

**The Towers of Lost Memories**

“The past cannot be changed, forgotten, edited or erased ; it can only be accepted.”

### **The Programme** Anxiety- Induced Memory Loss

Anxiety cases have been at a steady incline since the pandemic took place. Physical wellbeing is prioritised, with rarely any attention being paid to the fragile mental state it has placed the majority of the population in. As a result, this has led to a rise in cases of anxiety-induced memory loss, where individuals fail to remember a certain time frame within their lives [anywhere from a couple of weeks to years]. This is usually triggered by some form of trauma or sudden changes within this person's life. Usually, these changes will lead the individuals to feel lost or broken, leading them to backtrack to a time before this trauma was experienced. As they will be experiencing a fragment of their past as the present, functioning within this ever-changing reality can cause further distress and delay the healing process [anxiety-induced memory loss is reversible]. The proposal will aim to protect the occupant from the current, whilst encouraging them to accept both the past and the present. It will act similarly to rehab by encouraging the control or prevention of anxiety [which will prevent any further memory loss]. The occupant of the proposal will be constantly changing - once the memories have been found and they feel mentally stable to deal with reality, the occupant will be replaced by another individual.

The towers of lost memories provide the key conditions that have been identified as crucial for mental wellbeing through the forms, atmospheres and programme taking place within. They protect the fragile state of mind whilst gently encouraging acceptance and the retention of memory. Majority of the healing process will occur with these towers.

## Chapter 1

Term 1 Design & the Resident

## Development of Interest Term 1

This page summarizes the work carried out in term 1 and how the interest in psychology and anxiety-induced amnesia developed. This project will be focused primarily on memory loss and psychological stability - building on from term 1.

-emotional chaos stems from fears, these fears can be linked in with the constant change and decision making that comes with it make emotional management fun. **Sometimes an emotional chaotic wave can take you under, you get swamped by what I call *overcare* and succumb to despair. It's not the mistakes you make, it's fear projections, self-judgments and blame that make it harder to get back on course. Instead of "hitting bottom," you can learn to hold to a bottom line of neutral.** The tools we teach here help you go deeper in your heart and move back on track—the heart connection.

"hitting bottom" is a phrase that has a negative reputation but most times, this encourages positive change to take place after

-links in with the underground world

our experience of life. **When change feels out of our control, stress happens —on personal and societal levels. Overcare, over-identity and over-attachment become the results, and ultimately rule. Emotional management has been attempted through religions, moral codes and laws throughout history. But since emotional management involves individual choice, it can never be totally legislated.** When emotions are repressed, they don't just go away. They build historical accounts of wrongs done that seek release not in reconciliation, but in retribution. This won't work in a global society.

-over-attachment to regularity is why change can be a trigger for anxiety

-buddhism especially focuses on the greatness of change especially through nature

Extract from *Overcoming Emotional Chaos: Eliminate Anxiety, Lift Depression, and Create Security in Your Life* by Doc Childre and Deborah Rozman

**Atmospheric Collage**  
This collage is a visual representation of the atmosphere within the design. The relationship between the underground journey & the rain are explored alongside the idea of the walkway. The materials surrounding the walkway will still encourage change however, this will be entirely environmental. The users of the space will not impose any change on the structure themselves.

**Collages of the Experience**  
These collages describe a timeline of the experience of the different atmosphere/stages within the project



**[1] Viewpoints**



**Term 1 Project - A Pilgrimage of Change**  
Last term's project was heavily influenced by the current rise of cases of anxiety (due to the pandemic) & the need for constant adaption. Embracing uncontrollable change through nature (weathering of materials & seasonal changes), the walkway designed will form a pilgrimage journey that allows for reflection, the soothing of anxiety, and the appreciation for the uncontrollable hat has allowed mankind to move from the past to the present.

**[2] Material Intertwining**

-within these structure, there are many materials that intertwine  
-the contrasting relationship between the delicate wood and steel allows the stone of the ruins to be framed  
-highlights the change of materials positively

**[3] The Walkway**

-the building is accessed by a modern steel footbridge which runs down the length of the building  
-the visitor walks along a path through dark connecting tunnels from one spatial unit to another, and down some steps to the excavation level, to protect the Roman soil and the remainder of the ruins

**Key Precedent for the Walkway**  
The Shelter for the Roman Ruins is designed around protecting the remainder of the ruins but also acts as an exhibition space. To allow the users to experience the space without causing damage to the roman soil, a steel walkway is raised above the soil, creating a route for the visitors. This strategy should be considered within the Pilgrimage of Change to protect the rainfall as well as the users.

**[1] Framing the sky**

-as the project will be located underground, the sky will be framed  
-the sky is constantly changing through the movement of the clouds, the weather and the colours (as shown in the timeline above)  
-although it is in a constant state of change, the sky is viewed as a form of beauty and peace unlike decay

**[2] Framing the area of interest**

-this area of decay lies at the centre of this project  
-although it will remain untouched and unharmed, the area underneath it will be stripped back and will frame this  
-there will be a form of change within both the decay and the lighting, that will also contribute into framing it

**Other Key Concern**

**The Walkway and the Rough Cut**

-this perspective drawing aims to communicate the appearance of the rough cut of the hard rock  
-the connection of the walkway to the ground

Scale 1:350

**Final Extract from Term 1 that encouraged the route of this project**

Anxiety-induced memory loss can take many different forms. Rachel, 26, describes her memory loss as a general fog when she attempts to recall certain events from her past, as well as feeling foggy on days when she's experiencing high anxiety.

Our brain chemistry points to why high levels of anxiety can cause people to lose memories. When we are feeling anxious, the brain produces a stress response, also known as the fight-or-flight response. This increases levels of adrenaline and cortisol. If this process happens too frequently, our brains can become exhausted — that's when memory loss starts to occur.

New York-based licensed mental health counselor Ramon Lantigua Jr. further explains this connection to *Allure*. "Anxiety can cause memory loss because it is an incredibly unpleasant emotion, and memory loss allows us to put off dealing with that negative event in an attempt to limit future instances of anxiety," he says. "Often, specific memories that caused us anxiety are specifically 'lost' as a strategic coping mechanism. This coping skill is very common when dealing with those who have struggled with trauma."

"We might try really hard to remember, or be critical and tough on ourselves, and it's important to recognize that doing so only further exacerbates the pain and loss. If we practice letting it be, it's more likely that we will remember and return to what we've lost."

Someone with generalized anxiety disorder may worry that their memories are gone for good. However, that's not necessarily the case, and it's often true that if the anxiety is treated, the memories may resurface.

-links in metaphorically with weather change that is viewed as being negative  
-anxiety is expressed through negative change in weather

-memory loss is used as a survival mechanism  
-although the programme aims to challenge the perception of change, the programme should provide some sort of resting space

-memory loss is meant to help reduce anxiety, but usually it leads to further anxiety  
-the loss of memory is a form of uncontrollable change  
-the only way to return these memories to accept their temporary loss

Extract from "the Anxiety Files" by Mary Reta

**Manifesto** Term 1

“As an architect you design for the present, with an awareness of the past, for the future which is essentially unknown.”

- Norman Foster

Throughout term 1's design project, the idea of individual journeys/experiences played a big part of the design process. In term 2, I would like to explore these ideas of individuality further alongside the psychology of memory. Our personal predictions and reactions to the present are based on events that have taken place in the past. This leads individuals to experience certain atmospheres differently, which makes the past just as important as the present.

## Naomi Jacobs The Forgotten Girl

Naomi Jacobs was 32 when she woke up with a rare form of amnesia. She thought she was still 15, even forgetting she had a son. Her experience was recorded throughout her autobiography (The Forgotten Girl). The foundation of the programme emerged from her written record of her experience as she tries to regain her memory and deal with past trauma. This page outlines the timeline of the experiences that have led to psychology damage.

### Timeline of Traumatic Experiences:

5 Years Old: Abandonment Issues from the Mother

7 Years Old: Domestic Abuse from the Mother

9 Years Old: Parents Divorced, Custody went to Mother

10 Years Old: Sexual Abuse from Mother's Boyfriend,

11 Years Old: Failed Pottery Class

13 Years Old: School Nurse told her she's overweight, led to Bulimia

15 Years Old: Domestic Abuse, Further Sexual

19 Years Old: Escaped from Home to move to Manchester

21 Years Old: Accidental Pregnancy, Child was born deaf, Partner left, Ran three businesses alone (U haul Company, Holistic and Oriental Therapist and Teacher)

23 Years Old: Bankruptcy, lost jobs

24 Years Old: Homeless, moved to a hostel with son

28 Years Old: Went back to University, in massive debt

32 Years Old: Broke up with Partner, Anxiety due to past issues leading to Memory Loss



age : 15



age : 32

## Key Workshop Areas Initial Atmospheric Collages

These collages aim to visually represent the key programmatic spaces described within Naomi Jacobs's autobiography. The programme will include all these spaces as they are extremely beneficial for mental wellbeing.

### Pottery Workshop

*"I glanced my pot and it looked back at me apologetically" - Naomi Jacobs*

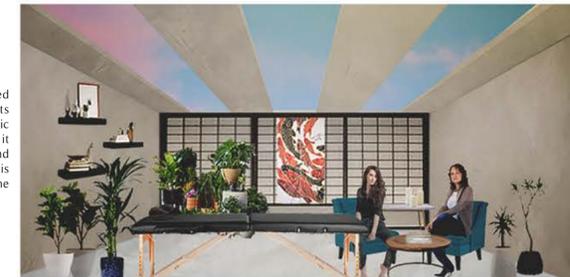
15 year old Naomi's first memory was based on her experience in a pottery class. This class was particularly important as it provided a creative outlet and distracted her mentally from the chaos surrounding her. Unfortunately, she ended up failing this class which led to an even stronger desire to improve this skill.



### Holistic Therapy

*"I worked in holistic therapy particularly" - Naomi Jacobs*

Naomi Jacobs worked and believed in the mental and spiritual benefits of different methods of Holistic Therapy. She personally felt like it has helped to soothe her anxiety and fear of the future. This space is extremely important to the programme.



### Library,Diary Collection and Writing Workshop

*"Adult Naomi had continued writing and had over twenty year worth of diaries" - Naomi Jacobs*

Not only did Naomi keep a record of her experiences within diaries, she was also a psychology student. Reading and writing both provided an escape for Naomi and so providing a space that collects and encourages literature is important.



### Therapy Space

*"It took a couple of weeks after I started therapy for me to open up but when I did, it was like the crack in the dam of my mind couldn't hold and I had to let it break" - Naomi Jacobs*

Naomi Jacobs attended therapy regularly and as this programme focuses on mental wellbeing, this space is essential.



## The Site 77-78 Western Road

The site was initially chosen based on Naomi Jacob's Autobiography and her inability to drive legally as an amnesiac. As the programme will accommodate to both, her and her son ten year old son (Leo), the site had to be located within walking distances to a primary school as well as a Buddhism mediation centre. This site is a nine minute walk from the Brunswick Primary School and a ten minute walk from the Bodhisattva Buddhist Centre. The key facilities that are needed by these particular individuals are shown on the plan above. For further away facilities, public transport is available within a walking distance from the site. This map aims to connect the site with the life of Naomi Jacobs.

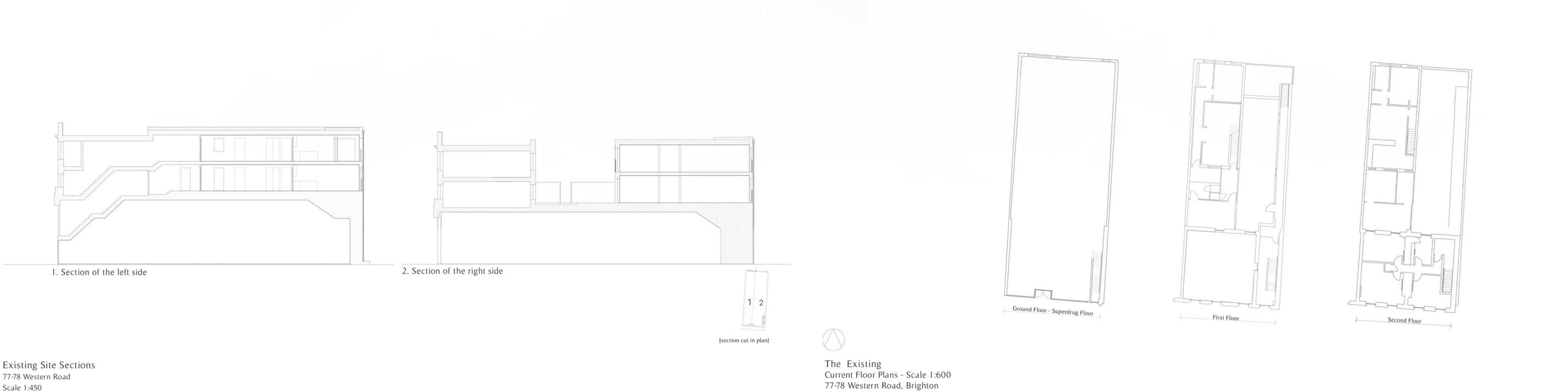


## Chapter 2

The Site: 77-78 Western Road

### Understanding the Site further

The project will be located on 77-78 Western Road, Brighton within an existing building (see photograph). The Site was chosen due to the surrounding wellbeing facilities for both mental and physical wellbeing. The Existing consists of three floors. The ground floor was previously used as shop. The reaming two floors where in residential use.



## Environmental Psychology Extract

Environmental Psychology focuses on the elements that improve mental wellbeing within different environments. As the programme aims to improve anxiety, memory loss and handling the of fear, environmental psychology is extremely important in aiding this.

Natural forms are connect the built with nature

Perhaps the psychological field that has most profoundly studied the human (affective) psychological relation with natural entities is environmental psychology.

It is argued that, by architecturally mimicking natural forms and structural organizations of natural settings, these beneficial effects can be tapped in a built context.

Occupants look for both of these factors within the architecture

humans have an emotional relation with natural elements and shows that contact with natural form is in a sense good for human psychological and physiological functioning.

According to Appleton's prospect-refuge theory, human beings' preference for landscapes correlates with two environmental qualities: prospect and refuge.

Besides causing liking responses, natural elements (e.g., vegetation and water features) are also found to contribute to the restoration of human individuals.

Vegetations water and other elements should be incorporated within the design

How could natural contents be integrated into the built environment? Evidently, this can be done by providing views on the outside environment, by integrating vegetation in built settings, by hanging nature pictures on the wall, by nature-oriented screensavers, and so on.

Key elements of a structure for psychological wellbeing

Another, more architectural method consists of mimicking key structural features of savannas. Possible strategies include creating wide and open spaces; making variations in the architectural topography; integrating clusters of real or symbolic trees (e.g., columns); and integrating a water feature (e.g., a fountain) or even a small fire.

Nature's composition rules should be used within the programme

By encouraging architects to integrate natural forms and patterns in their work, they are motivated to study nature's shapes and compositional rules, and this can enrich their creative curriculum.

Joye, Yannick. (2007). Architectural Lessons From Environmental Psychology: The Case of Biophilic Architecture. Review of General Psychology - REV GEN PSYCHOL. 11. 10.1037/1089-2680.114.305.

## Environmental Psychology Seeing the site differently

After developing further understanding of environmental psychology, the importance of the surrounding site became apparent. This drawing connects the hallways to nature (parks/greenery) to the site by exploring the pedestrian route taken. The presence of natural environments is fundamental to mental well being as shown throughout the extract and so the site had to be located within walking distance to parks. This is because patients with trauma induced amnesia are not encouraged to drive. The radar surrounding the site shows the amount of time (through minutes) to reach different areas of greenery and essential wellbeing facilities.



**A walk of reflection** Site Analysis

Continuing on from term 1, water and acoustics created by water (rain, waves etc) have a strong positive influence on the psychological wellbeing of an individual. This led to a mapped walk from the site to the sea as this will be a walk taken by the resident multiple times a week. The acoustics of the site were compared to the acoustic of the site and this has shown that the acoustics of the site are much louder (larger sound waves) and significantly less consistent than the acoustic created by waves. The project will aim to develop a space with similar sound waves to those of the waves

Acoustic Experience of the Walk



Acoustic from the entire walk including moments of standing still



Acoustic of the site standing still  
(1 minute)

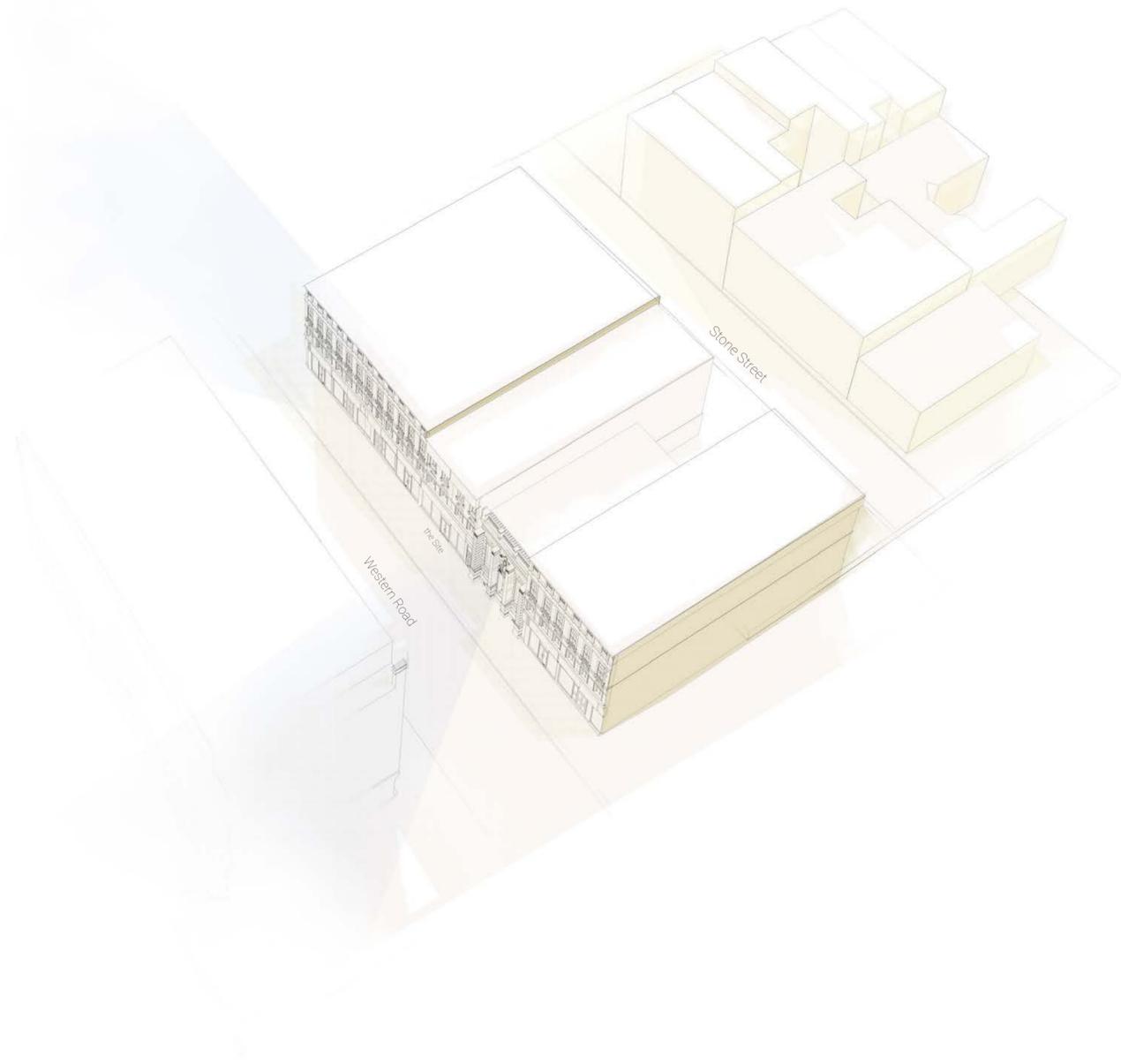
Acoustic from the waves standing still  
(1 minute)

Visual Experience of the Walk



### Shadows Site Analysis

The programme will consist of multiple spaces with different atmospheres where lighting is crucial. Mental wellbeing can be improved or damaged depending on the shadows and environments created by light. This drawing expresses the shadows caused by surrounding buildings during different times of the day. Some spaces will have to be built further away from areas with drastic shadows (gardens etc) whilst others will require the privacy that shadows provide such as the journal archive. Spaces that require more shadows will be built towards the front of the building, facing Western Road. Spaces with more light requirements will be built at the back, facing stone street.



Scale 1:950  
Morning Midday Evening Prevailing Wind

### The Journey of Rain and Noise Site Analysis

This map indicates the location of the drains that collect rain water on and around the site. The journey of rain was described by connecting these drains. The noise on Site was recorded through curves and lines shown on the map. Many areas on the site were completely silent as there is significantly less activity due to the pandemic. A lot of the acoustics that were recorded in quieter areas of the site originated from Western Road. Western Road produces most of the noise. Understanding the journey of both is extremely important as certain spaces within the programme will need to be located further away from noise pollution. The rain will be encouraged and collected within some spaces of the programme, creating an entirely new journey of rain water than the existing.



Scale: 1:2800  
Noise (thicker lines = more noise, thinner lines = less noise)  
Drains The Site

## Chapter 3

Developing the Programme & Spaces

## Nesting Environments Extract

In the previous extract, the idea of a cave as a space that provides comfort was extremely important. This led to further research in nesting environments and niche buildings. The programme will provide a safe haven from the remainder of the spaces.

The process by which an organism alters its own local environment

**Niche construction** is the process whereby organisms, through their metabolism, activities, and choices, modify niches.<sup>1</sup>

People learn from the consequences of their behavior, which also affects the environment in which they live

Advocates of the niche-construction standpoint seek to explain **the adaptive complementarity of organism and environment in terms of a dynamic, reciprocal interaction between the processes of natural selection and niche construction.**

We adapt our environments to the way we are living

This directionality is captured by Williams<sup>12</sup>: "Adaptation is always asymmetrical; organisms adapt to their environment, never *vice versa*."

Temperature and humidity is a key element considered when building a niche environment

**Yet organisms clearly change their environments.** Numerous animals manufacture nests, burrows, holes, webs, and pupal cases; plants change levels of soil chemicals and modify nutrient cycles; fungi decompose organic matter; bacteria engage in decomposition and nutrient fixation (see Odling-Smee, Laland, and Feldman<sup>1</sup> for a review of this literature).

Nests are one of the most developed niche buildings

Experiments have shown that **the internal temperature is appreciably damped relative to the external temperature.**<sup>14</sup> Similar observations have been made with respect to birds' nests, and other animal structures.<sup>13,15</sup> From the niche-construction perspective, **evolution is based on cycles of causation and feedback; organisms drive environmental change and organism-modified environments subsequently select organisms.**<sup>1-3,10</sup> **Nest building generates selection for nest elaboration, defense, and regulation.**<sup>1</sup>

Joye, Yannick (2007). Architectural Lessons From Environmental Psychology: The Case of Biophilic Architecture. Review of General Psychology - REV GEN PSYCHOL. 11. 10.1037/1089-2680.11.4.305.

## The Nest Collage

In the previous extract, the idea of a cave as a space that provides comfort was extremely important. This led to further research in nesting environments and niche buildings. The programme will provide a safe haven from the remainder of the spaces.



"The World at large doesn't always make sense to me, there are safe havens."  
-Natasha Lyonne

## Creativity and Memory Extract

Naomi Jacobs stressed the importance of her memories from her pottery class, which led to further research into the link between creativity and memory. As the programme aims to aid in the resurfacing of memories, creativity can act as a catalyst by encouraging the brain to use knowledge embedded with memories from the past. The programme will have a space that allows for creativity to take place

Memories adapted. This is a form of defensive mechanism for the brain to minimize the trauma of scaring memories.

From other points of view, the differences between memory and creativity may not be as distinct. For example, Bartlett (1932) noted that the way an event is remembered can change over successive recall tests. He found that information is sometimes deleted from the recollection of an event, and new information is sometimes added to the recollection of an event that was not present during the original experience.

Creativity is a form of subconsciously recording experiences from memories

Creative behavior can also involve elements of memory. For example, many creative works are based on the personal experiences of the artists and writers who produce them. The recollection of personal experiences necessarily involves aspects of memory. Creative behavior can also involve more abstract types of knowledge and skills. For example, a writer's linguistic skills or an artist's drawing skills reflect knowledge that is acquired through experience and represented in memory.

Knowledge is based on the brain's ability to memories and record facts

Creativity relies on the process of memory

The preceding discussion suggests that although memory and creativity often involve different goals, they may frequently involve similar processes. In order to better understand the factors that influence creativity, it seems worthwhile to consider how previous experience affects creativity.

Previous attempts can haunt the current

The findings of Peretto *et al.* (1983) suggest that memory for previous attempts to solve a problem can inhibit creative problem solving. Previous experience with a particular problem-solving strategy also may reduce the likelihood of using alternative and more effective problem-solving strategies (e.g., Luchins & Luchins, 1950). These findings demonstrate how memory for recent events or familiar concepts and strategies can interfere with creativity in problem solving.

Knowledge can prevent the development of creativity. We trust what we know, and so our thoughts that could led to creativity are trapped

The term *functional fixedness* is often used to describe situations (like those that Maier observed) in which people tend to think about objects only with respect to their most characteristic function (e.g., Duncker, 1945). This tendency to think about objects in the way that they are most often used illustrates one way that our memory for past experiences can limit flexibility in thinking and can inhibit the production of creative solutions.

Stein, Barry S. "Memory and creativity." In Handbook of creativity, pp. 163-176. Springer, Boston, MA, 1989.

## The Studio Collage

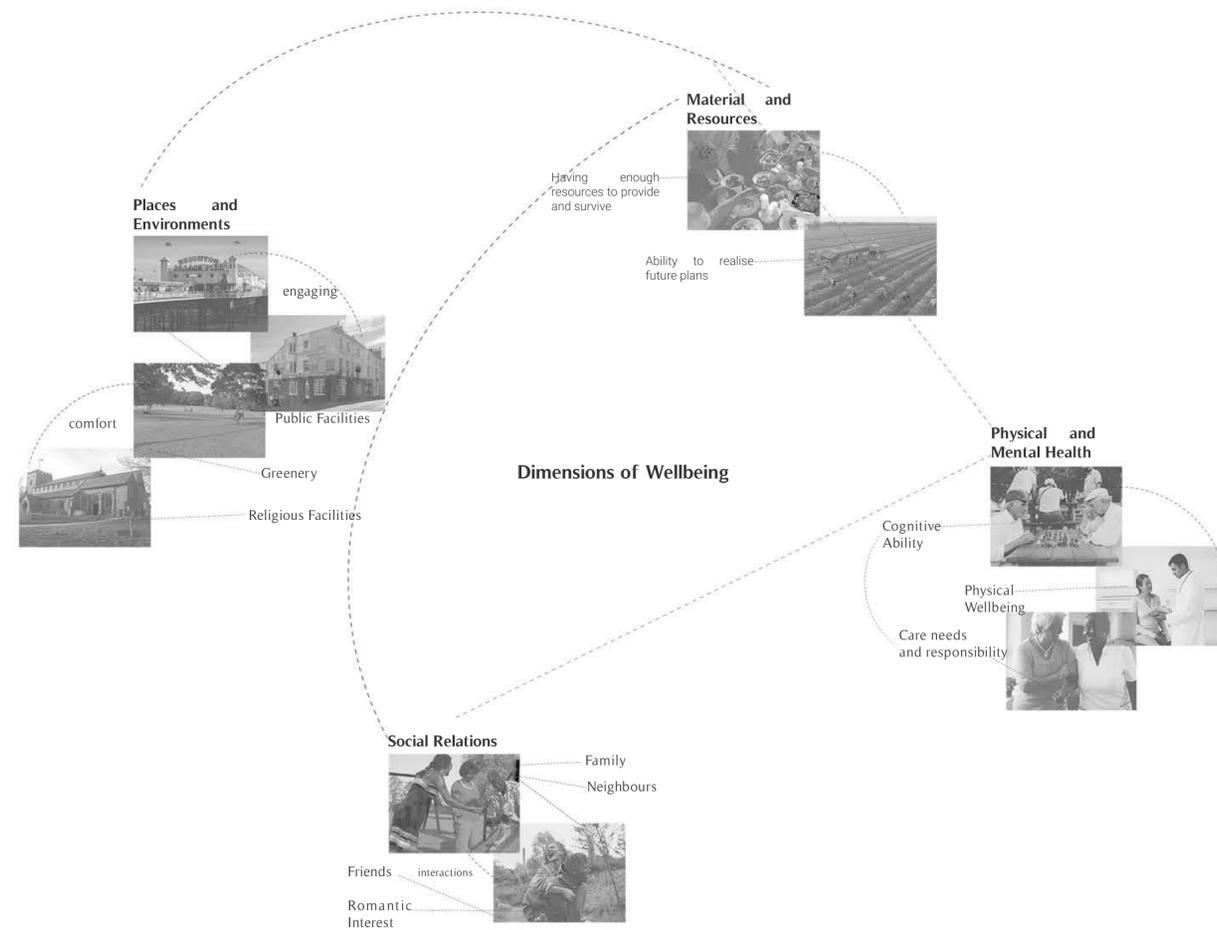
In the previous extract, the importance of encouraging and advancing creativity were discussed. Although the barrier between anxiety and creativity can lead to further anxiety, this could be channeled and controlled through further practice. This studio space will be a crucial part of the programme.



"What if imagination and art are not frosting at all, but the fountainhead of human experience?"  
-Rollo May

## Dimensions of Wellbeing BIAAS Lecture

Based on Sarah Wigglesworth's Lecture on the Dwell project. This diagram was inspired by Sarah Wigglesworth's lecture where she discussed the factors that are important to developing and maintaining a healthy psychological state. These factors will guide the further development of spaces.



## The Garden of Serenity Collage

Based on Sarah Wigglesworth's Dimensions of Wellbeing, the ability of an individual to completely sustain themselves is extremely important in aiding mental wellbeing. This space will act as a growing space for small food plants as well as any other plants the resident wants to plant themselves. It will also act as a space for gathering and visitors.



*"The more time you spend with nature, the deeper your understanding of life will be."  
- Nitin Namido*

**The Journal Archive** Collage

Keeping daily journals was extremely important to Naomi Jacobs's sanity as it allowed her to be brutally honest about her struggles. This space will act as an archive for the journals of the residents of the house. The space will also act as a library and writing space.



*"I can shake off everything as I write, my sorrows disappear, my courage is reborn."  
- Anne Frank*

**The Workshop of Life** Collage

This space will act as a therapy and mediation space that encourages inner peace and reflection. Roots of this particular space will be based in Buddhism and Oriental Therapy.



*"There is no greater agony than bearing an untold story inside you."  
- Maya Angelou*

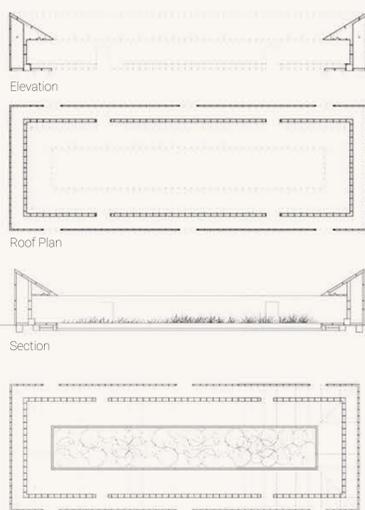
## Design Process Phase 1

This Initial sketches of the proposal were influenced by the precedents shown and spaces recognized as part of the programme. Some new spaces were uncovered when considering both the programming and environmental factors of the project. These spaces are: the garden of acoustic memories, the rain room and the telescope of the present. These spaces will be visualized and understood further throughout the next pages. The existing building is restricting the proposal still within these iterations.

### Influences on this Design Phase



*"Through blackness and shadow one enters the building from the lawn and begins the transition into the central garden, a place abstracted from the world of noise and traffic and the smells of London – an interior space within which to sit, to walk, to observe the flowers. This experience will be intense and memorable, as will the materials themselves – full of memory and time."*  
- Peter Zumthor



Name: Serpentine Gallery Pavilion

Architect: Peter Zumthor

Materials: Timber Structure + Gauze (coated with black paste)

Built: 2011

Precedent 1 - Understanding the Hallways and its relation to nature. Hallway and lighting were considered through the development of the design, with a similar approach being taken to that of Zumthor's



New Elements

First Floor



Ground Floor

Name: Astley Castle

Architects: Witherford Watson Mann Architects

Duration: 2007 - 2008

Materials: Brick, Concrete + Timber

*"We haven't restored it, nor left it as a broken, romantic relic. We re-established a kind of wholeness, making it stable, binding it together; but we retained a feeling of incompleteness, leaving it porous, its wounds still open."*  
-WWM

Precedent 2 - Understanding the importance of proposing a future that design that is both respectful to the present and the past, similarly to Astley Castle.

### Development of Sketch Sections

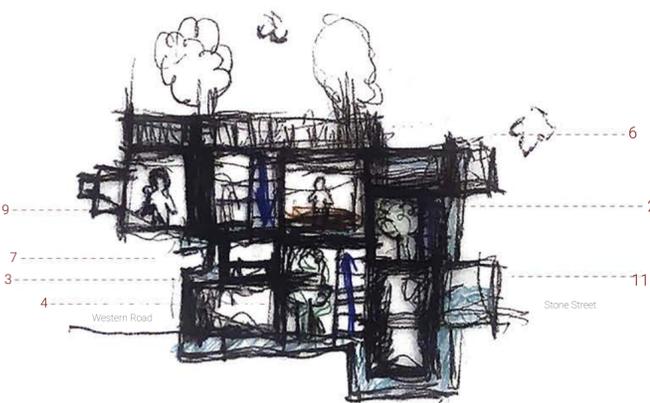


#### Iteration 1

Initial Sketch Iteration led to the development of two new spaces: An observation space (the Telescope of the Present) and a space that both encourages birds to inhabit it as well as rain to leave its mark.

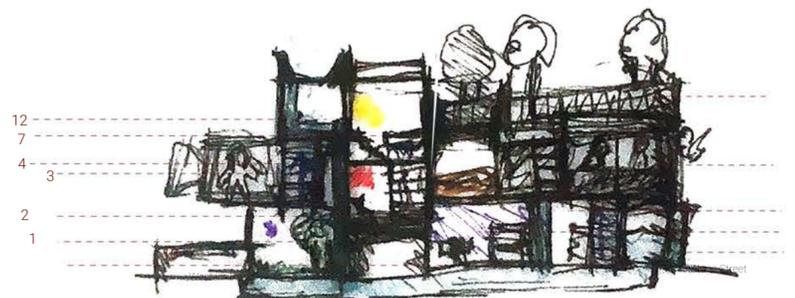
- 1 Hallway
- 2 Garden
- 3 The Journal Archive
- 4 The Nesting Space
- 5 The Rain Room
- 6 The Garden of Acoustic Memories
- 7 The Telescope of the Present
- 8 The Studio
- 9 The Garden of Serenity
- 10 Hallway to Nature
- 11 Rain Water Storage
- 12 Workshop of Life

(Numbers on sketches correspond to key shown above)



#### Iteration 2

Iteration 1 didn't contain all the spaces that the programme required. This iteration accommodated to more of the project's needs.



#### Iteration 3

This iteration led to the division of the joined space for birds and the rain into the Rain Room and the Garden of Acoustics. The entrance to the spaces will be through the hallway of nature to create mystery.



#### Iteration 4

This final iteration included all the spaces necessary for the programme. It also encourages the Garden of Serenity to take up a larger area without blocking the light or all of the sky by supporting it with a steel column.

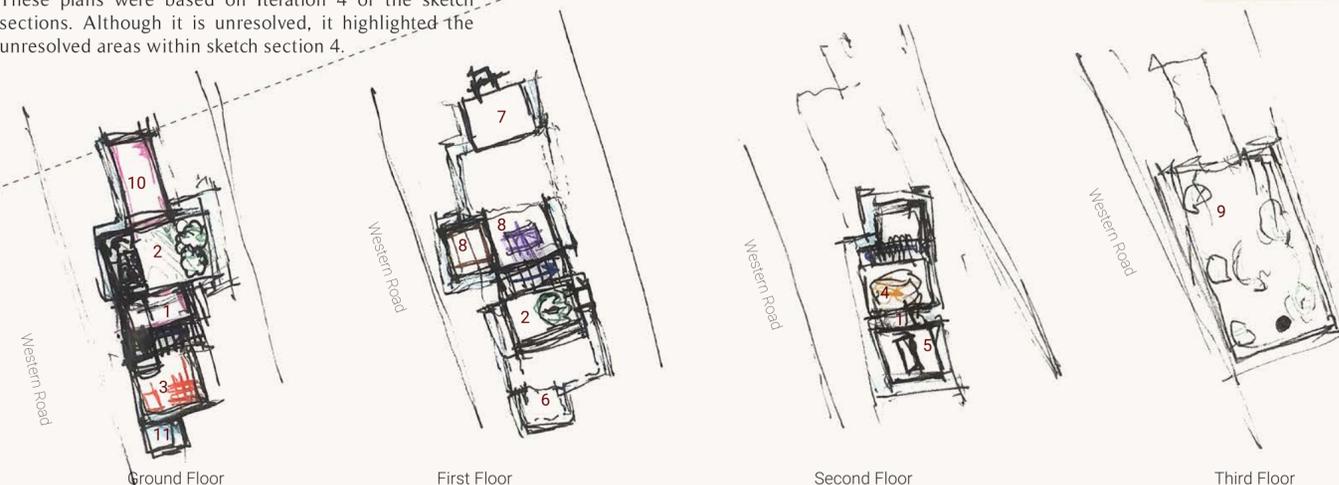


### Collage of Potential Moment

Through the iterations of sections this moment was present in all the iterations. The staircases will be used to separate some of the interior spaces from the natural spaces. It also frames the nature in multiple ways due to the change in height. This will also create a transparency to the threshold.

### Initial Sketches of the Plan

These plans were based on Iteration 4 of the sketch sections. Although it is unresolved, it highlighted the unresolved areas within sketch section 4.



## The Bird's Song is a Memory Extract

To humans, the chirping of birds is just a pleasant reminder of nature's beauty. Whereas to the bird, it's a skill that has multiple memories embedded within it. Sensory learning allows the bird to form permanent memories with the learned. The programme could take advantages of this and encourage sensory learning further to create permanent new memories and perhaps bring back the forgotten.

physiologically immature or undeveloped : young juvenile birds

A common theme of song learning is that it occurs during a juvenile sensitive period and involves two distinct phases—sensory learning and sensorimotor learning—that depend on auditory experience (Fig. 2). During sensory learning, the young bird listens to and memorizes one or more tutor songs.

In the ensuing phase of sensorimotor learning, the pupil relies on auditory feedback to match its song to the memorized model.

similar to humans when they have previous knowledge of creative tasks, memory takes over creativity

Sensorimotor learning ends with song "crystallization," a process wherein the song becomes highly stereotyped and usually much less dependent on auditory feedback.

Although a human appreciation for song learning probably dates back many centuries, the modern study of song learning emerged from the systematic description of regional intraspecific song dialects

Sensory learning in songbirds shares important features with forms of sensory imprinting described in other birds and mammals.

sensory learning can help embedded new memories within the programme

sensory learning results in a long-lasting and perhaps permanent memory, as is typical of other imprinted stimuli.

Imitation is the foundation for transmitting much of human culture. Most importantly, the child's ability to vocally mimic the speech of parents and peers forms the foundation for spoken language

The bird's song is perfected through layers of auditor memories

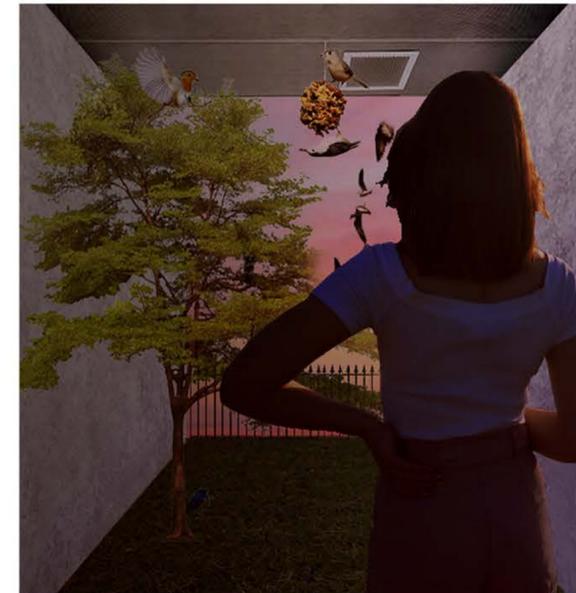
Sensory imprinting produces life-long attachment to environmental features experienced during a critical period of early development. Imprinting of this kind is highly conserved in evolution and is an important form of adaptive behavior

This project should ensure that there are careworkers and professionals in the appropriate spaces

Mooney, Richard. "Neural mechanisms for learned birdsong." Learning & memory 16, no. 11 (2009): 655-669.

## The Garden of Auditory Memories Collage

This space was developed through the previous sketches alongside the extract shown . It will act as a space that takes care of birds and encourages them to inhabit it. The bird's song is known to be soothing but more importantly its a reflection of auditor memory which will be beneficial for the occupants.



*"In the morning the chirping of birds is a sound of joy and hope,  
and in the evening of thanks and satisfaction."  
-Tasneem Hameed*

## Blue Mind Effect Extract

This extract was included in the term 1 portfolio and acts as a strong reminder of the importance of waves and other water sounds on mental wellbeing. The programme should encourage the collection of rainwater for both the visual and acoustic qualities

Marine biologist Wallace explains that looking at or being near water can provide a wide range of health benefits. **These benefits include reducing stress and anxiety, increasing happiness, lowering our heart rate, and other things that extend beyond just feeling calmer.**

**He calls this the "blue mind" effect and says it's a response we have when seeing water.**

A lot of our behaviors and reactions come from our DNA. This includes how our brains react to seeing water. Wallace says **this traces back to how our ancestors behaved thousands of years ago.**

Our ancestors were often on the move and in need of finding water as a matter of life and death. **For generations, they focused on finding new water sources. When they did so, it triggered a calming response in their brains, something we carry with us to this day.**

**Wallace says this is the reason why the sight or sound of water triggers the release of relaxing neurochemicals for most people.** Logically, there is a deep biological connection between our brains and the sight of water due to our dependence on it as a source of life.

The calming effect of seeing water uses just one of our senses. **The calming effects of water are even greater if we also hear the sounds of water. Whether it's the loud crash of ocean waves hitting the shore or the soft tapping of raindrops on the window, the sound of water also has a calming effect for most people.**

**Our brains also connect the sounds of water with calming images stored in our memories.** It triggers either personal memories or images we picked up from TV or other media.

Extract from The Blue Mind  
by Wallace Nichols

our response to water has been passed down throughout generations, -our ancestors have given water the therapeutic power it now has

water wasn't as readily available in the past as it currently is

sign of water represented an extension to life which accompanied calmness

memories are encouraged by water allowing positive memories to resurface can help with reducing anxiety

the programme aims to help with reducing anxiety through change, and water (rainfall) should be developed to become part of the programme,

water wasn't as readily available in the past as it currently is  
sign of water represented life which accompanied calmness

reflection and sight are viewed as being important, the sound produced by water is just as important

## The Rain Room Collage

The Rain Room will be an open area that encourages the resident to observe and enjoy the rain (based on the Blue Mind extract). The rain will also leave its imprint on the walls, so the room will act as a live record of the rain through the decaying of the material.



*"The sound of the rain needs no translation."  
- Alan Watts*

### The Telescope of the Present Collage

This space will act as a platform to view the activities of other users on the Site. As the residents of this project will have no current knowledge or memory of this year, the public might cause them serve anxiety, setting them back in their wellbeing journey. To ease this anxiety and to become accustomed to the present, this space will provided allowing the resident to observe the daily lives of other people.



### The Hallway to Nature Collage

Based on previous extracts , hallways and corridors are both extremely important for mental wellbeing. The mystery that arises when going down a corridor creates curiosity which challenges thoughts and fears. Nature has an opposing influence as it is a brings certainty and peace. This moment shown within the collage will be replicated within the structure.



*“Often the doorway to success is entered through the hallway of failure.”  
- Erwin W. Lutzer*

## Chapter 4

Integrating concepts spatial through exploring forms

## Stages of Rehabilitation Prescription for Recovery

Previous Research has led to the development of the 4 stages of Rehabilitation. The programme aims to not only recover lost memories, but also to aid with psychological stability, preventing trauma induced amnesia from taking place. As they will be in a fragile psychological state, the spaces and activities that they undertake will be determined according to what stage they are at. The Telescope of the Present will be monitored as this space could cause further distress if entered at the wrong stage, setting the resident back. The only set activity with set hours will be therapy in th Workshop of Life.

### Stage 1 - Acceptance

- the initial psychological stage of the resident
- during this stage, the resident is in denial, refusing to let go of the past [their current present after memory loss]
- during this stage the programme encourages acceptance : letting go of what was

### Stage 2 - Growth

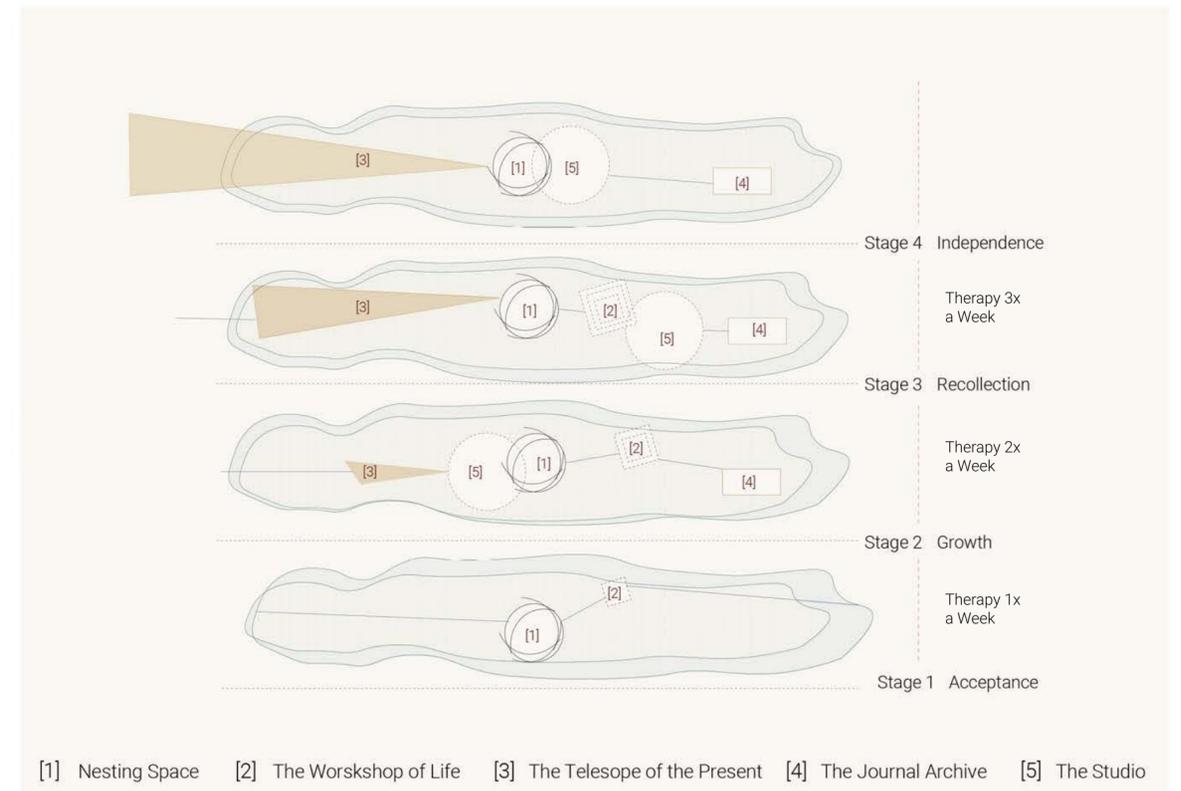
- the secondary psychological stage of the resident
- during this stage, the resident has accepted their memory loss and psychological stability is being built
- this will be achieved through growth : psychologically as well as skill based through the studio
- therapy will be increased and the Telescope of the present will be used form the furthest distance: accepting the present

### Stage 3 - Recollection

- during this phase, the resident starts to recall memories that have been forgotten
- therapy sessions will be increased and the Journal Archive will be in use more
- The Telescope of the Present will aid in the recovery process: resident will step closer to the present

### Stage 4 - Independence

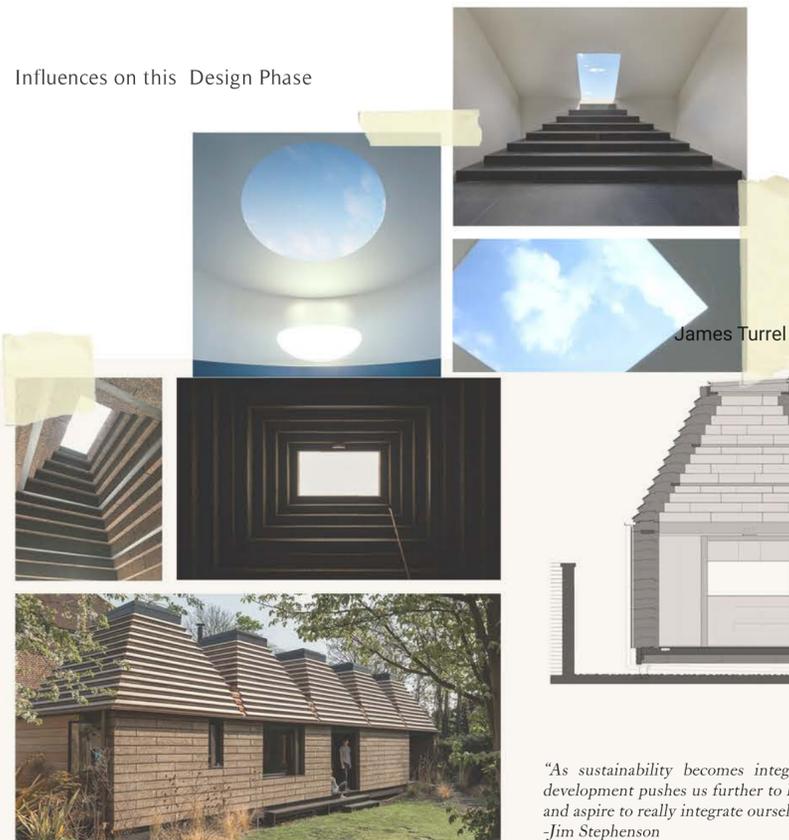
- the final stage in where the resident is encouraged to be completely independent, preparation to live in the present



## Design Process Phase 2

This Initial sketches of the proposal where influenced by the precedents shown and spaces recognized as part of the programme. Some new spaces were uncovered when considering both the programing and environmental factors of the project. These spaces are: the garden of acoustic memories, the rain room and the telescope of the present. These spaces will be visualized and understood further throughout the next pages. The existing building is restricting the proposal still within these iterations.

Influences on this Design Phase



James Turrel

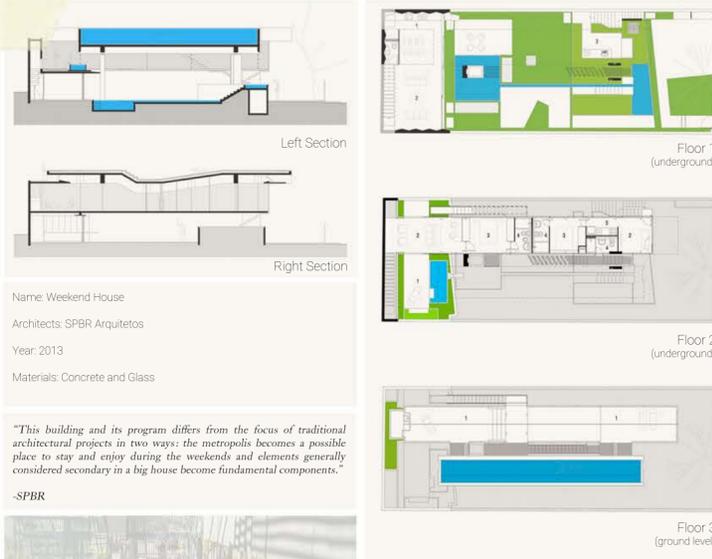
- 1 Hallway
- 2 Hallway to Nature
- 3 The Journal Archive
- 4 The Nesting Space
- 5 The Telescope of the Present
- 6 The Studio
- 7 The Workshop of Life
- 8 Rain Water Storage
- 9 Kitchen
- 10 Toilet/Bathroom
- 11 Guest Room
- 12 Caretaker's Room
- 13 The Rain Tower
- 14 The Light Tower



"As sustainability becomes integral to all construction, this development pushes us further to look beyond the requirements and aspire to really integrate ourselves with nature."  
-Jim Stephenson

## Tunnels of Light Precedent

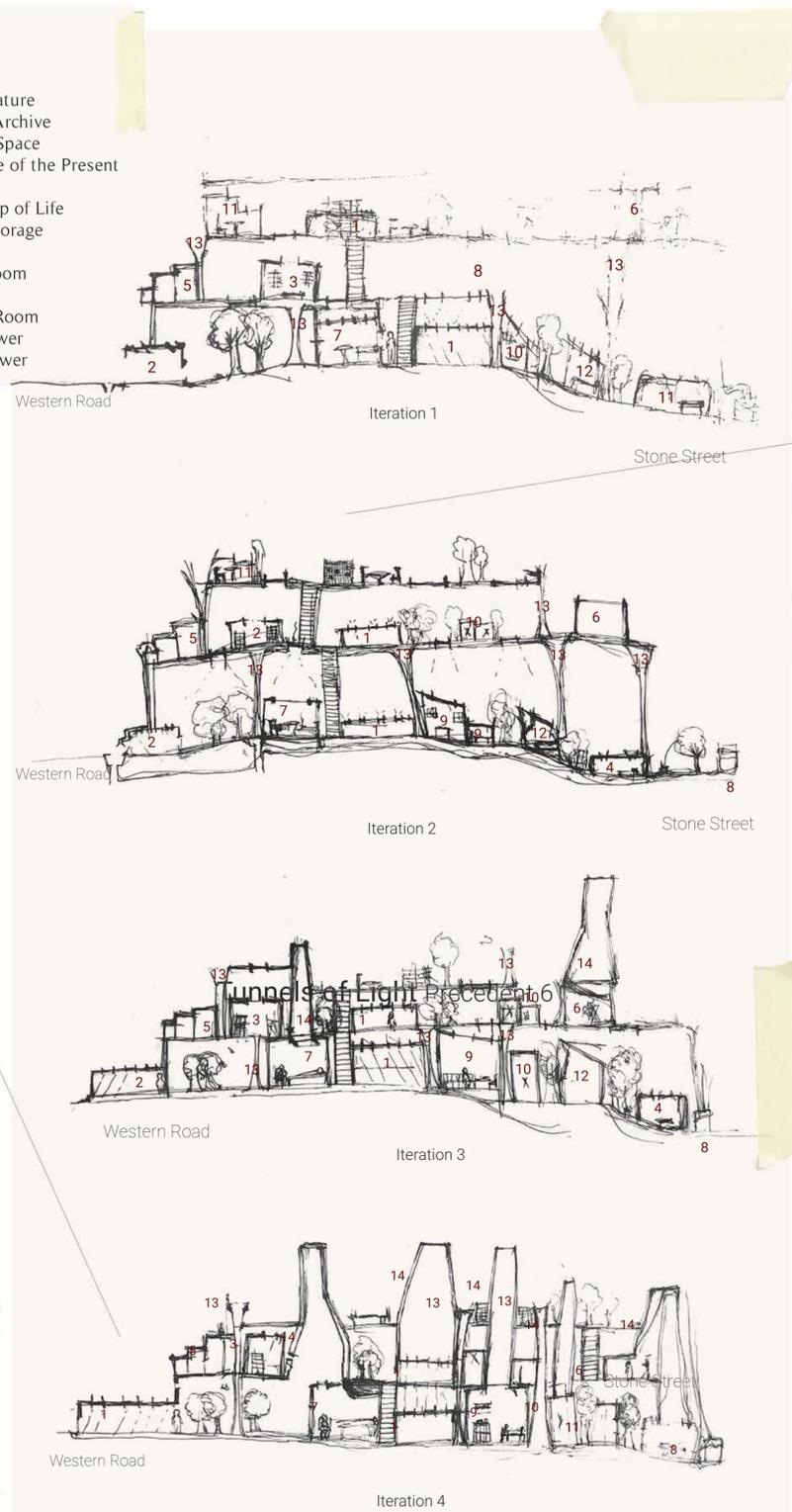
The Cork House by Jim Stephenson. The roof is formed in a way that frames the sky with the purpose of providing natural ventilation and lighting. This idea of the tunnel will be incorporated within the project to take advantages of natural lighting and ventilation.



Name: Weekend House  
Architects: SPBR Arquitectos  
Year: 2013  
Materials: Concrete and Glass

"This building and its program differs from the focus of traditional architectural projects in two ways: the metropolis becomes a possible place to stay and enjoy during the weekends and elements generally considered secondary in a big house become fundamental components."

-SPBR



## Section Sketch Iteration

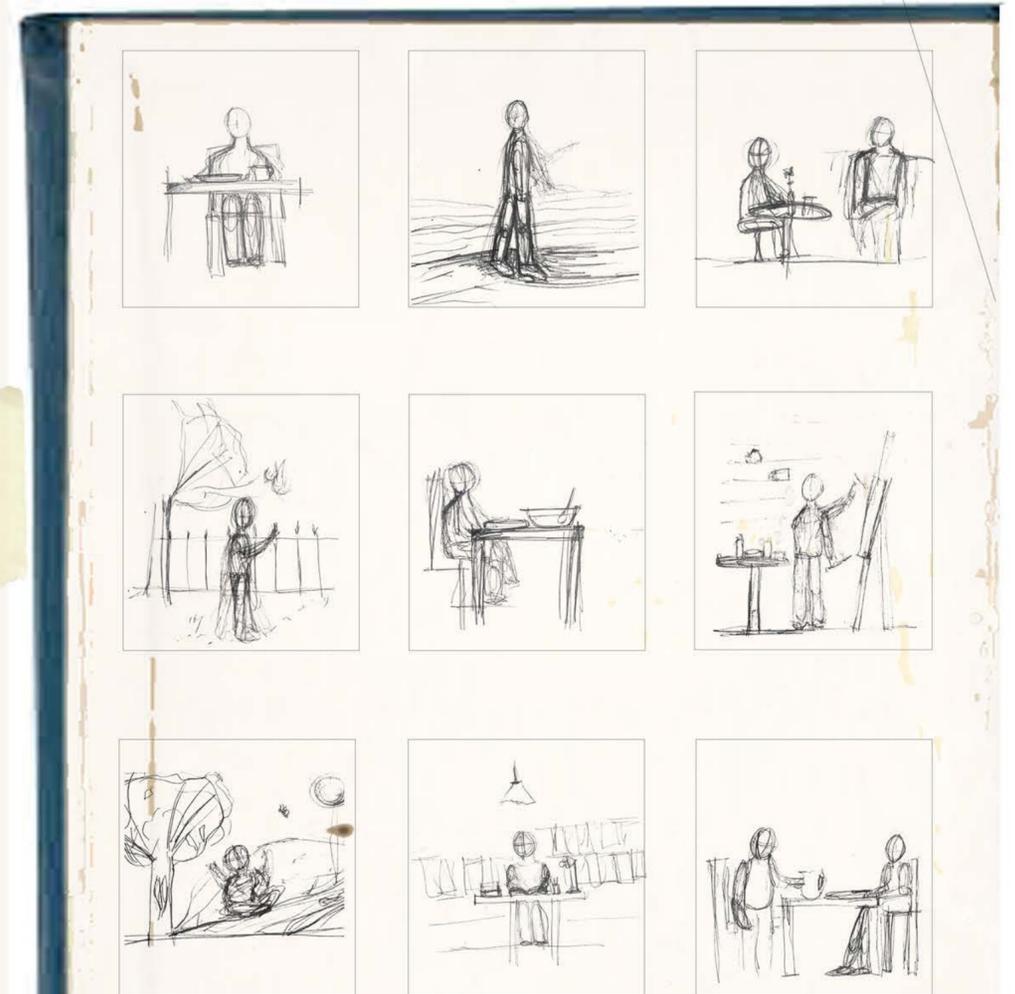
After identifying the Stages of Rehabilitation, the outdoor spaces identified previously were merged as they all share the same goal, and are allowed to intertwined fluidly throughout the building rather than being contained. Rain, the sky and lighting were prioritized as it will allow for the space to become adaptable depending on the resident.

In a task with high coordinative complexity, high sequential demands had a positive effect on both the speed and accuracy of the performance of highly test-anxious participants. Under high sequential demands, participants with high test anxiety responded faster and made less errors than participants with low test anxiety. These findings suggest that sequential demands may enhance the cognitive performance of test-anxious individuals working on a coordinatively complex task.

Stephan Dutke & Joachim Stöber (2001) Test anxiety, working memory, and cognitive performance: Supportive effects of sequential demands, Cognition & Emotion, 15:3, 381389, DOI: 10.1080/02699930125922

Extract on order

Sequence and order are very important for individuals with extreme anxiety. It less to an improvement in performance and concentration - which can help the brain with improvements to cognitive performance. This can led to an improvement in memory and recalling information of an individual. Therefore setting an order and a schedule for the resident to oblige to will be very beneficial.



## A Day in the Life of a Resident Schedule

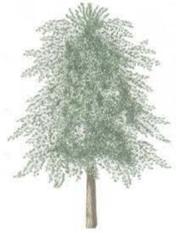
Within the project, the residents will be following a set schedule to create a sense of order and routine. This is also based on Extract 2 which states that when tasks are set out clearly, individuals that have experience high levels of anxiety carry out tasks much more successfully. This is an example of a day in the life of a resident.

## Slices of the Natural World Precedent

The Weekend House combines architecture with the two elements of nature that encourages wellbeing: greenery and water. This breaks the barriers between the outdoors and indoors which creates an atmosphere that is soothing for the occupants. The building is a holiday home so creating a calming environment was key. As the project revolves around creating a rehabilitation space for individuals with trauma induced memory loss, creating a space that has a similar atmosphere is key.

## Additional Occupants Nature

Nature will be occupying a large area of the project. These trees will be planted within the building due to their healing abilities for both mental and physical wellbeing. The mature size of the tree alongside the conditions required to maintain it will determine its location with the programme. Trees will also create shade and filter out Carbon Dioxide in the building, creating a healthy environment and home for the resident and the birds.



**Ginkgo Biloba Tree**  
Believed to improve memory & oldest homoeopathic plants

Mature Size Height: 14240  
(in mm) Width: 9144

Sun Exposure: Partial Shade

Soil Type: Moist but well drained

Soil pH: Alkali 5.0 - 8.0

Bloom Time: Spring



**Japanese Maple Tree**  
Treat any eye complaints & liver problems

Mature Size Height: 4572  
(in mm)

Sun Exposure: Shade/Filtered Sun

Soil Type: Moist but well drained

Soil pH: Slightly Acidic

Bloom Time: Spring



**Persimmon Tree**  
Fruit full of nutrients

Mature Size Height: 10668  
(in mm)

Sun Exposure: Full Sun

Soil Type: Any

Soil pH: Alkali 6.5 - 7.5

Bloom Time: Spring



**Saucer Magnolia Plant Tree**  
Increases cognition for individuals with alzheimers and other cognitive disease

Mature Size Height: 6096  
(in mm)

Sun Exposure: Partial Shade

Soil Type: Well drained

Soil pH: Acidic/Any

Bloom Time: Spring



**Weeping White Pear Tree**  
Leaves can be made into a herbal tea or a medical calm for soothing

Mature Size Height: 4572  
(in mm)

Sun Exposure: Partial Shade

Soil Type: Well drained

Soil pH: Acidic/Any

Bloom Time: not specified



**Lavender**  
Sedative Properties & Anti-Anxiety Capabilities

Mature Size Height: 609  
(in mm) Width: 609

Sun Exposure: Full Sun

Soil Type: Well drained

Soil pH: Neutral to acidic

Bloom Time: Summer



**Blueberry Plant**  
Improve memory and brain function

Mature Size Height: 914  
(in mm) Width: 1524

Sun Exposure: Full Sun

Soil Type: Well drained

Soil pH: Acidic 4.0 - 5.6

Bloom Time: Summer - Early Fall



**Evening Primrose**  
Treats symptoms of PMS & Skin Conditions

Mature Size Height: 914  
(in mm) Width: 1524

Sun Exposure: Partial Shade

Soil Type: Moist but well drained

Soil pH: Neutral to acidic

Bloom Time: Summer - Early Fall



**Signet Marigold**  
Treats sunburn & all skin conditions natural pest repellent

Mature Size Height: 127  
(in mm) Width: 178

Sun Exposure: Full Sun

Soil Type: Any

Soil pH: Alkali 6.0 - 7.0

Bloom Time: Summer Time



**Chamomile**  
Calms anxiety & potential anti-cancer treatment

Mature Size Height: 203  
(in mm) Width: 203

Sun Exposure: Full Sun

Soil Type: Not too rich or damp

Soil pH: Alkali 5.6 - 7.5

Bloom Time: Summer



**Jasmine Flower**  
Sedative & boosts brain functions

Mature Size Height: 509  
(in mm) Width: ---

Sun Exposure: Partial Shade

Soil Type: Any

Soil pH: Any

Bloom Time: Winter

## Additional Occupants Birds

Birds have become an important aspect of the programme due to the development of the Garden of Acoustic Memories (which has now been combined with the rain room and the indoor garden). These are the local species of birds that the project needs to care for. The birds will also be residents in this building so space and food will have to be provided. The structure needs to be suitable for them to allow them to roam freely.



**Starling**  
Feed on: fruits & invertebrates

Length (mm): 210

Wingspan (mm): 370 - 420

Weight (g): 75 - 90



**House Sparrow**  
Feed on: seeds & scraps

Length (mm): 240 - 250

Wingspan (mm): 340 - 385

Weight (g): 24 - 38



**Pied Wagtail**  
Feed on: insects, seeds & scraps

Length (mm): 180

Wingspan (mm): 250 - 300

Weight (g): 17 - 25



**Wren**  
Feed on: insects & spiders

Length (mm): 90 - 100

Wingspan (mm): 130 - 170

Weight (g): 7 - 12



**Blackbird**  
Feed on: insects, worms, berries & fruits

Length (mm): 240 - 250

Wingspan (mm): 340 - 385

Weight (g): 80 - 100



**Seagull**  
Feed on: worms, insects, fish & rubbish

Length (mm): 400 - 420

Wingspan (mm): 110 - 130

Weight (g): 300 - 480



**Robin**  
Feed on: worms, seeds, fruits, insects & other invertebrates

Length (mm): 140

Wingspan (mm): 200 - 220

Weight (g): 14 - 21



**Blue Tit**  
Feed on: insects, caterpillars, seeds & nuts

Length (mm): 120

Wingspan (mm): 180

Weight (g): 11

**Design Process Phase 3**

During this phase, the proposal was being refined through focusing on some of the main concerns that contributed to the improvement of mental wellbeing : lighting, greenery and the sky view. The towers were identified as the key structure, with the most important spaces being located within the towers. The towers will provide all the key elements that contribute to mental wellbeing - nature (by providing a climbing frame for plants, the sky view by increasing the height of the towers ), framing the sky view) and the sound of water. These concepts will be further developed.

For humans, lighting is the most important environmental factor for visual perception. However, light can also exert non-visual circadian and acutely physiological, psychological and cognitive effects

In general, this line of research suggests that bright light exposure, as compared to dim light exposure, leads to acute alerting effects and improvements on (cognitive) task performance.

These studies revealed that bright light exposure, although beneficial for vigilance tasks (i.e., the Psychomotor Vigilance Task; PVT) proved to be detrimental for more complex tasks measuring inhibitory capacity (GoNoGo task) and working memory abilities (2-back task).

Light plays a significant part in psychological and cognitive functions

The brain is on high alert

Working memory is the brain system that provides for the temporary storage and manipulation of information that is necessary for complex cognitive tasks such as language comprehension, learning and

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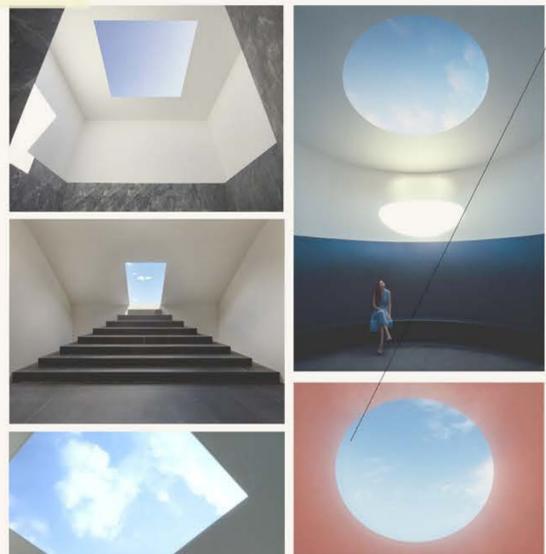
inhibitory control is the ability to inhibit or control impulsive (or automatic) responses, and create responses by using attention and reasoning. This cognitive ability is one of our Executive Functions and contributes to

In sum, there is considerable evidence that environmental light exposure can exert non-visual effects on cognitive performance.

Huiberts, Laura. 'Shining light on memory : the effects of daytime bright light exposure on memory task performance varying in difficulty level.'

Lighting and Psychology Extract  
In this extract, it explained that lighting is not just important for the visually aspect but also for the working memory. This suggests the lighting throughout the design is a crucial tool - natural lighting will be harnessed as much as possible.

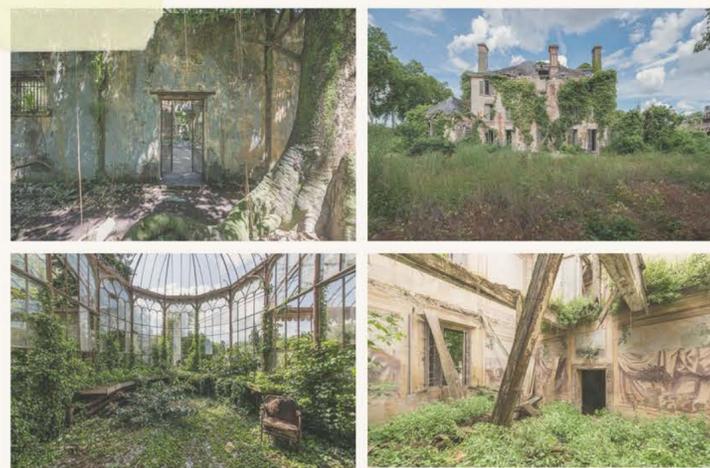
lighting and view have a strong link a



"The sky is no longer out there, but it is right on the edge of the space you are in. The sense of colour is generated inside you. If you then go outside you will see a different coloured sky. You colour the sky."

-James Turrell

Continuing from last term, James Turrell's work has had an influence on both the collages and the sketches done in this portfolio. The sky view is extremely important within this project as not only will it provide natural lighting, but it is also important in allowing the rain in. The sky view also acts as a natural form of therapy. This heavily influenced the development of the shape and height of the towers.



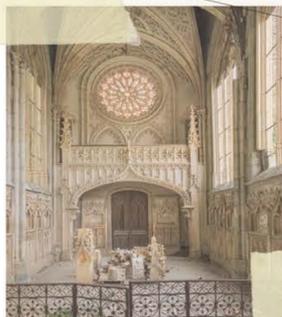
Romain Vaillon's photographs of the Chapelle Au Vaillon capture moments that this project aspires to achieve. The concept of nature taking over the infrastructure, leaving a memory of the time that has passed. Not controlling nature but allowing it to become part of the structure.

Architecture: Chapelle Au Vaillon

Photos taken by: Romain Vaillon

Taken in: 2018

Location: France



Respecting the Past whilst evolving a future - Astlery Castle by WWM.

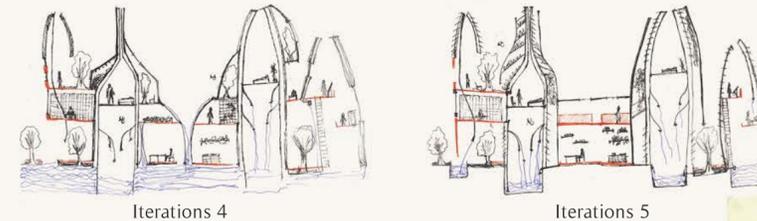
This precedent influenced the approach taken with the sketches- which encouraged further understanding of how



■ Existing Building Walls ■ Rain Water

**Section Sketch Iteration**

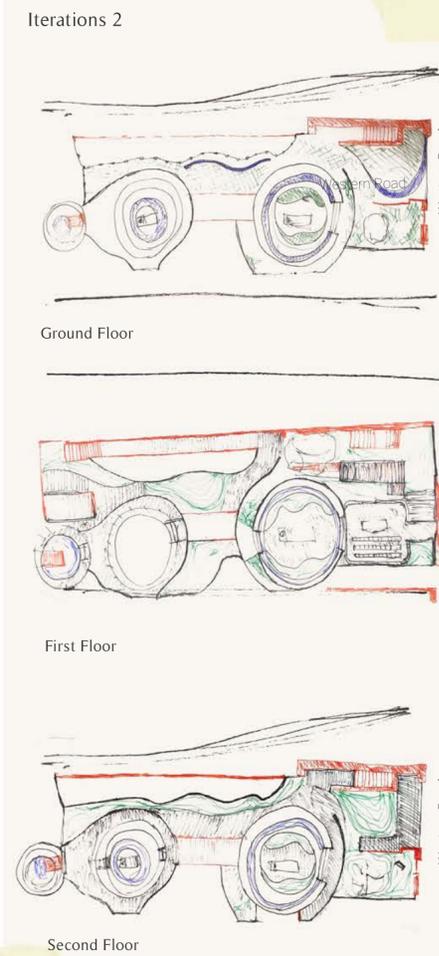
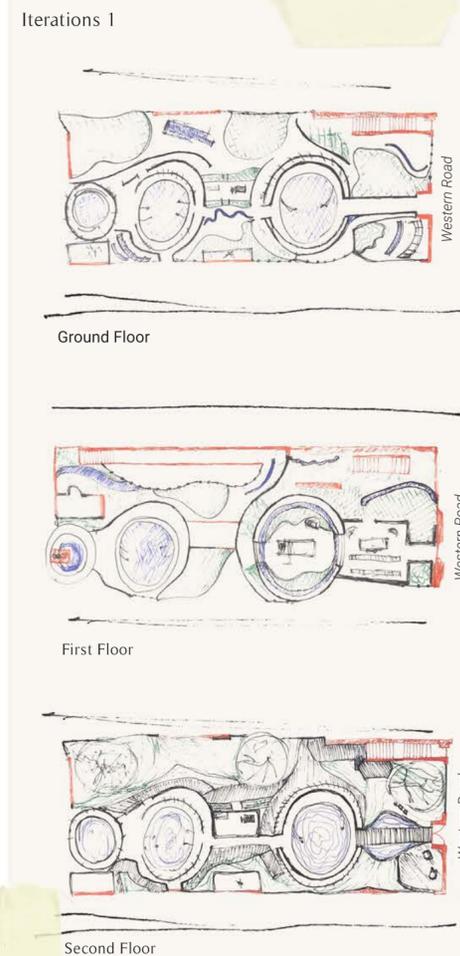
These sections were developed with the towers being the central part of the section. Water pools/bath areas were developed underneath these towers. These will also act as an area to collect rainwater. The red areas indicate the important parts of the section that are maintained.



**Plan Sketch Iteration**

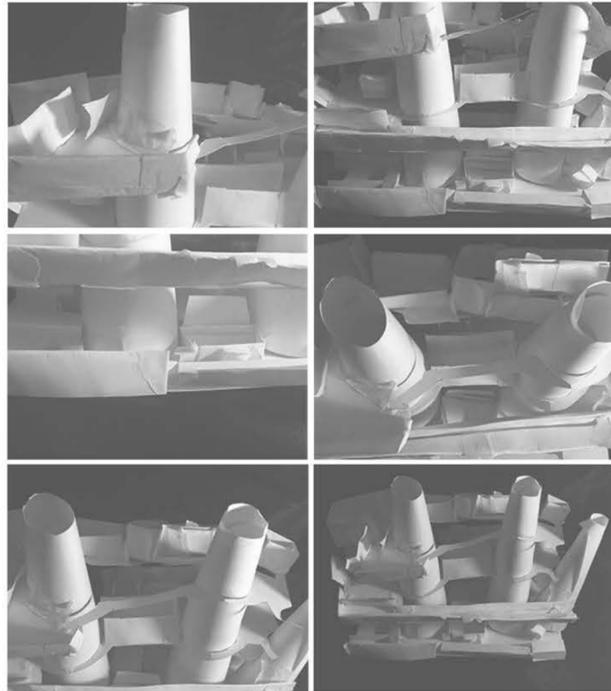
These plans focused on the idea of ground texture, particularly through preserving some of the existing wooden flooring

■ Existing Wooden Planks ■ Landscape/Plants ■ Rain Water ■ Existing Building Walls

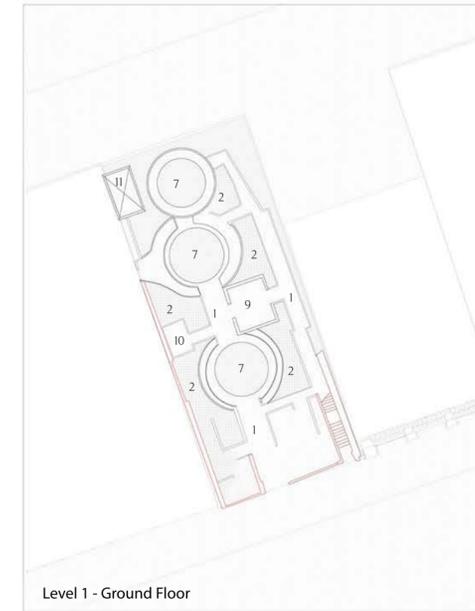


### Initial Plan Iteration

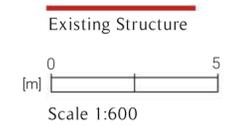
The initial ideas that were being explored through the model and the plan are to do with the connection of the existing and the towers. The model explores this by allowing the towers to pierce through the existing structure, which is then developed further within the plans.



Paper Model of Proposal at 1:100



- 1 Hallway
- 2 Garden Spaces
- 3 The Journal Archive
- 4 The Nesting Space
- 5 The Studio
- 6 The Workshop of Life
- 7 Towers & Waterpools
- 8 River
- 9 Kitchen
- 10 Toilet/Bathroom
- 11 Lift



## Design Process Phase 4

During this stage of the design, the spaces were understood further and rules were set to what the following iterations will have to follow.

### Physical Spaces vs Concepts

Initially, the spaces shown were identified as separate rooms in the previous iterations of sections and plans. However, these iterations have uncovered the fact that many of these spaces are in fact concepts and present freely around the building rather than in a restricted space. This will create a focus on the actual essential spaces require a certain enclosure - certain order. The majority of these conceptual spaces are related to nature and so controlling or restricting this will form an untrue representation of the natural world.

**Conceptual Spaces** - Spaces that aren't limited to a room, instead these are concepts that are present within the proposal and around the enclosed rooms (physical spaces)



**Garden of Serenity**  
- landscaping and plants will be taking up the entire free floor space of the building instead of just a certain location. The design will also act as some sort of climbing frame for plants.



**The Rain Room**  
- the proposal will not be entirely covered by a roof - spaces will have their own shelter but as much open space is left as possible - allowing rain into the space. Rain could be collected somewhere



**The Telescope of the Present**  
- areas of the facade of enclosed spaces would be open or contain some form of glazing - giving the resident an option of whether to observe the present or not. Heights of spaces will also form these "telescopes" with different depths.



**The Room of Acoustic Memories**  
- as the proposal will be open and landscaping will be present including trees, birds will be able to take residence throughout areas of the building rather than in limited locations

**Physical Spaces** - Spaces that are present between walls/in a room. These spaces are located in a certain unchanging part of the proposal unlike the conceptual spaces



**The Workshop of Life**



**The Journal Archive**



**The Nesting Space**



**The Studio**

### Diagram identifying the different elements of the proposal

#### Element 1 - Rain & Light Tunnels

- key element of the structure
- load bearing
- the concepts of the Telescope of the Present and the Hallway to Nature will be accommodate within these tunnels
- includes the sky view

#### Element 2 - Garden of Serenity

- the Garden of Serenity will be present fluidly throughout the structure
- the concepts of the Room of Acoustic Memories and the Rain Room will be accommodate through the Garden of Serenity

#### Element 3 - Rain/Water

- rainwater will be travelling throughout the structure, keeping the nature alive
- rainwater will be used in kitchens, bathrooms, etc.

#### Element 4 - Enclosed Living Spaces

- this element consists of the enclosed living facilities which are: The Studio
- The Nesting Space
- The Workshop of Life
- Bathrooms
- Kitchen
- Guest Bedrooms
- Journal Archive



Section Diagram showing the potential location of the Elements

### The Key Elements Division of Spaces

Previously, the spaces within this project have been shown through collages. However, some of these spaces have been identified as concepts rather than actual rooms. This diagram aims to differentiate the presence of the concepts vs the rooms and where the ideas of these concepts have been embedded within newly developed structures or existing (such as the tunnels or the Garden of Serenity)

#### Stage 1 - Acceptance

- the initial psychological stage of the resident
- during this stage, the resident is in denial, refusing to let go of the past (their current present after memory loss)
- during this stage the programme encourages acceptance : letting go of what was

#### Stage 2 - Growth

- the secondary psychological stage of the resident
- during this stage, the resident has accepted their memory loss and psychological stability is being built
- this will be achieved through growth : psychologically as well as skill based through the studio
- therapy will be increased and the Telescope of the present will be used form the furthest distance: accepting the present

#### Stage 3 - Recollection

- during this phase, the resident starts to recall memories that have been forgotten
- therapy sessions will be increased and the Journal Archive will be in use more
- The Telescope of the Present will aid in the recovery process: resident will step closer to the present

#### Stage 4 - Independence

- the final stage in where the resident is encouraged to be completely independent, preparation to live in the present

### Creating a Hierarchy of Spaces



The Workshop of Life, the Studio and the Nesting Space have been identified as spaces that will be located at a greater height and separate from other essential spaces. These three spaces will be in instant use by the resident and will therefore require separate structures with different atmospheres - creating a different narrative for each space. This is crucial as it will develop a distinct memory for the resident each of the separate spaces - which will help with recall & navigating their way through the proposal. However as these spaces will be in use the most, they need to provide the ideal atmosphere for the improvements of mental wellbeing.

These conditions are :

- space must contain or be connected to greenery
- water acoustic and/or visually qualities of water must be present in or around these spaces
- sky must be visible

This criteria was developed through the research shown in the earlier stages of the portfolio



### New Rules set after this process :

- Proposal will consist of separate structures - with consideration being made to the existing
- The three key spaces will be separate from the remainder of the spaces with the atmospheric conditions identified previously
- Collection of Water
- Structure must support or act as a climbing frame for plants

**Developed Ground Floor Plan Scale 1:50**

Leading on from the previous model based on the past plan iteration, the idea of circulation and creating a separate route /language for the journey through the towers in comparison to the journey through the hallways to nature, the water pools and the enclosed rooms. This was explored and understood further through these plans.



[1] Rammed Earth Hallways  
-guiding the resident throughout the structure  
-connects to the staircases which lead to the towers as well as the rooms  
-plans encourage the sky view from the hallways



[2] Rammed Earth Pools of Reflection  
-water pools made out of rammed earth and carved around the timber towers  
-more shallow than pools under the timber towers  
-allows resident to reflect on the past and present



[3] Staircases as a resting space  
-staircases will lead to the pools  
-they will act as private resting spaces as well as a threshold between the hallways and the enclosed spaces



[4] Rising Curved Staircases  
-curved staircases will lead up to the towers  
-water pools will be visible underneath

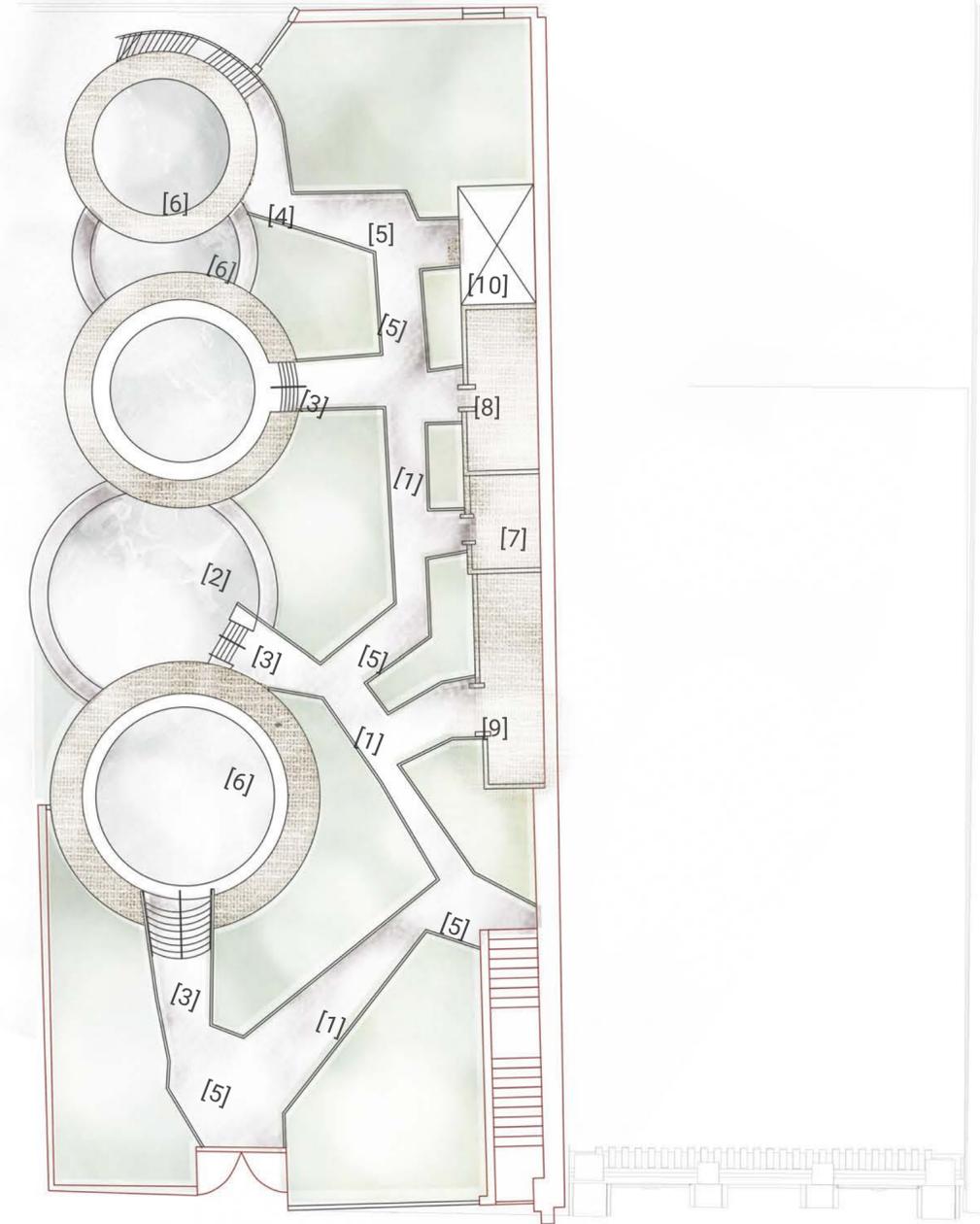
[6] Deep Water Pools for Water Storage  
[7] Toilets  
[8] Communal Room  
[9] Caretaker's Office  
[10] Lift

red lines = existing structure



[5] Hallway to Nature  
-there will be openings within the hallways to encourage the resident to visit the areas of nature occupying areas of the building

Stone Street



Western Road



**Developed First Floor Plan Scale 1:50**

Leading on from the previous model based on the past plan iteration, the idea of circulation and creating a separate route /language for the journey through the towers in comparison to the journey through the hallways to nature, the water pools and the enclosed rooms. This was explored and understood further through these plans.



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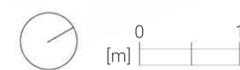
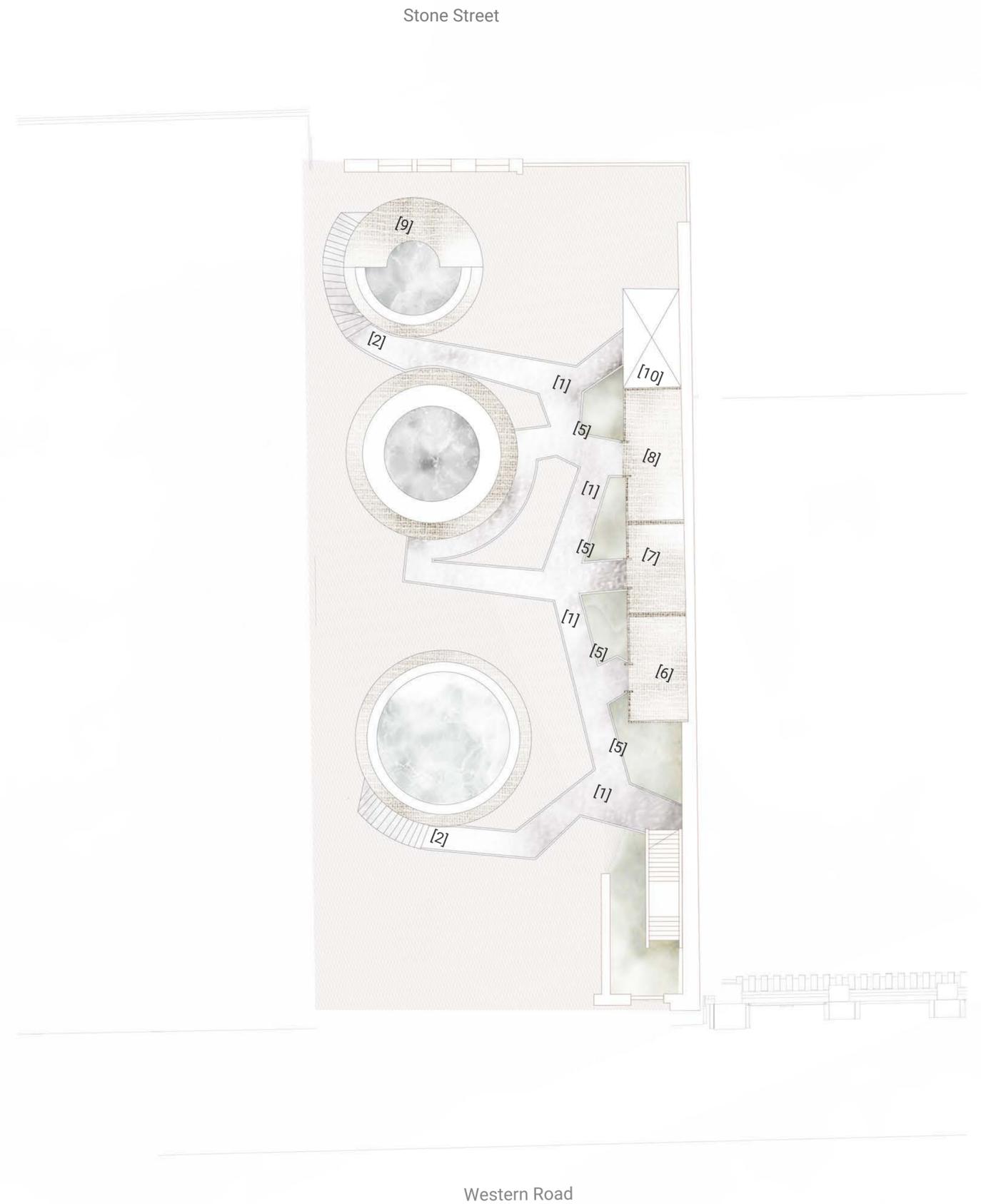
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red lines = existing structure



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**Developed Ground Floor Plan** Scale 1:50

Leading on from the previous model based on the past plan iteration, the idea of circulation and creating a separate route /language for the journey through the towers in comparison to the journey through the hallways to nature, the water pools and the enclosed rooms. This was explored and understood further through these plans.



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-staircases will lead to the pools  
-they will act as private resting spaces as well as a threshold between the hallways and the enclosed spaces



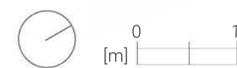
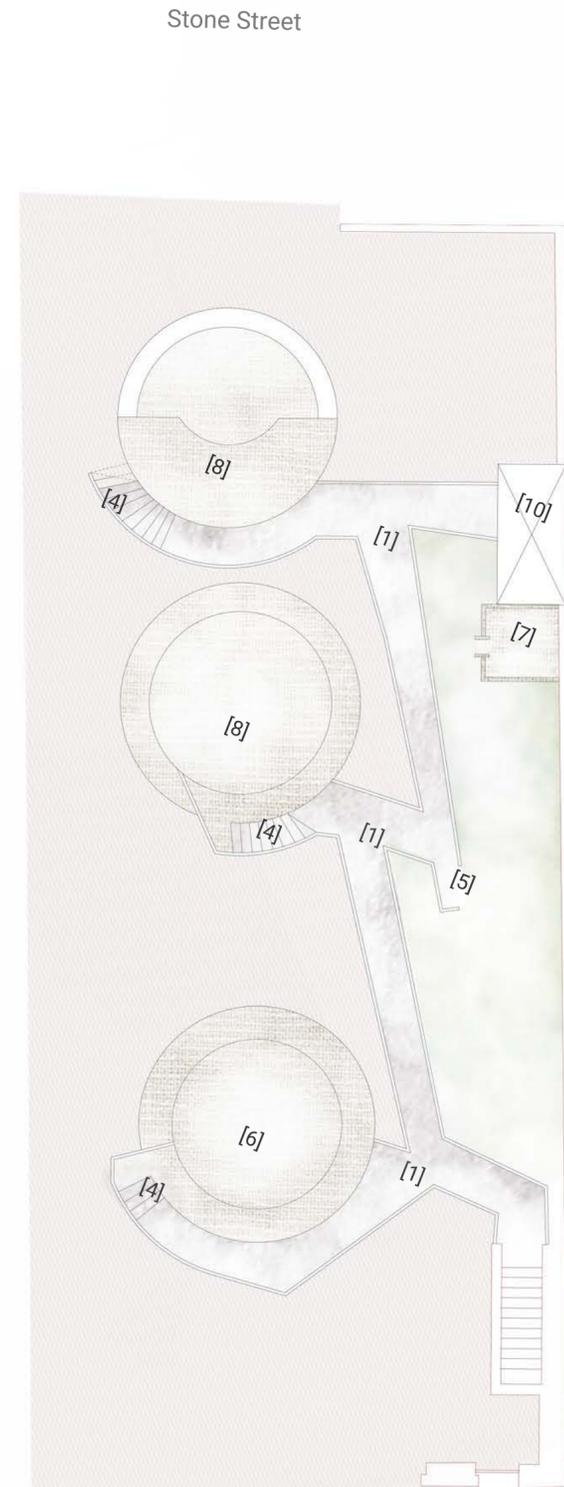
[4] Rising Curved Staircases  
-curved staircases will lead up to the towers  
-water pools will be visible underneath

- [6] Deep Water Pools for Water Storage
- [7] Toilets
- [8] Communal Room
- [9] Caretaker's Office
- [10] Lift

red lines = existing structure



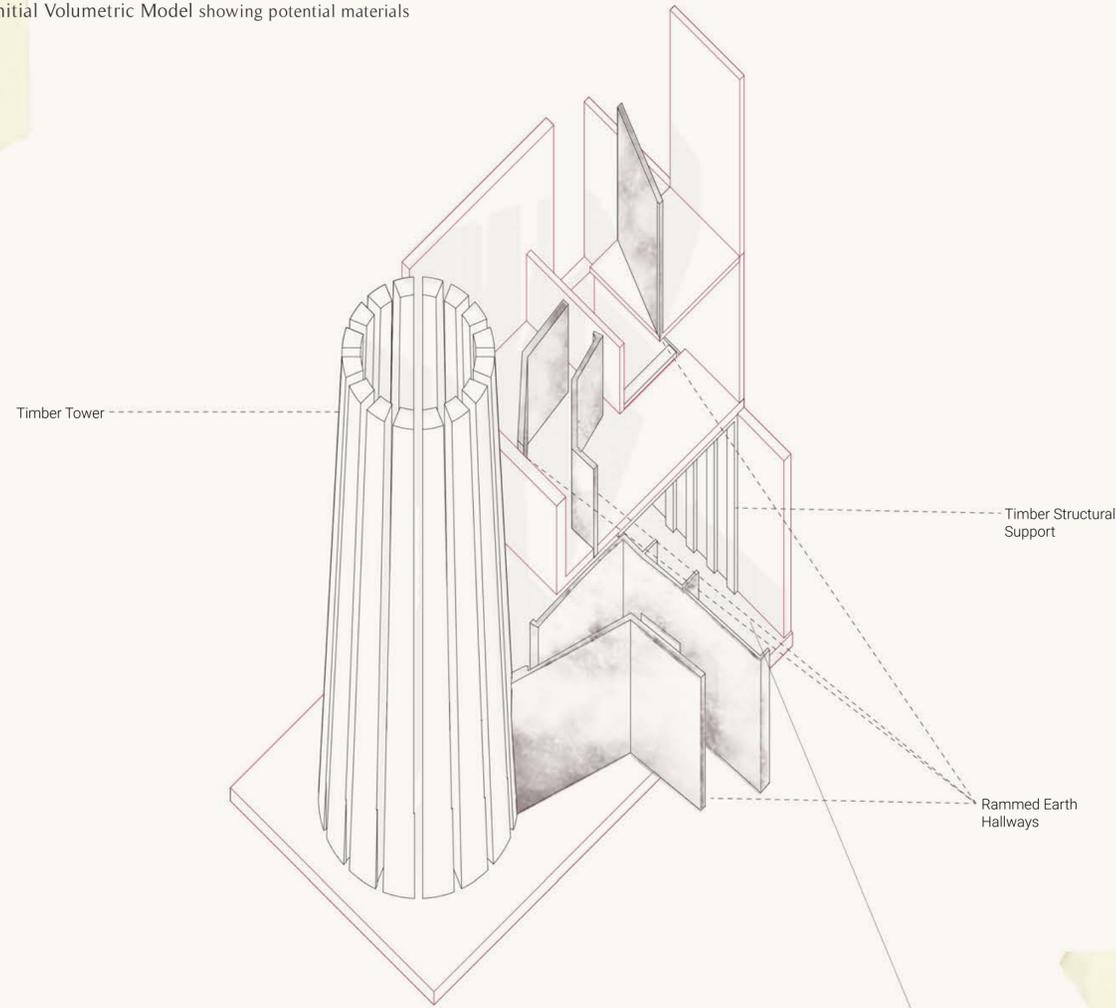
[5] Hallway to Nature  
-there will be openings within the hallways to encourage th resident to vисти the areas of nature occupying areas of the building



## Design Process Phase 5

During this stage of the design, materials were being explored further through construction process and other precedents. The conclusion drawn from this is that rammed earth will not be suitable for the intentions of the design. Instead timber, glazing and potential tensile stretched fabric will be used.

Initial Volumetric Model showing potential materials



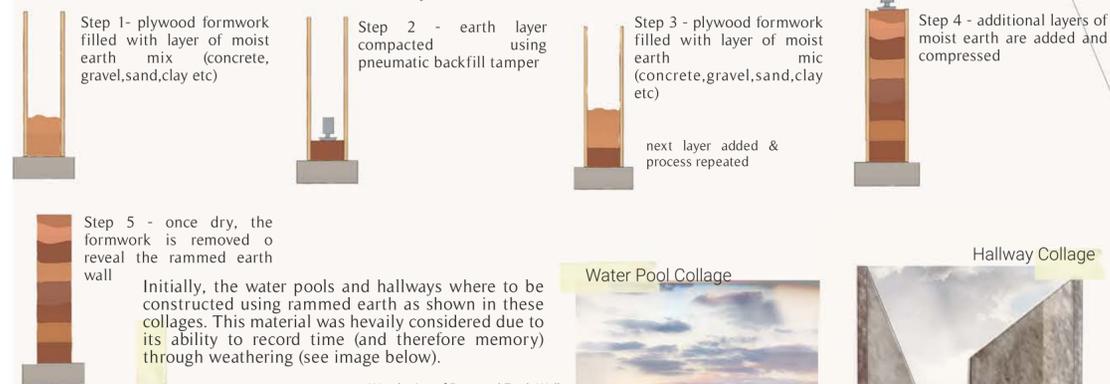
Extruding the Plan & Understanding Materials scale 1:150

After developing the plan through further sketches, an area of the last iterations drawn (shown above) has been developed into a model to explore these compositions further. This has led to understanding the circulation and connection between the separate floors further. The towers will have a separate circulation to the rest of the structure. The ground floor will connect and support the rest of the structure through a timber structural frame.

### Considering Rammed Earth - Hallways & Pools

Rammed earth construction is the process of ramming a mixture of aggregates, like gravel, sand, silt and clay into a formwork to create walls. When the earth is dry the formwork is removed to reveal solid monolithic walls.

#### Process that will be used to create rammed earth hallways



Weathering of Rammed Earth Wall



Water Pool Collage



Hallway Collage



### Precedent - Bushey Cemetry by Waugh Thistleton Architects a sensitive sacred place



"Connected by a cloistered timber colonnade, the earthen prayer halls are lined in English Oak, with sections of the rammed earth left exposed in the ceremonial spaces. Corten steel doors complement the natural material palette, and the calm internal environments are accentuated with subtle, low lighting."



### Conclusion based on Research :

Based on previous research, rammed earth would have been suitable as it would have advanced with the resident- creating a memory. However, more factors deem it to be unsuitable because:

- hallways are present in upper floors too - as it is a heavy material it would ruin the lightness of the project (which is an important part of the proposal)
- As the proposal is an open space, the hallways will be susceptible to seasonal changes, therefore overtime the water pools and hallways will completely breakdown (particular due to the constant rain in the UK)
- Rammed Earth will no longer be considered to be used in those spaces

### Considering a Timber Strucural Frame - Supporting Frame & Tower

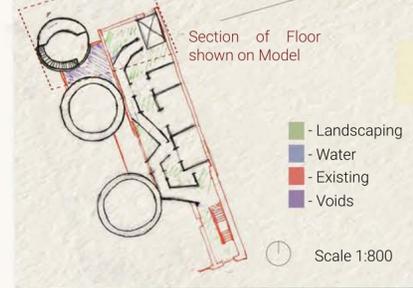
As shown in the Volumetric Model, both the towers and the supporting frame currently perceived as being made up of timber. The towers will only be supporting the rooms within them, whereas the timber structural frame will be supporting the remainder of the proposal - which is most likely to be part of the existing.

A similar approach will be taken to that of Periscope Tower- with a repeating fra supporting the structure.

#### Level 1 - Ground Floor



#### Level 2 - First Floor



#### Level 3 - Second Floor



### Precedent - The Periscope Tower by OOPEAA Office for Peripheral Architecture

"Made entirely of wood, the building is composed of an inner core of cross-laminated timber (CLT) and an external wooden frame that serves as a load bearing structure. The inner core made of CLT forms the frame for an extra large periscope with stairs circling around it. When taking the stairs up or down one can experience a rich range of different views framed by the various openings cut into the structure."



### Why create a New Structural Frame when there's an Existing Frame ?

As the proposal is taking place within an existing building (shown on the left), this building already has its own structural frame. Further research has led to this prediction of the drawing of the frame

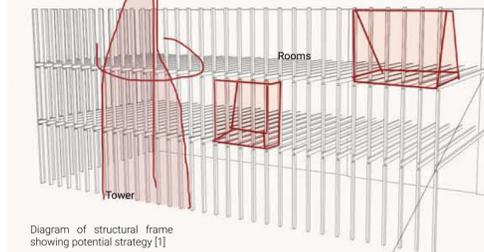
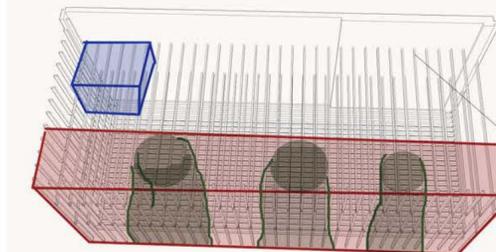


Diagram of structural frame showing potential strategy [1]

The towers could essentially pierce through the existing structural frame and connect a shown in the diagram above. The other standard spaces not located within the towers could be then be placed onto the supporting structural frame.



Green - Towers  
Red - Area of Structural Frame that will be removed  
Blue - Other Rooms  
Diagram of structural frame showing potential strategy [2]

Another approach could be to cut half of the existing structural frame and the towers could then be placed in that space. The other rooms could then be slotted into or between the structural frame.

### Potential Approach for the Enclosed Rooms supported by the Existing Structural Frame

Approach [1]- Similar to the Shelter for the Roman Ruins by Peter Zumthor's



A similar approach was taken in Peter Zumthor's Shelter for the Roman Ruins where the structure was supported by steel bracing and the enclosure was covered by timber louvered panels (as shown above). Same approach could be taken with the paneling being supported but the existing timber frame.

### Approach [2]- Similar to the Onsen Hotel by Kengo Kuma



Another approach that could be used is that of Kengo Kuma's in his Onsen Hotel, where the structure is being supported by a load-bearing timber frame with a layer of glazing panels and bamboo wrap between the spaces within the timber frame.

This approach could also be used for the hallways



**Using the Existing to support the Future** Section

After developing a new concept for the enclosed spaces that are not included within the towers, the spaces were identified and shown in section, exploring spatially the order of these spaces. Particular phases were formed - creating an order to these spaces. Ground Floor is titled the Welcoming phase which consists of gathering spaces. The first floor consists of the journal archive and the guest bedroom. This is part of the grounding phase as support is being provided by other people (through the guest) and their stories (through the journal archive). The second floor consists purely of landscaping and therefore is the most freeing and open space.



[1] The Communal Space & Kitchen  
-private meeting space enabling the resident to discuss/catch up with family & friends



[2] Caretaker's Office  
-office/resting space for caretaker  
-space will contain any legal documents of the current & previous resident



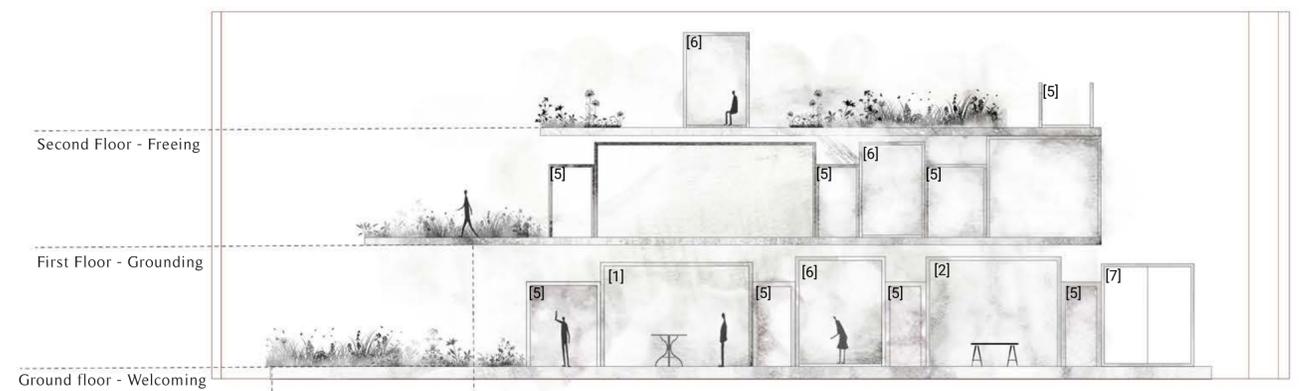
[3] Caretaker/Guest's Room  
-spare bedroom for other resident who will be keeping the amensic company



[4] The Journal Archive  
-the journal archive will be located in an enclosed space to ensure that the ideal atmospheric conditions are provided for the journals and books

- [5] Hallways
- [6] Toilets
- [7] Lifts

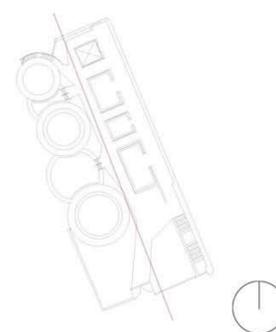
Red - Existing Structure



Scale 1:400

- [1] Welcoming Office
- [2] Communal Space
- [3] Caretaker/Guest's Room
- [4] Journal Archive

cut -line shown on plan



## Chapter 5

Structural & Material Considerations

## Initial Structure of the Towers Scale 1:50

In hopes of developing a stronger understanding of the towers and the skins they consist off, this section was developed. An aspect that has evolved further through this has been the strategy that will allow for the plants to be carried upwards with the towers (connecting to the idea of nature being important on all the stages of the building).

### Existing Structure

The existing building/site of the project has employed traditional construction methods/materials

Masonry Construction:

-Flemish pattern using old imperial bricks

Timber in the Existing:

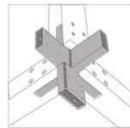
-Pine Wood  
-Oak Wood

### Foundations & Joints



[1] Pin Joints - Supporting Lighter Loads

The beams that will support the plant pots (and therefore supporting a lighter load) will be stabilized through a pin-joint.



[3] Steel & Timber Joints

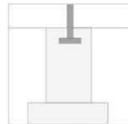
The beams that will support the plant pots (and therefore supporting a lighter load) will be stabilized through a pin-joint.

### Proposing a Respectful Future

The project will maintain the existing floors as well as some of the existing facade. This will not only minimise the materials that will be used but it will act as a memory of the past.

Precedent:

Bordeaux Law Courts by Rogers Stirk Harbour + Partners



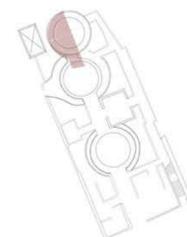
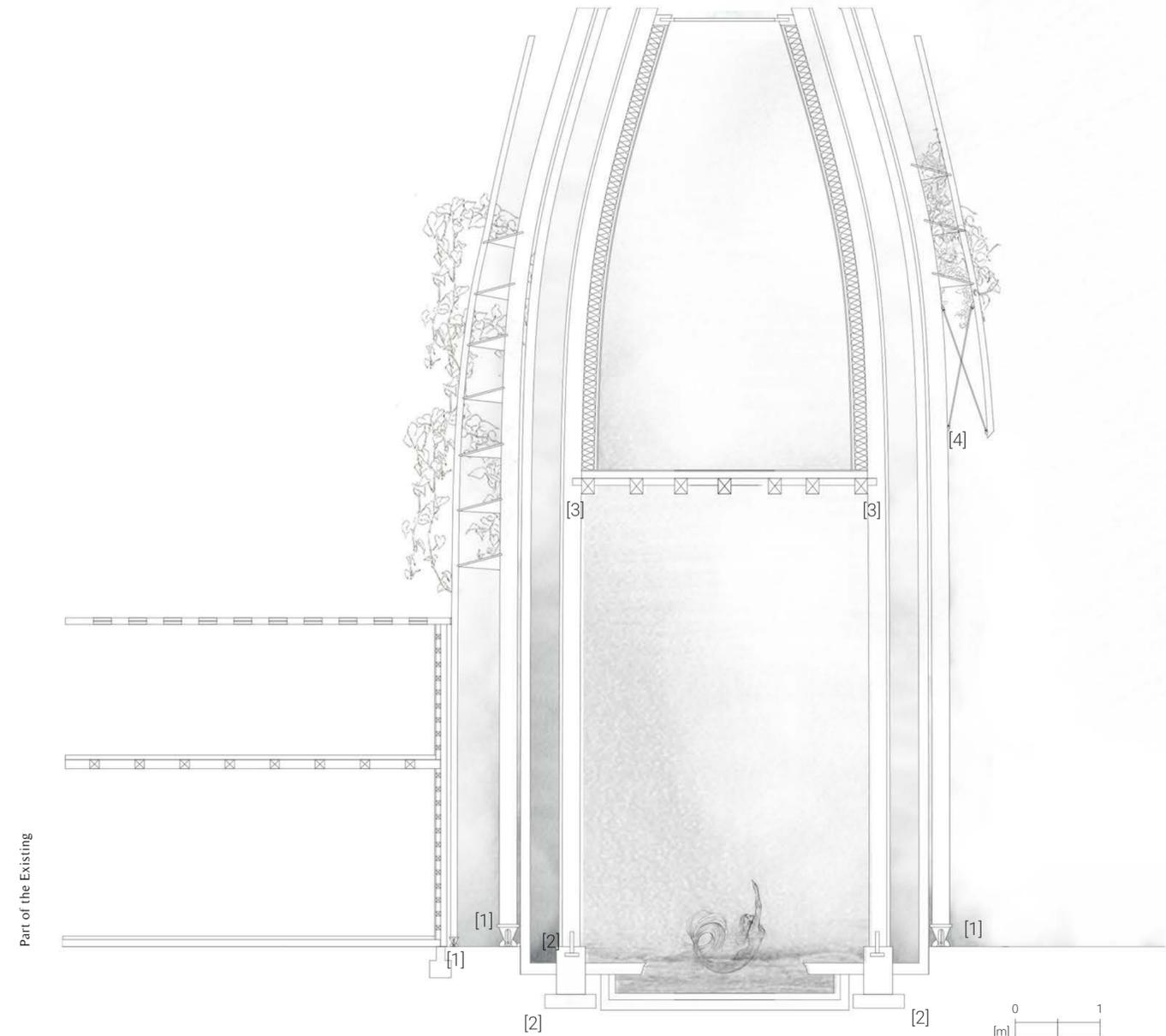
[2] Concrete Footing Foundation

The timber columns that will be carrying the majority of the load of the towers will be carried by these beams and therefore ensuring a strong foundation is crucial.



[4] Steel Cable Bracing joint to Towers

The timber columns that will be carrying the majority of the load of the towers will be carried by these beams and therefore ensuring a strong foundation is crucial.

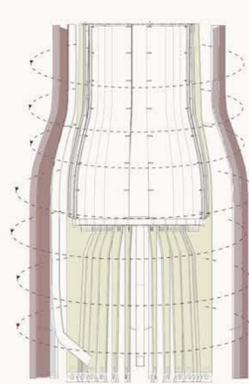
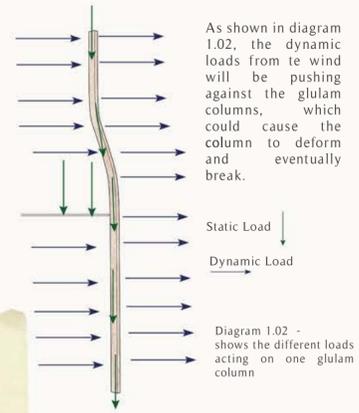


Section Cut shown on the Plan  
Scale 1:900

## Design Process Phase 6

During this stage, potential strategies for structural systems were being considered through research done on loads and other precedents. Timber has been chosen as the most suitable material for the towers - not just structurally but also due to its low carbon footprint.

### Horizontal Dynamic Loads from the Wind



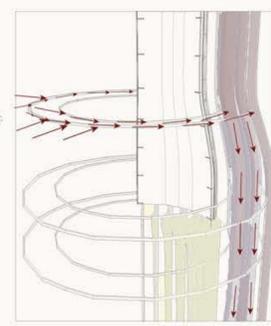
areas of the tower that require additional support

Thicker load bearing columns

Thinner load bearing columns

Diagram 1.03 - section of the tower showing areas that will require additional support

### Strategy - Steel Rings



Steel Rings could be installed between the layers of glulam columns to distribute the horizontal load towards the glulam as shown in diagram 1.04. Steel will be the most appropriate for this, as the rings will have to be as light as possible (so no large additional load is applied to the columns).

D y n a m i c Load/Horizontal Forces

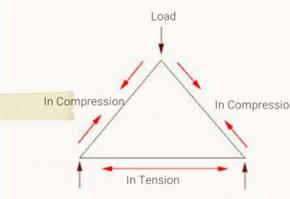
Diagram 1.04 - cut-out diagram shows the horizontal forces acting on the steel rings

Precedent: Saint Benedict's Chapel by Peter Zumthor



Option 1 - Steel Rods

Steel Rings could be installed between the layers of glulam columns (see diagram 1.05) to transfer the horizontal load towards the glulam as shown in diagram 1.04. Steel will be the most appropriate for this, as the rings will have to be as light as possible (so no large additional load is applied to the columns).

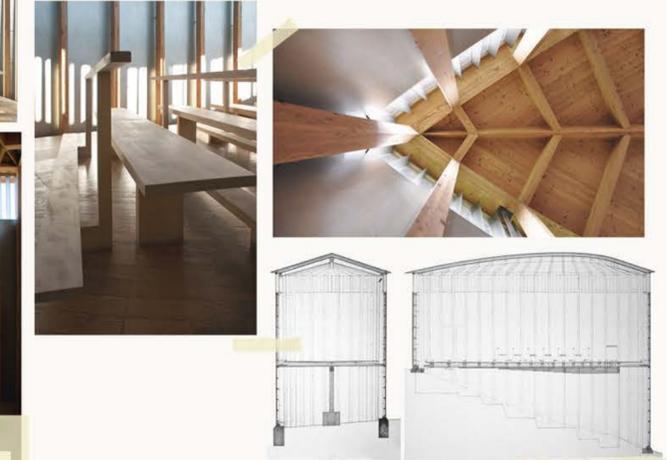


An equilateral triangle is the most structurally stable shape. Equal angles and vectors naturally resist gravitational and lateral forces equally in all directions, making the overall shape extremely rigid (shown above)



Precedent: Saint Benedict's Chapel by Peter Zumthor

"Although Zumthor used modern materials and techniques for this particular design, the cylindrical-shaped chapel blends naturally into its context, without offending the traditional and historical dimension of the Alpine village. For example, the chapel is constructed with wooden shingles and snips, similar to the local traditional houses."



### Foundations - transferring load to the ground

Two different types of foundations will be used - a stronger for the thicker glulam columns (shown in blue in diagram 1.07) as they will be carrying a more substantial load. As the thinner columns (green in diagram 1.07) are only carrying the load of a singular timber framed room, the foundation of these columns does not need to be extremely strong.

#### Options for Thick Glulam Column [1] - Shallow Foundations

Option 1 - Concrete Footing for each separate glulam column

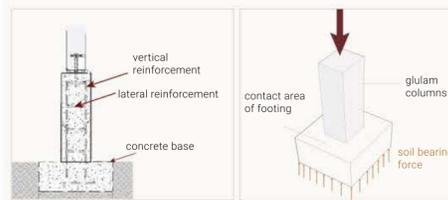


Diagram 1.07 - section of concrete footing showing reinforcements

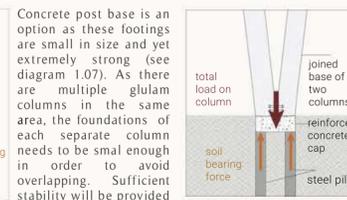


Diagram 1.08 - showing forces on concrete footing

Option 2 - Piles connecting multiple glulam columns

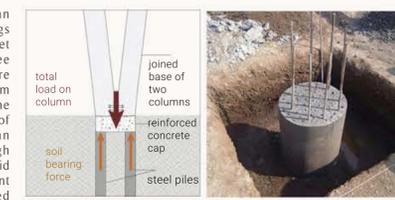


Diagram 1.09 - showing a section through the pile foundation

Another option is to use pile foundations. As these piles take up a larger area (see photograph on the left), there will not be any space to give each column its own foundation. Instead, two columns will need to be joined at the base and connected to the same foundation (as shown in diagram 1.9). The project's aesthetics requires these glulam columns to be separate



Photograph of a pile foundation

#### Options for Thin Glulam Column

Option 1 - Pin Joint



Photograph of a pin joint foundation

A strategy for the foundation of the thinner columns is to use a pin joint. This is an appropriate strategy as these joints are small in size and therefore will not be overlapping each other (as shown in the photograph on the left). This strategy was also used in the Cultural Centre precedent (see photo on the left). Concrete footing will still be required however this will be much smaller in size than the ones used for concrete footing.

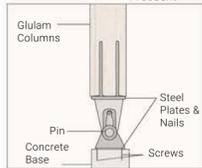


Diagram 1.10 - showing a section through the pin joint foundation

Option 2 - Raft Foundations supporting all the columns



Photograph of raft foundation process

Raft foundations (sometimes referred to as raft footings or mat foundations) are formed by reinforced concrete slabs of uniform thickness (typically 150 mm to 300 mm) that cover the entire footprint of a building. Using this raft foundation, as the glulam columns can be supported using a similar mechanism to concrete footings. This will not only ensure the entire tower is supported well, but it allows for slight errors on site to occur without the overlapping of foundations.

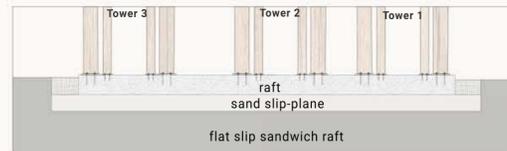


Diagram 1.11 - showing a section through the raft foundation

### Precedent: Cultural Centre by Renzo Piano

These buildings have a curved shape that references traditional Kanak constructions but here rather than the traditional woven vegetable fibre, these buildings are made of wooden ribs and slats; traditional exteriors inside of which all the benefits of modern technology are provided. Low-maintenance, termite-repellent iroko wood was chosen for the project.



### Connecting Elements - transferring load to the columns

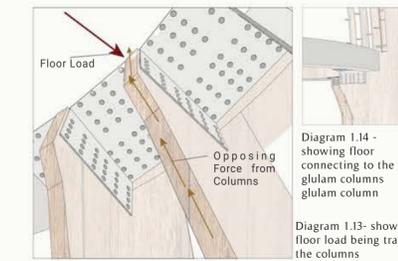


Strategy [3] - Connecting Wall Panels

The strategy proposed to connect the wall panels to the glulam columns (glulam columns will be supporting the wall panels) is through the steel rods shown in diagram 1.11. This will be done by a drilling a hole through the glulam columns and inserting the rod into the space. A bonding agent will be used to ensure that the rods staying place.

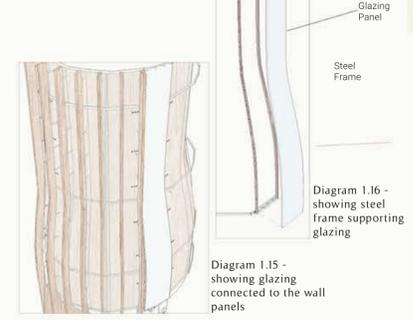


Diagram 1.12 - showing a plan of the rod attaching to the glulam column



Strategy [4] - Connecting Floor Panels to Columns

The strategy proposed to connect the floor of the room to the columns of the towers is through steel plates (see photo on the right) that will be bolted in between the glulam columns (shown in diagram 1.14). This will encourage the loads of the floor to be transferred to the columns (as shown in diagram 1.13).



Strategy [5] - Connecting Glazing Panels

This strategy suggested the potential method that will connect the glazing to the window panels (as shown in diagram 1.15). A light steel frame could be connected to the steel rings. The glazing will then be slotted into the frame as shown in diagram 1.16.

### Precedent: Cultural Centre by Renzo Piano

"The construction of the law courts utilised twentieth century building and materials technology as well as the knowledge and skills of artisan builders. In order to shape the laminated beam structure, the geometry of the courts was reduced to a simple mathematical equation". In contrast, the exterior of the courts, clad in western red cedar strips, were positioned and fixed on site. The seven courtroom pods are clad in cedar, raised on pilotis above the limestone plinth within a great glass curtain wall under an undulating copper roof. The administrative offices are reached by bridges spanning the atrium



### Translucent Spaces Kengo Kuma's Onsen Hotel

Kengo Kuma's 'ginzan onsen fujiya' is a wooden, four-story hot spring hotel. The site of the project was already in use by another building and so the design aimed to reuse the existing timber frame and supporting it further when necessary. This same approach will be taken with the proposal. Due to the number of floors, natural lighting was difficult to harness through solid walls, so a delicate bamboo lattice was used in order to allow for this transparency whilst still maintaining privacy in other spaces through further layers of thin timber shutters.

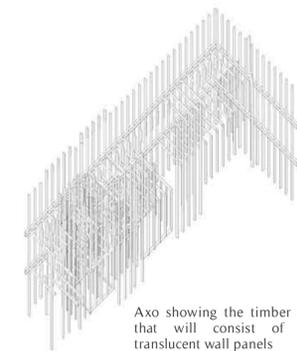
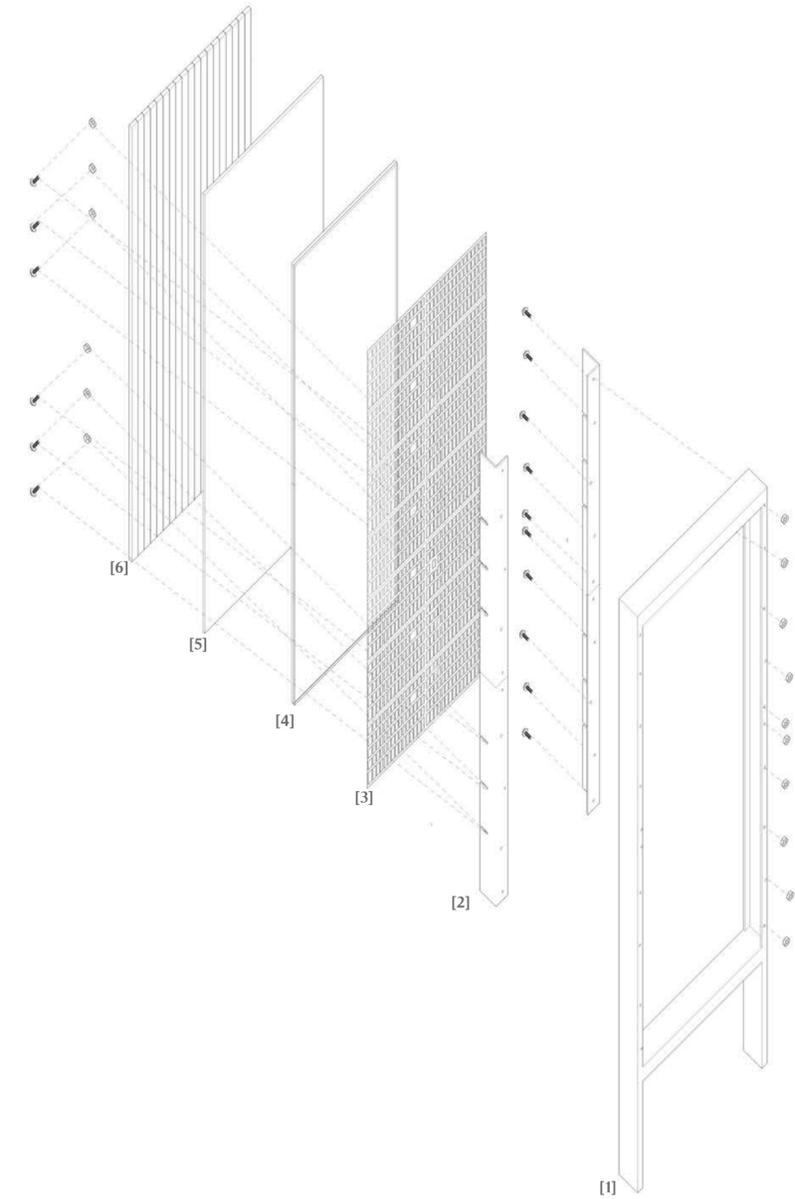


### Layers of the Rooms Scale 1:25

As the rooms supported by the timber structural frame will overlap on different floors, sunlight will struggle to get into these spaces. An exploded axo of the potential strategy for these wall panels are shown with translucence being the key focus of these layers. These panels will be located between the structural timber frame.

- [1] Glulam Timber Frame [attached to existing timber structure]
- [2] Recycled Aluminum Angle
- [3] Reed Translucent Screen [sustainable UK alternative to bamboo lattice]
- [4] Glass Panel
- [5] Glass Fibre Mesh Fabric Insulation [translucent insulation]
- [6] Interior Timber Skin

[Both screw systems will be taking place on either side - they are only shown like this for graphic purposes]



Axo showing the timber frame that will consist of these translucent wall panels

# Construction Manual for Towers

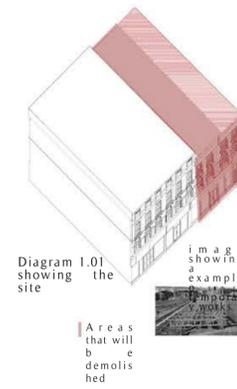
This page describes the construction timeline of the Workshop of Life Tower. These processes will be repeated for the other two towers.

## Stage 1 - Demolishing part of the existing

-half of the existing building will be maintained, the other half will be demolished and the towers will be constructed in its location (see diagram 1.01)

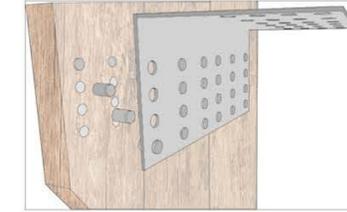
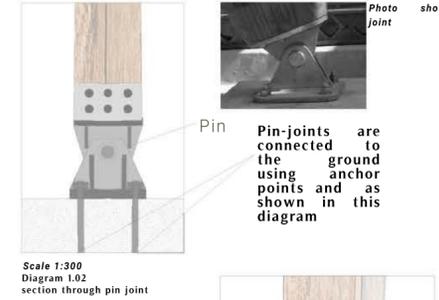
-the ground will need to be leveled and excavated in preparation for the construction of the foundations

-Temporary works will be supporting the half of the existing structure that is maintained

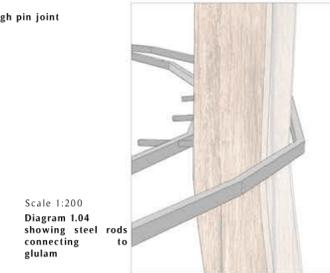


## Stage 2 - Installing Structural Elements

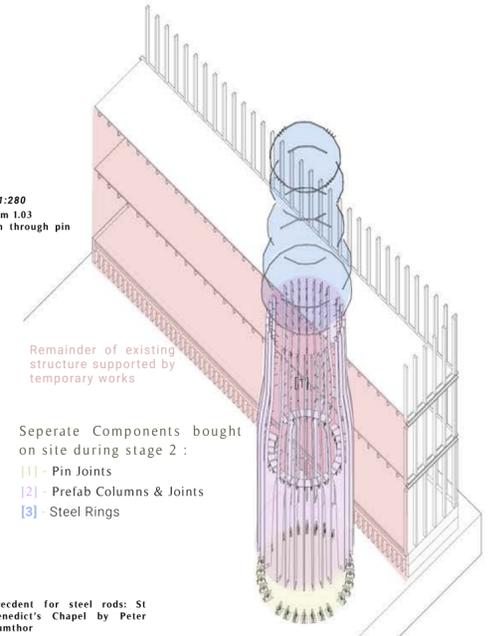
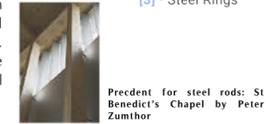
Part 1- The Prefabricated Glulam Columns will be bought on site and connected to the ground using individual pin-joints as shown in diagram 1.02.



Part 2 - The individual columns will be joined together through a steel plate and bolts as shown in diagram 1.03. This is done to ensure further stability of the columns. Steel plates will also have a horizontal section in preparation for installing of the flooring of the room.

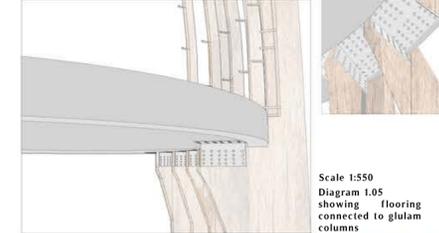


Part 3- The final structural element to attach are the steel rings. The glulam columns will have smaller steel rods attached to them. This will be done off-site. Some of these steel rods will be attached to the light steel rings as shown in diagram 1.04.

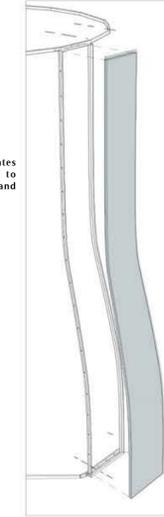


## Stage 3 - Floor, Wall & Glazing

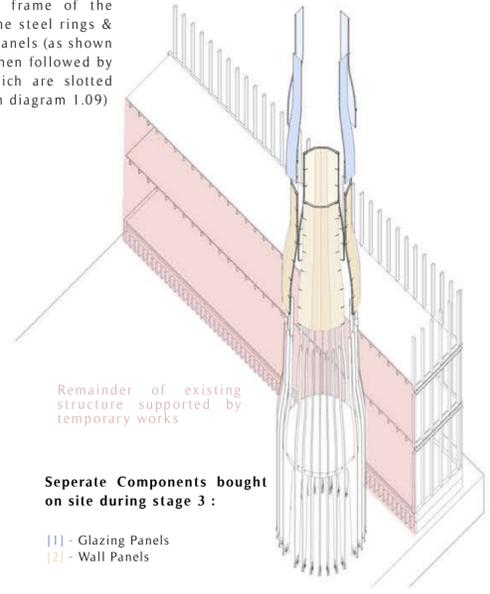
Part 1- The floor systems of the room will be prefabricated and bought onto site. It will then be slotted as shown in diagram 1.05 the columns. This is then further secured through the steel plates shown 1.06.



Part 2 - Pre-fab individual wall panels are bought onto site. The insulation and other layers of the wall be assembled off-site and held together through little steel rods. The wall panels are then placed as shown in the diagram 1.07 and held in position by the steel rods that will be piercing through the external skin of the building & glued in place.

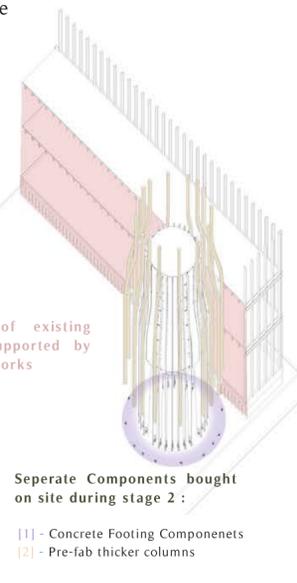
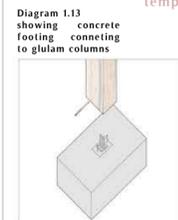


Part 3 - Pre-fab steel frame of the glazing is attached to the steel rings & between the solid wall panels (as shown in diagram 1.08). This then followed by the glazing panels, which are slotted into the frame (shown in diagram 1.09)

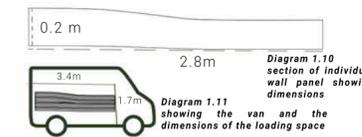


## Stage 5 - Adding thicker glulam column in partition to support the existing

Second Layer of columns will be attached which will later on support the existing area (currently supported by temporary works). These glulam columns will be supported by concrete footings as shown in the diagram.



## Transport of Prefab Wall Panels

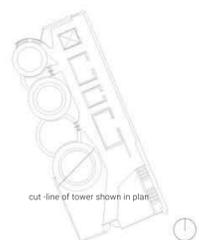
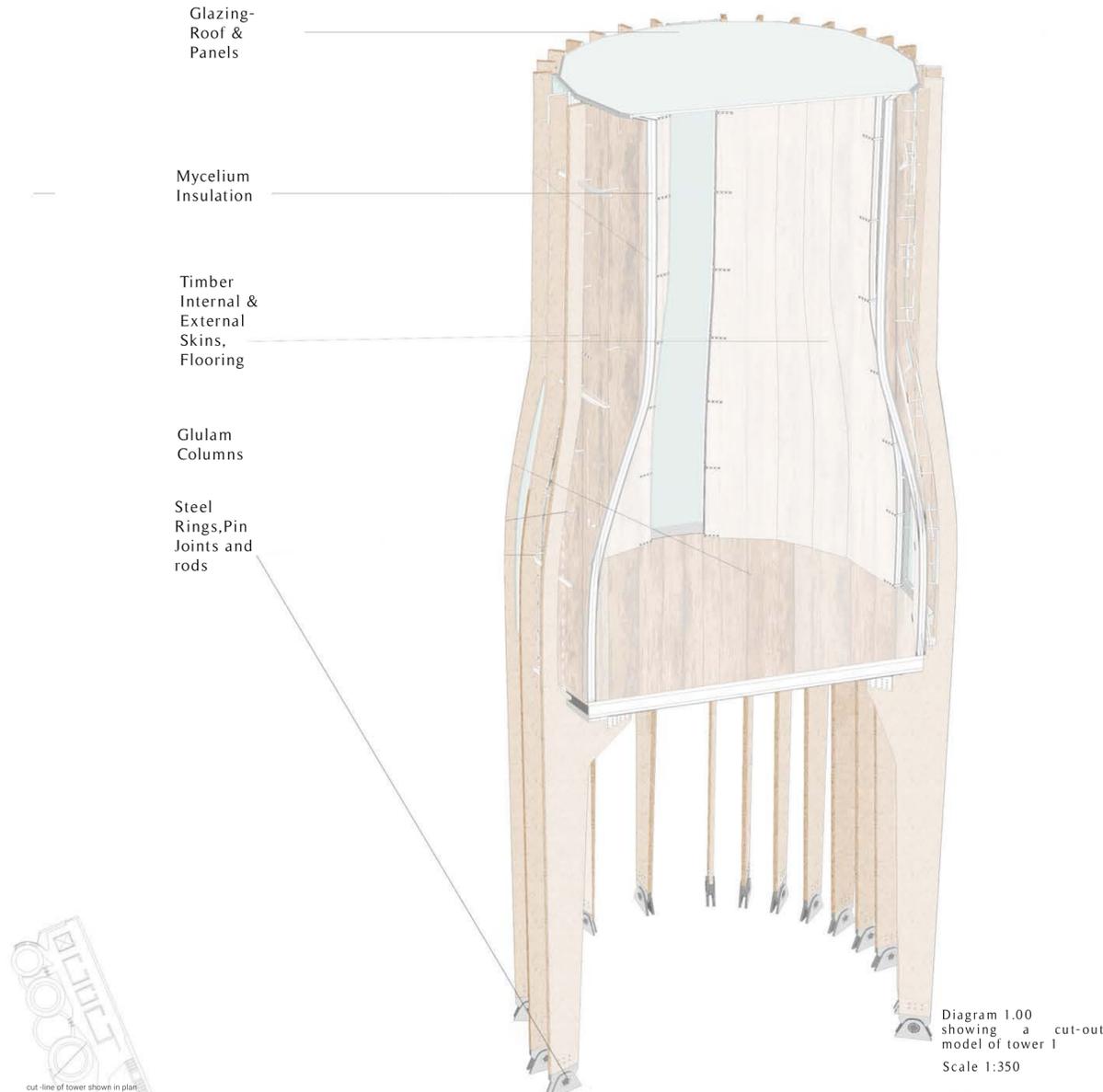
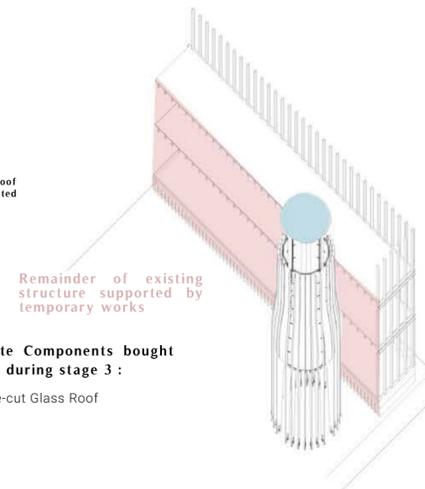


Wall panels are prefabricated shown the dimensions shown in diagram 1.10. These dimensions were chosen so that when they are being transported onto site, vehicle used can be smaller than a truck. A typical van has a loading space with a length of 3.4 meters, width of 1.7 meters and a height of 1.7 meters as shown in diagram 1.11. This means that a van will be able to fit multiple panels stacked on top of each other. This will limit the number of journeys taken to site which will lower the carbon footprint of the construction process.

## Stage 4 - Adding Roof



Roof glazing will be supported using the same method shown in stage 3 part 3.



**Elements of the Proposal**  
Summarizing the purpose of different elements

**[1] Circulation Elements:**

[a] Bridges will connect the towers to the rest of the building

[b] Ladders and staircases will connect the separate floors

[c] Curved Staircases will act as an entrance point to the Water Pools

**[2] Rainwater Collection Elements:**

[a] Water Pools will provide a cleansing and reflection Space for the resident. will also act as a rainwater storage space

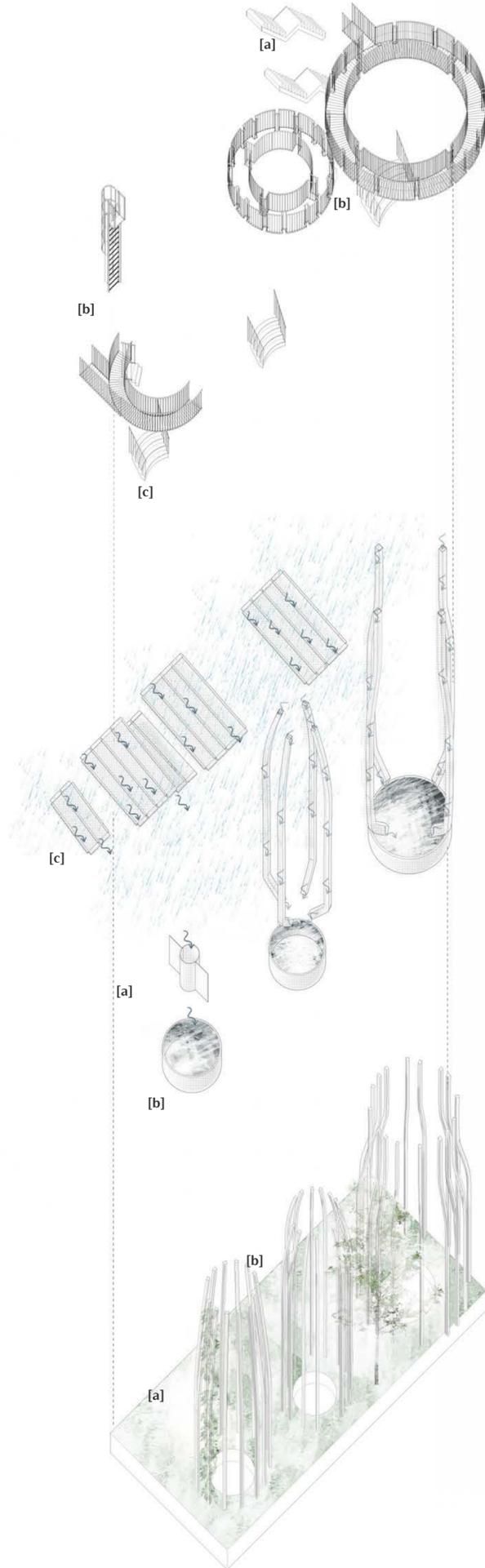
[b] Water Tubes will guide the rain water to the water pool as well as enhance the acoustic of water (this will be made out of brass which will enhance the sound)

[c] Rain will be encouraged into the space to water the plants through the slanted roofs

**[3] Plants & Landscaping Elements:**

[a] first layer of glulam columns will support the walkways and provide climbing frame for plants

[b] landscaping will take over the ground floor



**[4] Glazing Elements & Sky View within Tower Spaces:**

[a] The Studio Space: will have an open roof and large glazing panels which will both provide the desired sky view

[b] The Nesting Space will have a glass roof as well as glazing panels between the walls to achieve the sky view

[c] The Workshop of Life will have a glass roof as well as glazing panels between the walls to achieve the sky view

**[5] Structural Supports for Towers:**

Second layer of glulam columns will support the three spaces within the towers

**[6] Structural Timber Supports:**

Existing Timber Frame from previous building will be further supported with additional columns. This will then support the other spaces that aren't located within the towers

Scale 1:200



Axo view showing the entire proposal



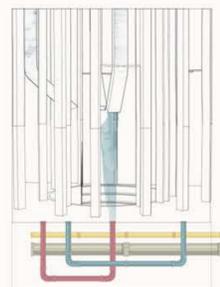
## Design Process Phase 7

This stage summaries the underlying concern present in the previous stages to do with the carbon footprint of the project. The proposal will aim to assist moving towards net-zero carbon through long-term strategies.

### Rain Water Harvesting

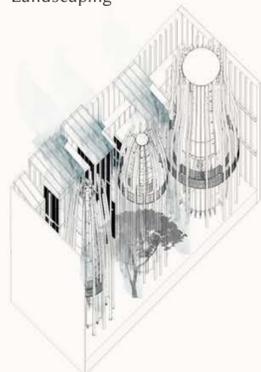
As mentioned previously, rain water will be harvested within this proposal through and used differently:

[1] Water tubes, waterpools and running water



Small drains can be placed underneath the water tubes to encourage the rainwater into the pipes underneath which will be used as running water for bathrooms etc.

[2] Slanted Roof & Landscaping



Slanted Roofs will encourage the rainwater to travel down to water the plants located on the ground floor



Photo of traditional rain water harvesting

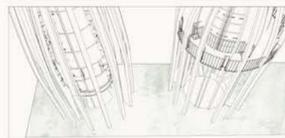


Water supplied will be sourced through rainwater harvesting as much as possible - additional water tanks can be added if necessary

Inspiration for water tubes was derived from Orient Occident Atelier's Civic Centre Rainwater Harvest. Pipes are connected to scooped roof which collects the water and distributes it to the separate pipes to different locations of the building

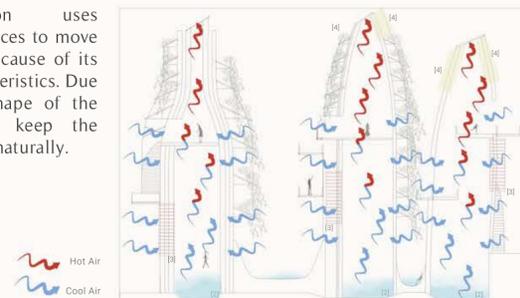
### Home grown fruits & vegetables

Garden located on the ground floor will contain fruit plants as well as some vegetable plants. Most groceries will be home-grown which overall will reduce in a relatively lower carbon footprint due to sourcing transport.

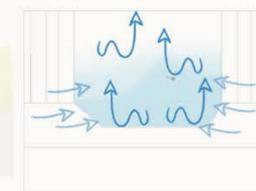


### Stack Ventilation & Water Vapour

Stack ventilation uses temperature differences to move air. Hot air rises because of its low-pressure characteristics. Due to the height & shape of the towers. This will keep the proposal ventilated naturally.

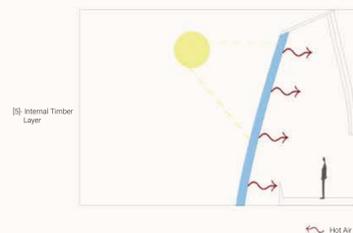


Stack ventilation uses temperature differences to move air (see diagram 10). Hot air rises because of its low-pressure characteristics. Due to the height & shape of the towers, as well as the glazing that will be taking over some of the facade, stack ventilation will occur extremely successfully within the structure.

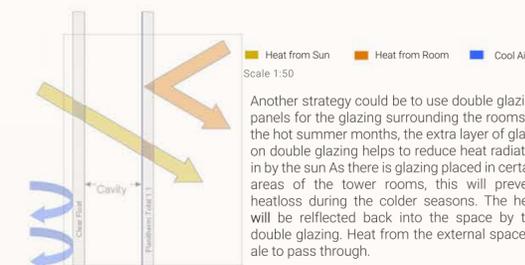


The proposal will be able to regulate airflow successfully through these methods

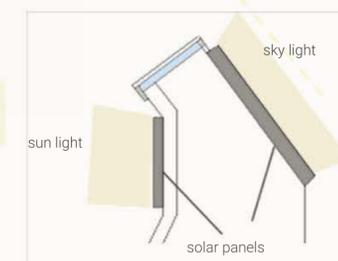
### Glazing, Thermal Mass & Solar Panels



Water has the capacity to store about four times as much heat as concrete. This heats up and cools down slowly, so heat collected from the sun will be released later on in the day when the space has cooled and vice-versa. The water pipes could be increased in size and to take up a larger area, as for this strategy to be the most effective, the wall should contain 200 liters of water per meter.



Another strategy could be to use double glazing panels for the glazing surrounding the rooms. In the hot summer months, the extra layer of glass on double glazing helps to reduce heat radiated in by the sun. As there is glazing placed in certain areas of the tower rooms, this will prevent heat loss during the colder seasons. The heat will be reflected back into the space by the double glazing. Heat from the external space is able to pass through.



As the site is an existing building, there will already be heaters within the structure. This could be powered through electricity generated by solar panels. Additionally, more radiators can be put into place to heat up the spaces further.

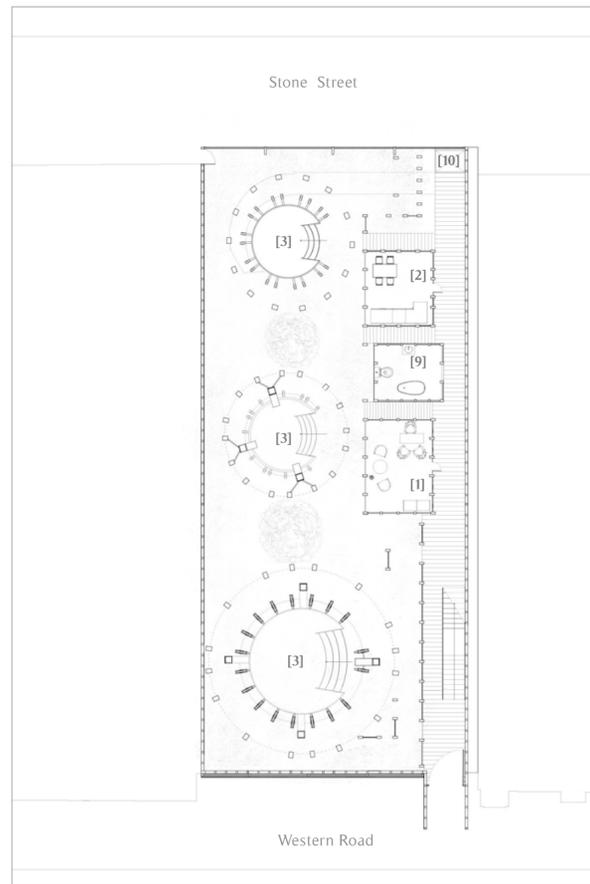
### Building Material & Construction

The majority of the proposal will be constructed from timber, with the existing structural frame from the previously building being maintained to support the remainder of the structure. These decisions should aid significantly in lowering the carbon footprint of the construction phase of the project.

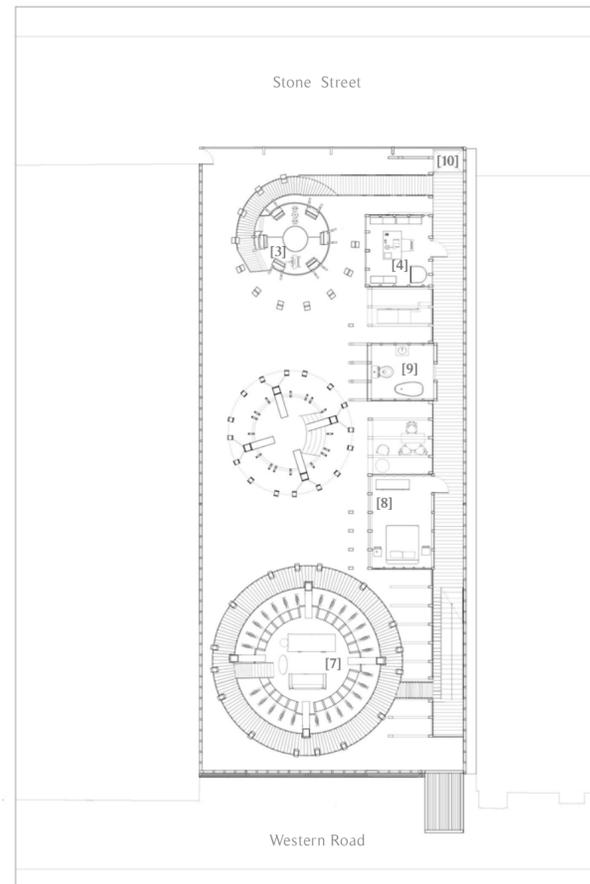
**Chapter 6**  
The Proposal

**Plans** Scale 1:580

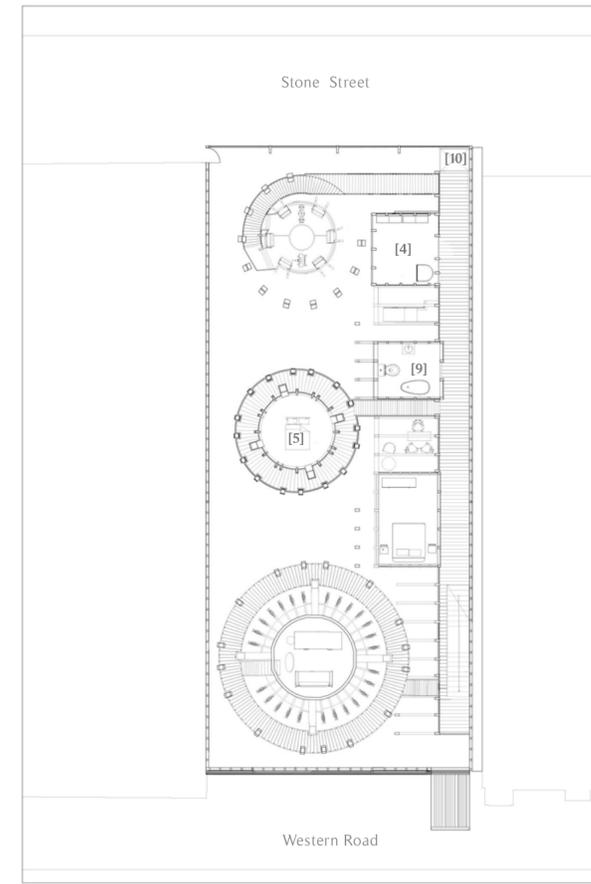
- 1 Welcoming Office
- 2 Communal Gathering Space & Kitchen
- 3 Water Pools
- 4 The Journal Archive
- 5 The Nesting Space
- 6 The Studio
- 7 The Workshop of Life
- 8 Guest/Caretaker's Bedroom
- 9 Toilets/Bathroom
- 10 Lift



Ground Floor



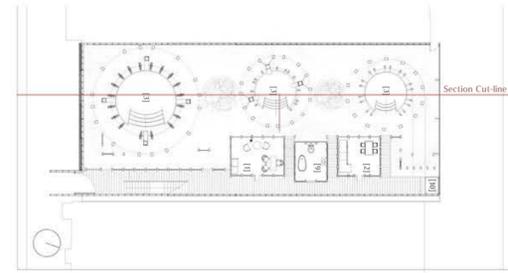
First Floor

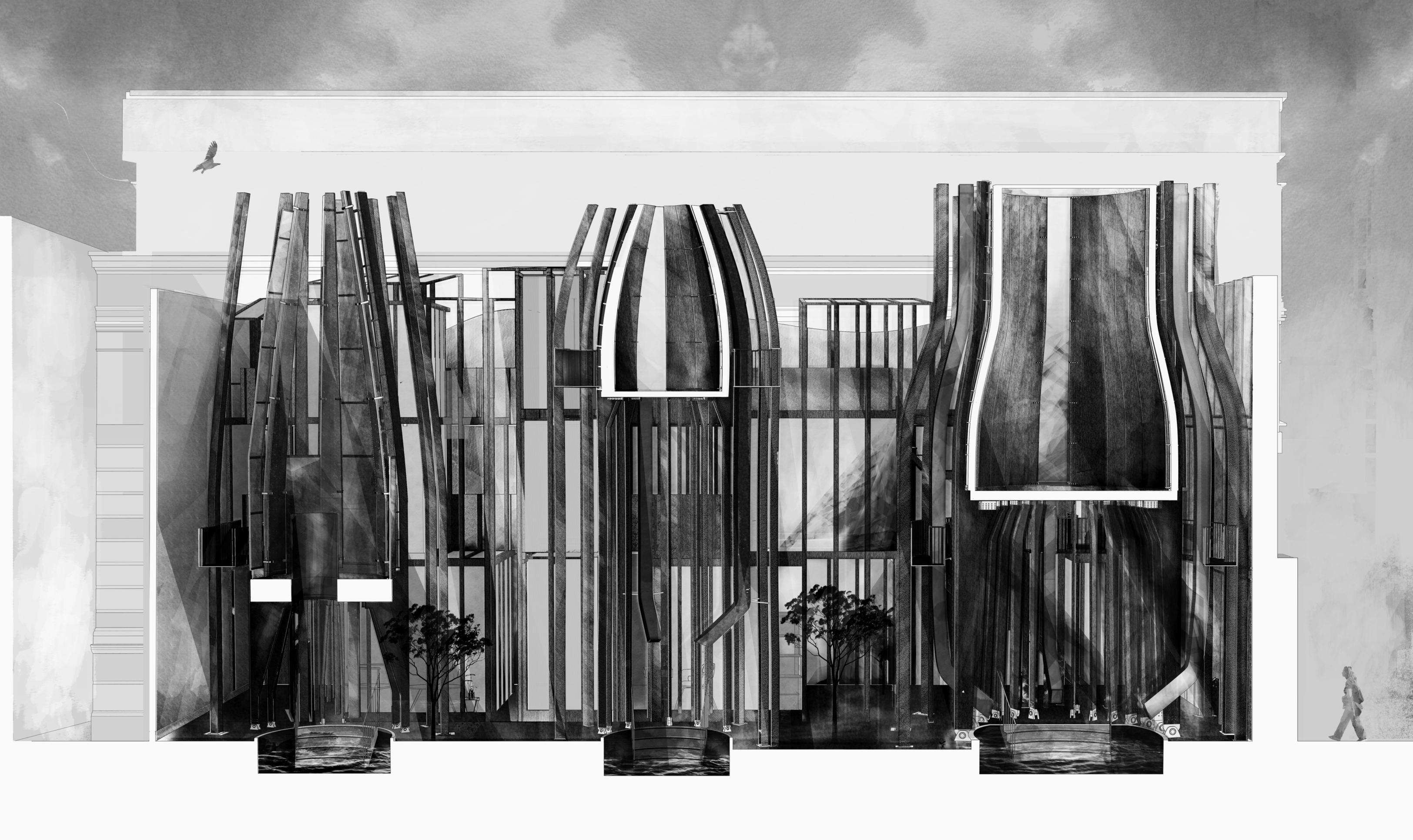


Second Floor

**Perspective Section**

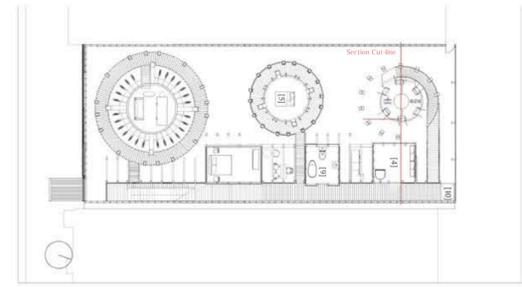
Scale 1:80





**Perspective Section**

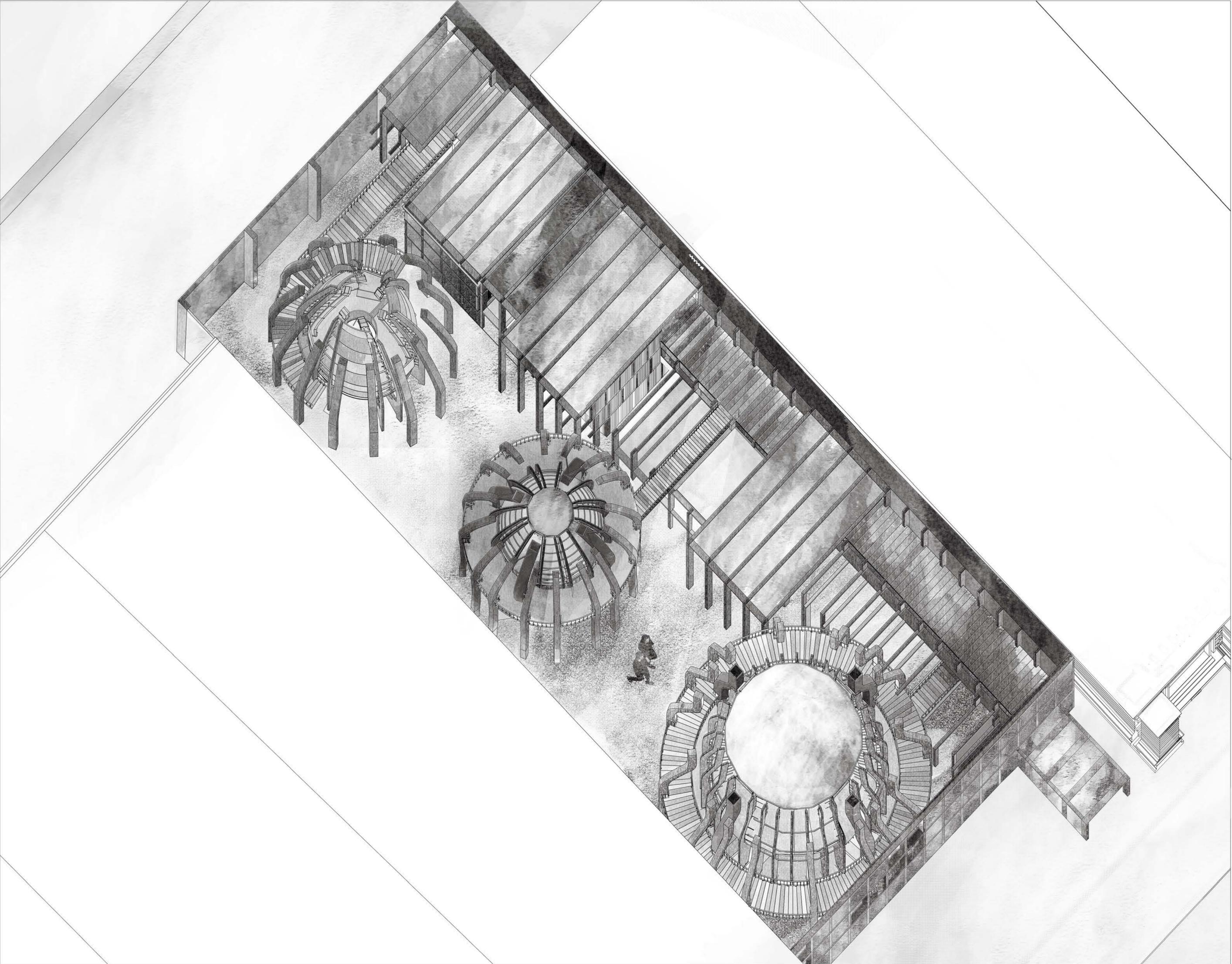
Scale 1:50





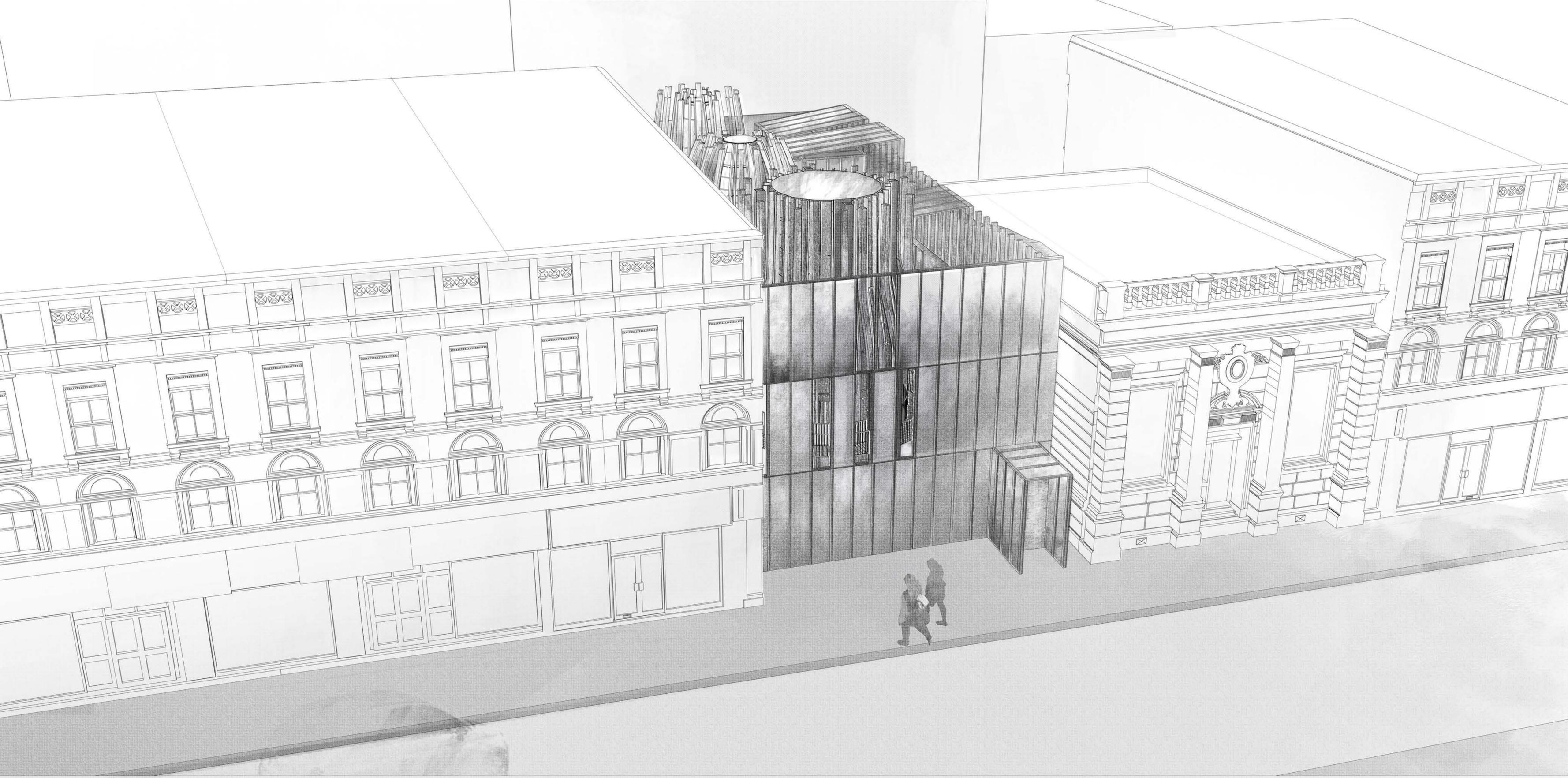
**Axo View of the Proposal**

Scale 1:380

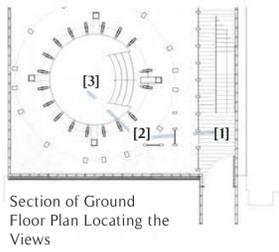


**Proposal in Context**

Scale 1:450



Walk of Reflection Views



[1] Entrance



[2] Travelling Between the Columns



[3] Reaching the Water Pool - The Reflection Space

