

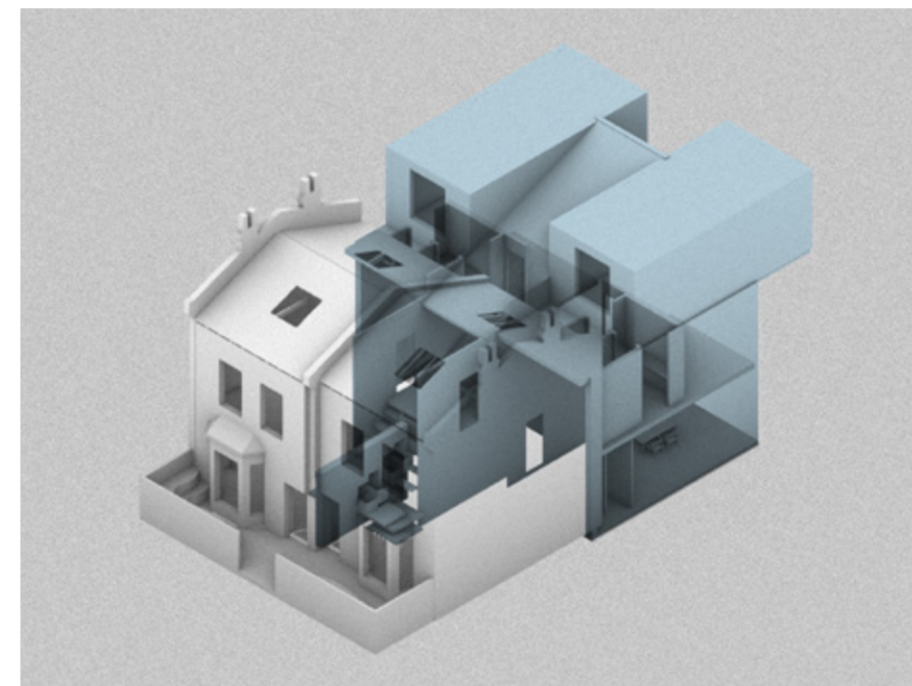
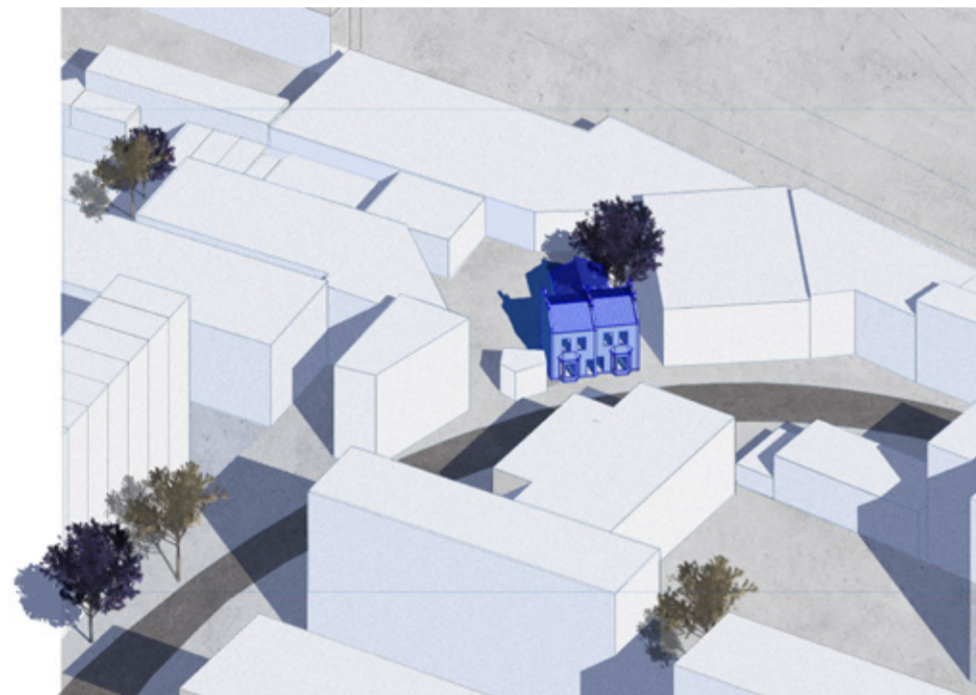


UNIT 10 SHIYI SU

Living the Void

Shelter Reimagined

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How To Define A New Design Space

In recent years, with the outbreak of the COVID-19 pandemic and the increasing frequency of extreme weather events such as typhoons, home isolation has become a part of everyday life. These challenges may persist or even intensify in the future, leading to further extensions of time spent at home. In this context, this project aims to explore how residential spaces can adapt to evolving living environments.

Set in a future where extreme weather events are frequent, people are forced to use their homes as shelters. A house must not only meet the basic needs of daily life during isolation but also possess flexibility, enabling seamless transition between everyday living and emergency modes. It should accommodate daily activities while also transforming into a fully functional, safe, and comfortable self-sufficient system in times of crisis.

Therefore, this project focuses on the multifunctionality of residential spaces and psychological support for residents, redefining traditional housing as a sustainable living environment that combines social interaction spaces and emotional comfort.

Additionally, this project aims to inspire or encourage people to begin thinking about and valuing new lifestyles for the future.

U9 Recap

How can spatial design be used to turn our own homes into shelters during extreme weather events, which provide physical and psychologically positive environments during prolonged periods of isolation.

Introduction

What does shelter mean to you?

When "shelter" "shelter" entered the lexicon in the early 19th century, it was used to describe a place of refuge. The word "shelter" has since become a verb, meaning to protect or shield from harm. This is a common theme in the design of shelters, which are often designed to provide a sense of safety and security.

The frequency of extreme weather and its far-reaching impact have increased in recent years. This is due to a combination of factors, including climate change, deforestation, and urbanization. These factors have led to an increase in the number of extreme weather events, which are often more severe and longer-lasting than in the past.

What does it mean to be sheltered? For us, it means a sense of safety and security. It means a place where we can go when we need it, where we can feel protected and supported. It means a place where we can be ourselves, where we can be vulnerable, and where we can be helped.

What is Shelter

Shelters are an essential part of infrastructure and design in a disaster context. They provide a sense of safety and security, and they are often designed to be resilient and adaptable. Shelters can be used in a variety of ways, from providing temporary housing to providing long-term shelter.

Design for the critical role that shelters play in disaster response. Shelters are often designed to be resilient and adaptable, and they are often designed to be used in a variety of ways. Shelters can be used in a variety of ways, from providing temporary housing to providing long-term shelter.

Ultimately, the best way to design a shelter is to design it for the people who will be using it. Shelters should be designed to be resilient and adaptable, and they should be designed to provide a sense of safety and security.



Figure 1: A collage of images showing various types of shelters, including tents, temporary housing units, and community centers.

Using these elements, I found that the nature behind these elements are closely related to one another.

Recent studies have shown that climate change is causing global warming, leading to an increase in extreme weather events. This is due to a combination of factors, including climate change, deforestation, and urbanization. These factors have led to an increase in the number of extreme weather events, which are often more severe and longer-lasting than in the past.

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When the frequency of extreme weather events increases, people are often forced to move to safer areas. This is often done through government programs, such as the National Flood Insurance Program. However, these programs are often limited in scope, and they often do not provide enough support for people who are displaced.

With the frequency of extreme weather events increasing, it is important to design shelters that can provide a sense of safety and security. Shelters should be designed to be resilient and adaptable, and they should be designed to provide a sense of safety and security.

Multifunctional periods of isolation, activity and connectivity challenge people's mental state. It is important to design shelters that can provide a sense of safety and security. Shelters should be designed to be resilient and adaptable, and they should be designed to provide a sense of safety and security.

What is Extreme Weather

Extreme weather events are those that are more severe than what is considered normal for a given area. These events can be caused by a variety of factors, including climate change, deforestation, and urbanization. Extreme weather events can have a significant impact on people's lives, and they can often be life-threatening.

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Home Isolation

Home isolation is a common experience for many people during extreme weather events. It can be a challenging experience, and it can often lead to feelings of loneliness and isolation. However, there are ways to make home isolation a more positive experience.

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Figure 2: A map of the United Kingdom showing the frequency of extreme weather events.

United Kingdom

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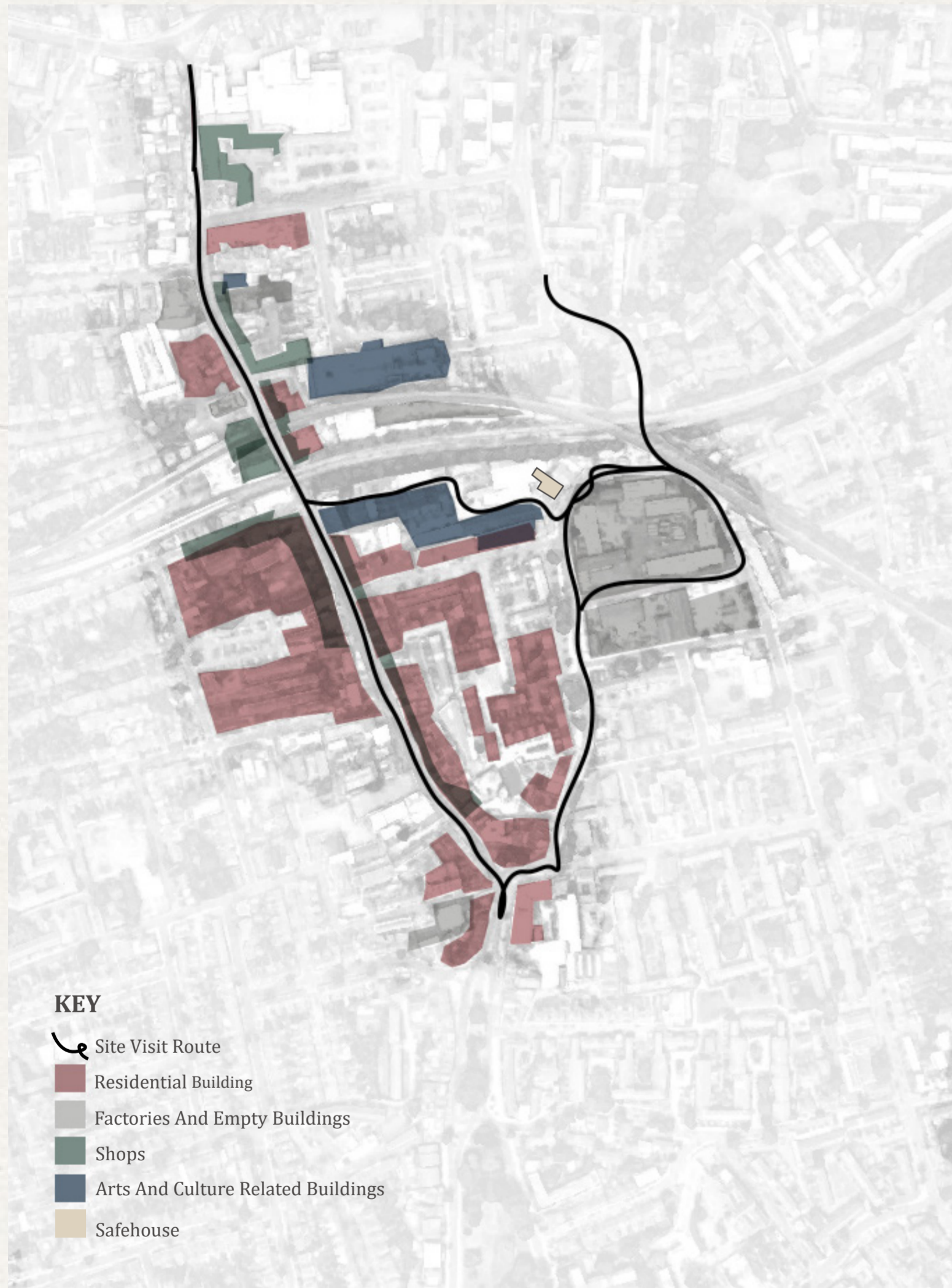
In Unit 9, I explored how spatial design can transform our homes into shelters during extreme weather events, providing a positive environment for both mind and body during prolonged periods of isolation. Through my research, I focused on three core areas: the nature and types of extreme weather events, the concept and design principles of shelters, and the psychological and spatial impacts of home isolation.

By analyzing real-world cases and design precedents, I found that effective shelter design must not only consider physical protection but also prioritize comfort, adaptability, and the ability to maintain mental and physical well-being in the absence of external support. I learned that creating a sense of safety and happiness through spatial elements such as light, materials, zoning, and flexibility is crucial during prolonged isolation.

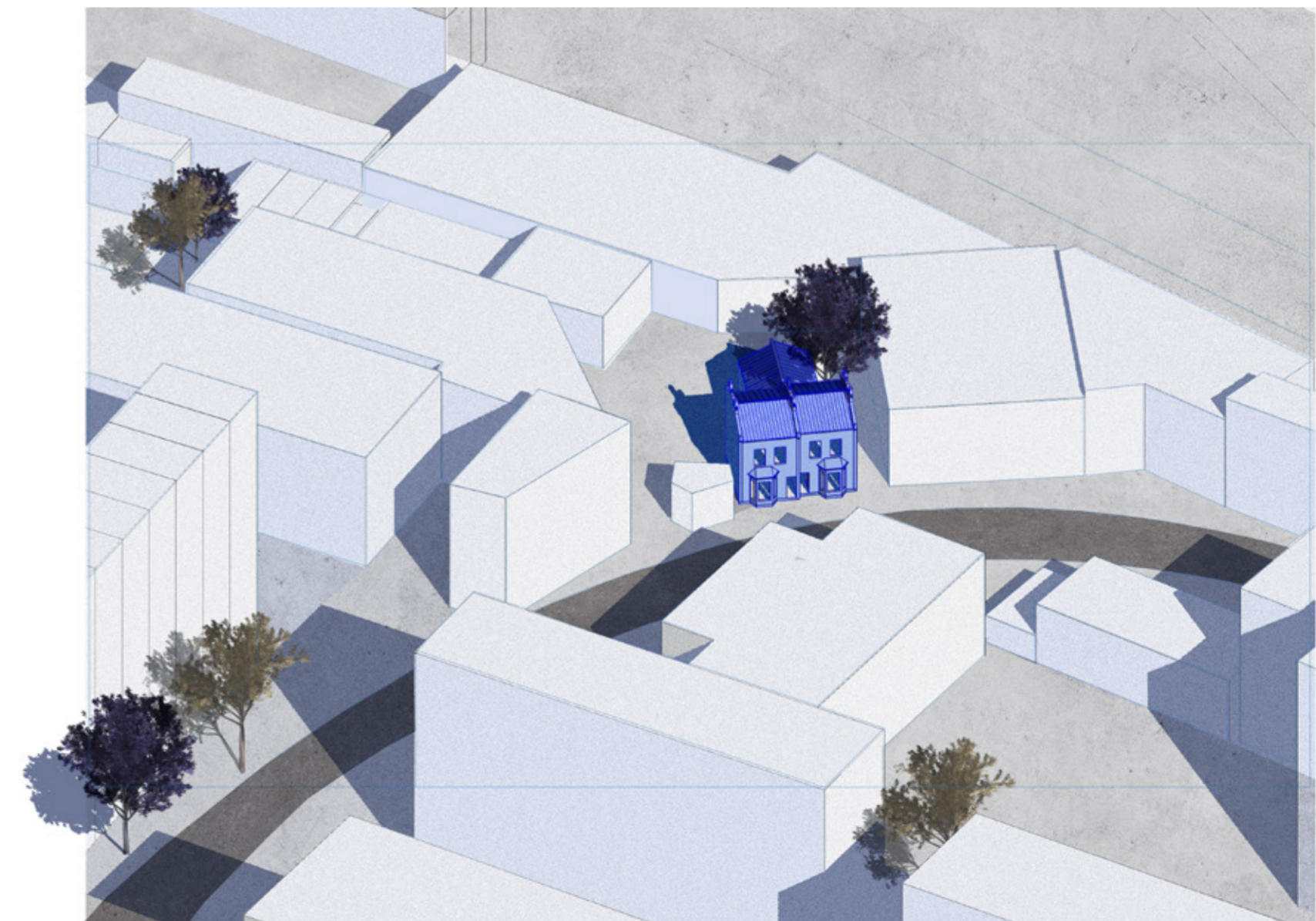
These insights have shaped my vision for Unit 10: to further develop spatial strategies that transform domestic spaces into multifunctional and sustainable environments—not only ensuring survival during crises but also maintaining long-term psychological and emotional well-being.

Site Analysis

Safehouse Surrounding Buildings and Sunlight Analysis



Map showing the users and different type of building surrounding the Safehouse.



The relationship between the safe house and surrounding buildings.

Internal Layer Of Safehouse

Elevation Collage And Varies Layers Of Safehouse

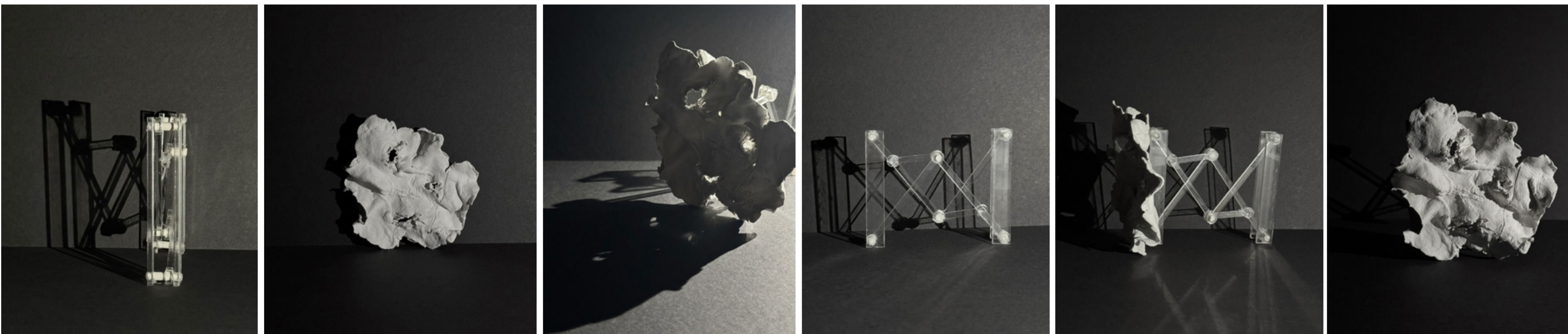


Unfolding the interior layer of the Safehouse.



Different types of layers in the Safehouse.

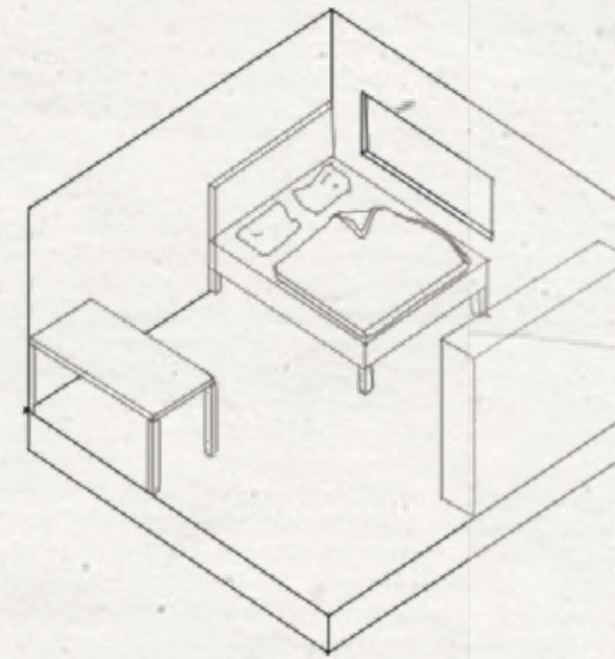
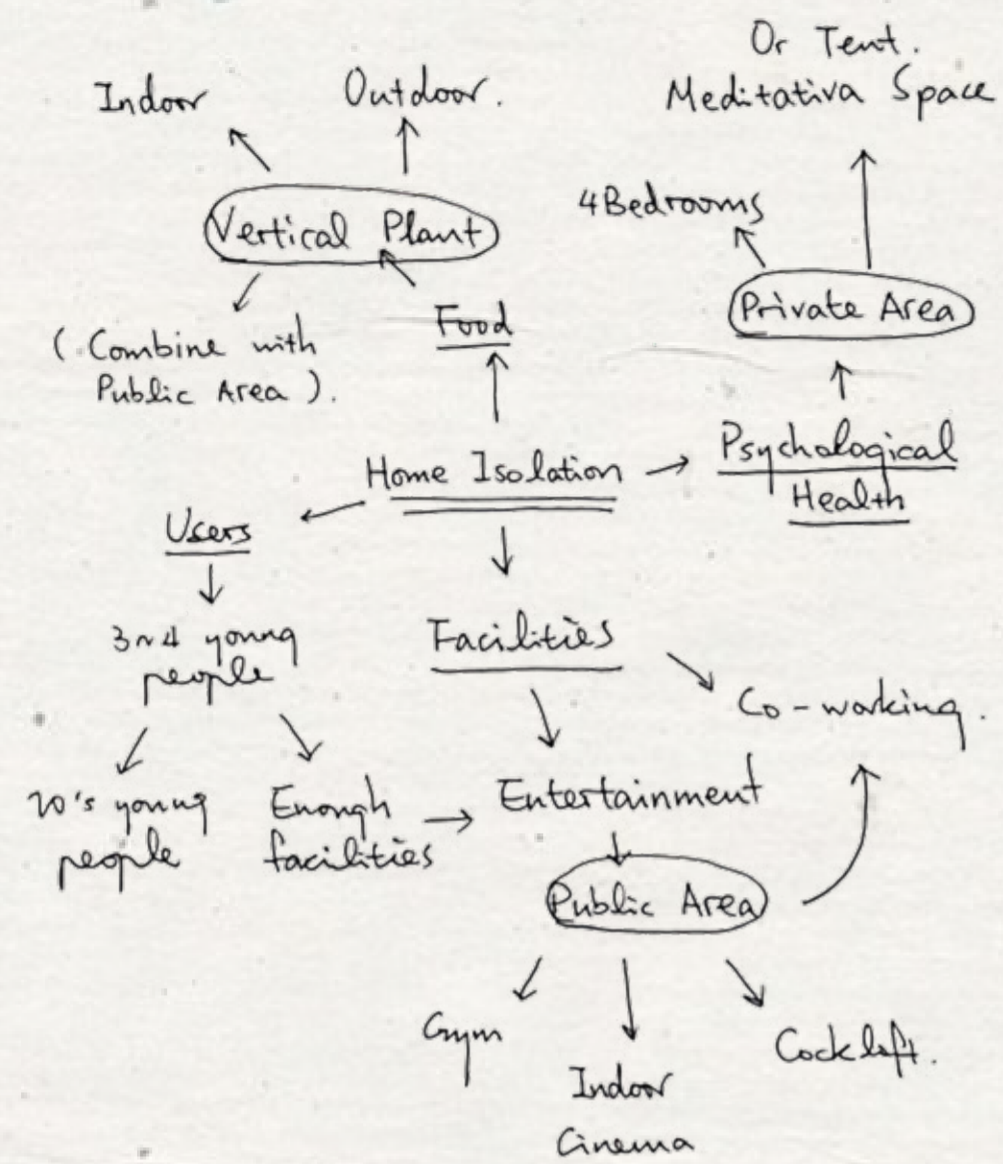
This collage focuses on the interior elevation of Safehouse 1's ground floor. It explores the spatial qualities, material selection, and construction details of the interior. During this process, I found the exposed timber structure, wall paneling techniques, and the layering of structural and finish materials particularly interesting. These elements are not just functional, they also give the house character and a sense of history. Therefore I plan to keep some of these layout and construction ideas into my unit 10 project.



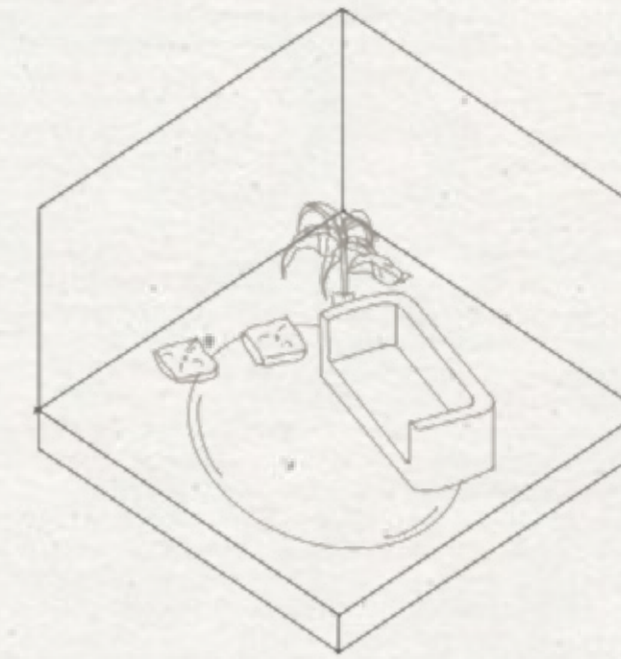
Photographic of showing different angles of the hook with light.

As in my U9 hook project, it is a hidden design on the wall, usually invisible and only visible when close to or from the side. This design shows the concept of something in the another layer of the ordinary, the function exists but does not disturb daily life, and only comes into play when needed.

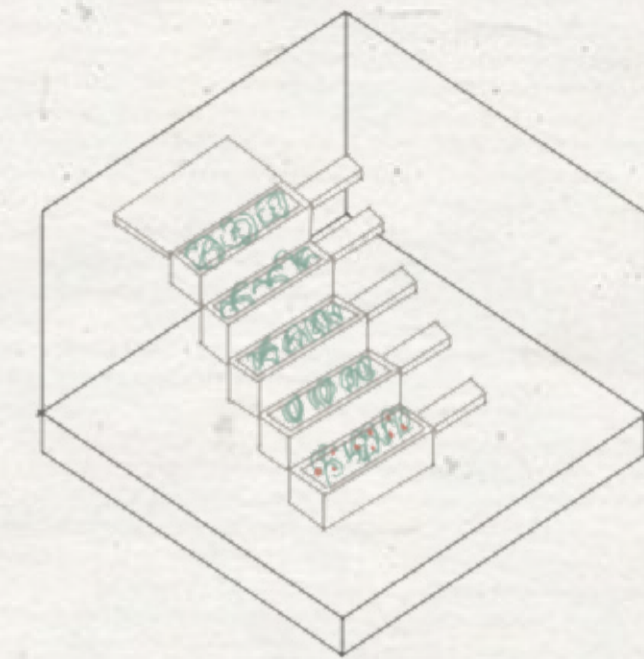
In the U10 design, I would like to continue this idea by dividing the space into different functional zones, creating a seemingly simple but functional living environment that is both open and private, and that meets the needs of extreme weather and home isolation.



PRIVATE SPACE



SHARING AREA



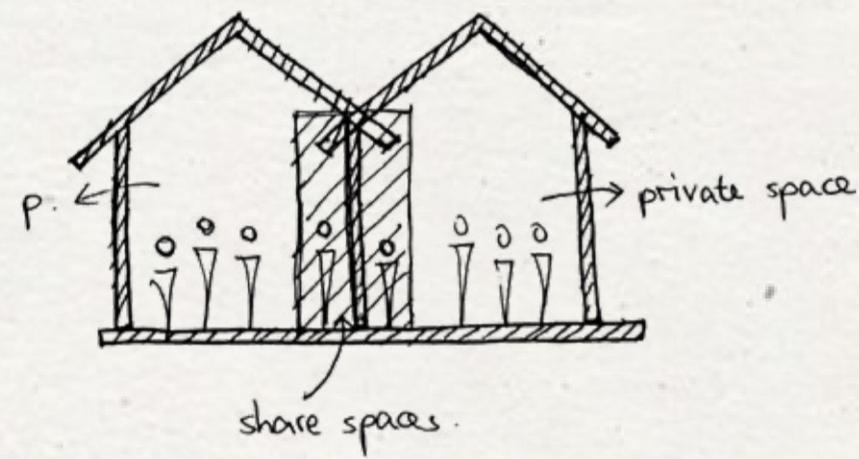
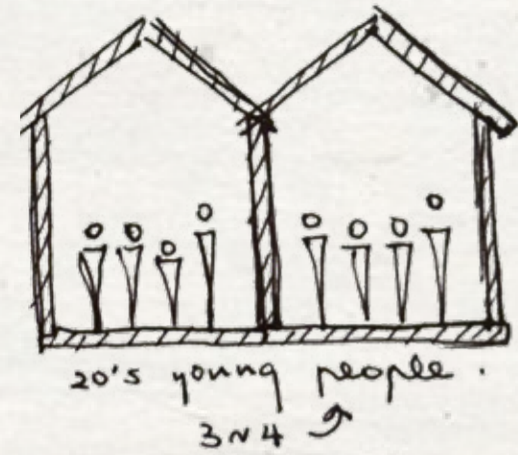
GREEN AREA

What we're missing in isolation living.

By identifying the missing elements in home isolation life, I focused the subsequent design on three core spaces: private space, shared space, and vertical planting areas, respectively addressing the needs for psychological support, social interaction, and self-sufficiency.

Given that Safehouse is located near several universities, the primary user group consists of 20's young people. Due to high living costs, students often need to share accommodations and live in limited spaces, facing issues such as insufficient privacy and limited functionality. Therefore the whole design provide enough flexibility and multifunctionality within compact spaces.

This residence not only serves the need for isolation during extreme weather conditions but also aims to be sustainable and suitable for long-term living in daily life, becoming a truly self-sufficient and adaptable living area.



Cinema - It provides a shared space for emotional release, connection, and relaxation.

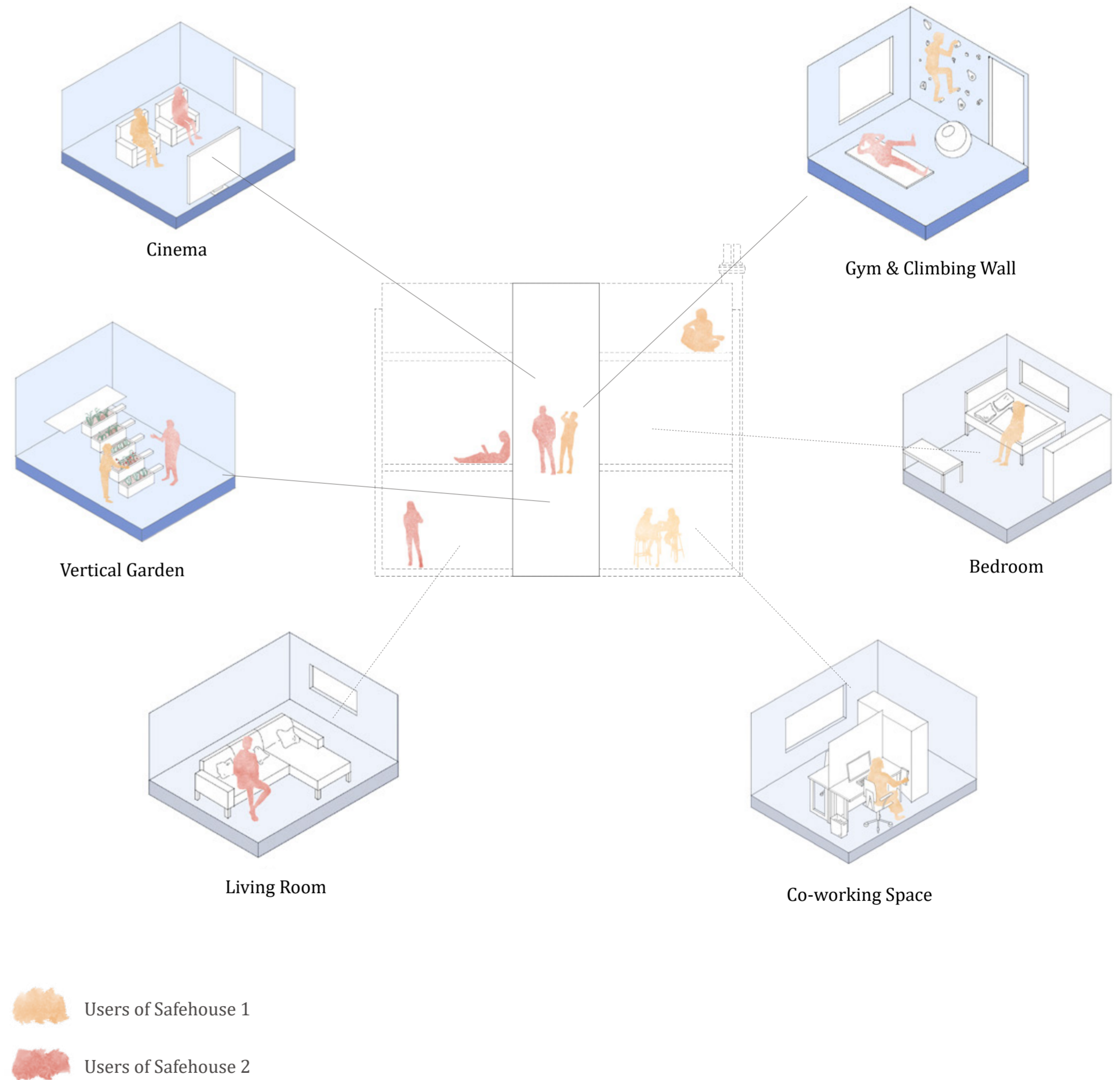
Vertical Garden - Integrated with the staircase to maximize planting area while achieving spatial overlap and functional integration.

Gym & Climbing Wall - Exercise helps relieve stress. Gym and climbing equipment support both physical health and emotional balance.

Living Room - It is the primary interaction area in a closed space, facilitating communication and companionship among users.

Bedroom - The only truly private space in an isolation setting, offering emotional security and personal quiet time.

Co-working - A new way of life, home office will become increasingly common.



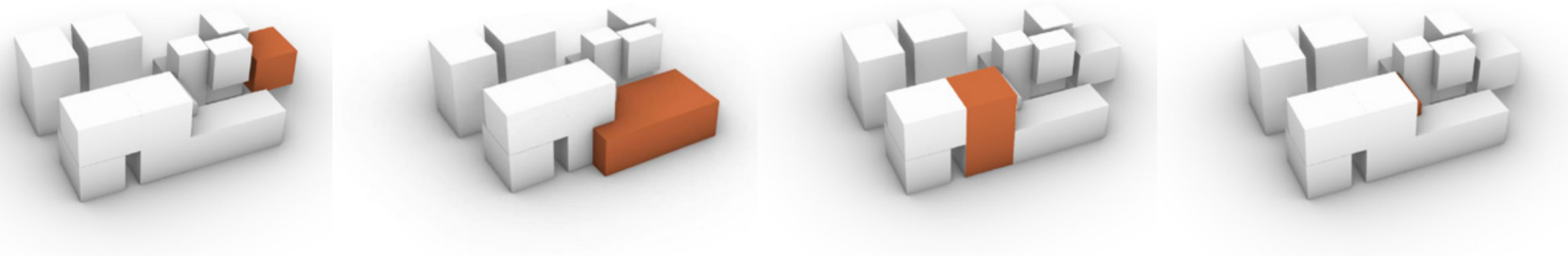
Design Development

Initial Idea Development

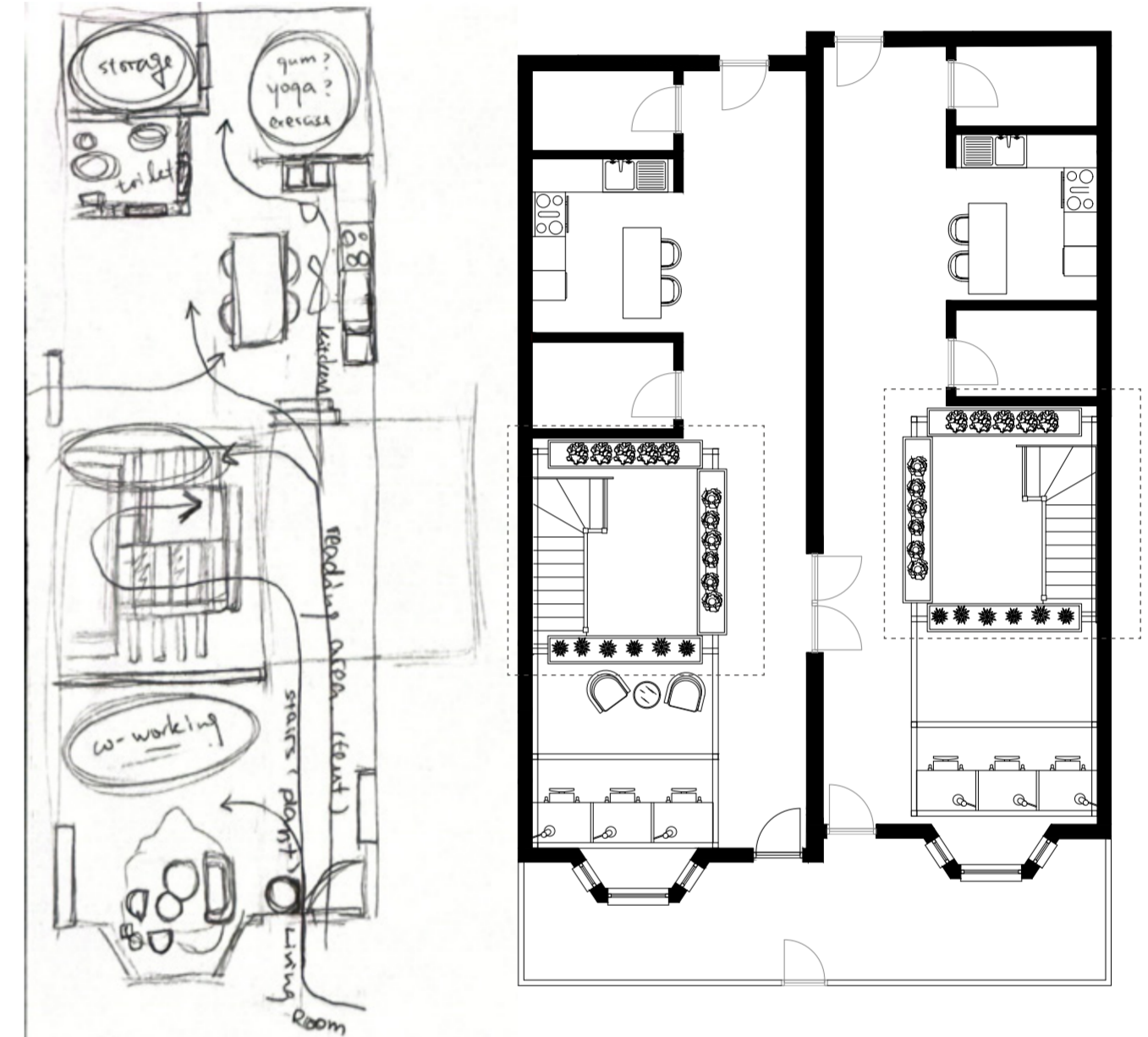
Initial Idea



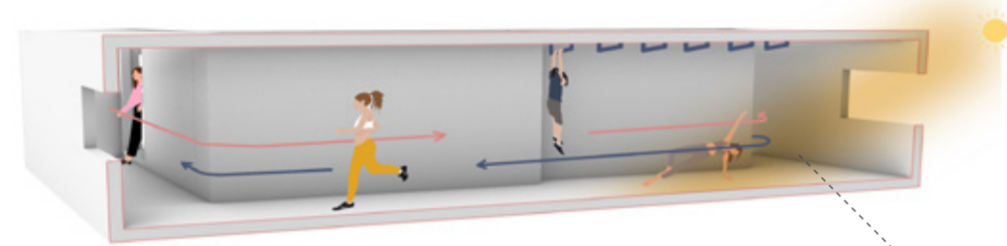
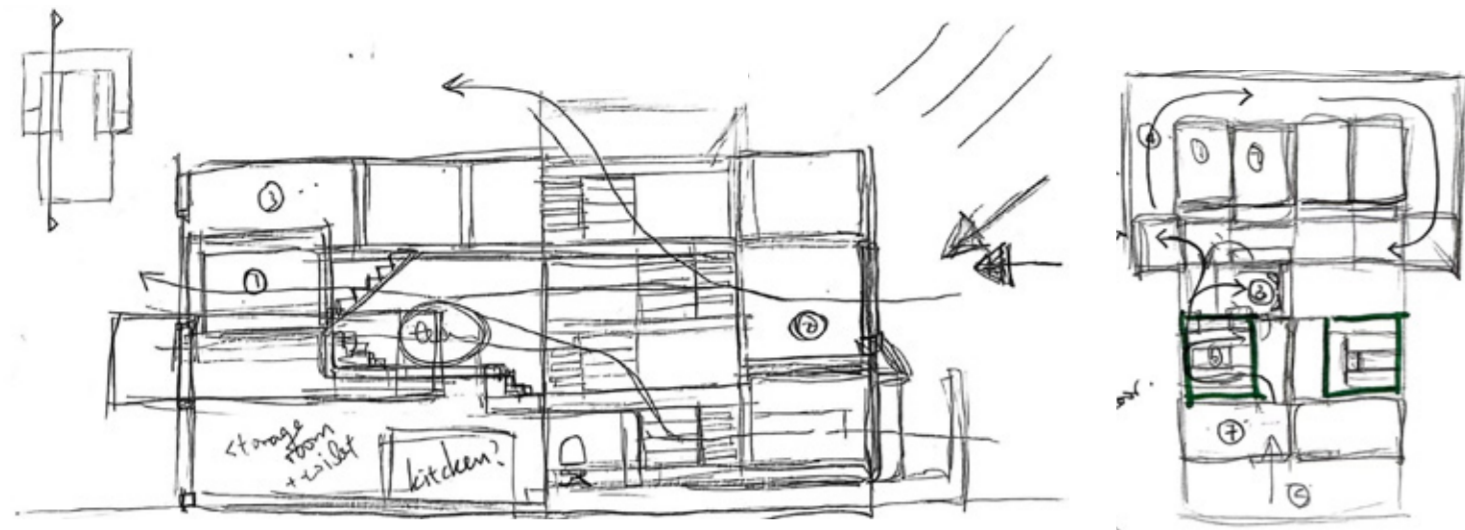
Initial zoning of the space plan.



Four design points have been located in the different place of safehouse.



In the initial concept, the vertical planting system was located in two separate safehouse buildings, functionally and structurally independent, connected only by a rear sky tunnel, which offers the possibility of communication and connection between the occupants in extreme climatic conditions.



Sky tunnel connecting two houses

Sharing Platform



Semi-private reading space



The whole project has been designed following the three modules of "Private Space, Shared Space and Vertical Planting Area". In the initial design, the shared space was set up on the platform between two houses on the first floor as the main communication area. However, due to the limited area of the platform and its single function, it is difficult to support various sharing activities, and the users' experience is also limited. Therefore, in the following design, I adapted and optimized the form of the shared space.

Initial Spatial Perception

Safehouse Entry Collage

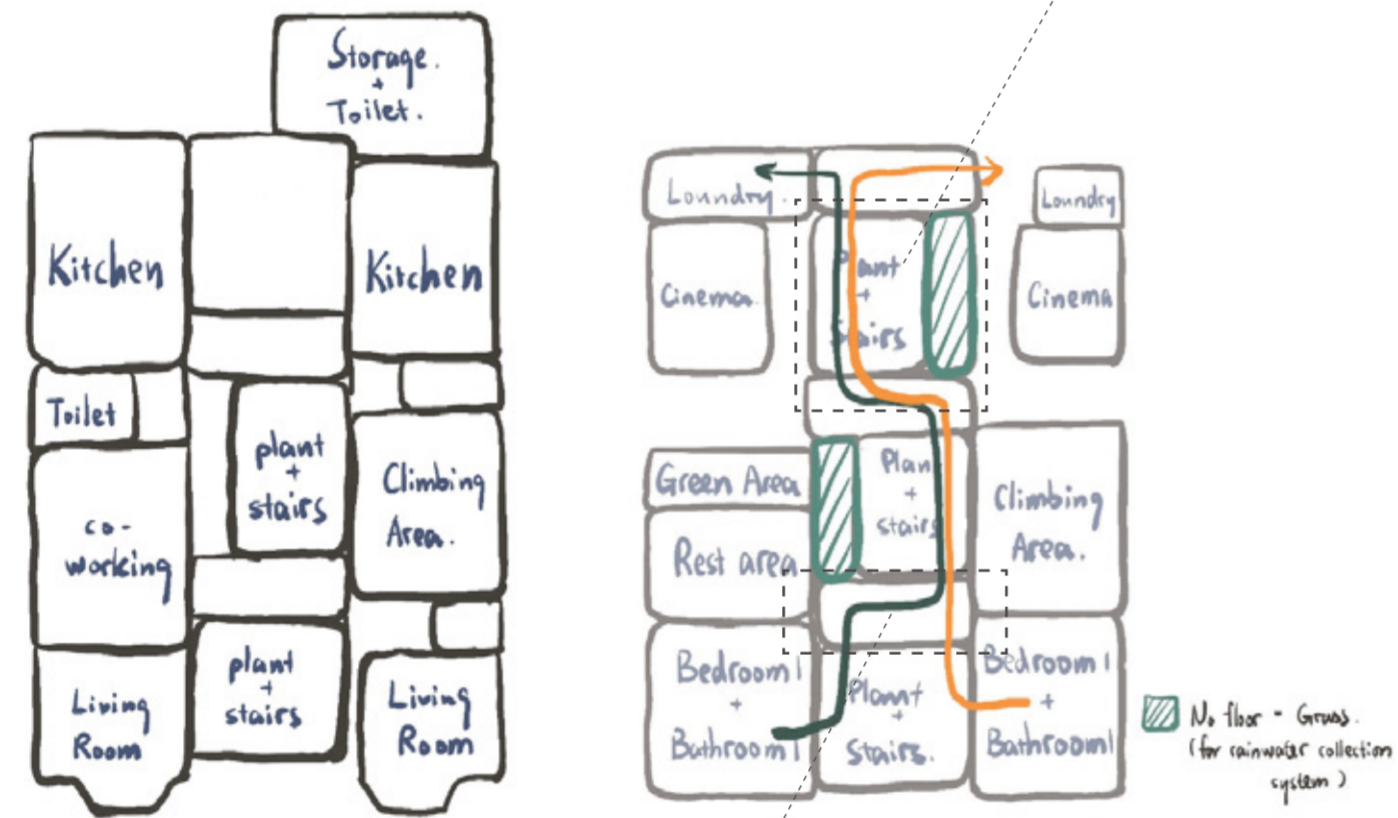


The first view when entering the home is the Safehouse's original wooden frame and vertical planting area. The overall space is designed with high ceilings and warm materials and colors to provide a sense of security and psychological stability for the occupants at the moment of entry.

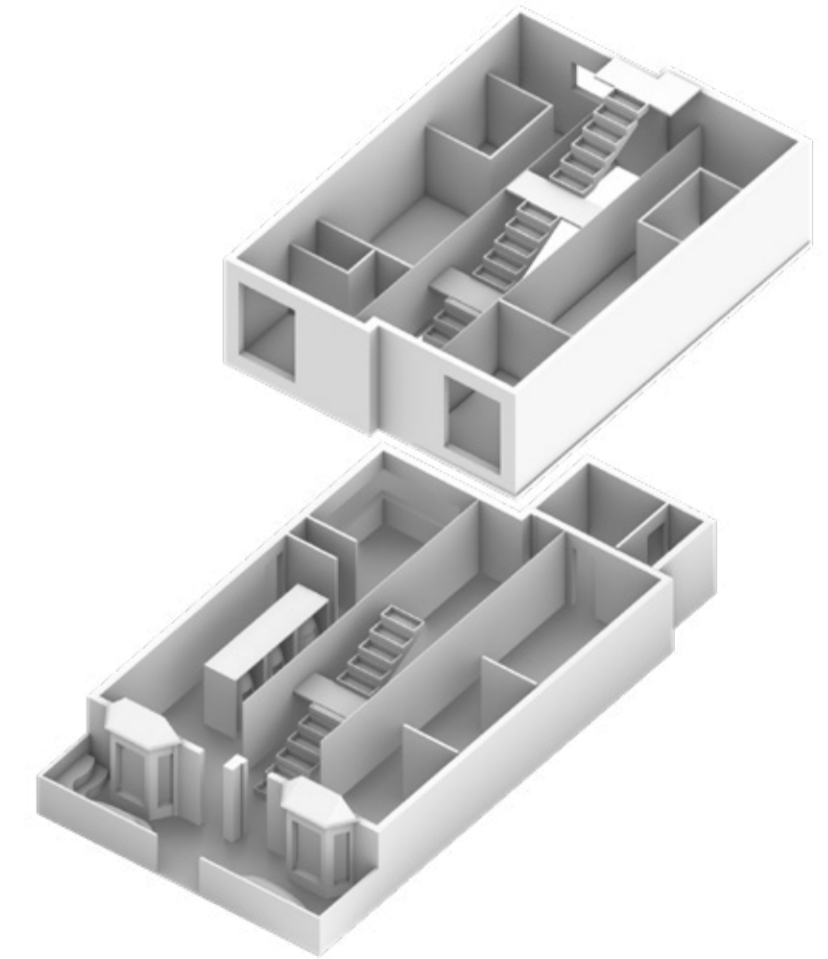
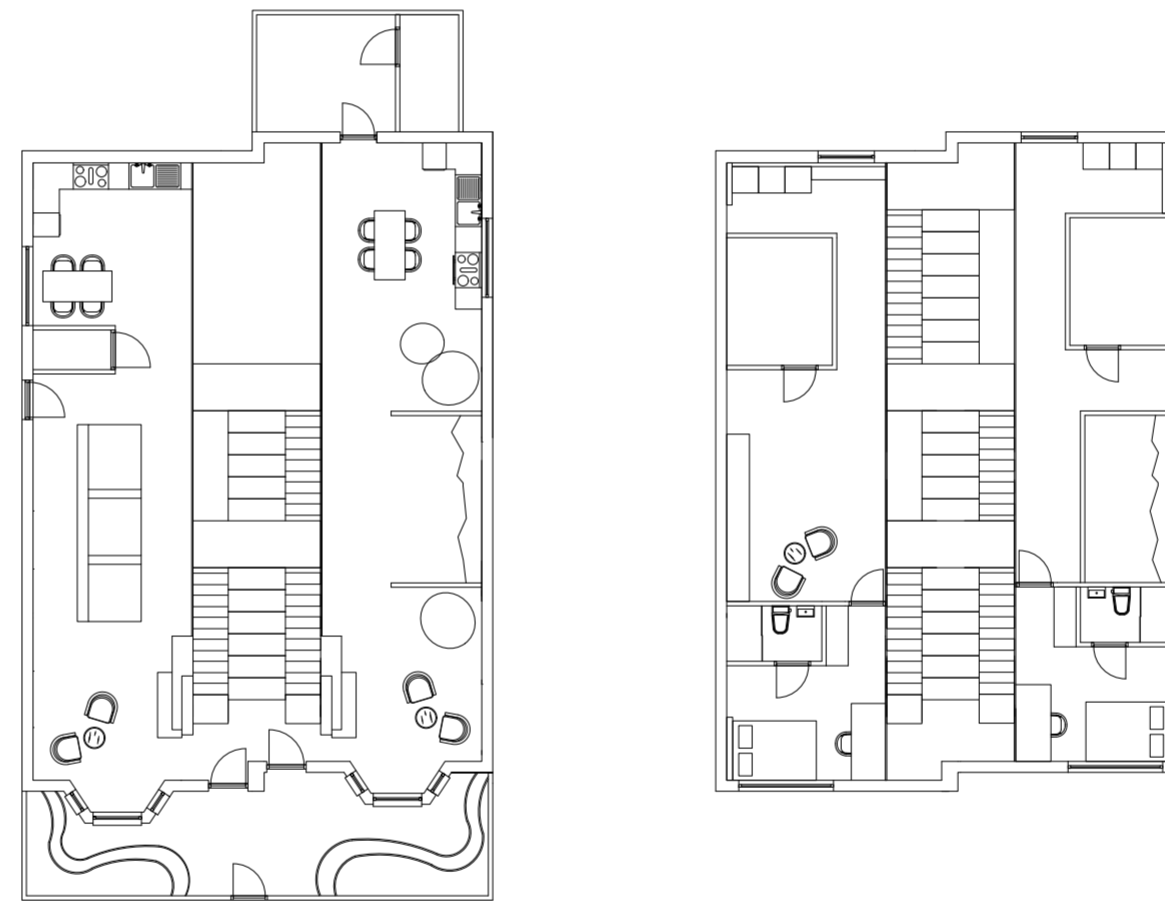
Design Development

Second & Final Design

Second Scheme

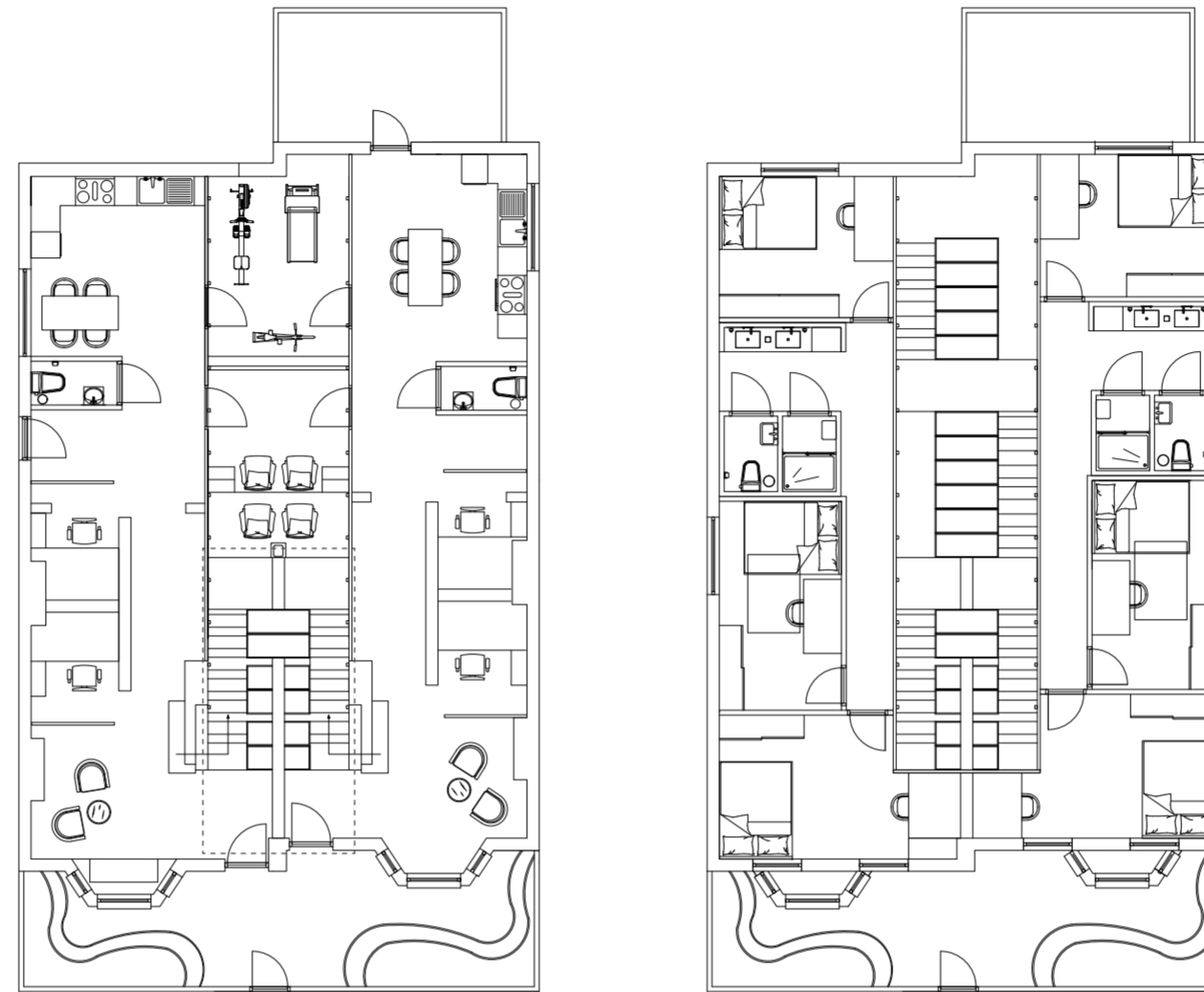
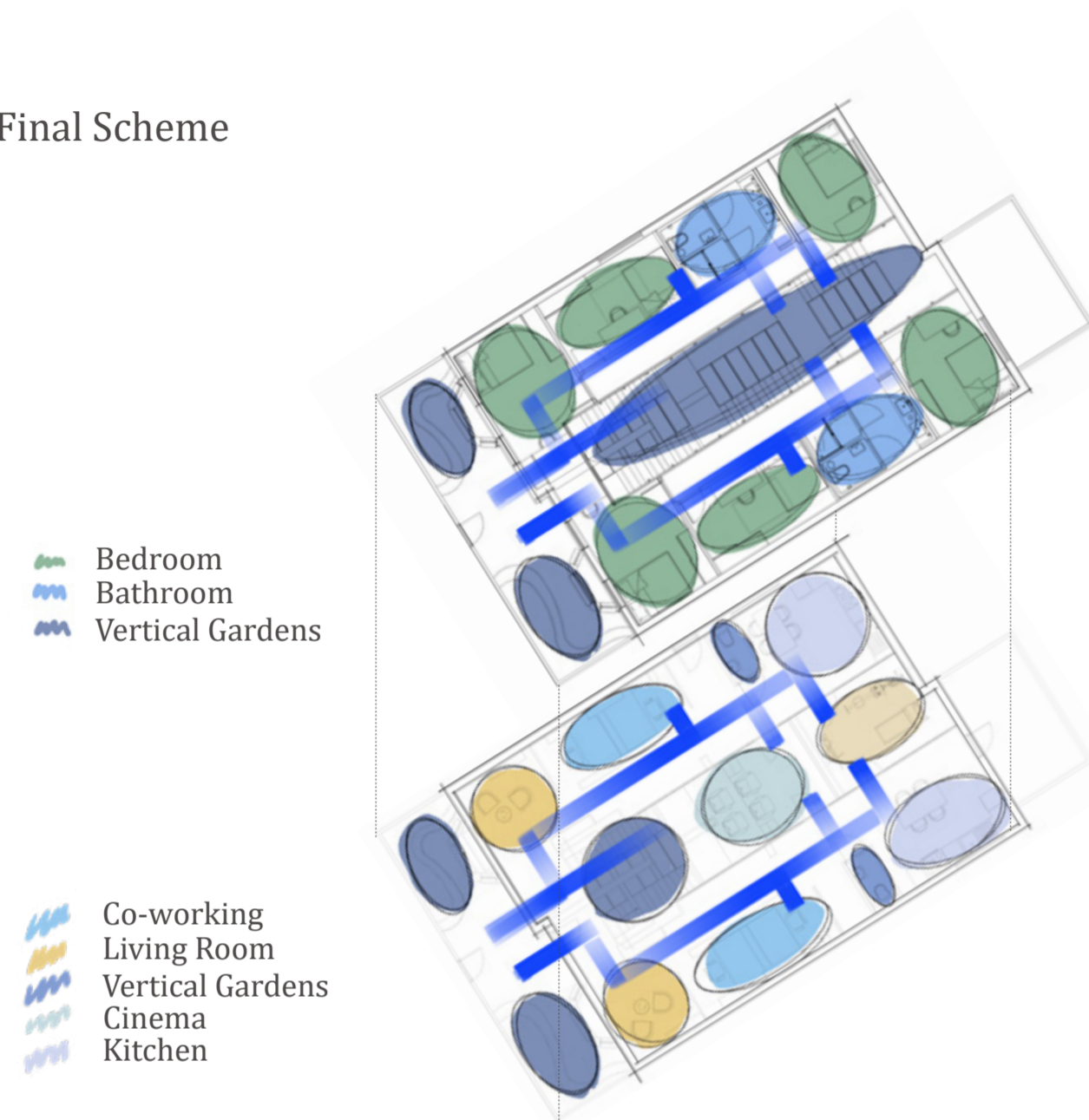


The platform not only provides space for communication and rest, but also serves as a connection, allowing users to access the two houses on the left and right side separately.

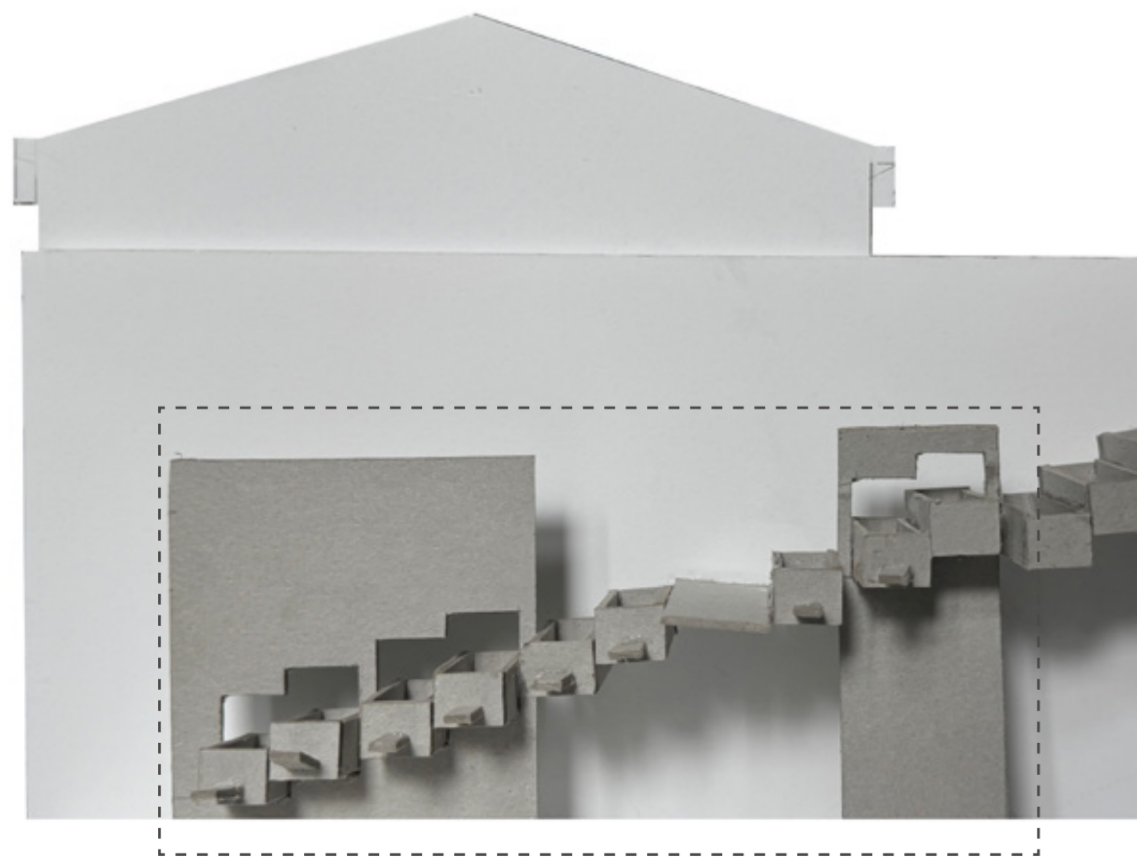
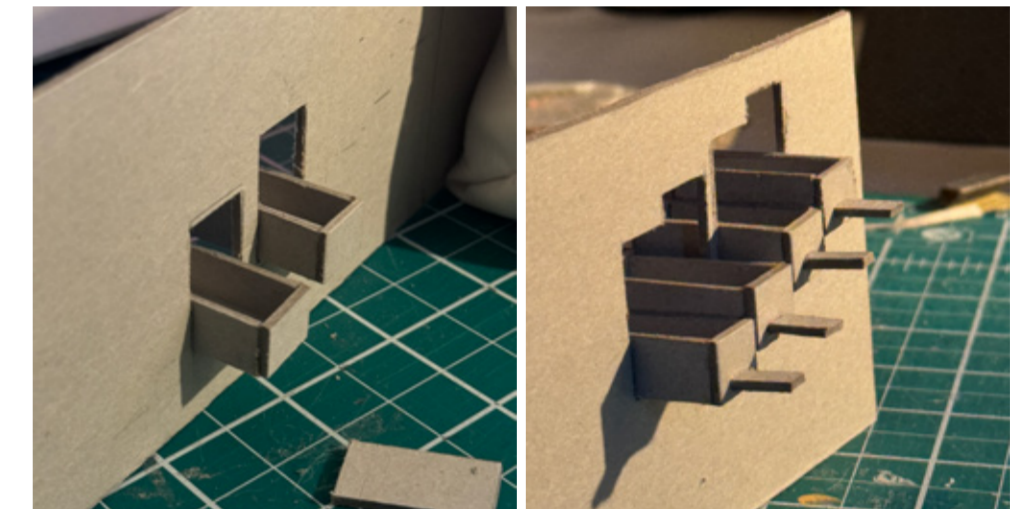


The second design proposal focuses on breaking down the isolation between buildings. By creating a shared space between the two buildings, the previously separate vertical planting areas on either side of the buildings are combined with the staircase to form a public core area for communication and interaction. At the same time, the original sky bridge has been removed, making the shared space the sole link between the two buildings and further emphasizing the space's gathering and sharing functions.

Final Scheme



Physical Model - Vertical Plant



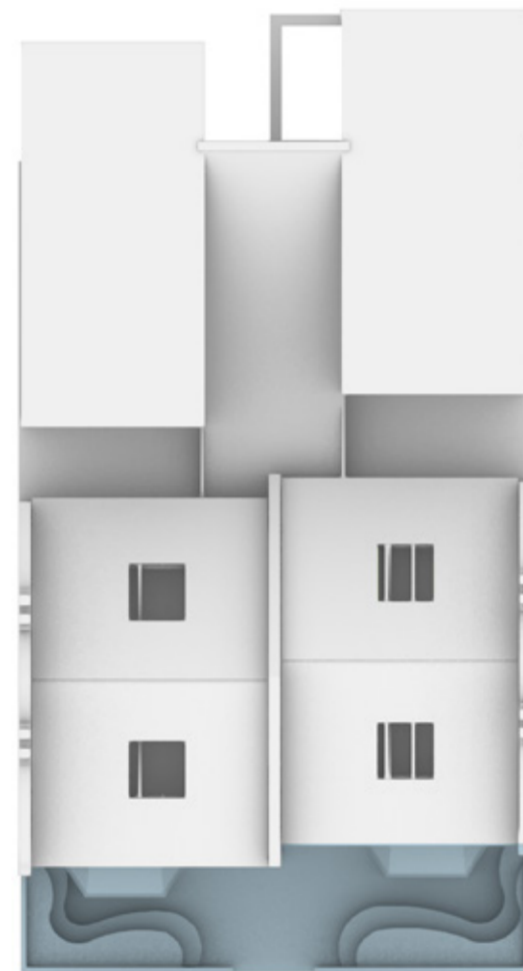
Vertical planting integrates with the existing walls of the safehouse, combining structural stability with privacy protection for both houses.



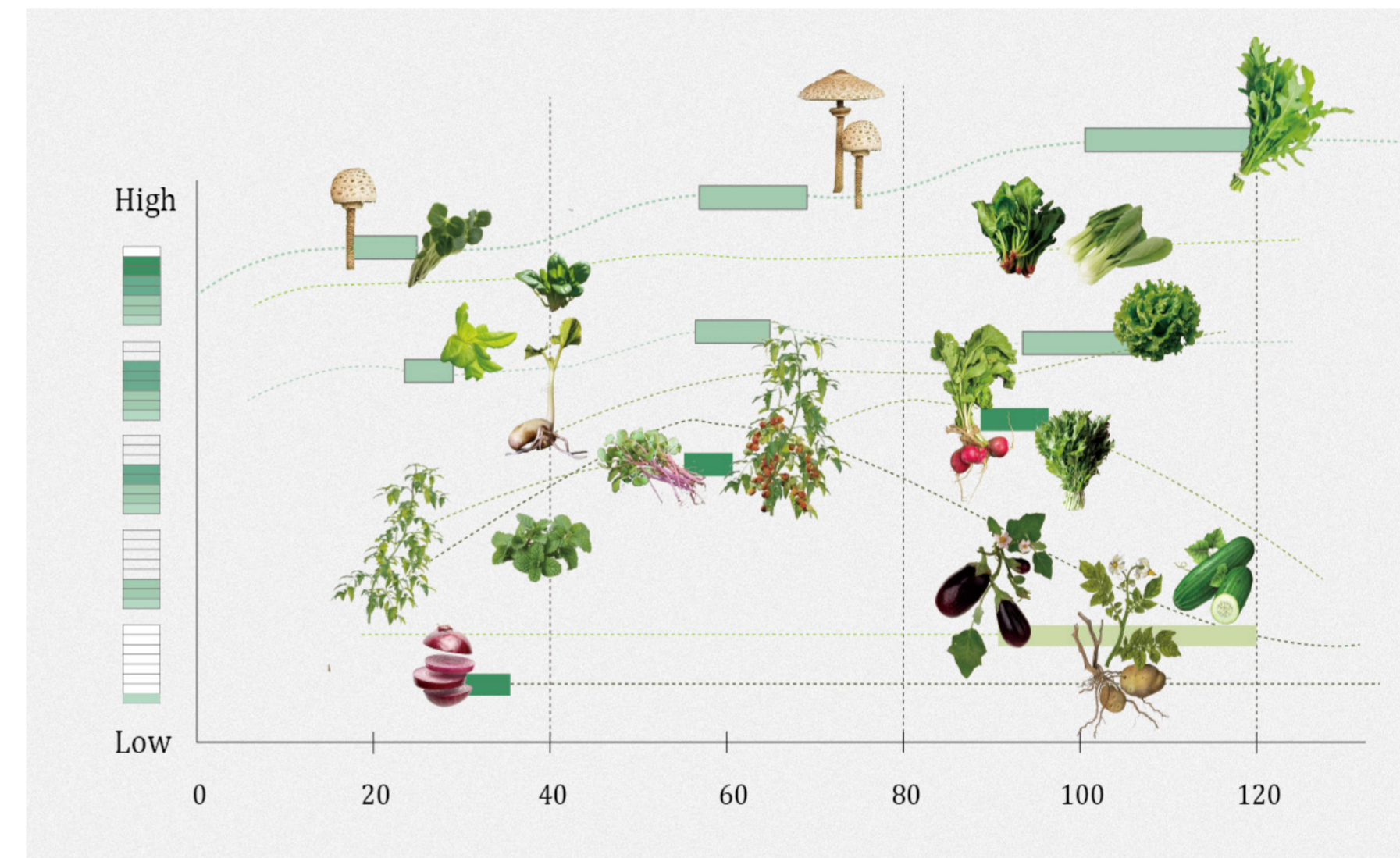
Different angles of part of vertical gardens.

The final scheme further optimizes the organization of the space by integrating all the shared spaces at the bottom of the staircase, forming a more compact and efficient central shared area. This layout not only improves the efficiency of space utilization, but also allows the two buildings to continue to operate as relatively independent units after the extreme weather ends. In addition, two additional functional spaces were relocated to the top of the building, freeing up the mid-section area and bringing greater flexibility and adaptability to the overall design.

Throughout the design process, although their presentation changed at different stages, the three modules of Vertical Space, Shared Area and Private Space have been present throughout the design.



After the sunlight analysis, the sunlight conditions in the front yard of the safehouse are better than the garden at the back and the open space on the right side of the house, so it can get more sufficient and stable sunlight. This makes it suitable for growing vegetables that are more dependent on sunlight than indoors, such as tomatoes, peppers and herbs. Meanwhile, the front garden can be planted with more outdoor-friendly vegetables, making it the most productive area of the refuge space. When the weather is a little nicer, people can plant and pick here and briefly feel close to nature and back to life for a moment.



The chart shows the growth cycles of plants suitable for indoor cultivation and their total annual yield. Most of the vegetables I have selected are short-cycle varieties that can be harvested repeatedly, providing a stable food source in the future or under extreme weather conditions, thereby establishing a self-sufficient lifestyle. The planting area is integrated with the staircase structure, saving space and improving efficiency. Additionally, windows are installed at the end of the staircase to facilitate natural light entering the indoor space. Furthermore, these vegetables have low sunlight requirements and can grow normally even in extreme weather conditions with insufficient sunlight, ensuring a basic food supply.

Precedent Studies

Compare and contrast different methods of converting buildings

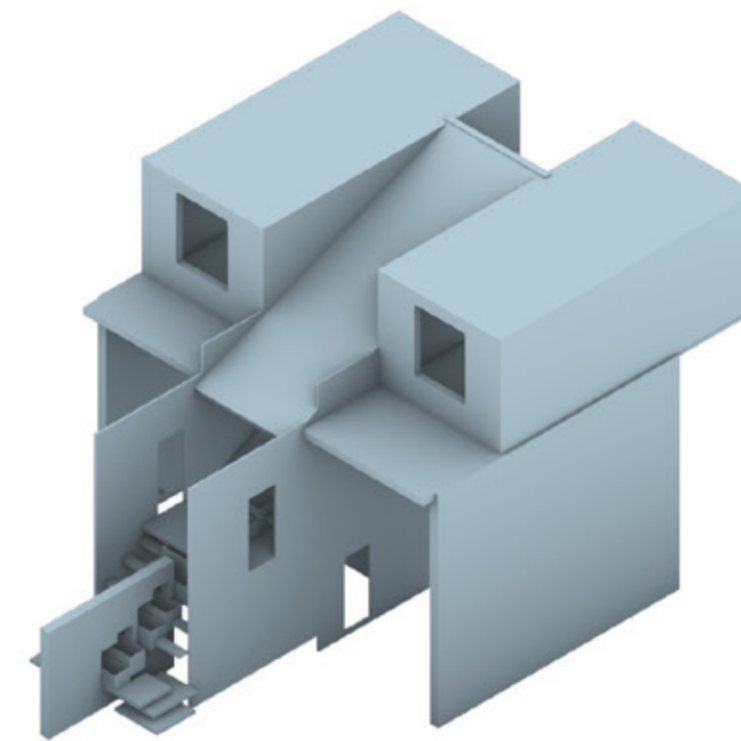
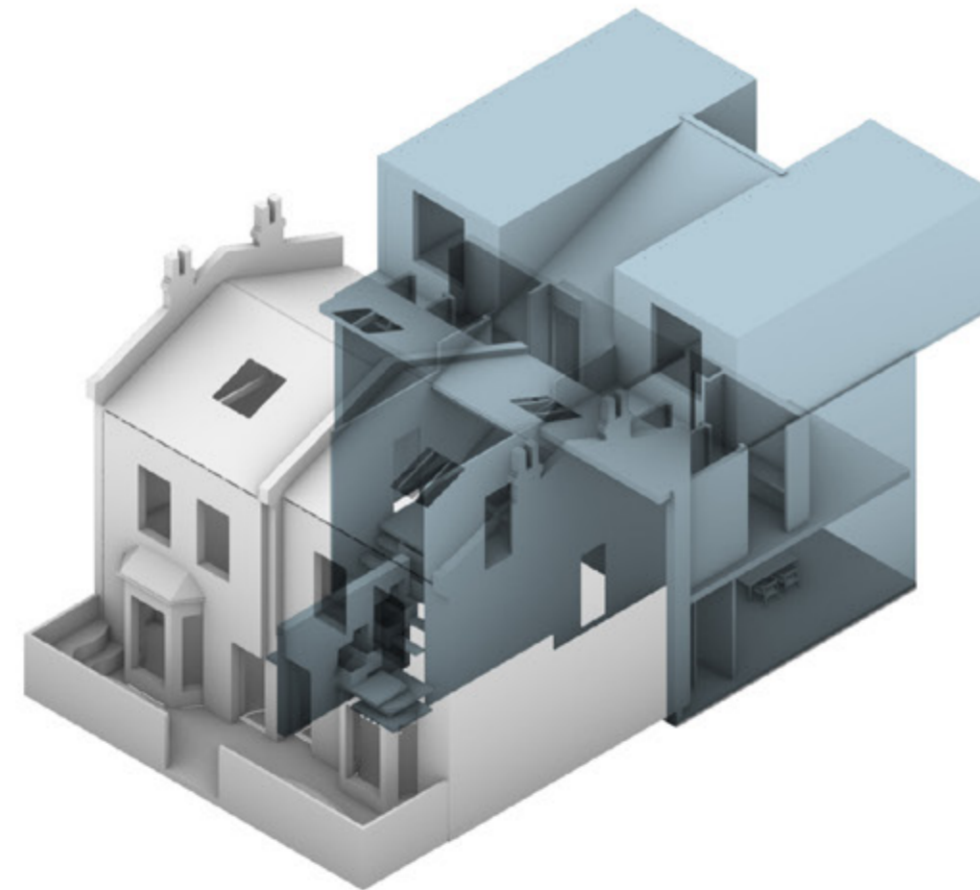


Undercover conservation

Kate Darby and David Connor have converted the ruins of an old cottage into a guesthouse and studio with no changes to the original structure, protection of the structure of the building and give them a new functions.

The Waterhouse at South Bund

Neri&Hu Studio added a new design while keeping part of the original house, transforming it into a modern, open-plan home.



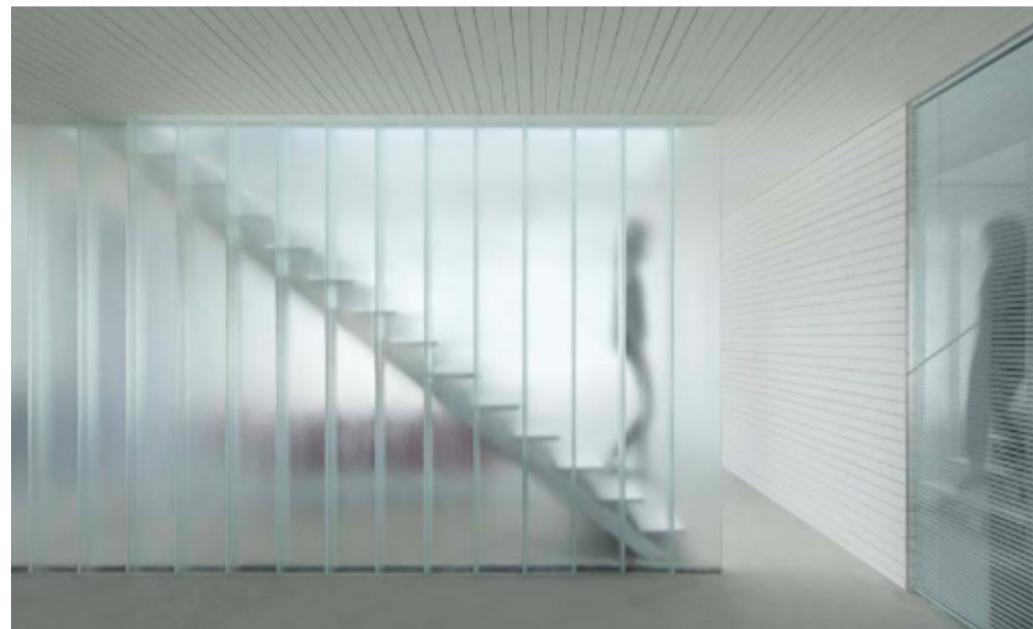
ORIGINAL STRUCTURE

COMBINE

NEW STRUCTURE

Combining two cases of renovating buildings in different ways, this design keeps the original structure of the front part of the two safe houses and expands and connects them. This approach preserves the historical traces of the buildings while providing a reasonable structural foundation and transition for the new functional spaces.

The aim for this design is to serve as a universal housing model that not only provides shelter during disasters but also functions as a model unit for survival education when extreme weather gone. Could demonstrating how spatial design can simultaneously meet survival needs and mental health challenges, and inspiring people to think about their future lifestyles. This is also a way to achieve green living and reduce carbon footprints.



C+ Architects Renovates Office Space Interior In Beijing

With this project, I became interested in polycarbonate sheets as a material. I was inspired by the balance they strike through the semi-transparent material that delicately creates a sense of space that is both private and public at the same time. The whole space is clean and simple, an atmosphere that I have always wanted to achieve in my design. Especially with the extreme weather conditions we may face in the future, a space like this provides a quiet, soft and cozy experience for the occupants, while balancing openness and privacy. These characteristics are very much suitable with my design direction.



The final version retains the original design concept, keeping the high ceilings, open spatial feel, and vertical planting areas. As you enter, you immediately sense the vitality brought by the greens, along with the space's transparency and openness. Compared to the previous design, the wooden frame at the entrance has been replaced with polycarbonate panels, which not only increases privacy but also keeps the visual connection between spaces. The overall materials primarily consist of wood, polycarbonate, and gray tones, aiming to create a quiet, warm living atmosphere through natural materials and soft color palettes.



Rusty House on the Rye
Peckham, United Kingdom, 2024

The additions are conceived as a ribbon of 'Corten' steel - the distinctive colour referencing the bands of red brick to the existing front elevation. The resulting folded form steps down the external facade serving to bind the newly formed spaces together and provide a striking contrast between old and new.

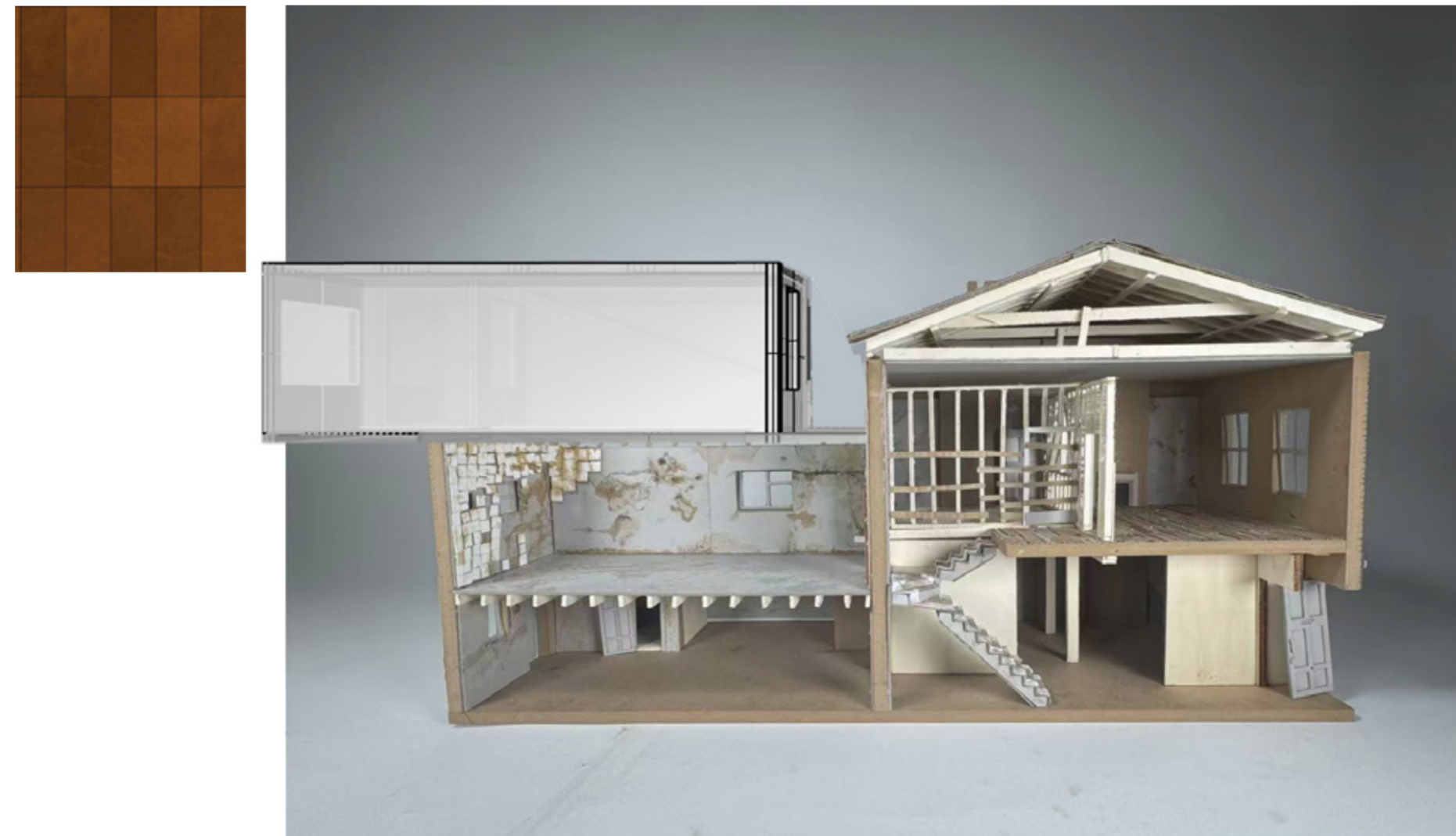


Micro House
Ant Farm, Poole House Remodel. San Francisco. California, 1974

When we can't change the shape of the original building, why not consider adding a new space on top of it? By adding on top of the building, the design not only preserves the integrity of the original structure, but also extends a new functional area. It inspired me to think about how to let the building continue to "grow" without destroying the original form, providing more possibilities for future living needs.

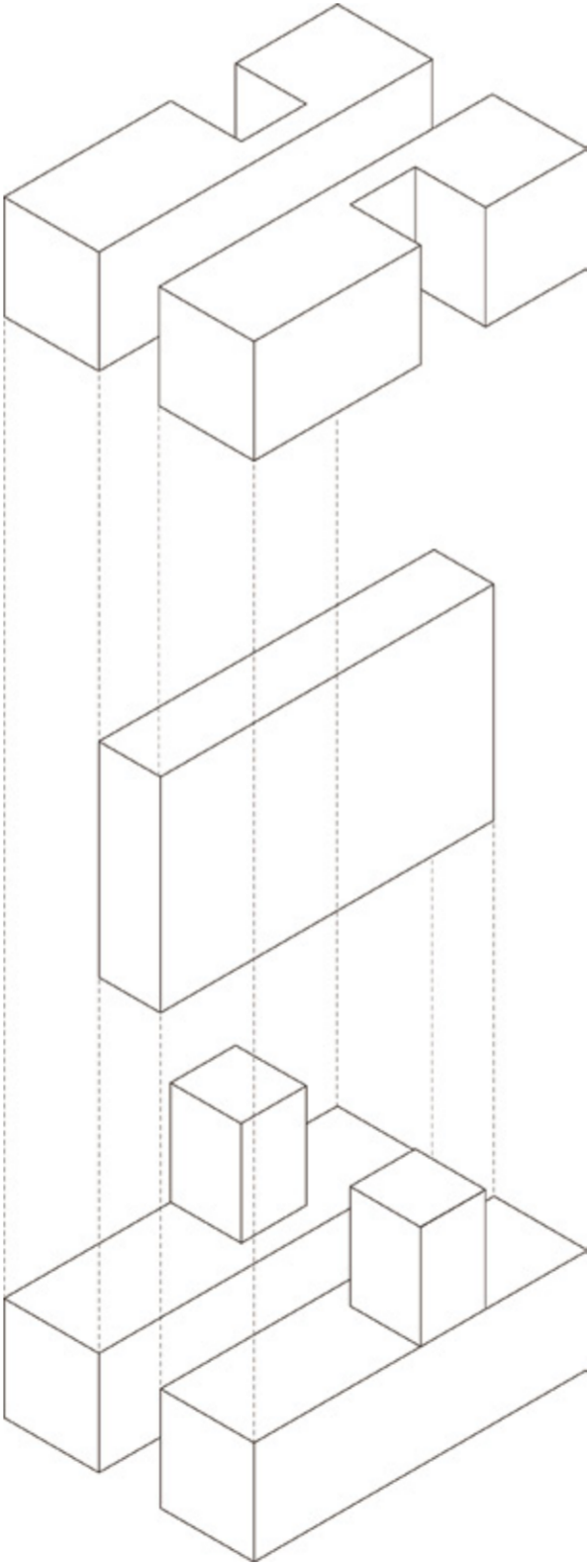
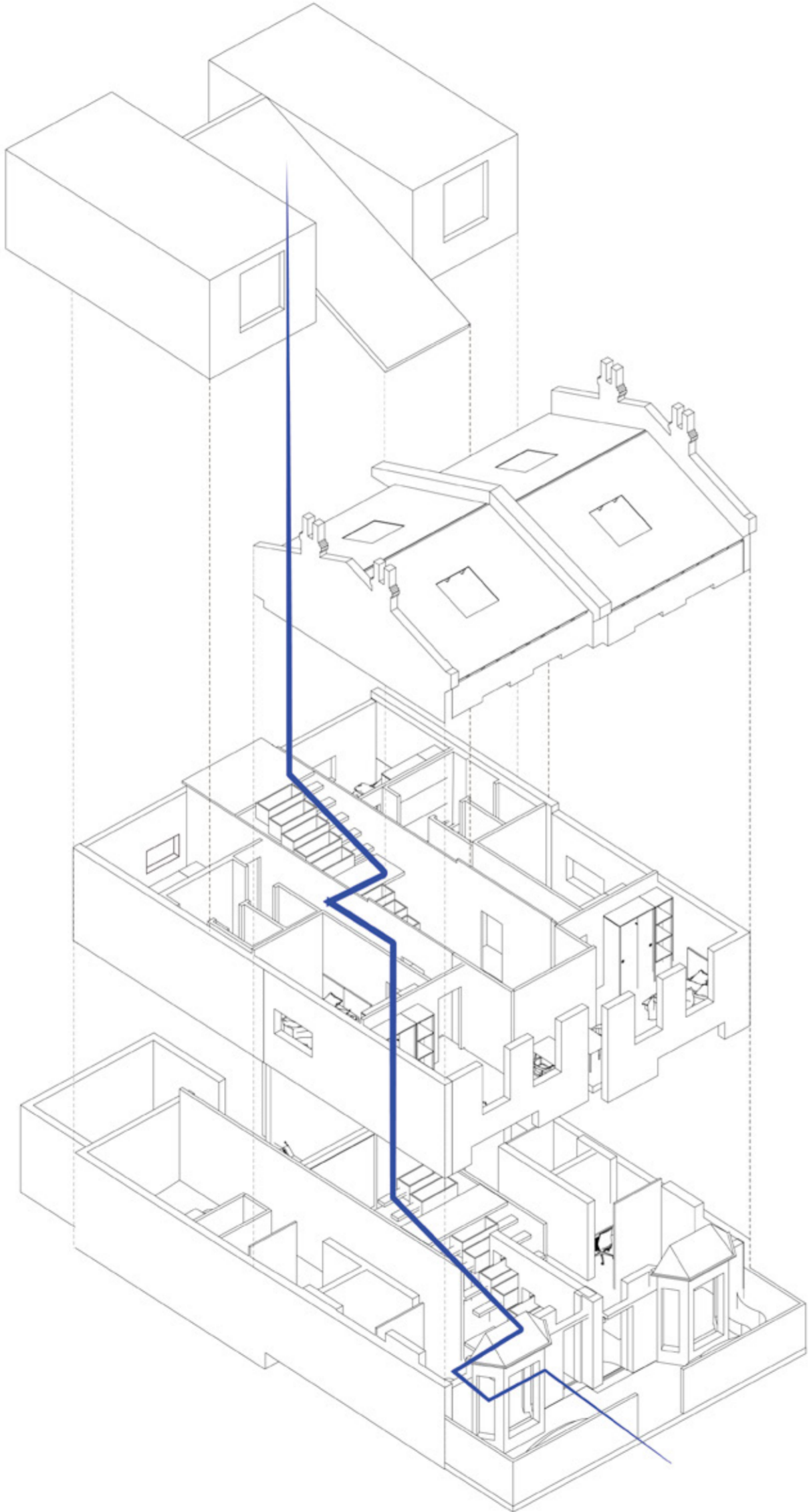


Backpack House
Leipzig, Koln, Essen, Germany



While keeping the Safehouse's original form intact, a new additional space was placed on top of the redesigned area in the back half of the safehouse.

Spatial Structure And Functions



Private Space

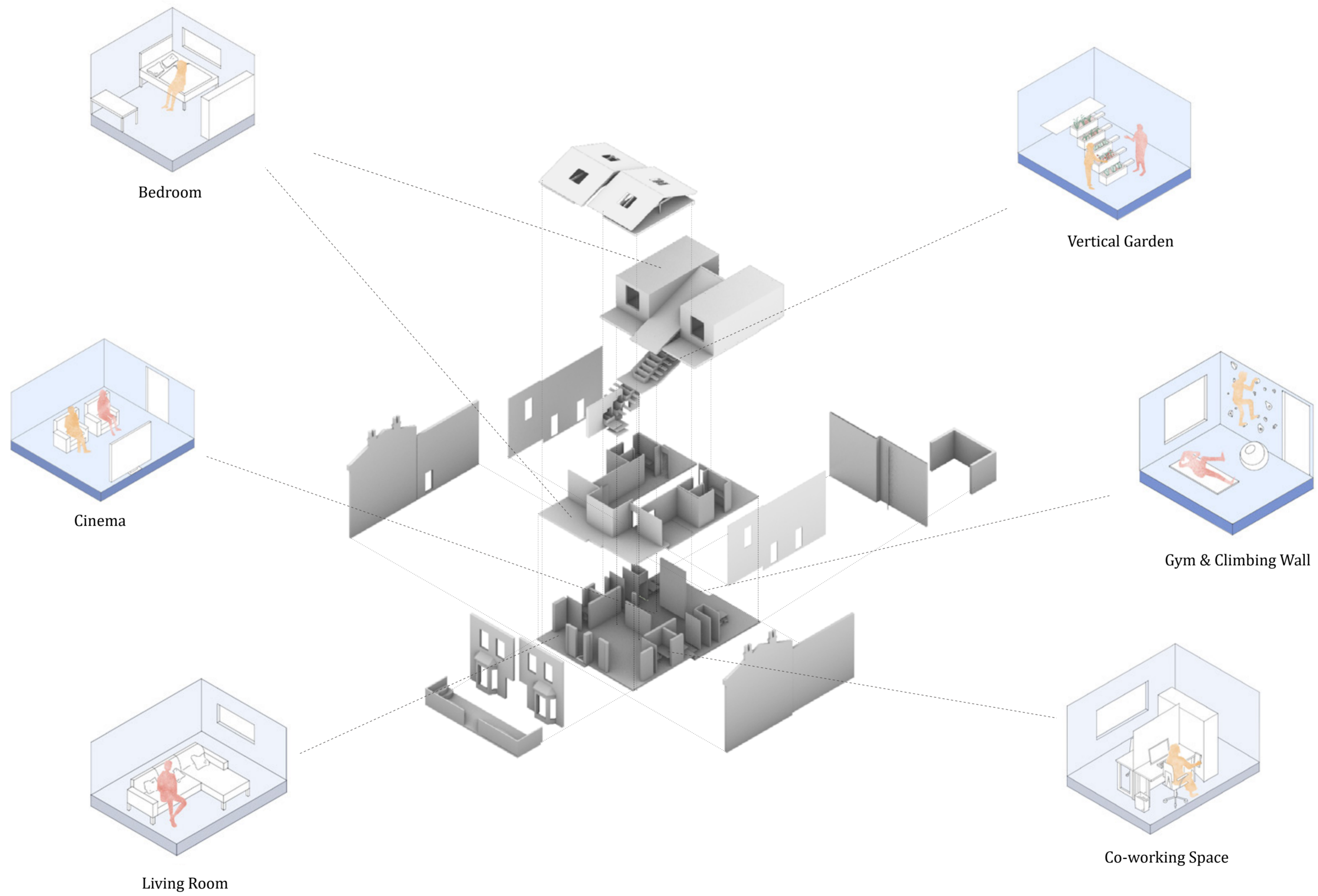
Vertical Plant

Public Area

This diagram shows the user's movement from the entrance to the top of the space, while also emphasizing the design considerations for privacy throughout the space.

The design concept was to create a house that could serve as a shelter in extreme weather conditions, but also be suitable for everyday use, so all public spaces are concentrated on the ground floor. At the same time, all functional spaces requiring more privacy were arranged on both sides of the first floor, thus avoiding interference from people moving up and down the stairs, while not completely closing off the space.

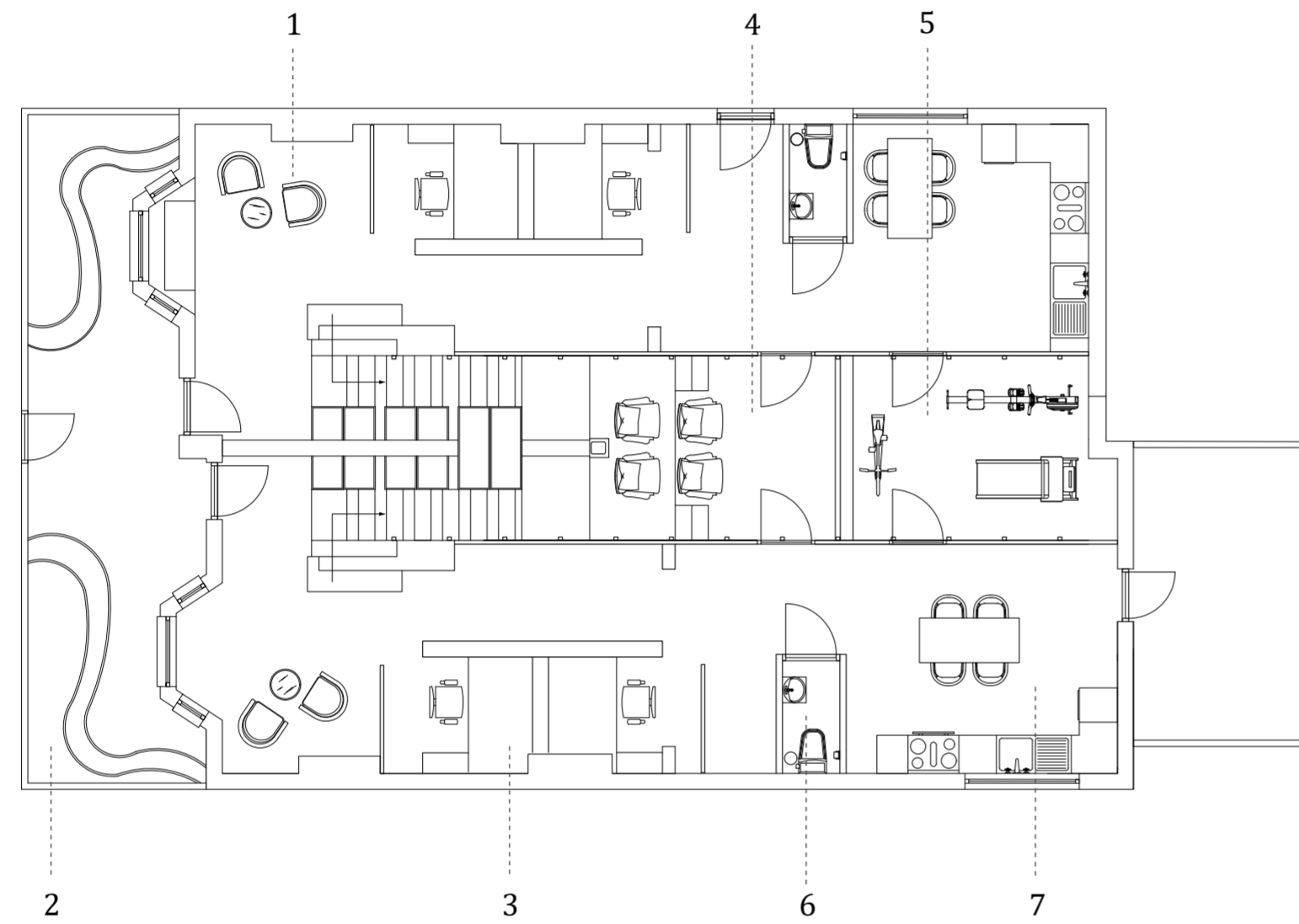
The walls near the staircase are made of polycarbonate sheets, creating a subtle, semi-transparent interaction between spaces. Like you can see the outlines of people but not their faces, balancing privacy and communication.



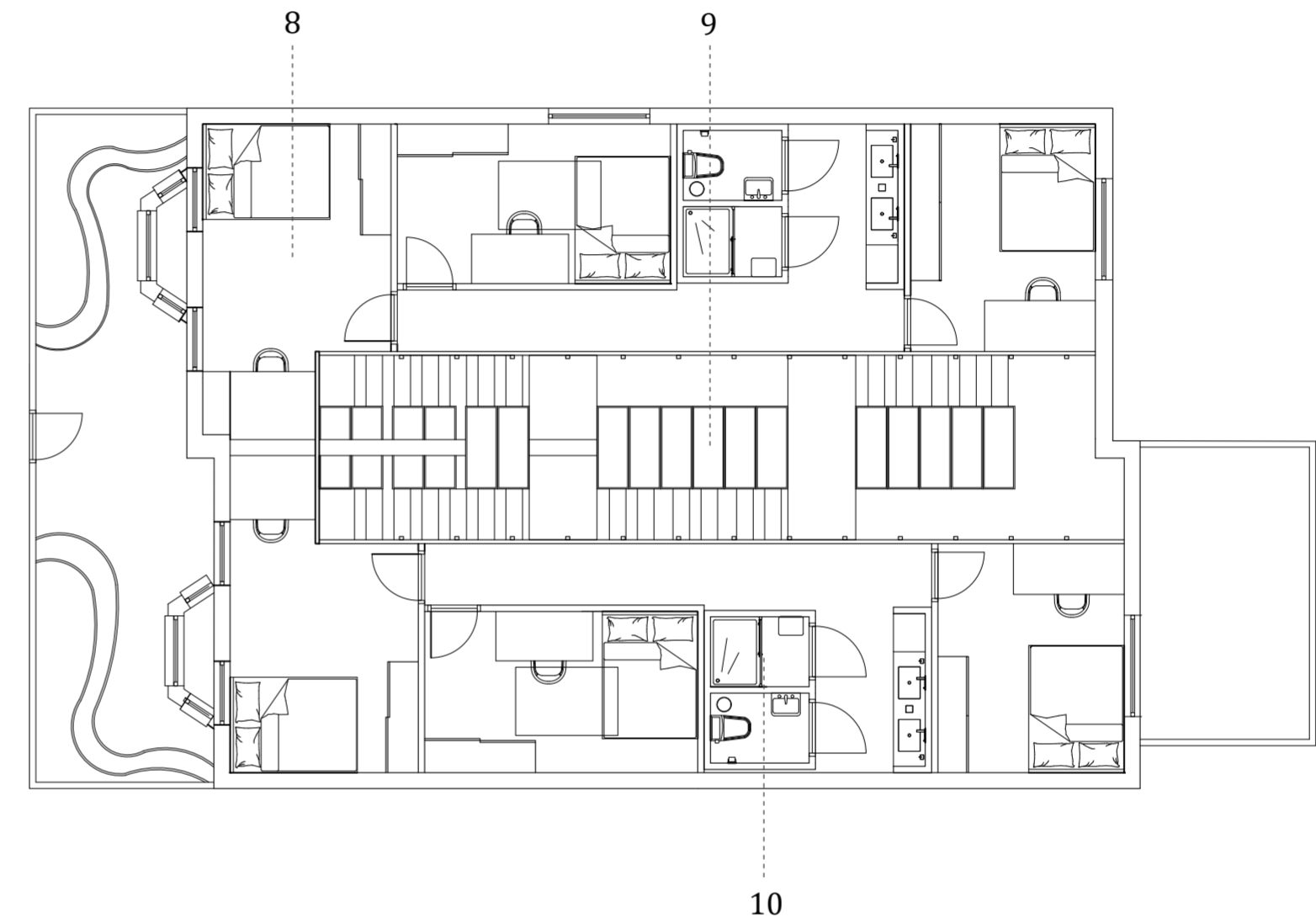
Retained the original ideas regarding functional zoning and usage requirements.

Technique Drawing

Ground Floor

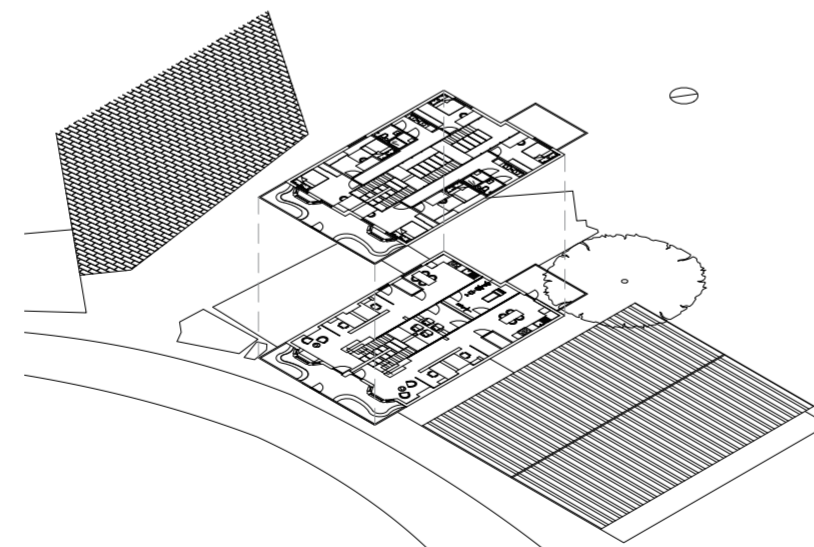


First Floor



KEY

- 1. Living Room
- 2. Front Yard Vertical Garden
- 3. Co-Working
- 4. Cinema
- 5. Gym With Climbing Wall
- 6. Toilet
- 7. Kitchen
- 8. Bedroom
- 9. Vertical Garden With Stairs
- 10. Bathroom



SCALE BAR 1:100



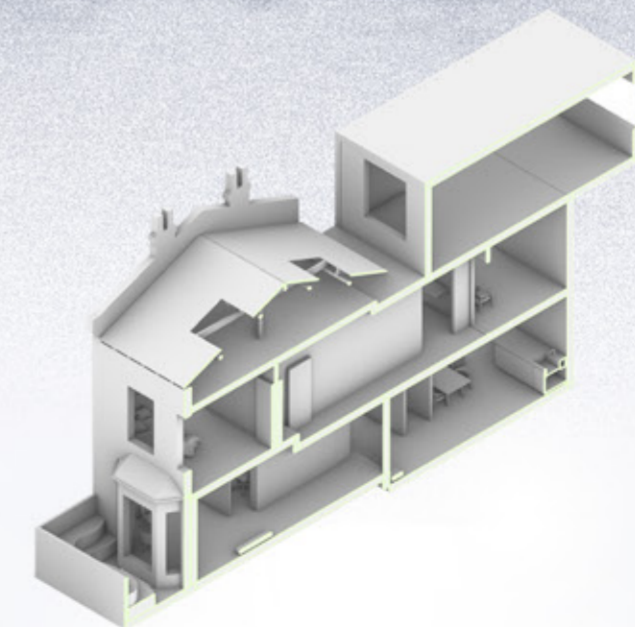
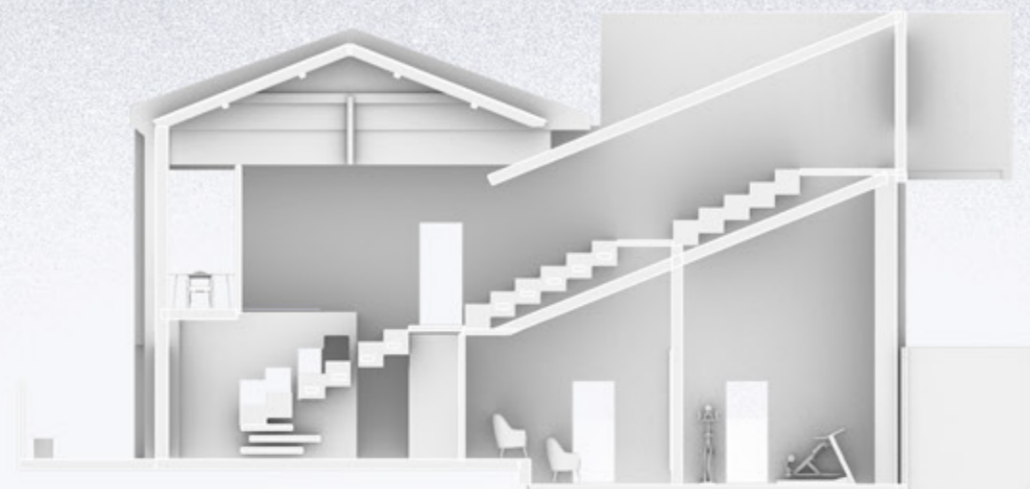
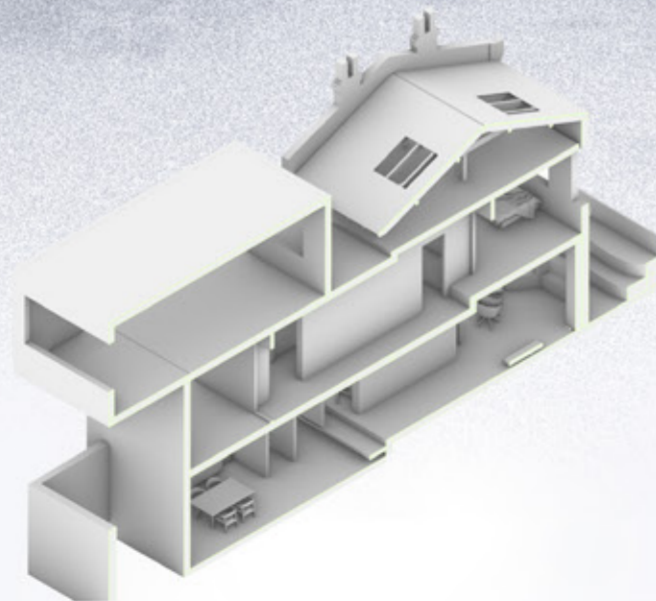
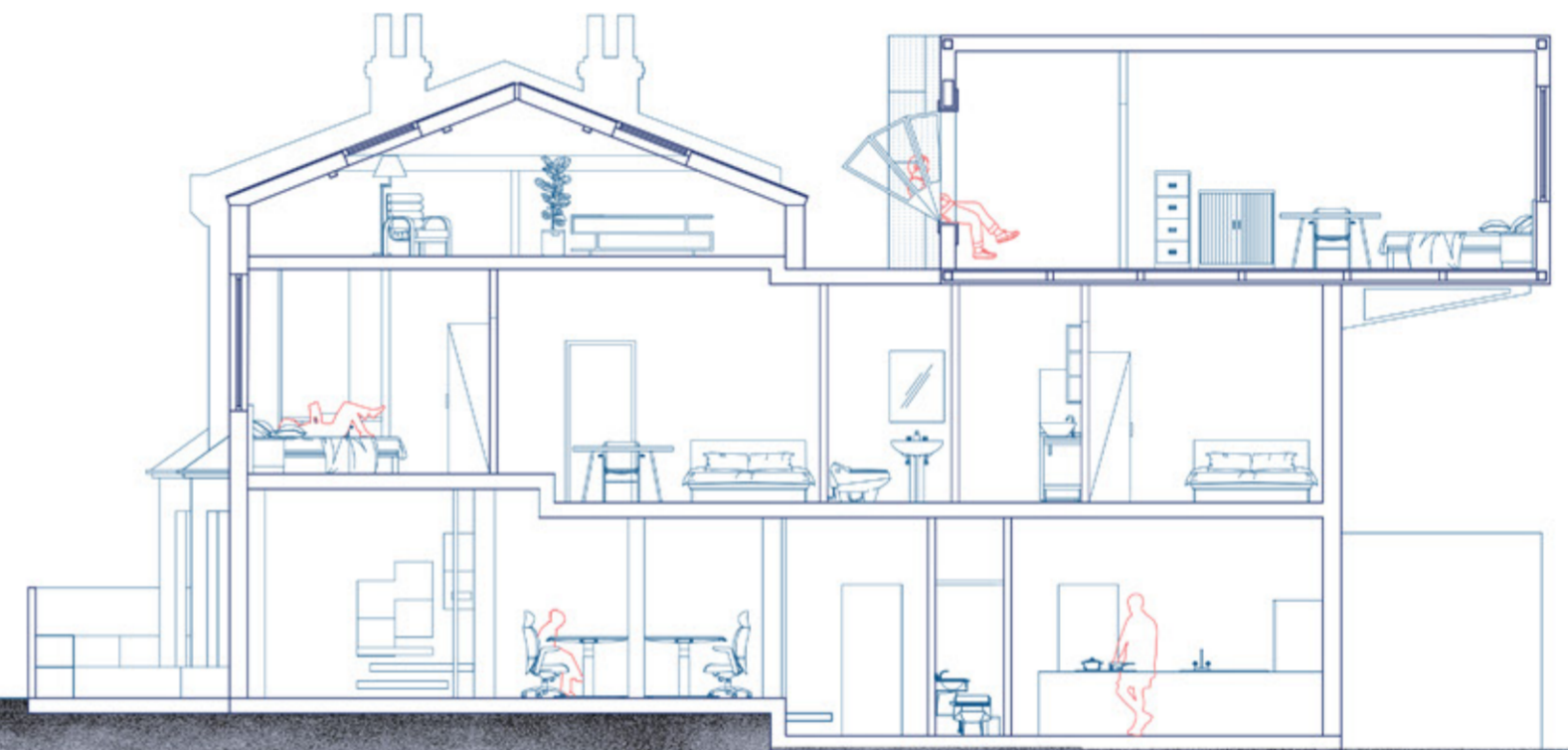
1:100 Plan @A2



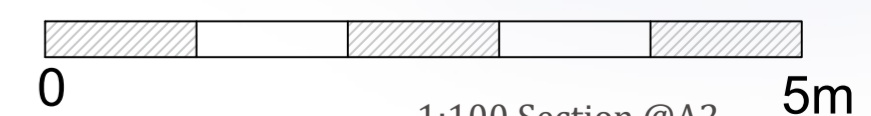
Safehouse 1



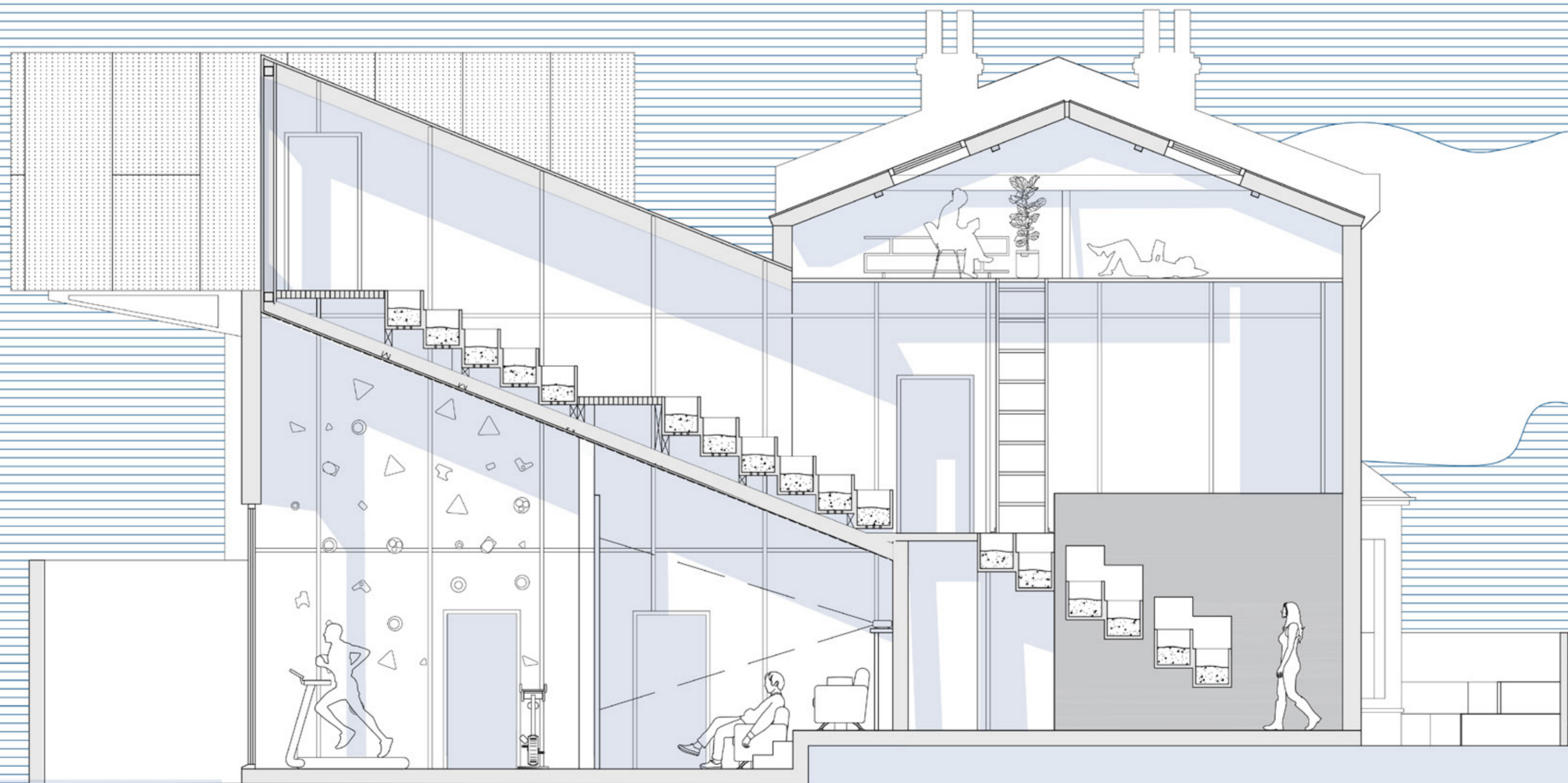
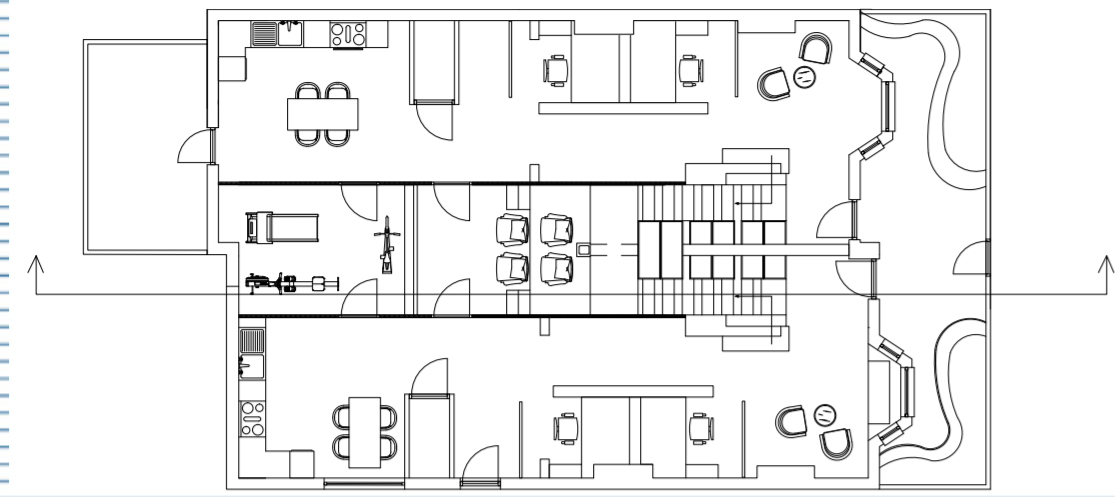
Safehouse 2



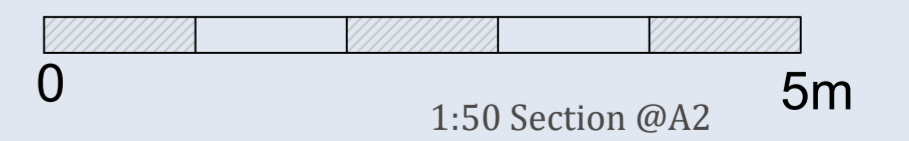
SCALE BAR 1:100



1:100 Section @A2

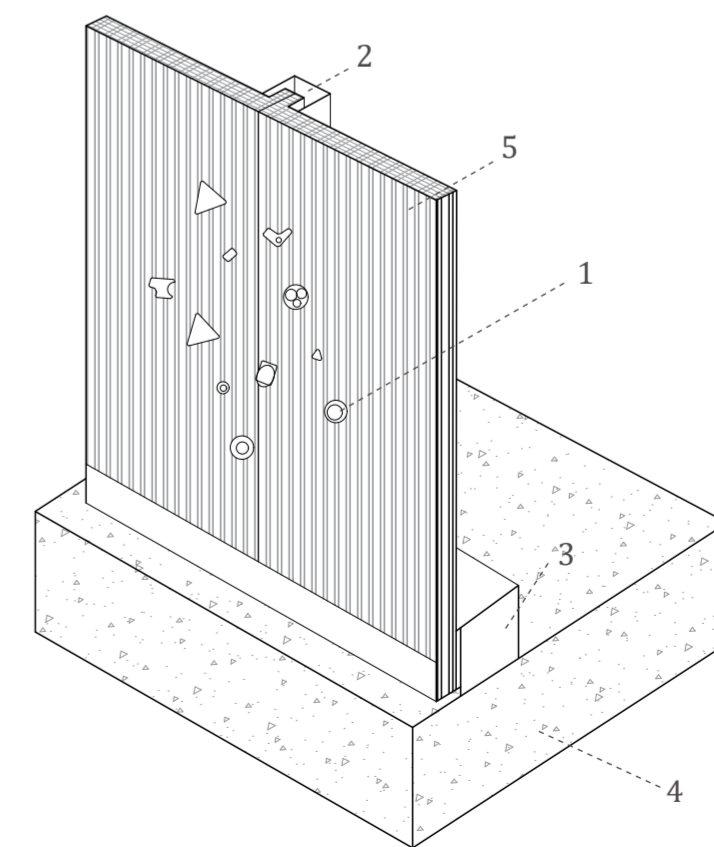
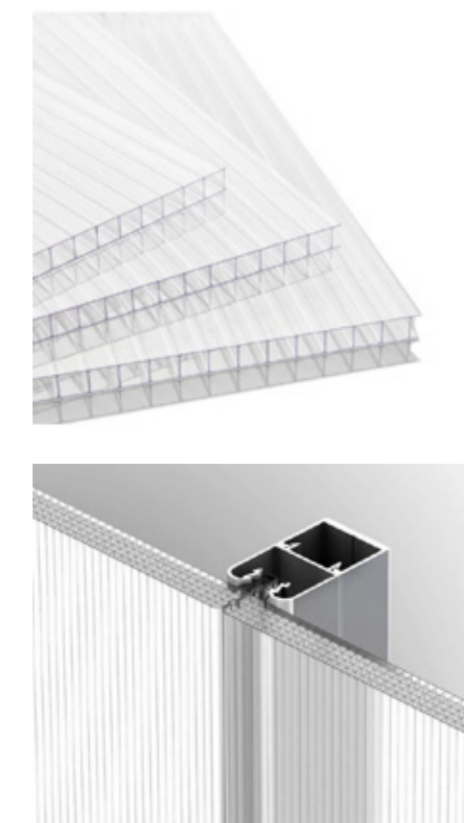
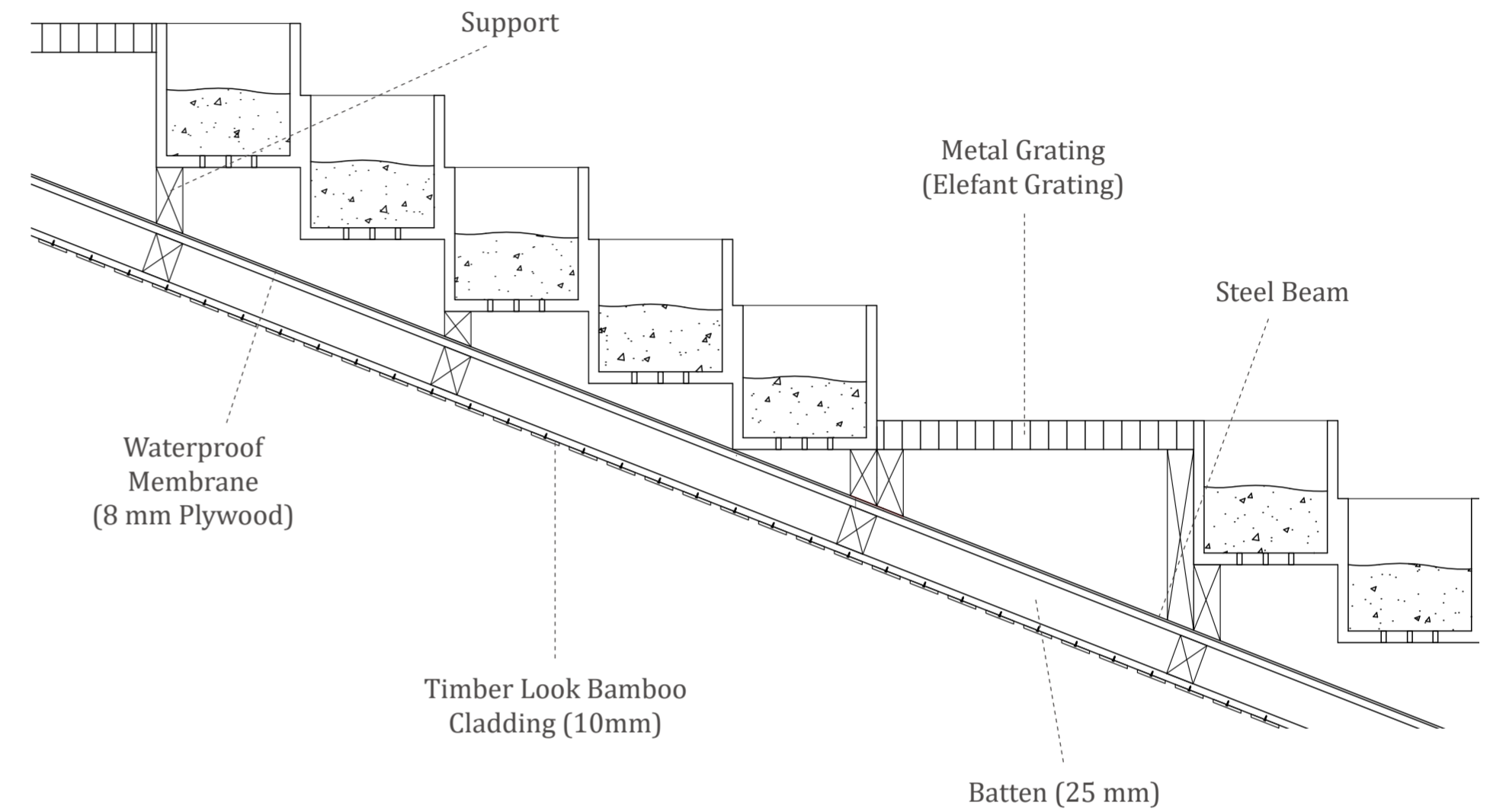
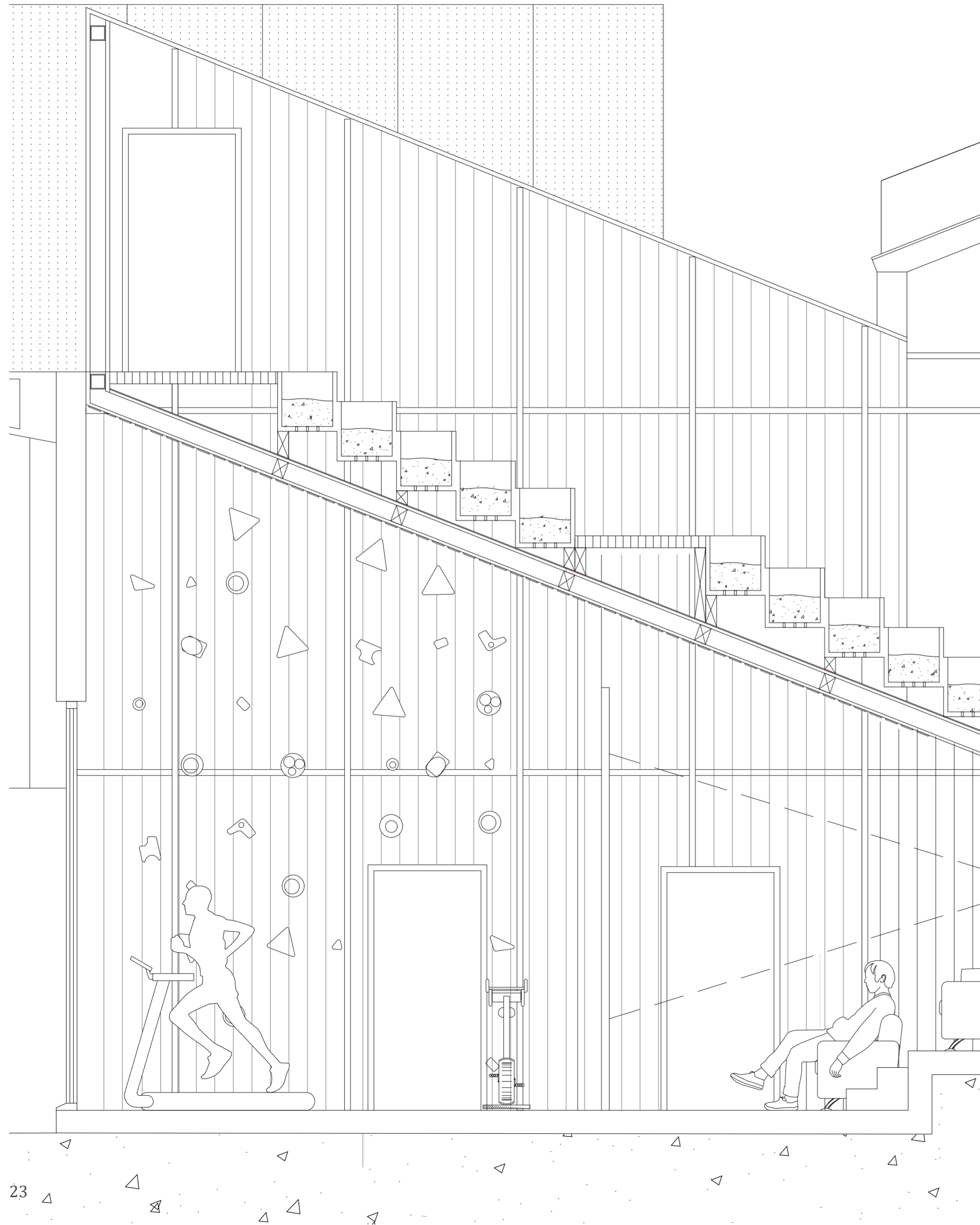


SCALE BAR 1:50



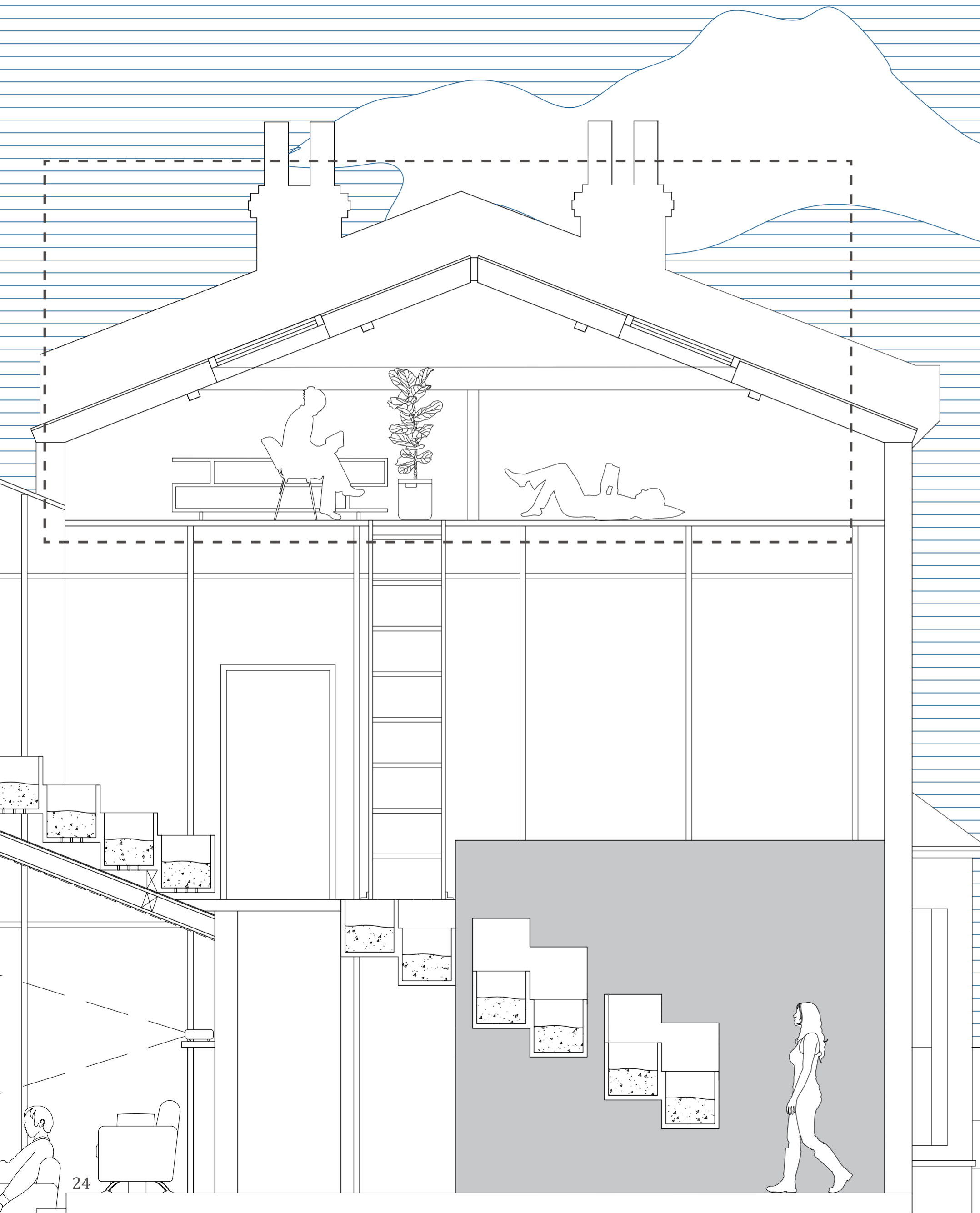
Detail Drawing

1:20 Section @A2

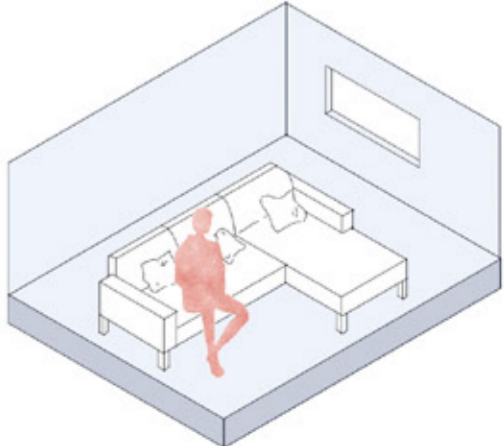
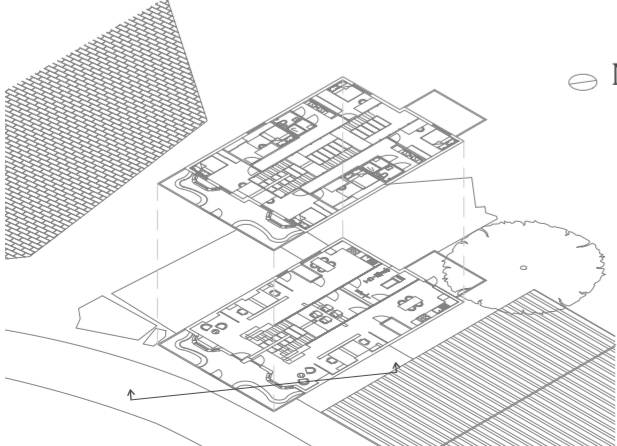


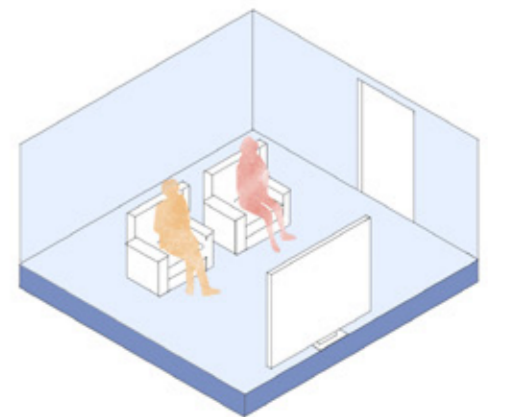
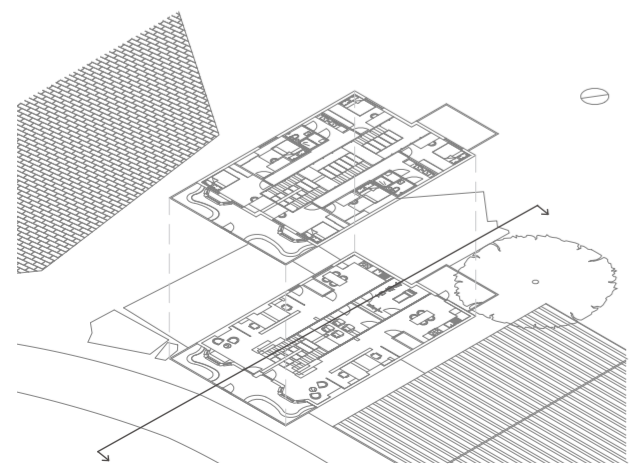
1. Climbing Holder
2. Connector Aluminium
3. Floor Rail
4. Existing (Concrete) Floor
5. Polycarbonate Sheet (15mm)

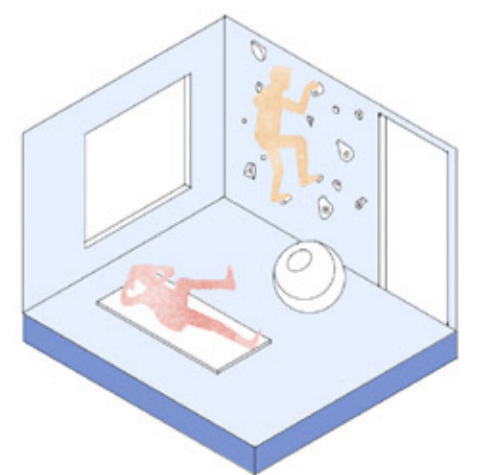
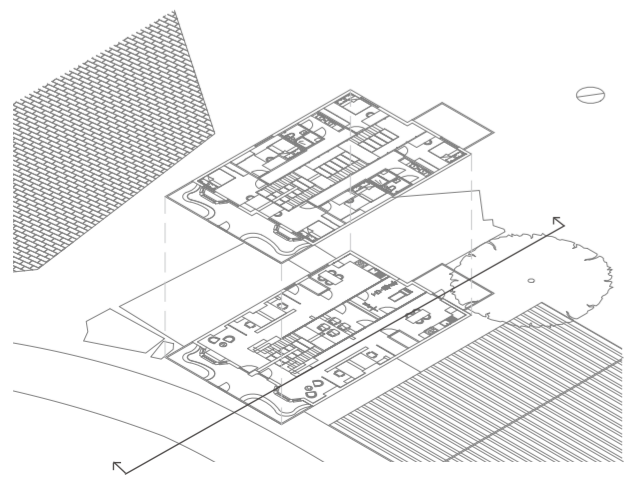
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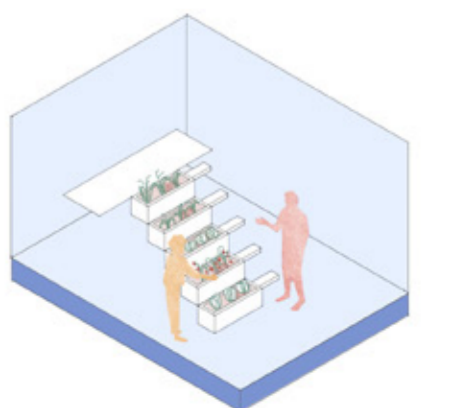
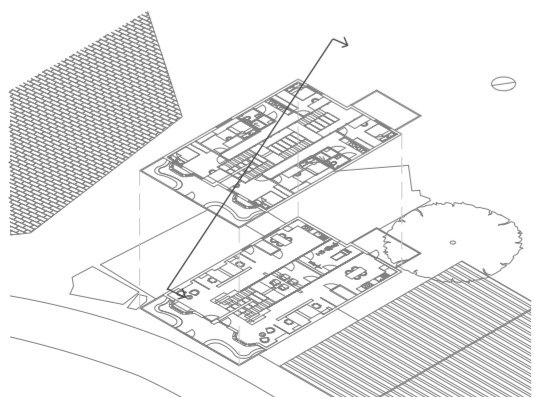


Final Visual Render









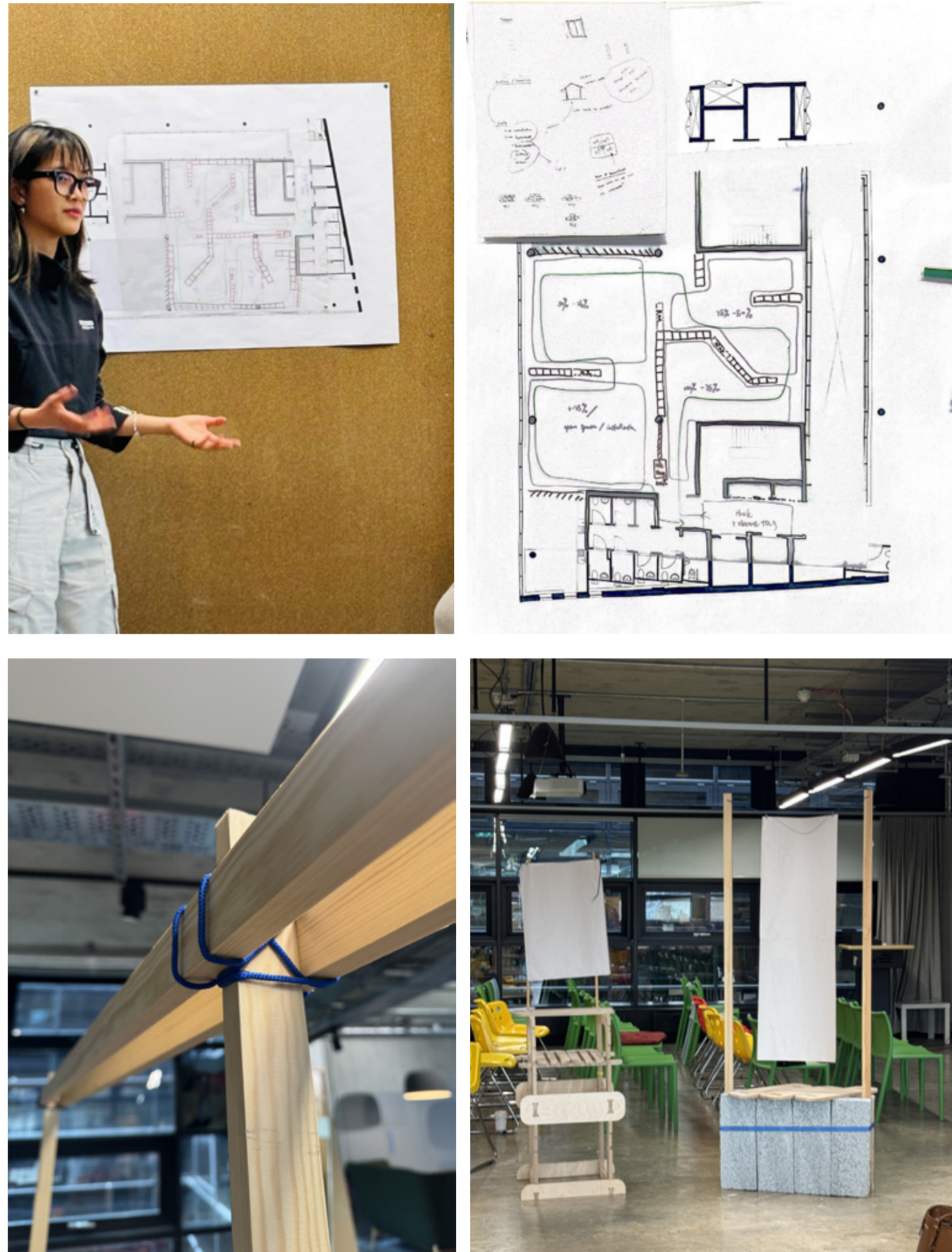


3D Scan Workshop

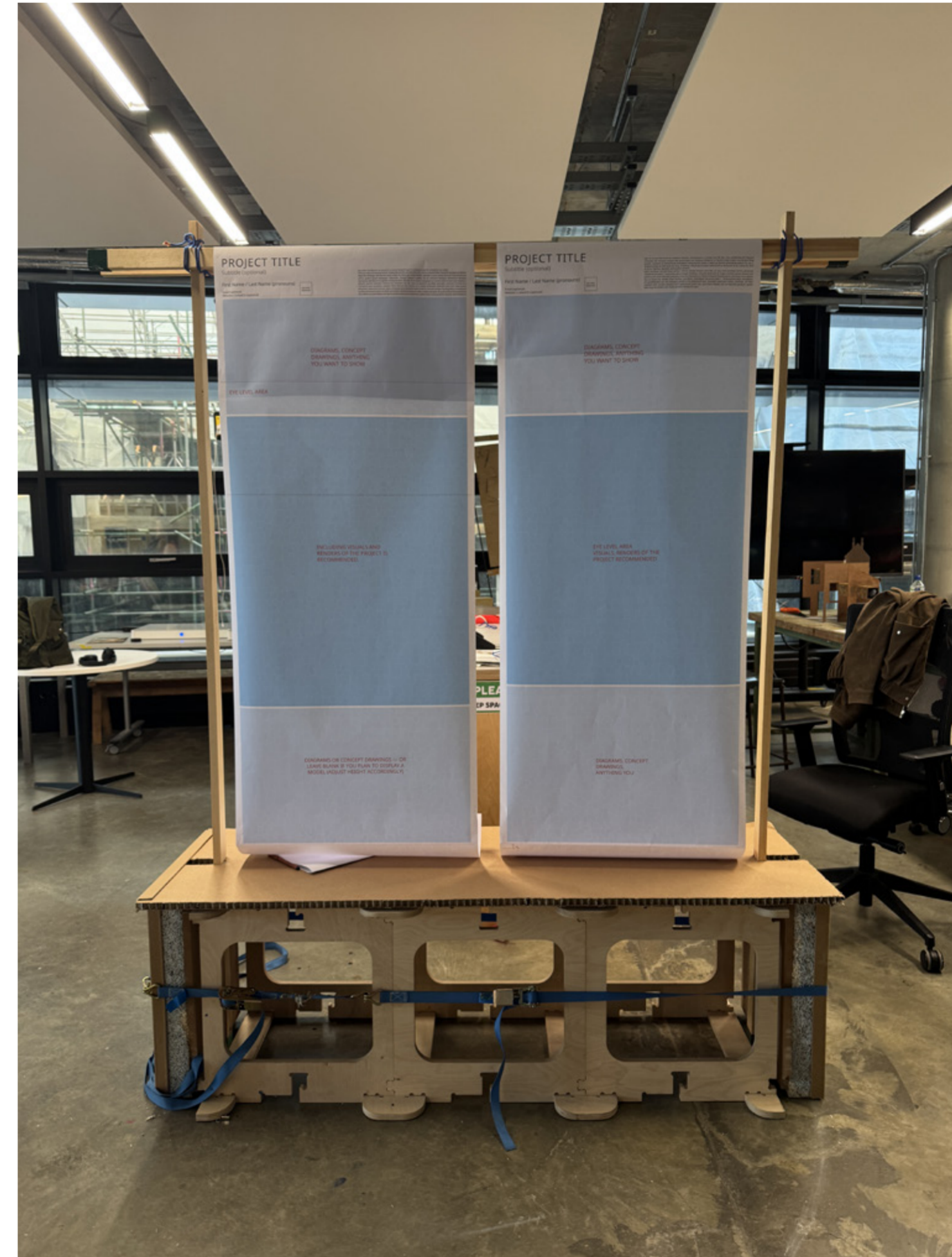


Graduate Exhibition Show

Design Development And Process Of Build Team.



Final Outcome



Reference List

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