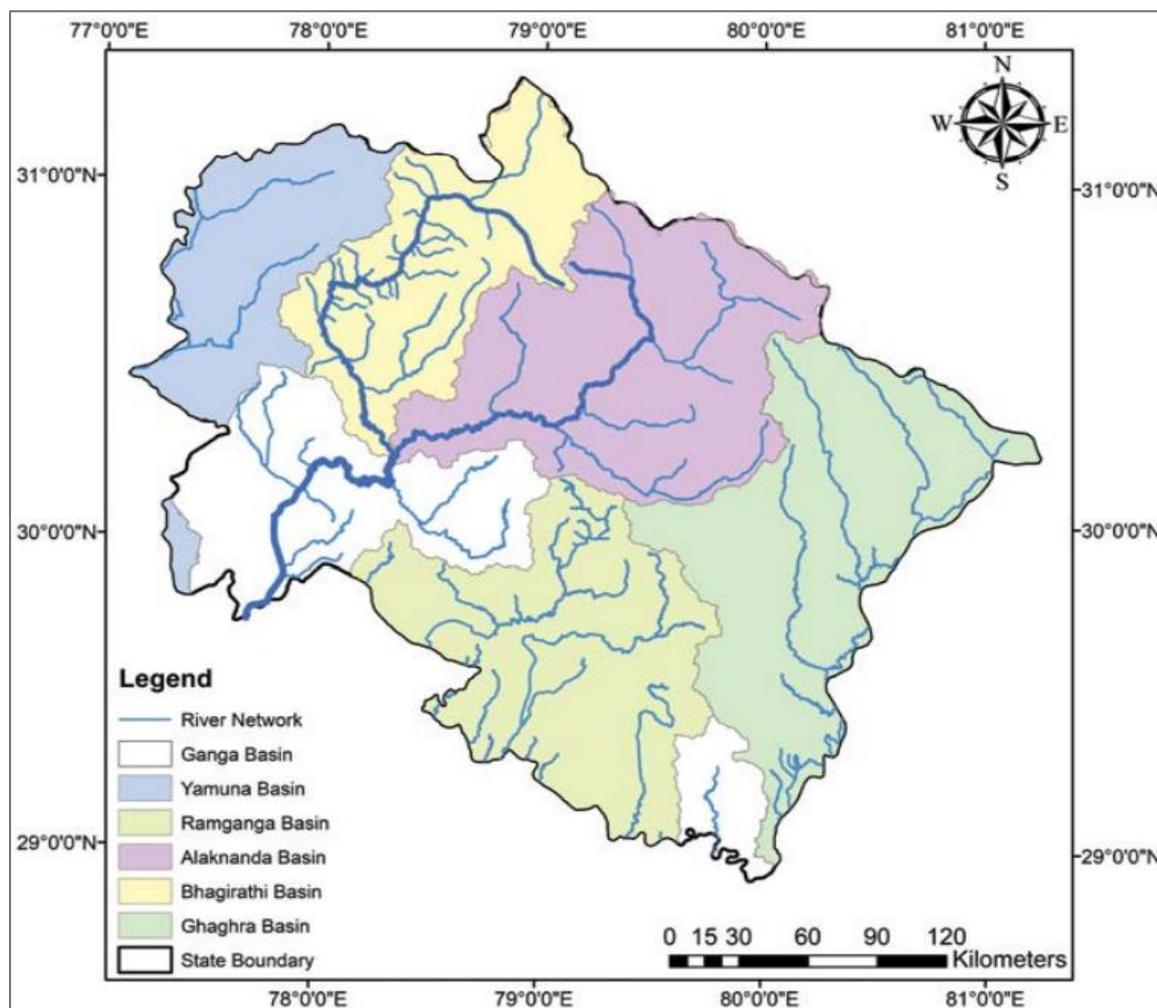
Map 9: Earthquake Zonation Map for the State of Uttarakhand



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



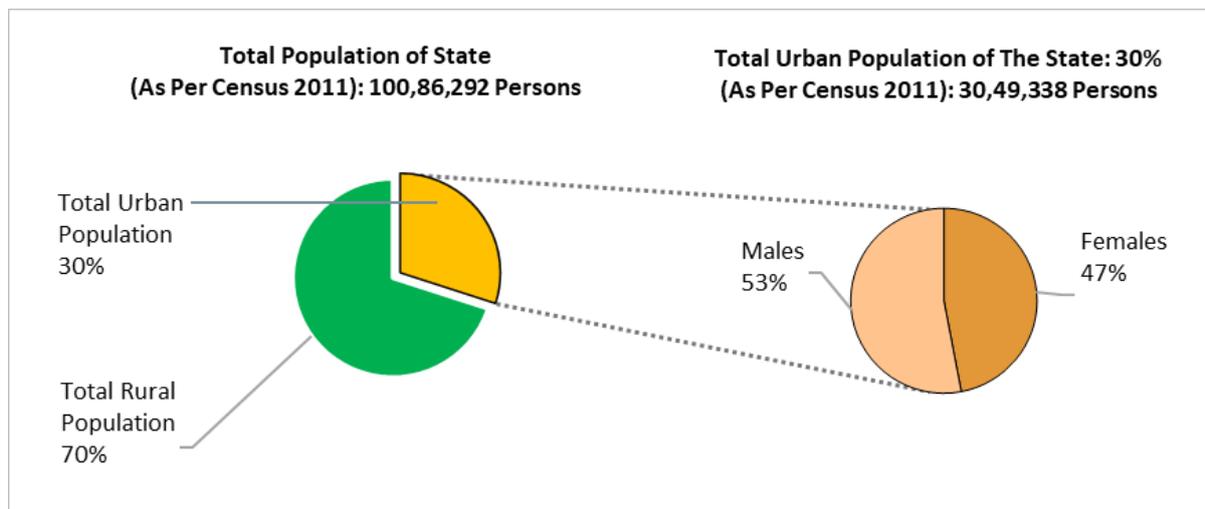
Source: (Uttarakhand River Atlas, National Mission for Clean Ganga, Ministry of Jal Shakti, Department of Water Resources, River Development & Ganga Rejuvenation, Government of India, 2021)

### 5.3. Demography and Socio-Economic Profile

#### 5.3.1. Demography

As shown in Figure 5, 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.

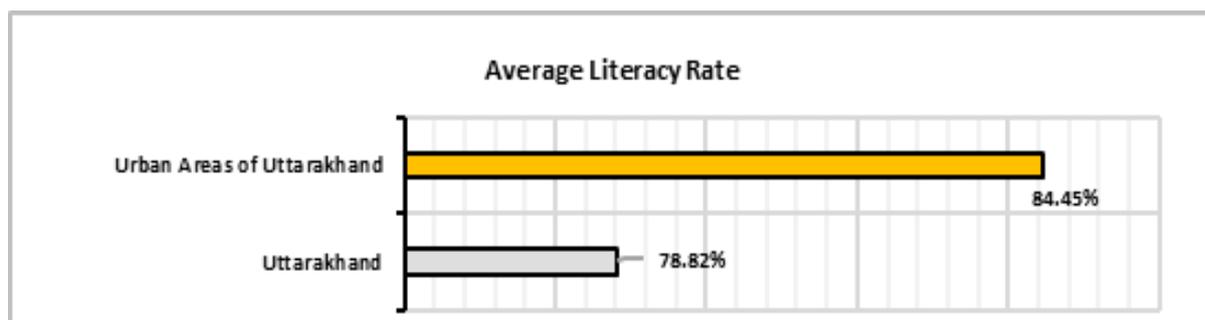
Figure 5: Population-Split of Uttarakhand (Census 2011)



Source: (Census India, 2011), Author

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%.

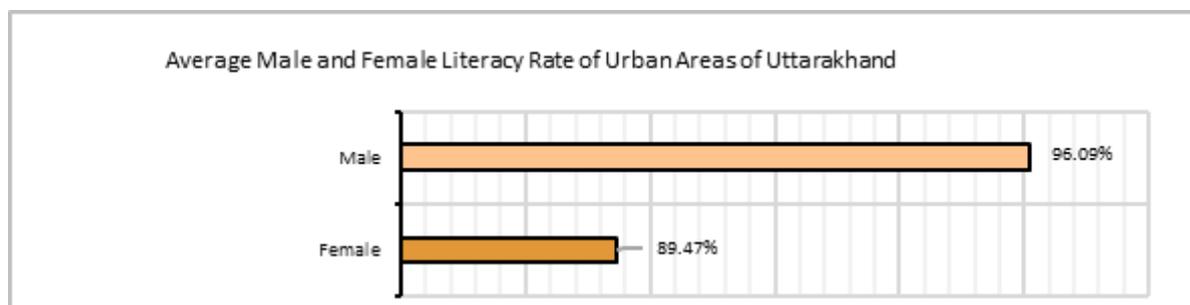
Figure 6: Comparative Analysis of the Average Literacy Rate of Uttarakhand and the Urban Areas of Uttarakhand (Census 2011)



Source: (Census India, 2011), Author

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%).

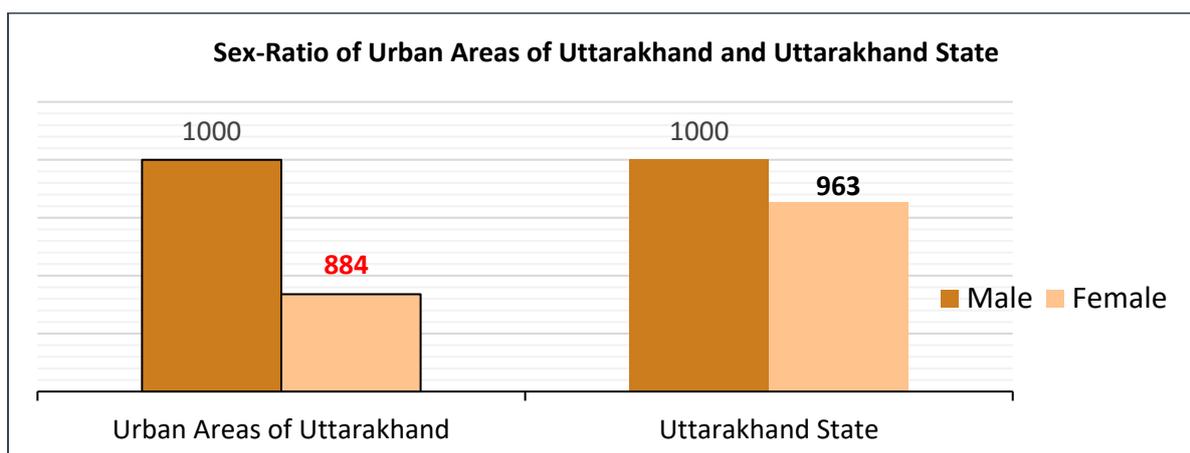
Figure 7: Comparative Analysis of the Average Male and Female Literacy-Rate of Urban Areas of Uttarakhand (Census 2011)



Source: (Census India, 2011), Author

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), Author

### 5.3.2. Social and Cultural Aspects

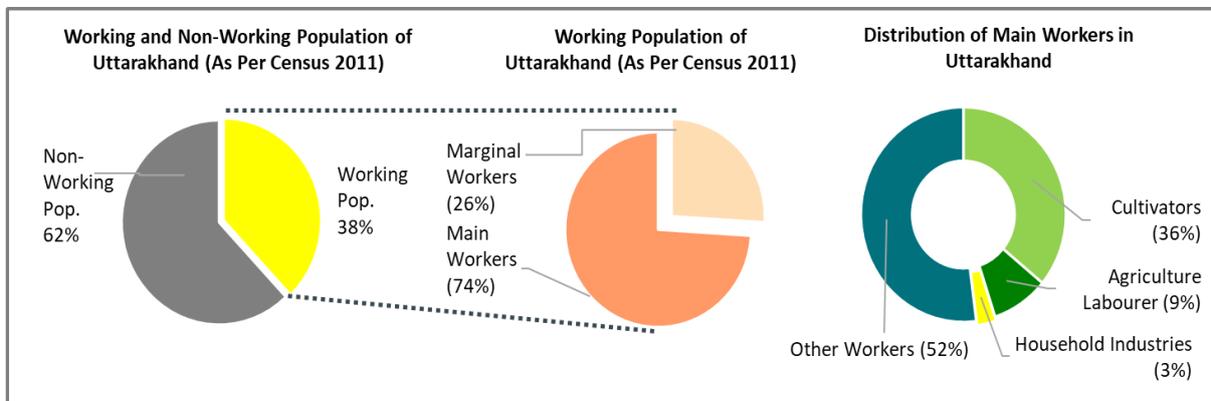
As per the (Census India, 2011), Uttarakhand has a Hindu majority with 82.97% of Hindu population followed by 13.95% of Muslim population, 2.34% Sikh population, 0.37% of Christian population, 0.15% of Buddhist population, 0.09% of Jain population, 0.01% of Other Religions population and 0.12% of population 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), Author

# Chapter 6

## Mussoorie Town

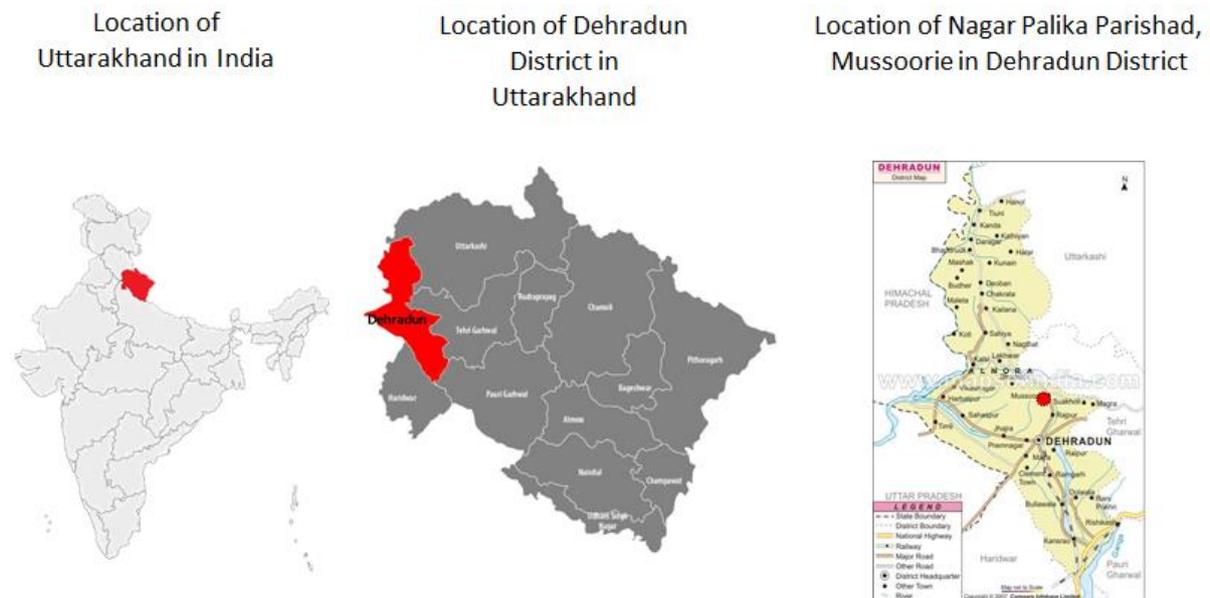
## Chapter 6. Mussoorie Town

### 6.1. Overview

As shown in Map 11, Mussoorie, often called the “Queen of Hill Stations,” it has also gained a reputation from British elites who sought refuge from the scorching summers of Delhi and Kolkata. Mussoorie hill station is situated about 38 km from Dehradun at coordinate 30.4953° N 78.0745° E, with an average altitude of 2,005 meters (6,578 ft). It offers commanding views of the snow-capped ranges to the northeast and the Doon Valley and Shiwalik range to the south, creating a fairy-tale atmosphere for visitors. The highest point in Mussoorie is Lal Tibba, standing at over 2,290 meters (7,500 ft). Located 300 kilometres north of Delhi, Mussoorie is a popular hill station overlooking the Doon Valley and the city of Dehradun, the gateway to Garhwal in the Himalayas.

Mussoorie was founded in 1823 but was never an official summer capital like Shimla or Nainital. Instead, it remained a destination for romance and leisure, earning the title "Honeymoon Capital of India." The town's charm is evident in its historic spots such as Landour Bazaar, Chaar Dukaan, Lal Tibba, Gun Hill, Camel Back Cemetery, the Mussoorie Library, and the historic Savoy Hotel. It also offers spectacular Himalayan views, with peaks like Bandarpooch, Srikantha, the Gangotri group, and Chaukhamba appearing close enough to touch.

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



Source: (Google Images, 2024), (Maps of India, 2024), Author

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

Table 3: Overview of Mussoorie Town (Census 2011)

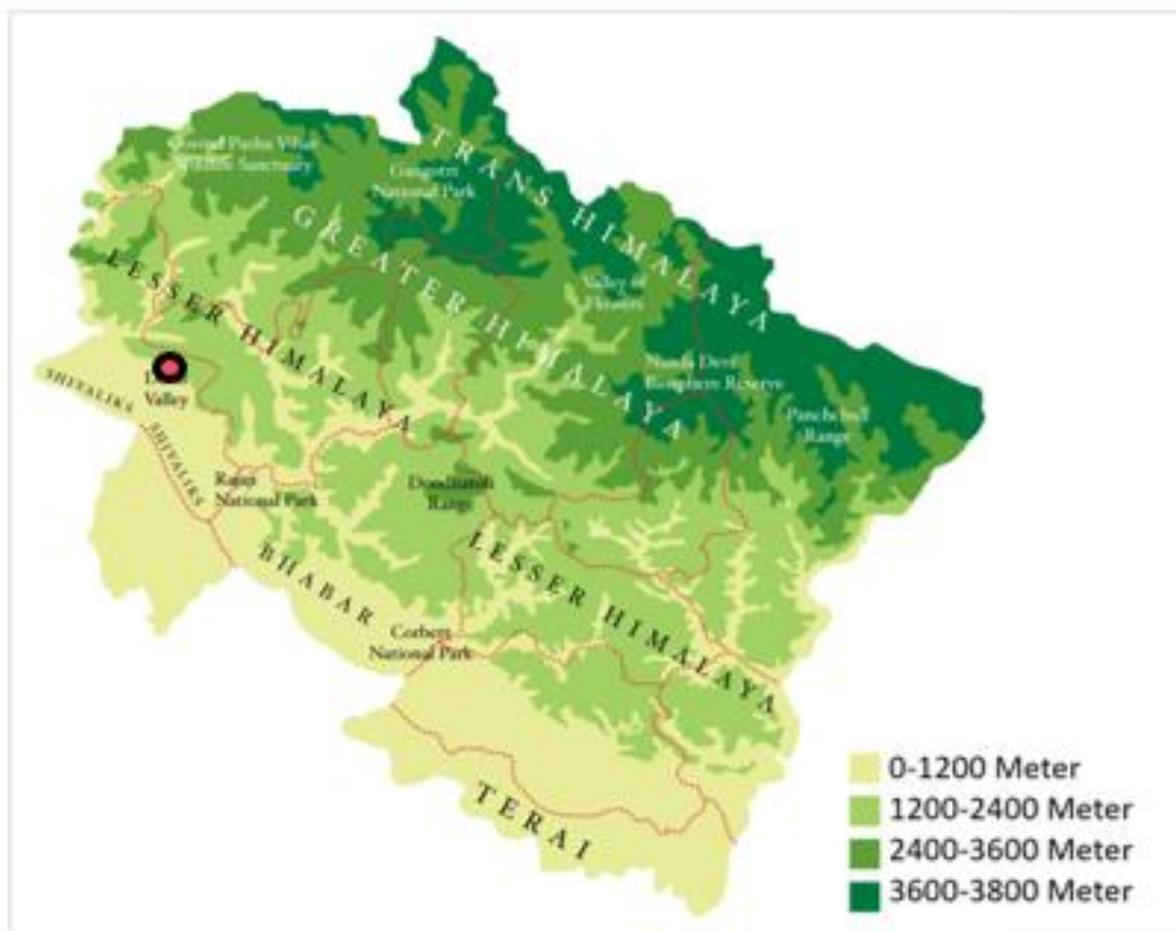
<b>GEOGRAPHICAL LOCATION</b>	
District	Dehradun
Tehsil	Dehradun
Town	Mussoorie
Latitude	30.4953° N
Longitude	78.0745° E
Geographical area of the Town	64.75 sq. km.
Average elevation of district headquarters (ASL)	2,005 meters (6,578 ft.)
<b>POPULATION DATA (CENSUS 2011)</b>	
Total population	<b>30,118</b>
Male population	16,623
Female population	13,495
Population density (persons per sq. km.)	465
Population growth rate (%) 2001-2011	15.5%
Average literacy rate (%)	89.70%
Male literacy (%)	86.5%
Female literacy (%)	75.9%
Sex-Ratio (female per thousand male)	812
<b>ULB</b>	
Nagar Palika Parishad Mussoorie	11 Wards

Source: (Gol, District Census Handbook, Champawat, 2011), (Census India, 2011)

### 6.2. Physical Features and Topography

As shown in Map 12, as per the (Department of Applied Geology, Dibrugarh University, Dibrugarh, 2020), Mussoorie Town geographically lies within the Lesser Himalayas region (1200-2400m) on the north and Outer Himalayan to the south of Uttarakhand. The terrain is predominantly steep and rugged, with winding roads and pathways that navigate the hilly landscape. This region is characterized by the presence of sedimentary rocks line limestone, dolomite, quartzite, and slate formations. The geology of the area has been shaped by tectonic, fluvial and glacial processes over time.

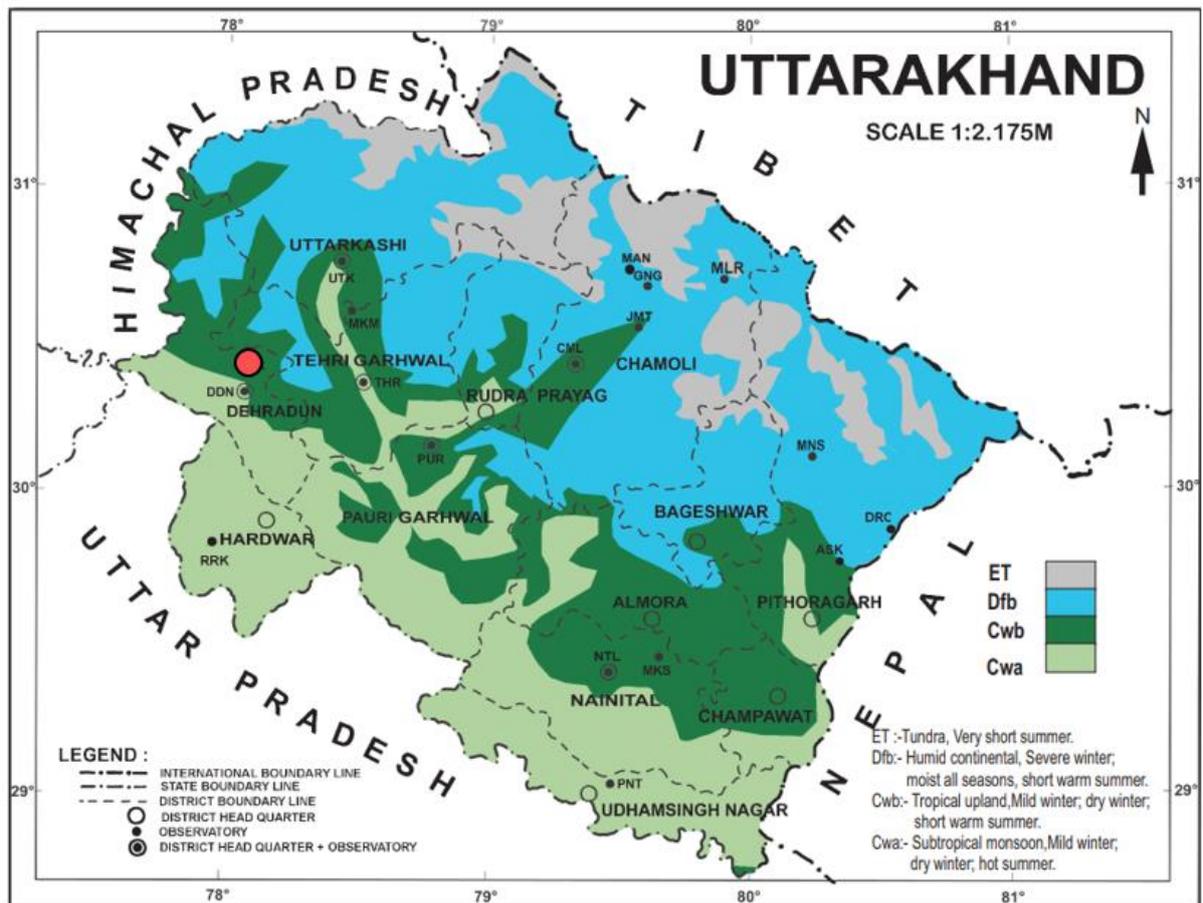
Map 12: Geographical Location of Mussoorie Town in Uttarakhand



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

As shown in Map 13, Mussoorie experiences cool summers, chilly winters and moderate to heavy rainfall during the monsoon season. The temperature in Mussoorie town ranges from 26°C to 13°C. Some of the high mountainous areas even receive precipitation in the form of snowfall.

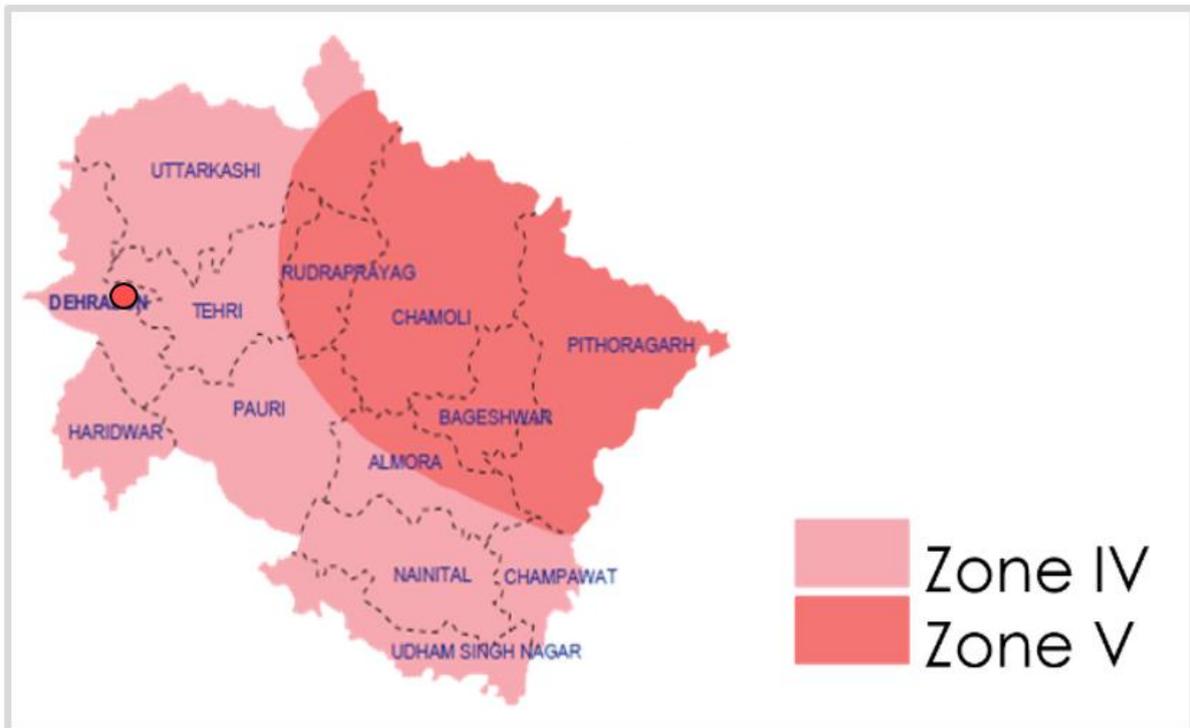
Map 13: Climatic Classification Map of Uttarakhand Highlighting the Climatic Conditions of Mussoorie Town



Source: Basemap: (Gol, Climate of Uttarakhand), Author

As shown in Map 14, Mussoorie 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 Mussoorie Town in Earthquake Zonation Map of Uttarakhand



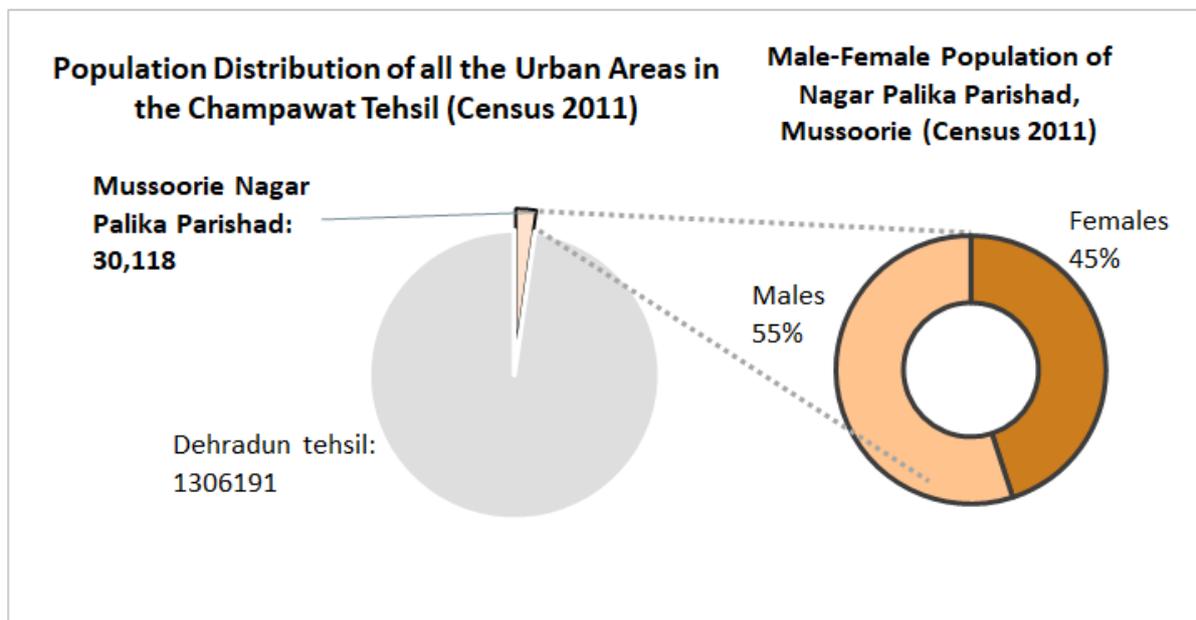
Source: (Thematic Map Library, Uttarakhand.org, 2024), Author

### 6.3. Demography and Socio-Economic Profile

#### 6.3.1. Demography

As shown in Figure 10, as per the (Census India, 2011), Dehradun Tehsil has 77% (7, 61,965 persons) of its total population in the urban areas i.e. including 11 Towns. The Nagar Palika Parishad, Mussoorie has 55% (16,623 persons) of male population and 45% (13,495 persons) of female population in the Town.

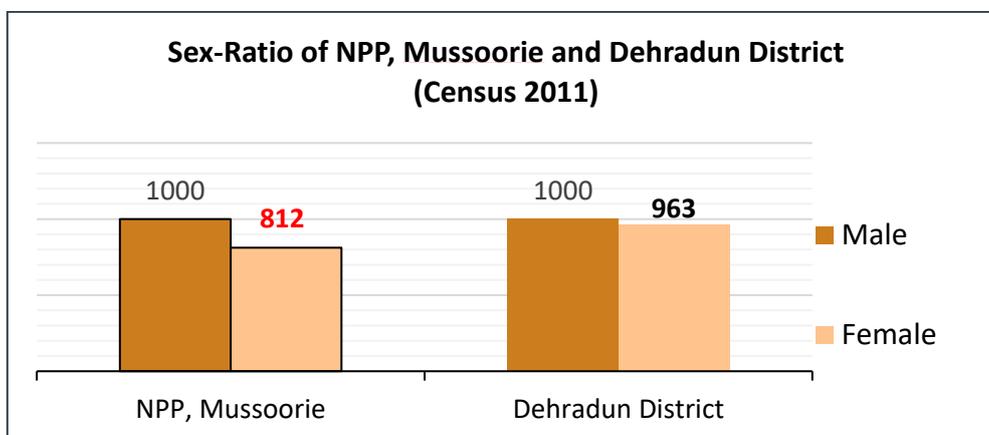
Figure 10: Population Distribution of the Urban and Rural Areas in the Dehradun Tehsil and Male-Female Population of the Nagar Palika Prishad, Mussoorie (Census 2011)



Source: (Census India, 2011), Author

As shown in Figure 11, Mussoorie town has 812 females per 1000 males. Thus, making the sex-ratio of Mussoorie Town to be lower than the sex-ratio of Dehradun District i.e. 963 females per 1000 males.

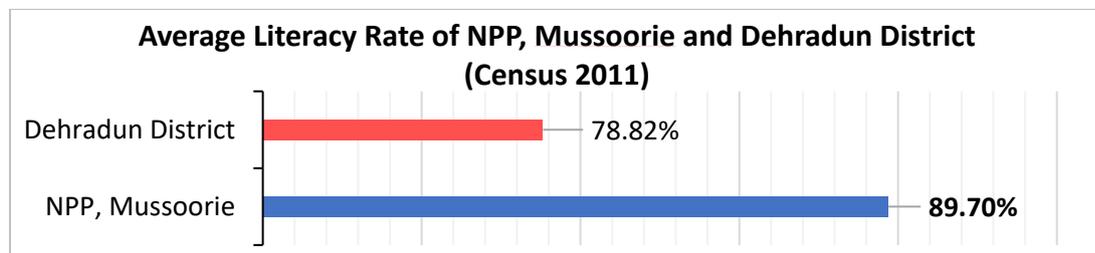
Figure 11: Comparative Analysis of Sex-Ratio of Nagar Palika Parishad, Mussoorie and Dehradun District (Census 2011)



Source: (Census India, 2011), Author

As shown in Figure 12, the average literacy rate of Mussoorie Town (94.50%) is higher than the average literacy rate of Dehradun District (78.82%).

Figure 12: Comparative Analysis of Average Literacy Rate of Nagar Palika Parishad, Mussoorie and Dehradun District (Census 2011)



Source: (Census India, 2011), Author

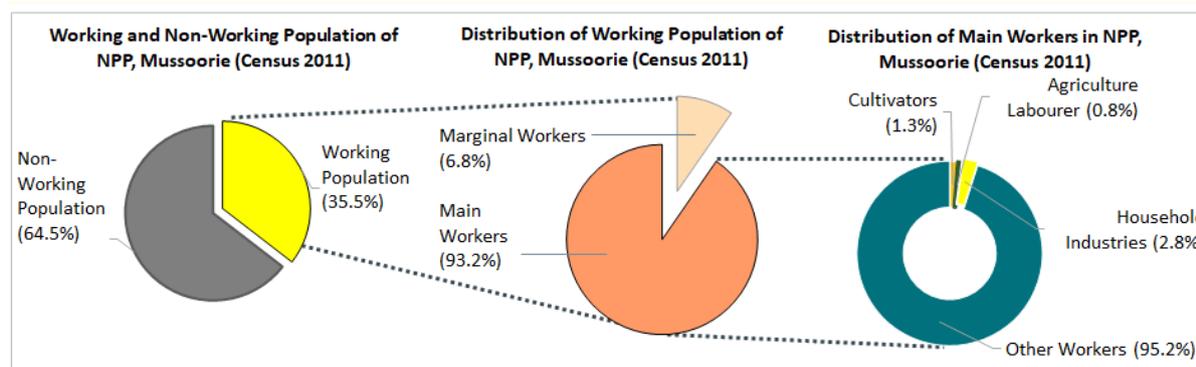
### 6.3.2. Social and Cultural Aspect

As per (Census India, 2011), in Nagar Palika Parishad, Mussoorie, out of the total population (30,118 persons) of the town 18.52% (5,578) of population is Schedule Caste (SC) and 0.85% (256) of population is Schedule Tribe (ST).

As per the (Census India, 2011), Nagar Palika Parishad, Mussoorie, has a Hindu majority with 80.67% of Hindu population followed by 7.70% of Muslim population, 3.77% of Christian population, 1.32% Sikh population, 5.90% of Buddhist population, 0.32% of Jain population, 0.13% of Other Religions population and 0.20% of population with No Religion Stated.

### 6.3.3. Economic Profile

Figure 13: Demography of Working Population of Nagar Palika Parishad, Mussoorie (Census 2011)



Source: (Census India, 2011), Author

As shown in Figure 13, according to the (Census India, 2011) around 35.5% of the total population of Nagar Palika Parishad, Mussoorie is engaged in working activities. Thus, making the total working population to be 10,692 persons. Out of this total working population, 90.4% of the population are Main Workers (employed or earning more than 6 months) i.e. 9,665 persons (83% males and 17% females) and the remaining 9.6% of the total working population are Marginal Workers (working for less than 6 months) i.e. 1,027 persons (75% males and 25% females). Out of the total Main Workers, 1.3% are Cultivators, 0.8% are Agriculture Labourers, 2.8% work in the Household Industries and 95.2% are engaged as Other Workers. While the remaining 64.5% of the total population of the

Nagar Palika Parishad, Mussoorie is the Non-Working Population i.e. 19,426 persons. Tourism is the mainstay of Mussoorie’s economy, with visitor flocking to the town for its natural beauty, colonial architecture, and pleasant climate. Other economic activities include architecture, mining and small-scale industries.

#### 6.4. Discussions during the Stakeholder Consultation Meeting held on 02<sup>nd</sup> September 2024 in NPP, Mussoorie

As shown in Image 2 below, a Stakeholder Consultation Meeting was held on 02<sup>nd</sup> September 2024 in NPP, Mussoorie. This meeting was attended by 15 stakeholders/participants as mentioned in the list attached in Annexure C.

Image 2: Images of Stakeholder Consultation Meeting Held on 02<sup>nd</sup> September 2024 in NPP, Mussoorie



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 Mussoorie Town.

**6.5. Post Study Workshop – 10 Dec. 2024**

A post study workshop was held at the Dr. R. S. Tolia Academy of Administration Nainital on 10<sup>th</sup> December 2024. Representatives of all the three towns of Mussoorie, Almora and Pauri participated in the meeting and the findings of the research work were discussed. Some suggestions for further improvement of the draft Final Report were given. Some data gaps were also noticed. All these data gaps and suggestions have been incorporated. The list of participants is given in the Annexure C. Photographs of the workshop are shown below:

Image 3: Some images of the Post Study Workshop -10<sup>th</sup> Dec. 2024, Nainital













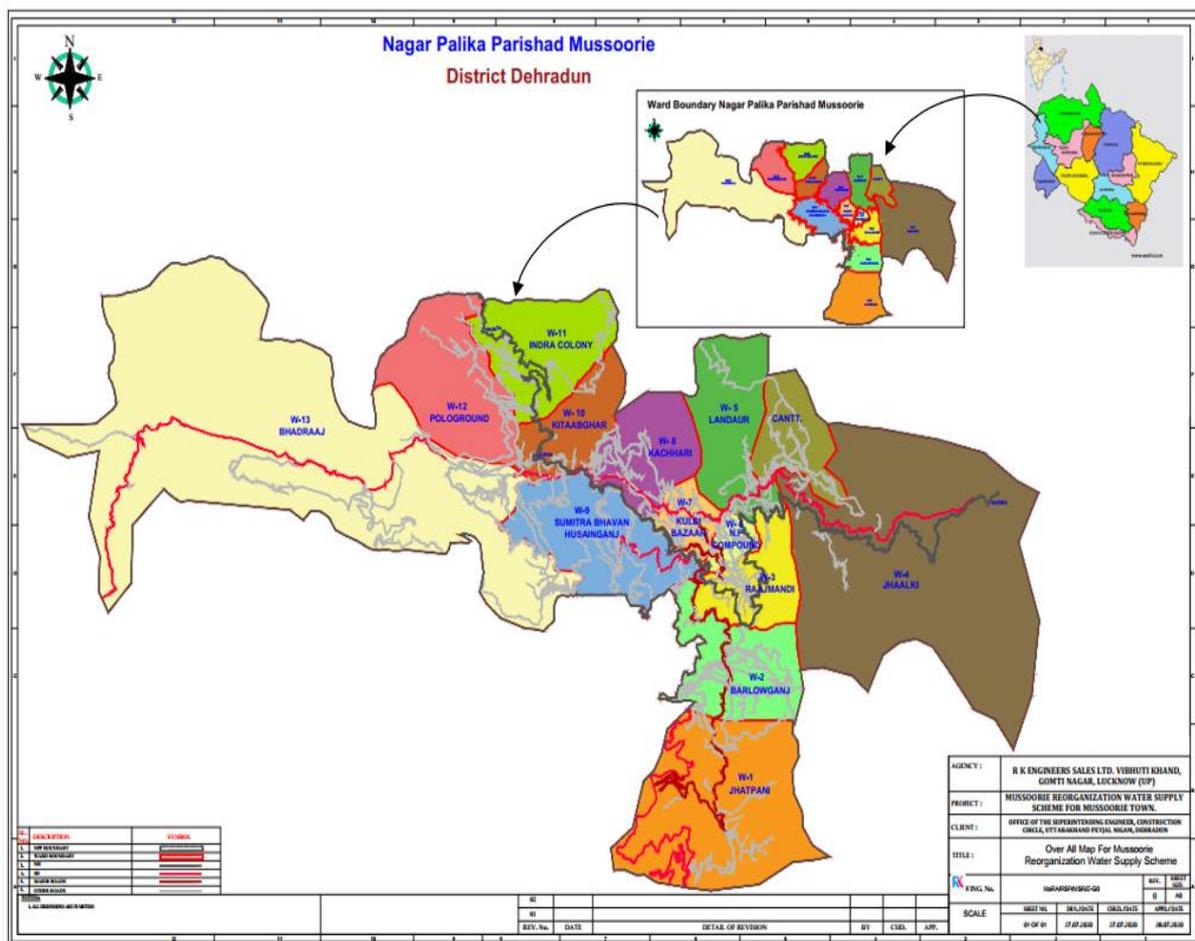


Source: (Dr. R. S. Tolia Uttarakhand Academy of Administration (ATI))

**6.6. Current Situation as per the Data Provided by the Officials Met During Field Visit**

As per the discussion with the officials of Nagar Palika Parishad, Mussoorie and the data collected as attached in Annexure A, at present the Mussoorie encompasses 64.74 Sq.km and divided into 13 wards. The population of the town is approximately 42,000, with significant floating population that fluctuates between 15,000 to 20,000 per day during peak season and 3,000 to 7,000 per day during off- peak seasons.

Map 15: Present Boundary Map of Nagar Palika Parishad, Mussoorie (2024)



Source: (Nagar Palika Parishad, Mussoorie, 2024), Author

At present, the Nagar Palika Parishad, Mussoorie has a total of 8,400 households (HHs) with an average household (HH) size of 5.

As shown in Table 4, in terms of infrastructure, the Nagar Palika Parishad is responsible for solid waste management, while the Uttarakhand Jal Sansthan handles water supply and maintenance. The Pey Jal Nigam Uttarakhand oversees the construction of water treatment plants and water distribution pipelines, and the public works Department manages the road network.

Table 4: Present Overview of Mussoorie Town as per the Discussions and the Data Provided by the Officials Met During Field Visit and Stakeholder Consultation Meeting (2024)

<b>Present Overview of Mussoorie Town (2024)</b>	
<b>Area of Mussoorie Town (2024) (in sq. km.)</b>	<b>64.74</b>
<b>Total number of wards in Mussoorie Town (2024)</b>	<b>13</b>
Ward 01	Jhadipaani
Ward 02	Barloganj
Ward 03	Raajmandi
Ward 04	Jhaalki
Ward 05	Landaur
Ward 06	Nagar Palika Compound
Ward 07	Kulri Bazaar
Ward 08	Kachhari
Ward 09	Sumitra Bhavan- Husainganj
Ward 10	Kitaabghar
Ward 11	Indra Colony
Ward 12	Pologround
Ward 13	Bhadraaj
<b>Total population in Mussoorie Town (2024)</b>	<b>42,000</b>
<b>Floating Population of Mussoorie Town (2024) (per day)</b>	<ul style="list-style-type: none"> <li>• On season – 15,000 to 20,000 per day</li> <li>• Off season – 3,000 to 7,000 per day</li> </ul>
<b>Total number of Households (HHs) in Mussoorie Town</b>	<b>8,400</b>
Name of department responsible for Solid Waste Management in Mussoorie Town	Nagar Palika Parishad, Mussoorie
Name of department responsible for Water Supply in Mussoorie Town	Uttarakhand Jal Sansthan (UJS), Mussoorie
Name of department responsible for Construction and Maintenance of Water Distribution Network Pipeline	Pey Jal Nigam Uttarakhand (PJNU), Mussoorie
Name of department responsible for Construction and Maintenance of Road Network in Mussoorie Town	Public Works Department (PWD), Mussoorie

Source: (Nagar Palika Parishad, Mussoorie, 2024), (Uttarakhand Jal Sansthan, Mussoorie, 2024), (PWD, Mussoorie, 2024), (Uttarakhand Tourism Development Board, Mussoorie, 2024), (RTO, Dehradun, 2024), Author

As mentioned in Table 5, the Main Market areas and busiest shopping hub of Mussoorie Town is located along the Mall Road. It is lined with local cafes, restaurants and shops selling souvenirs, handcraft, clothing and home décor. Near the bus station is the picture Palace market, known for its eclectic mix of clothing shops, accessory stores, and street food vendors. Library Bazar, located at Gandhi Chowk, is lively market with numerous shops selling books, clothing and local produces, complemented by its historical 19<sup>th</sup> century library. The Tibetan Market on camel's back road at Savitiru villa, Jhula Ghar, provides a cultural shopping experience with Tibetan artefacts, jewellery, and clothing. Kulri Bazaar, situated in the Kulri area, is another popular shopping destination with a wide range of store offering cloth, accessories, electronics and groceries. Lastly, Sister Bazaar in Landour offers a quaint shopping experience with its colonial era charm, featuring a few shops that

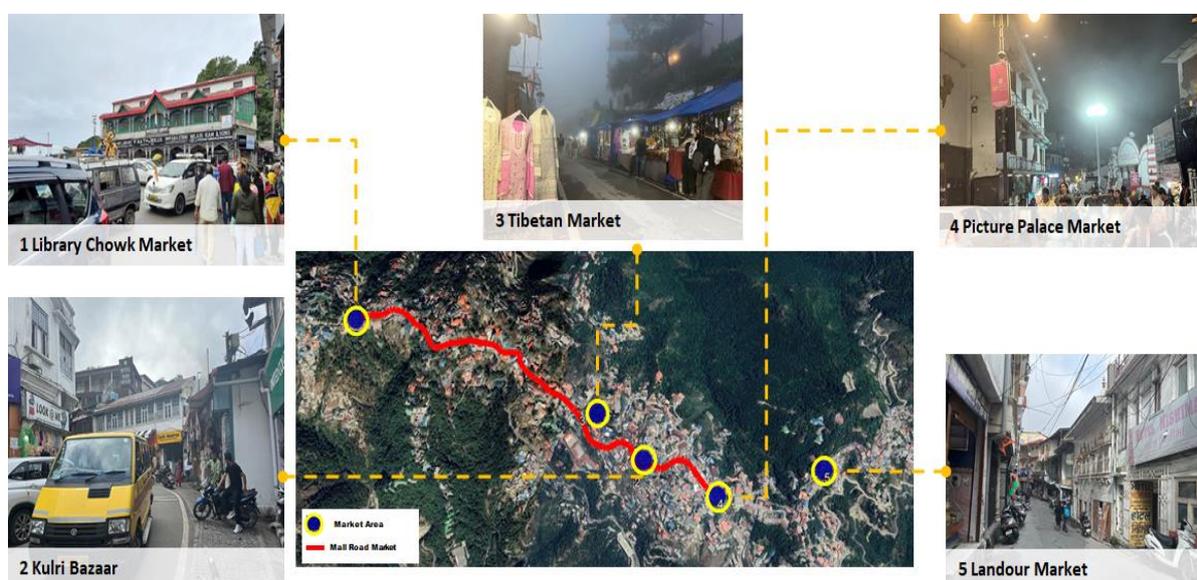
sell groceries, baked goods and household items. Each of these markets adds to the vibrant and diverse shopping landscape of Mussoorie.

Table 5: List of Major Market Areas in Mussoorie Town and their Location

Major Market Areas in Mussoorie Town and their Location		
S. No.	Market Areas	Location
1	Mall road Market	Along Mall road, Mussoorie
2	Picture palace Market	Near Picture palace bus station
3	Library Bazaar	Gandhi Chowk
4	Tibetan Market	Savitri villa, camel’s back Rd, Jhula Ghar, Mall road
5	Kulri Bazaar	Kulri Mussoorie
6	Landour Market	Landour

Source: (Nagar Palika Parishad, Mussoorie, 2024), Author

Image 4: Location of and Images of Main Market Areas in Mussoorie Town



Source: (Google My Maps, 2024), (Primary Survey, 2024), Primary survey by (Primary Survey, 2024)

### 6.7. Comparative Analysis of Nagar Palika Parishad, Mussoorie (as per Census 2011) and Nagar Palika Parishad, Mussoorie (at present, 2024), as per the Discussions and the Data provided by the Officials Met

The Table 6 below, shows the comparative analysis of the Nagar Panchayat, Mussoorie (as per Census 2011) and Nagar Palika Parishad, Mussoorie (at present, 2024) as per the discussions and the data provided by the officials met during field visit in the month of July 2024 and Stakeholder Consultation Meeting on 02<sup>nd</sup> September 2024. Along with the inferences for the same.

Table 6: Comparative Analysis of Nagar Panchayat, Mussoorie (as per Census 2011) and Nagar Palika Parishad, Mussoorie (at present, 2024), as per the Discussions and the Data provided by the Officials Met

<b>Present Scenario as per the Discussion and the Data Provided by the Officials Met During Field Visit and Stakeholder Consultation Meeting</b>			
<b>Overview</b>	<b>Nagar Panchayat, Mussoorie As Per census (2011)</b>	<b>Nagar Palika Parishad, Mussoorie (2024)</b>	<b>Inferences</b>
<b>Area of NPP, Mussoorie</b>	64.75 sq. km.	64.75 sq. km.	<ul style="list-style-type: none"> <li>At present i.e. 2024 the area of Town has no increase in its area since 2011.</li> </ul>
<b>No. of Wards in NPP, Mussoorie</b>	11	13	<ul style="list-style-type: none"> <li>Subsequently, the number of wards has increased from 11 to 13.</li> </ul>
<b>Total Population of NPP, Mussoorie</b>	30,118 Persons	42,000 Persons ( Projected by Census )	<ul style="list-style-type: none"> <li>The existing total population of the NPP, Mussoorie was not available (as per the discussions with the officials met).</li> <li>According to the Census of India, the projected population is 42,000 persons</li> <li>Therefore, there has been an increase of 39.45% in the total population of NPP, Mussoorie.</li> </ul>
<b>Total Number of Households (HHs)</b>	6,245	8,400	<ul style="list-style-type: none"> <li>The total number of Households (HHs) at present (2024) has increased 34.5% times since 2011.</li> </ul>
<b>Average HH Size</b>	4	5	<ul style="list-style-type: none"> <li>The Average HH size has increased from 4 to 5.</li> </ul>
<b>Population Density of NPP, Mussoorie</b>	4.65 PPH	6.49 PPH	<ul style="list-style-type: none"> <li>There has been approx. 39.57% of increase in the population density i.e. from 4.65 person/hectare to 6.49 person/hectare.</li> </ul>
<b>Floating Population of NPP, Mussoorie</b>	11.20 Lakh	14.7 Lakh by the year of 2023 On Season – 15,000-20,000 per day Off-season – 3,000 to 7,000 per day	<ul style="list-style-type: none"> <li>The over tourism in Mussoorie Town has resulted in the diversion and spread of tourists towards other areas surrounding it.</li> <li>This has resulted in slight Tourist influx in Mussoorie Town since 2022 i.e. 1,500 to 2,000 persons per day during the months of</li> </ul>

			<p>April, May, June, July, December and January.</p> <ul style="list-style-type: none"> <li>This number may even escalate up-to 3,000 persons during the peak tourism season i.e. the month of June.</li> </ul>
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Source: (Census India, 2011), (Nagar Palika Parishad, Mussoorie, 2024), (Stakeholder Consultation Meeting, 2024), (Primary Survey, 2024)

### 6.8. Tourist Footfall of Mussoorie Town

As shown in Table 7, the initial period from 2011 to 2012 saw a steady increase in tourist footfall, reflecting Mussoorie's growing popularity as a tourist destination but in 2013, there was a notable decline in tourist numbers (12.05 lakh to 10.76 Lakh from 2012 to 2013), likely due to the devastating Kedarnath, Uttarakhand flood in June 2013. The floods caused significant damage to infrastructure and heightened safety concerns among potential visitors. However, the subsequent year saw a significant recovery, with tourist numbers reaching 13.97 lakh in 2014. The period from 2015 to 2019 (27.69 lakh to 30.24 Lakh) a dramatic surge in tourist footfall. In 2020, the number of tourist reduced to 10.16 lakh persons only, reflecting the effects of lockdowns, travel restrictions and health concerns. However, with the easing of restrictions and the rollout of vaccination campaigns there was a recovery in 2021, with tourist numbers rising to 12.30 Lakh. In 2022, the tourist footfall was 11.74 Lakh. This slight decline from the previous year suggests a stabilization, as the tourism industry adapted to the normal.

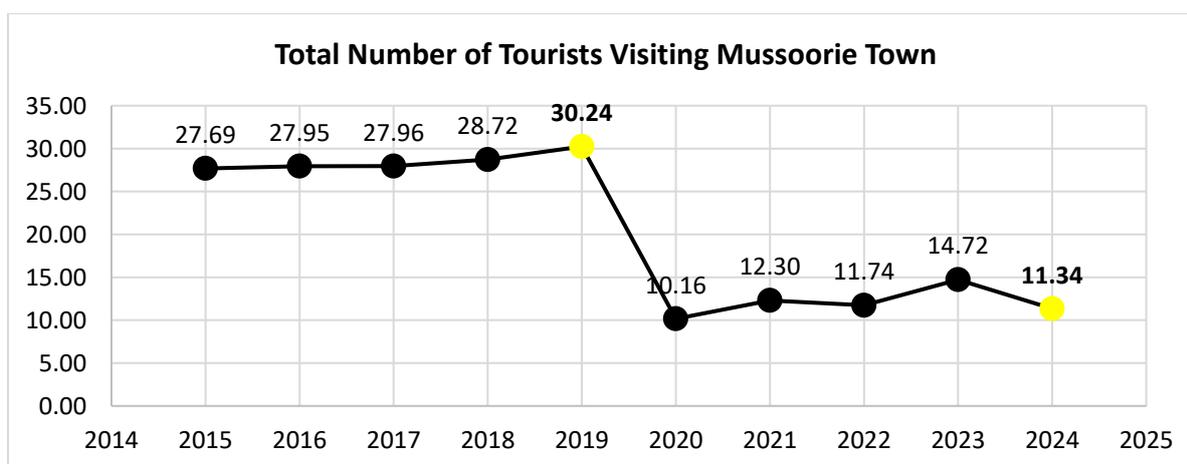
Table 7: Annual Tourist Footfall of Mussoorie Town from the Year 2011 to 2024 as per the Tourism Department of Mussoorie, Uttarakhand

Annual Tourist Footfall of Mussoorie Town from the year 2011 to 2022 as per the Tourism Department Mussoorie, Uttarakhand	
Year	Total Number of Tourists Visiting Mussoorie Town
2000	8,50,746
2001	8,91,938
2002	9,91,344
2003	1,027,738
2004	1,027,668
2005	1,047,792
2006	1,055,836
2007	1,081,322
2008	1,091,956
2009	1,102,567
2010	1,104,796
2011	1,120,287
2012	1,205,291
2013	1,075,975
2014	1,396,702
2015	2,769,272
2016	2,795,124

2017	2,795,973
2018	2,872,025
<b>2019</b>	<b>3,023,839</b>
2020	1,016,337
2021	1,229,808
<b>2022</b>	<b>1,173,789</b>
<b>2023</b>	<b>14,71,924</b>
<b>2024</b>	<b>11,34,400</b>

Source: (Tourism Department, Mussoorie, Uttarakhand, 2024),

Figure 14: Annual Tourist Footfall of Mussoorie Town from the Year 2011 to 2024 as per the Tourism Department of Mussoorie, Uttarakhand



Source: (Tourism Department, Mussoorie, Uttarakhand, 2024),

Table 8 Details of Tourist influx in the year of 2022

Tourist influx in the year of 2022				
S. no.	Month	National	Foreigner	Total
1	Jan-22	30,000	55	30,055
2	Feb. 2022	35,135	174	35,309
3	Mar-22	1,09,240	373	1,09,613
4	Apr-22	1,45,431	105	1,45,536
5	May-22	2,15,427	477	2,15,904
6	Jun-22	1,63,432	108	1,63,540
7	Jul-22	43,428	263	43,691
8	Aug-22	87,542	135	87,677
9	Sep-22	2,19,538	109	2,19,647
10	Oct-22	1,21,905	126	1,22,031
11	Nov-22	1,02,117	201	1,02,318
12	Dec-22	1,96,468	135	1,96,603
Total		14,69,663	2,261	14,71,924

Source: (Tourism Department, Mussoorie, Uttarakhand, 2024),

In 2022, Mussoorie witnessed a total tourist influx of 1,471,924, comprising 1,469,663 national and 2,261 foreign tourists. The influx showed distinct seasonal patterns, with peaks in May (2,15,904) and June (1,63,540) due to summer vacations and a significant increase in December (1,96,603) driven by

the holiday season. The months of July and September saw a decline, with 43,691 and 87,677 tourists respectively, likely due to the monsoon season. The influx of foreign tourists remained consistently low throughout the year, with the highest number recorded in May (477).

### 6.9. Final Population Calculation as of 2024

The final population of Mussoorie in the year 2024 has been worked out as follows:

Sr. No.	Categories	Population
01.	Population as per 2011 Census	30,118
02.	Population as per 2024 Projected (by Census)	42,000
03.	Tourist Population	20,000 per day (On Season)
		7,000 per day (Off Season)
04.	Boarding Schools/ Institutes (please see detailed Annexure)	10,024
05.	LBSNAA	700
06.	Cantonment Area	3,200
07.	Hospitals	600
08.	Floating Population	4,000
09.	Tenants	10,000
	<b>Total Population</b>	<b>90,524 (On Season)</b>
		<b>77,524 (Off Season)</b>

Source: (Census India, 2011), (Nagar Palika Parishad, Mussoorie, 2024), (Stakeholder Consultation Meeting, 2024), (Primary Survey, 2024)

# **Chapter 7**

## **Mussoorie Town:**

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

## Chapter 7. Mussoorie Town: Solid Waste Management

### 7.1. System Infrastructure

The Solid Waste Management (SWM) in Mussoorie Town is the responsibility of the ULB: Nagar Palika Parishad, Mussoorie. As per the discussions with the officials met (as mentioned in Annexure C) the Table 9 below, shows the existing system infrastructure for the SWM in NPP, Mussoorie.

Table 9: Overview of System Infrastructure for Solid Waste Management (SWM) in Mussoorie Town

System Infrastructure Provided By NPP, Mussoorie		
<b>Community Bins</b>		
Total Number of Dustbins	Bin- Free	<ul style="list-style-type: none"> <li>The Town is Bin-Free under the Swachh Bharat Mission 2.0.</li> <li>In the Commercial Areas along with Mall road to prevent littering of garbage the shop owners and road side vendors keep their individual dustbins.</li> <li>However, to ensure comprehensive waste management coverage fixed mesh bins have been installed along the road in the outer regions of the town.</li> </ul>
Total Number of Large Dustbins		
Ward Wise Number of Large Dustbins (on an average)		
Total Number of Small Dustbins		
Ward Wise Number of Small Dustbins (on an average)		
<b>Staff Appointed by NPP, Mussoorie and KEEN (Private agency)</b>		
<b>Total Number of Sanitation Workers</b>		<b>285</b>
<ul style="list-style-type: none"> <li>Number of Sweepers appointed by NPP, Mussoorie</li> </ul>		108
<ul style="list-style-type: none"> <li>Staff appointed by KEEN</li> </ul>		177
<b>Frequency of Cleaning of Roads and Streets for Commercial and Residential Areas by the staff appointed by NPP, Mussoorie</b>		
During Summers	Three 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> <li>Night sweeping: After 10:00 pm (Mall Road)</li> </ul>
During Winters	Three 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> <li>Night sweeping: After 10:00 pm (Mall Road)</li> </ul>
<b>Garbage Pick-Up Vehicles for Solid Waste Collection and Transportation</b>		
Garbage Pick-Up Vehicles Provided by the NPP, Mussoorie to the Private Agency (KEEN) for Solid Waste Collection and Transportation	<ul style="list-style-type: none"> <li>3 Bolero Pick-Up with the capacity of 2000kg each</li> <li>1 TATA ACE with the capacity of 750kg</li> <li>2 Tractor with the capacity of 1500kg and 2000kg</li> </ul>	Total Capacity = 12.04 m <sup>3</sup>
KEEN (Private Agency) Garbage Pick-Up Vehicle for Solid waste Collection and	<ul style="list-style-type: none"> <li>7 Bolero Pick-Up with the capacity of 2000kg each</li> <li>1 Bolero Maxi truck Plus with the capacity of 1200kg</li> </ul>	

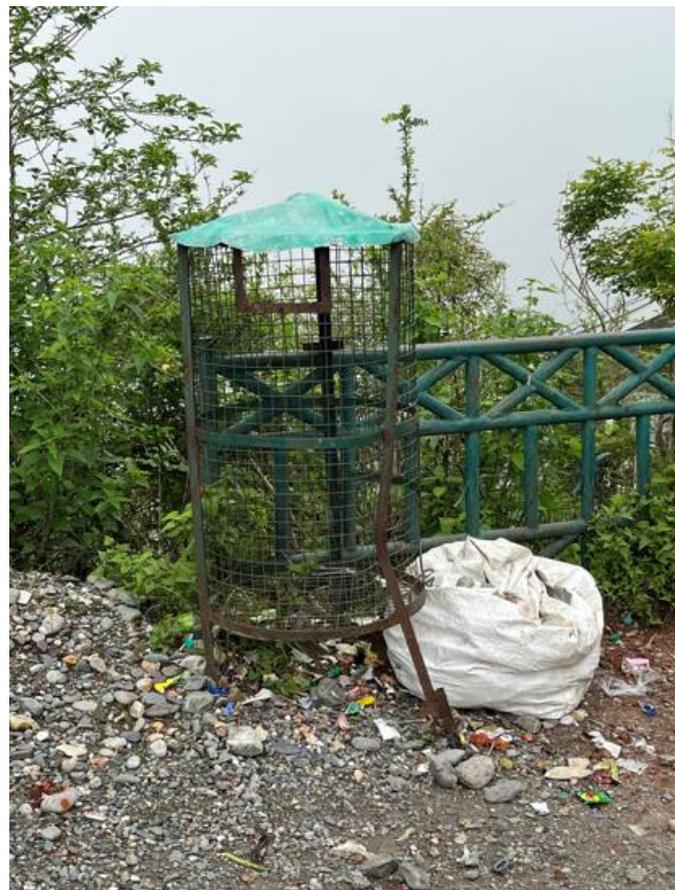
Transportation	Total Capacity = 17.85 m <sup>3</sup>
<b>Total Garbage Pick-Up Vehicles Capacity by both NNP, Mussoorie and KEEN</b>	<b>29.89 m<sup>3</sup></b>

*Source: (Nagar Palika Parishad, Mussoorie, 2024), Author*

As shown in Table 9, Mussoorie is Bin free city, under the Swachh Bharat Mission 2.0, highlighting the initiative’s success in reducing public littering. In commercial areas, particularly along mall Road, shop owners and roadside vendors are responsible for maintaining individual dustbins to prevent littering. To ensure comprehensive waste management coverage, fixed mesh bins have been installed along the roads in the outer regions of the town. This approach helps in maintaining cleanliness even in less populated areas and serves as an additional measure to support the bin-free status of the main town area.

Image 5: Existing Condition of the Garbage Bins in Outer regions of Mussoorie Town





Source: (Primary Survey, 2024)

The sanitation infrastructure of Mussoorie, managed by the NPP in collaboration with the private agency KEEN and KEEN has total 285 workers dedicated to management the waste and cleaning roads and streets. Out of total 285 workers, 108 workers hired by the NPP, Mussoorie and 177 workers are hired by the KEEN. The cleaning operations are conducted three times a day throughout the year, with specific schedules for both summer and winter season. During summer, the cleaning takes place in the morning 6:00 am to 10:00 am, in the evening from 2:00 pm to 5:00 pm, and night sweeping during the winter, ensuring consistent cleanliness.

Table 10 Details of Sanitation workers and Sweepers appointed by KEEN (Private Agency) in Mussoorie Town

<b>Workforce Structure Appointed for Solid waste Management by KEEN (Private Agency)</b>	
Operations Manager	1
Relations Manager	1
Finance Assistant	1
Head Supervisor	2
Supervisor	9
Health-NPPM	1
IEC Team	24
Intern-Finance	1
Sanitation workers and Sweepers workers	107
Driver	4
Helper (Vehicle)	26
<b>Total</b>	<b>177</b>

Source: (KEEN, Mussoorie, 2024)

As shown in Table-11, workforce structure designated for cleaning roads and streets across various wards. Team includes 1 operation manager responsible for overseeing the overall sanitation operations, 1 Relations manager who handles communication and coordination among different stakeholders, 1 Finance Assistant who manages the financial aspects of the sanitation operations, 2 Head Supervisors who ensure the proper execution of sanitation tasks, 9 Supervisors who manage the sanitation workers and sanitation tasks, 1 Health-NPPM responsible for maintaining health standards within the sanitation operations, 24 members of the IEC team (Information, Education and Communication) who spread awareness about cleanliness and hygiene, 1 intern-Finance assisting with financial tasks, 107 sanitation workers and sweepers who perform the actual cleaning of roads, streets and collecting waste from Door-to-Door within the allocated wards, 4 Drivers who operate the garbage collection vehicles and 26 Helpers who loading and unloading the garbage from the Vehicles.

Table 11 Wards wise details of Sanitation workers and Sweepers in Mussoorie Town

<b>Wards Wise Number of Sanitation Workers and Appointed for Cleaning of Roads and Streets by KEEN (Private Agency)</b>	
W-1	4
W-2	17
W-3	9

W-4	4
W-5	7
W-6	5
W-7	7
W-8	18
W-9	13
W-10	8
W-11	5
W-12	3
W-13	7
<b>Total</b>	<b>107</b>

Source: (KEEN, Mussoorie, 2024)

As per the discussions with the officials met the following Table 12 below, consists of a brief description of the activities undertaken by the NPP, Mussoorie and the Private Agency as per the contract for the Solid Waste Management in between them. According to the contract, the Private Agency is responsible for the door-to-door collection, segregation, transportation, storing of segregated dry waste, hiring of sanitation workers for the solid waste management, providing salary, equipment, safety masks, uniforms, ID cards, Insurance to the sanitation workers, providing fuel and vehicle repairs and collecting the user charge for Solid Waste Management in NPP, Mussoorie. While the NPP, Mussoorie is responsible for composting of segregated wet waste, selling the fertilizer produced after composting, taking care that the solid waste is not burned in the open in Town, 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.

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

S. No.	Activity	Done By/ Given To	
		NPP, Mussoorie	KEEN
1	<b>Door-To-Door Collection</b> of Solid Waste from all the 13 wards (Every-day, Every Morning)	-	Yes
2	<b>Segregation at Source</b> of Solid Waste Collected from Door-to-Door	-	Yes
3	<b>QR Scan in each house</b> are installed for collection of from Door-to-Door	Yes	-
4	<b>GPS Trackers</b> on Garbage Pick-Up Vehicles for solid waste Collection	Yes	-
5	<b>Cleaning of Roads and Streets within distributed Wards</b>	-	Yes
	<b>Cleaning of Public Toilet</b>		Yes
6	<b>Transportation</b> of Waste after Segregation	-	Yes
7	<b>Storing Segregated Dry Waste at one location in Plastic Bags on Site itself</b>	-	Yes
8	<b>Composting</b> of organic waste	Yes	-
9	<b>First Right on Waste Material and Fertilizer produced</b> after	Yes	-

	composting		
10	<b>Selling Rights</b> of Compost generated for generation of money	Yes	-
11	<b>Taking care solid the solid waste is not burned in open</b>	Yes	-
12	<b>Hiring of workers</b> and supervisors for collection and segregation of dry and wet waste	-	Yes
13	<b>Providing Salary</b> to the workers and supervisors hired for collection and segregation of dry and wet waste	-	Yes
14	<b>Providing Equipment, Safety Masks, Uniforms, ID Cards and Insurance</b> to the workers and supervisors hired for collection and segregation of dry and wet waste	-	Yes
15	<b>Providing Buckets and Plastic Bags</b> for manual door-to-door collection of solid waste	Yes	-
16	<b>Providing Vehicles, Small Dustbins, Big Dustbins etc. for Door-To-Door Collection</b>	Yes	-
17	<b>User Charge collection</b> for Solid Waste Collection	-	Yes
18	<b>Deposition of User Charge Collected to</b>		Yes
19	<b>Public Awareness Programme for MSWM</b>	-	Yes

Source: (Nagar Palika Parishad, Mussoorie, 2024), Author

Table 13 Penalties imposed by the NPP, Mussoorie on KEEN as per the Solid Waste Management (SWM) Contract

Sr. no	Work details	Units	Imposed Penalty
1	If the second Party does not collect waste from the houses located in the wards	Every house, shop, and Commercial establishment	₹10/- per day per unit
2	If any problem/ complaint is nor resolved by the second party within 24 hr.	Problems related to home, shop etc.	₹10/- per unsolved Problem/ complaints
3	Door-to-Door collection vehicle not performing duly as per conditions.	Vehicle Duty	₹500/- per day per unit
4	If any employee of the second party is found at work without the desired uniform and identity card.	Every employee/ worker	₹50/- per day per employee
5	Employee/Worker absent from workplace	Every employee/ worker	Max.₹ 200 per employee
6	In case of non-segregation of garbage at the site during door-to-door garbage disposal.	Every house/ shop, establishment	₹10/- per unit per day
7	In case of not cleaning the roads and paths etc. of the wards	Length per Kilometre	₹350/- per kilometre per day

Source: (Nagar Palika Parishad, Mussoorie, 2024), Author

### 7.1.1. Present Situation of Garbage Dumping in NPP, Mussoorie

As shown in Image 6, in NPP, Mussoorie the garbage generated is being dumped in the following seven areas i.e. common garbage bins provided by the Nagar Palika Parishad Mussoorie, waste treatment Plant, waste segregation point, waste collection vehicles by the NPP, Mussoorie to the

Private Agency for the collection of solid waste, openly littered in the drains, Landour valley near Clock Tower, and construction waste along the road-side. This will result in developing a potential towards future health hazard in the town.

Image 6: Areas being used for Dumping Garbage by the Residents of NPP, Mussoorie at Present

1. Common Garbage Bins outer regions of the Town



2. Waste Treatment Plant



3. Proper Segregation of plastic bottles and glass bottles



4. Open Littering around the Garbage Bins in Landour Area



5. Landour Valley



6. Drains

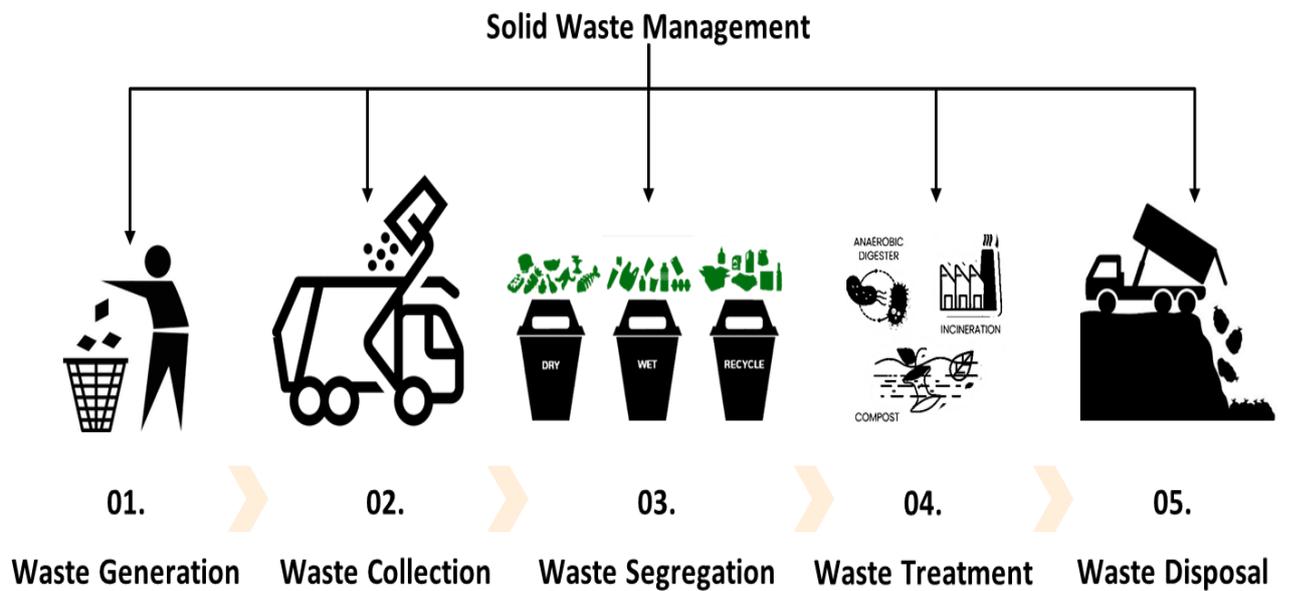


7. Road side Construction waste Dumping



Source: (Primary Survey, 2024)

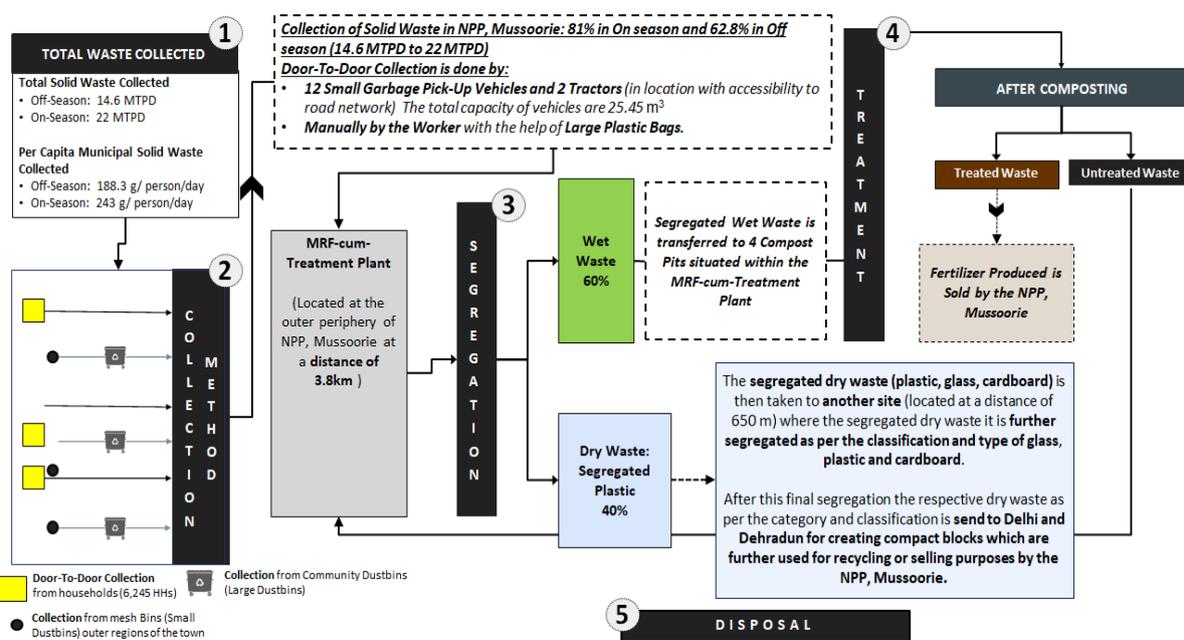
7.1.2. Process of Solid Waste Management in Mussoorie Town



Source: (Primary Survey, 2024)

As per the discussions with the officials met (as mentioned in Annexure C) the Figure 15 below represents the flowchart for Solid Waste Management (SWM) in Mussoorie Town.

Figure 15: Flowchart of Solid Waste Management (SWM) In Nagar Palika Parishad, Mussoorie



Source: (Nagar Palika Parishad, Mussoorie, 2024), Author

As mentioned in the flowchart the SWM in NPP, Mussoorie 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-01: Waste Generation**

As shown in Table 14, 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. NPP, Mussoorie’s waste collection fluctuates significantly between the off-season and the on-season due to the influx of tourists, which put additional pressure on the town’s waste management system. During the off-season, the town collected 14.6 MTPD of waste, while this rises to 22 MTPD during tourist heavy in season. Per capita municipal solid waste generation also increase from 188.3 g/person/day in the off-season to 243 g/person/day in the on season. *The NPP Mussoorie does not have waste generation data but has only waste collection data.* Therefore, waste generation has been worked out as follows:

Norm – as per URDPFI Guidelines Vol. – I, Section 8.3.6 on Solid Waste Management Table 8.44, the waste generation/ capita /day is 0.3 to 0.6 kg/ capita/ day. Therefore in Mussoorie, based on this norm, the total waste generation is estimated to be as follows:-

Table 14: Overview of Solid Waste Generated and Collected in NPP, Mussoorie

Solid Waste Generated and Collected in Nagar Palika Parishad (NPP), Mussoorie			
S.No.	S.W. Generation as per Norm (URDPFI Guidelines)	S.W. Collection as per NPP, Mussoorie (2024)	Inferences

<p>1)</p>	<p><b>On Season:-</b>                  = 0.3 x 90,524                  = 27,157 kg/ day                  i.e. 300 g/ person/day (as per the URDPFI Guideline)</p>	<p><b>On Season:-</b>                  = 22 x 1000                  = 22,000 kg/day                  81 % collection efficiency</p>	<ul style="list-style-type: none"> <li>The gap between waste generation and collection is approximately 19 %, indicating that <b>5,157 kg/day</b> of waste remains uncollected during peak tourist seasons. This highlights a strain on the existing collection infrastructure due to the surge in visitors, leading to waste accumulation, littering, and environmental degradation.</li> </ul>
<p>2)</p>	<p><b>Off Season :-</b>                  = 0.3 x 77,524                  = 23, 257.2 kg/ day                  i.e. 300 g/ person/day (as per the URDPFI Guideline)</p>	<p><b>Off Season :-</b>                  = 14.6 x 1000                  = 14,600 kg/day                  62.8% collection efficiency</p>	<ul style="list-style-type: none"> <li>The gap increases to approximately <b>37.2%</b>, leaving <b>8,657.2 kg/day</b> of waste uncollected during the off-season. This significant shortfall suggests inefficiencies in the collection system, even when waste generation is comparatively lower. It points to possible underutilization of resources or lack of optimized collection efforts during the off-peak period.</li> </ul>

Source: (Nagar Palika Parishad, Mussoorie, 2024)

**b) Step-02: Waste Collection**

As per the discussions with the officials met (as mentioned in Annexure C), the NPP, Mussoorie has developed a comprehensive system for solid waste collection that encompasses both Door-to-door service and collation from 2 designated Bins. The door-to-door collection service covers 6,245 households within town. This service is executed using a fleet of 12 small garbage pick-up vehicles and 2 tractors, which are utilized in areas accessible by road. These vehicles have a combined capacity of 29.89 m<sup>3</sup>. For areas lacking road access, waste is collected manually by workers with the aid of large bags.

Table 15 overview of Waste collection in NPP, Mussoorie

<b>System Infrastructure (As Per The Discussion With The Officials of NPP, Mussoorie)</b>	
<b>Community Bins Provided by NPP, Mussoorie</b>	
Total Number of Large Garbage Bins	2
Ward Wise Number of Large Garbage Bins	Bin-Free
<b>Staff Appointed by NPP, Mussoorie and KEEN</b>	
<b>Total Number of Sanitation Workers</b>	
<ul style="list-style-type: none"> <li>Wards Wise Number of Sweepers in NPP, Mussoorie</li> </ul>	108
<ul style="list-style-type: none"> <li>Staff appointed by Keen</li> </ul>	177

Frequency of Cleaning of Roads and Streets			
During Off-Season	Three 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> Night sweeping: After 10:00 pm (Mall Road)		
During Tourist-Season	Three 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> Night sweeping: After 10:00 pm (Mall Road)		
Garbage Pick-Up Vehicles for Solid Waste Collection and Transportation	Number of Vehicles Provided (B)	Capacity of Each Vehicle (m <sup>3</sup> ) (A)	Total Capacity (m <sup>3</sup> ) (C = AXB)
Bolero Pick-Up	10	2000	23.5
TATA ACE	1	750	0.88
Bolero Maxi truck	1	1200	1.4
Tractor	2	1500 & 2000	4.11
<b>Total</b>	<b>14</b>		<b>29.89</b>

Source: (Nagar Palika Parishad, Mussoorie, 2024),

In addition to door-to-door collection, the town also employs community and mesh bins. Small mesh bins are apportioned in the outer regions of the town, while large community dustbins are placed in Picture palace and Landour area. The waste collection efficiency in Mussoorie is noteworthy, with 95% of the total waste, ranging from 14.6 MTPD to 22 MTPD, being collected regularly.

Table 16: Duties/Job Responsibilities of Sanitation Workers Appointed by the Private Agency for Solid Waste Management in NPP, Mussoorie

S.No.	Sanitation Worker Appointed	Duties/Job Responsibility
01.	<b>Supervisors</b>	To <b>manage</b> the entire process of door-to-door collection throughout the Town.
02.	<b>Drivers</b>	To <b>drive and collect</b> the solid waste generated throughout the Town in the garbage pick-up vehicles provided by the NPP, Mussoorie, from the areas with proper road network accessibility.
03.	<b>Helpers</b>	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, Mussoorie.
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*Source: (Nagar Palika Parishad, Mussoorie, 2024)*

The workforce comprises 285 workers, including 108 directly appointed by NPP, Mussoorie and 177 hired through KEEN, private agency contracted for a five-year term. KEEN is responsible for door-to-door collation, segregation, transportation and disposal of solid waste, with their workers cleaning roads and streets three times a day throughout the year.

As per the officials, the town is designated as bin-free under the Swachh Bharat Mission 2.0: however, to manage littering in commercial areas and along Mall Road, shop owners and roadside vendors use individual dustbins.

Despite these measures, there are significant concerns. Workers involved in waste segregation are exposed to waste without proper protective equipment, such as masks or gloves, which poses health risks like skin diseases and respiratory issues. Additionally, in Landour, untreated waste is dumped openly around collector dustbins, attracting stray animals. This not only creates a public health hazard but also increase the risk of disease transmission to the community.

NPP, Mussoorie does not collect the medical waste separately. 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.

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

Image 7: Images of Vehicles used for Transportation of Solid Waste in Mussoorie Town





Source: (Primary Survey, 2024)

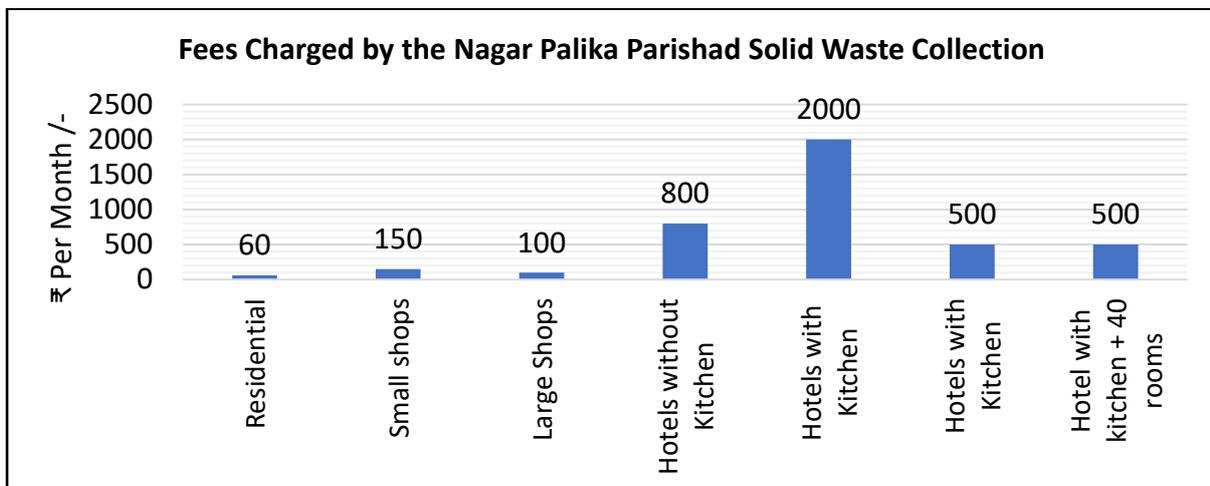
As shown in Table 17, NPP, Mussoorie charges ₹ 30/- per month for door-to-door collection of solid waste from the residential areas, ₹ 50/- per month from commercial areas and hotels with less than 20 beds and ₹100/- per month from hotels with more than 20 beds. This user charge is collected by the Private Agency and then deposited to the NPP, Mussoorie by the end of the month.

Table 17: Fees Charged by the Nagar Palika Parishad, Mussoorie for Door-To-Door Solid Waste Collection

Fees Charged by the Nagar Palika Parishad for Door-To-Door Solid Waste Collection	
Area	Charges (in INR)
Residential	₹30/- Per Month
Small shops	₹50/- Per Month
Large Shops	₹100/- Per Month
Hotels without Kitchen	₹800/- Per Month
Hotels with Kitchen	₹2000/- Per Month
Hotels with Kitchen + 40 rooms	₹4000/- Per Month

Source: (Nagar Palika Parishad, Mussoorie, 2024)

Figure 16: User Charges Charged by the NPP, Mussoorie for Collection of Solid Waste



Source: (Nagar Palika Parishad, Mussoorie, 2024),

After total solid waste is collected from the hilly town of Mussoorie it is transported to the MRF centre-cum-treatment located at the outer periphery of NPP, Mussoorie at a distance of 3.8km for Step-03 i.e. Waste Segregation.

Map 16: Location of MRF centre-cum-SWM Plant in Mussoorie from NPP, Mussoorie



Source: (Google My Maps, 2024), Author

## c) Step-03: Waste Segregation

As shown in Table 18, the solid waste segregation practices in Mussoorie Nagar Palika Parishad have undergone significant improvements, as highlighted by discussions with officials from NPP and KEEN. *At the source level, 85% of waste segregation is achieved, largely due to behavioural sensitization efforts as well as provision of free bags. As part of these efforts, 2,000 bin bags were distributed at the Household (HH) level to encourage proper waste sorting. Additionally, the installation of GPS trackers and QR codes on waste collection vehicles and at households has streamlined the process, enabling real-time tracking and organized pickups.* Currently, 50% of households have QR code installed, allowing for better monitoring of waste collection. As a result, 95% of the collected waste is now being effectively segregated at the Material Recovery Facility (MRF) centre, with 80-85% of households practicing segregation. However, about 5% of the waste, primarily from small shops, remains unsegregated.

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

<b>SOLID WASTE SEGREGATION IN NAGAR PALIKA PARISHAD (NPP), Mussoorie</b>		
<b>SOLID WASTE SEGREGATION</b>	<b>As per the Discussion with the Officials of NPP, Mussoorie and KEEN (2024)</b>	<b>INFERENCES</b>
<b>Segregation at Source Level and collection</b>	<ul style="list-style-type: none"> <li>• <b>85% source Level segregation.</b></li> <li>• <b>For the behavioral sensitization 2000 Bin bags were distributed at HH level of NPP, Mussoorie</b> by the ULB for the collection of SW.</li> <li>• GPS trackers and QR code installation on SW collection vehicle and on each HH by the NPP, Mussoorie and approx. 50% of houses has installed QR code</li> </ul>	<ul style="list-style-type: none"> <li>• <b>As a result of distribution of Bin Bags</b> in each HH by the NPP, Mussoorie 95% of the waste is now being segregated at the MRF center and 80% to 85% percentage at HH level. However, 5% of the waste, primarily generated by small shops, remain unsegregated.</li> <li>• <b>As a result of Installing of GPS trackers and QR codes</b> on SW collection vehicle and on each HH by the NPP, Mussoorie, streamline garbage collection by providing real-time tracking and data, ensuring timely and organized pickups, enable accurate monitoring of waste management activities</li> </ul>

<p><b>Segregation of Solid Waste after collection in the MRF center</b></p>	<ul style="list-style-type: none"> <li>Nagar Palika parishad has appointed a private agency to collect, segregate, and transport and dispose the solid waste generated in NPP, Mussoorie.</li> </ul>	<ul style="list-style-type: none"> <li>The workers appointed by the KEEN segregates the Plastic (dry waste 40%) and wet waste (60%) from the total solid waste collected in the MRF Center.</li> <li>100% of the wet waste using for biogas production, which generate electricity this makes the MRF centre a self-sustaining treatment Plant.</li> <li>The Remaining 40% of the waste is transported for recycling. This approach not only reduces the waste burden on landfills but also contribute to renewable energy production and resources recovery, demonstrating a sustainable model for waste management.</li> </ul>
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Source: (Nagar Palika Parishad, Mussoorie, 2024), Author

Once collected, the solid waste is further segregated at the MRF centre KEEN handle the collection, segregation, transportation and disposal of solid waste. Workers at MRF centre segregate the waste into two main categories: wet waste (60%) and dry waste (40%).

This comprehensive waste segregation model not only minimize the waste burden on landfills but also contributes to renewable energy production and resource recovery, showcasing a sustainable approach to waste management in Mussoorie.

**d) Step-04: Waste Treatment**

The segregated dry waste is further sold by the sanitation workers appointed by the Private Agency for door-to-door collection for some generation of monetary benefits. While the remaining wet waste and mixed-waste (non-segregable waste) are not provided with any further treatment before the final Step-05 i.e. Disposal.

As per the discussions with the officials met (as mentioned in Annexure C), at present the existing compost pits are not in function and have been permanently closed-up for the construction purposes of the SWM Plant in Mussoorie. The NPP, Mussoorie has proposed relocation of the Compost Pits (location is not available) in the revised DPR for SWM in Mussoorie Town.

**e) Step-05: Waste Disposal**

As per the discussions with the officials met (as mentioned in Annexure C), The wet waste is processed in four compost pits at the MRF-cum-Treatment Plant, which turns it into compost that is sold by NPP, Mussoorie. In addition, 100% of the wet waste is used for biogas production, contributing to the generation of electricity, making the MRF centre a self- sustaining treatment plant.

Dry, waste, comprising 40% of the total waste, is further segregated at another facility located 650 M away from the MRF-cum-Treatment Plant. This facility classifies the dry waste into categories such as plastic, glass, and cardboard. The segregated waste is then sent to Delhi and Dehradun for recycling or compacting into block, which are later sold or recycled. Notably, Mussoorie does not have a

significant accumulation of legacy waste, demonstrating the efficiency of its current waste management system.

Image 8: The Dumping Ground: MRF centre and Treatment plant for all the Garbage Collected from NPP, Mussoorie



Segregated waste Collection Vehicle



MRF Centre



Composting Pits



Treatment Plant



Construction waste Yard

Source: (Primary Survey, 2024), Author

### 7.1.3. Potential Health Hazards

As per the discussions with the officials met (as mentioned in Annexure C) and field visit, the workers involved in the waste segregation process in Mussoorie are frequently exposed to solid waste without proper safety measures, such as masks or protective kits. This lack of protective gear and low monitoring increase the risk of serious health hazards for these workers. Continuous exposure to waste can lead to skin diseases, respiratory issues, and other health complications, particularly affecting the lungs. The absence of proper protective equipment highlights the need for strong enforcement of safety protocols to safeguard the health of sanitation workers.

In Landour, untreated solid waste is openly dumped around collectors, attracting stray animals and cattle. These animals often interfere with the waste, and if they come into contact with public, they could potentially spread diseases, creating a public health hazard.

Despite these concerns, no major health hazards related to untreated solid waste have been reported in Mussoorie thus far. To mitigate the risk of vector-borne diseases, particularly during the summer and monsoon seasons, the Nagar Palika Parishad, Mussoorie conducts regular fogging operations.

### 7.2. Present Government Policies for Solid Waste Management in Mussoorie

Solid Waste Management Rule 2016 and Swachh Bharat Mission are the only policies implemented in NPP, Mussoorie 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, Mussoorie.

Table 19: Issues/Challenges Identified for SWM in NPP, Mussoorie

S.No.	Issues/Challenges	Inferences
01.	 <p style="text-align: center;"><b>Tourist Influx</b></p>	<ul style="list-style-type: none"> <li>Mussoorie experiences a surge in its floating population for six months of tourist seasons i.e. April, May, June, July, December, and January.</li> <li>Maximum numbers of tourist in the month of June 2018: 4,15,716, June 2019: 4,29,500, June 2022: 1,75,650, June 2023: 1,63,432 and June 2024: 3,72,031</li> <li>Waste generation fluctuates significantly between the off-season (14.6 MTPD) and the on-season (22 MTPD) due to the influx of tourists, which adds considerable pressure on the town's waste management infrastructure.</li> </ul>
02.	<p style="text-align: center;"><b>Waste Segregation Practices</b></p>	<ul style="list-style-type: none"> <li>Despite significant progress in waste segregation (85% at the source level and 95% at the Material Recovery Facility), around 5% of waste, primarily from small</li> </ul>

			<p>shops, remains unsegregated.</p> <ul style="list-style-type: none"> <li>• Unsegregated waste from commercial entities continues to be challenge, which can hinder the overall efficiency of the SWM system. This requires stronger enforcement of segregation rules and better awareness programs, particularly targeting small commercial establishments.</li> </ul>
03.		<b>Illegal Dumping and Littering</b>	<ul style="list-style-type: none"> <li>• Littering, particularly in the Landour area and around garbage bins, in common due to a lack of behavioral sensitization among residents and tourist.</li> <li>• Inadequate public awareness and non-compliance with waste management practices lead to improper disposal and illegal dumping, exacerbating the waste problem. This highlights the need for stronger awareness campaigns and stricter enforcement of waste disposal regulations to change public behavior.</li> </ul>
04.		<b>Stray Animal Interference</b>	<ul style="list-style-type: none"> <li>• Stray animals, particularly dogs, cattle and, monkeys often dig through community dustbins bins and scatter garbage across streets. This can lead to health hazards and 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>
05.		<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>
06.		<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> </ul>
07.		<b>Policy and Governance Issues</b>	<ul style="list-style-type: none"> <li>• Weak enforcement of waste management regulations in Landour area, limited funding and resources may hinder effective solid waste management in Mussoorie.</li> </ul>

#### 7.4. Possible Solutions/Suggested Projects for SWM in NPP, Mussoorie

A Stakeholder Consultation Meeting was held on 02<sup>nd</sup> September 2024 in NPP, Mussoorie. Based on the feedback provided by the official's possible solutions and suggested projects for improvement are proposed for Mussoorie Town in Table 20 below.

Table 20: Possible Solutions/Suggested Projects for SWM in NPP, Mussoorie

S.No.	Possible Solutions/Suggested Projects
01.	<b>Tourist Influx</b>
	<p><b><u>It is Proposed that:</u></b></p> <p><b>a) The State Government of Uttarakhad should undertake the following:</b></p> <ol style="list-style-type: none"> <li>i. <i>Implementing visitor registration and limiting vehicles access during peak tourist seasons will require policy change and enforcement by the state government.</i></li> <li>ii. <i>A statewide ban on plastic packaging and promotion of sustainable alternative like paper and tetra packs would be enforced by the state.</i></li> <li>iii. <i>Impose Solid Waste Management Cess on all the tourists/entering Mussoorie.</i></li> </ol> <p><b>b) The NPP, Mussoorie should undertake the following:</b></p> <ol style="list-style-type: none"> <li>i. <i>Strictly enforcing the Uttarakhand government's latest rule on solid waste management (SWM), requiring all tourists to carry a bin or bin bag in their car, would help reduce littering, promote responsible waste disposal, and maintain cleanliness in tourist areas.</i></li> </ol>
02.	<b>Waste Segregation Practices</b>
	<p><b><u>It is Proposed that:</u></b></p> <p><b>a) The NPP, Mussoorie should undertake the following:</b></p> <ol style="list-style-type: none"> <li>I. <b>Strengthen enforcement by deploying waste inspectors to monitor and ensure compliance with segregation rules, imposing fines for non-compliance</b> where necessary.</li> <li>II. Launch <b>targeted awareness campaigns, including workshops, door-to-door interactions</b>, and digital outreach, focusing on the benefits of segregation and the role of businesses in maintaining the town's cleanliness.</li> <li>III. Provide convenient <b>waste segregation infrastructure</b>, such as <b>labeled bins and collection schedules tailored to commercial areas</b>.</li> </ol>
03.	<b>Illegal Dumping and Littering</b>
	<p><b><u>It is proposed that:</u></b></p> <p><b>a) The NPP, Mussoorie 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> <ol style="list-style-type: none"> <li>i. <b>Increase monitoring</b> during tourist season to stop illegal/littering of waste in the town. Especially in the Landour area and valley.</li> <li>ii. <b>Impose high penalties and fines</b> on the people (tourists or residents) identified by the monitoring teams on-ground.</li> </ol>

	<p><b>b) The NPP, Mussoorie should undertake the following:</b></p> <ol style="list-style-type: none"> <li>i. <b>The NPP, Mussoorie</b> should conduct <b>Behavioural Sensitization programs</b> targeting both locals and tourist to reduce littering and instil proper waste disposal habit.</li> <li>ii. <b>Increase monitoring have to identify spots of illegal dumping and lettering</b> and increased <b>monitoring through cameras and speakers</b> for the <b>announcement</b> at the identified spots and <b>strong enforcement measure</b> help in combating illegal littering by the tourists and residents.</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> </ol>
04.	<b>Stray Animal Interference and Contamination caused by Them</b>
	<p><b><u>It is proposed that:</u></b></p> <p><b>a) The NPP, Mussoorie should undertake the following:</b></p> <ol style="list-style-type: none"> <li>i. <b>The NPP</b> should install <b>animal proof waste containers</b> in <b>vulnerable</b> areas to mitigate waste <b>contamination caused by stray animal</b> also monitor and ensure collection of garbage on a regular basis from the community dustbins in the Town.</li> <li>ii. <b>The NPP, Mussoorie</b> should also conduct a <b>dog census</b> every year along with a <b>sterilization program</b>. The census would provide <b>accurate data on the dog population</b>, allowing for better planning and resource allocation. <b>Additionally, the sterilization program would help control population growth, reduce the risk of disease transmission.</b></li> </ol>
05.	<b>Public Health Concerns</b>
	<p><b><u>It is proposed that:</u></b></p> <p><b>a) The NPP, Mussoorie should undertake the following:</b></p> <ol style="list-style-type: none"> <li>i. Implement pest control measures to alleviate public health concerns arising from pests such as rodents and insects attracted by the littering of waste.</li> <li>ii. The NPP have to provide regular health check-ups for sanitation workers and ensure they are provided with proper protective gear.</li> <li>iii. The NPP collaboration with local health authorities to educate the public on the health risk of improper waste disposal.</li> </ol>
06.	<b>Environmental Impacts</b>
	<p><b><u>It is proposed that:</u></b></p> <p><b>a) The NPP, Mussoorie 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. Promote sustainable waste management practice to mitigate environmental impact.</li> <li>ii. Build and implement environmental awareness campaigns/workshops like Clean-</li> </ol>

	<p>Up Drives in public spaces, market areas, 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.</p> <p>iii. Develop Green Infrastructure like rain gardens, permeable pavements, etc. to manage storm - water runoff and reduce pollution.</p>
07.	<b>Policy and Governance</b>
	<p><b><u>It is proposed that:</u></b></p> <p><b>a) The State Government of Uttarakhand should undertake the following:</b></p> <p>i. <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.</p> <p>ii. <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.</p> <p>iii. <b>Conduct surprise visits and inspections</b> to evaluate the on-ground progress of the ULBs on a regular basis.</p> <p><b>b) The NPP, Mussoorie should undertake the following:</b></p> <p>i. <b>Strengthen Awareness Programmes</b> by <b>Building and implementing respective Programmes/campaigns/workshops</b> required for effective SWM in Mussoorie 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, Mussoorie.</p> <p>ii. <b>NPP, should suitably increase the Vehicles and other infrastructure.</b></p> <p><i><u>The Nodal Officer appointed should:</u></i></p> <p>✓ <b>Strictly Monitor</b> the Implementation of the work assigned to their respective teams.</p> <p>✓ <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>iii. <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>iv. <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.</p> <p>v. <b>By implementing the above the collection efficiency can be improved.</b></p>

# **Chapter 8.**

## **Mussoorie Town:**

### **Urban Transport and Parking**

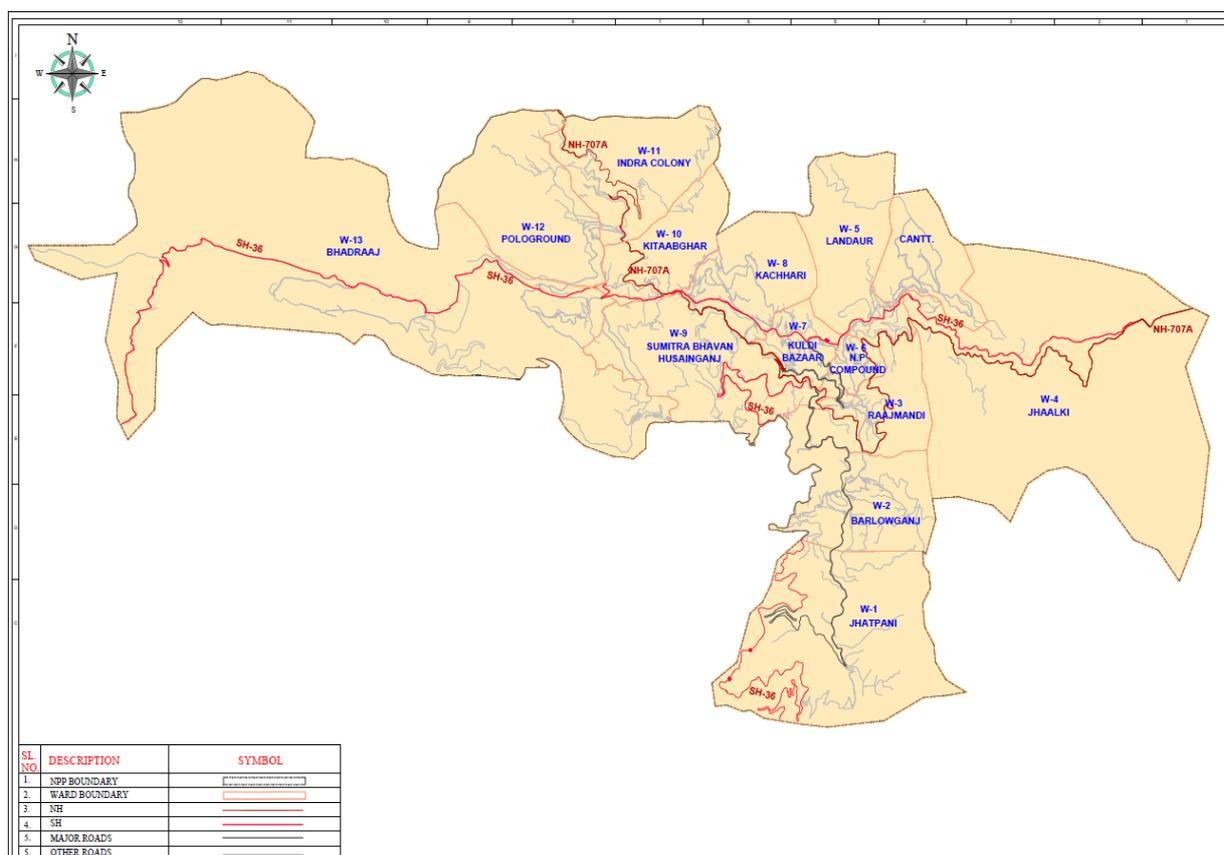
## Chapter 8. Mussoorie Town: Urban Transport and Parking

### 8.1. System Infrastructure

As shown in Map 17, Mussoorie’s transport network is primarily served by State highway (SH-36) which is the main artery connecting the town to Dehradun and other nearby region. This highway is critical for both locals and tourists facilitating movement to and from the town.

Additionally, National Highway (NH-707A), which is connecting the town to Chamba. National highway runs through key areas within the town, including Indra Colony, Kitaabghar, Kuldi Bazaar, N.P Compound and Jhaalki.

Map 17: Map of current Road Network of Mussoorie by SPA New Delhi



Source: (SPA, New Delhi, 2024)

The map also highlights other significant roads branching out within Mussoorie, leading to areas such as Bhadraj, Pologround, cant, Husainganj and Jhatpani, ensuring connectivity to the town’s peripheral regions. These roads contribute to distributing traffic across the hilly terrain and support the local transport infrastructure.

#### 8.1.1. Present Connectivity

To travel towards the major cities of India from Mussoorie Town, road network is the most convenient and easy to access medium and buses, shared taxis, local cabs, personal vehicles, railways and airways are the possible modes of transportation. This road network consists of narrow roads, non-continuous road connectivity and road congestion on them.

As shown in Table 21: Overview of Present Connectivity of NPP, as per the discussions with the officials (as mentioned in Annexure C), the town has two bus station known as the Library Chowk bus stand and Picture Palace bus stand. For rail connectivity, the nearest railway station is Dehradun railway station, about 35 km away, which connects Mussoorie to major cities across India. In terms of air travel, the closet airport is Jolly Grant Airport, located around 60 km away in Dehradun, and offering regular flights to key cities like Delhi. From the airport, travellers can easily reach Mussoorie by taxis or buses.

Table 21: Overview of Present Connectivity of NPP, Mussoorie

Road Network	Railways	Airways
<ul style="list-style-type: none"> <li>Connected to Dehradun through NH 734 and located about 35 Km from Dehradun Mussoorie has two main Bus stands:-                             <ol style="list-style-type: none"> <li>Library Chowk bus Stand</li> <li>Picture Palace Bus Stand</li> </ol> </li> </ul>	<ul style="list-style-type: none"> <li>The nearest railway station to Mussoorie is Dehradun Railway Station, located about 35 km away. This station connects Mussoorie to various major cities across India, making it a viable option for travelers arriving by train.</li> </ul>	<ul style="list-style-type: none"> <li>The closest airport is Jolly Grant Airport in Dehradun, approximately 60 km from Mussoorie. This airport offers regular flights to major cities, including Delhi.</li> <li>Travelers take taxis or buses from the airport to reach Mussoorie</li> </ul>
<p>Image 9: Library Chowk Bus Stand Mussoorie</p>  <p>Image 10 Picture Palace Bus Stand, Mussoorie</p>  <p>Source: (SPA, New Delhi, 2024) Primary Survey</p>	<p>Image 11: Dehradun Railway Station, approx. 35 km from NPP, Mussoorie</p>  <p>Source: (SPA, New Delhi, 2024) Primary Survey</p>	<p>Image 12: Nearest Airport: Jolly Grant Airport, Dehradun Approx. 60 km away from NPP, Mussoorie</p>  <p>Source: (SPA, New Delhi, 2024) Primary Survey</p>

Source: (Nagar Palika Parishad, Mussoorie, 2024), (PWD, Mussoorie, 2024), (RTO, Dehradun, 2024), (Primary Survey, 2024)

As shown in Table 22 *Detail of Registered Vehicles in NPP, Mussoorie* as per the discussions with the officials (as mentioned in Annexure C), the registered vehicles in NNP, Mussoorie indicates a fluctuating trend in growth over recent years. In 2022, there were 9.32 lakh vehicles registered, which saw a modest increase of 1.5% in 2021, bringing the total to 9.46 lakh vehicles. The year 2022, marked a significant

surge with a growth rate of 14.1%, resulting, resulting in 10.79 lakh registered vehicles. This upward trend continued in 2023, albeit at a reduced rate of 11.3% with the total retching 12 lakh. However, a substantial drop is observed in 2024, where the number of registered vehicles plummeted to 7.82 lakh. Overall, despite the fluctuations, the total vehicle count has risen to 301.10 lakh up until now.

Table 22 Detail of Registered Vehicles in NPP, Mussoorie

Numbers of registered vehicles in NNP, Mussoorie			
S.No	Years	No. of Vehicles (lakh)	Growth Rate (%)
1	2020	9.32	-
2	2021	9.46	1.5
3	2022	10.79	14.1
4	2023	12.00	11.3
5	2024	7.82	-

Source: (RTO, Dehradun, 2024)

As shown in Map 18 Map of congestion points in NPP, Mussoorie, traffic congestion within NPP, Mussoorie during the tourist season is a significant challenge, with several key points experiencing bottlenecks. The stretch from Mussoorie Jheel to Library chowk frequently encounters heavy congestion due to a mix of tourist vehicles and local traffic, especially during peak hours. Similarly, the road from Kempty fall to Library chowk experiences a high volume of traffic as tourist flock to these popular destination, resulting in frequent traffic jams.

Map 18 Map of congestion points in NPP, Mussoorie



Source: (Nagar Palika Parishad, Mussoorie, 2024) (Department of Police, Mussoorie, 2024) and (SPA, New Delhi, 2024) primary survey

Picture palace road, a major artery leading to Mussoorie's main attraction, is often gridlocked, and further compounded by narrow roads and indiscriminate parking. Clock tower on Landour road is another critical congestion point due to its central location, connecting to various routes, and acting as a hub for local market area. Library chowk and Kulri chowk, both major junctions, suffer from severe traffic snarls, particularly during weekends and holidays when the influx of tourist is at its peak. The inadequate road width, lack of proper parking facilities, and sheer volume of vehicles contributes to these recurring congestion issues, posing challenges for smooth mobility and requiring comprehensive traffic management strategies.

### 8.1.1. Present Parking Situation in NPP, Mussoorie

As shown in Table 23 Details of parking availability within NPP, Mussoorie, the availability of parking within the NPP limits plays a crucial role in managing traffic congestion, especially during the tourist season. Mussoorie, a prominent tourist destination, is grappling with a severe shortage of parking facilities due to the rapid increase in vehicular numbers over recent years. With only 1,807 available parking spaces, including 13 designated for buses, the current infrastructure struggles to accommodate the growing demand, especially during the peak tourist seasons. Key parking area within the municipal limits include the NPP town Hall, Library Chowk Taxi Stand, and multi-level parking at Kincaig, which together contribute to the bulk of the parking capacity. Despite these facilities, the influx of vehicles registrations, from 9.32 lakh in 2020 to 12 lakh by 2023. This increase has put immense pressure on Mussoorie's roads, leading to congestion and overuse of parking spaces. The situation is further aggravated by the limited spaces for larger vehicles like buses, which find fewer dedicated slots, compounding traffic issues.

Table 23 Details of parking availability within NPP, Mussoorie

PARKING IN MUNICIPAL LIMITS, MUSSOORIE					
S.No.	Location	Parking Name	Buses	Cars	Vehicles Capacity
1	NPP, Town Hall Parking	NPP, Town Hall Parking		150	150
2	Library Chowk, Mussoorie	Library Chowk Taxi Stand	3	600	603
3	Kincaig, Mussoorie	Multi-level Parking		350	350
4	Mall Rd, Mussoorie	Kempty Bus Stand Parking	10	20	30
5	Kempty Taxi Stand	Private Parking	-	300	300
6	Mussoorie Lake	Mussoorie lake parking	-	54	54
7	clock tower, Mall Rd, Rajmandi, Landour,	NPP Parking	-	40	40
8	2, Mall Rd, Picture Palace, Mussoorie,	MDDA Parking	-	30	30
9	Vikas Hotel	Private Parking	-	100	100
10	Picture Palace	Private Parking	-	150	150
	<b>Total Parking</b>		<b>13</b>	<b>1794</b>	<b>1807</b>

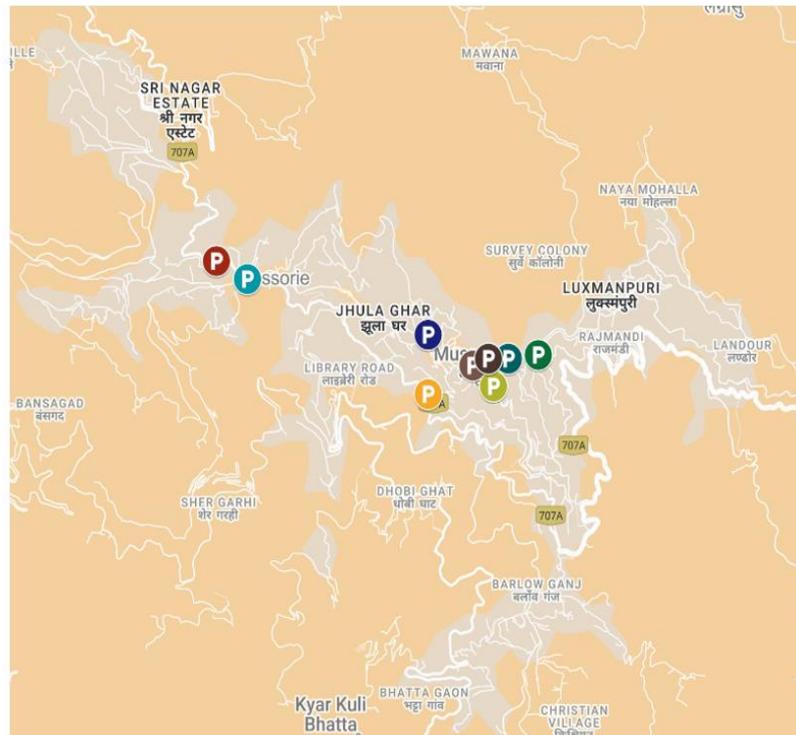
Source: (Nagar Palika Parishad, Mussoorie, 2024) and (SPA, New Delhi, 2024) primary survey

During the tourist season, this shortage becomes even more pronounced, with tourists and locals alike struggling to find adequate parking. Additionally, locations such as Mussoorie Lake Parking, Picture Place, and various private parking spaces provide supplementary capacity, but they remain insufficient to handle the growing number of vehicles. The urgent need for expanded parking infrastructure and traffic management strategies in Mussoorie is evident, especially considering the rapid vehicular growth, which continues to outstrip the current Nagar Palika Parishad Capacity.

Map 19 Location Map of existing parking in NPP, Mussoorie

Parking Area in Mussoorie

-  NPP, Town Hall Parking
-  Library Chowk Parking
-  Multilevel Car Parking
-  Picture Palace Taxi Stand
-  Kempty Bus Stand (Private Parking-1)
-  NPP Parking, Clock Tower
-  MDDA Parking
-  Vikas Hotel (Private Parking-2)
-  Picture Palace (Private Parking-3)



Source: (Nagar Palika Parishad, Mussoorie, 2024) and (SPA, New Delhi, 2024) primary survey

The Image 13: Images of existing Parking area in NPP, Mussoorie below shows the present situation of parking available in NPP, Mussoorie

Image 13: Images of existing Parking area in NPP, Mussoorie



Multi-Level Parking- Kinncraig



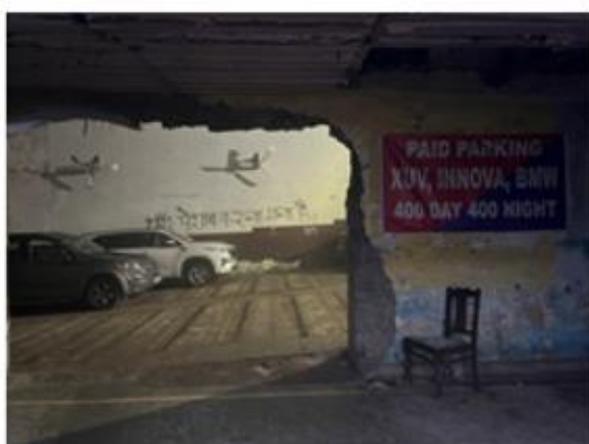
NNP Parking, Near Clock Tower



MDDA, Parking



Picture Palace Taxi Stand



Vikas Hotel Private parking



Kempty Fall Taxi Stand Private Parking



Picture Palace Private Parking



Library Chowk Taxi Stand

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

As shown in Table 24: Parking Areas Preferences of the Residents, the Working Population and the Tourists in NPP, Mussoorie, the local residents of NPP, Mussoorie primarily park along roads near their homes, within their residential premises, or in nearby private parking spaces when available. This reliance on roadside parking increase congestion, particularly in densely populated areas. The working population from surrounding areas often park their vehicles near office premises, along

roadside, or in nearby private parking spaces. These preferences contribute to a lack of available parking, especially during business hours, as workers tend to occupy street spaces for extended periods.

On other hand, tourists predominantly seek hotel parking, but when such spaces are unavailable or insufficient, they resort to parking along the roads or in nearby private lots. Tourists’ preference for roadside parking, especially during peak tourist seasons, further intensifies traffic congestion and reduces accessibility for both residents and local businesses. All groups relying heavily on roadside and private parking, crates immense pressure on Mussoorie’s already strained infrastructure, highlighting the need for more organized and regulated parking solutions.

Table 24: Parking Areas Preferences of the Residents, the Working Population and the Tourists in NPP, Mussoorie

Residents/ Working Population from Surrounding Areas/ Tourists	Parking Areas Preferences
Residents of NPP, Mussoorie	<ul style="list-style-type: none"> <li>• Along the roads</li> <li>• In their residential premises</li> <li>• Nearby Private Parking’s (if available)</li> </ul>
Working population from surrounding areas	<ul style="list-style-type: none"> <li>• Nearby Private Parking’s (if available)</li> <li>• In-front of their office premises.</li> <li>• Along the roads</li> </ul>
Tourists with their personal vehicles	<ul style="list-style-type: none"> <li>• Hotel Parking (If Available)</li> <li>• Along the roads</li> <li>• Nearby Private Parking’s (if available)</li> </ul>

Source: (Department of Police, Mussoorie, 2024), (SPA, New Delhi, 2024) primary survey

Image 14: Present Situation of on street parking in the Town



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

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

At present in NPP, Mussoorie for Urban Transport and Parking no specific policy at State Level is being implemented.

### 8.3. Issues/Challenges

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

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

S.No.	Issues/Challenges	Inferences
01.	 <p><b>Seasonal Variation in Traffic</b></p>	<ul style="list-style-type: none"> <li>• <b>Mussoorie's transportation infrastructure faces severe strain</b> due to rising tourist influx, which has shown distinct seasonal patterns, with peaks during the summer and winter months. The <b>highest tourist footfall</b> was recorded in May 2023, with <b>215,904 visitors</b>, followed by December with <b>196,603</b> tourists, and June with <b>163,540</b> visitors. These peak months, driven by summer vacations and the holiday season, <b>lead to extreme congestion on Mussoorie's narrow roads, which are ill-equipped to handle the surge in traffic.</b></li> </ul>
02.	 <p><b>Lack of Public Transport Options</b></p>	<ul style="list-style-type: none"> <li>• The town lacks a reliable and efficient public transportation system.</li> <li>• While buses and taxis are available, they are limited and add on the traffic issues.</li> <li>• This reliance on private vehicles exacerbates congestion and will create parking issues in the near future of the town.</li> </ul>
03.	 <p><b>Parking Shortage and Street Parking Problems</b></p>	<ul style="list-style-type: none"> <li>• Mussoorie faces a severe parking shortage, particularly during the peak tourist seasons, due to its limited parking infrastructure. With only <b>1,807 parking spaces available, including 13 dedicated for buses</b>, the existing capacity is inadequate to meet the demand caused by the rapid increase in vehicular numbers, <b>which rose from 9.32 lakh in 2020 to 12 lakh by 2023.</b></li> <li>• The scarcity of parking spaces, especially for larger vehicles like buses, exacerbates traffic congestion, with tourists and locals struggling to find adequate parking and forcing tourists to park along roadsides when hotel parking is unavailable or most hotels in the area provide parking for only 4 to 10 vehicles, which is far from</li> </ul>

			<p>adequate given the high demand, further reducing accessibility and worsening congestion.</p> <ul style="list-style-type: none"> <li>Local residents and working population also rely heavily on roadside, crating immense pressure on the town’s already strained infrastructure.</li> <li>The combination of increasing vehicle registrations, limited parking availability, and over-reliance on roadside spaces underscores the urgent need for expanded parking infrastructure</li> </ul>
04.		<b>Limited Road Infrastructure</b>	<ul style="list-style-type: none"> <li>Mussoorie's road infrastructure faces significant <b>challenges due to its limited capacity and the growing pressure from increasing vehicular traffic.</b> The town's <b>narrow, winding roads, designed during the colonial era, are unable to accommodate</b> the current volume of <b>vehicles, especially during the peak tourist season.</b></li> <li>This results in severe traffic congestion at key points such as <b>Library Chowk, Kulri Bazaar, and Landour, exacerbating travel delays and increasing air and noise pollution.</b></li> </ul>
05.		<b>Infrastructure Maintenance</b>	<ul style="list-style-type: none"> <li>Maintaining the existing road infrastructure in hilly terrain like Mussoorie is challenging and costly.</li> <li>The Mussoorie-Dehradun highway has faced disruptions due to landslides, particularly since Mid-July 2024. This has impacted the movement of heavy vehicles and public transportation services, with roadways buses being out of operation for weeks at a time. Residents have expressed that the common populace, especially students and workers commuting to Dehradun, has been severely affected by these disruptions.</li> </ul>
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 Mussoorie. Illegal parking, encroachments on roadsides, and lack of designated parking zones contribute to the chaos on</li> </ul>

			<p>the streets</p> <ul style="list-style-type: none"> <li>• Thus, regulations and implantation on strict policy norms like on multilevel parking needs to be implemented in the town with proper monitoring and regular inspections.</li> </ul>
07.		<p><b>Environmental Concerns</b></p>	<ul style="list-style-type: none"> <li>• <b>The increasing number of vehicles in Mussoorie contributes to air and noise pollution, which can have detrimental effects on the local environment and public health.</b></li> </ul>

#### 8.4. Possible Solutions/Suggested Projects for Urban Transport and Parking in NPP, Mussoorie

A Stakeholder Consultation Meeting was held on 02<sup>nd</sup> September, 2024 in NPP, Mussoorie. Based on the feedback provided by the official's possible solutions and suggested projects for improvement are proposed for Mussoorie Town in Table 26 below.

Table 26: Possible Solutions/Suggested Projects for Urban Transport and Parking in NPP, Mussoorie

S.No.	Possible Solutions/Suggested Projects
01	<b>Seasonal Variation in Traffic</b>
	<p><b><u>It is proposed that:</u></b></p> <p>a) <b>The NPP, Mussoorie</b> should undertake the following:</p> <ol style="list-style-type: none"> <li>The seasonal nature of tourism requires to <b>regulate the number of tourists</b> that enters NPP, Mussoorie.</li> <li><b>Introduce</b> dedicated tourist buses from Dehradun to Mussoorie for sightseeing to reduce the number of private vehicles in town.</li> <li>Tourist Permits shall be issued by the regulating authority.</li> <li>Without the Tourist Permit no Personal Vehicle should be allowed to enter the NPP, Mussoorie.</li> </ol>
02	<b>Lack of Public Transport Options</b>
	<p><b><u>It is proposed that:</u></b></p> <p>a) <b>The NPP, Mussoorie</b> should undertake the following:</p> <ol style="list-style-type: none"> <li>Develop and promote a more <b>organized public transportation system</b>, such as <b>shuttle buses</b> or <b>Shared taxis</b>, to reduce reliance on private vehicles.</li> <li><b>Stop Tourist vehicle outside</b> the <b>city</b> and provide <b>separate bus service</b> for the tourist by <b>the Govt.</b> This will reduce the Traffic congestion and Carbon emission.</li> <li><b>Eco Tax.</b> for other states vehicles <b>should be 5000/-</b> and provide free bus services for tourists from <b>Eco tax booth to Mussoorie.</b> This will reduce the dependency on private vehicles and reduce the traffic congestions and on street parking.</li> </ol>
03	<b>Parking Shortage and Street Parking Problems</b>
	<p><b><u>It is proposed that:</u></b></p> <p>a) <b>The NPP, Mussoorie in collaboration with the Police Department and traffic Police</b> should undertake the following:</p> <ol style="list-style-type: none"> <li>There should be a compulsory rule by the Authority that <b>house must include a designated parking space</b> to approve the layout and also there should be a <b>proper inspection</b> during the construction process by the authority.</li> <li><b>NPP, Mussoorie</b> should be a rule that <b>each households can buy only one personal 4 wheeler</b> with <b>dedicated parking area within the house or their own property.</b> If someone <b>buy 2<sup>nd</sup> 4-wheeler</b> then the <b>Registration fee</b> on second private vehicle should be <b>15% of the vehicle cost</b>, this will encourage people to use public transportation and reduce strain over environment and resolve the parking issues.</li> <li><b>Install single stack automated car parking wherever required in parking areas</b></li> </ol>

	<p><b>which are flat.</b> This will help to increase the existing parking capacity.</p>  <p style="text-align: right;"><i>Source: (Google Images, 2024)</i></p> <ul style="list-style-type: none"> <li>iv. <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>v. <b>Implement Digital Parking/Smart Parking System</b> to provide real-time information on parking availability.</li> <li>vi. 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. This will enable better parking management.</li> <li>vii. There should be compulsory parking provision in hotels based on the rooms and need of on-site verification during the construction time for parking spaces.</li> </ul> <ul style="list-style-type: none"> <li>b) <b>The NPP, Mussoorie</b> under <b>PPP Models</b> should collaborate with private entities for funding and managing parking facilities.</li> <li>c) <b>The NPP, Mussoorie</b> should promote <b>peripheral parking</b> and <b>shuttle services</b> through signage and information campaigns.</li> </ul>
04	<p><b>Limited Road Infrastructure</b></p>
	<p><b><u>It is proposed that:</u></b></p> <ul style="list-style-type: none"> <li>a) <b>The NPP, Mussoorie in collaboration with the Police Department and traffic Police</b> should undertake the following:             <ul style="list-style-type: none"> <li>i. <b>Implement advanced traffic management systems</b> (Real time Signal Adjustment, Traffic Monitoring cameras) that monitor and manage traffic flow, especially during peak tourist seasons.</li> <li>ii. The <b>Proposed Ropeway from Dehradun to Mussoorie</b> should be <b>prioritized</b> significantly reduce road traffic congestion and offers a faster and more efficient transportation alternative</li> </ul> </li> </ul>
05	<p><b>Infrastructure Maintenance</b></p>
	<p><b><u>For long term Infrastructure Resilience it is important to:</u></b></p> <ul style="list-style-type: none"> <li>i. Implement regular inspection and repair of vulnerable road sections prone to landslides and erosion.</li> <li>ii. Utilize innovative slope stabilization techniques such as Geosynthetic</li> </ul>

	<p>reinforcement, Soil Nailing etc.</p> <ul style="list-style-type: none"> <li>iii. Invest in resilient road construction materials.</li> <li>iv. Establish emergency response protocols to swiftly address disruptions and ensure uninterrupted travel for residents and tourists can support long-term infrastructure resilience.</li> </ul>
06	<b>Regulatory Issues</b>
	<p>To Identify Problem areas and Tailor Solutions to effectively address the Transport and Parking Challenges. The Following Solutions can help:</p> <ul style="list-style-type: none"> <li>i. Increasing <b>patrolling and deployment</b> of traffic police,</li> <li>ii. Imposing stricter <b>penalties for violations</b>,</li> <li>iii. Enhancing public awareness campaigns on parking regulations and road safety,</li> <li>iv. <b>Collaborating</b> with local stakeholders to designate and maintain proper parking zones,</li> <li>v. Leveraging technology such as smart parking systems to efficiently manage parking spaces and alleviate congestion on the streets</li> </ul>
07	<b>Environmental Concerns</b>
	<p><b><u>It is proposed that:</u></b></p> <p>a) <b>The NPP, Mussoorie 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, Mussoorie 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> <p><b>The following detailed surveys/ studies need to be initiated:</b></p>

	<ul style="list-style-type: none"><li>✓ Volume count survey (inner and outer cordon)</li><li>✓ Desire line mapping</li><li>✓ Speed and delay survey</li><li>✓ Road inventory survey</li><li>✓ Origin Destination survey and preparation of OD matrix</li><li>✓ Household survey</li><li>✓ Goods survey</li><li>✓ Land availability/ land suitability survey for parking Lots and MLCP.</li></ul> <p><b>Based on the above, detailed recommendations could be worked out.</b></p>
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# **Chapter 9**

## **Mussoorie Town:**

### **Water Availability and Supply**

## Chapter 9. Mussoorie Town: Water Availability and Supply

### 9.1. System Infrastructure

Mussoorie Town, located in the Yamuna Basin, relies on the Yamuna River as its primary source of water. The river serves as a vital natural resource, providing both surface water and groundwater to meet the daily water needs of the town's residents. Uttarakhand Jal Sansthan (UJS), Mussoorie and Pey Jal Nigam Uttarakhand (PJNU), Mussoorie collectively handle the water supply and construction of water distribution network as per the demand of water in NPP, Mussoorie. UJS, Mussoorie supplies the water in the Town while PJNU, Mussoorie is in-charge for the construction and maintenance of the water distribution network pipeline for NPP, Mussoorie.

#### 9.1.1. Situation of existing Mussoorie old Water Supply Scheme-1908

General Information of old Mussoori Water Supply Scheme for the year of 2023			
	Units	Off Season	On Season
<b>Produced drinking water</b>			
a) Pumping	MLD	7.08	7.08
b) Gravity	MLD	0.61	0.61
Water Supply	MLD	7.69	7.69
Need for drinking water	MLD	8.11	15.78
<b>Shortage of Drinking Water</b>	MLD	0.42	<b>8.09</b>
Number of Sources		20	
Total storage capacity of reservoirs	KL	29080.60	
Number of daily water distribution reservoirs		15	
Reservoir water storage capacity	KL	4445.6	
Number of additional water storage reservoirs		5	
Storage capacity of additional reservoirs	KL	24635	
<b>Number of water sources (spring and drain)</b>			
a) Gravitational source		6	
b) Sources of pumping stations		14	
Number of pumping stations		07	
Private water connection (domestic and non- domestic)		5700	

Source: (Uttarakhand Jal Sansthan, Mussoorie, 2024), (Pey Jal Nigam Uttarakhand, 2024), (Stakeholder Consultation Meeting, 2024), (SPA, New Delhi, 2024)

The Mussoorie Water Supply Scheme, established in 1908, is based on approximately 20 natural sources, including springs and Gadheras, with a total reservoir capacity of 29,080.60 KL across 15 main and 5 additional reservoirs. The current system supplies 7.69 MLD, derived from gravity-fed (7.08 MLD) and pumped sources (0.61 MLD), which meets demand in the off-season but falls short during peak tourist season when demand surges to 15.78 MLD, resulting in a significant water

shortage of 8.09 MLD. This system includes 7 pumping stations, 6 gravity-fed sources, and 14 sources supporting the pumping stations with 5,700 private connections, both domestic and non-domestic.

### 9.1.2. Present demand based water supply Project- Mussoorie water Reorganized Scheme

Existing Situation of Mussoorie's Water Supply 2024			
	Units	Off Season	On Season
<b>Produced drinking water</b>			
Total Water Supply	MLD	12	14
Need for drinking water	MLD	=135 X 77,524 = 10.5 MLD	= 135 x 90,524 = 12.2 MLD
<b>Shortage of Drinking Water</b>	MLD	Nil	Nil
<b>Number of sources</b>			
a) Yamuna River		1	
b) Springs and Gadheras		20	
<b>Number of reservoirs</b>			
a) Old reservoirs Capacity		6	
b) New reservoirs Capacity		3	
a) Old reservoirs Capacity	KL	29080.60	
b) New reservoirs Capacity	KL	8700	
<b>Total storage capacity of reservoirs</b>	<b>KL</b>	<b>37780.6</b>	
Number of daily water distribution reservoirs		17	
Number of additional water storage reservoirs		8	
<b>Number of water sources (spring and drain)</b>			
Old Pump Stations		07	
New Pump Stations		03	
Total Number of pumping stations		10	
Private water connection (domestic and non- domestic)		<b>6567</b>	

Source: (Uttarakhand Jal Sansthan, Mussoorie, 2024), (Pey Jal Nigam Uttarakhand, 2024), (Stakeholder Consultation Meeting, 2024), (SPA, New Delhi, 2024)

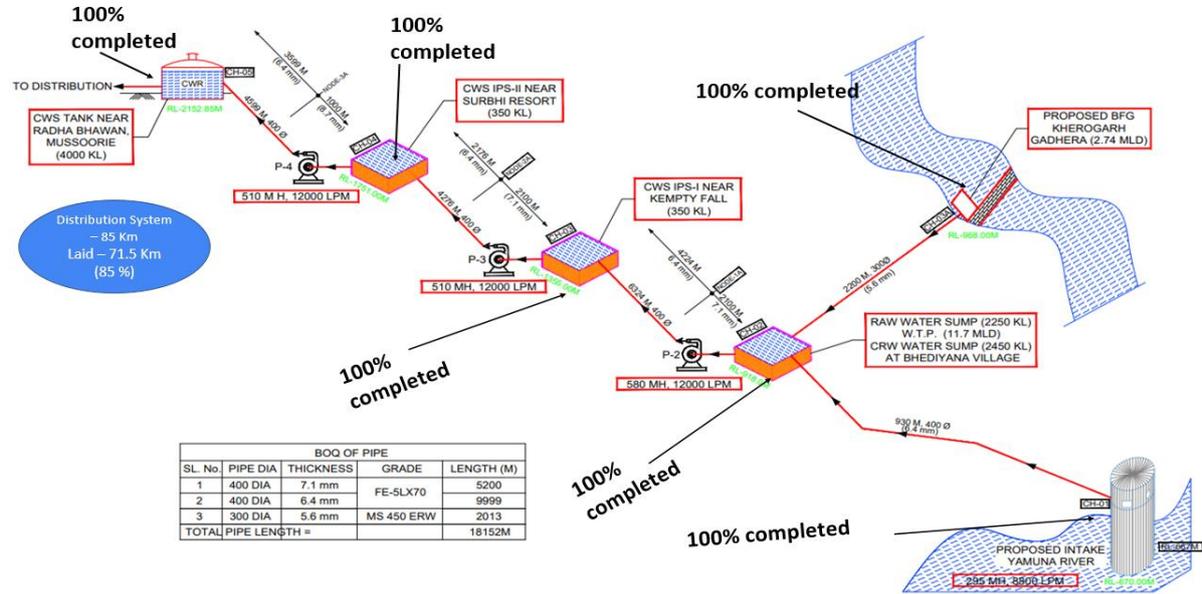
The Mussoorie Water Reorganized Scheme, launched in 2024 and projected for 2054, has significantly bolstered Mussoorie's water supply capacity, resolving prior seasonal shortages. With the integration of the Yamuna River, located 30 km from NPP Mussoorie, as a primary source along with 20 springs and Gadheras, total production capacity has risen to meet demand during both off and on-seasons (12 MLD and 14 MLD, respectively), ensuring a steady supply without shortages. The scheme expanded storage with six old reservoirs (29,080.60 KL) and three new ones (8,700 KL), bringing the total reservoir capacity to 37,780.60 KL, distributed through 17 daily reservoirs. Additionally, water pumping infrastructure now includes 10 stations (7 old, 3 new), supporting 6,567 private connections. This restructuring has added 2.31 MLD in the off-season and 6.31 MLD in the on-season, stabilizing the supply for peak demands and effectively addressing the 2022 shortage concerns. Therefore, the present supply is as follows:

✓ Off season = 154.6 LPCD

✓ On season = 154.7 LPCD

This is an average figure of water supply. There are variations and some people get as low as 90 LPCD while other gets around 200 LPCD.

Image 15 Layout of Mussoorie Water Reorganized Scheme

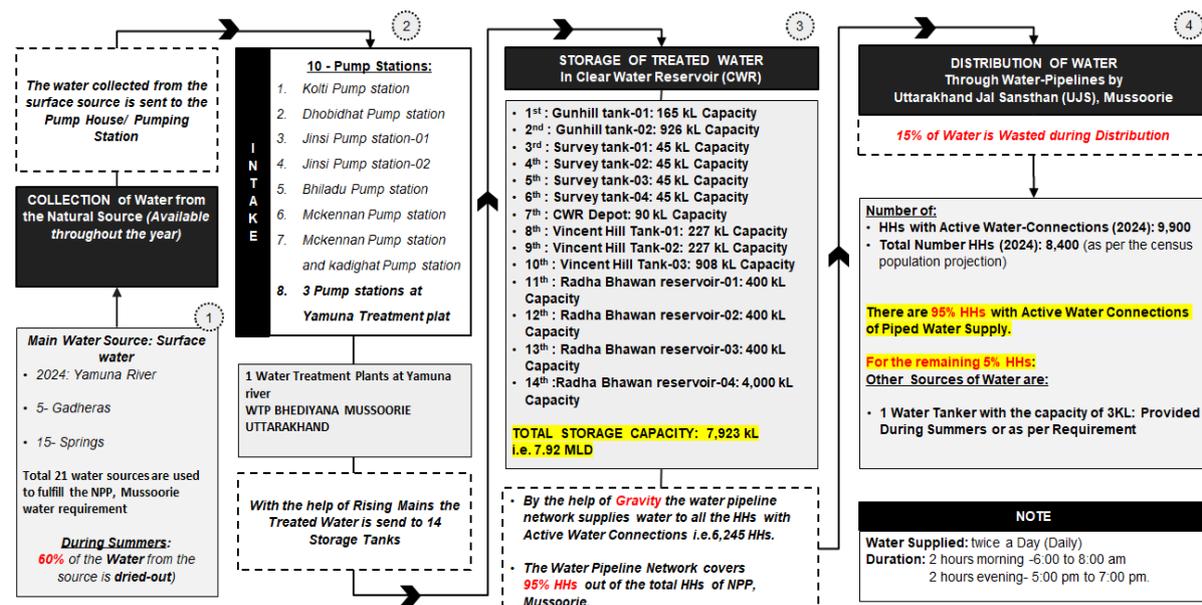


Source: (Uttarakhand Jal Sansthan, Mussoorie, 2024), (Pey Jal Nigam Uttarakhand, 2024), (Stakeholder Consultation Meeting, 2024), (SPA, New Delhi, 2024)

### 9.1.3. Process of Water Supply in Mussoorie Town

The Figure 17 below depicts the flowchart of the process of water supply in Mussoorie 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 17: Flowchart of Process of Water Supply System in NPP, Mussoorie



Source: (Uttarakhand Jal Sansthan, Mussoorie, 2024), (Pey Jal Nigam Uttarakhand, 2024), (Stakeholder Consultation Meeting, 2024), (SPA, New Delhi, 2024)

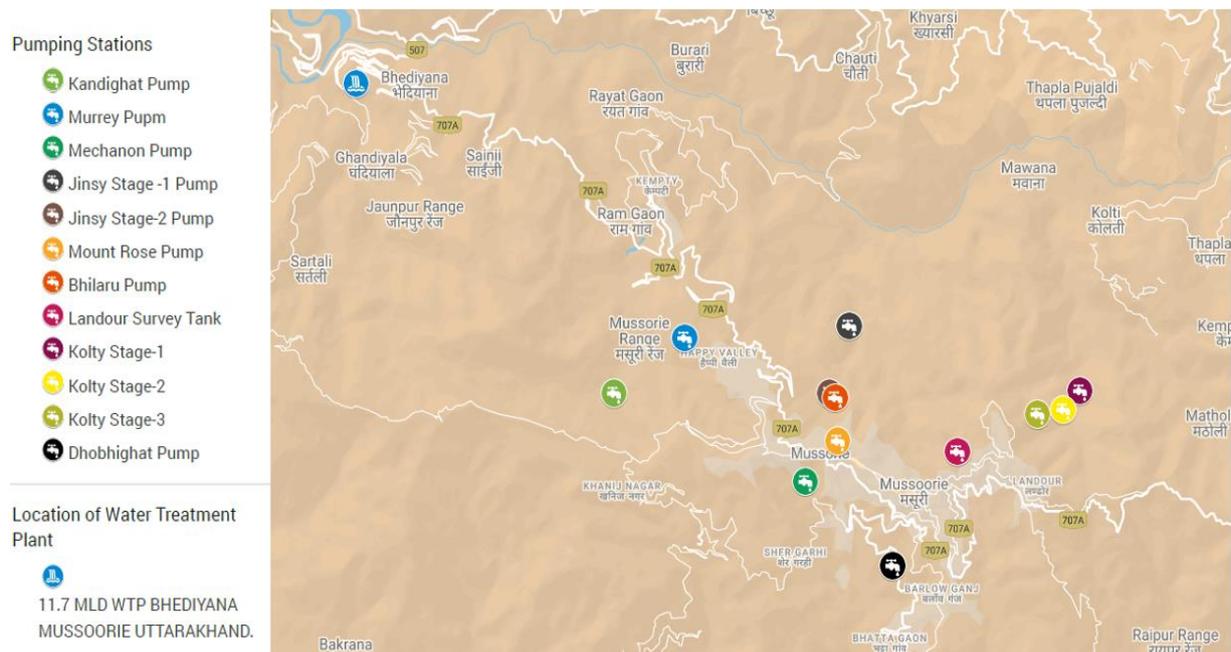
**a) Step-01: Collection of Water**

The primary source of water for NPP Mussoorie is surface water, predominantly from the Yamuna River, along with 5- Gadheras and 15 natural springs, totalling 21 water sources. These combined sources are crucial to meet the town's water requirements. However, during the summer months, approximately 60% of these water sources dry up, exacerbating the water scarcity, especially when the demand surges due to the influx of tourists. This seasonal depletion puts immense pressure on the remaining water reserves and underscores the need for improved water management strategies to ensure a sustainable supply for the local population and visitors.

**b) Step-02: Intake and Treatment of Water**

The water collected from surface sources in NPP, Mussoorie is directed to various pumping stations for further treatment and distribution. The 10 pump stations involved in this process, including the Kolti, Dhobidhat, Jinsi (01 and 02), Bhiladu, and Mckennan pump stations, along with Kadighat and three additional stations at the Yamuna Treatment Plant. The Primary water treatment facility, located 13 km from NPP Mussoorie, is the Bhediyana Water Treatment Plant at the Yamuna River, which has a capacity of 11.7 million litres per day (MLD). From this plant, further with the help of rising mains the treated water is transported for storage.

Map 20 Location Map of Pumping stations and Treatment Plant in Mussoorie Town



Source: (Uttarakhand Jal Sansthan, Mussoorie, 2024), (Pey Jal Nigam Uttarakhand, 2024), (Stakeholder Consultation Meeting, 2024), (SPA, New Delhi, 2024)

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

As shown in Table 27: List of Number of Existing and Added Water Storage Tanks i.e. Clear Water Reservoir (CWR) and their Storage Capacity, by the help of rising-mains, the treated water is transported to 14 storage tanks with a total storage capacity of 7,923 kL (7.923 MLD). Key storage

facilities include Gunhill tanks with capacities of 165 kL and 926 kL, several Survey tanks each with 45 kL capacity, a CWR Depot with 90 kL capacity, and multiple Vincent Hill Tanks with capacities ranging from 227 kL to 908 kL. Additionally, the Radha Bhawan reservoirs provide significant storage, totalling 4,000 kL across four tanks. Utilizing gravity, the water pipeline network effectively supplies water to 6,245 households with active connections, covering 95% of all households in the area. This comprehensive system ensures reliable water supply and supports the community's needs.

Table 27: List of Number of Existing and Added Water Storage Tanks i.e. Clear Water Reservoir (CWR) and their Storage Capacity

Sr. No	Storage Tanks Number	Capacity (KL)
1	Gunhill tank-01	165
2	Gunhill tank-02	926
3	Survey tank-01	45
4	Survey tank-02	45
5	Survey tank-03	45
6	Survey tank-04	45
7	CWR Depot	90
8	Vincent Hill tank-01	227
9	Vincent Hill tank-02	227
10	Vincent Hill tank-03	908
11	Radha Bhawan Reservoir-01	400
12	Radha Bhawan Reservoir-02	400
13	Radha Bhawan Reservoir-03	400
14	Radha Bhawan Reservoir-04	4,000
	<b>Total (KL)</b>	<b>7,923</b>
	<b>Total (MLD)</b>	<b>7.92</b>

Source: (Uttarakhand Jal Sansthan, Mussoorie, 2024), (Pey Jal Nigam Uttarakhand, 2024)

Image 16: Some images of Intake well, WTP, CWR and Pumping Stations in Mussoorie Town



Intake Well



4000 KL CWR at Radha Bhawan



Intermediate Pumping Station-1



Water Treatment Plant

Source: (Primary Survey, 2024)

d) Step-04: Distribution of Water

The water stored in the 14 CWRs is distributed in the Town by the help of underground water pipeline network laid by the PJNU, Mussoorie. The water is distributed by the UJS, Mussoorie through gravity and no energy is consumed in this process. During distribution about 15% of the water is wasted.

As shown in Table 27: List of Number of Existing and Added Water Storage Tanks i.e. Clear Water Reservoir (CWR) and their Storage Capacity. The water from these storage tanks is distributed to households with active water connections i.e. 6,245 HHs including cantonment area. However, the cantonment area does not fall under the NPP boundary. Thus, only 95% of the HHs are with active water connections of piped water supply and have no metered water connections. The remaining 5% of the HHs meet their water needs either by hand pumps or water tankers provided by the UJS during summers or as per the requirement.

Table 28: Water Supply Component

Water Supply Component		
Water Supply Component	Number	Inferences
Hand pumps (in NPP, Mussoorie)	<b>No hand pump in Town</b>	<ul style="list-style-type: none"> <li>There are total 5 Community Taps in NPP, Mussoorie, particularly within the Shiv Lok Colony</li> <li>UJS, Mussoorie 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.</li> <li>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.</li> </ul>
Community Taps (in NPP, Mussoorie)	<b>5 (Shiv Lok Colony)</b>	
Water Tankers	<b>Owned: 2</b> <b>Capacity: 3 KL</b> each <b>Hired: As per</b> requirement	
Length of pipeline in NPP, Mussoorie	-	

Source: (Uttarakhand Jal Sansthan, Mussoorie, 2024), (Pey Jal Nigam Uttarakhand, 2024) (SPA, New Delhi, 2024)

Image 17: Image of Existing Water Pipeline Network Hand Pumps and Community Taps in NPP, Mussoorie







Source: Primary survey by (SPA, New Delhi, 2024)

#### 9.1.4. Demand and Supply of Water in Town

As shown in Table 29, the existing water supply situation in NPP, Mussoorie, as per discussions with UJS and PJNU officials, aligns with the CPHEEO benchmark for per capita water supply at 135 LPCD, with no current gaps, supplying 12 MLD in the off-season and 14 MLD in the on-season to meet demand. Pipeline coverage reaches 100% of households, though piped water supply directly covers 95% as some residents are discontinuing connections in favour of community taps and water tankers. Water is supplied twice daily for 2.5 hours, from 7:00 am to 9:30 am and 4:00 pm to 6:30 pm, with extended hours during peak tourist season. While metering of water connections is currently absent, introducing metering would help assess non-revenue water, targeted at a benchmark of 20% to minimize water losses and improve resource management across the town.

Table 29: Comparative Analysis of Benchmark (as per CPHEEO) and Existing Situation of Water Availability and Supply (as per ULBs) in NPP, Mussoorie

NPP, Mussoorie: Water Supply: Existing Situation (As per the Discussions with the Officials Met)			
Indicator	Benchmark (as per CPHEEO)	Existing (as per UJS, Mussoorie and PJNU, Mussoorie)	Inferences (based on discussions with the Officials met and the Data Provided by them)
Per Capita Water Supply	135 LPCD	No Existing Gaps	<ul style="list-style-type: none"> <li>Water Supplied</li> </ul>

<b>Gap in Water Supply</b>	Nil	Nil	<ul style="list-style-type: none"> <li>a) Off-Season: 12 MLD</li> <li>b) On-Season: 14 MLD</li> <li>• <b>Water Demand</b></li> <li>a) Off-Season: 9 MLD</li> <li>b) On-Season: 11 MLD</li> </ul> <p><b>Thus, No Existing Gaps</b></p>
<b>Water Pipeline Coverage (HHs Covered)</b>	100%	100%	<ul style="list-style-type: none"> <li>• UJS, Mussoorie covers 100% of the total area with pipeline connections.</li> </ul>
<b>Water Supply Coverage (HHs Covered)</b>	100%	95%	<ul style="list-style-type: none"> <li>• UJS, Mussoorie covers 95% of the total population serviced with piped water supply connections at present.</li> <li>• Residents are discontinuing the piped water connections and are opting for other options community taps, and Water Tankers.</li> </ul>
<b>Continuity of Water Supply</b>	24/7 Hours/Day	4 Hours/Day	<ul style="list-style-type: none"> <li>• In NPP, Mussoorie 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 %	-	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.
<b>Extent of Non-Revenue Water</b>	20 %	-	

Source: (Handbook of Service Level Benchmarking), (Uttarakhand Jal Sansthan, Mussoorie, 2024), (Pey Jal Nigam Uttarakhand, 2024), (Stakeholder Consultation Meeting, 2024)

#### 9.1.5. 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 30, 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 Nagar Palika Parishad, Mussoorie i.e. ULB of the Town.

Table 30: Minimum Charges (Water Price) ₹ per Month as per the Annual Assessment of Building for Water Supply in Urban Residential Area by the Uttarakhand Jal Sansthan, Mussoorie

<b>Minimum Charge (Water Price) ₹ Per Month as per the Annual Assessment of Building for Water Supply in Urban Residential Area</b>				
<b>S.No.</b>	<b>Annual Assessment of Building</b>	<b>Effective Rates as on Date 01-04-2023</b>		
		<b>Gravity</b>	<b>Low Head</b>	<b>High Head</b>
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, Mussoorie, 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.

Table 31 shows the 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 Litres 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).

Table 31: Water Price Rates for Metered Domestic Water Connections (in ₹ per Kilo Litre per Month) by UJS, Mussoorie

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, Mussoorie, 2024)

As shown in Table 32, 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 Litres 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 32: Water Price Rates (Non-Domestic Metered Connections) ₹ per Kilo Litre by the Uttarakhand Jal Sansthan, Mussoorie

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, Mussoorie, 2024)

#### 9.1.6. Tourism and water supply:

The hotels and guest house in Mussoorie Town meets the additional water demand by the help of water tankers provided on request by the UJS, Mussoorie. UJS, Mussoorie owns 2 water tanker with a capacity of 3 kL and hires water tankers over additional requirements. The hired water tankers range from 2 to 9 kL of capacity depending on the water demand.

There has been a light increase in tourist influx, with 15,000-20,000 visitor per day during the tourist season (April, May, June, July, December and January), attributed to over tourism in Mussoorie. According to discussions with officials, after the implementation of the Mussoorie Water Reorganized Scheme, NPP Mussoorie has experienced no water supply issues due to tourist influx since 2023.

## 9.2. Issues/Challenges

The Table 33 below, highlights the issues/challenges identified along with the inferences for water availability and supply in NPP, Mussoorie.

Table 33: Issues/Challenges Identified for Water Availability and Supply in NPP, Mussoorie

S.No.	Issues/Challenges	Inferences
01.	 <p><b>Dependency on Natural Sources</b></p>	<ul style="list-style-type: none"> <li>NPP, Mussoorie heavily relies on the natural water sources such as Yamuna River, springs and river tributaries (known as Gadheras) from the main water source i.e. river Yamuna for its water supply.</li> <li>However, these sources are vulnerable to pollution, over-extraction, and environmental degradation, affecting both water quality and quantity.</li> <li>Also, during summers 60% of these sources dries up.</li> </ul>
02.	 <p><b>Sewer Tank Overflow During Monsoon Season</b></p>	<ul style="list-style-type: none"> <li>During the monsoon, Mussoorie's sewer tanks often overflow due to high rainfall volumes, creating health risk and contaminating local water sources. The existing sewerage infrastructure struggles to manage the influx, which results in contamination of drinking water supplies, spread of waterborne diseases, and heightened public health risks.</li> <li>Overflow incidents not only degrade water quality but also strain the already limited sewerage system, exacerbating risks of blockages and requiring urgent capacity upgrades to manage the heavy monsoon inflows effectively.</li> </ul>
03.	 <p><b>Population Growth and Urbanization</b></p>	<ul style="list-style-type: none"> <li>The expansion of both residential and commercial zones in Mussoorie is increasing demand on the water supply, potentially leading to shortages and interruptions in service.</li> <li>The rise in commercial spaces, especially hotels and guest houses catering to tourists, has further increased demand. These pressures require ongoing infrastructure upgrades and new management strategies to ensure water availability and service continuity across seasons.</li> </ul>

04.		<p><b>Infrastructure Limitations</b></p>	<ul style="list-style-type: none"> <li>• Out of the 100% HHs UJS, Mussoorie has provided 95% HHs with piped water connections.</li> <li>• Despite of this, out of the 100% HHs only 53% of HHs has retained the active connections with piped water supply while the remaining 12% of HHs have discontinued this piped water connections.</li> <li>• The total remaining 5% of the HHs are either using the water supplied to the HHs with active piped water connections or are extracting water directly from +community taps, or are requesting water tankers provided by the UJS, Mussoorie.</li> <li>• Moreover, the water lines laid across town are underground and are not mapped. Thus, making it even more difficult in the hilly Town of Mussoorie 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> </ul>
05.		<p><b>Lack of Trained Professionals</b></p>	<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.		<p><b>Climate Change Impacts</b></p>	<ul style="list-style-type: none"> <li>• Climate change is likely to worsen existing water challenges in Mussoorie Town.</li> <li>• Increased temperatures, changing precipitation patterns, and melting glaciers in the Himalayas affect the natural replenishment of springs, lakes, and other water sources.</li> <li>• Reduced snowfall and altered monsoon patterns lead to lower groundwater levels and reduce the flow of springs, especially during critical tourist season.</li> </ul>
07		<p><b>Lack of water Governance</b></p>	<ul style="list-style-type: none"> <li>• It's important to do the metering of water connections in the Town and to generate the data on the extent of</li> </ul>

			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.
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### 9.3. Possible Solutions/Suggested Projects for Water Availability and Supply in NPP, Mussoorie

A Stakeholder Consultation Meeting was held on 02<sup>nd</sup> September 2024 in NPP, Mussoorie. Based on the feedback provided by the official's possible solutions and suggested projects for improvement are proposed for Mussoorie Town in Table 34: Possible Solutions/Suggested Projects for Water Availability and Supply in NPP, Mussoorie below.

Table 34: Possible Solutions/Suggested Projects for Water Availability and Supply in NPP, Mussoorie

S.No.	Possible Solutions/Suggested Projects
01.	<b>Dependency on Natural Sources</b>
	<p><b>It is proposed that:</b></p> <p><b>a) The UJS, Mussoorie and PJSU, Mussoorie in collaboration should:</b></p> <ol style="list-style-type: none"> <li>I. Implementing extensive <b>rainwater harvesting systems</b> across <b>households, hotels, and public buildings</b> can reduce dependency on natural sources. During monsoon months, this harvested water can be stored and used during drier seasons.</li> <li>II. <b>Establishing treatment plants to recycle greywater for non-potable</b> uses such as gardening and flushing, can significantly reduce the demand on freshwater sources.</li> <li>III. <b>Implement watershed management programs to prevent soil erosion, Deforestation, and pollution.</b> Reforestation and controlling illegal dumping near springs and tributaries can enhance water quality and preserve water sources.</li> </ol>
02.	<b>Sewer Tank Overflow During Monsoon Season</b>
	<p><b>It is proposed that:</b></p> <p><b>a) The NPP, Mussoorie UJS, Mussoorie and PJSU, Mussoorie in collaboration should:</b></p> <ol style="list-style-type: none"> <li>I. <b>Upgrade existing sewer tanks with larger, higher-capacity tanks</b> to handle the additional water and waste load during monsoons. Installing <b>additional overflow tanks or auxiliary holding tanks</b> near areas prone to flooding can also help manage surges.</li> </ol>

	<ul style="list-style-type: none"> <li>II. <b>Encourage the use of permeable paving materials</b> and increase green spaces to absorb rainwater, reducing the amount entering the sewer system.</li> <li>III. <b>Ensuring that stormwater and sewage systems are separate</b> will prevent rainwater from overwhelming sewer tanks. Where possible, redirect storm water into natural drainage systems or retention ponds rather than the sewer network.</li> <li>IV. <b>Installing filters or screens at inlets to sewer tanks</b> can prevent solid waste and debris from entering and blocking pipes, <b>reducing maintenance requirements and the risk of overflow.</b></li> <li>V. <b>Encourage or mandate rainwater harvesting in residential and commercial buildings</b>, reducing the amount of runoff entering the sewer system.</li> <li>VI. <b>Regular maintenance, cleaning, and inspection of sewer lines and tanks</b> before and during the monsoon can prevent blockages and identify weak points.</li> </ul>
03.	<b>Population Growth and Urbanization</b>
	<p><b><u>It is proposed that:</u></b></p> <p><b>a) The UJS, Mussoorie and PJSU, Mussoorie in collaboration should:</b></p> <ul style="list-style-type: none"> <li>I. <b>Divide Mussoorie into residential, commercial, and tourism zones</b>, with specific water allocation and regulation based on each zone’s demand. This will help distribute water more equitably and ensure consistent availability.</li> <li>II. <b>Build additional reservoirs in key locations to improve seasonal water storage capacity</b> and better manage peak demand periods, especially in tourist-heavy zones.</li> <li>III. <b>Implement water efficiency standards for hotels, guest houses, and restaurants</b>, requiring the use of water-saving devices (low-flow showers, faucets, and dual-flush toilets). Compliance can be monitored with regular inspections.</li> <li>IV. <b>Install smart meters</b> in both <b>residential and commercial</b> properties to accurately track water usage patterns. This data can help in identifying high-demand areas, spotting leaks early, and optimizing distribution across the city.</li> <li>V. Replace aging and leaky pipes to reduce water losses, ensuring that more of the available water reaches end users without waste.</li> </ul>
04.	<b>Infrastructure Limitations</b>
	<p><b><u>It is proposed that:</u></b></p> <p><b>a) The UJS, Mussoorie and PJSU, Mussoorie in collaboration should:</b></p> <ul style="list-style-type: none"> <li>I. <b>Develop a comprehensive GIS map</b> of the underground water pipelines across Mussoorie. This would include precise locations, depths, and materials used for each segment, allowing for quick identification of leakages or faults. GIS</li> </ul>

	<p>mapping can significantly improve efficiency in detecting and addressing water supply issues.</p> <ul style="list-style-type: none"> <li>II. <b>Use acoustic sensors or digital leak detection devices</b> at intervals along the pipeline. These sensors can help detect leaks based on sound or vibration patterns, allowing for prompt repairs before contamination occurs.</li> <li>III. <b>Install pressure management valves</b> in the network to maintain <b>optimal water pressure, preventing pressure loss and ensuring</b> a more even distribution of water. This will particularly benefit households in higher elevations.</li> <li>IV. Offer incentives to households that have discontinued their piped water connections to rejoin the network. <b>Subsidized reconnection fees, discounts on initial water bills, or promotional offers for efficient water usage can encourage reconnections.</b></li> <li>V. Identify areas with aging or <b>high-failure-rate pipelines and prioritize replacement with durable, corrosion-resistant materials like ductile iron or PVC pipes</b>, which are better suited to handle Mussoorie’s hilly and humid environment.</li> </ul>
05.	<p><b>Lack of Trained Professionals</b></p>
	<p><u>is proposed that:</u></p> <ul style="list-style-type: none"> <li>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.</li> <li>b) <b>UJS, Mussoorie and PJNU, Mussoorie</b> should develop and implement: <ul style="list-style-type: none"> <li>✓ <b>Capacity Building and Training Programmes</b> among the local government employees.</li> <li>✓ <b>Knowledge Dissemination Programmes</b> among the local government employees and the local residents.</li> </ul> </li> </ul>
06.	<p><b>Climate Change Impacts</b></p>
	<p><u>It is proposed that:</u></p> <ul style="list-style-type: none"> <li>a) <b>UJS, Mussoorie and PJNU, Mussoorie</b> in collaboration should: <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> </ul> </li> </ul> </li> </ul>

	<ul style="list-style-type: none"> <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>
07.	<b>Lack of water Governance</b>
	<p><b>It is proposed that:</b></p> <p>a) <b>UJS, Mussoorie and PJNU, Mussoorie</b> in collaboration should:</p> <ul style="list-style-type: none"> <li>i. <b>Implement digital or smart water meters</b> for all active connections in <b>both residential and commercial areas</b>, enabling real-time monitoring of water usage and accurate billing. <b>Smart meters can also help detect anomalies, flagging potential water theft or leakages for timely intervention.</b></li> <li>ii. <b>Regularly collect and analyze metering data</b> to assess <b>consumption patterns, identify areas with high non-revenue water, and better understand seasonal water demand.</b> This will help UJS Mussoorie to create a baseline and set benchmarks for sustainable usage.</li> <li>iii. Form a dedicated team to <b>conduct periodic audits across the town to assess non-revenue water levels, water theft, and unmetered connections.</b> This team would identify <b>unauthorized tapping points and penalize illegal usage to reduce losses.</b></li> <li>iv. Develop a <b>strict regulatory framework that enforces penalties for water theft and unregistered connections, ensuring compliance and deterring misuse.</b> Provide incentives to households and businesses that report unauthorized connections or actively manage their water consumption.</li> <li>v. Organize <b>public awareness campaigns to educate residents about the importance of metering and water conservation, focusing on how responsible water usage benefits the entire community.</b></li> </ul>

# Annexure A

## Annexure A

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

Figure 18: Mussoorie Town Wards Name and Households List

Population	HH	Ward Number	Ward Name	Pincode
2103	438	1	JHARIPANI	
2287	476	2	BARLOGANJ	
2069	431	3	TEHRI BY PASS / IDH	
2249	459	4	JABERKHET / JHALKI	
1947	406	5	LANDOUR	
1987	414	6	PICTURE PALACE	
2594	530	7	KULRI	
2436	508	8	JHULAGHAR	
2242	467	9	HUSSANGANJ	
2359	491	10	LIBRARY	
2297	479	11	BHILADU/INDRA COLONY	
2496	510	12	POLO GROUND / HAPPY VALLY	
3052	636	13	BHADRAJ	
<b>30118</b>	<b>6245</b>			

Source: (Nagar Palika Parishad, Mussoorie, 2024)

Figure 19: Number of sanitation workers appointed by KEEN (private agency) under Nagar Palika Parishad, Mussoorie

KEEN Sanitation workers appointed by Contract (KEEN)		
sr.no	Operations Manager	1
1	Relations Manager	1
2	Finance Assistant	1
3	Head Supervisor	2
4	Supervisor	9
5	Health-NPPM	1
6	IEC Team	24
7	Intern-Finance	1
8	MSW (W-1)	4
9	MSW (W-2)	17
10	MSW (W-3)	9
11	MSW (W-4)	4
12	MSW (W-5)	7
13	MSW (W-6)	5
14	MSW (W-7)	7
15	MSW (W-8)	18
16	MSW (W-9)	13
17	MSW (W-10)	8
18	MSW (W-11)	5
19	MSW (W-12)	3
20	MSW (W-13)	/
21	Driver	4
22	Helper (Vehicle)	26
	<b>Total</b>	<b>177</b>

Source: (KEEN, Mussoorie, 2024)

Figure 20 Details of Collected user charges by the KEEN

Collected User Charges by the KEEN (2023-2024)			
Month	Year	Households	Commercial
July	2023	97590	245850
August	2023	110010	237225
September	2023	104160	230305
October	2023	109470	227795
November	2023	102420	245998
December	2023	96630	277600
January	2024	96150	268900
February	2024	82200	277500
March	2024	89880	282800
April	2024	104010	305000
May	2024	101670	310780
June	2024	102990	312585
<b>Total</b>		<b>1197180</b>	<b>3222338</b>

Source: (KEEN, Mussoorie, 2024)

Figure 21 Details of user charges for solid waste as per the SWM Norms 2016

अनुसूची-1 ढोस कचरा प्रबंधन के लिए इस्तेमालकर्ता शुल्क		
1	2	3
क्र सं	अपशिष्ट उत्पादक की श्रेणी/अपशिष्ट का प्रकार	प्रतिमाह सेवा शुल्क(यूजर चार्ज रुपये में)
1.	गरीबी रेखा से नीचे के घर(बी.पी.एल कार्ड धारक)	कच्ची झोपडी रु 10.00, पक्का मकान रु0- 20.00
2.	कम आय वाले घर(बी.पी.एल कार्ड धारक के अतिरिक्त रु 5000.00 प्रतिमाह तक की आय वाले घर)	रु 30.00
3.	मध्यम आय वाले घर (रु 5000.00 से अधिक रु 10000.00 तक प्रतिमाह आय वाले घर)	रु 50.00
4.	उपरोक्त के अतिरिक्त ऐसे घर/प्रतिष्ठान/व्यक्ति जहां से कूड़ा संग्रहकर्ता द्वारा कूड़ा एकत्रित किया जायेगा।	रु 200.00
5.	उपरोक्त के अतिरिक्त ऐसे घर/प्रतिष्ठान/व्यक्ति जिनके द्वारा जैविक कूड़े से कम्पोस्टिंग खाद तैयार की जायेगी।	पालिका के स्तर से निर्धारण किया जायेगा
6.	सब्जी एवं फल की दुकानें/टेली	टेली व फेरी में रु 100 प्रतिमाह, सब्जी एवं फल की दुकान पर रु 500.00 प्रतिमाह
7.	मांस एवं मछली विक्रेता	न्यूनतम 500 रु 10 कि०ग्रा० तक, उससे अधिक पर रु 10 अतिरिक्त प्रति कि०ग्रा० की बढ़ोतरी पर प्रतिमाह
8.	रेस्टोरेन्ट	छोटे रु 500.00, मध्यम रु 600.00 तथा बड़े रु 1500.00 प्रतिमाह
9.	होटल/लॉजिंग/गेस्ट हाऊस	20 बेड तक रु 500.00, 21 बेड से 40 बेड तक रु 800.00 एवं 41 से अधिक बेड तक रु1500.00

		प्रतिमाह
10.	धर्मशाला	10 कमरे तक रु 400 प्रतिमाह, 10 से उपर रु 600 प्रतिमाह
11.	बारातघर(चेरिटेबिल) बारातघर(नॉन-चेरिटेबिल)	रु 500.00 प्रति उत्सव रु 1200.00 प्रति उत्सव
12.	बेकरी	रु 500.00 प्रतिमाह
13.	कार्यालय	50 कर्मचारियों तक रु 300.00, 51 से 100 कर्मचारियों तक रु 600.00, 101 से 300 कर्मचारियों तक रु 800.00 तथा उससे अधिक कर्मचारियों वाले कार्यालय से रु1000.00 उपरोक्त दर प्रतिमाह हेतु लागू
14.	स्कूल/शिक्षण संस्थाएं(आवासीय)	100 बेड तक के लिए रु 1500.00, उससे अधिक रु 20.00 प्रति बेड अतिरिक्त प्रतिमाह
15.	स्कूल/शिक्षण संस्थाएं(अनावासीय)	500 विद्यार्थियों तक रु1000.00, उससे अधिक रु1500.00 प्रतिमाह
16.	हॉस्पिटल/नर्सिंग होम (बायोमेडिकल वेस्ट को छोड़कर)	20 बेड तक रु 1000, 21 बेड से 40 बेड तक रु2000.00 एवं 41 से 100 बेड तक रु 3000.00, उससे अधिक रु 20000.00 प्रतिमाह
17.	क्लीनिक/पैथोलोजी	क्लीनिक रु 300.00, पैथोलोजी रु 500.00 प्रतिमाह
18.	दुकान/चाय की दुकान	मोहल्ले की छोटी दुकान रु 50.00, बाजार की दुकान रु 100.00, शोरूम रु 500.00, छोटे मॉल रु 1000.00, बहुमंजिला मॉल रु 2000.00, अपने मकान के कमरे में खुली छोटी दुकान रु 100.00 प्रतिमाह
19.	फैक्ट्री	छोटी रु 600.00, मध्यम रु 1000.00, बड़ी रु 1000.00 प्रतिमाह
20.	वर्कशॉप	छोटी रु 200.00, बड़ी रु 500.00 प्रतिमाह
21.	कबाड़ी	छोटी रु 300.00, बड़ी रु 500.00 प्रतिमाह
22.	जूस/गन्ने का रस विक्रेता	रु 300.00 प्रतिमाह अथवा 10 रु प्रतिदिन
23.	सार्वजनिक/निजी स्थलों पर सर्कस/प्रदर्शनी/विवाह आदि आयोजन जिनमें अपशिष्ट उत्पन्न हो	प्रति उत्सव रु 1000.00 विवाह होटलों में, सर्कस/प्रदर्शनी रु 1000.00 प्रतिदिन, विवाह सडक/निजी/सार्वजनिक स्थल पर रु 1500.00 प्रति उत्सव
24.	ढहान तथा निर्माण सम्बन्धी अपशिष्ट	0.50घन मी0 तक रु 200.00, 1.0घन मी0 तक रु 400.00, 3.0घन मी0 तक रु 1000.00, 6.0घन मी0 तक रु 2000.00, इससे अधिक प्रतिघन मी0 रु 200.00 अधिक
25.	सिनेमा हॉल	रु 500.00 प्रतिमाह
26.	वॉइन शॉप	रु 500.00 प्रतिमाह
27.	जनरल स्टोर किराने की दुकान	रु 50.00 प्रतिमाह
28.	एजेंसी/थोक विक्रेता	रु 100.00 प्रतिमाह

इस्तेमालकर्ता शुल्क/प्रभार का भुगतान मांग जारी होने से 30 दिन के भीतर न किए जाने की रिश्ति में इस्तेमालकर्ता शुल्क/प्रभार पर 10 प्रतिशत की दर से विलम्ब भुगतान/प्रभार (एलपीएससी) लगाया जाएगा।

अनुसूची-2  
जमाना/दंड

क्र. सं.	नियम/उप नियम संख्या	अपराध	निम्नांकित पर लागू	प्रत्येक चूक के लिए जुर्माना (रुपये) प्रतिवार
1.	एसडब्ल्यूएम नियमों का नियम 4(1)(क)	कचरे को पृथक् करने और संग्रह करने तथा पृथक्कृत कचरे को इन नियमों के अनुसार सौंपने में विफल रहना	आवासीय	200.00
			बल्क जनरेटर	500.00
			5000 मीटर से कम क्षेत्र वाले विवाह/पार्टी हाल, फेस्टिवल हाल, पार्टी लान, प्रदर्शनी और मेले स्थल	10,000.00
			5000 मीटर से कम क्षेत्र वाले क्लबों, सिनेमाघरों, पब्स, सामुदायिक हॉल, मल्टीप्लेक्सेज और अन्य ऐसे स्थान	5000.00
			5000 मीटर से कम क्षेत्र वाले अन्य गैर-आवासीय स्थान	500.00
		फिस,मीट विक्रेता द्वारा कूड़े को पृथक्करण तरीके से न रखना	1000.00	
	एसडब्ल्यूएम नियमों का नियम 4(2)	सड़क/गली में 1.कूड़ा फेंकना,थूकना 2.नहाना,पेशाब करना, जानवरो को चारा खिलाना, कपडे धोना, वाहन धोना,गोबर नाली में बहाना	उल्लंघनकर्ता	रु- 200.00 से 500.00 एवं कार्यवाही उत्तराखण्ड कूड़ा फेकना एवं थूकना प्रतिषेध अधिनियम 2016 के अन्तर्गत होगी। रु- 500.00
2.	एसडब्ल्यूएम नियमों का नियम 4(1)(ख) और (घ)	नियमानुसार सेनिटरी कचरे का निपटान करने में विफल रहना। नियम के अनुसार बागवानी और उद्यान कचरे के निपटान में विफल रहना।	आवासीय	200.00
			गैर-आवासीय/बल्क जनरेटर	500.00
3.	एसडब्ल्यूएम नियमों का नियम 4(1)(ग)	नियम के अनुसार निर्माण और विध्वंस कचरे के निपटान में विफल रहना।	आवासीय	1000.00
			गैर-आवासीय/बल्क जनरेटर	5000.00
4.	एसडब्ल्यूएम नियमों का नियम 4(2), 15(ट)	टोस कचरे को खुले में जलाना	उल्लंघनकर्ता *	5000.00
5.	एसडब्ल्यूएम नियमों का नियम 4(4)	निर्धारित प्रक्रिया का अनुपालन किए बिना किसी गैर लाइसेंसीकृत स्थल पर 100 व्यक्तियों से अधिक की भागीदारी के साथ कार्यक्रम या सभा का आयोजन करना	ऐसा कार्यक्रम या सभा आयोजित करने वाले व्यक्ति अथवा ऐसा व्यक्ति जिसकी ओर से ऐसा कार्यक्रम या सभा आयोजित की गई हो और इवेंट मैनेजर यदि कोई हो, जिसने कार्यक्रम या सभा आयोजित की हो	10,000.00

6.	एसडब्ल्यूएम नियमों का नियम 4(5)	नियम के अनुसार कचरे का निपटान करने में विफल रहने वाले गली विक्रेता/वेन्डर कूड़ादान न रखने एवं कूड़े को पृथक्करण न करने,अपशिष्ट भण्डारन डिपो या पात्र या वाहन में डालने में विफल रहने पर	उल्लंघनकर्ता	200.00
7.	एसडब्ल्यूएम नियमों का नियम 4(2), 15(छ)	सार्वजनिक स्थलो, सडको, गलियों आदि में गंदगी फैलाना/कुत्ते/अन्य जानवरों द्वारा मल त्याग/उत्सर्जित कचरे के निपटान में विफलता	अपराधी	500.00
निम्नांकित उल्लंघनों के लिए महीने में केवल एक बार जुर्माना लगाया जाएगा				
8.	एसडब्ल्यूएम नियमों का नियम 4(6)	नियमों के अनुसार कचरे का निपटान में विफलता	निवासी कल्याण एसोसिएशन,आर.डब्ल्यू.एम.	10,000.00
			बाजार एसोसिएशन,संघ	20,000.00
9.	एसडब्ल्यूएम नियमों का नियम 4(7)	नियमों के अनुसार कचरे का निपटान में विफलता	द्वारबंद समुदाय	10,000.00
			संस्थान	20,000.00
10.	एसडब्ल्यूएम नियमों का नियम 4(8)	नियमों के अनुसार कचरे का निपटान में विफलता	होटल	50,000.00
			रेस्टोरेंट	20,000.00
11.	एसडब्ल्यूएम नियमों का नियम 17(2)	उत्पादन के कारण सृजित पैकेजिंग कचरे को वापस लेने की प्रणाली कायम किये बिना डिस्पोजल उत्पादों की बिक्री अथवा विपणन	विनिर्माता और/या ब्रॉड ऑनर/स्वामी	1,00,000.00
12.	एसडब्ल्यूएम नियमों का नियम 17(3)	नियमों के अनुसार उपाय करने में विफलता	विनिर्माता और ब्रॉड स्वामी और विपणन कम्पनियां	50,000.00
13.	एसडब्ल्यूएम नियमों का नियम 15(ड)	नियमों के उपाय करने, भवन योजना में अपशिष्ट संग्रहण केन्द्र स्थापित करने में विफलता	उल्लंघनकर्ता, युप हाउसिंग सोसाईटी या मॉर्केट काम्पलेक्स आदि	50,000.00
14.	एसडब्ल्यूएम नियमों का नियम 20(ग)	गलियों, पहाडियों, सार्वजनिक स्थलो में अपशिष्ट यथा कागज, पानी की बोतल, शराब की बोतल, सोप्ट ड्रिंक, कैन, टैट्टा पैक अन्य कोई प्लास्टिक या कागज अपशिष्ट को फेंकने पर	उल्लंघनकर्ता/पर्यटक /वाहन/चालक	1000.00
15.	एसडब्ल्यूएम नियमों का नियम 20(घ)	नगर पालिका परिषद की उप विधि को होटल/अतिथिग्रह में बोर्ड लगाकर व्यवस्था करने में विफलता	उल्लंघनकर्ता/होटल / अतिथिग्रह स्वामी	1000.00
16.		सार्वजनिक सभाओं (जलूस प्रदर्शिनियों, सर्कस,मैले,राजनैतिक रैलिया,वाणिजिक,धार्मिक, सांस्कृतिक कार्यक्रमों, विरोध प्रदर्शन आदि सहित से सार्वजनिक स्थलो पर आयोजित	आयोजनकर्ता	5000.00

Source: (Nagar Palika Parishad, Mussoorie, 2024)

Figure 22 Details of Dry waste sorting centre



Sorting center

000

Anda khet

Tazzuiz Ji, Trainy

LDP

SDP

PP

BLACK PP

WHITE PP

NATURAL PP

PET

High density polyethylene

HM

Flexible plastic: LDP, PP, HM,

Recyclers: Haryana, Delhi, Dehradun,

one month: glass 4/- per kg +

transportation 6000/-

Plastic Delhi

Bailing machine: Delhi

40 - 50 tonnes of recycling material

is generated

2:18 pm

Source: (Nagar Palika Parishad, Mussoorie, 2024)

Figure 23: Detail of water storage tanks and every day water supply in the Town

उत्तराखण्ड जल संस्थान, मसूरी।  
जलाशयों का विवरण

क्र०सं०	शाखा का नाम	पेयजल योजना का नाम	नगरीय ग्रामीण	जलाशय का नाम लोकेशन	सी०डब्ल्यू०आर ओ०एच०टी०	जलाशय की क्षमता (कि०ली०में)	प्रतिदिन Supply किये जाने वाले जल की मात्रा (कि०ली० में)
1	2	3	4	5	6	7	10
1	मसूरी	मसूरी पेयजल योजना	नगरीय	विन्सेन्ट हिल-1	सी०डब्ल्यू०आर	227	454
2	तदैव	तदैव	तदैव	विन्सेन्ट हिल-2	तदैव	227	454
3	तदैव	तदैव	तदैव	विन्सेन्ट हिल-3	तदैव	908	1400
4	तदैव	तदैव	तदैव	लाईब्रेरी सवाय	तदैव	380	760
5	तदैव	तदैव	तदैव	माउण्टरोज जलाशय न०-1 एवं 2	तदैव	500	1750
6	तदैव	तदैव	तदैव	गनहिल न० 1	तदैव	163.44	655
7	तदैव	तदैव	तदैव	गनहिल न० 2	तदैव	926.16	2600
8	तदैव	तदैव	तदैव	लाण्डौर सर्वे जलाशय न० -1 से 4	तदैव	45.0x4=180	360
9	तदैव	तदैव	तदैव	लाण्डौर कॅन्ट न० 8	तदैव	90	150
10	तदैव	तदैव	तदैव	डिपो आर०सी०सी०	तदैव	45.0x6=270	270
11	तदैव	तदैव	तदैव	वाईनबर्म ऐलान	तदैव	54	108
12	तदैव	तदैव	तदैव	दि ओवस नाभा	तदैव	400	800
13	तदैव	तदैव	तदैव	बालागंज स्टील टैंक	तदैव	50	100
14	तदैव	तदैव	तदैव	झडीपानी सुंगरधार	तदैव	25	50
15	तदैव	तदैव	तदैव	क्लाउड एण्ड	तदैव	45	90
कुल योग						4445.60	10001
मसूरी नगरीय पेयजल योजना के अन्तर्गत ब्रेलसिंग जलाशयों की स्थिति							
1	तदैव	तदैव	तदैव	राधा भवन-1	तदैव	4000	2000

Source: (Uttarakhand Jal Sansthan, Mussoorie, 2024)

Figure 24 List and Geographical Location of Reservoirs and water pumping Stations

Point	Name of point	Longitude	Latitude	Point	Name of point	Longitude	Latitude
A	Kandighat pump	30°28'04"	78°01'56"	L <sub>2</sub>		30°27'47"	78°04'18"
A <sub>1</sub>		30°28'06"	78°02'02"	L <sub>3</sub>		30°27'42"	78°04'20"
A <sub>2</sub>		30°28'09"	78°02'14"	L <sub>4</sub>		30°27'39"	78°04'23"
A <sub>3</sub>		30°28'11"	78°02'26"	L <sub>5</sub>		30°27'37"	78°04'25"
A <sub>4</sub>		30°28'22"	78°02'33"	L	Bhilaru Pump	30°28'02"	78°04'08"
B	Murrey Pump	30°28'30"	78°02'38"	From Gunhill Reservoir to Landour Survey Tank			
B <sub>1</sub>		30°27'42"	78°03'02"	K <sub>1</sub>		30°27'24"	78°04'38"
B <sub>2</sub>		30°27'36"	78°03'10"	K <sub>2</sub>		30°27'18"	78°04'41"
B <sub>3</sub>		30°27'32"	78°03'10"	K <sub>3</sub>		30°27'17"	78°05'03"
C	Vincent hill reservoir	30°27'30"	78°03'10"	K <sub>4</sub>		30°27'14"	78°05'10"
C <sub>1</sub>		30°27'34"	78°02'58"	K <sub>5</sub>		30°27'22"	78°05'13"
C <sub>2</sub>		30°27'35"	78°02'49"	K <sub>6</sub>		30°27'24"	78°05'13"
C <sub>3</sub>		30°27'36"	78°02'47"	K <sub>7</sub>		30°27'27"	78°05'17"
C <sub>4</sub>		30°27'42"	78°02'46"	M	Landour Survey Tank	30°27'36"	78°05'20"
C <sub>5</sub>		30°27'47"	78°02'46"	M <sub>1</sub>		30°27'26"	78°05'22"
C <sub>6</sub>		30°27'47"	78°02'32"	M <sub>2</sub>		30°27'26"	78°05'24"
C <sub>7</sub>		30°27'36"	78°01'58"	M <sub>3</sub>		30°27'27"	78°05'26"
C <sub>8</sub>		30°27'36"	78°01'56"	M <sub>4</sub>		30°27'30"	78°05'29"
D	Cloud End Reservoir	30°27'59"	78°00'36"	N	Cantt No. 8 Tank	30°27'31"	78°05'32"
From Vincent hill to Radha Bhawan				N <sub>1</sub>		30°27'37"	78°05'37"
E <sub>1</sub>		30°27'29"	78°03'10"	N <sub>2</sub>		30°27'33"	78°05'32"
E <sub>2</sub>		30°27'29"	78°03'14"	N <sub>3</sub>		30°27'31"	78°05'32"
E <sub>3</sub>		30°27'27"	78°03'17"	O	Depot Steel Tank	30°27'48"	78°05'45"
E	Radha Bhawan Reservoir	30°27'23"	78°03'17"	O <sub>1</sub>		30°27'49"	78°05'47"
F	Mechanon Pump	30°27'22"	78°03'50"	O <sub>2</sub>		30°27'47"	78°05'52"
F <sub>1</sub>		30°27'23"	78°03'48"	O <sub>3</sub>		30°27'53"	78°06'04"
F <sub>2</sub>		30°27'25"	78°03'49"	P	Kolty Stage 3rd	30°27'54"	78°06'08"
F <sub>3</sub>		30°27'27"	78°03'49"	P <sub>1</sub>		30°27'56"	78°06'09"
F <sub>4</sub>		30°27'30"	78°03'50"	P <sub>2</sub>		30°27'56"	78°06'12"
F <sub>5</sub>		30°27'33"	78°03'49"	P <sub>3</sub>		30°27'56"	78°06'19"
G	Savoy Reservoir	30°27'34"	78°03'49"	Q	Kolty Stage 2nd	30°27'56"	78°06'23"
H	Jinsy Stage 1st	30°28'36"	78°04'16"	Q <sub>1</sub>		30°27'57"	78°06'26"
H <sub>1</sub>		30°28'35"	78°04'14"	Q <sub>2</sub>		30°28'04"	78°06'29"
H <sub>2</sub>		30°28'28"	78°04'10"	R	Kolty Stage 1st	30°28'05"	78°06'33"
H <sub>3</sub>		30°28'27"	78°04'07"	S	Balancing Reservoir	30°27'54"	78°06'08"
I	Jinsy Stage 2nd	30°28'04"	78°04'04"	T	Dhobhighat Pump	30°26'42"	78°04'42"
I <sub>1</sub>		30°27'57"	78°04'07"	T <sub>1</sub>		30°26'40"	78°04'46"
I <sub>2</sub>		30°27'49"	78°04'09"	T <sub>2</sub>		30°26'43"	78°04'47"
I <sub>3</sub>		30°27'43"	78°04'06"	T <sub>3</sub>		30°26'50"	78°04'48"
J	Mount Rose Reservoir	30°27'41"	78°04'09"	T <sub>4</sub>		30°26'57"	78°04'58"
J <sub>1</sub>		30°27'43"	78°04'10"	T <sub>5</sub>		30°26'53"	78°05'08"
J <sub>2</sub>		30°27'39"	78°04'15"	T <sub>6</sub>		30°26'54"	78°05'13"
J <sub>3</sub>		30°27'37"	78°04'19"	T <sub>7</sub>		30°26'57"	78°05'16"
J <sub>4</sub>		30°27'36"	78°04'21"	U	The Oaks Nabha Tank	30°27'04"	78°05'14"
J <sub>5</sub>		30°27'35"	78°04'24"	V	Wynberg Allen Tank	30°26'56"	78°05'16"
K	Gunhill Reservoir	30°27'34"	78°04'27"	W	Barlowganj Steel Tank	30°26'23"	78°05'08"
From Bhilaru to Gunhill Reservoir				X	Nirmala School Tank	30°25'53"	78°05'02"
L <sub>1</sub>		30°27'51"	78°04'16"	Y	Kamal Cottage Tank	30°25'39"	78°04'58"

Figure 25: Detail of pumping stations

कार्यालय अधिशासी अभियन्ता उत्तराखण्ड जल संस्थान, मसूरी

फॉर्म 01

पम्पिंग पेयजल योजनाओं के अन्तर्गत अधिष्ठापित सेन्ट्रीफ्यूगल पम्पसेट की सूचना

शाखा का नाम-- मसूरी

जनपद का नाम-- देहरादून

क्र० सं०	विकास खण्ड का नाम	पम्पिंग योजना का नाम	पम्पिंग स्टेशन का नाम	अधिष्ठापित पम्पों की संख्या	कंप का वर्ष	मेक	मॉडल	पम्प रेटिंग				स्पेयर पम्पों की सं०	स्थिति	ट्रांसफार्मर		टिप्पणी
								एचएमपी	प्रतिदिन पम्प चलाने के घण्टे	हैड (मी०)	डिस्चार्ज			क्षमता	संख्या	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1		मरे पम्पिंग पेयजल योजना	मरे पम्प स्टेशन	सेट नं०-1	2002	एम० एच० पी०	—	220	24	555	875	3	चायू	250 केलीएमपी	3	कुल 06 पम्प सेट अधिष्ठापित हैं जिनमें से एक समय में तीन पम्प संचालित किये जाते हैं।
				सेट नं०-2	"	एम० एच० पी०	—	220	24	555	875					
				सेट नं०-3	"	एम० एच० पी०	—	220	24	555	875					
				सेट नं०-4	"	एम० एच० पी०	—	220	—	555	875					
				सेट नं०-5	"	के०एस०बी०	—	236	—	600	1000					
				सेट नं०-6	"	के०एस०बी०	—	236	—	600	1000					
			कण्डीघाट पम्प स्टेशन	सेट नं०-1	2010	एम० एच० पी०	—	40	24	120	650	3	चायू	100 केलीएमपी	1	कुल 05 पम्प सेट अधिष्ठापित हैं जिनमें से एक समय में दो पम्प संचालित किये जाते हैं।
				सेट नं०-2	"	एम० एच० पी०	—	40	—	120	650					
				सेट नं०-3	2002	एम० एच० पी०	—	30	24	120	650					
				सेट नं०-4	"	एम० एच० पी०	—	30	—	120	1000					
2		मैडोन्न पम्पिंग पेयजल योजना	मैडोन्न पम्प स्टेशन	सेट नं०-1	2016	एम० एच० पी०	RN 50	40	8	200	400	2	चायू	150 केलीएमपी	1	कुल 03 पम्प सेट अधिष्ठापित हैं। एक समय में एक पम्प संचालित किया जाता है।
				सेट नं०-2	"	एम० एच० पी०	—	40	—	200	400					
				सेट नं०-3	2002	के०एस० बी०	—	30	—	200	200					
3		मिलारू पेयजल योजना	मिलारू पम्प स्टेशन	सेट नं०-1	2016	एम० एच० पी०	RN65x10 CARS	167	8	550	650	1	चायू	250 केलीएमपी	1+1	एक समय में एक पम्प संचालित किया जाता है।
				सेट नं०-2	"	एम० एच० पी०		167	—	550	650					
रायपुर			जिन्सी स्टेशन-1	सेट नं०-1	2017	एम० एच० पी०	RKBK	180	—	370	1200	2	चायू	400 केलीएमपी	2+1	कुल 04 एनजी एक्सिडेंट पम्प सेट अधिष्ठापित हैं जिनमें से एक समय में दो पम्प संचालित किये जाते हैं।
				सेट नं०-2	2017	एम० एच० पी०		180	24	370	1200					
				सेट नं०-3	2017	एम० एच० पी०		180	24	370	1200					
				सेट नं०-4	2017	किलोस्कर		167	—	—	—					
4		जिन्सी पम्पिंग पेयजल योजना	जिन्सी स्टेशन-2	सेट नं०-1	2015	किलोस्कर	100/35	167	24	370	1200	2	चायू	400 केलीएमपी	2	कुल 04 पम्प सेट अधिष्ठापित हैं जिनमें से एक समय में दो पम्प संचालित किये जाते हैं।
				सेट नं०-2	2015	किलोस्कर		167	24	370	1200					
				सेट नं०-3	2017	एम० एच० पी०		180	—	370	1200					
				सेट नं०-4	2017	किलोस्कर		167	—	—	—					
			माजफरीज पम्प स्टेशन	सेट नं०-1	2010	एम० एच० पी०	RKBK 100/35	40	16	141	650	1	चायू	250 केलीएमपी	1	कुल 03 पम्प सेट अधिष्ठापित हैं। जिनमें से एक समय में दो पम्प संचालित किया जाता है।
				सेट नं०-2	"	एम० एच० पी०		40	16	141	650					
5		कोहली पम्पिंग पेयजल योजना	कोहली स्टेशन 1	सेट नं०-1	2002	के०एस०बी०	RN 50	100	24	330	650	2	चायू	100 केलीएमपी	1+1	कुल 03 पम्प सेट अधिष्ठापित हैं। जिनमें से एक समय में एक पम्प संचालित किया जाता है।
				सेट नं०-2	"	के०एस०बी०		100	—	330	650					
				सेट नं०-3	2020	एम० एच० पी०		100	—	330	650					
			कोहली स्टेशन 2	सेट नं०-1	2002	के०एस०बी०	RN 50	100	24	330	650	2	चायू	100 केलीएमपी	1+1	कुल 03 पम्प सेट अधिष्ठापित हैं। जिनमें से एक समय में एक पम्प संचालित किया जाता है।
				सेट नं०-2	"	एम० एच० पी०		100	—	330	650					
				सेट नं०-3	2020	एम० एच० पी०		100	—	330	650					
			कोहली स्टेशन 3	सेट नं०-1	2002	के०एस०बी०	RN 50	100	24	330	650	2	चायू	100 केलीएमपी	1	कुल 03 पम्प सेट अधिष्ठापित हैं। जिनमें से एक समय में एक पम्प संचालित किया जाता है।
				सेट नं०-2	"	के०एस०बी०		100	—	330	650					
				सेट नं०-3	"	एम० एच० पी०		100	—	330	650					
				सेट नं०-4	2004	एम० एच० पी०		150	—	600	675					
6		धोबीघाट पम्पिंग पेयजल योजना	धोबीघाट पम्प स्टेशन	सेट नं०-1	2004	एम० एच० पी०	3/4 HsPLX9	150	16	500	675	2	चायू	250 केलीएमपी	1+1	कुल 03 पम्प सेट अधिष्ठापित हैं। जिनमें से एक समय में एक पम्प सेट ही चलाया जाता है।
				सेट नं०-2	2015	एम० एच० पी०	—	150	—	600	675					
				सेट नं०-3	2015	एम० एच० पी०	RN65x10 CARS	150	—	600	675					
7	रायपुर	पुरासखण्डा घानीण हाई हैड पम्पिंग पेयजल योजना	एम०पी० एस०	सेट नं०-1	2017	के०एस०बी०	WKF140/16	75	16	520	200	1	चायू	100 केलीएमपी	1	दो पम्प सेट अधिष्ठापित हैं, एक समय में मात्र एक पम्प का संचालन किया जाता है। दो नव पम्प सेट अधिष्ठापित कर दिये गये हैं।
				सेट नं०-2	2017	के०एस०बी०		75	—	520	200					
			आर्डीपी० एस०	सेट नं०-1	2005-06	बिक्रम बिघर	ENB12S I	40	4	320	200	1	चायू	100 केलीएमपी	1	दो पम्प सेट अधिष्ठापित हैं, योजना चायू है। एक समय में मात्र एक पम्प का संचालन किया जाता है।
				सेट नं०-2		बिक्रम बिघर		40	—	320	200					

अधिशासी अभियन्ता  
मसूरी

Source: (Uttarakhand Jal Sansthan, Mussoorie, 2024)

Figure 26: Details of Mussoorie Water Supply scheme

<b>GENERAL INFORMATION OF MUSSOORIE WATER SUPPLY SCHEME.</b>			
1	योजना निर्माण का वर्ष	1908	
2	क्षेत्रफल वर्ग कि.मी.	64.25	
		ऑफ सीजन	पर्यटक सीजन
3	जनसंख्या 2011	33657	33657
5	वर्तमान जनसंख्या 2022	35650	36247
6	प्रलोटिंग जनसंख्या	14428	57273
7	कुल जनसंख्या	50078	93520
8	उत्पादित पेयजल		
i	अ) पम्पिंग ( एम.एल.डी)	7.08	7.08
ii	ब) गुरुत्व ( एम.एल.डी)	0.61	0.61
	कुल	7.69	7.69
9	पेयजल की आवश्यकता (एम.एल.डी.) में	8.11	15.78
10	पेयजल की कमी	0.42	8.09
11	जलाशयों की संख्या	21	
12	जलाशयों की कुल भण्डारण क्षमता (किलो ली०)	29080.60	
13	दैनिक जल वितरण जलाशयों की संख्या	15	
14	दैनिक जल वितरण जलाशयों की कुल जल भण्डारण क्षमता (किलो लीटर.)	4445.60	
15	अतिरिक्त जल भण्डारण जलाशयों की सं०	6	
16	अतिरिक्त जल भण्डारण क्षमता ( किलो लीटर.)	24635	
17	कुल श्रोत (स्प्रिंग एवं नाले)	20	
i	गुरुत्वीय श्रोत	6	
ii	पम्पिंग स्टेशनों के श्रोत	14	
18	पम्पिंग स्टेशन	6	
19	निजी जल संयोजन ( घरेलू एवं अघरेलू )	5700	
20	जल स्तम्भ ( P.T.S.P & T.T.S.P)	156	
21	जल नलिकाओं की लम्बाई (कि.मी.)	96	

Source: (Uttarakhand Jal Sansthan, Mussoorie, 2024)

Figure 27 Details of Schools/ Institutes in Mussoorie

Sr. No.	Schools/Institutes Name	Population
01.	Mussoorie International school	562
02.	Guru Nanak Fifth century School, Mussoorie	556
03.	Mussoorie Modern school	250
04.	St. George's college	812
05.	Mussoorie Public School	300
06.	Wynbvery-Allen School, Mussoorie	700
07.	Oak Grove School	640
08.	Manava Bharti India international School, Mussoorie	300
09.	Tibetan Homes School Mussoorie	1,500
10.	Covent of Jesus and Marry school, Mussoorie	600
11.	St. Clare's Convent School, Landour	250
12.	Woodstock school, Mussoorie	500
13.	The mussoorie Girls and Boys School	300
14.	S. T. S Mussoorie	382
15.	Hill Bird School, Mussoorie	350
16.	CJM Hampton Court School, Mussoorie	600
17.	Kendriya Vidyalaya, Mussoorie	404
18.	Mussoorie Girls and Boys High School	250
19.	Landour Language school, Mussoorie	240
20.	GNFC Schools (Girls), Mussoorie	528
	<b>Total Population</b>	<b>10,024</b>

Source: (Google Images, 2024)

Figure 28: Road Details of Nagar Palika Parishad, Mussoorie

दिनांक 18-08-2017 के द्वारा किये गये सर्वे के अनुसार मसूरी क्षेत्रान्तर्गत समस्त वार्डों के आन्तरिक गलिया/कच्चा/मार्गों की लम्बाई (कि०मी०) की सूची निम्नवत है:-

क्रमसं०	वार्ड नं०	मार्ग का नाम	लम्बाई
1	1	राजपुर रोड पालिका टोल तक	11.00 कि०मी०
2	1	कोल्हूखेत आन्तरिक मार्ग	1.00 कि०मी०
3	1	कोल्हूखेत रोड होकर झडीपानी तक	3.00 कि०मी०
4	1	झडीपानी से मकडेती गाँव तक	6.00 कि०मी०
5	1	आन्तरिक मार्ग	2.00 कि०मी०
6	1	राजपुर रोड होकर पैदल मार्ग	6.00 कि०मी०
कुल मार्ग की लम्बाई:-			31.00 कि०मी०

क्रमसं०	वार्ड नं०	मार्ग का नाम	लम्बाई
1	2	अपर भट्टा मार्ग होकर मन्दिर तक	2.00 कि०मी०
2	2	लोअर भट्टा मार्ग होकर मन्दिर तक	3.00 कि०मी०
3	2	जे०पी० होटल से गुरुद्वारा मौहल्लेसे लेकर भट्टा मोटर मार्ग तक	2.50 कि०मी०
4	2	बालोंगंज बाजार से बलबन्त सिंह रावत के घर तक	2.50 कि०मी०
5	2	महिमानन्द के घर से मौसी फॉल तक	2.00 कि०मी०
6	2	विन्जी के घर से मौसी फॉल तक	2.00 कि०मी०
7	2	बालोंगंज म्यूलस रोड से पानी की टंकी तक	1.750 कि०मी०
8	2	बाईपास से बड़े मोड तक	1.30 कि०मी०
9	2	बड़े मोड से ऐलन स्कूल के ग्रीन फील्ड तक	1.0 कि०मी०
10	2	सुरेश लाल गोयल से पीछे वाला मार्ग	2.50 कि०मी०
11	2	भण्डारी निवास से जाने वाला मार्ग	1.50 कि०मी०
12	2	डगलस डेल से जयगोपाल	1.00 कि०मी०
13	2	मसूरी फारेस्ट से गुरुद्वारा तक	1.00 कि०मी०
कुल मार्ग की लम्बाई:-			26.050 कि०मी०

क्रमसं०	वार्ड नं०	मार्ग का नाम	लम्बाई
1	3	सिविल अस्पताल से मरचरी रोड तक	1.50 कि०मी०
2	3	लण्डौर साउथ रोड	1.00 कि०मी०
3	3	लक्ष्मणपुरी रोड	0.500 कि०मी०
4	3	खच्चर खाना रोड	0.500 कि०मी०
5	3	मुर्दाघर को जाने वाला मार्ग	1.00 कि०मी०
6	3	बाटाघाट स काण्डा जाने वाला मार्ग	2.00 कि०मी०
7	3	टिहरी रोड से किमाई जाने वाला मार्ग।	2.00 कि०मी०
8	3	झालकी मार्ग	4.00 कि०मी०
9	3	सुवाखोली मार्ग	1.00 कि०मी०
10	3	जबरखेत से माउन्ट हरमन मार्ग	1.00 कि०मी०

11	3	थपलियाल के घर से फरक्लब तक	0.500 कि०मी०
12	3	उड स्टाक स्कूल से हवाघर से बाईपास तक	1.00 कि०मी०
कुल मार्ग की लम्बाई:-			16.00 कि०मी०

क्रम०सं०	वार्ड नं०	मार्ग का नाम	लम्बाई
1	4	लाल टिब्बा से कटियार हाउस तक	2.00 कि०मी०
2	4	लण्ढौर से खनाली तक	8.00 कि०मी०
3	4	लण्ढौर बाजार से पिक्च पैलेस तक	1.00 कि०मी०
4	4	लण्ढौ नार्थ रोड तक	0.500 कि०मी०
कुल मार्ग की लम्बाई:-			9.500 कि०मी०

क्रम०सं०	वार्ड नं०	मार्ग का नाम	लम्बाई
1	5	धन्टाघर से ऐलन तक	2.50 कि०मी०
2	5	फयाज की दुकान से	1.00 कि०मी०
3	5	उपर की रोड	1.00 कि०मी०
4	5	मसूरी गर्ल्स रोड	1.00 कि०मी०
5	5	होटल एबर ग्रीन से ऐलन स्कूल तक	1.00 कि०मी०
6	5	पिक्चर पैलेस से बराह कैची	2.00 कि०मी०
7	5	बराह कैची से हैम्पटन कोर्ट की ओर	1.00 कि०मी०
8	5	होटल ब्रैन्टउड से सम्राट वाली तिलक रोड तक	1.00 कि०मी०
कुल मार्ग की लम्बाई:-			9.500 कि०मी०

क्रम०सं०	वार्ड नं०	मार्ग का नाम	लम्बाई
1	6	कैमल बैंक रोड	3.00 कि०मी०
2	6	म्यूनिसिपल सराय रोड	2.00 कि०मी०
3	6	बेकरी हिल रोड	1.00 कि०मी०
4	6	जाफर हॉल रोड तक	1.00 कि०मी०
5	6	तारगली रोड	0.700 कि०मी०
कुल मार्ग की लम्बाई:-			7.700 कि०मी०

क्रम०सं०	वार्ड नं०	मार्ग का नाम	लम्बाई
1	7	हैम्पटन कोर्ट रोड	1.50 कि०मी०
2	7	हुसैनगंज रोड	2.50 कि०मी०
3	7	गैस गोदाम रोड	0.500 कि०मी०
4	7	हैकमन रोड	1.00 कि०मी०
5	7	सूर्याकिरन होटल से स्टेला काटेज तक	0.500 कि०मी०
6	7	हॉलिडे इन से कसमण्डा तक	1.50 कि०मी०
7	7	माल रोड से गनहिल तक	2.00 कि०मी०
8	7	क्लब महेन्द्र से दिलखुशा रोड तक	1.00 कि०मी०
9	7	भाटिया माई शॉप वालो के घर तक	1.0 कि०मी०

10	7	क्लब महेन्द्र से सेन्ध मेरीतक	12.50 कि०मी०
11	7	रोजलिग से नारापरा निवास तक	1.00 कि०मी०
12	7	माउन्ट रोज से भिलाडू	2.50 कि०मी०
13	7	बहुगुणा पार्क से भण्डारी निवास	1.00 कि०मी०
कुल मार्ग की लम्बाई:-			18.75 कि०मी०

क्रम०सं०	वार्ड नं०	मार्ग का नाम	लम्बाई
1	8	वित्ती रोड	1.01 कि०मी०
2	8	आई०टी०वी०सी० रोड	1.00 कि०मी०
3	8	दुग्गल विला रोड	1.00 कि०मी०
4	8	गाडीखाना रोड	1.00 कि०मी०
5	8	गुरुद्वारा से मैकनिक पम्प तक	1.50 कि०मी०
6	8	मैकनिक पम्प से भण्डारी निवास तक	3.00 कि०मी०
7	8	सिफिन कोर्ट	0.500 कि०मी०
8	8	वेवरली स इन्द्रा भवन तक	1.00 कि०मी०
9	8	कॉनवेन्ट रोड	1.00 कि०मी०
10	8	सुमित्रा भवन तक	1.00 कि०मी०
11	8	आन्तरिक मार्ग एंव मोहल्लो में	1.00 कि०मी०
कुल मार्ग की लम्बाई:-			13.00 कि०मी०

क्रम०सं०	वार्ड नं०	मार्ग का नाम	लम्बाई
1	9	हरमान सिंह मार्ग	1.00 कि०मी०
2	9	हरियाणा हाउस	1.00 कि०मी०
3	9	कटेशवर रोड	0.500 कि०मी०
4	9	इन्दिरा कालोनी (वाइल्ड फलावर)	2.500 कि०मी०
5	9	इन्दिरा कालोनी से पोलोग्राउण्ड	3.00 कि०मी०
6	9	चकरता से जिन्सी तक	10.00 कि०मी०
7	9	आन्तरिक मार्ग।	1.00 कि०मी०
कुल मार्ग की लम्बाई:-			19.500 कि०मी०

क्रम०सं०	वार्ड नं०	मार्ग का नाम	लम्बाई
1	10	अकादमी गेट से देवदार रोड स विरला गेट	2.500 कि०मी०
2	10	अकादमी गेट से पोलोग्राउण्ड	3.00 कि०मी०
3	10	सी०एस०टी० स्कूल से मजार तक	1.00 कि०मी०
4	10	बुद्धा मन्दिर से खनाल्टी तक	3.00 कि०मी०
5	10	तिब्बती होम्स से मरे पम्प	2.50 कि०मी०
6	10	वाइल्ड फलावर से सन्तुरा देवी तक	1.00 कि०मी०
7	10	सन्तुरा देवी से वीरा गाँव	1.50 कि०मी०
8	10	आन्तरिक मार्ग (कच्चा)	2.00 कि०मी०

क्रम०सं०	वार्ड नं०	मार्ग का नाम	लम्बाई
1	11	वेवरली से कम्पनी बाग	1.00 कि०मी०
2	11	ज्वाला देवी मन्दिर से कम्पनी बाग	1.00 कि०मी०
3	11	सिग्रो रोड	2.00 कि०मी०
4	11	आई०टी०वी०पी० सेवा सांगर	3.00 कि०मी०
5	11	मानव भारती से राधा भवन	2.00 कि०मी०
6	11	सरकुलर रोड से गुरुनानक स्कून तक	3.00 कि०मी०
7	11	चण्डालगढी से ओक ओपनिग तक	1.00 कि०मी०
8	11	वैलिगरन रोड	0.500 कि०मी०
9	11	धुमनंगज पॉव से ओक स्टेट	3.500 कि०मी०
10	11	हाथी पॉव से विसिंग वैल तक	2.00 कि०मी०
11	11	अपर पार्क रोड	1.500 कि०मी०
12	11	क्लाउडेण्ट से भद्रराज तक एंव छसखेत बुल्हाट मार्ग	3.0 कि०मी०
13	11	माल रोड तथा अन्य मार्ग	12.00 कि०मी०
कुल मार्ग की लम्बाई:-			47.500 कि०मी०

वार्ड नं० 1 से 11 तक कुल मार्ग की लम्बाई:- 215 कि०मी०  
कच्चे मार्गों की कुल लम्बाई:- 23.50 कि०मी०

## प्रारूप-5

## वित्तीय वर्ष 2024-25 में मार्ग पर संचालित वाहनों का विवरण

कार्यालय का नाम-देहरादून  
माह- जून 2024

मासिक	भार वाहन						रिक्वरी वैन	पेट्रोल टैकर	वाटर / मिल्क टैन्कर	सन्निर्माण उपकरण यान (Constructio n Equipment)	स्टेज कैरिज	कान्ट्रेक्ट कैरिज	स्कूल बस	सरकारी/अ र्द्ध सरकारी संस्थान की बसें	परिवहन निगम की बसें	एम्बुलेंस
	(GVW>3000kg)			(GVW<3000kg)												
	मल्टीएक्सल वाहन	HGV	MGV	LGV	तिपहिया	चार पहिया										
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
मासिक		2845	533	699	1582	5260	14	80	0	710		2089	460	37	980	820

मोटर कैब	मैक्सो कैब	तिपहिया यात्री वाहन		दो पहिया वाहन		कार गैर परिवहन (≤7 seat)	ओमनी बस (8 to 10 seat) परमिट से घट प्राप्त	ट्रैक्टर		ट्राली		ई-वीकल					अन्य	योग
		ऑटो रिक्शा	विक्रम	निजी	परिवहन			परिवहन	कृषि	परिवहन	कृषि	दो पहिया	ई- रिक्शा	ई- कार्ट	कार	बस		
17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
10584	5096	2187	0	665000	2326	268224	416	828	2764	225	23	5696	2652	138	647	33	35	982983

नोट- उपरोक्त तालिका में पंजीकृत वाहनों का विवरण वाहन '4' पोर्टल के अनुसार भरा गया है तथा कार्यालय डीबीए के अनुसार कालम न0 11 एवं 12 का डाटा वाहन 4 पोर्टल में उपलब्ध नहीं हो रहा है जिस कारण ' बस ' का विवरण '2089 ' दर्शाया गया है।

Source: (RTO, Dehradun, 2024)

Figure 29: Tariff for water Supply in Mussoorie

## 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 :

क्र0 सं0	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 साईज (एम.एम.)	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	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	लोहैड	हाईहैड	गुरुत्व	लोहैड	हाईहैड	गुरुत्व	लोहैड	हाईहैड
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 / म्यूनि० 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 / म्यूनि० 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	चतुर्भुज प्रमाण	दरें प्रतिवर्ग मीटर खाट एरिया पर	चतुर्भुज प्रमाण	दरें प्रतिवर्ग मीटर खाट एरिया पर	चतुर्भुज प्रमाण	दरें प्रतिवर्ग मीटर खाट एरिया पर	चतुर्भुज प्रमाण	दरें प्रतिवर्ग मीटर खाट एरिया पर	चतुर्भुज प्रमाण	दरें प्रतिवर्ग मीटर खाट एरिया पर	चतुर्भुज प्रमाण	दरें प्रतिवर्ग मीटर खाट एरिया पर	चतुर्भुज प्रमाण	दरें प्रतिवर्ग मीटर खाट एरिया पर	चतुर्भुज प्रमाण	दरें प्रतिवर्ग मीटर खाट एरिया पर	चतुर्भुज प्रमाण
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 (अधरेलु) (₹ प्रतिमाह) :

क्र० सं०	सीटर चार्ज (एच. एच.)	दरें	विशेष श्रेणी एवं औद्योगिक			अन्य व्यावसायिक प्रतिष्ठान			अन्य सरकारी, अर्द्धसरकारी एवं संस्थानगत प्रतिष्ठान			म्युनिसिपल बहुउद्देशीय			प्राचीन परिषद		
			गुरुत्व	लोहेड	हाई डैड	गुरुत्व	लोहेड	हाईडैड	गुरुत्व	लोहेड	हाई डैड	गुरुत्व	लोहेड	हाई डैड	गुरुत्व	लोहेड	हाई डैड
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
2	25	01-04-23 से प्रभावी दरें	2618	2990	3365	2618	2990	3365	1308	1495	1683	1308	1495	1683	1308	1495	1683
		दिनांक 01-04-13 को प्रभावी दरें	2243	2542	2691	2243	2542	2691	1121	1271	1346	1121	1271	1346	1121	1271	1346
3	50	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
4	80	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
5	100	01-04-23 से प्रभावी दरें	10093	11213	12335	10093	11213	12335	10093	11213	12335	10093	11213	12335	10093	11213	12335
		दिनांक 01-04-13 को प्रभावी दरें	4934	5980	7027	4934	5980	7027	4934	5980	7027	4934	5980	7027	4934	5980	7027
6	150	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
7	200	मूल दरों का 150 प्रतिशत	6429	8522	10764	6429	8522	10764	6429	8522	10764	6429	8522	10764	6429	8522	10764
		01-04-23 से प्रभावी दरें	9644	12783	16146	9644	12783	16146	9644	12783	16146	9644	12783	16146	9644	12783	16146
8	300	मूल दरों का 150 प्रतिशत	16073	21305	26910	16073	21305	26910	16073	21305	26910	16073	21305	26910	16073	21305	26910
		01-04-23 से प्रभावी दरें	9419	11213	13010	9419	11213	13010	9419	11213	13010	9419	11213	13010	9419	11213	13010
9	450	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 सतम 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 सतम शुल्क	10.00	10.20	20.20

Source: (Uttarakhand Jal Sansthan, Mussoorie, 2024)

## Annexure B

## Annexure B

### Questionnaire for Data Collection on Solid Waste Management of Mussoorie 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>1. What is the estimated daily/weekly/monthly volume of Solid Waste Generated in the Town?</p>	
<p>2. 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>3. 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 is the Garbage Dumping Areas in the Town?</p> <ul style="list-style-type: none"><li>a) Garbage Bins</li><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>a) Door to Door by Department</li><li>b) Door to Door by Private Organization</li><li>c) Individual</li><li>d) 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> <p>a) Yes</p> <p>b) No</p> <p>If NOT, then how is the Medical Waste or Hazardous Waste separated from the Solid Waste Collected? Please describe in Details.</p>
<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>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>
<p><b>MAPS AND PLANS REQUIRED:</b></p>
<p><b>City Development Plan</b></p>
<p><b>Municipal Boundary Map</b></p>
<p><b>Treatment facilities available &amp; proposed, their capacity &amp; location Map</b></p>
<p><b>Location and Network Maps of Drains and Nallahs in the Town</b></p>

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

List of Officials Met in Mussoorie Town in the Month of March for Data Collection				
S.NO.	NAME	DESIGNATION	DEPARTMENT	Contact Details (Mobile No., Email ID)
1	Mr. Rajbir Chauhan	Executive Officer	Nagar Palika Parishad (NPP), Mussoorie	+91-7088738736 <a href="mailto:nppmussoorie@gmail.com">nppmussoorie@gmail.com</a>
2	Mr. Arafat	Nodal Officer SWM		+91-8989616910
3	Mr. Rajat Bhandari	SWM Consultant		+91-7500352727 <a href="mailto:Rajat.june7@gmail.com">Rajat.june7@gmail.com</a>
4	Mr. Paras Khatri	Management Information System (MIS) Expert		+91-8650037763 <a href="mailto:Paraskhatri08@gmail.com">Paraskhatri08@gmail.com</a>
5	Dr. Abhaas	Health Officer		+91-9456374268
6	Mr. Birender Bisht	Sanitation Inspector		+91-9412142646 <a href="mailto:nppmussoorie@gmail.com">nppmussoorie@gmail.com</a>
7	Mr. Anirudh Singh Chaudhary	Tax Superintendent		+91-7017982081 <a href="mailto:anirudha99970@gmail.com">anirudha99970@gmail.com</a>
8	Binod Thapliyal	Head Clerk		+91-8126518004
9	Mr. Atul Gupta	Executive Engineer	Mussoorie Dehradun Development Authority (MDDA)	+91-941238609
10	Mr. Pramod Nehra	Assistant Engineer		+91-8006406525
11	Mr. Anuj Pandey	Junior Engineer		+91-9719109547
13	Mr. Amit Kumar	Executive Engineer	Uttarakhand Jal Sansthan (UJS), Mussoorie	+91-7500005774 <a href="mailto:amitatiitr@gmail.com">amitatiitr@gmail.com</a> <a href="mailto:ee_ujsmie@yahoo.com">ee_ujsmie@yahoo.com</a>

14	T. S. Rawat	Assistant Engineer		+91-9756202515
15	Ashish Sati	Junior Assistant		+91-9719342903
16	Mr. Sandeep Kashyap	Executive Engineer	Pey Jal Nigam, Mussoorie	+91-8477006101
17	Mr. M.S. Manral	Assistant Engineer		+91-8126499535
18	Mr. Deepak Sharma	Junior Engineer		+91-9576925284 <a href="mailto:jalnigam.mussoorie@yahoo.com">jalnigam.mussoorie@yahoo.com</a>
19	Mr. Naveen Singhal	SE, Engineering Chief Office, ENC Office	Irrigation Department	<a href="mailto:hod.plan@gmail.com">hod.plan@gmail.com</a>
20	Mr. Nautiyal	Executive Engineer		+91-9412997451
21	Mr. Sanjay Raj	Superintending Engineer (SE)	Irrigation Work Circle (IWC), Dehradun	+91-9412172401
22	Ajay Singh	Senior Superintendent of Police (SSP)	Police Dehradun	+91-9411112706
23	Arvind Kumar Chaudhary	SHO		+91-9411112817
24	Thana Mussoorie	Admin	Police Mussoorie	01352716227
25	Anuj Arya	Circle Officer (CO)	Traffic Police Department, Dehradun	+91-9411112751
26	Mr. Sailaish Tiwari	RTO (E)	RTO Division, Dehradun	+91-9412174991 <a href="mailto:rtodehradun@gmail.com">rtodehradun@gmail.com</a>
27	Mr. Sunil Sharma	RTO Administration		+91-9411112163
28	Mr. Arya		Tourism, Mussoorie	+91-7060038432
29	Subhash Thapliyal	Pradhan Sahayak	Tourism, Dehradun	+91-01352653217 <a href="mailto:rtotourismddn@gmail.com">rtotourismddn@gmail.com</a>

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30	Mr. Ashok	Operation Manager	<b>Keen</b>	<b>+91-9837170979</b>
31	Mr. Jitender Rawat	HR, Keen		<b>+91-9760723194</b>

**List of Stakeholders/Participants attended the Stakeholder Consultation Meeting held on 2<sup>nd</sup> September, 2024 in NPP, Mussoorie:**

<b>List of Stakeholders/Participants attended the Stakeholder Consultation Meeting held on 2nd September, 2024 in NPP, Mussoorie</b>				
<b>S.NO.</b>	<b>NAME</b>	<b>DESIGNATION</b>	<b>DEPARTMENT</b>	<b>Contact Details (Mobile No., Email ID)</b>
1	Mr. Arafat	Nodal Officer SWM		+91-8989616910
2	Mr. Rajat Bhandari	SWM Consultant		+91-7500352727 Rajat.june7@gmail.com
3	Dr. Abhaas	Health Officer		+91-9456374268
4	Mr. Birender Bisht	Sanitation Inspector		+91-9412142646 <a href="mailto:nppmussoorie@gmail.com">nppmussoorie@gmail.com</a>
5	Mr. Anirudh Singh Chaudhary	Tax Superintendent		+91-7017982081 <a href="mailto:anirudha99970@gmail.com">anirudha99970@gmail.com</a>
6	Mr. Amit Kumar	Executive Engineer	<b>Uttarakhand Jal Sansthan (UJS), Mussoorie</b>	+91-7500005774 <a href="mailto:amitatiitr@gmail.com">amitatiitr@gmail.com</a> <a href="mailto:ee_ujsmie@yahoo.com">ee_ujsmie@yahoo.com</a>
8	T. S. Rawat	Assistant Engineer		+91-9756202515
8	Mr. Sandeep Kashyap	Executive Engineer	<b>Pey Jal Nigam, Mussoorie</b>	+91-8477006101
9	Mr. M.S. Manral	Assistant Engineer		+91-8126499535
10	Mr. Naveen Singhal	SE, Engineering Chief Office, ENC Office	<b>Irrigation Department</b>	<a href="mailto:hod.plan@gmail.com">hod.plan@gmail.com</a>
11	Mr. Nautiyal	Executive Engineer		+91-9412997451
12	Mr. Sanjay Raj	Superintending Engineer (SE)	<b>Irrigation Work Circle (IWC), Dehradun</b>	+91-9412172401

13	Mr. Sailaish Tiwari	RTO (E)	RTO Division, Dehradun	+91-9412174991 <a href="mailto:rtodehradun@gmail.com">rtodehradun@gmail.com</a>
14	Mr. Arya		Tourism, Mussoorie	+91-7060038432
15	Mr. Ashok	Operation Manager	Keen	+91-9837170979
16	Mr. Jitender Rawat	HR, Keen		+91-9760723194
17	Prof. Dr. P. S. N. Rao	Research Project Co-ordinator	SPA, New Delhi	7042227021 drpsnrao@hotmail.com psnrao.dr@gmail.com
18	Miss Kiran Bala	Research Associate		7807720656 Kiranvashisht185@gmail.com

**List of Stakeholders/Participants attended the Post Study Workshop held at the Dr. R.S. Tolia Academy of Administration Nainital on 10<sup>th</sup> December, 2024:**

State Institute of Urban Development Dr. R. S. Tolia Uttarakhand Academy of Administration Nainital Date: 10th December, 2024 "Post Study Workshop" (Attendance Sheet)				
S.N.	Name	Designation	10.12.2024, Signature	Phone No.
1.	Heera Lal	Tourist Office Mussoorie D.T.O.		8257811665
2.	T. S. Nohia	Assistant Engineer Vik. Reg. Bd. Upper Almora		9412119821
3.	MUKUL Singh Maswal	T.T.O Toanspost (R.T.O) department		8476092315
4.	Ramesh Dutt Pitlark	Tax & Revenue Superintendent		7906653995
5.	Amirkuman	Executive engineer (Incharge) Uttarakhand Jal Sansthan, Mussoorie		7500005774
6.	T. S. Rawat	Assistant Engineer Uttarakhand Jal Sansthan Mussoorie		9756202515
7.	Ajay Sah.	INSPECTOR UTTAKHAND POLICE ALMORA.		9412935129

S.N.	Name	Designation	10.12.2024, Signature	Phone no.
8.	MARTUNJAY SHARMA	Assistant Engrg. PWD - Pauri		
9.	<u>RAVI DATTA</u>	<u>AAE Jal Sansthan Pauri</u>		Ri datta 9760846307 7055032250
10.	SNUBHAM BISHT	JE Pyyal Nigam Pauri		817218758
11.	VIVEK PANWAR	J.G Jal Sansthan Pauri		7351220833
12.	ASHOK RAWAT	J-E Pyyal Nigam Pauri		7906857475
13.	<u>Harish Aggarwal</u>	<u>JMM, Nagar Nigam Almora.</u>		4557966138
14.	<u>Pawan Prasad Pandey</u>	<u>TAI Nagar Nigam Almora</u>		8077849608
15.	Umang Sharma	JE Jal Sansthan Almora		7505282031
16.	Siddharth Purohit	A.E. Irrigation, Almora		9458305703

S.N.	Name	Designation	10.12.2024, Signature	Phone no.
17.	Birendra Singh Mehra	Assistant Engineer Uttarakhand Jal Sansthan Almora		7895890200
18.	<u>Dr. Devendra Singh Puri</u>	<u>Registrar Sardar Singh Teaha University Almora</u>		8449399063 101124
19.	Kunshal Singh Negi	District Tourism Dev. Officer Pauri Gadhwal		7300799201
20.	<u>Rashmi Bhatt</u>	ARTO (E) Almora		9027115122
21.	Swati Pal Umrigar	N.P.P. Pauri		9037327980
22.				
23.				
24.				

Source: (Dr. R. S. Tolia Uttarakhand Academy of Administration (ATI))

## Annexure D

## Annexure D

Poster of Stakeholder Consultation Meeting Held on 02 September, 2024 in NPP, Mussoorie



School of Planning and Architecture ( SPA), New Delhi  
August, 2024

INVITATION TO  
**STAKEHOLDER CONSULTATION**

**02<sup>nd</sup> September 2024, Monday**  
**11:00 Am to 03:00 PM**

Venue:  
**MUSSOORIE**  
Nagar Palika Parishad

S. No	DEPARTMENTS/ORGANIZATIONS INVITED
01	Nagar Palika Parishad, Mussoorie
02	Uttarakhand Jal Sansthan (UJS), Mussoorie
03	Pay Jal Nigam, Mussoorie
04	Mussoorie Dehradun Development Authority (MDDA)
05	Irrigation Work Circle (IWC) Dehradun
06	Department of Police, Mussoorie
07	RTO Division, Dehradun
08	Tourism Department, Mussoorie
09	Keen, Mussoorie
10	Taxi Union, Mussoorie
11	Department of Forest, Mussoorie

Solid Waste Management

Urban Transportation and  
Parking

Water Supply

Research Sponsored by  
**Dr. R. S Tolia Academy of Administration, Mussoorie**

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