URBAN REDEVELOPMENT FOR TOURISM SUSTAINABILITY IN HILL TOWNS, CASE APPLICATION OF A SMART CITY, SHIMLA, INDIA

An urban design thesis report

Submitted in partial fulfillment of the requirement for

The post graduate degree of

Masters in Architecture (Urban Design)

Under the Faculty of Engineering and Technology

Jadavpur University, Kolkata

Under the guidance of

Prof. Dr. Debashish Das & Prof. Tanmoy Datta

Submitted by:

MIHIR NARAYAN

Roll no.: 002010202005

Exam Roll no.: M4ARC22005

Student of Final Year, M.Arch (Urban Design)

Department of Architecture,

Jadavpur University, Kolkata – 700032

August, 2022

URBAN REDEVELOPMENT FOR TOURISM SUSTAINABILITY IN HILL TOWNS

Case Application of a Smart City, Shimla, India.

FACULTY OF ENGINEERING AND TECHNOLOGY

JADAVPUR UNIVERSITY

KOLKATA – 700032

The foregoing thesis is hereby approved as a creditable study in **Master of Architecture in Urban Design** and presented in a manner satisfactory to warrant is acceptance as prerequisite to the degree for which it has been submitted. It is understood that by this approval the undersigned do not necessarily endorse or approve any statement made, opinion expressed or conclusion therein but approve this thesis only for the purpose for which it is submitted.

Committee of final examination for evaluation of thesis

……

(Signature of Examiner/s)

……

(Signature of Supervisor)

……

(Signature of Supervisor)

JADAVPUR UNIVERSITY

KOLKATA – 700032

CERTIFICATE

This is to certify that the thesis entitled "**Urban Redevelopment for Tourism Sustainability in Hill Towns: Case Application of Shimla, HP, India**" submitted by **Mihir Narayan** of **Registration No. 153934** of 2020-2022 is in partial fulfillment of degree of **Master of Architecture in Urban Design of Jadavpur University.**

This is an authentic work carried by him under our supervision and guidance. To the best of our knowledge, the matter embodied in the thesis has not been submitted to any other university/institute for the award of any degree.

Countersigned

……	……
Prof. Mainak Ghosh	Dean, Faculty of Engineering
Head	and Technology,
Department of Architecture,	Jadavpur University,
Jadavpur University,	Kolkata-700032
Kolkata-700032	

ACKNOWLEDGEMENT

I Mihir Narayan, a student of M. Arch (Urban Design), Department of Architecture, Jadavpur University, Kolkata would profusely like to thank Dr. Mainak Ghosh, Head of Department, Faculty of Architecture, Jadavpur University, who gave me the opportunity to undertake Canal Oriented Development as my Master's thesis topic.

The still small voice of gratitude pays utmost respect to my guides Dr. Debashish Das and Tanmoy Datta, for their valuable insights and constant support during the entire course of my thesis project. Both their perceptual guidance and constructive criticism has been of immense help during each stage of development.

I would humbly like to extend my heartfelt thanks to our thesis coordinator

During the entire work period, my parents has been of immense support considering the ongoing pandemic taking place globally. A loud shoutout to all my Masters batch mates and special mention to my good friend Sakshi Goyal for her constant moral support.

Lastly, during the entire course of work, there were many people who helped me directly and indirectly, I would like to thank them all. I have thoroughly enjoyed the entire course of my project and learnt a lot from it. The entire experience which I acquired during these months, will always be cherished in my memory.

Thank you,

Mihir Narayan

LIST OF FIGURES

LIST OF TABLES

TABLE OF CONTENTS

1.0

INTRODUCTION

1.0 INTRODUCTION

1.1 BACKGROUND

- A city is not only a physical entity for human being, but also a mental & psychological set-up for living.
- Mental map is utmost important feature for the citizens as well as visitors of the place/city.
- The place will be unique in nature when it will hold its story of living of people and city creates imageability.
- Proposal for any hill town is something different from development in plain land due to its topographic settings, natural resources & views of natural beauty.
- Due to lack of usable space in mountain region, the development goes through the more chaotic way in most of the cases and it causes the natural disaster and destruction of natural resources.
- Urban design intervention for that kind of development is very important for economic growth as well as environmental sustainability.
- The objectives of this study are to describe existing condition, analyze and provide design solution for any hill town like Kalimpong.
- Deolo Hill of kalimpong is the new proposal of state government. to promote new development intervention & tourism hub
- This study will analyze the existing & future requirement of the development and formulate design guidelines to create new image of the city.

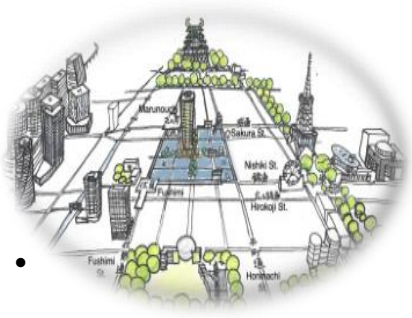
1.2 DEFINITION

1.2.1 URBAN REDEVELOPMENT

- Urban redevelopment is conceptually similar to land readjustment, with the exception that it happens in existing urban areas and often involves a rezoning by the government of a given area from a low-density (single-family housing) to higher-density (mixed-use or commercial) development.
- It contributes to develop a city's comprehensive vision, improves the physical, economic and social condition of a city therefore enhance the competitiveness of the city.
- A program of land redevelopment often used to address urban decay in cities.
- Urban infill on vacant parcels that have no existing activity but were previously developed, especially on Brownfield land, such as the redevelopment of an industrial site into a mixed-use development.
- Constructing with a denser land usage, such as the redevelopment of a block of townhouses into a large apartment building.
- Adaptive reuse, where older structures are converted for improved current market use, such as an industrial mill into housing lofts.

1.2.2 HILL TOWN

- Hill town is any citadel town built upon hills to make invasion difficult. Often protected by defensive walls, steep embankments, or cliffs, such hilltop settlements provided natural defenses for their inhabitants.
- In Europe, especially in Italy, Spain, Portugal and southern France, such towns were common.



1.2.2 SHIMLA

History

The state's capital Shimla was planned by the British for a population of 16,000 but now has a population of 201,500, according to the last census carried out in 2011.

Other cities and towns have also far exceeded their carrying capacity. Facilities such as water supply, sanitation, waste disposal and traffic management have not kept pace with rapid growth. Buildings have come up even over rainwater drains.

Jutla (2016) mentions the stages of tourism that Shimla has passed through; i) first during the British Raj about 50,000 British officers and rich Indians visited the town annually; ii) between 1940s to late 1980s tourists increased to 250,000 annually and it became a popular setting for Bollywood movies; iii) in late 1980s an average of 350,000 tourists visited Shimla annually leading to the expansion of the hotel industry; iv) from early 1990s to the present tourism has grown into a major industry and tourist arrivals have increased to 1.25 million causing tension on the city's natural and cultural resources. Since the beginning of political unrest in Kashmir over two decades ago, Shimla has become a major alternative tourist destination in the Himalayas (Jutla 2016). It sees a large flow of weekend tourists from neighbouring areas and states as well as international tourists who visit the city as a first stage of their Himalayan tour.

Shimla Planning Area

In order to ensure planned and regulated growth, Government of Himachal Pradesh or GoHP constituted Shimla Planning Area (SPA) through notification in November 1977. About 82 percent of whole population of SPA lives in Municipal Corporation, Shimla including Dhalli, Tutu, and New Shimla. As per the Census 2001, Dhalli, Tutu and New Shimla Urban Agglomeration (UA) were part of Municipal Corporation and later, notified under Special Area (SADA) having 13.83 percent population of the total population of Municipal Corporation. In August 2006, these Special Areas were again merged back into Municipal Corporation. Besides, 12 percent population of total SPA lives in Kufri and Shoghi Special Areas and 6 percent population lives in newly constituted Ghanahatti Special Area. Shimla Planning Area (SPA) comprise of Shimla Municipal Corporation (SMC), recently merged Special Areas of Dhalli, New Shimla, and Tutu, and Special Areas of Kufri, Shoghi and Ghanahatti.

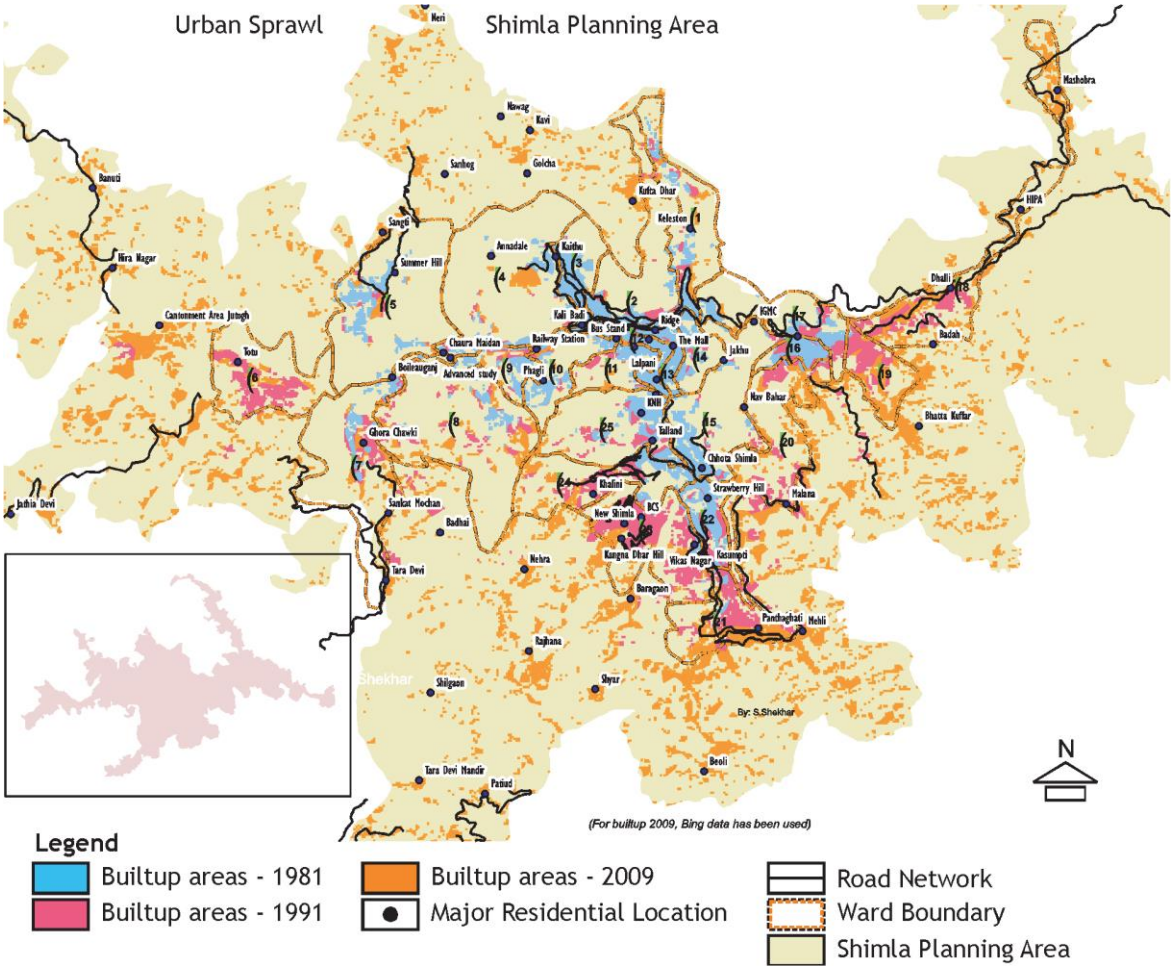


Figure 1 Shimla Planning Area

There is also a Cantonment Board though managed by its own authority. In 1924 the Government in Council declared Jutogh as a Cantonment Board under Section 2, clause XV of the Cantonment Act, 1924. The Cantonment Board is spread over an area of 1.41 sq. km. The Cantonment was originally built for and occupied by Gurkha Troops but after 1857 revolt a mountain battery was quartered and thereafter a detachment of the British Infantry was stationed. The Cantonment Board served a population of 1,396 in 1981 in civil area. Number of houses in the Board area is 109. Present population according to 1991 Census is 1,636.

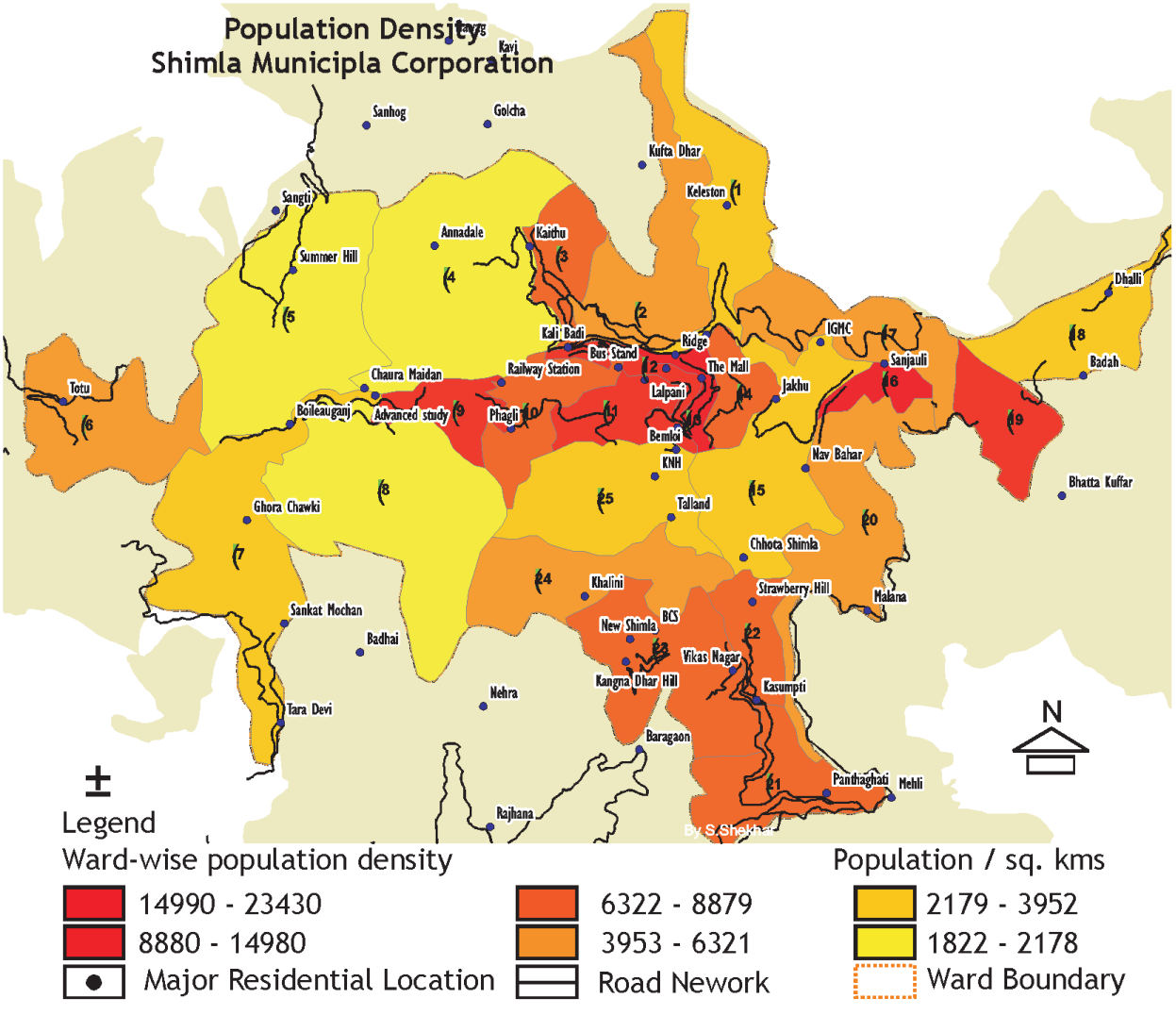


Figure 2 Population Density Shimla

The Cantonment Board obtains its water supply in bulk from military station and redistributes it in the Board area. The Cantonment Board provides basic

amenities in the cantonment area. Needless to say, that Shimla has been playing multiple roles including administrative, educational, Touristic Centre, heritage city etc. for a long time. This has led to the formation of a primate city in the state and consequently it is growing exponentially. Urban sprawl of the city has been estimated from the documents and maps procured from Municipal Corporation, Town and Country Planning Department and other free satellite data as discussed above (Fig. 1). Shimla has experienced massive growth during the last few years in the form of unplanned ribbon development along the highways and even minor roads emanating from the city. A vast city scape and sprawl is in the formation. Whereas, the already existing areas have got congested, the fringes are acquiring serious problems. Urban sprawl is observed almost in all directions. In addition to ribbon development along road networks, southern, eastern and western facing slopes have also been experiencing huge urban sprawl. Besides ribbon development, the city is growing on even unsustainable slopes and away from road networks. Many areas are inaccessible and even emergency services cannot reach them. Population densities of few areas have reached serious proportions (Fig. 2). As per this study, built-up areas excluding transportation network has increased from about 11.08 percent to above 17 percent in Shimla Planning Area (SPA). In addition, the forest cover has declined from 61.12 percent to about 54 percent and so is the case with agricultural land, which has also shown decrease from 21.8 percent to about 18 percent. If satellite data from Cartosat and WV-2 data were available, it would have been accurately assessed.

How much is Green Belt of Shimla?

Government of Himachal Pradesh has notified 17 green belts vide notification No. HIM/TP-RW-AZR/2000-III dated 11 February 2000, which included Tutikandi Forest bounded by Bye-pass and Cart road, - Nabha Forest, Phagli-Lalpani Forest, Bemloe Forest, Himland Forest, Khalini, Chhota Shimla Forest, Chhota Shimla Forest above Cart road, Kasumpti Forest, Charlie Villa Forest, Forest between Himfed Petrol Pump and Secretariat, Jakhu Forest (3 portions), Bharari-Shankli- Ruldu Bhatta Forest, Summer Hill Forest and Area in between Boileauganj-Chaura Maidan known as Ellesium Hill. The green pockets are located either in the Core or in Restricted Areas, where there is already heavy stress and strain with respect to services, infrastructure and transportation. The stress is reflected in large proportion of its land under non-forest use. As per Shimla Development Plan, the green belts in Shimla Planning Area is spread over 414 hectares out of which 78 percent area is either under forests or open area. Out of the remaining, 2 percent area, 13 percent is built up and 9 percent is under roads and paths. About 42 percent of the total green area is under forest cover and 36 percent is open area occupied by shrubs, bushes and grasslands. Out of this 150-hectare open area, 124 hectare is under state government ownership and just 26 hectare is in private ownership.

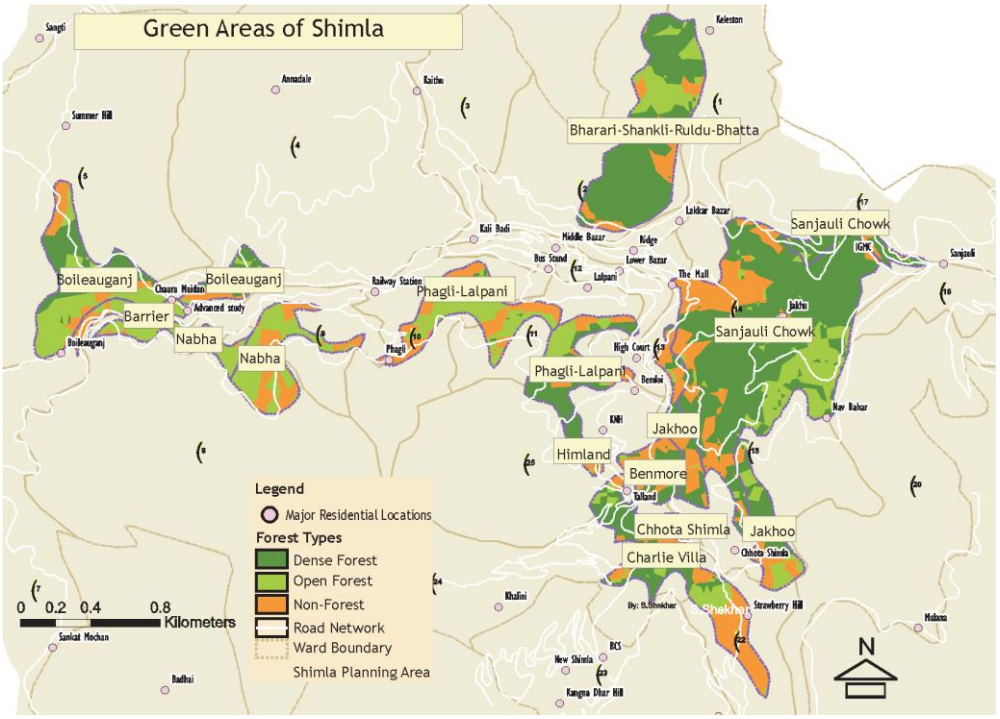


Figure 3 Shimla Green Area

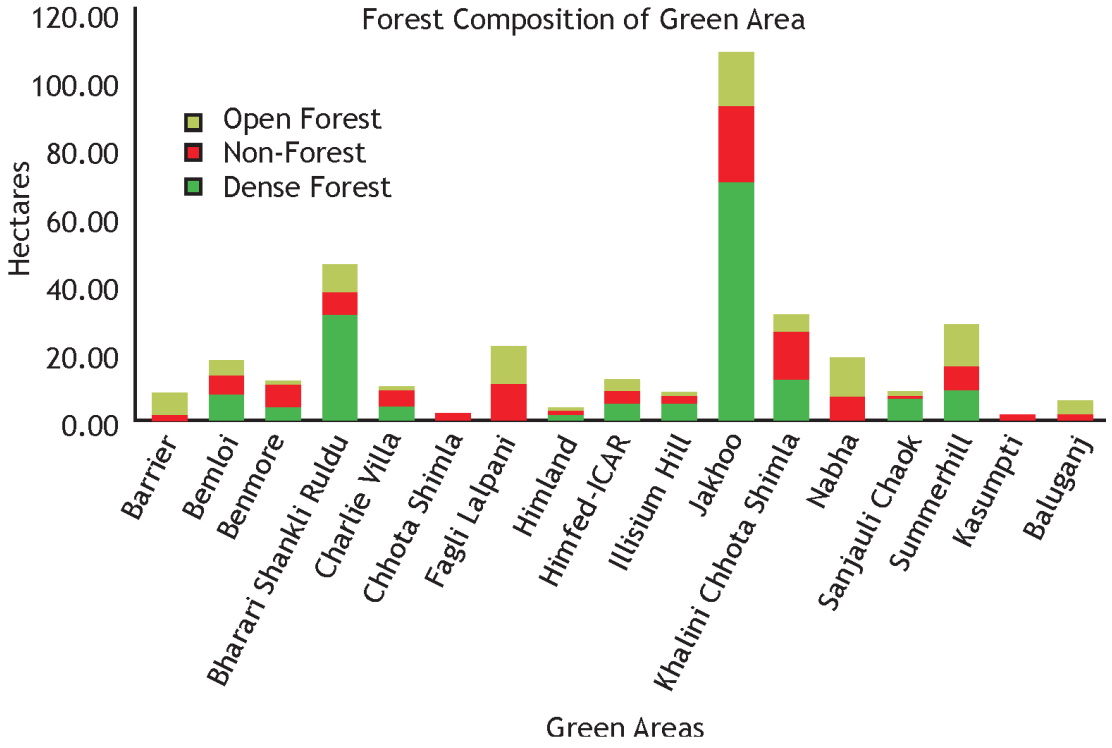


Figure 4 Shimla Green Area - Graph

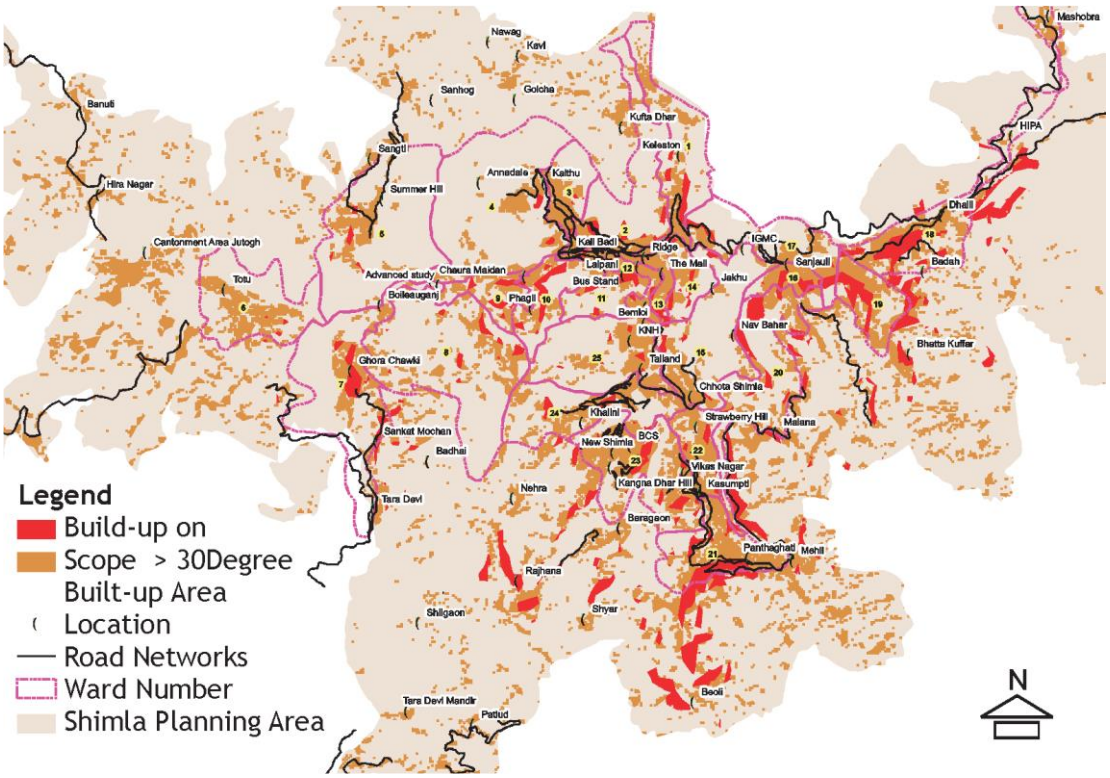


Figure 5 Built up area on high slopes

1.2.3 TOURISM SUSTAINABILITY

- Development decisions need to adopt a sustainable approach that balances tourism growth with the preservation of the natural and cultural assets
- Unplanned development can lead to a loss in opportunity to access the potential of these resources or cause their damage.
- Sustainable Tourism Benchmarking Tool (STBT)
  - Comprehensive assessing tool containing 3 pillars of sustainability – environmental, social and economical
  - Suggested by Cernat & Gourdon (2012)
  - Useful in detection of problem in tourist sector.
- Secondary data collected from – research papers and unpublished sources (Government offices & websites)
- Primary data is collected from – 1. Spatial planning of built environment and land use via visual survey 2. on site surveys (both residents and tourists)

1.2.4 DIMENSIONS OF SUSTAINABLE TOURISM

1. TOURISM ASSETS
2. TOURISM ACTIVITY
3. TOURISM RELATED LINKAGES
4. TOURISM RELATED LEAKAGES
5. ENVIRONMENTAL & SOCIAL SUSTAINABILITY.
6. INFRASTRUCTURE
7. ATTRACTIVENESS

TOURISM ASSETS.

- Focus of visitor i.e. initial motivation for tourist to visit.
- Natural asset, cultural asset.
- Carried out via secondary sources URDPFI Guidelines (2015) referred for benchmarking.
- Quality of resources as viewed by tourists also considered.
- Destinations are selected based on popularity among tourists, as listed by residents and mentioned on government sites

TOURISM ACTIVITY.

- Involves – No of tourists, purpose of visit and place of origin and mode of transport.
- Determines quantity of arrivals and their quality.
- Secondary data considered for flow of both local, national and international tourists.
- Compared with Kullu and Manali (domestic flow).
- Also measures – no of days spent in the city.

TOURISM RELATED LINKAGES.

- Involves establishing strong linkage between tourism and other economic sectors.
- Best way to enhance economic benefits.
- Measured via tourists spending and their city preferences.
- Parameters – Accommodations, Restaurants, Street food, Transportation, Tourist information

TOURISM RELATED LEAKAGES.

- Absence of linkage between tourism and other economic sectors leading to loss in potential development.
- Measured through parameters – Accommodations, Travel, Food and drinks, Activities and shopping.
- Leakages occur due to:
- Mismatch between facilities provided and tourist preference leads to infrastructure loss.
- Solution – Tourist feedback compared to available accommodation as listed by - Dept. of tourism and civil Aviation.
- External agents providing service to tourists.
- Ratio of Himachali employee and non Himachali employees
- Comparison between Tourism asset indexes to ward wise tourist industry provides gap between two values.

ENVIRONMENTAL & SOCIAL SUSTAINABILITY.

- Improving condition of people and ecosystem provides tourism sustainability.
- Achieved by increasing tourism linkages and decreasing leakages.
- Impact of tourism on environment via increase in traffic and building activities are appraised by policies laid down by government.

INFRASTRUCTURE.

- Includes – Transport, physical infrastructure, ICT (Information and communication technologies)
- Accommodation in most important tourist infrastructure.
- Important to invest in developing, managing and maintaining high quality infrastructure to sustain tourism.

ATTRACTIVENESS.

- Main parameter - tourists prefer certain destination over other.
- Includes – Value for money, security and no of qualified tourist service providers.
- To evaluate attractiveness of Shimla as destination, tourists' perceptions on important qualities of tourism in city are recorded.
- Parameters – city's safety level, hospitality received, value for their money received.
- Ratio of tourist employee to tourists indicating level of service

1.3 RELEVANCE

Proposed: Area of Interest

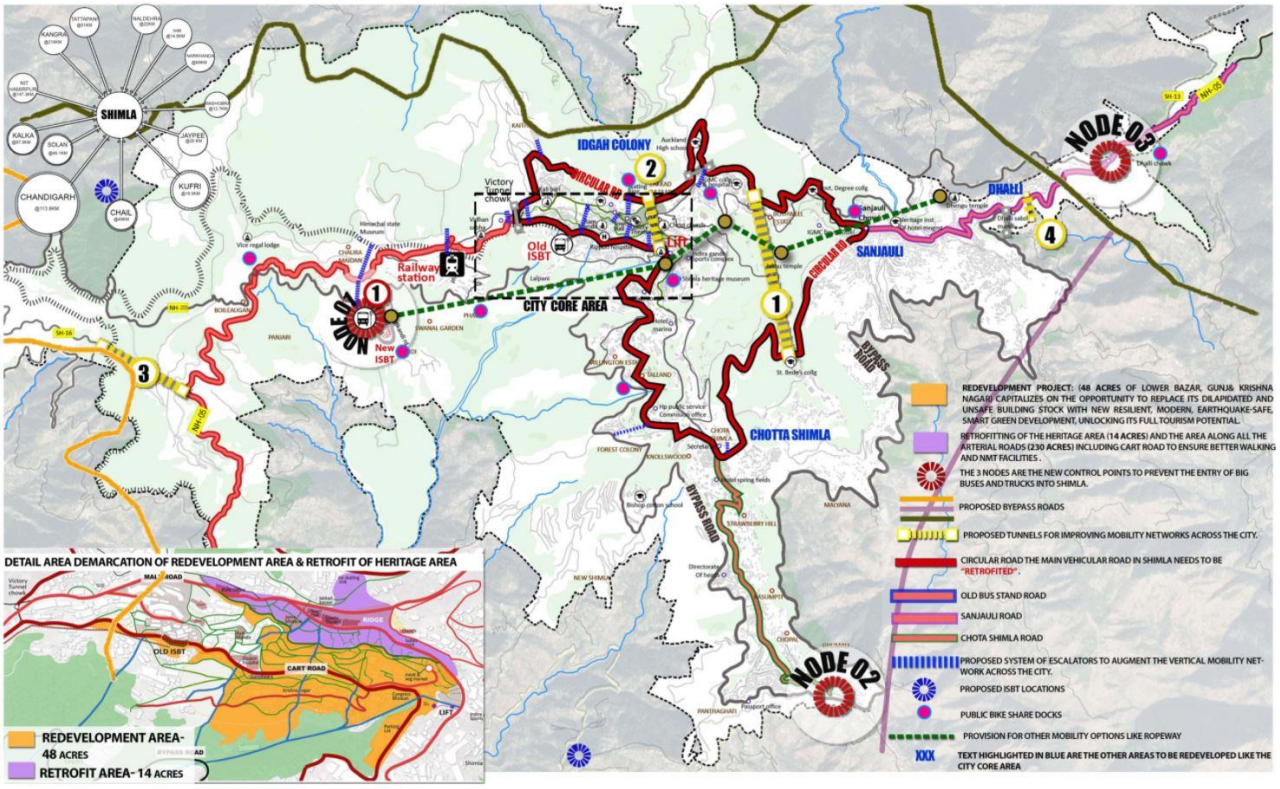


Figure 6 Area of Interest

- Re-Development of 50 Acres of Krishna Nagari capitalizes on the opportunity to replace its dilapidated and unsafe building stock with new Resilient, Modern, Earthquake-Safe, Water Abundancy, Sustainability and smart green development, unlocking its full TOURISM potential.
- Retrofitting of the Heritage Area and the area along all the Arterial Roads and sub–Arterial Roads to ensure better walking and other facilities.

1.4 AIM

Evaluating Tourism in a Contoured Smart City by Amalgamating existing situation and Accentuating Sustainability with Sensitive Urban Design Techniques in Shimla.

1.5 OBJECTIVES

- To unlock its full Tourism Potential.
- To Preserve Heritage and Cultural Values
- To Establish a Juxtaposition of existing and proposed Design.
- To Improve Road Networks
- To Design and provide solution for proper use of natural resources and Landform
- To Decrease chaos in the City Core

1.6 METHODOLOGY

- Selection process includes the stretch to and from the Core Area of the Shimla City.
- Literature Study to get an idea of Urban Road Networks, Ghat Sections and Landuse distributions
- Study of the Intervention Area
- Assessing Full Potential of Tourism
- Data analysis.
- Traffic and Survey analysis to be implemented.
- Try to achieve the Aim through different interventions at the site.

1.7 SCOPE OF WORK AND LIMITATION

- It should reduce the CHAOS.
- It should create opportunities to people living in Slums a healthy environment and life.
- It should decrease the congestion on the street networks around the CBD Area
- It should provide proper accessibilities and activities distribution in the city core
- It should increase the standard of living
- It should provide a sense of outdoor Thermal Comfort
- It should increase the footfall of tourists in a healthy and safe environment
- Assessing Full Potential of Tourism
- Data analysis.
- Traffic and Survey analysis to be implemented.
- Try to achieve.

Limitation

- Only a limited chunk of area is chosen from the proposed project.
- Many Infrastructure could not be possible to design/construct due to steep ghat sections

2.0

THEORETICAL PREMISES/ LITERATURE STUDY

2.0 THEORETICAL PREMISES / LITERATURE STUDY

2.1 EXISTING CONCEPTS

1. Concentric zone model

- Central business district
- Zone of transition.
- Zone of independent workers' home.
- Zone of better residences
- Commuters' zone.

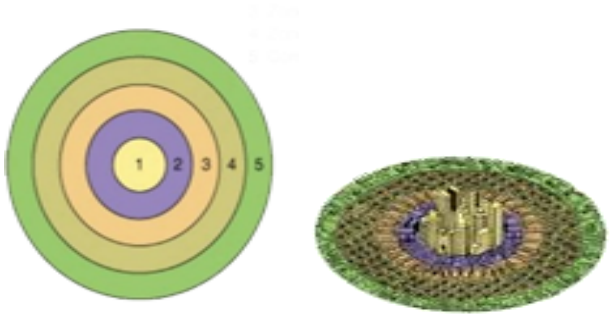


Figure 7 Concentric Zone Model

2. HOYT Model

- Central business district.
- Transportation & Industry.
- Low-class residential.
- Middle-class residential.
- High-class residential.

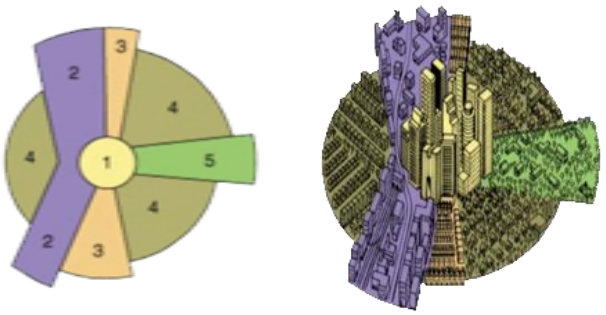


Figure 8 HOYT Model

3. Harris & Ulman Model

- Central business district.
- Wholesale, light manufacturing.
- Low-class residential.
- Middle-class residential.
- High-class residential.
- Heavy manufacturing.
- Outlying business district.
- Residential suburb.
- Industrial suburb.

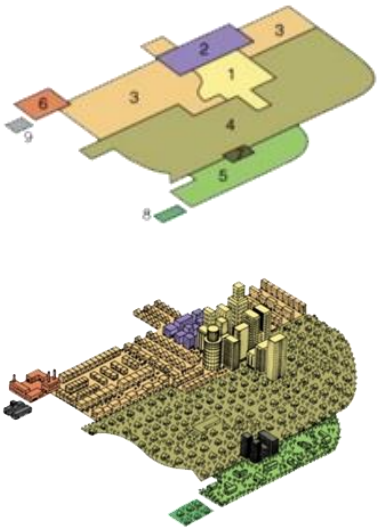
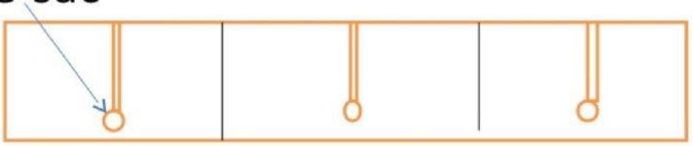


Figure 9 Harris & Ulman Model

Radburn Superblock

Bandar Botanic in Klang-use this Planning Concept

Cul-de-sac

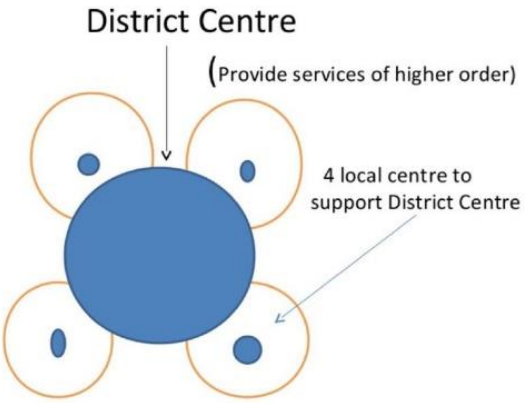


Open Space

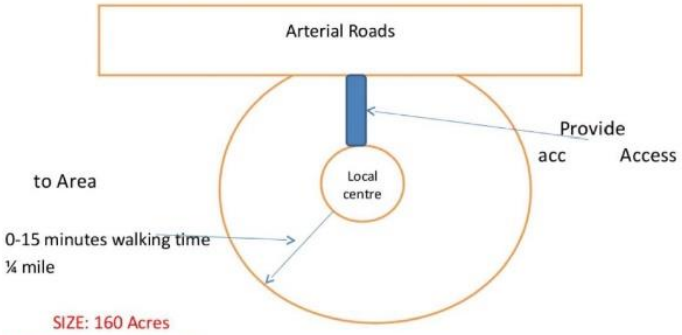
Local Centre, school

Pedestrian Link

Neighbourhood Unit Subang Jaya



Neighbourhood Unit Subang Jaya



SIZE: 160 Acres
Note: No through Traffic

2.1.1 TOURISM DEVELOPMENT

Process of establishing and maintaining industry of tourism for a particular location is known as tourism development.

- It involves strategies and plans to develop and encourage tourism.
- Planning for tourism development starts at regional level where areas that can interest tourists are recognized and the planning process begins.
- Planning for tourism development involves segregation into:
    - Heritage tourism.
    - Pilgrimage tourism
    - Cultural tourism
    - Leisure/Nature tourism
    - Educational tourism.
- Tourist inflow is calculated for different months of the year resulting in tourist rate growth. The tourist growth rate is used to find necessary steps the helps improve the growth rate.
- Accordingly, Tourist accommodation facilities are planned which can vary from hostels, hotels, guest houses, home stays.
- Tourism development also involves services and facilities used by tourists like health facilities, Sugam centres, Bus services and parking facilities near the tourist centres.
- Potential of tourism depends on factors like natural scenic beauty, adventure sports and rich cultural heritage.
- Lack of activities and infrastructure to hold the tourists and increase duration of stay can be an issue/challenge faced in tourism development.
- Few strategies to improve tourism development:
    - Establishment of tourism information center.
    - Forest based recreation.
    - Protection of monuments and environment in planning area.
    - Artisans village cum- vocational training centre.
    - Formulation of volunteer network for identified sites.
    - Tourism branding.
    - Safety of tourists.
    - Infrastructure improvement.
    - Smart city proposals.

2.1.2 IMAGEABILITY

Lynch introduced the concept of imageability, which is public consensus on those physical elements that enhance the structure or identity of a city:

``Imageability is that quality in a physical object which gives it a high probability of Evoking a strong image in any given observer. It is that shape, color, or arrangement which facilitates the making of vividly identified, powerfully structured, highly useful mental images of the environment. It might also be called legibility'

- Lynch's coined five elements of city Imageability are Paths, Nodes, Edges, Districts and landmarks
- These elements provide underlying structure for organizing visual representations of the community.
- A legible city is the one in which districts or landmarks or pathways are easily identifiable and structured.
- Lynch identified the main forms and qualities that emerge from an urban layout. Such categories contribute to the visibility, coherence, clarity and then the legibility of an urban environment.

Singularity:

- Singularity denotes the contrast and distinguishability of urban objects in a given scene.
- This is illustrated by the relative high singularity of the parcels that appear in the Khayyam neighborhood.

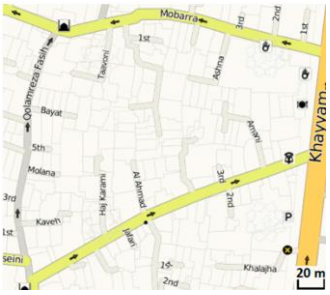


Figure 10 Imageability - Singularity

Simplicity:

- Simplicity characterizes the geometrical forms of an urban layout.
- Simple forms in an urban layout are like to favour a better perception and understanding of the environment.
- The figure presents an area that exhibits regular and simple forms of the parcels (Kanshanak neighborhood).

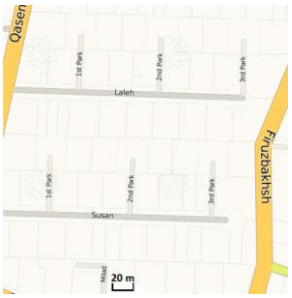


Figure 11 Imageability – Simplicity

Continuity

- Continuance characterizes the edges of an urban layout. A continuous edge should visually extent the potential perception of an urban space.
- The figure to the right presents an example of continuity edge to the North, while there is a breakdown of continuity close to a street intersection to the South.

Figure 12 Imageability - Continuity

Dominance

- Dominance denotes the property of a given urban feature with respect to the others in its neighborhood.
- The figure to the right shows a parcel very much different from the others in the neighborhood.

Figure 13 Imageability - Dominance

Directional differentiation

- Directional differentiation denotes asymmetries of urban streets.

For instance, asymmetries revealed by radial differences of urban streets can obscure the sense of direction.

- The example shown in the figure to the right by the Nawab highway exhibits a case whose symmetric sides obscure the sense of direction.

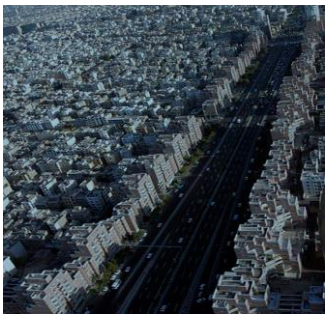


Figure 14 Imageability - Directional differentiation

Visual scope

- The visual scope reflects the range and penetration of the vision in a given street.
- The example illustrated by the figure to the right shows the Sattarkhan and Takestan Streets in Tehran whose bends limit the perspective offered.

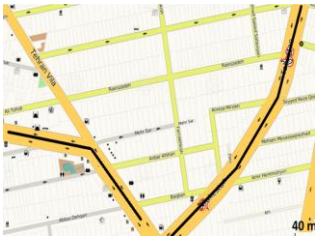


Figure 15 Imageability - Visual Scope

Motion awareness

- Motion awareness denotes the qualities sensible to the observer, through visual and the kinesthetic senses, and that constrains motion.
- Motion awareness is for instance impacted by curves and direction changes that constrain the visual scope. The example to the right presents.

Figure 16 Imageability - Motion Awareness

2.2 CITY REGENERATION

2.2.1CITY CENTERS

- When historic city centers started to form, their inner morphology trickled outward tothe surrounding context and this in turn created a feeder system.
- The city core was where business, manufacturing and public amenities were located.
- This concentrated focus gave birth to supporting land uses towards the fringe.
- Also, historic areas and buildings of importance within the core became landmarks or nodes and in turn the neighboring areas made connections to these focal points,

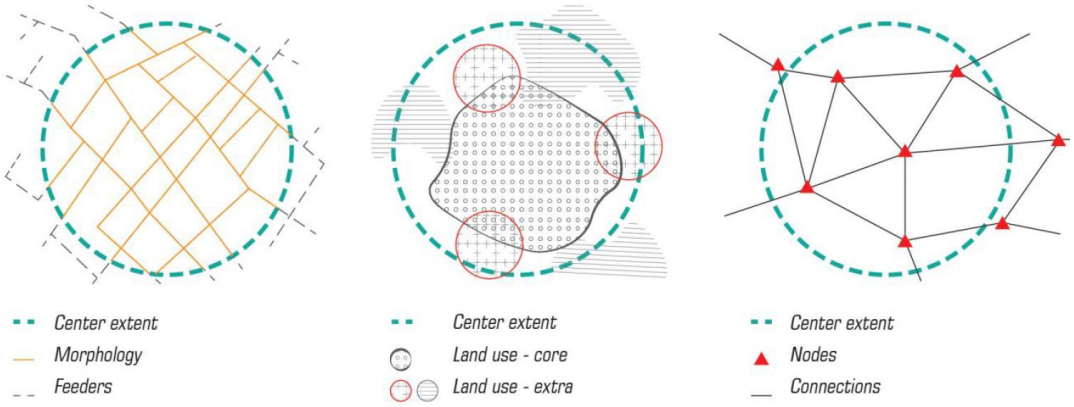


Figure 17 City Regeneration - City Centers

- The city center has a defined edge and around this demarcation lies the comfort or safety zone of residents.
- Within this region lies important areas of interest, built and un-built, and these in turn act as place-making tools.
- Inside this safety net the users work and innovate and create, this attracts Outside investments to flow in, Simultaneously, this development within the extents creates neighboring suburbs and towns to set up and they feed off the core's prosperity via links - technological and physical.

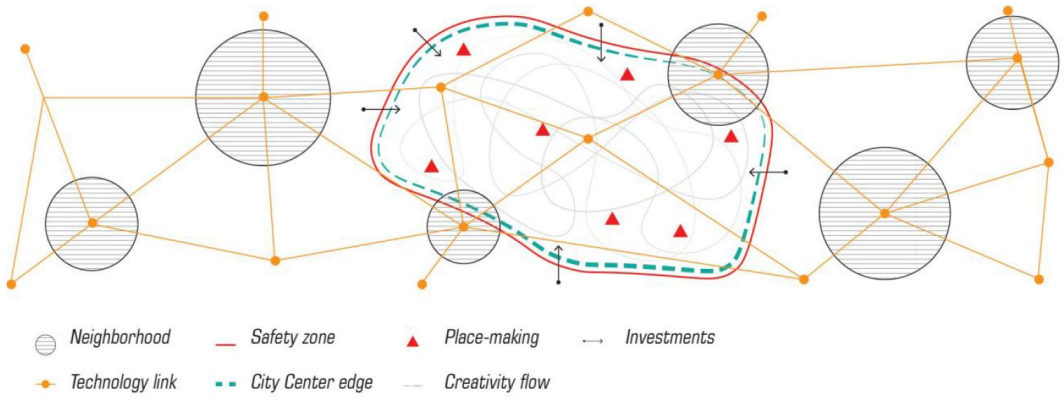


Figure 18 City Regeneration - technological & physical

- The city center is a unique region in the master-plan of a city It has either a tangible or intangible border and is an important node in the urban fabric.
- The economic prosperity leads to an influx of people looking for work - the pull. In turn neighborhoods and suburbs dot the periphery, for the new-found population to settle down - push.
- The center is a place of chaos, pollution and congestion, with the new trying to fit itself into the mold of the old. This in turn drives the outskirts to create their own areas of interest.

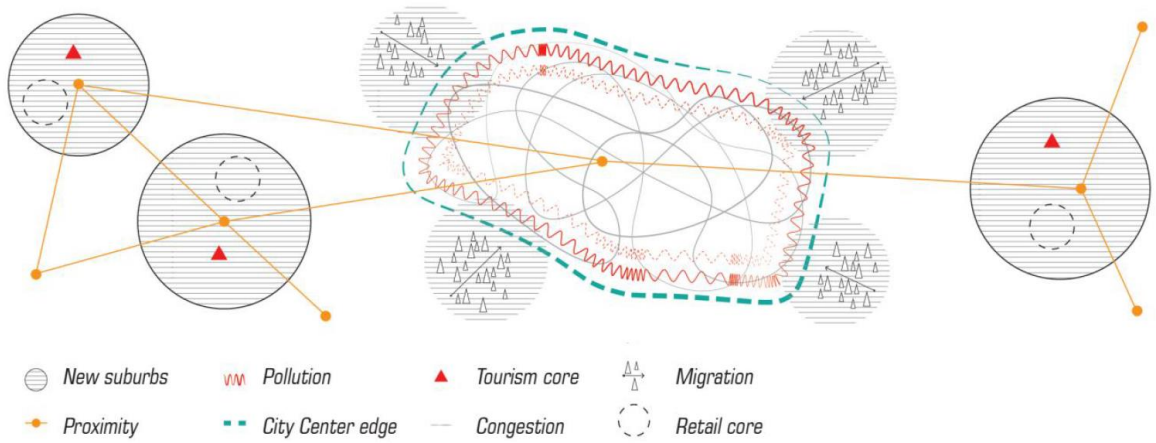


Figure 19 City Regeneration - Periphery

2.2.2 URBAN REGENRATION

- In the olden days city progress priorities were placed on respecting the past, on the value of communities and on the concept of place making and overall life revolved around manufacturing industries,
- The successive economic booms and busts created a shift in this delicate balance. In the current scenario of city growth, there is a race for reinventing the urban fabric.
- Priorities are placed on increasing land value, opening up the economy to commercialization and generating architecture that is gentrified.

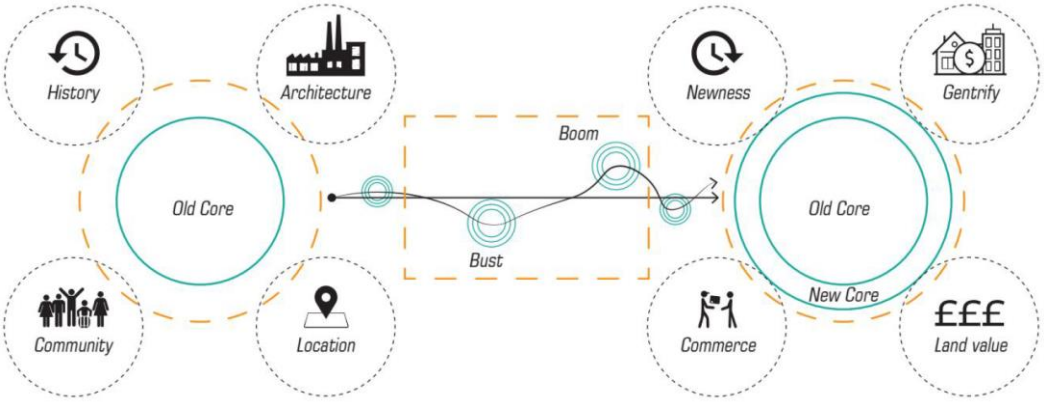


Figure 20 City Regeneration - core

- Urban regeneration is a concept where urban decay is tackled so as to wholly reverse it, or to try remove it from the development conversation - so to give the urban fabric a new lease on life.
- This can be in terms physical, economic or social interventions.
- It is a complex process where the context is evaluated to understand its strength and weakness, and then a plan is made to improve the on-site conditions. But care has to be taken so as to not create a monotonous and mundane new city center.

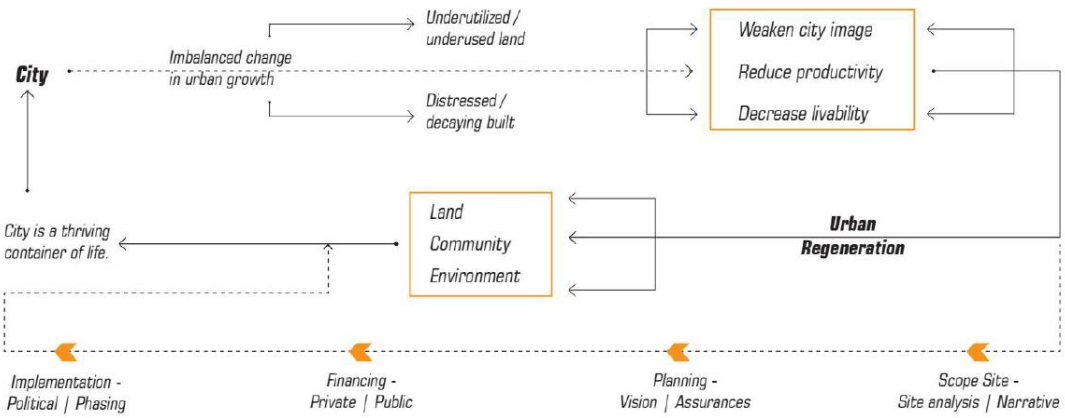


Figure 21 City Regeneration - Interventions

2.2.3 CANAL CENTRIC DESIGN

- Analyzing the current, prior and proposed future of the city brings out the dominant land uses that is seen – the priorities.
- This helps evaluate the context in terms of what typologies are lacking or under represented.

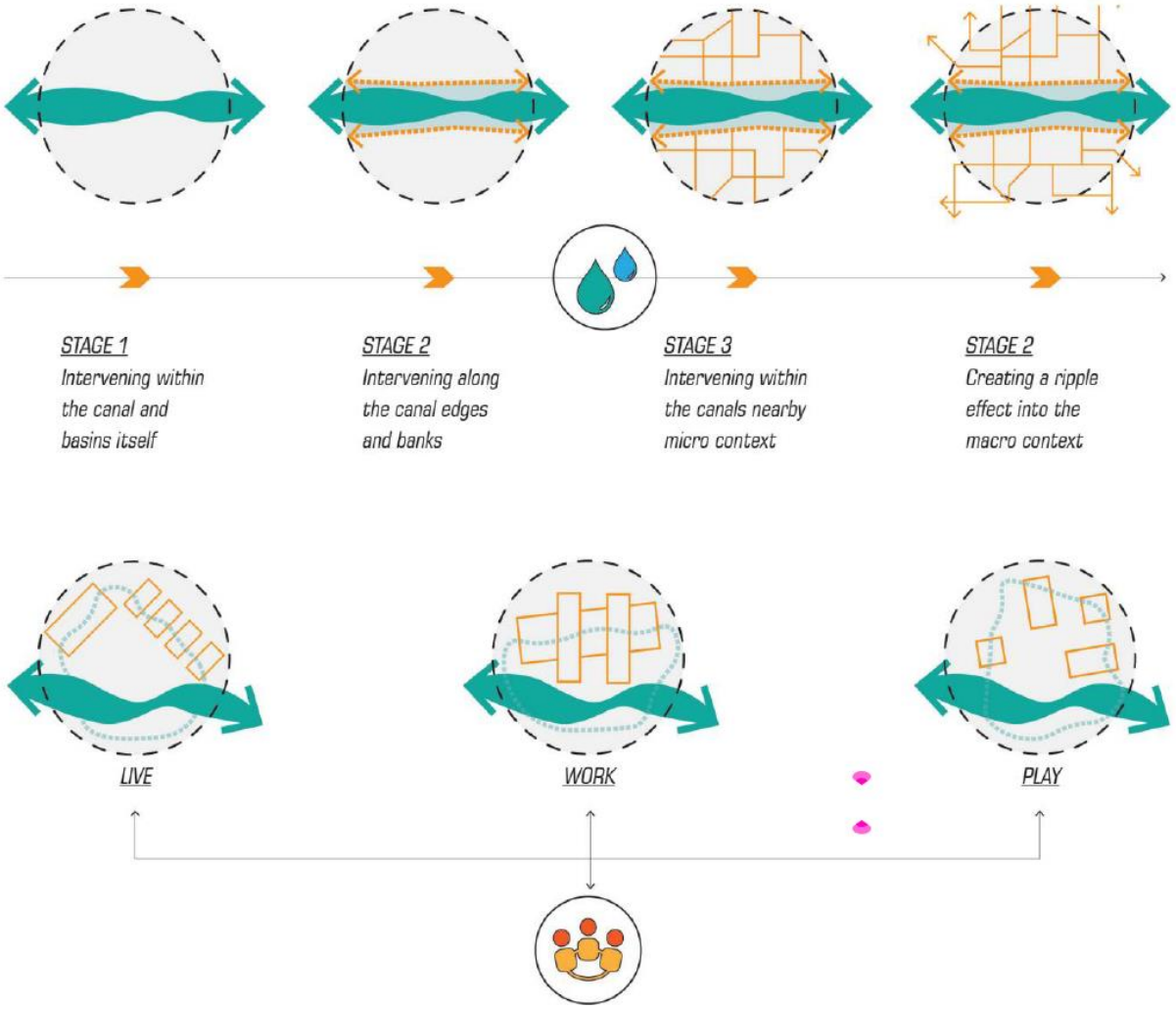


Figure 22 Canal centric design stages

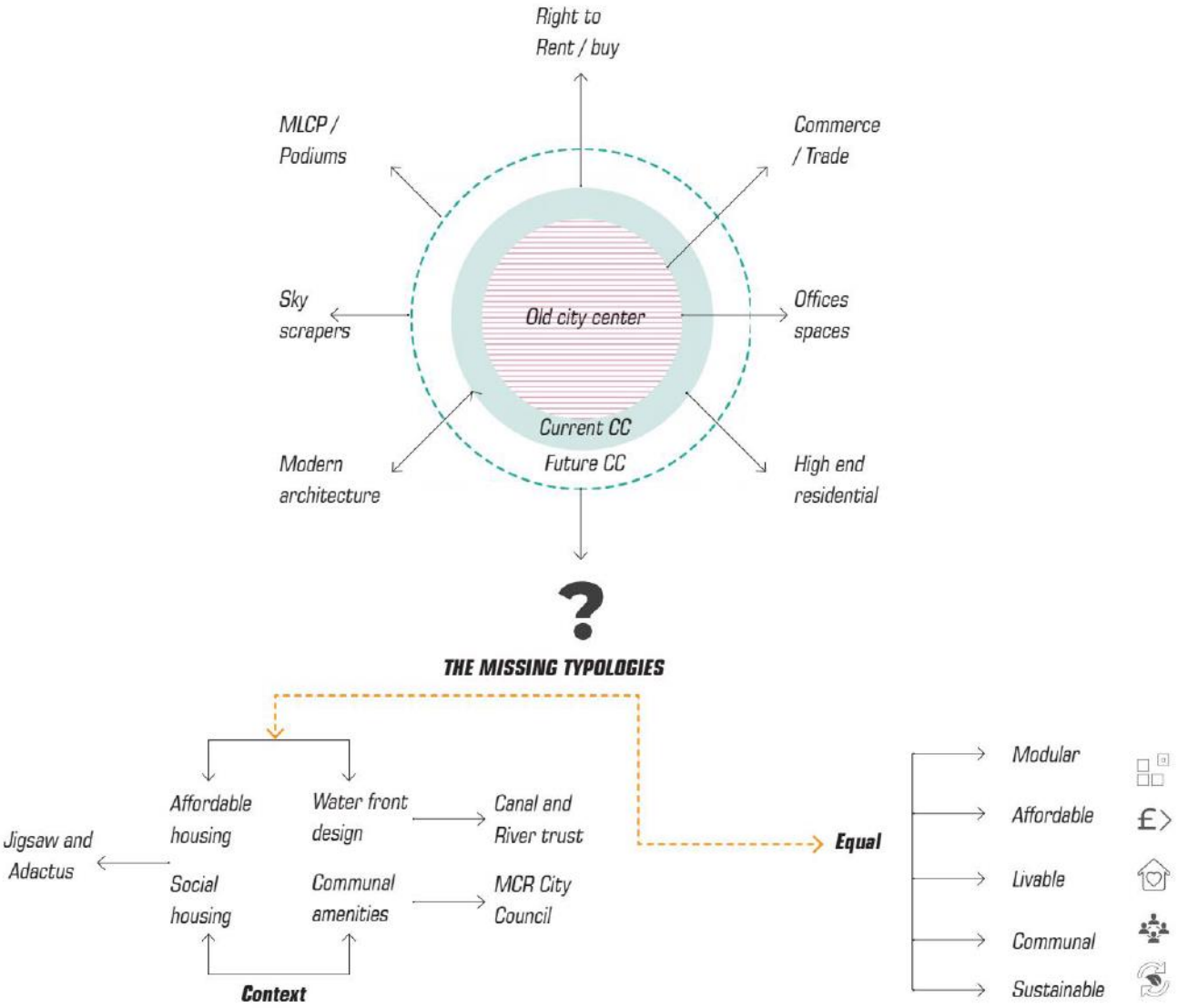


Figure 23 Canal centric design - Typologies lacking

2.3 IDENTIFICATION OF URBAN DESIGN PARAMETERS

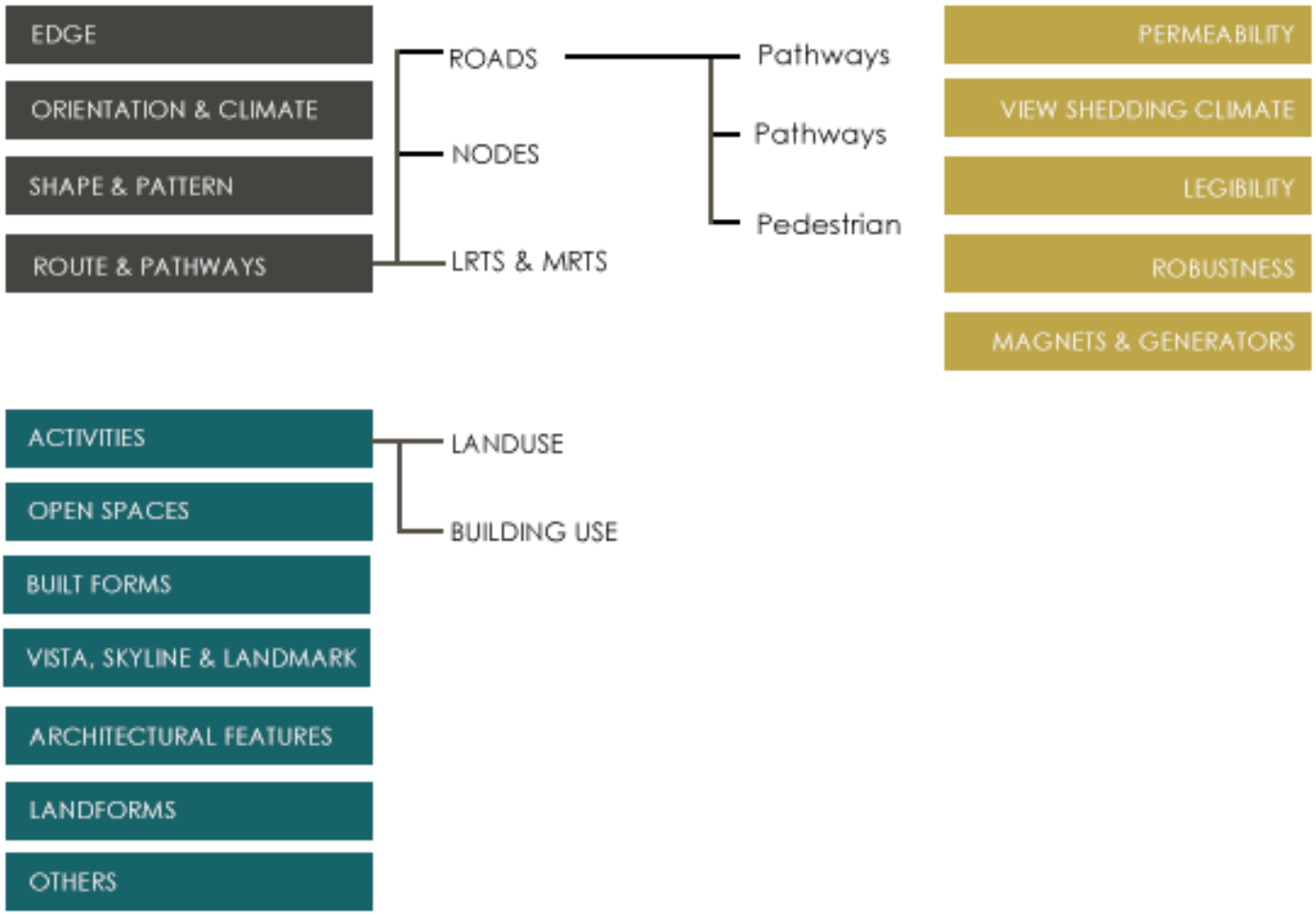
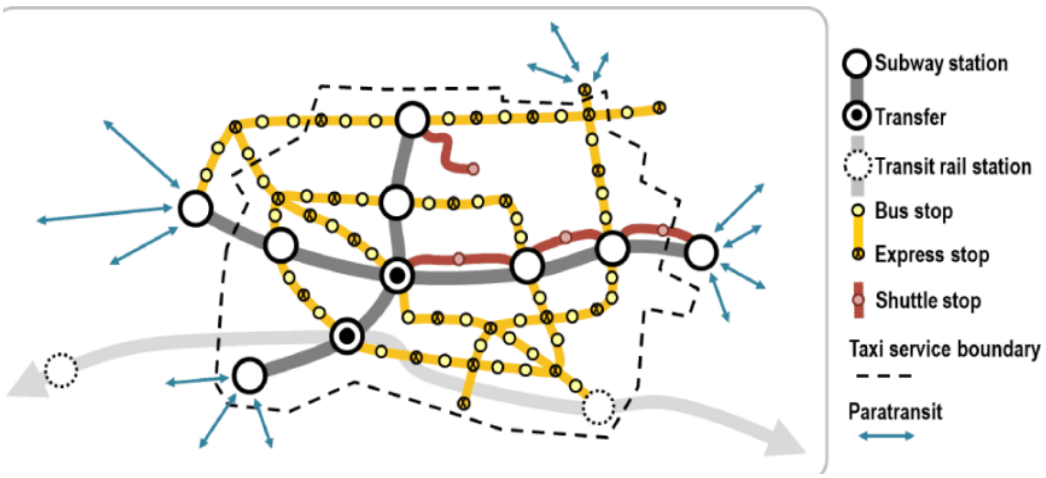


Figure 24 Urban design parameters



3.0

CASE EXAMPLE STUDY

3.0 CASE EXAMPLE

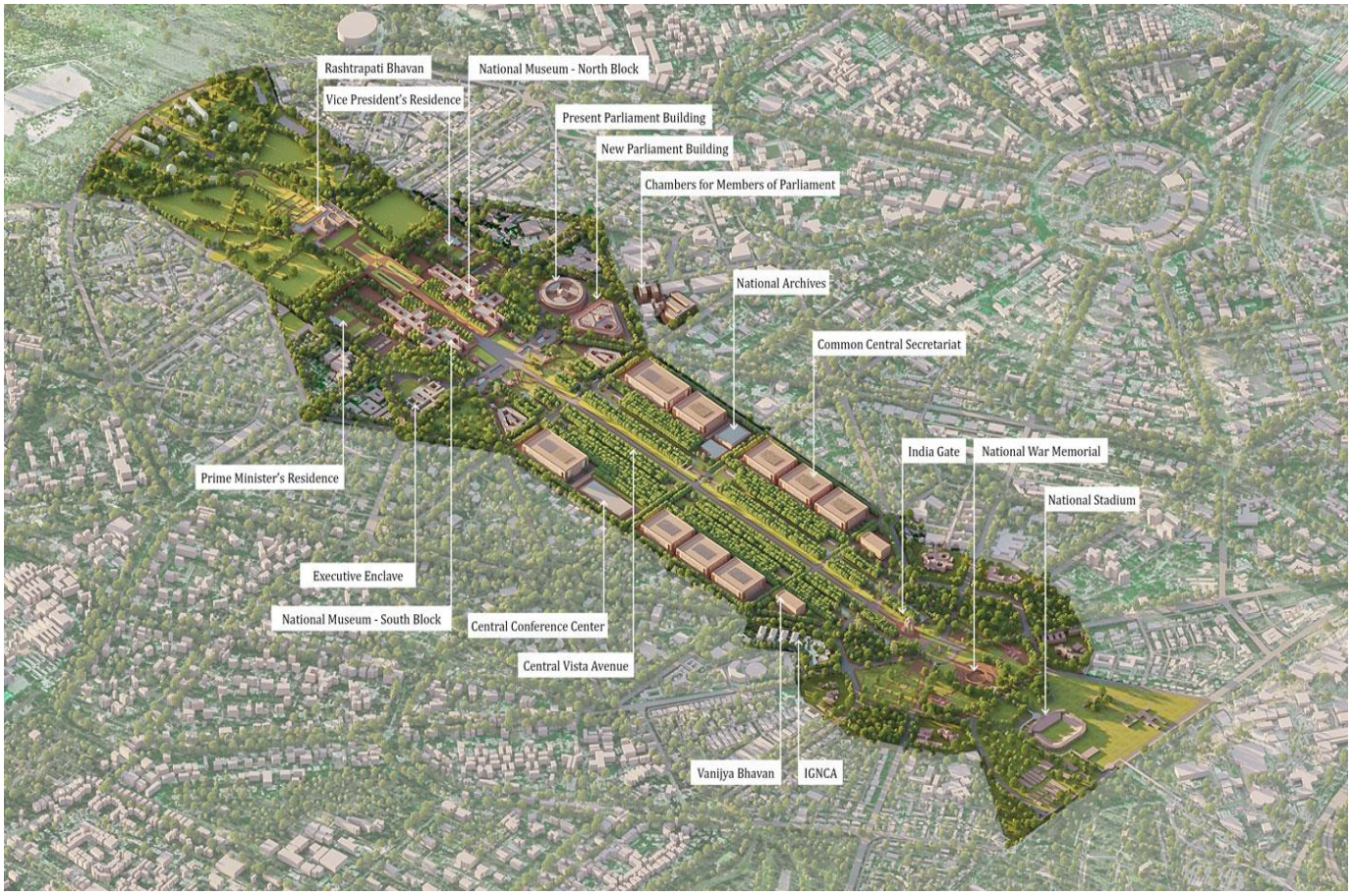
3.1 PILOT CASE EXAMPLE

3.1.1 MASTER PLAN FOR CENTRAL VISTA, NEW DELHI.

Urban Design

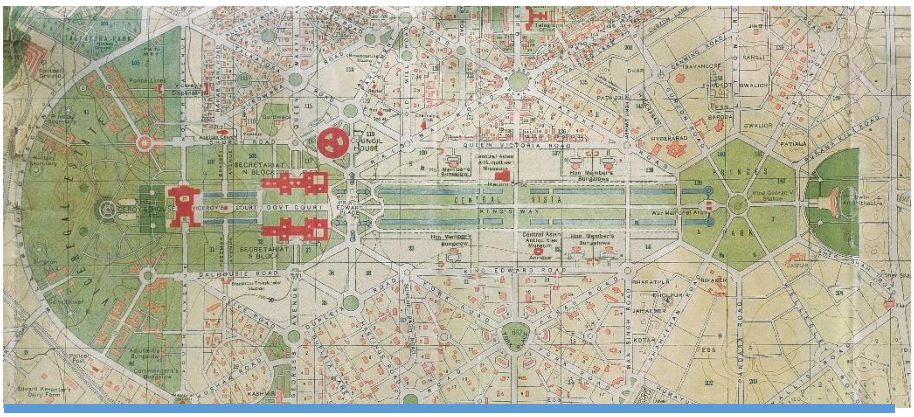
Client: Central Public Works Department
Status: Ongoing

The Central Vista was designed as the capital of British India and envisioned to be the 'living centre of administration'. It was inaugurated in 1931, with only five important buildings, the avenue and a monument completed: The Viceroy's House, now Rashtrapati Bhavan, the Secretariats - North and South Blocks, the Council House, now



Parliament House, the Record Office, now the National Archives and the All-India War Memorial, now India Gate.

Additional buildings were built post-independence, to meet the demands of time without an overarching architectural vision for the Vista. Some military barracks, originally built as temporary structures during World War II, continue to be used as offices spread across approximately 90 acres of precious land in the Central Vista. Today, the Central Vista houses only 22 out of the 51 Ministries of the Government of India, due to lack of adequate office spaces. The public space and landscape of the Vista were not designed for heavy public use and are quite stressed. A comprehensive upgrade of facilities and infrastructure is needed to improve public space and to assist the administrative and legislative functions of the Government of India.



Central Vista, as built by its inauguration in 1931

Central Vista Today

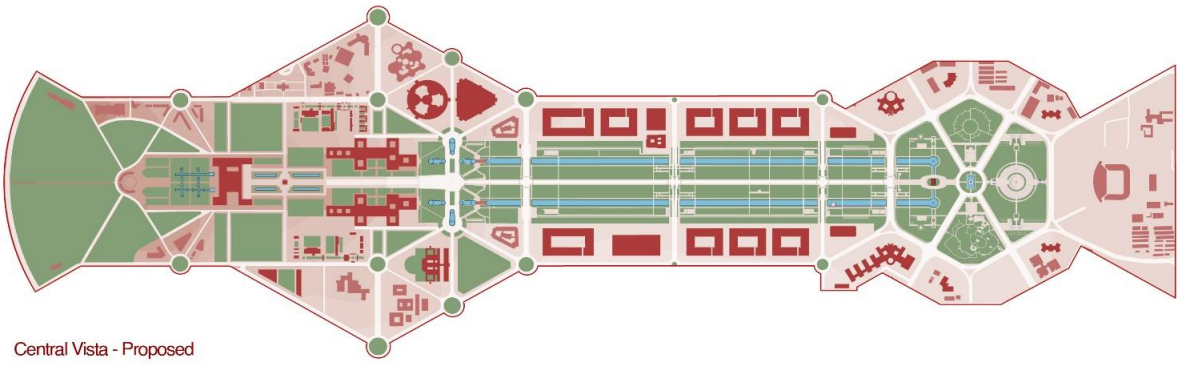
The proposed master plan will strengthen the Central Vista as an icon for governance, a grand public space and a

Central Vista, as built by its inauguration in 1931

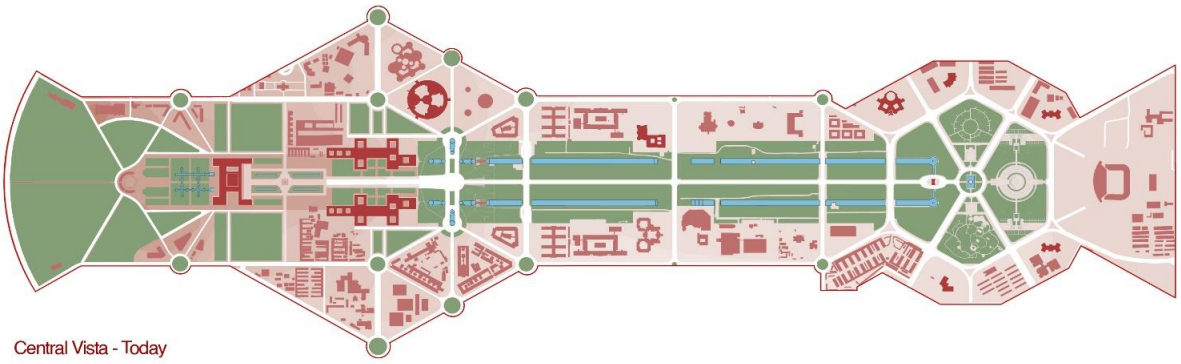
treasured part of India's heritage. The plan will provide modern, sustainable and upgradeable facilities for administration, cultural institutions and public space.

It will also restore the Vista's architectural character, protect its heritage buildings, expand and improve public space, and extend the Central Vista axis. The proposal will revive the formal order, grandeur and symmetry of the place, while creating space to consolidate all the essential functions of the Government of India.

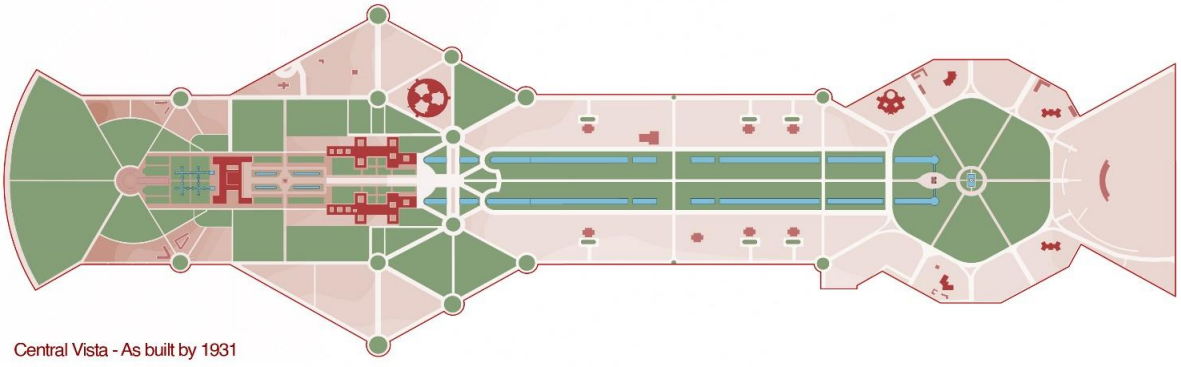
Redevelopment of Central Vista in New Delhi, India is a historically and culturally significant project proposing the redevelopment of over 440 Hectares of prime land. With the site allocated in the heart of the capital city, it is a mega-scale urban development which seeks to uplift and upgrade the requirements of a burgeoning economy.



Central Vista - Proposed



Central Vista - Today



Central Vista - As built by 1931

Urban Context

The site comprises of highly coveted buildings such as the Presidential Residence (Rashtrapati Bhawan), the North and South Blocks, the Indian Parliament, Ministerial Complexes, various Secretariat buildings besides the National Archives, few National Museums and a National Stadium. The design concepts are centered on restoration, adaptive re-use, intelligent conservation, upgradation, retrofitting and reconfiguration of the existing heritage and preserve the celebrated historic value of the area, along with creation of some landmark edifices.

Master Planning Concept

The overall master planning integrates elements of harmony, balance and rhythm to ideate a concept which is a comprehensive understanding of the challenges of the present times while leaving ample area for unhindered future expansion. The axis of the Vista extends more than 2 kms in length and is developed as a mixed-use cultural district. A natural stream along a central axis balances the overall site and is flanked by extensively landscaped avenues and pedestrian spine on either side. By restricting vehicular movement on the outer roads, this street is kept pedestrian-friendly, becoming an eco-conscious zone. The design also proposes a monorail concealed under the terraced landscape which links all buildings in the precinct & integrates with city mass transit. Technological advancement is utilized with features such as high-end security systems integrated in this district, display screens to help guide pedestrians with movement in and around the site, well-regulated parking space.

Vernacular Design

The architectural concept strives for a responsible design development through an understanding of conservation, sustainability and holistic approach. The offices are proposed as mixed-use spaces and are inspired by the mohallas, chowks and bazaars of Chandni Chowk and accommodate retail areas, restaurants, lounging spaces etc. in their central courtyards. Entrance of these buildings use Gopurams and Toranas as inspiration, giving a magnificent look to the complex.

Climatologically-responsive Design

The offices would be able to symbolically represent India through use of jaalis, louvres, accommodating semi-shaded central courtyards and creation of double skin façade by extending slabs (chhajjas) supported by colonnaded corridors around the Secretariat edifices. These architectural elements and techniques work well in the Indian landscape and establish a climatologically responsive design. Stone panels with different traditional Indian architectural motifs become the patterns for jaalis which celebrate the art and architectural history of India while synchronizing with the existing Lutyens' character.

Re-defining Urban Character

The proposal also integrates high-level technology through automation and artificial intelligence systems in the buildings for increased security. North and South Blocks, already existing and highly prominent offices, are proposed to be restored instead of using them as museums. At one end of the axis, a precinct of Museums is proposed around India Gate, a national memorial monument, imbibing adaptive reuse of historical Indian princely estates.

Re-imagining New Delhi as Garden City

Reimagining New Delhi as a Garden City, the redevelopment proposal offers a possibility of bestowing it with an international iconic stature and creating a state-of-the-art futuristic and livable vision of urban development.

3.1.2 AUDA DEVELOPMENT PLAN, 2021.

Urban Design

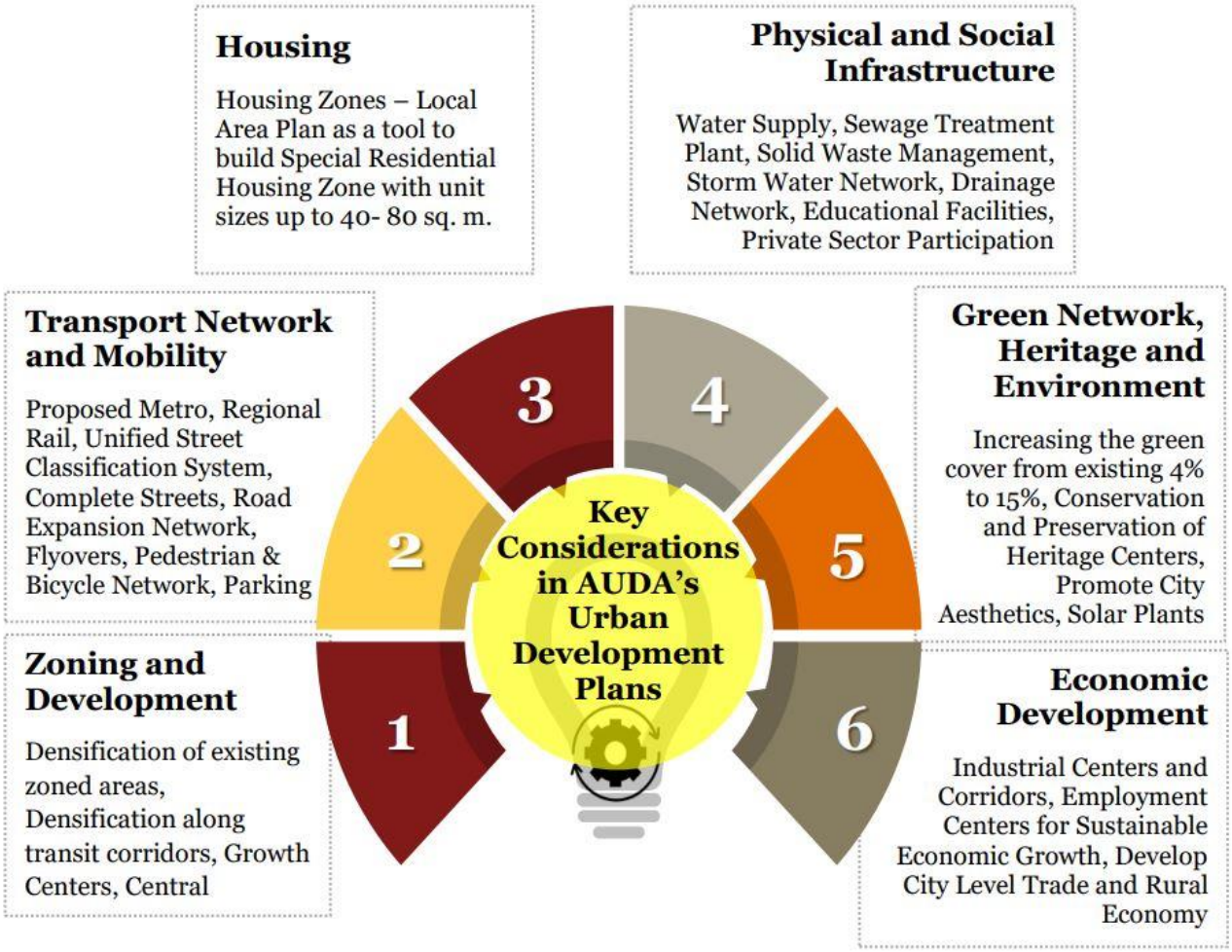
Location: Ahmedabad

Site Area: 186600 Ha
Status: Built (2010-2013)

Ahmedabad Urban Development Authority (AUDA), is in the process of revising the Development Plan for Ahmedabad city for the coming ten years (2021). AUDA sought technical support from EPC, a sister concern of HCP to synchronize and structure the Development Plan comprehensively. A similar kind of support had been provided for Revised Development Plan 2011 to AUDA by EPC.

The plan is prepared considering future population & economic growth by year 2021 and 2031. EPC has been working in close coordination with the Urban Planning Cell (UPC), AUDA to review the surveys, studies and analysis and accordingly identify the gaps, complete the analysis and prepare the final volume for Revised Development Plan 2021. The final Revised Development Plan 2021 includes existing condition studies & analysis, planning proposals & recommendations and General Development Regulations. HCP was closely involved in working as integral part of the AUDA team to provide expertise & technical support for preparing the contents and format.

Key Considerations in AUDA's Urban Development Plans



AUDA being pioneer since decades in infrastructure and development projects has given special emphasis on the development of affordable low-cost housing schemes focusing on the needs of economically weaker section of the society.

Extent of Land Provision for Various Services	
For Roads	15%
For parks, playgrounds, garden and open space	5%
For social infrastructure such as schools, dispensary, fire brigade, public utility place	5%
For Socially and Economically Weaker Section	10%
For sale by appropriate Authority for residential, commercial or industrial use	15%

Key Features of AUDA's zoning

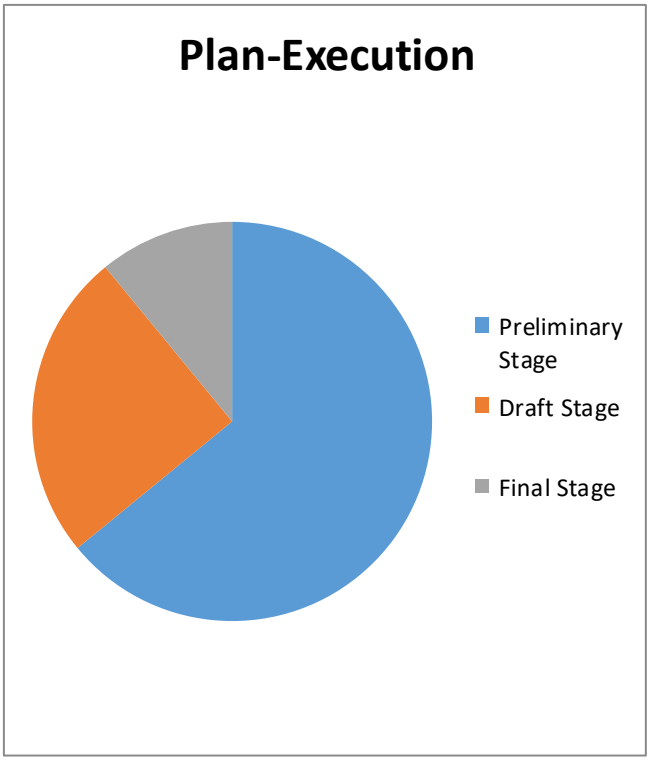
Densification of Existing Zones

For the better utilization of land within the defined AMC and AUDA boundary, AUDA focused on incentivized development in existing zoned areas. In these zones, FSI were increased based on the *Development of Growth Centres:*

As new industrial areas, special Investment Regions (SIR) and Special Economic Zones (SEZ) are being developed on large tracts of land around the urban areas of Ahmedabad, it is important to develop additional centres that can accommodate future population in nearby areas. Growth Centres are identified around the city in AUDA areas. They are Sanand, Mahemdabad, Kalol, Dehgam and Bareja. Also, in the revised development Plan of 2021, additional zones of Residential (R1 & R2 Zone) and Commercial were provided.

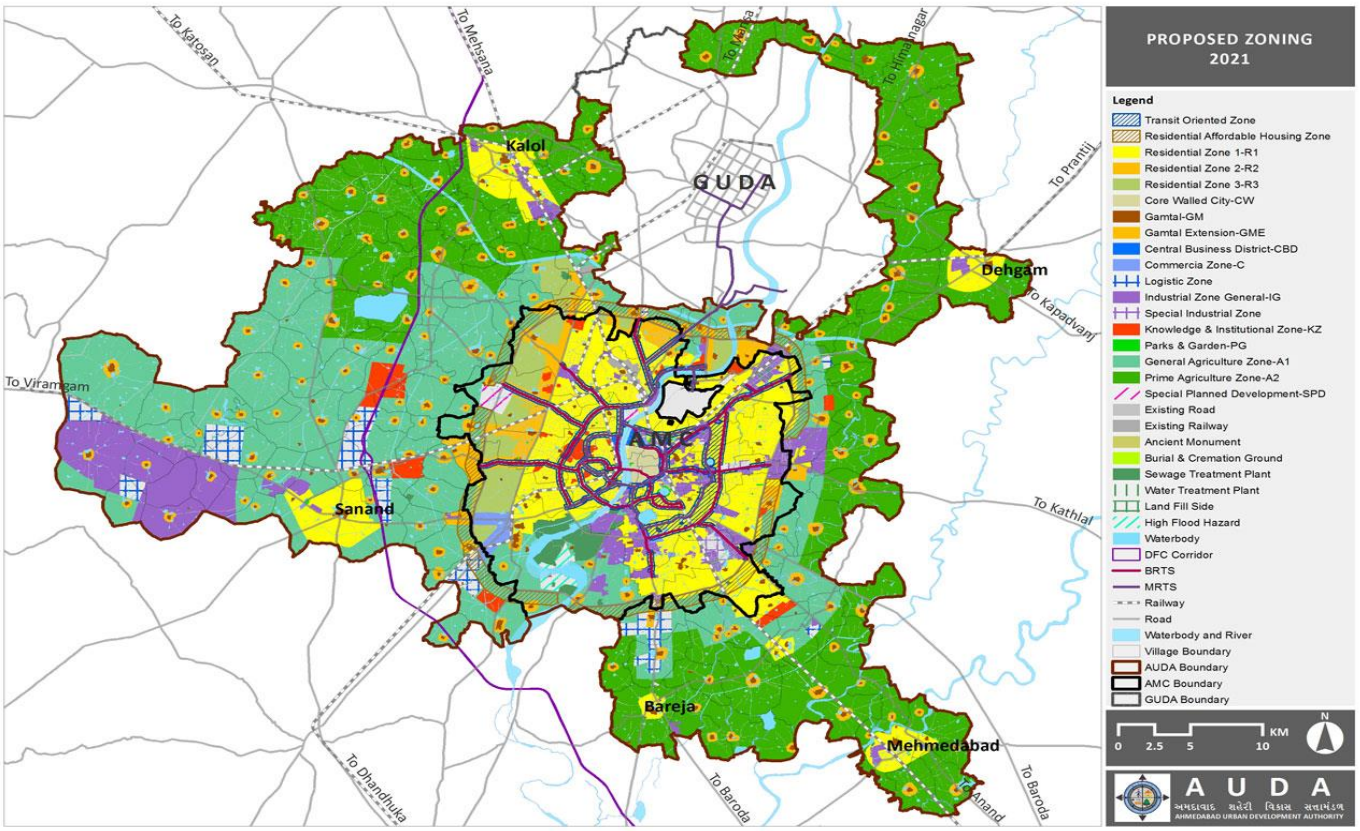
Development around Gamtals:

The growth around village should be accommodated in immediate vicinity of the village Gamtal in contiguous manner. Therefore, a buffer of 200 is provided around Gamtals having population less than 5000 and 300 m around Gamtals having population of more than 300 m where specific regulations and uses may be permitted according to GDCR.



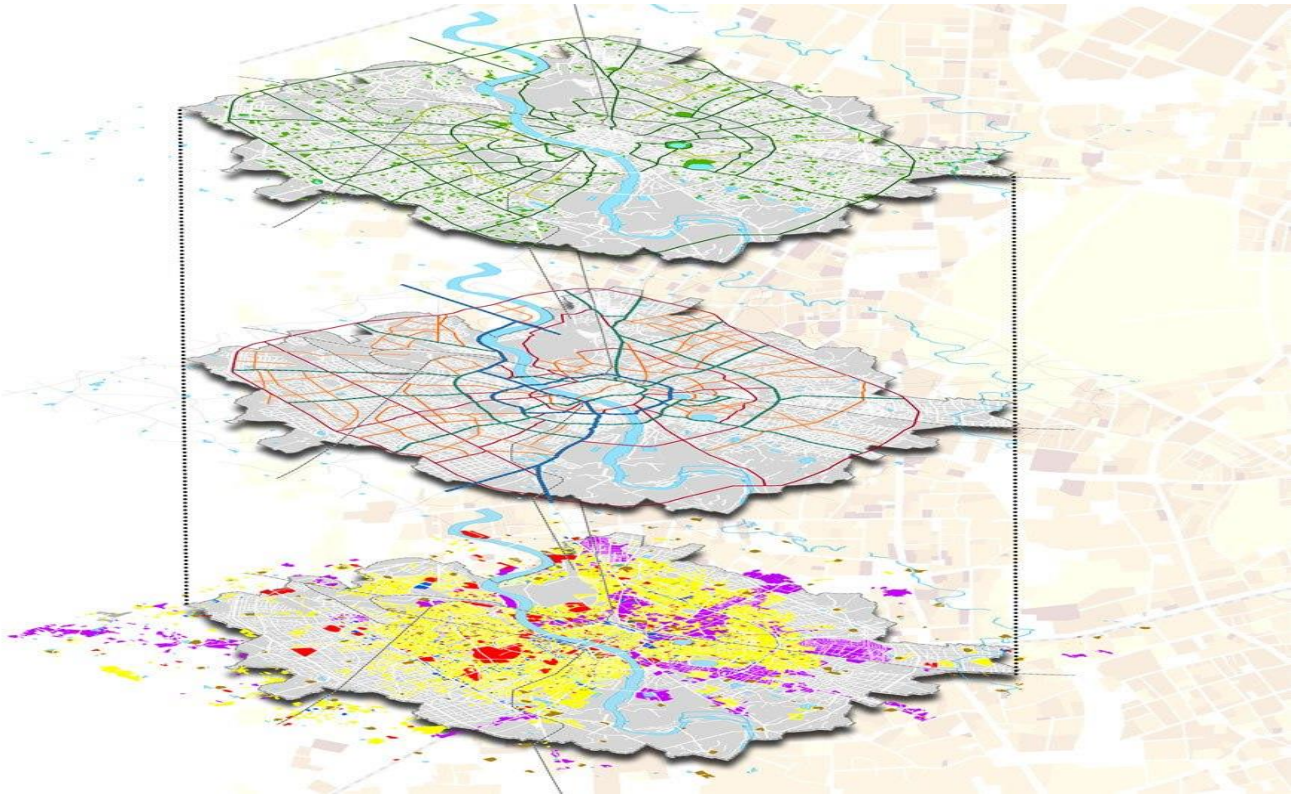
Knowledge & Institutional Zone:

Knowledge and institutional zones have been classified under the Development Plan, 2021 for an estimated area of 20 sq. m constituting 1.1% of the total zoned area. Various educational centers would be developed in the identified area to create educational hubs.

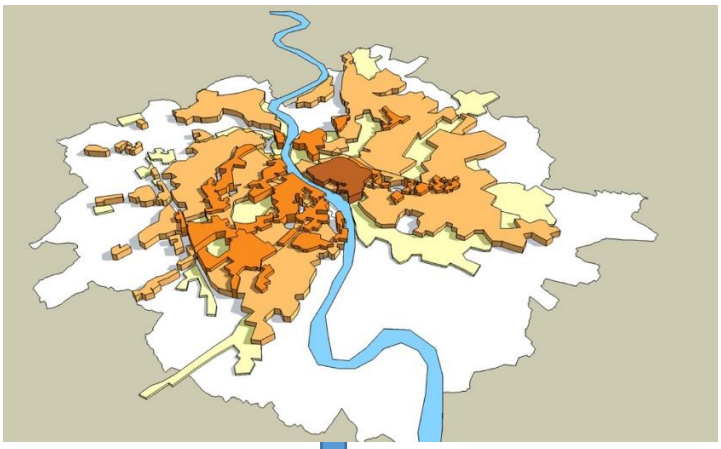


Proposed Zoning-2021

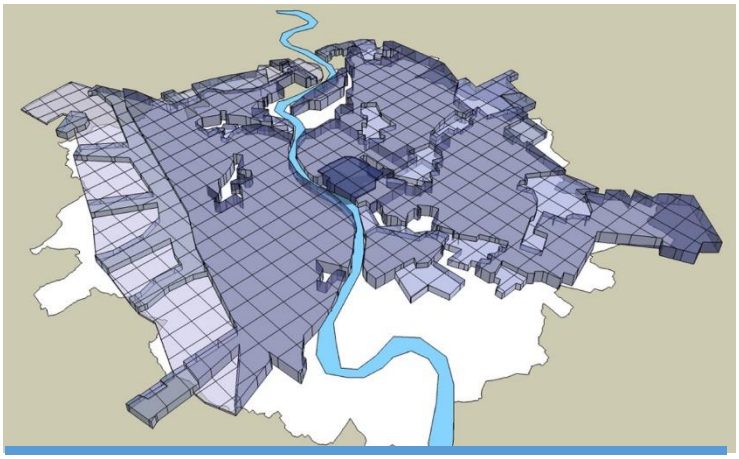
F



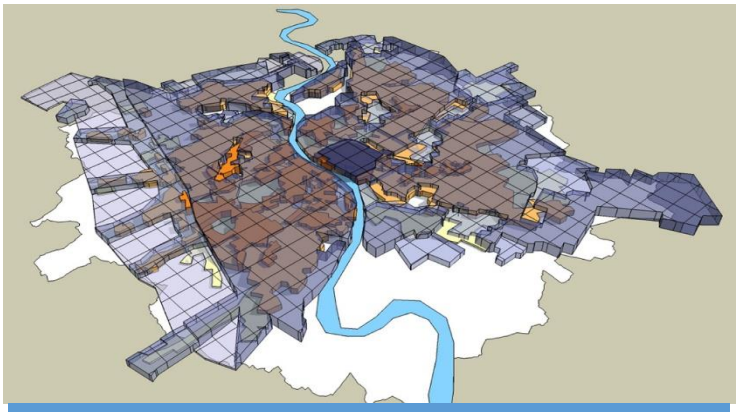
Evolving Street Network from Existing Development



Existing Built Form and Density



Proposed Built Form and Density



Overlaying Existing and Proposed Built Form

Logistics Zone:

Logistic zones, the category under local area plans group multiple activities involving freight distribution centres, transportation and related services within the area to be developed. These zones are unique because they correlate with transport networks and the array of services available. Under the Development Plan, 2021 the Ahmedabad Urban Development Authority plans to develop 43 sq. m of the area into commercial and logistics zone that is 2.3% of the total zoned area.

Introduction to Prime Agricultural Zone:

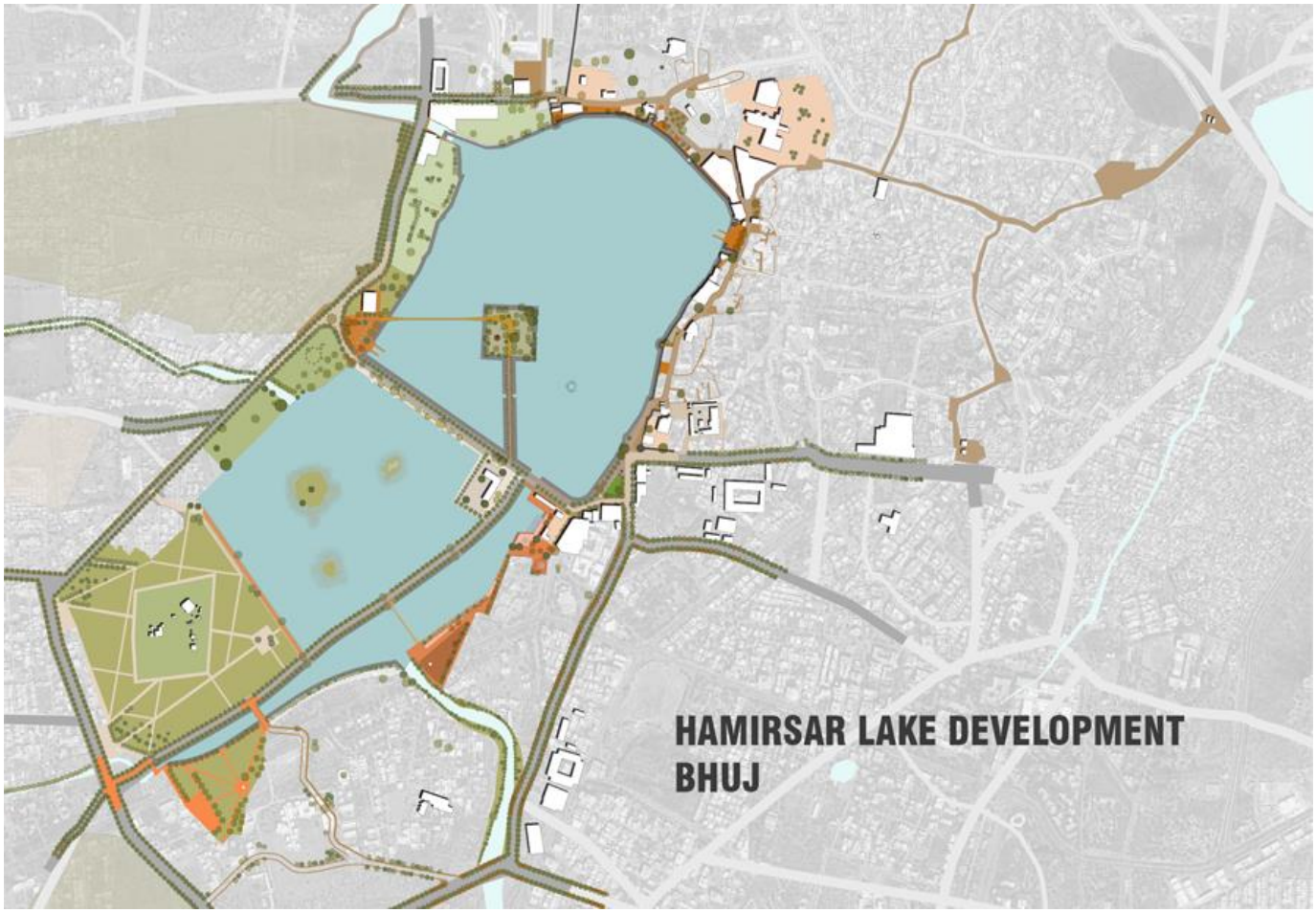
In order to improve primary sector in AUDA area and to preserve fertile double cropping land, zoning of appropriate agricultural land Prime Agriculture Zone has been introduced through this development Plan having an area of 569 sq.km.

3.1.3 HAMIRSAR LAKE PRECINCT DEVELOPMENT: WATERFRONT DEVELOPMENT.

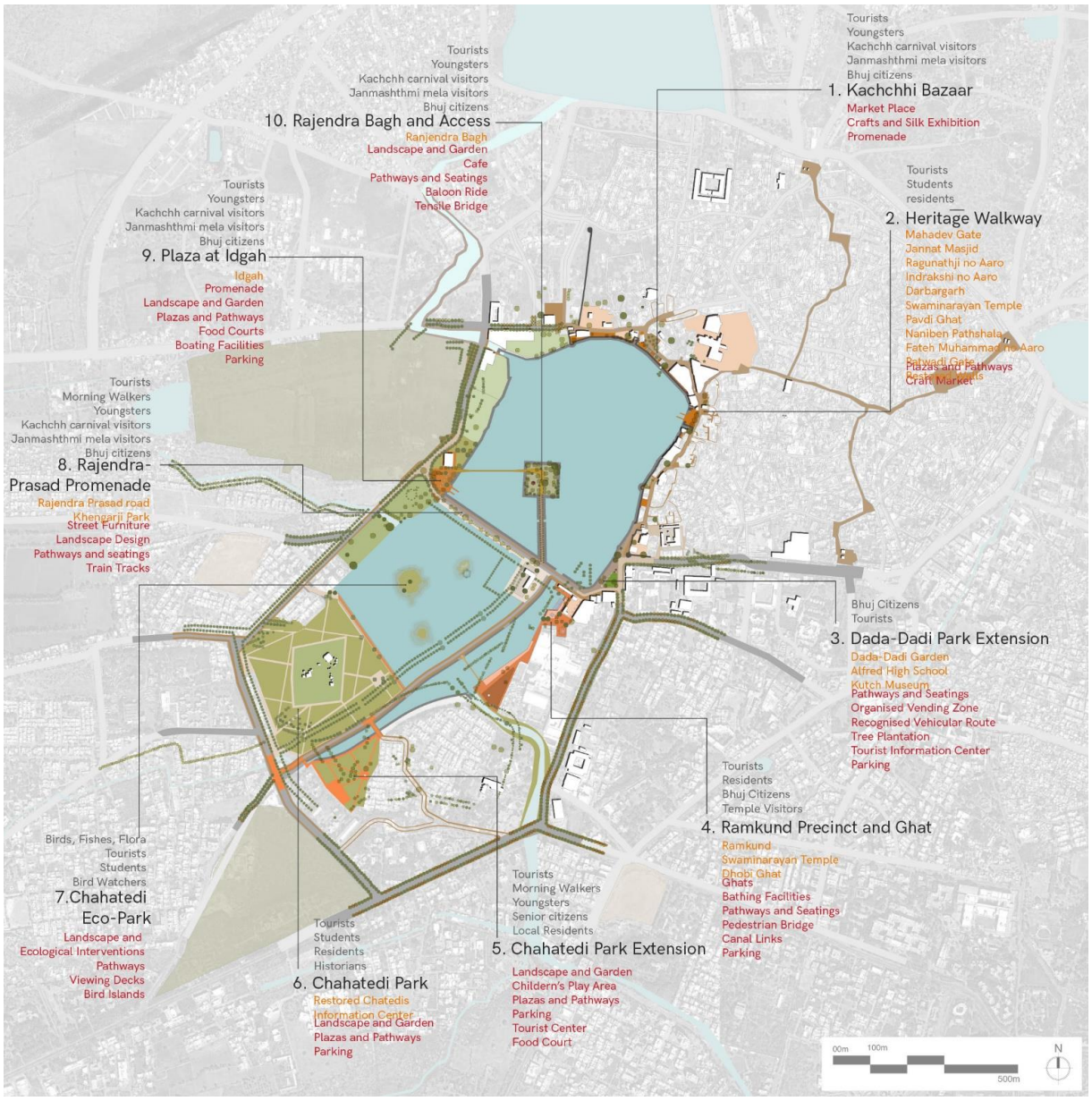
Urban Design

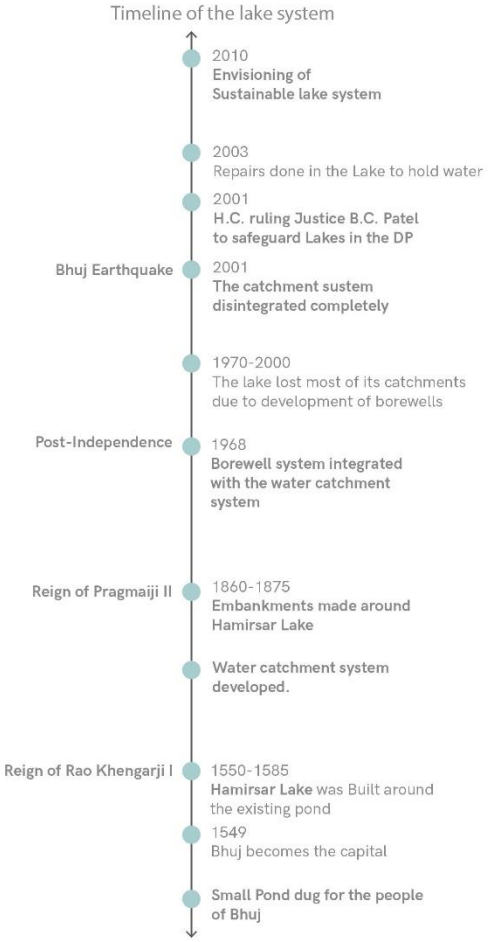
Location: Bhuj
Status: Ongoing

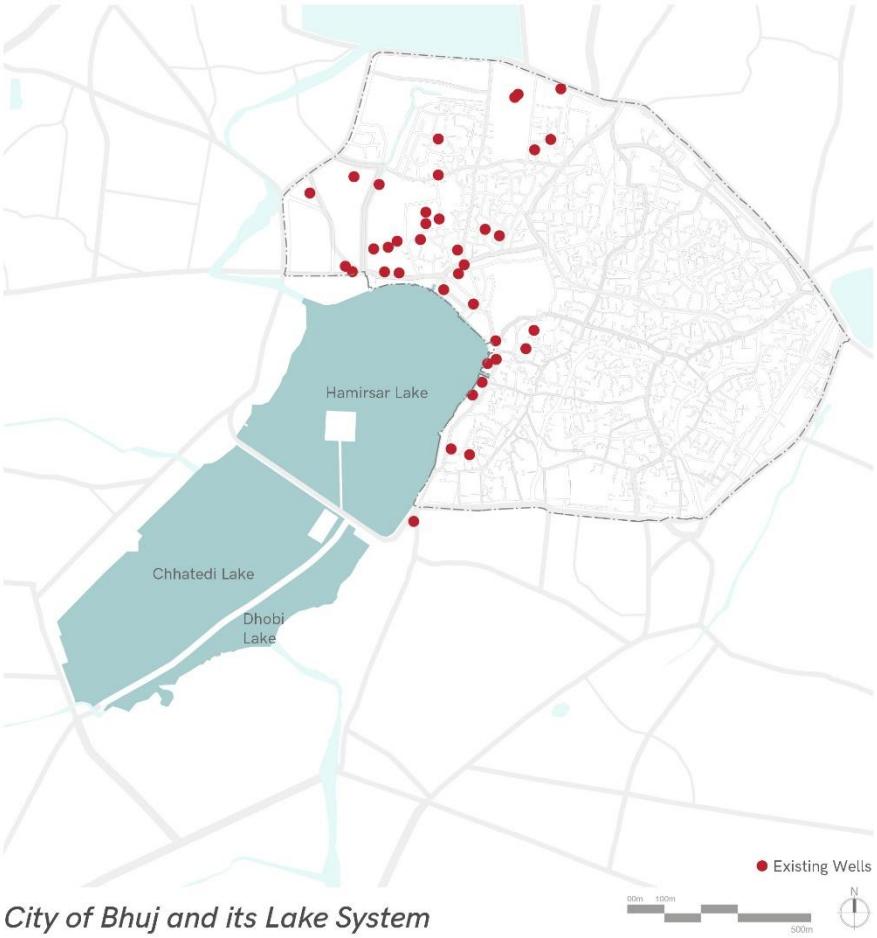
The city of Bhuj, located in western Gujarat, is home to a cluster of three lakes namely Hamirsar, Chhatedi and Dhobhi Talav. In the dense urban environment of Bhuj, its lake system forms an integral part of the city's public space. However, the existing condition of the lake is unorganized and ill-suited for the growing needs of the city. HCP has undertaken the revitalization of this lake cluster and its surroundings into an integrated lake precinct in the heart of the city.



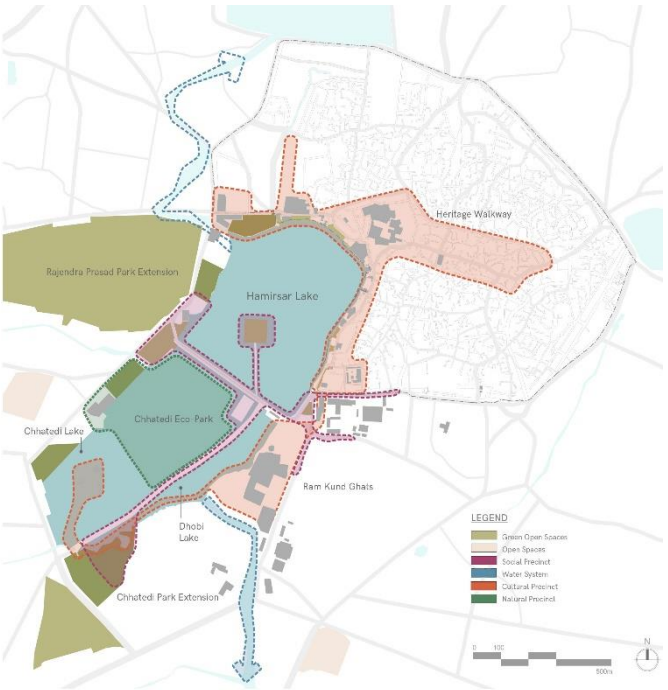
Based on a detailed study of existing conditions and multiple stakeholder consultations, HCP developed a proposal that targets key aspects of development like improving accessibility to the lake, revitalising cultural and historical sites, retrofitting the lake's water network to sustain water and restoring the lake ecology. It improves accessibility, creating a well-designed, robust network of pedestrian access, and vehicular connectivity between various inner-city markets. The edges of the lake, previously used for dumping garbage, are developed to create walkways and green spaces for the city. Old parks are reinvigorated and public plazas are incorporated in the precinct, to be used by citizens as everyday sites of recreation, as well as during festivals as public sites of celebration. These urban interventions are intrinsically linked with the capital budget plan, making possible numerous opportunities for revenue-generation.







City of Bhuj and its Lake System

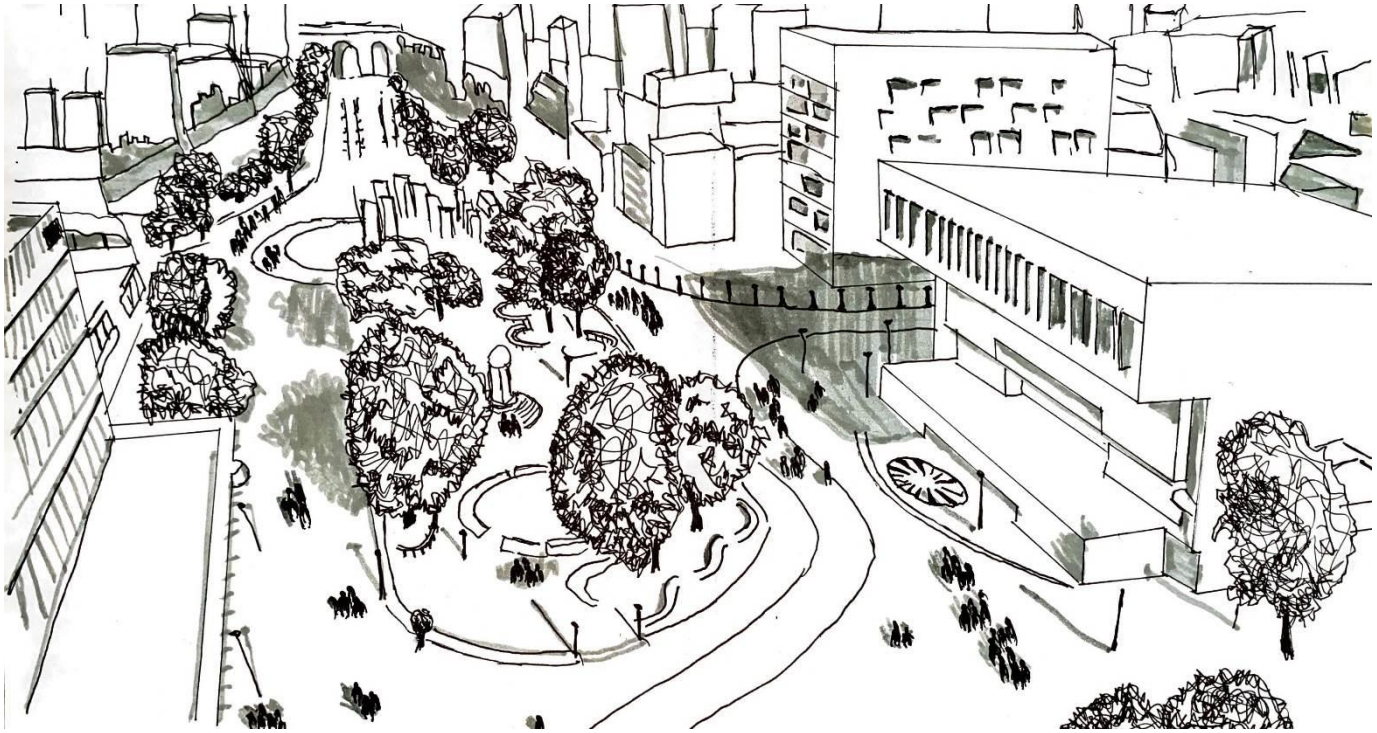


3.1.4 REVITALISATION OF BHADRA FORT.

Urban Design

Location: Ahmedabad, Gujarat, India
Status: Built (2011-2014)

Funded by the JNNURM (Jawaharlal Nehru National Urban Renewal Mission), the project became the first of its kind as a redevelopment and pedestrianization of a public space in an Indian old city. The redevelopment plan focuses on very basic aspects of the city to be considered in details; traffic congestion, no pedestrian demarcation, dense built fabric, unorganized informal activities, scarcity of open spaces, noise and air pollution.



The basic principles of the masterplan for redevelopment of Bhadra Precinct were to make the historic core a walkable precinct, develop pedestrian plazas, promote the use of public transport, develop large parks, conserve the heritage monuments and make this place a true city centre of Ahmedabad.

The project addresses a long-forgotten issue in countries with rapid developing economies like India: the concern to prioritize the revitalization of old cities instead of building and developing new and more economically profitable areas. Being an intervention for

everybody it does not revalue the land owned by the rich, but instead will benefit directly to the diverse community of the inhabitants in the walled city.

As a pioneer project in including the street vending activities in the design, exhaustive research on the informal activities in the plaza has been undertaken: vending pattern, types and typologies of stalls, location, movement, sizes and arrangement of hawkers have been documented in order to produce an inclusive and coherent proposal for relocation of 600 street vendors, thus protecting the livelihood of economically weaker citizens. It is a complex project that deals with multiple parameters and criteria ranging from public policy to design.

Over the time the revitalization of the area will flourish into the consequent up-gradation of the existing buildings in the surroundings. Given the guidelines for an elevation treatment, many of their upper floors abandoned and underused will convert into prosperous restaurants, offices or shops.

The impact will spread gradually along the axis of the Plaza into the bazaar street that connects to Manek Chowk (an open space that hosts commercial and leisure activities) towards the east, and Sabarmati river towards the west. The city of Ahmedabad – currently pending for recognition as World Heritage City status- will reflect on this project as a model example for redeveloping other public spaces.

Through the years, awareness of the value of this place will arise, connecting with the people and their pride for culture and identity of their past and present glory. The Bhadra Plaza will then again become one of the true great public centers in India, an open living room for people to meet, gather, celebrate, shop and recreate.

In 1958 Balkrishna Doshi gets the commission for a new auditorium, the Premabhai Hall. Facing the Bhadra Plaza, the building became an opportunity to design a first proposal for the revitalization of the area. The envisioned plaza would take in diverse activities distributed at different levels, and become a public foyer preceding the cultural hub of the Auditorium.

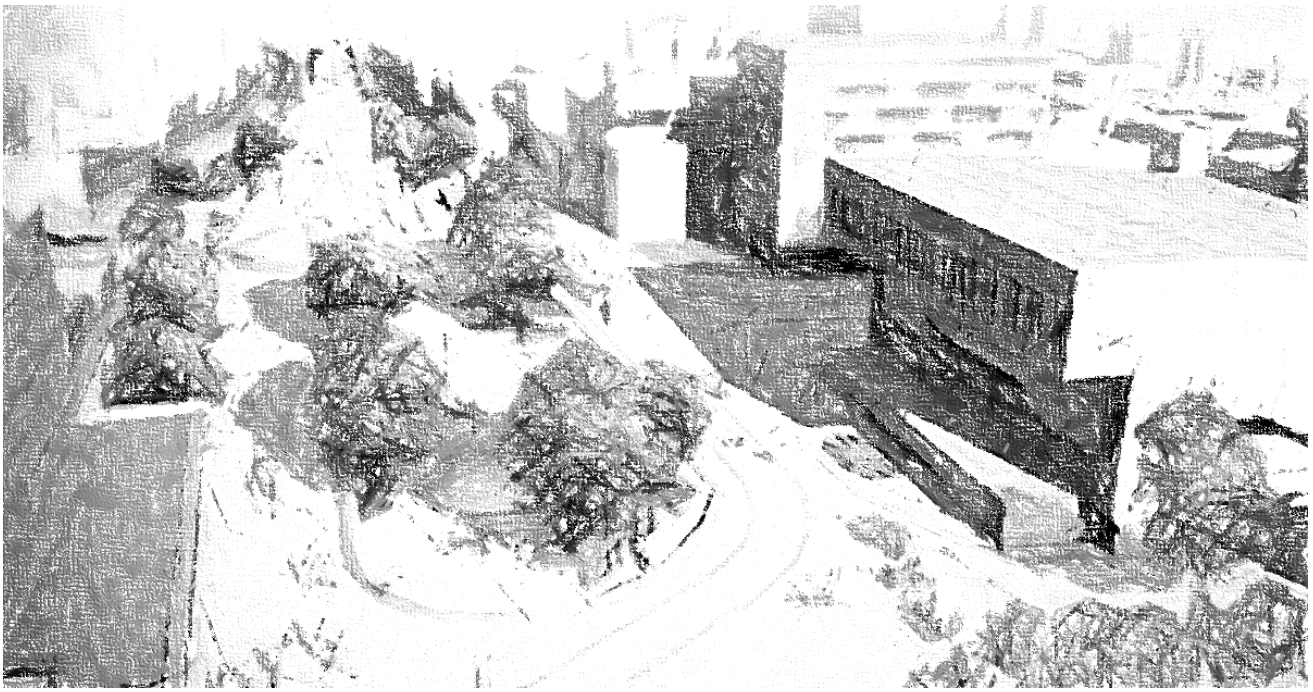
In 2009, the scenario was of a plaza whose original outline could still be traced, but that had been greatly encroached upon and suffered from intense traffic congestion, no pedestrian demarcation, unorganized informal activities, unutilized open spaces, haphazard parking, as well as noise and air pollution.

Along with the pedestrianization of the plaza, public access to the Bhadra site by pedestrian friendly lanes as well as enhancing the connection accross the Sabarmati River through a pedestrian bridge have been proposed. The project also includes the conservation and adaptative reuse of the Bhadra Fort by the Archeological Survey of India and the Redevelopment of the Lal Darwaza Bus Terminus in close proximity to the Plaza.

Existing Urban Revitalized Output

Existing activity pattern at plaza: total no. of Hawkers: 894

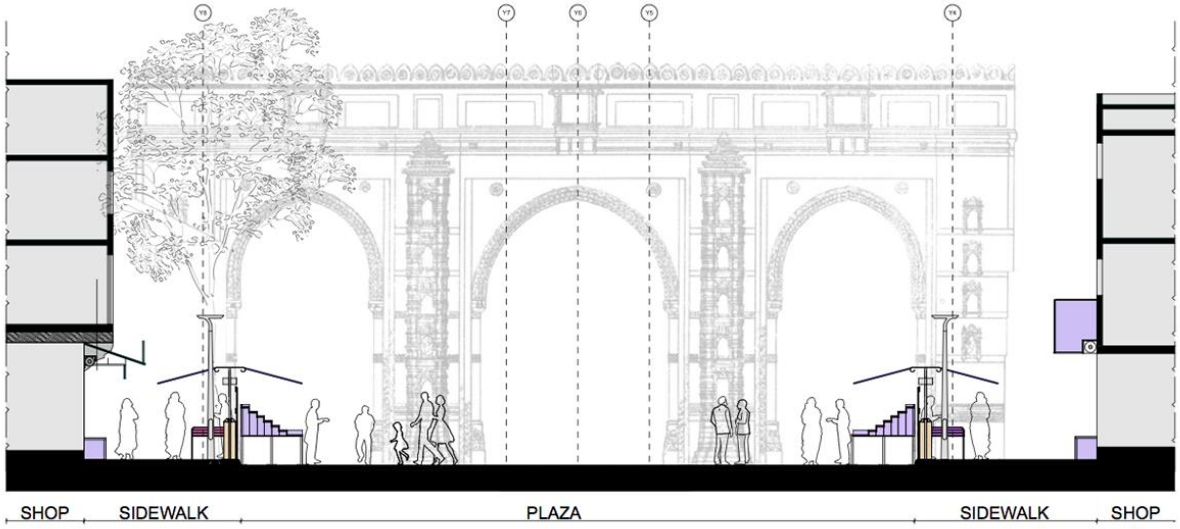
T

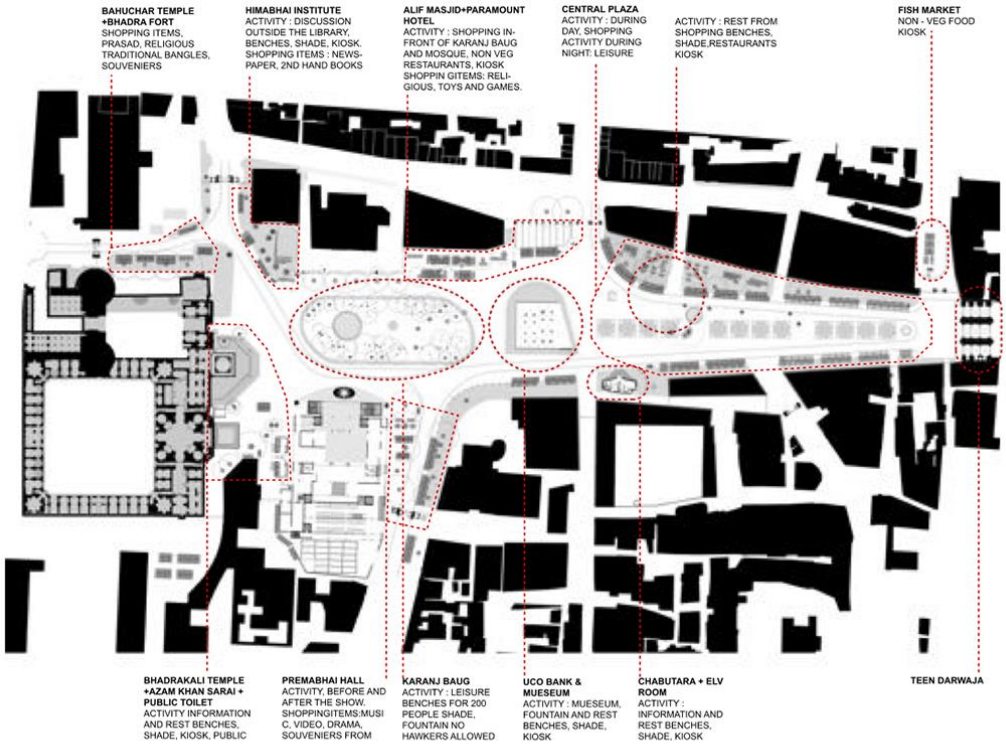


lows the informal and formal activities occur while maintaining the quality and character of

a vast public space with leisure zones with trees and shade, fountains and seating areas. Some of the other issues the project addresses are the up gradation of physical elements such as signage, lighting, landscaping and street furniture. Designed portal columns, arranged along the market space demarcate the commercial activity. These vertical elements will guide the new location of the stalls and the zones for street vendors, as well as provide light and structure for the awnings required in monsoon or summer seasons.

The pedestrian Plaza will also have entry gates for emergency, religious processions –like Tazia– and delivery of goods to the shops in the ground floors. As well as a museum located in the refurbished basement of an obstructing structure, a police station and a public toilet.

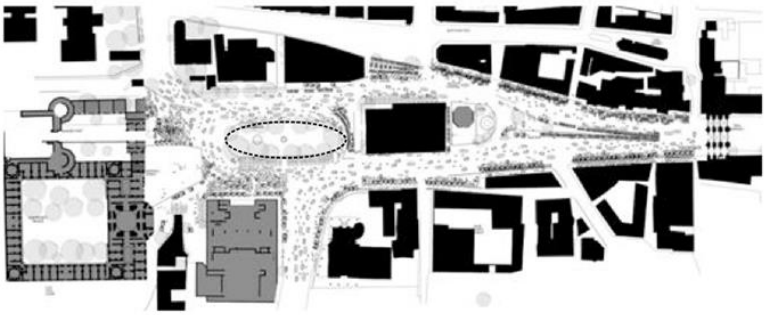




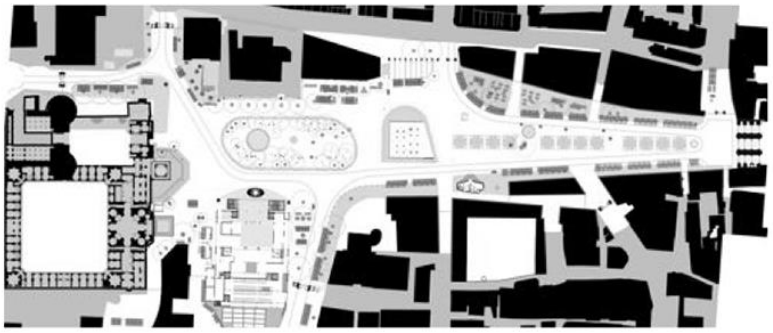
Existing Institutions & Public Spaces that have been revitalised at Bhadra square

Before 2012 and after 2014 Development Plan

Before 2012 and after the 2014 redevelopment plan.



Before Redevelopment

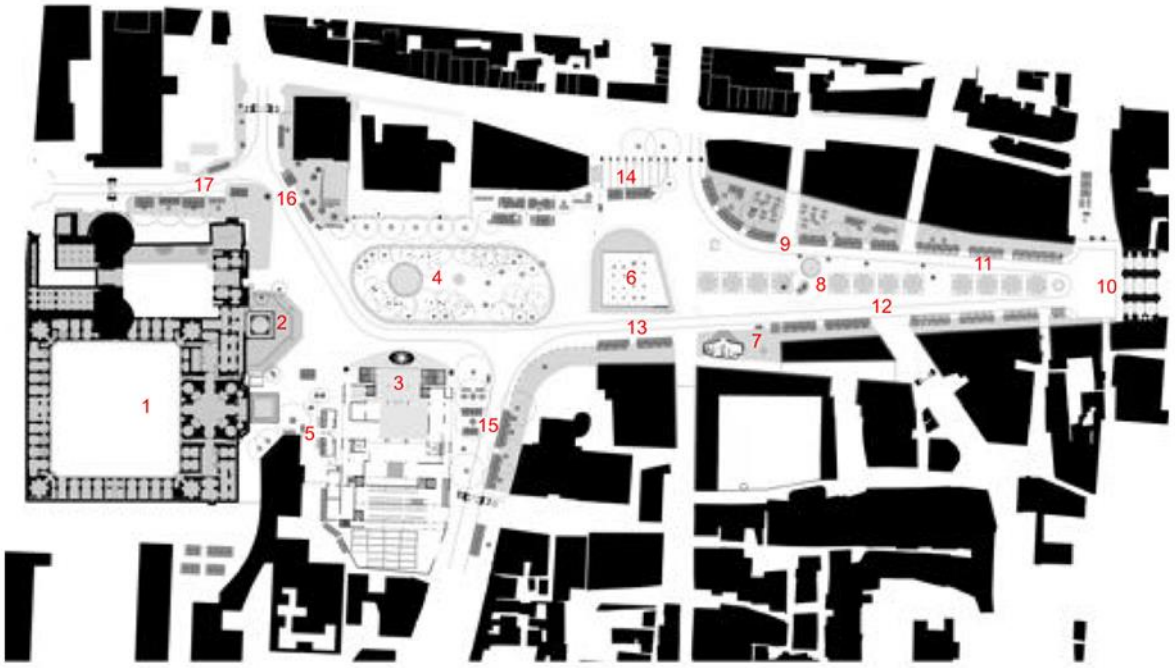


After Redevelopment

The project received HUDCO (Housing and Urban Development Corporation), 2012 Award for Best Practices to Improve the Living Environment, First Prize in the category of Conservation and Heritage and exhibited at 'Celebrating Habitat', Retrospective exhibition of B. V. Doshi at National Gallery of Modern Arts NGMA in Delhi, October-December 2014.

List of Interventions at Bhadra Square

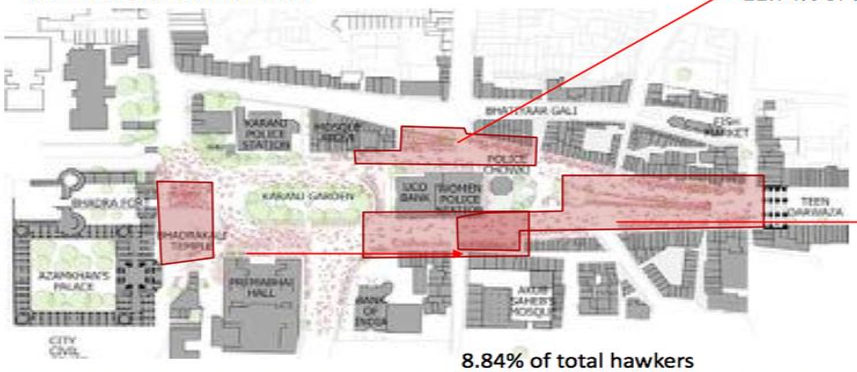
Dr Doshi has been a member of the Jury for several international and national competitions including the Indira Gandhi National Centre for Arts, Aga Khan Award for Architecture and Pritzker Prize.



1. BHADRA FORT & AZAM KHAN'S SARAI
2. BHADRAKALI TEMPLA AND RAISED PLATFORM
3. PREMABHAI HALL
4. KARANJ BAUG
5. BHADRA PUBLIC TOILET
6. UCO BANK & MUSEUM
7. ELV ROOM & CHABUTARA
8. BHADRA PLAZA FLOORING
9. HAWKERS & RESTAURANTS
10. TEEN DARWAJA
11. HAWKERS RELOCATED NR TEEN DARWAJA
12. HAWKERS RELOCATED NR. ELV ROOM
13. HAWKERS RELOCATED NR. UCO BANK
14. HAWKERS RELOCATED NR. BAHUCHAR TEMPLE
15. HAWKERS RELOCATED NR. ALIF MASJID
16. HAWKERS RELOCATED NR. BANK OF INDIA
17. HAWKERS RELOCATED NR. HIMABHAI INSTITUTE

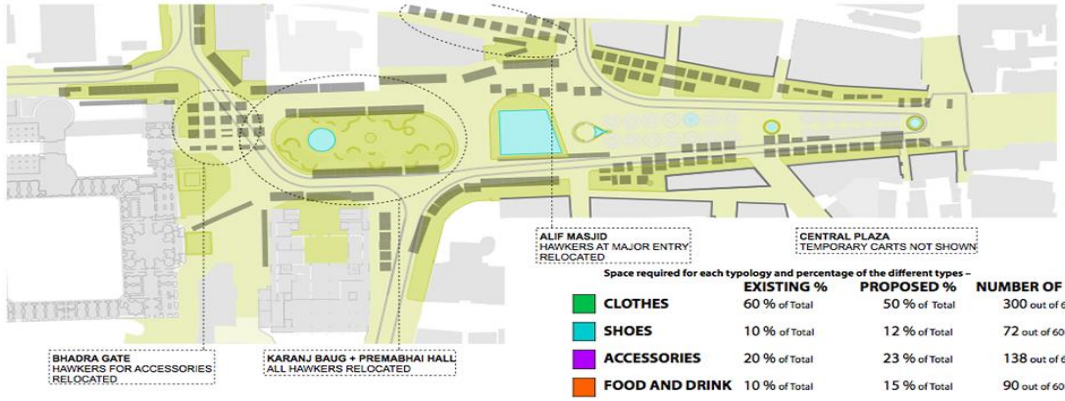
44.30% of the total hawkers

11.74% of the total hawkers

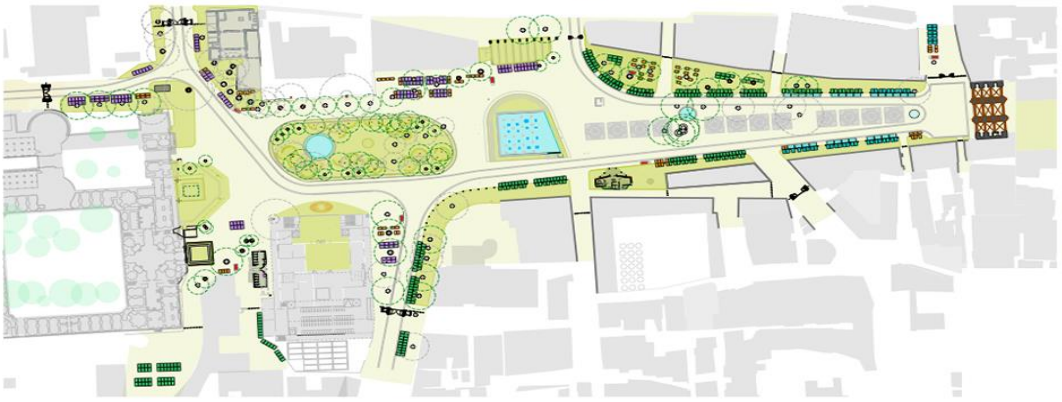


8.84% of total hawkers

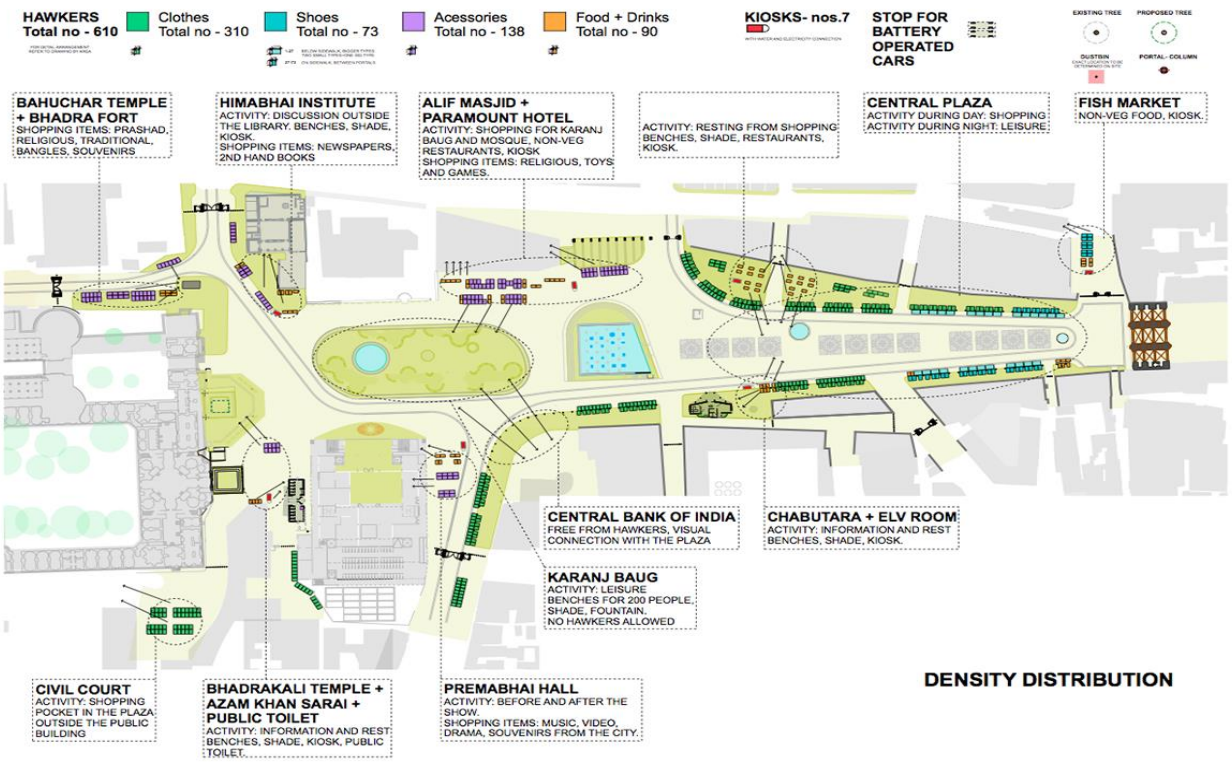
34.90% of total hawkers



EXISTING HAWKERS - APROX. 900 NOS.



PROPOSED HAWKERS - 600 NOS.



DENSITY DISTRIBUTION

3.1.5 TRANSIT ORIENTED ZONE, AHMEDABAD.

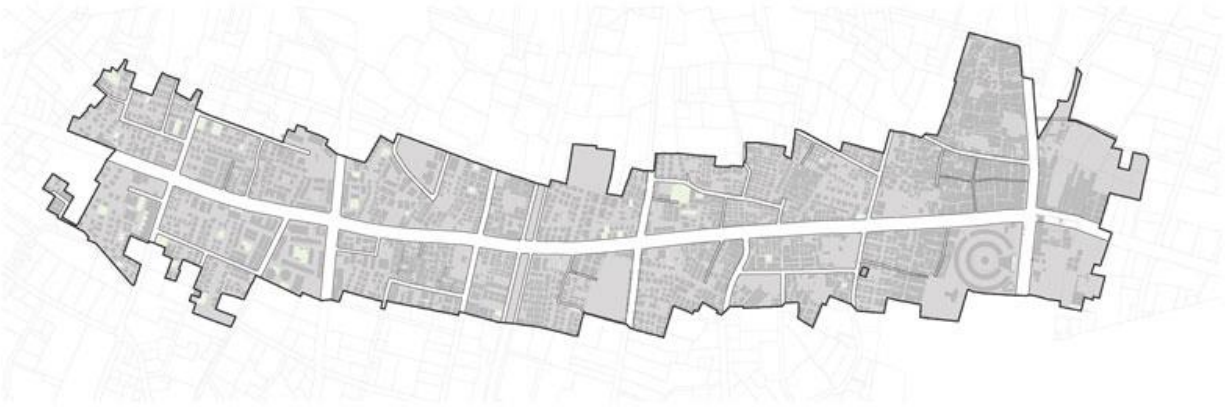
Urban Design

Site Area: 166.8 Ha
Status: Ongoing
Design Team:
Bimal Patel, Jignesh Mehta, Ganesh Ahire, Nirav Shah, Kaustubh Shukla

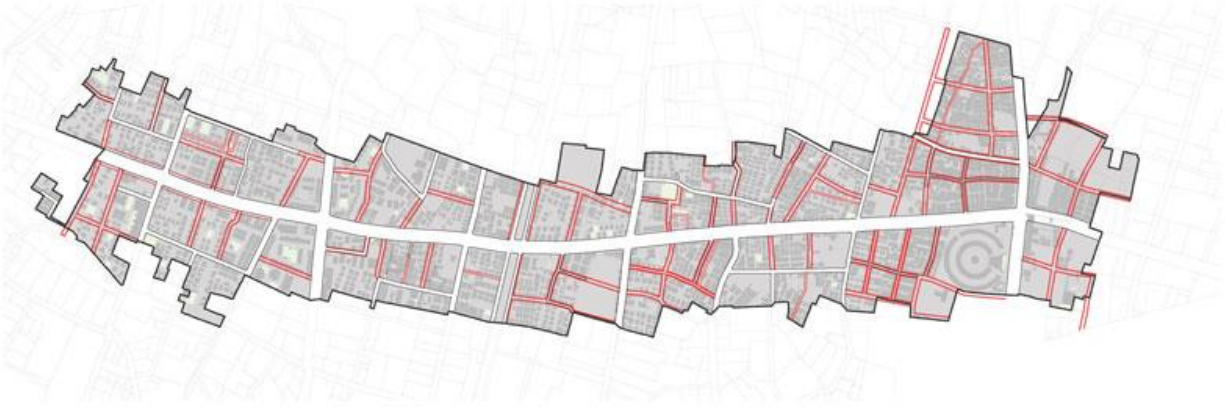
Transit Oriented Zone Local Area Plan, Ahmedabad 2015

AUDA's Comprehensive Development Plan 2021, with its focus on compact and sustainable development, has identified 400 m wide corridors along the public transit corridor (BRTS and Metro Line) as Transit Oriented Zone (TOZ). HCP has been appointed by AUDA to prepare the TOZ plans for additional six corridors covering about 51 kms length along the existing BRTS and proposed metro line.

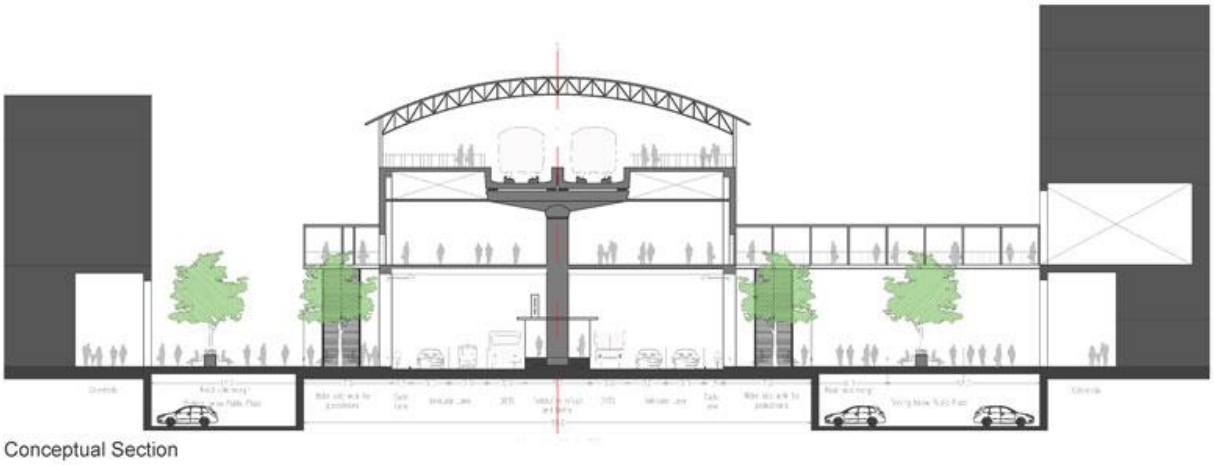
TOZ is a zone planned to reduce the dependence on private vehicles and to encourage pedestrian friendly environment and the use of public transport. Typically, a TOZ would entail compact, mixed-use development with thriving residential, commercial and entertainment activities at a comfortable walking distance from transit stations, designed to maximize the use of public transport. It would further promote compact Transit Oriented Development to help coordinate land use and transportation.



Existing Street Network



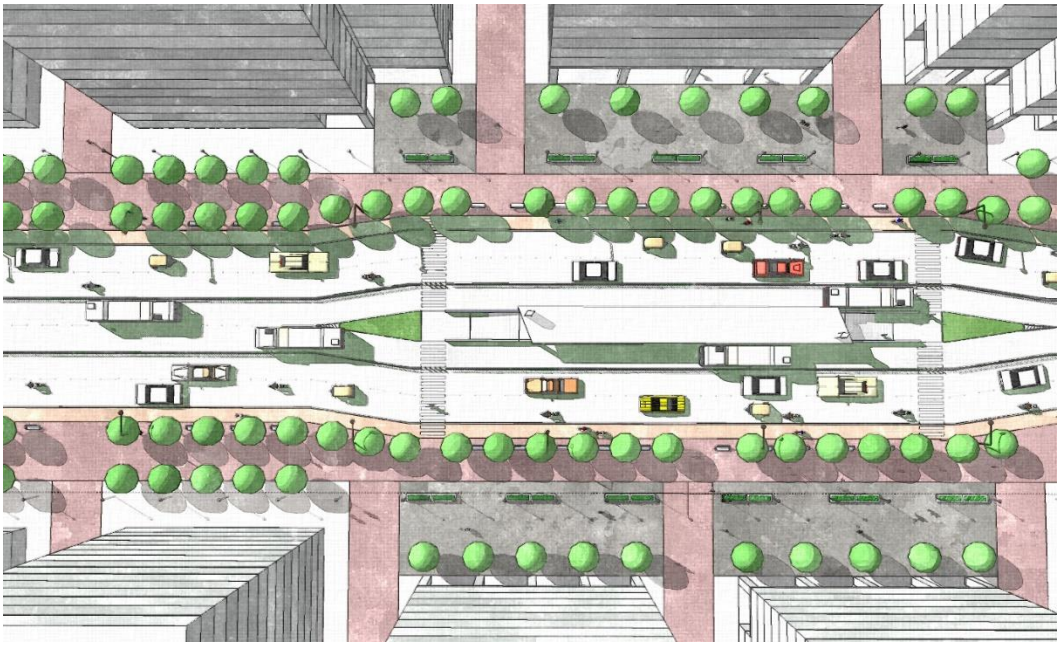
Careful Addition of New Streets through Incentivising Redevelopment

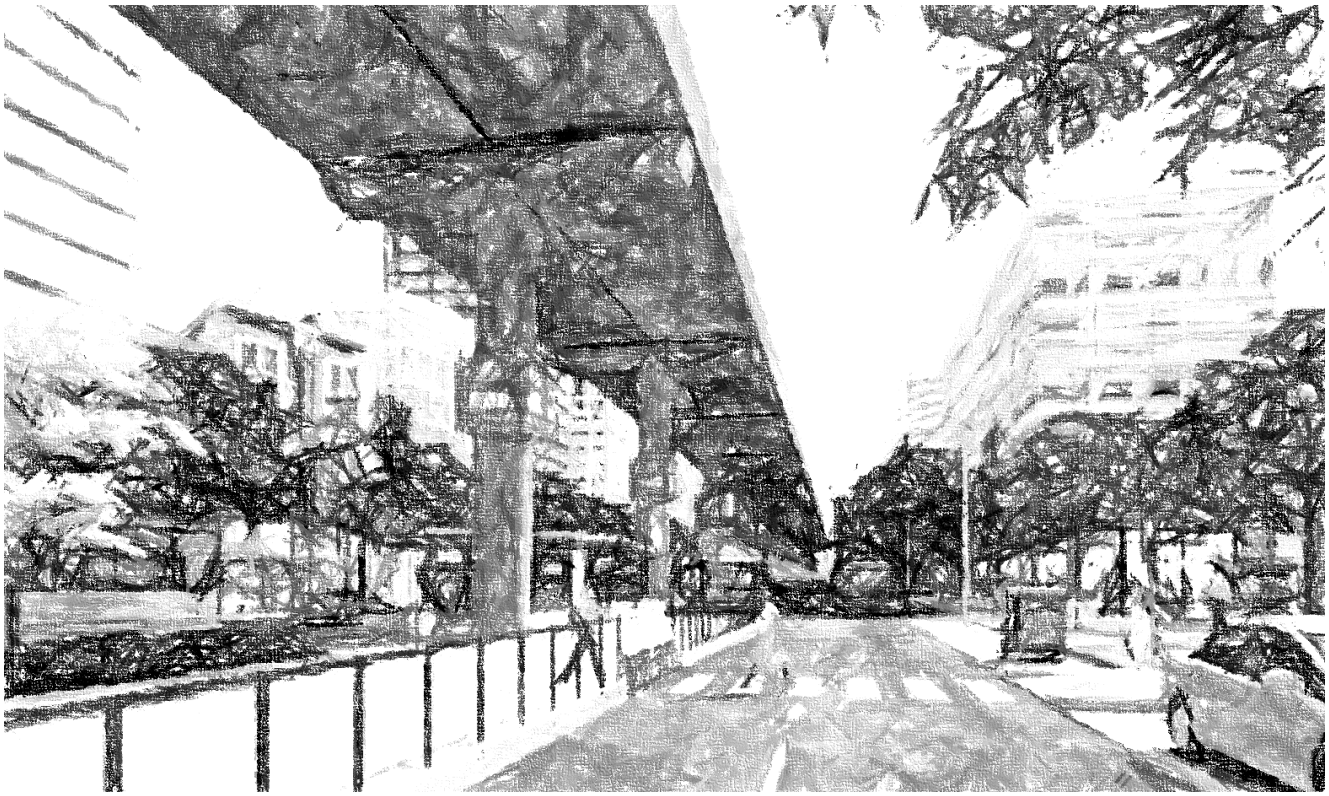


Conceptual Section

HCP is engaged by AUDA to prepare Local Area Plans (LAPs) for more than 70 kms of TOZ corridors. These LAPs are to transform the development within the TOZ corridors by incentivizing redevelopment and encouraging compact development by increasing the FSI from 1.8 to 4.0. At the same time, they also identify additional land to be taken into public ROW to add new streets, to improve pedestrian connectivity and at the same time, increase the green cover. This will enhance accessibility through direct connectivity with BRTS and upcoming Metro.

The HCP team is also involved in preparing development regulations which would improve the built form along the transit corridors through features such as arcades, plazas and public amenities near the transit stations.



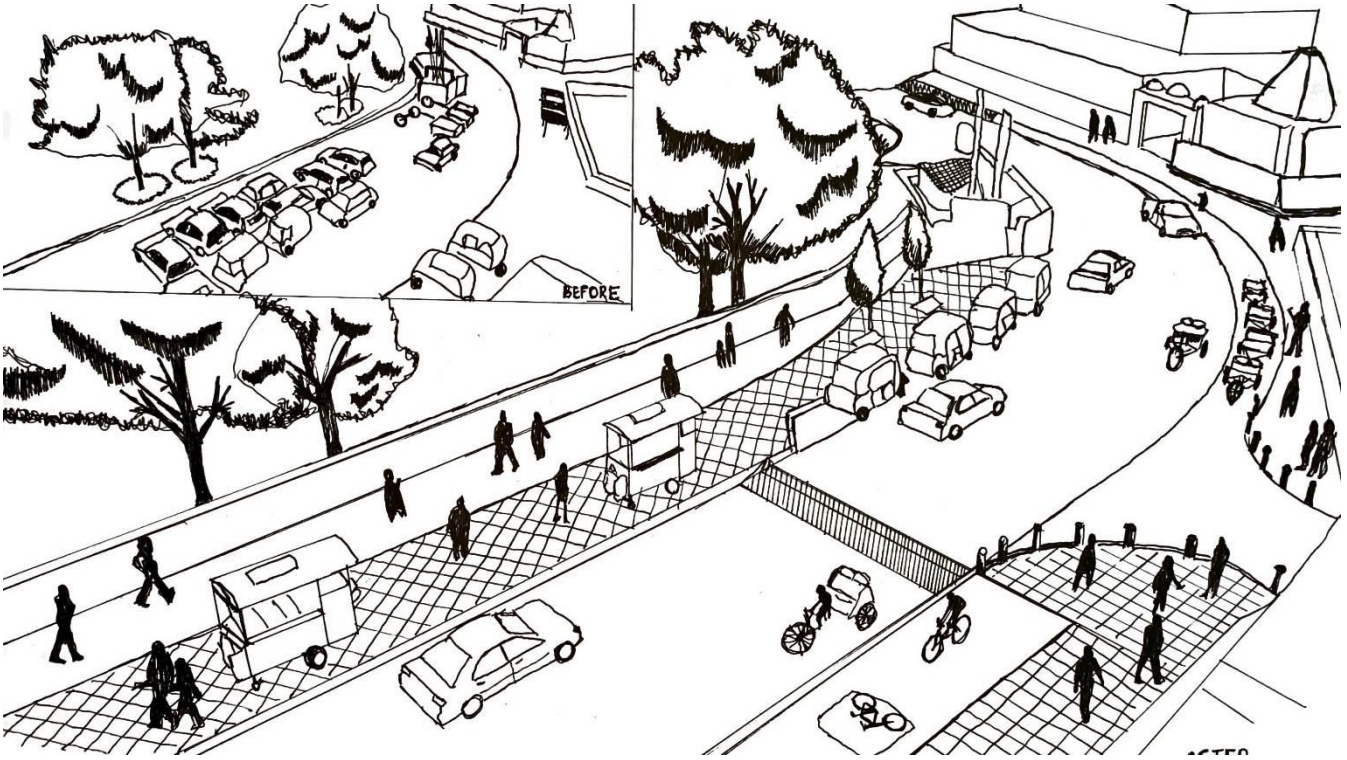


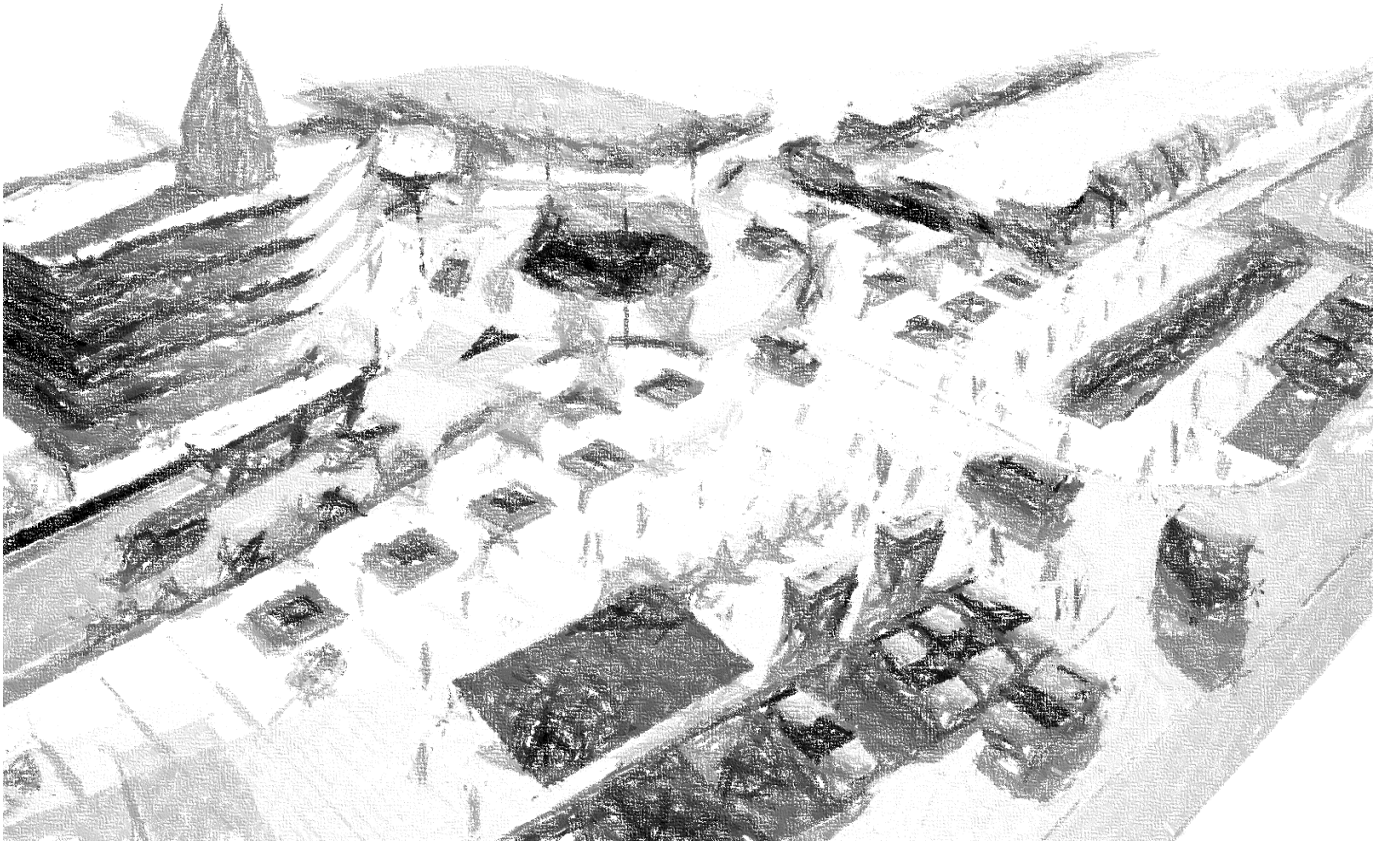
3.1.6 AAP KI SADAK, NEW DELHI.

Urban Design

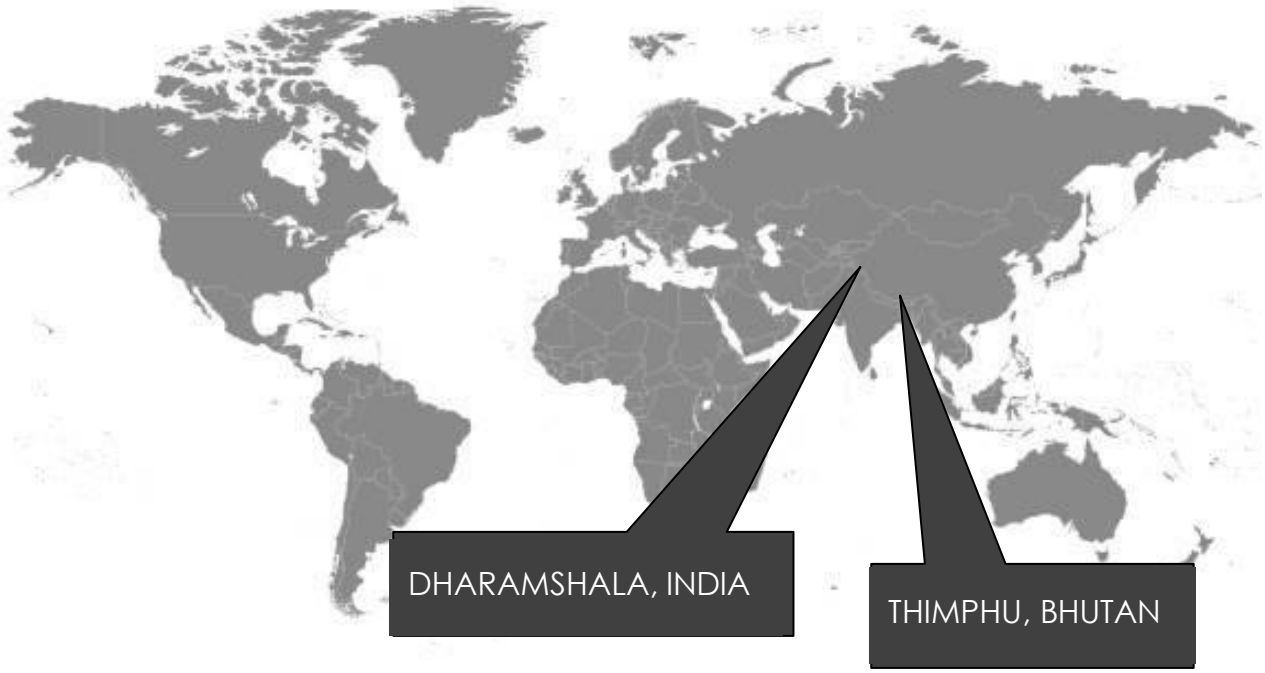
The proposal is for the detailed design and implementation of a pedestrian and NMT accessibility plan in the context of a typical urban precinct served by various public transit systems and spaces covering a variety of neighbourhood types typically found in large cities. The study area includes the Malviya Nagar / Khirki residential colonies. The project looks to bring about macro level systemic change in terms of public transport network connectivity, pedestrian friendly environment as well as micro level change in userbehaviour, vehicular dependence and site-specific physical obstacles. The phasing strategy moves from neighbourhood level solutions to systemic / macro level changes. The following phases are designed such that the key deliverables at the end of each phase are standalone and will contribute to the betterment of the city. The project is divided in six to seven zones depending on the character of the neighbourhood.

Before and after sketches





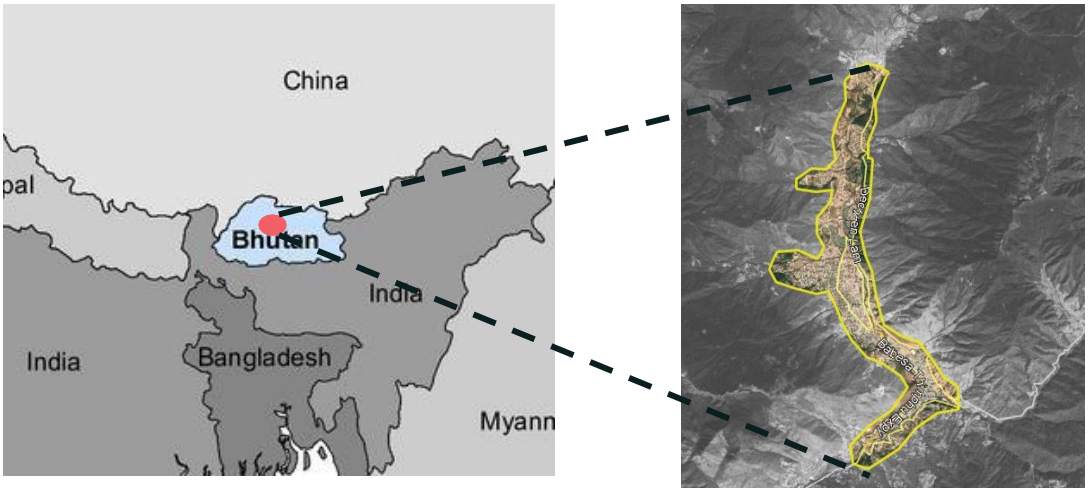
3.2 CASE EXAMPLE



3.2.1 CASE EXAMPLE 1.0 – THIMPHU, BHUTAN

Description

- Thimphu, the capital city of Bhutan at northern side of Indian state of West Bengal.
- Total population is approx. 1 lakh (2017) and the altitude is 2320 meters.
- Thimphu is city of traditional centre for culture, art, administration & economy.
- Thimphu city is designed by famous Architect Prof. Christopher Charles Benninger
- Designed with local tradition & culture of the place.
- The concept design includes measures to protect the fragile eco-systems; an open space system; urban corridor that link village square; amenities plan providing social infrastructure
- The main focus of the study is – Street scape, Public realm, open spaces, activities, Landforms & nature, view-vistas- skyline, Landmark.

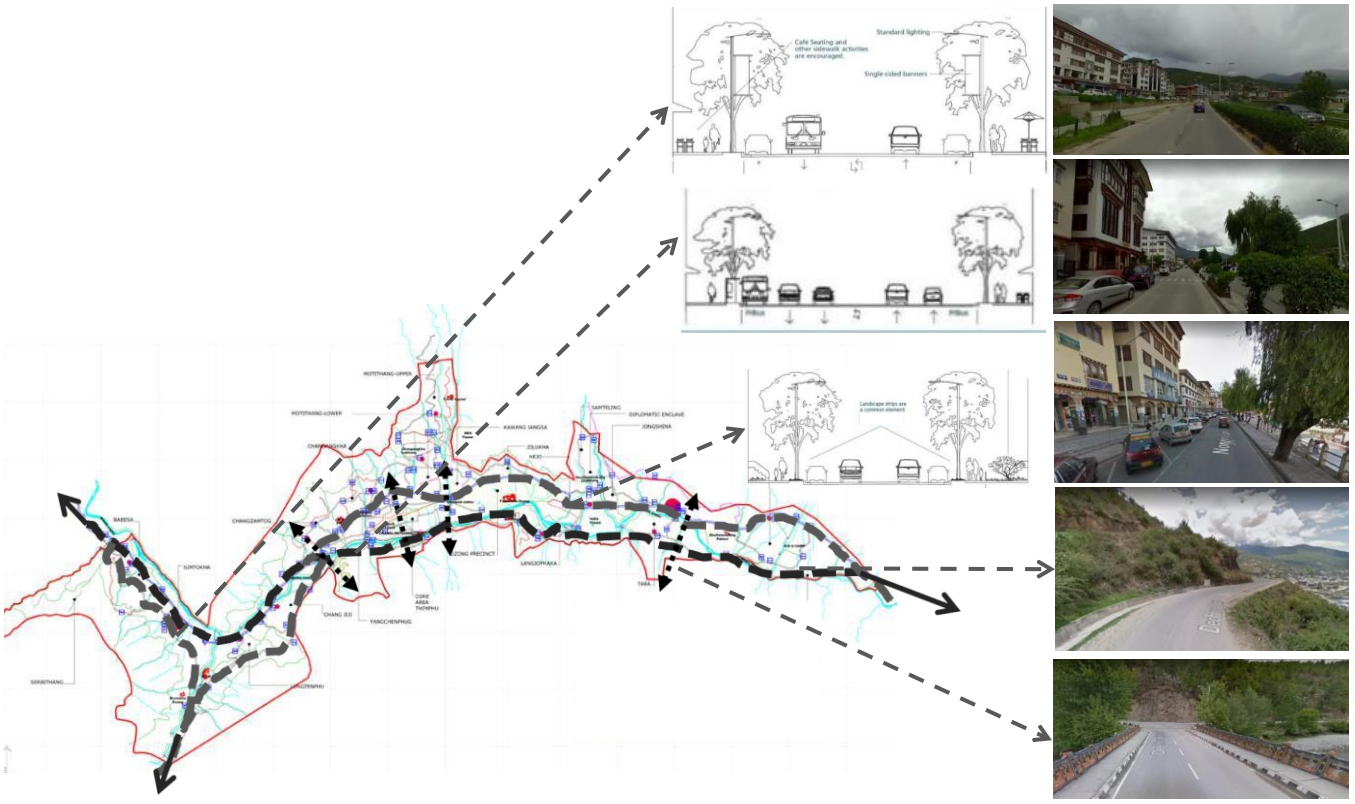



THIMPHU VALLEY

Survey & Analysis

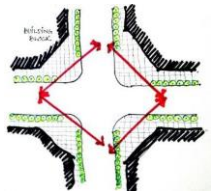
Pathways

- Roads are mainly grade separated with pedestrian connection for the entire city.
- Roads may be classified as Expressway, primary & secondary road, market place road & vehicular/foot bridge.
- As river flows through the city several vehicular bridges are introduced to connect both sides of the river.



Nodes & Landmarks

- Nodes are designed for better traffic movement.
- Node junctions are chamfered to connect visually better & well accessible from all direction.



Langten circle node

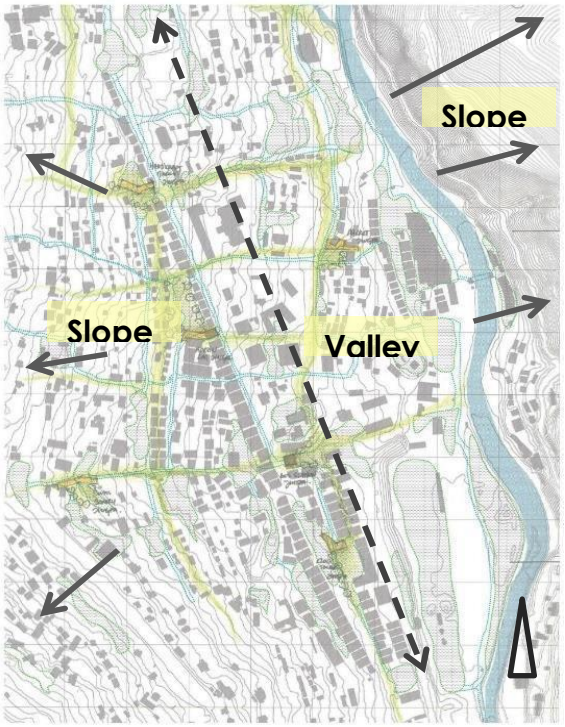
Views, Vistas & skyline

- Straight roads and building on both sides with setback create vista focusing on mountain views.
- Gates are introduced for locating from far as landmark with Bhutanese signature style

Main Road vista

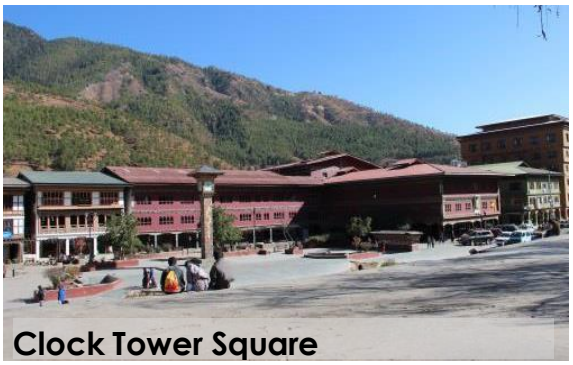
Landform & Nature

- Situated in Wang chhu (river) valley floor at 8000 feet high, with a verdant carpet of forest reaching up to the mountain.
- Longitudinal city-form along the valley/ Wang chhu.
- Importance on ecological balance & green cover on hillsides to protect the river valley.
- Intelligent urbanization has been proposed by designer (Prof. Benninger) to protect environmental balance.
- Bhutan is a carbon negative country.



Activities

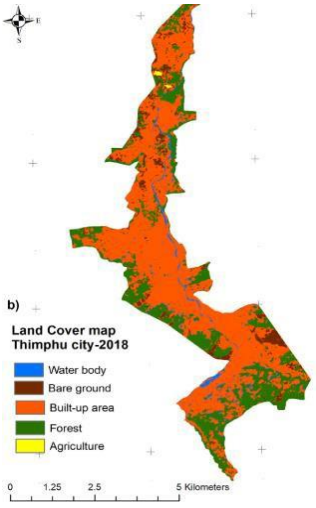
- Separate different activity pattern for the people
- Admin. & commercial zones & public activity zones are demarcated
- Clock tower square is at core of the city for gathering of citizens & tourist with proper landmark
- Public realm is backed by the design to enhance city experience
- Market place, tourist activity area & facilities are adjacent to each other



Clock Tower Square

Landuse

- Due to increasing tourism & core city development open spaces are decreasing
- Dedicated open area & public space are secured for the future

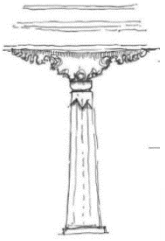


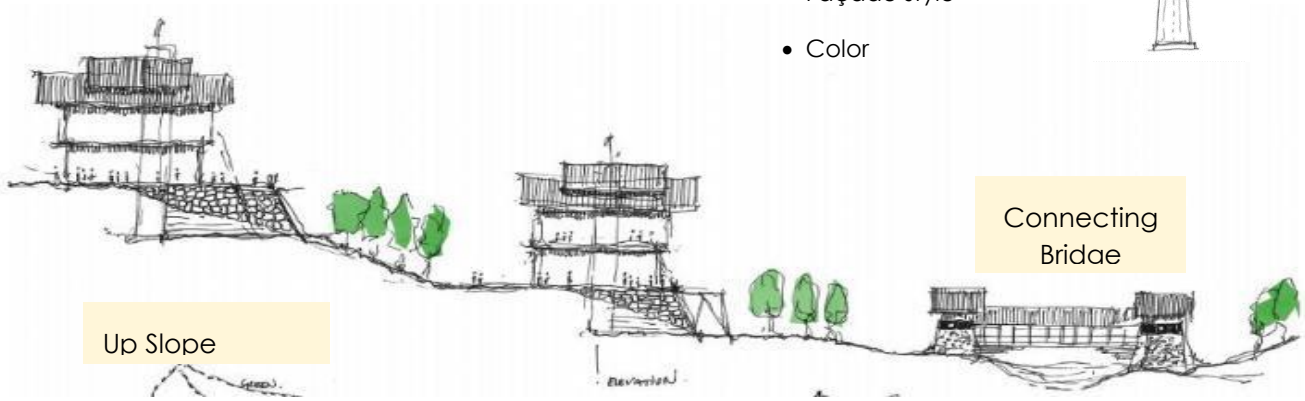
Architectural features

- Entire city has a homogeneous Pattern, Grain & Texture
- Strong Architectural concept & Urban design guideline control it to the best possibilities
- Understandable and recognizable form, style of the built environment.
- Monastery or Tibetan traditional architectural styles are predominant.
- Buildings with specific architectural features

Gateways & façade for Architectural Landmark

- Built with human scale.
- Building base & top.
- Window Pattern
- Façade style
- Color





Connecting Bridae

Up Slope

Road level

River Bed

Conclusions

Pathways

- Roads are mainly grade separated.
- Pedestrian connection for the entire city.

Nodes & landmarks

- Node junctions are chamfered to connect visually from all direction.
- Use of landmark structure like gate, Buddha sculpture etc.

Views, Vista & Skyline

- Straight roads and building with setback create vista
- Creation of view corridors

Landform & Nature

- Importance on ecological balance & green cover on hill sides to protect the river valley.

Open spaces

- Interconnected public open spaces within the city.

Activities

- Public Square is at core of the city for gathering of citizens & tourist with proper landmark & view-axis.

Landuse

- Dedicated open area & public space are secured for the future.

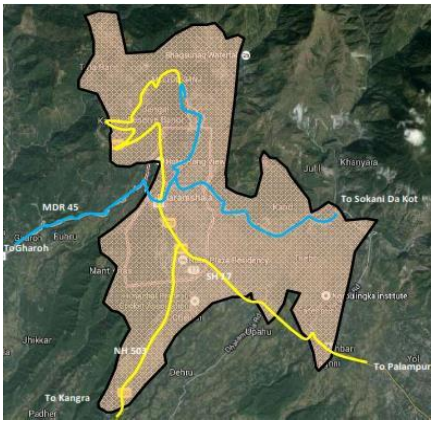
Architectural features

- Entire city has a homogeneous Pattern, Grain & Texture.
- Understandable & recognizable form, style of the built environment.

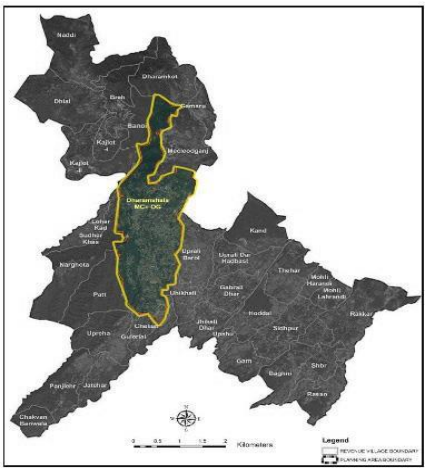
3.2.2 CASE EXAMPLE 2.0 – DHARAMSHALA, HIMACHAL PRADESH

Description

- Dharamshala, a colonial hill city of Himachal Pradesh in India, is land of culture of Tibetans and economic centre of this part of the state with a population of 53,543 (2015).
- It has an average elevation of 1457 M (4780 ft.)



- Dharmshala is a place of natural, cultural, recreational, business, sports & adventure tourism of the city
- This hilly city is endowed with its natural setting & physical heritage values and it is proposed as smart city under central Government scheme.
- The main focus of the study is;
- -Street scape, Public open spaces & activities, Natural settings, view-vistas



Survey & Analysis

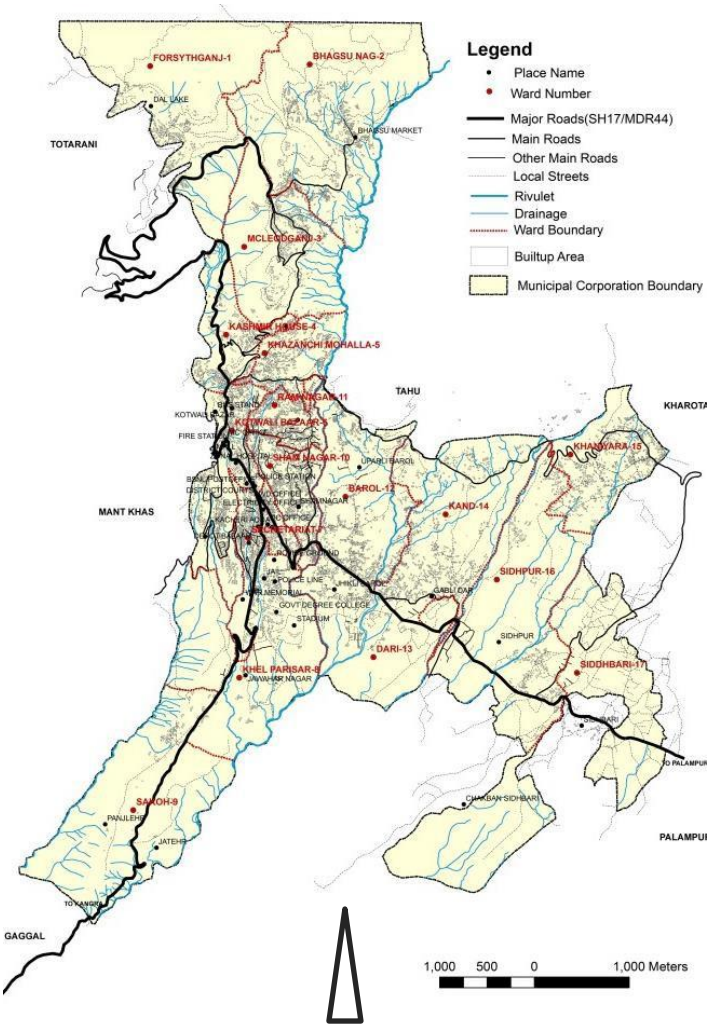
Pathways

- NH -503, MDR -45 & MDR -78 are three major road in and around Dharamshala city.
- Major modes of transport are:
  - *Bus:* The bus route is through the City center & connecting the other town
  - *Private Vehicles:* Private car is a mode for people travelling in the city center especially for commercial purposes.
  - *Goods Vehicles / Deliveries:* The supply chain for goods and services to Dharamshala from near plain land.
  - *Ropeway:* A leisure transport for tourist attraction.

Market area

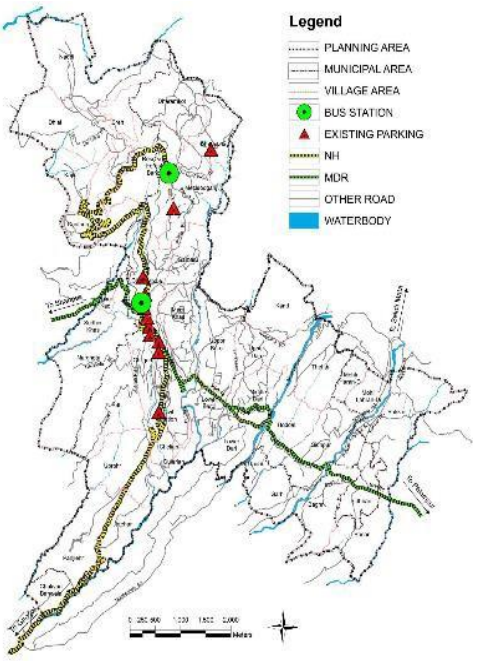
Main access Road

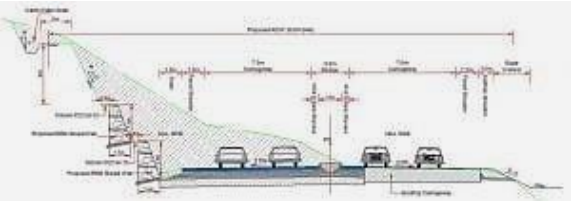
Market area



Pathways

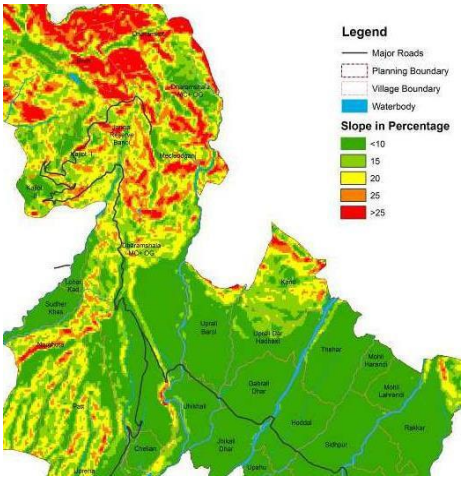
- Major roads are 7-9 meters wide at present and it needs to be wider as per proposal.
- Two wheelers & car/taxi are most predominant vehicle within the city
- Parking areas like near judicial complex, kotwali bazar, Dala Lama temple complex, Nagar nigam complex are important traffic management zones
- Pedestrian movement is not designed properly except some public square, but it has been proposed in next development plan





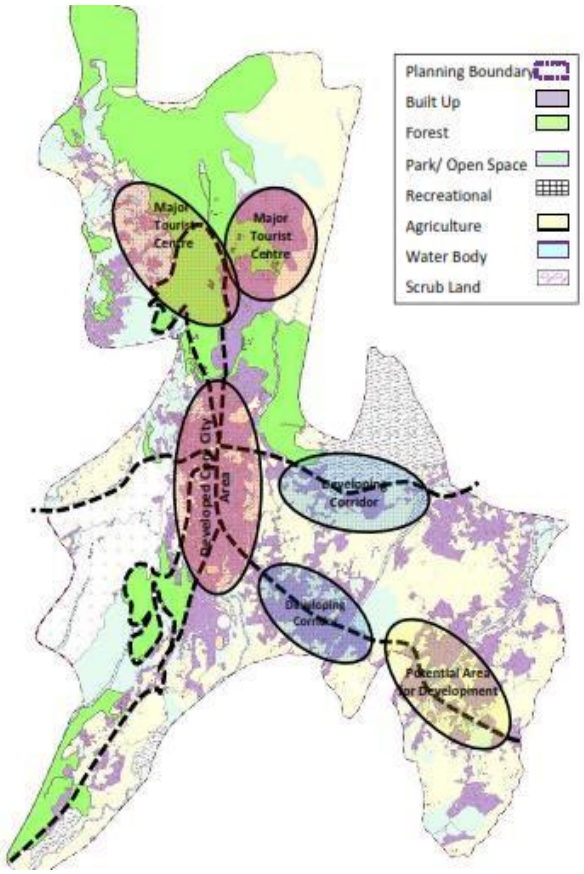
Landform & Nature

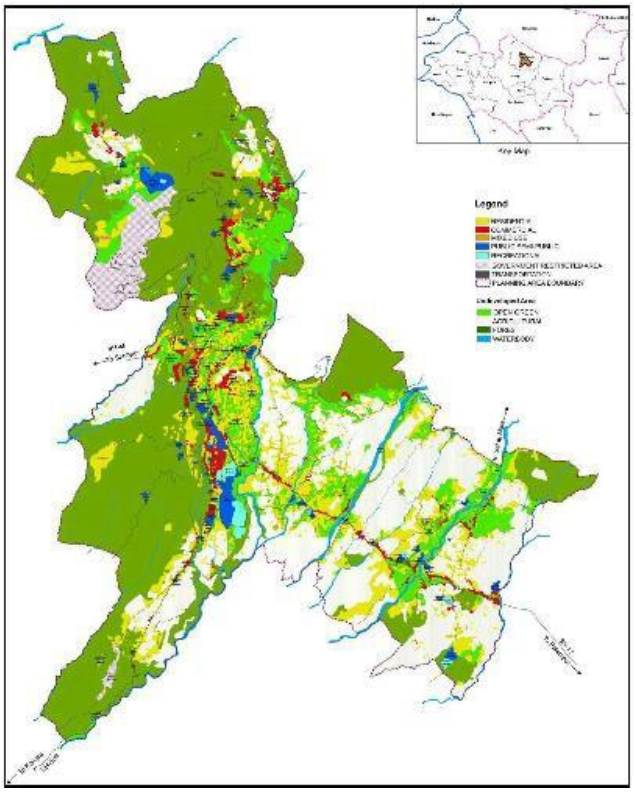
- It is a hill station of north India with elevation of 1460 mtrs. along with avg. slope of 20-30 deg.
- Almost 30% of the area is forest.
- Public area is on lower slope & residential & recreational area are on higer slope.
- Undeveloped area is restricted for conservation of forest land.
- Built space does not exist on the slope of more than 45 deg.
- Development prohibition in high risk disaster zone (landslide, earthquake etc.)
- Natural area has been left to act as complement to urban form.



Landuse

- Due to increasing population influx, city needs to expand towards it urban fringe.
- Major market places like Kotwali market is very conjested due to commercial activities along major road.
- Lack of conservation and preservation of old areas.





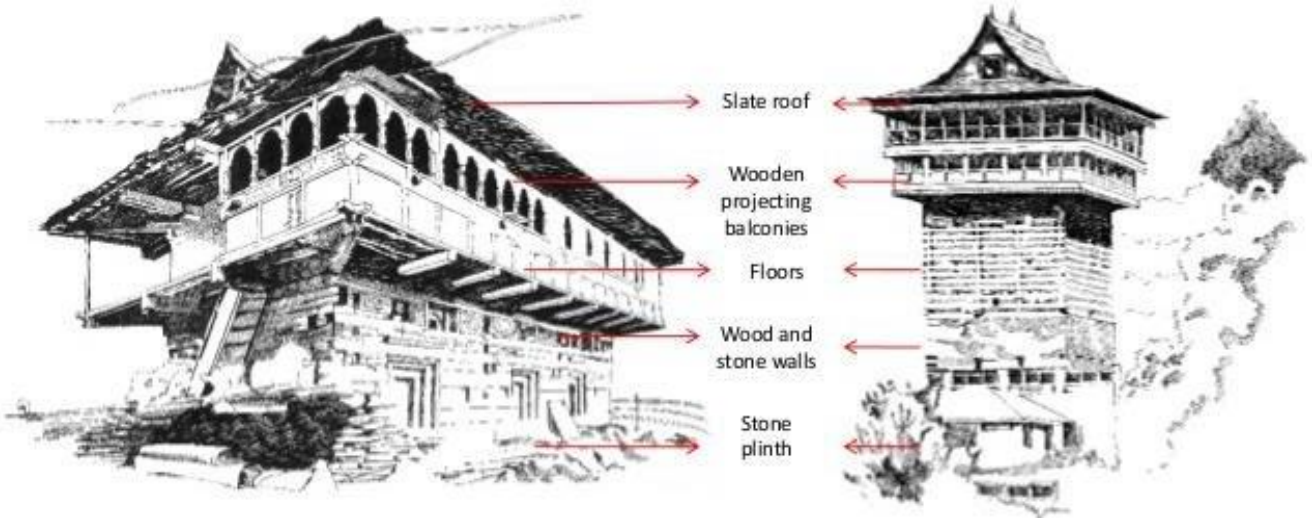
Landform & Nature

- Dal I Dal lake, triund, bhagsunag etc. are the tourist attractions
- Parks & open space within core of the city like Gandhi park, Nehru park etc. are in scattered location to serve the people

Architectural Features

- Over the ages, it has evolved unique traditions of art and architecture with foreign influences
- An indigenous construction technique of the region is Kath-Kuni style of architecture
- Many houses, bungalows & castles had been constructed during British period and these are identified as examples of Tudor style & Scottish baronial style of architecture
- Majorly used materials were locally available like teak, cedar wood & stained glass, stone masonry with slate roofs and stone plinth to support super structure
- Majorly Single or double storey buildings


Dharamshala Cricket stadium



Conclusions

Pathways

- No separation of modes of transport creates chaos.

Landform & Nature

- Almost 30% of the area is forest
- Public area is on lower slope & residential & recreational area are on higher slope
- Natural area has been left to act as complement to urban form

Open spaces

- Parks & open spaces within core of the city are in scattered location to serve the people.

Landuse

- Due to increasing population influx, city needs to expand towards its urban fringe.
- Lack of conservation and preservation of old areas.

Architectural features

- An indigenous construction technique of the region is Kath-Kuni style of architecture.
- No proper guidelines for pattern, grain, texture of the place.

4.0 CASE STUDY

4.1 SELECTION

4.1.1 WHY SHIMLA

- Shimla, the capital of Himachal Pradesh has been chosen as a study of hill town destinations in India because of its historical importance, heritage status and popularity among tourists even today.
- According to Kohli (2002) it was in Shimla that the formal concept of hill stations matured in India.
- Upcoming Smart City.
- The British called it the "Queen of Hills" and declared it the summer capital of the British Raj in 1864 (Draft Shimla CDP 2006). Since then, it has developed as an administrative-cum-tourist town.
- The city spreads across an area of approximately 22 square kilometers over seven hills.
- It enjoys a mild highland climate with cool winters and moderately warm summers. Monsoon rains arrive in July and snowfall in January and early February (Indian Meteorological Department 2012).
- The East-West axis has emerged as the major axis of development for the city. The road connects the Ridge in the East to the Vice Regal Lodge in the West. This forms a pedestrian artery on which a number of heritages structures are located.
- Tourism is an economic driver in Shimla but its vulnerability to natural disasters and eco sensitivity requires due consideration while planning for future development.
- Awareness, because the people Himachal have high aspirations for their state, but they are anxious about the effect that rapid development will have on their culture and values and fear that this may lead to loss of tradition and values.

4.1.2 ISSUES

Location

- Airport is at 22kms with overpriced flights.
- Long travel via Railways (6 hrs.)
- 350km from Delhi.
- Frequent landslides leading to incessant roadworks.
- Cannot build multi-storey buildings on steep slopes.

Topography

- Fragile ecosystem.
- Reduced visibility
- Vertical steep mobility.
- Challenges in planning and management of essential services.
- Cannot build multi-storey buildings on steep slopes.
- High risk zone (7 of 12 dist. – Seismic zone V).

Climate

- Fragile ecosystem.
- Reduced visibility
- Heavy snow and rain affecting several aspects.
- Natural calamities – making it extremely vulnerable to landslides.
- High risk zone (7 of 12 dist. – Seismic zone V).

Management

- Poor solid and liquid waste management system.
- only 11% is treated
- Exposed services.
- Challenges in planning and management of essential services.

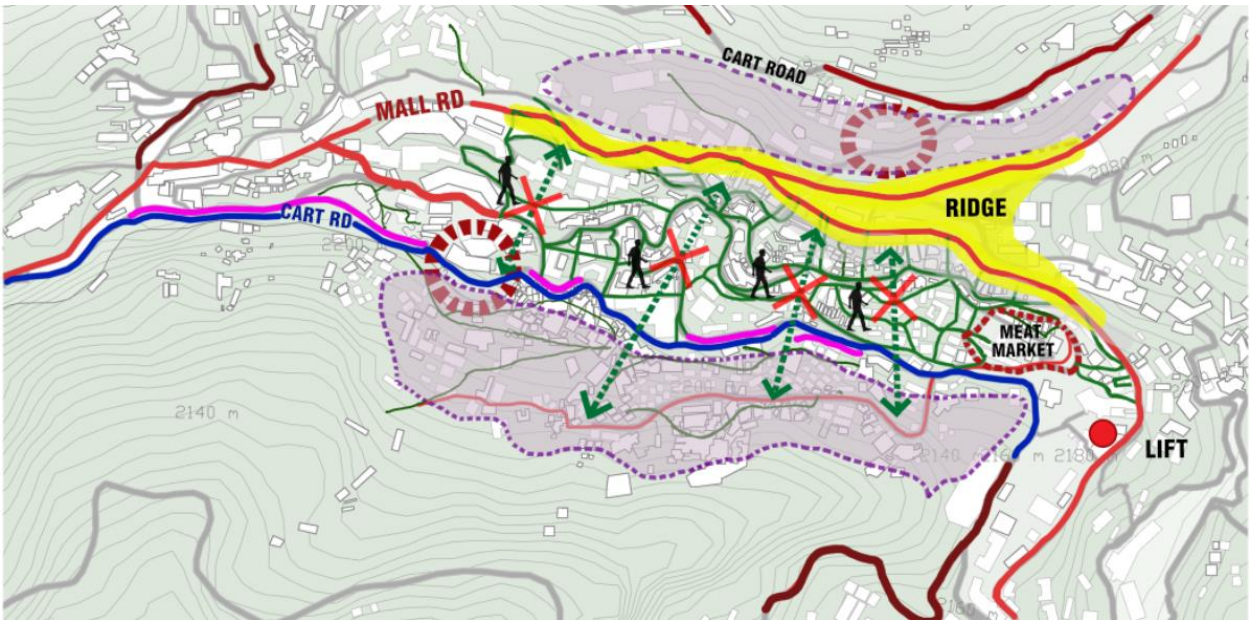


Figure 25 Issues

- Unauthorized building activates have led to haphazard built fabric with lack of open spaces.
- Lack of network & inaccessible roads 80% LAND BELONGS TO MC
- Ice Skating Rink Is Seasonal, Not All Year-Round Attraction
- Land near Lakkad Bazaar SINKING Land unfit for Development
- Lack of clear VERTICAL PEDESTRIAN MOVEMENT, no legible vertical stairs, escalators, etc. connecting the RIDGE TO LOWER BAZAAR RD TO CART RD TO KRISHNA NAGAR.
- Vegetable & Meat market area are the only flatter land available but LAND UNDERUTILIZED & lot of area lying underutilized.
- LIFT: This is the only mechanical device which facilitates vertical movement from Cart Road to the Mall road but is not legible due to chaos created by the taxis parked in front

CANTILEVERED FOOTPATHS

EXPOSED SERVICES

Presently on 16% of Motorable Streets have Pedestrian Walkways

Exposed Services not only create unsafe Public Realm but also results in collapsing of Infrastructure during Rainfall or Snowfall

Figure 26 Existing Site Conditions

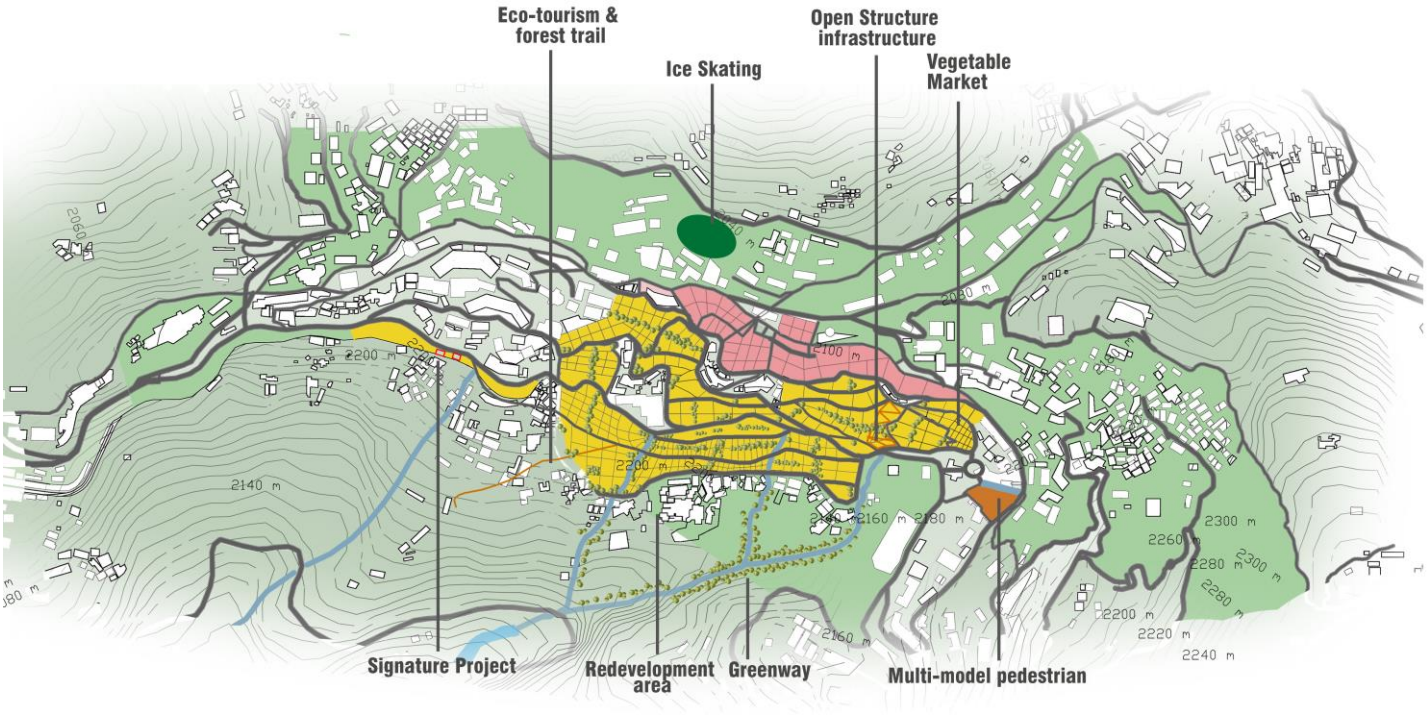


Figure 27 Delineation and proposals

4.1.3 OPPOTRUNITIES

- Re-Development of 50 Acres of Krishna Nagari capitalizes on the opportunity to replace its dilapidated and unsafe building stock with new Resilient, Modern, Earthquake-Safe, Water Abundancy, Sustainability and smart green development, unlocking its full TOURISM potential.
- Retrofitting of the Heritage Area and the area along all the Arterial Roads and sub–Arterial
- Nodes can be the new control points.
- New Roads can be proposed.
- New Tunnels can be constructed for improving mobility networks across the city.
- Slopes in the Valley can be used to re-direct the water flows in the city.
- New Bus Stands and Innovative Smart Bus Stops can be introduced.
- Pedestrians for Tourists can be made safer and easily accessible.
- Escalators, Heritage Walkators, Travellators can be proposed.
- Eco Tourism.

- Eco Houses.
- Railway lines can be re-start.
- Distinct Guidelines for the different areas of the city is required.
- Waste Management
- Protection of Natural Environment.

4.2 AREA LEVEL STUDY

4.2.1 LOCATION

- Shimla District lies between the longitude 77°-0" and 78°-19" east and latitude 30o-45" and 31o-44" north.
- It is bounded by Mandi and Kullu in the north, Kinnaur in the east, the state of Uttaranchal in the south, Sirmaur, district in the west.
- The elevation of the district ranges from 300 to 6000 metres. The topology of the district is rugged and tough.
- Site is taken from the core city of the Shimla with a total of 3 kilometres stretch.

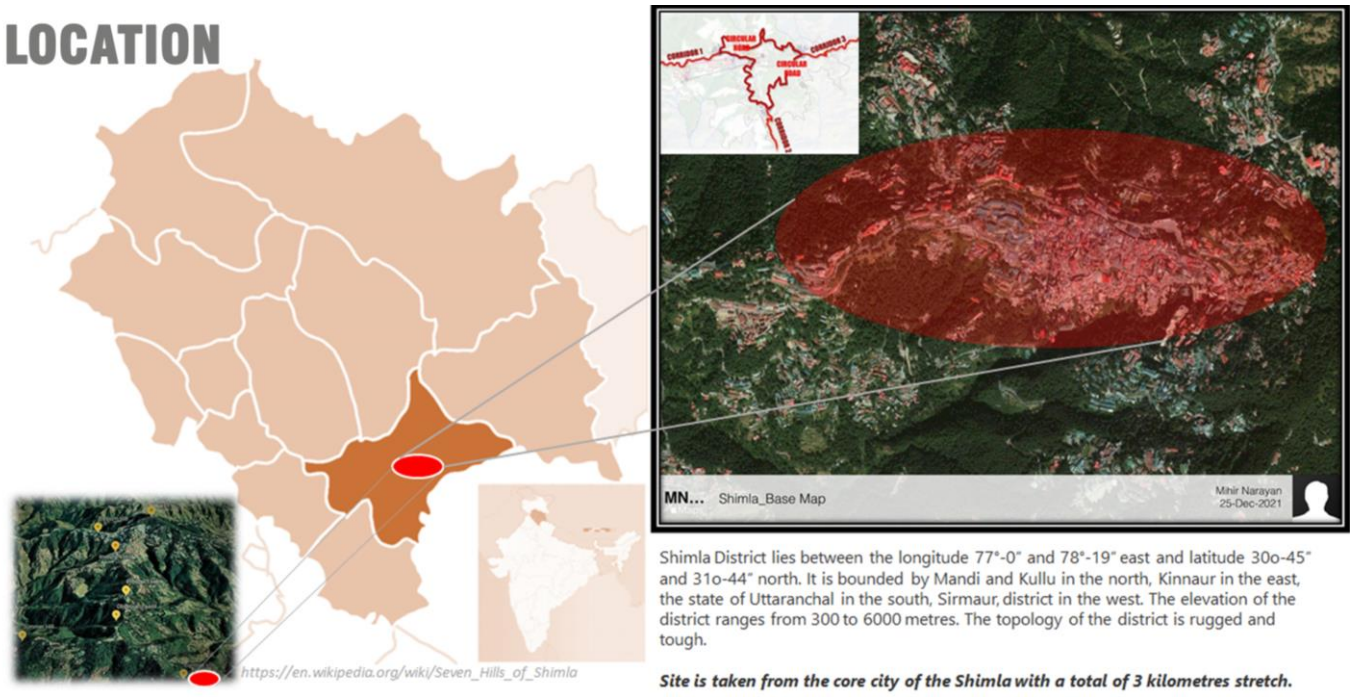


Figure 28 Location

4.2.2 ACCESSIBILITY

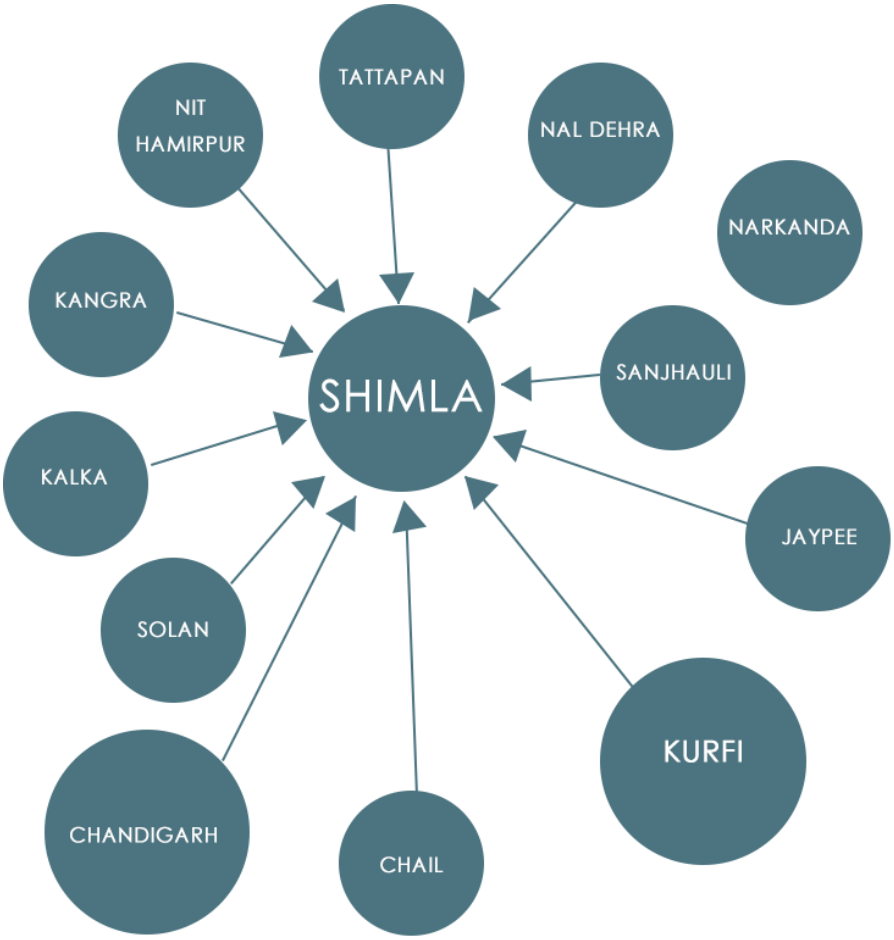


Figure 29 Accessibility 1

By Air:

Shimla Airport or Jubbarhatti Airport, about 20 km from the city, is the closest domestic airport serving this beautiful hill station. There are regular flights for Shimla from cities such as New Delhi and Chandigarh. There are five flights available per week from Delhi as of now. Delhi to Shimla by flight is a time saving option also for all the weekends. Travelers coming from abroad can book their tickets till Indira Gandhi International Airport (IGI) in Delhi, which is the nearest international airport. Located about 360 km away, IGI airport is well connected with rest of the world. From the airport, travelers can avail prepaid taxis or bus service to reach Shimla.

By Road:

A road journey to Shimla is a visual delight. The hill station enjoys excellent connectivity with neighboring cities such as New Delhi (350 km), Dehradun (230 km) and Chandigarh (115 km) through well-maintained national highways. Delhi to Shimla by car would be a fantastic idea and travelers and weekends prefer driving to this quaint hill town. A number of bus services, including Himachal Road Transport Corporation (HRTC) as well as private buses connect Shimla to its neighboring towns and cities. NH 1 and NH 22 lead to Shimla from New Delhi. Travelers can board luxury buses from ISBT Kashmiri Gate, approximately eight hours away, depending upon the traffic.

By Train:

Kalka railway station, situated at a distance of around 96 km, is the nearest railhead connecting Shimla to neighboring Indian cities. There are frequent trains available from New Delhi and Chandigarh for Kalka railway station. The Kalka Shatabdi, a daily train service leaving Delhi early morning is the best option for those travelling from New Delhi and who want to make it to Kalka by midday. From Kalka station, one can hire private cabs or opt for taxis to reach Shimla.

Figure 30 Accessibility Map

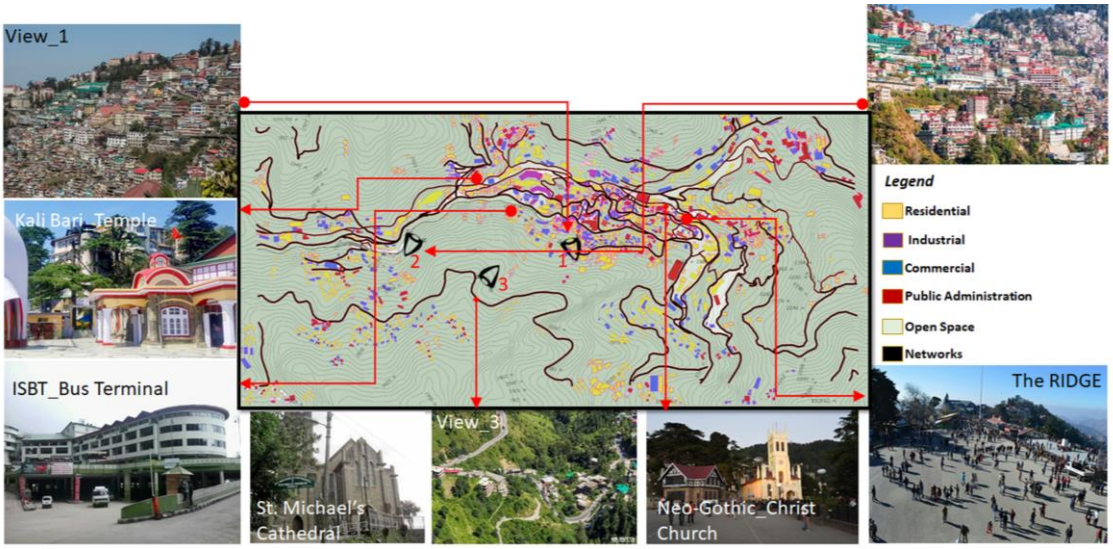


Figure 31 Views and Landmarks

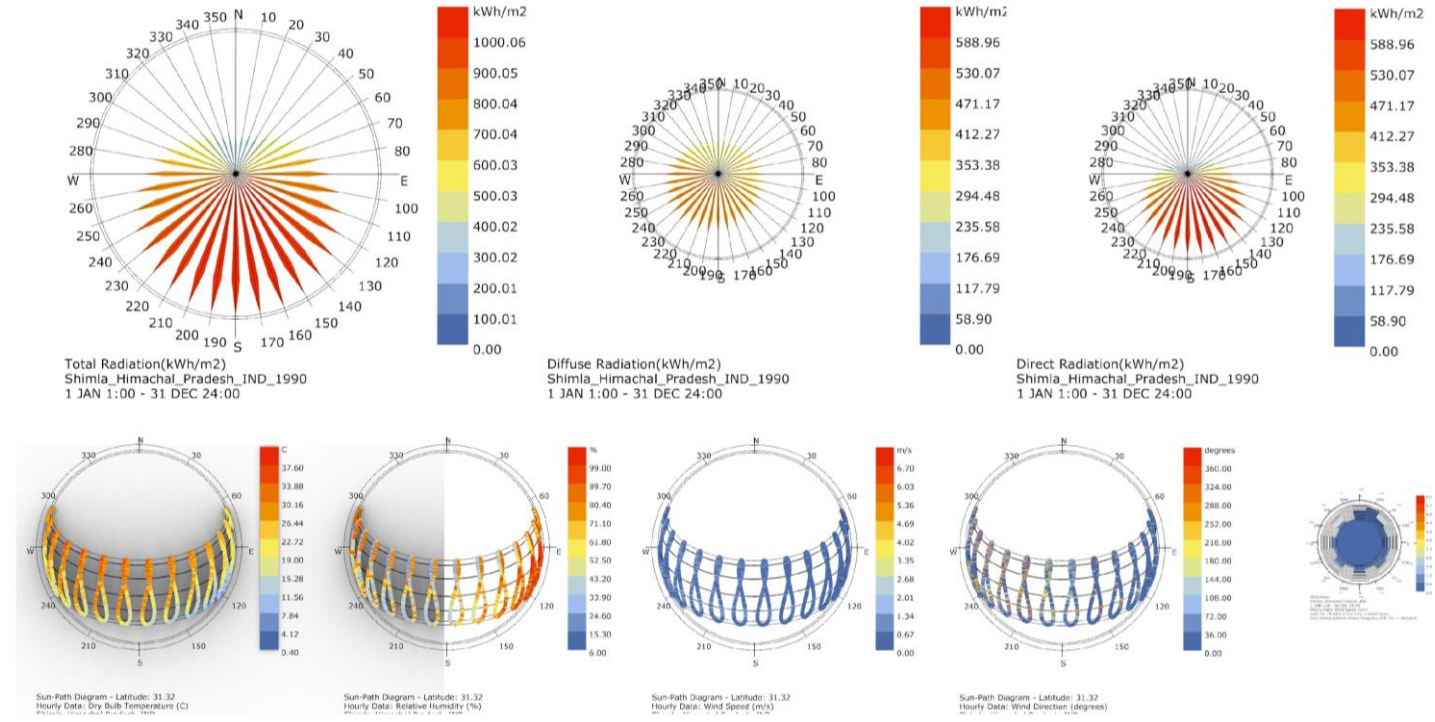


Figure 32 Orientation and Climate

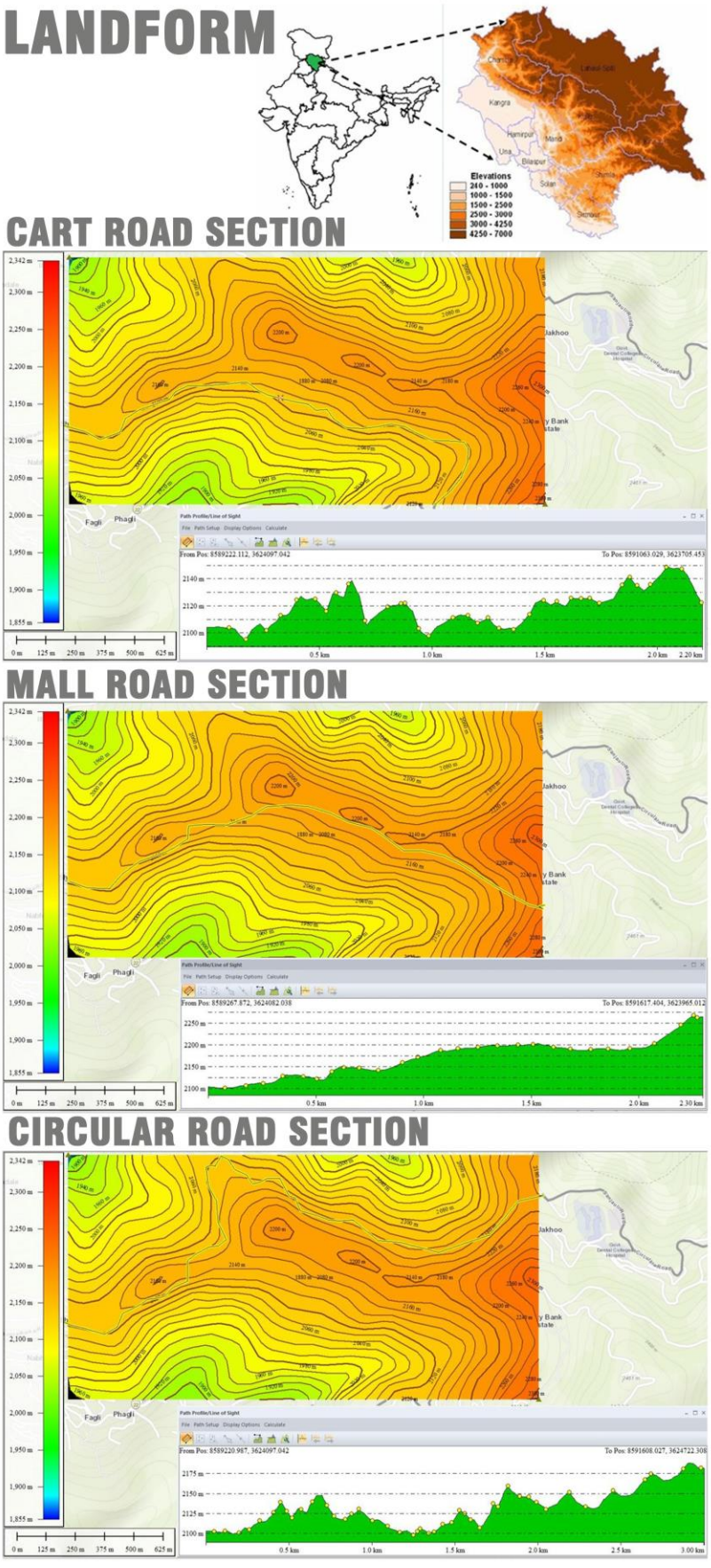


Figure 33 Landform

Landform and Density Grid

- Density grid shows the Robustness of the
- Area hence the Mall Road area
- Is the most robust.
- 1712 person can be spotted in day time
- On an average in and around
- The Mall road and Krishna Nagar

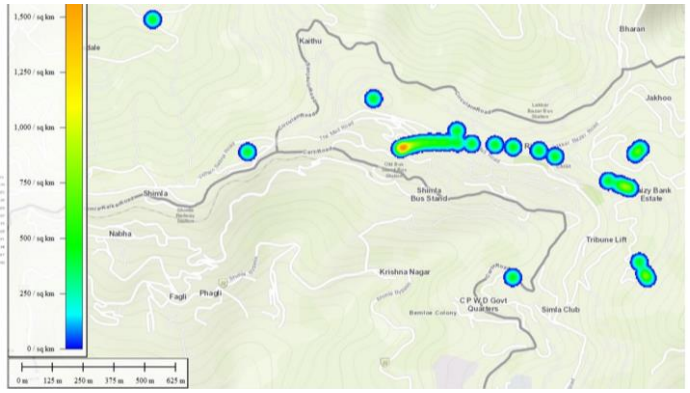


Figure 34 Density Grid Map

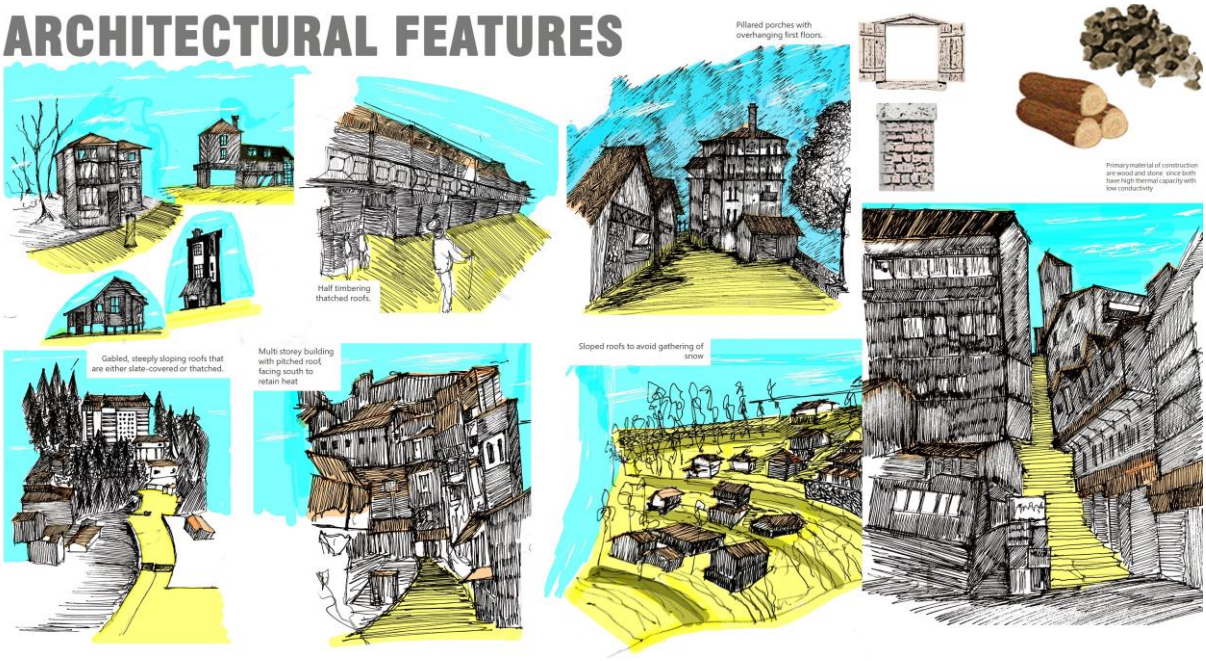


Figure 35 Architectural Features

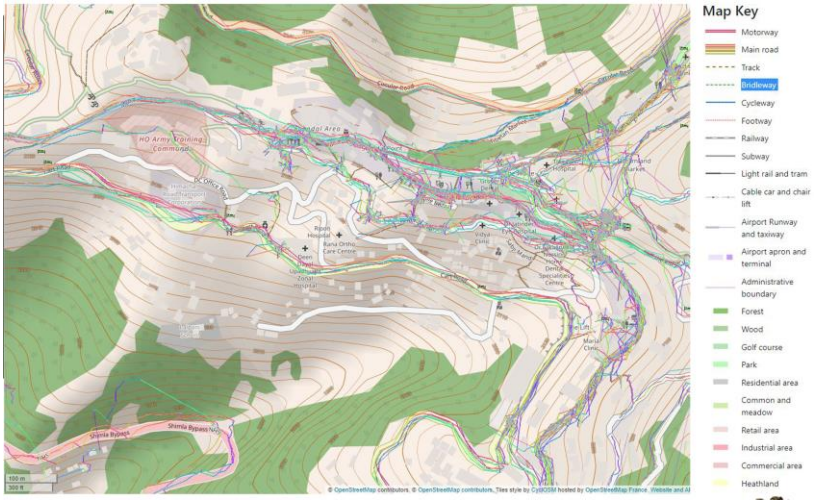


Figure 36- Humanitarian Map

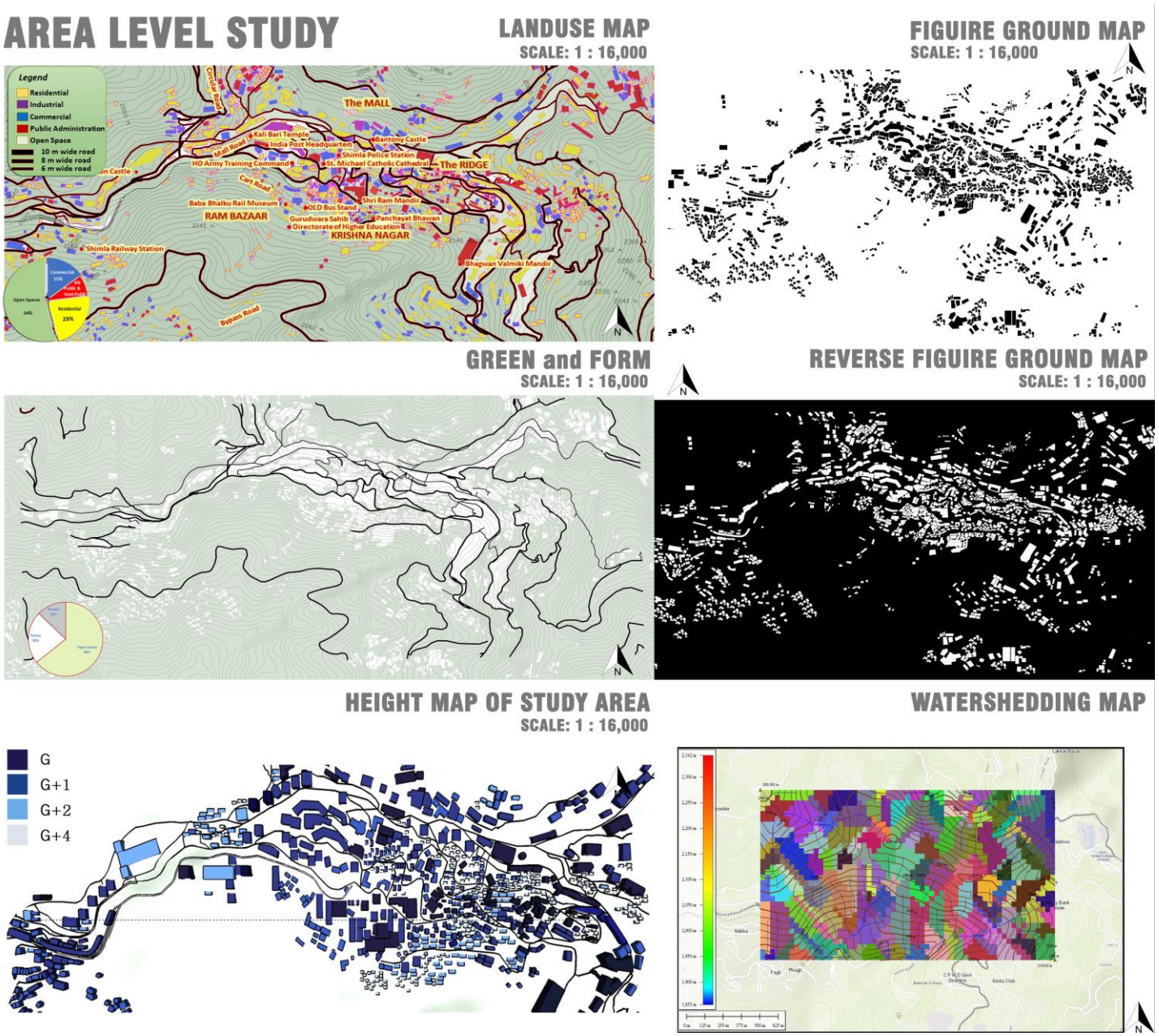


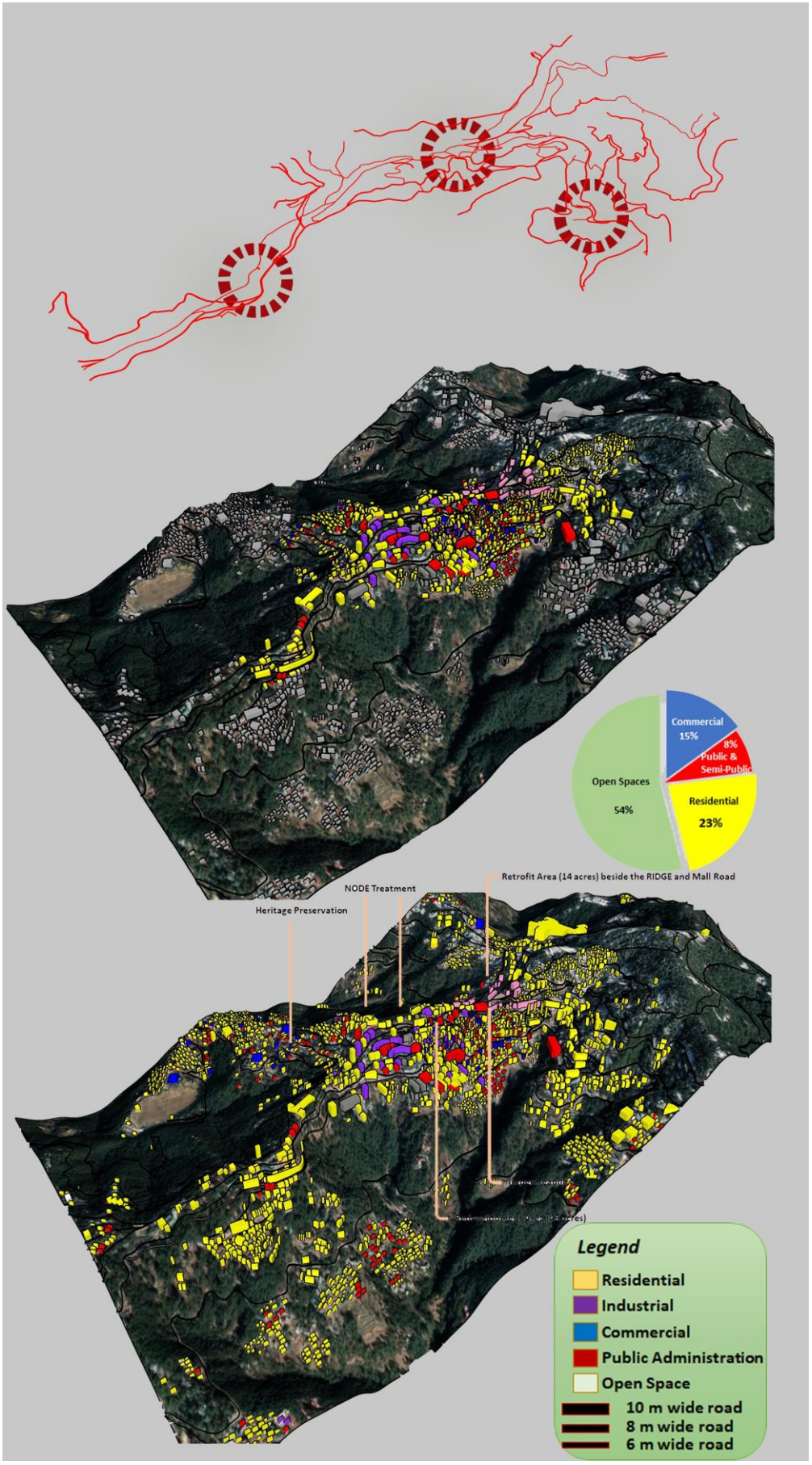
Figure 37 Maps - Landuse, Green & form, Height, Figuire, Reverse Figureand Watershedding.

Figure ground relationship plan of the study area depicts that there is less open space compared to the built form and density.

Urban Pattern: The major streets show an irregular geometric pattern whereas the local streets show an organic pattern of growth.

Urban grain and texture: Highly densely population with uneven and coarse gain and texture.

The figure ground map shows that there are encroachments at various parts and no proper regulations had been followed at the site developments.



Anchor project 1:

Eco-tourism Forest Trails being developed around the citys popular Mall road shall allow people to access thenatural heritage of Shimla and enjoy hiking, biking and other eco-tourism activities right in the heart of the city.

Anchor project 2:

Converting seasonal Ice-skating desination to all-year-round tourist attraction:

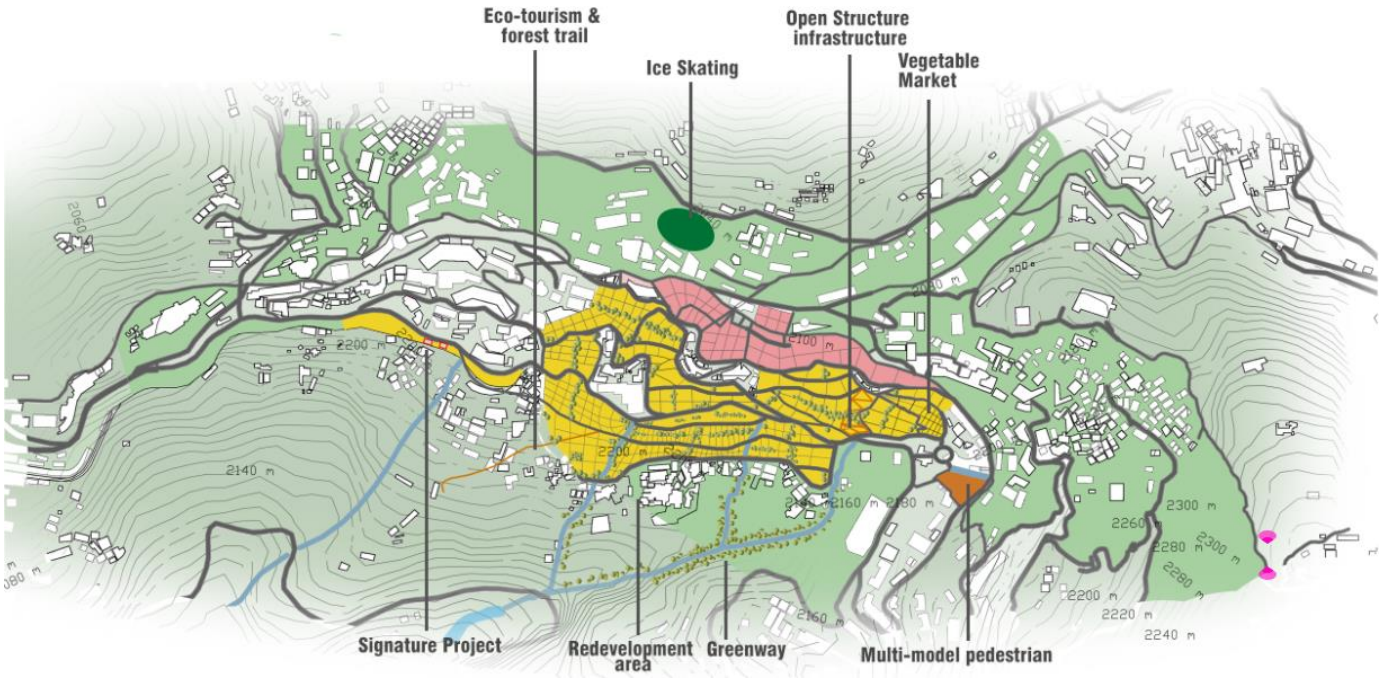
Shimla boasts of a natural ice-skating rink near Lakad Bazaar, which shall now be converted into a year-long ice-skating destination. This shall allow the city's tourists to enjoy this facility and also encourage people to take up related sports like ice-hockey, figure skating, and even group skating events.

Catalyst Project:

Demonstration project for a compact, high density mix-use block planned to create multiple flexible spaces, capture the view lines and solar penetration negotiate the slopes, and create interesting multi-level access possibilies with a shared and a public lobby.

Anchor project:

Investing in the market areas: On the easterner side of the site selected is the now decaying vegetable market and meat market area. The proposal looks at reviving and modernizing the vegetable bazaar and the meat bazaar street on the lines of Mercat de la Boqueria, Barcelona and the Borough Market, London. The other market streets of the old area can also be developed on the lines of the lines of the Grand Bazaar, Istanbul. These markets shall help rehabilitate the existing shop owners of the thriving existing Lower Bazaar and Gun Bazaar and become a great destination for both locals and tourists to enjoy local goods.



Signature project:

Reviving the entrance Gateway to Shimla:

A new gateway to Shimla shall be the signature project reimagined around the now defunct old ISBT area, located on the western end of the area selected for ABD. This multimodal hub once used to be the arrival point of Shimla with the bus-terminal and the railway station - but unfortunately today is unutilized and a perfect candidate to be reimagined as the new hub, the new gateway into the city.

Talks with Railways have already evoked their interest to partner with the new SPV, ensuring early by-in for the concept. The multi-modal hub having a railway station, important Circular Road bus-station, and the vertical mobility connections linking people directly to the popular Mall Road & Ridge area, shall ensure the critical connections for this new development, ensuring its popularity as the city's new public hub.

To cater to a growing MICE (Meetings, Incentives, Conferences, Exhibitions) market the Shimla-SCP looks at creating an international-class Exhibition-cum-Convention Centre, integrated with a executive hotel, open-deck restaurants, new public parks, valley view terraces.

A new City Planning museum, which shall integrate with the Railway's historic train museum. This shall be on the lines of the Shanghai Planning museum or the Singapore City museum.

The new SPV open-office shall also form an integral part of this complex to demonstrate the public-participatory approach that the city wants to adopt for all its future urban development programs. Business Incubation Centre which shall offer start-ups the facility of a full-fledged business center with common services of marketing accounts etc.

4.2.3 PERMEABILITY

Figure 38
Permeability

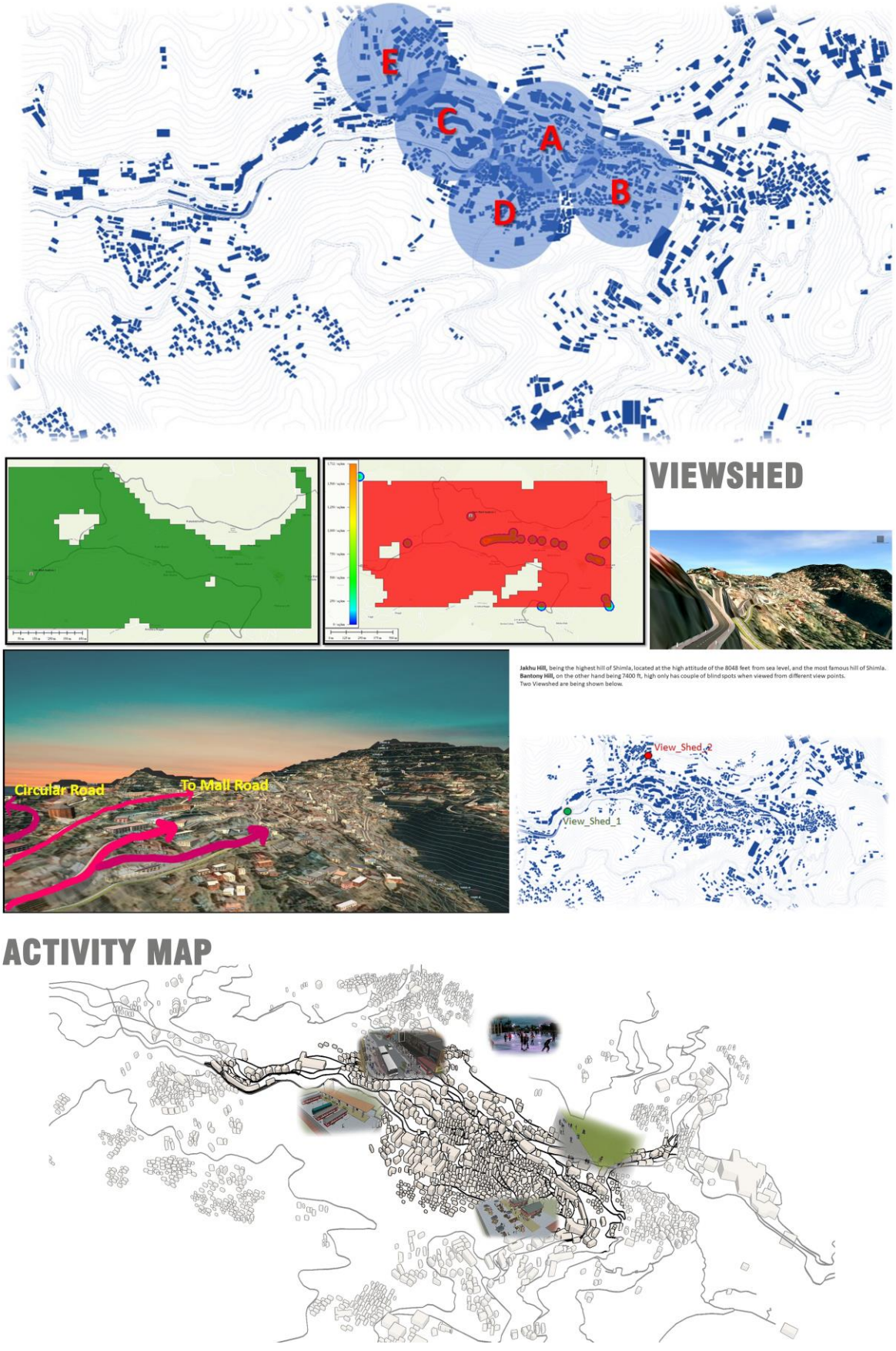


Table 1 Permeability

STREETS	Width	Interface Catchment(m)	Block Area (acres)	Permeability (AwaP)
1	12	700	6.9	37
2	12	400	2.5	7
3	12	1200	8.5	77
4	12	400	3.2	10
5	12	150	0.6	2
6	12	450	3.5	12
7	12	350	2.8	8
8	12	300	1.9	5
9	12	500	6	23
10	12	150	0.4	1
11	8	1250	9.3	88
12	8	750	3.5	20
13	8	1100	8	67
14	10	850	6	39
15	8	250	1.4	3
16	10	450	3.6	13
17	10	650	4.5	23
18	10	2000	10	152
19	10	1000	7	53
20	10	1200	7.8	71

STREETS	Width	Interface Catchment(m)	Block Area (acres)	Permeability
21	10	1200	9	82
22	10	600	3.5	16
23	10	450	3.8	13
24	8	1500	12	136
25	8	900	6.3	43

Equation 1 Permeability

$$\text{AwaP} = \sum_{i=1}^{n} P_i \times \frac{A_i}{A_T}$$

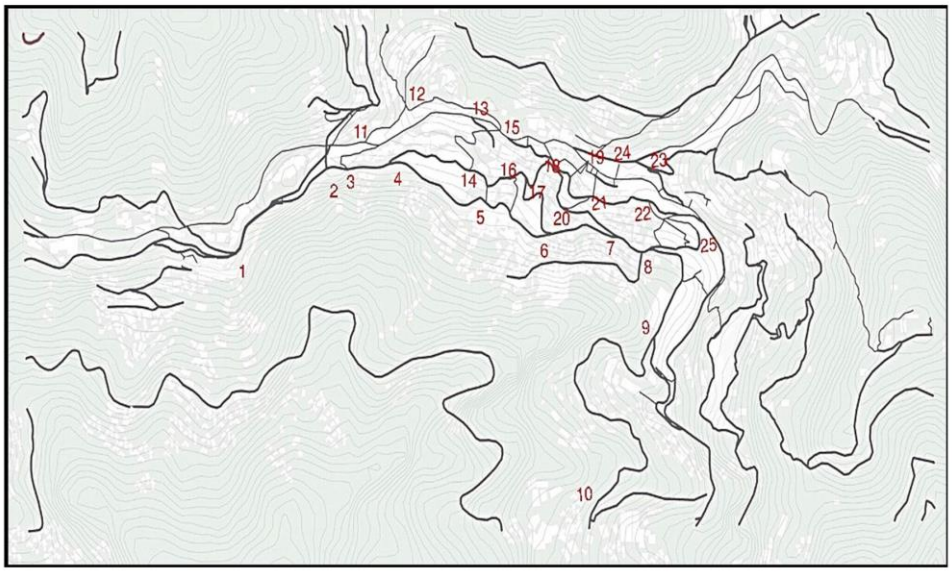
where n is the number of blocks, Pi and Ai are the perimeter and area of each block i, respectively, and AT is the total area of all blocks. ***Low AwaP scores indicate high permeability within the measured area, while high scores indicate low permeability.***

Here A_T = 131.8 Acres

$$= \sum_{i=1}^{n} \frac{P_i \times A_i}{A_T}$$

$$= \sum_{i=1}^{n} \frac{700 \times 6.9}{A_T}$$

$$= \mathbf{36.65}$$



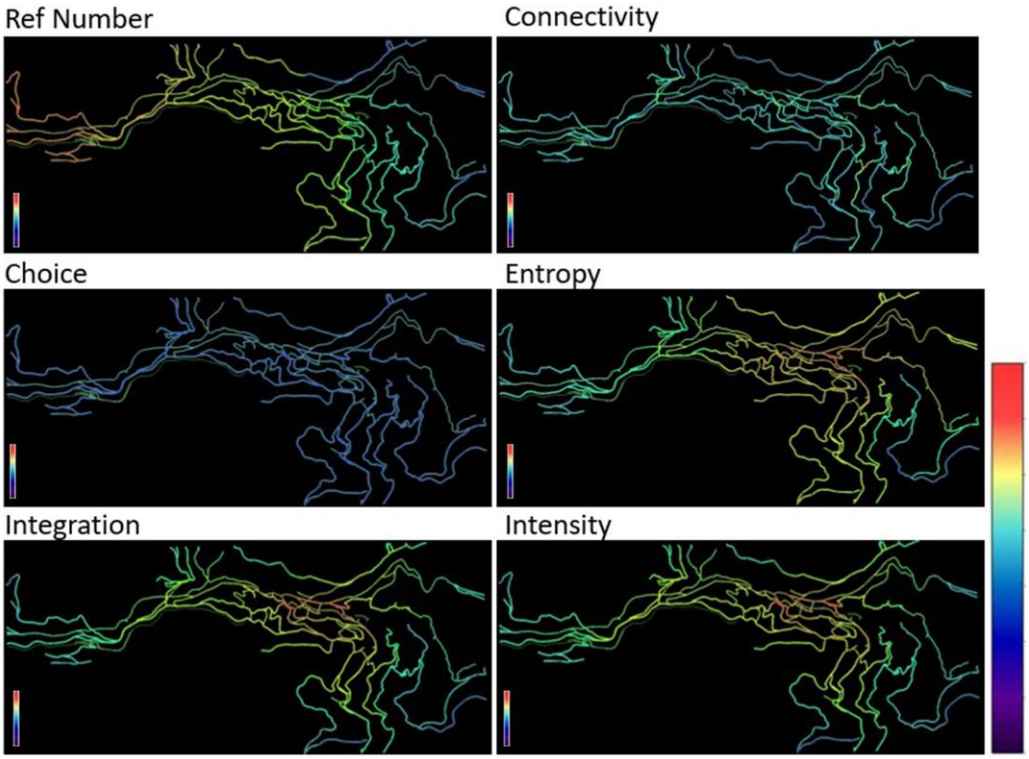


Figure 39 Permeability of Connectivity, Choice, Entropy, Integration, and Intensity

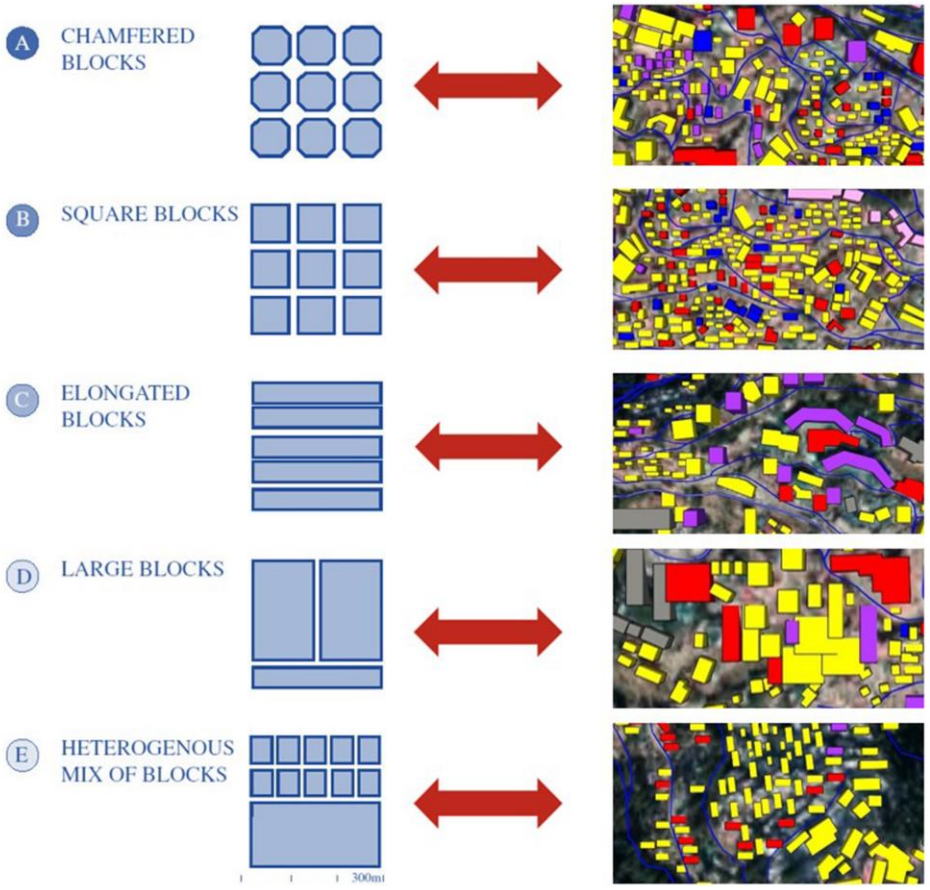


Figure 40 Permeability – Blocks

4.2.4 DESIGN GUIDELINES

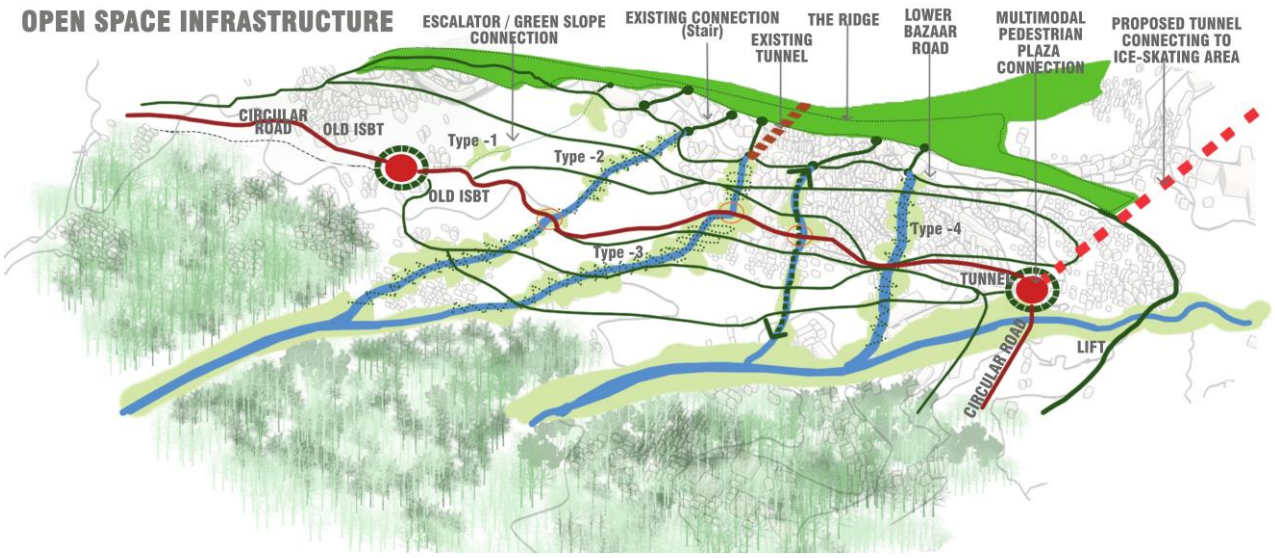


Figure 41 Open Space Infrastructure

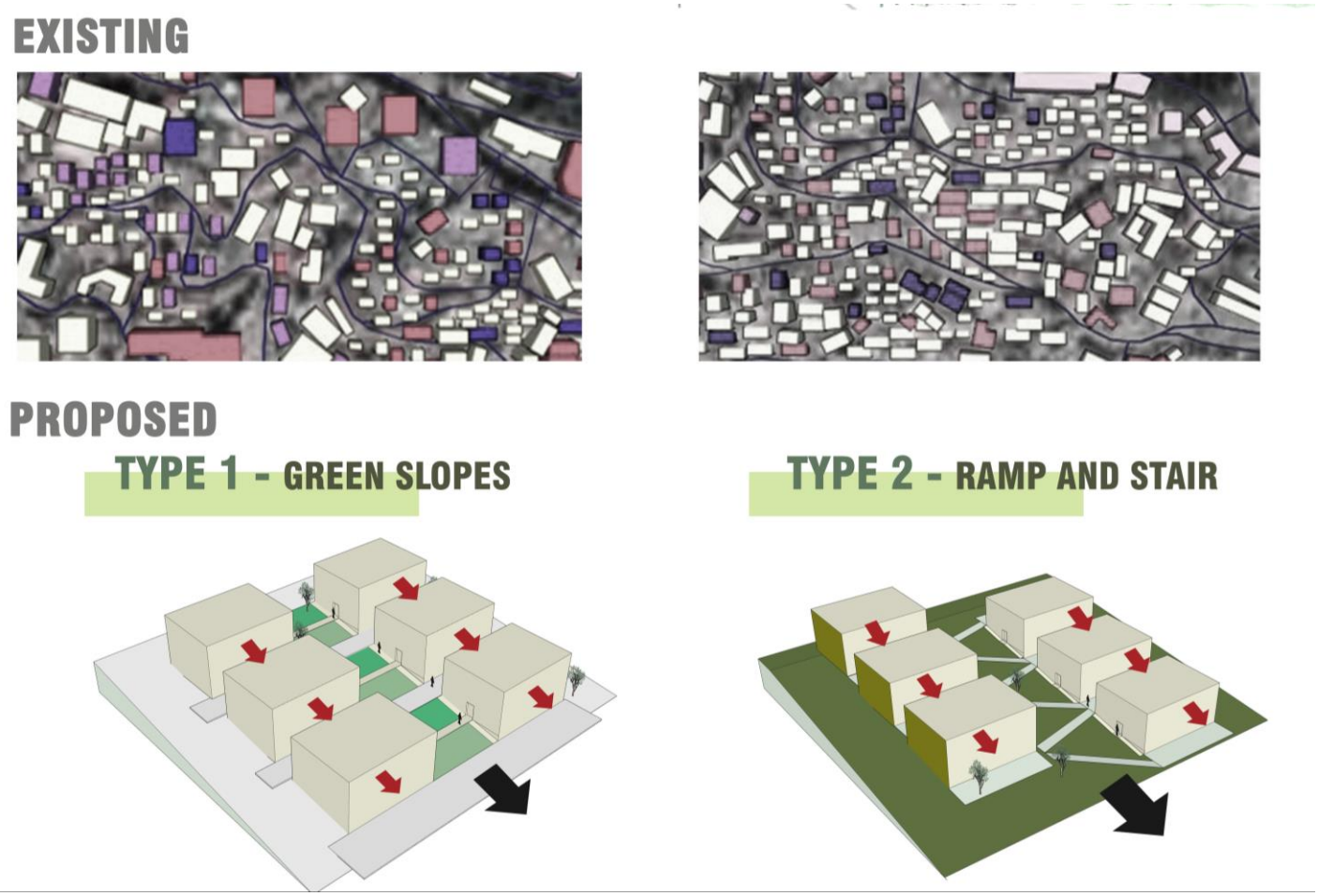
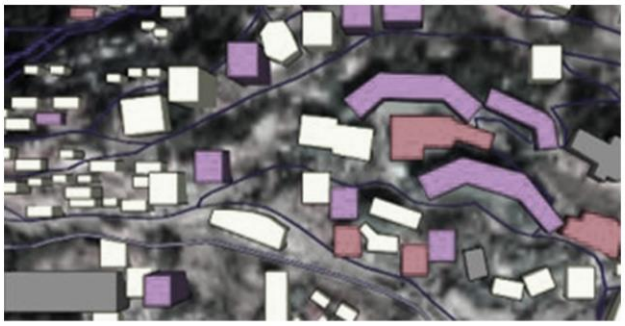
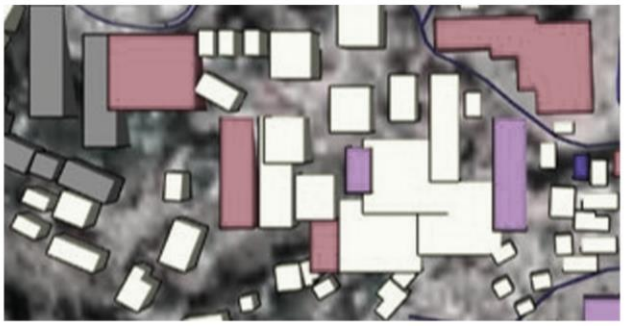
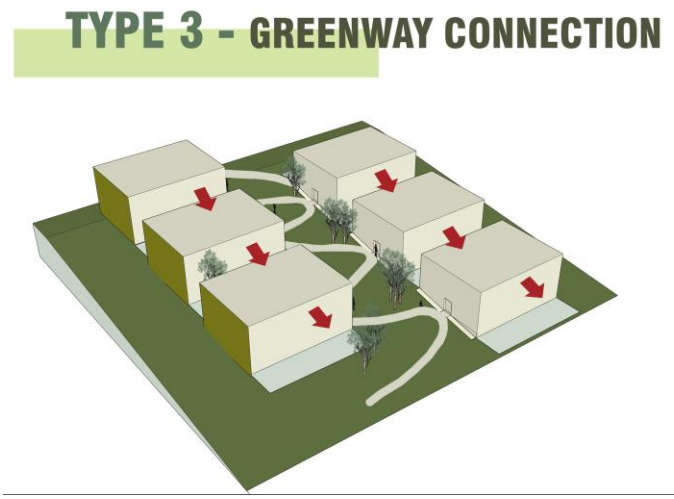


Figure 42 Design types – Green Slope, Ramp & Stair







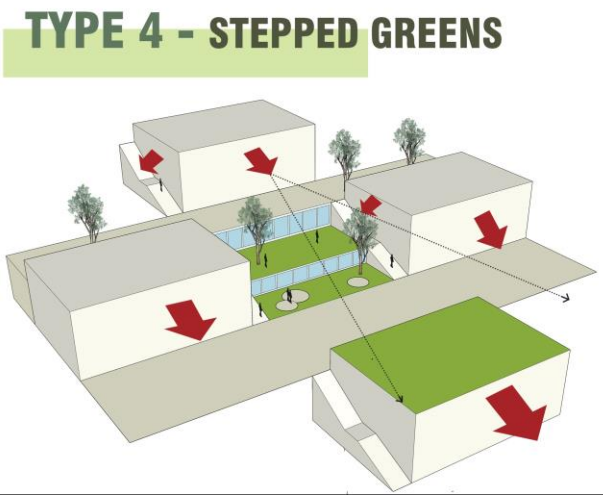
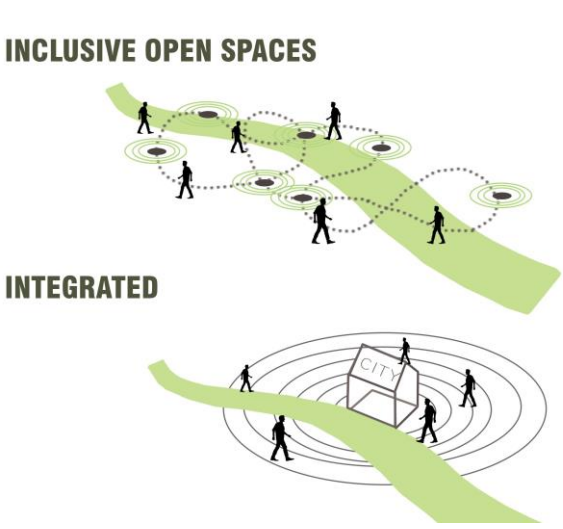


Figure 43 Design types Greenway Connection and Stepped Greens



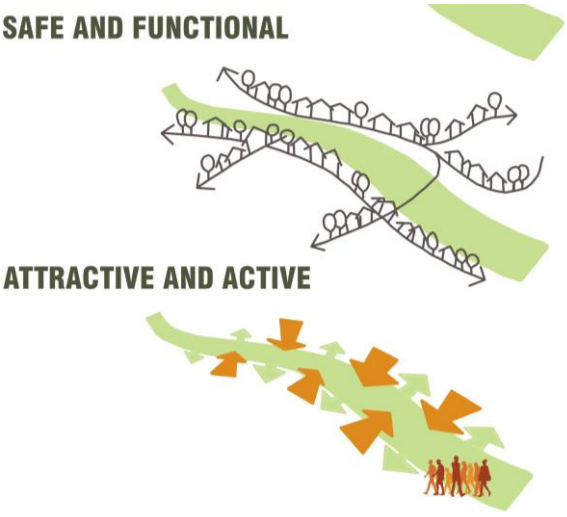


Figure 44 Figure - Open spaces, Integrated, Safe & Functional, and Attractive & Active

4.2.4 SITE SECTIONS

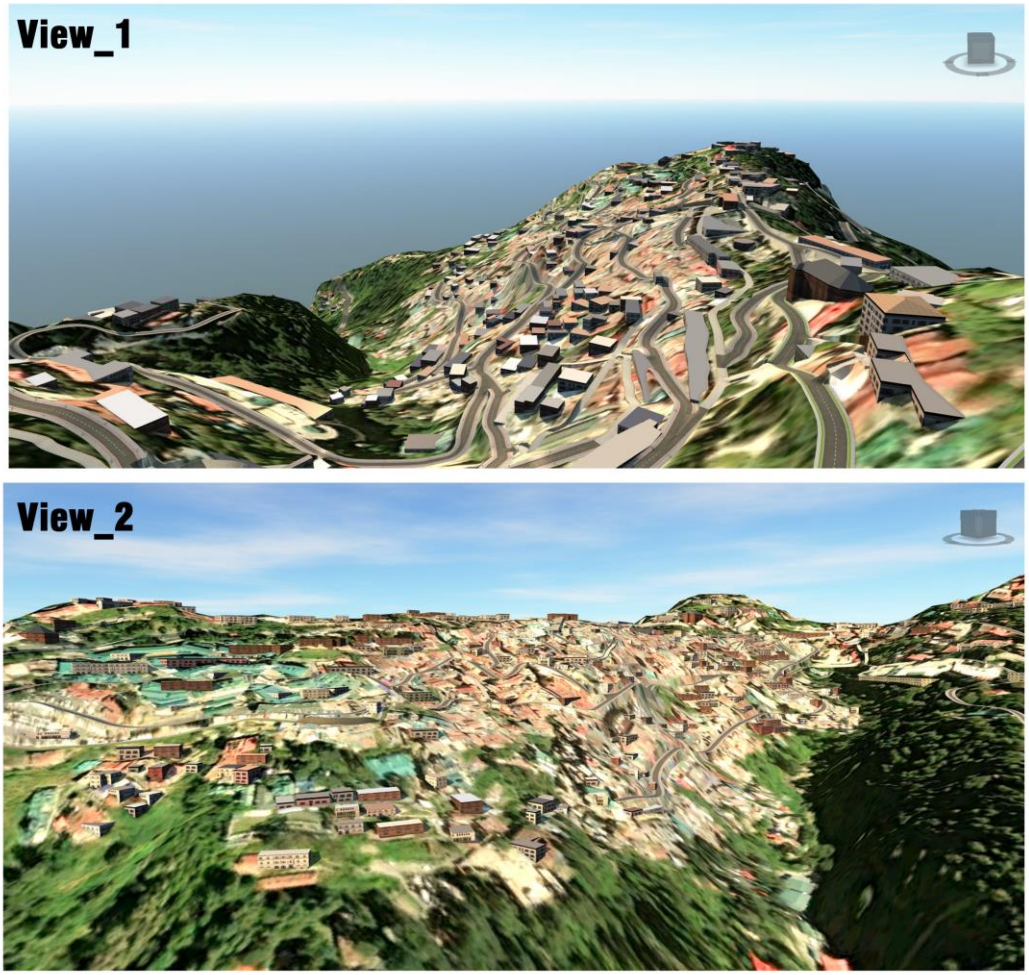


Figure 45 Shimla Site View 1 & 2

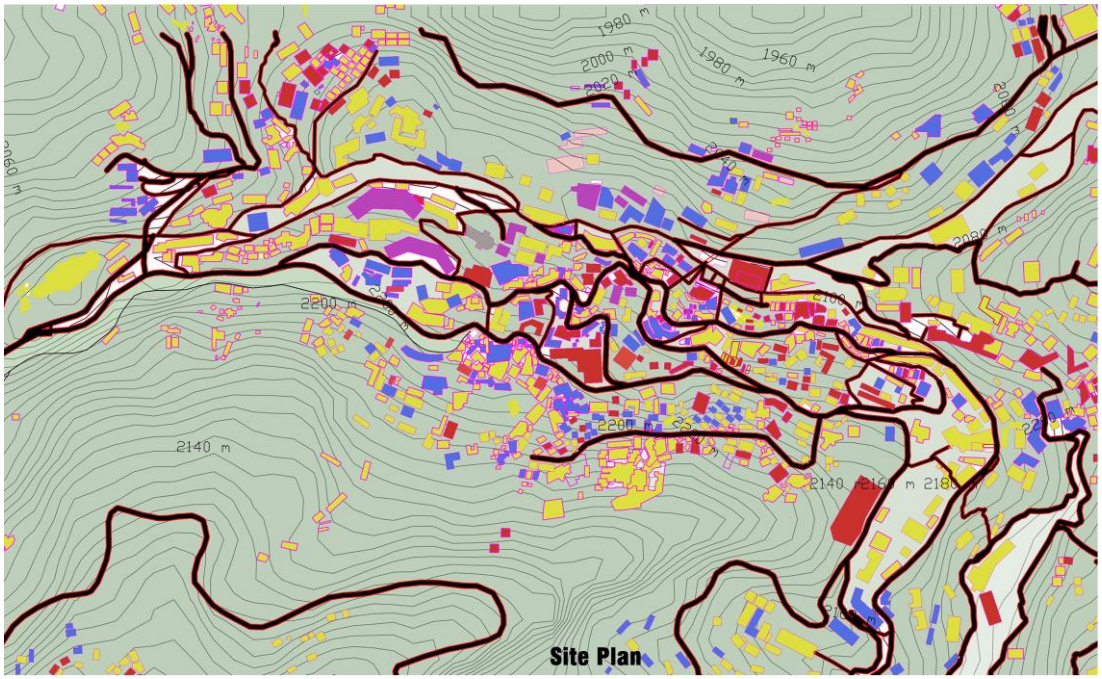


Figure 46 Shimla Site Plan

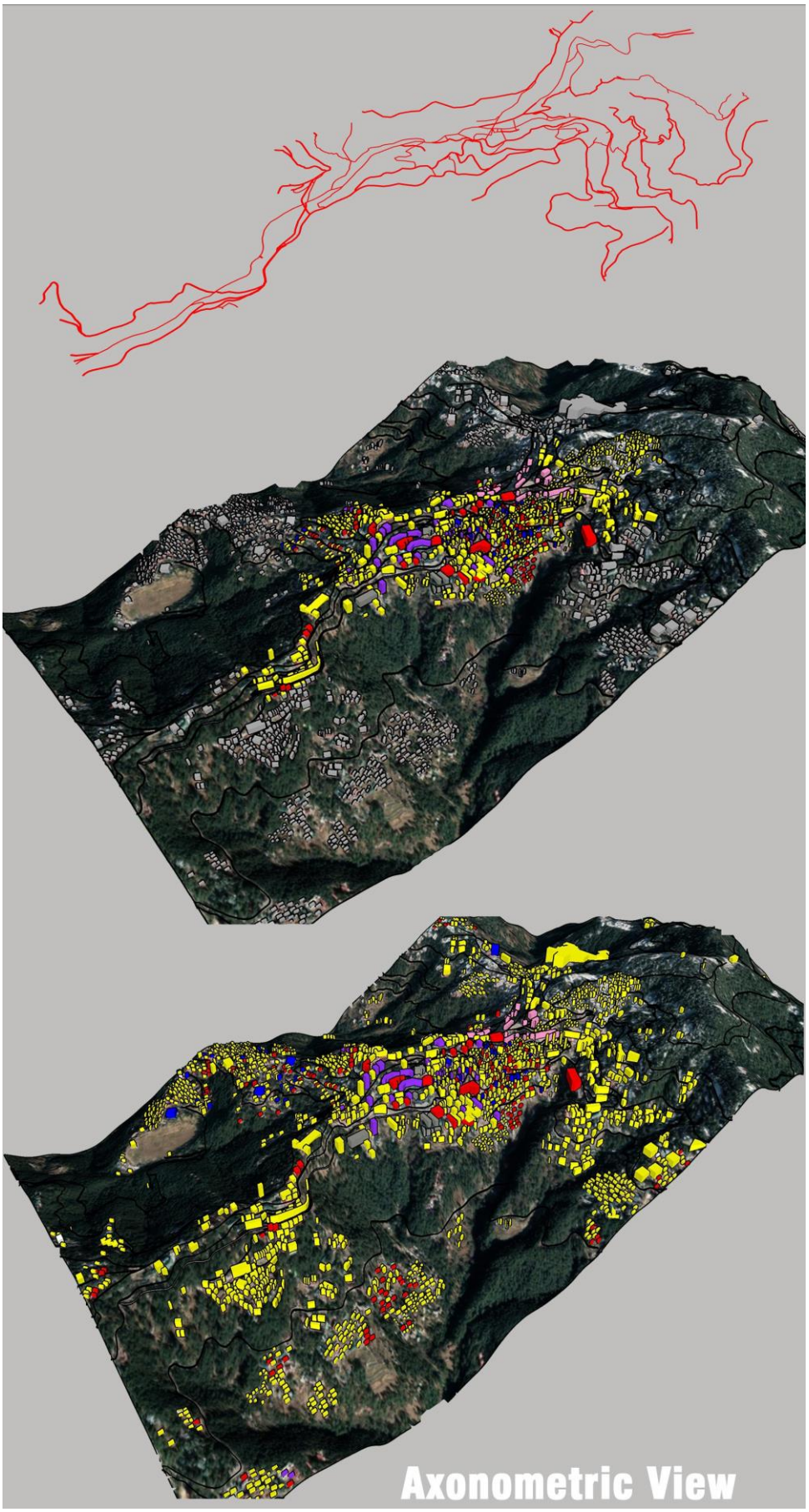
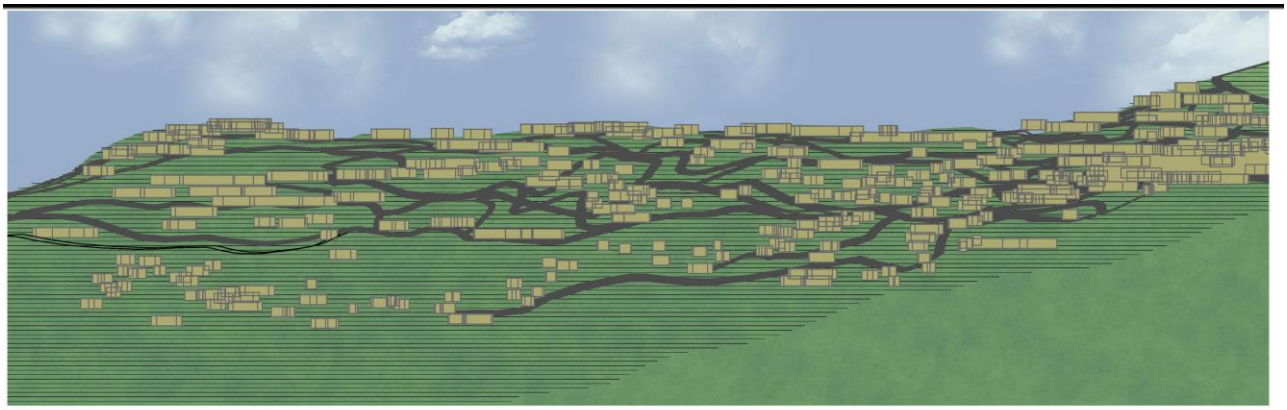
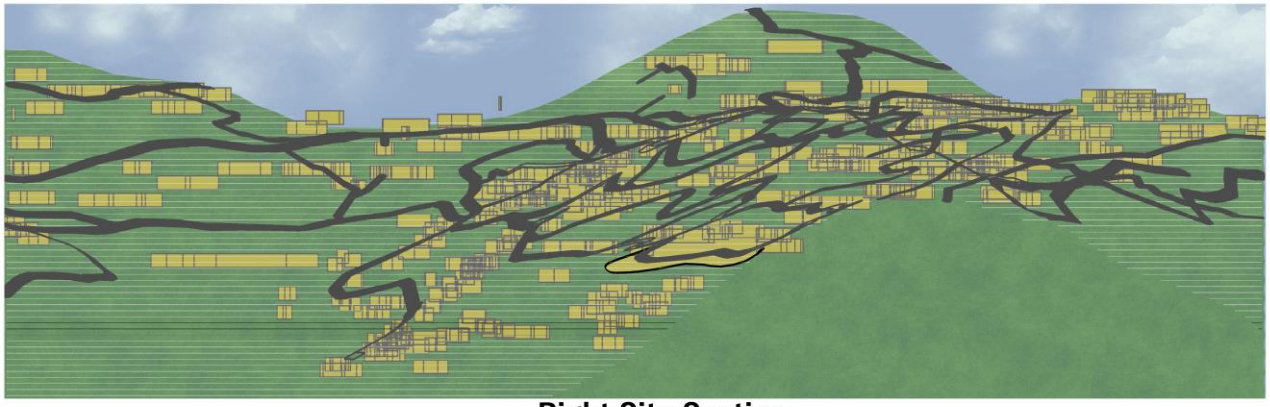


Figure 47 Shimla Site - Axonometric View

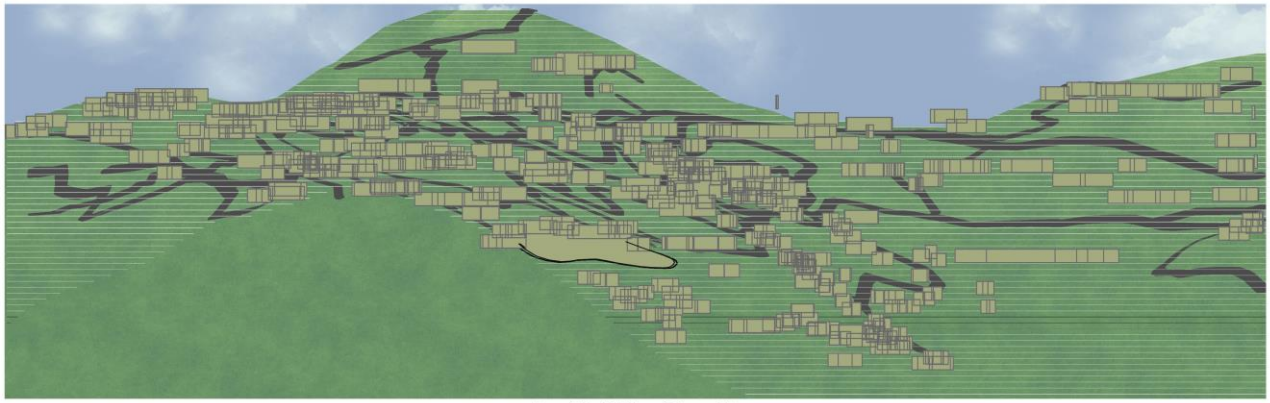


Front Site Section

Back Site Section



Right Site Section

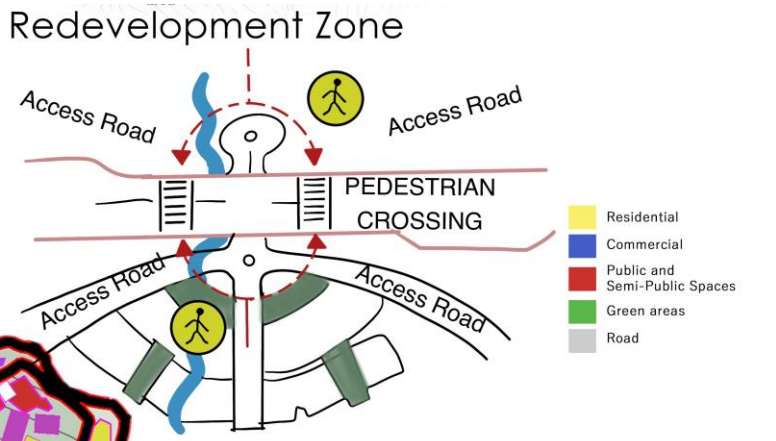


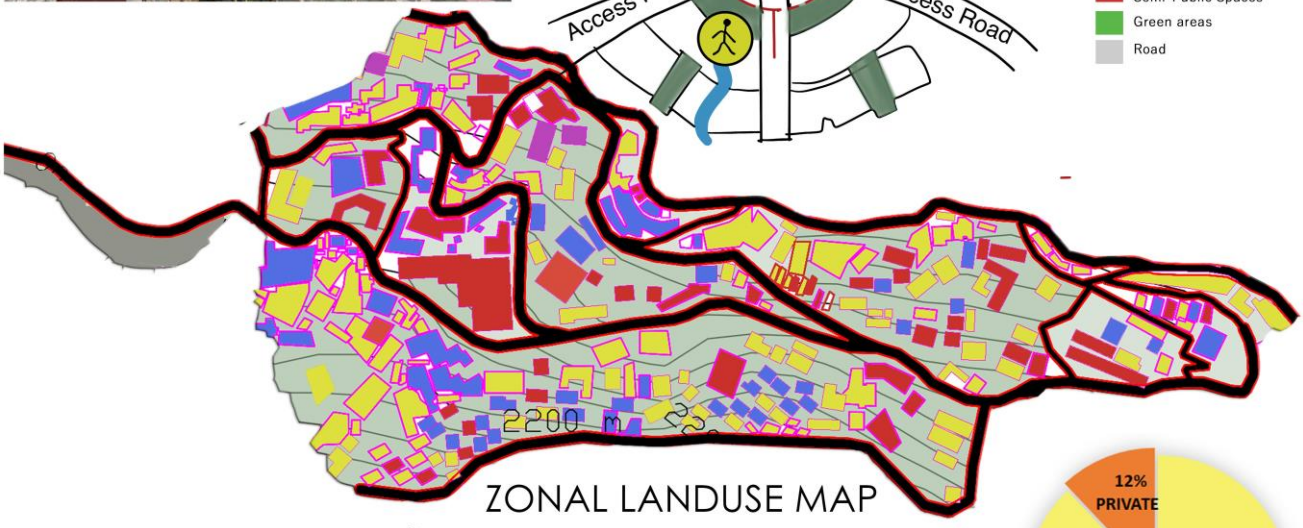
Left Site Section

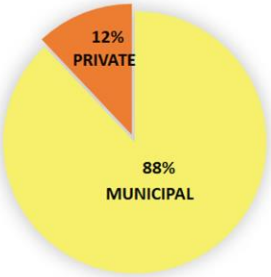
Figure 48 Shimla Site Sections

4.3 ZONAL LEVEL STUDY

4.3.1 REDEVELOPMENT ZONE (OWNERSHIP MAP)







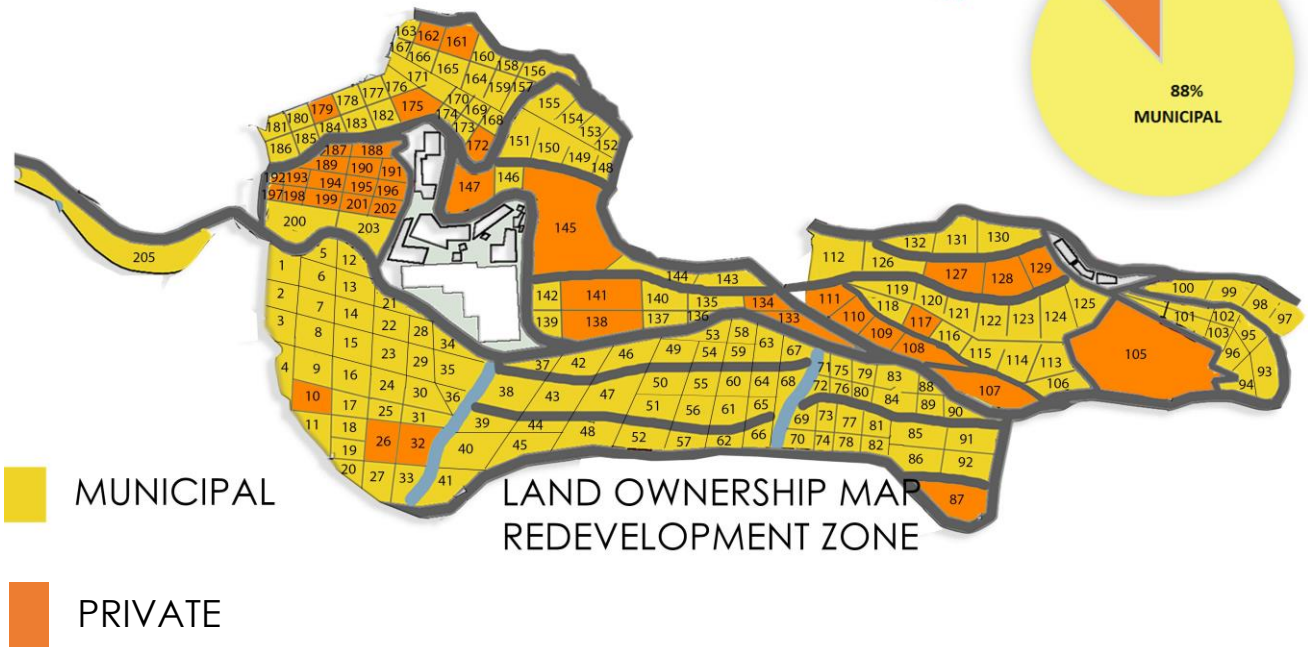


Figure 49 Zonal landuse map & Land ownership map

Table 2 Land Ownership data

Property Number	Landuse Type	Total Households	Property Type	Plot Area (m2)	Total Built-up Area (m2)
Plot no.-1 & 4	Commercial	1	Municipal	419.2	1640
Plot no.-2	Commercial	2	Municipal	364.5	1080
Plot no.-3	Residential	2	Municipal	386.4	1520
Plot no.-4 & 1	Open Space	0	Municipal	0	0
Plot no.-5	Open Space	0	Municipal	0	0
Plot no.-6	Residential	2	Municipal	327	990
Plot no.-7	Residential	1	Municipal	817	3200
Plot no.-8	Residential	1	Municipal	800	3200
Plot no.-9	Open Space	0	Municipal	0	
Plot no.-10	Residential	1	Private	237	690
Plot no.-11	Residential	1	Municipal	200	400
Plot no.-12	Commercial	1	Municipal	249	750
Plot no.-13	Residential	1	Municipal	800	3200
Plot no.-14	Residential	2	Municipal	49	150
Plot no.-15	Residential	2	Municipal	52	150
Plot no.-16	Residential	2	Municipal	47	150
Plot no.-17	Residential	1	Municipal	107	110
Plot no.-18	Residential	1	Municipal	51	50
Plot no.-19	Residential	2	Municipal	47	50
Plot no.-20	Residential	1	Municipal	49	50
Plot no.-21	Commercial	1	Municipal	501	1500
Plot no.-22	Public/Semi Public	2	Municipal	297	600
Plot no.-23	Residential	2	Municipal	63	1200
Plot no.-24	Residential	1	Municipal	103	300
Plot no.-25	Residential	2	Municipal	25	50
Plot no.-26	Open Space	1	Private	0	0
Plot no.-27	Open Space	2	Municipal	0	0
Plot no.-28	Commercial	2	Municipal	0	
Plot no.-29	Commercial	1	Municipal	73	140
Plot no.-30	Commercial	2	Municipal	97	300
Plot no.-31	Residential	1	Municipal	63	120
Plot no.-32	Residential	1	Private	61	120
Plot no.-33	Residential	1	Municipal	61	120
Plot no.-34	Open Space	0	Municipal	658	1950
Plot no.-35	Open Space	0	Municipal	49	100
Plot no.-36	Commercial	2	Municipal	59	100

Plot no.-37	Open Space	0	Municipal	60	240
Plot no.-38	Public/Semi Public	1	Municipal	98	400
Plot no.-39	Commercial	2	Municipal	57	60
Plot no.-40	Residential	3	Municipal	59	60
Plot no.-41	Open Space	0	Municipal	55	50
Plot no.-42	Open Space	0	Municipal	60	240
Plot no.-43	Residential	4	Municipal	60	240
Plot no.-44	Public/Semi Public	1	Municipal	103	400
Plot no.-45	Open Space	0	Municipal	153	150
Plot no.-46	Open Space	0	Municipal	60	240
Plot no.-47	Residential	1	Municipal	103	200
Plot no.-48	Commercial	1	Municipal	107	220
Plot no.-49	Residential	2	Municipal	83	320
Plot no.-50	Residential	1	Municipal	103	100
Plot no.-51	Commercial	1	Municipal	103	100
Plot no.-52	Commercial	2	Municipal	107	110
Plot no.-53	Open Space	0	Municipal	60	240
Plot no.-54	Open Space	0	Municipal	60	240
Plot no.-55	Public/Semi Public	2	Municipal	53	200
Plot no.-56	Public/Semi Public	1	Municipal	103	100
Plot no.-57	Commercial	1	Municipal	107	110
Plot no.-58	Open Space	0	Municipal	60	240
Plot no.-59	Residential	1	Municipal	83	320
Plot no.-60	Commercial	2	Municipal	124	480
Plot no.-61	Commercial	2	Municipal	107	440
Plot no.-62	Residential	1	Municipal	103	200
Plot no.-63	Residential	2	Municipal	43	50
Plot no.-64	Commercial	1	Municipal	103	100
Plot no.-65	Residential	1	Municipal	103	200
Plot no.-66	Residential	2	Municipal	107	220
Plot no.-67	Residential	2	Municipal	43	40
Plot no.-68	Residential	1	Municipal	45	40
Plot no.-69	Commercial	2	Municipal	123	360
Plot no.-70	Residential	2	Municipal	167	480
Plot no.-71	Open Space	0	Municipal	32	30
Plot no.-72	Open Space	0	Municipal	43	40
Plot no.-73	Open Space	0	Municipal	60	180
Plot no.-74	Residential	2	Municipal	73	210
Plot no.-75	Open Space	0	Municipal	56	50

Plot no.-76	Open Space	0	Municipal	56	50
Plot no.-77	Residential	2	Municipal	83	160
Plot no.-78	Residential	2	Municipal	77	160
Plot no.-79	Open Space	0	Municipal	127	240
Plot no.-80	Open Space	2	Municipal	49	100
Plot no.-81	Residential	1	Municipal	103	300
Plot no.-82	Residential	1	Municipal	267	810
Plot no.-83	Public/Semi Public	1	Municipal	84	240
Plot no.-84	Public/Semi Public	2	Municipal	123	360
Plot no.-85	Public/Semi Public	1	Municipal	103	300
Plot no.-86	Public/Semi Public	2	Municipal	103	300
Plot no.-87	Open Space	0	Municipal	67	120
Plot no.-88	Residential	1	Municipal	103	200
Plot no.-89	Residential	1	Municipal	103	200
Plot no.-90	Residential	2	Municipal	107	220
Plot no.-91	Residential	2	Municipal	152	600
Plot no.-92	Residential	3	Municipal	150	450
Plot no.-93	Open Space	0	Municipal	32	30
Plot no.-94	Open Space	0	Municipal	83	320
Plot no.-95	Open Space	0	Municipal	77	320
Plot no.-96	Commercial	2	Municipal	44	160
Plot no.-97	Residential	1	Municipal	56	110
Plot no.-98	Residential	2	Municipal	360	1080
Plot no.-99	Residential	1	Municipal	74	210
Plot no.-100	Residential	1	Municipal	321	960
Plot no.-101	Residential	2	Municipal	83	320
Plot no.-102	Public/Semi Public	1	Municipal	77	320
Plot no.-103	Public/Semi Public	1	Municipal	75	300
Plot no.-104	Residential	1	Municipal		
Plot no.-105	Public/Semi Public	1	Municipal	419	840
Plot no.-106	Public/Semi Public	1	Municipal	93	270
Plot no.-107	Residential	1	Municipal	123	480
Plot no.-108	Residential	2	Municipal	61	180
Plot no.-109	Open Space	2	Municipal	61	180
Plot no.-110	Open Space	1	Municipal	54	150
Plot no.-111	Commercial	1	Municipal	109	330

Plot no.-112	Residential	1	Municipal	54	200
Plot no.-113	Commercial	1	Municipal	71	210
Plot no.-114	Residential	1	Municipal	86	240
Plot no.-115	Public/Semi Public	1	Municipal	53	200
Plot no.-116	Public/Semi Public	1	Municipal	96	400
Plot no.-117	Residential	1	Municipal	214	420
Plot no.-118	Commercial	1	Municipal	51	200
Plot no.-119	Residential	1	Municipal	32	120
Plot no.-120	Residential	1	Municipal	103	200
Plot no.-121	Open Space	0	Municipal	107	220
Plot no.-122	Open Space	0	Municipal	107	220
Plot no.-123	Residential	1	Municipal	127	480
Plot no.-124	Residential	2	Municipal	61	240
Plot no.-125	Open Space	0	Municipal	132	520
Plot no.-126	Open Space	0	Municipal	97	400
Plot no.-127	Open Space	0	Municipal	71	140
Plot no.-128	Residential	1	Municipal	107	220
Plot no.-129	Residential	1	Municipal	214	840
Plot no.-130	Residential	2	Municipal	214	840
Plot no.-131	Open Space	0	Municipal	62	240
Plot no.-132	Residential	1	Municipal	84	320
Plot no.-133	Open Space	0	Municipal	60	180
Plot no.-134	Open Space	0	Municipal	54	150
Plot no.-135	Open Space	0	Municipal	60	180
Plot no.-136	Open Space	0	Municipal	60	180
Plot no.-137	Public/Semi Public	2	Municipal	52	100
Plot no.-138	Open Space	0	**Private**	52	100
Plot no.-139	Open Space	0	Municipal	214	840
Plot no.-140	Open Space	0	Municipal	83	320
Plot no.-141	Public/Semi Public	1	**Private**	604	1800
Plot no.-142	Open Space	0	Municipal	63	120
Plot no.-143	Residential	1	Municipal	44	80
Plot no.-144	Commercial	1	Municipal	71	140
Plot no.-145	Commercial	1	**Private**	52	100
Plot no.-146	Commercial	1	Municipal	103	200
Plot no.-147	Residential	1	**Private**	82	160
Plot no.-148	Open Space	0	Municipal	319	1280
Plot no.-149	Residential	2	Municipal	47	100
Plot no.-150	Commercial	1	Municipal	107	440

Plot no.-151	Residential	1	Municipal	59	120
Plot no.-152	Open Space	0	Municipal	63	120
Plot no.-153	Industrial	1	Municipal	60	120
Plot no.-154	Industrial	1	Municipal	214	840
Plot no.-155	Public/Semi Public	1	Municipal	49	100
Plot no.-156	Commercial	1	Municipal	42	40
Plot no.-157	Public/Semi Public	1	Municipal	87	270
Plot no.-158	Commercial	1	Municipal	31	30
Plot no.-159	Commercial	1	Municipal	92	270
Plot no.-160	Residential	1	Municipal	114	330
Plot no.-161	Residential	1	Private	88	270
Plot no.-162	Commercial	1	Private	219	880
Plot no.-163	Residential	1	Municipal	156	300
Plot no.-164	Residential	1	Municipal	24	60
Plot no.-165	Commercial	1	Municipal	83	320
Plot no.-166	Open Space	0	Municipal	66	120
Plot no.-167	Open Space	0	Municipal	124	240
Plot no.-168	Residential	1	Municipal	66	60
Plot no.-169	Residential	1	Municipal	54	50
Plot no.-170	Commercial	0	Municipal	34	30
Plot no.-171	Open Space	0	Municipal	34	30
Plot no.-172	Open Space	1	Private	53	200
Plot no.-173	Residential	1	Municipal	52	200
Plot no.-174	Residential	1	Municipal	26	80
Plot no.-175	Residential	1	Private	54	200
Plot no.-176	Industrial	1	Municipal	32	120
Plot no.-177	Residential	1	Municipal	63	180
Plot no.-178	Commercial	1	Municipal	82	240
Plot no.-179	Commercial	1	Private	51	150
Plot no.-180	Commercial	1	Municipal	49	150
Plot no.-181	Open Space	0	Municipal	48	150
Plot no.-182	Residential	1	Municipal	62	180
Plot no.-183	Residential	1	Municipal	76	210
Plot no.-184	Residential	1	Municipal	52	150
Plot no.-185	Residential	1	Municipal	52	150
Plot no.-186	Open Space	0	Municipal	52	150
Plot no.-187	Residential	1	Private	49	50
Plot no.-188	Open Space	0	Private	49	50
Plot no.-189	Commercial	1	Private	72	210
Plot no.-190	Commercial	1	Private	77	240

Plot no.-191	Public/Semi Public	1	Private	43	40
Plot no.-192	Open Space	0	Private	0	0
Plot no.-193	Open Space	0	Private	0	0
Plot no.-194	Open Space	0	Private	0	0
Plot no.-195	Public/Semi Public	1	Private	240	450
Plot no.-196	Public/Semi Public	1	Private	235	450
Plot no.-197	Open Space	0	Private	0	0
Plot no.-198	Open Space	0	Private	0	0
Plot no.-199	Public/Semi Public	1	Private	365	730
Plot no.-200	Public/Semi Public	1	Private	251	500
Plot no.-201	Public/Semi Public	1	Private	322	600
Plot no.-202	Public/Semi Public	1	Private	300	550
Plot no.-203	Residential	1	Municipal	215	420
Plot no.-204	Public	1	Municipal	192	380
Plot no.-205	Public	1	Municipal	114	220

Total (A)		**5686**	**22579**	**12176**	**10403**
Ward no.-12 (OG)		417	1430	687	743
Ward no.-13 (OG)		803	3079	1543	1536
Ward no.-14 (OG)		900	3676	1835	1841
Total (B)		**2120**	**8185**	**4065**	**4120**
Grand Total (A+B)		**7806**	**30764**	**16241**	**14523**

4.3.2 RETROFIT ZONE (OWNERSHIP MAP)

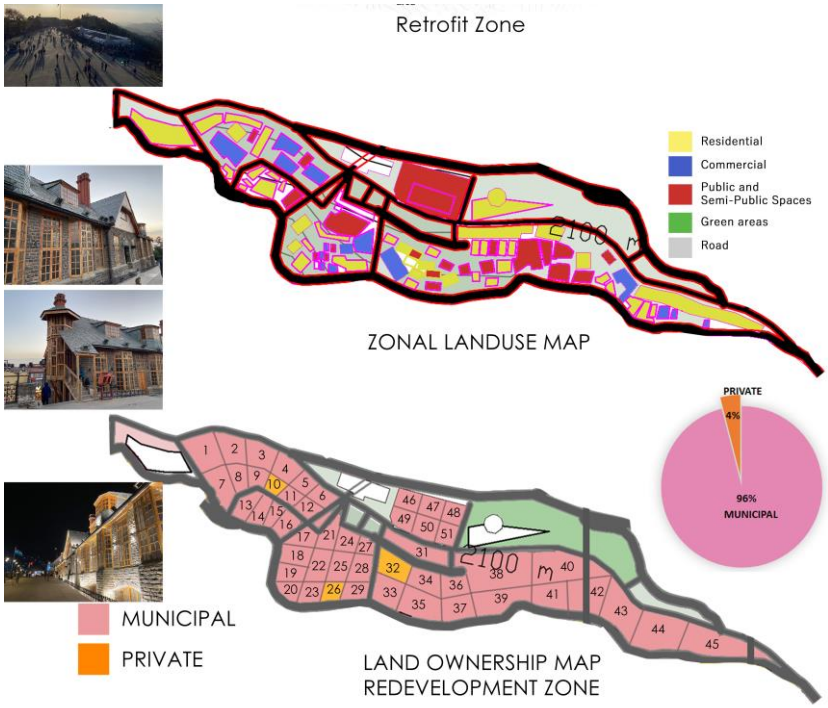


Table 3 Land ownership data for redevelopment zone

Property Number	Landuse Type	Total Households	Property Type	Plot Area (m2)	Total Builtup Area (m2)
Plot no.-1 & 4	Commercial	1	Municipal	392	1170
Plot no.-2	Commercial	2	Municipal	124	240
Plot no.-3	Residential	2	Municipal	419	1260
Plot no.-4 & 1	Open Space	0	Municipal	419	1260
Plot no.-5	Open Space	0	Municipal	0	0
Plot no.-6	Residential	2	Municipal	0	0
Plot no.-7	Residential	1	Municipal	0	0
Plot no.-8	Residential	1	Municipal	0	0
Plot no.-9	Open Space	0	Municipal	0	0
Plot no.-10	Residential	1	Private	0	0
Plot no.-11	Residential	1	Municipal	0	0
Plot no.-12	Commercial	1	Municipal	0	0
Plot no.-13	Residential	1	Municipal	63	0
Plot no.-14	Residential	2	Municipal	71	70
Plot no.-15	Residential	2	Municipal	63	60
Plot no.-16	Residential	2	Municipal	58	60
Plot no.-17	Residential	1	Municipal	214	840
Plot no.-18	Residential	1	Municipal	134	520
Plot no.-19	Residential	2	Municipal	74	140
Plot no.-20	Residential	1	Municipal	58	60
Plot no.-21	Commercial	1	Municipal	74	140

Plot no.-22	Public/Semi Public	2	Municipal	58	60
Plot no.-23	Residential	2	Municipal	77	160
Plot no.-24	Residential	1	Municipal	82	160
Plot no.-25	Residential	2	Municipal	58	60
Plot no.-26	Open Space	1	Private	89	180
Plot no.-27	Open Space	2	Municipal	114	220
Plot no.-28	Commercial	2	Municipal	76	150
Plot no.-29	Commercial	1	Municipal	82	160
Plot no.-30	Commercial	2	Municipal	110	200
Plot no.-31	Residential	1	Municipal	120	240
Plot no.-32	Residential	1	Private	332	1320
Plot no.-33	Residential	1	Municipal	84	80
Plot no.-34	Open Space	0	Municipal	74	140
Plot no.-35	Open Space	0	Municipal	68	140
Plot no.-36	Commercial	2	Municipal	74	140
Plot no.-37	Open Space	0	Municipal	68	140
Plot no.-38	Public/Semi Public	1	Municipal	84	80
Plot no.-39	Commercial	2	Municipal	76	70
Plot no.-40	Residential	3	Municipal	87	90
Plot no.-41	Open Space	0	Municipal	76	70
Plot no.-42	Open Space	0	Municipal	282	1120
Plot no.-43	Residential	4	Municipal	142	560
Plot no.-44	Public/Semi Public	1	Municipal	361	1440
Plot no.-45	Open Space	0	Municipal	985	3940
Plot no.-46	Open Space	0	Municipal	316	930
Plot no.-47	Residential	1	Municipal	935	3740
Plot no.-48	Commercial	1	Municipal	114	440
Plot no.-49	Residential	2	Municipal	0	
Plot no.-50	Residential	1	Municipal	0	
Plot no.-51	Commercial	1	Municipal	0	

4.4 REDEVELOPMENT DESIGN CONCEPT

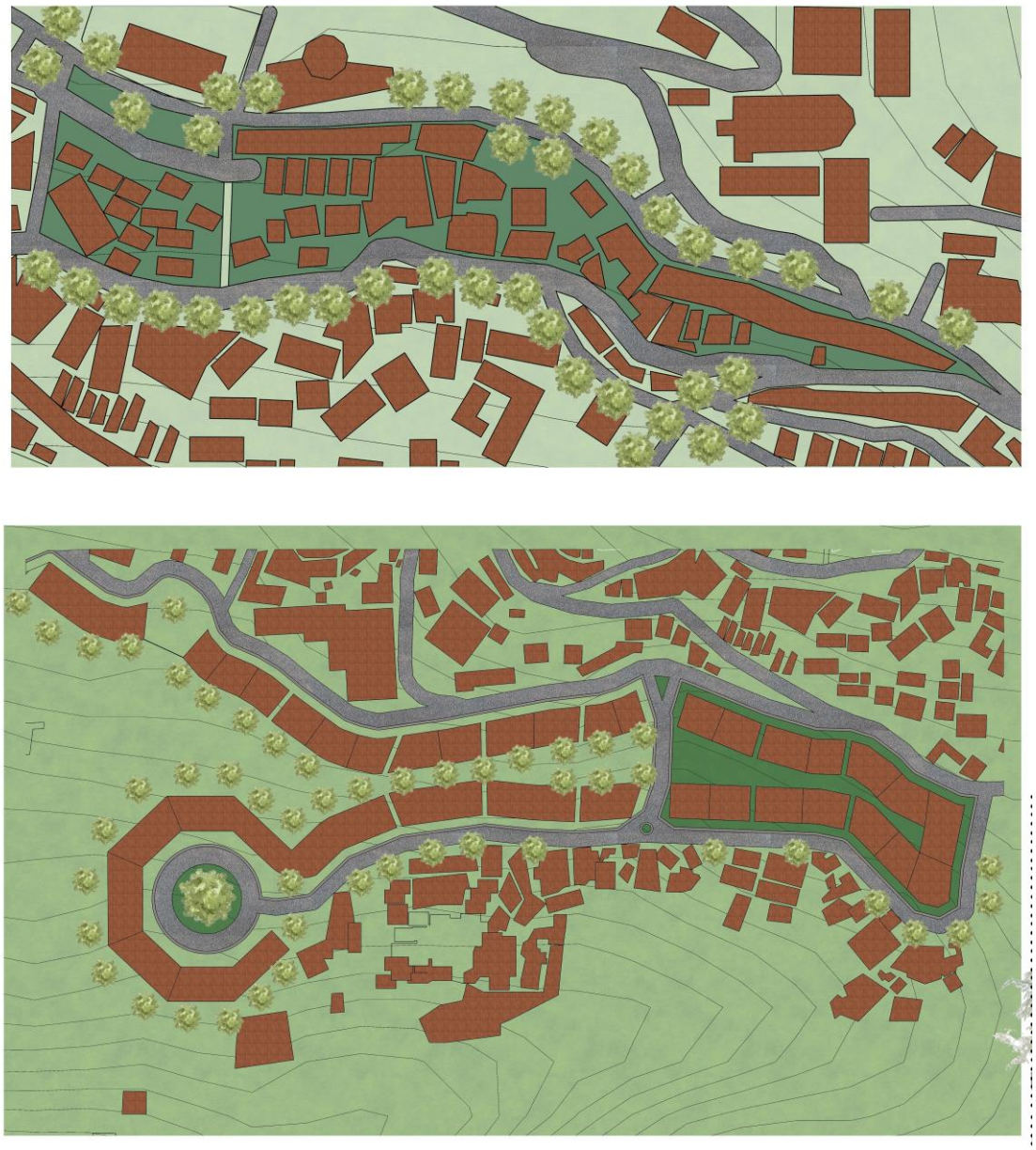


Figure 50 Concept design

DESIGN

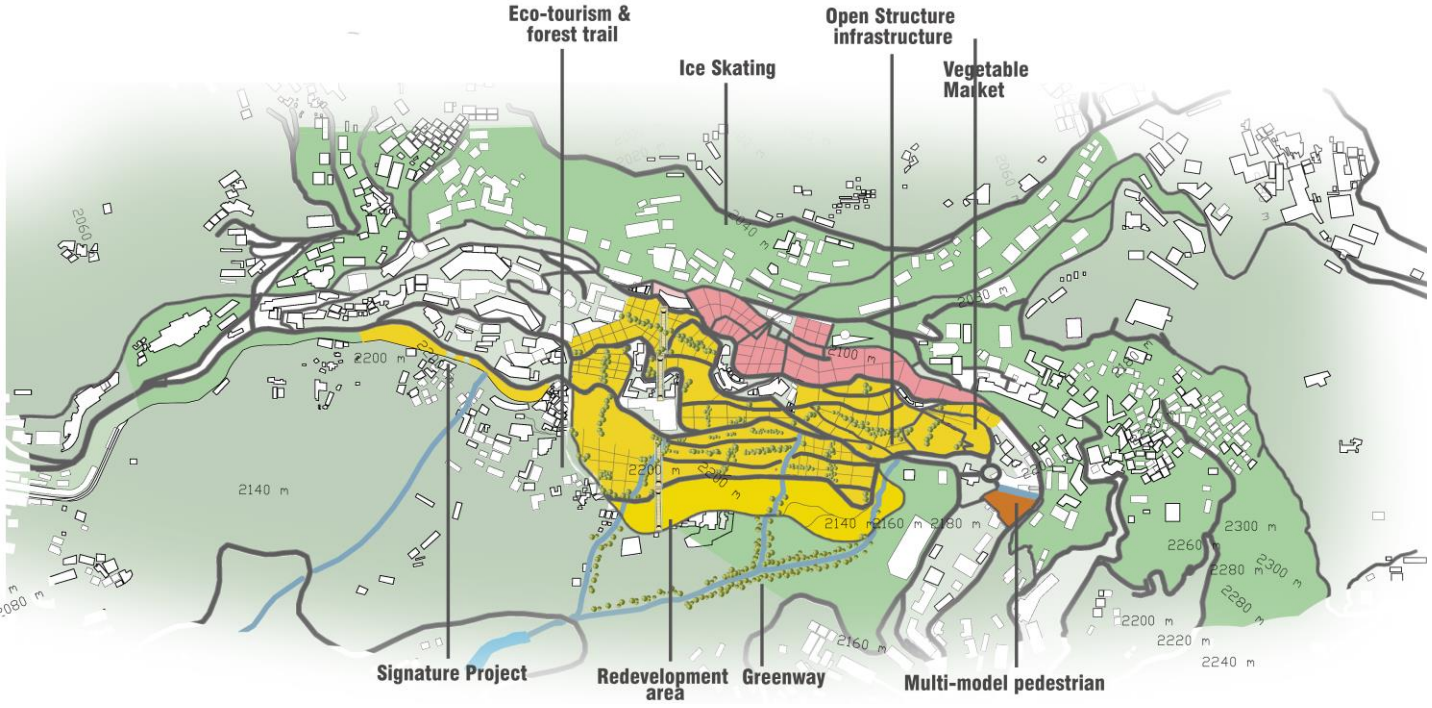


Figure 51 Redevelopment design circular road section

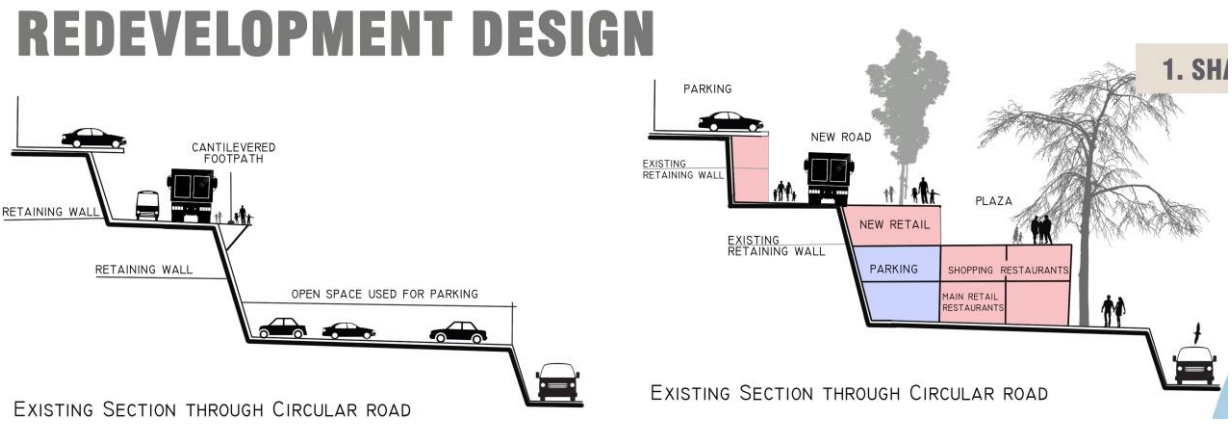


Figure 52 Enhancing Vertical Mobility

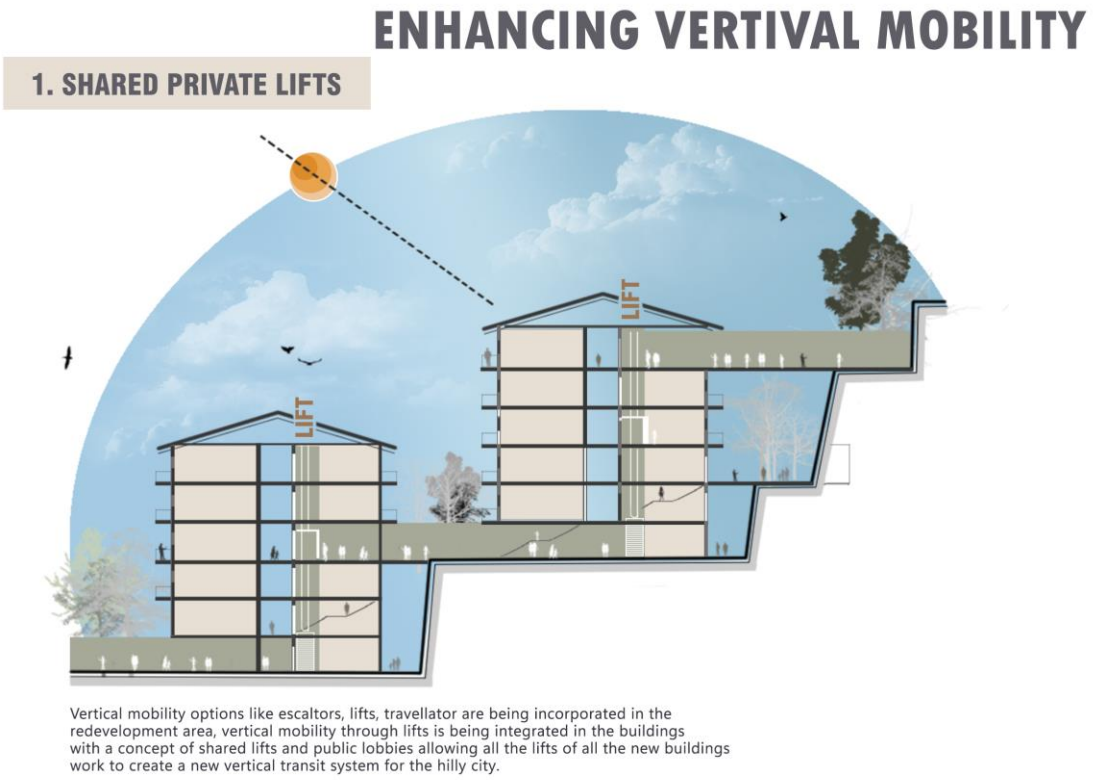


Figure 53 Redevelopment design circular road plan

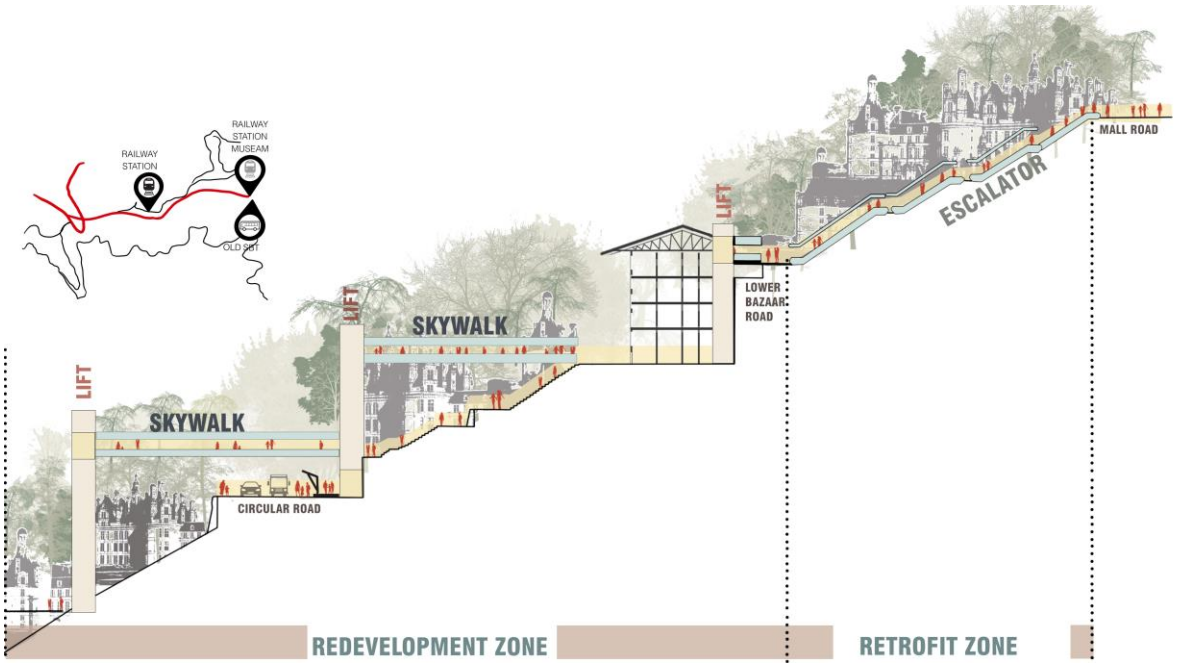


Figure 54 Redevelopment zone & Retrofit Zone Sectio

4.4 RETROFIT DESIGN

Figure 55 Retrofit Design area plan

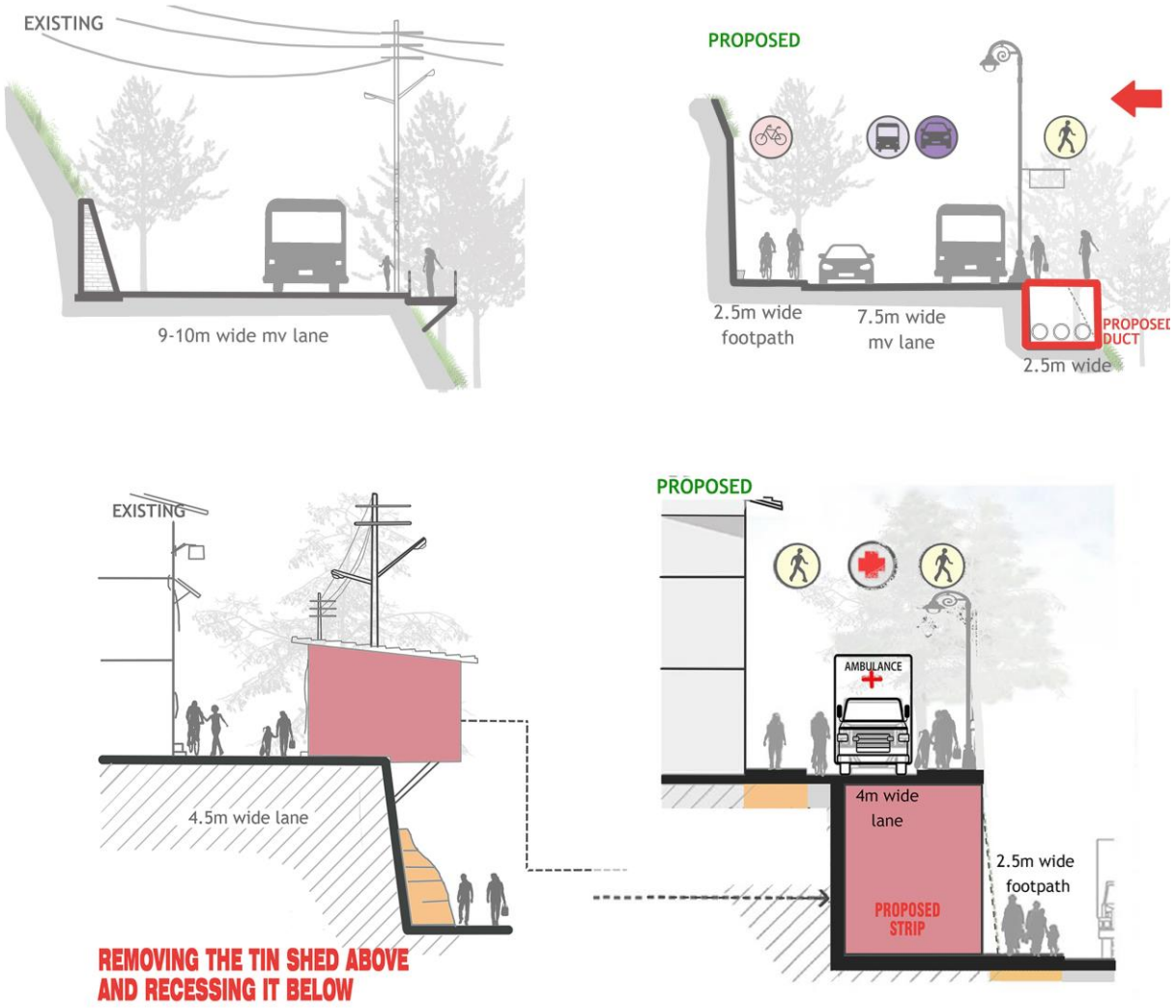


Figure 56 Retrofit Design - Existing & proposed

4.5 DESIGN SOLUTION

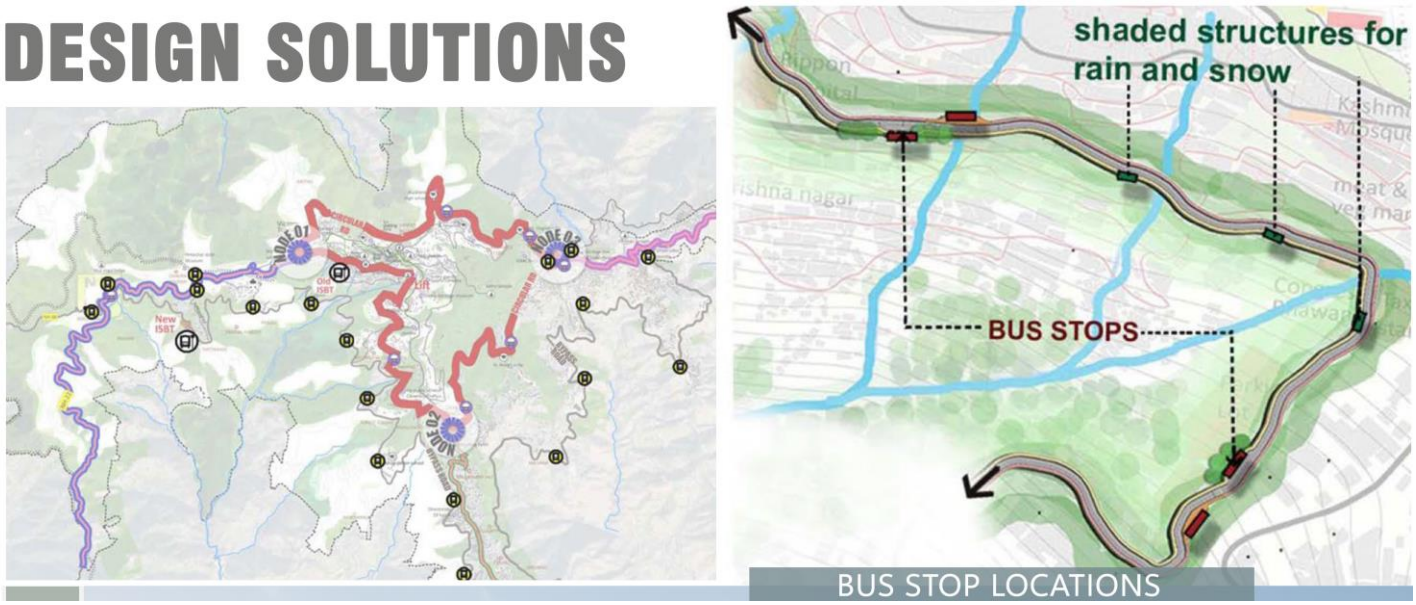


Figure 57 Bus Stop location

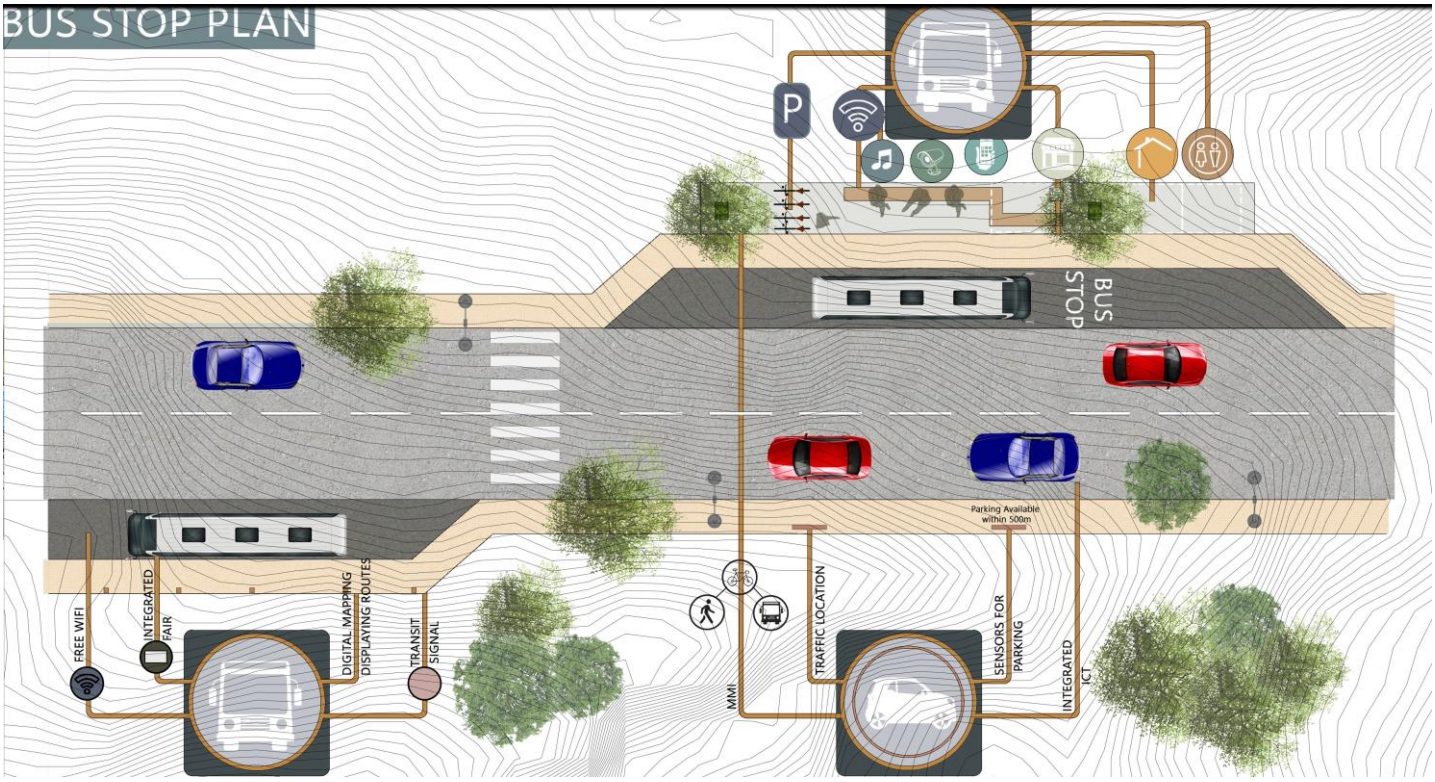


Figure 58 Bus Stop Plan

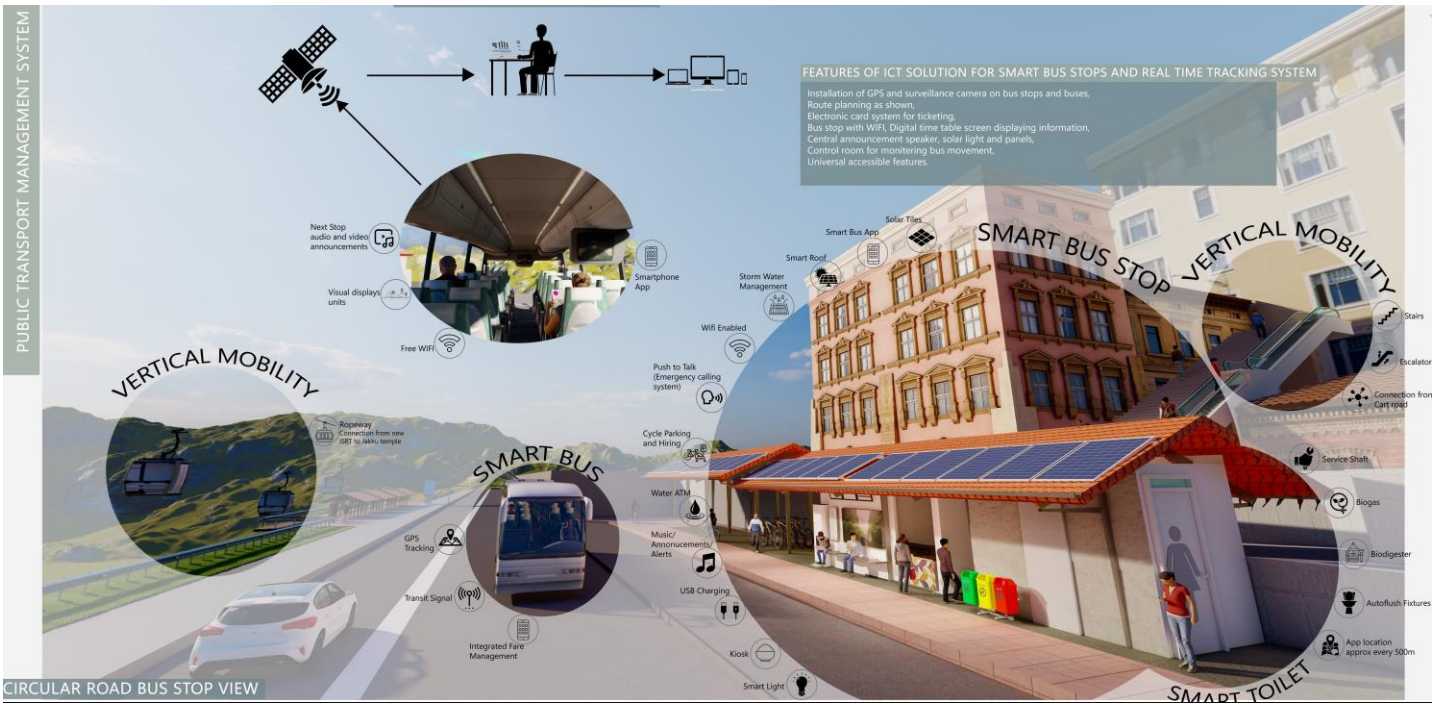


Figure 59 Public transport management system - Smart Bus Stop

4.6 3D-RENDERINGS


821119 Y: 3446977.289295 Z: 2031.386712m

5.0 REFERENCES

- *Subjective and objective dimensions of spatial legibility by Emine Koseoglu[a], Deniz Erinsel Onder*
- *Urban Sprawl and other Spatial Planning Issues in Shimla, Himachal Pradesh by Shashi Shekhar*
- *Street design guidelines*
- *Transparency in Planning Practice: Contemporary urban reform in India by Chandrima Mukhopadhyay*
- *GIS-based assessment of urban environmental quality inPort-au-Prince, Haiti by Myrtho Josepha, Fahui Wanga,b,*, Lei Wang*
- *Green neoliberalism: Recycling and sustainable urban development inSekondi-Takoradi by Franklin Obeng-Odoom*
- *A review of recent studies on sustainable urban renewal by Helen Wei Zheng, Geoffrey Qiping Shen*, Hao Wang*
- *Abu Dhabi street design manual*
- *Approach to formulate setback regulations for Indian hill towns by Ashwani Kumar, Pushplata*
- *Model building byelaws, 2016*
- *URDPFI guidelines*
- *Oasis, Shimla smart city*
- *DHARAMSHALA PLANNING AREADevelopment Plan-2035*
- *The Impacts of Urban Renewal: The Residents' The Impacts of Urban Renewal: The Residents' Experiences in Qianmen, Beijing, China Experiences in Qianmen, Beijing, China by Yongxia Kou*
- *Vernacular practices: as a basis for formulating building regulationsfor hilly areas by Ashwani Kumar, Pushplata*