GENDER - SENSITIVE HOUSING FOR SHONATOLA VILLAGE



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THE RESEARCH

INTRODUCTION

Bangladesh, one of the world's most climate-vulnerable countries, faces an array of environmental challenges that are intensifying due to global climate change. The country's low-lying geography and dense population make it susceptible to extreme weather events such as cyclones, seasonal flooding, prolonged droughts, and waterlogging. These climate-induced hazards have far-reaching consequences on various sectors, including agriculture, water resources, health, and infrastructure, thus threatening the stability of local livelihoods. These impacts, however, are not evenly distributed across the population. As noted by Albertyn et al. in the book 'Feminist Frontiers in Climate Justice: Gender Equality, Climate Change, and Rights' (2023), *the effects of human-induced climate change are more intensely felt by those who have fewer resources and less power: groups who are poor, vulnerable and disadvantaged, particularly in the Global South*. One such vulnerable group is women and girls, especially those in rural areas.

The social structure in rural Bangladesh largely dictates that women are the primary managers of household resources, including water, food, and fuel. Moreover, women are highly engaged in agriculture but lack recognition and access to resources like land, credit, and technology (UN Women, 2022, p. 7). Their responsibilities are often intensified in times of crisis as they become the primary responders to the immediate needs of their families and communities. However, despite their heightened vulnerability, women in Bangladesh have demonstrated remarkable resilience and adaptive capacities in the face of climate change. For example, women in Sylhet play a central role in managing homegardens, which serve as an essential source of food, security, income, and ecological conservation in the region (Akhter et al., 2010, p. 24).



Fig. 1: Many women in rural Bangladesh are highly engaged in agriculture (Shonatola Village, Dec. 2024)



Nevertheless, these contributions remain vastly undervalued in formal policy frameworks as discriminatory practices persevere. Additionally, the housing infrastructure in rural Bangladesh often fails to withstand the recurring climate shocks, as it lacks essential features such as water management systems, flood-resistant structures, and safe resource storage. These inadequacies not only increase women's vulnerability to displacement and loss of livelihoods but also hinder their ability to maintain essential household activities and support their adaptive strategies. The absence of safe, resilient, and supportive housing infrastructure is thus critical in reinforcing, reconstructing, and reshaping gendered inequalities that erode social, economic, and legal advances.

Although efforts to integrate gender perspectives into climate resilience initiatives are emerging, they remain largely insufficient. Facing the challenges posed by climate change, women in the Global South have at times been depicted in various roles: as powerless victims, as active proponents of a sustainable future, as holders of specialized knowledge, as tokens inserted into scientific and technical frameworks, as misguided decision-makers potentially destabilizing ecosystems, and as custodians of nature for future generations (Albertyn et al., 2023, p.1). These characterizations risk reinforcing familiar gender stereotypes and could undermine feminist progress. In reality, women's relationship with climate change is complex and nuanced, defying generalizations and deserving deeper engagement from a feminist perspective (Albertyn et al., 2023, p.1). Recent works, such as those by Buckingham and Masson (2017), highlight the importance of considering gender dynamics in policy and planning to ensure equitable outcomes. Similarly, ecofeminist frameworks, as discussed by authors like Karen Warren (1997), link the exploitation of natural resources to the subjugation of women, advocating for a more intersectional and integrated approach to sustainability and social equity. However, while these theoretical advancements have shown promise, practical applications in housing design and infrastructure development are limited. This underscores the need for a holistic integration of housing design, water management, and gender-responsive policies to create safe and supportive environments for women in climate-vulnerable regions like Bangladesh.

Fig. 2: A woman with her children (Shonatola Village, Dec. 2024)

LITERATURE REVIEW

The literature on climate change in Bangladesh reveals a combination of environmental, sociocultural, and economic factors that define women's experiences. Works like that of Alston (2015) and Momtaz and Asaduzzaman (2018) explore women's vulnerability to climate change, noting that their livelihoods are greatly influenced by extreme events such as cyclones, floods, and droughts. These events disrupt agriculture, which many rural women rely heavily on, and exacerbate water scarcity, an essential issue for women responsible for household water management. Similar issues are highlighted in the 'State of Gender Equality and Climate Change in Bangladesh' report (2022), emphasizing that women face disproportionate risks due to their social roles and lack of access to resources. For example, water scarcity often forces them to travel long distances for water collection, exposing them to violence and reducing their time for income-generating activities.

A 2023 UNICEF-WHO report further underscores the gendered impact of water scarcity by noting that 70% of households without onsite water rely on women and girls for water collection, burdening them with additional responsibilities that limit educational and work opportunities, while also exposing them to health and safety risks (UNICEF, 2023). In addition, findings from the Climate Change and Gender Action Plan (ccGAP) for Bangladesh indicate that women's limited participation in water resource management committees reduces their influence in decision-making, stressing the need for gender-sensitive water systems that consider women's safety and economic empowerment (Bangladesh Climate Change Trust & UN Women, 2024, pg.15).



Fig. 3: Two women collecting water for their households (Laladighi Pond, Dec. 2024)

Women's lack of access to resources can partly be attributed to sociocultural factors, starting from the home. Chowdhury (2023) highlights how gendered spatial practices in traditional Bangladeshi housing—often influenced by Islamic customs such as purdah—create physical separations within the home, which can limit women's access to shared spaces and reduce their mobility, impacting their ability to engage in economic activities. In the book 'Understanding Climate Change Through Gender Relations' (2017), Buckingham and Masson discuss how patriarchal frameworks often overlook the contributions and needs of women in climate discourse, perpetuating barriers to women's participation in adaptation and resilience-building strategies. This oversight not only limits the effectiveness of climate policies but also ignores the expertise women have developed through their roles in environmental stewardship. Recognizing women's contributions can enhance climate adaptation efforts by leveraging their on-the-ground knowledge of sustainable practices.

This knowledge and expertise of women can be demonstrated in homegardens, where women play a central role in management and maintenance. Akhter et al. (2010) highlight that homegardens are not only vital sources of food and income but also contribute significantly to biodiversity and sustainable land use. Women are deeply involved in activities such as planting, watering, and harvesting, drawing on indigenous knowledge to nurture these small ecosystems. Their management of homegardens exemplifies a critical integration of economic and ecological roles, providing a source of resilience against climate-related disruptions.

Further insights come from Datta (2019), who discusses indigenous land and water management practices in Bangladesh's Chittagong Hill Tracts. Datta emphasizes a relational approach to environmental management, where people, land, and water are closely interconnected. This holistic framework aligns well with climate-resilient housing designs that integrate community

and ecological needs, supporting women in their roles as caretakers and resource managers. Community-led initiatives provide additional pathways for resilience, as illustrated by Huq et al. (2023) in their study on women-led savings groups, such as Shabolombee Samity in northern Bangladesh. These groups serve as collective support systems, allowing women to pool resources and mitigate the financial strain of climate-related adversities. By providing social and economic security, such initiatives empower women to become more resilient to environmental shocks and offer a model that could be expanded through housing and water management practices to support broader community adaptation efforts. These examples demonstrate that building resilient housing and water systems is not solely a matter of infrastructure but also of fostering community networks that empower women economically and socially.

In conclusion, integrating indigenous knowledge and water management systems into housing design not only addresses the practical needs of women in flood-prone areas such as Sylhet, but also respects and builds upon the cultural, social, and spiritual dimensions of these communities. Housing should therefore be viewed as part of a broader ecological and cultural system, where both human and environmental needs are met through symbiotic design processes. These approaches highlight the necessity of community participation, cultural sensitivity, and environmental sustainability in the creation of housing solutions that empower women and build resilience to climate change.

PROBLEM STATEMENT

Despite an increasing focus on the intersection of gender and climate change, there remains a significant gap in understanding how gender-responsive housing can contribute to women's empowerment in climate-vulnerable regions such as Bangladesh. Existing research has predominantly expanded upon women's increased vulnerability, highlighting the ways in which climate change can exacerbate existing inequalities, yet few studies have examined how housing infrastructure can address these challenges.

Moreover, the existing literature has documented women's adaptation strategies, such as the establishment of community savings groups and the diversification of agricultural practices (Huq et al., 2023 and Akhter et al. , 2010). However, there is a lack of research on how housing infrastructure can be reimagined to incorporate these strategies and create safe, supportive environments that enhance women's capacity to manage resources and contribute to household resilience. The gap is further enhanced by the limited integration of ecofeminist perspectives in practical application of climate adaptation, despite the theoretical framework's emphasis on the interconnectedness of sociocultural and environmental systems.

This research aims to fill these gaps by exploring the ways in which housing design, incorporating water management systems, can create supportive environments that facilitate women's income generation, enhance their livelihoods and build community resilience to climate change in Bangladesh. By focusing on the intersection of architecture, gender and water management, it seeks to contribute to the development of inclusive solutions that address the unique challenges faced by women in climate-vulnerable regions.



Fig. 4: Water station (Shonatola Village, Dec. 2024)

THEORETICAL FRAMEWORK

This research is grounded in ecofeminist theory, which links the exploitation of nature with the oppression of women. According to ecofeminist writers such as Karen Warren (1993) and Kate Wilkinson-Cross (2023), the dominant anthropocentric framework enforces a hierarchical division between humans and nonhuman nature and sustains patriarchal power structures, which subjugate both women and the environment. Additionally, drawing from Astrida Neimanis' 'Bodies of Water' (2017), the concept of relationality is central to this framework. According to Neimanis, water is not merely an abstract commodity but a symbol of fluidity and interconnectedness, thus challenging the notion of discrete, bounded bodies. She introduces the idea of 'embodiment,' which is, in essence, 'the opposite' of the Western idea of bodies as discrete and fundamentally autonomous individual subjects. This perspective challenges the dichotomy between humans and nature and is used to explore shared vulnerabilities and ecological entanglements.

Donna Haraway's concept of "sympoiesis," or making-with, extends this understanding by emphasizing collaborative processes that involve humans and nonhumans (Haraway, 2016, pg.58). By acknowledging the complex relationship between human life and ecosystems, she highlights the necessity of housing designs that integrate with natural processes like water management rather than exerting control over or exploiting them. In Bangladesh, where women's routine engagements with water and land are crucial for both family sustenance and ecological stewardship, housing approaches that mirror this interconnectedness can provide significant transformative opportunities. Therefore, integrating water management systems into housing while considering the ecosystem as a co-actor in survival aligns with Haraway's vision of fostering multispecies flourishing through shared responsibility and collaboration.

Moreover, the research is significantly influenced by Nabeel Hamdi's design principles. In his work 'Housing Without Houses' (1995), Hamdi provides a potential 'toolkit' for amplifying women's voices during the design process. His work advocates for community-based initiatives that engage local populations in planning and design. He introduces the key concepts of 'participation," 'flexibility," 'enablement' and 'indeterminacy,' which aim towards building social capital, empowering marginalized communities, and creating adaptable, culturally appropriate housing projects that are not seen as finalized structures but as ongoing processes that emphasize the dynamic nature of communities. Through inclusive development practices, women's unique experiences and knowledge could thus come to the forefront, and their specific needs can be addressed. Hassan Fathy's work on vernacular architecture in Egypt (1973) offers additional insights into this participatory approach. By utilizing materials sourced from the local area and employing traditional construction methods like mud bricks, he demonstrates how traditional knowledge can be applied to build sustainable, culturally meaningful, and cost-effective housing that is adaptable to climate conditions. This participatory approach guarantees that housing designs are in tune with the local environmental and social contexts, similar to Fathy's efforts with rural communities in Egypt.

Furthermore, Christopher Alexander's A Pattern Language (1977) reinforces the participatory approach by introducing a flexible "pattern language" that communities can use to shape their spaces collaboratively. His method empowers individuals to design their own environments by utilizing a set of interconnected patterns, from city planning to small architectural details, that can be adapted to local needs.



Alexander's concept aligns with the ecofeminist and participatory frameworks in this research, as it encourages community-driven, contextually sensitive designs that respond to social and ecological needs. By embracing Alexander's vision of a pattern language, this research underscores the potential of housing projects to reflect the lived experiences and values of the women of Bangladesh, creating spaces that are ecologically attuned and socially meaningful.

Finally, the research considers indigenous knowledge and building systems, such as traditional water-harvesting techniques, which can promote a harmonious relationship between people and their environment when integrated into a housing project. Amos Rapoport's theory of vernacular architecture, as discussed in 'House Form and Culture' (1969),' supports this view by emphasizing that the most effective housing designs arise from local traditions and environmental adaptations. This theory reinforces the importance of integrating water management systems that are not only functional but also culturally attuned to the social fabric of Bangladeshi communities. Wajiro Kon's concept of "Modernology," as discussed by Izumi Kuroishi (2016), provides further insight into this framework by underscoring the significance of examining daily practices in informing adaptable housing design. His technique for examining how individuals engage with their surroundings ensures that housing solutions are based on actual, lived experiences. This methodology is essential in creating housing for at-risk communities, enabling solutions that incorporate both practical and cultural aspects.

Fig. 5: Moments of everyday life: a woman hanging clothes to dry (Shonatola Village, Dec. 2024)

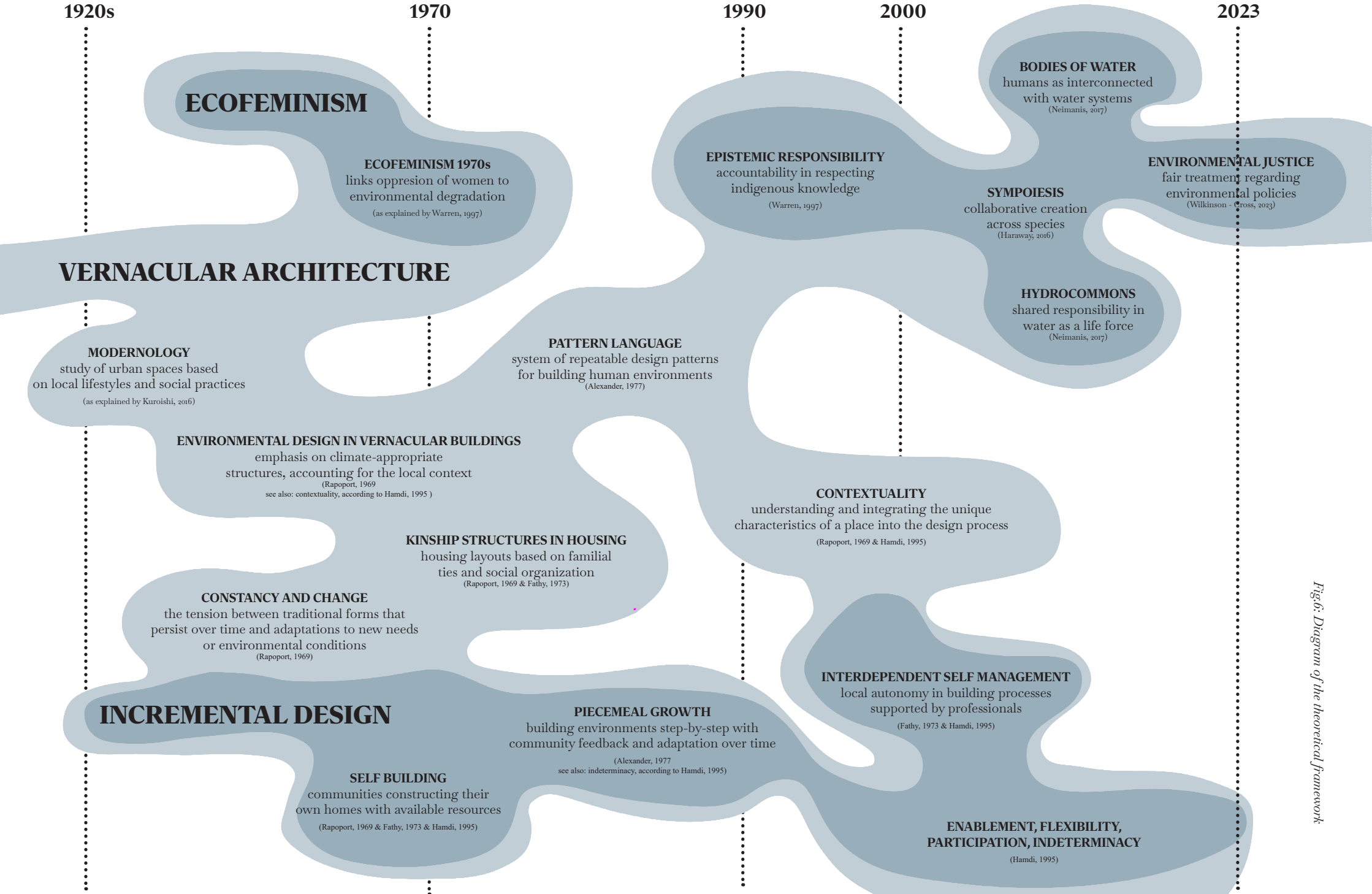


Fig.6: Diagram of the theoretical framework

RESEARCH QUESTION

How can housing design, with the integration of water management systems, create safe and supportive environments that facilitate women's income generation and enhance their livelihoods in the face of climate change?'

Sub - questions:

1. Holistic Understanding of Women's Embodiment and Environment
What are Bangladeshi women's specific embodied needs and how can they be addressed through housing design?

2. Incorporating Women's Knowledge
How can women's extensive knowledge of local resources, water management and agricultural practices be included in the design process?

3. Encouraging Women's Involvement in the Design Process
How can the concepts of participation, flexibility, enablement, indeterminacy and contextuality [1] be incorporated into the design process?

4. Facilitating Women's Income Generation
How can housing design create opportunities for women to generate income, while supporting and enhancing the initiatives that already exist [2] ?

[1] as introduced by Nabeel Hamdi in: *Housing without houses: Participation, flexibility, enablement* (1995)

[2] for example the cultivation of homegardens

Fig. 7: Women play a central role in the maintenance of homegardens (Shonatola Village, Dec. 2024)



METHODOLOGY

Fieldwork

During an intensive two-week field trip to Bangladesh in December 2024, Dhaka and Sylhet served as key sites for contextual analysis. This fieldwork included capturing photos and videos, studying building materials, interviewing residents (with the support of interpreters), and collaborating with researchers and students from Shahjalal University of Science & Technology. Fieldwork was essential to grounding design decisions in the lived realities of the people of Bangladesh. At the same time, it was critical to acknowledge our position as "outsiders" and to approach the people and their culture with humility, recognizing that we are learners rather than experts.

Literature Review

A wide range of books, academic articles and reports related to gender-responsive housing, water management systems and climate resilience were carefully studied. The literature review helped to situate the project within the broader field of research and practice, identifying theoretical frameworks (such as ecofeminism) and highlighting relevant precedents that informed both the problem statement and the design proposal.

Interviews

Structured and semi-structured interviews were conducted with local experts, including professionals in water management, members of the Women's Chamber of Commerce and NGO workers. Informal conversations were also held with local residents—particularly women—to understand their daily experiences, challenges, and aspirations. These interviews and discussions provided valuable technical insights,as well as human-centered perspectives that were extremely valuable for the design process.

Case Studies

Real-life examples of implemented projects, both in Bangladesh and internationally, were analyzed. This helped to evaluate the suitability of different design strategies, community engagement practices, and technical solutions in the local cultural and climatic context. The insights gained from these examples served as a valuable reference point for assessing the feasibility and adaptability of potential interventions.

Cataloguing & Mapping

Systematic documentation and spatial analysis were conducted to study the physical layout and housing conditions of the project site. This method included capturing photos and videos of the built environment and daily life of the residents. Additionally, sketches were created to document the daily activities of women, highlighting their roles and routines. This analysis helped identify opportunities for design interventions that support women's livelihoods and well-being.

RESEARCH SCHEME

WHY?

This research aims to explore the ways in which housing design, with the incorporation of water management systems, can create supportive environments that facilitate women's income generation, enhance their livelihoods and build community resilience to climate change in Sylhet, Bangladesh. By focusing on the intersection of architecture, gender and water management, it seeks to contribute to the development of inclusive solutions that address the unique challenges faced by women in climate-vulnerable regions.

RESEARCH AIM

WHAT?

The **main goal** of the research is to create housing solutions that enhance women's well-being through integrated water management in climate-vulnerable areas of Sylhet, Bangladesh.

SUB-AIM

Proper understanding of women's needs regarding **safety, health and comfort.**

SUB-AIM

Thorough insight into how women's **local knowledge** can inform water management in housing.

SUB-AIM

Insight into **participatory design** approaches that integrate women's perspectives.

SUB-AIM

Clarity on how housing design can support women's **economic opportunities** and livelihoods.

RESEARCH QUESTION

WHAT?

How can housing design, with the integration of water management systems, create safe and supportive environments that facilitate women's income generation and enhance their livelihoods in the face of climate change?

SUB-QUESTION

What are Bangladeshi women's **specific embodied needs** and how can they be addressed through housing design?

HOW?

-Literature review

-Site Visit

-Interviews

SUB-QUESTION

How can women's extensive knowledge of **local resources, water management and agricultural practices** be included in the design process?

-Literature review

-Site Visit

-Interviews

-Case Studies

SUB-QUESTION

How can the concepts of **participation, flexibility, enablement, indeterminacy and contextuality** be incorporated into the design process?

-Literature review

-Case Studies

SUB-QUESTION

How can housing design create opportunities for women to **generate income**, while supporting and enhancing the **initiatives that already exist**?

-Literature review

-Discussions with local women

-Case Studies



Fig. 8: Drawing with the children of Shonatola Village (Shonatola Village, Dec. 2024)

RELEVANCE

The integration of water management systems into housing design is particularly relevant in rural Bangladesh, where access to clean and reliable water is a constant challenge. Women's roles in managing household water resources make them important stakeholders in any intervention aiming to improve water security. Therefore, through the incorporation of water management systems into housing designs, such as rainwater harvesting, these interventions can significantly reduce women's time and effort spent on water collection, freeing up time for other productive or income-generating activities.

Additionally, the emphasis placed by the research on ecofeminist principles highlights the need for a transformative approach to housing design, which transcends technical solutions and addresses underlying gender inequalities. By creating spaces that are safe, supportive, and conducive to women's participation in the workforce, housing design can become a tool for social change, challenging traditional norms and empowering women to take on more active roles in their communities.

This study aims to bridge the gap between gender, climate change, and housing by proposing an integrated approach that uses water management systems to create environments that support women's livelihoods and enhance their resilience to climate impacts. The findings will have significant implications for policy and practice, providing a framework for developing suitable and gender-inclusive housing solutions in Bangladesh and beyond.

DEFINITIONS

Ecofeminism: the theoretical framework according to which the dominant anthropocentric model enforces a division between 'humans' and 'nonhuman nature', thus sustaining patriarchal power structures that oppress both women and nature.
source: Warren, K. J. (Ed.). (1997). Ecofeminism: Women, culture, nature.

Enablement: the concept according to which people can take control of their housing development. It includes providing access to resources, technical assistance, and legal frameworks that support community-led housing initiatives.
source: Hamdi, N. (1995). Housing without houses: Participation, flexibility, enablement.

Flexibility: flexibility in housing design allows for incremental development, where communities can adapt their housing environments over time according to their changing needs and resources.
source: Hamdi, N. (1995). Housing without houses: Participation, flexibility, enablement.

Homegardens: small-scale, often family-managed gardens that provide essential resources such as food, timber, and medicine. In rural Bangladesh, homegardens play a crucial role in food security and income generation, particularly for women.
source: Akhter, S., Alamgir, M., Sohel, M. S. I., Rana, M. P., & Chowdhury, M. S. H. (2010). The role of women in traditional farming systems as practiced in homegardens: A case study in Sylhet Sadar Upazila, Bangladesh.

Intersectionality: an intersectional approach to climate change explores how gender, race, class, and geographical location influence individuals' experience, focusing mainly on the ways it affects women and marginalized communities.
source: Alston, M. (2015). Women and climate change in Bangladesh

Modernology: a descriptive approach to urban studies focusing on the observation and analysis of everyday life and spatial practices. It contrasts with traditional urban planning by being more perception-oriented and rooted in observing the lived realities of people in urban spaces. The original research was conducted by Japanese architect Wajiro Kon, between 1925-30 and inspired many other architects in later years.

source: Kuroishi, I. (2016). Urban survey and planning in twentieth-century Japan: Wajiro Kon's "Modernology" and its descendants

Multispecies Flourishing: the state where humans and nonhumans co-shape each other's futures. This involves recognizing the entanglement of species and working towards shared survival amidst environmental crises.

source: Haraway, D. (2016). Staying with the trouble: Making kin in the Chthulucene.

Participation: the practice of involving local communities and future residents in the planning and design of housing projects. This aims for the designs to be more culturally appropriate, socially acceptable and responsive to the needs of the people. It also builds social capital, empowers marginalized communities and enhances local governance.

source: Hamdi, N. (1995). Housing without houses: Participation, flexibility, enablement.

Pattern Language: a system of repeatable design patterns for building human environments.

source: Alexander, C., Ishikawa, S., Silverstein, M., Jacobson, M., Fiksdahl-King, I., & Angel, S. (1977). A pattern language: Towns, buildings, construction.

Self-Building: a method of construction where local communities, especially the poor, participate directly in building their homes, often under the guidance of an architect. Fathy emphasized this approach as a way to empower local communities and reduce housing costs.

source: Fathy, H. (1973). Architecture for the poor: An experiment in rural Egypt.

Socio-Cultural Factors: these are the influences of cultural, social, and behavioral practices on the design and use of buildings. Rapoport argues that cultural preferences are as important as environmental or technological factors in determining house forms.

source: Rapoport, A. (1969). House form and culture.

Sympoiesis: sympoiesis (or making-with) emphasizes collaborative processes among humans and nonhumans.

source: Haraway, D. (2016). Staying with the trouble: Making kin in the Chthulucene.

Vernacular Architecture: buildings created by people without formal architectural training, reflecting the local environment, materials, and cultural values of a community. Vernacular architecture is distinguished from "grand design" or monumental architecture, focusing instead on everyday living spaces.

source: Rapoport, A. (1969). House form and culture.

INTERVIEWS

Selected Segments *(edited for clarity)*

Interview 1: Marina Tabassum | 11.12.24.

Founder and lead architect of Marina Tabassum Architects

On December 11, I conducted an interview with Bangladeshi architect Marina Tabassum, wherein we discussed her approach to inclusive and community-driven architecture, emphasizing the role of gender, cultural traditions, and sustainability in design.

Question: In your opinion, what role does gender play in shaping architectural needs?

Answer: Gender plays an immensely important role, for sure. I don't think it's just the gender. […] Every person deserves a certain space and it's sort of a democratic need in a way. It doesn't matter what gender you are. It's also for example about age group. Every person in every age group, [...] in every gender, needs a certain kind of attention in every kind of space. So as architects, [...] we need to address all these different aspects so that it's always a holistic thinking process rather than just being focused on a generalized way of looking at architecture […].

Question: In some of your projects, you have also specifically engaged women in the planning process. How was that different for you? Did you encounter any difficulties that you wouldn't encounter otherwise?

Answer: Women are very intelligent. Always. Wherever I went, be it in the refugee camp or in the communities, you know, they run families. They have very minimal means with which they are able to run a family of, let's say, five, ten people, giving them food every single day, making a family run. So you can imagine how intelligent you need to be to run a family with very minimal means. So quite often I've found myself humbled by that. To work with them, all you need to do is just introduce to them that this is how you design. You know, just draw it like this. This is a room. And once they get that, it's very easy. […] It has never been a problem working with them. It's always been a very rewarding experience. And when you include them in the process, it's also very empowering for them. The fact that people are listening to them and their needs and their aspirations is for them also very rewarding and very empowering.

Question: Do you think that women possess specific knowledge on resource management that, when incorporated in the architectural planning, could elevate the architecture itself as well?

Answer: Yes, for sure. If you just follow a woman starting from her morning, from when she wakes up until she goes to sleep, you'll see that she doesn't waste things. She's the person who tries to save everything, every little penny, every little thing. I mean, [you can] just see the saree we wear, in our culture. Women wear these sarees, and after wearing them several times, washing and wearing, the fabric becomes very soft and fragile and starts to tear. […] And then, the moment it kind of starts to tear and it fades, that's when they take these sarees together, several of them, placing them together, and then they start to make quilts. And these are quilts that are passed on from one generation to the next generation, from grandmother to granddaughter. […] So, see, it's not wasted. And then when you start using that quilt and the quilt becomes so old that it's not usable anymore, they would take it down and sort of make it into smaller elements with which you can do other things. […] And then when even that doesn't work anymore, they would probably turn it into ash and use it as something. So, from the point of its grandeur of a saree to the point it turns into ash, [at] every step it is sort of being used in a certain way. Nothing gets wasted. That's also part of the culture that's embedded in our society. But at the same time, it's also the women who actually try to make use of everything that they have. It's only when it comes to plastics and things that are foreign objects, that have never been in our environment or in our landscape, that's where we completely fail. We don't know how to use it anymore. That's what the problem is.

INTERVIEWS
Notes

Interview 1: Marina Tabassum | 11.12.24.
Founder and lead architect of Marina Tabassum Architects

Gender and Space:

- Gender plays a crucial role; everyone deserves their own space—it's a democratic need.
- Historically, inner courts or houses were spaces where women could socialize freely.
- While societal changes have occurred, having a dedicated 'women's space' remains important.
- Pregnant women have specific needs in low-income families; designs must consider the impact on child development.
- A sense of peace and refuge for women can be achieved through small elements: a balcony, a window, or a little garden.

Women's Roles and Empowerment:

- Women are highly resourceful, running families with minimal means.
- Empowering women through inclusive design fosters a sense of ownership and participation.
- The process becomes rewarding and effortless when women are involved and introduced to basic design principles.
- In rural areas, women use their afternoons for income generation, like weaving or quilting, while socializing.
- Following a woman's daily life reveals how she avoids waste, using every material to its fullest potential.

Architecture and Community Engagement:

- Architects must adopt holistic thinking rather than generalizations.
- Local communities should not be seen as 'clients' but as collaborators.
- The role of architects is to act as agents, working to provide better living environments.
- Be a catalyst: empower people through design rather than designing for them.
- Creating a sense of community and fostering active participation is essential for ownership.

Women's Spaces in Design:

- Women's spaces often emerge as places of productivity and solace, such as weaving or quilting areas.
- In rural settings, women's shared spaces provide opportunities for socializing and income generation.

Public and Communal Spaces:

- Public spaces should consider women's needs; the line between men's and women's spaces often blurs in public areas.
- A well-designed public space fosters community interaction and inclusivity.
- Sustainable practices observed in villages need adaptation for urban settings to establish symbiotic relationships.

Sustainability and Resourcefulness:

- Women's practices of reusing sarees and creating quilts illustrate a deep understanding of resource efficiency.
- The shift to modern, 'foreign' materials like plastics disrupts traditional sustainable practices.
- Villages preserve sustainable lifestyles, but urban areas have yet to adopt similar principles.

INTERVIEWS

Selected Segments *(edited for clarity)*

Interview 2: Sylhet Women's Chamber of Commerce and Industry | 13.12.24.

On December 13, I visited the Sylhet Women's Chamber of Commerce, where I had the opportunity to speak with Ms. Radia Islam, the project coordinator of the Chamber, along with seven women entrepreneurs. Our conversation delved into the realities of being a businesswoman in Sylhet today, exploring the challenges they face and the passions that drive their work.

Question: Can you tell me some words about your bussiness? How did you start, what difficulties did you encounter?

Lubana: "My business is in the construction sector. My husband was also involved in that business at first after my marriage. When I saw him [working in this sector], I saw it was so challenging. [...] I started my business in Moulvibazar. It's very conservative there, so it's even more challenging. Now, I focus on involving women workers. My aim is to make women financially independent so they can support their families and add validation to their roles in society."

Selina: "I run a boutique business specializing in traditional Bangladeshi designs. I export products internationally and participate in exhibitions in Nepal and other countries. It was exciting to start in 2001, but I faced many challenges, especially coming from a joint family. With support from my mother and husband, I managed to grow the business and even received a national award in 2006."

Salsabil: "I run an organic food business called Grains and Greens. I started it after my MBA in 2017. My focus is on brown rice processing and using organic methods, involving rural women in the work. I also collect waste to create

organic fertilizer, which I use on my land. In the future, I want to set up a cold storage room [for farmers] to store their products and save them from flood damage. I also plan to create a market where rural women can sell their products directly."

Nila: "I've been in entrepreneurship for 11 years now. I work on traditional artisanal products [...]. I have also worked on several projects, including foreign initiatives for four years, focusing on youth engagement and empowering populations left behind. For example, I've worked with BRAC on capacity building for tea garden workers and job placement programs for people who are not educated or experienced enough but have potential. My work includes helping them become entrepreneurs or secure jobs locally and abroad."

Sajnara: "I've been a maths teacher in an English medium school for 20 years. But due to family needs, I started a small business two years ago to earn extra income. My business began with making and selling pickles. Initially, I sold pickles at my school staff, but due to family problems, I had to stop for five years. I resumed in 2020 after training and workshops. In addition to pickles, I create traditional products from local materials like Chitalpa, which is made from the stem of a tree unique to Sylhet. I make items like flower vases, trays, and pen holders to represent Sylhet's traditions. My business [...] aims to showcase our culture locally and internationally. Although I face challenges with exporting due to costs, my products reach abroad through relatives.



Fig. 9: Interview at the Women's Chamber of Commerce and Industry

INTERVIEWS
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Interview 2: Sylhet Women's Chamber of Commerce and Industry | 13.12.24.

Purpose of the SWCCI:

The SWCCI seeks to empower women to achieve financial independence by facilitating their active participation in commercial sectors. It aims to foster entrepreneurial opportunities and strengthen women's contributions to the financial sector.

Key Issues Addressed by the SWCCI:

1. **Limited Market Access**
   - Limited funding and high costs hinder women's ability to establish physical stores or expand businesses.
   - Women struggle with visibility and representation in competitive markets.

2. **Cultural and Social Barriers**
   - Conservative traditions and religious norms restrict women's mobility and workforce participation.
   - Single women remain dependent on families, limiting their autonomy and mental well-being.

3. **Resource and Training Gaps**
   Women, particularly in rural areas, often lack access to skill-building programs and funding opportunities.

4. **Economic and Logistic Issues**
   - Formal export processes are expensive and complicated, forcing reliance on informal networks.
   - Floods disrupt operations by halting production, damaging raw materials, and washing away construction resources.

Structure of the SWCCI:

1. Membership: Approximately 350 members engaged in both online and offline businesses.
2. Primary Sectors of Focus: Agriculture, tourism, caregiving, and IT.
3. Collaborations: Works with organizations such as the International Labour Organization (ILO) to implement projects and offer training.

Activities of the SWCCI:

1. **Skill Development and Training**
   - Organizes workshops and entrepreneurship programs to enhance business skills.
   - Focuses on localized training to overcome language barriers and cultural constraints.

2. **Support for Rural Entrepreneurs:**
   - Monitors women's skills, provides resources, and connects them with funding opportunities.
   - Offers recommendations to facilitate access to markets and funding.

3. **Capacity Building**
   Develops internal capabilities to deliver autonomous training for local entrepreneurs.

4. **Collaboration and Networking**
   Partners with international organizations to expand opportunities and improve visibility.

INTERVIEWS
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Profiles of Entrepreneurs and Their Initiatives:

1. **Atika (Food Business)**
   - Runs a Turkish food business independently after receiving training.
   - Solely manages her business without family involvement.

2. **Lubana (Construction Business)**
   - First introduced to the construction business through her husband.
   - Fascinated by the challenges in the construction sector, particularly the lack of female representation.
   - Involves women in her labor force to promote financial independence.
   - Faced obstacles from conservative traditions and religious perspectives, but earned recognition at the district level in 2021.

3. **Selina (Boutique Business)**
   - Exports products internationally and participates in exhibitions.
   - Overcame challenges rooted in poverty and traditional family dynamics with the support of her mother and husband.

4. **Salsabil (Organic Food Business)**
   - Processes brown rice and uses rural women's agricultural waste as fertilizer.
   - Plans to build flood-resilient storage for produce and help rural women sell their products directly at fair prices.
   - Focuses on involving women who cannot commute or leave their homes due to familial restrictions.
   - Wants to create a market where women can sell their products directly at fair prices and stay close to home.

5. **Nila (Artisanal Products and Youth Engagement)**

   - Designs traditional art products and works with tea garden workers, Manipuri communities, and vulnerable populations.
   - Provides training and motivation to those with limited education or social support.
   - Supports people who need mental and psychological help and acts as a career counselor, helping them find opportunities both locally and abroad.

6. **Sajnara (Pickle Business)**
   - Maths teacher at an English school for two years; sought supplemental income.
   - Began by providing pickles to the school, which encouraged her to turn it into a business.
   - Started her business at 18 but paused for 5 years due to family issues.
   - Resumed after undergoing extensive training and workshops for preparation.
   - Produces traditional items using locally-sourced raw materials: bamboo, cane, and birch tree stems (unique to Sylhet).
   - Aims to preserve Sylheti traditions and engage local women in home-based economic activities.
   - Supports women with limited mobility due to family constraints by sharing simple recipes and advocating with their families.

7. **Aporna (Textile Business)**
   - Works with the Manipuri community to produce sarees and other products, providing skills and job opportunities.
   - Faced challenges communicating with this minority community and building trust.
   - Provides skills and job opportunities through training workshops.
   - Informally exports products to 60 districts and beyond through personal networks.
   - Hosts a show interviewing women entrepreneurs, providing a platform to share their stories.

INTERVIEWS

Selected Segments *(edited for clarity)*

Interview 3: Dr. Pijush Sarkar, Dr. Ashutus Singha | 16.12.24.

Professors at the Bangladesh Agricultural University

On December 16, I visited the Department of Irrigation and Water Management at the Bangladesh Agricultural University to discuss with Dr. Sarkar and Dr. Singha on the topic of the destructive losses faced by farmers in Bangladesh during floods.

Question: Floods seem to be a huge issue in Bangladesh. Can you tell us more about how they impact agriculture?

Answer: "Absolutely, flooding is a major problem. Imagine this: farmers work all season, and just as their rice crops are ripening in April, flash floods come rushing in from upstream in India—no warning, nothing. The entire crop gets destroyed [...]. And the problem isn't just the floods; it's also poor river management. The dikes and barriers we have just aren't strong enough or well-maintained to handle these situations."

Question: How do farmers prepare for or adapt to these floods?

Answer: "There are a few things they can do. One is to plant short-duration rice varieties, which mature faster and can be harvested before the floods. These varieties yield less, but at least they offer some protection. Another strategy is building small dikes along riverbanks using low-cost, indigenous methods [...]. Finally, after the floods recede, farmers can grow a second crop, like Aman rice, with supplemental irrigation. However, many farmers lack the training and resources to implement these measures effectively."

Question: What happens when floods destroy everything? Do people leave their villages?

Answer: "Yes, they often migrate. Those who lose their crops and livestock sometimes move to places like Chittagong to find work as laborers, rickshaw

pullers, or in garment factories. Women, in particular, join textile industries. Some families return to their villages during the dry season, hoping to rebuild and cultivate again, but it's a difficult cycle of losing and starting over."

Question: What role do women play in agriculture and flood resilience?

Answer: "Women are heavily involved in agriculture, but there are social constraints. In many cases, men don't allow their wives or daughters to work in the fields, especially in rural areas. When women do get the opportunity, they work hard and take on multiple responsibilities, managing the household and contributing to farming."

Question: What steps are being taken to address these issues?

Answer: "The government and agencies like the Water Development Board are working on river dredging, diking, and irrigation projects, but these efforts are often inadequate. There's a lack of resources, and sometimes the funds aren't used effectively. NGOs and local groups are doing what they can to help, but the problem requires a much larger, coordinated effort."

Question: How is urbanization impacting flood management and agriculture?

Answer: "Urbanization is reducing the amount of agricultural land—about 1% of arable land is lost every year to housing and industrialization. Cities like Sylhet are expanding into rural areas, leaving less soil to absorb water. This lack of planning makes the flooding problem even worse."

Question: What needs to happen to improve flood management and help these communities?

Answer: "There's no single solution, but better riverbank protection, improved irrigation systems, and the use of climate-resilient crops would make a big difference. The bigger challenge is implementation. We need proper planning, sufficient funding, and honest governance. Public awareness and community involvement are also essential—without them, even the best plans won't succeed."

INTERVIEWS
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Interview 3: Dr. Pijush Kanti Sarkar, Dr. Ashutus Singha | 16.12.24.

Professors at the Bangladesh Agricultural University

Agriculture in Bangladesh:

1. **General Characteristics**
   - Agriculture is one of the main sources of livelihood in the country.
   - Highly diversified agricultural practices.
   - Farmers often lack access to modern technology and awareness of climatic changes.

2. **Challenges**
   - Seasonal flash floods destroy crops, particularly boro rice, during critical agricultural periods, specifically before the harvest period.
   - Flooding disrupts planting schedules, reduces soil fertility through erosion, and damages irrigation systems.
   - Urbanization reduces arable land (~1% annually), decreasing water absorption capacity.

3. **Possible Adaptation Measures**
   - Cultivation of short-duration rice varieties (January–April), though these are typically lower yielding.
   - Construction of dikes along riversides with government and NGO support.
   - Crop diversification to include multiple varieties, requiring training in irrigation and mixed cropping.

Flooding and its Impacts:

1. **Erratic Flood Patterns**
   - Climate change has made flooding increasingly unpredictable.
   - Rainy seasons (traditionally May to August) are no longer reliable.

2. **Effects on Livelihoods**
   - Significant losses in agriculture and livestock, forcing temporary or premanent migration to urban areas for alternative jobs (e.g. rickshaw pulling, construction, textile work).
   - Many farmers lack land ownership, cultivating rented plots ; poverty often leads to land sales.
   - Communities rely on temporary shelters (e.g. schools) for weeks, supported by government, NGOs and mutual aid.

Gendered Impacts of Flooding:

1. **Women's Roles and Challenges**
   Women play crucial roles in farming and household management but face disproportionate impacts:
   - Loss of income from damages crops and limited employment opportunities.
   - Greater responsibility for securing food, water, and sanitation during after floods.
   - Restricted mobility limits access to markets and resources.

2. **Post - Flood Recovery**
   - Women have limited access to financial resources, aid, and loans.
   - Rising food prices and resource scarcity exacerbate their burden in ensuring family food security.

3. **Infrastructure Gaps**
   - Lack of gender-inclusive infrastructure, such as safe flood shelters and sanitary facilities, inreases risks to women's health, safety and recovery efforts.

INTERVIEWS

Selected Segments *(edited for clarity)*

Interview 4: Mr. Dipak Dev | 16.12.24.

Director at the Bangladesh Water Development Board

On December 16, I visited the Bangladesh Water Development Board to discuss with Mr. Dev about water management challenges in Sylhet, including flooding and riverbank erosion, and their impact on local communities. We talked about strategies like dredging, bank protection, and community involvement and the challenges posed by climate change, unplanned urbanization, and limited resources.

Question: How often does erosion happen per year?

Answer: "Erosion typically occurs during the flash flood season, which runs from May to August. During this time, the water level rises and falls sharply over short durations, triggering riverbank erosion. In the dry season, as water levels drop, the riverbanks also start collapsing."

Question: How do you strengthen the riverbanks?

Answer: "We focus on the concave parts of the river where erosion is most severe. We use concrete blocks to stabilize these areas and dredge nearby sections to direct the river flow. However, new erosion can occur at other points the following year, and continuous intervention is challenging due to limited funding."

Question: Is it becoming worse because of climate change?

Answer: "Yes, climate change is a significant factor. In the past, water levels rose gradually, allowing us to prepare. Now, heavy rainfall occurs over just two or three days, causing water levels to rise dramatically in a short time. The same monthly rainfall now falls within a week, making it harder to manage."

Question: Why do people want to live so close to the riverbanks?

Answer: "Living near rivers is practical for transportation and livelihoods. Transporting goods by ship is much cheaper than by truck, and many fishermen and their families depend on the river for their work. Historically, civilizations have always settled near rivers for easy communication and resources."

Question: Do the people in the affected areas have their own techniques to deal with the floods?

Answer: "Yes, people in rural areas often move their houses when necessary. If erosion threatens their homes, they relocate lightweight structures made from bamboo or corrugated metal to safer land. However, houses made of concrete cannot be moved, which creates additional challenges."

Question: Do you think community involvement in water management strategies is important?

Answer: "Absolutely. From my studies in the Netherlands, I've seen how crucial stakeholder involvement is for successful projects. Unfortunately, in Bangladesh, many people are not educated enough to understand or support development projects, focusing instead on immediate personal benefits rather than long-term progress."

INTERVIEWS
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Interview 4: Mr. Dipak Dev | 16.12.24.
Director at the Bangladesh Water Development Board

Water Dynamics and Monsoon Impact

- Water flows from the Indian mountains into Bangladesh during the monsoon season.
- Major rivers such as the Barak River bifurcate into the Kushiyara and Surma rivers, carrying significant water volumes.
- Heavy rainfall in the Meghalaya mountains can raise water levels in Sylhet rivers drastically within 24-36 hours, sometimes by as much as 3.7-5.5 meters.
- Average water level rise during flood seasons in Sylhet is 1-3 meters.

Flooding Challenges

- Flash floods and river overflows affect Sylhet 3-4 times annually, damaging homes, crops, and infrastructure.
- Floods lead to massive agricultural losses, especially for rice, vegetables, and cereal crops, contributing to poverty cycles.
- Unpredictable flooding patterns, exacerbated by climate change, make preparation and mitigation difficult.

River Systems and Management

- Rivers are crucial for transportation and exporting products, offering a cost-effective alternative to road transport.
- Efforts to manage flooding and erosion include:

    Dredging Projects: Conducted on major rivers to increase water-carrying capacity.

    Bank Protection: Use of heavy concrete blocks to stabilize riverbanks against erosion.
- Challenges include limited funding and public resistance to relocation or infrastructure projects.
- Unplanned urbanization and insufficient drainage systems lead to urban waterlogging, especially in Sylhet city.

Climate Change and Human Adaptation

- Climate change intensifies flooding and unpredictability, with rainfall occurring in shorter durations but higher volumes.
- Rural and poor communities are disproportionately affected, often becoming “climate refugees” within their own country due to land loss and erosion.
- Many homes near riverbanks are built from lightweight materials, allowing for relocation, but wealthier households often build concrete homes for durability and status.

Gendered Challenges

-Women and children are most vulnerable during disasters due to societal and cultural constraints.
- Women often depend on men for decision-making and action during emergencies, limiting their ability to respond rapidly.
- Schools and other institutions serve as temporary shelters during floods, prioritizing women and children.

Stakeholder Involvement and Education

-Effective stakeholder engagement, a successful strategy in countries like the Netherlands, is limited in Bangladesh due to low public awareness and education.
- Resistance to government projects is common, with people prioritizing personal or immediate needs over long-term benefits.
- Education alone is insufficient; broader community involvement and trust-building are necessary.

INTERVIEWS
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<u>International Solutions and Relevance</u>

- The Dutch project “Room for the River” project serves as a model for flood management:
    - Strategies include lowering floodplains, relocating dikes, creating bypasses, and enhancing storage capacity.
- In Bangladesh, only dredging and dike improvement are commonly implemented due to resource constraints.
- Expanding canal systems for water storage and agriculture could be beneficial but is challenging due to population pressures.

<u>Housing and Construction</u>

- Building homes away from floodplains (200-300 meters from riverbanks) is recommended to minimize flood risk.
- Elevated structures and lightweight materials (e.g., bamboo) are common in rural areas but vulnerable to destruction.
- Reinforced concrete homes, while more durable, are expensive and not easily relocated.



Fig. 10: Interview at the Bangladesh Agricultural University



Fig. 11: Interview at the Bangladesh Water Management Board

INTERVIEWS

Selected Segments *(edited for clarity)*

Interview 5: Mr. Mohammad Zobair Hassan | 17.12.24.

Chief member at Development Organization for the Rural Poor (NGO)

On December 17, I had a conversation with Mr. Hassan about the women's initiative, 'The Mother's Parliament'. He shared insights into their work, the challenges they face, and their efforts to motivate and empower women in remote areas, who are often socially restricted and live under the poverty line.

Question: "What are the main issues that the Mother's Parliament focuses on, especially for women and children?"

Answer: "The Mother's Parliament is a platform for raising voices about basic rights—housing, shelter, and activities in hard-to-reach areas. They mainly focus on water, sanitation, hygiene, and health rights. For example, adolescent girls often face challenges during their menstrual cycles because of poor toilet facilities. They end up staying home and missing three or four days of school. You can see how these issues—lack of proper housing and sanitation—create interconnected problems for women and children."

Question: "What measures are being taken to adapt housing and infrastructure to climate challenges?"

Answer: "These days, when installing hand pumps, people are considering higher platforms because floods and cyclones are becoming more frequent. It's about thinking long-term—elevating houses, toilets, and even cattle shelters above the usual levels. This integration of social and engineering solutions is crucial to ensure families benefit from these facilities in the long run."

Question: "How does the Mother's Parliament help promote education for women and children?"

Answer: "There are two types of education here: formal and non-formal. Formal education happens in primary schools, but for children who can't attend school during the day, there are evening learning centers run by small NGOs with funding from the Mass Education Department. Women in the Mother's Parliament work to encourage families to send their children to school, explaining the long-term benefits of education."

Question: "What opportunities exist for women to generate income through the Mother's Parliament?"

Answer: "Microfinance institutions here play a big role. They lend money to women without requiring collateral and also provide training for skills like sewing or running small businesses. The Mother's Parliament acts as a connector, helping women access these resources and advocating for their needs within the community."

Question: How are urban and rural governance systems supporting local communities, and what challenges do they face?

Answer: "In urban areas, municipalities handle things like urban management and utilities, while rural areas fall under union councils, which are the lowest tier of local government. The challenge lies in connecting people with the right service providers. Many don't know where to go or who to approach for help with housing, water, or other needs. The goal is to strengthen community capacity and share knowledge so they can advocate for themselves."

INTERVIEWS
Insights

Interview 5: Mr. Mohammad Zobair Hassan | 17.12.24.
Chief member at Development Organization for the Rural Poor (NGO)

Purpose of the Mother's Parliament:

The Mother's Parliament seeks to empower women to raise their voices and address key issues in hard-to-reach areas by:

1. Advocating for health and healthcare services.
2. Advocating for the improvement of water and sanitation facilities.
3. Promoting education programs, such as informal evening schools funded by the Mass Education Department and run by NGOs.
4. Addressing public facilities (housing, food, agriculture).
5. Supporting access to finance for women through microfinance institutions.
6. Connecting communities with policymakers to gain attention and action on these issues.

Key Issues Addressed by the Mother's Parliament:

1. **Water Management**
   During floods, water facilities (e.g., hand pumps) are often damaged, forcing women to travel longer distances to fetch water, sometimes in unsafe conditions like darkness.

2. **Sanitation and Hygiene**
   Inadequate sanitation facilities force women and girls to stay home, leading to missed school days and reduced mobility.

3. **Housing and Infrastructure**
   No clear local government guidelines for housing construction; residents build homes without formal plans.

4. **Women's Empowerment**
   Women, particularly in remote areas, often have very limited access to resources and the knowledge required to seek support from the appropriate authorities.

Structure of the Mother's Parliament:

1. Five branches (three in the southwest, two in the southeast).
2. Initial group size: Nine members, expanding to a maximum of twenty-one members through community outreach.

Activites of the Mother's Parliament:

1. Monthly community meetings at central locations for discussion and decision-making.
2. Quarterly submission of petitions and requests to higher authorities (e.g., chiefs of administration).

Governance and Policy Advocacy

Importance of knowing the right authority to contact for specific needs.

- The Mother's Parliament connects women with service providers and mobilizes resources.
- It brings women into discussions that inspire self-reliance and action.
- It provides tailored information based on individual household needs to facilitate access to necessary resources.

THE SITE



THE SHONATOLA VILLAGE

The village of Shonatola, located a few kilometers from Sylhet City (fig. 12), exemplifies the vulnerabilities of rural communities amid urban expansion and climate change. Originally two separate villages, Shonatola is now a single community where residents primarily engage in agriculture and construction work. Women play a pivotal role in sustaining the village's daily life, balancing household duties with significant contributions in small-scale agriculture, cattle rearing, and sewing. However, their contributions are largely undervalued, as they lack access to resources such as land ownership, credit, and formal training.

Shonatola is positioned between two of Sylhet's largest rivers, Shari Goyain river in the north and Surma river in the south (fig. 13). This makes the village highly vulnerable to the impacts of climate change, with flooding occurring two to three times annually due to the nearby rivers' overflow during seasonal rains. These floods force families to evacuate their homes, relocating to a nearby school along the highway. For women, these displacements are particularly challenging as they must navigate unsafe and overcrowded conditions while ensuring the safety of children, elderly relatives, and basic household provisions. Moreover, the destructive losses in crops and livestock sustained during the floods deprives many people of their only source of income, forcing them to seek alternative modes of employment in the city.

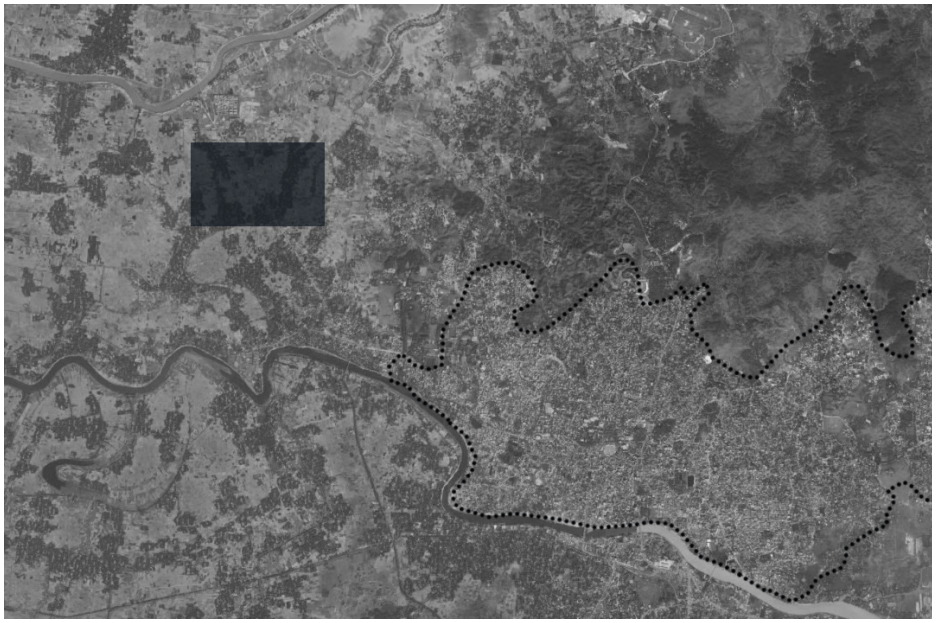


Fig. 12: The Shonatola village in relation to Sylhet City

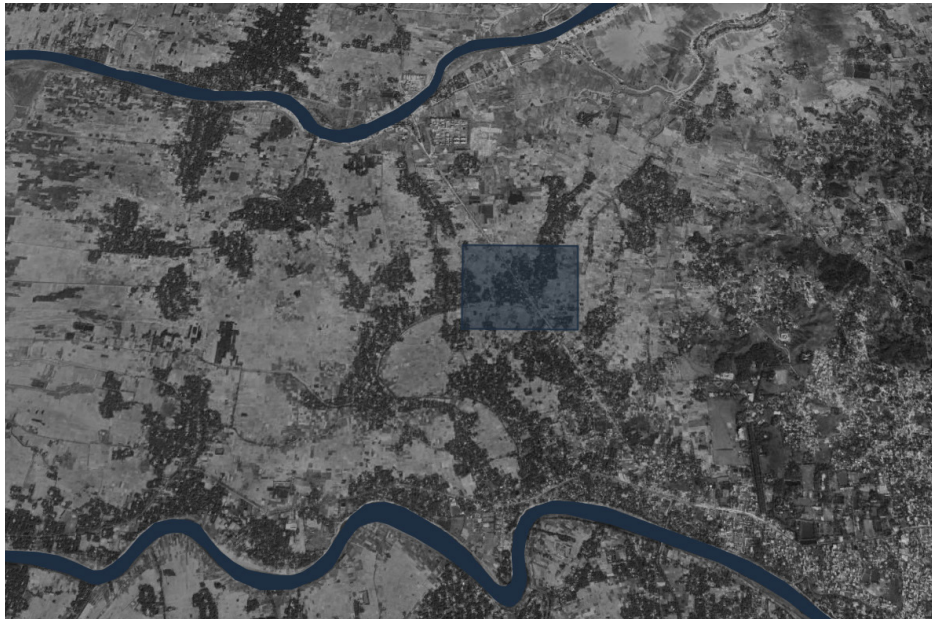


Fig. 13: Position of the village between two main rivers in the North-South axis

Housing structures in Shonatola are typically self-built without guidance from local authorities or access to technical expertise. Wealthier families are sometimes able to afford brick and concrete homes. However, many of the houses in the village are constructed with materials such as corrugated metal sheets, mud, and bamboo, which offer little resistance to the floods that inundate the region. Many houses are built on low-lying land without adequate foundations or plinths, making them highly susceptible to water damage and collapse. This cycle of destruction and reconstruction drains household resources and limits long-term stability.

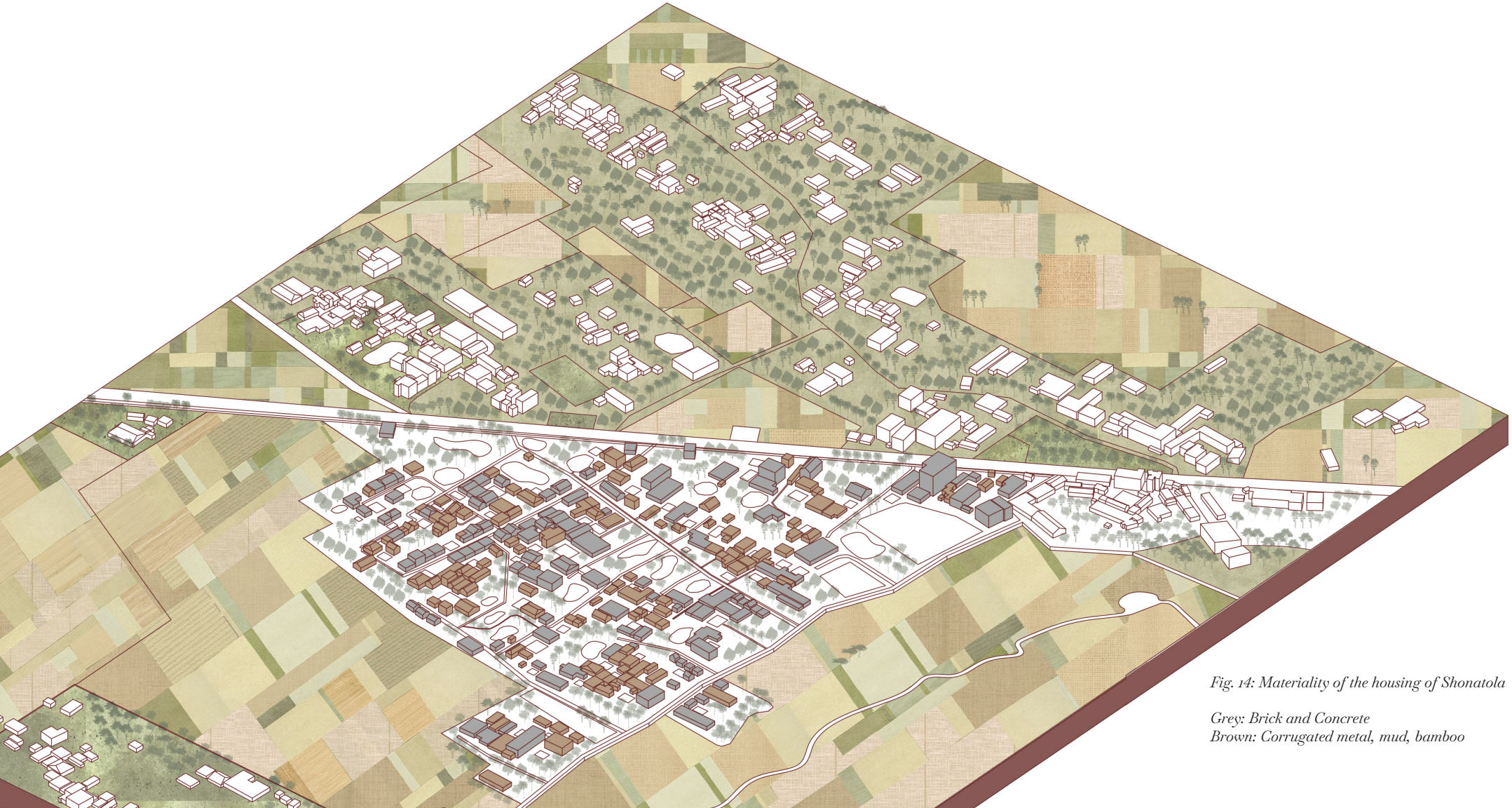


Fig. 14: Materiality of the housing of Shonatola

Grey: Brick and Concrete
Brown: Corrugated metal, mud, bamboo





Fig. 15, 16: Materiality: brick and concrete





Fig. 17, 18: Corrugated metal, mud, bamboo



Communal space in the village is scarce, leaving residents with few opportunities to gather and participate in shared activities. However, during our visit, we observed makeshift “courtyards” nestled between the houses. Though these spaces lack any formal design or clear markers, they nonetheless serve as important gathering points, highlighting the community’s underlying need for a dedicated common space.

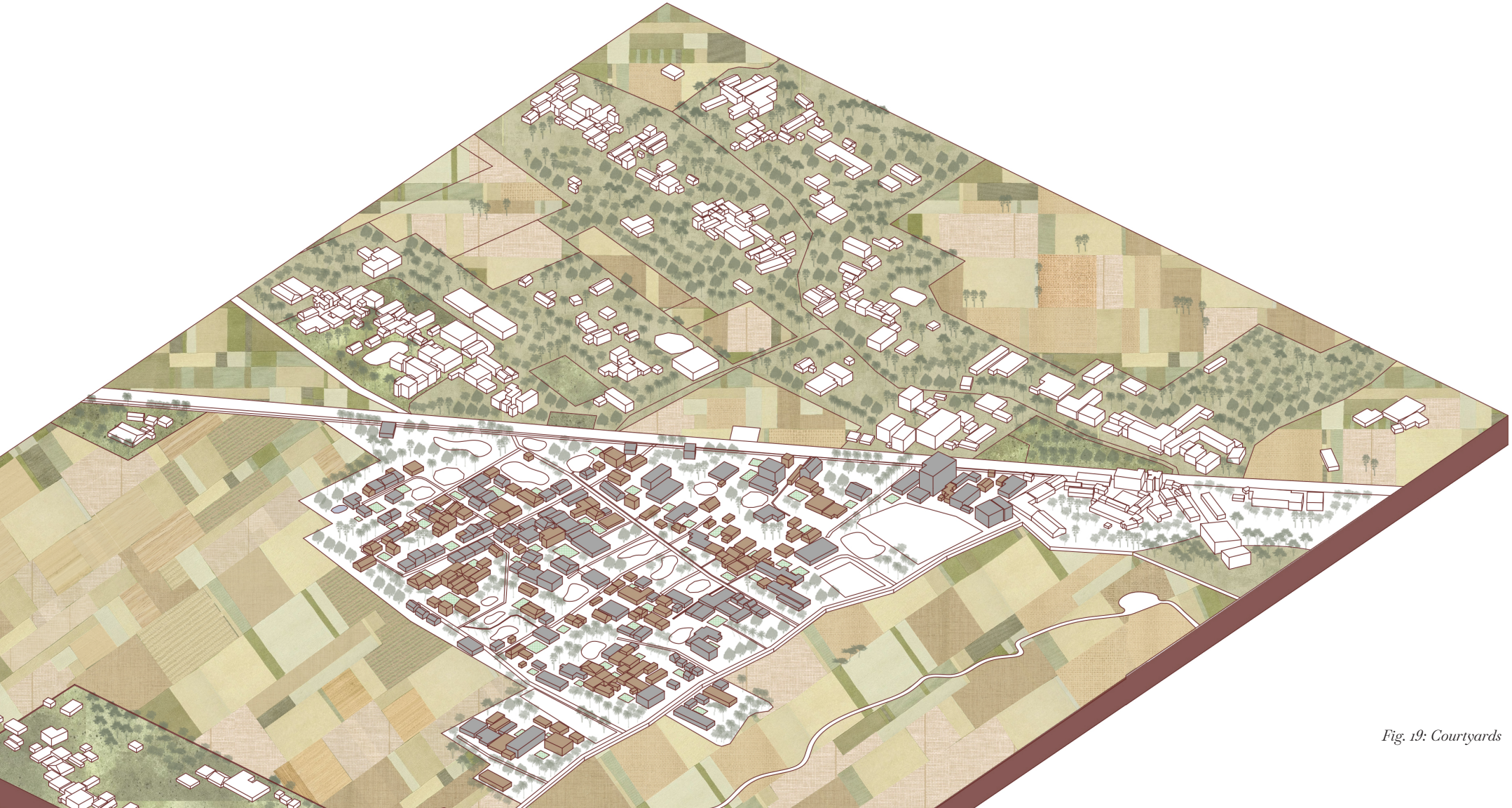


Fig. 19: Courtyards



Fig. 20: An example of these unofficial communal spaces between houses

In the village, ponds are an important feature, playing a vital role in daily life. They fulfill multiple practical needs, as women use them to wash dishes and clothes, and families raise ducks there, which are often prepared for meals during special occasions, such as when hosting guests. Beyond these utilitarian functions, the ponds also hold social significance, particularly for women. They provide a communal space where women can gather, share stories, and offer each other companionship while engaging in their household chores. This dual function highlights the integral role that ponds play in shaping both the everyday rhythms and the communal life of the village.

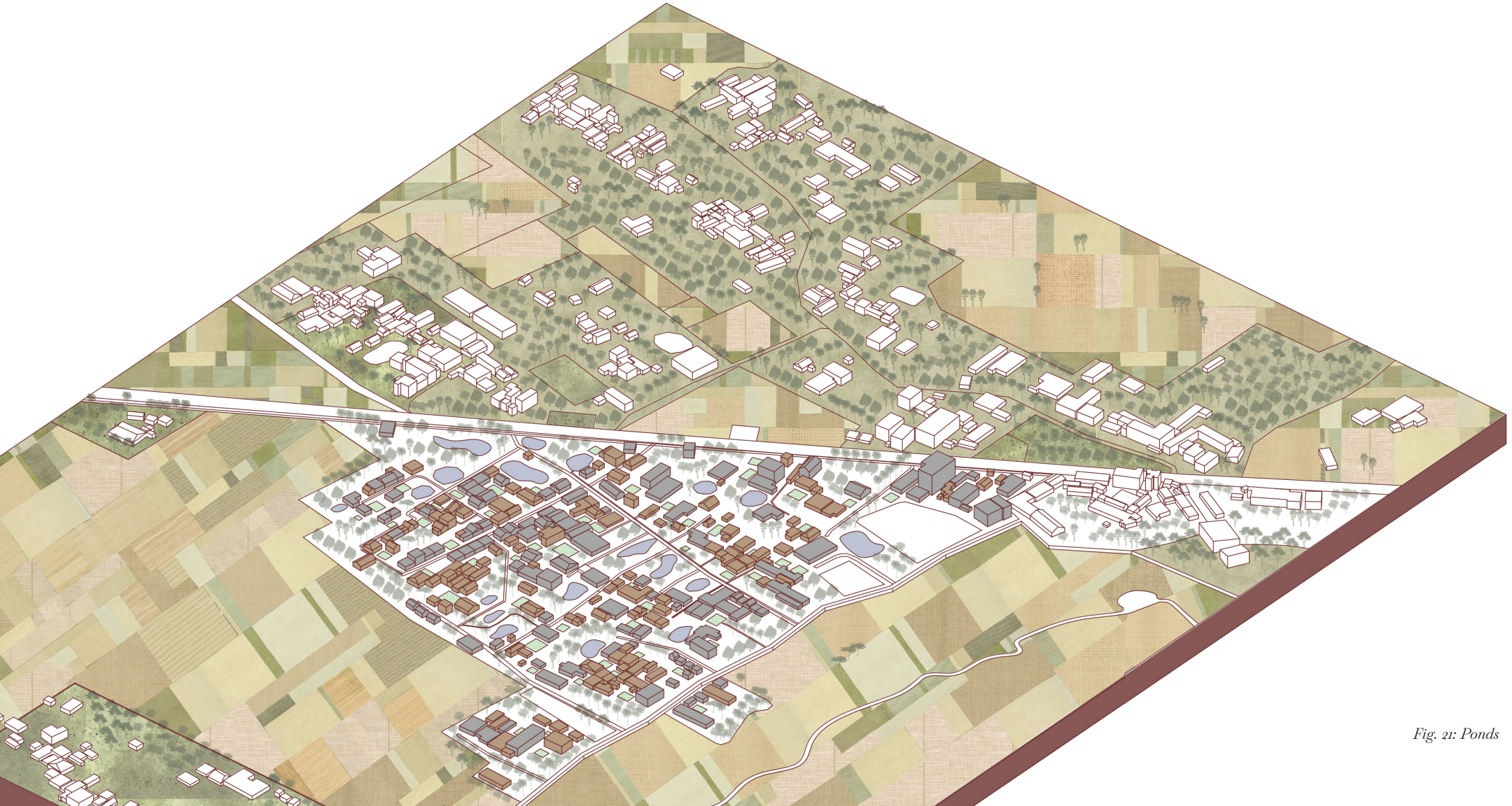


Fig. 21: Ponds



Fig. 22: One of the ponds in the village

Amenities in the village include a mosque (1), a school (2), and the Shonatola bazaar (3). The mosque serves as a spiritual center, while the school—although primarily intended for education—also doubles as a temporary shelter during flood season. However, it is far from spacious enough to accommodate the entire village population during emergencies. The Shonatola bazaar, though relatively underdeveloped, stands as the village's main commercial hub, providing essential goods and services that sustain local livelihoods.



Fig. 23: Amenities



Fig. 24: The mosque



Fig. 25: The school

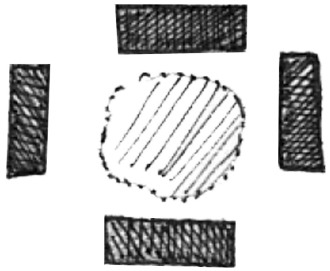


Fig. 26: A seller at the Shonatola bazaar

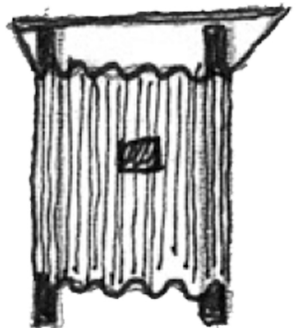
KEY ISSUES



Inadequate housing infrastructure, which is unable to withstand flooding and often does not meet adequate lighting and ventilation requirements



Lack of communal space



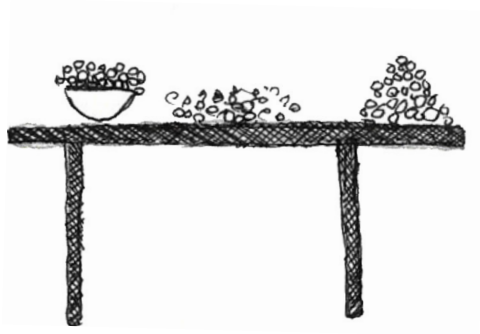
Inadequate sanitation facilities



Women need to commute for water when handpumps get damaged during floods



Limited opportunities for women's income generation

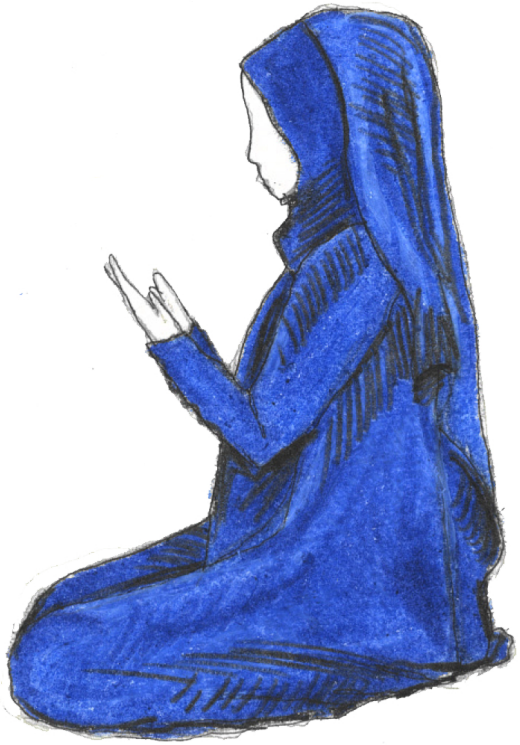


The Shonatola Bazaar is underdeveloped

THE PEOPLE OF SHONATOLA

In an effort to better understand the people I am designing for, I studied the daily lives of the residents, particularly the women of Shonatola, in order to gain an idea of the aspects of the village that should be carried over to my project, as well as new provisions that my proposed design could offer.

The Women of Shonatola



Prayer

For most of the women of Shonatola, the day begins before sunrise, around 5:00 or 6:00 am. It is typical to start the morning with prayer, called fajr. This quiet early morning is often a moment of personal peace and reflection before the household tasks begin.



Fetching water for daily tasks

Collecting water is an important activity, which usually takes place early in the day, as most of the houses do not have running water. Women fetch water from handpumps, which they use for cleaning, cooking and bathing. This becomes an issue at the time of flooding, as handpumps often get damaged, forcing women to walk longer distances for water.



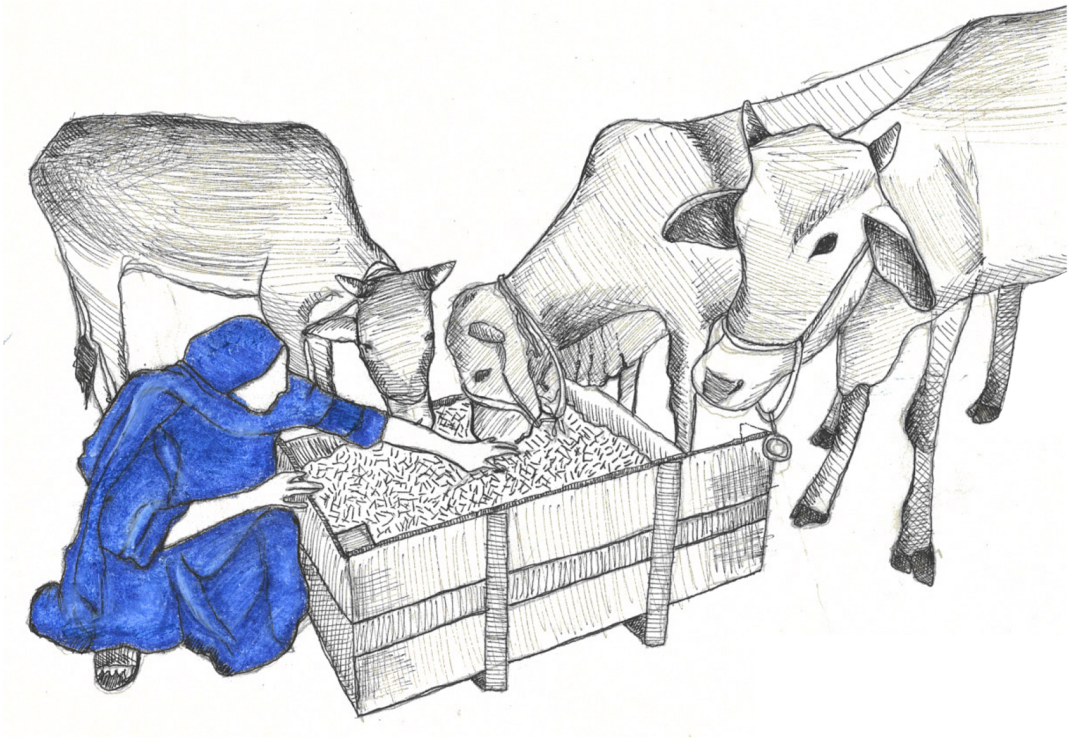
Cooking for the family

Women prepare breakfast for their family, often cooking over a clay or gass stove, using simply ingredients like vegetables, rice and lentils. Alongside breakfast, the often also start preparing lunch, as the midday meal is typically cooked in the morning to accommodate the long list of tasks that follow.



Washing dishes and clothes in the pond

The cleaning of clothes, as well as utensils used for cooking and eating, happens in the ponds that exist within the village. Each pond is unofficially "owned" by a few households, and women often gather there to carry out this task together, taking it also as an opportunity to keep each other company.



Taking care of the livestock

Being an agricultural community, it is quite common for families in Shonatola to own livestock, such as cattle, goats and chickens. With most men away at work during the day, the responsibility of tending to the animals typically falls to the women, who manage their care as part of their daily routine.



Maintaining the house and yard

An essential part of a woman's daily routine involves ensuring that both the house and yard are kept clean and orderly. This goes beyond sweeping and tidying, as women often carry out minor maintenance tasks as well. These include repairing mud floors, patching walls, or reapplying clay to surfaces to maintain the home's condition. These efforts ensure not only hygiene and comfort but also preserve the structural integrity of the dwelling over time.



Looking after the children

Women are primarily responsible for caring for the younger children, which includes not only meeting their daily needs but also helping with homework or teaching them basic skills at home. In contrast, older boys often accompany the men to work in the fields, on construction sites, or in other forms of manual labor, gradually taking on responsibilities outside the household.



Making cow dung sticks for fuel

In rural villages like Shonatola, women commonly make dried cow dung sticks, which serve as a source of household fuel. After collecting fresh cow dung, they mix it with straw or husk and shape it into flat or stick-like forms by hand. These are then laid out in the sun to dry, often along walls. Once dried, the dung sticks are stored and used as fuel for cooking, especially in traditional clay stoves. This practice is not only a form of resourceful waste recycling but also a crucial part of daily life where access to gas or electricity is limited.



Partaking in agricultural activities

Women often contribute to agricultural activities, helping the men with farming as well as the drying and collection of the rice. However, it is important to note that their contributions remain largely undervalued, and they do not receive any financial compensation for their efforts. This issue is not limited to Shonatola, as, according to UN Women, an estimated 59.7% of employed women in Bangladesh are engaged in agriculture, including fisheries and forestry, yet only 18.6% are formally recognized as agricultural labourers.



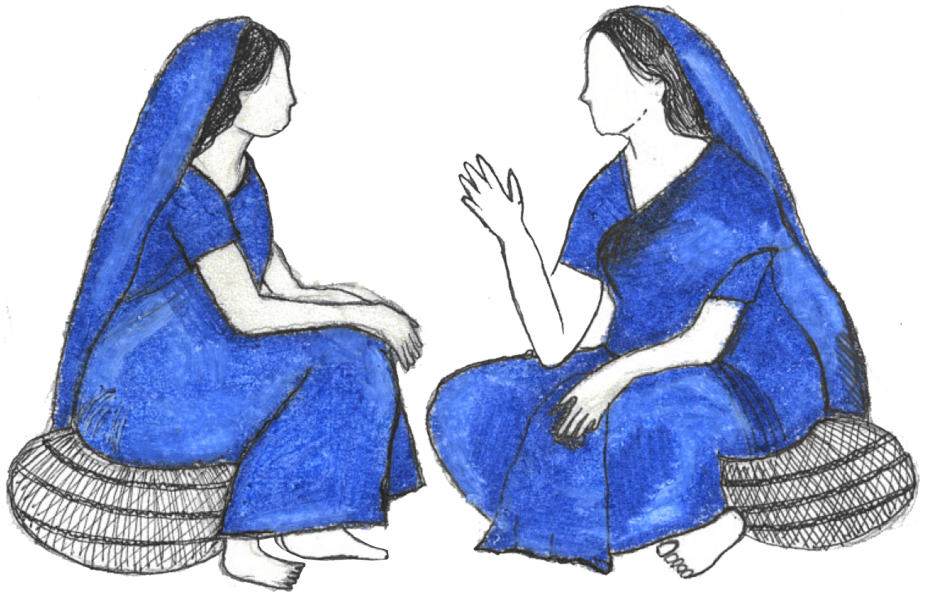
Maintaining homegardens

Women in the village sometimes tend small homegardens, which provide a valuable source of fresh vegetables, herbs, and sometimes medicinal plants. These gardens contribute to the family's self-sufficiency, reducing the need to purchase food from the market and ensuring access to nutritious ingredients. Beyond their practical use, homegardens also reflect women's knowledge of seasonal planting and local ecology.



Engaging in activities such as sewing, weaving & handicrafts

Later in the afternoon, once most of the day's responsibilities have been fulfilled, women often spend time mending clothes or working on small creative projects. These crafts (whether embroidery, stitching, or handmade goods) serve both as a source of personal satisfaction and as a means of generating modest income through informal trade or sales within the village. This quiet period offers a moment for focus, self-expression, and sometimes social bonding, as women often gather to work together.



Visiting other women to socialize in a more intimate setting

In the evenings, women sometimes visit one another's homes to talk, share stories, and unwind after a long day. These informal gatherings provide a valuable space for social connection, emotional support, and the exchange of everyday knowledge. In close-knit villages like Shonatola, such visits strengthen community bonds and create a sense of solidarity among women.

The Men of Shonatola



Prayer

Like the women, men begin their day at dawn, often starting with the fajr prayer, a quiet moment of reflection before the day's responsibilities unfold. Breakfast typically follows (usually is a simple meal of rice, lentils, and seasonal vegetables) after which they get ready and set off for work.

The men of Shonatola engage in a diverse range of occupations. While many still work in the paddy fields that surround the village, the recurring floods that inundate the region each year and devastate the crops have pushed a significant number to seek alternative livelihoods. These include carpentry, construction work, and other forms of manual labor. After finishing work, usually quite late in the day, the men return to the village to spend time with their family or socialize with each other.



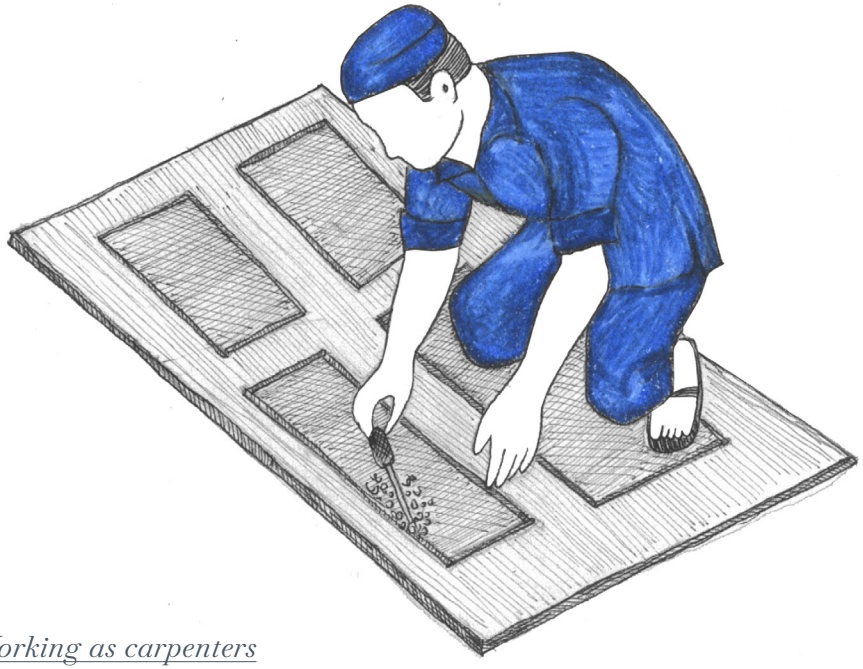
Working in the fields



Selling produxe at the market



Working in construction



Working as carpenters

Conclusions:

1. Men focus mainly on external work; women manage domestic and caregiving roles.

2. Both men and women adjust routines in response to climate-related challenges.

3. Daily life relies on complementary roles between genders.

4. Women carry a heavier load of unpaid, multitasked labor.

5. Access to markets, water, and resilient systems shapes daily routines and opportunities.

6. Water is not merely a necessity, but also a unifying and social element that fosters connection among people, especially women.

7. There is a need for a variety of spaces that cater to both intimate gatherings and larger, more casual social interactions.

8. Women need more opportunities to engage in activities which offer the potential to generate income from their work.

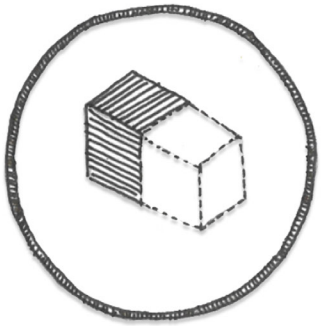
DESIGN PRINCIPLES



Flood Resilience



Water Management



Incrementality



Women's Income Generation

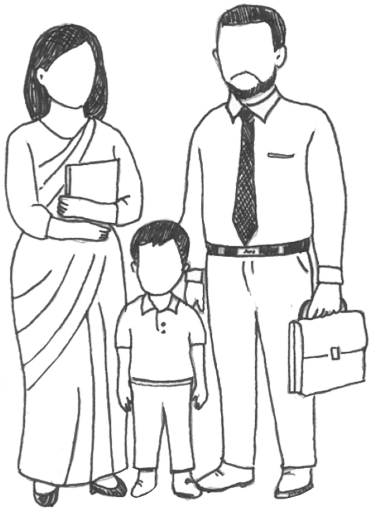


Mixing Incomes

TARGET GROUPS

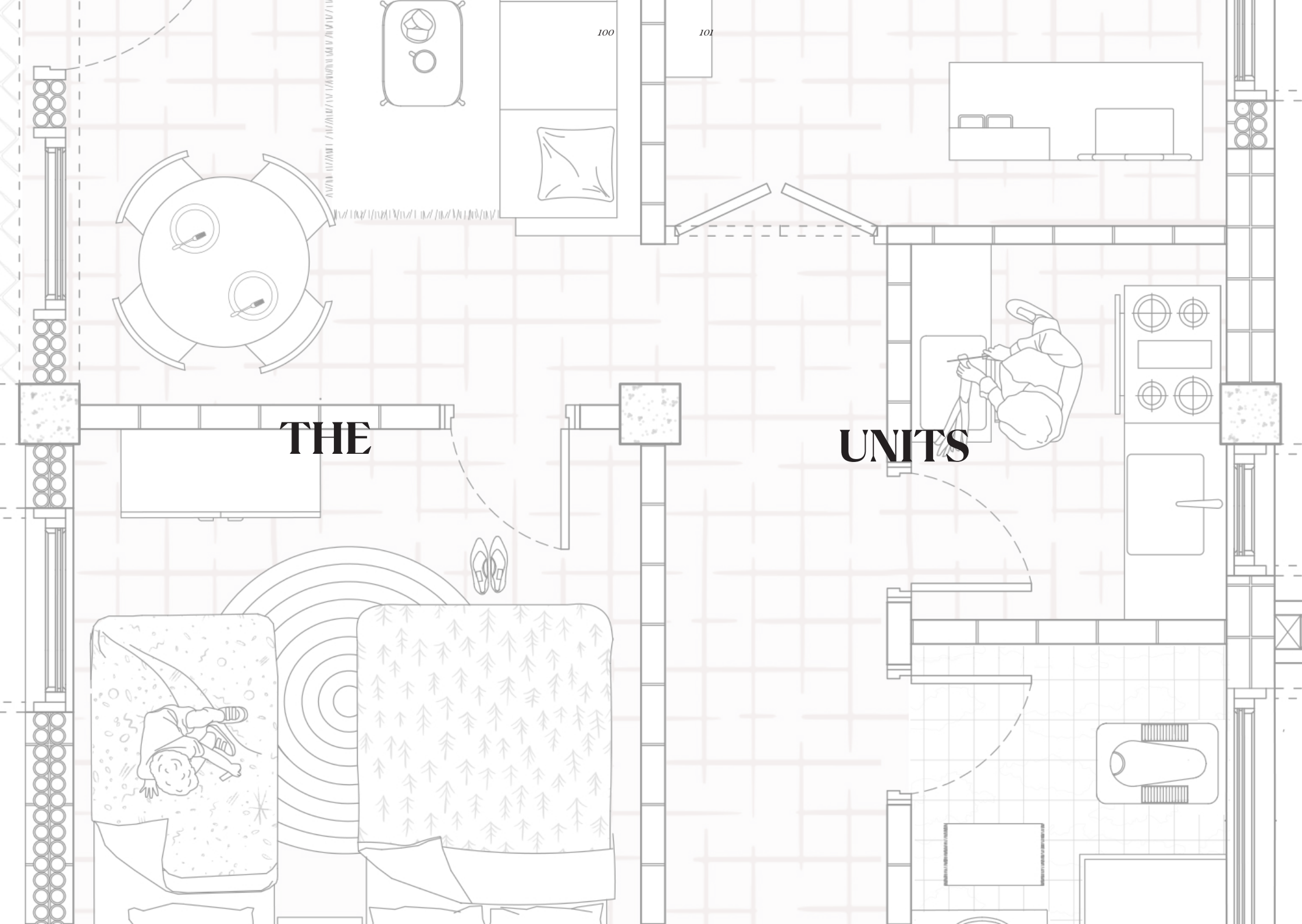


Women of Shonatola and their families (low-income)



People working in the city and their families (middle-income)

THE UNITS



THE UNITS
Case Studies

Aranya Low-Cost Housing, 1989 by Balkrishna Doshi

Commissioned by the Indore Development Authority, Aranya was designed to accommodate over 80,000 people through a mix of core housing units that allowed incremental expansion. Instead of imposing a one-size-fits-all solution, Doshi's plan emphasized self-determination, enabling residents to build, expand, and adapt their homes over time according to their means and needs. The project introduced a human-scaled urban layout of interconnected courtyards, narrow streets, and shared public spaces that encourage community interaction and economic activity.

Why this case study?:

- *Incremental Growth: Core housing units designed for future expansion by residents.*
- *Community Spaces: Network of courtyards, narrow streets, and shared public areas.*
- *Affordability & Dignity: Low-cost construction without compromising spatial quality.*
- *Livelihood Integration: Accommodates home-based work and small-scale enterprises.*
- *Climate Responsiveness: Natural ventilation, shade, and orientation strategies.*
- *Social Inclusivity: Mix of income levels and housing types to support diverse communities.*



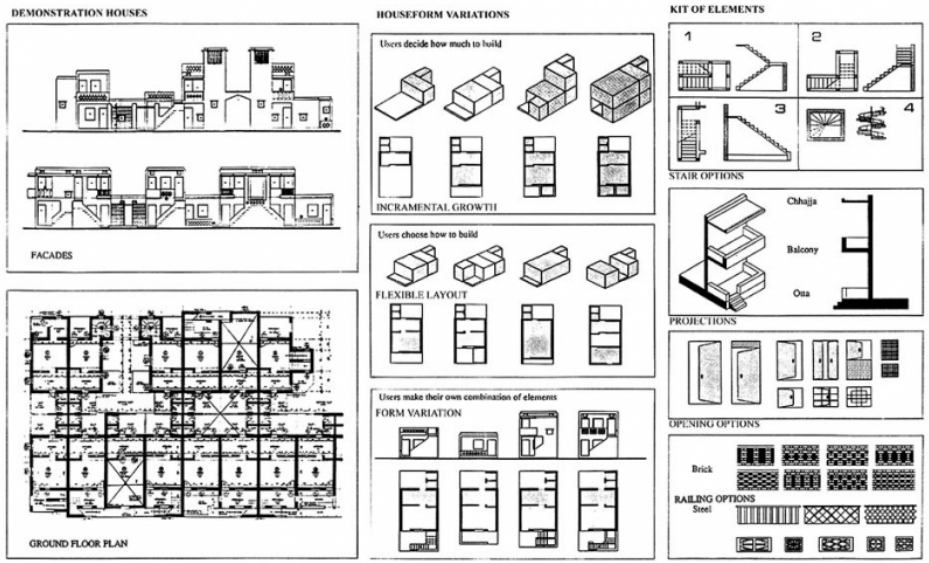


Fig. 27, 28: Aranya Low-Cost Housing by Balkrishna Doshi

Villa Verde Housing, 2010 by ELEMENTAL

Villa Verde, designed by Alejandro Aravena's firm Elemental and completed in 2010 in Constitución, Chile, is a pioneering example of incremental social housing. Commissioned by the forestry company Arauco after the 2010 earthquake and supported by Chile's Housing Solidarity Fund, the project delivered 484 two-story homes based on a "half-house" model. Each unit provided a fully functional core—complete with kitchen, bathroom, roof, and essential services—spanning 57 m², with the possibility for residents to expand up to 85 m² as their means allowed.

A key feature of the project was its participatory design process. Future residents were invited to take part in a series of workshops that shaped the layout and informed the final design. They also received manuals to support responsible self-construction. The housing was arranged in a compact, high-density layout with communal green spaces, promoting both efficiency and a sense of community.

Villa Verde stands out not just for its affordability, but for its dignity, adaptability, and long-term vision, thus empowering residents to shape their homes while maintaining architectural coherence and resilience.

Why this case study?:

- *Incremental design: Delivers a solid, expandable half-house that residents can complete over time.*
- *Participatory approach: Involves future homeowners in the process, promoting ownership and customization.*
- *Resilience through flexibility: Adaptable to changing needs and effective in post-disaster reconstruction.*
- *Modular structure: Supports phased, organic growth based on residents' means and priorities.*
- *Social impact focus: Uses architecture as a means to address inequality and improve quality of life.*



Fig. 29: Villa Verde Housing by ELEMENTAL

THE UNITS

Type A: low - income, one storey home

female owned shop or workspace for women

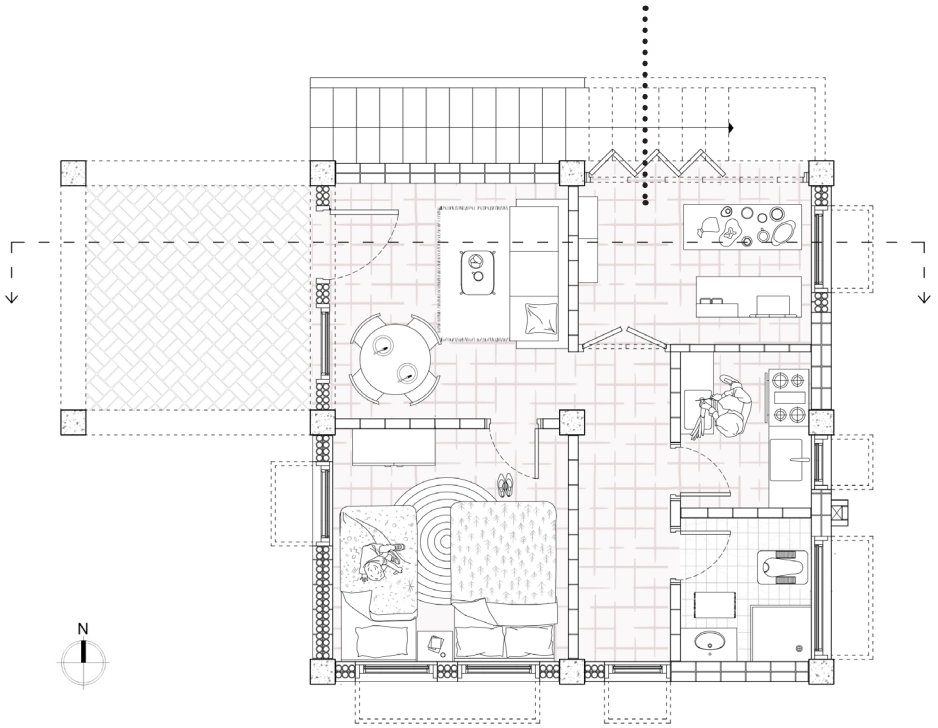




Fig. 30: Ground floor plan

Fig. 31: Axonometric view

THE UNITS

Type A: low - income, one storey home



Fig. 32: Female-owned shop - impression

THE UNITS

Type A: low - income, one storey home



Fig. 33: Workshop for women - impression

THE UNITS

Type A: low - income, one storey home

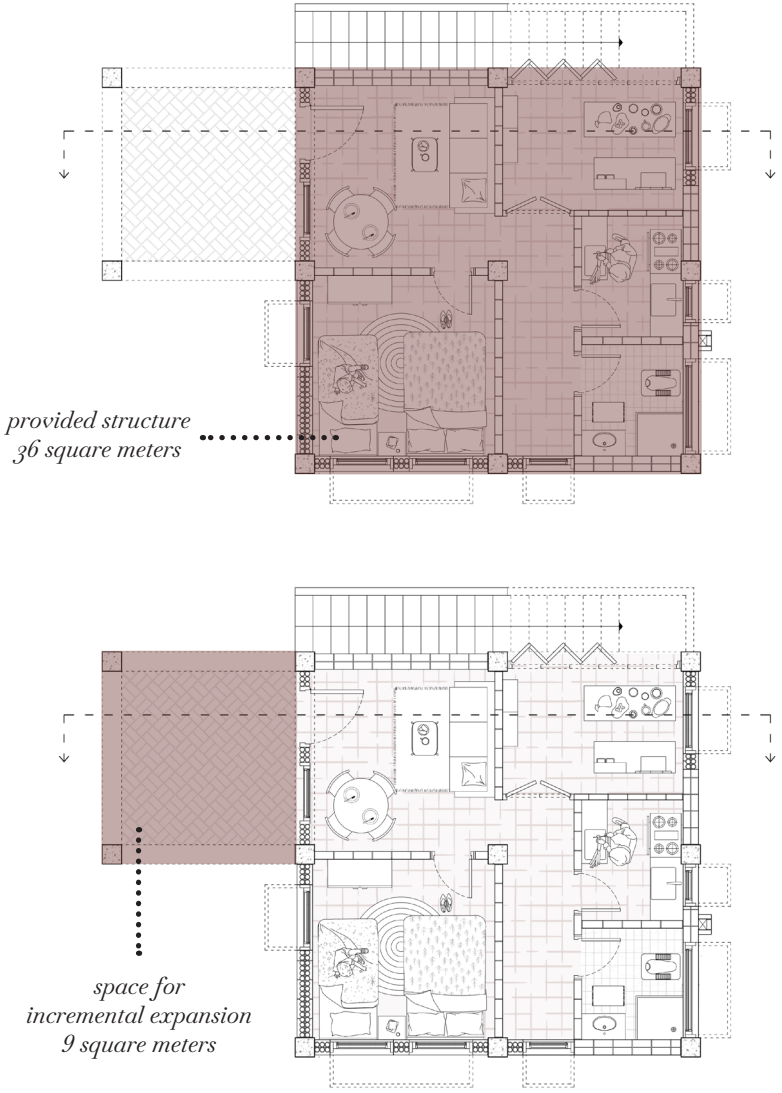


Fig. 34: Provided structure
Fig. 35: Space for incremental expansion

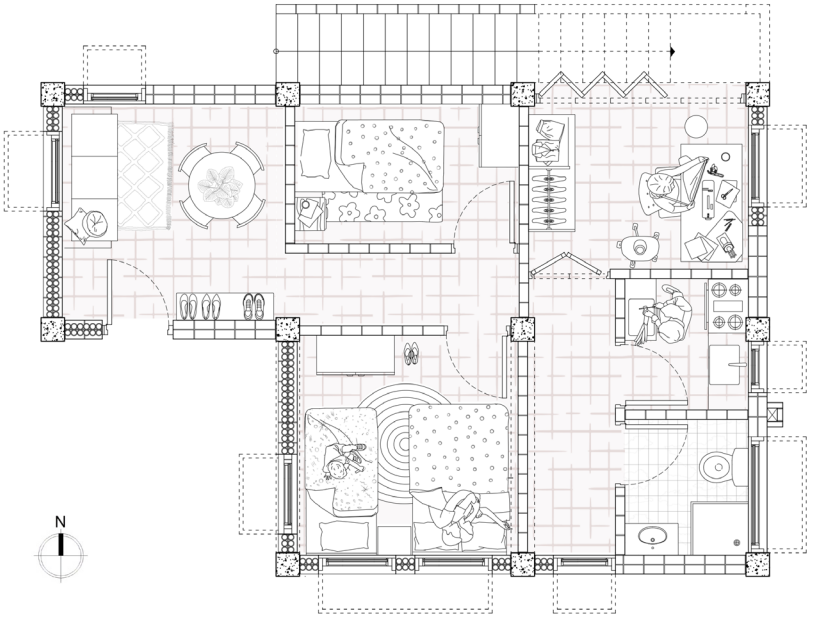


Fig. 36: Expanded unit

THE UNITS

Type B: low - income, two storey home

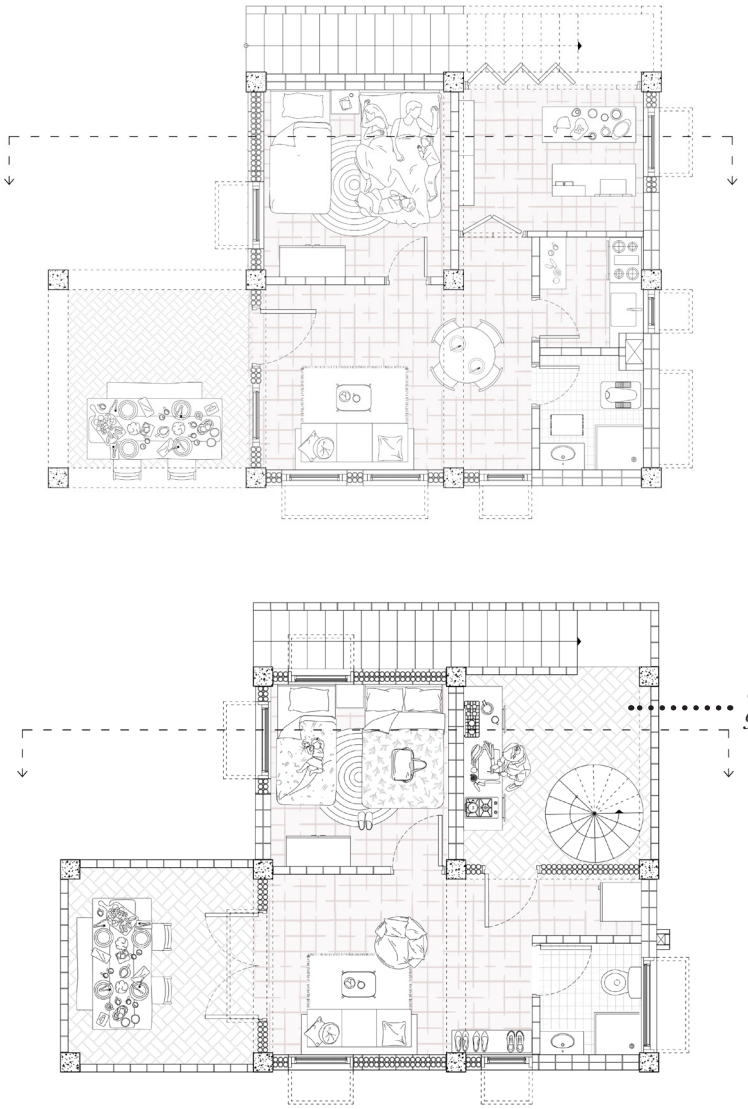


Fig. 37: Ground floor plan
Fig. 38: First floor plan



Fig. 39: Axonometric view

THE UNITS

Type B: low - income, two storey home

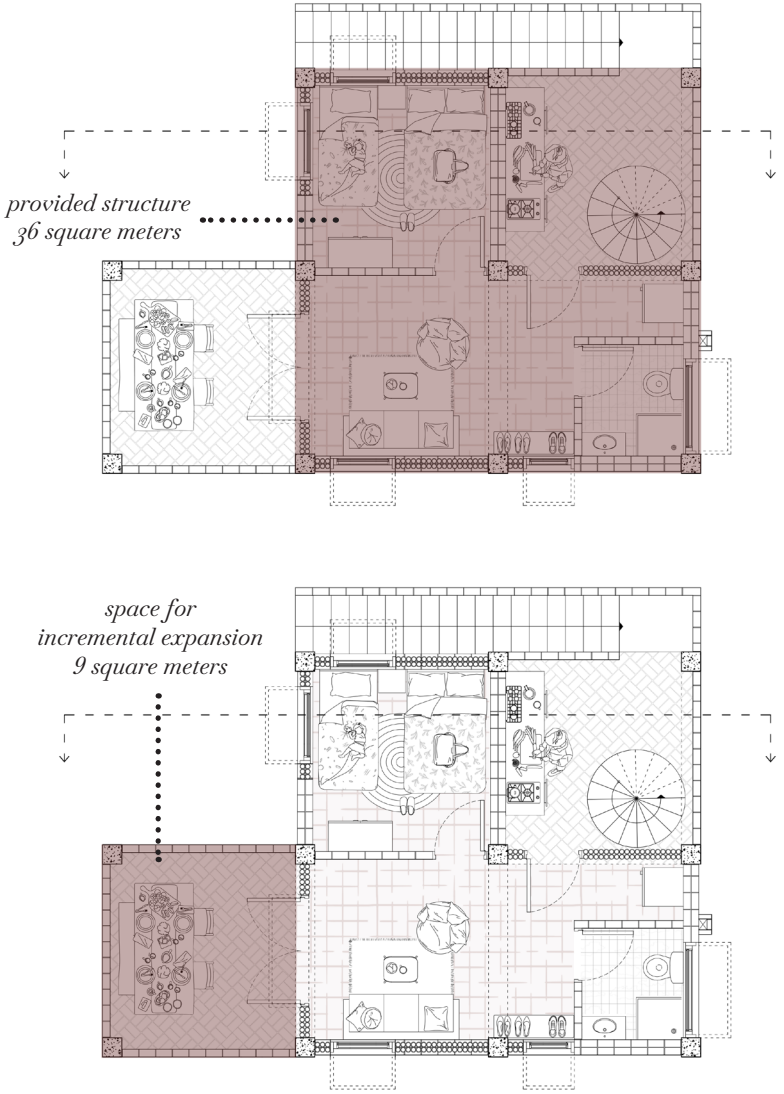


Fig. 40: Provided structure, first floor
Fig. 41: Space for incremental expansion, first floor

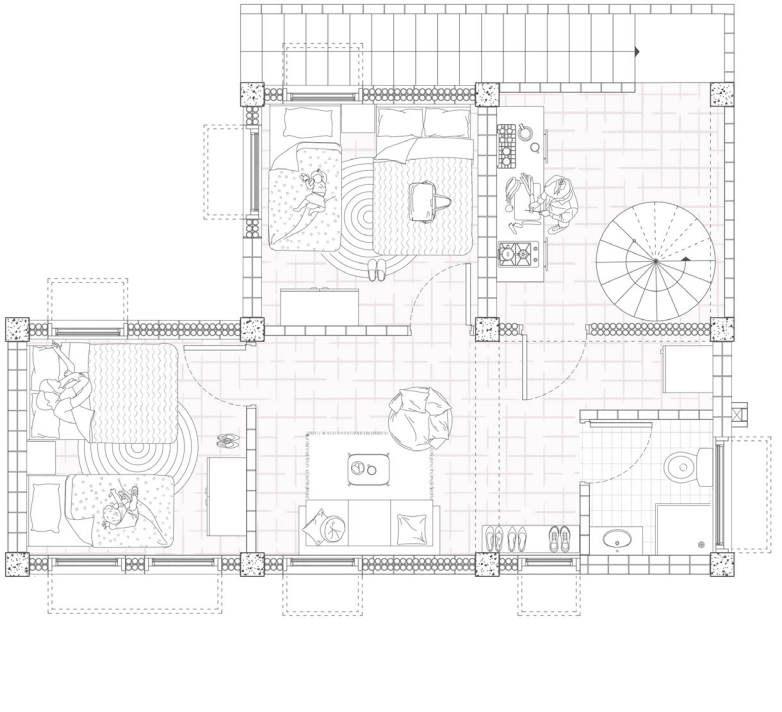


Fig. 42: Expanded unit, first floor

THE UNITS

Type C: low - income, three storey home

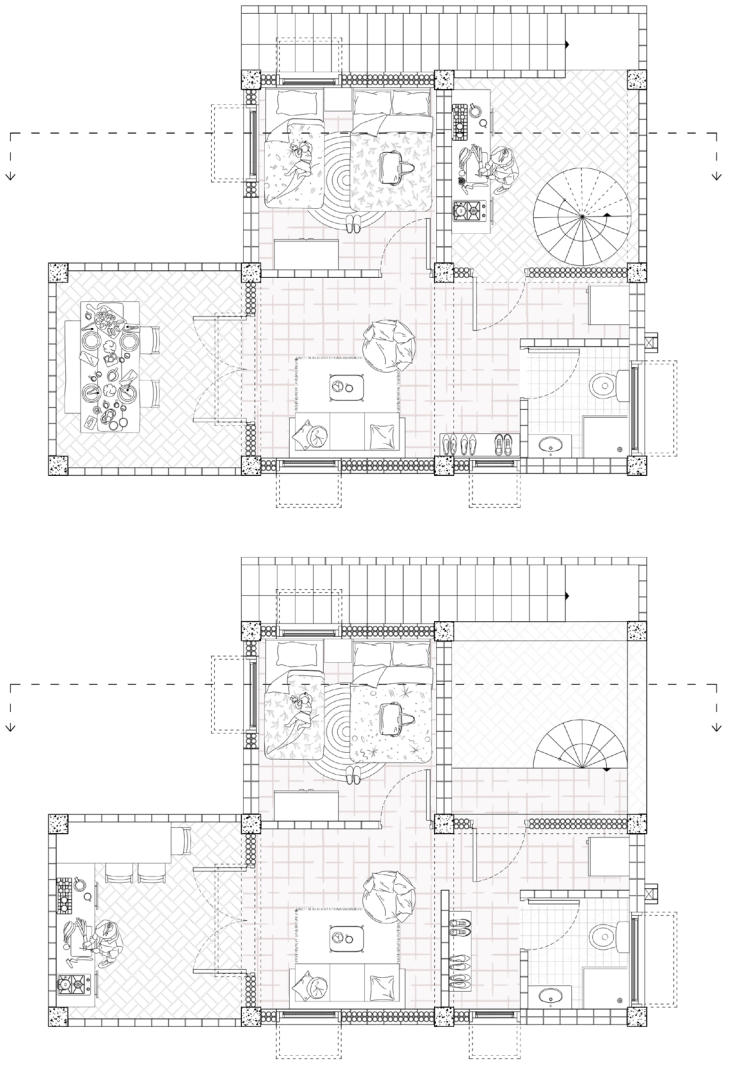


Fig. 43: First floor plan
Fig. 44: Second floor plan



Fig. 45: Axonometric view

THE UNITS

Incrementality - different scenarios





THE UNITS

Incrementality - different scenarios

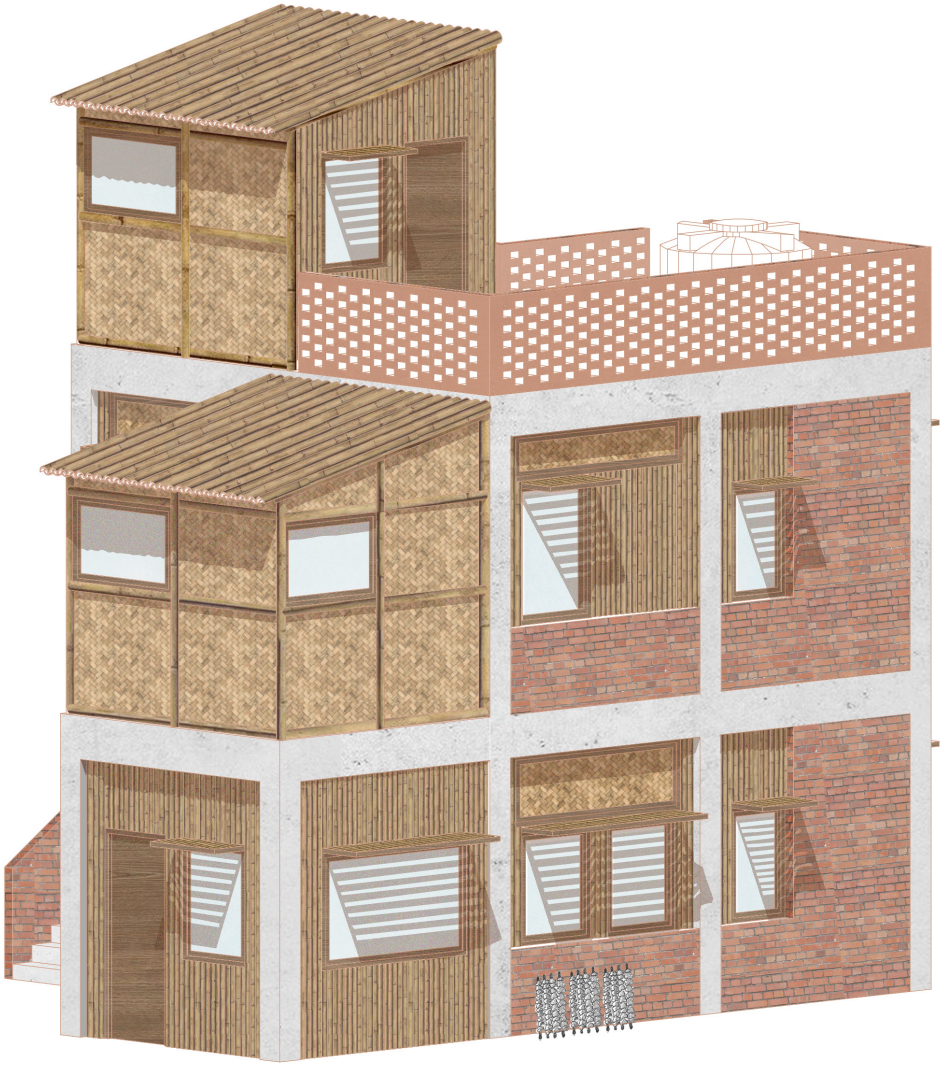




THE UNITS

Incrementality - different scenarios





THE UNITS

Incrementality - different scenarios



The allocated space for incremental development offers residents the flexibility to adapt and expand their homes according to evolving needs, resources, and aspirations. The scenarios illustrated above represent just a few of the many possible trajectories such growth could take, employing diverse construction materials and techniques that reflect individual agency, economic capacity, and cultural preferences.

THE UNITS

Type D & E: middle income homes

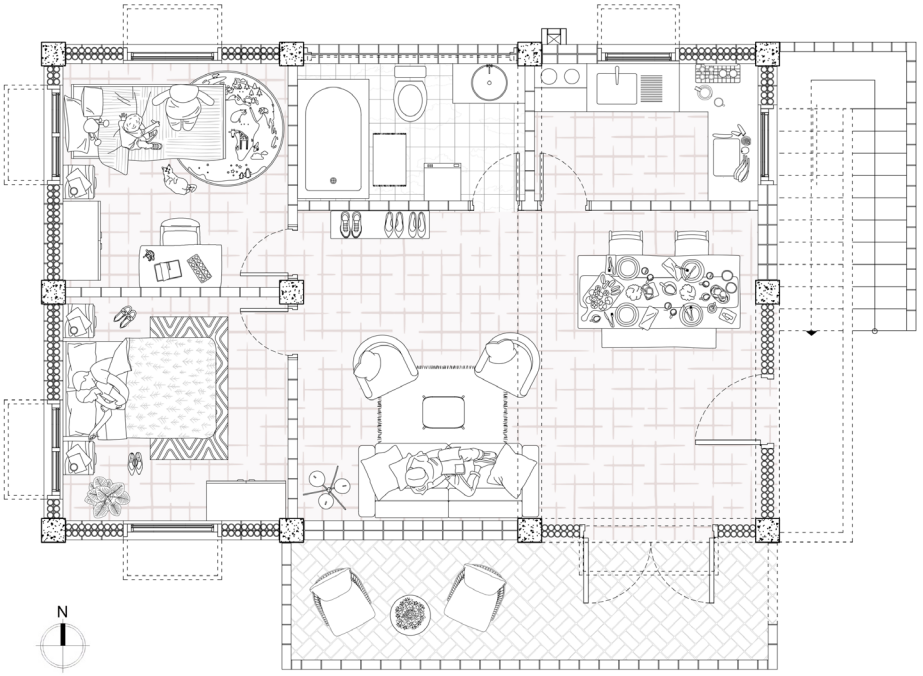
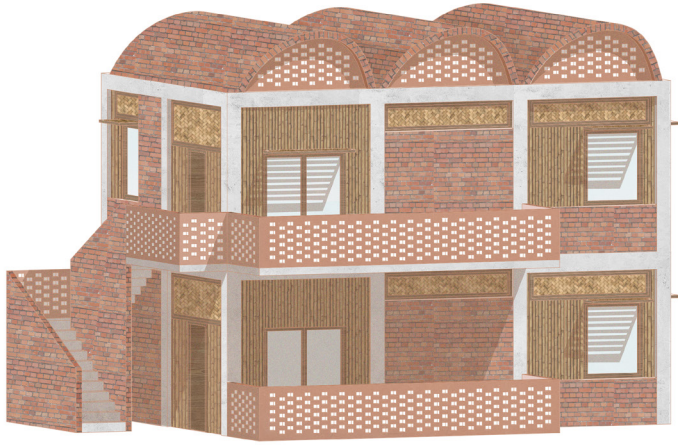


Fig. 46: Typical floor plan



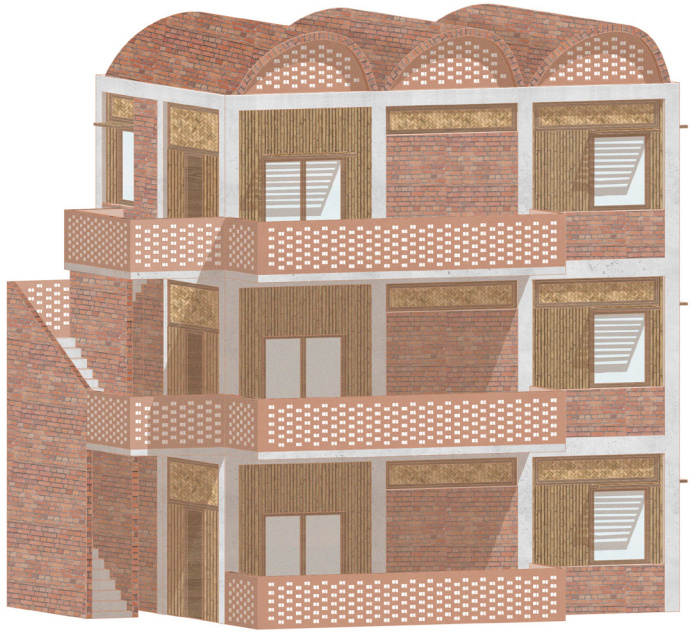
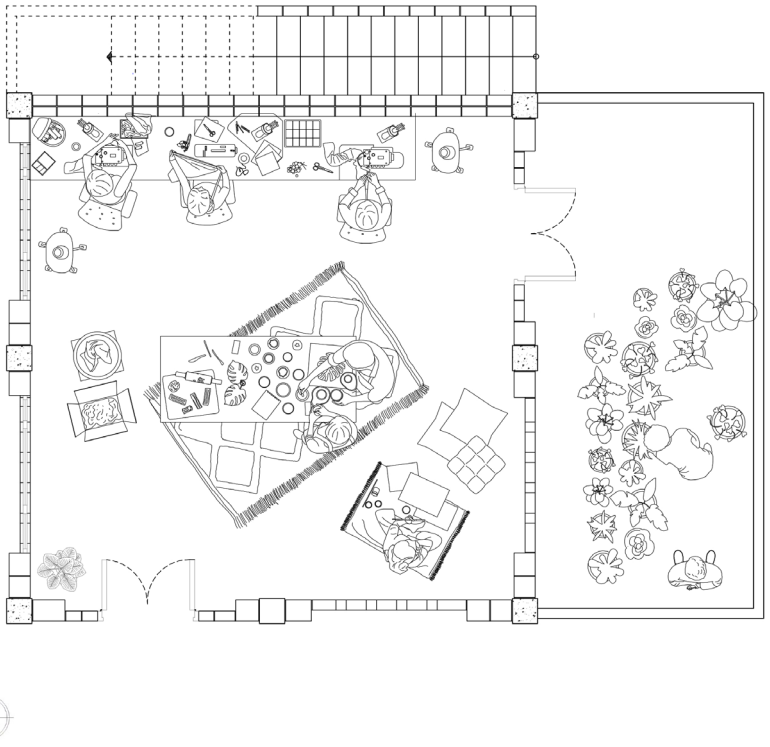
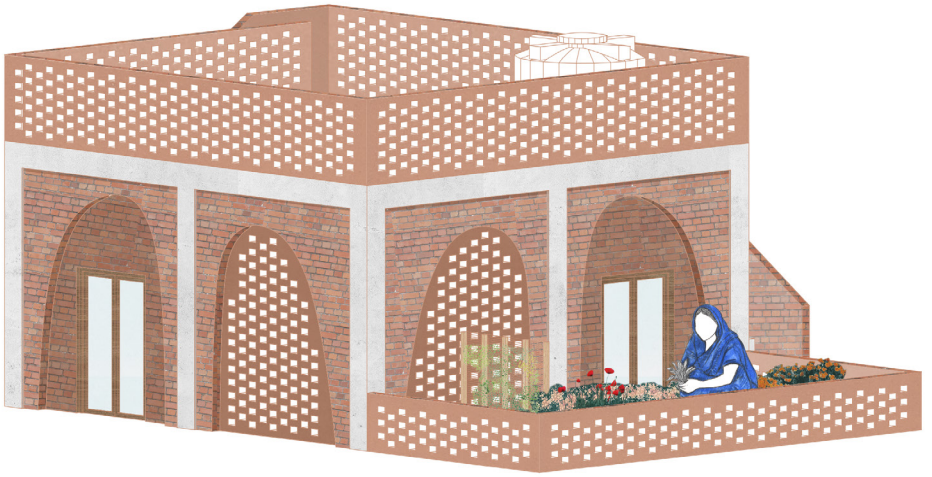


Fig. 47: Axonometric view, two storey
Fig. 48: Axonometric view, three storey

THE UNITS

Type F: communal building for women





At the core of each cluster lies a women-centered community building designed to support collective empowerment and livelihood generation. The ground floor accommodates income-generating and social activities—such as handicrafts and workshops—while the rooftop is designated for communal cooking and features a small garden.

Fig. 49: Floor plan

Fig. 50: Axonometric view

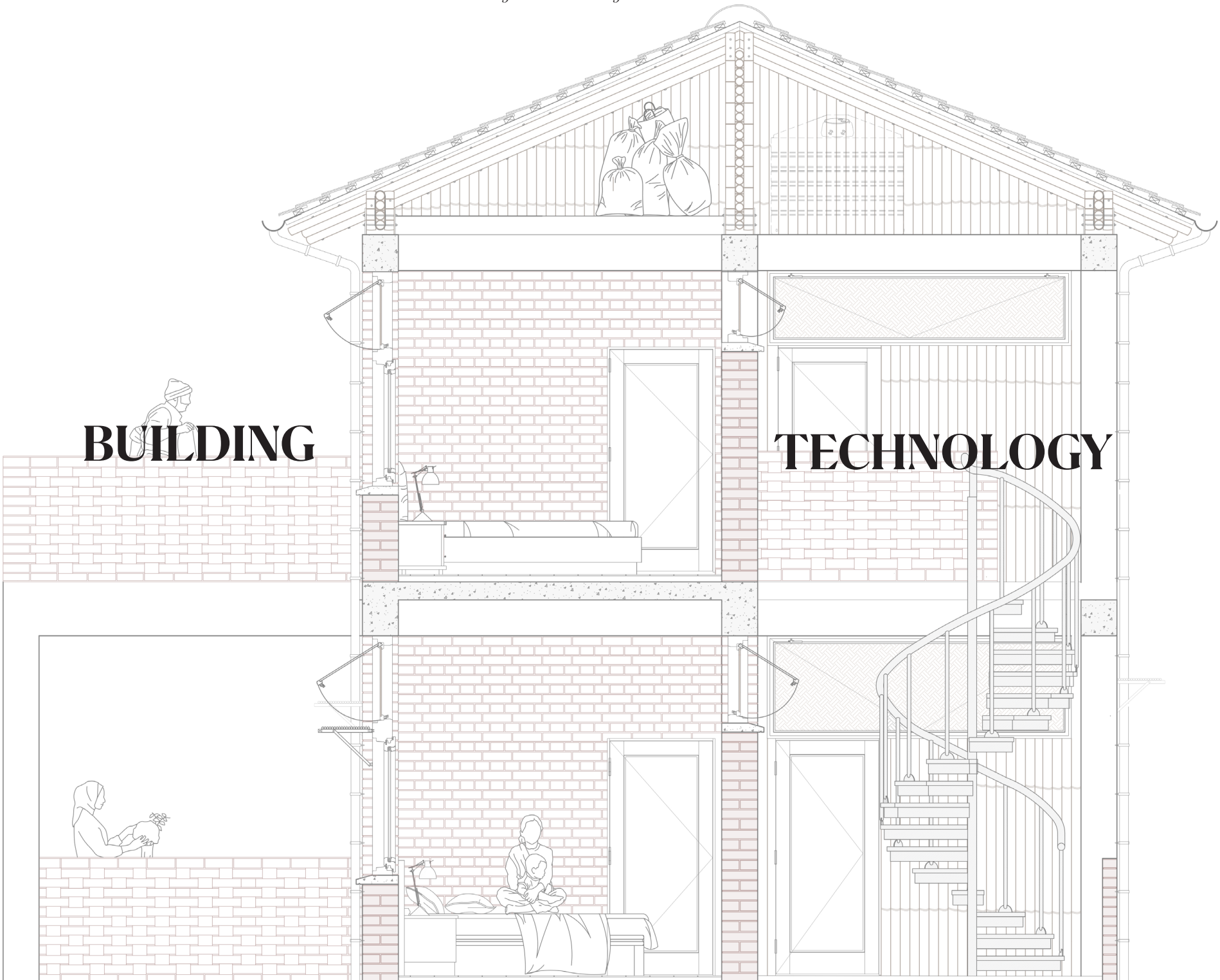
THE UNITS

Type F: communal building for women



Fig. 51: Communal building - impression

BUILDING TECHNOLOGY



MATERIALITY

Material Strategy: Brick, Concrete, and Bamboo

The material palette—brick, concrete, and bamboo—is carefully selected to respond to the climatic, social, and economic context of Shonatola Village. Concrete provides structural stability and resilience against flooding, forming the raised platforms and essential structural elements that ensure long-term durability. Brick, widely available and locally understood, is used for infill walls, offering thermal mass and ease of maintenance while supporting incremental construction over time.

Bamboo introduces a lightweight, renewable, and culturally familiar material that enhances the adaptability and environmental performance of the housing. Its use in shading devices, partitions, and secondary structures adds spatial warmth and flexibility while supporting local craftsmanship and low-carbon building practices.

Together, these materials balance permanence and adaptability, enabling a construction approach that is both resilient and responsive to local livelihoods, incremental growth, and climate-related challenges.

Women's Role in Bamboo Craft and Construction

In rural Bangladesh, women have long played a central role in bamboo craftsmanship, using their skills to produce household items, furniture, and structural components. This embedded knowledge becomes a valuable asset in the construction and maintenance of the dwellings. By incorporating bamboo into the design—not only as a sustainable and locally available material but also as a medium of female expertise—the project creates opportunities for women to actively participate in the building process. Their involvement reinforces traditional skills, fosters a sense of ownership, and strengthens community-based resilience. In this way, the architecture becomes both a product and a process of local knowledge, with women positioned not just as users but as co-creators of the built environment.

FRAGMENT

Type C unit



Fig. 52: Elevation
Fig. 53: Plan

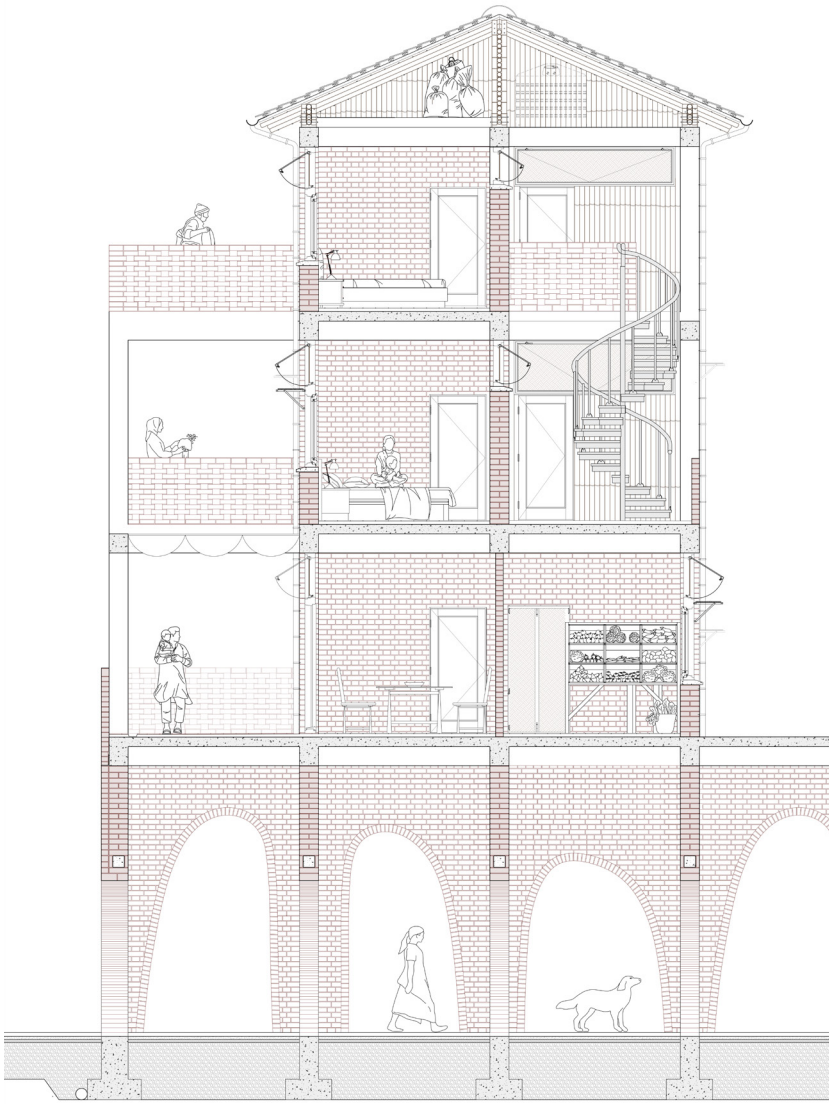


Fig. 54: Section

FRAGMENT
Details

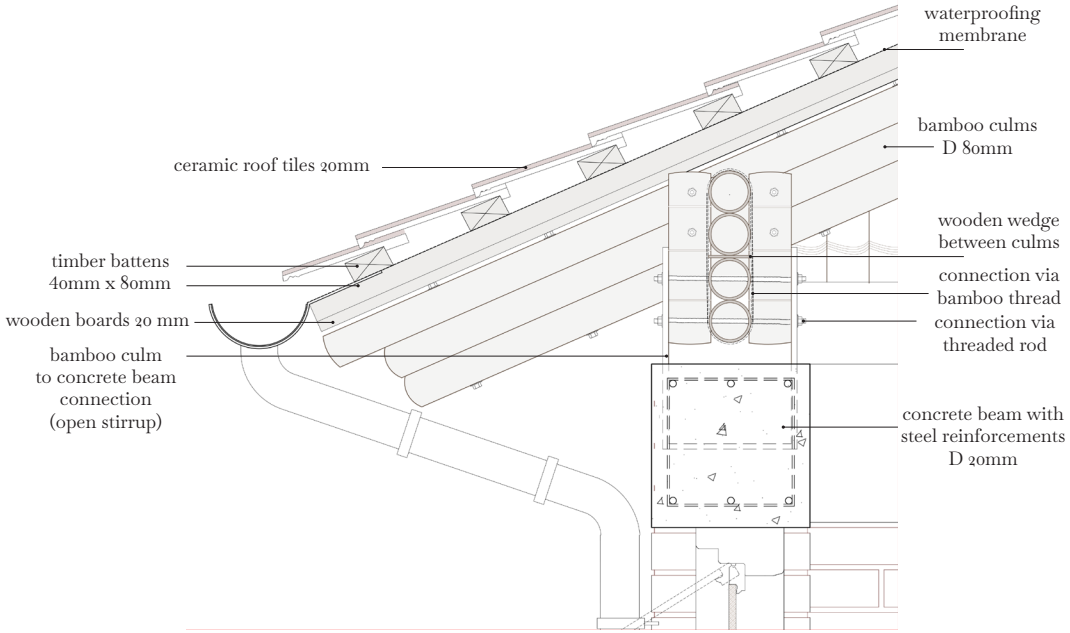
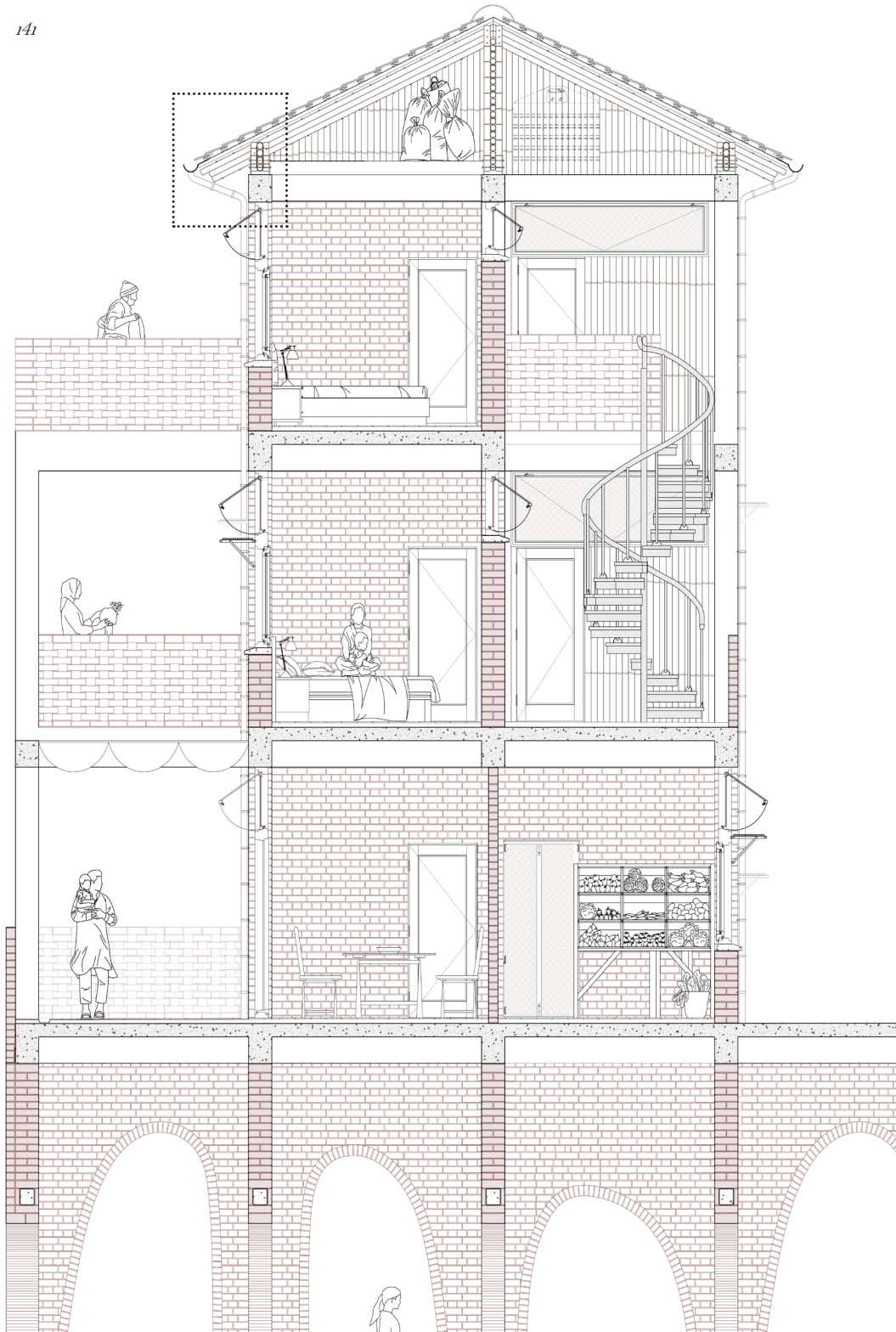


Fig. 55: Roof Detail



FRAGMENT
Details

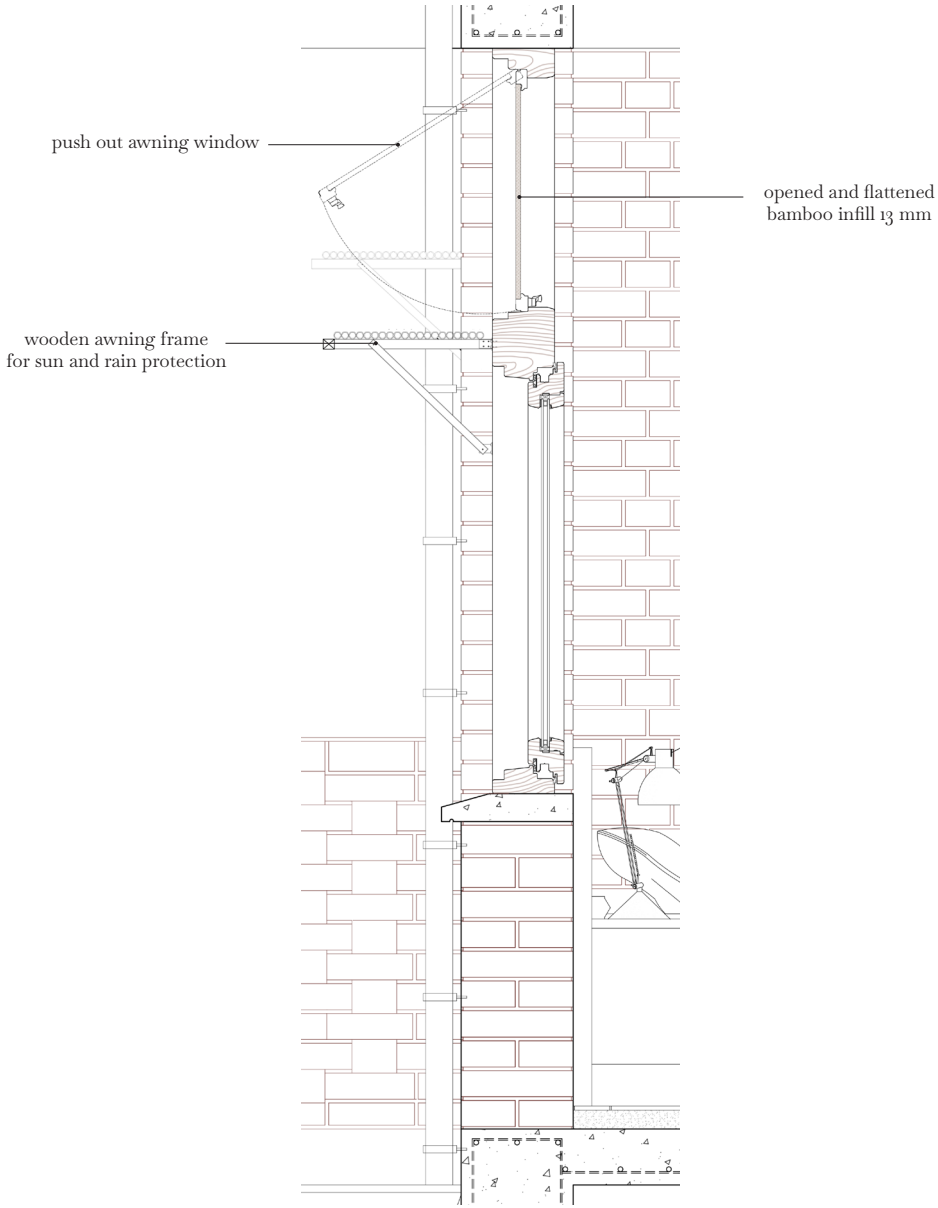
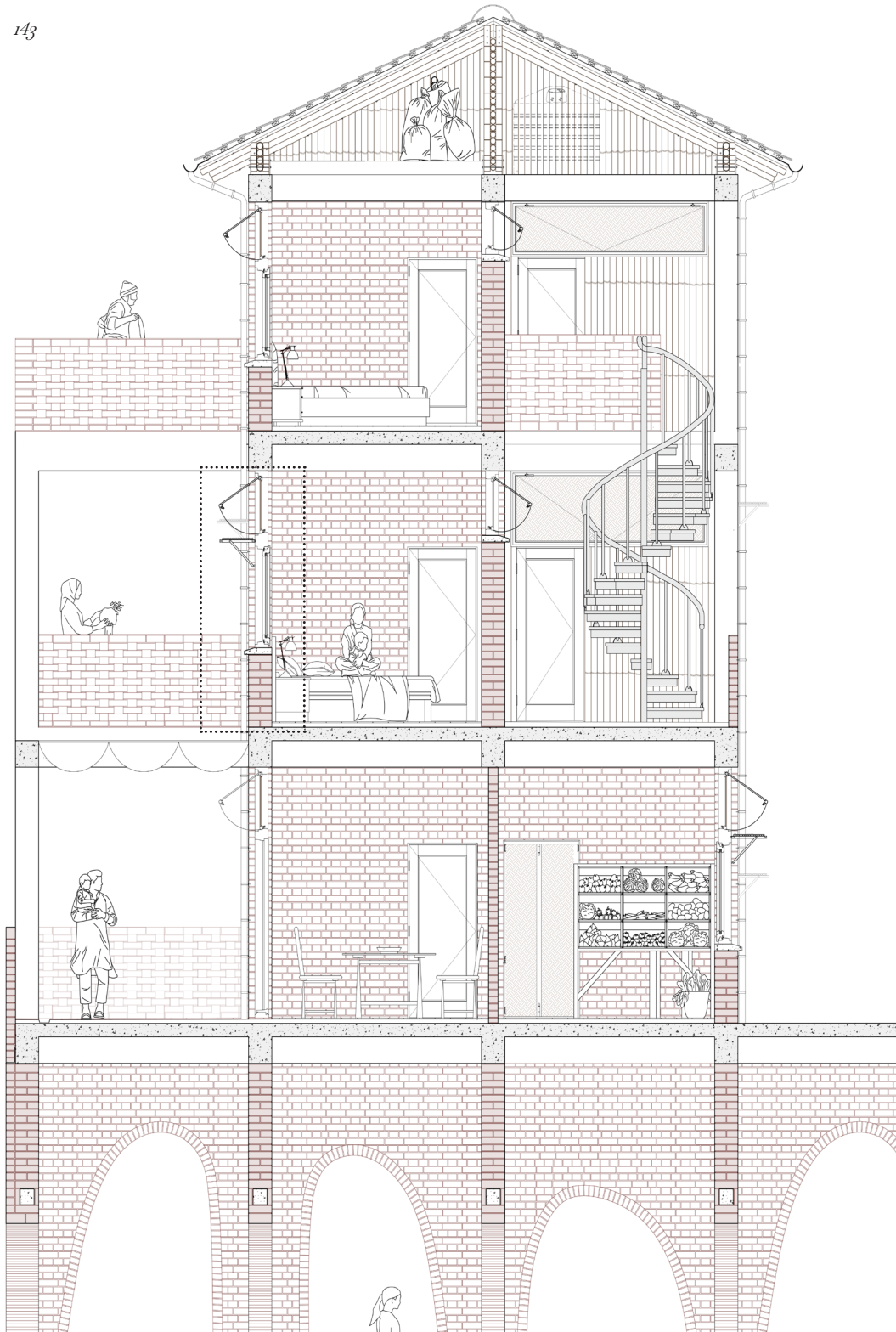


Fig. 56: Window Detail



FRAGMENT
Details

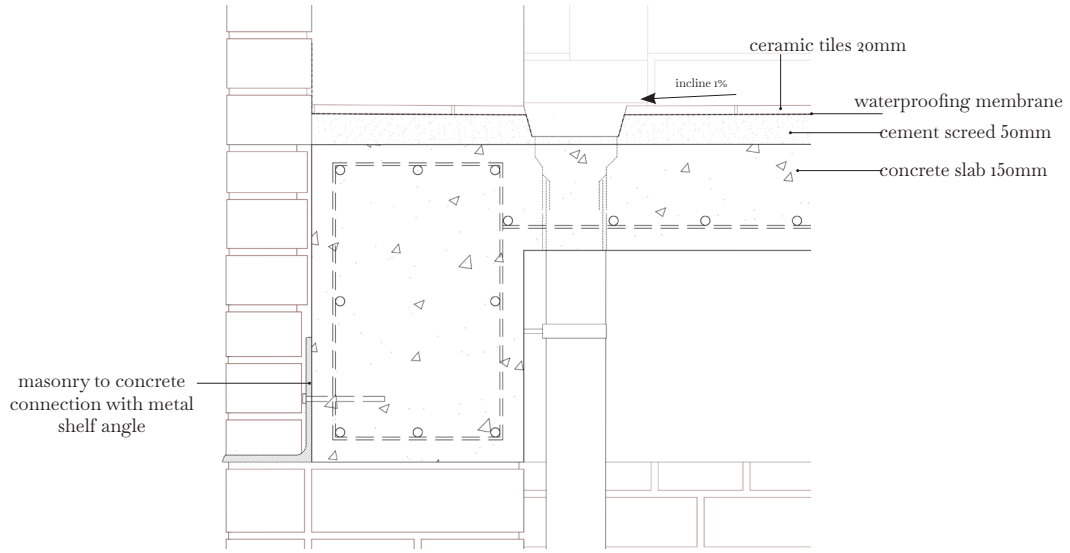
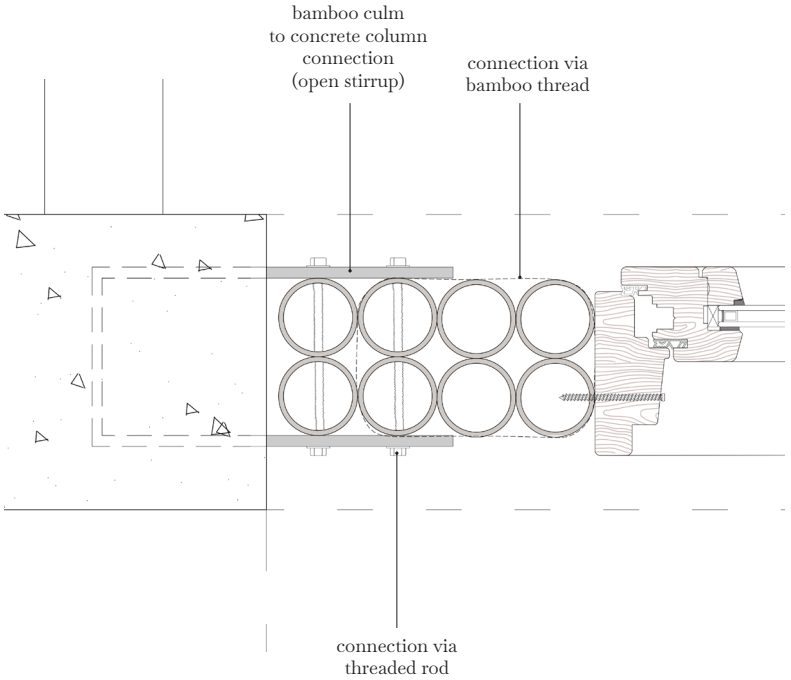


Fig. 57: Balcony Detail

FRAGMENT
Details



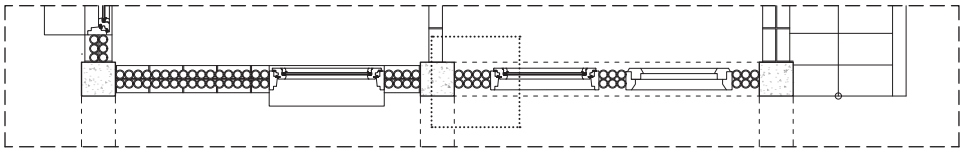


Fig. 58: Window Connection Detail

CONSTRUCTION PROCESS

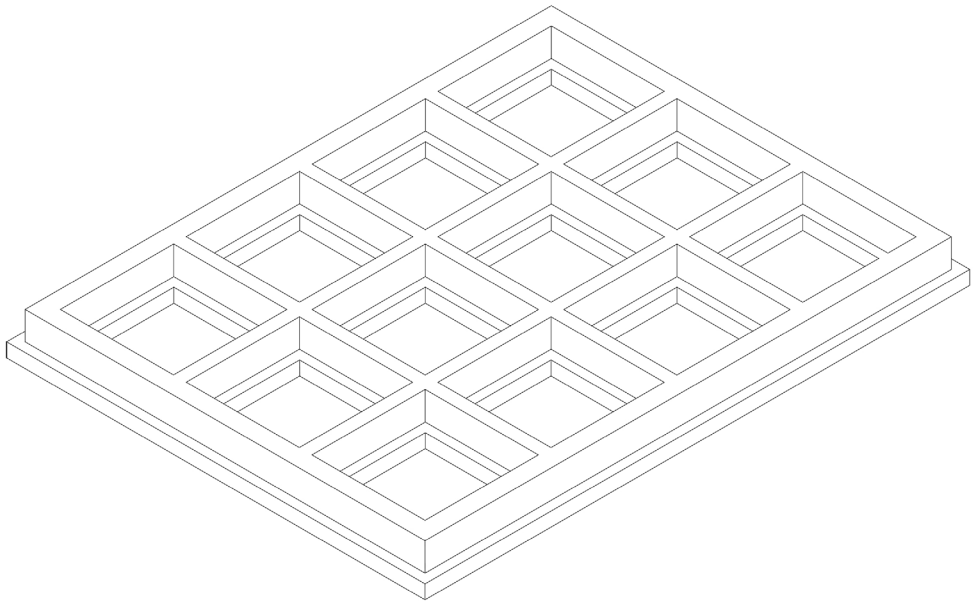


Fig. 59: Step 1: Concrete Foundations

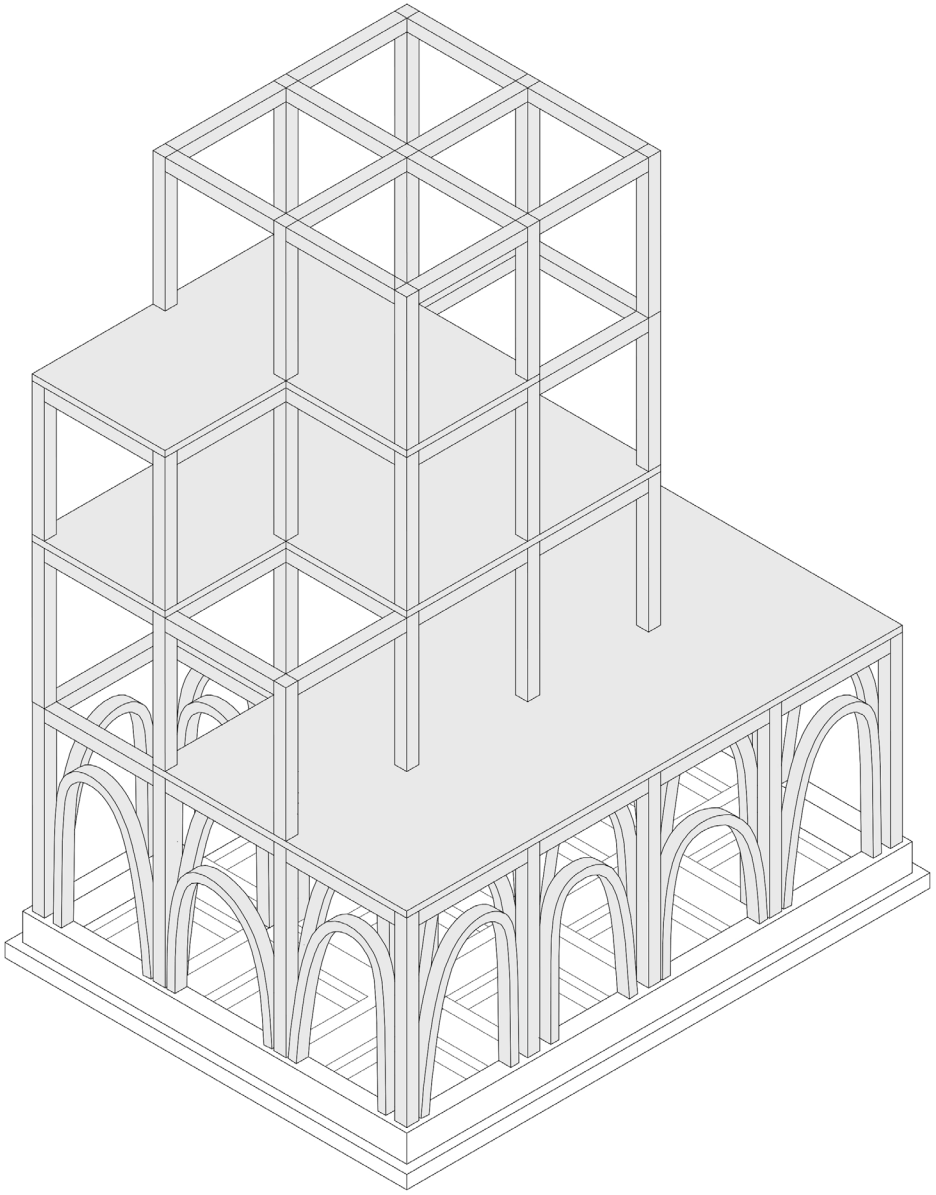


Fig. 60: Step 2: Concrete Structure

CONSTRUCTION PROCESS

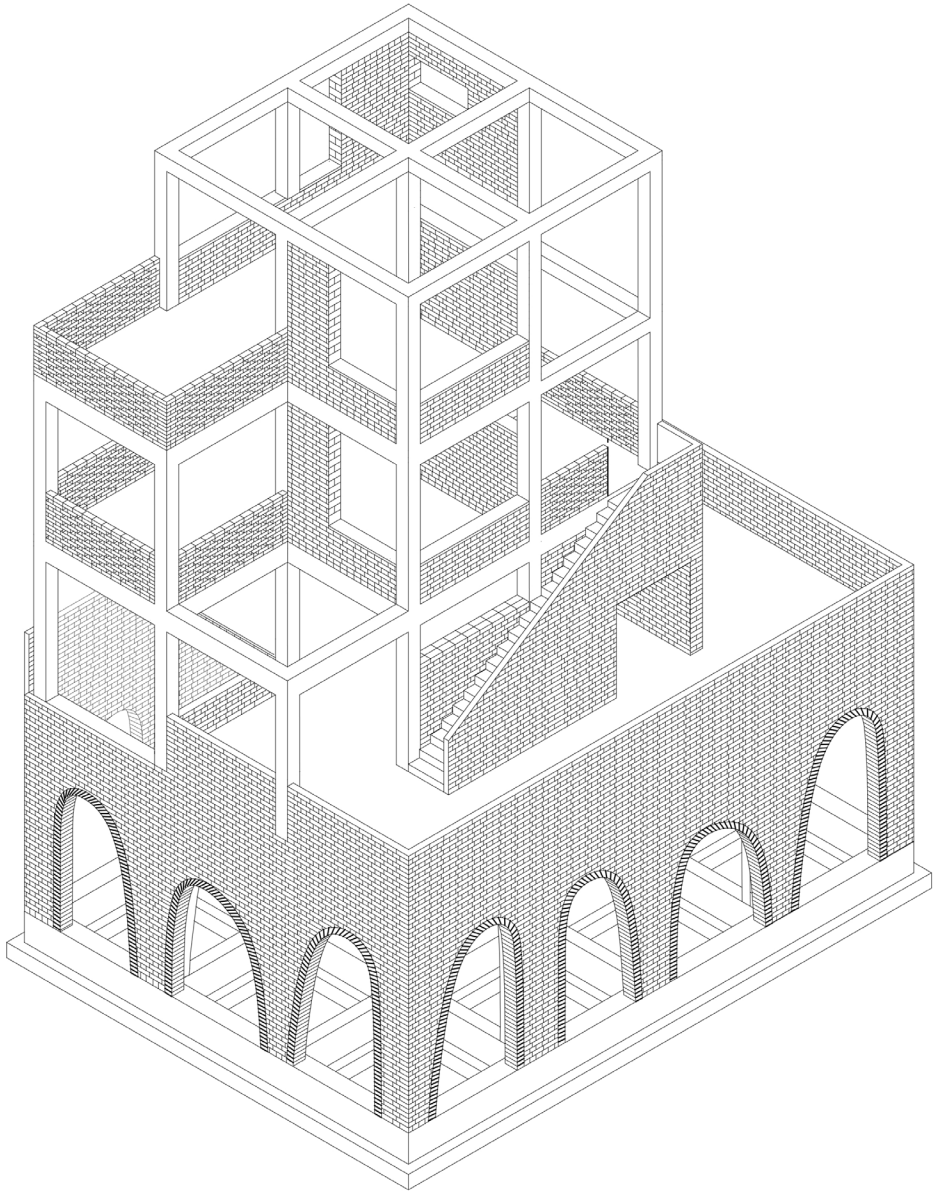


Fig. 61: Step 3: Brick Infill

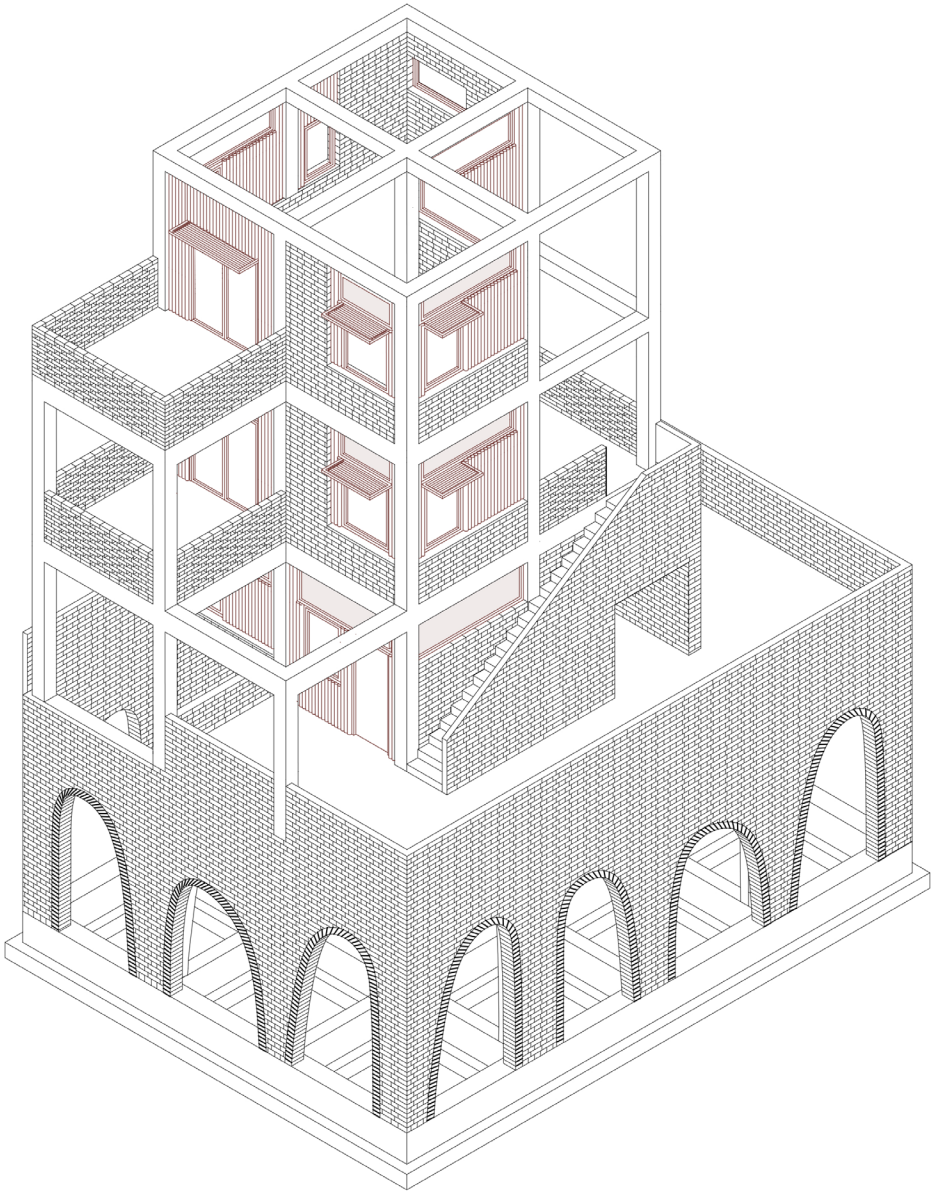


Fig. 62: Step 4: Bamboo Infill

CONSTRUCTION PROCESS

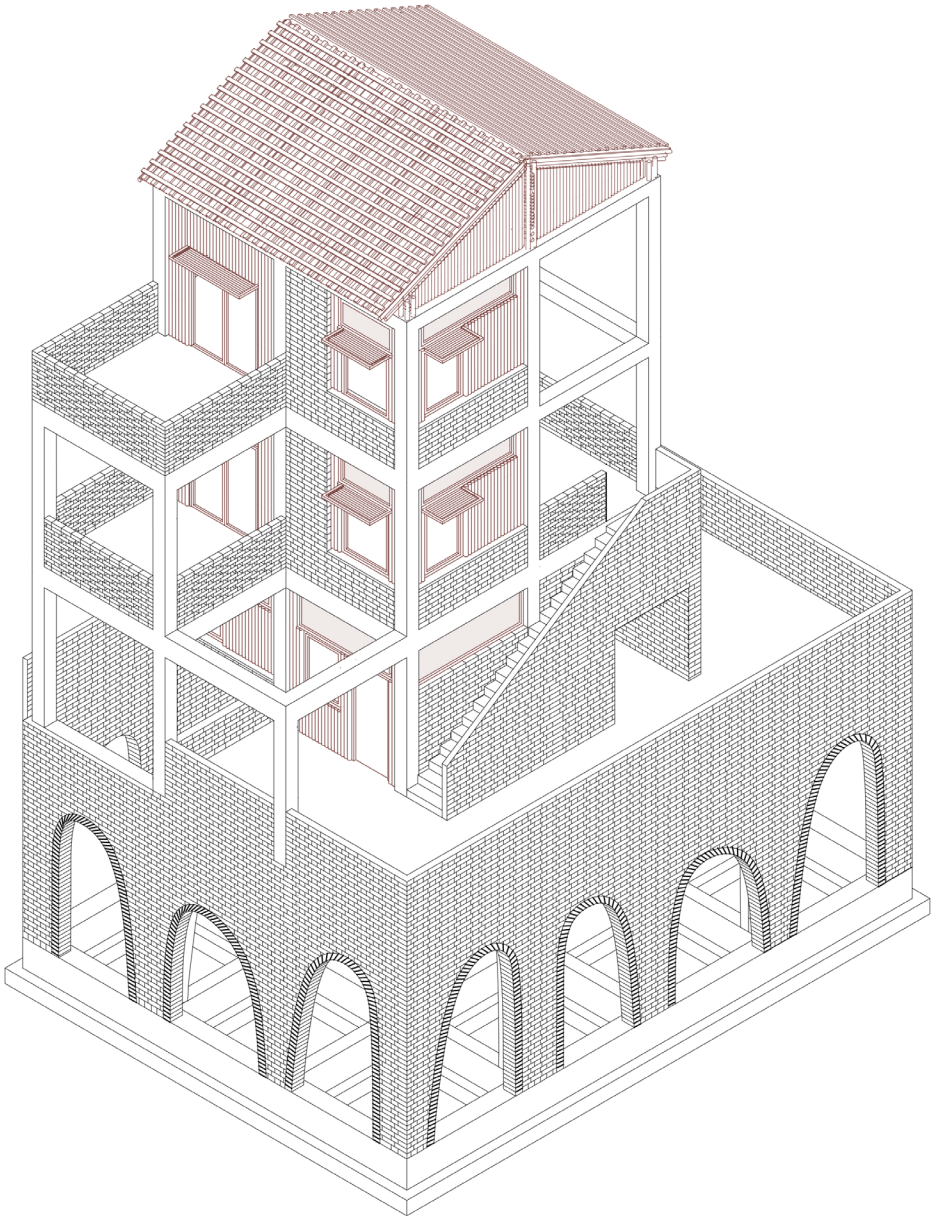


Fig. 63: Step 5: Roof Structure

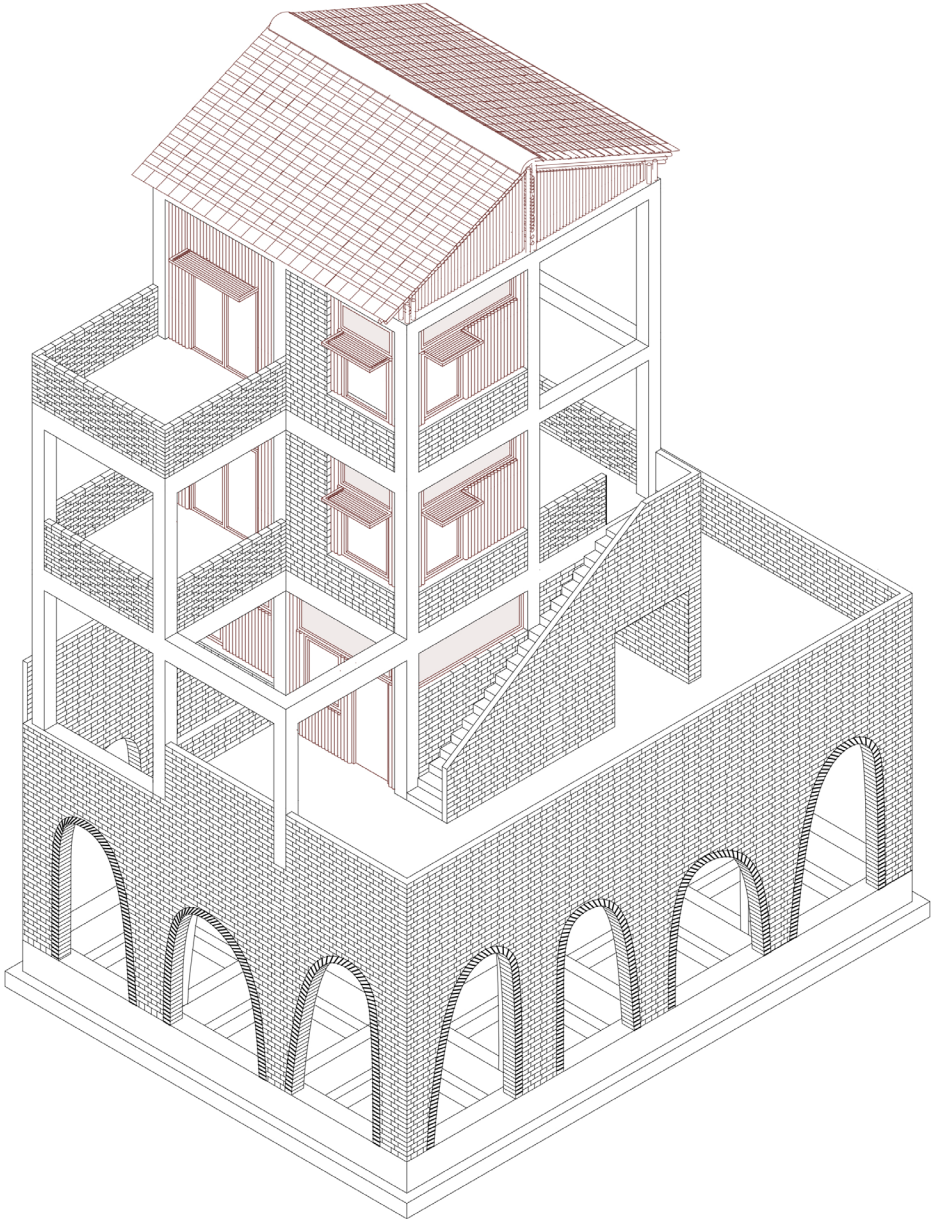
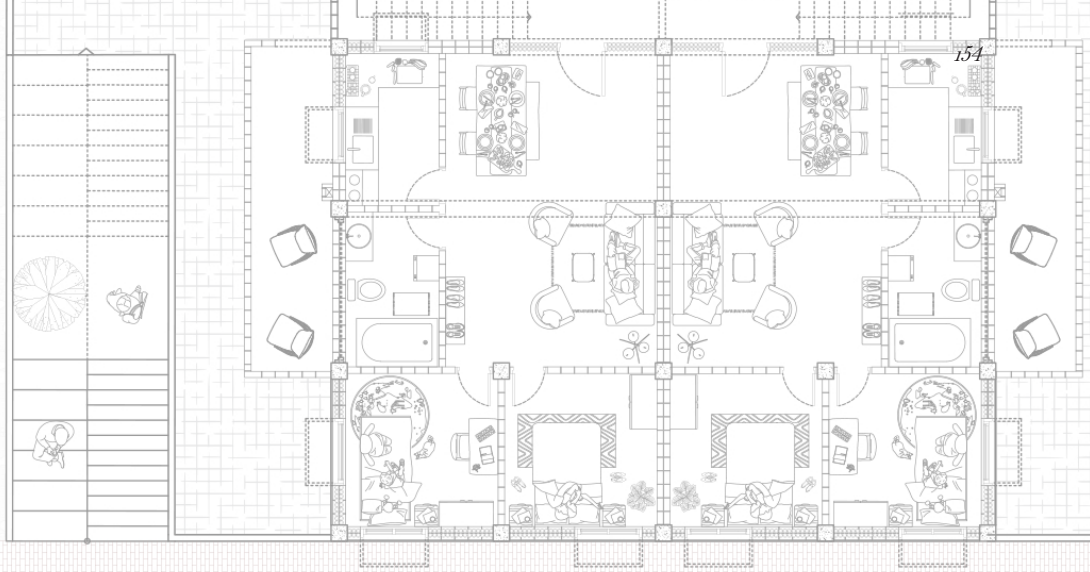
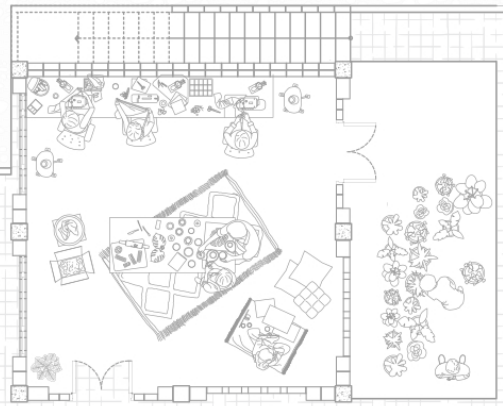
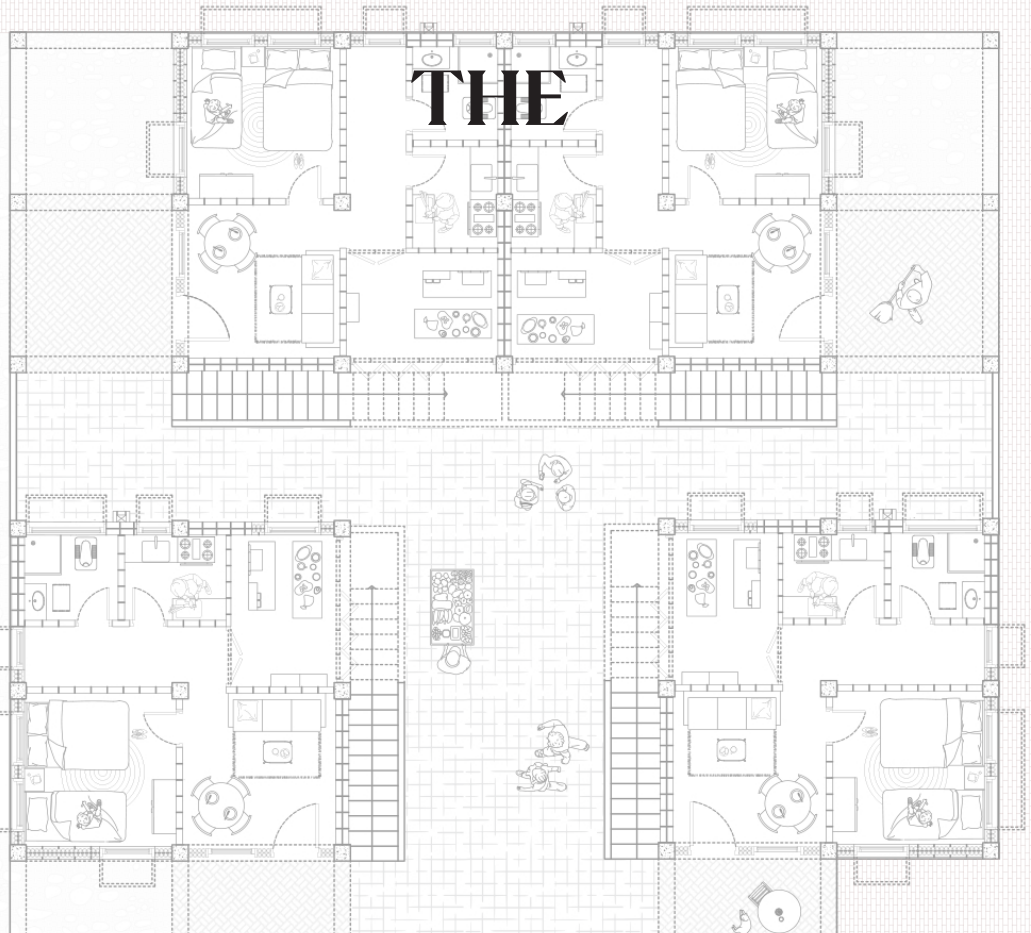


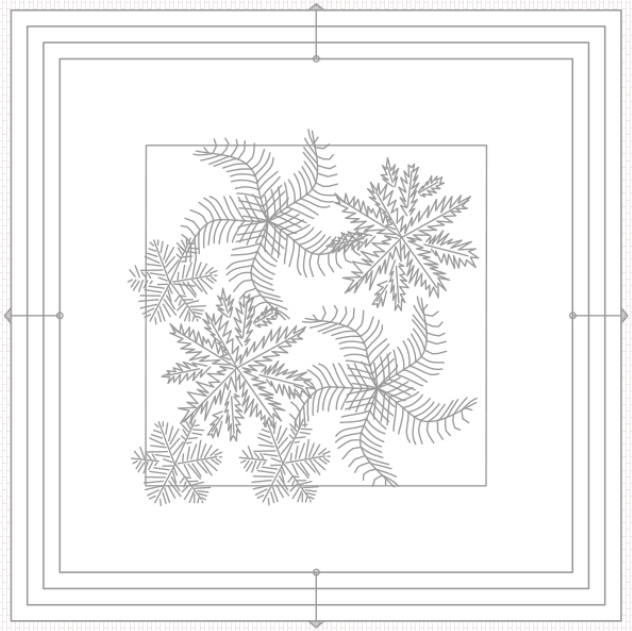
Fig. 64: Step 6: Roof Tiles





THE CLUSTER





THE CLUSTER

Case Study

School of Dancing Arches, 2019 by Samira Rathod Design Associates

The School of Dancing Arches, designed by Samira Rathod Design Associates in Bhadran, India, reimagines school architecture as a space for wonder and play. Inspired by the spontaneity of a child's drawing, the building is composed of irregular terracotta brick arches that curve, lean, and twist, thus creating a dynamic sequence of spaces that encourage movement, exploration, and imagination.

Set amidst tobacco fields, the school comprises five curved classroom blocks connected by a central spine, housing 11 classrooms, offices, a small temple, and service areas. Vaulted ceilings, sandwich concrete slabs, and carefully placed skylights bring in natural light, while the use of local materials ensures both contextual relevance and thermal comfort.

More than a school, it is an architectural landscape that invites children to climb, hide, play, and question, subtly embedding lessons in creativity, freedom, and spatial awareness. The project blurs the boundary between structure and story, offering a learning environment that is as emotive as it is functional.

Why this case study?:

- *Playful Arches: An interesting architectural element that create identity and character through expressive, non-standard forms*
- *Interplay between lighter and darker spaces*
- *Materiality: Use of brick, a highly relevant material in the context of both India and Bangladesh*

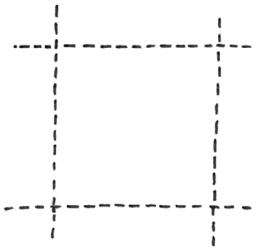




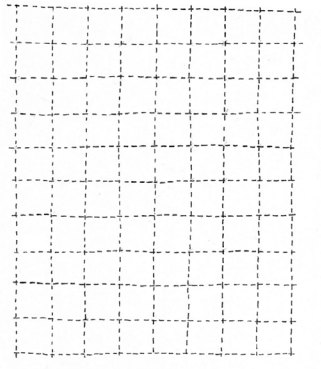
Fig. 65, 66: School of Dancing Arches by Samira Rathod Design Associates

THE CLUSTER

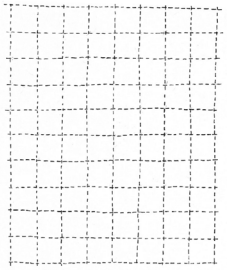
Concept



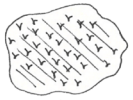
Grid of 3m x 3m



Road to Sylhet City -
Middle income housing







Paddy fields -
Low income housing

For the cluster layout, I began with a 3×3 meter grid, oriented along the north–south axis to create a clear and organized structure. In the northern part of the site, I placed the dwellings intended for middle-income residents. This location is closer to the main road leading to Sylhet city, providing easier access to their workplaces. In contrast, the southern side of the cluster accommodates the low-income housing. Positioned near the paddy fields, this placement allows residents—many of whom work in agriculture—to stay close to their fields and livestock, maintaining a direct connection to their daily livelihoods.

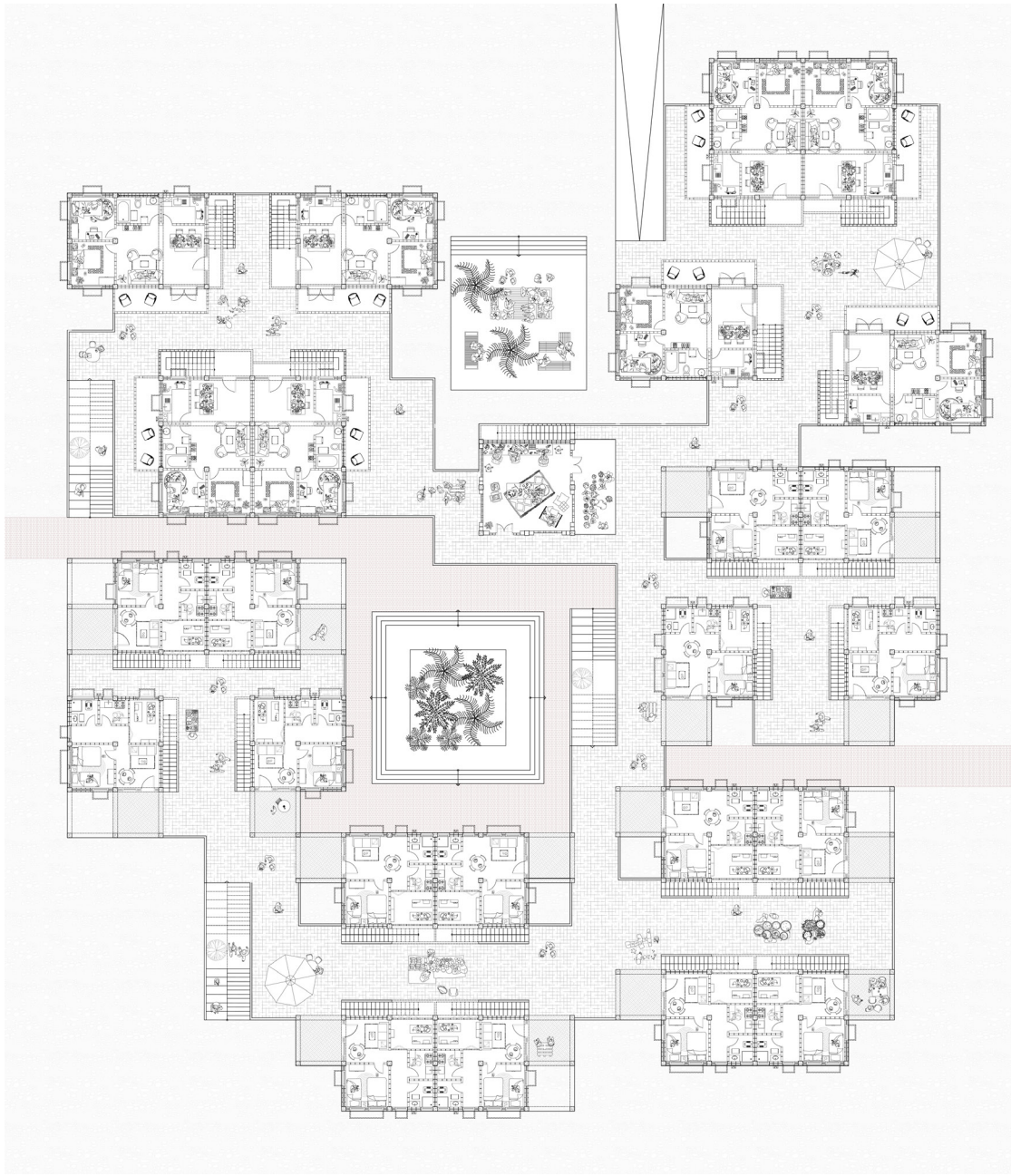




Fig.67: Cluster Plan - first floor

THE CLUSTER

Concept

Within the cluster's low-income section, female-owned shops and women's workspaces are strategically positioned to face one another in groups of four dwellings. This spatial arrangement fosters semi-private communal zones that mediate between the domestic and the public realm, encouraging social interaction and mutual support among women.

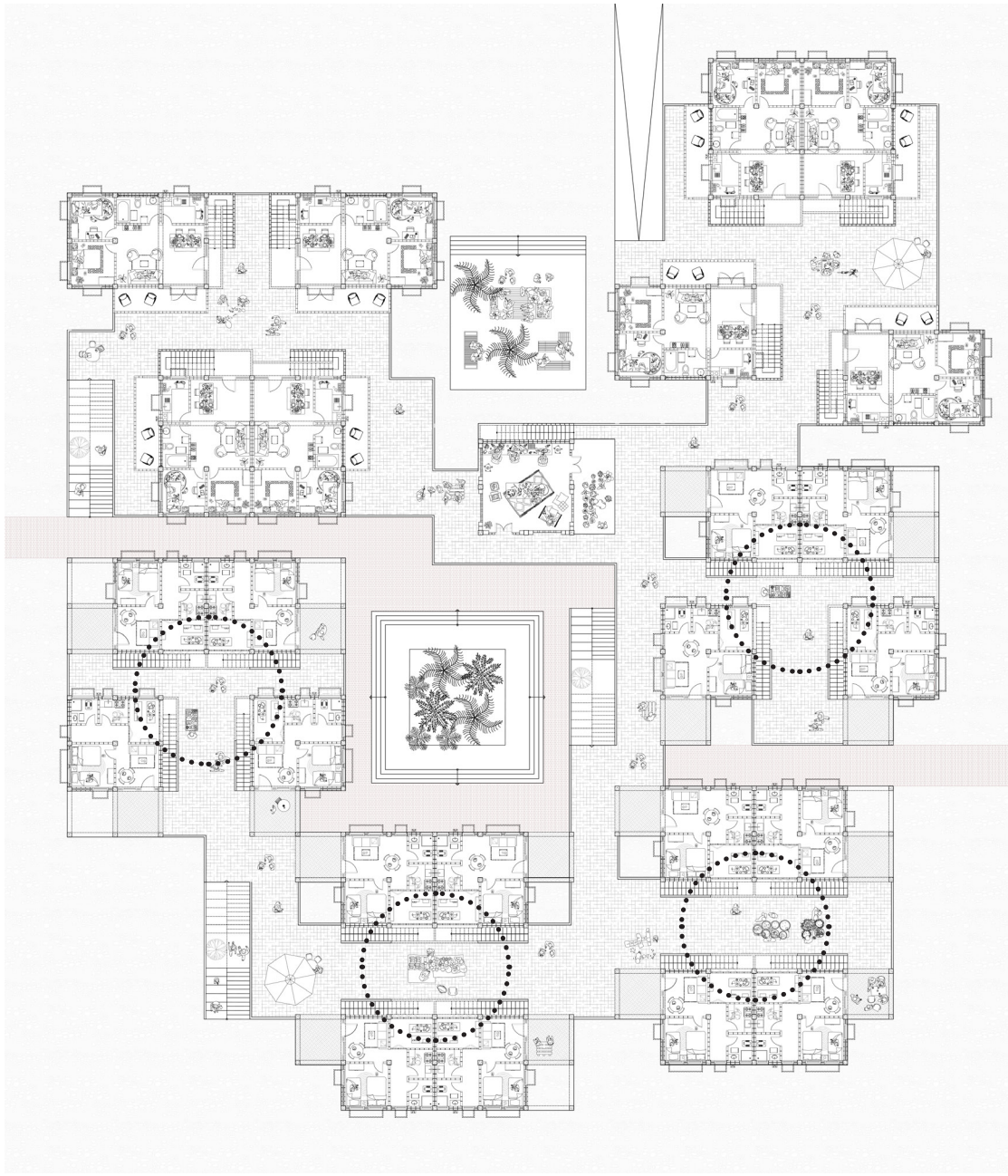


Fig. 68: Cluster Plan - first floor

THE CLUSTER

Concept

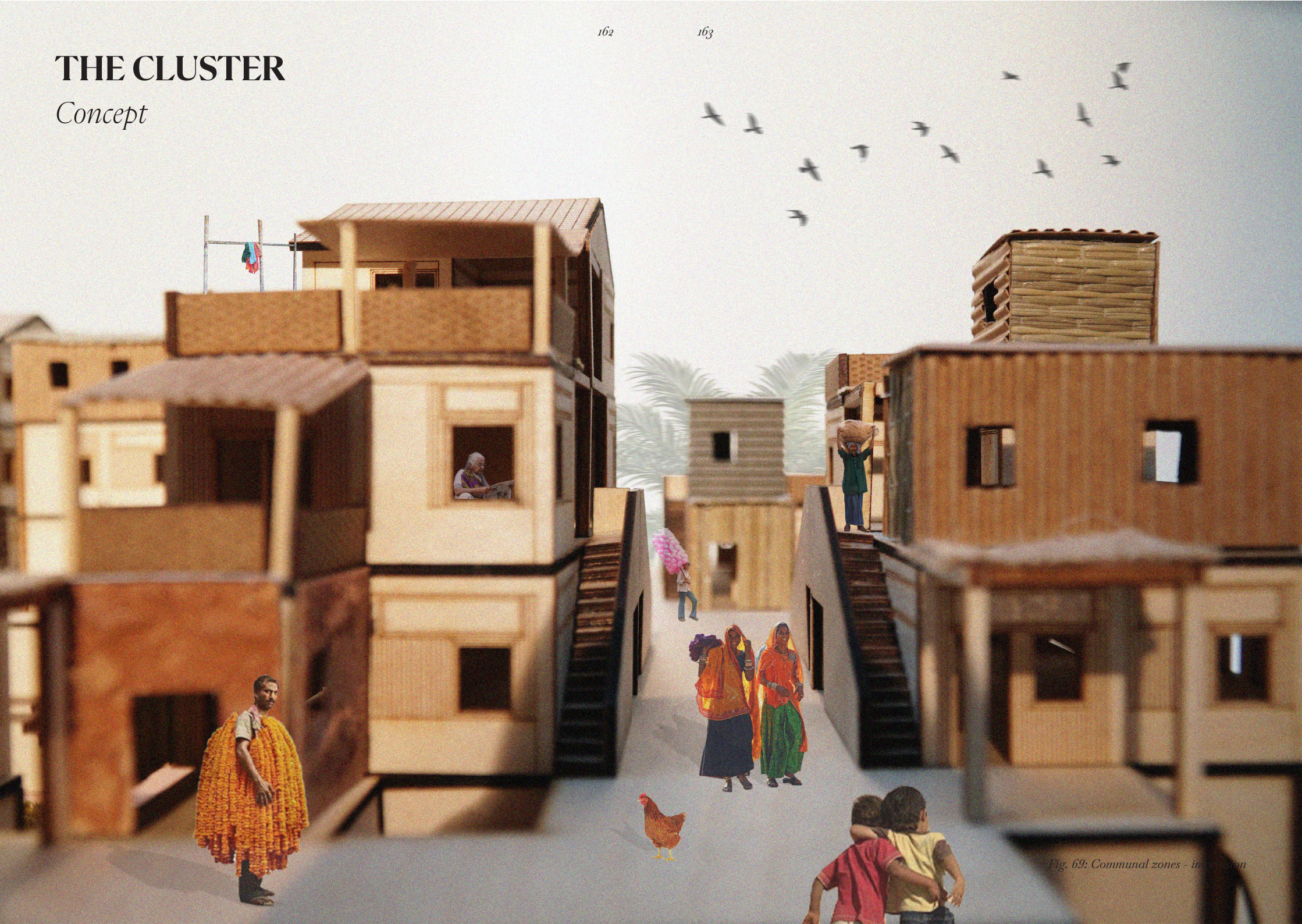


Fig. 69: Communal zones - im[illegible]on

THE CLUSTER

Ground Floor

The ground floor is intentionally left open to allow the unobstructed flow of water during flood season. This open space serves multiple purposes for residents, including hosting open markets, providing storage, and accommodating animals. The only enclosed areas on this level are dedicated to protecting rainwater collection tanks. These structures are designed with built-in benches, market tables, and watering stations for animals, helping to activate and animate the surrounding ground floor space.



Fig. 70: Ground floor - collage

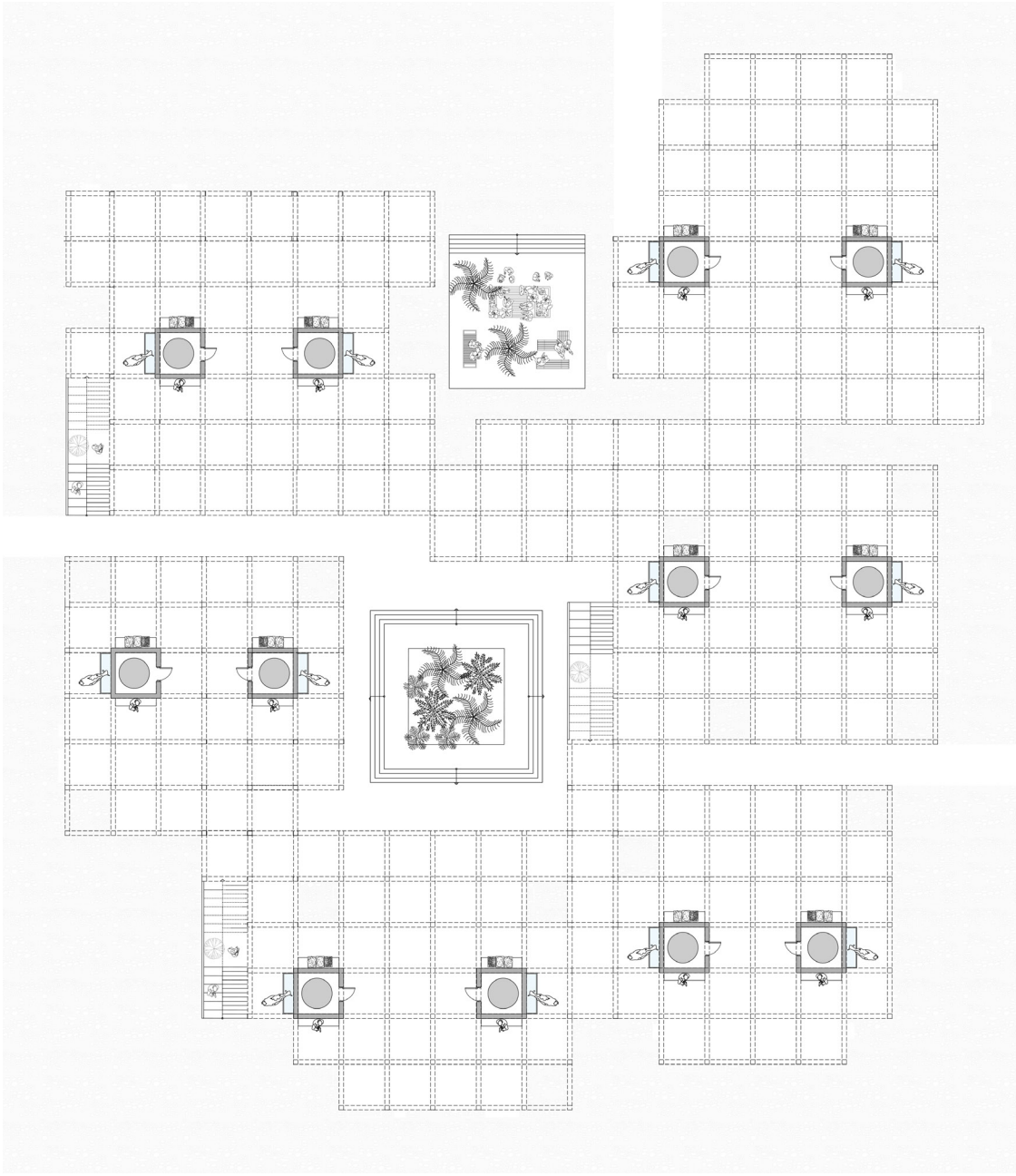


Fig. 71: Cluster Plan - ground floor

THE CLUSTER

Ground Floor



Fig. 72: Impression - ground floor

URBAN STRATEGY

URBAN STRATEGY



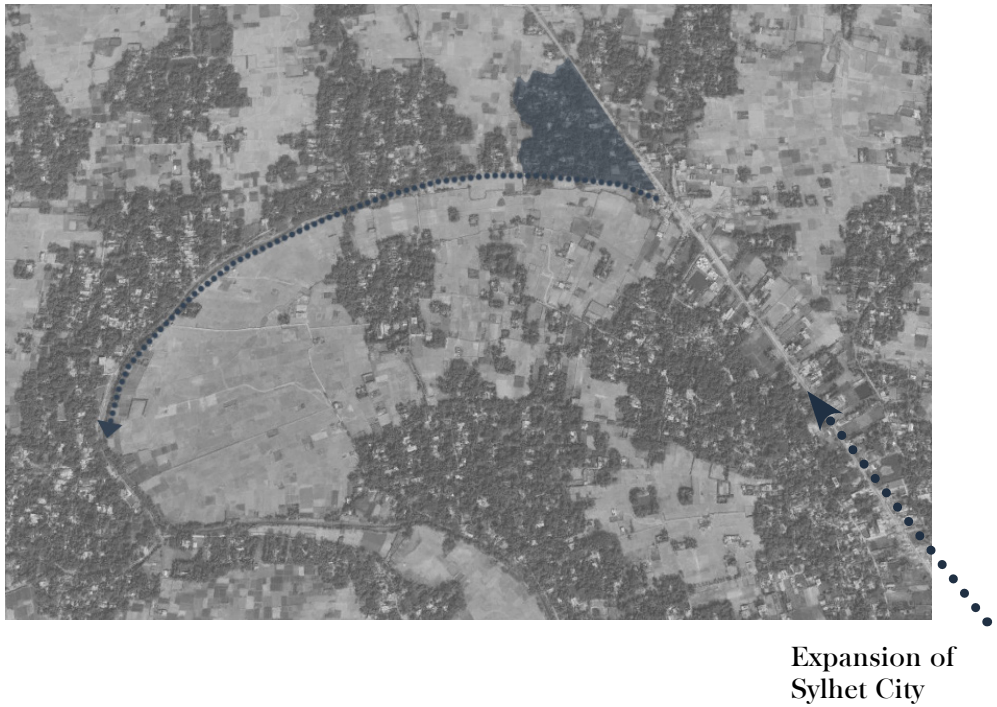
Fig. 73: Location of the village



Fig. 74: Selected project site

The site I selected for my project spans 4 hectares and is located just south of the main road, on the southern edge of the village. It sits approximately 2.5 meters lower than the main village area, with a maximum recorded flood level of around 3.5 meters. This topographical condition played an important role in shaping my design approach, particularly in relation to elevation and water management.

URBAN STRATEGY



I chose this site because of its strategic position at the threshold between the existing village and the anticipated expansion of Sylhet city. The pattern of village development naturally follows a curved path, as seen in the site imagery, creating a soft, organic edge along the southern boundary. At the same time, urban growth is advancing from the south, as indicated by the development trajectory. This site, therefore, offers a unique opportunity to act as a connective tissue between the rural and the emerging urban, thus bridging the traditional with the new. My project aims to respond to this transitional condition, proposing a model of housing that respects the village fabric while anticipating future growth.

Fig. 75: Development of villages along curved path

URBAN STRATEGY
Case Study

Agricultural City, 1960 by Kisho Kurokawa

Following the widespread destruction of agricultural towns in Aichi caused by the Ise Bay Typhoon in 1959, Japanese architect Kisho Kurokawa introduced a bold project in 1960 which he titled the "Agricultural City." Rather than simply rebuilding, Kurokawa envisioned a progressive architectural response that tackled the region's flood vulnerability head-on.

His proposal involved elevating the entire city above ground level—an unconventional strategy designed to protect against future flooding. The city was to be structured around a grid system, with spans of 300 to 500 meters supporting raised buildings and infrastructure.

Beyond offering a practical response to disaster, the Agricultural City also served as a critique of conventional urban planning. It rejected the idea of conflict between urban and rural life, instead advocating for their integration. This vision aligned closely with the ideals of the Metabolist movement, which emphasized large-scale architectural frameworks capable of adapting and evolving like living organisms.

Why this case study?:

- *Urban–rural integration: Blends agriculture and city life, challenging conventional separations.*
- *Flood resilience: Elevates the city on platforms to withstand seasonal flooding.*
- *Holistic vision: Designs a self-sufficient system combining living, farming, and infrastructure.*
- *Grid-based structure: Uses a modular grid (300–500m spans) to organize elevated infrastructure—systematic and scalable.*
- *Metabolist principles: Embodies flexibility, modularity, and organic urban growth.*

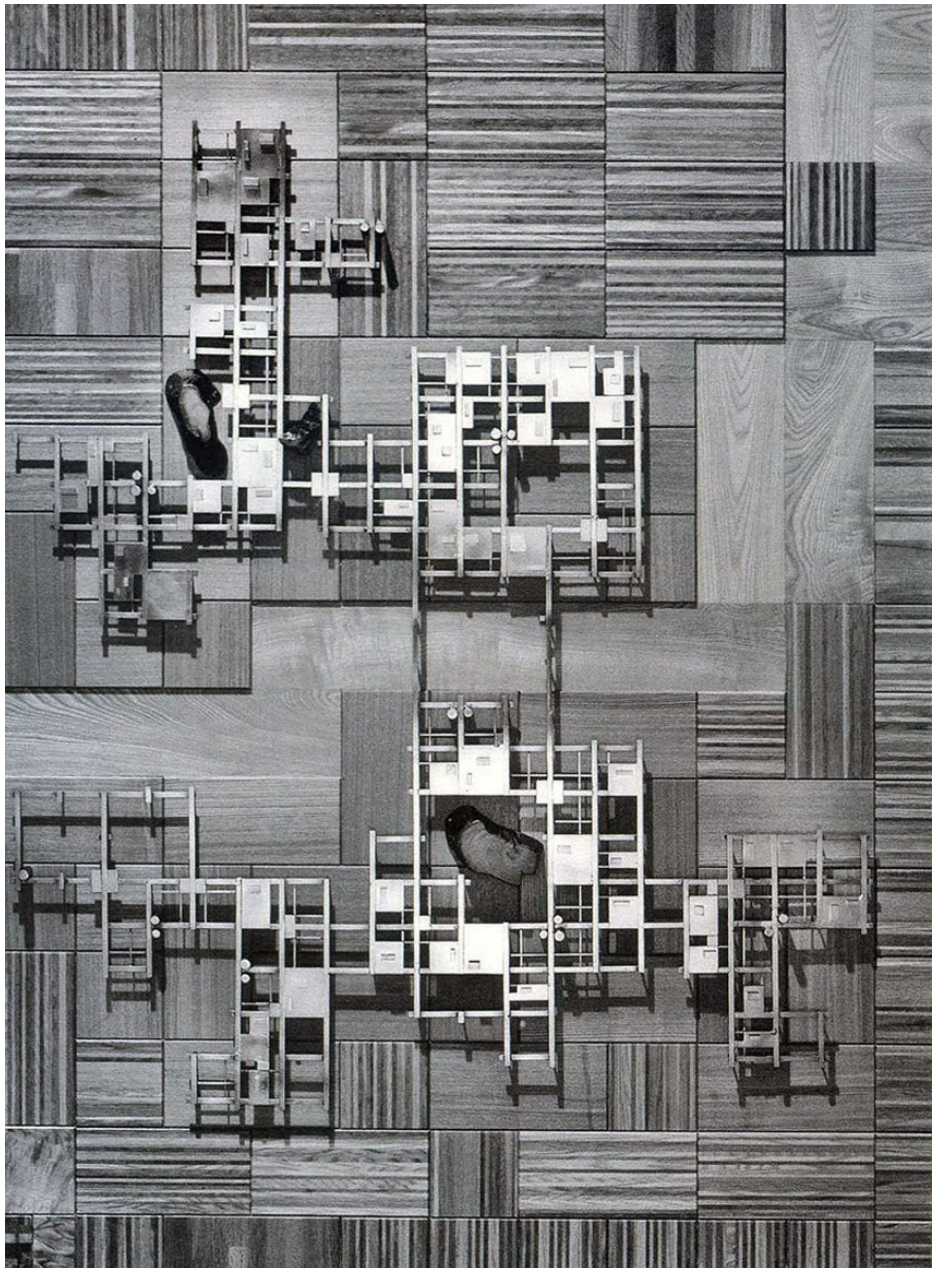


Fig. 76: Agricultural City by Kisho Kurokawa

URBAN STRATEGY



Fig. 77: Main road as organizational axis

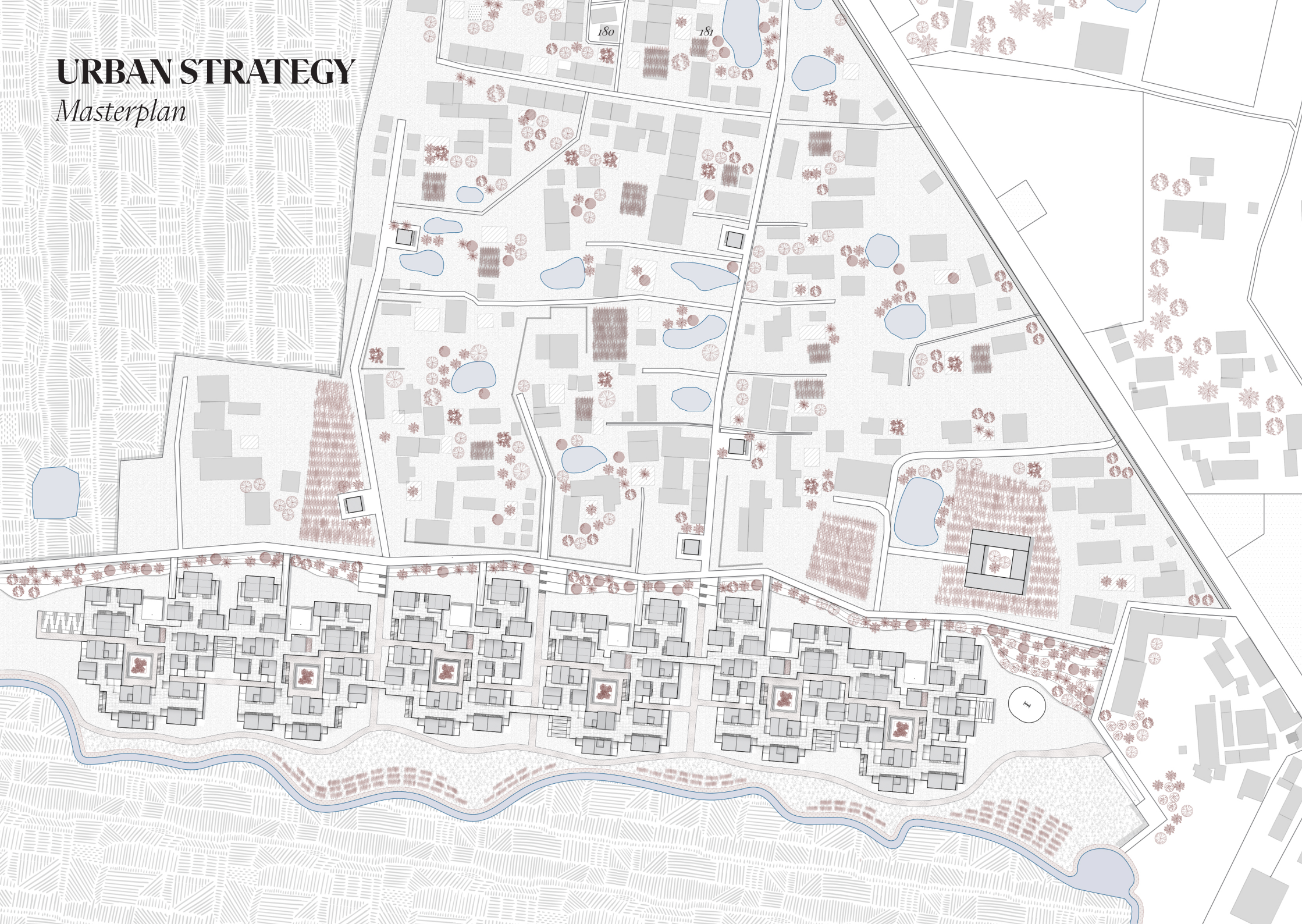
URBAN STRATEGY



Fig. 78: Village roads extended as new routes into the site

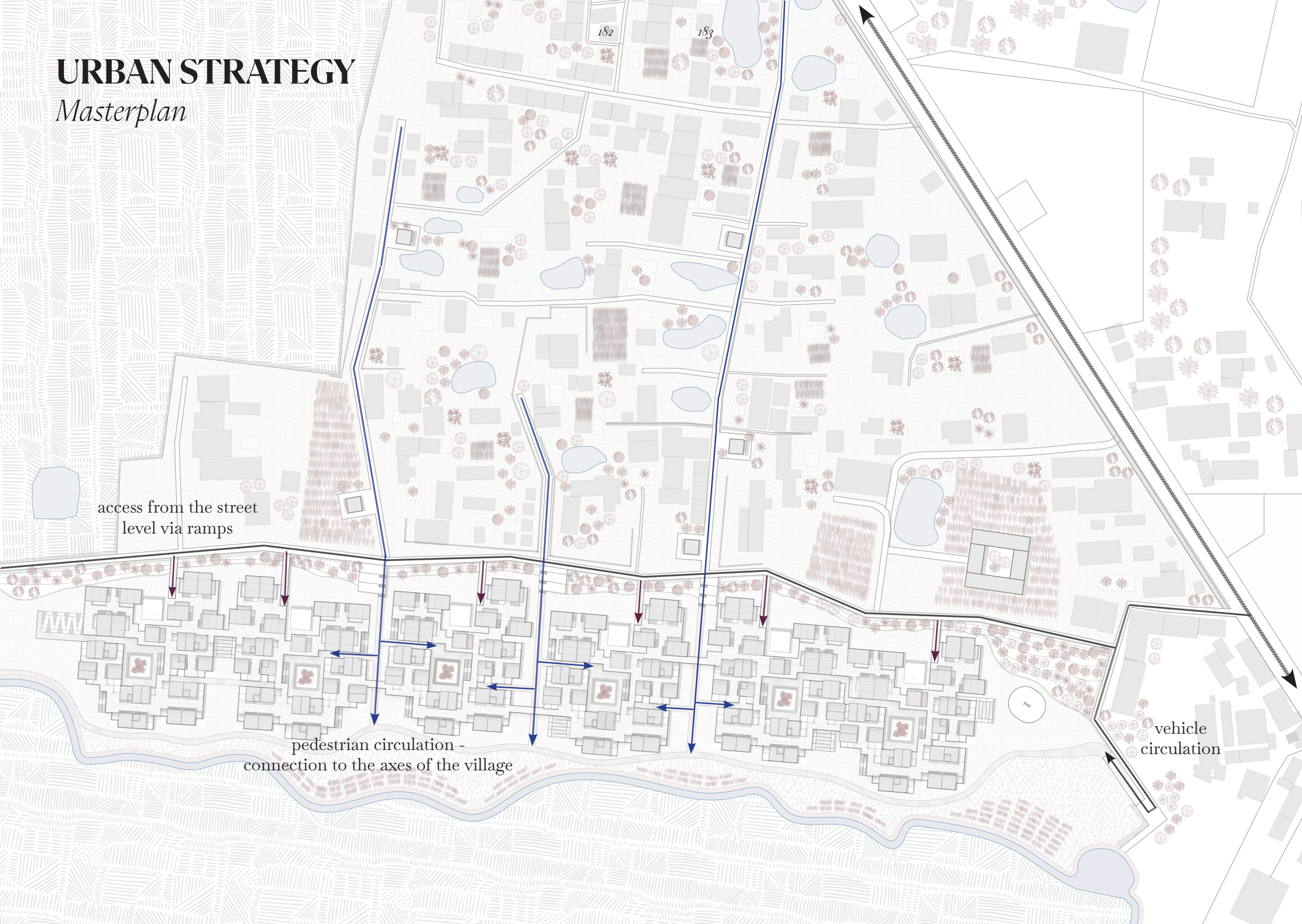
URBAN STRATEGY

Masterplan



URBAN STRATEGY

Masterplan



URBAN STRATEGY

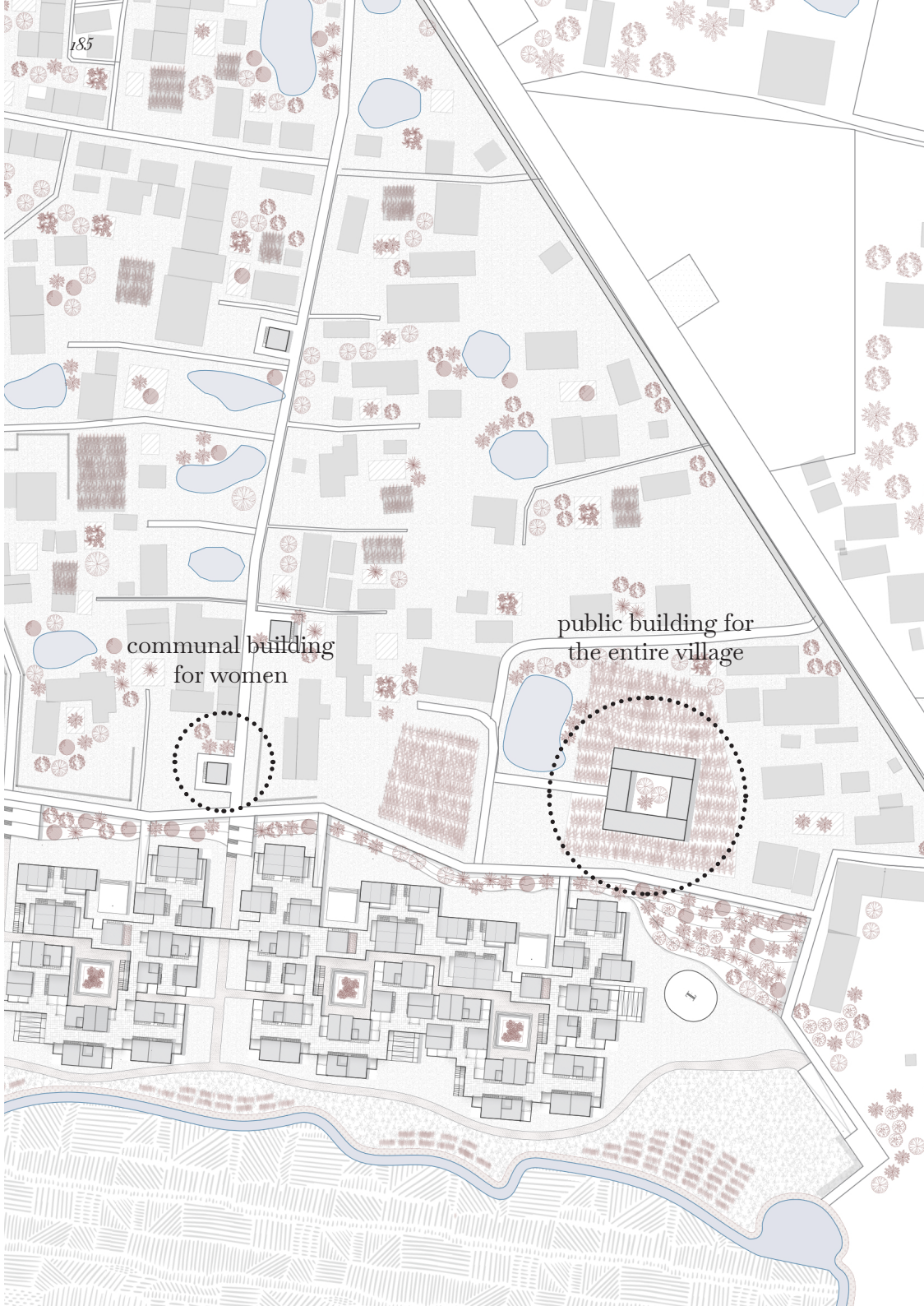
Masterplan

Number of dwellings: 150

GSI: ~ 0

FSI (initial): 0.3

FSI (maximum): 0.8



URBAN STRATEGY

Masterplan

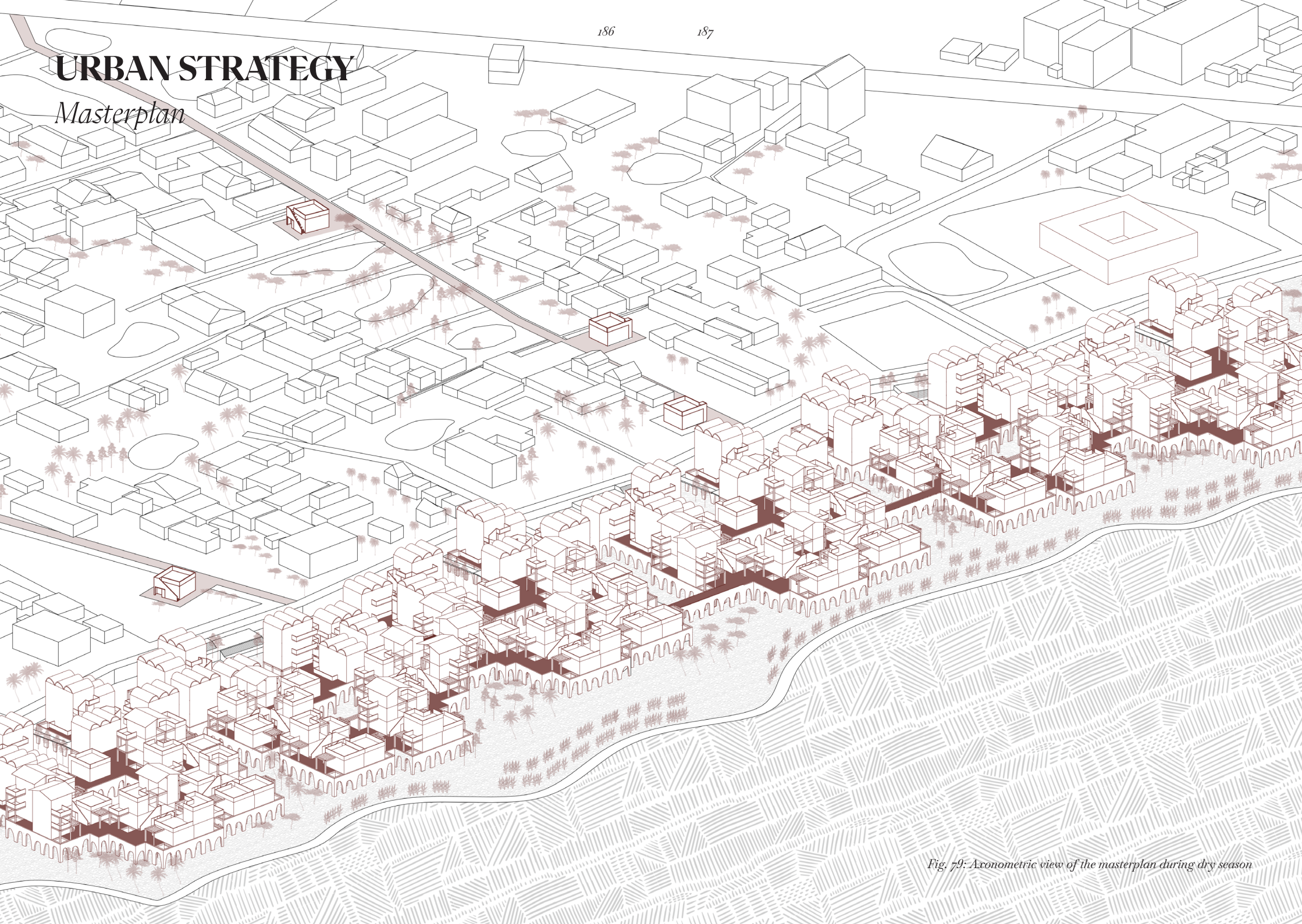


Fig. 79: Axonometric view of the masterplan during dry season

URBAN STRATEGY

Masterplan

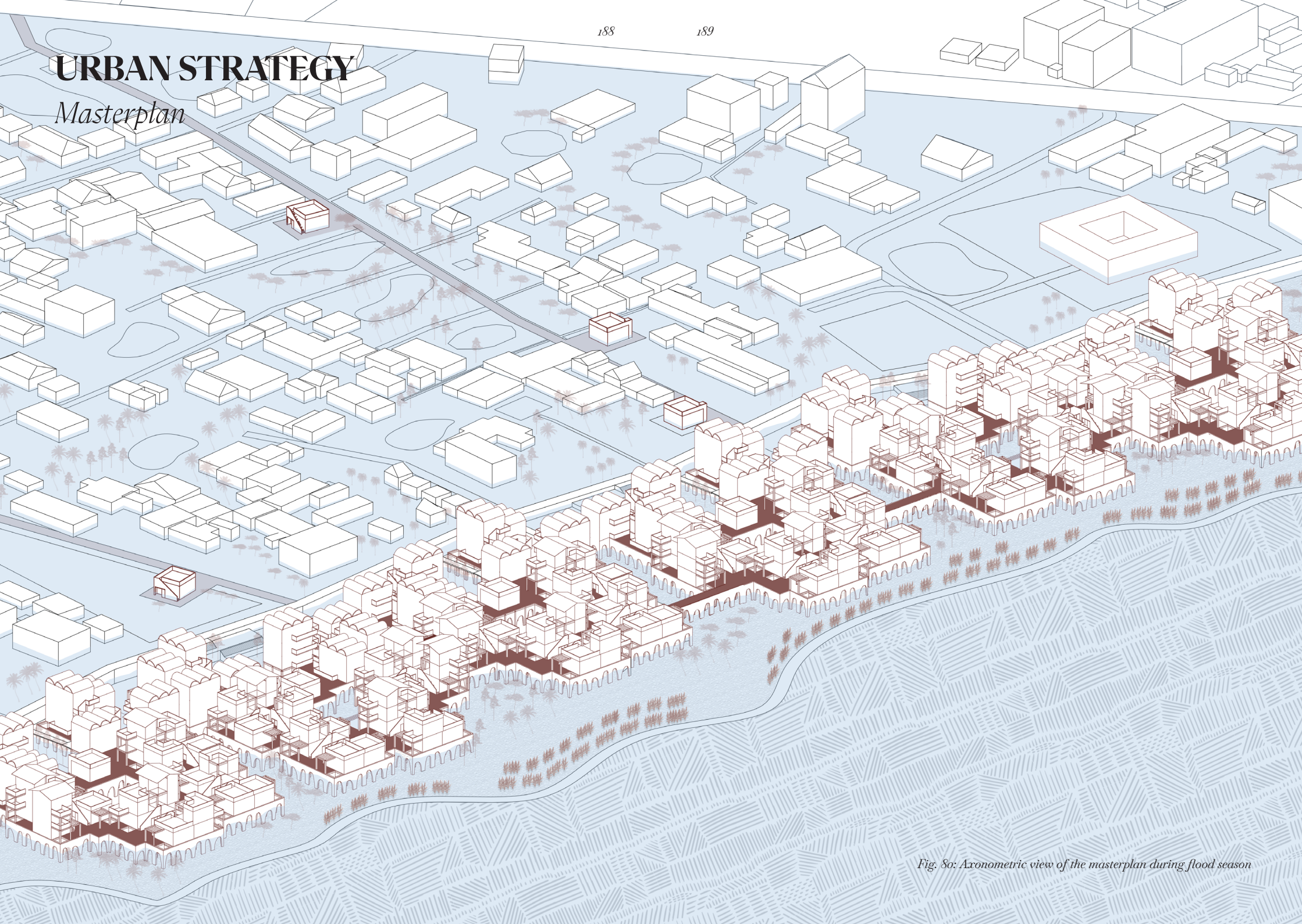


Fig. 80: Axonometric view of the masterplan during flood season

URBAN STRATEGY

Masterplan

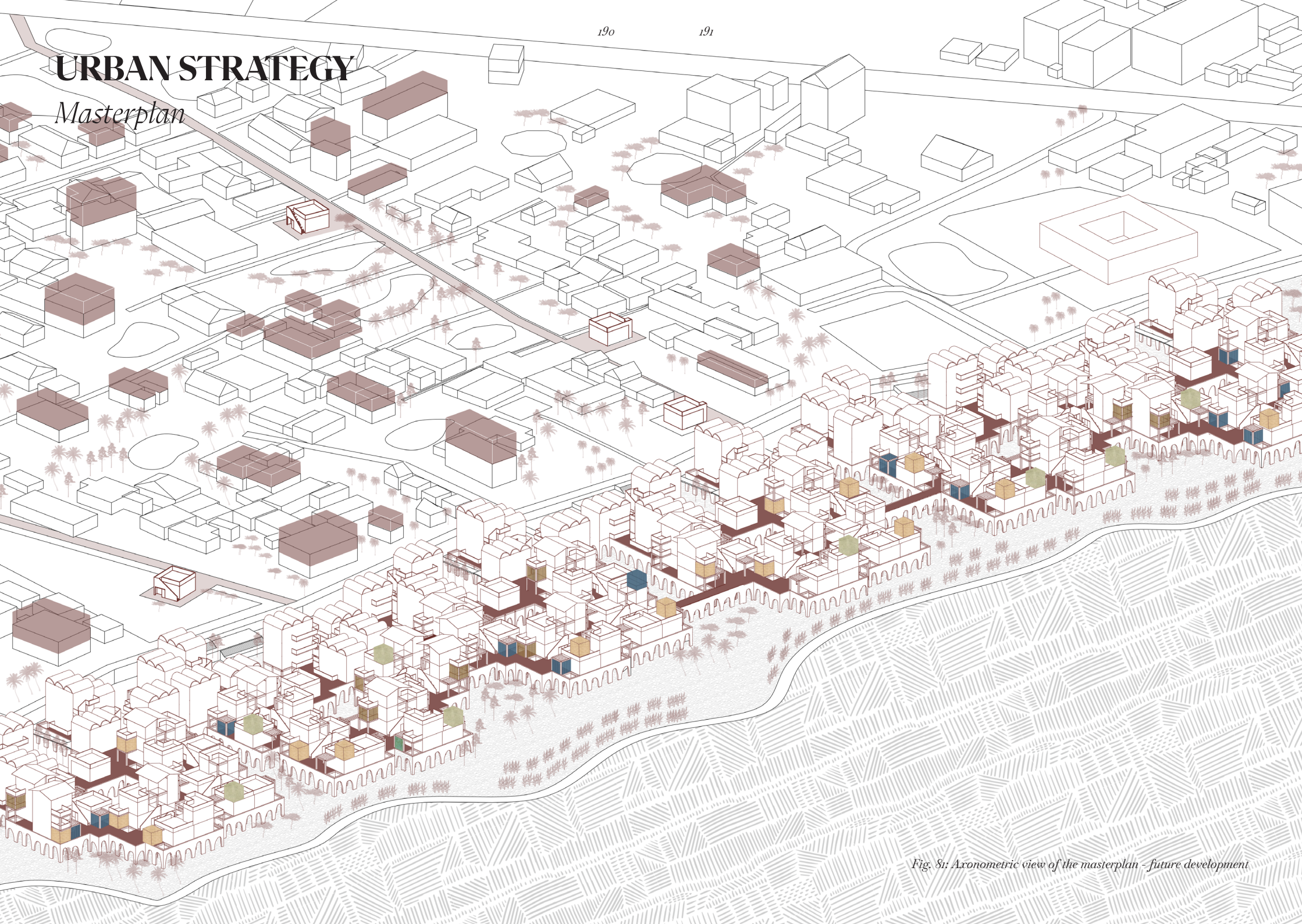
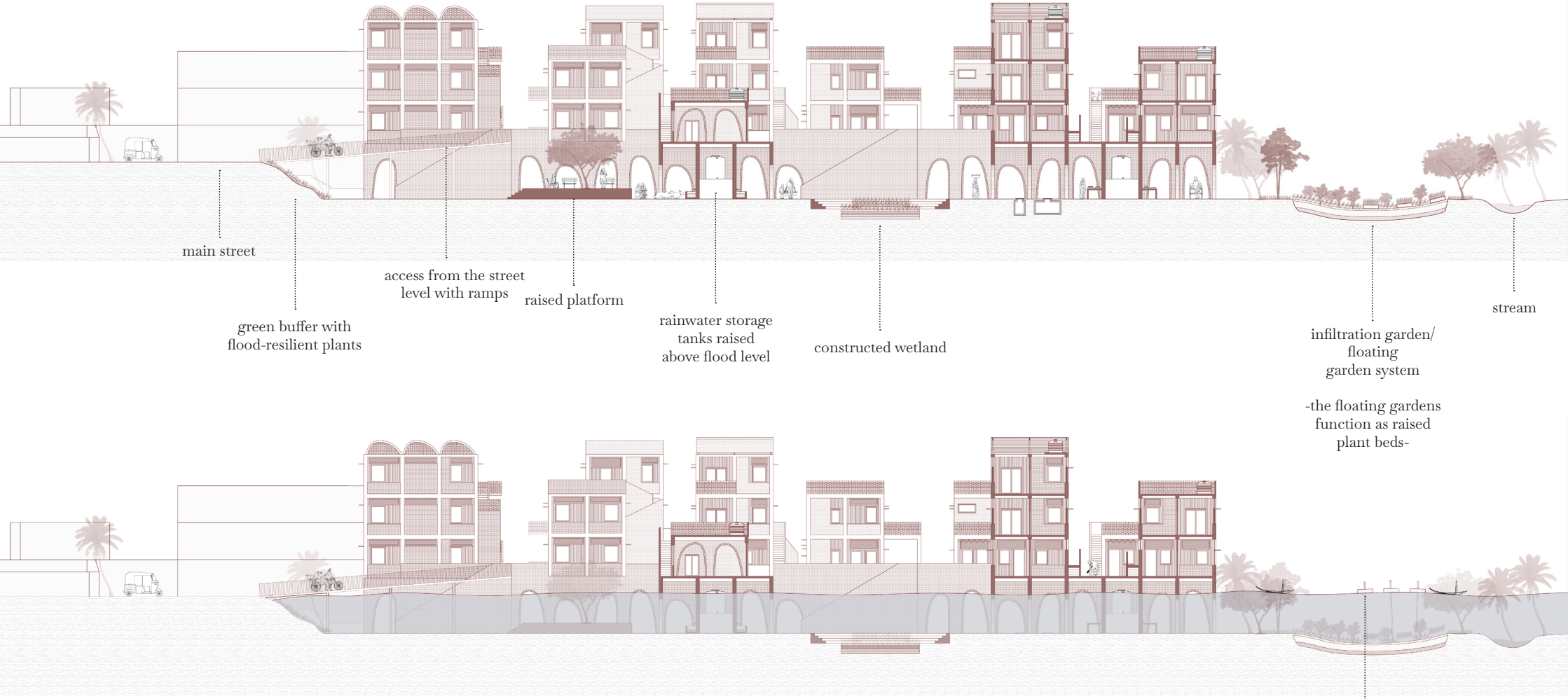


Fig. 81: Axonometric view of the masterplan - future development

URBAN STRATEGY

Dry season and flood season



URBAN STRATEGY

Climate scheme



URBAN STRATEGY

Managerial scheme



Middle - income housing helps subsidize low-income housing



Land Acquisition

Government Agencies

Private-public partnership

Private Developers & Contractors

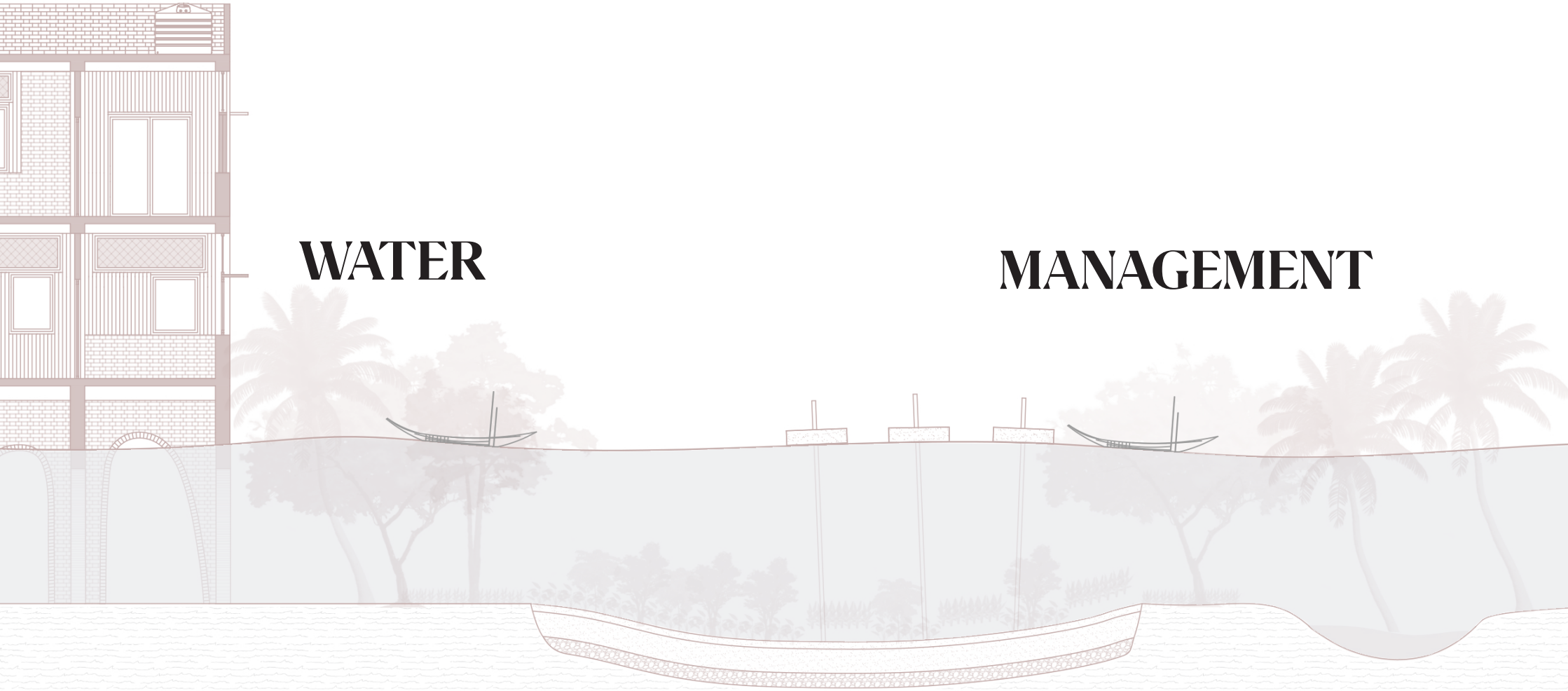
Grants for low-income housing

NGOs & Climate Adaptation Funds

Loans to villagers

Microfinance Institutions (Grameen Bank)

WATER MANAGEMENT



WATER MANAGEMENT

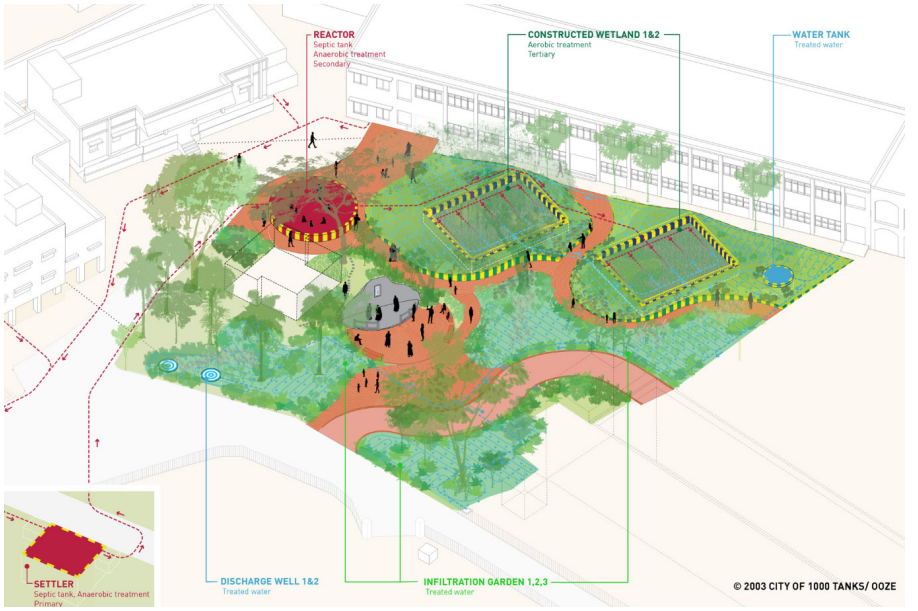
Case study

City of 1,000 Tanks Water Balance Pilot, 2021-2023 by OOZE

The City of 1,000 Tanks – Water Balance Pilot is a pioneering, nature-based urban water management project in Chennai, India, developed by OOZE Architects and a multidisciplinary team. Implemented at the Little Flower Convent School for the Blind and Deaf in T. Nagar, the pilot integrates rainwater harvesting, decentralized wastewater treatment, and groundwater recharge to address the city's chronic issues of flooding, water scarcity, and pollution.

The system captures rainwater from rooftops, treats grey and blackwater through constructed wetlands and bio-filtration, and enables aquifer recharge—creating a localized, closed-loop water cycle. Designed for replication, the pilot acts as a proof of concept for citywide water resilience, aligning with the broader Water as Leverage initiative.

Supported by local authorities, NGOs, and international partners, the project empowers communities through participatory design, educational outreach, and climate-adaptive infrastructure. It exemplifies how decentralized, low-tech interventions can restore urban water balance while enhancing ecological health, social equity, and climate resilience at the neighborhood scale.



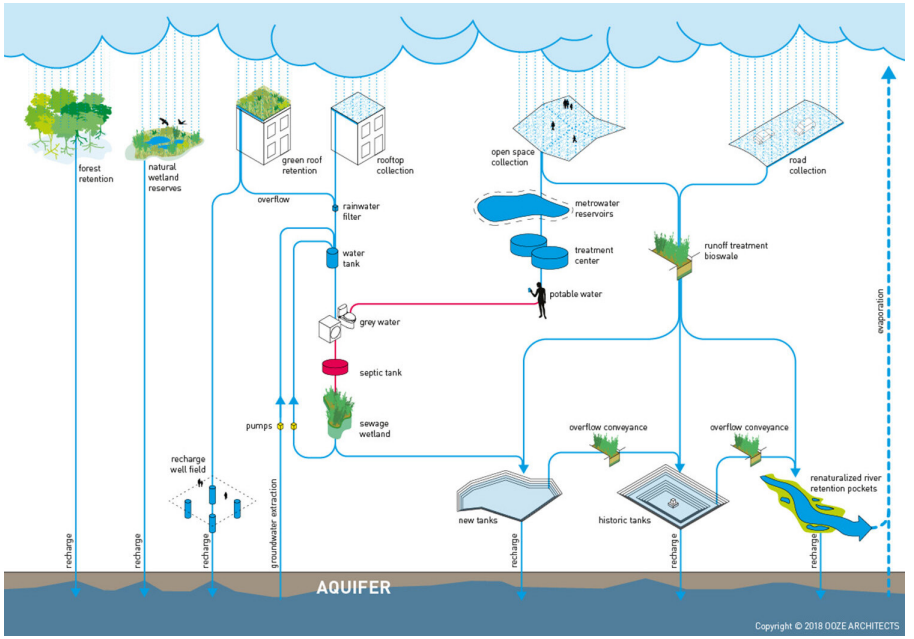


Fig. 82, 83: City of 1,000 Tanks Water Balance Pilot by OOZE

WATER MANAGEMENT

Strategy

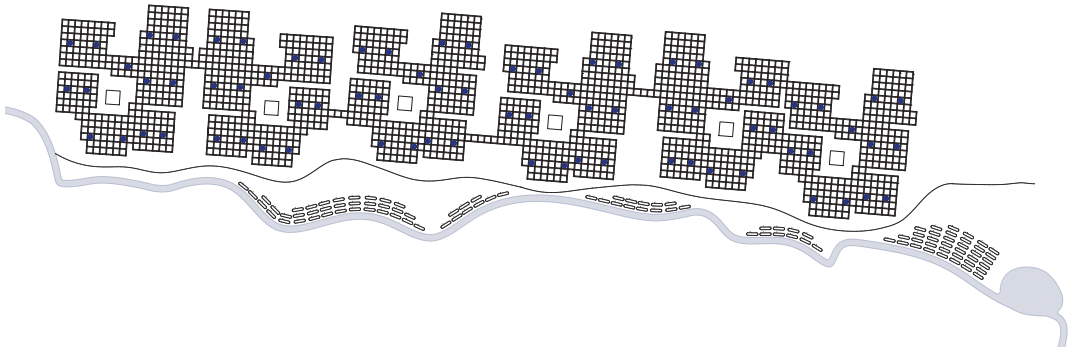


Fig. 84: Rainwater is collected from the roofs and stored in concrete tanks on the ground floor (two 600 l tanks per 4 dwellings)

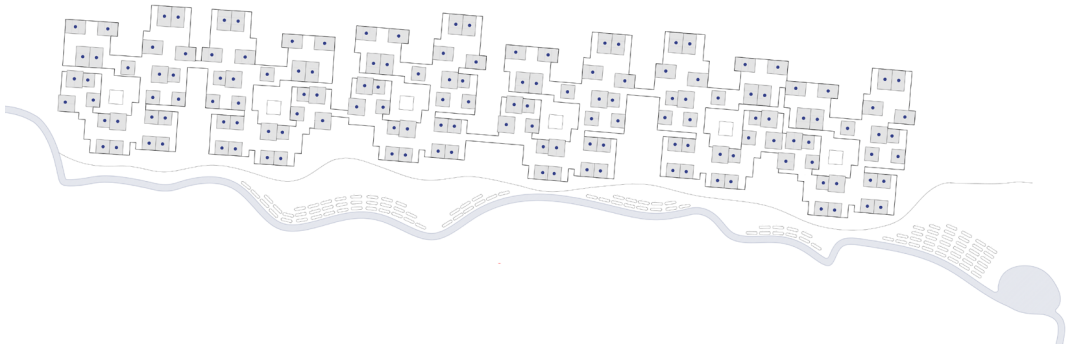


Fig. 85: After filtration, the water is pumped up to a smaller water tank in each dwelling

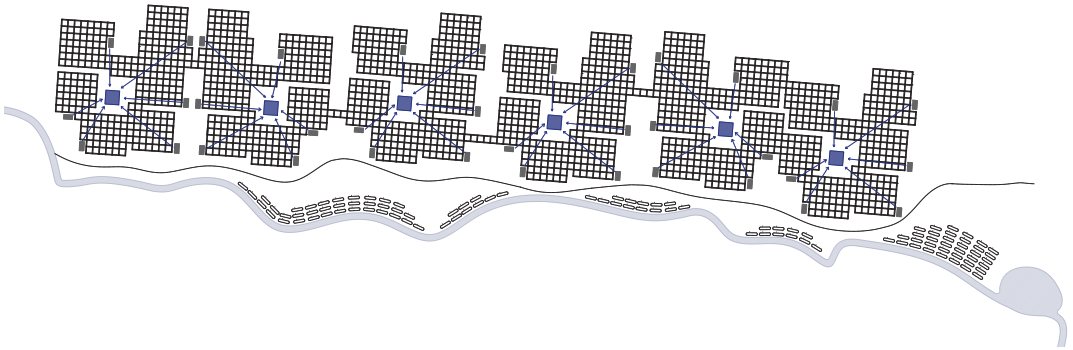


Fig. 86: Greywater and blackwater flow into underground septic tank (one 5000 l tank per 4 dwellings)

After intial filtration, the water flows into a constructed wetland at the center of each cluster

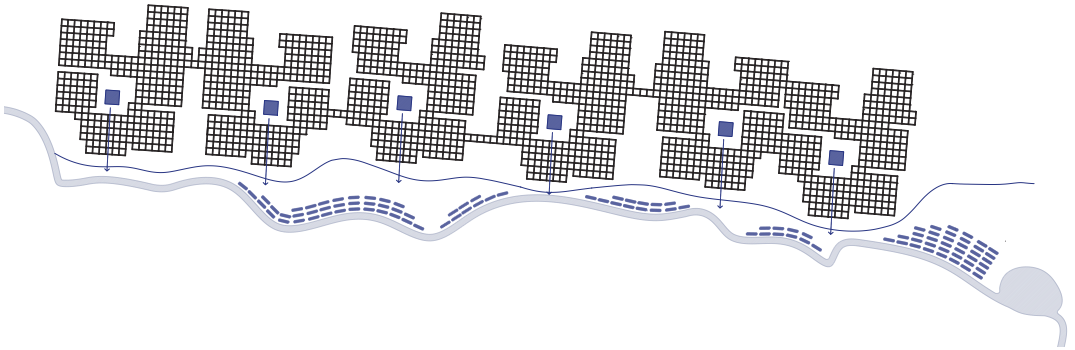
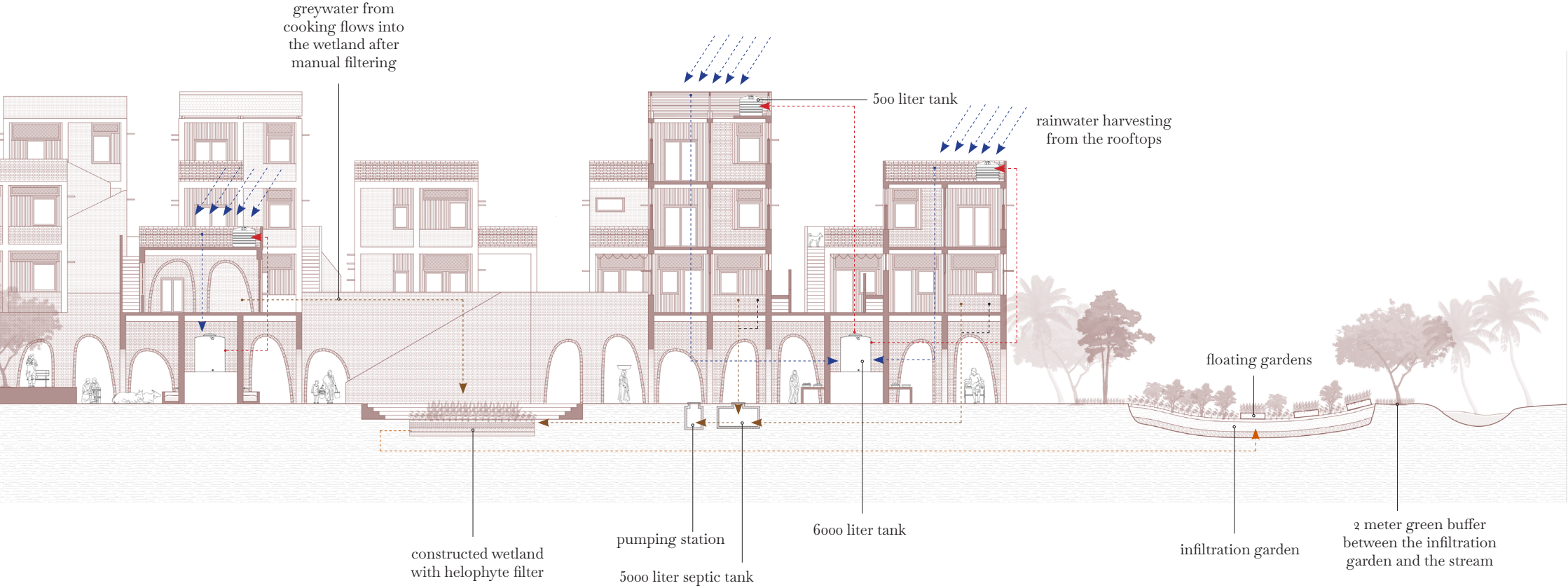


Fig. 87: The water then flows into and infiltration/floating garden system on the south side of the site

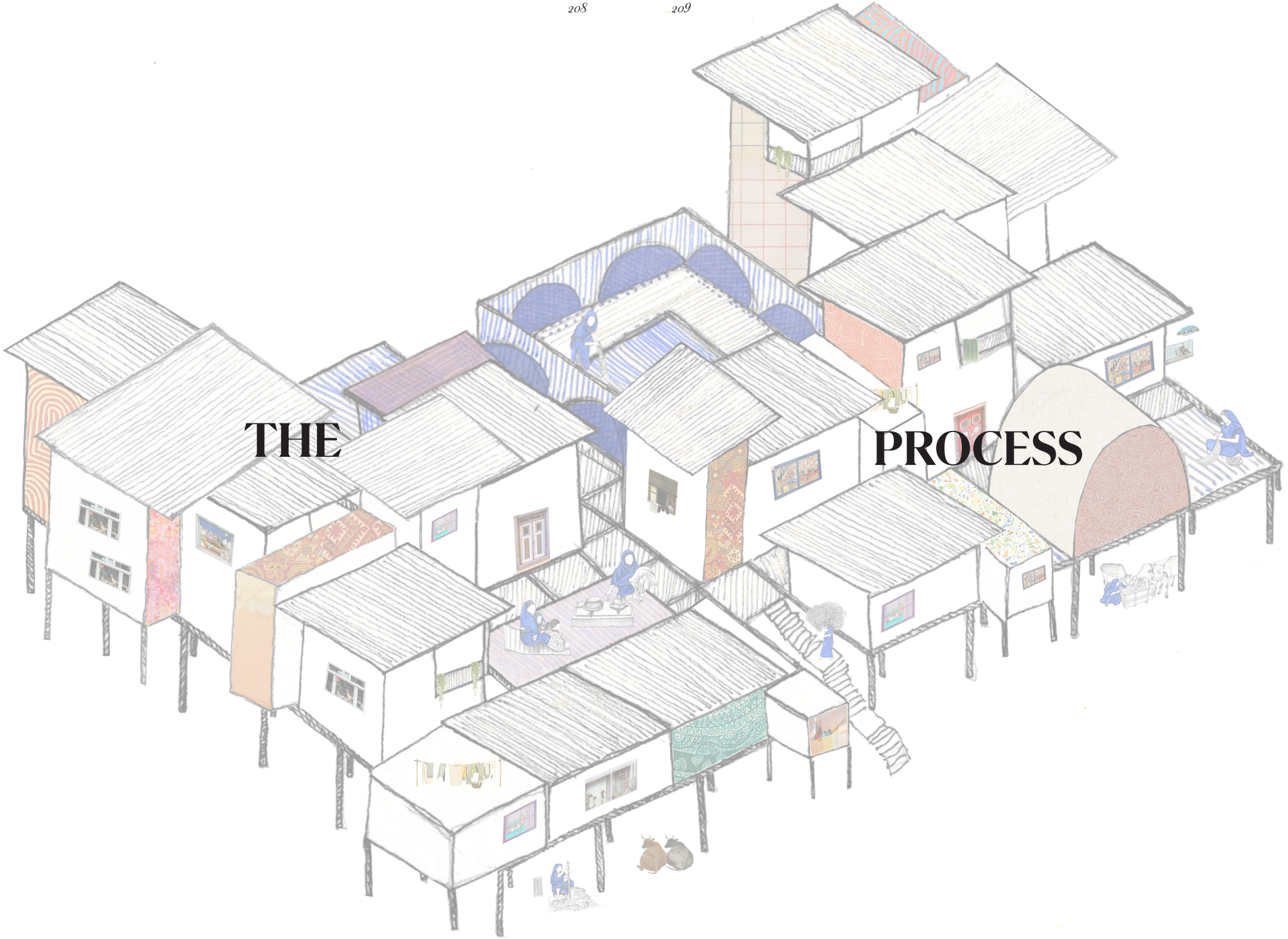
WATER MANAGEMENT



rainwater harvesting
filtered rainwater flow
greywater flow
blackwater flow
filtered greywater/blackwater flow



Fig. 88: Constructed wetland - impression



THE PROCESS

PHASE 1: CASE STUDY ANALYSIS

Before going on our study trip to Bangladesh, which was delayed due to the unstable political climate in the country at the time, we analyzed case study examples, both in an international context and in the context of Sylhet, in order to better understand the different scales of housing design as well as the complex array of different elements we would be called to take into account when we would start formulating our own proposal.

Mickey Leland, 2006-2008 by Housing Development Project Office (International Context)

The Mickey Leland Condominium project in Addis Ababa is part of Ethiopia's Integrated Housing Development Programme (IHDP), launched in 2004 to respond to a major housing shortage. The aim was to provide affordable housing to lower- and middle-income families while also creating jobs and supporting small-scale construction industries. The project includes 123 residential buildings and houses around 24,000 people. Though it tackled the housing gap at scale, the project also exposed key issues in how large-scale planning interacts with everyday life.

What stood out to me in the Mickey Leland project was how it tried to achieve a lot—housing, job creation, infrastructure—but still fell short in supporting how people actually live. The shared cooking spaces, for example, were a good idea in theory, but they were too far from the homes, so people didn't use them. Instead, they adapted by cooking in semi-public areas like the galleries. It reminded me how design must start from real habits and routines, not assumptions.

Another element that stood out to me was the way that the open spaces were handled. There was a lot of land between buildings, but most of it ended up being used for functions such as informal parking or placing satellite dishes, as these spaces were not designed to invite social life. That absence of meaningful public space felt like a missed opportunity, especially in a high-density setting where shared outdoor areas could have supported community life.



Fig. 89: Typical buildings in the Mickey Leland project (C5 Type)



Fig. 90: Unused common kitchen building



Fig. 91: Galleries being used for cooking

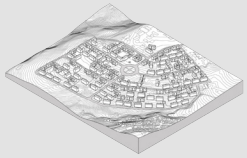
Neighbourhood



Plot
Area: 25,7 Ha
Dwelling Units: 4,800



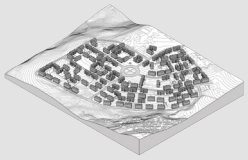
Program
Housing: 384,800m2
Ammenities: 35,613 m2



FSI/FAR
0.89

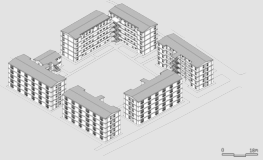


GSI
0.19

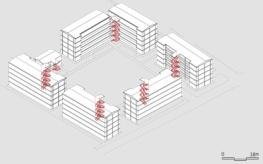


Density
187 du/ha

Block



Volume
Ground floor + 4



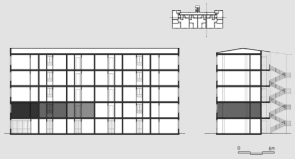
Connectivity
Acess and Circulation System



Ground Floor Plan
Access Points

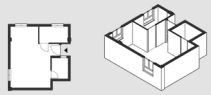


Typical Floor Plan
Dwelling Type Variations

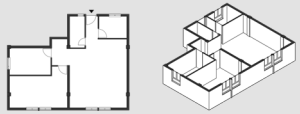


Sections
Dwelling Type Variations

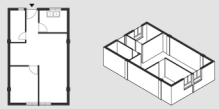
Unit



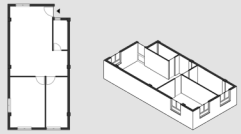
Dwelling Type 1
Area: 23 m2



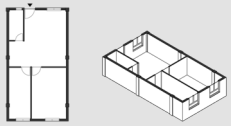
Dwelling Type 2
Area: 64 m2



Dwelling Type 3
Area: 38 m2



Dwelling Type 4
Area: 49 m2



Dwelling Type 5
Area: 44 m2

Mickey Leland

Addis Abeba, Housing Development Project Office (HDPO), 2006-2008

Plot Area: 25.7 ha
Number of Dwellings: 4800
Density: 187 du/ha
FSI: 0.89
Unit Sizes: 279 sqm
GSI: 0.19
Client: Ethiopian Government
Scheme: Public Housing
Design: HDPO
Tenure: Home Ownership

The Mickey Leland Condominium Site is a significant housing development located in the north-western part of Addis Ababa, Ethiopia. Situated on a 26-hectare steep site that slopes southwards, the project is named after George Thomas "Mickey" Leland, an anti-poverty activist and U.S. congressman who died in Addis Ababa in 1989. The housing complex comprises 123 blocks featuring five different typologies, each with slight variations to accommodate either commercial spaces or additional housing on the ground floor, depending on the block's location within the neighborhood.

The most prevalent building type within the project is the C5 Type. These are five-story structures—the maximum height permissible without requiring elevators—constructed with a frame of reinforced concrete using precast beams and hollow concrete-block masonry infill. A distinctive feature of the C5 Type is the exterior steel stairwell positioned at the center of the façade, connecting all floors and providing access to galleries that lead to the individual units. Each C5 block contains 40 units, divided into ten studio apartments, ten one-bedroom units, and twenty two-bedroom units, catering to a diverse range of residents.

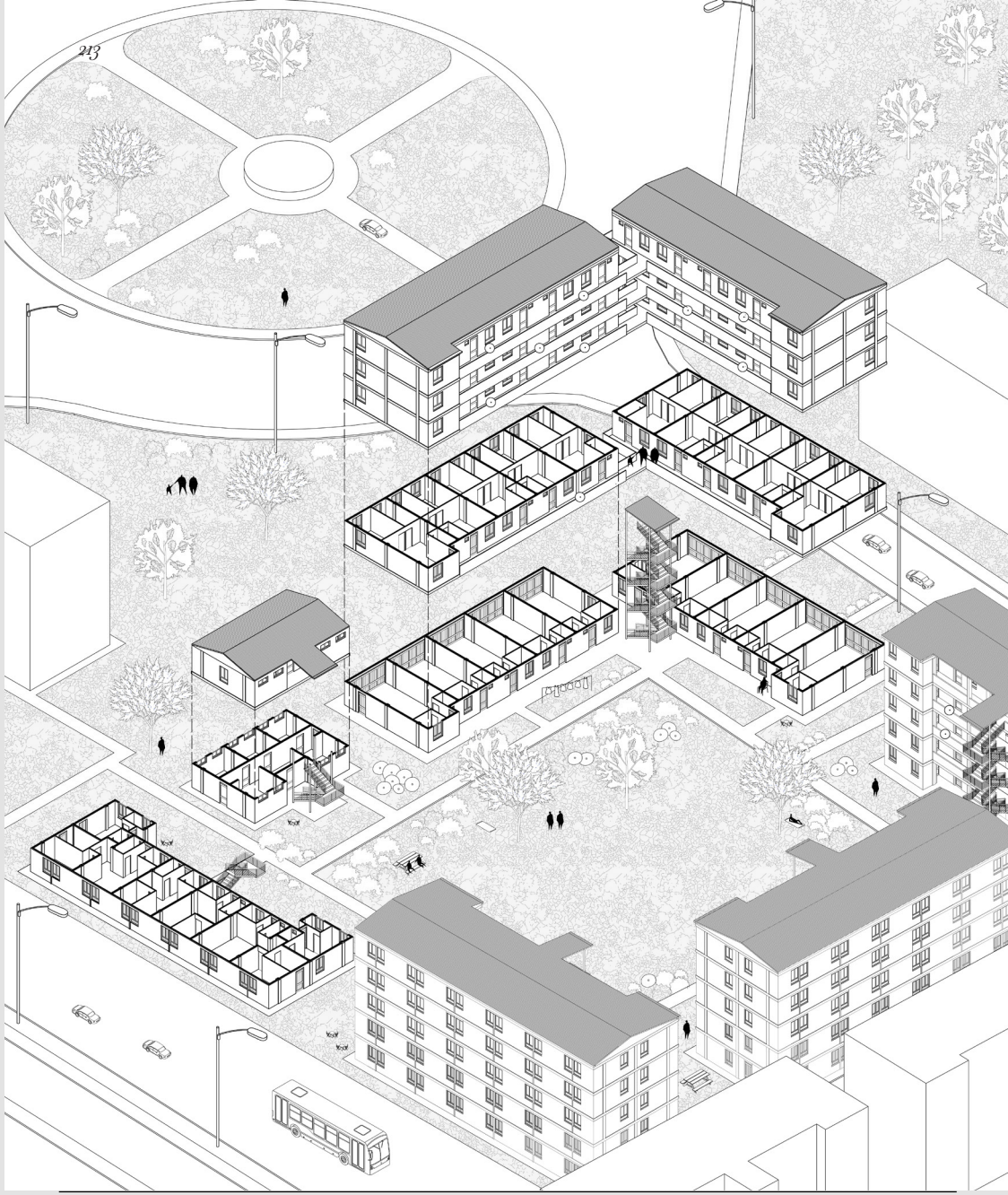
In total, the Mickey Leland Condominium Site provides 4,800 housing units, accommodating an estimated 24,000 inhabitants.

Design Research: Global Housing
Global Housing Graduation Studio
Architecture of Transition in the Bangladesh Delta:
Autumn Semester 2024/25 [AR3AD105]

Tutors:
Prof. Marina Tabassum
Prof. Dick van Gameren
Ir. Rohan Varma
Ir. Frederique van Andel
Ir. Antonio Paoletti

Student:
Lida Chrysi Ganotaki

GLOBAL HOUSING | TU Delft | Architecture and the Built Environment



Mickey Leland

Addis Abeba, Housing Development Project Office (HDPO), 2006-2008

The Mickey Leland Condominium Site exists within the rapidly expanding urban landscape of Addis Ababa, a city grappling with significant housing deficits and a high percentage of its population living in slums or substandard conditions. Culturally, the project highlights the tensions between standardized architectural designs and traditional Ethiopian lifestyles. For example, typical food preparation in Ethiopia involves cooking in outdoor spaces, a practice not adequately accommodated in the condominium design. Although shared "cooking buildings" were provided, their inconvenient locations have led residents to appropriate and privatize gallery spaces adjacent to their units for this purpose.

Spatially, the project's location on the city's fringe and its steep, sloping terrain present both challenges and opportunities. The lack of planned open spaces for essential needs like parking has resulted in the informal conversion of available areas into parking lots and satellite-dish yards. Despite these shortcomings, the site's natural topography allows for a visually engaging cascade of buildings, creating dynamic spatial relationships, and communal courtyards that enhance the living environment. The project reflects the complexities of urban development in Addis Ababa, balancing the urgent need for housing with cultural practices and spatial constraints.

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PHASE 1: CASE STUDY ANALYSIS

Comfort Reverie, 2007-2011 by Marina Tabassum Architects (Bangladesh Context)

While my project is set in a rural, low-income context in Shonatola Village, which is significantly different from the high-rise, high-income Comfort Reverie in urban Dhaka, I still found value in analyzing Marina Tabassum Architects' approach. It reminded me that architecture, regardless of scale or budget, is always about negotiating climate, culture, and materials.

One of the most immediate parallels I noticed was the use of brick. Comfort Reverie employs traditional fired brick with a lime finish to create a facade that feels grounded in local identity while addressing thermal performance and durability. Although my design is more modest and built on a smaller scale, I also use fired brick—both for its local availability and its thermal mass. Seeing how MTA treated brick not just as a structural material but as a key part of the building's expression encouraged me to think more intentionally about how materiality can shape the atmosphere and climate responsiveness of a home.

Another aspect that resonated with me was the treatment of kitchens and service spaces. Comfort Reverie's kitchen is purposefully set off to the side, with a separate staff zone to maintain privacy and manage odors—something I hadn't directly considered in such architectural terms before. In my own project, I observed during field visits that women value a degree of separation between cooking, washing, and sleeping areas, even in cases where this is rendered difficult due to significant spatial constraints. The project helped me better understand these preferences not just as practical choices, but as expressions of dignity and cultural norms.

What I also appreciated was the way Comfort Reverie incorporates passive environmental strategies—like shading fins and cross-ventilation—to reduce dependence on mechanical systems. This affirmed the importance of designing climate-responsive housing that works with natural ventilation, shaded courtyards, and local vegetation, rather than relying on expensive infrastructure, particularly when designing for lower-income groups.



Fig. 92: Street view of Comfort Reverie

Lastly, studying Comfort Reverie helped me reflect on how space is culturally programmed in Bangladesh. Even in its dense urban form, the building maintains a hierarchy between public, semi-private, and private zones. In my project, this principle informed how I thought about thresholds, shared outdoor spaces, and the design of flexible interiors that can adapt to family needs over time.

In the end, while our contexts differ, Comfort Reverie reminded me that good architecture starts with listening—to people, to place, and to materials. That's something I carried with me throughout the design process in Shonatola.



Fig. 93: Typical Floor Plan

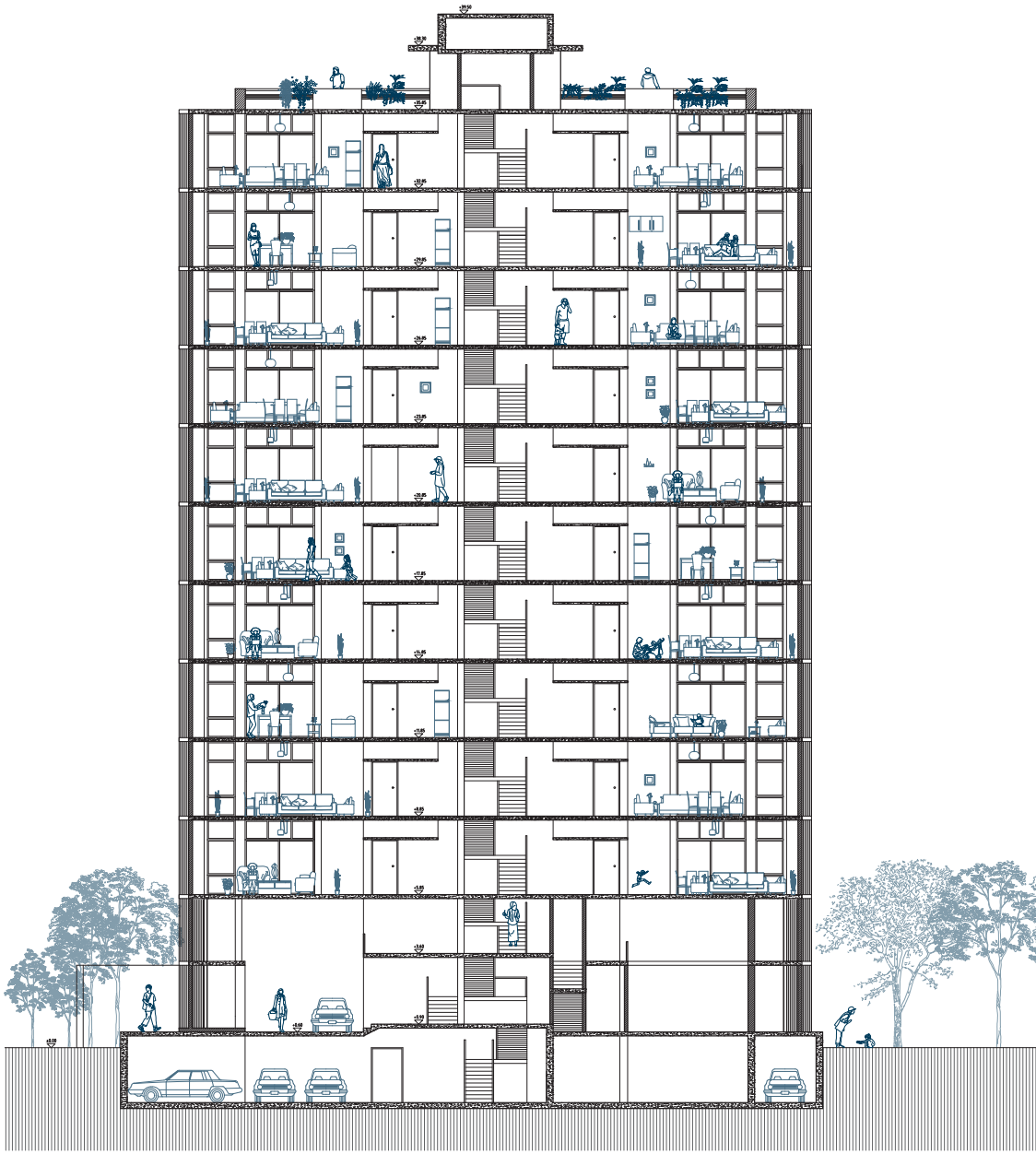


Fig. 94: Section A-A'

P1: PILOT PROJECT

After analyzing the case studies, we were assigned a specific FSI and tasked with developing our own "pilot project" by drawing on 2–3 from the "collective archive" of these references. The goal was to better understand how different densities translate spatially and visually when applied to a realistic design scenario.

For this exercise, where I chose an FSI of 3.0, I based my pilot project on two case studies: the Housing for the Bangladesh Livestock Research Institute Institute by Shisrikkhu Sthapati and Shamsul Wares and Zahir Paradise by Shattoto. From the outset, I was interested in exploring a cross-subsidization model by integrating different income groups within the same development. I introduced a river running through the site to enhance the landscape and provide a strong connection to nature, while a central path and extensive green areas served as the main organizational axis for the housing layout. To activate the ground floor of the low-income housing blocks, I incorporated small shops and cultural spaces, aiming to foster social interaction and economic opportunity. This design experiment offered valuable insights into the challenges of mixing income groups—particularly how to encourage integration without reinforcing divisions.

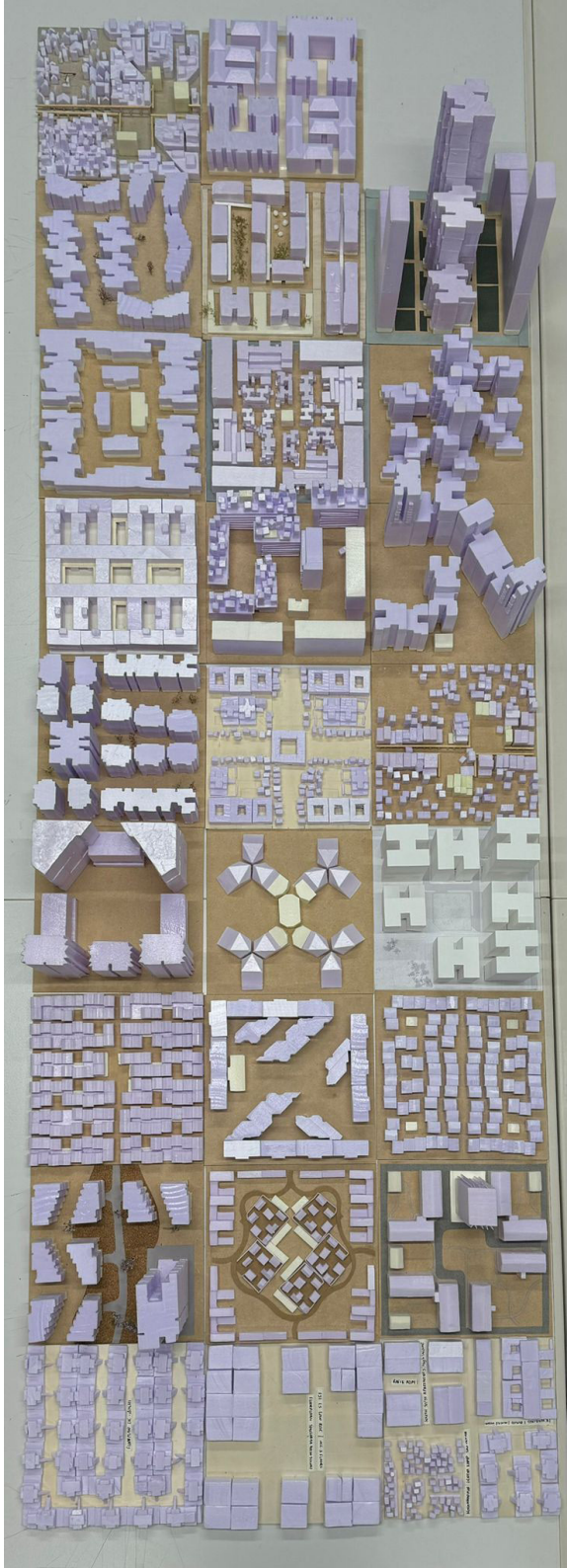
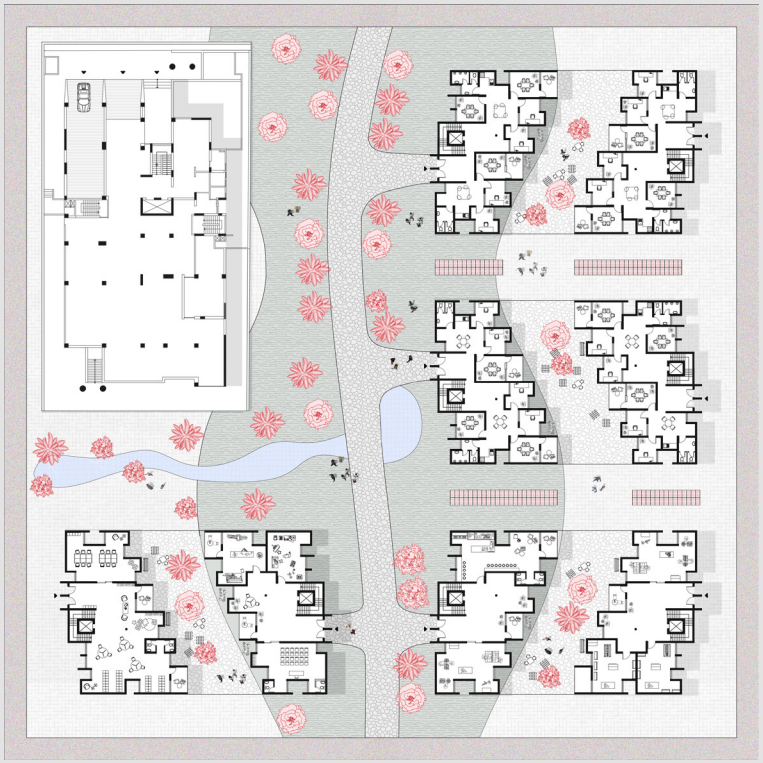
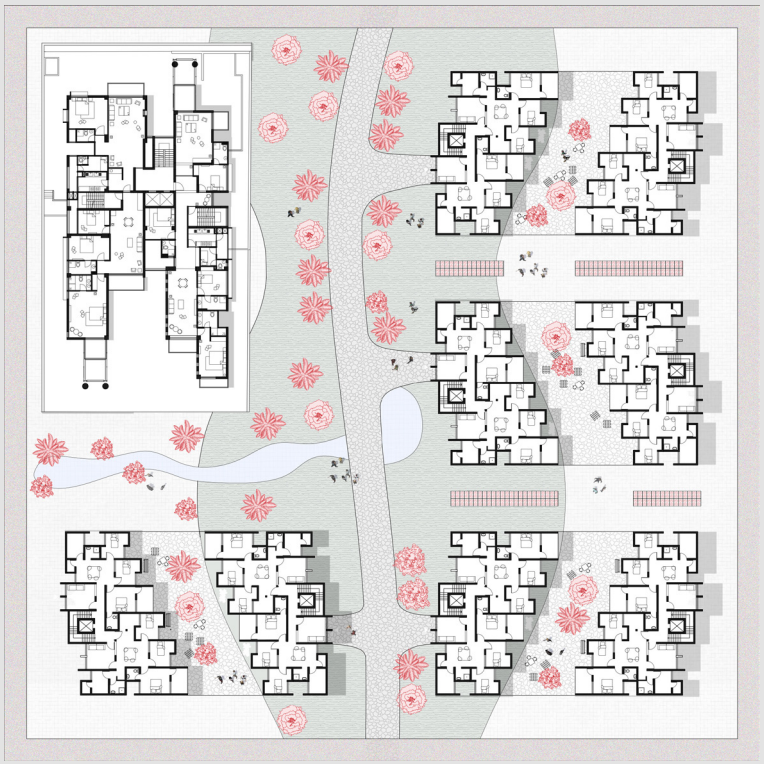


Fig. 95: A "cityscape" of all the pilot projects

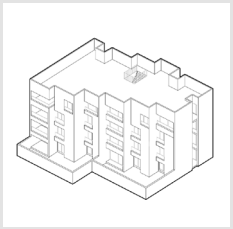
Ground Floor Plan
1/500



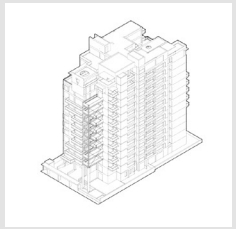
Typical Floor Plan
1/500



Typological References

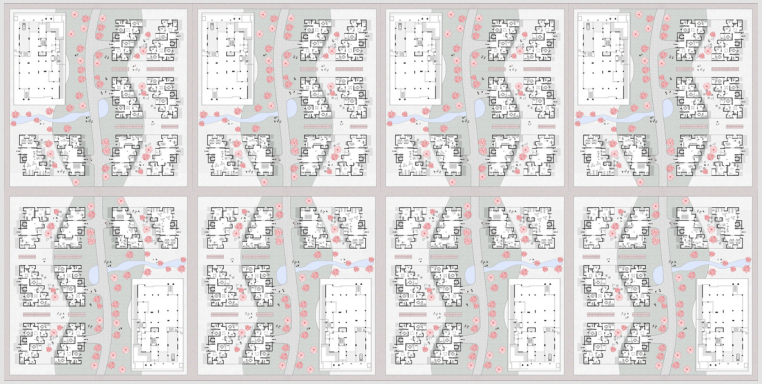


Housing for Bangladesh Livestock Research Institute
Shisrikkhu Sthapati &
Shamsul Wares
Dhaka
1985
FSI 1.88



South Zahir Paradise
Shattoto
Dhaka
2006-2009
FSI 6.90

Urban Fragment (Replicability)
1/2000



The Density Challenge
3.0 FSI High-rise

Student:
Lida Chrysi Ganotaki

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The Density Challenge
3.0 FSI High-rise

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P2: PRELIMINARY DESIGN

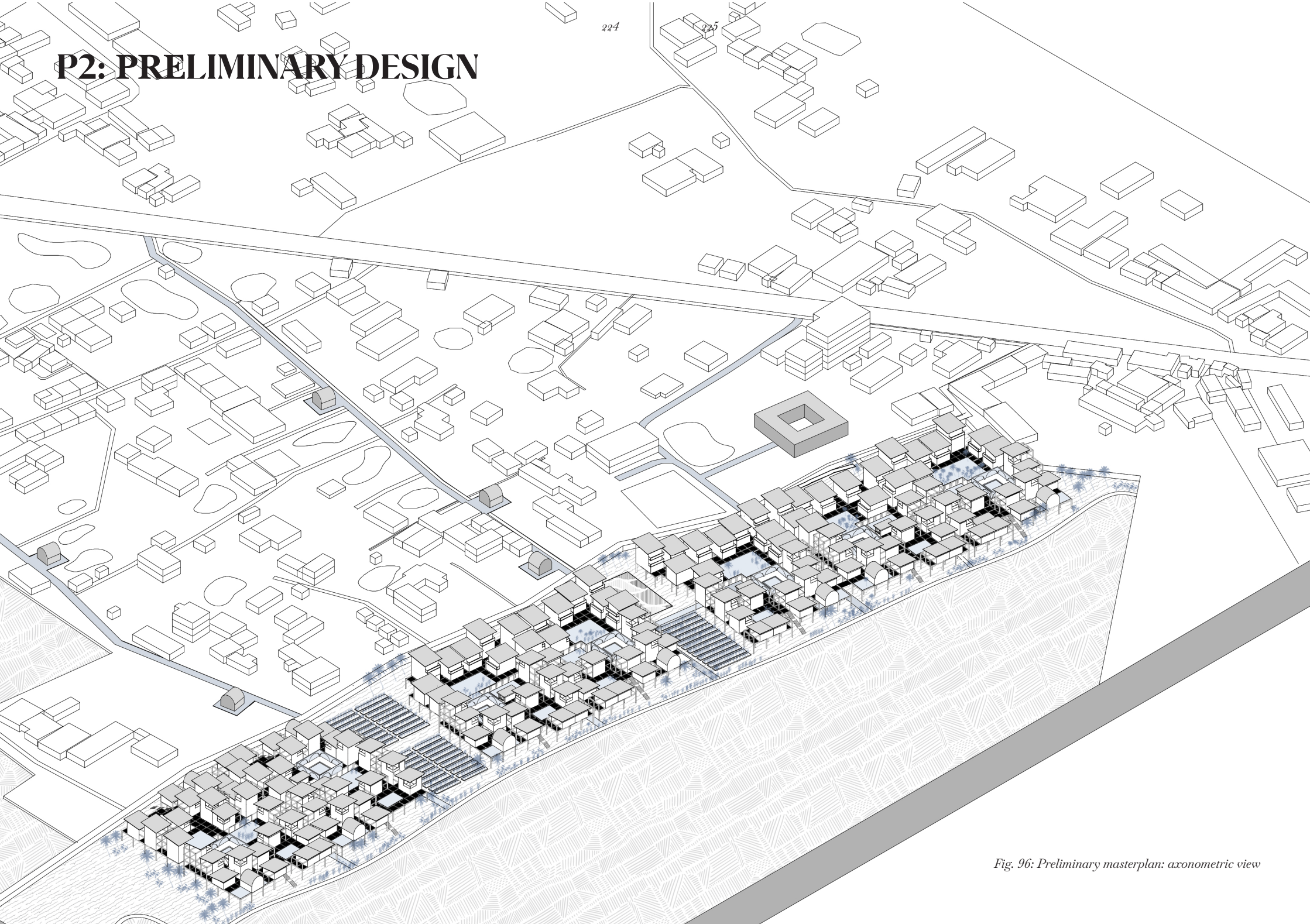


Fig. 96: Preliminary masterplan: axonometric view

P2: PRELIMINARY DESIGN

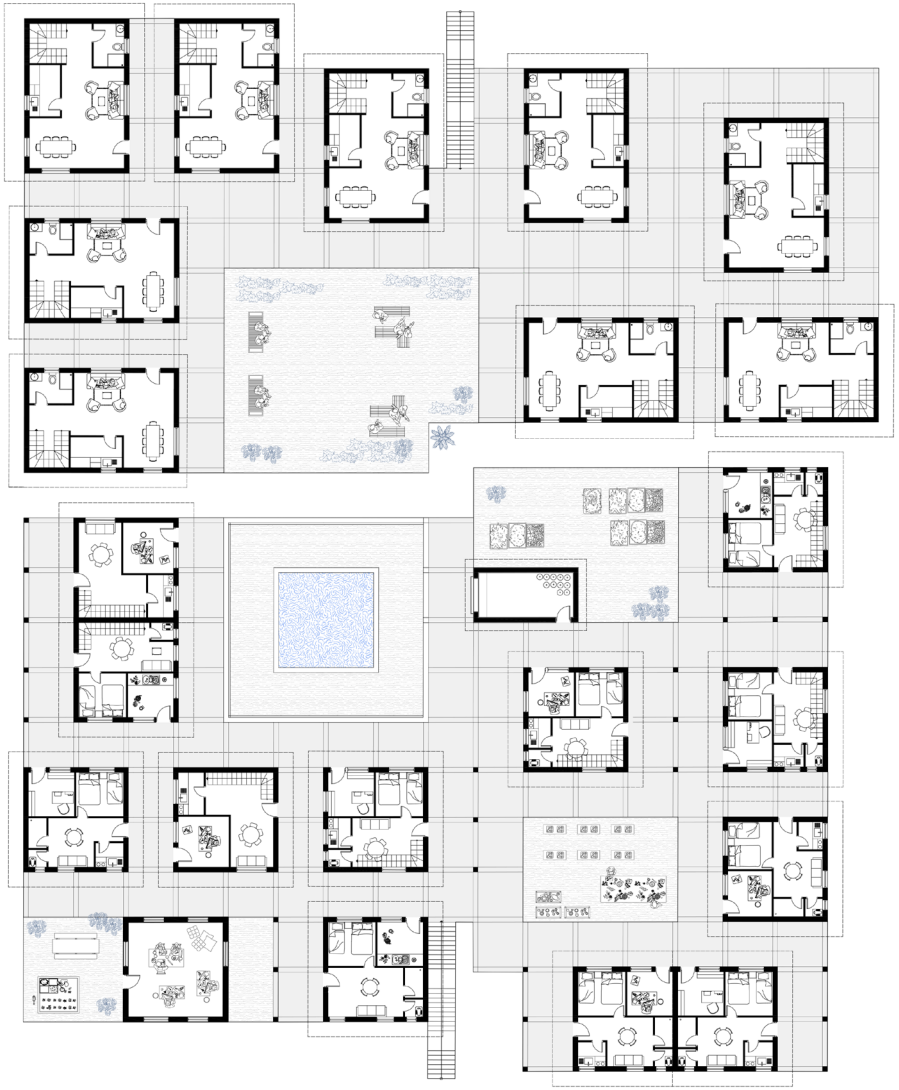


Fig. 97: Preliminary cluster plan

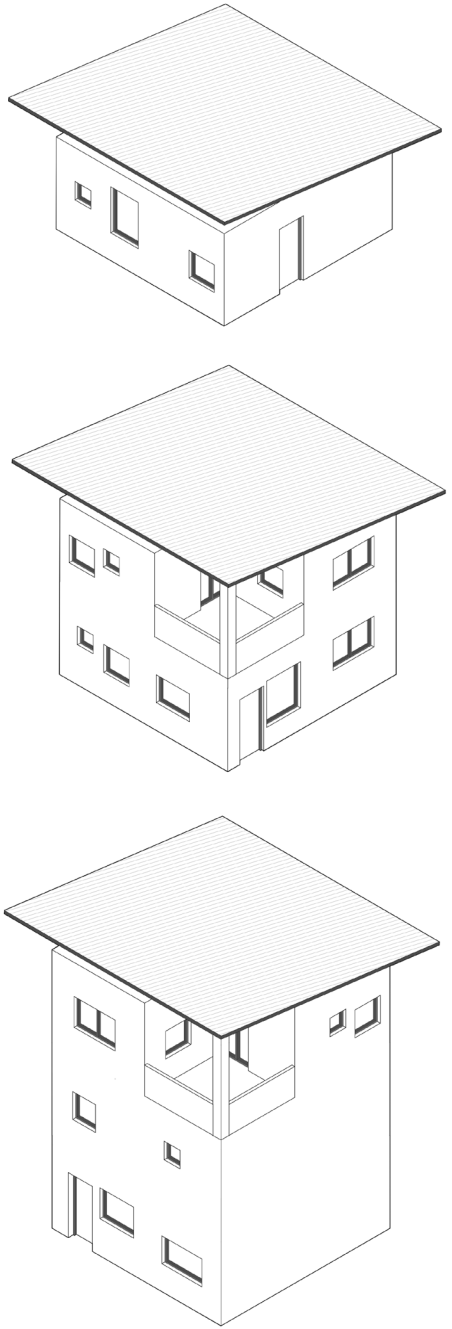


Fig. 98: Preliminary unit axonometrics

P2: PRELIMINARY DESIGN

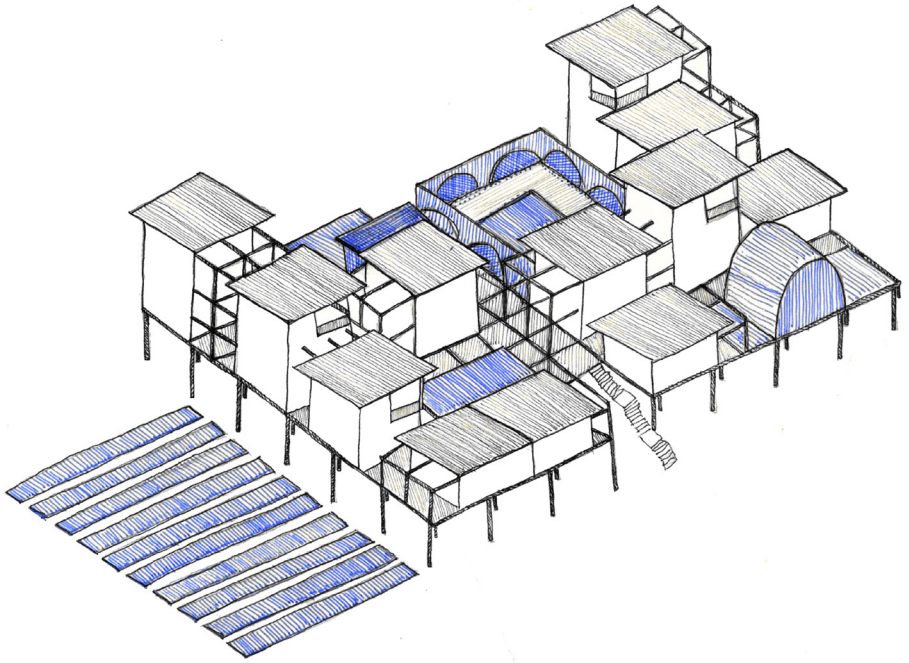


Fig. 99: Cluster axonometric

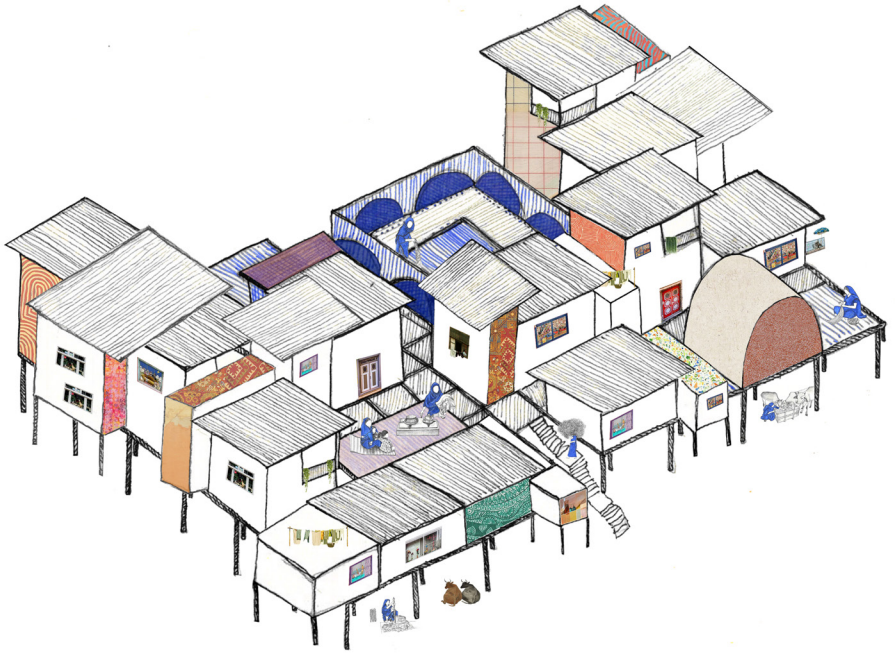


Fig. 100: Incremental development axonometric

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