

ORGANIC MATTER

Organic Matter represents a paramount space within the local community, offering an inclusive allotment that serves not only as a means to nourish individuals but also as a hub for various activities within the building. Distinguished by its hydroponic gardening techniques and self-sustaining system, the allotment exemplifies a unique approach to cultivation, maintained by volunteers and visitors.

In light of the challenges posed by Covid-19, which have resulted in higher levels of mental health issues and social isolation, this space emerges as a haven for individuals seeking solace and reconnection through their shared appreciation for nature, gardening, and sustenance. It transcends cultural boundaries, acting as a unifying force that brings diverse communities together.

Furthermore, the repercussions of the ongoing cost of living crisis have affected individuals' access to an adequate food supply, even among the most vulnerable, including young children. Within this design, a core objective emerges — to provide assistance to those in need. The produce cultivated in the allotments serves as a vital resource that can be donated to the local community, offering sustenance to those facing food insecurity. Additionally, the harvested yield plays a pivotal role in supplying the kitchens, serving the café/restaurant area. Moreover, it contributes to the creation of long-lasting products that supplies the sustainable refill shop.

Organic Matter embodies a profound commitment to addressing the multifaceted challenges faced by the community, acting as a catalyst for positive change. By intertwining the principles of environmental stewardship, community engagement, and the alleviation of food insecurity, this design stands as a testament to the transformative power of a shared passion for nature, cultivation, and care.



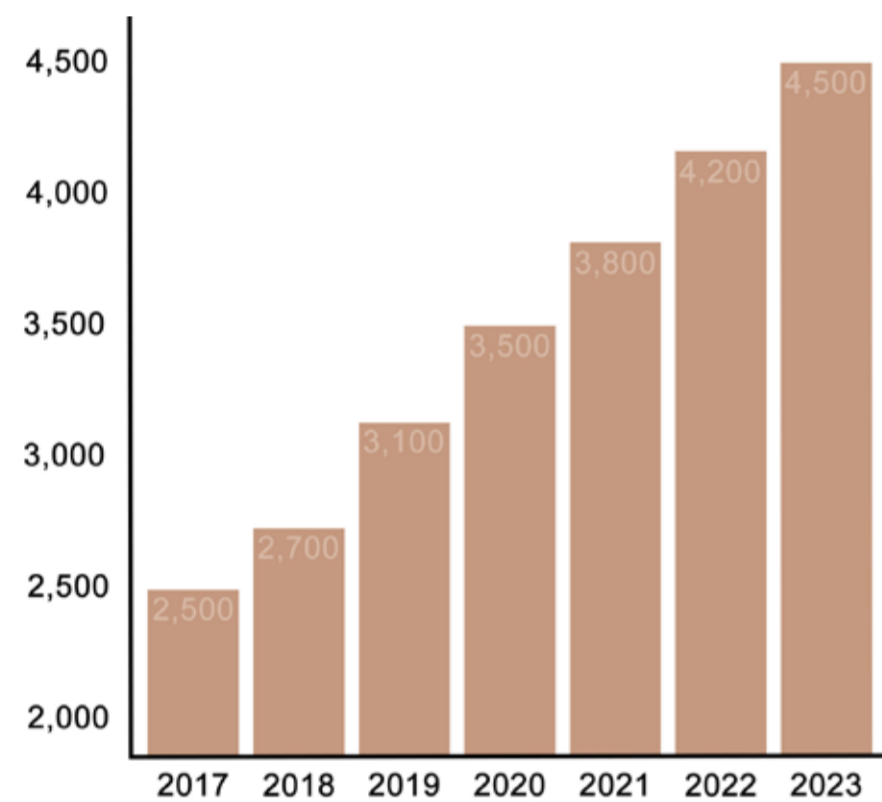
Site map



- Boathouse 4
- Historic dockyard buildings
- Surrounding roads
- Old Portsmouth buildings

The location of this project is in the Historic Dockyards of Portsmouth in the Boathouse 4, a large warehouse like building with access to the water both inside and outside of the building.

Number of overcrowded homes per year in Portsmouth



This graph shows that overcrowding in Portsmouth is on the rise, with this being taken into consideration, there will be an increase in demand for housing which in turn will take up more land. This leads to less room for social and community areas like parks and gardens, with the recent events of the cost of living crisis and the ongoing effects of the lock down, local communities rely on spaces that allow them to socialise and be around nature.

Percentage of flats near the site diagram



The area surrounding the site is majority flats and apartments, this information is key as it suggests that the local community lacks garden and growing space.

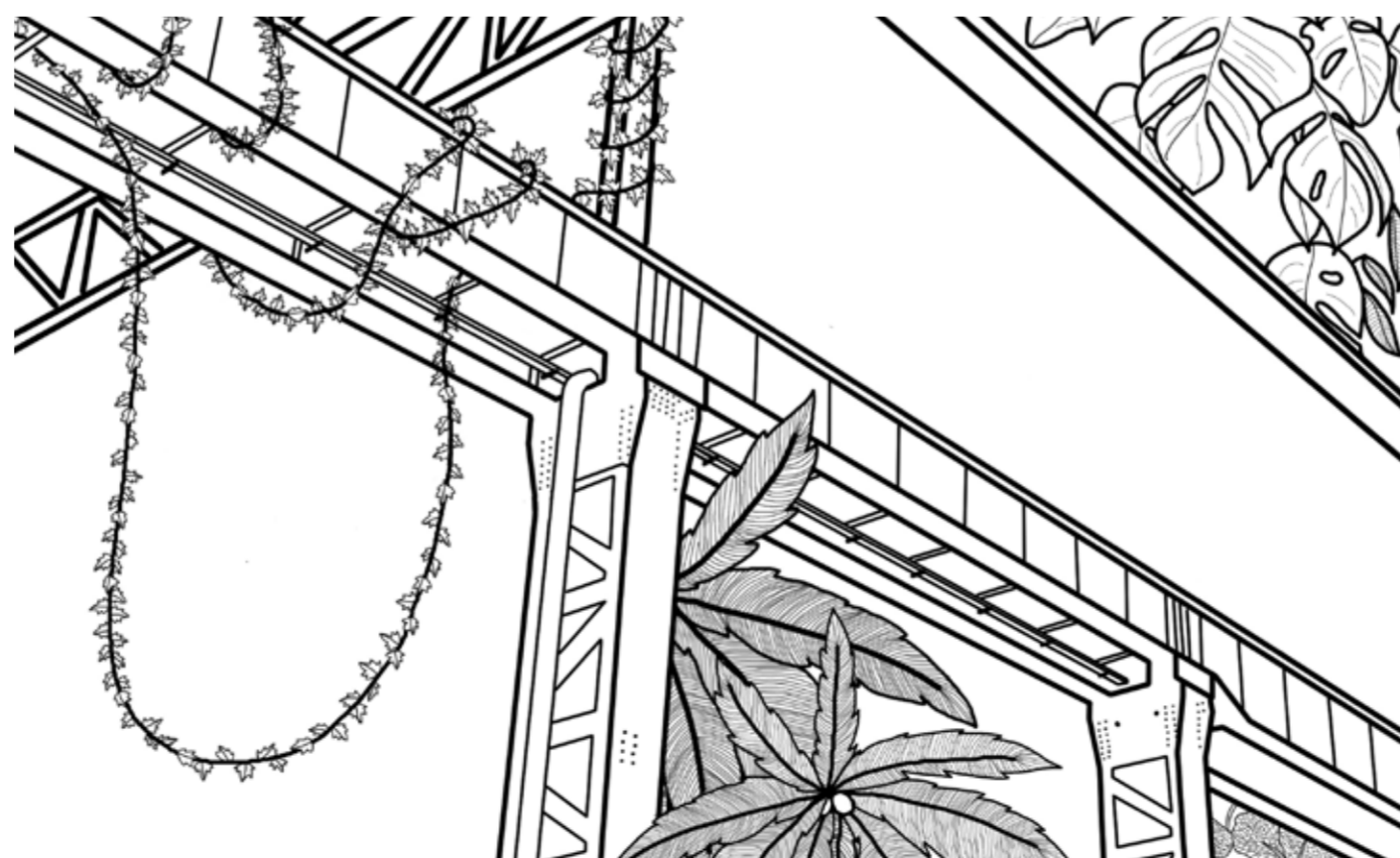
- Boathouse 4
- < 40%
- 40.1 - 50%
- 50.1% >

The site, design and context

Portsmouth, renowned as a shipping port facilitating the import and export of goods worldwide, bears witness to the substantial environmental impact associated with transporting food over long distances. This practice engenders alarming levels of pollution, despite the ease with which we can cultivate seasonal produce in the UK. However, the lack of available garden spaces and lack of education surrounding the benefits of seasonal produce and gardening exacerbate this issue. Thus, this dedicated design endeavours to offer individuals a sanctuary wherein they can acquire the knowledge and skills necessary to cultivate their own sustenance.

At the heart of this innovative design lies a pivotal feature—the hydroponic garden. Distinguished by its distinctive methodology, hydroponic systems disregard conventional soil-based cultivation in favour of hydroponic solutions. The nutrient-rich hydroponic solution provides the necessary sustenance for plants to thrive, eliminating the need for traditional soil-based growth mediums. Augmenting this setup is the integration of controlled lighting, which significantly contributes to the resounding success of the hydroponic garden. The Organic Matter allotment, reliant upon the efforts of volunteers and visitors for its maintenance, benefits immensely from the efficiency of the hydroponic system. This methodology minimizes the demand for extensive maintenance routines, as the plants receive appropriate hydration and nourishment through a precisely calibrated solution that is systematically pumped up and drips down through the piped structure.

By embracing such an innovative and efficient approach, the Organic Matter allotment endeavours to confront the prevailing challenges posed by limited garden space, environmental concerns, and the lack of education surrounding seasonal produce cultivation. It not only serves as a platform for experiential learning but also empowers individuals to participate actively in sustainable agriculture practices, forging a deeper connection with their food sources. Through this transformative endeavour, Portsmouth can begin to mitigate the environmental impact of shipping, whilst fostering a more resilient and self-sufficient community rooted in the principles of local cultivation and ecological harmony.



Bea lives locally, she struggles financially as she is now retired. With the increase in prices she had to reach out to local food banks to get by. When she discovered Organic Matter she found a safe place where she didn't feel as guilty taking food as she gives back through volunteering. On the weekends she looks after her grandchildren and brings them to Organic Matter to learn how to grow their own food, to cook and to be surrounded by nature.



Mackenzie is a student at the University of Portsmouth, he found that he couldn't quite connect with people on his course as he started through lock down. When he discovered Organic Matter he chose to study here regularly and through doing so has met other people locally who he now considers his friends. This building has been a key factor in his confidence building as he's met new people and learnt new skills.

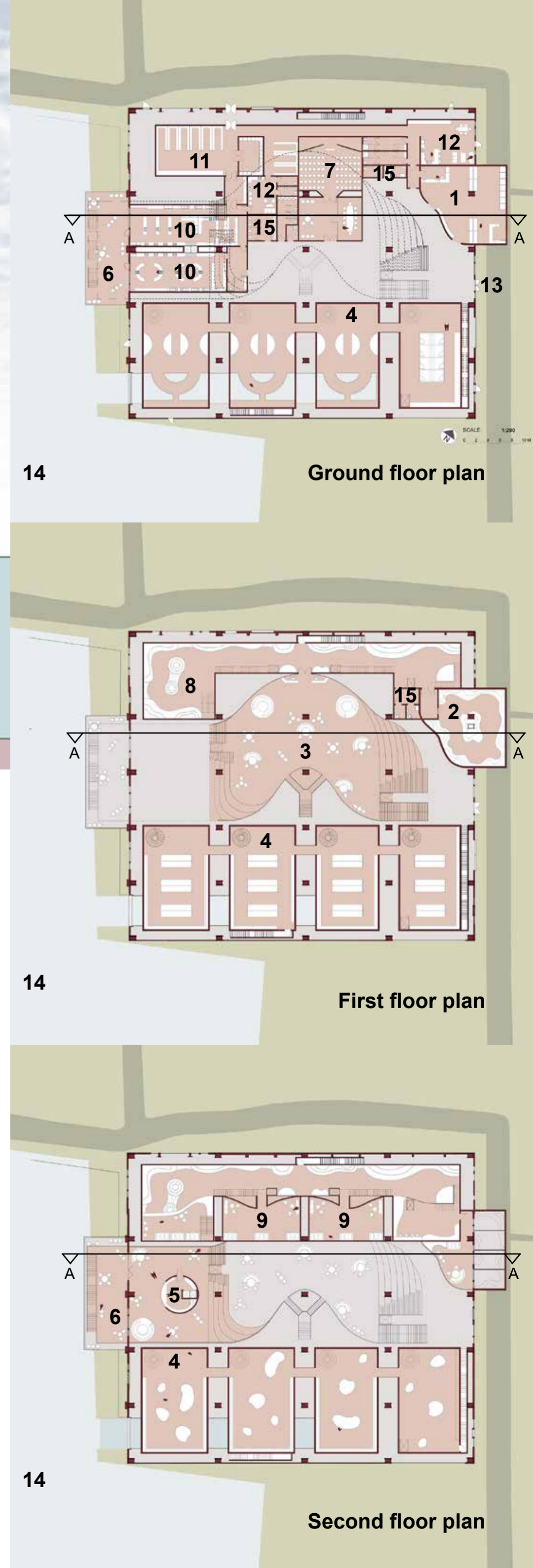
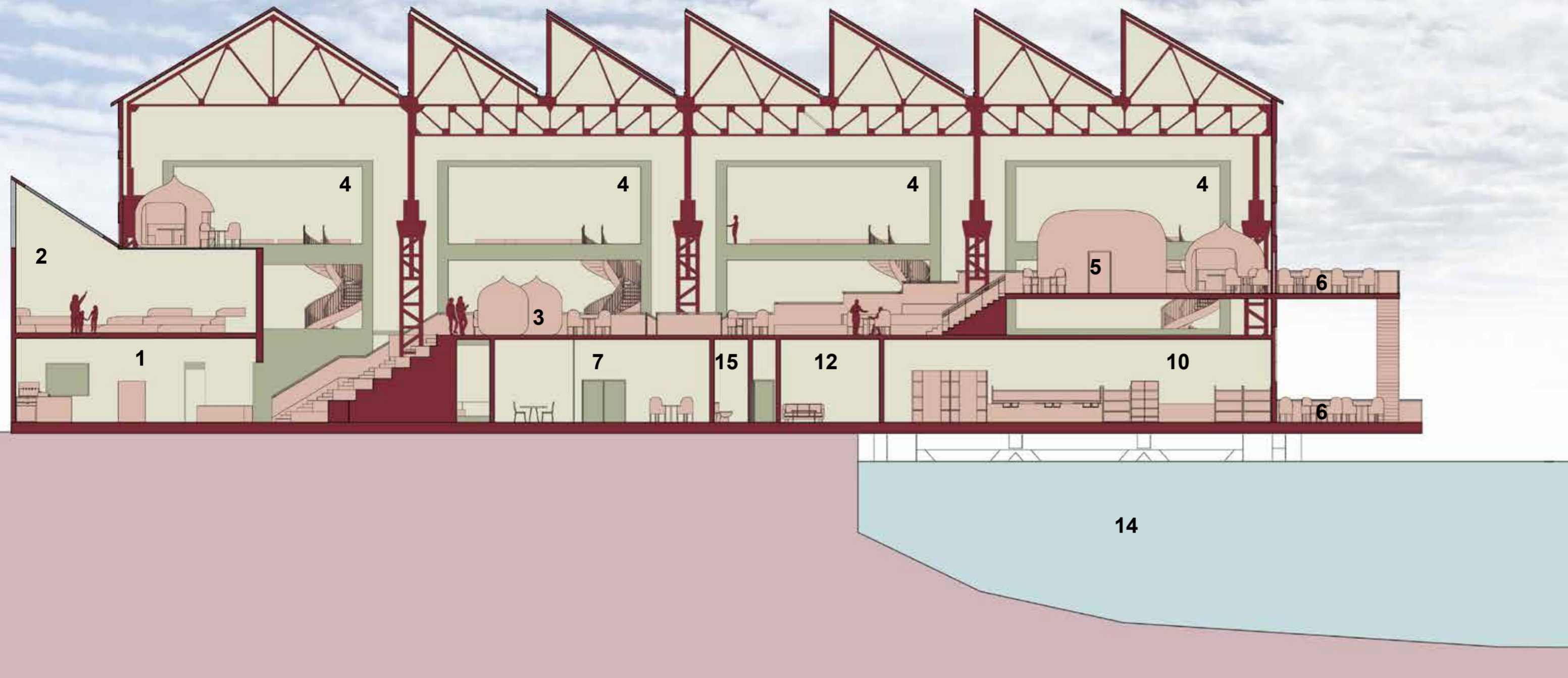


Elsie lost her job through lock down, she is a passionate gardener but hated the job she did have, upon having time to reflect she decided to make gardening her career and got a job at a garden centre. Whilst this was great she found that she has more freedom for what she wants to grow in Organic Matter and now sees it as somewhat her own. Again Elsie has struggled with the cost of living crisis so benefits from the fresh produce that is donated away.



Key people

Section AA



Floor plans and sections

These visuals show the arrangement of the allotment space, encompassing every floor of the building. Spanning across the three levels, the allotment space exhibits a thoughtful integration that permeates throughout the entire structure, instilling a sense of cohesiveness and functionality.

Situated centrally the seating area serves as a pivotal element, seamlessly bridging the gap between the allotment space and the adjacent botanical garden. This strategic placement not only fosters a smooth transition between these two distinct areas but also encourages a symbiotic relationship, where the seating area acts as a space of connection where people can gather and reflect.

In essence, the amalgamation of the allotment space, the centrally located seating area, and the adjacent botanical garden exemplifies a holistic approach to design, where elements seamlessly interweave, creating a captivating environment that invites exploration, rejuvenation, and a deep connection with community and nature.



Botanical garden



Cafe and seating area



Butterfly garden and shop

Legend

- 1 - shop
- 2 - butterfly garden
- 3 - seating area
- 4 - allotment space
- 5 - cafe pod
- 6 - outside seating
- 7 - multi purpose event room
- 8 - botanical garden
- 9 - quiet seating area
- 10 - kitchen
- 11 - storage
- 12 - staff area
- 13 - entrance/exit
- 14 - the sea
- 15 - toilets

14

Second floor plan

Hydroponic gardening

The idea behind the hydroponic garden system emerged from a deep contemplation of how to incorporate a captivating, multifunctional, and productive allotment system within the building, with the capacity to supply the kitchens and donation area. Research into cultivation methods led to the realization that hydroponics stood as the most optimal approach, given its inherent suitability for a garden reliant on the contributions of volunteers and visitors, mitigating the risk of failure due to potential lapses in maintenance.

An element of beauty within this structure is in the exposure of the roots, which shows the growth and journey of the plants. This serves as a metaphor for the intended impact of the design on the community it serves. The aspiration is to create a space that mirrors the growth and development of the community itself—a space where the education surrounding seasonal produce expands. Moreover, the building seeks to act as a space for reconnecting individuals who have faced challenges.

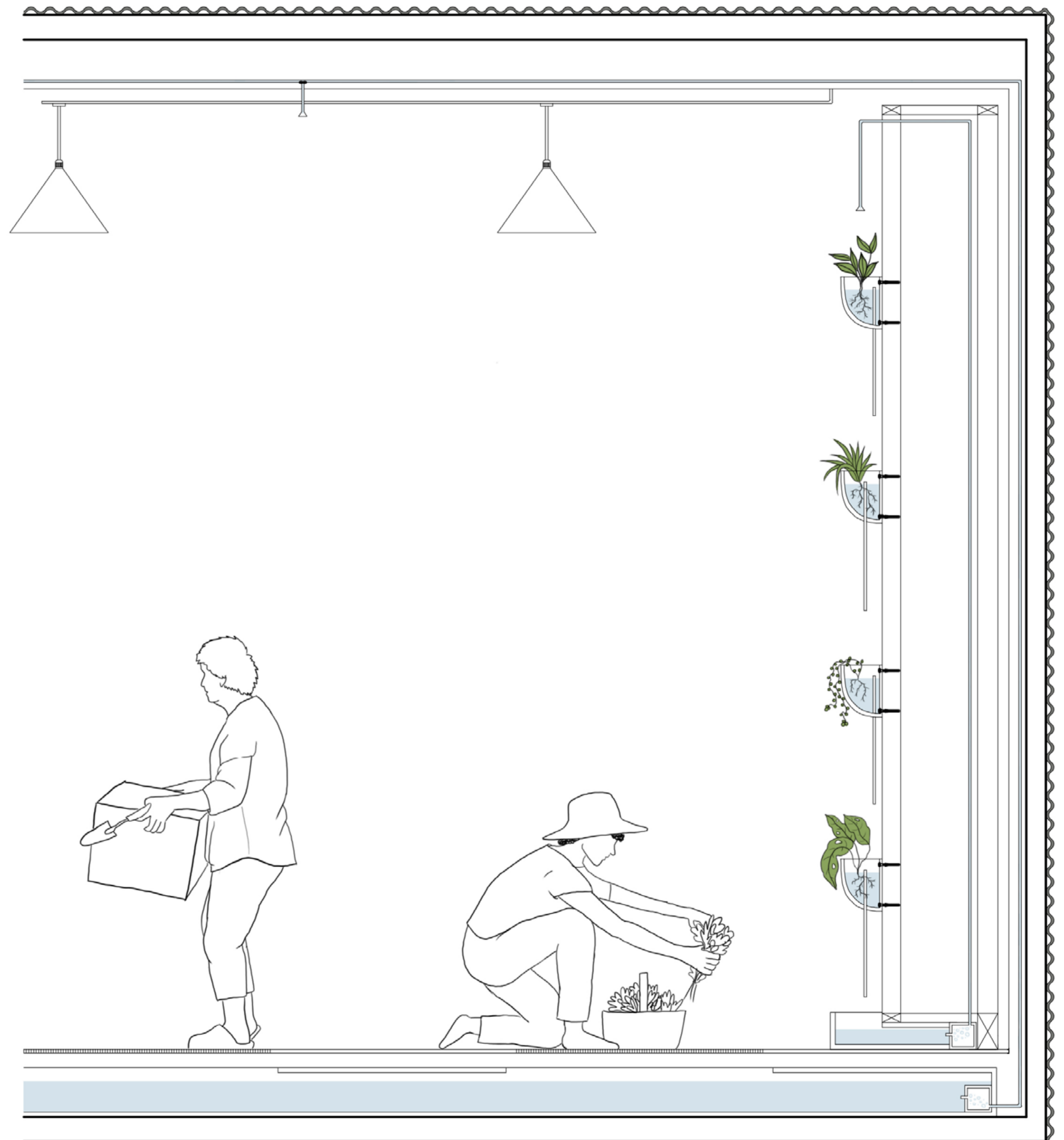


Inspiration

The genesis of my hydroponic garden design drew partial inspiration from Ken Rinaldo's hydroponic herb garden, made for individuals seeking to grow their own herbs within the comfort of their homes.

Crafted using blown glass, the hydroponic garden stands as a testament to the artistry and skill required to bring this intricate vision to life. The organic forms shaped by the glass work confer a sense of delicate beauty upon the structure, rendering it an exquisite centerpiece in any environment it graces.

Harnessing the power of the sun, this innovative system generates electricity to power the water pump, ensuring a self-sustaining and environmentally conscious operation. Through the process of elegant blown glass work and solar-powered functionality, the hydroponic garden emerges through beauty, innovation, and self-sufficiency.





Hydroponic model

The hydroponic garden model I crafted embodies a true-to-life 1:1 scale representation. This model serves as a tangible manifestation of how the design would seamlessly integrate within the overall architectural vision, showcasing the innovative features that set it apart.

Key to the model's design are the specially engineered "plant pods" meticulously designed to accommodate the growth of the plants. These pods serve as a testament to the thoughtful consideration given to the plants' needs while adding an element of beauty that juxtaposes the otherwise robust appearance of the structure. The deliberate exposure of the roots within the design further enhances its aesthetic allure, symbolizing the intrinsic journey and growth of the plants themselves.

The model's functionality is underpinned by a sophisticated drip system. At its core, a tray located at the bottom houses the hydroponic solution, which is then propelled upward through concealed pipes via a water pump. Positioned atop the structure, protruding pipes discreetly drip the hydroponic solution, ensuring a regulated flow into each plant pod. The height of each pod's pipe is precisely calibrated, allowing for controlled water distribution that neither rushes through nor overfills the pods. Through a seamless progression from one pod to the next, the hydroponic solution ultimately reaches the bottom tank, from where it embarks on its cyclical journey once again.

This intricate drip system showcased by the model exemplifies the thoughtful engineering and attention to detail inherent in the hydroponic garden design. The careful management of water flow ensures optimal nourishment for the plants while maintaining a sustainable and efficient cultivation process. By showcasing this intricate functionality in the model, the design's viability and seamless integration within the broader architectural context become apparent, offering a glimpse into the transformative potential of the hydroponic garden concept.

For the construction of this model, I experimented with a variety of methods using recycled plastics and found that vacuum forming and dome blowing created the specific aesthetic that I desired.

