Ferment.

Reclaiming Space Through Tofu Craft

Sophie Wakeford

'Ferment.' proposes the adaptive reuse of Papplewick Pumping Station; a Victorian-era monument to pumping clean water for the first time, into a space for the craft of tofu making: a quiet but radical gesture toward ecological repair.

In response to a speculative near-future where lab-grown, AI-optimised foods dominate, and traditional food systems collapse under climate extremes, this project embraces slowness, tactility, and cultural memory. By celebrating tofu- a low-carbon, protein-rich food- as a spatial process, 'Ferment.' questions how interiors can foster reconnection with the Earth and one another.

The project reclaims an existing structure, reducing embodied carbon and revaluing historical civic infrastructure. Each spatial intervention reflects the tofu-making process: soaking, pressing, coagulating. From water-based rituals to communal preparation spaces, the design resists extractivist architecture through vernacular material use, passive energy systems, and local soilscapes. Light paths, thermal massing, and layered textures create a climate-responsive, sensory-rich interior.

This is a space of quiet activism- not through slogans, but through shared action. 'Ferment.' reframes interiors as places of care and resistance- where cultural heritage and ecological practice intersect.

Climate Change 2025

Livestock, specifically cattle, have a large impact on release of methane into the atmosphere. This is mainly produced through their digestive process.

Burning of fossil fuels such as coal release carbon dioxide into the atmosphere. Deforestation further doesn't help this cause, by not only releasing carbon when burned, but also reducing the earth's natural carbon 'sink'.

It is predicted that the peak of 1.5 degrees agreed in the Paris Agreement, to keep well below the 2 degree limit, needs to be reached by next year, otherwise there is a much greater risk of reaching and surpassing the 2 degree limit. Within this, global greenhouse emissions must also be reduced by 43% by 2030.

Climate Change 2085

Global warming has massively effected the farming industry, with many parts of the world being unfarmable due to extreme weather conditions. Mass floods have become the norm in winter periods, whilst heatwaves reaching extreme draughts and rapid loss of ice caps have also become extremely common in the summer periods.

Deforestation + Farming

2025

Forests are being cut down to make way for more farms and mono-cultured plants.

2050

More land is being cleared to house livestock. Taking away for forests is damaging the earth's natural carbon 'sink'.

2085

The majority of land is used to house livestock. The lack of space is causing more farmers to keep livestock in the same fields, limiting soil health and fertility.

Urbanisation + Burning Fossil Fuels

2025

Cities are still growing. Not enough funding is put towards green energy systems.

2050

Cities continue to expand, creating concentrations of pollution around the country.

2085

The growth of cities contribute to the urban heat island effect, as well as increasing greenhouse gas emissions.

Warmer Temperatures + Desertification

2025

The summers are getting warmer, but not enough to badly damage land.

2050

With hot summers, the land is scortched from the sun and livestock are finding it difficult to survive in the long summers.

2085

Extreme drought means farmers struggle to give livestock the resources needed to survive.

Extreme Weather + Mass Flooding

2025

The envirnoment is getting harsher, with many autumn and springs filled with floods up and down the country.

2050

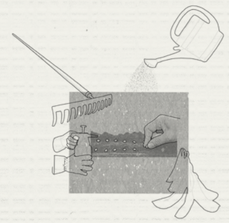
The floods have extended to further areas of the country, where rising sea levels are aiding the flooding of higher level ground.

2085

The autumns and winters are filled with flooding everywhere. The intensity of weather events are increasing.

Extreme Climate Counter Act

Tofu Making



Growing Soy

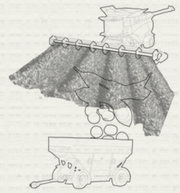
1. Soil is prepared for seeding. A deep, loose seed bed is needed.

2. Planting occurs. This can commence from early to mid-November. Seeds are planted at 3-5cm and start to emerge from about 5-7 days.

3. Fertilisation and weed control is recommended for a healthy plant.

4. Watering of the soy plant is vital for success. It is important to keep adequate moisture throughout development. The soybean plant should use 0.2 - 0.3 inches of water everyday.

5. On ripening, the leaves of the soy plant turn yellow. This indicates a moisture drop in the plant, from about 65% to 14%.

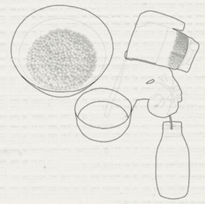


Harvesting Soy

1. As the moisture level of the soy decrease, the beans brown and start to burst out the pods.

2. Combines are used to harvest soya beans. Collecting, then separating, the combine collects the beans and seeds in a holding tank.

3. The collected soy beans are emptied into a grain wagon/ truck and transported either directly to a grain dealer, or into storage facilities until sold.



Making Soya Milk

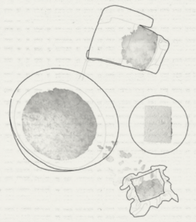
1. Rinse the soy beans and add them to a bowl with water. Cover them and allow them to soak for 8+ hours/ overnight.

2. Drain the soy beans and add them to a blender with some water. Blitz until smooth.

3. Pour the pureed soybeans into a large pot with some more water.

4. Heat the soy milk, skimming foam off the top when it appears. As soon as the mixture starts to foam and expand, remove from heat and allow foam to shrink.

5. Pour the soya milk into a cheesecloth, wringing out the soybean pulp as much as possible.



Making Tofu

1. Pour the nigari into the warm soya milk. The milk should start to coagulate into medium sized chunks.

2. Once sat for 10mins, transfer the coagulated mix into a tofu press.

3. Press tofu overnight, ensuring press is heavy enough to make the tofu firm.

4. Take the tofu out of the mold. It is now ready to eat.

Soy's Positive Impact

Nitrogen Fixer · **Low Water Use** · **Low Greenhouse Gas Emissions** · **Low Carbon Footprint** · **Organic** · **Reduced Waste Potential**

Ferment.

Reclaiming Space Through Tofu Craft

Sophie Wakeford

Project Details:

Site Location: Papplewick Pumping Station, Rigg Lane, Ravenshead, Nottingham, NG15 9AJ

The Pumping Station was originally built in 1881, after a drive for cleaner water in cities. Closed in 1969, this station design aims to reimagine the space into a tofu making factory.

Opening Hours: Thursday-Tuesday: 15:00-sundown

The variation on closing time comes down to the tofu cutting ceremony, taking place at sundown. The later opening time allows workers to produce alot of the tofu during the day when the public are not around.

Team: 10-15 key workers.

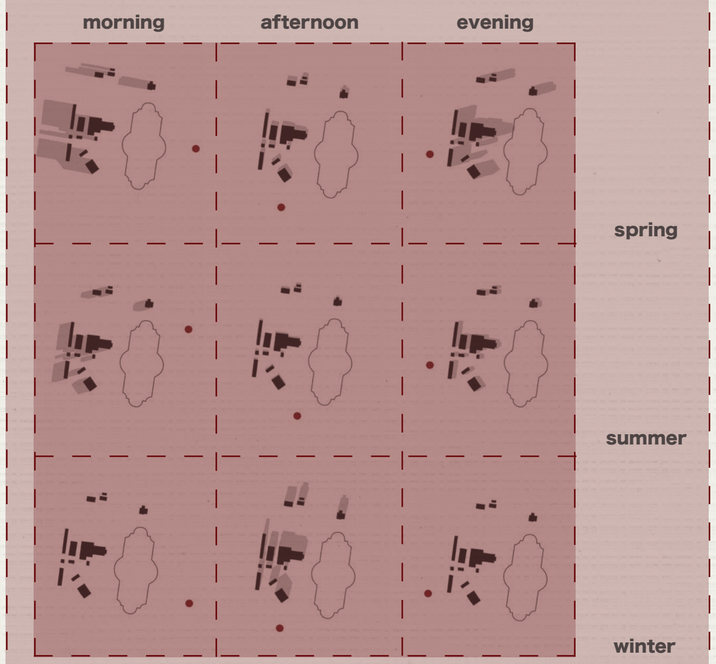
This is a group of people working consistently throughout the space; focusing on ensuring the tofu making process runs smoothly, the machinery is maintained and guests are welcomed.

Finance: Tofu Selling and Donations

The finanical drivers for this project is from the sustainable practices of tofu making. This is then sold directly from the tofu ceremony room. People are also able to donate to the causes and boycotting the lab grown meat industry.

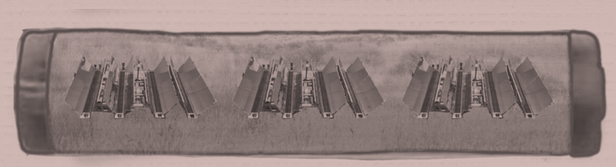
Current site: Maintained Pumping Station

This site, although originally built in the Victorian Period, the building is well maintained and no immediate structural repairs need to take place. It would therefore be best to explore the project from a standpoint of preservation, especially some of the key architectural parts of the building



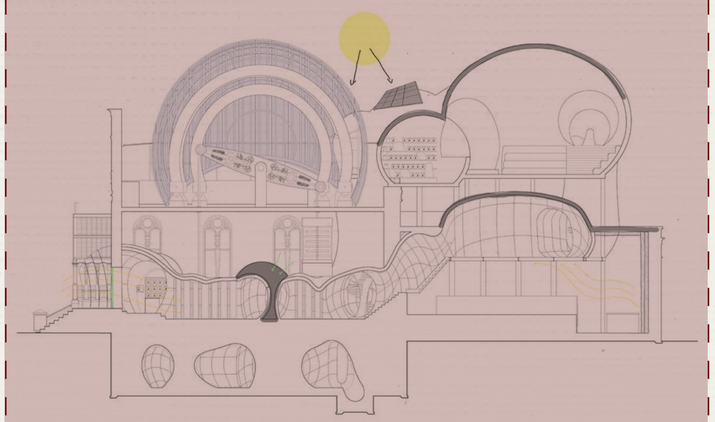
Sunpath Importance:

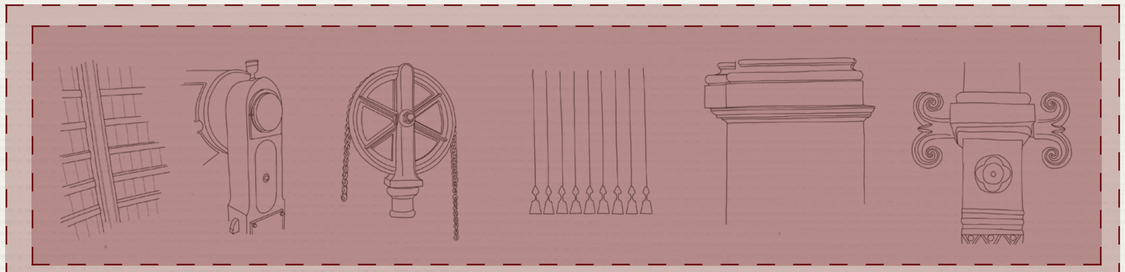
Observing the path the sun takes throughout the day in all seasons is key in creating a considered design. Utilizing the key feature of the predicted extreme climate allows for a strong eco energy presence.

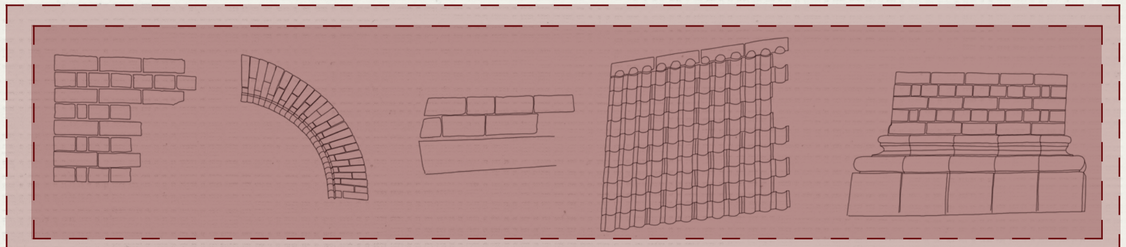


Thermoelectric Generator

This converts heat- driven by temerature difference into electrical energy. This is most commonly known in the form of solar panels. Adding solar panels to the sun-facing exterior walls should generate enough energy for the running of machinery for the tofu making process.







Construction

The construction details within Papplewick Pumping Station are highly intricate and detailed. The level of precision and attention to detail shows that when considering design of my own, I should be mindful of this. Many of the details shows hints of the site's functionality, whilst the brick types and layouts give a better understanding of the building's construction.

Soilscape and Geology

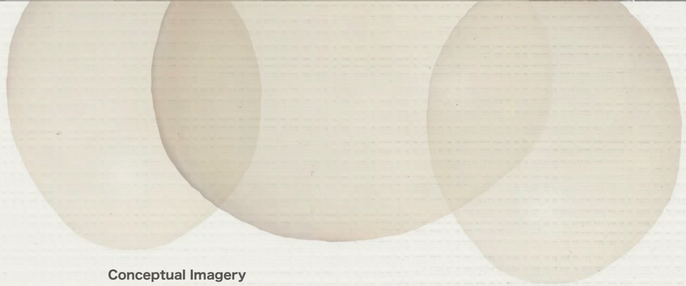
Using locally sourced materials in construction is a more sustainable solution. Vernacular materials for Papplewick include clay, gravel and limestone. These are categoried into two different geologies; superficial and bedrock. Superficial geology includes clay, silt, sand, and gravel. Whilst the deeper, bedrock geology includes limestone, gravel, and pebbles.

A celebration of clean water becomes a celebration of clean food.

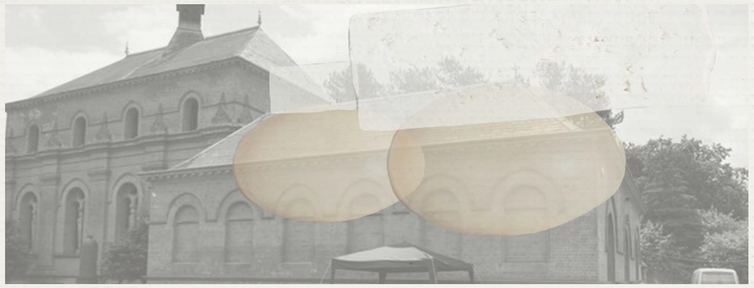
Ferment.

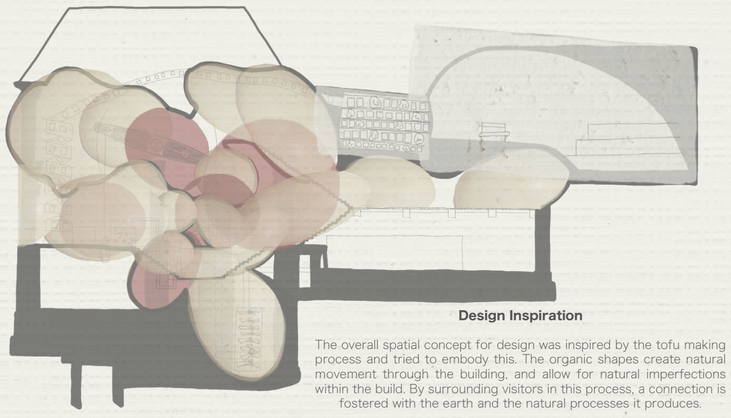
Reclaiming Space Through Tofu Craft

Sophie Wakeford



Conceptual Imagery

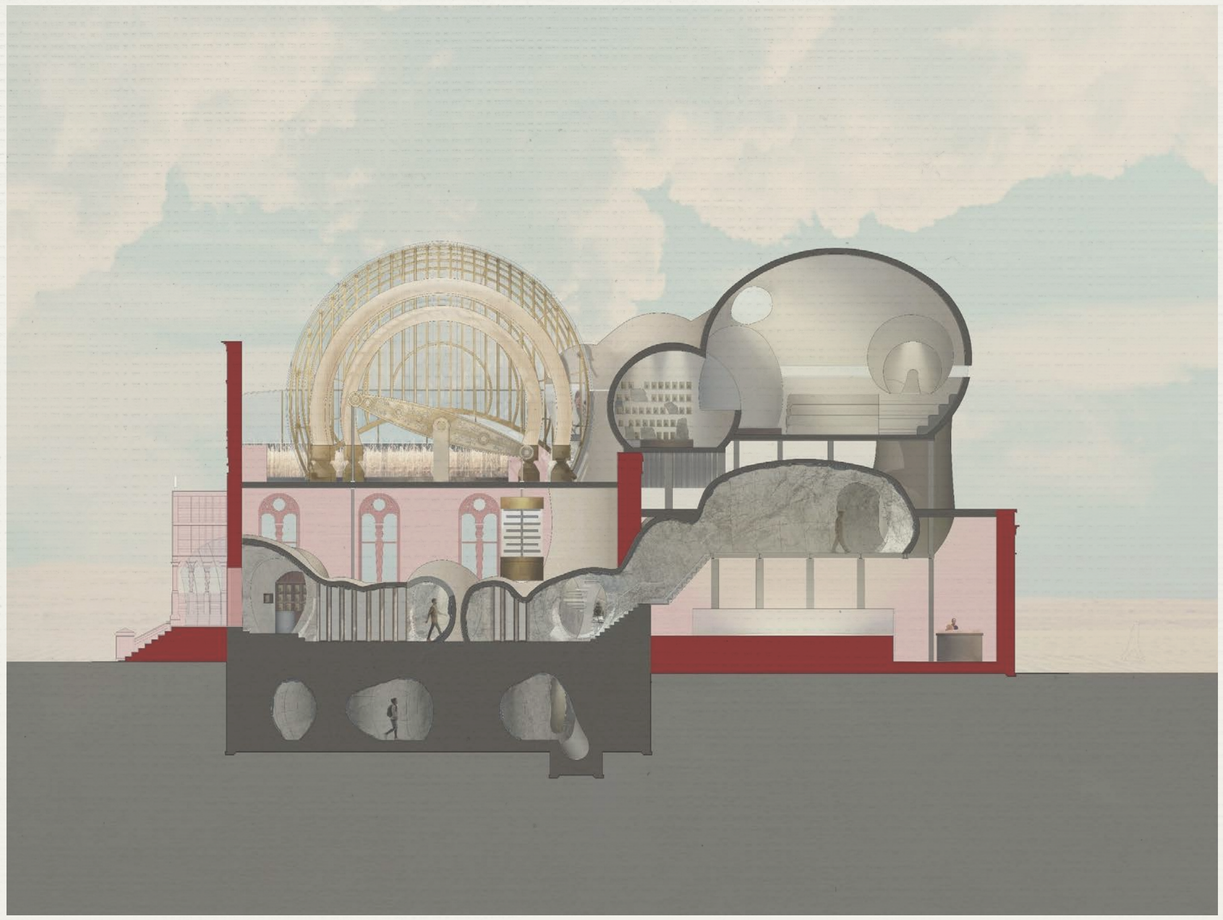




Design Inspiration

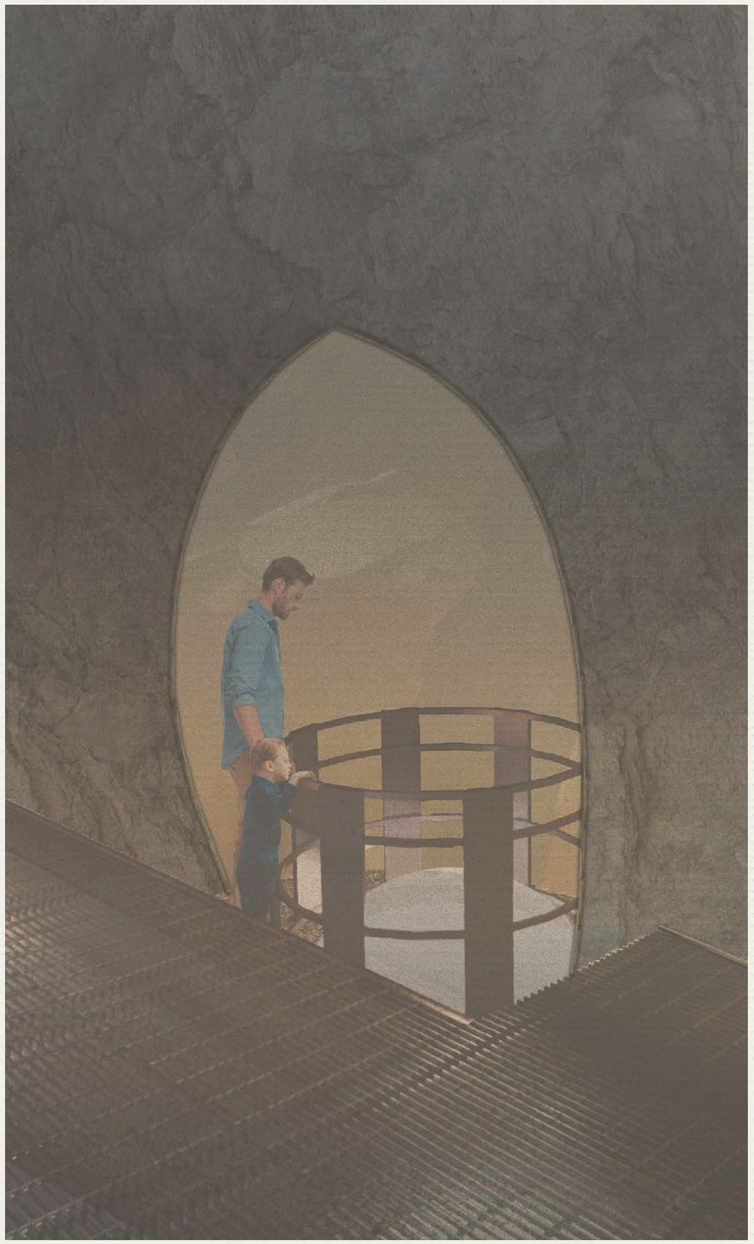
The overall spatial concept for design was inspired by the tofu making process and tried to embody this. The organic shapes create natural movement through the building, and allow for natural imperfections within the build. By surrounding visitors in this process, a connection is fostered with the earth and the natural processes it produces.

Soaking Tanks

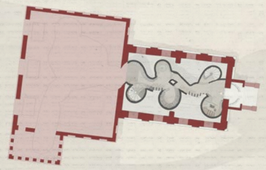


Design Proposal

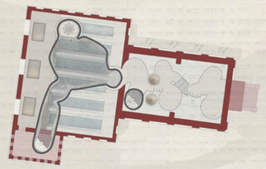
The final design for this project encompasses both values of tofu making and using vernacular materials. To keep the space cool internally, natural light has been minimised to mimic a cave-like interior with the use of local limestone. At the top of the structure, large windows maximize solar energy for growing the soy and moving the soy stirring pumps. On the solid limestone exterior on the right-hand side of the building, solar panels collect solar energy for use throughout the rest of the building.



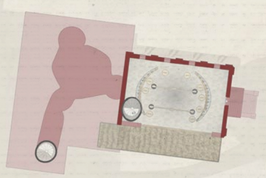
Basement
Tofu Making



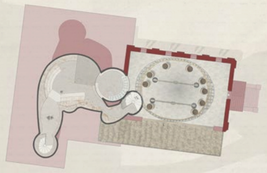
Ground
Tofu Making and
Observation



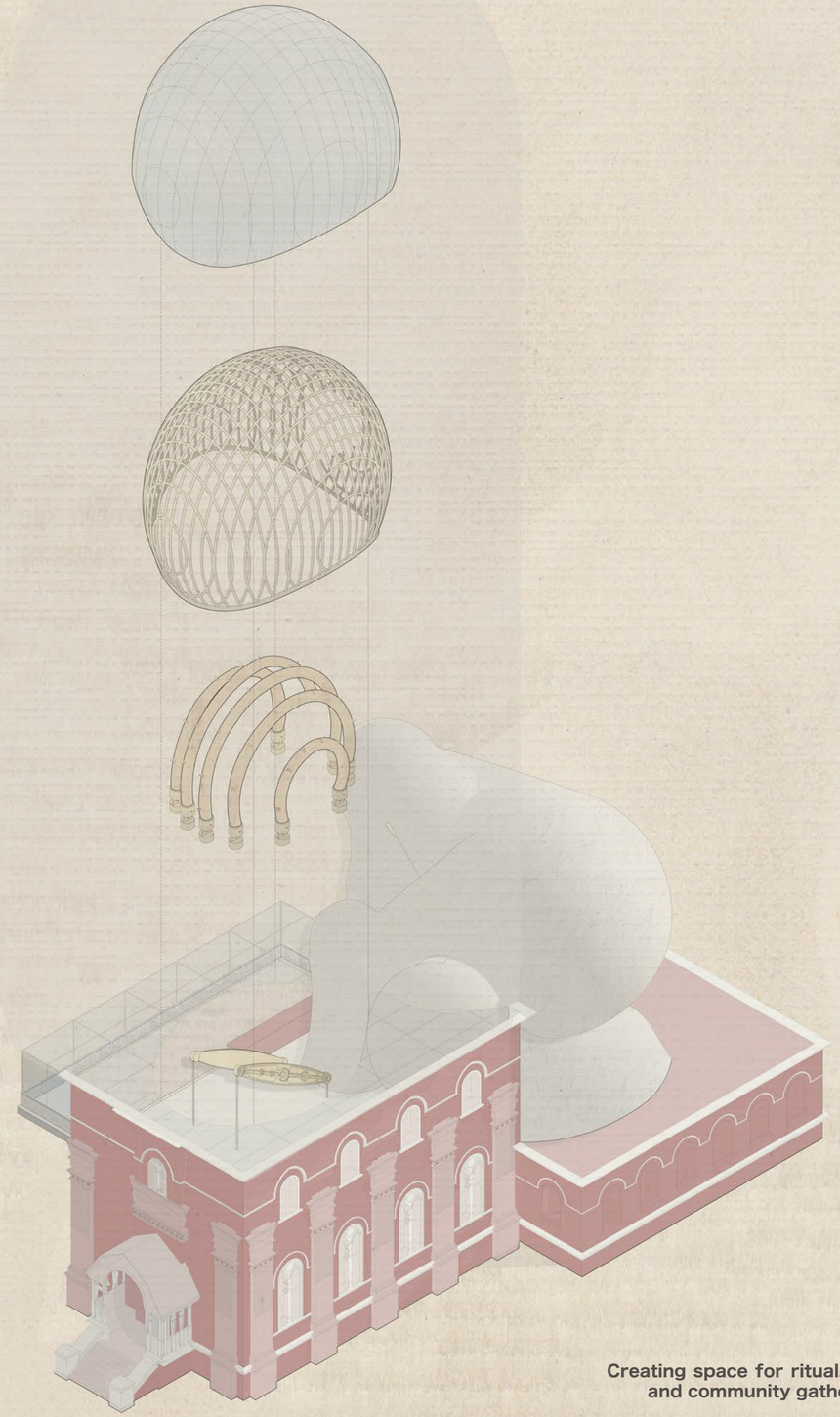
First
Tofu Making and
Observation



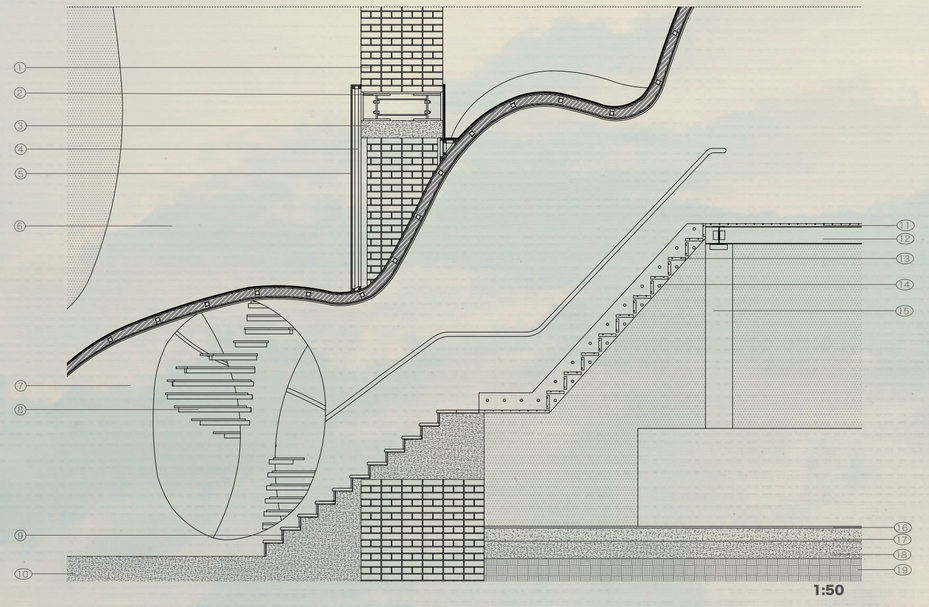
Second
Tofu Making and Energy
Harvesting



Third
Tofu Making, Observing, and
Energy Harvesting



Creating space for ritual, memory, and community gathering.



1:50

ANNOTATION KEY:

1. 8-brick Imperial English Bond Exterior Wall. 228 x 115 x 88mm.
2. 310 x 310 Structural Steels with 20mm top plate and tied with bolted steel plate
3. Concrete padstone. 942 x 500 x 200mm
4. Softwood timber internal framework. 30 x 30mm
5. 12.5mm Plasterboard with sandblasted concrete plaster finish.
6. Sandblasted concrete plaster finish.
7. Sandblasted concrete plaster finish.
8. Floating Spiral Steel staircase with 5mm supporting steel plate. 150mm rise.
9. Sandstone steps. 50mm thick with bedding mortar.
10. Concrete foundations
11. Galvanised steel grated flooring. 30mm depth.
12. Universal structural steel 203 x 203 x 60mm
13. Galvanised steel grated steps. 30mm depth. 220mm rise.
14. Wall suspended steel stair stringer. 275mm w x 50mm d
15. Universal structural steel 203 x 203 x 60mm
16. Cement Slurry Finish
17. Cement concrete. 150mm depth.
18. Base cement concrete. 200mm depth.
19. Rammed earth

Exhibit

Introspective Rememberance: A place of personal reflection.

This is where people reflect back on their past eating habits and the destruction it caused.

Generate

Energy Generation: A place for generating energy.

With the high levels of solar energy now being produced, it is key this is utilised. Large windows draw light into the building for warmth, and solar panels built into the curves of the roof also gather lots of key energy, creating a net-zero design.

Celebrate

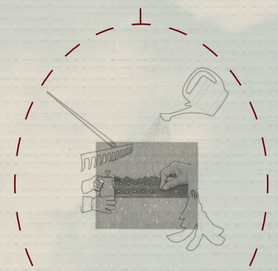
Collective Rememberance: A place of congregation for future endeavors.

This is where people come together and look to the future ahead of tofu > meat consumption.

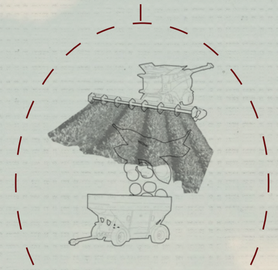
Manufacture

Product Generation: A place for making tofu.

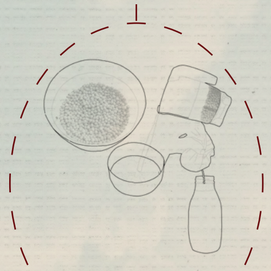
This is where people can buy and watch tofu being made. This is present throughout the space as a whole.



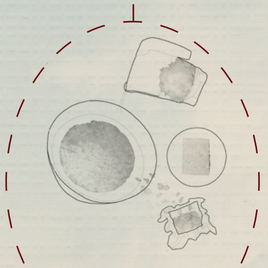
Sow + Grow



Harvest



Milk



Ferment