

# EcoVille x Silo D

Bente Koelink

**Rooftop:** Has a rooftop greenhouse bar and interactive algae experience.

**Fourth Floor:** Start of museum experience & ferments and dehydrates the raw sugar.

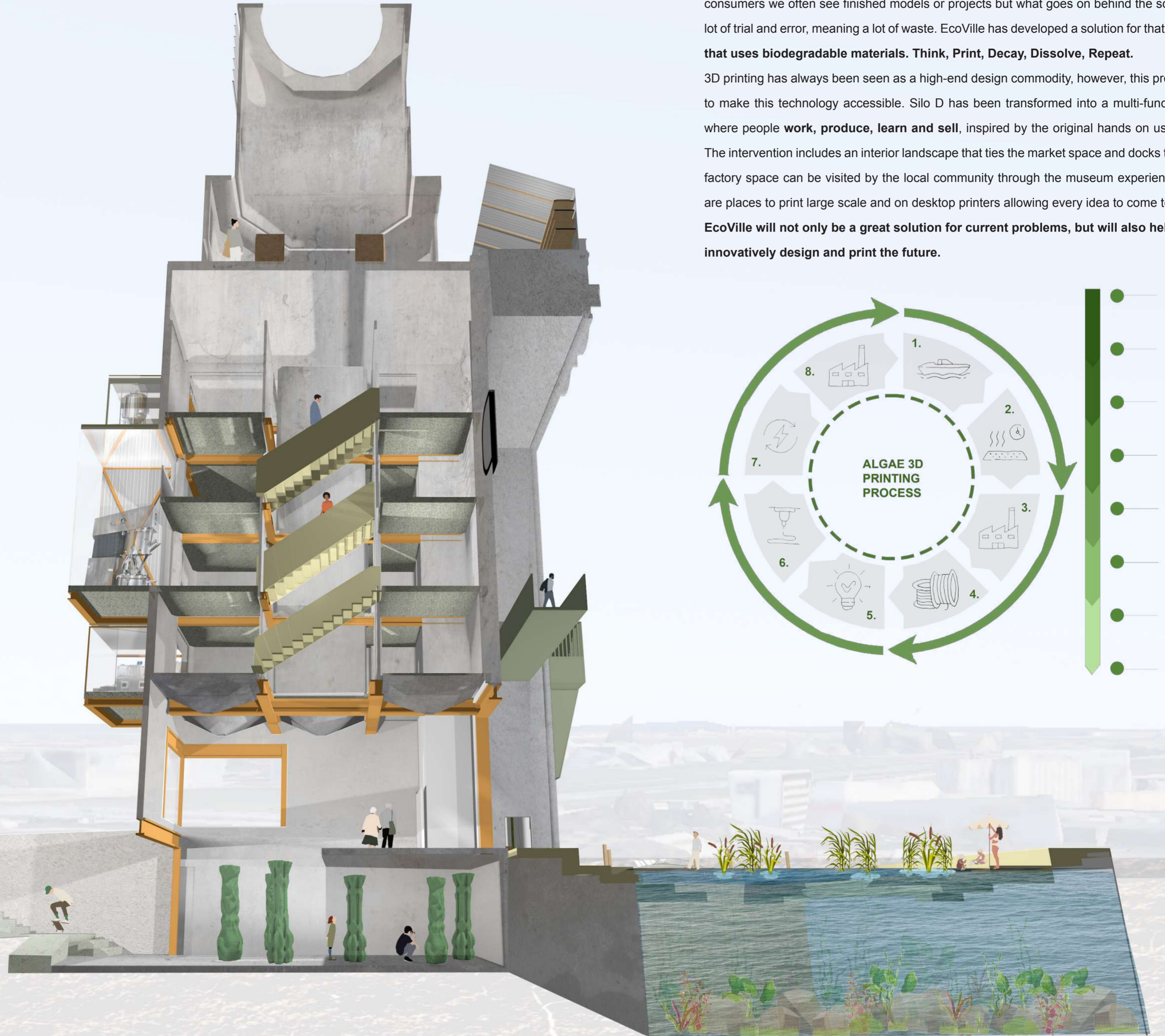
**Third Floor:** Prepares and dries wet algae & has tables for factory workspaces.

**Second Floor:** Blends the dried algae and bio-PLA & has bridge connecting side towers.

**First Floor:** Prepares the filament ready for printing in side towers.

**Ground Floor:** Includes an interior landscape connecting the back basement entrance & double height market space & docks.

**Basement:** Part of interior landscape & includes a naturally filtered pool in the docks.



EcoVille is a response to the evident waste problem in the design industry. Do you know how much waste the design industry produces? According to a study done by PBC, **the design sector** uses 400 million tonnes of material **every year**, which results in **100 million tonnes of waste**. As consumers we often see finished models or projects but what goes on behind the scenes? It is a lot of trial and error, meaning a lot of waste. EcoVille has developed a solution for that: **3D printing that uses biodegradable materials. Think, Print, Decay, Dissolve, Repeat.**

3D printing has always been seen as a high-end design commodity, however, this proposal seeks to make this technology accessible. Silo D has been transformed into a multi-functional facility where people **work, produce, learn and sell**, inspired by the original hands on use of the silo. The intervention includes an interior landscape that ties the market space and docks together. The factory space can be visited by the local community through the museum experience and there are places to print large scale and on desktop printers allowing every idea to come to life.

**EcoVille will not only be a great solution for current problems, but will also help innovatively design and print the future.**





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Roof Top

Fourth Floor

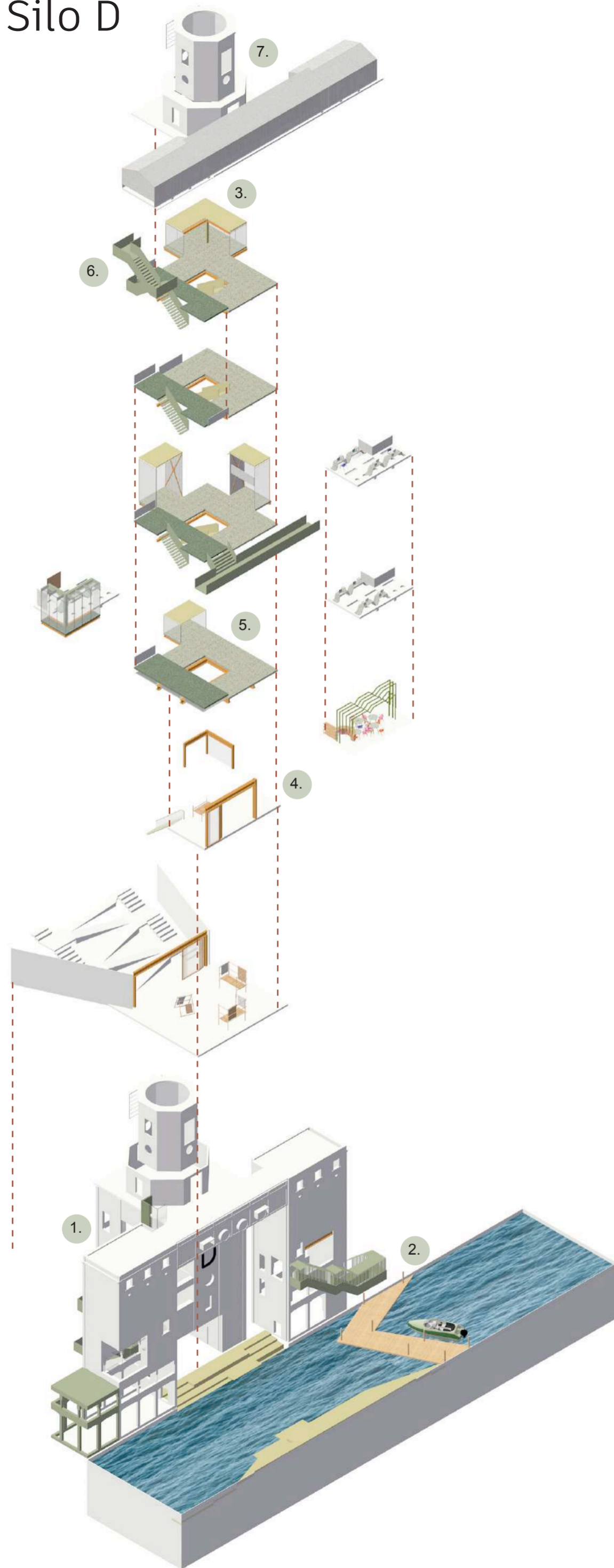
Third Floor

Second Floor

First Floor

Ground Floor

Basement



Exploded Isometric of Scheme

*EcoVille will not only be a great solution for current problems, but will also help innovatively design and print the future.*



Concept Collage of EcoVille x Silo D



Physical Material Palette

My proposal revolved around mimicking the work ethic of the original host building as well as finding a circular and sustainable approach to solving a world-wide issue. EcoVille aimed to bring together a large group within the local community as well as expanding out to the rest of London and internationally. Local school kids can come and develop their 3D printing skills as well as learn about bio-plastics and how that will be a key part of future design. Young adults and young creatives use the space for the market and large scale 3D printing, showcasing their work and sharing it with the world proving the success of this proposal.

All the materials selected have been sourced locally from warehouses where the materials would have gone to waste. This up cycling process helps reduce waste of a design process, just like the aim of EcoVille. The materials that have been chosen for this scheme are linked to the proposal shown in isometric. This gives a clear indication of how the materials are used throughout the site.

1. Brushed Steel Mesh
2. Recycled & Refurbished Larch Wood
3. Polished Aluminium = reflective
4. Orange Powder Coated Steel I Beam
5. Terrazzo Slab - made from recycled post-industrial plastics
  - a) Durat - P014 Kombu Milk
  - b) Durat - 364 (360 04)
6. Powder Coated Steel Slabs - orange, green & dark green
7. Corrugated Plastic Sheet

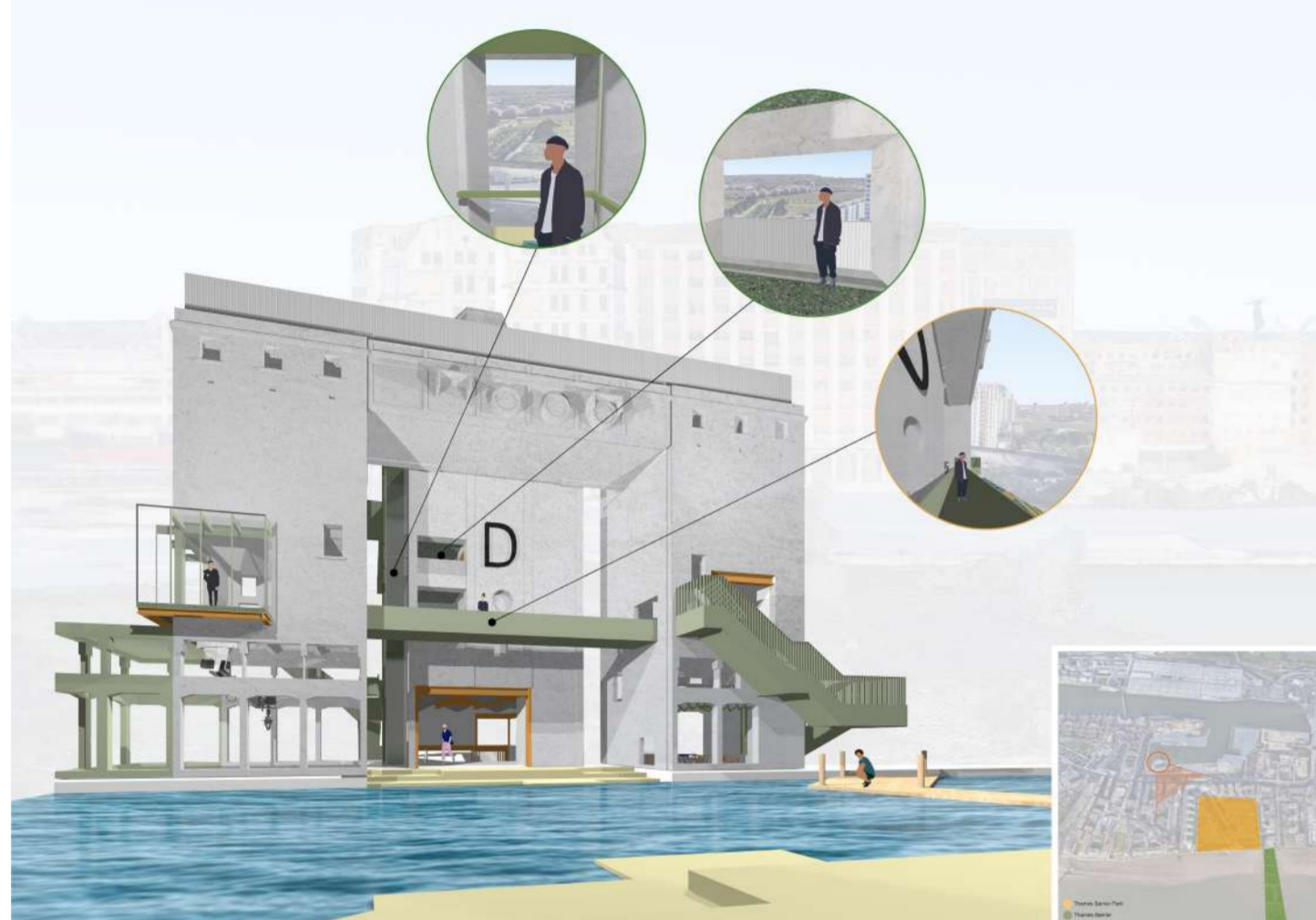


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Something that this design proposal has valued is the relationship this adaptation of Silo D has with the local area. There are key look-out points created within the scheme that allow for views overlooking the general area such as the Thames Barrier, Thames Barrier Park, Millenium Mills and The Royal Victoria Docks. These opportunities allow for engagement between Ecoville and the local surrounding area. Occupying such a historical landmark needs to stay connected and involved with the surrounding area. The rooftop, as shown in the second render, shows some of the views nearby as well as the elevation below and what different levels look out to.

There are also key moments that define the space and the relationship between the **old and the new**. The sketches show what those key moments are. Such as the factory space glass boxes protruding out of the main head tower, creating a relationship between the viewers and the workers as well as the new and existing building. The 3D printed extension copying the facade details of Silo D and the interior landscape, creating a new relationship between Silo D, the swimmable docks and the multi-functional space within. These moments make the experience of EcoVille within Silo D more porous.



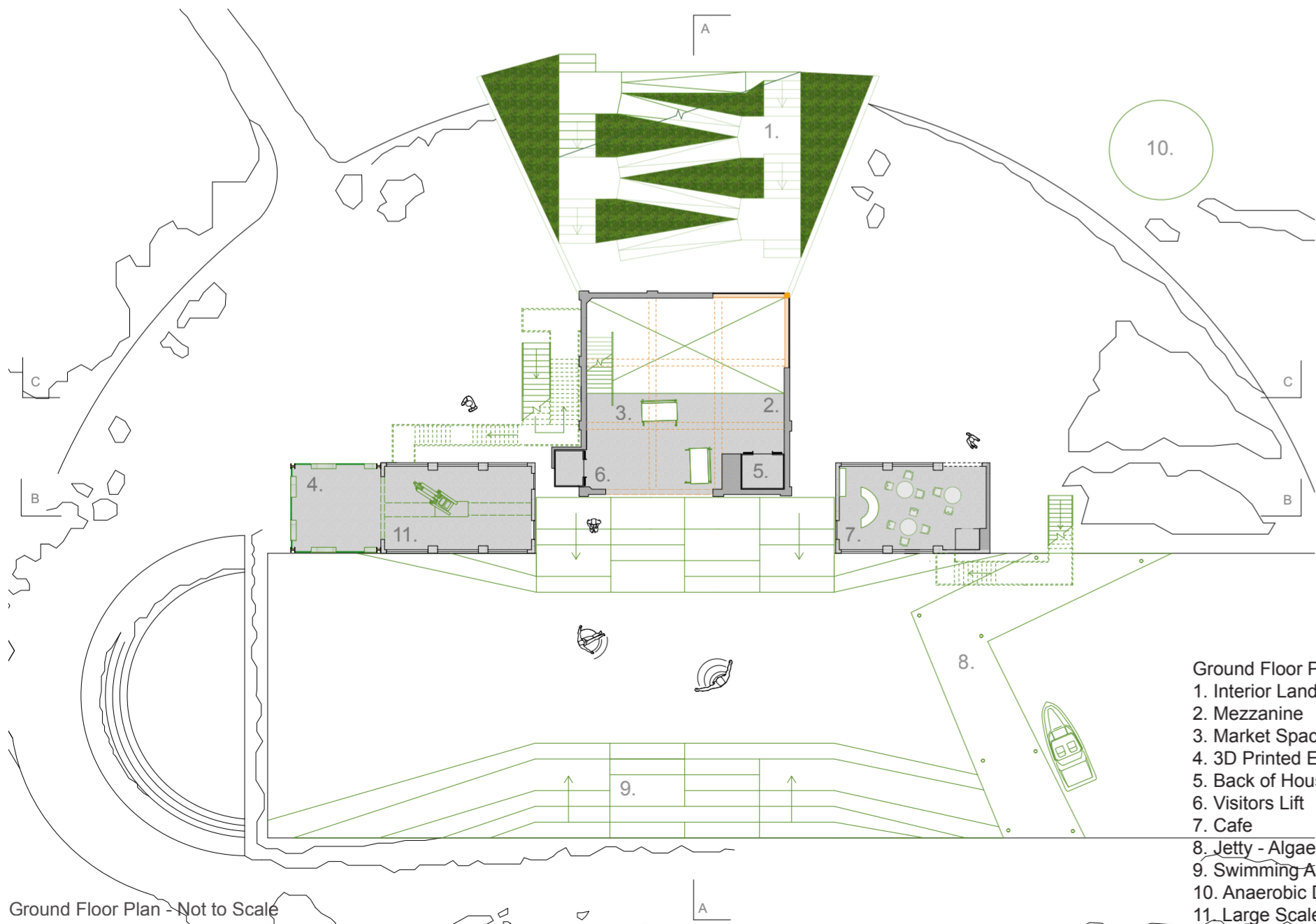
Exterior Front Elevation



View Rooftop Cafe

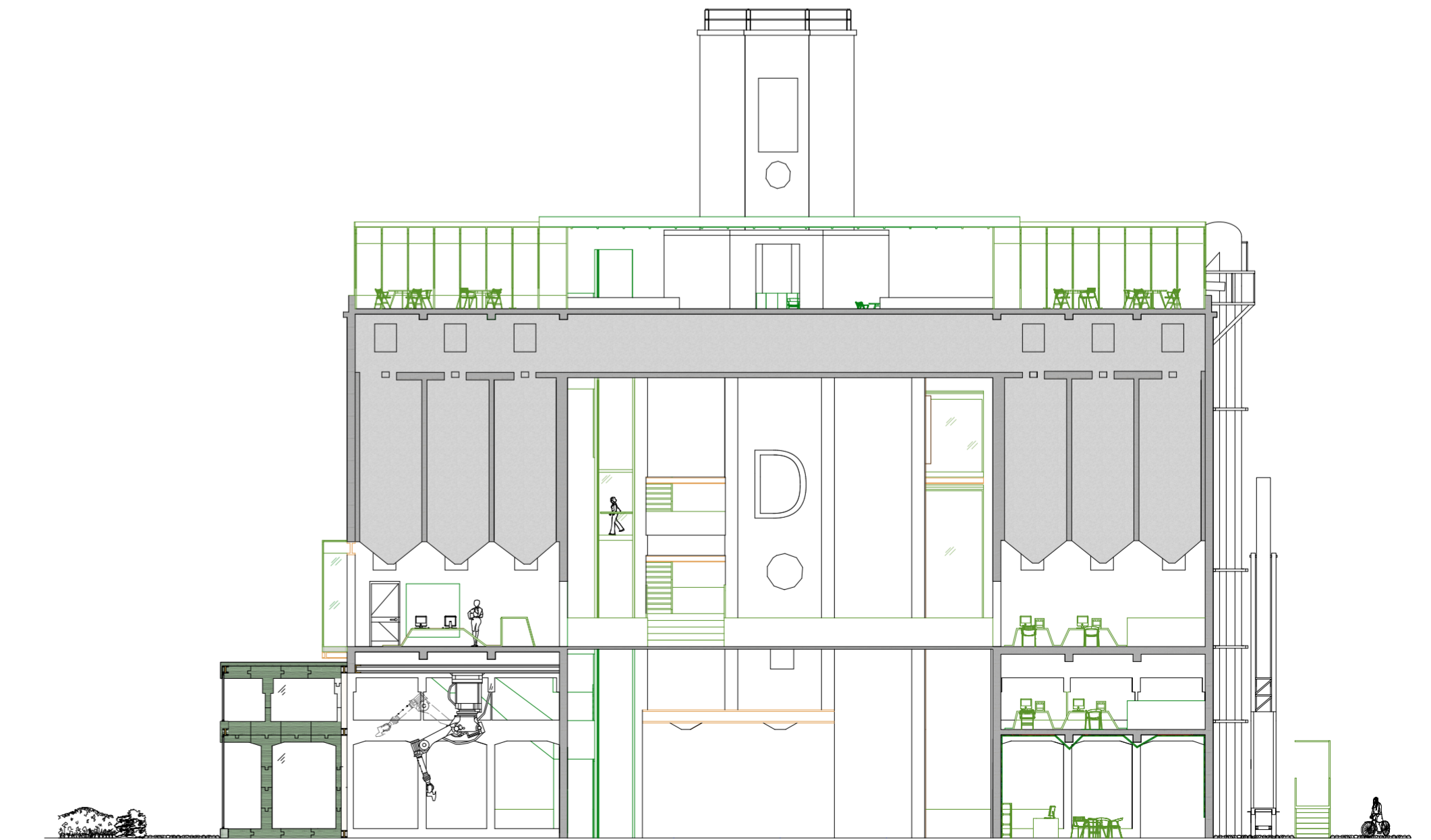


Perspective Section BB



Ground Floor Plan - Not to Scale

- Ground Floor Plan Key:
- 1. Interior Landscape
  - 2. Mezzanine
  - 3. Market Space
  - 4. 3D Printed Extension Facade
  - 5. Back of House Lift
  - 6. Visitors Lift
  - 7. Cafe
  - 8. Jetty - Algae Collection Boat
  - 9. Swimming Area
  - 10. Anaerobic Digestion Tank
  - 11. Large Scale 3D Printer



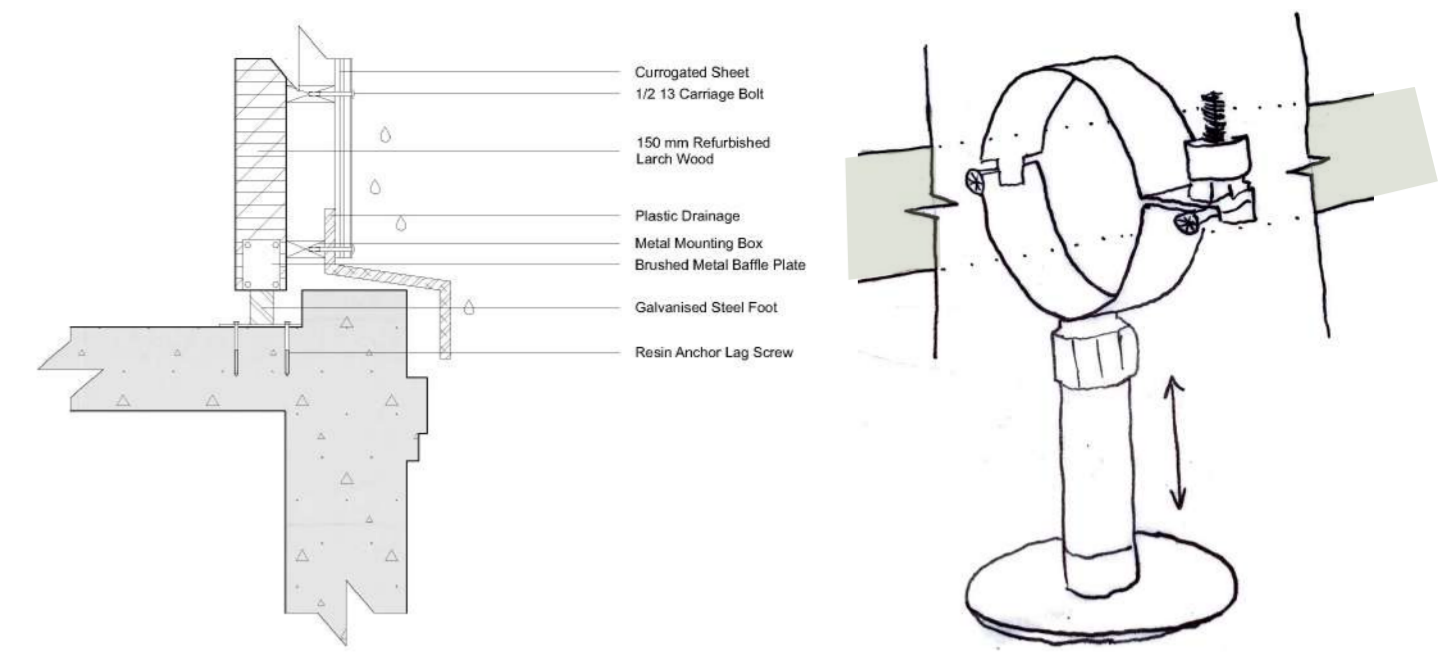
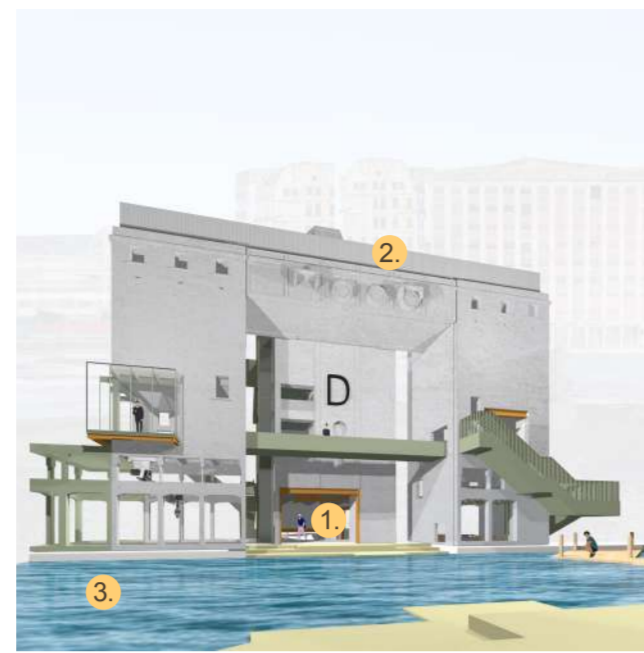
Section BB - Not to Scale



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These visuals capture different moments within the scheme. (1) The interior landscape shows the open flexible space that can be used as a market or for talks and events. (2) The second image captures the rooftop green house cafe with interactive algae tubes. This is a way to create a connection between the community and algae, the key ingredient for the filament that is produced and used on site. Through recycled pumps, oxygen is pumped into the bio-rubber tubes, feeding the algae. The joint details show how the green house meets the existing building. Also how the tubes are clamped using an SS Industrial Pipe holding clamp, making it adaptable. (3) The docks have been transformed into a natural pool that is filtered by plants rather than filters or chemicals. Making it natural and supports a new local ecosystem.



Interior View Interior Landscape - Garden Leading to Flexible Market Space



Interior View Rooftop Cafe - Interactive Algae Pumps



Exterior View Natural Pools

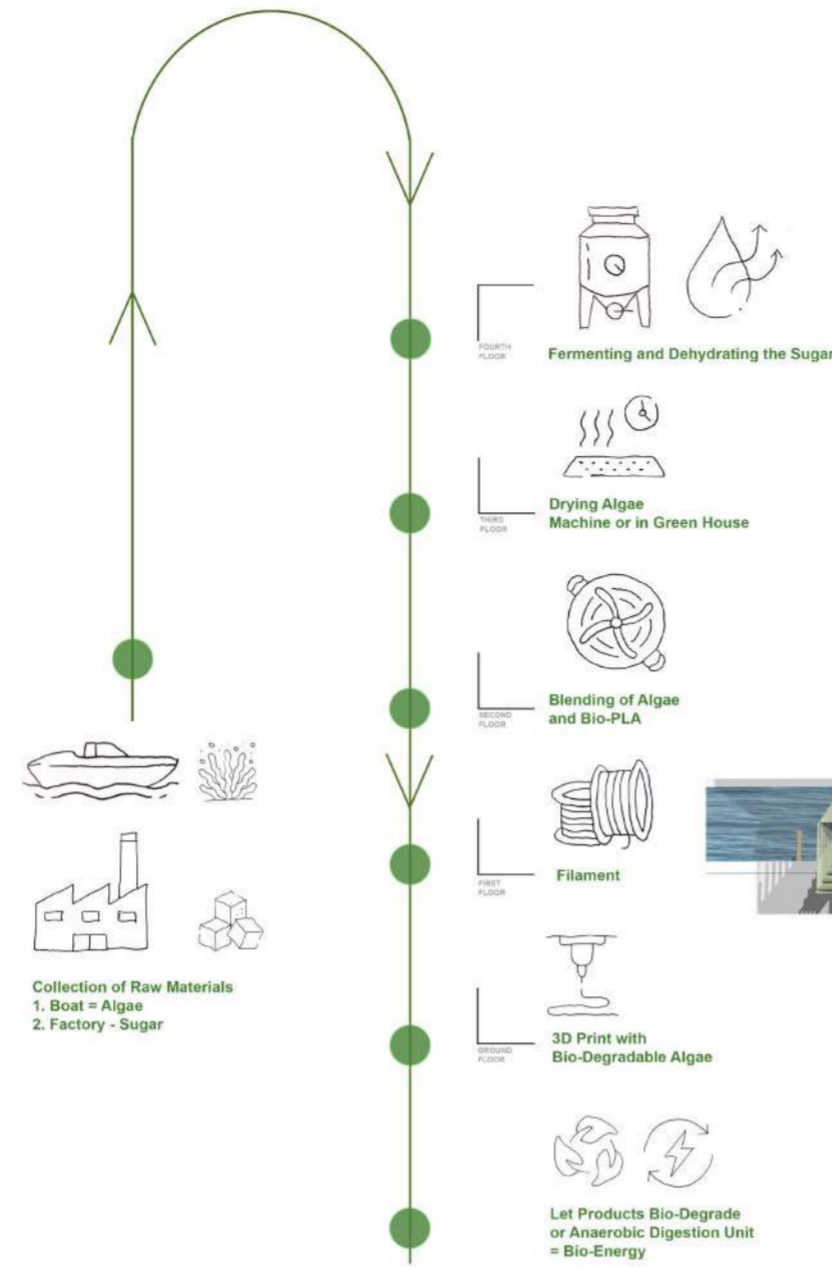
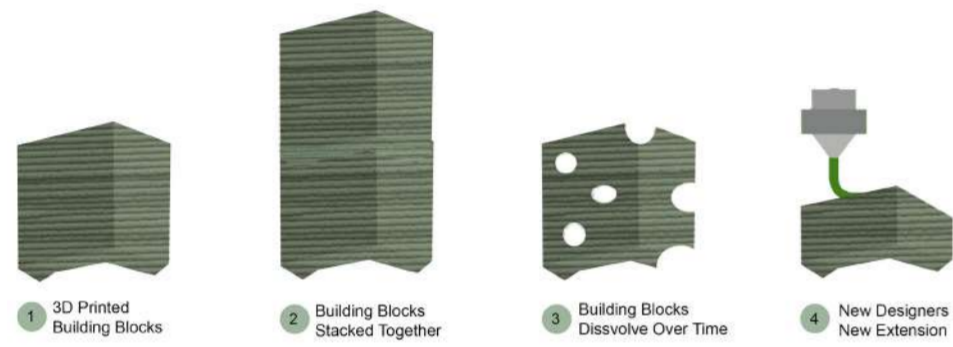


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This page is a summary on the use of the filament process and how it is applied to the design industry. Through the process of designing with prototypes and models, a lot of waste is created. This biodegradable filament allows for models to be made at a large or small scale which can be used as testing or temporary solutions, however after a 6 month period will slowly decompose. After it starts to decompose, the products can be brought back to the site and added to the anaerobic digestion tank which would create a biofuel, used to help power the factory process. Making the entire scheme a circular process.

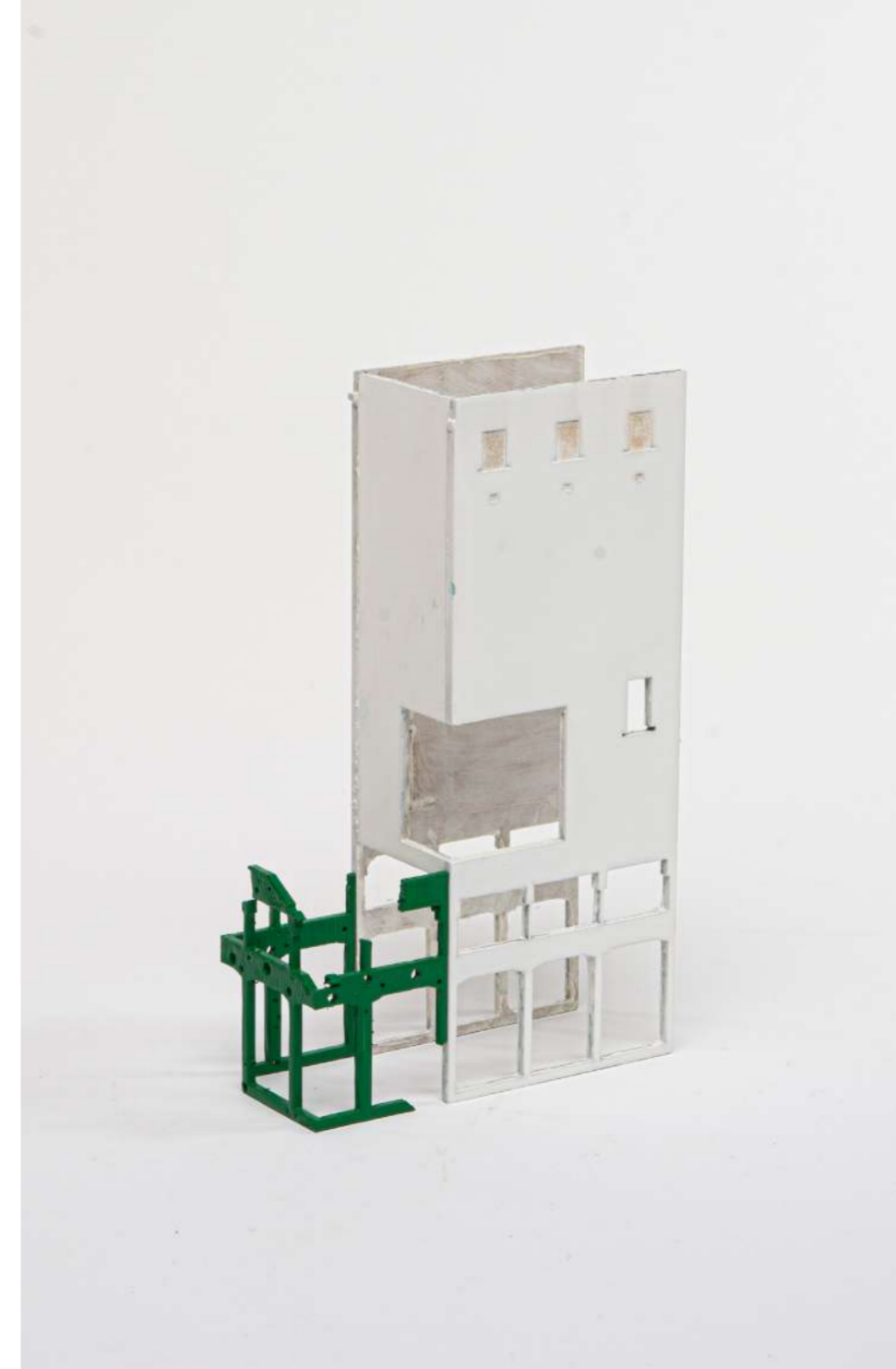
The 1:200 model made is a physical example of how this process is applied. It shows how the 3D printed extension attached to the left side tower of Silo D is first printed and the decaying process over time in relation to the existing building. This intervention gave extra space for the large scale 3D printer and the extension was 3D printed by the machine it hosts. After it decays, a new design can be printed and attached, creating an endless creative cycle for the people involved at EcoVille. The diagram below shows how the large scale Fused Deposition Modelling (FDM) 3D printer works and feeds filament along a track. Something that is controlled in the workspace above.



Exterior View of Flexible Work Space Controlling 3D Printer



1:200 Model Left Side Tower and 3D Printed Extension



Exterior View of 3D Printed Extension in Relation to Site