History of the Site



Oxford Railway Station, Jericho and surrounding flooding, Oxford, from the north (Historic England,1947)



Jericho. Oxford (Historic England, 1952)



Jericho, Oxford (Historic England,1947)



Oxford Railway Station, Jericho and surrounding flooding, Oxford, from the north (Historic England, 1947)



Current Jericho (Historic England, 2008)

Reference

[`]Oxford Railway Station, Jericho and surrounding flooding, Oxford, from the north, 1947 © Historic England. Aerofilms Collection - EAW003936 flown 20 March 1947 (https://historicengland.org.uk/images-books/archive/collections/aerial-photos/record/EAW003936)

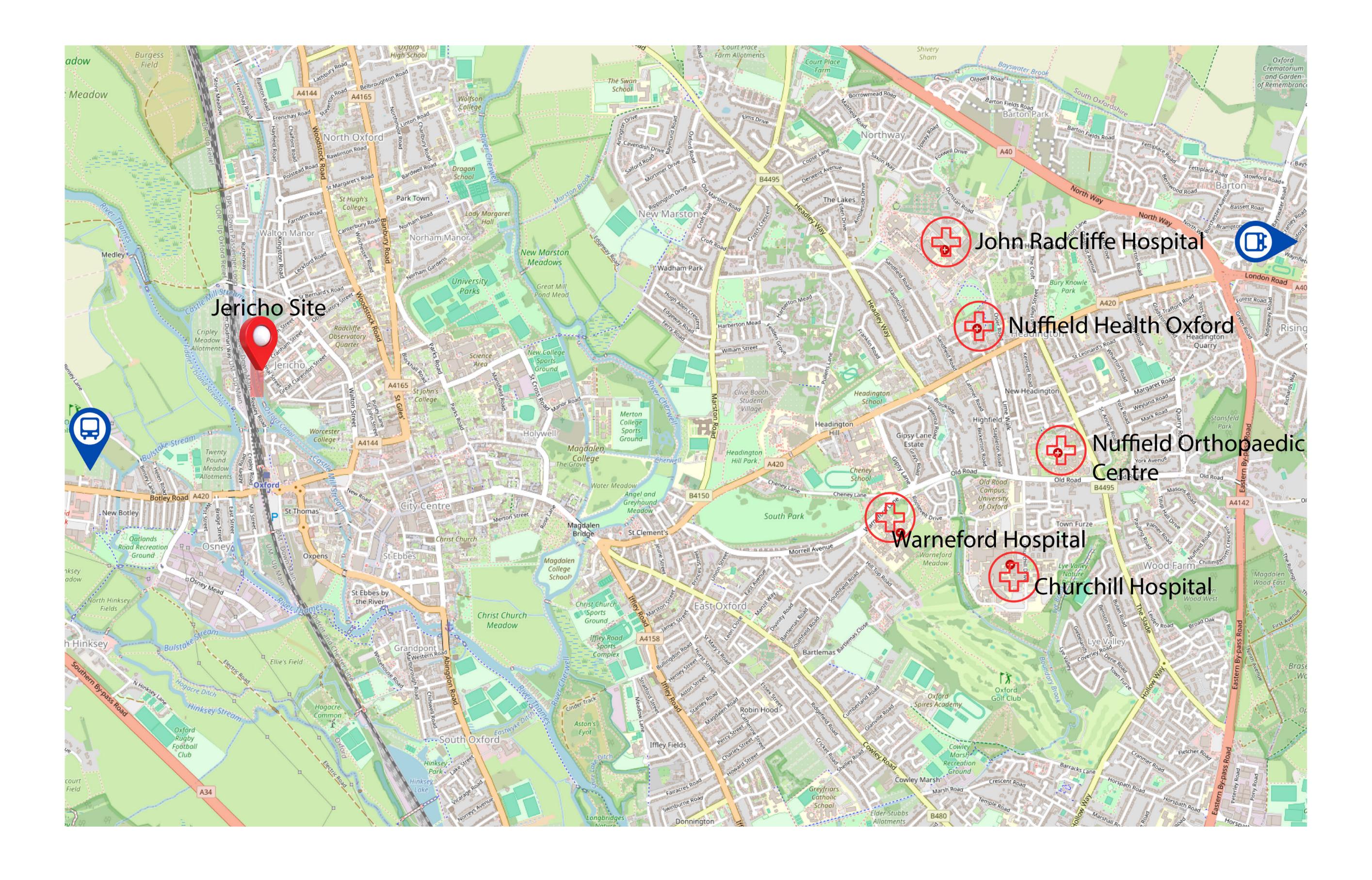
⁾ Jericho, Oxford, 1952. This image has been produced from a prints marked by Aerofilms Ltd for photo editing. © Historic England. Aerofilms Collection | EAW043100 flown 17 May 1952 (https://historicengland.org.uk/images-books/archive/collections/aerial-photos/record/EAW043100)

Source Historic England Archive (RAF photography) raf_cpe_uk_2334_vp4_5327 flown 30 September 1947 - Source Historic England Archive (USAAF photography) us_7ph_gp_loc4_v_5025 flown 24 July 1943 - Aerial Photo of © Historic England 26035_001 flown 24 June 2008

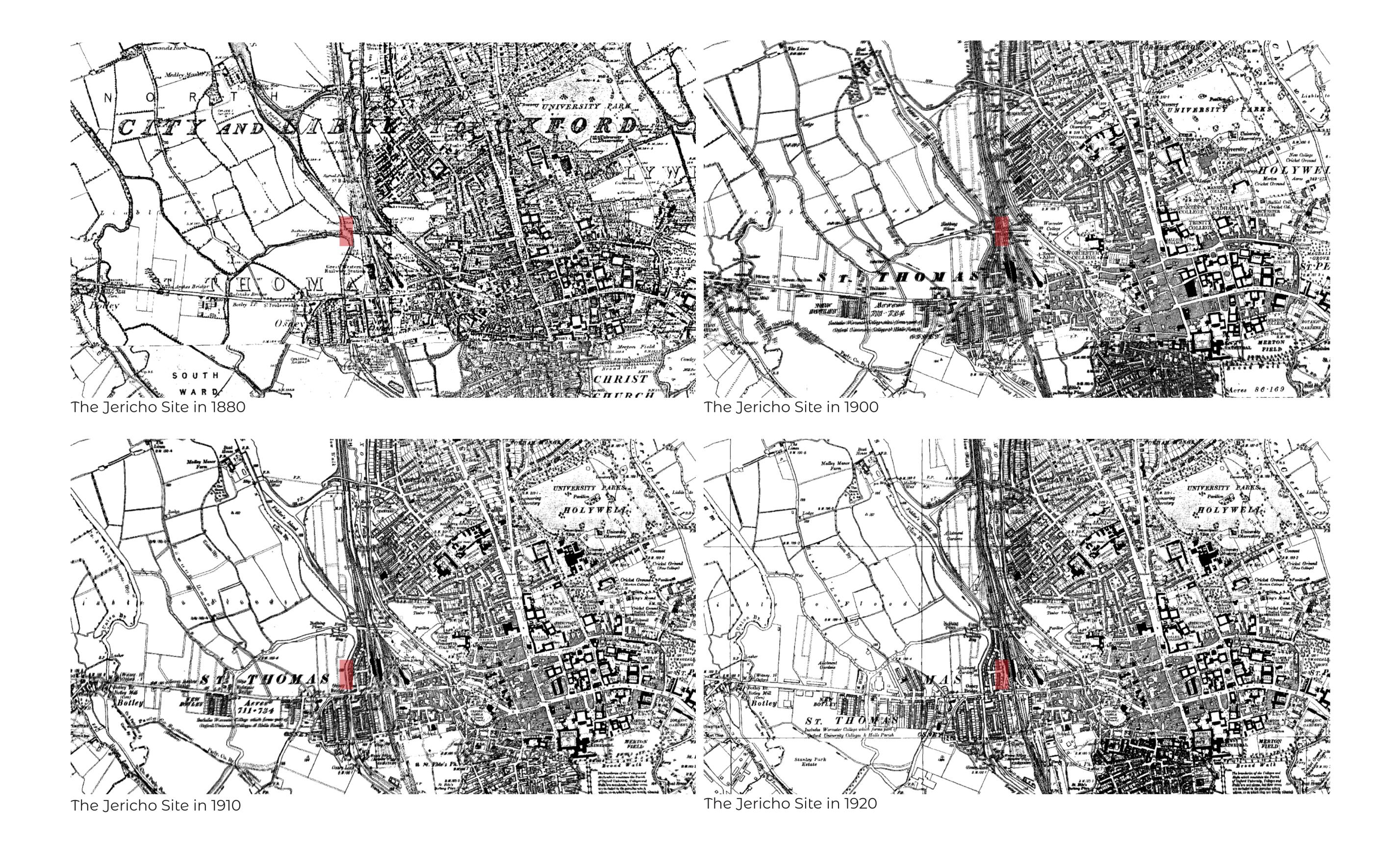
Site Location in UK



Current Planning - Location of the site



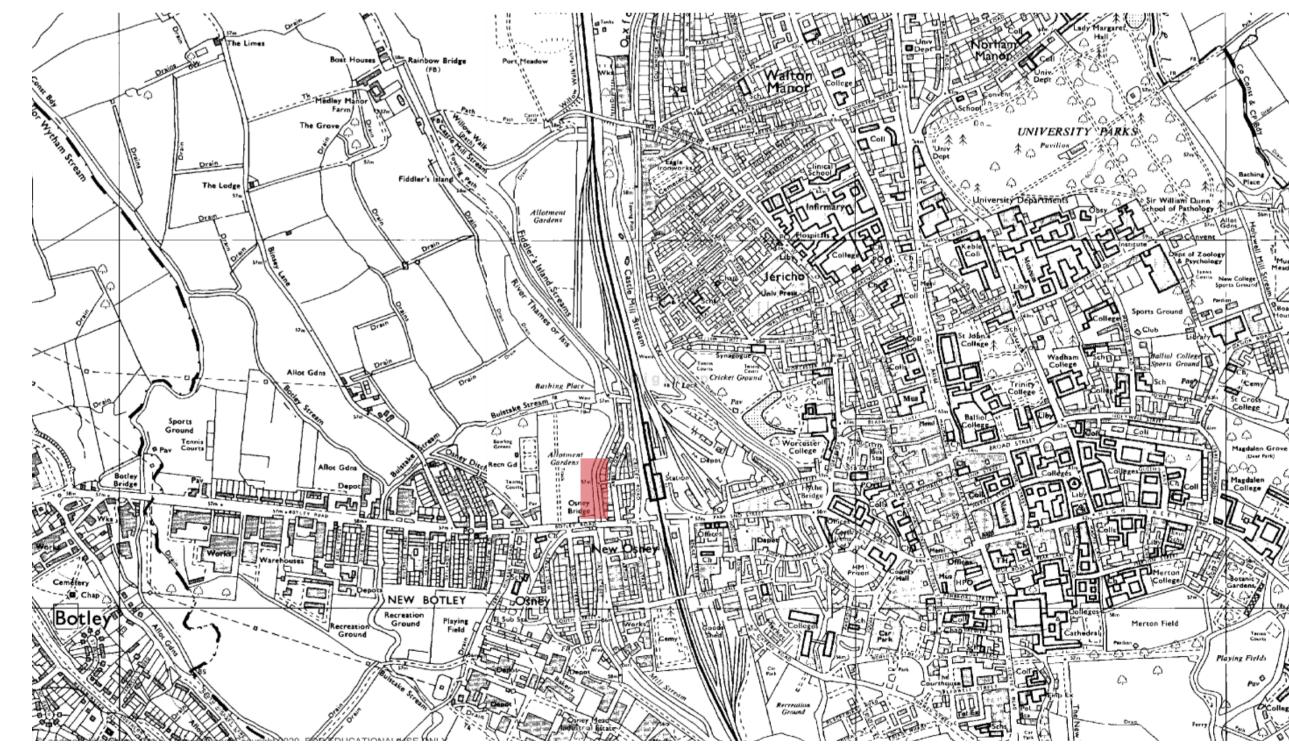
How Jericho has changed throughout the years?



How Jericho has changed throughout the years?



The Jericho Site in 1930



The Jericho Site in 1970



The Jericho Site in 1940

Analysis

- From the undeveloped and sparse structure of the 1880s
- the urbanization and defined settlement plan near the canal in the 1900s
- Industrial Developments in the 1930s
- to the residential developments influenced by the 20th-century urban planning.

The area seeks developments for

- Canal revitalization
- Smart Urban Planning (Energy-efficient housings, traffic management and blending spaces)
- Cultural Preservation

Pitt Rivers Museum Artifact - Buddha from Burma



Culture and related myth

Symbolism: Jade Buddha statues symbolize harmony and peace.

Impact: Believed to purify the environment, enhancing the well-being of its inhabitants.

Cultural Connection: Linked to the legend of Buddha's enlightenment, which emphasizes self-purification.

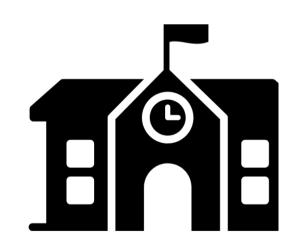


Posture: Traditionally seated Buddha posture symbolizing meditation and enlightenment.

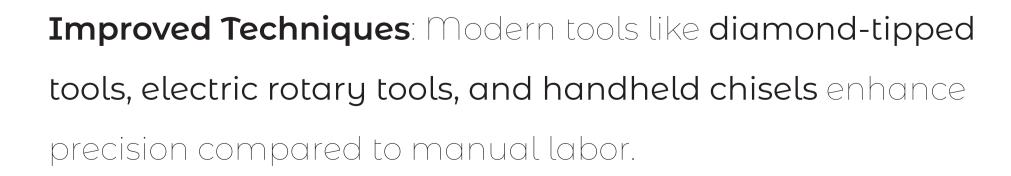
Themes: Reflects peacefulness and harmony with nature.

Craftsmanship: Detailed carvings enduring over a century, indicating the skill and delicate approach of the artists.

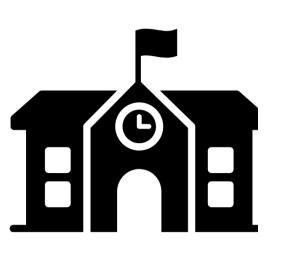




Nowadays



Cultural Uses: Commonly used in **temples**, **monasteries**, and for **jewelry** production.



Material

Thermal Conductivity: Low compared to metals, making it suitable for jade rollers and massage tools.

Heat Resistance: Resistant to heat, with a melting point of approximately 1,400°C.

Heat Capacity: Possesses moderate heat capacity.



Process of making

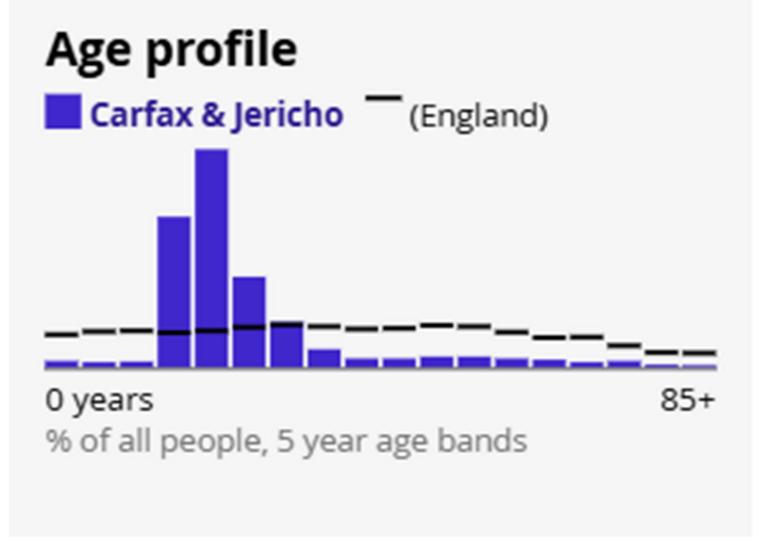
Sourcing: Jade, a very hard stone, is **carefully sourced** to ensure minimal imperfections.

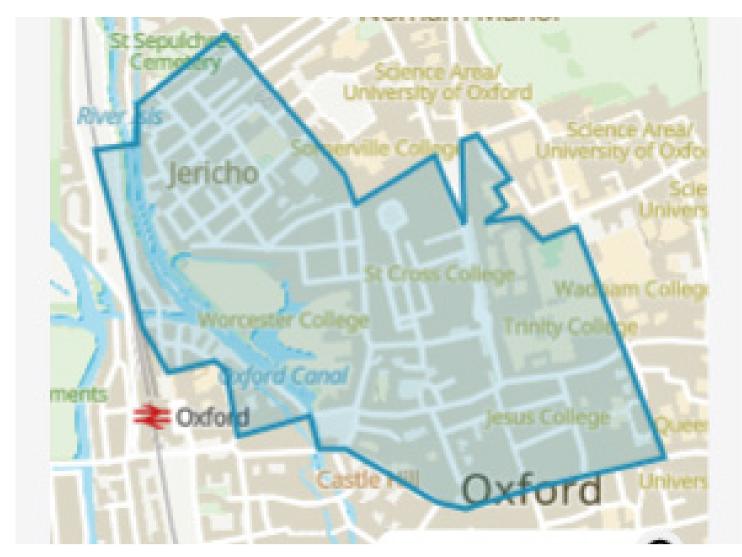
Carving Tools: Traditional tools include hammers, chisels, stones, and picks.

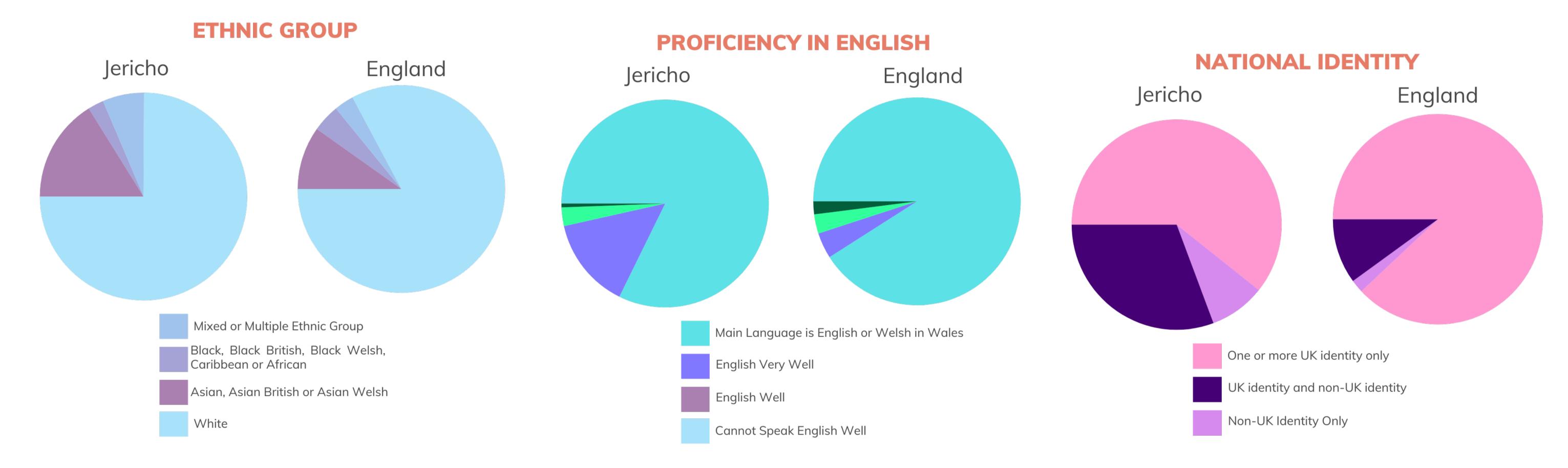
Polishing: Uses abrasives like sandstone, fine grit powders, or sandpaper, followed by oil treatment for a smooth finish.

Project 2A - Siting your ideas - The Jericho Canal, Oxford Site Analysis - Population Demographics

8100 People of **56,490,000** people England







Analysis

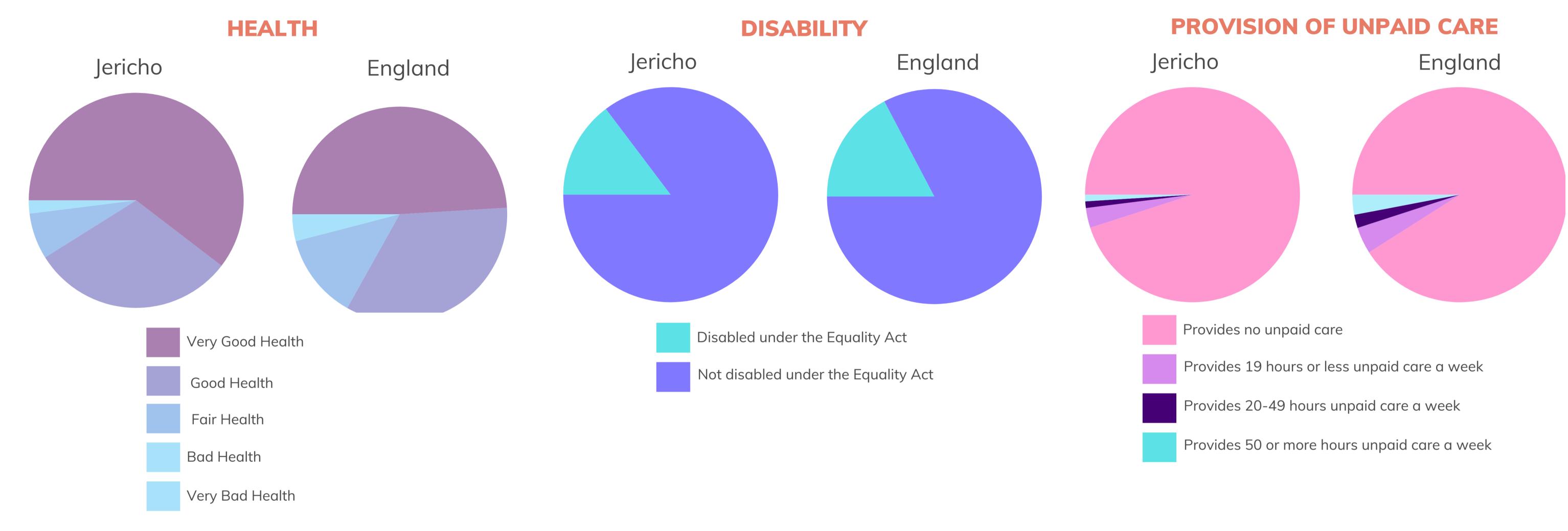
Population - Compared to England's total population, the area represents a smaller but more localised community and distinct demographics.

Age Profile - The age is sperad across different groups, a significant portion representing the working age, impacting the local service needs, work, and serving the community.

English and National Identity - The space is predominantly white, suggesting improvements for culturally inclusive services, events and spaces.

Things to Improve

- Community Center Design and Programs
- Area mapping to maximize accessibility
- Public Spaces such as youth areas, and zones for older peop.e.



Analysis

- Majority reports good to very good health
- A small portion report disabilities, suggesting new accessible healthcare resources

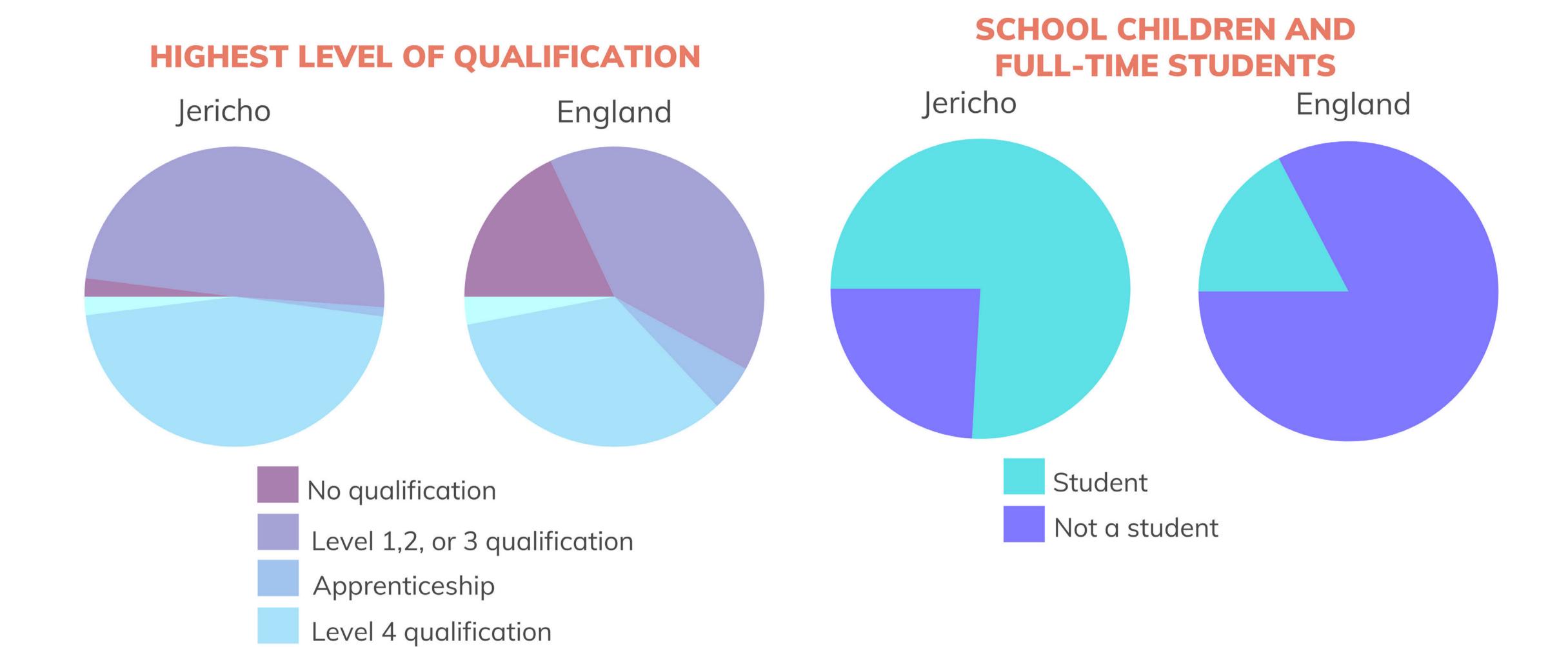
Things to Consider

- Integrating wellness programs, accessible healthcare facilities to cater diverse health needs



Site Analysis - Education





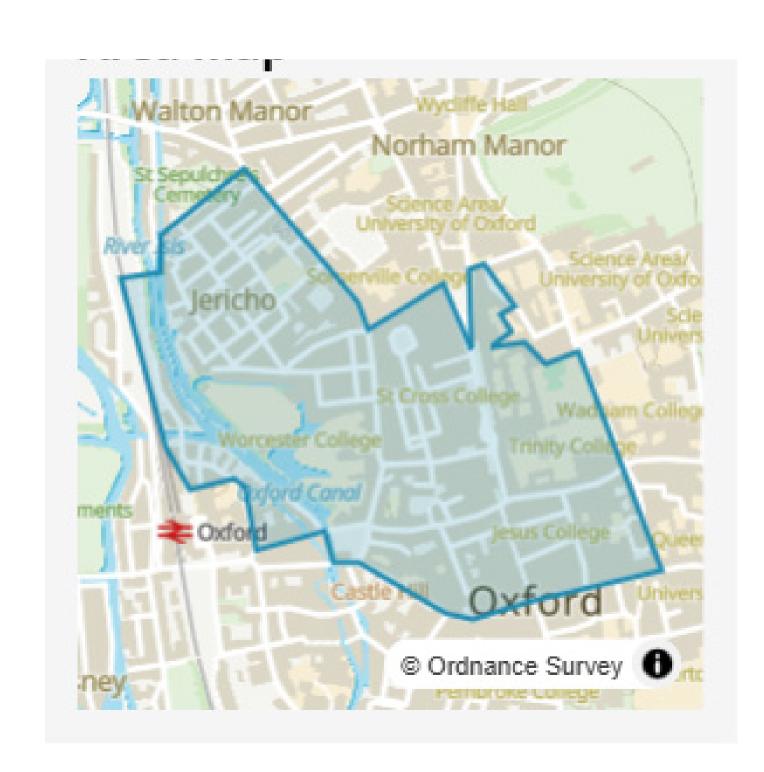
Analysis

- Well-educated community
- Significant portion of schoolchildren and full time students

Other Qualification

Things to Consider

- Student Friendly spaces and resources



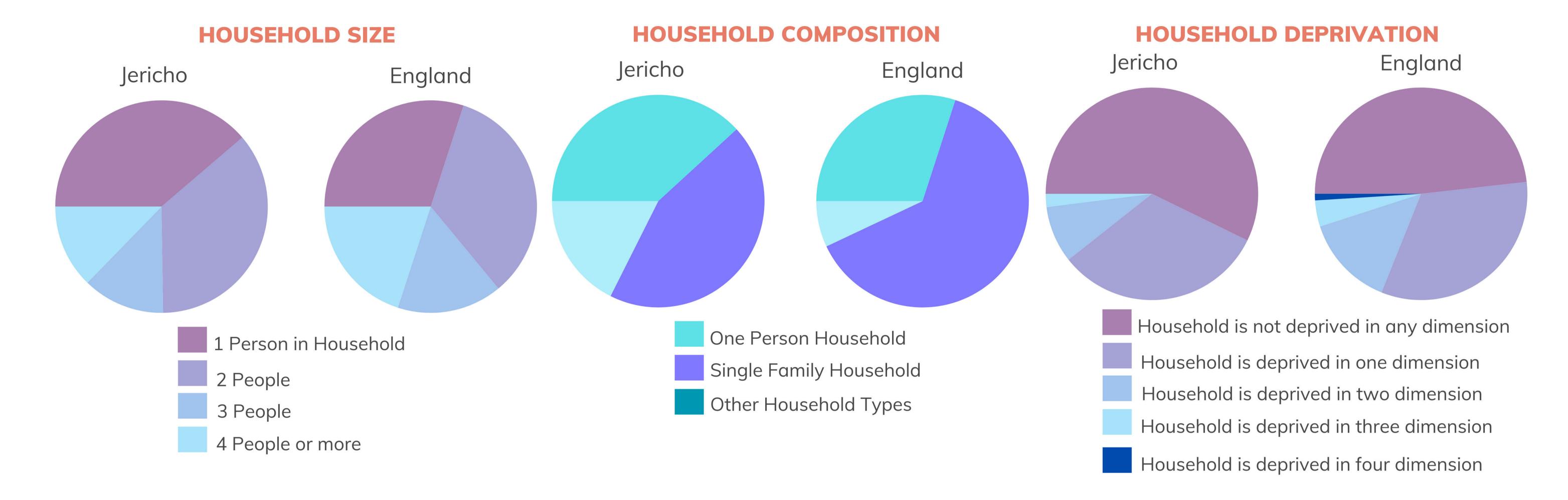
Site Analysis - Housing











Number of households

1,300

households

23,436,100 households in England Rounded to the nearest 100 households

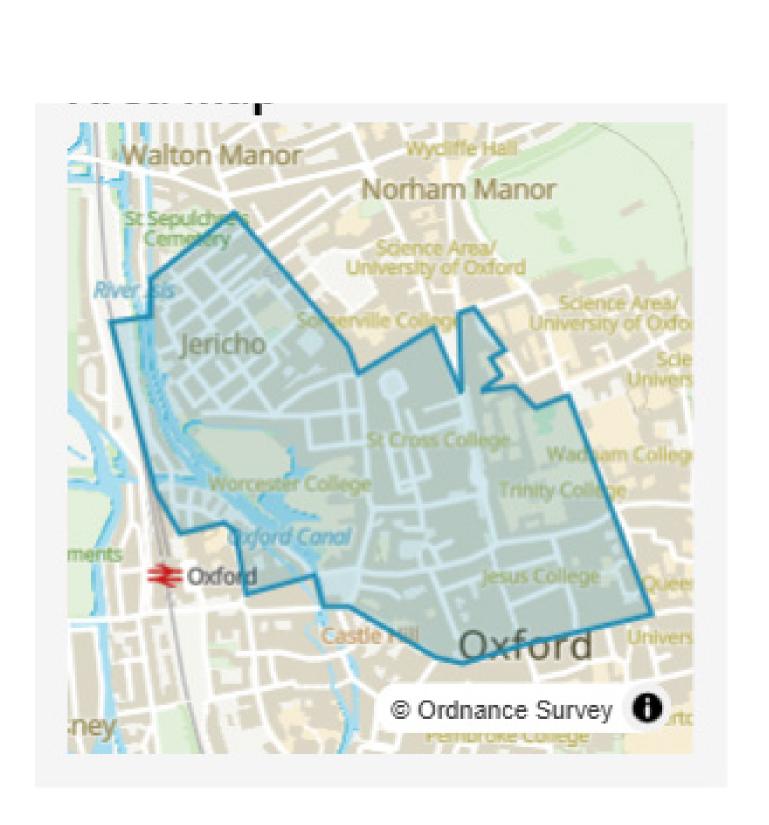
Analysis

Comprises a medium-sized residential community

- Large number of individual-focused ammenities.
- High number of non-family household indicate a variety of living status, including shared accomodations.

Things to Consider

To Develop - manageable spaces to serve both single-person and small family households



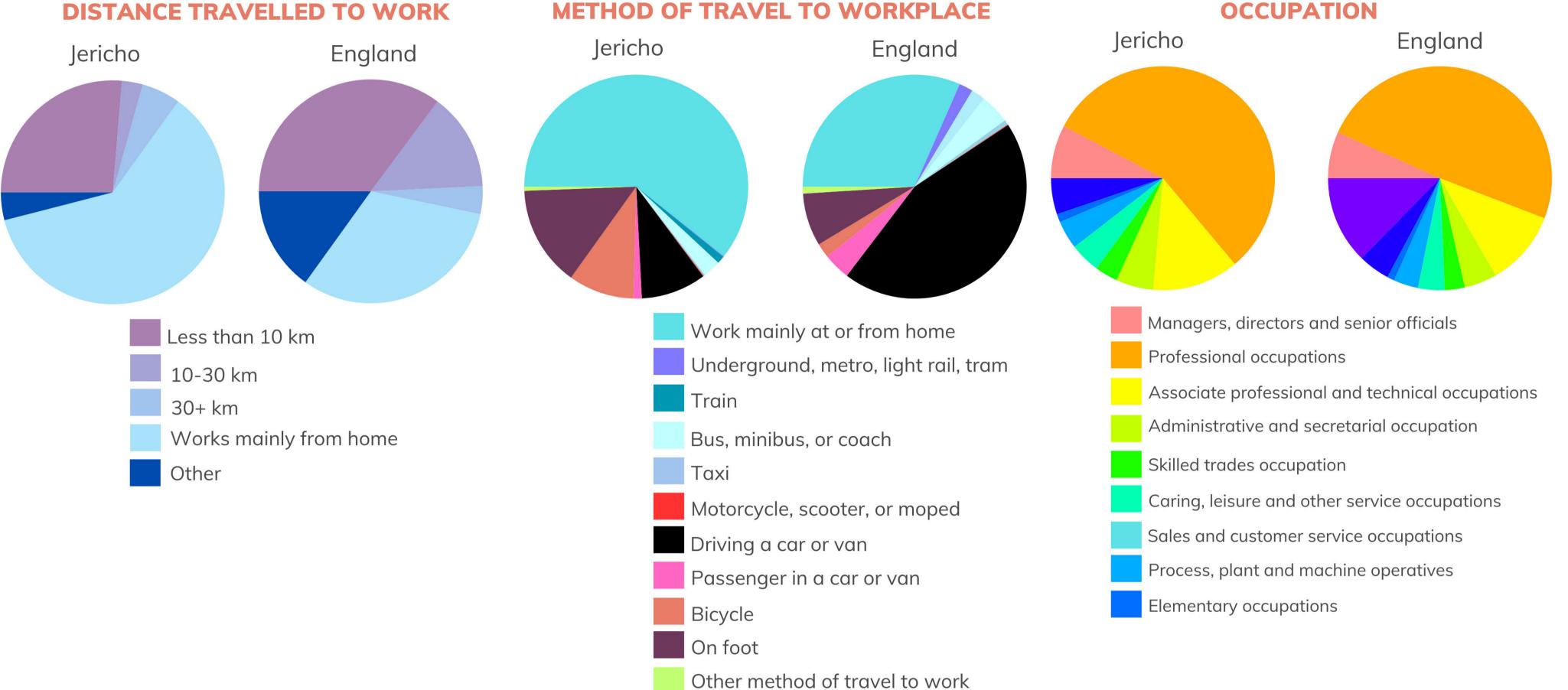
Site Analysis - Employment

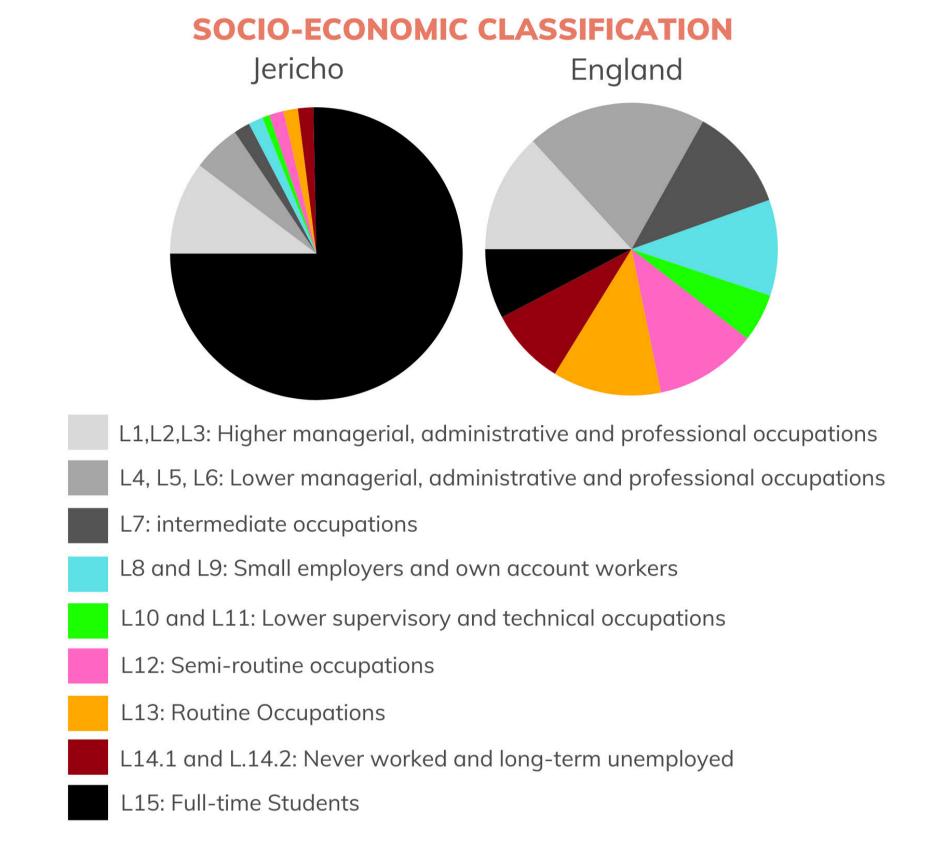












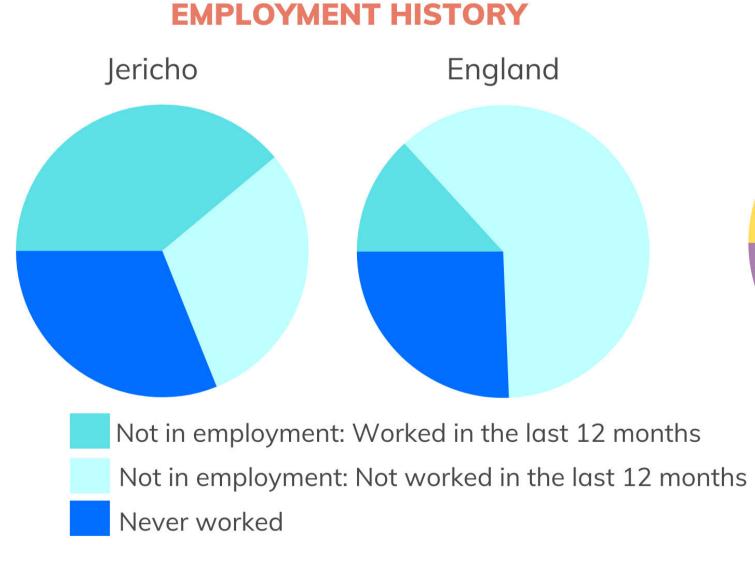


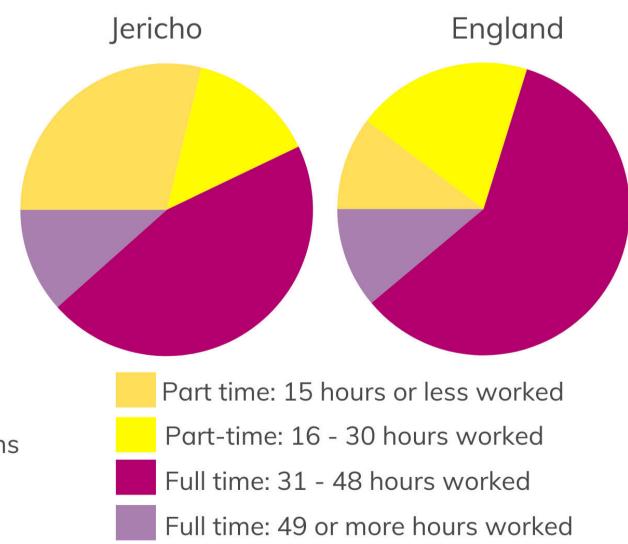
- Significant remote-working and short commutes population
- **High rate of walking and cycling** suggests good local infrastructure.
- Shows high employment status, and full-time and flexible employment patterns.

Things to Consider

- Need for community-centered development accommodating diverse employment patters, sustainable travels, and resources supporting the professional and skilled workforce of Jericho.







HOURS PER WEEK WORKED

The Castle Mill Boatyard Campaign

Eviction of boaters, court orders, and bankruptcy of developers are some of the worst cases occured during the Castle Mill Boat Yard Campaign.

Why did it happen?

British Waterways and Bellaway Homes proposed the 160 year old boatyard to be cleared for 46 Flats. (BBC, 2005).

Phillip Pullman, the author of His Dark Materials, one of Britain's most celebrated works of modern fiction, claimed the Waterways as

"...greedy, shifty, and dishonest and cannot open their mouths without lying" (Vidal, 2006)

The eviction by British Waterways caused local people resisting development of yards for the flats. Castlemill Boatyard in Oxford's Jericho district, the last public boatyard along the Oxford Canal, served as home to 120 families.

2005



Boats in the Oxford Canal(BBC, 2005)

Feb 15, 2008



Castlemill Boatyard, Jericho (Johathan Player, 2008)

May 31, 2006



Locals barricading themselves into the boatyard, being evicted by British Waterways(David Hartley, 2006)



Protester Martin Wright tries to stop a boat being lifted.(David Hartley, 2006)

Reference



Policemen gathering in the boat yard during the eviction (David Hartley, 2006)



A crane lifts one of the canal boats out of the water (David Hartley, 2006)



Protester Martin Wright stopped by police. (David Hartley, 2006)



Bailiffs at the boatyard move in to evict boaters.(David Hartley, 2006)

The Timeline



British Waterways

Timeline of political issues - The Start

1992	Orchard Cruisers, the last working boatyard, ceases operations. British Waterways (BW) owns the site.
1993	BW gains planning permission for 10 houses, 2 flats, a boating shop and office, café, and pedestrian/cycle bridge.
1997	 - BW's planning permission nears expiration. - Rosamund Catering applies to use the site for a floating restaurant pick-up and drop-off point. - A boatyard begins to grow as other boaters work with Rosamund Catering, providing services and repairs on-site.
1999	 - JCA proposes a community center on the site, receiving support from the council and church. - JCA partners with Rosamund Catering and developer Metropolitan and County to draft a proposal. - The Canalside Development Group forms, including local organizations and representatives, and meets until 2002. - Metropolitan and County bid on the site for a development with a boatyard, community center, and housing, but BW rejects it in 2000.



The Castlemill Boatyard, operated by Alchemy Boats, also sold supplies to boaters (The Guardian)



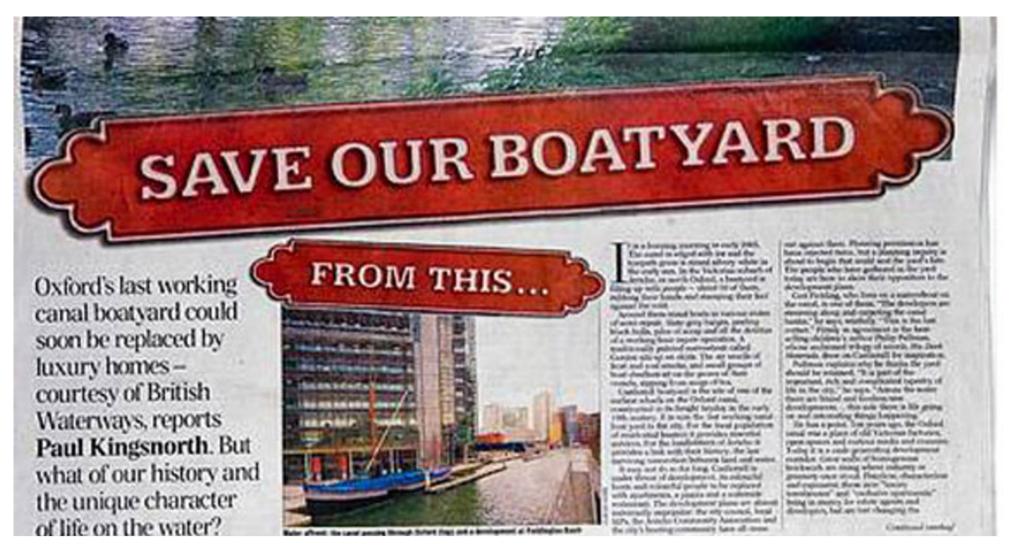
Boater owners were able to have their canalboats craned out of the water for repair (The Guardian)



The Castlemill Boatyard was also used for boatbuilding (The Guardian)

Timeline of political issues - JCA and Bellway

2000	BW opens bidding on the site. JCA and Leadbitter bid but are out bid by Bellway Homes.
2002	- JCA secures council support to use Dawson Place garages for a community center but needs more land. - BW denies JCA's request for an additional 0.1 acres.
2004	City Council rejects Bellway's application due to lack of a community center provision.
2005	Bellway's appeal is rejected by a Planning Inspector, citing no land allocation for a community center and BW's duty to provide boatyard facilities on-site or in a comparable location. Bellway forfeits the land. Alchemy Boats vacates the site, which is then occupied by boaters.
2006	May: BW evicts boaters from the site, sparking public protests and media coverage.
2007	Spring Residential buys the site from BW for £4 million and applies for planning permission, which includes land for a community center.



National press, including the Telegraph, cover BW's threats to evict the boaters (Adrian Arbib)



High Density Housing from Bellway Homes



Bellway did not include a community centre. They were refused planning permission.

Spring Residential and the formation of Jericho Wharf Trust

The council rejects Spring's application, citing

2007 December-

- lack of boatyard provisions,
- insufficient affordable housing,
- poor building design, and failure to meet environmental standards. Spring appeals.

2008 December—

Spring's appeal is rejected by the Planning Inspector for inadequate boatyard facilities, poor design, a lackluster public square, and impact on St Barnabas Church.

- Spring Residential goes into administration due to debt, including a £4 million loan for the boatyard site.
- 2009
- Four local organizations form an informal Canalside Development Group.

2010

Jericho Community Association, JCA secures outline planning permission for a community center on the site's north side.

With funding and support, JCA collaborates with architects Haworth Tompkins to create a masterplan, which is reviewed by the local community and well-received.

2012

The four Canalside Development Group organizations establish the Jericho Wharf Trust (JWT) to develop the site, initiate fundraising, and negotiate with site administrators.



Some unpopular plans of Spring Residential (Jerichowharf, 2007)



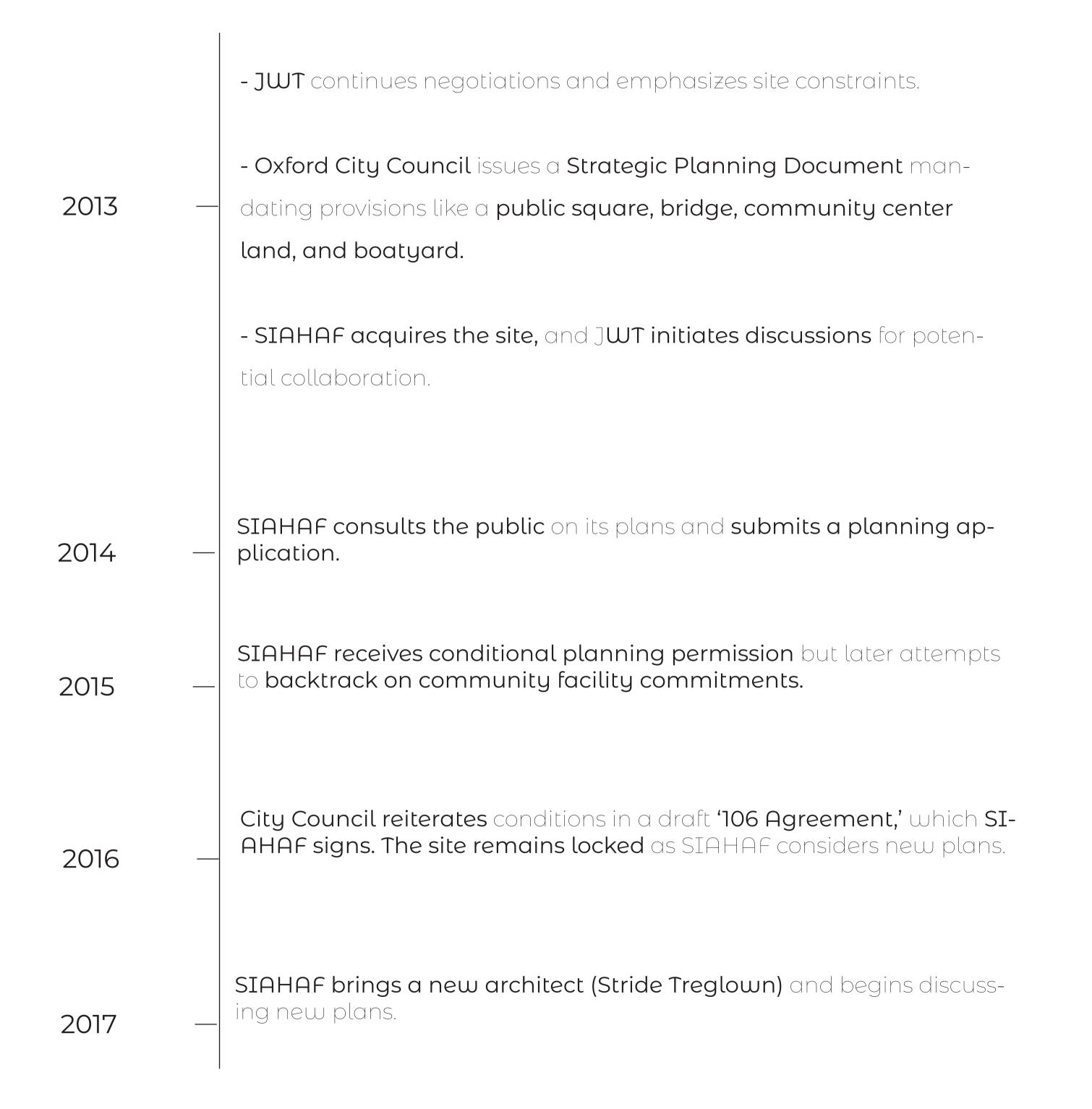
Protesting Spring's Appeal at the Town Hall.



Vacant Site in 2009

Reference

Strategic Iconic Assets Heritage Acquisition Fund (SIAHAF)





SIAHAF's proposal



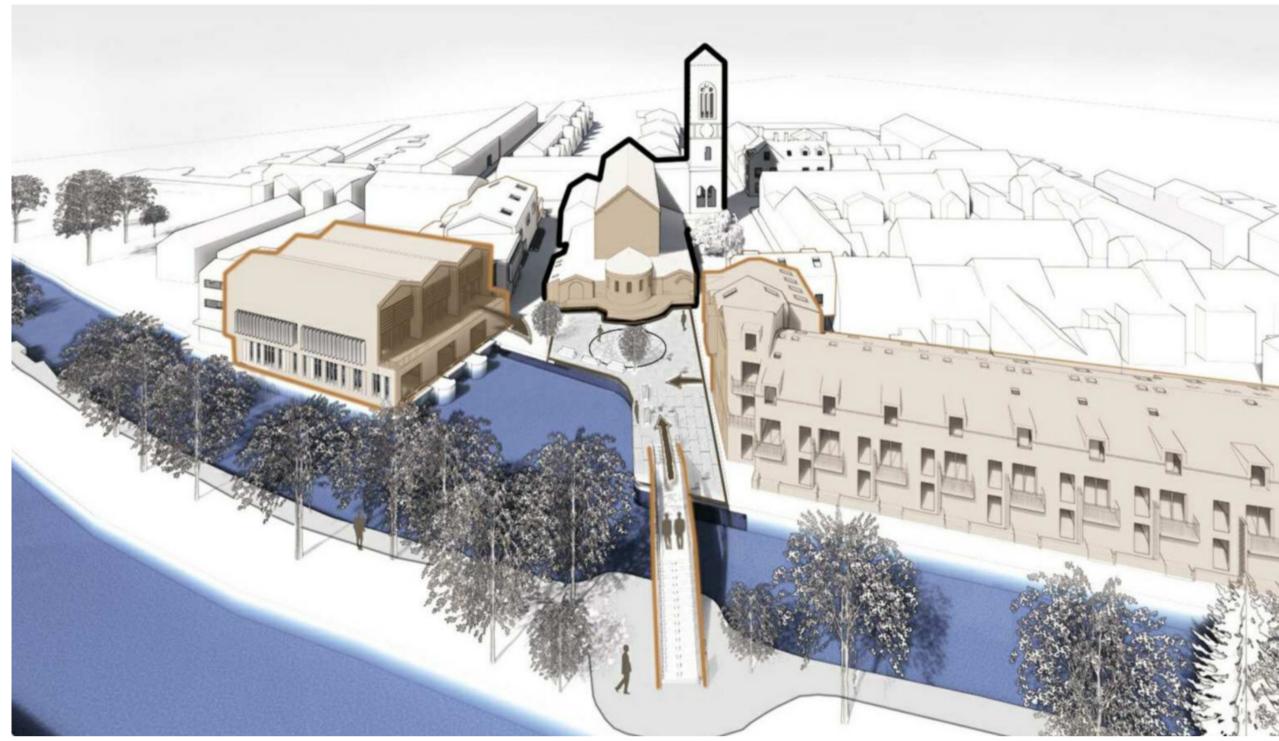
Access to the square across the canal was initially indicated as an at-level lift or swing bridge



The site remains locked while SIAHAF decides what to do (Jerichowharf, 2017)

Cornerstone - The final proposal

2019	 The Jericho Wharf Regeneration Company (JWRC) holds a pre-planning consultation with the community.
2020	Local company Cornerstone partners with JWRC and applies for planning permission.
2021	Cornerstone revises its application, removing a bridge into the piazza.
2022	Cornerstone revises the plan again, excluding affordable housing. The City Council Planning Committee rejects the application. Cornerstone appeals to the Planning Inspectorate.
2023	The Planning Inspectorate approves Cornerstone's appeal, granting them planning permission.



Proposal of Two Phase Development of JWFC and Cornerstone (Jerichowharf, 2020)



Oxford City Planning Committee rejects Cornerstone's application

New Jericho Planning by Cornerstone Stone Land

Proposed Plan

Regeneration of a brownfield site: A derelict area left unused for nearly 30 years is set for redevelopment.

New working boatyard: Plans include a functional boatyard with two dry docks, a wet dock, workshops, and laundry facilities.

Community center: A two-phase, 1,748 sq m (18,817 sq ft) facility featuring a café, pre-school spaces, a sports hall, and meeting rooms.

Central piazza: A public space offering better access to St Barnabas Church and the canal frontage.

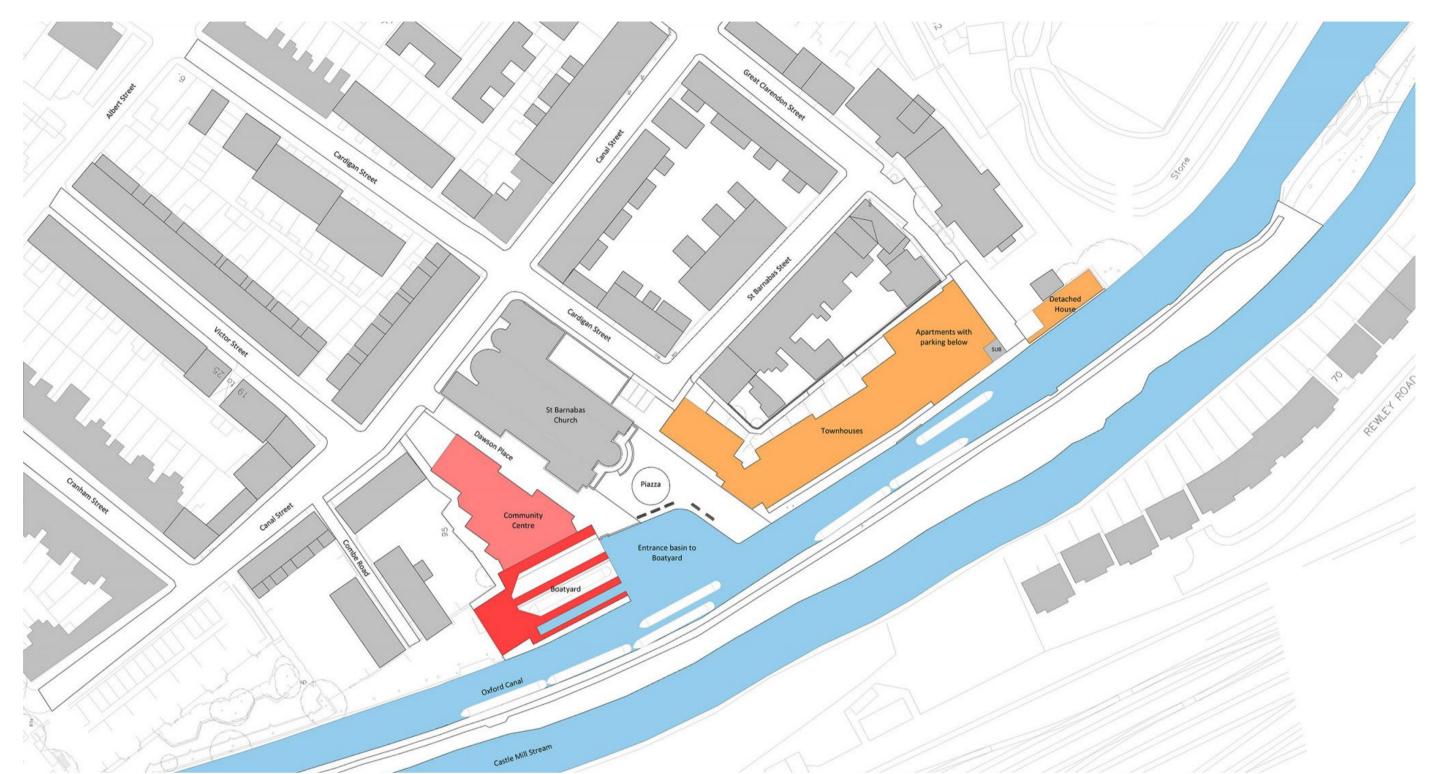
Financial contribution for a bridge: £655,000 allocated toward the construction of a new bridge.

New housing: Development of 18 high-quality, energy-efficient homes.

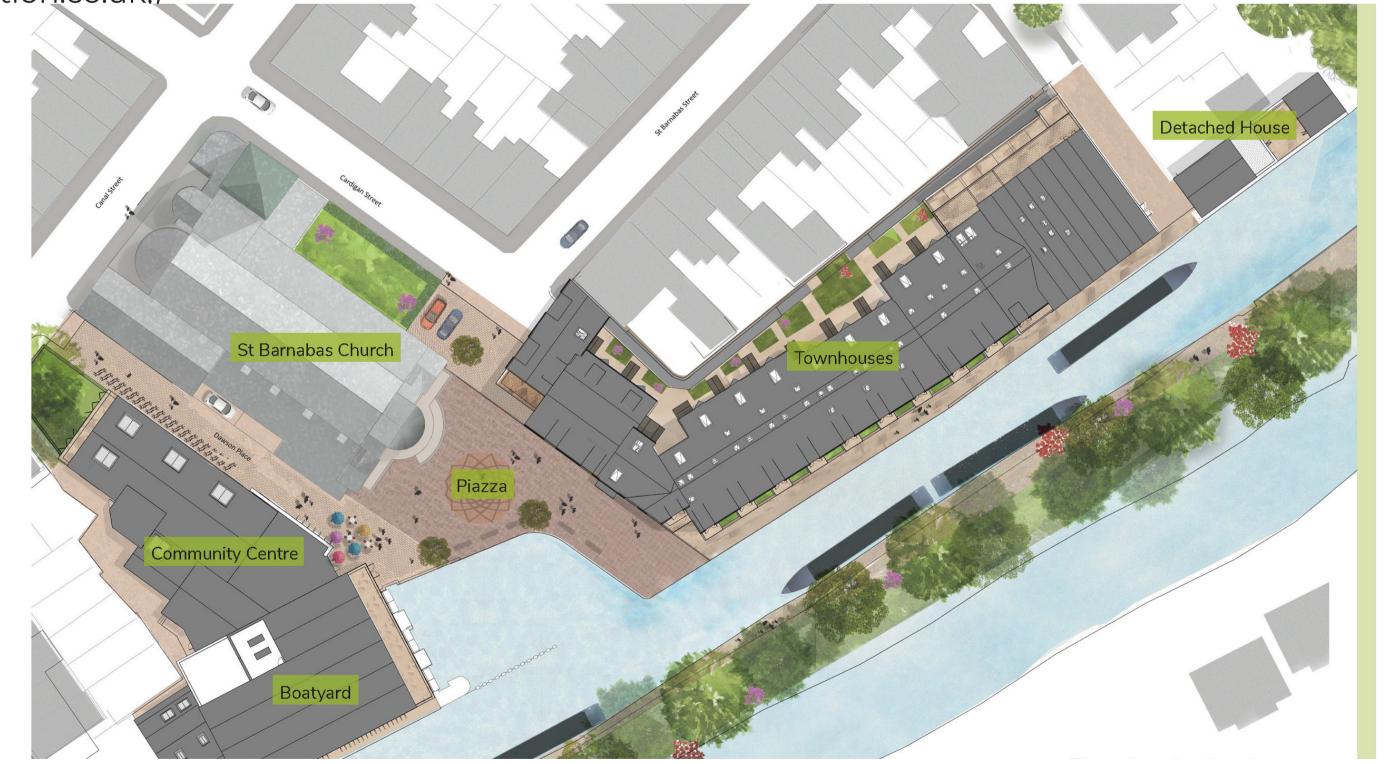
Sustainable design: The entire project emphasizes environmental sustainability.

Parking and bike spaces: 54 bike spaces and 16 car parking spaces, including 2 City Car spaces and 1 Disabled space.

Community profit-sharing: A financial guarantee that any windfall profits will be shared with the community.



Artwork showing overview of proposed development (Jericho regeneration.co.uk.)



Plan of application site

New Jericho Planning by Cornerstone Stone Land

Proposed Plan Benefits

- Boatyard shell and core: £2.4 million

- Community center (shell and core): £1.9 million

- **Public realm enhancements**: Includes piazza and access ramp to St Barnabas £1.85 million
- Bridge contribution: £655,000
- Community Infrastructure Levy: £405,000



View of proposed boat yard and Community Centre south elevation

Community Centre

- To ensure the project is achievable, phase 1 of the community center will be developed larger than policy requirements, to a "shell and core" stage, and won't be transferred as vacant land.
- Some suggested to
 - reduce the size of the centre, andfund a larger piazza or affordable housing,

but JWT also requested a larger centre supporting community usages.

Proposed Area: Total of 1,748 sq m (18,817 sq ft)

Policy SP33 Requirement: 418 sq m (4,500 sq ft).



Community Centre west elevation

New Jericho by Cornerstone Stone Land

The Piazza

Public Piazza:

Designed as a central gathering space for the community and visitors, offering enhanced access to St Barnabas Church.

Size Adjustment:

The piazza is smaller than initially planned to accommodate the expanded community center and boatyard.

Surrounding Features:

The piazza will be framed by

- a café in the community center (north),
- St Barnabas Church (east),
- new homes (**south**), and
- the canal (west), creating a vibrant, welcoming environment.

Community Feedback on Piazza Size:

Some consultees preferred a larger piazza

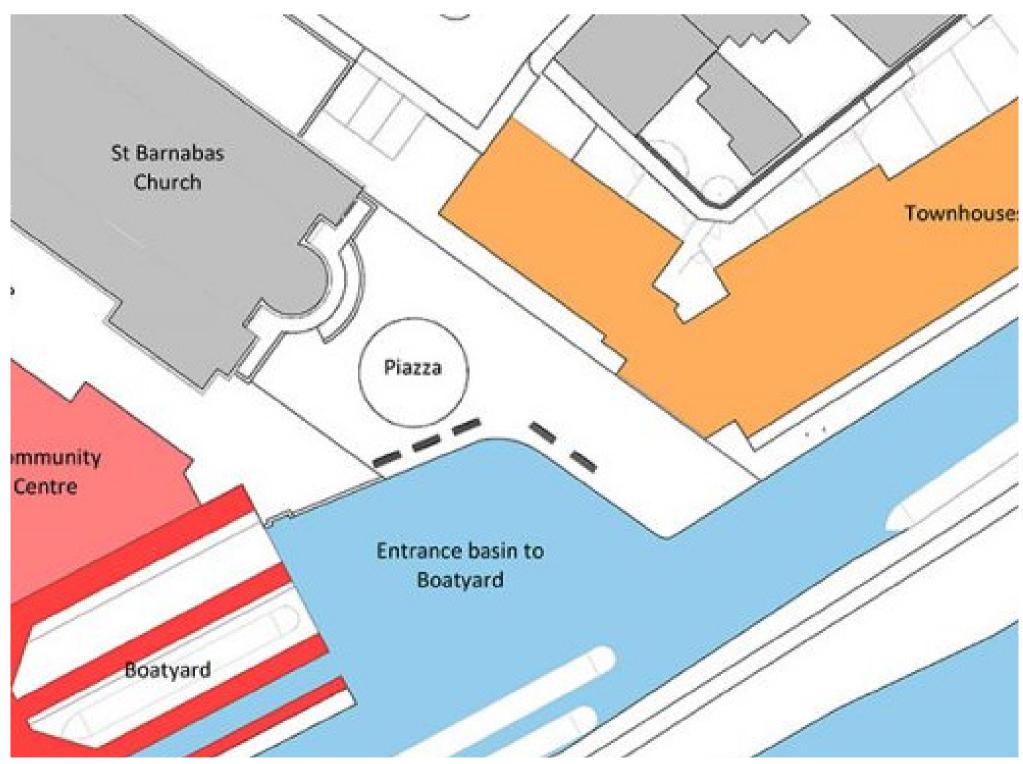
- with views of St Barnabas from the towpath,
- eastward down Cardigan Street, and
- connecting the campanile with Radcliffe Observatory.

Design Trade-Off:

Enlarging the piazza would mean reducing the community center or building fewer homes, potentially decreasing funding for other community benefits.



Piazza visualisation



Piazza in Context

New Jericho Planning by Cornerstone Stone Land

The Bridge

Footbridge Proposal:

Initial plans included a footbridge over the canal, supported by residents and local stakeholders.

Environmental Concerns:

The Environment Agency and Canal & River Trust rejected the proposed bridge due to

- potential flood risk and
- concerns for navigational and towpath safety.

Alternative Solutions:

No suitable alternative has been found to connect directly to the piazza.

Financial Commitment

A commitment of £655,000 has been made to the council for a replacement bridge at Mount Place if no feasible solution for the piazza connection is identified.

Next Step

The plan is under review by the City Council Planning Committee, and meetings with the local stakeholders and residents are being held in the meantime.



Canalside visualisation





Current Status

Site Analysis - Panoramic Photos



South west view of the canal.

B



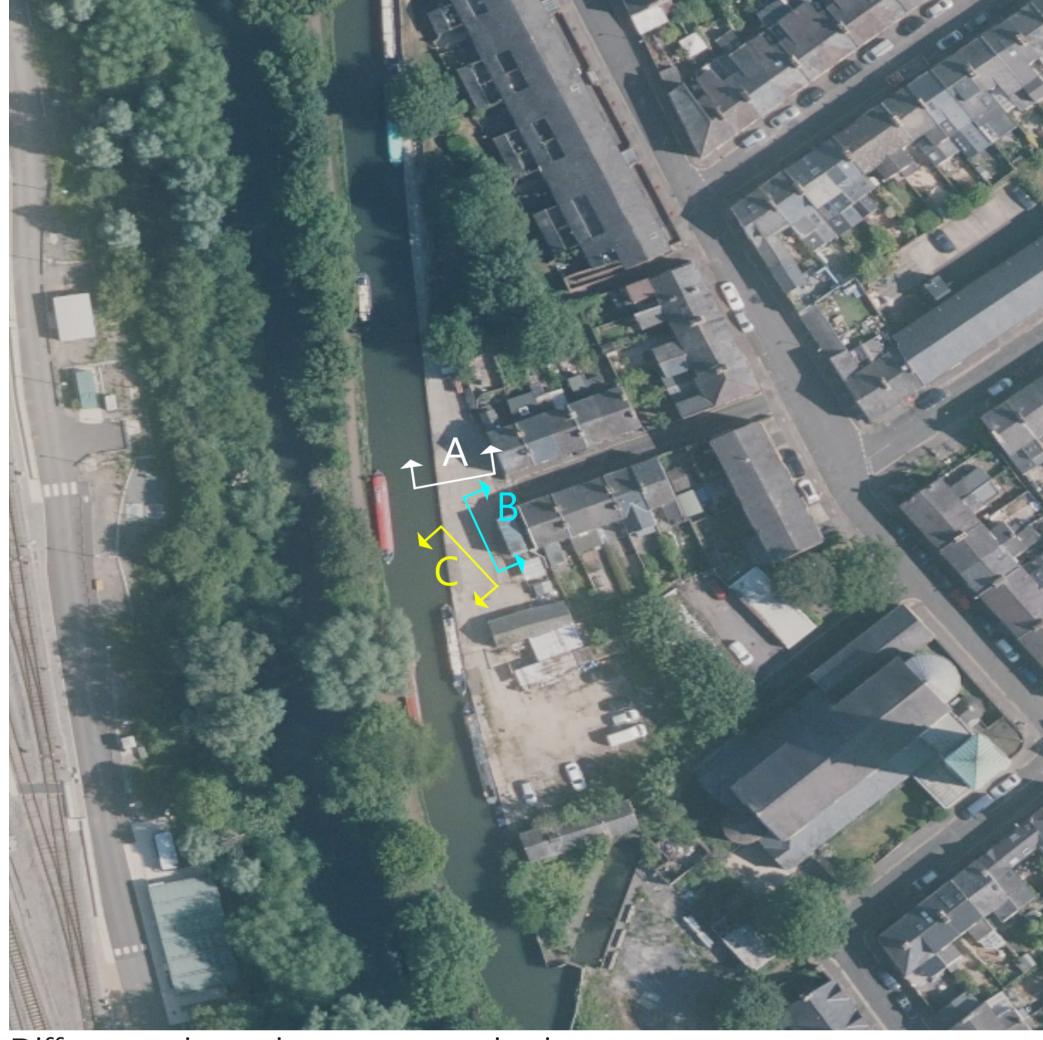
North view of the entrance to the site



South East view of the canal and the boatyard.



View of the canal from the entrance.



Different orientations panoramic view

Analysis

Community Usage: Used for residential and recreational purposes.

Connectivity: A natural corridor linking various parts of the neighbourhood for enhanced pedestrian and cyclist accessibility.

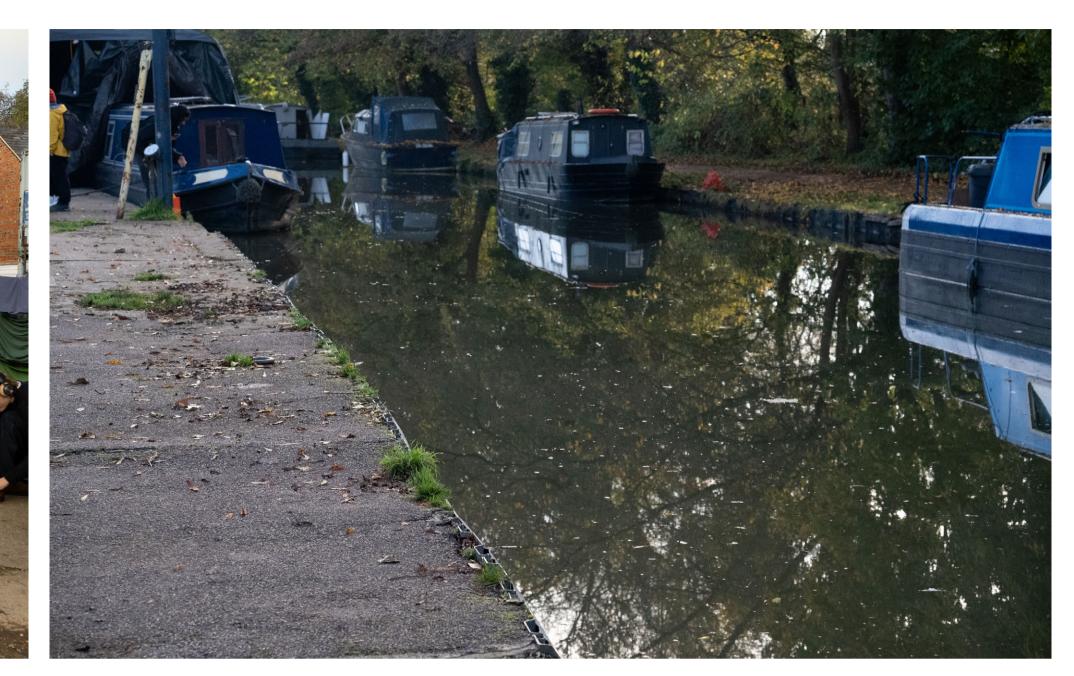
Design Challenges: The spaces are narrow and underutilized.

Preservation: Future developments with modern sustainable solutions must combine with the historical character.

Site Photos







View from the Old Bookbinder Ale House

Remains of the boatyard

The boats







The canal

The metal mooring ring

The dock providing boat repairs before

Various aspects of the canal and its surroundings could be seen.

Using Project 1C Device - The Sun



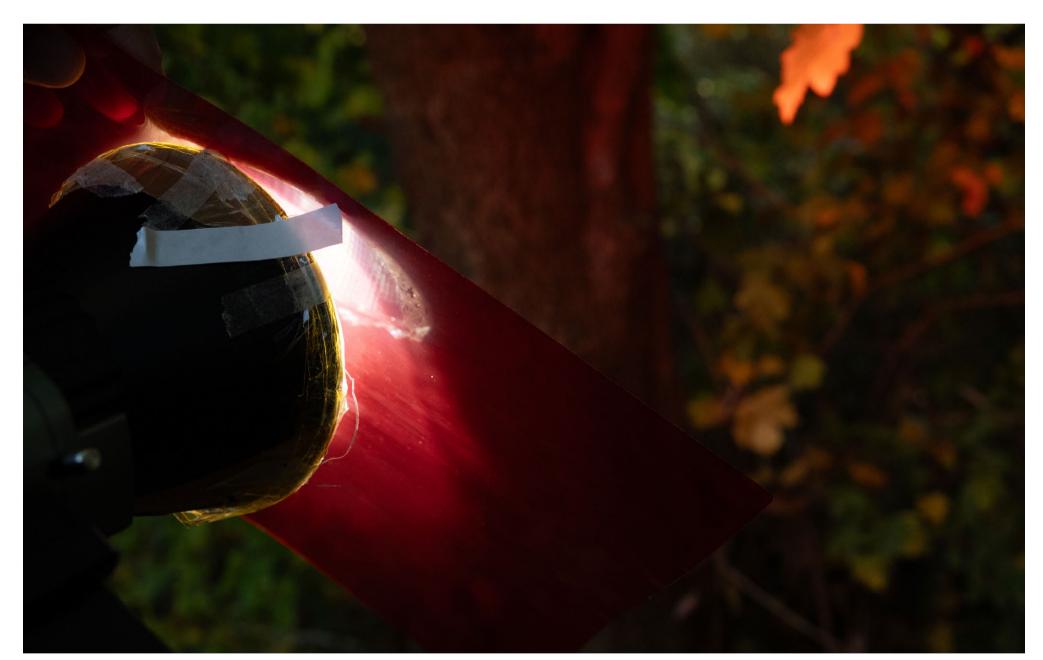




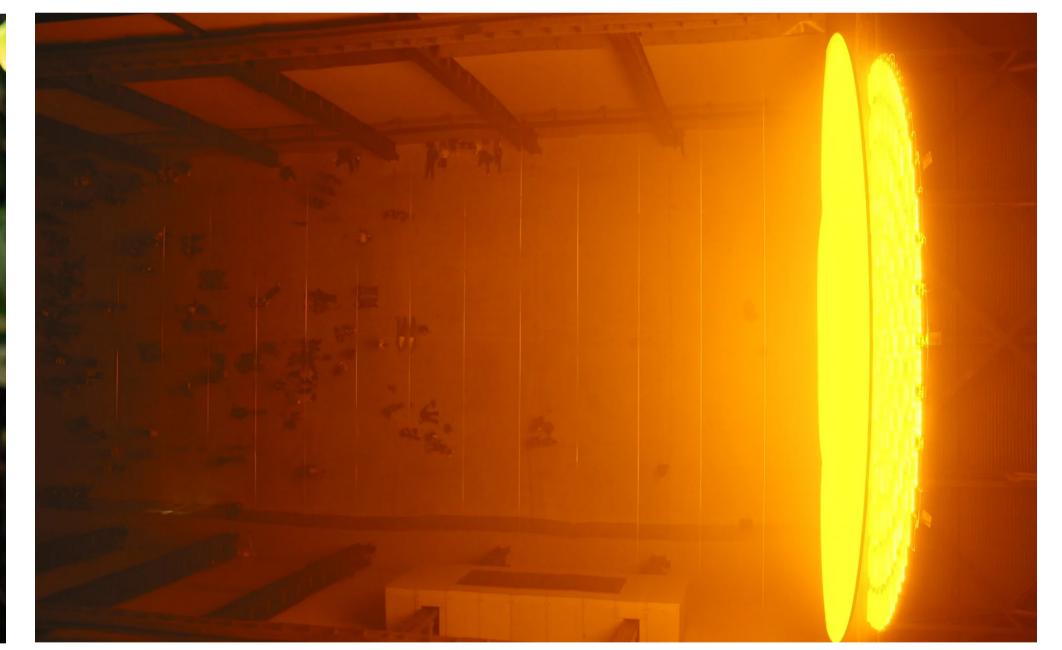
The light without any filter

The light without any filter

The backup set up







Close up shot

The light without any filter

Precedent - Olafur Eliasson's the Weather Project

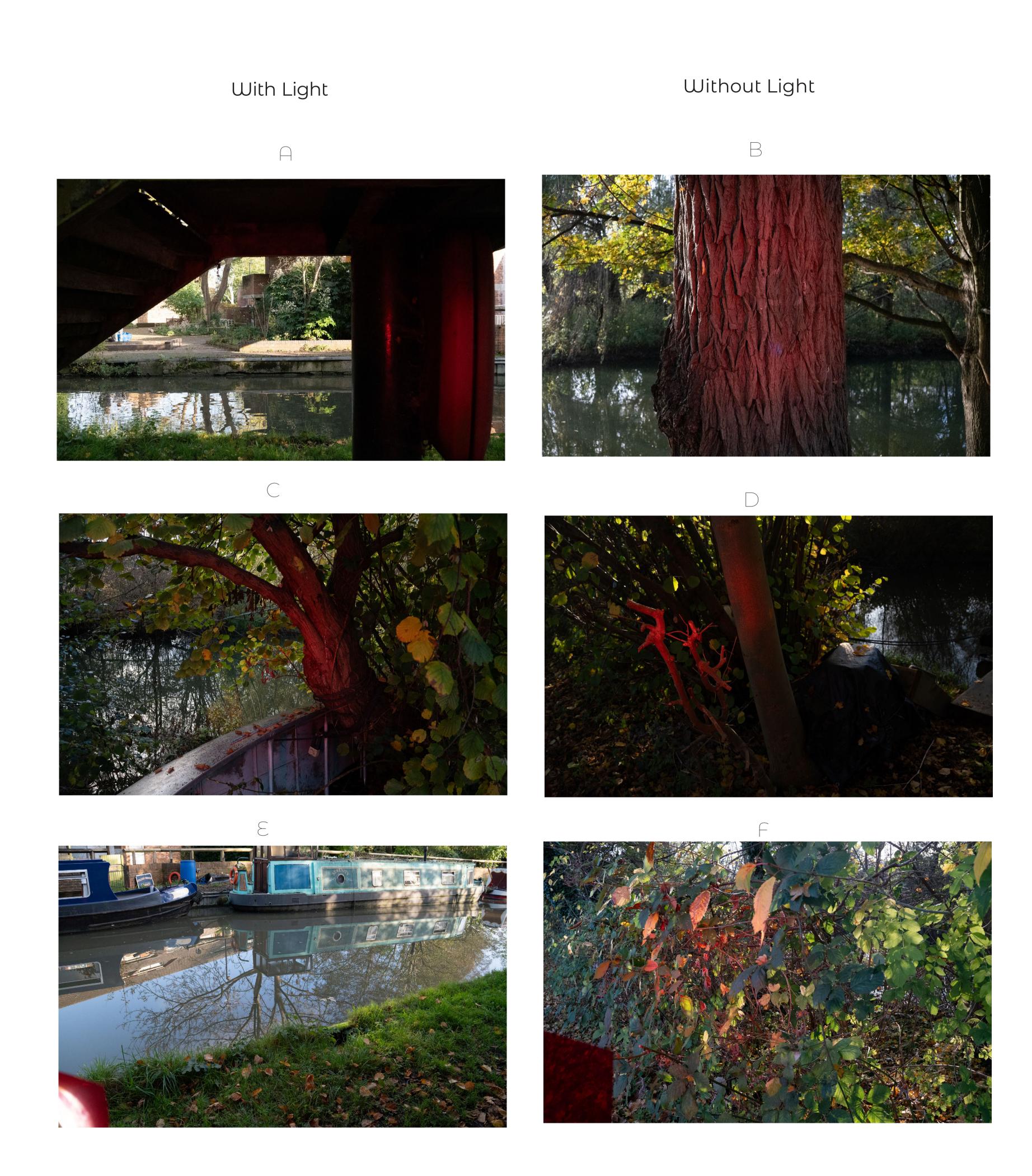
As expected, the filter, after the light was turned on for a long time, was burned, and the backup plan was utilized. Nevertheless, the tests provided an overview of how certain areas would reflect to light at parts of the day.

Site analysis using Project 1C Device



Device Testing

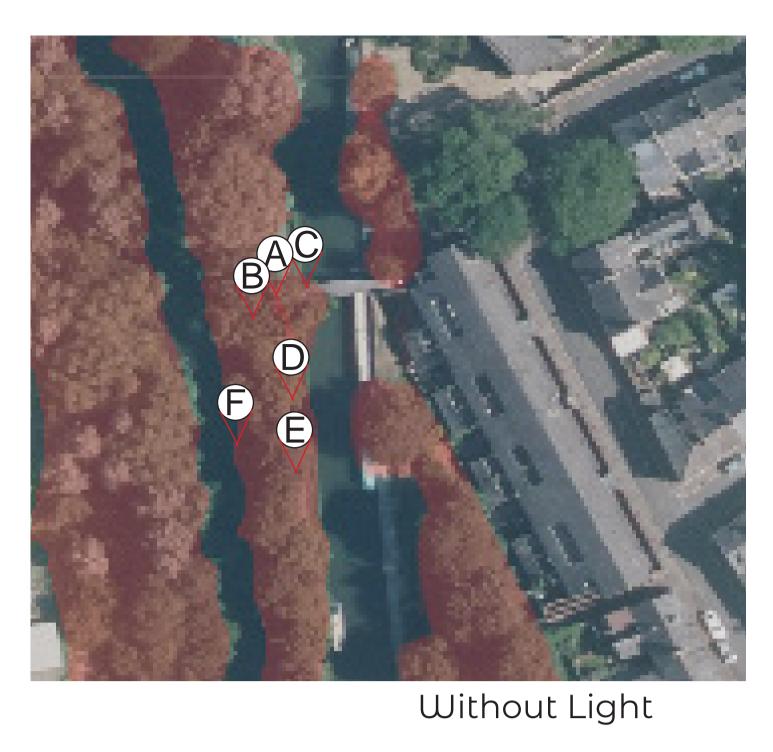
Utilizing the device, areas with the most red areas receive the least sun light, therefore, becomes the darkest areas with humidity.

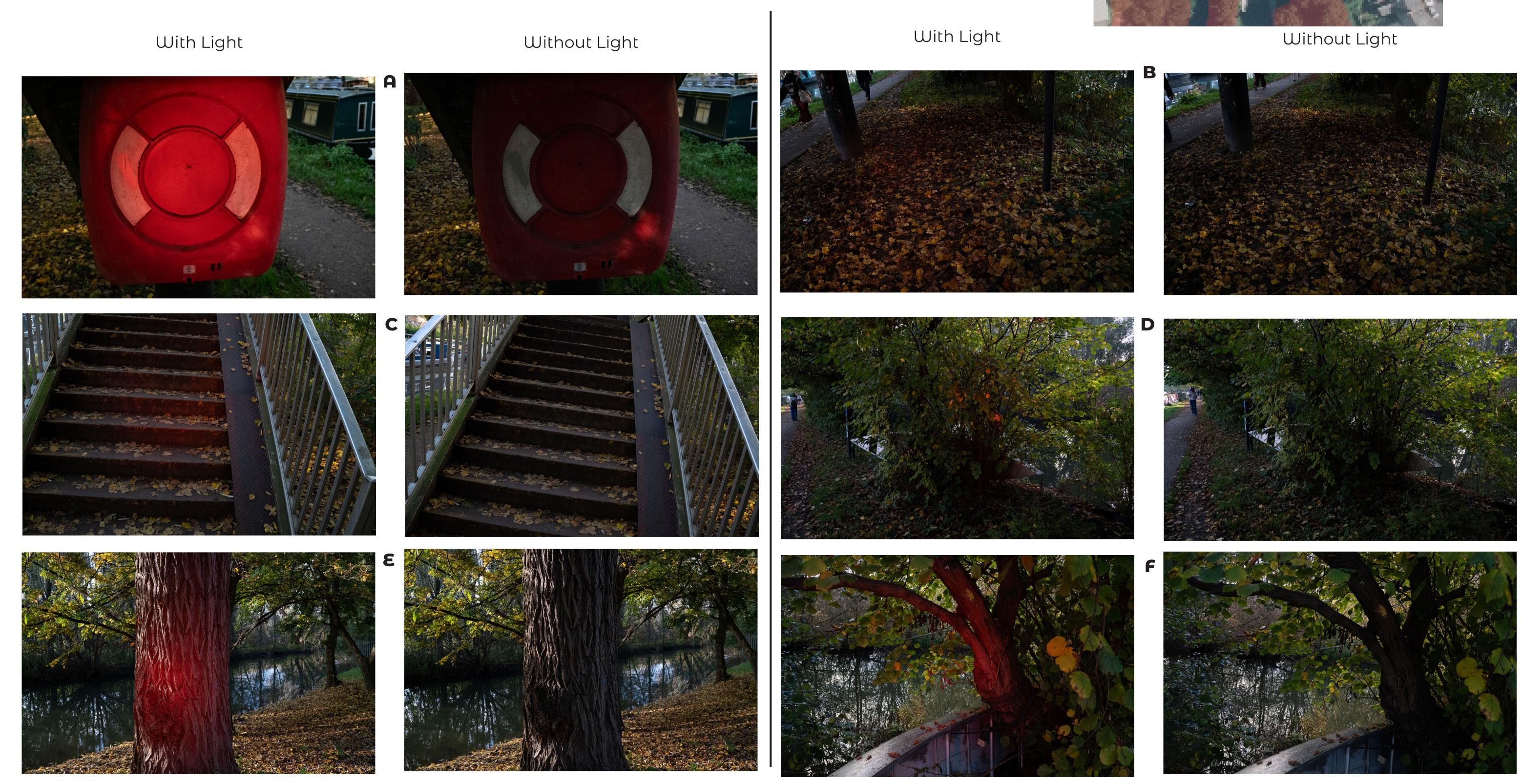


Project 2A - Siting your ideas - The Jericho Canal, Oxford

Site analysis using Project 1C Device

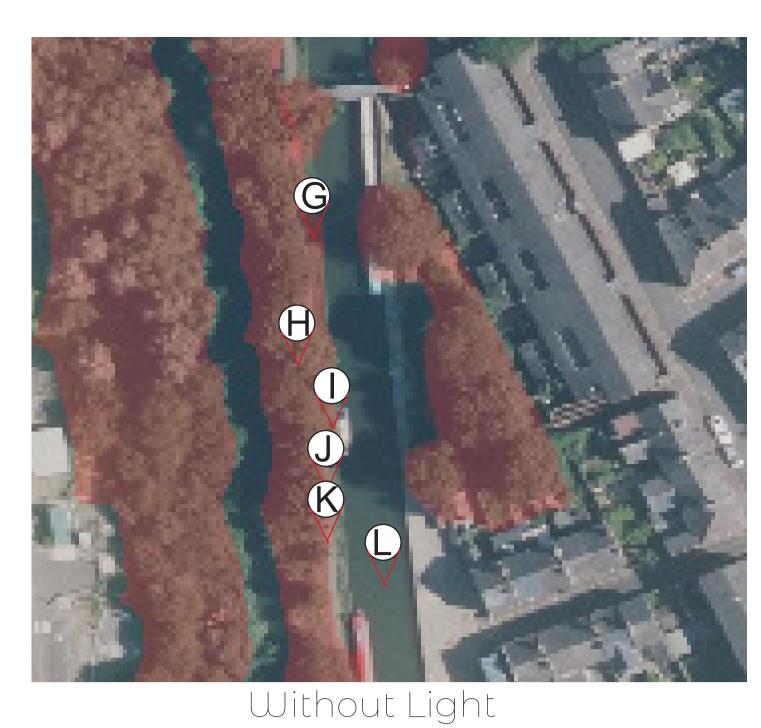
Areas shaded in red shows response to the device, showing that certain areas of the site shoulder level are dark even during the day





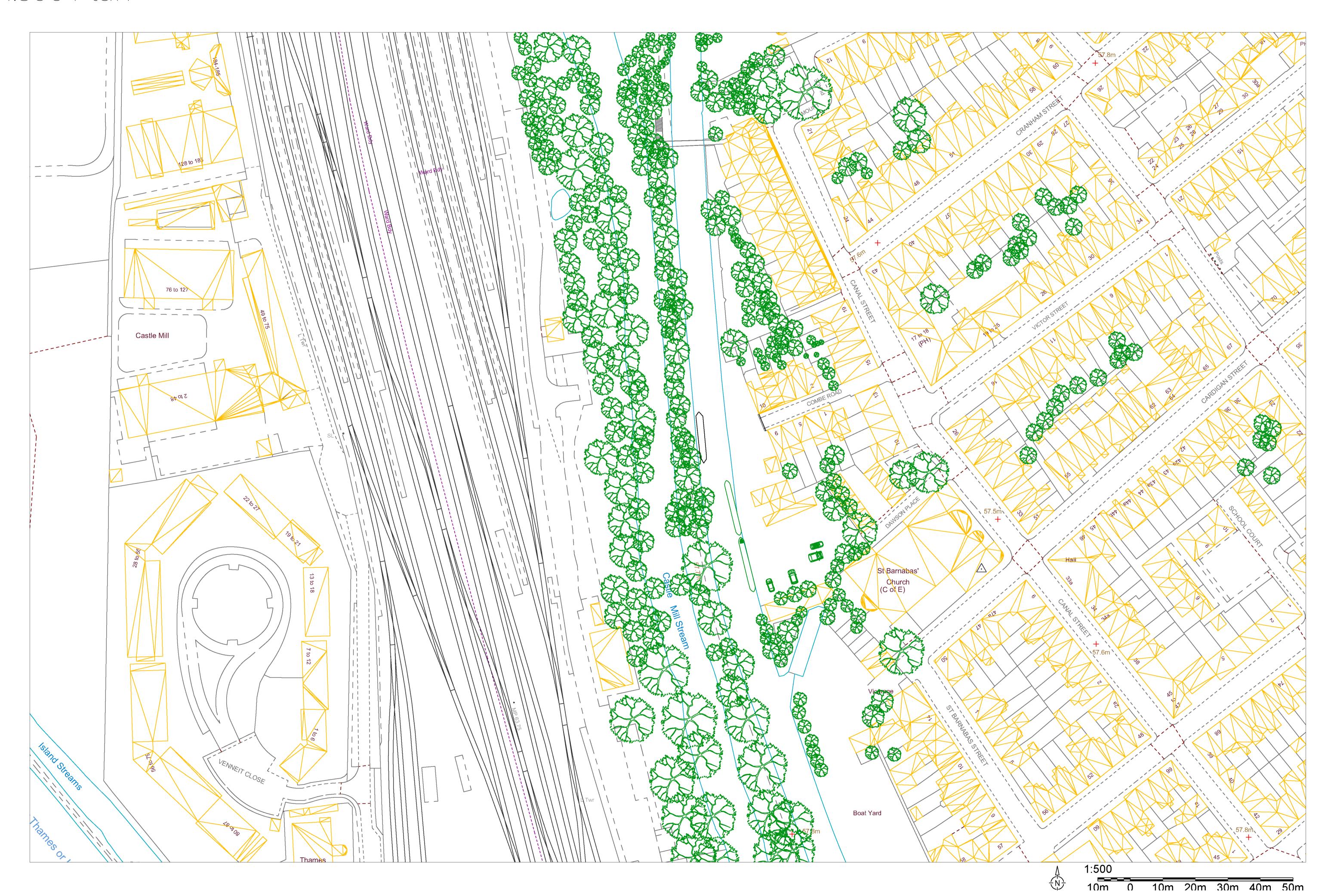
Site analysis using Project 1C Device

Areas shaded in red shows response to the device, showing that areas closer to the pedestrian way and the canal area are less dark.

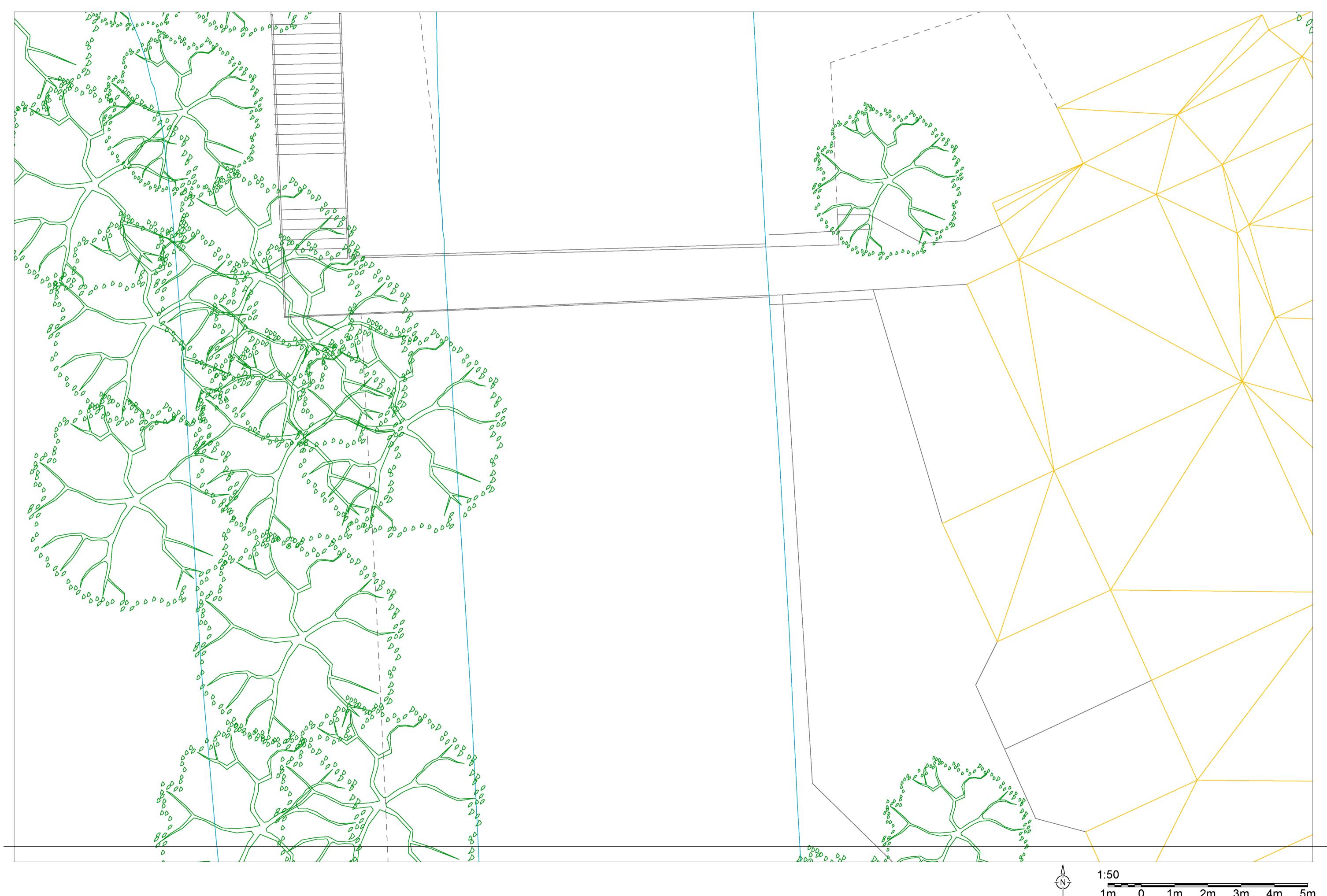


With Light Without Light With Light Conclusion: Already lit enough to have response to light)

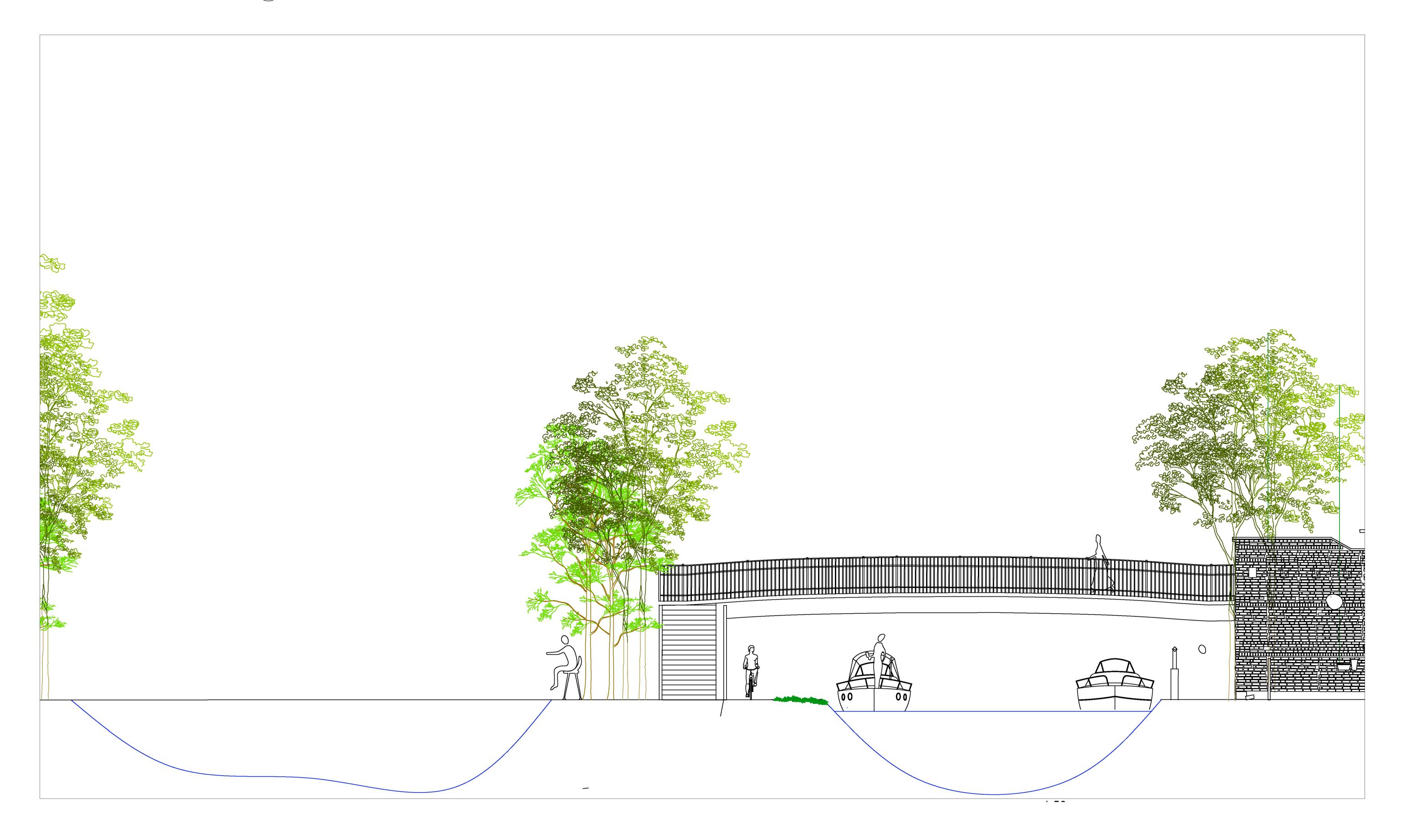
7:500 Plan

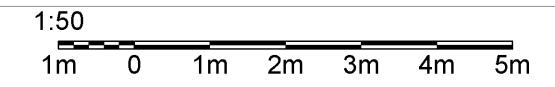


7:50 Plan



1:50 Section A - A @A1







1:50 Elevation B-B

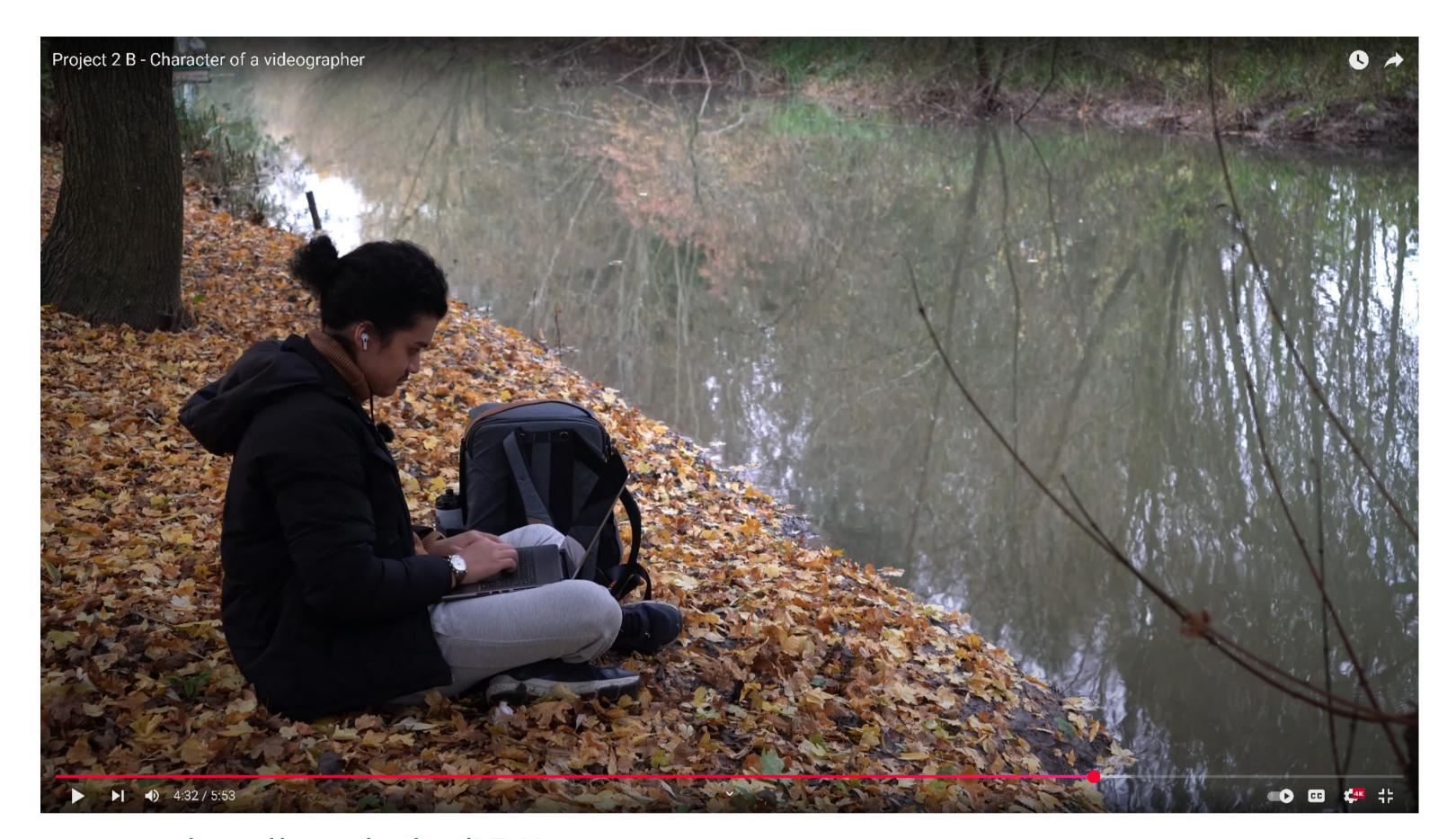


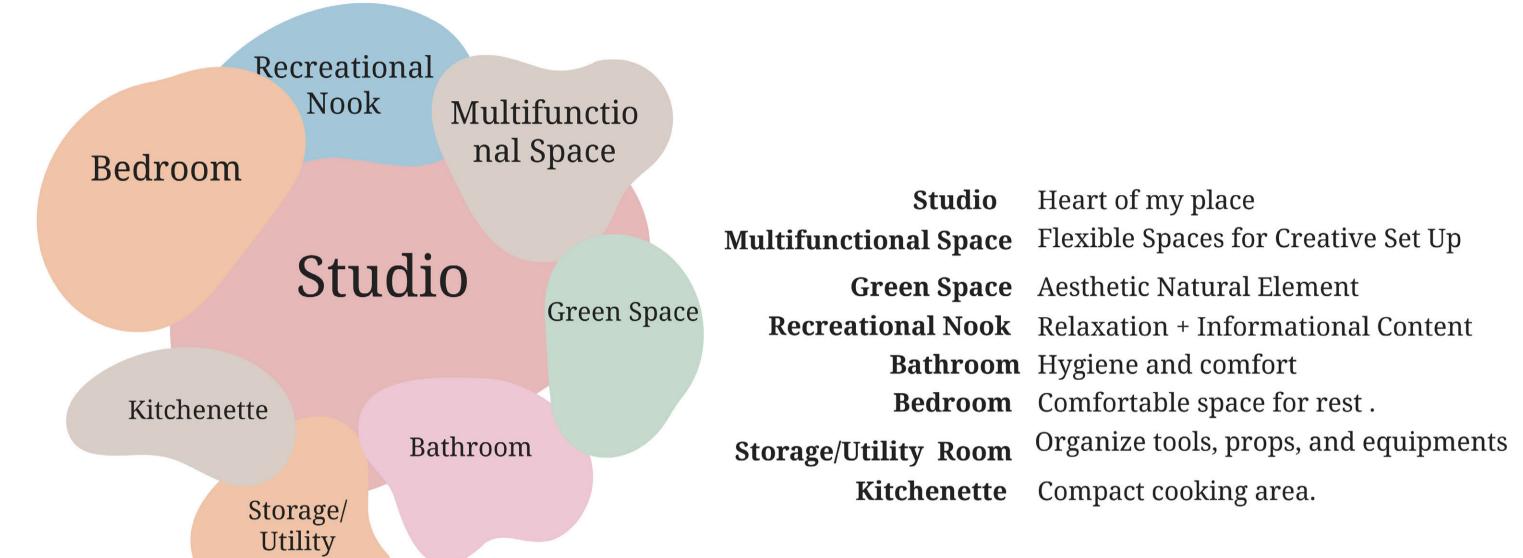
1:50 1m 0 1m 2m 3m 4m 5m

Semester One: Amateur Film Enthusiast's Studio - Character Development

Film

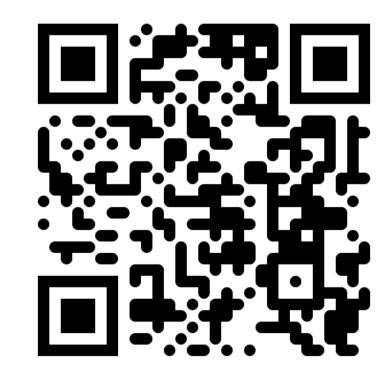
Here's a link to the film of a character, an amateur film enthusiast in the canal of Jericho, Oxford. Scan the QR Code or click the link.





Film Link - https://youtu.be/mcrjD7uNams





Spaces needed by my character - The Content Creator



Multifunctional Space Flexible Spaces for Creative Set Up

Green Space Aesthetic Natural Element
Recreational Nook Relaxation + Informational Content
Bathroom Hygiene and comfort
Comfortable space for rest.

Organize tools, props, and equipments

Compact cooking area.

Kitchenette

Main Idea Precedent - One Square Meter House by Didier Faustino



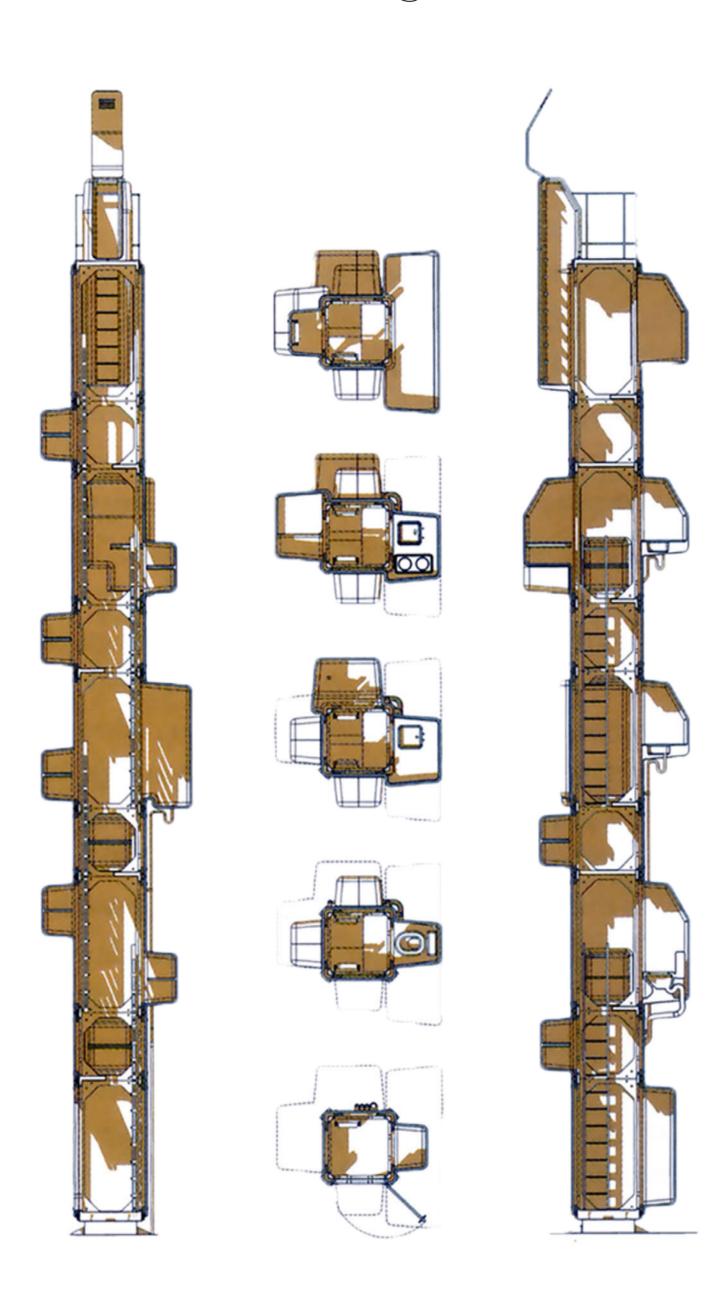


Location:Paris, FranceArtist:Didier FaustinoYear:2001-2006

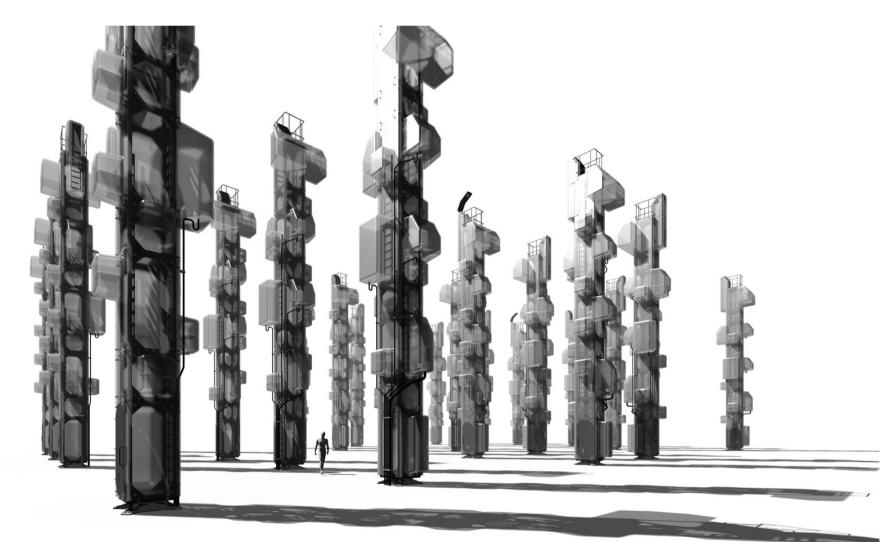
Dimensions 2.7 x 2.7 x 17 m | 1m² each level

Material Galvanised steel structure, composite shells: cellular

and epoxy resin



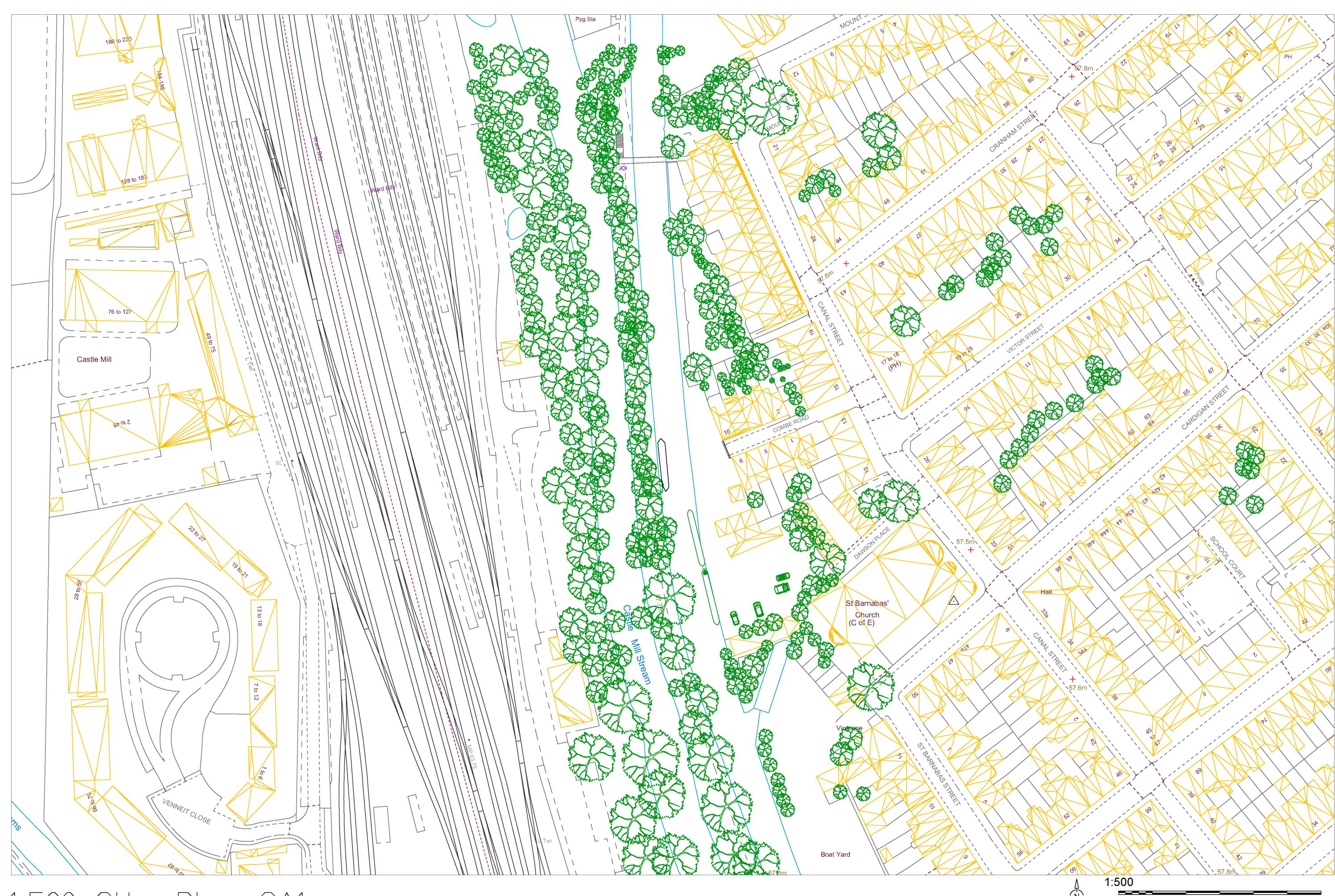


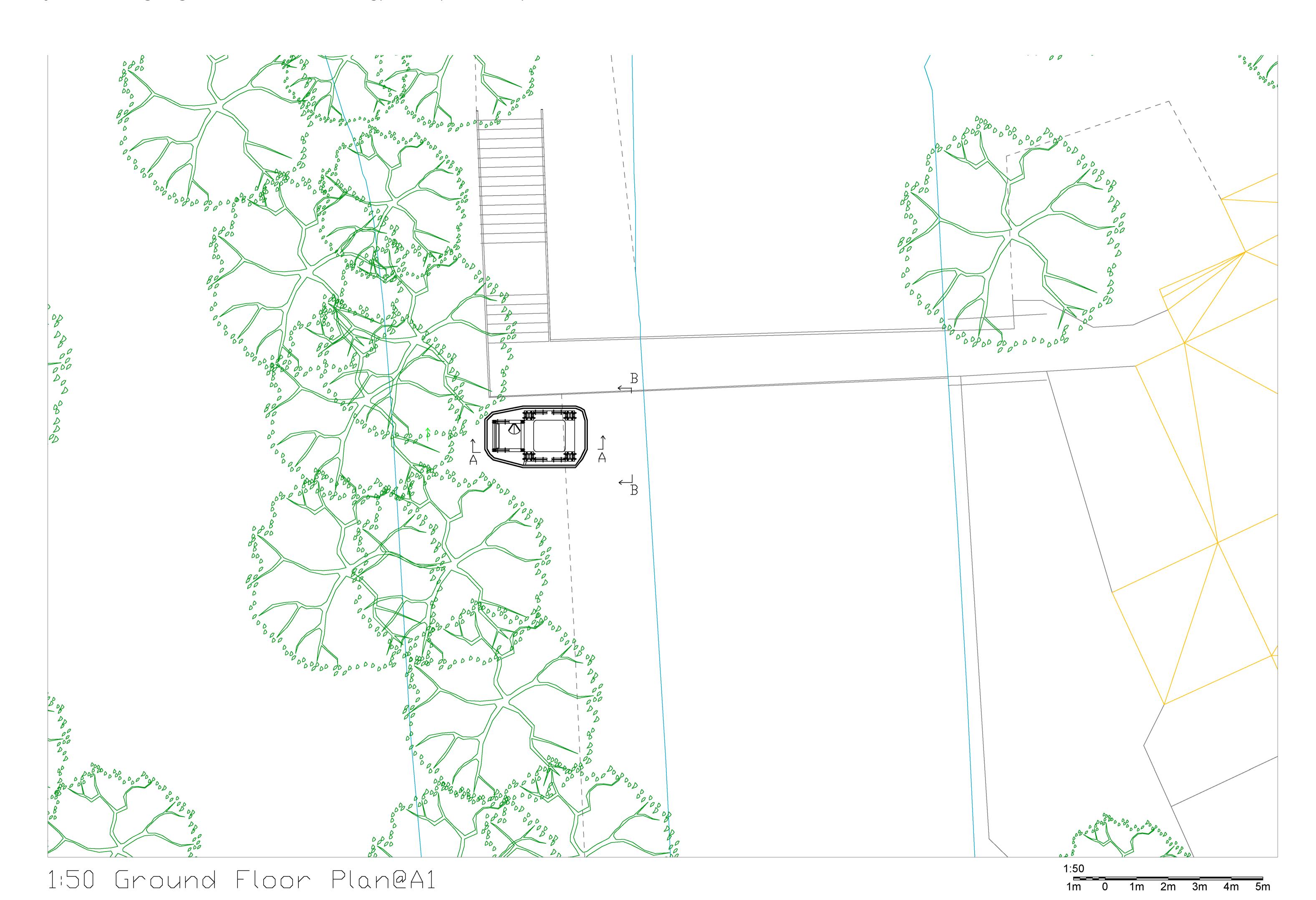


Key Takeaway

"A conceptual critique of modern housing, urban space, and societal values."

- Critiques land speculation and high housing costs.
- Questions conventional notions of habitability and space.
- Encourages reliance on public spaces for social interactions.













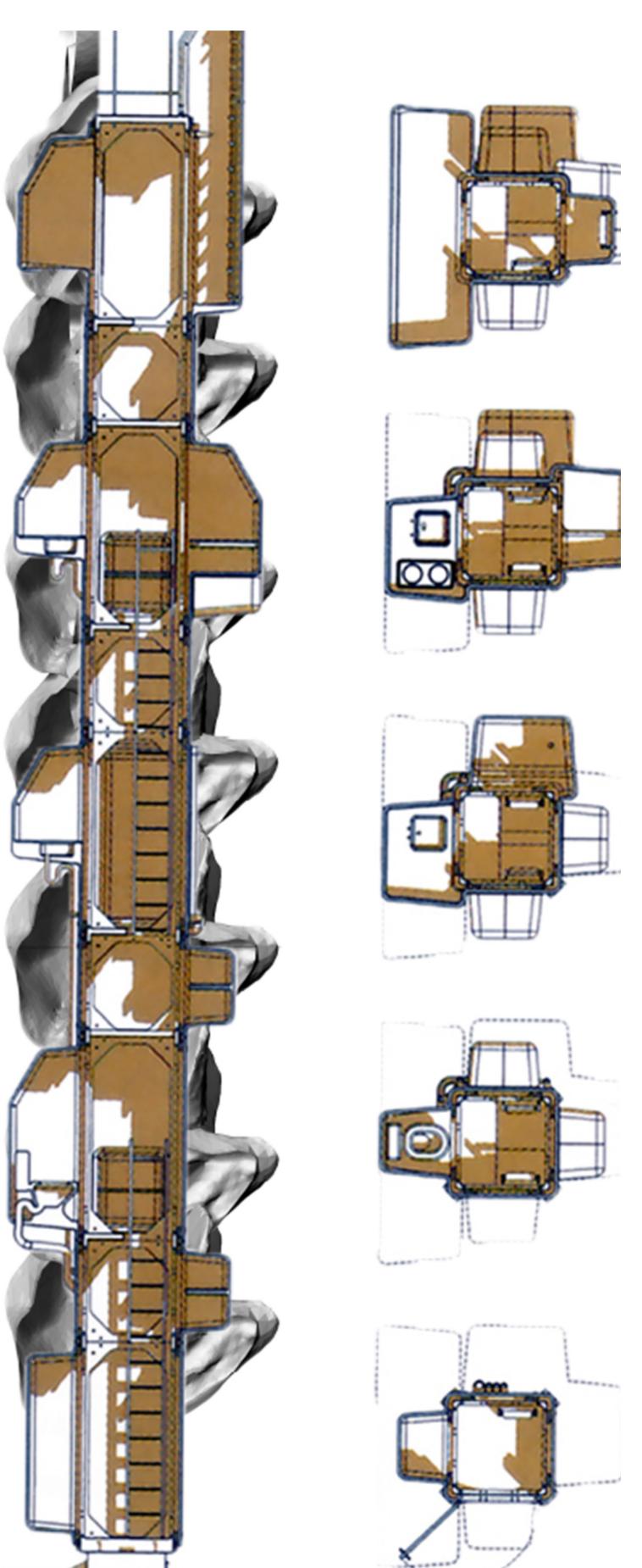


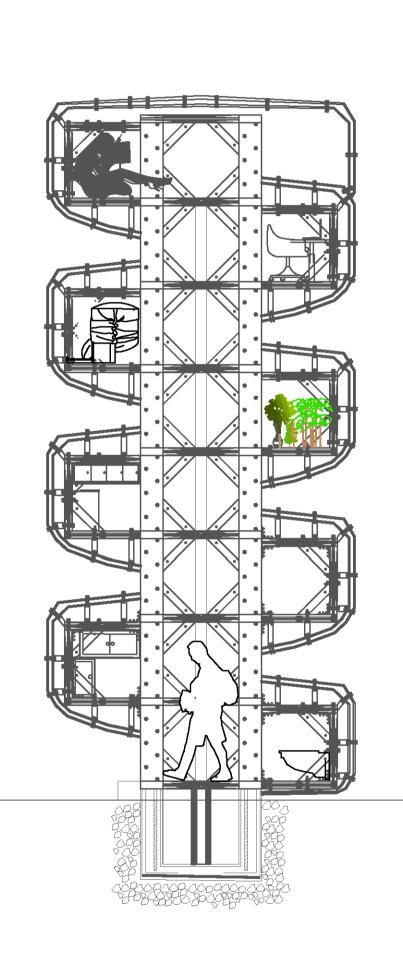


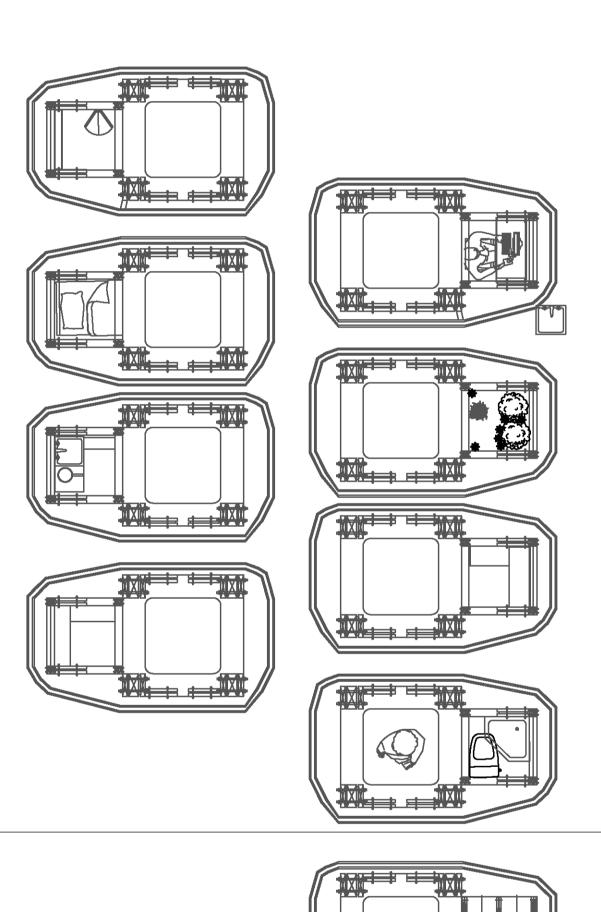






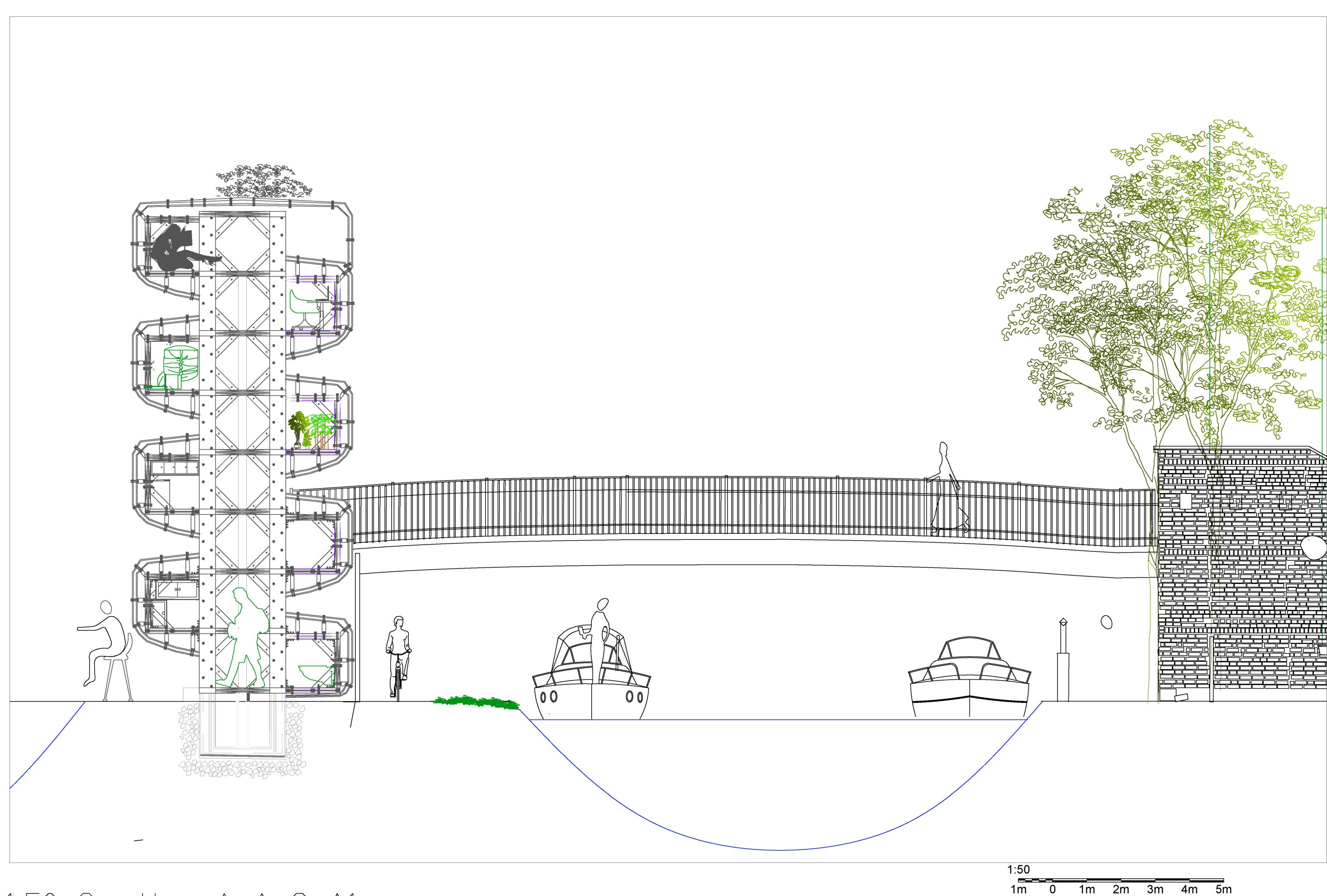








1:50 Elevation B-B @A1



Compact Unit Precedent

Muji Hut



KODA/Kodasema



Photo: Muji

Location: Japan

Architect Muji, Ryohin Keikaku Co., Ltd.

Photo: Paul KuimetArch Daily

Location:Tallinn, EstoniaArchitectKodasema

Year: 2016

Compact Unit Precedent - Prefabricated Bath Unit, Arc 1800, Savoie, France









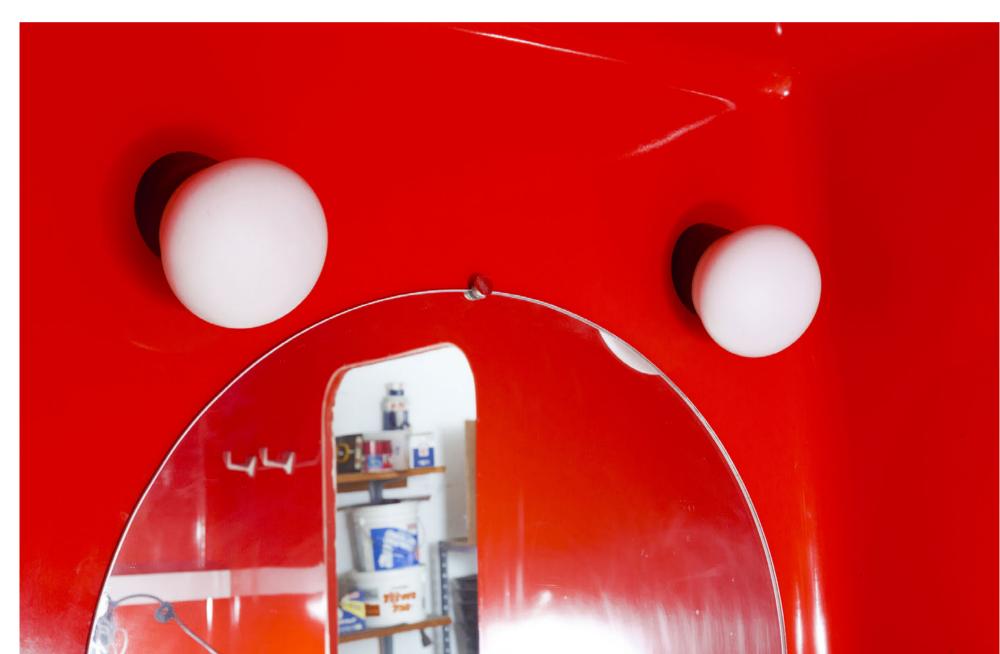


Photo: Artists Rights Society (ARS), 2018

Location: Savoie, FranceArchitect Charlotte Perriand

 Year:
 1975-1978

 Dimensions
 4000 m2

Reference

Medium Polyester and fiberglass shell, monoblock polyester,

ceramic and chrome-plated brass

Color Vibrant red, green and blue.

Description

Particularly studied in kitchens and bathrooms due to the complexity of materials and trades involved.

Goals:

- Create usable and affordable domestic spaces.
- Adapt to contemporary lifestyles.
- Enhance enjoyment and functionality in residential design.

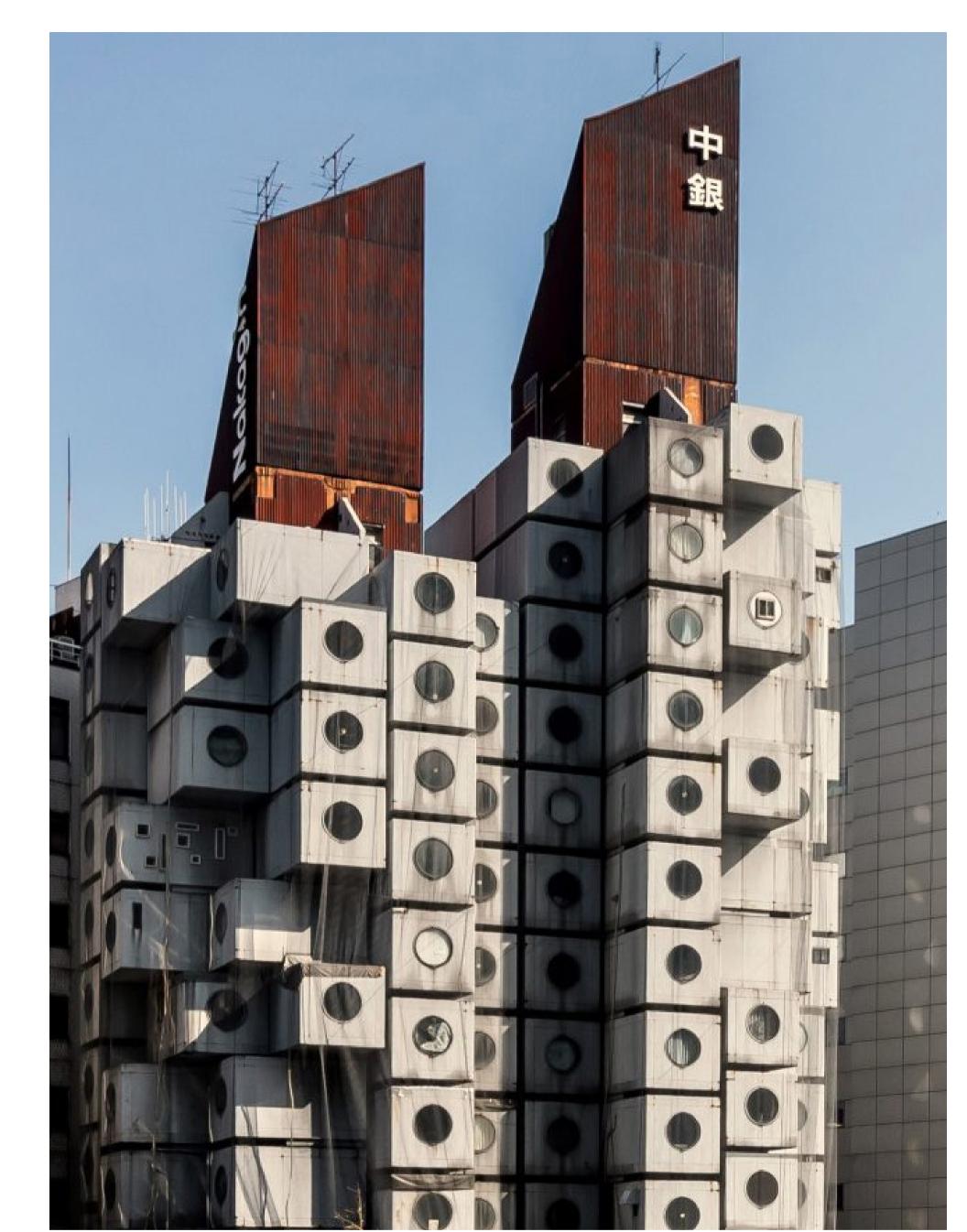
Modular Unit Precedent - Nakagin Capsule Tower















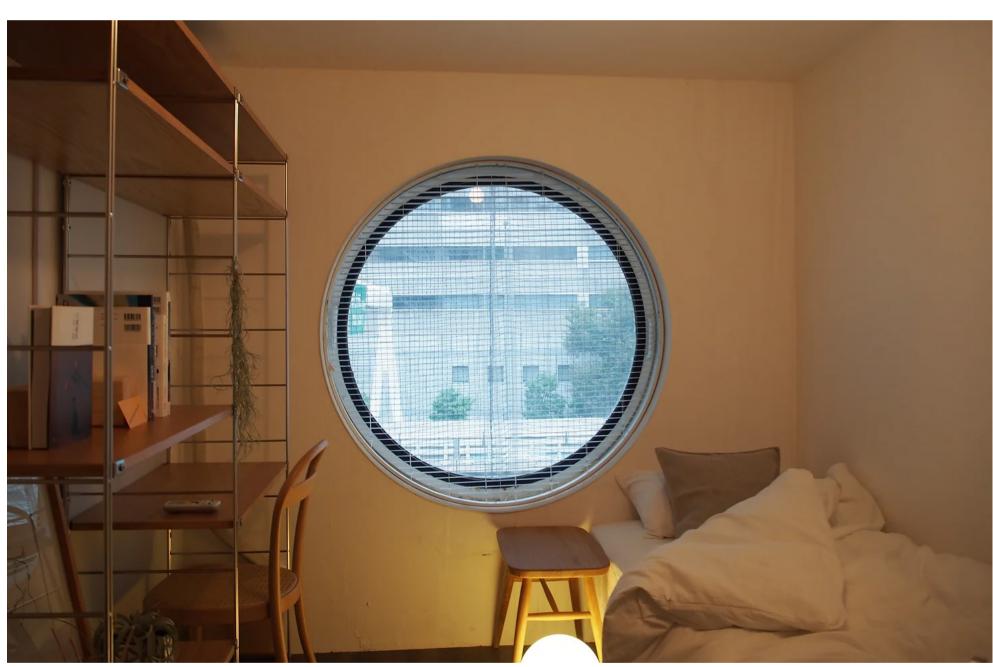




Photo: Kakidai, Nakagin Capsule Tower

Location:Ginza, Tokyo, JapanArchitectKisho KurokawaYear:1972 (Built in 30 days)

Dimensions 2.5 m × 2.5 m × 4.0 m (8.2 ft × 8.2 ft × 13.1 ft).

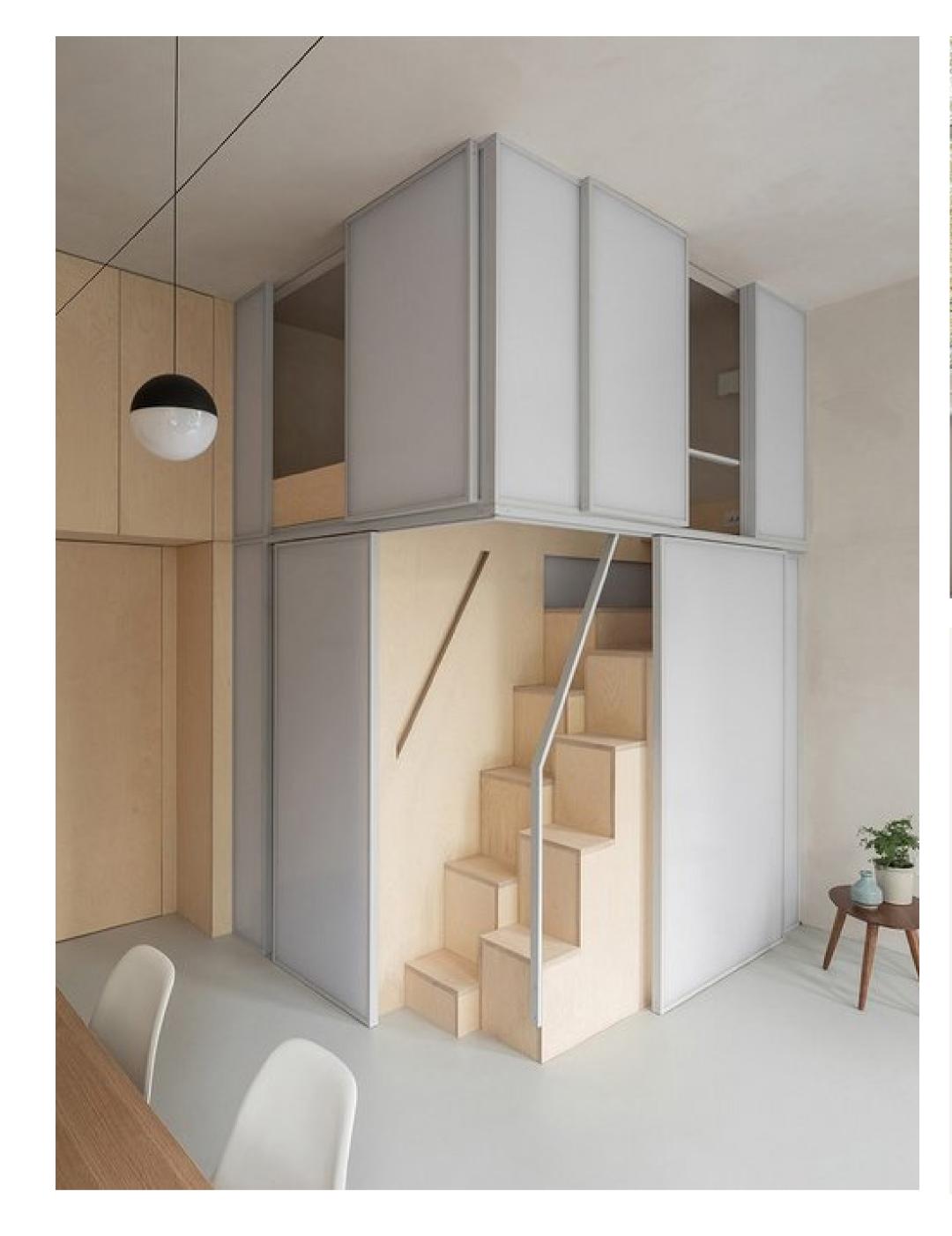
Material Steel and reinforced concrete

Description

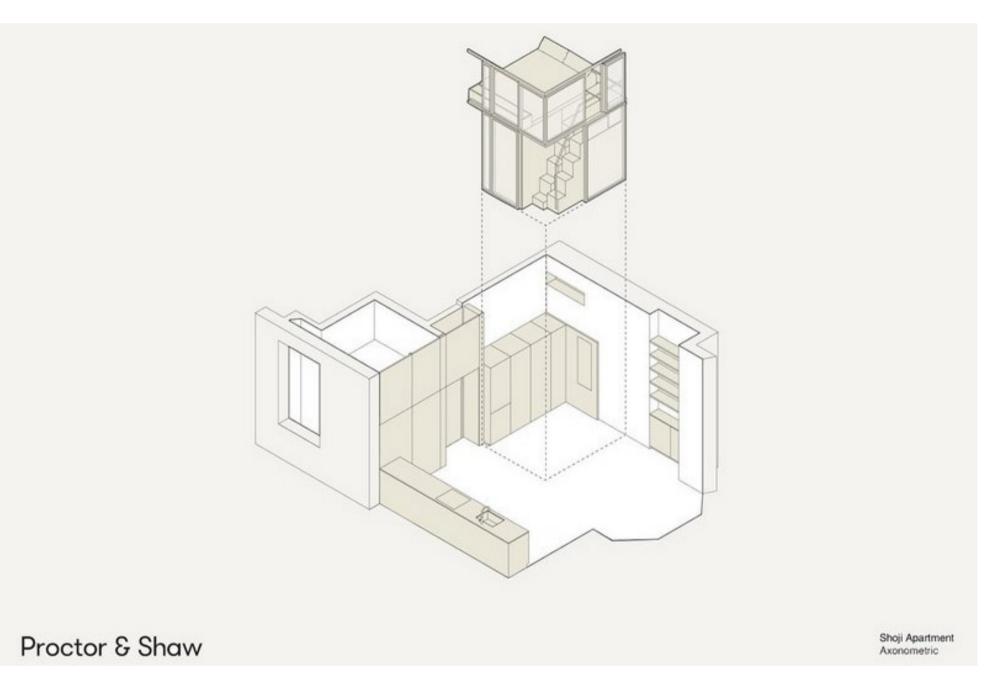
Combined modern technological advancement with adaptable urban planning principles.

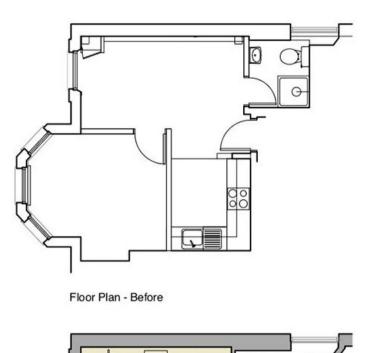
- Prefabricated steel-truss boxes with galvanized panels.
- Rust-preventative paint and Kenitex glossy finish.
- Units connectable to form larger spaces.

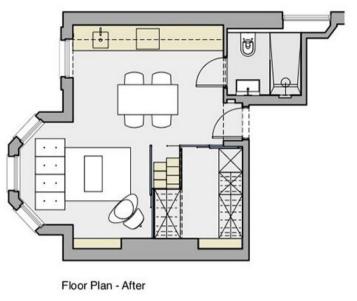
Compact Unit Precedent - Shoji Apartment, Belsize Park

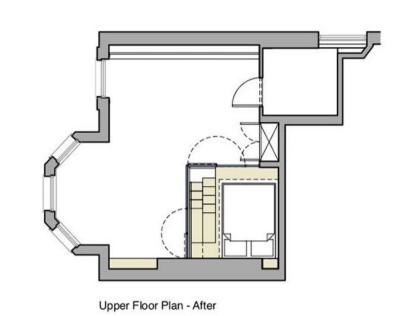


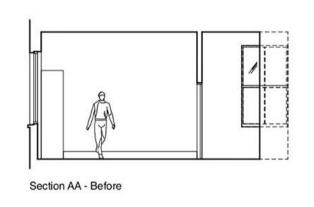


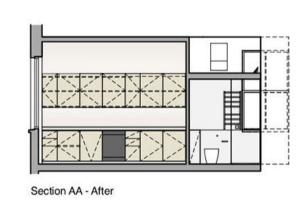


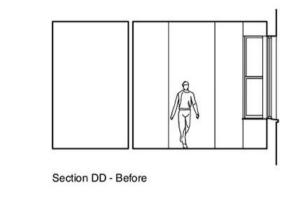


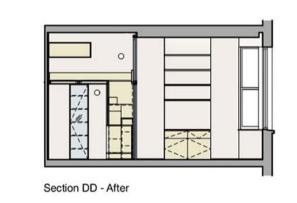












Proctor & Shaw

0.0 0.5 1.0 1.5 2.0 M Shoji Apartm Sections Scale 1:100 @ A4 Before and A

Photo: Ståle Eriksen, RIBA Journal

Location: London

Architect Proctor & Shaw Architect

Year: 1972 (Built in 30 days)

Dimensions 29 square meter

Material Birch Plywood, Clay Plaster, Translucent Panels(Shoji

Screens)

Description

The design was a clever spatial manipulation, ergonomically designed with sustainability and modern living standards in mind.

Japanese Influence: Shoji-inspired translucent sleeping pod.

Innovative Layout: Bedroom relocated to the rear for more space.

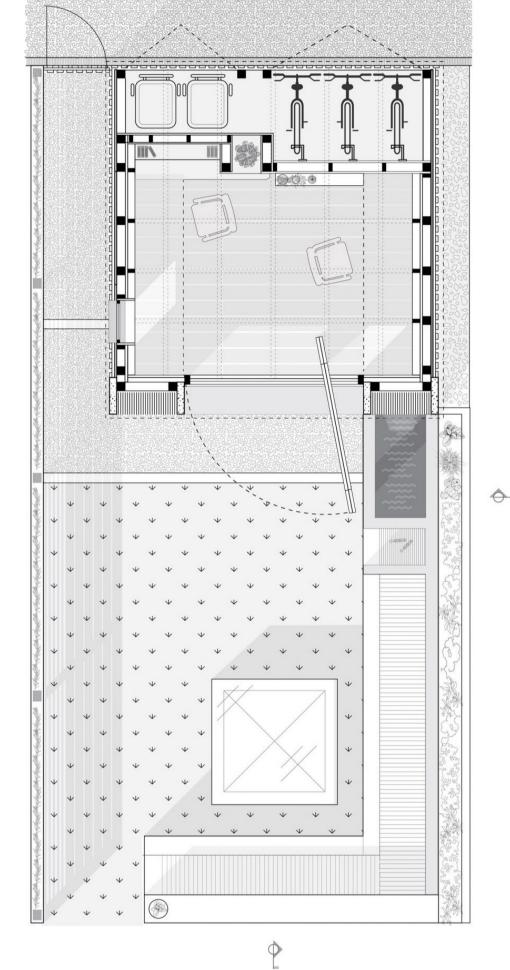
Integrated Storage: Walk-in wardrobe beneath the raised sleeping pod.

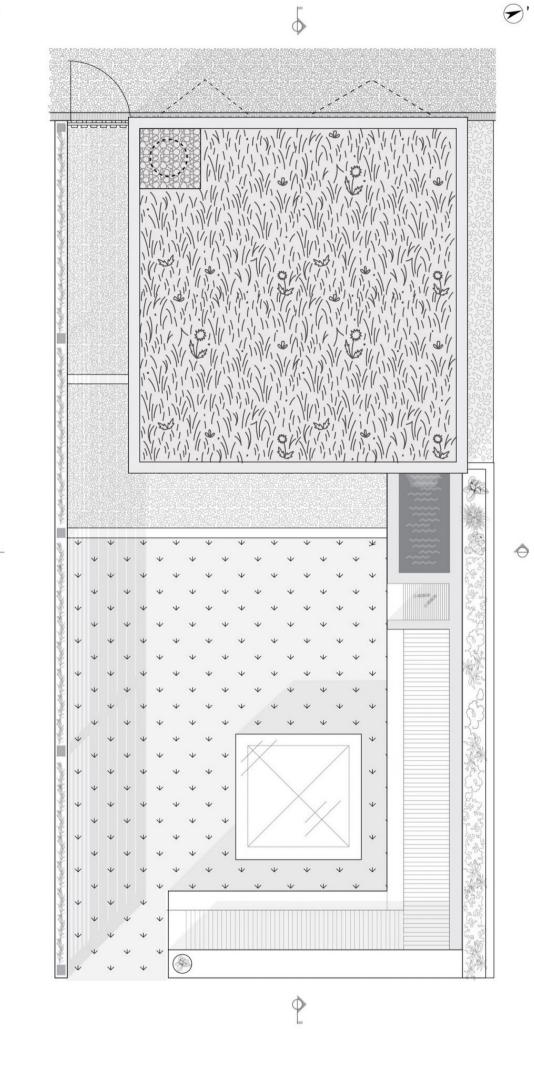
Efficient Design: Maximizes 3.4m ceiling height in a Victorian building.

Compact Unit Precedent - The Garden Retreats, Cambridge











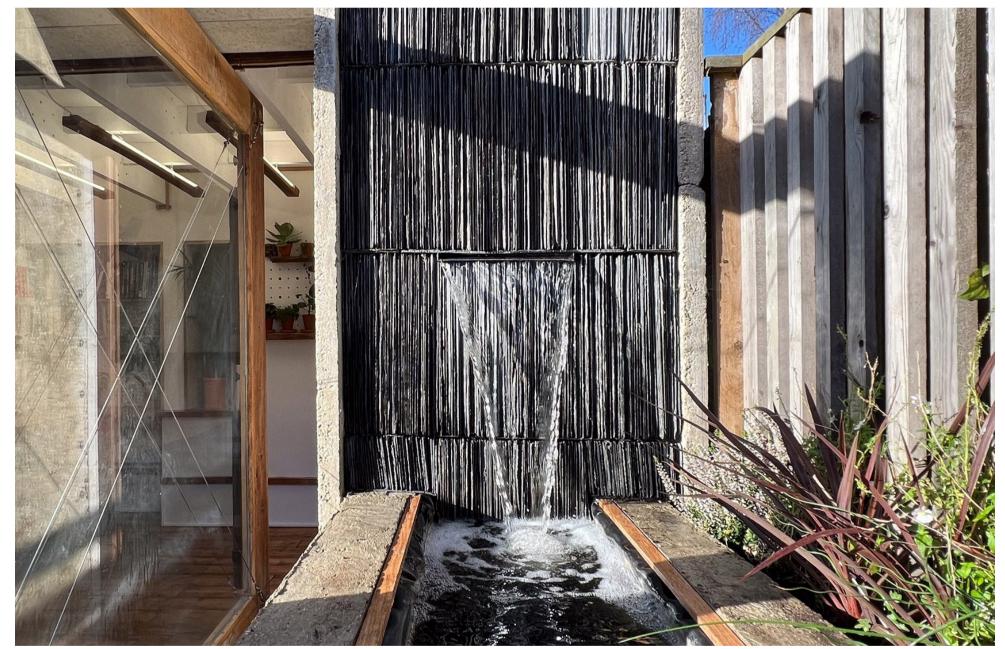


Photo: The Garden Retreat

Location: Cambridge, England

Architect The Environmental Design Studio (TEDS),

Year:2023Dimensions15m².

Material Over 85% recycled, including slate, timber, and cedar.

Description

The small scale projects sustainability, biodiversity and adaptability

Recycled floorboards and pegboard panels for flexible storage solutions.

Cedar worktops set at varying heights for standing or seated work.

Fully removable furniture for multipurpose usage.

Features: Sedum roof, bug hotel, waterfall, bird bath, removable furniture.

Layout Precedent - Flor og Fjære, Norway

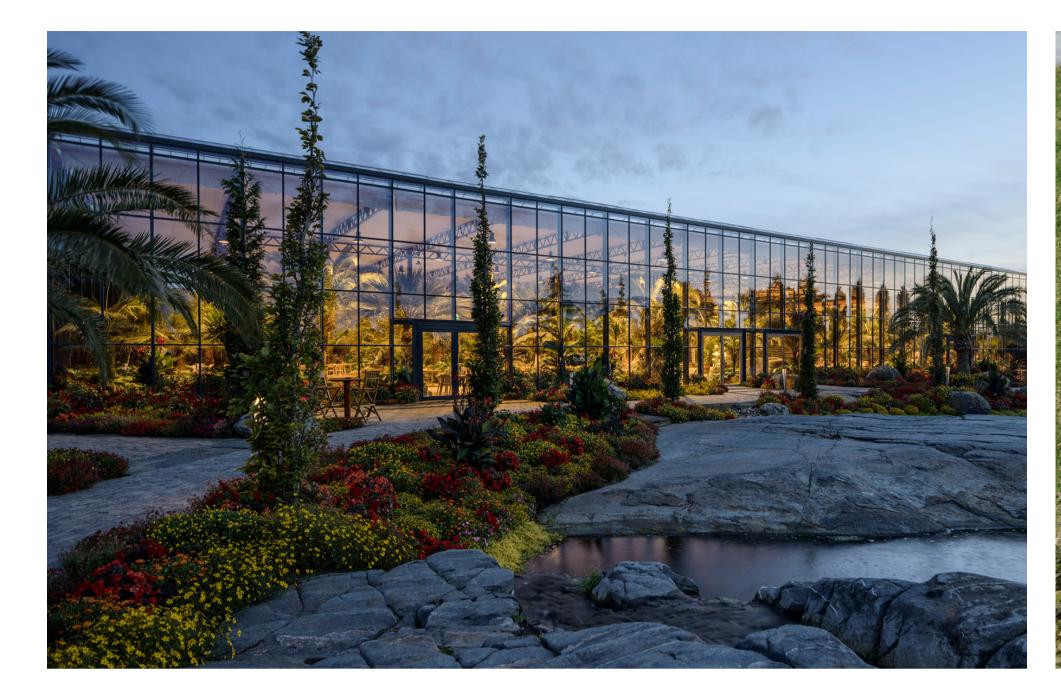












Photo: Helen and Hard

Location: Sør-Hidle, Stavanger, Norway

Architect Helen&Hard

Year: 2022(Completed)

Area 4000 m2

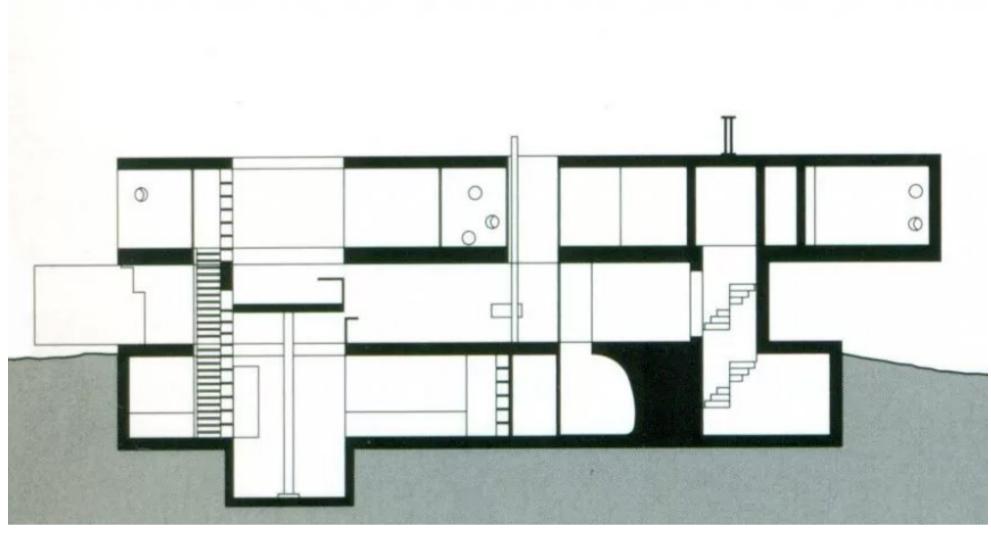
Description

Located in a larger botanical garden, the green house merges the naturality of plants with the glass structure.

It can be utilized for hosting workshops, educational events, and exhibition, providing natural light to enhance photography and videography

Vertical Platform Precedent - Maison Bordeaux









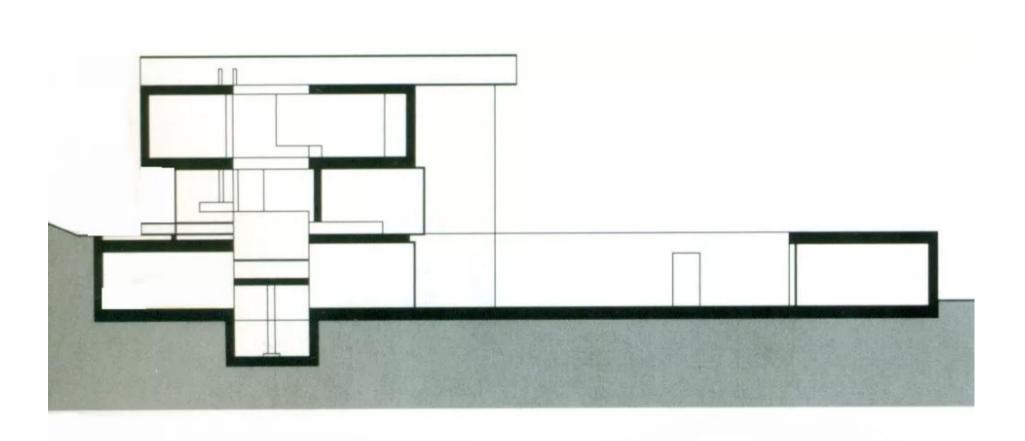




Photo: Maison Bordeaux, France.

Location:Bordeaux, FranceArchitectRem Koolhaas

Year:1994-1996Dimensions500m².

Materials Aluminum sheets, Cement

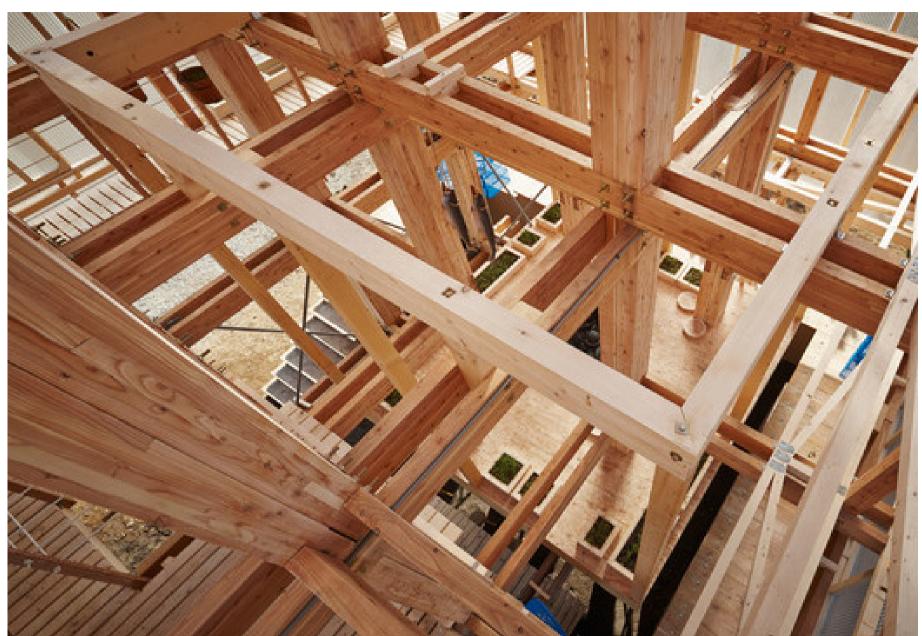
Description - Vertical Platform

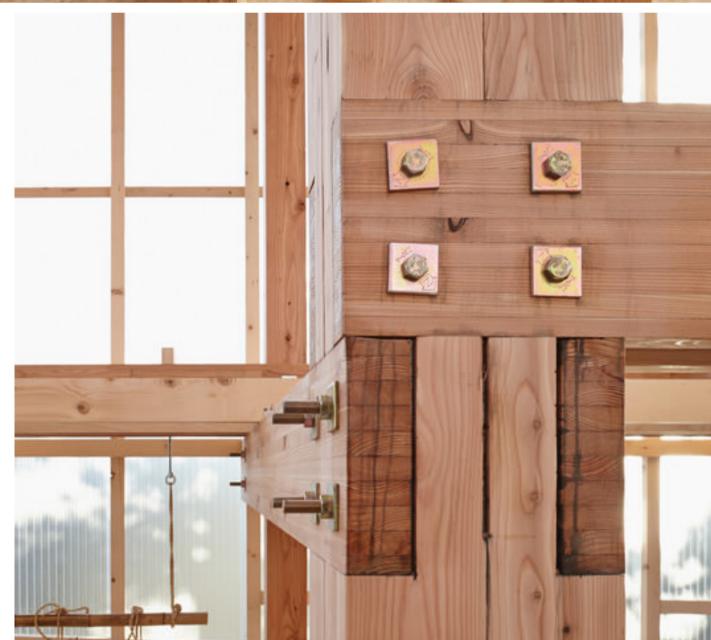
Mechanism: Hydraulic Piston System

- Hydraulic systems ensure **smooth and precise movement**, capable of supporting significant weight, including books and furniture.
- Powered by a **hydraulic pump**, the system ensures **controlled upward and downward move-ment**.
 - Designed as a room without walls, effectively serving as a study or workspace.
- It allows the user to access multiple levels of the house (kitchen, living room, bedroom) while remaining seated at their desk.

Frame Precedent Research - Nest We Grow









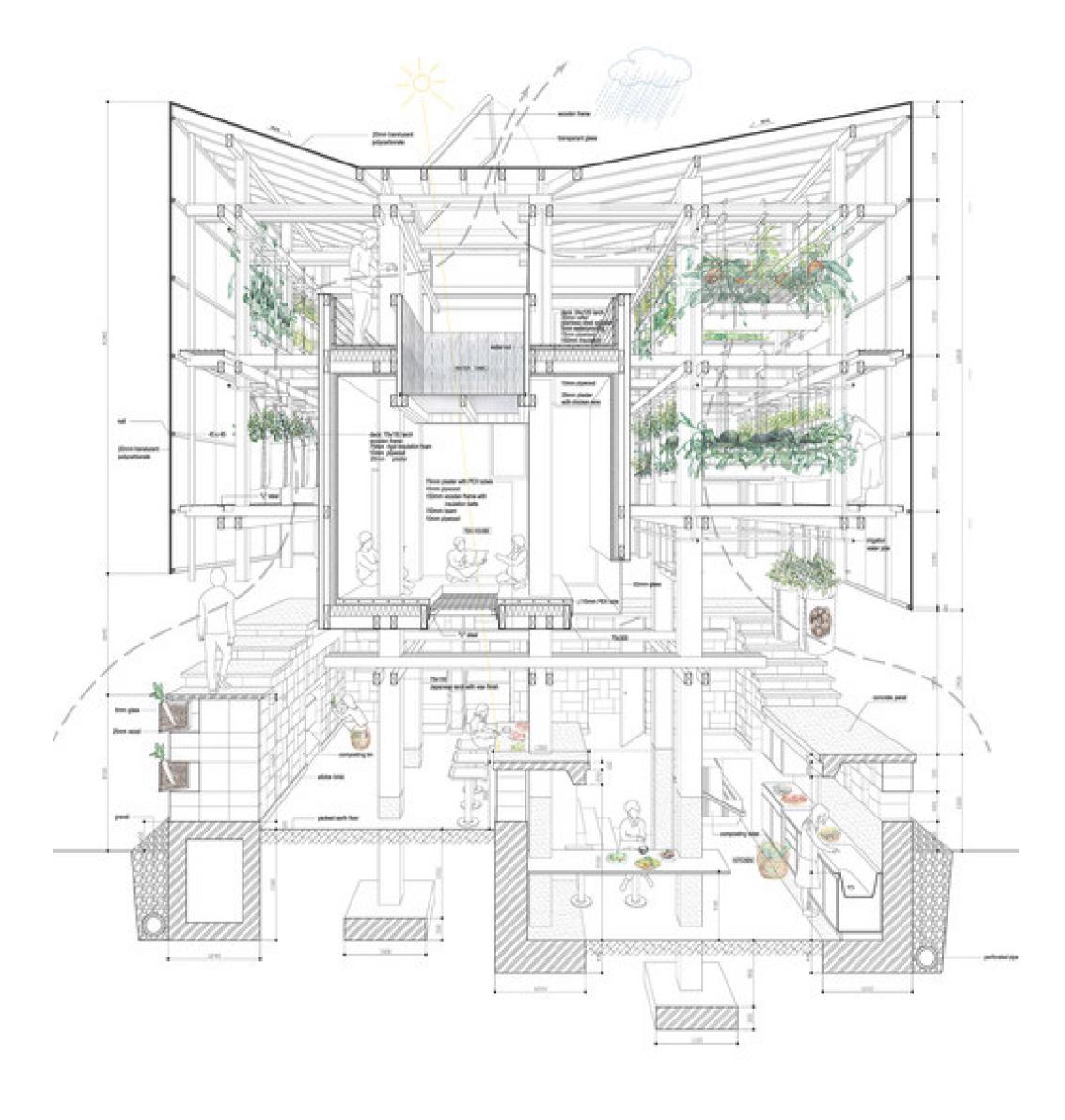


Photo: Arch Daily, 2016

Location: Takinoue, Japan

Architect College of Environmental Design UC Berkeley,

Kengo Kuma & Associates

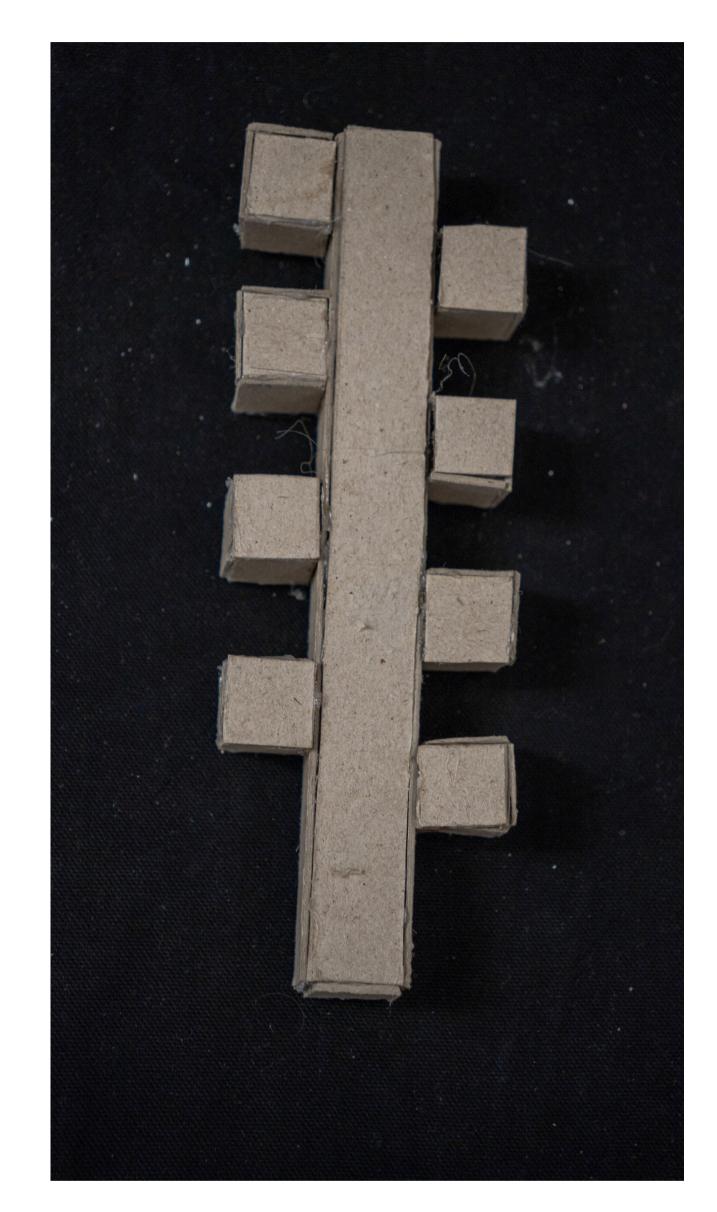
Year: 2014Dimensions 85m².

Materials Aluminum sheets, Cement

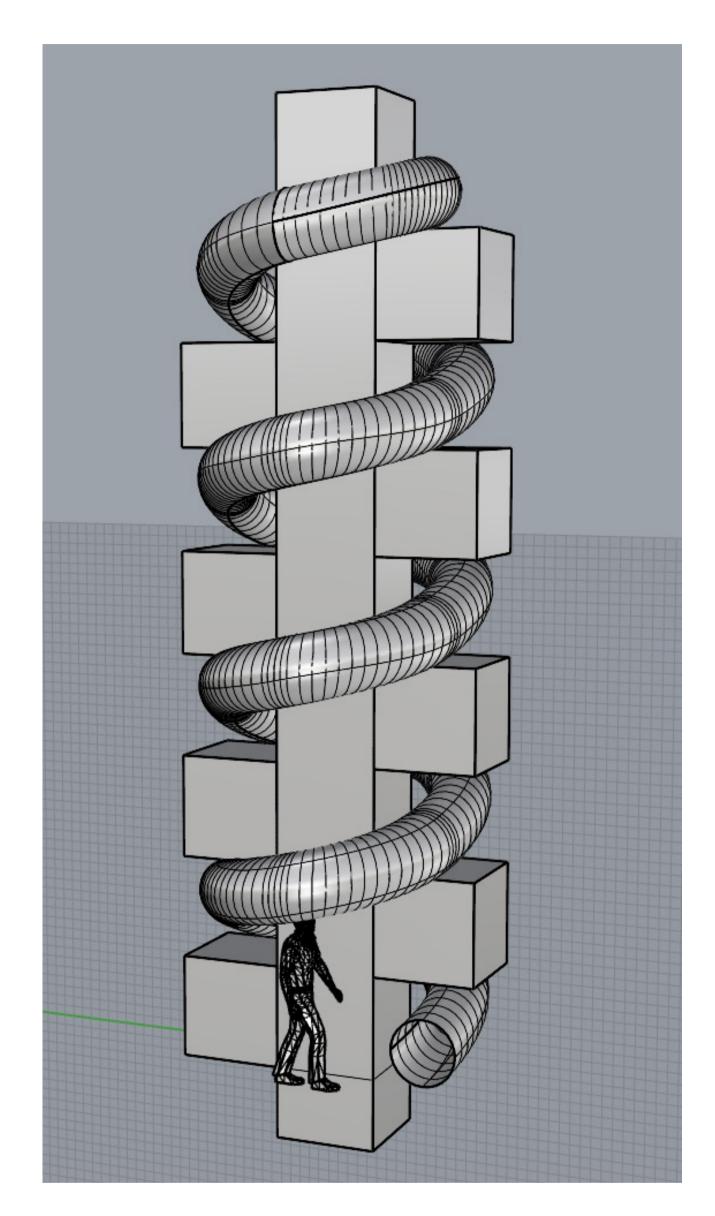
- A community-focused building designed to store, prepare, and enjoy local foods in Hokkaido, Japan.
 - It integrates rammed-earth walls, straw bale construction, and heavy timber techniques.
- The composite columns, made by combining smaller wood pieces to form larger columns, adapt American timber construction methods to traditional Japanese carpentry.

Project 2C - Designing in the Glitch: The Prototype - Bespoke Occupation

Quick model sketch







The main idea was to enclose a person within the bare minimum spatial requirement to help address Jericho and Oxford's high population index.

7 AFFORDABLE AND CLEAN ENERGY

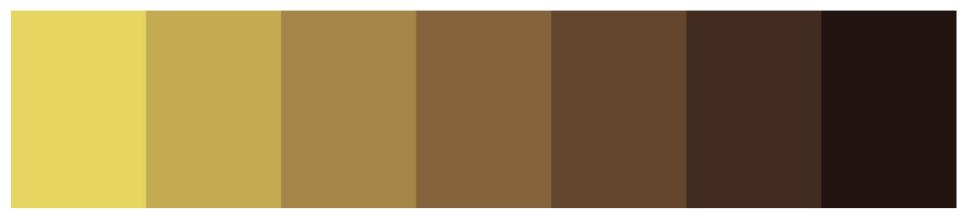






Material Research

Cross-Laminated Timber (CLT)



Usage in My Building:

- Structural panels for walls, floors, and ceilings.
- Supports modular construction and reduces construction time.
- Negative carbon material, contributing to overall sustainability.

Advantages:

- Excellent thermal and acoustic insulation.
- Lightweight yet highly durable, reducing transport emissions.
- Enhances indoor air quality due to its natural properties.



Galvanised Steel



Usage in My Building:

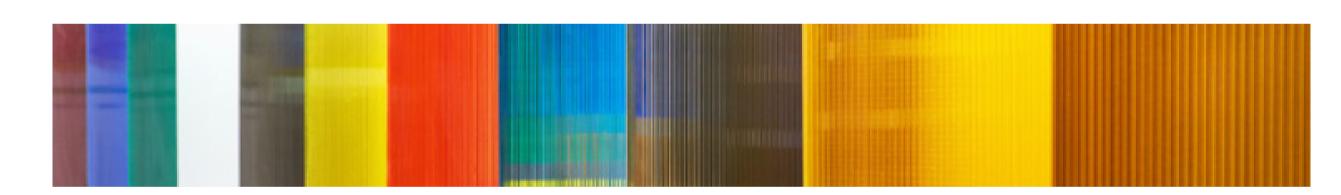
- Flitch plates for timber connections.
- Structural bracing and fasteners (screws, bolts).
- Key load-bearing elements in modular construction.

Advantages:

- High strength-to-weight ratio.
- Long lifespan with minimal maintenance.
- Provides precision and stability to timber structures.



Bio-Based Polycarbonate



Concrete with GGBS



Usage in My Building:

- Transparent panels for walls and windows.
- Provides natural lighting and reduces reliance on artificial light.
- Ensures weatherproofing and insulation for exterior cladding.

Advantages:

- UV-resistant and durable.
- Lightweight, reducing structural loads.
- Recyclable and contributes to lower embodied carbon compared to fossil-based plastics.



Usage in My Building:

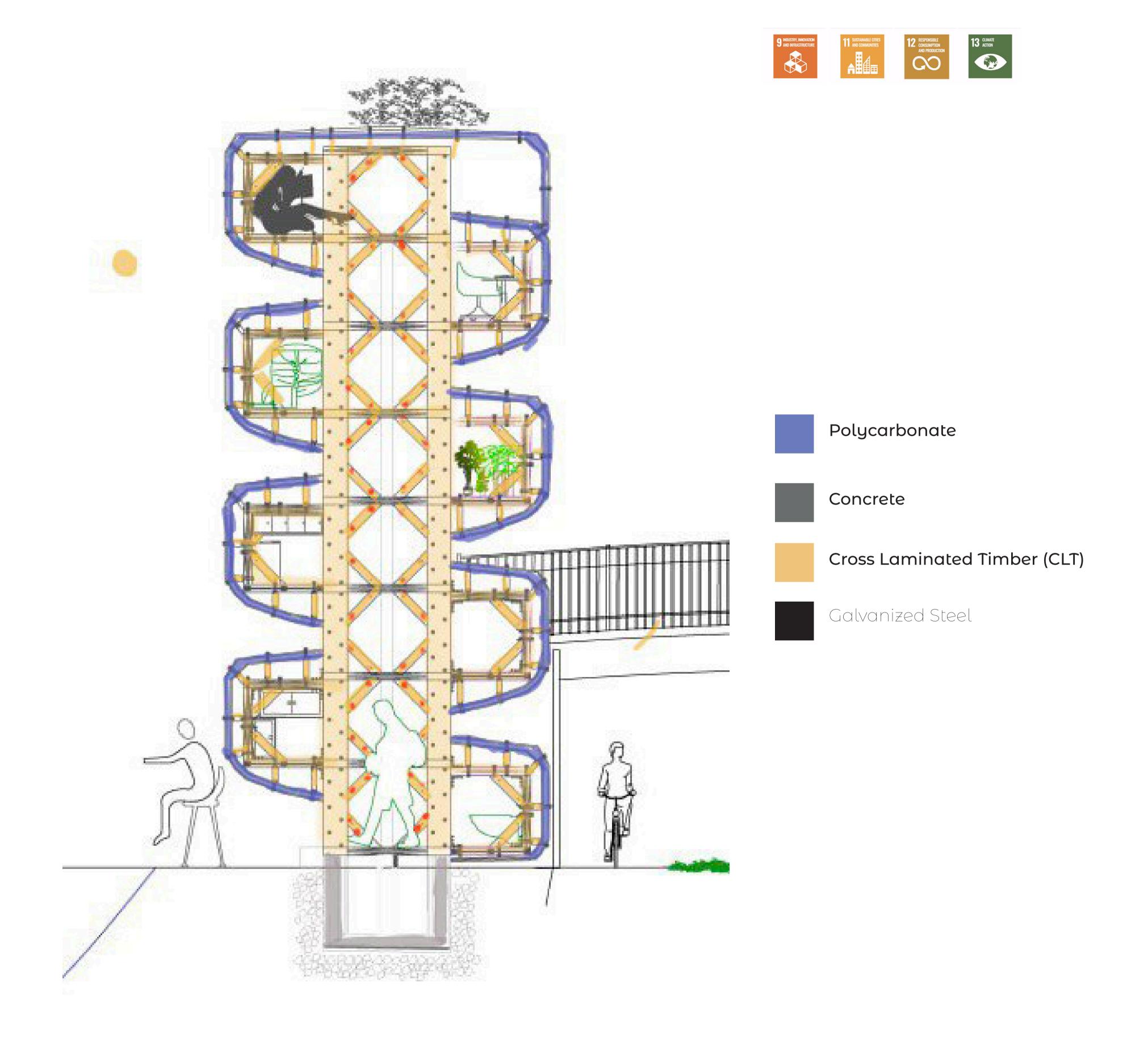
- Foundation slab for structural stability.
- Provides a robust base for timber columns and modular rooms.
- Integral to drainage and waterproofing systems.

Advantages:

- 50% lower embodied carbon compared to standard concrete.
- Long-lasting and resistant to environmental degradation.
- Versatile in load-bearing and non-load-bearing applications.



Material



Building Life Cycle Accessment

RAW MATERIALS AND PRODUCTION A1-A3:

TOTAL FOR A1-C4: ~60.88 KGCO₂E.

- CLT: Carbon sequestration.
- GGBS concrete: Reduced embodied carbon.
- · Polycarbonate: Lightweight with moderate emissions.
- Steel: Minimal use for bracing and flitch plates.
- CLT (-1.27 kgCO₂e/kg),
- GGBS concrete (0.137 kgCO₂e/kg),
- steel (2.11 kg CO_2e/kg), and
- polycarbonate (2.47 kgCO₂e/kg).
- Cradle-to-Cradle Approach: The design emphasizes
- modularity,
- renewable materials,
- recyclability, and
- end-of-life reuse to minimize environmental impact.

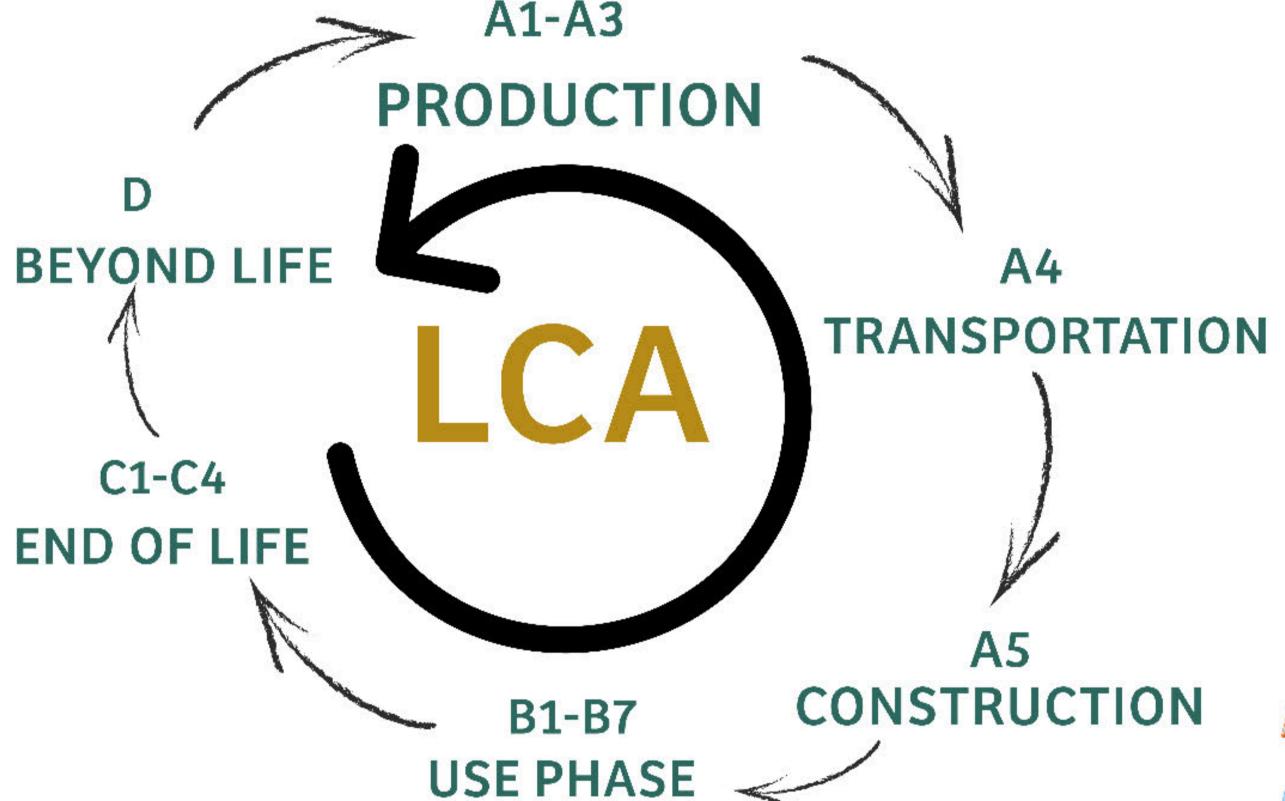
CLT timber, bio-based polycarbonate, GGBS concrete, and galvanised steel



NEXT LIFE

 Carbon benefits from reused materials included in the next lifecycle.

(90% CLT, 95% Steel)



RECYCLING

Deconstruction enabled by modularity.

Recycling and Reuse:

- CLT panels and steel parts reused or recycled.
- Crushed concrete reused as aggregate for new construction.

Energy Efficiency:

- Polycarbonate allows natural light, reducing lighting energy.
- CLT offers natural insulation for thermal comfort.

Maintenance Needs:

- CLT and steel connections require periodic inspection.
- Replace bio-polycarbonate panels after 25 years.

Water Use (B7): Incorporate rainwater harvesting for landscaping and green spaces.



MATERIALITY

- Transport emissions reduced by sourcing locally produce CLT and GGBS concrete.
- Modular, prefabricated components minimize delivery tri





ASSEMBLY

- Fast assembly due to prefabricated CLT panels and polycarbonate walls.
- Less construction waste and on-site energy consumption.

CLT fits into a "Cradle-to-Cradle" system, ensuring material reuse and minimizing waste.

Building Life Cycle Accessment













RAW MATERIAL

Source: Sustainable forests certified by FSC (Forest Stewardship Council).

- CLT panels are made by layering wood boards at 90° angles and bonding them with eco-friendly adhesives.
- Carbon Capture: Timber absorbs CO₂ during its growth phase, resulting in biogenic carbon storage.





RECYCLING

Reuse:

- Panels can be disassembled and reused in other structures.
 Recycling:
- Damaged wood can be repurposed for chipboard or other wood products.

Carbon Retention:

 Carbon remains sequestered in timber even after reuse or recycling



MAINTENANCE

- Regular inspections to ensure airtightness and prevent moisture infiltration.
- Requires less maintenance compared to untreated wood.

THERMAL TREATMENT



- Kiln drying to remove moisture (improves stability and resistance to decay).
- Protects against rot, pests, and shrinkage.

FIRE TREATMENT



- Application of non-toxic fire-retardant solutions or encapsulation systems.
- Ensures compliance with fire safety codes.

PROCESS

- Timber is dried, laminated, and cut into panels.
- Low energy-intensive manufacturing process compared to concrete or steel.



EMBODIED CARBON:

- Negative emissions due to carbon storage in timber.
- Reduction of energy use by sourcing close to construction sites.

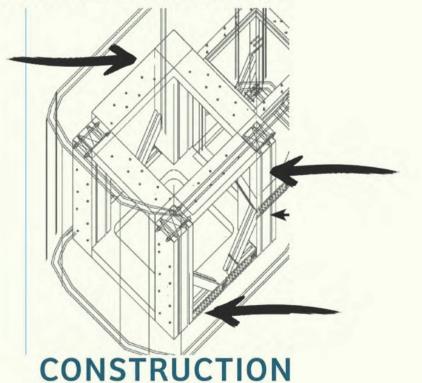
PRODUCTION END OF LIFE LIFECYCLE

NSTRUCTION

OPERATION

TRANSPORT TO SITE

- Lightweight panels reduce transport emissions compared to concrete or steel.
- Panels transported via rail or low-emission vehicles to minimize A4 emissions.



ENERGY EFFICIENCY

 $596 \, \text{W/(m}^2 \text{K})$

- High thermal performance due to wood's natural insulation properties.
- Airtight construction reduces heating and cooling energy demands.
- CLT fits into a "Cradle-to-Cradle" system, ensuring material reuse and minimizing waste.

Assembly:

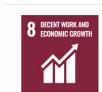
- Prefabricated panels allow for faster and cleaner on-site assembly.
- Reduced construction waste.

Fixing:

• Use of metal connectors and screws for precision.

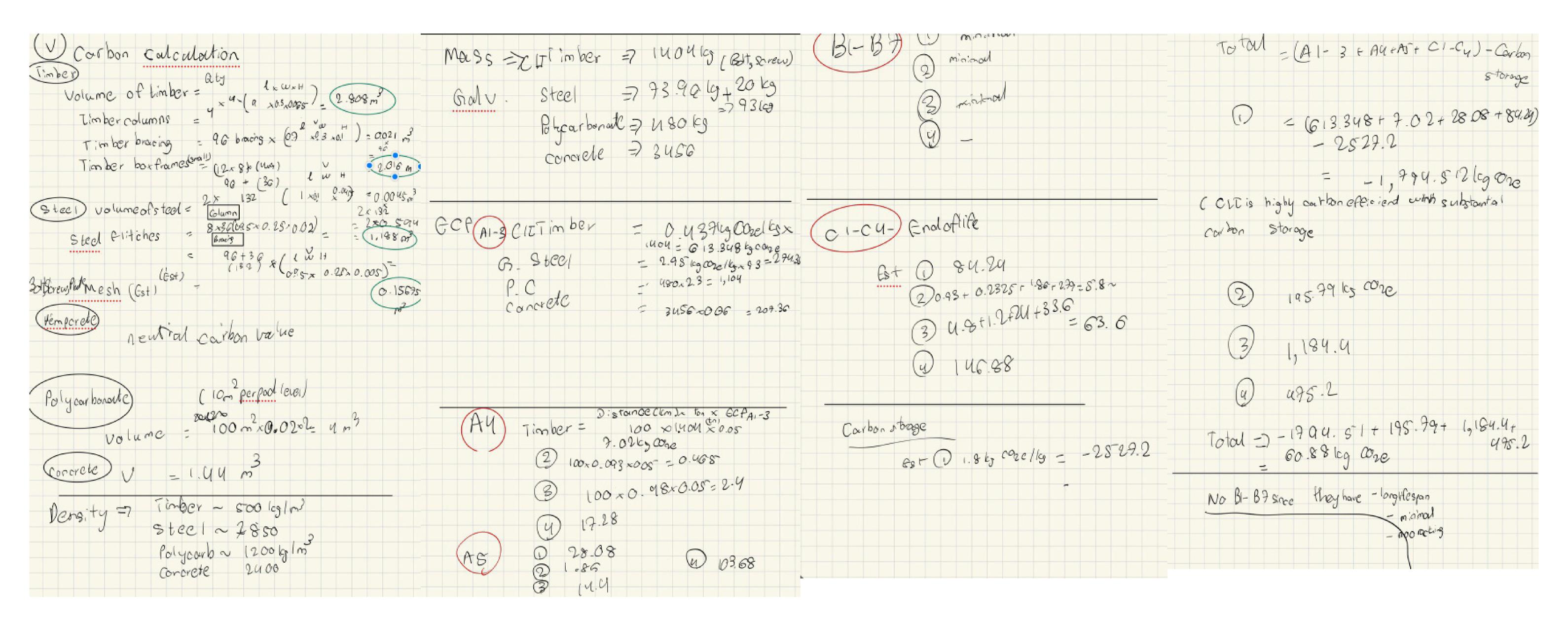
Embodied Carbon Value











Carbon Efficiency

- Total embodied carbon: ~60.88 kgCO₂e.

Negative carbon from CLT timber offsets emissions from other materials like polycarbonate and concrete.

CLT Timber Impact

- Major contributor to carbon efficiency via biogenic carbon storage.
- Without carbon storage, total emissions increase by 1,794.51 kgCO₂e.

Polycarbonate Trade-Off

- High emissions: **1,184.4 kgCO₂e,** despite benefits in lightweight design and light transmission.
 - Alternatives: High-performance glass or insulated timber systems.

GGBS Concrete Role

- -50% GGBS reduces concrete emissions by ~50% compared to standard mixes.
- Essential for foundation stability with emissions at $475.2 \text{ kgCO}_2\text{e}$.

Galvanised Steel

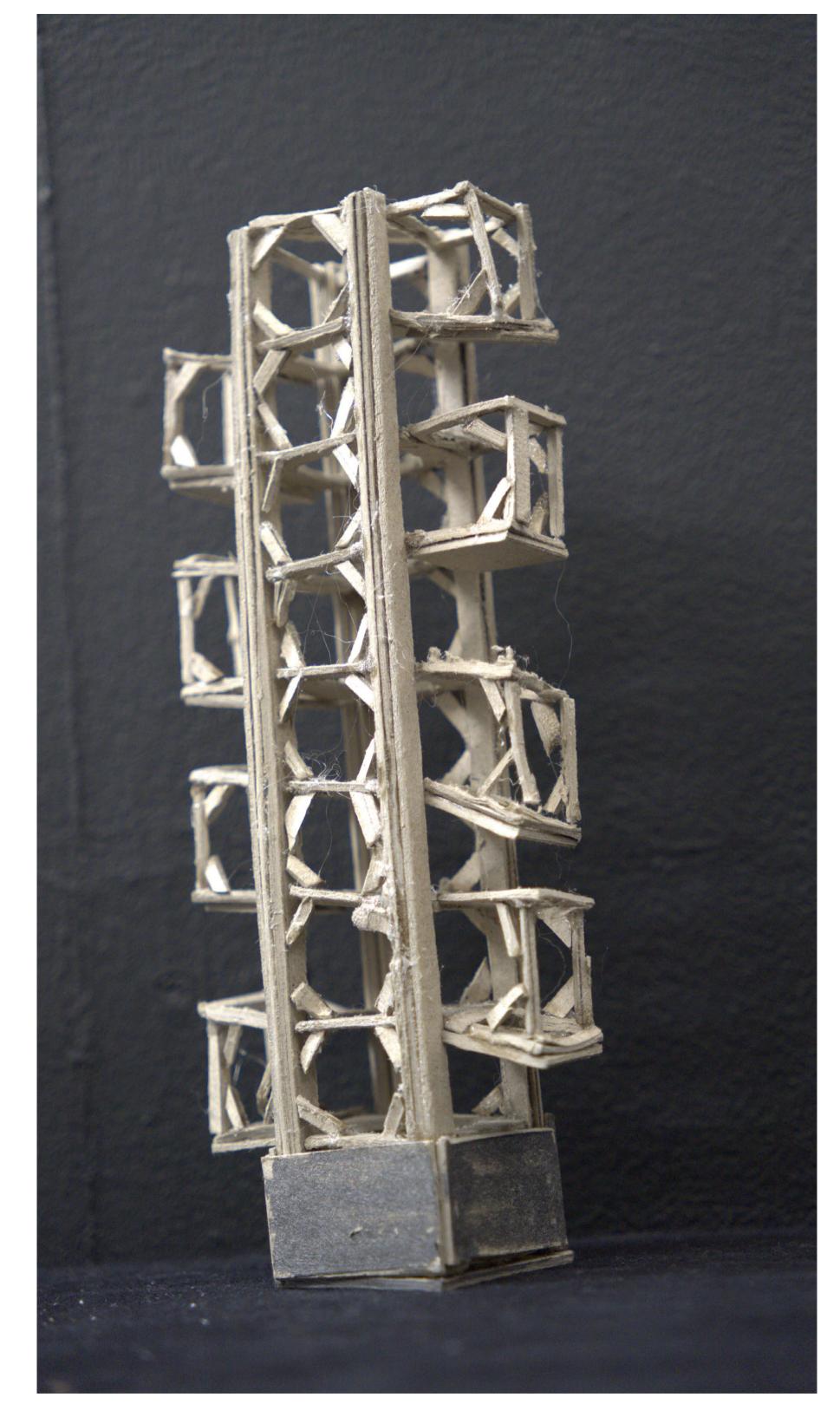
- Modest impact: 195.79 kgCO₂e for 93 kg.
- Use minimized to maintain structural durability.

Future Reductions

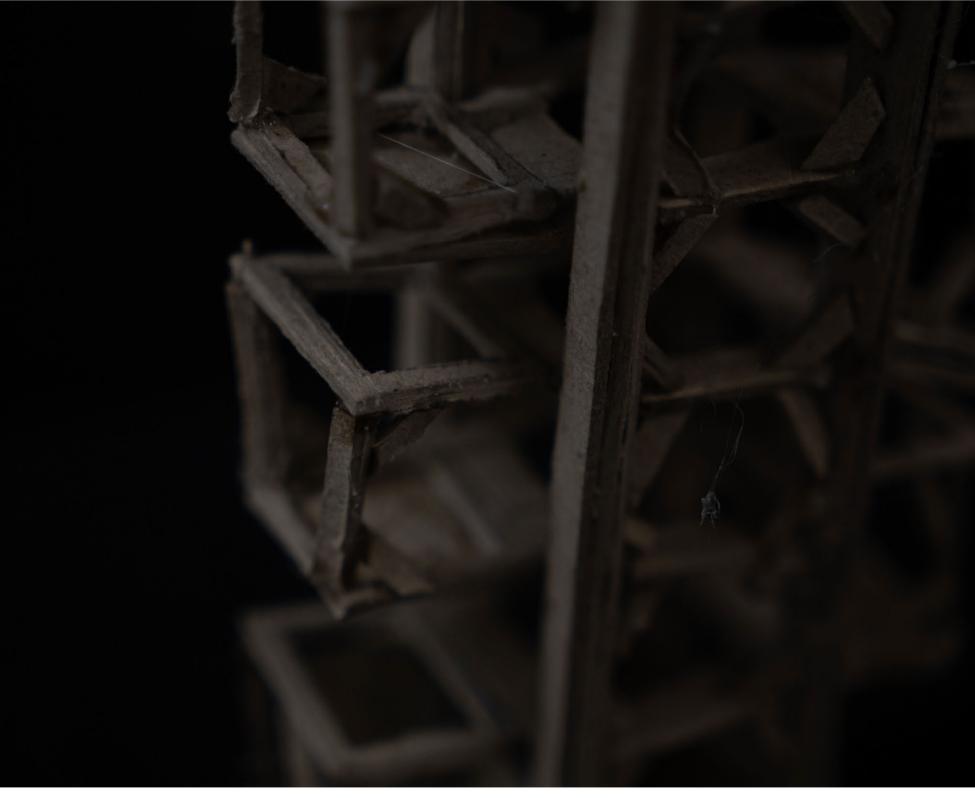
- Explore low-carbon materials: Carbon-sequestering concrete, alternative cladding.
- Source materials locally to reduce transport emissions (A4).

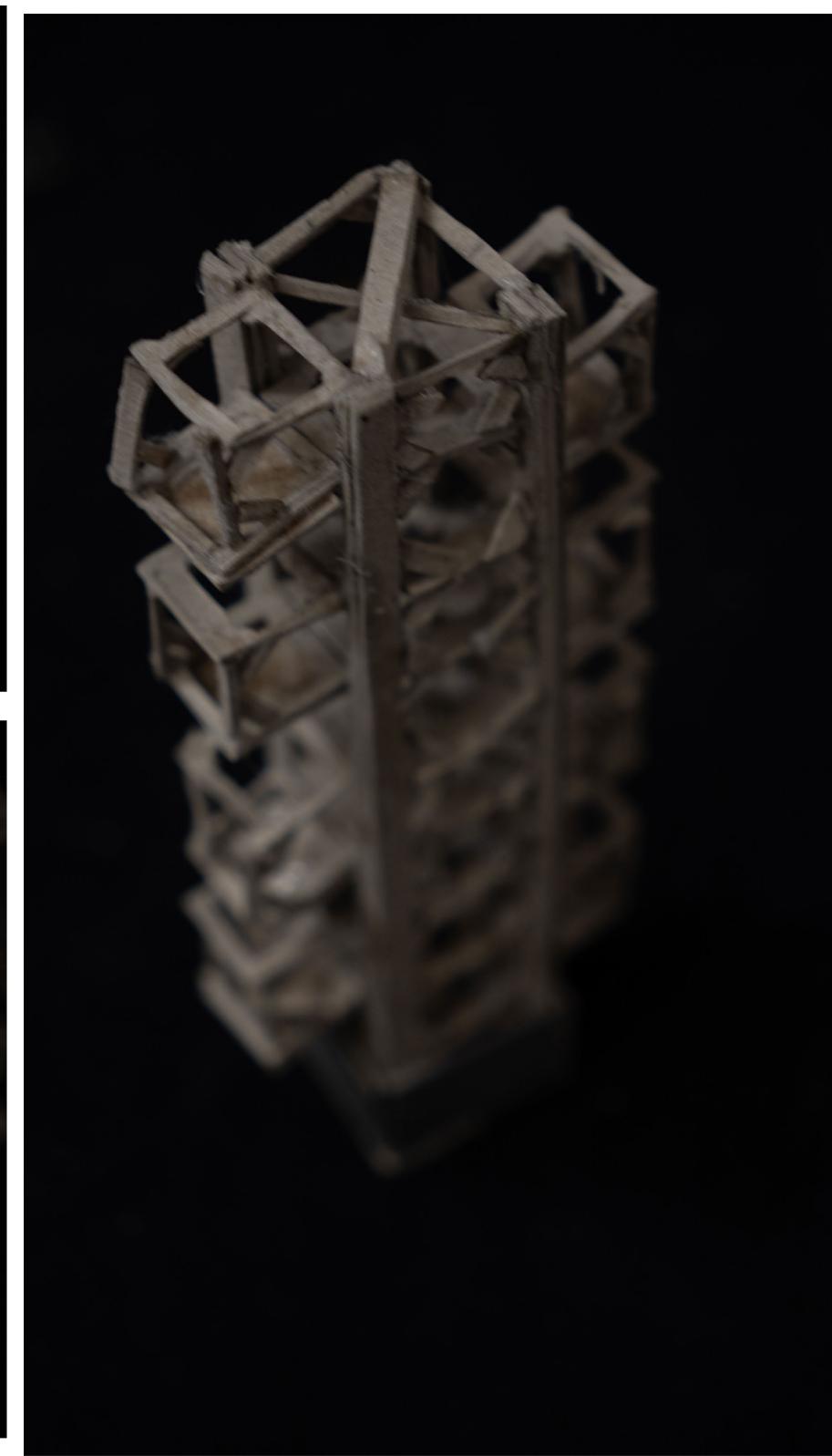
This summary aligns sustainability considerations directly with architectural design and material choices.

Task 2 - 1:50 Structural Model



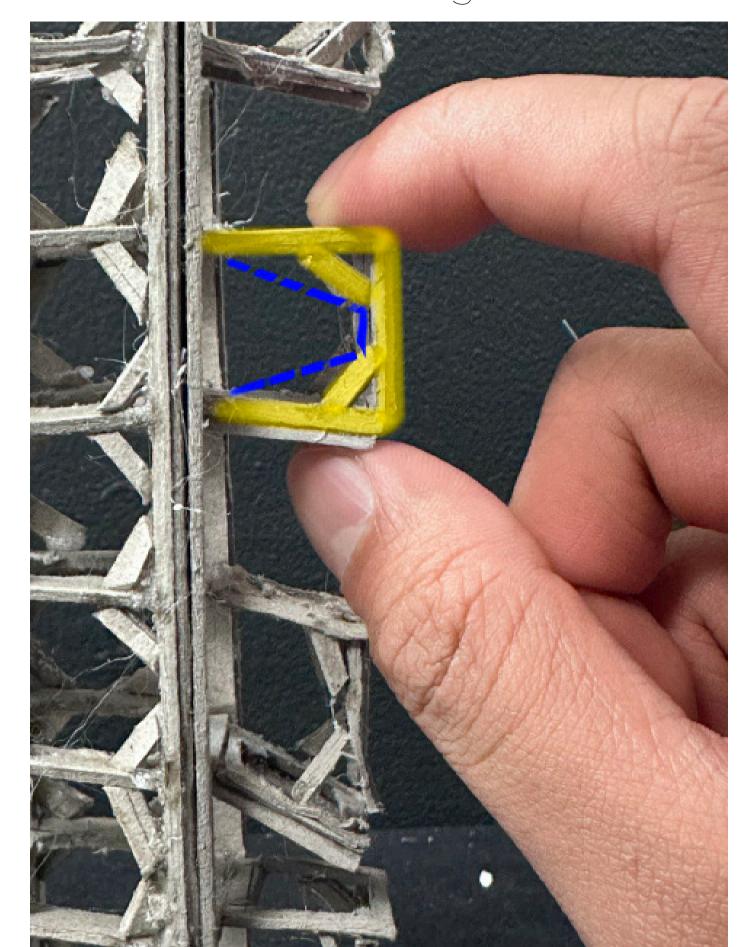


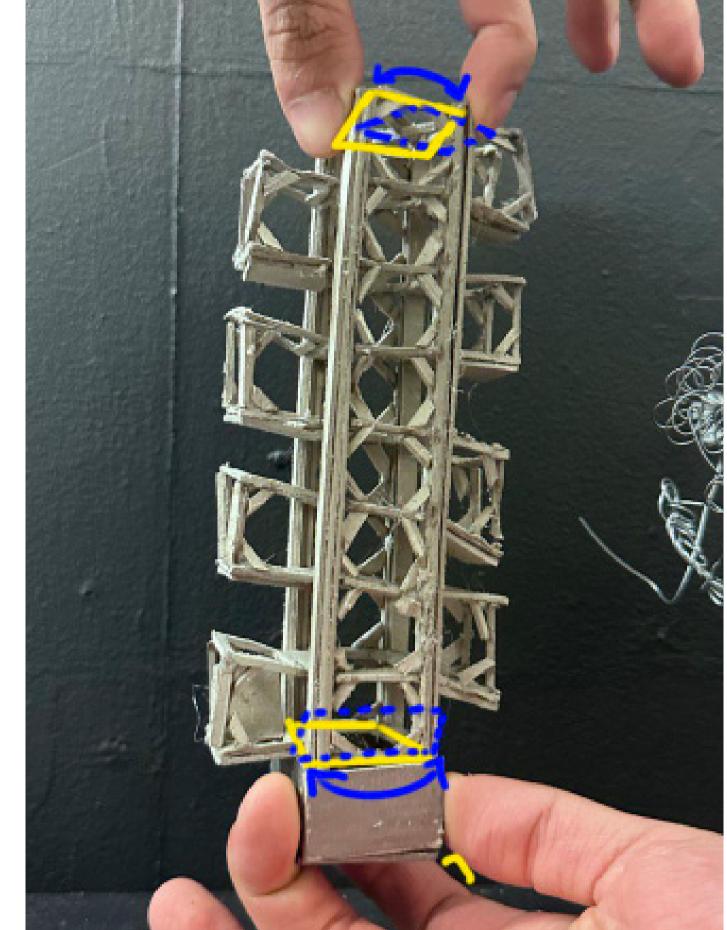




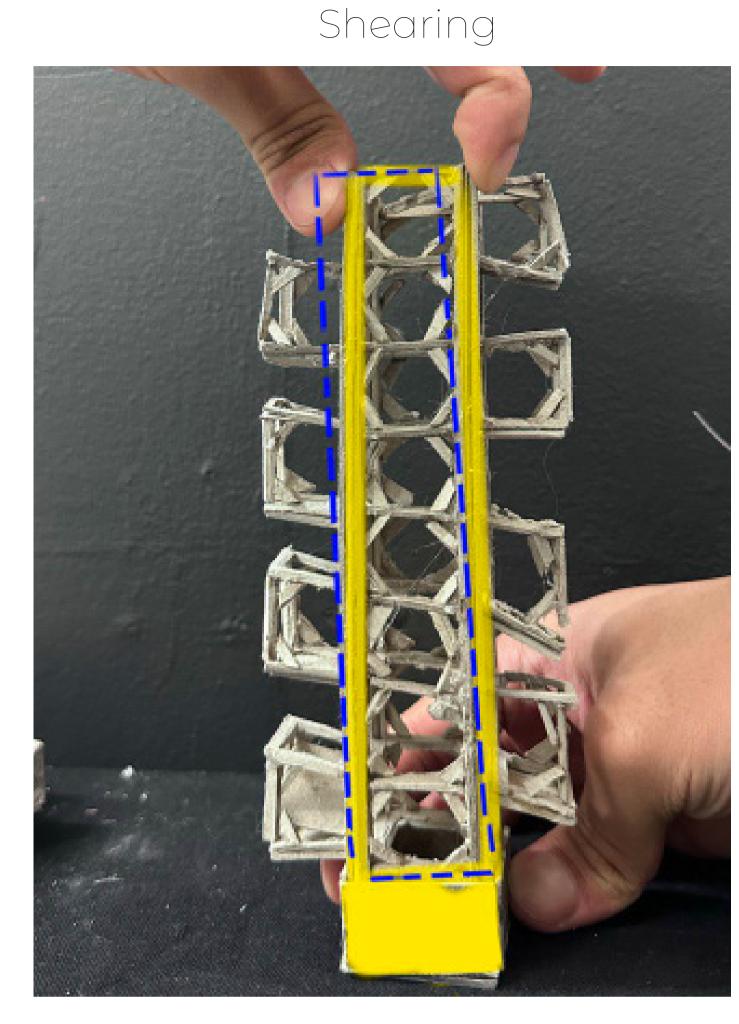
Technology - Tension

Bending





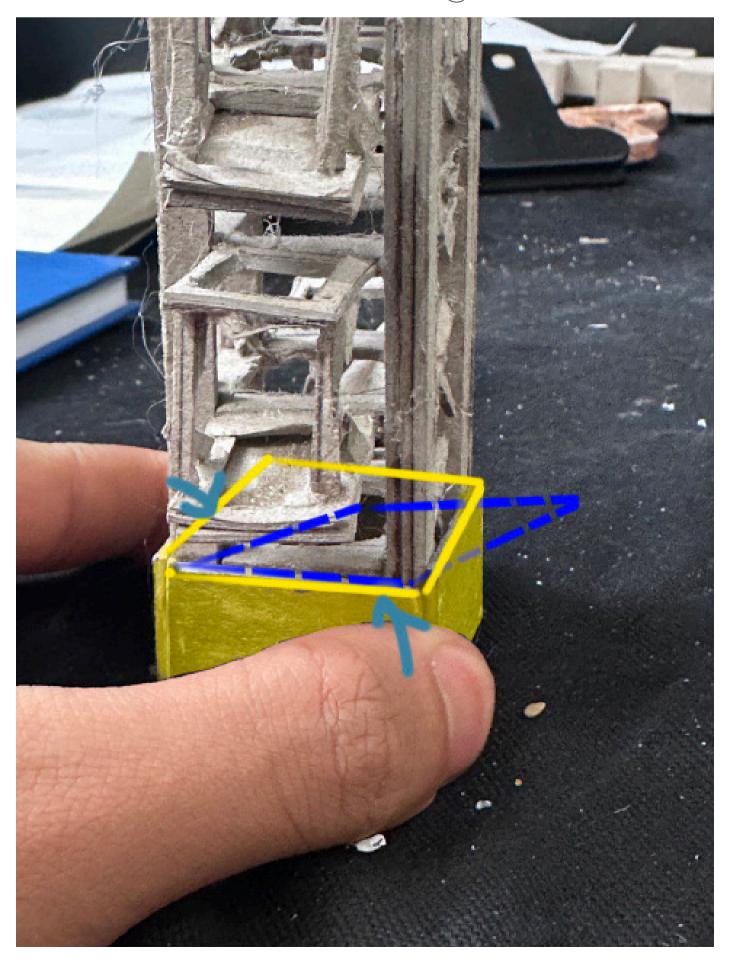
Torsion



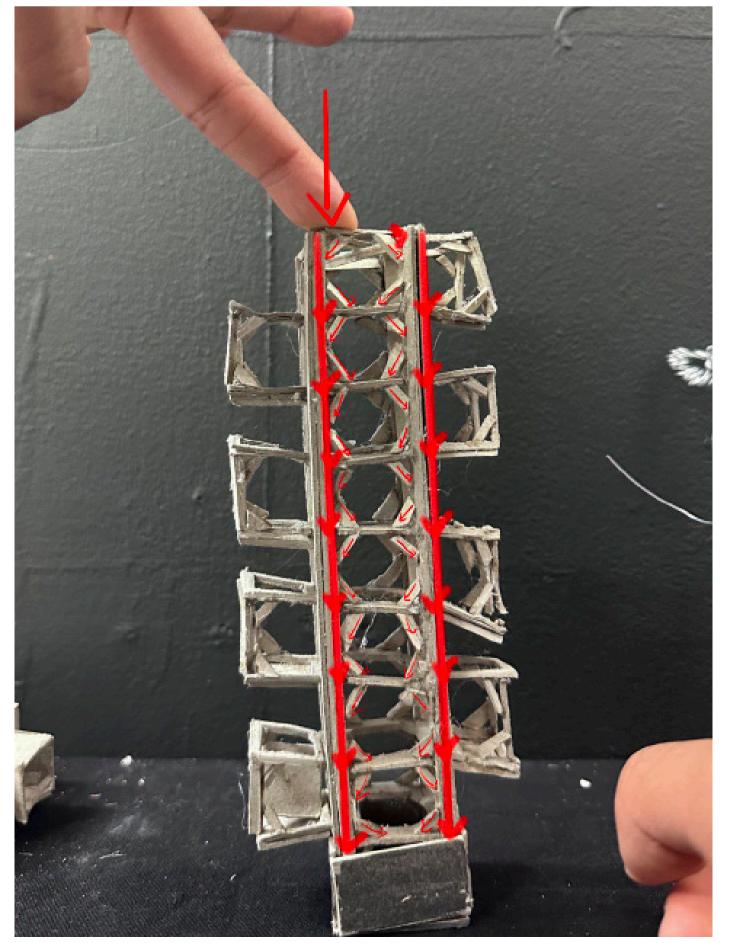
Bracing Systems Present

- Cross Bracing to counteract lateral forces
 - Primary Vertical Load Path
 - Base Support
 - Box Bracing/Frames.

Bending



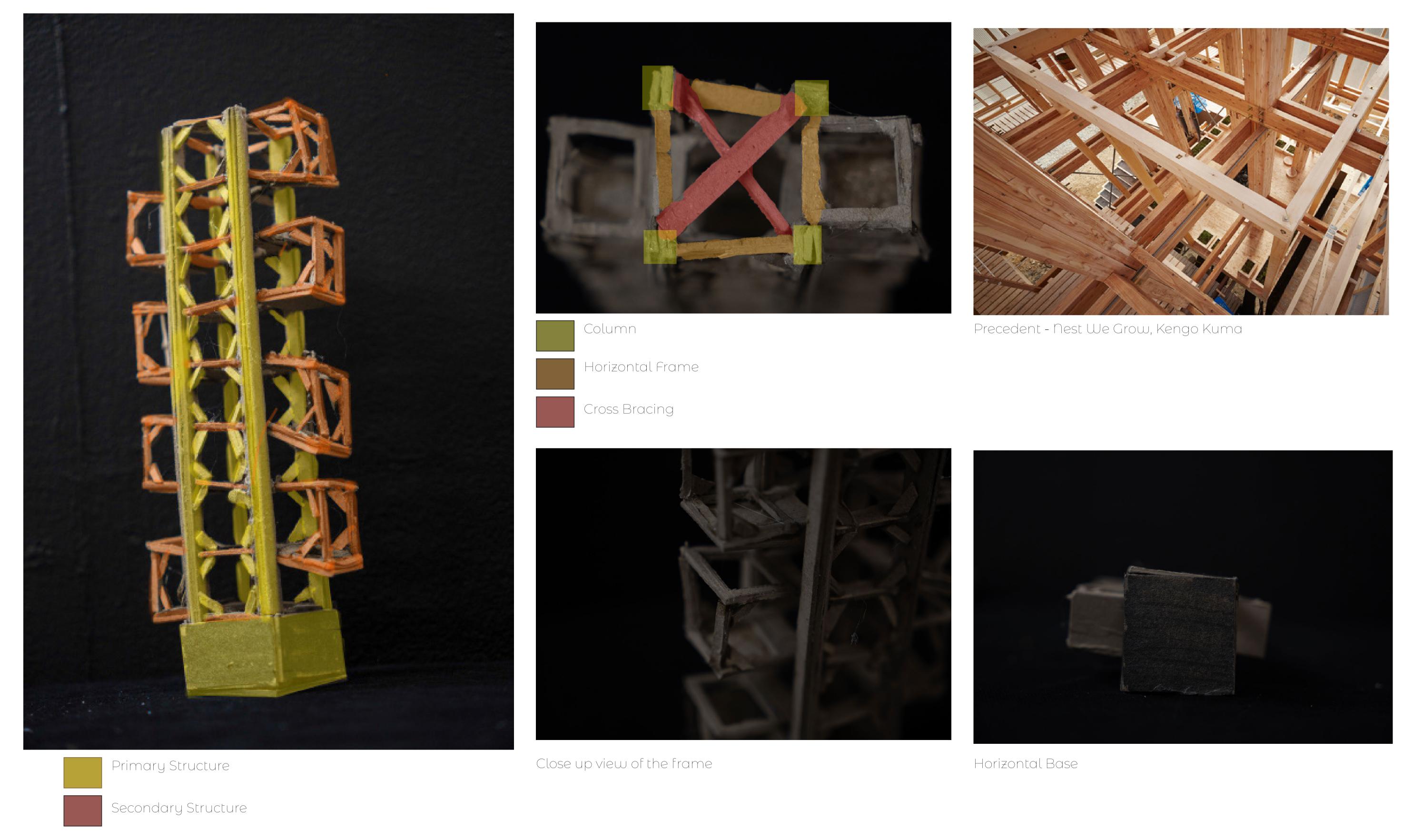
Vertical Forces



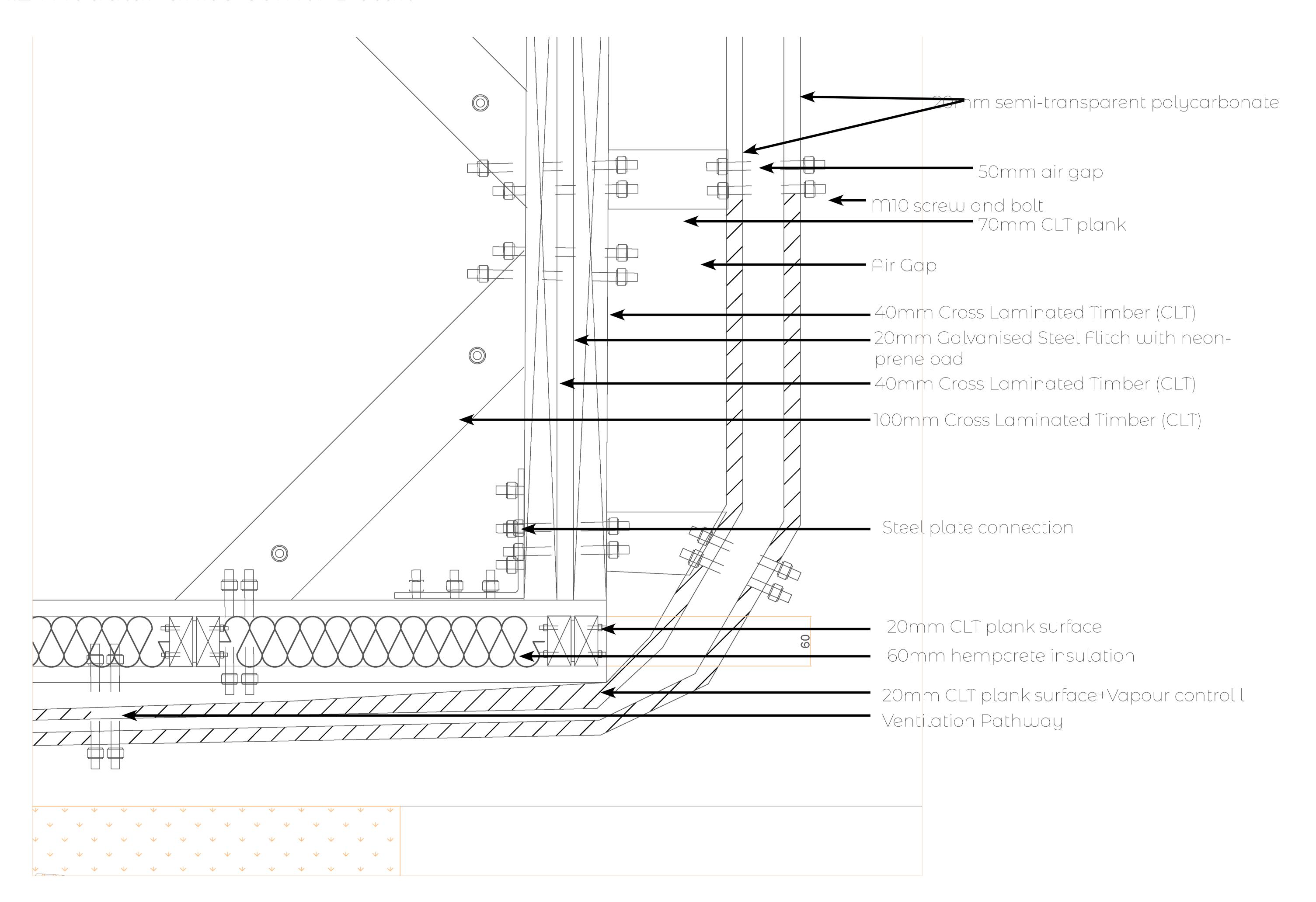
Dynamic Forces



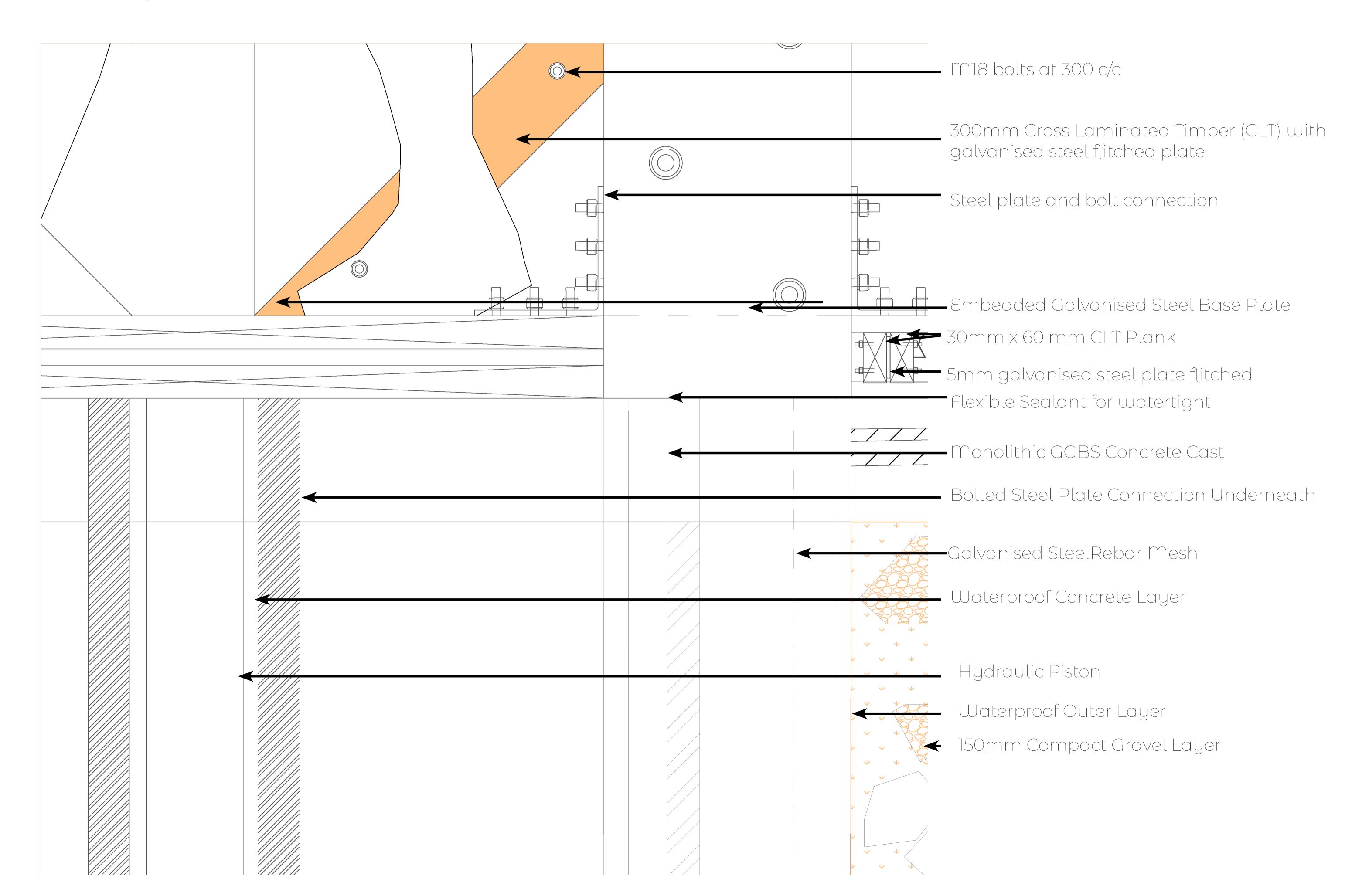
Structure



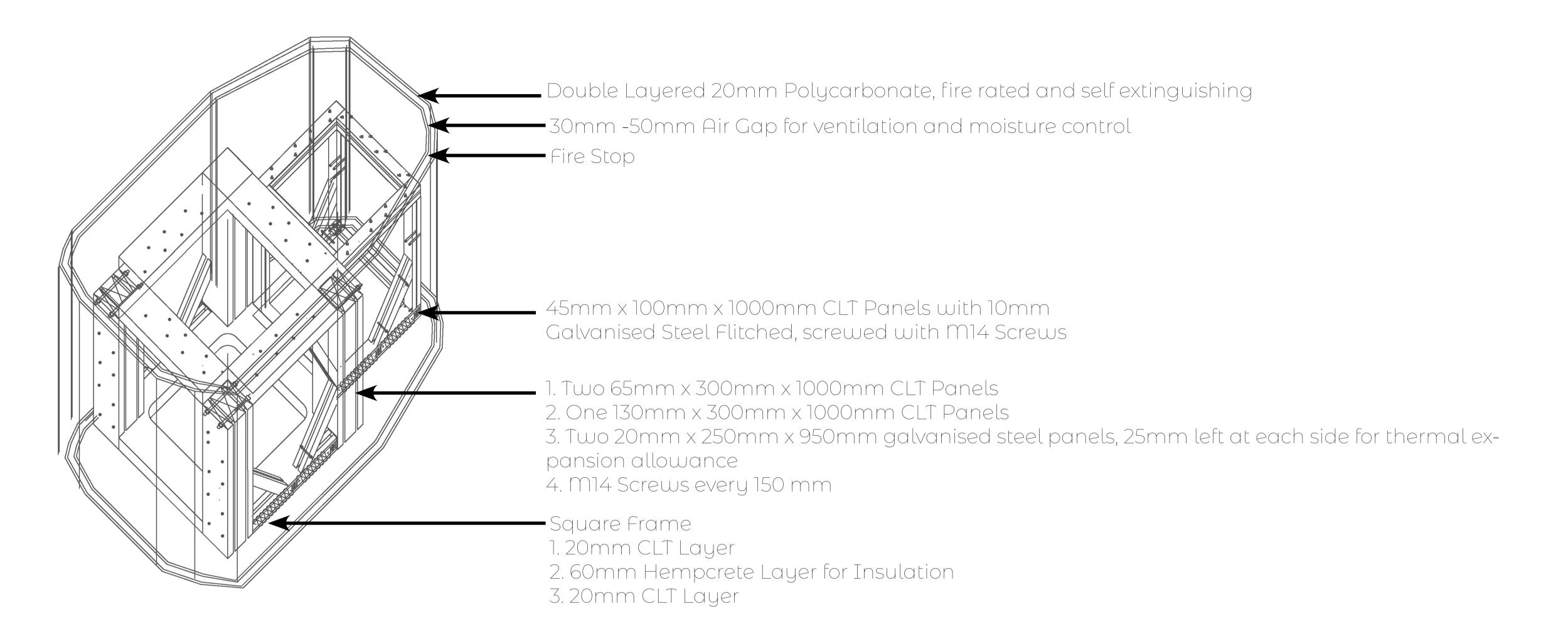
1:2 Modular Unit's Corner Detail

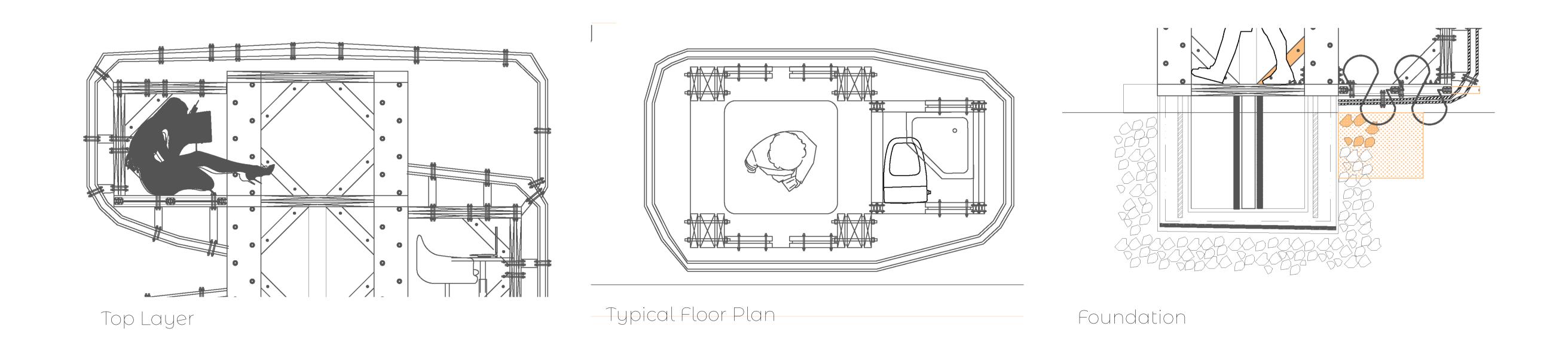


1:2 Building's Base Detail



1:20 Building Fabric Axonometric Section and U value calculation



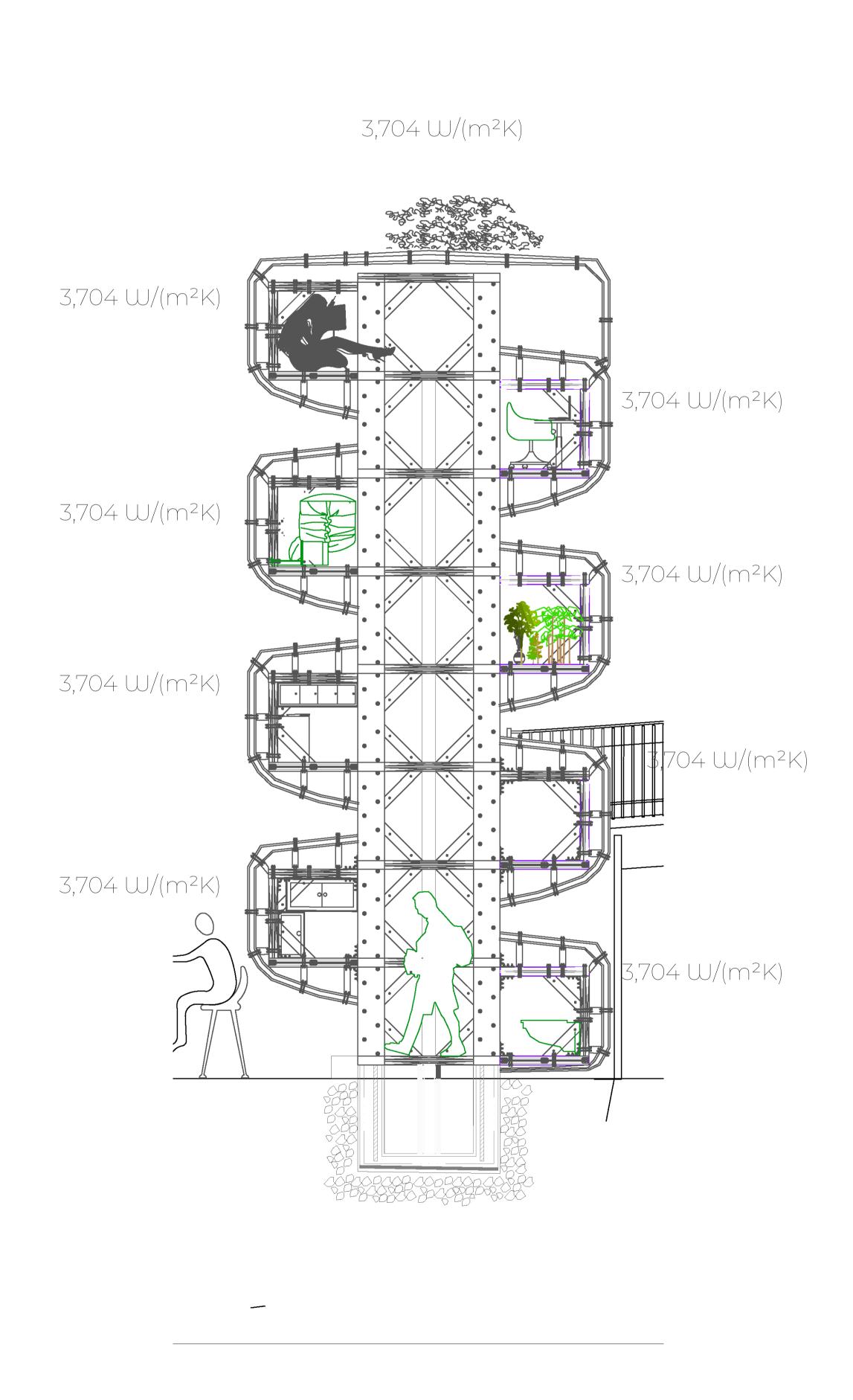


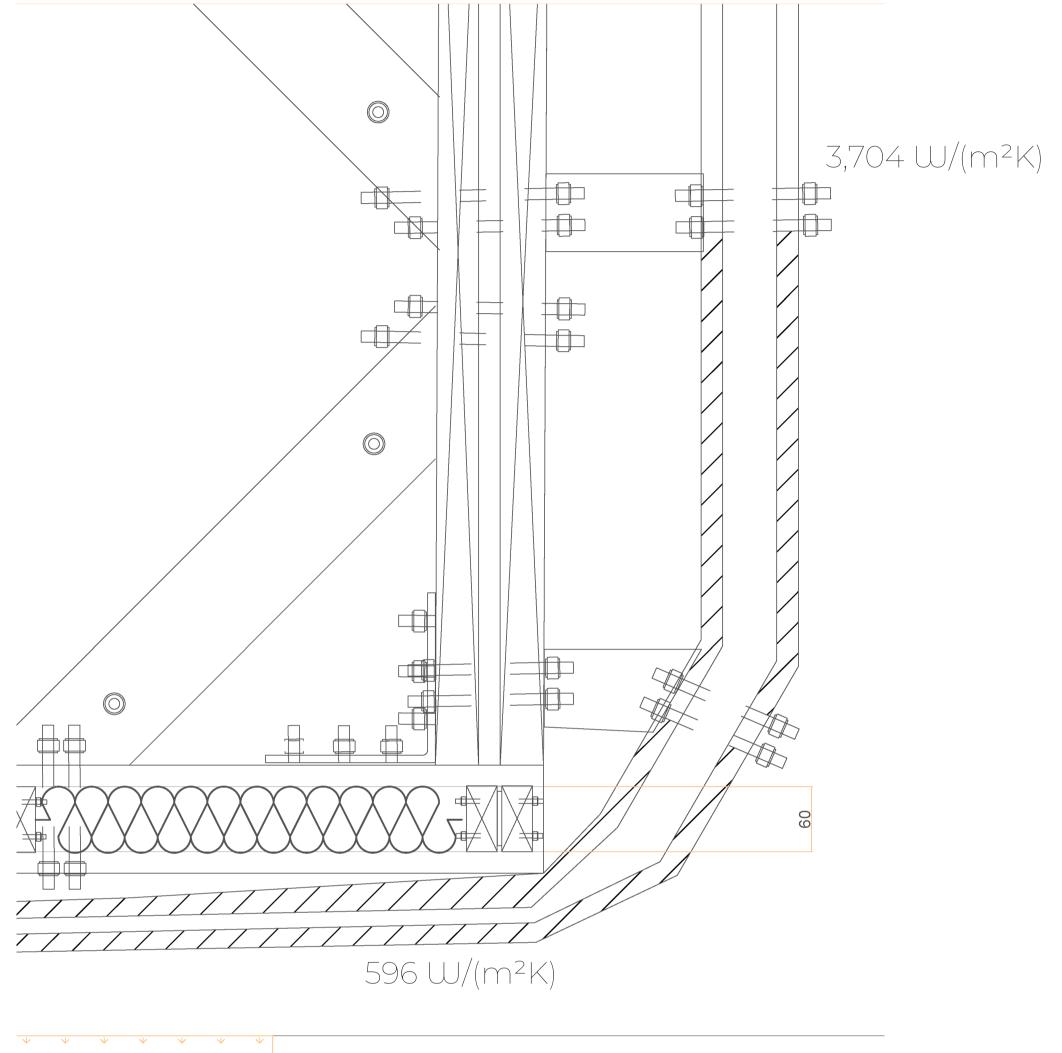
Sun path

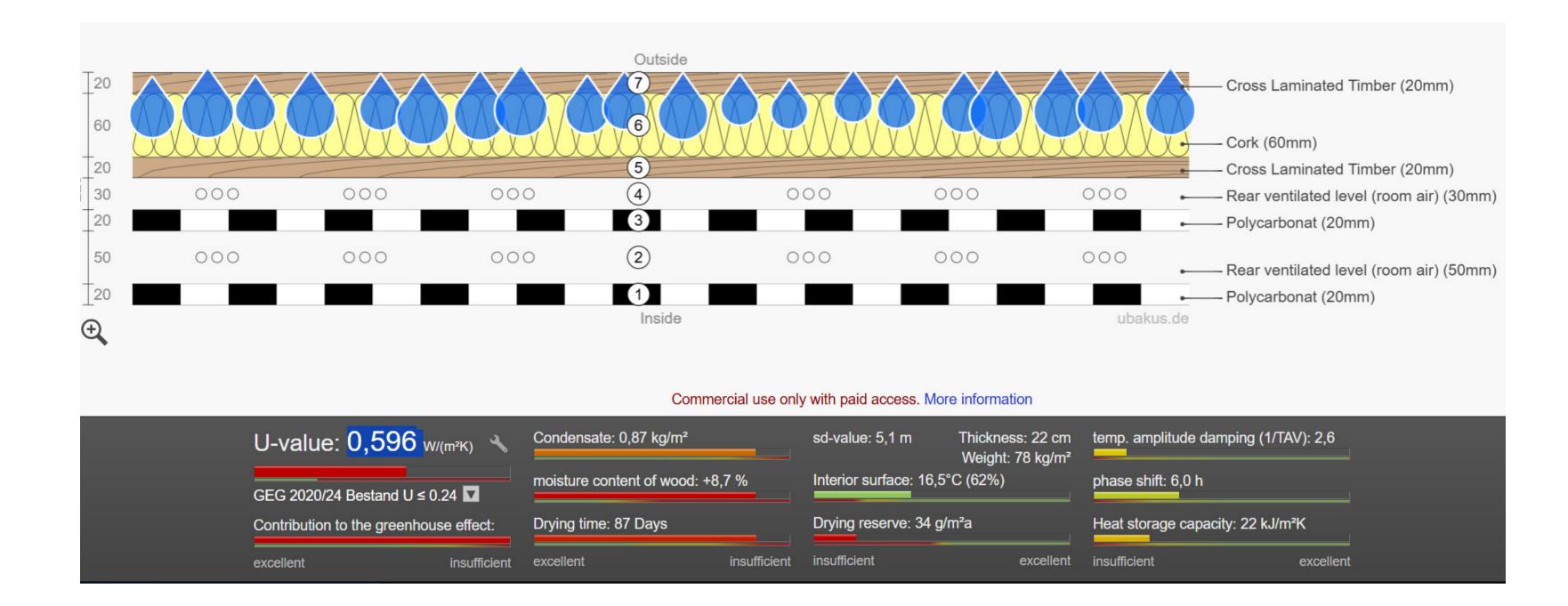
Shortest Day of the Year Longest Day of the Year

Project 2C - Designing in the Glitch: The Prototype - Bespoke Occupation

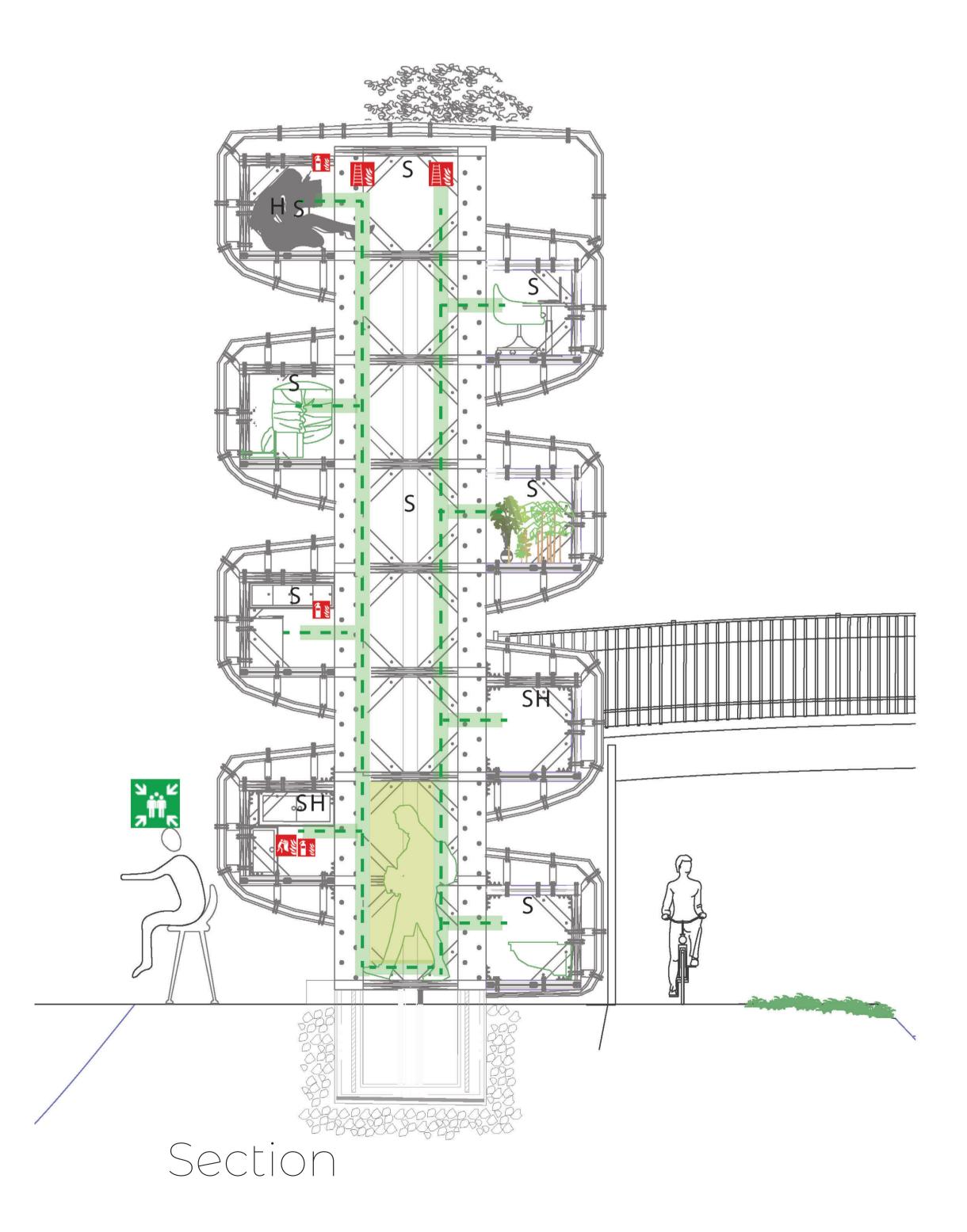
Thermal U value calculator







Fire Analysis



--- Exit Route

60 min Fire Door

Heat Detector

S Smoke Detector

Emergency Exit

Emergency Exit

Fire Emergency Telephone

Fire Emergency Ladder

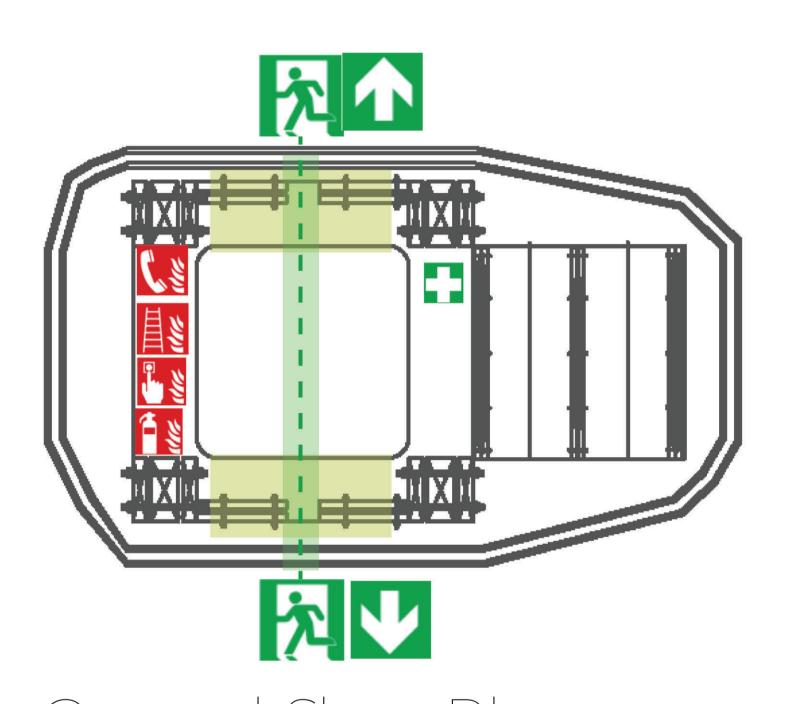
Fire Alarm Point

Fire Blanket

Fire Extinguisher

First Aid Kit

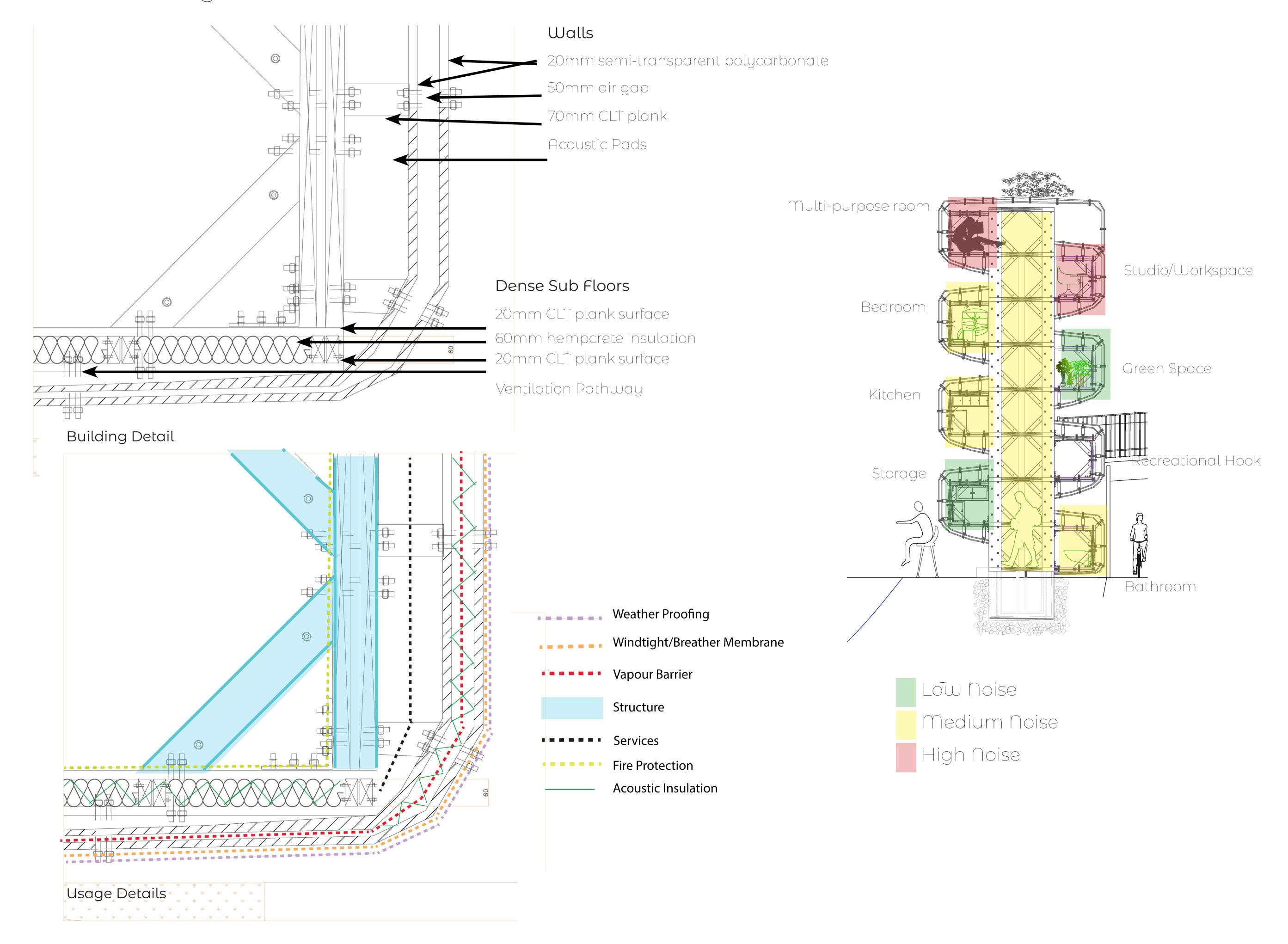
Evacuation Assembly Point



Ground Floor Plan

Project 2C - Designing in the Glitch: The Prototype - Bespoke Occupation

Acoustic Analysis



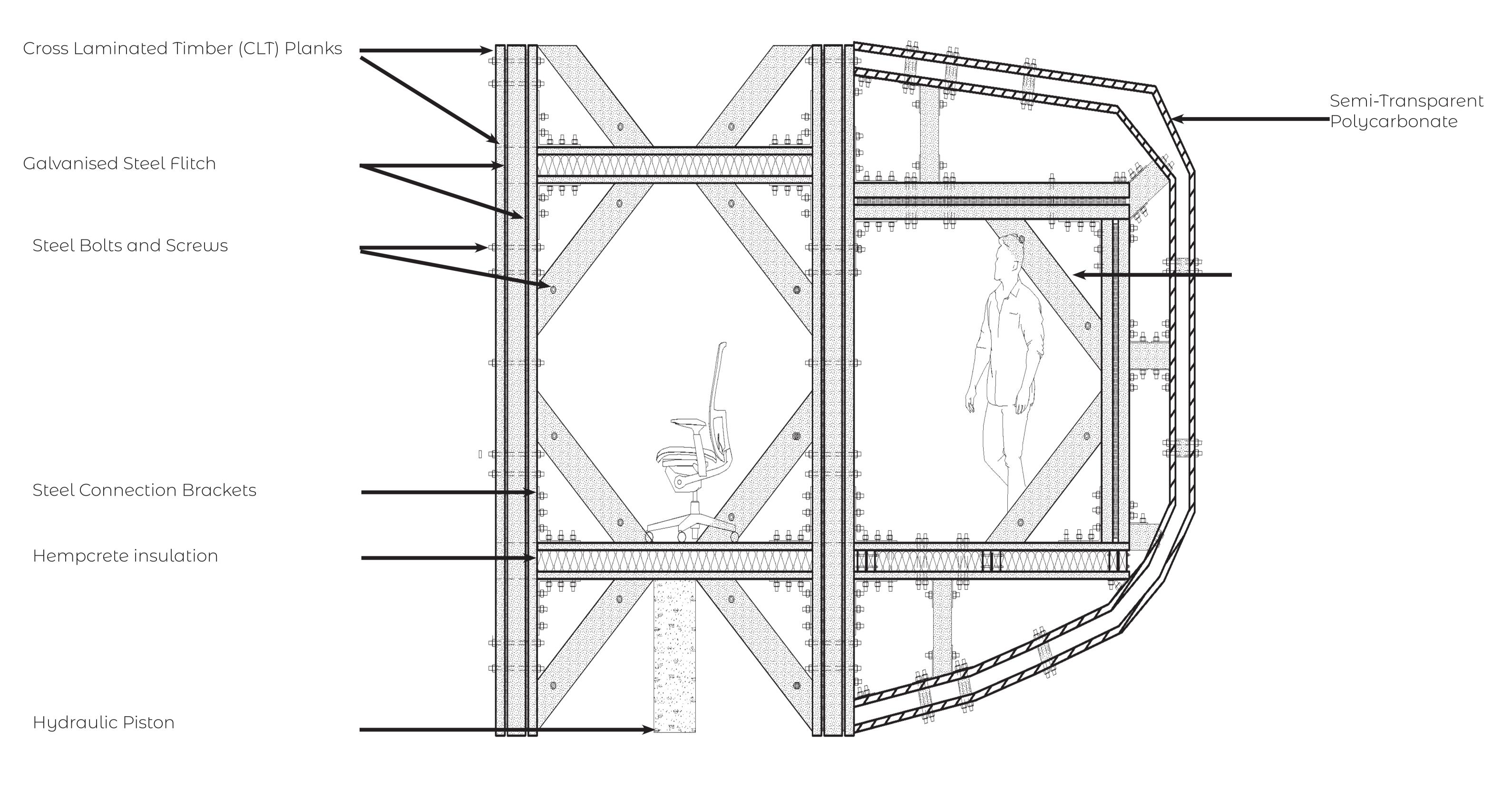


SUSTAINABLE GENERAL COMMENT	LS	nclusive and Adap- tecture	Construction	and Minimalist Space	yht Materials	Evironmental Design	ental Architecture	Housing Solution	conomy Principle	cy Housing	Construction	l Resource and Eco- esign	le Materials (e.g., ,	ble Construction	to Climate					
UN SUSTAINABLE DEVELOPMENT GOALS	LIVING BUILDING CHALLENGE	Socially Inctive Archite	Modular	Compact	Lightweigk	Passive	Experime	Affortable	Circular E	Emergen	Net-Zero	Integratec system Do	Renewab CLT)	Sustaina Methods	Resilience					
1 № No Poverty • • • • • • • • • • • • • • • • • • •	 15. Living Economy Sourcing 									•										
Zero Hunger • • • • • •	 02. Urban Agriculture 	• • •																		
3 GOOD HEALTH AND WELL-BEING Good Health and Wellbeing	 09. Healthy Interior Environment 10. Healthy Interior Performance 11. Access to Nature 19. Beauty and Biophilia 					•														
4 QUALITY Quality Education	 20. Education and Inspiration 	• • •					• • •													
Gender Equality	18. Inclusion																			
6 CLEAN WATER AND SANITATION Clean Water and Sanitation	05. Responsible Water Use06. Net Positive Water	• • •																		
7 AFFORDABLE AND CLEAN ENERGY Affordable Clean Energy	 07. Energy and Carbon Reduction 	• • •				•							•							
8 DECENT WORK AND ECONOMIC GROWTH Economic Growth	 14. Responsible Sourcing 							• •							•					
9 INDUSTRY, INNOVATION Innovation and Infrastructure	04. Human-scaled Living							• •												
10 REDUCED REQUALITIES Reduced Inequality	18. Inclusion 17. Universal Access																			
11 SUSTAINABLE CITIES AND COMMUNITIES Sustainable Cities and Communities	04. Human-scaled Living						•	• •		•		•								
12 RESPONSIBLE CONSUMPTION AND PRODUCTION Responsible Consumption + Production tion	13. Red List16. Net Positive Waste12. Responsible materials																			
13 Climate Action	 08. Net Postive Carbon 	• • •				•			•			•	•							
14 LIFE Below Water Life Below Water	 01. Ecology of Place 						• • •													
Life on Land	 03. Habitat Exchange 								•				•							
16 PEACE, JUSTICE NAID STRONG INSTITUTIONS Peace and Justice		• • •			• •			• •			•									
17 PARTNERSHIPS FOR THE GOALS Partnership Goals															• •	dapted	from (Claran	Malik	

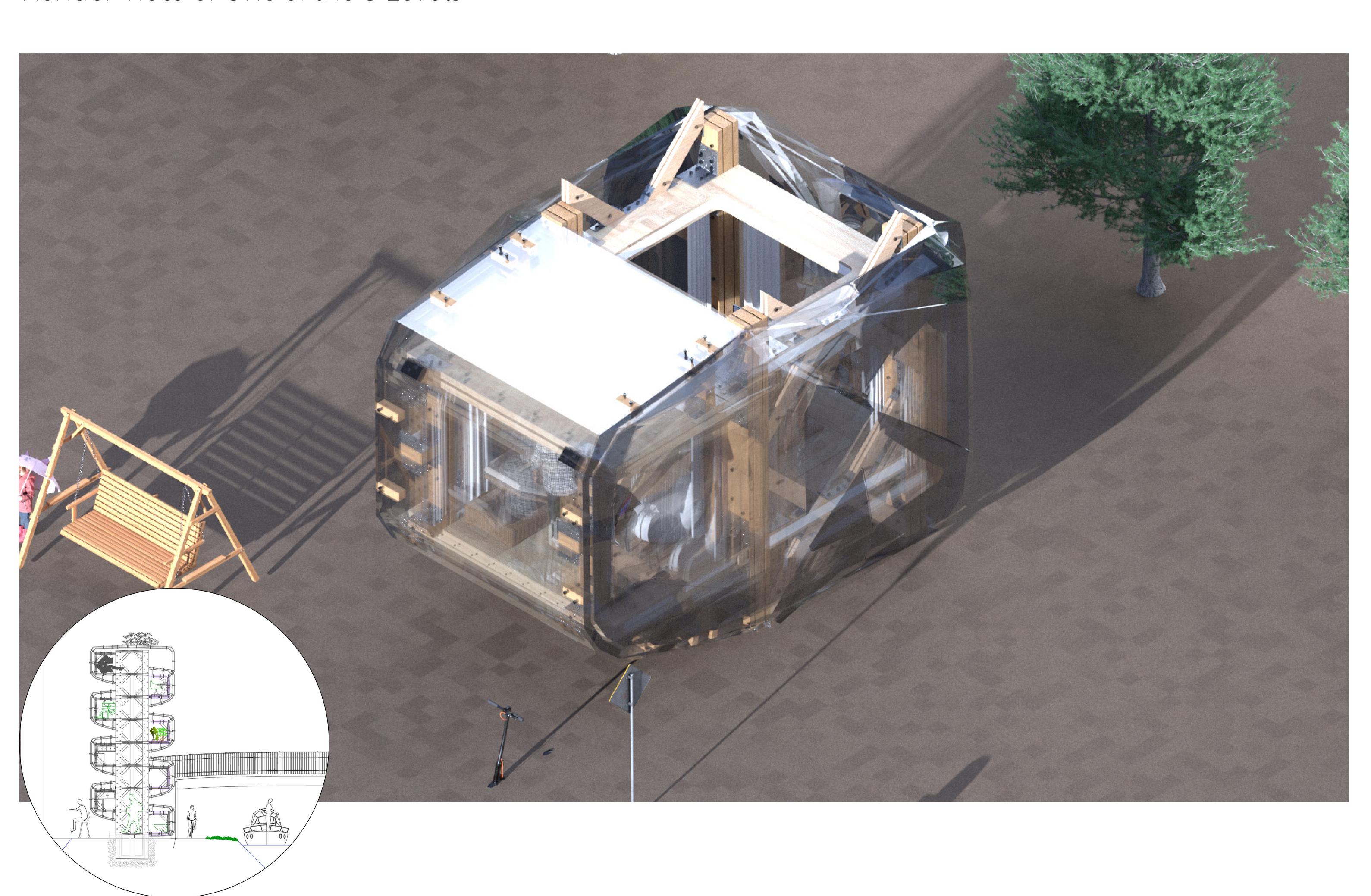
Image Collage



1:10 Section



Render View of One of the 8 Levels



Rendered View - Eye Level.



Semester One: Amateur Film Enthusiast's Studio - Final Design

Rendered View - Interior `



Semester One: Amateur Film Enthusiast's Studio - Final Design

Rendered View - Interior (2)



Scratch Model



The model with different annotations



Tulle fabric

- Soft surface
- dients



Threads

- Binds the structure.
- Diffuse light, soften the impact and creates gra- Wouldn't affect the light but creates fine shadow lines depending on the direction of light.



Wooden Screwers



Red paper



Silver foil from baking tray

- Forms the skeletal framework as the main structure of the model

- Attached to the sides - Lightweight and thin, creating shadow effects when light passes throug or around

- Sits on the top and reflects light - Could produce sharp reflections and highlights, acting as the most reflective part of the

area.

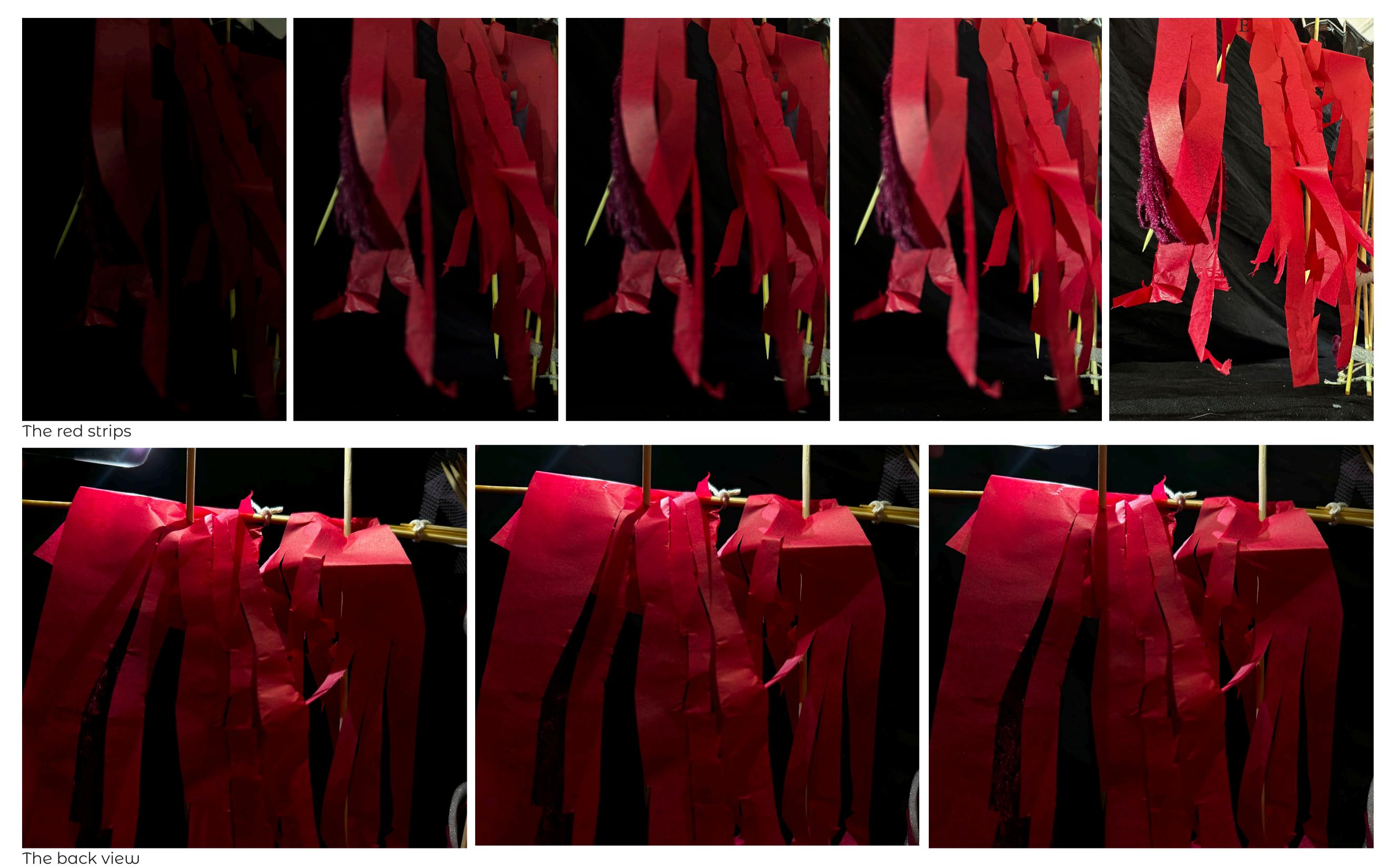
Scratch Model - How does it respond to light?

As the main focus of the project was light and its reaction to surfaces, a scratch model that could utilize the focus was necessary.



The top part

Scratch Model - How does it respond to light?

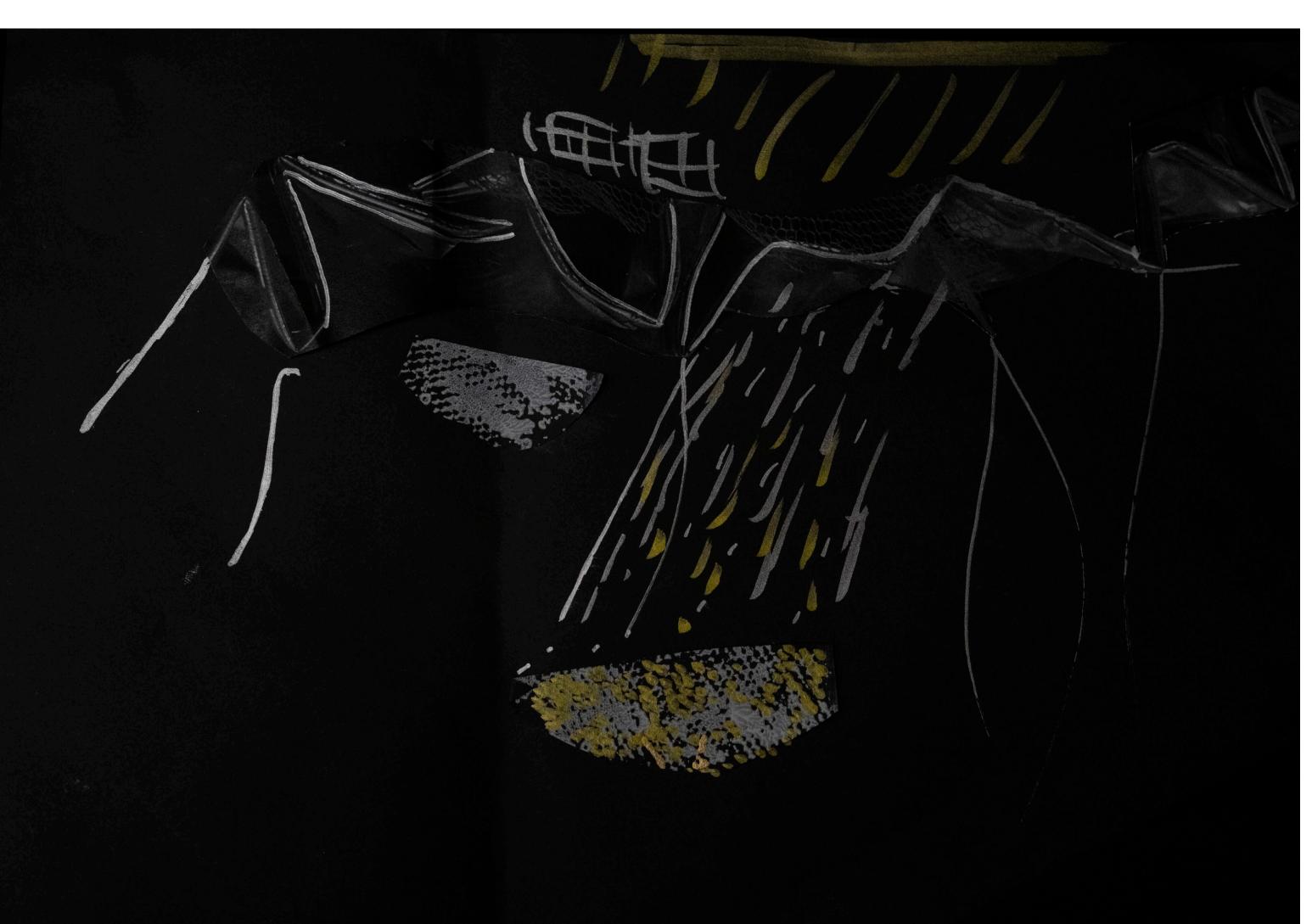


The second slide focuses on the red strips, which is both reflective being red and non-reflective being matte paper.

Composite Drawing

The task was to utilize metallic markers and elements from the model to create astonishing edits,

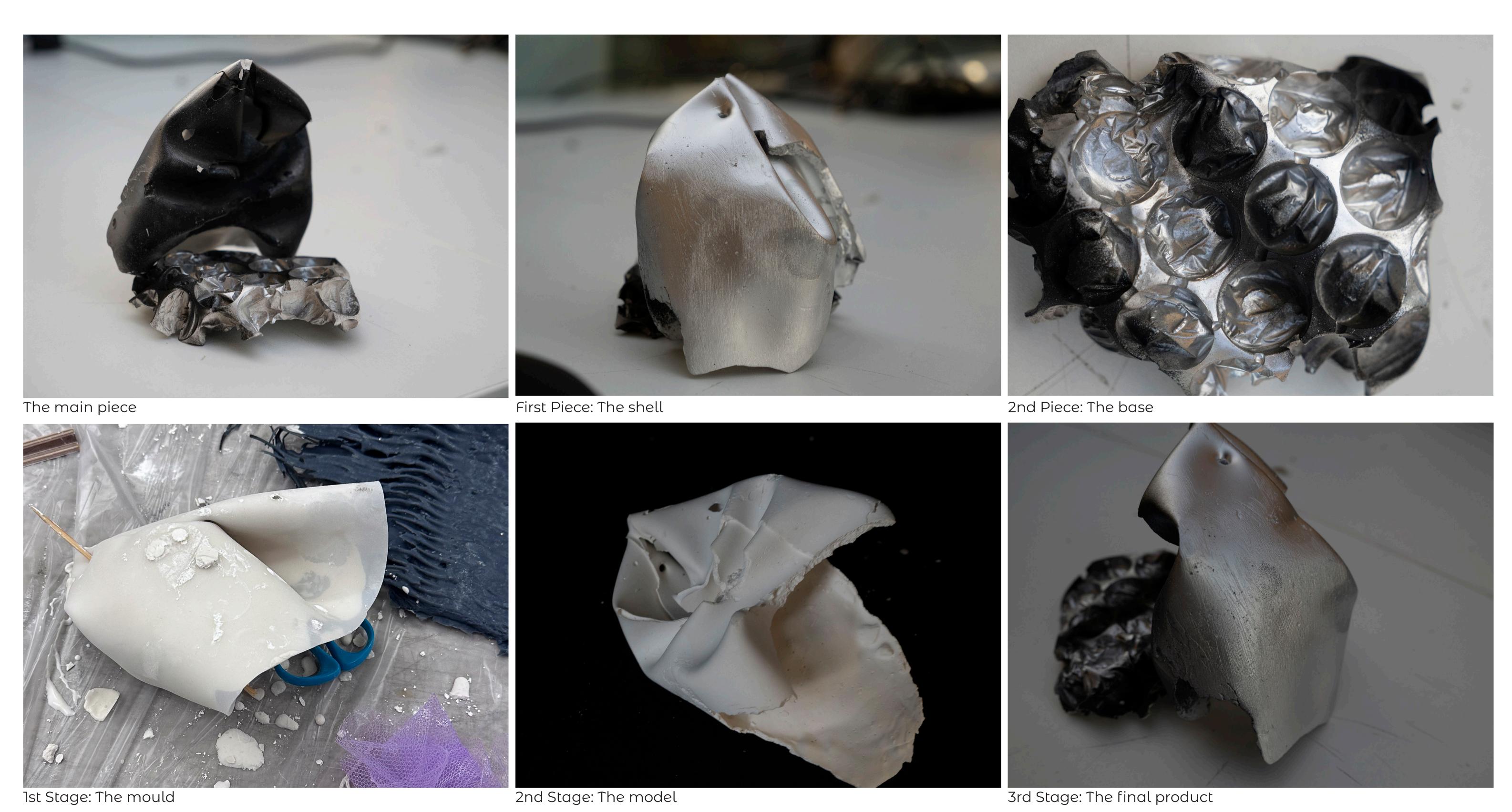




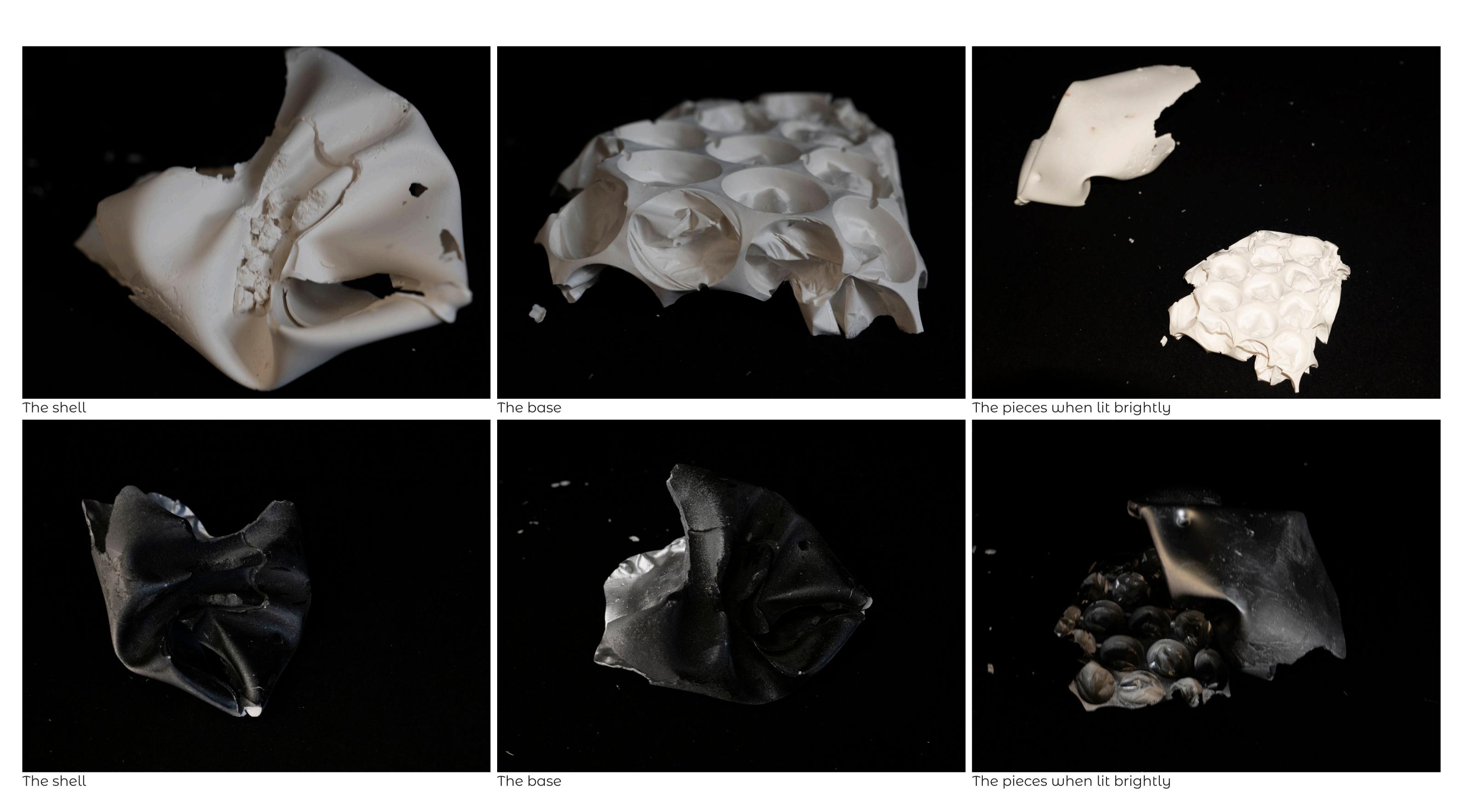


Plaster Casts

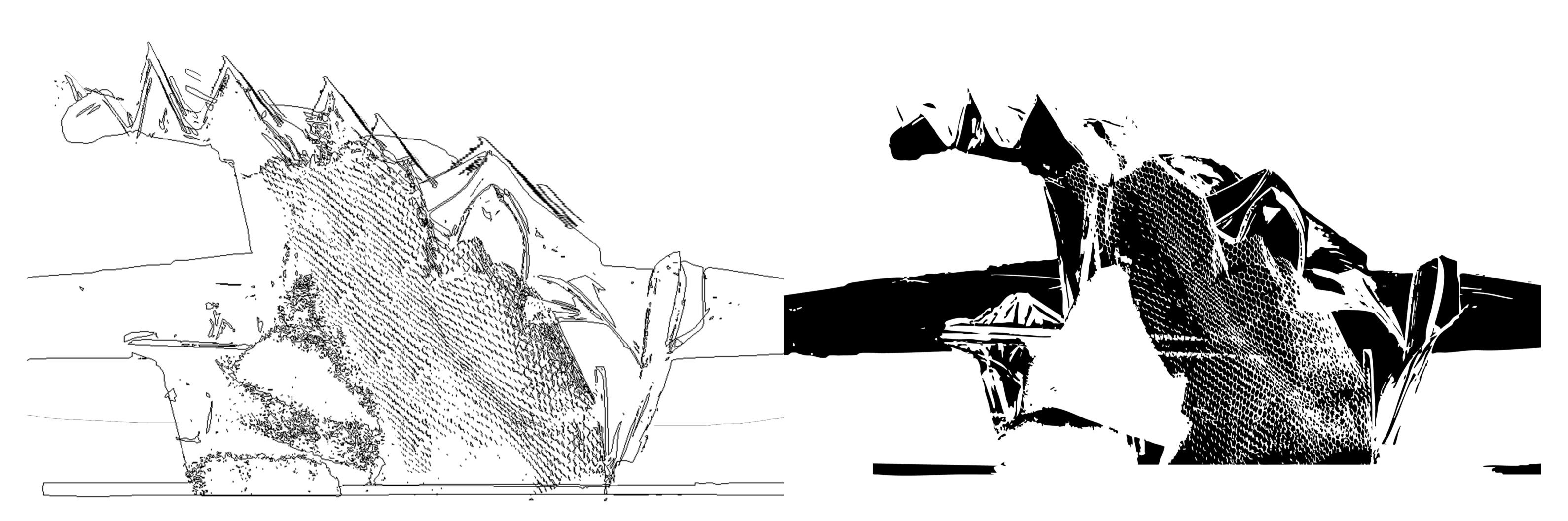
The task was to utilize different materials, create mould, then use plaster to make models, then refine them.



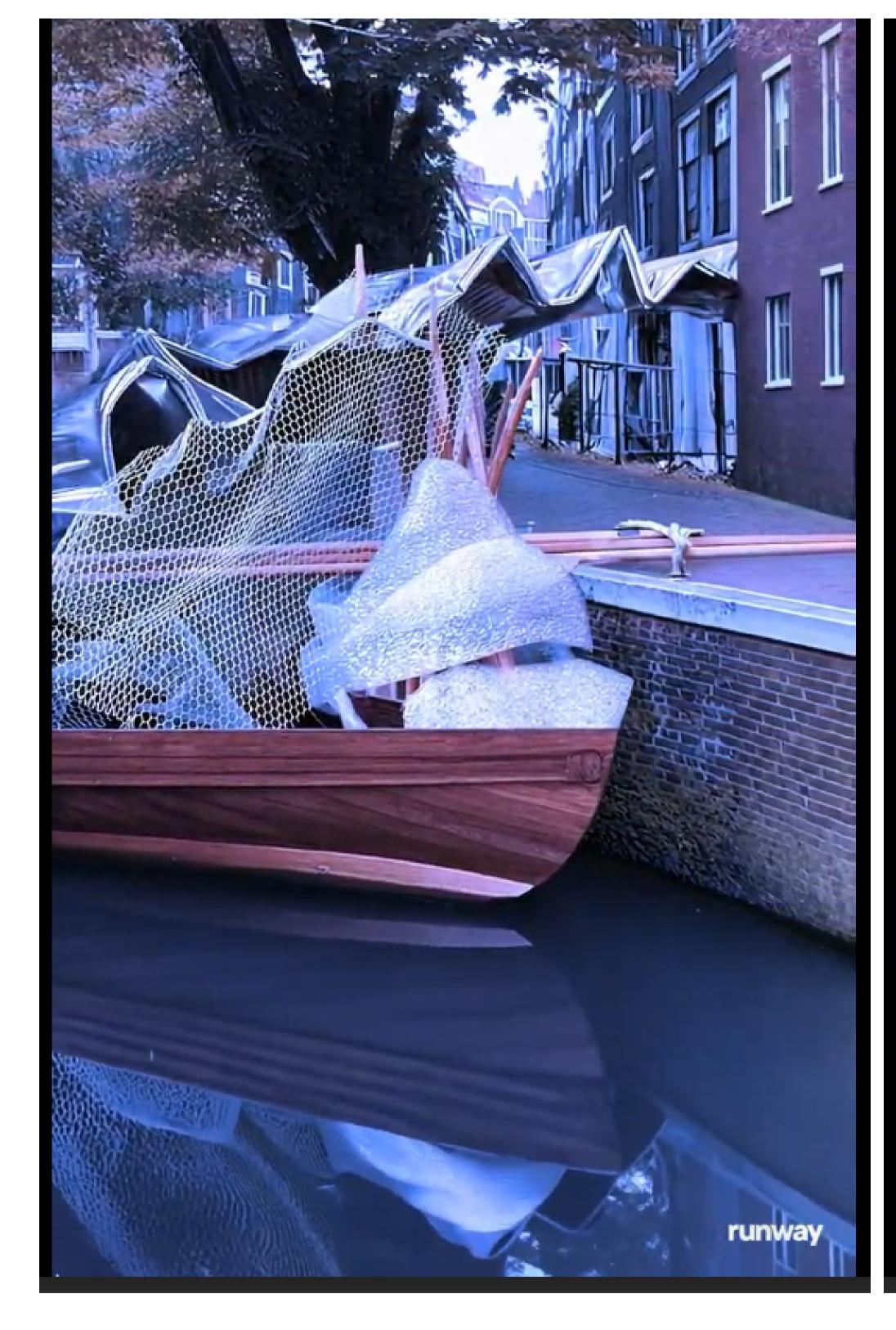
Plaster Casts



Runway Scratch Model Trace



Runway Scratch Model Test







Semester One: Model Making

Runway Scratch Model Test (2)



