

Cover Page



"... water is constantly in motion, changing states, crossing borders, nourishing (and destroying) life. How can water and urbanism be considered together as a generative frame for urban design practice, social life, and ecological regeneration?" (Kate Orff, 2012)



Resilience in Architecture

Haridwar as a living laboratory

Urban Design Studio

Academic Year 2024-2025

Acknowledgements

The team extends its heartfelt gratitude to all those who contributed to the making of this book on Haridwar.

This publication is the result of collective effort, shaped by the support, insights, and encouragement received from a wide range of individuals and communities. The team is especially thankful to the people of Haridwar, whose deep cultural ties, everyday experiences, and spiritual connection with the Ganga form the foundation of this work.

The team also acknowledges the feedback received from the faculty members of IIT Roorkee, local residents, storytellers, and caretakers of cultural heritage who generously shared their knowledge, time, and perspectives. Their voices helped ground this work in authenticity.

The contributions of peers and collaborators was equally invaluable—through discussions, shared resources, and critical reviews, they strengthened both the process and the outcome.

Gratitude is also extended to the academic mentors and faculty members whose guidance and constructive feedback played a crucial role throughout the research and design process. Their support helped the team explore Haridwar through multiple lenses and bring this vision to life.

This book is a tribute to Haridwar's resilience, layered history, and evolving urban identity—and it is with deep respect that the team offers this work to all who continue to shape the story of the Ganga and its sacred landscape.

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Disclaimer: The content of this publication, "Resilience in Architecture: Haridwar as a Living Laboratory," has been compiled from the academic work of B.Arch. Fourth year, Semester 8 Urban Intervention Studio conducted at Haridwar. The data presented in the form of maps, drawings, sketches, and other graphical representation are prepared and presented by the respective authors and reflect the learnings of the Studio.

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Principal's Note

It gives me immense pleasure to present “Resilience in Architecture: Haridwar as a Living Laboratory,” a compilation of thoughtful explorations by our students, which captures the essence of an evolving cityscape with remarkable sensitivity and insight.

Set against the vibrant backdrop of Jwalapur, Haridwar, this studio journey invited students to critically engage with the unique confluence of sacred heritage and industrial modernity. Haridwar, long revered as a sacred city, now stands at a crossroads where its historic spiritual significance intertwines with emerging urban-industrial dynamics. This layered reality offered students a rich canvas for investigation and intervention.

The studio, “Resilience in Architecture,” positioned the students not merely as designers but as observers, thinkers, and catalysts for change. The focus was to understand the interplay of the historic and the contemporary urban fabrics, and to delve into the transformation of the Ganga—from a revered sacred river to a canal serving industrial purposes. This transformation became the central narrative around which students framed their design inquiries, challenging them to respond with imagination and empathy.

The works compiled here are a testament to the students’ efforts to propose resilient, inclusive, and ecologically sustainable interventions—efforts that aspire to honour tradition while embracing the demands of modern urban life. Each project embodies a deep commitment to contextual relevance, community engagement, and forward-thinking design principles.

As Haridwar continues to evolve, the observations, urban mapping, surveys, insights and ideas presented in this book serve as a reflection of the city’s ongoing dialogue between past and future. They also offer a vision for cities everywhere—on how to build resilience not by erasing history, but by weaving it thoughtfully into the fabric of the future.

I congratulate all the students and faculty members involved for their dedication, creativity, and commitment in bringing this important work to life.

Dr. Ashwini Pethe



Cities are living organisms - constantly evolving, adapting, and negotiating the delicate balance between memory and aspiration. “Resilience in Architecture: Haridwar as a Living Laboratory” is a reflection of this profound reality, captured through the eyes, minds, and hands of young designers who dared to see beyond the visible.

As a studio tutor, it has been a rewarding experience to witness the evolution and execution of the Studio. Watching students engage with the unique contradictions of Har ki Pauri to Jwalapur - where sacred traditions meet industrial modernity - was a reminder of the deeper role architecture plays in shaping not just tangible spaces, but also the intangible ones. This book captures the spirit of inquiry, synthesis, reflection, interpretation, and innovation that our students brought into the studio. Set in the complex tapestry of Haridwar, the studio challenged students to look beyond conventional design responses and engage deeply with the layered realities of a sacred yet gradually evolving identity, transforming and industrializing city of Haridwar.

The transformation of the Ganga from a sacred river into a utilitarian canal became a metaphor for the broader questions of resilience, identity, and sustainability that the students grappled with. This transformation, formed the quest of our inquiry: How do we design for resilience in a place where the symbiotic relationship between tangible and intangible, and meanings of space, water, and urban life are in flux?

Through this lens, the students embarked on a journey that was not just architectural but deeply human. They explored the invisible threads that bind communities to their rivers, streets, and sacred spaces. The work presented in this book is as much about process as it is about outcome. Through their proposals, they have sought not only to design physical spaces but also to re-weave the socio-cultural and ecological threads that define Haridwar.

This book is a reflection of their honest efforts to design interventions that respect the past, respond to the present, and imagine a more resilient future. I am proud of the thoughtfulness and commitment they have shown, as a testament to a sensitive, resilient, and contextually rooted approach to urban design — and I hope this body of work encourages the students and others to always design with an approach that values memory as much as it embraces change.

Dr. Neeti Trivedi



It is with great pride and satisfaction that this book documents the outcomes of the Fourth year Urban Design Studio titled “Resilience in Architecture: Haridwar as Living Laboratory,” conducted at MIT School of Architecture, Pune. This studio was conceived as an academic initiative to investigate and respond to the complex urban realities of Haridwar, a city that stands at the intersection of heritage, pilgrimage, ecology, and rapid urban transformation.

This studio explored the historic and dynamic city of Haridwar as a live learning environment, focusing on the idea of resilience in its many forms ecological, social, infrastructural, and cultural. Students engaged in a multi-layered process involving contextual research, site documentation, stakeholder interactions, and thematic mapping. Through this, they identified key urban challenges and developed strategic design interventions that respond to the complexities of Haridwar’s evolving urban fabric. The studio emphasized contextual sensitivity, sustainable thinking, and community-focused design.

v
This book reflects not only the academic rigor of our students but also the collaborative efforts of faculty, professionals, and local voices who enriched the studio experience. I extend my sincere gratitude to all who contributed to this journey and hope the work presented here adds meaningful value to the discourse on resilient urbanism in Indian cities.



Ar.Ketki Patil

Haridwar a city along the banks of the Ganga is not only a spiritual city but a city full of varied emotions and journeys. The architectural character of the urban fabric has also seen a blend of heritage as well as some contemporary development over the years. The city as a built form and the users have generated various nodes, markers and public realms amidst its dense fabric most of them being experiential while some remain notional. While the ghats develop the visual character of the city externally the internal streets in the core city define the local character and culture which also generate the economy for the city.

The aim is to understand the context, culture and commerce of Haridwar and deeply identify the need of the city. While proposing any insert in such an multifold urban fabric it is also necessary to be sensitive to it's existing morphology, built form and its history. The studio aims to understand the cities overall development and identifying the appropriate insert as per the potential and requirement of the city in today's context while also adhering to the futuristic needs. The proposed program should also benefit and uplift the economy, awareness and tourism creating an opportunity for the city's growth in all aspects. It is also very critical in this process to also address the city's density and massing for the urban intervention to merge into the city's urban landscape.



Ar. Ajinkya Desai



*"Come, beta... let's uncover the layers of
Haridwar's soul — its streets, stories and
people!"*

— Baba

Resilience in Architecture

Haridwar as a living laboratory

Visiting Haridwar as an architecture student was like walking into a living case study of how geography, culture, and economics shape urban form. River Ganga is the quintessence of the city—not just a sacred entity but also a socio-cultural and economic anchor that defines Haridwar’s morphology and daily life.

Cities, as articulated by *Patrick Geddes in his City as an Evolving Organism Theory*, are not static artifacts – but a living, breathing organism that evolves through time. Cities are living systems shaped by layers of rituals, migration, commerce and ecology. Haridwar exemplifies this notion. The city of Haridwar has evolved in a symbiotic relationship with the river. Rather than emerging from singular, planned interventions, its form has evolved organically over centuries, adapting continually to socio-cultural and environmental changes. The ghats at Har ki Pauri are a prime example of demonstrating this spatial adaptability. They are not just ritual spaces but multifunctional public hubs where life unfolds throughout the day. Pilgrims perform sacred ablutions, vendors sell flowers and offerings, and families gather to connect with both divinity and each other. This constant interaction between people and the river creates a dynamic, ever-changing space that is a far cry from static urban plazas. The architectural openness responds to fluidity and porosity of the space, that transforms the riverfront into a living threshold of the city. Here, as students we clearly observed the learnings of Place Theory, that is manifested not only through physical design but also through collective memory, where emotional attachments enrich the materiality of space.

From a design perspective, the wide, accessible ghats are pragmatically designed in response to seasonal fluctuations in the Ganga’s water levels. This adaptive design is crucial for a city that experiences monsoonal fluctuations, ensuring that the river remains accessible regardless of seasonal changes; and to accommodate not just ceremonial and customary rituals but, gathering, waiting, watching, and belonging, thus, responding to the contextually sensitive and resilient architecture. Economically, the river sustains not just tourism but also livelihoods tied to rituals and festivals. Flower sellers, priests, and even food vendors rely on the constant flow of visitors who come to seek blessings or witness the mesmerizing Ganga Aarti. The river is the city’s heartbeat, dictating its rhythms and sustaining its people. Further, as we transitioned from the openness of the ghats of Har ki Pauri, we entered the denser urban core, with a new intricate spatial configuration. We found this spatial configuration relevant to *Roger Trancik’s Figure-Ground Theory*. Compact, dense, labyrinthine streets of old Haridwar, where built forms (figures) interlock with narrow lanes and courtyards (grounds). These voids are not empty, they’re active social corridors that sustain everyday interactions.

Further away from the river, the city’s morphology becomes more complex, in an attempt to accommodate the pilgrims to commercial buildings, hotels, and *dharmshalas*, inducing fragmentation into the coherence of the existing morphology of the city. It was observed that the new development lacked contextual sensitivity, disrupting the spatial continuum between the historical and the contemporary structures, raising concerns about identity and image of the city (Lynch, 1960).

In contrast, Jwalapur presents an alternative and different urban rhythm. Unlike the ceremonial tone of Har ki Pauri, Jwalapur speaks of everyday resilience. Jwalapur exemplifies, *Christopher Alexander’s Organic Growth Theory*, where built form has emerged in response to the local needs, climate responsiveness, and socio-religious customs. Houses here have architectural elements like *verandas* that offer street interaction, courtyards providing thermal comfort, and spatial organization reflecting socio-religious practices.

The spatial connectivity between Jwalapur and *Har ki Pauri* where roads act not merely as conduits but as vibrant spines of social, commercial, and religious life. This connective tissue integrates diverse urban experiences, creating a rational narrative that links the sacred with the mundane.

What stood out the most was how every turn of a corner revealed a new spatial experience. Jwalapur’s alleys to the expansive ghats, with changing textures, sounds, and views offered a constantly unfolding spatial narrative. The city accommodates millions of pilgrims during *Maha Kumbh* and during major festivals and yet the city is inherently safe, exemplifying *Jane Jacob’s Eyes on the Street Theory*, where the presence of shopkeepers, locals, and visitors ensures passive security and social engagement at all hours.

In its entirety, Haridwar reflects the idea that a city thrives when its parts, old and new, sacred and mundane, coexist with harmony. Despite modern interventions that sometimes disrupt this balance, Haridwar remains a living laboratory - resilient, dynamic, and deeply rooted in both space and spirit. Walking through Haridwar felt less like observing a city and more like listening to a living, breathing story, one narrated through its streets, rituals, river, and people. The city doesn’t just reflect layers of architecture and planning; it reflects values, beliefs, and centuries of adaptation. As an architecture student, experiencing Haridwar wasn’t just about documenting built form, it was about understanding how a city becomes resilient by staying rooted in its past while embracing the complexities of the present.

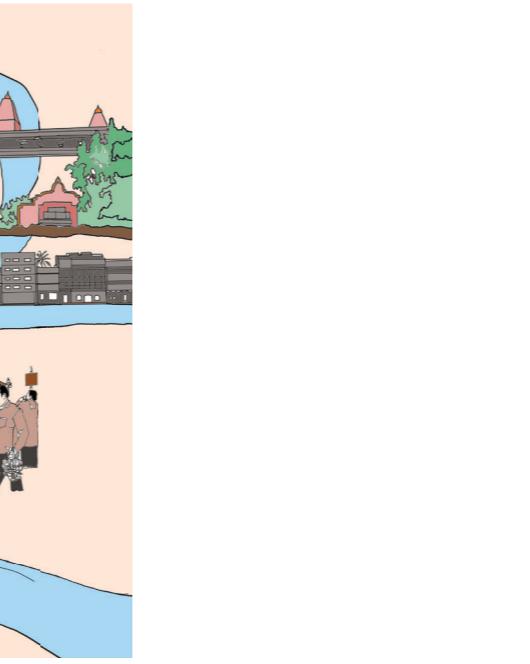
01

Haridwar's Past & Present:
An Overview



02

Tiers of Haridwar:
Mapping the Urban Tapestry



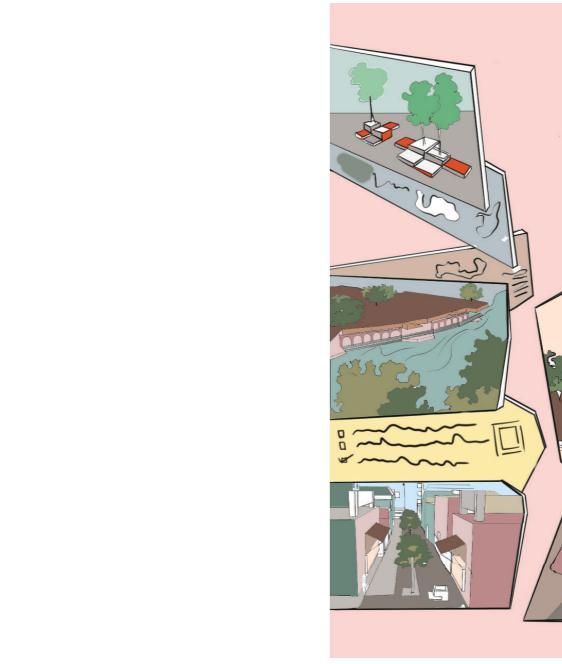
03

Sacred Paths:
A Walk through Haridwar

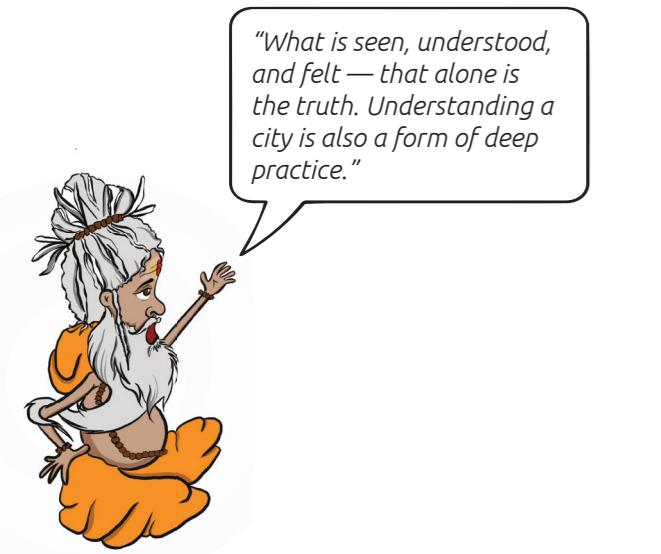


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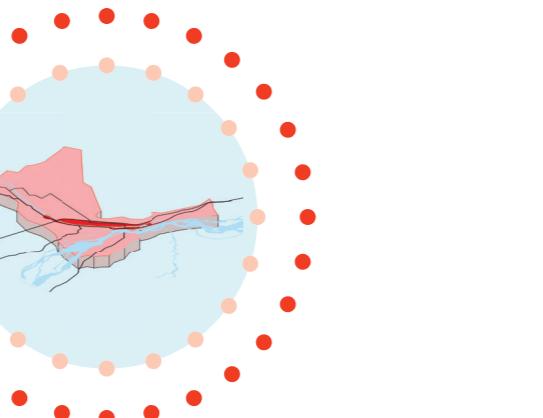
Urban Strategies
for Haridwar



Methodology

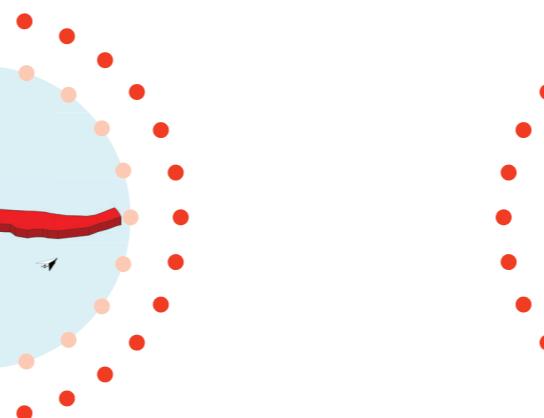


1 IDENTIFYING SITE CONTEXT



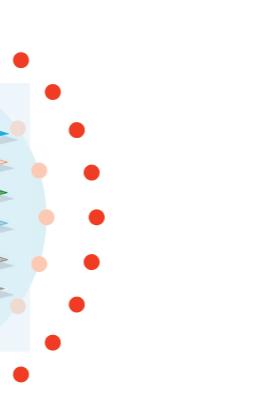
- To study site location, context, and regional connectivity.
- To understand cultural and spiritual significance.
- To study the character of the place, including natural and built environments.
- To conduct background studies on climate, topography, and resources.
- To examine demographics, population structure, and economic activities.

2 BASE MAP CREATION / INFORM AND INVOLVE



- To generate a base map of Haridwar by rasterizing Google Earth images.
- To include site boundaries, major landmarks, and infrastructure.
- To analyze the character of the place, including natural and built environments.
- To identify urban issues, challenges, and opportunities.
- To draw inferences and ideas from case studies for application in Haridwar.

3 URBAN MAPPING OF HARIDWAR



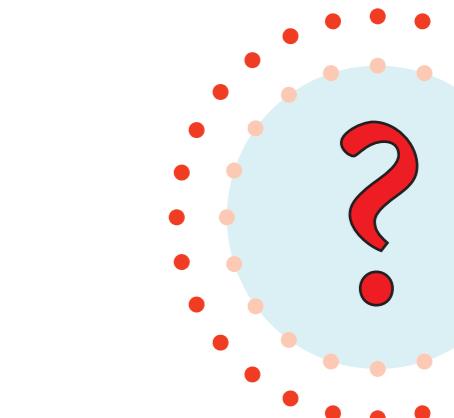
- To prepare layers for the study
1. Land use
 2. Figure and Ground
 3. Road Network
 4. Transportation
 5. Building Age
 6. Building Height
 7. Amenities
 8. Green Infrastructure
 9. Water Infrastructure
 10. Food Map

4 SYNTHESIZE, REFLECT AND INTERPRET



- To identify potential sites
- SWOT Analysis
- Site Analysis

5 INDIVIDUAL INTERVENTION



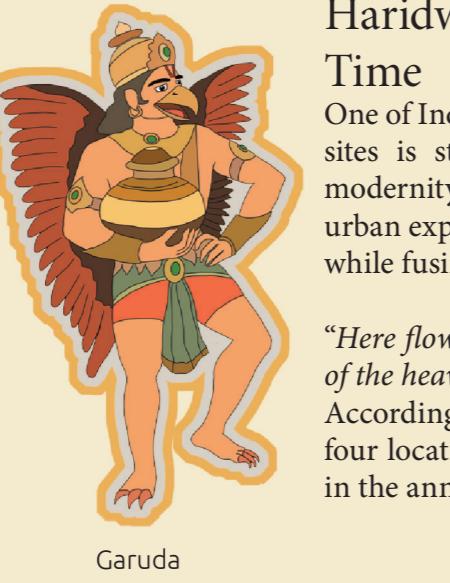
- Minor case studies related to the urban intervention.
- Design Proposal.
- Proposed urban design policies

01

Haridwar's Past & Present: An Overview



History & Background



Historical Evolution

Known in ancient literature as *Gangadwara*, Haridwar has long been an important religious centre. Its architectural and cultural landscape was shaped by empires such as the Mauryas, Kushans, and Mughals, and its antiquity is confirmed by documents written by the Chinese traveler Huan Tsang. The city's status as a spiritual hub was cemented with the building of Har Ki Pauri and other ghats.



Har Ki Pauri Painting 1656 AD

Haridwar: A Sacred City Evolving Through Time

One of India's most important spiritual and cultural sites is still Haridwar, a city where legend and modernity collide. From heavenly myths to modern urban expansion, it maintains its religious character while fusing devotion with progress.

"Here flows the Ganga, carrying with it the whispers of the heavens and the prayers of the faithful."

According to Hindu legend, Haridwar is one of the four locations where drops of *Amrut* fell, resulting in the annual big Kumbh Mela.



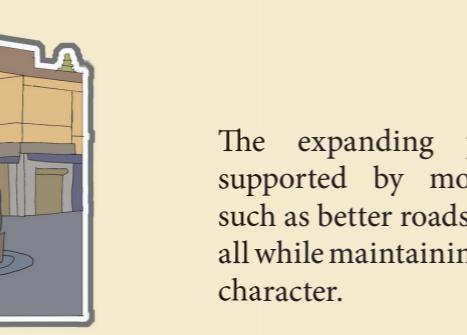
Ganga

The Ganga was brought to earth by King Bhagiratha's penance, thus establishing the city as a site of spiritual cleansing. Millions of pilgrims visit it every year because of these stories, which have formed its reputation as a doorway to salvation.

Urban Expansion and Changing Fabric

"A city grows not just in buildings and streets, but in the hearts of those who call it home."

With an increasing influx of pilgrims, Haridwar expanded beyond its historic core. Once a distinct community, Jwalapur became part of the city's urban fabric by offering both commercial and residential space.



Aarya Nagar Chowk

The expanding population is now supported by modern infrastructure, such as better roads, transit, and lodging, all while maintaining Haridwar's spiritual character.



Balancing Tradition and Modernity

Haridwar incorporates contemporary innovations while maintaining its spiritual foundation. While cultural customs like yoga, meditation, and Ayurveda flourish, the *Ganga Aarti* at *Har Ki Pauri* continues to be a magnificent ceremony.



Aarti Scene

Resilience in Architecture:

Haridwar as a Living Laboratory

Introduction: A Gateway to the Divine
Haridwar, one of the holiest cities in India, is revered as the "Gateway to God." Nestled in the foothills of the Himalayas, this ancient city holds immense spiritual, cultural, and historical significance.

The city's spiritual landscape, which includes ghats, temples, and ashrams, continues to be its distinguishing characteristic despite urbanisation. Haridwar maintains its spiritual and cultural identity thanks to initiatives to control pilgrim flow and infrastructure development.

Millions of pilgrims visit Haridwar every year to take part in religious rituals, with the sacred Ganga River serving as a focal point for purification and devotion. The city is also one of the four sites for the Kumbh Mela, the largest spiritual gathering in the world, held every 12 years.

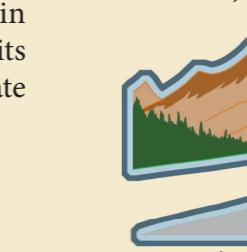


Dharmshala

A Testament to Faith and Transformation

"In its waters flow the past and the future, embracing all who seek its wisdom."

The journey of Haridwar illustrates how dedication and growth may live harmoniously. The city's essence—an eternal sanctuary where mythology, spirituality, and urbanisation mix in harmony—remains unchanged as its urban fabric changes to accommodate contemporary demands.



Physical Features

Geographical & Physical Landscape

The 2360.29 km² Haridwar region of Uttarakhand is home to important tehsils like Roorkee, Laksar, and Bhagwanpur. Smaller streams and the Upper Ganga Canal, which facilitates irrigation and water supplies, complement the Ganga River, which rises in the Himalayas and shapes the city's natural and urban landscape. Haridwar is a spiritual hub and an ecological hotspot since it is encircled by Rajaji National Park, a biodiverse area that is home to deer, elephants, and leopards.

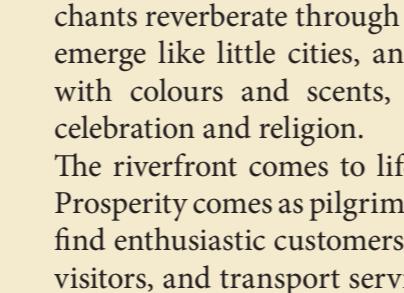
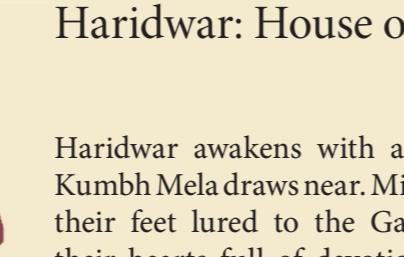


Scene of people taking a dip in the ganges



Sacred Landmarks & Cultural Heritage

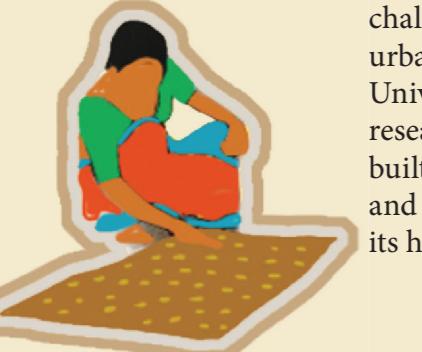
Haridwar is home to numerous religious sites, including the most revered ghat, *Har Ki Pauri*, where hundreds of pilgrims gather each evening for the Ganga Aarti. Other significant locations are the Hindu mythological Chandi Devi Mandir, Mansa Devi Mandir, and Maya Devi Mandir. The city's spiritual significance is further enhanced by the Daksheshwar Mahadev Mandir and renowned ashrams like Shantikunj Ashram and Saptarishi Ashram.



Activities of people in Kumbh Mela

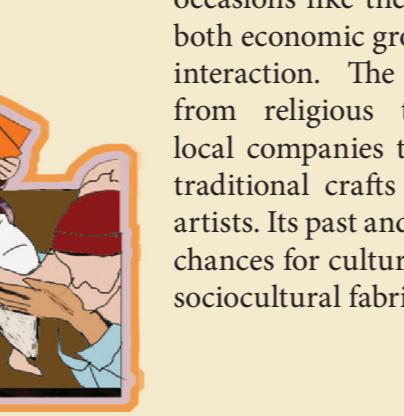


Activities of local people



Urban Design & Resilience

Beyond its religious essence, Haridwar serves as a living laboratory for studying urban resilience and architectural sustainability. The city's relationship with the Ganga River, natural ecosystems, and cultural identity presents unique challenges and opportunities for urban planning. As part of MIT-ADT University's School of Architecture research, this study examines Haridwar's built environment, hydrological systems, and ecological balance, aiming to preserve its heritage while enhancing its resilience.

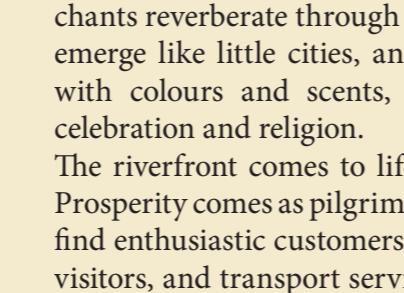
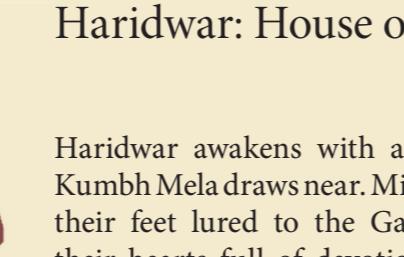


Spiritual Readings

Haridwar: House of the Kumbh

Haridwar awakens with a unique energy as the Kumbh Mela draws near. Millions of pilgrims arrive, their feet lured to the Ganges' hallowed waters, their hearts full of devotion. The city changes as chants reverberate through the air, temporary tents emerge like little cities, and markets are bursting with colours and scents, creating a tapestry of celebration and religion.

The riverfront comes to life with each sacred dip. Prosperity comes as pilgrims pour in. Street vendors find enthusiastic customers, hotels are packed with visitors, and transport services are rushing around the city to link different locations.



Activities of people in Kumbh Mela

Beyond only spiritual seekers, the influx of tourists supports local businesses, sustains livelihoods, and compels authorities to improve security, sanitation, and roads, leaving a legacy of urban growth.

However, Haridwar's power is not limited to the Kumbh. Travellers captivated by its ageless essence as well as devotees are drawn to the brilliance of Dev Diwali, the dedication of Kanwar Mela, and the flames of Ganga Dussehra. Every event strengthens Haridwar's core, boosts its economy, and attracts new global fans to its rich cultural legacy.

As dawn breaks in Haridwar, temple bells chime and incense perfumes the air. Devotees begin their day with yoga, meditation, or a sacred dip in the Ganges. Soon, the aroma of local vegetarian delicacies like lentil curries and chaats fills the streets, with some non-vegetarian options available. Locals pursue their livelihoods, from managing hotels to crafting handicrafts, maintaining Haridwar's cultural fabric. The day culminates in the enchanting Ganga Aarti, where priests perform rituals with lamps and hymns, casting a golden glow on the river as devotees offer prayers and release their own lamps. This blend of daily life and spiritual devotion defines Haridwar's essence.



Activities of the women

Haridwar: Traditions & Flavours

As dawn breaks in Haridwar, temple bells chime and incense perfumes the air. Devotees begin their day with yoga, meditation, or a sacred dip in the Ganges. Soon, the aroma of local vegetarian delicacies like lentil curries and chaats fills the streets, with some non-vegetarian options available. Locals pursue their livelihoods, from managing hotels to crafting handicrafts, maintaining Haridwar's cultural fabric. The day culminates in the enchanting Ganga Aarti, where priests perform rituals with lamps and hymns, casting a golden glow on the river as devotees offer prayers and release their own lamps. This blend of daily life and spiritual devotion defines Haridwar's essence.



Local people

Haridwar Gateway to Gods

हरदिवारे हरपिदसेवति गङ्गायाः तटमणरिम्ये ।
तीरथराजे सुरनरसेवति मुक्तदिवारं भजाम्यहम् ॥

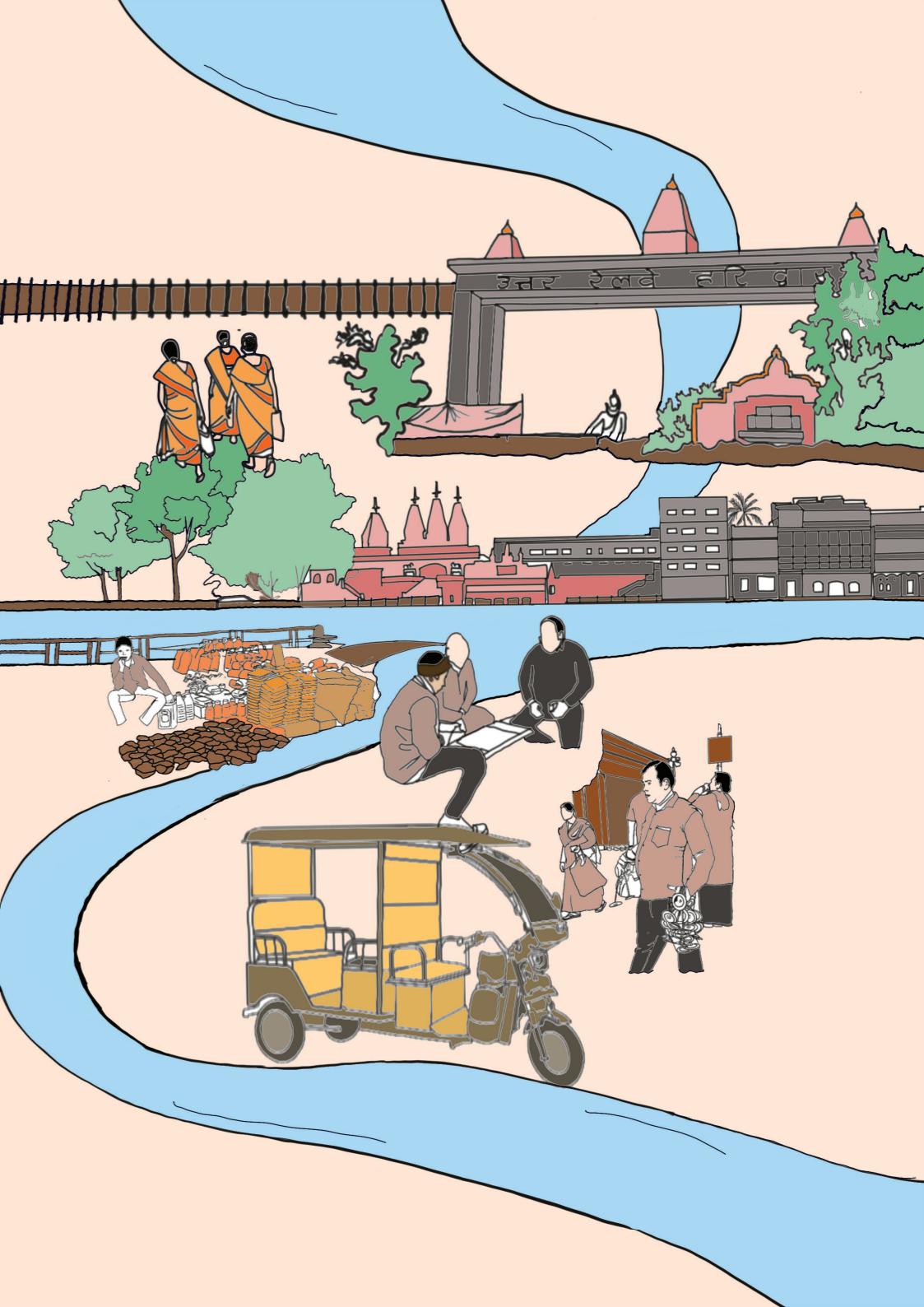
(Haridvāre Haripada-sevite Gangāyāḥ Tata-maniramye |
Tīrtharāje Sura-nara-sevite Muktidivāram Bhajāmyaham ||)
Meaning: "In Haridwar, where the feet of Lord Vishnu are revered, on the beautiful banks of the sacred Ganga, in the king of pilgrimages, where gods and humans alike seek salvation—I bow to this gateway of liberation."

With 400 hotels, 180 dharamshalas, and ashrams that house hundreds of people every day, tourism contributes to economic growth. Jobs are created by the retail and hospitality industries, and accessibility is improved by infrastructure upgrades. However, the city's resources are strained by congestion, inadequate sanitation, and a lack of long-term historical conservation.

Haridwar is more than just a place of pilgrimage; it is a combination of nature, culture, and spirituality. The city continues to be a symbol of religion and tradition because of its historic temples, holy river, and abundant biodiversity. But as urbanisation increases, sustainable architecture solutions become increasingly important. We can endeavour to preserve Haridwar's heavenly essence while guaranteeing a robust future by comprehending its spiritual, environmental, and urban fabric.

02

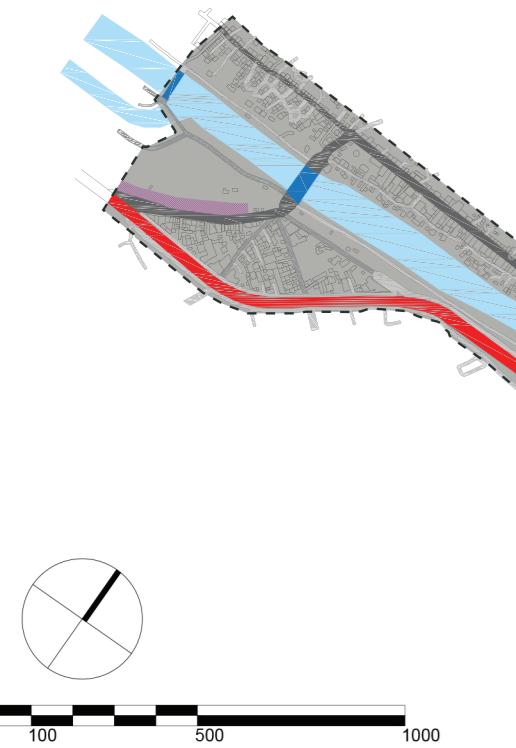
Tiers of Haridwar: Mapping the Urban Tapestry



Introduction to Study Area

Haridwar, a sacred city along the banks of River Ganga, features a change between its ancient religious center and its expanding urban landscape. Our site a stretch of 10 kms from *Har ki Pauri* to Jwalapur, integrates varied layers of architecture, land use, economic, and socio-cultural dynamics.

This multicultural urban context places Haridwar as a living laboratory, where tradition and modernity meet. Our study investigates the resilience of Haridwar, examining how its built environment and socio-cultural fabric evolve to meet the challenges of modern urban life while preserving its historic character.



Jwalapur: The Industrial Hub

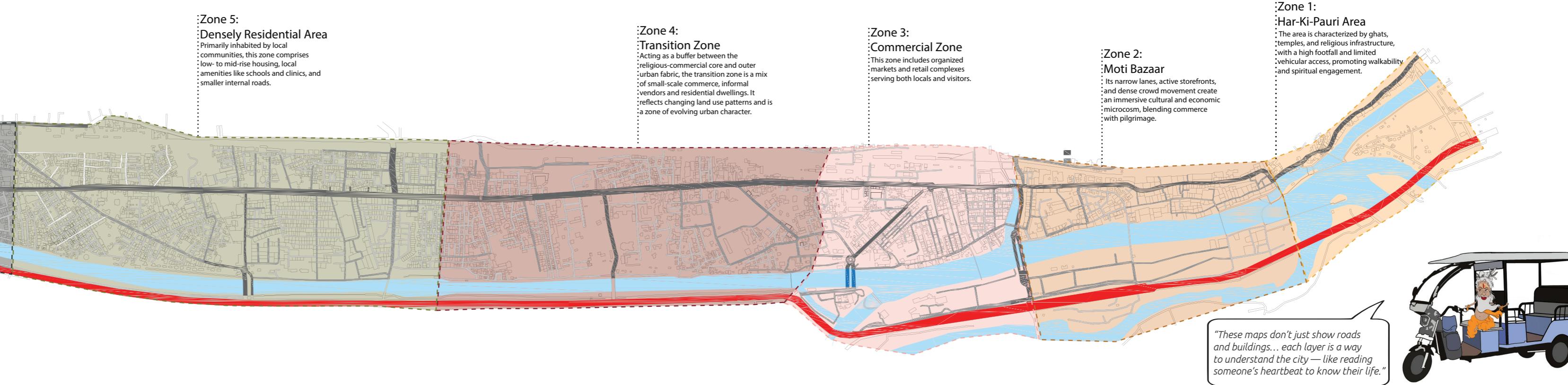
Jwalapur is a dramatic contrast to *Har ki Pauri*. As a historic trade center, it has become an industrial and residential area, home to modern typologies of housing, commercial complexes, and small industries. Contrary to the organic, intensive planning of earlier Haridwar, Jwalapur has broader roads, laid-out planning, and modern materials. It serves the local working class rather than tourists, which marks a change from religious tourism to urban sprawl.

Transition Zone

The city becomes a transition zone by having mid-rise residential buildings with small-scale businesses and administrative offices separated from the ghats. In this area, old and new structures signify the changing socio-economic dynamics of the city, a blend of tradition and modernization.

Har ki Pauri: The religious capital of Haridwar

The *Har ki Pauri* district is the spiritual core of Haridwar and is marked by high-density urban fabric, heritage buildings, and religious establishments such as *akhadas*. Serpentine narrow streets are edged with dharamshalas, temples, and busy markets selling goods to pilgrims. The built-up landscape shows an organic growth pattern where old wooden and stone buildings sit alongside newer commercial buildings. The Ganga ghats are the lifeline of the city which attracts millions of devotees every year, thus framing public spaces and economic activities together.

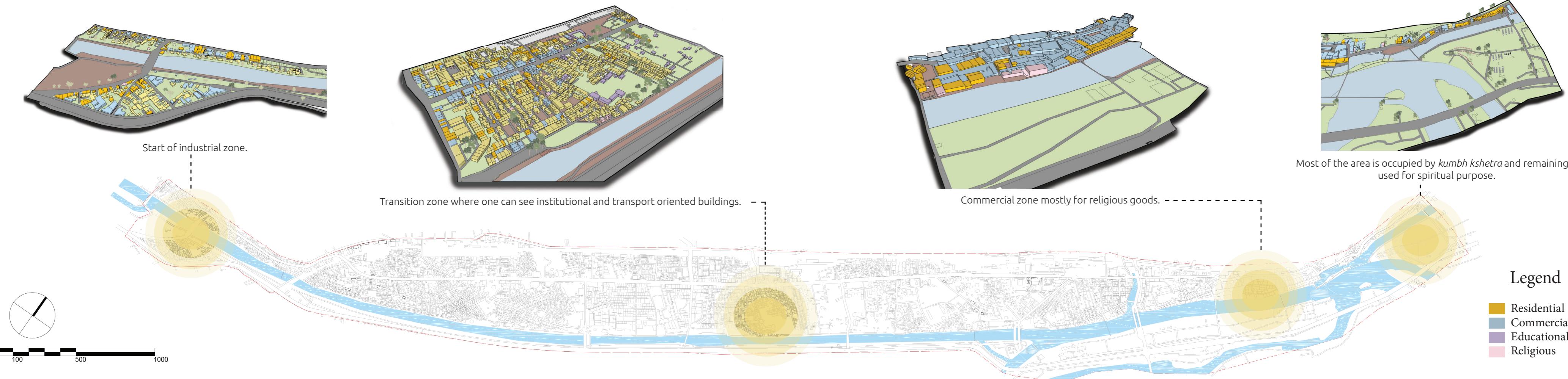


Land Use

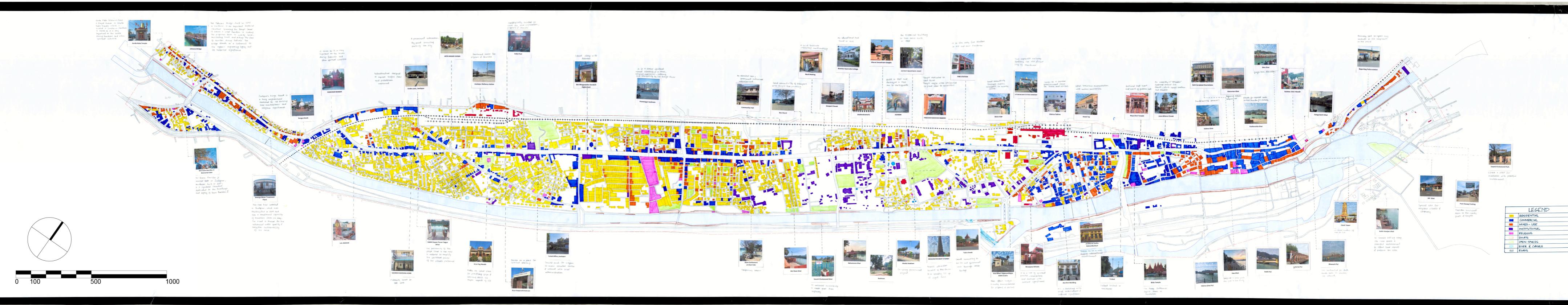
Haridwar, a city steeped in religious history, is really two places in one. There is a old town, the traditional heart of the city, packed with temples, *ashrams*, and places for religious learning. It is a tight-knit community with traditional homes and pilgrim lodgings, all buzzing with the energy of pilgrimage and local trade. The markets are lively, selling everything from sacred items to Ayurvedic remedies and local crafts. But because everything is so close together, it can get pretty crowded and a bit chaotic.

Then there's Jwalapur, the newer part of Haridwar, which feels totally different. It's all planned out with separate areas for homes, shops, and institutions. More people live here, and it has better roads and facilities. With modern stores, business centers, and hotels. Plus, it has schools, hospitals, and government offices that keep Haridwar running smoothly.

Haridwar is a fascinating mix of old and new. It is slowly becoming more urban, but it is also important to find a way to grow without losing its special religious character. The challenge is to keep Haridwar a timeless place for locals and pilgrims while also making it a vibrant, modern town.



Land Use



Public Infrastructure

Haridwar has many public toilets, especially in the pilgrimage areas like the *Kumbh Kshetra*. As you approach Jwalapur, a decrease in the number of toilets is observed.

The primary roads, bridges, and ghats are well illuminated, providing safety and liveness. Stepping into the tertiary road is a different story altogether because most of these areas have inadequate street lighting, leaving patches of roads dark. The infrastructure of the city favors busy, high-traffic zones while the inner neighborhoods are left in the dark.

Haridwar's police and emergency services are strategically located at the point of transition between Old and New Haridwar. The police station and fire station are located at such points, making them accessible to both sides of the city. This facilitates a rapid response in case of emergencies and acts as a lifeline in a city that has constant movement and large crowds.

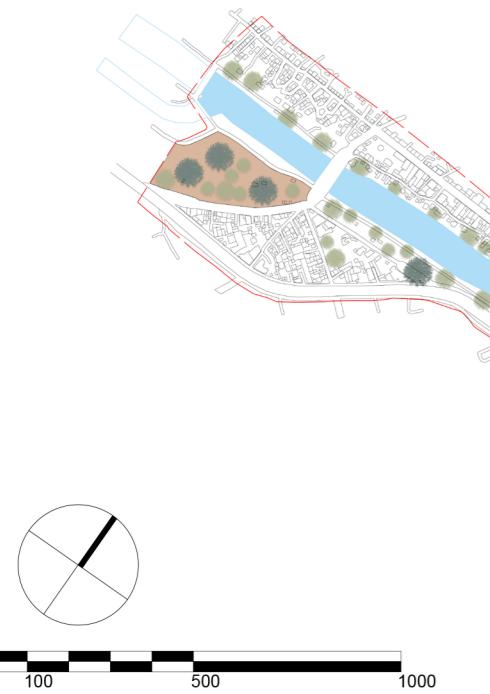
Most of the hospitals are found on the Jwalapur side, with most of them located in one area. This clustering ensures that medical care is accessible but also results in those living elsewhere in the city having to go long distances to receive treatment.



Vegetation

Haridwar, a religious and cultural heritage city, has a diverse picture as far as vegetation is concerned. The ordinary tree species observed while driving through the city include neem, peepal, and banyan trees—trees carrying strong religious and cultural significance. These sacred trees have been largely preserved, representing a living image of heritage and worship.

However, a visible difference between the older part and the newer part of the city is present. The ancient parts of Haridwar have a higher concentration of green cover, while the more urbanized part of Jwalapur reflects a high level of vegetation deficit. On the riverbanks, there are diverse riparian plants that thrive and form natural buffers that sustain the ecosystem. Away from these riverbanks and sacred groves, the city has difficulty sustaining its green nature.



Between roads, sidewalks, and buildings, vegetation is sparse, where only culturally important trees are maintained and the rest are destined to be cut down, perhaps considered to be of lesser importance in the urban landscape. This shift in vegetation signals the delicate balance between tradition, development, and care for nature in one of India's holiest cities.

The map below also shows the open grounds, urban voids, and land made available as Kumbh kshetra, denoting the change in land use patterns from *Har ki Pauri* to Jwalapur. The vegetation map also helps students cater with the identification of potential sites (as shown in potential site map on page 68-69) and public-semipublic amenities to be proposed



Sheesham

Banyan

Neem

Tulsi

Mango

Palm



Legend

- Parks and playground
- Open Grounds
- Kumbh kshetra

Road Network

The road hierarchy of New Haridwar and Old Haridwar is quite different due to their historical development and urban planning.

New Haridwar (Jwalapur) -

More Organized and Wider Roads:
Transition from old to new was such that the roads became wider with dividers.
Arterial roads were wide, and well-planned connecting Haridwar to other major cities.



ar (*Har Ki Pauri*) -

inner Network:
are around 8m wide and are narrow
connect inner residential areas and local
main roads.
narrow, crowded leading to the old
and residential areas.



(Open Drains) Shri Guru Ravidas Ji Memorial Gate

Jatwara Bridge

Jatwara Bridge

management Spine Ro

Railway Station

Durga Ch

I

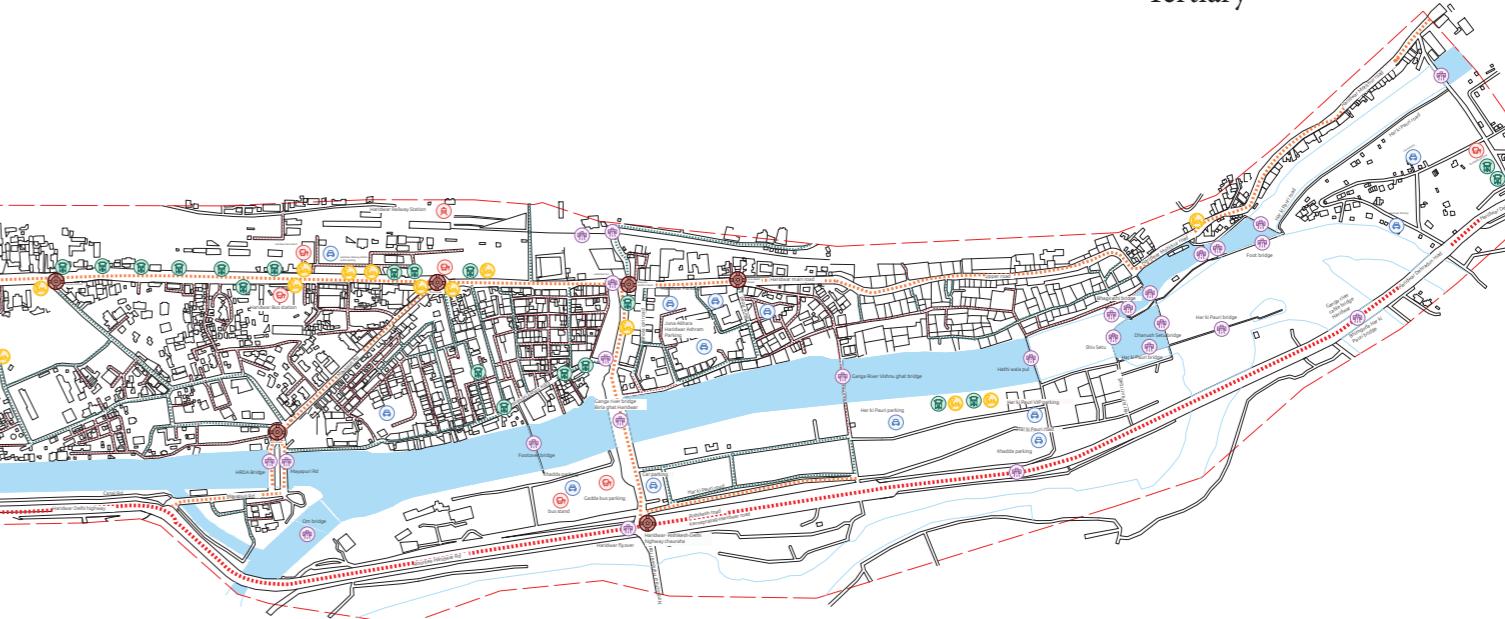
-  Public Parking Lots
 -  Bridges, Foot bridges, Flyovers
 -  Railway Stations
 -  Auto Rickshaws
 -  Traditional Rickshaws
 -  Bus Stops. Bus Parking, Bus Ter.
 -  Chowk

National Highway 

Primary 

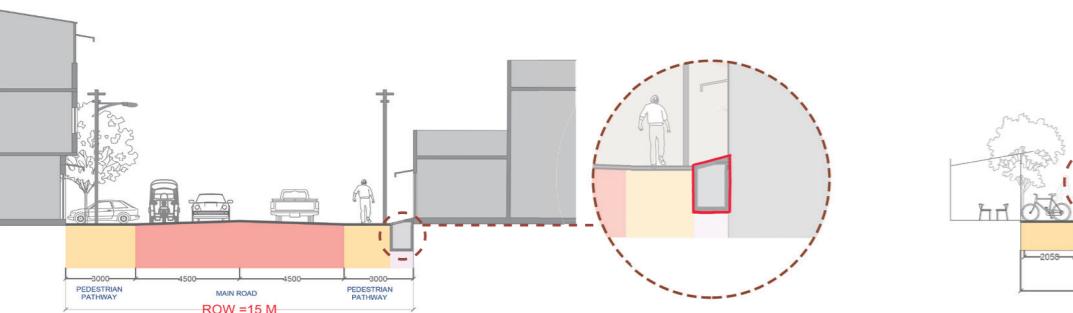
Secondary 

Tertiary 



Street Sections

The street sections illustrate the evolving spatial and functional characteristics of the main road in Haridwar, revealing a transition from the compact and organically developed fabric of Old Haridwar to the more structured and zoned layout of Jwalapur.



Drains observed on
the roadsides



Street Vendors observed
occupying the roads and
footpath space



Eyes on the street theory by Jane Jacobs; presence of people subconsciously observing the streets deters crime

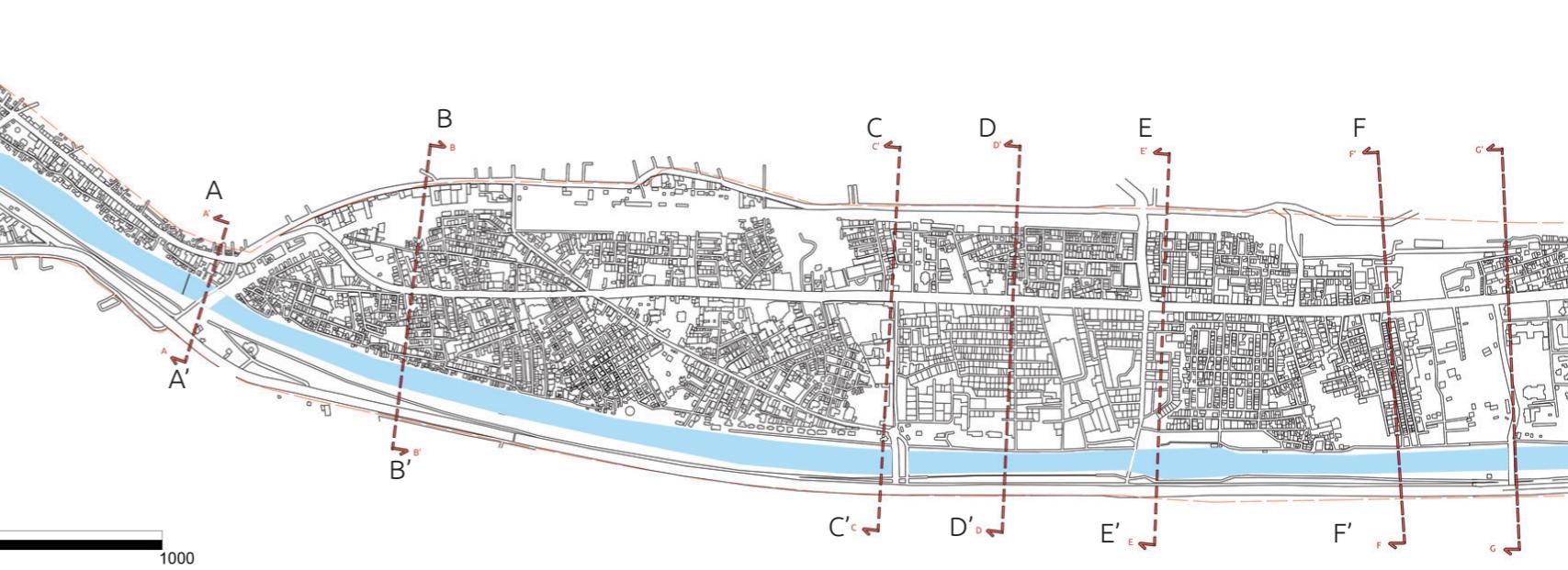
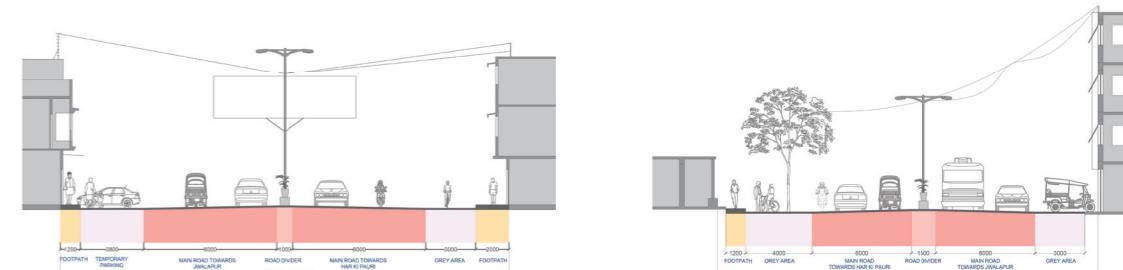


Larger vehicles like buses used as a major mode of transportation. People observed using the main road as a pedestrian passage, in addition to footpaths

Jwalapur

In Jwalapur, the road follows a clear rhythm—lanes are well-defined, walkways guide pedestrian with ease, and traffic flows smoothly, creating a sense of order and harmony.

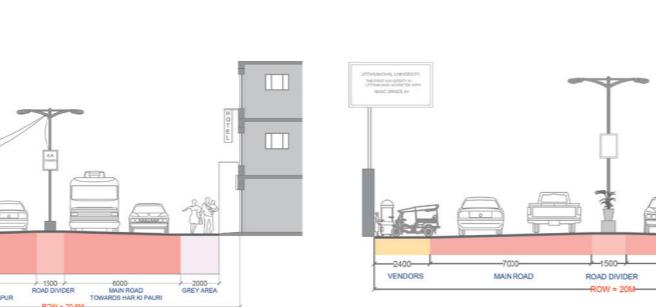
The structured road network in Jwalapur enhances movement efficiency, distinguishing it from the organic and compact nature of Old Haridwar's streets.



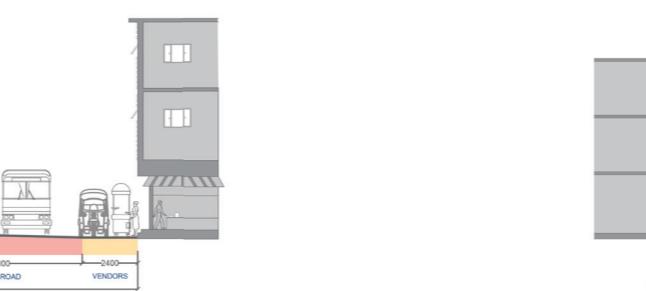
Haridwar

The narrow and organically developed roads of old Haridwar, lacks a structured hierarchy, resulting in mixed pedestrian and vehicular movement, create an immersive yet chaotic urban experience.

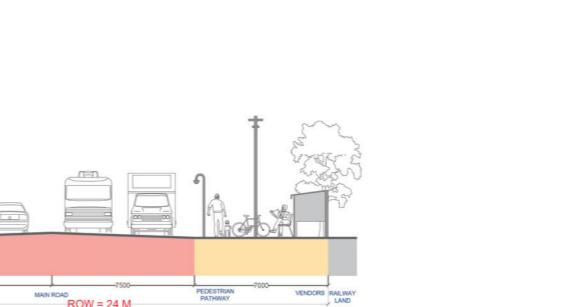
In Old Haridwar, the road has shaped itself around the surrounding buildings rather than following a fixed plan giving the streets a unique character but also making movement less structured



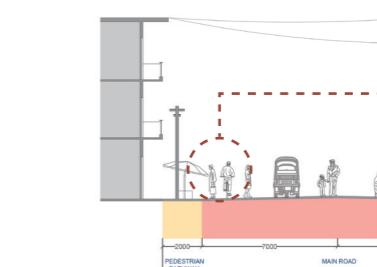
SECTION G-G'
Near Rishikul Ayurveda College



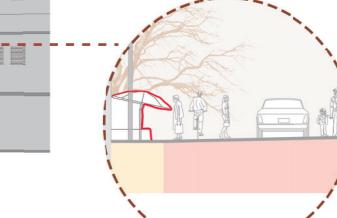
SECTION H-H'
Near Railway Station



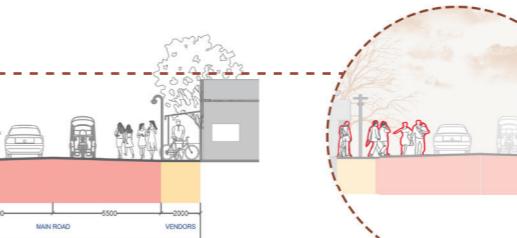
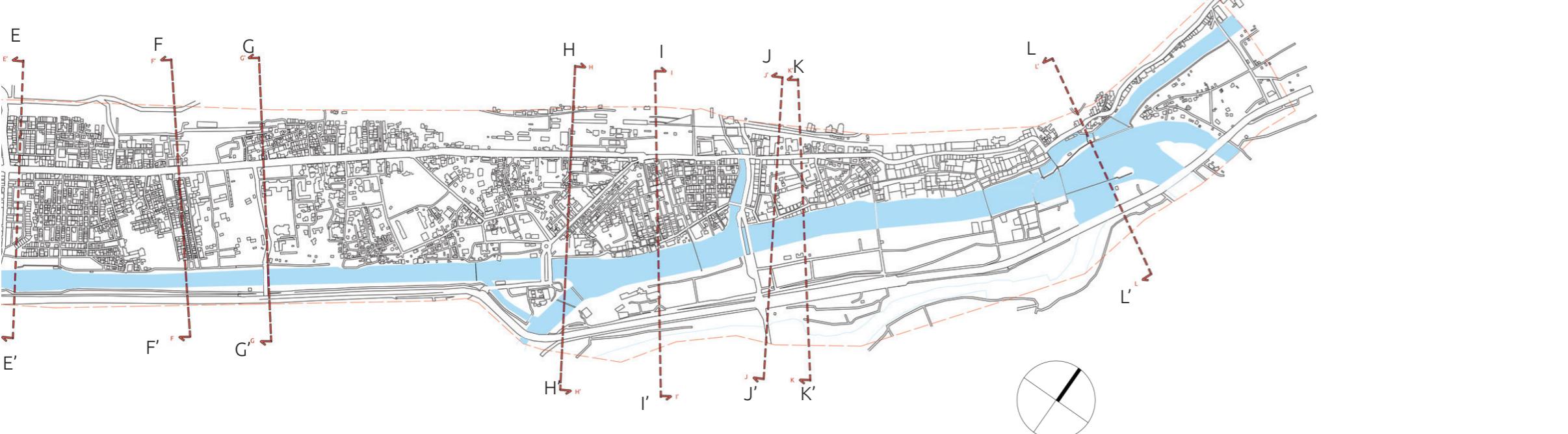
SECTION I-I'
Near Railway Station



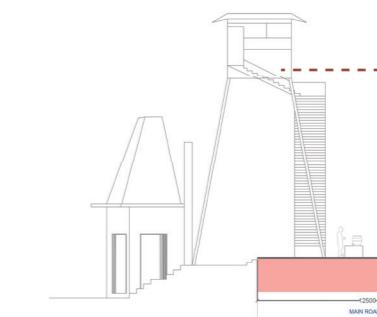
SECTION J-J'
Near Juna Akhada Chowk



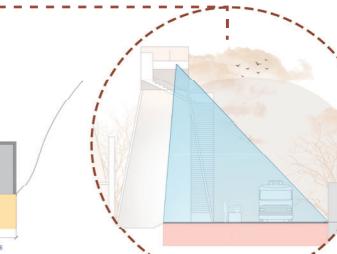
Vendors encroaching on the streets, leaving little to no space for pedestrians and vehicles



People walking on the streets in a chaotic fashion; no provision of footpaths, zebra crossings, signages.



SECTION L-L'
Haridwar Motichoor Road
Near Har ki Pauri



Watchtower placed in a strategic way to ensure less criminal activity

Building Morphology





Grid-patterned neighborhoods with matching homes behind gates, where families arrive in cars rather than on foot, private gardens replace communal spaces, and children play in designated parks rather than street corners.



Jwalapur Modern Development

The western section toward Jwalapur represents the newest phase of Haridwar's urban development. This area showcases contemporary concrete construction with multi-story apartment buildings, modern commercial complexes, and planned residential neighborhoods. The architecture follows utilitarian principles with minimal ornamentation, flat roofs, and reinforced concrete as the primary building material. The urban layout adopts a more regular grid pattern with wider streets accommodating vehicular traffic. This zone reflects Haridwar's contemporary growth beyond its religious significance into a modern urban center serving broader residential and commercial needs.

Central Commercial Transition Zone

Moving westward, the city transitions into a mixed commercial residential zone characterized by colonial-era structures and early 20th century buildings. Here we see the Moti Bazaar area with shop houses, combining ground-floor retail with upper-level residences. The architecture displays a blend of traditional elements with British colonial influences, featuring covered verandas, balconies, and more regularized façades. Building heights increase moderately, and the street pattern becomes somewhat more organized while still maintaining organic elements.

Historic Core (*Har ki Pauri*)

The eastern riverfront is dominated by traditional sacred architecture centered around *Har ki Pauri* ghat. This area features temple complexes, ashrams, and religious structures with distinctive architectural elements like domes, shikhara towers, and ornate façades. Buildings here serve primarily religious and pilgrim accommodation functions, with dense clustering along the ghats. The urban fabric follows ancient patterns that prioritize access to the sacred Ganges, with narrow winding streets oriented toward the river.

Inferences

This urban analysis effectively documents how Haridwar's built environment has evolved from its sacred historic core at *Har ki Pauri* toward the more secular, contemporary development in Jwalapur, reflecting the layering of history, religious significance, and modern development pressures in this important pilgrimage city.

The map illustrates the gradual transformation of architectural styles and urban patterns along the Ganges River corridor connecting the sacred *Har ki Pauri* ghat area to the newer development in Jwalapur.

City Skyline

In Haridwar, architecture does not rise to dominate; it settles to belong

Then there's Jwalapur—a short distance away, but worlds apart in character. With 4 to 5-story buildings and broader roads, it reflects Haridwar's modern face. It's faster, busier, and built for urban life. But even here, the city doesn't forget its roots. It balances progress with tradition.

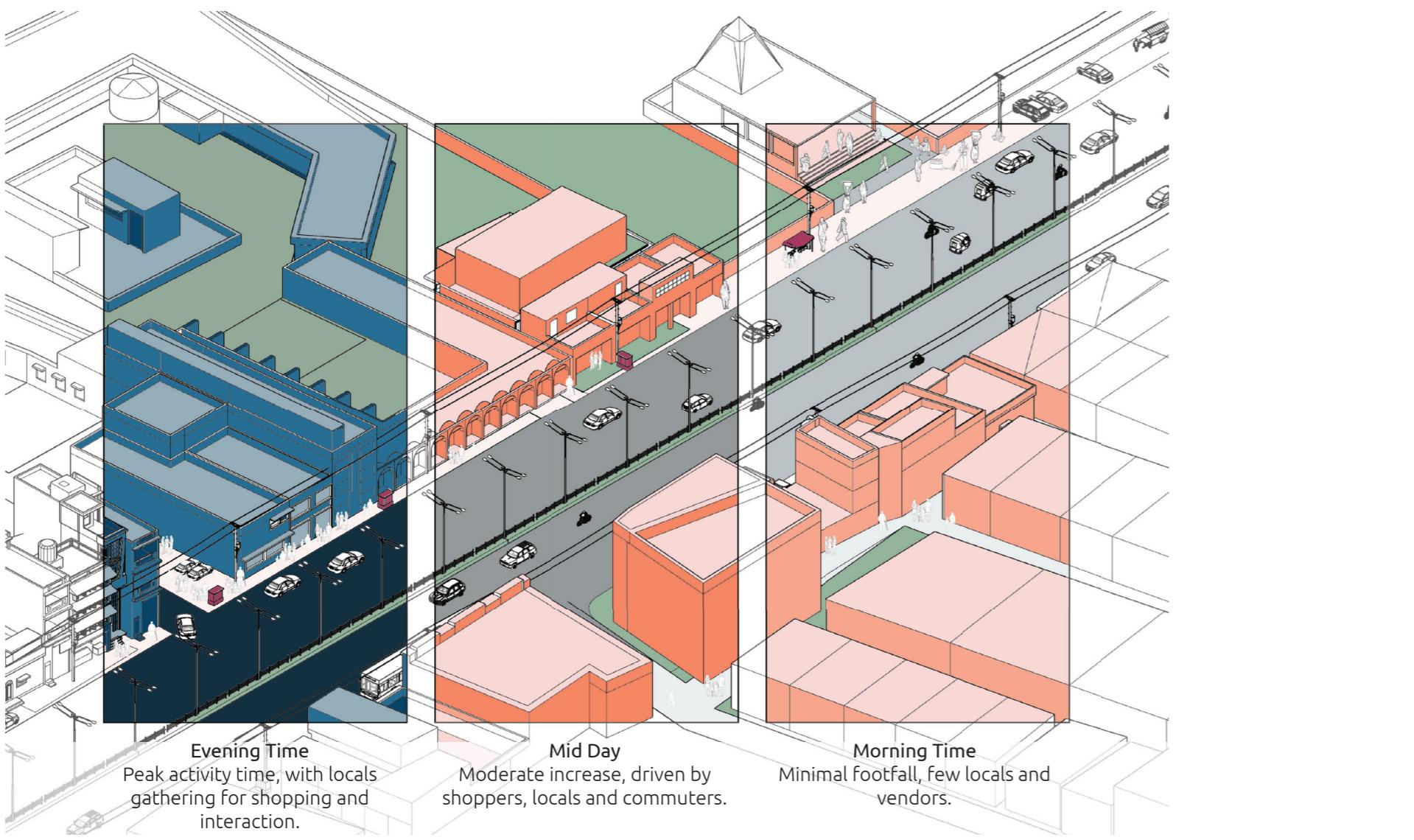


Buildings in Haridwar whisper rather than shout. Standing modestly along narrow streets and facing the holy Ganga, they are only two to four floors high. They have a subdued elegance, as though they are bending in respect. Even while their shapes and colors have evolved over time, their height has remained same, retaining the spiritual quality.

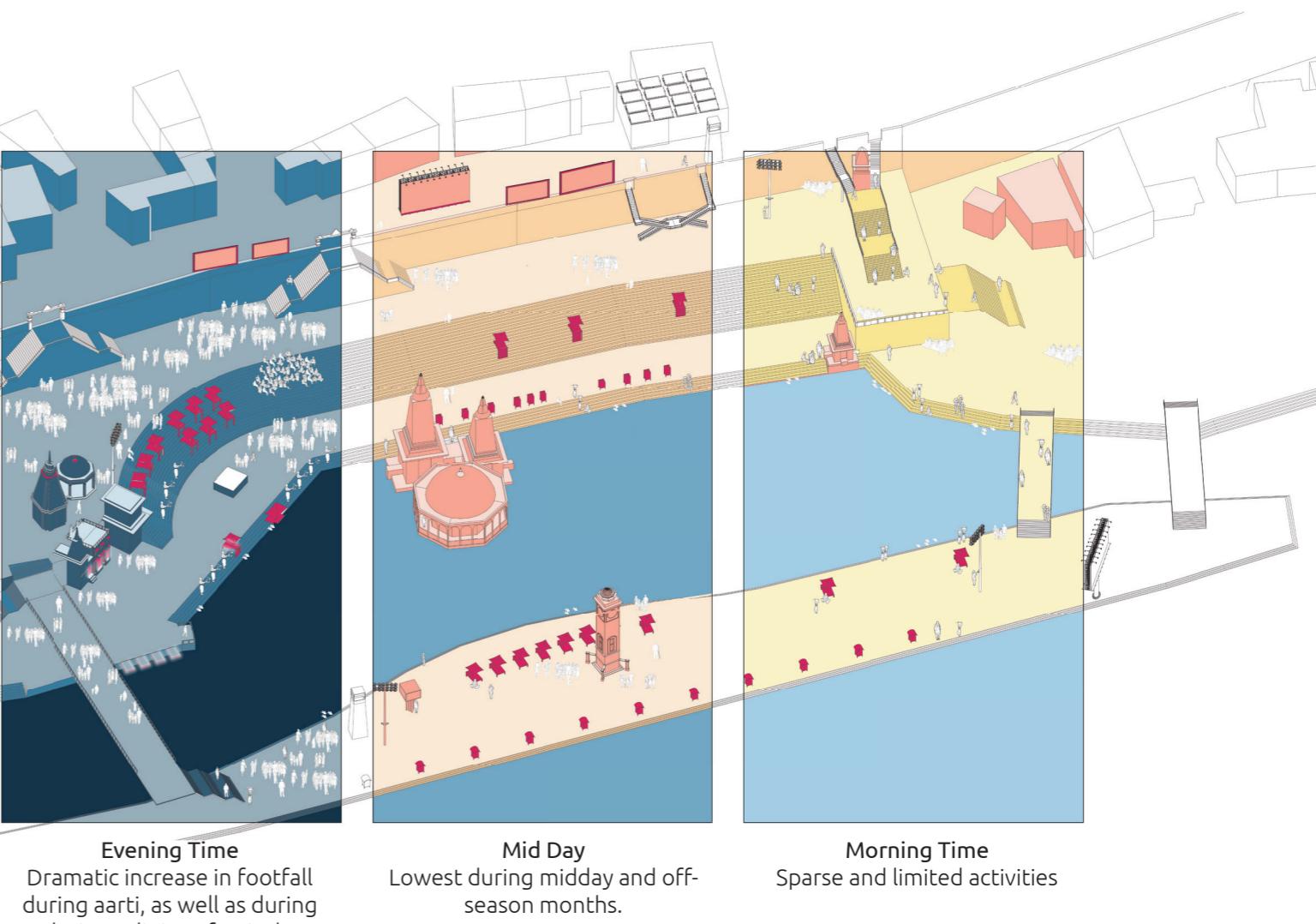


The low-rise scale allows the sacred energy of the place to flow freely, keeping the city's essence intact. The architecture here feels intentional, not just in design but in spirit. It respects the rhythm of the river, the beliefs of its people, and the intimacy of its setting.

Footfall Analysis

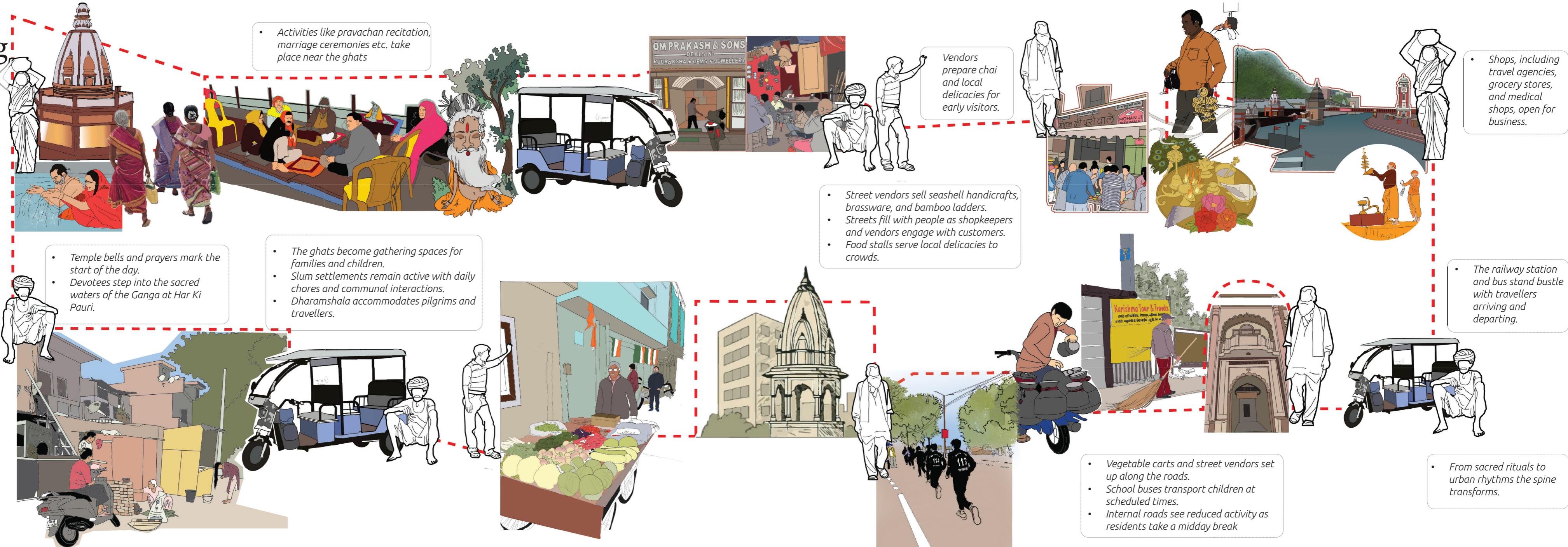


Jwalapur Area

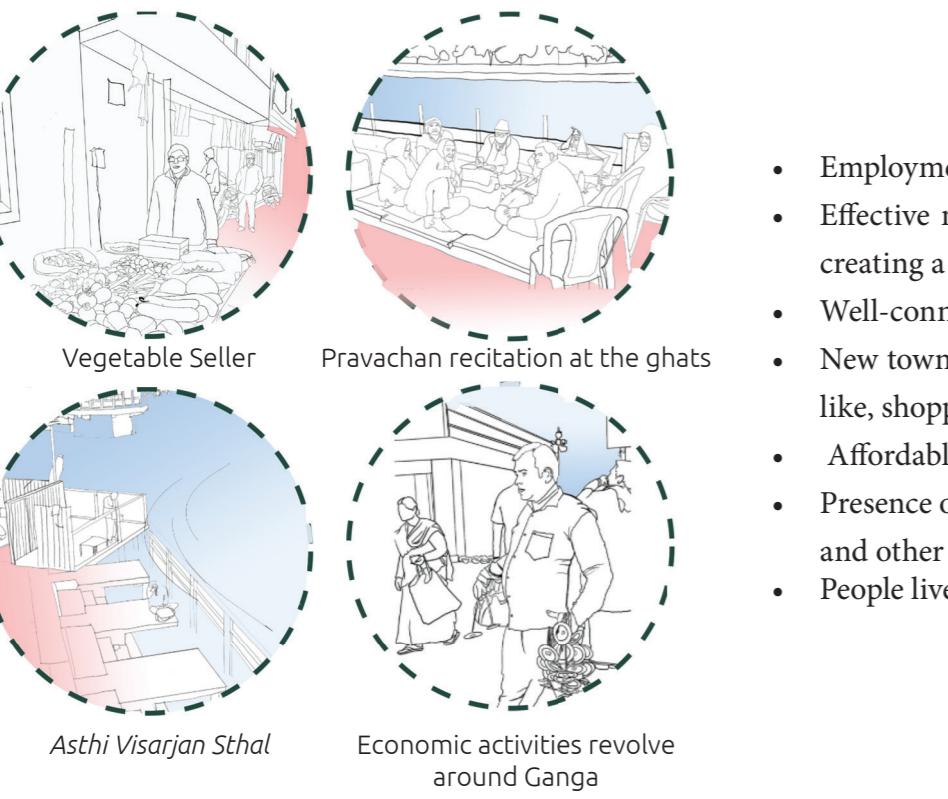


Har-ki-Pauri

Activity Mapping

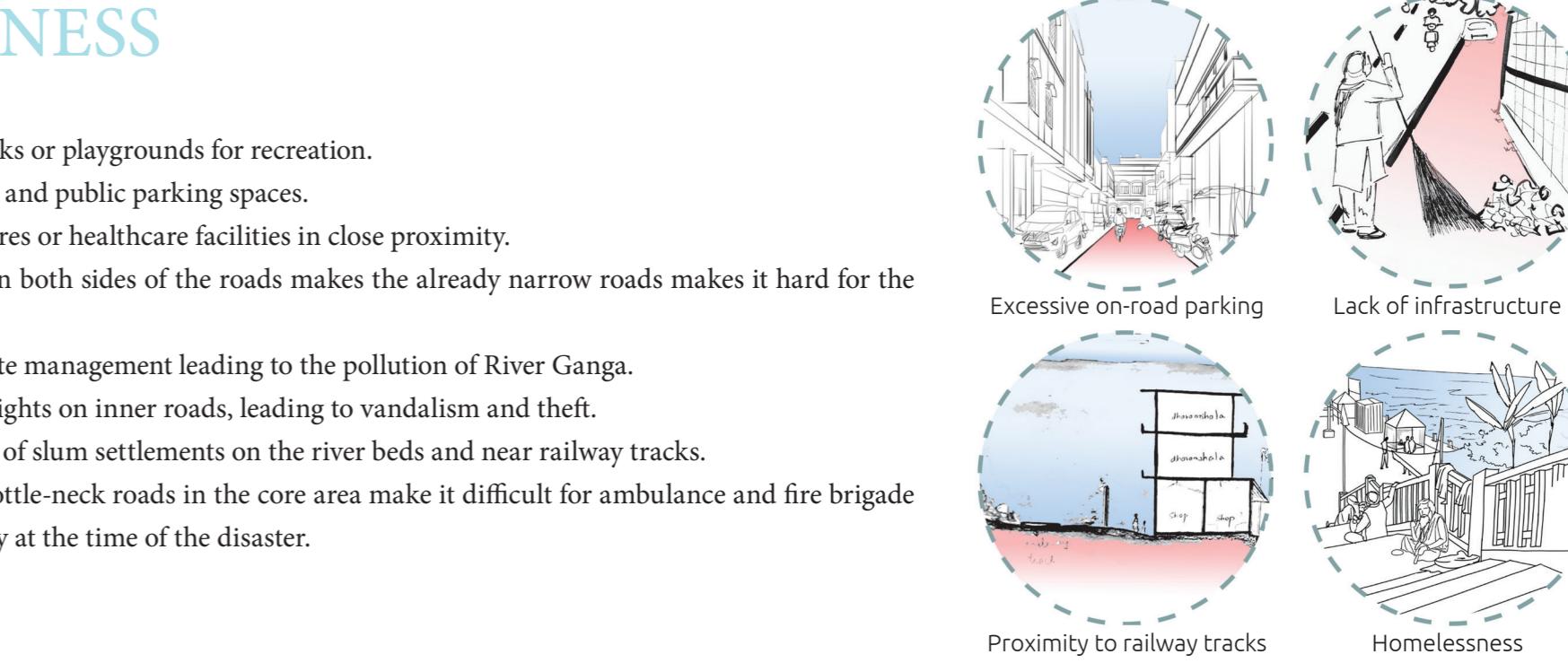


STRENGTH



- Employment opportunities available at temple precinct, *dharamshalas*, and *ashrams*.
- Effective measures have been taken towards crowd control that keeps the visitors from creating a chaotic atmosphere impacting the local population.
- Well-connected to nearby towns through railways and bus.
- New town caters to the industry employed population with availability of infrastructure, like, shopping malls, theatres, and proper food courts.
- Affordable housing options available catering to middle-income groups.
- Presence of Ganga, a sacred holy river, adds up to a lot of economic growth during *Kumbh* and other festivals.
- People live a very content and simple lifestyle.

WEAKNESS



- Absence of parks or playgrounds for recreation.
- Lack of private and public parking spaces.
- No grocery stores or healthcare facilities in close proximity.
- Open drains on both sides of the roads makes the already narrow roads makes it hard for the pedestrians.
- Poor solid-waste management leading to the pollution of River Ganga.
- Lack of street lights on inner roads, leading to vandalism and theft.
- Encroachment of slum settlements on the river beds and near railway tracks.
- Narrow and bottle-neck roads in the core area make it difficult for ambulance and fire brigade to enter the city at the time of the disaster.

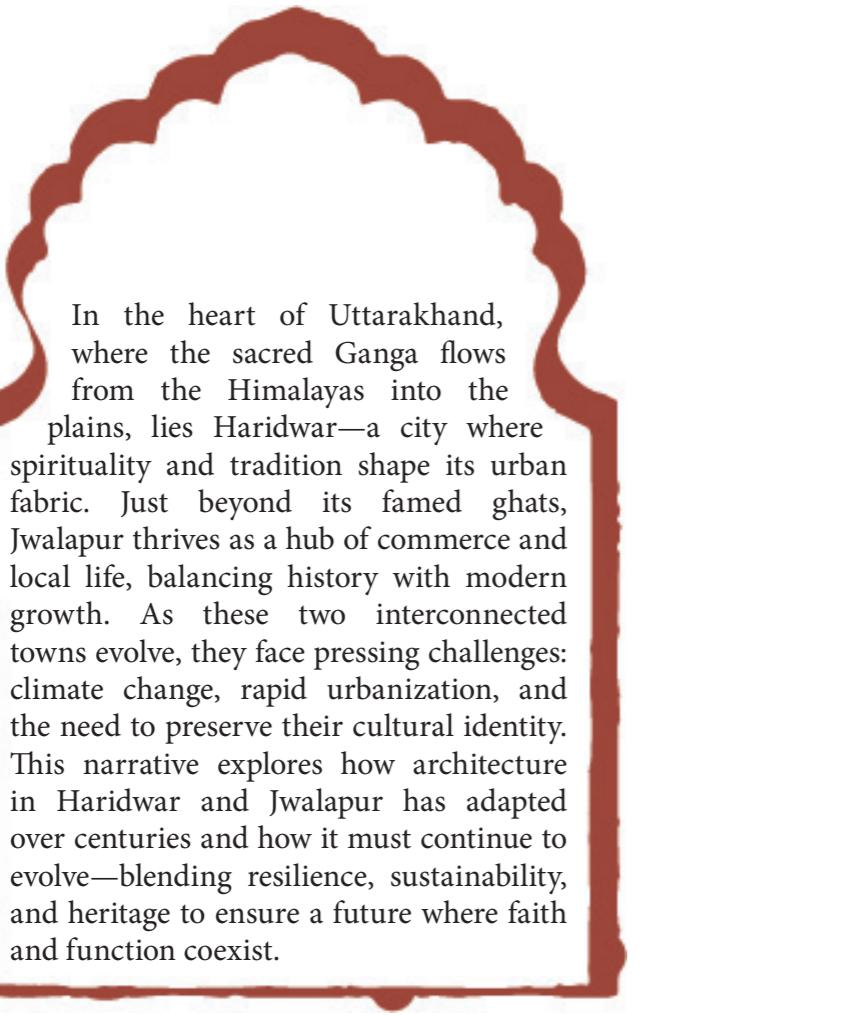
OPPORTUNITIES

- The new town with access to railway and National Highway creates an opportunity to expand the industrial sector.
- The land available for temporary construction during the *Kumbh* festival can be utilized in appropriate manner in the form of tactile urbanism or community gathering spaces.
- The upcoming new town could be an opportunity to practice sustainable ideas and implement proper urban planning guidelines to avoid encroachments and disorganized development.
- Art and craft centres can be proposed to promote the spirituality of the city under *Viksit Bharat*, throughout the year.
- Developing homestays, eco-tourism, and heritage walks and improvement in the physical infrastructure can improve Haridwar tourism.
- Community projects can be encouraged in order to engage locals in programs to preserve the area's heritage and environment.
- Urban Infrastructure Development: Upgrading waste management and sanitation systems to improve living conditions.

THREAT



Documentary Insight: Architecture, Culture & Change

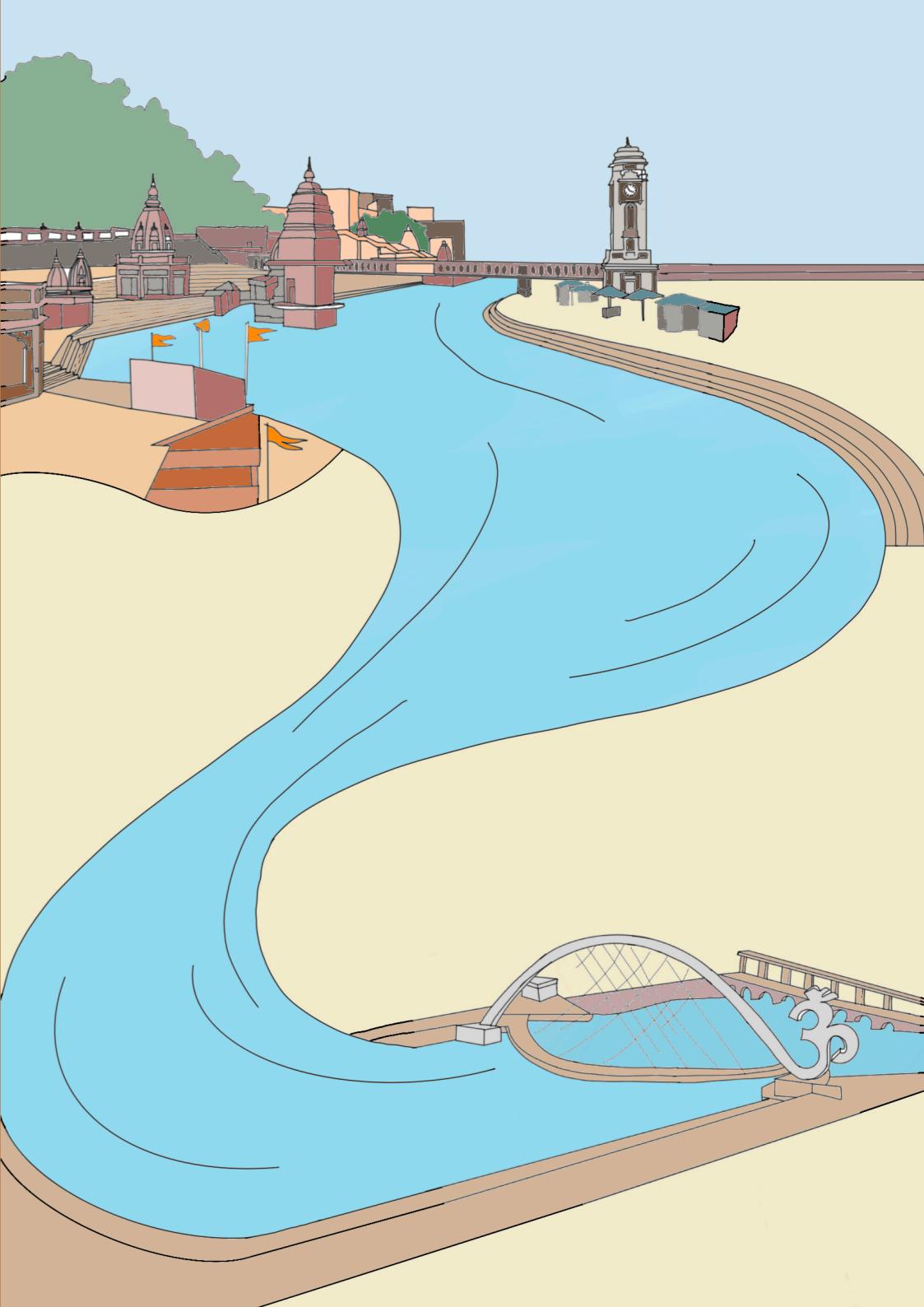


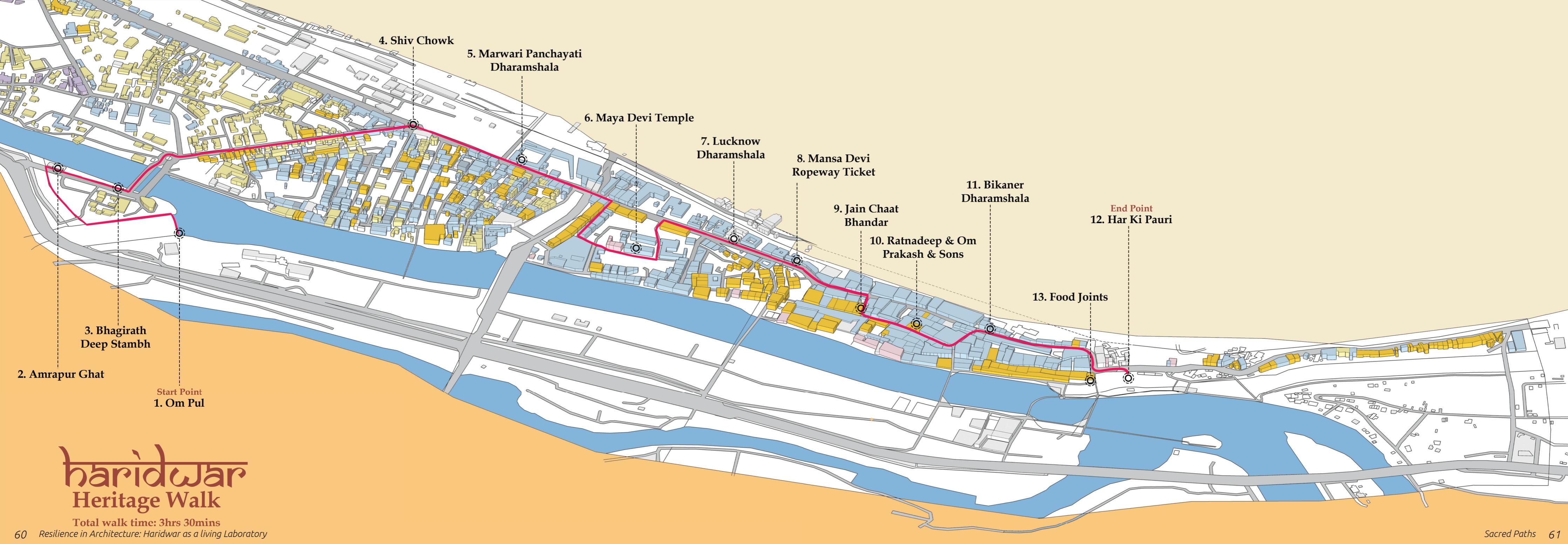
To enhance your understanding,
scan the QR code to watch the video



03

Sacred Paths: A Walk through Haridwar





HERITAGE WALK

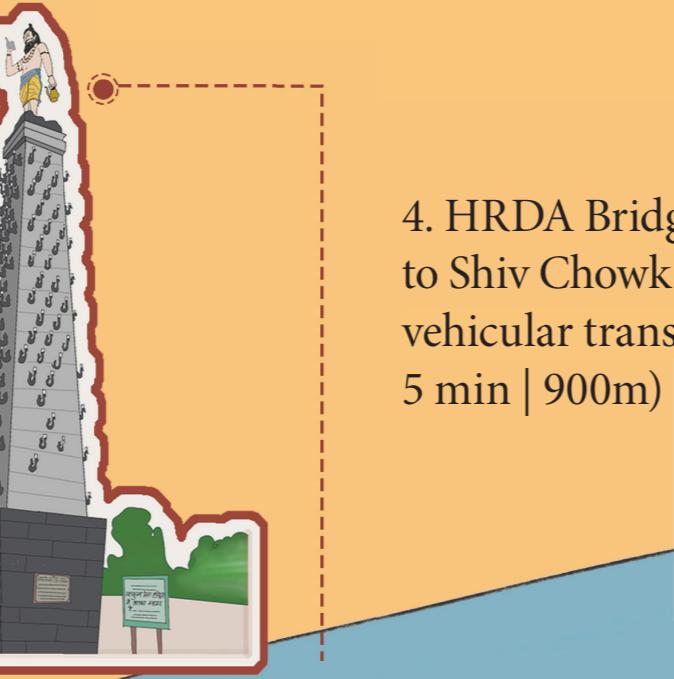


1. Starting point: Om Setu Bridge

While crossing Om Setu Bridge, where the Ganga flows beneath, reflecting temple bells. Pause to take in the ghats and the city's sacred rhythm.

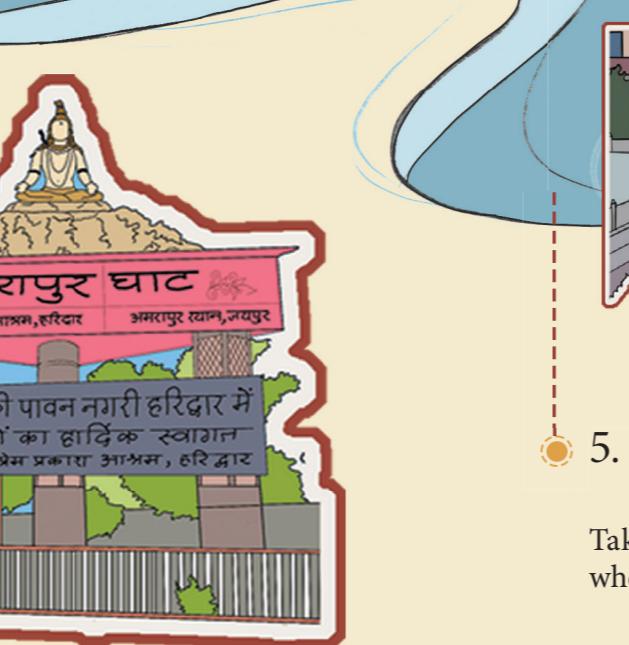
3. Bhagirath Deep Stambh

Pause at Bhagirath Deep Stambh, where countless lamps glow in devotion, illuminating Haridwar's spiritual essence.



2. Amrapur Ghat (4 min walk | 280m)

Stroll towards and stop by the ghats where the river whispers tale of time and mural paints the timeless spirit of haridwar.



5. Marwari Panchayati Dharamshala

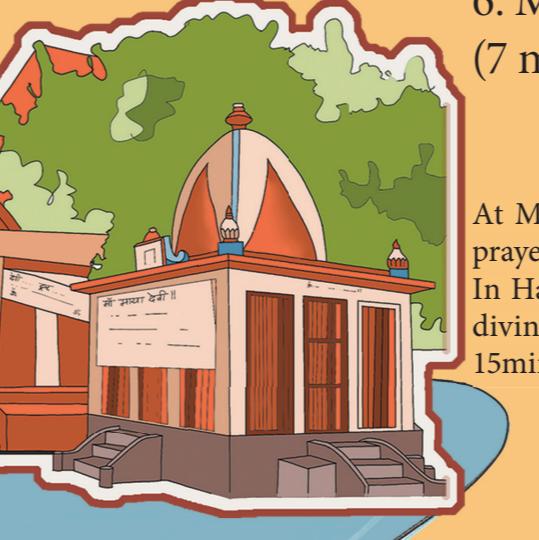
Take a 5min stop at the Dharamshala, a sanctuary for pilgrims, where journeys pause, and faith finds rest.



4. HRDA Bridge to Shiv Chowk (via vehicular transport | 5 min | 900m)

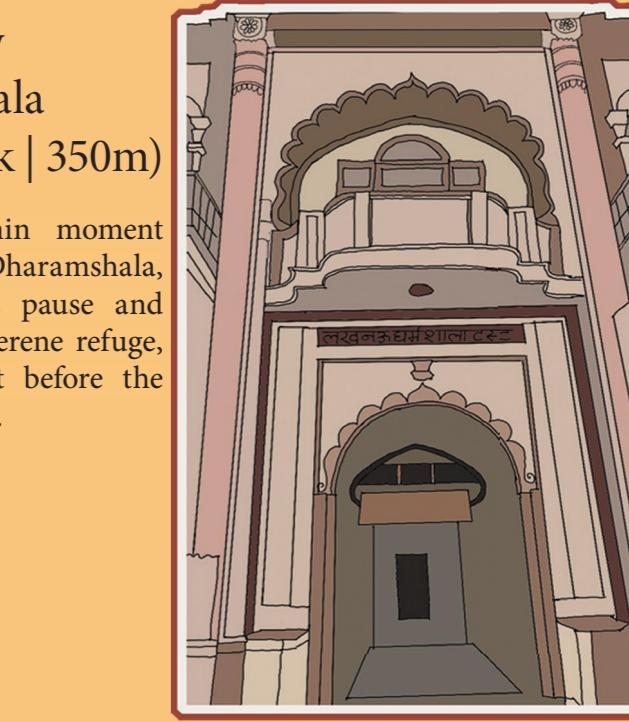
6. Maya Devi Temple (7 min walk | 450m)

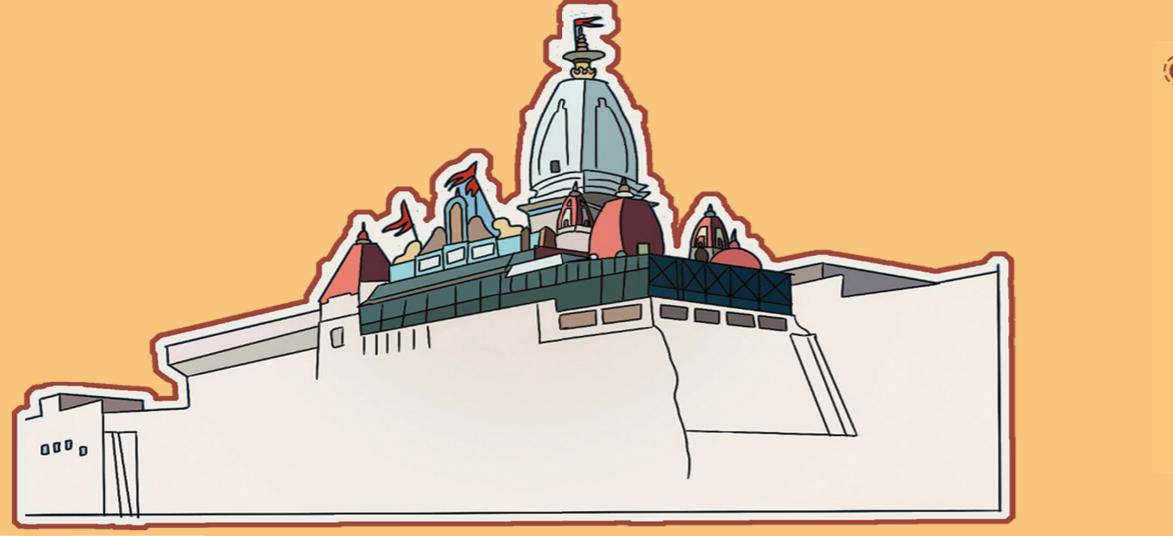
At Maya Devi's feet, offer your prayers, In Haridwar's embrace, feel the divine presence. Spend about 15min.



7. Lucknow Dharamshala (4 min walk | 350m)

A fleeting 5min moment at Lucknow Dharamshala, where travelers pause and find peace. A serene refuge, whispering rest before the road calls again.



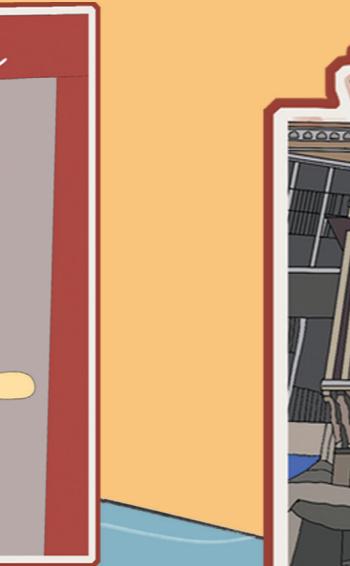


8. Mansa Devi Ropeway & Temple Visit (8 min walk | 550m)

Take the ropeway to Mansa Devi's peak, spend 45 min in darshan, soaking in the views.

9. Jain Chat Bhandar (3 min walk | 220m)

A bustling street food mall, perfect for a quick 15min break to savor delicious snacks and indulge in local flavors.



10. Ratnadeep Store & Om Prakash & Sons (3 min walk | 240m)

Shops brimming with religious souvenirs, Rudraksha malas, and prasad items spend 5 to 10 min exploring, finding sacred treasures to carry home.



11. Bikaner Dharamshala (2 min walk | 120m)

A brief 5min stop at another pilgrim's resting place, where serenity meets stunning architecture, offering a glimpse into its timeless beauty.



13. After the aarti, savor local flavors at Mohanji Puri Wale, known for its puri-sabzi, enjoy the mouthwatering kachoris at Munna Lal, and refresh with a cool lassi at Prachin Punjabi Lassi Wala.

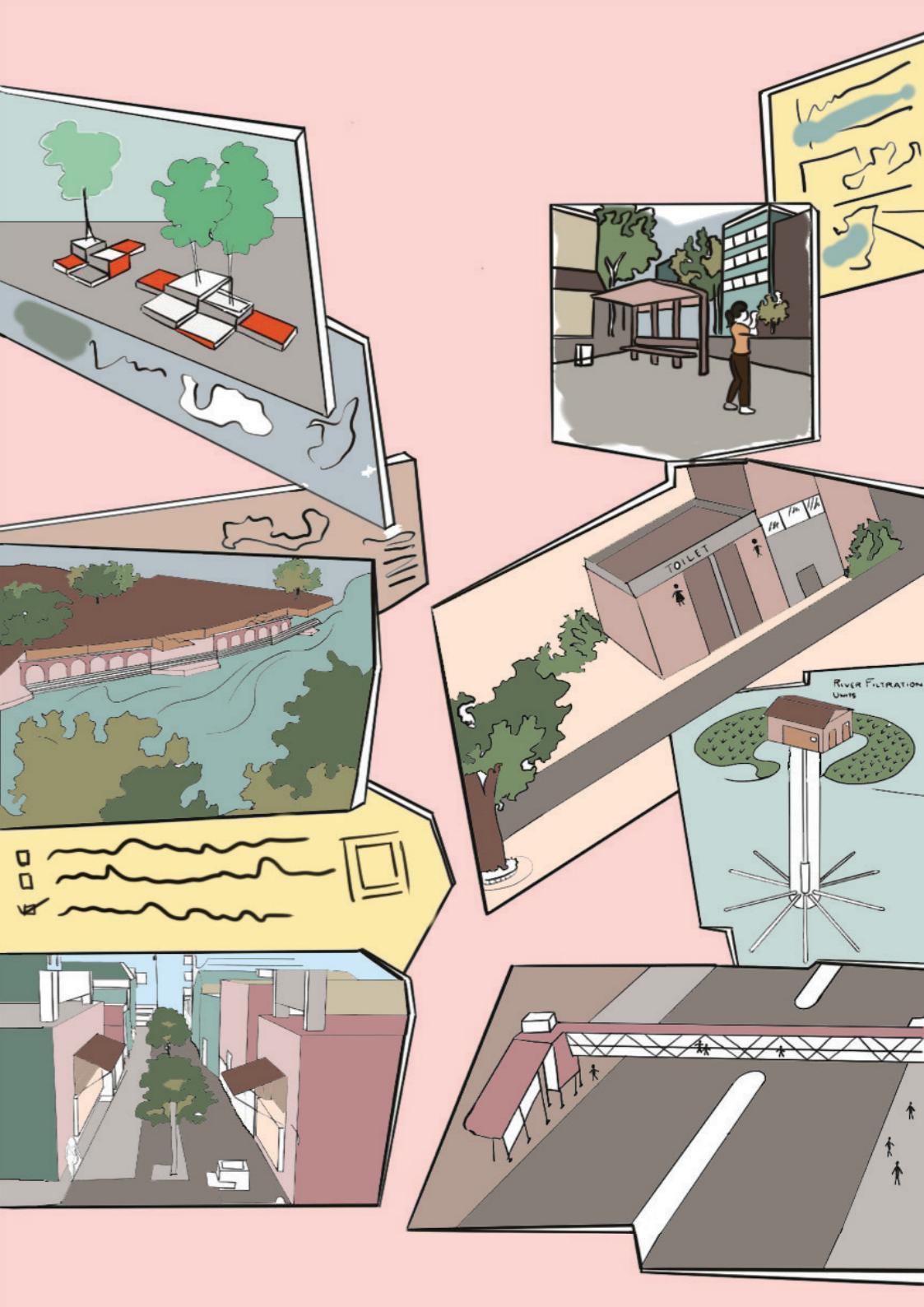


12. Final Destination: *Har ki Pauri* (7 min walk | 500m)

Arrive at the sacred *Har ki Pauri*, the famous ghat in Haridwar. Spend 45 min immersed in the mesmerizing Ganga Aarti, a spiritual ritual where devotees unite to offer prayers to the river, enveloped in divine light and devotion.

04

Urban Strategies For Haridwar





- Potential Sites
 - Locations for minor interventions
 - Kumbh kshetra*
 - Parks and playgrounds

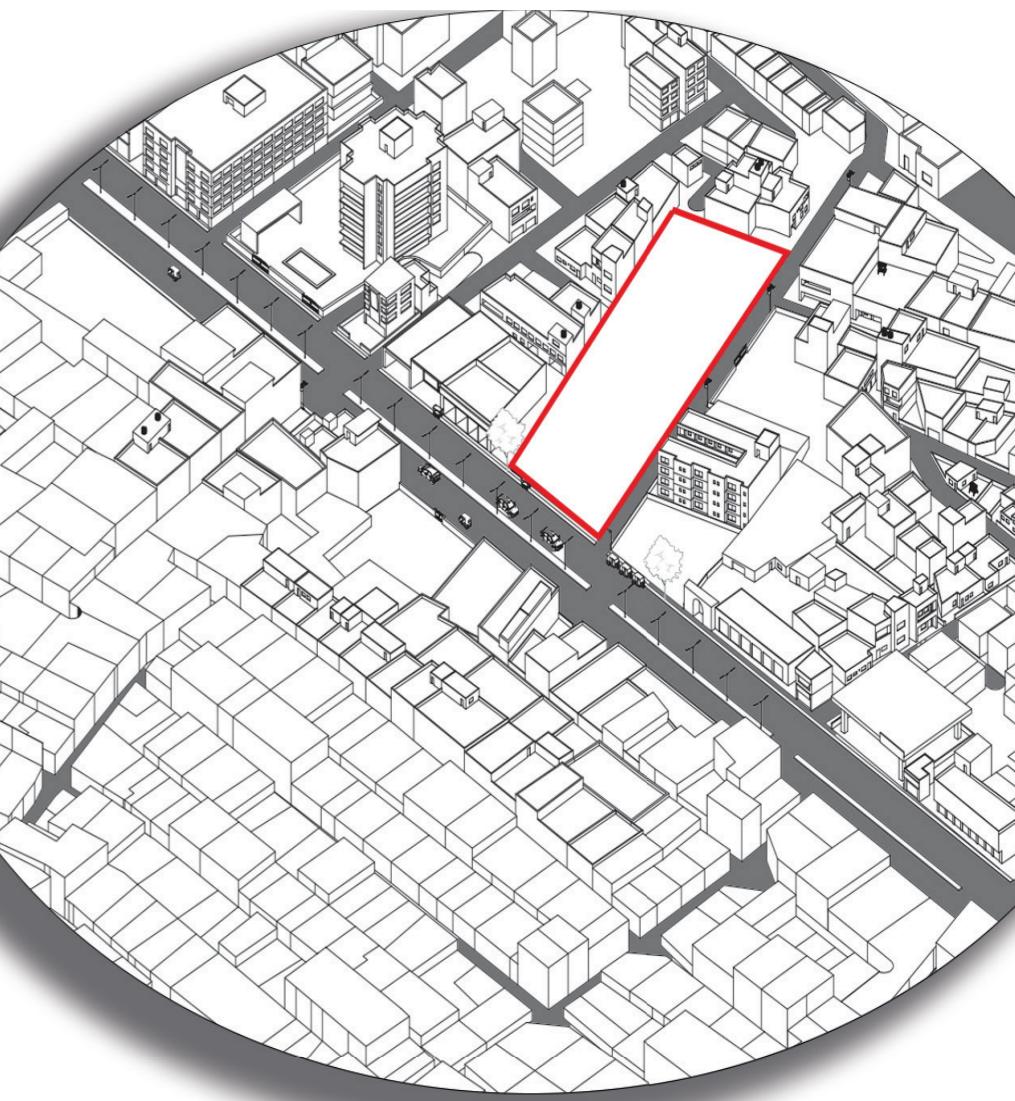
SITE- JWP001



LOCATION: Pul Jatwara, Roorkee Road, Jwalapur, Uttarakhand 249407
LAT: 29°55'56.0"N .
LON: 78°08'19.9"E.
LANDMARK: near Shri Guru Ravidas ji Memorial Gate.

The buffer zone offers several advantages, such as flood control, environmental preservation, and community activity space. The water edge has to be revitalized in order to enhance accessibility and ecological health because it is in bad shape. For the remainder of the year, the property is underutilized because it is mostly used during the Kumbh Mela. There are still plenty of undeveloped areas on the property, which offers chances for planning and future expansion. The location is well-connected to the highway, making it convenient for logistics and commuters. The site's accessibility improves emergency response capabilities, enabling prompt action when necessary. It is important for social, cultural, and religious events because of its closeness to the ghat.

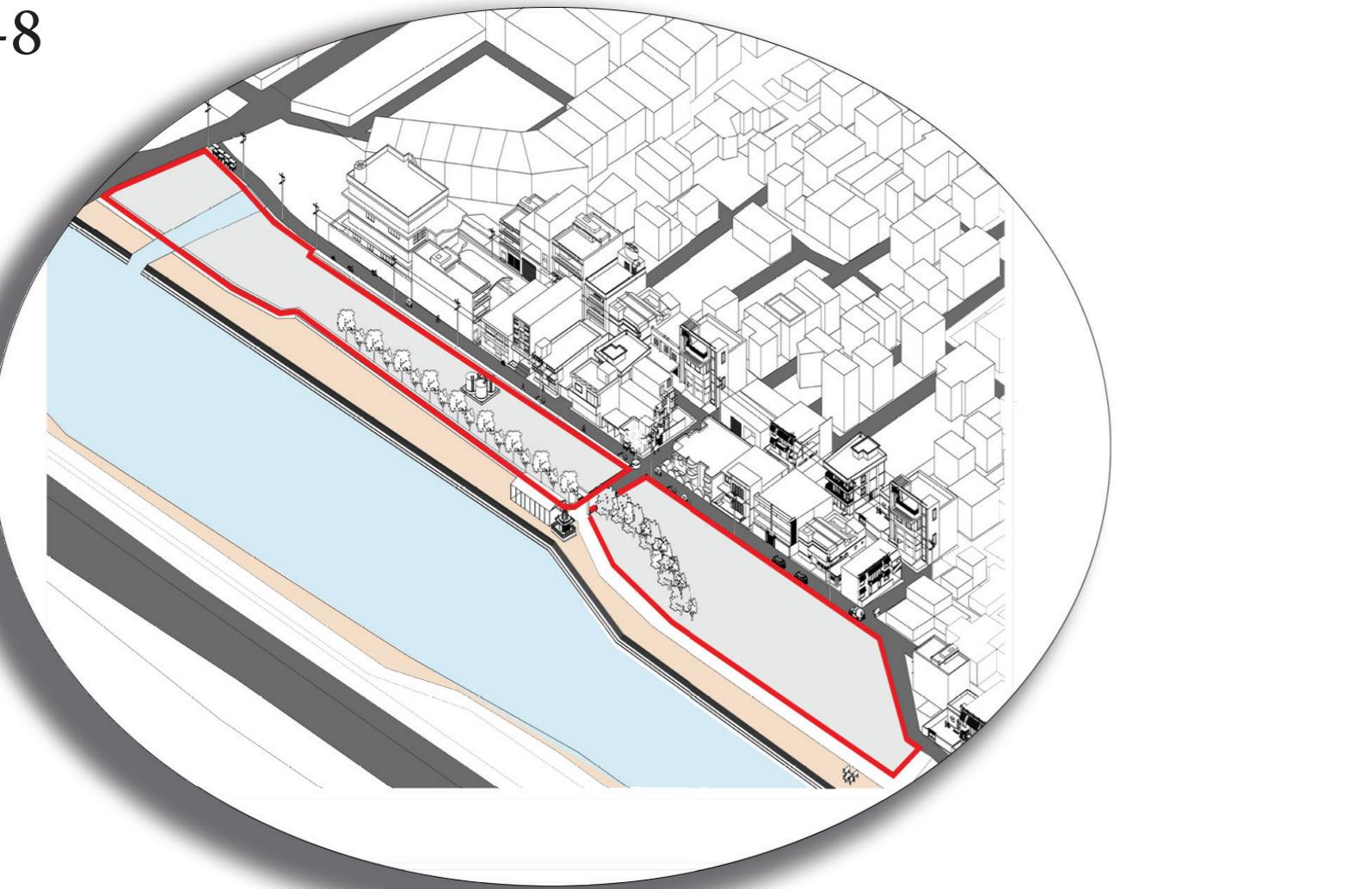
SITE- JWP006



LOCATION: Mod, Yogi Vihar Colony, Model Colony, Ranipur, Haridwar, Uttarakhand 249401
LAT: 29°55'53.8"N
LON: 78°07'47.1"E
LANDMARK: near Shankar Ashram

The location acts as a bridge connecting Old and New Haridwar. The location is ideally situated for a bus station due to its excellent road access, since buses arrive from Dehradun and Himachal. Because of its direct highway connection, it is more accessible to tourists, which stimulates the local economy by drawing more visitors. The site is a well-connected and easily accessible commercial area, with a chowk that helps manage traffic on the city's main spine. The location offers easy access to local transportation, railroads, and the Delhi-Haridwar Highway (NH-58). Devotees can get directly and safely to the Kumbh Mela location (Rishikul) thanks to a pedestrian bridge.

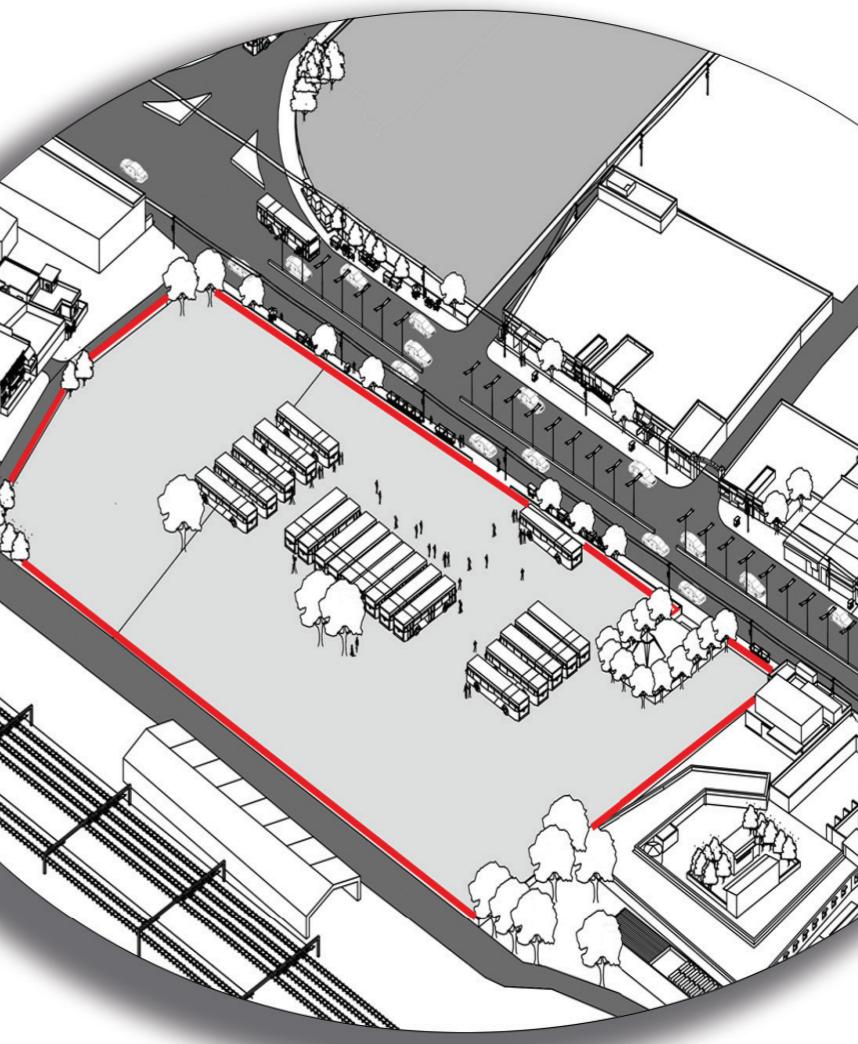
SITE- JWP007-8



LOCATION: Govindpuri, Devpura,
Haridwar, Uttarakhand 249410
LAT: 29°55'56.0"N
LON: 78°08'19.9"E
LANDMARK: near Premnagar Ashram

Given that it is flanked by both residential and commercial space, the site is ideally situated within the framework of urban development. It is reachable from three main access points due to its excellent connections to the national highway and the significant Haridwar spine. It also has a direct visual from the national highway making it a key landmark. The site's abundance of vegetation improves landscaping and, in general, somewhat lowers heat gain. The site blends well with the ghat providing diverse opportunities to explore various urban projects.

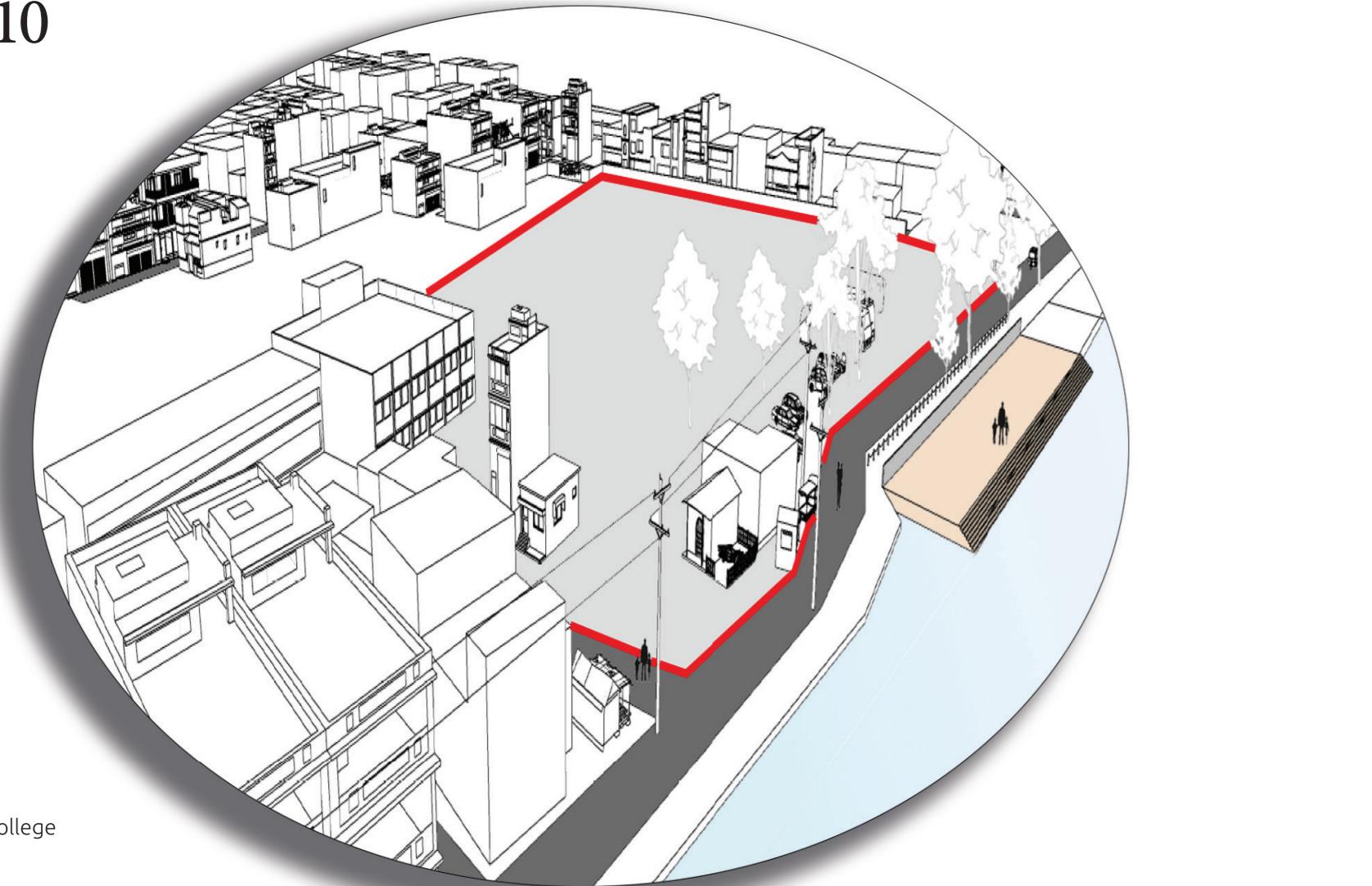
SITE- JWP009



LOCATION: Haridwar Main Rd,
Rishikul, Devpura, Haridwar,
Uttarakhand 249410
LAT: 29°56'20.4"N
LON: 78°08'31.4"E
LANDMARK: near Rishikul Haridwar

The location acts as a bridge connecting Old and New Haridwar. The location is ideally situated for a bus station due to its excellent road access, since buses arrive from Dehradun and Himachal. Because of its direct highway connection, it is more accessible to tourists, which stimulates the local economy by drawing more visitors. The site is a well-connected and easily accessible commercial area, with a chowk that helps manage traffic on the city's main spine. The location offers easy access to local transportation, railroads, and the Delhi-Haridwar Highway (NH-58). ; Devotees can get directly and safely to the Kumbh Mela location (Rishikul) thanks to a pedestrian bridge

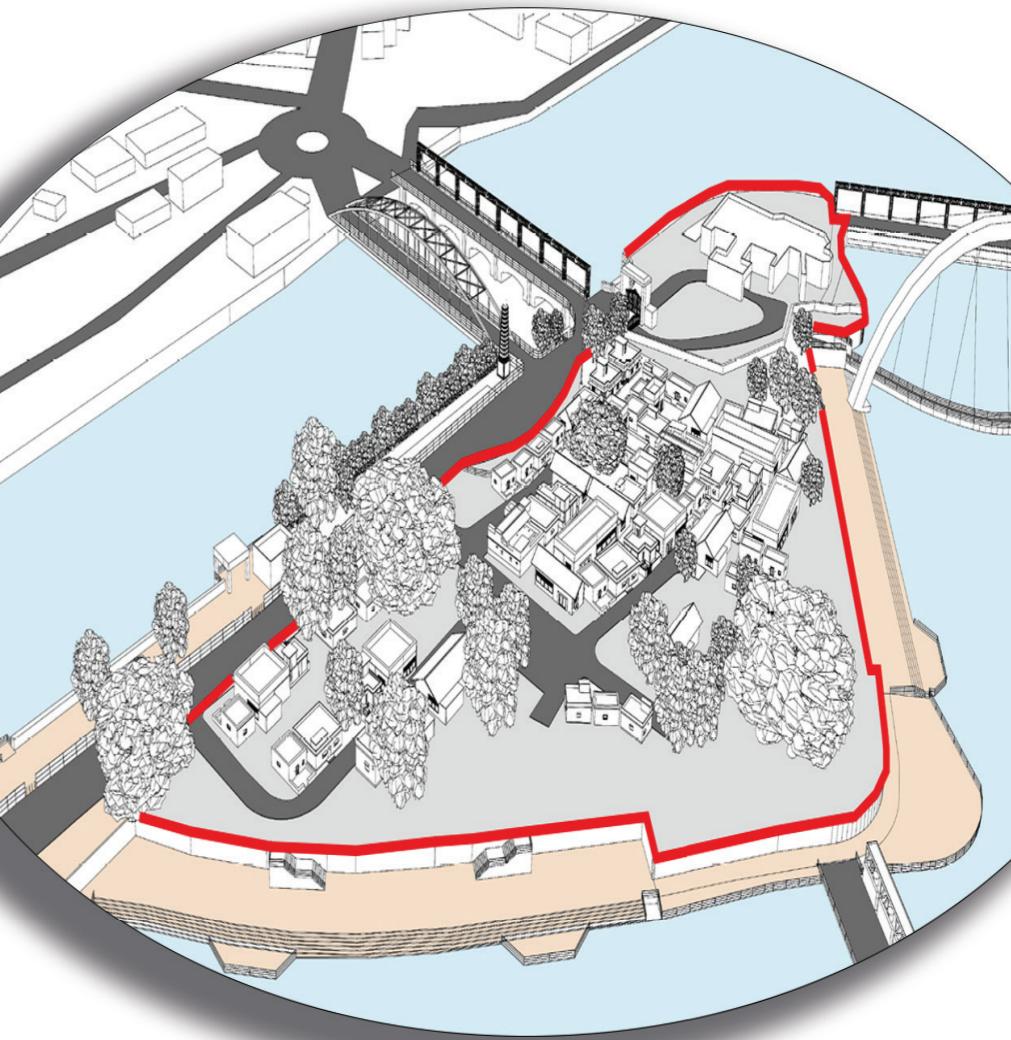
SITE- JWP010



LOCATION: Govindpuri, Devpura,
Haridwar, Uttarakhand 249410
LAT: 29°56'05.0"N
LON: 78°08'30.4"E
LANDMARK: near S.M.J.N. (P.G.) College

The property, which is close to Haridwar Junction, is easily accessible and ideally situated between the city's current growth and historic center. It acts as an organic link between the past and the present. The waterfront is currently neglected, but with better access, shaded sitting, and ecological improvements, it has a lot of potential to become a lively public area. During occasions like the Kumbh Mela, Kanwar Yatra, and Ganga Aarti, the region transforms into a cultural hub and stays vibrant all year round. The land, which is still undeveloped, has a special chance for well-considered urban planning that encourages leisure, spirituality, and cultural interaction. It is perfect for sustainable development that incorporates public amenities and improves connections inside Haridwar because it has a more tranquil atmosphere than the city center.

SITE- HKP001



LOCATION: Mayapur,
Haridwar, Uttarakhand
249410
LAT: 29°56'27.9"N
LON: 78°09'21.2"E
LANDMARK: near om bridge

The site's proximity to Old Haridwar facilitates access and ensures that it is conveniently located among historical and cultural sites, offering a fantastic chance to combine modern design with legacy. Away from the bustle and commotion of the city, the island's seclusion creates a tranquil and unique setting that is ideal for the creation of areas that promote introspection and individuality. The site's underdevelopment presents an opportunity to revitalize and improve the area, transforming it into a modern, practical space that enhances the urban setting and overall standard of living.



Faculty



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Studio Tutor



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Studio Tutor



Ar. Ajinkya Desai
Studio Tutor

The Team



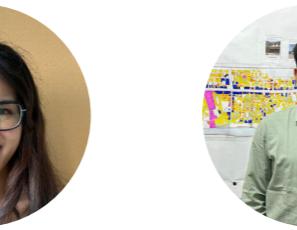
Akanksha Bankhele



Anshuman Mohapatra
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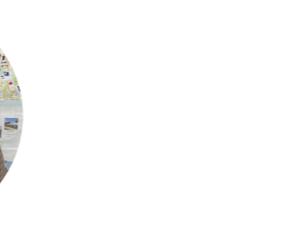
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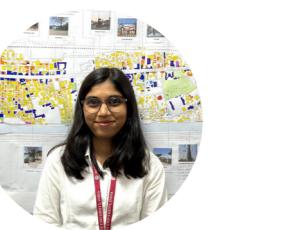
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Annexure

Category	Details
Course Code	21ARCH801
Course Title	Architectural Design VIII
Credits	10
Faculty	NT, KP, AD
Mandatory/ Elective	Mandatory
Intake Capacity	40
Course Semester Semester	VIII
Program Level	Undergraduate
Program Type	B.Arch.
Project	Resilience in Architecture: Haridwar as a Living Laboratory Urban Design

Contact Days and Timings

Brief Description

Set in Jwalapur, Haridwar, the studio titled “Resilience in Architecture” explores the dynamic relationship between the historic sacredness of Haridwar and the evolving urban-industrial identity of Jwalapur. The studio focuses on the interplay of the old and new urban fabrics, investigating the transformation of the Ganga from a sacred river into a canal for industrial purposes. This dichotomy forms the core of the design inquiry, where students are tasked with envisioning resilient and inclusive urban interventions that harmonize tradition, modernity, and ecological sustainability.

Unit Typology	No
Vertical Studio	Advanced
Studio Level	Dr. Neeti Trivedi
Name of the Tutor	Ar. Ketki Patil
Name of the Co-Tutor	Ar. Ajinkya Desai

Contact Days and Timings

Long Description

“... water is constantly in motion, changing states, crossing borders, nourishing (and destroying) life. How can water and urbanism be considered together as a generative frame for urban design practice, social life, and ecological regeneration?” - Kate Orff (2012)

Monday 8:45 am - 3:30 pm	The ancient city of Haridwar, situated on the banks of the sacred River Ganga, serves as a living testimony to India’s cultural, spiritual, and ecological heritage. As one of the holiest cities in India, Haridwar attracts millions of pilgrims annually while grappling with the dual challenges of urbanization and environmental degradation. The studio, “Resilience in Architecture,” aims to explore the socio-cultural and spatial interplay between the old town of Haridwar and the new town of Jwalapur. Through the studio, the intent is to address the challenges posed by the conversion of the Ganga into an industrial canal while acknowledging its sacred and ecological significance. Through field study, mapping and observational study, the students would develop a comprehensive understanding of urban resilience through the lens of architecture, public spaces, and environmental stewardship. The objective is to encourage students to reconnect with the sacredness, heritage and spirituality of the old city of Haridwar and engage with the unique upcoming urban identity of Jwalapur as a growing industrial hub. The studio aims to empower students to design with resilience at the forefront, fostering an understanding of the symbiotic relationship between heritage and progress, and preparing them to address the complex challenges of urbanization and climate change. By understanding planetary urbanization and southern urbanism, students will rethink development approaches, prioritizing regional wisdom and living heritage. The studio culminates in design proposals that celebrate the coexistence of tradition, ecology, and contemporary urban needs, revitalizing the sacred relationship between Haridwar and its water systems. The studio encourages students to approach Haridwar as a living laboratory, learning from its sacred and cultural significance while addressing contemporary urban challenges with innovative, resilient design solutions.
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Course Expense

Thursday 8:45 am - 3:30 pm	(extra expenditure a student would incur during the semester) Students may incur additional costs for field visits, use of tools for data collections, and model making material.
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Course Prerequisite

Contact Days and Timings	It is expected for the students to have fundamental understanding of urban studies, data collection methods, and design softwares.
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Problem Statement:

Monday 8:45 am - 3:30 pm	The studio, “Resilience in Architecture,” aims to explore the socio-cultural and spatial interplay between the old town of Haridwar and the new town of Jwalapur. Through the studio, the intent is to address the challenges posed by the conversion of the Ganga into an industrial canal while acknowledging its sacred and ecological significance.
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Project Aim:

Thursday 8:45 am - 3:30 pm	The studio aims to explore resilient urban design strategies that correspond to the evolving industrial identity of Jwalapur with the sacred and ecological significance of Haridwar, focusing on the transformative role of the River Ganga.
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Learning Outcomes

Contact Days and Timings	(Learning Outcomes must state what a student will be able to do as a consequence of the learning) Through this studio, students will explore the transformative potential of architecture and urban design to create resilient communities. The students will develop a comprehensive understanding of different urban fabrics, spatial dynamics, with a focus on socio-cultural ecological aspects. Students will get proficient in urban design representation techniques, including mapping, diagramming, and three-dimensional visualization, to effectively communicate spatial qualities and design proposals. The students will be able to formulate context-specific and context sensitive design strategies. Understand and localize the Sustainable Development Goals (SDGs) within the context of urban design.
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"Haridwar teaches us — that resilience is not resistance, it is graceful adaptation."