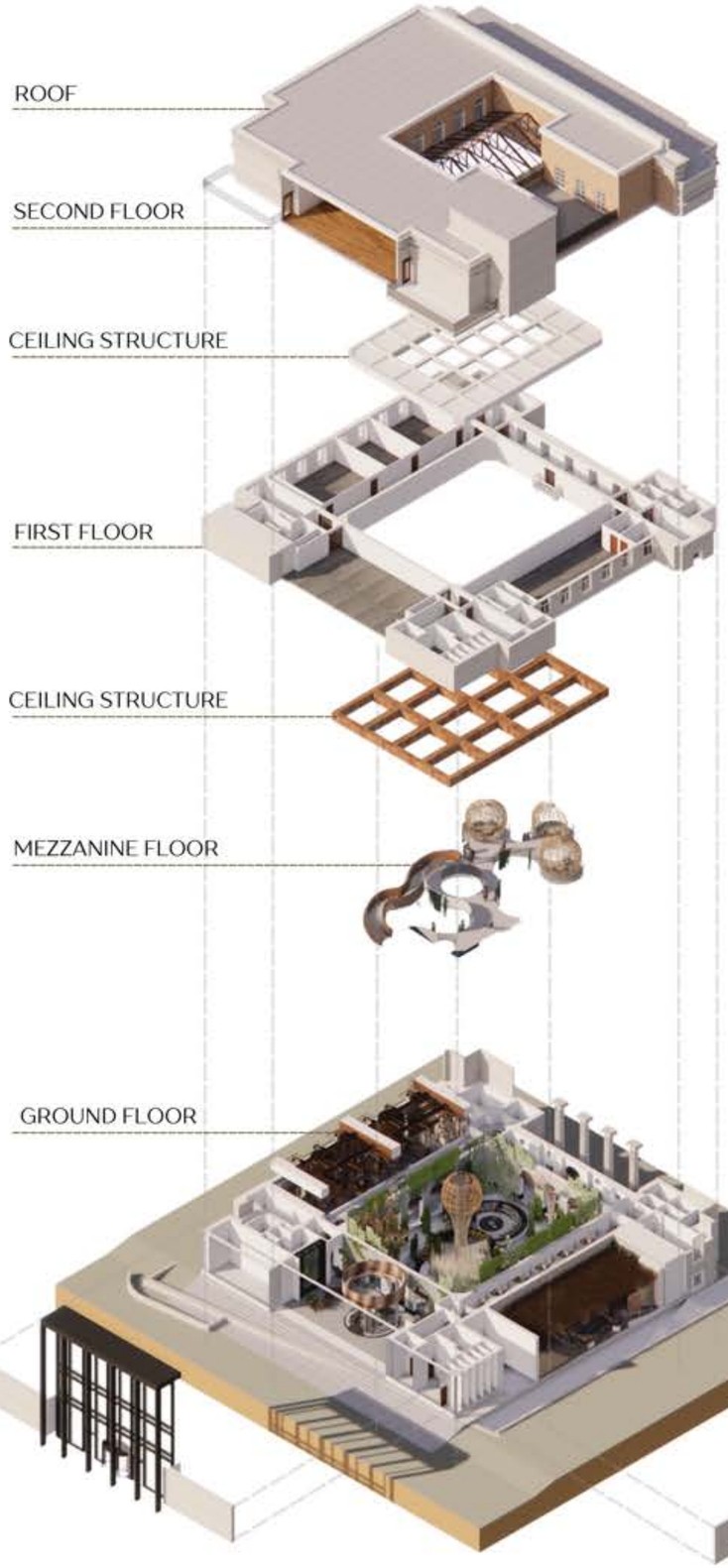
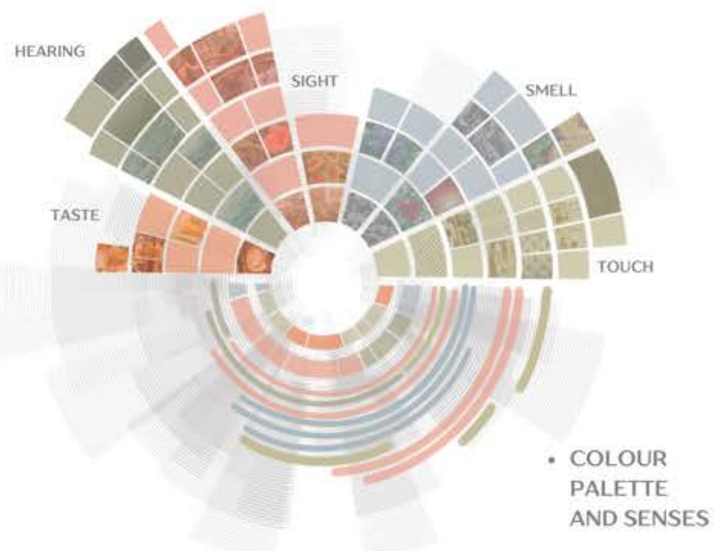
Re:Source Hub

by ROSHA DABBAGH – 22240907



Re Hub explores how interior design can encourage greater awareness of water, waste and sustainability through everyday experiences. Inspired by Birmingham's waste management challenges and my own experience of adapting to a new recycling culture, I wanted to create a space that helps people better understand the environmental systems that support daily life. The project centres around rainwater harvesting, filtration and reuse, making these processes visible within the café experience rather than hidden from view. Through material exploration, sustainable design strategies and biophilic principles, I developed a space that encourages reflection on consumption and environmental responsibility while creating a welcoming and engaging experience for visitors.



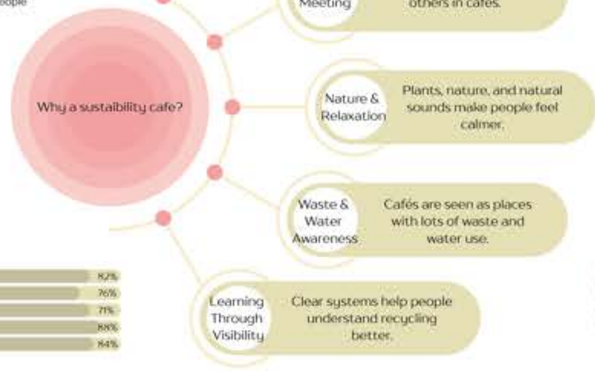
My Starting Point

This project began with a personal moment of uncertainty after moving to the UK and adapting to a new recycling culture. Standing in front of recycling bins, I experienced a small moment of hesitation that made me question how everyday systems influence our choices and habits. This became the starting point for a project focused on climate awareness, waste, water, and sustainability. I want to design a social environment where people can learn, connect, and become more aware of sustainable living through everyday experiences.

For the starting point of my project, I decided to create a survey to understand people's awareness and behaviour around recycling, waste, and sustainability. The survey asks questions about people's everyday habits, their confidence when using recycling bins, and where they notice the most waste in public spaces. This helped me identify the need for a familiar social environment, such as a café, where people can learn, connect, and become more aware of sustainable living through everyday experiences.

The questions:

- Where do people feel comfortable?
- Where do they meet others?
- What feels relaxed and welcoming?
- Where do people notice the most waste?
- What café waste do they notice most?
- What waste is confusing to recycle?
- Do people hesitate at bins?
- What would help them recycle better?
- Would clear systems improve awareness?
- Would visible waste systems make people more aware?



A café is a strong social space for connection.

The café should feel warm, familiar, and welcoming.

Make the recycling and water process visible and educational.

Show visible recycling, water collection, and reuse systems.

Add biophilic design, planting, and water sounds.

Based on my survey, people feel most comfortable at home, but cafés are often chosen for meeting others because they are social and relaxed. The results also show that cafés produce noticeable waste through cups, packaging, food waste, and water use. I feel visible recycling and water systems can help improve awareness and encourage more sustainable habits.

When Waste Meets Water

Birmingham's canal network is an important part of the city's industrial history and identity. Built during the Industrial Revolution, the canals carried coal, iron, and other heavy goods, helping Birmingham grow as a major industrial city (Birmingham City Council, n.d.). The Canal & River Trust describes the Birmingham Canal Navigations as the "life-blood" of Victorian Birmingham and the Black Country, showing how important canals were to the city's development (Canal & River Trust, n.d.).

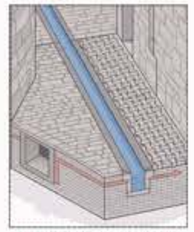
The Birmingham bin strike showed how quickly waste becomes a visible urban problem when collection systems fail. Uncollected rubbish can spread through streets, drains, and towpaths, creating a risk of litter entering the canal network during wind or rain.

- **Canal link:** water has shaped Birmingham's movement and identity
- **Waste issue:** rubbish build-up affects streets and public spaces
- **Water risk:** litter can wash into canals and pollute water
- **Wildlife impact:** plastic and food waste can harm canal habitats
- **Project link:** waste and water systems need to be visible, protected, and better understood

Project Connection

Birmingham's canals show how water has shaped the city's movement, industry, and public spaces. The bin strike also shows how waste on land can affect the wider environment, including streets, canals, and water systems.

Based on the research, I decided to design a café space where water can be collected, recycled, and reused. By making this process visible, the café helps people understand the value of water and encourage better habits around waste, recycling, and sustainability.

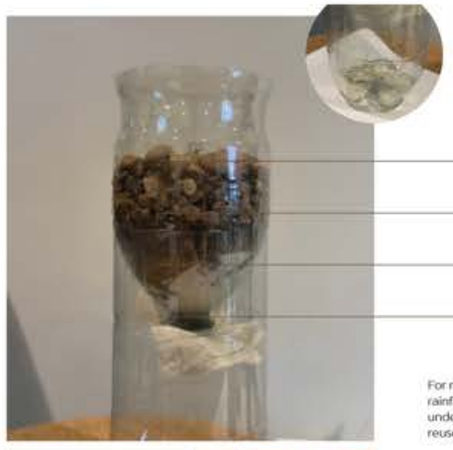


Baseline (Jewellery Quarter)
- light rain to moderate by drains and canal

Storm event (Digbeth)
- heavy rain causes controlled outfall flooding

Failure (Broad Street)
- litter blocks drains, causing flooding

Water Purification Process (Model Making)



Based on the research I had, I wanted to experience the filtration process myself, so I created a real-life water filtration experiment.

- **Step 1: Prepare the filter** — Use a bottle or container and place filter materials inside it.
- **Step 2: Add layers** — Add materials such as cotton, sand, gravel, or charcoal to catch dirt.
- **Step 3: Pour dirty water** — Pour muddy water through the filter slowly.
- **Step 4: Collect cleaner water** — The layers trap impurities, and cleaner water comes out at the bottom.

This process shows how filtration works by separating dirt and particles from water.

For my design, I wanted to check if Birmingham receives enough rainfall to support a water collection and reuse system. This helps me understand how much rainwater can be collected, filtered, stored, and reused within the café.

For the ground floor of The Exchange, Birmingham, the exact ground floor area is not clearly published, but the whole building has a gross internal area of 4,217 m² according to RIBA (2023). Birmingham's average annual rainfall is around 809 mm per year, based on the Met Office 1991–2020 climate average.

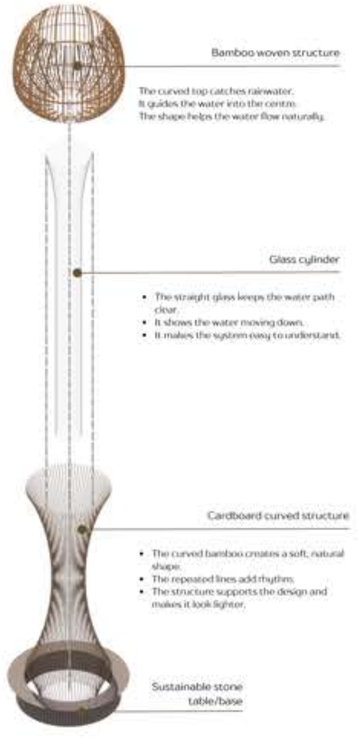
By collecting Birmingham's annual rainfall, the café can filter and reuse water as part of the design. This supports my aim to make water reuse visible, educational, and part of the everyday café experience.

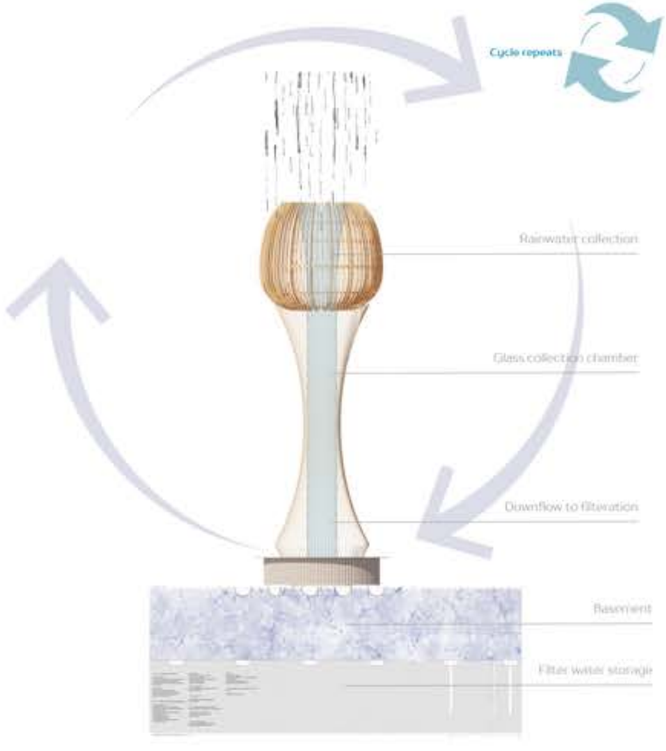
Rainwater collection formula:

Rainfall × collection area = water collected
- 1 mm rainfall on 1 m² = 1 litre of water
- Example canopy area: 100 m²
- 809 mm × 100 m² = 80,900 litres per year

This collected rainwater could be reused for:

Design Development



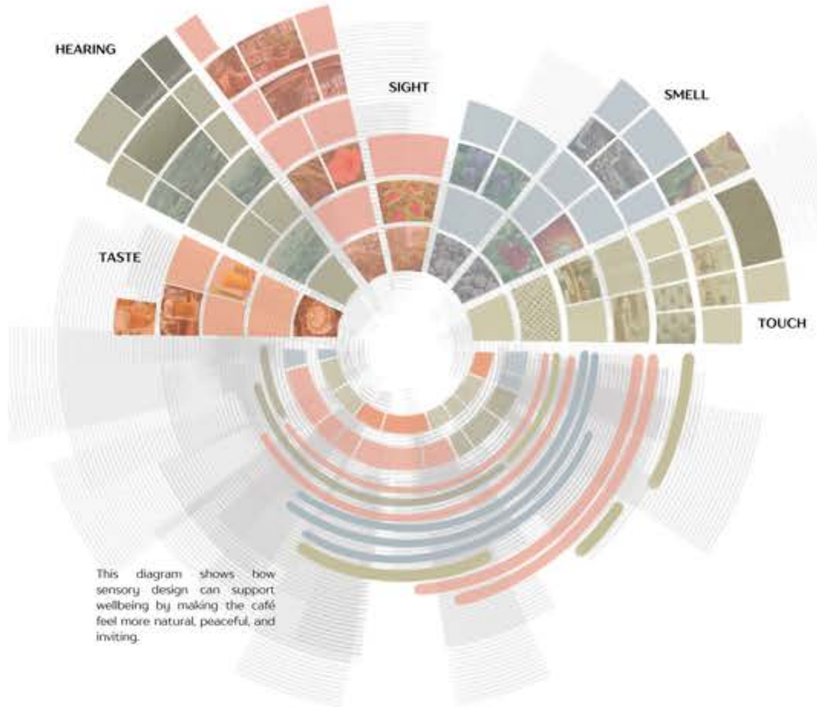


MATERIALITY & SUSTAINABILITY

For a better understanding of movement, sound, images, atmosphere, and human interaction, I created this digital material board to show how the space will be experienced, not only how it will look. It reflects my design vision through a calm, natural, and environmentally conscious palette, using sustainable materials, soft textures, greenery, and natural finishes. The board helps communicate how users will move through different sensory zones, hear calming water sounds, see natural materials and plants, feel a warm and relaxing atmosphere, and interact comfortably within the café. Overall, it presents a design approach that is biophilic, welcoming, sustainable, and connected to nature.

1. Recycled Terrazzo
2. Natural Linen
3. Organic Cotton
4. Recycled Concrete
5. Recycled Rubber
6. Timber Slats
7. Reclaimed Fabric
8. Recycled Stone
9. Natural Marble
10. Recycled Glass
11. Recyclable Metal
12. Ceramic Tile
13. Powder-Coated Steel
14. Stone Composite
15. Natural Palm Leaf

#B5B2AD #7F5231 #BABB8D #E7E7E7



This diagram shows how sensory design can support wellbeing by making the café feel more natural, peaceful, and inviting.

I want to show the five senses — taste, hearing, sight, smell, and touch within my design. The aim is to create a welcoming and biophilic space where people can feel relaxed, connected, and surrounded by nature.

- TASTE: Everything in the café will feel fresh, from the food and drinks to the overall atmosphere.
- HEARING: People will hear the calming sound of water dripping down, creating a peaceful and relaxing environment.
- SIGHT: Visitors will see lots of plants and greenery, helping them feel closer to nature inside the café.
- SMELL: Each section of the café will have a different scent, creating a unique sensory experience.
- TOUCH: The space will use natural and sustainable materials, allowing people to feel connected to the environment through texture.

TASTE HEARING SIGHT

SMELL TOUCH

Based on colour theory, I chose earthy and natural colours to create a relaxation space where people can gather, connect, and feel comfortable. The health and wellbeing of users was important, so each colour was chosen to support mood, emotions, and behaviour in a positive way.

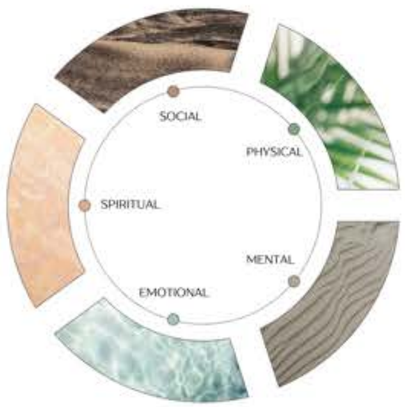
Together, these colours support the five pillars of health by focusing on physical comfort, mental calmness, emotional wellbeing, social connection, and environmental awareness. The palette makes the space feel relaxing, welcoming, and balanced.

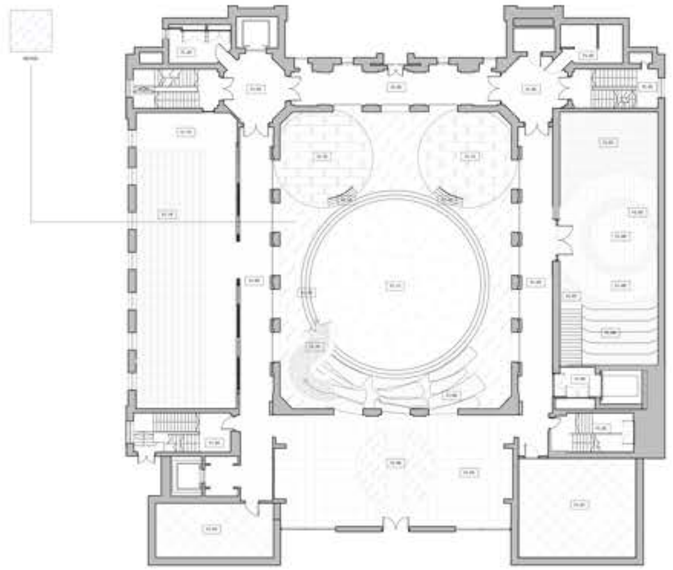
- Green – Plants, growth, and healing:
Green connects to nature and plant life. It gives a **calm, fresh, and peaceful energy**, helping people feel **relaxed and balanced**. Symbolically, it represents **growth, renewal, health, and sustainability**.

- Blue – Ocean, water, and calmness:
Blue is linked to the ocean and water. It gives a **peaceful, clean, and trustworthy feeling**, which can help people feel emotionally **calm and safe**. Symbolically, it represents **purity, flow, healing, and mental clarity**.

- Brown – Soil, earth, and grounding:
Brown represents soil, wood, and natural materials. It gives a **warm and stable energy**, helping people feel **grounded and secure**. Symbolically, it represents **roots, strength, support, and connection to the earth**.

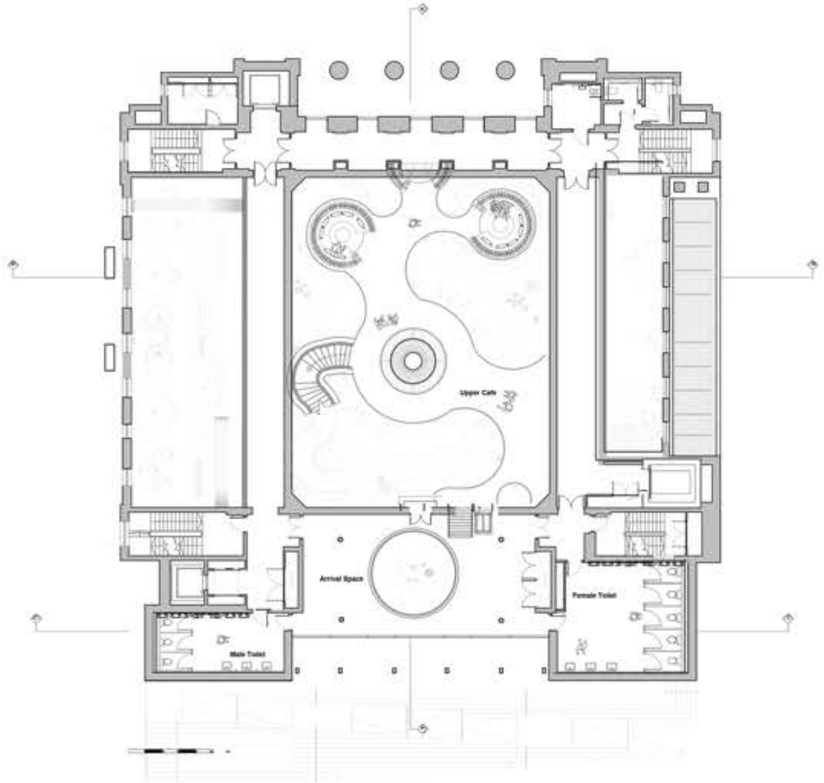
- Yellow – Sun, warmth, and positivity:
Yellow represents sunlight and natural energy. It gives a **happy, uplifting, and welcoming feeling**, encouraging people to feel more **positive and open**. Symbolically, it represents **hope, creativity, warmth, and new beginnings**.

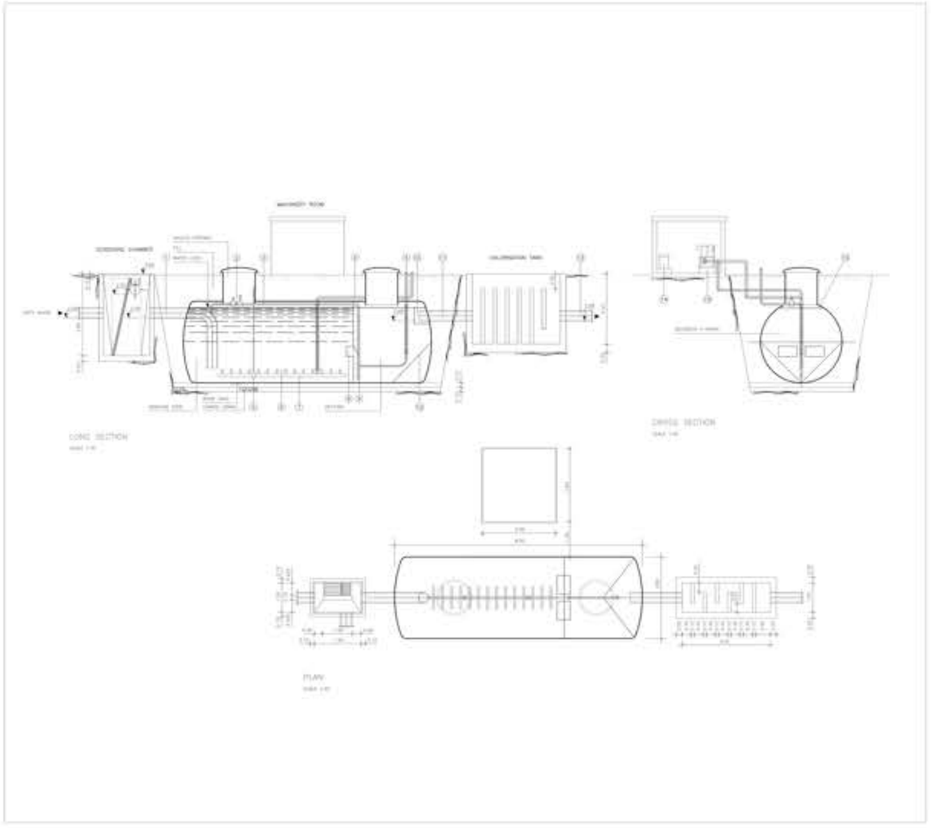




Site Address: The Exchange Birmingham
Drawing Title: Finishing Plan Ground Floor
Number: 1 of 2
Date: 13/05/2026
Drawn By: Rosha Dabbagh
Scale: @1:100

FIRST FLOOR PLAN

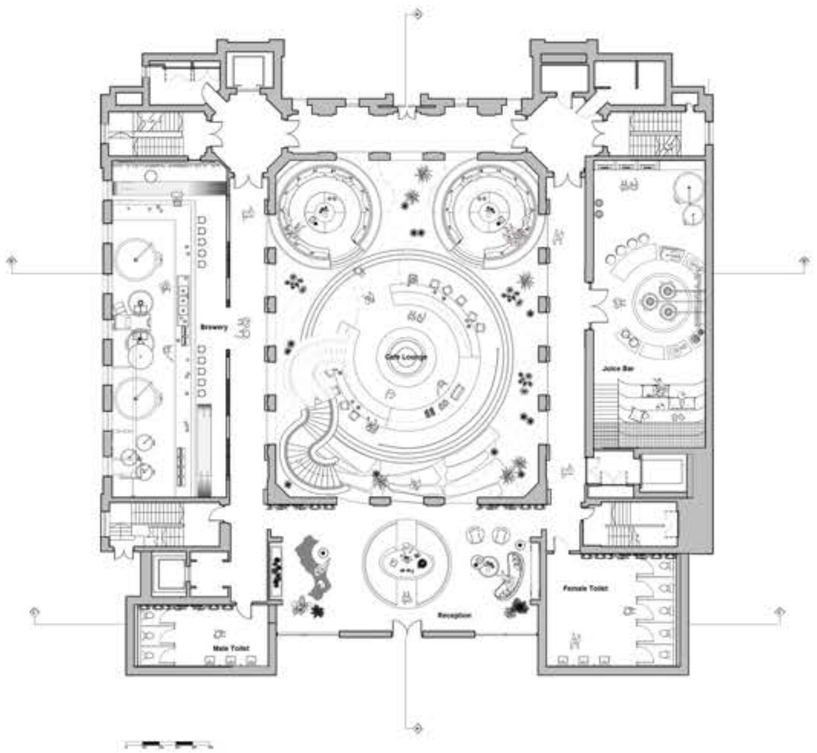


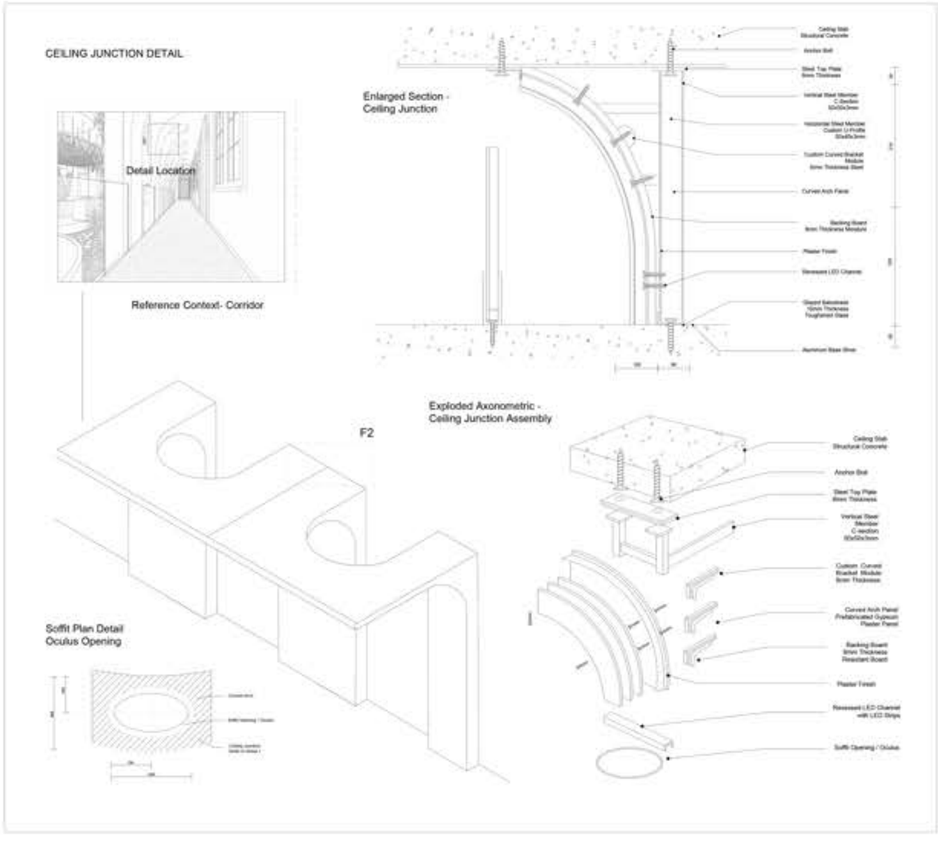


1. Untreated Water Inlet
2. Sludge Removal
3. Sludge Recirculation
4. Air Duct
5. Support
6. Diffuser Plates
7. Hanging Air Distributor
8. Water Inlet to Decanter and Calming Tank
9. Sludge Intake
10. Overflow Weir
11. Outlet of Water to Chlorination Tank
12. Formation of Slopes for Sludge
13. Treated Water Outlet
14. Hypochlorite Dosing Unit
15. Air Blower

Site Address: The Exchange Birmingham
Drawing Title: Water Filtration Detail Drawing
Basement Floor
Number: 1 of 1
Date: 13/05/2026
Drawn By: Rosha Dabbagh
Scale: @1:40

GROUND FLOOR PLAN





Site Address: The Exchange Birmingham
Drawing Title: Corridor Detail Drawing
Number: 3 of 3
Date: 13/05/2026
Drawn By: Rosha Dabbagh
Scale: @1:20

CAFE
LOUNGE

Scan the QR code to enter the virtual design video and experience the space's atmosphere.

Section B-B