

Revitalization of the Walled City of Delhi, Shahjahanabad
Incremental Urban Development Mediated through an
Urban Design Framework

by
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Author's Declaration

I hereby declare that I am the sole author of this thesis. This is a true copy of the thesis, including any required final revisions, as accepted by my examiners.

I understand that my thesis may be made electronically available to the public.

Dedication

To my Family

Abstract

Shahjahanabad, the historic center of Delhi, built in 1638, offers an old-world charm that fosters a culturally rich community. Also known as Old Delhi, the hustling streets, the vibrancy of the old city life and the people who live like a close-knit family, are the heart of the city.

The transition from developing nation by modernization has led to rapid urbanization in Delhi over recent decades. Shahjahanabad, being the historic center, has been at the receiving end of this explosion in population growth. Migration of thousands of people from rural as well as urban agglomerations has impacted the civic infrastructure and constantly challenges the resilience of the city.

The permanence of the existing high-density urban form in Old Delhi, and the increasing crisis for shortage of living space, intensifies the conflict between the need to preserve the history of the city while accommodating increased density. The thesis proposes selective minimization of Old Delhi's physically decaying historic built form and re-imagine derelict building sites as spaces of resourcefulness to cater to the needs of the community. The research on the existing apparatus of urban development and housing conditions informs the thesis and the application of planning principles to different site conditions. An exploration of the thesis design principles on different sites, develops mixed-use housing typologies which forms a new urban condition amenable to the old with the existing built fabric. Through an assemblage of new collective dwelling, the development done by incremental changes aims to bring the present Old Delhi population and the new migrant residents together in their differences and informs them of a better quality of living moving forward.

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Figure 0.01 Old Delhi

Introduction

*'To inhabit is to appropriate space, in the midst of constraints, that is to say, to be in a conflict—often acute—between the constraining powers and the forces of appropriation.'*¹

- Henri Lefebvre

People cultivate a sense of belonging to a place through their individual and collective experiences. Such belonging often constitutes a deep rootedness in the physical, social, and cultural environment. In the practice of inhabiting a place, people form relationships with each other, which instill a sense of unity in situations of potential conflict. Such social relationships are seen to be lacking nowadays. As a result of rapid urbanization and scarcity of land for occupation, the dichotomy between the desire for progress and the ability to reach such progress is the primary cause driving rural-urban migration in both the developed and developing world.

The greatest mass migration in human history probably took place during the partition of India in 1947, as a culmination of the Quit India Movement. As many as fourteen million Sikhs, Hindus, and Muslims were displaced as they moved respectively to India and Pakistan during this catastrophic event. This was not a historically isolated event. Over the course of several thousand years of conflict, suppression and changing power equations, the territory of India had intermittently witnessed considerable physical, social, and cultural changes under the changing hegemony of multiple rulers.

¹ Lukasz Stanek, "From Practices of Dwelling to Production of Space," In *Henri Lefebvre on Space: Architecture, Urban Research and the Production of Theory* (London: Minnesota Press, 2011), 87.

This thesis explores the crisis of resilience of the historic city centers in adapting to the rural-urban migration that has been occurring in third world countries as a consequence of a transition from being developing nations to rapidly modernized ones. Delhi, being the nation's political and administrative capital, is the center of national power today and accommodates thousands of migrants arriving every year from rural and neighbouring urban agglomerations, all migrants seeking employment, education, and shelter. The historic center of Delhi, Shahjahanabad, built in 1638 and the context for this thesis, has been on the receiving end of this explosion in population growth. Shahjahanabad, also known as Old Delhi or the Walled City of Delhi, is rich in urban heritage, monuments, and historic buildings but is significantly impacted today by the process of rural-urban migration. The lack of affordability and land for development in the capital state has led to the phenomenon of *transmigration* in Shahjahanabad, where poor labourers are in-migrating for employment and affordable living whereas affluent residents are out-migrating to neighbouring cities in the Delhi metropolitan area due to deteriorating civic infrastructure in the centre. This process has led to inflation of the homeless and migrant population in the walled city.² The charm and grandeur of the architecture peculiar to its historical past is now concealed within extensive development of single family dwellings over those structures and the majority of the buildings are in a state of disrepair. They are especially prone to being collapsed during rainy seasons.

Over the course of hundreds of years, various old mansions in Shahjahanabad have been converted to markets, workshops or sites for manufacturing industries. The change in the functional typology of the mansions is visible in the now built-up courtyards. The increase in vehicular transport due to intensified small retail trade has led parking to emerge as a new typology for open public spaces. This transformation of the historic city has created a rupture in the individual and collective social memories of the past. As stated by urban critic Mike Davis, similarities to this historical shift can be drawn

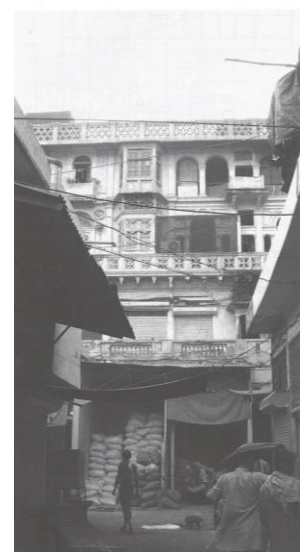


Figure 0.02

Sarae Bangash – Spice Market

British influence on the architectural elements during late nineteenth century.

Today the courtyard is also built up.

² Government of NCT of Delhi, "Revitalization of Shahjahanabad (Walled City of Delhi) - Project Concept Proposal," in *Shahjahanabad Redevelopment Corporation*. Retrieved from <http://srdc.delhigovt.nic.in>

with some Latin American and Asian cities, where conversion of colonial mansions and Victorian villas has been quite common. Davis writes that under similar conditions of mass migration to cities, the majority of ‘Rio’s *avenidas*, Quito’s *quintas*, Old Havana’s *cuarterias* or Bueno Aires’ and Santiago’s *conventillos*, are now dangerously dilapidated and massively overcrowded.’³ The thesis thus seeks to examine Old Delhi as a case study for how the physical fabric of a city manifests and responds to the social pressure created by the current patterns of growth and development.

The process of land development plays an important role in the transformation of the physical and social dynamics of cities. In such places, the state operates through a critical framework consisting of multiple active and passive actors, termed by architect and urban critic Iyonne Santoyo-Orozco as the “apparatus.” Delhi’s land development framework is dominated by government authorities that form an organizational framework that is reliant on a top down decision-making process. The land owners, the renters, the floating population, the homeless and the migrants are passive actors who are dependent on the “apparatus”. This thesis establishes the current relationship between the authorities and the potential role of practicing local architects and land owners, as actors to spur the process of private land development to alleviate the crisis in Old Delhi.

The Master Plan 2001 of Delhi identifies Shahjahanabad as a Special Area, which mainly accommodates residential, commercial and industrial uses. Old Delhi and New Delhi were nominated by the Government of National Capital Territory of Delhi for UNESCO’s list of World Heritage Sites in 2014. The proposal was not submitted however, due to uncertain reasons. The Shahjahanabad Redevelopment Corporation (SRDC) was set up as a Special Purpose Vehicle (SPV) to develop a cohesive framework for Old Delhi’s revitalization. The thesis acknowledges the previous failed attempts of revitalization plans for the city, failures due to political conflicts and lack of organization. In the current framework of redevelopment of Old Delhi, SRDC proposes the

³ Mike Davis, "The Prevalence of Slums," In *Planet of Slums* (London/New York: Verso), 2006.

restoration and preservation of the heritage buildings that symbolize the historical past of Delhi but fails to accommodate the inevitable growth in population density and fails to provide regulations to counter the unauthorized incremental additions to the existing built fabric. As an extension to SRDC's proposal for catalyzing private development, the thesis identifies potential in dilapidated buildings, collapsed building sites, and various sites that are functioning as large parking lots regulated by Municipal Corporation of Delhi (MCD), that can be developed keeping in mind future growth patterns.

This thesis engages the practice of architecture by gaining insights through an analysis of the existing housing typology, the activities of the people, and how the historical built fabric accommodates and responds to the continuous out-migration and in-migration of residents. Through concept case studies, this thesis develops different models for housing that operate within the typological guidelines appropriate to the existing historical built fabric of Old Delhi and addresses the specific site conditions. The implementation of these models as catalysts in mediating the housing crisis also intends to recapture the lost "genius locus" of the city, which is found in the essence of the environment, the streets, the courtyards and everyday interactions. The architectural typologies engage the practice of dwelling as a means of generating an overall improvement and re-structuring of the physical environment of Old Delhi while maintaining its sense of place which makes it a UNESCO treasure.

Methodology, resources, and thesis structure

This thesis has four chapters, successively gaining insight through research and developing a narrative to support the vision of improving the quality of life of the people in Old Delhi.

Chapter 1 describes the *Historical Evolution of Shahjahanabad*. It gives an insight into the consequences and historical fallouts of the city, its infrastructure and the people under British rule. The sub-chapter, *Today's Crisis of Urban Place - Growth, Density and Resilience in Old Delhi*, presents the population estimates and migration patterns in the city. It discusses the reasons for this tremendous growth of nineteen million people in Delhi today and how has that impacted the life of the people. The term "resilience" is described to explain the vitality of older cities against challenges of urbanization and how the people have adapted to the change.

Chapter 2 presents the *Existing Apparatus of Development* through actors involved in the process of land development and ownership. The second sub-chapter presents the *Urban Renewal Initiatives* established by government authorities in for the revitalization of Shahjahanabad. The information presented is extracted from a variety of sources: Government of India websites, reports, newspaper articles, and books. A key source that has provided information specific to Shahjahanabad and helped me develop initial thoughts has been the Project Concept Proposal for the Revitalization of Shahjahanabad by Shahjahanabad Redevelopment Corporation (SRDC).⁴ The third sub-chapter *Mapping Shahjahanabad*, through maps represents the existing condition of the built fabric in relation to the use of land, density of buildings and parks, network of streets and roads, transport to and from the city, and the presence of culturally rich institutions. The last sub-chapter, *Typologies and Building Patterns*, discusses briefly the architectural elements used in buildings in Old Delhi. The key works in understanding what typology means, what components of a building can be listed under a type, and the

⁴ Delhi Government, "Revitalization of Shahjahanabad (Walled City of Delhi) - Project Concept Proposal," in *Shahjahanabad Redevelopment Corporation*. Retrieved from <http://srdc.delhigovt.nic.in>

importance of the relationship of the building form with the street are by authors Aldo Rossi, Barnard and Harald, Christopher Alexander and Jane Jacobs.⁵ The research presents an analysis of the existing housing typologies in Shahjahanabad and how people have adapted them physically and socially.

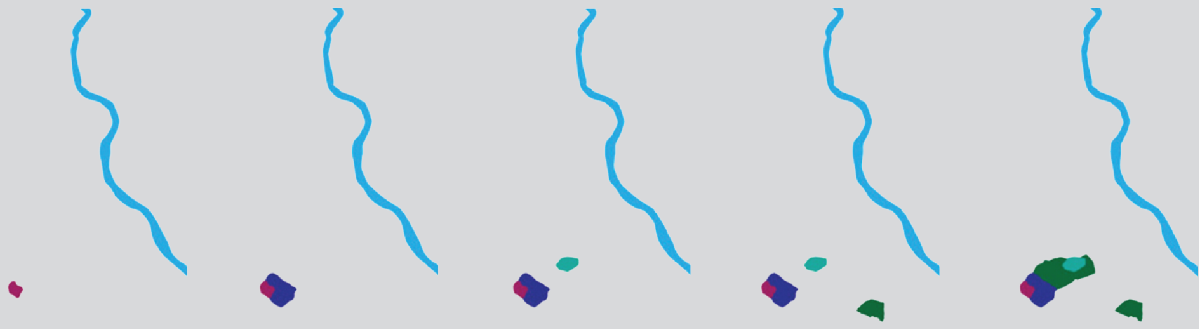
Chapter 3 develops special guidelines at a small-scale for Old Delhi as standards for better tactical urban development. The sub-chapters address the problem of land development and ownership. A design framework is developed for Old Delhi involving strategies for effective use of existing dilapidated building sites, which inform the design for mixed use housing with communal facilities. A framework of interested actors in the development of abandoned sites in Old Delhi is developed. It proposes strategies to mitigate further deterioration and abandonment of sites in Old Delhi. These strategies are flexible as well as replicable on similar site conditions.

Chapter 4 presents through design exploration on different sites a methodology for incremental development in Old Delhi. The sub-chapter *Design Exploration on Sites* addresses how the individual site conditions can be manipulated to provide housing and improve living conditions. The methodology depicts different typologies of housing that can be implemented as prototypes by in-fill construction or adaptive reuse of the existing dilapidated structures to repurpose the urban condition and encourage the inclusion of essential grassroots participation to create a symbiotic and regenerative relationship with the environment.

⁵ See Bernard Leupen and Harald Mooij, "Typology," In *Housing Design - A Manual* (Rotterdam: NAI Publishers), 35-58; Christopher Alexander, *The Timeless Way of Building* (New York: Oxford University Press), 1979; Jane Jacobs, *The Death and Life of Great American Cities* (Vintage Books, 1992), 35.



Figure 0.03 Sketch of Environs of Delhi, 1807



1060

1180

1297

1321

1326

Lal Kot

Qila Rai Pithora

Siri

Tughlaqabad

Jahanpanah

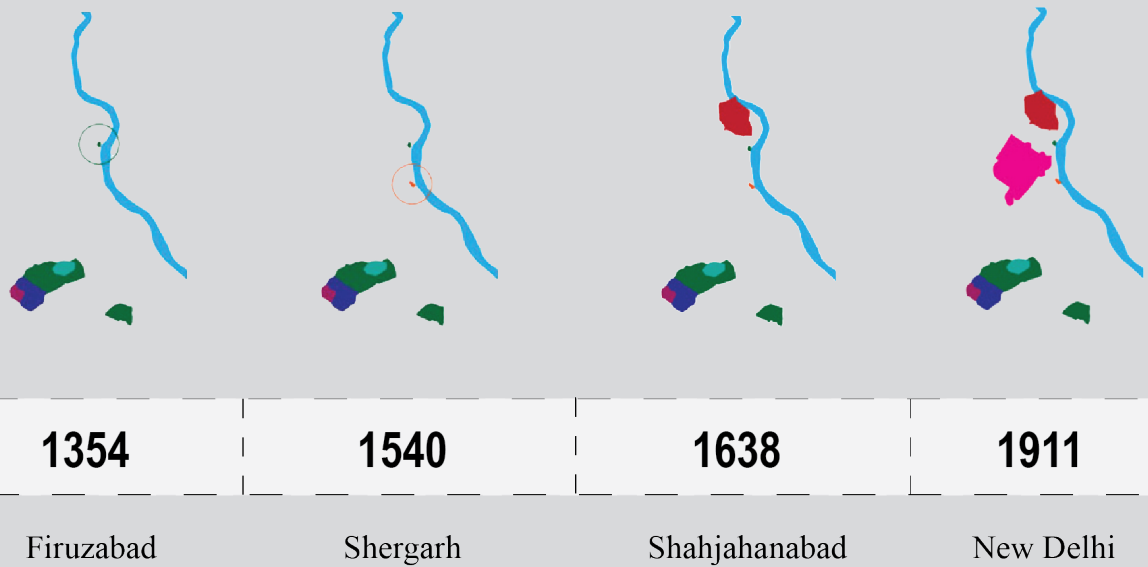
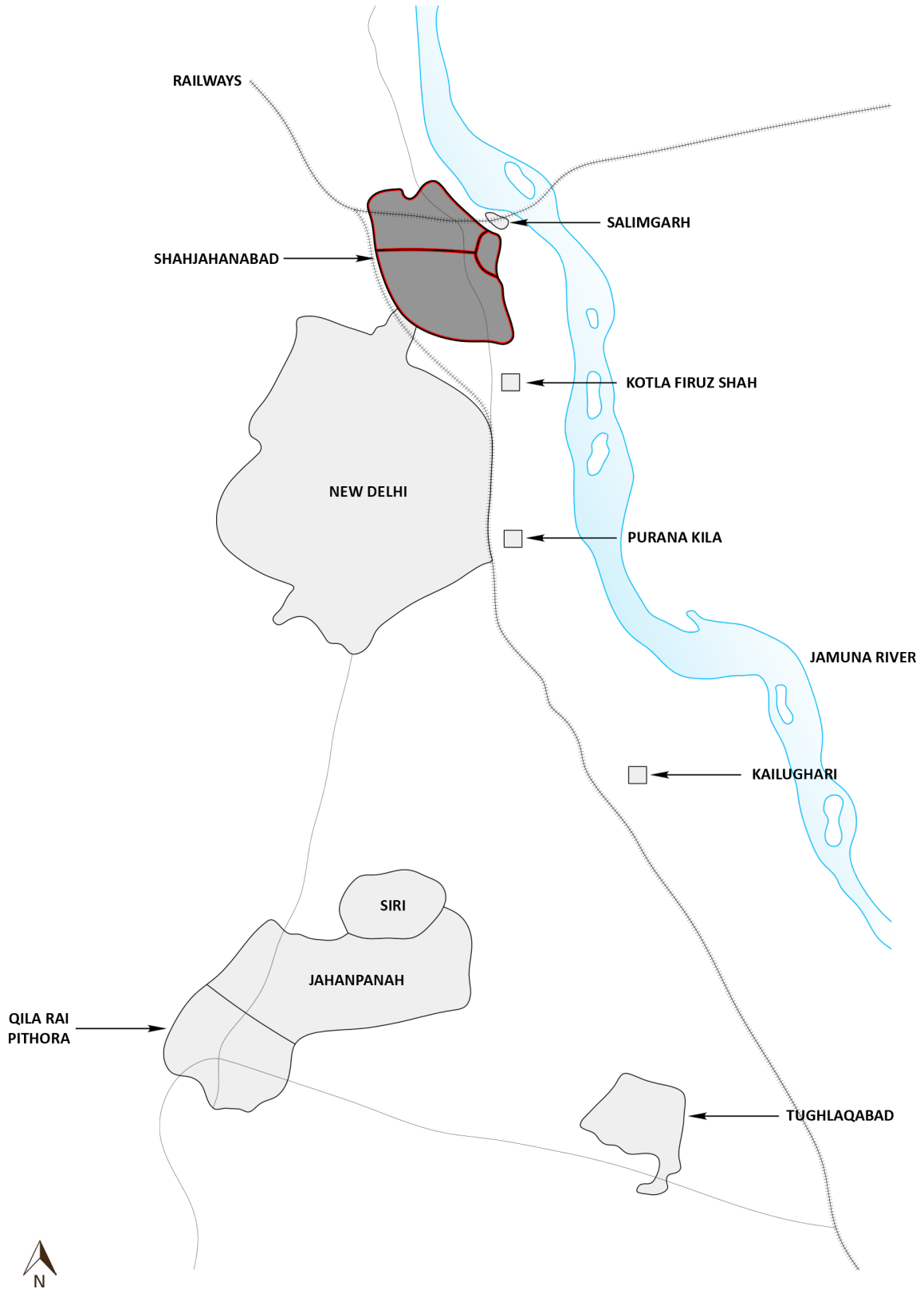


Figure 1.01 Evolution of Delhi

Part 01 Shahjahanabad - The Walled City of Delhi

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Figure 1.02 Cities of Delhi



1.1 Historical Evolution of Shahjahanabad

The area around Delhi has traditionally been a favored land due to its strategic position in the northern part of India, also known as the Delhi Triangle.⁶ The first city in this area, called Dilli, was built in the eighth century A.D. by the Tomar Rajputs. The Tomar settlement was located south of the Delhi Triangle and ruler Anangpal built the first settlement *Lal Kot*, which was expansive enough to be called a city. Lal Kot was further expanded to accommodate more people by spreading to a larger area outside its boundaries and by building huge new walls, which came to be known as *Qila Rai Pithora* in A.D. 1180.⁷ The Tomar dynasty was overthrown by the Tughlaqs in A.D. 1303 by Ala al-Din Khalji, who rebuilt and renovated many structures in Qila Rai Pithora along with building a new city, Siri. The dynasty witnessed the construction of *Tughlaqabad* in 1321, *Jahanapanah* in 1325 and *Firuzabad* in 1354.

Soon after the death of the last Tughlaq ruler Firuz, the cities of Siri, Jahanapanah and Firuzabad were looted and burnt in 1388 by the great central Asian conqueror and ruler, Timur or Tamerlane.⁸ The Sayyids in 1414 and the Lodis in 1451 overcame the Tughlaqs but were superseded by the Mughals in 1526.⁹ The Mughal empire was established in 1526 and ruled by a Muslim Dynasty. Humayun who was the son of the first Mughal emperor Babur, built a modest city called *Din Panah* from the remains of Siri but the settlement was razed and plundered by Sher Shah in 1540. The Mughals founded another city to the north of the Delhi Triangle in 1638, named after the Mughal emperor Shahjahan. Shahjahanabad, built in 1638 by Shahjahan, is the seventh city of Delhi. It is also referred to as

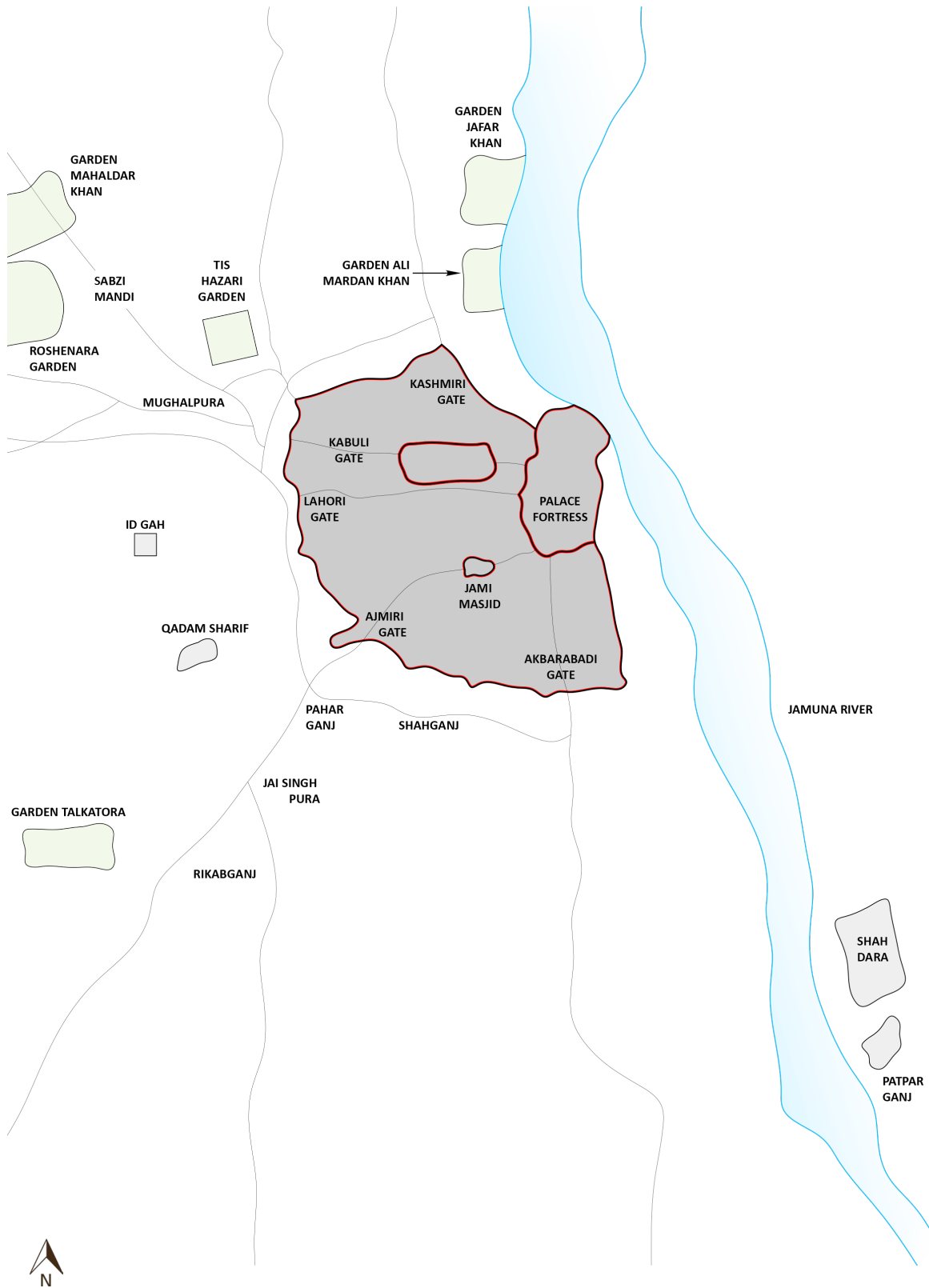
⁶ The Delhi triangle is a sixty-square-mile area that is surrounded by the two prominent features, the Yamuna river to the east and the Aravalli Hills to the west and south. See Stephen P. Blake, *Shahjahanabad: The Sovereign City in Mughal India, 1639-1739* (Cambridge: Cambridge University Press, 1991), 5.

⁷ Ibid, 9.

⁸ Ibid, 10.

⁹ Ibid, 12.

Figure 1.03 Suburbs of Shahjahanabad, 1739



the ‘Walled City’ of Delhi. Rich in urban heritage, monuments and historic buildings from the Mughal period to today, this old city reflects the charm and grandeur of its rich historical past. Stephen P.Blake, a critic and writer characterizes the city as an imperial mansion. Under the patrimonial bureaucracy of the Mughal Empire, the city was inextricably enslaved to the patriarchal authority of the state, which in turn defined the form and structure of the city. From its inception, Old Delhi has been the product of imperial planning which monopolized the social, economic and cultural life of the city and influenced its built form.

In 1707, after the death of the Mughal emperor Aurangzeb, the city suffered “indiscriminate plundering” by a sequence of Nadir Shah, the Jats, Ahmad Shah Abdali, and the Marathas. But the city sustained the indiscriminate brutality and retained its social and cultural character. Finally in 1803 the British East India Company invaded the city and the Mughal Emperor became a ruler only in name without any authority. In 1857, the city came under direct British rule, and British influence brought social, cultural, and physical changes in the city. Land from “*haveli complexes*”¹⁰ were acquired and fragmented into smaller plots, courtyards were converted into building plots, land was redistributed to people as per their loyalties to the new colonial empire. The inequality created segregation and class difference. Introduction of railways within the Walled City led to the uprooting of many people from the area and clearance of orchards, gardens, and fields. Many of these now vacant lots of land were repurposed for commercial activities. Urban writer Jyoti Hosagrahar writes,

¹⁰ Hosagrahar explains,

Widely used as the term is, a precise definition of *haveli* is hard to come by. The dictionary defines a *haveli* as a mansion or a spacious house (Bashir Ahmad Qureshi, ed., *Standard Twentieth Century Dictionary: Urdu into English*, revised by Abdul Haq, Delhi: Educational Publishing House, 1991, 279). Rory Fonseca considers contemporary *haveli* in Delhi as houses with introverted gardens (“The Walled City of Old Delhi,” in *Shelter and Society*, edited by Paul Oliver, London: Barrie and Rockliff, 1969). Varma and Shankar have interpreted the *haveli* to mean mansions, including those built by the British, that did not have interior courtyards (Pawan Varma and Sandeep Shanker, *Mansions at Dusk: The Havelis of Old Delhi*, New Delhi: Spantech Publications, 1992). (Jyoti Hosagrahar, *Indigenous Modernities - Negotiating Architecture and Urbanism*, Routledge, 2005, 200.)



the revamping of basic infrastructure reinforced the idea of the city as a machine.”¹¹

In 1860 an increase in population was visible, when there was expansion of trade. As Hosagrahar explains, “the decline of the old nobility was accompanied by the rise of a mercantile class.”¹² Craftsmen and markets empowered the shops to be wellsprings of goods such as foods, textile, and jewelry. “The *merchant city* succeeded the political city,” writes urban theorist Henri Lefebvre, “at this time (approximately the fourteenth century in Western Europe), commercial exchange became an urban *function*, which was embodied in a *form* (or forms, both architectural and urban). This in turn gave urban space a new *structure*.”¹³ By the mid-1870s, the opulence of the growing city attracted thousands of people to immigrate and Shahjahanabad became the seventh largest city in British India. In 1911, the capital of British India, then Calcutta, was moved to Delhi. The Mughal city itself was bypassed for Edwin Lutyens new neo-classical capital complex.

The course of deterioration of the conditions of any city become more apparent when they are divided into old and new.¹⁴ The evolution of Mughal Delhi, Shahjahanabad, is today reflected in the historical events and the constant yearning of its residents to unify the long-harbored traditional ways of living with the social, cultural, and physical (architectural) changes of the twenty-first century.

Figure 1.04
Delhi in 1942

1. Walled City
2. Civil Lines
3. West of walled city
4. Karol Bagh
5. New Delhi

¹¹ Jyoti Hosagrahar, *Indigenous Modernities - Negotiating Architecture and Urbanism* (Routledge, 2005), 39.

¹² *Ibid*, 28.

¹³ Henri Lefebvre, "From the City to the Urban Society," in *The Urban Revolution*, trans. Robert Bononno (Minneapolis/London: University of Minnesota Press, 2003), 10.

¹⁴ The eighth city, New Delhi, was built by the British as their imperial capital. Of the earlier cities, six are only of archaeological interest, while Shahjahanabad, the seventh city of Delhi, and the British New Delhi are currently existing side by side, splitting today's Delhi into Old and New. The two cities – one a seventeenth century city and the other, a twentieth century city – despite being so different, still form two integral parts of one organic whole, that is Delhi. See Ajay K. Mehra, *Politics of Urban Redevelopment : A Study of Old Delhi* (New Delhi: Sage Publications, 1991), 41.

Figure 1.05 Historical Timeline for Shahjahanabad

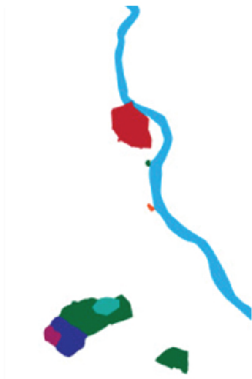


Figure 1.05.1
Shahjahanabad - 1638

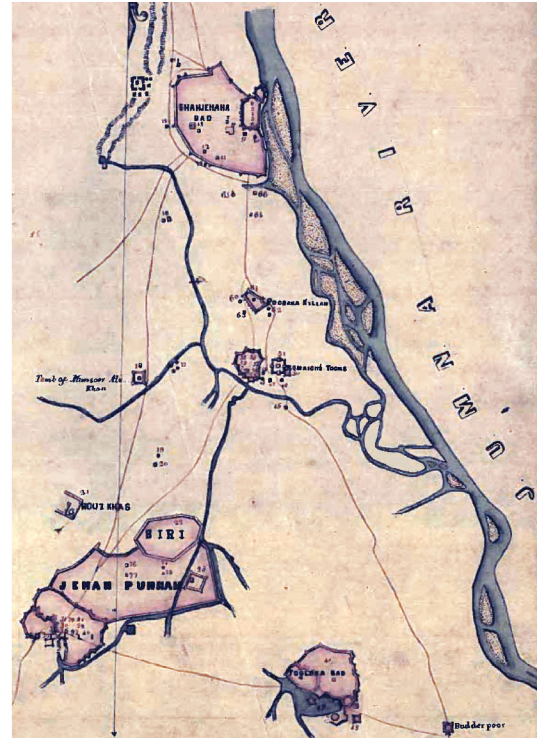


Figure 1.05.2
Antiquities of Delhi - After 1803 but before 1857

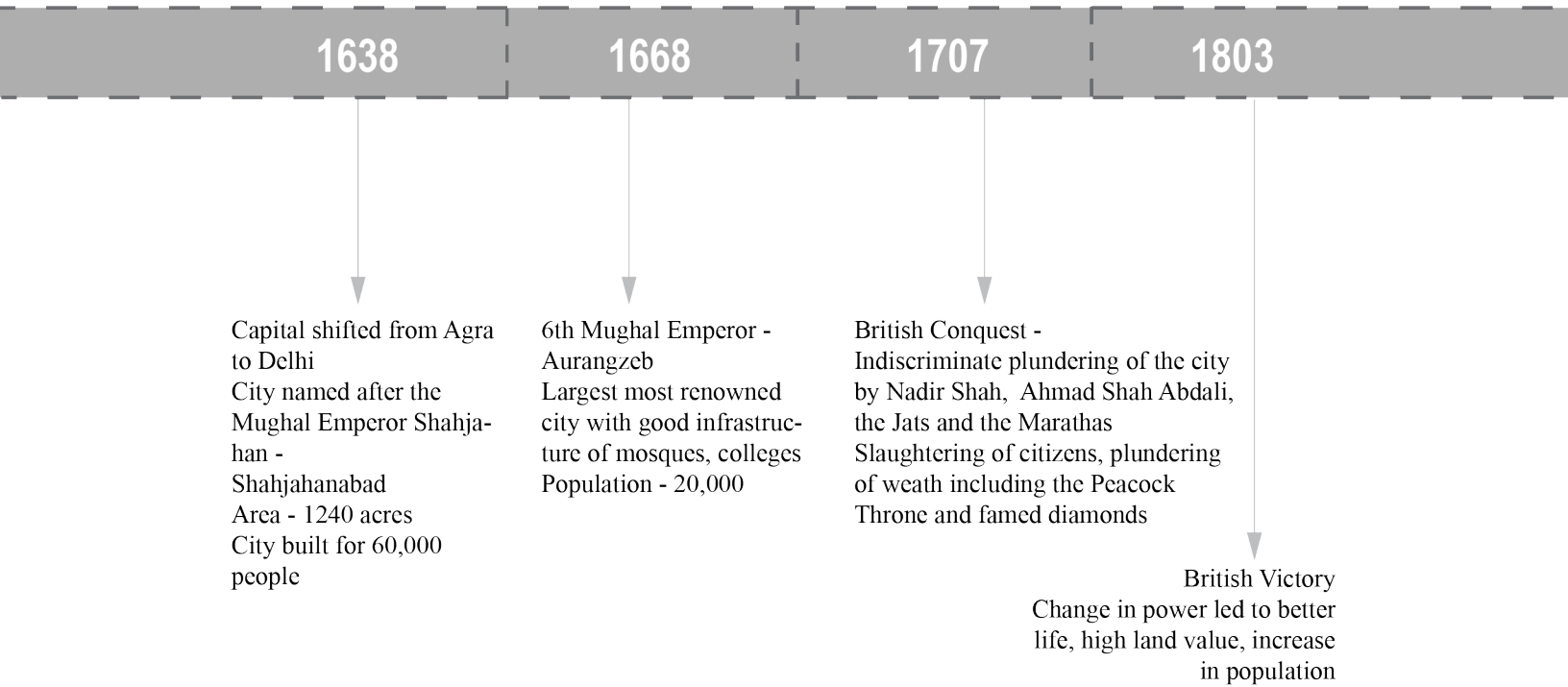




Figure 1.05.3
Seige of Delhi - Kashmere Gate 1857

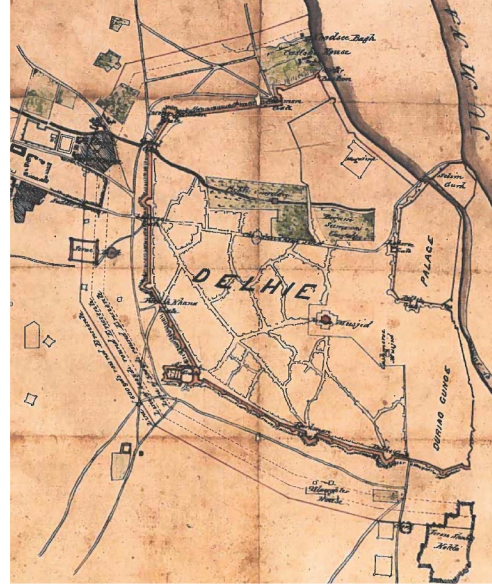
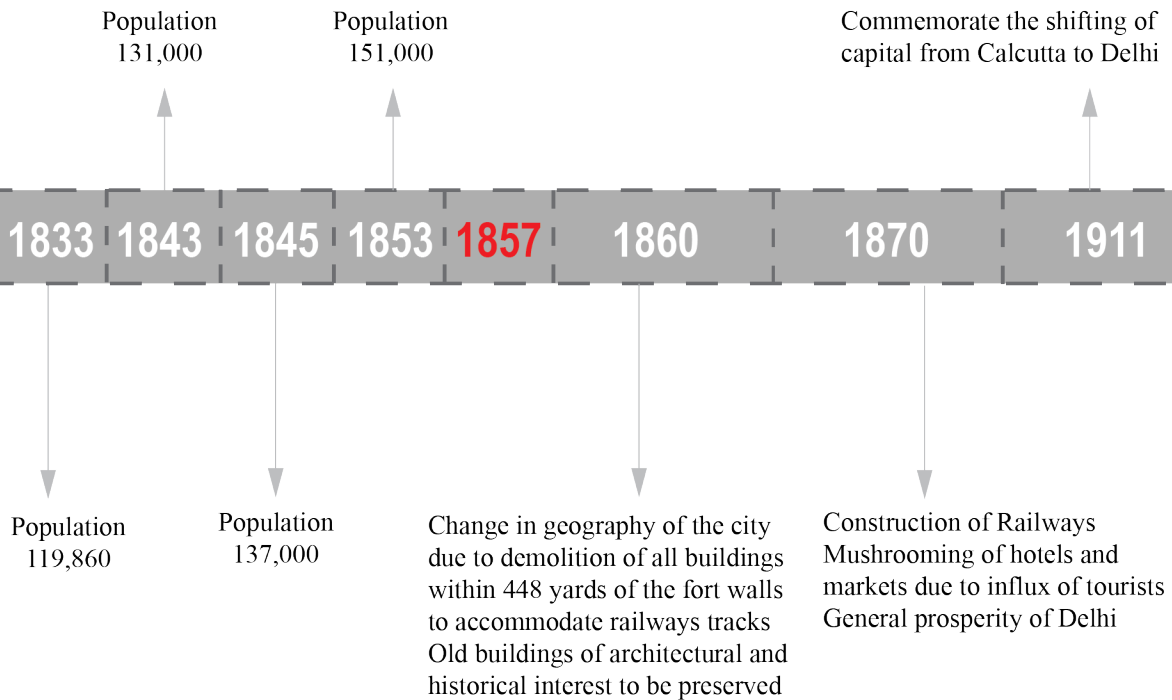


Figure 1.05.4
Esplanade round Fortification of the City



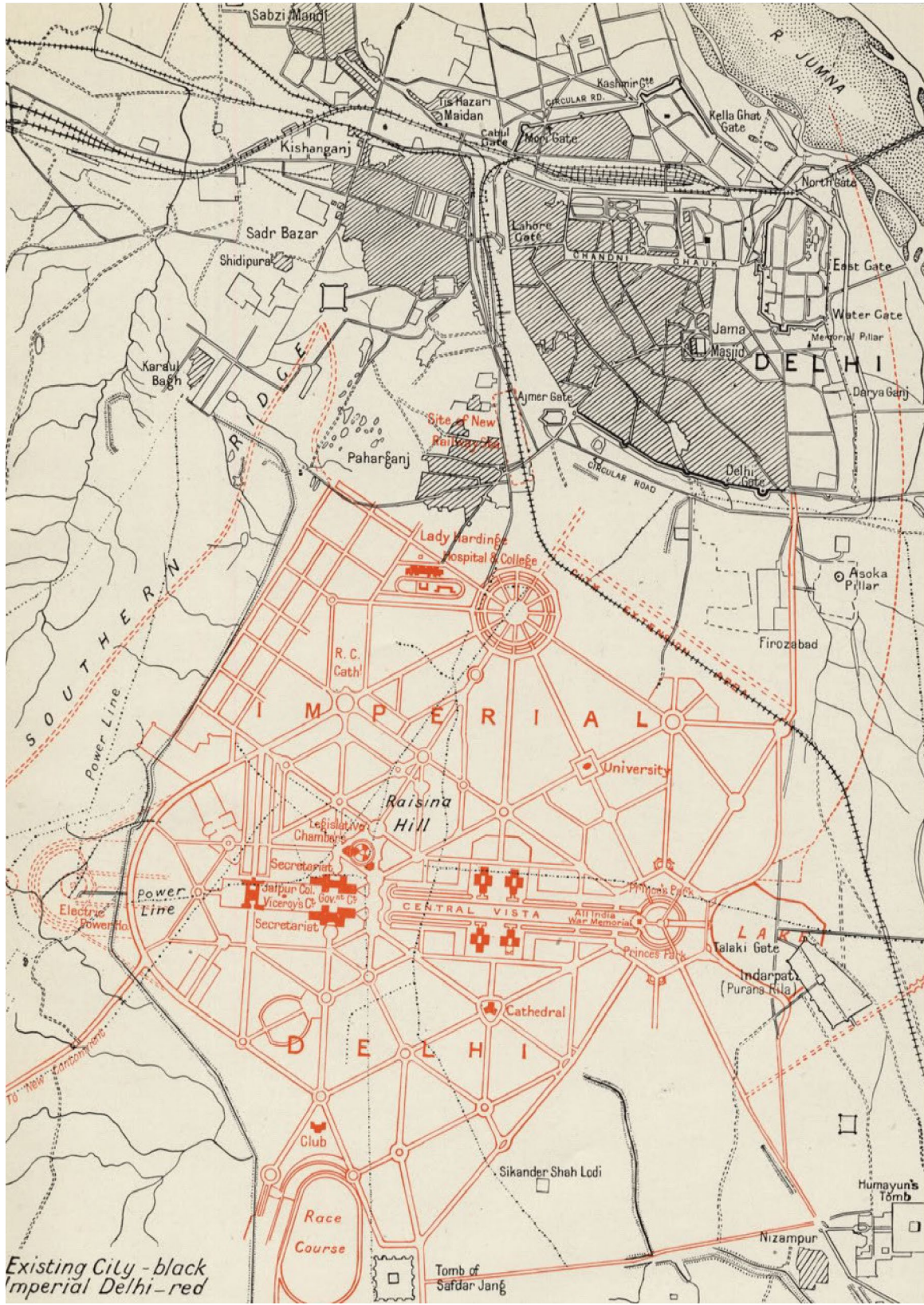


Figure 1.06 Imperial Delhi, 1910

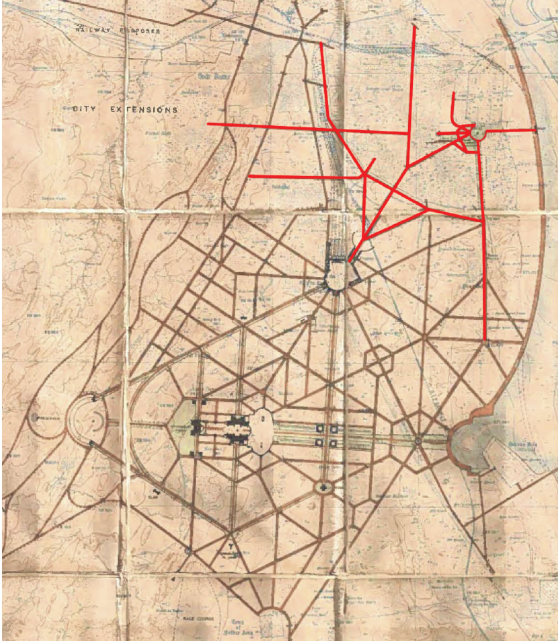


Figure 1.05.5
Conceptual layout of Imperial Delhi, 1912



Figure 1.05.6 16th August, 1947
People gathered outside Red Fort to hoist the flag after Independence

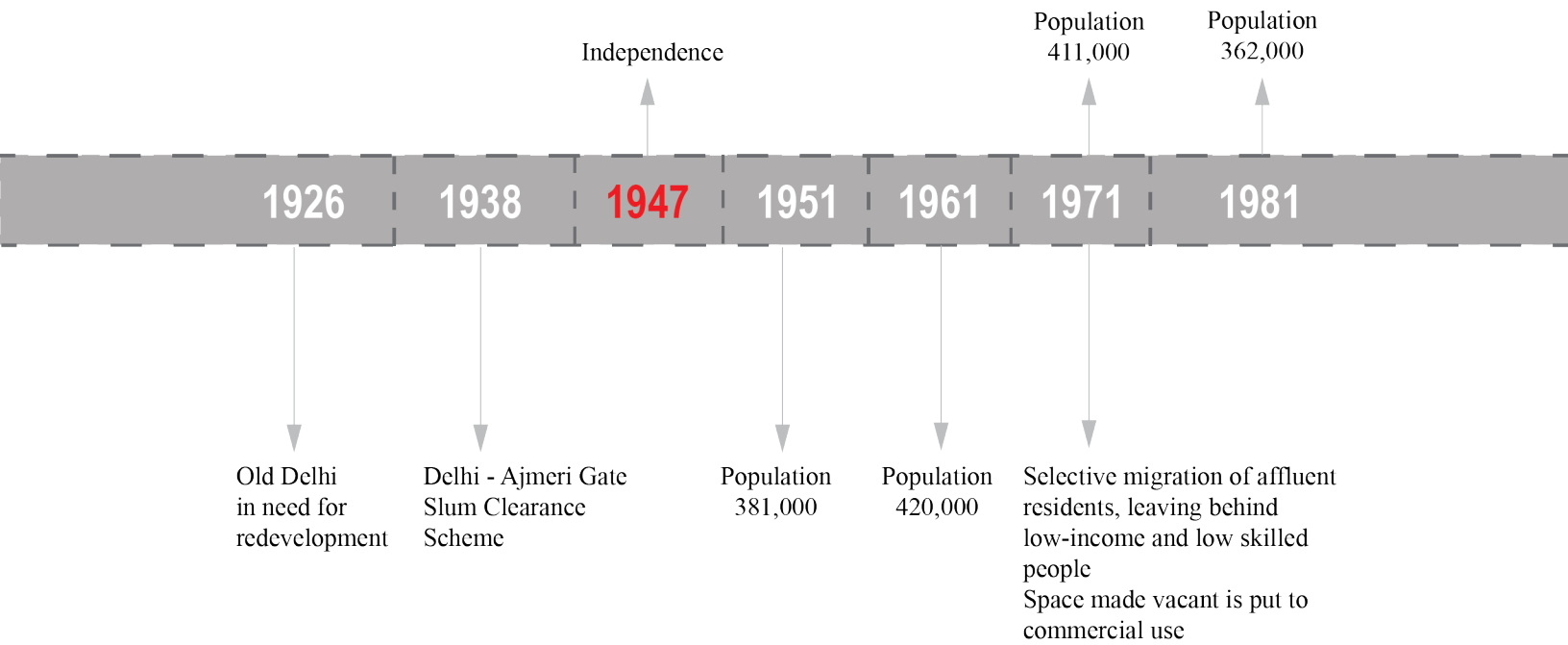




Figure 1.07 City of Delhi before the Seige, 1857





Figure 1.08 Present Old Delhi



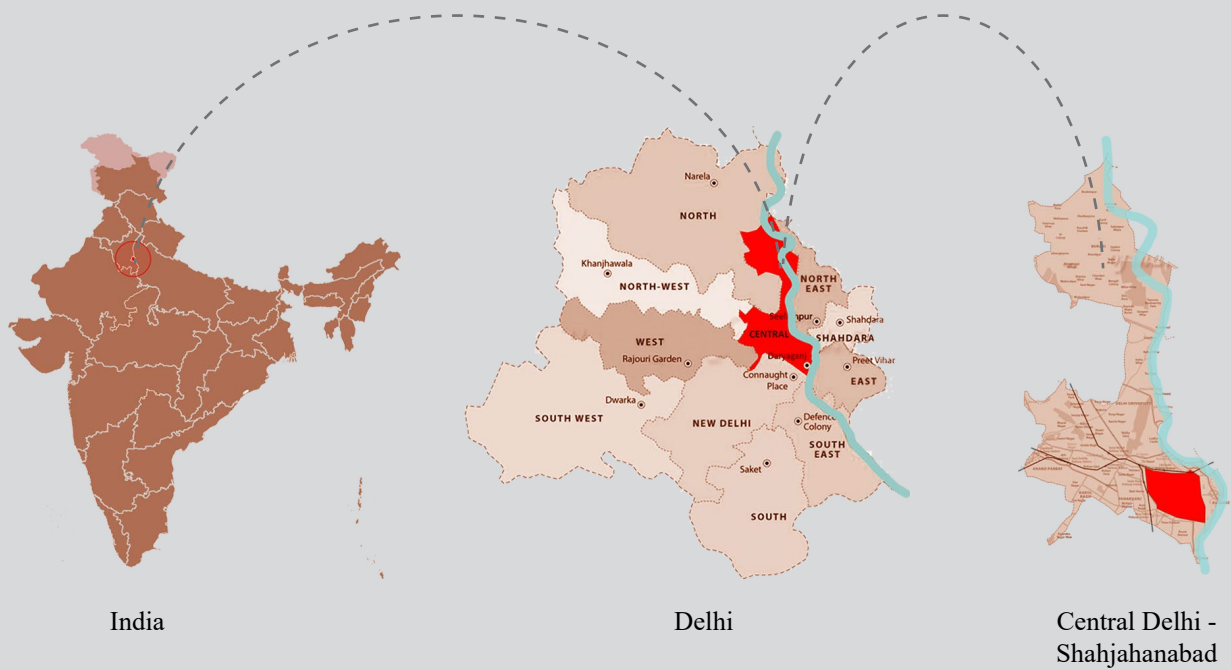


Figure 1.09 Location of Shahjahanabad

Part 01 Shahjahanabad - The Walled City of Delhi

1.1	Historical Evolution of Shahjahanabad	11
1.2	Today's Crisis of Urban Place - Growth, Density and Resilience in Old Delhi	27
	1.2.1) Population Growth and Density in Shahjahanabad	33
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Figure 1.10 Mass Migration, 1947



Figure 1.11 Train full of refugees, 1947



Figure 1.12 Families escaping from violence, 1947

1.2

Today's Crisis of Urban Place Growth, Density and Resilience in Old Delhi

Current assessments indicate that the world population will continue to increase at a rate where it is expected to top nine billion by mid-century and will require an ecological footprint equivalent to three Earths. A significant part of this unchecked growth in population is largely visible in South Asian countries, most predominantly in India. Delhi, being the political and administrative capital of India, has a current population of 19 million in the National Capital region, which is projected to rise to 36 million by 2050. Delhi is also the second most densely populated Indian city after Mumbai.

The unprecedented growth of population in Delhi can be said to have been triggered by the partition of India. The formation of India and Pakistan as separate countries led to more than fourteen million people being displaced from their native lands. In that migration of Muslims to Pakistan and Hindus and Sikhs in the opposite direction, approximately two million people lost their lives. People crossing areas adjoining the India-Pakistan border had to face barbaric violence. The repercussions were uncontrollable.¹⁵ The event in north-west India led to a massive influx of refugees, most of whom were people who fled from Punjab headed towards Delhi. Even though Shahjahanabad lost roughly one third of its population to out-migration, the city was not equipped to organize and shelter the close to a million people that came in. As a result, numerous camps were set up in the old historic forts, available vacant land, the outskirts of the city, farming fields, and many people took refuge under the boundless shade created by the old city wall.¹⁶

The following graphic charts depict the migration patterns as extracted from the Census of India, 2011 for Delhi.

¹⁵ William Dalrymple, "The Great Divide: The Violent Legacy of Indian Partition," *The New Yorker* (June 2015). <https://www.newyorker.com/magazine/2015/06/29/the-great-divide-books-dalrymple>

¹⁶ Sohail Hashmi, "The Role of Partition in Making Delhi What it is Today," *The Wire* (August 2017). <https://thewire.in/history/partition-new-delhi>

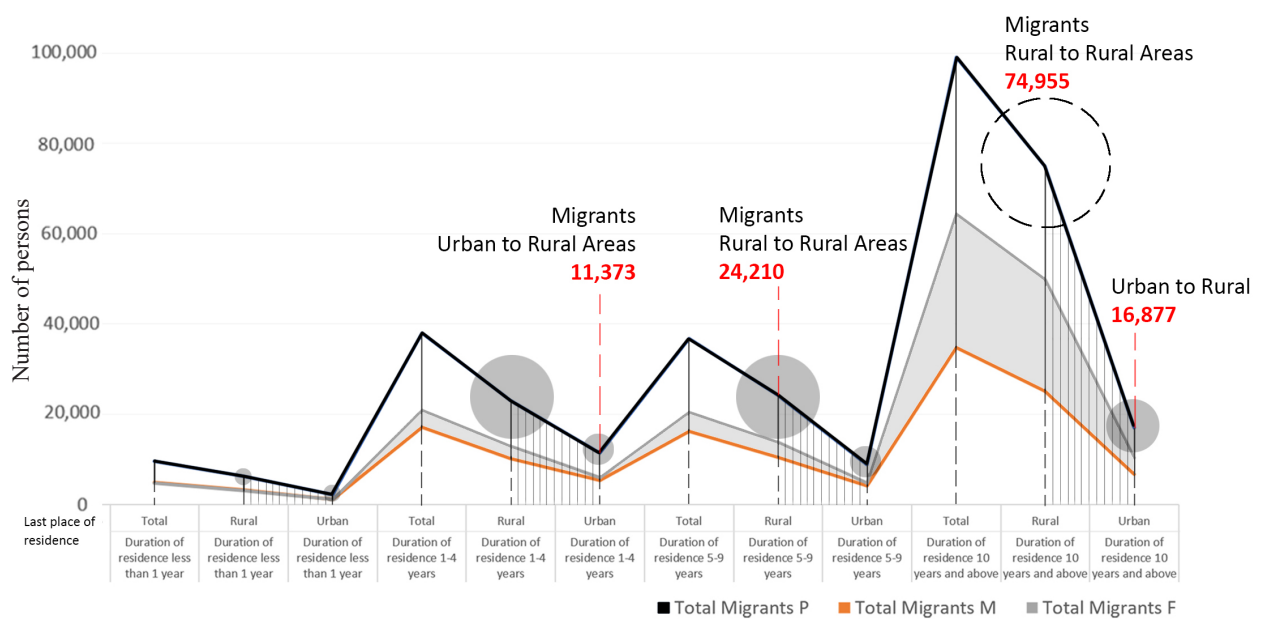


Figure 1.13 Rural Migrants - Different Durations of Residence, National Capital Territory of Delhi

Maximum migration of people is 74,955 people from rural to rural areas who have resided in their native place of residence for a duration of 10 years or more. More women are migrating from such rural areas than men.

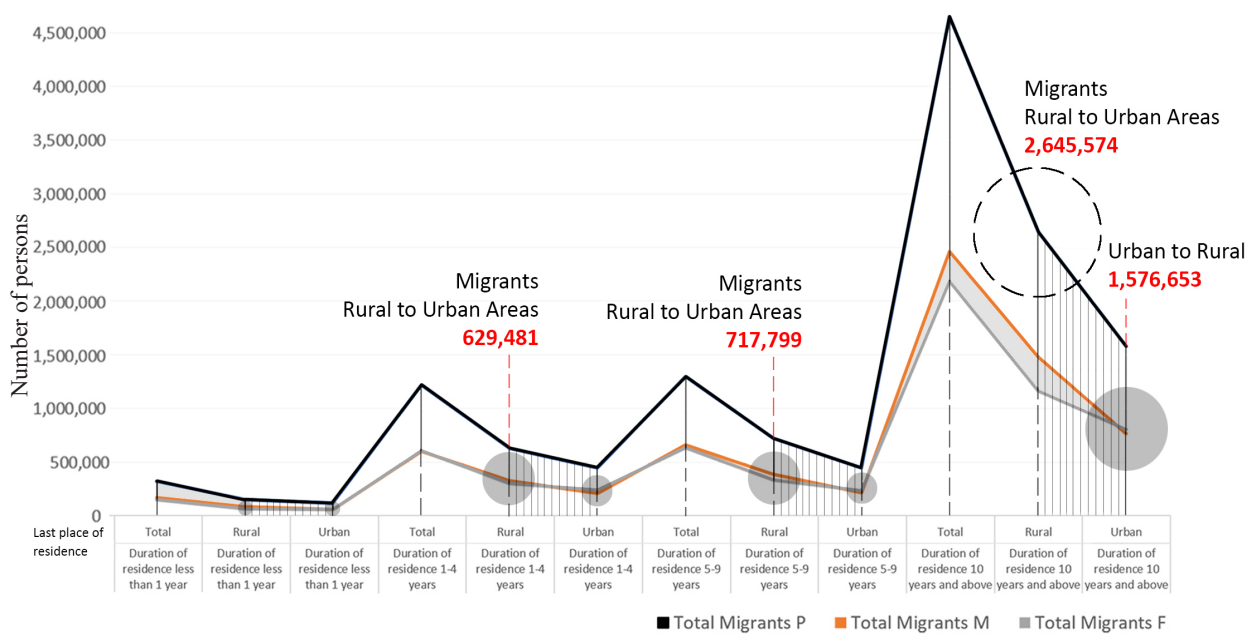


Figure 1.14 Urban Migrants - Different Durations of Residence, National Capital Territory of Delhi

Maximum migration of people is 2,645,574 people from rural to urban areas who have resided in their native place of residence for a duration of 10 years or more. More men are migrating from such rural areas than women.

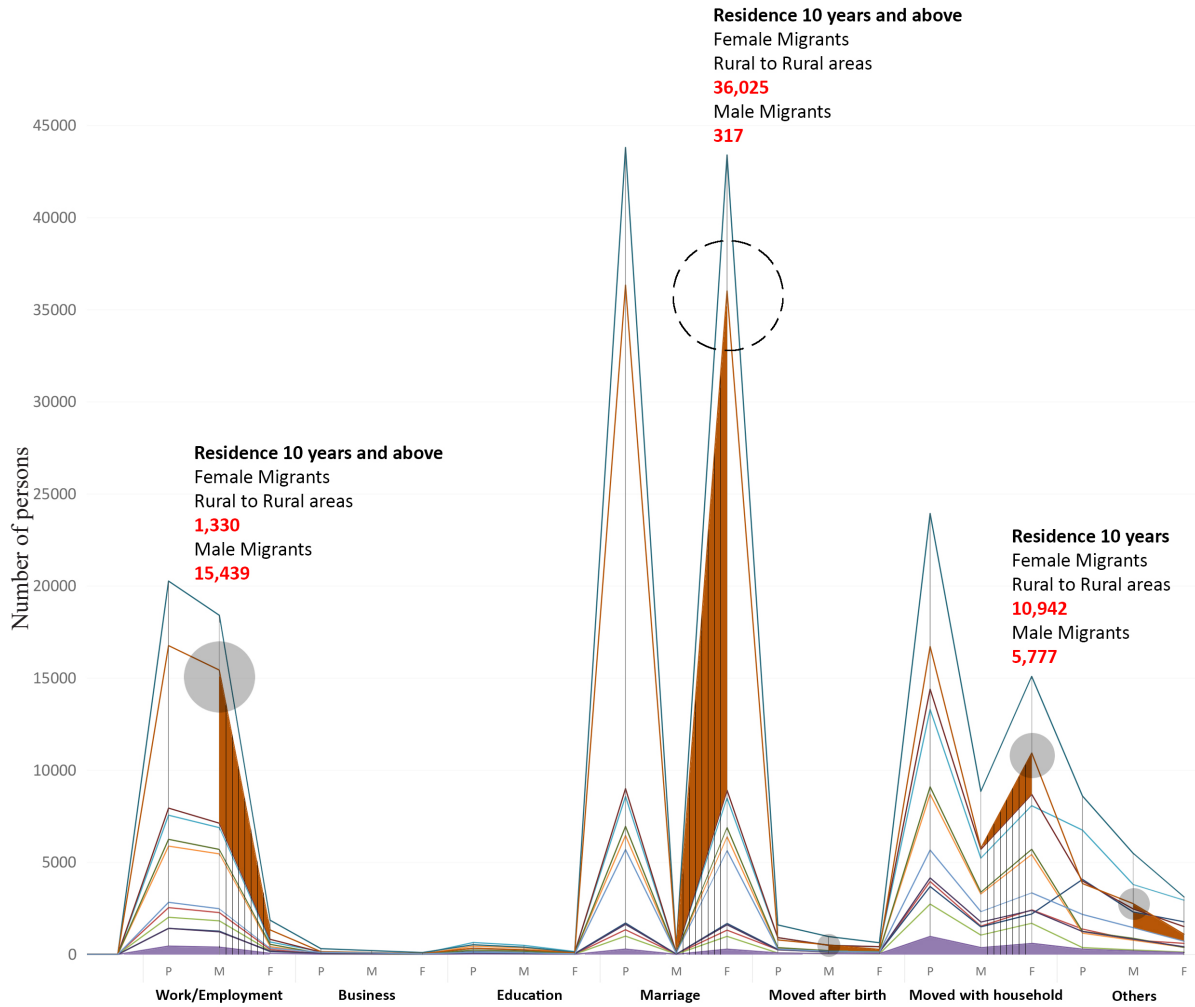


Figure 1.15 Rural Migrants - Reasons of Migration for people with different durations of residence, National Capital Territory of Delhi

Maximum migration of people from rural to rural areas is seen among women due to reasons of marriage. The main reasons for migration within men is due to work/employment.

- Total - Duration of residence 10 years and above
- Rural - Duration of residence 10 years and above
- Urban - Duration of residence 10 years and above
- Total - Duration of residence 5-9 years
- Rural - Duration of residence 5-9 years
- Urban - Duration of residence 5-9 years
- Total - Duration of residence 1-4 years
- Rural - Duration of residence 1-4 years
- Urban - Duration of residence 1-4 years
- Total - Duration of residence less than 1 year
- Rural - Duration of residence less than 1 year
- Urban - Duration of residence less than 1 year

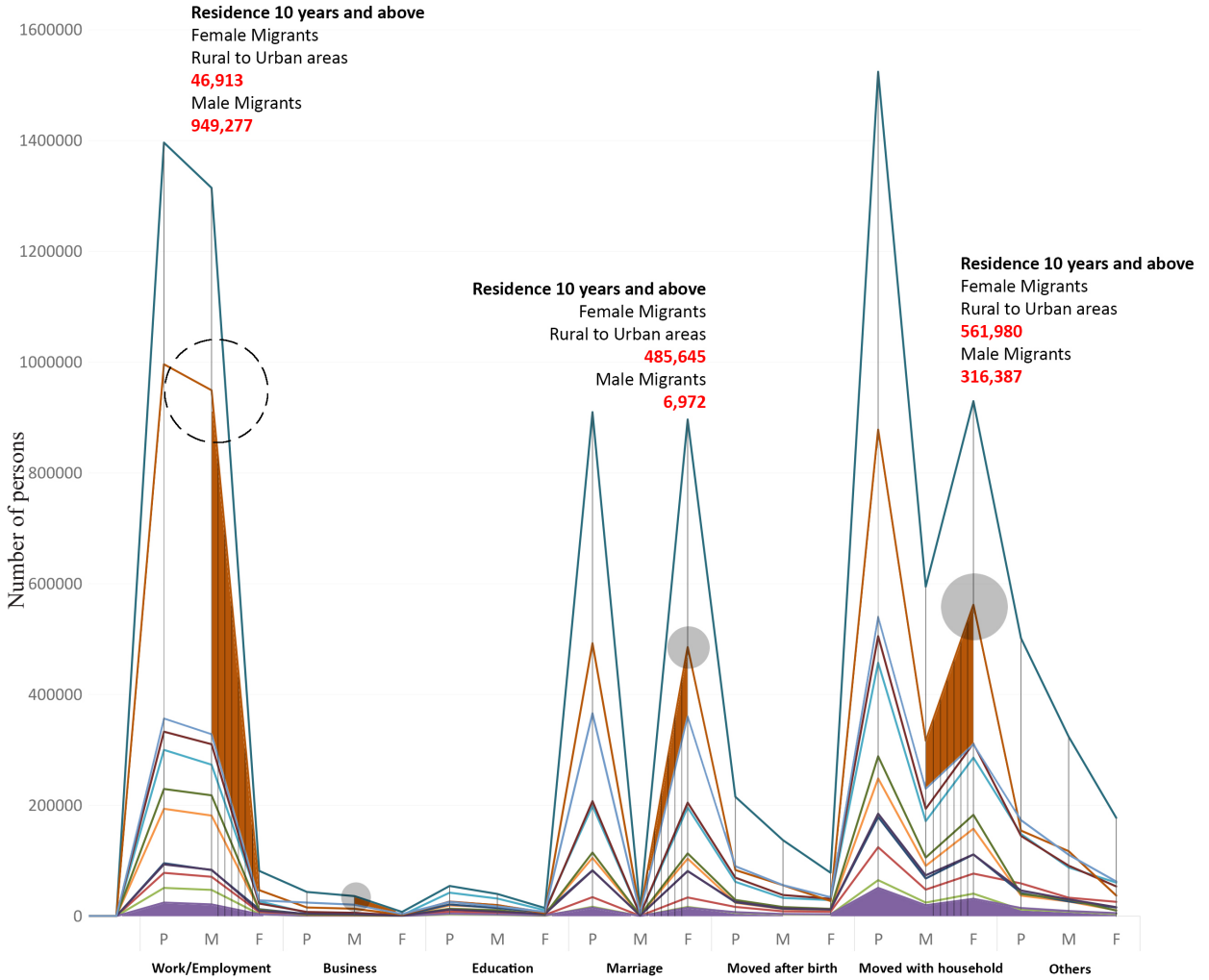


Figure 1.16 Urban Migrants - Reasons of Migration for people with different durations of residence, National Capital Territory of Delhi

Maximum migration of people from rural to urban areas is seen among men in search of work/employment. A considerable number of both men and women are migrating with their household and many women due to marriage.

- Total - Duration of residence 10 years and above
- Rural - Duration of residence 10 years and above
- Urban - Duration of residence 10 years and above
- Total - Duration of residence 5-9 years
- Rural - Duration of residence 5-9 years
- Urban - Duration of residence 5-9 years
- Total - Duration of residence 1-4 years
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- Urban - Duration of residence 1-4 years
- Total - Duration of residence less than 1 year
- Rural - Duration of residence less than 1 year
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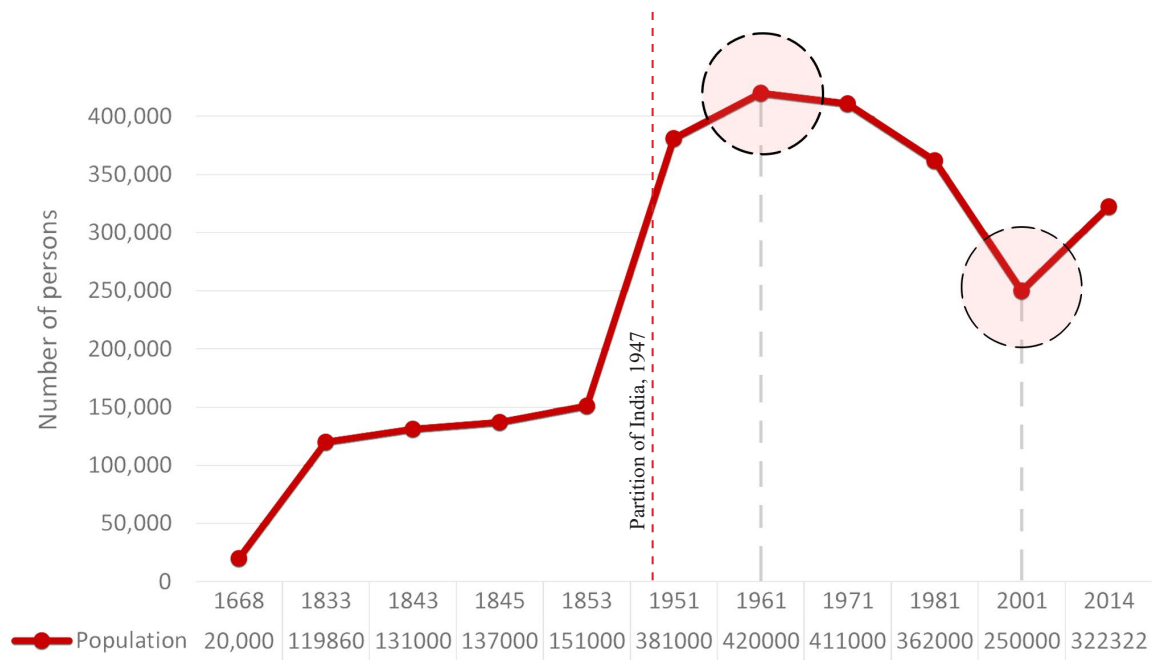


Figure 1.17 Population of Shahjahanabad

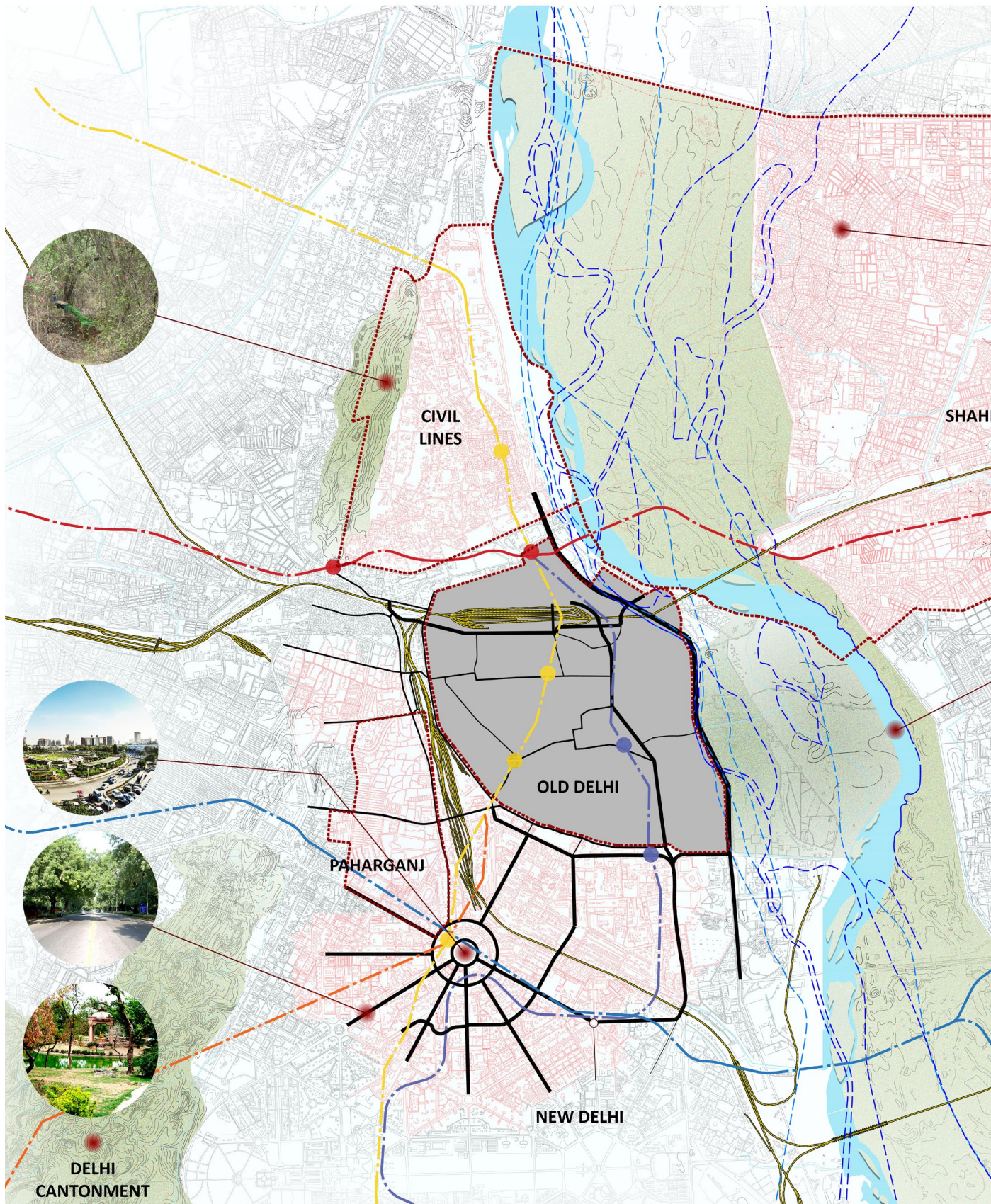
1.2.1 Population Growth and Density in Shahjahanabad

Shahjahanabad was originally built in the 1600's to be a residential town covering an area of about 7.12 sq.km. to accommodate a population of 60,000 people. In 2014, the population was recorded to be approximately 350,000 people.¹⁷ Over the course of 345 years, the walled city encountered many demographic changes. The maximum population growth was recorded in 1961 to be 420,000 people because of migration, commercialization, and urbanization. Various old mansions in Shahjahanabad were re-appropriated to house programs such as workshops, warehouses or manufacturing industries. There was also an increase in vehicular transport due to retail trade. Small pieces of vacant land were occupied for needed parking, and most of the *baghs* (gardens) were used for new urban construction. Notably, however, Shahjahanabad lost close to half of its population between 1961 and 2001 (*figure 1.17*). There has still been a gradual and steady increase in the population of Shahjahanabad ever since. More lower income people are steadily migrating into the city in recent decades.

The physical parameters of the city also determined the form of the growth. Metropolitan Delhi continues to expand relentlessly, but Old Delhi is restricted by its physical limitations. The old city is surrounded by railway lines on the northern and western side, the Yamuna river is on the eastern side and British New Delhi bounds on the southern side. This physical structure has caused Old Delhi to contain its tremendous growth in population over recent decades within its original boundaries. Symbolic, but largely psychological barriers in the mind-set of the people that reside long term in Old Delhi have prevented them from relocating. These barriers are often based on personal experiences, a sense of belonging to a place, and a fear of the consequences of displacement.¹⁸

¹⁷ Government of NCT of Delhi, "Revitalization of Shahjahanabad (Walled City of Delhi) - Project Concept Proposal," in *Shahjahanabad Redevelopment Corporation*, 12. Retrieved from <http://srdc.delhigovt.nic.in>

¹⁸ Edward Relph, *Place and Placelessness*, ed. Allen J Scott (London: Pion Limited, 2008).



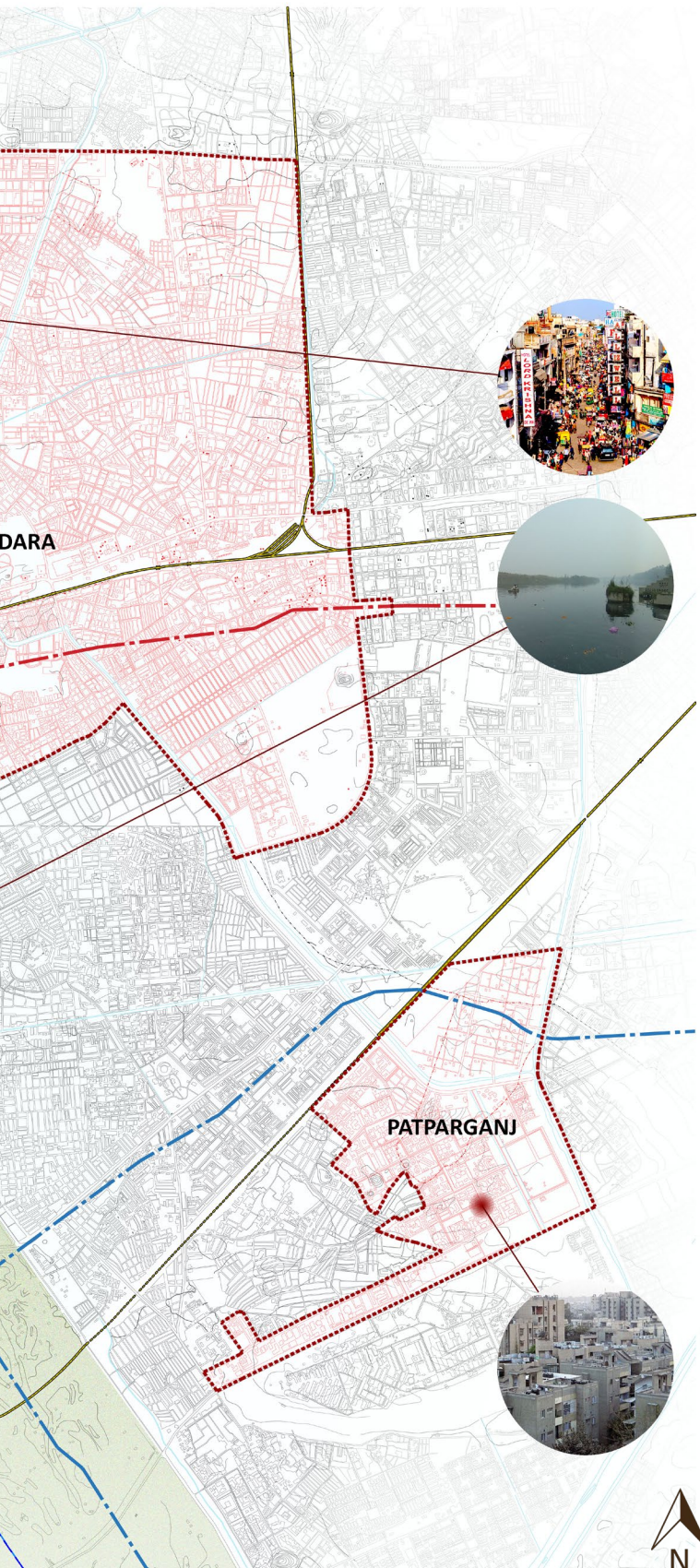


Figure 1.18 Old Delhi and surroundings

The map represents the urban structure of the city today. Old Delhi is surrounded by dense urban settlements on the East and West. Yamuna river plane has drastically shrunk over the recent decades. With railway lines surrounding the city and a network of underground metro line, the city is well connected to its neighbouring districts.

SHAHJAHANABAD - SITE



YAMUNA RIVER

YAMUNA RIVER - 1863

YAMUNA RIVER - 1911

RAILWAY LINE

DELHI METRO LINE

SUBURB BOUNDARIES

ROAD NETWORK

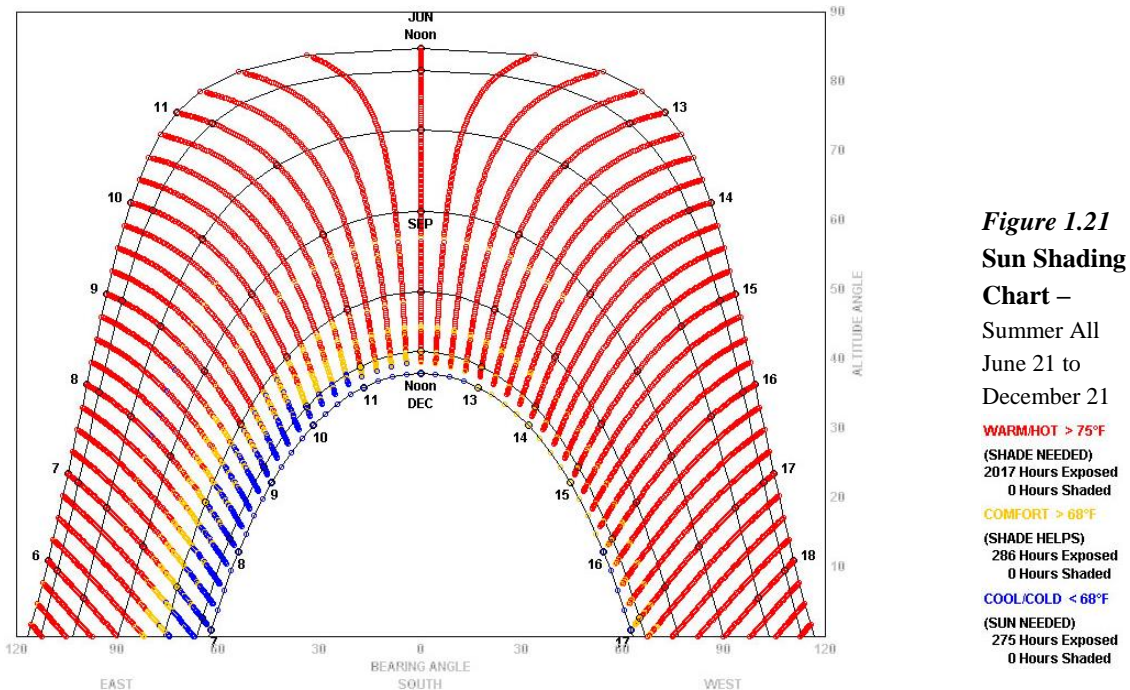
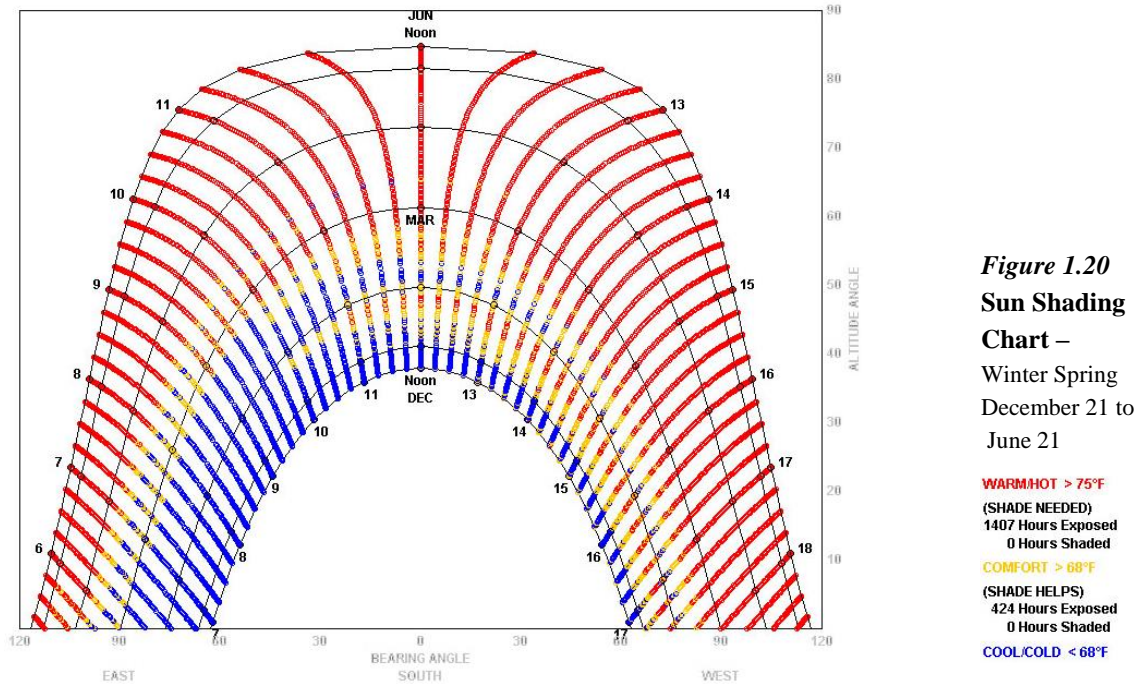


Figure 1.19 May 27, 2018 - Vertical Sun

1.2.2

Climatic conditions in Shahjahanabad

Delhi has a humid subtropical climate. The average daytime temperature in the month of May is approximately 104 deg. F and falling to 68 deg. F during winters. As the graphs suggest, the houses need light to both penetrate as well as be shaded throughout the year.



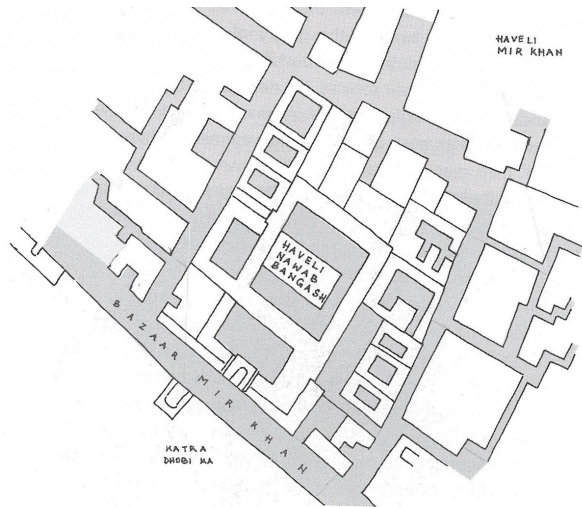


Figure 1.22 & Figure 1.23
Haveli Bangash Khan
 Fragmentation of land into several smaller plots
 Many owners sold and rented out portions of their property

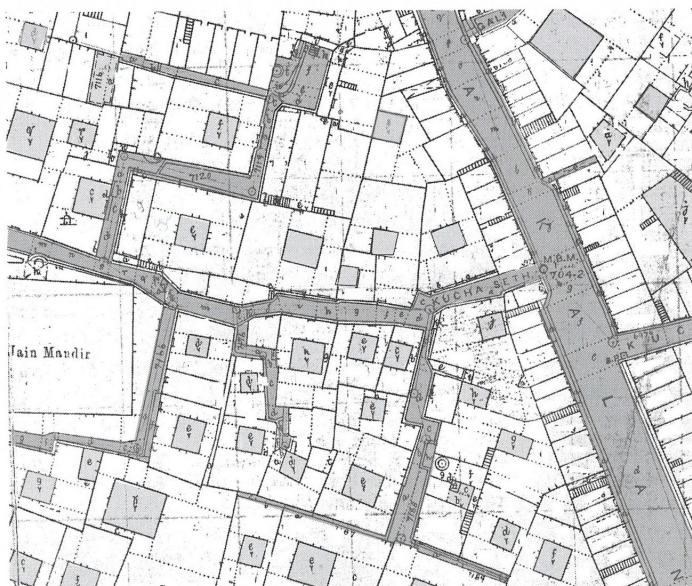


Figure 1.24
Neighbourhood in the Southern part of Shahjahanabad
 It shows the hierarchy of spaces as one moves from the street to the interior courtyards and dwelling space

1.2.3

Resilient Old Cities

*'...the ability of an ecosystem to withstand and, to some degree, absorb the effects of sometimes unpredictable and sudden changes to prevailing environmental conditions while still maintaining the majority of its structures and functions.'*¹⁹

Nina Marie Lister

Migration and displacement are among the most significant contributing factors in uneven distributions of urban population. Throughout the world, people are always in the quest to find an equilibrium between shelter and work; factors that are key concern cost of living, transportation to work, and an overall quality of life. "Housing choice is a hard calculus of confusing trade-offs," explains Mike Davis.²⁰ The location of the concentration of the urban poor in developing countries is unplanned. In Hong Kong, Singapore or China, around one third of the lower income groups reside near the urban core in older multifamily housing, whereas in many Latin American and Asian cities people have occupied colonial mansions and Victorian villas as residences, now known as *hand-me-down housing*. The grandeur and splendor of these mansions or courtyard housing or gardens, is now masked beneath excessive squatting and dilapidation.²¹ This social and spatial marginalization, as planner Vanessa Watson states, is the result of "urban modernism which fails to accommodate the way of life of the majority of inhabitants in rapidly growing, and largely poor and informal cities."²²

The high density urban form of Old Delhi results from similar combination of in-migration, overcrowding, and shortage of living space. Two fundamental reasons for the increasing gap between demand and supply for housing in Delhi are scarcity of vacant land for new development, and the unaffordability of what development built. The low Floor Space

¹⁹ Chris Reed, "Absorb/Adapt/Transform," in *Resilient Cities and Landscapes, Topos 90*, 2015, 61.

²⁰ Mike Davis, "The Prevalence of Slums," In *Planet of Slums* (London/New York: Verso), 2006.

²¹ Ibid, 32.

²² Vanessa Watson, "The Planned City sweeps the Poor Away: Urban Planning," *Progress in Planning* 72 (2009), 151-193, 175.

Index ratio (FSI) or Floor Area ratio (FAR) of a typical property in Old Delhi prevents vertical building construction.²³ The buildings in Old Delhi have been constructed to the maximum permissible height in the area, which is 15 meters. Many old and new buildings, however, exceed the restricted height limit but are limited by small building footprints.

The decline in the housing condition was set in motion due to loss of wealth among land owners under British rule. Grand mansions became commodities that the rising mercantile class could purchase. An example of this speculative land commodification is Haveli Bangash Khan, now known as Gadodia market, Asia's largest spice market. The mansion was divided into several small properties by the owners. It now operates as a spice market, a warehouse for storing goods and carts, and residence for migrant workers, laborers, and shop owners. The once huge courtyard is now built up with cramped dwellings. Urban theorist Jyoti Hosagrahar explains, "the reduced haveli not only signaled decreasing grandeur but also the increasing commodification of services."²⁴ People started operating their professions independently. Under similar conditions of destitution, Mumani Jan's mansion was auctioned. The new owners were unable to maintain the original structure and most likely never intended to do so. Hosagrahar continues:

'At places the doorways caved in and the walls collapsed; the roofs sagged here and there, and the projecting shares broke off. Each arched space in the pavilions is a home and each home is the residence of a bustling household with many children. Within the (small subdivided) space each family eats and cooks (and leads their life).'²⁵

The common building typology in Shahjahanabad—of mansions with courtyards and the hierarchy of separate spaces for men and women to socialize—began to change into newer

²³ Delhi Development Authority, *Master Plan for Delhi 2021* (New Delhi: Delhi Development Authority), p.44, p. 153. <https://dda.org.in/planning/mpd-2021.htm>

²⁴ See Jyoti Hosagrahar, *Indigenous Modernities - Negotiating Architecture and Urbanism* (London & New York: Routledge, 2005), 28.

²⁵ *Ibid*, 30.

typologies like single-courtyard houses, ordinary flats, and one or two room accommodations.

The urban architectural fabric of older cities like Old Delhi as well as developing urban centers, demonstrates the resilience to be a functioning human ecosystem that absorbs and withstands the disruption caused by social, cultural, physical, and environmental events. Shahjahanabad has demonstrated such resilience against accelerated and incessant growth in population over the past years. Decrepit heritage buildings, even today, combat neglect and abandonment by the residents and landowners. The vulnerability of such spaces must be understood as an opportunity to transform them into places deep-rooted in culture and productive environments. Old Delhi must not be recognized as a space devoid of any potential and lost to an overwhelming destructive decay. Rather, it should be acknowledged as a space of resourcefulness and creativity.



Figure 2.01 **Photograph** - Man enjoying the hustle bustle of the street

Part 02 The Present Situation

2.1	Existing Apparatus of Development	44
2.2	Old Delhi Urban Renewal Initiatives	50
2.3	Mapping Shahjahanabad	60
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2.1

Existing Apparatus of Development

Transformation of physical and social dynamics of cities is a global phenomenon that is heavily dominated by the “apparatus.” In this form of hegemony, the state operates through a framework consisting of multiple active and passive actors. The New Delhi urban area is the seat for both the State Government of Delhi and the Government of India. The State Government of Delhi is the governing body for the National Capital Territory of Delhi (NCT) and its 11 districts. Delhi has more than one hundred civic organizations that manage and monitor land use, water, electricity, transport, etc. The NCT has three municipal corporations, namely Municipal Corporation of Delhi (MCD), New Delhi Municipal Corporation (NDMC) and Delhi Cantonment Board (DCB). The MCD is responsible for providing civic services to the 8 districts out of 11 that are under its jurisdiction. The Delhi Development Authority (DDA) plays an important role in planned land development and distribution. Including many other agencies along with the MCD and the DDA, these organizations report to different departments and ministries. The duality in governance in Delhi makes for a confounding organizational setup. While the MCD, Delhi Police, the DDA and the Central Public Works Department (CPWD) report to the Central Government, the Public Works Department (PWD), the Delhi Jal Board (DJB) and the Delhi Transport Corporation (DTC) report to the State Government.

The Shahjahanabad Redevelopment Corporation (SRDC) was set up in 2008 as a Special Purpose Vehicle (SPV) to develop a cohesive framework for the revitalization of Old Delhi. The objectives of the SRDC include providing civic services, developing plans/programs for the conservation of the built and natural heritage, to help in the implementation of plans through models like public private partnership and promote the re-use of old buildings. SRDC operates under the Government of the National Capital Territory (NCT) of Delhi.

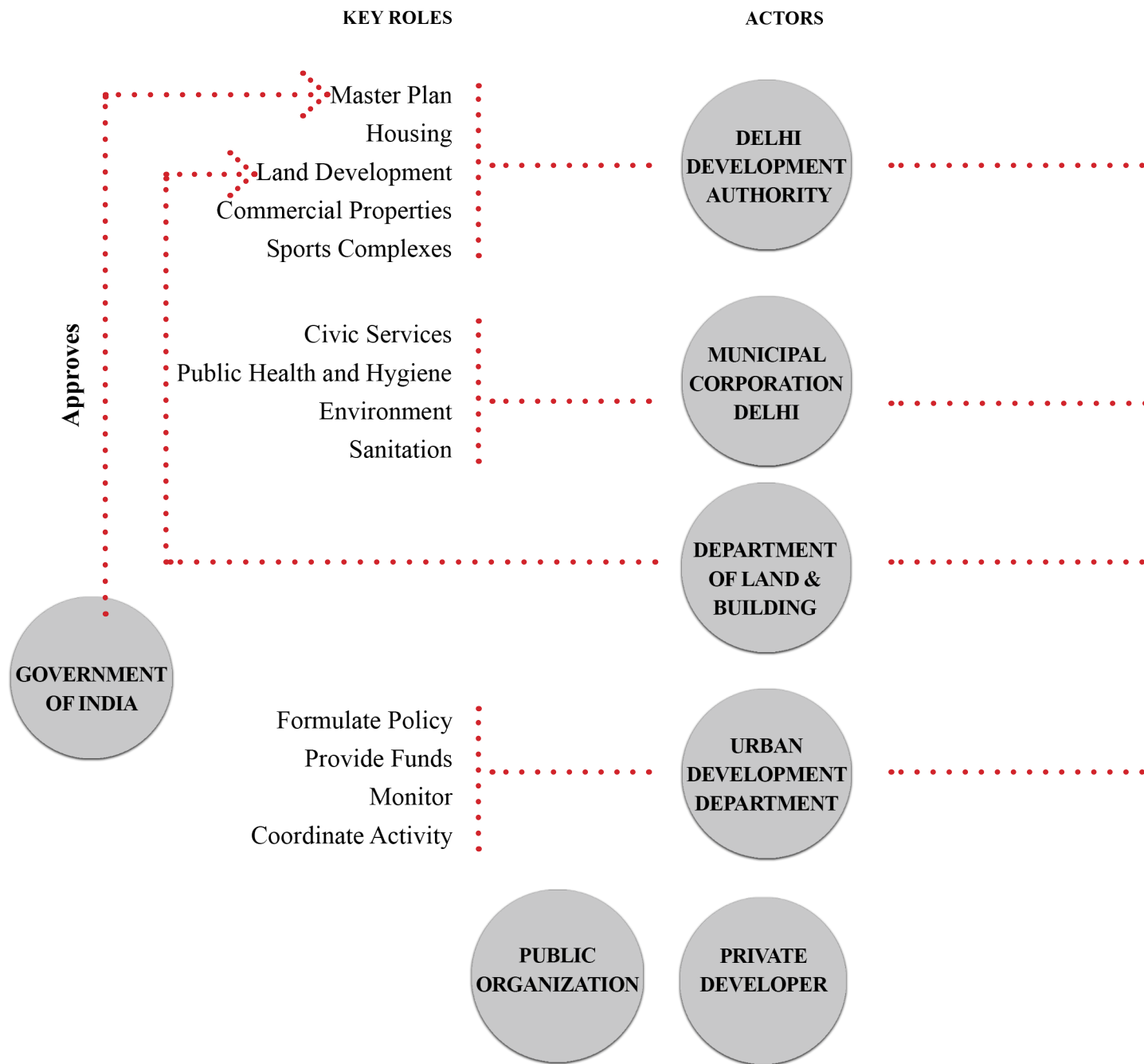
All the existing actors combine to form a setup that is reliant on a top-down decision-making process. The governing actors operate on a scale that disregards the need for involvement of local participatory organizations. Land owners,

people renting houses, the floating population, migrants, and the homeless play the role of passive actors (*figure 2.02*). Until 2013, under the Land Acquisition Act of 1894 (a law introduced during the British era), it was not a challenge to acquire land for public purpose. The compensation to the people for the land was decided upon by the authorities, which often led to exploitation and displacement of people, without the latter being relocated or properly compensated. Land owners were submissive to the law. The Land Acquisition Act of 2013, however, compensates land owners reasonably under many categories.²⁶ The Act could be beneficial in the redevelopment of Shahjahanabad. There are numerous abandoned sites that remain under the ownership of private land owners. A strategic possibility of redevelopment and distribution of such ownership is proposed as a driver of overall urban development in the next chapter.

For policies and redevelopment plans to influence the lives of the people and also empower the passive actors, various other organizations can be effectively included as part of the decision-making process. Locally practicing architects and planners, contractors, and non-government organizations can assist in matters of planning, construction, and execution.

²⁶ For detailed information on the Land Acquisition Act, 2013, see *Land Acquisition Act*, *Wikipedia*, retrieved from https://en.wikipedia.org/wiki/Land_acquisition_in_India

Figure 2.02 Governing and existing actors



HOW IT WORKS

• **Acquire land** from land owners at price determined by DDA

• **Undertake Master planning**

• **Develop land**

• **Divide and Sell land** piece by piece to Private Developers and Public Organizations

• **Construction**

• **Upkeep and Maintenance**

• Large-scale acquisition of land for Planned Development of Delhi under Land Acquisition Act of 1894 and placing it at the disposal of DDA for development and distribution

• Plan for infrastructural facilities, services and coordinate activities of local bodies - MCD, NDMC, DJB etc.

Land Acquisition Act 2013 compensates, extends rehabilitation and resettlement to land owners under certain categories

LAND OWNERS

Passive Actors

RENTERS

FLOATING POPULATION

MIGRANTS

HOMELESS

Monitor

3 mega plans, 50 yrs, same Old Delhi

FAILED PLANS AND A FESTERING CITY As each Master Plan mirrors the other in grand promises and utter failure, levels are being used as godowns and wholesale markets are being run out of dangerously cramped lanes



A plan mayhem in the royal city

Promises made for the revamp of the Walled City in successive Master Plans have not been delivered



INFRA CRUMBLING UNDER POPULATION PRESSURE



LIVING QUARTERS OR MARKETPLACE?

- 1 Bhagirath Palace Electrical goods and medicines
- 2 Lajpat Rai Market Electronics goods
- 3 Dariba Jewellery
- 4 Kinari Bazar Bridal wears (wedding dresses), laces
- 5 Esplanade Road Watches, cycles, camera, antiques, crackers
- 6 Nai Sadak Books, bridal wears
- 7 Chawri Bazar Paper, sanitary wears
- 8 Ajmeri Gate Plastic, iron, water pumps
- 9 Lahori Gate Cereal, grains
- 10 Lal Kuan Hardware, cooking equipments for sweet meat shops
- 11 Khari Baoli Spices, dry fruits, beetel leaves, tobacco

The city in numbers

- 40 Commercial markets
- 56 Commercial streets
- 325 Havelis
- 783 Heritage structures including 229 historical buildings
- 41 Archeological Survey of India-protected structures
- 554 Heritage structures identified by state archeological dept

Promises which were never fulfilled

- Restrict commercial activities
- Create parks, schools, and dispensaries in dilapidated houses
- Redevelop crucial roads
- One-way traffic in the area
- Shifting of squatters
- Relocate industries
- Facilitate thinning of population
- Conserve heritage value while retaining residential structures
- Street patterns to be restructured with linkages from the Metro stations
- Restrict entry of heavy goods vehicles
- Ban on storage of hazardous/inflammable commodities
- Develop adequate parking spaces in the area



A plan mayhem in the royal city

Promises made for the revamp of the Walled City in successive Master Plans have not been delivered



INFRA CRUMBLING UNDER POPULATION PRESSURE

Spread over about 600 hectares, Shahjahanabad was planned for merely 60, 000 residents. Today, over three lakh people live there

1961	4.2 lakh
1981	4 lakh
2017	3.25 lakh

LIVING QUARTERS OR MARKETPLACE?

- 1 Bhagirath Palace Electrical goods and medicines
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- Ban on storage of hazardous/inflammable commodities
- Develop adequate parking spaces in the area

they say

- Implementation has been a problem. The project needs to be worked upon in an integrated manner. Residents have to be taken on board.
- Last year, around Diwali, there was a fire on the main road. The firemen took an hour to reach the site though the fire station is just a kilometre away.
- It certainly requires an integrated approach or inclusiveness, keeping in mind all stakeholders including number of homeless and poor people.

AK JAIN, former commissioner (planning)
SANJAY BHARGAVA, Chandni Chowk Sarv Vyapar Mandal
NITIN PANIGRAHI, Shahjahanabad Redevelopment Corporation

Figure 2.03 Newspaper Article: Discussion on the crumbling infrastructure of Shahjahanabad due to the failed plans for development of Delhi.

Part 02 The Present Situation

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Redevelopment projects for dense cities are always inextricably urban in nature – the idea that drives the centrality of the project is its urban dimensions, be it a proposal for housing, local sanitary developments, community parks etc. It is an ongoing process of articulations with the urban. However, in this process, governments, authorities at city level, politicians, planners, architects etc., typically fail to acknowledge the impact of urban renewal projects on people that will engage with them in their everyday life. As Mehra states, “the solution probably lies in a comprehensive look and an integrated approach, combining a macro–approach as preventive measure and a micro–approach as a curative measure.”²⁷

The map of Old Delhi around 1850 (figure 2.04), represents the stable urban form of the city at the time and reflects a sense of cohesion and control. The city has evolved overtime and accepted two radically different traditions – the Mughal empire and the British colonial empire while incorporating the vernacular-built fabric distinctive to Indian cities. Whereas, figure 2.05 represents the presently effective Master Plan of Delhi 2021. From an urbanisable area of 448 sq.km in the first master plan of Delhi in 1962, the city today is a metropolitan agglomeration, with an urbanisable area of 978 sq.km and is expected to reach a population growth of 23 million by 2021. Old Delhi and British Lutyens Delhi are today, only a small part of this urban sprawl.

Shahjahanabad is the historic city centre of Delhi which is experiencing the pressure created by such massive growth in population throughout Delhi. The historical artifacts of the city like mosques, forts, temples etc., the traditional handicrafts communities, the textile wholesale markets, and the public transport connectivity to neighbouring districts are the reasons for many people migrating to the city in search of employment and livelihood. This phenomenon is causing pressure on the existing built fabric of Old Delhi.

²⁷Ajay K. Mehra, *Politics of Urban Redevelopment: A Study of Old Delhi* (New Delhi: Sage Publications), 1991, 58.

The present master plan of Delhi, 2021 segregates the Walled City and its extensions, under a ‘special area’ redevelopment plan (figure 2.06) because of its high density urban form. The planning authorities comprehend that the city requires a special redevelopment framework. In 2008, Shahjahanabad Redevelopment Corporation was setup as a Special Purpose Vehicle (SPV) to develop a cohesive framework for the conservation of the built and natural heritage of the walled city of Delhi.

Special Area regulations for Shahjahanabad (Walled City) as mentioned in the Master Plan of Delhi, 2021:²⁸

The most important part of the Special Area is the traditional City of Shahjahanabad, part of which is a core of the business district. The area is prone to commercialization, particularly with improved accessibility due to the Metro Rail Transit (MRTS). Traditional areas in Walled City need special treatment to conserve its heritage value while retaining the residential character. Permission of activities in use premises and building control regulations shall be as follows in Old Delhi:

1. The area surrendered for public facilities or for heritage value to be used as tradable FAR (Floor Area Ratio).
2. Street pattern: The street pattern in residential area is proposed to be restructured with linkages from the metro stations.
3. Subject to preparation and approval of an Integrated Redevelopment Scheme, higher FAR (Floor Area Ratio) and other development controls can be considered.

²⁸ The above noted data is extracted from Delhi Development Authority, *Master Plan for Delhi 2021* (New Delhi: Delhi Development Authority), 27. Retrieved from <https://dda.org.in/planning/mpd-2021.htm>.

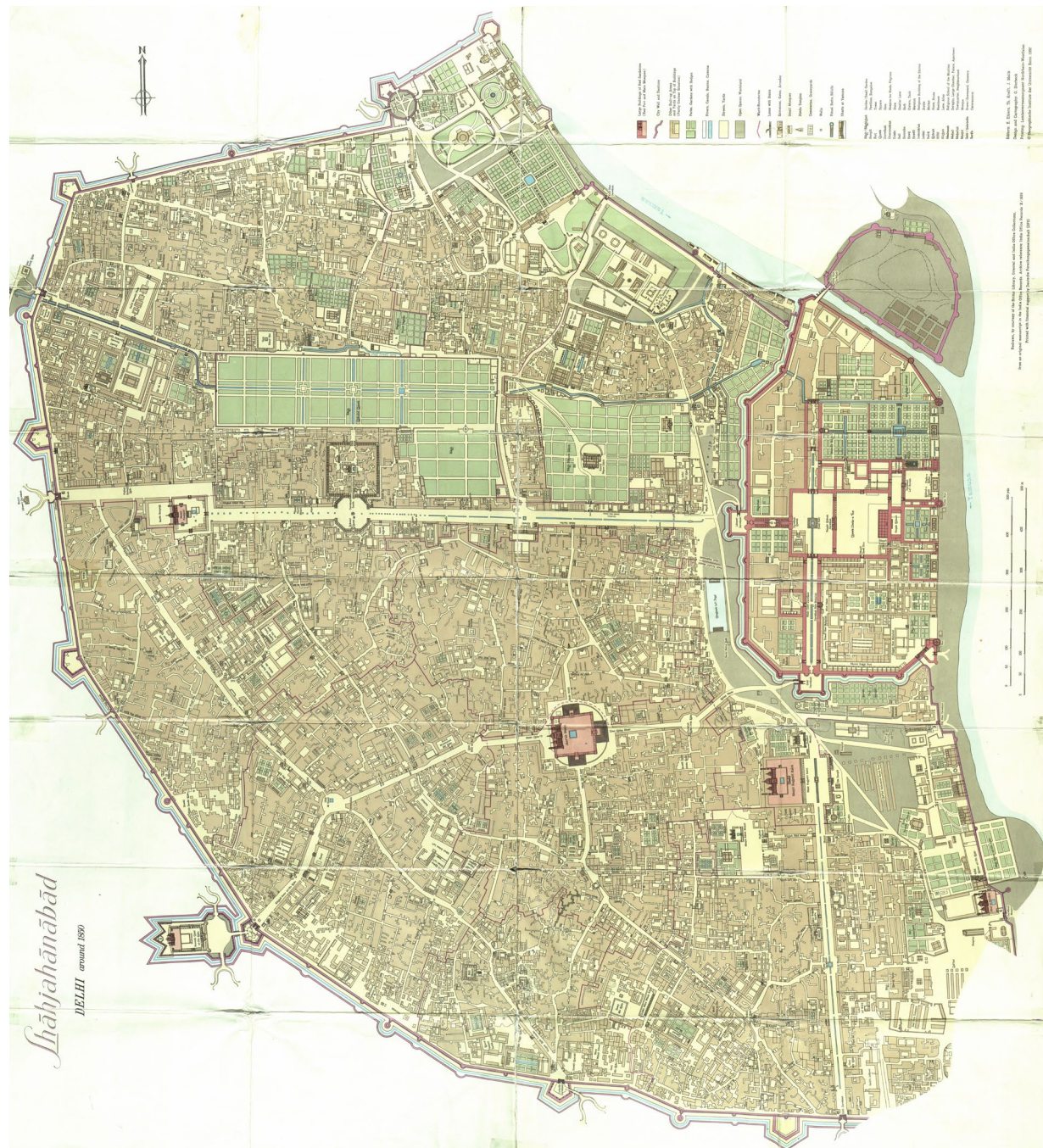


Figure 2.04 Shahjahanabad circa 1850

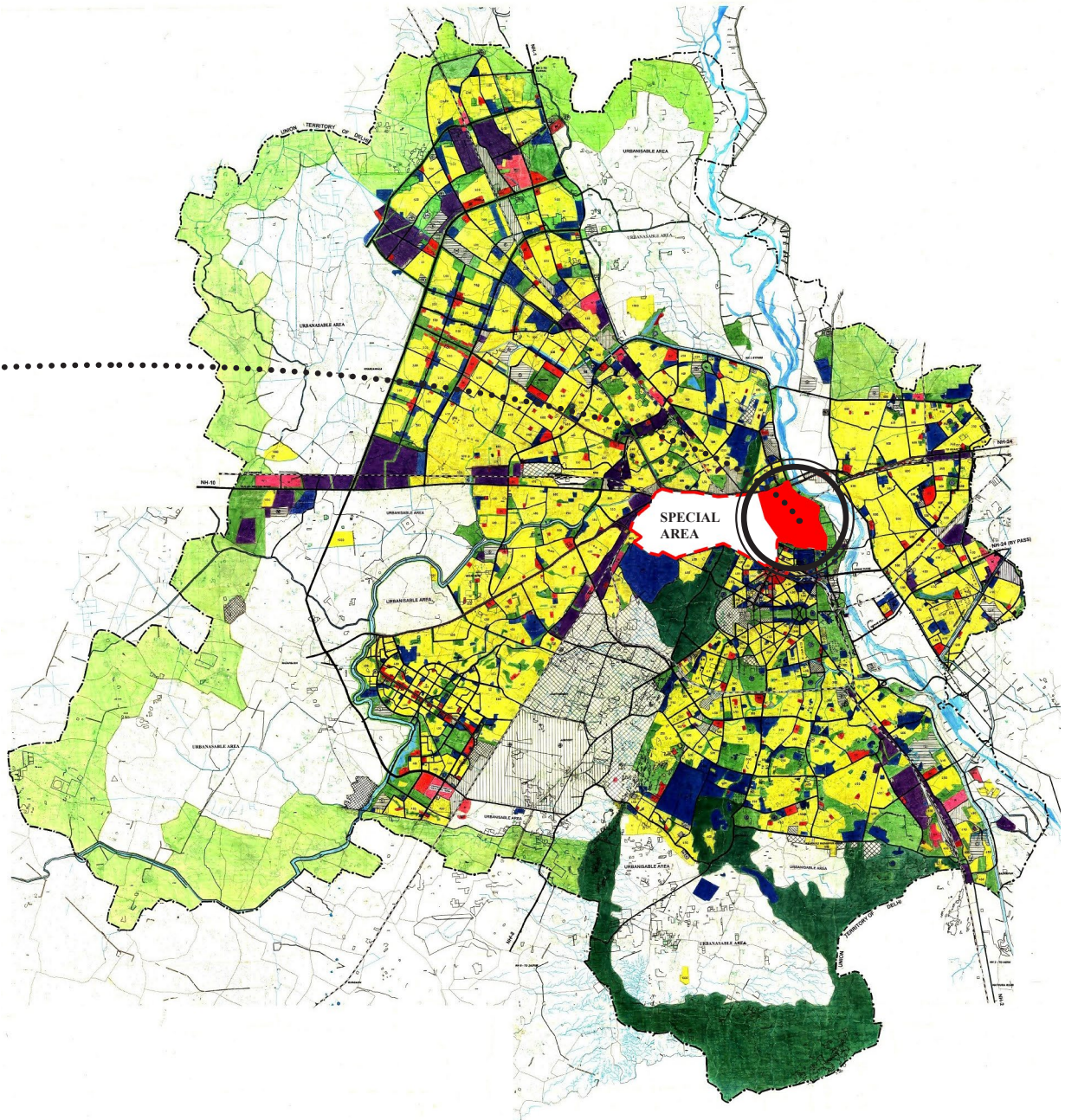
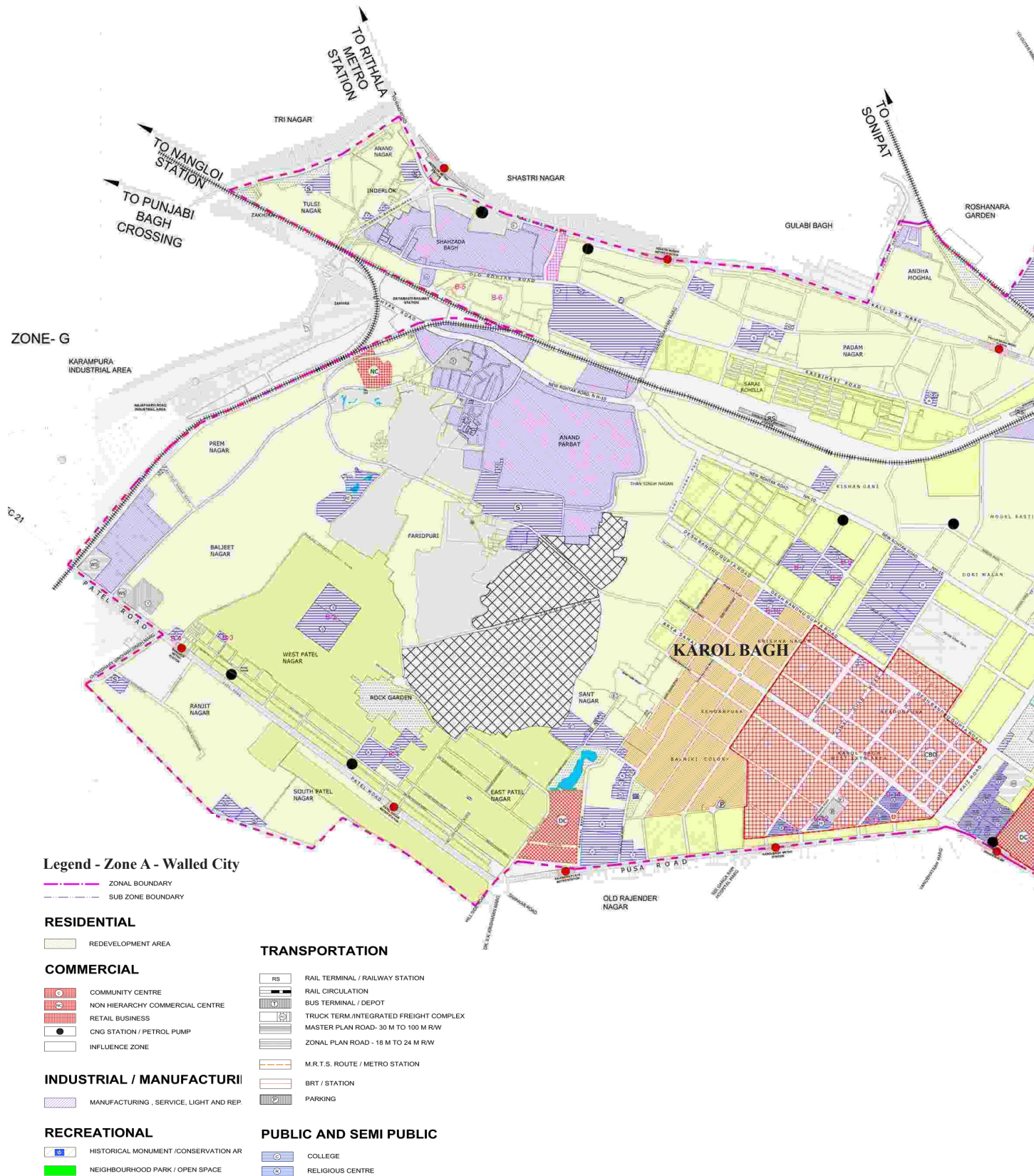


Figure 2.05 Master Plan of Delhi, 2021 (National Capital Territory of Delhi)

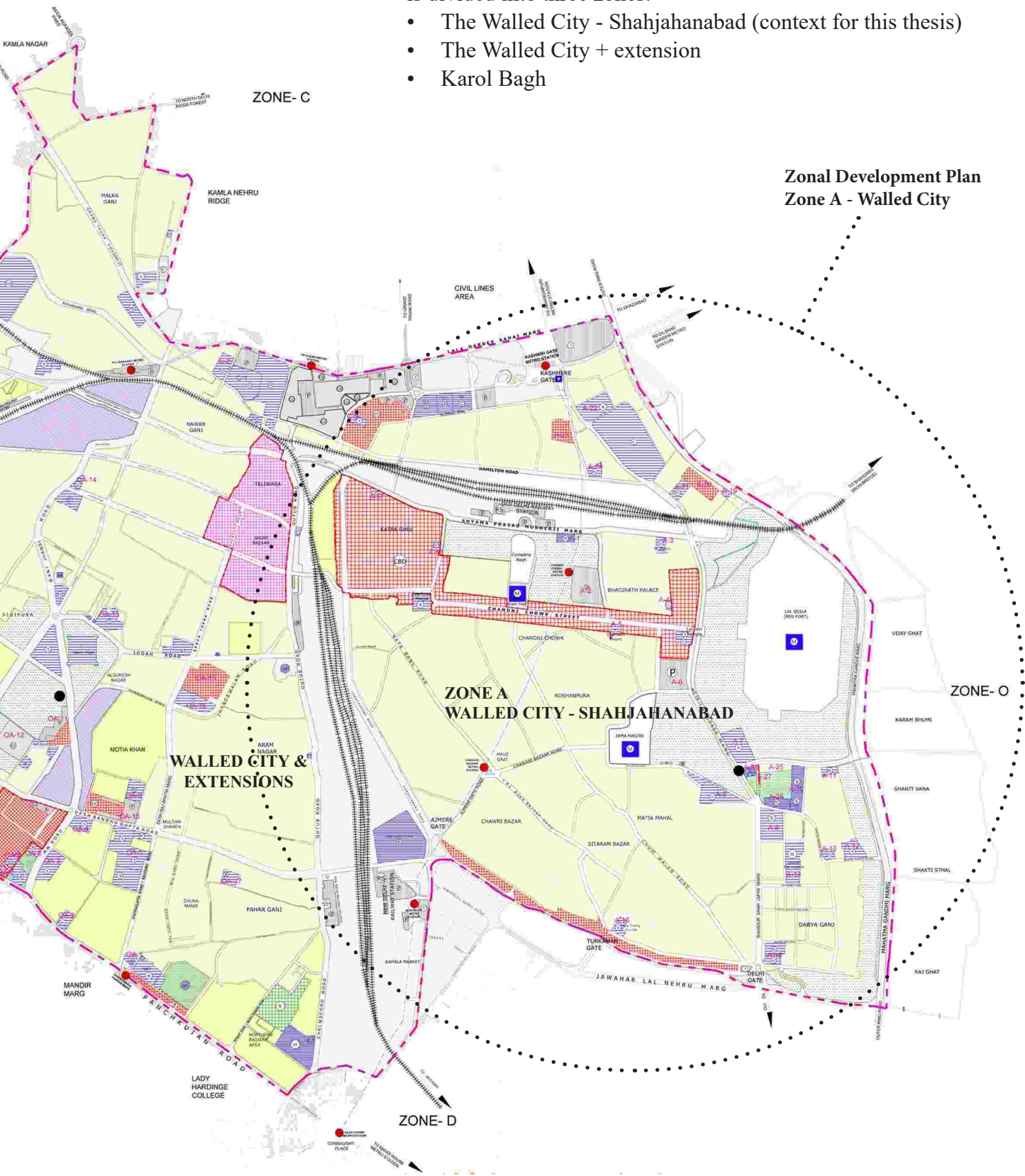
- Residential
- Commercial
- Industrial
- Recreational
- Public & Semipublic facilities

Figure 2.06 Proposed Special Area Plan extracted from Master Plan of Delhi, 2021



The Special Area as denoted in the Master Plan of Delhi, 2021, is divided into three zones:

- The Walled City - Shahjahanabad (context for this thesis)
- The Walled City + extension
- Karol Bagh



Shahjahanabad Redevelopment Corporation (SRDC) developed Urban Renewal Strategies for the Zonal Development Plan for Walled City (Part Zone A and C) as follows:²⁹

1. The noxious industries and hazardous trades to be closed immediately and land to be used for low intensity uses.
2. The public & semi-public uses and services like hospitals, dispensaries, colleges, school, police stations etc. shall be retained in their present location.
3. The possibility to increase the parks and open spaces by utilizing the evacuee properties.
4. The facilities such as public toilets, eating places and any other facilities required for working population/day time population.
5. As far as possible all 9-meter-wide roads may be pedestrianized.
6. The Road R/w (Right-Of-Way) should be in conformity with R/w (Right-Of-Way) given in Master Plan approved road alignment plan.
7. All the six underground parking sites be linked with the park & ride or park & walk system.”

Some of the many micro – approaches that are also proposed for the revitalization of Shahjahanabad are:³⁰

1. “The opportunities lie in adaptive reuse of Heritage buildings or privately owned mansions through private investment with formulating incentives or Funding Schemes by the Government.
2. The creation of new Facades for infill construction that match the side and character of adjacent Heritage Building can help in creating an environment conducive for increasing tourist inflow in the area and promote Local Economic Development.

²⁹ The above noted data is extracted from Government of NCT of Delhi, "Revitalization of Shahjahanabad (Walled City of Delhi) - Project Concept Proposal," in *Shahjahanabad Redevelopment Corporation*, 10-11. Retrieved from <http://srdc.delhigovt.nic.in>

³⁰ The above noted data is extracted from Government of NCT of Delhi, "Revitalization of Shahjahanabad (Walled City of Delhi) - Project Concept Proposal," in *Shahjahanabad Redevelopment Corporation*, 36-51. Retrieved from <http://srdc.delhigovt.nic.in>

3. Restoration of 554 Heritage Buildings for adaptive reuse into art galleries, boutique hotels, cultural centers, traditional food outlets, handicraft museum, offices, service apartments, creative industries etc.
4. Reduced number of homeless persons due to improved access to basic amenities, livelihood protection and improved income.
5. Livelihood protection of informal workers including rag pickers, rickshaw pullers etc.”

The micro-approaches mentioned above like adaptive reuse and infill construction can be useful in redeveloping derelict buildings without destruction and displacement of its residents. Providing basic amenities and housing for the lower income groups is an emergent requirement in Old Delhi. The urban renewal strategies promote an inclusive methodology towards the redevelopment of Old Delhi. However, further commercialization of buildings into galleries, cafes and boutique hotels could be a catalyst for *gentrification*. Therefore, the redevelopment of Old Delhi must preserve the residential character of the city and support local community benefit programs.

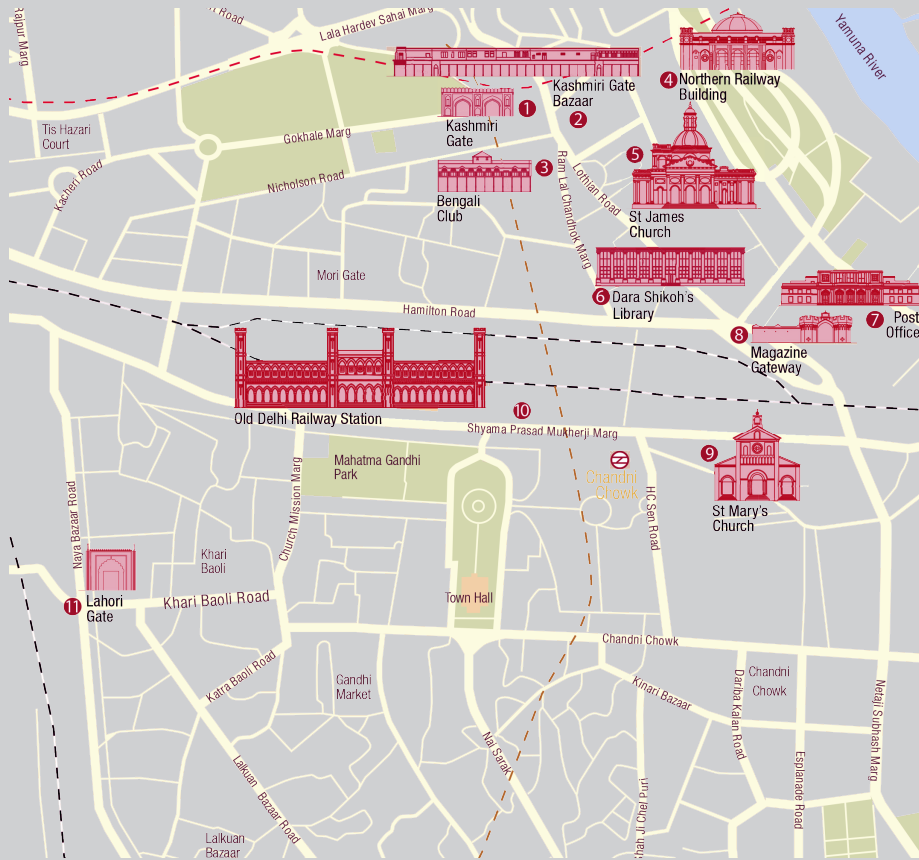


Figure 2.07
North Shahjahanabad

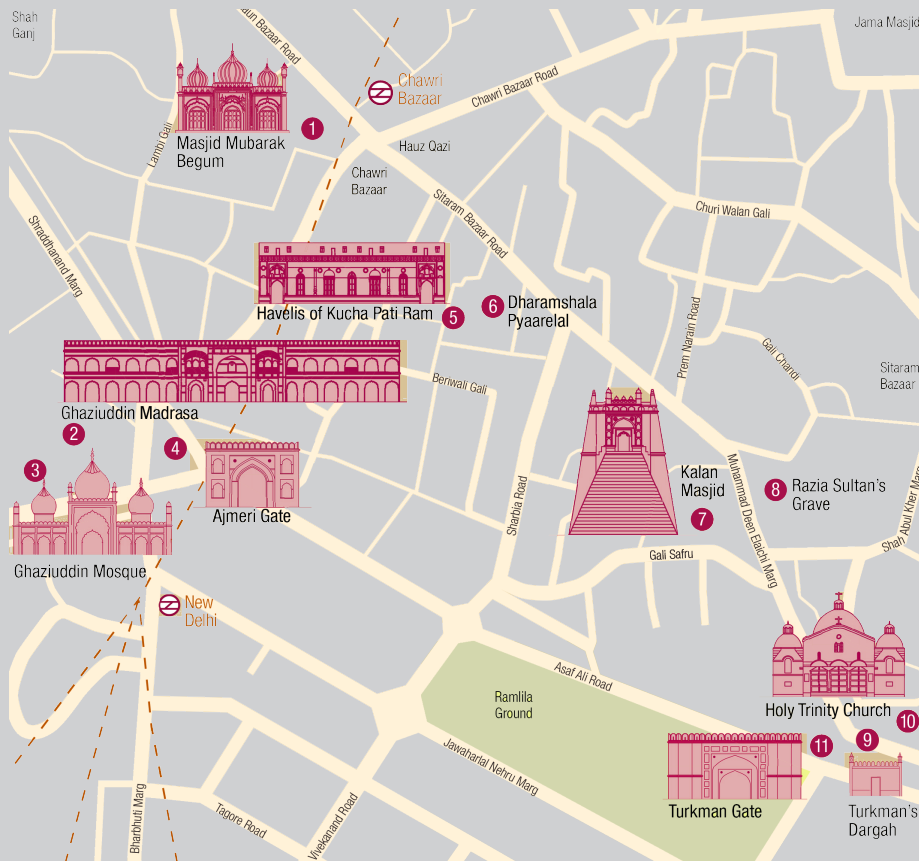


Figure 2.08
South Shahjahanabad

This sub-chapter documents Shahjahanabad through maps. Being located in the Central District of Delhi and in close proximity to the Parliament of India, access to digital documentation of the city done by the Government authorities is restricted. These maps are created by the author of this thesis by extracting information from several resources like Government websites, Survey of India, Delhi State Spatial Data Infrastructure Department, Master Plan documents, Project Concept Proposal by Shahjahanabad Redevelopment Corporation and individual research. Old Delhi has been the subject for many student researchers who have documented the city at a micro-scale. The following maps can be a helpful resource for future research work.

Part 02 The Present Situation

2.1	Existing Apparatus of Development	44
2.2	Old Delhi Urban Renewal Initiatives	50
2.3	Mapping Shahjahanabad	60
2.4	Typologies and Building Patterns	82
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	2.4.3) Recurring Typological Details Patterns	108

Existing Building Landuse

The existing building land use is heavily dominated by wholesale and specialized markets. The introduction of railways in 1867 under British rule led to the increase of industrialization and commercialization. 32 percent of the building landuse is residential but many residents have converted the ground floor into shops. Many manufacturing industries have mushroomed since then. The unorganized growth has deteriorated the living conditions in the city.









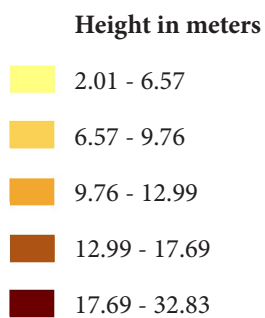
-  Residential
-  Mixed-Use
-  Commercial
-  Govt. Flats
-  Govt. Buildings
-  Gardens
-  Open Space
-  Road Network



Figure 2.09 Existing Building Landuse

Building Heights

Ongoing influx of people has led to many additions and alterations on existing buildings. The existing bye-laws allow for construction within the existing footprint but the streets are becoming narrower due to encroachment. 71 percent of the buildings are above 3 floors. The built fabric is very dense which makes the buildings prone to collapse during rainy seasons or under any seismic activity.



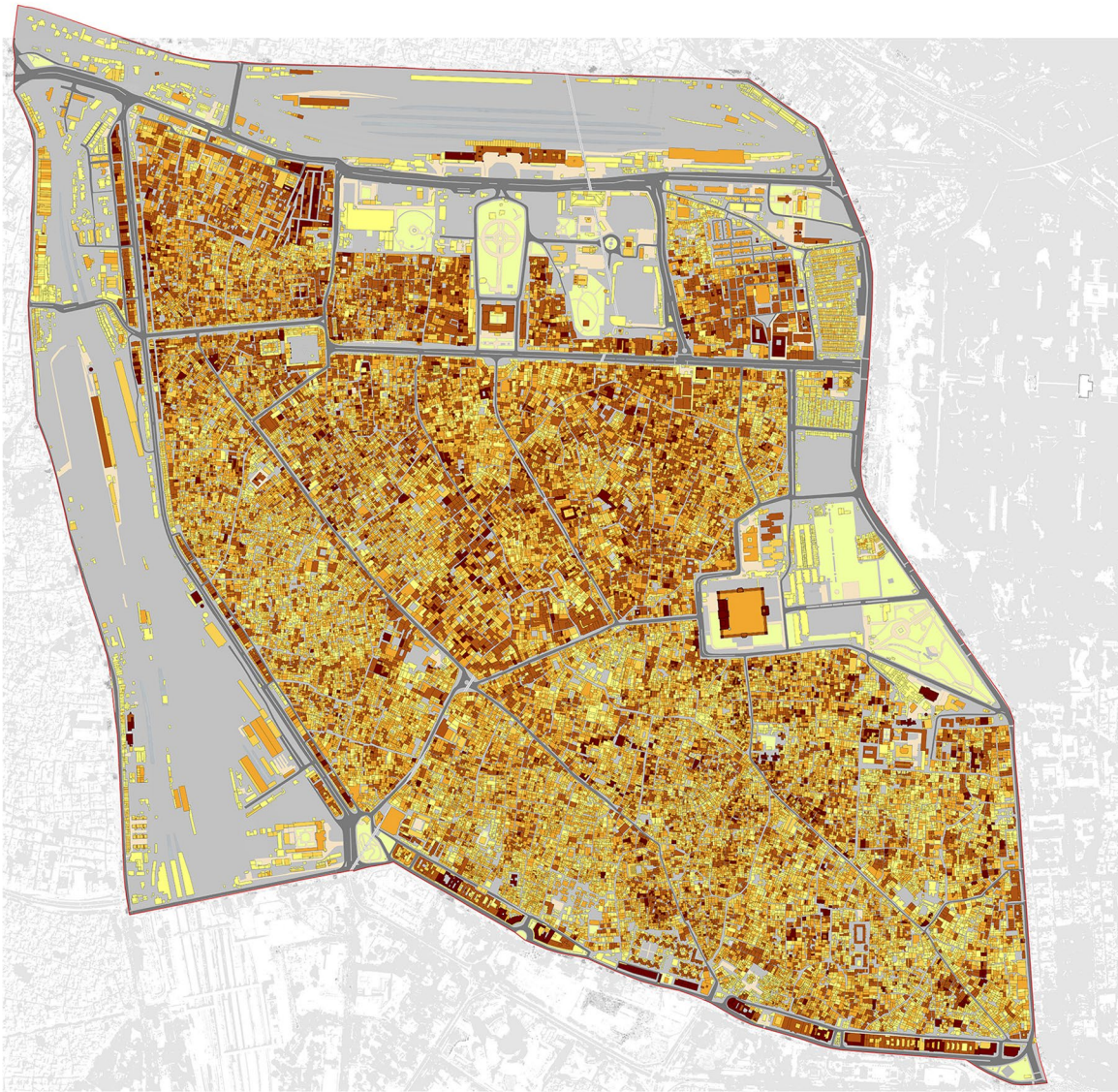


Figure 2.10 Building Heights

Open Spaces and Gardens

The gardens and parks have been occupied by ongoing construction over the past hundreds of years. Parks and major open spaces constitute 17 percent of the built fabric including the large regulated garden spaces. Open space for children to play and people to have outdoor social interactions is absent in Old Delhi. Major park spaces:

(1) Mahatma Gandhi Park (2) Urdu Park (3) Red Fort Gardens



Small Parks






Large Open/Garden Space



Figure 2.11 Open Spaces and Gardens

Hierarchy of Road Network

The inorganic form of road and street network in Old Delhi is attributed to the haphazard way of construction. Delhi Gate, Ajmeri Gate, Lahori Gate, Mori Gate and Kashmere Gate are the major external road links that connect Old Delhi to the rest of the neighboring areas. Chandni Chowk Road is a major road with the largest wholesale market. The internal street network is like a maze. The street width can be as narrow as 2 feet to 1 meter in the interior parts of the built fabric. The streets are also an integral part of the social and cultural realm.

-  Road Width < 8m
-  Road Width <15m
-  Road Width - 20m - 30m

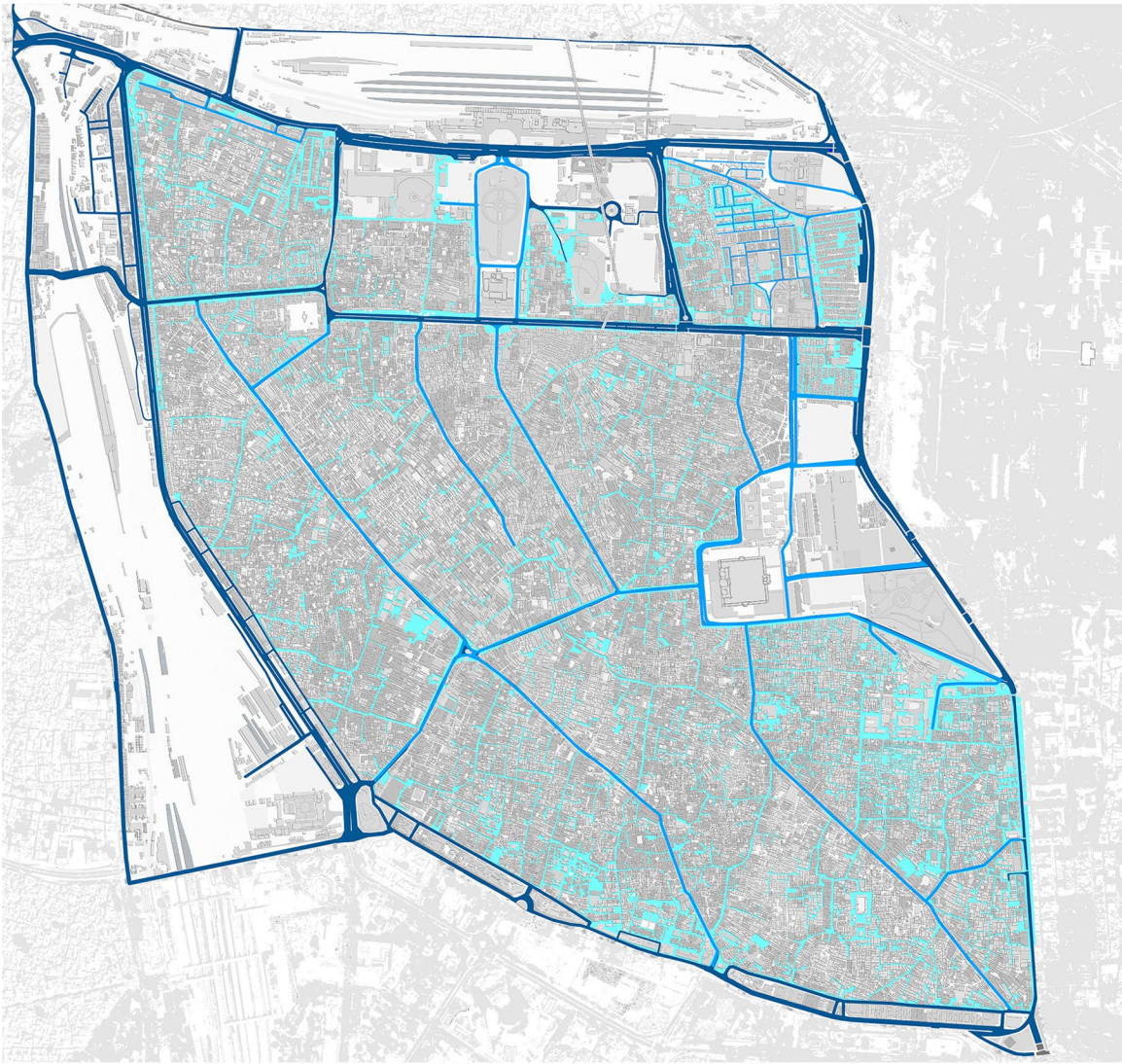








Figure 2.12 Hierarchy of Road Network

Network of different modes of transport

The transport industry provides employment and livelihood to thousands of people. Different types of vehicles are used to transport goods and carry passengers. 15 percent of the land surface is occupied by roads which excludes the land area under the railway lines. The roads have no logical hierarchy. Many migrant workers are rickshaw pullers or pull hand carts of goods. This network of informal transport provides a means of income for the newer migrants or homeless. For many people their shelter is their vehicles itself but due to a large number of rickshaws in the area, there are problems of congestion.

Old Dehi is connected through an underground metro line with the rest of the city. There two metro stations located in Old Delhi. Vehicular movement is possible on some roads within the built fabric. Motorized two-wheeler vehicles are most common. The buses run around the periphery as width of road inside are narrow. Surrounded by the railway lines on two sides, Old Delhi is well connected with other parts of the city.

-  Heavy Vehicle Route
-  Light Vehicle Route
-  Bus Stop
-  Bus Route
-  Underground Metro Station
-  Railway Line

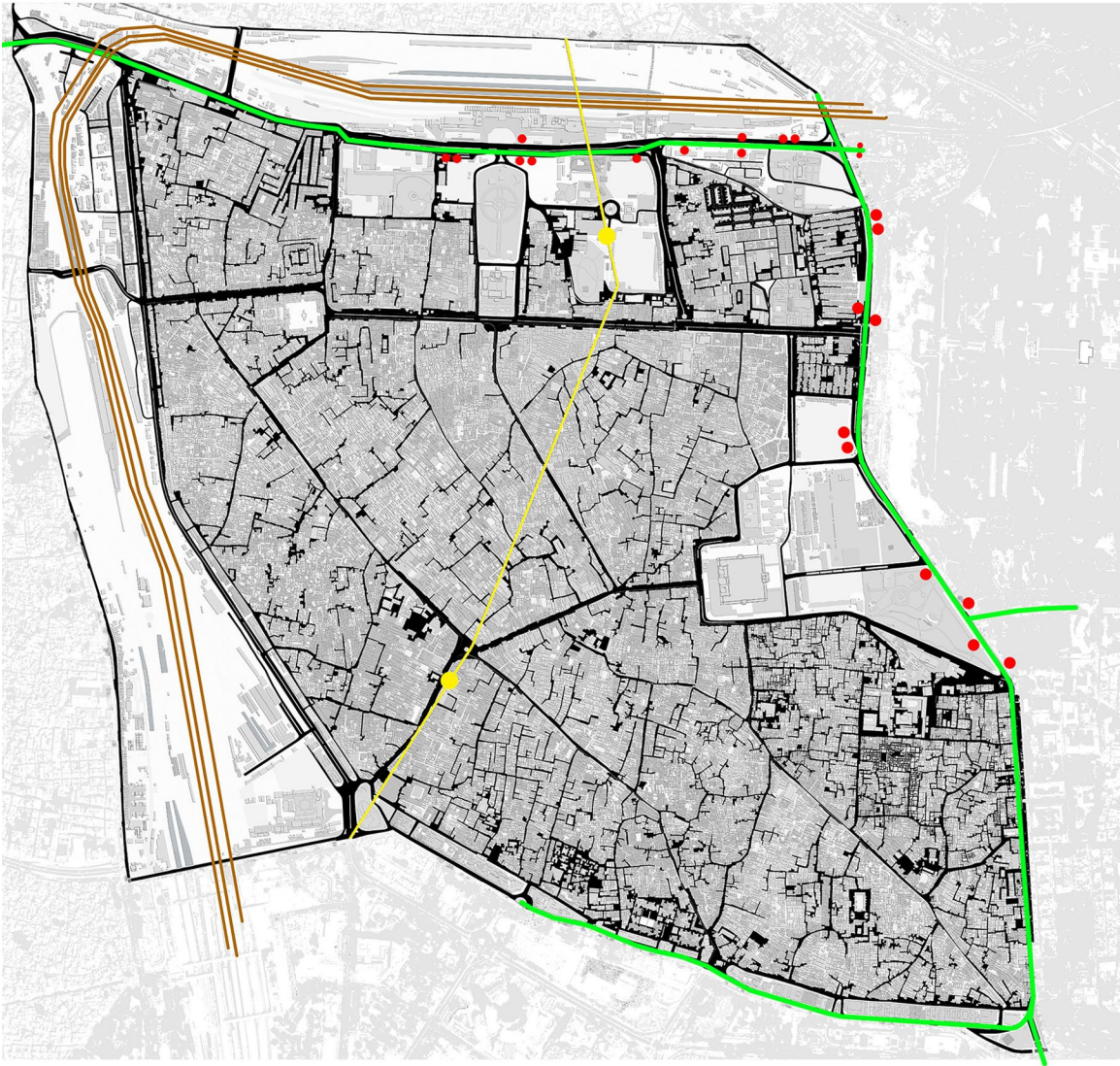


Figure 2.13 Network of different modes of transport

Haveli Complexes (Mansions)

An integral part of the residential fabric is the Haveli Complex (mansions). The Haveli's are courtyard houses and were a dominant building typology in Old Delhi. The large mansions during Mughal Era which operated as localities with places of residence, small shops, places of worship were subdivided into smaller plots of land under British rule. Merchants occupied the upper floors as their residence and lower floors facing the street for their shops. Only few mansions can be recognized due to extensive use and deterioration of buildings. Some are now converted to warehouses, godowns or shops. The lack of funding or no incentives in the form of tax redemptions for owners of Heritage buildings prevents them to maintain regular renovation work.

● Haveli/Mansions



Figure 2.14
Kazanchi Haveli



Figure 2.15 Haveli Complexes (Mansions)

Prominent Haveli Complexes -

- 1. Mansion of Sa'adat Khan
- 2. Chunnumal Ki Haveli
- 2. Bhagirath Palace
- 4. Zeenat Mahal

- 5. Mansion of Haider Quli Khan
- 6. Mirza Ghalib Ki Haveli
- 7. Haveli Dharampura
- 8. Mansion of Shir Afghan Khan
- 9. Mansion of Adinah Beg Khan

- 10. Mansion of Bakhtawar Khan
- 11. Haskar Haveli
- 12. Masterji Ki Haveli
- 12. Chaurasi Ghanta Mandir
- 14. Haveli Razia Begum

Religious Centers

The city has been conquered by many rulers in the past and the prevalence of multicultural people is an outcome of the same. There are many temples, mosques and churches that co-exist within the same built fabric. Built by the Mughal Emperor Shahjahan in 1656, one of the largest mosque in India, Jama Masjid, is located in the heart of the city. The presence of two large mosques and many small religious centres makes the city culturally rich and brings people together in their differences.

 Mosque

 Temple



Figure 2.16 Religious Centers

Heritage Sites & Tourist Landmarks

Old Delhi is a famous tourist destination for people who visit Delhi because of its architectural wonders. The city has many mansions, temples, mosques and church. The images below show some famous landmarks for tourists and local visitors.



Heritage Sites



Major Landmarks for Tourists

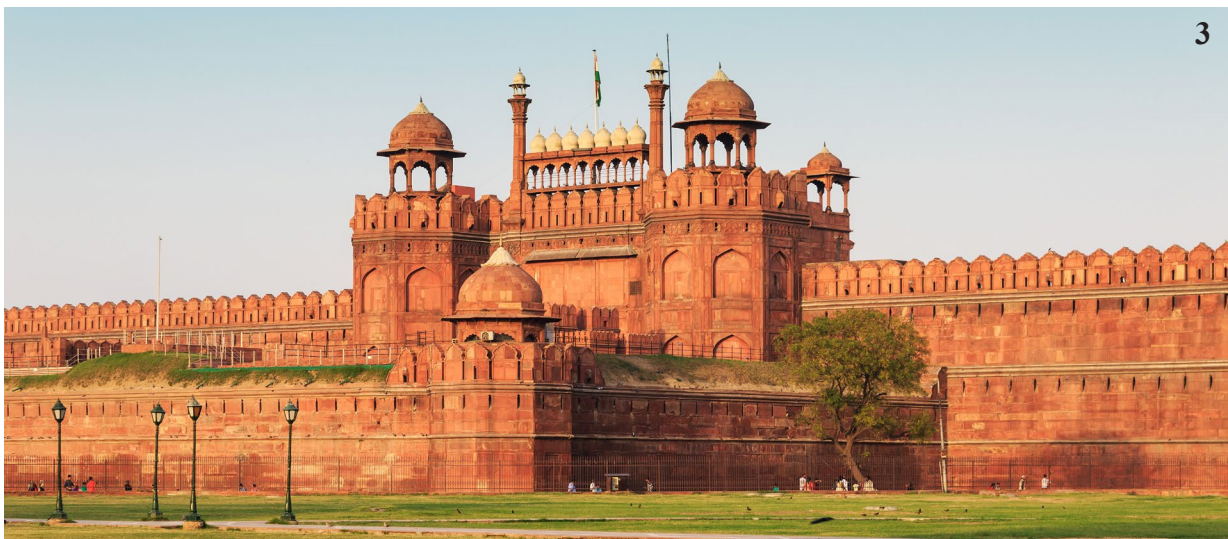


Figure 2.17, 2.18, 2.19 Photograph

(1) Gurudwara Sis Ganj Sahib (2) Haveli Dharampura (3) Red Fort

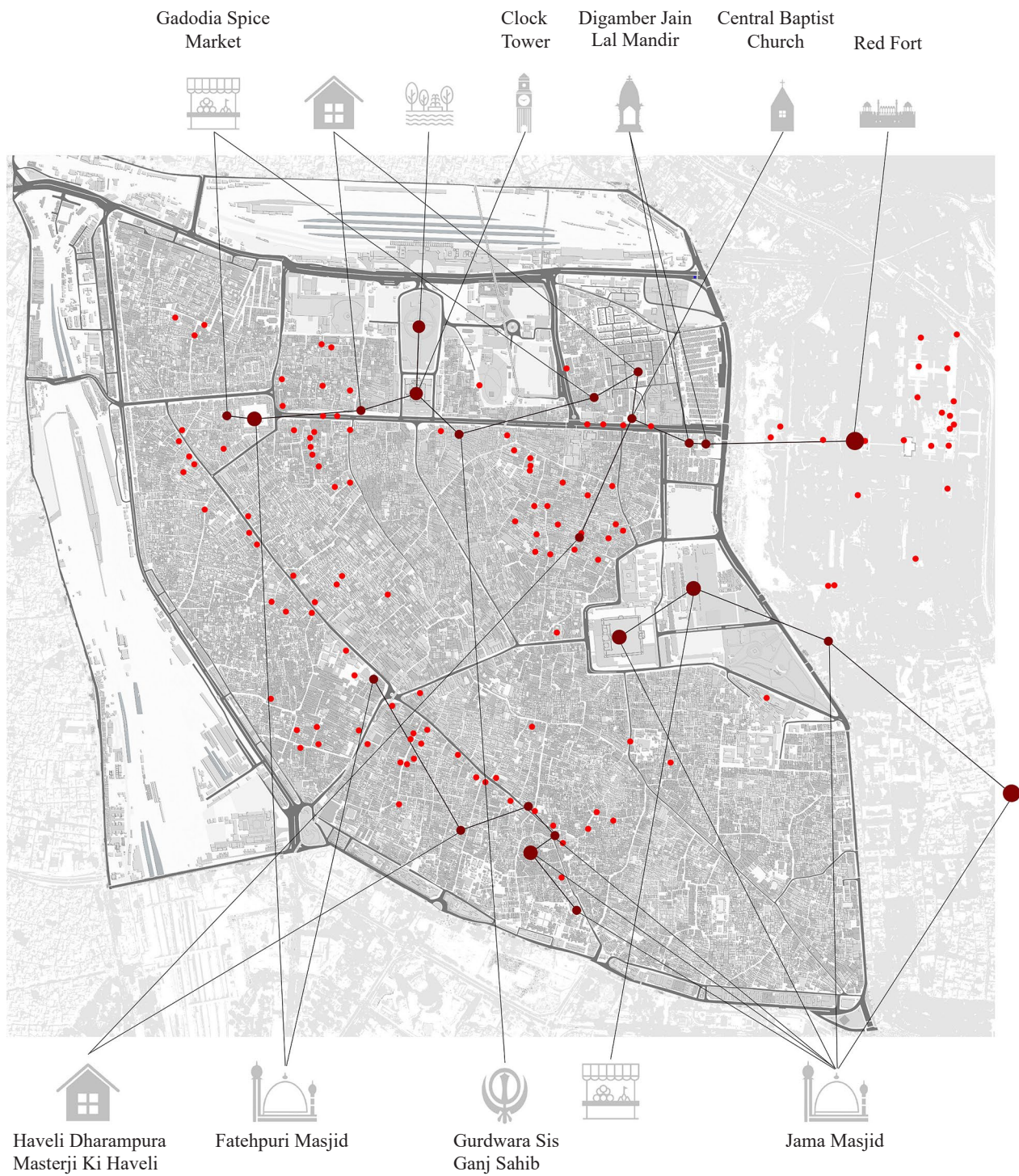


Figure 2.20 Heritage Sites and Tourist Landmarks

Sites listed under Conservation & Protection

INTACH (Indian National Trust for Art and Cultural Heritage) listed 554 sites in the walled city to be conserved and protected. These sites are recognized by SRDC (Shahjahanabad Redevelopment Corporation) as potential sites for adaptive reuse while retaining the character of the city and also improving the building condition preventing them from being collapsed. These heritage sites are also economic drivers for the city as they attract tourism.

 Conservation Sites
listed by INTACH



Figure 2.21 Sites listed under conservation and protection

Temporary Shelter by DUSIB (Delhi Urban Shelter Improvement Board)

The largest number of homeless population is found to be concentrated in the Central District accounting to about 25 per cent of the homeless in Delhi. These include ragpickers, rickshaw pullers, construction workers etc. who shelter themselves on the pavements and streets due to lack of affordable housing options. DUSIB (Delhi Urban Shelter Improvement Board) which functions under the Government of NCT of Delhi, provides Night Shelters throughout the city. The night shelters are large halls depending on the location and amount of space available which are categorised for different types of people. Many of them are gender specific or dedicated only to children or for drug addicts. Some of them are located within a RCC structure building whereas many of them are temporary structures. But, due to lack of space, unhygienic conditions, fear of theft and presence of people under the influence of alcohol and drugs, many people prefer sheltering themselves on the streets. Overcrowding is another downside of the night shelters.

Old Delhi also has Dharamshala/Shelter for people who look for temporary stays for a longer period of time. Many mansions are now converted to Dharamshala's.

Dharamshala/Shelter	
Night Shelter	Capacity
RCC Building	2100
Porta Cabin	350
Tent	450



Figure 2.22 Temporary Shelters

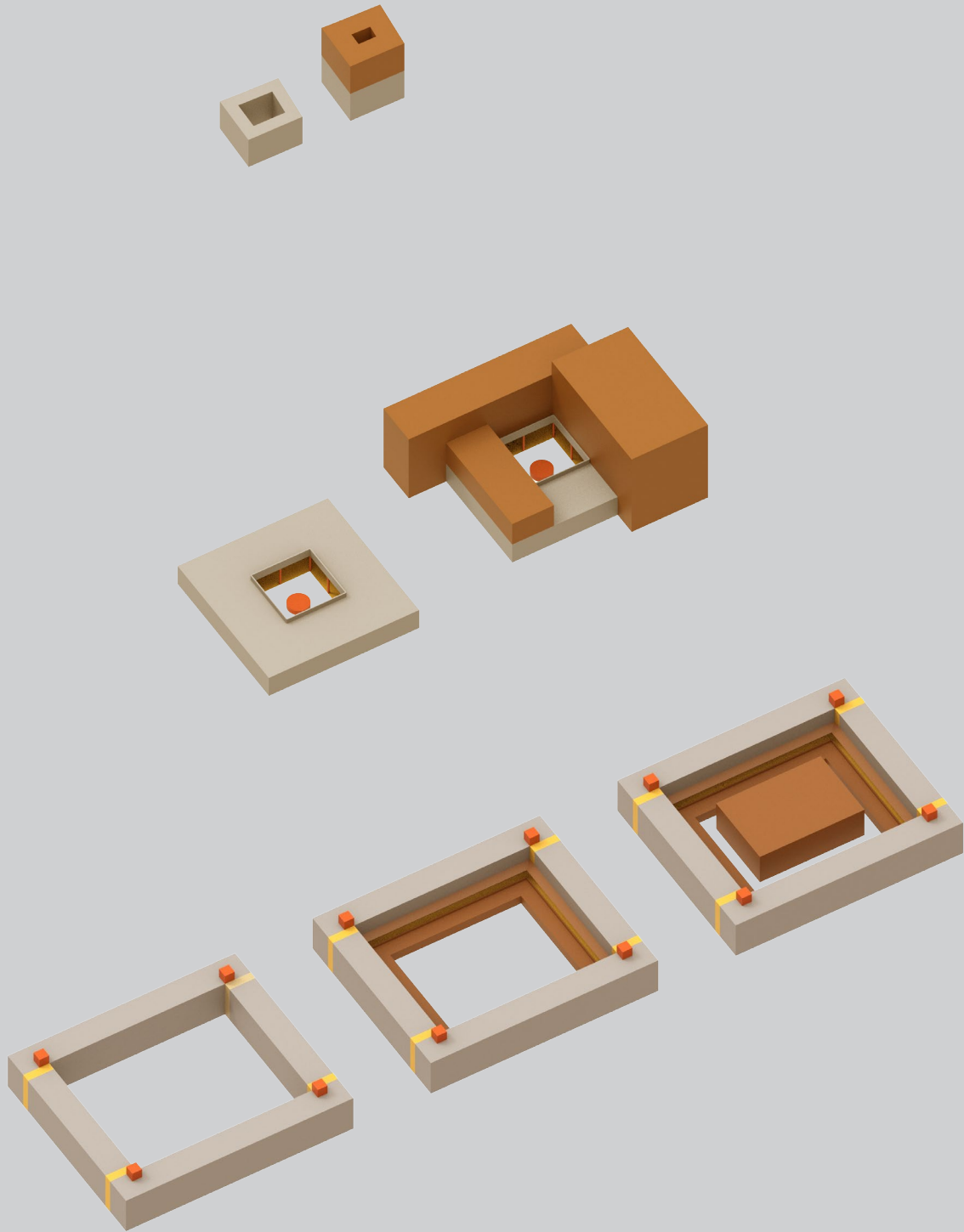


Figure 2.23 Changes in Courtyard Typology due to extensive squatting

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*It is a process which brings order out of
nothing but ourselves; it cannot be
attained, but it will happen of its own
accord, if we will only let it.*

- Christopher Alexander

The architecture of Shahjahanabad is particular to its historical past which is reflected conspicuously in its architectural wonders. Imprints of Mughal and British colonial architecture are evident throughout the built fabric of Old Delhi. In the broader spectrum of building typologies, Shahjahanabad's built fabric consists of forts, religious institutions (mosques, temples, churches, gurdwara etc.), monuments, *haveli complexes*³¹ (mansions now converted into shops or residence) and residences of the native Delhi people as well as new migrants.

Although more than three-and-a-half centuries old, the walled city has not only been able to retain but also adopt the original characteristics and elements like arches, wooden decorative supports, *jharokhas*, etc., in its contemporary building construction practice.³² At the micro-level, the residential buildings are composed of small repetitive patterns, and are predominantly evident in the way windows, doors, balconies and additional temporary structures are constructed. The use of color and motif to decorate the buildings is also popular.

³¹ Jyoti Hosagrahar, *Indigenous Modernities - Negotiating Architecture and Urbanism* (London & New York: Routledge, 2005), 200.

³² A jharokha (or jharoka) is a type of overhanging enclosed balcony. Jharokhas jutting forward from the wall plane could be used both for adding to the architectural beauty of the building itself or for a specific purpose. One of the most important functions it served was to allow women to look outside without being seen themselves. See <https://en.wikipedia.org/wiki/Jharokha>

There exists a combination of both traditional Indian dwellings as well as dwellings reflecting European influence. Hosagrahar describes the modification of older mansions to include “Greek columns, wrought-iron balconies, cement lattice-screens, large framed mirrors, stained glass, and paneled doors.”³³ Houses for wealthy families incorporated the use of imported building materials from Europe and elsewhere. Some traditional homes, however, still continued the use of local materials and vernacular ways of building. Finally in the 19th century and into the 20th, accommodating for British-influenced changes in construction and as way of life was a way of demonstrating loyalty and acceptance of British colonial hegemony.

Architectural theorist Bernard Leupen and architect Harald Mooij define typology as the “subject area of classifying, naming and schematizing the design of buildings or part of the buildings.” It can further be defined as the act of repetitions, alterations, and combinations of “specific characteristics” or “mutually exclusive categories.”³⁴ Architect and urban theorist Aldo Rossi believes, these recurring elements are the outcome of accumulation of the deep-rooted traditional ways of living that have been established in the past. Rossi explains, ‘type is a constant and manifests itself with a character of necessity; but even though it is predetermined, it reacts dialectically with technique, function and style, as well as with both the collective character and the individual moment of the architectural artifact.’³⁵

The formation of a typology is also driven by the use of the building. The elements mentioned above for Old Delhi, like arched windows and doors, wooden decorative supports, *jharokhas*, etc., often serve a particular practical purpose, and are seen to be an integral part of residential buildings in Old Delhi. The interpretation of a building typology, however, differs among architects, planners, developers, and residents. For architects, the building typology is a design tool in the

³³ Jyoti Hosagrahar, *Indigenous Modernities - Negotiating Architecture and Urbanism* (London & New York: Routledge, 2005), 40.

³⁴ Bernard Leupen and Harald Mooij, "Typology," In *Housing Design - A Manual* (Rotterdam: NAI Publishers), , 37

³⁵ Aldo Rossi, “The Structure of Urban Artifacts,” In *The Architecture of the City* (The MIT Press, 1982), 41.

process of creating newer typologies, as opposed to planners and developers for whom it is a method of classification based on location and economic benefit.³⁶

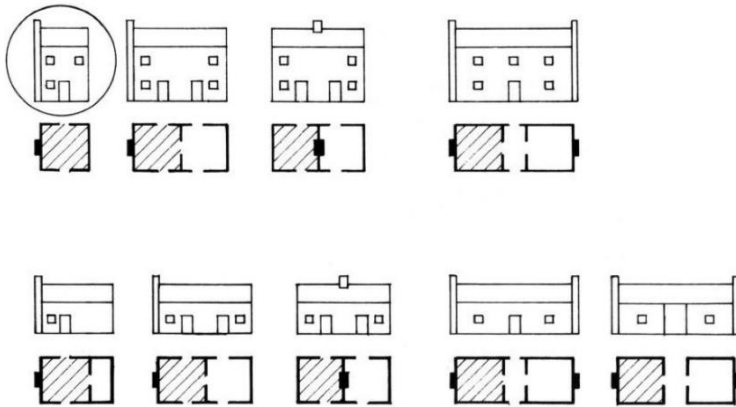


Figure 2.24
Rural and Urban House Types in North America
 New designs are developed by consolidating similar or different types. The diagram from *Rural and Urban House Types in North America*, Pamphlet, by Steven Holl, depicts the ability to reproduce a type forming newer typologies.

Barnard and Harald have devised different practices to categorize buildings. They mention the typological levels described by Argan, an Italian architectural historian, to study building typology:³⁷

- The overall building configuration
- The major structural elements
- The decorative elements

Segregating the building into components under different categories differentiates the building type into smaller groups, where each represents a type. Residential buildings, however, are composed of more complex layers, for example, the stacking organization of units/apartments, access and circulation to those dwellings, building form and also the form of the built environment in which the singular building rests. Classification of the additional layers is usually done in the following manner:³⁸

- “Spatial Organization of the Dwelling,” “Linking and Stacking” and “Dwelling Access”
- The building forms
- Configuration of the urban ensemble (skin, scenery, service elements)

³⁶ Ibid, 38.

³⁷ Ibid, 45.

³⁸ Ibid, 48.

A building typology can also be characterized by the occurrence of events in that space. Architect Christopher Alexander in his seminal work in the “Timeless Way of Building,” states that “the action and the space are indivisible.”³⁹ The relationship between the physical space and the physical elements of a building stimulates the action that takes place in that space. Similarly, the imitation of peculiar architectural features, for example, *jharokhas*, on the building facades of Old Delhi facing the street activate the exterior space with visual contact and interaction. The shops on the ground level open onto the streets, which creates a dynamic setting during holidays and festivals when people and children gather to celebrate. The presence of shops owned by the residents help to monitor any unusual activity on the street, which urban critic and theorist Jane Jacobs expresses as the “eyes belonging to those we might call the natural proprietors of the streets.”⁴⁰ Furthermore, the orientation of the buildings is key to ensure the safety of the neighbourhood. Jacobs also asserts the importance of an active street to invigorate the day to day activities in the built environment.⁴¹ These permanent elements and temporary evolving patterns of events begin to form a typology.



Figure 2.25
Typical Jharokha

The typological analysis of Old Delhi establishes different housing typologies based on their presence in the physical environment. Different characteristics such as dwelling access, use and interaction of different components of the building with the street and public realm, and the components that repeat or alternate can be defined as a typological pattern.

³⁹ Christopher Alexander, *The Timeless Way of Building*, (New York: Oxford University Press, 1979), 70.

⁴⁰ Jane Jacobs, *The Death and Life of Great American Cities*, (Vintage Books, 1992), 5.

⁴¹ *Ibid*, 35.

2.4.1 Housing Typologies

Typology 1 - The Traditional House from the Mughal Era

This first basic type is the traditional typology of residences located on the interior streets of Old Delhi. These houses can be distinguished from the others due to their raised plinth and use of color on the façade. The raised plinth at the entrance is a common element that prevents water to enter the house during heavy seasonal monsoon rains. It is also used for other social purposes like meeting friends, playing cards and sitting outside observing the movement of the people on the street. These residences are well maintained as compared to other houses and the use of marble on the entrances is very common. Another peculiar feature is the jharokha on the upper level. The jharokha today has additional awnings to prevent light entering into rooms. These houses continue to remain low rise, two to three storeys, as not many people have allowed the construction of dwellings above them.

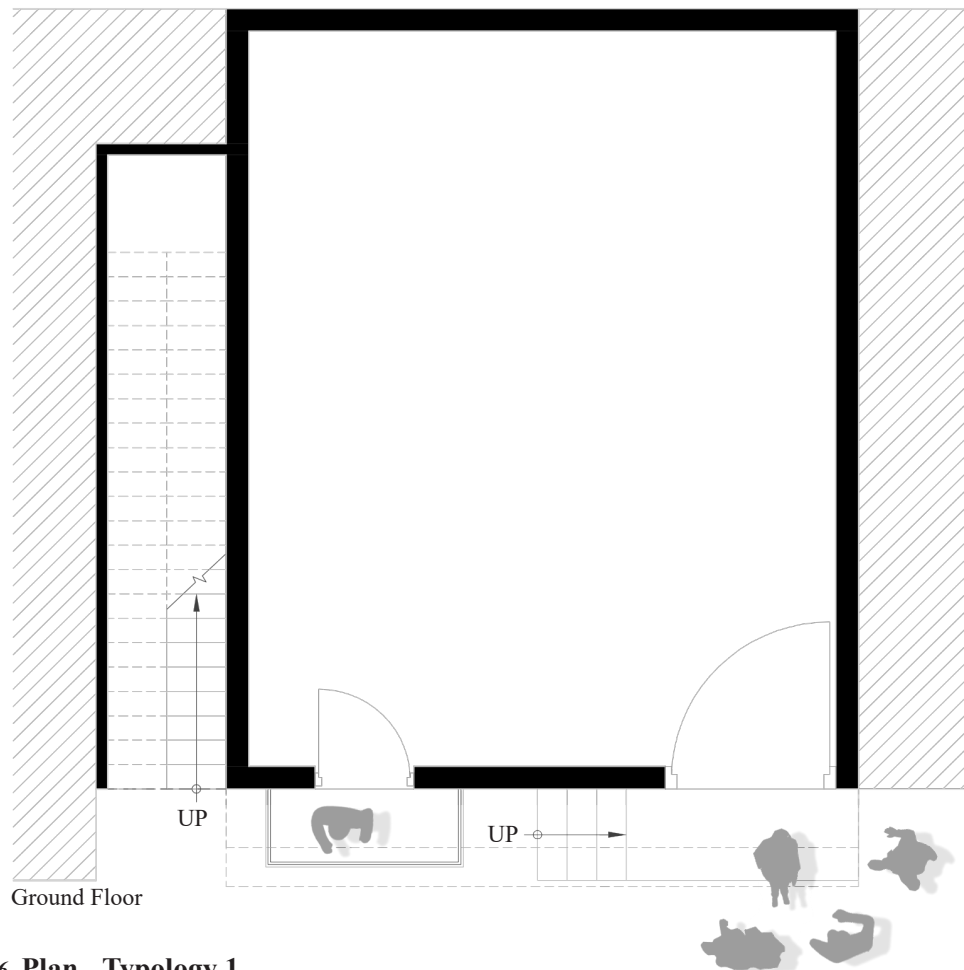


Figure 2.26 Plan - Typology 1
Scale 1:750

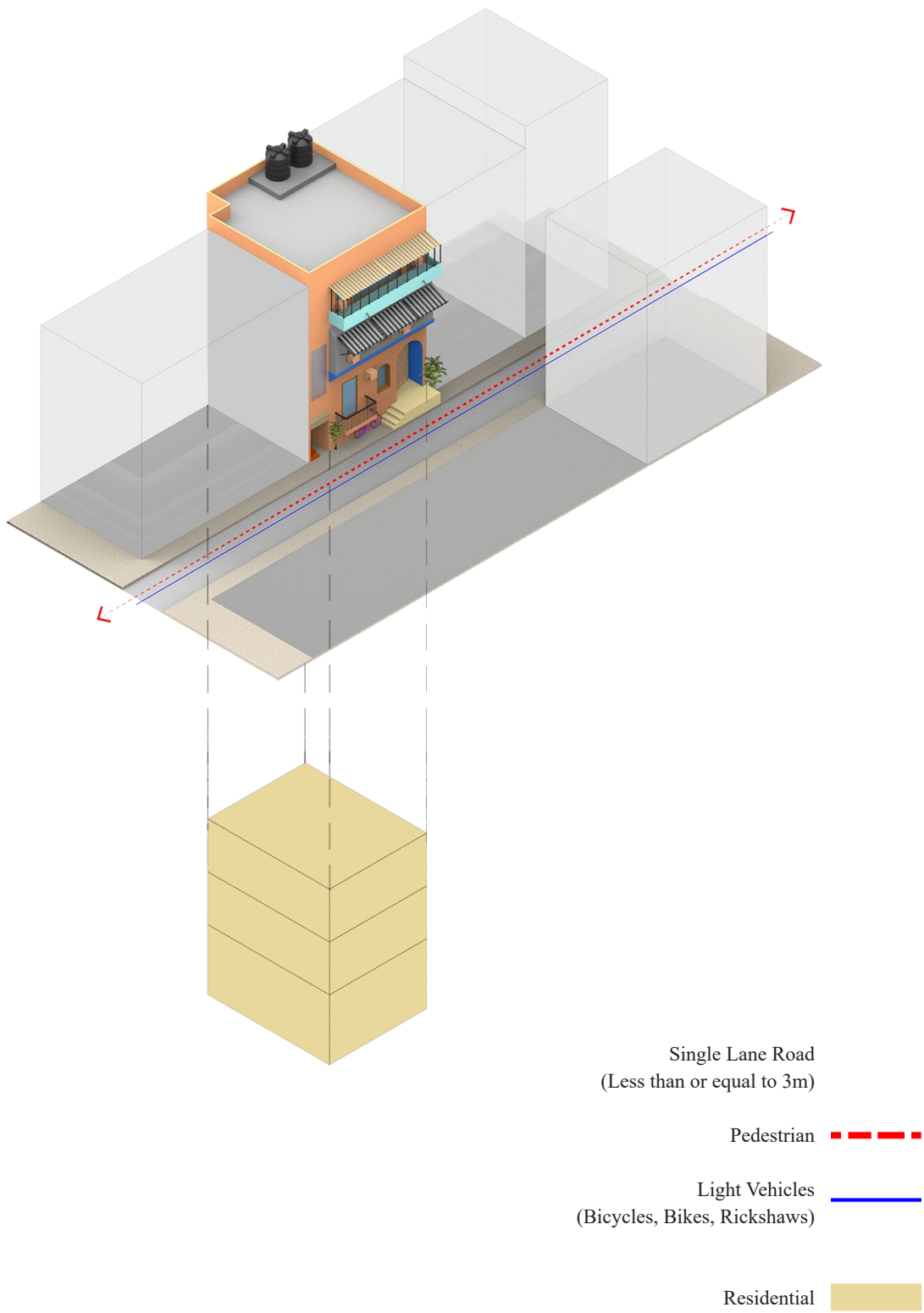


Figure 2.27 Isometric View - Typology 1



Figure 2.28 Photograph - Row of traditional houses

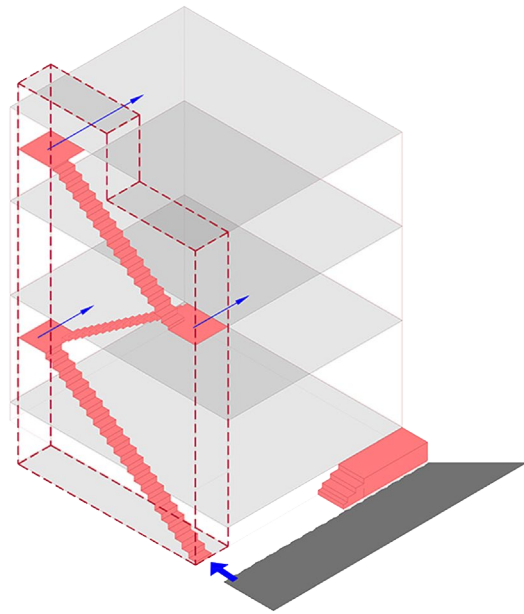


Figure 2.29

Circulation Staircase

A separate staircase with access only for one house. The entry on the ground floor is through a raised platform and staircase.



Figure 2.30

Relationship of typological patterns with the public realm

The raised platform is a space for social interaction between people. The balconies and jharokha are means of interacting with the activities on the street.

Typology 2

This second type is the most common typology seen throughout Old Delhi. The plot size varies based on the location of the street. The ground level is used as a shop while upper floors are residential. The depicted option is shown for an interior street with a street width of 3 meters and accessible through light vehicles. This housing typology is constructed with concrete framework and brick infill. Balconies are adaptations of jharokha using low-cost waste materials like wooden slats and tin. The building height is typically constructed up to the allowable building height of 15 meters, which is 4 to 5 storey's high. The access to shops and upper floors is from the street.

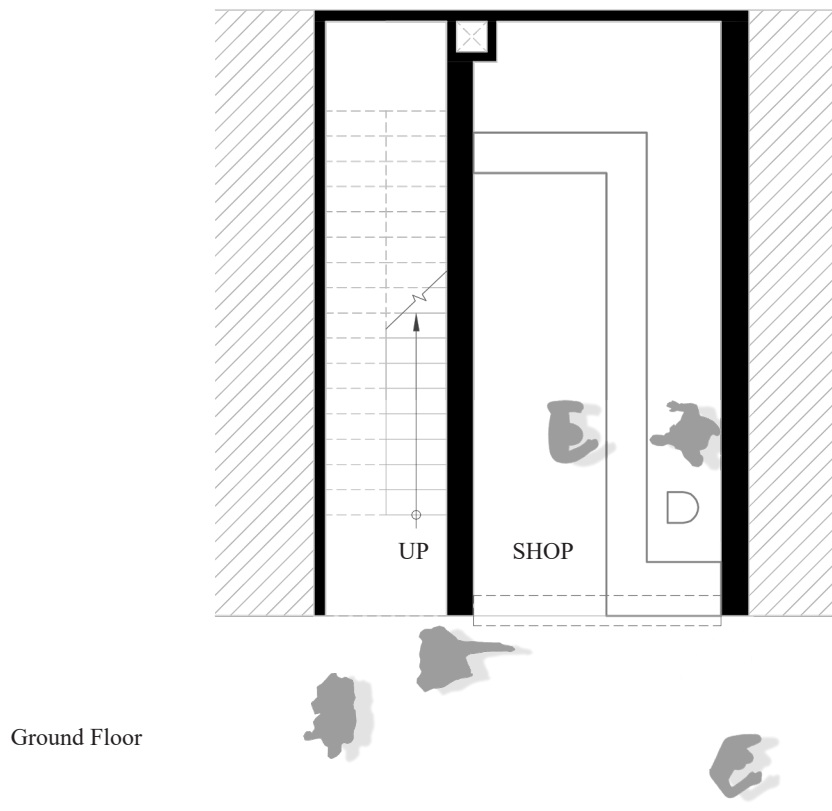


Figure 2.31 Plan - Typology 2
Scale 1:750

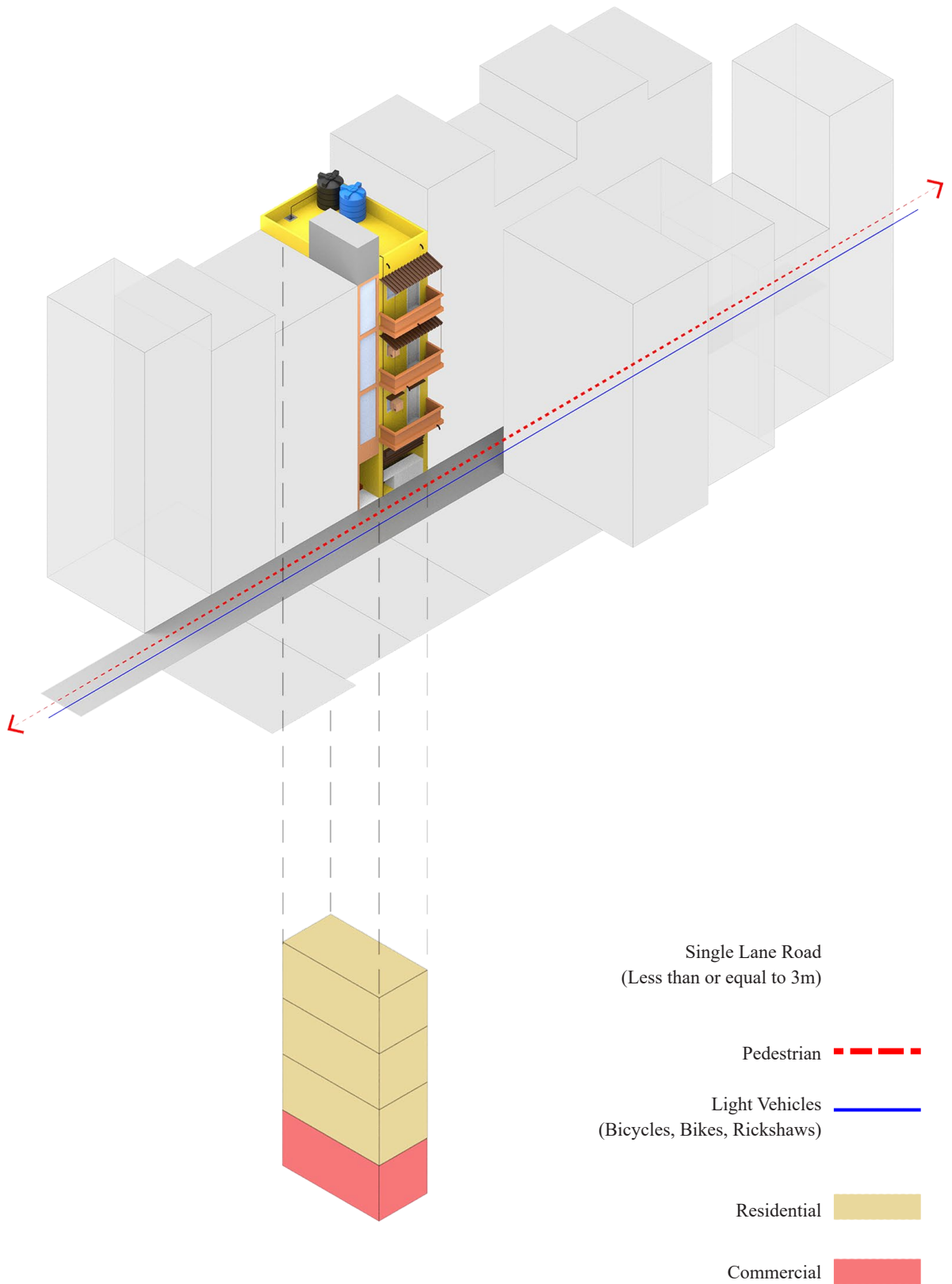


Figure 2.32 Isometric View - Typology 2

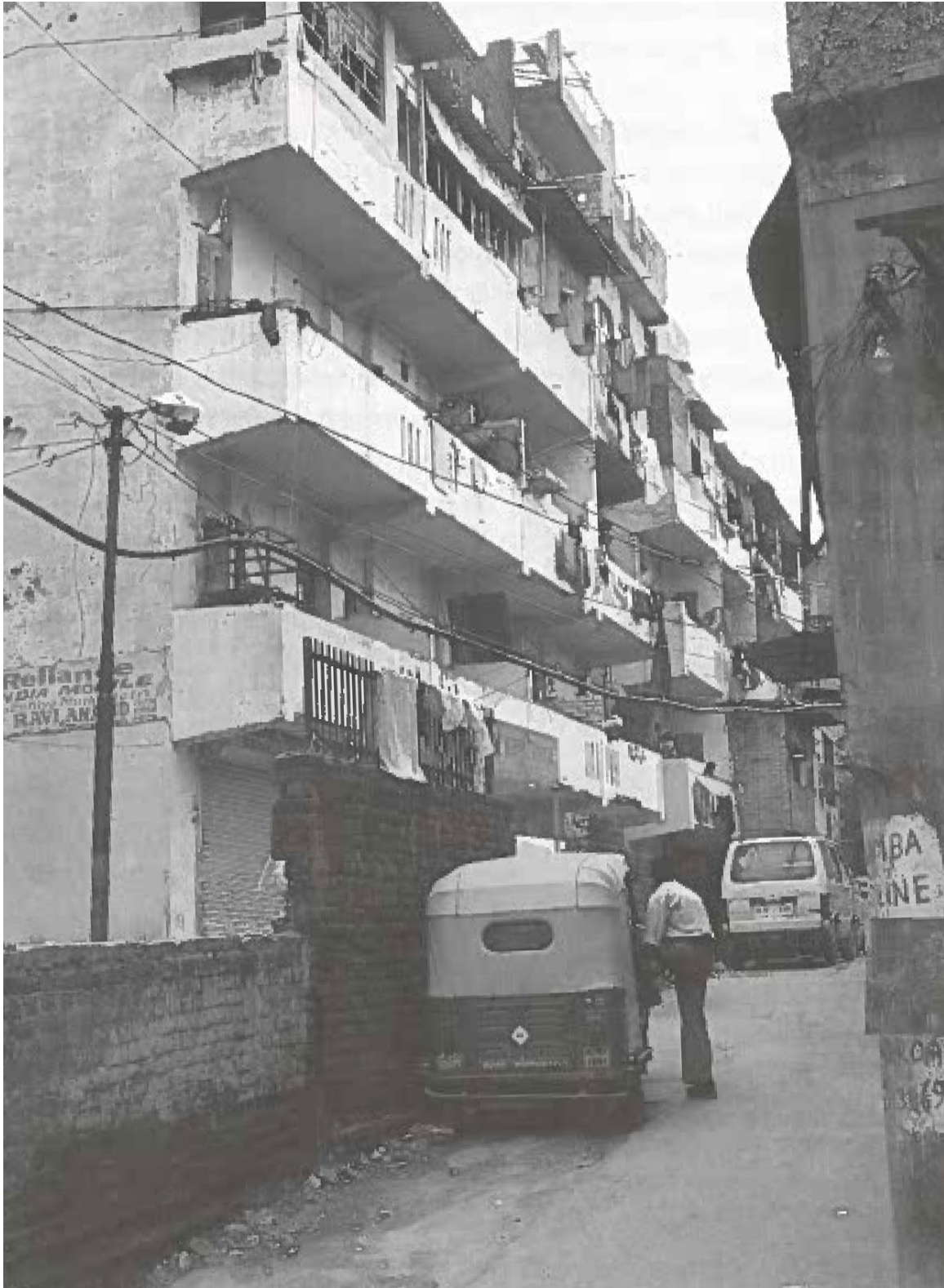


Figure 2.33 Houses developed as part of Delhi Ajmeri Gate Scheme

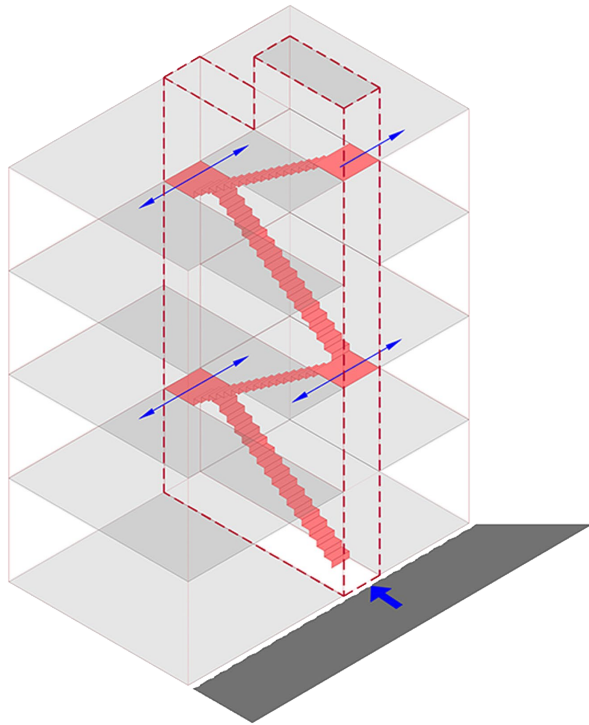


Figure 2.34

Circulation Staircase

Due to the smaller plot sizes of these buildings, the same staircase maybe shared with the adjacent building for access.



Figure 2.35

Relationship of typological patterns with the public realm

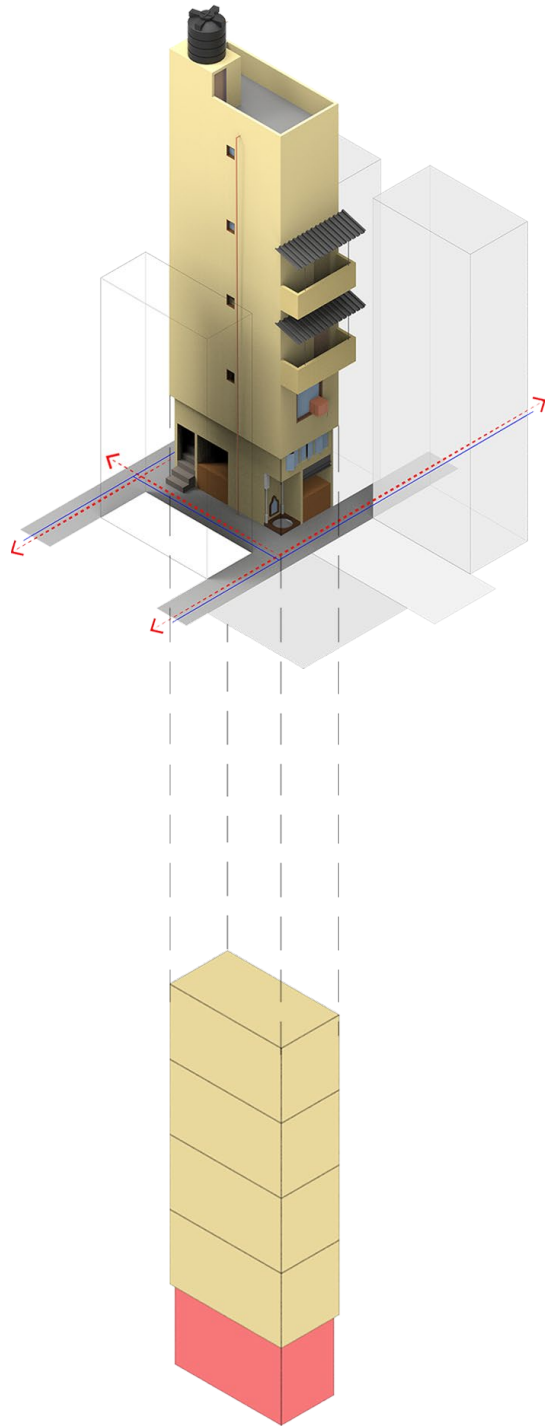
The balconies and jharokha are means of interacting with the activities on the street. The use of Jali (perforated cladding) on staircase core allows for light inside. The street facing shops stimulate public interaction.

Typology 3 - Corner House

This typology depicts a peculiar corner situation seen at various locations in Old Delhi. The site is accessible on two or more sides and the ground floor is divided into more than one commercial shop. Throughout Old Delhi, there are places with drinking water for the people during summers. At the corner houses, Pyau is identified, which was a water point for travelers and animals. The corner houses had a window through which the people were served water and a hole in front would collect the overflow of water for animals. Modified form of Pyau are seen even today operating as water pumps. The access to the upper floors is from the side street. Some of the new construction in Old Delhi do not have windows and the staircase core occupies approximately 30 percent of the plot area.



Figure 2.36 Plan - Typology 3
Scale 1:750



Corner house connecting two streets
(Less than or equal to 3m)

Pedestrian - - - -

Light Vehicles ————
(Bicycles, Bikes, Rickshaws)

Residential ■

Commercial ■

Figure 2.37 Isometric View - Typology 3



Figure 2.38 Pyau - Drinking water point

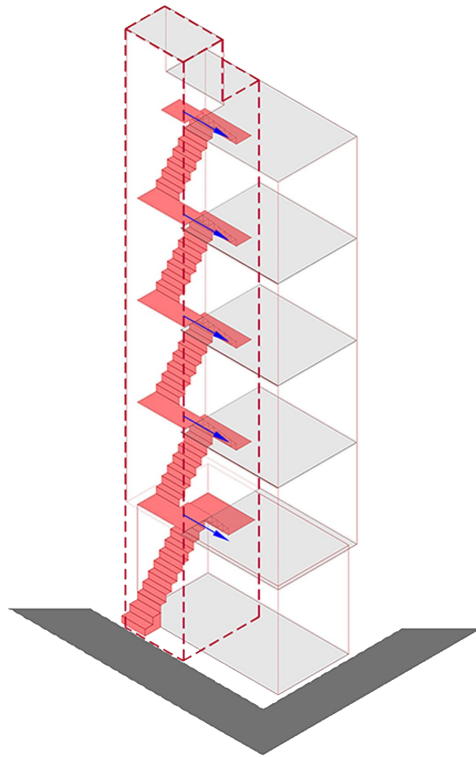


Figure 2.39
Circulation Staircase

The staircase in smaller plots occupies approximately 30 percent of the area or more. The width of the stairs in many houses is as narrow as 2 feet and without any windows the circulation core becomes a dingy space.

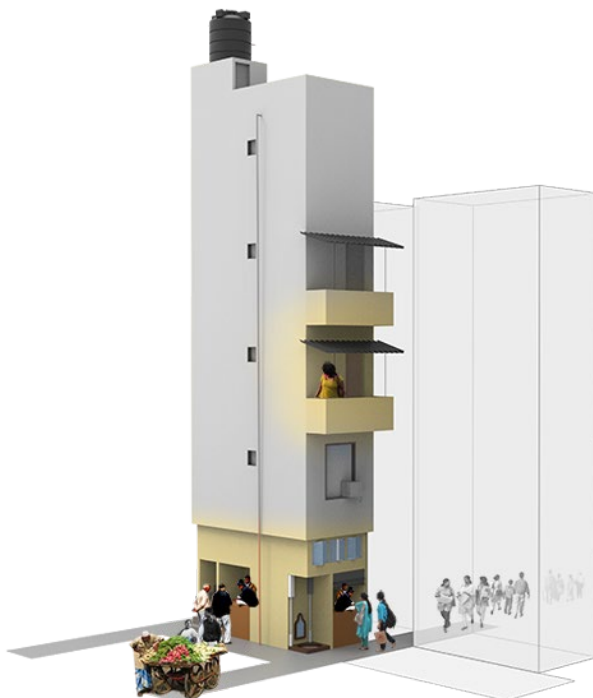


Figure 2.40
Relationship of typological patterns with the public realm

Corner houses at street junctions are more active. The small shops at the ground level for example, grocery, betel-seller, tailor, barber shop etc. bring people from different communities together through daily interactions and creates a community which benefits the residents. These shops generate the local economy of the neighbourhood.

Typology 4 - Buildings on Chandni Chowk Road

This complex type is the typical condition on the main street of Old Delhi, Chandni Chowk. The market has a pedestrian sidewalk on both sides of the road and it is shaded by the overhang of the buildings extensions. All the height of the ground level is higher than other buildings on other streets. Chandni Chowk road can be accessible by vehicles. Heavy vehicles such as small trucks and buses also use the road to deliver goods for the wholesale market. The buildings are typically 4 to 5 storeys high. Many buildings extend commercial activities to the first level and have separate staircases for commercial and residential use. Use of intricately carved jali's, arches for windows and doors are common features of this building typology.



Figure 2.41 Photograph - Building on Chandni Chowk Road

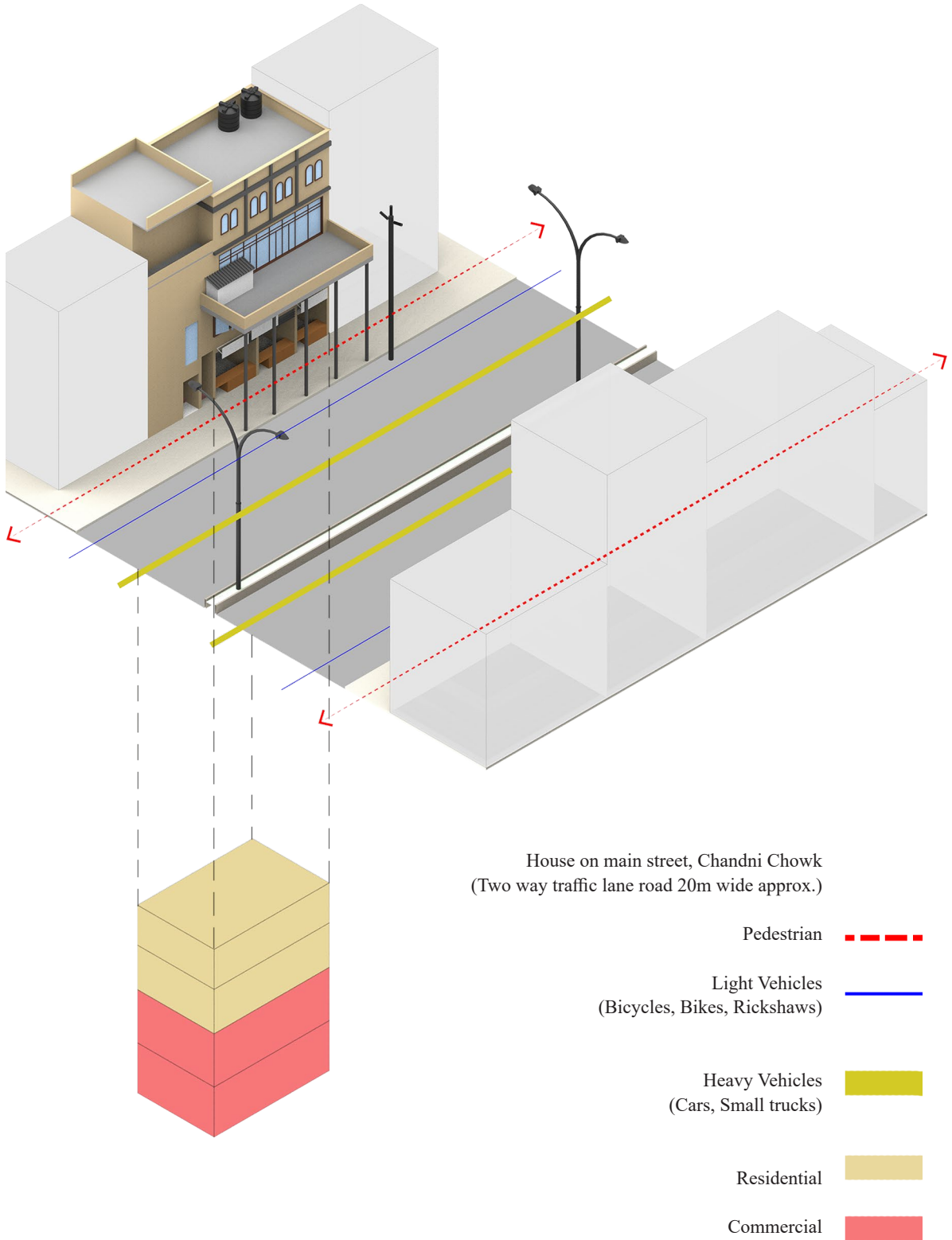


Figure 2.42 Isometric View - Typology 4

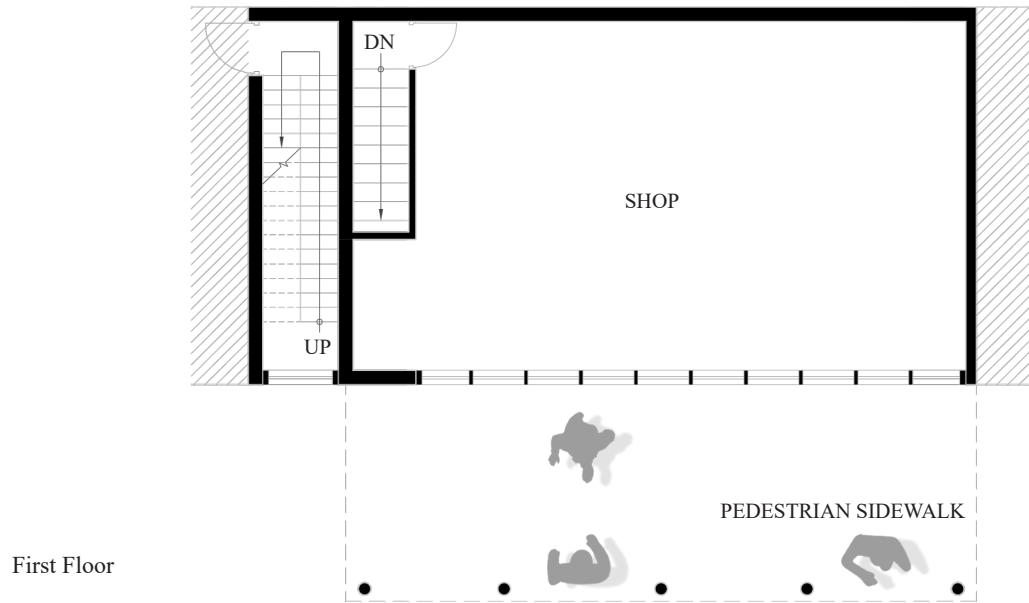
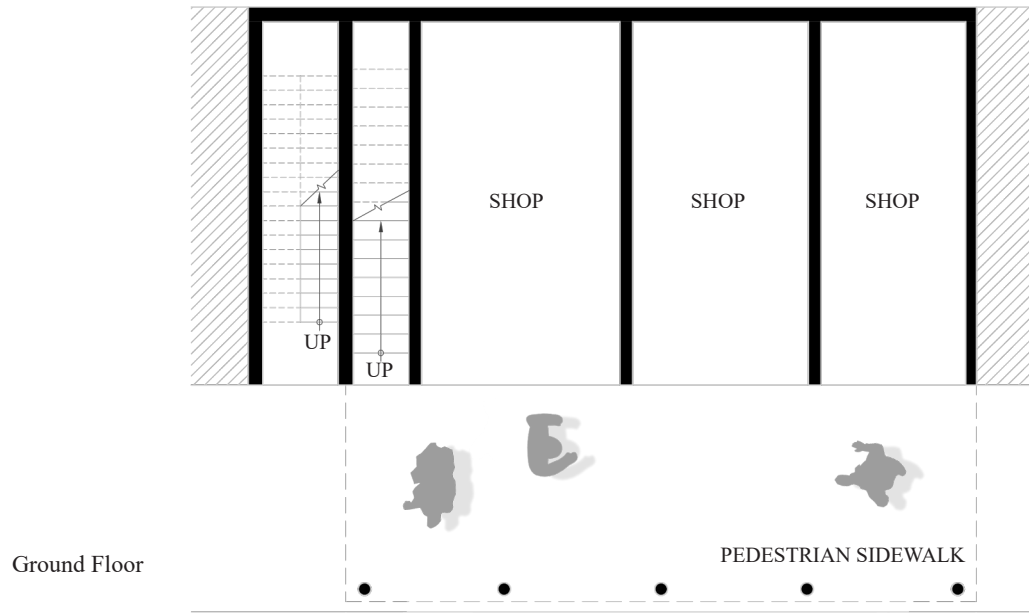


Figure 2.43 Plan - Typology 4
 Scale 1:750

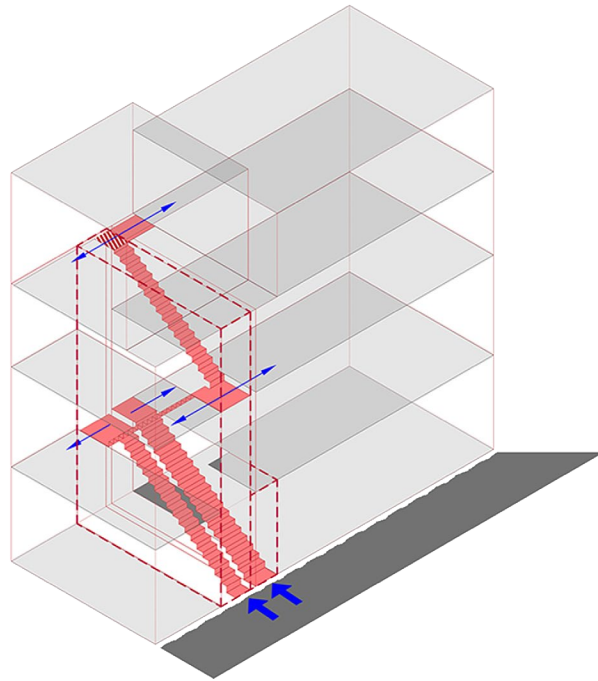


Figure 2.44

Circulation Staircase

Access to upper floors is from the sidewalk. Different staircases take you to different levels and may connect to adjacent building floors.



Figure 2.45

Relationship of typological patterns with the public realm

Chandni Chowk is the most commercial street in Old Delhi, it is famous for the wholesale market and is visited by many tourists everyday. All along the road there are shops which extend to upper floors. Some buildings are entirely commercial. The ground level has a higher floor height and clerestory windows which keeps the visual connection intact.

Typology 5 - Gadodia Market

A common building typology since Mughal era, this type is originally an inward-looking courtyard house. Many mansions have been re-appropriated, however, from their original function of a residence for a large family. This typology, depicted below, is the famous Spice Market of Old Delhi, earlier known as Sarae Bangash, where the courtyard is now built up with small one room accommodations. The buildings are occupied by the laborers and workers. The ground level of the buildings in the courtyard and the original mansion are shops selling spices. The first floor of the original mansion is now a storage space for bags of spices and the terrace on the first level is used for communal cooking and washing clothes. The several rooms in the mansion are occupied as residences.



Figure 2.46 Photograph - Gadodia Spice Market

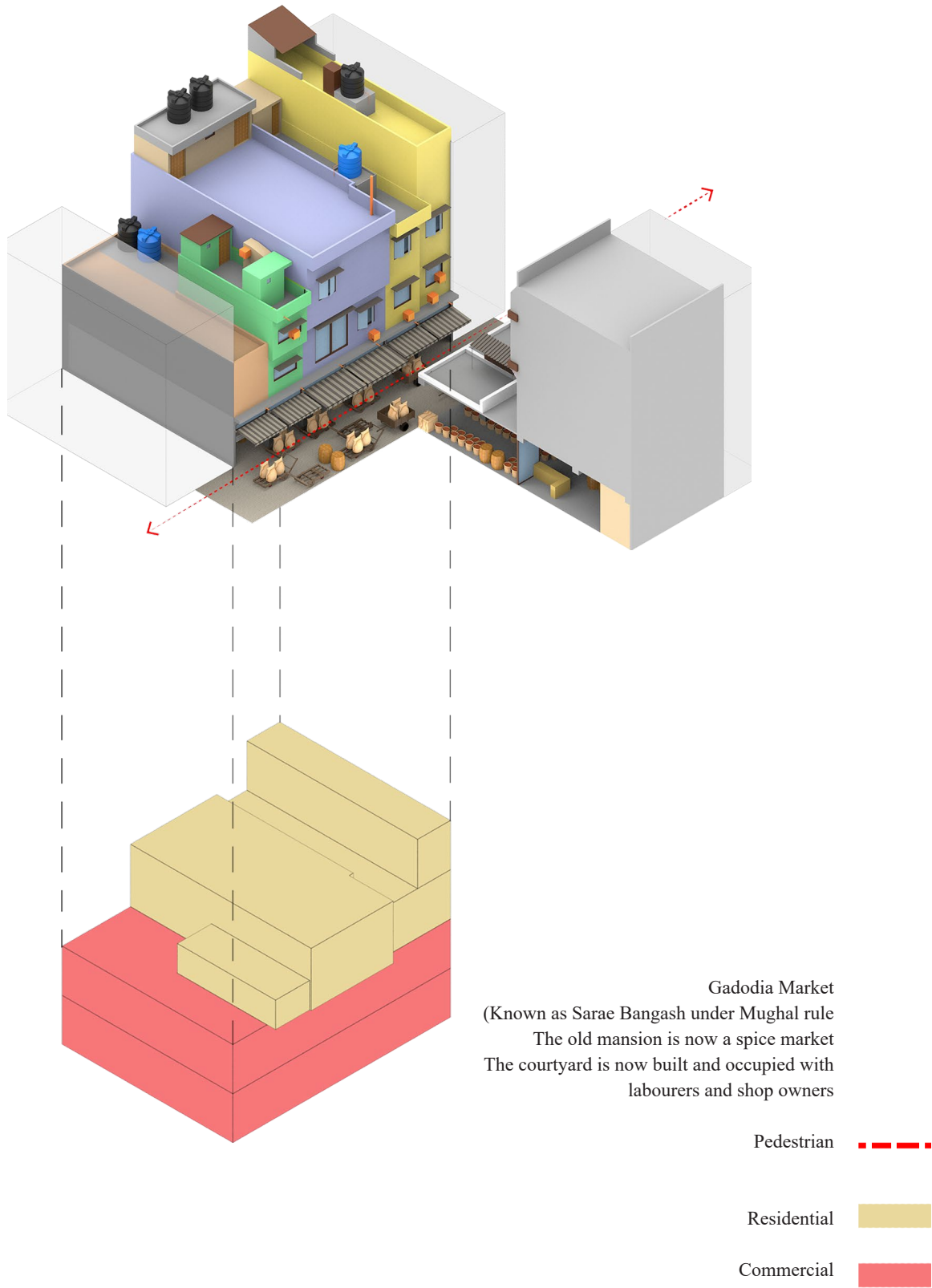
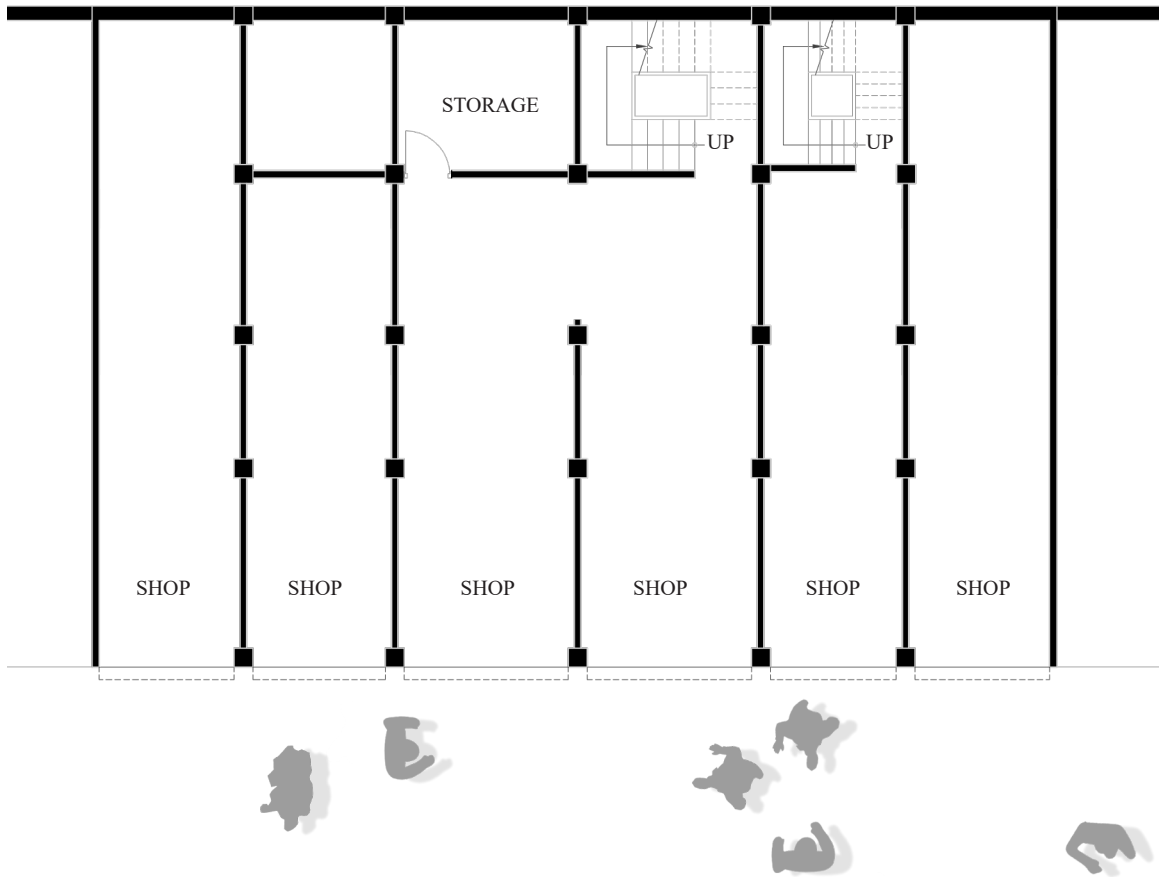


Figure 2.47 Isometric View - Typology 5



Pedestrian access and carts for transporting goods

Ground Floor

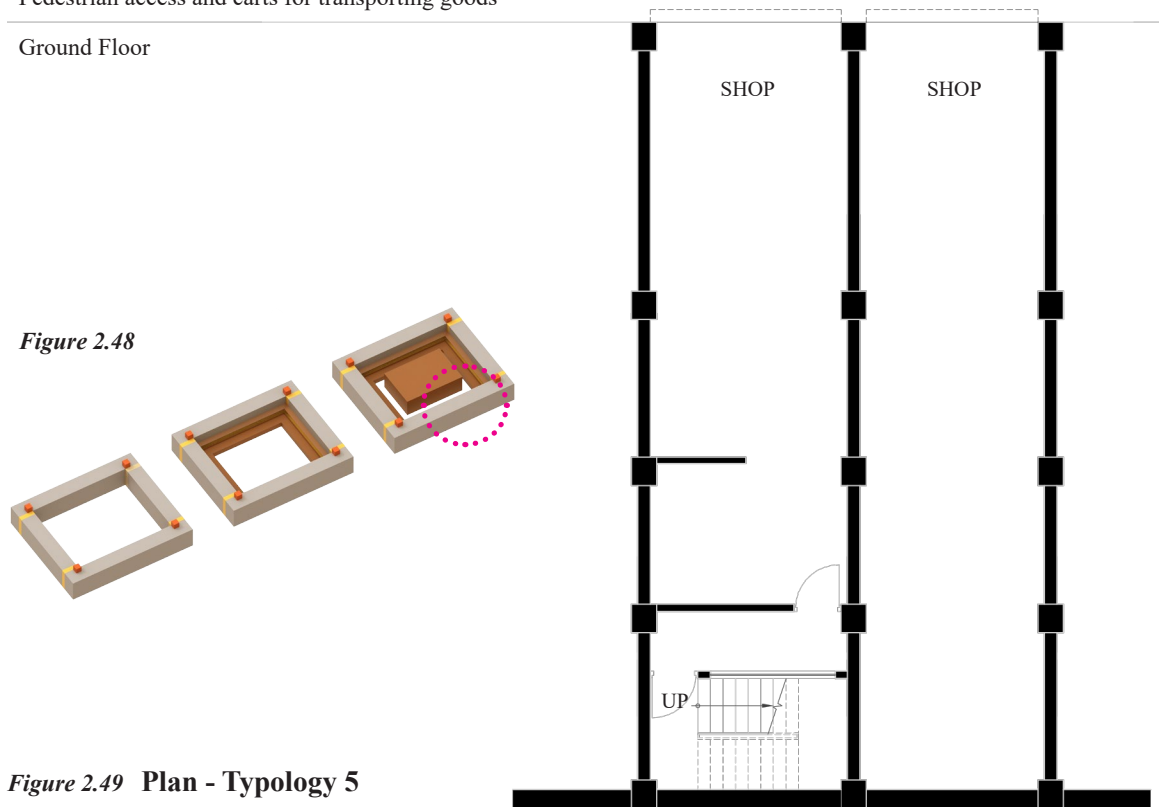


Figure 2.48

Figure 2.49 Plan - Typology 5
Scale 1:200

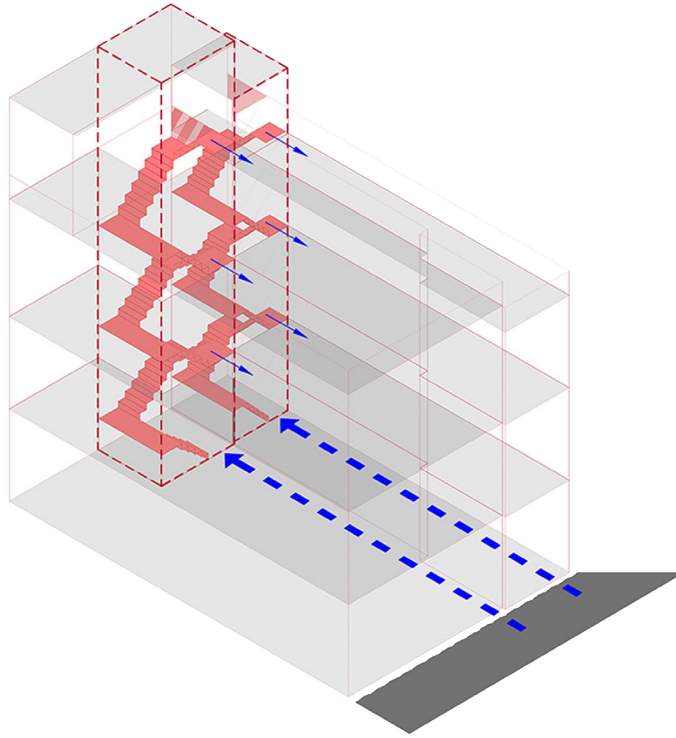


Figure 2.50
Circulation Staircase

The entry to the market is through the street and the upper floors can be accessed through staircases built on four corners of the mansions.

The buildings in the courtyard have haphazard access. Small buildings have separate staircases with large risers and small treads to be built in a small area. No windows or source of light makes them small dark holes in the building.



Figure 2.51
Relationship of typological patterns with the public realm

The built up courtyard has shops on the ground level which create a setting around it for shoppers. Mostly the ground level is congested with carts and sacks of spices. Being a wholesake market, the interaction of customers is minimal as goods are sold and transported to large godowns.

2.4.2 Rooftops or Shared Collective Spaces

The lack of open space and parks in Old Delhi has led to the terraces being shared spaces for the community. From domestic activities of washing clothes, drying spices, making pickles to celebrating various festivals, the rooftops are the communal grounds for the people. On *Independence Day* one can sight hundreds of people on their rooftops flying kites. On *Holi* (festival of colors) children are seen playing with colors and water balloons while on *Diwali* (festival of lights), the city lights up.

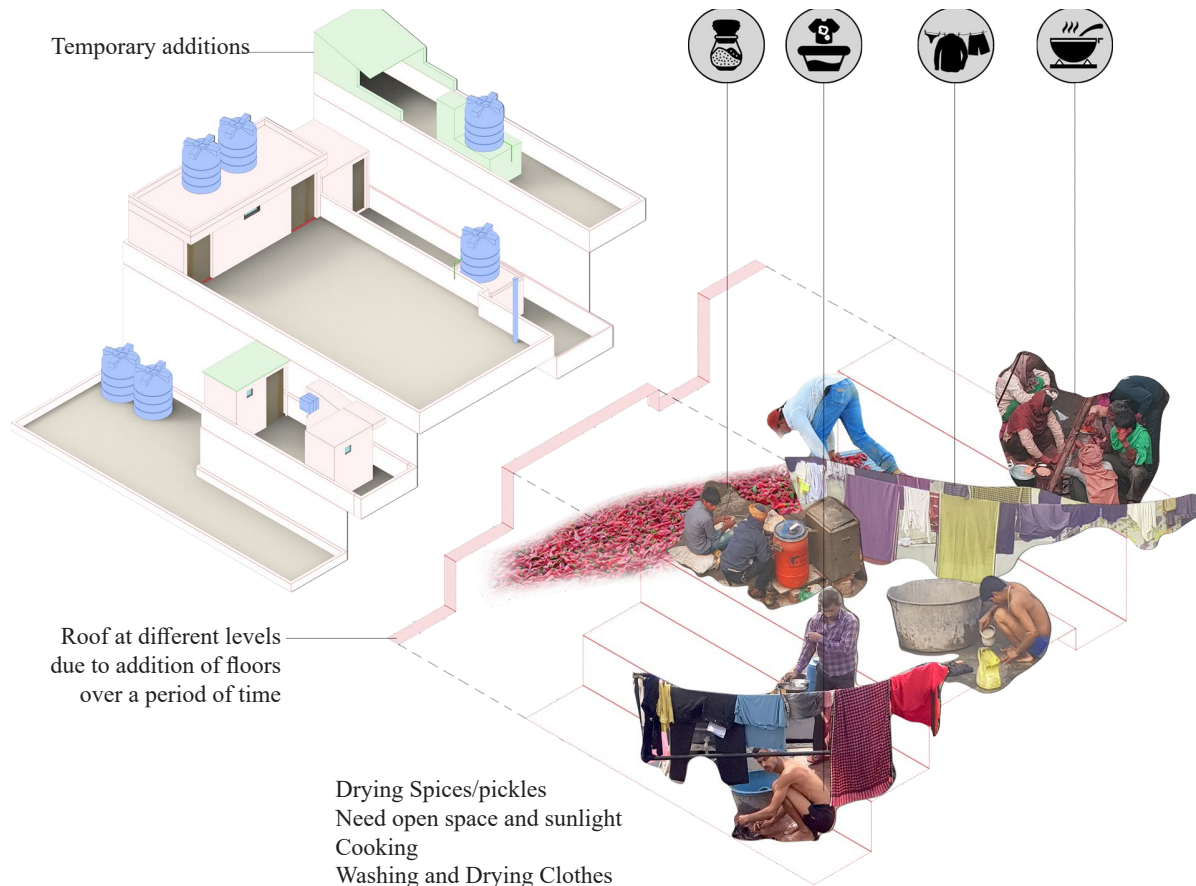
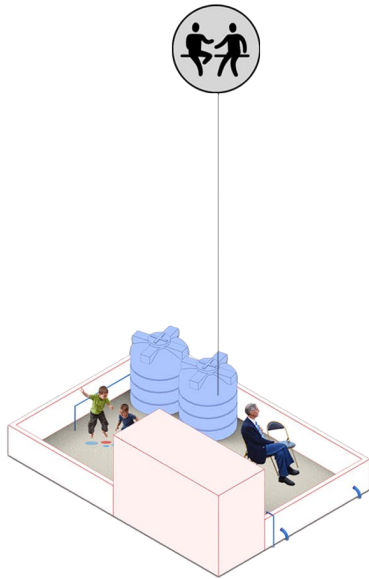
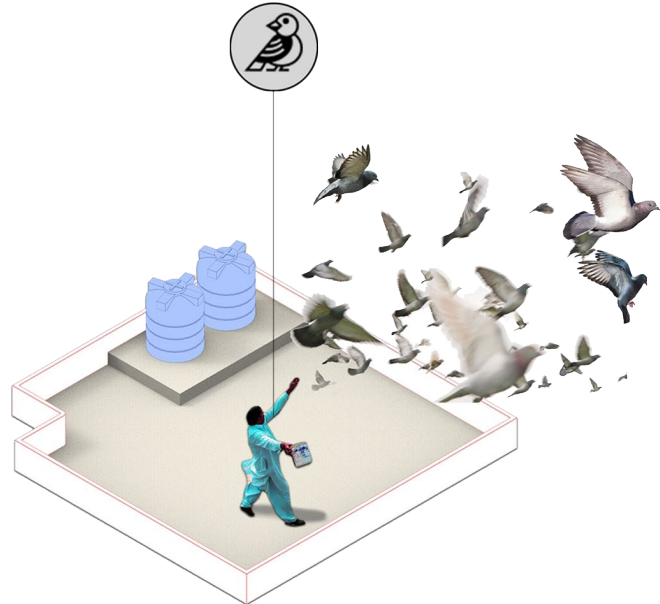


Figure 2.52 Rooftop - Shared space for domestic activities



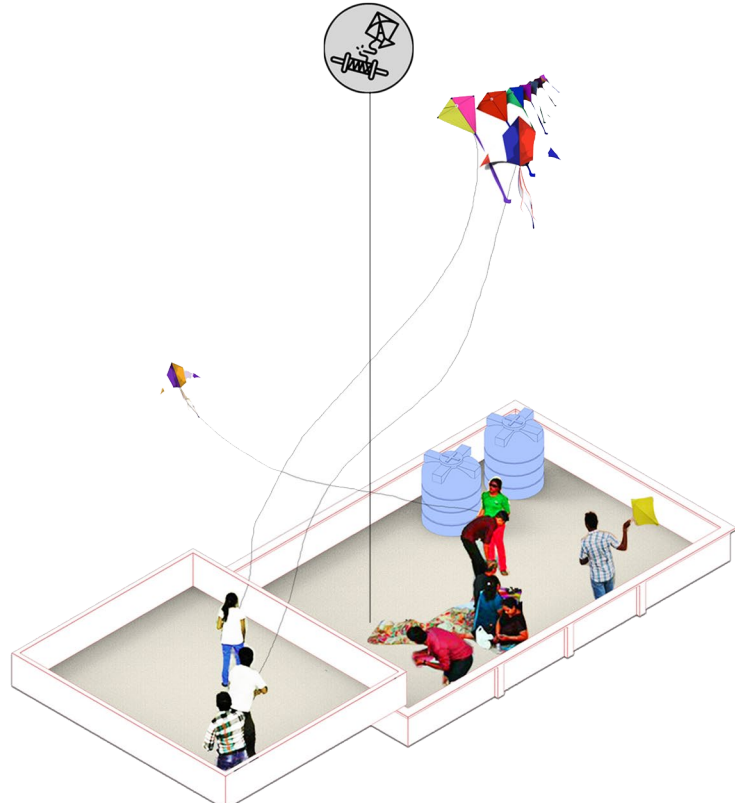
Soaking in the sun
Children playing



Kabootar Baazi (Pigeon flying)



Drying spices/pickles
Need open space and sunlight



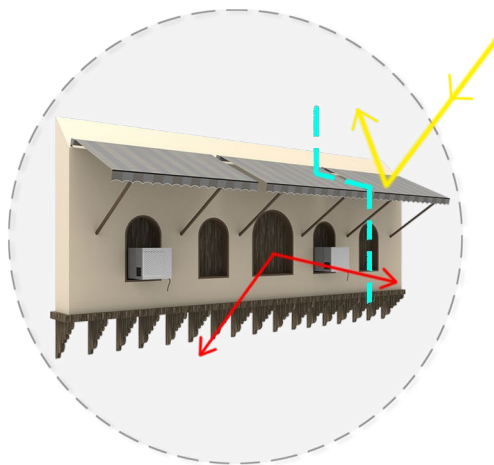
Flying kites on holidays and festivals

Figure 2.53 Rooftop - Shared space to celebrate festivals and communal activities

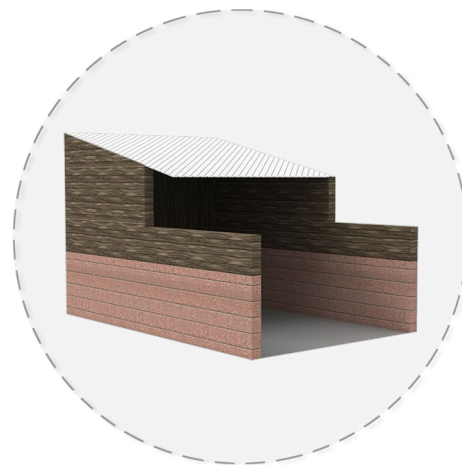
2.4.3 Recurring Typological Detail Patterns

The common typological patterns are derived from the housing typologies. People have incorporated these patterns using different materials and ways of construction in their houses. The repetitive use of elements in the ongoing construction practice informs the cities historical and cultural continuity.

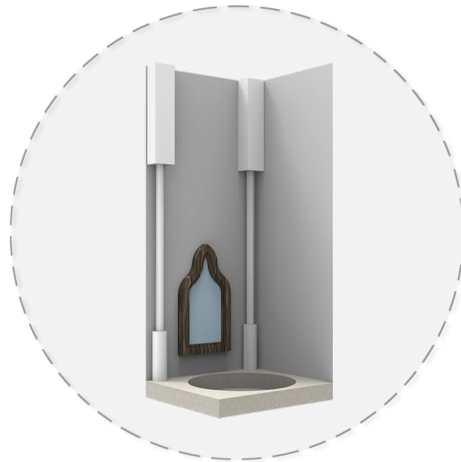
Figure 2.54 Recurring Typological Patterns



Jharokhas - Enclosed balcony which allowed women to see the events outside without being seen themselves
Addition of awnings for climate control



Temporary tin structures on top of buildings for cooking or sleeping purposes



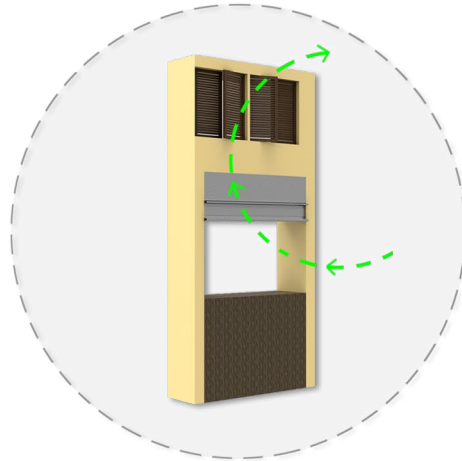
Pyau - A small kiosk for travellers/commuters to get a drink of water



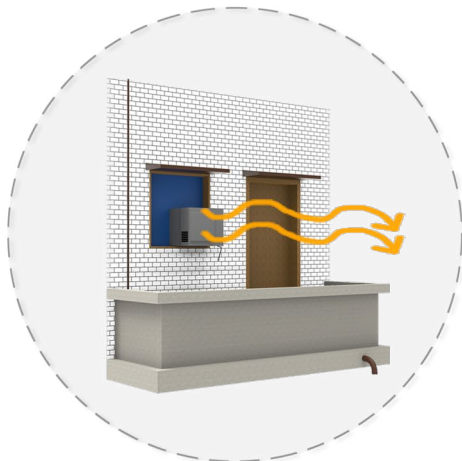
Mumpty on every building roof for water tanks



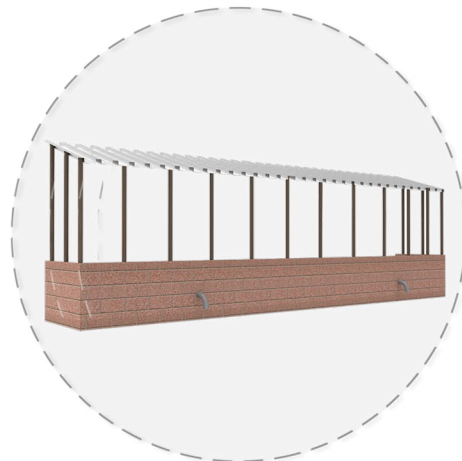
Small podiums in front of houses
Space for gathering



Clerestory windows to admit light and fresh air
Louvred shutters for climate control



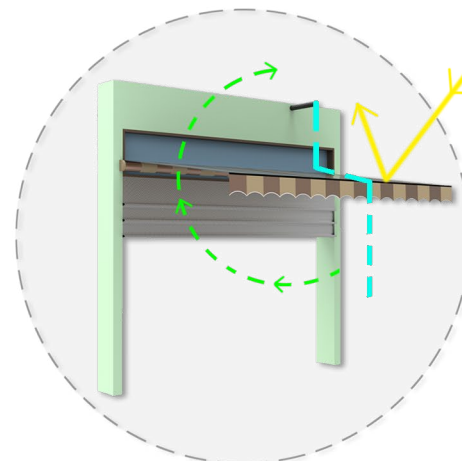
Use of air-conditioning with units placed on windows, blocking natural light and releasing hot air on the narrow streets



Temporary structures made out of tin which are added to existing buildings as balconies



Raised balcony



Shop with shutter, clerestory windows and awning
- Provide shade during summer and monsoons for goods and customers



सावधान
यह मकान असुरक्षित है,
कभी भी गिर सकता है।
कृपया इससे बचकर निकलें।
मकान मालिक
2257, गंगी अनाम, किनारी बाजार, दिल्ली-6
मनीष वर्मा पुत्र श्री सुरेश चन्द वर्मा

Figure 3.01

The design guidelines established in the present Master Plan of Delhi are devised for large modern urban centres and implemented under a top-down process. Application of those guidelines for high density historical urban areas like Old Delhi is not suitable. The problems in developing the small-scale complex built fabrics of dense city areas occur at a neighbourhood scale. These must be resolved through step by step strategies that respond to the immediate context they exist in. Special guidelines at a small-scale that address adjacencies, can help in future preservation of the heritage buildings and in-fill development in Old Delhi.

The following analysis and design guidelines proposal in this chapter attempt to establish standards for better tactical urban development.

Part 03 Framework for Redevelopment

3.1 General Strategy for Design Guidelines for Old Delhi	111
3.1.1) Actor Frameworks for Redevelopment	112
3.1.2) Low-Rise Old Delhi	117
3.1.3) Plot sizes and principles of Setbacks	121
3.1.4) Building Height and Street Width - Existing and Proposal	127
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3.1.1 Actor Frameworks for Redevelopment

Amidst the dense built fabric of Shahjahanabad and lack of housing, many buildings and mansions are now abandoned by their owners due to deteriorating living conditions in the city, inadequate facilities and often due to reasons of dispute between family members. The abandonment has caused the structures to be unsafe over the years because of no maintenance work being done. And, the dispute between family members prevents them to convert the houses into rental accommodation or even occupy the houses themselves. There are signs stuck on the walls of the houses along streets stating that the houses are unsafe and could crumble any moment.

Figure 3.02 outlines some strategies to resolve these problems and develop abandoned plots while taking into consideration the interest of different actors. The thesis proposes three lines of development of these small, complex, situations.

Private Development by Land Owners

With the help of incentives like tax credits, loans with lower interest rates, longer grace periods, capital investment from the Government and personal investment, private owners can create a singular or even a collective framework for redevelopment. The municipal organizations must play the role of a coordinating body and the private sector should renovate their properties as part of the negotiation for such incentives. Local architects can be hired by the owners themselves. This methodology does not require tendering and bidding as it can be performed at a more informal, personal, level. The architect hires the contractor and establishes the structure of the work.

Disputed Property – The Government buys the land and re-sells it or develops it

There are several buildings in Old Delhi that have been abandoned for years. The Government in interest of revitalization of Heritage buildings to boost economic growth through tourism, acquires the building plots. The site can be developed in three ways:

Figure 3.01

The Sign reads:

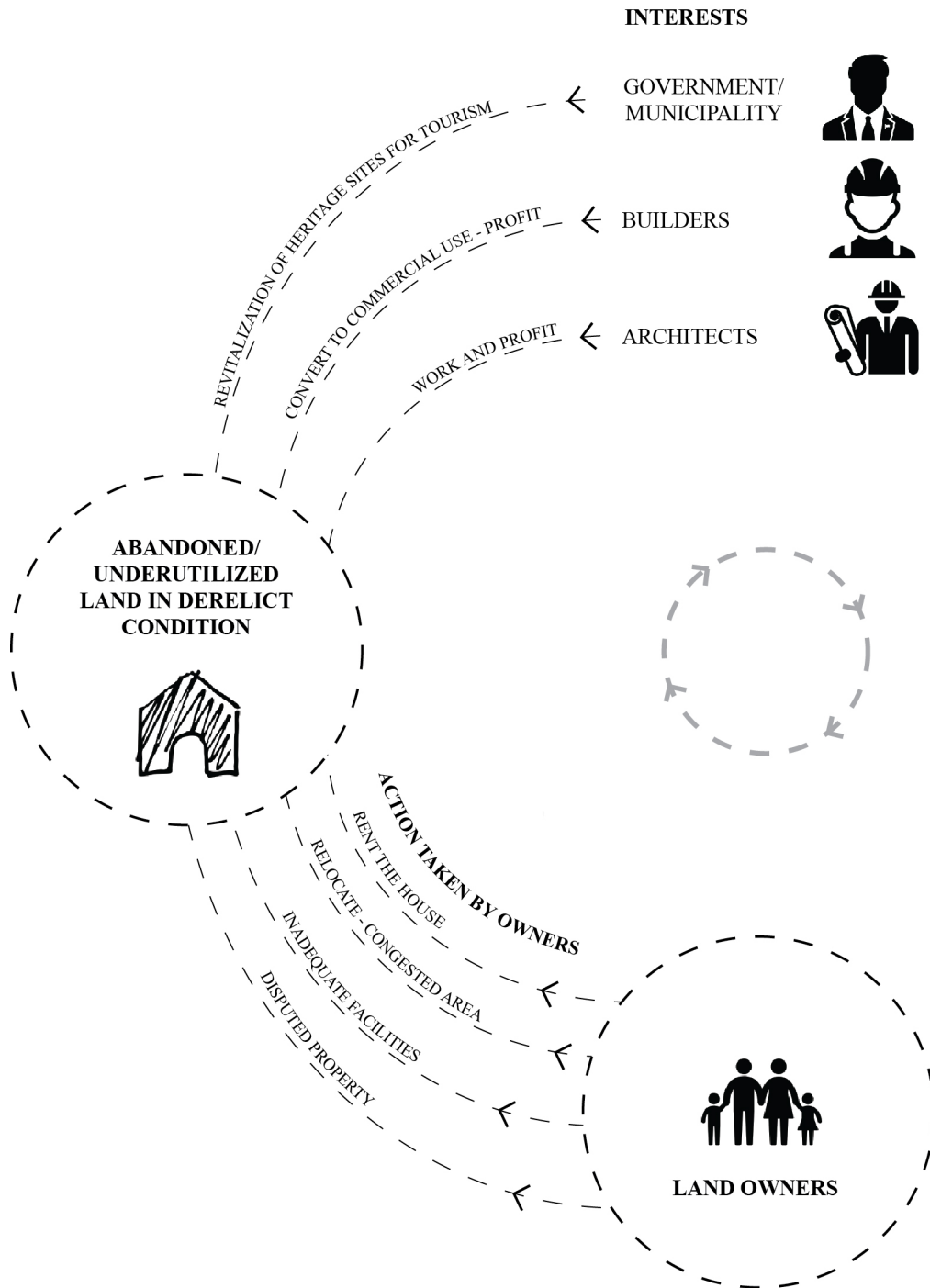
Careful
These houses are unsafe.
They can collapse any moment.
Please be careful while
walking on the street.

- Funded by the Government into a program for public benefit or affordable housing for newer residents.
- Sold to a real estate developer or local contractor over tendering and bidding for a proposal for community benefit programs.
- Through land acquisition – As mentioned in Chapter 3 Sub-chapter 3.1, the present Land Acquisition Act of 2013, compensates the owners of the property speculative market value which can benefit them as opposed to an abandoned derelict site with no rental income. An alternative to land acquisition used in neighbouring cities is the leasing the land from land owners which makes the process less expensive. This strategy can be beneficial for creating temporary shelters for the people especially new migrants.

Disputed Property – The Government intervenes to resolve the issue

Disputed property cases continue in courts for several years which prevent any development on the land. Such cases are resolved through a process of *Mediation and Conciliation*. In this process an advocate who is qualified and certified to be a mediator is appointed to conduct various sessions with both the parties and their respective advocates to reach a settlement regarding the dispute between them. *Pilot Courts or Fast/track Courts* were introduced in India in the year 2000, for cases which are 5-10 years old or above to accelerate the process. There are very few such courts in relation to the number of cases pending. The Government must introduce more pilot courts throughout the country to speed up the process of resolution.

Figure 3.02 Land Ownership, Interest and Strategies



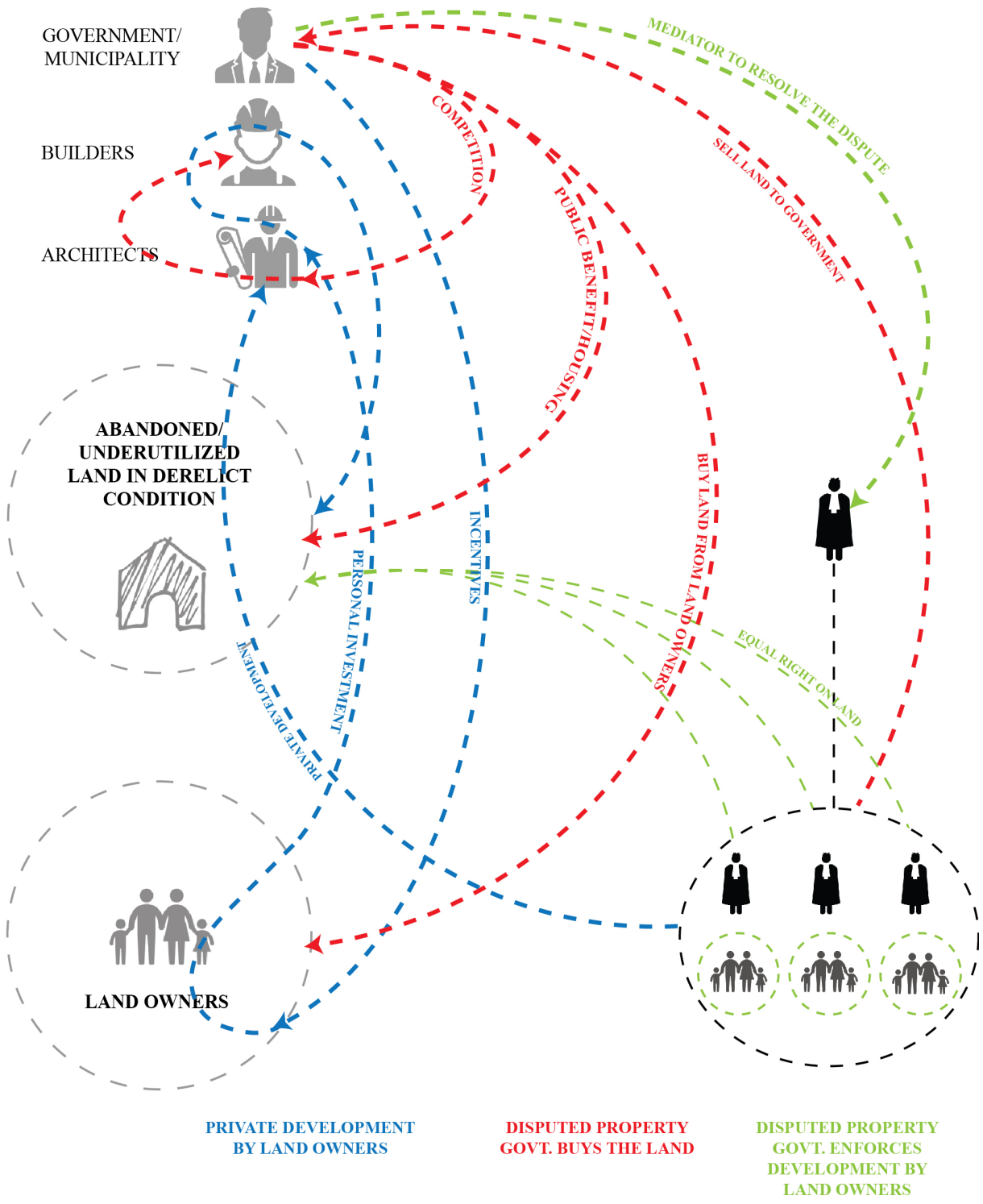


Table 3.01 Plot sizes & minimum setbacks for Delhi

PLOT SIZE (SQ.M)	MINIMUM SETBACKS			
	FRONT (M)	REAR (M)	SIDE (M)	SIDE (M)
Upto 60	0	0	0	0
Above 60 & Upto 150	3	1.5 (avg.)	-	-
Above 150 & Upto 300	4	2 (avg.)	-	-
Above 300 & Upto 500	4	3	3	-
Above 500 Upto 2,000	6	3	3	3
Above 2,000 Upto 10,000	9	6	6	6
Above 10,000	15	12	12	12

Table 3.02 Plot sizes and Floor Area Ratio for Delhi

PLOT SIZE (SQ.M)	MAX. GROUND COVERAGE %	FAR	NO. OF DU'S
Above 50 to 100	90	350	4
Above 100 to 250	75	300	4
Above 250 to 750	75	225	6
Above 750 to 1000	50	150	9
Above 1000 to 1500	40	120	9
Above 1500 to 2250	40	120	12
Above 2250 to 3000	40	120	15
Above 3000 to 3750	40	120	18
Above 3750	40	120	21

3.1.2 Low-Rise Old Delhi

The low rise horizontal growth of Old Delhi and the very small size of the land parcels can be attributed to the low FAR implemented in the city. Shahjahanabad being a part of Central Delhi and in close proximity to the restricted zone of Lutyens Delhi, Government centre, is prohibited from high rise construction due to security reasons. Table 3.01 & 3.02 represent the minimum setbacks and FAR that determine the buildable floor area in all of Delhi. Table 3.03 is an analysis of the actual buildable number of floors after applying the setbacks and taking into consideration the FAR. It was noted that the ground coverage on certain plot sizes is less than what is allowed after the setbacks are applied. This in turn does not allow the individual or group to construct as per the allowable FAR as depicted in figure 3.03 & figure 3.04. In Delhi the plot sizes are large as compared to Shahjahanabad, hence, the conditions for the plot sizes available in Old Delhi are further extracted and analyzed in the following sub-chapter.

Table 3.03 Floor Area Ratio and Ground Coverage after applying minimum setbacks

PLOT SIZE (SQ.M)	MAX. GROUND COVERAGE (%)	MAX. GROUND COVERAGE (SQ.M)	NO. OF FLOORS	AVAILABLE GROUND COVERAGE AFTER SETBACKS	NO. OF FLOORS AFTER SETBACKS	FAR	NO. OF DU'S	TOTAL FLOOR AREA (SQ.M)
60	90	54	4	60	4	350	4	210
100	75	90	4	55	6	300	4	350
150	75	112.5	4	105	5	225	6	450
200	50	150	3	140	3	150	9	450
300	40	225	3	210	3	120	9	675
400	40	300	3	221	4	120	12	900
500	40	375	3	306	4	120	15	1,125
600	40	450	3	294	4	120	18	1,350
1,000	40	500	3	589	3	120	21	1,500
2,000	40	800	3	1394	3	120	-	2,400
5,000	40	2000	3	3230	3	120	-	6,000
8,000	40	3200	3	5780	3	120	-	9,600
10,000	40	4000	3	6800	3	120	-	12,000
12,000	40	4800	3	7068	3	120	-	14,400

Figure 3.03 Plot sizes depicting building volume as per Setbacks & Floor Area Ratio

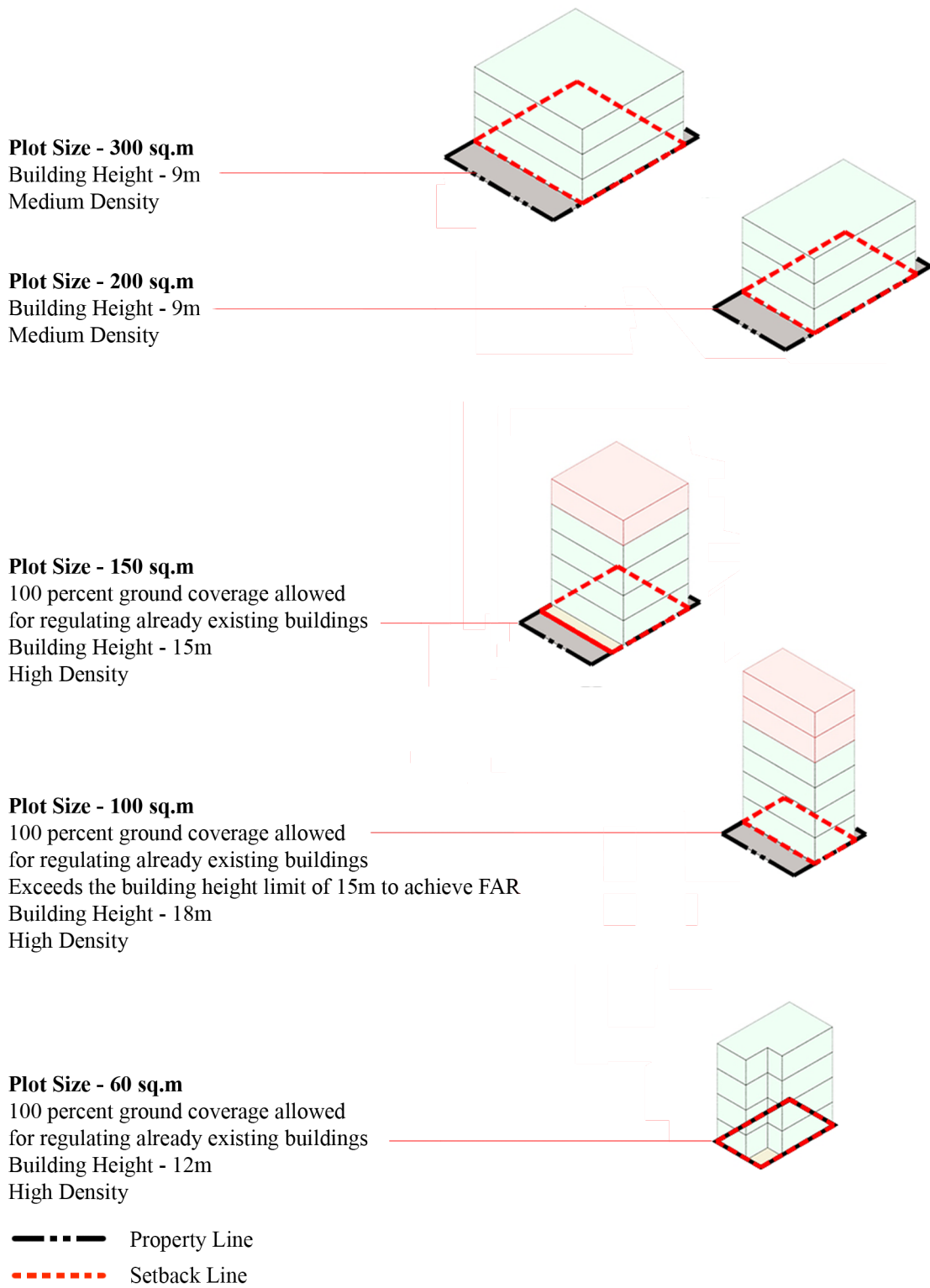


Figure 3.04 Plot sizes depicting building volume as per Setbacks & Floor Area Ratio

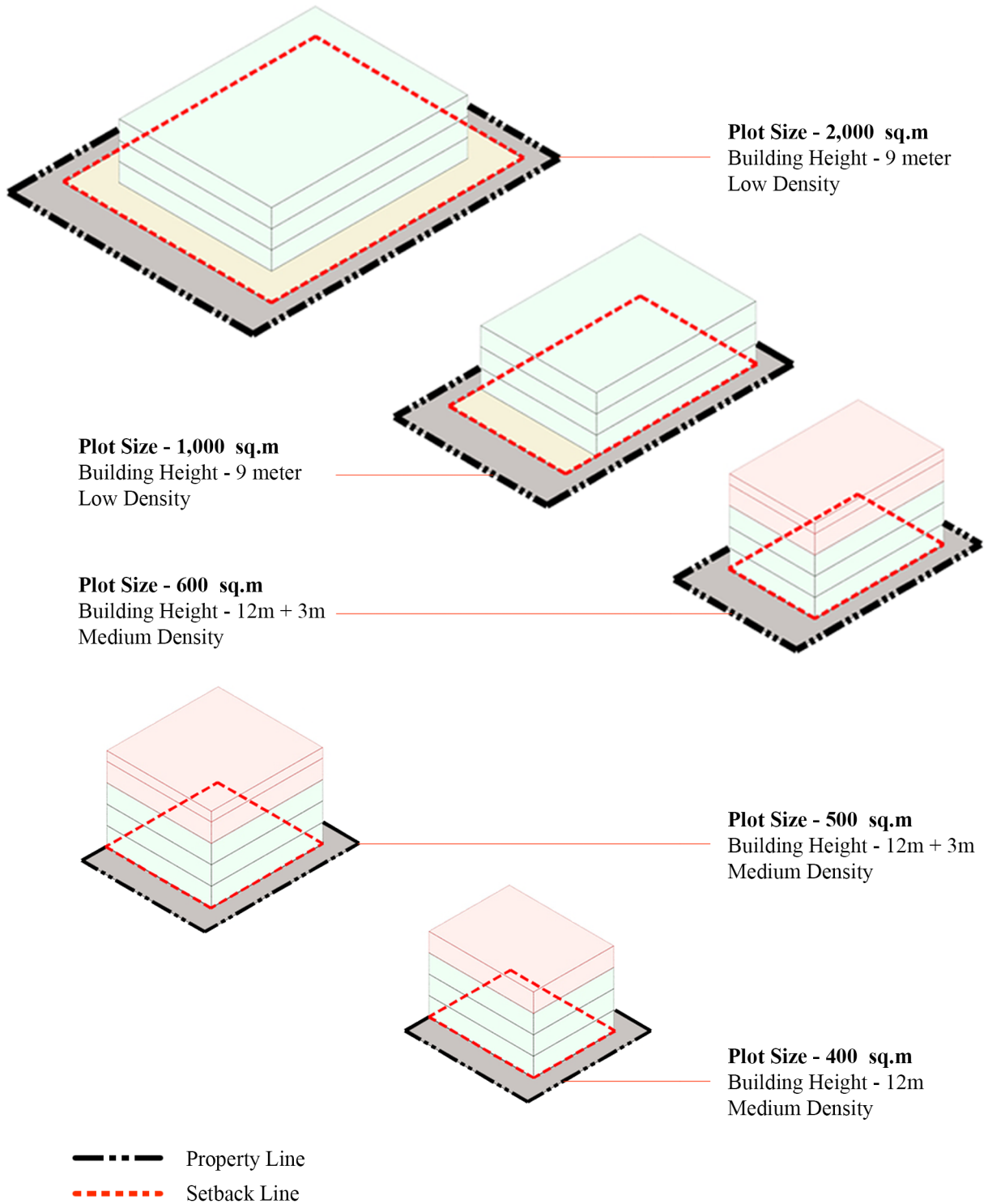
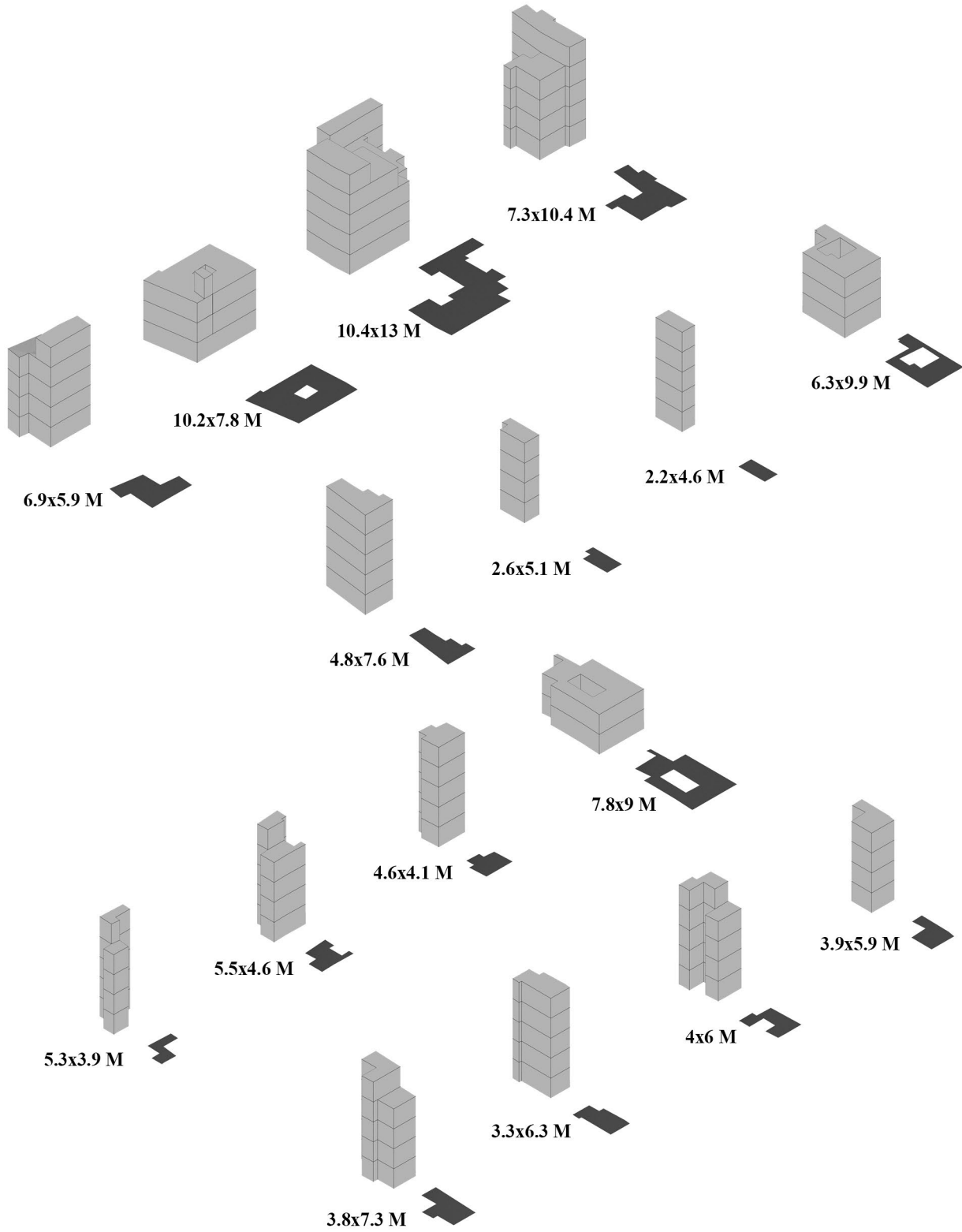


Figure 3.05 Range of Plot sizes in Shahjahanabad



3.1.3 Plot sizes and principles of Setbacks

The parcelization of land in Old Delhi over the years has led to very small plot sizes. As mentioned in *table 3.01*, a plot size of 60 sq.m does not require any setback. A large percentage of plot sizes in Shahjahanabad are less than 60 sq.m and therefore the existing construction practices build without any setbacks. But for plot sizes larger than 60 sq.m, if complete setbacks are applied, the ground coverage reduces (*refer table 3.03*) further more than the already small size of the plot. This thesis proposes that the existing high density form of Old Delhi does not require any setbacks except in specific site conditions which are highlighted in the next following diagrams. Many adjacent buildings have window openings oriented towards the plots incase of abandonment of land for several years.

Figure 3.08 represents the site and building relationship through sectional diagrams after applying setbacks as existing in Delhi's present Master Plan from *Table 3.01* on plot sizes relevant in Old Delhi.

As a basic first step, the proposed sectional diagrams in *Figure 3.09* propose a minimum of 1.5 meter setback only on wall façades which have window openings in case of redevelopment on collapsed building sites or renovation projects. This prevents blocking of existing openings for the residents and also allows for percolation of light on all the floors and creates visual connection between buildings.

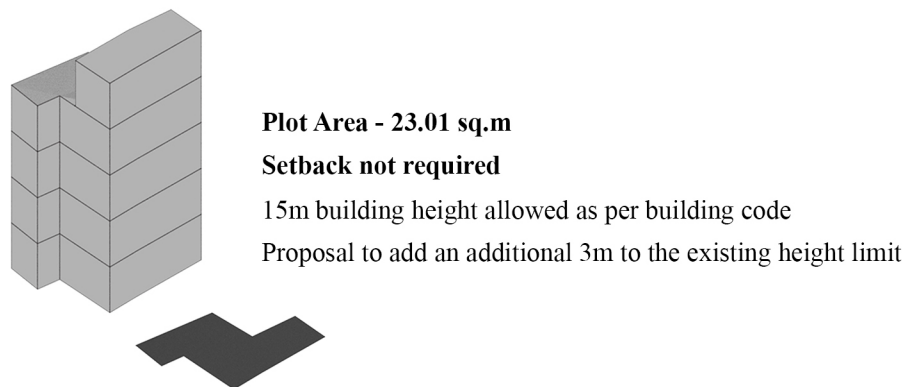
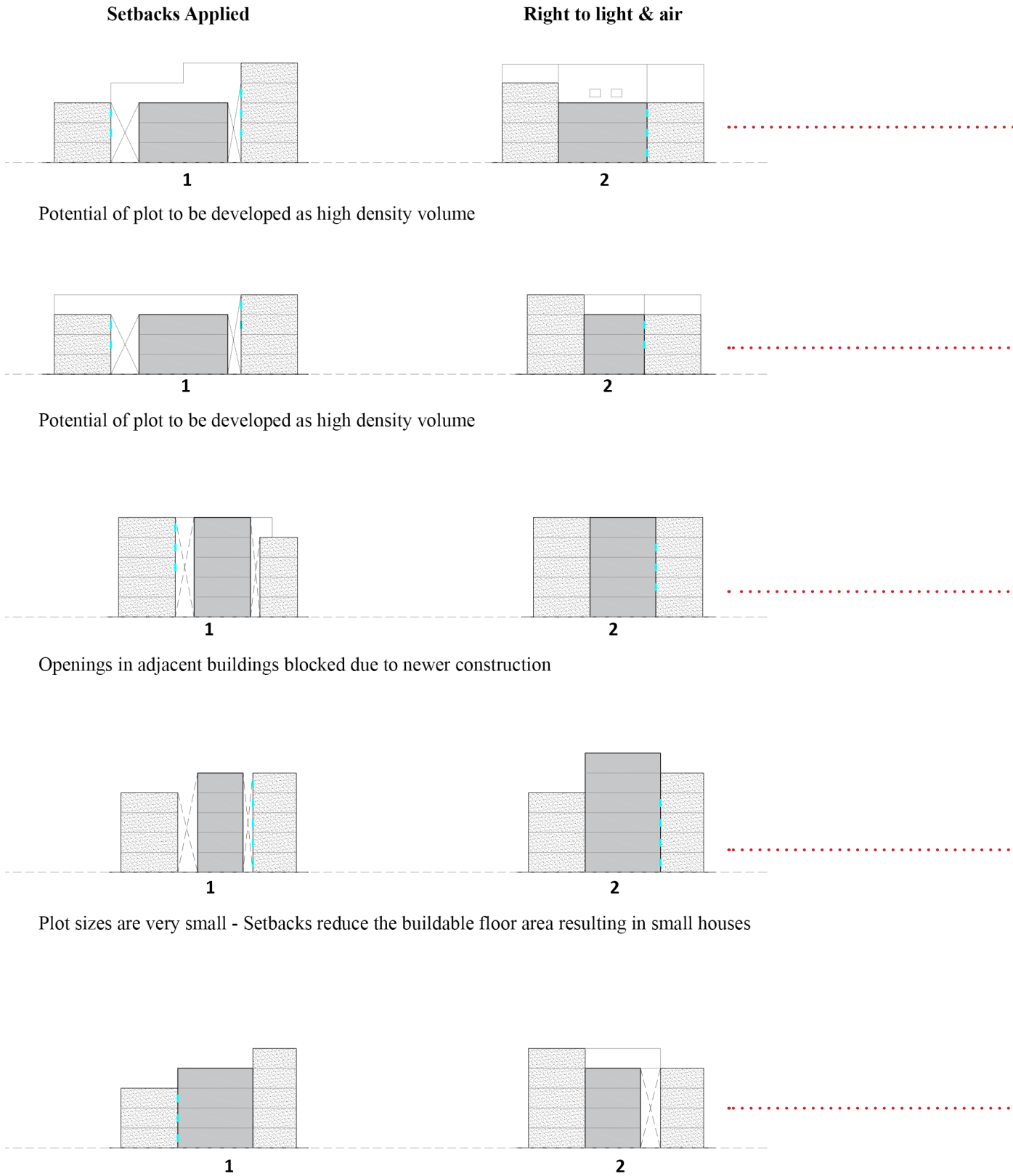
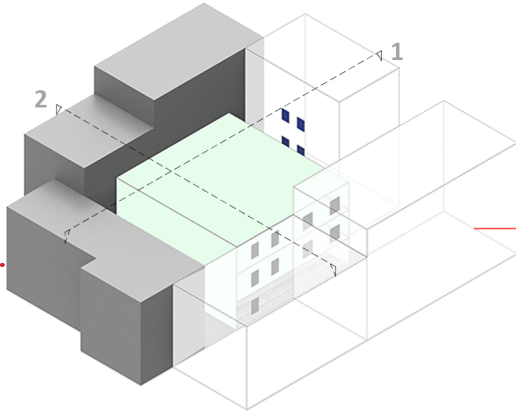


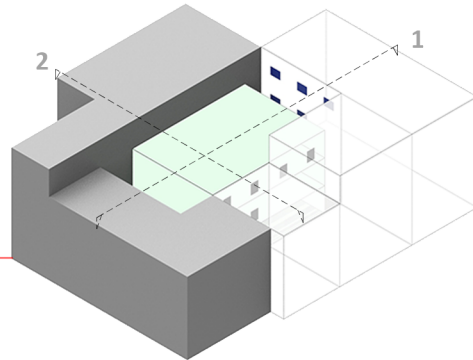
Figure 3.06 Depiction of Setback and Building Height

Figure 3.07 Existing - Sectional diagrams through different site conditions

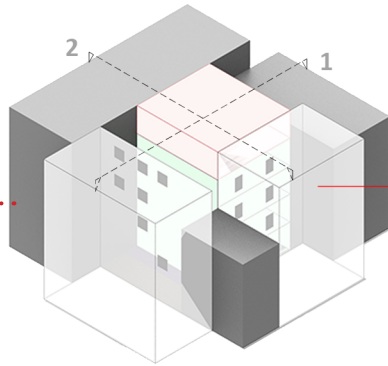




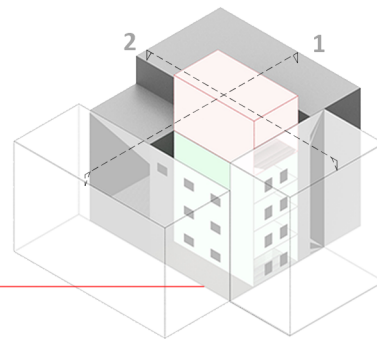
Plot Size - 300 sq.m
 Ground Coverage - 210 sq.m
 Building Height - 9m
 Medium Density



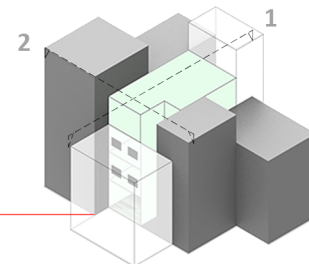
Plot Size - 200 sq.m
 Ground Coverage - 140 sq.m
 Building Height - 9m
 Medium Density



Plot Size - 150 sq.m
 Ground Coverage - 105 sq.m
 Building Height - 15m
 High Density

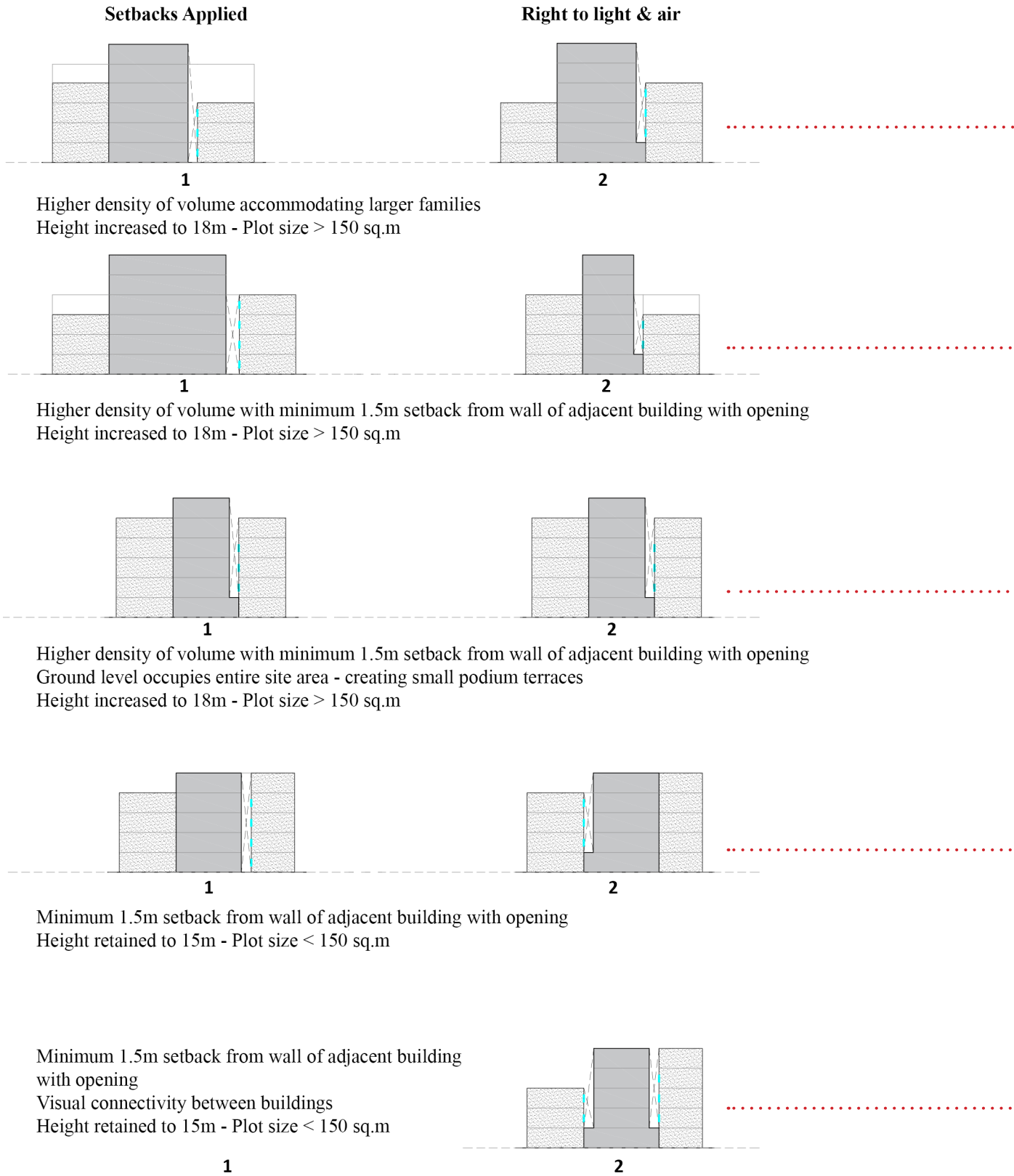


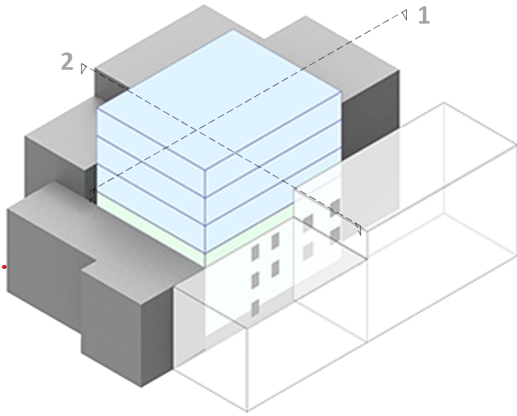
Plot Size - 100 sq.m
 Ground Coverage - 55 sq.m
 Building Height - 18m
 High Density



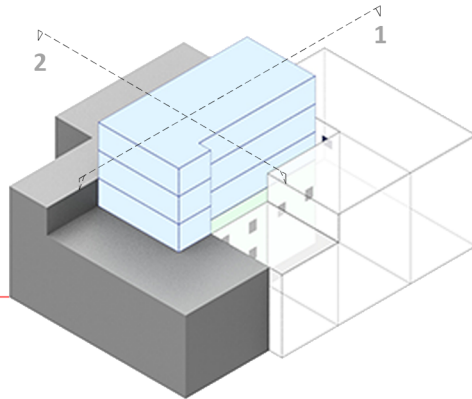
Plot Size - 60 sq.m
 Ground Coverage - 54 sq.m
 Building Height - 12m
 High Density

Figure 3.08 Proposed revision - Sectional diagrams through different site conditions

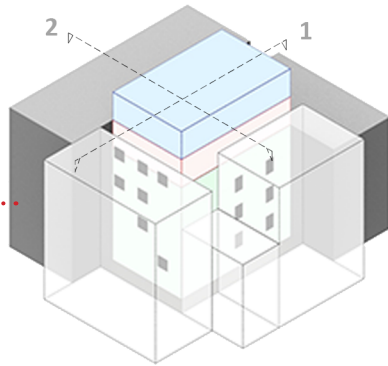




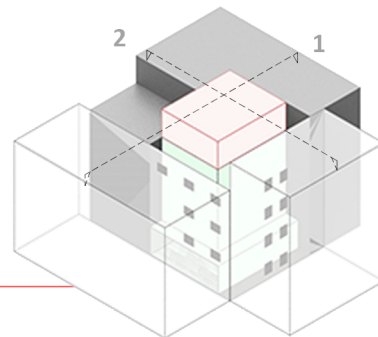
Plot Size - 300 sq.m
 Ground Coverage - 230 sq.m
 Building Height - 18m
 High Density



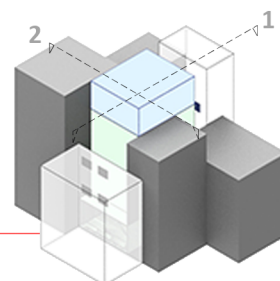
Plot Size - 200 sq.m
 Ground Coverage - 163 sq.m
 Building Height - 18m
 High Density



Plot Size - 150 sq.m
 Ground Coverage - 115 sq.m
 Building Height - 18m
 High Density

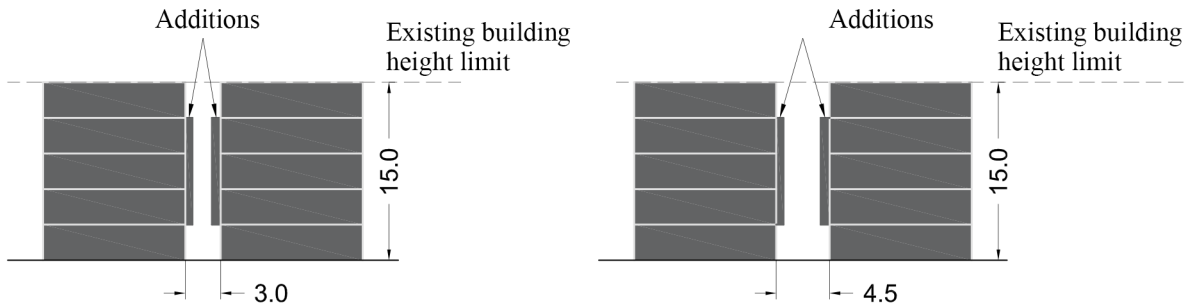


Plot Size - 100 sq.m
 Ground Coverage - 85 sq.m
 Building Height - 15m
 High Density



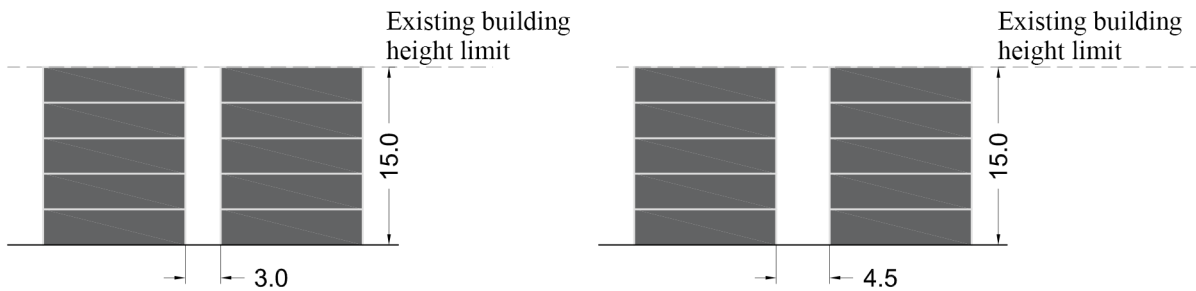
Plot Size - 60 sq.m
 Ground Coverage - 65 sq.m
 Building Height - 15m
 High Density

Figure 3.09 Existing Building Height and Encroachment



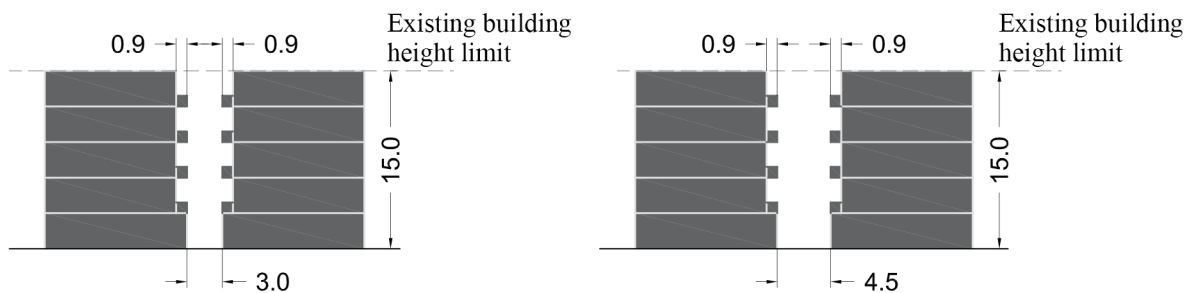
Addition of balconies on building facades - Encroachment on existing narrow street widths

Figure 3.10 Street Width Proposal by Shahjahanabad Development Corporation



Proposed street width by SRDC -
3m for 30-50m long road
4.5m for more than 50m long road

Figure 3.11 Building Height Proposal



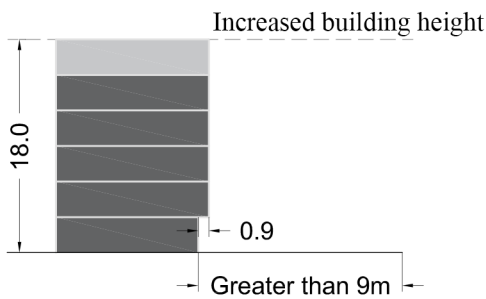
Setback of 0.9 meter on facade of buildings facing street width less than 9 meter

3.1.4 Building Height and Street Width - Existing and Proposal

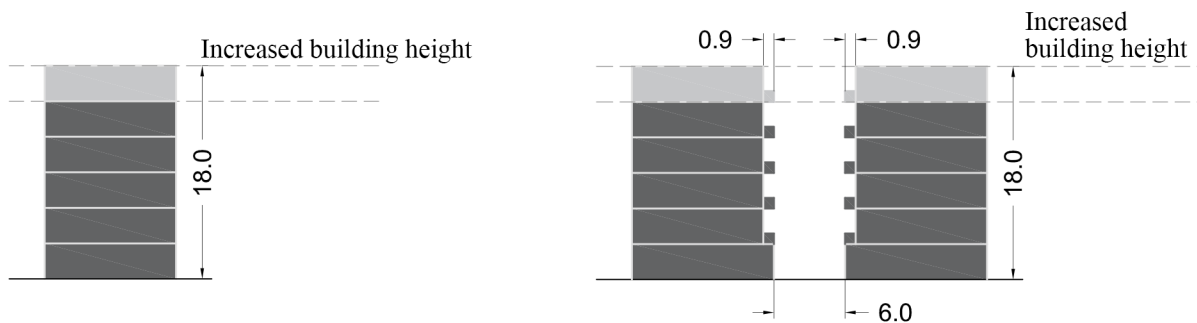
The street network in Shahjahanabad is organic. Some inner streets are as narrow as 2 feet. The 4 to 5 storey high buildings dominate the streets. In addition, the building façade encroachment onto the street also adds to the congestion. SRDC proposes guidelines for minimum street widths concerning hazardous events occurring due to fire (*figure 3.11*). But the reorganization of the built fabric requires demolition of the existing buildings. The change will occur over time but through incremental strategies on newer construction with stronger materials, a more integrated and functional street facing building typology can be developed.

- The frontal street facing setbacks can be used for circulation or balconies.
- The buildings facing streets with street width greater than 9 meters can use an overhang of 0.9 meters for balconies or extension.
- The proposal to increase the building height from 15 meters to 18 meters is already under consideration. The thesis proposes to increase the height for newer construction of buildings facing the street width greater than 6 meters.

Figure 3.12 Building Height Proposal

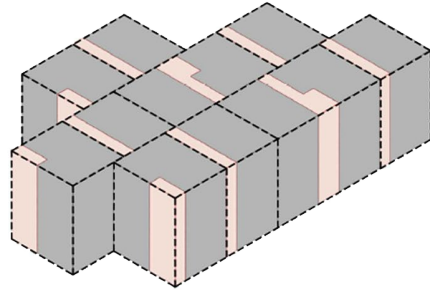


Overhang of 0.9 meter for buildings facing street width greater than 9 meter
Increase in building height from 15 meter to 18 meter



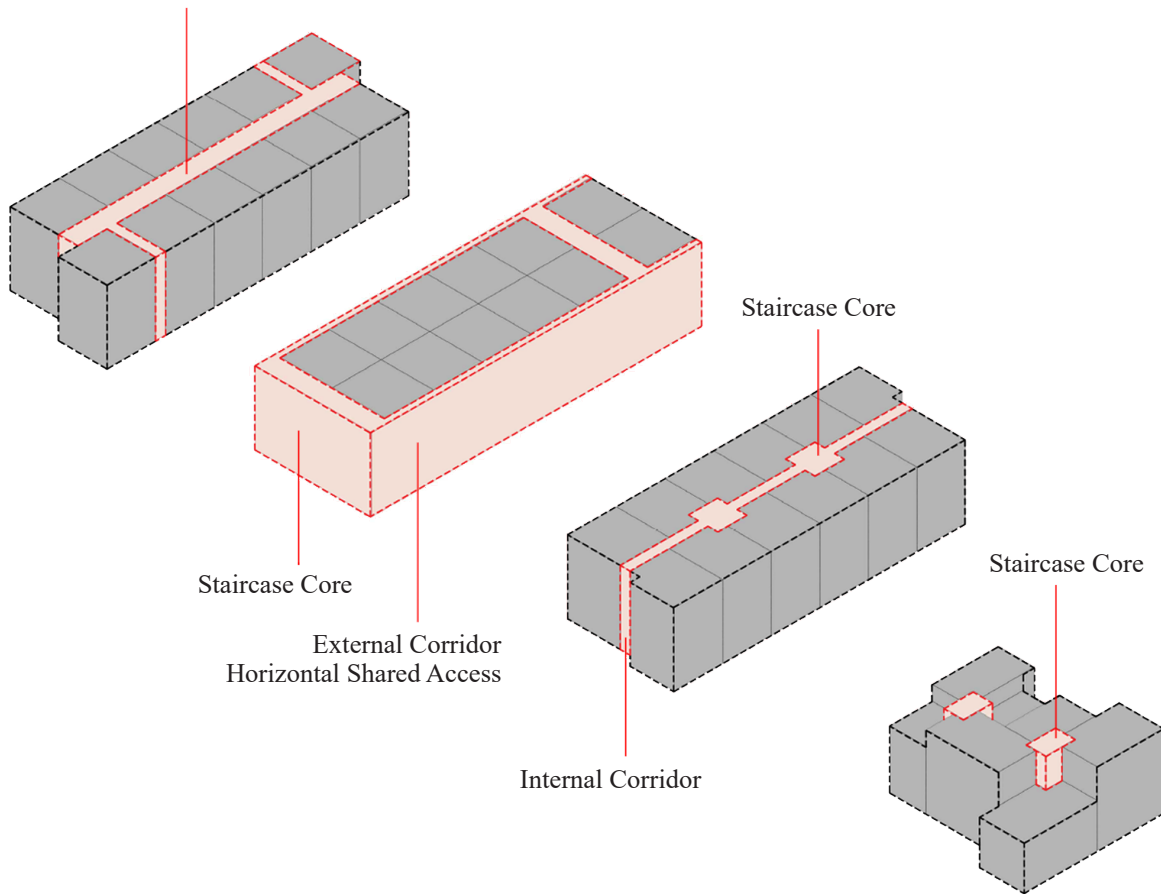
Increase in building height from 15 meter to 18 meter on street width > 6 meter

Figure 3.13 Effective Circulation and Consolidation of Building's Functional Use



Each building has a separate staircase core
Staircases occupy upto 30 percent of space in a building

Collective Space - Internal Street and Circulation Core



- Building Plots
- Circulation

3.1.5 Consolidation of Access and Circulation

Due to the small and individual plots sizes, a staircase core in every plot occupies up to 30 percent of the floor area. The staircases are also very narrow and feel unsafe for an outsider who is visiting. The thesis proposes grouping of smaller plots to share common access and circulation. *Figure 3.14* depicts different scenarios of staircase cores combined with internal and external corridors.

- The inner corridor creates a semi-private space for buildings that are oriented outwards facing the street. It can act as a collective space and utilized for different uses.
- Similarly, an external corridor creates an outdoor horizontal shared access and consolidates the building volume into one.
- Staircase cores serving small clusters of houses can act as transition spaces. The landings can be designed as points of gathering.

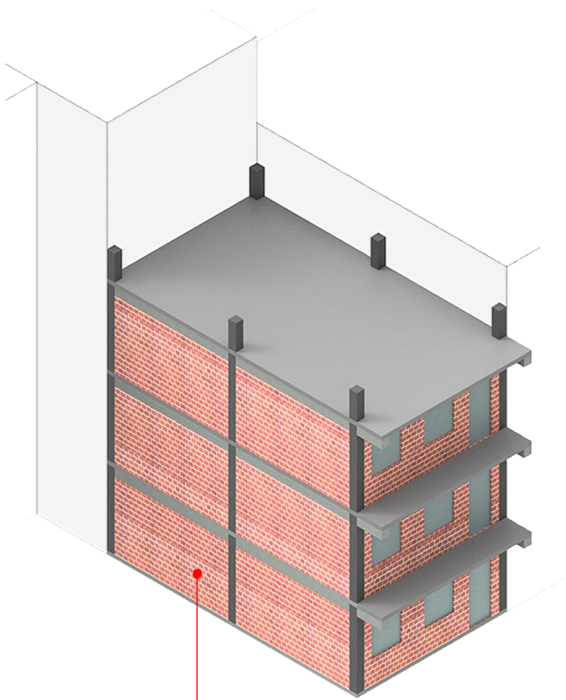
Although circulation cores seem to occupy a substantial amount of space in buildings, but, planning of their location and grouping can lead to efficient use of space.



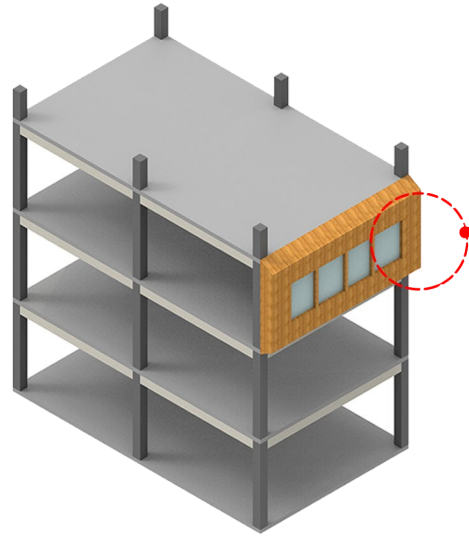
Figure 3.14

Some parts of the Old City even today exhibit the old geography of the city. Some areas in the city are higher showcasing the Aravali range. The image shows small houses with each having a separate staircase entrance.

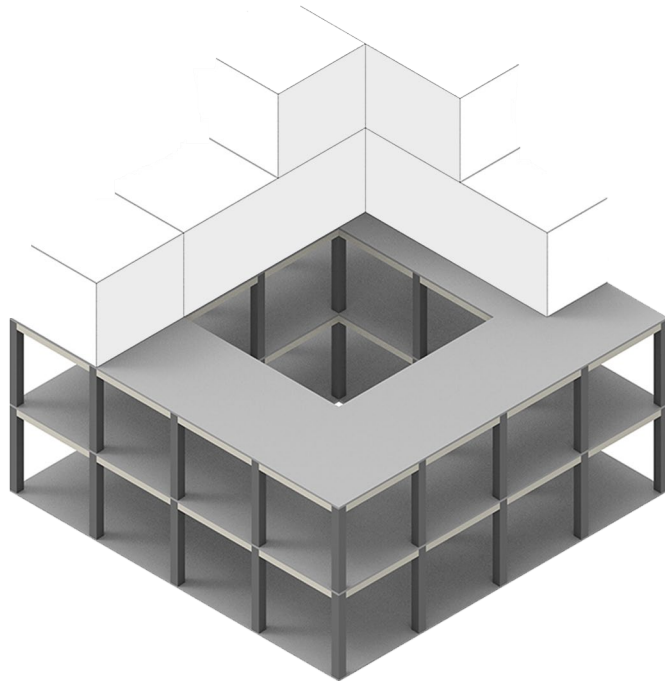
Figure 3.15 Common Construction Practice and Materiality



Common Practice -
Concrete framework infill
of brick masonry



Typical Housing Typology
Material - Wood (cause of fire)
Built as a temporary structure as balcony



Courtyard Typology - Additional construction

3.1.6 Flexibility and Local small scale Construction Practice and Materiality

The hot and dry climatic conditions in Delhi are the reason for concrete framework with brick infill as the most common construction practice. The weather resistant properties of these materials makes them a suitable choice even during heavy rains in the city.

- The exterior walls are constructed to be thicker, approx. 250mm after adding plaster. The thicker walls keep the house cool during summers and store heat during winters.
- The interior walls are approx. 120mm after applying plaster and paint. The inner walls made of brick help maintain the temperature inside the house.

Most of the additions on the existing buildings are constructed by the people themselves. Working as laborers in the city, laying bricks themselves is an easy job. Although most of the construction is using brick, but, newer and cheaper materials like waste tin sheets, metal sheets, waste wooden planks or metal rods are used for constructing balconies and roofing over temporary structures. The use of wood on the exterior of the building can be a cause of fire. Concrete slabs must be used for overhangs. Metal rods supporting corrugated translucent polycarbonate sheets for shade in balconies can be an affordable and safe material choice. People must use vernacular construction practices to achieve durability and affordability.

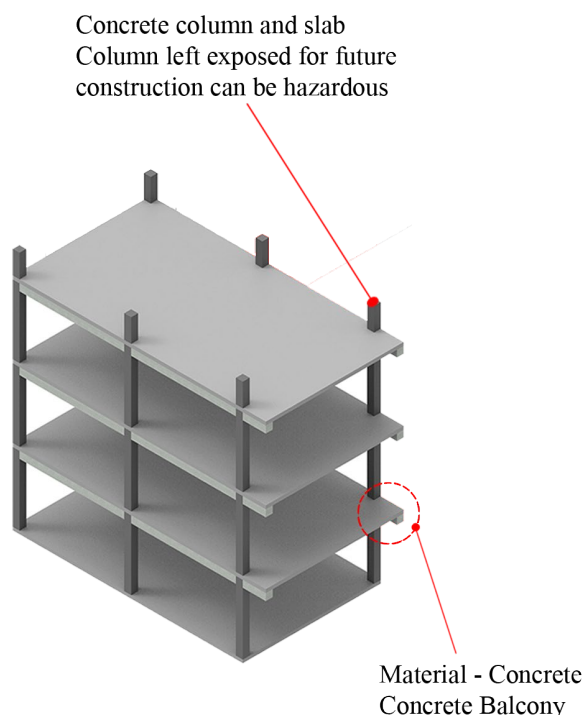


Figure 3.16
Common Construction Practice and Materiality
Concrete framework construction

Natural Ventilation

- Location of doors and windows
- Window overhangs
- Operable sunshades

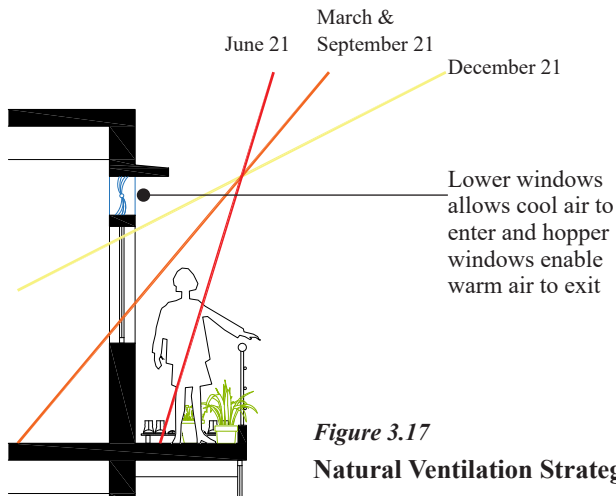
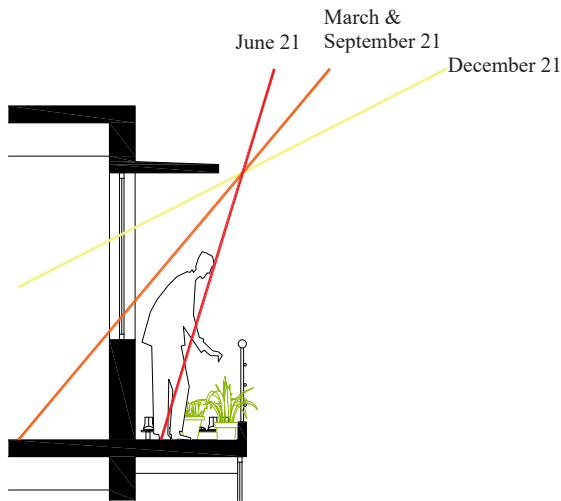
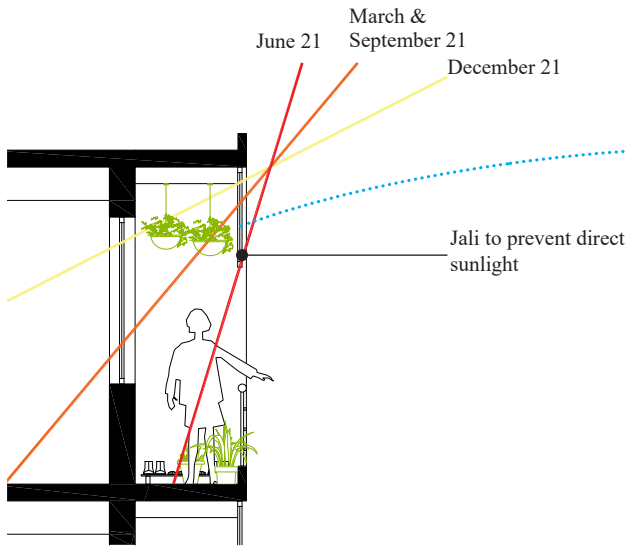


Figure 3.17
Natural Ventilation Strategies

Passive Comfort Cooling

- Screened porches and corridors
- Use of perforated materials to allow ventilation and prevent for insects
- Shades Corridors, Arcades, Porch



Figure 3.18
Jali/meshwork screen in the corridor to prevent direct sunlight



Figure 3.19 Operable Bamboo Chick Blinds

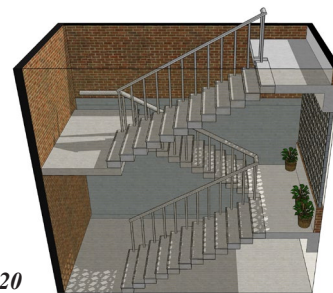


Figure 3.20
Iron Grills or Cement Concrete Meshwork on street facing staircase facade for ventilation and light

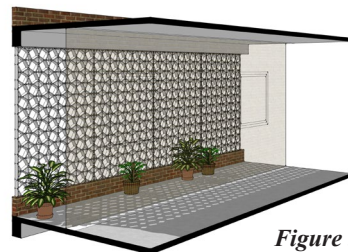


Figure 3.21
Iron Grills or Cement Concrete Meshwork

3.1.7 Design Strategies for Adaptive Comfort

People have developed micro design strategies to adapt to the changing weather conditions as depicted in the housing typologies analysis. The chart in figure 3.22 depicts that adaptive comfort ventilation can contribute to 29.3% of comfortable hours throughout the year using specific design strategies. Existing practices include clerestory windows, awnings, sunshades and enclosed balconies. The thesis proposes some basic strategies as represented in the following figures.

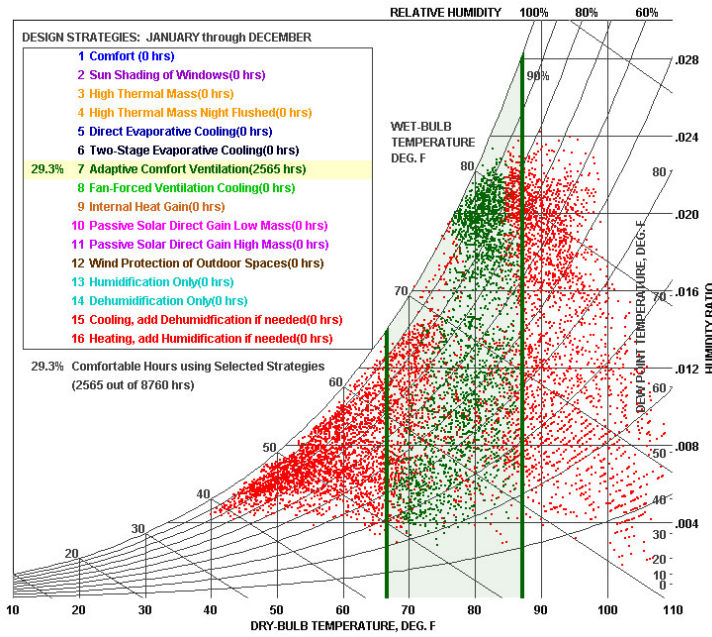


Figure 3.22
Psychrometric Chart -
Adaptive Comfort

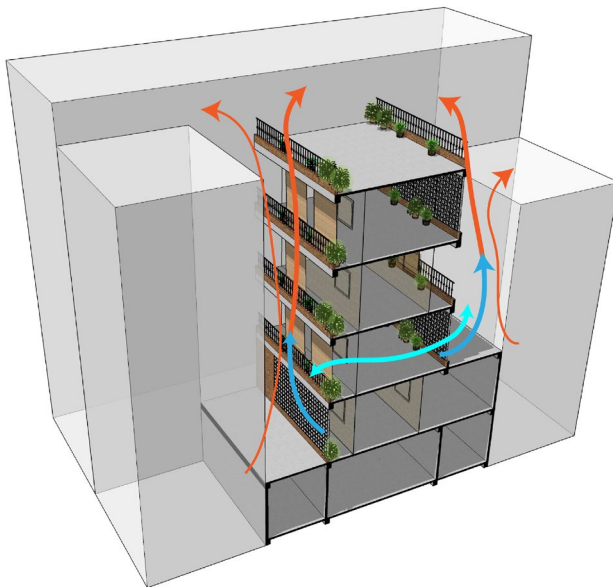


Figure 3.23
Stack Ventilation

- Open Staircases
- Atriums
- Ventilation shafts

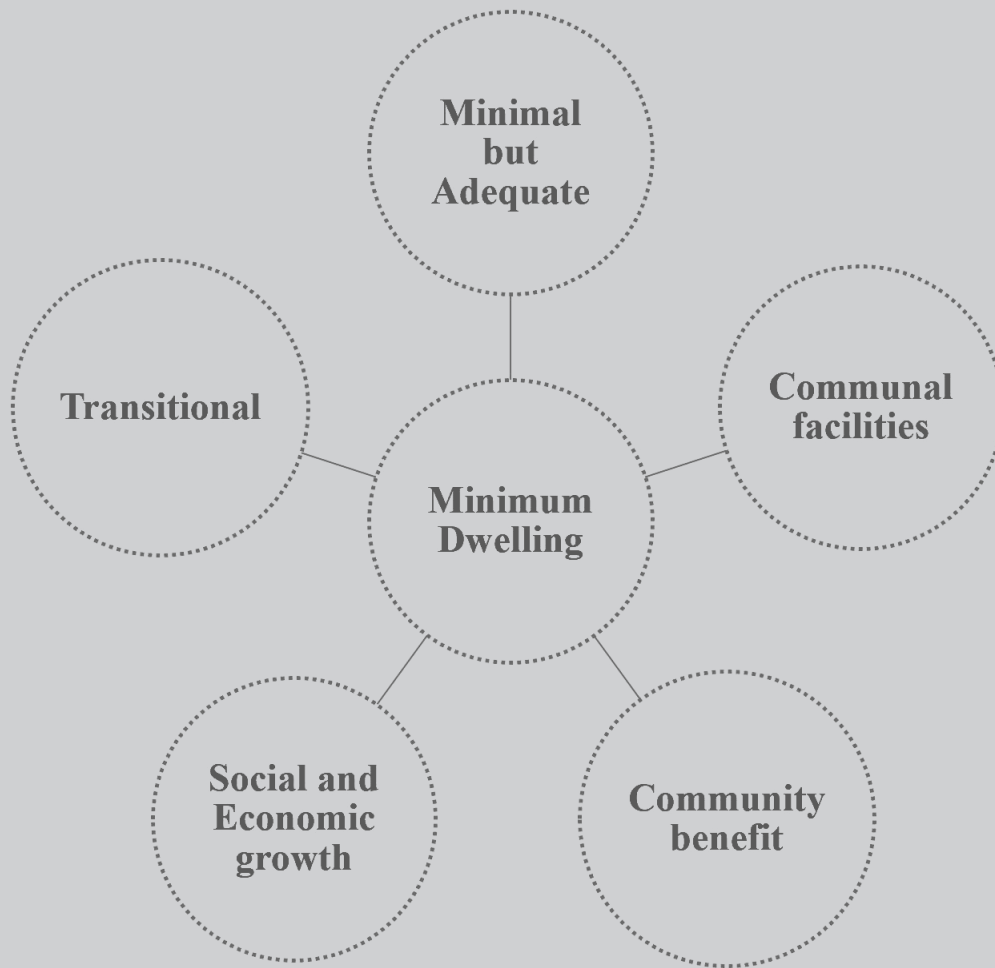


Figure 4.01 Diagram of factors describing a Minimum Dwelling

Part 04 Models of Collective Dwelling

Thesis Concept Architectural Case Studies

4.1	The Minimum Dwelling	137
4.2	Concept Case Studies	145
4.2.1	Redevelopment Behind Fatehpuri Mosque	147
4.2.2	Renovation On Netaji Subhash Marg	163
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Figure 4.02
**Minimal Housing
Conditions, Old Delhi**

- 1) Amidst all the Chaos
- 2) A moment of respite
- 3) Overly cramped

4.1

The Minimum Dwelling

The concept of the minimum dwelling by the modernist avant-garde artist, writer and critic Karel Teige, is a constructive response to the prevailing housing crisis. In the book Teige describes the collective dwelling as “a social situation in which the family will cease to exist as a basic economic unit and the division of labor and the resulting inequalities between man and woman, parent and child, will be overcome.”⁴²

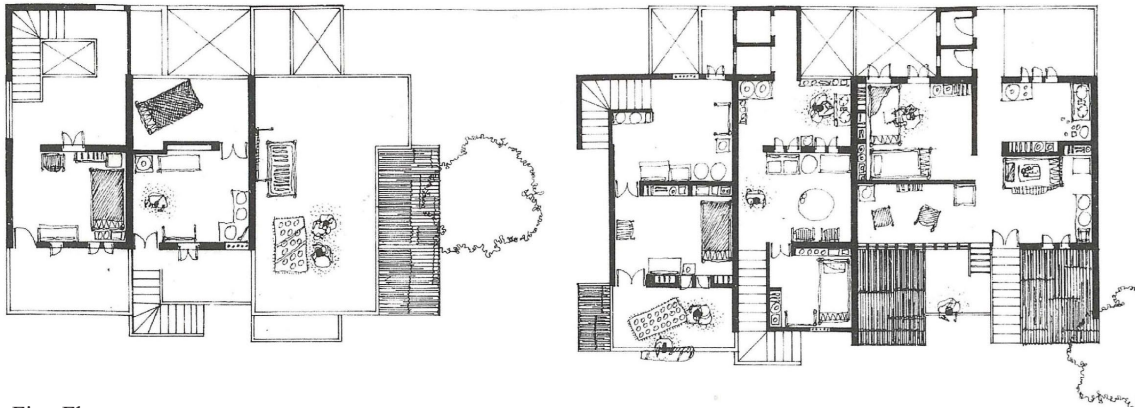
Many people in Old Delhi are living and working on below average wages with no livelihood protection. ‘Around 86% of the workers are informal workers.’⁴³ Informal sector has created many employment opportunities and provides for a low but some kind of fixed income to the workers. The people require settings which can be shared with co-workers or families to sustain themselves.

The organization and combination of functions like access to the upper floors, common indoor and outdoor spaces, the kitchen, rooms and sanitary spaces form the subsistence minimum dwelling type. Although space is deficient in informal contexts, one should not plan for the minimum but provide the adequate amount of space needed for live, work and play. This introduces the concept of communal facilities which on one hand helps in reducing clutter within the already small dwelling and second, it enhances the social relationship amongst people. The people in Old Delhi are culturally close knit and often seen cooking together and sharing common tasks. While some families living in one room accommodations use the same space as sleeping as for cooking meals. A communal kitchen advocates for regular involvement of all the residents cooking together and the meals can be more affordable.

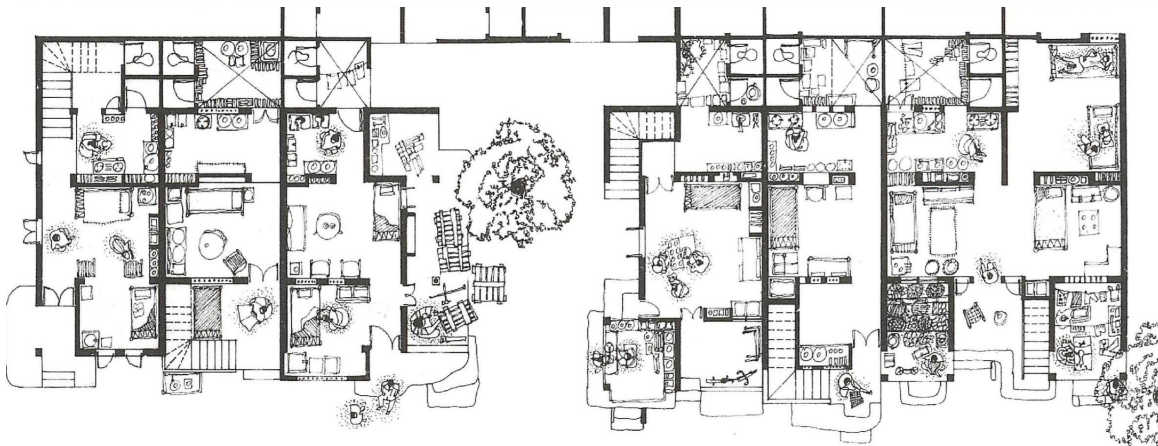
The recently awarded Pritzker Prize-Winner, 2018 and an inspirational architect Balkrishna Doshi, embraces the idea of harmony between the built environment and the people who

⁴² Karel Teige, *The minimum dwelling*, translated by Eric Dluhosch. (The MIT Press, 2002), 14.

⁴³ Government of NCT of Delhi, "Revitalization of Shahjahanabad (Walled City of Delhi) - Project Concept Proposal," in *Shahjahanabad Redevelopment Corporation*, 25. Retrieved from <http://srdc.delhigovt.nic.in>



First Floor



Ground Floor



Elevation

Figure 4.03 Aranya Low-Cost Housing - Drawings
 Drawings for ground floor plan, first floor plan and elevation

inhabit it. This belief is idealized in one of his projects, Aranya Low Cost-Housing in Indore where he attempts to create a community of different social-economic groups living together. The housing project is designed with small clusters of houses with self-sustaining local neighborhood shops for community benefit and local economic growth, small spaces for children to play and for people to perform domestic activities. The layout plans for the housing units depict openings on two sides for natural light and ventilation, small shaded courtyards and to use the services in planning as flexible programs (figure 4.02). One of the crucial aspects of construction was using locally available materials.

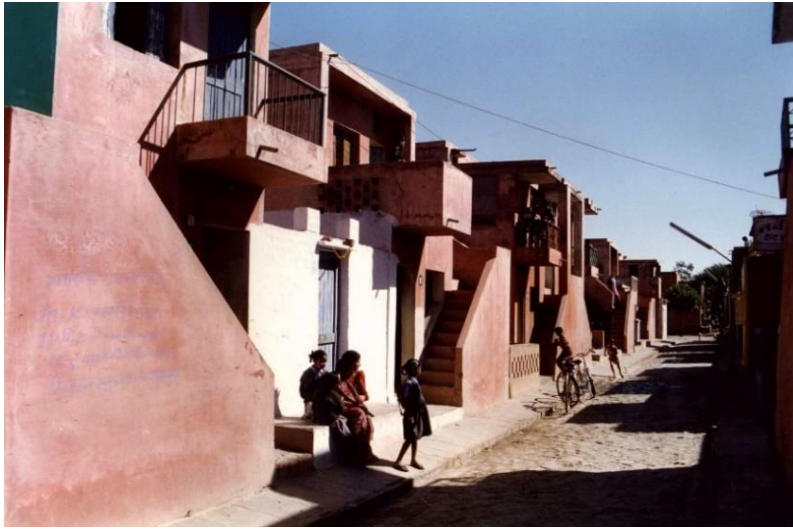
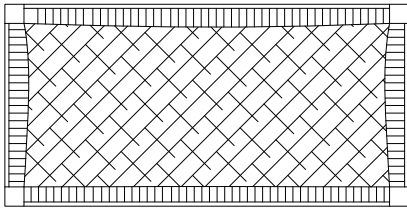


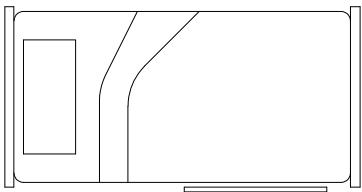
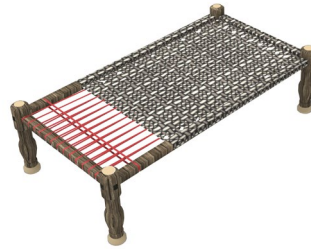
Figure 4.04 and figure 4.05
Aranya Low-Cost Housing
An example of incremental



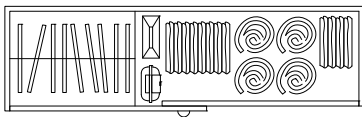
Figure 4.06 Typical objects used in homes



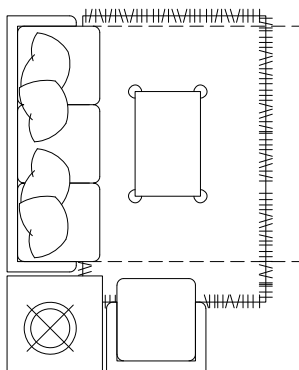
Charpai



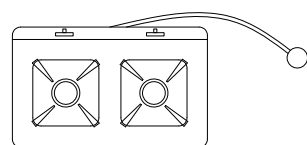
Bunk Bed



Variety of storage



Sofa Bed



Cooking stove



The design proposal of the concept case studies in the following sub-chapter, develops further on these strategies and the idea of a minimum but adequate dwelling space. The different sites are developed based on peculiar site conditions, principles established in Chapter 3 and a combination of modular housing units with communal facilities keeping in mind individual or group ownership.

- The modularity of housing units and layouts helps to accommodate different social-economic groups within the same building. The use of typical furniture for a small floor space is depicted in figure 4.06.
- The living room is depicted as a common space for everyone: the family hosts its guests, used as a dining room, a recreation room for watching television or even for sleeping on the sofa bed.
- The internal and external corridors are used as outdoor shared spaces.
- Communal activities like cooking, washing clothes, growing and drying their own spices encourage shared living.
- Community benefit programs like a small barber shop, a grocery shop selling milk, chips, biscuits etc. or renting a small corner to a family ironing clothes for the neighborhood are ways of creating opportunities for economic growth for the residents of the neighborhood.

The phenomenon of migration is irrepressible, which also makes it transitional. People shift from one residence to another often due to bad connection to workplace but more importantly because of the constant hike in prices of commodities, transport and rental housing. Many people also shift houses to upgrade their living conditions or under prospects of buying a house. The housing condition is constantly in flux and hence a coherent planning strategy which can accommodate for the changing needs of the people is essential.

Part 04 Models of Collective Dwelling

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Figure 4.07 Location of Intervention Sites

The design exploration combines all the research in previous chapters based on housing typologies, existing and proposed design guidelines, and precedents to examine how these strategies can be implemented on the chosen site conditions. Three sites were chosen after site visit. The first site is a collapsed building site found behind the Fatehpuri mosque and Gadodia market. It is a void created between the dense cluster of buildings. There are many sites in Old Delhi that are barren land filled with debris and must be categorized under **redevelopment** - new construction.

Many 4 to 5 storey buildings are built on plot sizes as small as 24 sq.m which includes circulation, services as well as rooms. One such group of five buildings adjacent to each other can be found on Netaji Subhash Marg. The ground floor is commercial and upper floors are residential. Similar group of buildings are located on Chandni Chowk Road. For such conditions, smaller groups of buildings must be **re-appropriated** to one building volume with common access and circulation. Communal facilities can additionally help in creating a more integrated dwelling type.

The third building identified is a typical condition found on Chandni Chowk Road. The building typology extends along the road with variations in plots sizes. The building typology creates an arcade space on the ground level for pedestrians by extending the upper level over the sidewalk. Some buildings have enclosed the upper level as opposed to leaving it as a terrace. All heritage buildings in Old Delhi are labelled for restoration. **Restoration** preserves a type which is peculiar to the architecture of Shahjahanabad. Buildings located on different streets differ in their type. Thus, the third site is chosen to demonstrate a particular street condition and formulate methods to restore the typological condition while integrating the public and the private realm.



Figure 4.08 Redevelopment Site

BEHIND FATEHPURI MOSQUE

REDEVELOPMENT



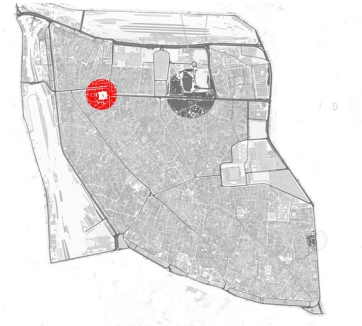


Figure 4.09 Key Plan for Site

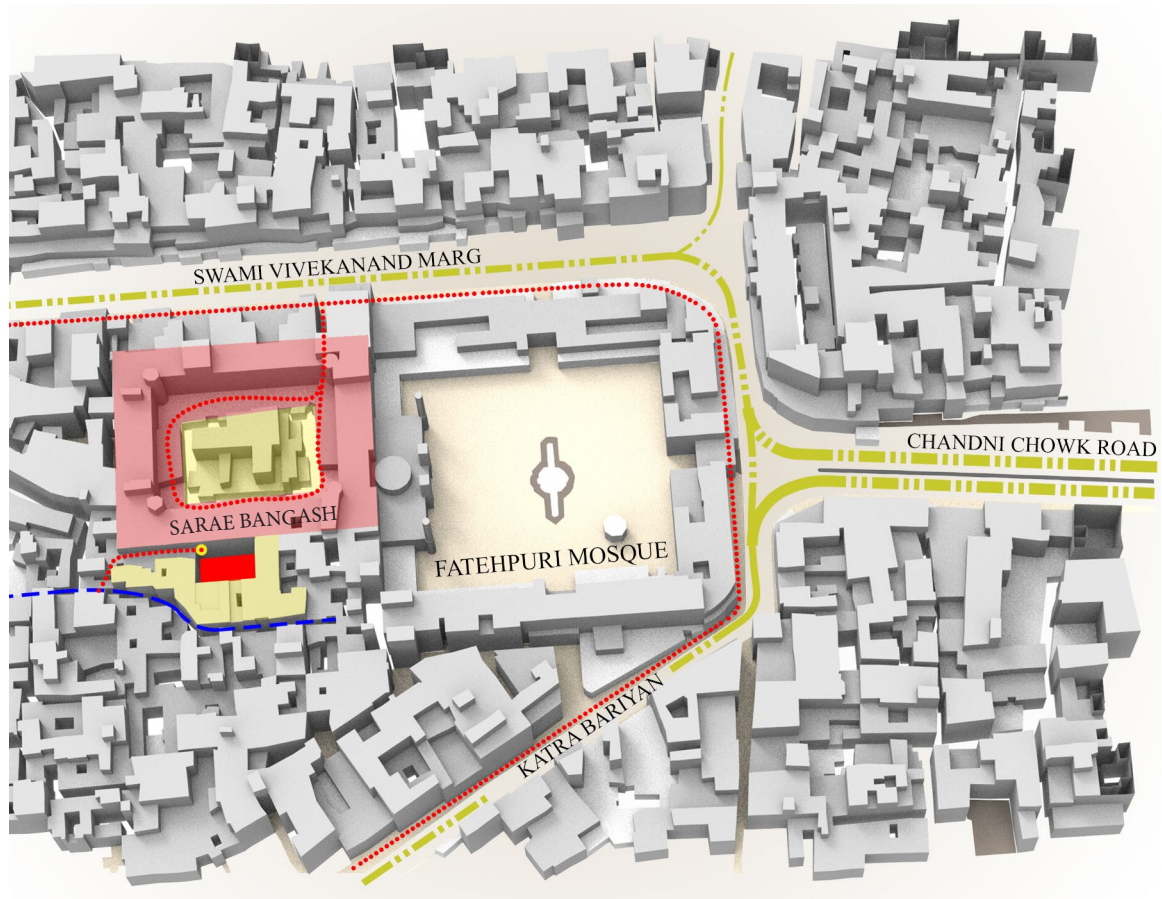


Figure 4.10 Site Location and approach

- HEAVY VEHICLES (CARS, SMALL TRUCKS)
- PEDESTRIAN
- MIXED USE

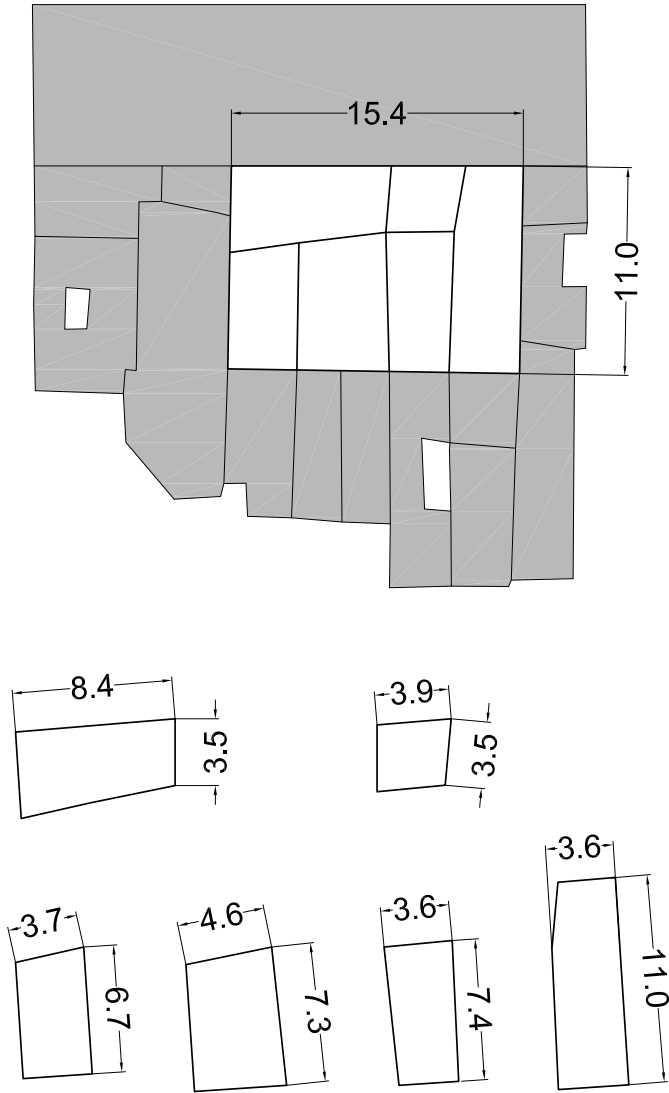


Figure 4.11

Site Dimensions - The plot size of 15.4 by 11 meters is fragmented into six smaller plots as identified on site. Two plots are occupied by migrants under temporary shelter conditions.



Figure 4.12
Collapsed Building site occupied by migrants

Figure 4.13
Site is surrounded with 4-5 storey buildings with many window openings oriented towards the site



Figure 4.14
One of the collapsed building appears to have been 3 storey high

Behind Fatehpuri Mosque - Redevelopment

The site is recognized as a collapsed building site or a hollow plot, which is neighbored by residences on all the four sides. A small pathway on the West is used to enter the site from the street. A peculiar condition on the site is the window openings of the adjacent building from second floor level and up. The following design strategies are used on site:

- The entire site area is utilized on ground floor and first floor for community and resident well-being spaces and has selective setbacks of 1.5 meters for the sides facing adjacent buildings window openings.
- The proposal is a building volume which sets back vertically to allow for percolation of light and ventilation on each floor and is oriented towards South.
- The small terraces facing the neighbouring houses create a visual and verbal connection.
- A ventilation shaft on first floor is useful for the communal kitchen for circulation of air.
- The height of the building is limited to 15 meters to create an opportunity to connect terraces for communal activities.

Life looks inwards in hollow building sites that have no visual connection with the street or any active surroundings, thus, the organization of spaces and vertical connection plays a vital role in augmenting social cohesion between the residents.



Figure 4.15

Site Context: Sarae Bangash

Famously known as Gadodia Market (Khari Baoli - Asia's largest spice market). The micro-dwellings in the courtyard are residences for the workers. The mansion is functioning as a warehouse on the first level and residence of shop owners on upper levels.



Figure 4.16

Site Context: Fatehpuri Mosque

Iterative Conditions on Site

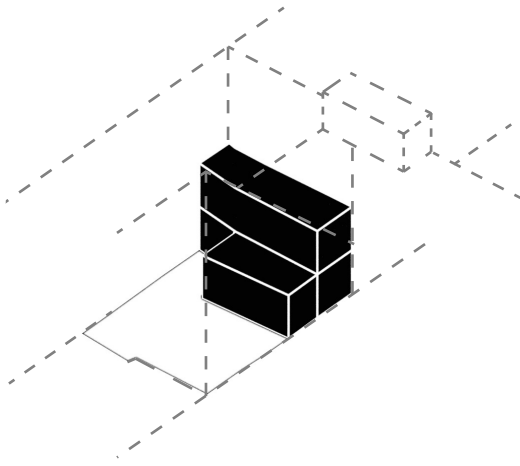


Figure 4.17

- Existing Site condition - two plots occupied by migrants

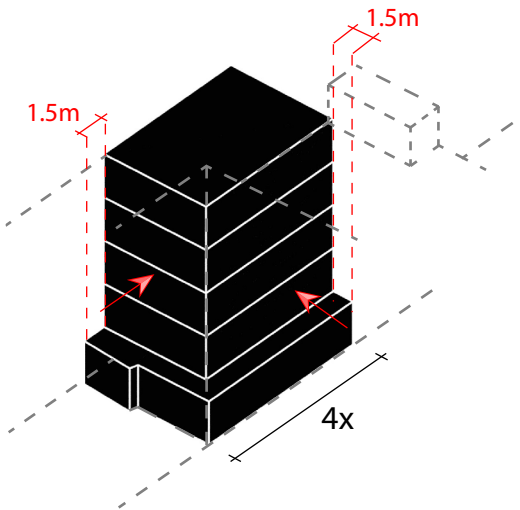


Figure 4.18

- Building volume as per proposed minimum setback of 1.5 meter - required on plots surrounded by buildings with openings oriented towards the site
- Proposed building height for plot size > 150 sq.m and surrounded by buildings on all four sides - limited to 15 meter as per established guidelines in Master Plan of Delhi, 2021

Alternative possibilities while retaining the proposed fundamental principles

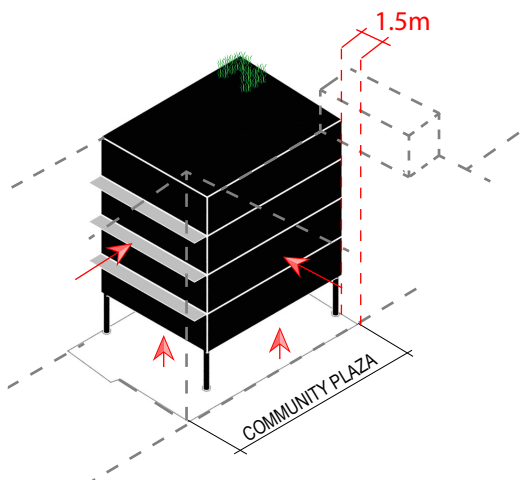


Figure 4.19

- Unobstructed ground plane as a community space for residents and neighbors
- Balconies facing the entrance
- Terrace - collective space for residents for various activities

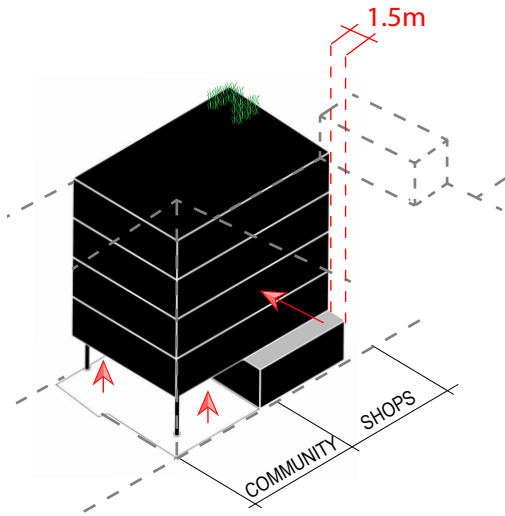


Figure 4.20

- Divide the ground plane into resident/public benefit program and community space
- Setback on 1.5 meter for all

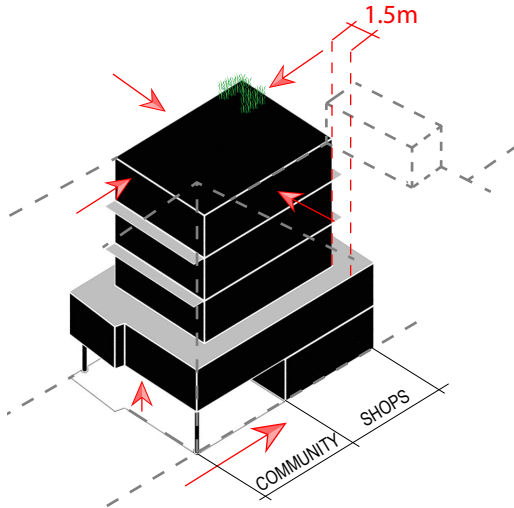


Figure 4.21

- Develop upper level for communal facilities as setback not required on this site until second floor - entire plot area as usable space
- Usable small terrace space on second floor roof
- Upper floors with setbacks on all sides to allow for more ventilation and light (not suitable as floor space reduces)

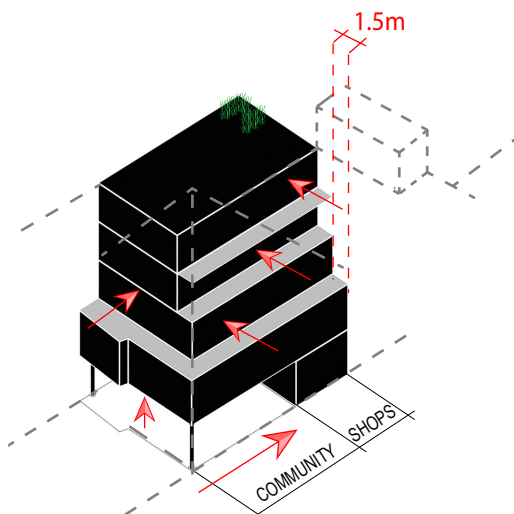


Figure 4.22

- Divide the ground plane into resident/public benefit program and community space
- Develop upper level for communal facilities as setback not required on this site until second floor - entire plot area as usable space
- Usable small terrace space on second floor roof
- Add setbacks 1.2 meter on upper floor to create terraces facing South - allowing for sunlight on each floor and levels of interaction
- Terrace - collective space for residents for various activities

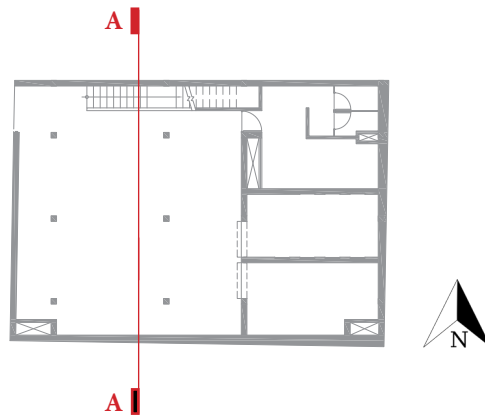
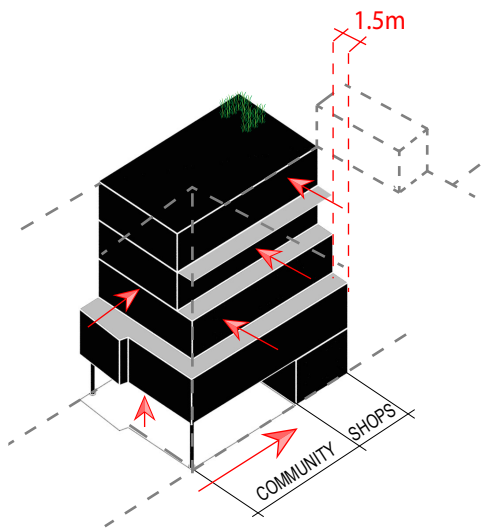
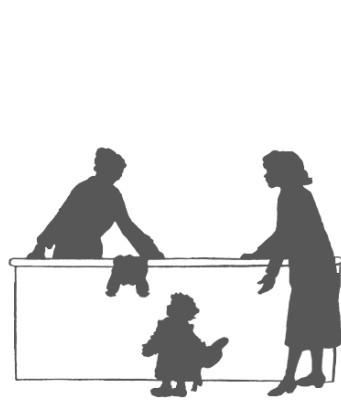


Figure 4.23 Key Plan for Section

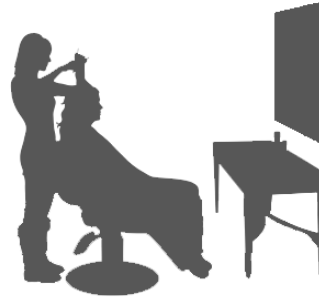
Figure 4.24 Building Section A-A
Scale 1:100



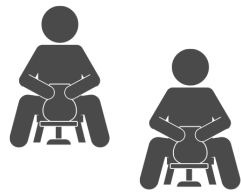




Clothes Ironing Shop



Neighborhood Barber Shop



Local artists making pottery



Grocery shop



Communal Kitchen

Figure 4.25 Illustration of activities and program

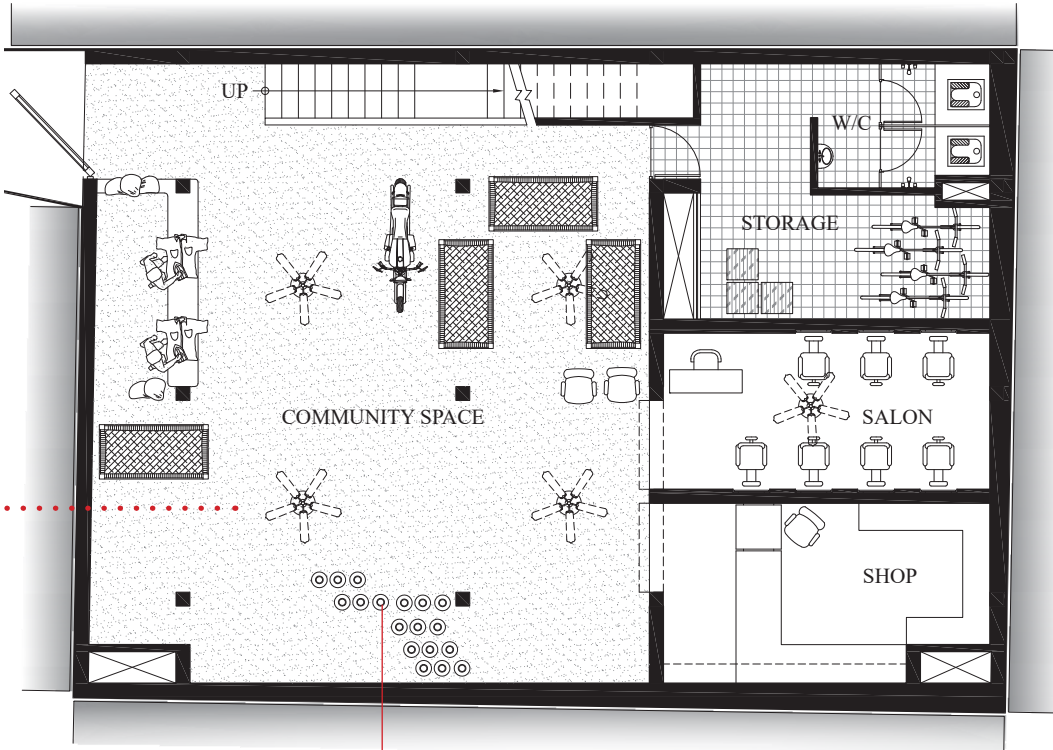


Figure 4.26 Ground Floor Plan

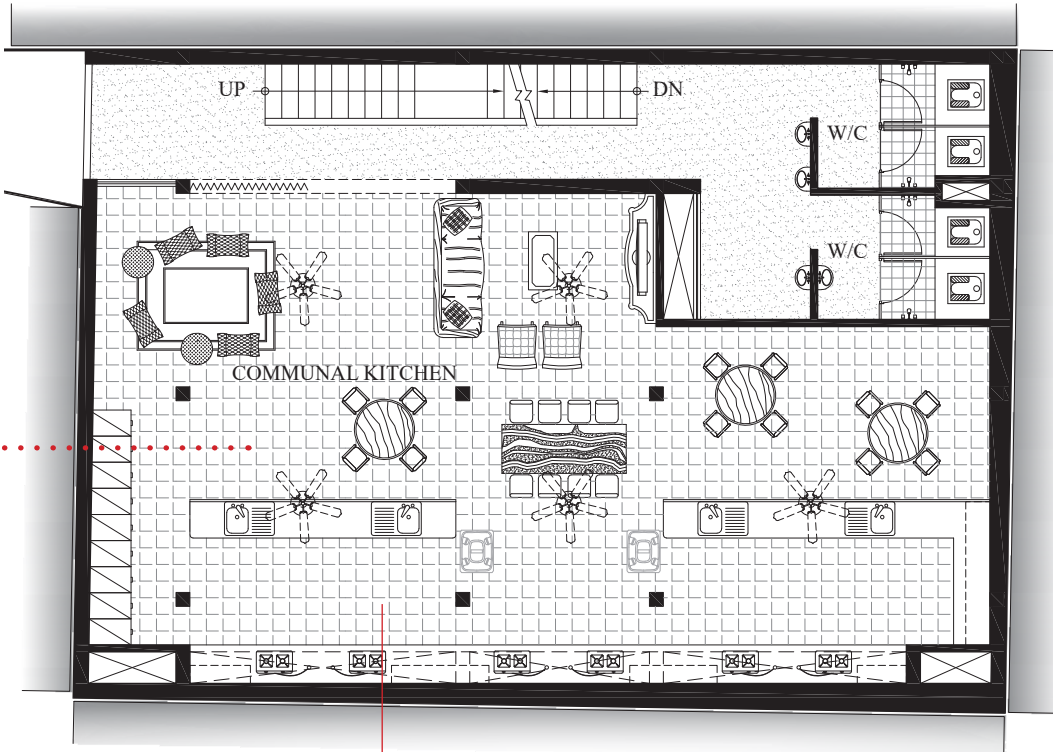
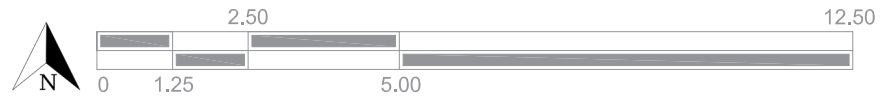


Figure 4.27 First Floor Plan





Unit Type A - Family size of 4 to 5 people
Area - 24 sq.m



Unit Type B - Family size of 3 to 4 people
Area - 18 sq.m



Unit Type C - Family size of 1 to 2 people
Area - 10 sq.m



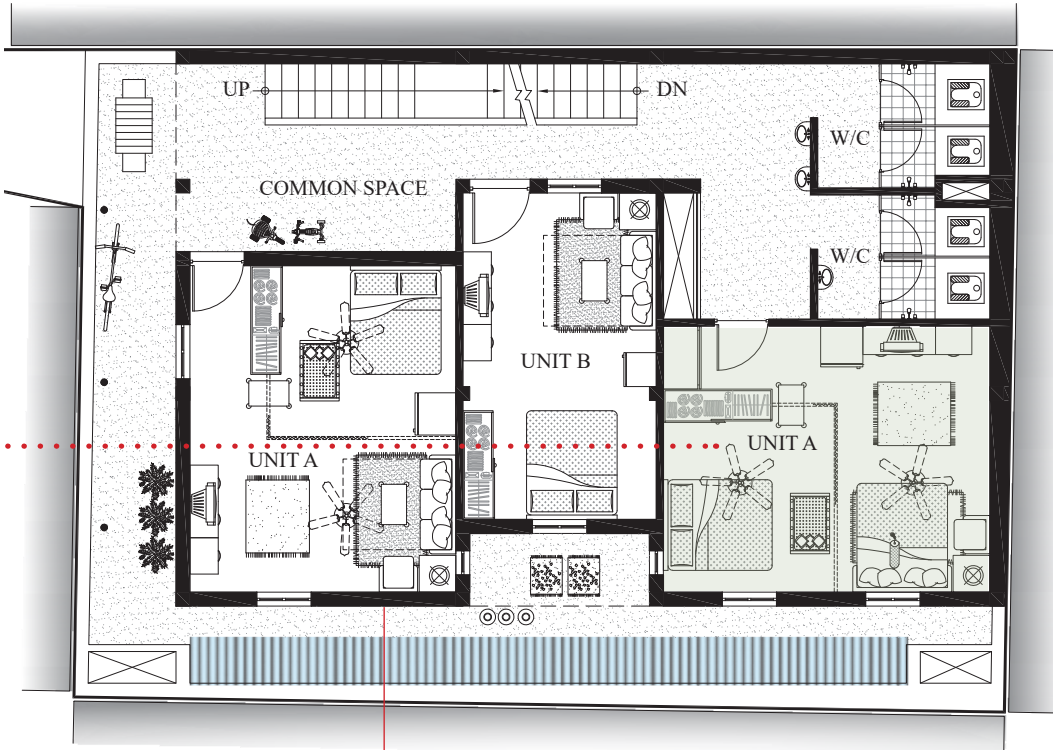


Figure 4.28 Second Floor Plan

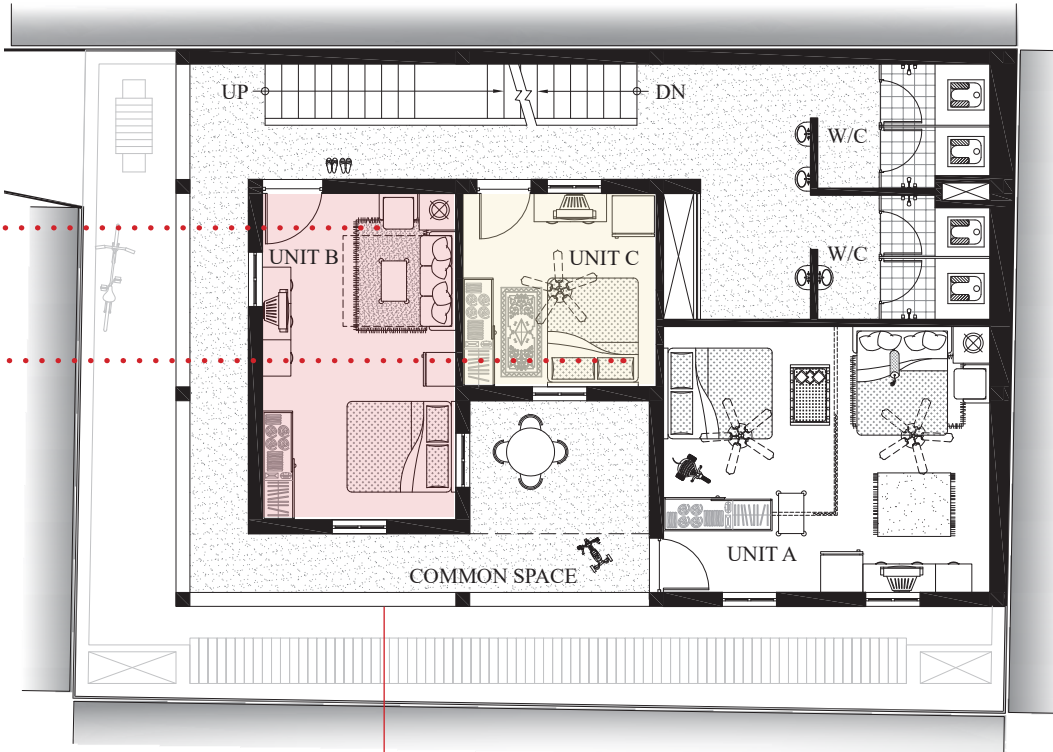


Figure 4.29 Third Floor Plan



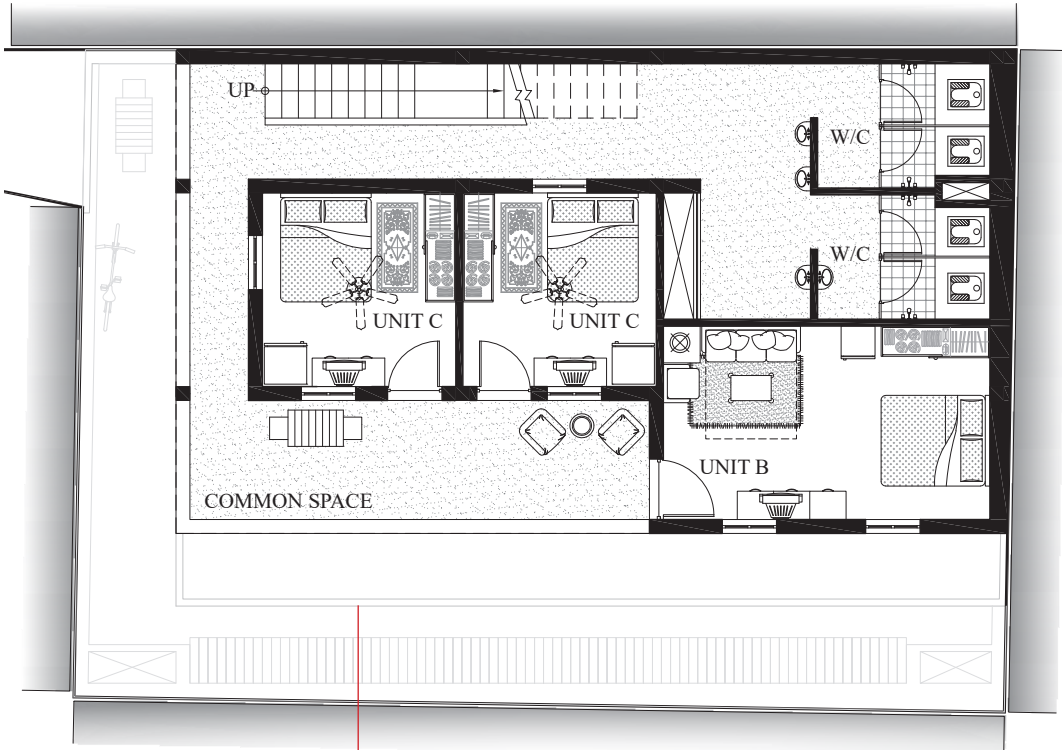


Figure 4.30 Fourth Floor Plan

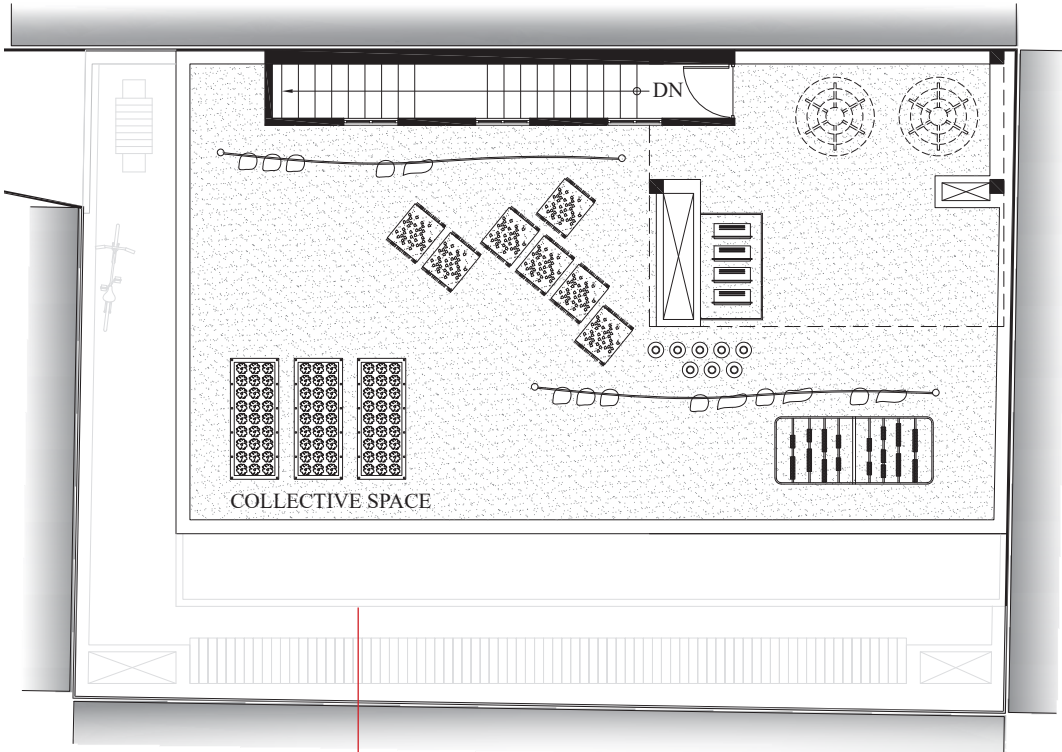
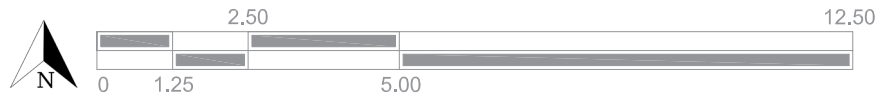


Figure 4.31 Terrace Plan



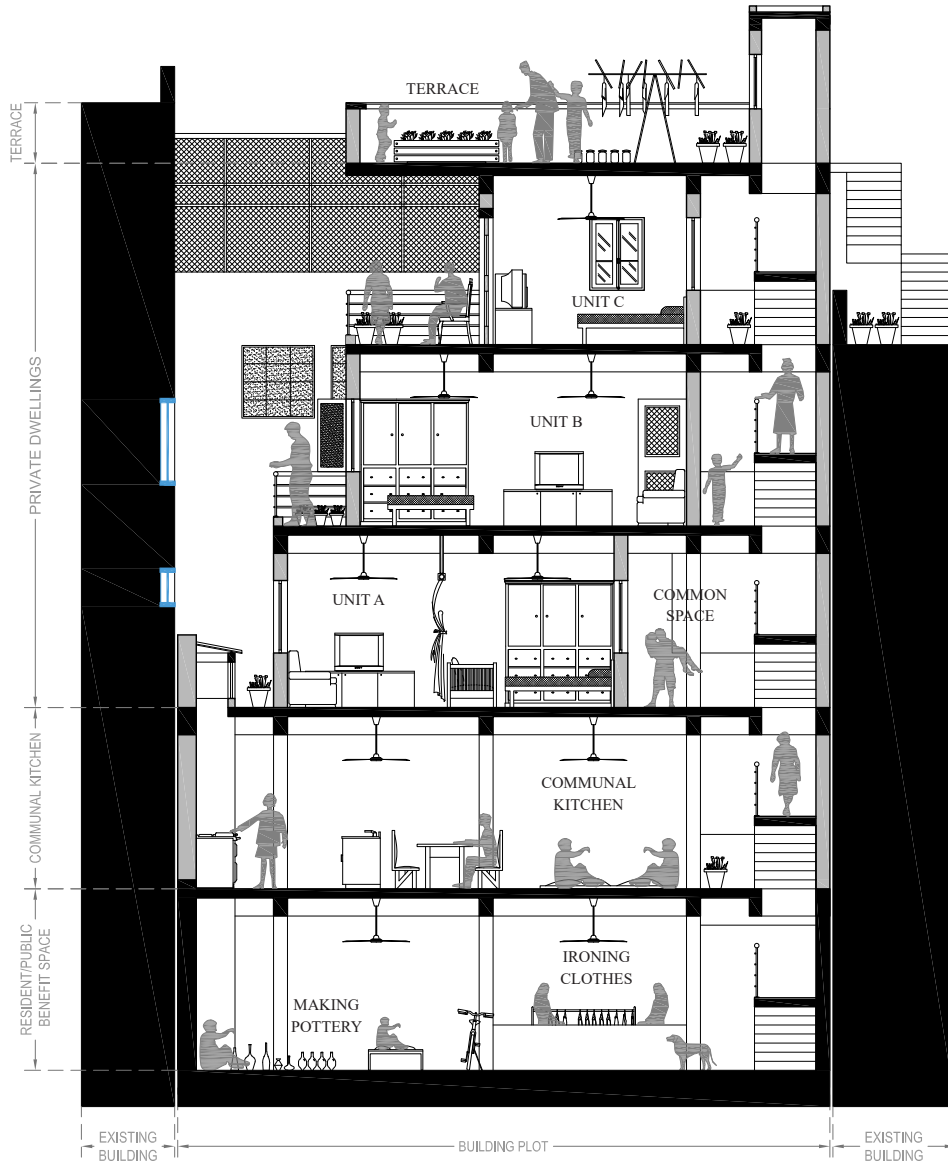


Figure 4.32 Building Section A-A





Figure 4.33 Re-appropriation

ON NETAJI SUBHASH MARG RE-APPROPRIATION





Figure 4.34 Key plan for Site

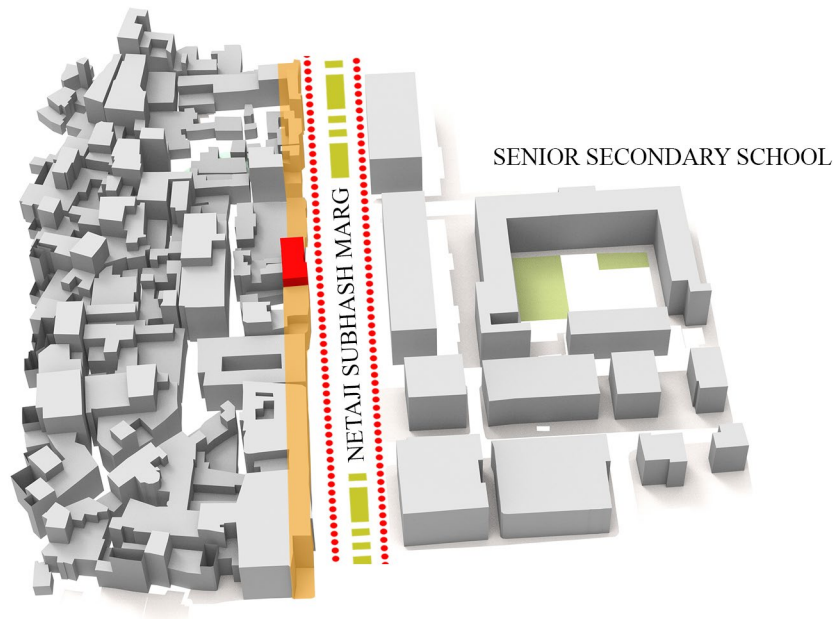


Figure 4.35 Site Location and approach

- HEAVY VEHICLES (CARS, SMALL TRUCKS)
- PEDESTRIAN
- MIXED USE

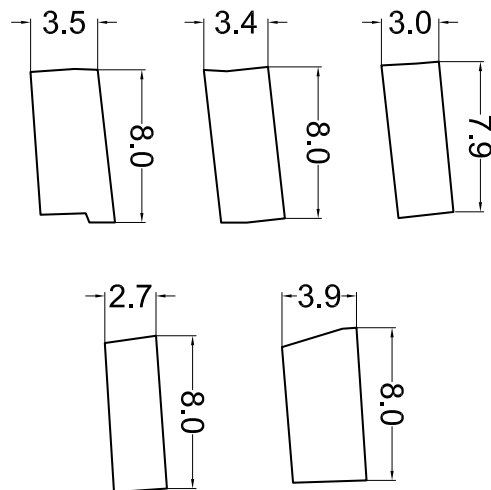


Figure 4.36

Site Dimensions - The plot size of 14.5 by 8 meters is fragmented into five smaller plots as identified on site. All the plots are occupied by 3 - 4 storey buildings



Figure 4.37

On Netaji Subhash Marg - Re-appropriation

The site is located on a major connecting road, Netaji Subhash Marg, on the outer edges of Shahjahnabad. The proposal is a consolidation of five buildings with very small plot areas. The effective methodology tested in the iterations for this site are to transform five buildings into one volume with a common access and communal facilities on each floor.

The following design strategies are used on site:

- The height of the building is increased from 15 meters to 18 meters.
- A small public seating area is created on the ground level which gives the visitors and tourists a place of relief in the scorching heat during summers.
- Being located on a major road, the house harmonizes with the hustling street but the duality in orientation of the programs in the building helps in creating more intimate spaces around family.
- Each floor has communal facilities and residences in the form of typical units which can be rented individually or the entire floor can be co-shared by owners of the units.
- The internal corridor creates hierarchy of spaces for gathering as per different levels of integration between the residents.
- The exterior balcony and corridors allow to be visually connected with the activities happening on the street.

Iterative Conditions on Site

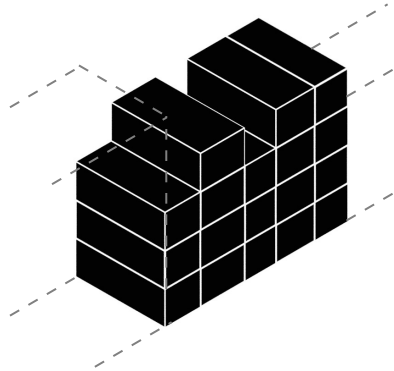


Figure 4.38

- Existing Site condition - 3 to 4 storey buildings on all the plots

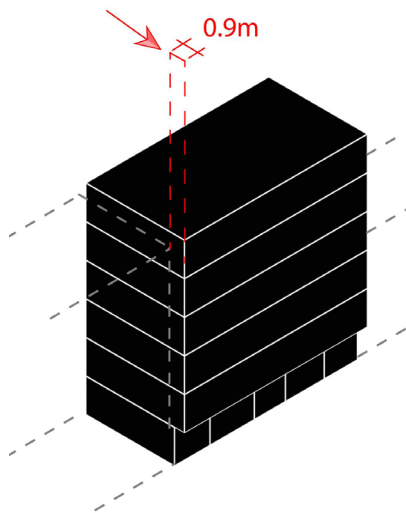
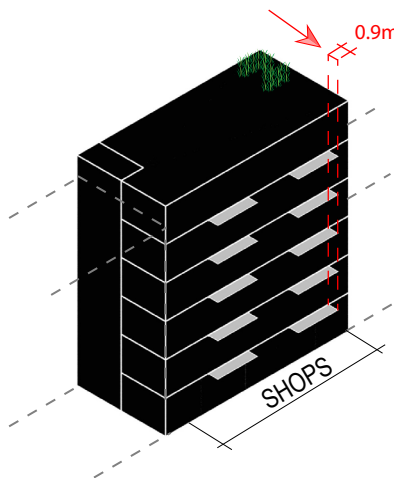


Figure 4.39

- Building volume as per proposed overhang conditions - 0.9 meter overhang for buildings facing street with a street width > 6 meter
- Proposed building height for plot size > 150 sq.m and facing a street with a street width > 6 meter - height increased to 18 meter (additional floor)



Alternative possibilities while retaining the proposed fundamental principles

Figure 4.40

- Retain shops facing the street
- Combine all small plots with common access and circulation
- Space occupied by staircase reduced to 7.5% from approximately 30% due to separate staircases for each plot
- Usable overhang of 0.9 meter for balconies on each floor
- Terrace - collective space for residents for various activities

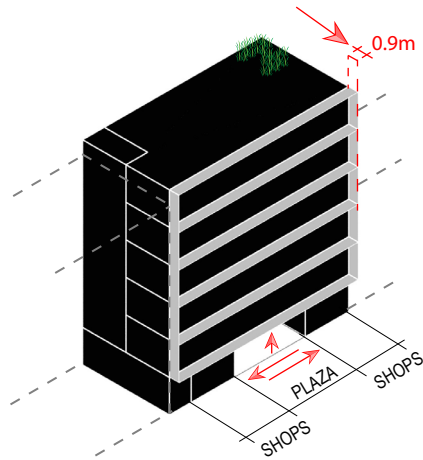


Figure 4.41

- Ground plane - Arrange the shops around a small public seating space
- Usable overhang of 0.9 meter as external corridor for access and circulation

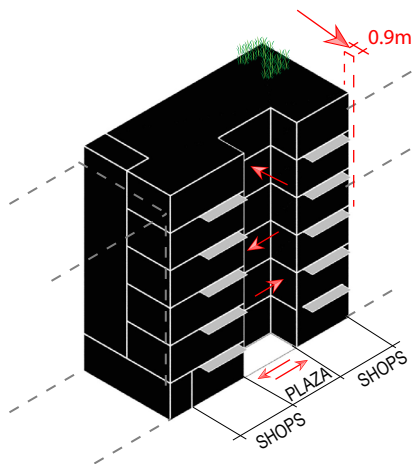


Figure 4.42

- Usable overhang of 0.9 meter for private balconies
- Alter the building volume by creating a U-shape form (not suitable - reduces floor space)

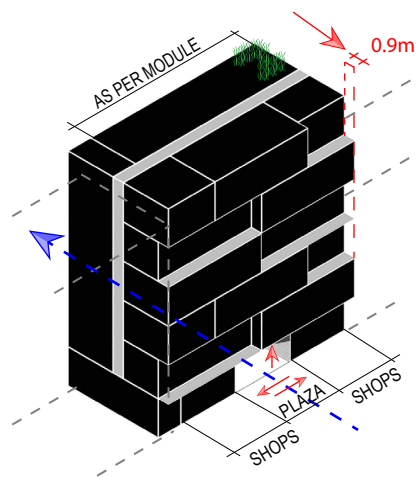


Figure 4.43

- Ground plane - Arrange the shops around a small public seating space or create a central pathway to connect to the other side if possible
- Space occupied by staircase reduced to 7.5% from approximately 30% due to separate staircases for each plot
- Usable overhang of 0.9 meter for extended floor space for construction which creates an internal corridor extending to the exterior in some pockets
- Terrace - collective space for residents for various activities

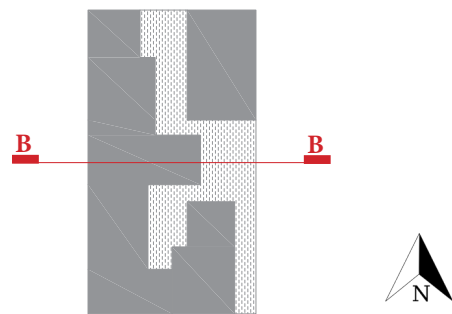
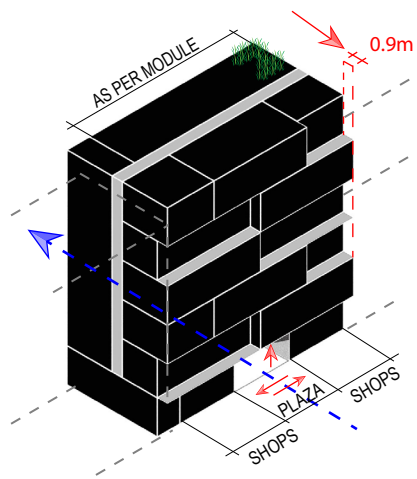


Figure 4.44 Key Plan for Section

Figure 4.45 Building Section B-B
Scale 1:100





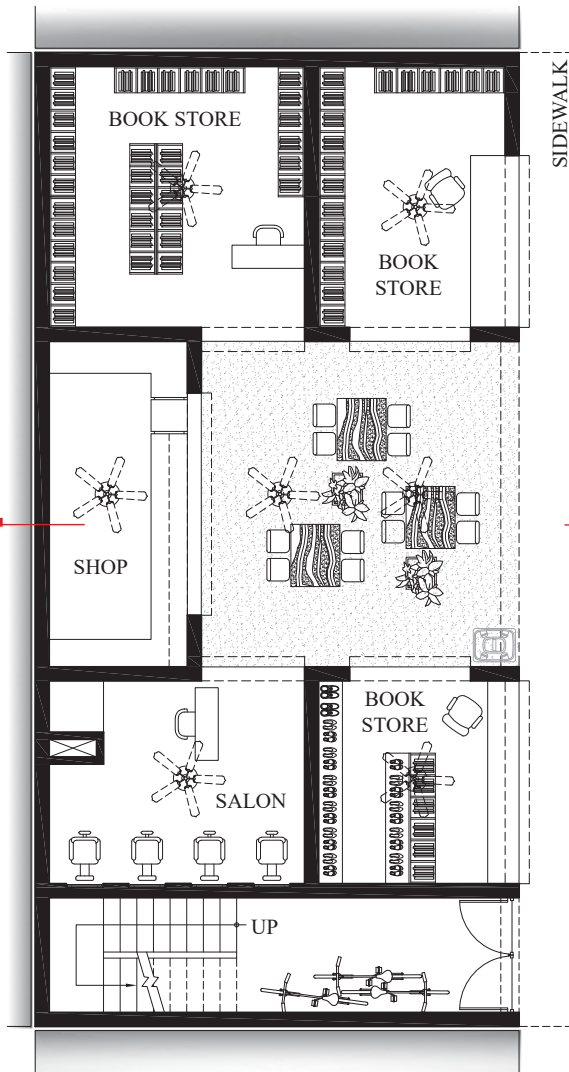
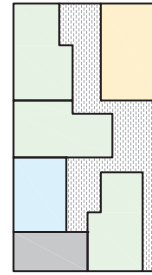
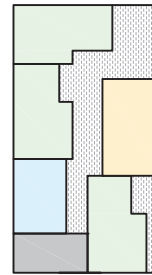


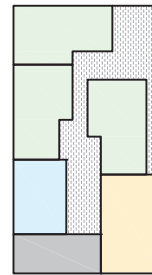
Figure 4.46 Ground Floor Plan



Third Floor



Fourth Floor



Fifth Floor

Figure 4.47 Combination of Units for upper floors



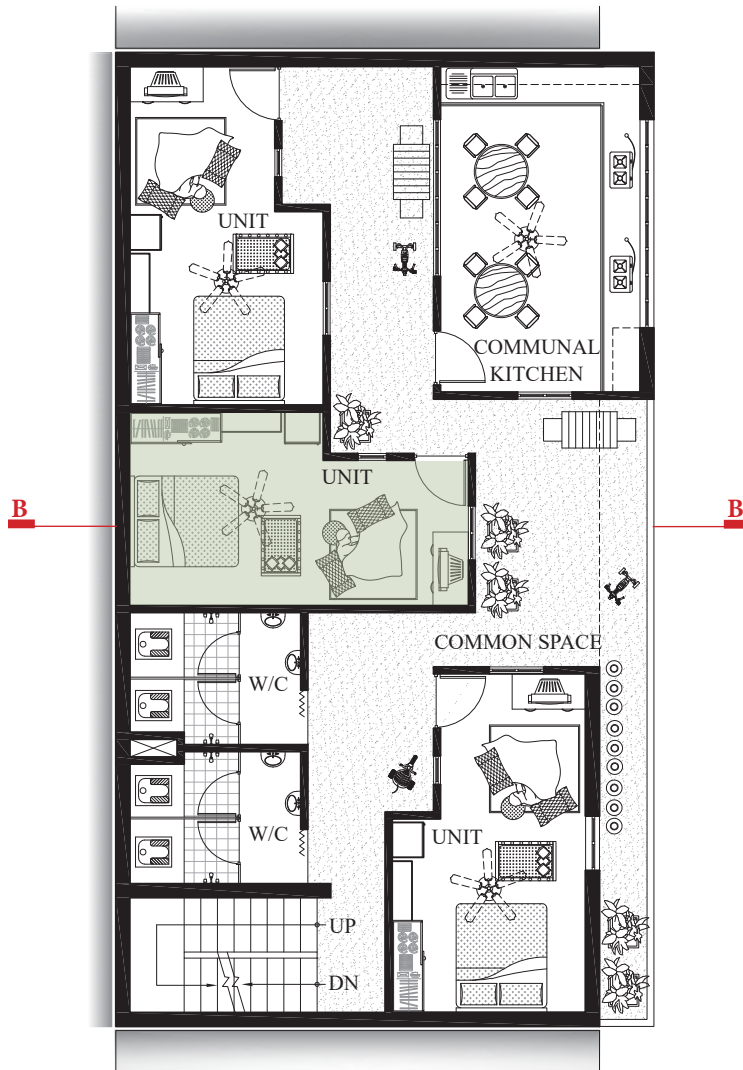


Figure 4.48 First Floor Plan

Unit Type - Family size of 3 to 4 people
Area - 16 sq.m



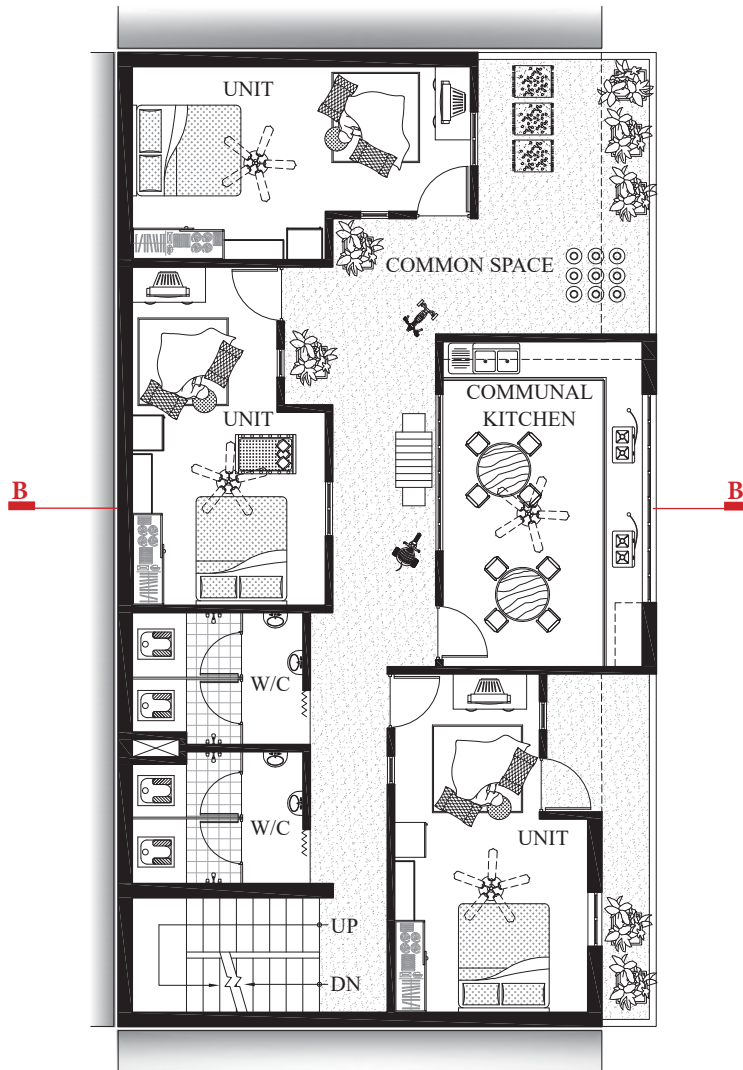


Figure 4.49 Second Floor Plan



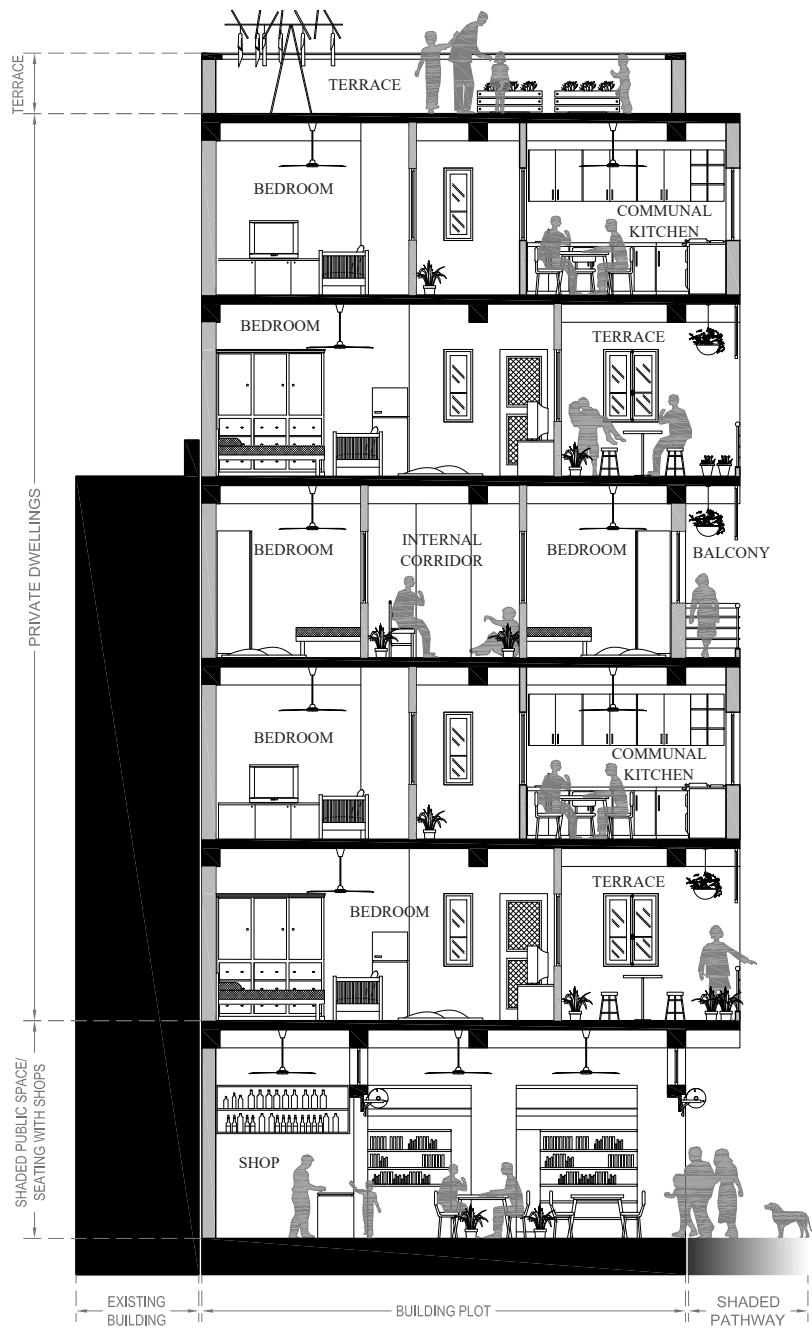


Figure 4.50 Building Section B-B





Figure 4.51 Chandni Chowk in 1870

ALONG CHANDNI CHOWK ROAD
RESTORATION



Figure 4.52 Restoration Site



Figure 4.53 Key Plan for Site

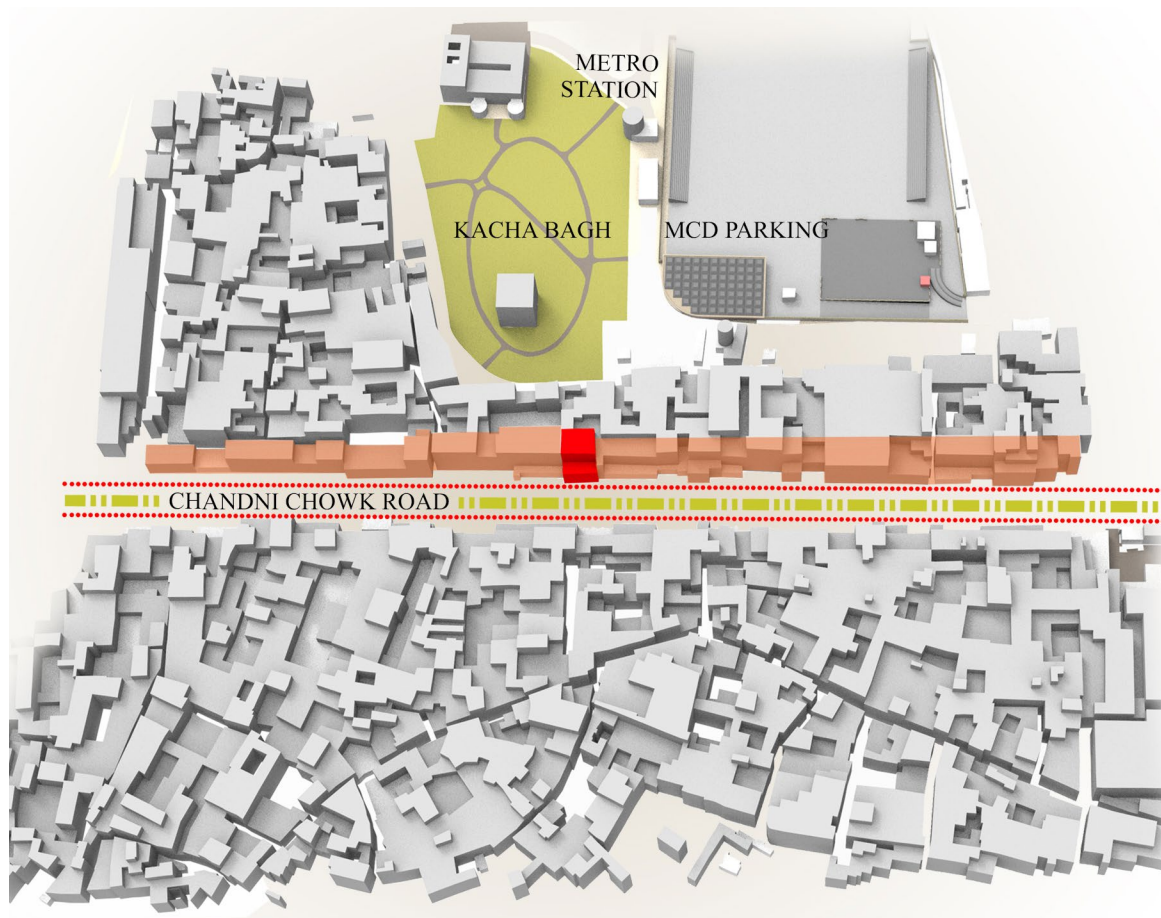


Figure 4.54 Site Location and approach

- HEAVY VEHICLES (CARS, SMALL TRUCKS)
- PEDESTRIAN
- MIXED USE

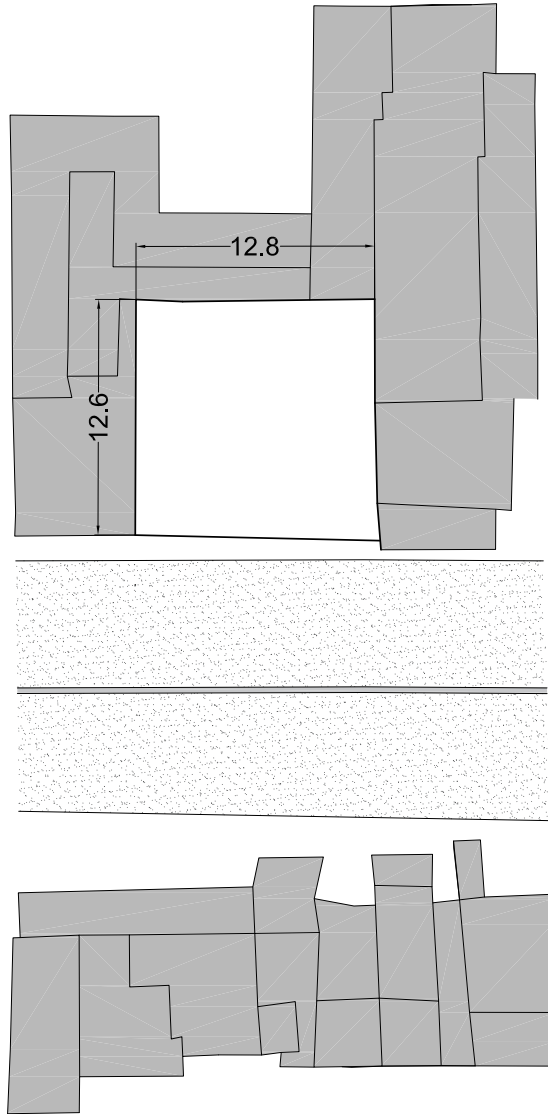


Figure 4.55

Site Dimensions - The plot size of 12.6 by 12.8 meters is occupied by a single 5 storey building extending over the sidewalk on Chandni Chowk Road



Figure 4.56 Building on Chandni Chowk Road, similar typology

Along Chandni Chowk Road - Restoration

Located on the main internal street Chandni Chowk, the building defines the common typology on the street. Being the most commercialized street in Shahjahanabad, many shops extend onto upper floors and many buildings are entirely commercial. The proposal aims to retain the existing typology while highlighting possibilities of an improved more integrated public realm. The following design strategies are used on site:

- The building height is increased from 15 meters to 18 meters.
- A pedestrian sidewalk always existed since Chandni Chowk flourished as a popular market place but the overhang of the floors above shaded the sidewalk.
- Similar urban setting is created with both ground and first floors facing towards a covered walkway which play a vital role in enhancing the public realm and can be connected horizontally to the adjacent buildings through corridors.
- The residences are developed as apartments for larger family sizes due to higher land value and thus higher rental price.
- The layouts are modular and the terraces can be collectively appropriated by the people.

Iterative Conditions on Site

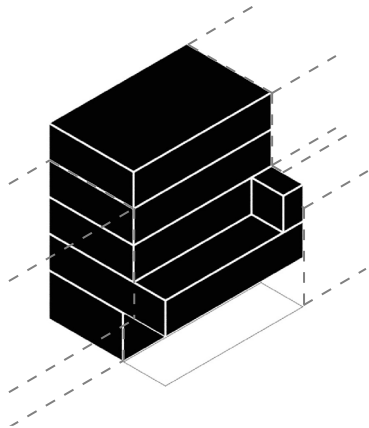


Figure 4.57

- The buildings on Chandi Chowk Road have a typical building typology
- Existing Site condition - 5 storey building
- Ground floor and first floor operating as commercial space
- Third floor as temporary residence by people
- Fourth floor and fifth floor are abandoned

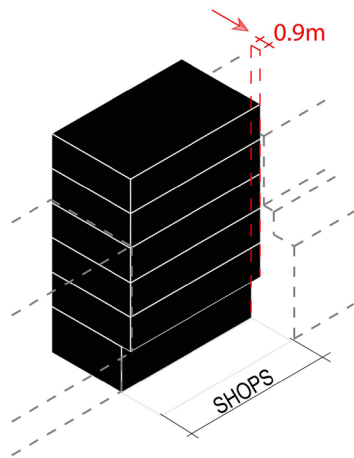
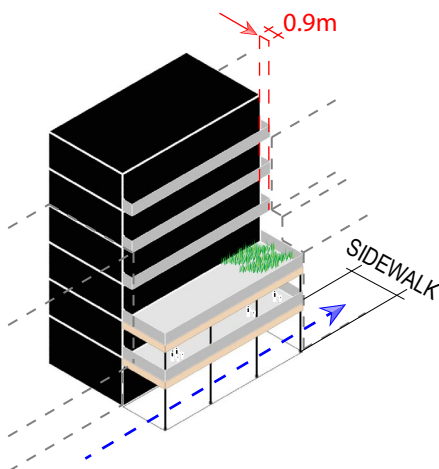


Figure 4.58

- Building volume as per proposed overhang conditions - 0.9 meter overhang for buildings facing street with a street width > 6 meter
- Proposed building height for plot size > 150 sq.m and facing a street with a street width > 6 meter - height increased to 18 meter (additional floor)



Alternative possibilities while retaining the proposed fundamental principles

Figure 4.59

- Retain shops facing the street
- Use the upper floors for residential units with terrace space
- Usable terrace space on first and second level as a collective space for the residents
- Usable overhang of 0.9 meter as external corridor for each floor
- Terrace - collective space for residents for various activities

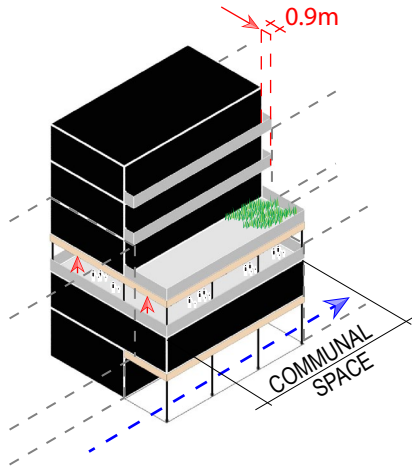


Figure 4.60

- Retain the existing form - first level as an enclosed commercial space
- Create a roof plaza on second level as community garden/ event space/flea markets

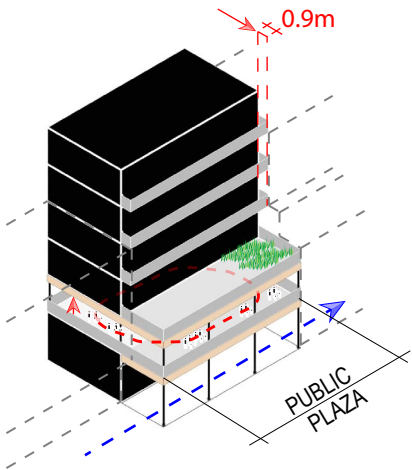


Figure 4.61

- Convert the commercial space on first level into a roof plaza for the public

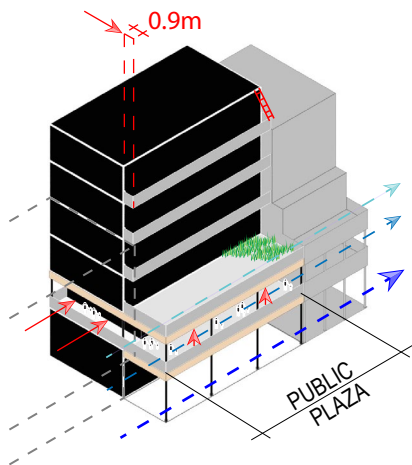


Figure 4.62

- Retain shops facing the street
- Use the first level to rent space as commercial with a covered seating/public space
- Usable terrace space on second level as a collective space for the residents
- Opportunity to create different levels of connection vertically throughout the street
- Usable overhang of 0.9 meter as external corridor for each floor
- Terrace - collective space for residents for various activities

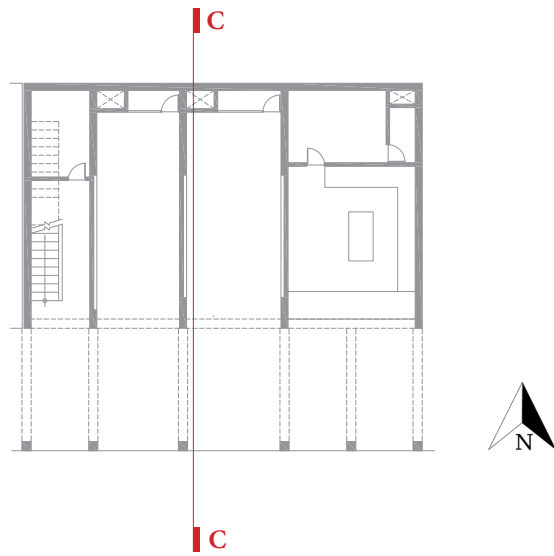
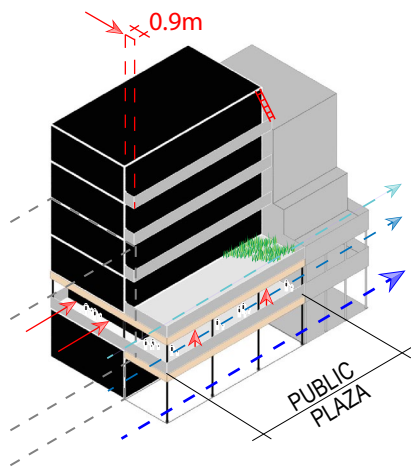
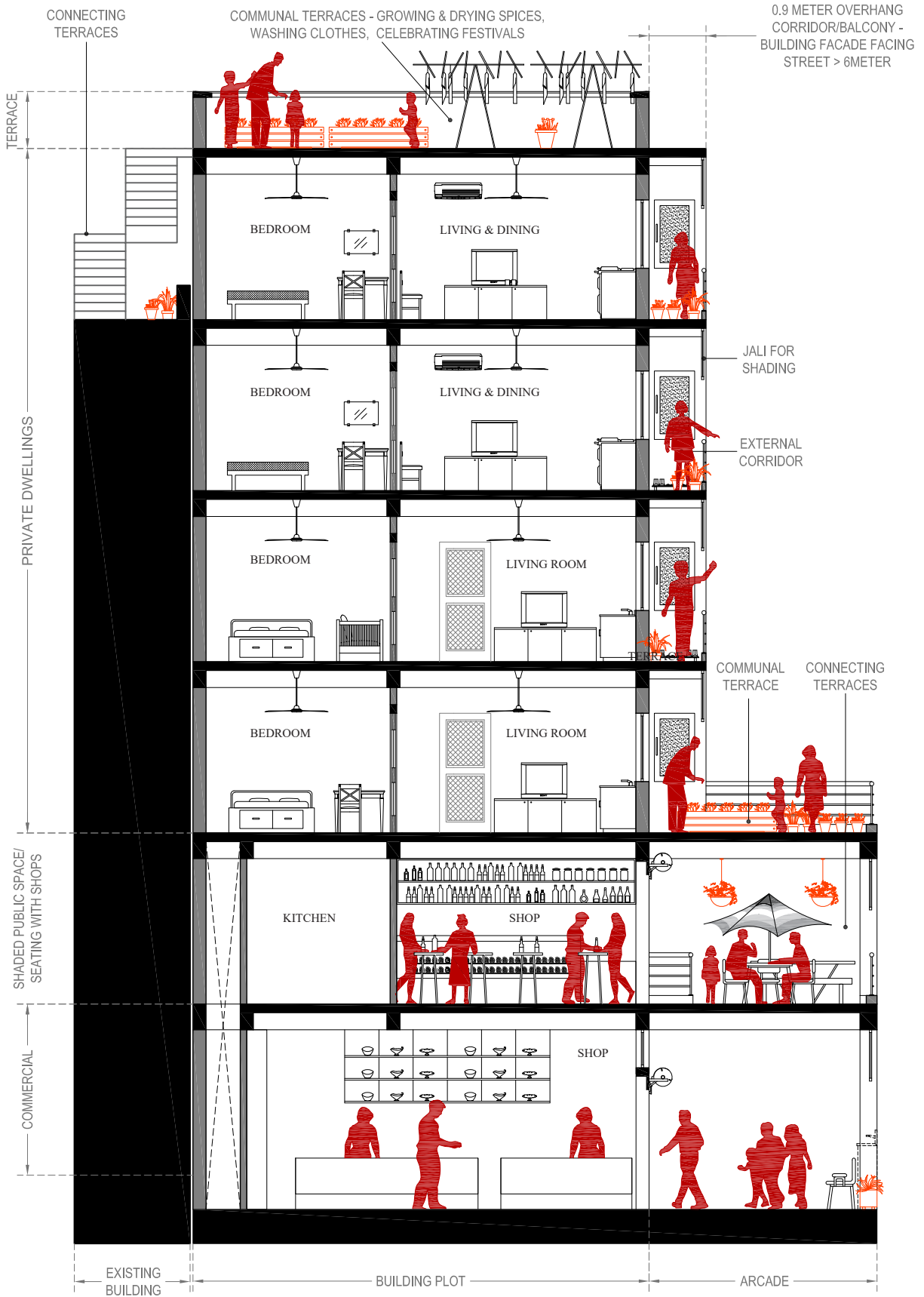


Figure 4.63 Key Plan for Section

Figure 4.64 Building Section C-C
Scale 1:100





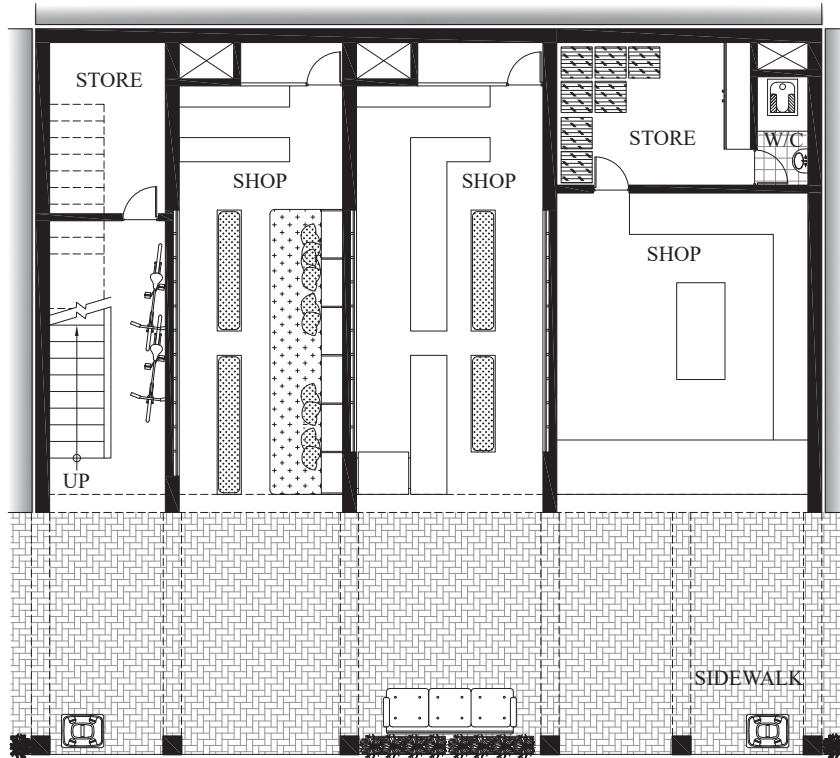


Figure 4.65 Ground Floor Plan with sidewalk

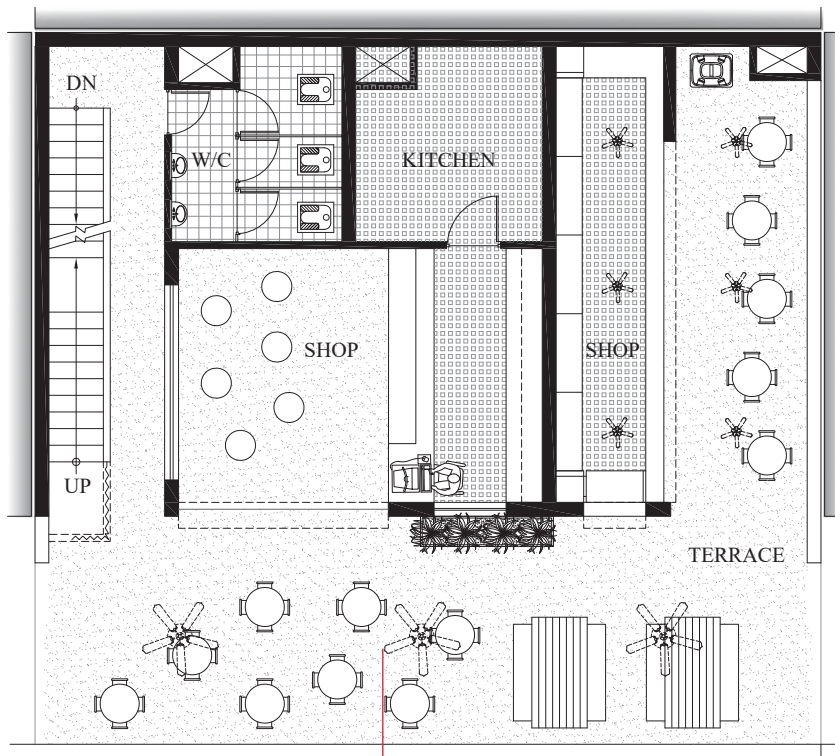


Figure 4.66 First Floor Plan



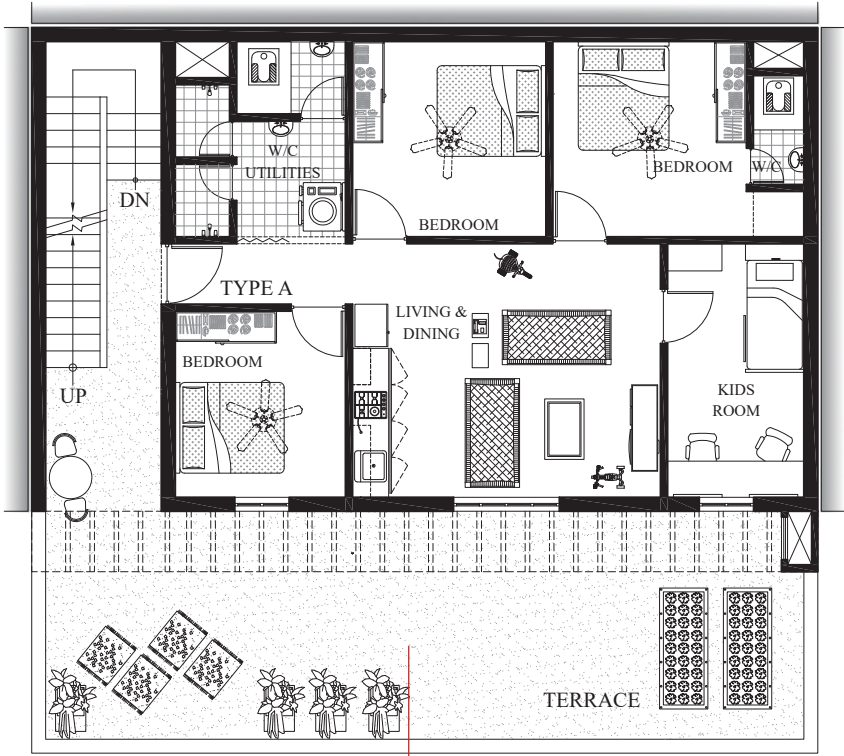
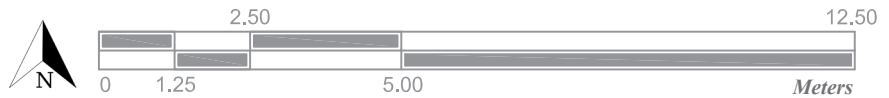


Figure 4.67 Second Floor Plan 1C

Apartment Type A - Joint family arrangement for 6 to 8 people
 Area - 78 sq.m



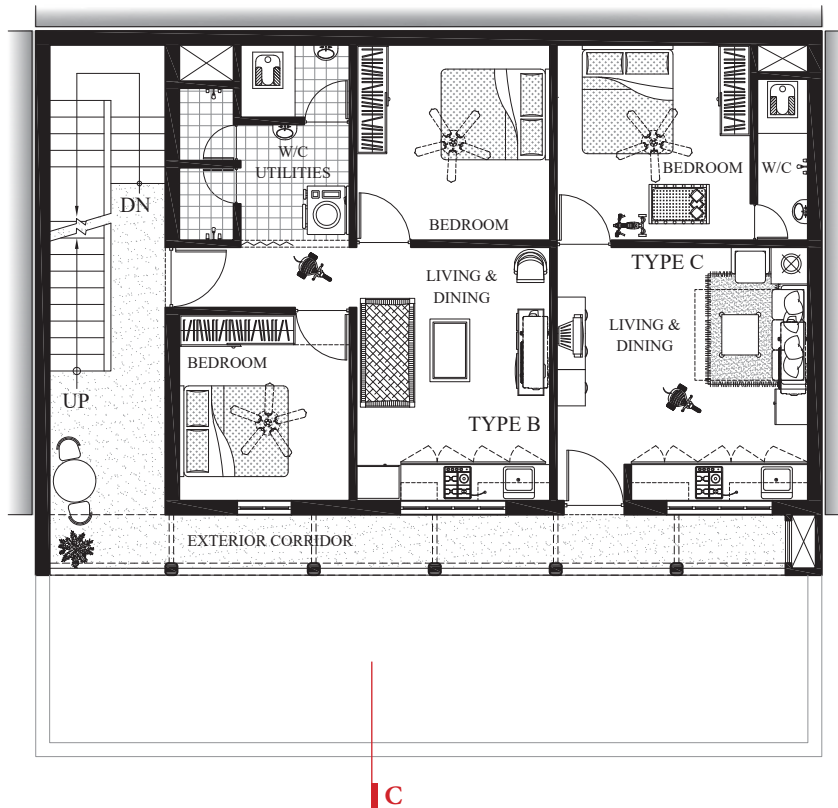


Figure 4.68 Third Floor Plan - Typical for upper floors

Apartment Type B - Joint family arrangement for 5 to 6 people
 Area - 46 sq.m



Apartment Type C - Joint family arrangement for 4 to 5 people
 Area - 32 sq.m



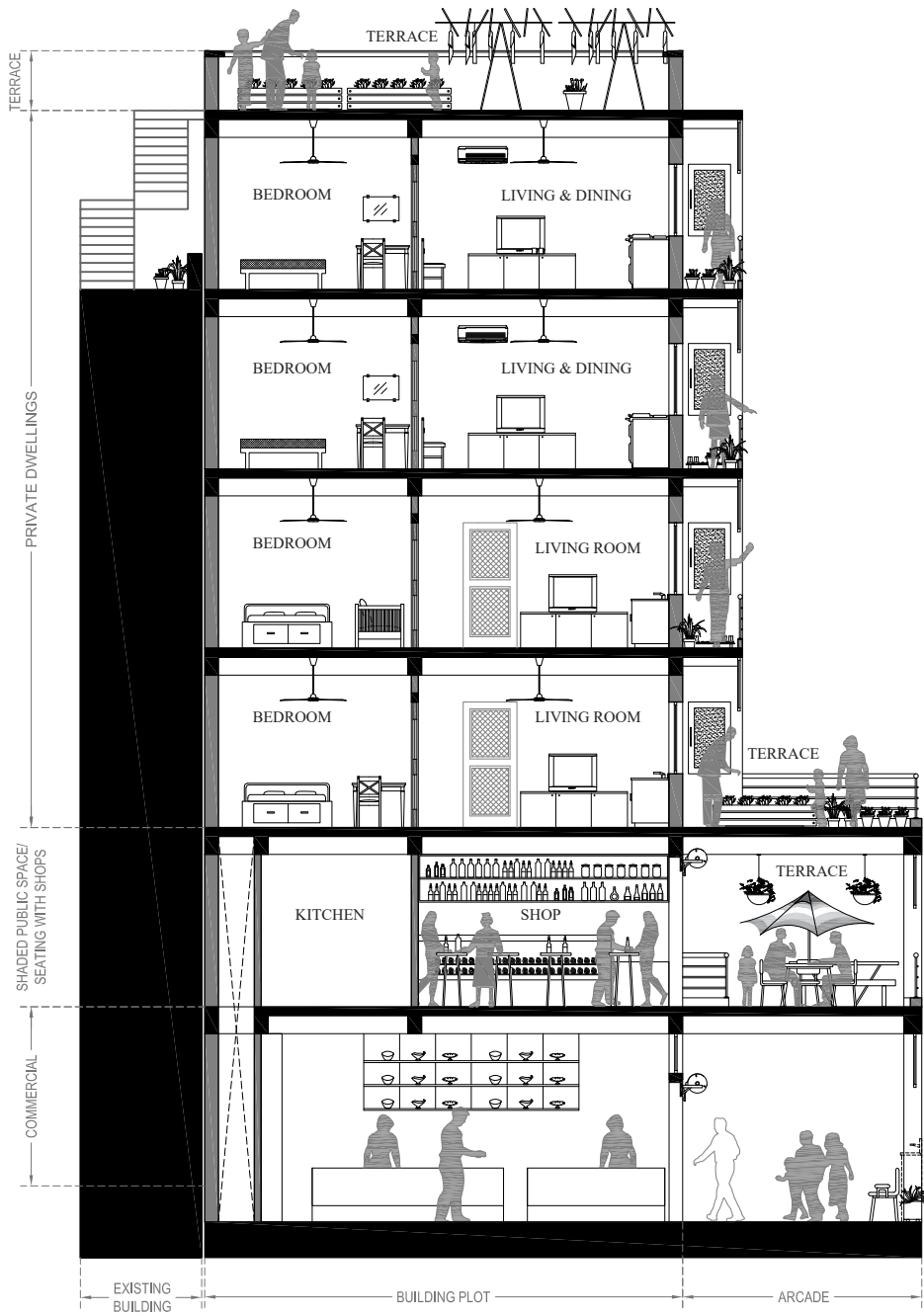


Figure 4.69 Building Section C-C



Part 04 Models of Collective Dwelling

Thesis Concept Architectural Case Studies

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Existing Proposal for Chandni Chowk

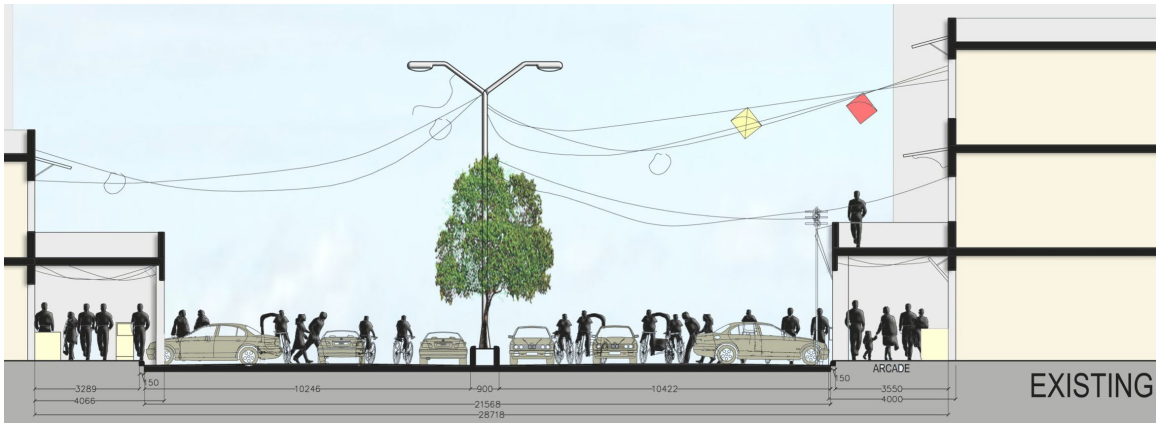


Figure 4.70 Existing Street Section through Chandni Chowk by Abhimanyu Dalal Architects for Municipal Corporation of Delhi & Council of Science and Industrial Research

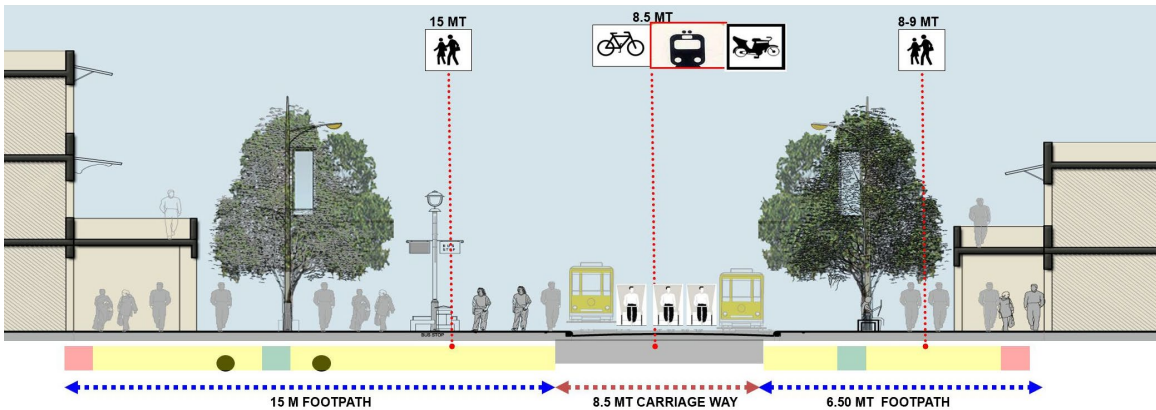


Figure 4.71 Proposed Street Section through Chandni Chowk Road by Abhimanyu Dalal Architects

Chandni Chowk Revitalization Proposal

Figure 4.70 and figure 4.71 represent the existing proposal for revitalization of Chandni Chowk. The proposal envisions to convert the chaotic vehicular street into a pedestrian friendly street with user friendly public transport. The vehicles will not be allowed on the street during the day and additional parking facilities are also planned in the vicinity. But the proposal allows the circulation of buses on the street which will eventually lead to cars and small trucks entering onto the street causing congestion and chaos.

The urban condition illustrates the concept case studies explored in the previous sub-chapter at a city scale. Each model created in the design exploration takes a condition within the city fabric. Apart from determining how people inhabit a building, it is essential to analyze the relationship of the buildings and the people with their built environment. The built environment composes of spatial, physical and human systems that directly impact our quality of life. Planning with a holistic vision can ensure sustainable environments and social cohesion among people. The urban conditions are illustrated through the main street Chandni Chowk and through the interior of the built fabric of Old Delhi. The proposed design is replaced on the existing built conditions to demonstrate a publicly responsive social realm and a resident oriented living condition in the city.

For Chandni Chowk the thesis proposes a pedestrian friendly street with access given only to rickshaws. The arcade is extended and converted into an open plaza with connections to upper levels through staircases, space for vendors to sell their goods and seating for people under a boulevard of trees on both the sides (refer figure 4.72). The connectivity to an underground metro line has made it easier for people to travel within Delhi. All vehicular transport can be diverted onto the main roads around the city and the existing parking structures can be improved to accommodate for additional space.

The interior condition for Old Delhi (refer figure 4.73), displays the relationship of the buildings and people with each other. The existing houses are built up right next to each other. The intervention tries to break the density of the built fabric while creating surroundings that reinforces a symbiotic relationship of the people with their physical environment.

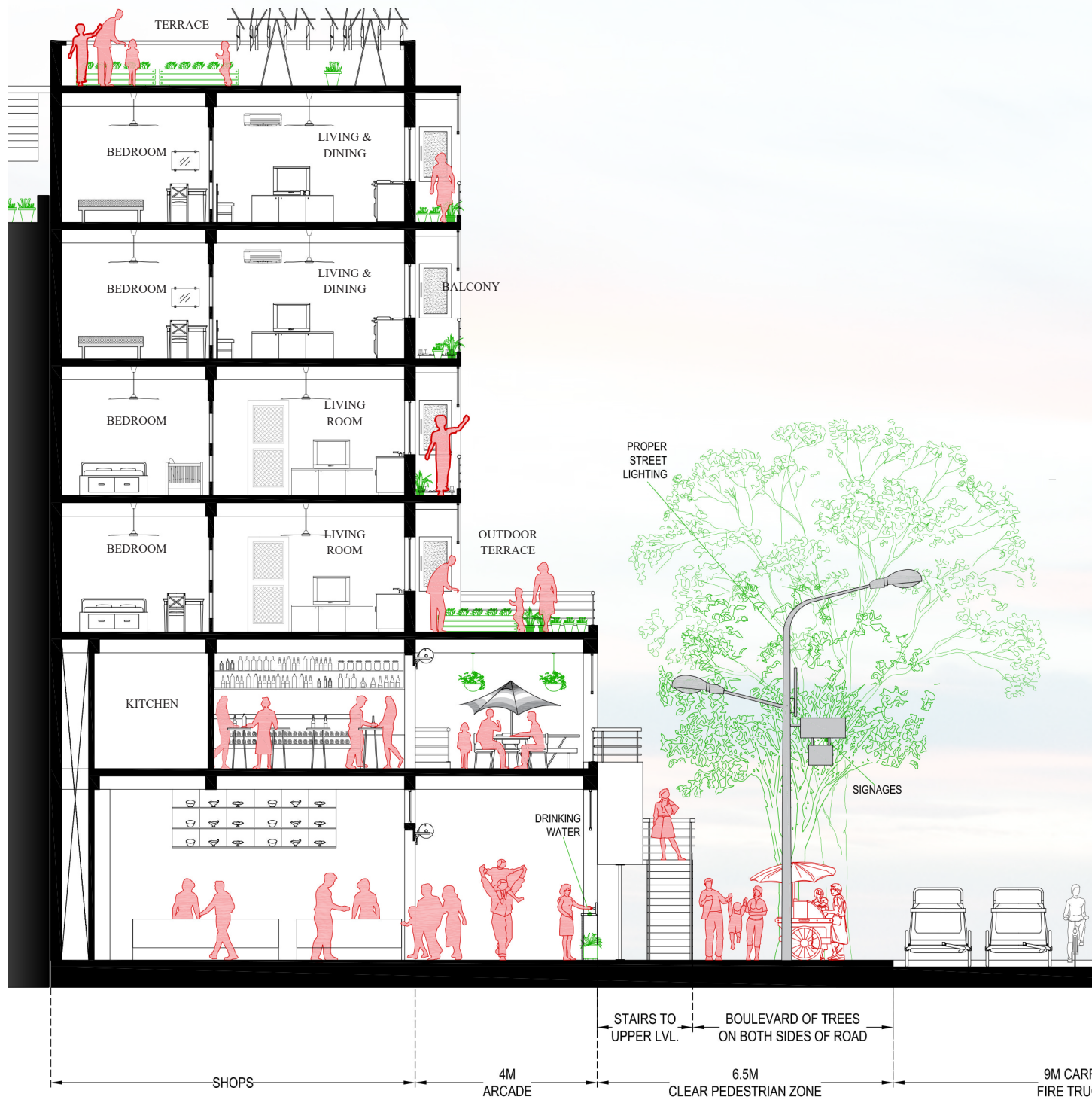


Figure 4.72 Proposed Street Section through Chandni Chowk, Old Delhi
 Scale 1:125

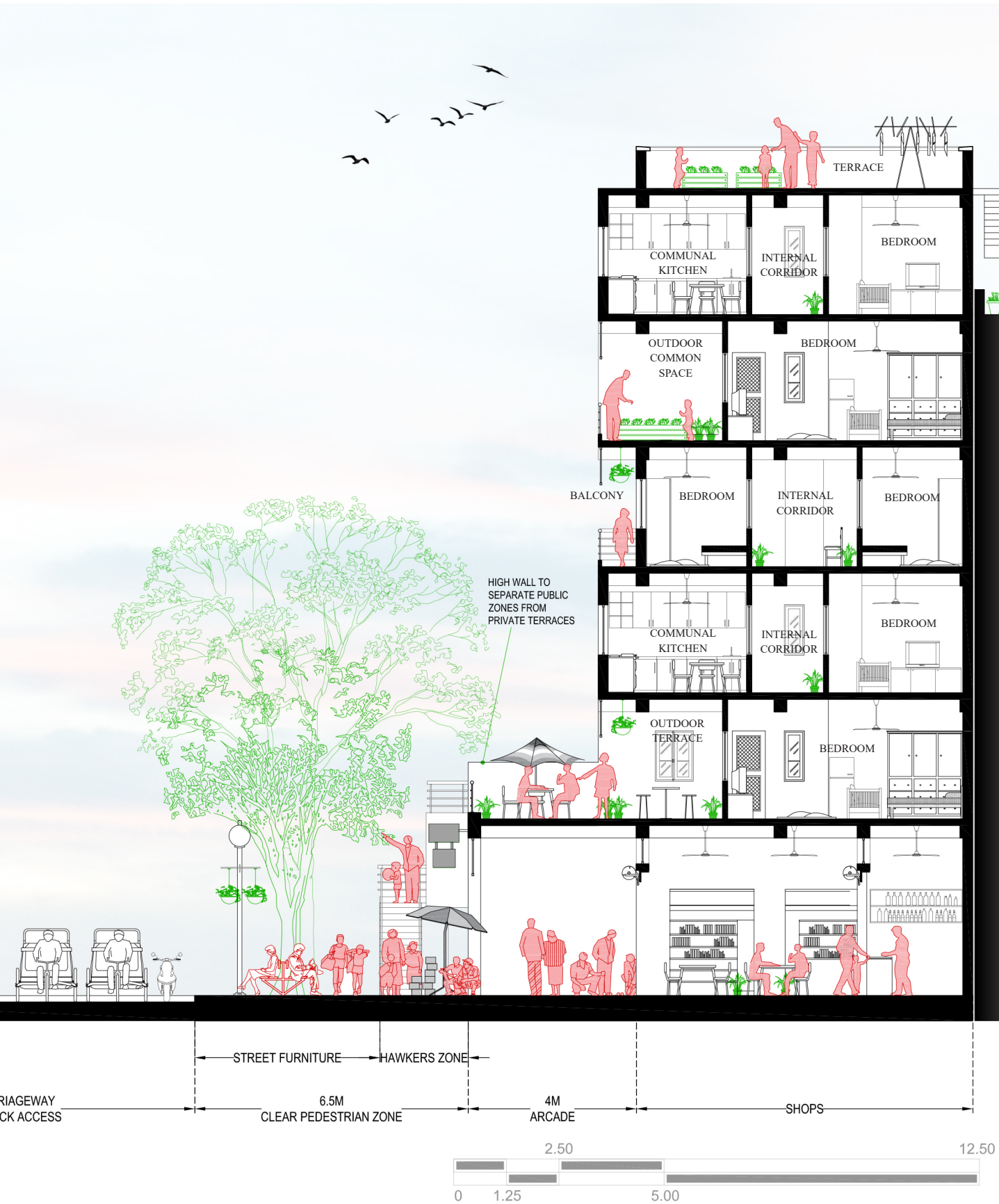




Figure 4.73 Typical urban condition created connecting with the interior built fabric, Old Delhi
Scale 1:125

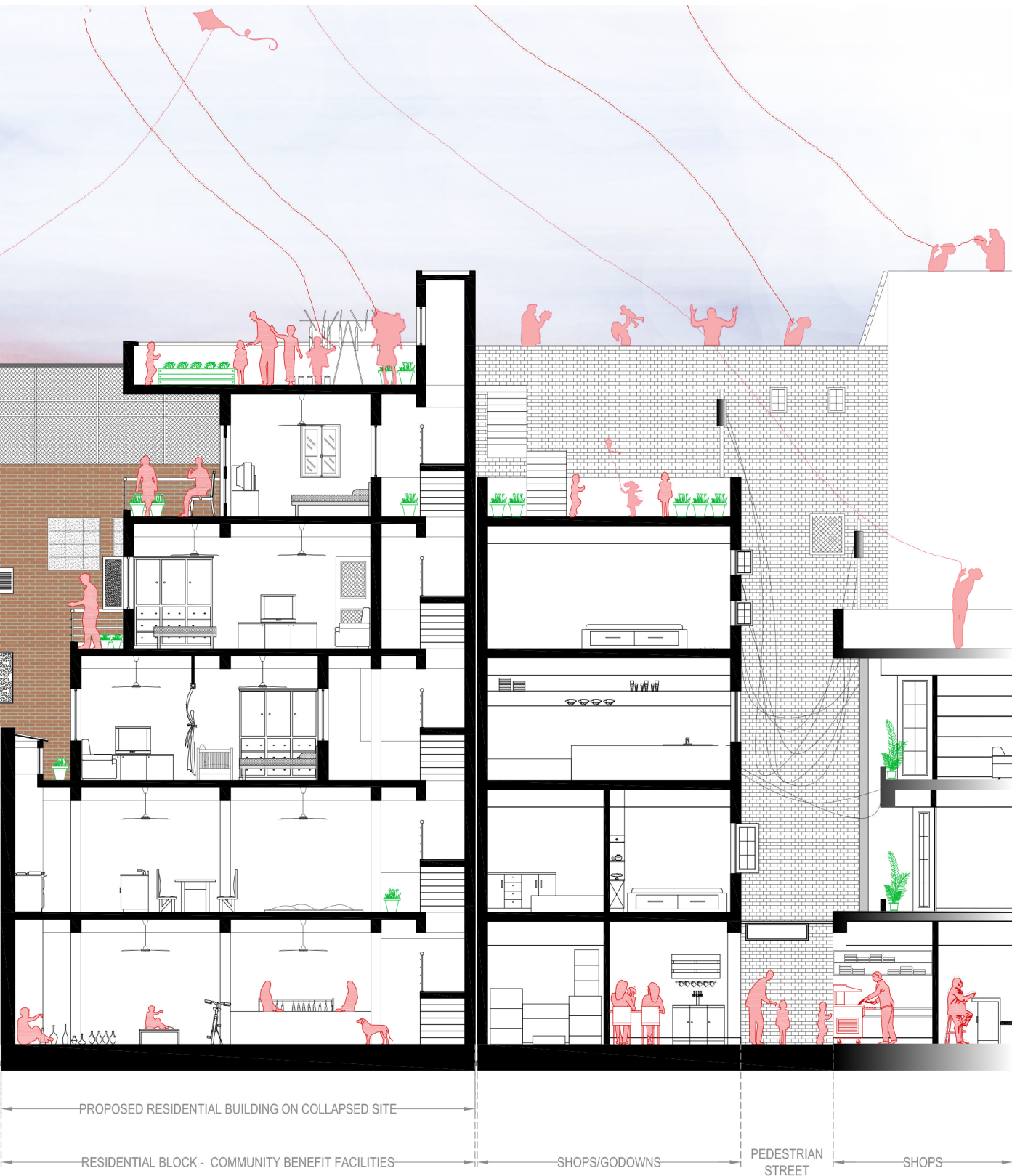




Figure 4.74



Figure 4.75



Figure 4.76

***“One cannot make architecture without studying
the conditions of life in the city.”***

- Aldo Rossi

Conclusion

I was born and brought up in Delhi and lived there until I decided to pursue post-graduate studies from a global university. After a year of pursuing the masters course I went back to Delhi to visit my family during summer break - before beginning my thesis. It was a month-long break and a very cherished one. I wanted to buy gifts for my friends here in Canada and the closest place I could think of as 'Indian' was Old Delhi. I never saw beneath the surface of those glittering traditional apparels and accessories, unique hand-crafted artwork, mouthwatering food and bustling streets before I came to Canada.

All of Delhi is overpopulated and I could have never made the distinction if I hadn't moved to Canada, where it seems the relationship of people with their habitat is more integrated resulting from a better quality of life. It made me evaluate that underneath all the charm and grandeur of Old Delhi, the city is crumbling into decay and the uncertainty of its future was visible through my naked eyes. It made me question what I could offer in my personal capacity to make it better? With that question my thesis became an exploration of trying to find formality in this informal context and plan for the minimum basic quality of life.

The multiplicity in production, reproduction and parcelization of space over the past 380 years has led to the densification of the built fabric, derelict living conditions and lack of space for social interaction in Old Delhi. This form of urban growth asserts rigidity and restricts interaction amongst people in their everyday life. To alleviate this urban condition of such rhizomatic growth like many informal settlements, a planning approach must adopt tactical practices that make the informal both an assemblage of dwellings that have the potential to grow in an organized manner and leaves space for uncertainties that can be collectively appropriated by the people. Land is scarce and with the recent large-scale redevelopment projects and the preparation of the next Master Plan of Delhi, space is a prized possession. It becomes

important to understand how people conceive and perceive a space, to prevent its exploitation. The articulation of space which interacts with the surrounding and the people who inhabit it, acts as a catalyst for growth.

During the initial few weeks after starting the thesis, I realized my goal for the 'Revitalization of Shahjahanabad' was very ambitious. Confining the scope was the most difficult as there are numerous factors involved and interconnected for a city to be functioning. Although, in a crumbling state it is the resilience of the people and the city which maintains an equilibrium between all the uncontrolled events.

Reflecting on these thoughts, the research into the existing ways of living, how people have adapted and altered the historical built fabric became an important aspect of the thesis. The site visits gave me an opportunity to document the housing condition at present, observe the activities of the people throughout their day and the nuances people face in their day to day life. Amidst the dangerously dilapidated buildings and neighborhoods, the deep rootedness of the people with their land indicated that regardless of its physical state, it is their home. These settlements are containers of social and cultural networks which need to be acknowledged through incremental development strategies by providing socio-economic resources as an elemental step towards their revitalization.

One of the most important factors affecting the socio-economic resources is affordability that stems from a large income and wealth disparity between people in Delhi, and the lack of affordable housing which results from political influence, lack of coordination between Government authorities and ownership of land. Small parcels of land for individual ownership are scarce. Most land is owned by Government bodies and is disposable as per planning done with a top-down approach. Under many schemes the economically weaker sections and lower income groups of the society are not able to avail the benefits from the housing schemes because they do not have assets to apply for housing loans or housing mortgage loans. Some schemes involve private developers and local governing bodies over tender and bidding systems for redevelopment which is time consuming and never sees the

light of the day. The housing scheme introduced by the National Democratic Alliance(NDA) Government - *Pradhan Mantri Awas Yojna (Urban)– Housing for All* , is a hope for people all across India to be able to afford a home by 2022. To achieve this vision, a strong desire for working towards improving the life of the people in the country is imperative.

These irregularities which are mostly created lead to phases of displacement and migration in people’s life. The government needs to expand its outreach in matters concerning affordable housing. The affordable housing crisis in Delhi has inevitably caused the intensification of people in older parts of the city who are living in less than minimal housing conditions.

The different possibilities and strategies determined in the thesis provide incremental steps towards a better living environment for the people and children impacted by this problem:

1. A framework for integrating the ownership rights and interests of the people, developers and Government authorities through the development of abandoned and underutilized land in derelict conditions –
 - Encourages participation in groups to make the development more viable through Government funded incentives or co-housing units.
2. A design framework specific to the housing types to be found in the impacted neighbourhoods –
 - Defines special guidelines for dense city fabrics.
 - These dictate a methodology for effective planning and manipulation of land and buildings.
 - The setbacks and building heights are changed to create an urban alternative that forms a suitably scaled building density and takes into consideration the easement of light and air for neighbouring buildings.
 - The building mass consolidation and circulation engage a group of people in the development of their land together. The construction of smaller clusters becomes more affordable than the

redevelopment of various individual buildings. It also strengthens the community while co-existing and sharing their day to day chores.

- The Construction practices and materiality suggests reintroducing design and construction based on local needs of the people using materials that support natural climate control, are more durable than the new lightweight materials and culturally harken back a spirited past condition. The thesis proposes the use of inflammable materials in construction must be prohibited on building facades as supports or decorative elements. The structure must be a concrete framework with brick infill. Use of compressed earth bricks can help in better cooling and fire resistance. The leftover extension of reinforcement from columns on terraces for addition of extra storeys must be forbidden.
3. In Chapter 6 the thesis identified potential through incremental development on collapsed building sites, land occupied by buildings in dilapidated condition, underutilized land and heritage sites through adaptive reuse or infill construction. The design proposals on different sites are concept case studies which demonstrate different planning approaches based on the principles established in Chapter 4.
- The design of the dwellings is minimal and developed as flexible and replicable models based on the family size.
 - The planning introduces the concept of multiplicity within its territories while also creating overlaps of shared space. The modularity of the units or the modularity in layouts subdivides the space into smaller zones that can be used for different purposes. It also accommodates for flexibility in future expansion.
 - The floor space on each floor is divided into smaller units. Multiple ownership of the same

space stimulates a co-living environment and keeps everyone involved in decision-making.

- The ground plane and the terraces are developed as collective spaces which the residents can appropriate themselves.
- The local public and resident benefit programs for example, small grocery stores, barbers shop, clothes ironing place etc. on the ground level are catalysts for a socially and culturally integrated neighborhood.
- The three different sites may also imply different ownership strategies based on the location and size of the land. The sites can be developed by private owners for rental housing with communal facilities, by developers for rental as well as permanent ownership or by the people as cooperative housing with incentives from the Government.

The essential goal of this thesis was to unearth the opportunity of utilizing land for the benefit of the common people. Resilience reinforces the community, neighborhoods and the people to adapt to change. The indicated urban condition in the thesis is prevailing in many older cities in the world. Old cities are functioning ecosystems with various external forces acting upon it. I strongly believe Shahjahanabad and all other cities will show solidity until ruination. It is how resilience responds to the disturbances and the tolerance of the people against it, that defines the identity of the ecosystem. An urge to reinvigorate the historical inheritance concealed under extensive squatting can recoup the spirit of Shahjahanabad.

Delhi has always been a favorite destination for people seeking a better standard of living. The people of Old Delhi bare their souls and identity to the city and form the framework of the social and economic activity. The thesis envisions to return the city to the people. It is my way of giving back to society which has given me everything.

Epilogue

One of the biggest challenges in the redevelopment of Old Delhi through constructing over abandoned sites or combining buildings to re-appropriate them into co-housing dwellings as explored in this thesis is *Gentrification*. The suggested methodology of building smaller units can eventually be replaced by bigger apartment units or converted into galleries or cafes. Old Delhi has been experiencing extensive commercialization since several years but a recently renovated Haveli Dharampura into a boutique hotel displays the city's potential for gentrification in terms of its location in Delhi and a thriving economic market. Another factor contributing to the threat gentrification poses to the lower income groups in the city is *touristification*. Similar to the revitalization of the historic center of Havana (*refer sub-chapter 4.3*), many cities envision the transformation of older city fabrics through restructuring the urban space with tourism-related programs and activities and forcing the displacement of the people who have lived there for many years.

This thesis presented here can thus be viewed as a viable framework that does not challenge the natural system of events which may take place but establishes a mechanism to preserve the scale to accommodate the present and future growth in population. Presently we have a city functioning resiliently against all external forces that can be made better to live in. The proposal intensifies the dense built fabric without destruction but with the realization that the new construction will also reach its saturation over the course of time. The dominant presence of various underlying political and administrative frameworks often determines factors affecting affordability and a housing market which prevents the implementation of many revitalization projects for the common good. But, as architects and planners we can contribute in forming a system that defines the minimum requirements into the policies and frameworks for development, that are formulated around more traditional living and spatial arrangements familiar to and liked by the inhabitants. A progressive approach towards the city's development will yield inclusive and healthy built environments.



Figure 5.01 Decrepit Condition of housing - Wooden supports, railing and planks used for the Jharokha (enclosed balcony)

PHOTOGRAPH FOLIO

Remnants of Resilience towards change



Figure 5.02 Gadodia Market - Also known as Sarae Bangash or asia's largest spice market. The courtyard for this inward looking mansion is now built up with small single room accommodations.





Figure 5.03 Begum Samru Mansion - Adapted by migrants today. Courtyard being used for communal activities under unhygienic conditions. Mansion sub-divided into small rooms.





Figure 5.04 Jharokha (enclosed balcony) converted into a room cantilevered on wooden supports.



Figure 5.05 Abandoned house - dangerously dilapidated. Vulnerable to heavy rains during seasonal monsoon down pour.



Figure 5.06 School for children



Figure 5.07 Common external corridor - use of vibrant colours



Figure 5.08 Gadodia Market - Retionship of the existing mansion with the now built up extensions and courtyard. Use of vibrant colours on the facades of the mansion.





Figure 5.09 Unique condition in Old Delhi - The building on the right is operated as a night shelter. The open amphitheatre is presently locked within the premises of the night shelter and not open to the people and children living in the neighbourhood. The space holds the potential to be developed as a community space/community theatre for the local artists that reside in the city

New Construction Practice and Type



Figure 5.10 Present day construction



Figure 5.11 Micro Dwellings



Figure 5.12 Micro Dwellings



Figure 5.13 Small rooms constructed on rooftops



Figure 5.14 Raised plinth with water drainage passageway underneath



Figure 5.15 Houses looking into a collapsed hollow building site



Figure 5.16 View from neighbours rooftop into an adjacent dwelling - depicts the two layers of the central courtyard. Original courtyard converted into a small light shaft.





Figure 5.17 Building located on the main street - Chandni Chowk. Ground and first levels used as commercial and second floor used as a residence. Upper floors are abandoned with broken glass windows.



Figure 5.18 Old vs New Construction in Old Delhi



Figure 5.19 Gadodia Market - Buildings in courtyard. Use of terraces for communal activity.



Figure 5.20 New additions - balconies constructed like Jharokhas



Figure 5.21 Repeated housing typology



Figure 5.22 Typical street facing building typology



Figure 5.23 View of Red Fort on the left and Jama Masjid (mosque) on the right from the rooftop





Figure 5.24 Workers pulling hand carts full of goods. Common occupation for low income workers to sustain a livelihood in the capital city.

Everyday Life



Figure 5.25 Terraces for cooking and bathing



Figure 5.26 Early morning communal cooking on the rooftop of Gadodia Market



Figure 5.27 Rooftop setting and activity





Figure 5.28 Rooftop setting and activity



Figure 5.29 Rooftop setting and activity



Figure 5.30 Pyau (water break for commuters) located on the interior streets of Old Delhi - not operational presently



Figure 5.31 Modern day Pyau located on main street Chandni Chowk



Crumbling Infrastructure



Figure 5.33 Collapsed building site



Figure 5.34 Present construction in some parts of Old Delhi - exposed brick work and temporary additions



Figure 5.35 Buildings being used as godowns to store goods





Figure 5.36 Small park used as a dumping ground for garbage



Figure 5.37 Abandoned building - Ground floor occupied as a shop whereas upper floors remain unoccupied



Figure 5.38 Kazanchi Mansion - Heritage ruins



PHOTOGRAPH FOLIO

Adapted Conditions



Figure 6.01

Chunnamal Haveli located in Katra Neel

Built in 1848 by the owner Lala Rai Chunnamal, the mansion is located on the main street Chandni Chowk. The interior of the mansion reflects the grandeur of olden times. Many features like painted ceilings, fire places, mirrors, chandeliers etc. have been preserved. The mansion continues to be a residence of the successive land owners. The mansion has been nominated for sale to be converted into a Heritage Hotel.



Figure 6.02

Mirza Ghalib ki Haveli

An urdu poet named Mirza Ghalib lived in this mansion in the 19th Century. The residence is now a museum which displays various portraits and poems by the poet framed and hung on the walls. It also has a life size replica of Mirza Ghalib in a created setting with a Hookah. The mansion was built by locally available materials at the time - lakhori bricks (clay bricks - feature of Mughal architecture), that are still retained.



Figure 6.03

Haveli/Dharamshala located in Katra Neel

This 19th Century mansion with a courtyard now operates as a Dharamshala/Temporary shelter. The balconies on the first level are later additions constructed with the help of steel supports.



Haveli Bakhtawar Khan

The mansion owned by Bakhtawar Khan was a two storey mansion with a central courtyard and a small water body. The mansion was sold to Husain Bakhsh. Additional floors have been constructed on top of the two storey mansion. It is now known as Madrasa Husain Bakhsh - an islamic educational institution.



Figure 6.05

Haveli Dharampura

The mansion was built in 1887. It was an abandoned site in a deteriorating condition until 2016, when it was restored by its current owners into a restaurant and hotel. The restoration took 6 years with rigorous work. The present state of the mansion exemplifies the grandiosity of Mughal architecture. It has adapted all the existing architectural elements and the courtyard. All the old wood work has been preserved and new furniture made as per the traditional style. Intricate carvings and decorations have been done retaining the original character of the mansion. The mansion is now a famous heritage site for local visitors as well as tourists to experience the opulence of olden days.



Figure 6.06



Figure 6.07



Figure 6.08



Figure 6.09 Mansion Dharampura - Dilapidated Condition



Figure 6.10 Mansion Dharampura - Restored

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Figure 7.01 & figure 7.02
**SOS Children Village in
Djibouti**
Figure 7.03 & figure 7.04
Elemental Housing

Appendix

Precedents

In preparing and implementing revitalization plans for dense urban areas, slums or informal settlements it is important to understand how the city and the people operate. The idea of incremental development is further researched in projects and proposals situated in informal context or undergoing similar process of deteriorating infrastructure and squatting. The selection of precedents is based on their relevance in highlighting the following features:

- Organization and re-organization of the built fabric
- The residents become a part of the decision-making process
- Self-built infrastructure
- Modularity and expansion in design
- Activating public realm
- Co-living environments
- Adaptive reuse and in-fill development
- Use of locally available materials
- Distribution of land for development



Figure 7.05 & figure 7.06 Self-built Prototype

Empower Shack by Urban Think Tank (UTT)

Empower Shack is a pilot project in Africa. UTT attempts to keep the spirit of the settlement alive through incremental upgradation by developing a housing prototype that can be built by the people on site using locally available materials. The prototype can be attached to their existing units as well as built independently. The plan includes reorganizing of the houses to create new residential clusters with collective spaces for the community. The plan for reorganization of the settlement was done by the people themselves in association with the planners and architects. The involvement of the people results in a scheme favourable to their everyday life. The proposal separates the public and private spaces to different levels and connects them externally. People use communal facilities in the settlement. The existing houses are prone to catching fire, thus, the prototype is built using timber and corrugated steel cladding for better fire resistance.



Figure 7.07 Prototypical arrangements for the organization of the units and layouts for the houses

Figure 7.08 Use of locally available materials - Typical details



Figure 7.09 Historic buildings in Havana



Social Housing with Tourism in Havana

This project is a proposal for the revitalization of the historic core, Havana, that is undergoing similar problems of a physically decaying built fabric as Old Delhi. The proposal adapts the existing collapsed or decaying building sites to re-appropriate them with social housing and hotel space. The design is based on 6 prototypes depending on different site conditions.

The program of the building includes residences, rooms for tourists to rent, shops, office spaces, urban farming and collective spaces for the permanent and temporary residents. The residents can generate income by renting rooms to the tourists. Locally made materials are promoted, for example, cuban ceramic tiles and decorative wrought iron railings. The ground plane is treated like an open plaza with seating spaces overlooking the restaurants and activities on the street. The permeability of the ground plane activates the public realm and promotes a sense of security amongs the residents.

The revitalization project aims to boost the tourism sector by developing the historic built fabric with tourism related programs which may imply gentrification of the downtown core in the future.

Figure 7.10 Sectional View through a prototype for social housing in Havana



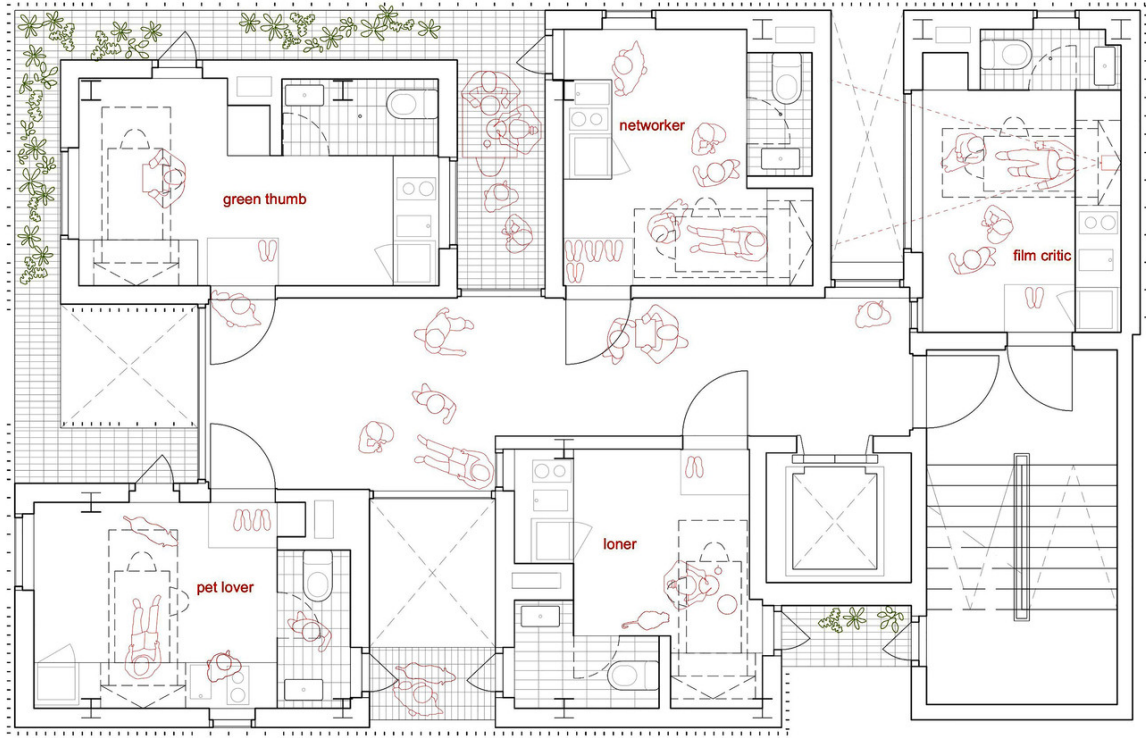


Figure 7.11 Floor Plan for Songpa Micro Housing



Figure 7.12 Aerial View of Songpa Micro Housing within its context

Songpa Micro Housing, Seoul, South Korea

The project addresses the pressing issue of urban density and affordability. The design creates micro-units for residence with modular furniture that can be arranged as per different requirements of space during the day. The building is an inward looking building with an indoor central common space. The indoor space is occupied by people during the day and creates a co-living environment. The ground floor and basement are treated as a shared living space with a cafe/stepped seating which connects with the units above. The building is lifted at the ground level to incorporate for parking space which creates an open area that can be appropriated by the residents for various events. The co-living environment with indoor corridors and small bridges enhance the visual connectivity between the residents throughout the day.

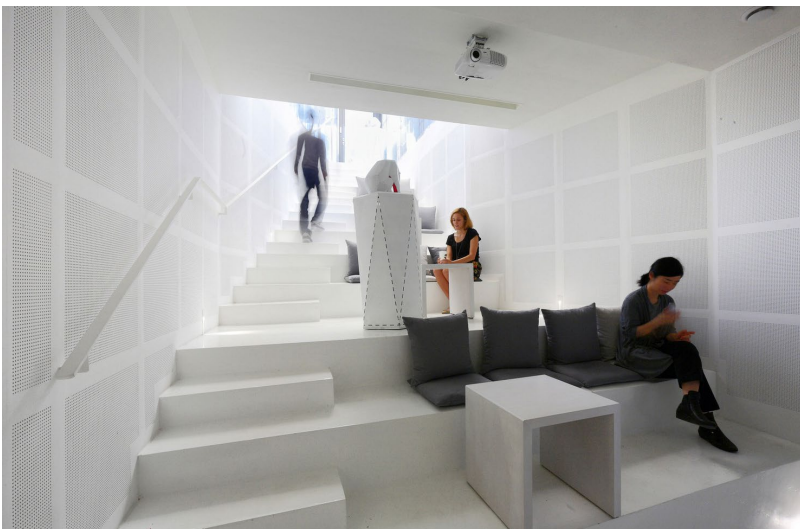


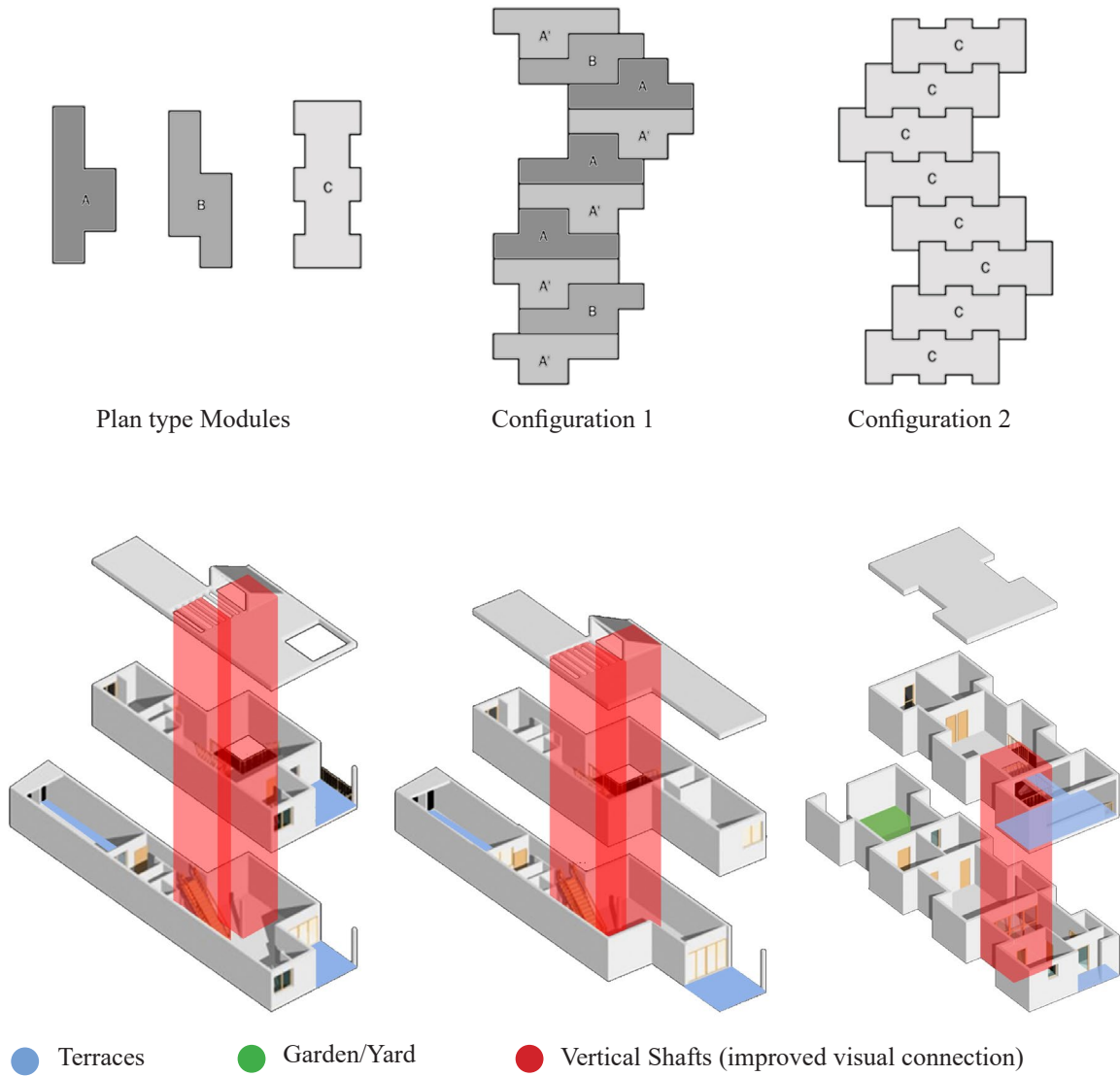
Figure 7.13

Interior View

Figure 7.14

Auditorium Space

Figure 7.15 Housing Proposal for PREVI by Charles Correa



PREVI Experimental Housing - Late 1960's Social Housing

The PREVI model of social housing was an attempt of the Peruvian Government to control informal growth. The settlement is developed based on different housing models designed by local and international architects. The houses were designed to accommodate larger families with the possibility of extension and construction of additional floors overtime. Although the process of multiplication of these housing models was not successful but the settlement today represents the evolution of housing through the distinct identities of the people inhabiting them.

The proposal built by Charles Correa was designed with modular layouts. The houses are oriented towards a community spine. The flexible shape of the block allows for different orientations to create more outdoor communal space. The vertical shafts cross ventilate the house and allow percolation of natural light. The indoor garden/yard and outdoor terraces create a secure environment for the children and a space that privately engages with the street.



Figure 7.16 Charles Correa Scheme - Evolution overtime by addition of floor above the existing building

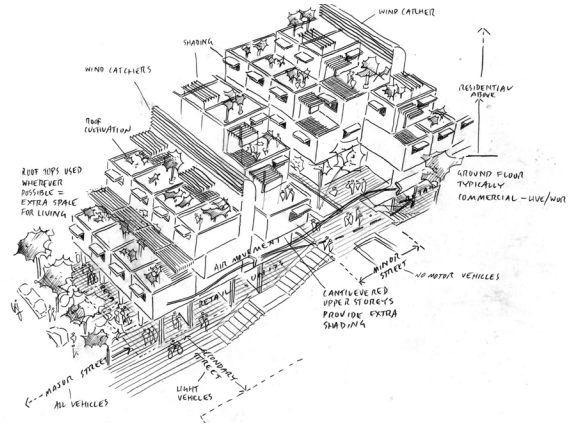


Figure 7.17 & figure 7.18 Dharavi Redevelopment Plan by Foster + Partners

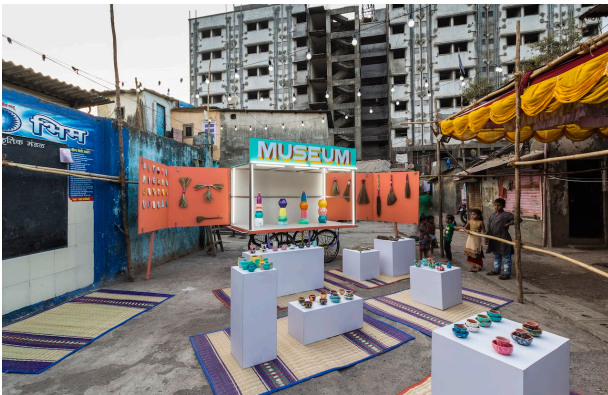


Figure 7.19, figure 7.20 & figure 7.21 Mobile Museum

A moving museum which displays the art work created by the people locally

Figure 7.22

Shipping Container Skyscraper
Affordable housing for the slum

Dharavi Revitalization Strategies, Mumbai

One of the largest slums in the world, Dharavi defines urban density. From large-scale redevelopment plans to shipping container skyscraper proposal, there have been many innovative ideas for the redevelopment of Dharavi slum. Dharavi has reached an urban density where normality in the basic quality of life of the people cannot be restored through external forces. The revitalization done through reconstructing the city will inevitably displace thousands of people. The land is their home and people residing in Dharavi have formed a resilient community with strong social ties.

The biggest challenges in slum revitalization projects are that of land ownership. The land is distributed between various Government authorities and private land owners, which only augments conflict. An architecture and urban design firm PLURAL situated in Mumbai, won the international competition by Urban Design Research Institute in 2014 for revitalization of slums through Dharavi as a case study. In their proposal, PLURAL identifies the land as the conflicting commodity. They introduce the concept of *Dharavi Community Land Trust* where the land owned by the Government is transferred to the trust that will be governed by various officials, tenant and owner representatives, and neighbourhood associations (figure 7.23). The transfer of ownership to people who are a part of the community, helps to devise more human-centered strategies for redevelopment. The Government must play the role of a coordinating body and transfer the ownership rights to the local community associations and the people.

Figure 7.23
Proposal-Dharavi Community Land trust by PLURAL
 Distribution of people forming the Land Trust

