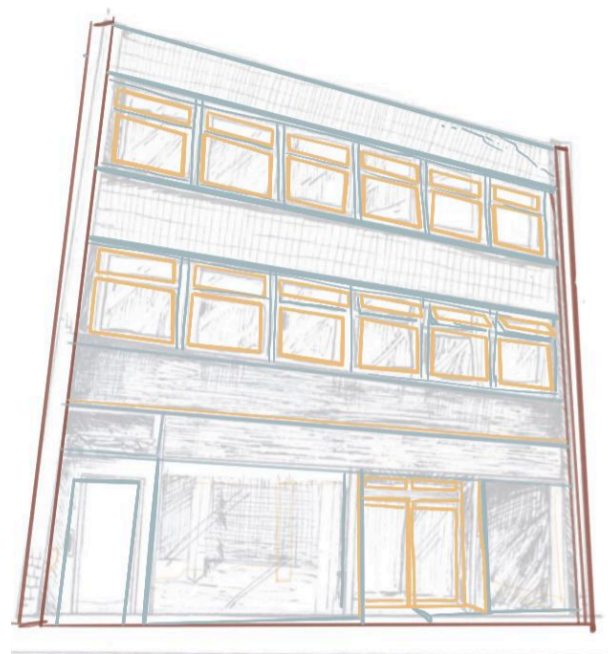


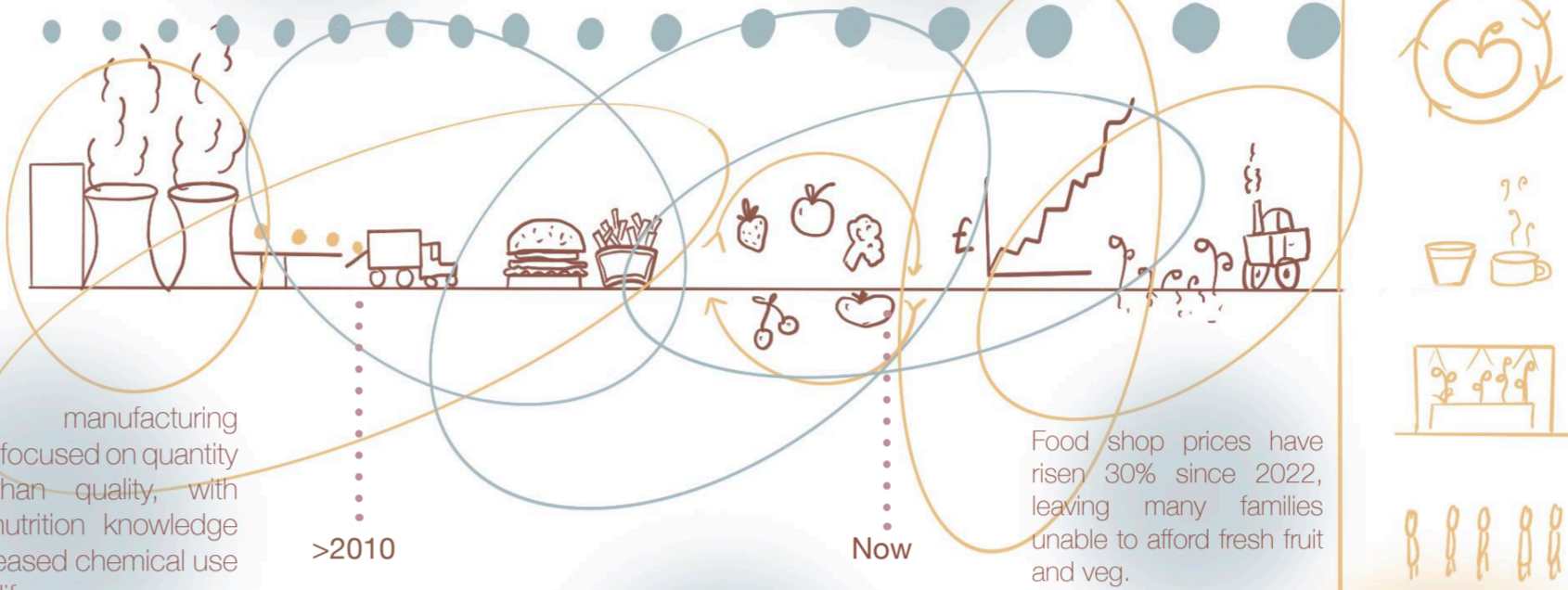
Biome is a circular and **sustainable environment** that re imagines how food, materials and waste interact. Inspired by the intelligence of fungi and bacteria, the project addresses **Hidden Hunger** and **declining soil health** through education, nutrition and **regenerative design**. Materials such as **mycelium** are grown from agricultural waste, transforming low-value by-products into **renewable, biodegradable building components**. This process **reduces waste**, lowers **environmental impact** and demonstrates how natural systems can **create valuable resources**. By mimicking **circular biological cycles**, Biome promotes a future where materials are **continuously regenerated**, supporting both human gut health and the **long-term health of the planet**.

Site



In 2003, the UK government introduced "5 a day" nationwide to boost fruit and veg intake and reduce the risk of heart disease, cancer and diabetes. (Years, 2003a)

In 2018, the American Gut Project found that eating 30 plants a week was linked to better gut health. (Carter, 2026)



Food manufacturing became focused on quantity rather than quality, with limited nutrition knowledge and increased chemical use for shelf life. (Welch and Mitchell, 2000a)

"5 a day" and 30 plant-based foods a week are growing in popularity, but the cost of living is making healthy eating a luxury. (Jones, 2023a)

Food shop prices have risen 30% since 2022, leaving many families unable to afford fresh fruit and veg.

With the global population nearing 10 billion, biofortification and seed innovation may shape the future of agriculture. Without prioritising soil health and access to nutrition, hidden hunger will become an increasing risk worldwide.

Food Forecast

Why Mushrooms?



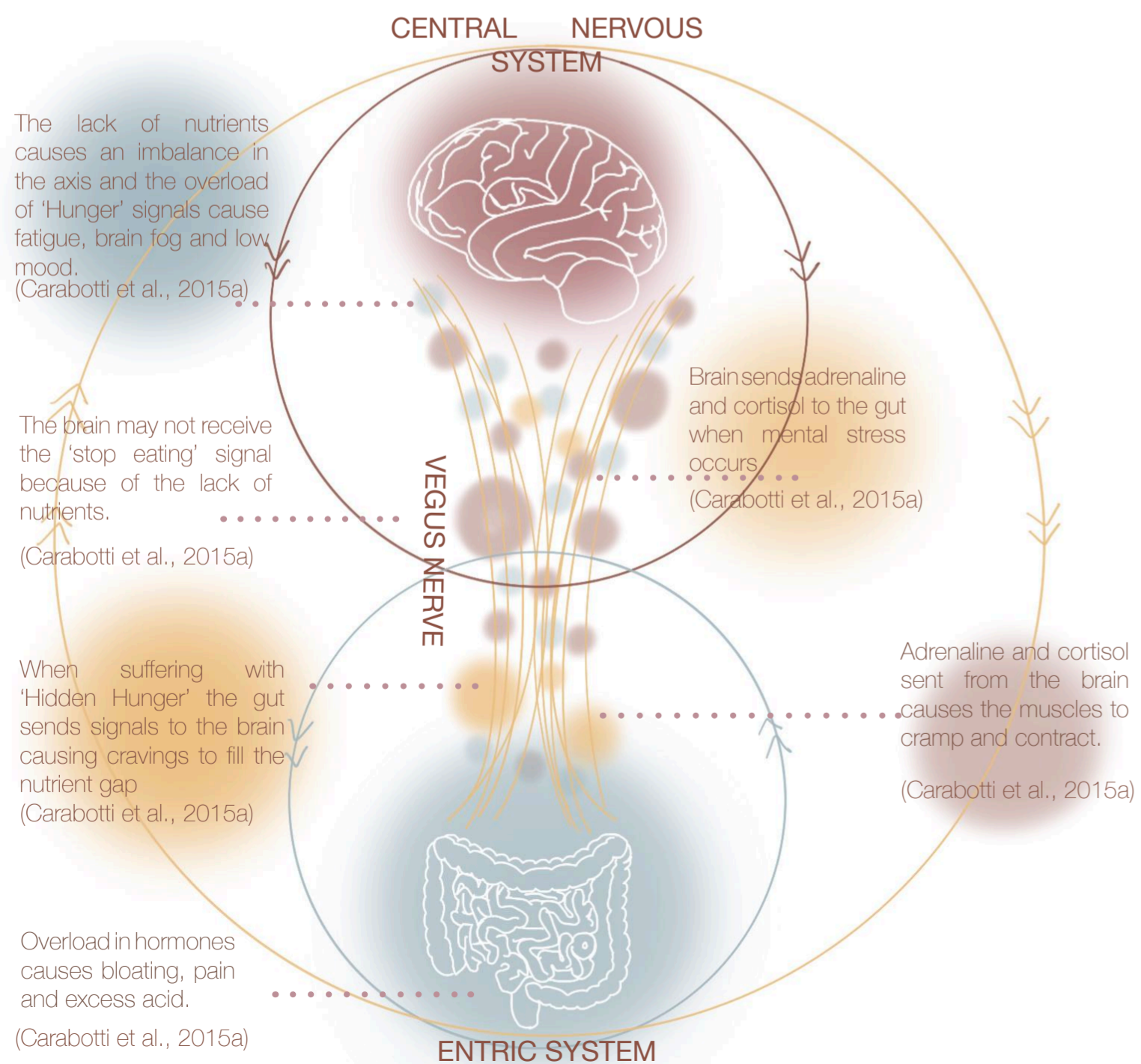
Mushroom value is expected to grow 138% by 2033.

Mushrooms can grow using agricultural waste, with minimal land and water compared to many crops and animal proteins.

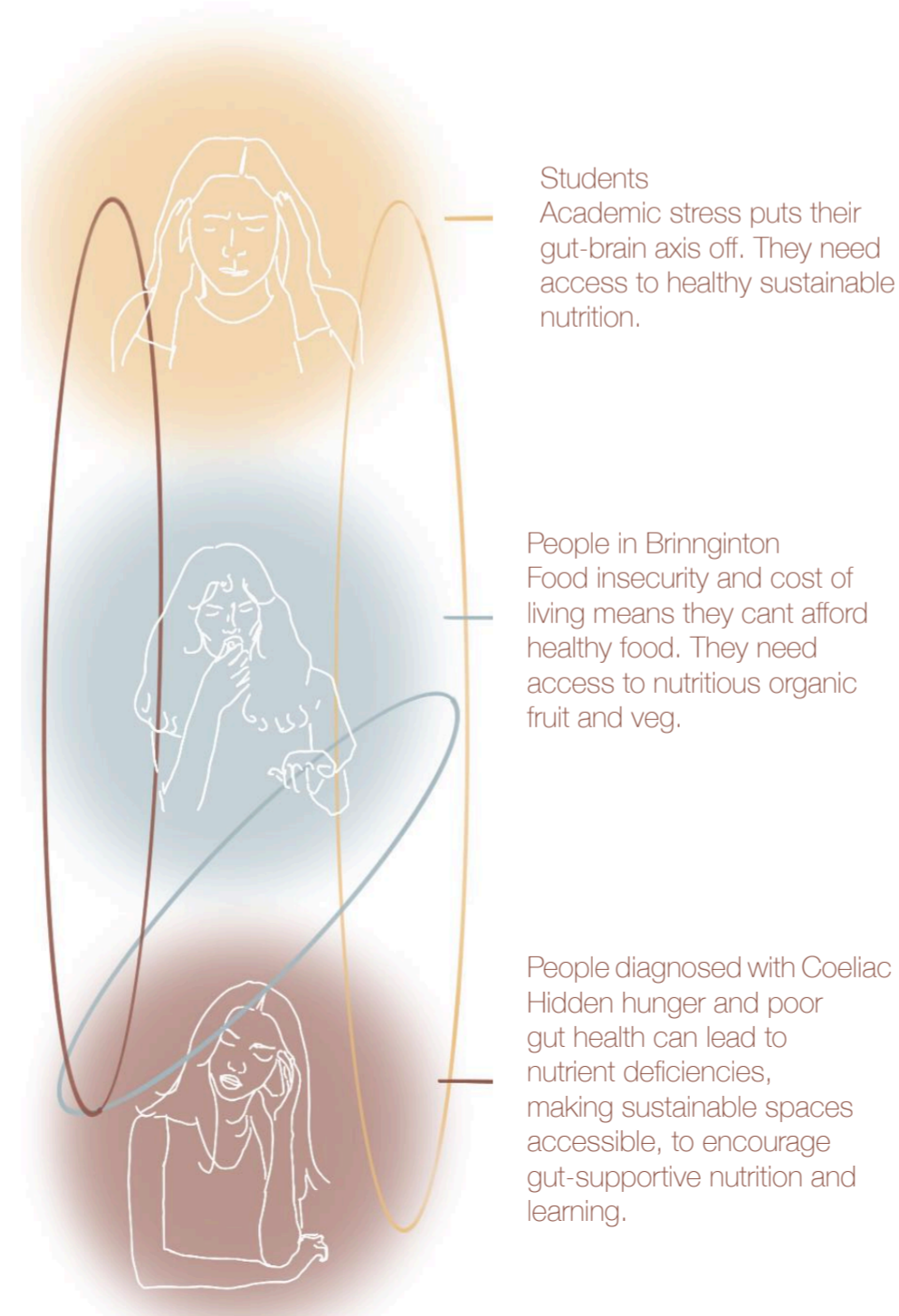
They contain beta-glucans, a prebiotic fibre that supports gut bacteria and links directly to the gut-brain axis.

Mycelium acts like an underground "root system", breaking down organic matter and recycling nutrients in soil.

Gut-Brain Axis



Who?



Brand Partnerships



Living Things
Functional drinks brand focusing on Prebiotic fizzy drinks. The brand promotes enjoying a fizzy drink but one with less sugar and chemicals as Coca Cola.

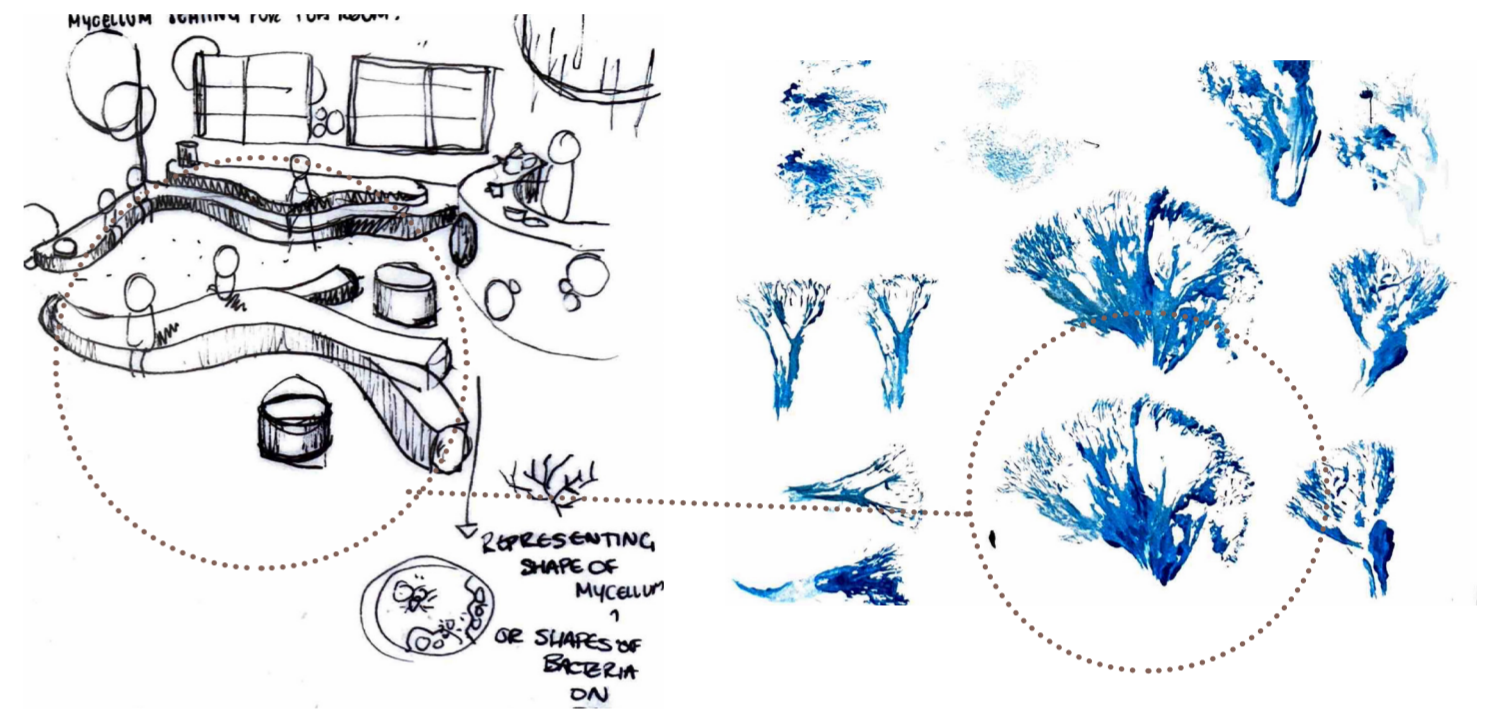
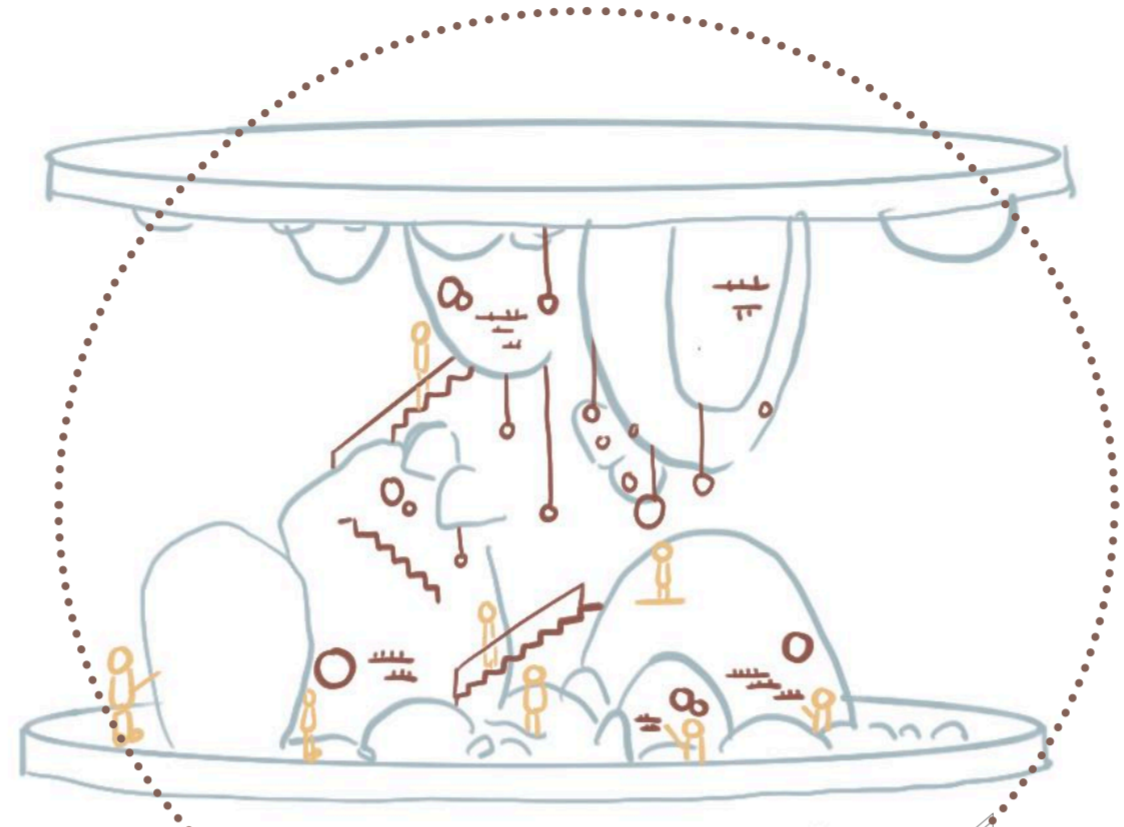
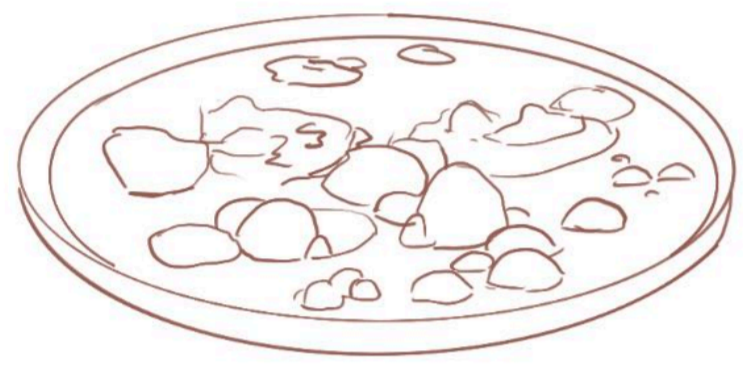
Gluten free Sourdough Bread
Gluten-free sourdough is a fermented bread alternative made without gluten-containing grains, using natural fermentation to improve digestibility and nutritional value compared to standard bread

Dirtea
Dirtea is an wellness brand that produces functional mushroom-based drinks and supplements designed to support focus, energy, and overall health using natural ingredients.

Small brands with high sustainability credentials for their products. All take into account the products end-of-life circularity.

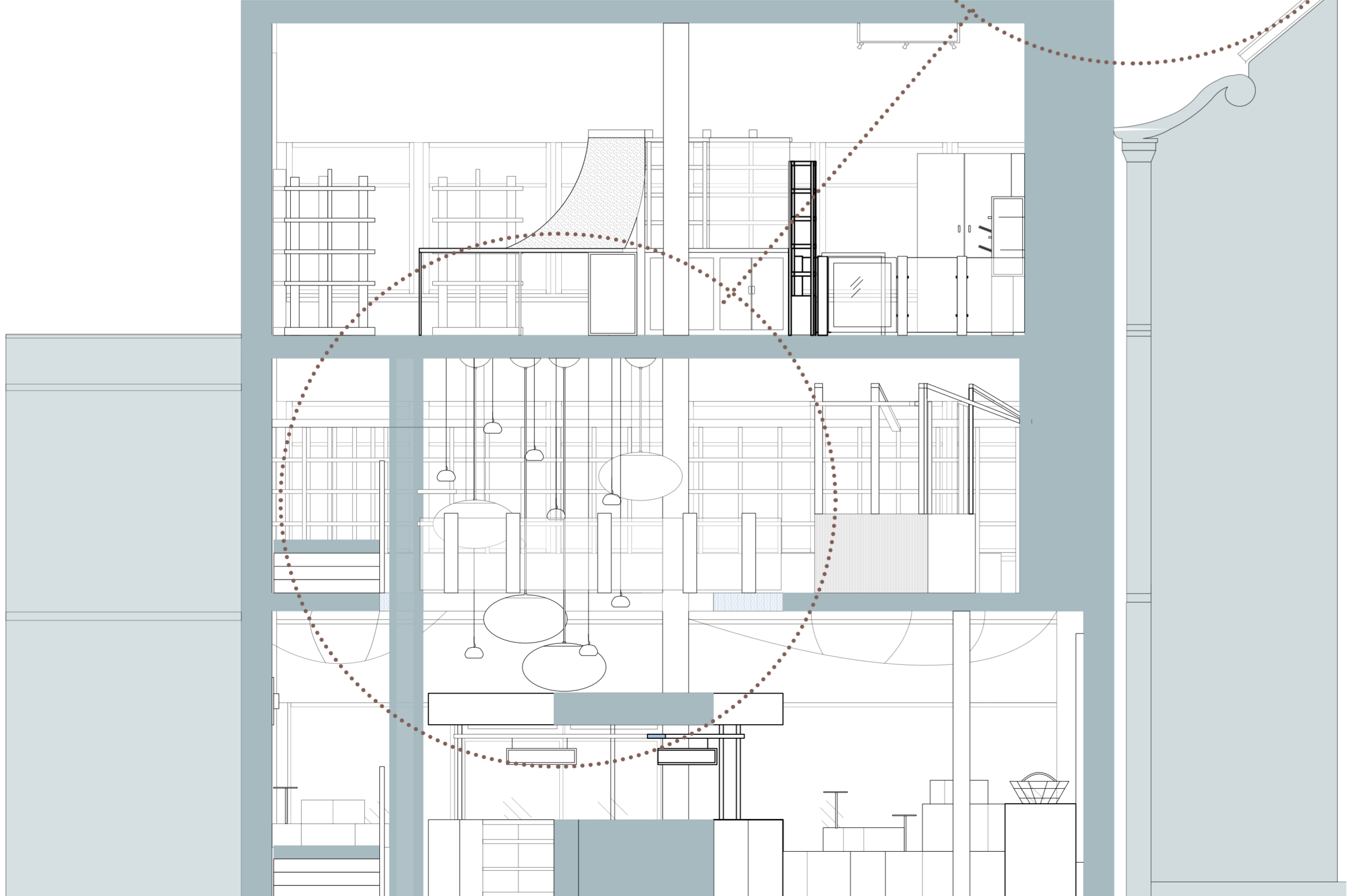
Developing Forms

Investigating shapes and forms of organic bacteria and fungi growth to convey the connection between 'Brain' and 'Gut'.



Visual studies of Lion's Mane mushrooms explored the texture, density and growth patterns of fungi. Through sketching and printmaking, the cascading filament structure was analysed and translated into spatial and material ideas for the seating design.

Final visual of Steeping room seating. Mycelium grown from agricultural waste provides a spatial and tactile experience



Materiality in Context



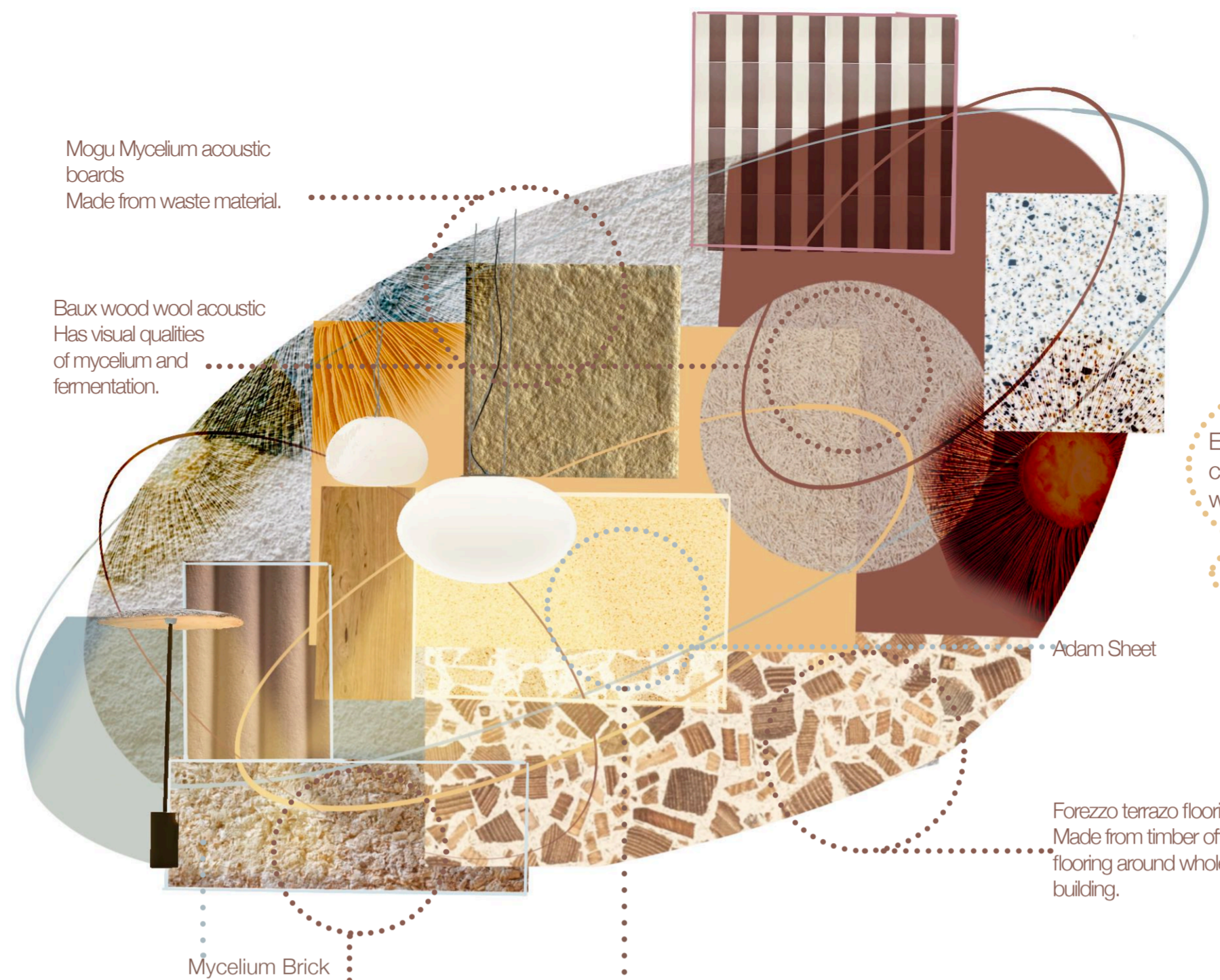
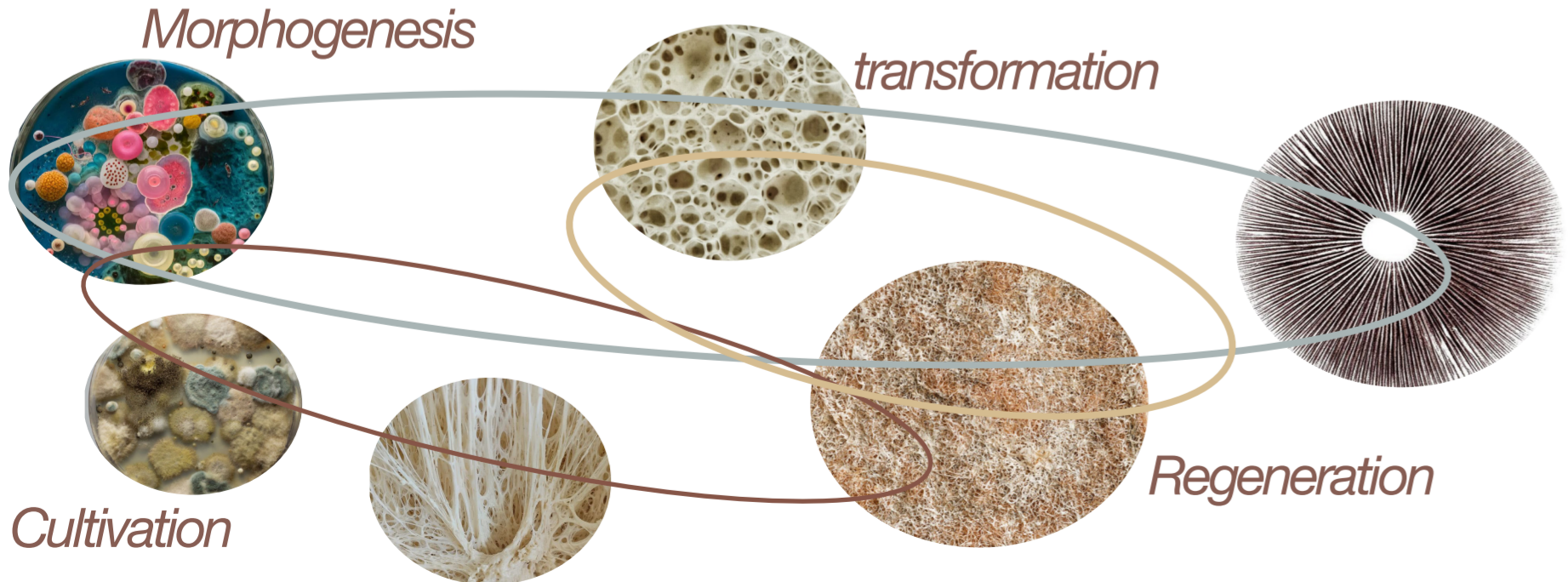
Adam sheet

- Sozai Center developed Adam Sheet, a waterproof biotextile made from apple waste.
- Uses apple flesh, skin, seeds and stems with a bio-based binder.
- Made from around 87% food waste.
- Durable, washable and a sustainable alternative to conventional textiles.
- Supports Biome's focus on circularity by turning waste into a functional material.
- Links to the project's aim of tackling environmental and agricultural issues through innovative material use.

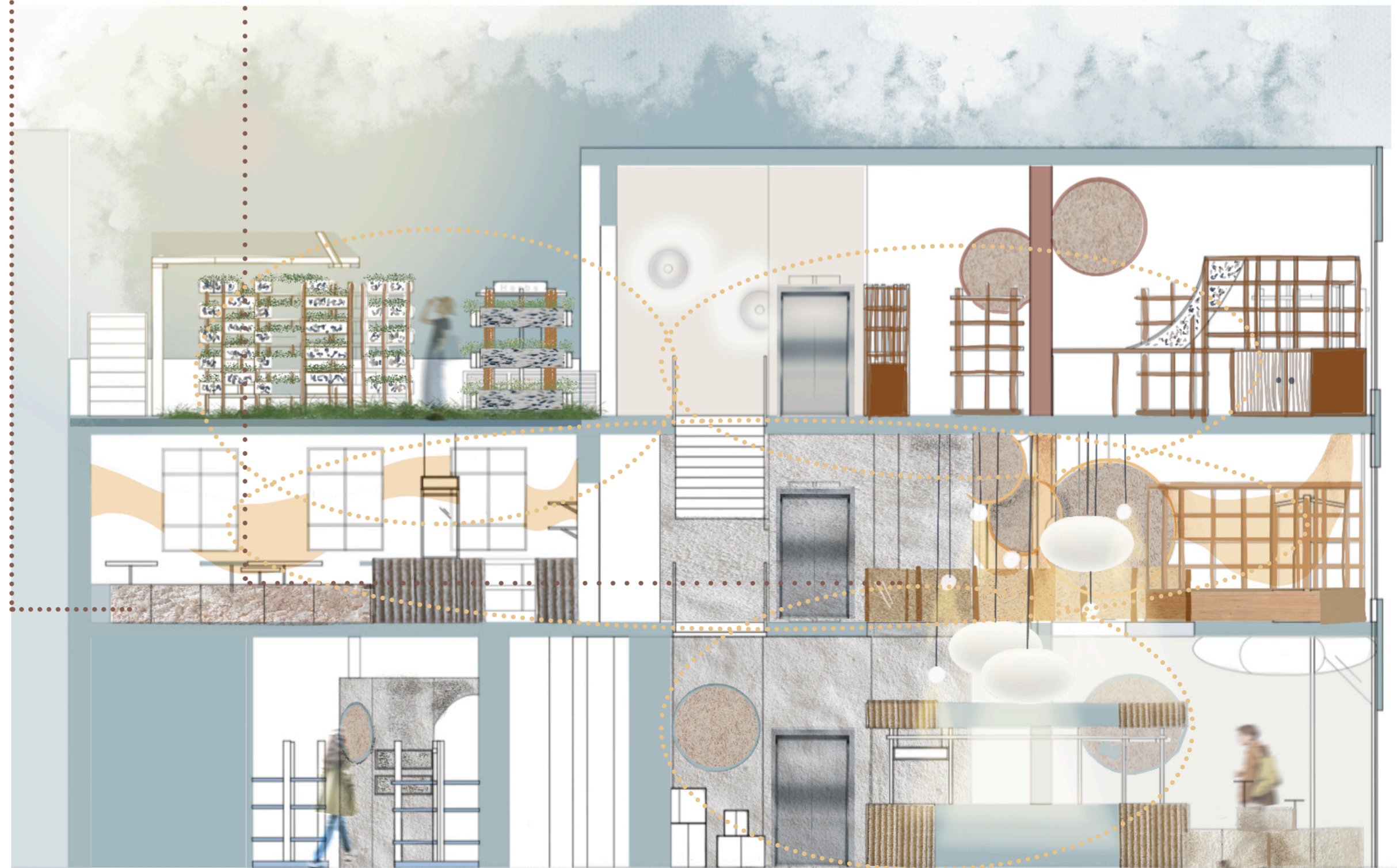
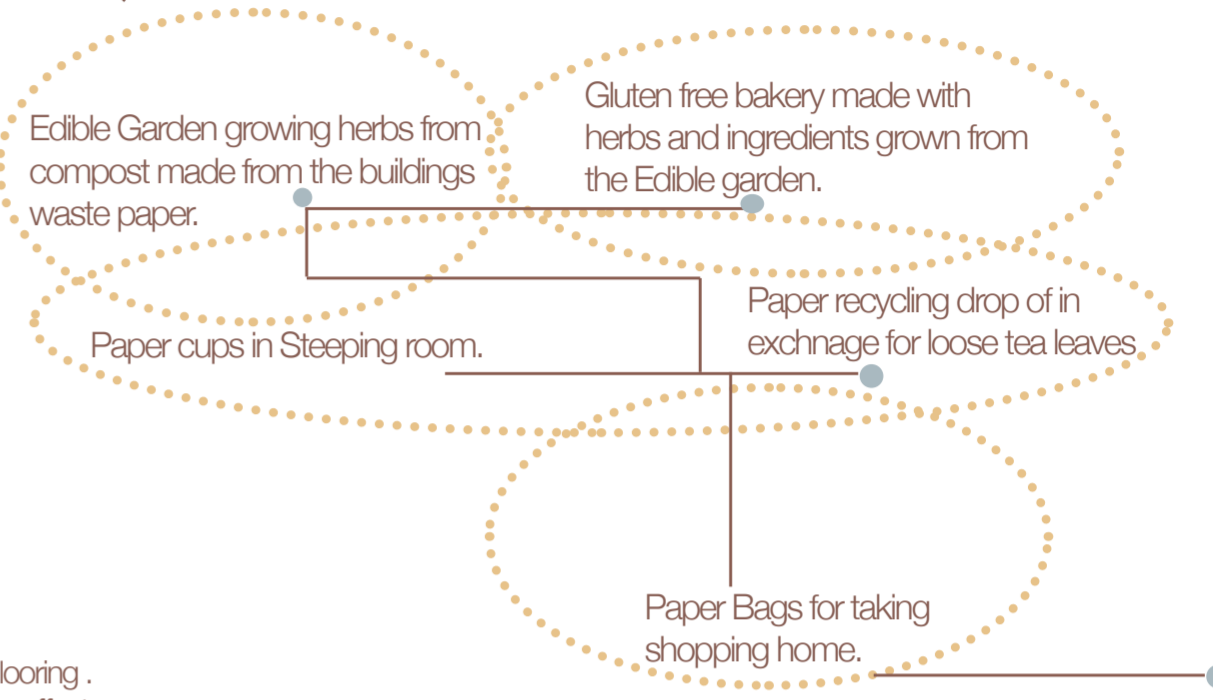


Mycelium

- Mycelium is the root structure of fungi and can be grown into sustainable building materials.
- Can be grown from Agricultural waste, reusing what would be thrown away.
- It is carbon-negative, naturally fire-resistant, and provides thermal and acoustic insulation.
- Mycelium products are already being used in furniture and interior design.
- Tactile and organic growth creates intrigue and visual stimuli.
- As Biome is inspired by fungi and bacteria, mycelium will be a key material throughout the space.

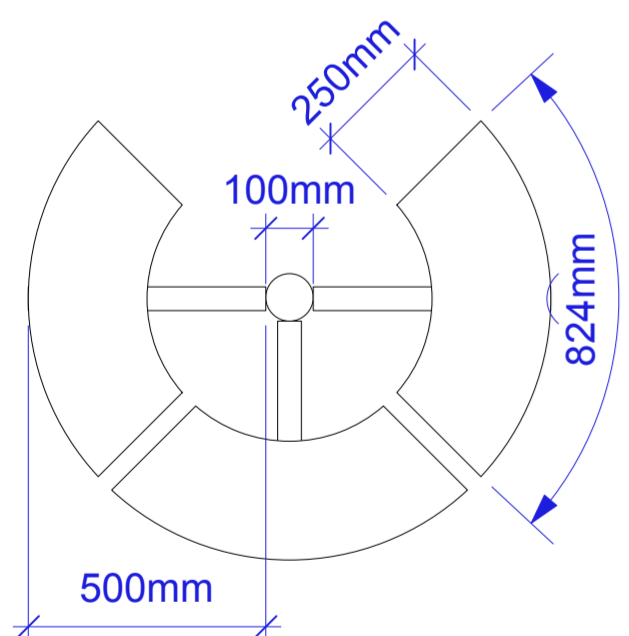


Circular systems within the building...
All products bought are plastic free paper only, The paper can be recycled and returned in exchange for loose herbal tea leaves. The paper is then used to feed the soil in the Edible garden to help the herbs grow sustainably.

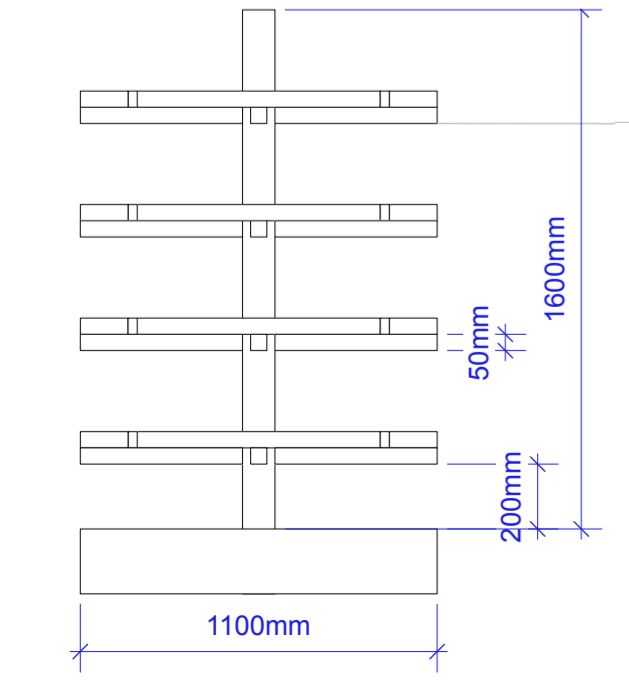
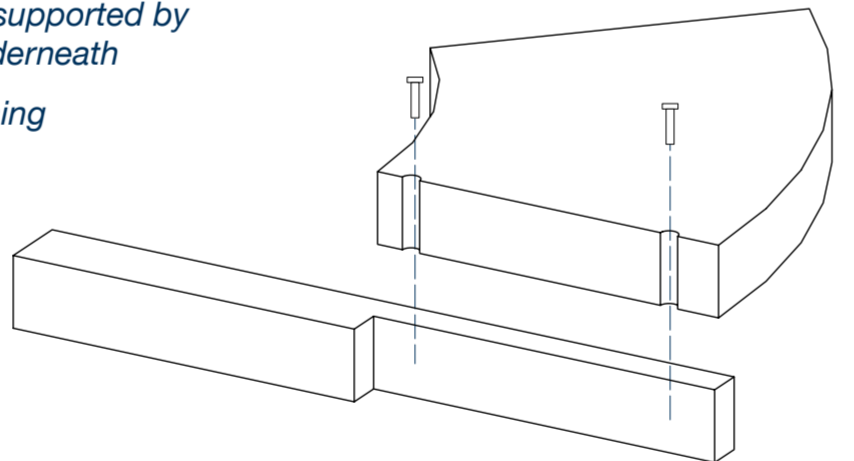


Construction Detail Indoor

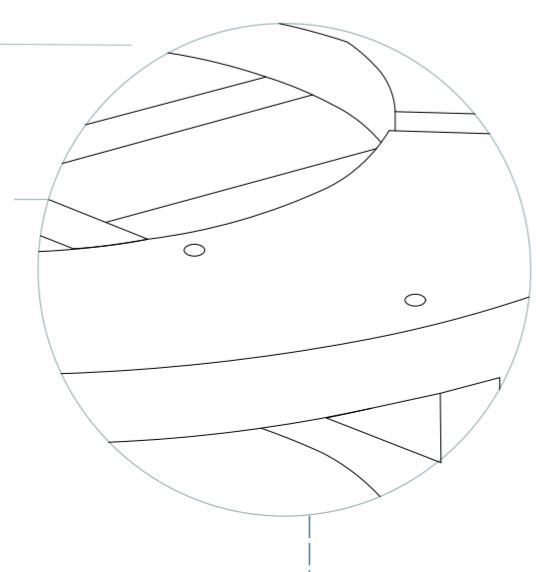
Circular shelving unit to display key products in retail spaces.
Made from local felled wood.
Reflects the shapes of Bacteria and mould growth.



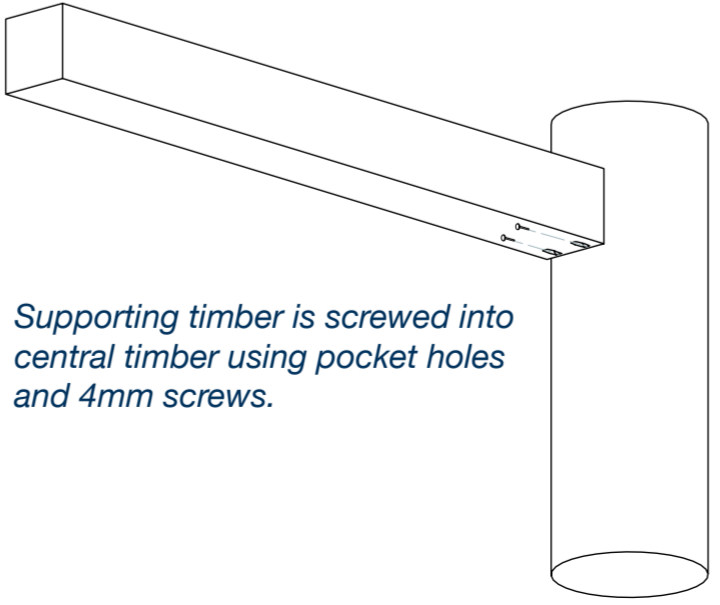
Curved pieces (shelves) supported by 50mmx50mm timber underneath
6mm flat head screws joining shelf piece and supporting timber.
Timber support centred underneath curved shelf.



TYPICAL ELEVATION 1:20@A3

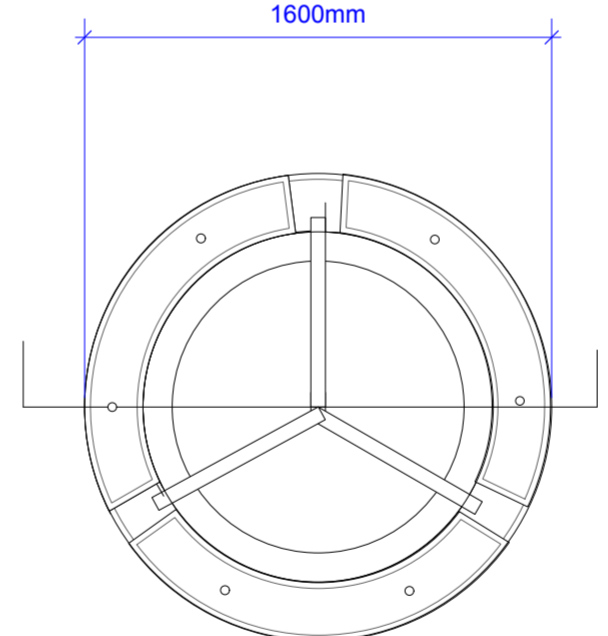


Supporting timber is screwed into central timber using pocket holes and 4mm screws.

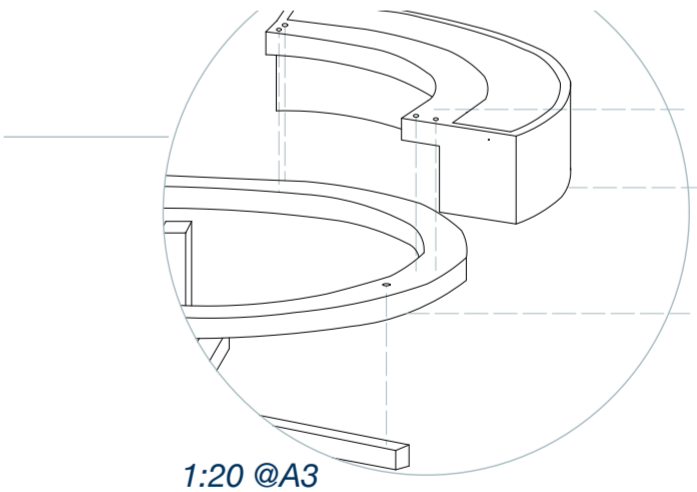
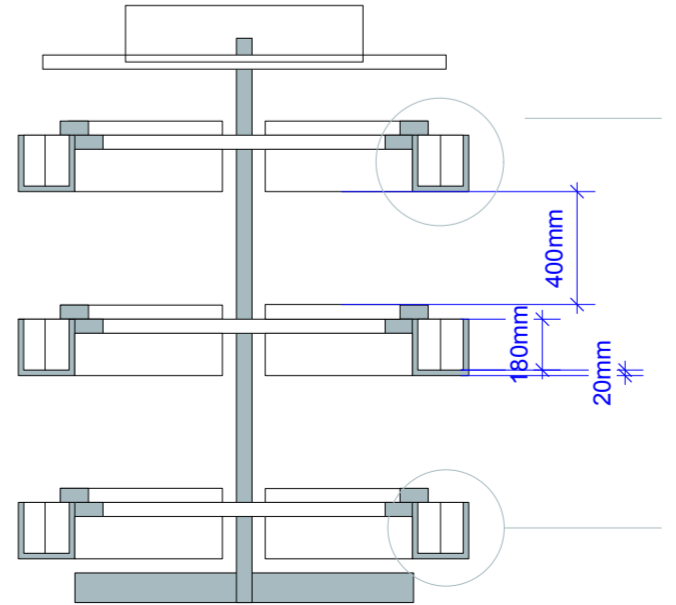


Construction Detail Outdoor

Circular self watering tiered planter system.
Made from local felled wood reclaimed and Corian which can bend into the curved shape.
Herbs at the top need more light and less water, herbs at the bottom need more water.



PLAN 1:20@A3

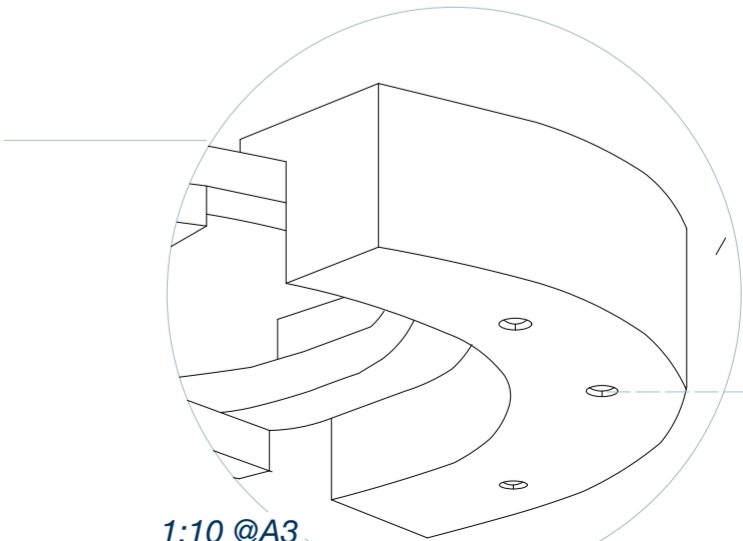


1:20 @A3

Holes in Corian to allow for screws to secure to timber structure underneath

Solid Piece of Corian bent into the curved shape.

Pressure Treated Pine.



1:10 @A3

Drainage holes drilled into Corian to ensure herbs don't get flooded.