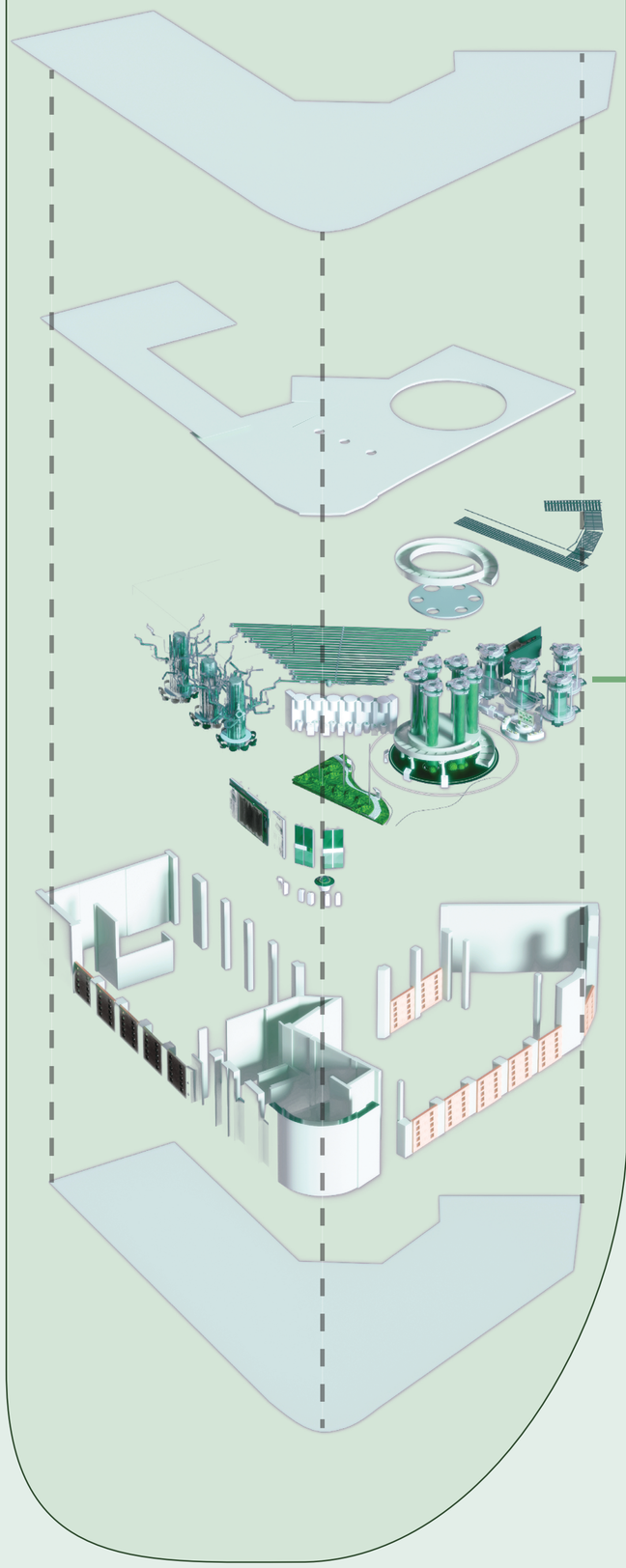
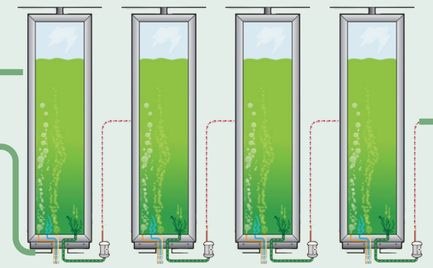
Virdo$_2$

Breathing Interior Design Powered by Algae

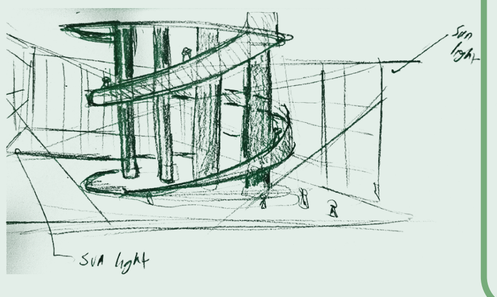


Virdo$_2$ is a spatial design response to the climate emergency. Located in Bristol's old fire station—an urban site surrounded by pollution—it uses algae as both a functional and symbolic material to purify air and visualize ecological renewal. The space incorporates transparent pipes, natural light, and rhythmic circulation to create a "breathing system" that reconnects humans with the invisible urgency of our atmosphere. This project allowed me to reflect on how interior design can engage with environmental crises beyond surface-level aesthetics. I began to see design as a quiet yet impactful act of resistance—where even small-scale spatial decisions can challenge pollution, raise awareness, and promote behavioural change. Virdo$_2$ is not just a concept; it is a working system that imagines how interiors can participate in climate action. Through this project, I explored how design can become part of the solution, contributing meaningfully—however subtly—to a more breathable future.

Carbon dioxide from both indoors and outdoors is pumped into containers filled with green algae. The algae is then circulated through different pipelines to maintain continuous flow. Inside the space, there are four green algae air purification units.



Its spiral form pays tribute to the Bristol Old Fire Station, echoing the historical firefighter's pole—a symbol of urgency and rescue. Reimagined in this context, it becomes a "breathing column" wrapped in algae tubes, linking the site's past with a sustainable future.

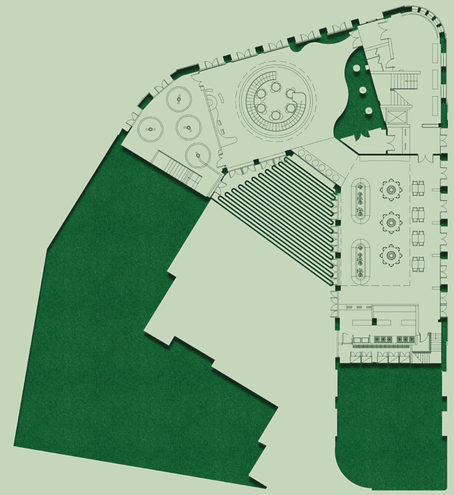


Courtyard

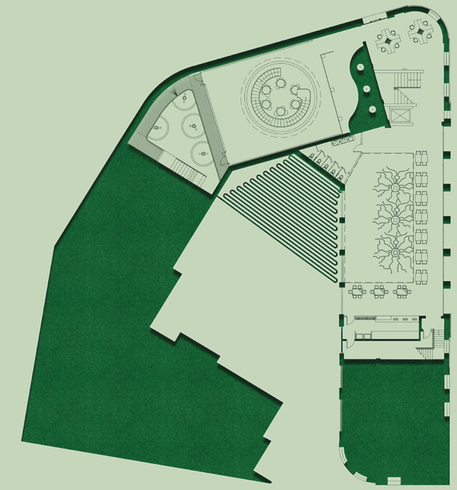
The courtyard hosts a large shading structure made of transparent tubes filled with flowing microalgae. Sunlight passing through supports photosynthesis and casts gentle green light—creating a calm, forest-like atmosphere. This immersive installation brings a sense of nature into the city.

Display Area – Algae?

This area is designated for the display of algae specimens and related information. It showcases different types of algae, their characteristics, ecological roles, and environmental significance



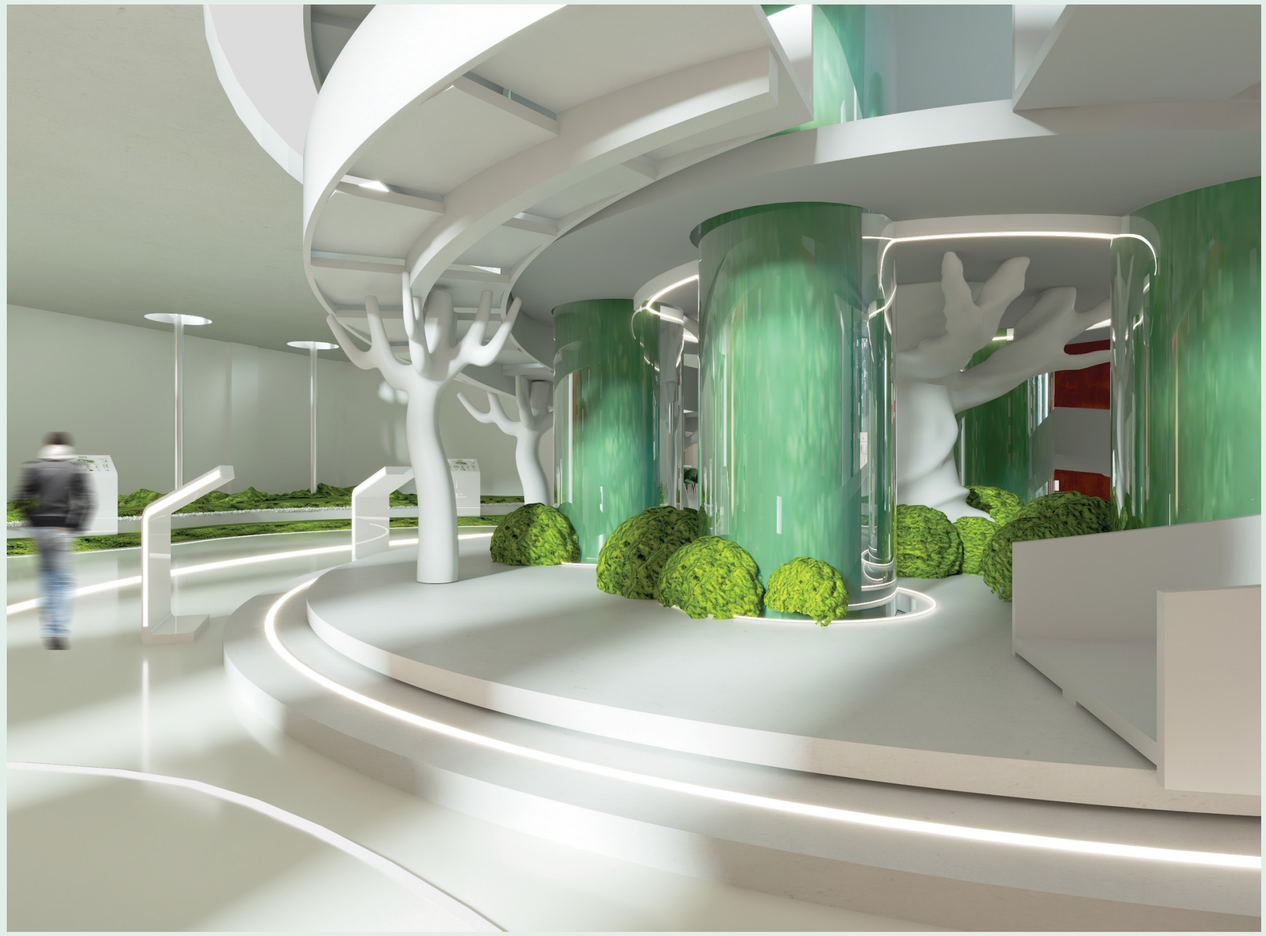
Grounf Floor



First Floor

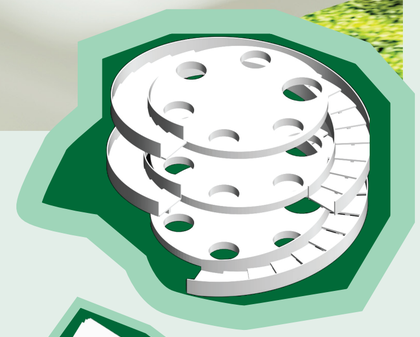
Weekly Development of Cultivated Green

Green algae that I have personally cultivated. Each container holds samples from different points in the weekly growth cycle. The aim is to allow viewers to clearly see the algae's gradual transformation and better understand its biological development over time.



Main Staircase & Breathing Core

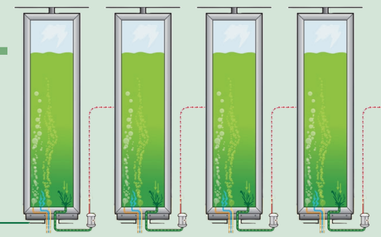
A key spatial feature is the large spiral staircase, designed to create strong visual impact upon entry. Beyond circulation, it serves as the central sculptural element of the space.



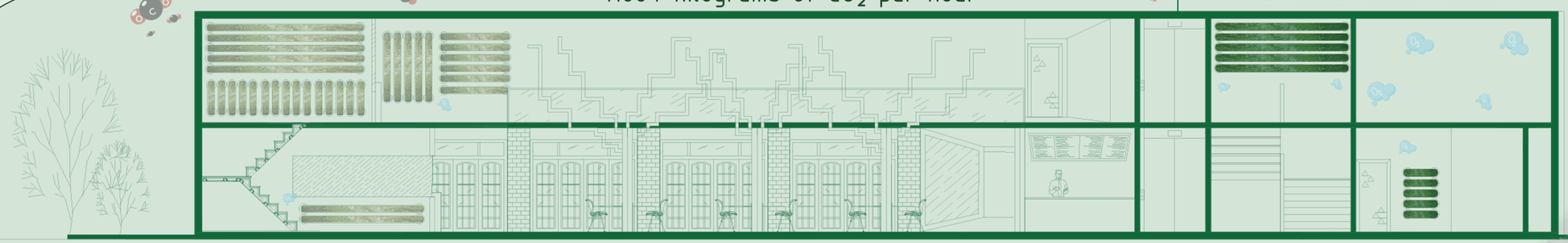
Algea Needed

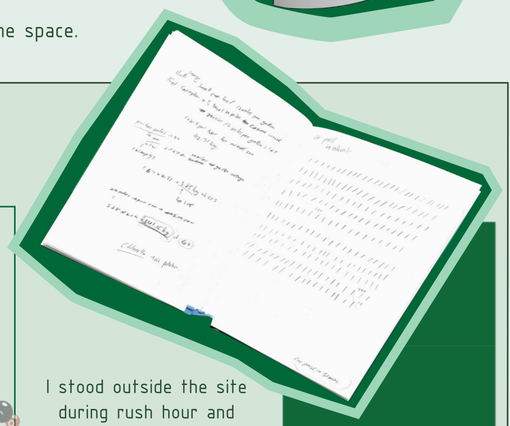
Algae needed = Target CO_2 ÷ Absorption rate
Example: 7 kg ÷ 0.075 = 93.3 kg

Each air purification unit contains about 30 tons of water enriched with green algae.



219 vehicles × 120g/km × 0.3km = 7,884 grams of CO_2
= 7.884 kilograms of CO_2 per hour



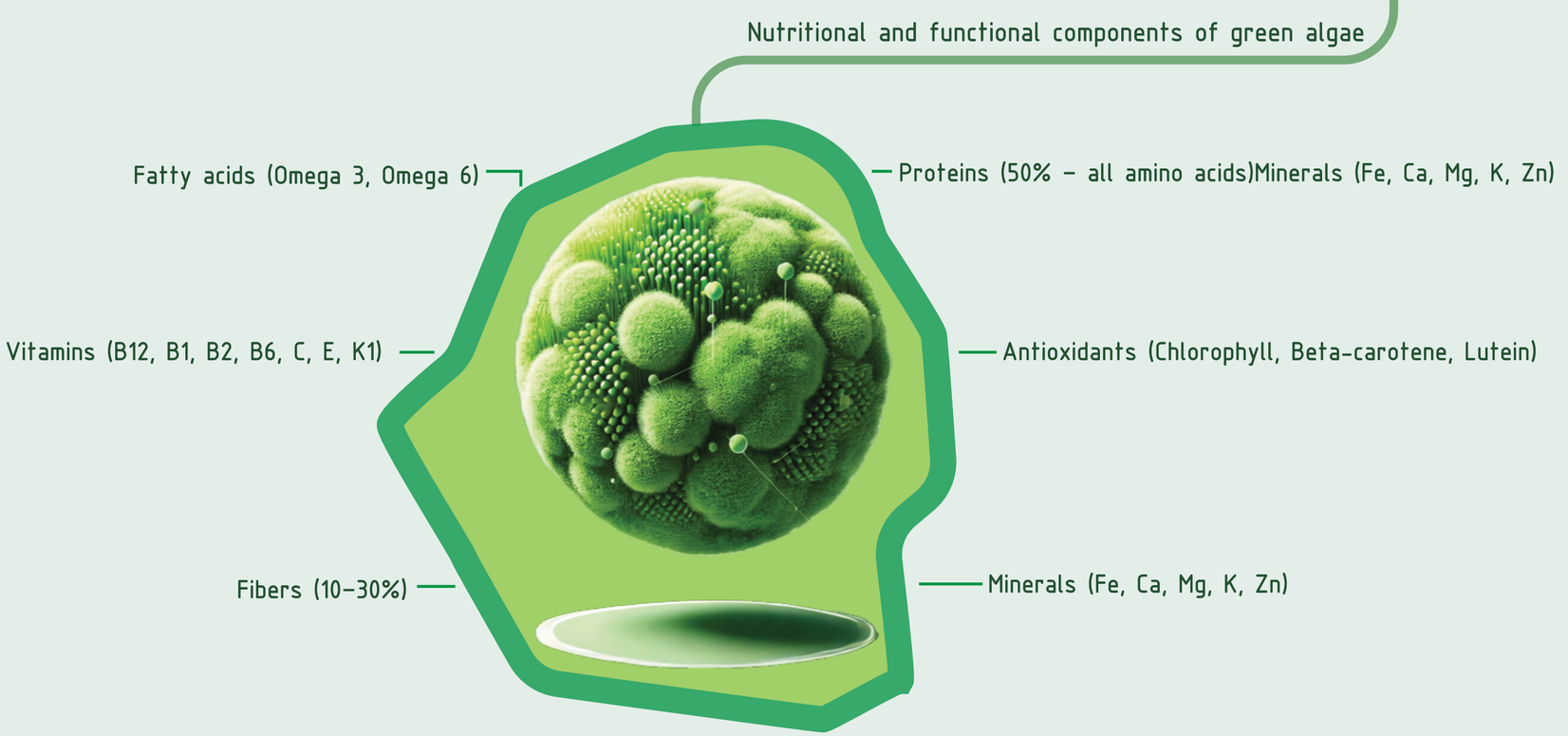


I stood outside the site during rush hour and counted the passing vehicles. In just one hour 219 cars passed by.

Green Algae Tunnel

This tunnel connects the Main Hall to the Dining & Relaxing Area. Along the path, visitors can explore various types of green algae, displayed in tubes or habitats to highlight their diversity, forms, and environmental roles.

Inspiration



Dining & Lounge Area

This space features a tree-like column made of transparent pipes, with spirulina flowing around it like vines. Inspired by algae growing on trees in Malaysia's Gunung Tahan National Park, the design turns natural symbiosis into architecture—creating a forest-like, breathable environment that reflects the bond between humans and nature.

Algae Storage & Interaction Zone

More than a storage space, this area allows visitors to engage with the algae system up close. A catwalk offers an overhead view of the "breathing" process — from storage to output. At intervals, algae are released for DIY use or sent to the restaurant, completing a cycle of growth → use → education.