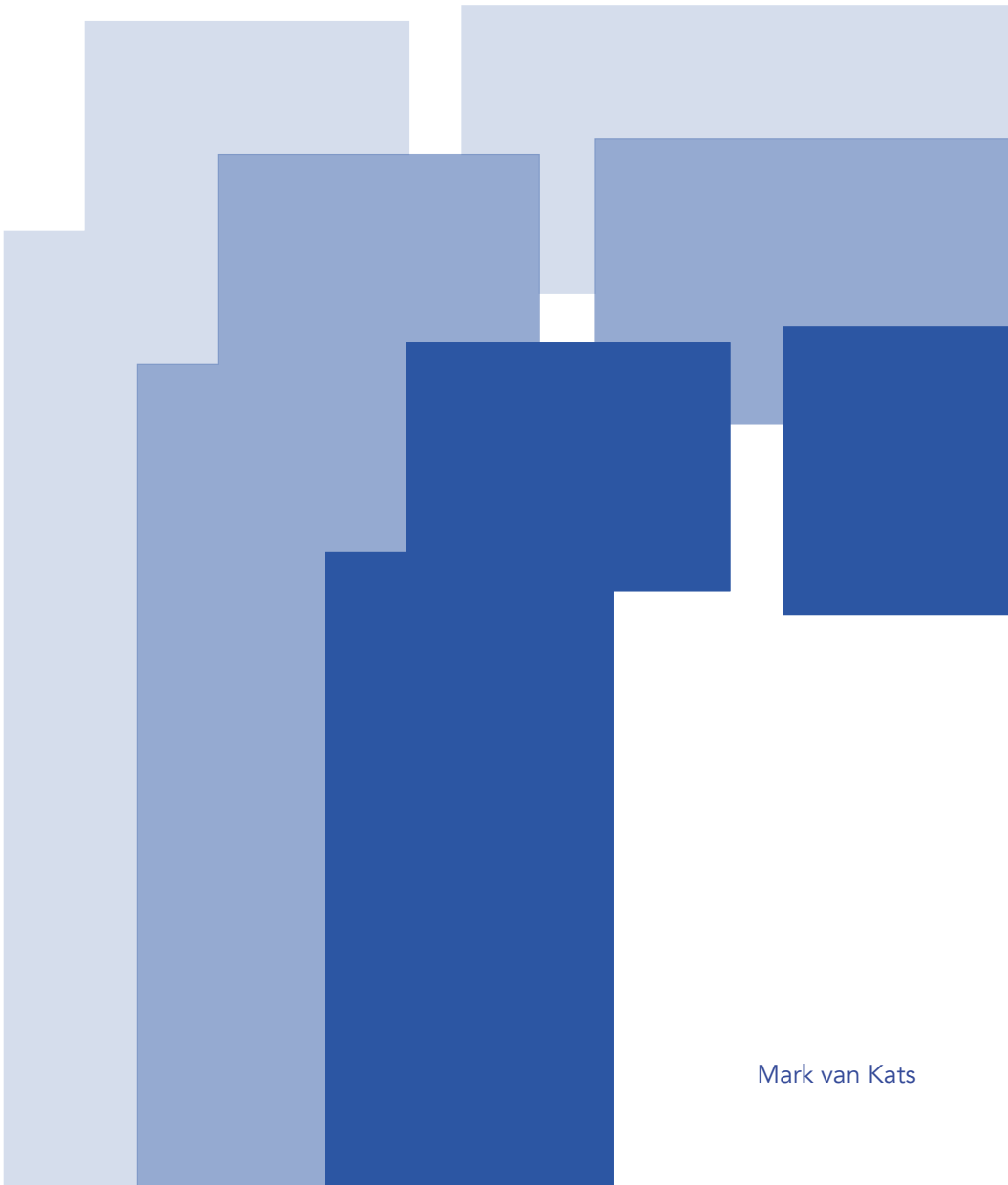
LIVING MARKETS

Housing Embedded in Urban Market Life



Mark van Kats

LIVING MARKETS

"If you want to look far ahead, first look far back and then be aware that you are designing for the present, but you are also designing for a future, which is unknown."

~

Norman Foster

COLOPHON

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Global Housing: Architecture of Transition in the Bangladesh Delta
AR4AD105

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PROBLEM STATEMENT

Bangladesh, like many countries in the Global South, faces the complex challenges of rapid urbanization. As rural populations migrate to cities in search of better economic prospects, the demand for urban housing has surged. This migration is further complicated by the country's limited availability of developable land, intensifying what has been described as a condition of acute "land hunger" (Hasan, 1985). The result is a growing mismatch between population growth and housing supply, making efficient use of land and adaptable housing strategies more critical than ever.

In response, modern construction practices, such as prefabrication and modular systems, have become increasingly popular for their speed and cost-effectiveness. These methods are often embraced by policymakers to meet urgent housing shortages. However, while efficient, these approaches frequently neglect the social and cultural dimensions of housing that are deeply rooted in the local context. One key trade-off is the loss of flexibility, a defining characteristic of traditional housing in Bangladesh. Historically, such homes, built with local materials and techniques, were highly adaptable to both environmental conditions and evolving family needs (Das et al., 2021).

This adaptability extended beyond structural considerations. Traditional housing facilitated incremental growth, allowing families to modify their spaces as household sizes changed or social roles shifted. These dwellings supported social flexibility, accommodating multigenerational living, shared spaces, and communal practices essential to community cohesion. In contrast, contemporary multistoried housing, often designed to rigid, standardized plans does not support this level of personal or social adaptability (Das et al., 2021).

Sylhet, a rapidly expanding city in northeastern Bangladesh, exemplifies these challenges. Its population has grown from approximately 350,000 in the early 2000s to nearly 1 million today (MacroTrends, n.d.). While the region remains vulnerable to natural disasters such as floods and earthquakes, the pressures of urban growth and social transformation are equally significant. These dynamics demand housing models that are not only resilient in the face of environmental risks but also responsive to the everyday lives and social patterns of their residents.

While modular and prefabricated systems offer technical resilience and speed (Danko, 2013), they often fail to reflect the nuanced needs of the communities they serve. Without the capacity for personalization and adaptation, these homes can feel disconnected from residents' identities, traditions, and social networks (Hasan, 1985). This can erode the very social cohesion that communities rely on during times of crisis and transition.

The way forward lies in hybrid approaches that combine the strengths of modern construction with the adaptability of traditional housing. Frameworks like Open Building and modular design can support user-driven modifications, enabling both structural resilience and social flexibility (Estaji, 2017). By reintroducing adaptability into the design of contemporary housing, it is possible to address both environmental and social challenges in a holistic manner.

Such integrated solutions have the potential to do more than meet urgent housing needs, they can sustain cultural continuity, support evolving family structures, and foster community resilience. In this way, housing in Bangladesh can move beyond mere shelter, becoming a dynamic framework for sustainable urban life in a rapidly changing world.

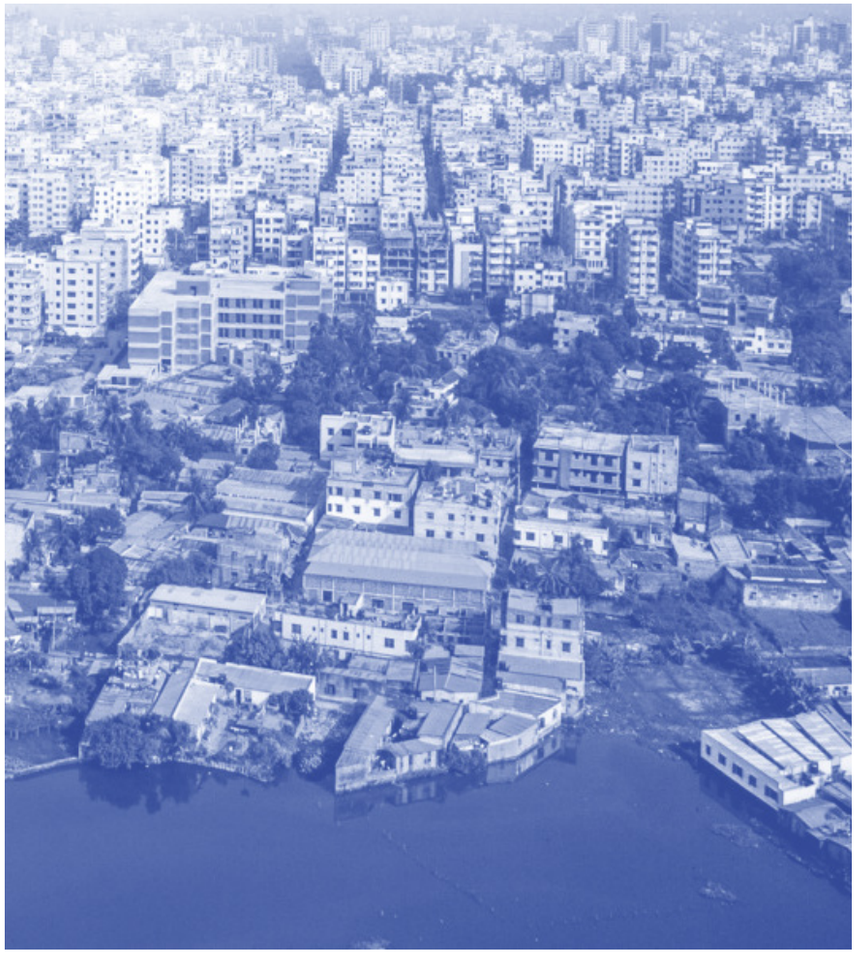


Figure 01: Rapid urbanization in the Global South (Habitat III, n.d.)

Research plan

RESEARCH QUESTION

This research explores the integration of traditional housing knowledge with modern construction practices to address the challenges posed by rapid urbanization in Sylhet. It focuses on how housing design can respond not only to environmental pressures but also to the cultural and social needs of communities. While previous emphasis was placed on material durability and spatial/cultural flexibility as separate considerations, this updated approach aims to unify them under a broader goal: developing housing that is both sustainable and responsive to the evolving urban fabric.

"How can traditional adaptive housing features be combined with modern construction practices to create affordable, flexible, and culturally responsive housing solutions for a rapidly urbanizing city like Sylhet?"

This question can be further broken down into three core areas of investigation:

Traditional Adaptive Housing Features
Traditional housing in Sylhet has evolved over generations to respond to local climatic conditions, seasonal flooding, and social customs. These structures often use locally sourced materials like bamboo, timber, and corrugated metal, and their spatial organization supports extended family living and community interaction. Adaptability, through movable partitions, elevated plinths, or modular extensions, has allowed these homes to remain functional through social and environmental change.

This brings me to my first question:

What are the key adaptive features of traditional housing in Sylhet that enable it to respond effectively to environmental pressures and social needs?

Modern Construction Practices
Contemporary construction technologies, including prefabricated systems, modular design, and innovative materials, offer opportunities for faster, more durable housing delivery. These practices can also support energy efficiency and resilience to hazards like flooding. However, when implemented without cultural sensitivity, they risk producing standardized environments that lack relevance to local lifestyles.

Building on these observations, my second question is:

How can modern construction techniques be applied in ways that enhance the performance of housing while maintaining the adaptability and cultural relevance of traditional models?

Affordable, Flexible, and Culturally Responsive Housing Solutions
Sustainability in urban housing must go beyond structural integrity to include affordability, spatial flexibility, and cultural acceptance. Housing solutions that can be easily adapted over time, support diverse family structures, and reflect local values are more likely to be embraced by residents and sustained over the long term.

This leads to the last question:

What design strategies can support the creation of affordable, flexible, and culturally responsive housing in Sylhet's rapidly urbanizing context?

By investigating these three interrelated themes, the research aims to propose hybrid housing solutions that blend tradition and innovation, offering resilience not only against environmental threats but also against the social fragmentation that often accompanies rapid urban growth.

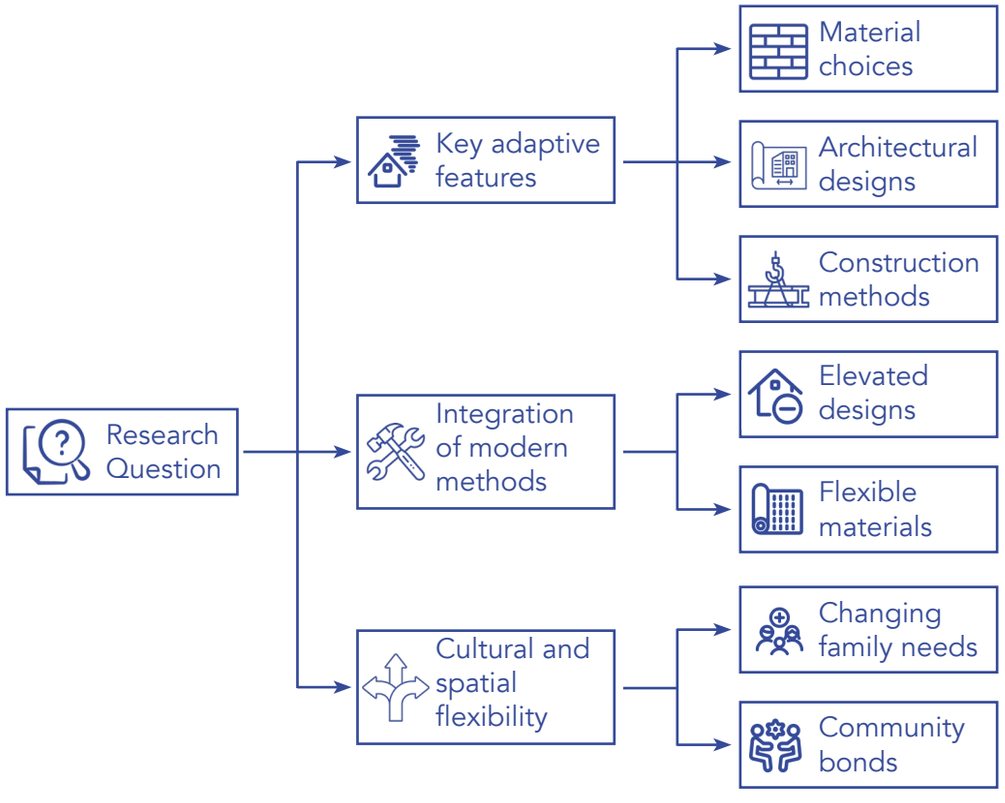


Figure 02: Research question figure (Own figure)

Research plan

METHODOLOGY

This research applies a qualitative and design-based methodology that combines literature and case study analysis, empirical fieldwork, and design synthesis. Each method addresses a specific aspect of the central research question: "How can traditional adaptive housing features be combined with modern construction practices to create affordable, flexible, and culturally responsive housing solutions for a rapidly urbanizing city like Sylhet?".

The methodology is structured around five interrelated components: literature review, case study analysis, field observation, interviews, and prototype design development.

Literature review
The literature review forms the theoretical backbone of the research. It investigates vernacular housing practices in flood-prone regions, particularly focusing on Sylhet's traditional architectural responses to climate and social change. Key themes include elevated construction techniques, spatial adaptability, use of local materials, and community-based design logic. In parallel, the review explores modern construction technologies such as prefabrication, modular building systems, and material innovations aimed at improving structural durability and efficiency. This dual focus allows for a comparative framework that identifies where traditional and modern approaches converge and where they conflict.

The literature review thus informs the first and second subquestions, providing historical and theoretical context for understanding which traditional features enable environmental and social responsiveness, and how modern construction methods might enhance or undermine them.

Case study analysis
To move from theory to practice, a series of case studies will be analyzed. These will include both traditional housing examples and hybrid projects that demonstrate innovative combinations of vernacular strategies and modern construction methods. Selected case studies will come from within Bangladesh and from similar flood-prone or rapidly urbanizing regions elsewhere in Southeast Asia. Each case will be studied for its architectural configuration, material choices, adaptability, and long-term sustainability. Special attention will be given to projects that succeed in maintaining cultural relevance while improving performance in terms of resilience, speed of construction, or affordability. This analysis supports the second and third subquestions by offering real-world precedents for how tradition and modernity can work together in creating sustainable housing solutions in rapidly changing environments.

Field observation
Field research in Sylhet will allow for direct engagement with the built environment and lived experiences of residents. Observations will focus on neighborhoods that still feature traditional Sylheti housing or transitional forms where vernacular elements remain visible. These visits will document architectural features, materials, and spatial layouts, with particular interest in how homes respond to flooding, temperature variation, and evolving family needs. Elevation strategies, ventilation techniques, shared spaces, and user modifications will be closely analyzed. In addition to technical aspects, fieldwork will observe the social life of these spaces: how people use them, adapt them over time, and what values they attach to specific design elements. This method is central to answering the first and third subquestions, as it uncovers both the environmental logic and the social resilience embedded in traditional housing forms.

Prototype design development
The final phase of the research involves the development of a prototype housing design that synthesizes findings from the literature, case studies, fieldwork, and interviews. This prototype will incorporate traditional adaptive features, such as elevated floors, modular room arrangements, and use of climate-responsive materials, into a modern construction system that emphasizes affordability, durability, and ease of replication. The design will be created digitally and tested conceptually against scenarios such as flood exposure, household expansion, and construction efficiency. While not a full-scale building, the prototype will serve as a design proposal that illustrates how the research findings can be translated into practical, real-world housing solutions. It addresses the second and third subquestions by demonstrating how design strategies can meet both environmental and socio-cultural requirements in the context of urban growth.

Figure 03: Prefabricated vernacluar house in Bangladesh (Asif Salman Photography, 2023)

RELEVANCE

The relevance of this research lies in addressing a critical challenge faced by rapidly urbanizing, flood-prone regions like Sylhet: the need to develop housing solutions that are not only resilient to environmental hazards but also socially adaptable, affordable, and culturally resonant. As cities like Sylhet grow at an unprecedented rate, the pressure to provide large volumes of housing quickly and economically has led to a widespread adoption of modern construction methods. These techniques, such as prefabrication and modular systems, offer clear advantages in terms of speed and initial cost. However, they often neglect the cultural and spatial needs of the communities they serve, leading to environments that feel disconnected from local traditions and patterns of living (Schneider & Till, 2005).

At the same time, the vernacular housing traditions of Sylhet are fading from the contemporary built environment. These traditional homes, characterized by their use of locally sourced materials, elevated structures, and incrementally adaptable layouts, have long demonstrated an intrinsic responsiveness to both environmental and social conditions. They accommodate shifting family structures, allow for user modifications over time, and foster strong community ties, qualities that are becoming increasingly rare in new developments (Das et al., 2021).

This research is therefore situated at the intersection of tradition and innovation. By exploring how the adaptive features of traditional Sylheti housing can be integrated with the structural efficiency of modern construction practices, the study aims to address a deeper, often overlooked question: "How can we create housing that is not only physically resilient, but also socially sustainable?".

This study is especially urgent in the context of climate change. Sylhet and similar regions face increasingly unpredictable weather patterns, seasonal flooding, and long-term environmental shifts (Landenweb.nl, n.d.). In such settings, housing must be able to evolve over time rather than remain static. The ability of a home to flexibly respond to changing conditions, both environmental and social, can significantly reduce community vulnerability and strengthen long-term resilience.

Equally important is the need for housing that reflects and reinforces cultural identity. As modern developments prioritize speed and cost, the cultural dimensions of housing, those rooted in everyday life, rituals, and shared spaces, are often lost. This disconnect can weaken social cohesion, which plays a critical role in how communities collectively respond to crises. The research highlights the importance of designing with people, not just for them, by embracing community-driven design strategies where residents' lived experiences and cultural practices inform the housing process.

Though rooted in the context of Sylhet, the findings of this research have broader significance. Many cities across the Global South, particularly in southeast Asia, Africa, and island nations vulnerable to climate change, face the same tension between rapid urbanization and cultural continuity.

By proposing a hybrid approach that values both the social adaptability of vernacular housing and the efficiency of modern construction, this study contributes to a growing global discourse on sustainable architecture and resilient urban development.

Ultimately, this research presents a more holistic view of housing, one that understands buildings not merely as static structures, but as living frameworks that support evolving lives, strengthen communities, and preserve cultural meaning in the face of change.

Figure 04: Residential area under water (Montu, 2023)

OBJECTIVE

The objective of this research is to develop a comprehensive housing approach for rapidly urbanizing cities like Sylhet, an approach that thoughtfully merges the adaptive intelligence of traditional Sylheti architecture with the efficiency, scalability, and material performance of modern construction methods. This integrated strategy aims to deliver affordable, flexible, and culturally responsive housing solutions that address not only the pressing environmental risks but also the complex social transformations currently reshaping communities in the region.

In flood-prone areas such as Sylhet, conventional modern housing often prioritizes rapid deployment and cost-efficiency, frequently at the expense of cultural integrity and long-term spatial adaptability. At the same time, traditional Sylheti housing models, characterized by features such as elevated plinths, courtyards, locally sourced materials, and a capacity for incremental, user-driven modification, are increasingly marginalized in the context of formal urban development. This research seeks to bridge these divergent models by identifying connections between them and proposing a hybrid design framework that fosters both structural resilience and cultural continuity.

To achieve this, the research outlines the following key objectives:

Identify Adaptive Features in Traditional Housing
Investigate the spatial, material, and environmental characteristics of traditional Sylheti dwellings that contribute to long-term resilience, social adaptability, and environmental sustainability. This includes an in-depth analysis of vernacular design elements such as raised foundations for flood protection, passive ventilation strategies, and flexible room arrangements that accommodate changing household needs.

Evaluate Modern Construction Methods for Integration
Assess current modular, prefabricated, and other industrialized building systems in terms of their potential to improve construction speed, affordability, and structural durability. Special emphasis is placed on methods that can be adapted to incorporate the flexible and user-modifiable nature of traditional housing without erasing its cultural specificity.

Develop a Hybrid Housing Framework
Synthesize insights from both traditional and modern methodologies to propose a new, adaptable housing typology that supports "right-size living", a flexible approach that adjusts to varying family sizes, income levels, and future lifestyle shifts. The goal is to deliver a design system that grows with its users while remaining structurally robust, materially efficient, and economically viable.

Promote Cultural Continuity and Community Resilience
Explore how architecture can act as a medium for cultural expression and social cohesion by enabling resident participation, spatial personalization, and continuity of local building practices. The housing model aims to strengthen the agency of residents, allowing them to shape and adapt their living environments in ways that reflect their evolving social and cultural needs.

Provide Scalable Design Tools for Wider Application
Develop a practical "toolbox" of design strategies, construction techniques, and adaptable planning principles that can be used by architects, urban planners, and policymakers.

These tools will be applicable not only in Sylhet but also in other rapidly urbanizing, climate-vulnerable regions around the world facing similar socio-environmental challenges.

Through these interconnected objectives, the research aspires to offer a holistic, forward-looking housing strategy that responds to immediate environmental risks, such as flooding and urban heat, while also fostering a deeper sense of cultural rootedness and long-term urban resilience. Although Sylhet serves as the primary site for this investigation, the proposed design principles and tools are intended to serve as a replicable model for other contexts grappling with the overlapping pressures of climate change, accelerated urban growth, and cultural displacement.

Figure 05: Resilient housing design in Bangladesh (Novenario, 2024)

RESEARCH

Research

CLIMATIC PROFILE

Bangladesh, located in the deltaic region of South Asia, experiences a humid tropical monsoon climate. The country's weather is defined by high temperatures, substantial rainfall, and distinct wet and dry seasons. Its geographic position, bordered by the Bay of Bengal to the south and influenced by the Himalayan mountain range to the north, results in significant seasonal climatic variation.

This chapter explores four essential aspects of the country's climate: rainfall, wind direction, temperature, and sun hours, with a comparative focus on Dhaka, the capital, and Sylhet, a northeastern city where the design intervention takes place. Understanding these factors is critical in developing climate-responsive strategies in architecture and urban design.

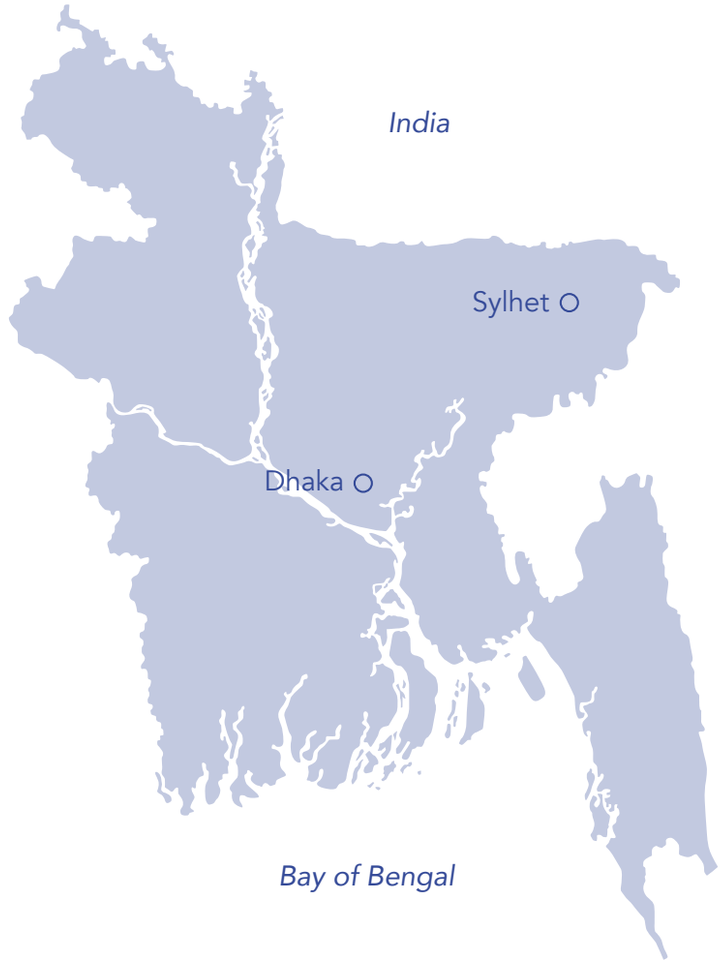


Figure 06: Map of bangladesh (Own drawing)

Research

CLIMATIC PROFILE - *Rainfall*

Rainfall in Bangladesh is heavily influenced by the southwest monsoon, which typically arrives in early June and lasts through September. During these months, the country receives the majority of its annual precipitation. In Dhaka, the average monthly rainfall begins to increase gradually from March, with significant rainfall from June to August. For example, in June, Dhaka receives around 340 mm of rain, while the drier months, such as January and December, register only about 10 mm. The annual total in Dhaka amounts to approximately 2000 mm.

Sylhet, located in the northeast and near the hills of Meghalaya, experiences far more rainfall than Dhaka. The topography and geographic exposure to moisture-laden winds make Sylhet one of the wettest areas in the country. In the peak monsoon months of June and July, Sylhet can receive over 770 mm of rainfall each month, with an annual total exceeding 4000 mm. Even in the pre-monsoon months like April and May, rainfall in Sylhet is significantly higher than in Dhaka. This disparity underscores the importance of different design responses in each city, particularly concerning rainwater management and flood resilience.

■ = Dhaka
■ = Sylhet

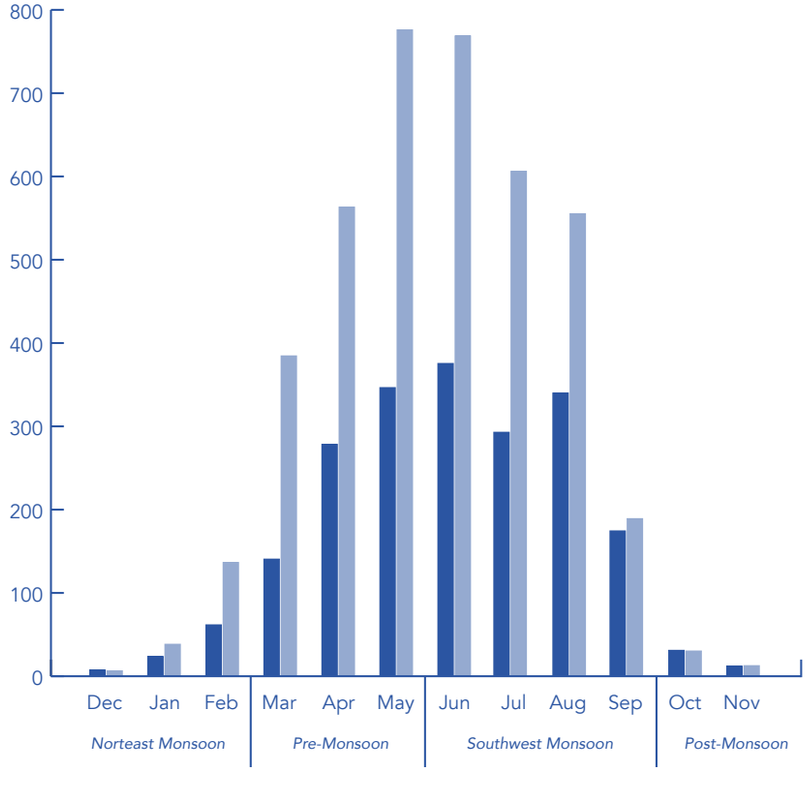


Figure 07: Rainfall in different seasons (Own figure, source: Khatun, et al., 2016)

Research

CLIMATIC PROFILE - *Sun hours*

Sunlight availability in Bangladesh shows a clear seasonal pattern throughout the year. The lowest number of sun hours occurs in December, after which sunlight gradually increases, though it fluctuates somewhat month to month. The peak of sunlight is reached in May, which consistently records the highest daily sun exposure. Following this peak, the amount of sunlight slowly decreases again as the year progresses toward December.

In Sylhet, the pattern of sun hours closely mirrors this national trend but tends to be slightly lower on average. During the months with the fewest sun hours, Sylhet may receive only about 10 hours of sunlight per day, while in May, the sunniest month, daily sunlight can reach approximately 13 hours. Understanding this seasonal variation is important for planning building design and daylighting strategies that respond effectively to changing light availability throughout the year.

■ = Dhaka
■ = Sylhet

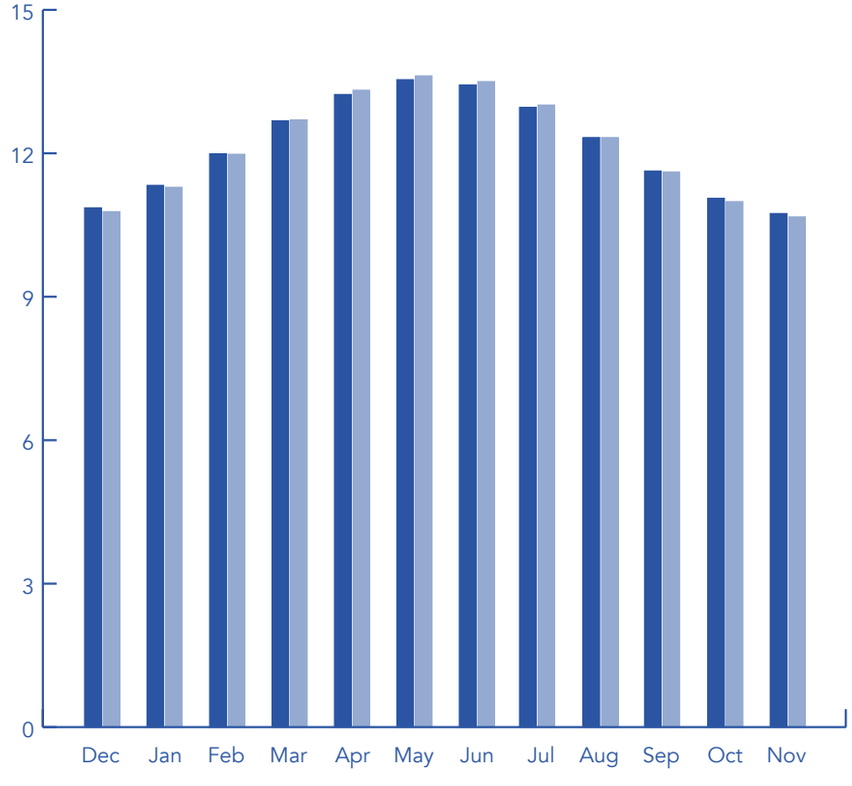


Figure 08: Amount of sun hours per day (Own figure, source: Tutiempo Network, S.L., n.d.)

CLIMATIC PROFILE - *Wind direction*

The prevailing wind direction in Bangladesh shifts seasonally in response to the monsoon cycle. From March through October, the dominant wind direction across the country is from the southwest, as moisture-laden winds from the Bay of Bengal move inland, marking the onset of the monsoon. These southwesterly winds bring intense rainfall and high humidity. In contrast, during the cooler and drier period from November to February, the dominant wind direction shifts to the north or northwest, carrying cooler, dry air from the interior of the Indian subcontinent.

While this general seasonal pattern is observed throughout most of Bangladesh, there are notable regional differences in the precise wind direction due to topography and local geography. In Dhaka, the wind rose shows a clear dominance of southwesterly winds during the monsoon months, closely aligned with the national pattern.

However, in Sylhet, the prevailing monsoon winds tend to come more directly from the west rather than the southwest. This deviation is largely influenced by the surrounding hilly terrain and the region's position relative to the Meghalaya Plateau, which alters the flow of the incoming air masses.

As a result, wind in Sylhet is often funneled along a west-to-east axis, especially during the wet season. This has important implications for environmental design, as buildings in Sylhet benefit most from being oriented or ventilated along the west-east direction to capture prevailing winds. In Dhaka, meanwhile, the optimal orientation for passive cooling would typically favor openings toward the southwest. Understanding these local wind dynamics is essential for tailoring ventilation strategies, minimizing heat gain, and optimizing indoor thermal comfort in both cities.

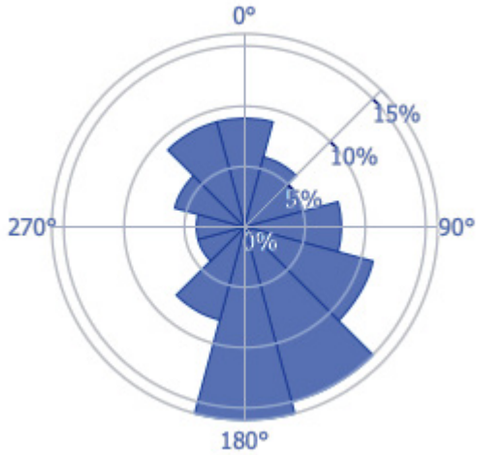


Figure 09: Dominant wind direction of Bangladesh (Global Wind Atlas, n.d.)

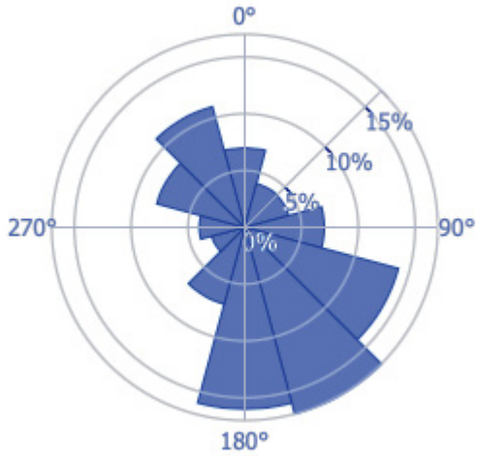


Figure 10: Dominant wind direction of Dhaka (Global Wind Atlas, n.d.)

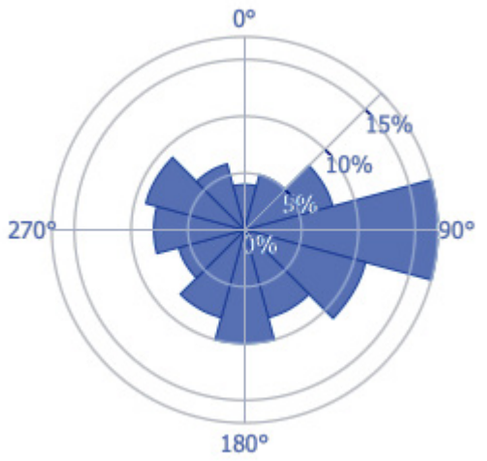


Figure 11: Dominant wind direction of Sylhet (Global Wind Atlas, n.d.)

CLIMATIC PROFILE - *Temperature*

Temperatures in Bangladesh remain relatively high throughout the year, with a noticeable contrast between the hot summer months and the cooler winter period. In Dhaka, the average monthly temperature ranges from around 25 °C in January to approximately 33 °C in April or May, which is typically the hottest period before the onset of the monsoon. The arrival of monsoon rains in June tends to moderate the temperatures slightly, though humidity remains high.

Sylhet follows a similar temperature pattern, though the averages are generally a few degrees lower due to its elevated location and surrounding greenery. For instance, in January, Sylhet records average temperatures of around 25 °C, while in April or May, it can reach up to 31 °C. These slight differences can affect indoor thermal comfort, especially in naturally ventilated spaces, and may influence material choices and shading strategies in architectural design.

= Maximum temperature
= Average temperature
= Minimum temperature

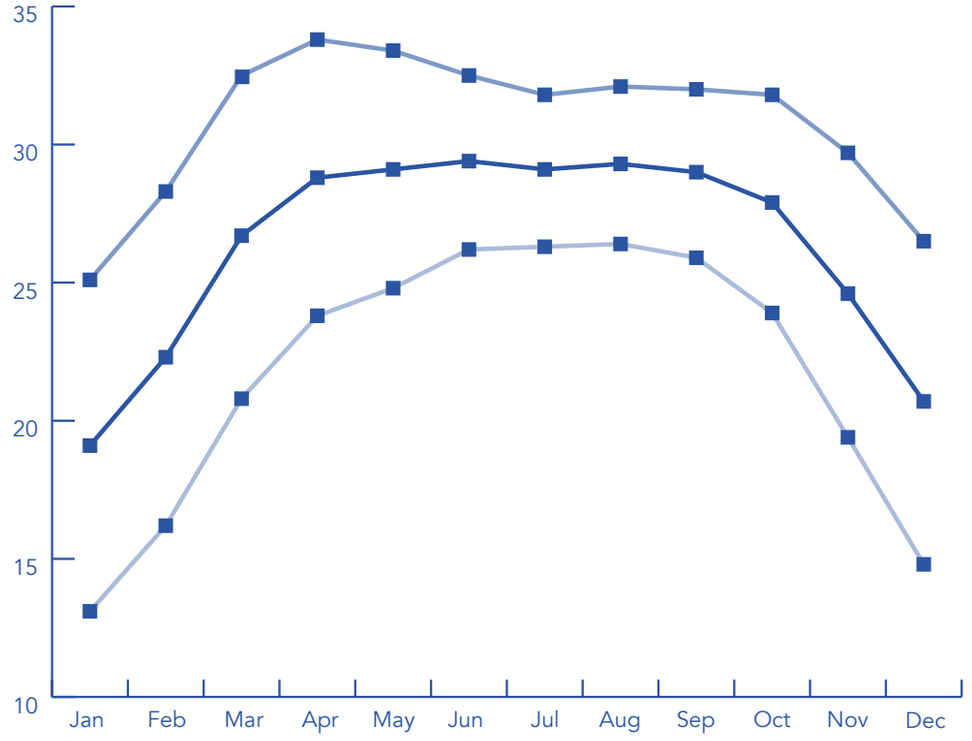


Figure 12: Temperature in different months Dhaka (Own figure, source: Khatun, et al., 2016)

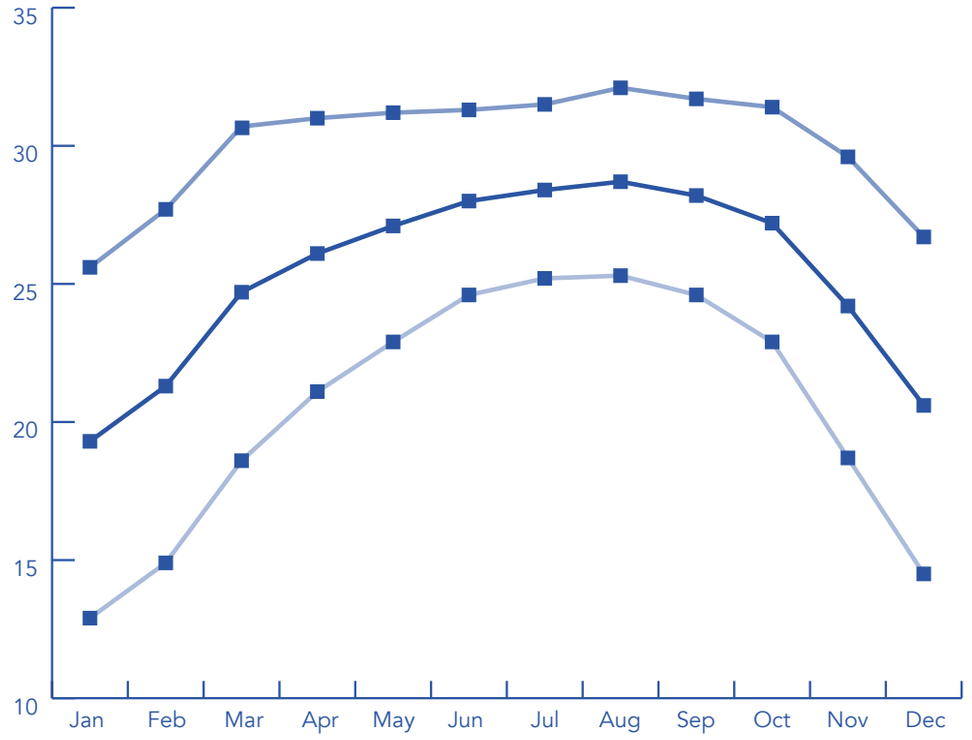


Figure 13: Temperature in different months Sylhet (Own figure, source: Khatun, et al., 2016)

Research

LOCATION - *Sylhet*

This research is situated in Sylhet, a rapidly urbanizing city in the northeastern region of Bangladesh. Known for its lush green landscape, tea gardens, and hilly terrain, Sylhet is a culturally rich and economically significant area with strong ties to the Bangladeshi diaspora, particularly in the United Kingdom. The city is positioned along the Surma River, which borders the southern edge of the city center. This proximity to water brings both natural beauty and environmental risk, as Sylhet is highly susceptible to seasonal flooding due to monsoon rains and river overflow.

Over recent decades, Sylhet has experienced significant population growth and urban expansion, placing increasing pressure on its housing infrastructure. The city's development continues to extend outward from the historical core, often into areas vulnerable to environmental hazards. This makes Sylhet an urgent and relevant context for exploring resilient, culturally appropriate housing solutions that respond to both climate challenges and the demands of rapid urbanization.

Figure 14: Sylhet (Google Earth, n.d.)

Research

LOCATION - *Neighbourhood*

Zooming into the heart of Sylhet, the focus of this research centers on the Hawkers Market, an informal, yet vibrant pocket of urban life tucked just north of the Surma River. Though located near one of the city's busiest main roads and directly connected to the main bridge into the city center, the site itself reveals a stark contrast to its surroundings. Behind the noise and congestion of nearby traffic arteries lies a quiet, enclosed plot, marked by a rich layering of local markets and community activity.

This hidden site has its own unique rhythm and spatial character. It is surrounded by various market typologies, from street vendors and hawkers to more permanent stalls and semi-structured retail spaces. These markets not only reflect Sylhet's informal economy but also demonstrate a kind of adaptability in use, scale, and construction that resonates with the core themes of this research. The Hawkers Market offers a valuable testing ground for reimagining housing and public space within a rapidly growing urban environment, where tradition, informality, and transformation coexist.

Figure 15: Hawkers Market (Google Earth, n.d.)

LOCATION - *URBAN TRANSFORMATION*

The site of the old Hawkers Market has experienced a major transformation in recent years. Where there was once a dense, multi-storied commercial building, similar in structure and activity to the current Hawkers Market next to it, the plot has since been cleared. Today, it is occupied by a temporary setup of bamboo stalls, where fresh products and meat are sold in a more informal setting.

This clearance was part of a larger initiative by the local municipality to rethink and redevelop this central urban area. The plot is now designated for a new mixed-use development that will integrate both market functions and residential units.

This approach aims to address the city's growing demand for housing while preserving the area's economic and social vibrancy.

Importantly, this project is seen as a pilot for future urban development in Sylhet. Once this site is redeveloped, the municipality plans to apply a similar strategy to the adjacent current Hawkers Market, demolishing the existing structure and replacing it with a more planned and multifunctional urban complex. This marks a significant shift from informal, congested market layouts to more structured, resilient, and inclusive urban planning.

2016

2023

Figures 16-17: Urban transformation plot (Google Earth, n.d.)

LOCATION - *Market area*

The project site is embedded within a dense commercial zone, surrounded by Hasan Market to the north, the existing Hawkers Market to the east, and Kaleghat Road running along the south. The plot itself currently hosts a temporary market, adding to the layered, evolving character of the area.

This dynamic market environment shapes the social and economic rhythms of the site, offering valuable insight into how flexible, community-driven spaces function within Sylhet's urban core.

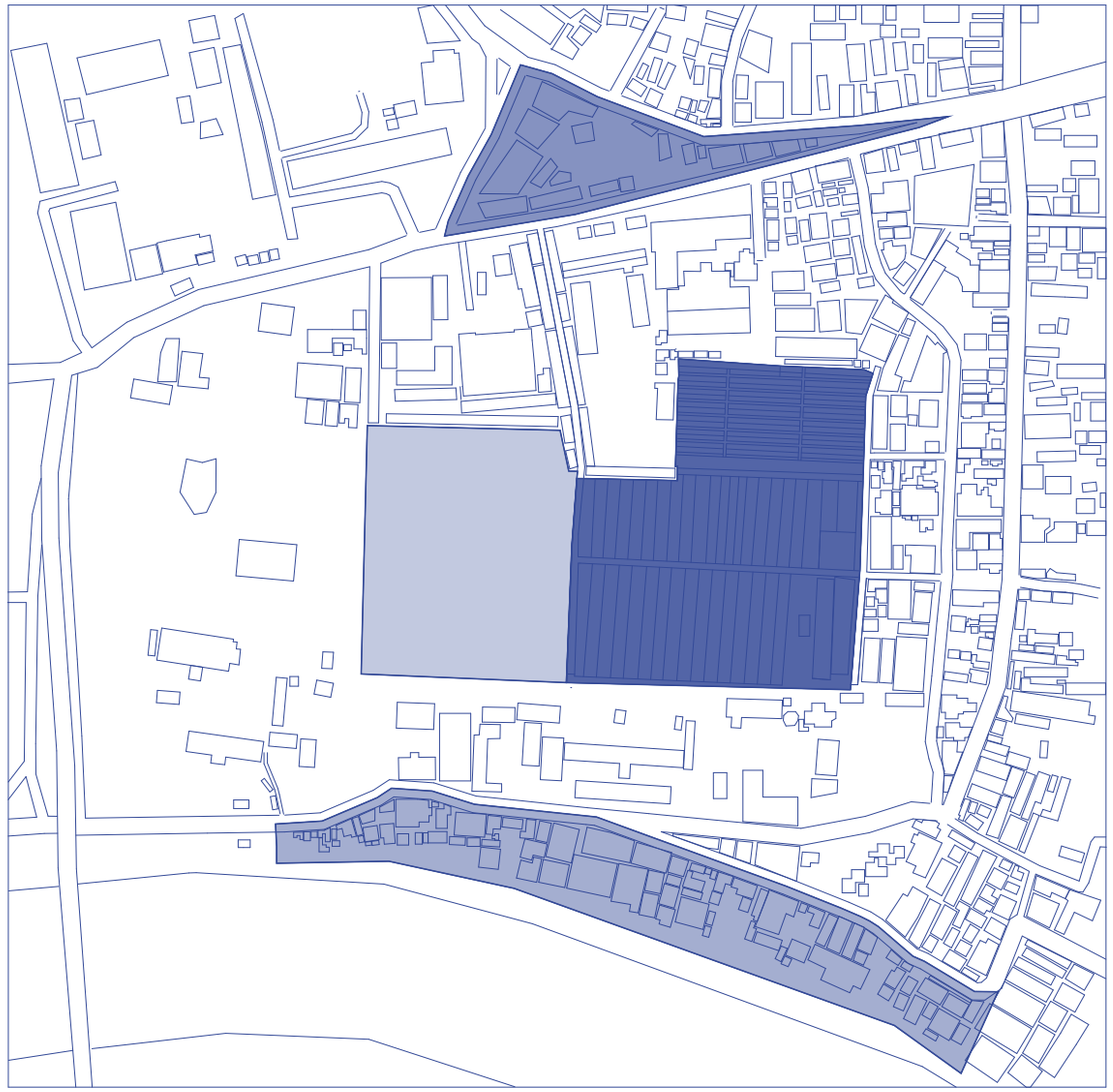


Figure 18: Surrounding market areas (Own drawing)

LOCATION - *HASAN MARKET*

Located just north of the site, Hasan Market is a compact commercial area bordered by major roads, which restrict any further spatial expansion. It is composed mainly of single-storied structures that house vendors selling leather goods, clothing, and toys.

Despite its small scale, the market remains a consistent and recognizable part of the neighborhood's retail fabric.

Figure 19: Hasan market (Own drawing)

Figures 20-23: Surroundings Hasan market (Own pictures)

LOCATION - *CURRENT HAWKERS MARKET*

To the east of the plot lies the current Hawkers Market, a vibrant area formed by a mix of major roads and narrow alleyways. This market features a variety of multi-storied structures, offering a range of goods with a focus on pharmaceuticals, clothing, and toys.

Serving as the primary access point to the project site, it presents a dynamic and often chaotic urban experience that reflects Sylhet's layered commercial growth.

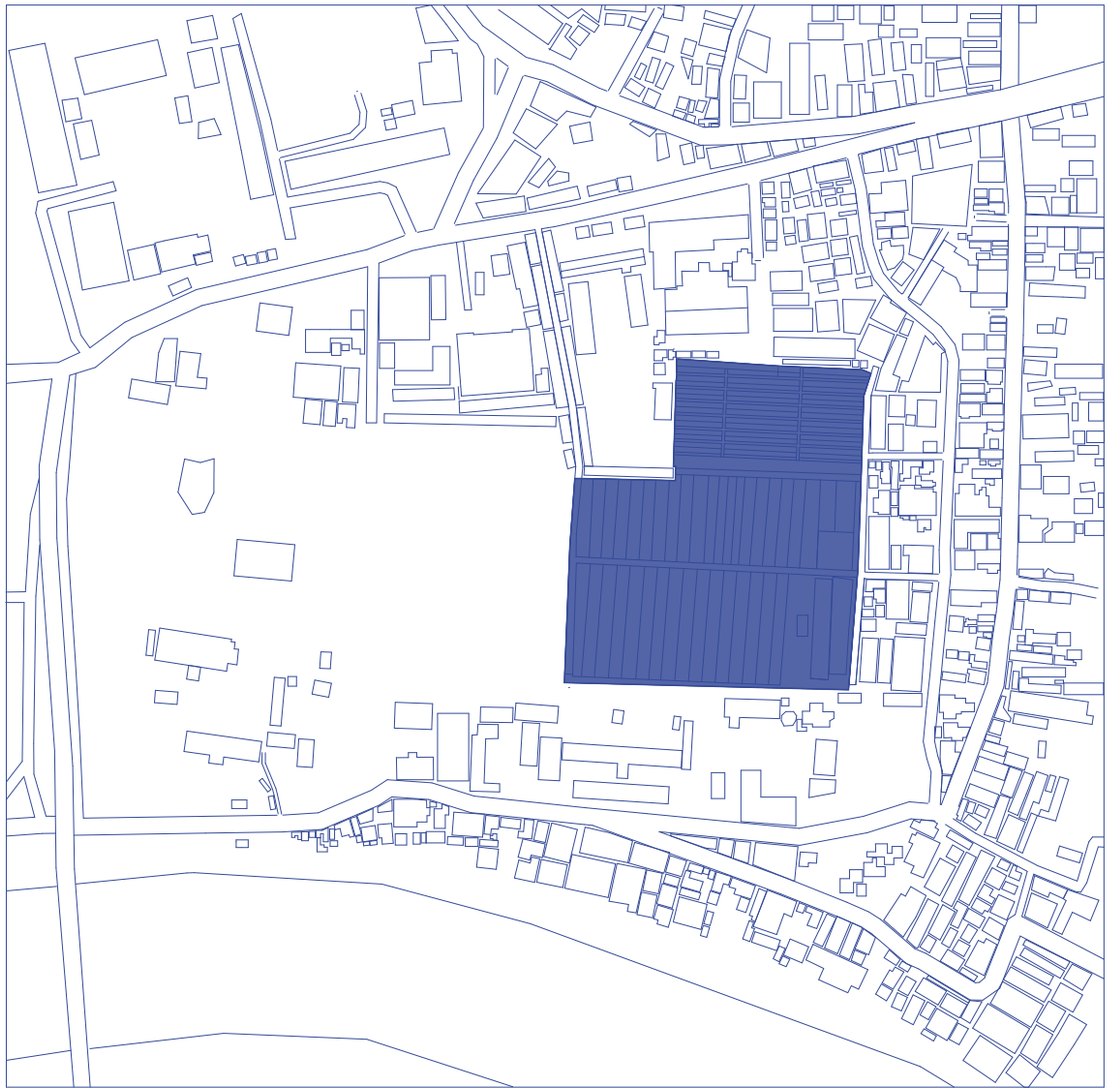


Figure 24: Current Hawkers market (Own drawing)

Figures 25-28: Surroundings current Hawkers market (Own pictures)

LOCATION - *KALEGHAT ROAD*

South of the site is Kaleghat Road, an area that functions both as a marketplace and a logistical node. Thanks to its riverside position and direct connection to a major road, it receives large quantities of goods delivered by boat, which are then transferred onto trucks for further distribution.

The market primarily deals in bulk commodities such as rice and spices, making it a key artery in Sylhet's flow of goods.

Figure 29: Kaleghat road (Own drawing)

Figures 30-33: Surroundings Kaleghat road (Own pictures)

LOCATION - *OLD HAWKERS MARKET*

The plot itself was historically home to the old Hawkers Market. Today, it hosts a series of temporary bamboo stalls where vendors primarily sell fresh products such as vegetables and meat.

Though modest in structure, this informal market plays an important role in local daily life, offering affordable and accessible food in a relatively quiet pocket within the dense urban surroundings.

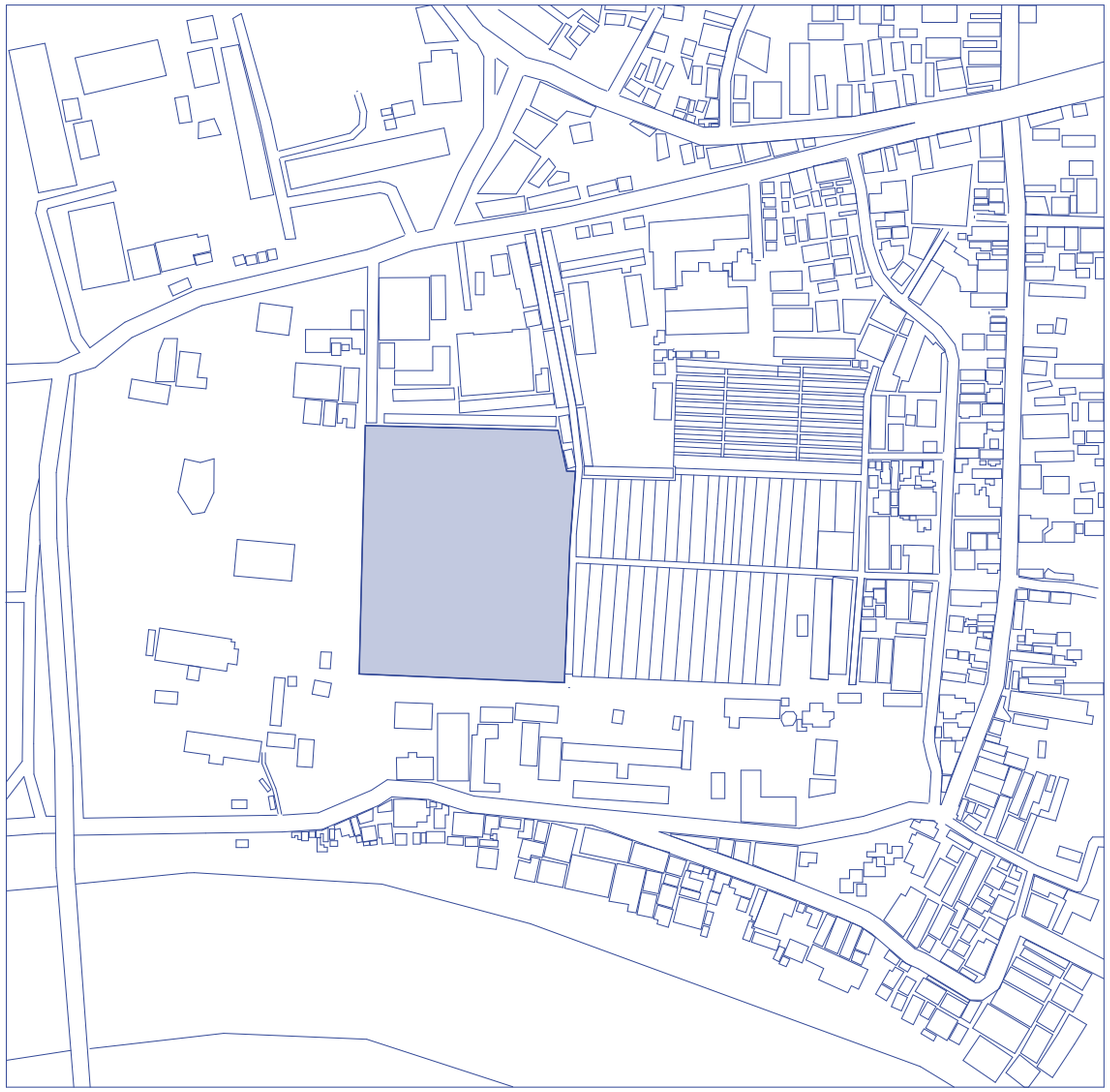
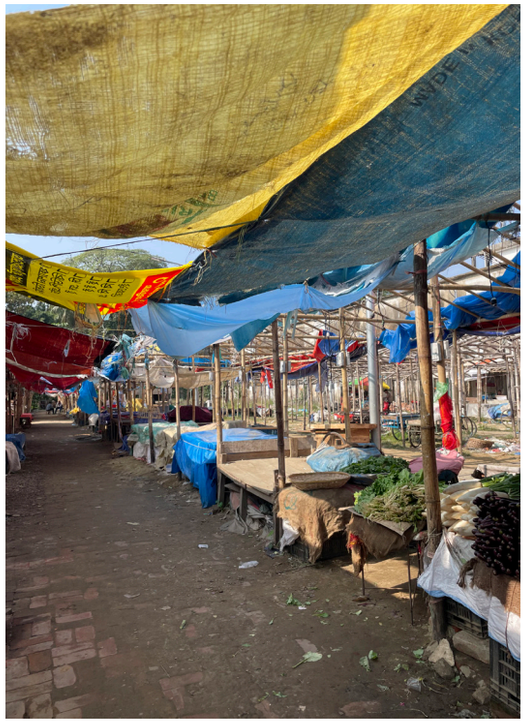


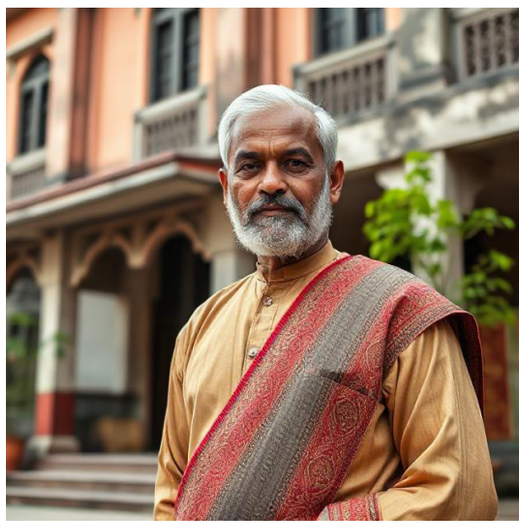
Figure 34: Old hawkers market (Own drawing)



Figures 35-38: Surroundings old Hawkers market (Own pictures)

TARGET GROUPS

In designing for inclusive urban living, it is essential to understand the diverse social and economic groups that coexist within a city. The project aims to create housing and supportive spaces that accommodate a wide range of income groups, from low to high, while also addressing the needs of those involved in market-based livelihoods, such as vendors and their customers. The context of the site, formerly a market and still surrounded by active commercial life, reinforces the need to consider not only residents but also the people who contribute to the economic and social vibrancy of the area.



Figures 39-42: Different target groups (Own images)

TARGET GROUPS - *Low income*

The low-income demographic in this context typically engages in informal and labor-intensive work. Many earn a living as street vendors, market porters, waste pickers, or bicycle-based ride-hail operators. Others may work irregular hours as part-time cleaners or security guards. These jobs often offer unstable or inconsistent income, making affordability a key concern in housing provision.

Households in this group usually consist of four to six members, often with one main earner supplemented by occasional contributions from other family members. Their living conditions are generally compact and crowded, often located in dense settlements with minimal privacy. Shared facilities such as kitchens and toilets are the norm, and space is used as efficiently as possible. Providing dignified, affordable housing for this group requires not only cost-conscious solutions but also thoughtful spatial design that acknowledges these everyday realities.

Figure 43: Low income target group (Own image)

TARGET GROUPS - *Mid income*

Mid-income households tend to enjoy greater economic stability. This group includes individuals with salaried employment in fields such as teaching, nursing, or public service, as well as small-business owners, including those who might operate shops in the local market. Their financial security allows for a higher standard of living and more predictable housing needs.

These households are typically nuclear families with three to five members. They often live in mid-rise apartment buildings or gated townhouse clusters, where access to reliable utilities such as water, electricity, and internet is expected. Their homes are constructed with more durable materials and offer improved privacy and comfort. Housing design for this group must balance quality, privacy, and affordability, while allowing proximity to both work and amenities.

Figure 44: Mid income target group (Own image)

TARGET GROUPS - *High income*

High-income residents generally hold executive or entrepreneurial positions. This group includes real estate developers, high-level businesspeople, surgeons, lawyers, and other elite professionals. Their lifestyle affords them the ability to choose premium housing options and to benefit from additional services such as domestic staff.

Households in this group often include four to five members but tend to rely on hired help for tasks like cleaning and childcare. Their residences are found in luxury condominiums or gated estates with a high degree of security, private parking, and refined finishes. For this group, comfort, exclusivity, and privacy are paramount, and their presence on site enables financial mechanisms that help support lower-income groups.

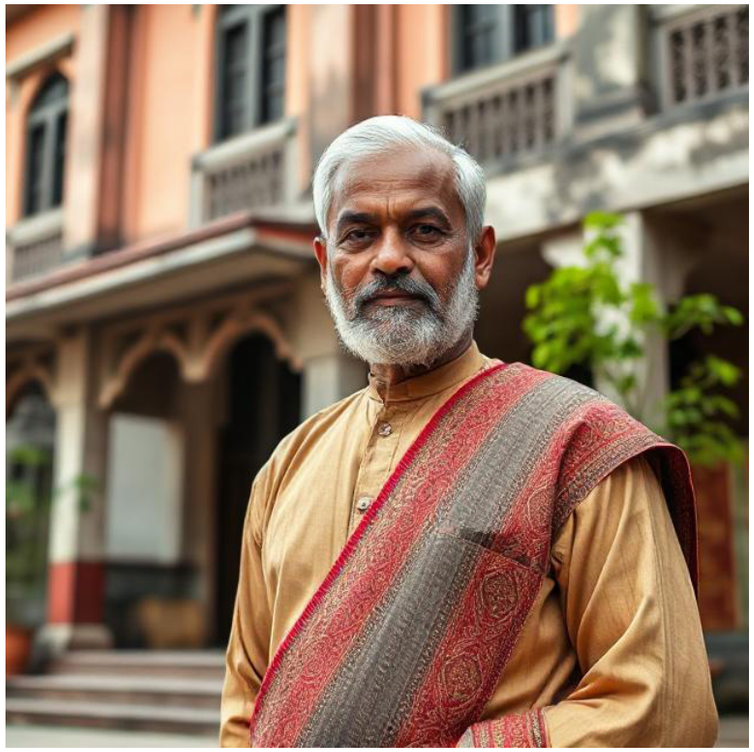


Figure 45: High income target group (Own image)

TARGET GROUPS - *Vendors/customers*

Though the primary focus of this project is residential, it is impossible to ignore the influence and importance of the surrounding commercial life. The project site lies in a dense urban center with a longstanding connection to markets, making vendors and their customers a crucial part of the social and economic ecosystem.

Most vendors operate small-scale businesses ranging from five to twenty square meters in size. Their operations run on slim margins but rely on high turnover, especially during peak hours after work.

Customers are typically local residents, primarily from the lower-middle-income bracket, who depend on these vendors for daily necessities. The businesses are usually housed in alley-front units with limited infrastructure, such as refrigeration or storage space. Creating space for these commercial activities within the residential context strengthens local economies and keeps daily life vibrant and accessible.

Figure 46: Vendors/customers target group (Own image)

TARGET GROUPS - *Cross subsidization*

One of the key advantages of incorporating a range of income groups into a single urban development is the potential for cross subsidization. This financial model uses the economic strength of higher-income residents and commercial tenants to support affordable housing for lower-income families.

In this project, vendors contribute by paying rent for their market stalls, while higher-income residents pay elevated prices for land, housing units, or services.

The revenue generated from these two groups can be redirected to subsidize housing costs for low-income families, making it possible to include them in central, well-connected urban areas that would otherwise be unaffordable.

This approach not only makes economic sense but also supports the creation of socially mixed neighborhoods. It helps reduce urban inequality and promotes a more inclusive city where people of different backgrounds live, work, and interact in close proximity. The result is a more dynamic, diverse, and equitable urban community.

Figure 47: Cross subsidization (Sheeler, 2015)

HABRAKEN

John Habraken, a Dutch architect and theorist, is best known for challenging conventional models of housing and introducing the concept of “support structures” and user participation in the design of the built environment. His work critiques the rigidity of top-down mass housing and proposes new ways to balance architectural control with resident agency. I chose Habraken as a theoretical case study because his ideas offer a meaningful lens for thinking about flexibility, community involvement, and long-term adaptability, central themes in my own project for affordable housing in Sylhet.

John Habraken’s theoretical work has had a lasting influence on how we think about housing, participation, and the built environment. In Support: An Alternative to Mass Housing, Habraken challenges the dominance of top-down housing systems that ignore the role of the inhabitant. He argues that the critical shift in modern housing is not just the introduction of new materials or technologies, but the removal of the resident from the process of creation. “Our ideas of housing reduce the inhabitant, in essence, to a statistic,” he writes, stripping them of any real influence or authorship over their homes (Habraken, 1972).

In response, he proposes the concept of the “open framework”, a structural system designed not as a complete and final object, but as a base that allows for user adaptation over time. In this model, the building is divided into a permanent support (structure, services, access) and an adaptable infill (internal layout, finishes, fittings) that can change with the needs of the residents. It is only when we abandon the rigid model of mass housing, Habraken argues, that the true potential of industrialization and prefabrication can be realized, by enabling mass customization instead of uniform mass production (Habraken, 1972).

Crucially, he reframes the design question from “what is a dwelling?” to “what conditions must a dwelling satisfy to fulfill its purpose?”, placing use and adaptability at the core of design thinking (Habraken, 1972). A support structure, in this sense, is not an incomplete shell waiting to be filled, but a complete architectural system that enables a variety of possible homes to exist within it. The more variety it can accommodate, the more successful it becomes (Habraken, 1972).

In his later essay The Uses of Levels (1988), Habraken deepens this approach by reflecting on the disconnect between the knowledge we have gained about human settlement and the methods we continue to use in practice. “We now know much more about all aspects of human settlement, but our ways of working have responded inadequately to the new knowledge we gained. Our methods are still based on those first applied half a century ago” (Habraken, 1988). He identifies a fundamental flaw: while our understanding of housing has advanced significantly, our design and planning systems have not evolved in parallel.

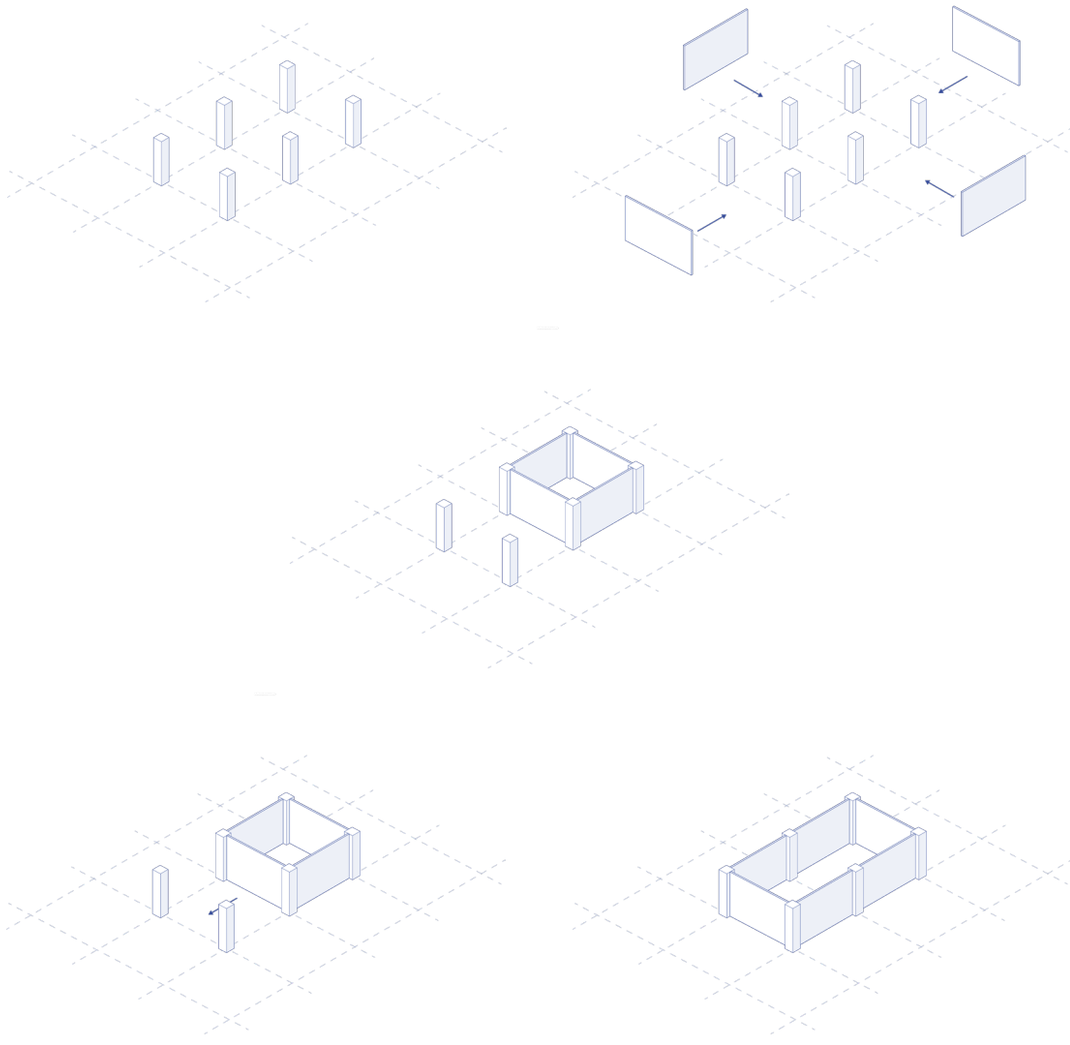


Figure 48: Habrakens ‘open framework’ steps (Own drawings)

To address this, Habraken introduces the idea of hierarchical levels in the built environment, each with its own scope, timeframe, and actors. These levels (such as urban structure, buildings, infill, and furniture) are not only physical, but organizational. By distinguishing them, we can assign responsibilities more clearly and make room for user participation without undermining larger-scale coherence.

He distills this understanding into seven key lessons drawn from decades of practice and observation:

First, he stresses that housing is not just a product, but a process. It is something that evolves, shaped by the people who live in it. Designing for permanence alone ignores the dynamic nature of domestic life.

Second, he emphasizes that professionals alone cannot design meaningful housing. The users, those who live in and adapt these spaces, must have a voice in the process. Without this, housing becomes disconnected from real life.

Third, he notes that change over time is both natural and necessary. Families grow, shrink, age, and shift in function. Good housing must be able to accommodate these changes.

Fourth, he argues that uniformity does not equal efficiency. On the contrary, real efficiency comes from enabling diversity, because only then can industrial systems meet real needs.

Fifth, he recognizes that residents are individuals, not abstract averages. Standard units may meet no one's needs well, while flexible frameworks allow each user to find their own fit.

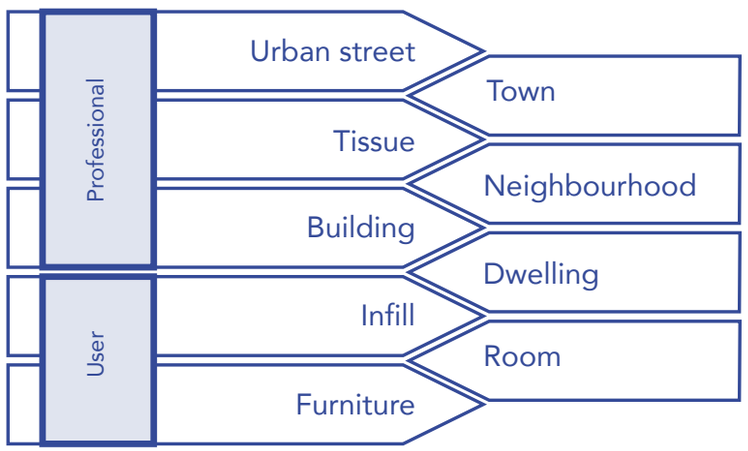


Figure 49: Habraken's level model (Own figure)

Sixth, he affirms the importance of local customs, culture, and everyday practices. Housing should not impose a singular way of living, but instead support the lifestyles people already inhabit.

And seventh, he underlines that housing must relate meaningfully to its context, urban, social, and climatic. A dwelling is never just an object; it is always part of a larger fabric (Habraken, 1988).

Together, these insights provide a powerful foundation for alternative models of housing, ones that are responsive, participatory, and resilient.

In my own project, Habraken's ideas directly inform the use of open frameworks, flexible unit layouts, and layered spatial systems that can evolve with residents over time. Rather than designing finished, fixed homes, I aim to create a structure in which people can live, adapt, and grow, transforming housing from a static product into a living process.

These ideas directly inform my own project, especially in how I think about long-term use, incremental change, and a balance between structure and adaptability. Habraken's theory helps frame housing not as a fixed solution, but as a living framework, one that evolves with its inhabitants and the city around it.

At the same time, it's important to acknowledge the limits of applying the full open framework model in the urban context of Sylhet. While I've been inspired by Habraken's principles, particularly the idea of layered control and designing for change, I haven't implemented a fully open system where each unit can be altered freely at any time. In a dense, rapidly growing city where affordability is a key concern, such freedom can compromise construction efficiency, cost control, and infrastructure planning. Instead, my project interprets Habraken's thinking in a more grounded way: by embedding flexibility where it matters most, in layouts, courtyards, and construction strategies, while still working within the constraints of urban density, economy, and community.

Research

HOME-MADE FAMILY HOUSE

This project was selected as a case study for vernacular architecture because it highlights how traditional Sylheti design can support flexibility, climate responsiveness, and cultural continuity.

Designed by Kashef Chowdhury, the HOME-Made Family House integrates a central courtyard as a multifunctional space for light, ventilation, and social interaction, core features of regional living patterns.

The detached kitchen, a familiar element in rural Bangladeshi homes, allows for spatial separation and reflects vernacular ways of organizing domestic life.

Constructed with locally sourced materials and simple techniques, the house is affordable and adaptable, responding effectively to environmental and social needs.

This project demonstrates how low-tech, user-driven housing can inspire resilient and contextually grounded urban design, making it a valuable reference for future-oriented yet rooted housing models.

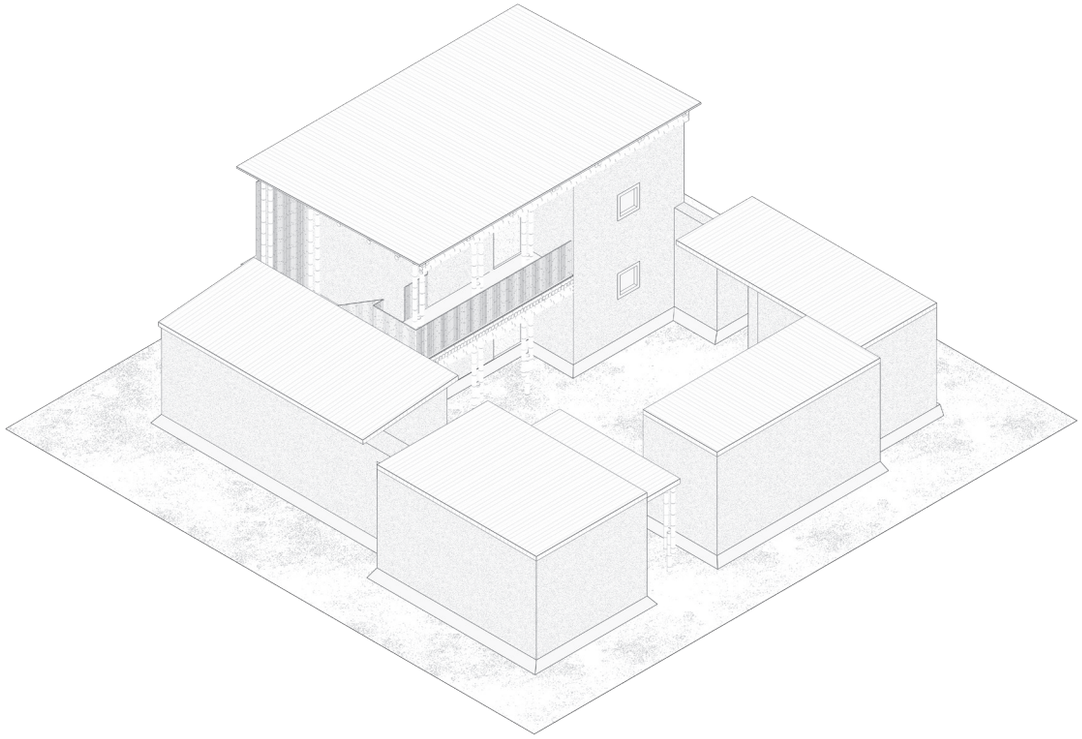


Figure 51: Vernacular courtyard structure (Halleran & et al., 2024)

Research

SOUTH 50/53 APARTMENTS

I used the South 50/53 apartments by Shatotto as a case study for contemporary architecture in Bangladesh because it showcases both the strengths and limitations of modern residential design. The building is structured around a robust concrete frame with fixed dwelling layouts, illustrating a rigid and formal design approach. This inflexible configuration contrasts with vernacular and more socially adaptive models, where homes evolve with the changing needs of residents.

Despite this rigidity, the project has strong architectural and environmental strengths. The design is highly responsive to climate, integrating planted terraces, deep balconies, and carefully placed openings that allow for cross ventilation and filtered daylight. These elements create comfortable indoor environments while reducing reliance on mechanical systems. The building also expresses a clear architectural identity, using geometry, massing, and materiality to establish a bold presence in the dense urban fabric of Dhaka.

This case study highlights the value of climate sensitivity and structural clarity in modern housing, but also underscores the need for greater flexibility, user participation, and social responsiveness, especially in rapidly urbanizing and economically diverse contexts like Sylhet.

Figure 53: Rigid concrete construction (Darweshi & Kim, 2024)

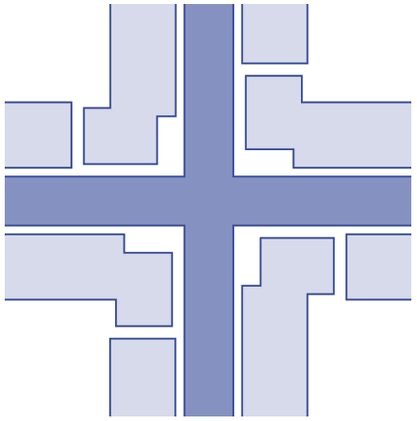
CONCEPT

Concept

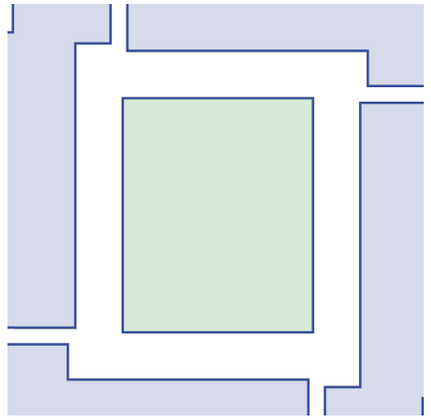
HIERARCHY OF SPACES

A clear spatial hierarchy forms the foundation of my design, helping to organize movement, interaction, and privacy across the site. This layered sequence moves gradually from public to private, creating a cohesive and well-structured urban environment. At the heart of the project is the public spine, which functions as a central axis for circulation and community activity.

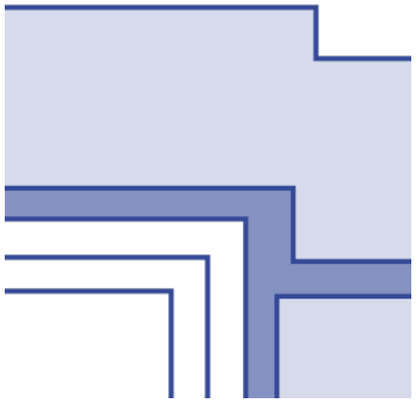
From there, spaces become increasingly intimate: the semi-public courtyard offers shared outdoor space for residents; the semi-private gallery serves as a transitional zone adjacent to dwellings; and finally, the private veranda provides a personal threshold between home and the outside world. Together, these spaces form a gradient of social interaction that supports both community life and individual privacy.



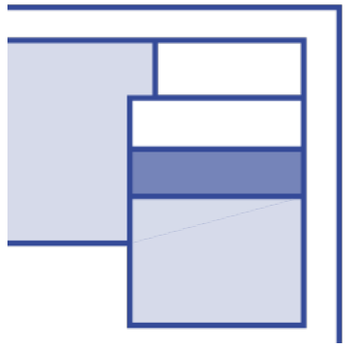
Spine
Public



Courtyard
Semi-public



Gallery
Semi-private



Veranda
Private

Figures 54-57: Hierarchy of spaces (Own drawings)

Concept

HIERARCHY OF SPACES - *Spine*

Tara apartments

The Tara Apartments in New Delhi, designed by Charles Correa, offer a powerful precedent in using a central spine to organize community housing. In this project, the spine is more than a passage; it acts as the heart of the neighborhood. It connects units, encourages interaction, and integrates small-scale commercial activity directly into the residential fabric. The varying widths and spatial pauses along the spine create moments for gathering, sitting, or spontaneous encounters, while also maintaining strong visual connections across levels and courtyards.

This idea of the spine as a social and functional backbone deeply informed my own design. In my project, I adopt a similar approach, using the spine to unify circulation and community life, while ensuring access and visibility for all target groups. Like in Correa's work, the spine is activated with a mix of uses and designed with pauses that invite people to stop, interact, and inhabit the space rather than merely pass through. It becomes the starting point from which the rest of the spatial hierarchy flows.

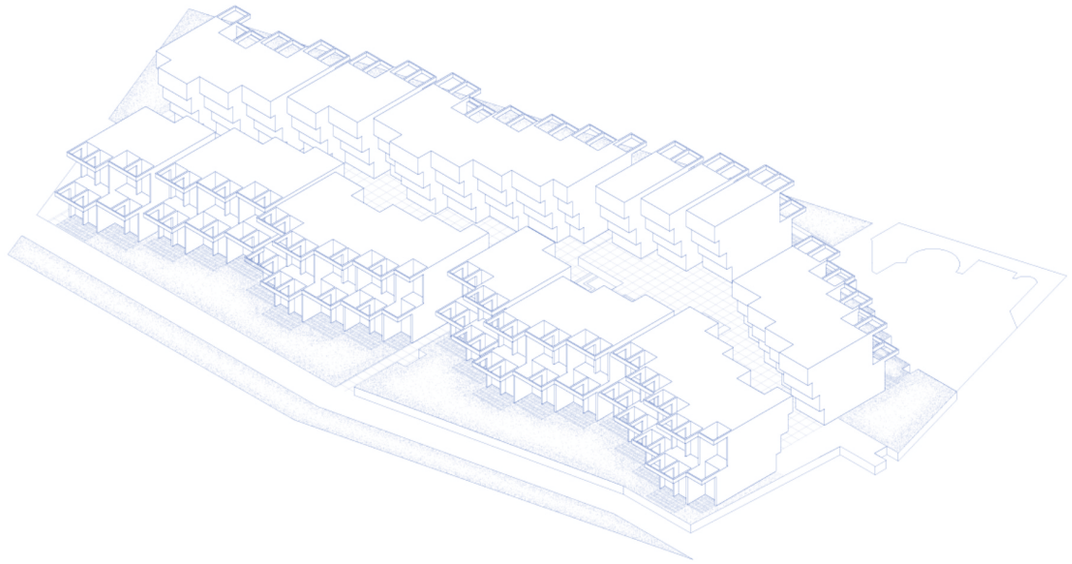


Figure 59: Tara apartments - Charles Correa (Briccolani, 2009)

Swadeshi market

In the Swadeshi Market, the architect skillfully weaves together small-scale shops and modest residential units, layering public and private life within a compact footprint. The market occupies the ground level, buzzing with movement and trade, while the dwellings above are arranged around open corridors and terraces that maintain airflow, light, and social connection. Crucially, the design avoids overlap between commercial and domestic functions by clearly defining zones—ensuring both can thrive without disrupting the other. This spatial clarity fosters a vibrant yet livable environment.

Drawing from this precedent, I applied a similar logic in combining market areas with residential life in my own design. Inspired also by the Tara Apartments' linear organization, I created two spines, one dedicated to commercial activity and the other to housing. Positioned on different levels, these spines generate two distinct atmospheres: one dynamic and open to the public, the other more calm and residential. Yet, they are interconnected, visually, spatially, and socially, creating a dialogue between two worlds. This layering allows the project to reflect the complexity of urban life.

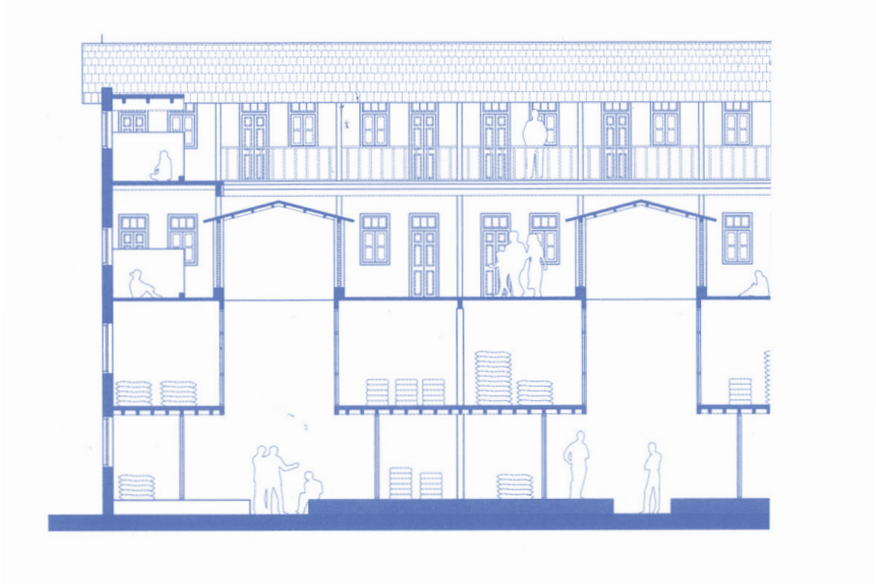


Figure 61: Swadeshi market - Vishwanath Kashinath (Padora, 2020)

In my project, the spine plays a central role in organizing both circulation and spatial hierarchy across the site. By introducing a linear axis that cuts through the built mass, the design gains a clear and efficient structure, one that ties together the residential and commercial components while defining the four main blocks of the masterplan.

Drawing inspiration from the Swadeshi Market, where market and living functions coexist but remain spatially distinct, I raised the dwelling level to the second floor. This creates a dual-system spine: one at the ground level for public use and commerce, and another elevated spine that serves as a second ground floor exclusively for residents. The result is a separation of atmospheres,below, a vibrant, public shopping street; above, a calmer, more private circulation route connecting the homes.

This elevated spine is not just a walkway, it is designed as a linear planter that weaves through the upper level, filled with greenery that softens the built environment and adds visual richness to the everyday experience of residents. It provides shade, improves air quality, and fosters a strong sense of identity and comfort, while the lower spine bustles with activity as a 7-meter-wide shopping street.

These layered spines not only organize the plan but also create a rich interplay between market life and domestic life within a shared architectural system.

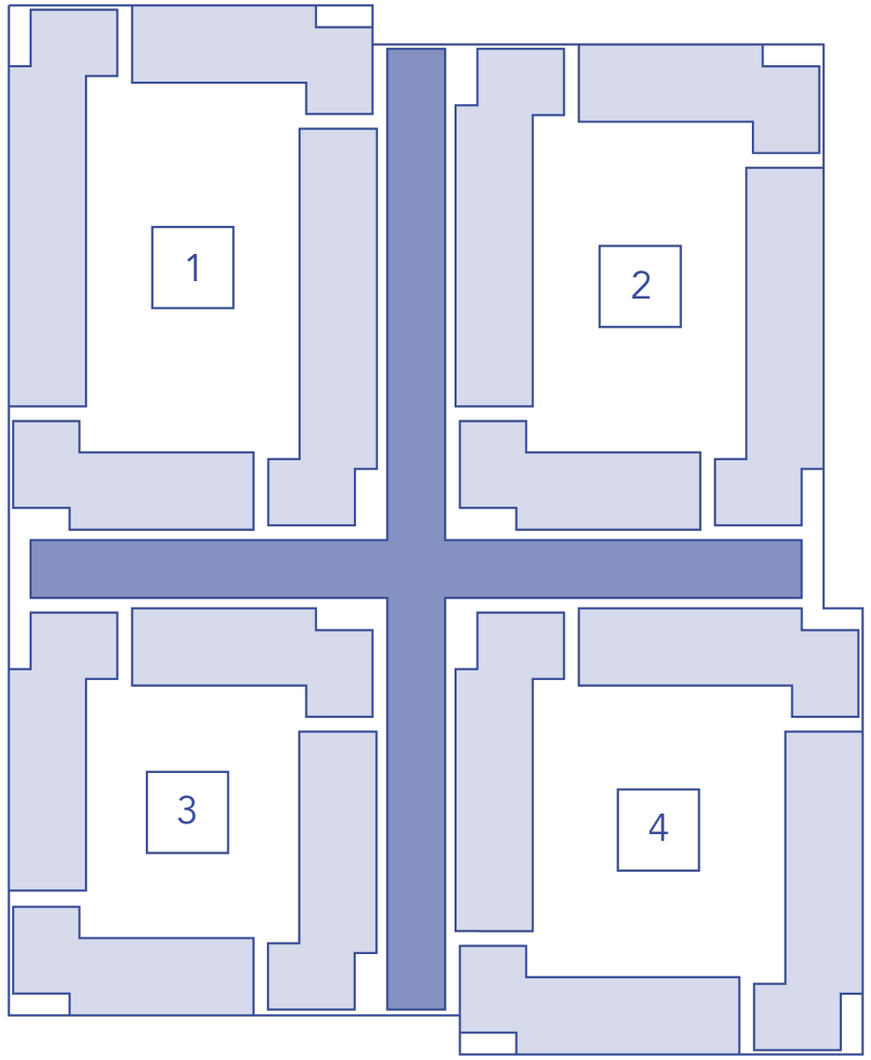


Figure 62: Spine through masterplan (Own drawing)

Concept

HIERARCHY OF SPACES - *Courtyard*

Belapur housing

Belapur Housing in Navi Mumbai, designed by Charles Correa, is a pioneering project that emphasizes community life through thoughtful spatial organization. One of its key features is the use of shared courtyards as semi-public spaces within the housing clusters. These courtyards are not just circulation voids, they are active social spaces, scaled to encourage interaction among residents, support daily routines, and provide relief from the dense urban context. Correa carefully arranged the dwellings around these courtyards to create a sense of neighborhood while maintaining individual privacy.

This approach to shared open space directly influenced how I designed the courtyards in my own project. In each block, I introduced a central semi-public courtyard that acts as a communal space for residents. It provides a quiet, shaded environment for gathering, resting, or informal play, offering a counterbalance to the activity of the public spine and commercial areas nearby.

Like in Belapur, these courtyards are spatially integrated into the residential fabric, with clear visual and physical connections to the homes.

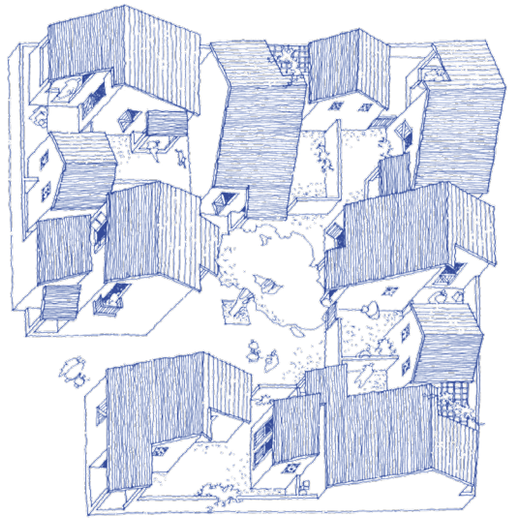


Figure 64: Belapur housing - Charles Correa (Hidden Architecture,2023)

At the heart of each cluster in my project is a courtyard, a space deeply rooted in Bengali architectural tradition. These courtyards serve not only as communal gathering areas but also as quiet, inward-facing pockets of calm that offer relief from the liveliness of the commercial streets. They provide residents with a sense of intimacy and belonging, reinforcing the social bonds that are essential to everyday life.

Each cluster is composed of four separate residential blocks, strategically detached to improve natural ventilation and allow circulation between the buildings. These separations create small pathways that connect the central courtyard to the outer edges of the cluster, encouraging movement and visual connection while also opening the cluster up to its surroundings.

This layout ensures that the courtyard is never isolated, it remains accessible, visible, and integrated into the life of the entire block.

Each of the four buildings contains its own vertical core, with an elevator and staircase, offering residents easy access to their homes while framing the courtyard as a shared, central space.

This composition balances the need for privacy with the value of community, making the courtyard a semi-public, welcoming environment where residents can gather, rest, or simply pass through as part of their daily rhythm.

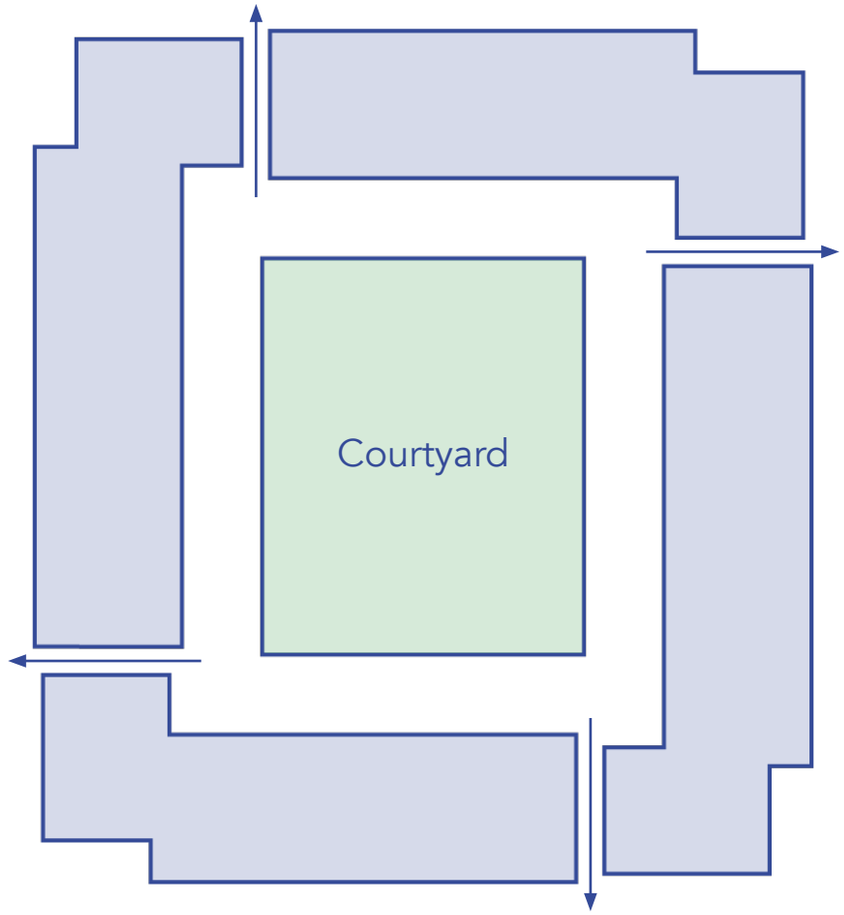


Figure 65: Courtyard of cluster (Own drawing)

Concept

HIERARCHY OF SPACES - *Gallery/veranda*

LIC Colony

LIC Colony in Mumbai, designed by Charles Correa, reimagines standard housing through the use of volumetric setbacks. These setbacks break the monotony of the block and introduce private terraces for each apartment, while also allowing for large windows that enable natural cross ventilation. This thoughtful design improves indoor comfort in a tropical climate without relying on mechanical systems. The variety of unit sizes created by these setbacks also allows people from different income levels to live in the same building, encouraging social diversity and integration.

This concept of setbacks influenced both the circulation and outdoor living spaces in my design. On the inner side of each block, I introduced a gallery system, semi-private walkways on each floor that serve as circulation while also creating opportunities for informal interaction. On the outer side of the buildings, the setbacks are used at the corners to create private terraces for the corner dwellings. These outdoor spaces give residents a personal area for relaxation, light, and ventilation, while also adding variation and depth to the building's façade.

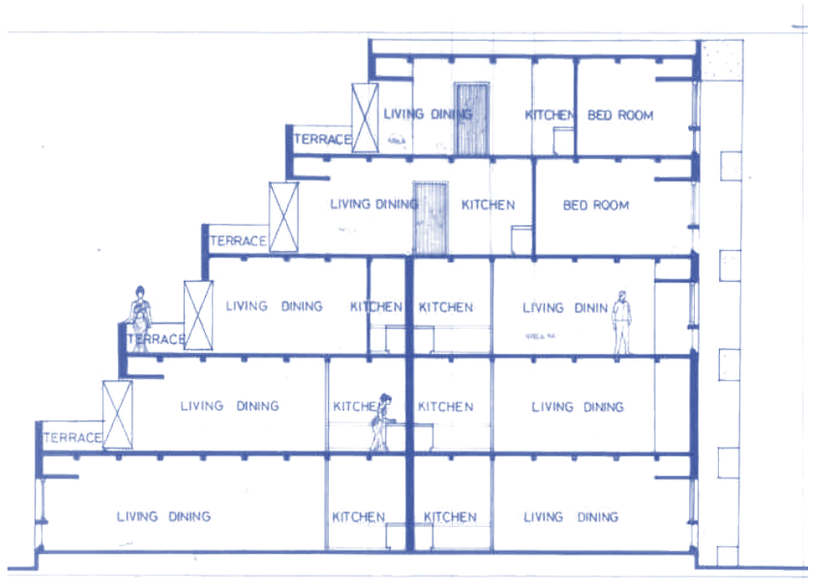


Figure 67: LIC Colony - Charles Correa (Ramnath, 2019)

The final and most private layer of the spatial hierarchy is defined by the gallery and the veranda. Through a series of strategic setbacks, each cluster accommodates a dual-edge design: on the inner side, setbacks create a continuous gallery that wraps around the courtyard, serving as a circulation space and encouraging a soft social life between neighbors. This gallery system ensures every dwelling is connected while maintaining a calm, semi-private atmosphere.

On the outer edge of the cluster, the setbacks form private verandas for the corner units. These terraces act as personal outdoor spaces, offering light, air, and a direct connection to the outside without compromising privacy. Together, the gallery and veranda offer residents both connection and retreat within the same spatial framework.

To enhance comfort and climate performance, green roofs are added to help buffer heat and rain, while accessible rooftops provide additional communal or functional space. These design choices not only improve environmental performance but also add value to the everyday lives of residents, enriching the balance between privacy, interaction, and usability across the cluster.

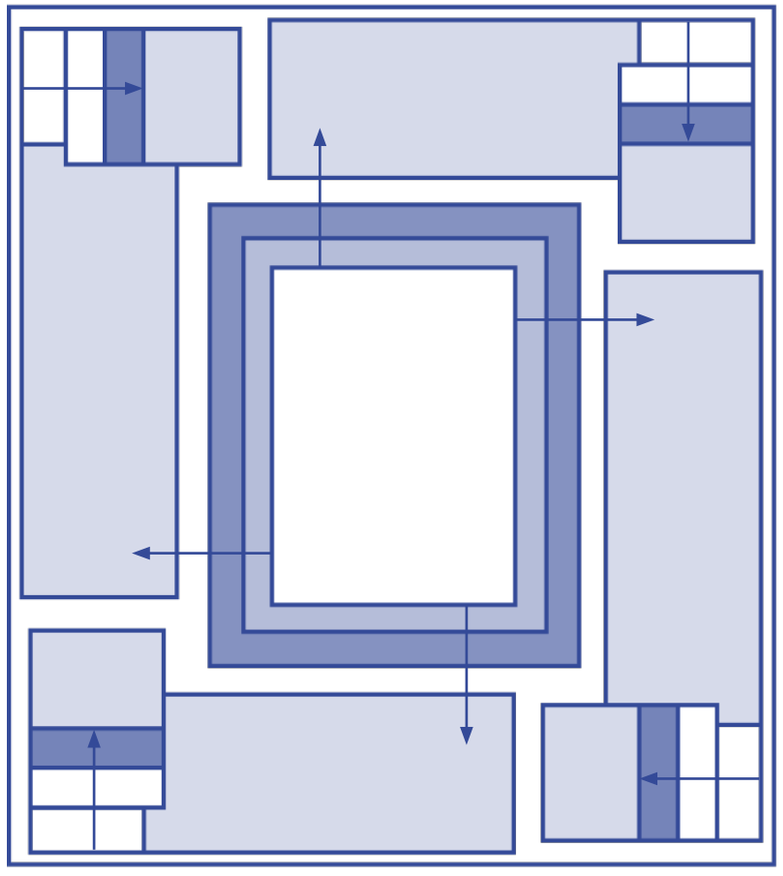


Figure 68: Gallery's and veranda's in the cluster (Own drawing)

DESIGN

Design

MANAGERIAL STRATEGY

The site today is a vacant plot in the heart of Sylhet, directly adjacent to the current Hawkers Market on the eastern side. Until recently, this site was home to an extension of the same informal market. However, the local government has demolished the hawkers market on this location with the intention of redeveloping the area into a more structured urban fabric that integrates both housing and market activity.

Surrounded by dense, mixed-use developments, the now-empty site presents a unique opportunity to initiate a new type of urban model, one that preserves the energy of the market while introducing much-needed residential infrastructure.

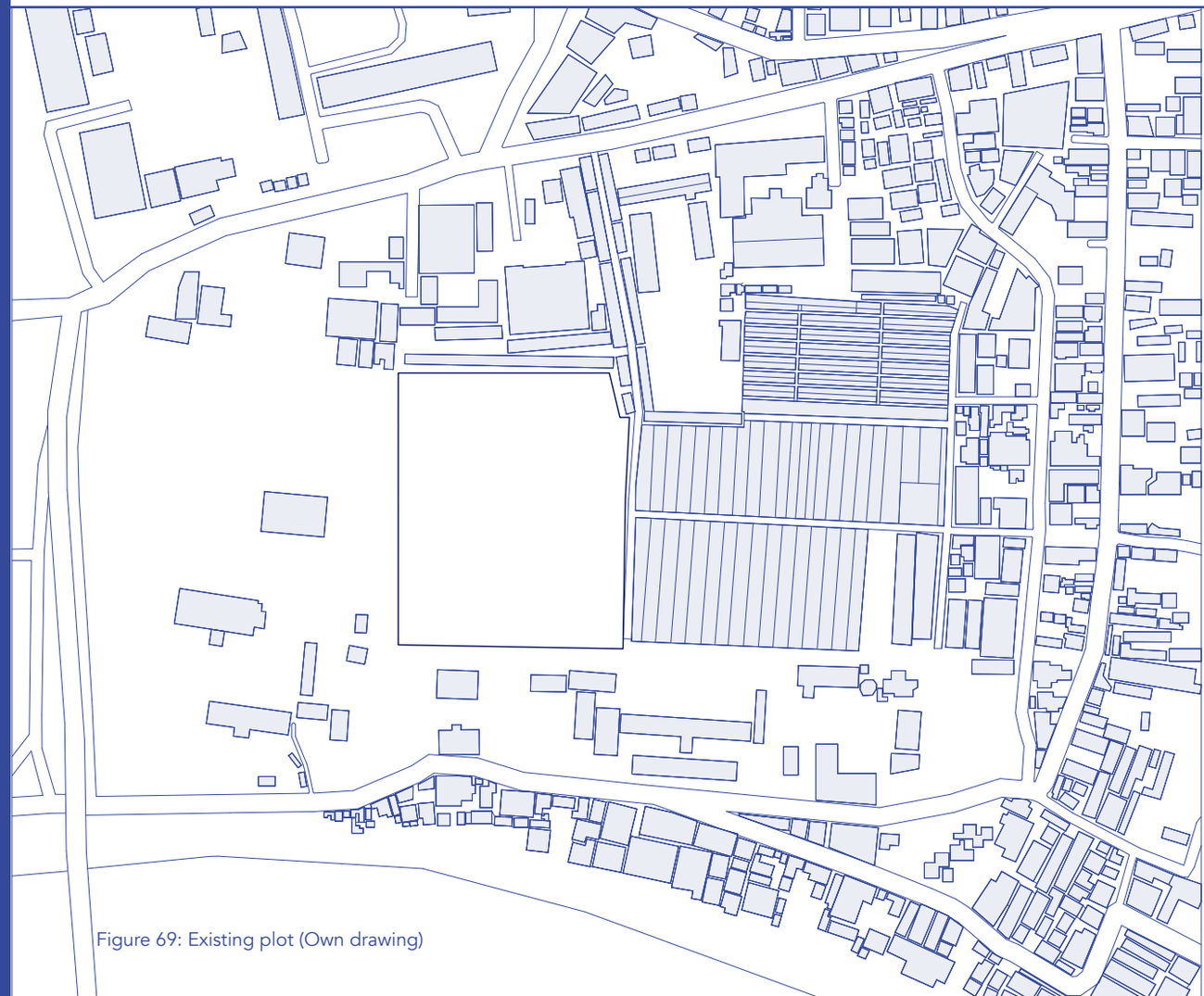


Figure 69: Existing plot (Own drawing)

Phase 1

In the first phase, the proposed design is implemented on the currently empty plot. Four residential blocks are constructed, each raised above a two-level commercial base that houses market stalls and retail spaces. This phase delivers approximately 300 new dwelling units, combined with 1,200 m² of commercial space.

The design balances density and livability, achieving a Floor Space Index (FSI) of 2.6, slightly above the desirable 2.5 target for this neighborhood, ensuring efficient land use while respecting the existing urban fabric. By utilizing a clear cluster-based structure, this phase serves as the foundation for future expansion.

Phase 2

Following the completion and activation of Phase 1, the local government plans to redevelop the current Hawkers Market site. In Phase 2, the same architectural system of clusters with integrated market spaces is extended into this area. Thanks to the modular grid and adaptable block sizes, the typology is easily replicated and scaled to fit the site. This phase adds another 300 residential units and an additional 1,200 m² of commercial space, doubling the total to over 600 dwellings and 2,400 m² of retail area.

Together, the two phases form a cohesive, mixed-income neighborhood that strengthens local commerce while addressing housing demand in central Sylhet.

Importantly, this does not have to be the final phase. Due to the flexible and repeatable nature of the grid and cluster design, the masterplan can continue to expand beyond Phase 2, growing with the city if needed, and accommodating future demands for housing and market space.

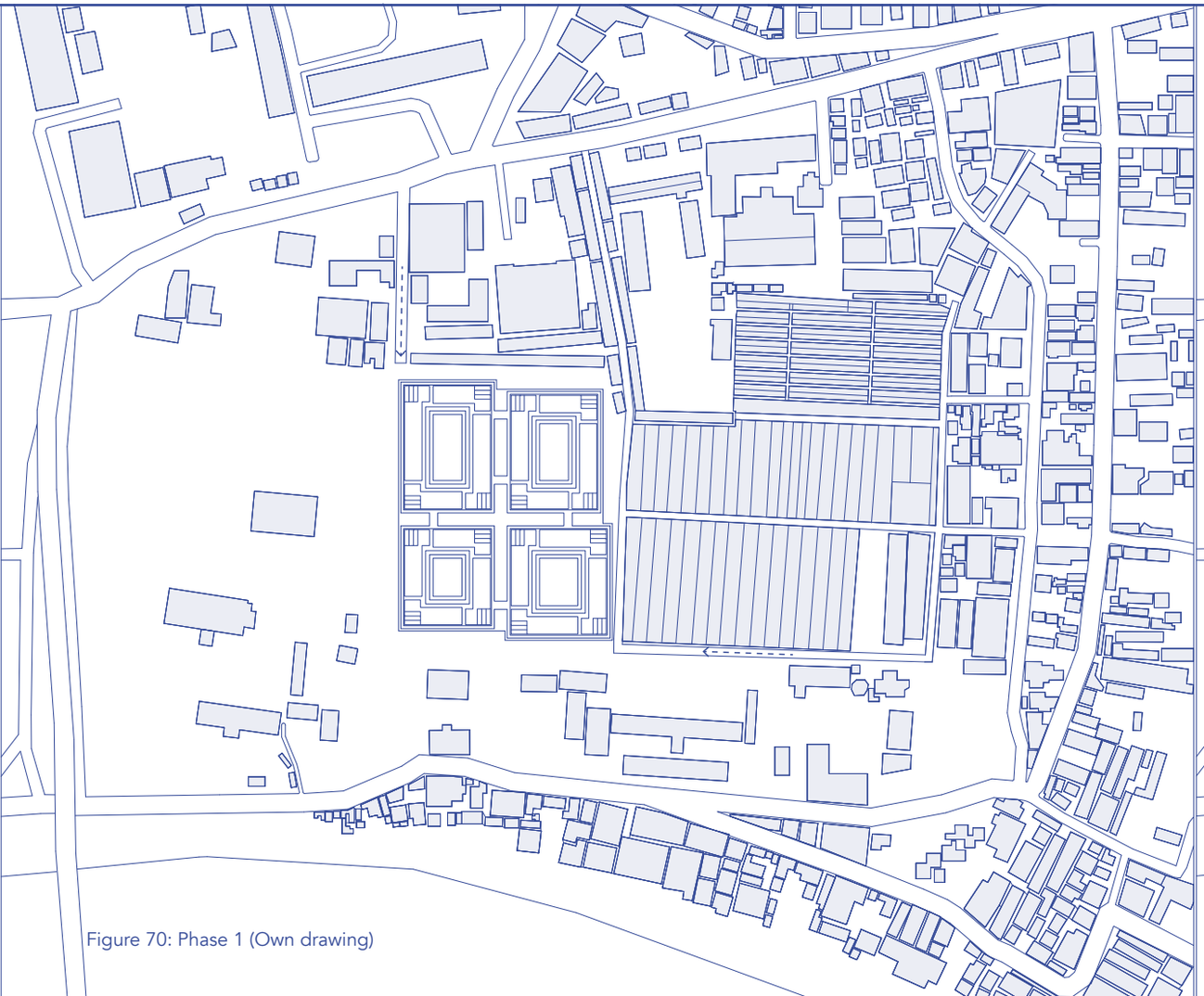


Figure 70: Phase 1 (Own drawing)

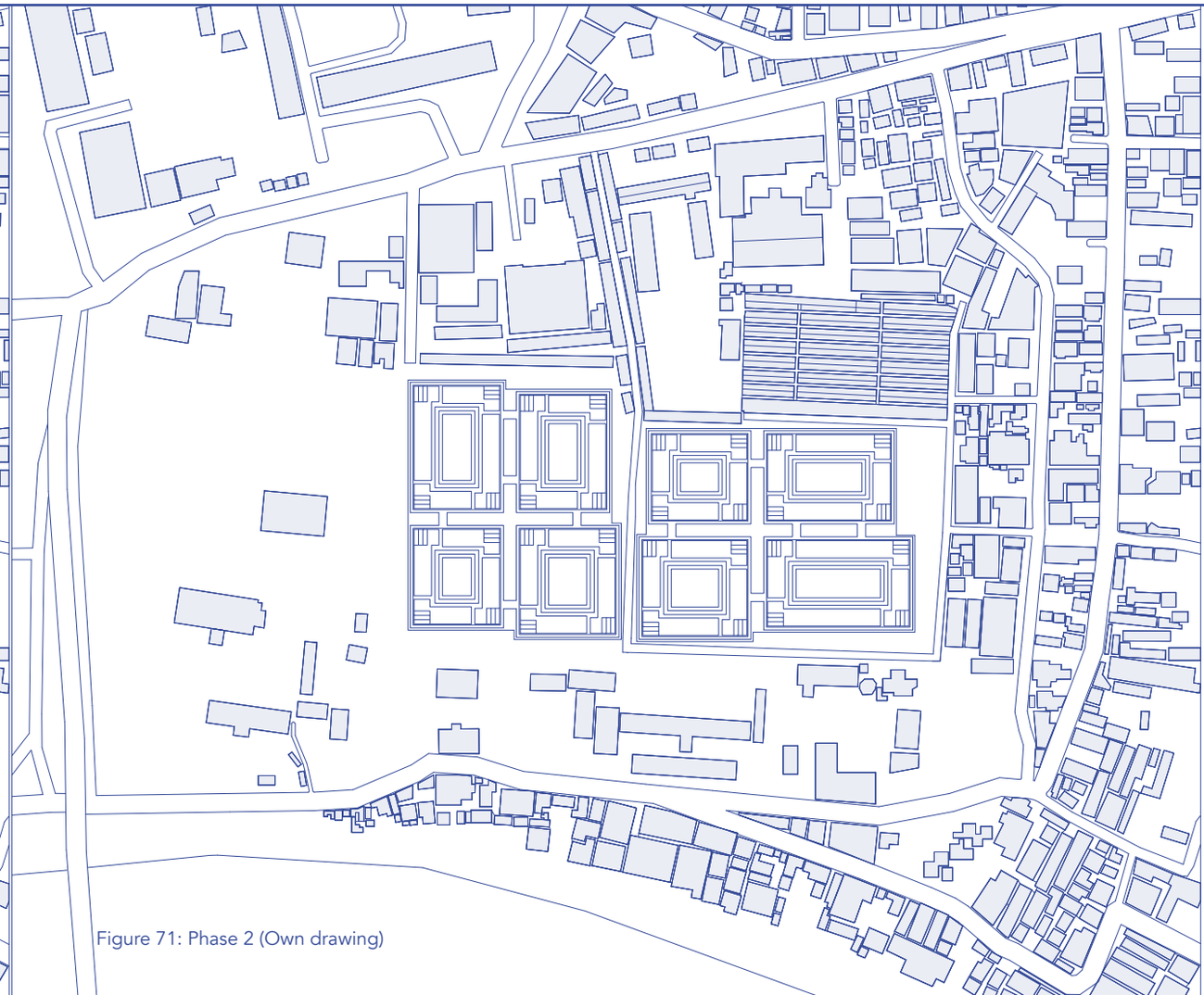


Figure 71: Phase 2 (Own drawing)

Abacus

	Phase 1	Phase 1 + Phase 2
FSI	44.200/17.000 m^2 = **2,6** 11.800 m^2 (non-residential) 16.000 m^2 (Low income) 9.200 m^2 (Mid income) 4.500 m^2 (High income)	93.600/39.000 m^2 = **2,4** 24.000 m^2 (non-residential) 32.000 m^2 (Low income) 18.400 m^2 (Mid income) 9.000 m^2 (High income)
GSI	10.880/17.000 m^2 = **0,64**	23.400/39.000 m^2 = **0,60**
Density	306/1,7 ha = **180 dw/ha**	630/3,7ha = **170 dw/ha**
Dwellings	306 units 54%(Low income) 31% (Mid income) 15% (High income)	630 units 55% (Low income) 30% (Mid income) 15% (High income)
Amenities	11.800/1500 = 7,9 m^2/rs 1500 residents 11.800 m^2 amenities	24.000/ = 8,0 m^2/rs 3000 residents 24.000 m^2 amenities
Parking	120/306 = 0,39 ps/unit 120 parking spaces 306 units	250/630 = 0,39 ps/unit 250 parking spaces 630 units

Figure 72: Calculations data (Own figure)

Costs

Revenue	Expenses	Payback
Total revenue = 2.960.000 + 8.850.000 = **11.810.000 BDT** *96.700 USD* Low income rent/month = 8.000 BDT Mid income rent/month = 10.000 BDT High income rent/month = 15.000 BDT 165 x 8.000 = 1.320.000 BDT 95 x 10.000 = 950.000 BDT 46 x 15.000 = 690.000 BDT Total revenue dwellings = **2.960.000 BDT** Rent per m^2 shop = 750 BDT 11.800 x 750 = **8.850.000 BDT**	costs/m^2 x area = construction 24.000 x 44.200 = **1.060.800.000 BDT** *8.700.000 USD* 24.000 BDT/m^2 for concrete construction with brick infill Total m^2 of entire plot = 44.200 m^2	1.060.800.000 / 11.810.000 = **89,8 months** *7,5 years* Costs / revenue = Amnount of months before payback

Figure 73: Calculations revenue and costs (Own figure)

To estimate my revenue, I calculated the expected monthly rent for each dwelling and apartment, based on typical rental values, and included the projected rent per square meter for the shop space. This gave me a total monthly income from the entire project. For construction costs, I used an estimated price per square meter for a concrete structure with brick infill and multiplied this by the total built area. The payback period was then calculated by dividing the total construction costs by the monthly revenue, giving an estimate of how many months and years it would take to recover the investment. Based on these figures, the payback time is approximately 7.5 years.

Please note that all prices used are estimates and subject to change.

Stakeholders

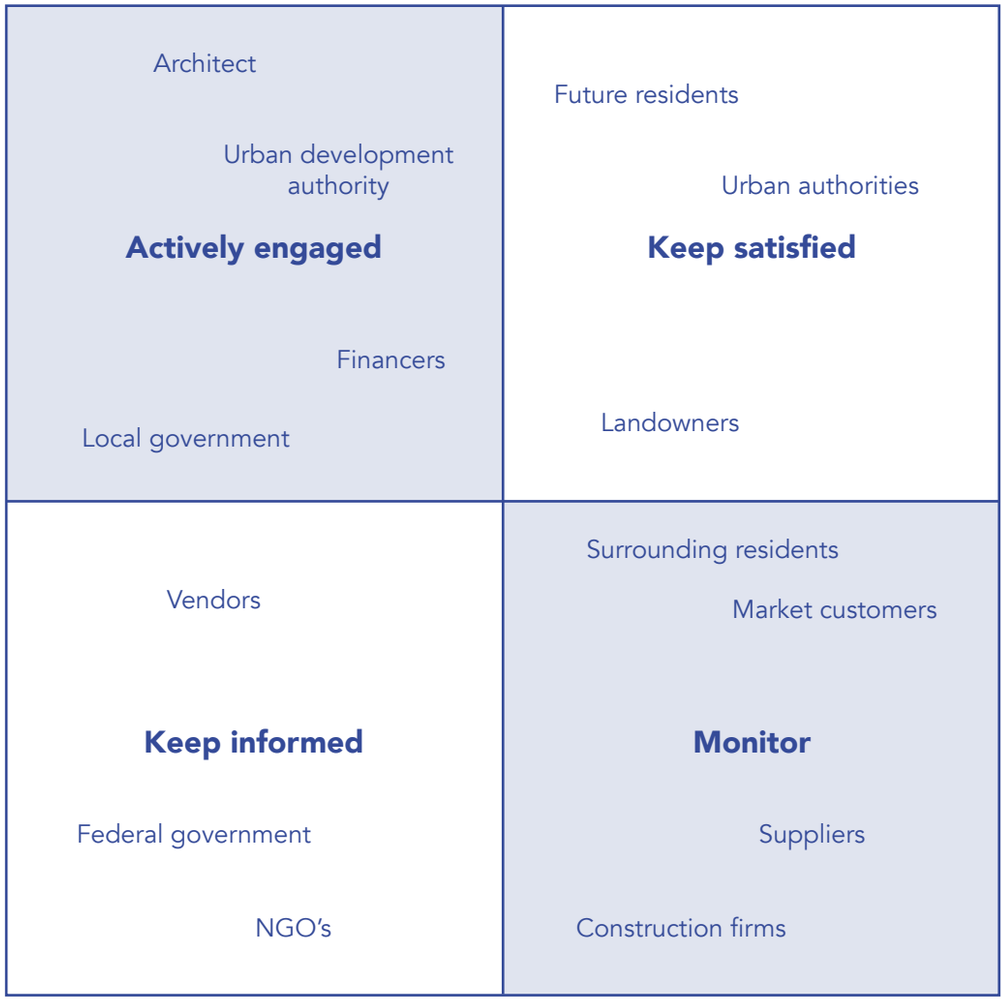


Figure 74: Stakeholder analysis (Own figure)

In any large-scale housing and market development, a variety of people and groups are involved, some directly shaping decisions, others influencing outcomes in more subtle ways. To manage these relationships effectively, stakeholders are grouped into four categories based on their level of power and interest.

The 'Actively Engaged' group includes those who play a leading role in the realization of the project and require close collaboration throughout. In the 'Keep Satisfied' group are those who may not be involved day-to-day but whose support is essential, especially in financial or strategic terms.

The 'Keep Informed' category includes people most affected by the outcomes of the project, whose voices and needs must be continuously acknowledged and respected. Finally, the 'Monitor' group holds less direct influence but still contributes to the long-term success of the design.

In this project, set in a dense urban context with a mix of housing and market functions, stakeholders come from different social, economic, and institutional backgrounds. A careful balance between these groups ensures the project remains inclusive, grounded, and feasible over time.

URBAN STRATEGY - *Masterplan*

The structure of the masterplan is defined by two intersecting spines that organize the site into four distinct residential clusters. These spines, one at ground level for commercial activity and one elevated for residential circulation, form the backbone of the design, guiding movement and creating a clear hierarchy of public and private spaces. By crossing through the site, they divide the plot into four quadrants, each hosting its own cluster with a central courtyard.

At ground level, the lower spine functions as a vibrant shopping street, lined with market stalls and small businesses. This spine is open to the public and maintains the energy of the surrounding market context. Above it, the raised spine acts as a 'second ground floor', a planted pedestrian route reserved for residents. This elevated pathway connects all clusters, offering calm circulation away from the bustle below, with bridges linking across the gaps.

The courtyards within each cluster serve as quiet, semi-public spaces for residents. They support social interaction, offer a sense of belonging, and improve natural ventilation and light within the dense site. The buildings around these courtyards are strategically detached to allow small passageways between them, connecting the courtyards back to the public spines and the wider neighborhood.

The roofscape further enhances the environmental performance and usability of the project. Some rooftops are made accessible for communal or recreational use, while others are planted with sedum to improve stormwater retention, reduce heat buildup, and support biodiversity. These green roofs contribute to better water management and air quality while providing additional layers of life and activity to the architecture.

In combining the logic of market and dwelling, circulation and enclosure, the masterplan creates a cohesive, adaptable urban fabric that responds to both functional needs and the rhythms of daily life.

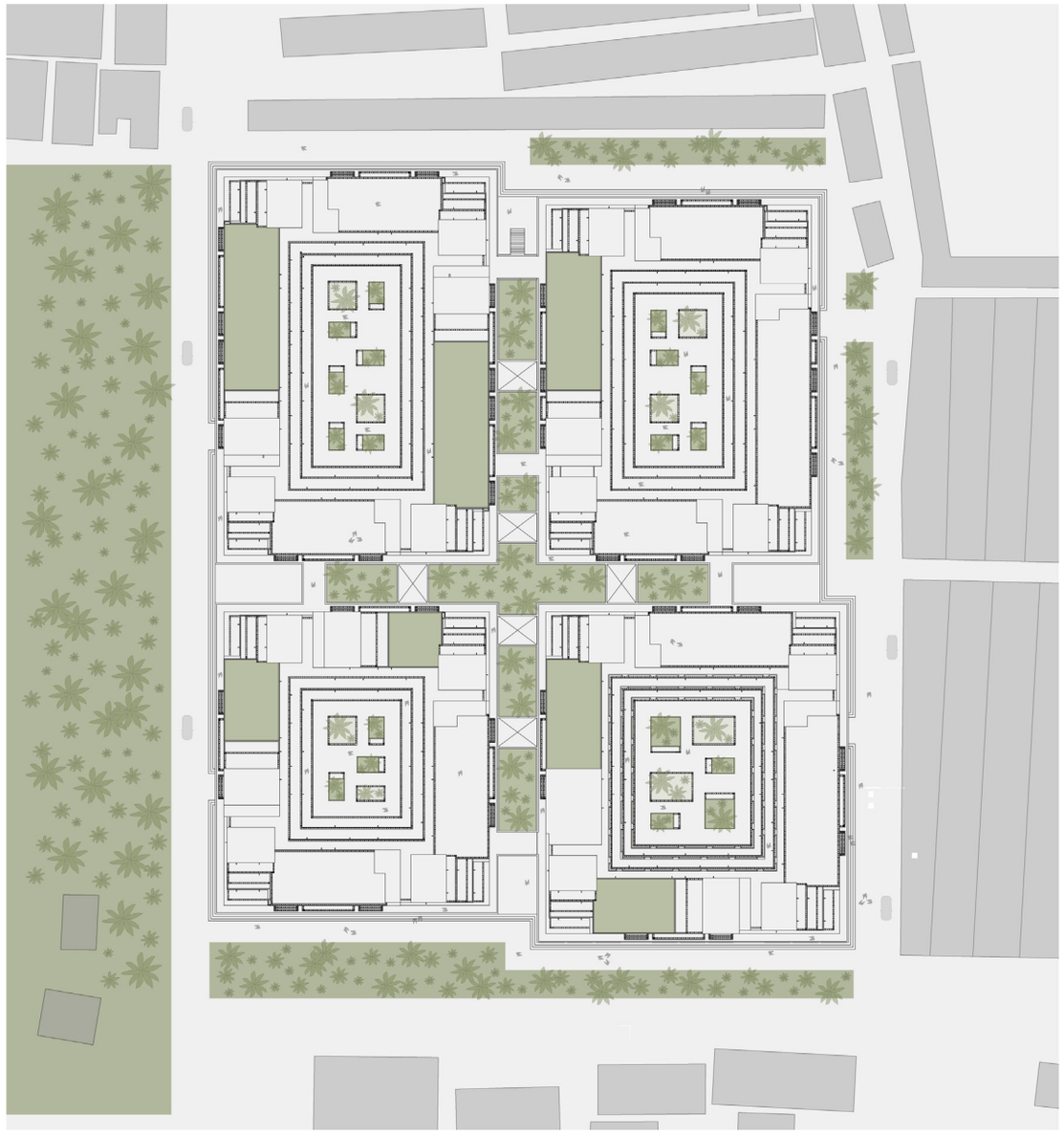


Figure 75: Masterplan (Own drawing)

Design

URBAN STRATEGY - *Circulation plan*

The masterplan is organized around two main roads on the east and west sides, which connect to the city's road network and allow access for cars and service vehicles. In contrast, smaller streets on the north and south edges are reserved for slow traffic like pedestrians and cyclists, creating a calm edge to the site.

Inside the masterplan, two intersecting spines form the main pedestrian routes. The lower spine serves as a vibrant shopping street, while the elevated spine connects all residential clusters as a quiet, green walkway. This separation of traffic ensures safety and supports a walkable, accessible environment.

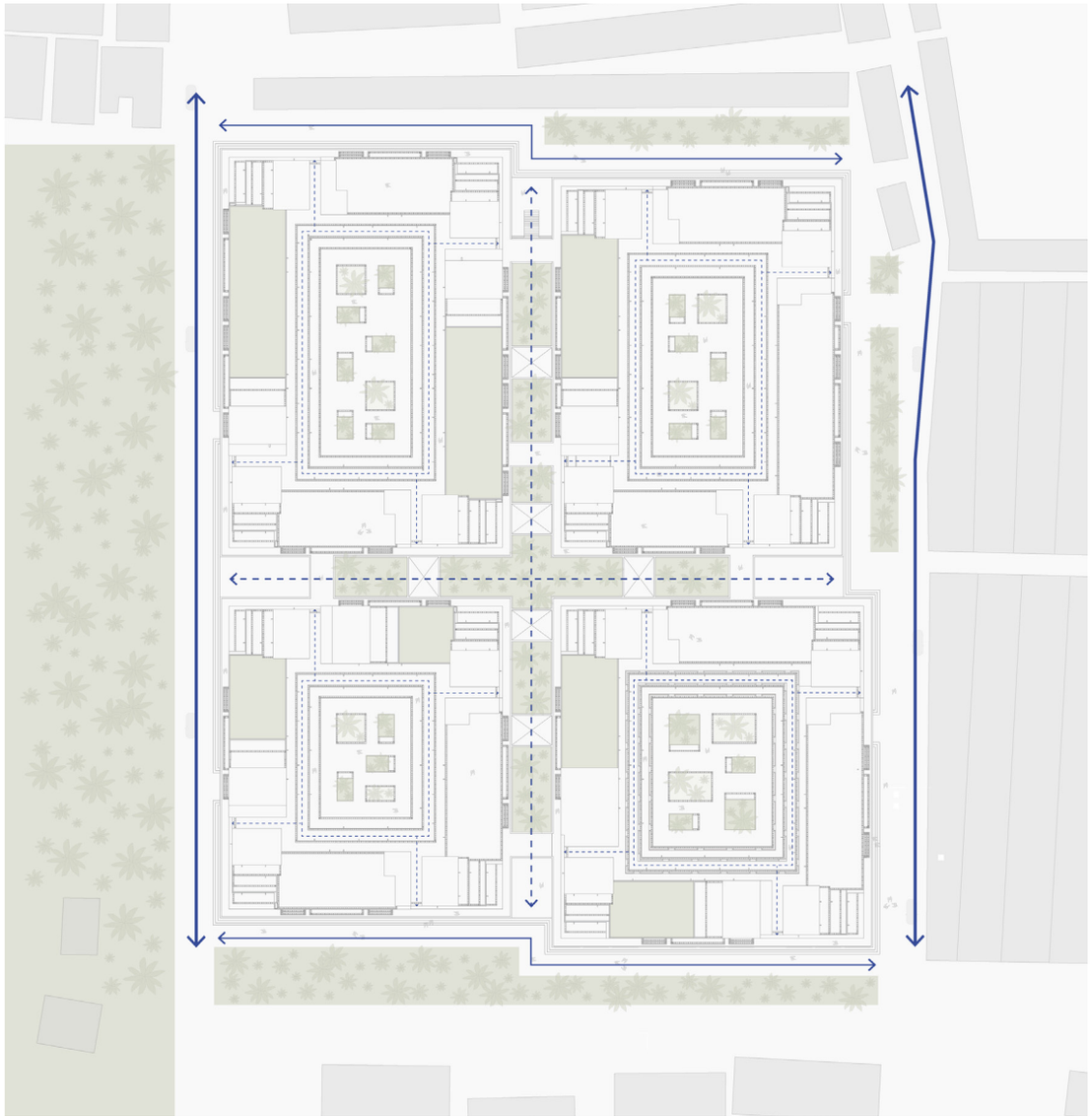


Figure 77: Circulation plan (Own drawing)

Design

URBAN STRATEGY - *parking plan*

To keep the masterplan walkable and pedestrian-friendly, parking is handled efficiently and with minimal visibility. Each of the four clusters includes an integrated ground-level garage, with entrances aligned to the main roads on the east and west. This allows vehicles to access the site without disturbing the interior pedestrian zones.

By concentrating vehicular access to the site's perimeter and containing parking within each block, the design minimizes surface-level car presence. This enhances safety, maximizes public space, and supports the project's vision of a market-residential environment shaped primarily by people, not cars.

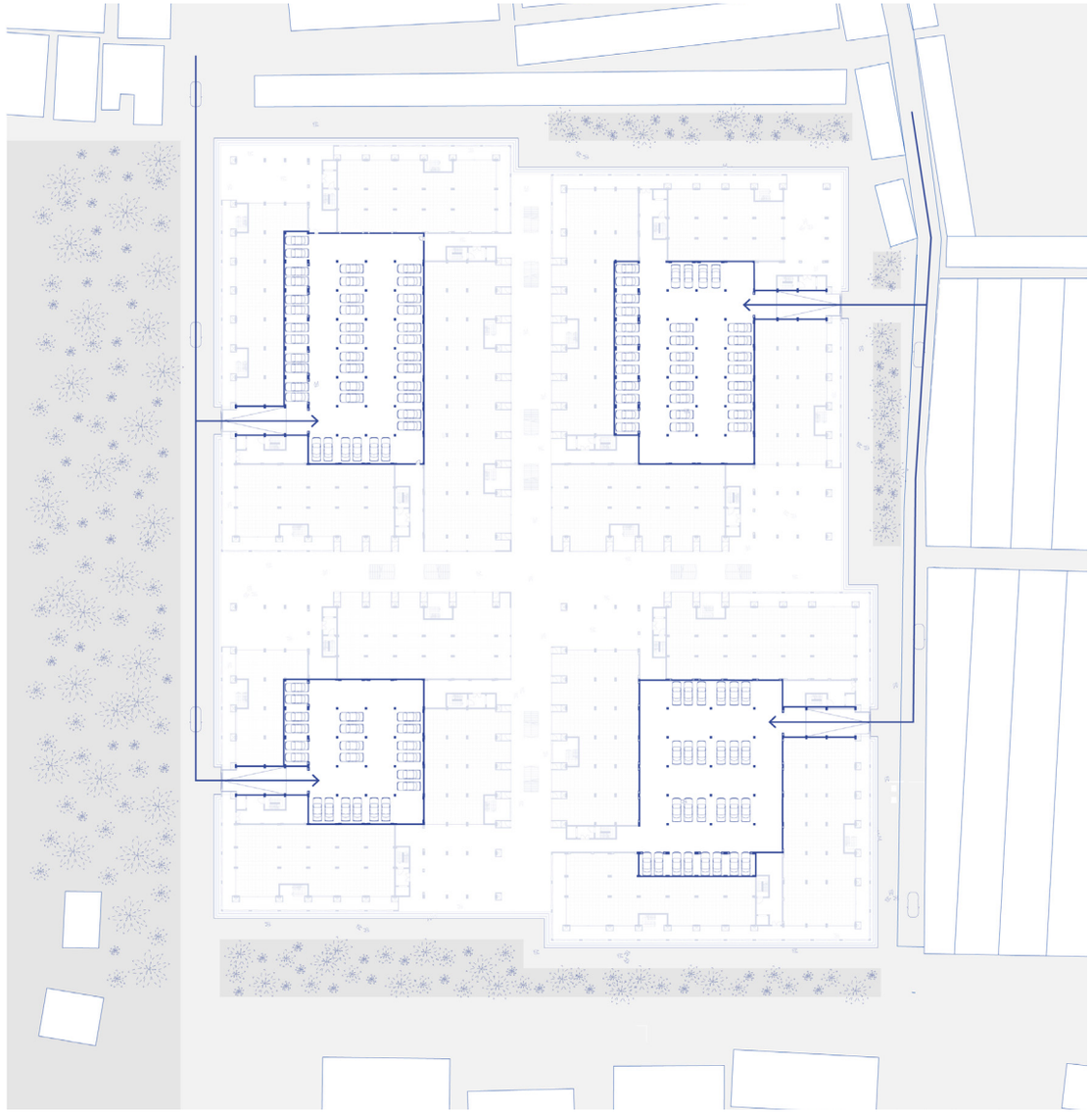


Figure 78: Parking plan (Own drawing)

URBAN STRATEGY - *Ground floor plan*

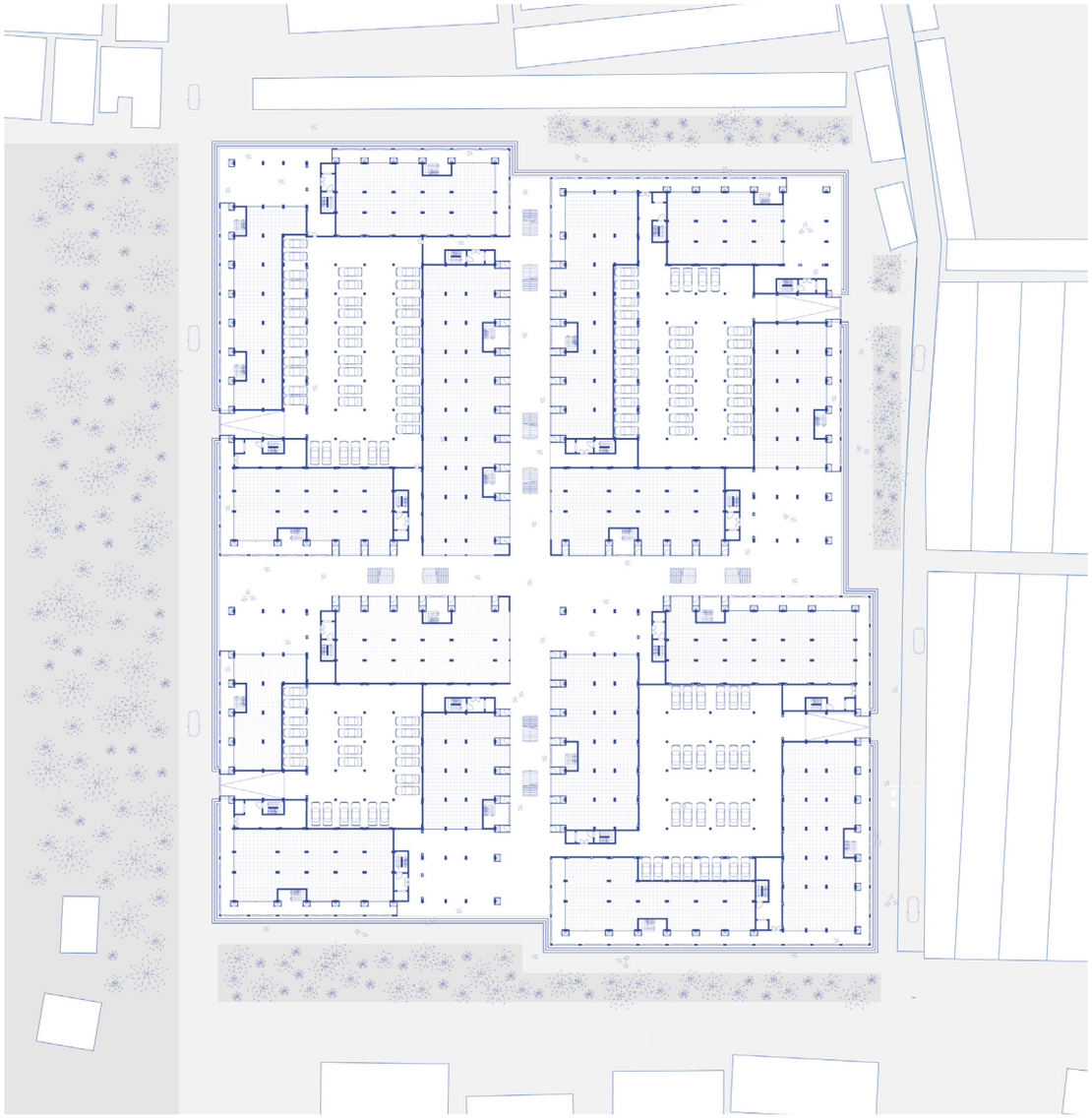


Figure 79: Ground floor plan (Own drawing)

The ground floor of the masterplan plays a vital role in shaping the public character of the project. At the center of each cluster, the parking garages are seamlessly integrated, allowing for efficient use of space without compromising the pedestrian-friendly nature of the masterplan. Surrounding these garages are rows of small-scale commercial units that cater to both residents and visitors. These shops are oriented in two directions, some face outward toward the surrounding roads and neighborhood, while others open onto the internal shopping spine, ensuring that activity and accessibility are distributed throughout the site.

One of the key features on this level is the inclusion of strategically placed double-height cut-outs that punctuate the commercial strip. These voids bring natural light and ventilation into the covered shopping street, enhancing comfort and atmosphere. Beyond their functional role, the cut-outs improve spatial quality by creating visual connections and aiding orientation within the market. They also serve as social nodes, inviting spaces where people can pause, gather, or enjoy moments of openness amidst the busy environment.

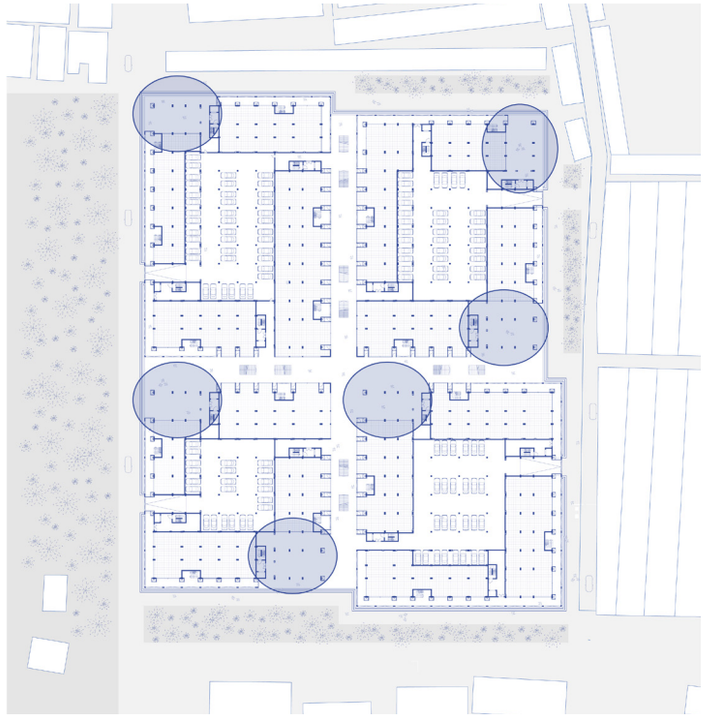
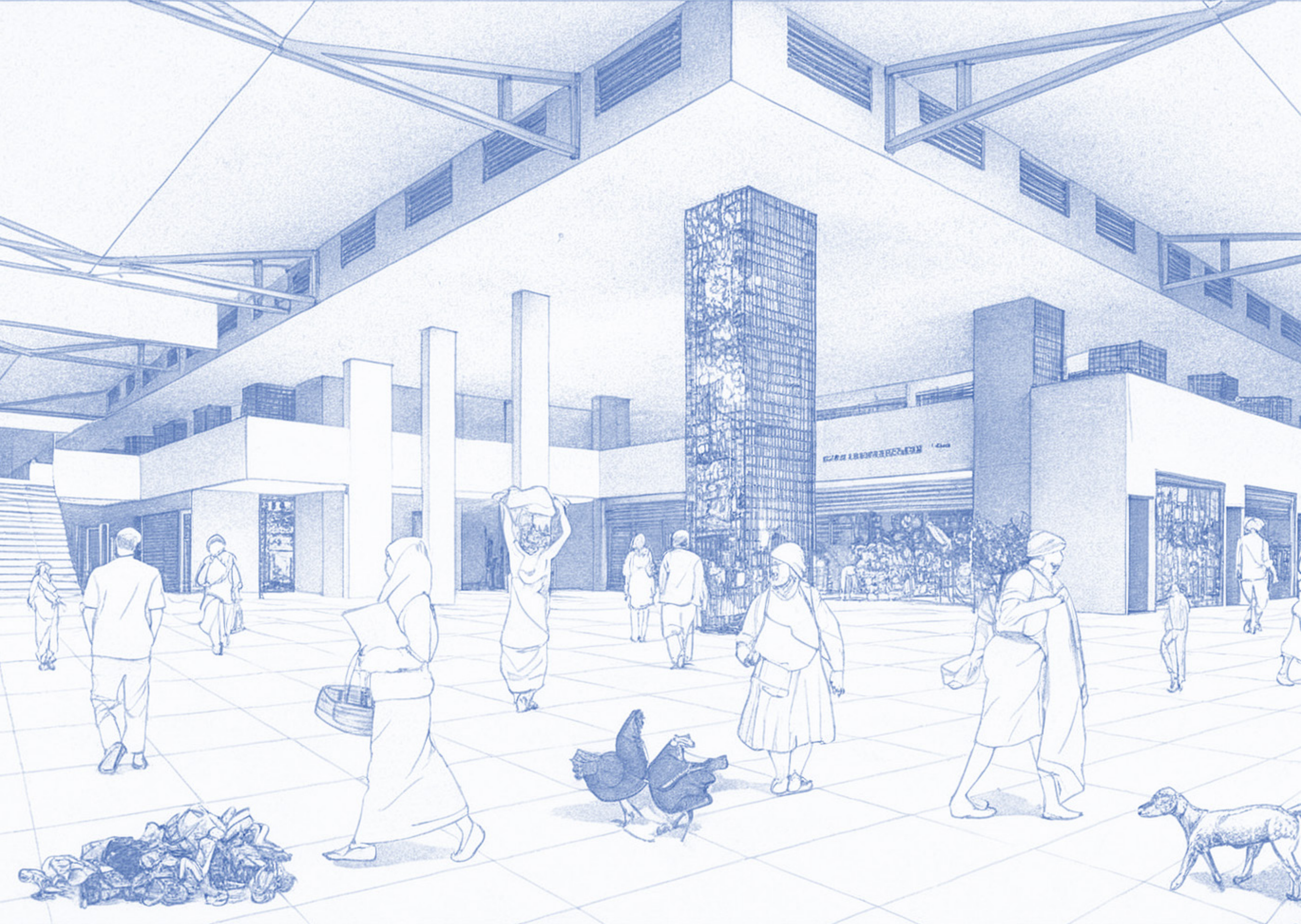


Figure 80: Ground floor plan with cut outs (Own drawing)



URBAN STRATEGY - *Water management plan*

Water management in the masterplan is addressed through green roofs, raised planters, and natural infiltration zones. The central spine doubles as a green corridor, with planters that help capture and filter rainwater. Sedum roofs reduce the urban heat island effect and absorb rainfall, acting as a buffer during storms.

Overflow is either collected for reuse or directed to infiltration zones along the site edges. To improve flood resilience, the entire masterplan is raised by 500mm, protecting it from extreme seasonal flooding.

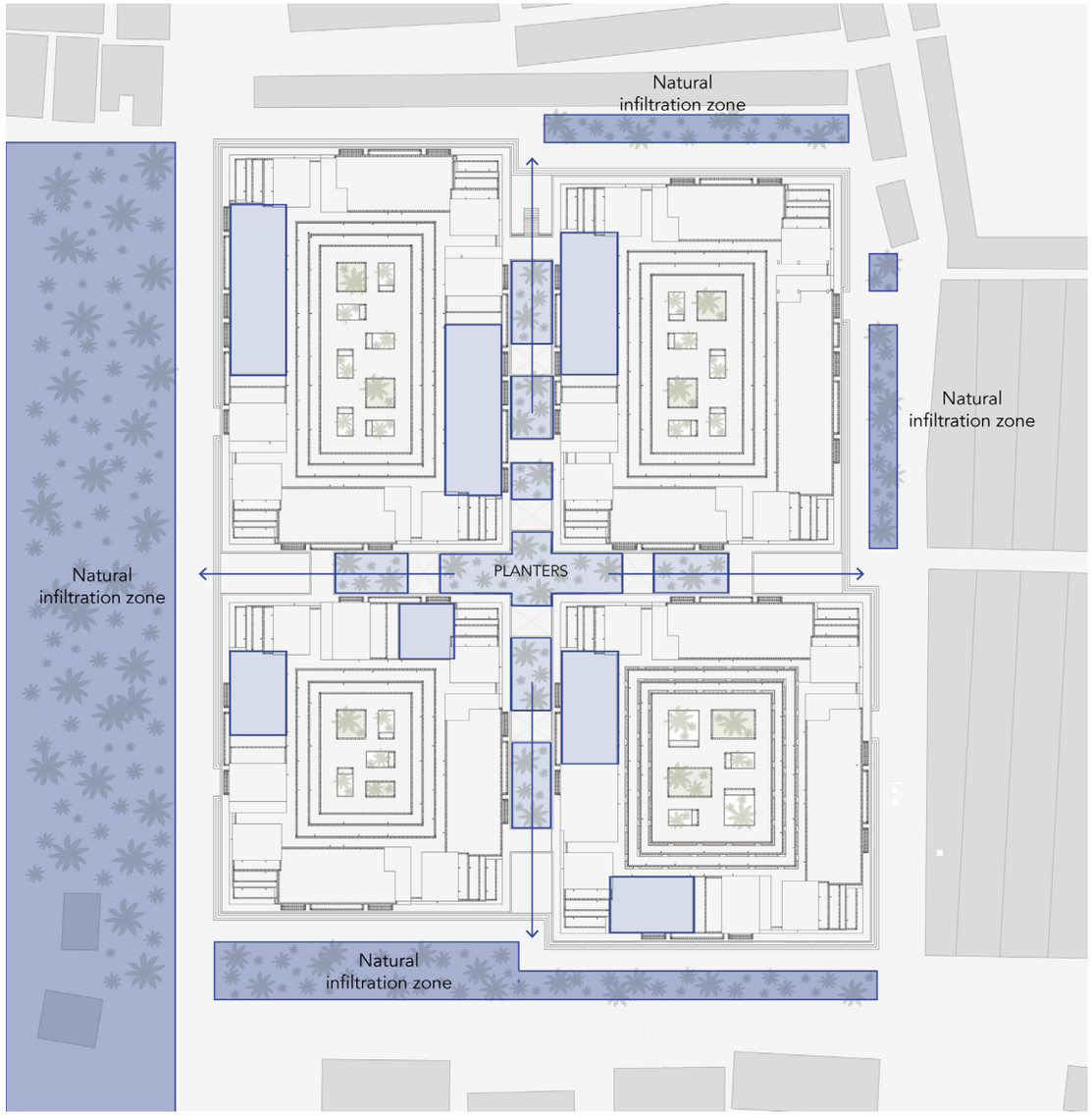


Figure 82: Water management plan (Own drawing)

URBAN STRATEGY - *Ventilation plan*

Ventilation across the masterplan is shaped by its surroundings. To the south, the nearby Surma River brings cooler air into the site, while the denser city fabric to the north introduces warmer urban air. The two central spines channel these contrasting flows through the development, enhancing cross ventilation at an urban scale.

Within each cluster, smaller alleys and openings maintain airflow and create distinct microclimates. This layered system improves comfort, reduces heat buildup, and supports a healthier, more breathable environment.

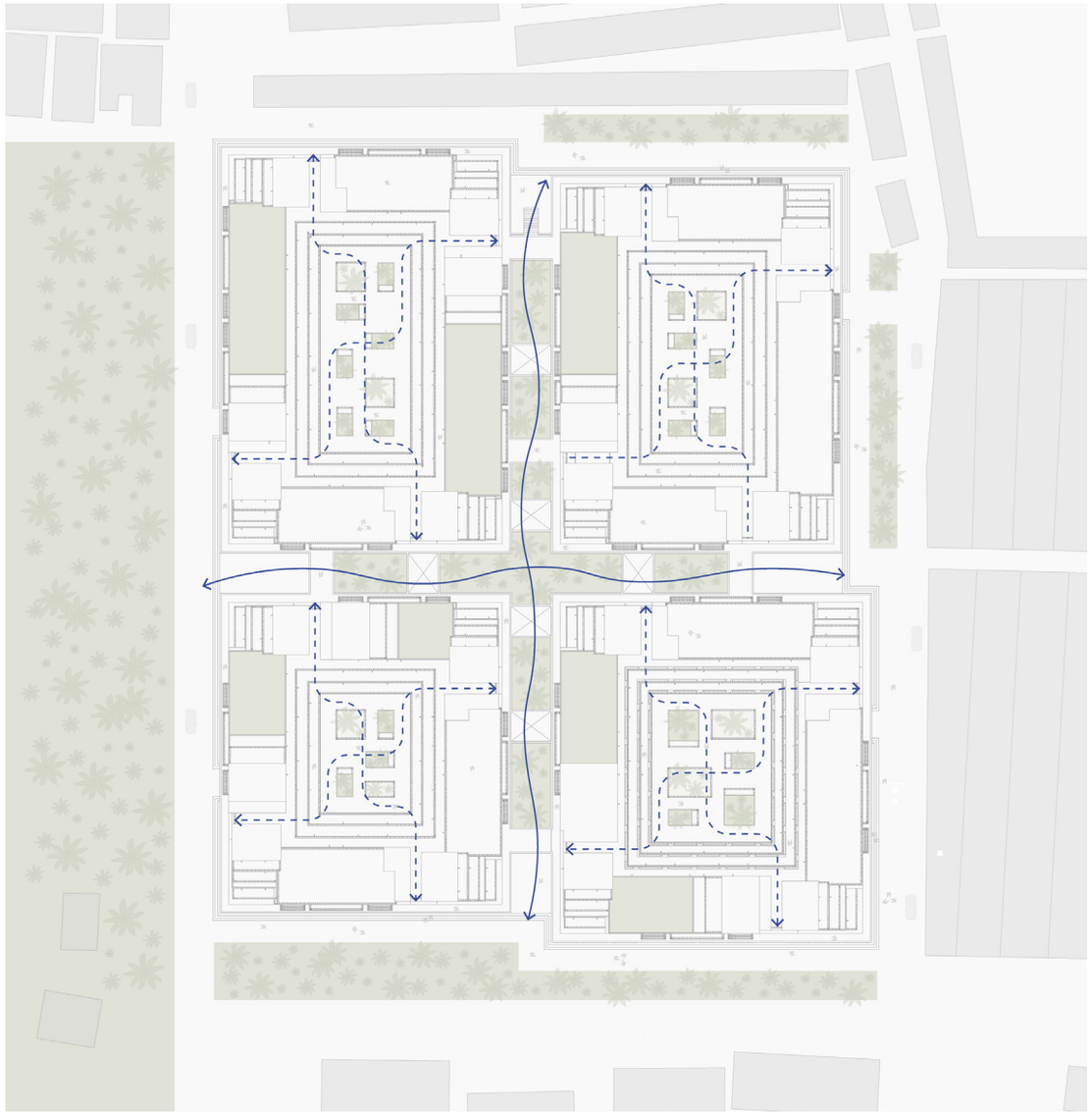


Figure 83: Ventilation plan (Own drawing)

URBAN STRATEGY - *Elevations*

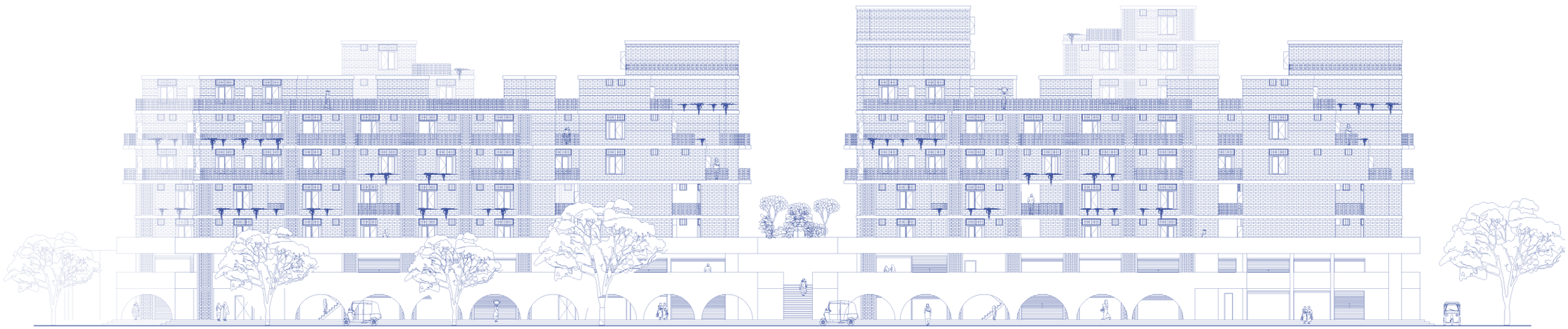


Figure 84: North elevation (Own drawing)

Figure 85: South elevation (Own drawing)

Figure 86: East elevation (Own drawing)

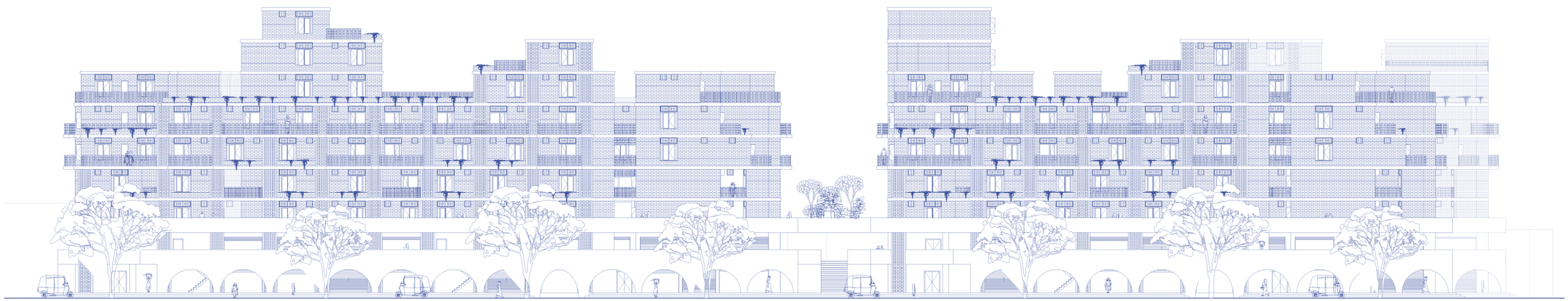


Figure 87: West elevation (Own drawing)

URBAN STRATEGY - *Street profile*

The eastern street profile, situated between the new development and the existing hawkers market, is designed as a layered public interface that organizes movement and enhances user experience. Starting at the outer edge, a busy traffic lane accommodates cars and service vehicles, connecting to the broader road network. Adjacent to this, a green buffer zone introduces a sense of calm, separating the fast-moving vehicles from the pedestrian realm. This is followed by a wide walkway that encourages foot traffic and social interaction along the commercial edge.

Before entering the buildings, a second buffer zone sits behind a light, semi-open second façade. This transitional space creates a soft threshold between the lively outdoor street and the interior market spaces, improving spatial quality and orientation. Together, these layers manage circulation while enhancing comfort, safety, and the overall character of the public realm.

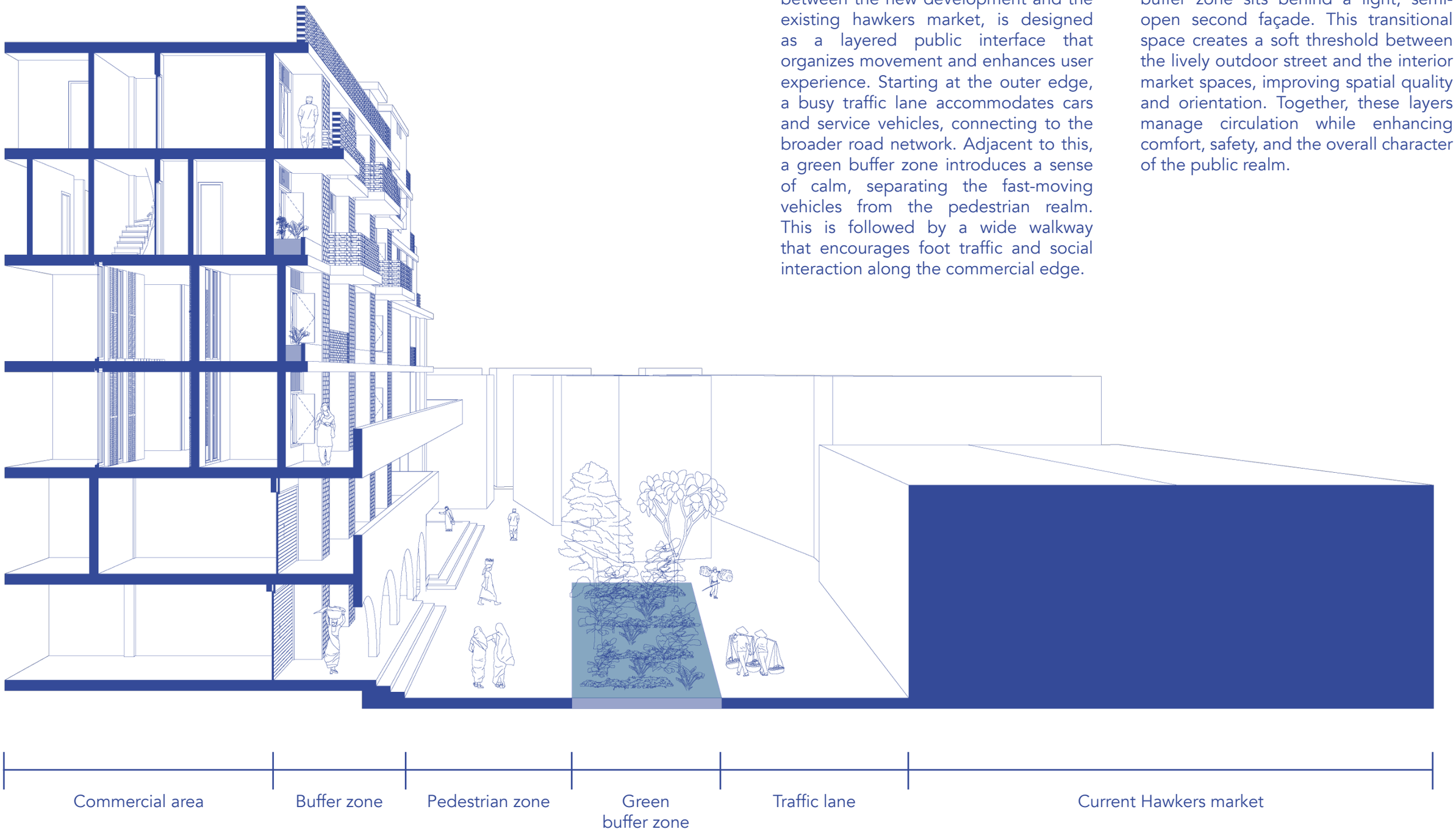


Figure 89: Street profile east side (Own drawing)

Design

URBAN STRATEGY - *Street detail*

Positioned between the vehicular traffic and pedestrian walkway, the green buffer zone plays a key role in separating movement flows and enhancing environmental quality. Made of natural soil and planted with greenery, this strip acts as a soft barrier between the busy road and the calm pedestrian zone.

While the buffer itself is natural, the adjacent traffic lane and pedestrian walkway are constructed with permeable concrete paving blocks. These materials allow rainwater to pass through and reduce surface runoff. In combination, the system supports natural infiltration, lowers the risk of flooding, and cools the immediate microclimate, contributing to a more pleasant and sustainable urban environment.

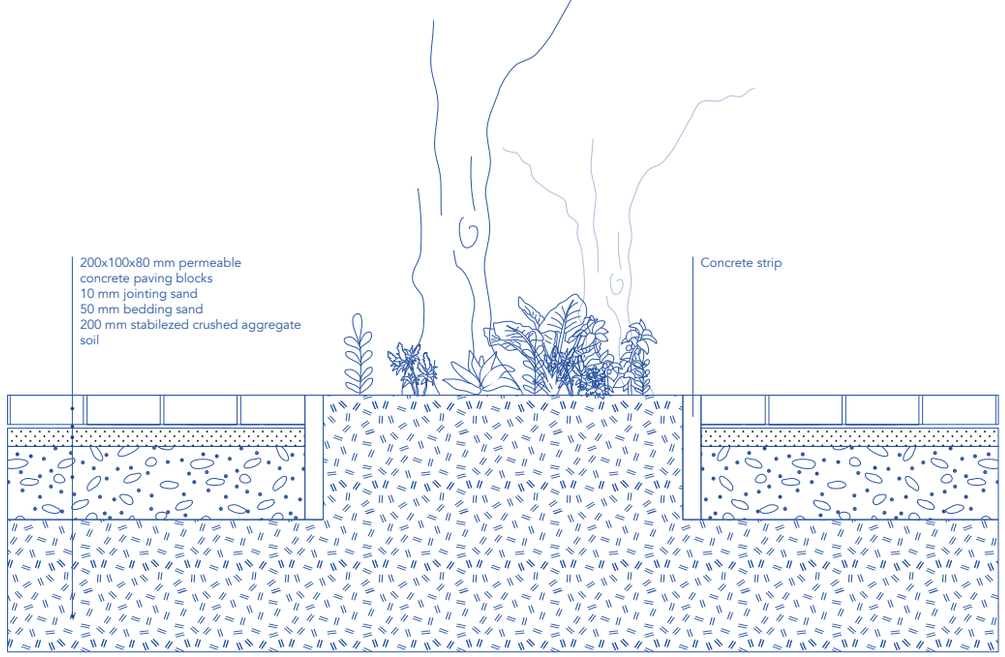


Figure 90: Street detail green buffer zone (Own drawing)

URBAN STRATEGY - *Sections*

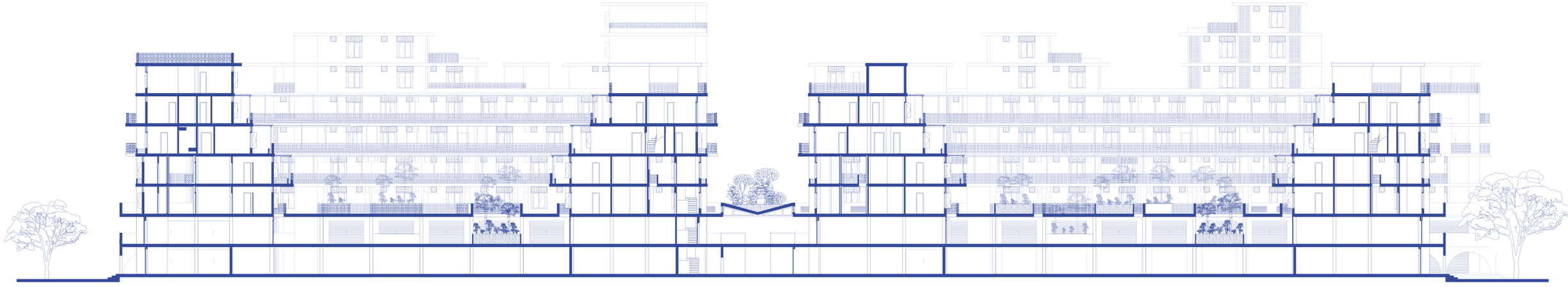


Figure 92: Section north - south (Own drawing)

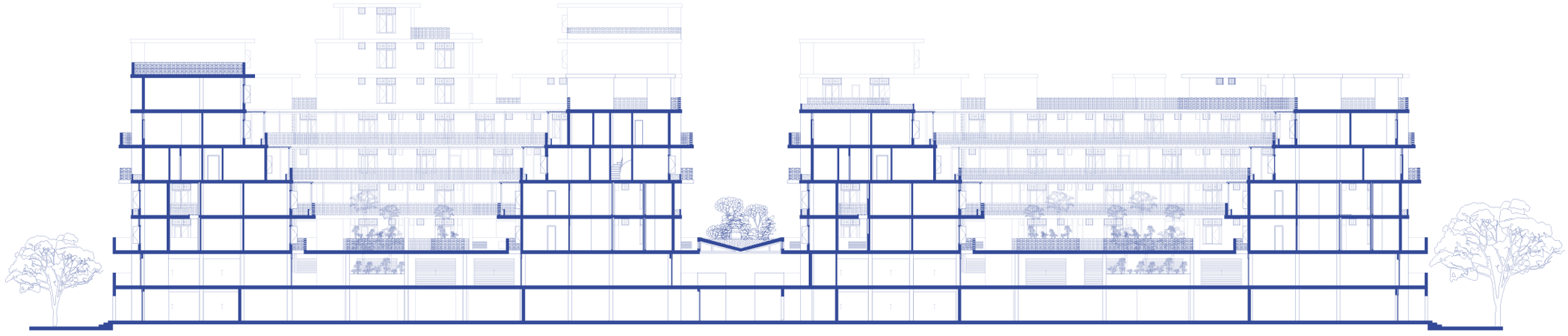


Figure 93: Section east - west (Own drawing)

URBAN STRATEGY - *Street profile*

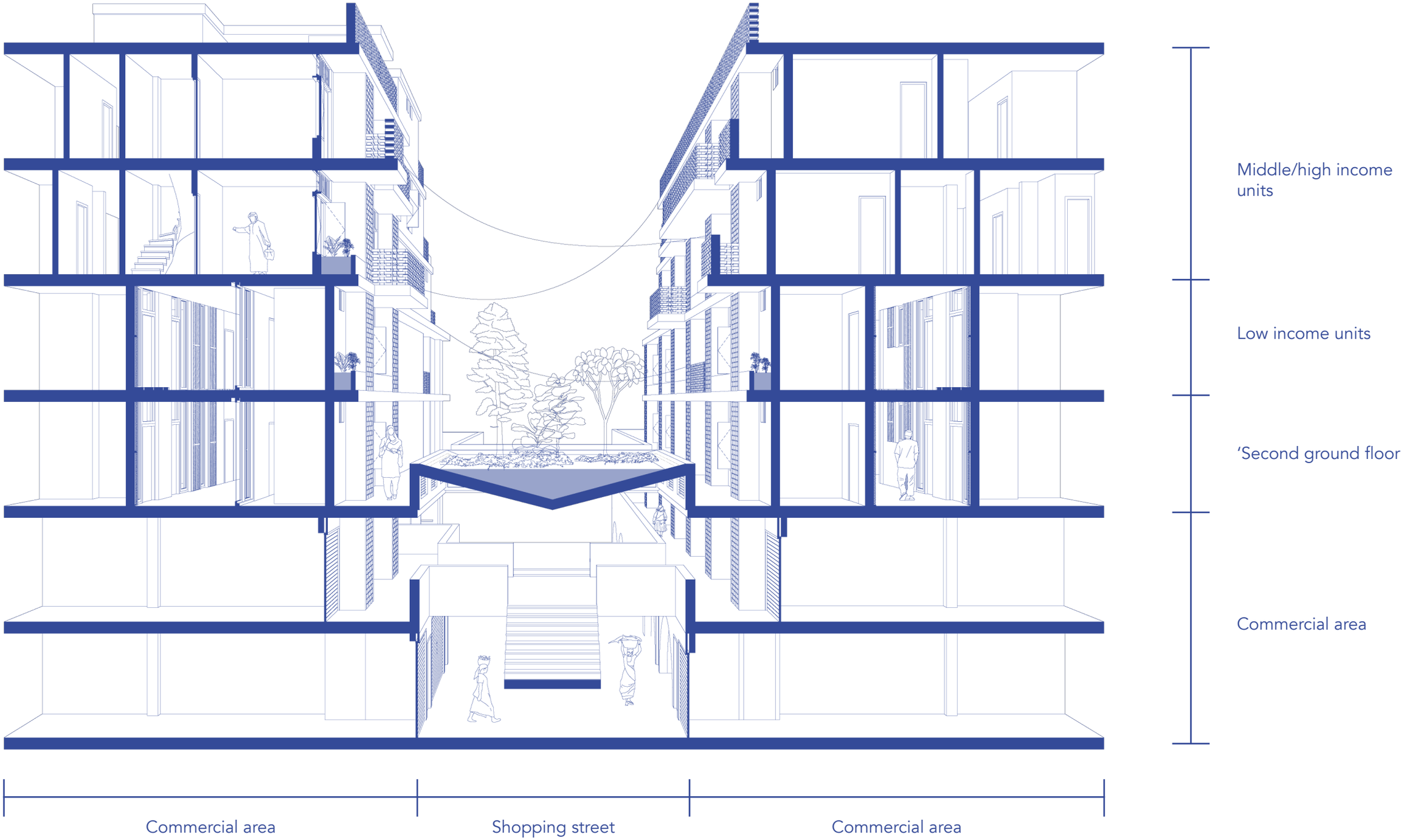


Figure 94: Street profile spine (Own drawing)

URBAN STRATEGY - *Functional separation*

This sectional diagram clearly illustrates the distinct functional zones within the building. The first two floors are dedicated to vibrant commercial spaces, which wrap around the courtyards and the central 'bazaar' on the first floor, activating the public realm and encouraging social interaction. This commercial base supports the mixed-use nature of the project, blending shopping and community life seamlessly.

Above the commercial floors, the project's defining raised spine becomes apparent. Positioned at the second-floor level, this elevated 'second ground floor' acts as a green, landscaped corridor that connects all four clusters. It provides residents with a shared, semi-private social space and efficient circulation path, integrating nature into everyday life while maintaining a clear separation from the bustling market below.

Residential units begin from the second and third floors, where low-income housing is prioritized, offering easy access to communal courtyards and essential amenities. This supports inclusivity by placing affordable units close to the social heart of each cluster. Higher floors are dedicated to a mix of middle- and high-income units, fostering social diversity vertically within the buildings. Together, these layers create a balanced and well-organized community that combines commerce, social interaction, and housing within one cohesive urban framework.

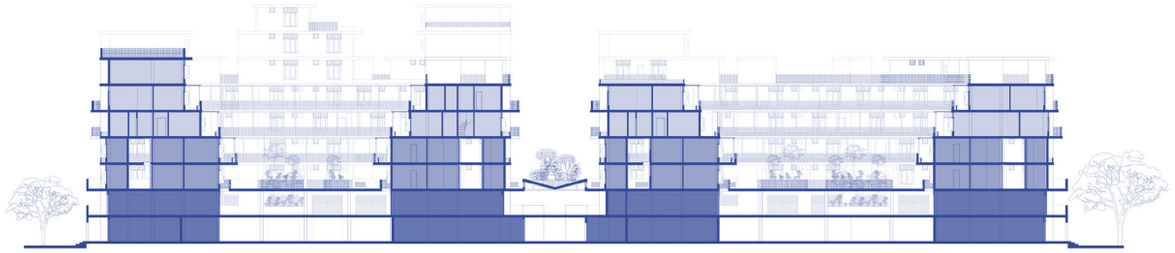


Figure 96: Section functional separation (Own drawing)

CLUSTER DESIGN

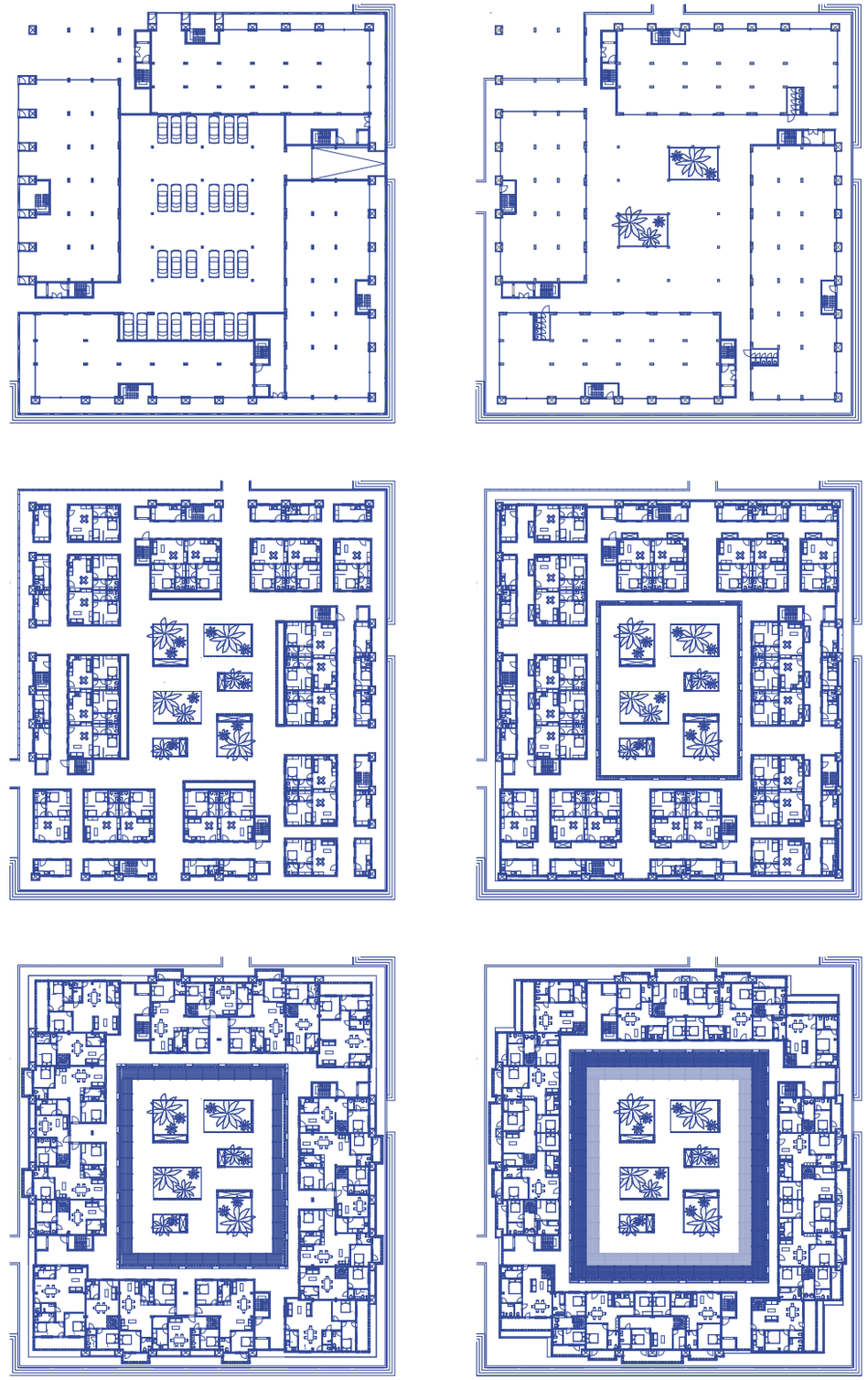


Figure 97: All floorplans of cluster (Own drawings)

Design

CLUSTER DESIGN - *Ground floor*

The ground floor of each cluster is designed around a central parking garage, which is thoughtfully surrounded by vibrant market areas. This layout activates the street level with commercial activity while keeping vehicle parking discreetly contained within the building footprint. Each cluster is divided into four parts, and every part has two separate cores to ensure efficient vertical circulation.

One core, equipped with stairs, serves residents up to the third floor and is designated primarily for low-income housing. The second core includes an elevator and provides access all the way to the top floors, accommodating the mid- and high-income residents. This dual-core system ensures both accessibility and social inclusion, while maintaining clear circulation paths tailored to different user groups within the cluster.

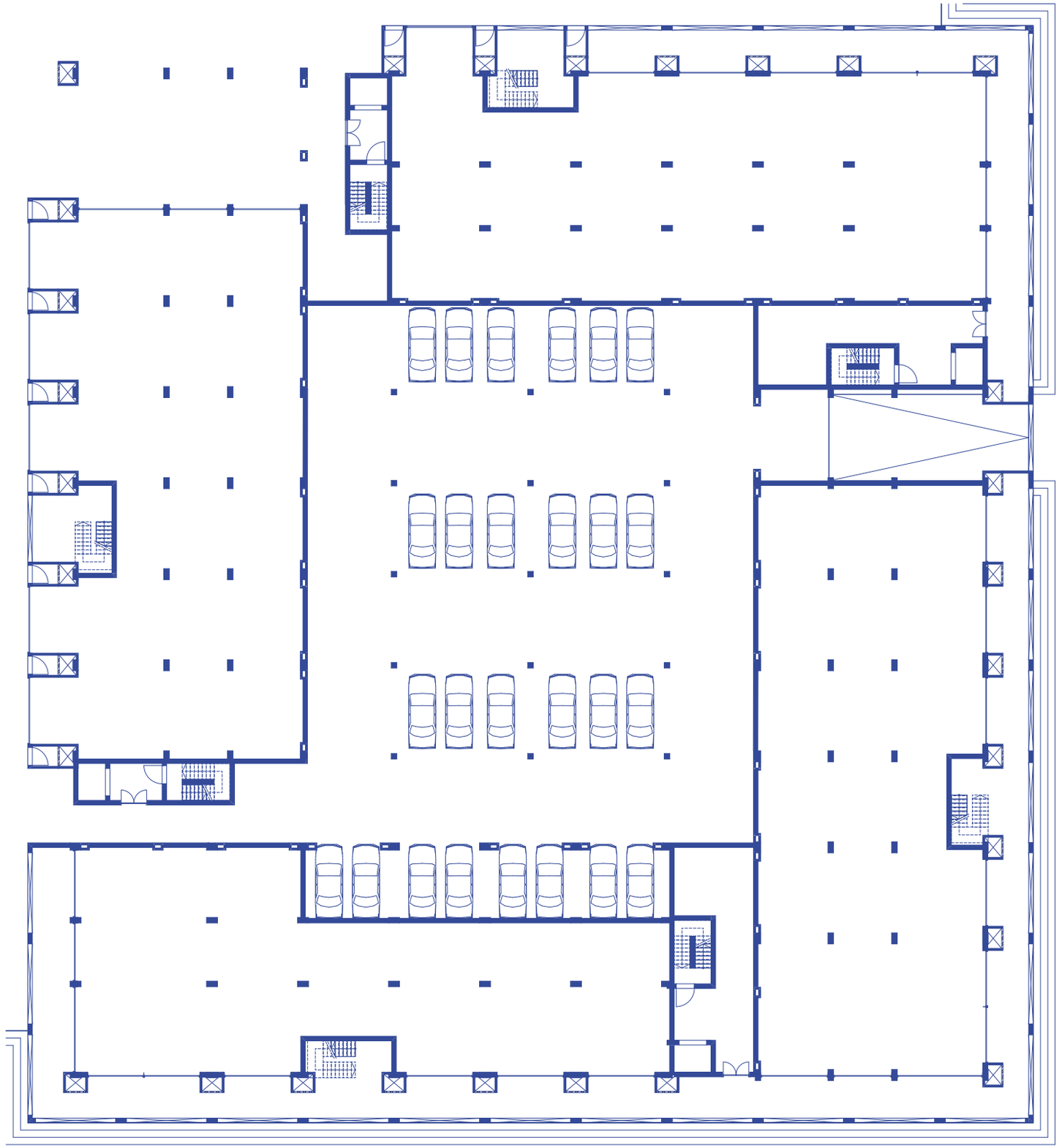


Figure 98: Ground floor plan (Own drawing)

Design

CLUSTER DESIGN - *1st floor*

The first floor maintains the dynamic commercial environment, with market spaces oriented towards both the interior courtyard and the exterior of the cluster. At the heart of this floor lies a 'bazaar' style area, covered by a roof with strategically placed openings that provide natural light and ventilation, creating a pleasant and inviting atmosphere for shoppers and vendors alike.

Both the ground and first-floor market zones are designed based on the Habraken principle, an open structural framework supported by columns. This system empowers vendors to customize their spaces by negotiating the placement of interior walls themselves, allowing for flexible stall sizes and layouts. This adaptability ensures that the market can evolve organically, responding to changes in demand or vendor needs.

Implementing the Habraken principle throughout the building makes the commercial areas highly adaptable and resilient over time. This flexibility not only supports a lively, diverse marketplace but also future-proofs the design, enabling the space to accommodate different uses and configurations as the community grows and changes.

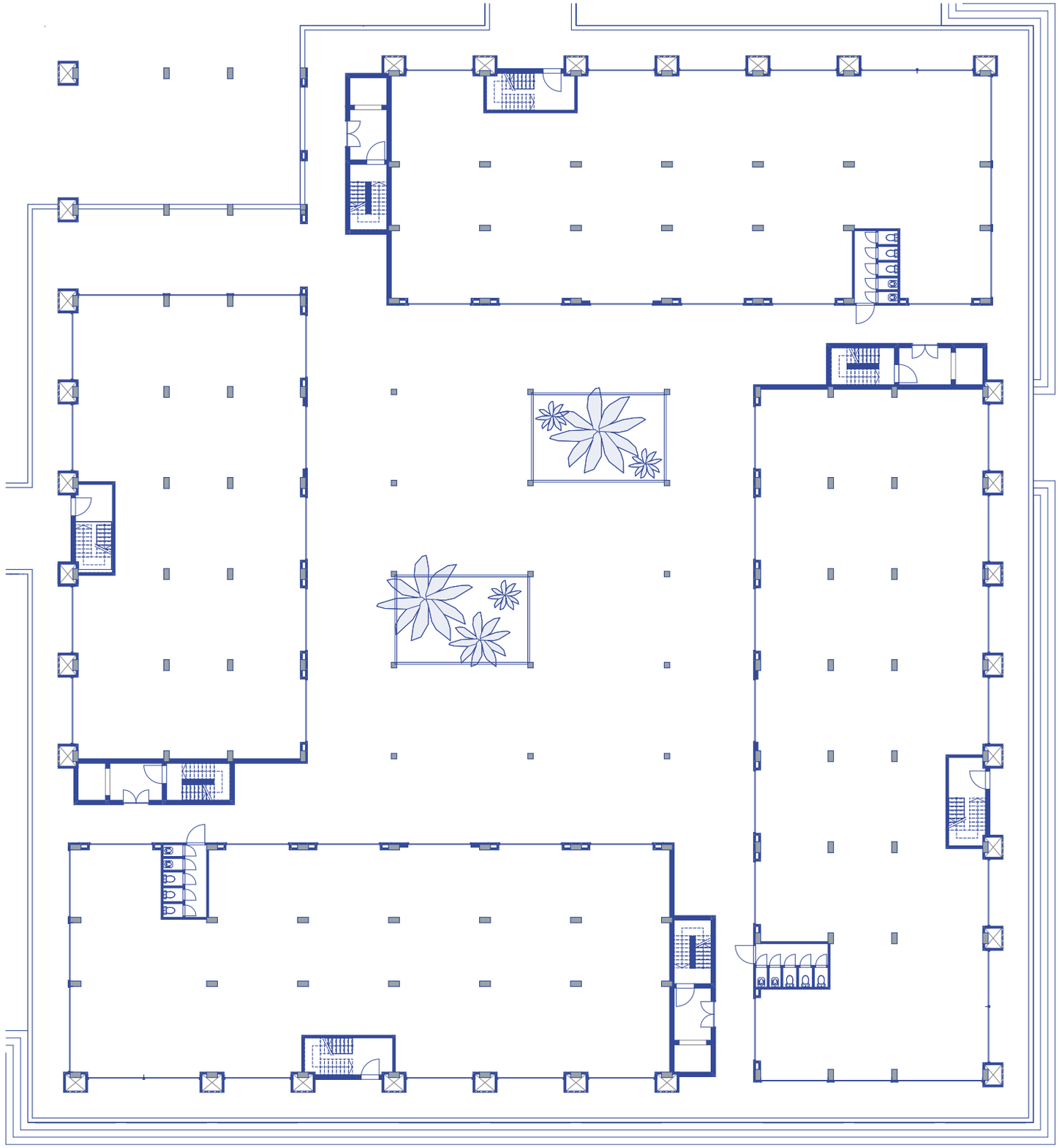


Figure 99: First floor plan (Own drawing)

Design

CLUSTER DESIGN - *2nd floor*

The second floor, often referred to as the "second ground floor," serves as an elevated communal level connecting the clusters into one unified space. This floor features a spacious courtyard at its center, thoughtfully designed with a combination of planters and open areas. These elements allow natural light and ventilation to filter down into the bazaar below, while also providing a peaceful, private retreat removed from the bustling market activity underneath.

This level marks the beginning of the residential area with the first set of low-income housing units situated here. Residents benefit from direct access to this quieter, green courtyard space, enhancing their living environment with both comfort and privacy. The design carefully balances the vibrancy of the commercial ground floors with calm and open living spaces above, fostering a harmonious coexistence between market life and residential comfort.

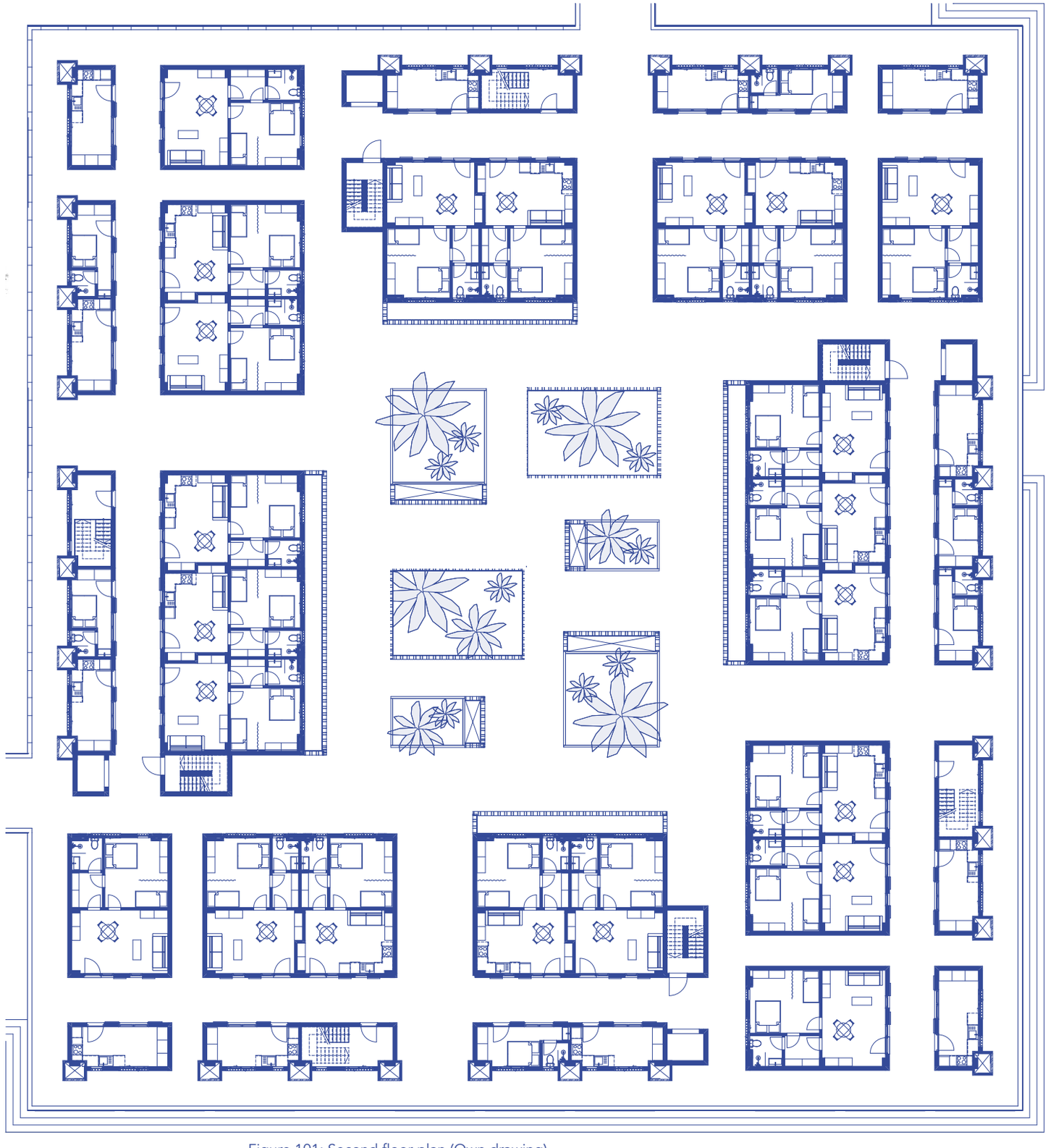


Figure 101: Second floor plan (Own drawing)

Design

CLUSTER DESIGN - *3rd floor*

The third floor continues to accommodate the low-income units, which are organized around an internal gallery system overlooking the courtyard below. A distinctive feature of these units is the corridor that runs through the dwelling, allowing for improved natural light and effective cross ventilation throughout the space.

This design also revives a traditional vernacular element by separating the kitchen from the main living areas. This separation encourages more social interaction among neighbors as kitchen spaces become semi-public zones. Additionally, the separate kitchen areas offer residents the flexibility to rent out these spaces when needed, providing an opportunity for supplemental income and fostering a stronger sense of community.

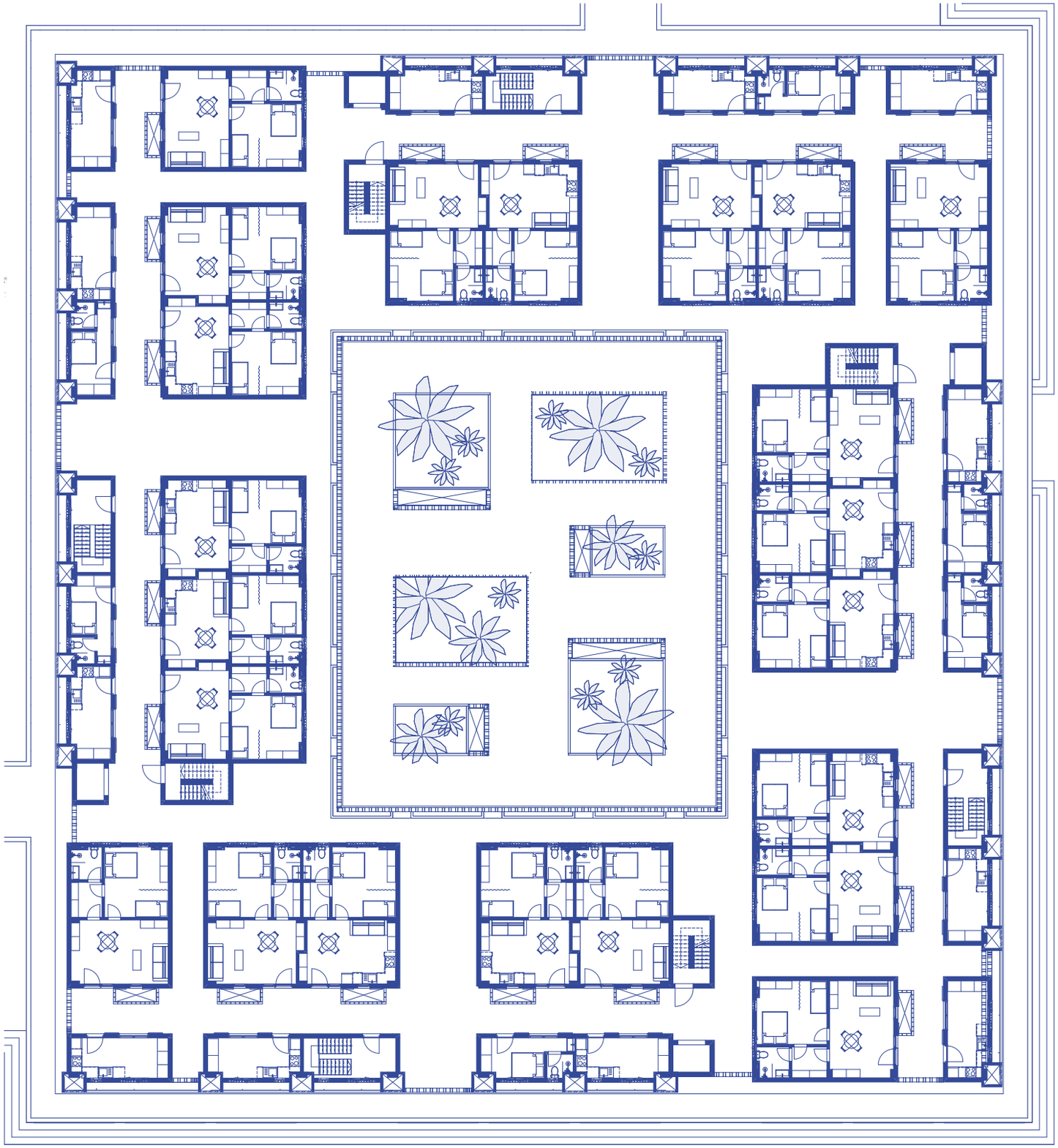


Figure 102: Third floor plan (Own drawing)

Design

CLUSTER DESIGN - *4th floor*

On the fourth floor, mid- and high-income units are arranged to face both the internal gallery system and the outer sides of the cluster, providing a variety of views and natural light. The setbacks in the building's massing create the galleries overlooking the courtyard, fostering strong visual and social connections within the cluster.

Pergolas are thoughtfully placed along the galleries to offer shade and protection from rain, enhancing the comfort of these semi-outdoor spaces. The four cores, one for each section of the cluster, ensure efficient vertical circulation for all residents.

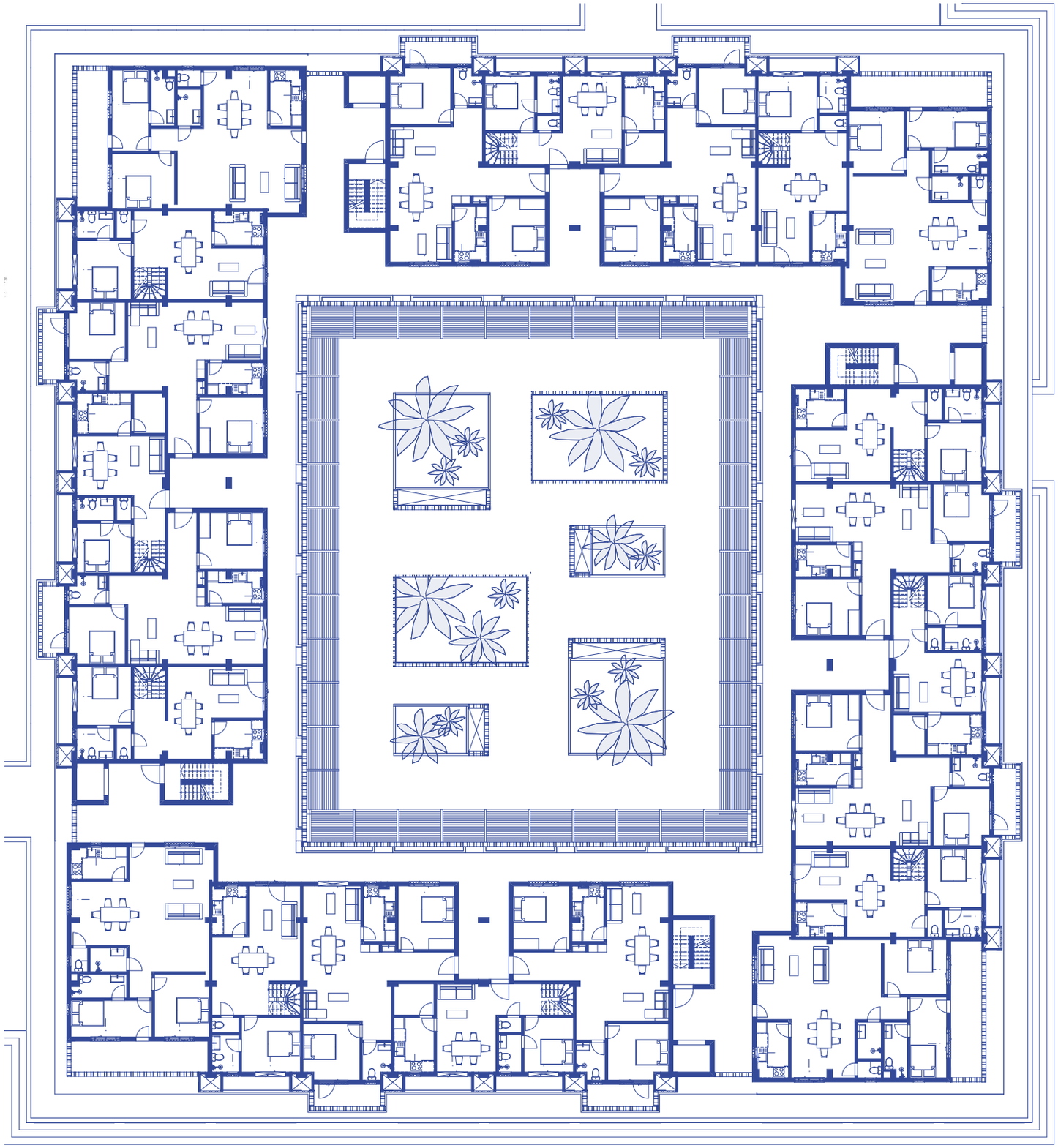


Figure 103: Fourth floor plan (Own drawing)

Design

CLUSTER DESIGN - *5th floor*

The fifth floor continues with mid- and high-income units facing both the internal galleries and the outer perimeter, maintaining a balanced connection between communal and external environments. Pergolas remain a prominent feature, offering shelter and defining the gallery walkways.

Starting from this level, small towers begin to rise above the main massing, introducing verticality to the masterplan and adding architectural interest to the skyline. The cores continue to provide accessible vertical circulation throughout the cluster.

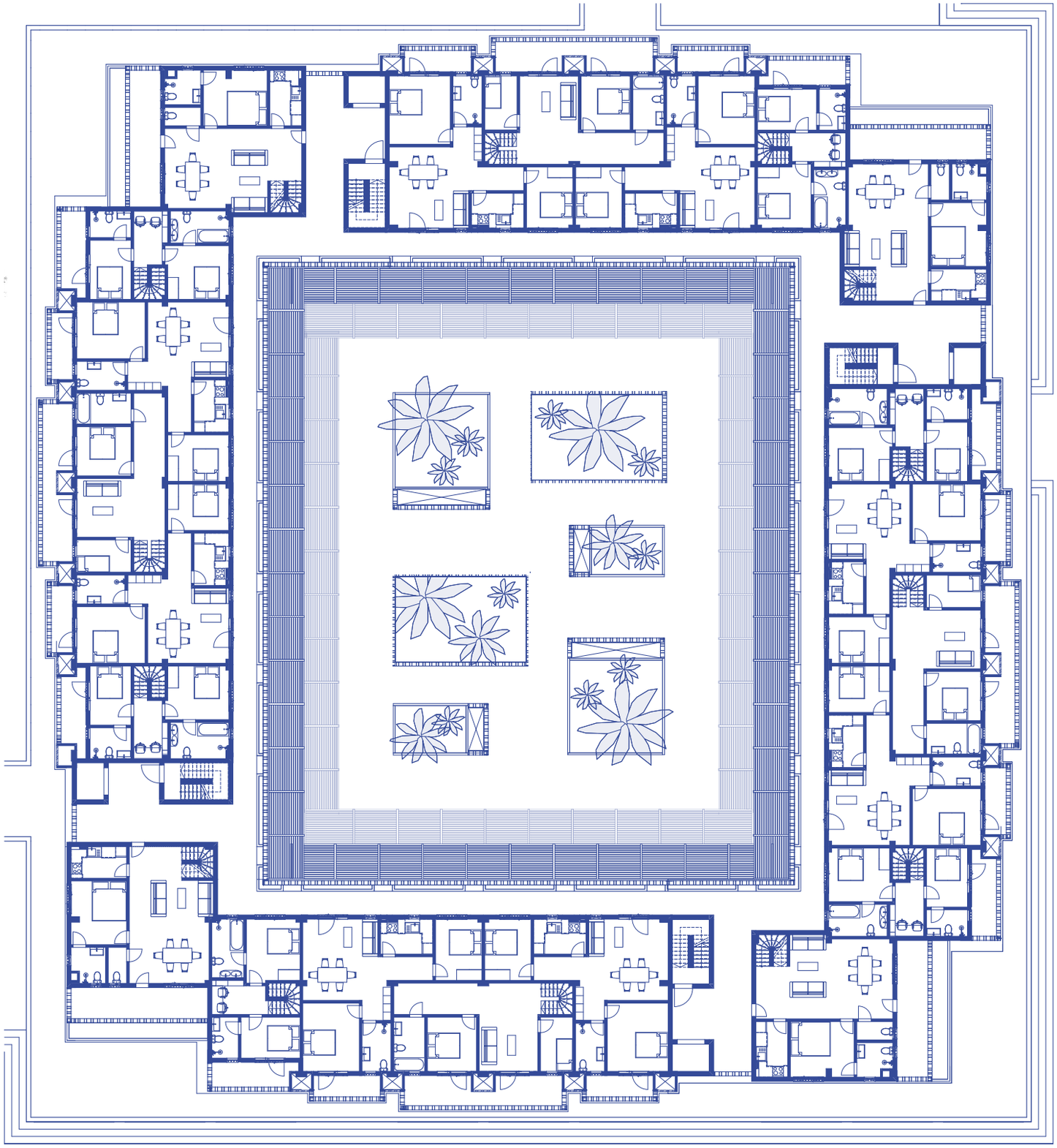


Figure 104: Fifth floor plan (Own drawing)

CLUSTER DESIGN - *Section*

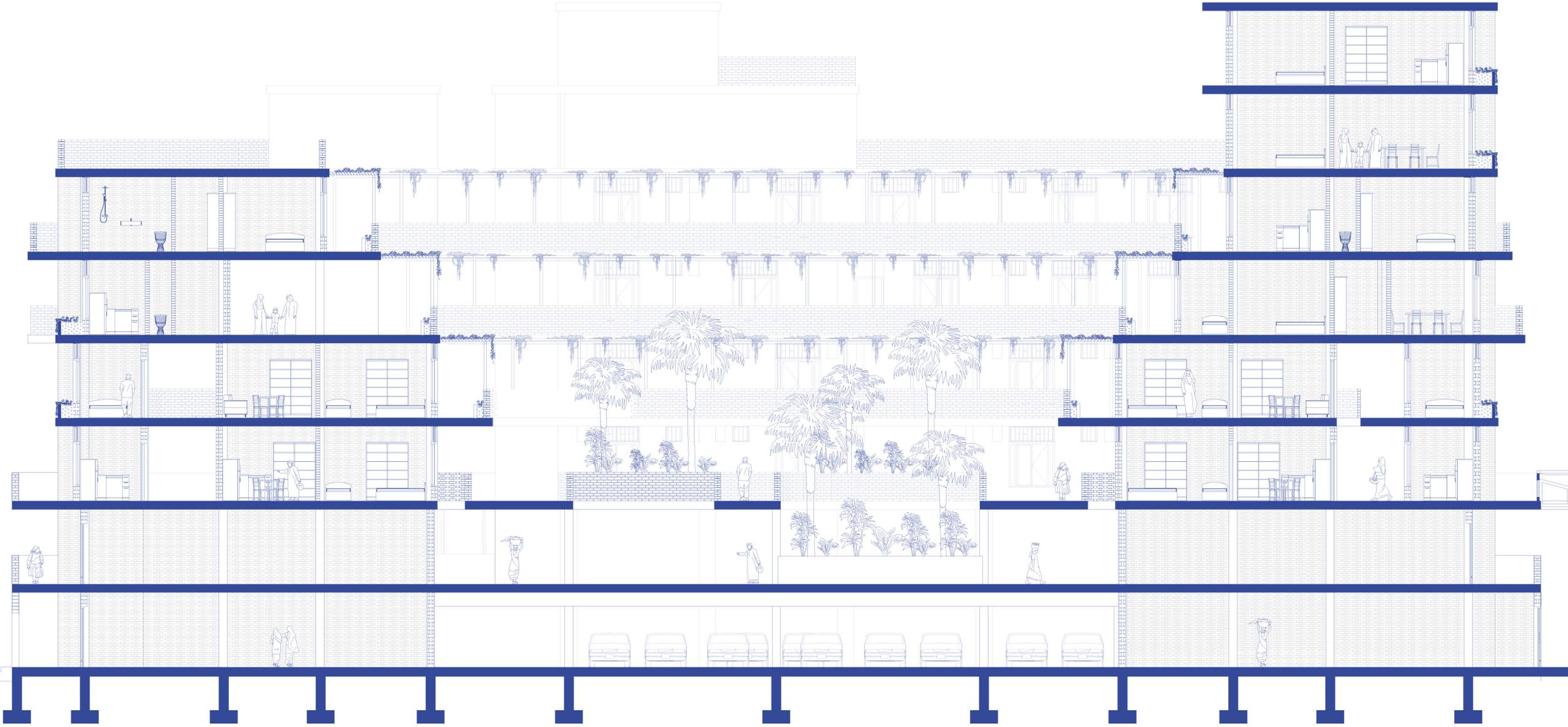
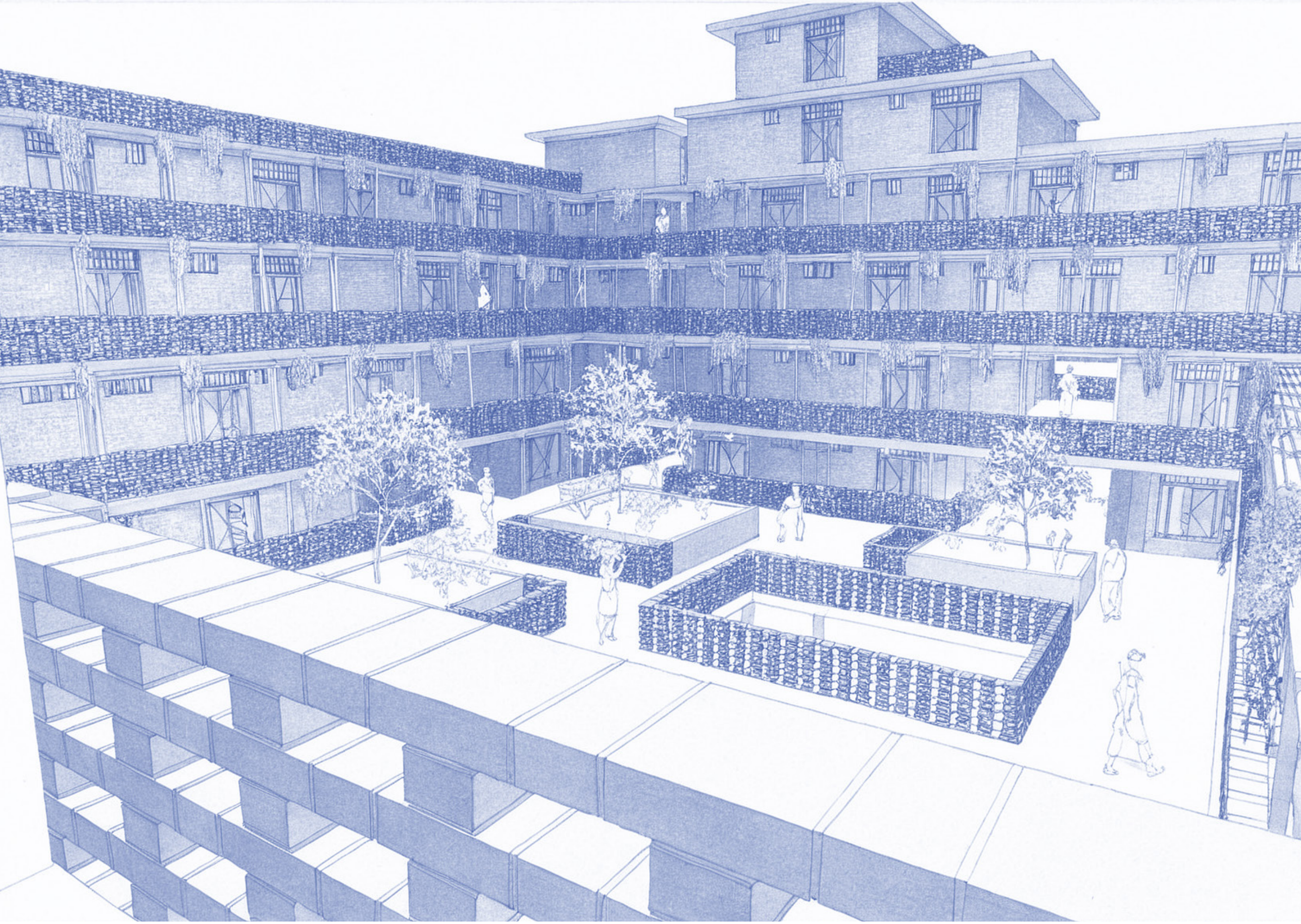


Figure 105: Cluster section (Own drawing)

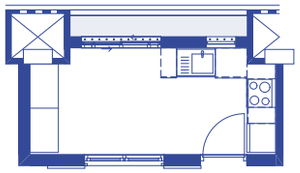
This section mainly illustrates how the courtyard functions as a private, peaceful space at the heart of the cluster. It highlights the strong connection between the courtyard and the bazaar below, with openings and planters on the first floor allowing light and ventilation to pass through, while maintaining privacy.

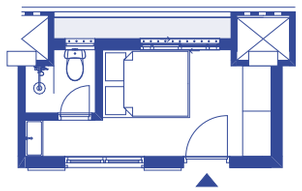
The pergolas on the courtyard side create shaded, green-covered walkways that enhance comfort and encourage social interaction. The section also reveals the corridor design in the low-income units, promoting natural light and cross ventilation, while reflecting traditional vernacular layouts.

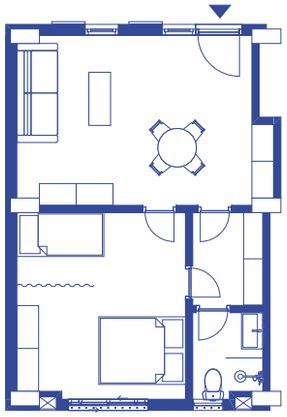
Finally, the occasional towers rising above the cluster introduce verticality and variety to the overall massing, adding visual interest and breaking the skyline.

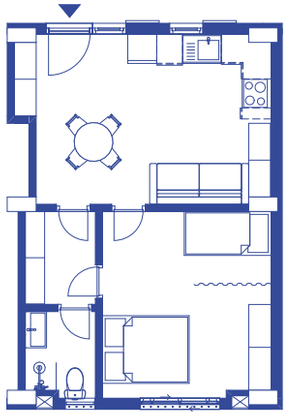


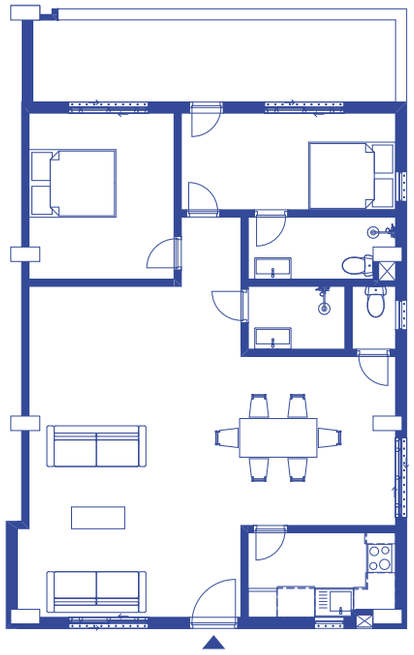
DWELLING DESIGN

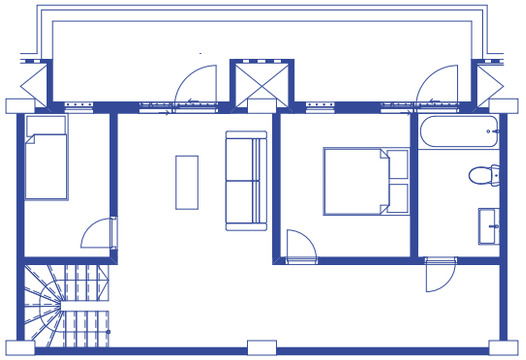


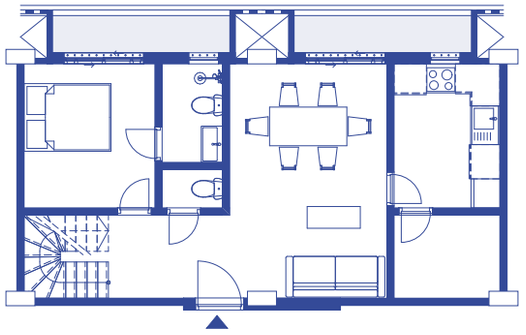


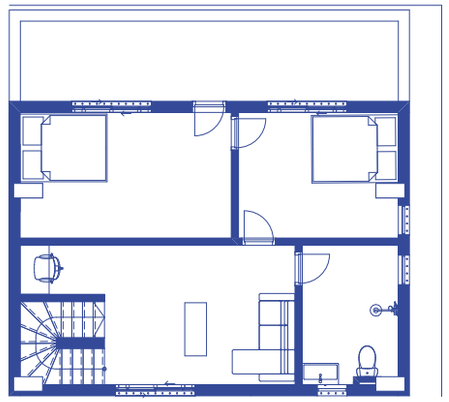


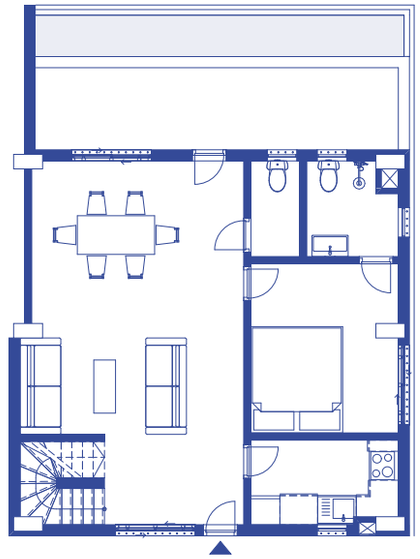


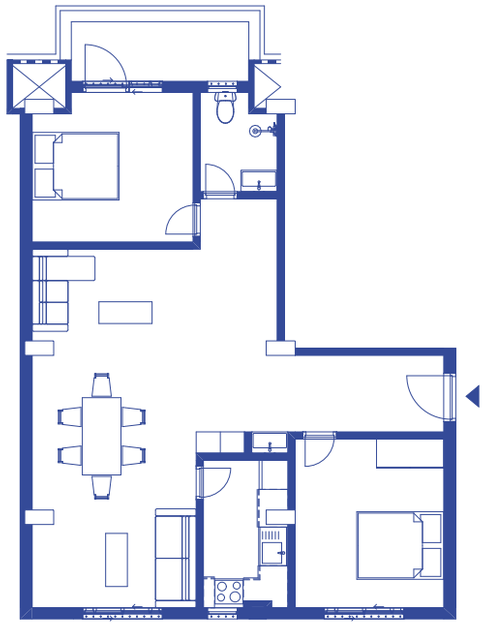


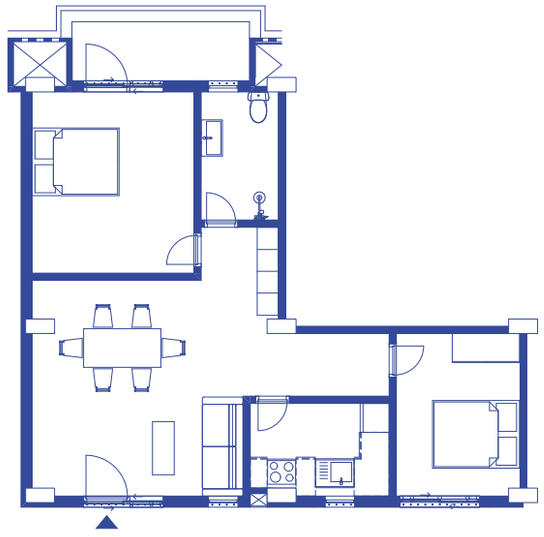


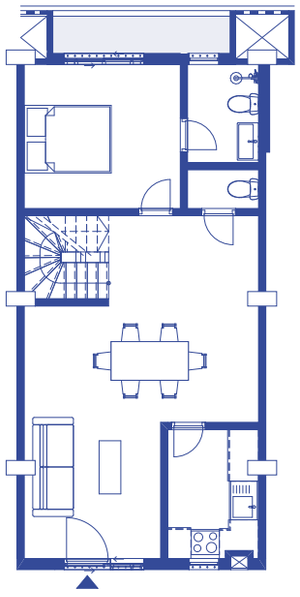












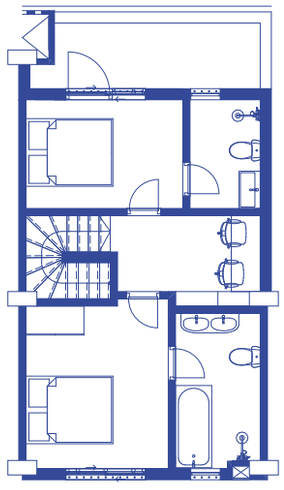


Figure 107: All dwelling types (Own drawings)

DWELLING DESIGN - *Low income*

This low-income dwelling features a central corridor that separates the kitchen from the main living spaces, reflecting a traditional Bangladeshi vernacular design. This spatial separation enhances natural light and cross ventilation throughout the home.

Additionally, the corridor encourages social interaction among neighbors by acting as a semi-private communal space. The design thoughtfully balances privacy and connectivity, while allowing flexibility to adapt to changing family needs over time.

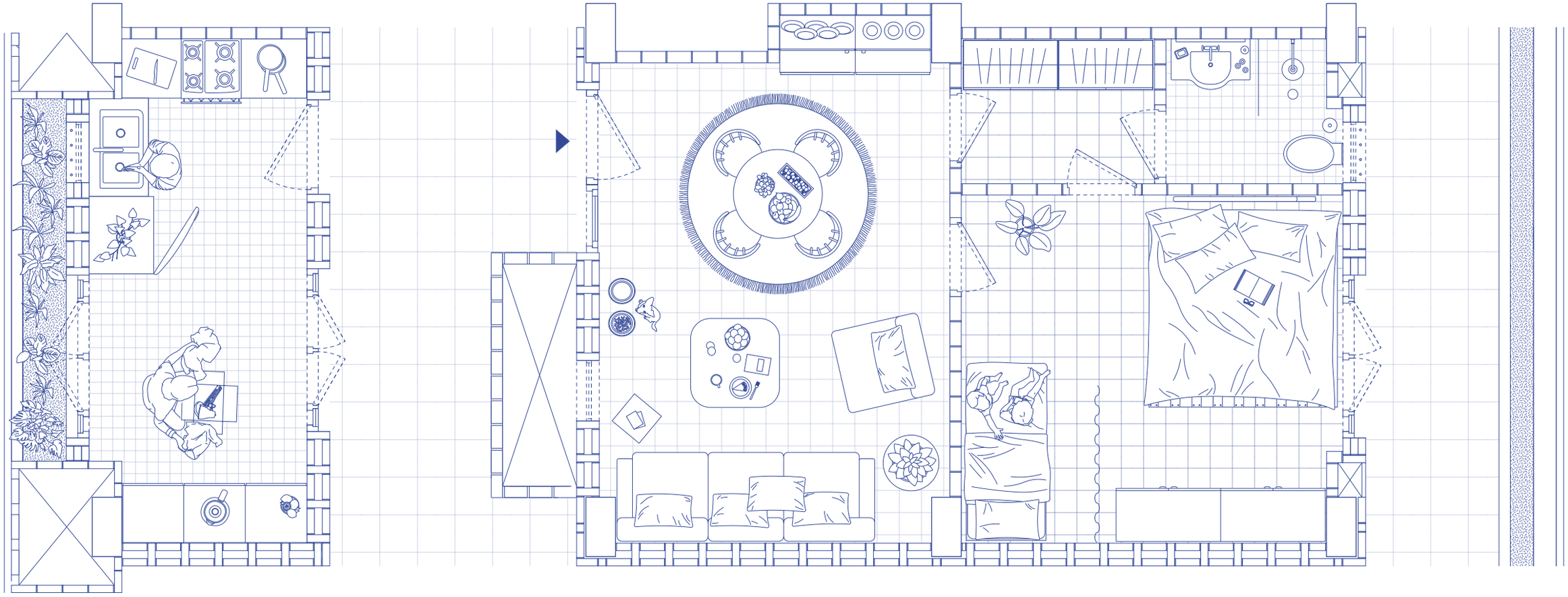


Figure 108: Low income dwelling type 1 (Own drawing)

In this adapted layout, the kitchen is moved to the opposite side of the corridor, freeing up the original kitchen area to be converted into a small studio unit with its own bed and bathroom. This flexible design empowers residents to rent out part of their home, generating additional income and supporting economic resilience. Despite this change, the layout maintains privacy and comfort for both the family and potential tenants, showcasing the dwelling's social and functional adaptability.

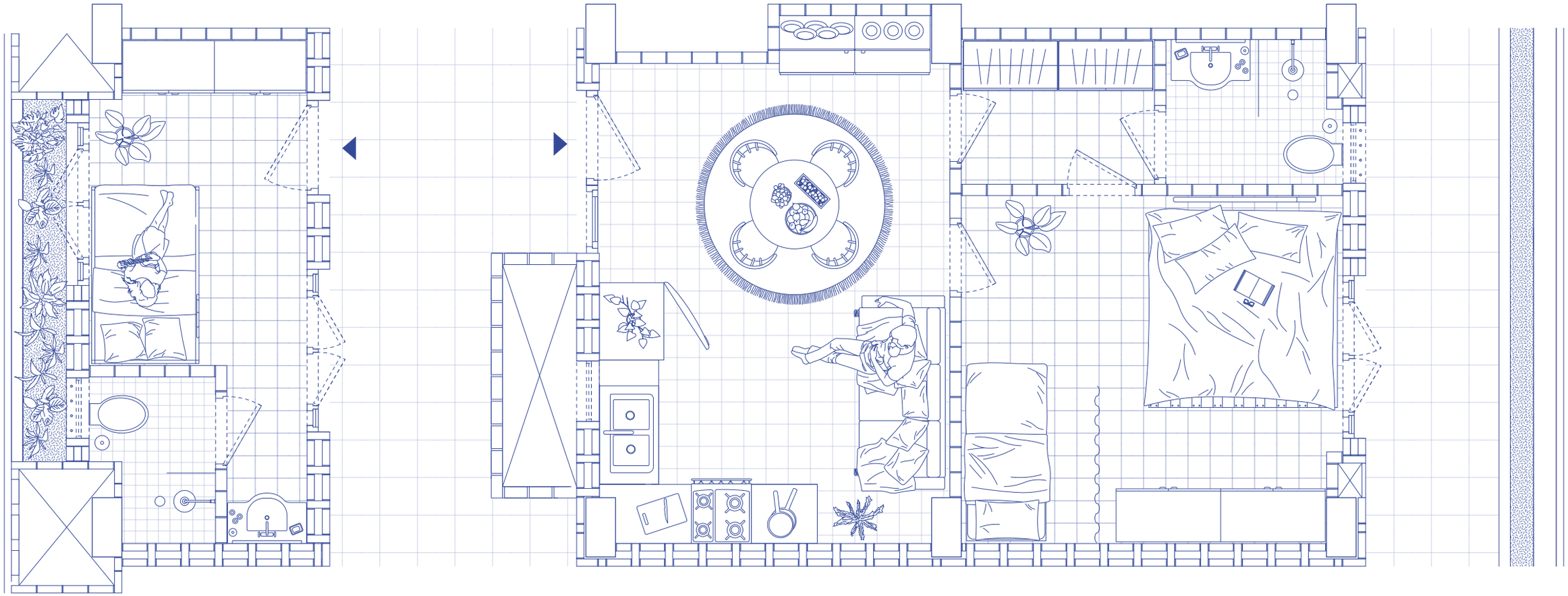


Figure 109: Low income dwelling type 2 (Own drawing)

DWELLING DESIGN - *Mid income*

The mid-income dwelling offers a comfortable and spacious living environment, featuring two bedrooms and a private outdoor terrace. Its open-plan design seamlessly connects the dining and living areas, creating a bright and inviting space perfect for daily life and social gatherings.

This thoughtful layout balances privacy with openness, making it an ideal home for families seeking both comfort and connection.

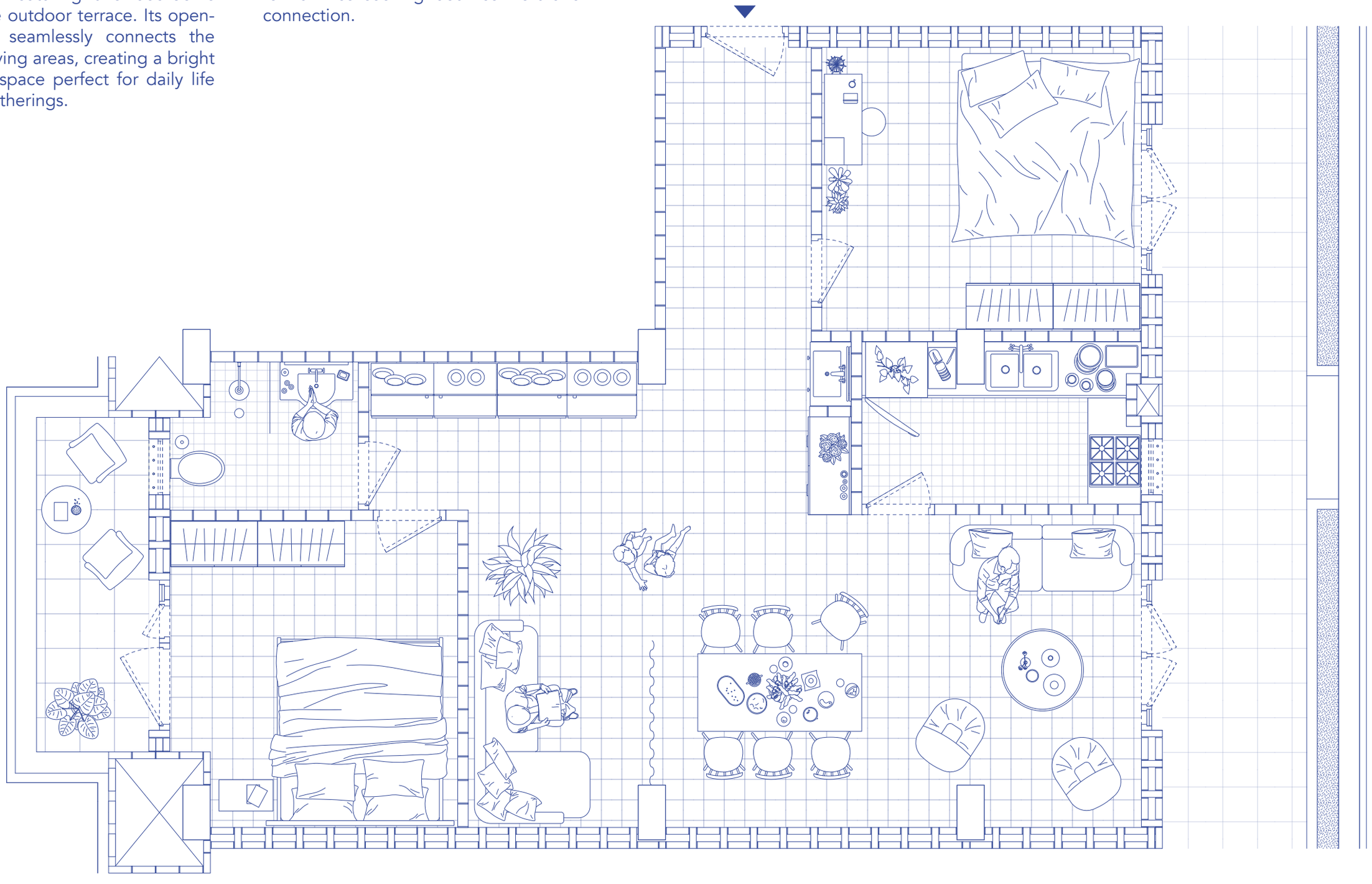


Figure 111: Mid income dwelling (Own drawing)

DWELLING DESIGN - *High income*

The high-income dwelling is designed as a spacious duplex, featuring three bedrooms and two bathrooms to comfortably accommodate larger families or those seeking extra space. With generous living and dining areas, the layout offers a luxurious and open environment perfect for both relaxation and entertaining. A standout feature is the large private outdoor terrace, which provides stunning views over the rest of the development.

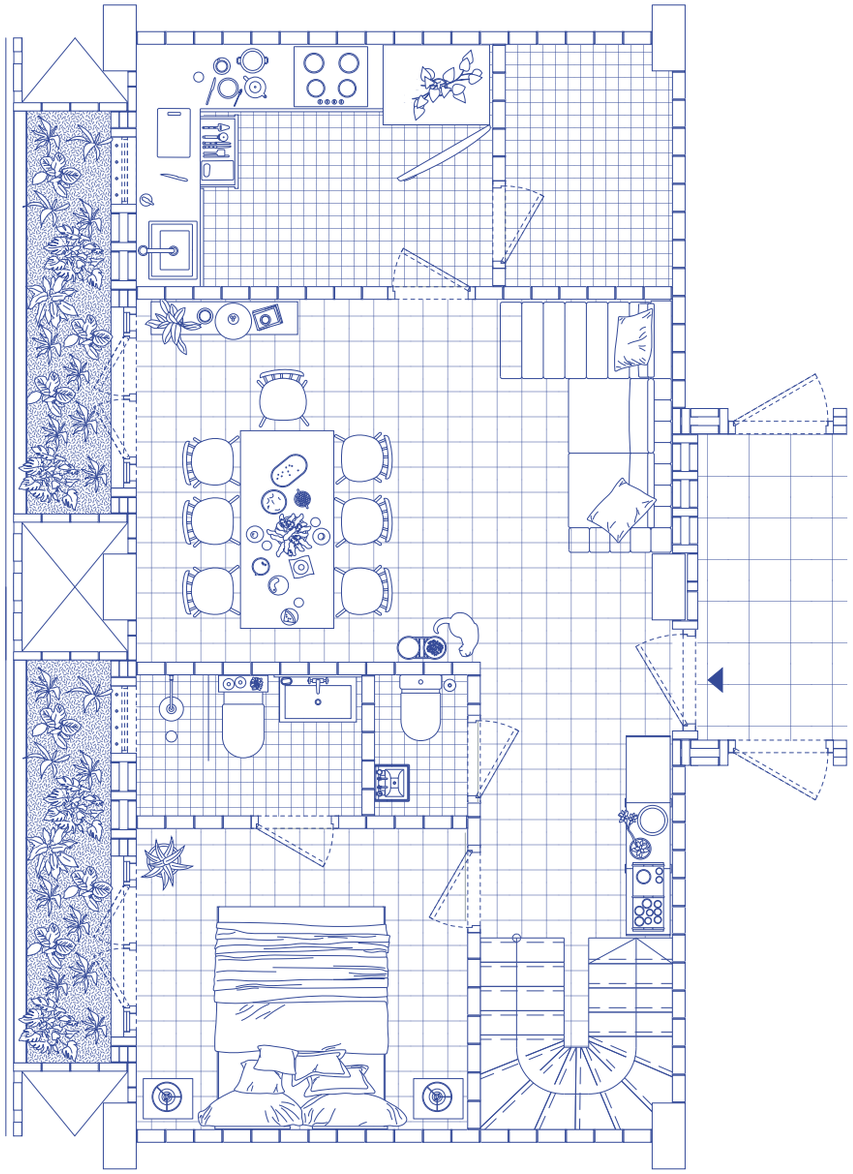


Figure 112: High income dwelling first floor (Own drawing)

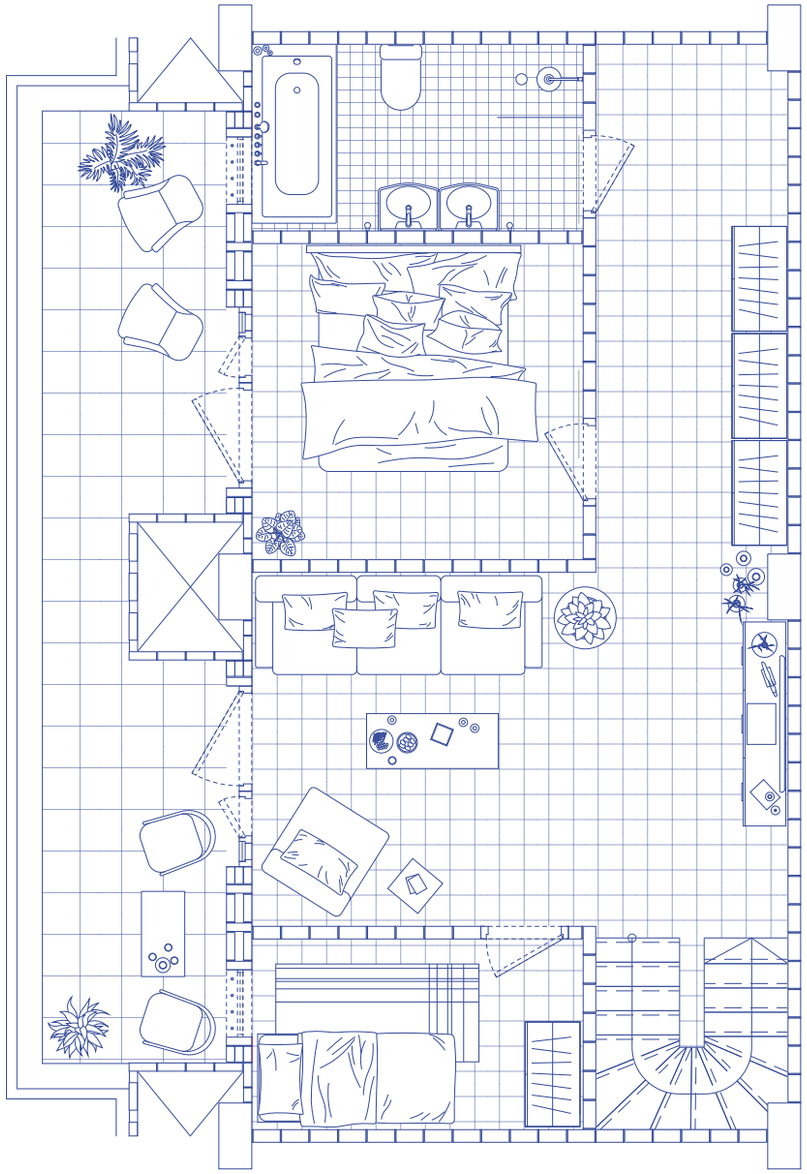


Figure 113: High income dwelling second floor (Own drawing)

BUILDING TECHNOLOGY

This chapter explores the technical strategies that form the backbone of the project, where structure, climate response, and material logic come together to support affordable and adaptable housing in Sylhet. In a rapidly urbanizing and flood-prone city, building technology must go beyond construction efficiency. It must also support long-term livability, environmental resilience, and economic feasibility.

Rather than relying on expensive systems, the project uses simple, local, and climate-responsive solutions. A concrete column and flat slab structure provides clarity, ease of construction, and flexibility in unit layouts. Passive design principles guide decisions around ventilation, shading, and water management, ensuring comfort with minimal energy use. The stepped façade, courtyard orientation, and integrated planters all work together to create breathable, shaded environments.

Materials are chosen for durability, affordability, and cultural relevance, such as cement plaster at the base, exposed brick above, and ceramic tiling throughout. The rat trap bond brickwork improves insulation while reducing material use, and the window design minimizes glass while offering residents control over ventilation, sunlight, and privacy.

Altogether, the building technology in this project supports more than function, it creates the conditions for social life, environmental balance, and everyday adaptability.

Figure 114: Building under construction (Own picture)

BUILDING TECHNOLOGY - *Water management*

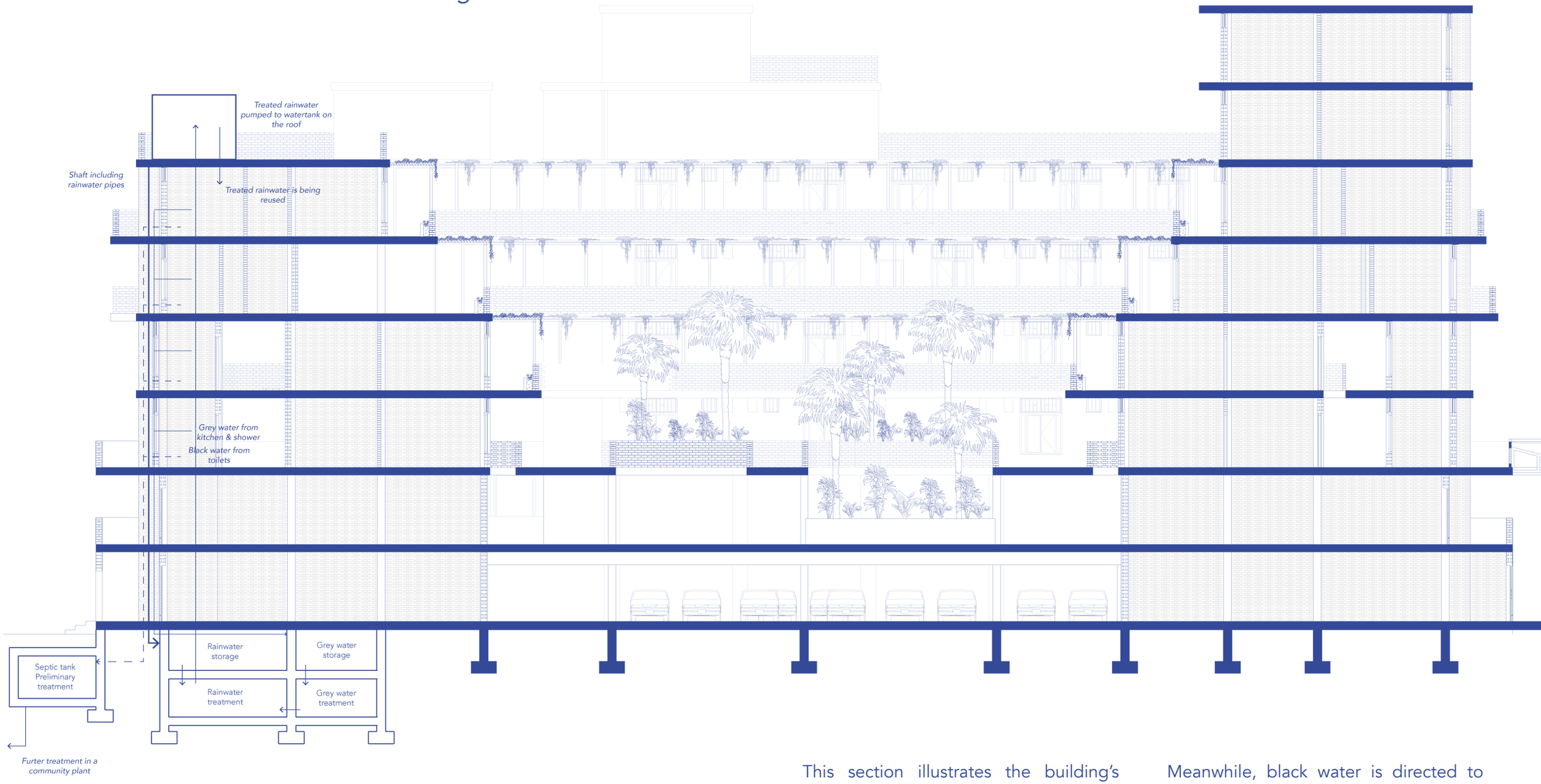


Figure 115: Water management section (Own drawing)

This section illustrates the building's water management system, where rainwater, grey water, and black water are separated and managed through different streams. Rainwater and grey water are collected in dedicated tanks beneath the building, treated, and then pumped back up to rooftop tanks for reuse.

Meanwhile, black water is directed to an underground septic tank located adjacent to the building for easy access and maintenance. To further support resilience, the entire ground floor of the cluster is raised by 500 mm, helping protect the building from extreme flooding during heavy rains or seasonal floods.

BUILDING TECHNOLOGY - *Construction*

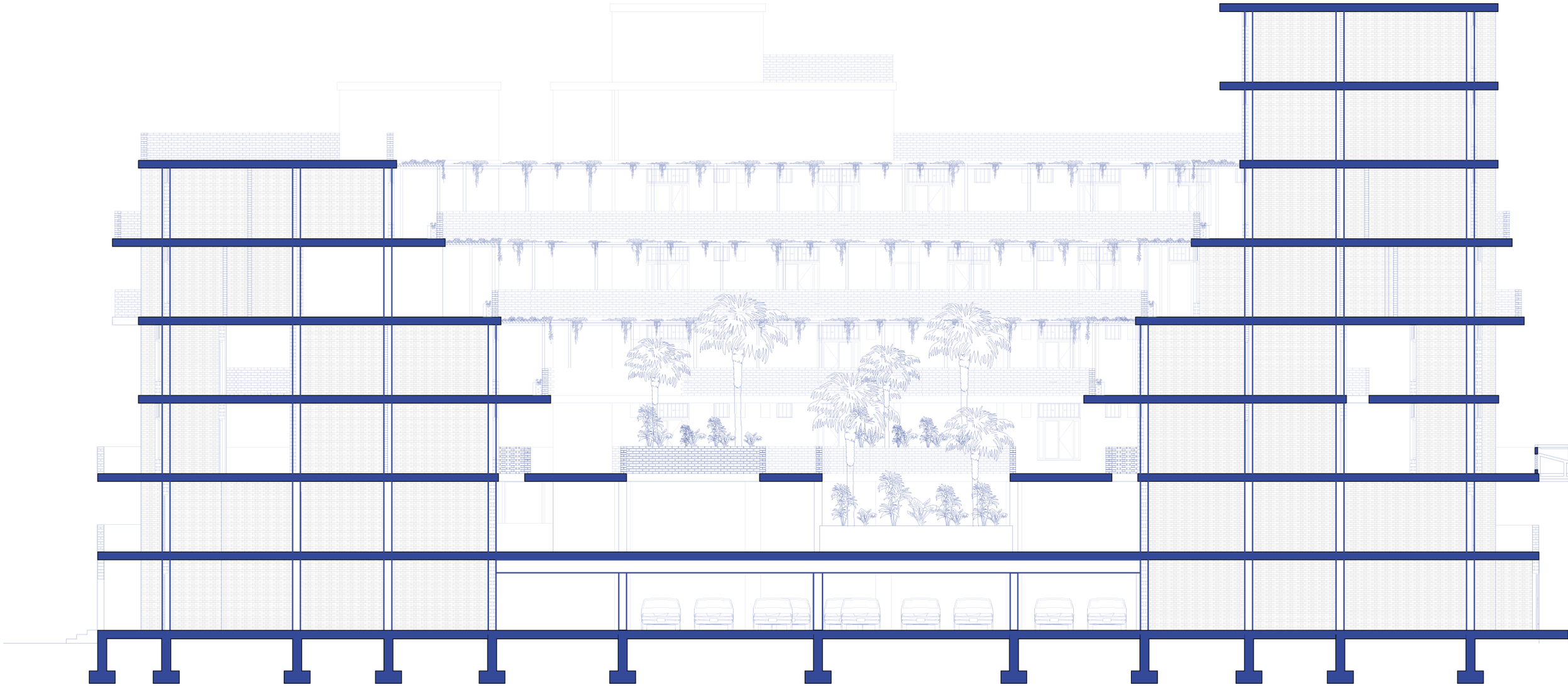


Figure 116: Construction section (Own drawing)

The construction system of the project is based on a straightforward and efficient flat slab structure, using cast-in-place concrete floors supported by a regular grid of columns. The columns measure 300 x 600 mm, while the concrete floor slabs are 300 mm thick, allowing for spans of up to 6 meters.

This approach provides flexibility in the layout of both residential and commercial spaces. In the parking garage, additional beams are integrated beneath the courtyard area to support the weight of the planters above. The simplicity and robustness of this system ensure structural durability while allowing for long-term adaptability.

BUILDING TECHNOLOGY - *Ventilation/shading*

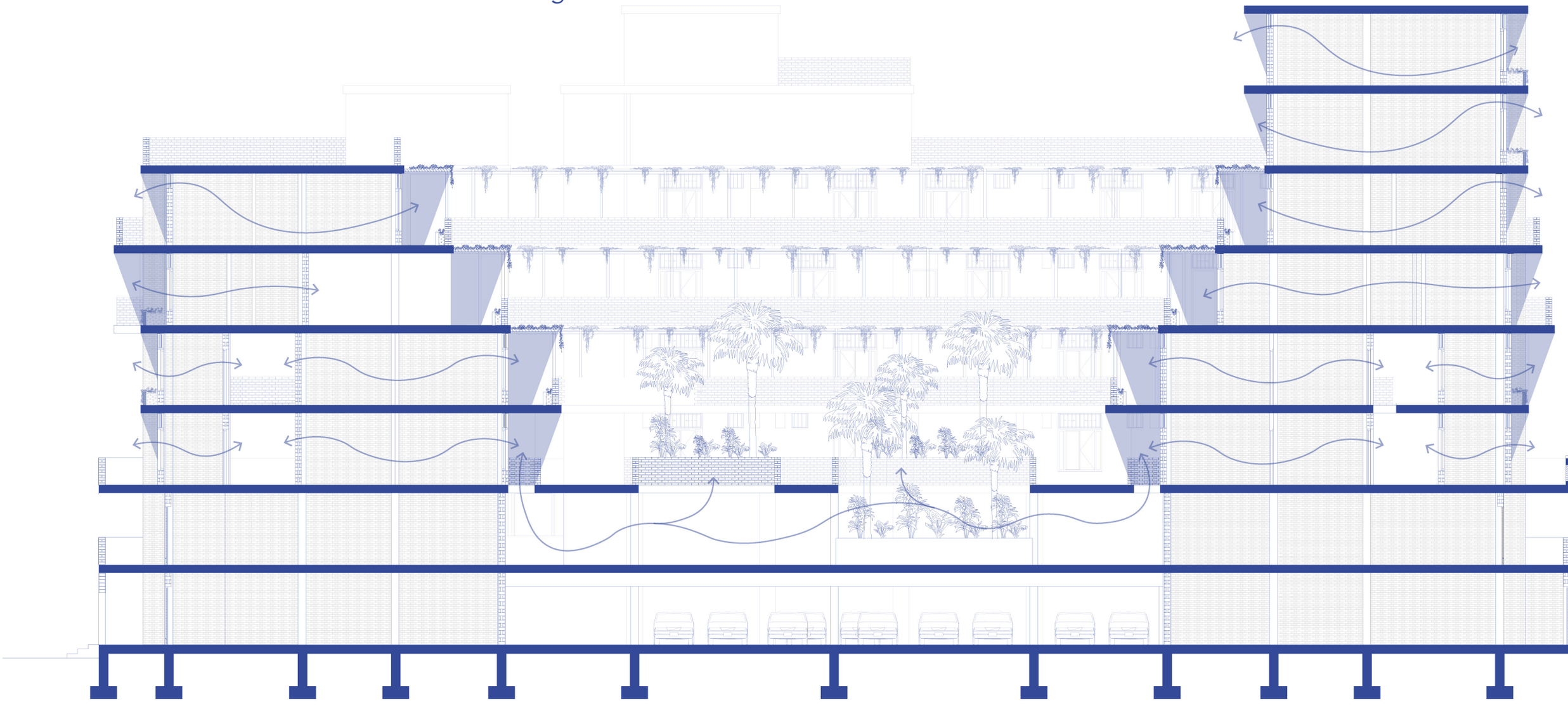


Figure 117: Ventilation/shading section (Own drawing)

The cluster design ensures passive comfort through well-integrated shading and natural ventilation strategies. Each dwelling benefits from effective cross ventilation, supported by the positioning of openings on both sides of the units. The central courtyard and circulation alleys promote airflow within each block, while the open structure of the bazaar below also supports a continuous breeze. Shading is achieved with pergolas along the courtyard-facing façades and the stepped articulation of the outer façades. These passive strategies reduce indoor heat, enhance comfort, and lower reliance on mechanical systems.

BUILDING TECHNOLOGY - *Stepped facade*

The stepped façade along the outer edge of the cluster contributes to both environmental and functional performance. By strategically setting back parts of the façade, natural shading is created on the lower levels, reducing solar gain and improving thermal comfort. These recesses also offer space for small planters, adding greenery to the living environment and contributing to the project's sustainability goals. In addition, the stepped areas provide discreet zones to install and conceal air conditioning units, preserving the visual quality of the building while maintaining functionality.

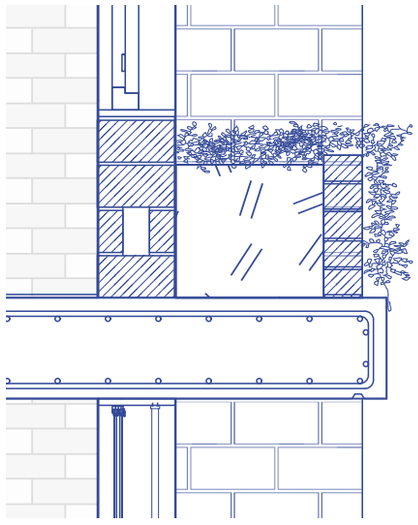


Figure 118: Small planter (Own drawing)

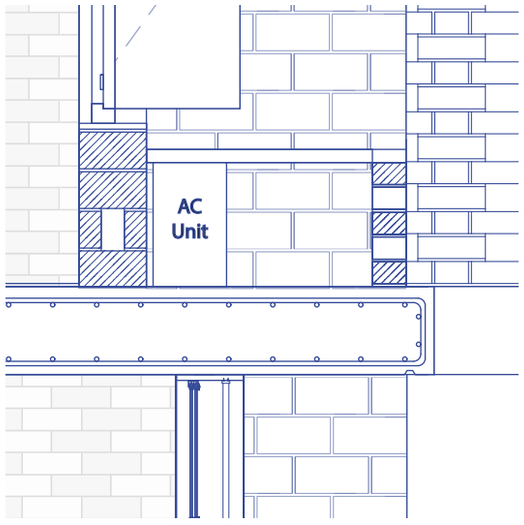
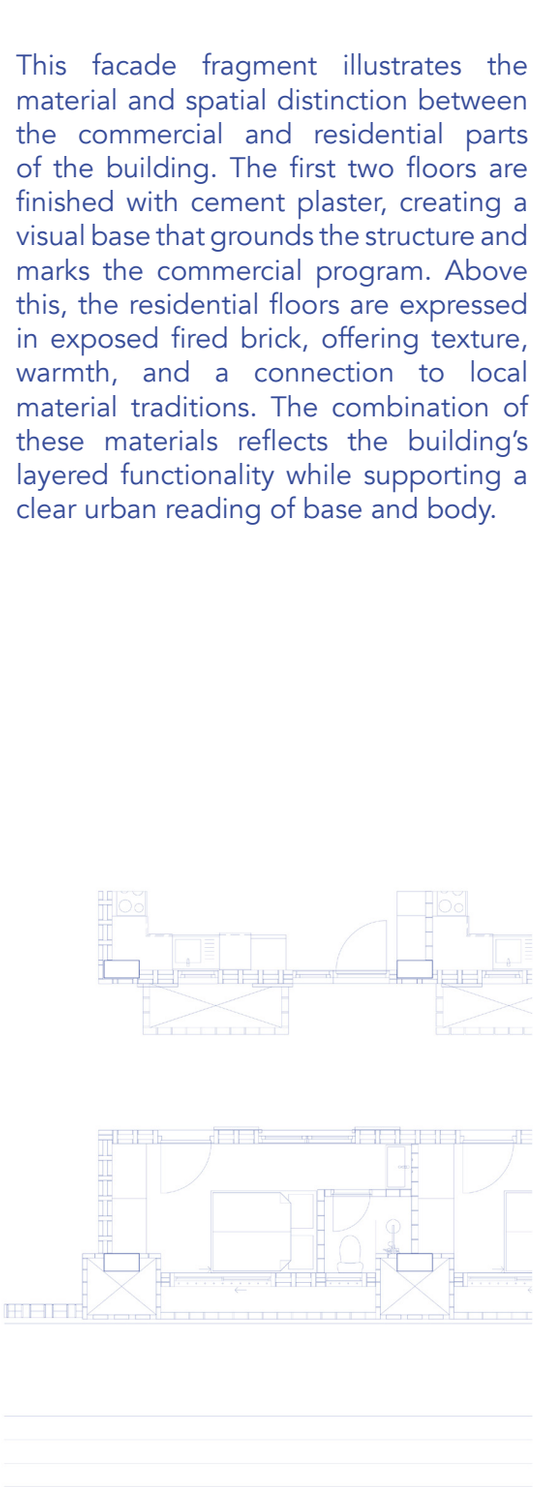


Figure 119: Hidden AC Unit (Own drawing)

Figure 120: Stepped facade (Own drawing)

BUILDING TECHNOLOGY - *Facade section*

This facade fragment illustrates the material and spatial distinction between the commercial and residential parts of the building. The first two floors are finished with cement plaster, creating a visual base that grounds the structure and marks the commercial program. Above this, the residential floors are expressed in exposed fired brick, offering texture, warmth, and a connection to local material traditions. The combination of these materials reflects the building's layered functionality while supporting a clear urban reading of base and body.



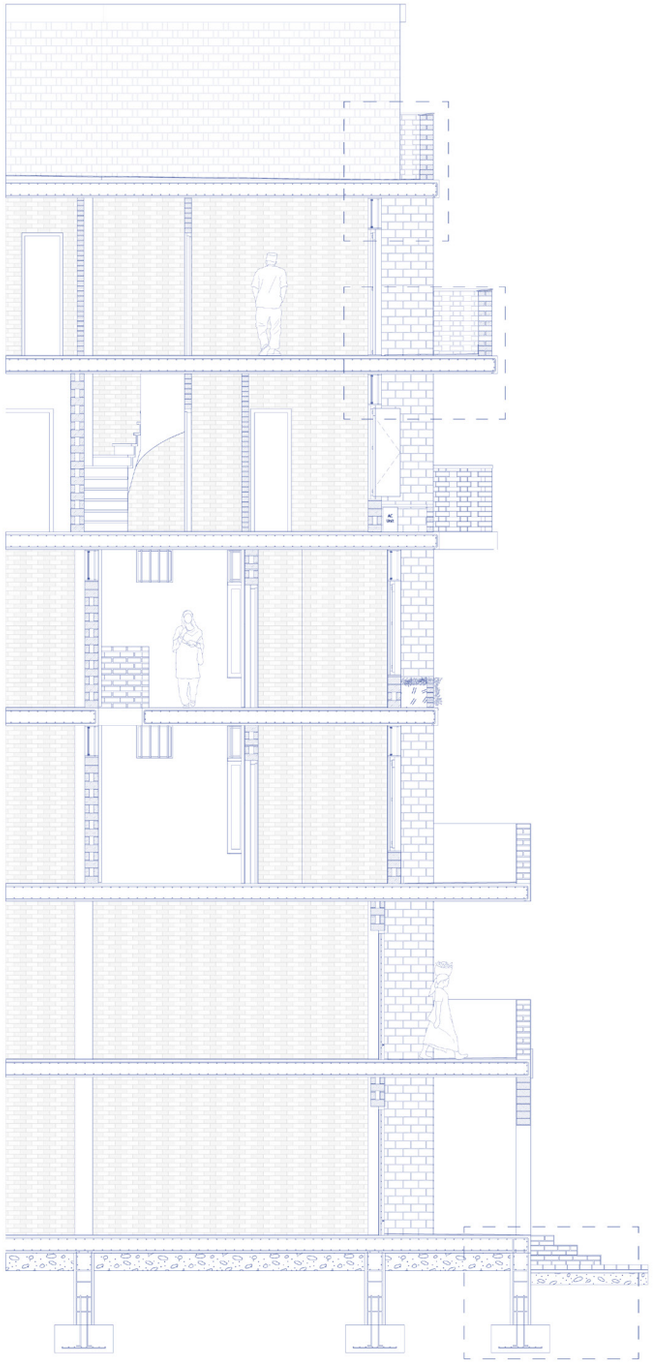


Figure 121: Facade fragment (Own drawing)

BUILDING TECHNOLOGY - *Details*

The roof edge is designed as an active and accessible space, enclosed with a simple jail balustrade for safety. A full-height window meets the slab edge, ensuring maximum daylight access inside the uppermost dwellings.

The end of the concrete slab features a small drip cut-out underneath to prevent rainwater from streaking down the facade. This simple but effective feature helps preserve the surface of the building over time.

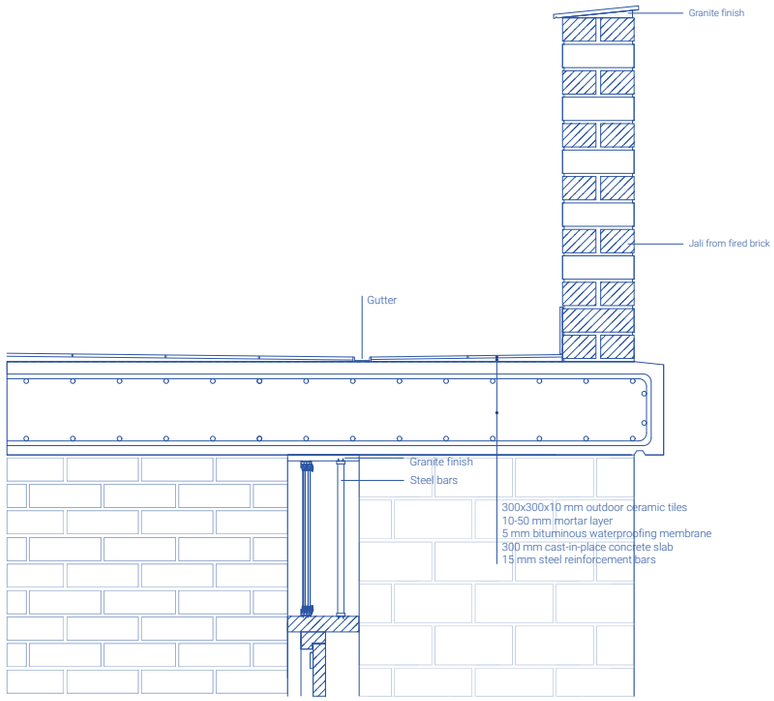


Figure 122: Roofedge detail (Own drawing)

This detail highlights the functional and durable design of the balcony. The surface is finished with ceramic outdoor tiles and designed with a subtle 1% slope to direct rainwater toward a built-in gutter. From there, water is led into the drainage shaft.

The balcony railing is composed of a brick jail, echoing the project's material palette and maintaining visual coherence with the rest of the facade while allowing airflow and filtered views.

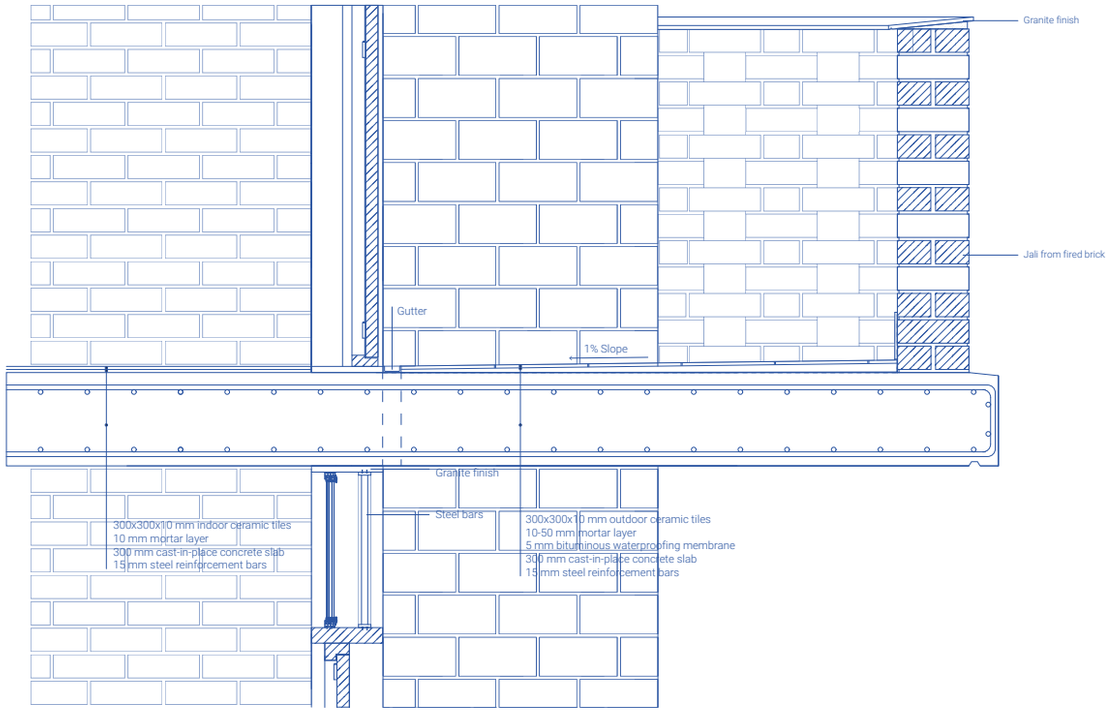


Figure 123: Balcony detail (Own drawing)

The foundation detail shows how the structure responds to Sylhet's flood-prone conditions. The concrete footing is securely embedded into the ground, and the ground floor slab is raised to minimize the risk of flooding.

Access to this elevated level is provided by a small staircase made from brick and finished in cement plaster, matching the treatment of the building's lower facade. This transition detail ensures resilience while maintaining a unified architectural language.

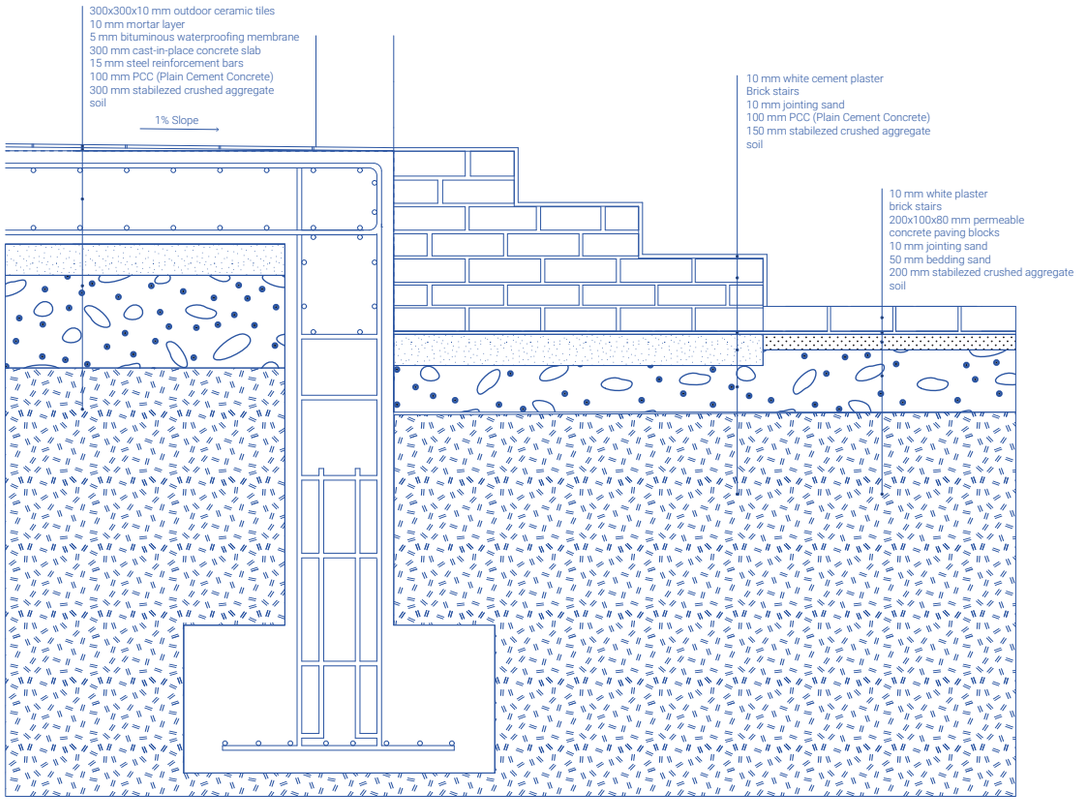


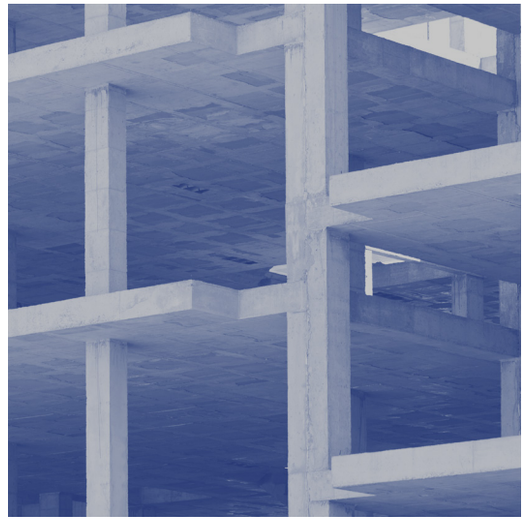
Figure 124: Foundation detail (Own drawing)

Design

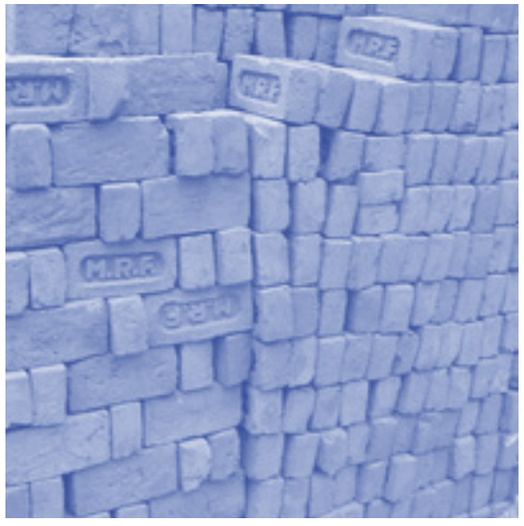
BUILDING TECHNOLOGY - *Materials*

The material palette of the project is rooted in simplicity, affordability, and locality. The lower floors are finished with cement plaster over brickwork, giving a durable and clean appearance for the commercial base of the building. Above, the upper residential levels showcase exposed fired bricks, celebrating a common and widely available material in Bangladesh. The building's structure is made of reinforced concrete, providing strength and flexibility for the open framework concept. Ceramic tiles are used as flooring throughout the project, offering a practical and cost-effective finish. Together, these materials support local industries and contribute to a design that is both economically and culturally grounded.

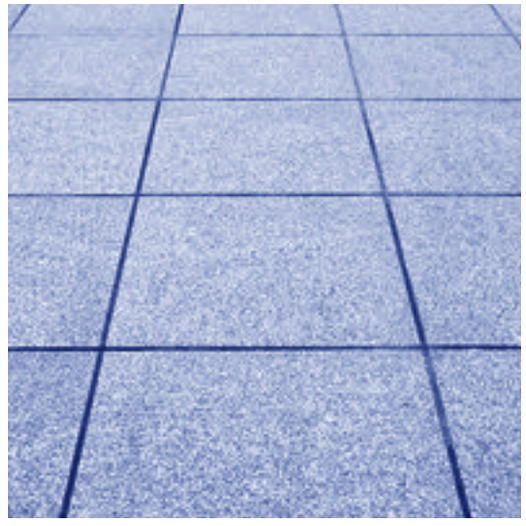
Cement plaster



Concrete



Fired brick



Ceramic tiles

Figure 125: Material palette (Own pictures)

Design

BUILDING TECHNOLOGY - *Brick infill*

The infill walls of the building are constructed using a rat trap bond, a traditional and efficient bricklaying technique where bricks are placed on edge to create internal cavities. This method significantly reduces the number of bricks needed, making construction more cost-effective while also enhancing thermal performance through the insulating air pockets. The double-layered quality of the rat trap bond also provides a practical advantage: it allows the concrete structural columns to be concealed neatly within the wall thickness, resulting in a cleaner façade.

In contrast to the hidden columns, the concrete slabs are extended outward beyond the façade. These horizontal projections help define the floors externally, emphasizing the layered character of the building.

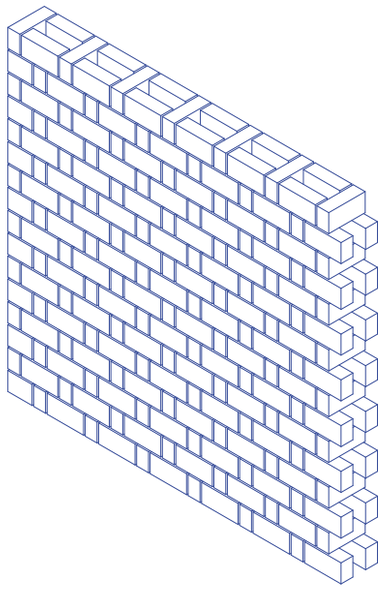


Figure 126: Rat trap bond (Own drawing)

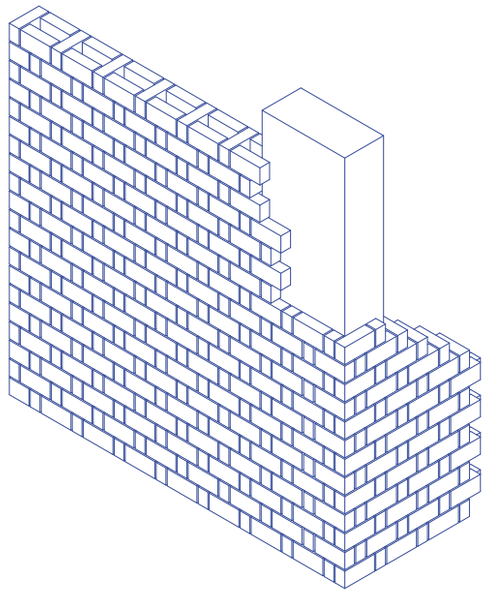


Figure 127: Rat trap bond hiding column (Own drawing)

Design

BUILDING TECHNOLOGY - *Window design*

The window design in this project is guided by a balance between affordability, climate responsiveness, and user comfort. Drawing inspiration from low-cost design strategies, such as those by Charles Correa, the window minimizes the use of expensive materials like glass while maximizing flexibility.

Each window consists of two operable wooden shutters flanked by narrow fixed glass panels. Above these is a sliding window fitted with protective metal bars. This layered composition allows for multiple modes of use. When privacy is not needed, the shutters can be opened to allow ample daylight and cross-ventilation. When closed, the small side panels and top sliding window still ensure light and airflow enter the space without compromising privacy or security.

This design is adaptable across all façades of the project, regardless of orientation. The limited use of glass helps reduce costs and solar heat gain, while offering residents full control over how much sun, light, and ventilation they want to let into their homes, making it both climate-appropriate and cost-effective.

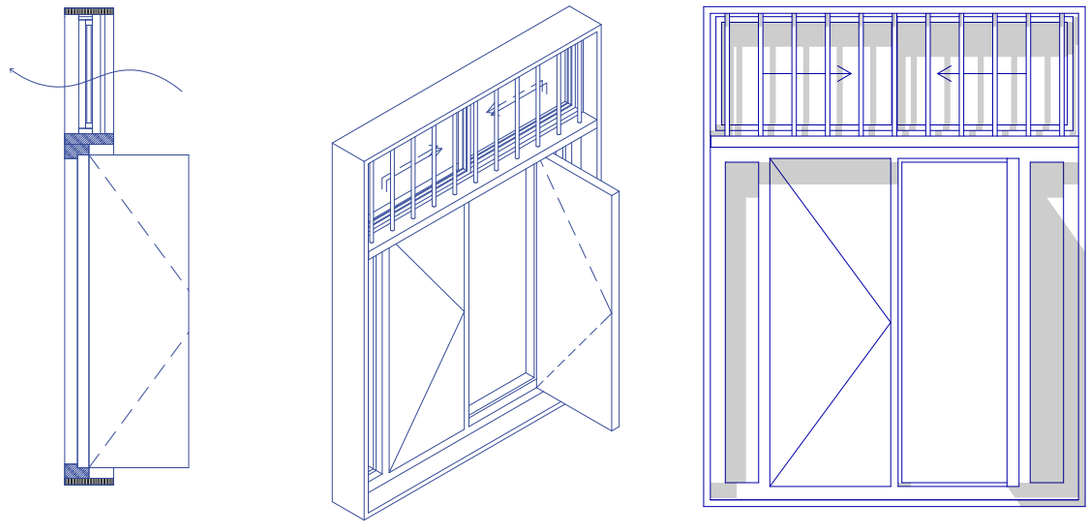


Figure 128: Window design (Own drawings)

REFLECTION

Introduction and Motivation

The motivation for my graduation project arises from the urgent need to address the challenges posed by rapid urbanization in the Global South. As cities expand, modern construction practices have gained popularity due to their speed and cost-efficiency. However, this shift toward mass-produced housing threatens to erase the cultural and spatial adaptability that defines traditional housing in Bangladesh. In Sylhet, this trend is particularly visible, as high-density developments increasingly overlook the social dynamics and informal urban life that characterize the city. My choice of the Global Housing Studio was based on its focus on socio-cultural relevance and context-responsive design principles that closely align with my architectural ambitions and have guided the direction of my graduation project titled "Living Markets"

Research and Design

My research process began with an exploration of the contrast and coherence between modern construction approaches and the vernacular ways of building and living in Bangladesh. Through literature review, case study analysis, and conversations with local people on site, I gained insights into the core values of both contemporary building methods and traditional architectural practices. These findings shaped the conceptual framework of my design process. The interplay between research and design became especially evident after my site visit, which prompted me to reconsider my initial ideas about adaptable housing in a dense urban context.

My preliminary design proposed an open structural framework in which residents could shape their own dwellings by shifting walls within a rigid frame. However, this notion of adaptability proved problematic when applied to a highly urbanized, high-density site in central Sylhet. This realization led me to shift toward a concept of social adaptability, not focused on physical flexibility at the unit level, but rather on the spatial and programmatic capacity of the building to accommodate different social groups and uses over time.

While the individual units are no longer designed to change on demand, the masterplan retains long-term adaptability. With its permanent concrete column structure and the market spaces integrated into the first two floors, the building is designed to support a range of functions across decades, adapting to evolving social and economic needs.

Methodolgy and Process reflection

In the Global Housing Studio at TU Delft, the process is divided into two phases: a research phase followed by a design phase in which the research is applied. In my case, these phases sometimes overlapped. While conducting research, design ideas naturally emerged, and vice versa. However, after completing the research plan in the first semester, my research efforts slowed down. Looking back, I realize that a more integrated development of research, fieldwork, and design would have benefited my overall process.

Unfortunately, our field trip was rescheduled due to the student strikes and disruptions during the summer of 2024.

As a result, this year's studio followed a different structure compared to previous years. Before traveling to Bangladesh, we conducted case and material studies, which I found particularly helpful for the design phase after the field trip. The knowledge gained during this period gave us a solid understanding of how people from different income groups live, as well as the materials they use to meet various needs in this context.

At the beginning of the studio, my understanding of the socio-cultural and environmental realities of the Global South was still developing. Without that perspective, it was difficult to frame my research and begin thinking about a design. As a result, my initial research plan sometimes felt disconnected from the real-world context. While literature can provide a lot of information, it doesn't offer the same depth as fieldwork. The early research lacked the grounded insights I later gained through the case/material studies and the field trip. This disconnect created challenges in aligning the research with the design in later stages. A more integrated, or even reversed, approach might have helped me develop a more precise and contextually grounded research base.

My approach combined both qualitative and quantitative methods, including literature analysis, case and material studies, field observations, and photographic documentation. This mixed-method strategy proved highly effective for me, especially in generating the insights and knowledge needed to develop a strong theoretical and conceptual framework for my design.

Feedback and Personal leraning

During my graduation process, the feedback from my mentors, Rohan Varma, Rocio Conesa Sanchez, and Frederique van Andel, was pivital. Their critiques throughout the different stages of the design process helped me identify the knowledge needed to create a design that is not only aesthetically appealing, but also responsive to both climate and social context. I appreciated working with all mentors on the same overarching topic, rather than shifting focus between different aspects like construction and dwelling layouts. This consistency helped steer my process along a clear and focused path.

This graduation project taught me the importance of social acceptability and vernacular ways of living in dwelling design. When combined with climate-responsive strategies and aesthetic quality, these elements address the core values of good architecture. Engaging with local narratives not only enriched my design but also expanded my understanding of the ethical and sustainable responsibilities we carry as architects.

Accademic and Social relevance

Academically, this thesis contributes to ongoing discussions on the challenges and opportunities of rapid urbanization in the Global South. It explores the integration of vernacular living practices with modern construction techniques, highlighting the potential for contextually grounded and resilient urban development.

Societally, the project advocates for socially acceptable and adaptable housing strategies within an urban context. By emphasizing flexibility, cultural relevance, and community engagement, it offers insights into more inclusive and sustainable approaches to urban dwelling design.

Replicability of results

While rooted in the specific context of Sylhet, the principles behind this design can be applied to other urban environments. The research provides not only a foundation for design decisions but also offers broader insights into vernacular lifestyles and how they can be thoughtfully integrated with modern construction approaches. The design strategy developed in this project could serve as a model for similar urban contexts in rapidly developing countries, where balancing tradition and innovation is essential for sustainable growth.

Self-Developed reflection questions

How can shared public programs, such as integrated market spaces, function as spatial and social anchors in rapidly urbanizing contexts?

This question stems from the inclusion of market spaces in the lower floors of my project, which serve as more than just commercial zones, they act as social condensers in a high-density urban setting. The separation of functions in urban housing can be quite distinct and instead I propose a model where programmatic hybridity can foster long-term adaptability and community resilience. I'm interested in how these semi-public layers might not only provide economic utility but also reinforce social bonds, cultural continuity, and a sense of ownership in transitional urban landscapes.

What architectural strategies can reconcile the permanence of modern construction systems with the evolving spatial needs of communities rooted in informal living traditions?

This question arises from the difficulties I encountered between the rigidity of concrete structural systems and the fluid, often improvised nature of vernacular spatial practices. While a permanent frame offers durability and structural integrity, it risks freezing the built environment in a context where adaptability is a social and functional necessity. I aim to explore how long-term structural logic can coexist with more ephemeral, user-driven modifications, perhaps through modular infill systems, semi-open thresholds, or community-managed shared spaces.

How can locally available materials be recontextualized within modern construction frameworks to support both environmental performance and cultural continuity?

This question reflects the design tension between standardization and local specificity. In Sylhet, vernacular construction often uses materials like corrugated metal, bamboo, or brick in ways that are both climate-responsive and symbolically rich. However, modern systems tend to prioritize concrete, steel, and prefabrication for efficiency. I am interested in how architectural language can evolve to embed local materials within contemporary construction methods,

not as superficial references, but as performative and narrative elements that reinforce identity, resilience, and sustainability.

Looking back

Looking back on this graduation process and final thesis project, I feel deeply grateful for the experiences and insights I've gained over the past academic year.

The field trip not only elevated my design to a more grounded and contextually aware level but also left me with lasting personal memories. It brought weight and clarity to my design challenges and helped root my work in the realities of Bangladesh.

The research and design process was demanding, primarily because I could no longer rely on familiar references or my existing theoretical framework. Designing within a completely different cultural and climatic environment forced me to shift my perspective and pushed me to grow as both a thinker and designer.

This new way of working was challenging, but ultimately, I believe, highly rewarding. It expanded my thinking not just about architecture, but about life. It deepened my understanding of the responsibility we hold as architects and reshaped how I see my role within a diverse, global context.

The lessons I've learned and the experiences I've had throughout this year will continue to shape both my professional practice and personal worldview long after this project.

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