

# Architecture and Reconciliation:

Laboratorium  
Pemodelan  
Arsitektur &  
Perkotaan

## *A Design of Co-Habitant Space for Palestinians And Israelis*

**Final Architectural Design Studio**  
International Undergraduate Program

**Arinta Azka Hirarki**  
21512022

**Supervisor:**  
Prof. Dr.-Ing. Ar. Ir. Ilya Fadjar Maharika, M.A., IAL,



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# Abstract

The prolonged Israeli-Palestinian conflict has caused deep physical, social, and psychological fragmentation, especially in areas like the Gaza Strip. Urban spaces have become zones of division, where restricted mobility, segregated infrastructure, and destroyed housing have further marginalized communities. The challenge lies not only in rebuilding what has been lost but also in reimagining how space can serve as a medium for reconciliation, coexistence, and resilience. This project responds to that challenge by proposing a design intervention that shifts the focus from separation to integration through architecture.

Using the concept of a \*Co-Habitant Space\*, this project introduces a layered, inclusive design typology that supports social interaction, cultural exchange, and environmental sustainability. The design avoids rigid zoning and instead adopts a multilayered spatial approach that allows for flexible, shared use of space by different communities. Rooted in both historical urban narratives and contemporary needs, the project integrates climate-responsive architecture, and community participation to create a prototype of reconciliation architecture in Gaza. Ultimately, the project offers an alternative vision of post-conflict urbanism that values coexistence, sustainability, and dignity for all.



# Abstrak

Konflik berkepanjangan antara Israel dan Palestina telah menyebabkan fragmentasi yang mendalam secara fisik, sosial, dan psikologis, terutama di wilayah seperti Jalur Gaza. Ruang-ruang kota berubah menjadi zona pemisah, dengan mobilitas yang terbatas, infrastruktur yang tersegregasi, serta kehancuran hunian yang memperburuk keterpinggiran masyarakat. Tantangannya tidak hanya terletak pada membangun kembali yang telah hancur, tetapi juga pada bagaimana merancang ulang ruang sebagai medium untuk rekonsiliasi, koeksistensi, dan ketahanan. Proyek ini hadir sebagai respon atas tantangan tersebut dengan mengusulkan sebuah intervensi desain yang menggeser fokus dari pemisahan menuju integrasi melalui pendekatan arsitektur.

Dengan menggunakan konsep *\*Co-Habitant Space\**, proyek ini memperkenalkan tipologi desain berlapis yang inklusif, yang mendukung interaksi sosial, pertukaran budaya, dan keberlanjutan lingkungan. Desain ini menghindari zoning kaku dan sebaliknya menerapkan pendekatan spasial multilayer yang memungkinkan penggunaan ruang secara fleksibel dan bersama oleh komunitas yang berbeda. Berakar dari narasi sejarah perkotaan serta kebutuhan kontemporer, proyek ini mengintegrasikan arsitektur responsif terhadap iklim, dan partisipasi masyarakat untuk menciptakan prototipe arsitektur rekonsiliasi di Gaza. Pada akhirnya, proyek ini menawarkan visi alternatif bagi urbanisme pascakonflik yang menjunjung tinggi nilai koeksistensi, keberlanjutan, dan martabat manusia.



# Authentication Sheet



Final Architectural Design Studio entitled:

## Architecture and Reconciliation: A Design of Co-Habitant Space for Palestinians and Israelis

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Student's Identification Number : 21512022  
Has Been Evaluated and Agreed on : 25 August 2025

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# Statement of Authenticity



By signing this form, I:

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| Student's Identification Number | : 21512022                                  |
| Study Programme                 | : Architecture                              |
| Faculty                         | : Faculty of Civil Engineering and Planning |
| University                      | : Universitas islam Indonesia               |

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Yogyakarta, 25 August 2024



*[Handwritten signature of Arinta Azka Hirarki]*

Arinta Azka Hirarki

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## ① Introduction



## Background

The Israeli-Palestinian conflict has long been a complex socio-political issue that has shaped the built environment in contested territories. Urban spaces in conflict zones often become symbols of division, with physical barriers reinforcing ideological and cultural separation. As an architecture student passionate about social impact design, I am eager to explore how the built environment can facilitate reconciliation and foster coexistence, rather than perpetuate conflict.

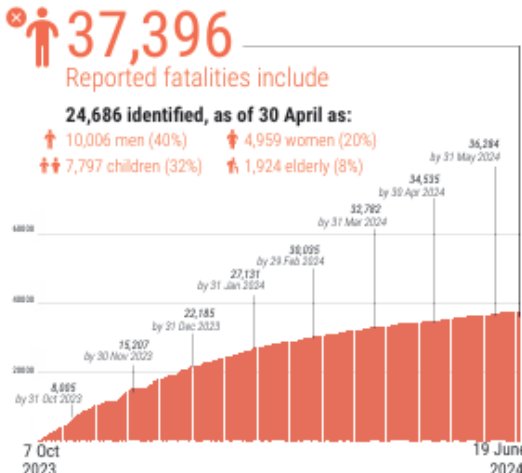
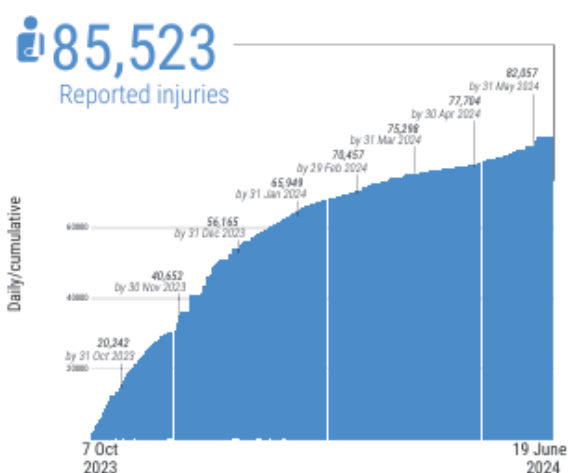
This study explores how architecture can promote social integration in politically and culturally divided areas. It aims to demonstrate how design principles can be utilized to create inclusive spaces that encourage interaction between historically conflicted communities. By adopting the Cohabitant Architecture approach, the study seeks to provide insights into spatial reconciliation—a vital but often overlooked topic in architectural discourse. More than just fostering human coexistence, this research introduces a broader co-existence framework that integrates human-non-human relationships, religious plurality, and cultural interactions within the built environment. This holistic perspective ensures that architectural interventions not only bridge human communities but also respect the ecological and cultural contexts in which they exist.

Beyond its social and cultural significance, this research presents an opportunity to explore sustainable architecture as a key driver for post-conflict rebuilding efforts. The proposed design will integrate net-zero emission principles, energy efficiency, and climate-responsive strategies, making it an attractive investment for international stakeholders interested in sustainable urban development in fragile regions. This approach aligns with the growing global emphasis on green architecture as both an environmental necessity and an economic opportunity. By demonstrating the feasibility of sustainable and socially inclusive spaces in Gaza, this research aims to attract investors, policymakers, and organizations focused on rebuilding conflict-affected regions in a way that is both ecologically responsible and socio-politically transformative.

This study contributes to the ongoing dialogue on architecture's role in social transformation. By examining historical case studies and proposing new design interventions, the research aims to demonstrate that architecture is not merely about constructing buildings but also about shaping environments that encourage dialogue, understanding, and peacebuilding—while simultaneously addressing the urgent need for sustainability in urban resilience and reconstruction efforts.

## REPORTED CASUALTIES (Cumulative) as of 19 June 2024

### Palestinians\*



### Israelis\*\*



### FOOD SECURITY

- 265K people facing crisis levels of food insecurity (IPC Phase 3):
- 854K people facing emergency levels of food insecurity (IPC Phase 4):
- 1.1 million people facing catastrophic levels of food insecurity (IPC Phase 5):
- 60-70% of meat and dairy-producing livestock killed or prematurely slaughtered (source: FAO).

\* Source: IPC projection for 16 March - 15 July 2024

### NUTRITION\*

- Over 96% of women and children aged 6-23 months are not meeting their nutrient requirements due to lack of minimum diet diversity.
- 346,000 children under five and 160,000 pregnant and breastfeeding women require feeding and micronutrient supplements.
- >50,000 children are estimated to require treatment for acute malnutrition in 2024.

\*Source: Nutrition Cluster

### EDUCATION\*

- ~625,000 students with no access to education.
- >7,030 students and 378 educational staff killed (source: MoE, as of 11 June).
- 88% of all school buildings (497 out of 563) sustained some level of damage, including 54% directly hit (as of 3 May).
- 69% of school buildings used as IDP shelters (238 out of 345) were directly hit or damaged (as of 3 May).

\*Source: Education Cluster, unless otherwise noted

### SHELTER\*

- 1.5 m<sup>2</sup> average space per person in IDP shelters, below the minimum standard of 3.5 m<sup>2</sup> per person.
- >100,000 households estimated to be in urgent need of shelter support.

\*Source: Shelter Cluster

### PROTECTION

- ~1.7 million internally displaced persons, (source: UNRWA).
- >1 million children in need of mental health and psycho-social support, (source: UNICEF).
- ~17,000 children are unaccompanied or separated, (source: UNICEF).
- At least 273 aid workers killed (266 nationals, 7 foreigners), including:
  - 197 UN staff - UNRWA: 193; WHO: 1; UNDP: 1; UNOPS: 1; UNDSS: 1.
  - 33 PRCs staff and volunteers, including 19 while on duty.
  - At least 43 other aid workers.
- 498 health workers killed, including at least 15 also counted under aid workers above (source: MoH Gaza).
- 70 Civil Defence staff killed while on duty (source: PCD).
- 151 journalists and media workers killed (source: GMO).

### WATER AND SANITATION\*

- Three water pipelines coming from Israel are partially operational.
- Two out of three water desalination plants are operational.
- 95,000m<sup>3</sup> to 108,000 m<sup>3</sup> of water per day produced.
- ~340,000 tons of accumulated solid waste and two landfills remain inaccessible.

\*Source: WASH Cluster

### HEALTH\*

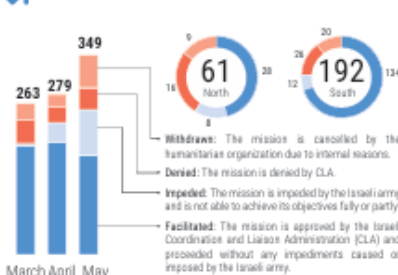
- 17 hospitals partially functional (3 in North Gaza, 7 in Gaza, 3 in Deir al Balah, 4 in Khan Younis).
- 19 out of 36 hospitals are out of service.
- 7 field hospitals, including 4 fully functional and 3 partially functional.
- 39% of primary health care centres are partially functional (38 out of 97).
- 25% (6 out of 24) UNRWA health centres operational (source: UNRWA, as of 9 June).
- 11 Emergency Medical Teams (EMTs) deployed, none in northern Gaza.
- >865,000 cases of acute respiratory infections (as of 26 May).
- >485,000 cases of diarrhea, incl. >113,600 children under five (as of 26 May).
- 46% (5,857 out of 12,760) of critical patients who submitted requests for medical evacuation were approved; these include 38% (4,895) who were medically evacuated abroad as of 7 May.
- As of 8 June, 1,550 patients (an average of 50 per day) have not been evacuated since the closure of Rafah Crossing, placing further stress on Gaza's few remaining health facilities.

\*Source: WHO, unless otherwise noted

### REPORTED DAMAGE

- >60% of residential buildings (source: World Bank, as of Jan 2024).
- >80% of commercial facilities (source: World Bank, as of Jan 2024).
- 155 health facilities (source: MoH Gaza).
- 187 UNRWA installations. (source: UNRWA).
- 130 ambulances (source: MoH Gaza).

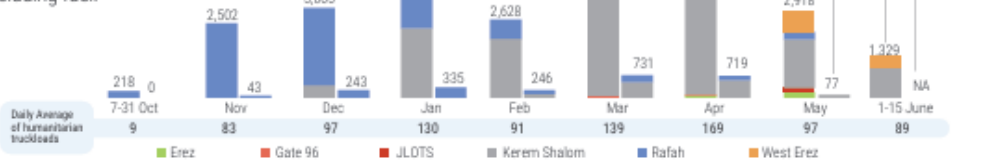
### HUMANITARIAN ACCESS (1-18 June)



### INCOMING TRUCKLOADS\*

- The pre-crisis average per working day in 2023 was 500 truckloads, including fuel.

\*Commercial trucks are not captured in the totals following 7 May, as the UN has been unable to directly observe the arrival of private sector cargo at Kerem Shalom crossing. Fuel is not included.



Source: Reported Casualties as of 19 June. OCHA 2024

Given these complex issues, the Cohabitant Architecture approach is becoming increasingly relevant. This concept not only focuses on social reconciliation between conflicting communities, but also emphasizes harmony between humans and the environment. The design to be developed in this research not only considers spatial

and social reconciliation, but also sustainability aspects, such as zero emission buildings and sustainability systems to support environmental restoration and attract the attention of global investors who are oriented towards sustainable development.



## Design Problem Study

The Israeli-Palestinian conflict has long been a complex socio-political issue. Gaza is currently in a state of total devastation due to the prolonged conflict, with destroyed infrastructure, a severe humanitarian crisis, and an urgent need for reconstruction. The city is at the center of global attention, including the United States and the Arab League, in an effort to find a long-term solution to the ongoing effects of the war.

As part of research for design, this study will explore how architecture can play a role in the reconstruction of Gaza with an approach that considers social, cultural, economic, and environmental aspects. The analysis will incorporate various disciplines related to architecture, including conflict-resistant building materials, adaptive structure and construction, and sustainability principles such as net zero emission technology to attract global investment.

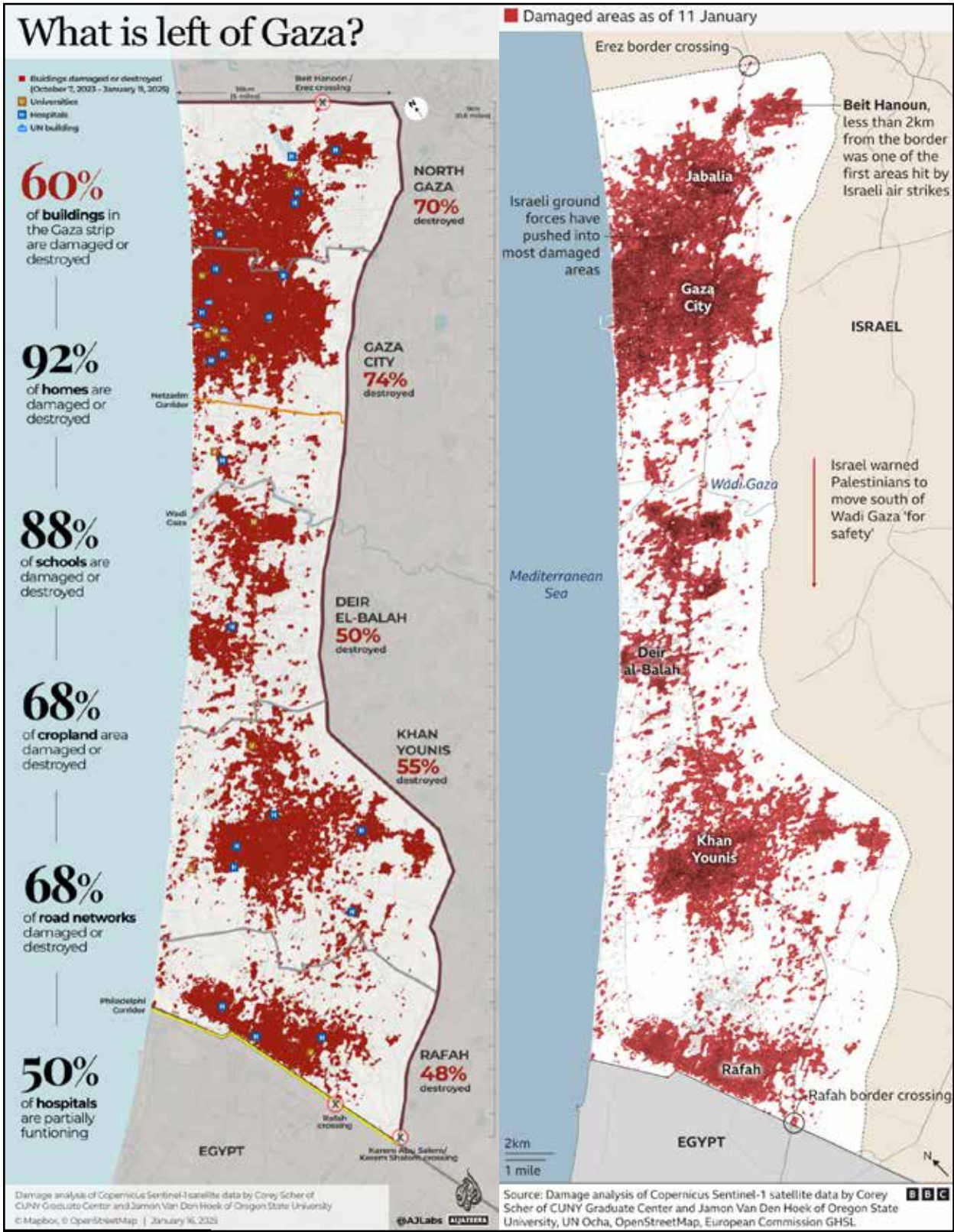




Source: Israel Conflict 2023

The Gaza Strip stretches for about 40.3 kilometers with an area of about 224.7 square kilometers, almost twice the size of the capital of the United States, Washington DC. It borders Israel for 58 kilometers

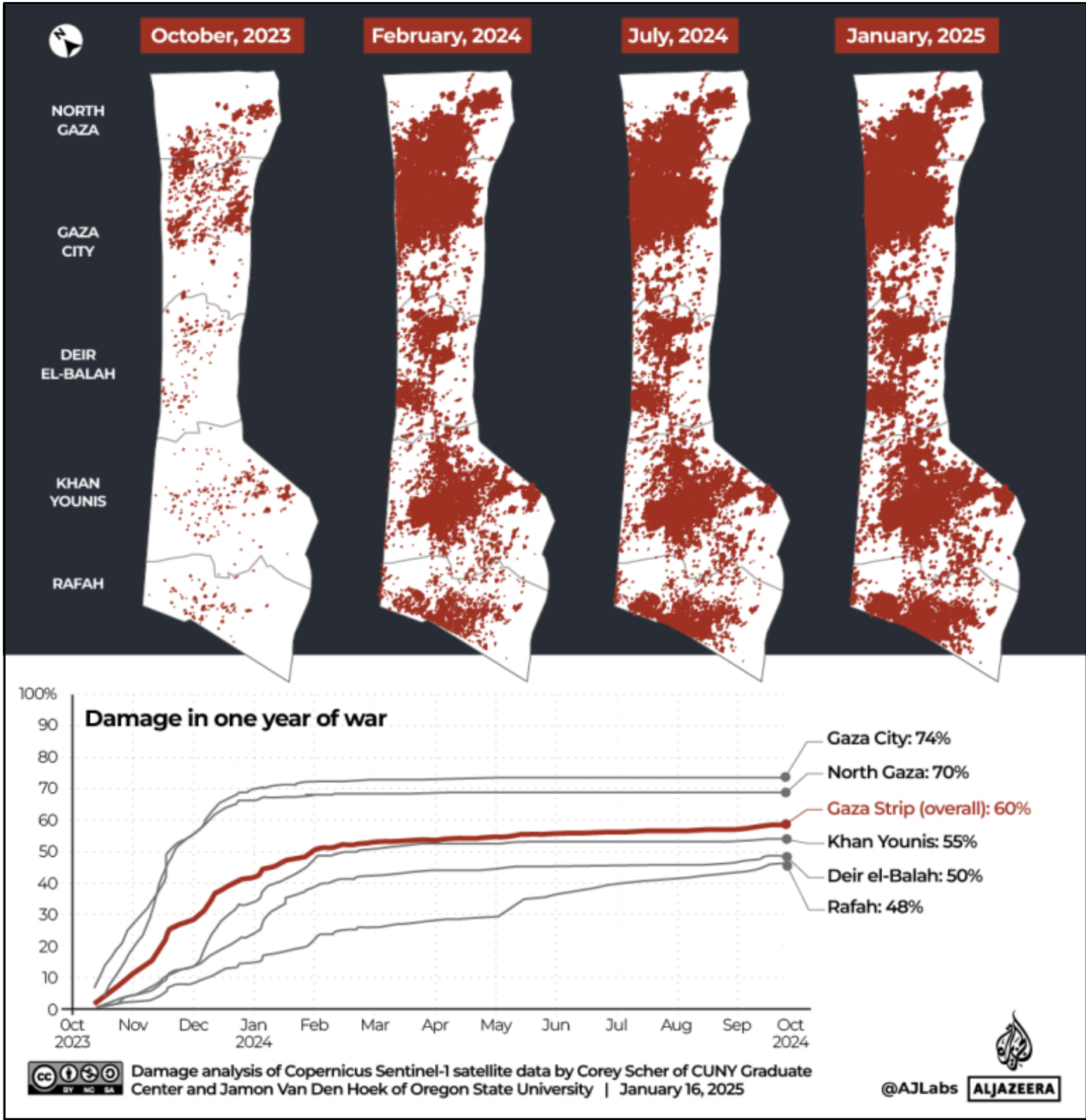
and Egypt for 12.9 kilometers. Meanwhile, its coastline facing the Mediterranean Sea is about 38.6 kilometers long.



Source: ALJAZEERA 2025

## Level of Destruction

The level of destruction in Gaza as of January 2025, where 60% of buildings in the Gaza Strip were destroyed or damaged, including 92% of houses, 88% of schools, and 68% of road networks and agricultural land. In addition, 50% of hospitals are only partially functional. This data reflects the massive scale of the impact of the conflict that has left Gaza an area with nearly destroyed infrastructure, requiring urgent reconstruction.



ISRAEL'S WAR ON GAZA

Almost all homes destroyed

Entire neighbourhoods have been reduced to rubble, leaving 1.9 million people displaced.

92%

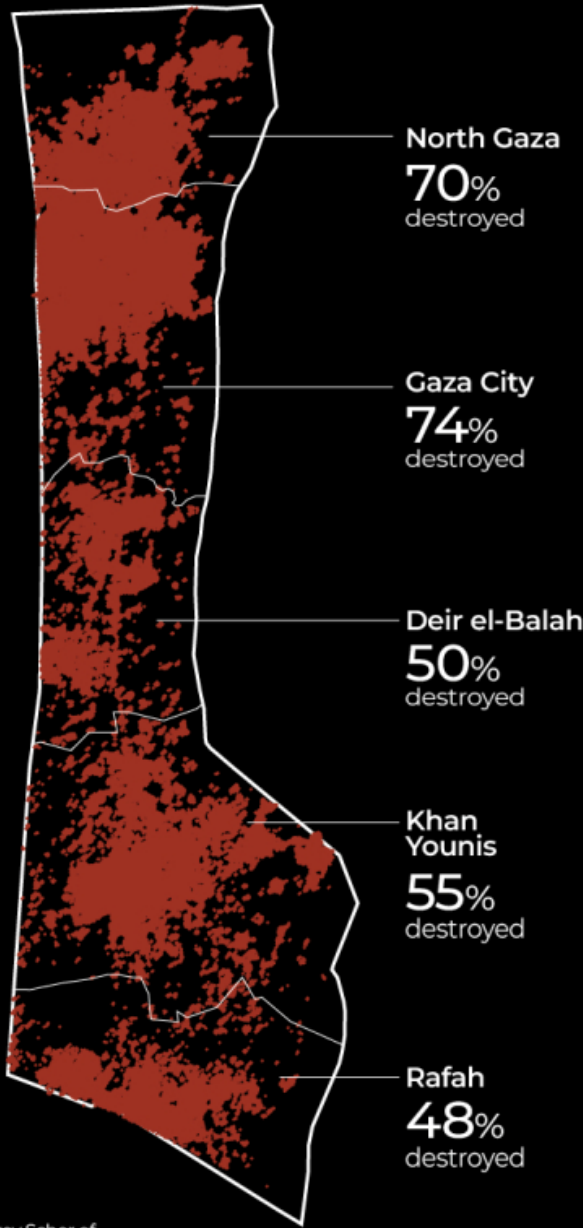
of homes are damaged or destroyed



Palestinians leave their homes due to Israeli attacks , Gaza City, December 23, 2024 [Dawoud Abo Alkas /Anadolu]

1.9 million people are internally displaced

80% of commercial facilities damaged



Damage analysis of Copernicus Sentinel-1 satellite data by Corey Scher of CUNY Graduate Center and Jamon Van Den Hoek of Oregon State University



Source: OCHA | January 15, 2025



@AJLabs ALJAZEERA

Source: OCHA 2025

Homes Destroyed

The image presents an overview of the destruction caused by Israel's war on Gaza, highlighting the severe impact on residential and commercial infrastructure. It states that 92% of homes have been destroyed or damaged, leaving 1.9 million people internally displaced. The damage is widespread across various neighborhoods, with specific percentages indicating destruction levels: 70% of homes in Northern Gaza, 74% in Gaza City, 55% in Khan Younis, 48% in Rafah, and 55% in Deir el-Balah.

Additionally, 80% of commercial facilities have been damaged. The image includes a photograph of a war-torn area in Gaza City, taken on December 23, 2024, by Anadolu Agency photojournalist Abed Abu Alkas. The data analysis is credited to Copernicus Sentinel-1 satellite imagery by Corey Scher of CUNY and Jamon Van Den Hoek of Oregon State University, with the United Nations Office for the Coordination of Humanitarian Affairs (OCHA) as the data source. The image was published by Al Jazeera on January 15, 2025.

ISRAEL'S WAR ON GAZA

Over half of Gaza's croplands destroyed

More than half of Gaza's vegetation land, essential for feeding the Strip's hungry population, has been damaged or destroyed by Israeli attacks.

68%

of cropland area damaged



Before and after images of cropland in east Maghazi, Deir el-Balah (Planet Labs PBC)



Source: Planet Labs, UNOSAT | January 16, 2025

ISRAEL'S WAR ON GAZA

Almost no schools left in Gaza

Gaza's education system lies in ruins after Israeli aerial bombardments. Many schools that remain standing are being used as makeshift shelters for displaced families.

88%

of schools are damaged or destroyed



An UNRWA-run school destroyed during Israeli military offensive, April 14, 2024 (Dana Rouga/Reuters)

503 educational staff killed

51 university buildings destroyed



Source: OCHA, UNICEF | January 16, 2025

ISRAEL'S WAR ON GAZA

Half of Gaza's hospitals destroyed

Israel's attacks on hospitals have left millions without healthcare, while more than 110,000 people were injured in air raids.

50%

of hospitals are partially functioning



Al-Shifa Hospital on November 7, 2023 (AFP)



Al-Shifa Hospital after Israeli strikes on April 1, 2024 (Stringer/Reuters)

130 ambulances damaged



Source: OCHA | January 16, 2025

ISRAEL'S WAR ON GAZA

More than half of Gaza's roads destroyed

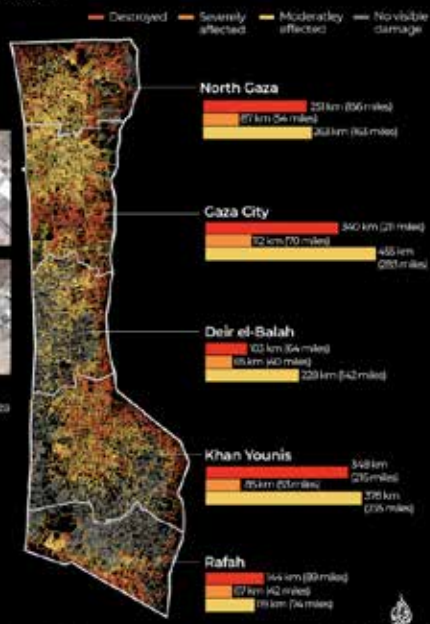
According to satellite imagery analysis, about 1,190km (740 miles) of roads are destroyed, 415km (258 miles) of roads are severely affected and 1,440km (895 miles) of roads are moderately affected.

68%

of road networks damaged

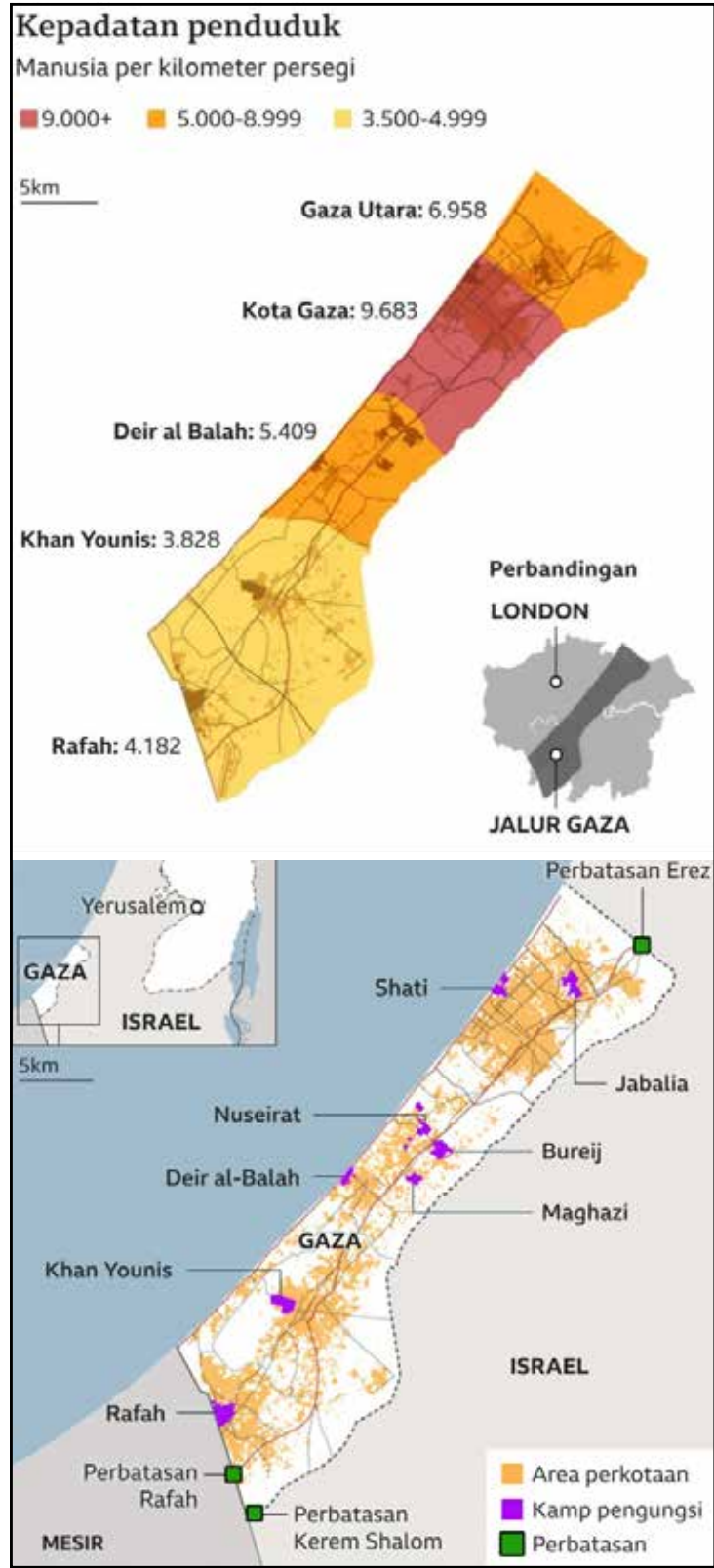


Before and after images of a roundabout interchange in Gaza City's Zeitoun neighbourhood (Planet Labs PBC)



Source: UNOSAT | January 16, 2025

Source: OCHA 2025



Source: BBC 2024

## Population Density

The Gaza Strip has a very high population density, with an average of thousands of people per square kilometer. Gaza City has the highest density, reaching 9,683 people/km<sup>2</sup>, making it the most densely populated area. This is followed by North Gaza with a density of 6,958 people/km<sup>2</sup>, and Deir al Balah which has 5,409 people/km<sup>2</sup>.

Meanwhile, southern areas such as Rafah have a density of 4,182 people/km<sup>2</sup>, and Khan Yunis, although larger, has a lower population density of 3,828 people/km<sup>2</sup>. This data shows that the central to northern areas of the Gaza Strip are denser than the southern part. When compared to a large city like London, the Gaza Strip has a much smaller area but is inhabited by a very large number of people. This high density puts great pressure on the infrastructure, resources, and quality of life of the people in the area.

## Distribution of Urban Areas and Refugee Camps in the Gaza Strip

This map illustrates the distribution of urban areas, refugee camps, and major borders in the Gaza Strip. Urban areas are marked in orange, indicating areas with high population density, especially in major cities such as Gaza City, Khan Yunis, and Rafah. In addition, some refugee camps, such as Jabalia, Shati, Nuseirat, Bureij, Maghazi, and Deir al-Balah, are marked in purple. These camps house many Palestinians affected by the prolonged conflict, with limited infrastructure and restricted access to basic services such as clean water, electricity, and health facilities.

The main borders between the Gaza Strip and its neighbors are also shown on this map. The Erez Border in the north connects Gaza with Israel, while the Rafah Border in the south provides a link with Egypt. In addition, the Kerem Shalom Border is the main entry point for humanitarian aid and merchandise. With limited territory and a dense population, access to resources and mobility are major challenges for Gazans. This map reflects the complex geographic and demographic conditions of the Gaza Strip and the enormous challenges faced by its residents due to conflict and limited infrastructure.

# SWOT Analysis of Gaza Strip

| Factor   | Positive (Strengths)                                                                                                                                                                                                                                                                                                    | Negative (Weaknesses)                                                                                                                                                                                                                                                                                                                                                                |
|----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Internal | <ul style="list-style-type: none"><li>- Strategic location on the Mediterranean coast, offering potential for trade and fishing.</li><li>- Strong social resilience, with high solidarity within the community.</li><li>- Rich cultural and historical heritage, serving as a strong identity for its people.</li></ul> | <ul style="list-style-type: none"><li>- Limited infrastructure due to prolonged blockade and conflict.</li><li>- Scarce natural resources, including clean water and decreasing agricultural land.</li><li>- Restricted access to education and healthcare due to political and economic conditions.</li></ul>                                                                       |
| External | <ul style="list-style-type: none"><li>- International support from humanitarian organizations and pro-Palestinian nations.</li><li>- Investment potential if the conflict ends and trade routes reopen.</li><li>- Cultural diversity, which could attract religious and historical tourism.</li></ul>                   | <ul style="list-style-type: none"><li>- Political instability and ongoing conflict, hindering development and investment.</li><li>- Economic blockade and restricted access imposed by Israel and Egypt, limiting trade and aid distribution.</li><li>- Environmental and infrastructural damage, including the destruction of buildings and public facilities due to war.</li></ul> |

Source: Author



## Design Study Preliminary

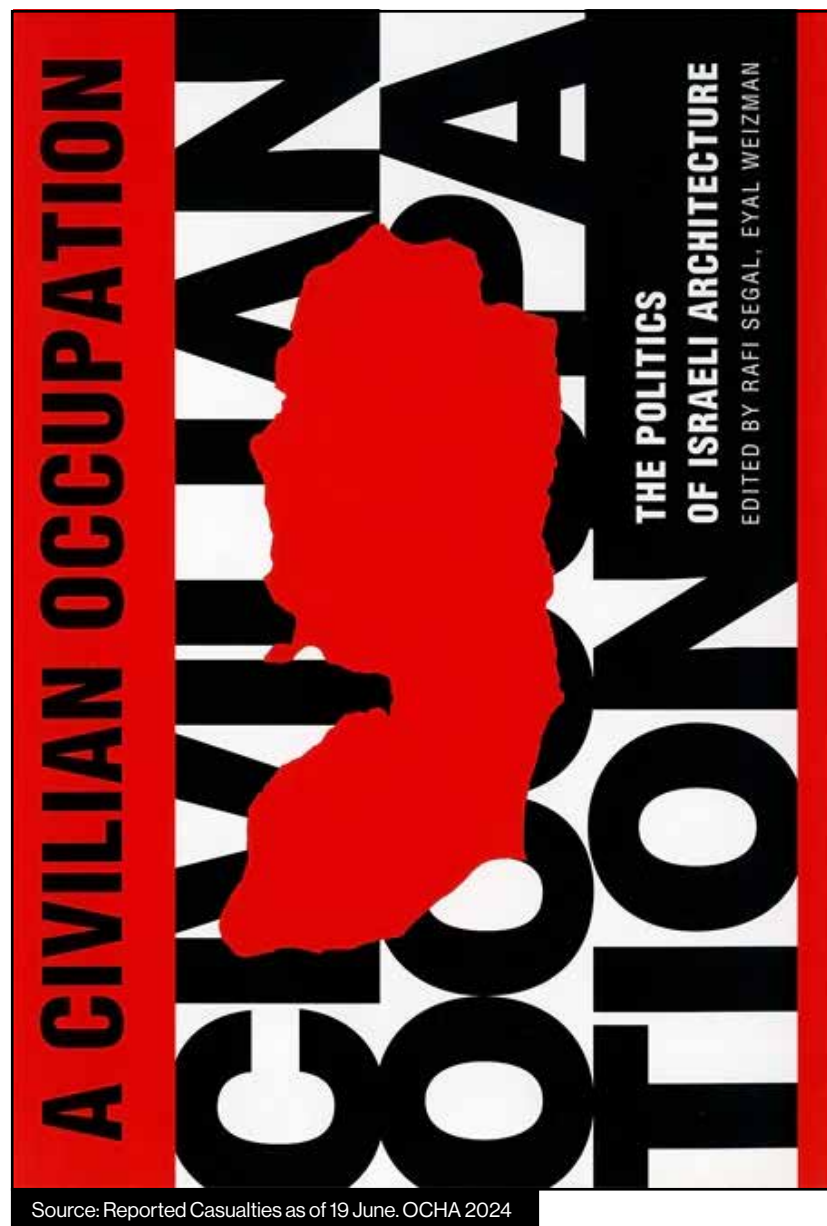
# A Civilian Occupation: The Politics of Israeli Architecture (2003)

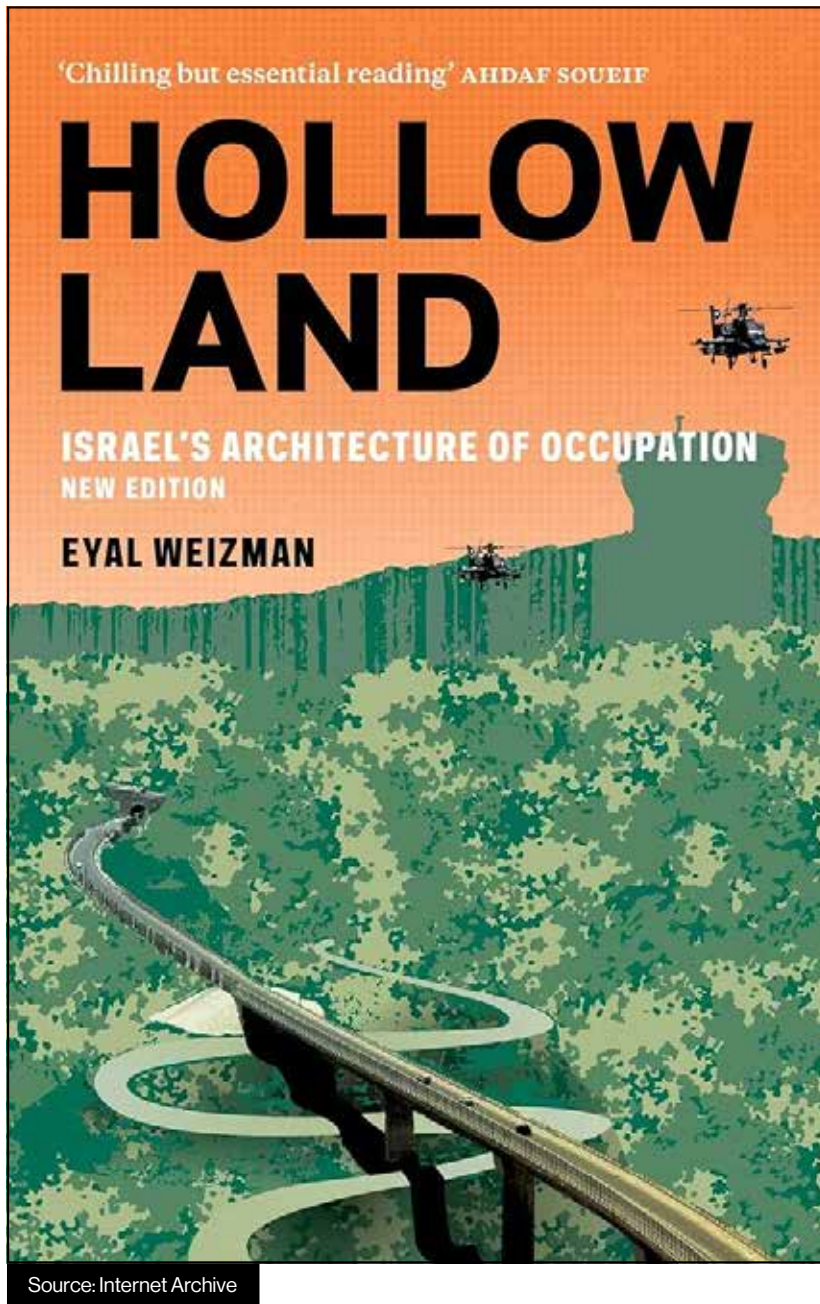
*Rafi Segal, Eyal Weizman*

The book *A Civilian Occupation: The Politics of Israeli Architecture* reveals how architecture and urban planning have been used as political tools in the Israel-Palestine conflict. One of its main arguments is that spatial design has served as an instrument of dominance, aiming to control and restrict Palestinian communities. For example, urban planning and the construction of illegal settlements have created segregation, limiting Palestinian access to essential resources and infrastructure. In this project, a key lesson to be applied is the necessity of designing inclusive spaces that avoid segregation and instead serve as a platform for reconciliation among communities affected by conflict.

Additionally, the book highlights how spatial fragmentation and territorial division have worsened conditions in Palestine, particularly in Gaza. Restrictions on transportation routes, water access, and electricity have further isolated Gaza, making it more vulnerable to humanitarian crises. Therefore, this project must counteract such fragmentation by designing spaces that are functionally connected and self-sufficient in terms of resources, such as through the use of renewable energy and sustainable water management systems. The book also discusses how home demolitions and new settlement developments have systematically erased Palestinian architectural identity. To address this, the project will integrate local cultural elements into the design, using traditional materials, indigenous spatial patterns, and architectural adaptations suited to Gaza's environmental conditions.

In the context of resistance through design, the book illustrates that architecture can serve as a form of Palestinian resilience. For instance, rebuilding demolished homes and creating community spaces that can withstand conflict conditions offer a means of asserting Palestinian identity and autonomy. In this project, the design approach must actively involve the people of Gaza, ensuring they have agency over their built environment. Moreover, modular construction techniques and rapidly deployable infrastructure will be central to the project, providing structures that can be quickly rebuilt in the face of ongoing instability.





## Hollow Land: Israel's Architecture of Occupation (2010)

*Eyal Weizman*

Eyal Weizman's *Hollow Land* critically examines how architecture is weaponized in the Israel-Palestine conflict, demonstrating how spatial planning is used to control, segregate, and oppress Palestinian communities. The built environment in Gaza and the West Bank has been shaped by barriers, military checkpoints, and segregated infrastructure, leading to fragmented urban landscapes that restrict mobility and access to essential resources. This insight directly informs the project's approach, which aims to counteract spatial domination by designing for resilience, inclusivity, and sustainability in Gaza.

One of the book's key lessons is the role of architecture in maintaining systems of power through the manipulation of vertical and horizontal space. Israeli control extends beyond roads and settlements to include airspace, underground infrastructure, and even psychological elements of design that instill fear and surveillance. In response, this project will integrate decentralized and multi-dimensional spaces, utilizing underground areas and rooftops to maximize land use while ensuring accessibility and security for residents. Sustainable strategies such as water collection, renewable energy, and adaptable infrastructure will be central to the design, fostering self-sufficiency even under blockade conditions.

Ultimately, *Hollow Land* underscores the power of architecture not only as a tool of oppression but also as a force for change. This project seeks to reclaim architecture as an instrument of empowerment by prioritizing human-centered design, cultural preservation, and sustainable development. By creating spaces that foster community resilience and self-sufficiency, the design challenges the mechanisms of control outlined in the book, offering a vision for an urban environment that supports coexistence rather than division. *Hollow Land* serves as a critical foundation for understanding the intersection of architecture and conflict. The key takeaway for this project is that architecture should not be a passive reflection of political realities but rather an active force for change. By designing for integration rather than division, for sustainability rather than dependency, and for empowerment rather than control, this project aims to challenge the very architectural mechanisms that have been used to suppress Gaza's communities.

## Berlin Post-Cold War Urbanism (1989)

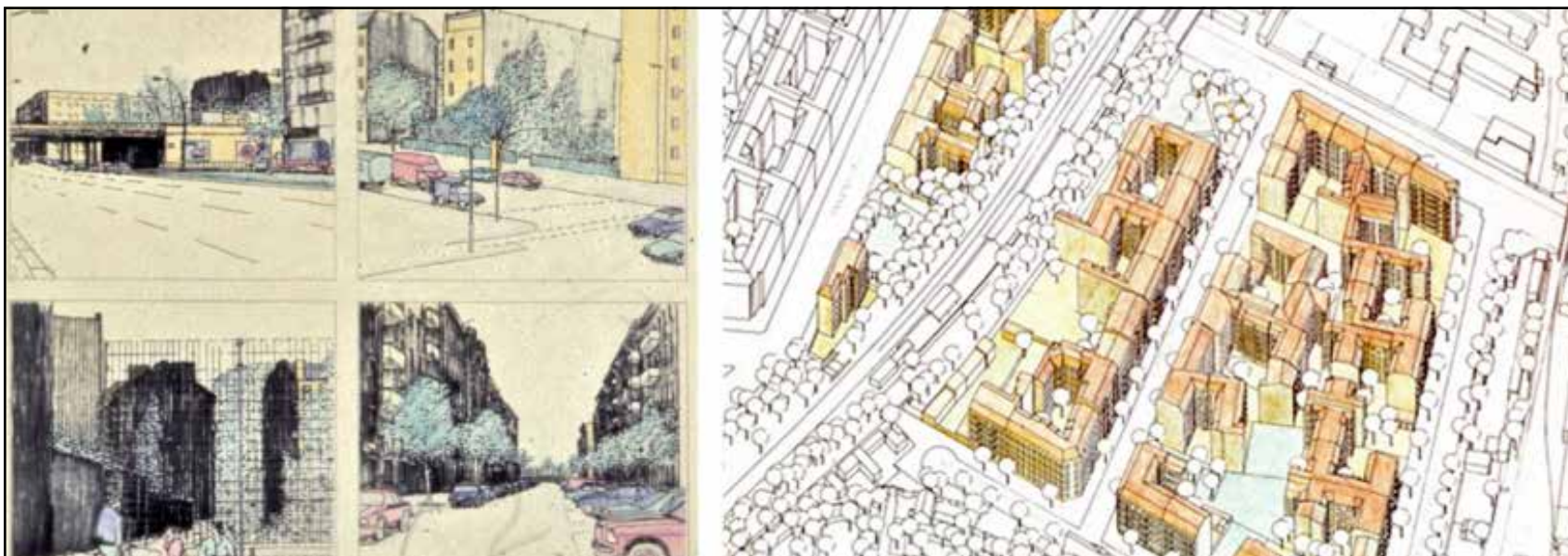
### *German War*

The urban transformation of Berlin after the Cold War provides valuable insights into how architecture and urban planning can be used to heal divided societies. After the fall of the Berlin Wall in 1989, the city faced the immense challenge of reunifying its fragmented urban fabric, which had been physically and ideologically divided for decades. Strategic urban planning, adaptive reuse of infrastructure, and an emphasis on fostering social cohesion played a crucial role in the city's reintegration (Till, 2005). These approaches offer important lessons for designing in conflict-affected areas like Gaza, where urban fragmentation and political tensions continue to shape the built environment.

One key aspect of Berlin's post-Cold War urbanism was the reintegration of divided neighborhoods through strategic urban design. Rather than erasing the past, Berlin embraced its history by repurposing former barriers and reestablishing lost connections between East and West (Huysen, 2003). This is highly relevant to Gaza, where the built environment has been shaped by decades of conflict and division. The proposed project will apply similar principles by reconnecting isolated communities through inclusive public spaces, pedestrian-friendly infrastructure, and mixed-use developments that encourage interaction among different social groups. The goal is to use architecture as a tool for reconciliation rather than separation.

Another lesson from Berlin is the role of adaptive reuse in revitalizing post-conflict cities. Many abandoned industrial sites and remnants of the Berlin Wall were transformed into cultural spaces, museums, and public parks, creating areas that promote collective memory and social engagement (Ladd, 1997). In Gaza, where destruction has left large portions of the city in ruins, adaptive reuse can offer a sustainable approach to reconstruction. By repurposing existing structures and materials, the project can minimize environmental impact while preserving the historical narrative of the space. This aligns with the principles of sustainable design and resource efficiency, making it an attractive model for both local and international stakeholders.

Lastly, Berlin's approach to sustainable urban development provides a framework for rebuilding Gaza with resilience in mind. The German capital has invested heavily in green infrastructure, energy-efficient buildings, and public transportation to ensure long-term sustainability (Cochrane & Jonas, 1999). Similarly, this project will incorporate principles of net-zero emissions, renewable energy sources, and climate-responsive design. By positioning sustainability as a key component, the project not only addresses immediate reconstruction needs but also presents a viable long-term investment opportunity for international partners. In this way, the lessons from Berlin's post-Cold War urbanism can serve as a blueprint for transforming Gaza into a more connected, livable, and resilient city despite its ongoing challenges.



Source: Econstore 2020



## Belfast Peace Walls (1960)

*Northern Ireland*

The Belfast Peace Walls are a series of physical barriers built in Northern Ireland since the late 1960s to separate Catholic (nationalist) and Protestant (unionist) communities during The Troubles. Originally intended as temporary security measures to reduce sectarian violence, these walls have become a permanent feature of Belfast's urban landscape (Shirlow, 2003). Today, more than 100 peace walls stretch over 34 kilometers, reinforcing social and economic segregation between communities (Gormley-Heenan & Byrne, 2012). This situation closely parallels Gaza, where physical barriers, such as walls and blockades, have deepened social, economic, and mobility restrictions for its residents.

One of the key lessons from the Belfast Peace Walls is how security-driven infrastructure can evolve into permanent divisions that prolong conflict and distrust. Research by Leonard & McKnight (2011) highlights that these barriers have created "mental borders," where residents on both sides feel increasingly isolated and unwilling to engage with each other. This psychological impact is highly relevant to Gaza, where movement restrictions and access limitations have profoundly affected daily life. The proposed project seeks to counteract these effects by designing spaces that promote inclusivity

and reduce segregation, such as transitional zones or communal areas that encourage social interaction.

Another lesson from Belfast is the role of urban design in fostering reconciliation. In recent decades, initiatives have transformed some peace walls into spaces for interaction through murals, community centers, and joint economic development projects (Byrne et al., 2015). This provides valuable insights into how architecture in Gaza can facilitate dialogue and social recovery. For example, the project could incorporate cultural and historical narratives into building facades or create flexible public spaces that accommodate both economic and social activities, fostering a sense of shared identity and resilience.

Finally, Belfast's experience demonstrates that physical solutions alone are insufficient for long-term peace. According to Calame & Charlesworth (2009), successful urban reconstruction in conflict zones must be accompanied by sustainable social, economic, and policy strategies. This means that architectural projects in Gaza should go beyond spatial design to support economic empowerment, education access, and long-term social well-being. By adopting key principles from Belfast, this project aims to create architecture that not only serves as shelter but also acts as a tool for recovery and reconciliation amid ongoing conflict.

# Bosnia and Herzegovina Post-War Reconstruction (1992)

## *Bosnia and Herzegovina*

Bosnia and Herzegovina underwent a complex and challenging reconstruction process following the devastating war from 1992 to 1995. The conflict left cities, infrastructure, and social structures in ruins, with Sarajevo, Mostar, and other urban centers heavily damaged. Post-war reconstruction efforts were guided by both international organizations and local initiatives, aiming not only to rebuild the physical environment but also to restore social cohesion in a deeply divided society (Calic, 1996). This experience is highly relevant to Gaza, where ongoing destruction has similarly fragmented communities and necessitates a holistic approach to rebuilding that integrates architectural, economic, and social strategies.

One of the key lessons from Bosnia's reconstruction is the importance of balancing historical preservation with modernization. In cities like Mostar, efforts were made to restore iconic structures such as the Stari Most (Old Bridge), a symbol of multicultural coexistence, while also integrating new infrastructure that could support long-term urban resilience (Sircar, 2006). Similarly, architectural projects in Gaza should aim to restore cultural heritage sites that hold symbolic and historical value, reinforcing a sense of identity and continuity for displaced communities. This can be done while incorporating modern, sustainable design elements that improve quality of life and enhance disaster resilience.

Another critical aspect of Bosnia's reconstruction was the challenge of social reintegration in a post-conflict environment. Research by Jansen (2005) highlights that physical rebuilding alone was insufficient; deep-rooted divisions between ethnic groups remained a significant barrier to reconciliation. In Gaza, a similar issue arises, as long-term displacement and restricted mobility contribute to social fragmentation. Thus, any architectural intervention must prioritize community-oriented spaces that encourage interaction and social rebuilding. Mixed-use developments, public gathering spaces, and cooperative housing models can facilitate engagement and economic recovery, fostering a sense of shared ownership and resilience.

Finally, Bosnia's post-war reconstruction underscores the risks of over-reliance on external aid without sustainable local empowerment. According to Džihic & Kramer (2009), many international reconstruction projects in Bosnia failed to engage local communities effectively, leading to developments that were misaligned with the needs of residents. To avoid this in Gaza, participatory design methods should be employed, ensuring that residents are actively involved in decision-making processes. This will help create a built environment that genuinely serves the needs of the people and enhances long-term sustainability. By learning from Bosnia's successes and challenges, this project aims to implement an inclusive, culturally sensitive, and resilient design framework that supports both immediate recovery and long-term development in Gaza.



# Typology of Separation Barrier

## Israel-Palestine

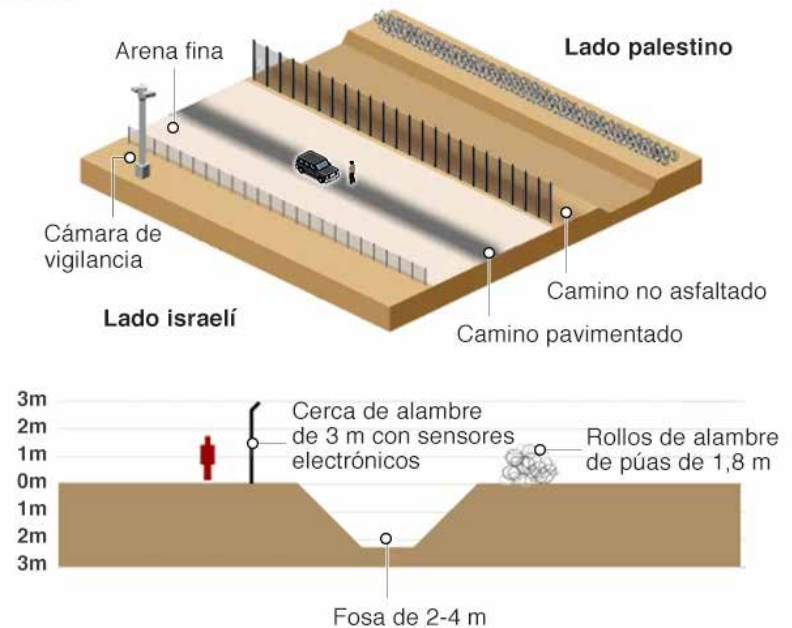
### 1. Monolithic Concrete

The monolithic concrete wall is perhaps the most visible and politically symbolic element of the separation system. It consists of large, prefabricated reinforced concrete panels reaching a height of 8 to 9 meters. Each panel is placed side by side to form an uninterrupted vertical barrier that creates a sense of impenetrability. In urban areas, the wall is often supplemented with surveillance cameras, watchtowers, barbed wire, and sensor systems. In certain segments, the surface of the wall has become a canvas for political graffiti, protest art, and murals, turning it into both a structure of division and a symbol of resistance.

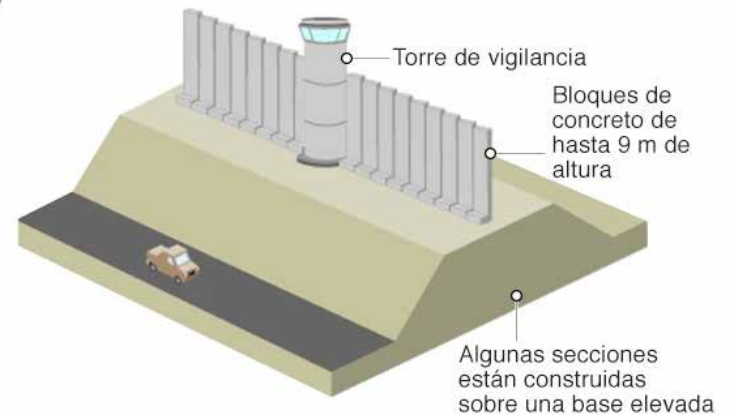
The wall serves as a maximum-security barrier in densely populated regions where visibility, proximity, and frequent crossings make fencing insufficient. It is particularly prevalent in East Jerusalem, Bethlehem, and Qalqilya, where it cuts through urban neighborhoods, sometimes just meters away from residential buildings. Its primary aim is to completely block physical access between Israeli and Palestinian territories, while also limiting visual connectivity, thereby reinforcing psychological separation.

The impact of this wall is profound. It often divides communities, cutting off families, neighbors, students from their schools, workers from their jobs, and farmers from their land. The wall has also severely disrupted urban continuity, halting organic urban growth and producing a fragmented cityscape that challenges planners and residents alike. From a human rights and architectural perspective, the wall represents an imposed structure of control and spatial dominance, which reshapes urban life into zones of restriction and surveillance. Furthermore, its presence fosters a sense of enclosure and imprisonment, deeply affecting the mental health and social fabric of Palestinian communities living in its shadow.

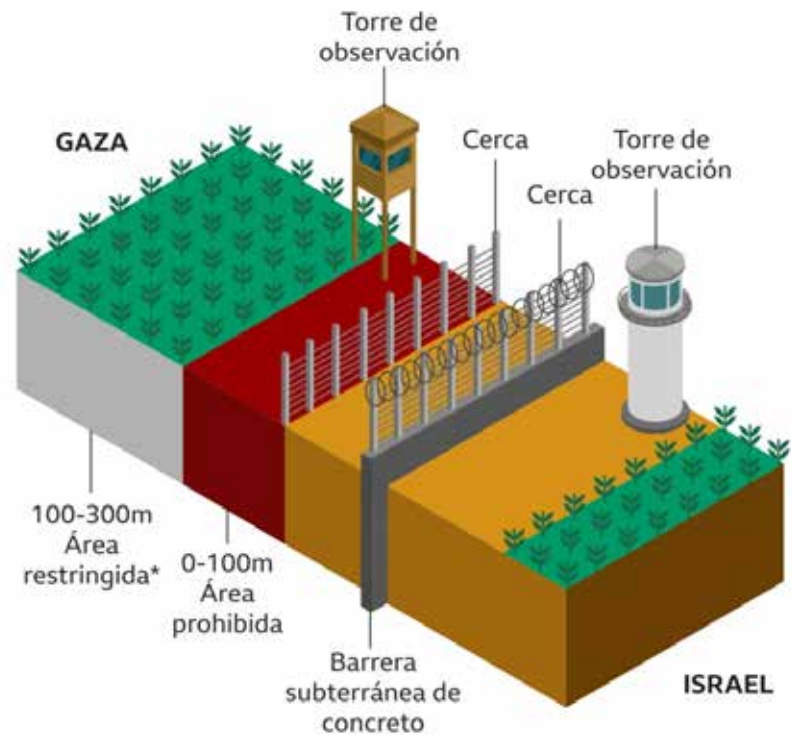
#### Cerca



#### Muro



# Cerca fronteriza de Israel con Gaza



\*Acceso solo para agricultores y a pie

Fuente: Oficina de la ONU para la Coordinación de Asuntos Humanitarios



## 2. Electrified Fence and Barbed Wire

Unlike the massive concrete wall, this typology employs a lighter, yet highly controlled fencing system. It typically includes metal mesh or steel fences, ranging from 2.5 to 4 meters in height, fortified with barbed wire coils, electronic motion detectors, CCTV cameras, and underground sensors. In many cases, the system is supported by dual or triple fences with patrol roads in between, allowing the military to respond quickly to any breach. This system is mostly found in rural or agricultural zones, where topography and population density do not require the visual and symbolic imposition of a solid wall.

The electrified fence serves to physically restrict movement across the border, primarily in open areas of the West Bank. Although it does not obscure the view like the concrete wall, it remains equally effective in preventing unauthorized crossings. It also includes designated gates, which are militarily controlled and often open for only limited hours, creating unpredictable access for Palestinian residents and farmers.

The socio-economic effects are particularly felt by Palestinian agricultural communities, who have lost access to large portions of fertile land now trapped behind the fence. Farmers are often required to obtain special permits to access their own land, and these permits can be arbitrarily delayed, denied, or revoked. The fence, therefore, contributes to economic degradation, food insecurity, and increased dependency. Spatially, it breaks regional connectivity, dividing natural routes and isolating rural villages from each other. It reinforces territorial fragmentation and contributes to the broader policy of separation by design, where control over space becomes a tool for political dominance.

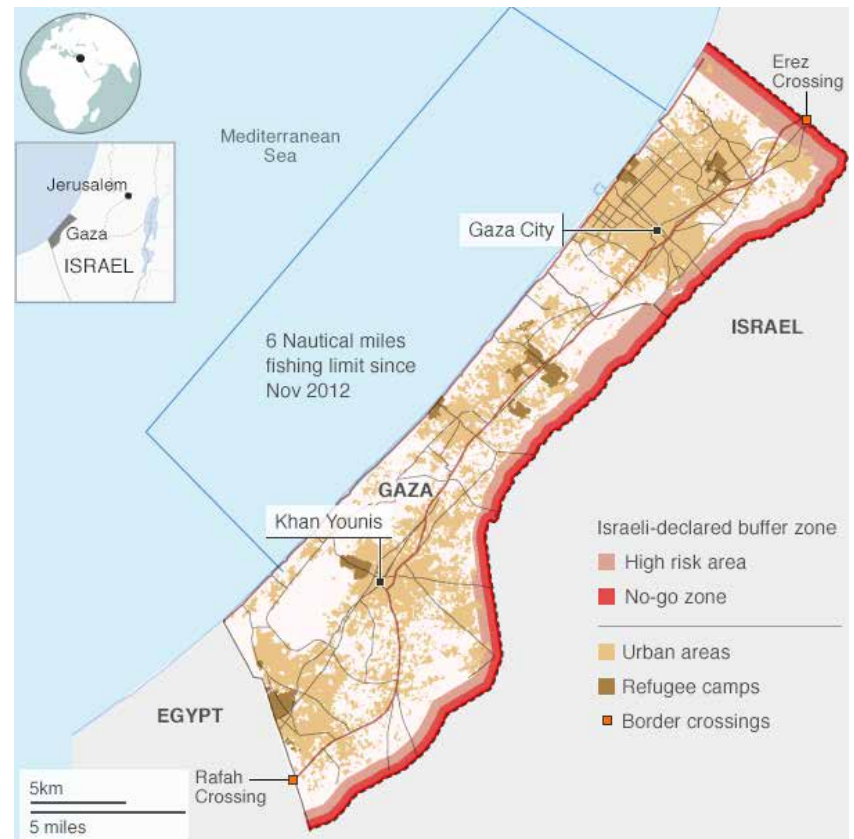


### 3. Buffer Zones (Security Zones)

Buffer zones, also known as security zones or military buffer strips, are uninhabited and restricted areas adjacent to the separation wall or fence. These zones vary in width—typically between 20 to 100 meters, and sometimes even more—and are often cleared of vegetation, structures, and human activity. In many cases, they are planted with landmines, guarded by armed patrols, and surveilled 24/7. Some include watchtowers or drone surveillance, while others are surrounded by warning signs, creating an atmosphere of tension and intimidation.

The buffer zone extends the security reach of the barrier, creating a physical distance that serves as a deterrent and an early warning system for any attempted crossing. It enables military forces to operate without civilian interference and reduces the possibility of direct confrontation at the barrier itself. While it is justified on grounds of national security, the actual application of buffer zones has raised significant ethical and legal concerns.

The existence of buffer zones leads to the confiscation of large tracts of Palestinian land, including private properties, agricultural fields, and sometimes entire villages. These areas become inaccessible to their original owners, who may be displaced or economically marginalized. Moreover, the psychological effect of living near or within proximity to a militarized, no-go zone adds to the trauma experienced by local populations. Buffer zones contribute to the creation of a landscape of fear and exclusion, further limiting urban and rural development and reinforcing the spatial logic of apartheid-like separation.



# The Architectures of Cohabitation Typology

Arch +

The Architectures of Cohabitation typology, as discussed in ARCH+, explores how architectural design can facilitate coexistence between diverse communities, species, and ecological systems. This approach challenges traditional urban planning methods that often segregate spaces based on social, political, or economic factors. Instead, it promotes inclusive, adaptive, and hybrid spaces where different entities—whether human, non-human, cultural, or ecological—can interact harmoniously.

A key characteristic of this typology is the emphasis on mixed-use and adaptive spaces that evolve over time based on community needs. Examples include shared housing, multi-functional public spaces, and hybrid infrastructures that integrate nature with urban environments. Another essential aspect is human and non-human interaction, ensuring that architectural designs support not only human coexistence but also biodiversity, such as through urban wildlife corridors, integrated green roofs, and water-sensitive

landscapes. Additionally, the typology embraces decentralization and distributed systems, moving away from rigid zoning and instead fostering self-sufficient, community-led development.

This typology is particularly relevant in post-conflict or contested territories, where architecture plays a crucial role in rebuilding trust and social cohesion. Strategies such as neutral shared spaces, cultural and religious integration, and collaborative urban planning can help restore fragmented communities. This directly relates to your project in Gaza's post-conflict reconstruction, which aims to create inclusive, resilient spaces that encourage interaction and coexistence. The focus on adaptive and mixed-use spaces aligns with designing public areas and housing that foster social integration, while the emphasis on cohabitation between human and environmental systems supports the use of sustainable architecture, net-zero energy solutions, and ecological restoration.

Thus, the Architectures of Cohabitation typology provides a strong theoretical foundation for this project, reinforcing the idea that architecture can serve as a tool for reconciliation, sustainability, and inclusive urban development in Gaza.

Source: Author



# Separation Typology

## Definition

The separation typology is based on the intentional and physical division of space to isolate communities from one another. This spatial strategy often stems from narratives of security, ethnic-political control, or cultural protectionism. Rather than creating conditions for interaction, it seeks to prevent it entirely.

## Characteristic

- 1. Implementation of hard barriers such as walls, fences, or militarized buffer zones.
- 2. Segregated roads, checkpoints, or no-go zones.
- 3. Control over movement and access based on identity or affiliation.
- 4. A spatial manifestation of exclusion and control.

## Examples:

West Bank Separation Barrier, built by Israel and often referred to as the “Apartheid Wall” by critics, which isolates Palestinian communities.

Belfast Peace Walls in Northern Ireland, constructed to separate Catholic and Protestant neighborhoods during The Troubles, many of which still exist today.

## Scholarly Perspective:

Eyal Weizman in *Hollow Land: Israel's Architecture of Occupation* (2007) describes the wall not merely as a defensive measure but as an architecture of dominance—a tool to fragment territory, isolate populations, and enforce geopolitical agendas.

Leonard & McKnight (2011) argue that separation generates “mental borders” as much as physical ones. These internalized divisions deepen mistrust and reinforce identity-based fear, which can persist across generations.

## Critique:

While separation may offer a short-term sense of security, it fails to address the root causes of conflict. It often institutionalizes fear, makes daily life more difficult, and obstructs any effort toward long-term reconciliation. Separation creates passive peace—the absence of violence, but not the presence of justice or understanding.



# Parallel Coexistence Typology

## Definition

Parallel Coexistence refers to a condition where communities live geographically near each other, sometimes even within the same city, but maintain separate and autonomous systems for nearly every aspect of public life—schools, infrastructure, governance, even timing of public space usage.

## Characteristic

1. Duplication of urban systems: separate roads, schools, clinics, markets.
2. Limited or no interaction in public life, despite geographic proximity.
3. Often enforced not by walls, but by unspoken social or cultural boundaries.
4. Coexistence without cooperation.

## Examples:

Post-war Mostar (Bosnia and Herzegovina): Though geographically one city, it is socially and politically divided between Bosniak and Croat populations, with each group using its own institutions and symbols.

Jerusalem, particularly in contested neighborhoods, where Palestinian and Jewish communities coexist side-by-side but use different transportation systems, attend separate schools, and interact minimally.

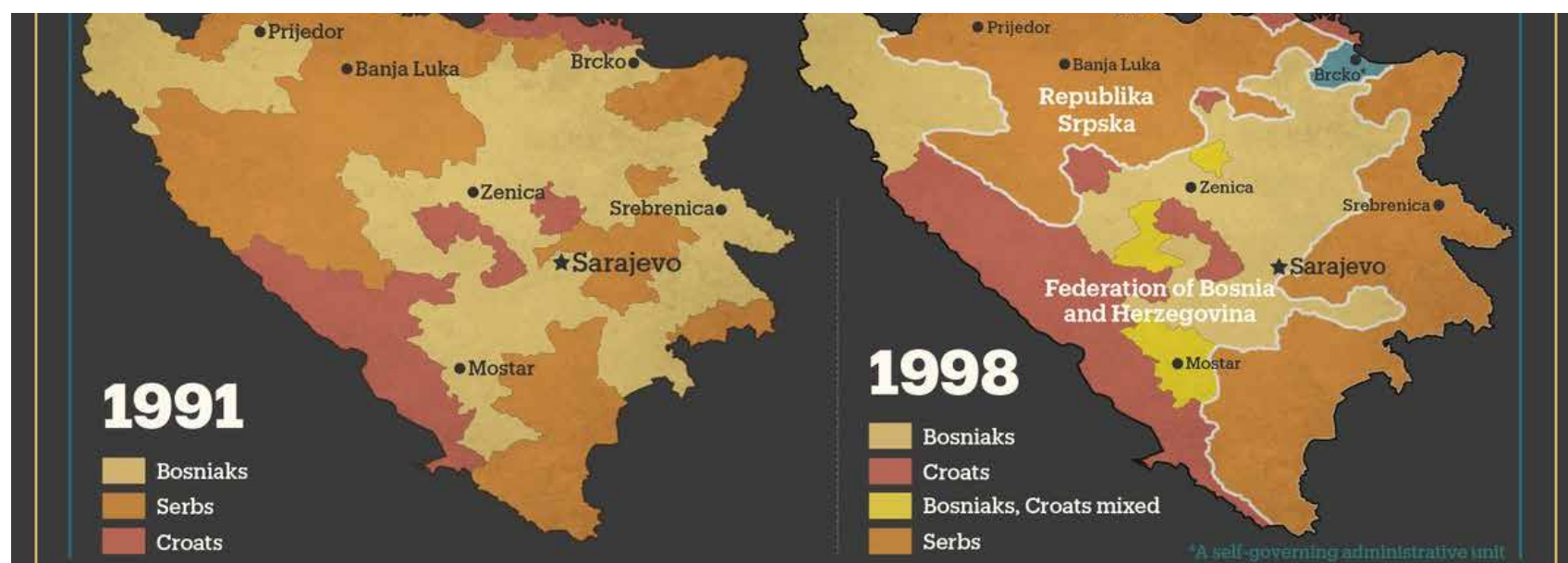
## Scholarly Perspective:

Sircar (2006) in his analysis of Mostar calls this a “fragile balance”—a situation where conflict is suspended, but not resolved. The city operates in two parallel realities, without genuine social integration.

Jeremy Till in *The Architecture of Reconciliation* (2005) notes that such arrangements often preserve division under the illusion of peace, making long-term reconciliation more difficult.

## Critique:

Parallel coexistence may seem peaceful on the surface, but it often masks deep segregation. It creates inefficiencies (due to duplicated systems) and reinforces ‘us vs. them’ mentalities. Without designed interaction, the typology sustains isolation and may harden social boundaries rather than soften them. Over time, this undermines opportunities for shared identity or mutual understanding.



# Comparative Matrix of Spatial Typologies in Conflict Contexts

*Seperation, Parallel Coexistence, Co-Habitant Space*

| Category                   | Separation                                                                                                | Parallel Coexistence                                                                        | Co-Habitant Space                                                                                           |
|----------------------------|-----------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|
| Core Definition            | Spatial division through barriers, aiming to isolate communities                                          | Two communities exist in the same space, but with separated systems and limited interaction | Shared space model that encourages interaction, cooperation, and reconciliation in daily life               |
| Social Interaction         | Minimal to none; interaction is prevented by physical and psychological boundaries                        | Limited and indirect; occurs only when necessary                                            | High; interaction is encouraged and supported through design                                                |
| Design Strategy            | Walls, buffer zones, checkpoints, controlled zones                                                        | Duplication of infrastructure: schools, roads, services                                     | Layered zones (public-semi-private-private), shared facilities, flexible layouts                            |
| Urban Form Impact          | Fragmented urban fabric, isolated enclaves                                                                | Dual, redundant infrastructure; inefficient land use                                        | Integrated urban fabric; promotes continuity and connectivity                                               |
| Psychological Effect       | Fear, distrust, alienation                                                                                | Tolerance without trust; social detachment                                                  | Empathy-building, shared identity, sense of belonging                                                       |
| Cultural Integration       | Prevented                                                                                                 | Avoided                                                                                     | Promoted through shared cultural/art/public programs                                                        |
| Security Perception        | High through control, but fragile; often breeds resentment                                                | Relatively stable but shallow peace                                                         | Security through familiarity, trust, and spatial empathy                                                    |
| Sustainability Potential   | Low; overuse of resources for redundant systems, no environmental focus                                   | Moderate; depends on parallel systems' efficiency                                           | High; shared resources, green systems, and ecological restoration integrated                                |
| Adaptability for Future    | Rigid, difficult to transform without political shift                                                     | Moderate; can evolve slowly, but remains limited                                            | Highly adaptable to social change, community growth, and participatory governance                           |
| Precedent Examples         | West Bank Barrier, Belfast Peace Walls                                                                    | Mostar (Bosnia), divided neighborhoods in Jerusalem                                         | Berlin post-reunification (select spaces), Reconciliation parks, Habitat for Humanity community programs    |
| Scholarly Critique         | Weizman (2007) sees it as “architecture of domination”; Leonard & McKnight (2011) highlight mental trauma | Sircar (2006): "Peaceful yet fragile division"                                              | Till (2005): Shared space fosters “active peace”; Rami Nasrallah (2020): co-existence through public design |
| Long-term Conflict Healing | Very Low                                                                                                  | Low to Moderate                                                                             | High – supports grassroots, everyday reconciliation                                                         |

# Why Co-Habitant Space Is the Most Suitable Typology?

*The Co-Habitant Space typology directly addresses the root causes of spatial and social fragmentation by encouraging everyday interaction between divided communities. Unlike separation, which isolates, or parallel coexistence, which duplicates resources, co-habitant space builds shared environments—markets, gardens, and public infrastructure—where cooperation becomes part of daily life.*

*This typology promotes spatial empathy, allowing people to rebuild trust through proximity and shared use of space. It also reclaims existing conflict infrastructure—like the Gaza separation wall—as structural and symbolic elements of healing, turning them into green corridors, art walls, or support structures for housing.*

*Importantly, co-habitant space is sustainable, adaptable, and context-sensitive. It uses local materials, efficient systems, and flexible design rules that support long-term growth. In post-conflict zones with limited resources and deep trauma, this typology offers a hopeful and practical model for reconciliation—by transforming division into coexistence, and conflict into collaboration.*

# Greencake Material

## Sustainable Material

GreenCake is an eco-friendly building material developed by Majd Mashharawi, a civil engineer and innovator from Gaza, Palestine. A lightweight brick made from recycled building waste, including ash and cement, GreenCake offers a lightweight yet durable option for building homes. Its unique green sponge-like texture not only provides insulation against sound, extreme temperatures, and fire, but also contributes to environmental conservation by reusing materials that would otherwise become waste. This innovation came about as a response to the limited building materials due to the blockade and damaged infrastructure in Gaza.

### *Main Ingredients:*

The main ingredient used in making Palestinian Green Cake is ash or dust from burning coal and wood, which is used as the main filling material to replace sand and other building materials. This innovation was developed as a solution to the scarcity of building materials in Gaza due to the blockade, making Green Cake a cheaper, lighter, and environmentally friendly alternative to conventional bricks.



ARAB  
NEWS

*Production process:*

1. Drying and filtering the coal ash to remove large particles and standardize the mix.
2. Mixing the filtered ash with lime, water, and light aggregates to form a workable material.
3. Molding the mixture into brick shapes using modular forms.
4. Air-drying the bricks for several days—no kiln or high-heat firing is required.
5. Once dry, the bricks are ready for use in construction.

*Advantages*

1. Lightweight: Easy to transport and install; ideal for modular or prefabricated construction.
2. Affordable: Low production cost due to the use of waste materials and no firing process.
3. Eco-friendly: Reuses waste and significantly reduces carbon emissions
4. Thermal insulation: Provides good heat and sound insulation for better indoor comfort.

*What is GreenCake Used For?*

GreenCake bricks are suitable for various architectural and construction applications, especially in low-resource or post-conflict areas. Typical uses include:

1. Walls for homes and shelters
2. Interior partitions
3. Lightweight facades



# Problematique



| Category                   | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Background                 | The prolonged conflict in Gaza has resulted in large-scale destruction, leaving the region with severe housing shortages, damaged infrastructure, and limited access to basic needs. The blockade further exacerbates economic instability and restricts reconstruction efforts. The project aims to address these issues through sustainable and resilient architectural solutions.                                                                                                                                     |
| Non-Architectural Issues   | Political instability, economic constraints, and social fragmentation create additional challenges in rebuilding Gaza. International aid dependency, limited material access due to the blockade, and restricted mobility further hinder rehabilitation efforts. These factors must be considered in designing a feasible architectural solution.                                                                                                                                                                        |
| Architectural Issues       | The destruction of urban infrastructure and housing requires an innovative approach to resilient urban planning. Key issues include lack of green infrastructure, inefficient space utilization, and inadequate climate-responsive design. Rebuilding efforts must also consider cultural preservation and community engagement.                                                                                                                                                                                         |
| General Problem            | How can architecture play a role in the sustainable and resilient reconstruction of Gaza while addressing socio-political and economic constraints?                                                                                                                                                                                                                                                                                                                                                                      |
| Specific Problems          | <ol style="list-style-type: none"> <li>1. How to design adaptable and sustainable housing within limited resource availability?</li> <li>2. How to integrate public spaces that foster social cohesion in a fragmented community?</li> <li>3. How to implement construction methods that mitigate environmental challenges such as extreme heat and air pollution?</li> </ol>                                                                                                                                            |
| Design Objective           | The project aims to develop a resilient, adaptive, and culturally integrated architectural model that responds to Gaza's urban destruction. It will incorporate sustainable materials, climate-responsive design, and community-driven planning to create long-term housing solutions that empower residents.                                                                                                                                                                                                            |
| Variables to be Considered | <ul style="list-style-type: none"> <li>- Environmental Factors: Climate, temperature, solar exposure, air quality</li> <li>- Material Constraints: Availability of sustainable and locally sourced materials</li> <li>- Social Integration: Community participation, accessibility, inclusivity</li> <li>- Economic Viability: Cost-effectiveness, ease of construction, resource management</li> <li>- Political &amp; Regulatory Constraints: Building codes, land use policies, international restrictions</li> </ul> |

Source: Author

# Excellency, Originality & Novelty

## Adoption of the Palestine Green Building Design Approach, with the Help of Checklist Tools

*Usama I. Badawy/2021/ Journal of Environmental Protection*

The paper titled Adoption of the Palestine Green Building Design Approach, with the Help of Checklist Tools (Badawy et al., 2021) discusses sustainable green building design in Palestine, focusing on key principles, strategies, and guidelines for sustainable construction. It examines the current status of green buildings in Palestine and introduces a checklist tool to assess and improve the sustainability of new and existing buildings. The research highlights how green building design can help conserve resources, reduce waste, and contribute to environmental preservation while enhancing quality of life. The study also emphasizes the necessity of localizing sustainable design principles to Palestine's unique socio-political and environmental context.

Different typology, same approach

## Architecture as a Defense for War

*Nadhila Suhaila Syahriandy /2013/Fakultas Teknik Universitas Indonesia*

The thesis Arsitektur sebagai Pertahanan Perang by Nadhila Suhaila Syahriandy (2013) explores the relationship between architecture and warfare, emphasizing how architecture evolves from being a target of destruction to a strategic element of defense. The study analyzes war strategies and their influence on architectural design, investigating how buildings and urban environments are adapted to withstand attacks. Case studies, including historical fortified cities and modern war-related structures, illustrate how architecture can function as a protective mechanism during conflicts.

Different typology, same approach

## Philosophy of Defense Architecture

*Agung Prapsetyo /2022/ Jurnal Hukum Islam dan Pranata Sosial Islam*

The paper Filosofi Arsitektur Pertahanan (Agung Prapsetyo et al.) explores the philosophical foundation of defense architecture by analyzing it through ontology, epistemology, and axiology. It discusses how defensive architecture is not just a technical discipline but also a multidisciplinary field that integrates elements of security, military strategy, and urban resilience.

Different typology, same approach



## Design Method

# Design Approach

## Layering Approach for Co-Habitant Typology

The design approach used in this project is Layering, as opposed to Zoning, due to its ability to promote social inclusivity and spatial integration. Traditional zoning methods often lead to social segregation by rigidly defining areas based on function, thereby reinforcing economic and cultural divisions. In contrast, layering offers a more fluid and adaptable spatial organization, ensuring that no single entity dominates a specific zone. This approach aligns with the Co-Habitant typology, which fosters coexistence and sustainability through shared spaces that accommodate similar cultures, livelihoods, and demands.

## How the Layering Approach Works

Instead of rigidly demarcating zones for different functions, layering involves overlapping spatial elements to create a dynamic and adaptable environment. This allows multiple user groups to interact within the same physical space, ensuring equal access to resources and services.

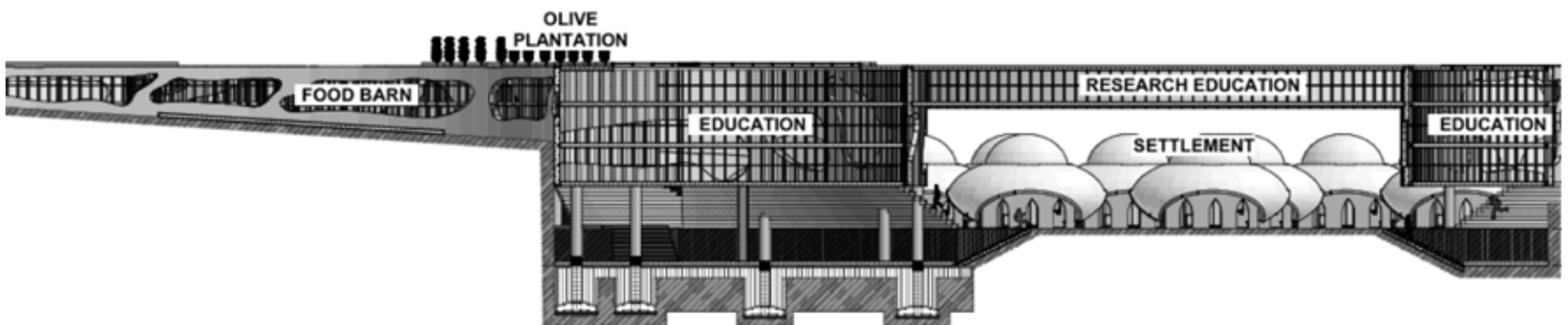
*Value Proposition: Co-Existence and Net Zero Carbon as an Investment Strategy*

This design approach is not only socially sustainable but also provides an attractive economic and environmental value for investors. The emphasis on Net Zero Carbon ensures that the project aligns with global green investment trends, making it a viable option for climate-conscious investors. Additionally, the integration of co-existence principles enhances the project's potential for international humanitarian funding by positioning architecture as a tool for reconciliation and resilience in post-conflict settings.

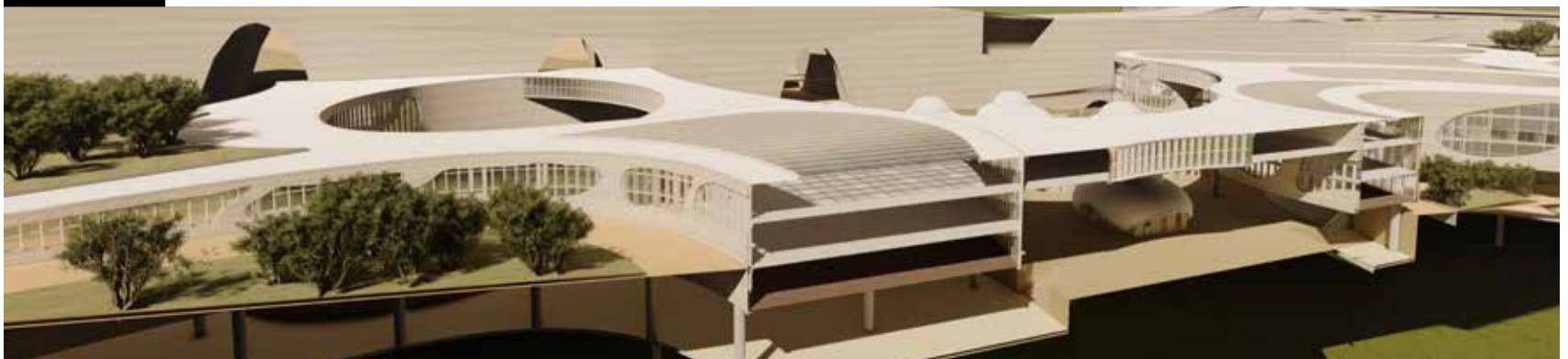
## Methodological Steps

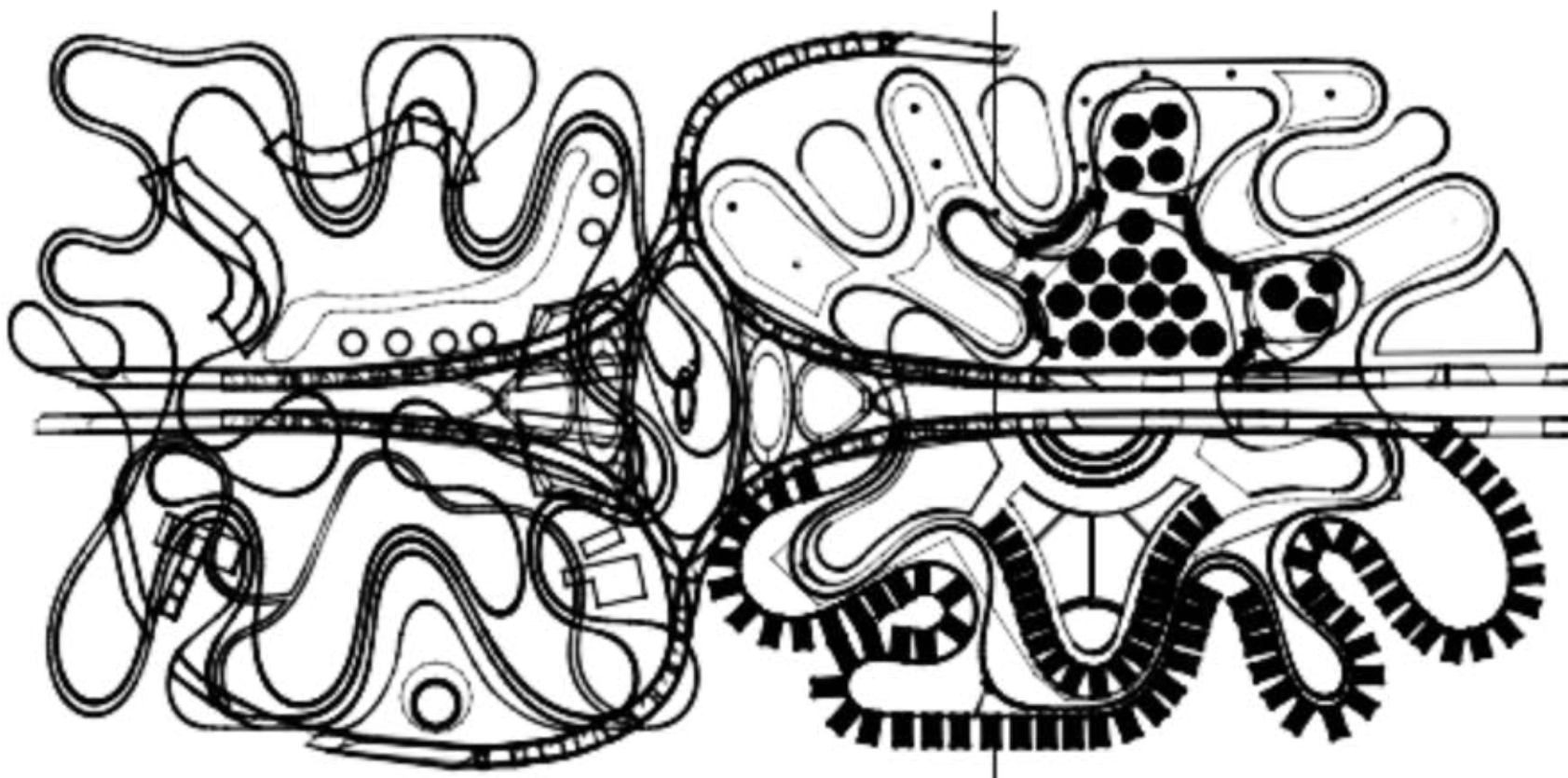
The design process will follow a structured methodology involving:

1. Preliminary Research | Case studies on layered urbanism (e.g., Berlin, Sarajevo, and Belfast) and sustainable reconstruction in post-conflict zones.
2. Prototype Development | Scaled models to test spatial adaptability, material sustainability, and climate responsiveness.
3. Iterative Refinement | Continuous testing and feedback loops to optimize design solutions.



Source: Author





Source: Author

### *Layering Concept Aims*

The Co-Habitant approach with the layering concept aims to create an inclusive space by integrating multiple layers of functionality and accessibility, preventing unilateral claims over specific zones. This approach ensures that spaces are designed to accommodate diverse users with different needs, promoting coexistence and shared usage. The concept of \*layering\* in this context involves the strategic organization of space to foster interaction while maintaining flexibility and adaptability. By incorporating shared spaces that cater to similar activities and needs, this typology encourages social cohesion and a sense of community among inhabitants.

Additionally, the layered design enhances the resilience of urban areas by reducing spatial segregation and promoting adaptive reuse, making cities more sustainable and better equipped to handle future challenges, including conflicts and population displacement. A key lesson from the post-war reconstruction efforts in places like Bosnia, Iraq, and other conflict-affected areas is the importance of designing environments that do not reinforce divisions but rather create opportunities for coexistence, dialogue, and inclusivity.

Methodological Steps

The design process will follow a structured methodology involving:



# Design Hypotheses



| TYPOLOGY          | APPROACH        | GOALS                                                                                                                                                             |
|-------------------|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Co-Habitant Space | Layering System | establish coexistence (co-habitant living) and sustainability as core values, positioning this project as an international model for conflict-sensitive urbanism. |

Co-Habitant Space as Building Typology

The Israeli-Palestinian conflict has long resulted in physical, social, and political fragmentation, shaping an urban landscape marked by division. The built environment, rather than facilitating reconciliation, has often reinforced these separations through rigid zoning, security barriers, and exclusive spatial planning. Recognizing architecture's potential as a tool for peacebuilding, this project seeks to introduce a Co-Habitant Space, a shared environment where Palestinians and Israelis can coexist through inclusive design. By creating a neutral and adaptable space, this project aims to redefine how architecture can mediate conflicts, foster dialogue, and support social integration in a deeply contested region.

To achieve this, the project employs a layering approach, which differs from traditional zoning by allowing multiple functions and users to overlap harmoniously without rigid segregation. This strategy ensures that no single group claims exclusive ownership of a space, reducing socio-political tensions while promoting interaction. Additionally, the design incorporates sustainable building principles, including net-zero emissions, passive climate strategies, and resource-efficient construction, making the project not only socially but also environmentally responsible.

The ultimate goal is to establish coexistence (co-habitant living) and sustainability as core values, positioning this project as an international model for conflict-sensitive urbanism. By demonstrating how architecture can transcend political boundaries and create shared, resilient environments, this initiative presents a compelling vision for post-conflict reconciliation and sustainable urban development that can be applied globally.

# Bryan Lawson’s Design Constraints & Requirements

|                                  | Practical                                                                                                                                                                                                                                                                                                                                                                                     | Formal                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Symbolic                                                                                                                                                                                                                   | Radical                                                                                                                                                                                                                                                                                                                                                                  |
|----------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Legislative<br>The United Nation | <b>Unified and Reconciliatory Communities</b><br>Communities committed to promoting political stability, reconciliation, and poverty alleviation. These communities serve as spaces for dialogue and understanding among people from various backgrounds, offering assistance and opportunities to uplift those facing hardship and fostering solidarity and collaboration among inhabitants. | <b>The United Nations has laid out five principles in its Charter, one of which pertains to the peaceful resolution of international disputes.</b><br><br>as outlined in Article 2(3) in conjunction with Chapters VI and VIII of the UN Charter, emphasizes that parties involved in a dispute, such as the Palestine-Israel conflict, are obliged to seek resolution through negotiation, inquiry, mediation, conciliation, arbitration, judicial settlement, or other peaceful means of their own choosing before escalating the matter to the UN or resorting to regional bodies or agreements. | <b>Symbolization of peace and the United Nation</b><br>A symbol of peace representing a place of unity for people, as well as symbolizing The United Nations as the client.                                                | <b>Political stabilization, fostering reconciliation, and alleviating poverty.</b><br>Ensure political stability, reconciliation, and poverty alleviation, enabling everyone to live in harmony, feel secure, and thrive. This entails establishing stable governance, fostering dialogue and understanding, and providing opportunities for socio-economic advancement. |
| User<br>Palestinian and Israeli  | <b>Equal and United Space</b><br>A space for Palestinian and Israeli where they can seek peace and equality. These areas aim to provide an inclusive space where everyone can access basic needs, empower themselves, and unite with everyone living there.                                                                                                                                   | <b>Safe Unity Space</b><br>Safe unity space for both Palestinian and Israeli that provides inclusivity, safety, and essential human needs, with an area of living place per person approximately at least 3,5 m2.                                                                                                                                                                                                                                                                                                                                                                                   | <b>Palestinian and Israeli Culture</b><br>Symbolization of both Israeli and Palestinian culture that can represent the initial living culture of both communities.                                                         | <b>Fostering Inclusivity, Safety, and Unity</b><br>Ensure safe space and inclusivity, making everyone unite, feel safe, and fulfilled. This involves providing safe settlements, access to basic human needs, and a place for them to improve their life quality.                                                                                                        |
| Client<br>The United Nations     | <b>Safe Space to Survive</b><br>A space for Palestinian and Israeli where they can seek peace and equality, without any political influences. These areas aim to provide an inclusive space where everyone can access proper survival needs.                                                                                                                                                  | <b>Safe Unity Space</b><br>As the primary provider of all facilities to the Palestinian and Israeli, the total area of the whole project is estimated to be 4 ha.                                                                                                                                                                                                                                                                                                                                                                                                                                   | <b>Symbolization of peace and the United Nation</b><br>Symbolization of peace that represents a space where people can unite, as well as symbolization of The United Nations as the client.                                | <b>Fostering equal chance to improve living</b><br>Ensuring a space where everyone from every background can access their survival needs and unite to improve their living quality.                                                                                                                                                                                      |
| Designer                         | <b>Safe Space to Unite and Survive</b><br>A space where both community can unite and access survival needs while improving their living quality together through their shared interest.                                                                                                                                                                                                       | <b>Safe Unity Space</b><br>Safe unity space for both Palestinian and Israeli that provides inclusivity, safety, and essential human needs, with a properly-measured area of living place, per person approximately at least 3,5 m2 and the whole area, including all facilities, estimated to be 4 ha.                                                                                                                                                                                                                                                                                              | <b>Symbolization of Peace and Their Culture</b><br>Symbolization of peace that represents a space where people can unite, as well as their cultures as a representation of the initial living culture of both communities. | <b>Fostering empowerment through unity</b><br>Ensuring a space where everyone from every background can access their survival needs and unite, empower together to improve their living quality.                                                                                                                                                                         |

Source: Author

# Design Limitations

## Scope of Co-Habitant Space as a Reconciliation Medium

The proposed Co-Habitant Space is intended to serve as a neutral and inclusive environment that promotes interaction between historically divided communities—specifically Palestinians and Israelis. However, the design is limited to architectural and spatial interventions and does not directly address larger political, legal, or military barriers to reconciliation. The project focuses solely on what architecture can offer as a facilitator of coexistence, without assuming control over broader systemic issues.

## Prototype as a Symbolic Model, Not a Universal Solution

The design is developed as a prototype that may serve as a symbolic and functional model for reconciliation, applicable to Gaza's post-conflict context. However, due to the unique cultural, political, and geographical complexities of each conflict zone, this prototype is not intended to be universally replicated without adaptation. It is also limited by the absence of full access to on-site construction realities, local regulations, or active stakeholder negotiations, making it primarily a conceptual and academic proposal.

## Layering System as a Spatial Approach with Contextual Constraints

The design adopts a layering system instead of traditional zoning to prevent socio-spatial segregation and encourage flexibility, inclusivity, and coexistence. However, while layering allows shared use of space, it requires careful curation of programmatic overlaps to prevent tension or competition between groups. The success of this method depends on user behavior, trust-building processes, and active participation—factors that are beyond the control of design alone.

## Community Participation Assumptions

The project includes participatory strategies through public narratives and social media responses; however, actual face-to-face community involvement is limited due to the researcher's geographical distance and the conflict situation. Thus, the design is informed by representative interviews and secondary data, which may not fully capture the diversity of needs and perceptions on the ground.

## Time Context – When Will This Building Be Built?

This design addresses both present and future needs by offering inclusive spaces for coexistence and using flexible, growable housing systems. It integrates sustainable materials and repurposes dividing walls as shared structural elements, ensuring long-term resilience and adaptability.

## Client – Who Is The Client?

The client for this project is UNRWA (United Nations Relief and Works Agency for Palestine Refugees in the Near East), an international organization with long-standing responsibility for providing housing, healthcare, and education to Palestinian refugees. Its mandate and experience make it the most suitable client to support sustainable housing and reconciliation-focused interventions in Gaza.

## Target Users – Who Is This Building For?

The Co-Habitant Space is intended for individuals and families from both Palestinian and Israeli communities who are willing to live together in peace, share resources, and engage in everyday interactions. It is not for political representatives or institutional actors, but rather for civilians who desire reconciliation through lived experience.

## Population Capacity – How Many Families?

The prototype is designed to accommodate 6–10 families in its initial phase, with a balanced representation of Palestinian and Israeli residents (e.g., 3–5 families from each community). This small scale allows for manageable interaction, trust-building, and conflict-sensitive design. It also serves as a pilot project that can be replicated and scaled in other areas.

## Scalability – What Is the Optimum Size?

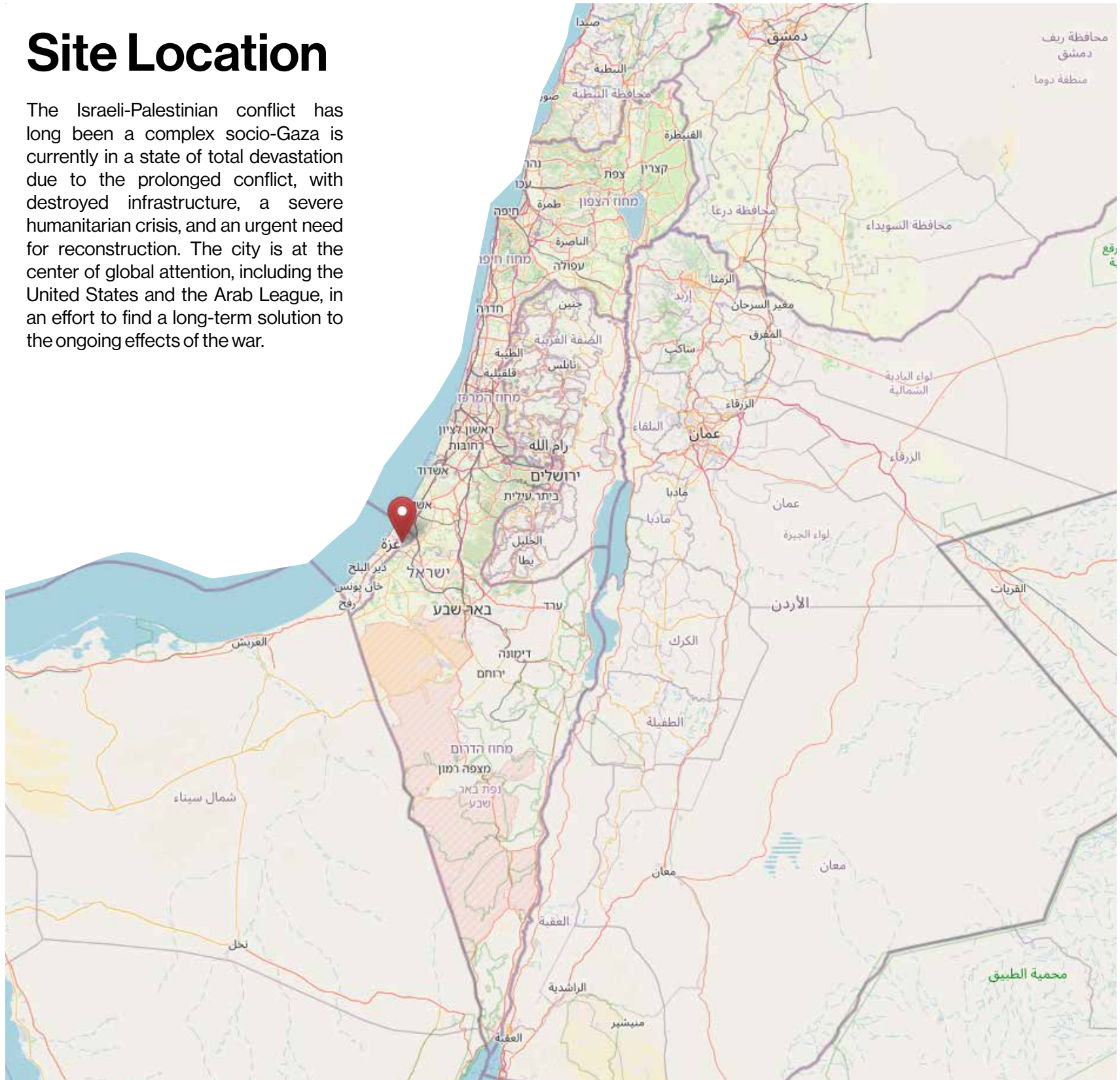
The optimum scale is a neighborhood-scale cluster of approximately 20–30 housing units, integrated with shared public facilities such as a market, garden, learning center, and communal infrastructure. This scale is ideal for fostering intimate yet diverse interaction, maintaining security, and testing the effectiveness of cohabitation principles before expanding to larger urban contexts.

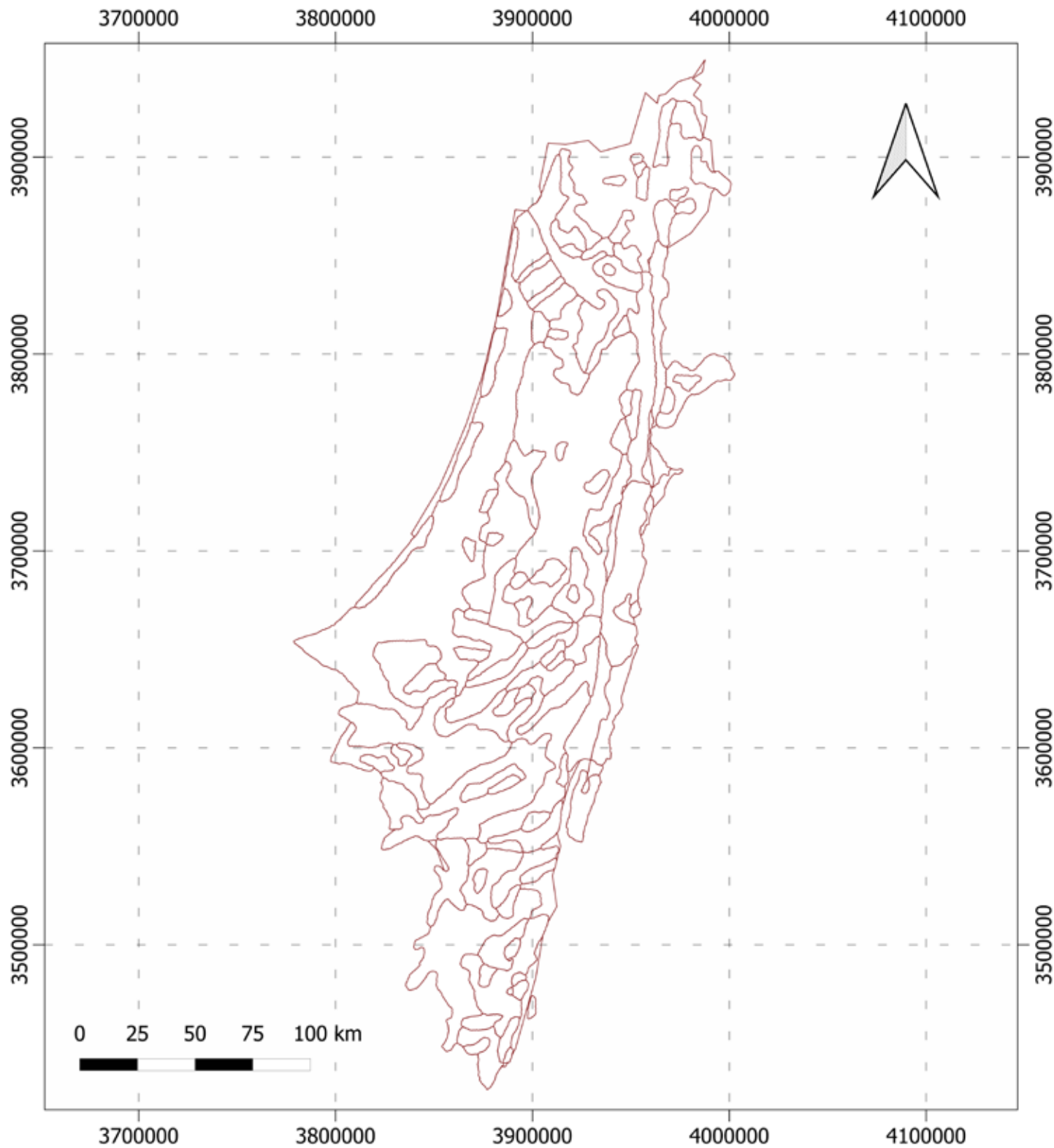


## ② Problems and Studies

# Site Location

The Israeli-Palestinian conflict has long been a complex socio-Gaza is currently in a state of total devastation due to the prolonged conflict, with destroyed infrastructure, a severe humanitarian crisis, and an urgent need for reconstruction. The city is at the center of global attention, including the United States and the Arab League, in an effort to find a long-term solution to the ongoing effects of the war.



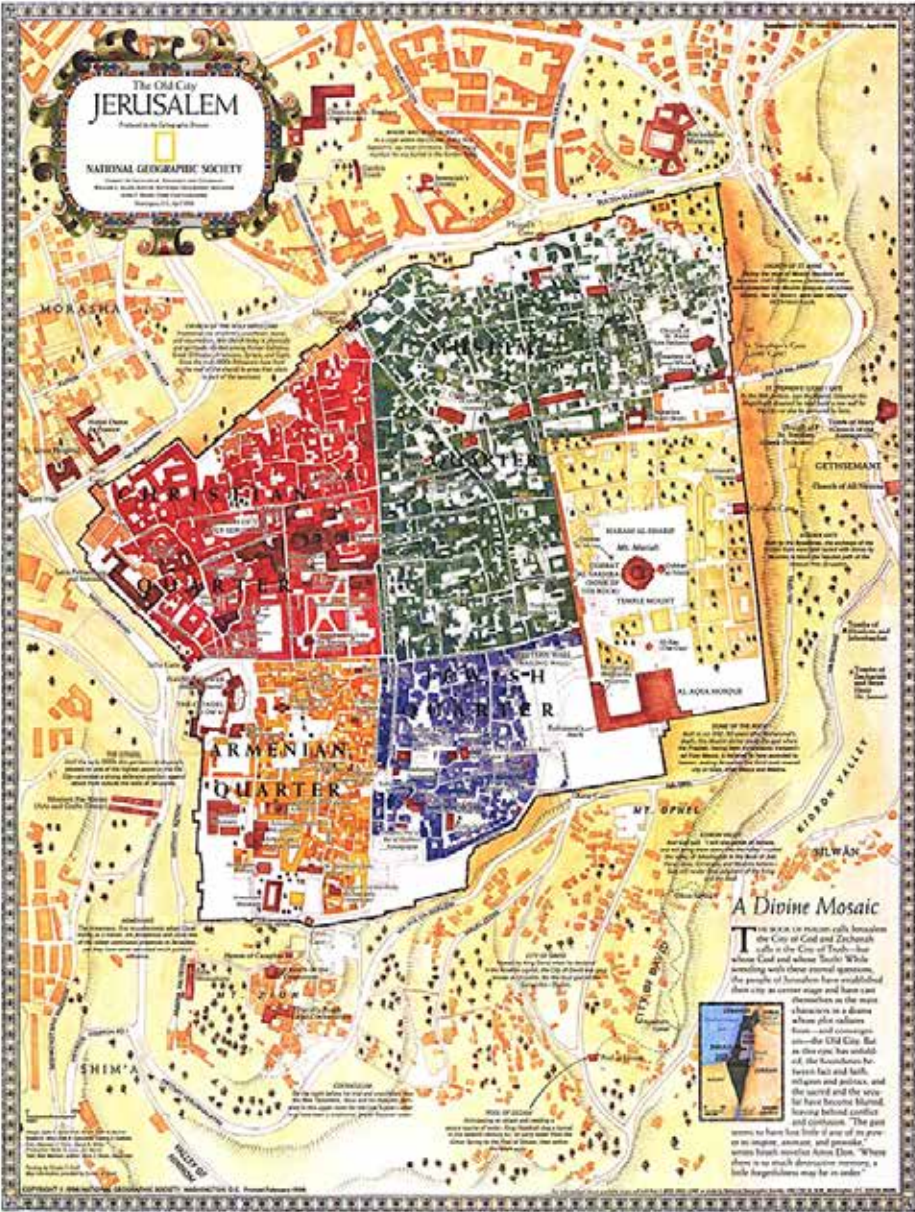


# Precedents

## Jerusalem, Palestine

Jerusalem, one of the world's most historically and religiously significant cities, serves as a compelling precedent for this project due to its complex socio-political landscape and diverse architectural heritage. Spanning approximately 125.1 square kilometers, the city is home to a population of around 966,200 residents (as of 2023), comprising Jewish (about 60%), Muslim (about 36%), and Christian (about 2%) communities. This diverse demographic makeup has influenced the city's spatial organization, leading to distinct yet overlapping cultural and religious zones. Architecturally, Jerusalem is characterized by a blend of ancient, medieval, and modern urban forms, shaped by centuries of conquests, migrations, and religious traditions.

The Old City, a UNESCO World Heritage Site, is divided into the Jewish, Muslim, Christian, and Armenian quarters, each with unique architectural styles and urban layouts. Despite its rich history, the city's urban landscape has been shaped by political tensions, with walls, checkpoints, and divided neighborhoods reinforcing segregation. By studying Jerusalem's shared sacred spaces, historical urban fabric, and cohabitation patterns, this project seeks to extract valuable architectural insights on how to design inclusive, layered environments that encourage coexistence while maintaining cultural and historical integrity.



# Ancient Jericho

Towns became bigger as their populations increased. This made their architecture and urban planning more complex and they required more space to expand. The possibility of storing food surpluses meant that part of the population quit agricultural activities to devote their time to other things. Artisans, priests, traders... The wealth of flourishing cities attracted greed of the nomadic tribes and forced their inhabitants to build protective walls around their cities. This was the case of Jericho, in the West Bank, Palestine. With a history of more than 11,000 years, this was the first fortified city known ever and, up to the present day, it is considered the first city in history.

## Jericho, the first one

Natufian hunter groups settled in this spot in 12,000 BC before it became the city of Jericho. Towards 9,400 BC, the settlement had more than 70 houses with around a thousand inhabitants and something unprecedented; a 3.5m high and almost 2m thick wall and a stone tower that reached a height of 8.5 m.

7000 BC  
The round houses made with adobe, similar to igloos, were substituted by rectangular ones. Sanctuaries and ovens appeared.

## Glory and collapse

The apparition of the Canaanites implied changes in house planning. This people absorbed the original culture and took Jericho to its most glorious times. According to archeological records, the city was destroyed by 1500 BC to be re-founded in the 9th century BC.

Houses  
They had stone foundations, clay brick structure, 50 cm width walls and the roofs were covered with a mixture of reeds and clay.

Courtyards  
The buildings usually had a 7 metre square courtyard used to cook and preventing smoke from entering inside the house.

Double fortification  
Similar to medieval fortifications, these were 3 m wide and more than 4 m high by 1700 BC. They were reconstructed at least 15 times.

Resources  
There is evidence of cultivated plants and possible sheep breeding since 7220 BC. There was a water canal system.

The Jordan River  
Jericho was favored by the river and trade. Its walls became thicker and were surrounded by a moat.

Two storeys  
Two storey houses had a working area in the first floor and the rooms on the second floor.



## Jericho, Palestine

Jericho, one of the oldest continuously inhabited cities in the world, serves as an important architectural precedent for this project due to its rich historical heritage and unique geographic and climatic conditions. Located in the West Bank, Palestine, Jericho covers an area of approximately 58 square kilometers and sits at around 258 meters below sea level, making it the lowest inhabited city on Earth. The city has a population of around 25,000 people, primarily Arab Palestinian Muslims, with a small Christian minority.

Architecturally, Jericho is known for its ancient settlements, historic irrigation systems, and traditional adobe structures adapted to the desert climate. It is home to significant archaeological sites such as Tell es-Sultan, which showcases construction techniques dating back thousands of years, and Hisham's Palace, an early example of Islamic architecture. As a historic trade route hub, Jericho has been influenced by various civilizations over time. Given its extreme geography and resource limitations, this project can learn from local building techniques that emphasize climate adaptation, the use of natural materials, and sustainable water management, which can be applied to creating resilient and inclusive architectural solutions in Gaza.

## The Eco Living Module - Gray Organschi Architecture

The 215-square-foot housing module—developed through a collaboration between Yale University, Gray Organschi Architecture, and the United Nations—was created to “encourage dialogue on how truly self-sufficient a home for a family of four can be,” explained Anna Dyson, founding director of Yale’s Center for Architectural Ecosystems (CEA). Sustainability is at the core of its design.

The unit integrates solar panels with battery storage sufficient to run a radiant heating and cooling system. It also uses condensers to harvest rainwater and moisture from the air, supplying clean water for drinking, hygiene, and irrigation. Additionally, an exterior plant wall supports food cultivation, capable of providing enough produce to nourish a family of four for more than 260 days annually.



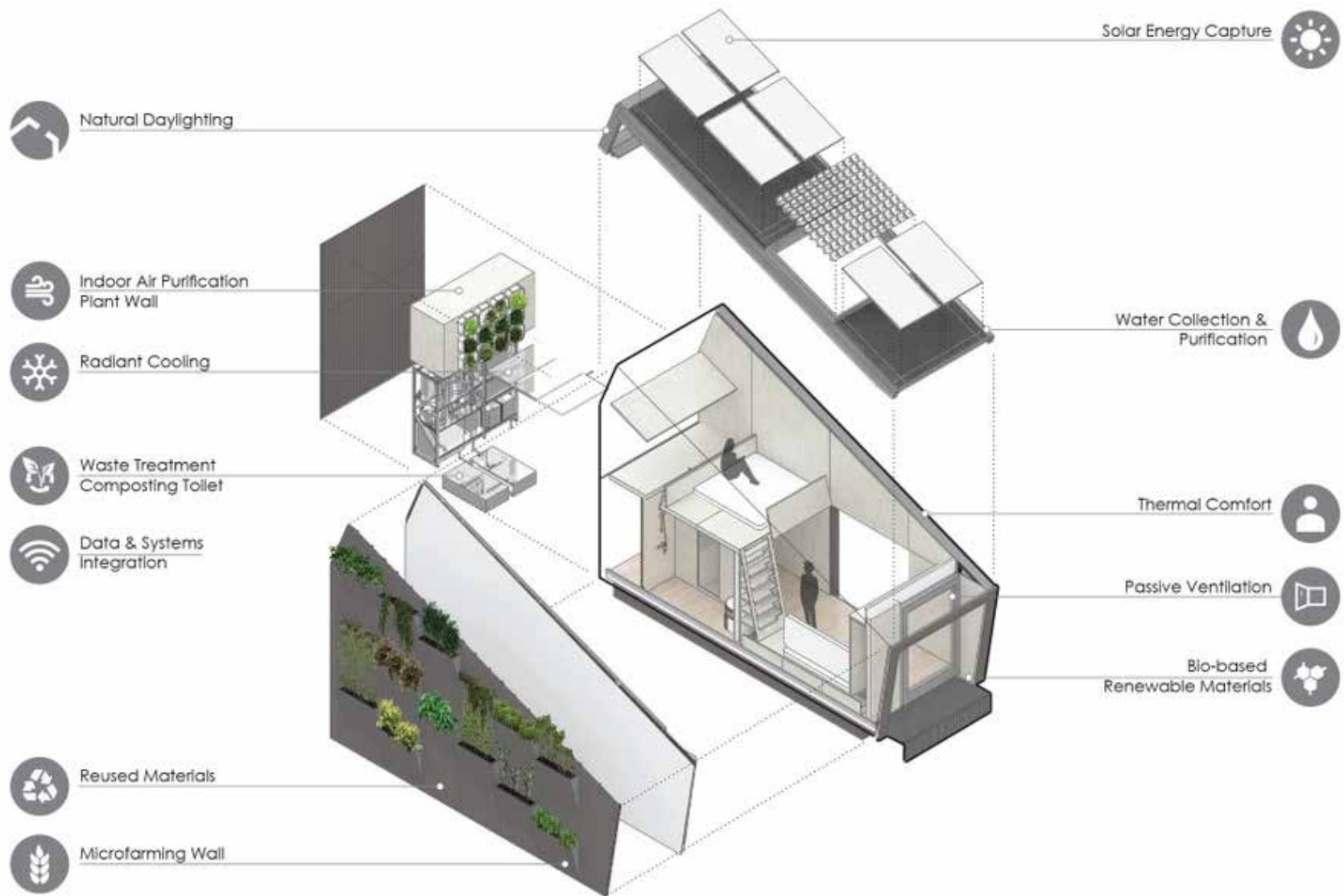






Around one billion people live in informal settlements, often lacking stable access to electricity, clean water, sanitation, and food. At the same time, the housing sector consumes 40% of global resources and generates over one-third of greenhouse gas emissions. To confront these challenges, UN Environment and UN Habitat commissioned the design of a prototype home to be showcased at the UN Headquarters in New York.

This led to the creation of the Ecological Living Module (ELM)—a 230-square-foot dwelling that is compact, energy-efficient, and completely off-grid, built with sustainable materials, straightforward construction methods, and advanced green technologies. Designed to accommodate up to four people, the ELM includes sleeping and living areas, a full kitchen, and a bathroom equipped with a shower and composting toilet. The unit can also be adapted for commercial purposes. By utilizing renewable, biogenic materials and integrating systems that manage energy, water, air, and waste on-site, the project aims to minimize both the energy use and resource demands throughout the module's life cycle.



The Ecological Living Module (ELM) is manufactured off-site in a production facility and delivered by truck as a compact container measuring 8' x 8' x 22'. Once placed on its lightweight foundation, the roof pivots on a steel hinge to form a double-height, 16-foot interior that includes a sleeping loft. Prefabricated wall panels are then manually assembled. In this prototype, fabrication was completed within four weeks, and installation took only three days with a team of 16 workers.

With large-scale industrial production, each unit could be prefabricated for under \$50,000. The ELM's low-carbon design and self-sustaining systems directly support global sustainability goals. By reducing energy demands, it lowers the cost of housing production; the use of renewable, bio-based materials helps conserve rural ecosystems and natural resources; and, when scaled worldwide, such low-carbon housing could significantly mitigate the impacts of climate change.

### Bio-based Renewable Materials

Materials are renewable, locally sourced, durable, and carbon sequestering.

### Passive Environmental Systems

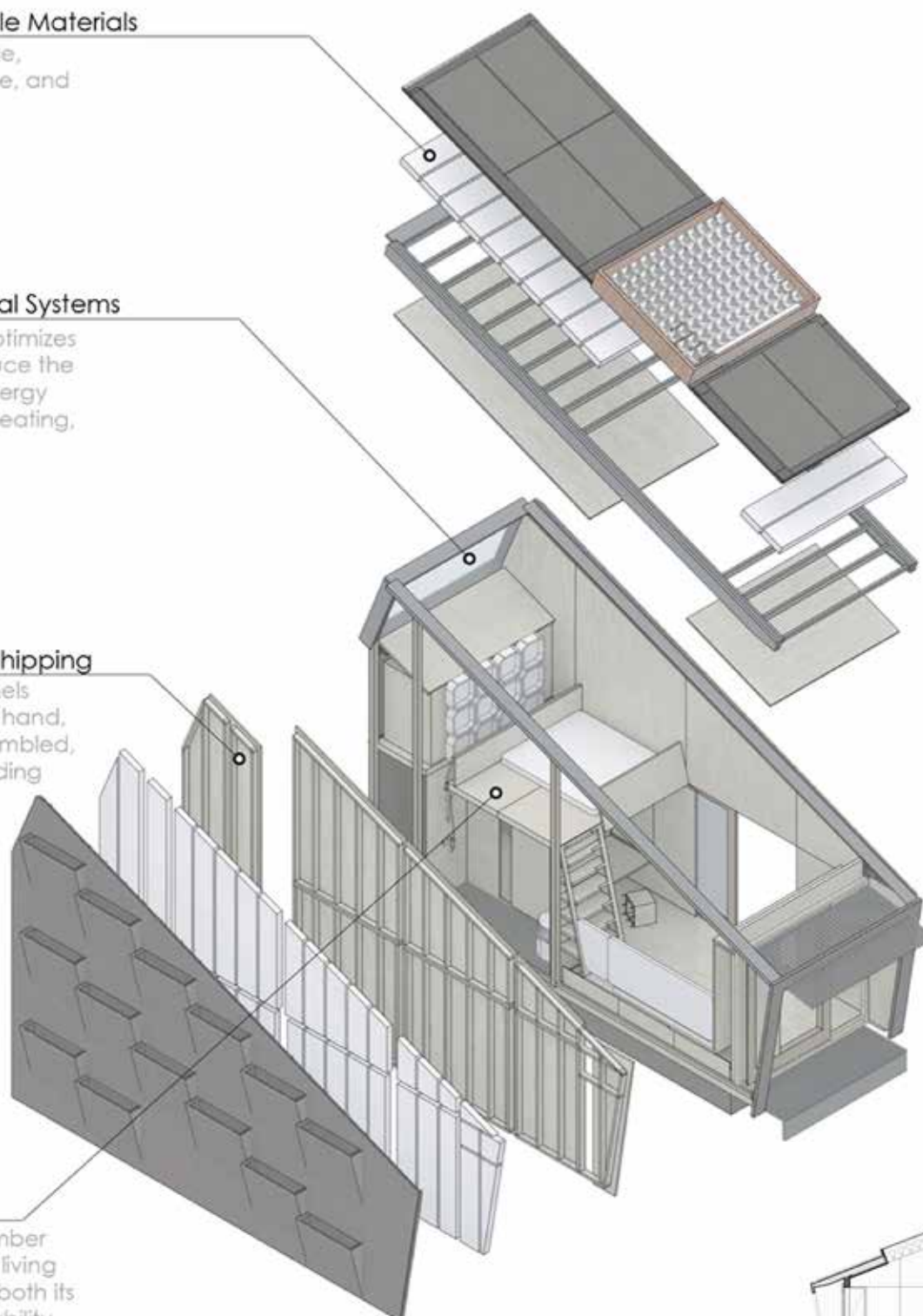
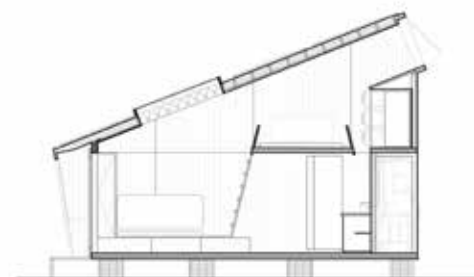
Architectural design optimizes passive systems to reduce the home's operational energy demands for energy, heating, and cooling.

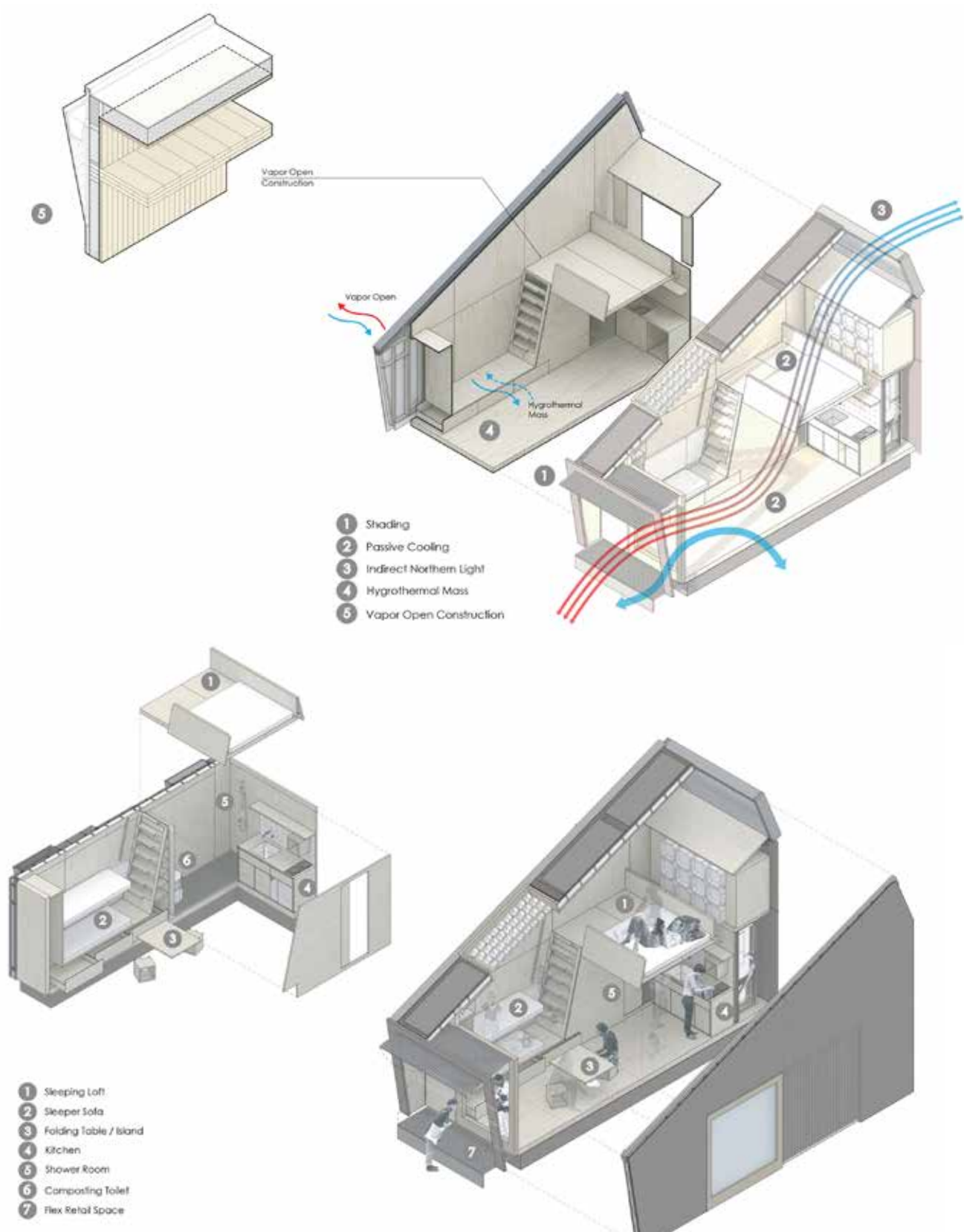
### Prefabrication and Shipping

Prefabricated wall panels can be set in place by hand, creating a readily-assembled, high-performance building envelope.

### Living

The ELM includes a number of innovative, inclusive living systems that maximize both its livability and its adaptability.







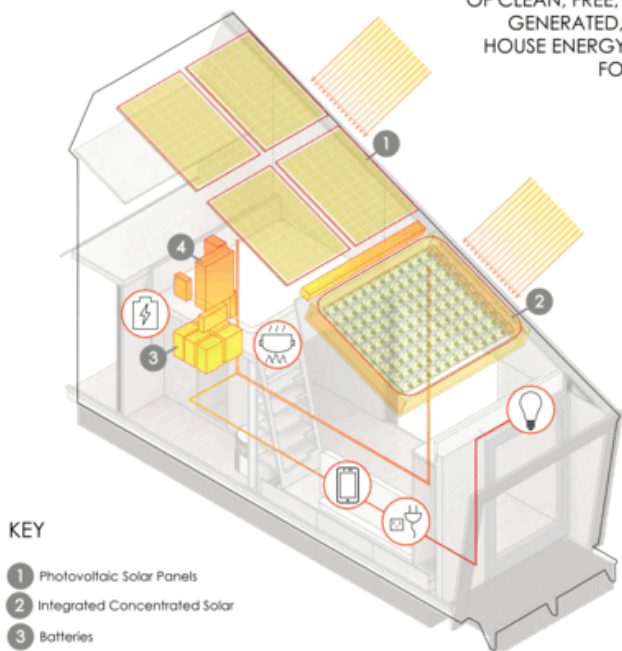
The building's design minimizes unwanted solar heat, enhances natural ventilation, brings in daylight, and optimizes sun exposure for its photovoltaic panels and HeliOptix solar façade. The HeliOptix system generates more power per area than conventional panels, uses under 1% of the semiconductor material, and directs diffuse daylight indoors.



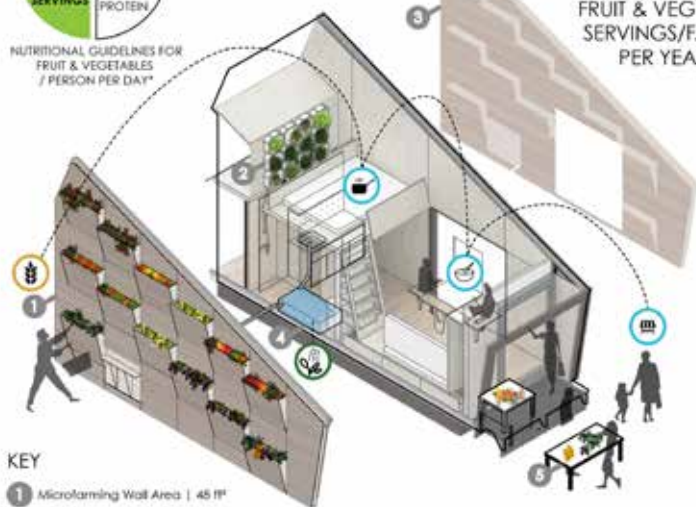
Together, these systems meet 100% of the building's energy demand. Water is supplied entirely on-site: 80% of roof rainwater is captured and purified, while a dehumidifier supplements supply in humid summers. Greywater irrigates crops on the west-facing farming wall. An Active Modular Phytoremediation System (FABS)—a green aero-hydroponic wall—filters air pollutants, boosts indoor microbiome diversity, and reduces the need for outside air intake.

# CLEAN ENERGY

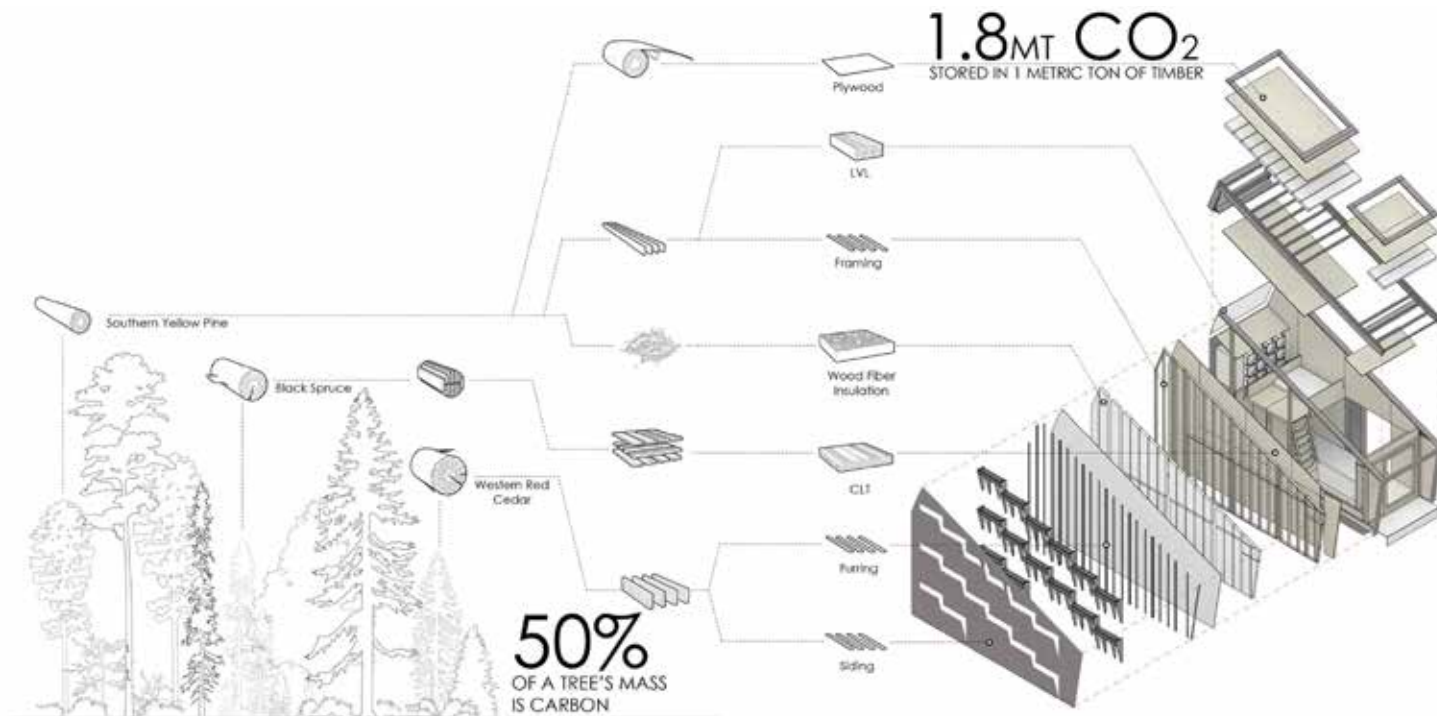
2<sub>kW</sub>  
OF CLEAN, FREE, ON-SITE ENERGY  
GENERATED, RENDERING THE  
HOUSE ENERGY SELF-SUFFICIENT  
FOR FOUR PEOPLE\*



65%  
NUTRIENT DENSE  
FRUIT & VEGETABLE  
SERVINGS/FAMILY  
PER YEAR\*\*

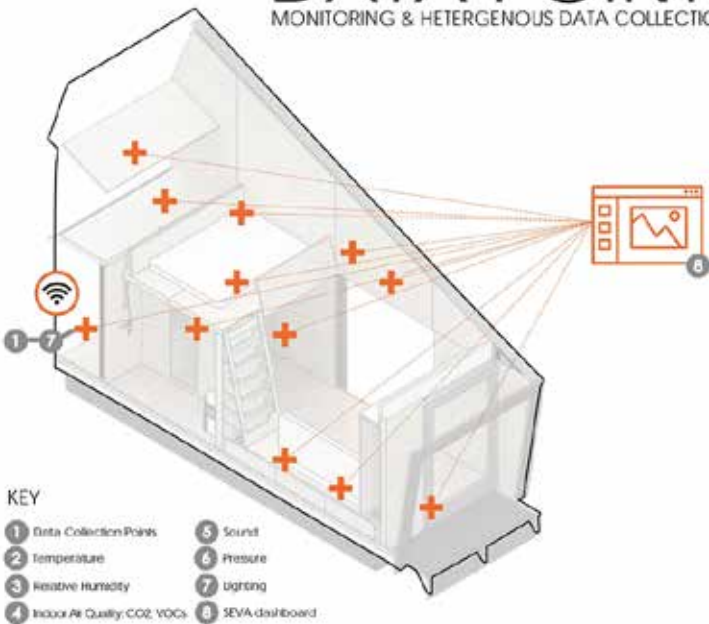


\*Minimum Fruit & Vegetable Serving Nutrition Recommendation by UN World Health Organization. \*\* Based on optimized plant selection for increased harvest yields across total 100 ft<sup>2</sup> wall areas. \*\*\*Use of Indoor Air Purification Plant Wall for edible plantings. Ideally leafy vegetable plants.



# DATA POINTS

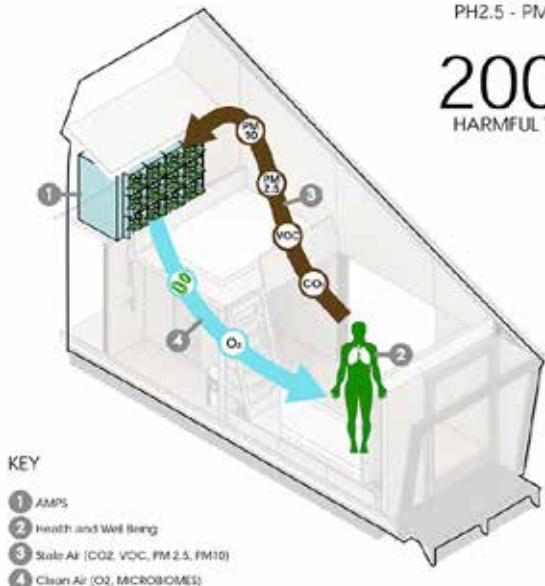
MONITORING & HETEROGENOUS DATA COLLECTION\*



\*Monitoring occurs via the Mote air quality sensors, the Holo Co<sub>2</sub> logger, and Future Air SAM. Data being collected for Temperature, Relative Humidity, Indoor Air Quality, Sound, Pressure, and Lighting is uploaded to the SEVA platform for visual analytics.

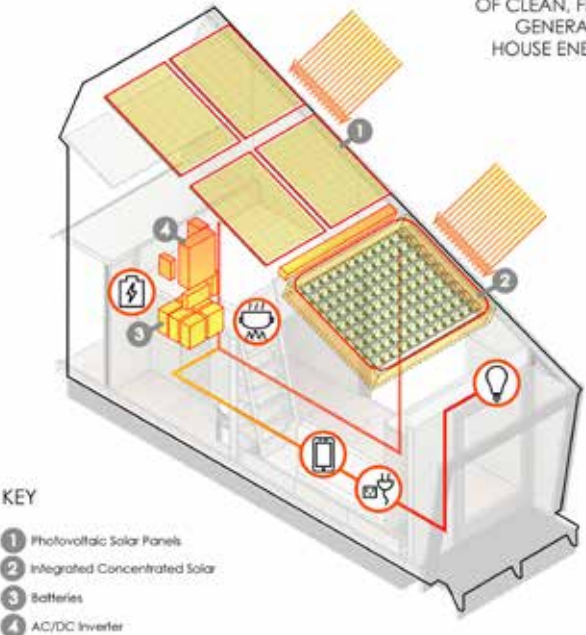
99%  
PM<sub>2.5</sub> - PM<sub>10</sub> REMOVAL\*

2000  $\mu\text{g} / \text{M}^3 \cdot \text{DAY}$   
HARMFUL VOC REMOVAL\*\*



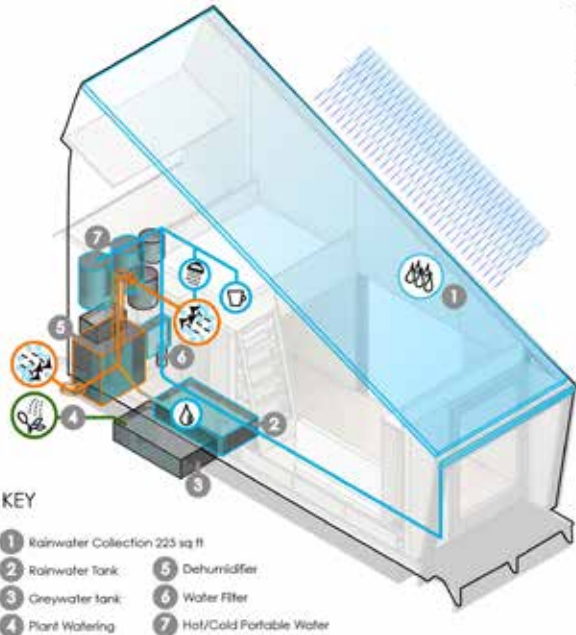
\* Liu, X., et al. (2017). "Soy Protein Isolate/Bacterial Cellulose Composite Membranes for High Efficiency Particulate Air Filtration." Composites Science and Technology 138: 124-133. \*\* Aydogan, A. and I. D. Montoya (2011). "Formaldehyde removal by common indoor plant species and various growing media." Atmospheric Environment 45(18): 2675-2682.

2kW  
OF CLEAN, FREE, ON-SITE ENERGY  
GENERATED, RENDERING THE  
HOUSE ENERGY SELF-SUFFICIENT  
FOR FOUR PEOPLE\*

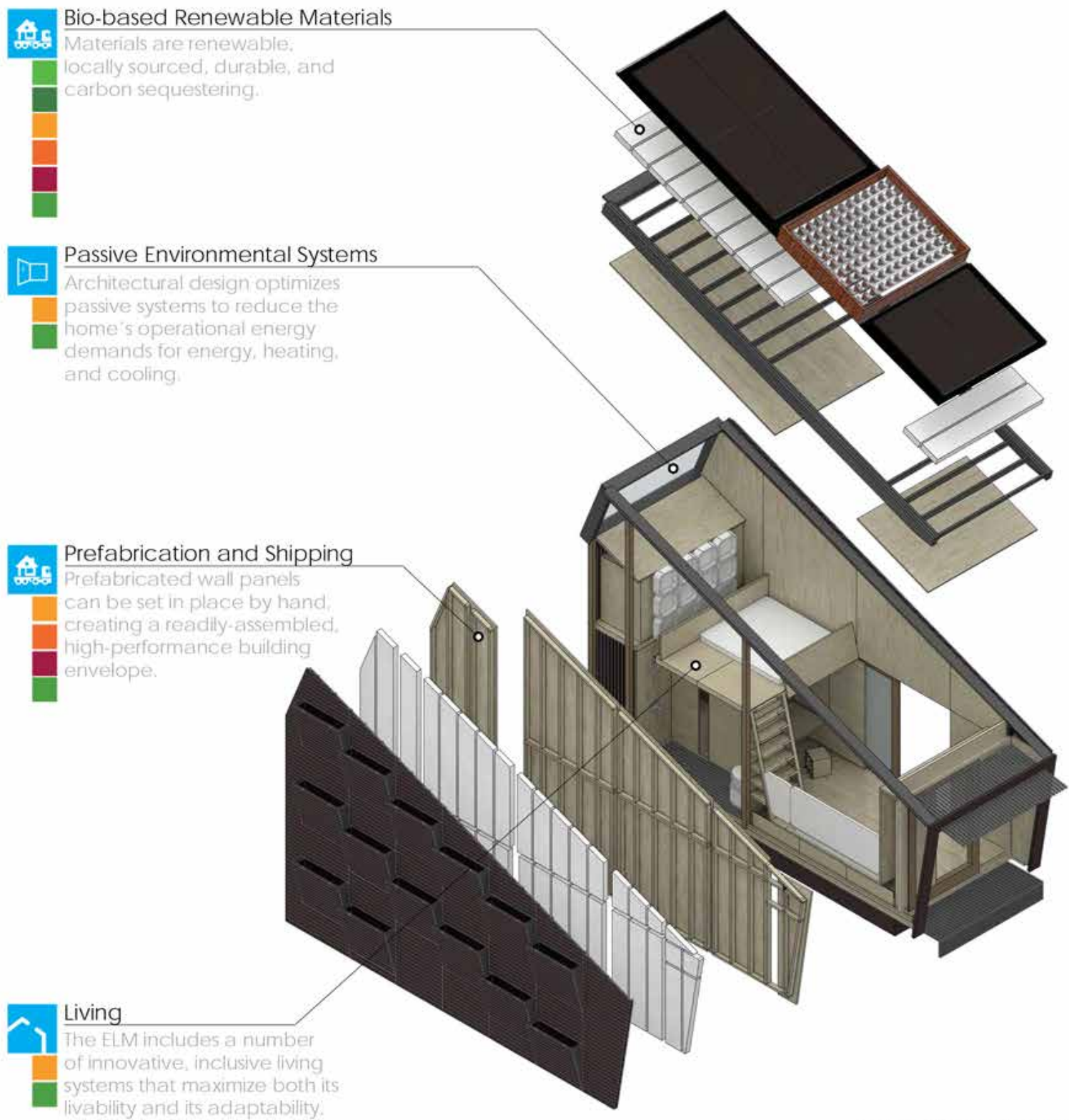


\* Clean energy generated from combined PV solar panels and integrated concentrated solar panel

20 LITRES  
PER PERSON PER DAY;  
ENOUGH FOR  
DRINKING, CLEANING,  
COOKING, & BATHING



\* Assuming water generation from dehumidifier and water collection for rain water roof capture



Architecture of the ELM

## Solar Energy

On-site net zero energy  
Concentrating Solar PV  
Clean on-site energy generation  
Low embodied energy of PV cell

## Radiant Thermal

Radiant thermal comfort  
Thermal control

## Indoor Air Purification

Fresh air from within  
Modular system  
Indoor pollutant reduction  
Enhanced microbiome diversity

## Data & Systems Integration

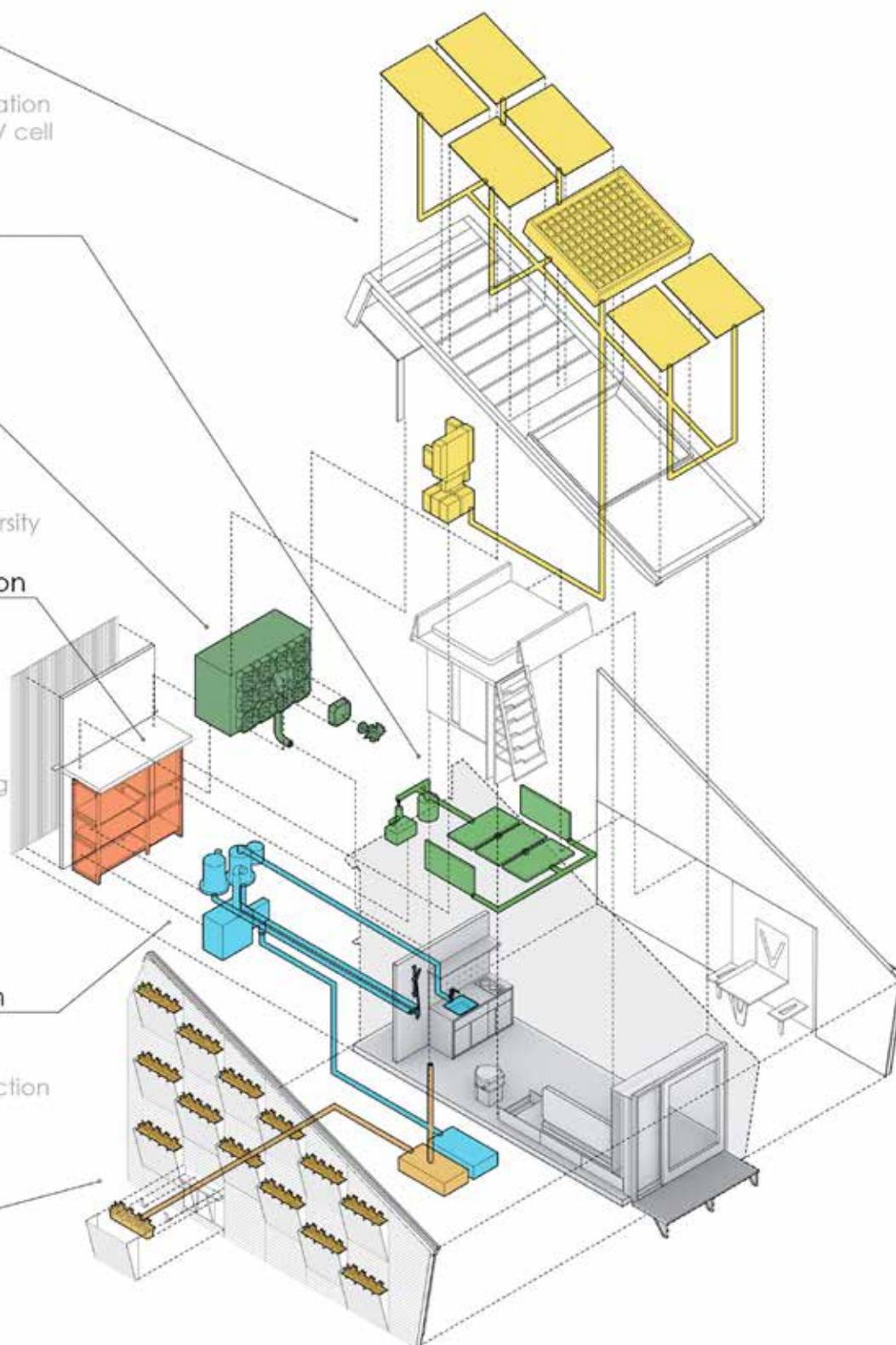
Live Sensor Feed  
System Monitoring of ELM  
Data Collection  
Data Management  
Mechanical Network  
Visual Analytics dashboard  
Heterogeneous data viewing

## Potable Water Collection

Humidity capture  
Rain water collection  
On-site potable water collection  
Water filtration

## Microfarming Wall

Living Systems  
Nutrient dense provisions  
Self-sufficiency  
Fruit & vegetables yields



## Hex House - Architects for Society

Minnesota-based nonprofit Architects for Society has created a prototype for the Hex House, a quickly deployable shelter designed for people displaced by disasters. Each 431-square-foot (40-square-metre) unit is built primarily from steel-and-foam Structural Insulated Panels (SIPs), which can be flat-packed for easy transport by truck.

The homes are designed to be scalable, with a lifespan of 15–20 years, and are estimated to cost between \$15,000 and \$20,000 (£10,600–£14,000) per unit. They can be configured in different layouts and combined with outdoor features such as gardens, courtyards, driveways, or pathways. According to the designers, units may simply be placed side by side or connected to share walls, improving thermal efficiency.



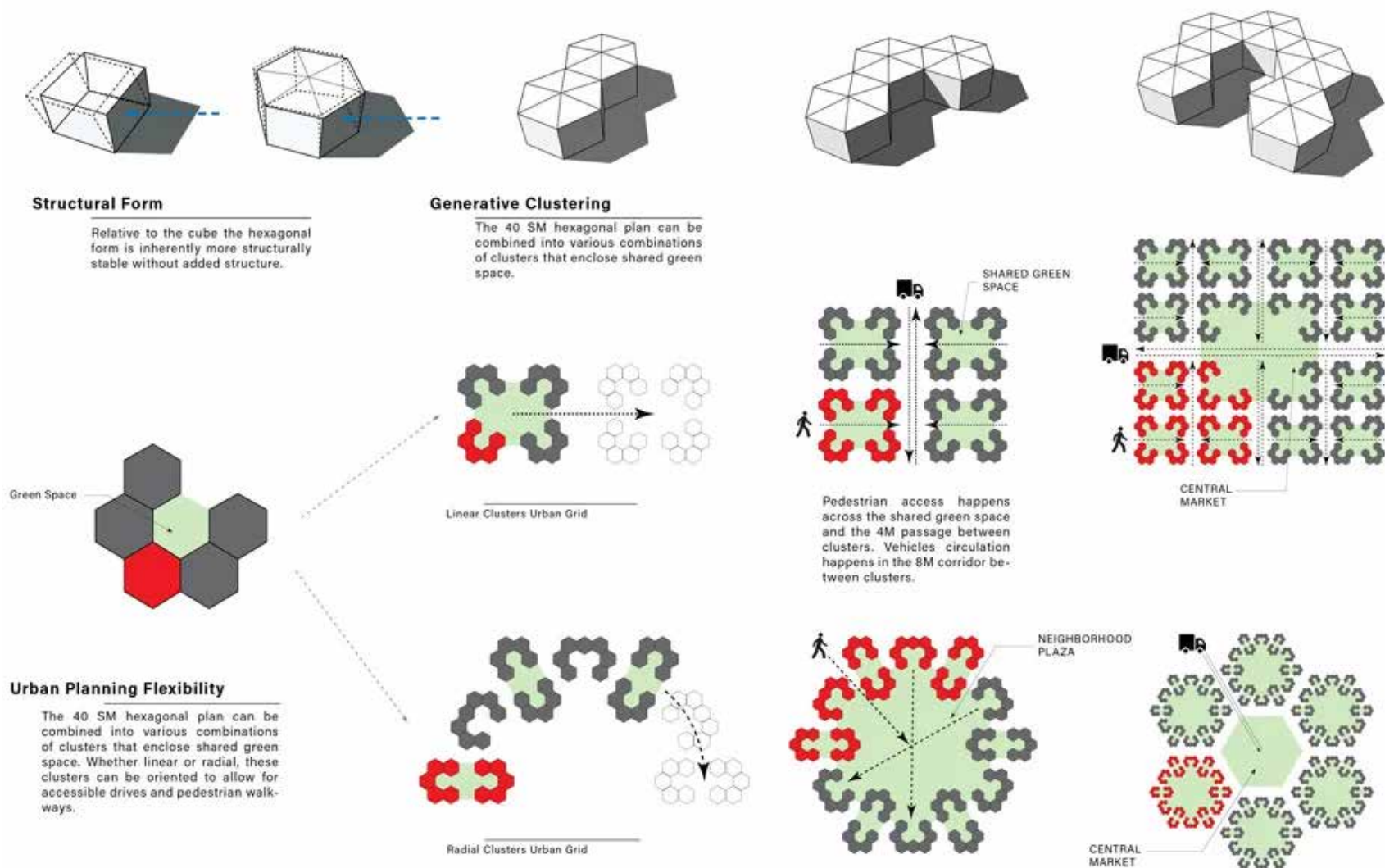






Architects for Society set out to create housing solutions for vulnerable populations that are both affordable and dignified. Each Hex House unit includes two bedrooms, a kitchen, a bathroom, a living room, and a small porch, with the option to combine units into larger residences. The interior is designed for flexibility: walls stop short of the ceiling to allow customizable layouts and encourage natural ventilation, while two ventilation shafts on opposite sides help release hot air.

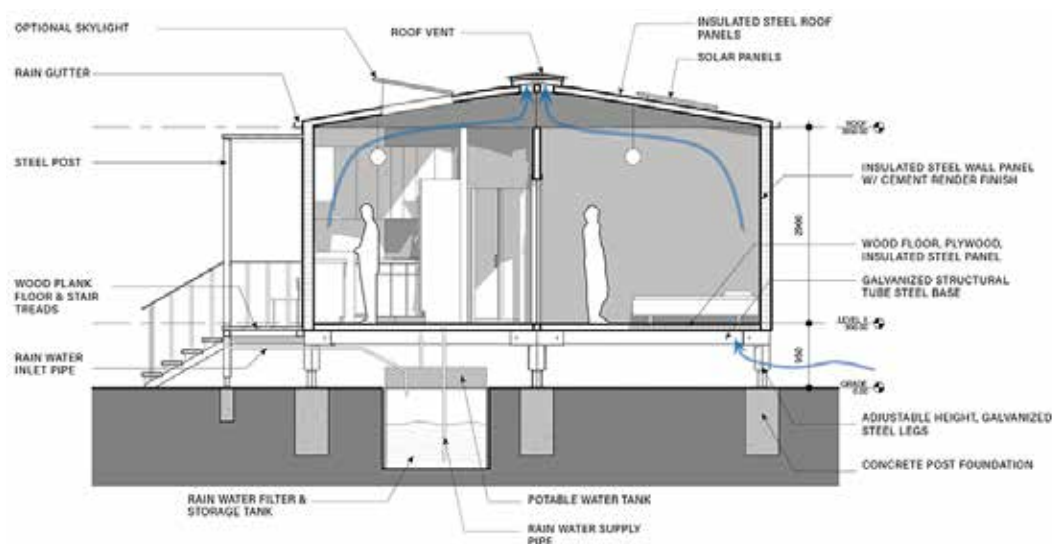
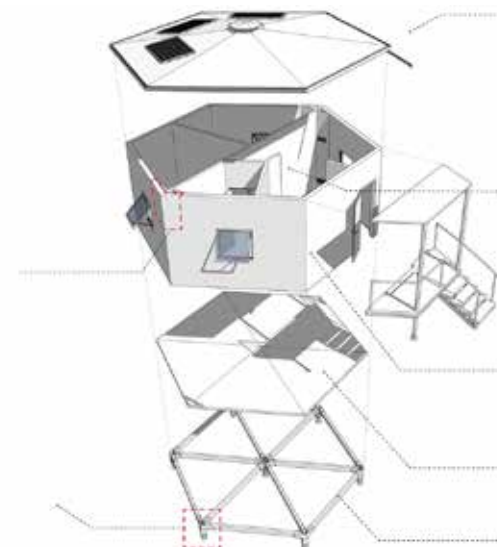
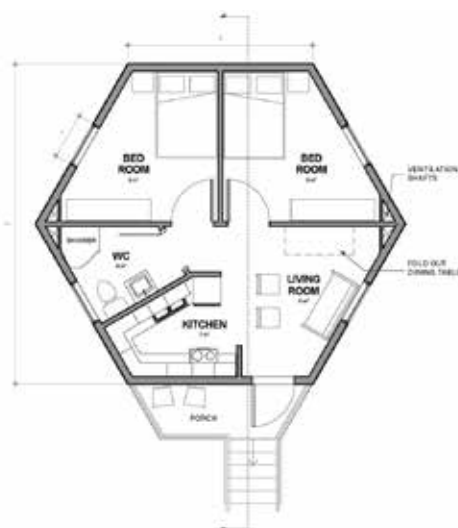
Finishes are kept simple yet refined, featuring gypsum walls, bamboo cabinetry, and ceramic tile flooring in the bathroom. The structure is built with Structural Insulated Panels (SIPs) composed of steel facings and rigid foam insulation. Standardized exterior wall panels measure about 10 by 13 feet (three by four metres), while roof and floor panels are also uniform in size to streamline production, packing, and transport.



The walls are affixed to a hexagonal steel frame, with six perimeter supports and one central support. The height-adjustable supports are anchored to concrete pier foundations. Designed to be self-supporting, the walls and roof panels are locked together using tongue and groove joints, and form a sturdy structural shell. The exteriors can be clad in stucco, wood, or other materials using typical mechanical fasteners.

The home's components can be flat-packed and shipped via a conventional trailer, with one trailer able to carry the parts for three units. They are designed to be easily assembled onsite. "The simple construction method of the Hex House facilitates full assembly by the inhabitants, using simple tools and a little training," the organisation said.

The plans also include rainwater harvesting systems, underground water storage tanks and rooftop solar panels that can power lighting and small electronics. "The hexagonal roof allows for optimal solar panel placement, with three surfaces oriented for maximum solar incidence as the sun moves across the sky," the group said.



The proposal stems from the organisation's recent work with Chalmers University in Gutenberg, Sweden, for which it helped develop a rapidly deployable shelter prototype for Syrian refugees living in Jordan's Alzaatari Camp. Opened in 2012 as a temporary housing solution, the camp has evolved into a permanent settlement with more than 80,000 inhabitants.

The Hex House is the latest in a series of proposals for refugee housing, prompted by events taking place around the world. Other recent examples include flat-pack shelters manufactured by IKEA and folding emergency shelters by the Scottish design agency Suisse.

The organisation is raising money through a crowdfunding campaign to construct a Hex House prototype. It also is in the midst of working out a contract with a SIPs manufacturer in Florida to build a prototype and manufacture the homes in mass.

## Carmel Place - nARCHITECTS | Eric Bunge, Mimi Hoang

Carmel Place was developed in response to New York City's housing crisis. As part of the city's New Housing Marketplace Plan, it emerged from the adAPT NYC competition, which sought to address shifting demographics, particularly the rise of smaller households. The building's apartments, ranging from 260 to 360 square feet, are paired with generous shared amenities designed to foster community and social interaction.

Inside, the micro-units are thoughtfully designed to maximize livability, featuring ample natural light, fresh air, high ceilings, and abundant storage, proving that compact housing can still support a high quality of life. The project has been recognized internationally as a prototype for new housing models, especially for its innovative use of modular construction, which reduced both building time and noise while achieving a precise 1/8-inch tolerance.

Following its success, the city amended zoning regulations to support modular building methods and broaden housing options, including micro-units. With 55 rental apartments, Carmel Place demonstrates how smaller living spaces can be balanced by well-planned social areas.









Carmel Place, located in Kips Bay, Manhattan, is an affordable multi-family housing development consisting of 55 micro-units ranging from 260 to 360 square feet. Designed by nARCHITECTS, the interiors aim to provide spaciousness, comfort, and efficiency despite their compact size. This effect is achieved by emphasizing volume and light rather than floor area: ceilings at 9'-8" create a sense of openness comparable to or greater than a typical 400-square-foot apartment, while eight-foot sliding windows and Juliet balconies flood interiors with daylight and expand the perception of space.

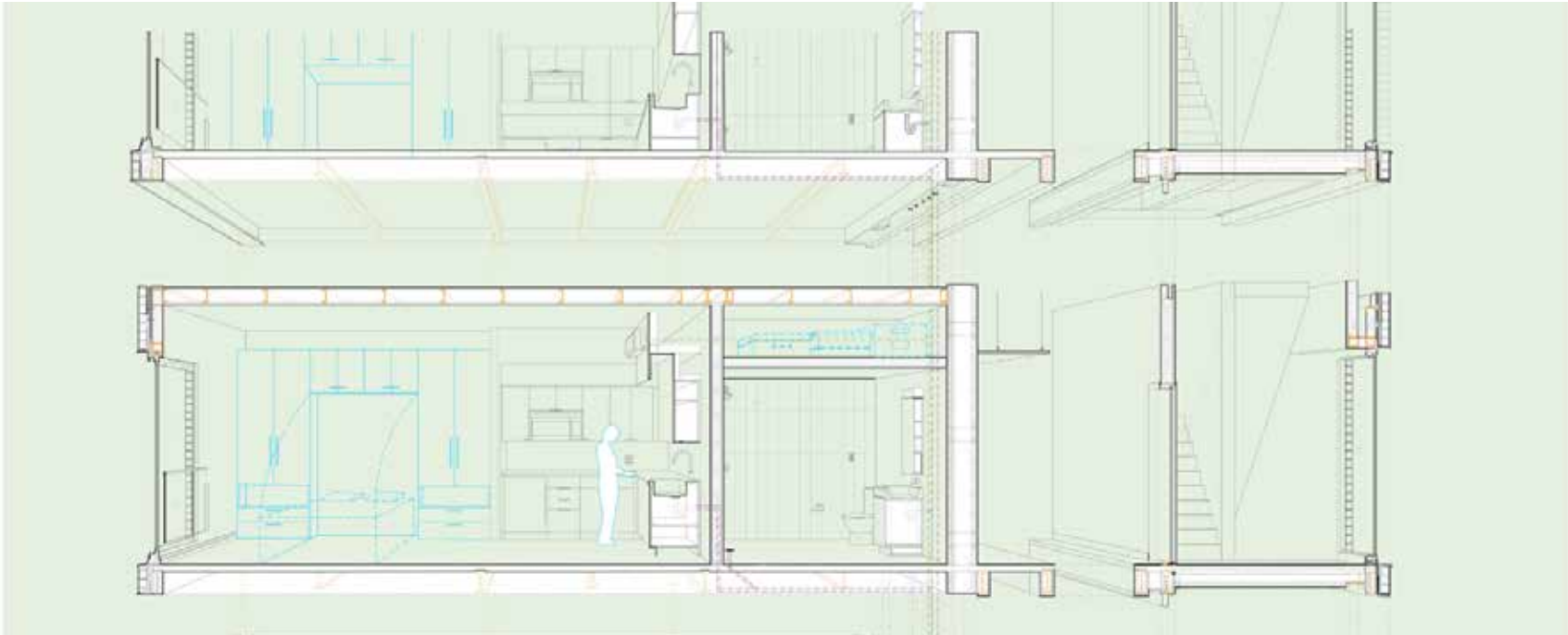
Additional storage is cleverly integrated above bathrooms, and kitchens and bathrooms are finished with high-quality materials such as lacquered cabinetry, back-painted glass, and porcelain tile. The building offers five unit types with varied layouts to serve a range of small households. Each apartment is outfitted with practical features, including a full-depth closet, lofted storage, kitchenette, refrigerator, fold-down table or counter, pull-out pantry, range, space for a convection microwave, and an 18-inch dishwasher.

Despite the modest footprint, high ceilings, large windows, and balconies create the impression of larger living. Residents also have access to shared amenities, including a rooftop deck, gym, and recreation room.



Carmel Place is – at the time of writing - the tallest modular building in Manhattan, and one of the first multi-unit Manhattan buildings using modular construction. Construction of Carmel Place consisted of fabrication, transportation and stacking of 65 individual self-supporting steel framed modules; 55 of which serve as residential micro-units, while the remaining ten serve as the building's core. The modules were pre-fabricated locally in the Brooklyn Navy Yard at the Capsys factory, while the foundation and ground floor were

built on site. The completed modules were then transported over the Manhattan Bridge and stacked on site ready for installation of appliances and some interior finishes. Dividing the construction process reduced on-site construction noise and neighborhood disruption, while the controlled environment of the factory allowed the team to control quality and maintain critical interior dimensions.

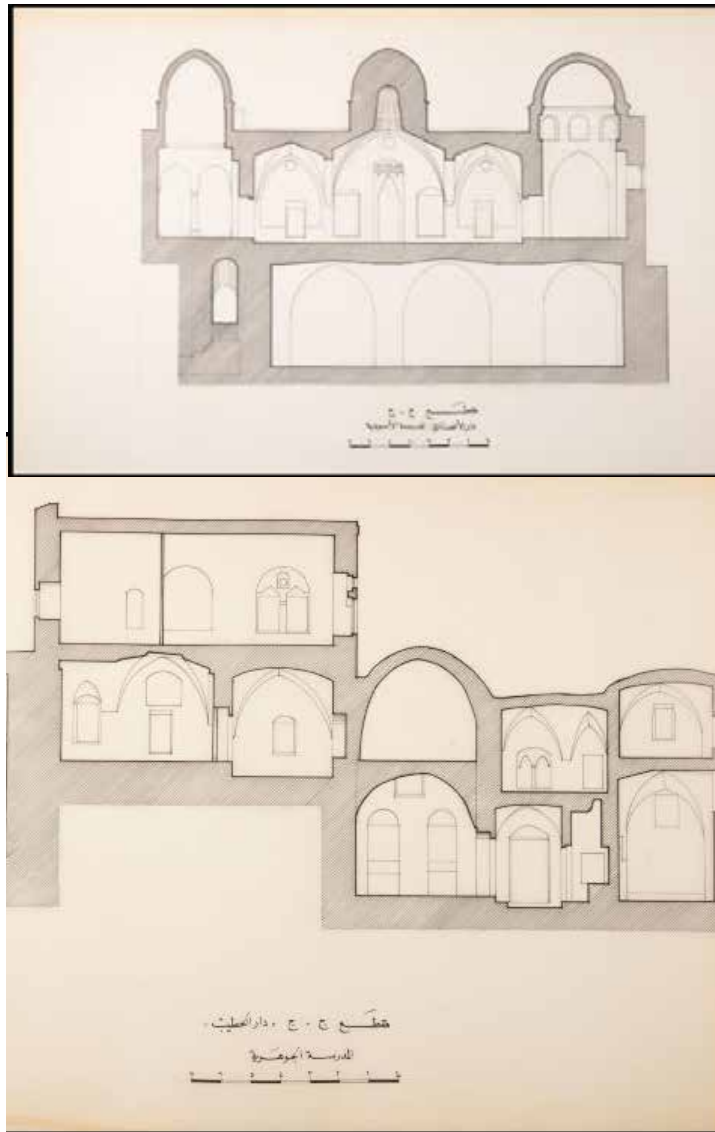


# Housing Characteristics



1

Mashrabiya patterns used as ventilation and entrance doors to houses, decorated magnificently with patterns.



2

In the structure of the house, thick walls are used on the ground floor, which become thinner or lighter as they go up.



3

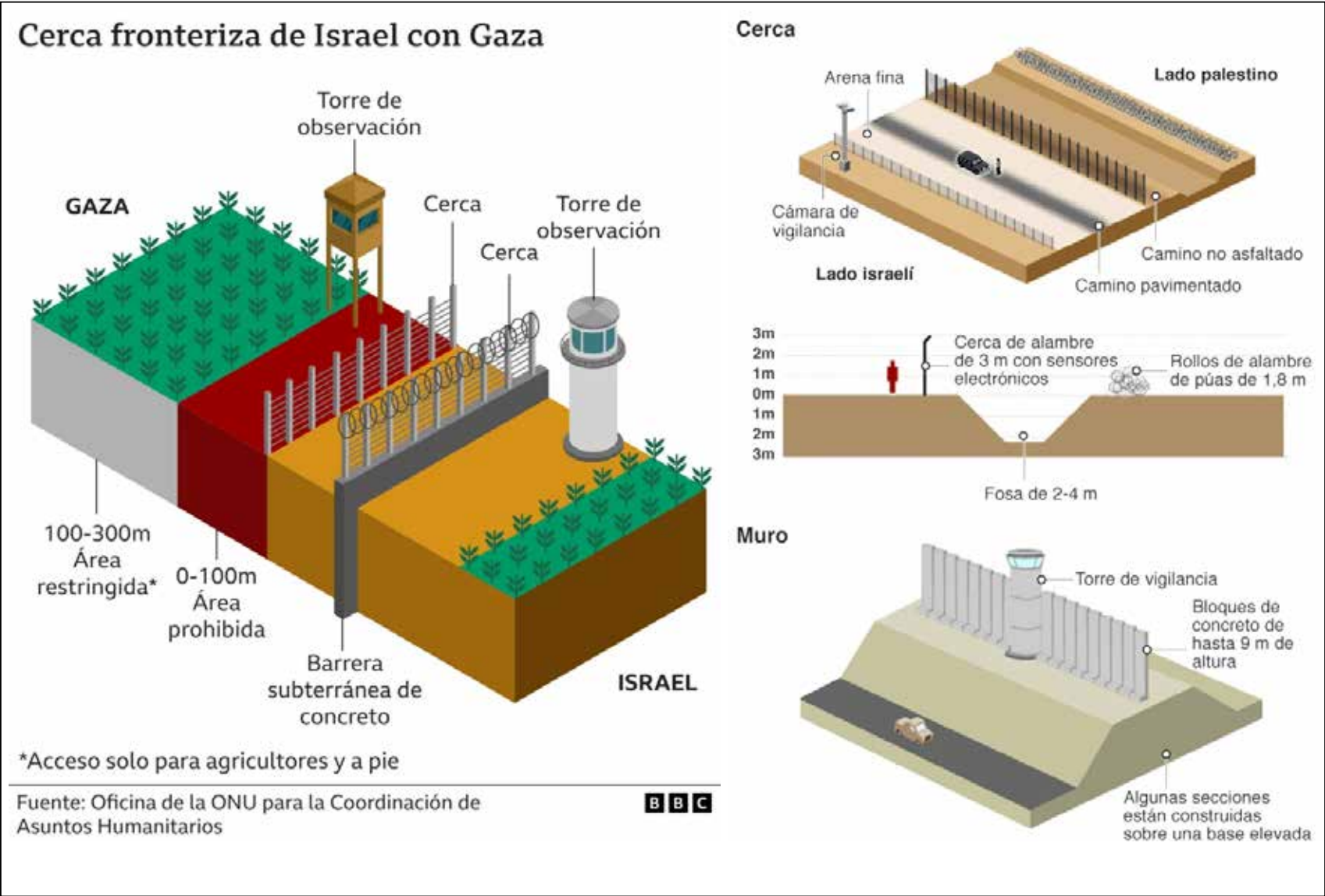
The basic material of traditional houses is limestone bonded with mud or clay.



4

Green Cake is a sustainable building material made from recycled coal ash with cement, sand, and water. Lightweight, durable, and insulating, it reduces environmental impact and addresses material shortages, making it ideal for eco-friendly construction in conflict zones like Gaza.

# Boarder Characteristics



1

In general, segregation walls are divided into two types: wire barriers and monolithic concrete structures. These walls are designed to restrict the movement of Palestinians and reinforce segregation or zoning, physically and socially separating communities.



2

The wall runs along the perimeter of Gaza, measuring 1 meter in thickness and 9 meters in height, serving as a massive physical barrier that enforces separation.



## ③ Design Problem Solving

## Site Selection

### *Layering Approach for Co-Habitant Typology*

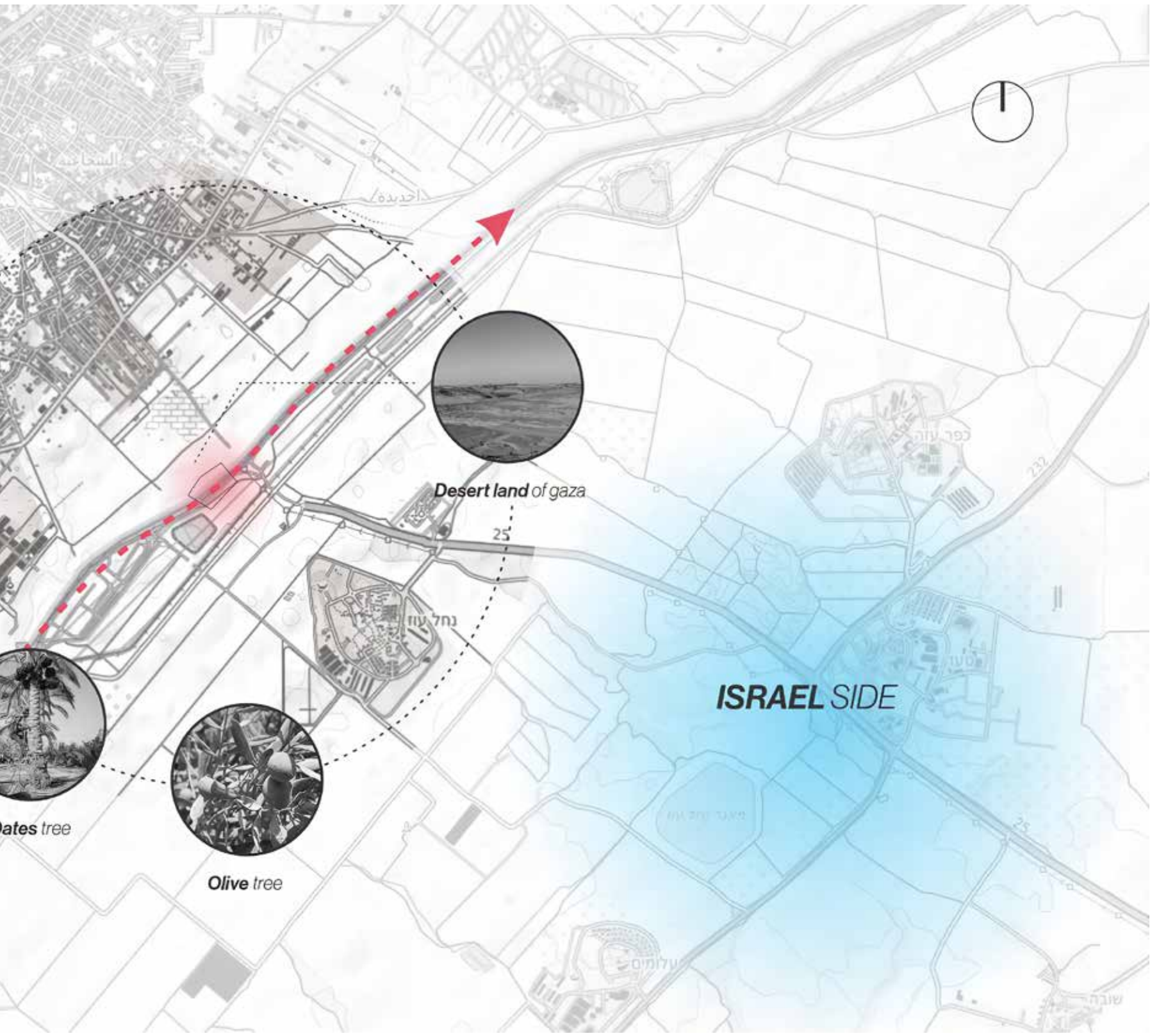
The selected site is strategically positioned in a highly symbolic and contextually significant location—right between the Palestinian and Israeli zones. This spatial condition reflects the core idea of the project: to bridge divisions and foster reconciliation through architecture. The site's proximity to both communities makes it an ideal place for designing a Co-Habitant Space where interaction, dialogue, and shared activities can occur across social and political boundaries.

Importantly, the site is located within the Gaza–Israel separation barrier, allowing the existing wall to be reinterpreted not as a symbol of division, but as a structural and symbolic element of unity. Rather than demolishing the wall entirely, the design seeks to architecturally transform it into a connective structure—integrating spaces for movement, gathering, and cooperation along its spine. This approach not only preserves part of the physical infrastructure but also sends a powerful message: architecture can reframe conflict-laden elements into opportunities for healing.

Moreover, the selected region of Gaza is historically known for its production of date palms and olive trees, both of which hold deep cultural and economic significance in Palestinian and Israeli societies. In fact, the olive and date industries are sectors where cross-border cooperation already exists, with both communities involved in cultivation, trade, and distribution. This shared livelihood becomes a powerful metaphor—and practical basis—for designing spaces that encourage cooperation and mutual dependence. It reinforces the idea that coexistence is not only possible but already rooted in shared traditions and economies, waiting to be spatially and socially amplified through thoughtful design.

Additionally, the site remains closely connected to both Palestinian and Israeli residential areas, ensuring accessibility and relevance for users from both sides. This adjacency strengthens the project's potential to become a shared platform that is embedded in the everyday lives of the communities it intends to serve.





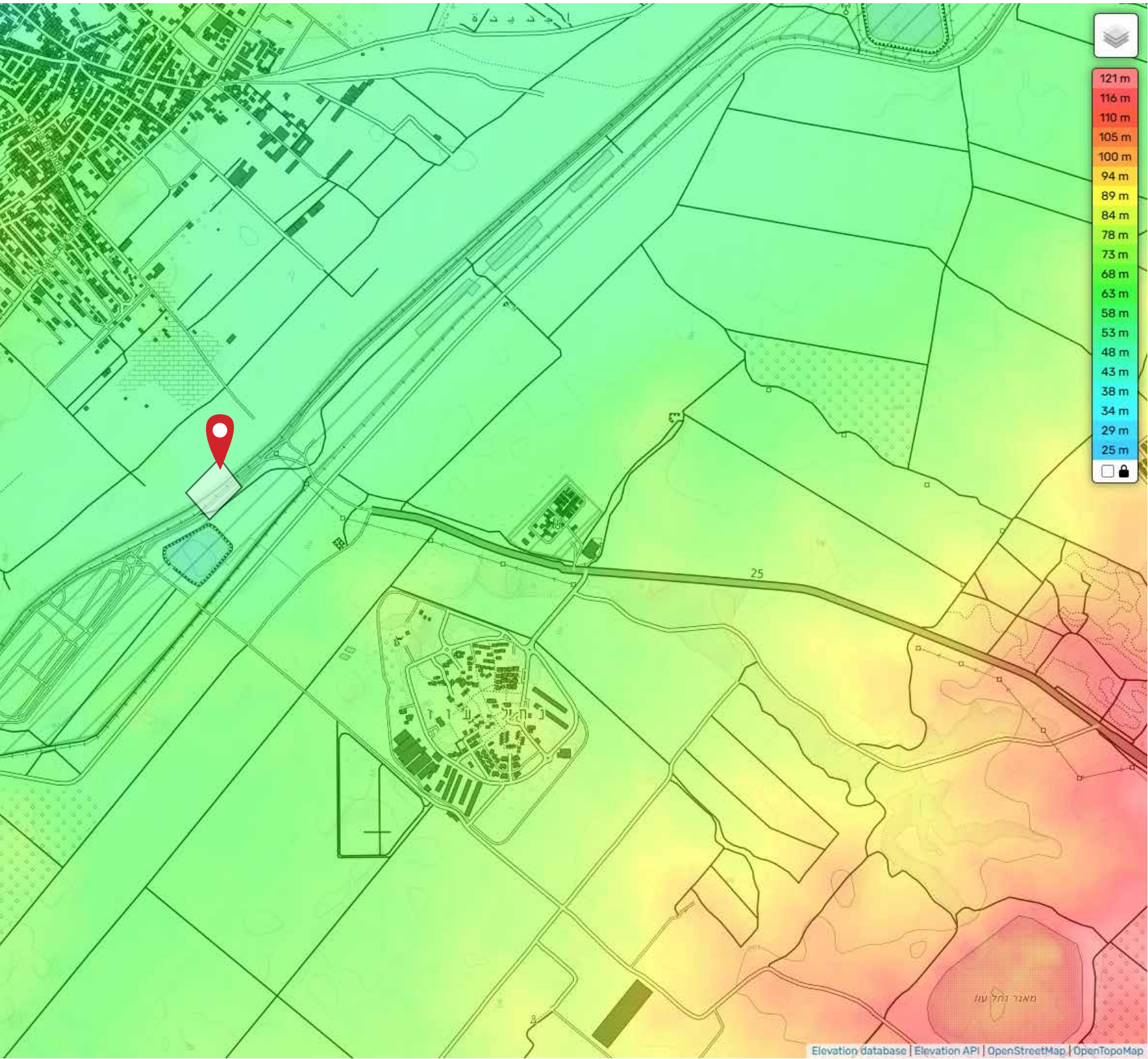
## Site Topography

### *Layering Approach for Co-Habitant Typology*

Based on the elevation contour map shown in the image, the selected site located in the central area demonstrates relatively gentle topographic conditions. This is indicated by the dominant light green shading, representing an elevation range of approximately 60–70 meters above sea level, along with the widely spaced contour lines—signifying a low slope gradient.

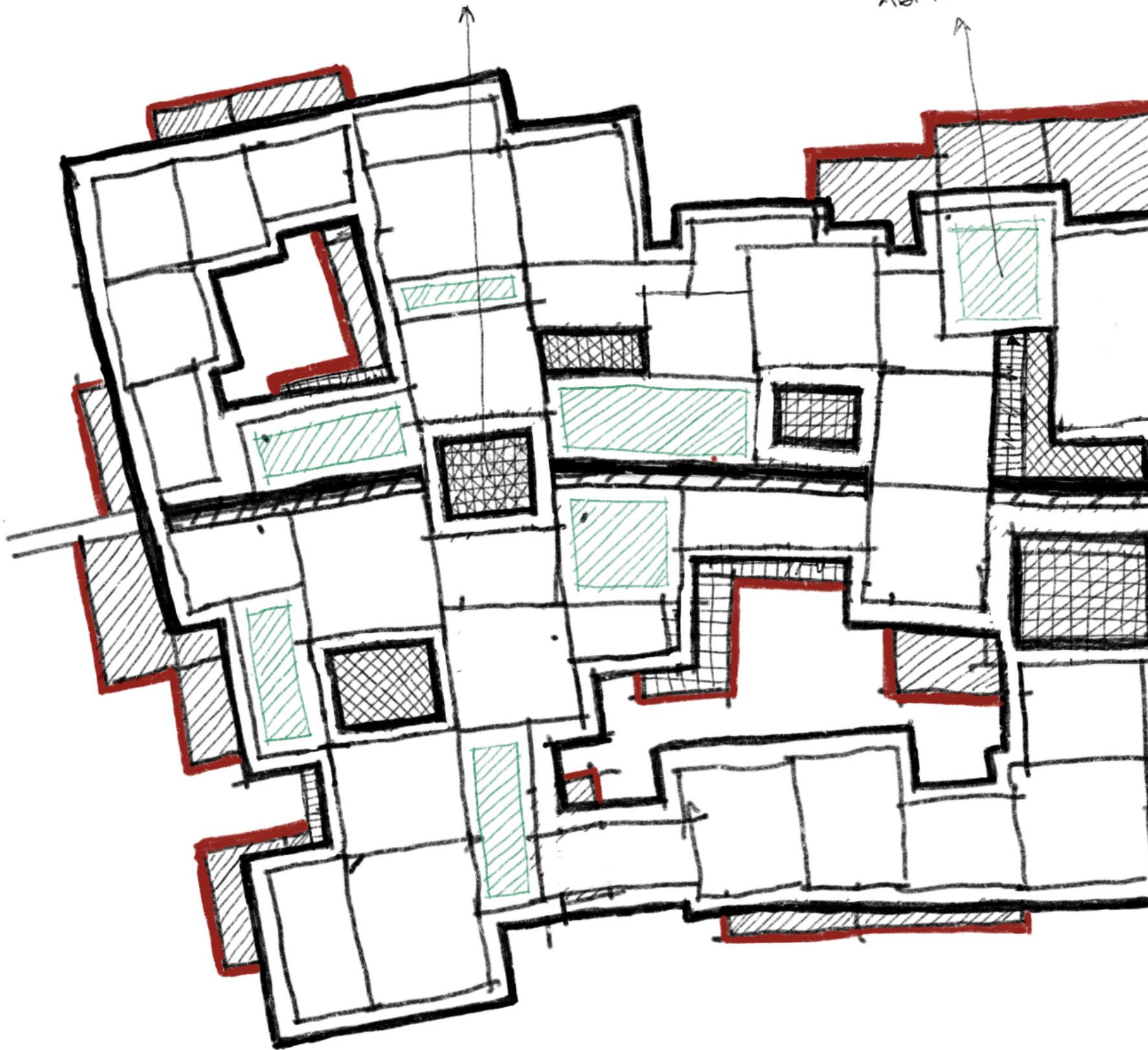
Such a stable and moderate terrain offers significant advantages for the planning of a Co-Habitant Space. It facilitates easier construction processes, supports better-managed natural drainage systems, and aligns well with the project's layered (\*layering\*) spatial approach. Additionally, the site is strategically positioned between two denser residential zones to the north and south, making it a neutral and accessible point with strong potential for hosting integrated public spaces for cross-community interaction.

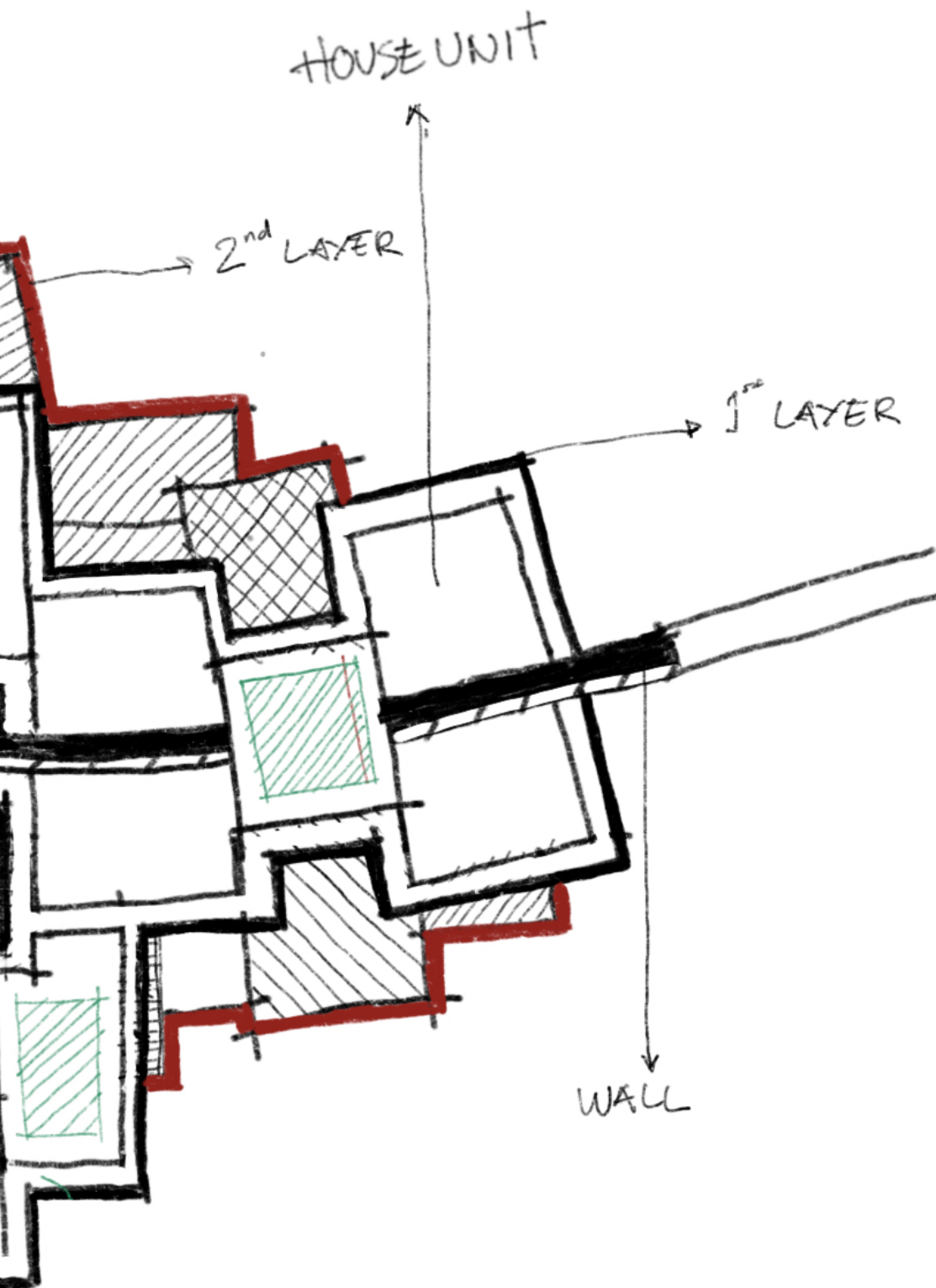




COMMUNAL  
SPACE

AGRICULTURE

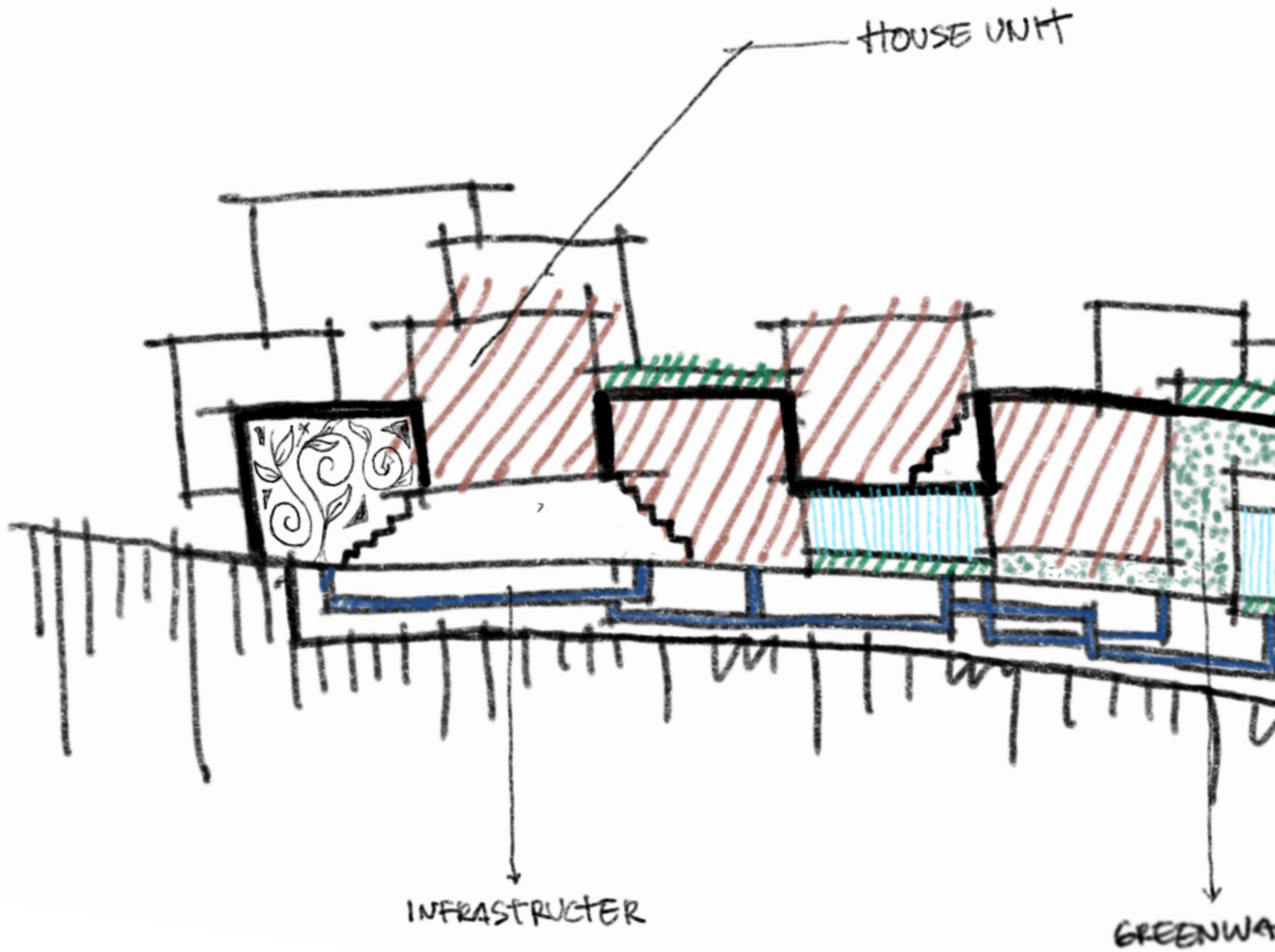


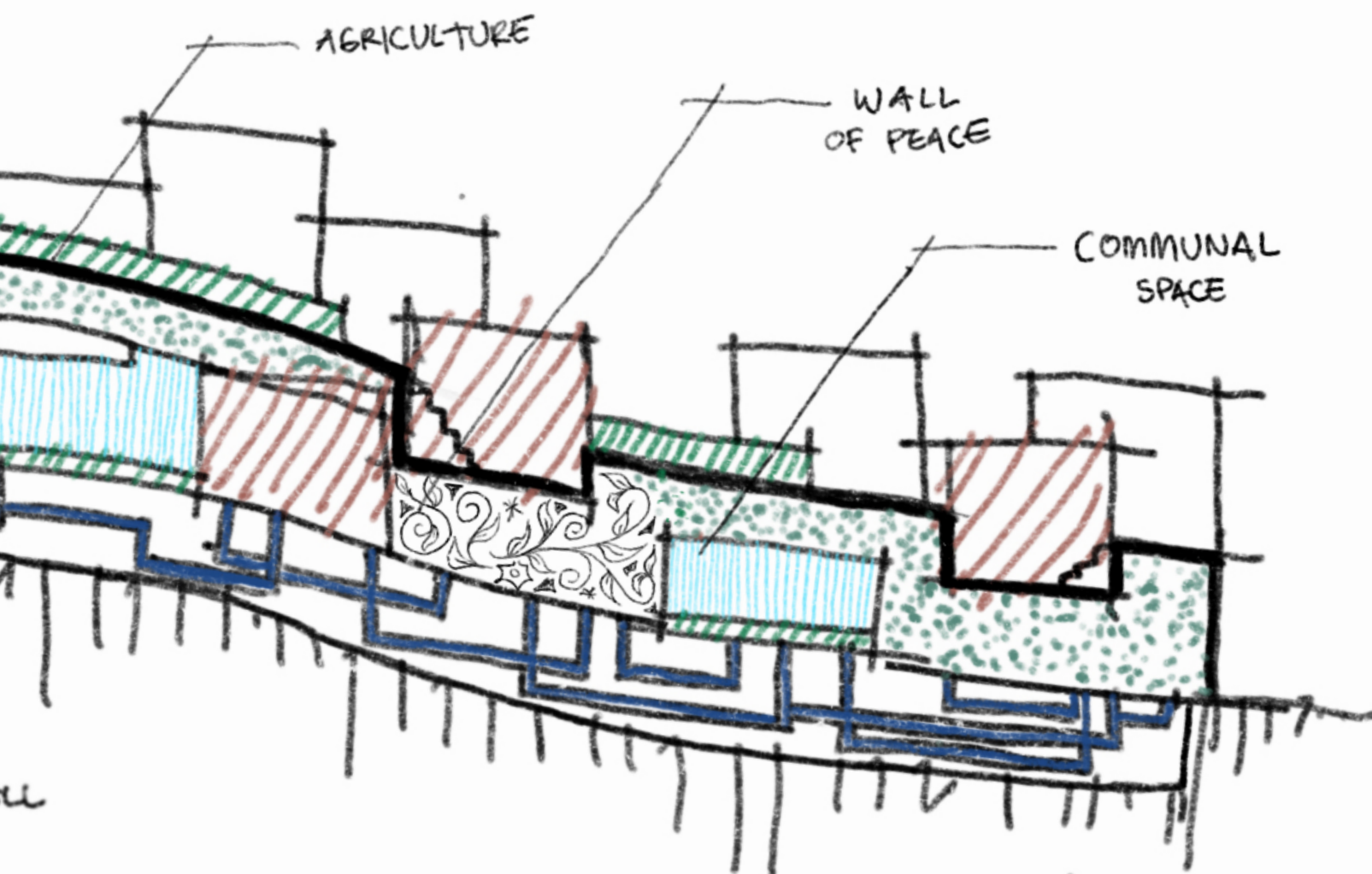


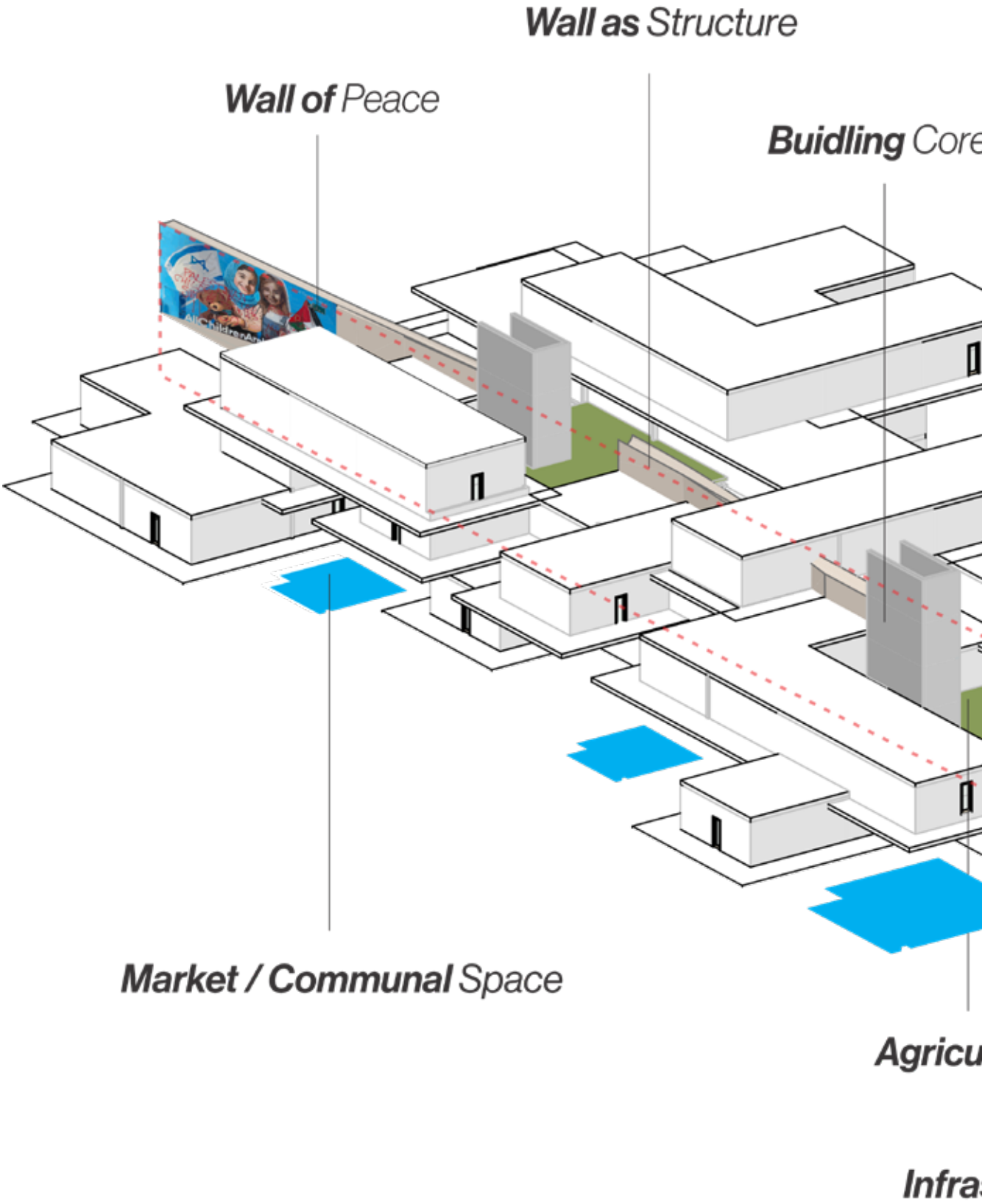
This project reimagines the separation wall—not as a symbol of segregation, but as an architectural element of unity. Through a layering approach, the wall is transformed into a multi-functional structure that supports community interaction and spatial integration. Instead of dividing, it now connects: parts of the wall are adapted into shared spaces, such as corridors, viewing decks, and support structures for modular housing units that sit adjacent to or above it.

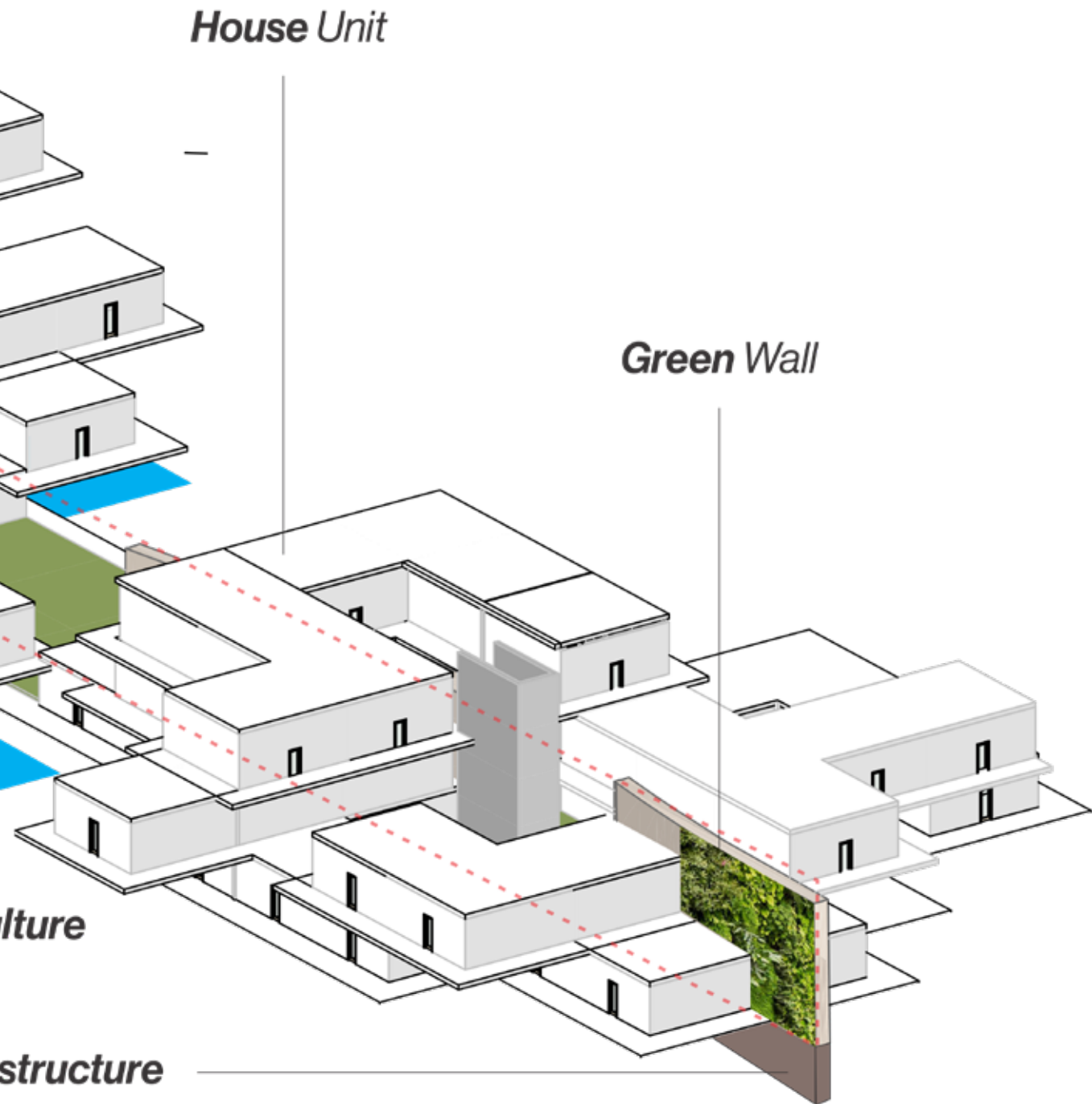
In addition, the concept introduces agriculture and marketplace programs along the wall as social bridges between the two communities. Shared farming areas, date and olive plantations, and collaborative market zones become platforms for economic cooperation and daily interaction, encouraging peaceful coexistence through common livelihood.

Visually, the wall is also redefined. Once a symbol of conflict, it is now a canvas for peace, with curated murals and art installations reflecting cultural identity and hope. Portions of the wall are turned into green walls, supporting climbing plants and vegetation as part of a broader sustainable architectural strategy. Below the wall, a continuous corridor becomes a central infrastructure spine, integrating pathways, utilities, and public transit access. Through this transformation, the wall shifts from being a line of division to becoming a structural and symbolic foundation for reconciliation.

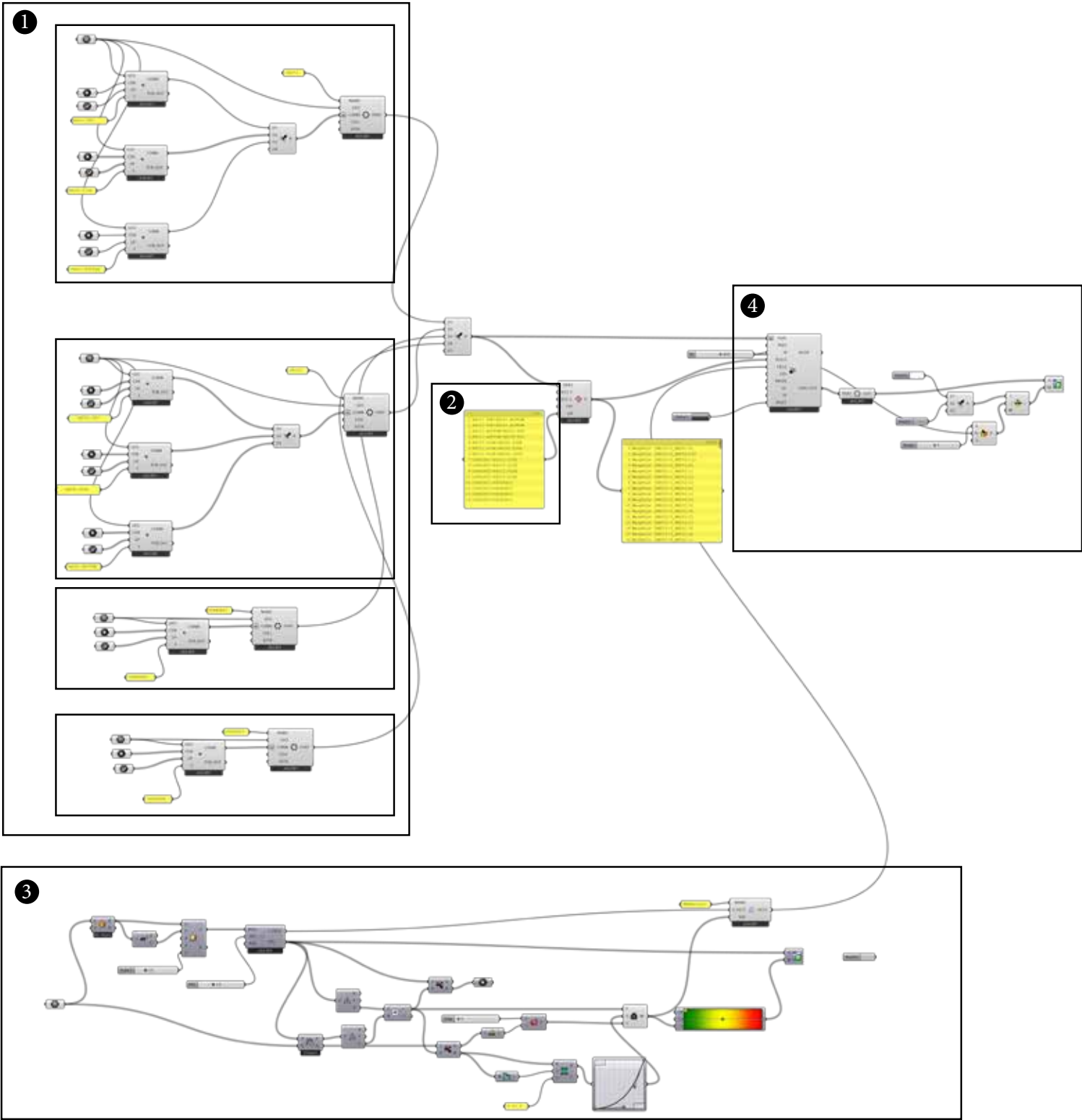


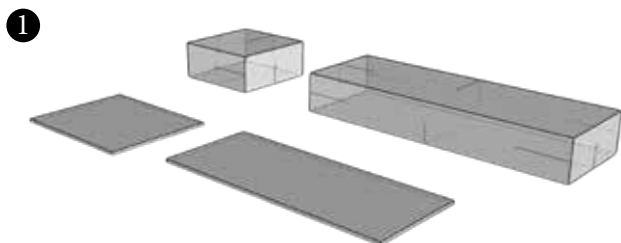






# How The Algorithm Works

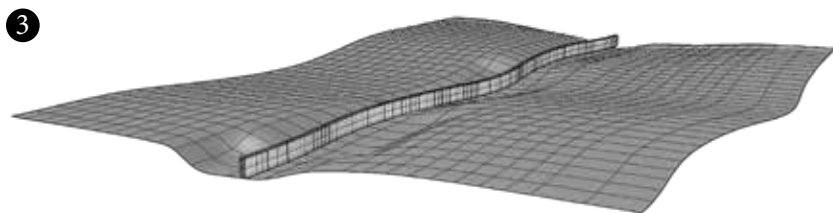




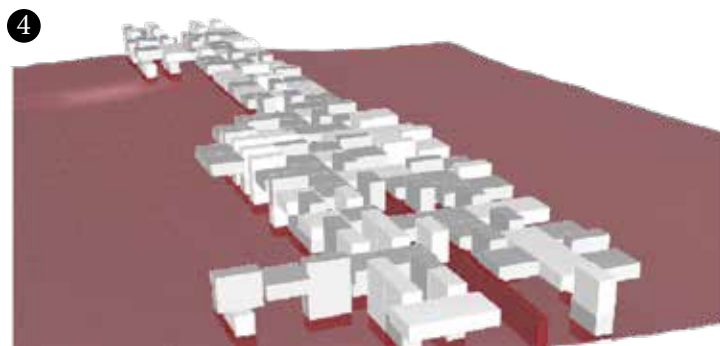
1. Define the basic form of the design prototype. Establish connections on each side of the selected form.



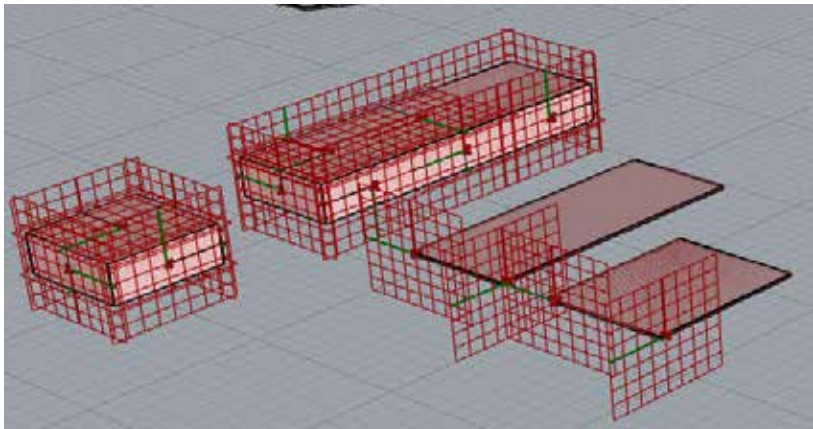
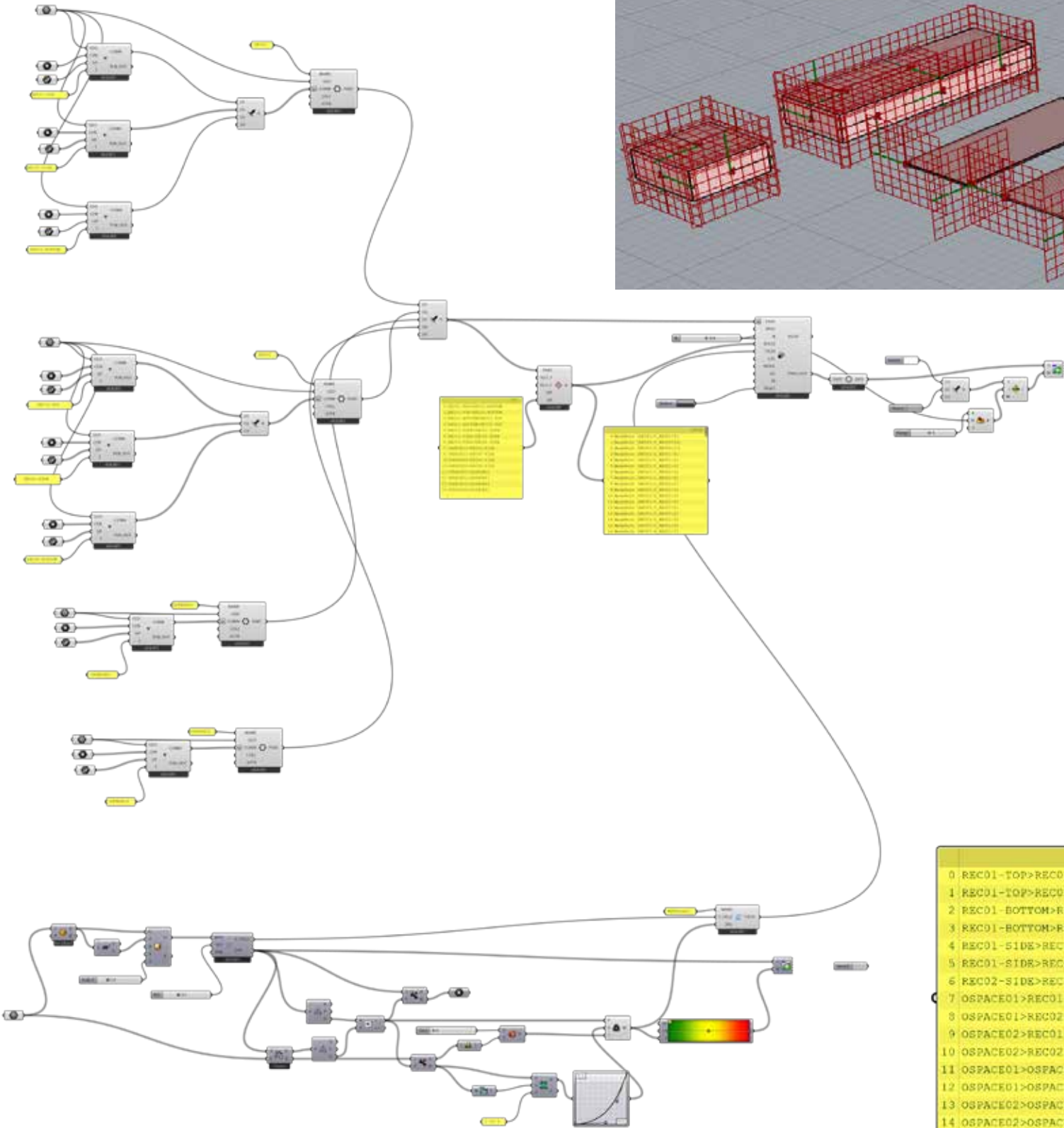
2. Develop a set of design “grammar” or rules that will guide the creation of the grand prototype based on spatial and functional needs.



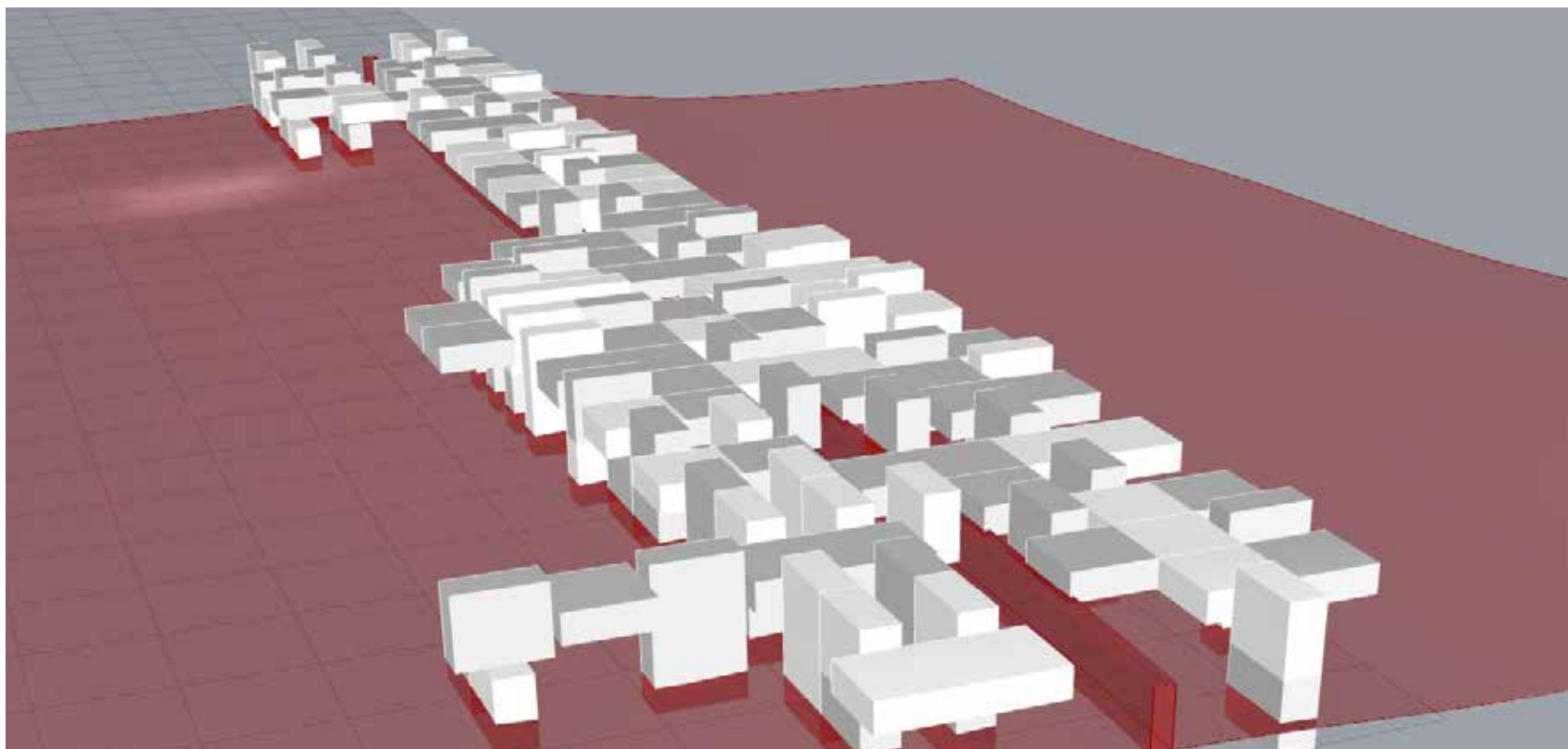
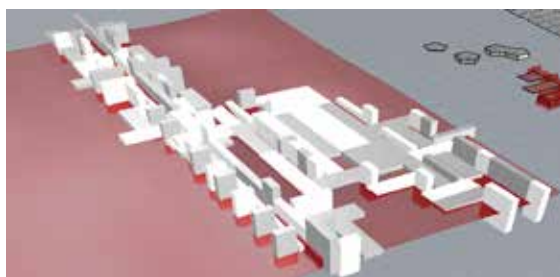
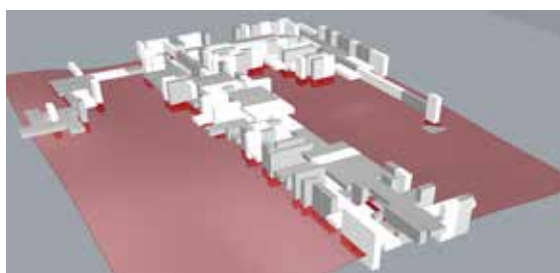
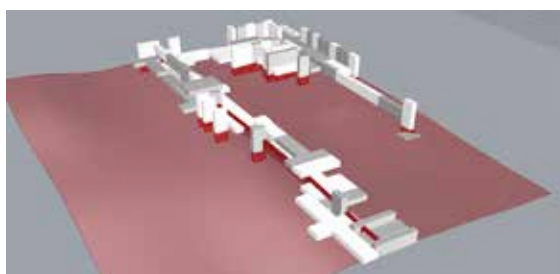
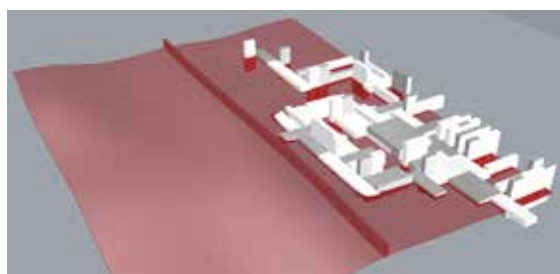
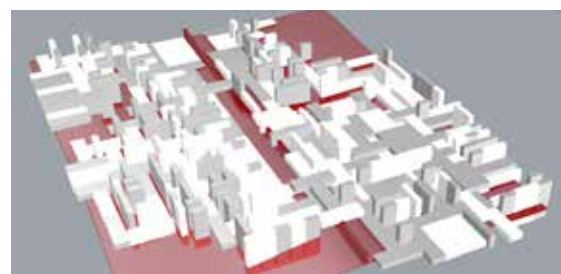
3. Create the site base according to the chosen location in Palestine, including the existing wall that will be reinterpreted as part of the architectural design.

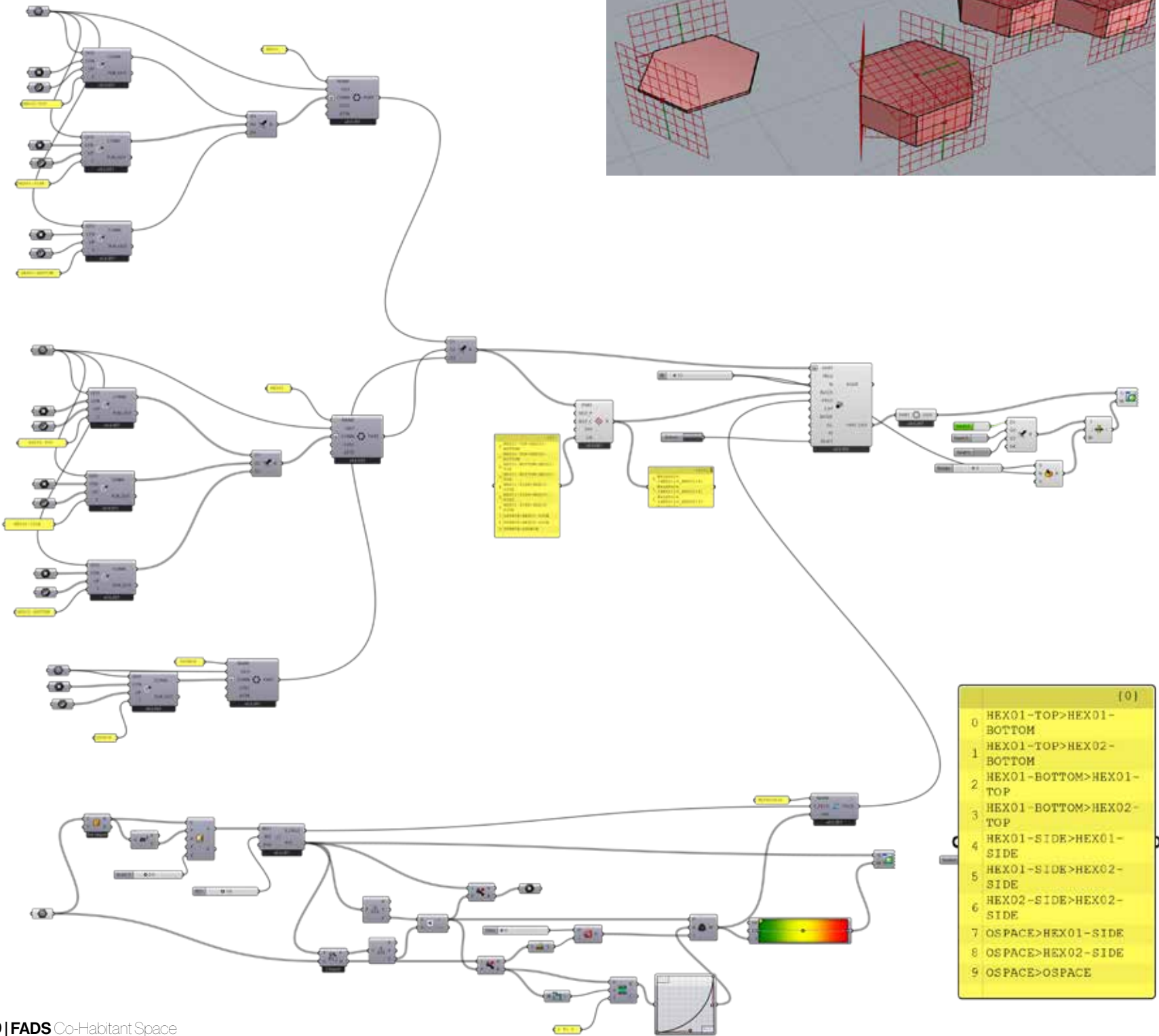


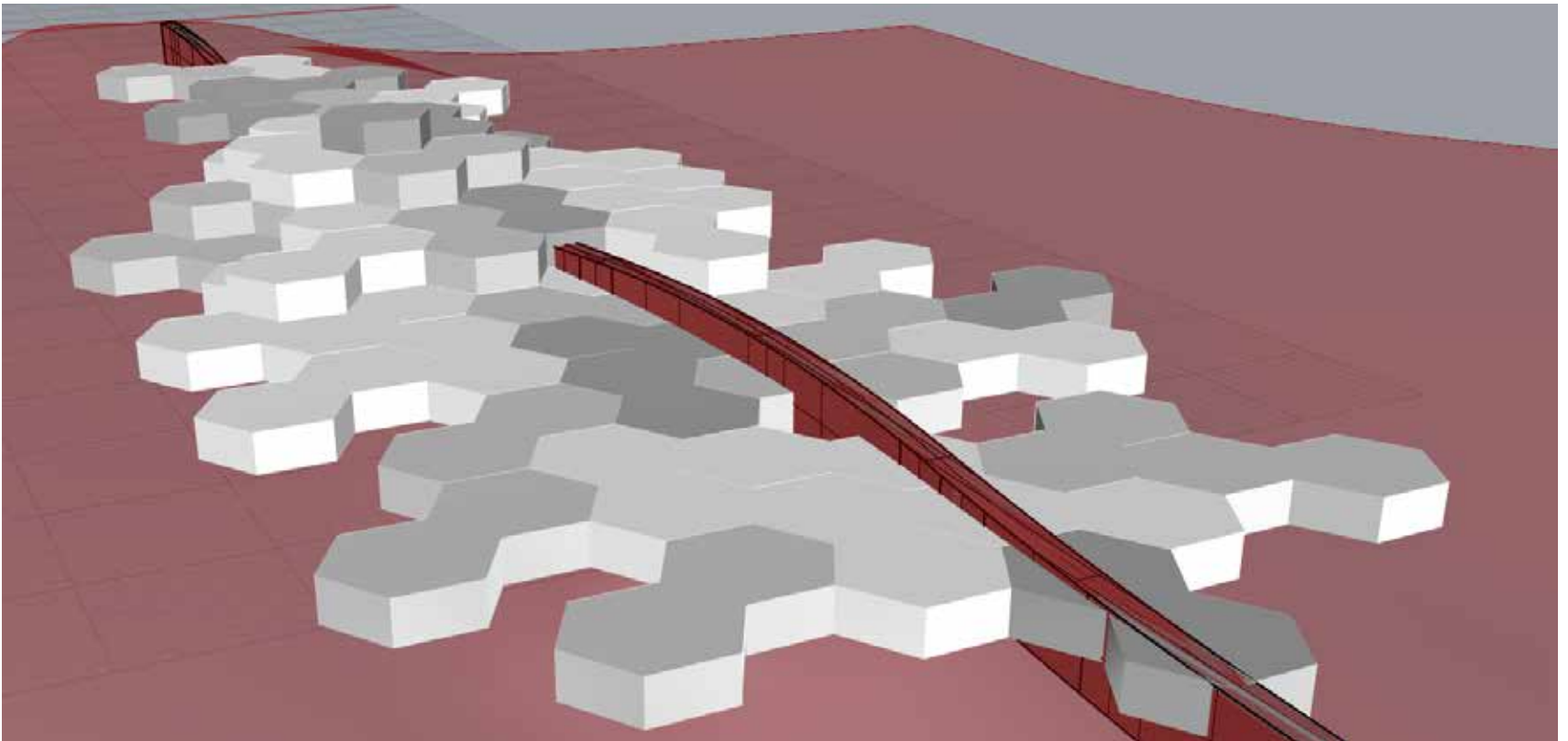
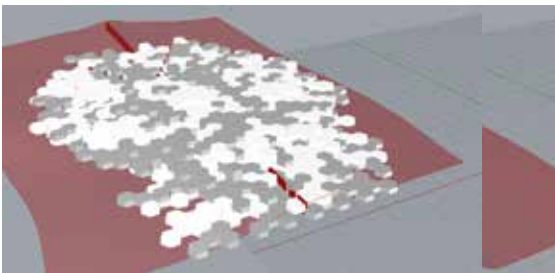
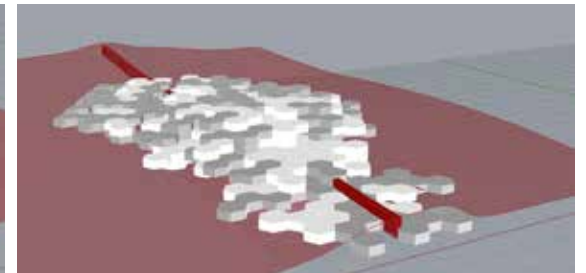
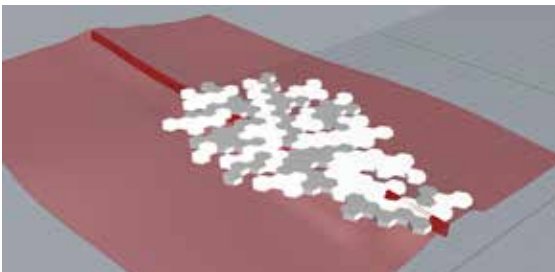
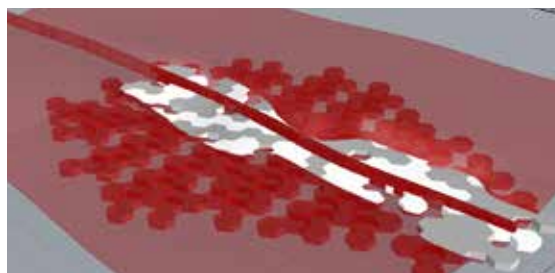
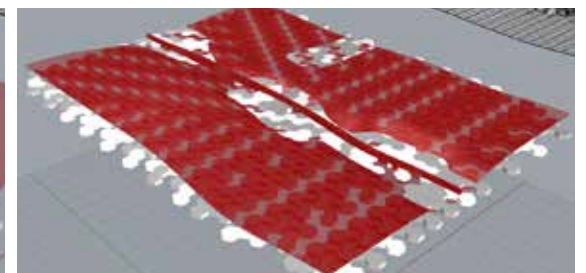
4. Apply the prototype onto the site, ensuring it adapts to the terrain levels and integrates with the existing wall structure.

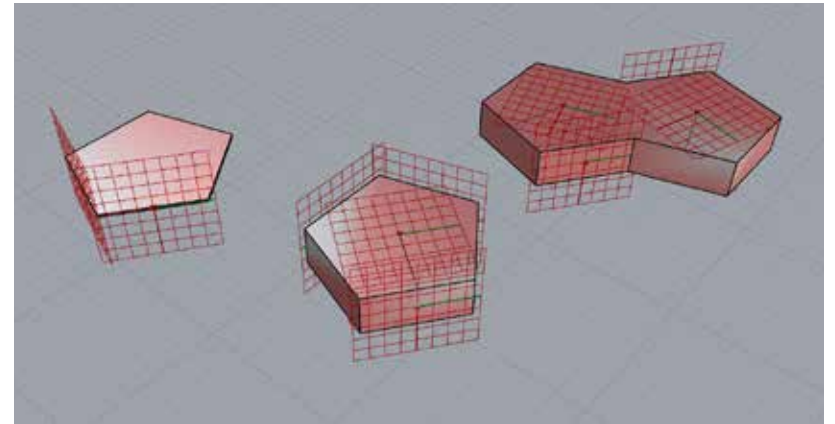
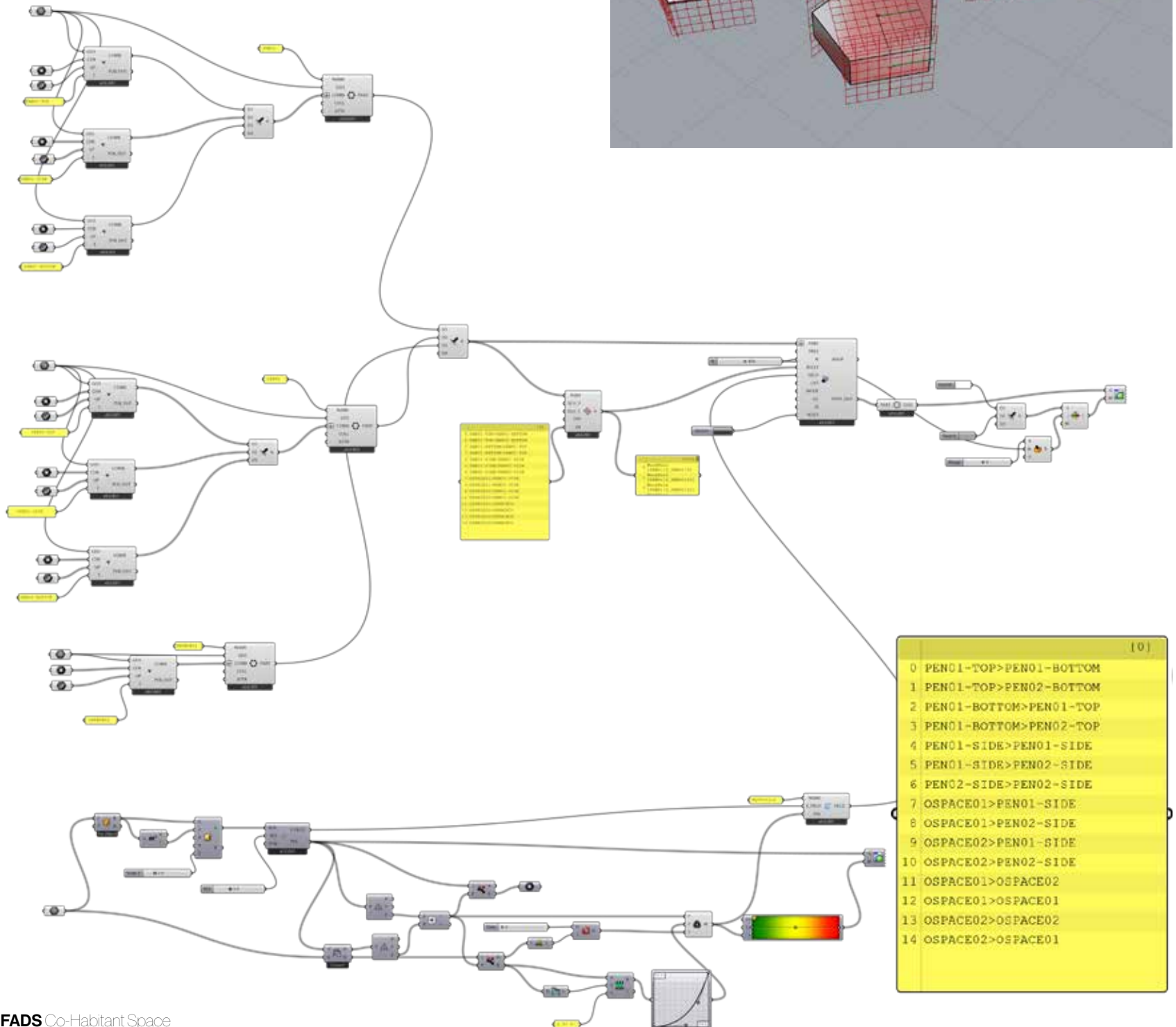


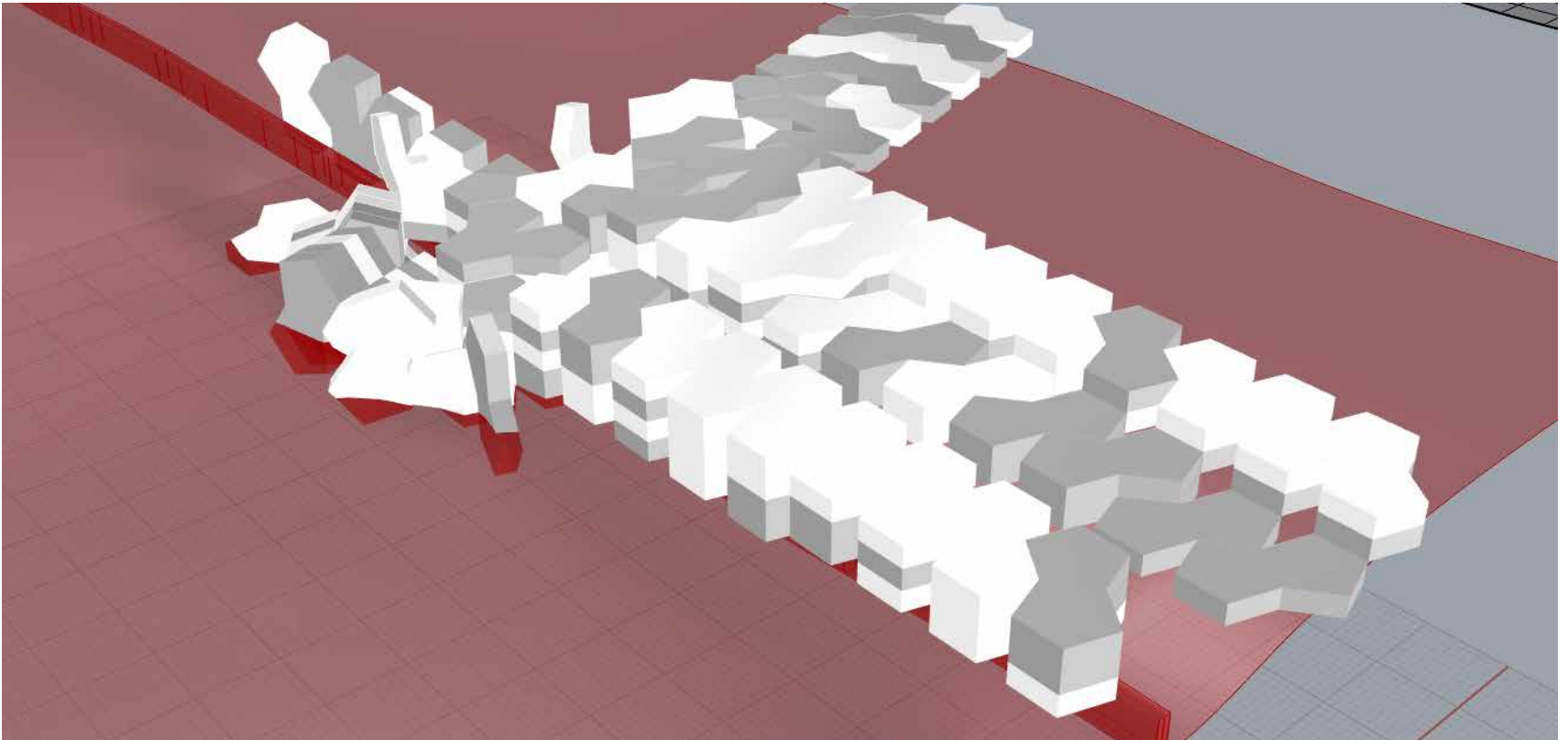
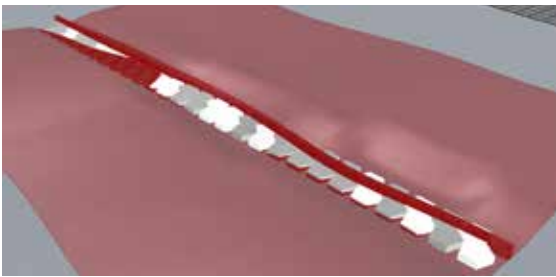
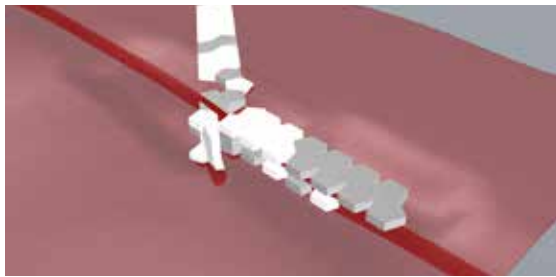
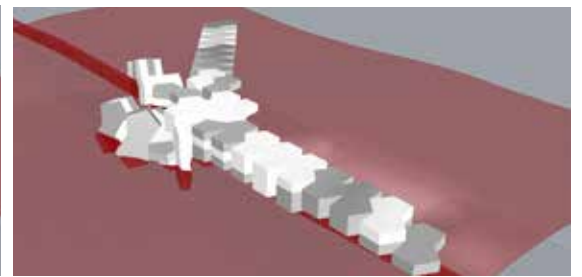
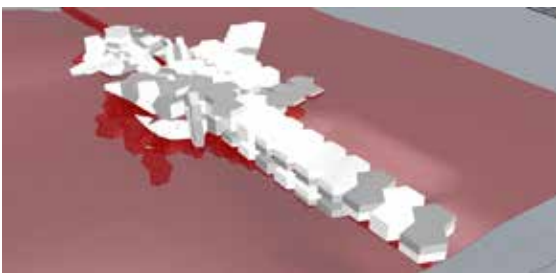
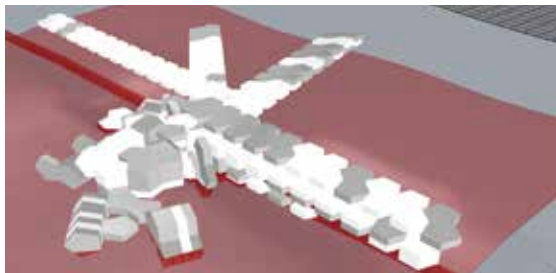
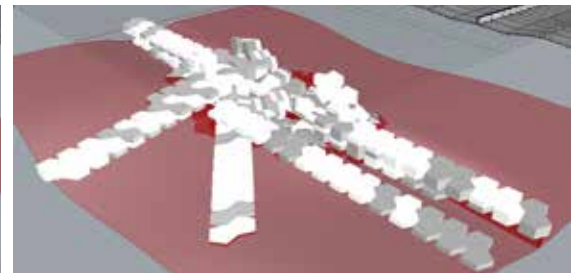
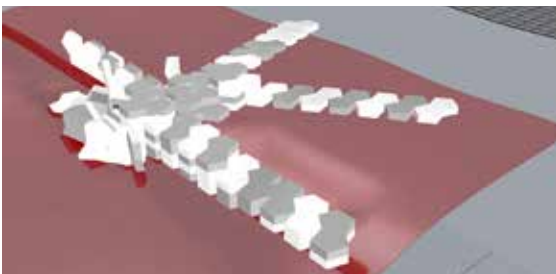
|    |                        |
|----|------------------------|
| 0  | REC01-TOP>REC01-BOTTOM |
| 1  | REC01-TOP>REC02-BOTTOM |
| 2  | REC01-BOTTOM>REC01-TOP |
| 3  | REC01-BOTTOM>REC02-TOP |
| 4  | REC01-SIDE>REC01-SIDE  |
| 5  | REC01-SIDE>REC02-SIDE  |
| 6  | REC02-SIDE>REC02-SIDE  |
| 7  | OSPACE01>REC01-SIDE    |
| 8  | OSPACE01>REC02-SIDE    |
| 9  | OSPACE02>REC01-SIDE    |
| 10 | OSPACE02>REC02-SIDE    |
| 11 | OSPACE01>OSPACE02      |
| 12 | OSPACE01>OSPACE01      |
| 13 | OSPACE02>OSPACE02      |
| 14 | OSPACE02>OSPACE01      |













## ④ Schematic Design





## AI Generated

“Generate a detailed conceptual design for a landscape architecture project that applies the multilayer concept. The design should incorporate multiple functional layers, including vegetation, water management, circulation, and social spaces. The landscape should integrate native plants, green roofs, and vertical gardens for ecological sustainability while ensuring climate adaptability. Additionally, include pathways, shaded seating areas, and interactive public spaces to promote community engagement. The design should balance aesthetics with functionality, emphasizing biodiversity, environmental resilience, and a harmonious connection between natural and built environments. Present the concept in a visually compelling manner, highlighting different layers through sectional diagrams and perspective views.”















## ⑤ Design Development



**Segregation**  
*Barrier*



**Housing**  
*Characteristic*

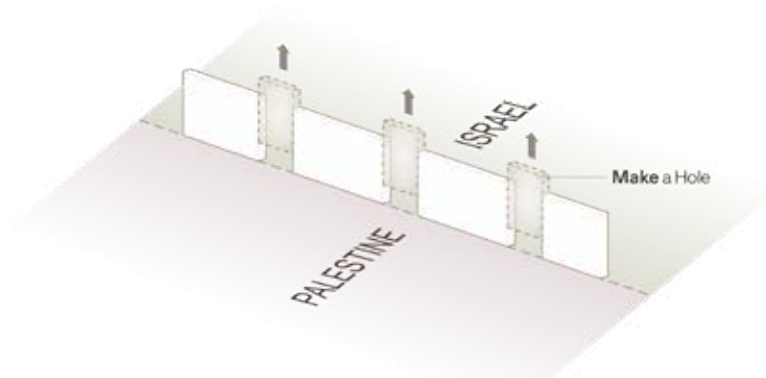




*1. How can a border, once intended as a means of separation and control, be reimagined and transformed into a functional element that promotes connection, collaboration, and integration between the communities it previously divided?*

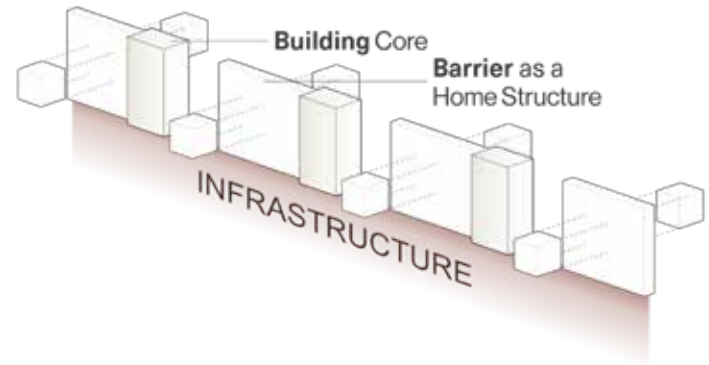
*2. How to create contextual housing solutions that reflect the character of the people there, adaptability, identity, and functionality to build cohesiveness?*

# Design Concept



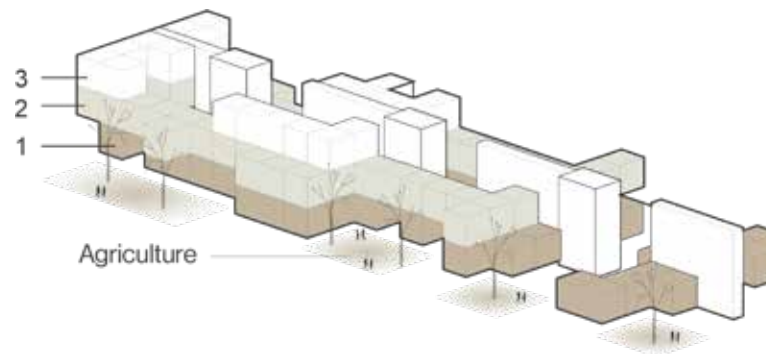
## 1. Perforation – Opening the Wall

The segregation wall, once isolating two communities, is transformed into a connector by making holes. Controlled openings allow visual and physical interaction, marking the first step toward Palestinian–Israeli integration.



## 2. Blurring – Softening the Barrier

The wall is blended with housing structure, infrastructure, and vertical circulation, softening its presence and transforming it into a functional, less dominant part of the shared environment.



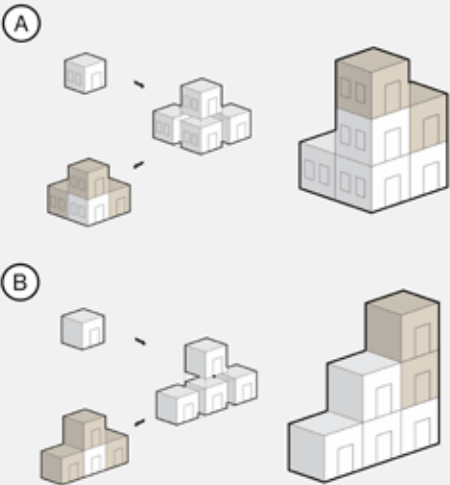
## 3. Multilayering – Designing with Layers

Multiple spatial layers balance shared, semi-private, and separate spaces, enabling flexible coexistence that reflects real-life interaction and preserves both connection and privacy.

# Housing Exploration

## Expandable Housing

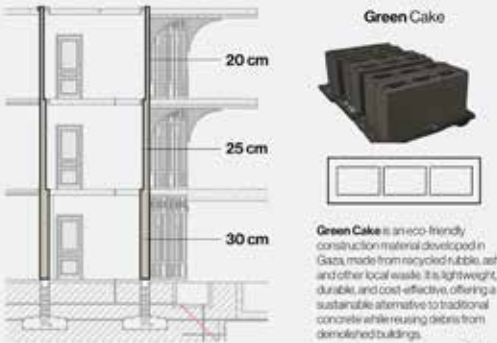
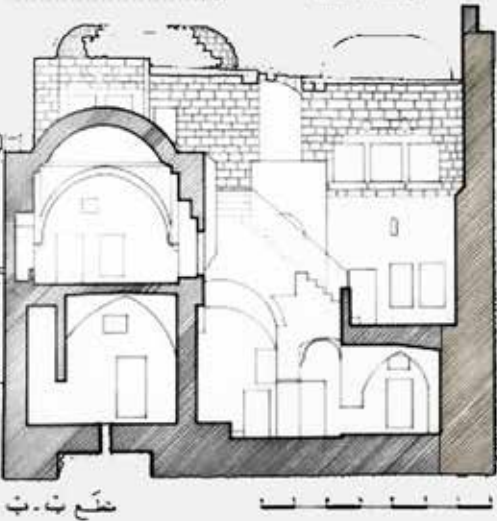
The expandable design—both horizontally and vertically—reflects the evolving needs of residents with diverse family structures and traditions. By enabling outward or upward growth, it accommodates future changes such as new family members, economic activities, or additional functions. This flexibility ensures relevant, sustainable, and resilient as the community develops over time.



Expandable House expands vertically and horizontally with the condition that the walls are not openings.

## Structural Composition with Green Cake Material

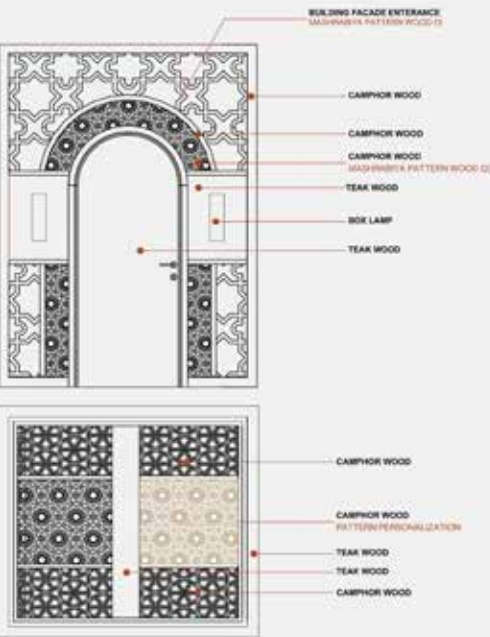
The building's main structure uses Green Cake, a sustainable material, starting with 30 cm-thick walls at the base for stability. Thickness reduces to 25 cm on the second floor and 20 cm on upper levels, minimizing weight, improving structural efficiency, and optimizing material use without sacrificing strength or safety.

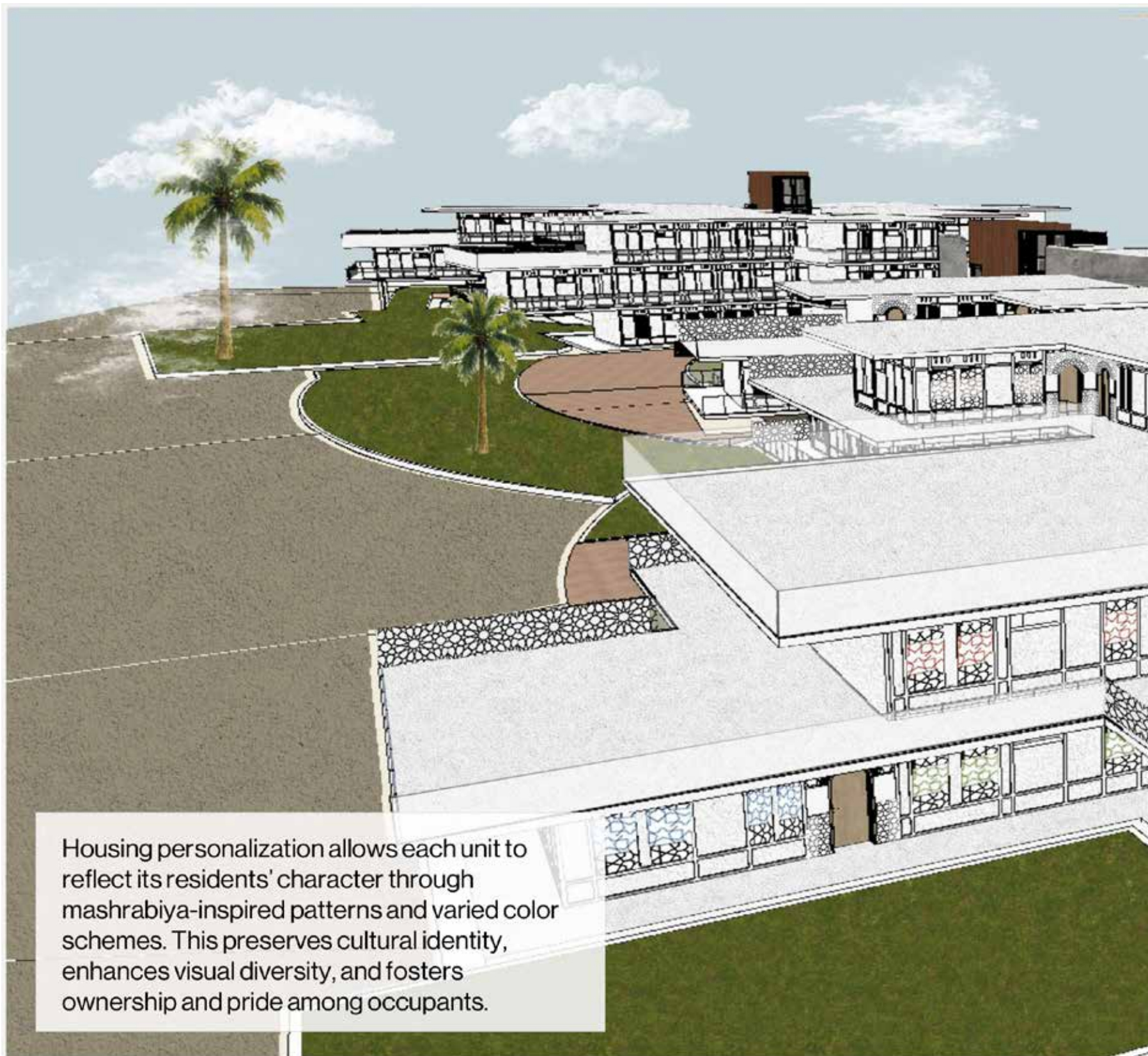


Section of a traditional Palestinian house, starting with thick walls that become lighter towards the top.

## Personalized Design for Each Unit

Each housing unit is personalized with mashrabiya-inspired patterns that preserve local identity while offering beauty and shading. Distinct color schemes add vibrancy, foster ownership, and encourage residents to maintain their homes.





Housing personalization allows each unit to reflect its residents' character through mashrabiya-inspired patterns and varied color schemes. This preserves cultural identity, enhances visual diversity, and fosters ownership and pride among occupants.

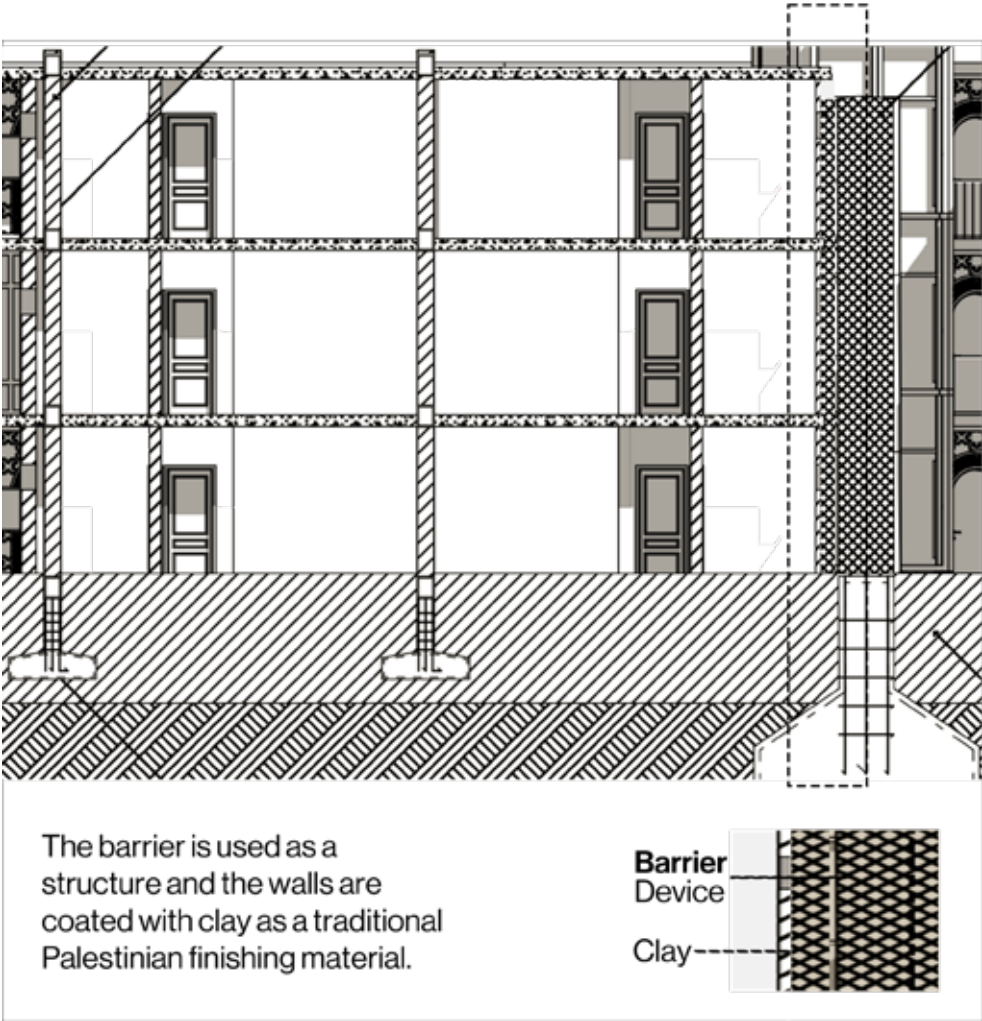


## Housing Personalization

# Barrier Exploration

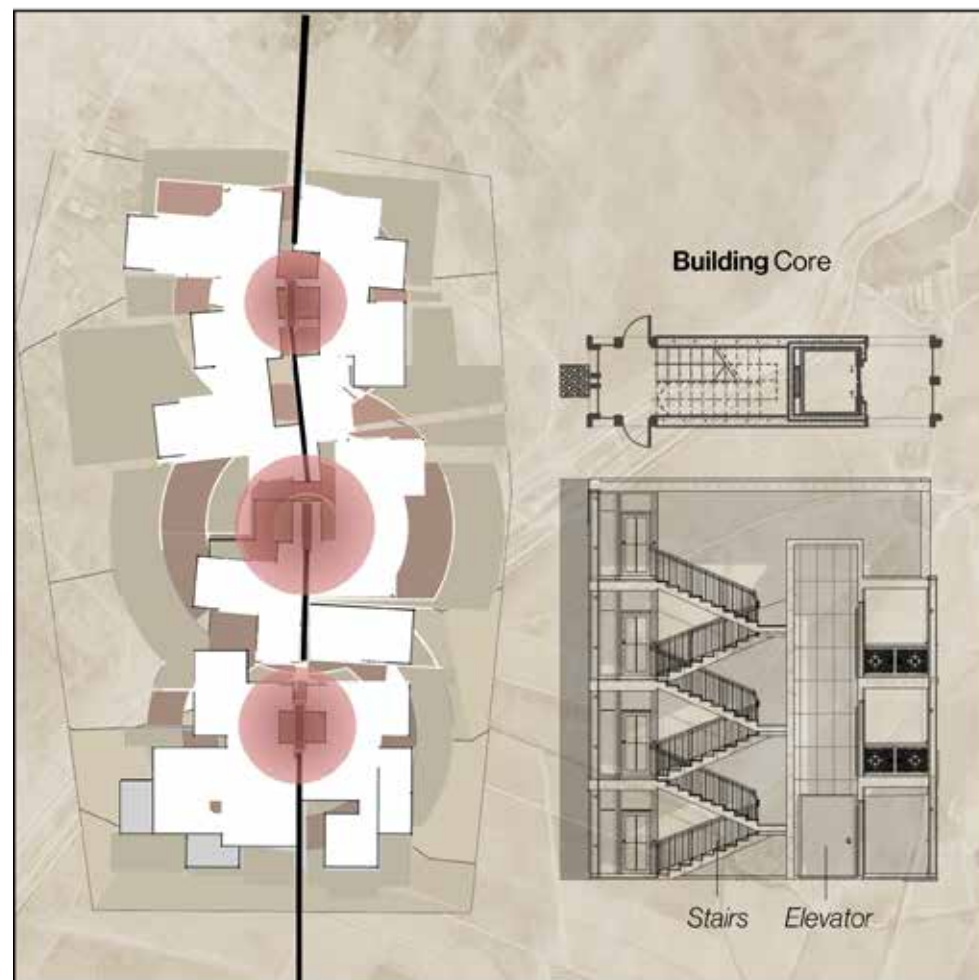
## The Segregation Barrier as Structural Housing and Historical Asset

The segregation barrier, constructed from reinforced concrete with a thickness of 1 meter and a height of 9 meters, possesses the structural strength needed to support housing development. Instead of demolishing it, the barrier can be repurposed as part of the building's structural system, transforming its role from a symbol of division into a functional asset while preserving it as a historical legacy.



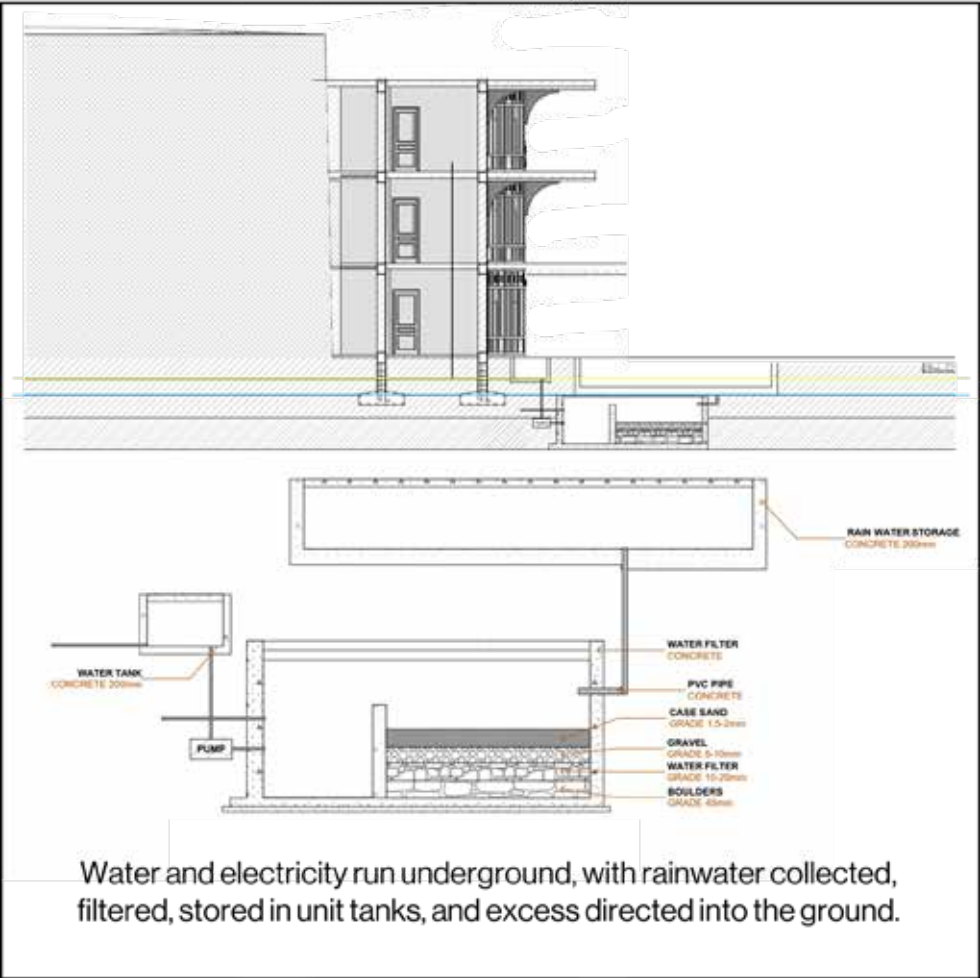
### The Segregation Barrier as Building Core

The segregation barrier as a building core, functioning as the primary vertical circulation hub that integrates stairs and elevators. Strategically positioned within each compound, it not only provides structural stability but also transforms a symbol of division into a functional architectural element that connects different spaces.



**The Segregation Barrier as Infrastructure**

The segregation barrier as an infrastructure hub, serving as the central conduit for water and electricity systems located at its base. Additionally, a rainwater harvesting system is integrated beneath the building core, where collected water is stored and then distributed to individual unit water tanks.





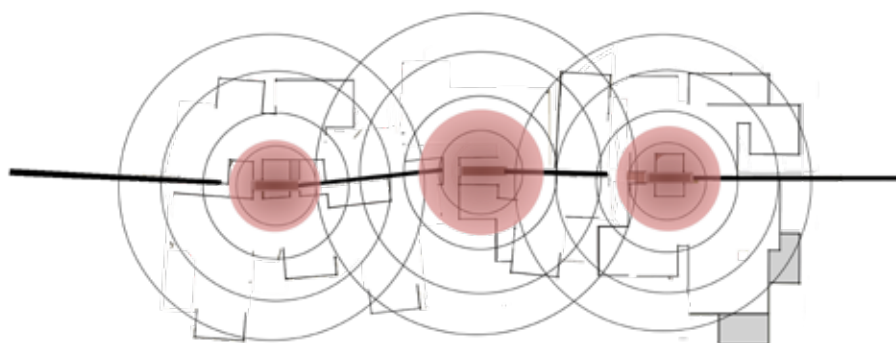
# Landscape Concept



"Landscape Illustration, Sketched by the Author

### Landscape as Signage

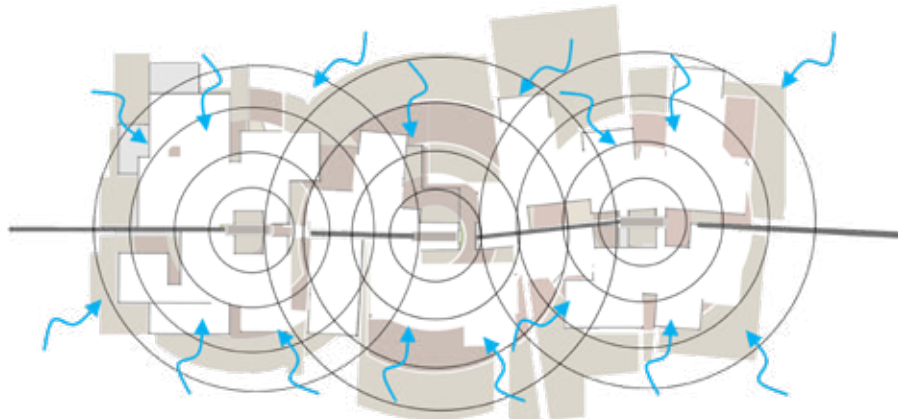
The landscape is designed to function as a prominent signage element, clearly marking the center of each compound. By adopting a radial pattern that encircles the building core, the design naturally draws attention to the area where the main vertical access points—such as stairs and elevators—are located. This not only enhances wayfinding within the site, making navigation more intuitive for residents and visitors, but also contributes to the overall aesthetic harmony of the compound.



The radial landscape layout further creates a sense of order and centrality, reinforcing the building core as a focal point of activity and connectivity.

### **Landscape as Infrastructure Guideline**

The landscape is designed to serve both aesthetic and functional purposes, acting as a guide for water and electricity routes. Water channels are directed straight to green areas for efficient irrigation, remaining unobstructed by buildings to ensure smooth flow. Additionally, the landscape also functions as a pathway for rainwater, directing it into the rainwater harvesting storage for later use.



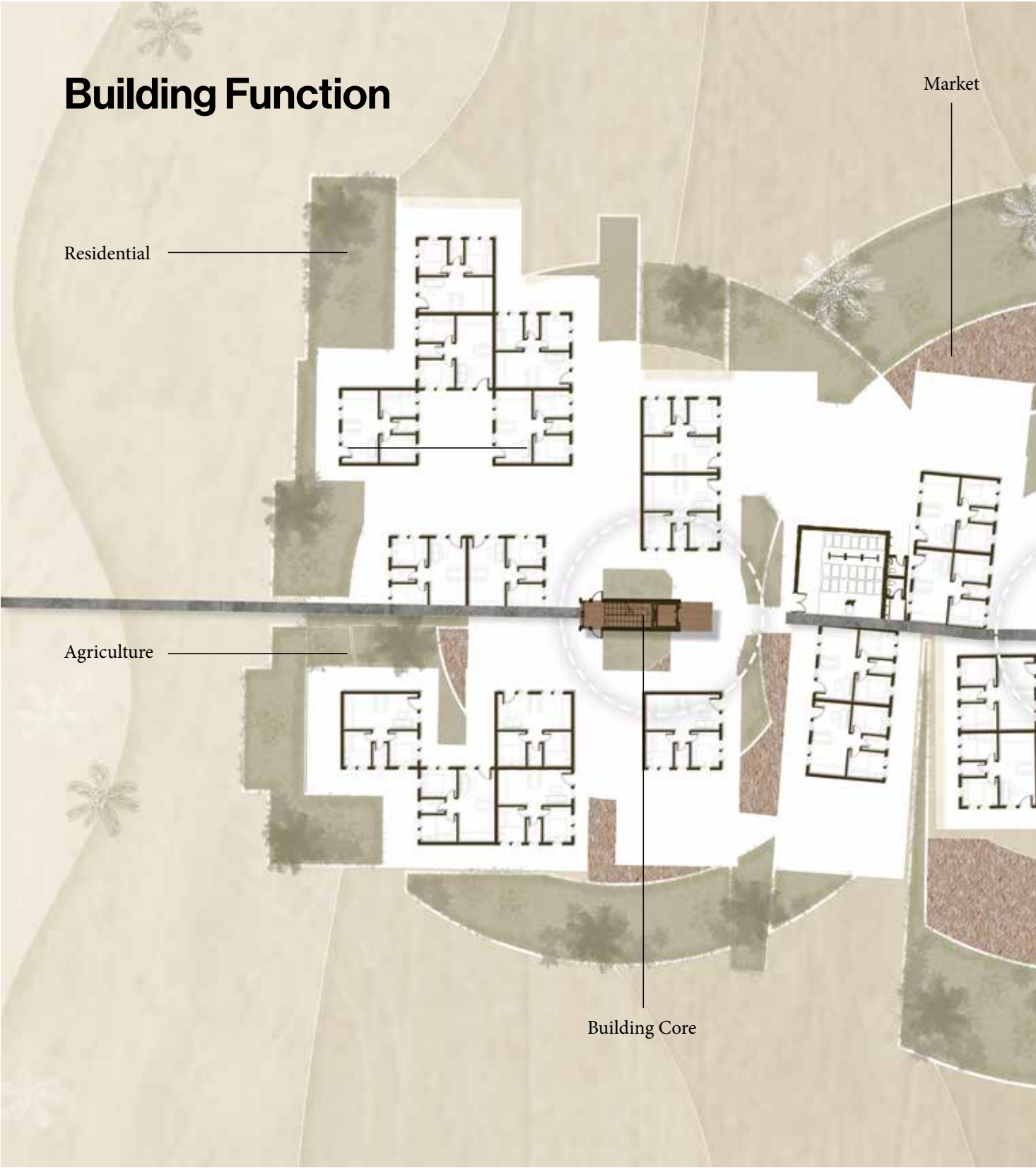
By integrating these infrastructure elements into the landscape design, the system becomes more harmonious, environmentally responsive, and user-friendly.

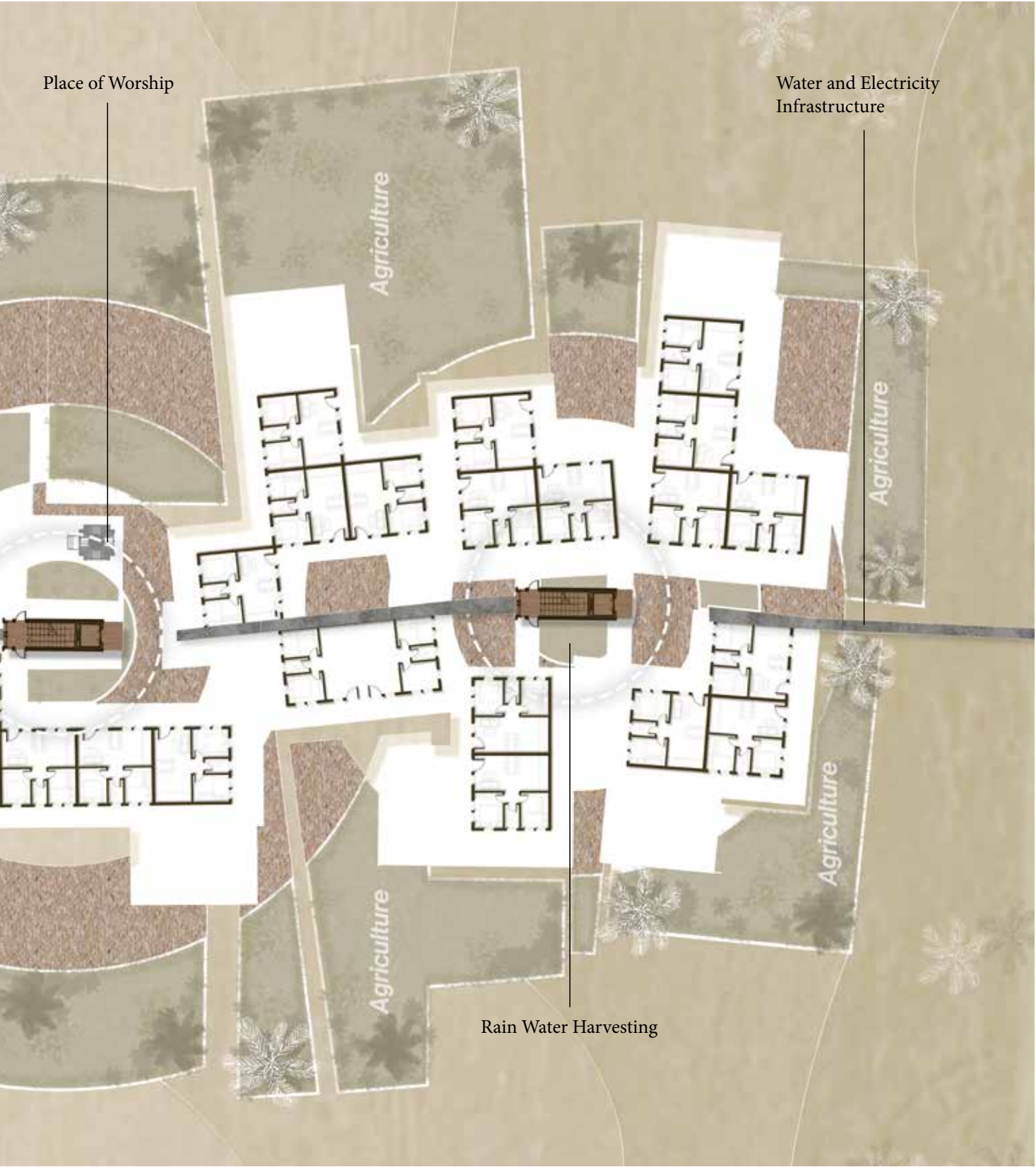
**Green Belt and Market Position**

The Green Belt is formed by placing agricultural areas around the perimeter of the compound, while maintaining a central green space to provide natural cooling and enhance comfort. The market is strategically positioned at the center, serving as the main communal hub where residents can gather, interact, and strengthen social connections.



The Green Belt encircles the compound, with a central market as the main hub for gathering and interaction.





# Design Criteria

## 1. Maximized Openings for Natural Ventilation and Light

The residential units must feature generous use of windows, perforated walls, and ventilation systems to ensure optimal airflow and daylight penetration, enhancing indoor comfort and reducing energy consumption.

## 2. Integration of Community Gardens within the Site

The overall master plan should include green areas or communal gardens, encouraging urban farming, food independence, and social interaction among residents.

## 3. Use of Locally Sourced Materials

Construction materials should prioritize availability from the local context, promoting sustainability, supporting the local economy, and ensuring cultural and environmental relevance.

## 4. Flexible and Responsive Housing Types

The housing design should accommodate two main types: a. Detached/Singular Units for individual families, b. Expandable (Growing) Houses that can adapt over time, developed based on the family's size and evolving needs.

## 5. Reappropriation of the Wall as a Multi-functional Element

The existing separation wall must be reimagined as part of the architectural solution:

As a structural component supporting residential or public facilities

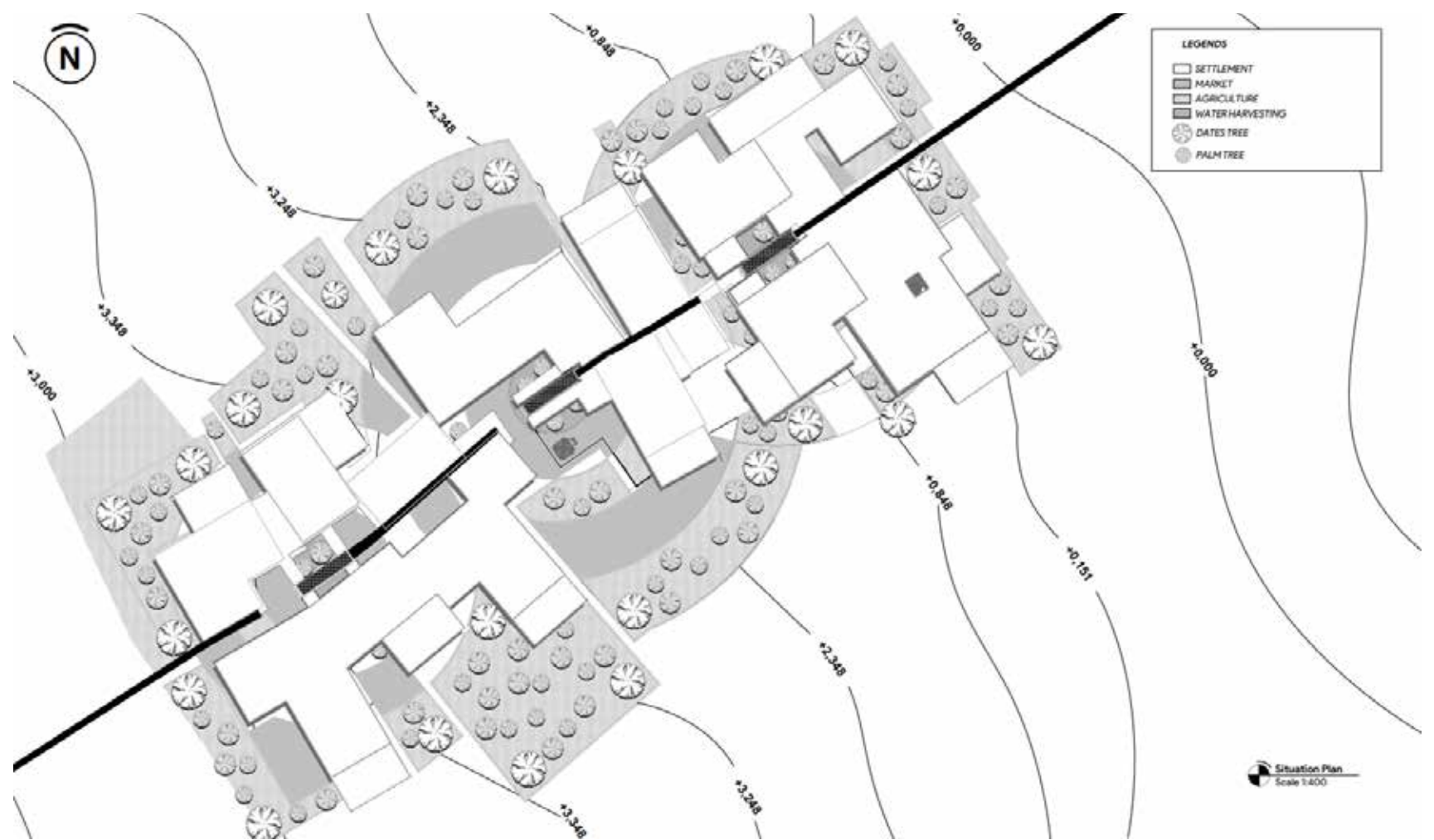
As a public art canvas, featuring murals or cultural expression

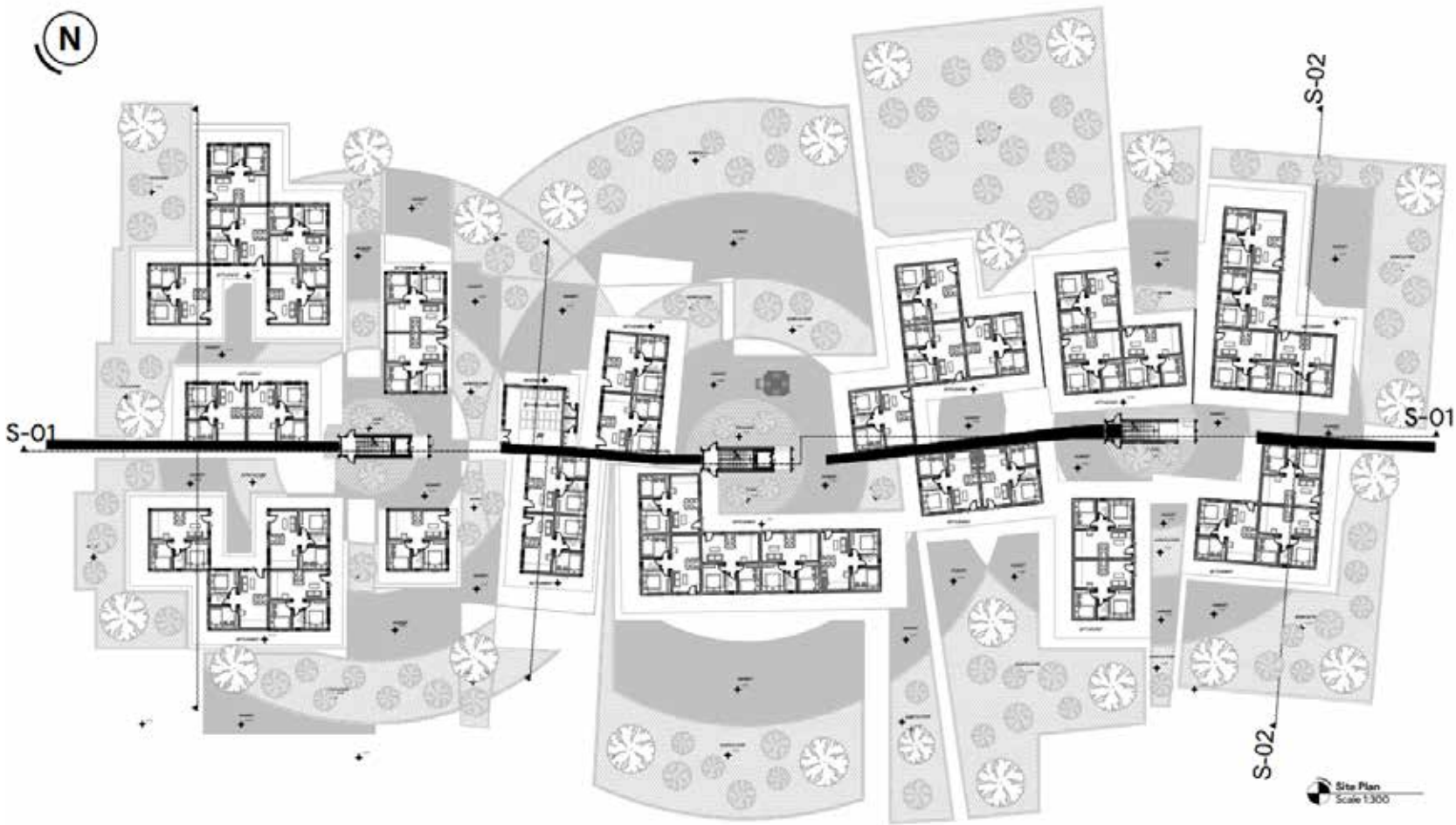
As a sustainability element, for example as a green wall or for passive climate control

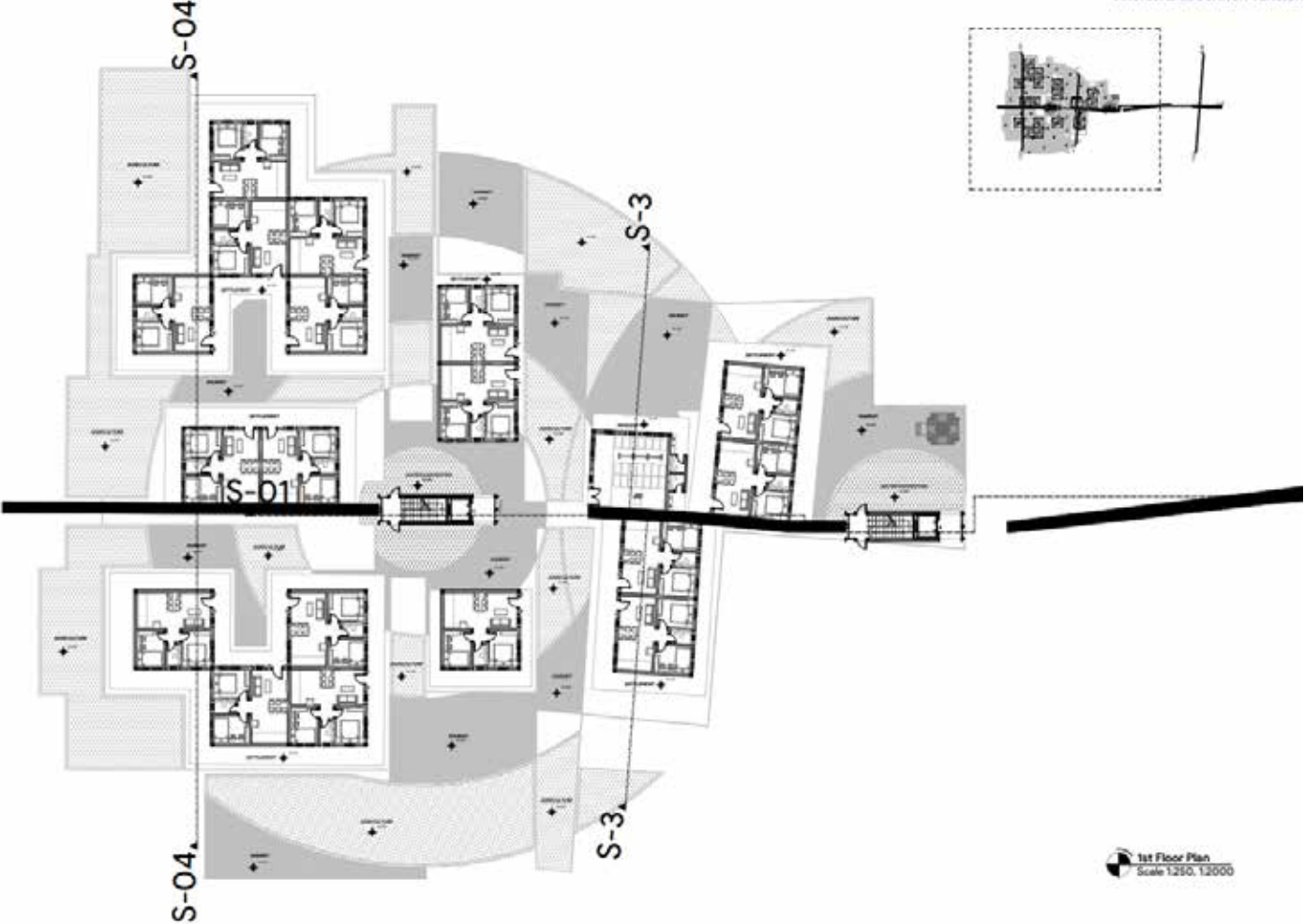
# Design Guideline

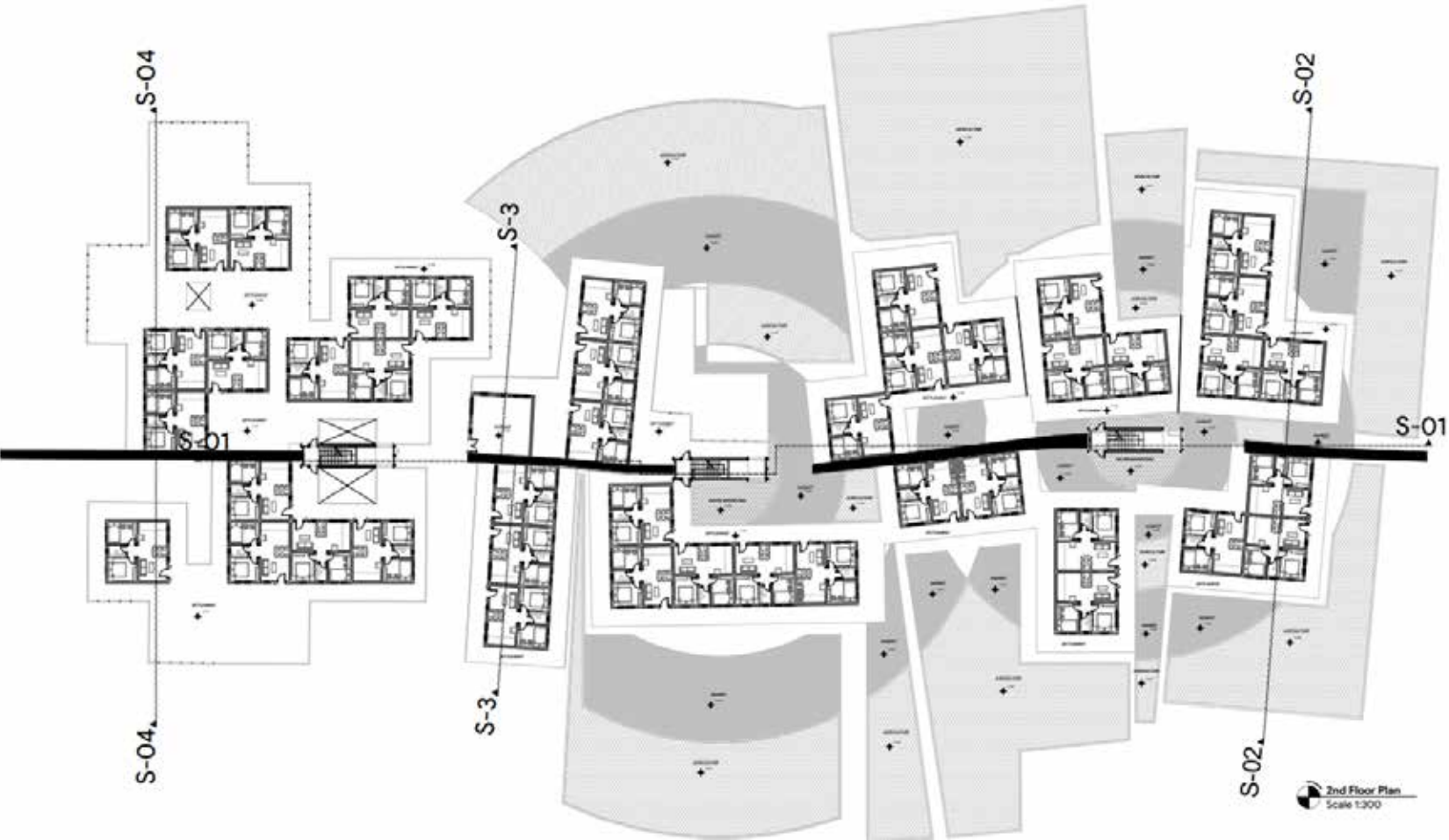
| No. | Design Aspect              | Guideline Description                                                               | Suggested Size/Dimension                                         |
|-----|----------------------------|-------------------------------------------------------------------------------------|------------------------------------------------------------------|
| 1   | Spatial Configuration      | Layered zoning (public, semi-private, private); encourage interaction across layers | Site: ± 3,000–5,000 m <sup>2</sup> (depending on community size) |
| 2   | Housing Typology           | Individual house & growing house based on family size                               | ±49 m <sup>2</sup> per unit (based on shape)                     |
| 3   | Communal Garden            | Community farming space for dates, olives, and vegetables                           | 150–300 m <sup>2</sup> minimum per cluster                       |
| 4   | Natural Ventilation        | Openings on at least 2 opposite sides; cross ventilation & clerestory windows       | Window-to-wall ratio: min. 30% per wall                          |
| 5   | Material Usage             | Use of Green Cake (recycled material), local stone, rammed earth, or earth blocks   | Based on availability and structural needs                       |
| 6   | Wall Integration           | Wall reused as structural support, art surface, or green wall                       | Height: existing (6–8 m), reused segments every ±10–15 m         |
| 7   | Circulation System         | Accessible pedestrian paths, ramps instead of stairs                                | Ramp slope: max 1:12; Width: min. 1.5 m                          |
| 8   | Accessibility Design       | Universally designed units and spaces; tactile floor guides, ramps, signage         | Door width: min. 90 cm; turning radius: 150 cm                   |
| 9   | Rainwater & Solar Systems  | Integrated rainwater harvesting tanks and rooftop solar panels                      | Rain tank: ±1.5 m <sup>3</sup> /unit; Solar: 1.5–2 kWp/roof      |
| 10  | Visual Openness & Lighting | Semi-open facades, skylights, perforated blocks                                     | Skylight opening: ±1.2 m <sup>2</sup> per module                 |
| 11  | Cultural & Art Element     | Wall used for mural art, memory lane, religious/cultural representation             | Art strip: min. 1.5 m height on reused wall segments             |

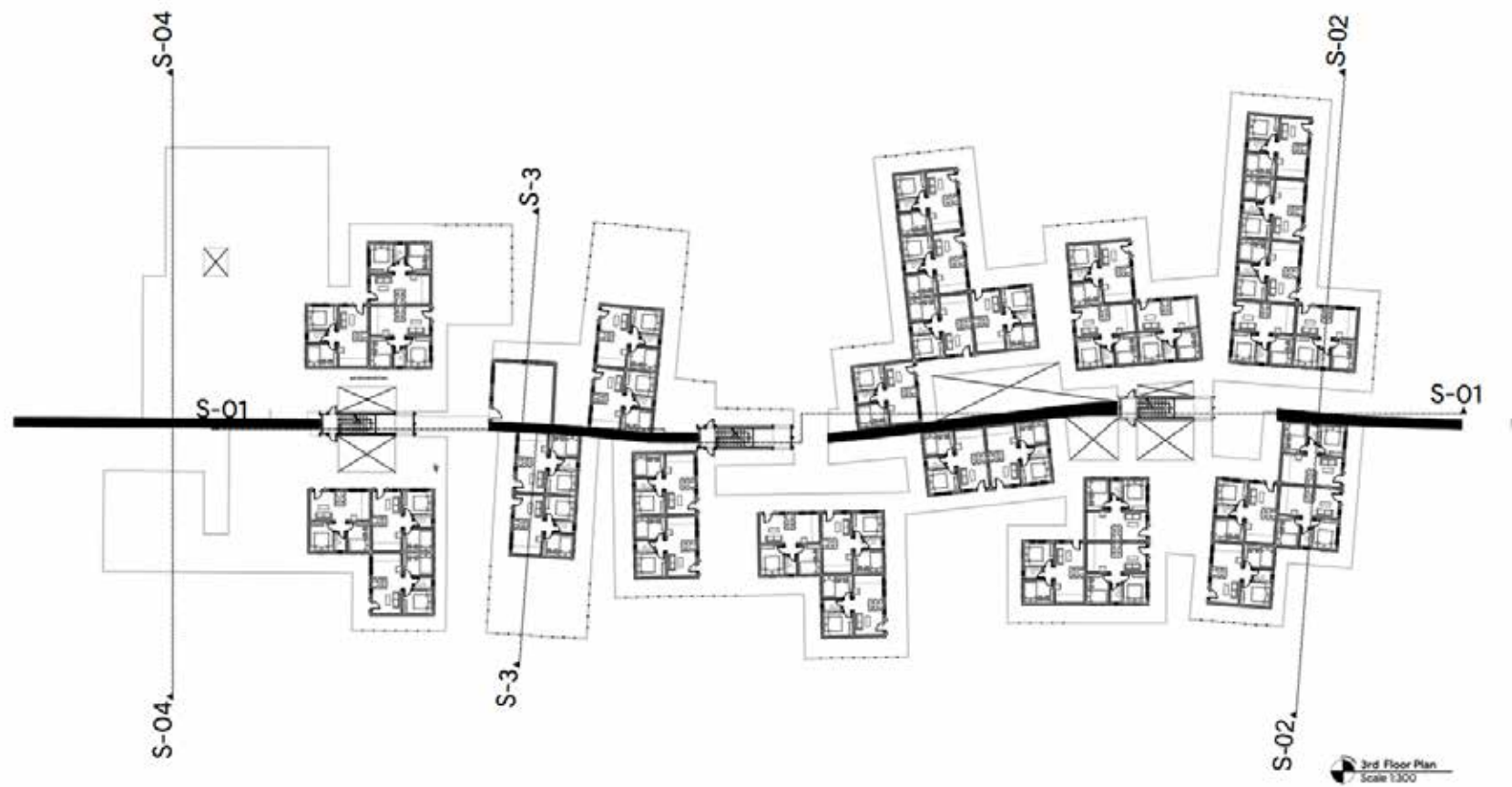
# Design Drawing

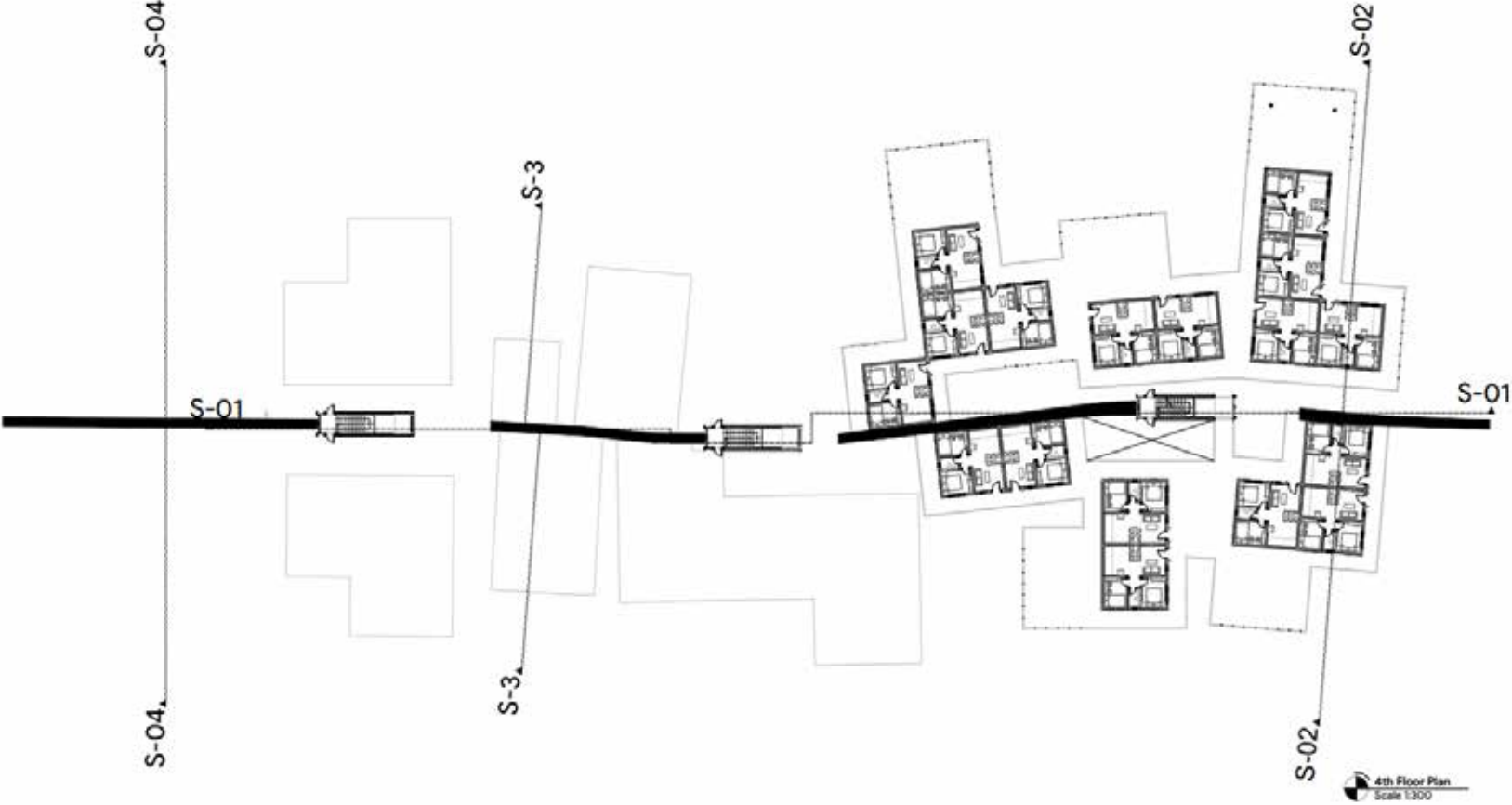








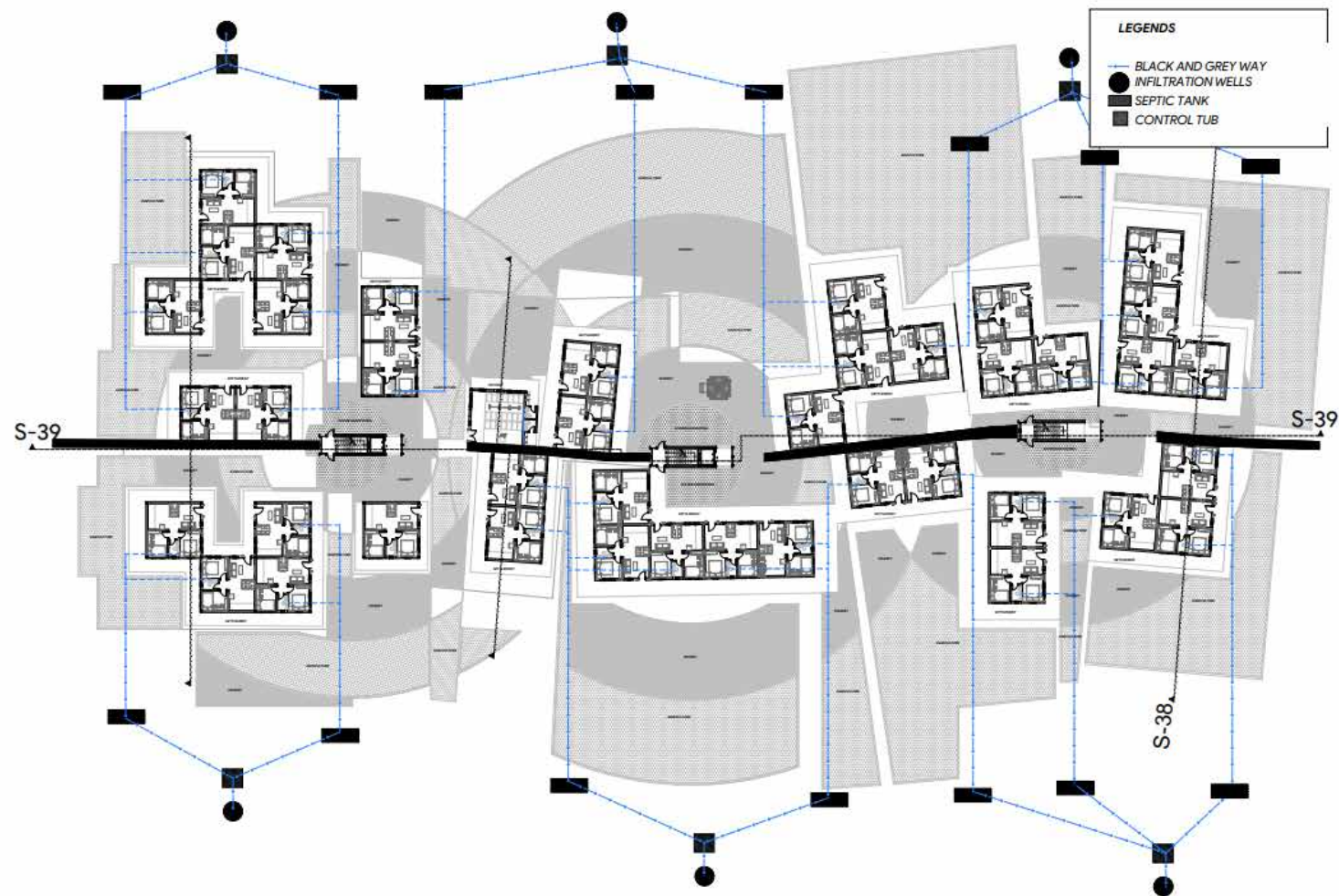




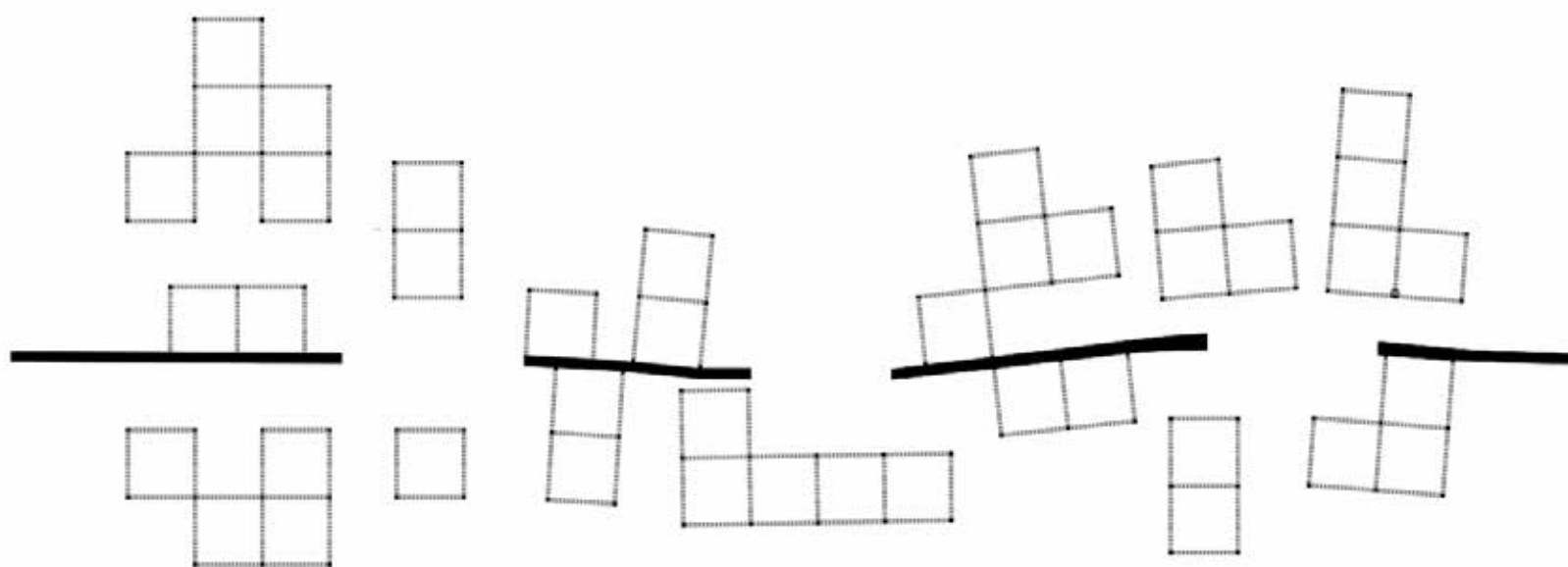




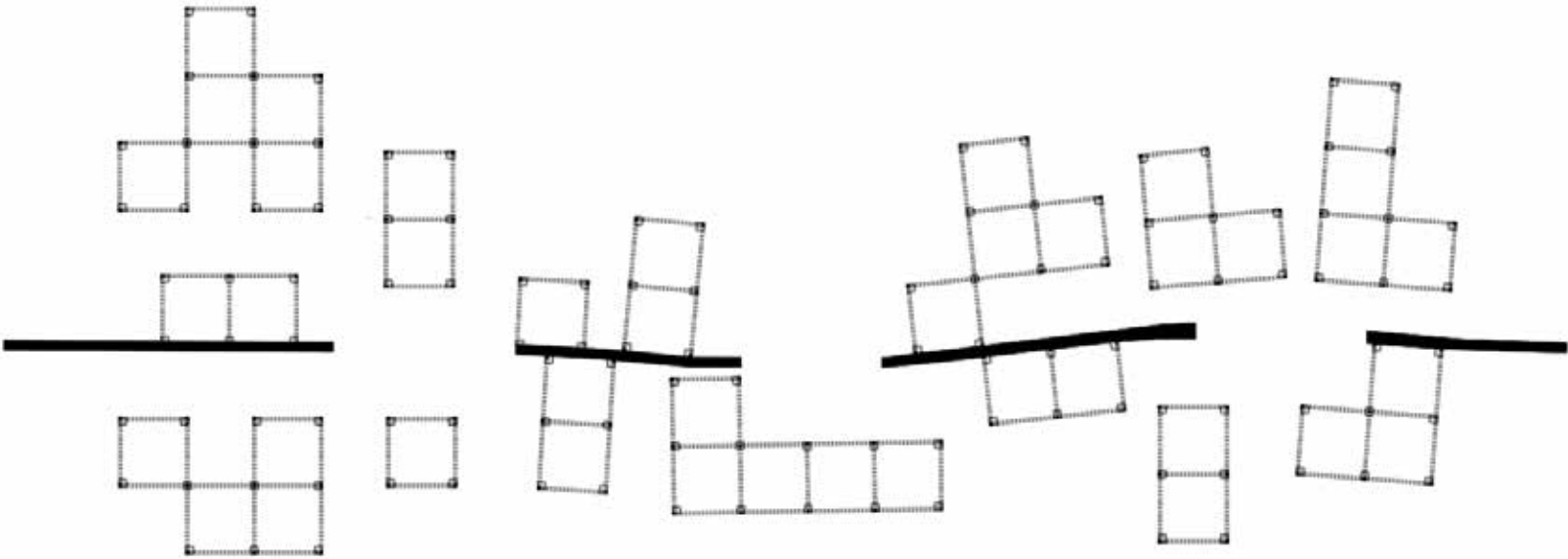
Clean Water Plan



Black and Grey Water Plan  
Scale 1:400

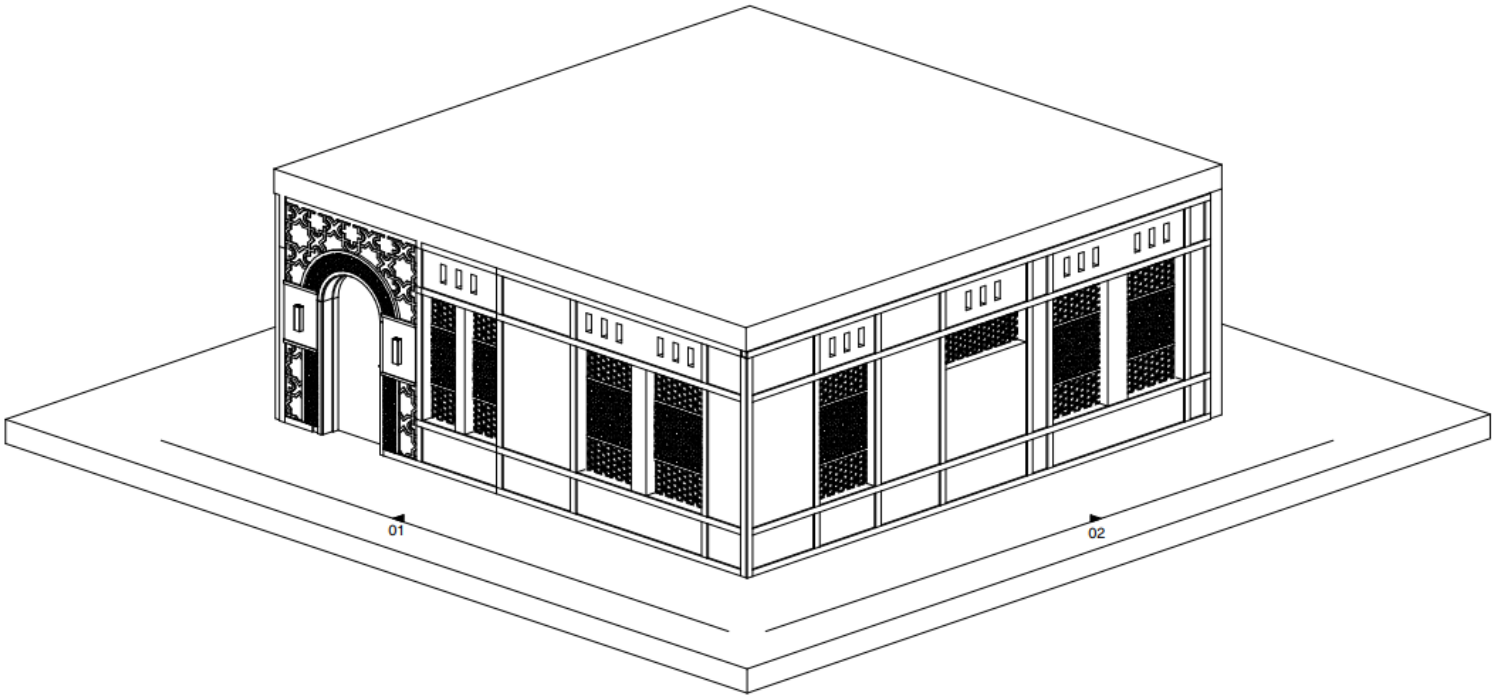


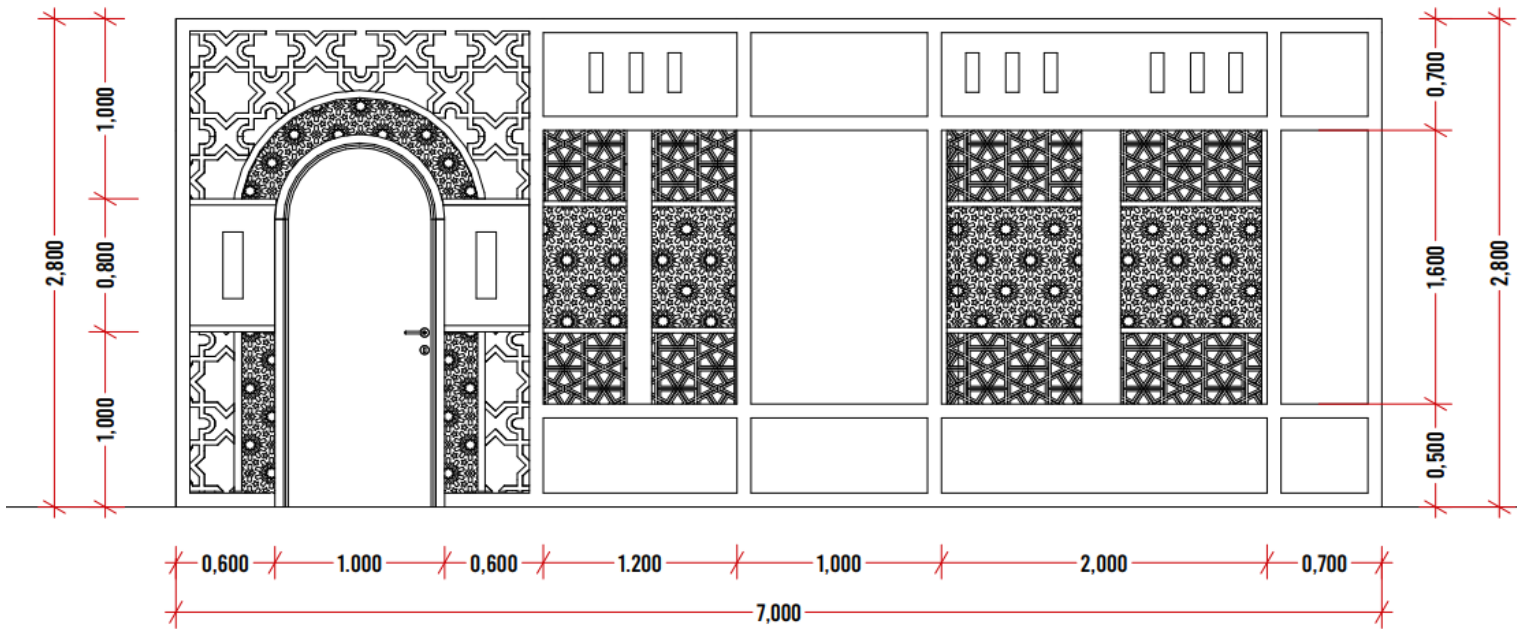
Column and Beam Plan  
Scale 1:300



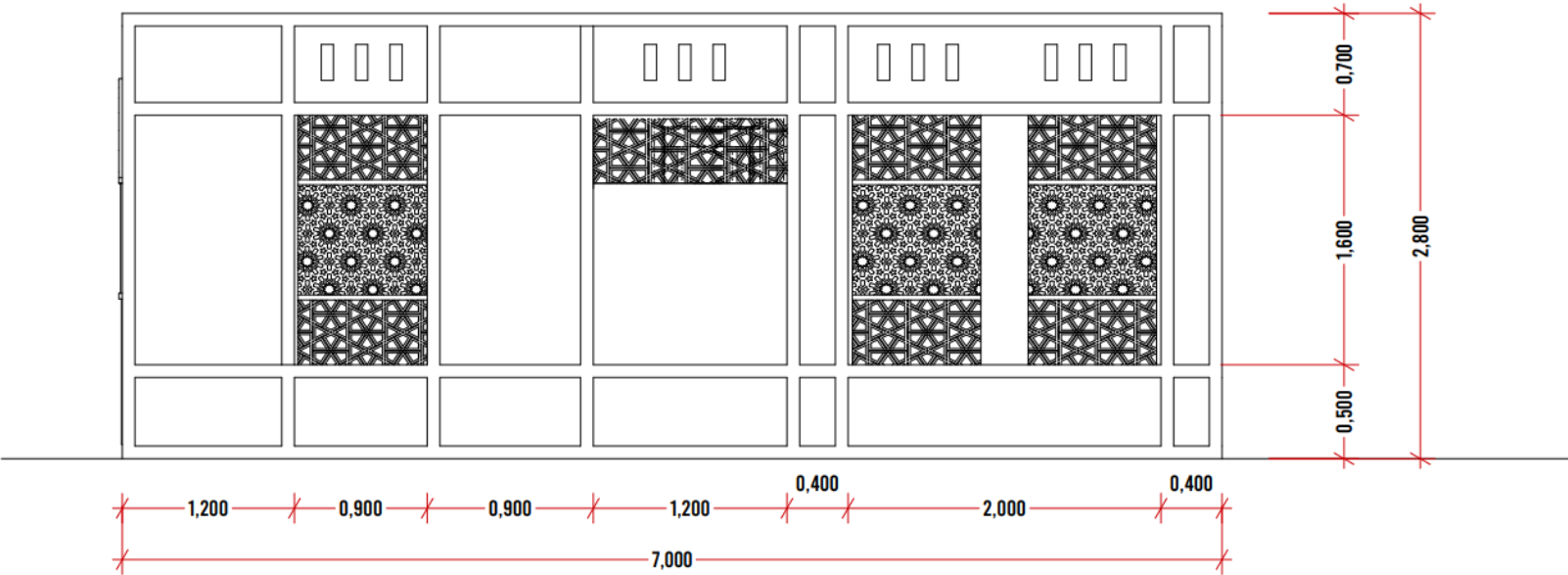
Foundation Plan  
Scale 1:300



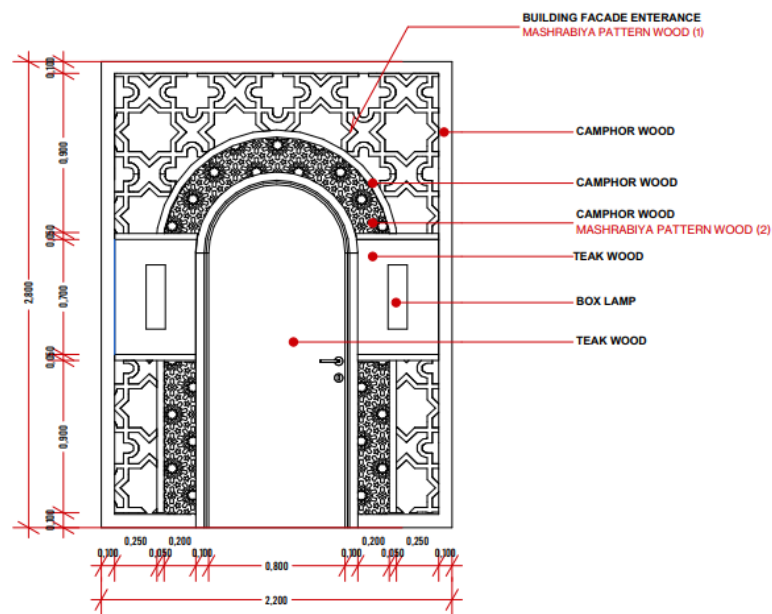
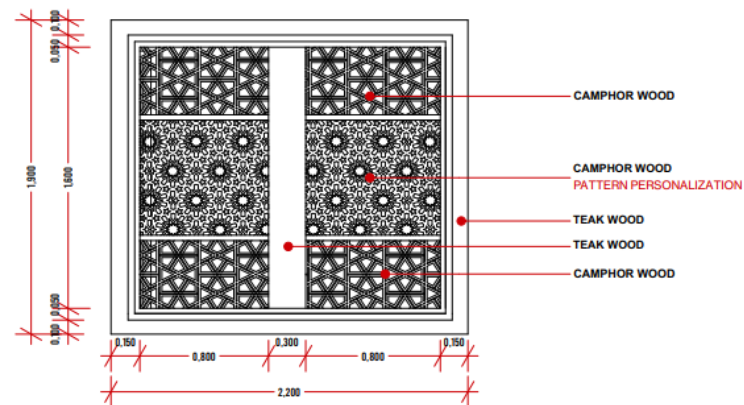


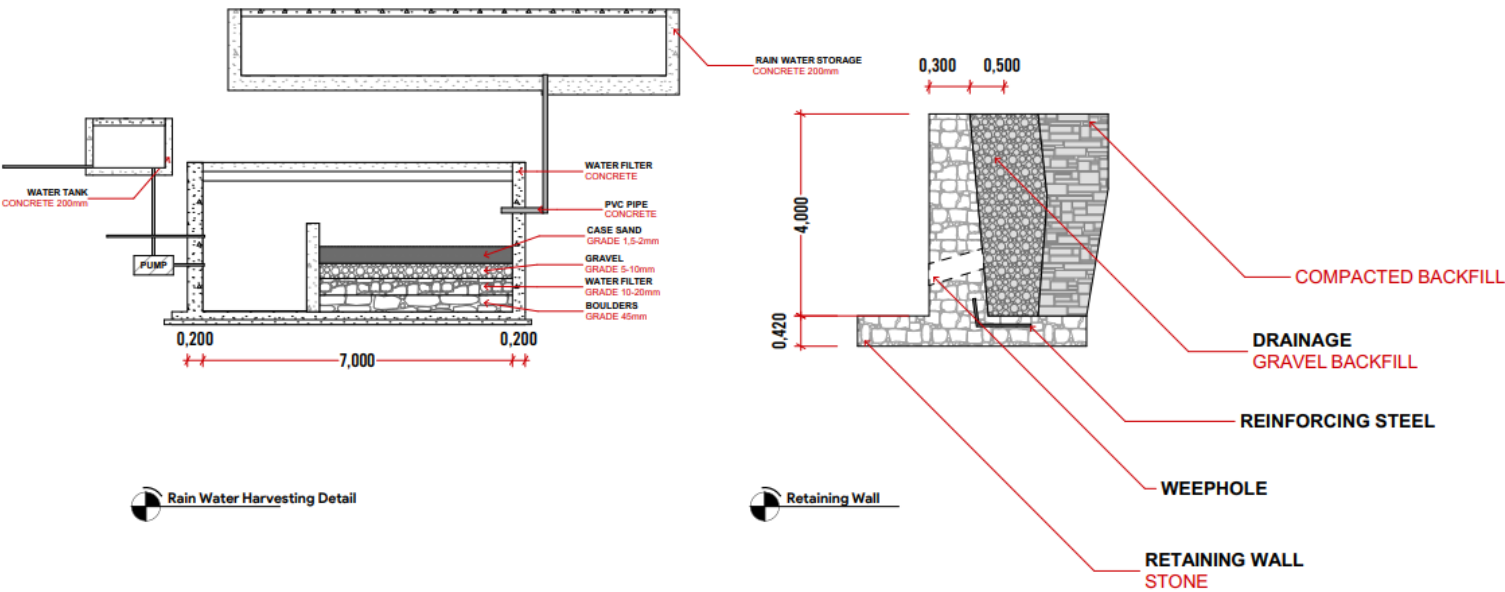


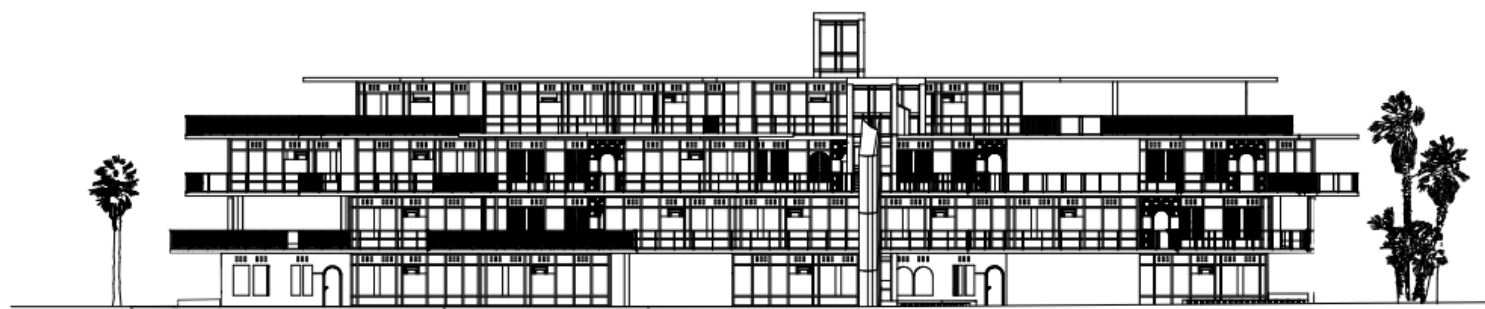
House Unit View 01

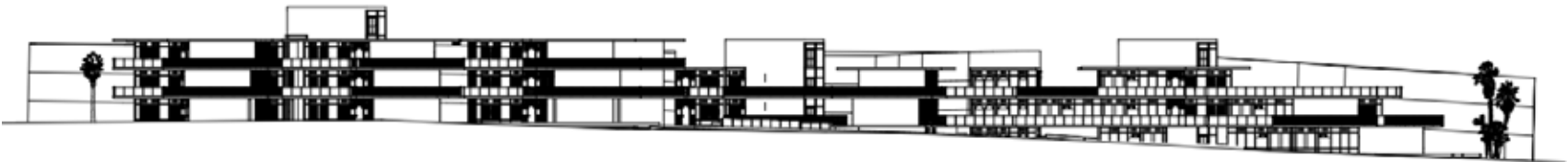


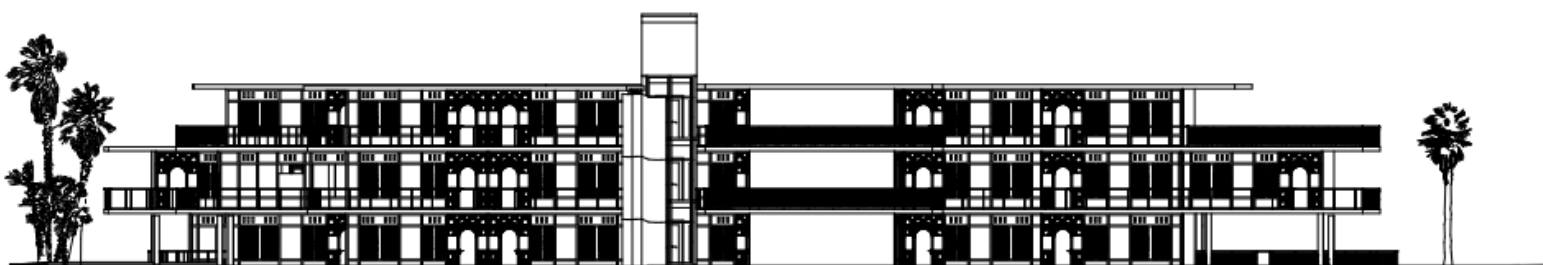
House Unit View 02

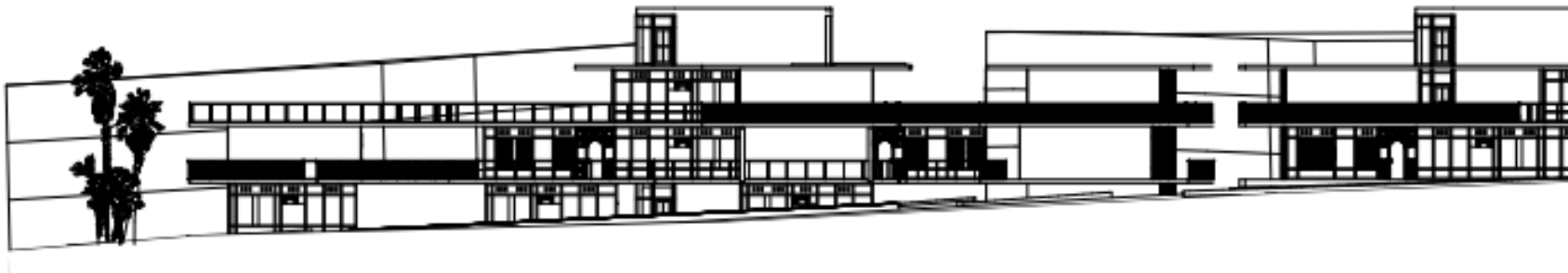




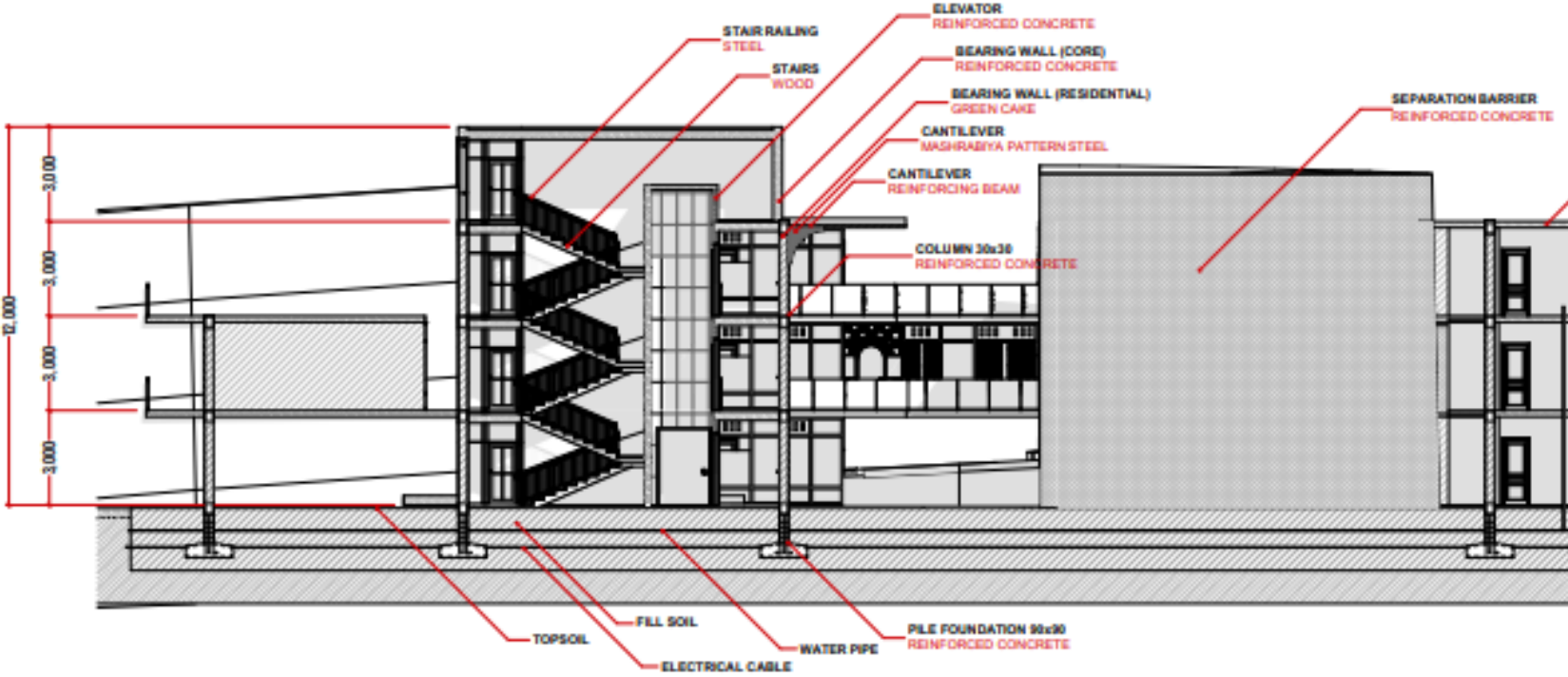


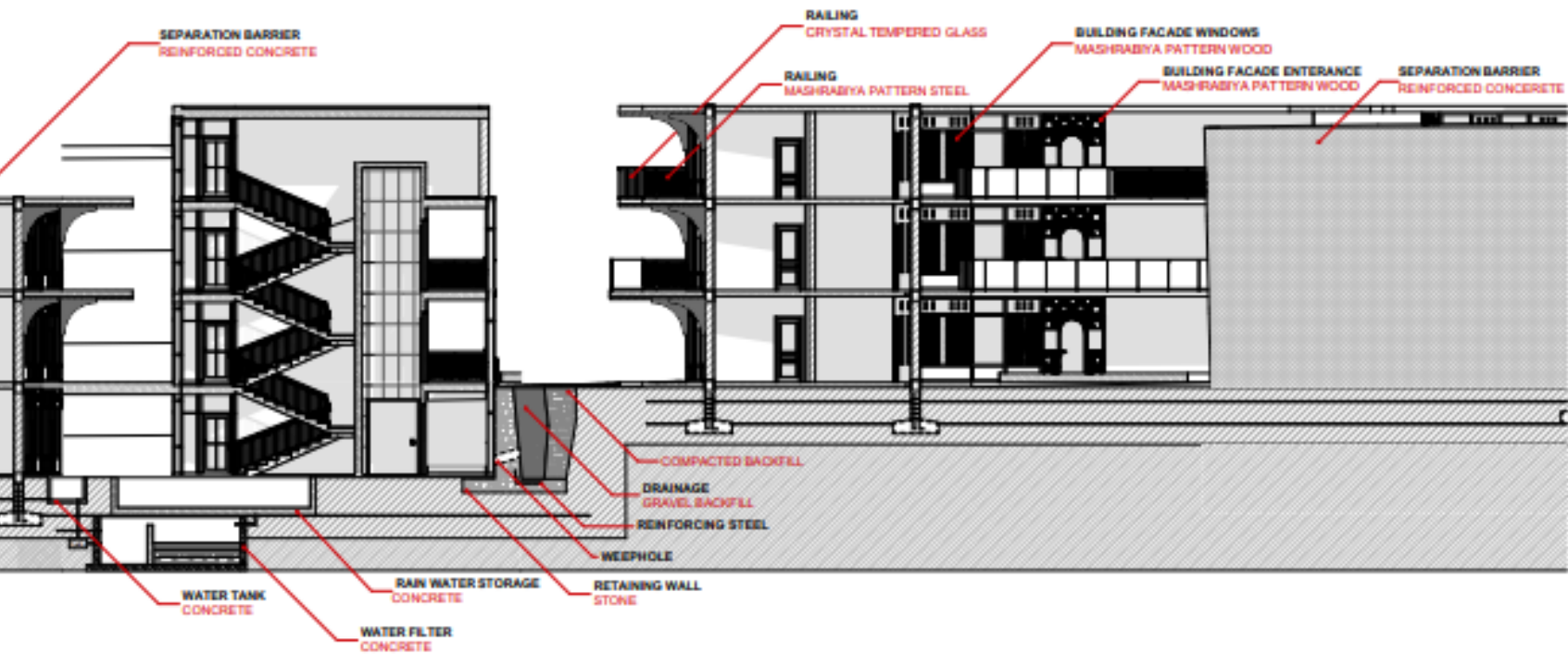


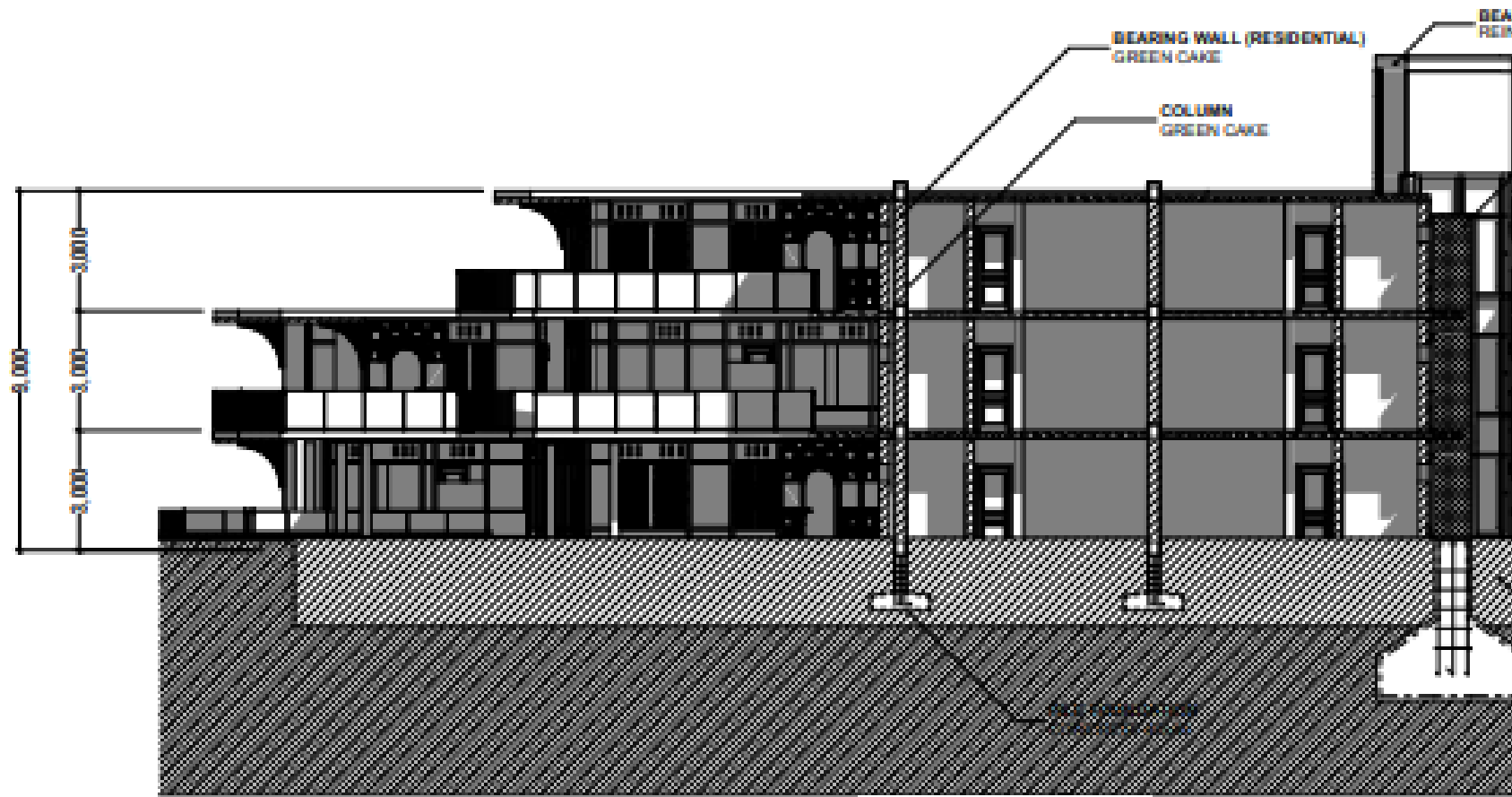


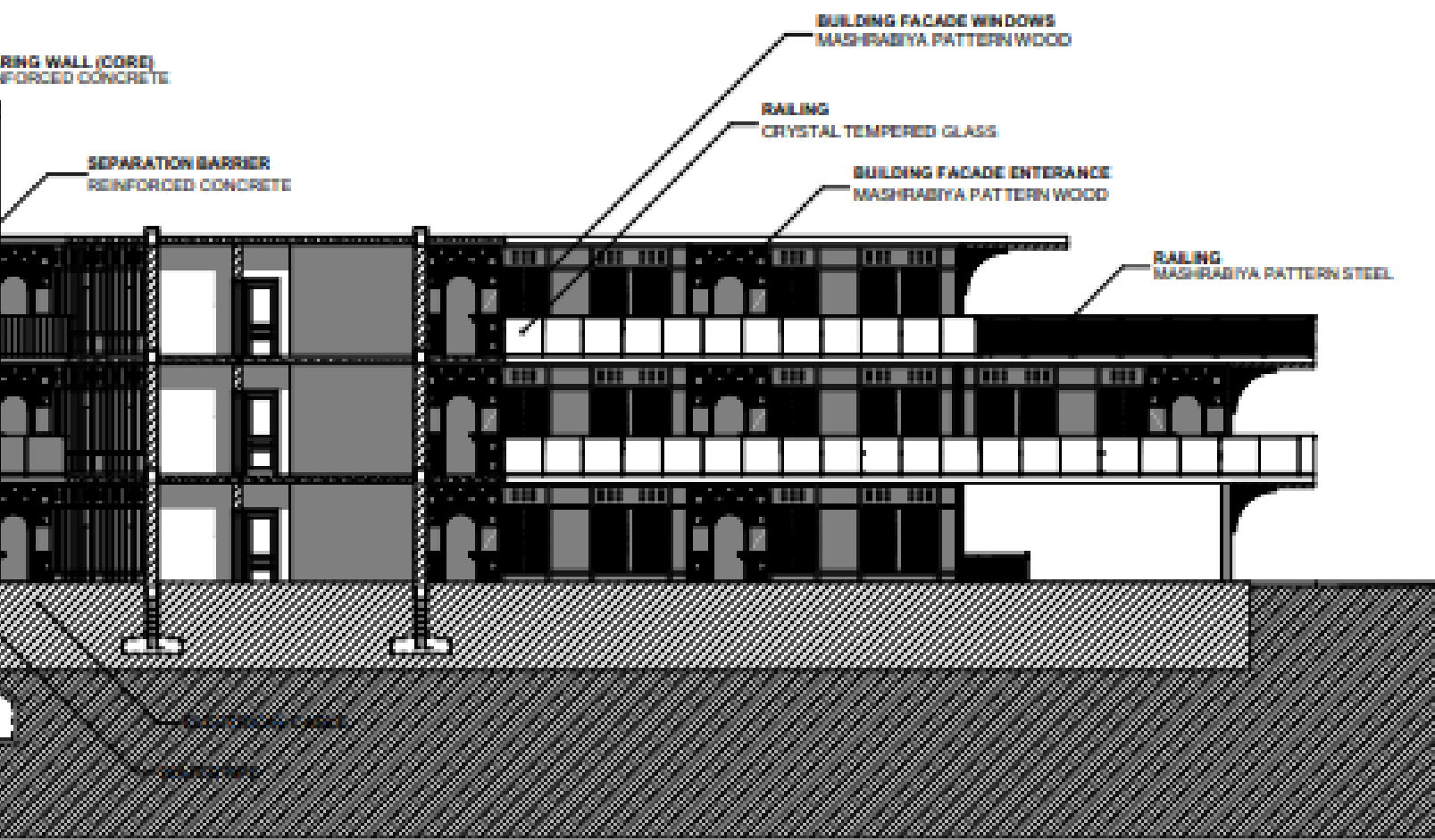








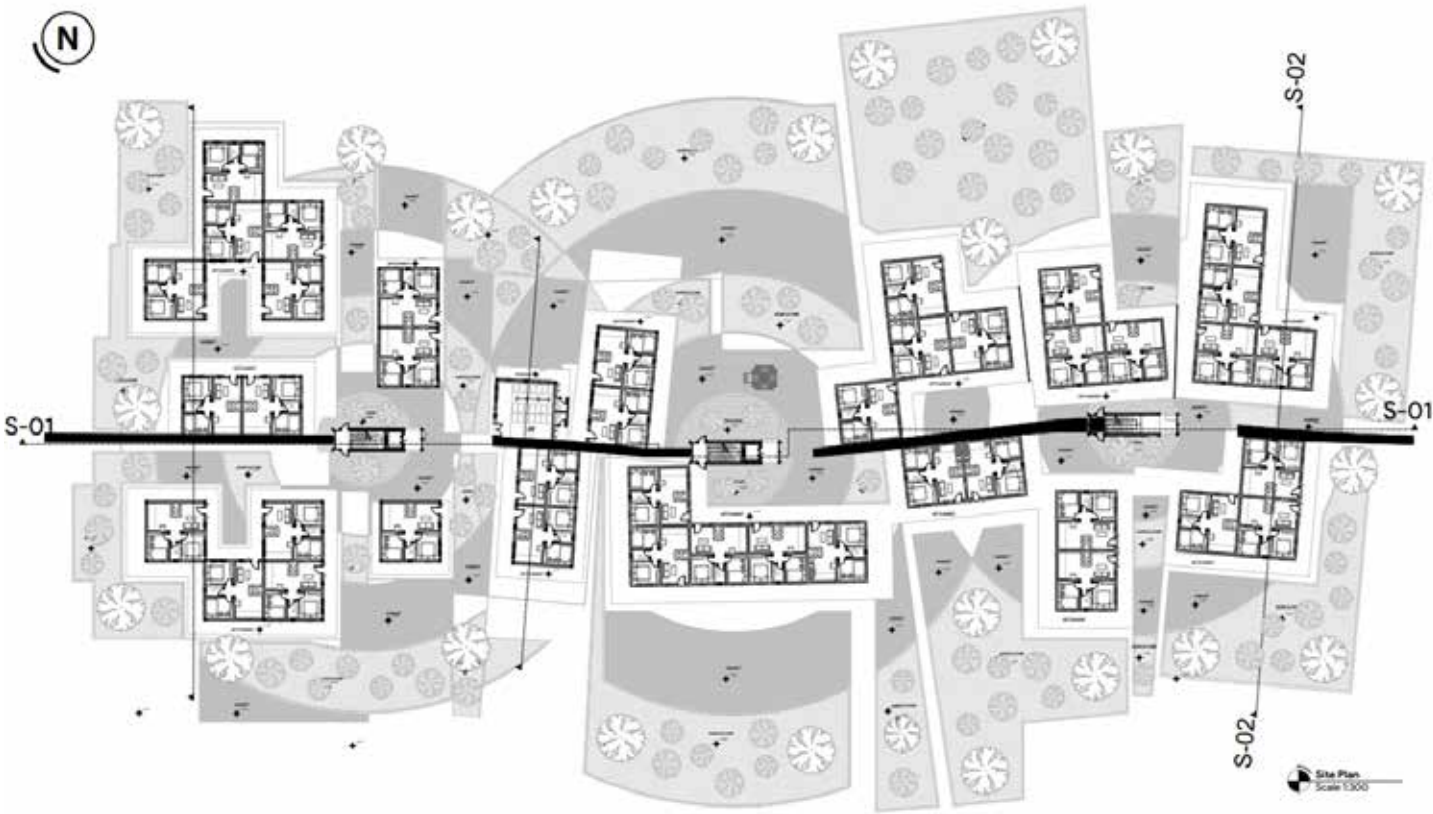


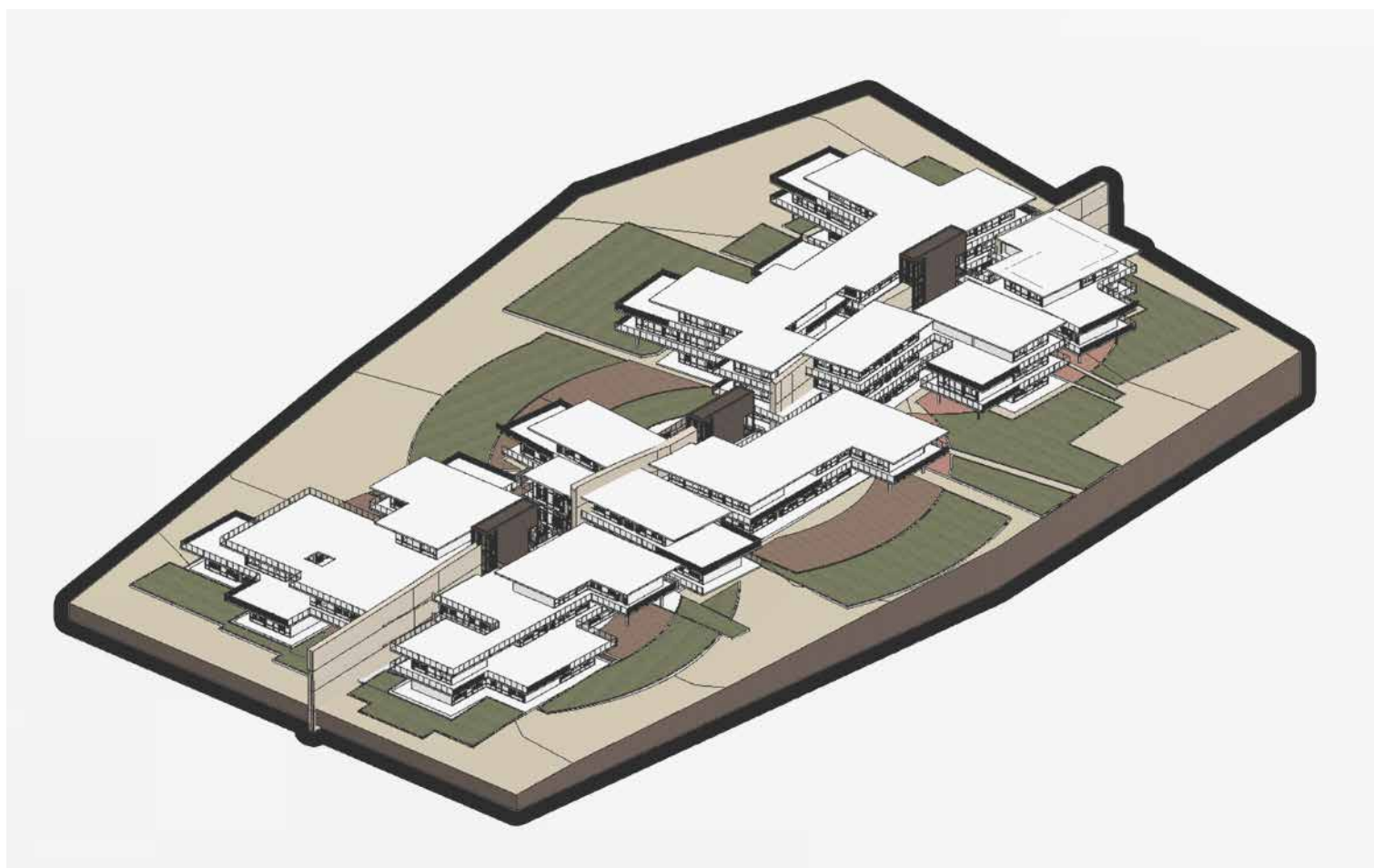


## Accessibility

The Co-Habitant Space is designed to be fully accessible, with wide ramps, tactile paths, and multilingual signage to accommodate users of all ages and abilities. Barrier-free circulation supports inclusive movement throughout the site. These features promote spatial equity—essential in a project centered on reconciliation.

In terms of safety, the design includes clearly marked evacuation routes, fire-resistant materials, and disaster-resilient infrastructure such as rainwater drainage and earthquake-proof foundations. Some modular units also serve as safe rooms during emergencies. Public areas are visually open and well-lit, fostering psychological comfort and reducing fear. Overall, the space is built to be not just livable, but secure, inclusive, and healing.











The market serves as a central hub where residents from both communities can trade goods, share resources, and interact on a daily basis. Its design encourages social exchange, strengthens economic ties, and fosters a sense of unity and coexistence within the community.



Dates Tree

Residential

Buidling Core

Market

Agriculture

Market





Dates Tree

Residential

Human View - South



Market

Agriculture

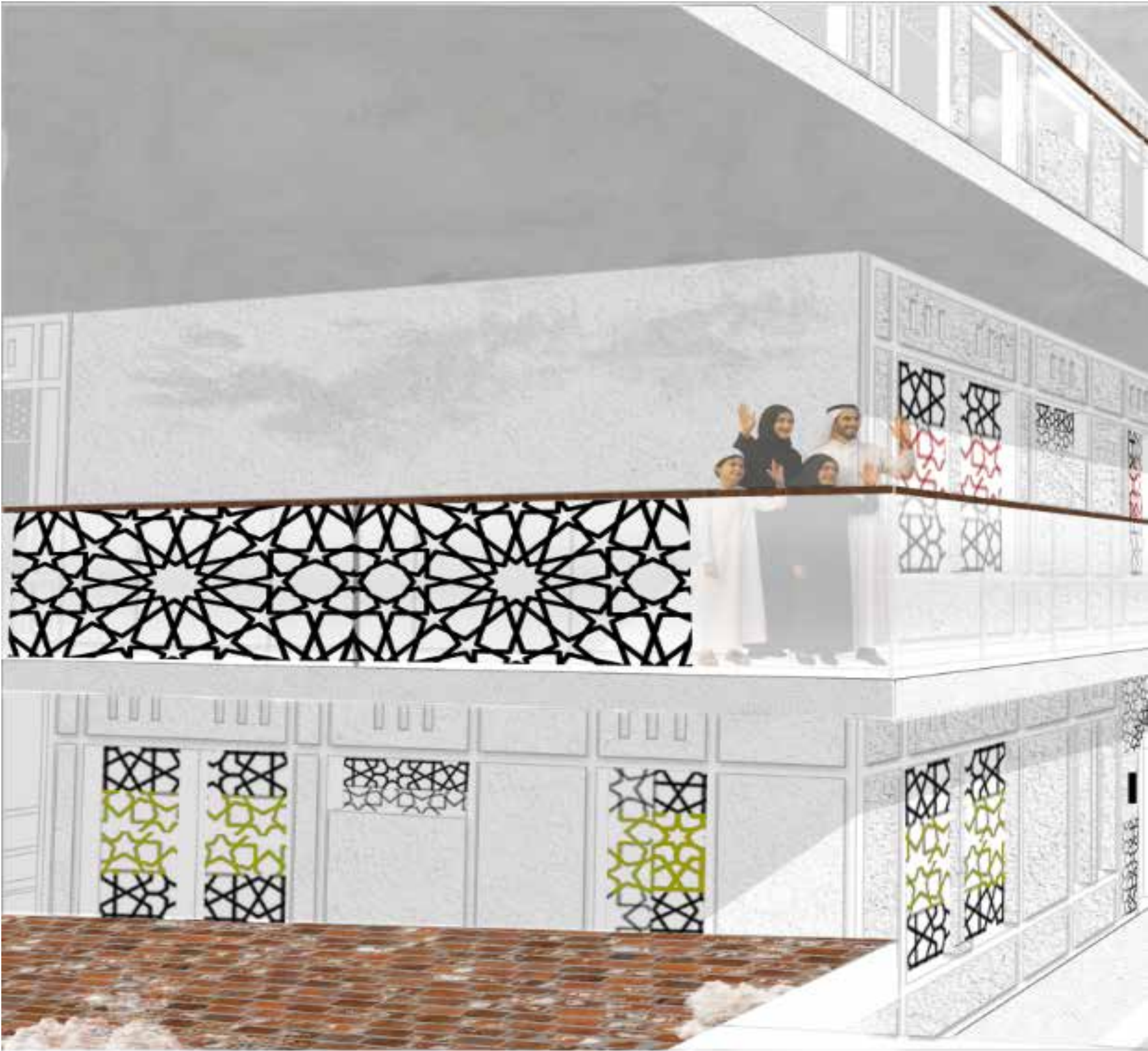
Human View - West



Living Room

The interior design reflects the local architectural style by incorporating mashrabiya panels, which filter natural light to create intricate shadow patterns across the space. These patterns not only enhance visual beauty but also preserve cultural identity while providing functional shading and comfort.









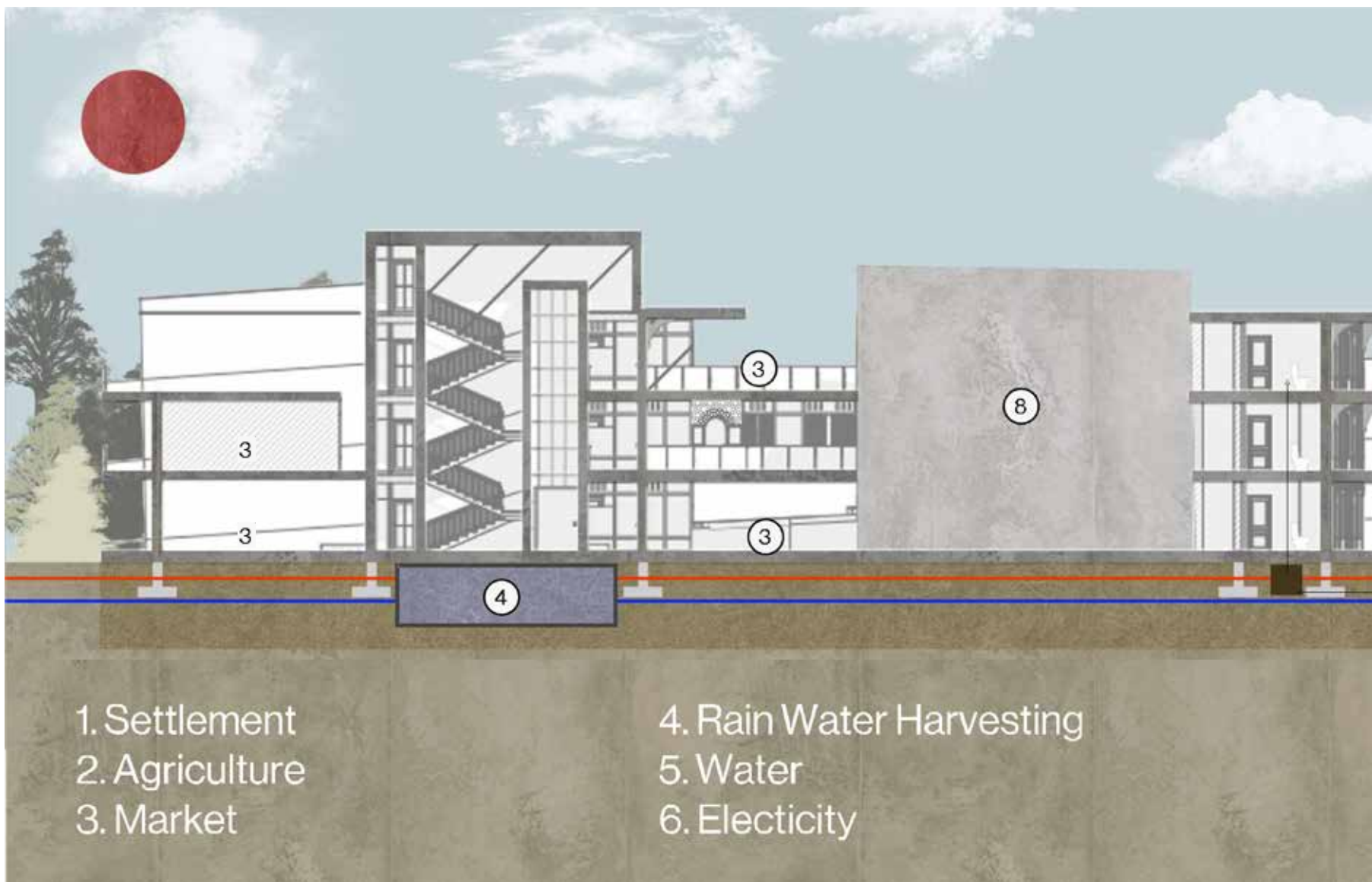
## ⑥ Evaluation and Reflection

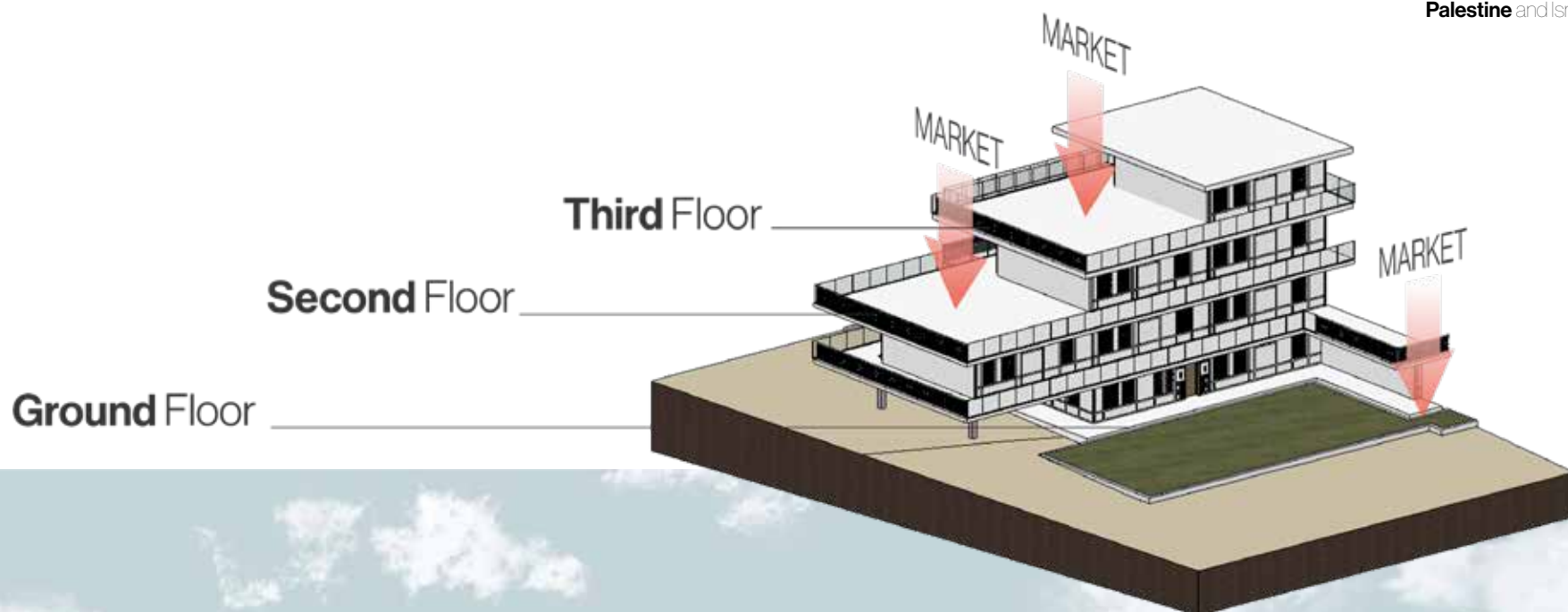
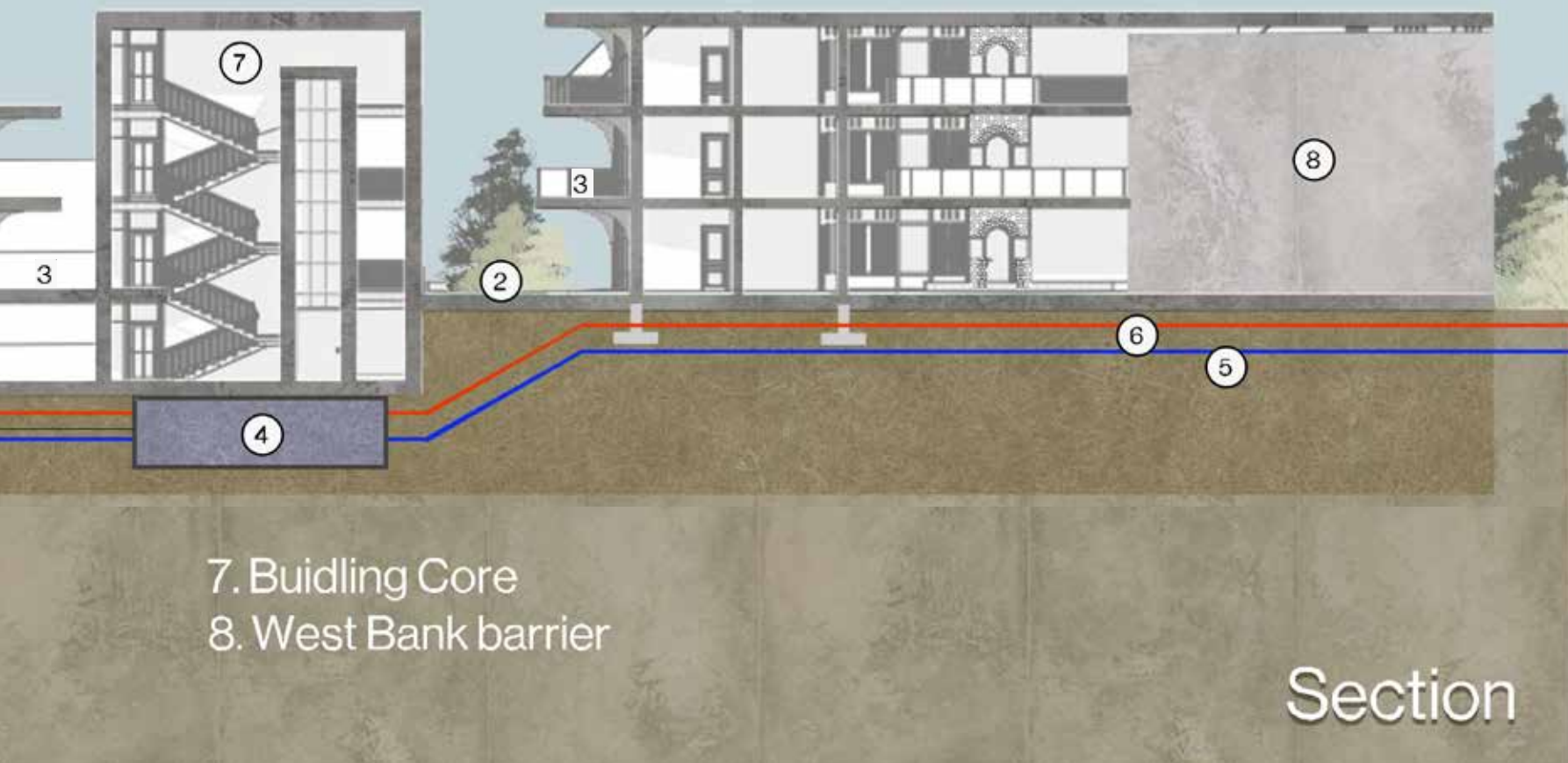
## Accessibility to reach the market and common facilities is not optimal for the people on the second floor

1st Jury: Dr. Ar. Yulianto Purwono Prihatmaji, S.T., M.T., IPM., IAI.

Accessibility to the market and common facilities is designed to be highly flexible and efficient, particularly for residents living on the second floor. Unlike conventional layouts where the market is centralized in just one location, here markets are distributed across different levels,

ensuring that every resident has easy and equal access without the need for long vertical circulation. The market design itself is adaptable, allowing it to expand or contract depending on community needs.



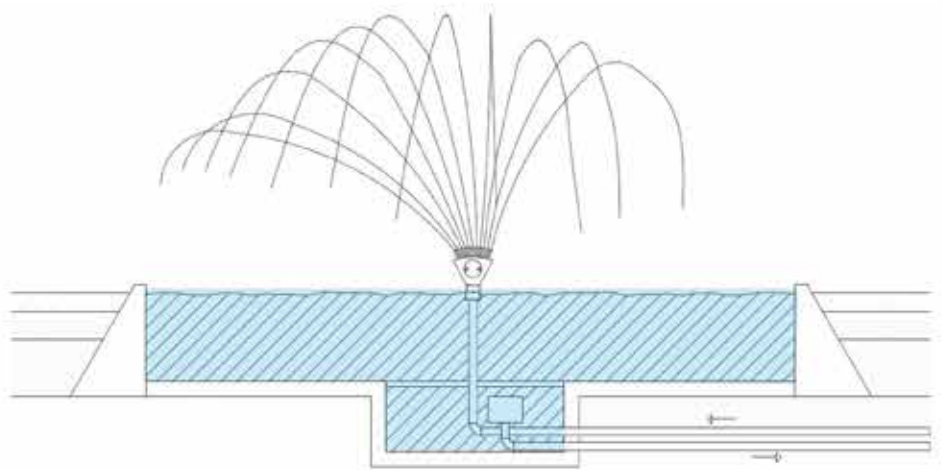


## Climatic response needs to be expressed clearly with the details.

*2nd Jury: Assoc. Prof. Wiryono Raharjo, Ph.D.*

The climate response in this design is addressed through two main strategies: water fountains and rainwater harvesting. The water fountains are placed in communal spaces to provide natural cooling, improve air circulation, and create a comfortable microclimate for residents.

At the same time, rainwater harvesting is integrated into the building core, where rainwater is collected, filtered, and stored in underground tanks. This water can then be distributed to individual units for daily use and irrigation of the surrounding green areas. Together, these systems reduce reliance on external resources, enhance sustainability, and create a resilient environment adapted to the local climate conditions.



G



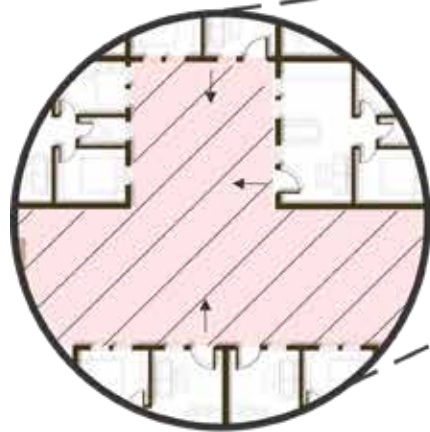
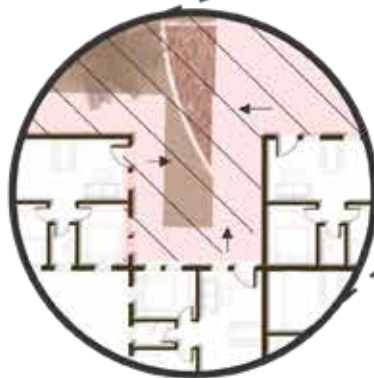
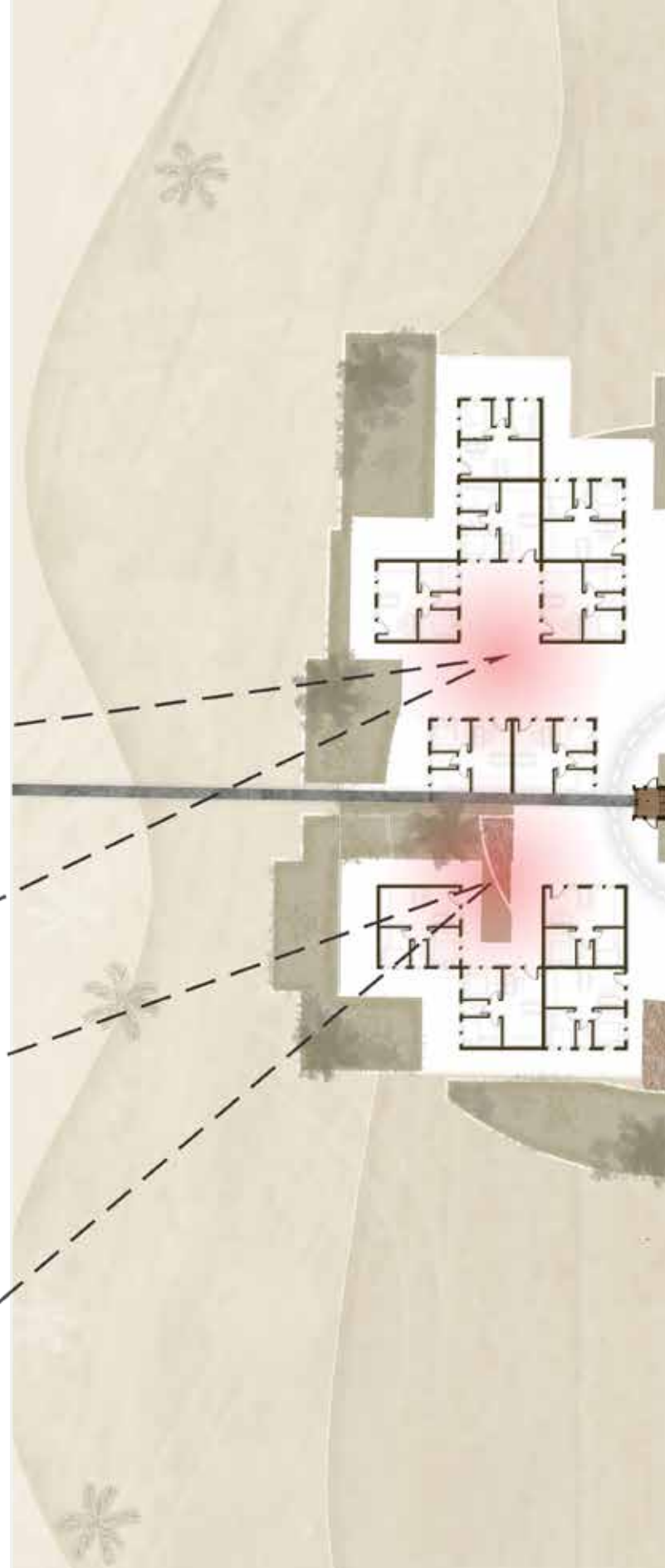


## Micro climate created by innercourt need more explicit

*1st & 2nd Jury*

The microclimate is created by designing an inner court formed through the arrangement of housing units, where the entrances of each unit face one another. This spatial configuration generates a shared courtyard that promotes natural ventilation, increases shading, and reduces heat accumulation.

The inner court not only cools the surrounding environment but also serves as a semi-public space that encourages social interaction among residents. By combining environmental comfort with opportunities for community building, the inner court becomes both a climatic and social asset within the overall design.





SADA Response [Design Brief, Comprehensive, Final Seminar]

| No | Notes from Jurys*                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Adequate Response                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Revised Part (Page)                     |
|----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|
|    | Dr. Yulianto P. Prihatmaji, S.T. , M.T. , IAI, IPM.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                         |
| 1  | <div>1. Who is the owner and commissioner of this project? Is there any reference for the design &amp; location selection? Is there any adequate study of this design proposal?</div> <div>2. What building typology do you purpose? How important is the 'building' with reconciliation?</div> <div>3. What are the design challenges of this project and what are the proposed design solutions?</div> <div>4. What your concepts, design guidelines &amp; design criterias in your project? How to decide&amp; deal with all those?</div> <div>5. Describe your design approaches deal with the PAP Lab concerns?</div> <div>6. Describe a keywords of embed co-existences design, and demonstrate this in your design.</div> | <div>1. UNRWA because they are a neutral party in this issue, guidelines in making shelters are also available in UN documents. The place of this project is on the between Gaza city and Israel with the consideration of Gaza as a city that has a lot of damage and one of the places that are still inhabited by Palestinians and Israelis so that the selection of this place is very correlated. The main references used include Eyal Weizman's Hollow Land, A Civilian Occupation: The Politics of Israeli Architecture, and case studies from Berlin, Belfast, and BosniaHerzegovina.</div> <div>2. The project proposes a Co-Habitant Space, a mixed-use architectural typology that integrates shared cultural, social, and economic spaces for both Palestinians and Israelis. This typology is crucial in reconciliation efforts as it promotes interaction, shared experiences, and mutual understanding through spatial design. Rather than reinforcing separation, the layering approach allows different groups to coexist within adaptable, multi-functional spaces, preventing unilateral claims over territory while fostering a sense of collective ownership.</div> | <div>Pg. 36, 38</div> <div>Pg. 35</div> |

|  |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                |
|--|--|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|
|  |  | <p><b>3. DESIGN CHALLENGES</b></p> <p><b>A. Zoning Always Leads to Segregation</b></p> <p>Segregation often stems from rigid lines, zoning, and physical walls. Regardless of the two-state discourse, these boundaries remain a reality, and similar barriers may persist within Palestine. The question is whether they will be dismantled or transformed into functional spaces that foster integration and serve both communities</p> <p><b>B. Facilities for Those Living Between Two Identities</b></p> <p>Some individuals experience an identity crisis, coming from Palestinian families yet holding Israeli passports, making it essential to provide spaces that address their unique circumstances. This design is intended to be compatible for them while also welcoming anyone willing to live together in harmony.</p> <p><b>DESIGN SOLUTIONS</b></p> <p><b>A. Border, once intended as a means of separation and control, be reimagined and transformed into a functional element that promotes connection, collaboration, and integration between the communities it previously divided.</b></p> | <p>Pg. 106</p> |
|--|--|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|

|  |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                 |
|--|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------|
|  |  | <p>B. Create contextual housing solutions that reflect the character of the people there, adaptability, identity, and functionality to build cohesiveness?</p> <p>4. <b>DESIGN CONCEPT</b></p> <p>1. Perforation – Opening the Wall</p> <p>2. Blurring – Softening the Barrier</p> <p>3. Multilayering – Designing with Layers</p> <p>5. By intervening in the urban structure of the segregation wall, this design approach seeks to transform its role from a symbol of division into a medium of reconciliation. Functionally, the rigid barrier is redefined through perforations, integration of infrastructure, green spaces, and layered communal zones that allow gradual interaction. Philosophically, this shift represents a transition from exclusivity to connectivity, from obstruction to bridge, ultimately shaping an inclusive and dynamic urban space that responds to the complex socio-political realities of the context.</p> <p>6. Keywords of embedding co-existence are <b>integration, adaptability, and shared identity</b>. In this design, the segregation wall is reimagined as structure, infrastructure, and symbol of peace through green walls and art. Housing units are adaptable, able to grow with family needs, while communal spaces like</p> | <p>Pg. 107</p> <p>Pg. 105-120</p> <p>Pg. 35</p> |
|--|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------|

|   |                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                       |
|---|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------|
|   |                                                                                                                                                                                                                                                         | markets, agriculture, and worship areas foster daily interaction and coexistence.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                       |
| 2 | 1. Define design concepts, design criterias and design guidelines to solve design problems.                                                                                                                                                             | 1. DESIGN CONCEPT<br>1. Perforation – Opening the Wall<br>2. Blurring – Softening the Barrier<br>3. Multilayering – Designing with Layers                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | pg. 107 (Design Concept), 121 (Design Criterias), 122 |
| 3 | 1. Is there a housing typology or guidelines for creating housing units?<br>2. Accessibility to reach the market and common facilities is not optimal for the people on the second floor.<br>3. Micro climate created by innercourt need more explicit. | 1. The housing design is adapted from traditional Palestinian housing, reflecting its spatial organization, cultural identity, and flexibility. Elements such as courtyards, adaptable layouts, and incremental growth ensure familiarity and comfort while maintaining authenticity and connection to local daily life.<br>2. Accessibility to markets and common facilities is made flexible and efficient by distributing markets across different levels. This ensures equal access for all residents, including those on upper floors, while the adaptable design allows the market to expand or contract as needed.<br>3. The microclimate is shaped by an inner court created through housing units facing each other. This layout improves ventilation, provides shading, and reduces heat, while also serving as a semi-public space that fosters social interaction, making it both a climatic and social asset. | Pg. 69<br><br>Pg.163<br><br>Pg.167                    |
|   |                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                       |

|   |                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                               |
|---|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|
|   | Ir. Wiryono Raharjo, M.Arch., Ph.D.                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                               |
| 1 |                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                               |
| 2 | <ol style="list-style-type: none"><li>1. Perlu penegasan entry point (titik masuk) perancangan. Apakah diasumsikan bahwa perang fisik masih terus berlangsung atau Gaza sudah dalam posisi gencatan senjata permanen? Ini akan berpengaruh terhadap strategi desain.</li><li>2. Fungsi arsitektur sebagai ruang rekonsiliasi perlu dikaji lebih dalam, terutama faktor sejarah konflik Israel-Palestina.</li></ol> | <ol style="list-style-type: none"><li>1. Design Limitation</li><li>2. Architecture serves as a space for reconciliation by transforming the legacy of conflict into a medium for peace. In the history of the Israeli-Palestinian conflict, architecture has often been used as a tool of control and segregation, such as through separation walls or illegal settlements. However, by creating inclusive spaces that encourage interaction and dialogue, architecture can become a medium for healing social wounds, bridging a painful past with the hope of a peaceful future.</li></ol>                                                                                                                                    | <p>pg. 37</p> <p>pg.11-16</p> |
| 3 | <ol style="list-style-type: none"><li>1. Is the choice of location in Gaza appropriate, because there are no Israelis in Gaza. So maybe it is more appropriate if it is in the west bank where there are still Palestinians and Israelis?</li><li>2. Micro climate created by innercourt need more explicit.</li><li>3. Climatic response needs to be expressed clearly with the details.</li></ol>                | <ol style="list-style-type: none"><li>1. I do agree with the statement, but I still choose gaza because of the consideration about "gaza now", almost all countries want to acquire this land even the arab league initiated by Egypt has made a design for gaza contrary to trump and israel who disagree. So this momentum is right because this land is still up for grabs.<br/><br/>Therefore, instead of me moving the location to not gaza, I chose to move the location to the edge of gaza which is directly adjacent to the israeli territory so that the Palestinian and israeli communities still exist.</li><li>2. The microclimate is shaped by an inner court created through housing units facing each</li></ol> | <p>Pg. 28</p> <p>Pg. 165</p>  |

|  |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                |
|--|--|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|
|  |  | <p>other. This layout improves ventilation, provides shading, and reduces heat, while also serving as a semi-public space that fosters social interaction, making it both a climatic and social asset.</p> <p>3. The climate response in this design uses two strategies: water fountains and rainwater harvesting. Fountains in communal spaces provide cooling, ventilation, and comfort, while rainwater is collected, filtered, and stored in underground tanks for daily use and irrigation. Together, these systems enhance sustainability, reduce resource dependence, and create a climate-resilient environment.</p> | <p>Pg. 167</p> |
|  |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                |

- \*Jurys Note:
- 1. Jurys note from Google Classroom
  - 2. Jurys note from platform of SADA
  - 3. Jurys note from offline seminar

# Attachments



Technical Drawing



APREB



Video Rendering



FADS Response



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E. perpustakaan@uii.ac.id  
W. library.uii.ac.id

### **SURAT KETERANGAN HASIL CEK PLAGIASI**

Nomor: 2718399332/Perpus./10/Dir.Perpus/VII/2025

*Bismillaahirrahmaanirrahiim*

*Assalamualaikum Wr. Wb.*

Dengan ini, menerangkan Bahwa:

Nama : Arinta Azka Hirarki  
Nomor Mahasiswa : 21512022  
Pembimbing : Prof. Dr.-Ing Ilya Fadjar Maharika  
Fakultas / Prodi : Teknik Sipil dan Perencanaan/ Arsitektur  
Judul Karya Ilmiah : Architecture and Reconciliation: A Design of Co-Habitant Space of Palestinians And Israelis

Karya ilmiah yang bersangkutan di atas telah melalui proses cek plagiasi menggunakan **Turnitin** dengan hasil kemiripan (*similarity*) sebesar **13 (Tiga Belas) %**.

Demikian Surat Keterangan ini dibuat untuk dapat dipergunakan sebagaimana mestinya.

*Wassalamualaikum Wr. Wb.*

Yogyakarta, 7/21/2025

Direktur



Muhammad Jamil, SIP.

# Beit As-Salam

A Co-Habitant Space for Palestinians and Israelis

The ongoing Israeli-Palestinian conflict has led to significant physical, social, and psychological fragmentation, particularly in areas like the Gaza Strip, where urban spaces have become divided by restricted mobility, segregated infrastructure, and destroyed housing. This project aims to not only rebuild what has been lost but also to transform these spaces into mediums for reconciliation, coexistence, and resilience.

Proposing on the concept of Co-Habitant Space, the project introduces a layered, inclusive approach that fosters social interaction, cultural exchange, and environmental sustainability. Moving away from rigid zoning, it uses a flexible spatial approach to support shared use of spaces by different communities. Rooted in both historical urban narratives contemporary needs, community participation, offers an alternative vision for post-conflict urbanism that emphasizes coexistence, sustainability, and dignity for all.

## Site Location, Gaza



## Design Strategy



**1. Perforation - Opening the Wall**  
The segregation wall, once isolating two communities, is transformed into a connector by making holes. Controlled openings allow visual and physical interaction, marking the first step toward Palestinian-Israeli integration.

## Design Problem / Why Co-Habitant?



## Design Criteria/Component



**2. Blurring - Softening the Barrier**  
The wall is blended with housing structure, infrastructure, and vertical circulation, softening its presence and transforming it into a functional, less dominant part of the shared environment.



**3. Multilayering - Designing with Layers**  
Multiple spatial layers balance shared, semi-private, and separate spaces, enabling flexible coexistence that reflects real-life interaction and preserves both connection and privacy.



Student:  
Ariana Azka Hirani

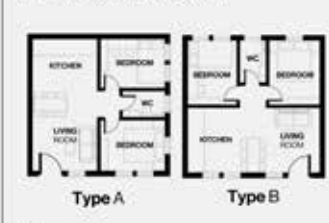
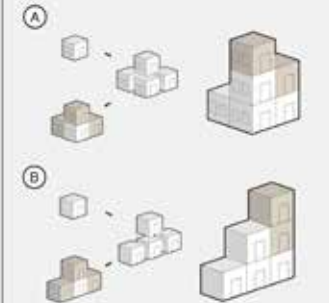
Supervisor:  
Prof. Dr.-Ing. Ar. Ir. Iyia Fadiar Mahanka, MA, UAE

Laboratory:  
PAP - Final Architecture Design Studio



## Housing Exploration

**Expandable Housing**  
The expandable design – both horizontally and vertically – reflects the evolving needs of residents with diverse family structures and traditions. By enabling outward or upward growth, it accommodates future changes such as new family members, economic activities, or additional functions. This flexibility ensures relevant, sustainable, and resilient as the community develops over time.



Expandable House expands vertically and horizontally with the condition that the walls are not openings.

**Structural Composition with Green**  
The building's main structure uses materials, starting with 30 cm-thick. Thickness reduces to 25 cm on the upper levels, minimizing weight, optimizing material use without sa-

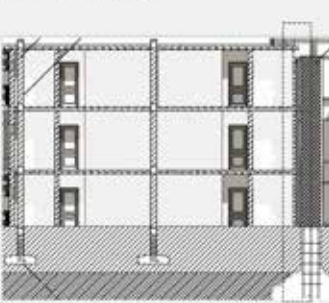


Section of a traditional Palestinian house with thick walls that become



## Barrier Exploration

**The Segregation Barrier as Structural Housing and Historical Asset**  
The segregation barrier, constructed from reinforced concrete with a thickness of 1 meter and a height of 9 meters, possesses the structural strength needed to support housing development. Instead of demolishing it, the barrier can be repurposed as part of the building's structural system, transforming its role from a symbol of division into a functional asset while preserving it as a historical legacy.



The barrier is used as a structure and the walls are coated with clay as a traditional Palestinian finishing material.

**The Segregation Barrier as Building**  
The segregation barrier as a building or circulation hub that integrates stairs within each compound, it not only provides a symbol of division into connects different spaces.



Student:  
Ariana Azka Hirani

Supervisor:  
Prof. Dr.-Ing. Ar. Ir. Iyia Fadiar Mahanka, MA, UAE

Laboratory:  
PAP - Final Architecture Design Studio

**Green Cake Material**

Green Cake, a sustainable material, is used for the walls at the base for stability. The second floor and 20 cm on top improve structural efficiency, and sacrificing strength or safety.

**Green Cake**



Green Cake is a sustainable material made from local earth and water. It is used for the walls at the base for stability. The second floor and 20 cm on top improve structural efficiency, and sacrificing strength or safety.

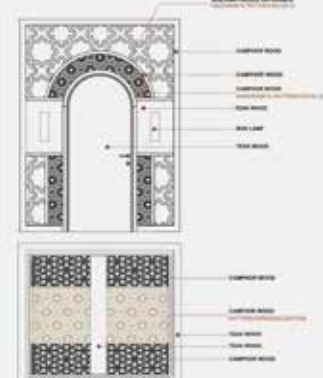
**Personalized Design for Each Unit**

Each housing unit is personalized with mashrabiyas-inspired patterns that preserve local identity while offering beauty and shading. Distinct color schemes add vibrancy, foster ownership, and encourage residents to maintain their homes.



**Building Core**

The building core is strategically integrated into the existing barrier wall, serving as the main vertical circulation hub within the design. It houses essential access components such as staircases and elevators, allowing residents and visitors to move efficiently between different levels of the structure. Positioned within the wall, this core not only defines space but also redefines the wall's role—from a symbol of division into a central element of connectivity and mobility within the co-habitant environment.



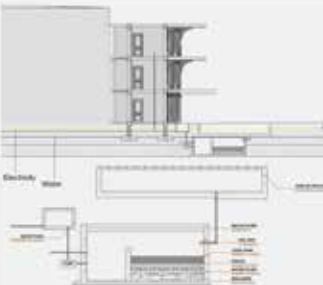
**Core**

The core, functioning as the primary vertical circulation hub, is strategically positioned within the barrier wall. It provides structural stability but also serves as a functional architectural element that connects the different levels of the building.

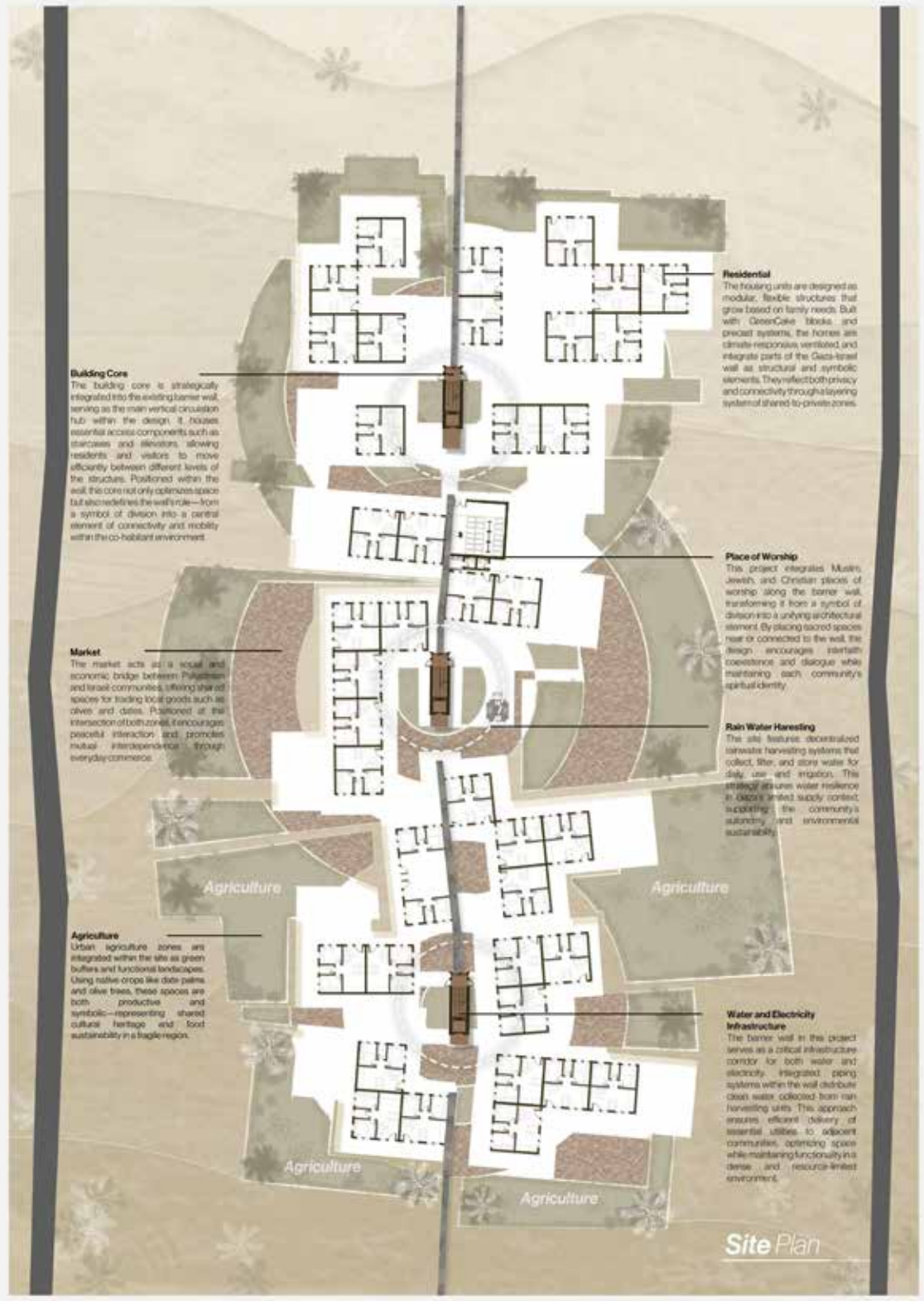
**Building Core**



**Water and Electricity**



Water and electricity run underground, with rainwater collected, filtered, stored in unit tanks, and excess directed into the ground.



**Residential**

The housing units are designed as modular, flexible structures that grow based on family needs. Built with Green Cake blocks and precast systems, the homes are climate-responsive, ventilated, and integrate parts of the Gaza-Israel wall as structural and symbolic elements. They reflect both privacy and connectivity through a layering system of shared to private zones.

**Place of Worship**

This project integrates Muslim, Jewish, and Christian places of worship along the barrier wall, transforming it from a symbol of division into a unifying architectural element. By placing shared spaces near or connected to the wall, the design encourages interfaith coexistence and dialogue while maintaining each community's spiritual identity.

**Rain Water Harvesting**

The site features decentralized rainwater harvesting systems that collect, filter, and store water for daily use and irrigation. This strategy reduces water reliance on external supply, supporting the community's autonomy and environmental sustainability.

**Water and Electricity Infrastructure**

The barrier wall in this project serves as a critical infrastructure corridor for both water and electricity. Integrated piping systems within the wall distribute clean water collected from rain harvesting units. This approach ensures efficient delivery of essential utilities to adjacent communities, optimizing space while maintaining functionality in a dense and resource-limited environment.

**Market**

The market acts as a social and economic bridge between Palestinian and Israeli communities, offering shared spaces for trading local goods such as olives and dates. Positioned at the intersection of both zones, it encourages peaceful interaction and promotes mutual interdependence through everyday commerce.

**Agriculture**

Urban agriculture zones are integrated within the site as green buffers and functional landscapes. Using native crops like date palms and olive trees, these spaces are both productive and symbolic—representing shared cultural heritage and food sustainability in a fragile region.

**Site Plan**

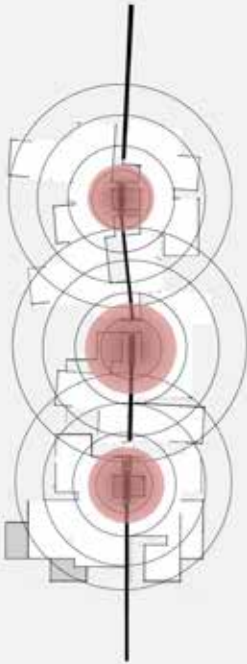
Landscape Concept



Landscape Illustration, Sketched by the Author

Landscape as Signage

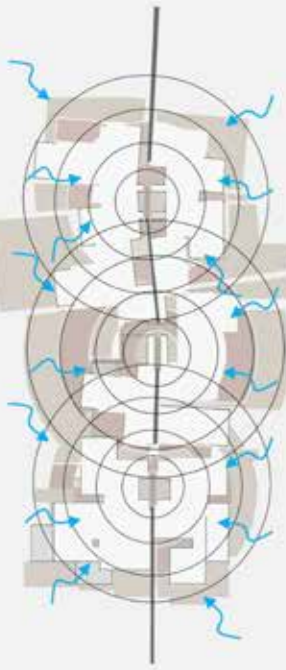
The landscape is designed to function as a prominent signage element, clearly marking the center of each compound. By adopting a radial pattern that encircles the building core, the design naturally draws attention to the areas where the main vertical access points—such as stairs and elevators—are located. This not only enhances wayfinding within the site, making navigation more intuitive for residents and visitors, but also contributes to the overall aesthetic serenity of the compound.



The radial landscape layout further creates a sense of order and centrality, reinforcing the building core as a focal point of activity and connectivity.

Landscape as Infrastructure Guideline

The landscape is designed to serve both aesthetic and functional purposes, acting as a guide for water and electricity routes. Water channels are directed straight to green areas for efficient irrigation, remaining unobstructed by buildings to ensure smooth flow. Additionally, the landscape also functions as a pathway for rainwater, directing it into the rainwater harvesting storage for later use.



By integrating these infrastructure elements into the landscape design, the system becomes more harmonious, environmentally responsive, and user-friendly.

Green Belt and Market Position

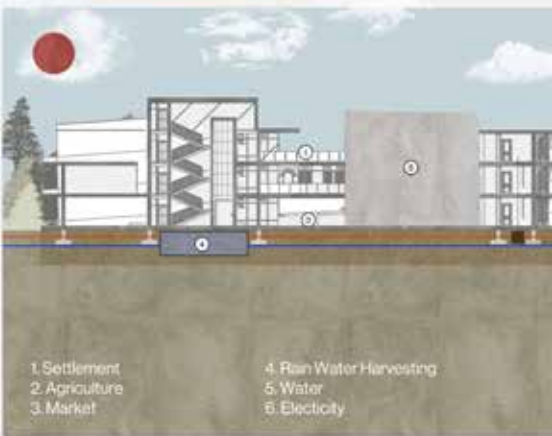
The Green Belt is formed by placing agricultural areas around the perimeter of the compound, while maintaining a central green space to provide natural cooling and enhance comfort. The market is strategically positioned at the center, serving as the main communal hub where residents can gather, interact, and strengthen social connections.



The Green Belt encircles the compound, with a central market as the main hub for gathering and interaction.



This design creates an environment that naturally encourages interaction, with pathways, green areas, and communal spaces arranged to foster meetings, collaboration, and social connection, promoting inclusivity and co-existence.



- 1. Settlement
- 2. Agriculture
- 3. Market
- 4. Rain Water Harvesting
- 5. Water
- 6. Electricity



Housing personalization allows each unit to reflect its residents' character through masliniya-inspired patterns and varied color schemes. This preserves cultural identity, enhances visual diversity, and fosters ownership and pride among occupants.

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# Reflection

In the journey of writing this thesis, countless challenges have been faced, and this architectural idea was not born overnight, but rather through the many life processes the author has gone through. During university, the author actively engaged in social activities with **KAMMI (Kesatuan Aksi Mahasiswa Muslim Indonesia)**, voicing social issues, including the struggle of Palestine. From this series of experiences, the thought emerged: **what if architecture could be used as a tool for peace, instead of being a tool of war as it often is today?**

Ultimately, independence is the right of every nation, including the Palestinian people. Genocide and war must be opposed by anyone who has the capacity to think and feel, and peace must be the call that unites us. With this thesis, let it stand as a witness that Palestine is not alone. There will always be people who rise to support, one after another. Perhaps freedom will not come today, tomorrow, or the next day, but surely it will come. Whatever your profession, **never stop speaking about Palestine – because the wounds of Palestine are the wounds of us all.**

- Arinta Azka Hirarki





Interview with a female student (**Reem Mohammed Arada**) from the Faculty of Medicine at UII who is originally from **Palestine**

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