

# The Rebirth of the House Mill

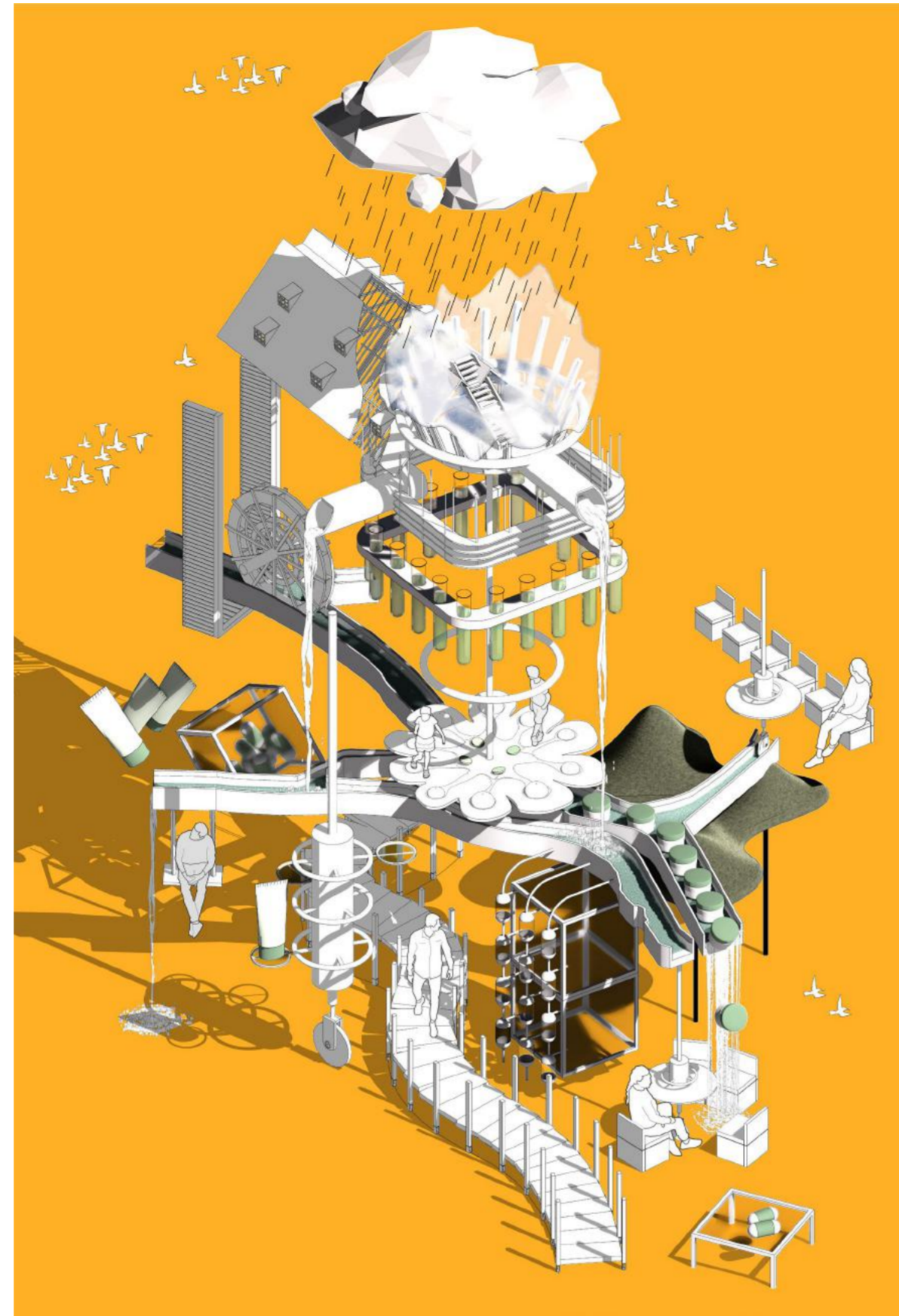
ChuYu Chen

**Background:** The House Mill on the River Lea, a tributary of the Upper Thames in East London, is a well-known historic tidal mill and one of the best preserved of the area's eight historic water mills. However, historical industrial activity polluted the river, and damming slowed water flow and increased algal blooms in the Lea River.

**Significance of the project:** The circular economy is a research direction for sustainable human existence in a future where resources and materials are scarce. To become new spaces that encourage sustainable and healthy living, old buildings, as cultural carriers representing the history of human activity, must be given new functions while retaining their historical elements.

**The project aims** to revitalise the surrounding under development community and industrial heritage through the sustainable economic cycle of algae, addressing future energy resource scarcity in society. Algae can transform carbon dioxide into biomass and healthy agricultural products, solving the energy crisis while developing the retail sector and driving the circular economy of the surrounding area. In addition, the algae consume urban waste gases and produce oxygen during photosynthesis, creating a natural oxygen bar that brings physical and psychological healing to residents who need it. The House Mill will be adaptively reused to create a centre for microalgae bioenergy production and a future healthy community centre; the old building serves as a dialogue with the past, and the new space is planned to allow for a variety of healing and fun community activities.

The entire space of the old mill will be fully utilised here. The tidal water wheel will serve as the initial power source for the micro-algae installation.



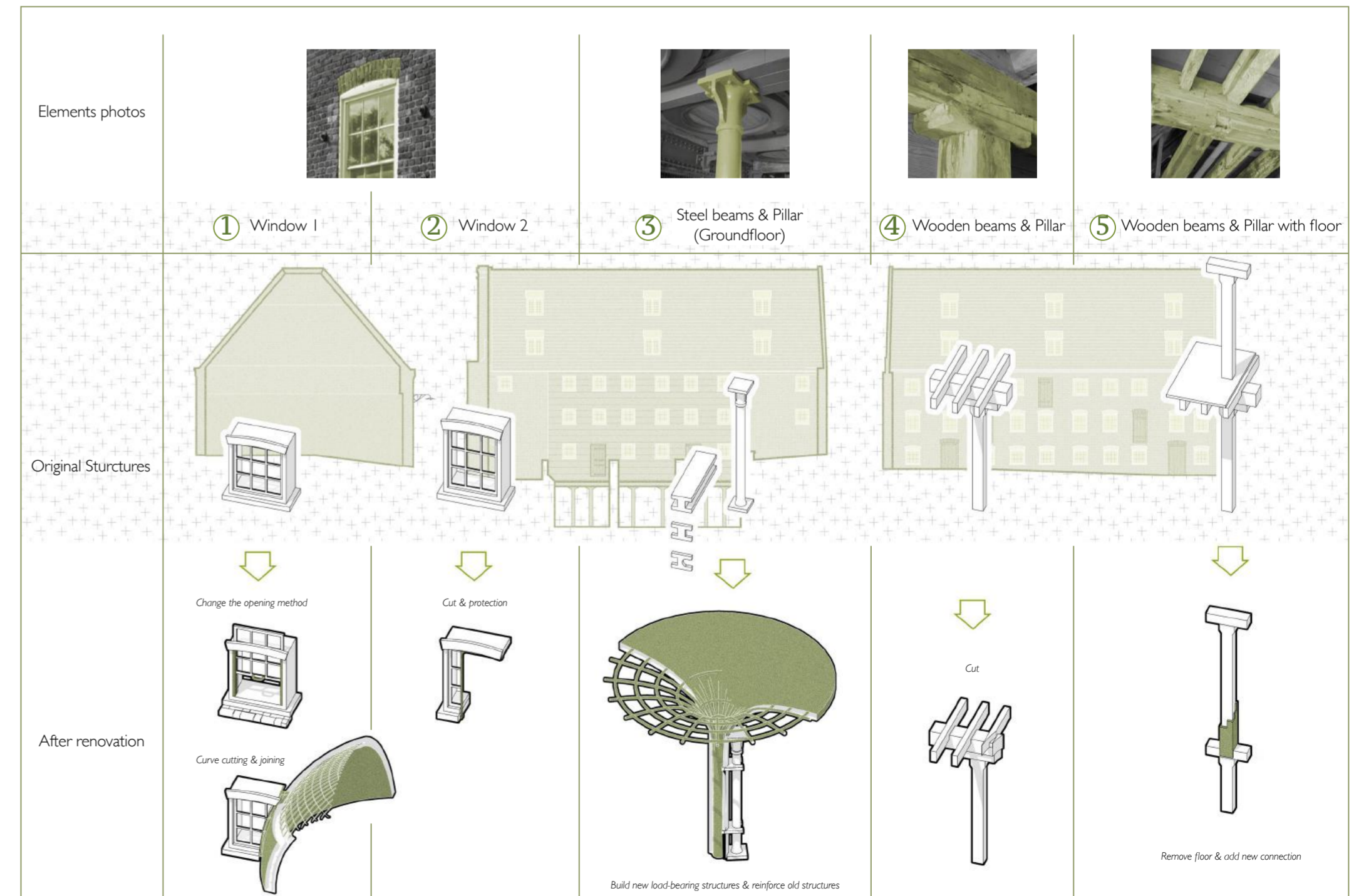
Concept collage

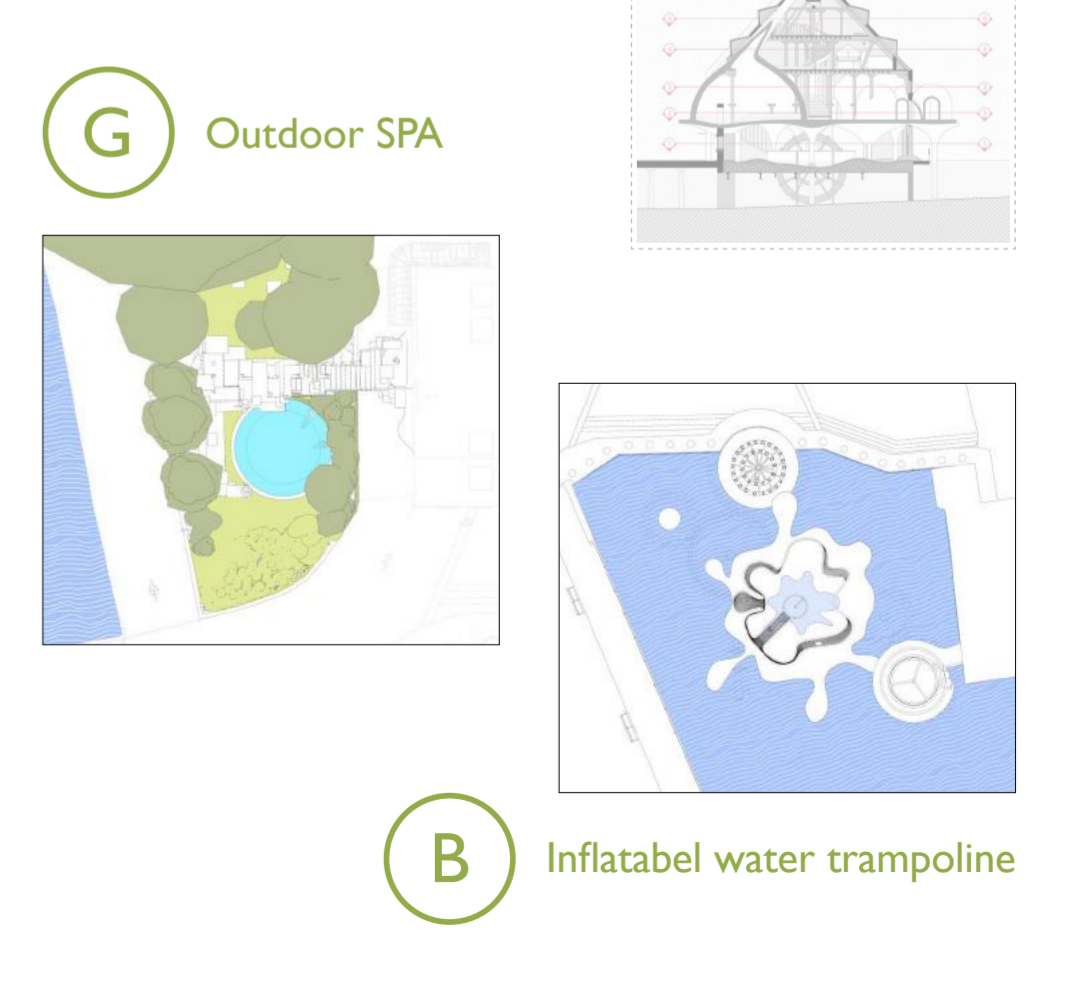
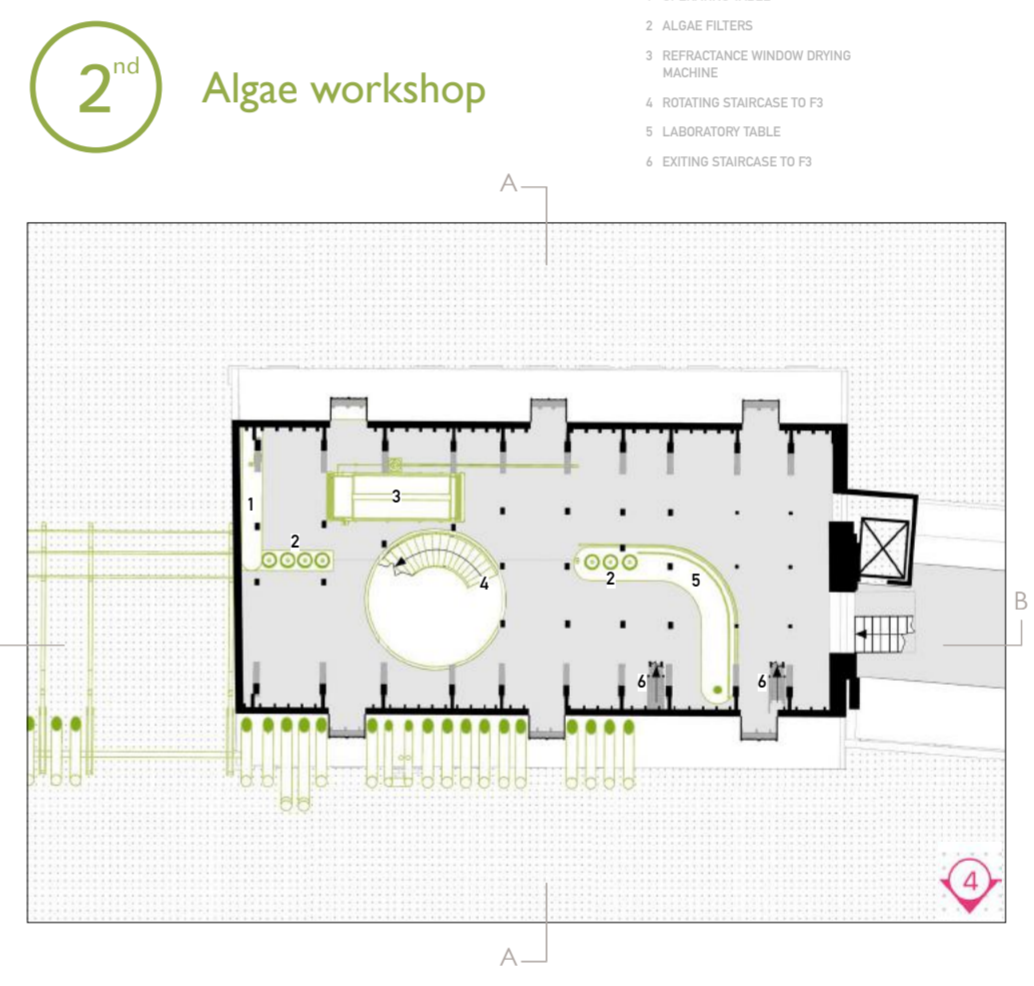
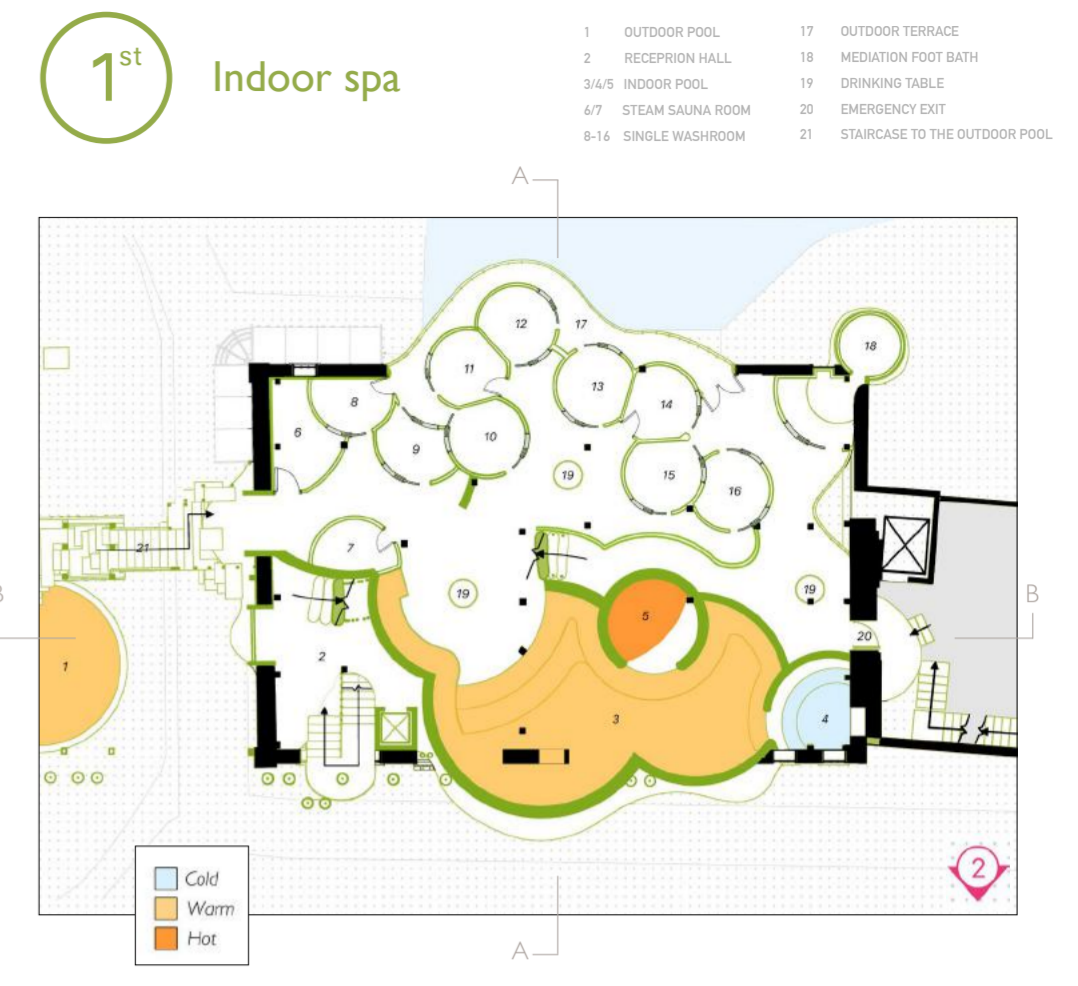
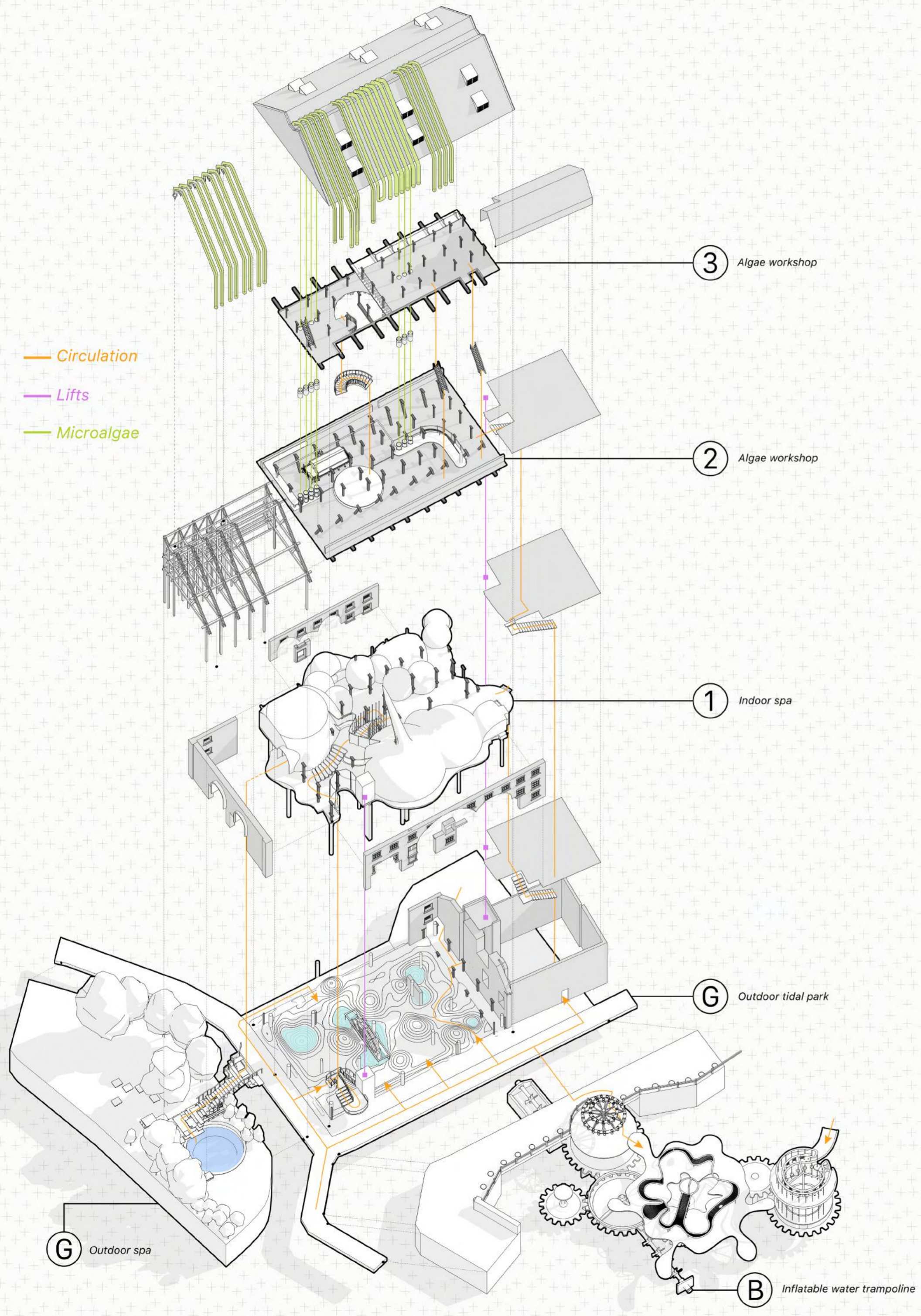


Outdoor spa rendering

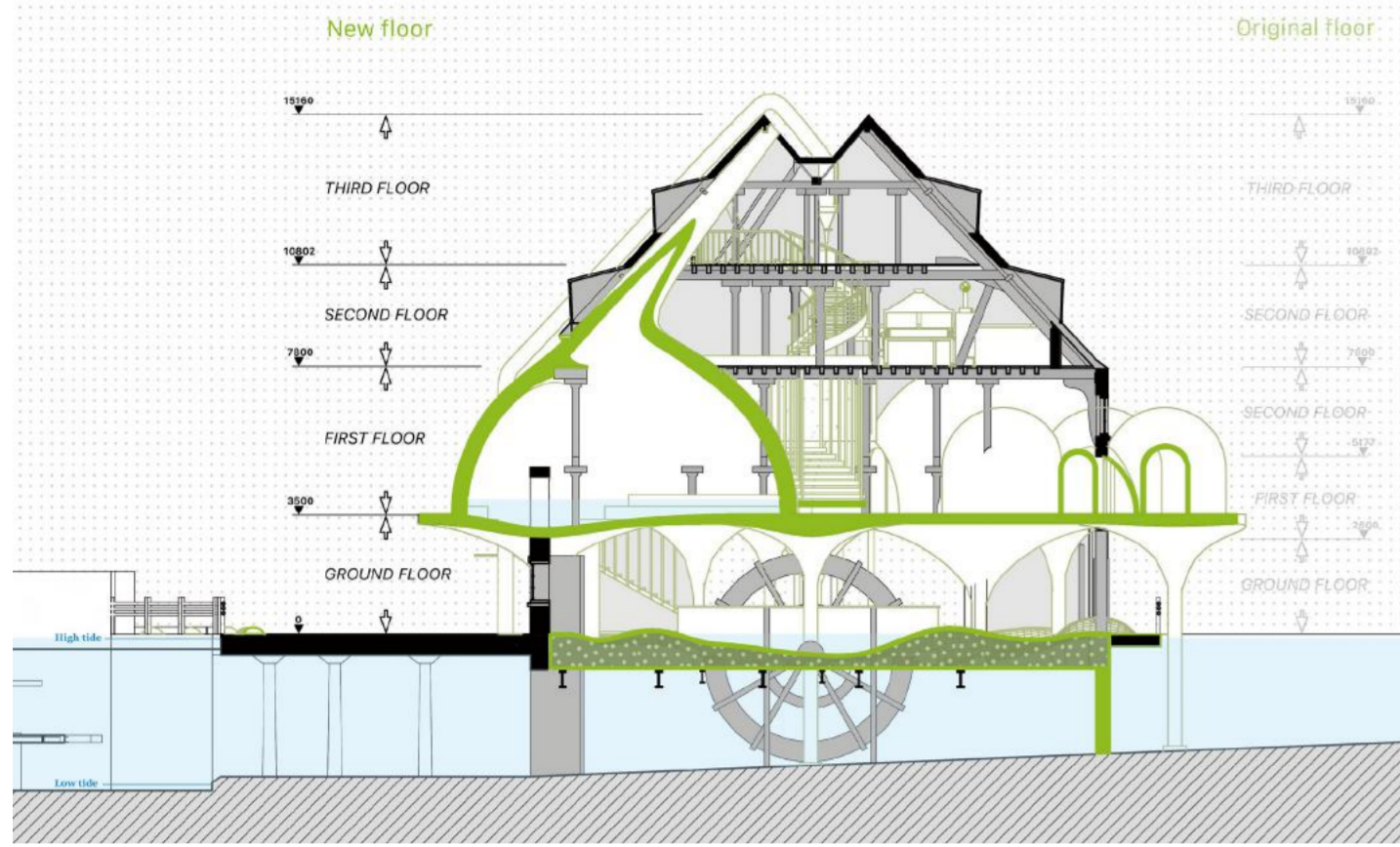


Rebuild the structure of elements

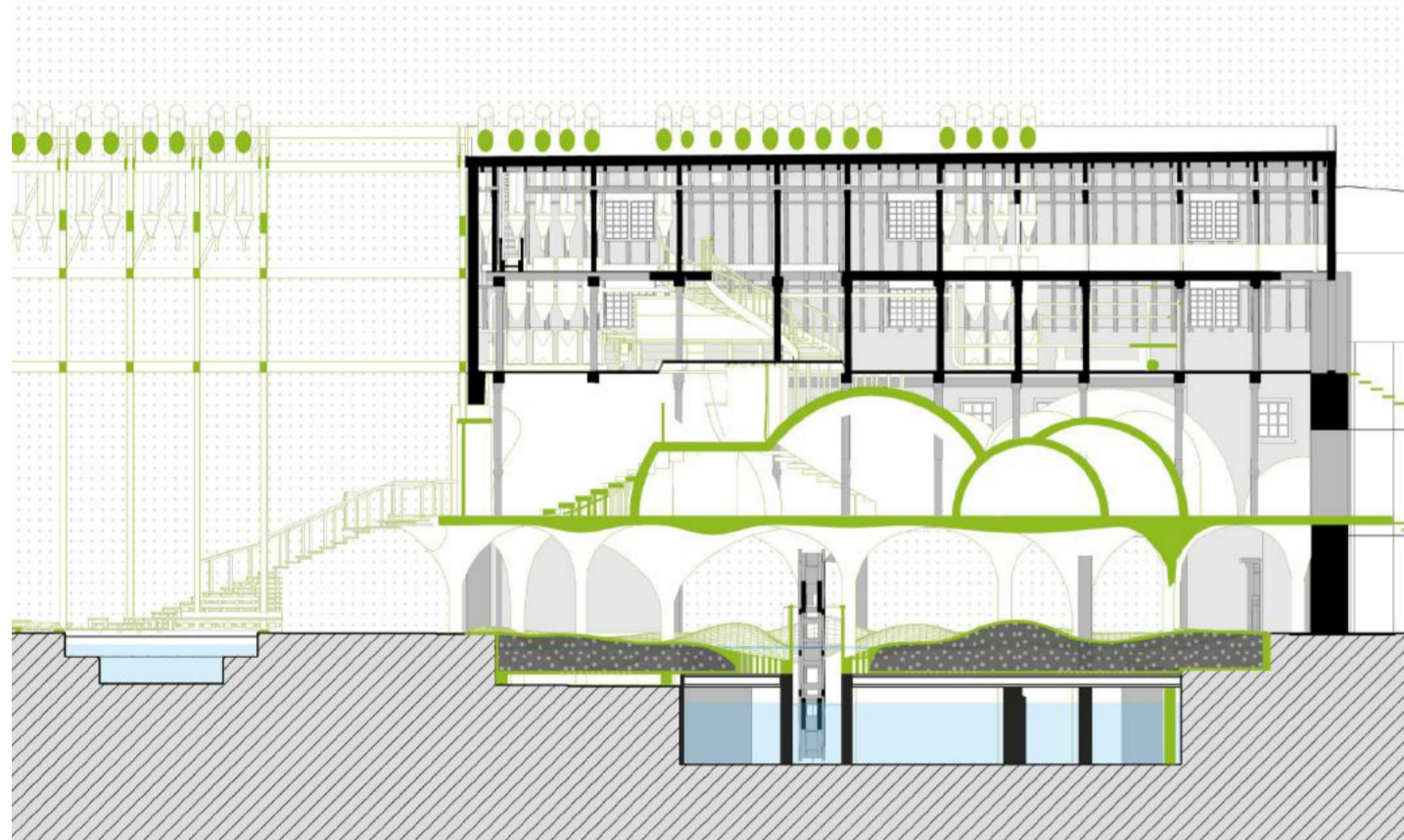




Section AA



Section BB

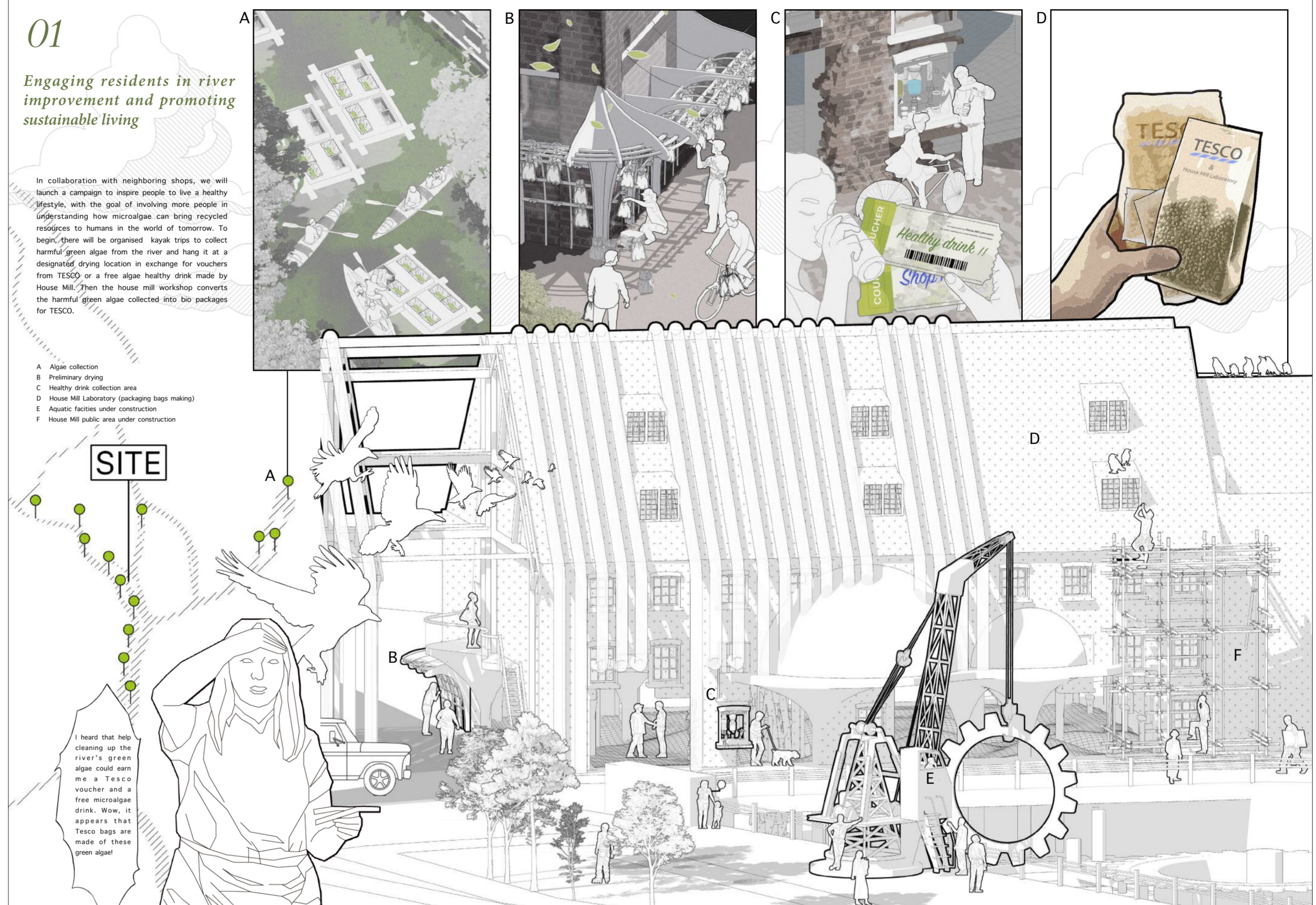


01

Engaging residents in river improvement and promoting sustainable living

In collaboration with neighboring shops, we will launch a campaign to inspire people to live a healthy lifestyle, with the goal of involving more people in understanding how microalgae can bring recycled resources to humans in the world of tomorrow. To begin, there will be organised kayak trips to collect harmful green algae from the river and hang it at a designated drying location in exchange for vouchers from TESCO or a free algae healthy drink made by House Mill. Then the house mill workshop converts the harmful green algae collected into bio packages for TESCO.

- A Algae collection
- B Preliminary drying
- C Healthy drink collection area
- D House Mill Laboratory (packaging bags making)
- E Aquatic facilities under construction
- F House Mill public area under construction



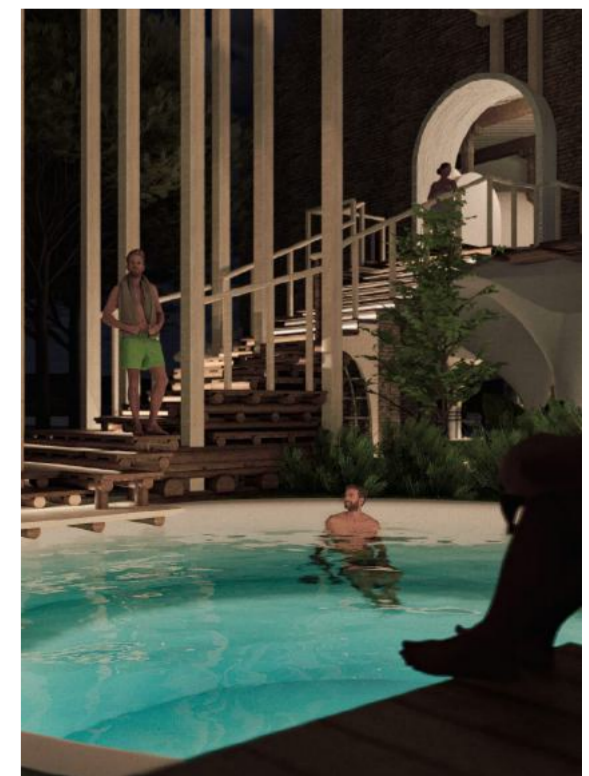
Night view



Outdoor tidal park (night)



Outdoor tidal park (bright)



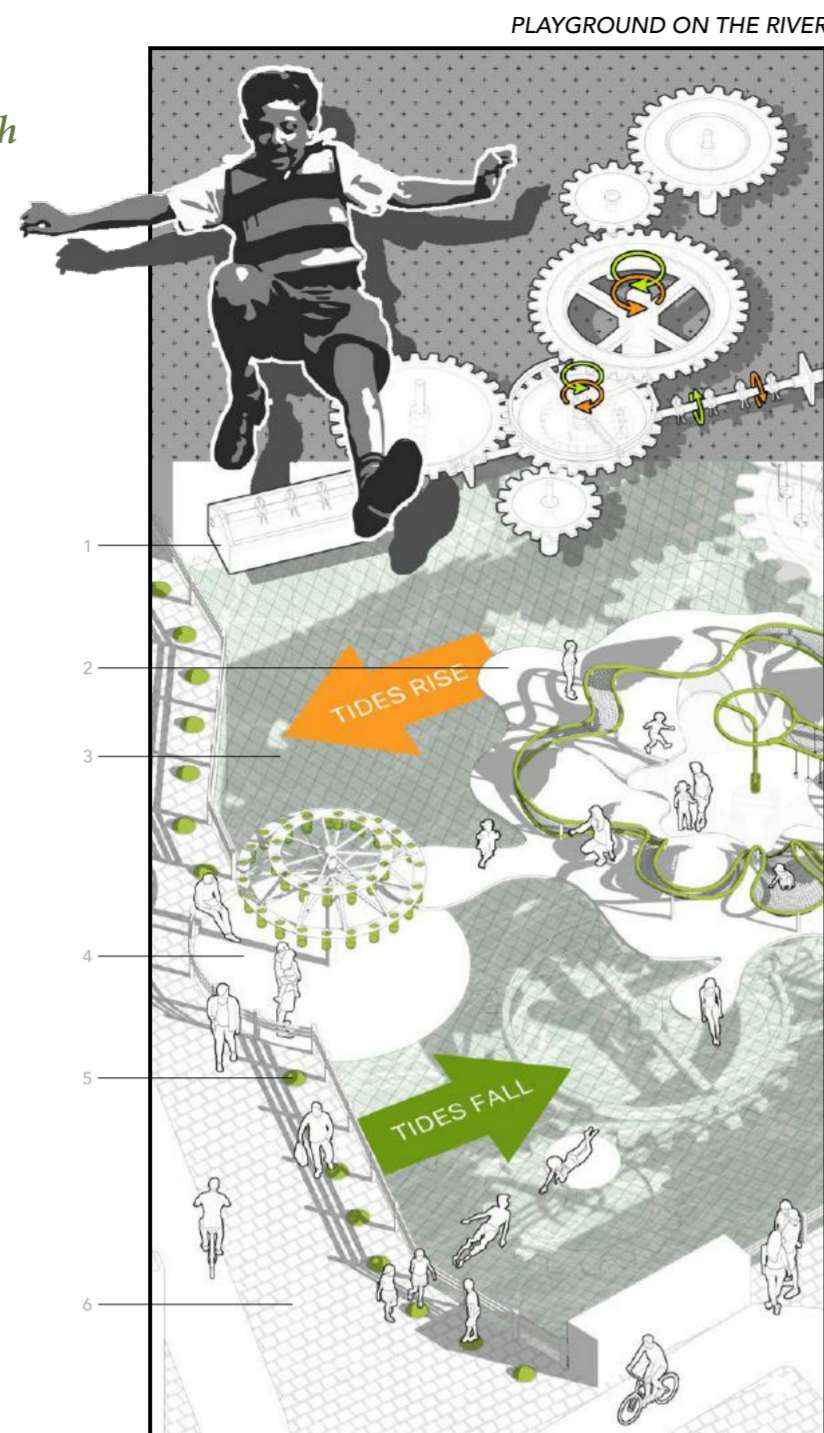
Outdoor spa (night)

# 02

## Purify the air for a healthy life with microalgae.

The improved river allows for more water activities: The old tidal water wheel allows the inflatable trampoline to rotate on the water, attracting students to enter. Furthermore, the inflatables in front of the House Mill allow pedestrians to pedal over them and jump on them. The bouncing and crushing allow more air to be squeezed into the microalgae tube, accelerating photosynthesis, and thus releasing oxygen to turn the entire House Mill space into a natural oxygen bar. Furthermore, it will store more electricity to power the indoor bath. The hot steam from the bath space keeps the microalgae warm while still allowing efficient photosynthesis in the winter.

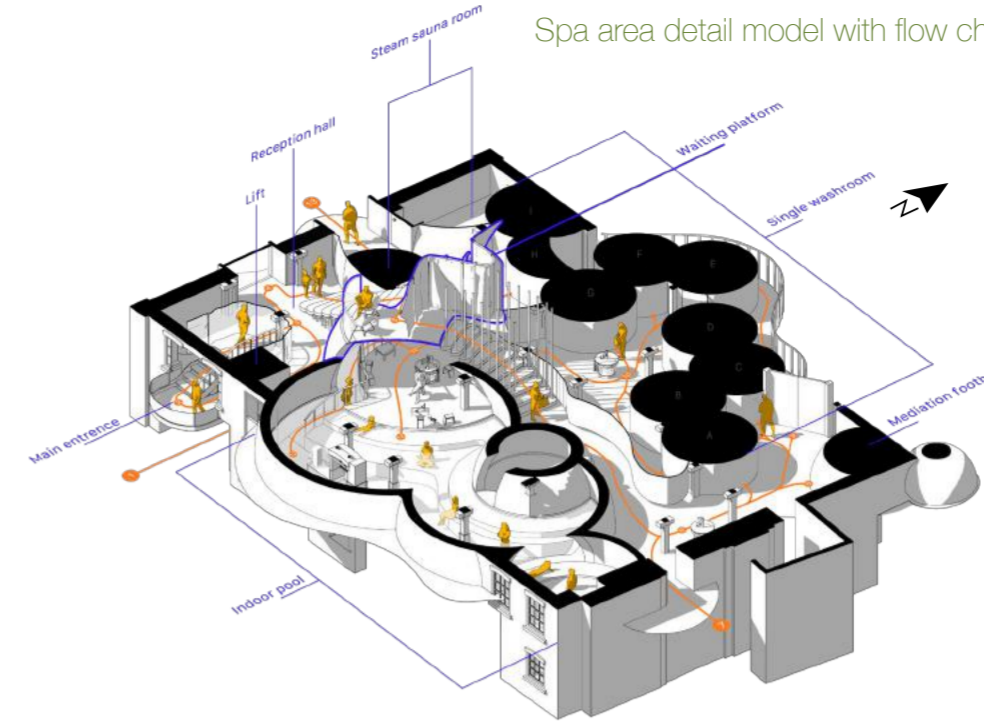
- 1 GEAR STRUCTURE AT THE BOTTOM OF THE ROTATING PLAYGROUND
- 2 MAIN INFLATABLE TRAMPOLINE
- 3 STANDABLE UNDERWATER SAFETY NETS
- 4 EDUCATIONAL ORNAMENTAL MICROALGAE TUBES
- 5 PEDALABLE RUBBER BLOWER PUMP
- 6 EXITING BRIDGE



# INDOOR SPA



# Spa area detail model with flow chart



- 1 ENTER SPA
- 2 VIEWING TERRACE
- 3 ARRIVE RECEPTION HALL
- 4 SELF-SERVICE WASHROOM KEY COLLECTION
- 5 CHOOSE TO WAIT OR ENTER THE SPA
- 6 CHOOSE ENTER FOOTBATH OR WASHROOM AS/IC
- 7 EMERGENCY EXIT
- 8 FOOTBATH
- 9 ENTER WASHROOM (IF POINT THROUGH A TERRACE BEHIND THE DOUBLE DOORS)
- 10 CHANGE TO ENTER THE INDOOR SPA/OUTDOOR SPA/SAUNA
- 11 CHOOSE THE WAY TO ENTER SPA/SAUNA
- 12 ENJOY INDOOR SPA
- 13 GO TO OUT DOOR POOL

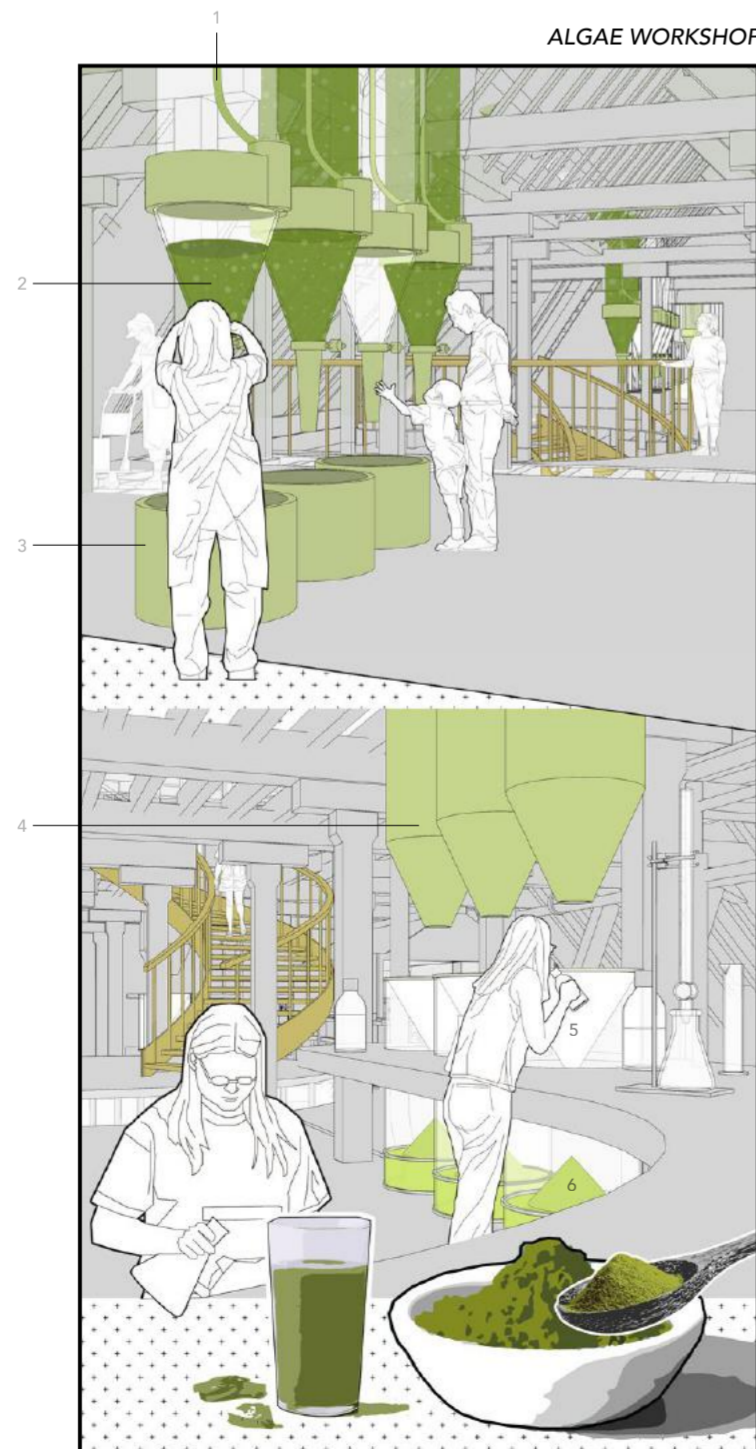


# 03

## Promoting the microalgae chain and envisioning a brighter future for community living.

The workshop allows more residents and visitors to participate in the experience of making algae skin care and nutritional products, as well as to retail these agricultural products or to stimulate the development of related industries in the surrounding area. The House mill will be a pioneering microalgae farm in the future, influencing the transformation of other similar sites in the vicinity.

- 1 WATER PUMPING PIPES
- 2 ALGAE TUBES WITH MICROALGAE IN
- 3 UNDERTAKING 4
- 4 WATER FLOW RESTRICTION FUNNELS
- 5 FILTERS
- 6 WASTE WATER COLLECTION CONTAINERS (COME TO AVOID SPLASHING AND REDUCE NOISE)
- 7 MOVABLE RETAIL SHELVES
- 8 EXITING TIDAL WHEEL



# GROUNDFLOOR LANDSCAPE WITH RETAIL SPACE



# Detail section

