

RESPIRATION

— STATION AND HOTEL —

This project innovatively uses symbiosis of different spatial design typologies to create a healthy functioning solution to air quality and breathing, both physically and conceptually at a human and urban scale.

It pairs a metro station with a hotel through a shared focus on air movement and quality. The station is ventilated by wind catcher inspired pillars that draw cool air down from the roof into the underground platforms and expel stale air from the building.

The hotel works differently, with sealed windows and a separate system that supplies filtered air at floor level, allowing it to rise naturally through the rooms. The design is inspired by alveoli, creating cellular spaces organised along a diagonal split.

Roof planting captures pollutants before cleaner air is released back into the city, while heat from the station is reused to warm the hotel, linking the two systems.



PRIMARY RESEARCH

I carried out primary research in Bristol city centre by asking people where they would place a metro station and why. Many said buses are unreliable and traffic makes travelling difficult, showing strong support for a metro system. Most people agreed that connections to the city centre are the most important. Using these responses, I designed a tube line linking key areas of Bristol, including a city centre loop with Temple Meads. This would improve access across the city and provide visitors with a quick and reliable connection to important locations, including the hotel.



THE SITE

The Old Bridewell Fire Station in Bristol was built in 1928 and served as the city's main fire station for many years. Located on Silver Street, the Grade II listed building is known for its distinctive red engine doors and historic architecture.

After the fire station closed, the building was restored and turned into The Station, a community and creative centre run by the Creative Youth Network.

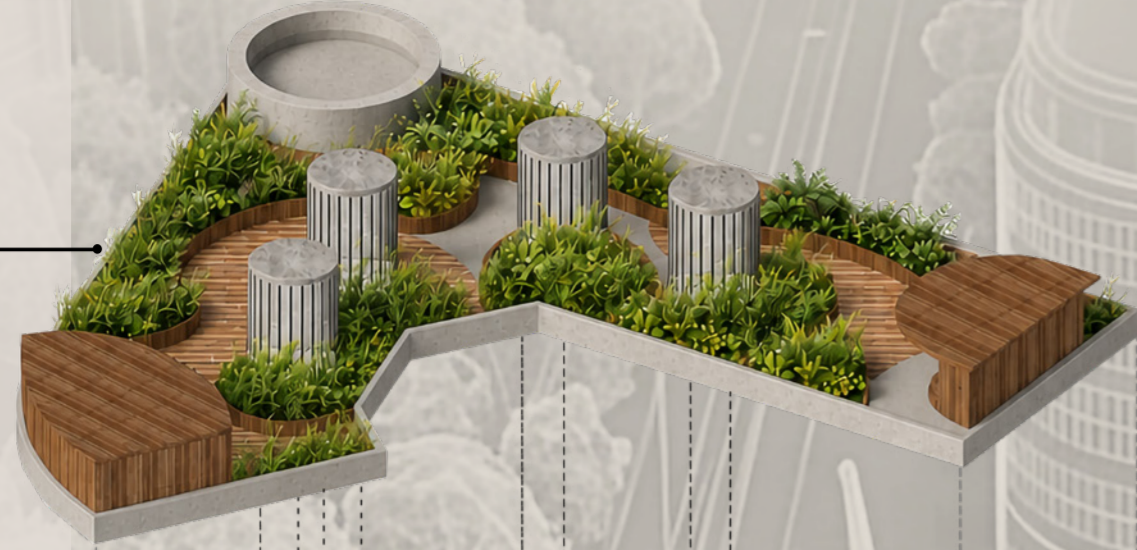
Today, it provides space for young people and local organisations, hosting workshops, events, exhibitions and other activities that support creativity and community life in Bristol.



AIR AS A SYSTEM

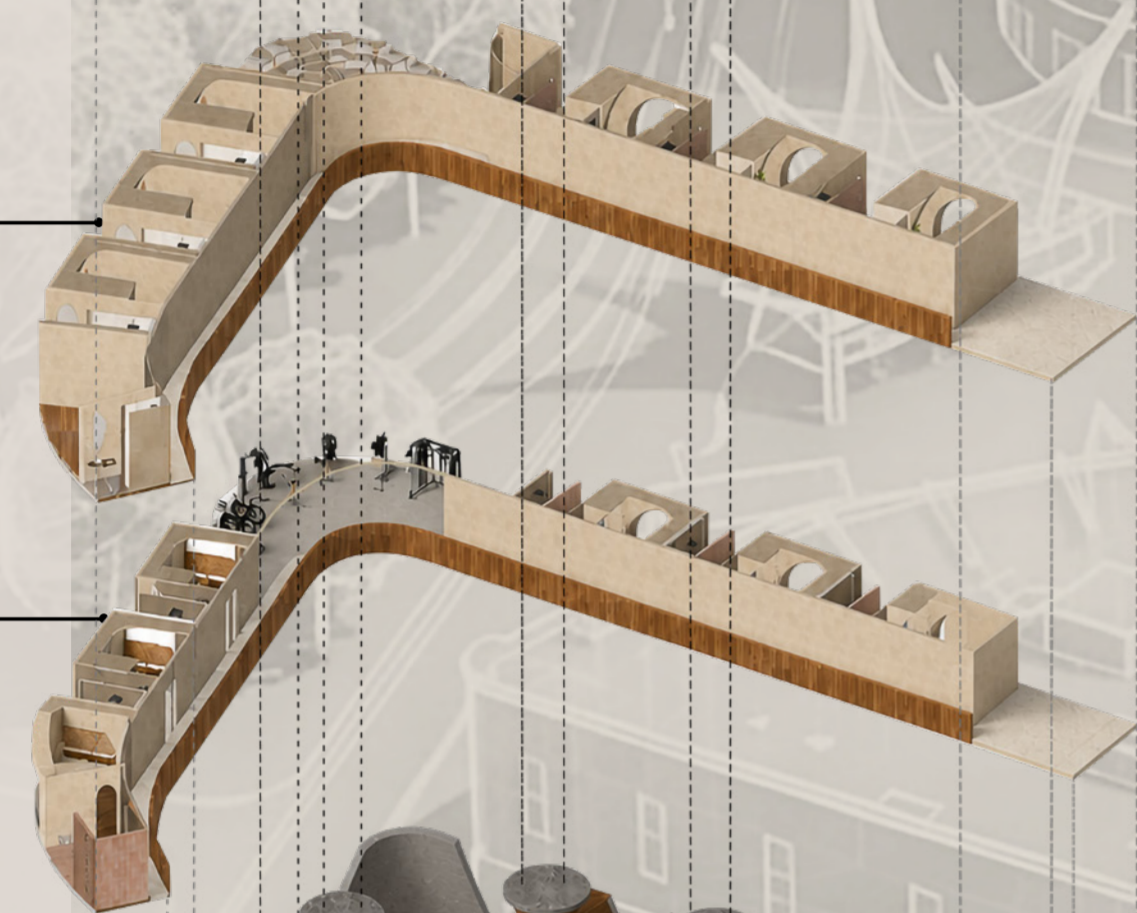
03

ROOFTOP GARDEN



02

HOTEL ROOMS, BREATHING CENTRE



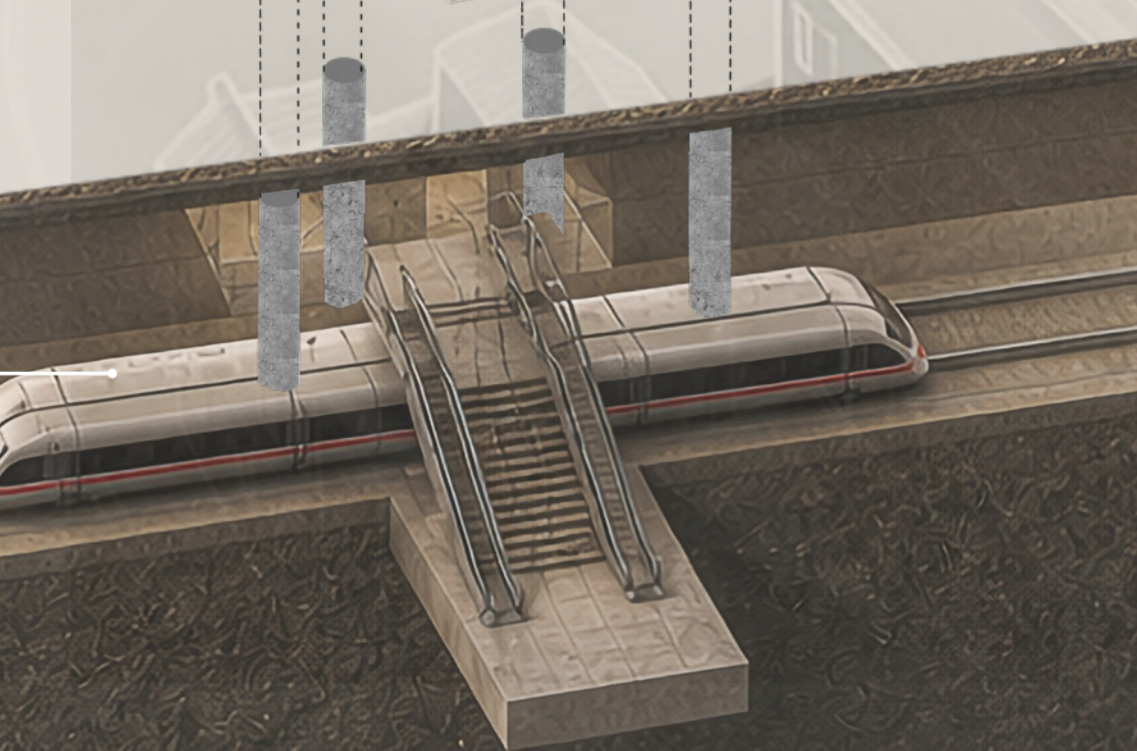
01

HOTEL ROOMS, GYM



00

OVERGROUND STATION, HOTEL RECEPTION, HOTEL OFFICE



-01

UNDERGROUND STATION

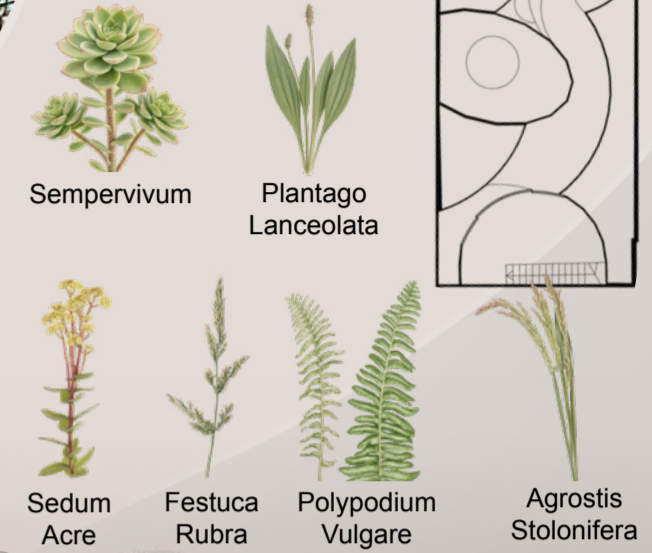
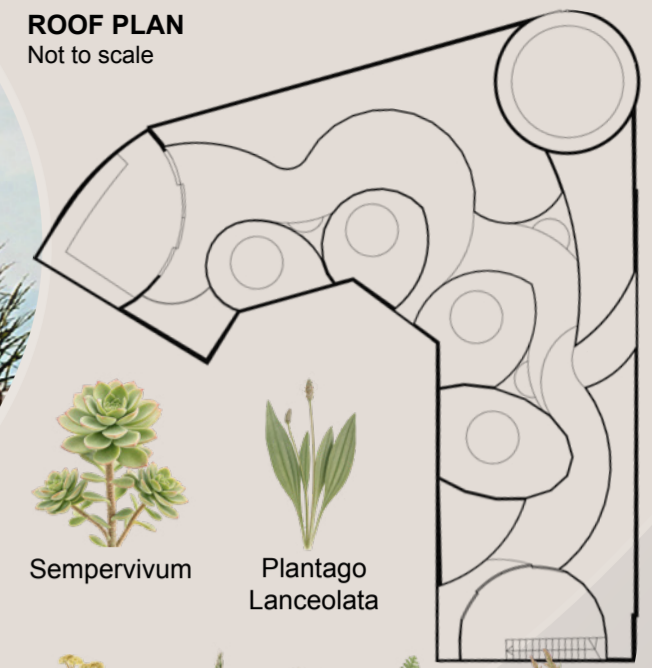


AIR FILTRATION PLANTS

Roof garden planting selection specifically chosen for air purification properties.

ROOF PLAN

Not to scale



Breathing & Gas Exchange

Train station analogy

1. INHALE

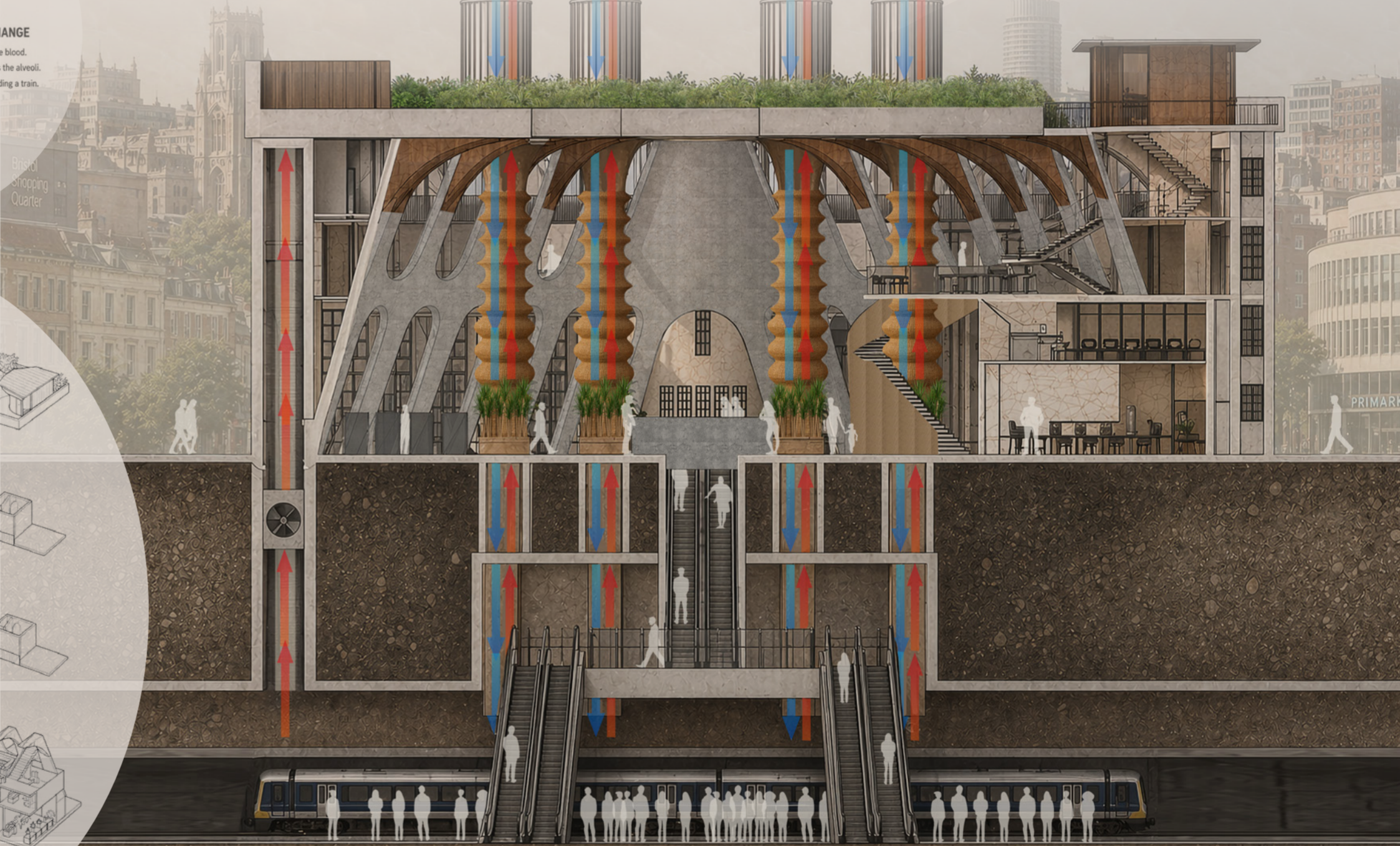
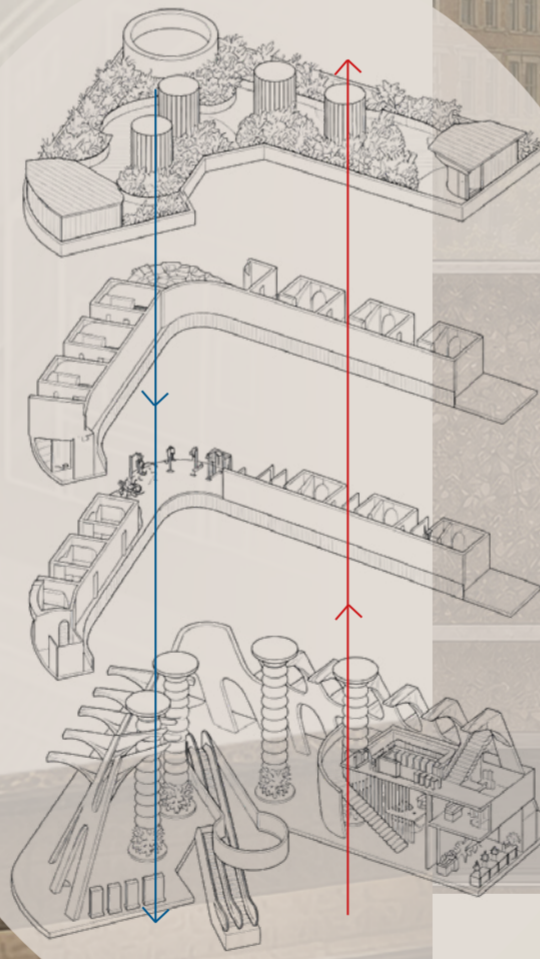
Air enters the alveoli.
Like people entering a station.

2. GAS EXCHANGE

Oxygen enters the blood.
Carbon dioxide enters the alveoli.
Like passengers boarding a train.

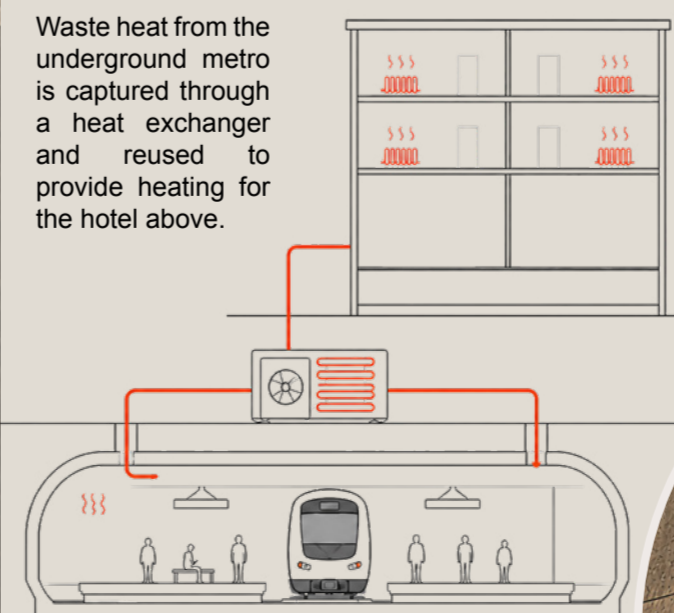
3. EXPIRATION

Waste gas moves out.
Like passengers getting off the train.



HEAT RECOVERY FROM THE UNDERGROUND STATION

Waste heat from the underground metro is captured through a heat exchanger and reused to provide heating for the hotel above.



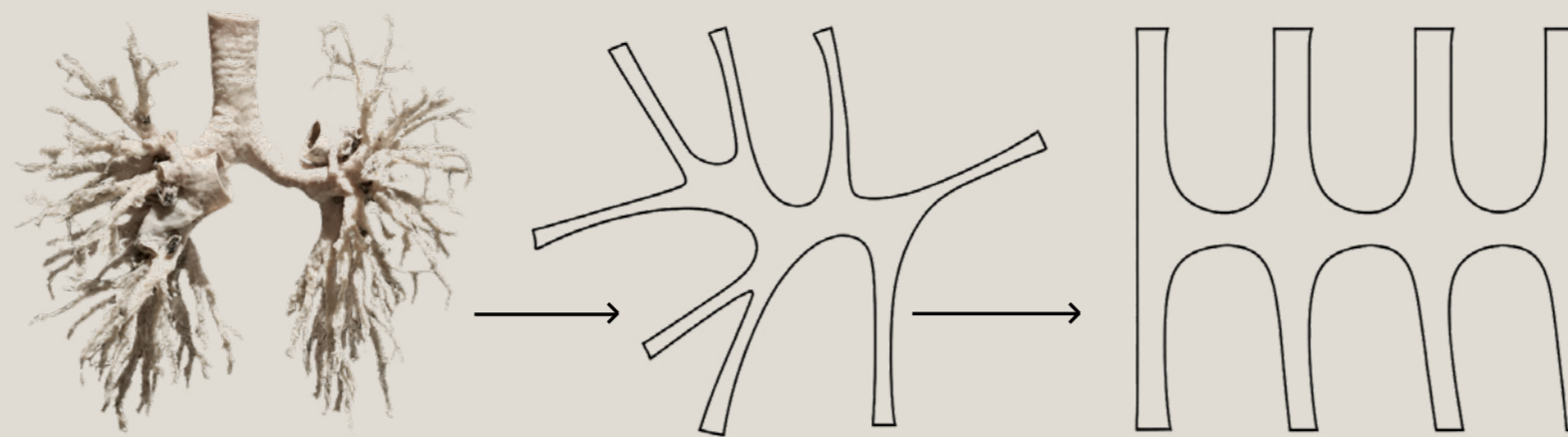
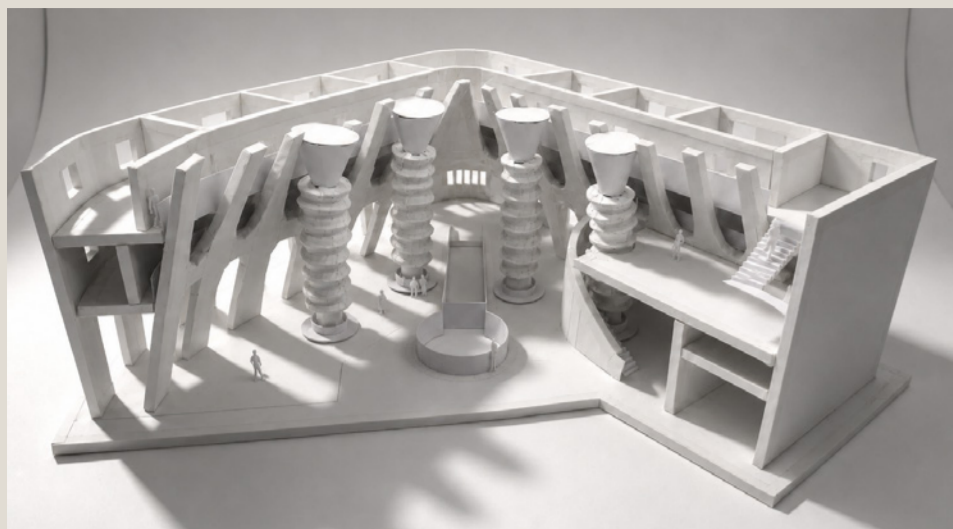
Air flows in through roof windcatchers and down through the central pillars.

Cool air enters the underground station, while warm air rises and is pushed back through the pillars.

Hot air rises out the building through the vertically split pillars.



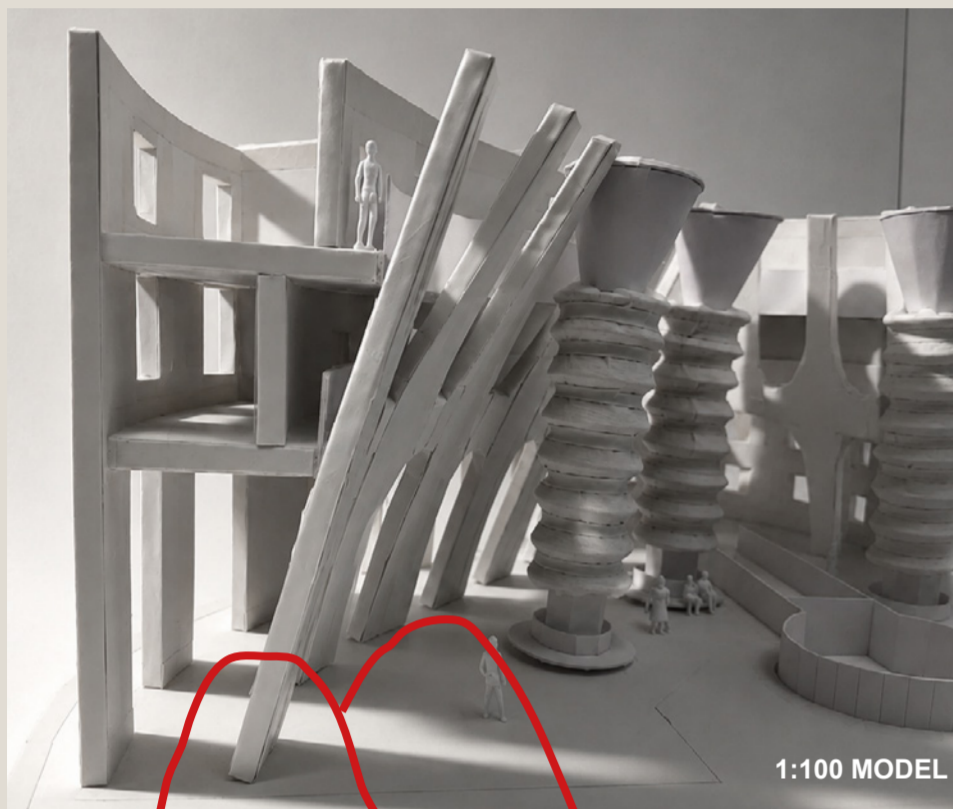
MOVEMENT INTO FORM



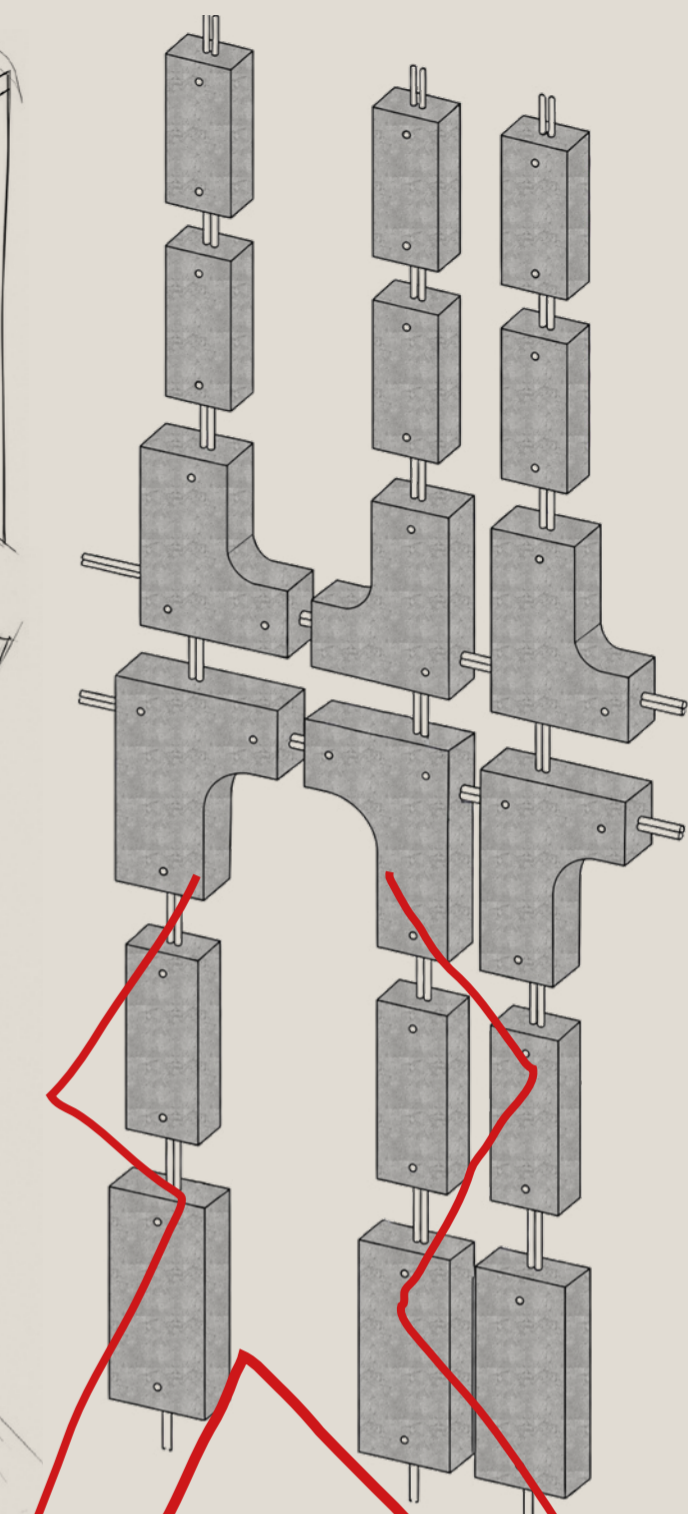
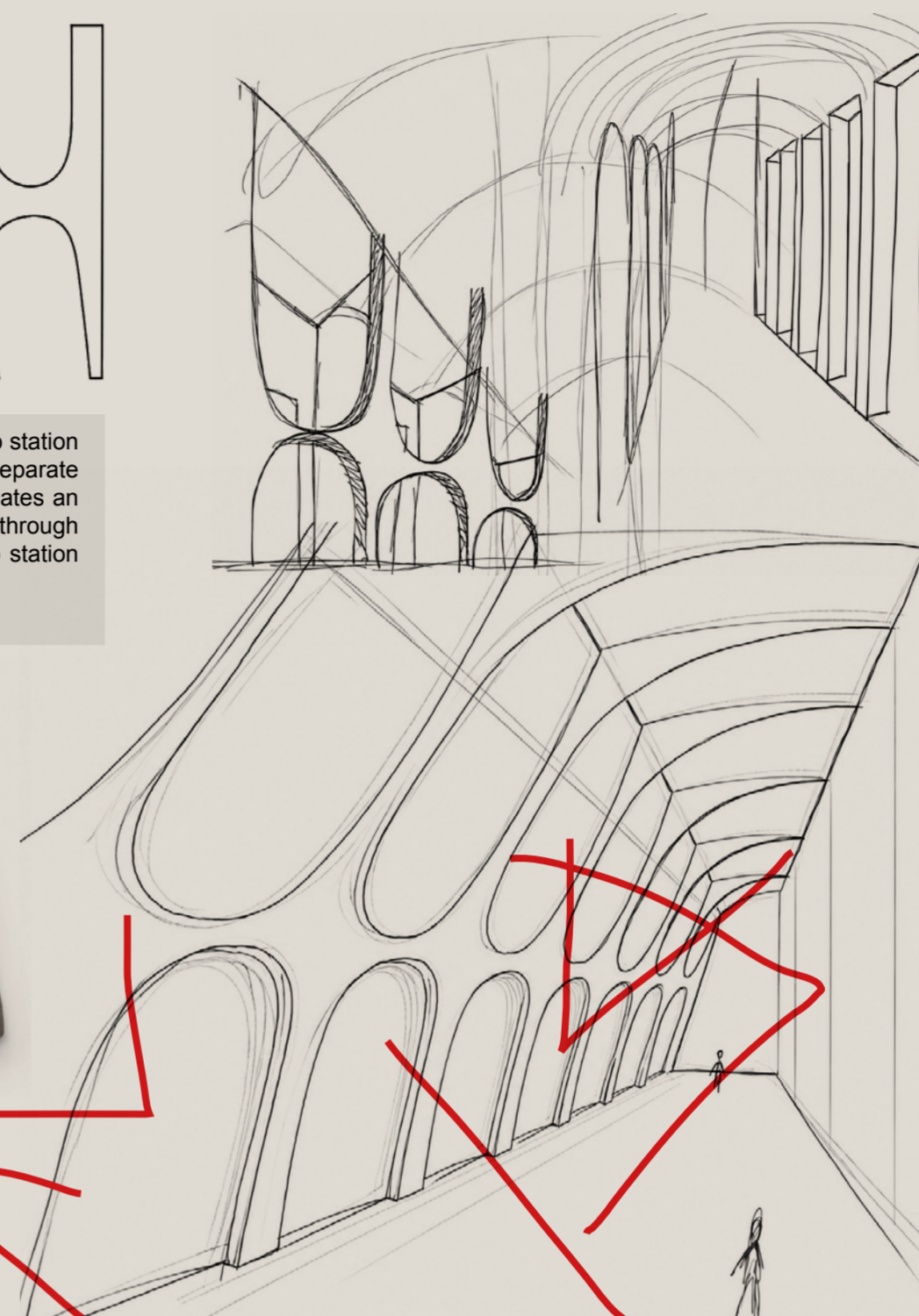
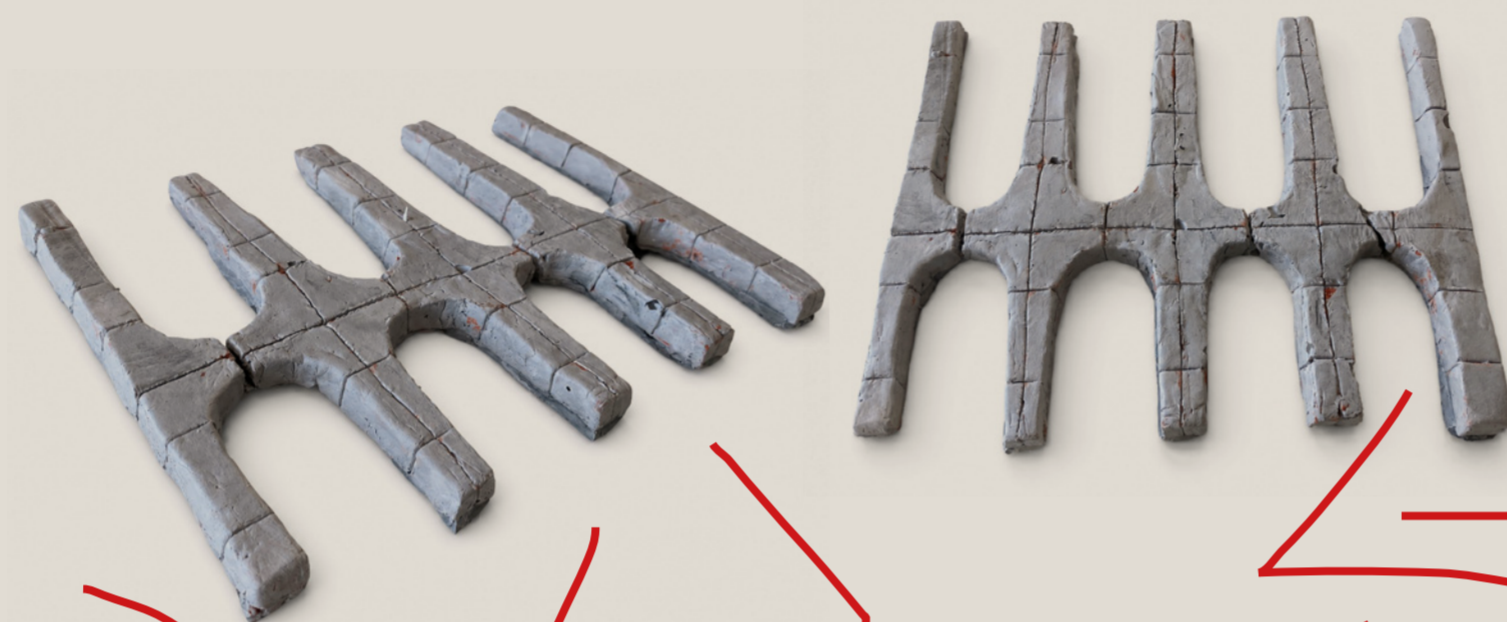
BRONCHIAL FORM STUDY

After studying the shapes of bronchioles in the lungs further, arch-like forms began to emerge in my designs. I experimented with creating these shapes in plaster to mimic concrete, carving lines into the models to suggest where the concrete sections would connect and be assembled. My concrete arches cut

through the building diagonally which allows the metro station to have a large open space, while also creating a separate and more private area for the hotel rooms. It also creates an interesting experience for hotel guests. As guests walk through the hallways to their rooms, they can view the metro station from above and watch the movement of people below.



1:100 MODEL



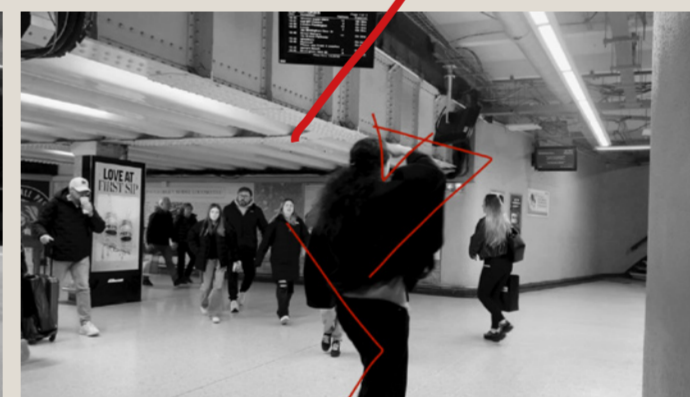
Ethnomethodology- A film capturing



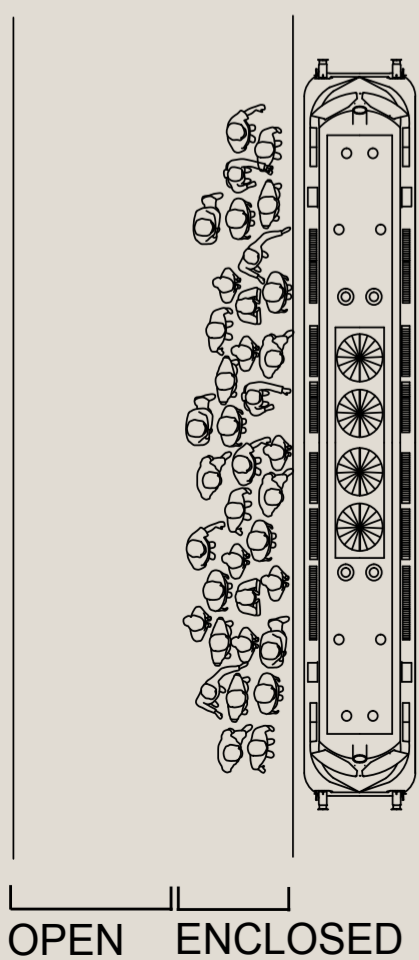
ordinary moments of pause



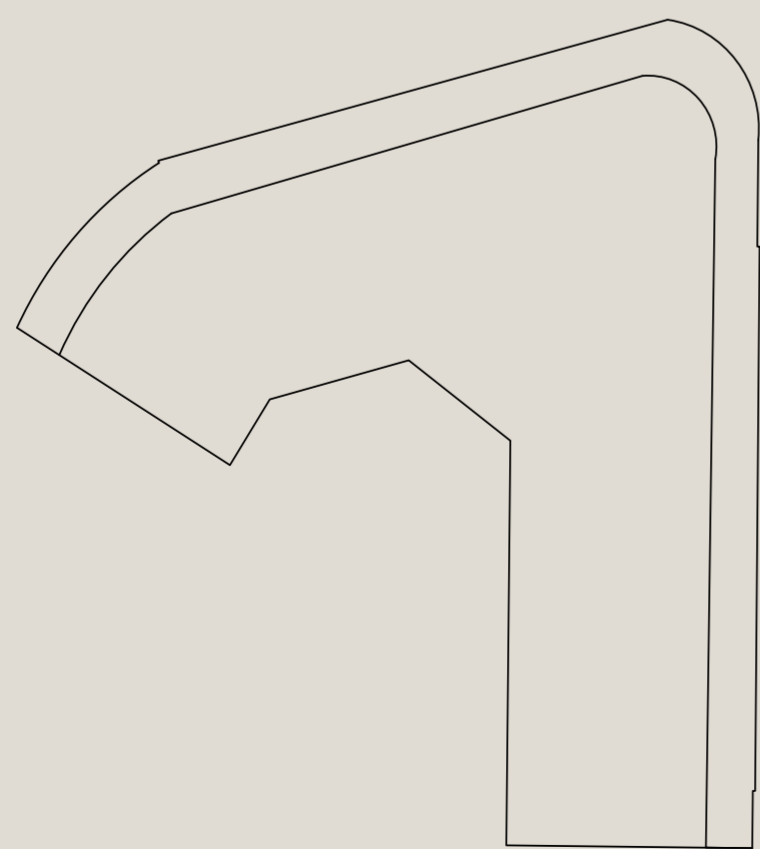
that often go amiss



[Watch the Short Film](#)



OPEN ENCLOSED



OPEN ENCLOSED

MOVEMENT INTO PLAN

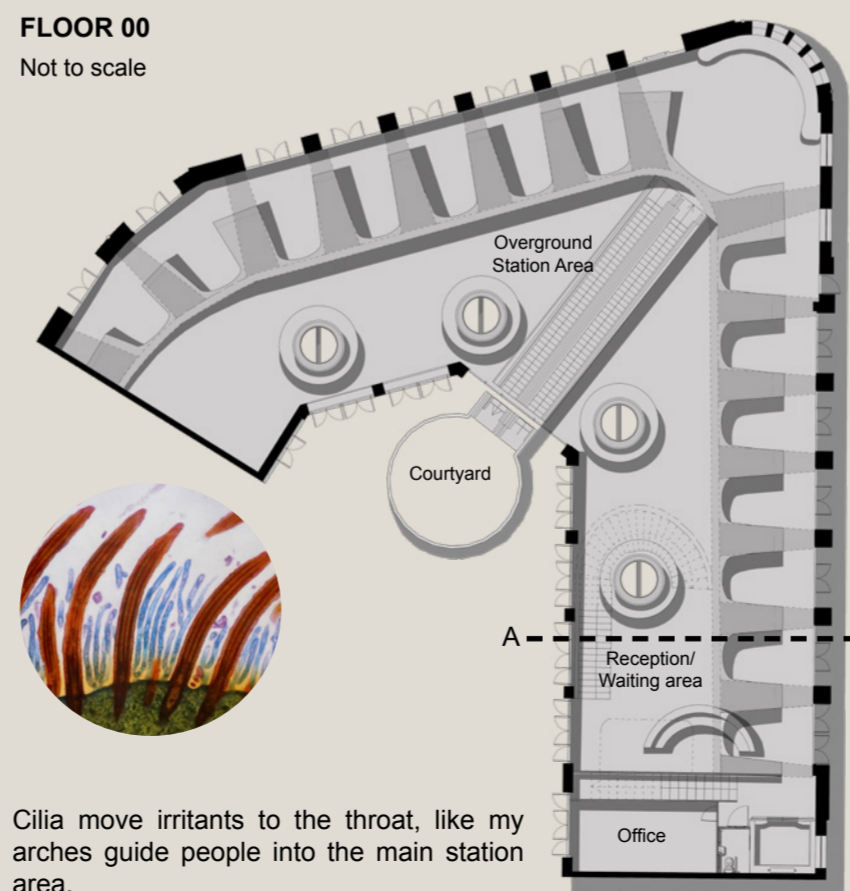
I created a short film in Temple Meads exploring movement in a busy train station, pausing at moments where spatial forms began to emerge. I noticed that people were bumping into each other, running and rushing. The film became an analogue research tool, translating patterns of movement, crowding, pause and release into spatial form.

I noticed how a train arrival made the platform crowded, while a large open space remained behind. I recreated this contrast in my design through a low, narrow entrance that opens through arches into a larger, higher space, creating a sense of compression and release, like breathing in and out.

The floor plans are also inspired by cell-like shapes. I wanted the building to feel organic and connected to the body, rather than being a standard rectangular transport space.

FLOOR 00

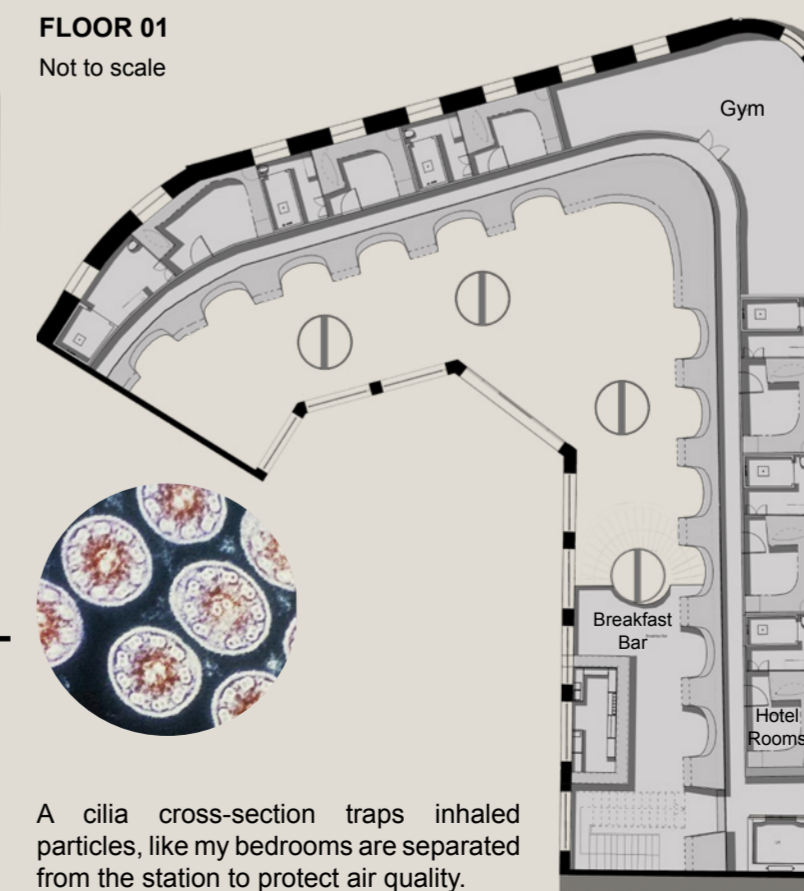
Not to scale



Cilia move irritants to the throat, like my arches guide people into the main station area.

FLOOR 01

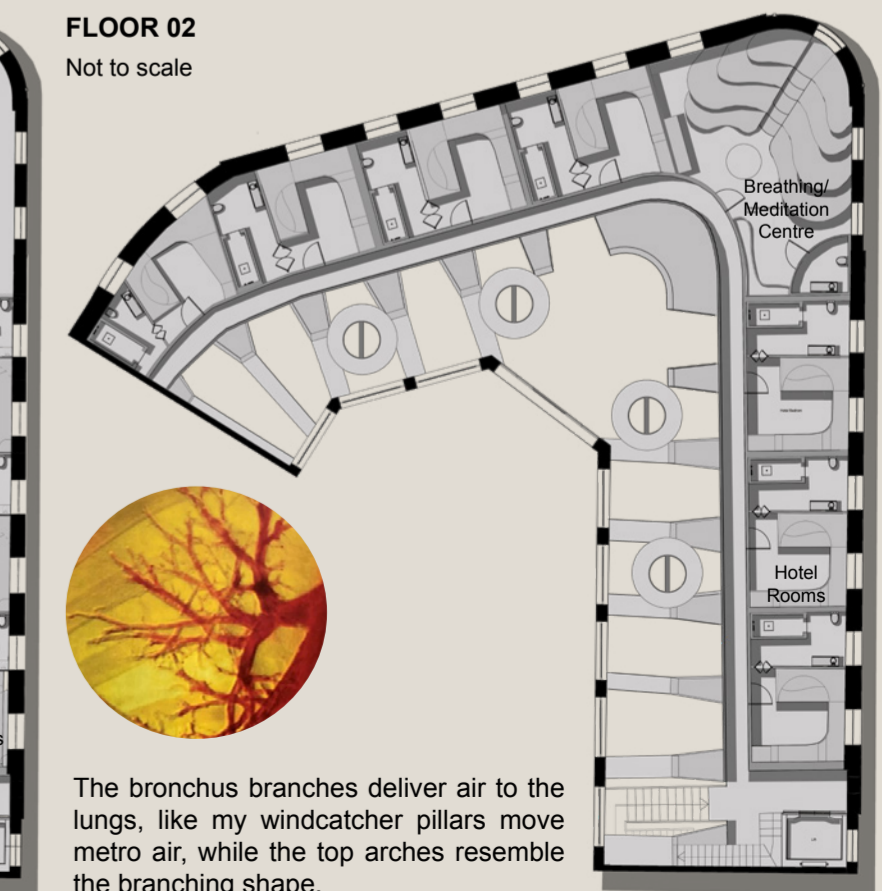
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A cilia cross-section traps inhaled particles, like my bedrooms are separated from the station to protect air quality.

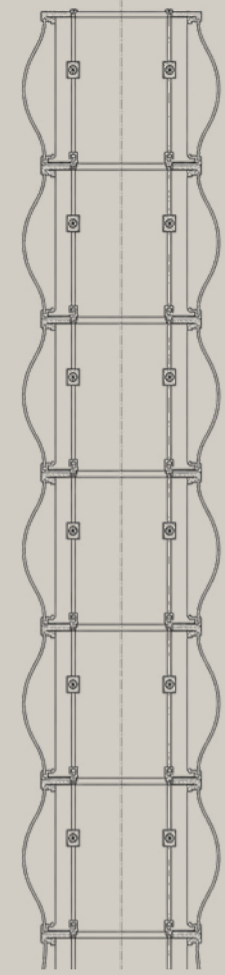
FLOOR 02

Not to scale



The bronchus branches deliver air to the lungs, like my windcatcher pillars move metro air, while the top arches resemble the branching shape.

BREATHING STRUCTURES



PLAN

VERTICAL BREATHING PILLARS

Repeating air-filled chambers inflate sequentially, pushing the fabric upward before deflating in a continuous cycle. This creates a breathing motion, while air is circulated down to the metro station and back up through the roof. The breathing pillars act as both environmental infrastructure and experiential objects, making air movement visible within the station.



CONCRETE BASE

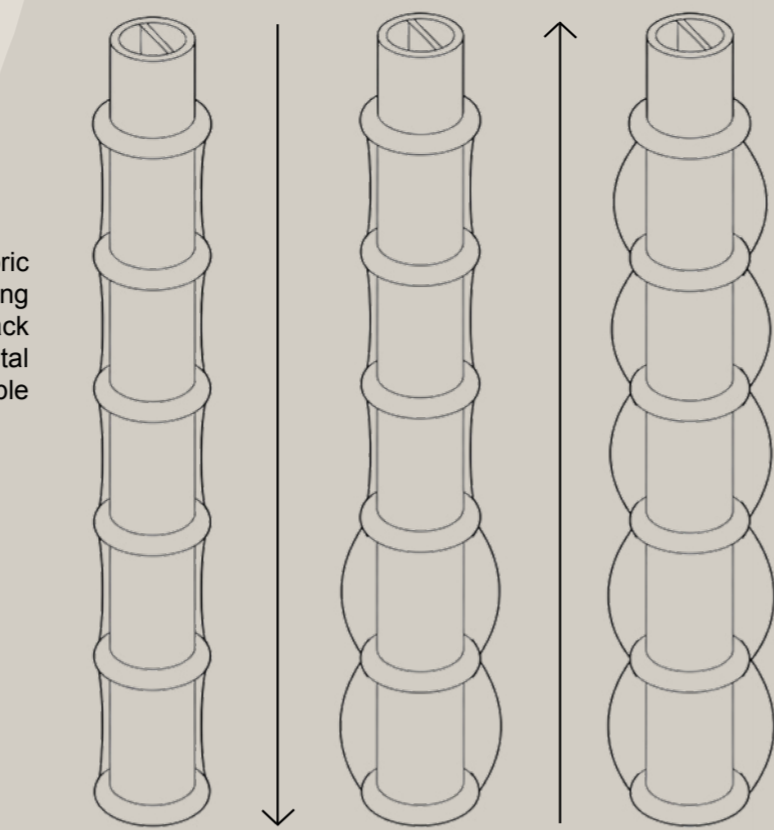
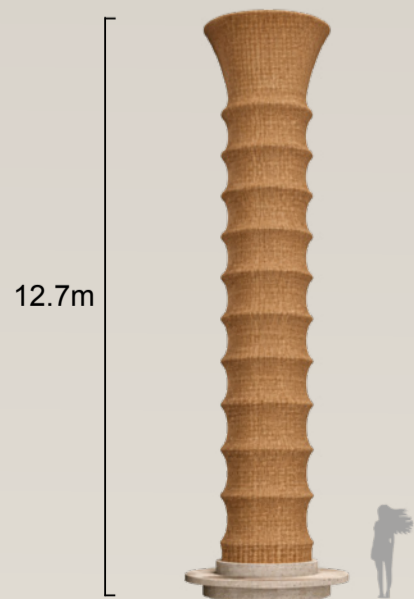
Provides stability and acts as my windcatchers within the pillar.



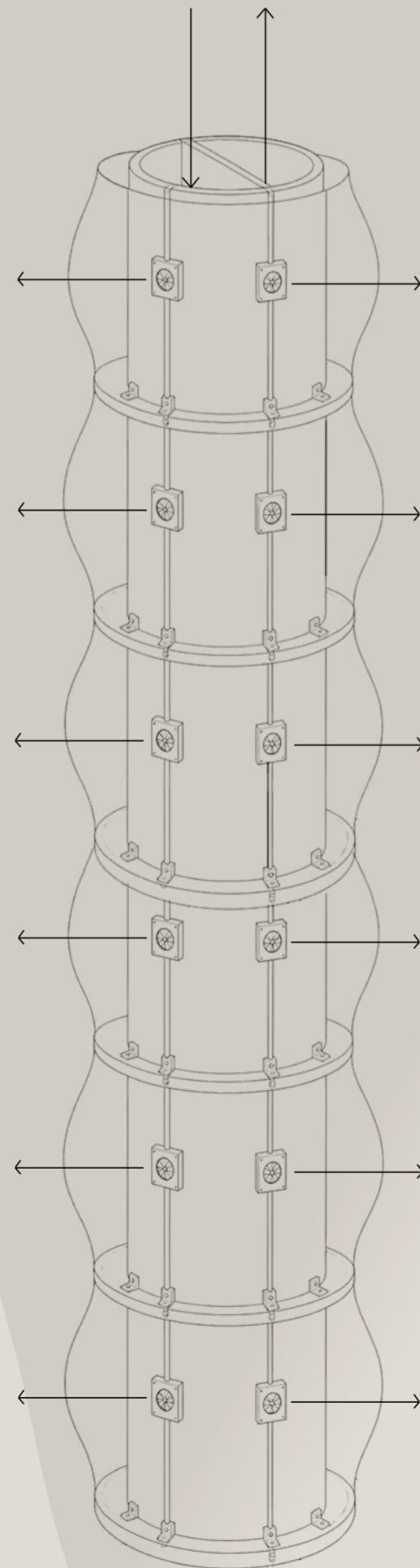
FABRIC

Natural woven linen fabric provides flexibility, movement and lightness.

SCALE AND CONTEXT



Fans inflate the fabric progressively upward, before the air is drawn back down through the system.



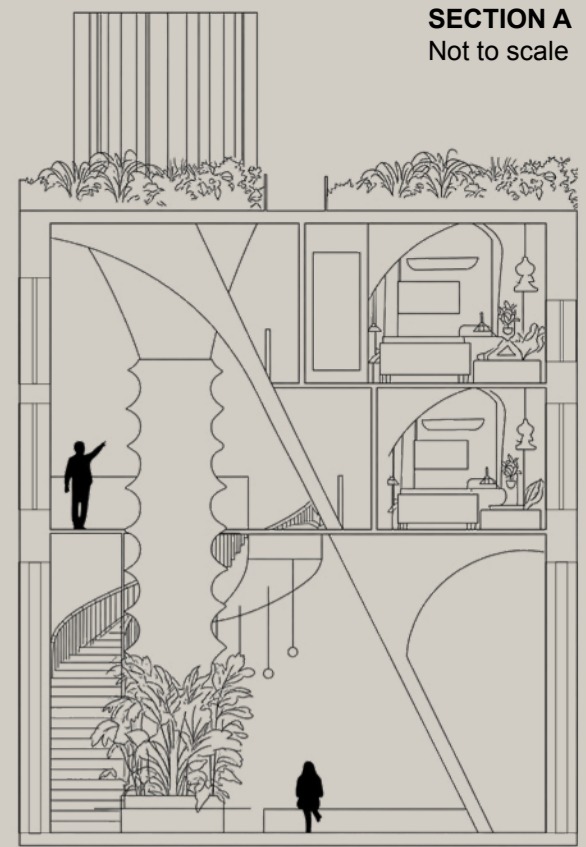
STATION MATERIALS

The metro station retains the character of the Grade II listed building, with existing flooring, concrete arches, clay plaster, oak, linen and Dracaena plants adding industrial character, warmth and cleaner air.



SECTION A

Not to scale



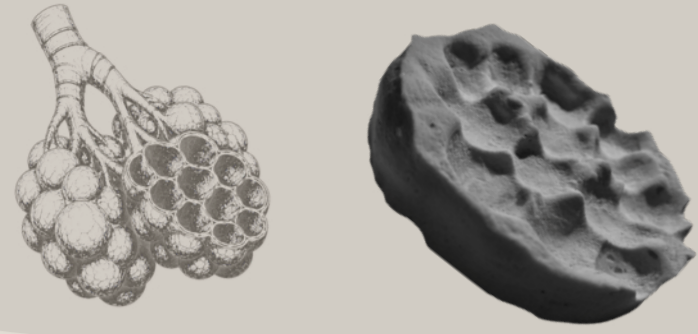
ENTRANCE HALLWAY



HOTEL RECEPTION/ WAITING AREA

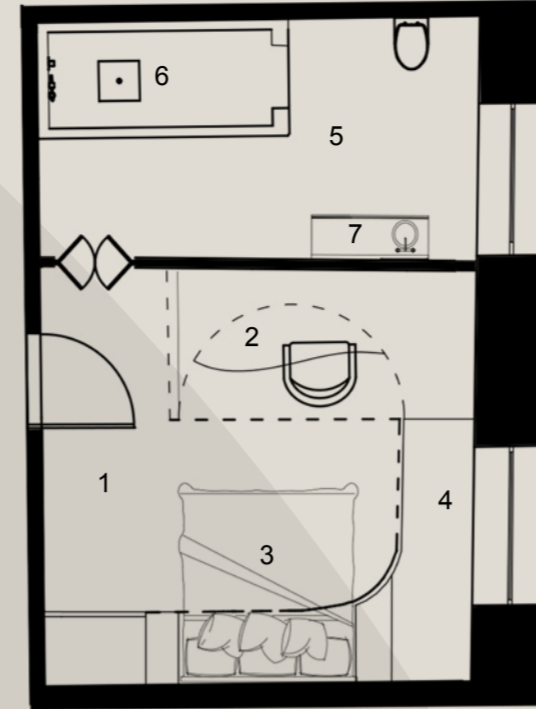


ROOMS FOR BREATHING



ROOM CONCEPT

The hotel bedrooms are inspired by a plaster mould I made, based on the shapes of alveoli. Alveoli are the small air sacs in the lungs where gas exchange happens. I wanted the rooms to feel like calm air pockets, making guests more aware of the quality of the air around them.



- 1- Hotel Bedroom
- 2- Desk
- 3- Bed
- 4- Window Seating
- 5- Bathroom
- 6- Shower
- 7- Bathroom Sink

HOTEL BEDROOM PLAN
Not to scale



MEDITATION/ BREATHING CENTRE



HOTEL ROOMS

BREATHING SYSTEMS AND WELL-BEING

My building uses separate breathing systems for each area. In the metro station, windcatcher pillars ventilate air in and out of the building, reflecting the movement of people entering and leaving the trains. The hotel focuses more on human breathing and well-being, with rooms designed around air quality and a meditation space dedicated to breathing practices.

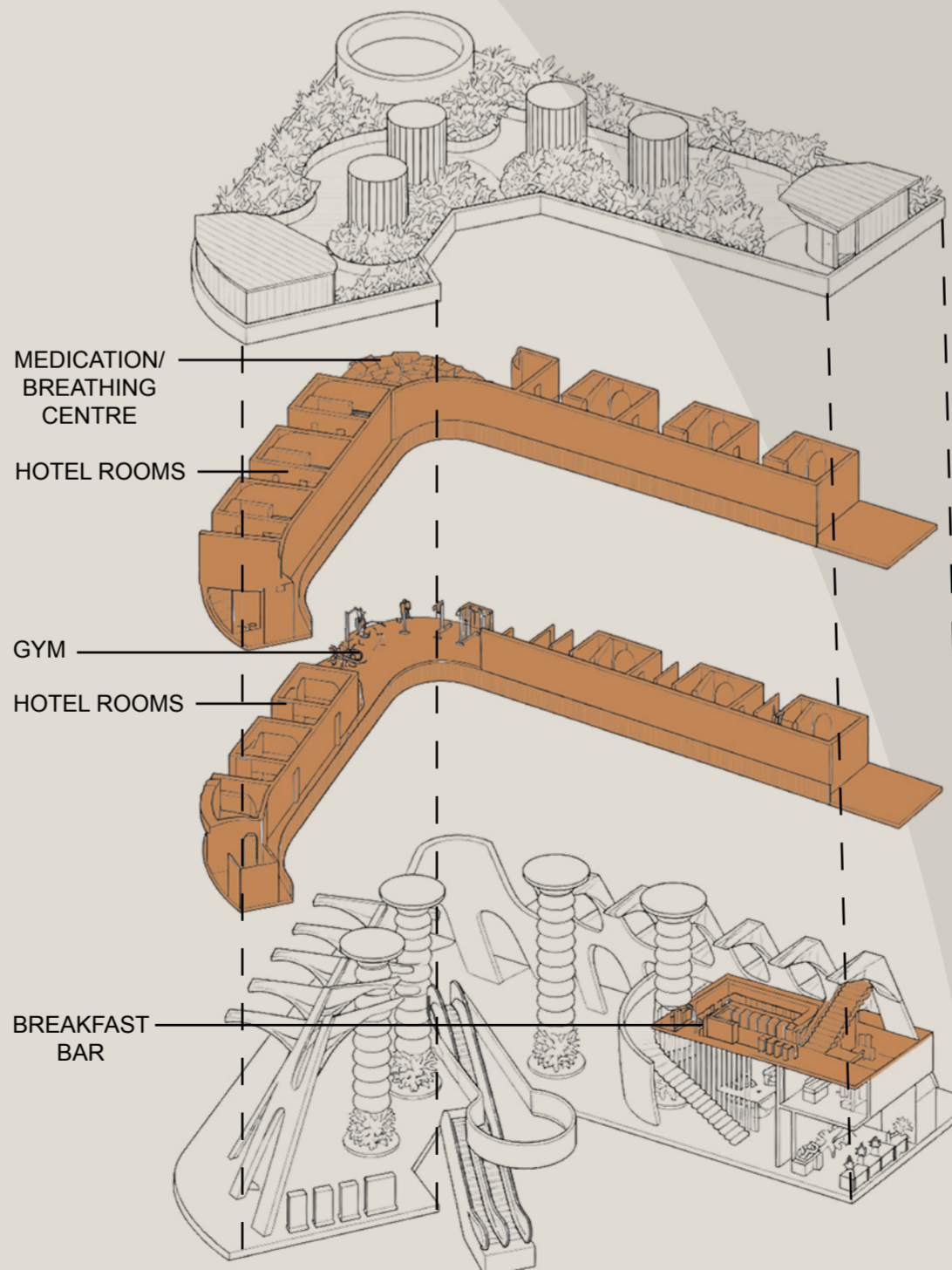
I added a public breathing and meditation centre for both hotel guests and visitors. The space supports relaxation, reduces stress and anxiety,

improves sleep, and encourages better mental well-being through breathing and mindfulness. The hotel rooms use natural, breathable materials to support air quality and well-being, including Belgian linen, organic cotton, humidity-regulating clay plaster, FSC-certified oak, and woven rattan furniture for a warm, calming atmosphere.

The air would pass through hospital-grade filters to remove carbon, VOCs, pollen, and other particulates, then enter at floor level through slow displacement ventilation, rising naturally from ground level before being extracted through



HOTEL BREAKFAST BAR



AIR VENT DEVELOPMENT

My air vents are inspired by forms developed from the short film. I used these shapes in the hotel bedrooms to connect the movement of air in the rooms with the movement of people in the metro station below.



HOTEL ROOMS MATERIAL BOARD