Thesis Dossier
ARB301 Project Thesis
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Advanced Studies in Architecture
and Urban Design

Pink is Not a Color

Table of Contents

Pink is not a Color envisions a new land-based shrimp farm which develops further indoor aquaponics to provide animal welfare and a balanced relationship with the biosphere.

Aquaculture is the process of rearing, breeding, and land-harvesting aquatic creatures that can be a solution for restoring threatened and endangered wild marine fauna. However, while the ancient hatchery farm considered fish a mythological symbol, the Roman pond represented a celebratory gesture towards animals, and the 19th century farm was an early approach to public agritourism, today's aquaculture needs to redefine its role and position in the food industry. The historic conflict between intensive farms, which prevent land depletion, and extensive farms, which can ensure animal welfare, calls for a new approach to 'compactness' and for a new building type to emerge.

Developing further the European Commission guidelines for a sustainable aquaculture, the shrimp farm composes a techno-natural factory that not only supplies the increasing demand for seafood, but it also eradicates marine extinction.

The Netherlands is internationally recognized as one of the world's largest food exporters due to its excellent connectivity throughout Europe and is home to world-class research institutions. It is—in effect—feeding the world. Driven by the anticipation for a renewable future, the country's journey towards optimization, sustainability, and health requires a paradigm shift in the food industry.

As the COVID-19 pandemic has reshaped the retail market in unprecedented ways, consumers shifted around lifestyle and value. This demanded new spatial configurations of the supermarket, transitioning between a pre-COVID-19 and a post-COVID-19 society. Resting within its etymology—where "super" alludes to supremacy concerning size, quality, and quantity, while "market" refers to trading in goods of value—the supermarket, selling food and household goods, first originated in the 19th century with the novel concept of a self-serve store. As a platform of recurring successful innovations, their profits increased during the COVID-19 pandemic, underscoring that supermarkets are now an essential service - representing a new civic presence.

The collective project on the spatial implications of the food industry in the Netherlands and beyond seeks to redesign the supermarket—currently occupying the most densely used square meters in a city—to implement developments within the meticulously designed sales floor via craft, reshoring, protectionism, automation, and extinction—for an immersive consumer experience—and the concealed back of house through the notions of tastemaking, scarcity, sensorialism, inclusivity, and trade—associated with the product's supply chain—ensuring a frictionless future for shoppers.

These ten contributions explore the architectural and urban design possibilities within the future of the food industry across sites within the Blue Banana—the European Megalopolis—transporting products and radiating back to the Albert Heijn shelves in Delft. They collectively form a project for the design of a future supermarket on the current site of the Albert Heijn XL on Martinus Nijhofflaan in Delft. These contributions provide modifications in the supply chain, product distribution, and store planning, in relation to the products, their associated building types, and their extensive territories. The collective design of this Albert Heijn XL will raise issues of scenography, product flow, human interaction, digital technology, and consumer experience, in an attempt to address the future of the food industry.

At a time when the world is pulling through the COVID-19 pandemic, faced anew with the impending environmental crisis, the collective project raises questions about the ever-changing relation of architecture and the food industry in the Netherlands and beyond.

Figure 1
Tsukioka Yoshitoshi, “Oniwakamaru observing the carp pond,” Japan, 1889
The engraving represents the ancient mythological relationship between fish and humans which meant affluence in Asia

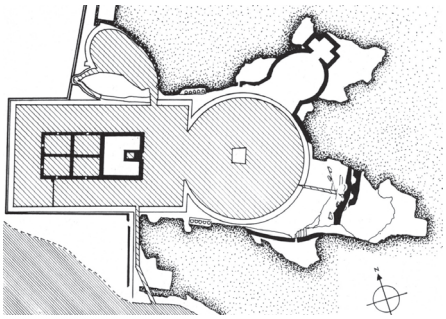


Figure 4
Scylla Group, “Villa of Tiberius,” Sperlonga, Italy, 20AD
The more ostentatious fish ponds were designed around the triclinium, a place where the patricians used to talk and eat after choosing their own live animal to fish and consume

Figure 7
Martine Beck-Coppola - Louis-Joseph Yperman, “La pêche au vivier,” Avignon, France, 1910 (oeuvre originale : 1343-1344) © RMN-Grand Palais

Figure 2
Map of seven prefectures of Southeast China showing the water morphology and the dike-ponds for rice and fish production around the Tai Lake, 1639

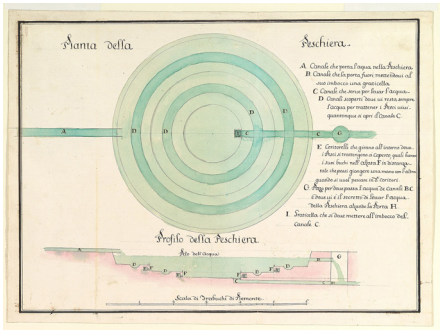


Figure 5
“Design for a fishpond,” Piedmontese, Italy, 18th century

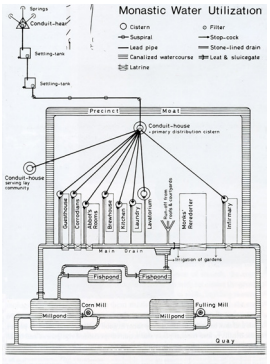


Figure 8
The diagram shows the two sources of water required in a monastery; the clean water from a spring is led to various offices while a stream or river can supply the mill and fishponds and flush out the drains

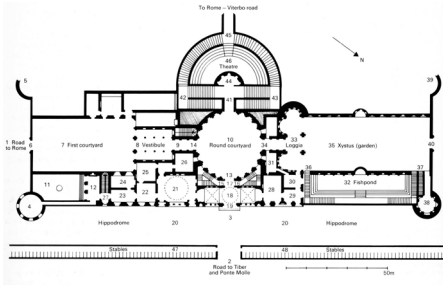


Figure 3
Raphael Sanzio, “Villa Madama,” Rome, Italy, 1518
The Roman villa incorporated the fish farm for aesthetic and social enjoyment.

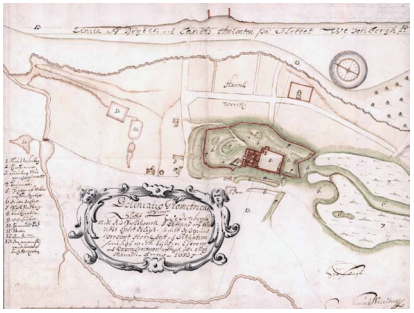


Figure 6
The castle of Wesenberg in Rakvere had crucian carp ponds depicted on the map, 1683

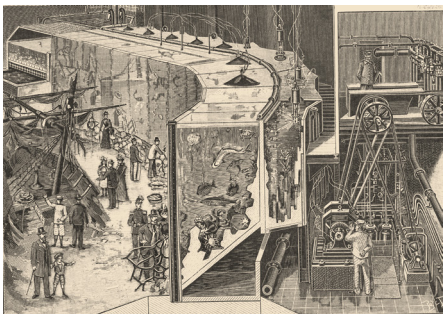


Figure 9
Albert and Henri Guillaume, “Aquarium de Paris,” Paris, France, 1900
The International Exhibitions of Paris and London triggered the construction of aquariums to show technological developments related to science and biology that were used in aquaculture

Pink is not a color. The carotenoid responsible for the eye-catching pink glow of farm-raised seafood and fish skin is called Astaxanthin, a powerful pigment that can be synthetically created or biologically grown. Common characteristics of fish such as color, size and taste are reproduced in aquaculture farms to promote the consumption of land-harvested fish and therefore reduce the extinction of over-harvested marine species.

The pandemic caused by COVID-19—a virus transmitted from animals to people—has revealed that humanity has developed an unsustainable relationship with nature. Economist and environmentalist Inger Anderson warns that the outbreak of the virus is an eloquent indication of the level of depletion to which the planet is subjected.1 One of the consequences of biosphere exhaustion is the current sixth mass extinction, accelerating an unnatural loss of marine biodiversity driven by plastic pollution and higher global temperatures.2 This is exacerbated by fishing techniques that includes the incidental catch of non-target organisms.

As one third of global fish stocks are considered overfished, aquaculture is an alternative to traditional fishing. This technique could be a solution for restoring threatened and endangered marine fauna by rearing, breeding, and land-harvesting aquatic creatures whose characteristics are artificially manipulated. Through a chronological study of land-based farms, this essay highlights the spatial and territorial parameters involved in aquaculture to identify the link between its architecture and its ability to prevent extinction.

Humans have manipulated marine and freshwater habitats for millennia. Farming fish and shellfish dates to ancient China and Rome (BCE 500 to 500 CE) and, since its origins, aquaculture has been associated with power, standardization, and urban planning. The earliest reference in Chinese literature to "aquahusbandry"—a primitive technology related to the care and cultivation of animals—appears in The Treatise of Fish Culture (BCE 475). It describes a regulated fishing pond an acre in size based on the minimum unit for agricultural planning. Apart from agriculture, fish harvesting in ancient Asia carried a strong relationship with mythology where yú represented the word fish while also symbolizing abundance, affluence, and prosperity (see fig. 1).

The pond system was designed to alleviate the disappearance of species while controlling their health and behavior through what would later be called rudimentary biology (see fig. 2).3 Contrary to the Chinese, the Roman vivarie piscinae or fishponds were not only productive, but also utilized fish for aesthetic and social enjoyment. Freshwater ponds were typically located closer to homes and decorated gardens, serving both as spaces to enjoy as well as a central focal piece of a site's planning and architecture (see fig. 3). More ostentatious ponds were designed around the triclinium—a place where patricians would talk and eat after choosing their own live animal to capture and consume. Their proximity to homes also helped to create cooler temperatures for local citizens (see fig. 4). Later, the Roman piscinae became independent from the villas and the hedonistic approach of the triclinium was combined with ensuring the access to a great variety of fish in anticipation of food scarcity (see fig. 5).

As the Roman empire extended into northwestern Europe, the practice of aquaculture also expanded, and during the Middle Ages (500 to 1450 CE) fish-farming came to be related to religion and royalty. During the feudal period, it was typical for monasteries and castles to have fishponds owing to their awareness that fish was a suitable supplement for meat and a common manifestation in religious ceremonies (see fig. 6). This led to the development of a hybrid that combined clerical facilities with fish production by monks for the elite, but forbidden to peasants who were not allowed access to fish (see fig. 7). Aristocratic fishponds seem to indicate that little attempt was made to realize their full potential in terms of yield. A good example is the 400-acre ponds maintained by the bishops of Winchester Abbey in the UK where barely a 10th of their potential was exploited when a yield of 1.5 fish per square meter ensured adequate quality and growth.4

Medieval governing elites were informed about the need for fish preservation and created legislation to regulate fish stocks through seasonal calendars that considered natural reproduction. Thus, monks were already conscious not only of the problems of fish consumption, but also about the use of natural resources. Monastic fishponds were constructed as an integral part of their water supply network, frequently placed near bodies of water used as part of the building's functional infrastructure, a similar approach to today's recirculation aquaculture system (see fig. 8).5

In the modern age, aquaculture has undergone a huge transformation, evolving further from combining fish production with other crops in Asia to the development of the first indoor farm in Europe. As opportunities for trade expanded, leaders continued to export some of their wealth and knowledge to those who traded with them. Some skills such as catching fish and keeping them in coastal tambaks—extensive rice-fish farming systems in irrigated areas— were disseminated from Asia to other countries, becoming one of the most common systems of aquaculture today. The tambak pond not only resulted in a worldwide peak in the domestication of aquatic animals, but it was also an early approach to sustainable and combined production that nowadays includes technology as aquaponics. Years later, the publication of Charles Darwin's On the Origin of Species (1859), and The International Fishery Exhibition (1883) in London marked a new era for the spatial and cultural relationship between humans and aquatic species. In displaying live animals to the public, these both occasioned an appeal for research laboratories and aquariums that did not yet exist, demanding previously unimagined structures and engineering (see fig. 9).6

The nineteenth century—known as a golden era of science and technology—triggered the ambition to use aquaculture to replenish falling stocks devastated by the Industrial Revolution in Europe and as a regulated response to the bad management of both marine and inland fisheries. The first groundbreaking invention related to artificial breeding had already arrived in 1735—known as "Jacobi's Incubator," it consisted of a simple wooden trough where trout eggs were incubated before being transferred to the growing ponds as larvae (see fig. 10). However, the first experimental farm that developed the indoor incubator system took place a century later in France in 1850. The Huningue farm became

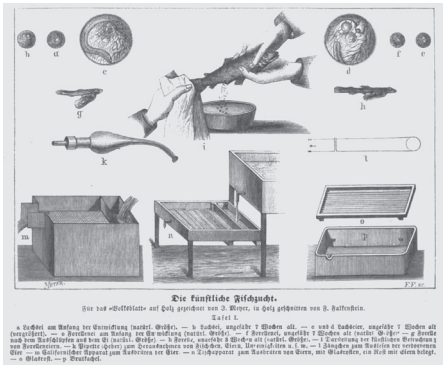


Figure 10
Rearing boxes, Huningue, France, 1850
[https://www.cbs.nl/en-gb/news/2020/51/forecast-population-growth-unabated-in-the-next-50-years]

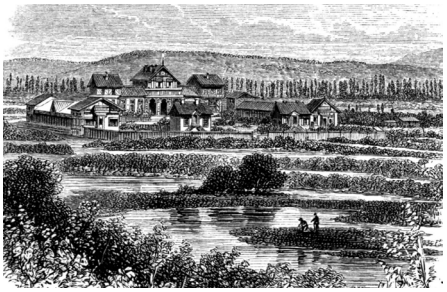


Figure 11
P.Coste, “Huningue farm,” Huningue, France, 1850
The series of buildings form the aquaculture production chain occupying a space of eighty acres

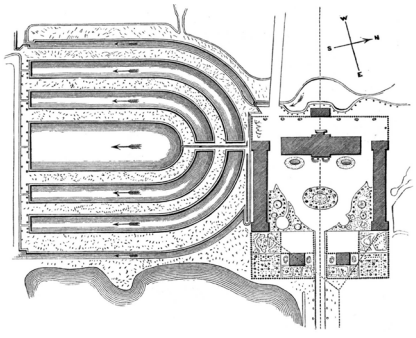


Figure 12
P.Coste, “Huningue farm,” Huningue, France, 1850
The suite of buildings comprise at the side two great hatching-galleries, containing a plentiful supply of tanks and egg-boxes; and in the back part of the square are the offices, library laboratory, and residences of the officers

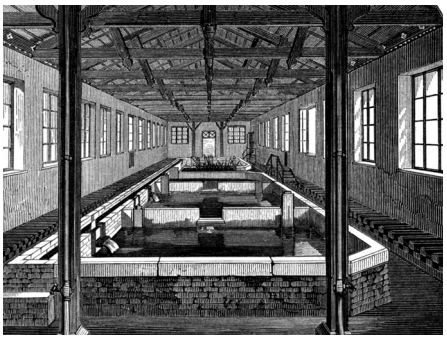


Figure 13
P.Coste, “Huningue farm,” Huningue, France, 1850
The public viewing galleries and observation decks brought a new approach to agro-tourism and an ecological awareness of fish extinction in the Industrial Revolution era

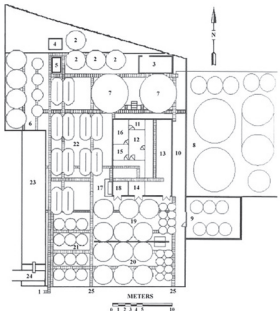


Figure 14
Design of a pilot-scale for a tropical marine hatchery and a research center located in Mexico

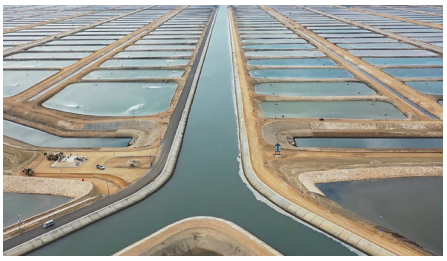


Figure 15
Al-Fayrouz fish farm is nowadays the largest shrimp farm in Africa and the Middle East

Figure 16
HSB Architekten GmbH, “Swiss Shrimp farm,”
Basel, Switzerland, 2020
The exterior of Swiss Shrimp Farm is composed of a big reflective industrial box which captures solar energy

Figure 17
Nordic Aquafarm, located in Norway, uses RAS or recirculation tanks, a technology for farming fish by reusing the water in the production

an industry for producing millions of eggs that could restock rivers dredged through industrial practices. Public viewing galleries and observation decks brought about not only an early approach to agritourism, but also prompted ecological awareness of fish extinction and the depletion of rivers in the Industrial Age (see figs. 11 to 13).7

While the first half of the twentieth century saw a period of sporadic scientific and technical progression related to fish-farming, the second half carried significant changes that encouraged the creation of infrastructural farms and increased the public's awareness of extinction. Following the end of World War II, demand for seafood increased in developed nations, fostering the construction of large-scale facilities specialized in farming invertebrate creatures (see fig. 14). However, after the 1973 oil crisis and the rise of sustainability concerns, ecological awareness promoted a shift in the seafood hatchery typology to address the heavy depletion of natural resources. Hence, the building type was refined to concentrate all processes into less indoor space, replacing harmful excavated ponds with efficient and prefabricated circular tanks (see fig. 15). Contrary to the nineteenth-century experimental farm, twenty-first century buildings were no longer a public experience, focusing instead on maximizing yields with a production of 150 animals per square meter—around 100 times its medieval counterpart.

The merely commercial overexploitation carried out in sea-based aquaculture until the 1980s diminished after studies demonstrated that human pressure was the main cause behind the loss of marine biodiversity. This fact encouraged the United Nations' Food and Agriculture Organization (FAO) to set up standardized technologies for every country to promote land-based aquaculture that produced adjacent research laboratories and controlled the animal's color, size, and taste to ensure consumer acceptance (see figs. 16,17). Through these achievements, consumption of farmed fish surpassed that of wild fish in 2013 and the production of farmed fish exceeded farmed beef for the first time in the contemporary era.

In an age where oceans are no longer capable of saving sea life from extinction while simultaneously feeding an increasingly pescatarian world, architecture and land infrastructure can be an alternative way to maintain consumption levels. The FAO states that aquaculture is growing faster than any other major food production sector, and institutions and companies such as the European Commission and Siemens are funding the field, providing an opportunity for designers to rethink human-made habitats safeguarding planetary coexistence.8

"Biology and evolutionary theory over the last two centuries have simultaneously produced modern organisms as objects of knowledge and reduced the line between humans and animals to a faint trace."9 Studying building types shows that animal well-being and its relationship to extinction always has spatial implications. Ancient hatchery farms considered fish a mythological symbol, Roman ponds represented a celebratory act for animals, and modern farms included a public experience where humans interacted with other live beings. Nonetheless, contemporary aquaculture needs to again redefine its relationship with the global biosphere to balance the conflict between intensive farming and land degradation, all the while ensuring animal welfare. A new approach to "compactness" strives to develop further techno-natural ecosystems that can prevent extinction through the artificial manipulation of marine species and the recreation of healthy indoor environments.

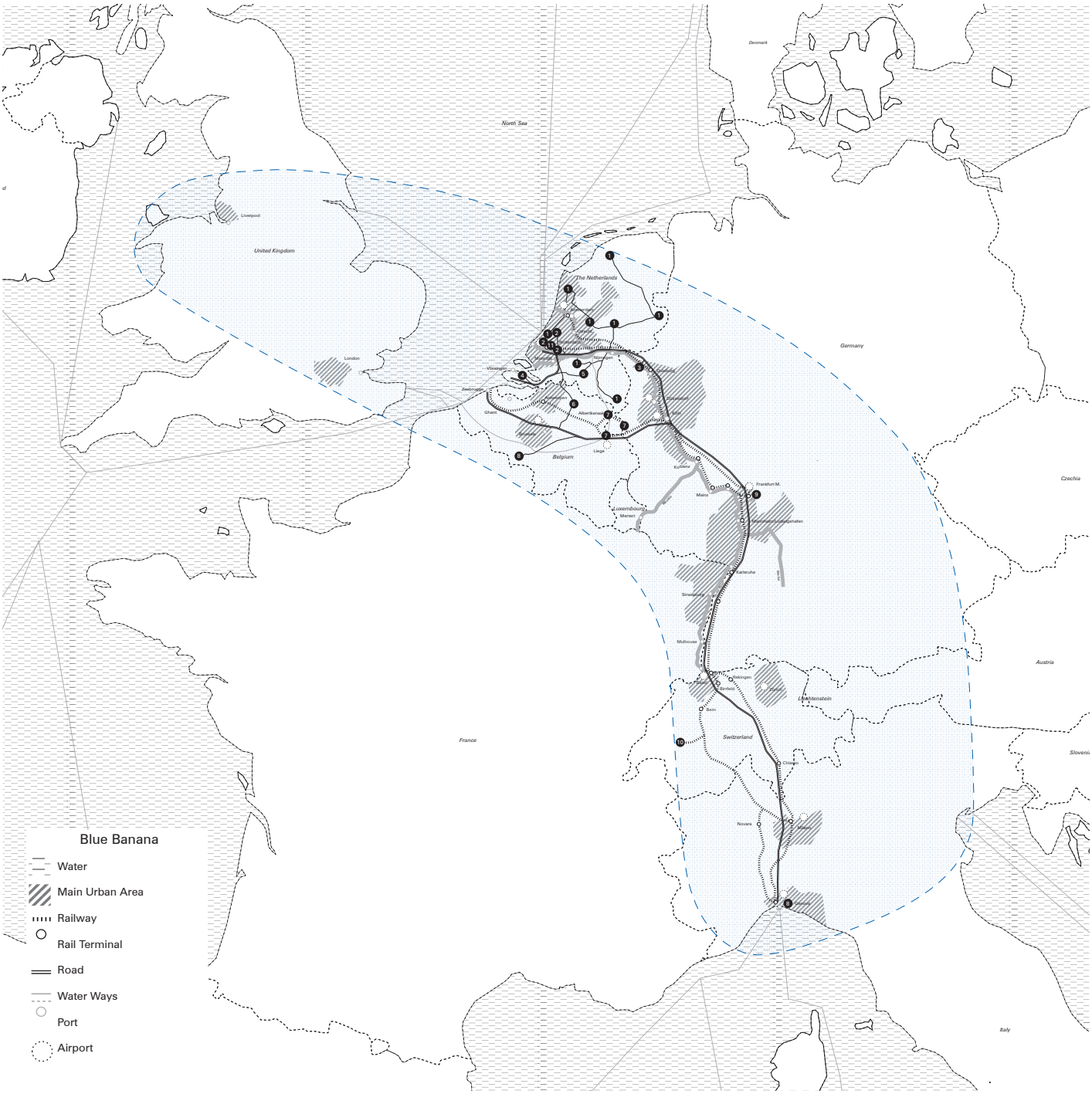
Endnotes:

1. Richard Ingersoll, "The Day After; Pandemics and the Anthropocene," Arquitectura Viva (June 2021) :36.
2. Gerardo Ceballos, Paul R. Ehrlich, Anthony D. Barnosky, Andrés García, "Entering the Sixth Mass Extinction," Science Advances (June 2015) 1-5.
3. Colin Nash, The History of Aquaculture (EEUU:Wiley-Blackwell, 1865).
4. Edward Roberts, "The Bishop of Winchester's fishponds, 1150-1400: their development, function and management," Hampshire Field Club Archeology (1986) 125-138.
5. Richard C. Hoffmann, "Economic Development and Aquatic Ecosystems in Medieval Europe," The American Historical Review (June 1996) :646.
6. Angela Rui, "Aquaria, or the illusion of a boxed sea," Mat Extended, published February 17, 2021, https://ext.maat.pt/bulletin/aquaria-or-illusion-boxed-sea
7. James G. Bertram, The Harvest of the Sea (London:John Murray, 1865), 86-90
8. FAO, "The State of World Fisheries and Aquaculture 2020," Food and Agriculture Organization of the United Nations, 2020, http://www.fao.org/state-of-fisheries-aquaculture
9. Donna Haraway, "A Cyborg Manifesto: Science, Technology, and Socialist-Feminism in the Late 20th Century," in The International Handbook of Virtual Learning Environments (Dordrecht, Springer, 2006), 149-181.

The Blue Banana

The Blue Banana—a term coined in 1989 by a group of French geographers—is a name used to describe a European corridor of almost continuous urbanization. Home to 110 million people, the corridor contains metropolitan areas, industrial sites, and major economic centers, stretching all the way from Manchester to Milan, connecting the Irish Sea to the Mediterranean.

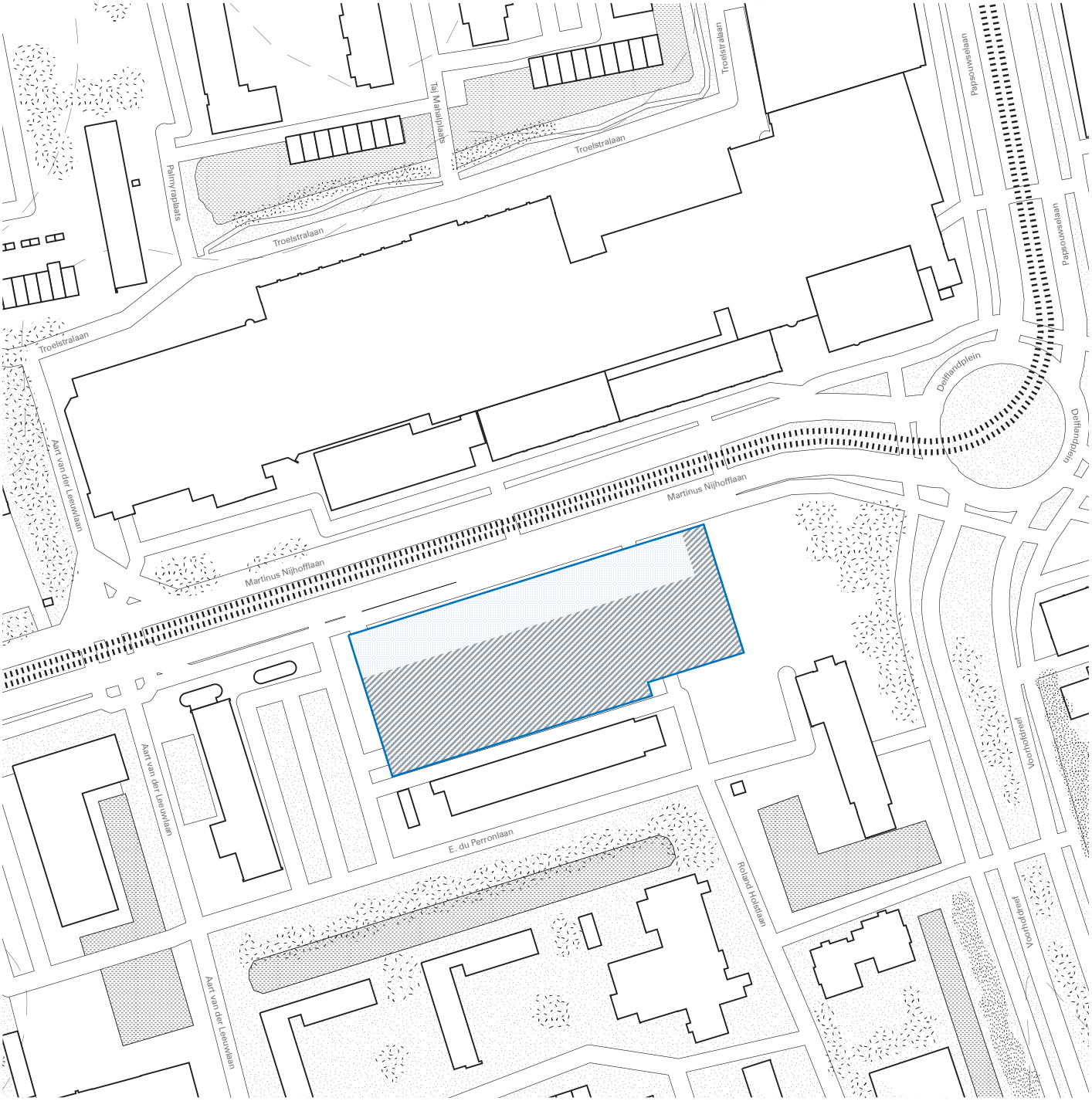
Ten contributions speculate upon the spatial implications of the food industry across the Blue Banana—the European Megalopolis—responding to the specificity of the sites, while, at the same time, providing modifications throughout the supply chain in relation to their respective products that radiate back to the supermarket shelves in Delft.



1 Lab Oratory
2 Whole Milk
3 Pink is Not a Color
4 The Tastemaking Estate
5 Aardket
6 Sensatorium
7 Domus Leo
8 Food Utility Network
9 Fresh Forword
10 Crafted with Care
11 Albert

Albert Heijn XL

The collective project for the design of a future supermarket is located on the current site of the Albert Heijn XL on Martinus Nijhofflaan in Delft. Amidst a densifying residential area, with a variety of stores on the ground floor and social housing above, multicultural demography, proximity to the parking garage, and excellent connectivity to road infrastructure and public transport, the location of the Albert Heijn XL provides the opportunity to reciprocate with its adjacent and peripheral territory.


Troelstralaan
Troelstralaan
Troelstralaan
Troelstralaan
Papsouwselaan
Papsouwselaan
Delflandplein
Delflandplein
Martinus Nijhofflaan
Martinus Nijhofflaan
Aart van der Leeuwlaan
Aart van der Leeuwlaan
Aart van der Leeuwlaan
E. du Perronlaan
Roland Holstlaan
Vondelgaarde
Vondelgaarde
0
10
50 m

The collective research—focused on the food industry in the Netherlands and beyond—commenced with the typological analysis of a supermarket. Analysing a local Albert Heijn, it examined the relation between products, their associated building types, and territories, from raw materials to supermarket shelves.

While a supermarket operates within a highly efficient tailored space, how do design decisions vary between intervening in an existing canal house and a purpose-built suburban supermarket?

Transitioning from the mimicry of local markets to promotions on digital screens, what role does scenography play in the design of a supermarket's storefront?

How does the prediction of supply and demand through data-driven decision-making and automation affect the organization, product distribution, and design within supermarkets and the ever-changing future of retail?

How does the incorporation of a supermarket reciprocate with its adjacent and peripheral demography, real estate, and territory and in turn affect land appreciation?

How does the design of the layout of the concealed back of house relate to the meticulously designed sales floor?

With a constant flow of products, what spatial consequences are posed by the standardized packaging sizes, product distribution, and store planning on the supply chain of a supermarket?

With ever-increasing reliance on e-commerce and perpetually improving digital experiences, what will the future hold for supermarkets in the Netherlands?

The annotated analysis of Albert Heijn reveals the dichotomy within the functioning of a supermarket, between the meticulously designed sales floor for an immersive consumer experience and the concealed back of house associated with the product's supply chain.

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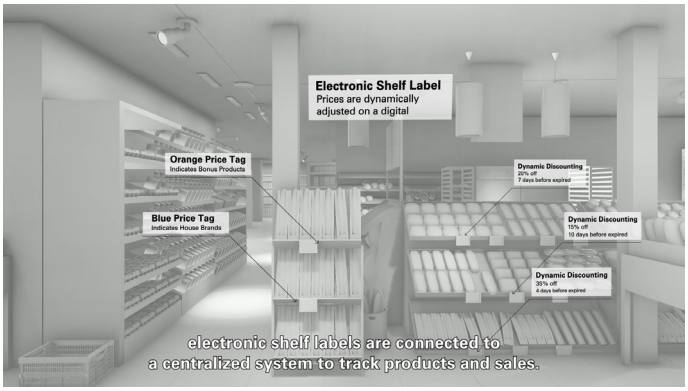

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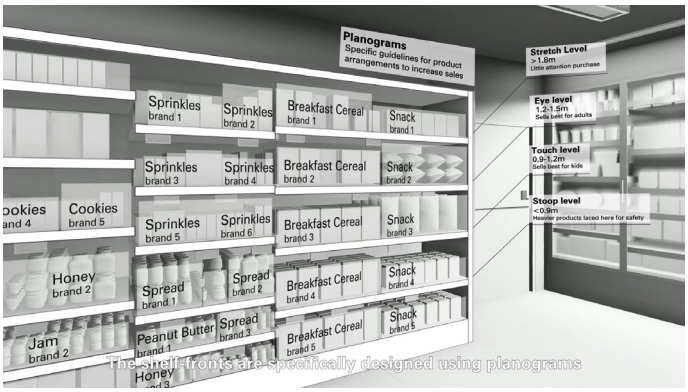

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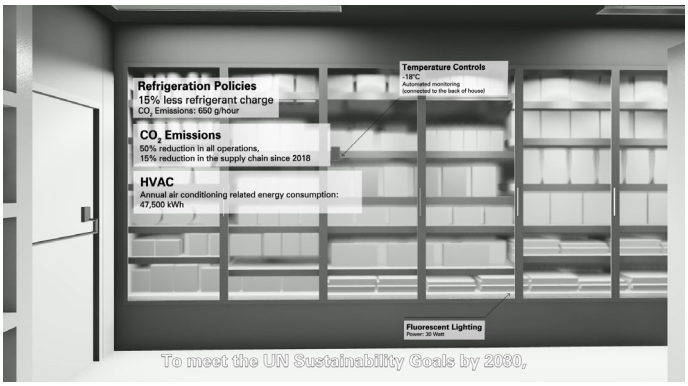
Scenes from annotated analysis of
Albert Heijn



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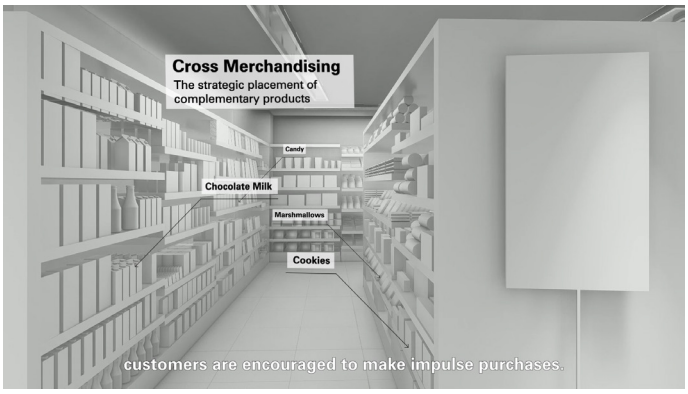

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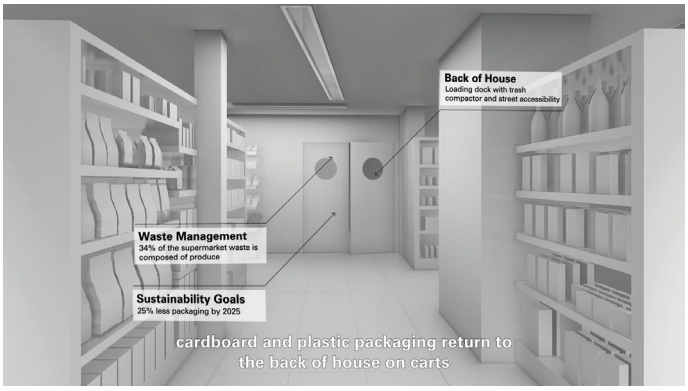

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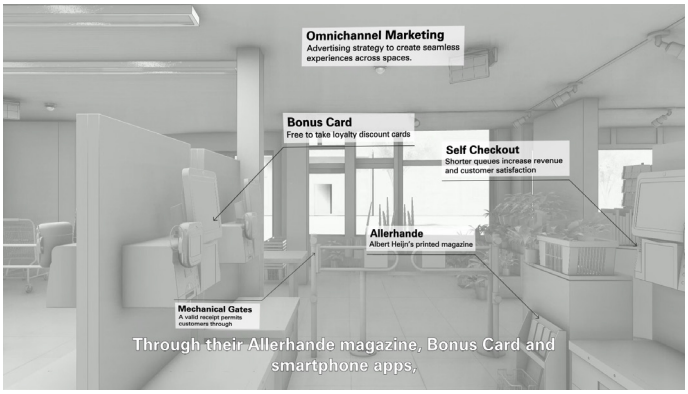
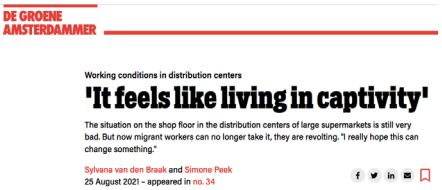


11

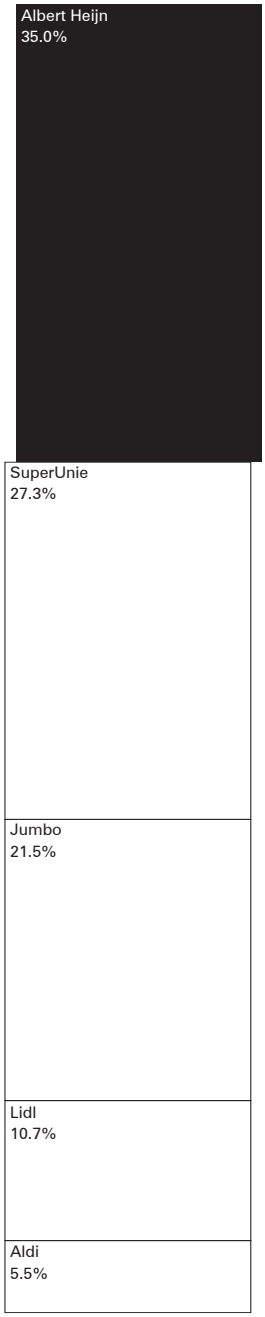
1 Facade
2 Fresh Produce
3 Fresh Produce
4 Bakery
5 Bakery
6 Condiments and Spreads
7 Refrigerated Section
8 Back of House
9 Confections
10 Loading Dock
11 Point of Sale

The Supermarket Reconstructed.

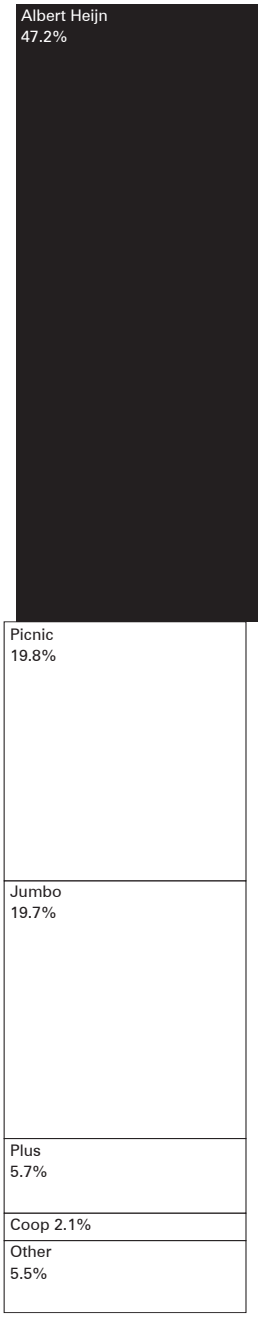
On extinction- The ambient display of seafood refrigeration showcases the highly controlled and technified aquaponic shrimp farm designed to resolve fish extinction.



Recent headlines describe the supermarket and its distribution network in the Netherlands as a highly competitive sector, with questionable working conditions, while unregulated competitors are set out to disrupt the market.

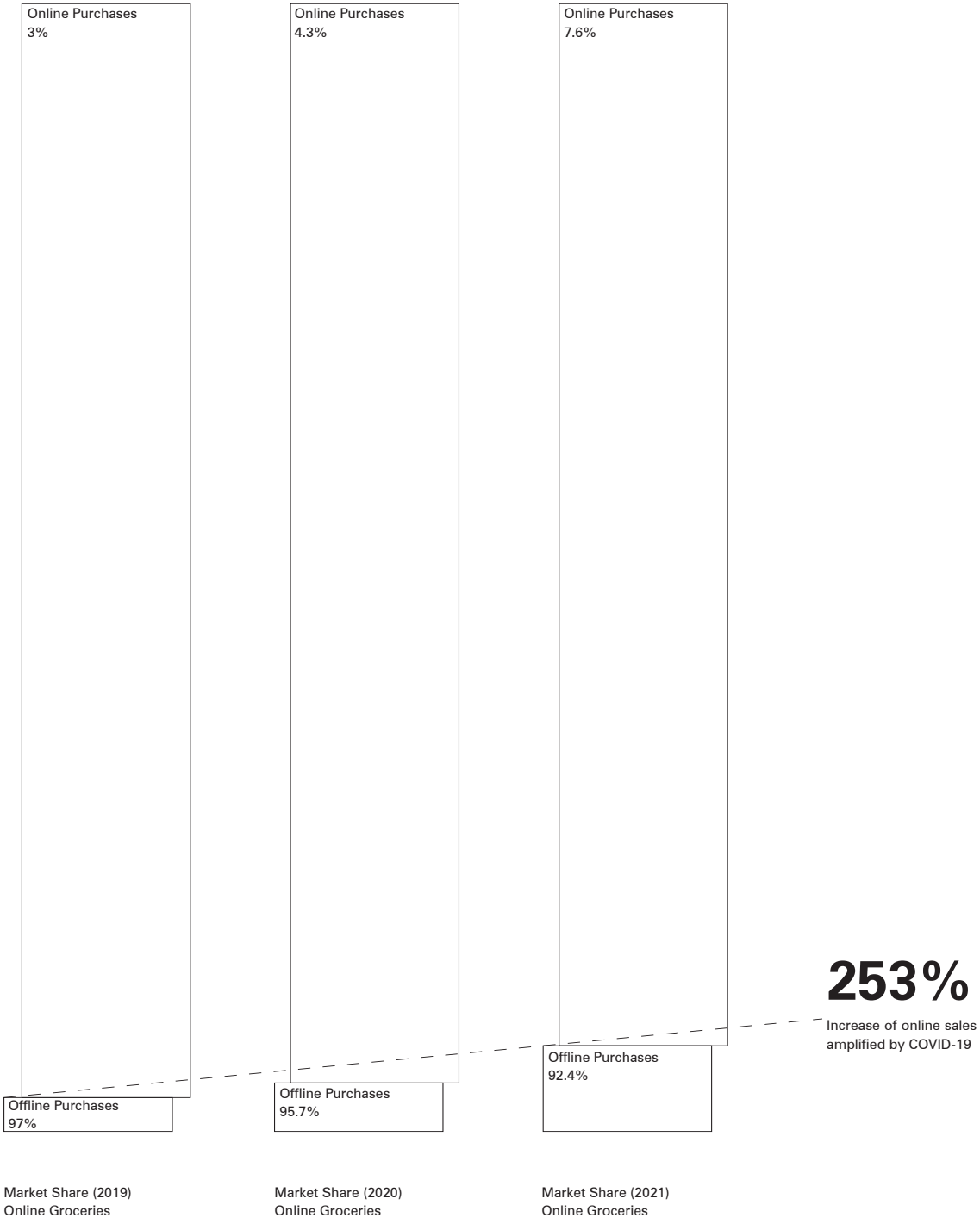


Market Share (2020)
Supermarkets



Market Share (2020)
Online Groceries

The “supermarket war” in the Netherlands, has led to a consolidation of companies and a seemingly oligopolized landscape of grocers, in which Albert Heijn has the greatest market share in both physical and digital stores.



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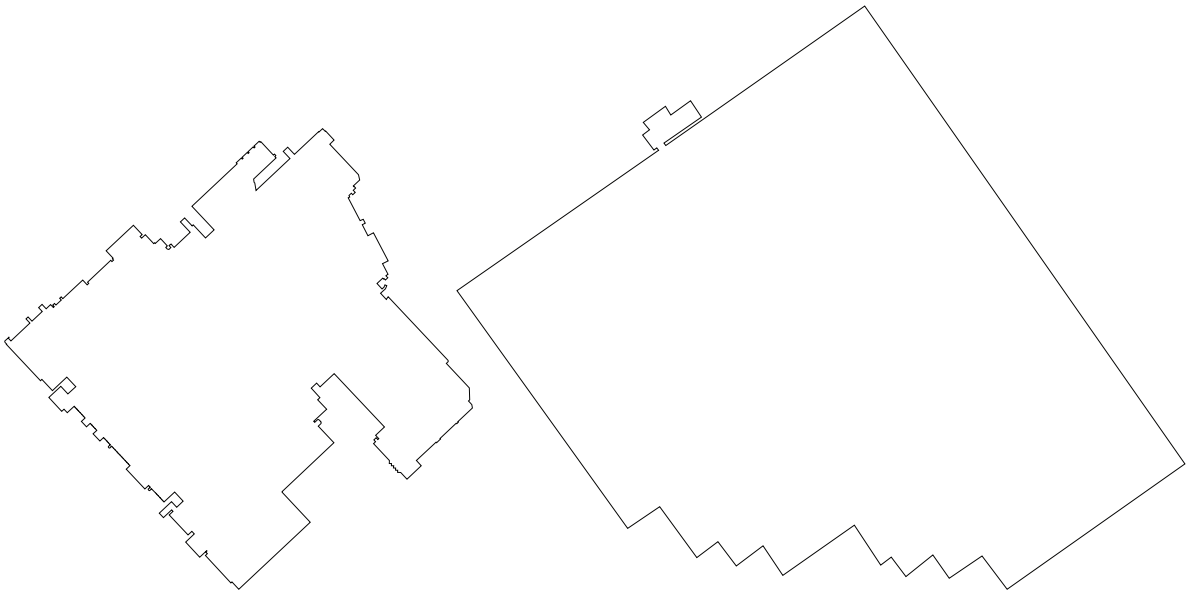
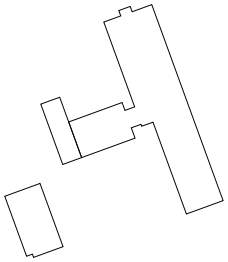
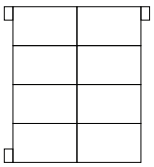


Royal Flora Holland
Aalsmeer
433,000 m²

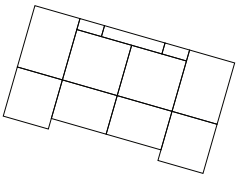
Royal Pride Holland BV
Wieringermeer
1,010,000 m²



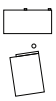
Ahold-Delhaize DC
Delfgauw
62,750 m²



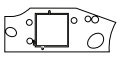
Coolblue DC
Tilburg
90,000 m²



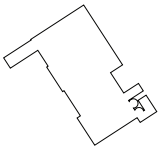
Zalando
Bleijswijk
140,000 m²



Amazon
Heerlen
9,000 m²

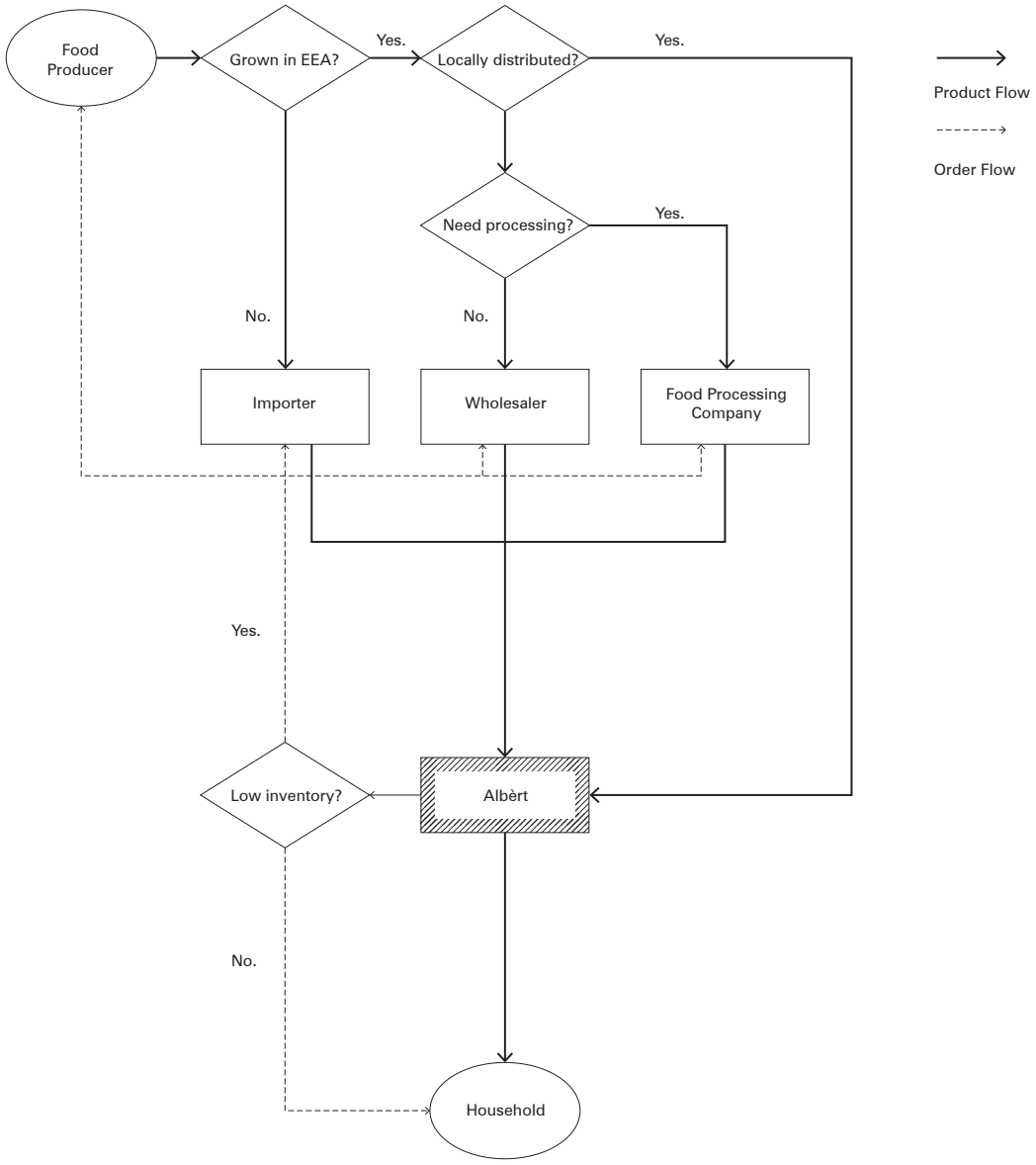


Albèrt
Delft
18,600 m²



IKEA
Delft
40,000 m²

The concealed back of house extends to the peripheries of the Dutch urban areas, taking upon a variety of spatial dimensions, accommodating different quantities of workers, and serving a range of regions.



Producers and suppliers respond to complex market dynamics through just-in-time production, relying on automation, logistics, and infrastructure within the Blue Banana, allowing supermarkets to optimize their stocking to shopper's demand.

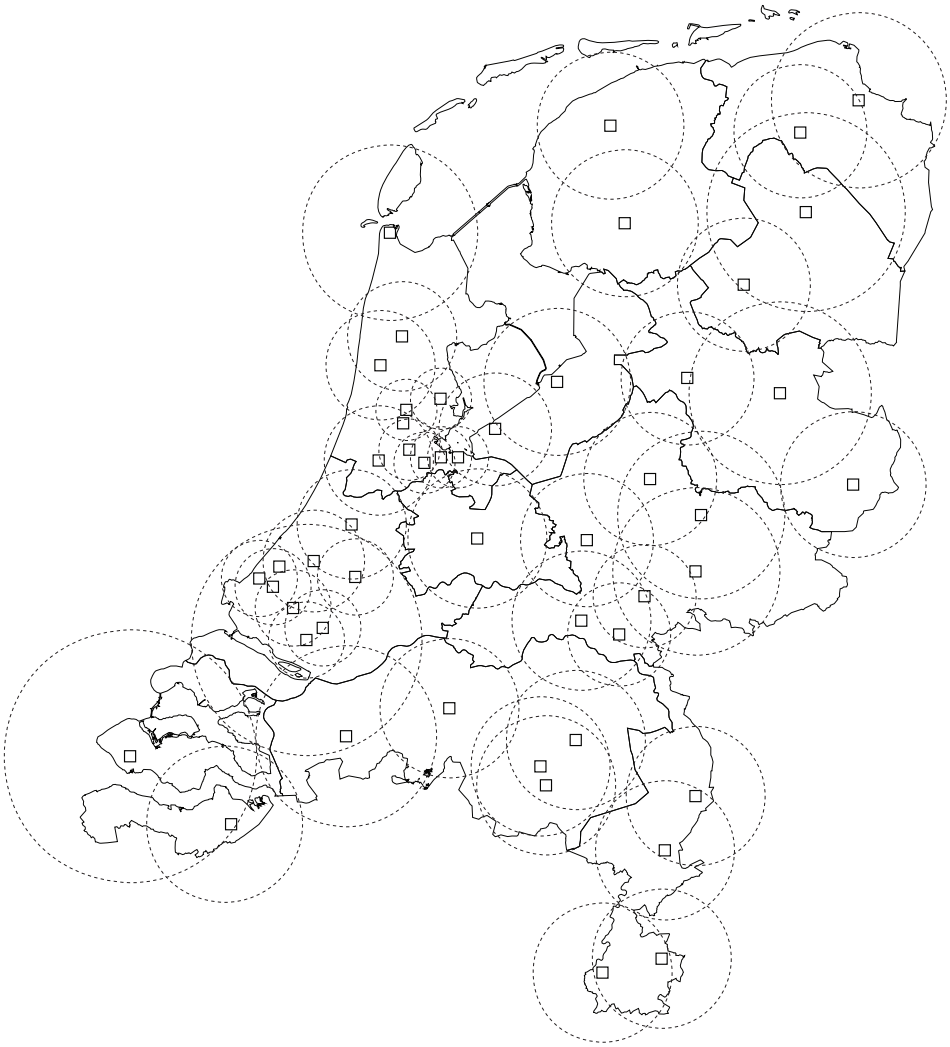
Employees keep track of just-in-time arrivals of products, while their prices are informed by market conditions and proximity.

2022

In an effort to break open the centralized and concealed distribution network of the supermarket, the role of the distribution centers is shifted to large-scale supermarkets such as Albert Heijn XL—now Albèrt—with a floor area of at least two thousand square meters, ready to serve a larger region through e-commerce.

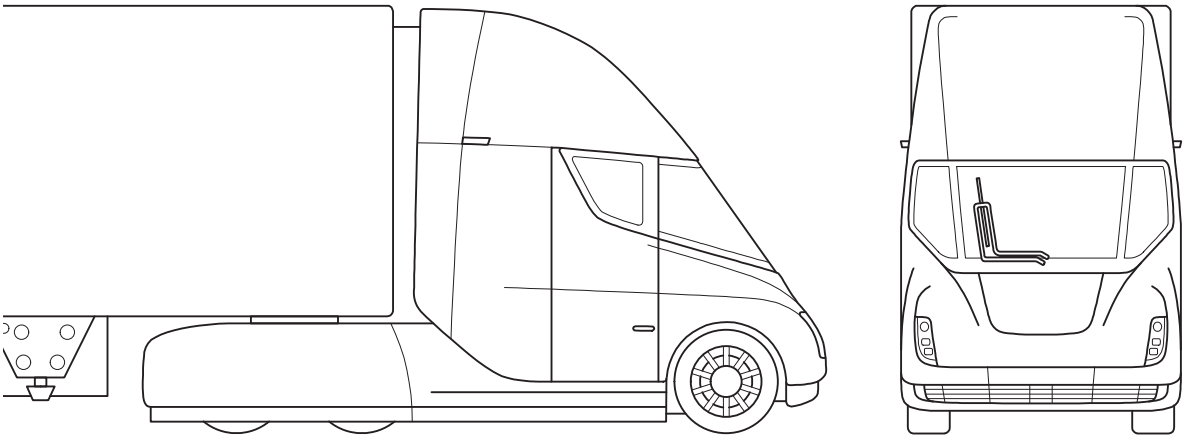
2030

Albèrt

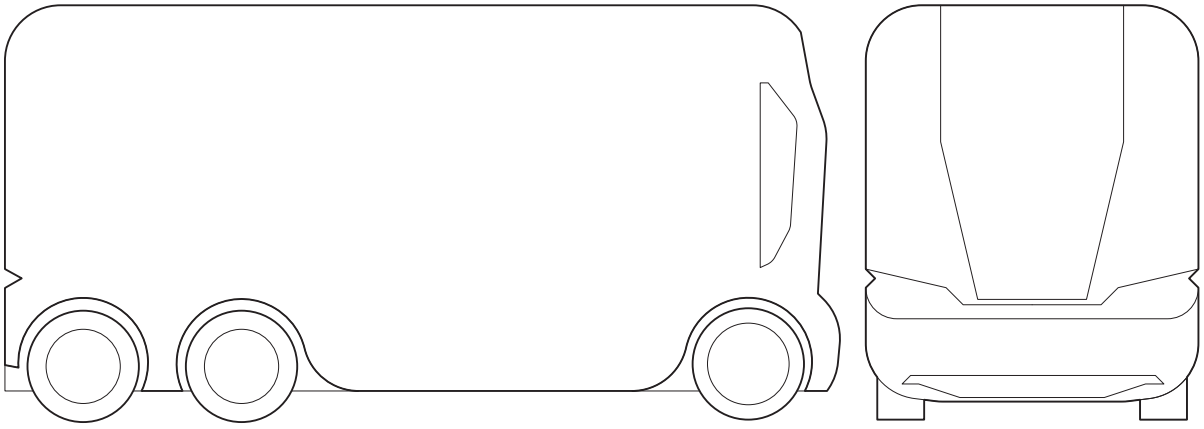


The number of supermarkets and their siting are regulated through municipal planning, leading to an even distribution over Delft's urban expansion areas. Delft's historic center, however, exhibits a high density of supermarkets and speed delivery hubs, responding to valuable shoppers in their proximity. This informs the future distribution of Albèrt and smaller-footprint Albèrtjes.

The essential products in these multiple Albèrtje stores within each city are fed by the distribution centers integrated within each Albèrt, while also having products directly sourced from local suppliers within the city, with the choice of having fine quality products and essential goods at the same place.



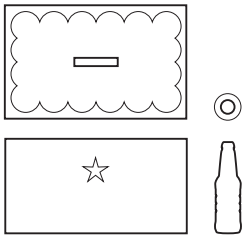
Freight-truck



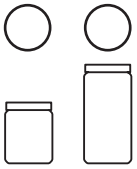
Albèrt truck

By distributing the supply chain from centralized warehouses to large supermarkets in the vicinity, electric semi-trucks with shorter roundtrips take care of transport between producers, supermarkets, and homes.

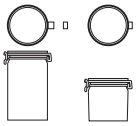
PET Bottle 1.5 l



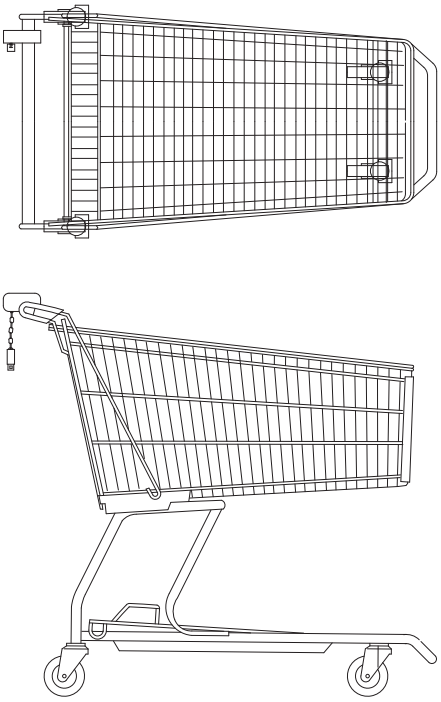
Crate and Glass Bottle, 33 cl



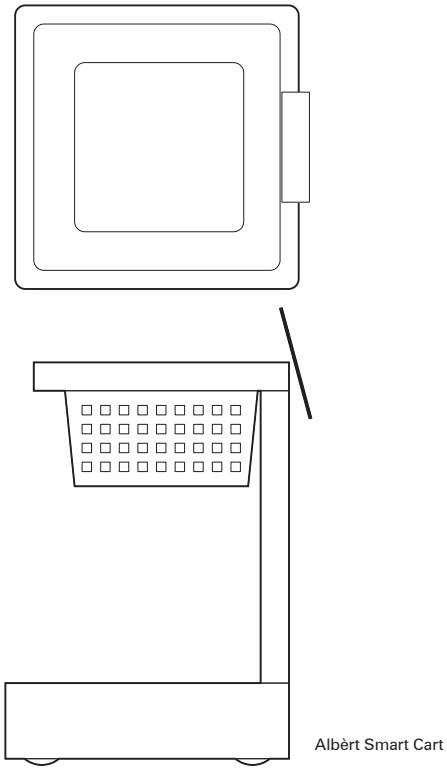
Albèrt Smart Cart



Pieter Pot Reusable Glass Jars, various volumes

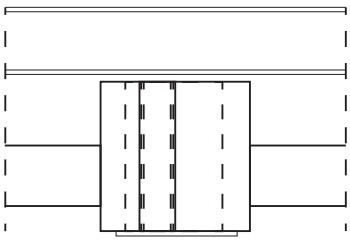


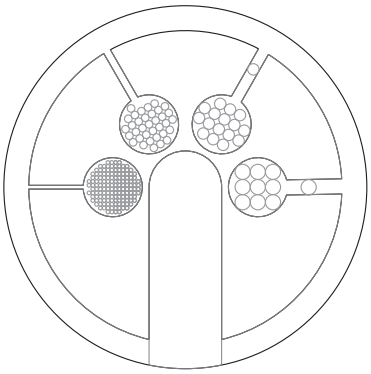
Supermarket shopping cart and shopping basket

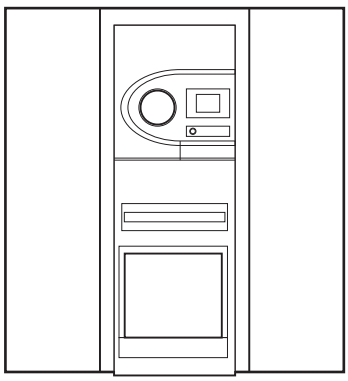


Albèrt Smart Cart

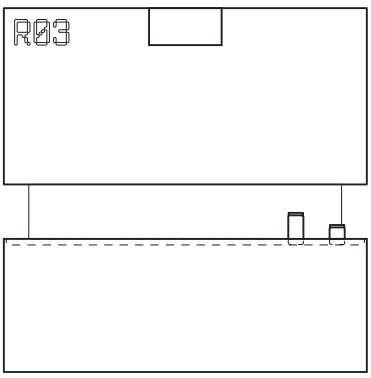
To eliminate single-use packaging and optimize logistic processes, a unified container-deposit system is introduced, limiting the variety of product dimensions in Albèrt. Displays on the smart cart and supermarket hosts guide shoppers in finding their products.





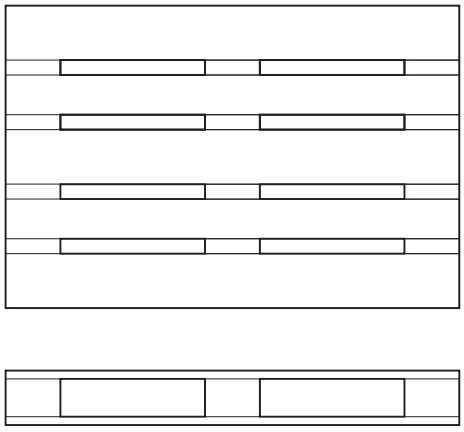


Container-deposit machine

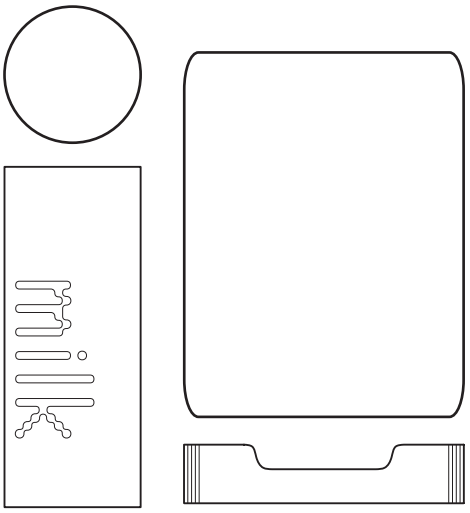


Albèrt Container Return Point

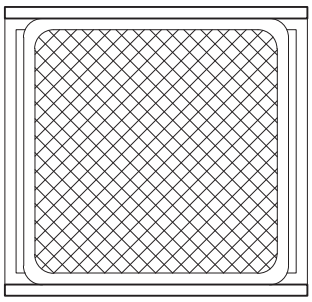
Albèrt's container deposit system utilizes the shopper's existing familiarity with return points for used bottles and crates.

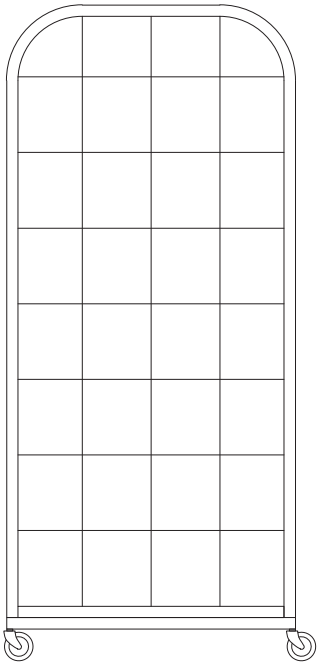


EPAL-Pallet

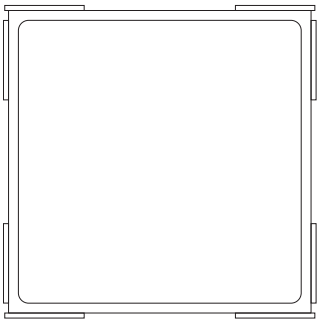


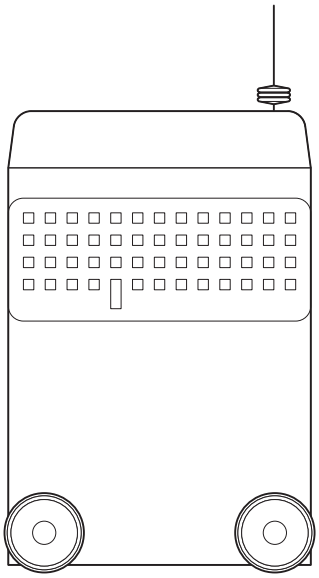
Albèrt Bulk Containers and Crates





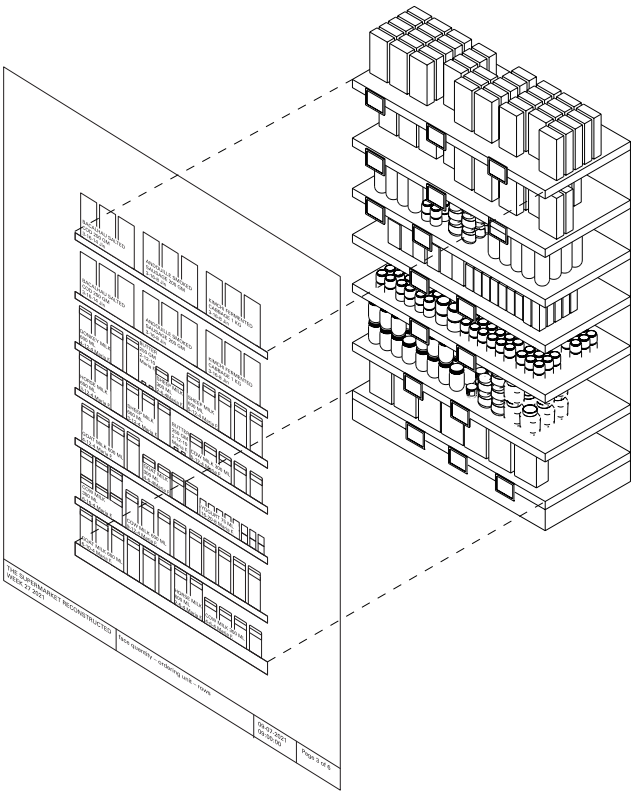
Stocking Cart

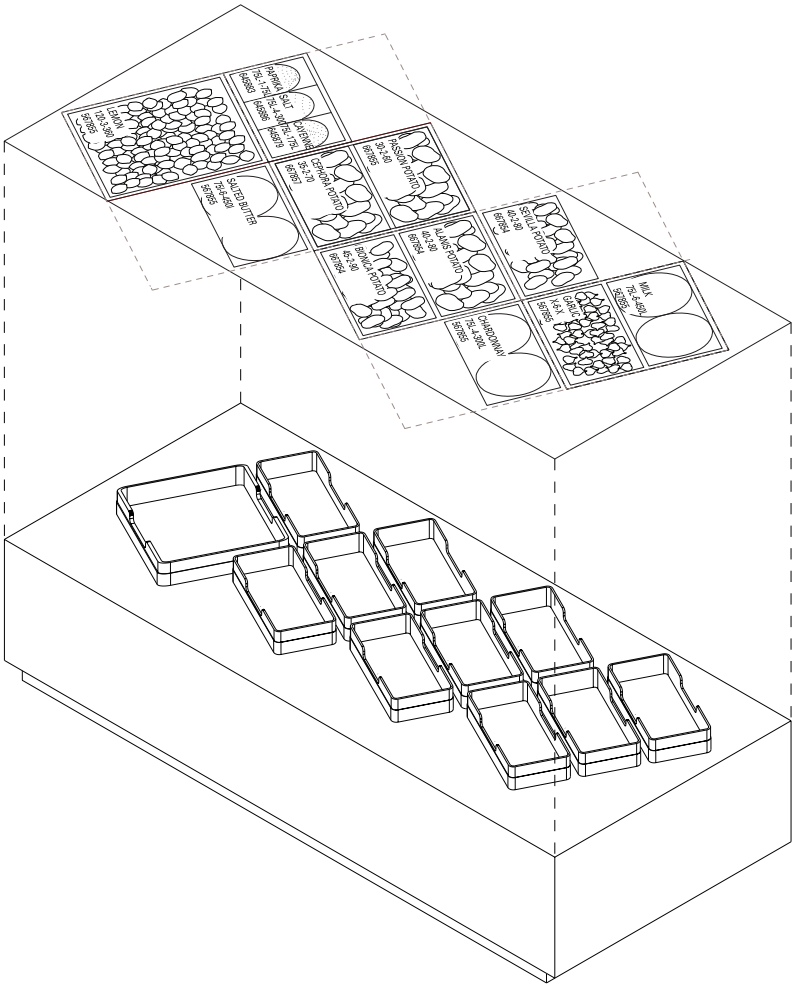




Ocado Robot

Albèrt's automatized warehouse, making use of Ocado robots, considers legacy dimensions based on the EPALpallet, by adhering to an 80 x 80 cm grid.



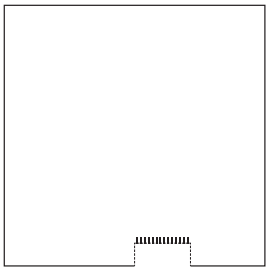


Planograms are an elevational system to optimize the relation between shoppers and the grocer's shelves, in order to maximize sales and minimize wasted space. By introducing a flexible automatized stocking system, the planogram is transformed into a planar organization, in which the retail experience can be dynamically adjusted to market conditions and seasonality.

1970
Thermal printed price label with European Article Number and unit price
120 x 100 mm

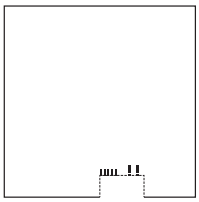
Self-service store with checkout counters
~170 m^2

1936
Self adhesive price label
21 x 12 mm



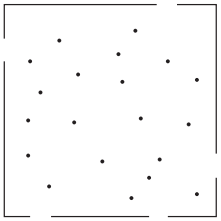
Hypermarket with checkout counters
~6000 m^2

2020
Electronic Shelf labeling system with dynamic display
70 x 36 mm



Modern Supermarket with omi-channel checkouts
~3000 m^2

2030
NFC tag embedded in the crate
Ø3 mm



2030
Albèrt with smart carts
Ø3 mm

The introduction of the fixed price—attached to a product through a sticker—has allowed the grocer to develop into self-service stores, informing the architectural type of the supermarket. Technological developments such as thermal printing, e-ink, NFC tags, and computer vision reintroduce dynamic pricing while offering novel spatial solutions for the supermarket, such as the elimination of the physical check-out point.

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The introduction of cold storage via ice blocks to the food industry.

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An observation of the industrial spaces and infrastructure that operate between the production and consumption of food.

4. Diana Holland, "From Land to Mouth: Interview with Brewster Kneen", *Share International*, accessed August 15, 2021, https://www.share-international.org/archives/economics/ec_dhfromland.htm

An interview discussing a book critiquing the corporate food industry with a call for local farming practices.

5. "Disruption & Uncertainty: The State of Grocery Retail 2021", *McKinsey & Company* (March, 2021).

An interview with the CEO of Ahold Delhaize about the financial positioning of supermarkets after COVID-19.

6. Executive Summary: Global Status of Commercialized Biotech/ GM Crops 2011, *International Service for the Acquisition of Agri-biotech Applications*, 2011

Global statistics and trends on the use of biotech/GM crops.

7. Frank Viviano, "This Tiny Country Feeds The World", *National Geographic*. (September, 2017).

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8. Franziska Bollerey, *Setting the Stage for Modernity: Cafés, Hotels, Restaurants, Places of Pleasure and Leisure* (Jovis Verlag GmbH, 2019).

An analysis of the representations and scenographies to discuss the dichotomies of dining culture.

9. Ignite2X,"The Rise of Artisanal Brands," *Ignite2X*, published July 18, 2019, https://www.ignite2x.com/rise-artisanal-brands/

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A list of foods in danger of extinction due to climate change and market demands.

11. Lia Ryerson, "Bigger Hauls, Fewer Choices: How the Pandemic Has Changed Our Grocery Shopping Habits Forever," *The Washington Post*, September 1, 2020.

An article cataloguing new market trends in the American supermarket after
COVID-19.

12. Marcus Case and Ember Smith, "Automation From Farm to Table: Technology's Impact on the Food Industry," *Brookings*, November 23, 2020.

An article bringing up the incorporation of automation in different parts of the food industry along with its potential impacts on policy and labor.

13. Marten Kuijpers and Ludo Groen, "Automated Landscapes and the Human Dream of Relentlessness," *Strelka Mag*, March 3, 2020.

An article about large automated production spaces in the Netherlands and their effects on people and land.

14. Melissa Repko, "Grocery Shoppers Trade Up From Dried Beans and Rice to Premium Foods as Covide Cases Rise," *CNBC*, November 12, 2020.

American market trends toward higher quality groceries after COVID-19.

15. Michelle Dunne and Angela Wright, *Local and Artisan Food: A Case For Supermarket Space?* (11th Annual Tourism and Hospitality Research in Ireland Conference (THRIC), 2015).

A literary and market study on the possibility of the placement of local and artisan foods in Irish supermarkets.

16. Nicola Twilley, "The Coldscape: From the Tank Farm to the Sushi Coffin." *Cabinet*, published 2012, https://www.cabinetmagazine.org/issues/47/twilley.php

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Four human-interest stories about the impacts of rising food costs after COVID-19.

18. Peter Del Tredici, "The Flora of the Future", in *Projective Ecologies*, ed. Chris Reed and Nina-Marie Lister (New York: Actar D, Harvard Graduate School of Design, 2014).

An article claiming the significance of biodiversity in urban areas.

19. Peter Wyeth, "Modernist Cooks!" *The Modernist*, #38 Kitchen.

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20. Sylvana van den Braak and Simone Peek, "'It Feels Like Living in Captivity,'" *De Groene Amsterdammer*, #34 (August 25, 2021). Translated by Google Translate from 'Het voelt als leven in gevangenschap'.

An article on the changing working conditions at Albert Heijn distribution centers after COVID-19.

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A case study on the use of Microsoft's data and AI technology for Albert Heijn.

22. Thibaut Marie Tardieu, *Potential Greenwashing At Dutch Supermarkets* (Wageningen University & Research May 11, 2020)

A Business and Consumer Studies thesis from Wageningen University on the communication versus actual sustainability at Dutch supermarkets.

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An excerpt from a book questioning the notion of nature and a human's place within it.

24. David Wallace-Wells, "What Happens When All the Bugs Die?", *New York Magazine*, July 31, 2021.

An interview with Dave Goulson about Silent Earth, a book on insects and the possibility of extinction they face.

25. Zachary Stieber, "GMOs, A Global Debate: South Africa, Top GMO-Producer in Africa", *The Epoch Times* (October 19, 2013).

An article on the connection between GM crops and pest control and the opposing views and policies surrounding the use of GM crops in South Africa.

Supermarket is a collective project on the spatial implications of the food industry in the Netherlands and beyond, redesigning this now considered essential architecture to entail a paradigm shift in its journey towards optimization, sustainability, and health consciousness. It imagines a future supermarket that integrates retail experiences with distribution, supply chains, and product display to ensure a frictionless future for conscious consumers; while, at the same time, creating a new civic presence for the city and its residents.

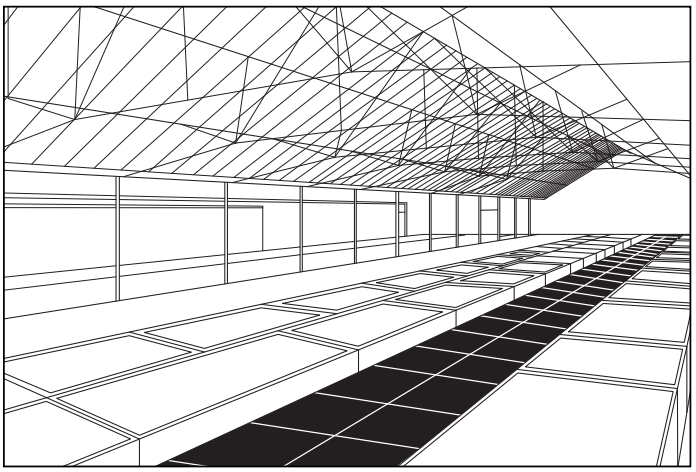
The envisioned supply chain for the future supermarket commences with the Blue Banana, enhancing the position of the Netherlands— one of the world's largest food exporters and home to world-class research institutions—in this urbanized trade corridor. From Genoa to Delft, and from the supermarket's back of house to the sales floor, Supermarket addresses multifaceted aspects of the food industry— scarcity, trade, inclusivity, sensorialism, tastemaking, craft, reshoring, protectionism, automation, and extinction—through ten architectural and urban design contributions.

Ten products, along with their associated building types and territories demonstrate how a modified food distribution network converges at the future supermarket—Albèrt—on Martinus Nijhofflaan in Delft. Albèrt seeks to display products and their supply chain by integrating the once stand-alone and distant distribution center with an automated Ocado grid system, asserting itself as the generator of a just-in-time production system—thereby disrupting the seriality of infinite supermarket aisles. With all Albèrt supermarkets operating as distribution centers for multiscalar Ahold Delhaize branches—such as Albert Heijn and Albertje—the supply chain, and its resultant territories, are condensed and reconfigured.

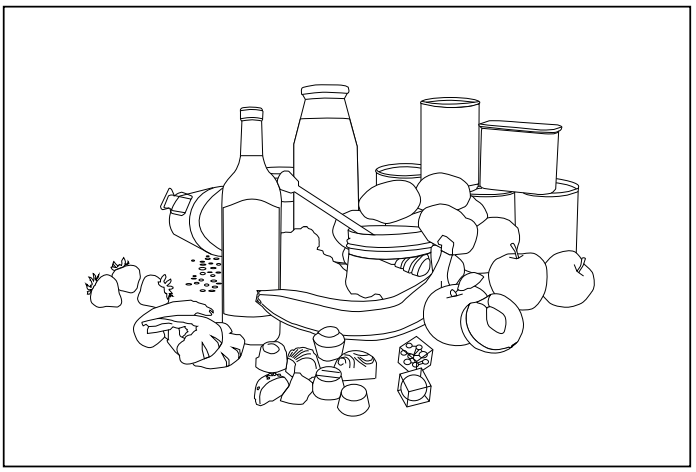
Albèrt offers an omni-channel consumer experience in both physical and digital forms. It reflects on the traditional supermarket's backstory, effectuating sustainability goals throughout a reimagined supply chain. The supermarket assures optimization in unison with the country's circular economy by implementing reusable packaging for all Albèrt products, extending shelf-life from data-driven decision making, offering digitized scanners informing conscious consumers of product particularities, and by providing dynamic pricing for food security.

Along with a flexible open-plan allowing various iterations of product displays to maximize profits and render a unique shopping experience, Albèrt 's business models are diversified, generating revenues from branded products staged in shop-in-shops and electric car-sharing facilities to encourage consumer traffic.

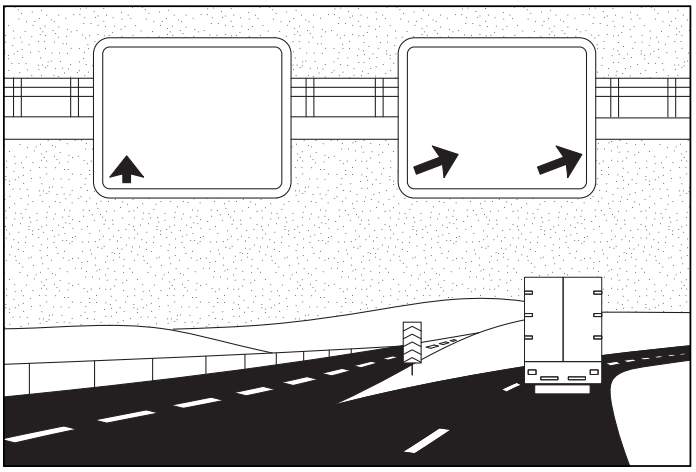
The supermarket—previously conceived as a destination—incorporates a pathway to meet the constant movement of divergent consumers with the conjunction of fast-paced pick-up zones—promoting cycling, delivery, and e-commerce—and slow-paced demonstration zones offering novel tasting experiences along with the green public spaces on the periphery. Albèrt demonstrates an innovative retail experience beyond the technology of the new integrated distribution center, extending its perimeter toward the Delft city center to establish a new civic presence.



The Netherlands is internationally recognized as one of the world's largest food exporters due to its excellent connectivity throughout Europe. Home to world-class research institutions, it is—in effect—feeding the world. However, food production and consumption are responsible for around 25% of the total emission of greenhouse gases and for 60% of the terrestrial loss of variation in plant and animal species. When it comes to the food industry, the country's journey towards optimization, sustainability, and health requires a paradigm shift.



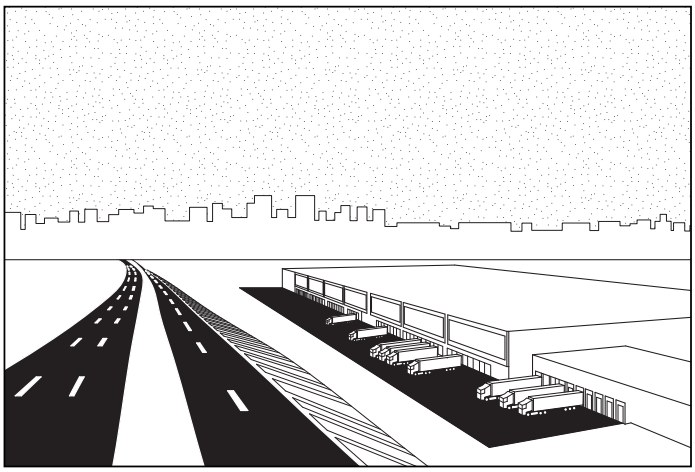
Ten architectural and urban design contributions sited within the Blue Banana—a European corridor of almost continuous urbanization—originating from supermarket products, <<<redesign the future supermarket of 2030.



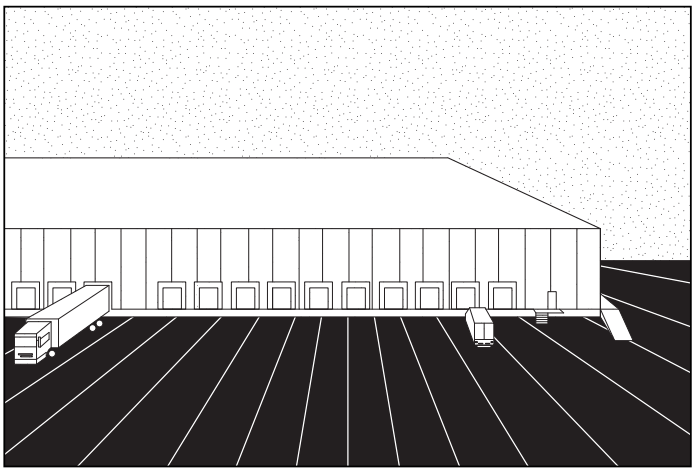
A continuous supply of products and materials, to and from the current supermarket, is made possible through a vast network of roads, rails, and waterways, connecting it to various infrastructural nodes and European trade routes within the Blue Banana.

Supermarkets occupy the most densely used square meters in a city. Resting within its etymology—where «super» alludes to supremacy concerning size, quality, and quantity, while «market» refers to trading in goods of value—the supermarket, selling food and household goods, first originated in the 19th century with the novel concept of a self-serve store.

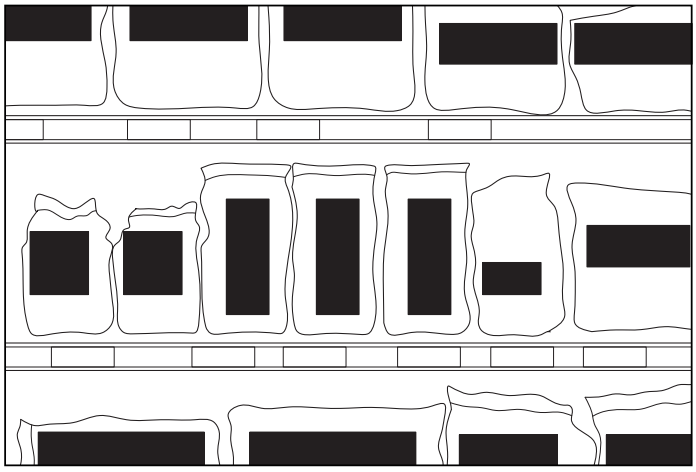
Presented in a set of spatial narratives, the collective project addresses multifaceted aspects of the food industry and its distribution network commencing with the Blue Banana's urbanized trade corridor to reconfigure at the future supermarket—Albèrt—on Martinus Nijhofflaan in Delft.



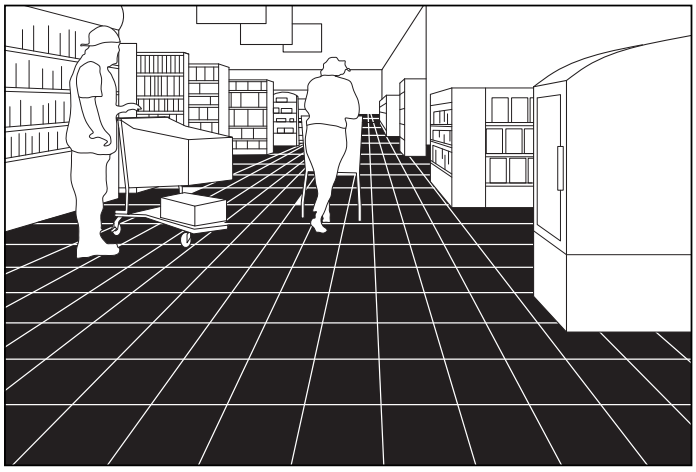
These ten contributions provide modifications to the supply chain, product distribution, and store planning, in relation to the products, their associated building types, and their extensive territories through a vast network of transportation nodes.



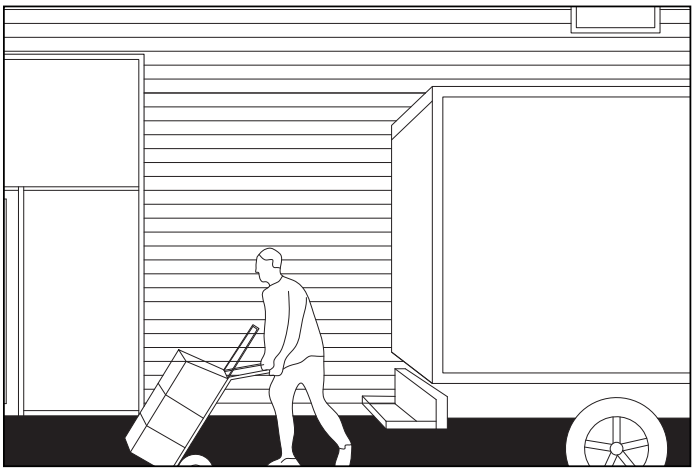
For this purpose, distribution centers currently serve as the epicenter, exploring the resultant spatial characteristics, and linking these ten contributions with the future supermarket.



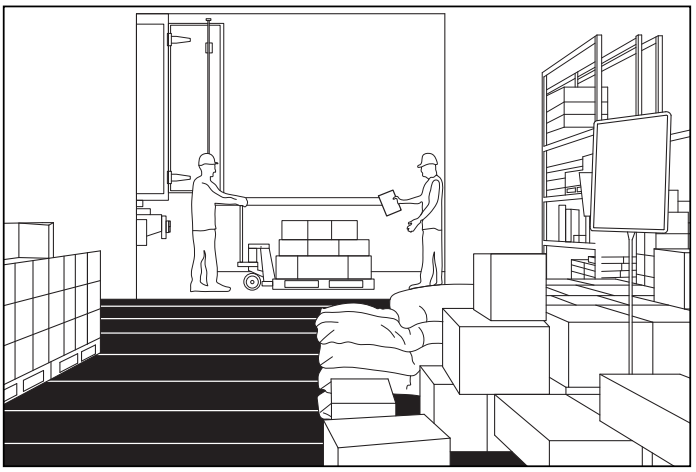
Fixed prices that originated in order to accelerate grocery sales had a huge impact on consumer experience. From standardization of price tags to uniformity of products, and from barcodes to electronic shelf labeling, the improved logistics, shorter employee training periods, a monitored supply system, and efficient shelf organization.



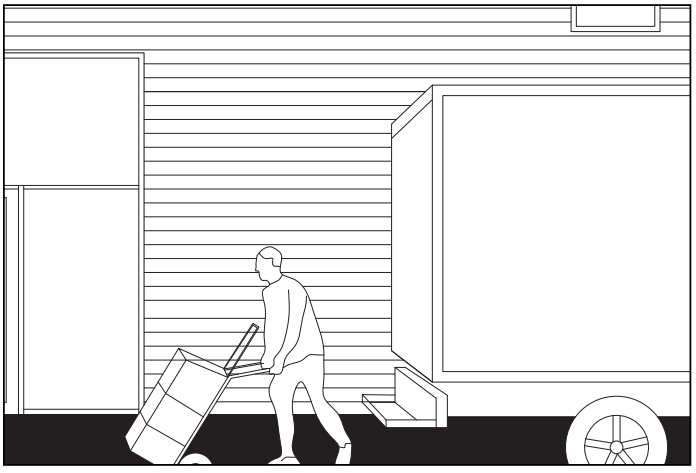
As the COVID-19 pandemic has reshaped the retail market in unprecedented ways, consumers shift around lifestyle and value. Its profits increased up to 40% and physical stores overflowed with people seeking to maintain a sense of normalcy, underscoring it as an essential service, one that represents a new civic presence. This demands new spatial configurations of a supermarket transitioning between a pre-COVID-19 and a post-COVID-19 society.



Home delivery and e-commerce businesses grew up to 5 times faster than before the pandemic, giving rise to an online distribution center that offers the convenience of a digital supermarket.



The supermarket analysis reveals its functional logic through the concealed back of house that is associated with the product's supply chain. Regarded as the employee's domain, the back of house is concerned with product flow, supply, and demand through data-driven decision-making, standardized packaging sizes, and product distribution via tastemaking, scarcity, sensorialism, inclusivity, trade, and biodiversity.



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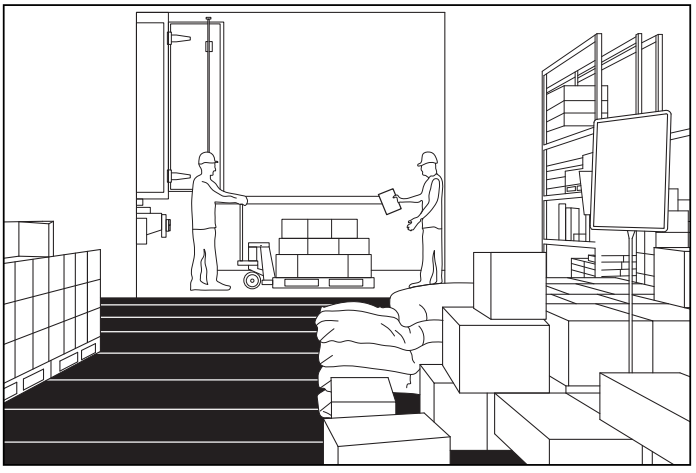

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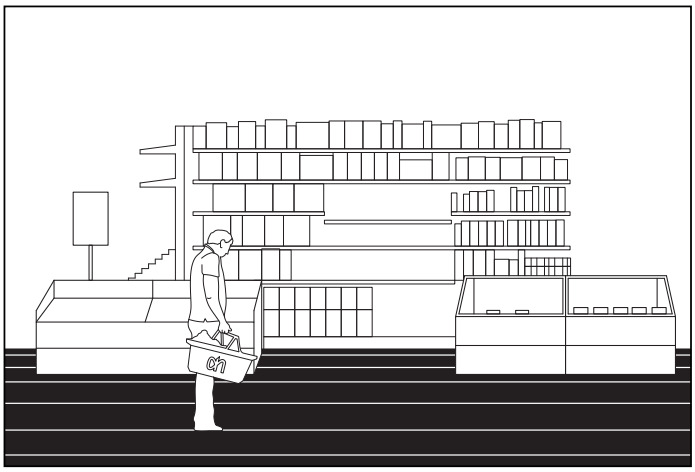
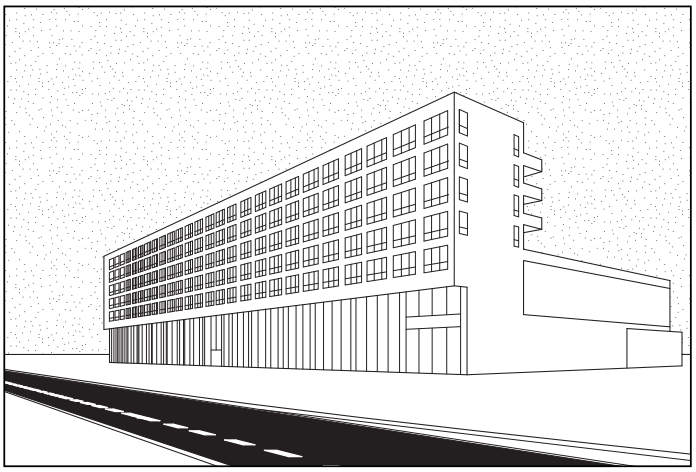
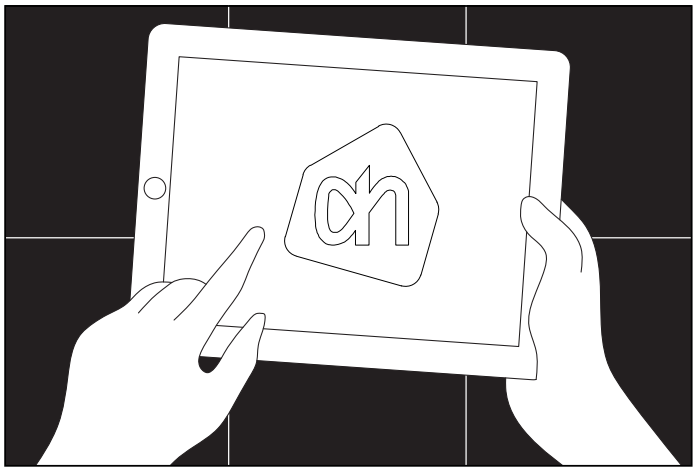
Presented in a set of spatial narratives, the collective project addresses multifaceted aspects of the food industry and its distribution network commencing with the Blue Banana's urbanized trade corridor to reconfigure at the future supermarket—Albèrt—on Martinus Nijhofflaan in Delft.



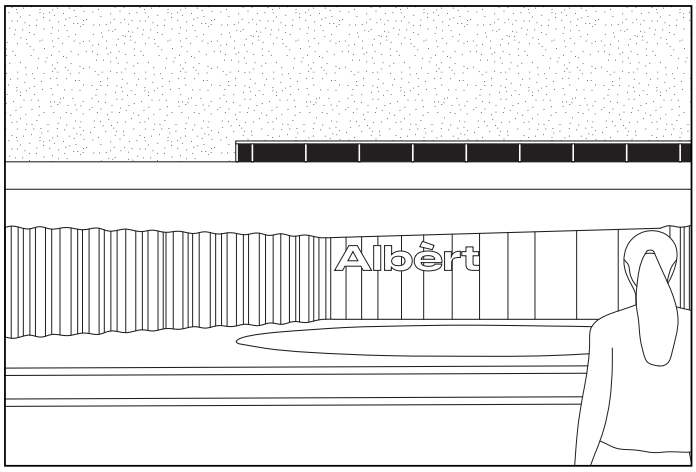
Secondly, the meticulously designed sales floor provides an immersive consumer experience. The sales floor raises issues of scenography, human interaction, digital technology, and the organization of supermarkets within the ever-changing future of retail through the notions of craft, reshoring, protectionism, automation, and extinction.



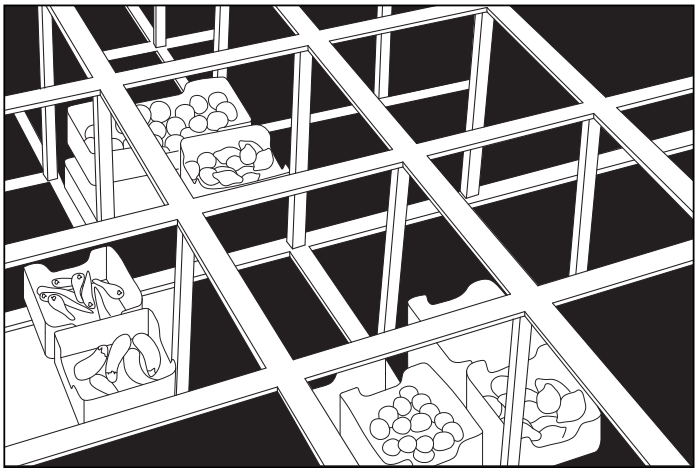
The collective project on the spatial implications of the food industry in the Netherlands and beyond redesigns a future supermarket on the current site of the Albert Heijn XL on Martinus Nijhofflaan in Delft, implementing developments on the sales floor and the back of house ensuring a frictionless future for shoppers.



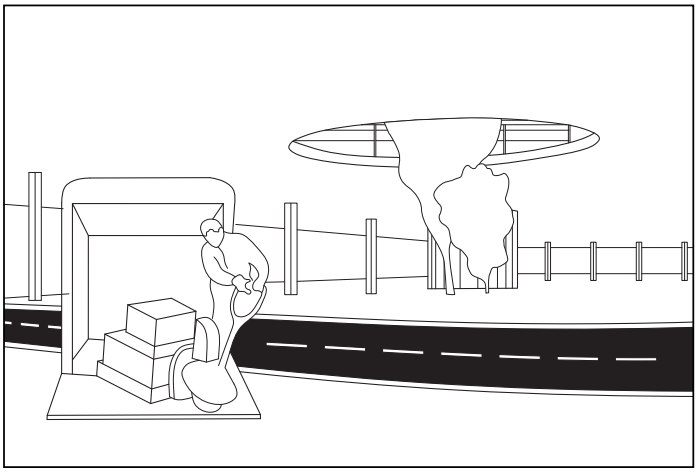
Situated in a densifying expansion area of Delft, a forecasted demography of (international) students, families, and elderly will make use of this supermarket and its e-commerce services.



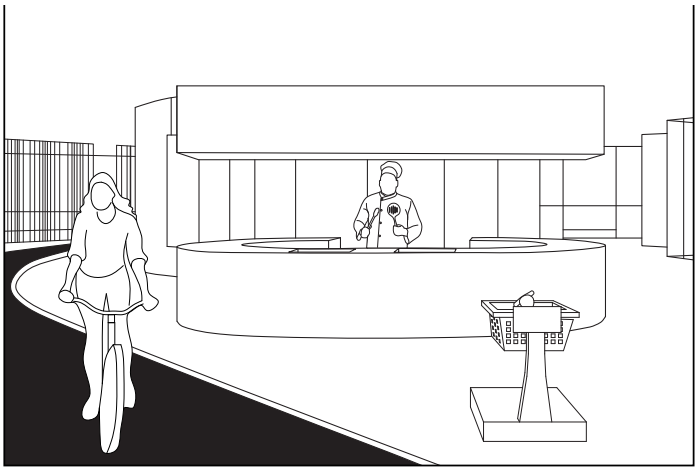
Responding to technical, environmental, and societal demands from the Blue Banana's urbanized corridor to the new Albért, and from the supermarket's back of house to the sales floor, new spatial propositions redefine the future supermarket of 2030.



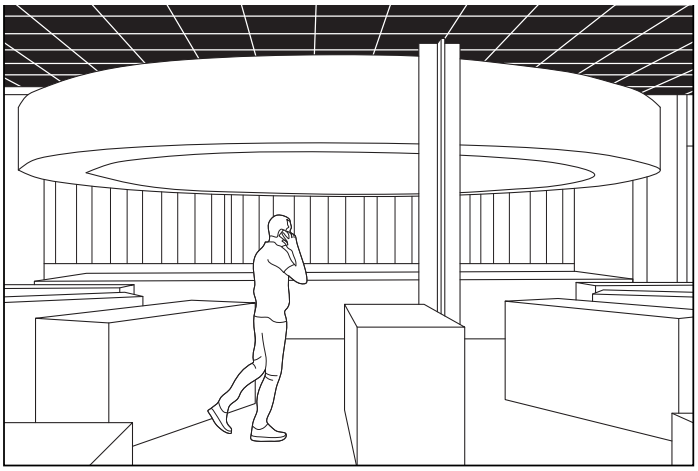
The reimagined supermarket—Albèrt—seeks to display both the product and its supply chain, in turn, the sales floor and the back of house, by integrating the distribution center with an automated Ocado grid system, asserting itself as the generator of a just-in-time production system.



With all Albèrt supermarkets functioning as distribution centers for multi-scale Ahold Delhaize branches—such as Albert Heijn and Albèrtje—the supply chain, and its resultant territories are condensed and redefined. Product distribution within each network thus densifies within smaller radii, becoming open to more local suppliers frequenting small-batch deliveries, while also providing proximity to consumers in the city.



The storefront of the supermarket moves beyond blocked-off rows of checkout lanes and security gates to designated slow-paced zones with product demonstrations, workshops, and exclusive shops that entice consumers into the supermarket.



The automated Ocado system in the distribution center above allows for the diversion of labor in the supermarket towards hospitality and social interaction through various host stands—strategically placed to encounter pedestrian flows—offering a tailored shopping experience.

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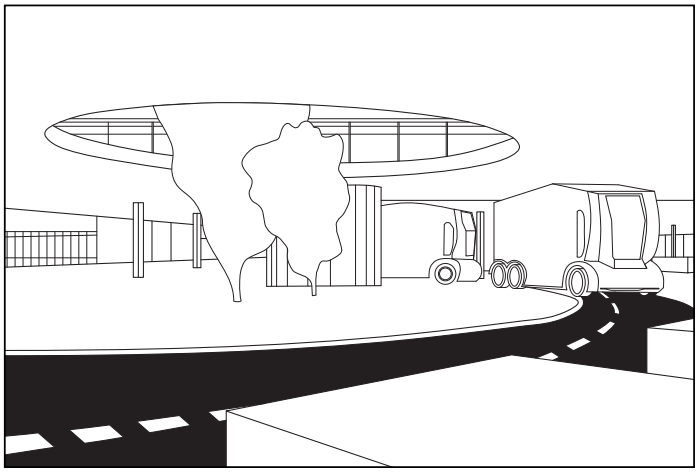
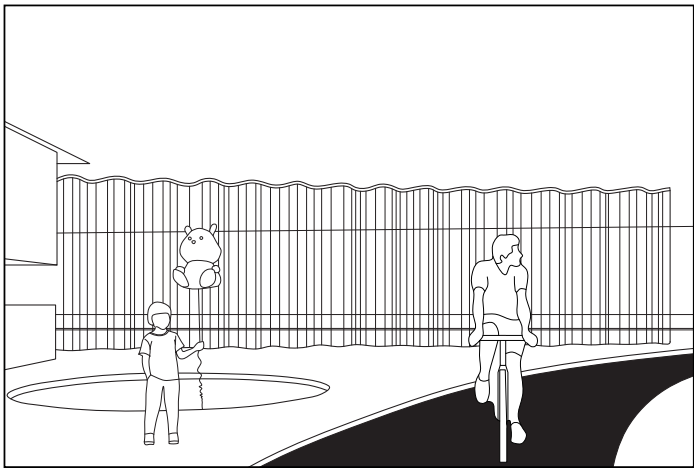
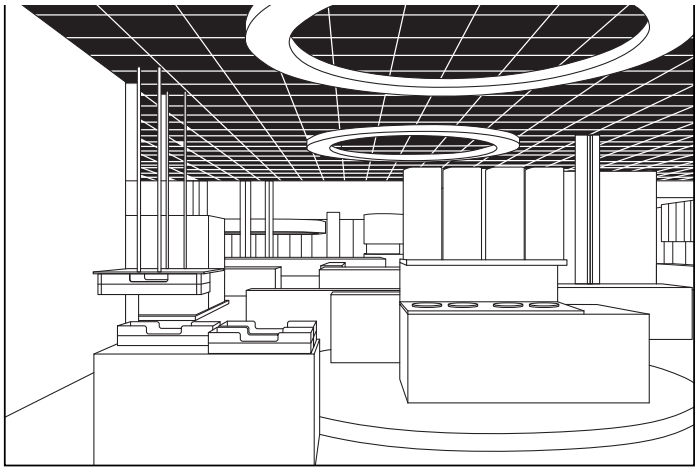


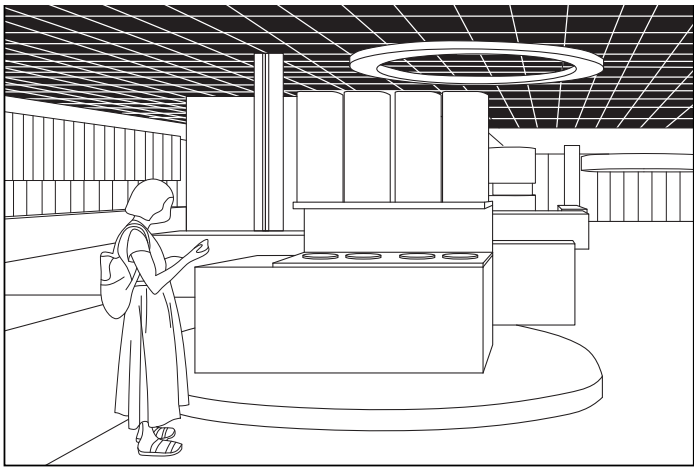
The relationship between the supermarket and the city changes with a modified transitional system that showcases the dynamic loading dock and its functioning on the sales floor, diverts private vehicular flow, e-trucks, and car-sharing services towards the Albèrt parking on the site, and promotes cyclists by providing access on the sales floor through the incorporation of a pathway for fast-paced pick-up zones with an increase in delivery and e-commerce.



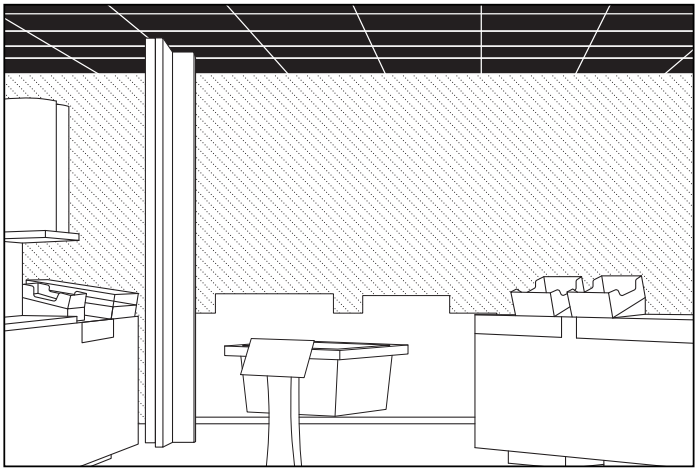
The supermarket provides several entrances—strategically located near high traffic zones—to move away from a one-directional circulation path to a multi-directional circulation pattern within the organic layout of the facade that is designed in response to the surrounding context.



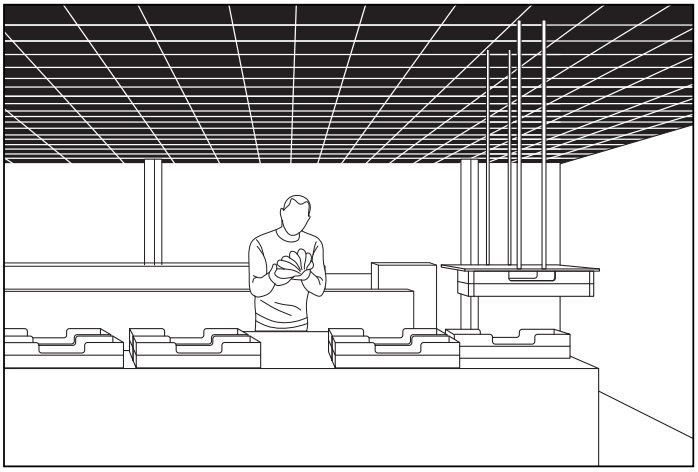
The supermarket is reorganized according to the central high yield automated distribution center within a static grid ceiling that offers dynamic robotic movements, allowing various iterations of product displays in reaction to seasonality and specialties, to render an open floor plan shopping experience.



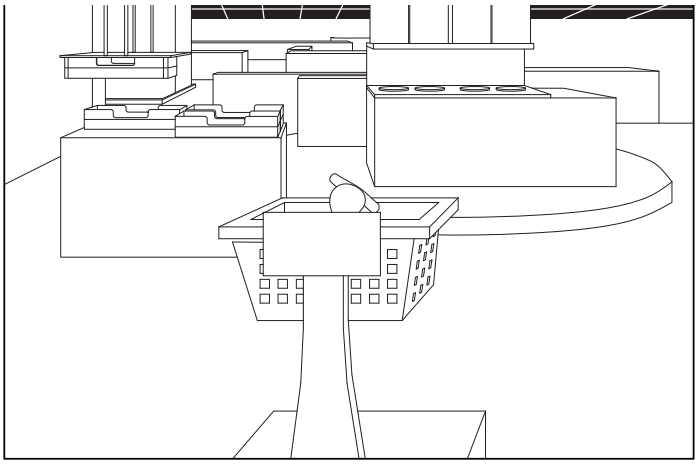
Stores will continue to use planograms, working on existing principles of increasing sales. From bulk shelves to fresh produce crates, shelving systems within the open plan generate new episodic formats of planograms, while accommodating changes in circulation with the incorporation of electronic signage to guide the consumers.



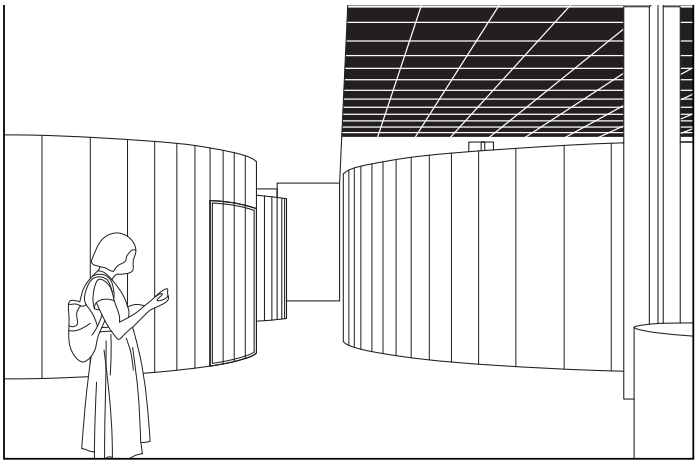
Responding to the supermarket's visibility of the supply chain, vertical experiential walk-in refrigerators represent the ripening rooms and recreate the conditions of refrigerated trucks to extend the distribution center to the sales floor with a convenient product flow, allowing consumers to momentarily enter the varied environments of the food supply chain.



All new shelves, carts, packaging, and delivery methods work within the 800mm x 800mm grid to ensure full standardization within the supply chain system starting from the cargo pallet itself.



Once an item is delivered, the screen on the smart cart displays other useful items, or the next item on the shopping list while still incorporating key supermarket sales concepts and experiences like cross-merchandising and impulse buys.



Business models and real-estate strategies—introduced through independent areas defined for peripheral store-in-stores—promote collaborations with exclusive brands and local entrepreneurs by bringing in highly curated experiences, catering to the experimental and diverse tastes of Delft residents.

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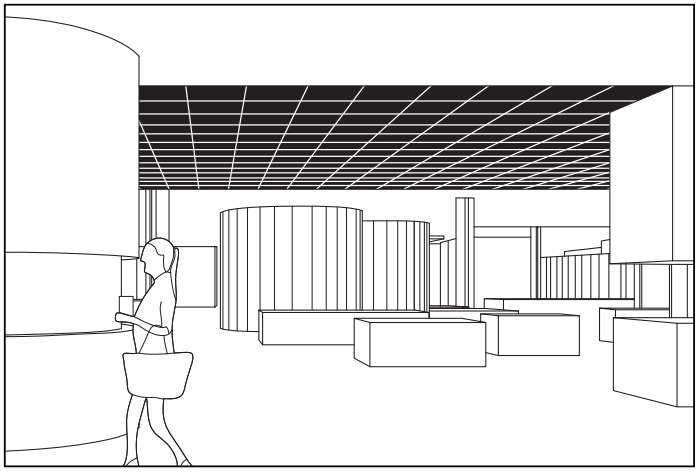
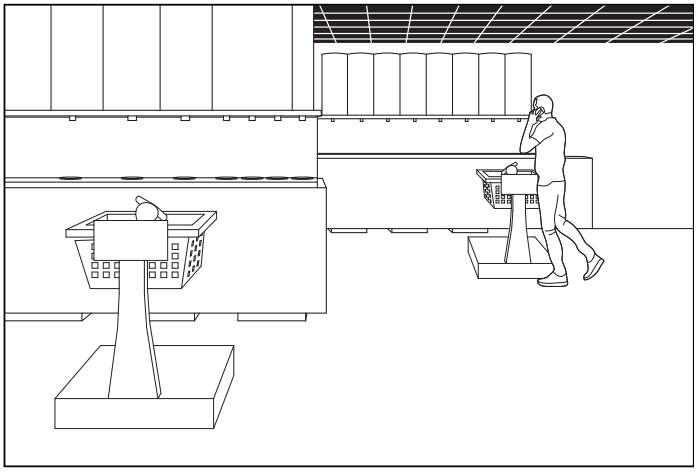
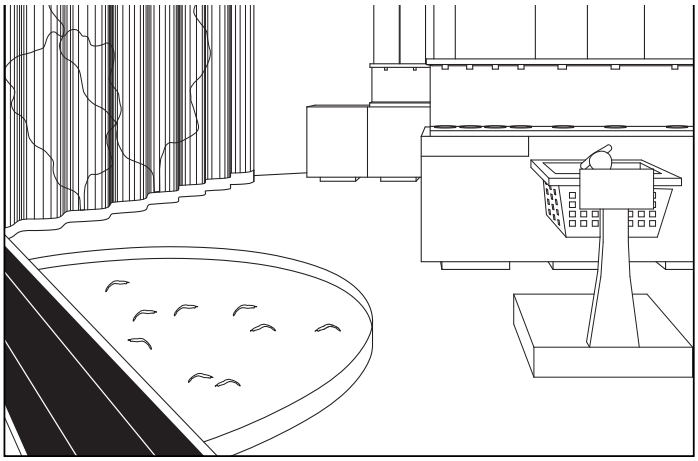


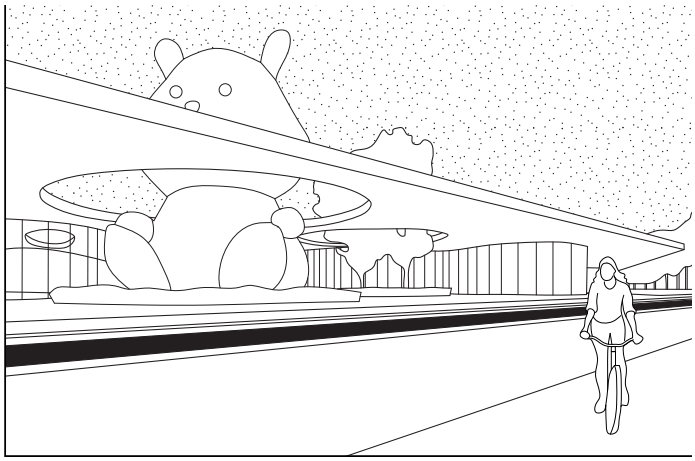
The future supermarket addresses sustainability goals through a reimagined supply chain with reusable packaging for all Albèrt products that are collected, cleaned, and redistributed on site in various return points, cleaning stations, and end-cap gondolas respectively, that remain scattered throughout the sales floor.



Smart carts with digitized scanners react to the particularities of the product on the shelf with information on the provenance of products for conscious consumers. Electronic displays are connected to expiration dates, supply, and demand through dynamic pricing monitored by data-driven decision-making.



As an essential service, the supermarket's design incorporates several public green zones amidst the sales floor to entice the consumers to spend more time inside, while at the same time providing a healthier working environment, through biodiverse farming solutions, integrated agriculture strategies, and a green roofscape.



Albèrt offers a new retail experience open to Delft by putting both the product and its supply chain on display. A flexible open plan within and beyond the high yield automated distribution center—now a part of the supermarket—extends its perimeter towards the city and its residents, establishing a new civic presence.

The introduction of fast-paced zones in the supermarket spreads along the bike lane, featuring a demonstration kitchen and pick-up points.

Live shrimps and small-batch milk deliveries demonstrate freshness and reusable packaging within a just-in-time production system.

Permaculture as a new farming method inside the supermarket boosts biodiversity and rewards the cultivation of GMOs

View of the automated Ocado grid system and the distribution center on the ceiling from the concierge desk on the sales floor.

The smart cart eliminates the boundaries of the supermarket's sales floor while dynamic pricing and digitalized labels inform the consumers about the product's supply chain and provenance.

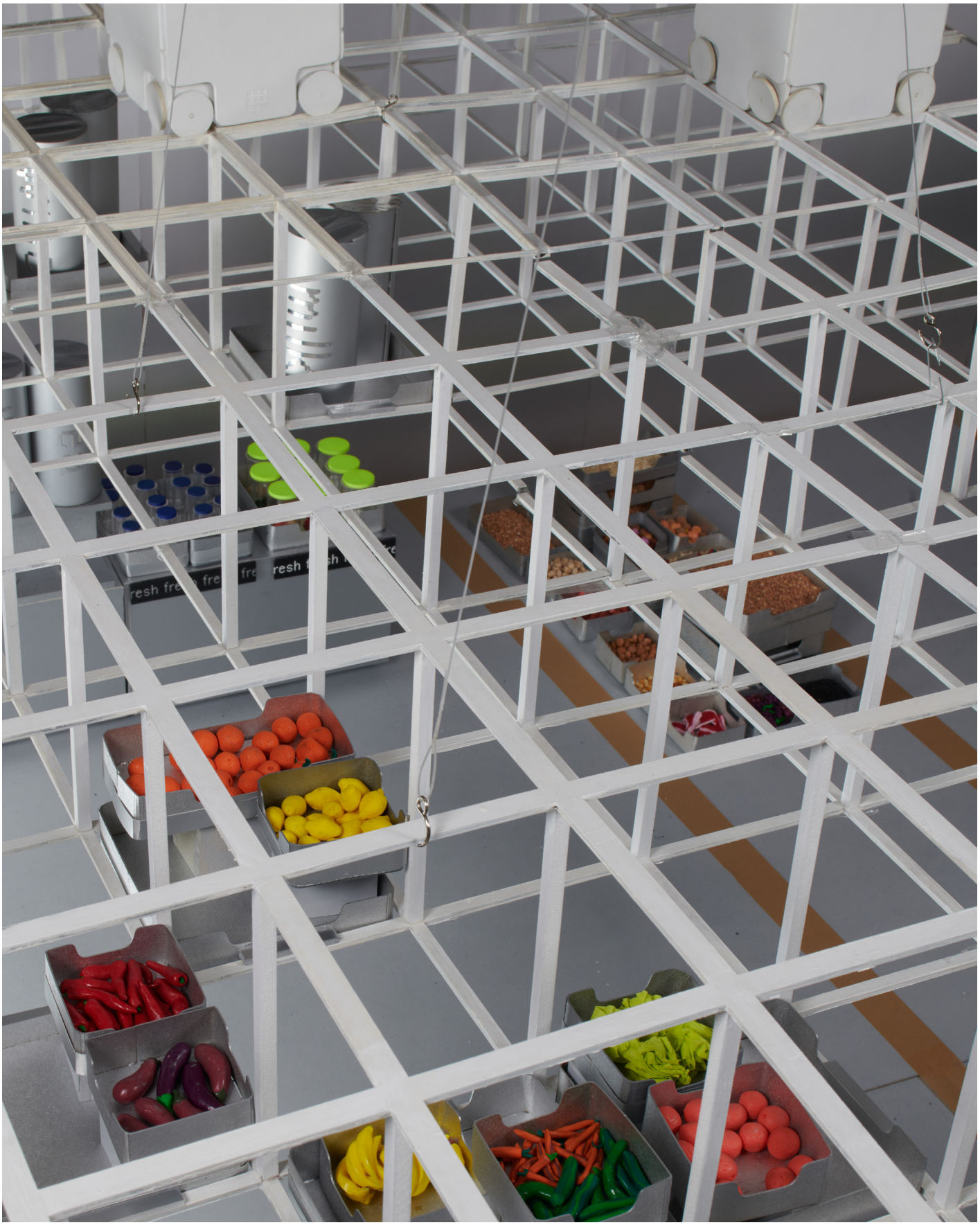
Dynamic robotic movement above the open sales floor allows for various iterations of product displays, according to seasonality, discounts, and specialties.

Free food is no longer shameful, facing the luxury products of the Hermès store-in-a-store.

The walk-in refrigerator extends the distribution center to the sales floor, offering a momentary experience in the varied environments of the food supply chain.

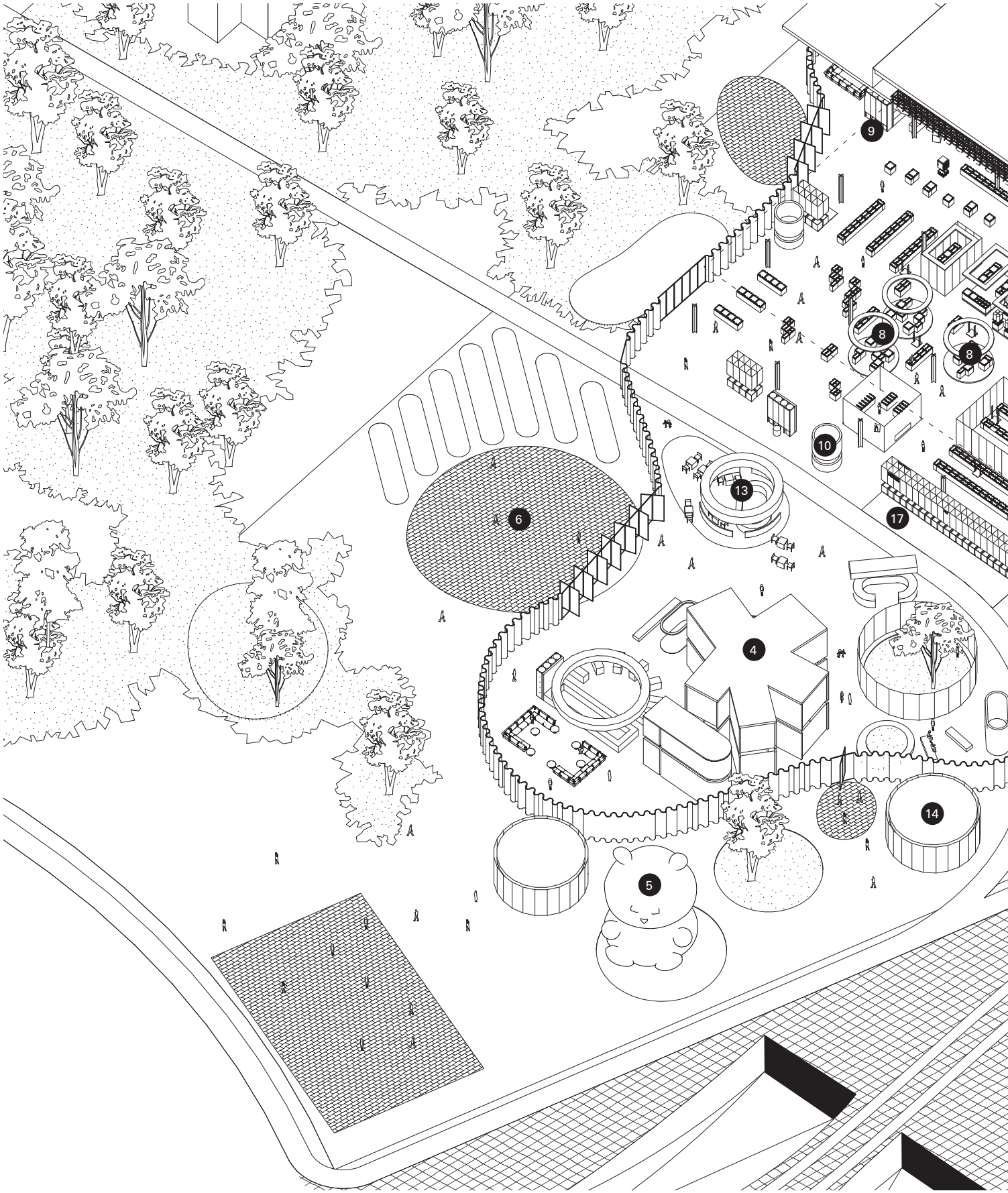
A wine bar next to an automat restaurant are part of the slow-paced zones of the supermarket, introducing a novel tasting experience next to a public green terrace.

Beyond the internal core, Albèrt offers an innovative retail experience, opening up the supermarket's perimeter towards the city.



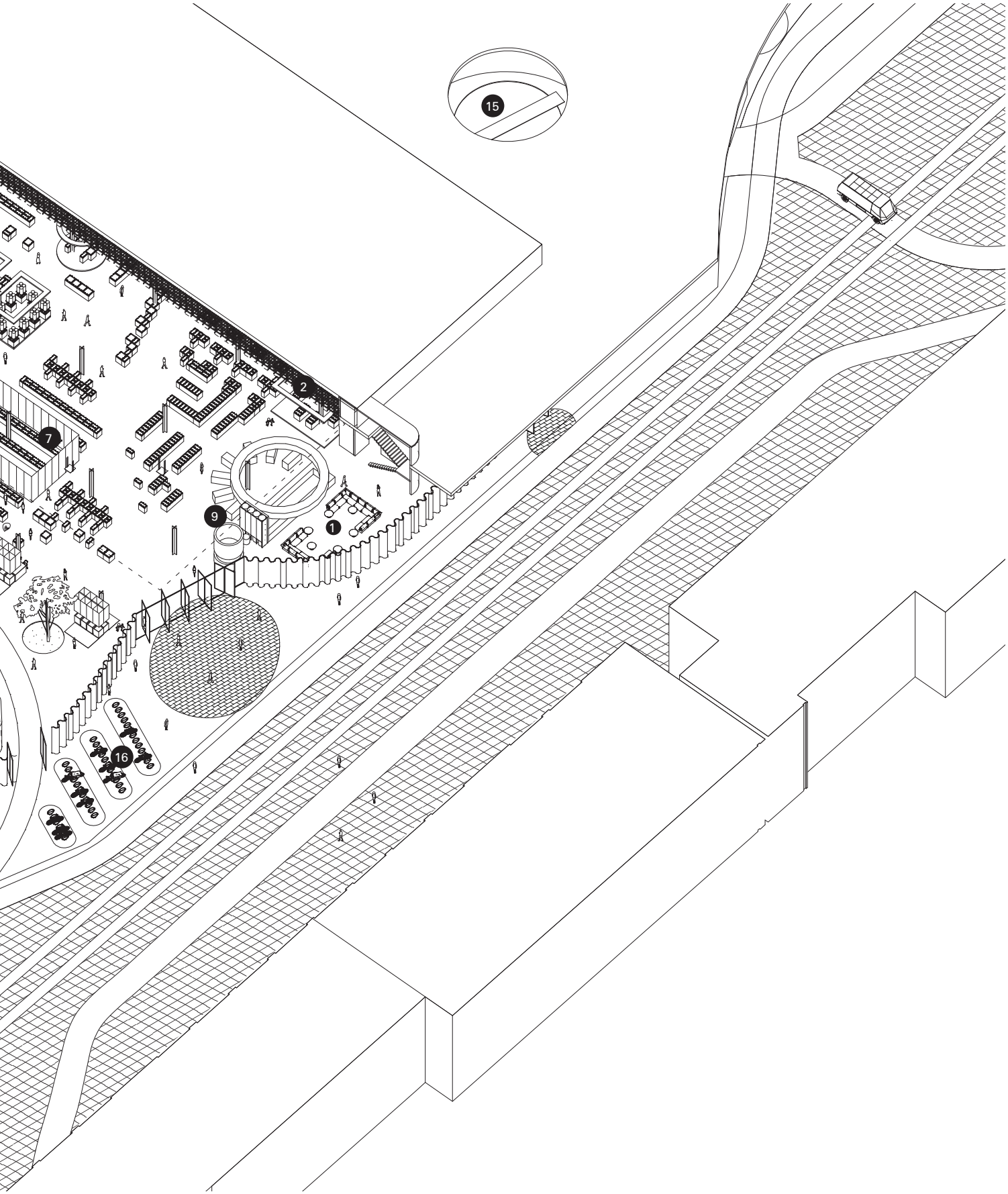
View of the loading dock on the sales floor from the automated distribution center on the ceiling.

A green roofscape amidst the residential neighborhood, provides a healthy working and living environment.

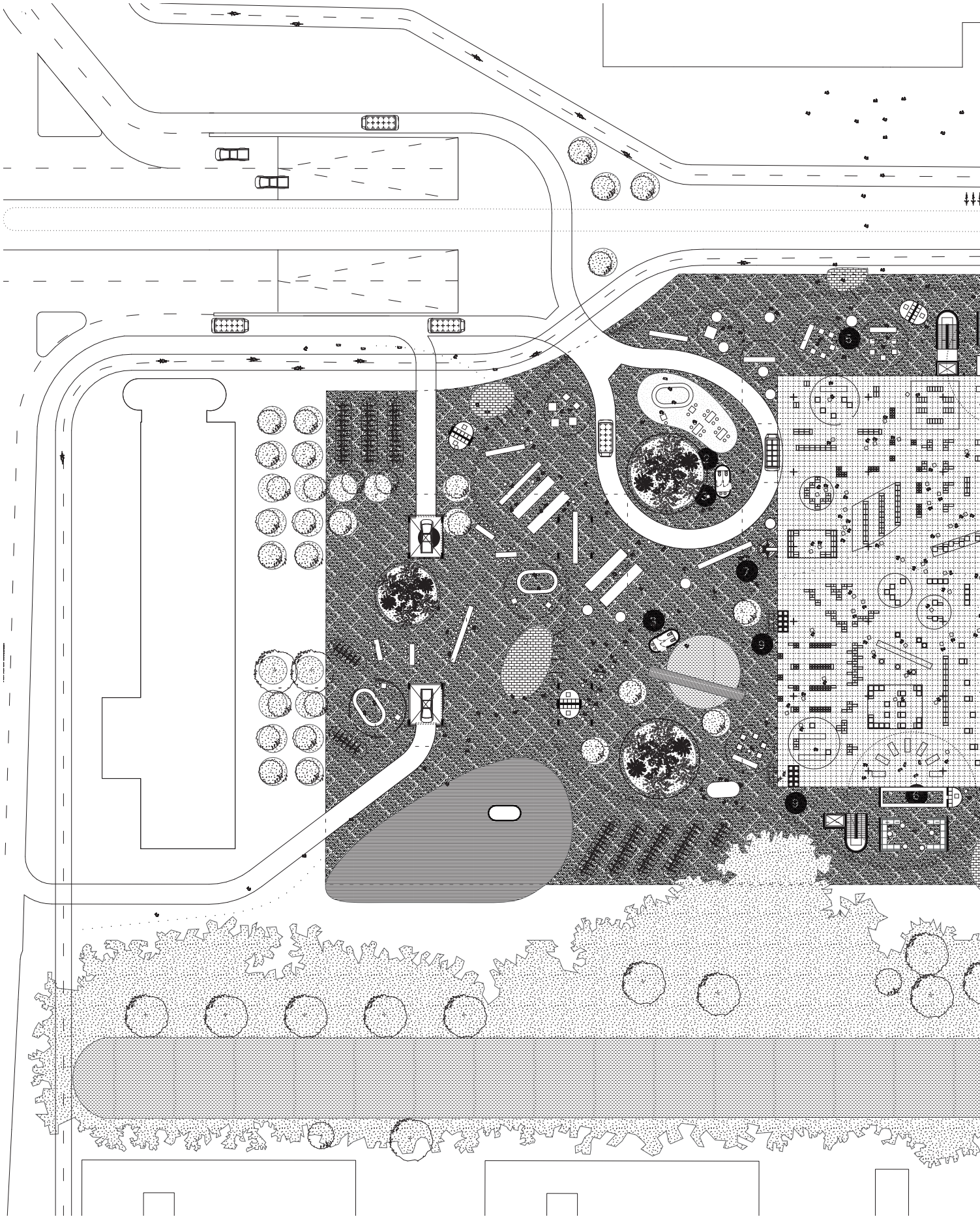


A cut-out axonometric exposing the blurred boundaries between the supermarket, the landscape, and the city of Delft.

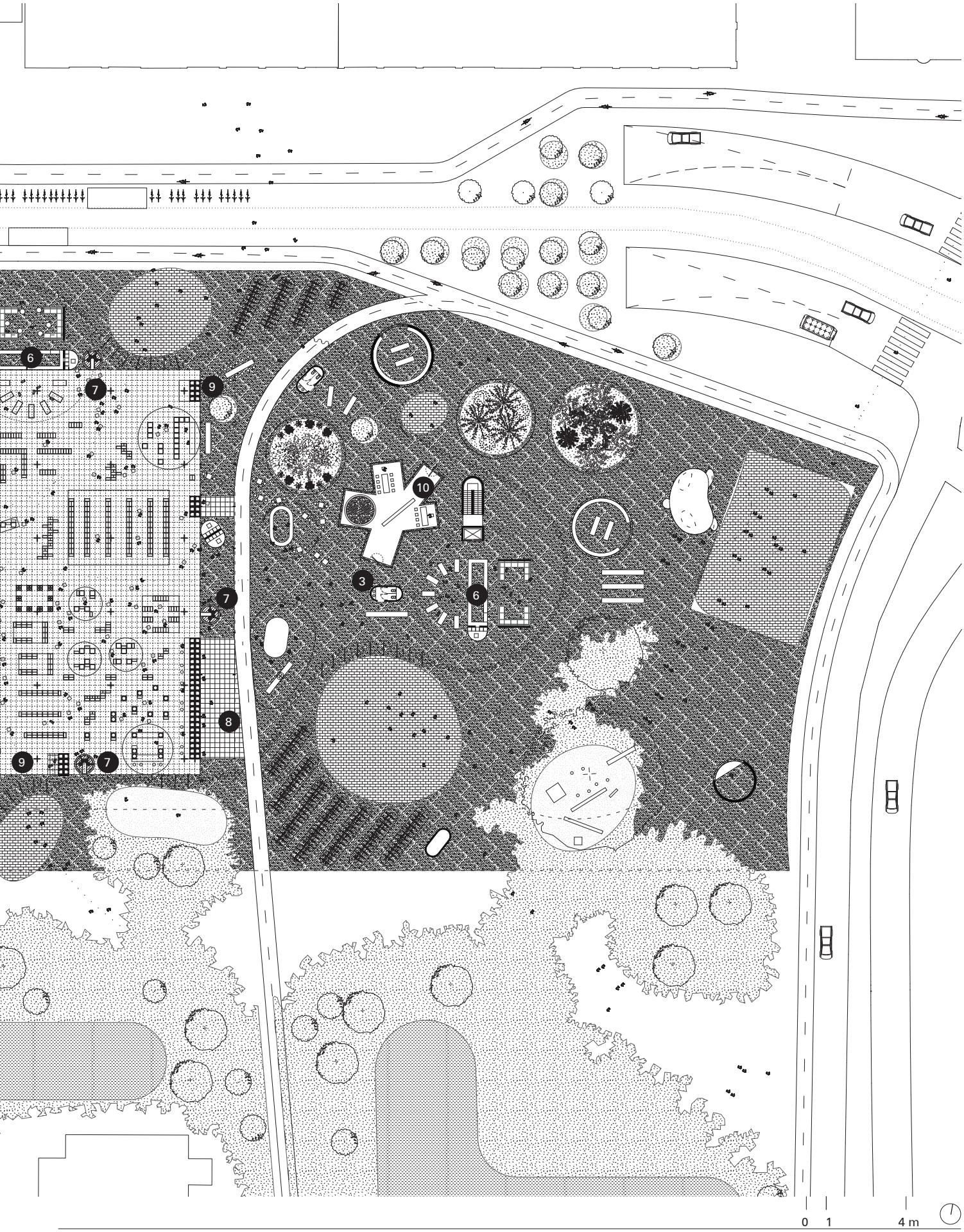
1 Concierge
2 Automated Ocado grid
3 Vertical circulation core
4 Kindergarten
5 Sculpture of Albèrt's mascot
6 Entrance
7 Refrigerated area
8 Specialty displays



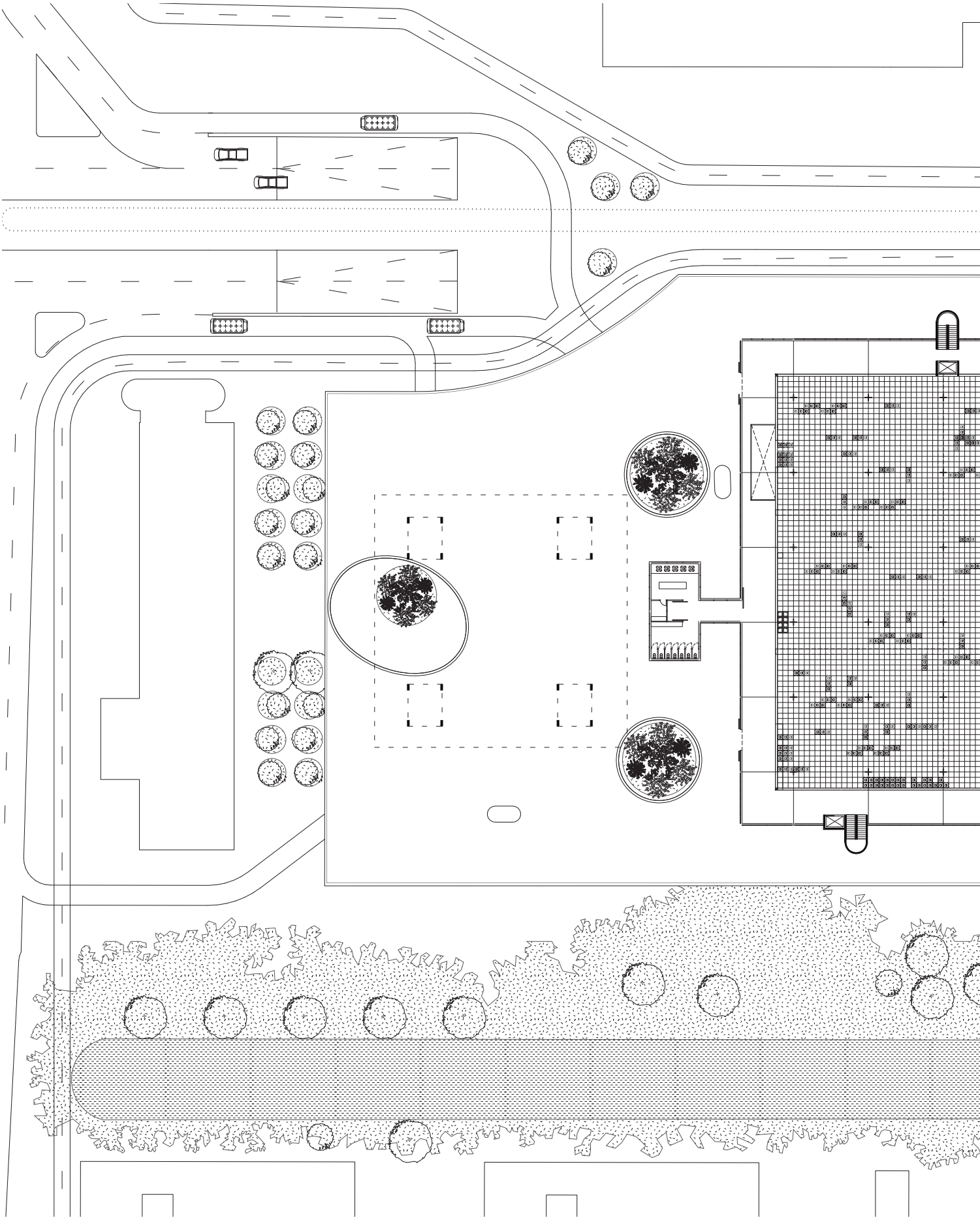
9 Smart cart station
10 Return points
11 Pick up points
12 Cycle track
13 Demonstration kitchen
14 Shop-in-shops
15 Shrimp pond
16 Bycicle parking
17 Automat



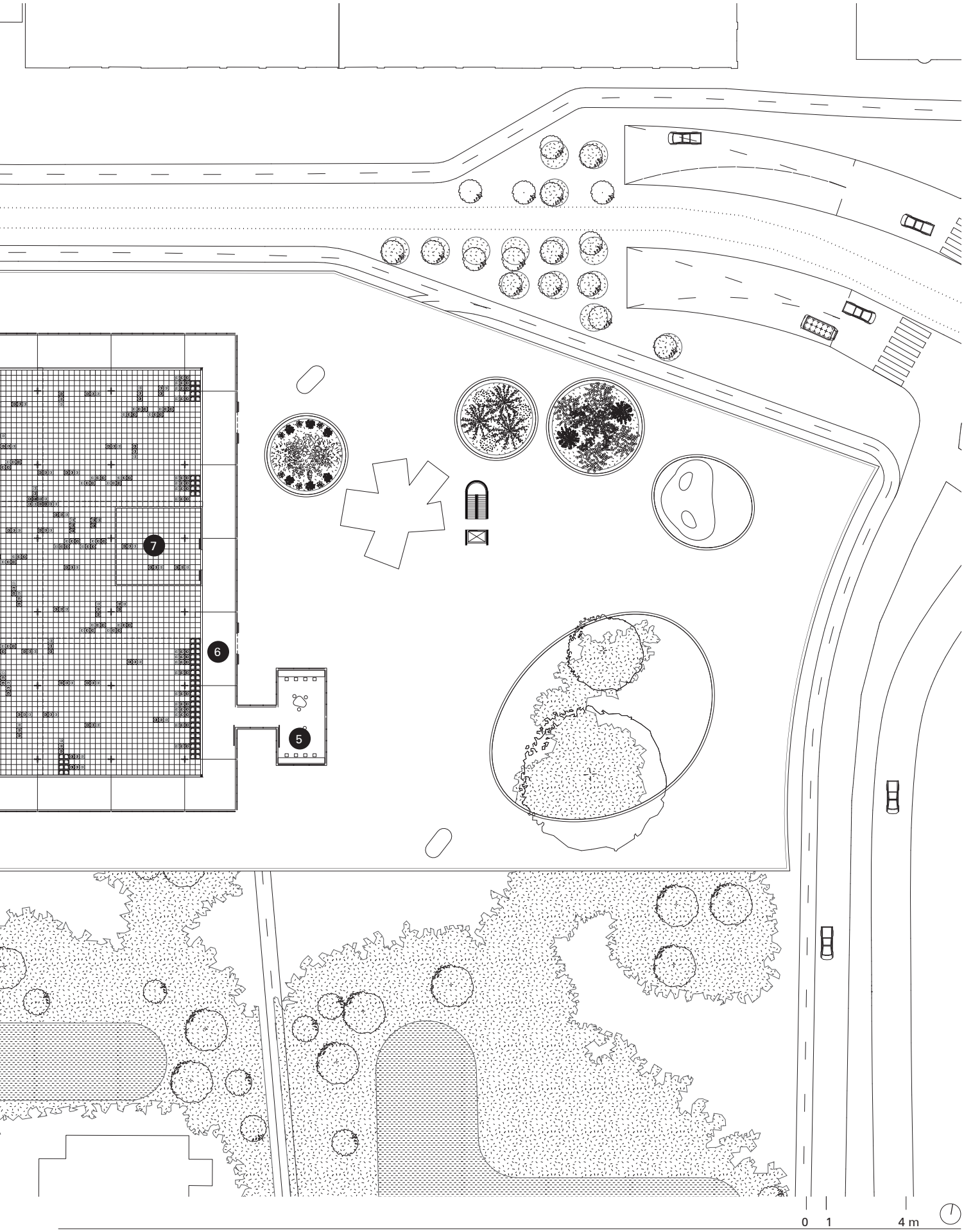
Albèrt offers a new retail experience with a flexible open plan within and beyond the high yield automated distribution center to display both the product and its supply chain. The supermarket is organized in three different zones, consisting of the central high yield core, the interior periphery of the glass facade, and the outdoor facilities covered by the cantilevered roof.



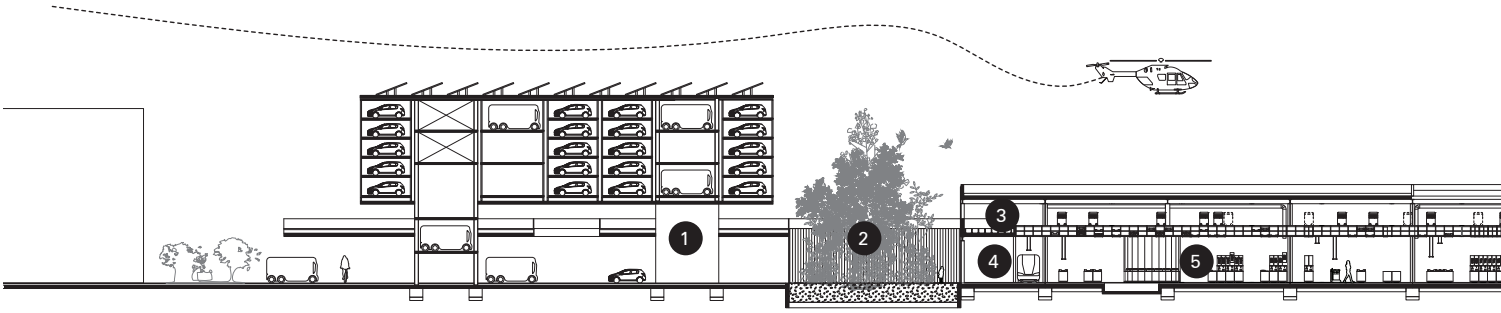
1 Access to Parking
2 Loading dock
3 Estructural cores, toilets, HVAC
4 Shrimp pond
5 Shop-in-shop
6 Concierge
7 Return point
8 Automat
9 Pick up points
10 Kindergarten

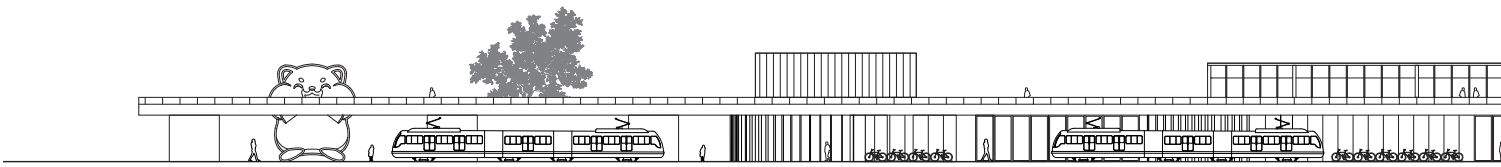


The back of house operates as a distribution center above the sales floor, consisting of the automated Ocado system in the static grid ceiling core that offers dynamic robotic movements.

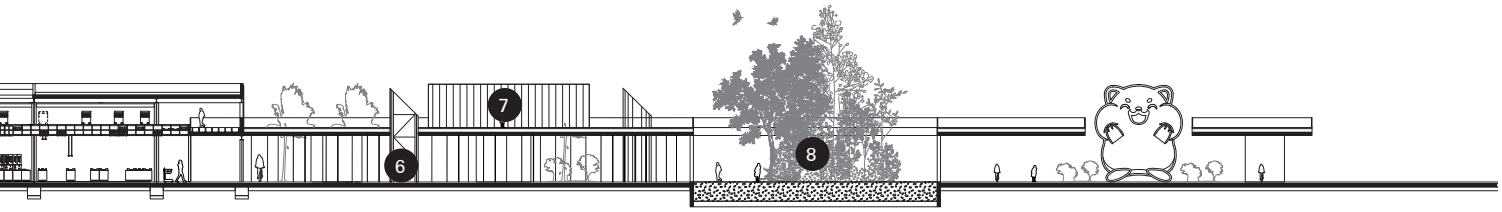


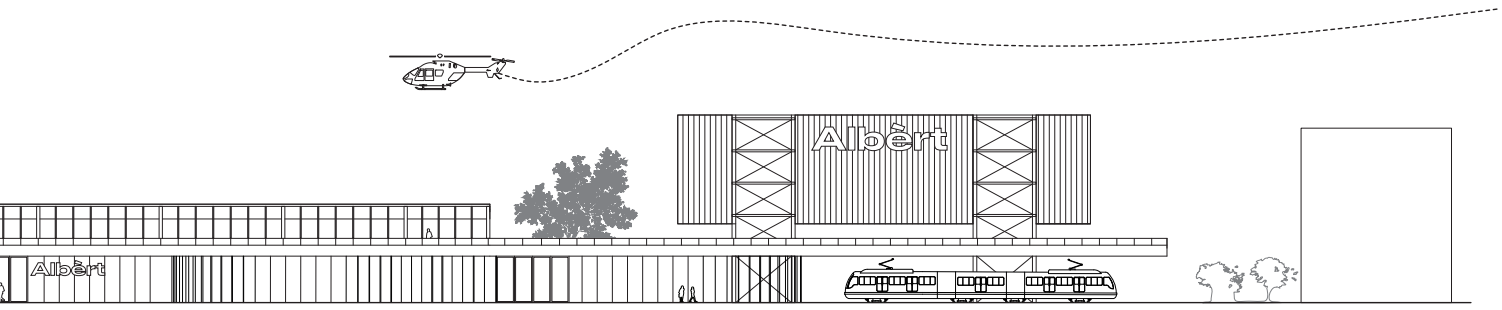
1 Maintenance point
2 Toilets
3 Automated Ocado grid
4 Vertical core
5 Offices
6 Perimeter for humans
7 Refrigerated area





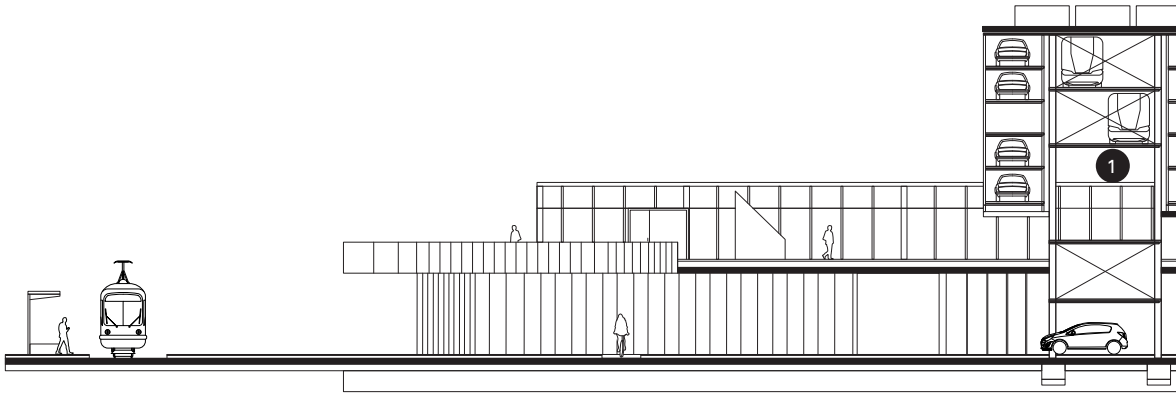
The reimagined relationship between the supermarket's sales floor and back of house is vertical, juxtaposed with the additional Albèrt car-sharing facilities and parking on the site that caters to the supermarket's customers, e-trucks, and the neighborhood's needs.

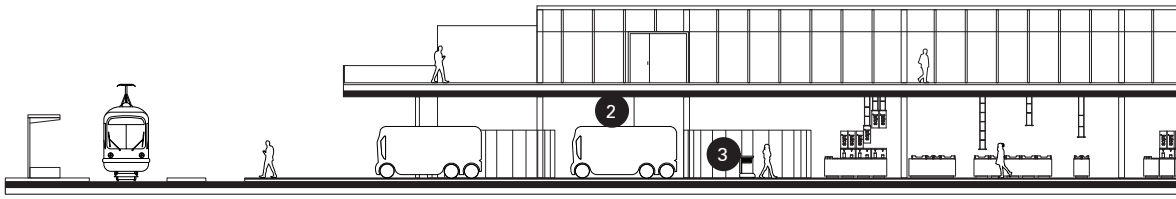




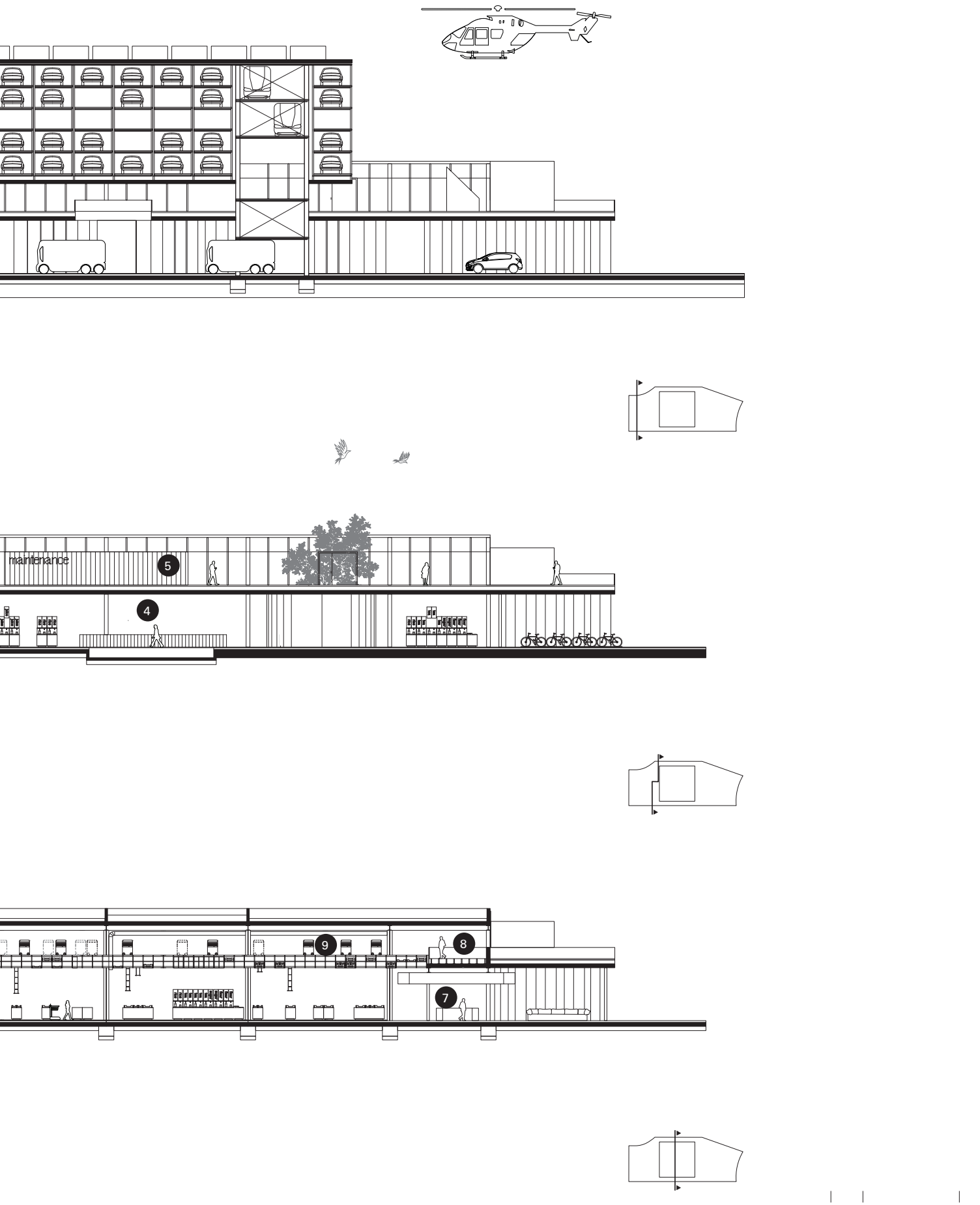
0 1 4 m

1 Maintenance point
2 Toilets
3 Automated Ocado grid
4 Vertical core

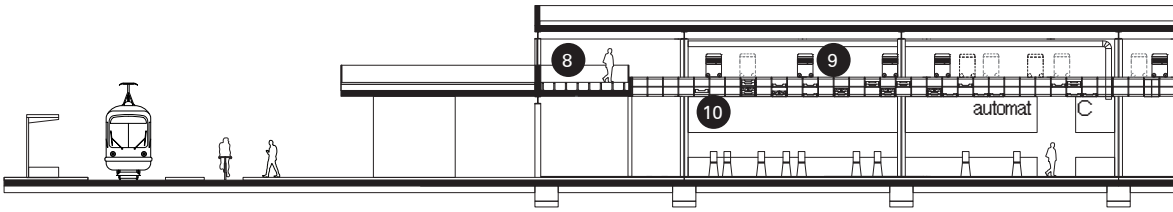


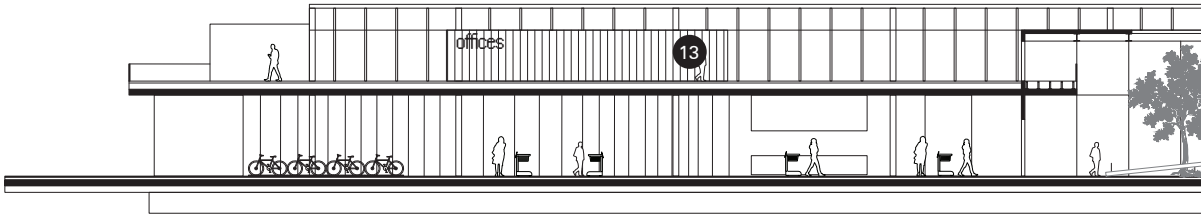


The organization of the building around the central high yield distribution center allows for various iterations of product displays on the sales floor, disrupting the infinite seriality of the supermarket aisles.



1 Automated parking
2 Loading dock
3 Shop-in-shop
4 Shrimp pond
5 Maintenance point
6 Vertical core
7 Concierge
8 Perimeter for humans
9 Automated Ocado grid





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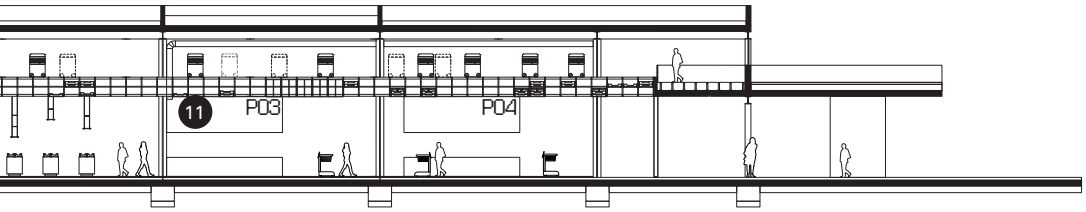
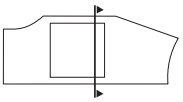
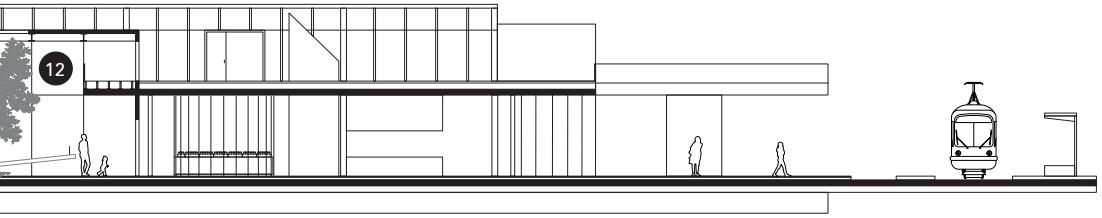
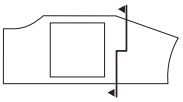
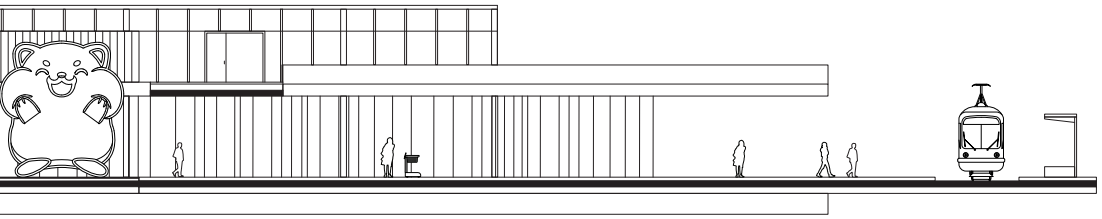
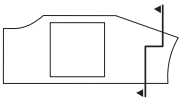






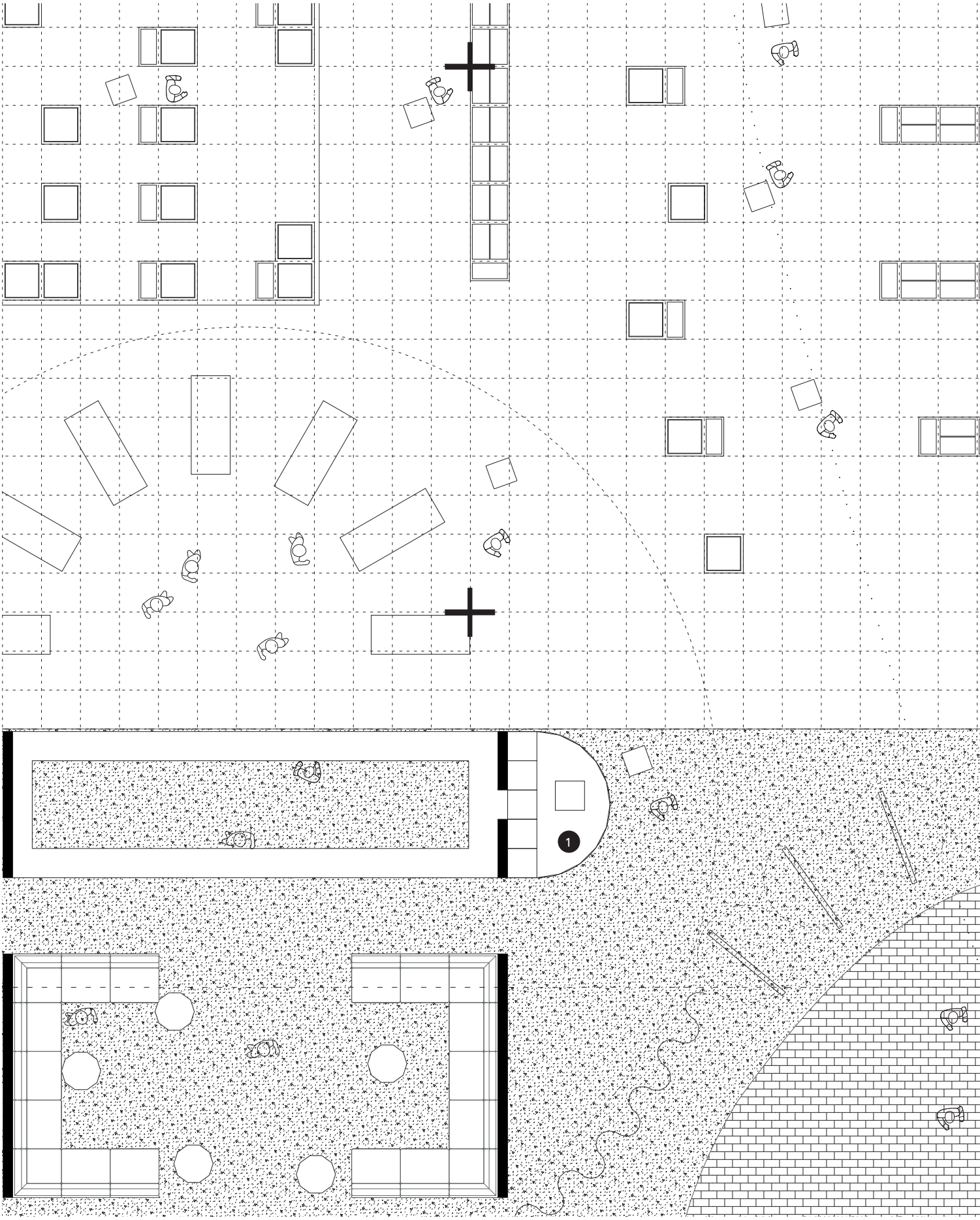




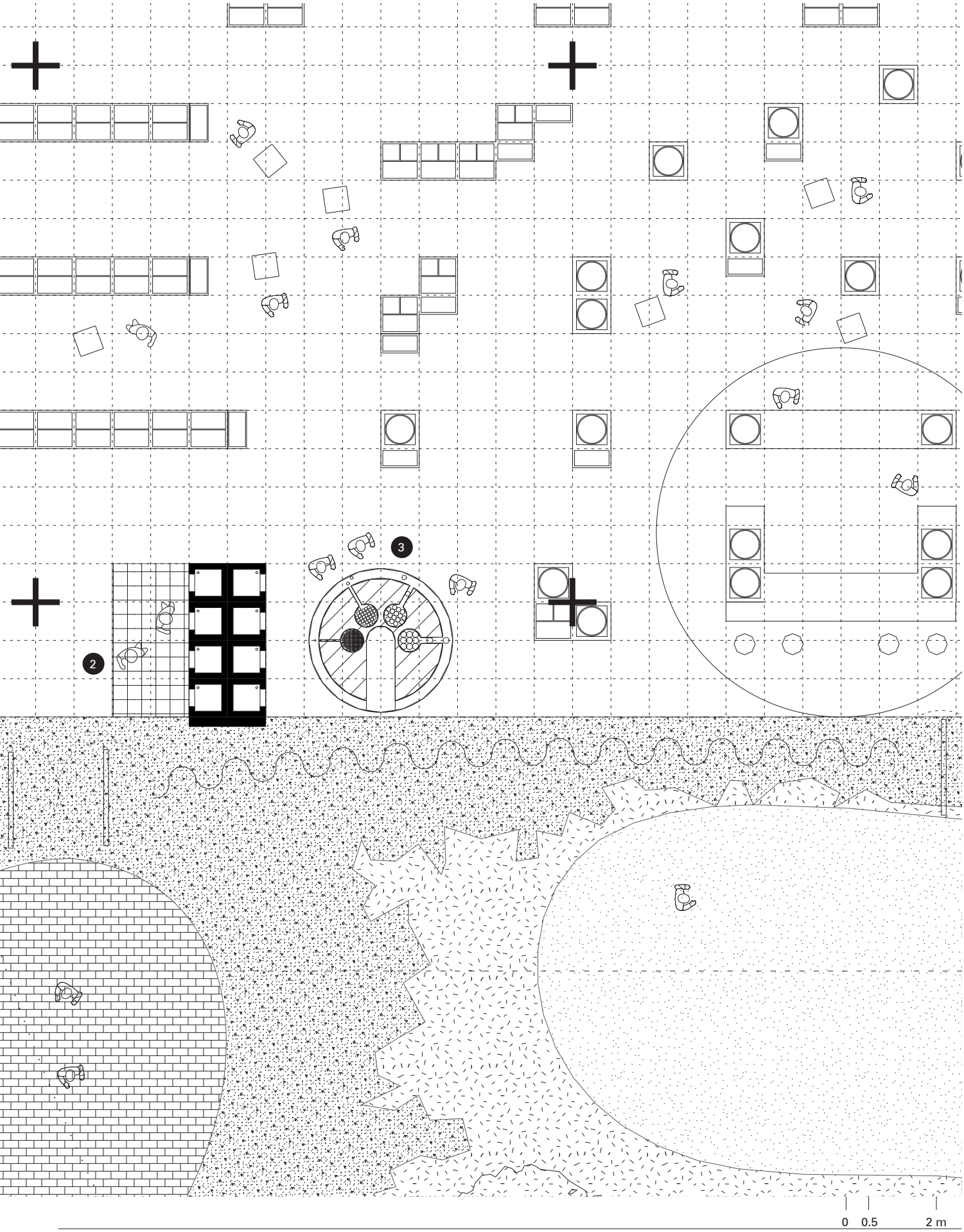


0 2.5 10 m

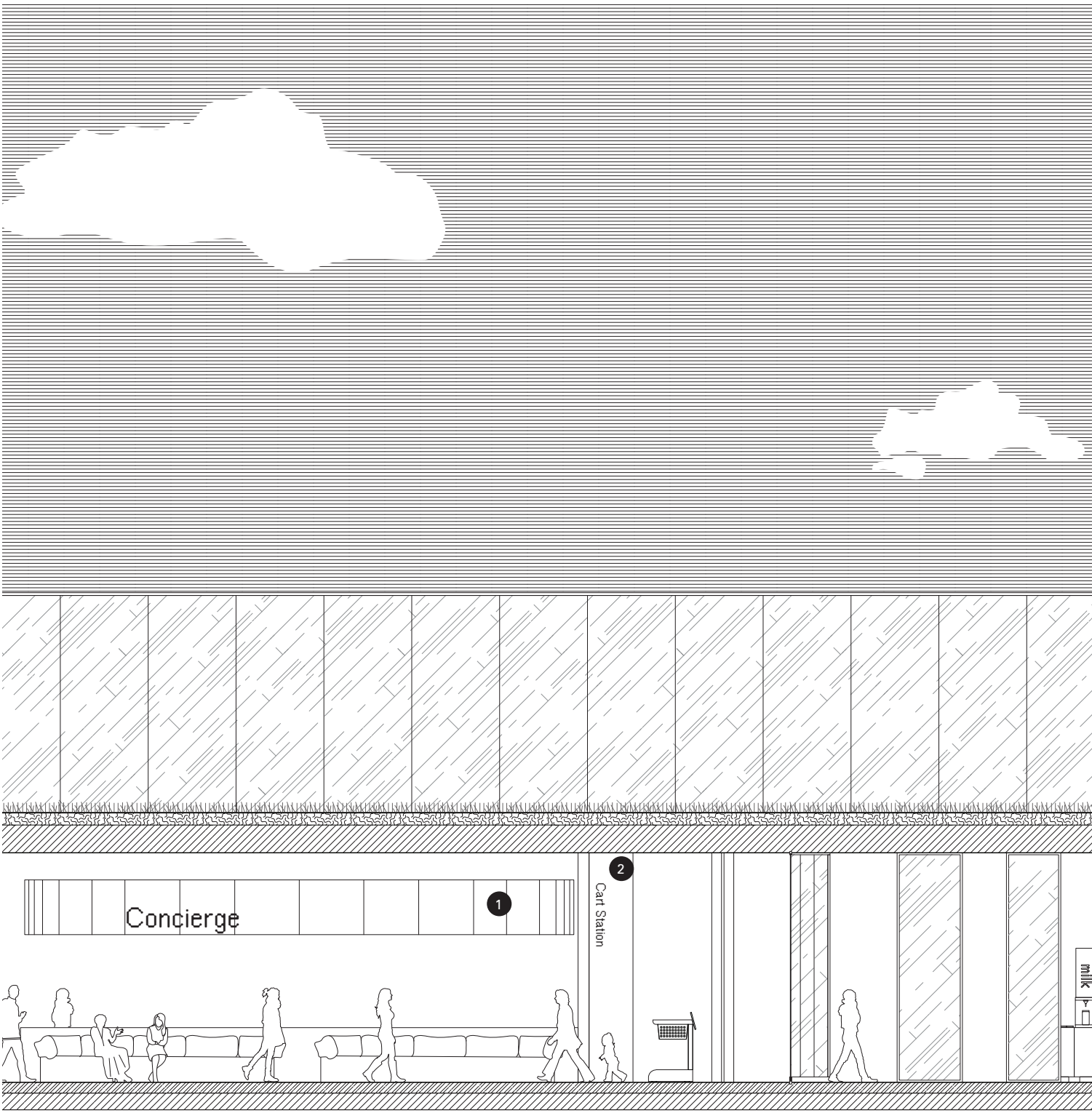
1 Automated parking
2 Loading dock
3 Shop in shop
4 Shrimp pond
5 Maintenance point
6 Vertical core
7 Host
8 Perimeter for humans
9 Automated ceiling
10 Automat
11 Pick up points
12 Kindergarten



The dynamic robotic movements allow for the reconfiguration of the supermarket shelves in reaction to seasonality and specialties, rendering a unique shopping experience.



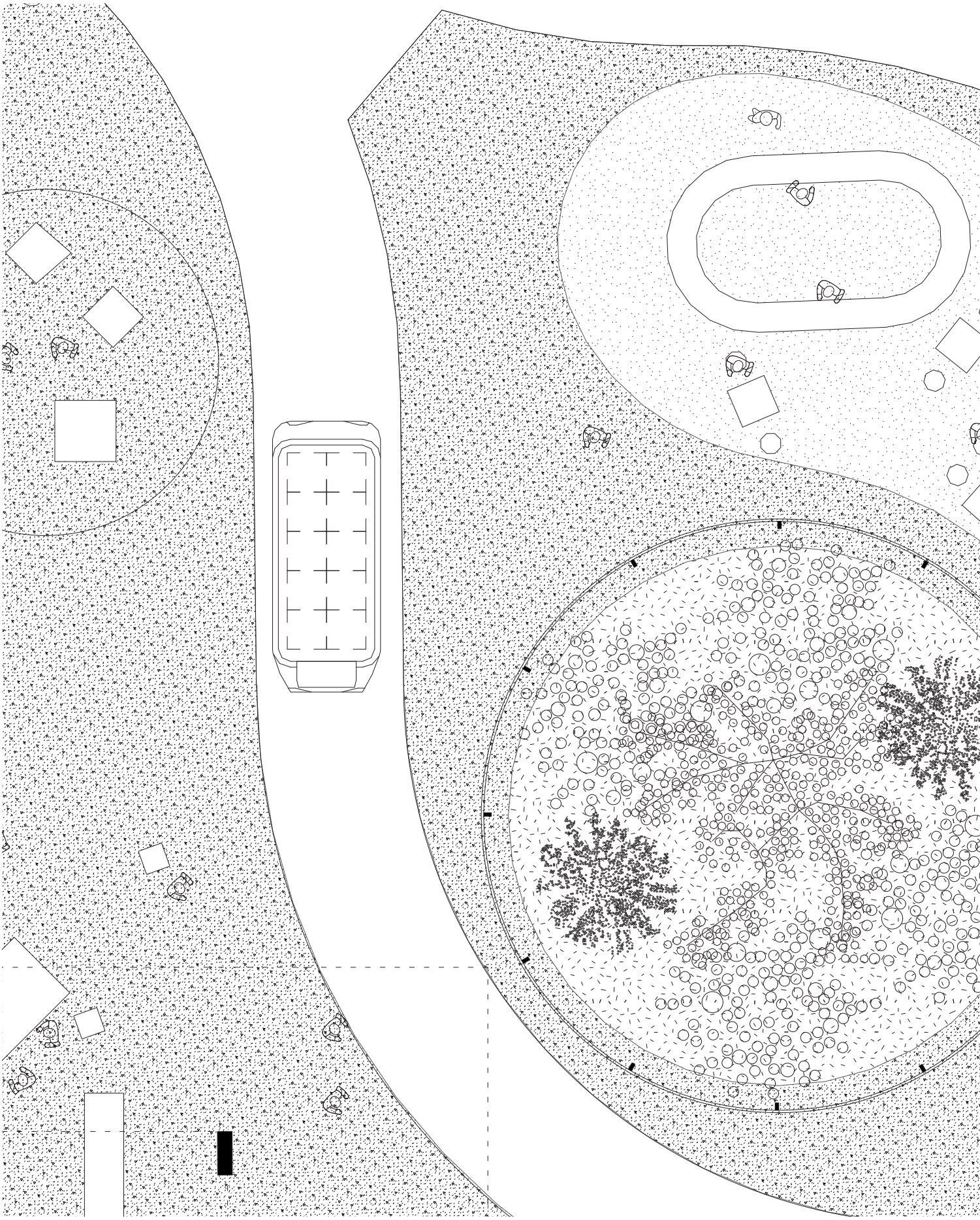
1 Concierge
2 Pick up points
3 Returning point



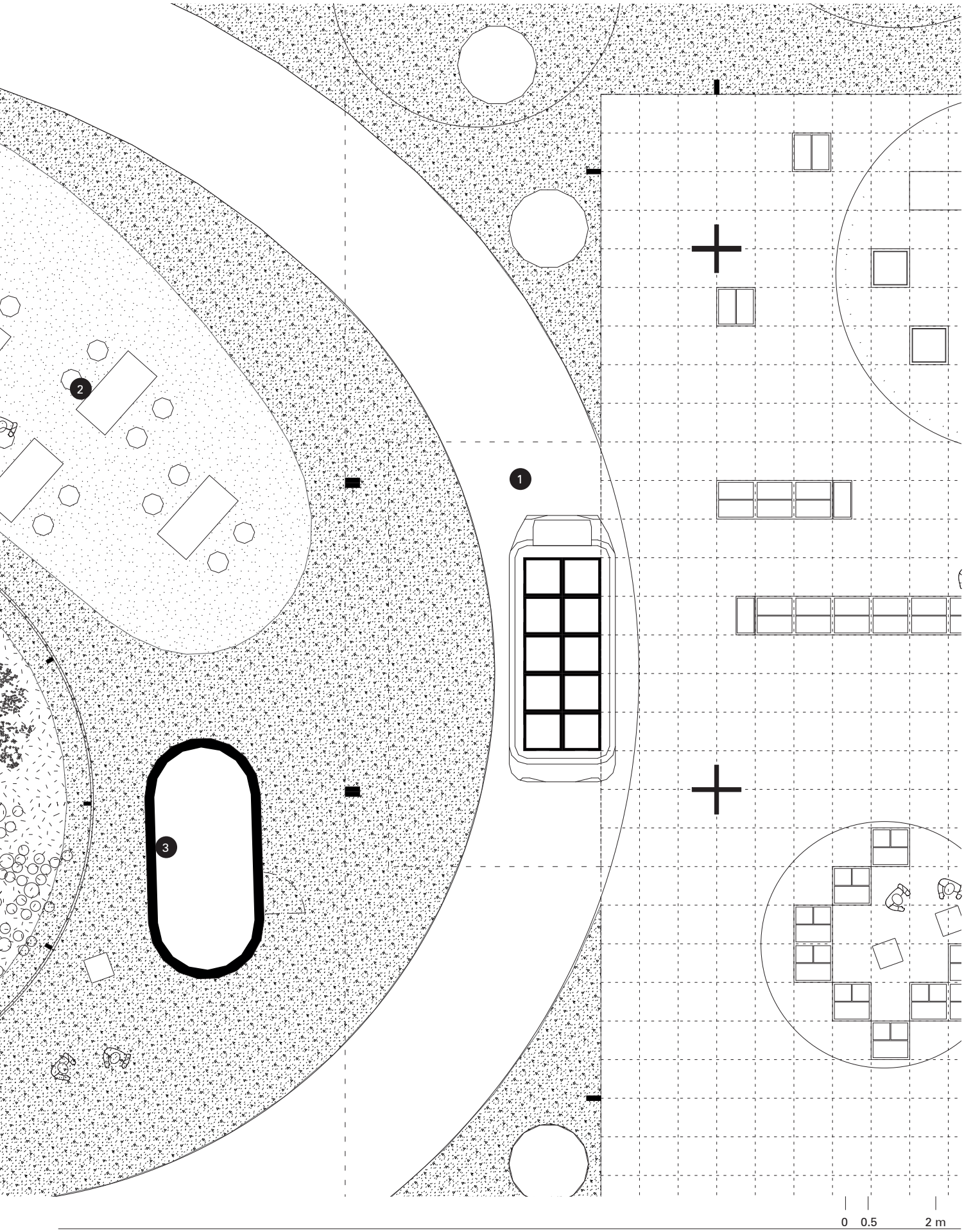
The dynamic robotic movements allow for the reconfiguration of the supermarket shelves in reaction to seasonality and specialties, rendering a unique shopping experience.

0 0.5 2 m

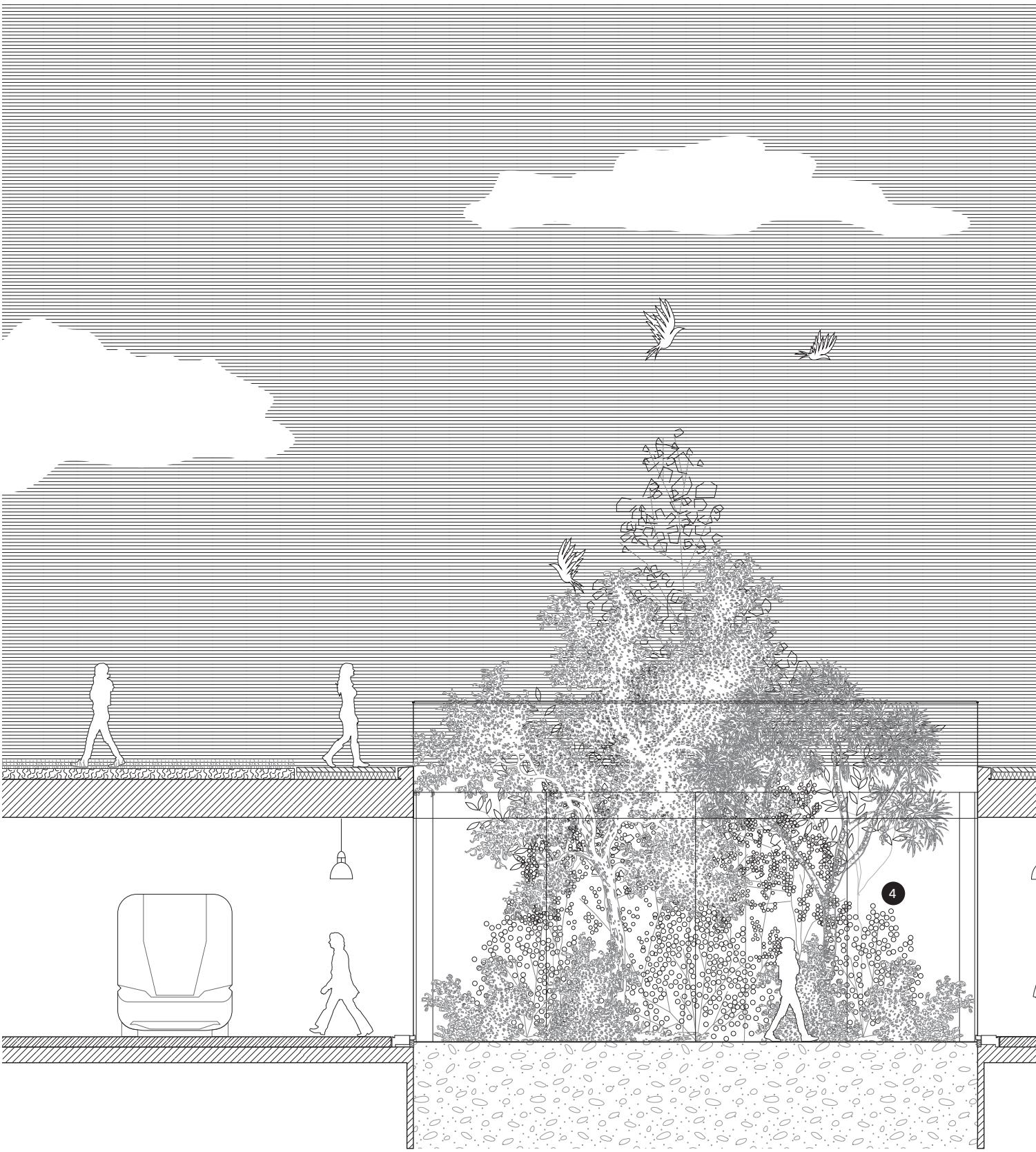
1 Host
2 Cart station



A ritual of loading and unloading is experienced on the sales floor, exposing the supermarket's supply chain to the conscious consumers.



1 Loading dock
2 Bar
3 Structural core and HVAC
4 Permaculture



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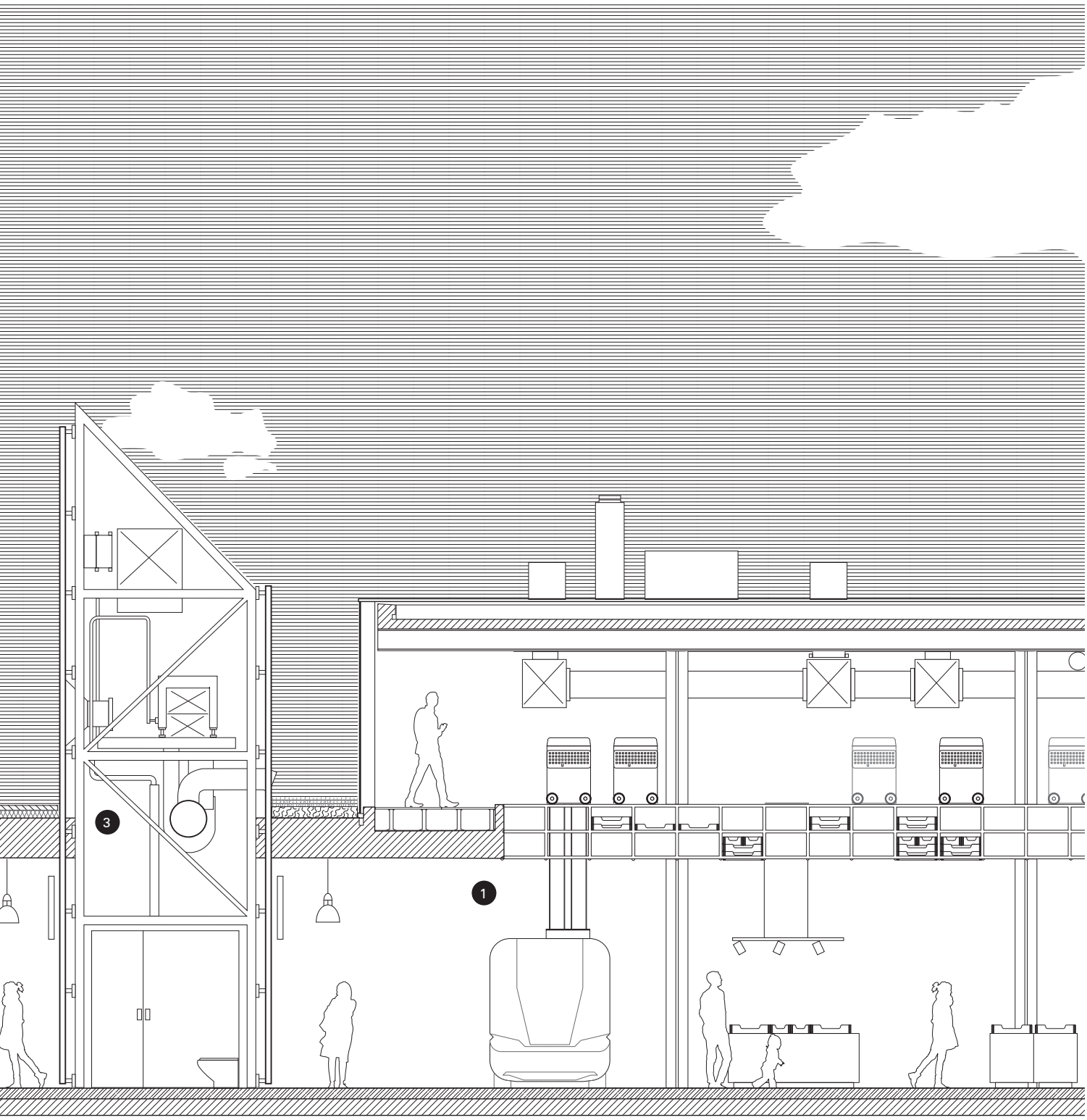

0 0.5 2 m

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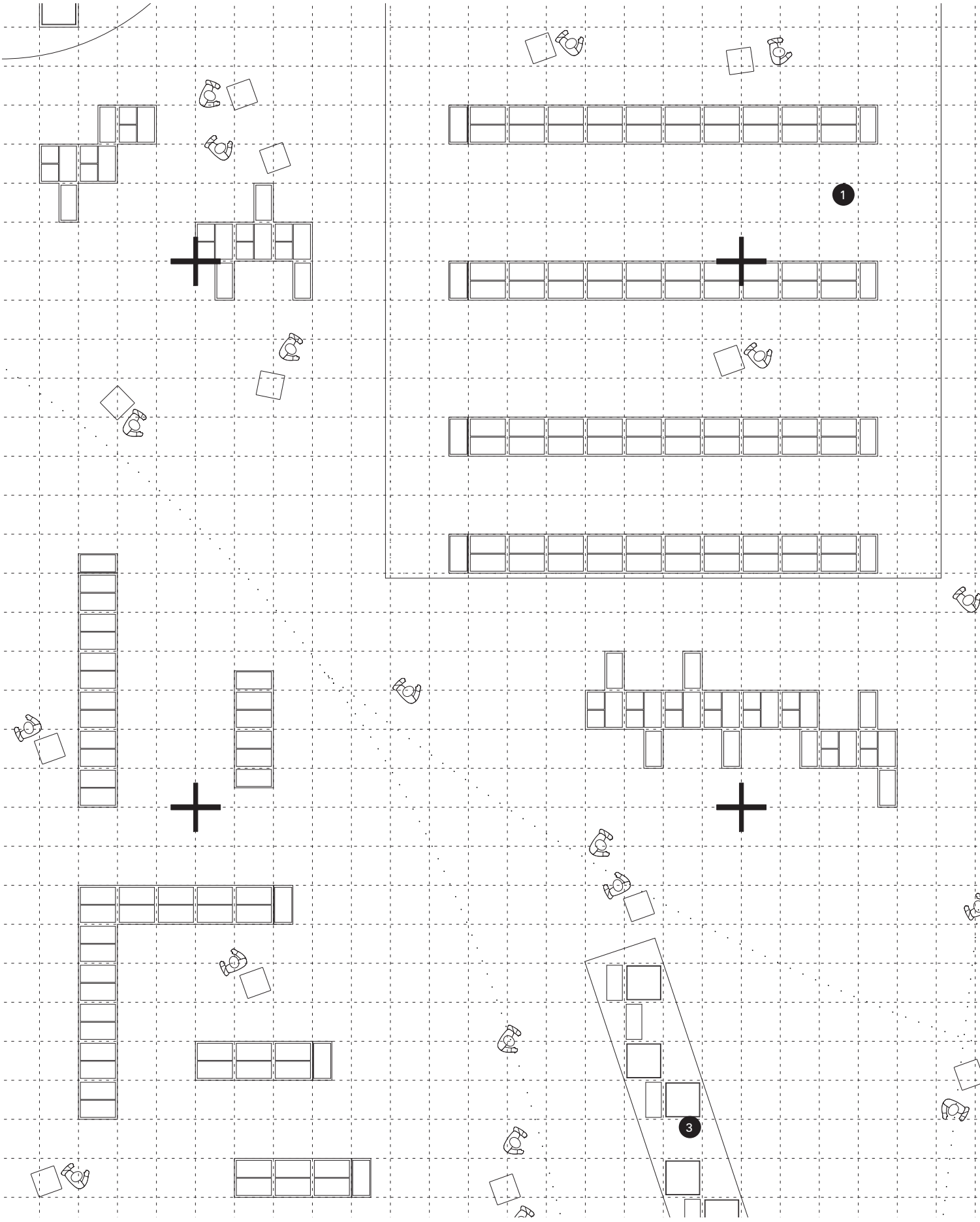

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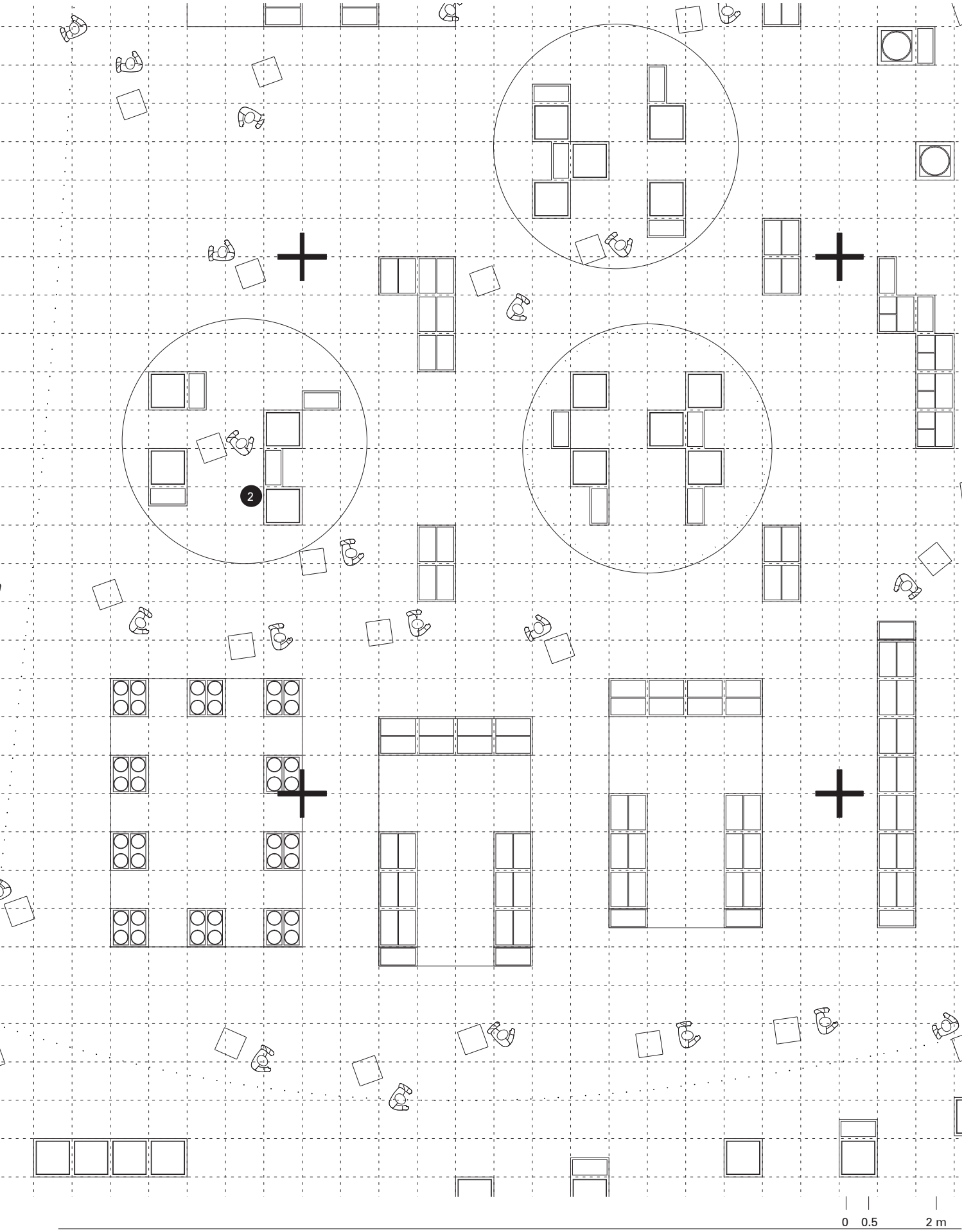
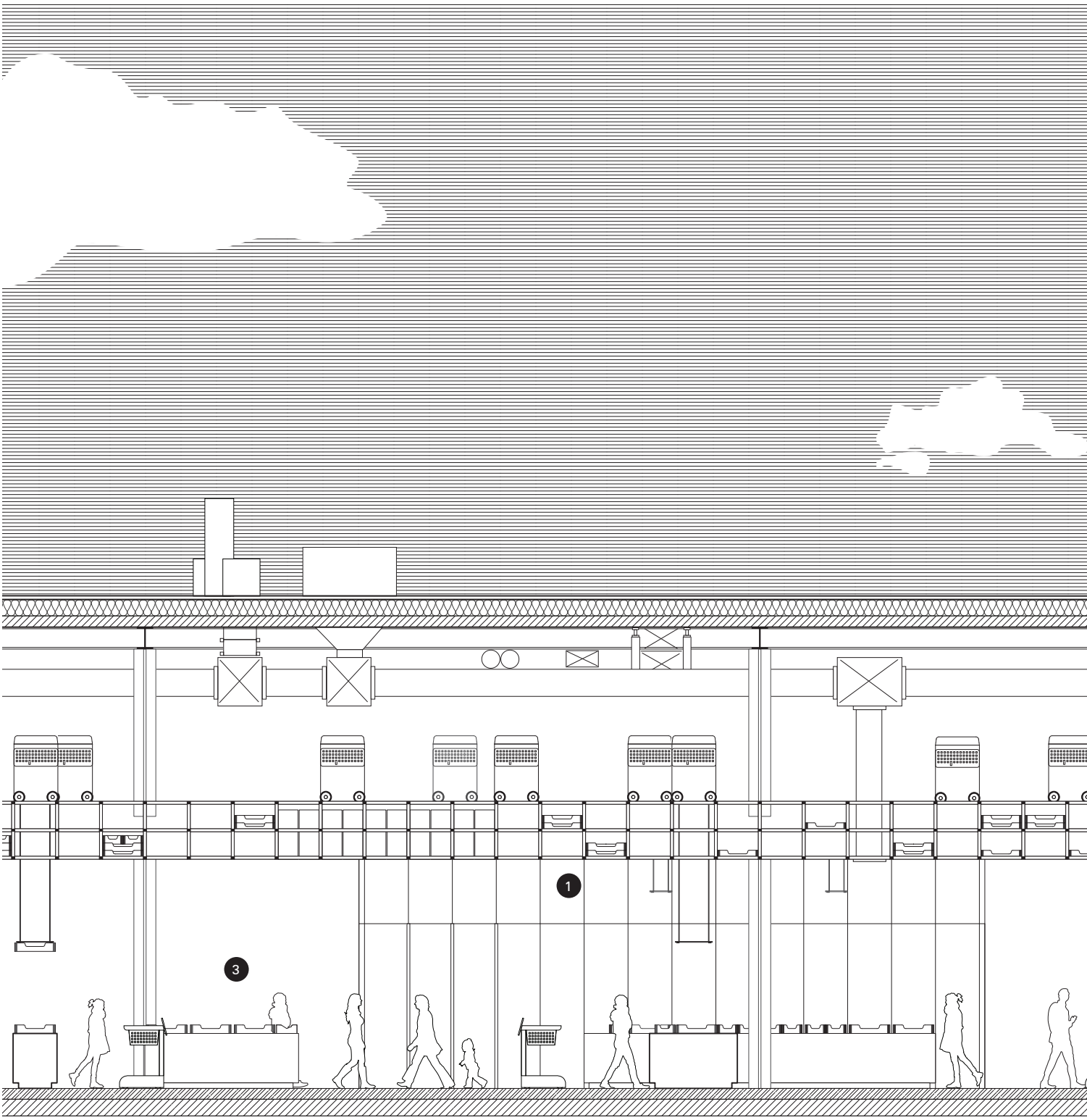


1 Refrigerated room
2 Sesonal products
3 Bonus



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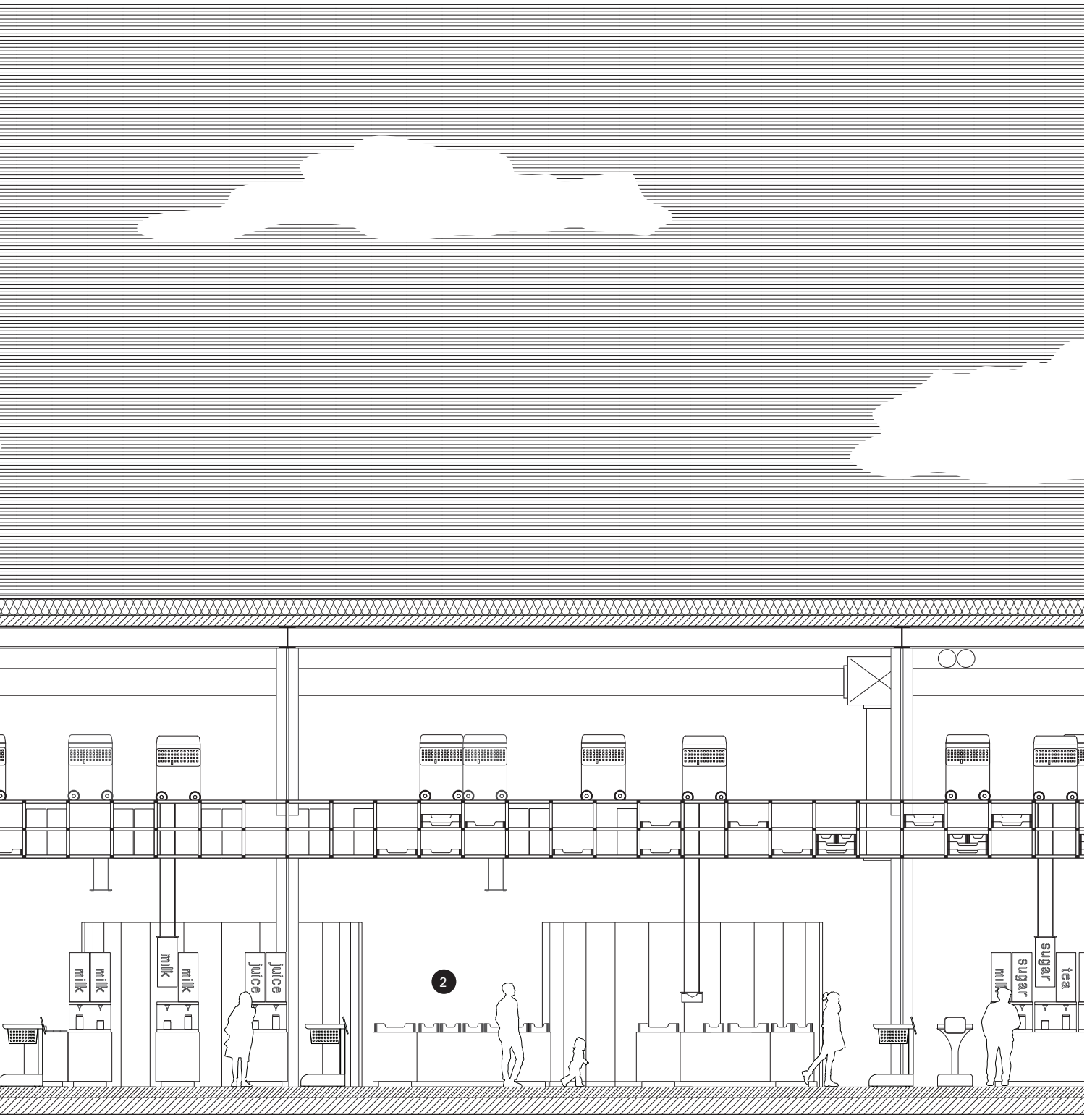

0 0.5 2 m

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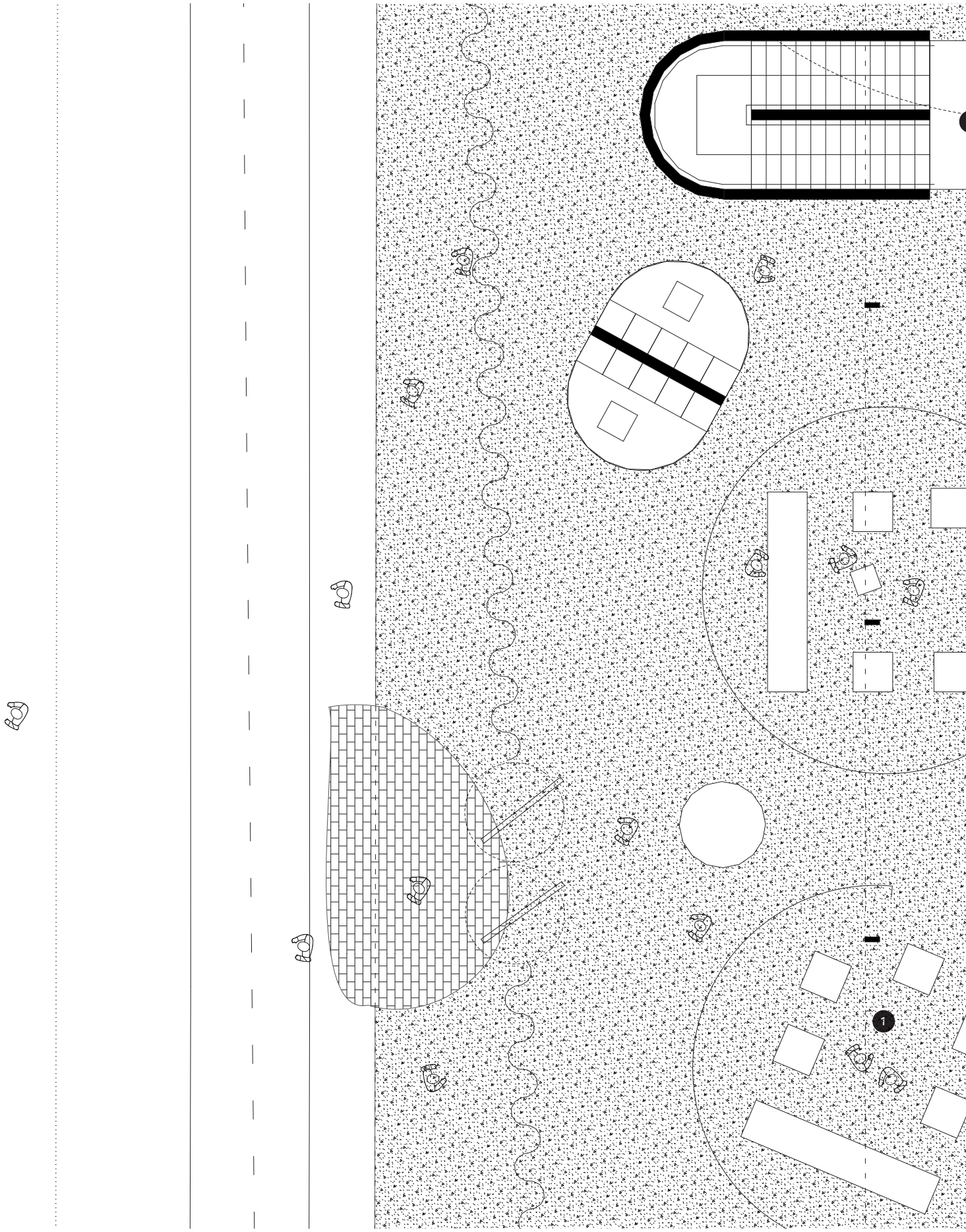
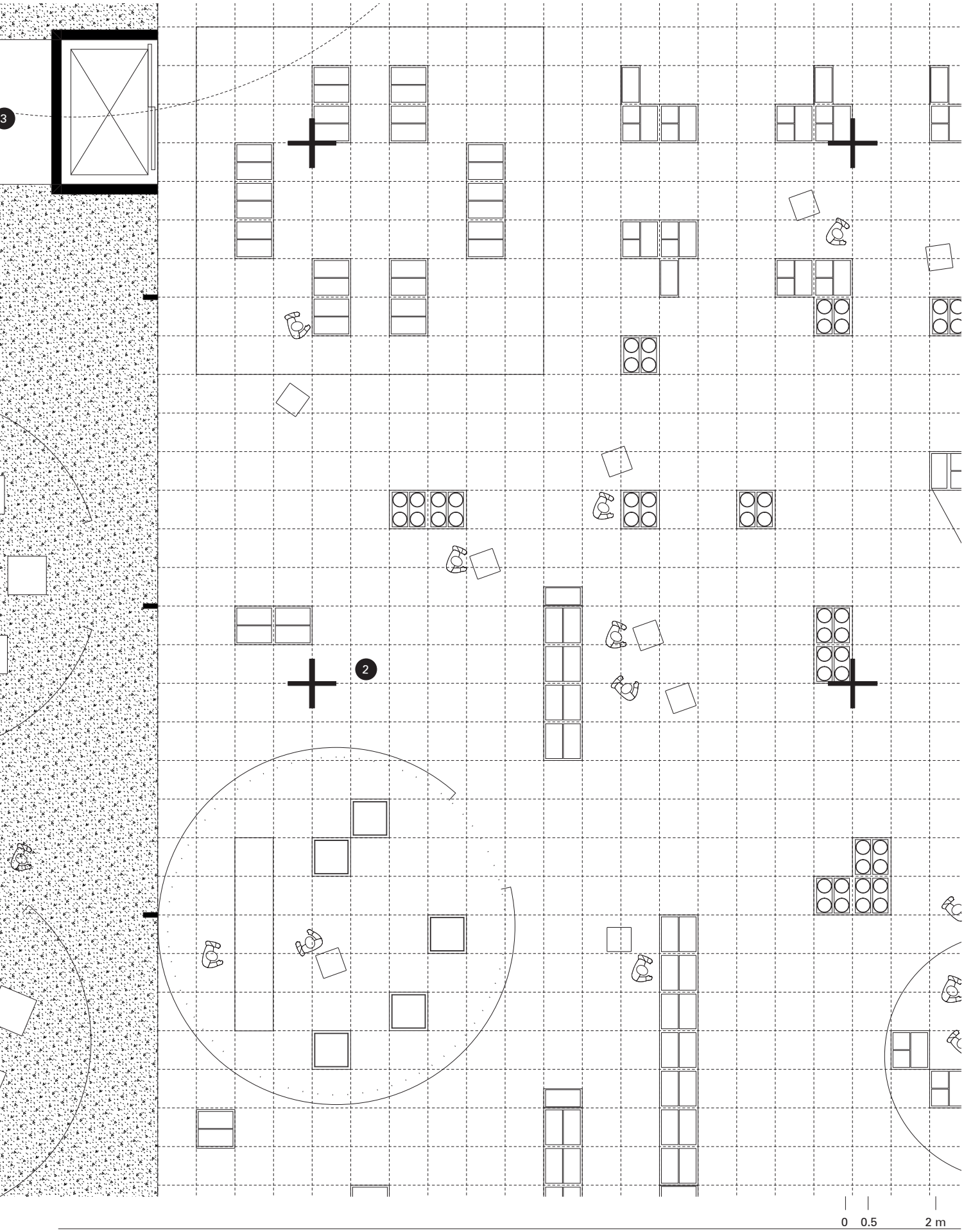
2 Sesonal products
3 Bonus



Independent areas are defined for peripheral store-in-stores, promoting collaborations with exclusive brands and local entrepreneurs.



1 Shop-in-shop
2 Sales floor
3 Vertical core
4 Loading dock

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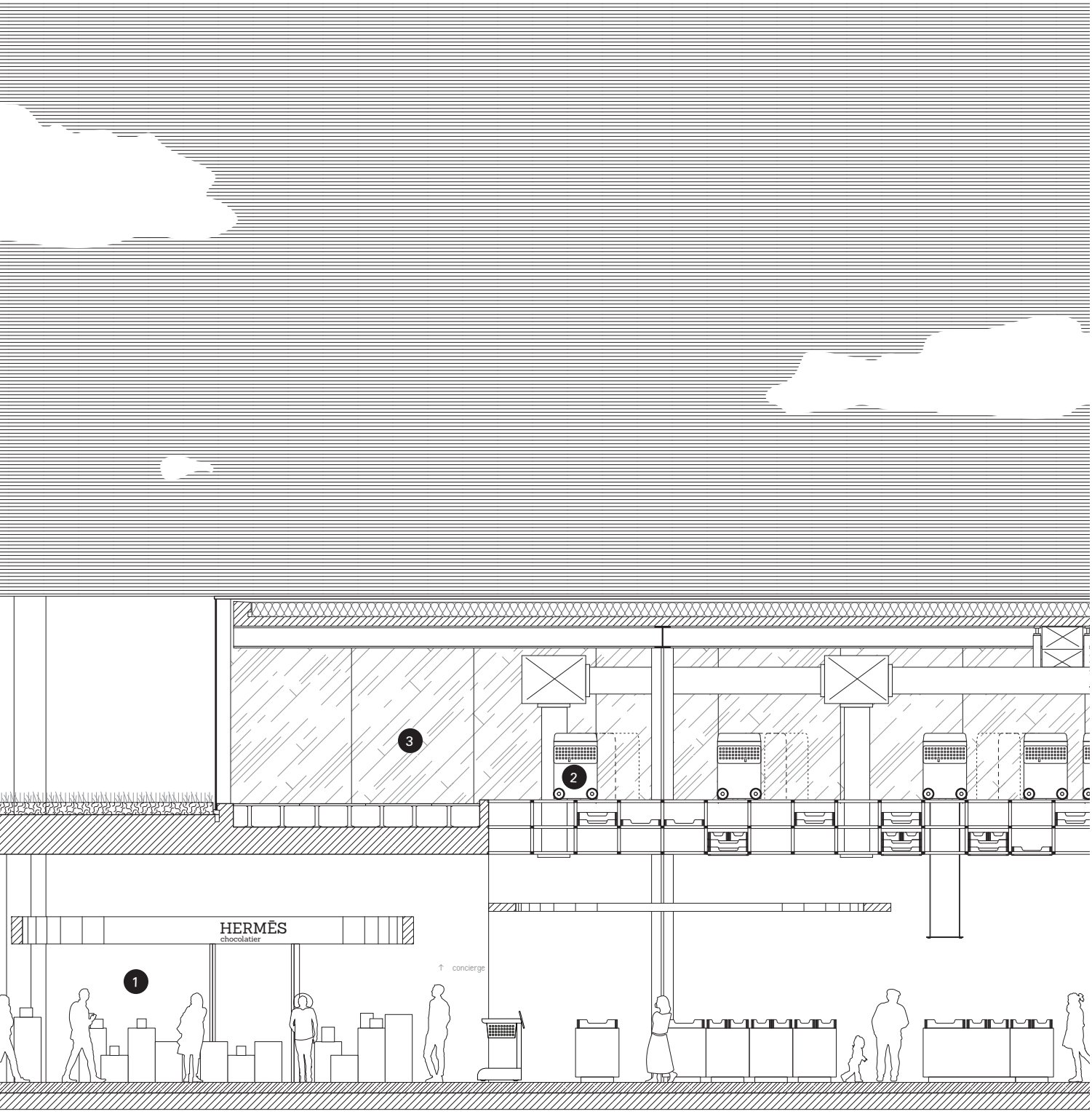
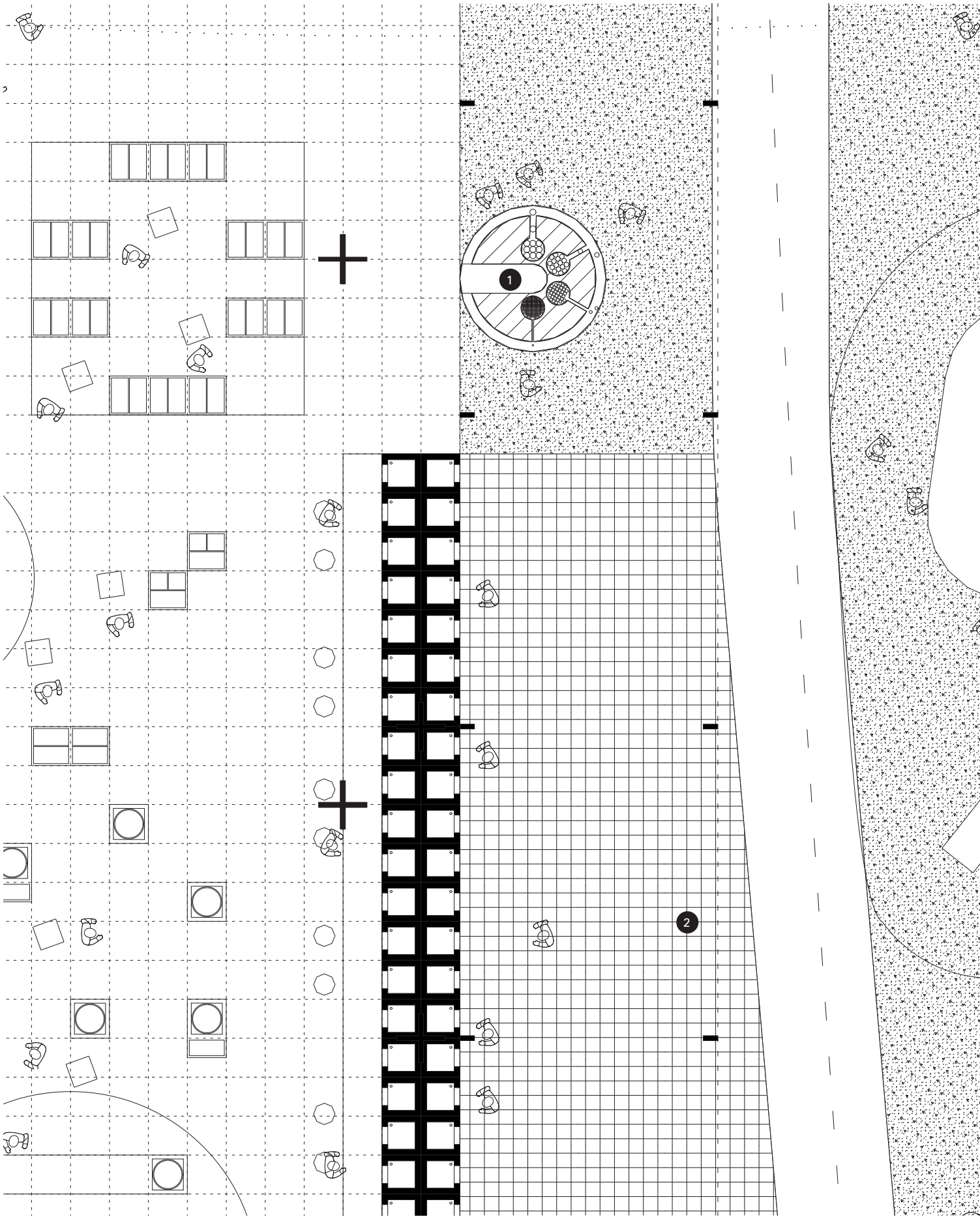
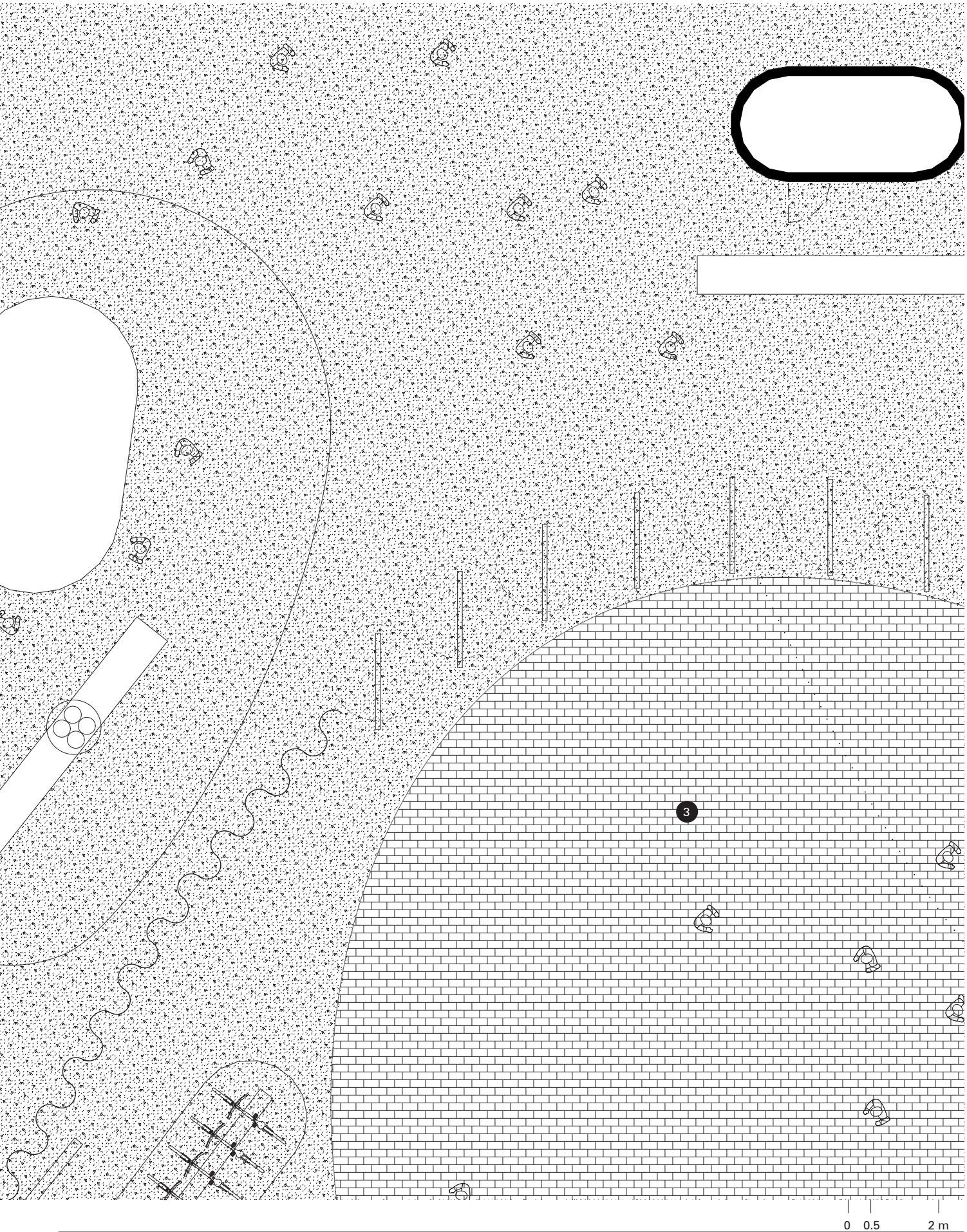


0 0.5 2 m

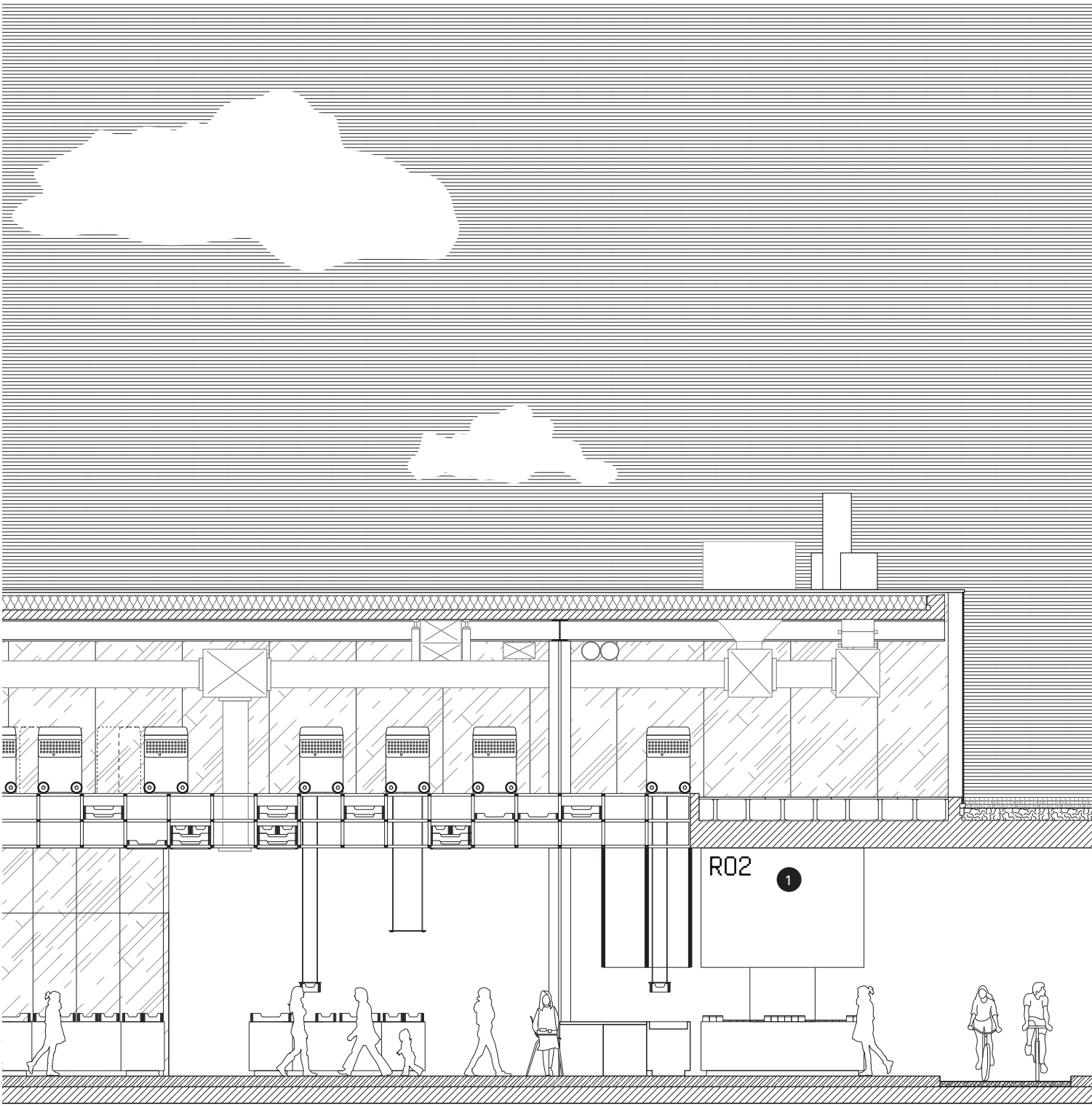
1 Shop-in-shop
2 Sales floor
3 Vertical core
4 Loading dock



Designated slow-paced zones with product demonstrations, workshops, and exclusive shops are developed around the periphery of the supermarket sales floor, in juxtaposition with fast-paced pick-up zones along the bike pathway to promote cyclists, delivery, and e-commerce.



1 Returning point
2 Automat
3 Entrance



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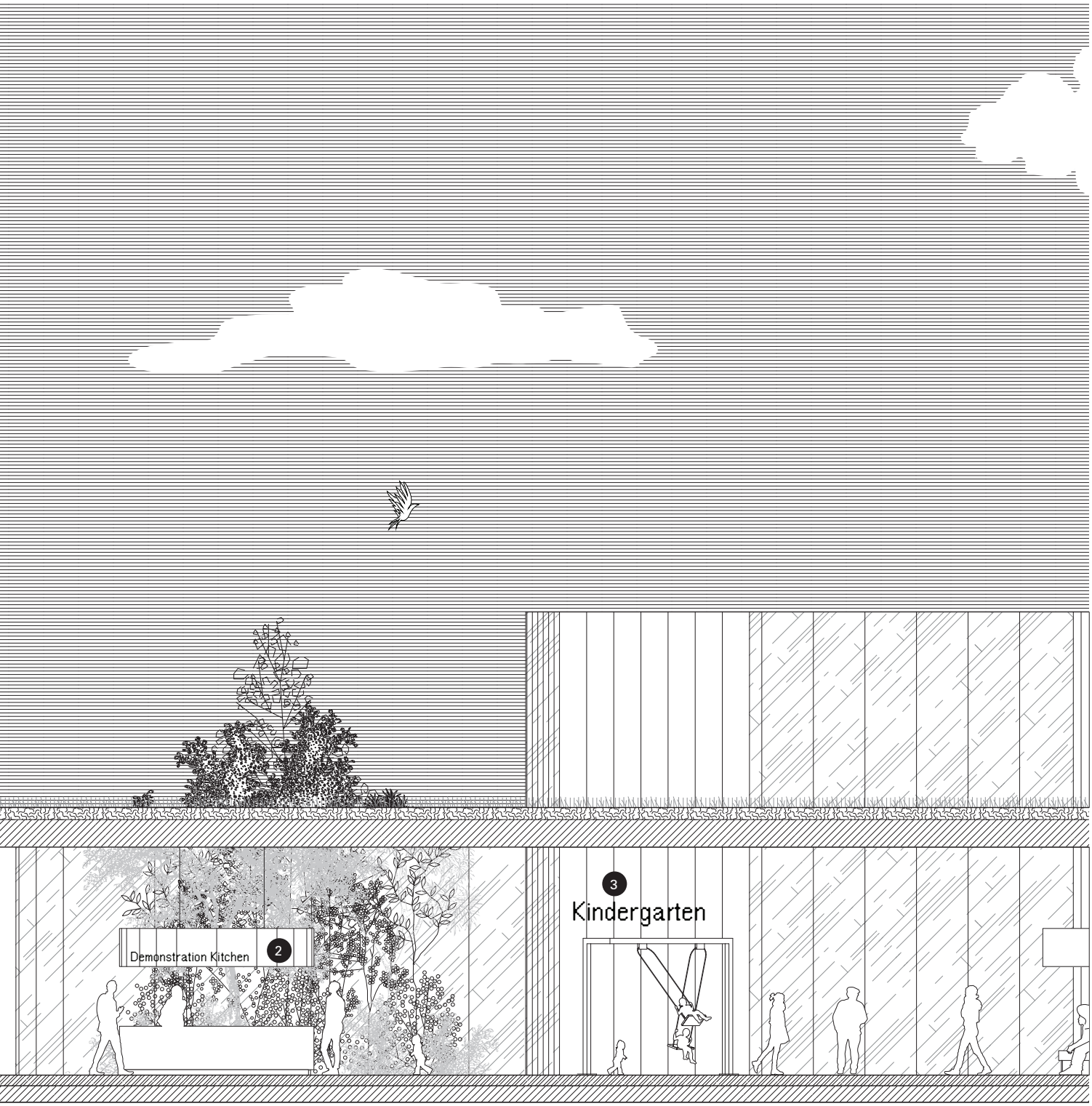
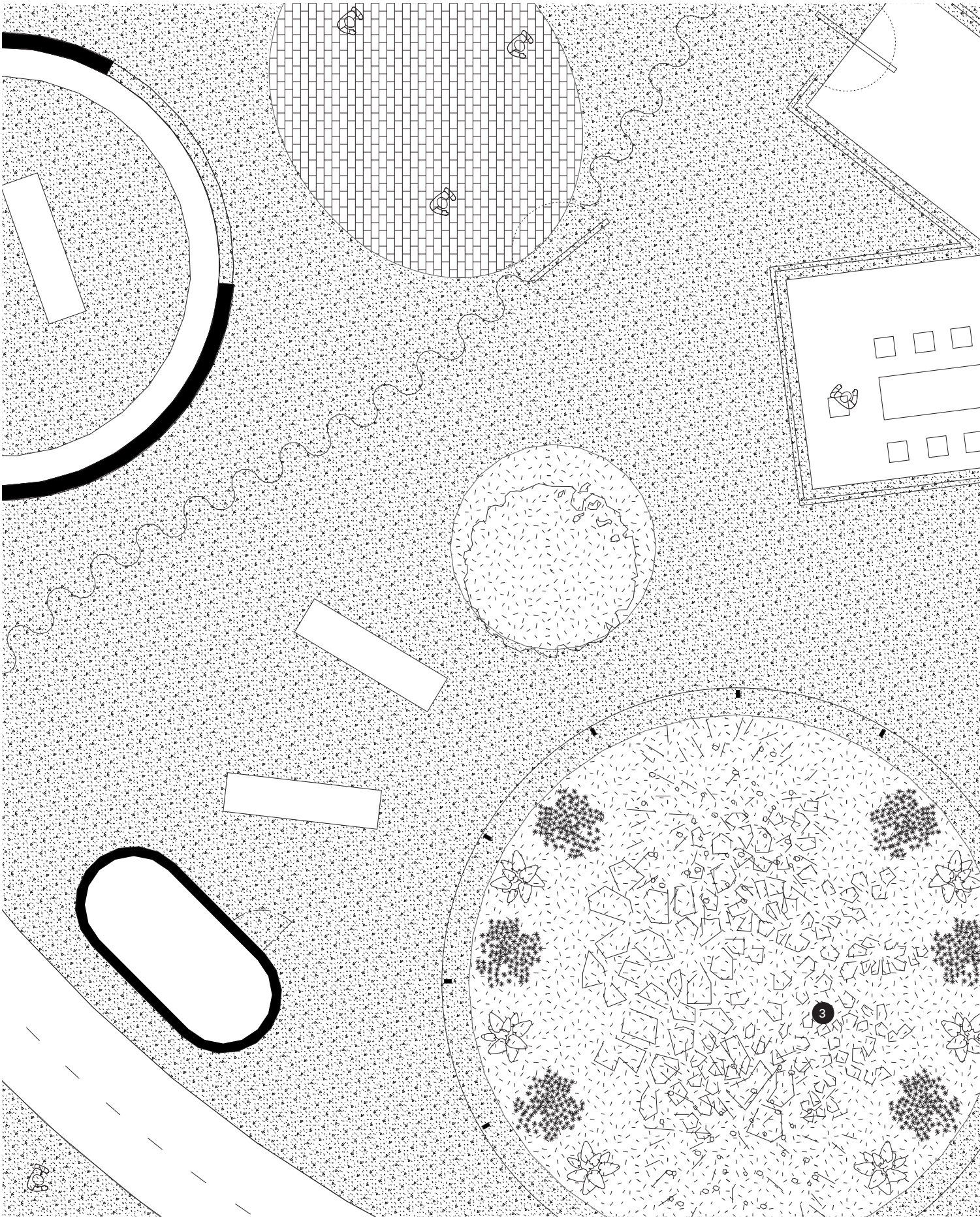
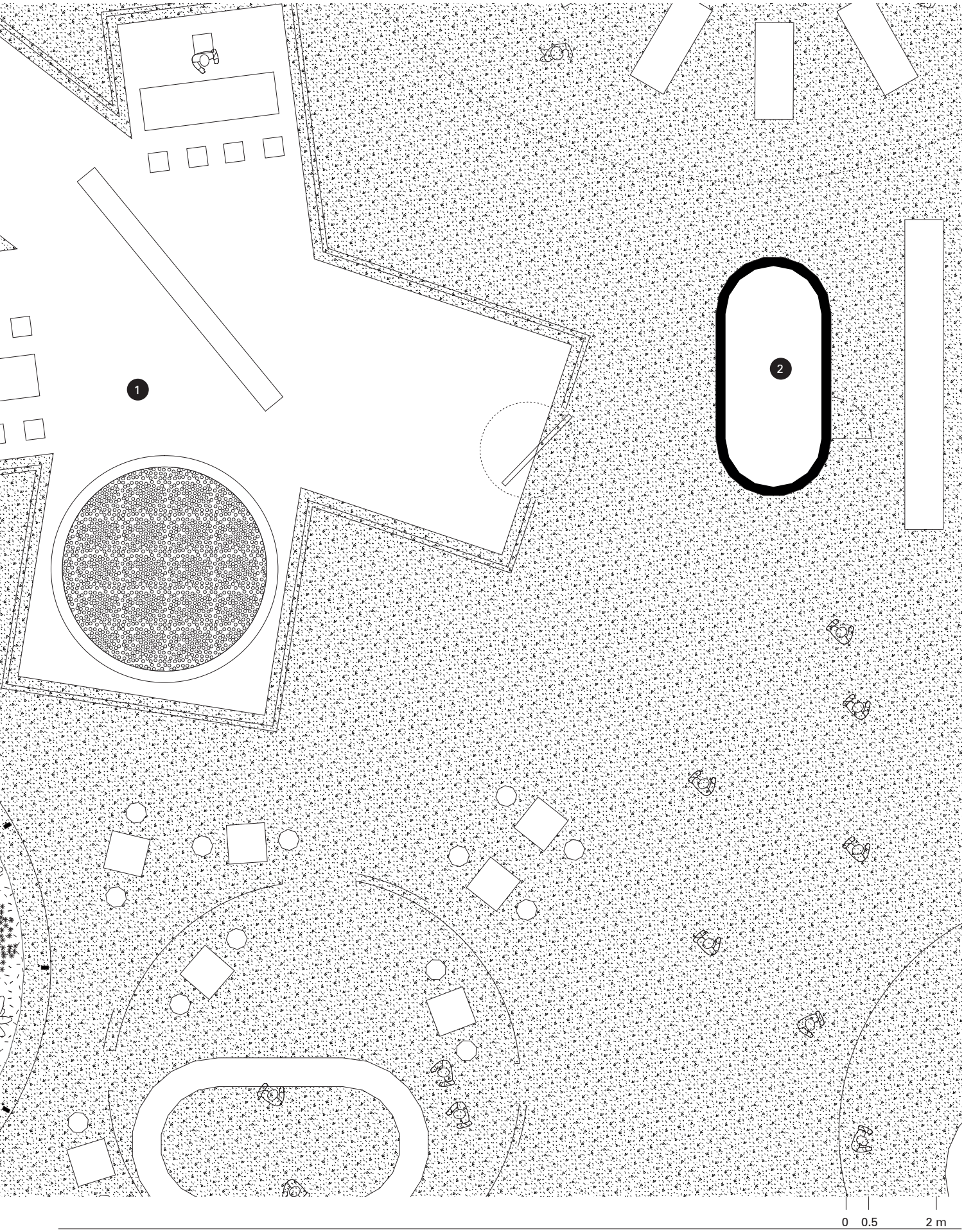


0 0.5 2 m

1 Returning point
2 Automat
3 Entrance



Public green zones are incorporated amidst the sales floor to entice the consumers to spend more time inside, while also providing a green roofscape for the neighborhood.



1 Kindergarten
2 Structural core, toiltes, HVAC
3 Public green areas

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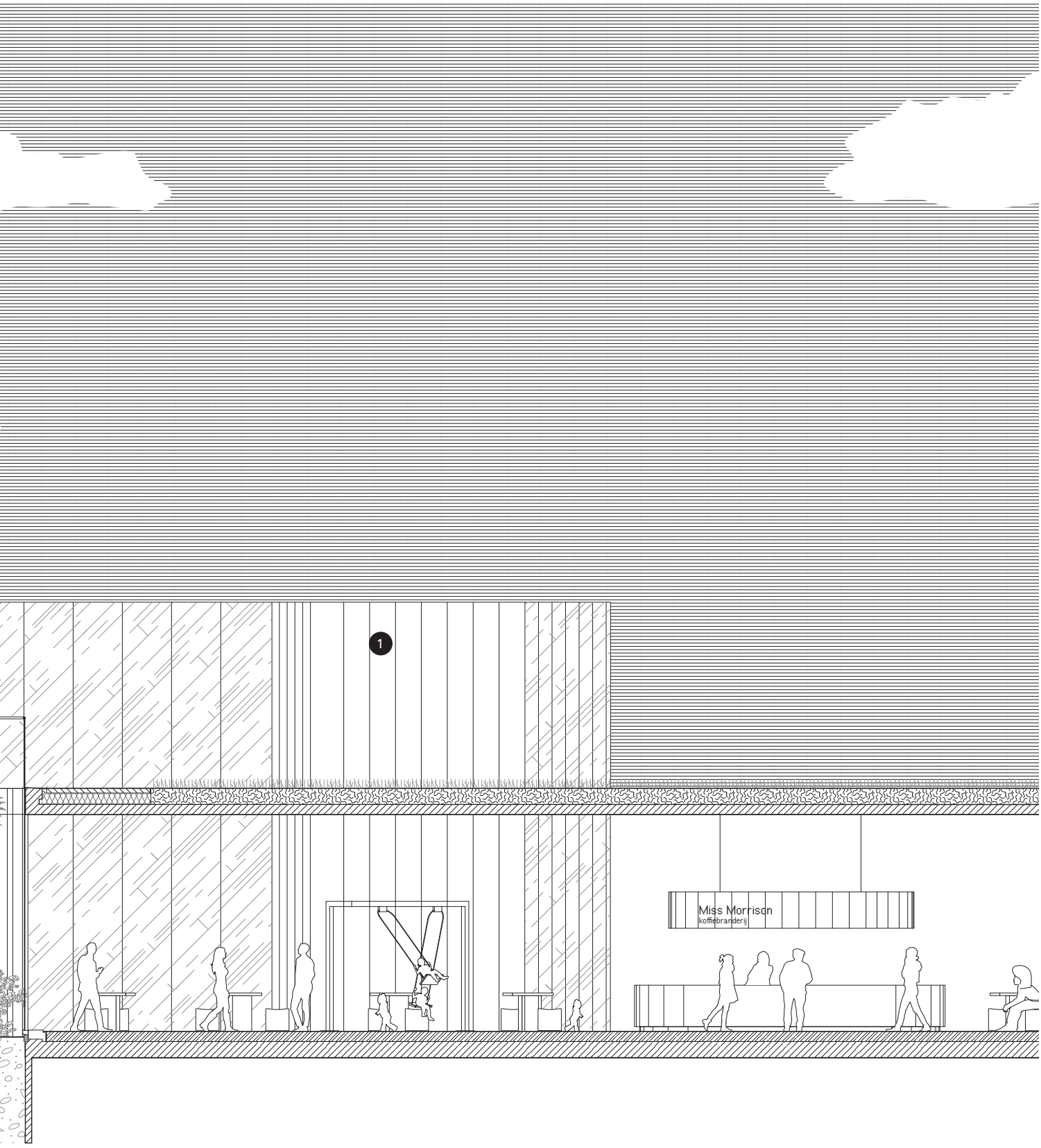
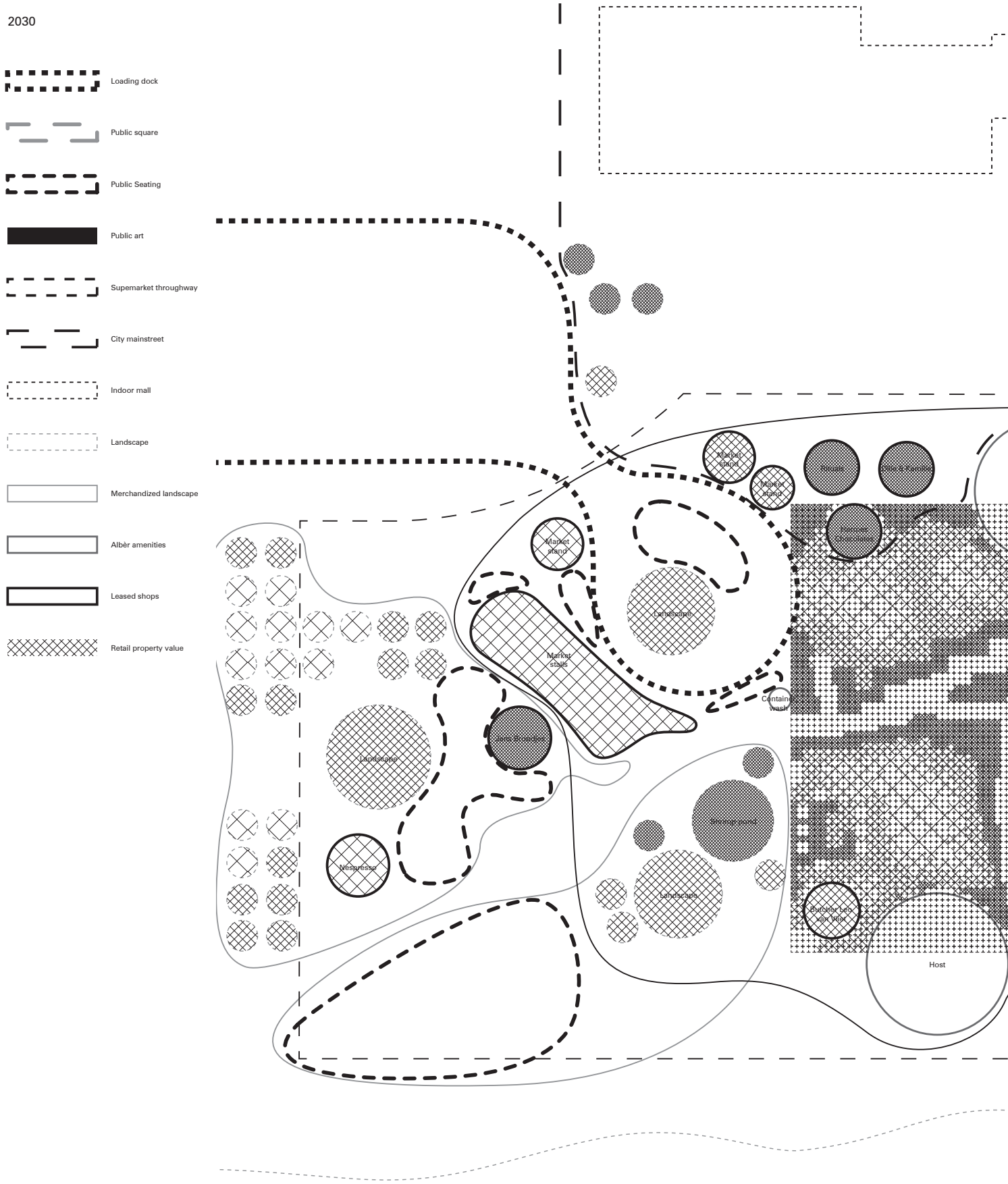
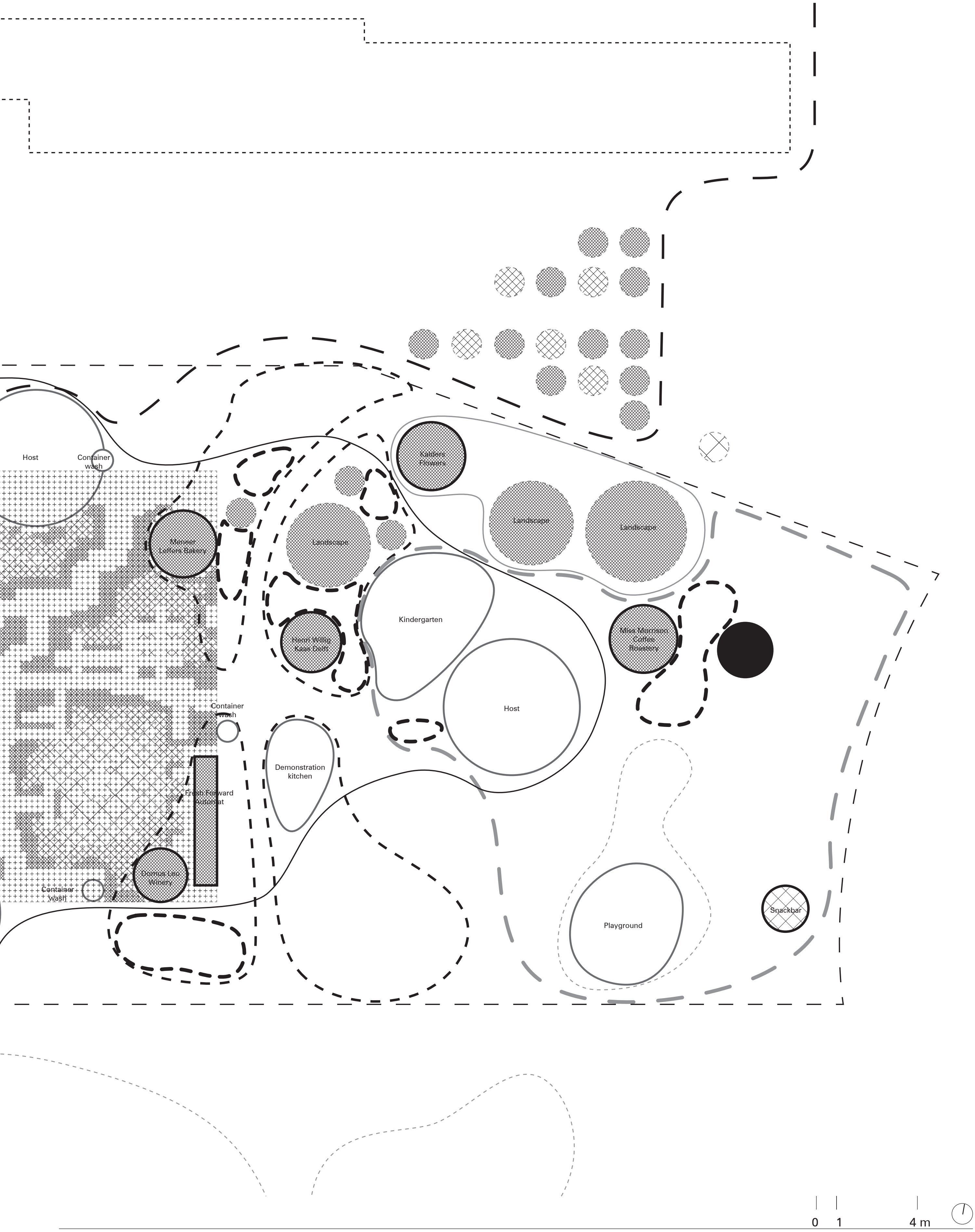


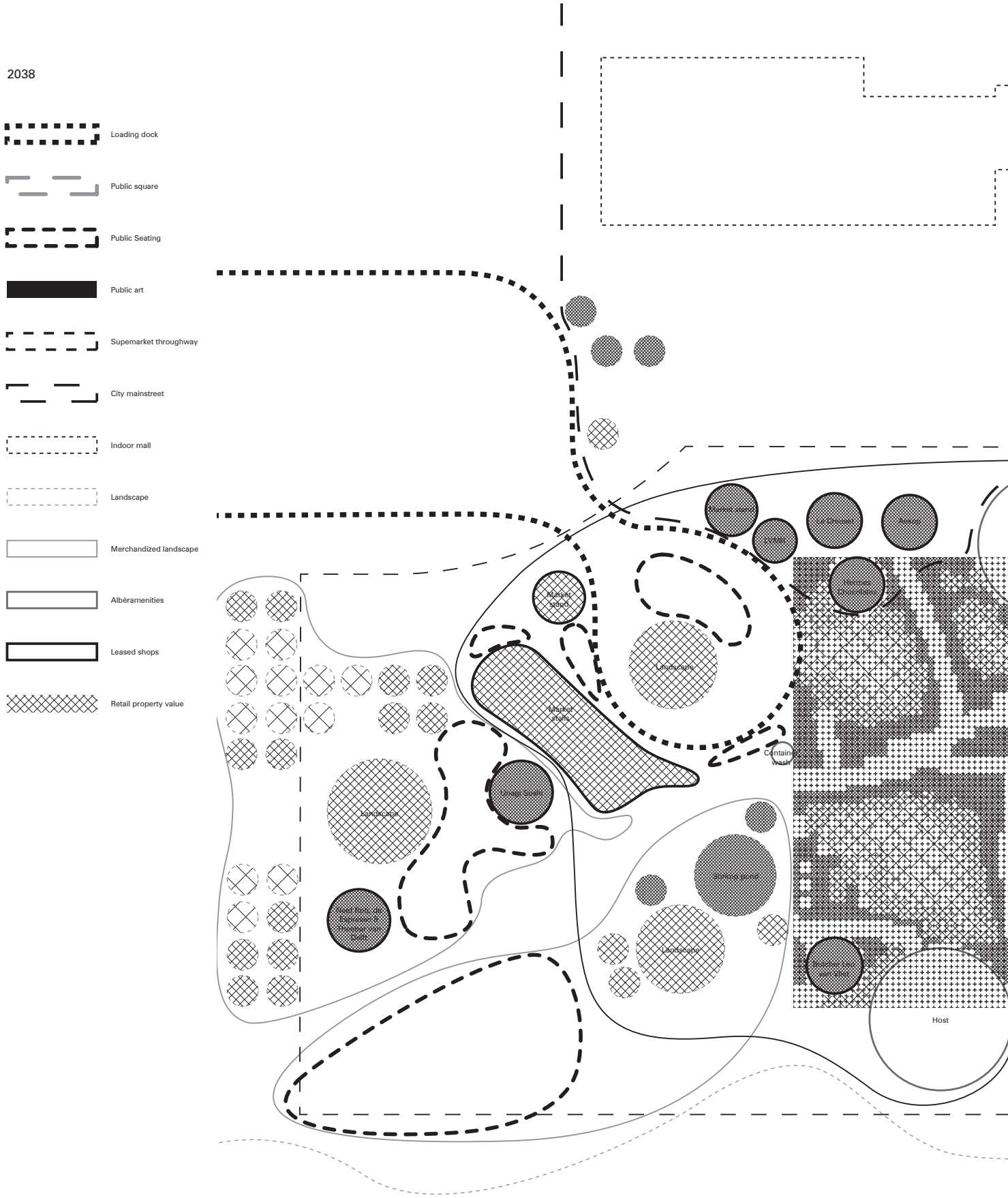
0 0.5 2 m

1 Kindergarten
2 Structural core, toiltes, HVAC
3 Public green areas



From bulks to fresh produce crates, standardized shelving systems within the open plan generate new episodic formats of planograms. No longer vertical and detached from each other, the new planograms dictate the dynamic floor plan.


Host
Container wash
Meneer Leffers Bakery
Landscape
Kalders Flowers
Landscape
Landscape
Kindergarten
Henri Willig Kaas Delft
Miss Morrison Coffee Roastery
Host
Container wash
Demonstration kitchen
Fresh Forward Automat
Domus Leo Winery
Container wash
Playground
Snackbar
0
1
4 m



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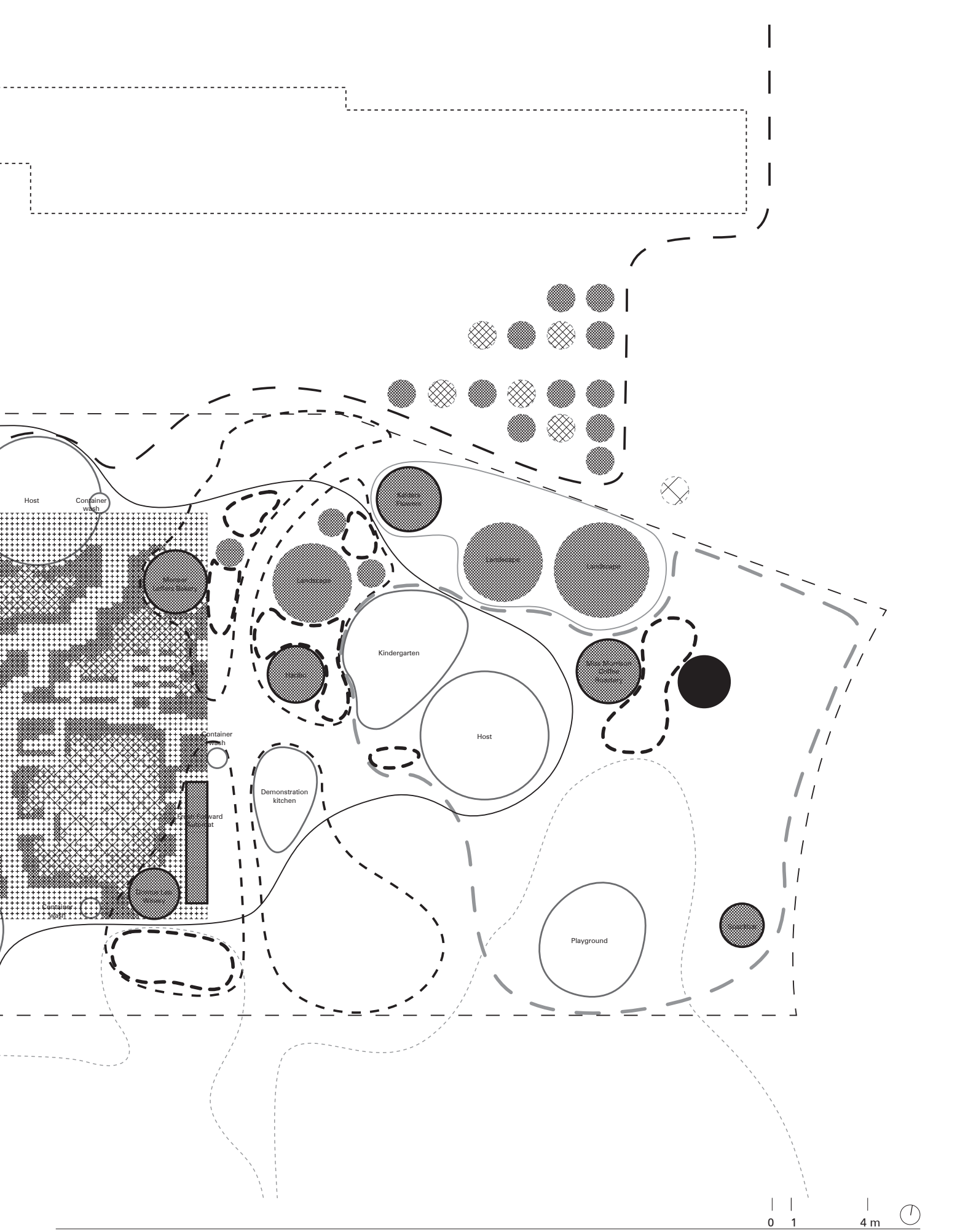
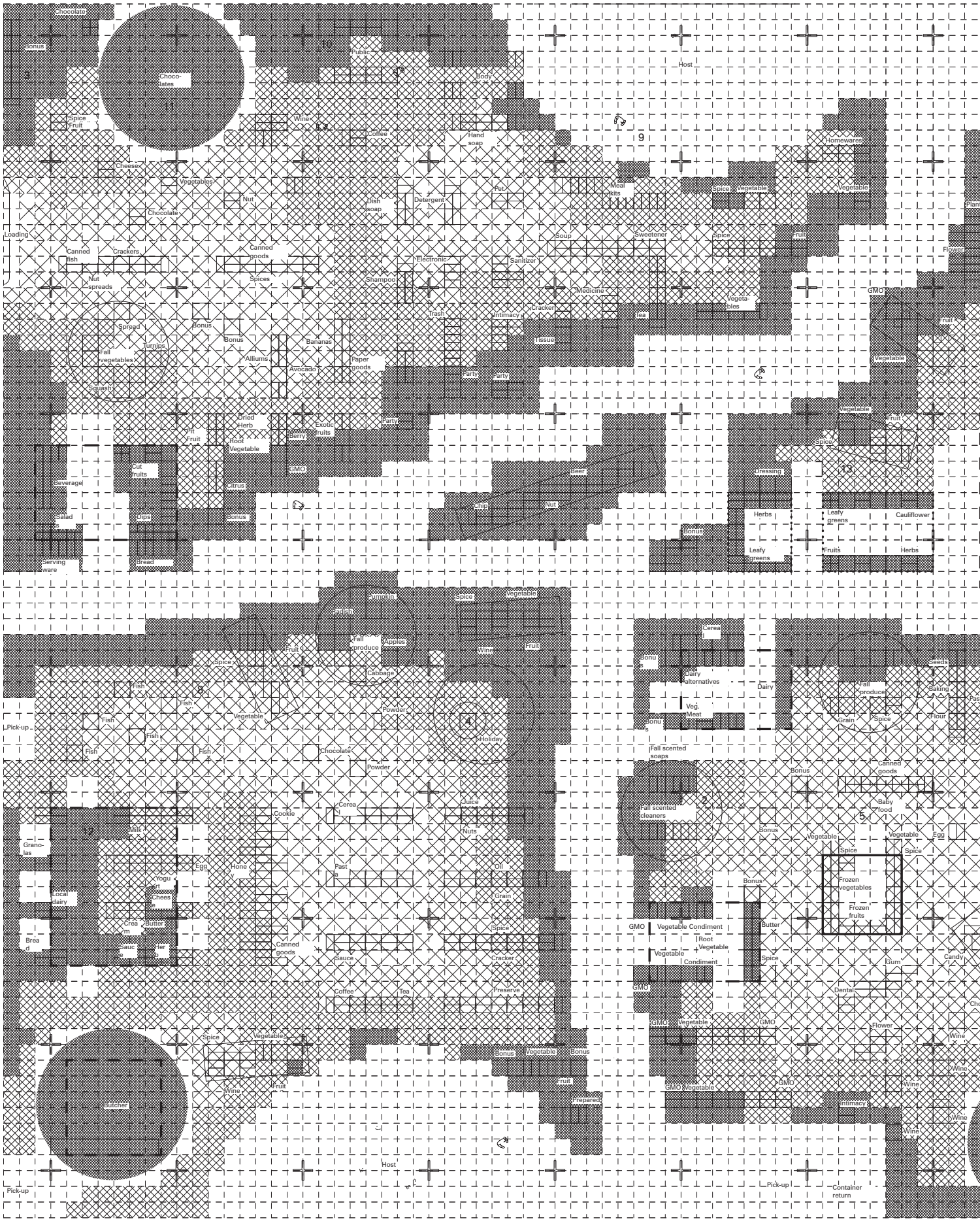
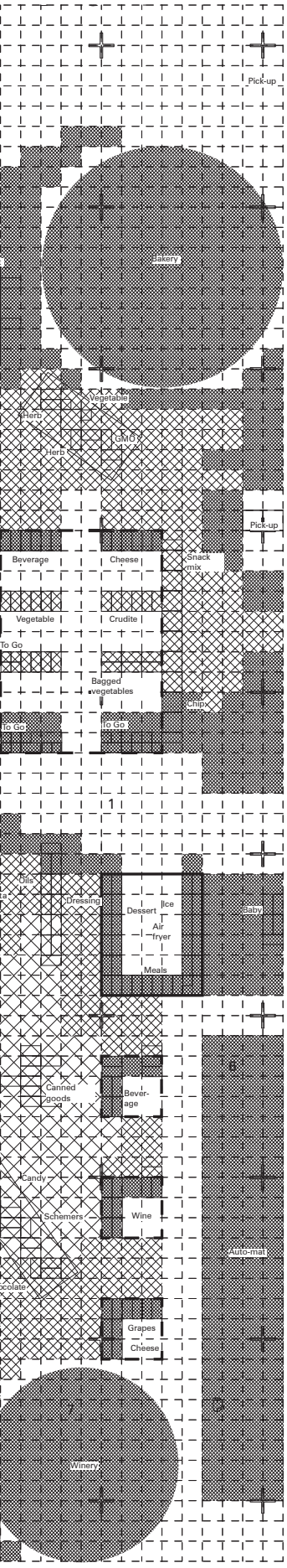

Host
Container wash
Kindergarten
Host
Demonstration kitchen
Container wash
Container wash
Playground
0
1
4 m



The supermarket sales floor as a real estate platform reveals business strategies in order to generate profit. Albèrt's business approach offers a wide range of products through a binary financial model that incorporates all Albèrt products within the efficient automated grid system, while real estate strategies—such as store-within-a-store—for branded products remain exclusively and independently staged.



Retail property value

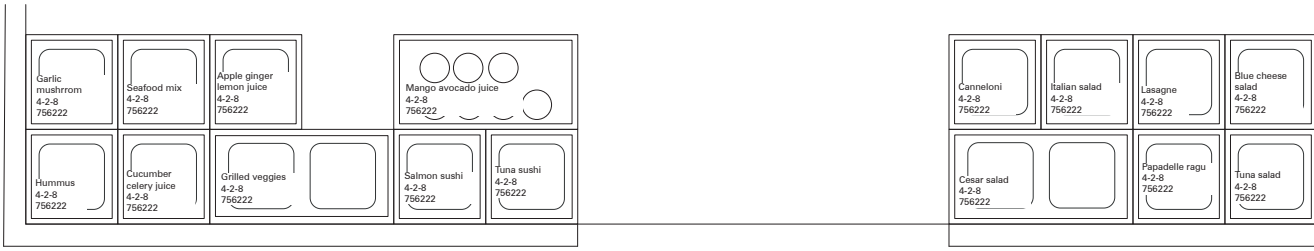
Walk-in refrigeration

Misted refrigeration

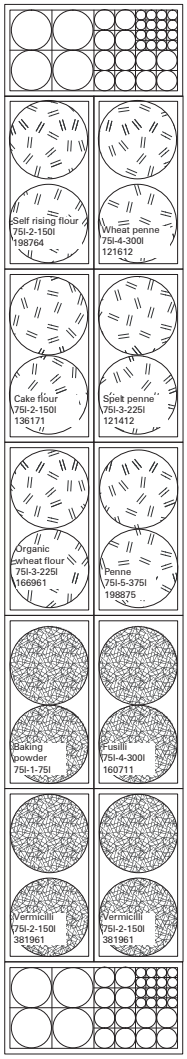
Freezer

PRODUCT NAME (XXXX)
UNITS IN CONTAINER - CONTAINERS IN STORE - UNITS IN STORE (#-#-#)
PRODUCT CODE (######)

0 1 4 m



Path

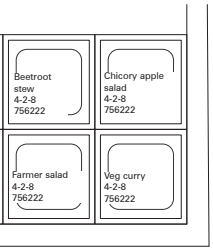


1

Holiday

Path

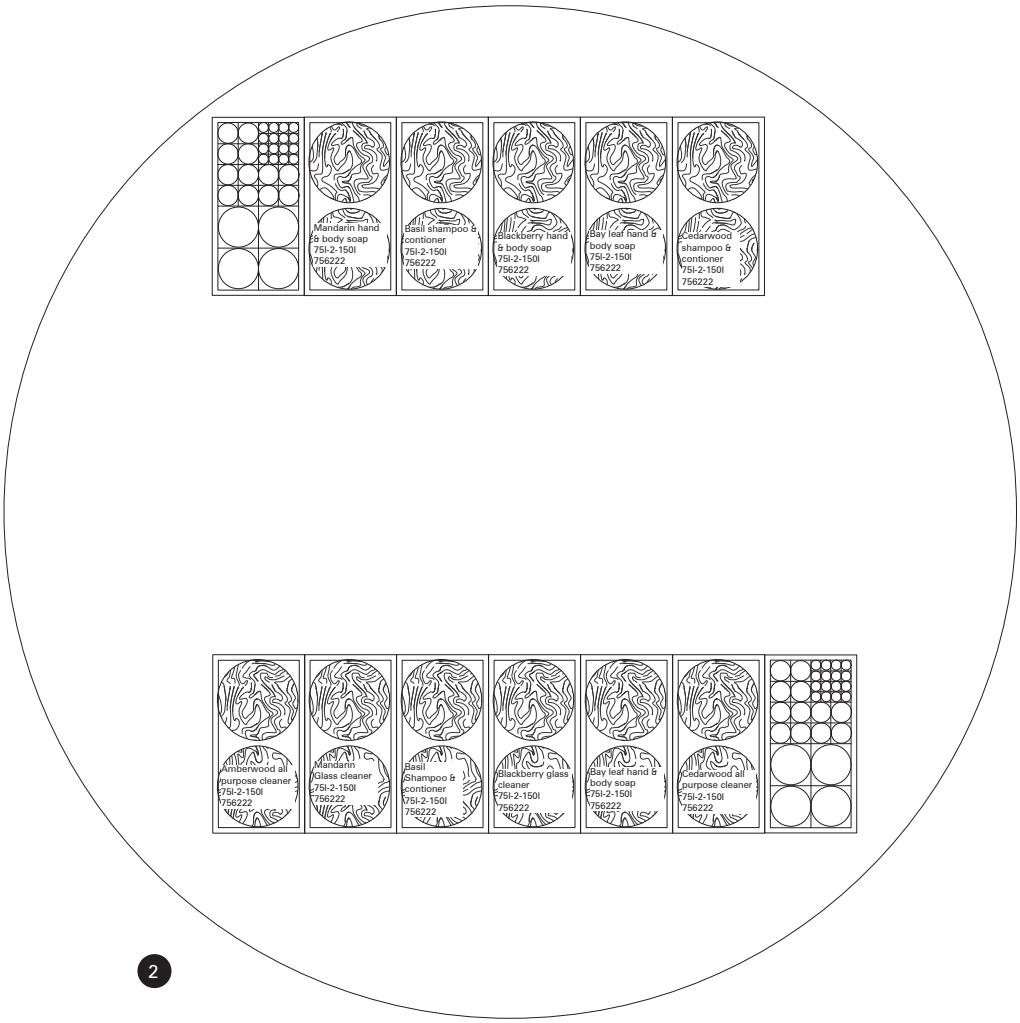
From bulks to fresh produce crates, standardized shelving systems within the open plan generate new episodic formats of planograms. No longer vertical and detached from each other, the new planograms dictate the dynamic floor plan.



Pick-up

Seating

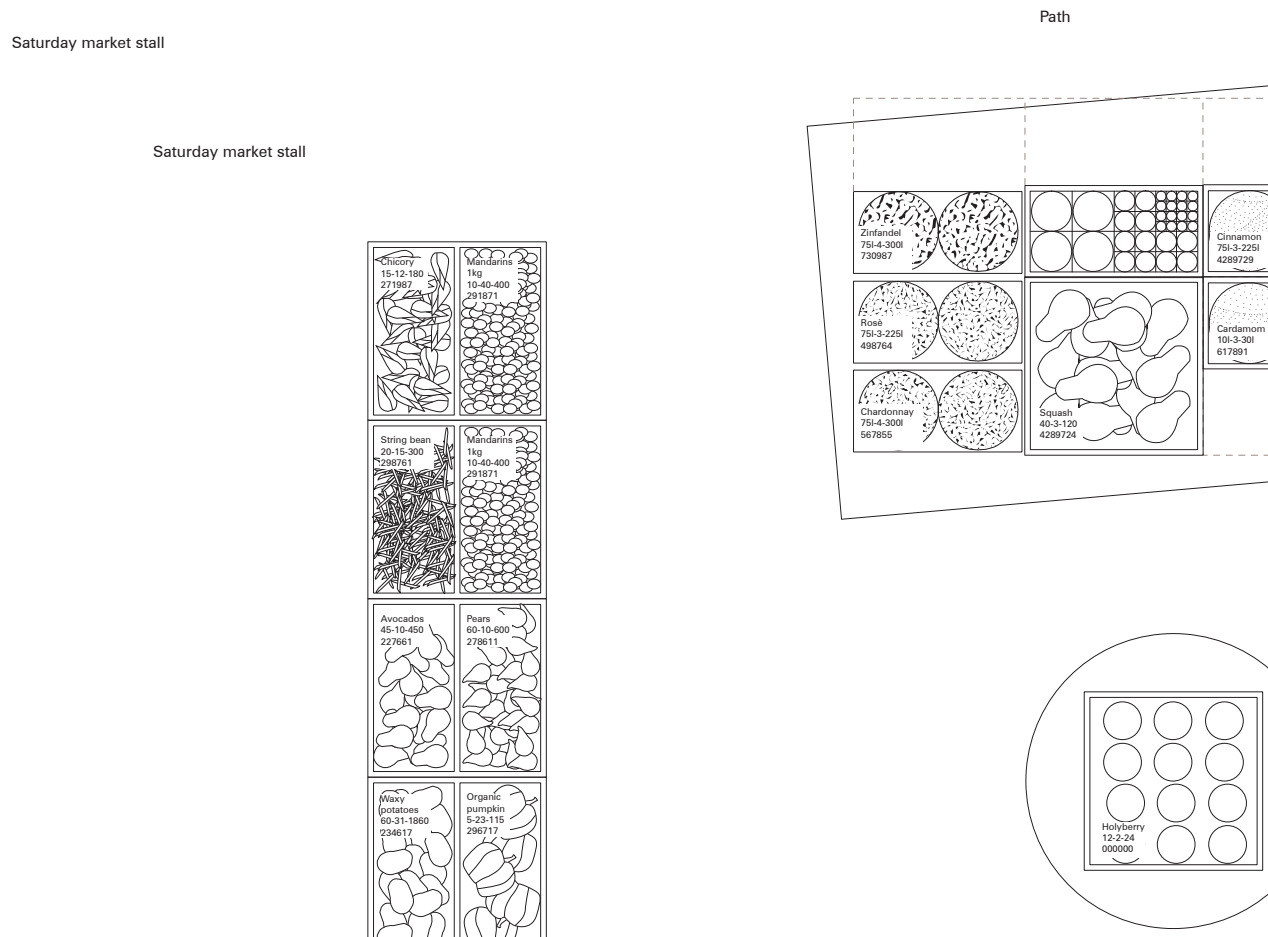
Bike path



2

0 200 1000 mm

1 Bike path convenience
2 Fall scented cleaners



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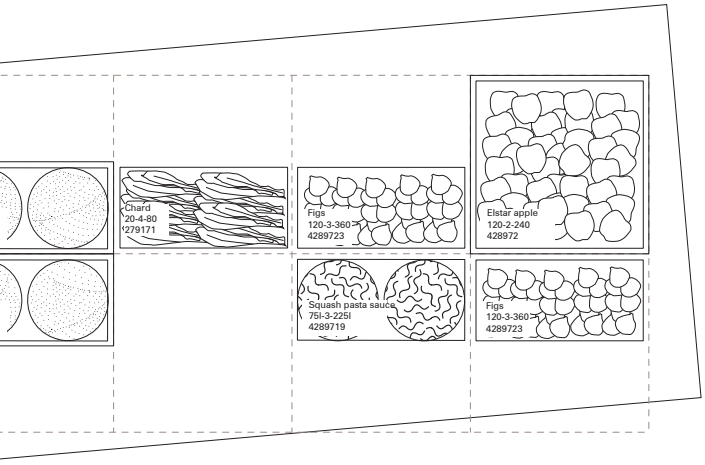
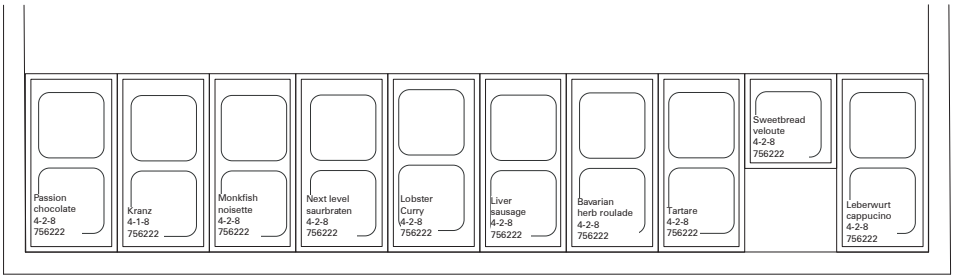
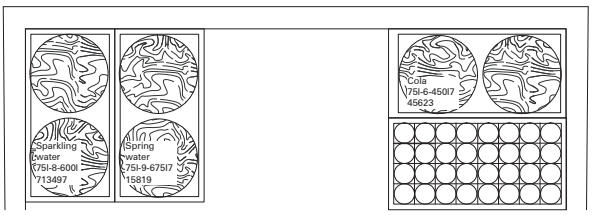


Path



Fresh forward automat

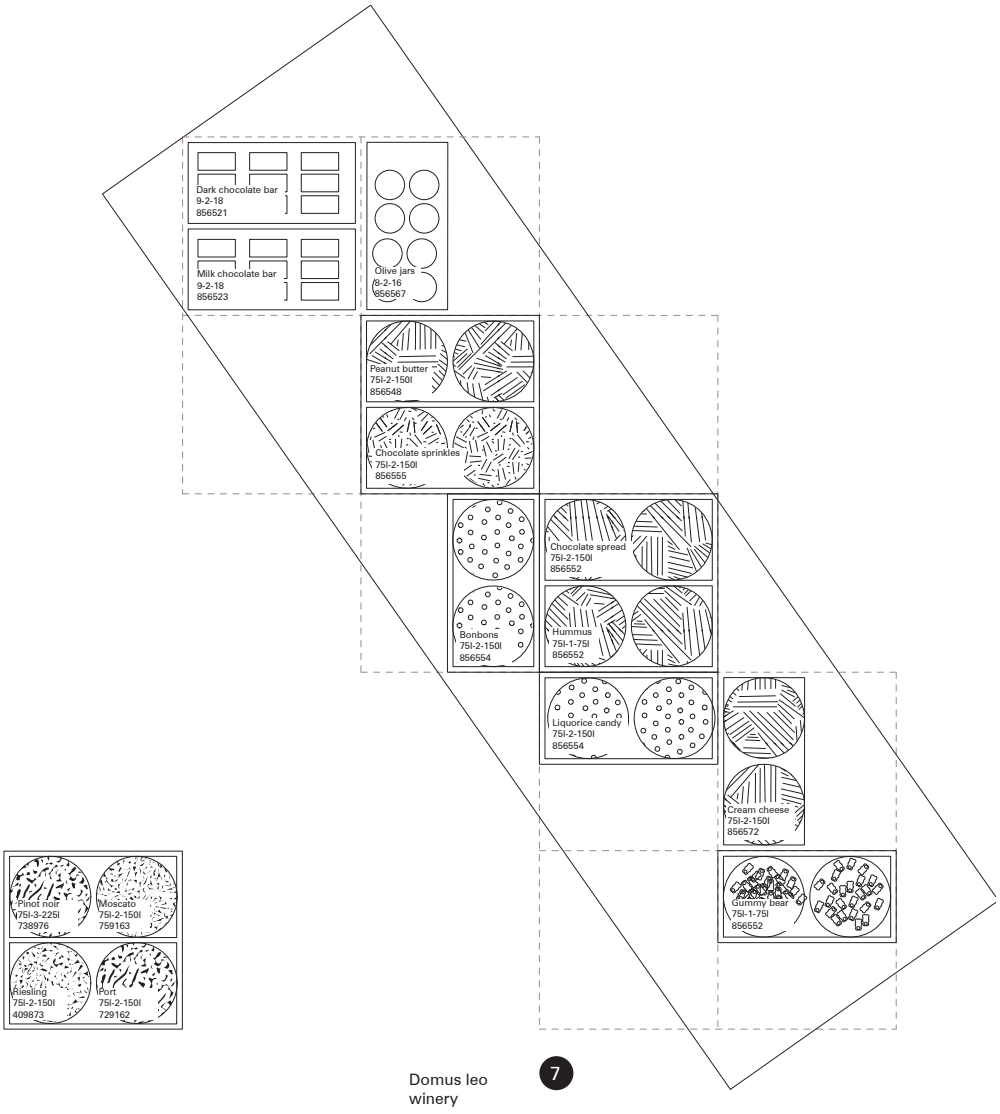


Seating

6

0 200 1000 mm

3 Saturday market aisles
4 Holyberry merchandising
5 Baby products and pantry
6 Automat merchandising



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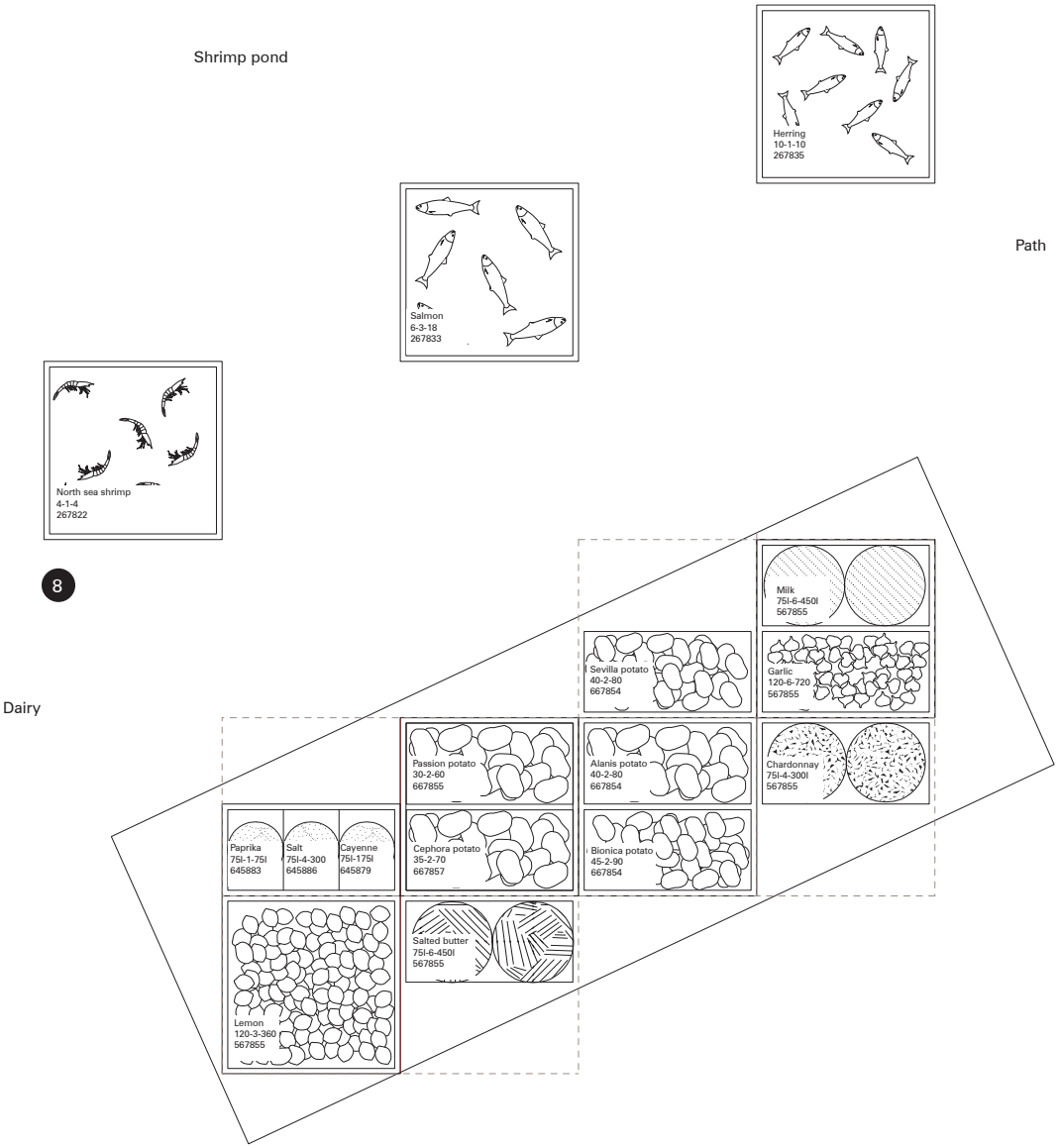
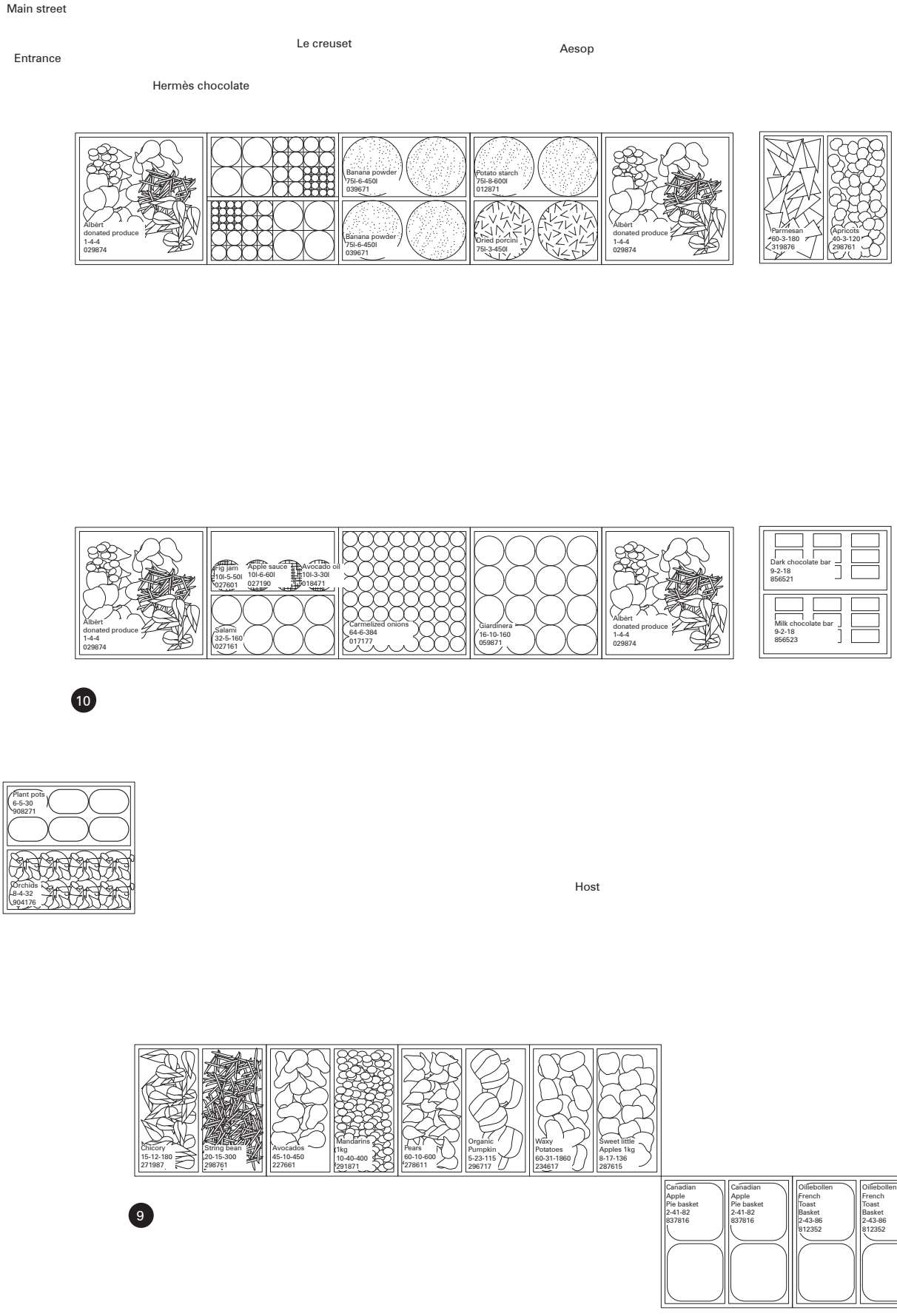


0 200 1000 mm

7 Wine merchandising
8 Fishmonger merchandising



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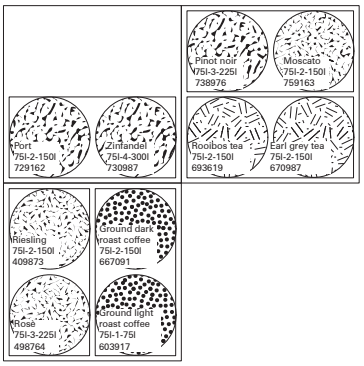
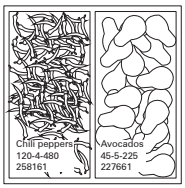
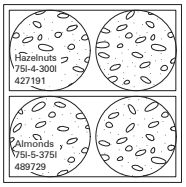
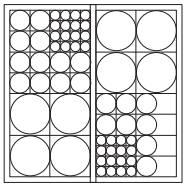
Main street

Hermès chocolate









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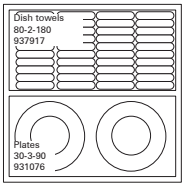
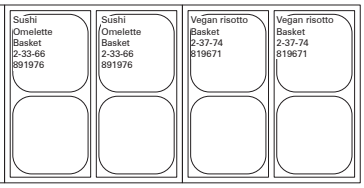
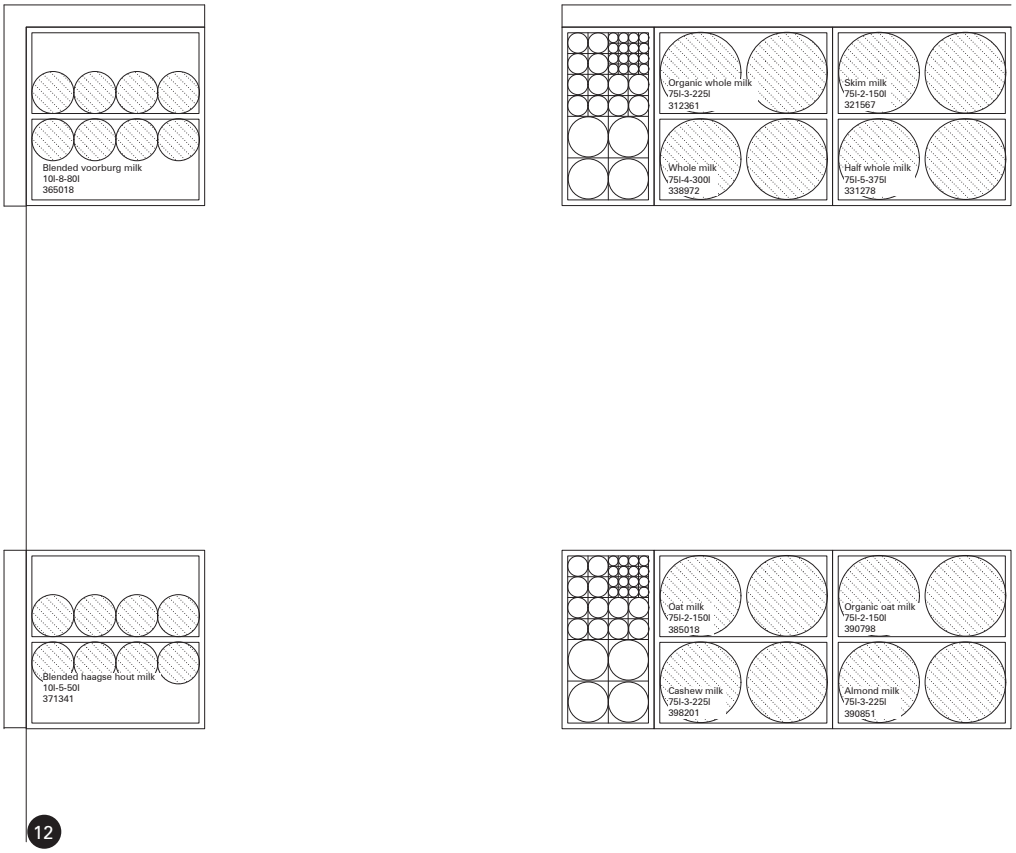


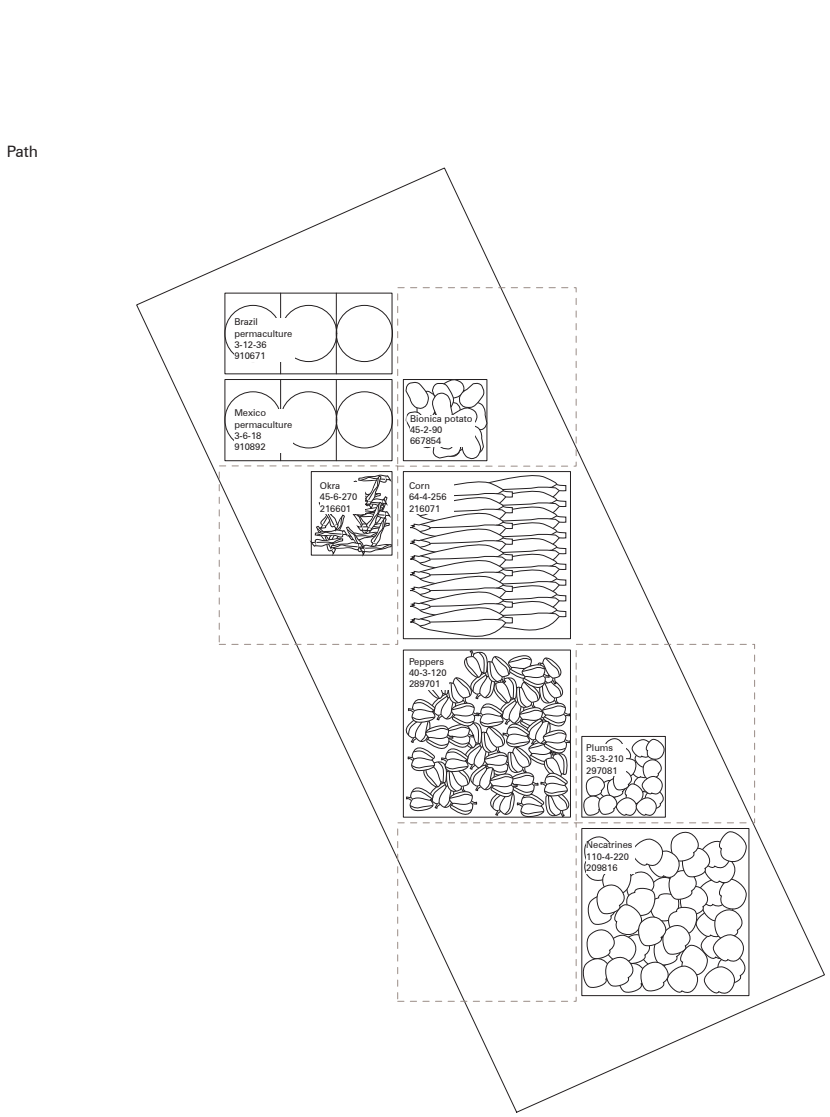


0 200 1000 mm

9 Albèrt lifestyling
10 Public products
11 Chocolate merchandising



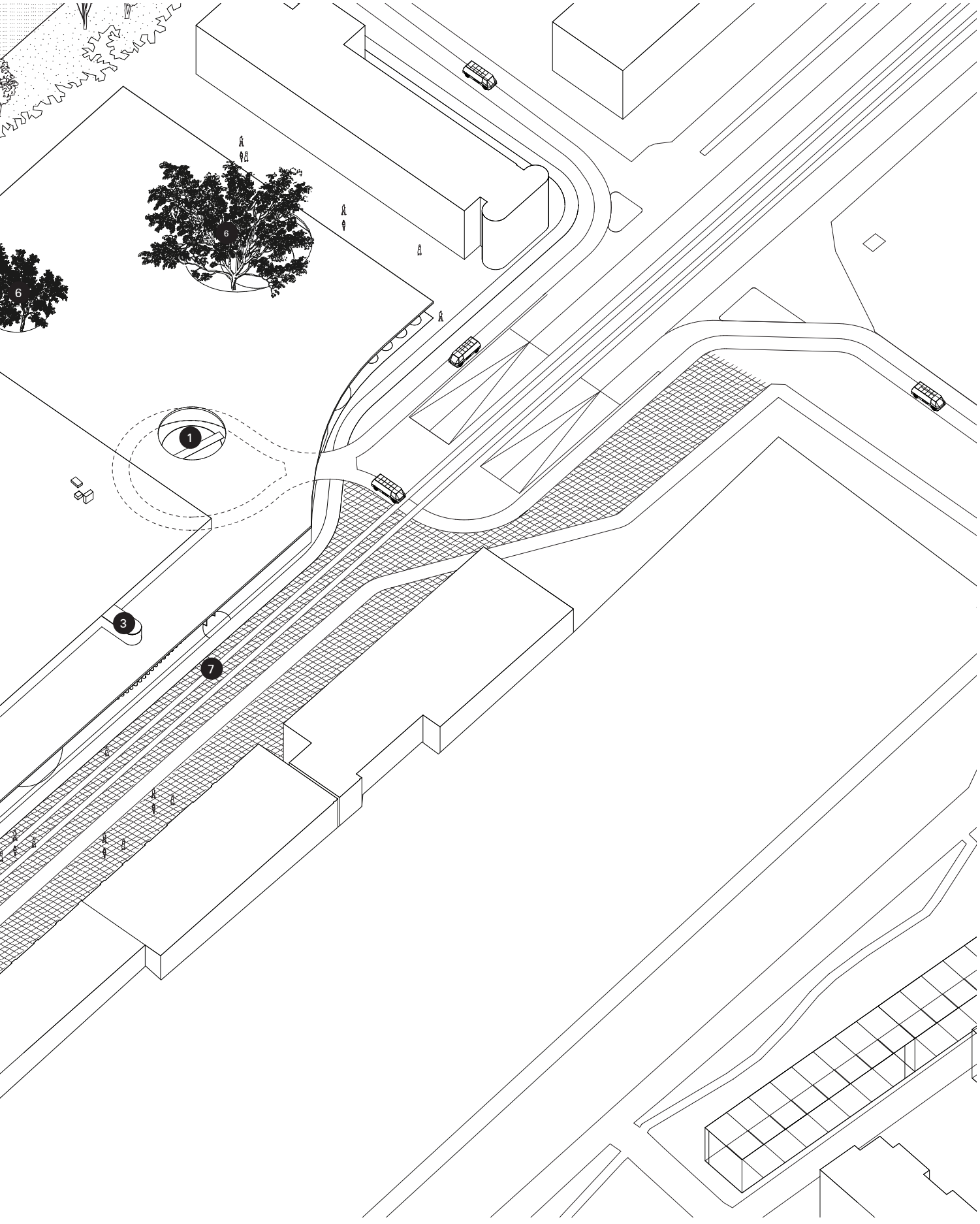
From bulks to fresh produce crates, standardized shelving systems within the open plan generate new episodic formats of planograms. No longer vertical and detached from each other, the new planograms dictate the dynamic floor plan.



0 200 1000 mm

12 Dairy walk-in
13 Fresh produce display

Amidst a transportation node and a public square, featuring a green roofscape, Albèrt extends its perimeter towards the city and its residents, establishing a new civic presence.



1 Loading
2 Automated ceiling
3 Vertical core
4 Kindergarten
5 Sculpture of Albèrt's mascot
6 Garden
7 Tram

Stills from the walk-through video on the reimagined supermarket of the future, Albèrt.


Albèrt

Stills from the walk-through video on the reimagined supermarket of the future, Albèrt.


Demonstration Kitchen

Stills from the walk-through video on the reimagined supermarket of the future, Albèrt.


Koffiebranderij
RO3
PO1

Stills from the walk-through video on the reimagined supermarket of the future, Albèrt.

Stills from the walk-through video on the reimagined supermarket of the future, Albèrt.

1 From The Hague to Genoa, the supply chain of the future supermarket will span across the Blue Banana trade corridor, addressing multifaceted aspects of the food industry in the Netherlands and beyond, through the notions of scarcity, trade, inclusivity, sensorialism, tastemaking, craft, reshoring, protectionism, automation, and extinction.

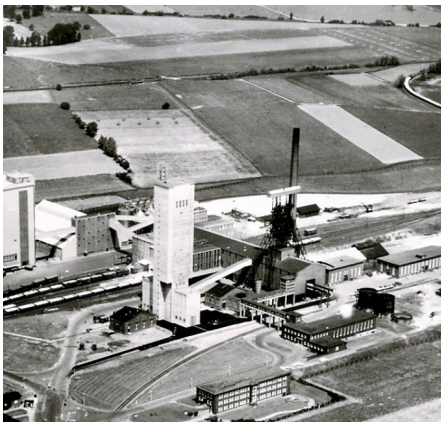
2 The reimagined supermarket—Albèrt—displays both the product and its supply chain for the conscious consumers by integrating the distribution center with an automated Ocado grid system above the supermarket, rendering a completely open sales floor.

3 In an attempt to reduce waste and address sustainability goals, Albèrt operates within a just-in-time production system of non-disposable packaging and dynamic pricing, maintaining small batches of products in the integrated Distribution Center.

4 No longer an enclosed and controlled retail space, the supermarket uses various strategies—such as store-in-a-store rentals for exclusive brands and specialty displays for seasonal products—to create a flexible sales floor in order to maximize profit, operating as a real estate platform.

5 Novel tasting experiences and green public spaces—along with the dynamic robotic movement that diverts human labor towards hospitality and social interaction—blur the boundaries between the supermarket and the city, introducing a new civic presence.

1



4

2

5

3

1-5 Borth Salt Mine
located in Rheinberg

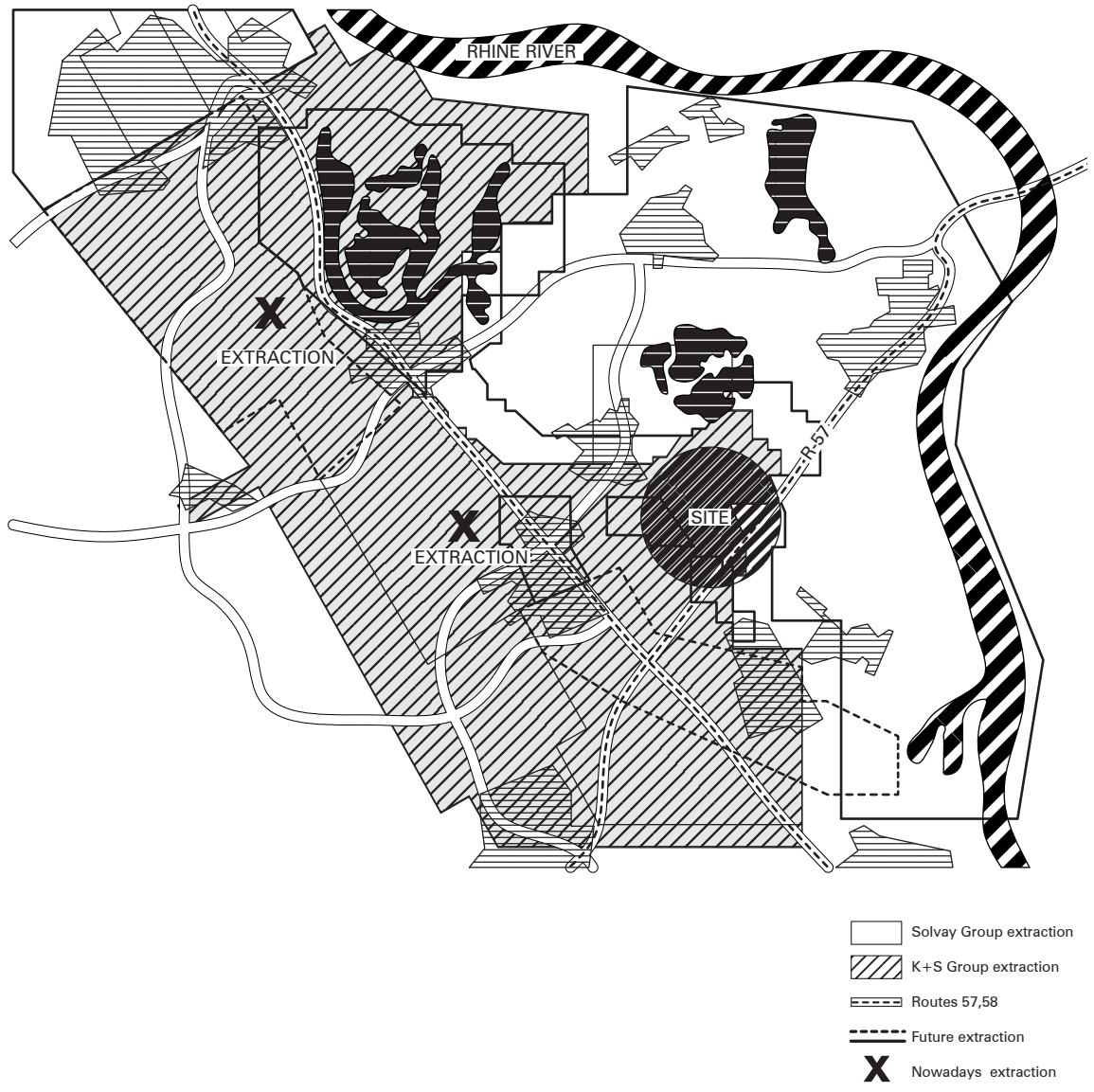
Germany, a country inside the Blue Banana and the largest salt producer in Europe, anticipates a new prototypical and strategic network that works in symbiosis with the existing salt factories.

1

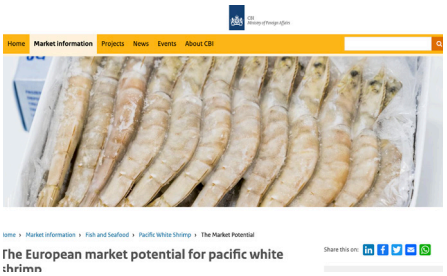
2

3

1-3 Salt study developed during a visit to the site



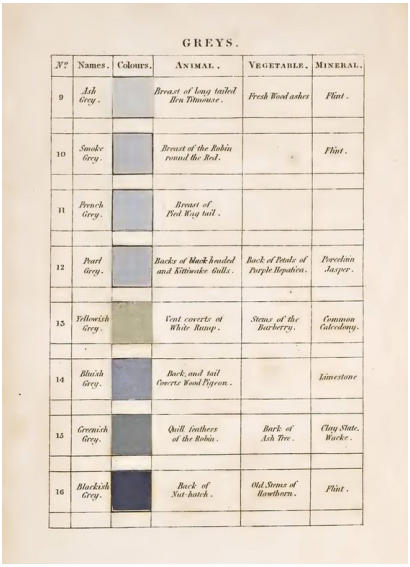
The existing Borth Salt Mine, regional soil conditions, and the Rhine River, make Rheinberg an ideal location.



The European market potential for White Pacific Shrimp

Adverstisement campaign to introduce the Head on Shell on Shrimp in Europe

Freshness marketing developed by Swiss Shrimp

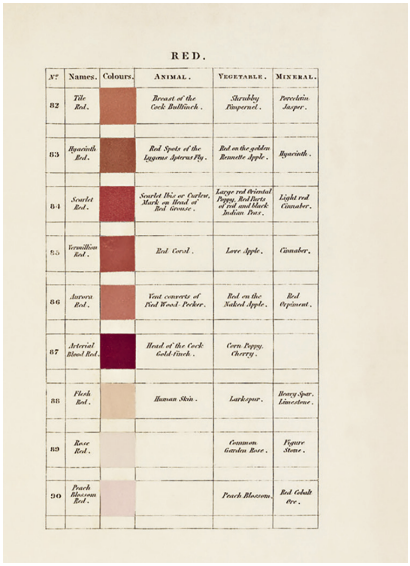


GREYS.

№	Names.	Colours.	Animal.	Vegetable.	Mineral.
9	Ash Grey.		Breast of long tailed Field Titmouse.	Fresh Wood ashes	Flint.
10	Smoke Grey.		Breast of the Robin round the Red.		Flint.
11	French Grey.		Breast of Red Wag tail.		
12	Pearl Grey.		Backs of Black-headed and Kittiwake Gulls.	Back of Petals of Purple Hepatica.	Porcelain Jasper.
13	Yellowish Grey.		Vent coverts of White Bump.	Stems of the Barberry.	Common Calcedony.
14	Bluish Grey.		Back, and tail Coverts Wood Pigeon.		Limestone
15	Greenish Grey.		Quill feathers of the Robin.	Bark of Ash Tree.	Clay Slate, Wacke.
16	Blackish Grey.		Back of Nut-hatch.	Old Stems of Hawthorn.	Flint.

Naturalist colorimetry from the XIX century from the book “A Color Reference System from the Natural World “

Technique developed to determine the Shrimp colorimetry

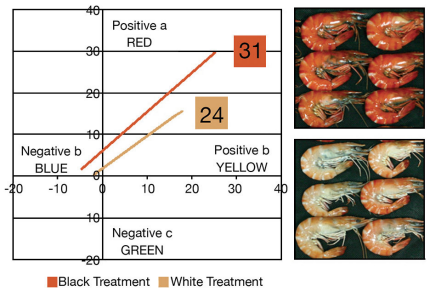


RED.

№	Names.	Colours.	Animal.	Vegetable.	Mineral.
82	Tile Red.		Breast of the Cock Bullfinch.	Shrubby Pimpernel.	Porcelain Jasper.
83	Reginald Red.		Red Spots of the Lagopus Aperus Pty.	Red on the golden Reinette Apple.	Reginalds.
84	Scarlet Red.		Scarlet Ibis or Curlew. Mark on Head of Red Grosbeak.	Large red Oriental Poppy, Red Parts of cut and Black Indian Ink.	Light red Cinnaber.
85	Vermillion Red.		Red Coral.	Love Apple.	Cinnaber.
86	Auburn Red.		Vent coverts of Red Wood Pecker.	Red on the Naked Apple.	Red Orpiment.
87	Arterial Blood Red.		Head of the Cock Gold finch.	Corn Poppy. Cherry.	
88	Flesh Red.		Human Skin.	Larkspur.	Heavy Spar. Limestone.
89	Rose Red.			Common Garden Rose.	Figure Stone.
90	Peach Blossom Red.			Peach Blossom.	Red Cobalt ore.

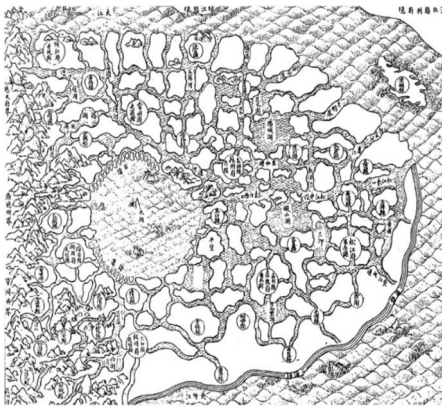
Naturalist colorimetry from the XIX century from the book “A Color Reference System from the Natural World “

Shrimp color fan after the use of additives

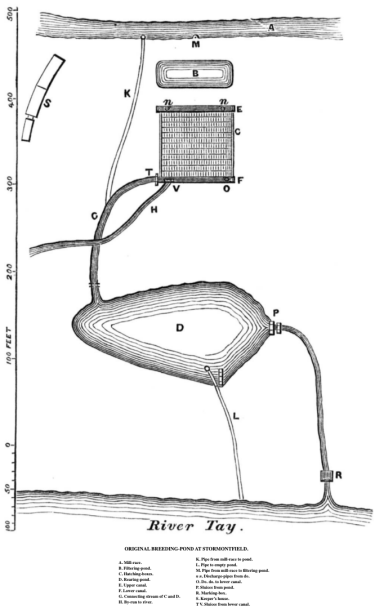


Different color treatments applied to the shrimps

On Shrimp Colorimetry



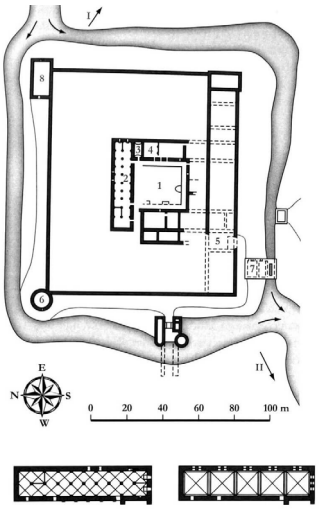
Map of seven prefectures of Southeast China showing the water morphology and the dike-ponds for rice and shrimp production around the Tai Lake, 1639



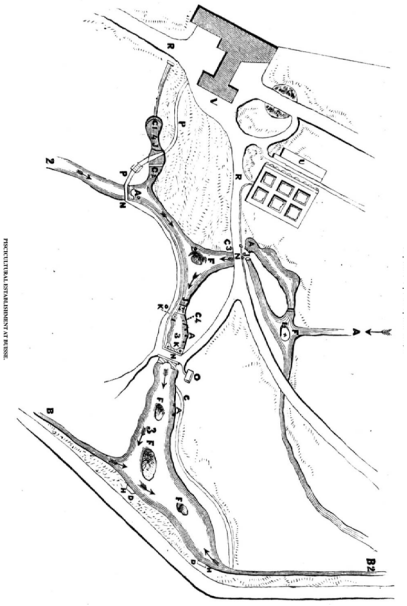
Original breeding pond in Stomrfield, France, 1850
https://www.gutenberg.org/files/63433/63433-h/63433-h.htm

Extensive shrimp farm in The Philippines
https://www.globalseafood.org/

Indoor shrimp farm in Indonesia
https://www.globalseafood.org/



Klooster Kalkenau ponds, 1640
Medieval ponds were used to feed the aristocracy
https://www.kloster-walkenried.de/en/museum/museum/pond-landscape



Breeding pond in Buisse, France, 1860

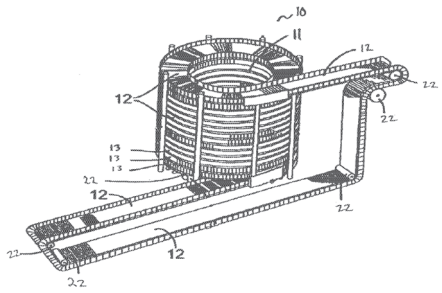
Crusta Nova in Germany
https://www.crustanova.com

Sananbio automated system
https://www.youtube.com/results?search_query=sananbio+aquaponics

Indoor aquaponics in The Netherlands

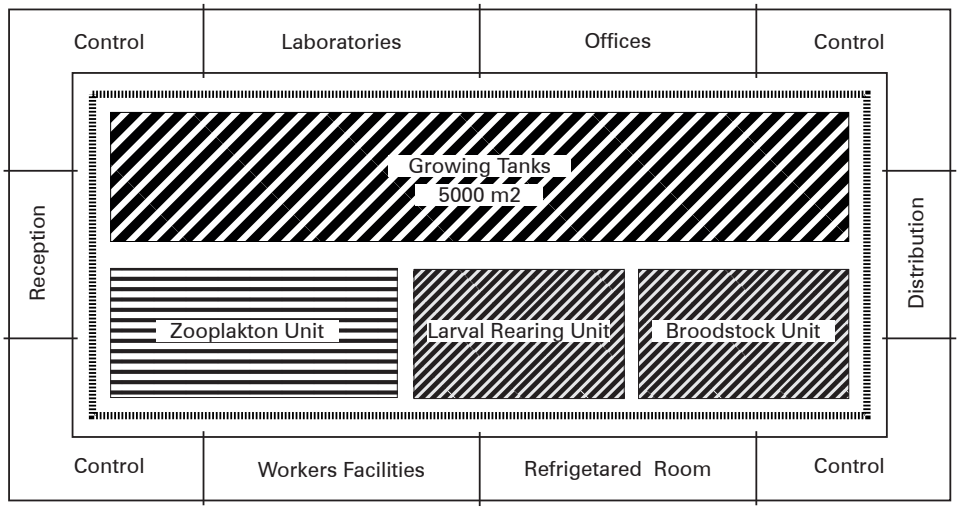
Automated conveyor belts used in Aquaculture

Automated conveyor belts used in Aquaculture

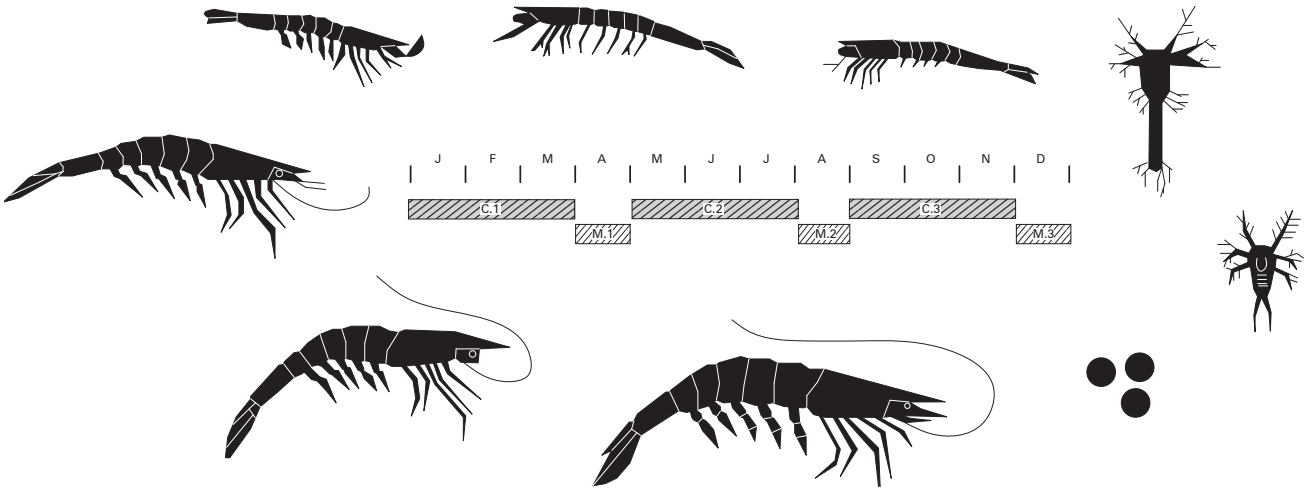


Automated conveyor belt patent

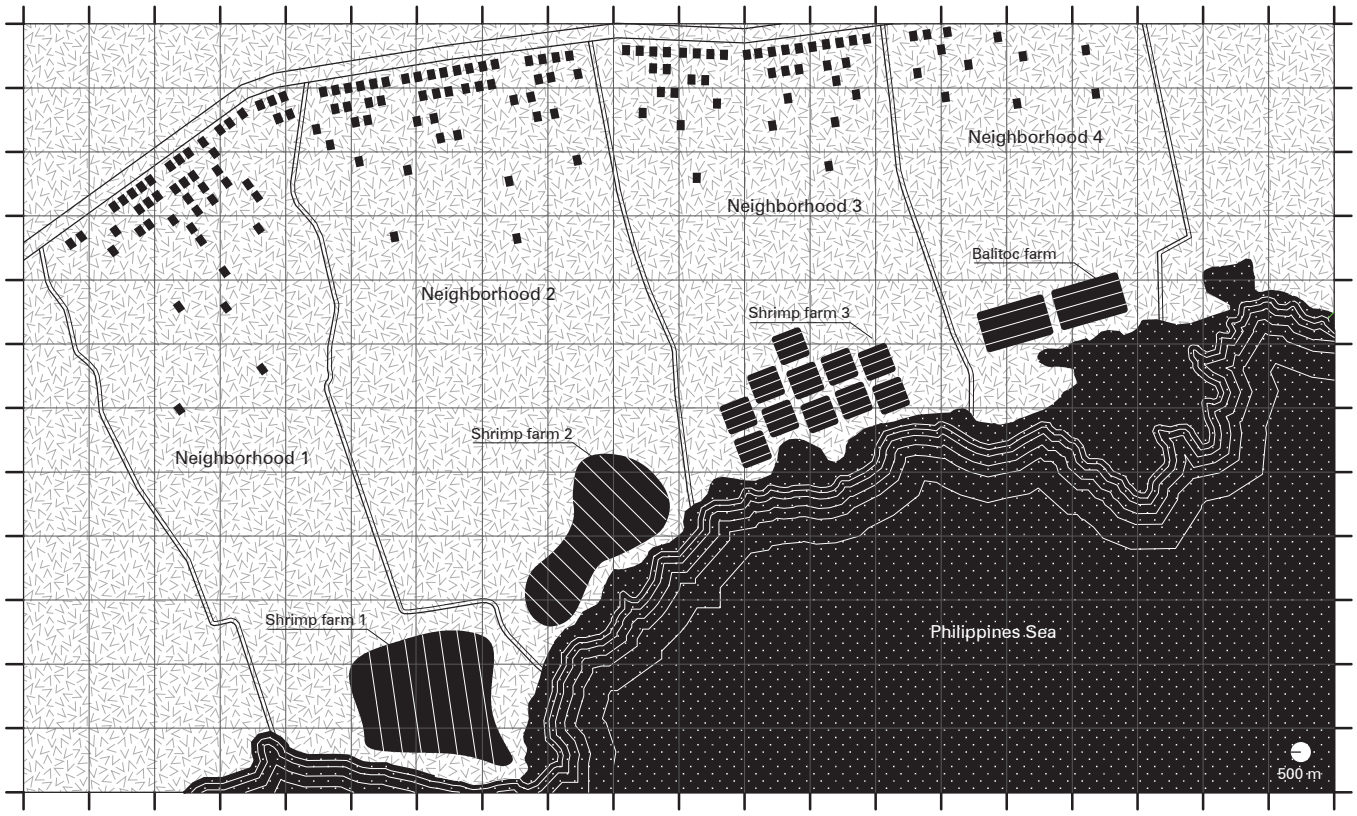
On Automated Aquaculture



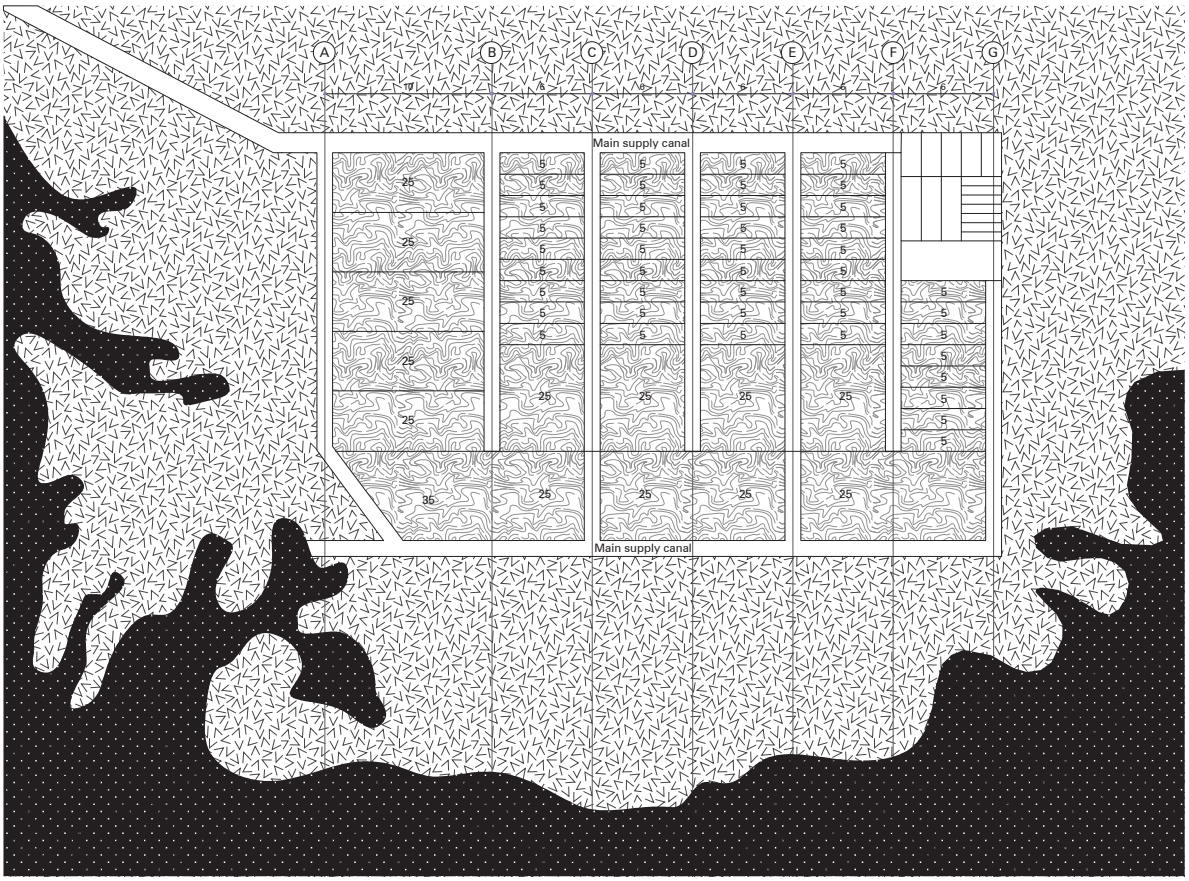
The main program is enclosed in a dark ecosystem.



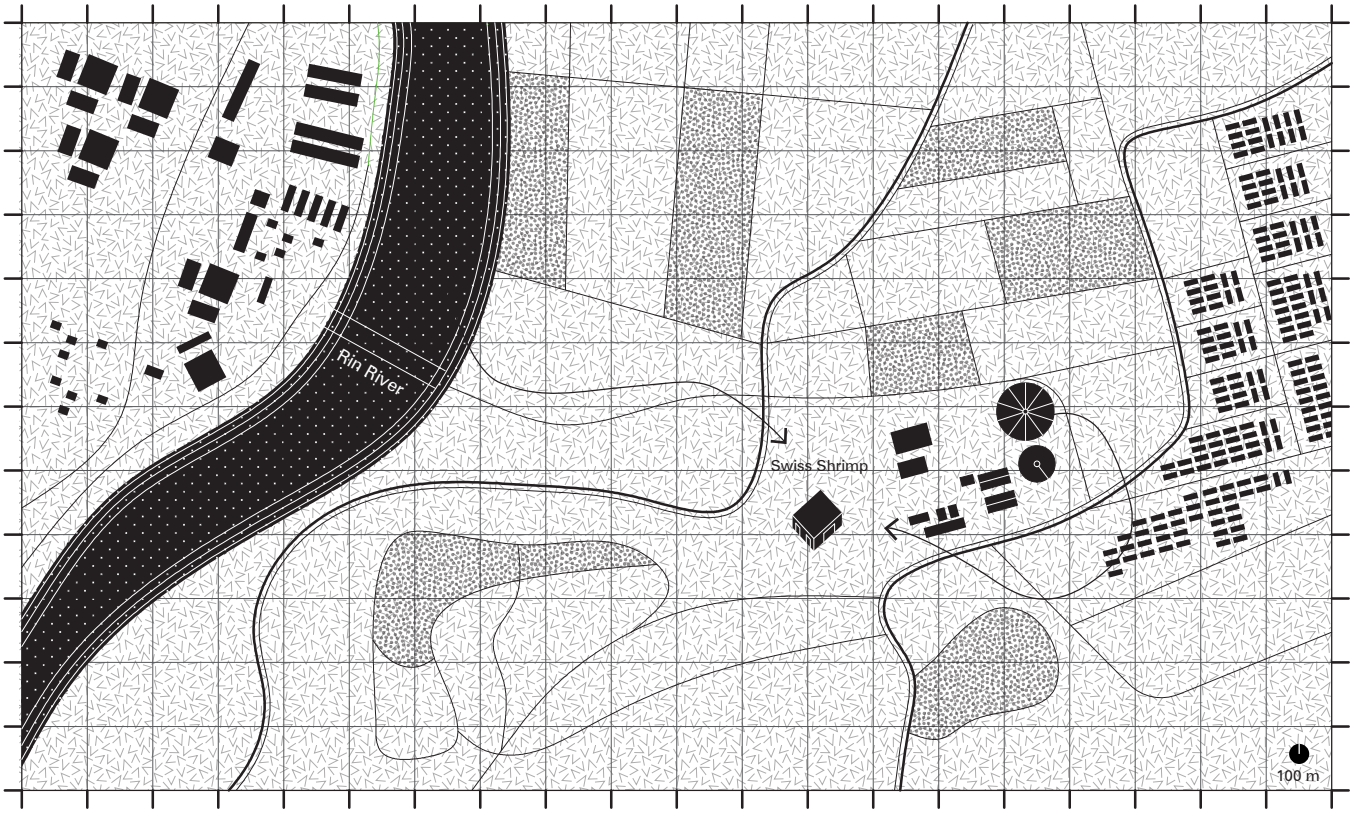
Incorporating zootechnia to the design guidelines, the contribution will be presented through the cyclical reproduction system of the shrimp and the spaces involved.



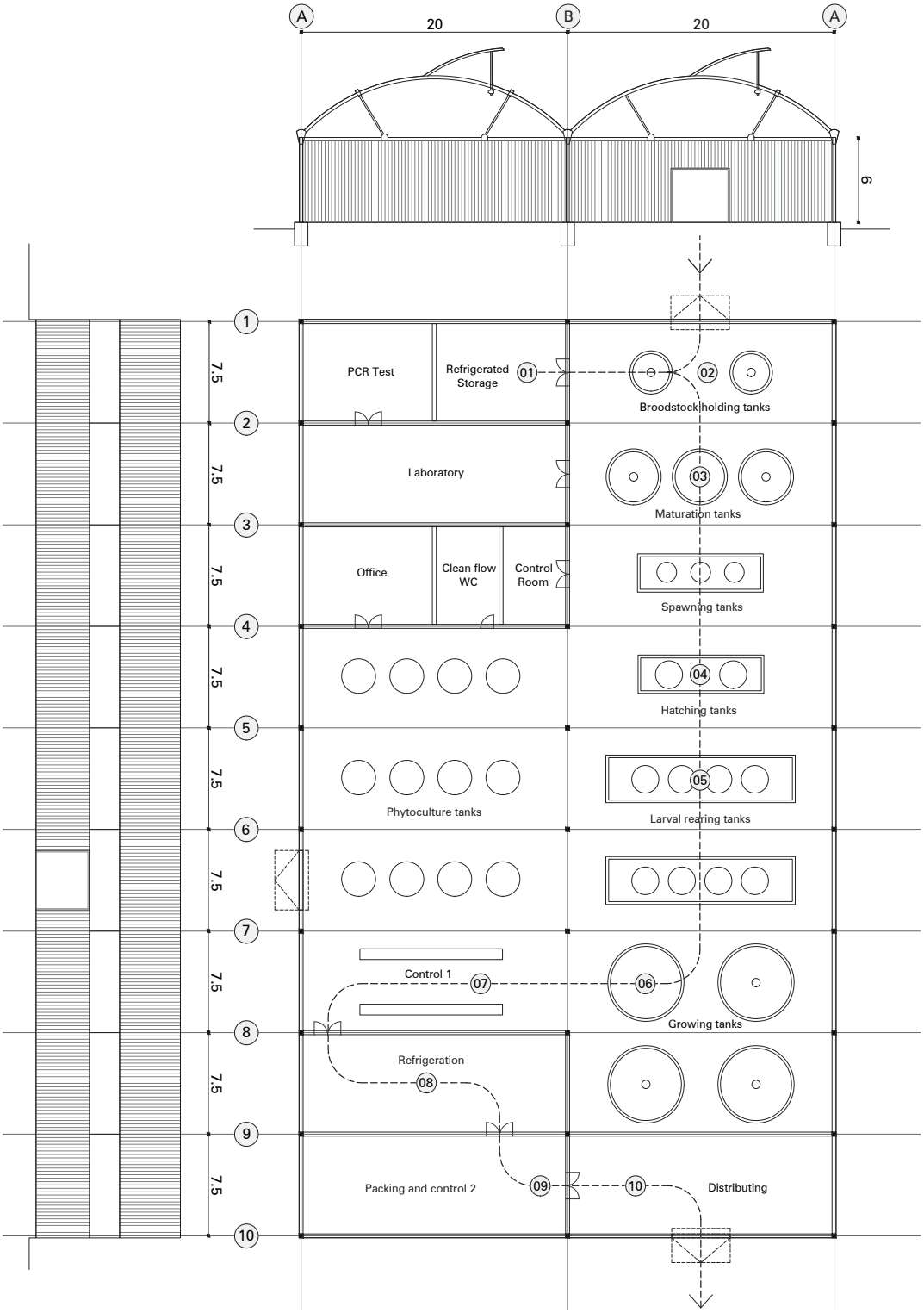
Building type analysis. Ramon's farm in the Philippines.



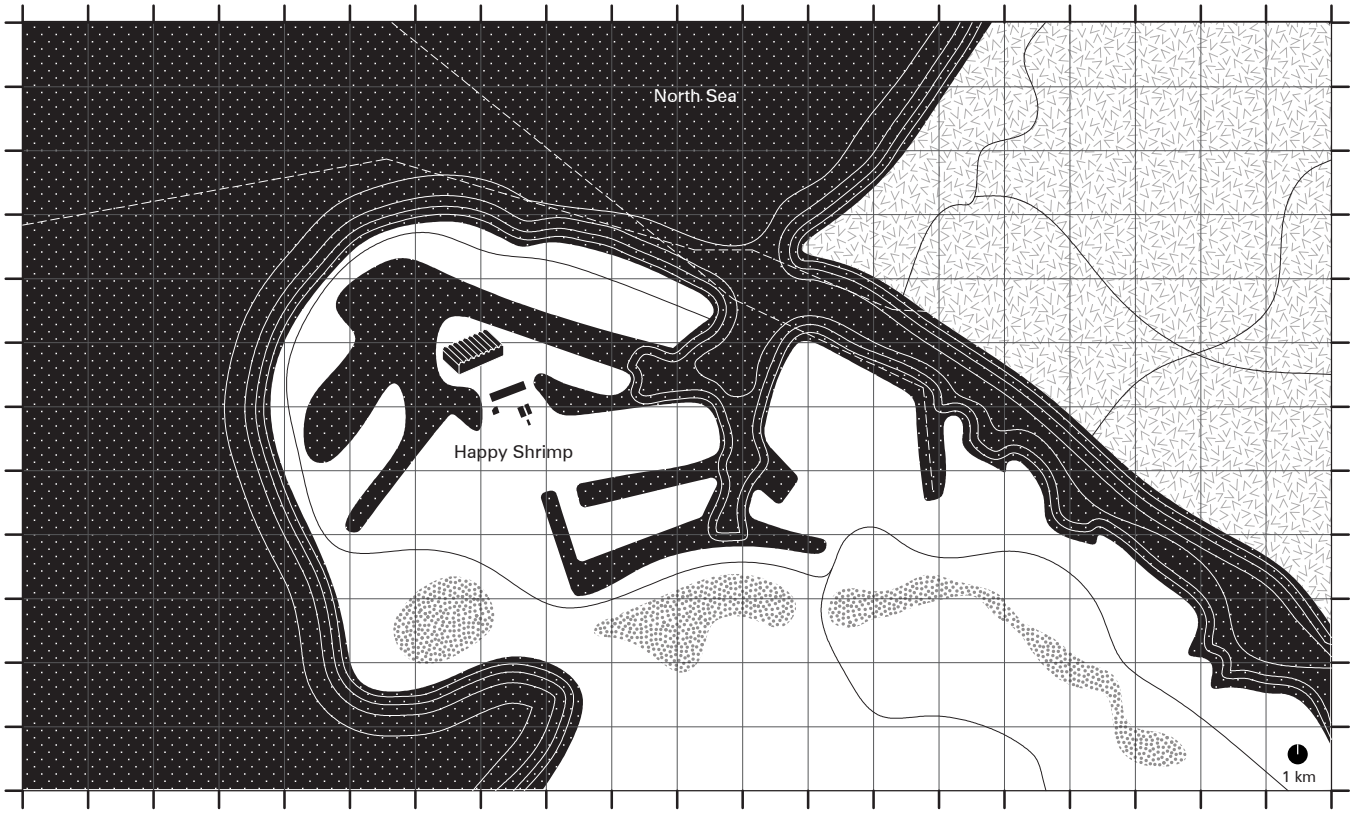
Building type analysis. Ramon's farm in the Philippines.



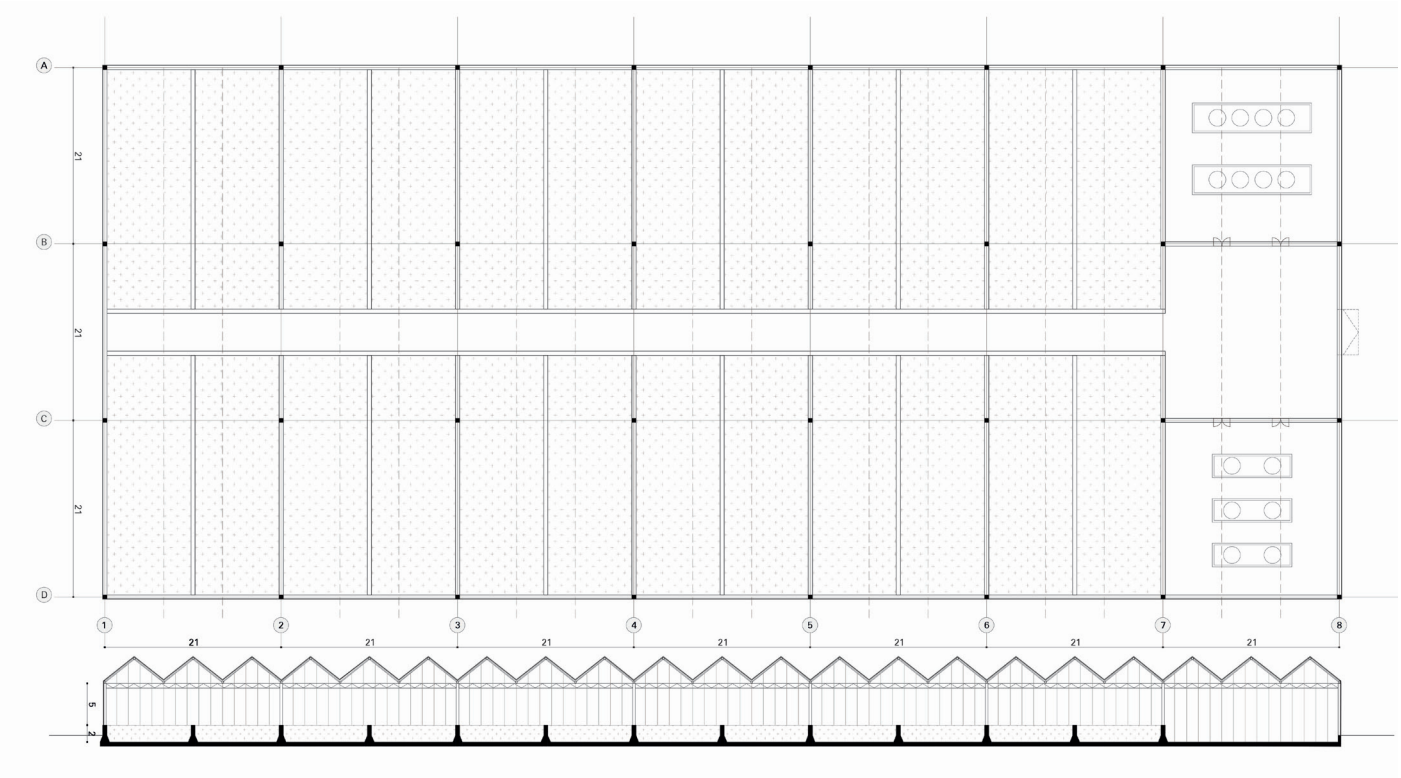
Building type analysis. Swiss Shrimp in Basel.



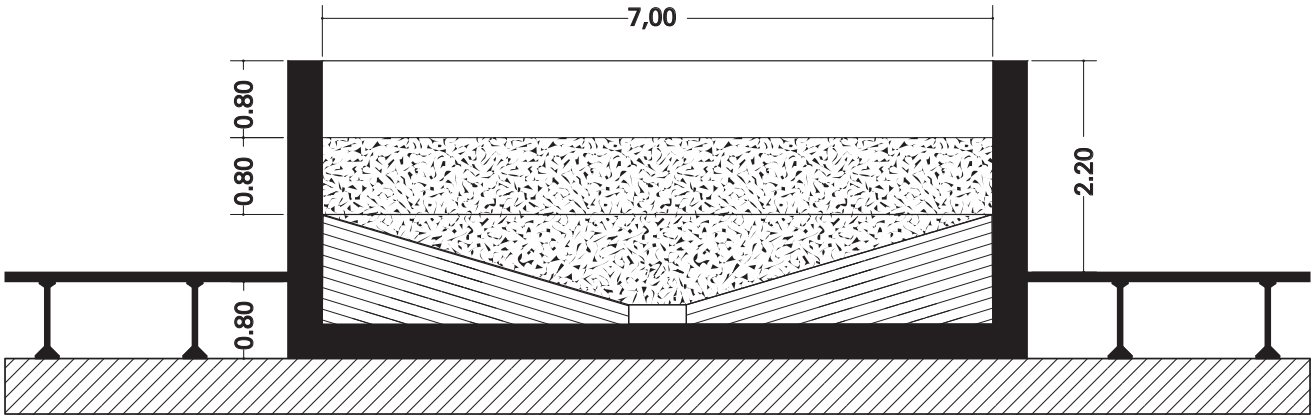
Building type analysis. Swiss Shrimp in Basel.



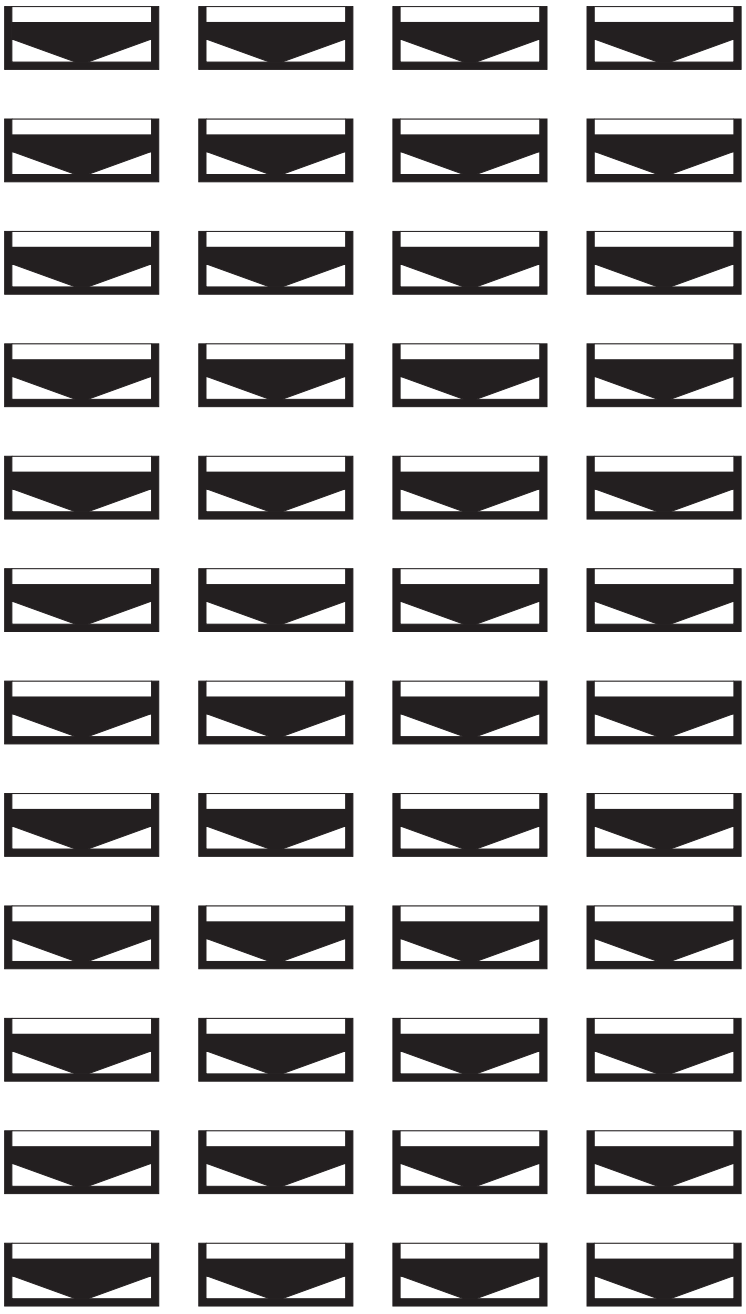
Building type analysis. Happy Shrimp
in Rotterdam.



Building type analysis. Happy Shrimp
in Rotterdam.



Each growing tank measures 50m2
with a depth of 0.8m.
50m2 x 0,8: 40m3
40.000 L water

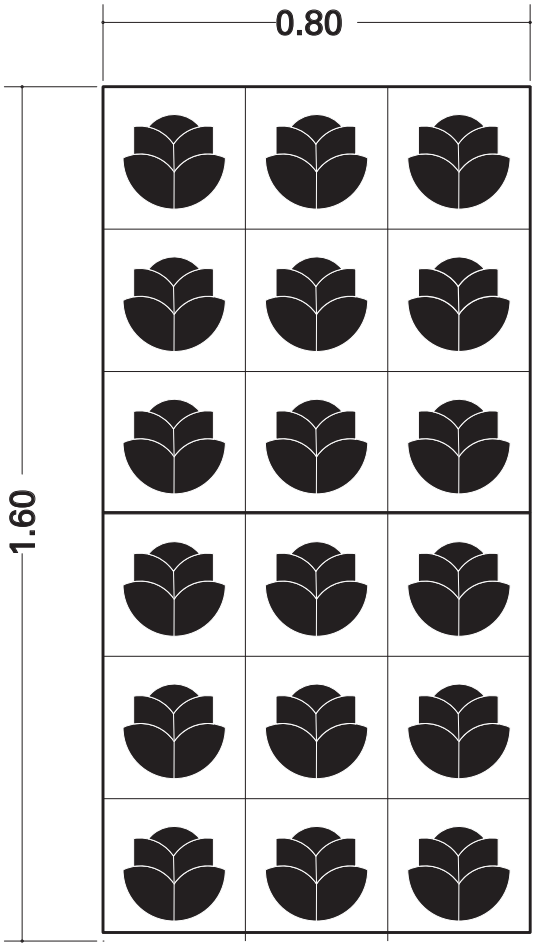


To produce 2 tons of shrimp per week, the growing area has 12 clusters of 4 tanks. Each week, 4 tanks are emptied to be delivered to the supermarket. The 12 clusters respond to the 12 weeks of the trimestrer.

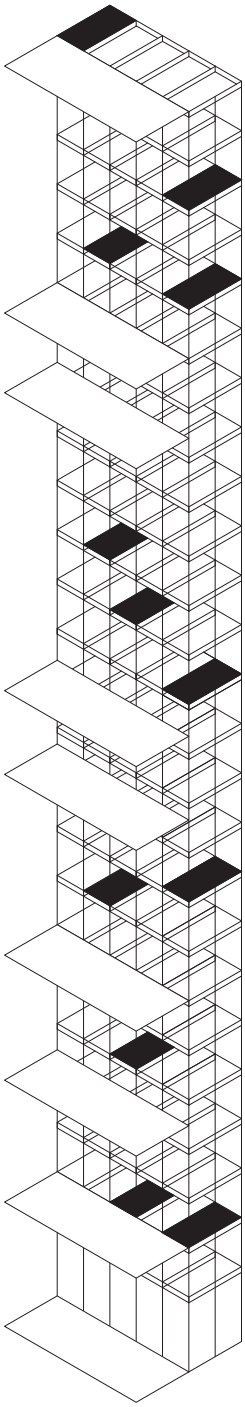
To ensure animal welfare and avoid cannibalism, each tank produces a maximum of 4kg/m3

Each tank grows 960 shrimps

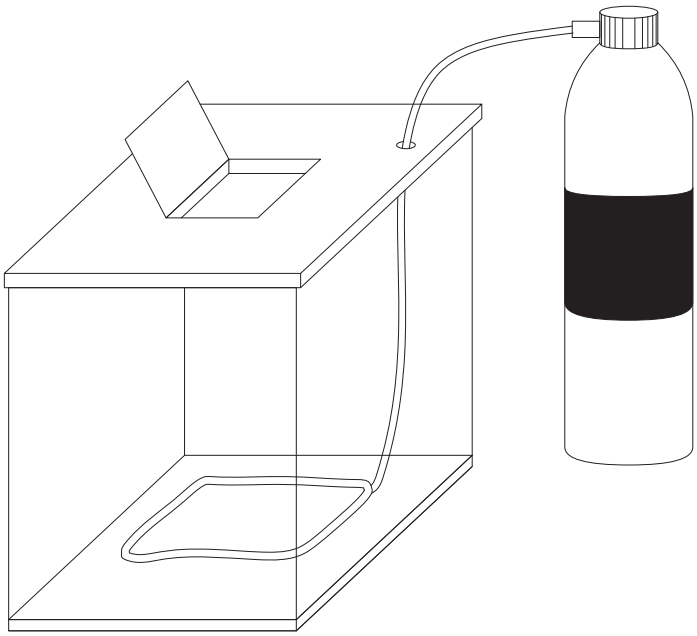
1 kg of Shrimps contains 60/70 pieces



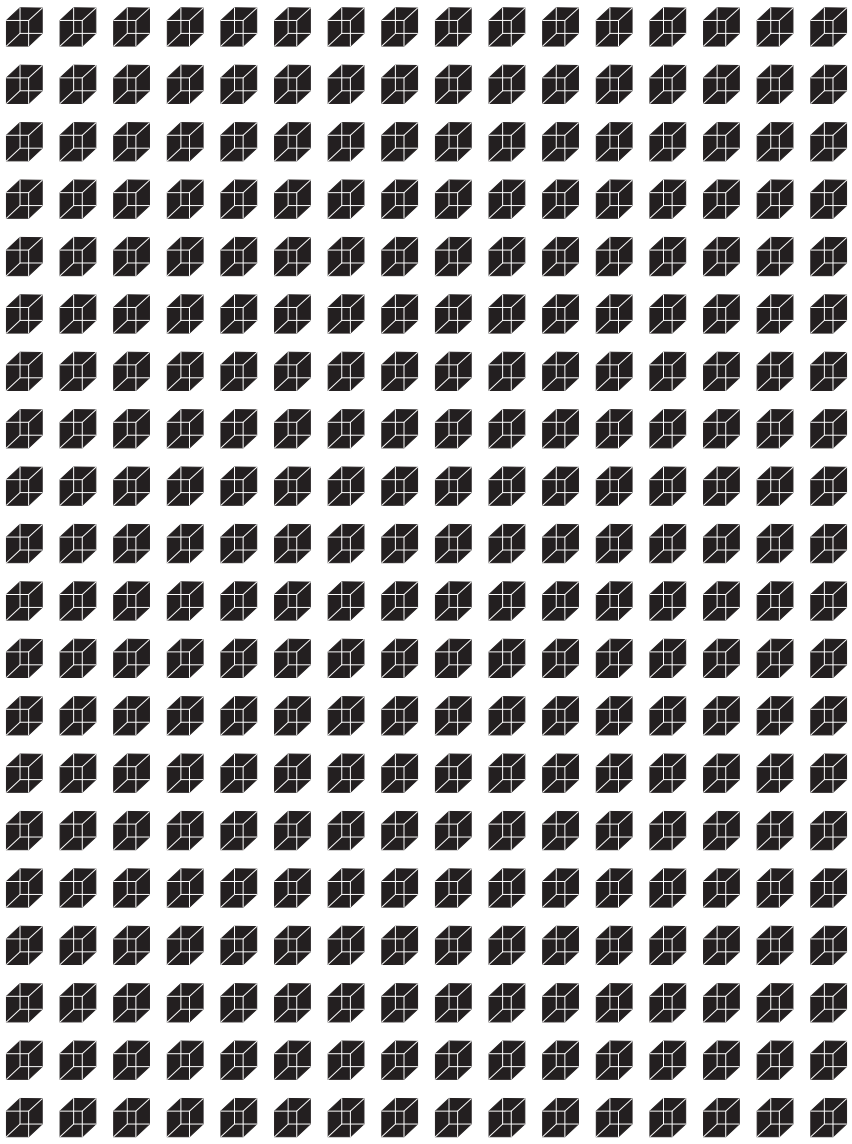
Following the new universal pallet system that responds to the Ocado robot, each aquaponic unit contains 18 lettuces, which need a separation of 30 cm among them to grow in a perfect condition.



The total high of the building contains one vertical unit that responds to the universal pallet system and the structure of the farm. Each vertical unit has 20 floors.



Once they are grown, and after 24 hours of fast, 1kg of shrimps are poured into each of the transportation tanks.



Twice a week, 320 transportation tanks
leave the farm in 32 trucks.

A total of 500 workers come to the facilities every day.

Innovation Director at Landing Aquaculture, Rotterdam

Landing Aquaculture is a Dutch engineering and consultancy company focused on land-based intensive shrimp-farming. Developed from aquacultural engineers to technical experts and consultants who apply a creative approach to engineering with the help of designers.

A: One of the premises of your company is to improve the reputation of the fish-farming sector through sustainable design. Could you elaborate more on this?
C: I will be critical with the claim because you also need to know the reality. The paradox is that efficiency doesn't mean sustainability. The aquaculture sector has a very negative impact on the aquifers. Check the amount of nitrogen and phosphorus that your farm produces.

A: Do you have any examples of sustainable farms that you follow?
C: Of course! Atlantis Miami, Salmon evolution, Columbia Salmon, Noray in Spain, Duurzaam Farm where you should go to eat at Sea Farm.

A: I would like to know the difference between the circular and rectangular tank. Which one do you recommend?
C: The rectangular is more efficient in terms of space but the circular is better for reusing the feces because if it's centrifugal system.

A: Which materials do you normally use?
C: Sandwich panel with insulation, aluminum foam, epoxy coating and a lot of anticorrosive maintenance. You need a constant humidity of 70% so ventilation and heat exchange are very necessary.

A: What is the maximum amount of species per m3 to ensure animal welfare?
C: Don't harvest more than 4kg per m3. If you produce more, cannibalism among them appears.

A: What is your main argument to develop aquaculture in NL?
C: Even if Europe has the biggest coast, they use it for other purposes. Inside the EU, access to the coast is difficult and aquaculture is a way of democratizing fish production.

A: What about the term carrying capacities?
C: These farms (RAS System) consume 10.000 times less water than the traditional ones in Asia and they consume less space. However, there are some quantities that need to be taken into account like the soil conditions, proximity to a river° Not every context can produce the same amount of shrimp/sq meter.

Karlanae Brown, Head of production in RM Farm, Indiana

RM Shrimp Farms, located in Indiana, is a sustainable controlled environment farm. They mix biology, environmental science and chemistry to produce HOSO (Head on shell on) Shrimps ensuring animal welfare and freshness.

A: In the youtube video where you present your company you introduce the necessity of buildings more shrimp farms in the future. Why is it safer growing shrimps on aquaponics than fishing them in the ocean? I've been reading that when we eat wild shrimps we also eat microplastics..
K: Indeed, that is one of our premises to talk about our product. My water is very clean!! The only thing is: water, salt, baking soda, feed, bacteria consumption. Our shells are thinner and more transparent.

A: Checking how to compete with the existing market, I would also like to produce HOSO White Pacific shrimps. How could I communicate the benefits?
K: Having the head ensures more freshness! So yes, it's better to sell it with the head. If you cook it with the head the flavor is much more fresh. The digestive system occupies the whole body, in fact they have the stomach in the head, that's why they are so tasty!!!

A: The North Shrimp Corridor (Belgium, Germany and The Netherlands) consumes frozen and ready to eat shrimps. How did you educate people in Indiana to rely on your gray ugly shrimps?
K: We needed to educate people at many supermarkets. Cook the shrimps there in front of the customers.

A: Many people are concerned with the smell, that's why they prefer to buy frozen or cooked shrimps at the supermarket.
K: With your farm you can control the water so it doesn't smell. That funny smell disappears.

A: Could you elaborate more on how you feed and fish the animals?
K: High humidity in the barn will snap the automatic feeders, so we need to hand feed them 3 times per day. Then we fish them with a net because it's the way that stresses them the least. Much higher survival.

A: How do you ensure a continuation of the production without emptying the tanks?
K: My water is 11 years old. I need to keep all the bacteria ok. As everything is in suspense, everything is ok. For that we have a sedimentary tank where all the extra metaria goes. Pvc pipes are used to connect the tanks to the sediment tank. When there is 5-10 pounds left, we move them to the same rotation tanks, we clean them and we put water again coming from the RAS. We don't use chemicals but I cannot lose the bacteria, we use eutrophic/probiotic. We need to keep everything in suspension.

A: You are also selling live animals. Could you elaborate more on the logistics and timing?
K: The ice packs can last up to 5 hours once they are harvested so the customer needs to drive less than 5 hours. They are made of recycled containers so they can go into compost. No chemical ice packs because they can contaminate the product. Then the shrimp after 2 hours inside the ice pack die so the consumer needs to wait for 2 hours. If we process them I compete with the importers and that makes no sense.

A: Do you feed your shrimp with antibiotics or hormones?
K: no!! Our product is completely transparent. All our business is word-to-mouth.

A: What is the amount of time that the shrimp is fasting before arriving at the aquarium? I would like to know if the animals pass through the Distribution Center.
K:24 hours maximum without food. They start killing each other if they are not fed. So, on the same day they need to arrive at the supermarket. I don't think that your product should go to the Distribution Center, be sure you have a vet at the supermarket but that's it.

A: How many times per week do you deliver the animals?
K: You need to have deliveries every 2 or 3 days and know the consumption. Just bring more in special dates like St Patricks or Christmas. Delivery on Fridays…

A: How does the rotation tank system work?
K? Our normal rotation is 5 tanks every month, but in December we have 8 tank rotation per month.

A: How are the farms built?
K: Very well insulated. 5-6 inches of concrete in the floor, 1 inch of spray foam in the whole building, vapor barrier, duraplay stainless steel is what they use for semi trucks. 26 inches in the ceiling and we heat radiant heat inside the tanks with pipes. We heat the water only and we use plastics over it to keep the heat.
82-84 percent humidity fahrenheit, 82 degrees fahrenheit.

A: I've seen that the farms don't even have a window!
K: Windows never!! That produces algae inside the tanks

A: What about artificial lighting?
K: Don't use total darkness. The lights are 24-7 as the moon light in the room. Dimmers on the top of the tanks.
We need to simulate the sun and the moon.

A: Did you try aquaponics?
K: We tried 11 vegetables but we did better with the Mangrove trees. The problem is if the veggies take too much of the bacteria. They grow in the same space and you use plant lights.

A: How did you compete with the niche market?
K: You cannot compete with the processed shrimps. Your product is a speciality that people know everything about the farm. Our business is increasing a lot because people want to know about traceability

A: What about the use of salt?
K: We use Instant ocean. Each tank takes (14 feet) 455-470 pounds of salt 18 feet (700 pounds)
15 ppt (normally is 22ppt) the ocean is around 30 ppt but its very expensive to get the salt shipped. We don't lose the salt, it is also reused. Nursery division needs salt every month because it follows the intermediate tanks. Every month we receive new babies.

A: Thank you so much for your time. I will keep you updated!
K: Doing your own hatchery is really sophisticated and difficult so please contact me if you have more questions! It will be nice to see that another farm is developed in Germany where the cold temperature will be a challenge. Good luck Ana!

Expert on Environmental Justice and ecosystemic urbanism based in New York

The Urban System Lab applies socio-ecological analysis to urban ecosystem services and environmental risks, with special focus on their spatial attributes and their links to ecological justice. They are experts in concepts such as Ecosystemic Approach and Carrying capacities taking into account the relation between humans and other species.

A: My point of departure is the necessity of a new compactness and the question of scale of forms in the aquaculture industry.

P: There are many examples and in many cases of which the hyper-densification of livestock farms is a very big problem without perhaps damaging the landscape so much. All the waste generated by the pigs is the animals that are being farmed, it is highly concentrated. and that can cause a worse impact on the environment. It's like, for example, having a single diffusion point for all the nitrates and phosphates generated by the pig and all the wastewater that is also generated.

A: Could this have a bit to do with the concept of Carrying Capacities?

P: Exactly. In Sweden I studied Community Ecology, and you should add it to the speech. The concept of Carrying Capacities is studied with bacteria. Those bacteria have to feed, reproduce and eat. How many bacteria can you have in that test tube? What are the factors that limit its growth? You may run out of space or food… If there are too many bacteria, there is too much competition to reproduce.

For your farm, tanks are your ecosystem. What is the most you can produce?

P: 4kg per tank to avoid cannibalism. What would be the relationship with extinction?

P: For practical purposes, your project is aquaculture. How does it influence the prosperity of the natural fishing grounds of the oceans? Do you have to start by talking about how the natural shrimp is fished? Trawling destroys coral reefs. it is not a selective fishery and it drags the habitat of the fish. Dan Barber's ecosystem approach tries to manage ecosystems by mixing many types of species. In your ecosystem approach, in addition to encouraging less plastic to be released into the sea, one of the measures is to stop fishing and that is your ecosystemic approach. You combine Life Cycle Assessment and Material flow analysis. How much waste is generated? Do you consider the use of excrement? You have to see beyond production... Can't you produce species that you later release into the ocean?

A:I have read several articles from the BBC.. some people do it already

P: Think further. How can the building be a new ecosystem?
You are surrounded by farm fields that cause a lack of diversity. You can talk about birds or bees that benefit from your ground cover. Your building is in a place very affected by anthropization so you have to do better.

A: The farm works with the waste heat from the existing factory. But it can restore the insect biodiversity of the area like what happens in Zollverein. The landscape project in a brownfield site is fascinating.

P: Exactly! Add these concepts and the project will be more powerful.

1. Richard Ingersoll, “The Day After; Pandemics and the Anthropocene,” Arquitectura Viva (June 2021) :36.

2. Gerardo Ceballos, Paul R. Ehrlich, Anthony D. Barnosky, Andrés García, “Entering the Sixth Mass Extinction,” Science Advances (June 2015) 1-5.

3. Colin Nash, The History of Aquaculture (EEUU:Wiley-Blackwell, 1865).

4. Edward Roberts, “The Bishop of Winchester’s fishponds, 1150-1400: their development, function and management,” Hampshire Field Club Archeology (1986) 125-138.

5. Richard C. Hoffmann, “Economic Development and Aquatic Ecosystems in Medieval Europe,” The American Historical Review (June 1996) :646.

6. Angela Rui, “Aquaria, or the illusion of a boxed sea,” Mat Extended, published February 17, 2021, https://ext.maat.pt/bulletin/aquaria-or-illusion-boxed-sea

7. James G. Bertram, The Harvest of the Sea (London:John Murray, 1865), 86-90

8. FAO, “The State of World Fisheries and Aquaculture 2020,” Food and Agriculture Organization of the United Nations, 2020, http://www.fao.org/state-of-fisheries-aquaculture

9. Donna Haraway, “A Cyborg Manifesto: Science, Technology, and Socialist-Feminism in the Late 20th Century,” in The International Handbook of Virtual Learning Environments (Dordrecht, Springer, 2006), 149-181.

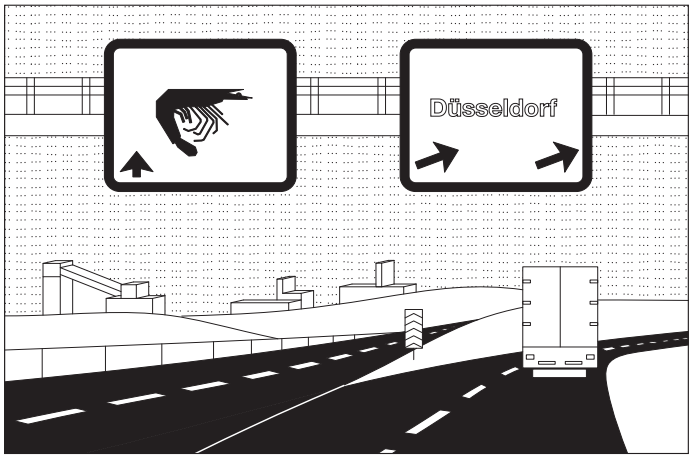
Description

Pink is not a Color envisions a new land-based shrimp farm which develops further indoor aquaponics to provide animal welfare and a balanced relationship with the biosphere. Responding to an increasingly pescatarian society, its aim is to eliminate the practice of unsafe traditional fishing which provokes marine extinction while creating a new collective understanding of an indoor ocean.

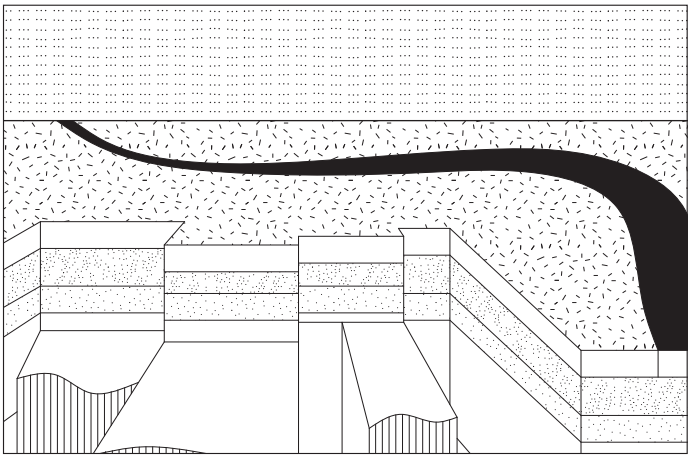
Germany, a country inside the Blue Banana and the biggest producer of salt in Europe, perceives the new prototypical network as an strategy that works in symbiosis with the existing salt factories through the technique of industrial ecology—which involves the creation of partnerships with other industries for the purpose of sharing resources. The existing Borth Salt Mine, the soil conditions of the area, and the Rhine River make Rheinberg an ideal location for the first pilot case, adjacent to the fundamental resources—water and salt.

The historic conflict between intensive and extensive farms, calls for a new approach to 'compactness' to be developed and for a new building type to emerge. As a response, the vertical farm strives to reconsider the relationship between aquaponics and the planet extinction through the use of water recirculation and the harnessing of animal disposal to grow green leaves. Additionally, the three-month shrimp growing cycle determines a repetitive rhythm that combines animal welfare with productivity. Three different environments compose the functioning of the building: the animals' ecosystem, the green leaves automated façade and the humans' facilities. While the artificial ecosystem which resembles the Ecuadorian mangroves is contained in a dark and sealed box that accommodates the productive program, the adjacent spaces destined for the workers are located on the rooftop providing a new interaction with the industrial landscape.

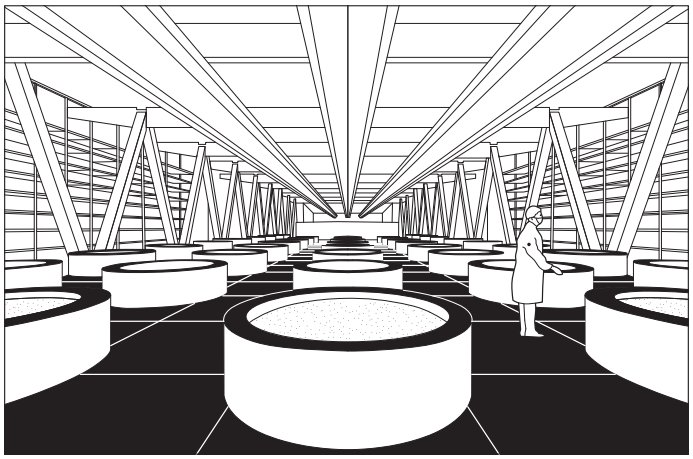
This contribution explores the opportunity of improving the reputation of the shrimp farming industry, welcoming to the building not only students and researchers, but also shrimp tasters who experiment the blurred boundaries between artificial and natural. Supplying directly to Albèrt supermarket in Delft, the contribution provides a new interaction with live animals at the sales floor, where controlled ponds display natural shrimps, showcasing the future of land-based aquaponics.



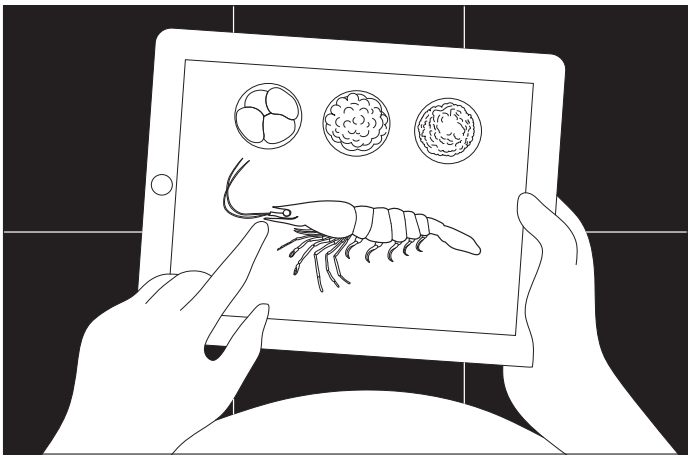
Due to an increasing pescatarian society, per capita consumption of meat is set to drop to the lowest levels. To accommodate the growing demand for shrimps, a new White Pacific Shrimp network connected to the existing North corridor for crustaceans will produce 78.500.000 tons of fresh land-harvested shrimps per year to reduce the bycatch provoked by traditional fishing.



Germany, a country inside the Blue Banana and the biggest producer of salt in Europe perceives the new shrimp network as a system that works in symbiosis with the existing salt factories with the purpose of sharing resources. The three biggest German salt mines incorporate land-based aquaponic farms in a phased strategy that starts with the pilot case of Rheinberg.

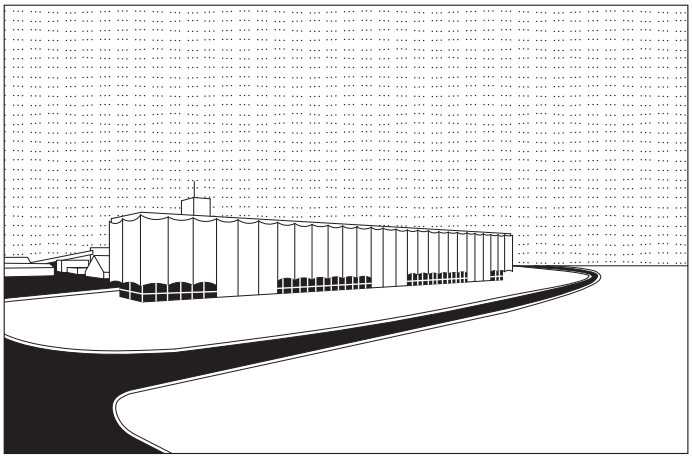


The dark volume composes the main area of the building, where the breeding, growing and harvesting takes place. After the maturation ends, the eggs are poured into the nursery tanks with a water temperature of 30 degrees. Salt tablets provided by the adjacent salt factory are added in the water contained by the recycled concrete tanks perched on the top of a technical floor.

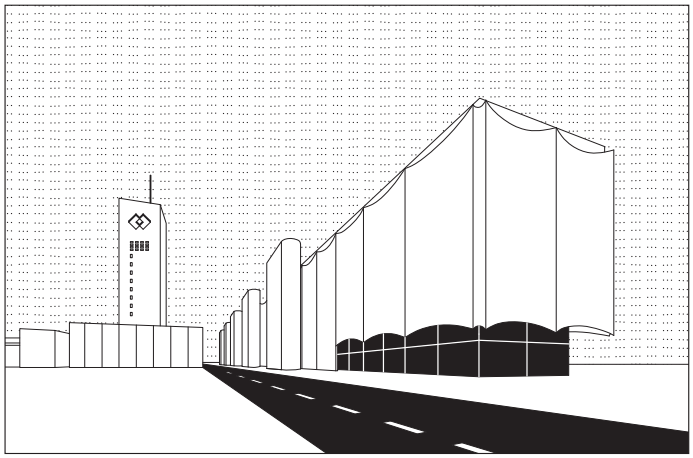


112 days. 16 weeks is the amount of time needed for a farmed White Pacific Shrimp to grow and be distributed. After the first month, the farmer controls the complete cycle of two months for growing thanks to the monitored feeding and health control. Each year, three shrimp crops take place by two mandatory weeks for maintenance.

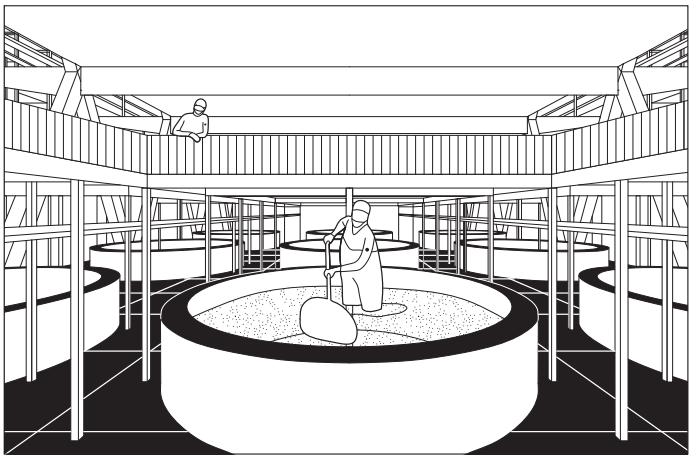
Presented in a set of spatial narratives, the contribution of a land-based aquaponic farm, depicts the modified supply chain of shrimp production which reconfigures the future supermarket—Albèrt—on Martinus Nijhofflaan in Delft.



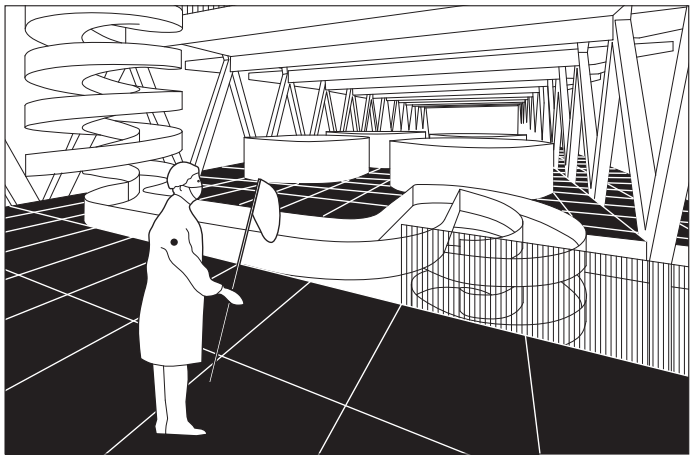
The existing Borth Salt Mine, the soil conditions of the area, and the Rhine River make Rheinberg an ideal location, adjacent to the fundamental resources–water and salt. The monolithic volume of the aquaponic farm works in tune with the existing industrial landscape that is perceived from the highway as part of the actual master plan.



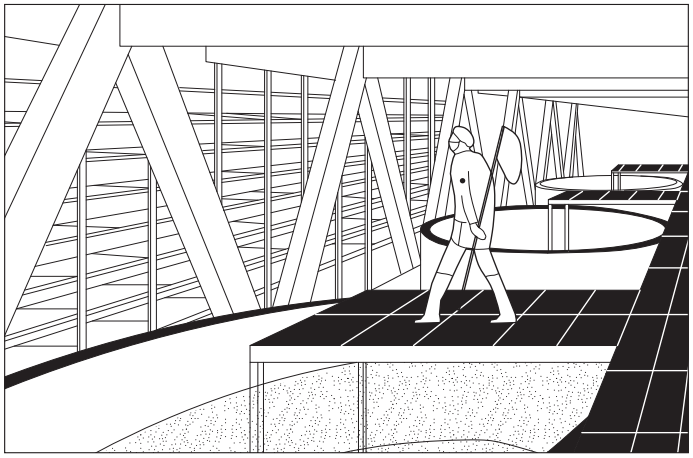
The building consists of three different environments. The dark volume which encloses the controlled ecosystem capable of mimicking the Ecuadorian mangroves, the luminous areas located on the rooftop and the logistical ground floor which is connected to the roads that surround the new shrimp farm.



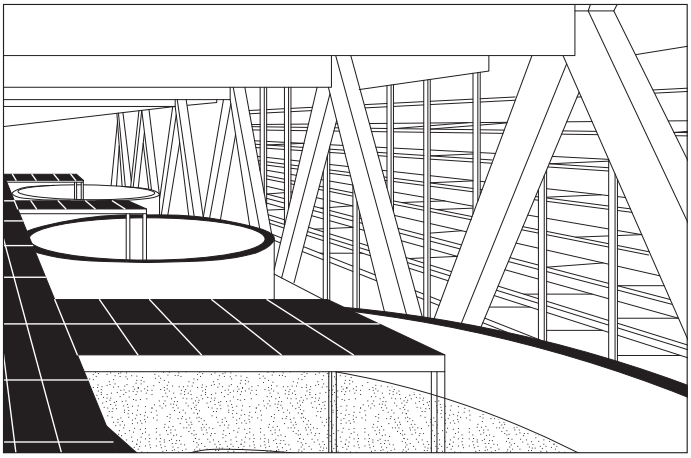
The nursery tanks are carefully controlled by the farmers and the students who combine the theoretical lessons that take place in the pavilions with practical work that take place in the dark and sealed volume.



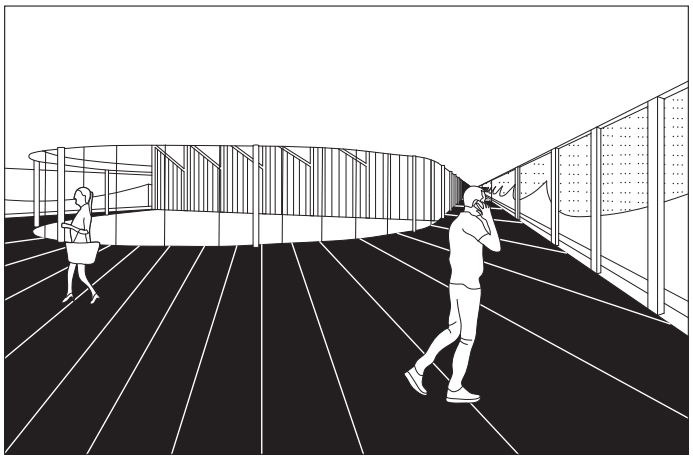
Mimicking natural tides, vertical spiral conveyor belts transport the shrimps from one floor to the next one avoiding animal stress.



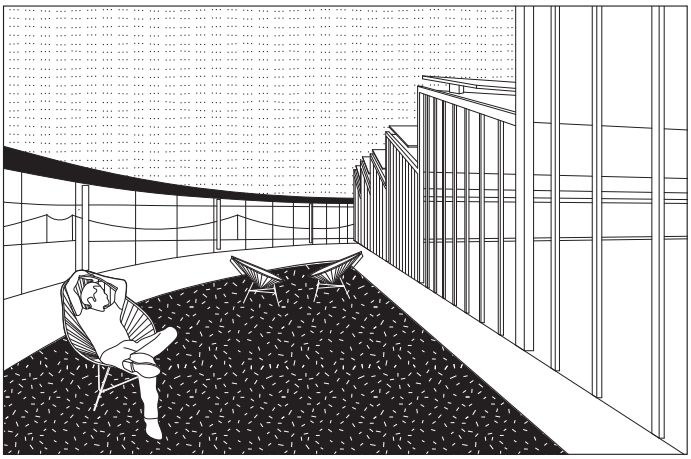
The beauty of repetition and scale brings spatial qualities to the growing area, where the larvae are placed during the 4th week. With a water temperature of 28 degrees, the tanks are accessible for the farmers who develop the act of hatching while walking inside the water.



The sturdiness of the tanks are combined with light walkways creating two different levels to separate the clean circulation from the production space. Future farmers use this level in order to have a controlled view of the process observing the harnessing while circulating through the elevated structures.

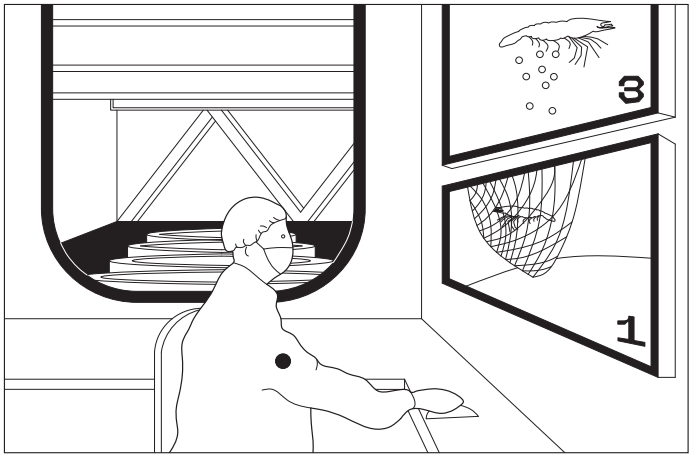


Responding to the working breaks that take place every two hours, facilities are located on the rooftop ensuring a healthy life for the workers and providing spectacular views of the industrial area. From the transitional lobbies, the gardens and pavilions are recognized and surrounded by the presence of the curved façade.



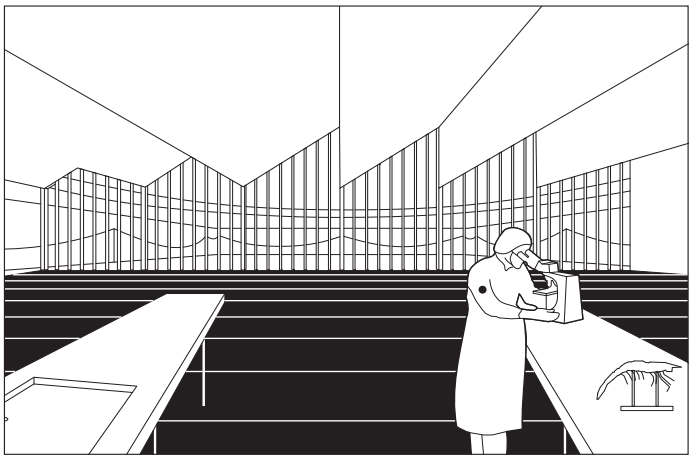
The exterior gardens function as extensions of the specific pavilions bringing nature inside the building. Six different courtyards are attached to the leisure and learning areas working as additional programs for the humans.

Presented in a set of spatial narratives, the contribution of a land-based aquaponic farm, depicts the modified supply chain of shrimp production which reconfigures the future supermarket—Albèrt—on Martinus Nijhofflaan in Delft.

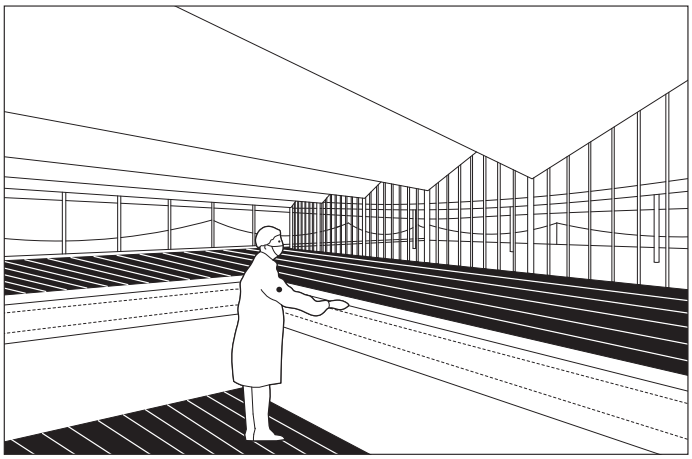


From week 12, the shrimp fishing starts. The farmers walk inside the tanks capturing the species with the net. The artificiality of the environment is controlled from the monitoring room in which the species to be hatched are carefully selected according to the deliveries.

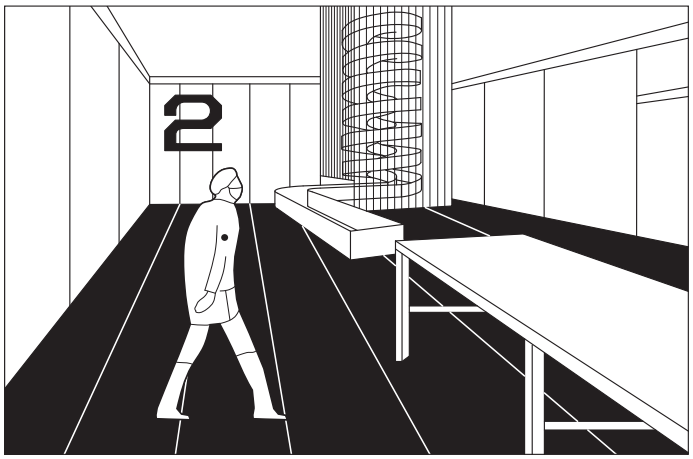
From the 8th week, the aquaponics start the growing process. The water is pumped out of the shrimp tanks into aquaponic beds creating a closed-loop water system through which the shrimp provide nutrients for the plants and the plants clean the water for the shrimps.



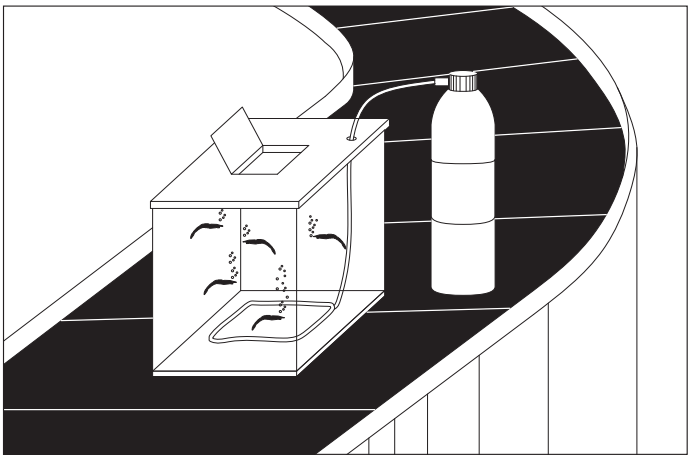
Standing next to the training center, the laboratories function with indirect light provided by the saw tooth rooftop. Long stainless steel tables organize the space and ensure hygiene for the performance of the dissection of the crustaceans.



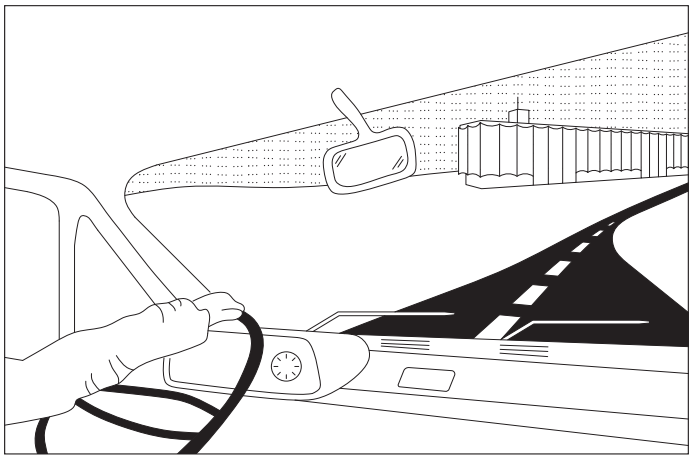
The workers canteen is open to the visitors who come to taste the fresh shrimp farmed in the middle of Germany sharing the space with the workers. The food circulates on the top of conveyor belts that connect the tables enabling a dynamic atmosphere where fresh food moves through the space.



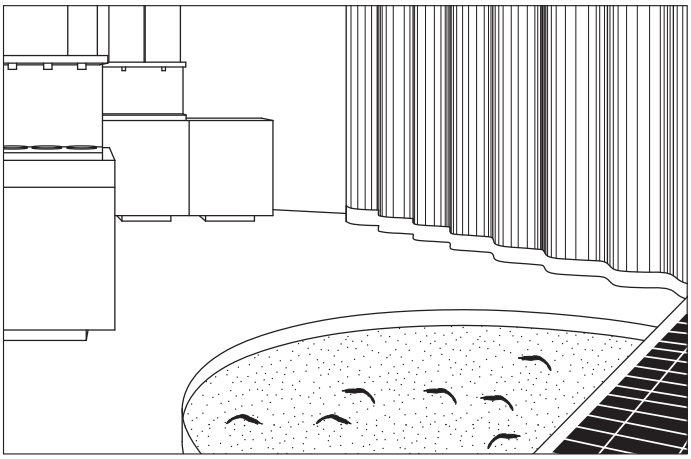
Once the products are grown, they are vertically transported to the ground floor, where the control and the labeling take place. This floor illustrates the dynamic functioning of the trucks, which form a choreography with the control system and the vertical production.



After spending 24 hours in the fasting tanks, clusters of 50 shrimps are located in 1m3 tanks made out of plastic. Accompanied by an oxygen tank, the animals travel without food in their stomach to avoid a high level of nitrogen provoked by the fece

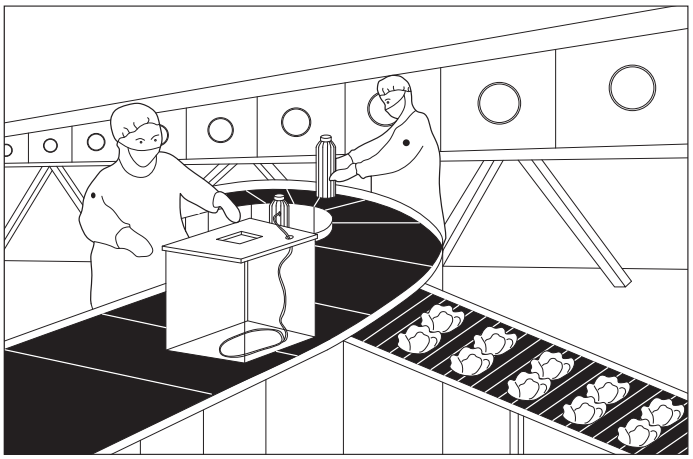


During the first 100 km the truck crosses the industrial landscape of the Ruhr Basin where the new volumes adjacent to the salt factories are perceived. Regularity, infinity, the absence of center and seriality compose the new monolithic constructions that blur the boundaries between artificial and natural, creating a new collective understanding of the ocean and the culture of fishing.

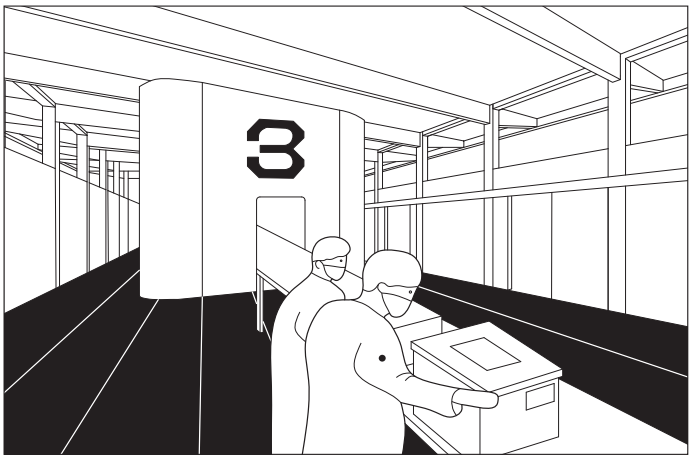


At the supermarket, the ambient display of live seafood showcases the highly controlled and technified aquaponic shrimp farm designed to resolve fish extinction. A new relationship between humans and animals takes place in the supermarket.

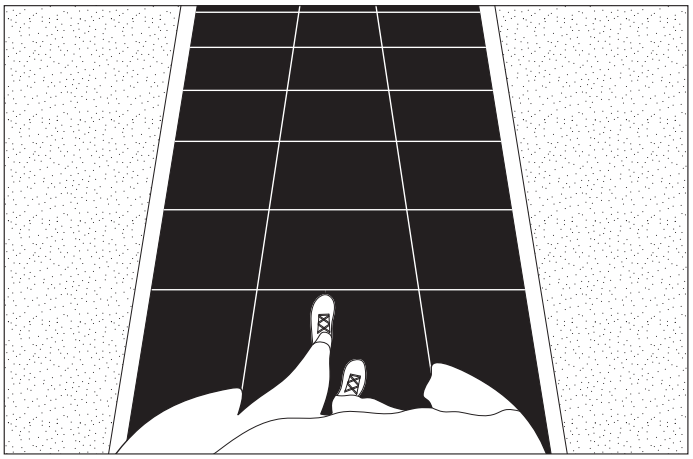
Presented in a set of spatial narratives, the contribution of a land-based aquaponic farm, depicts the modified supply chain of shrimp production which reconfigures the future supermarket—Albèrt—on Martinus Nijhofflaan in Delft.



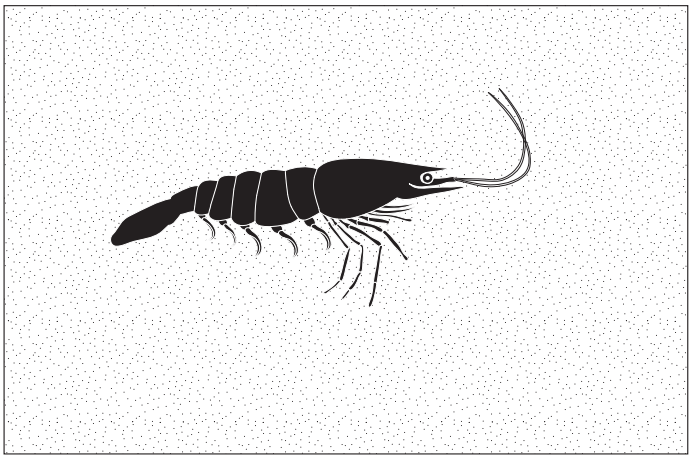
The processing lines combine the green leaves and the animals in the same space. After being placed inside the tanks, the oxygen tanks are checked, and the lettuces are cleaned and placed in pallets. The room has a temperature of 20 degrees for the shrimps to slowly acclimatize to room temperature before they arrive at the supermarket.



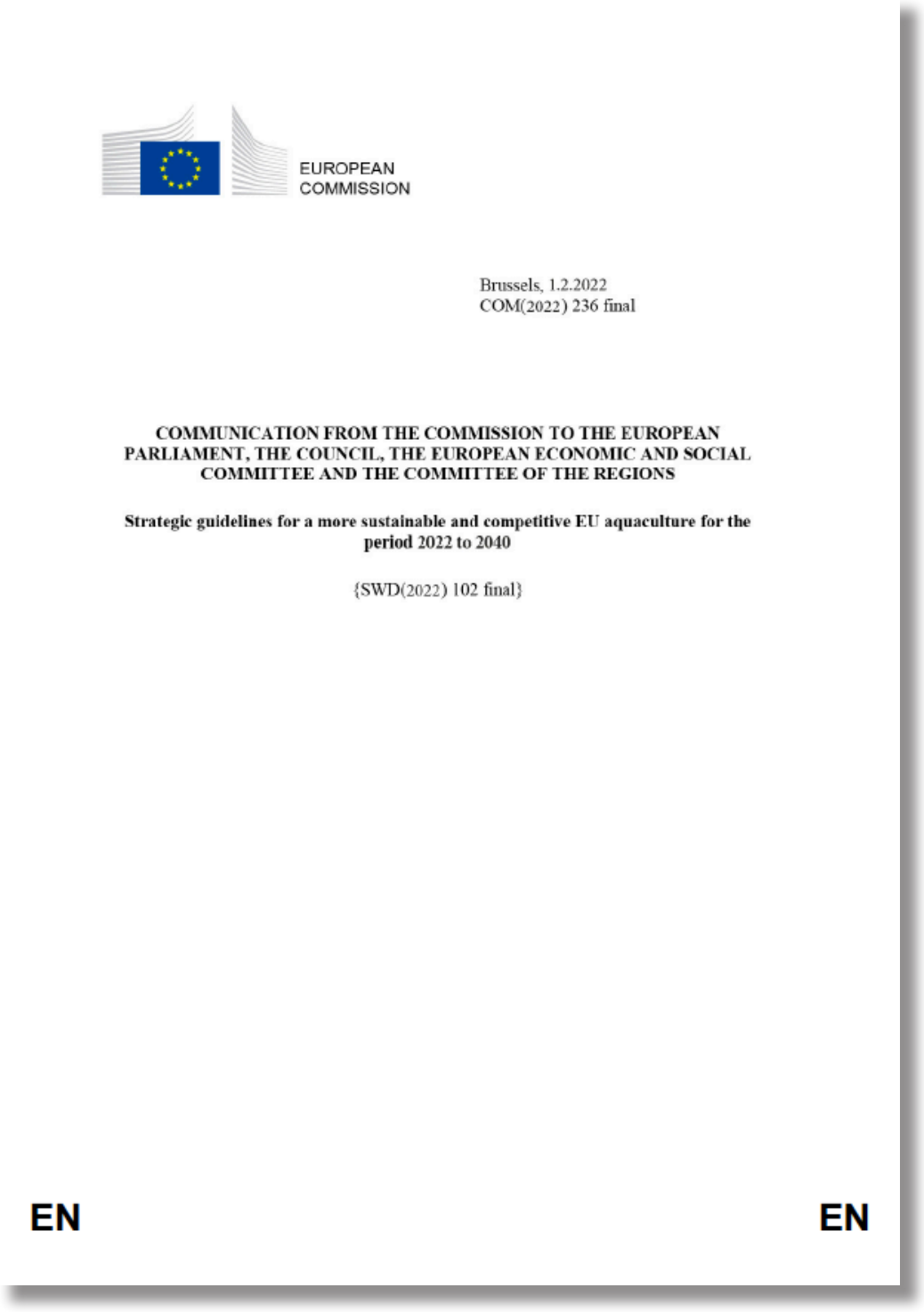
The last control and labeling take place in a space with direct access to the storage area composed by a repetitive interior façade. The label Farmed Responsibly responds to the animal welfare and the zero-waste approach of the factory.



The consumer experience is enhanced by the walkways that cross the shrimp tanks. Surrounded by water, the consumer selects the species to buy, understanding a new way of circular farming.



Live and natural shrimps swim inside the water tanks. Through the purified water, the consumer observes the pigment-free colors of the species, which are displayed in their artificial habitats which produce a new collective perception of freshness.



EUROPEAN
COMMISSION

Brussels, 1.2.2022
COM(2022) 236 final

COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS

Strategic guidelines for a more sustainable and competitive EU aquaculture for the period 2022 to 2040

{SWD(2022) 102 final}

EN **EN**

A communication from the European Commission to the European Parliament establishing the strategic guidelines for a more sustainable and competitive EU aquaculture for the period 2022 to 2040.

1. THE NEED FOR A NEW EU STRATEGY FOR AQUACULTURE

The European Green Deal and the Farm to Fork Strategy underline the potential of farmed seafood as a source of protein for food and feed with a low-carbon footprint which has an important role to play in helping to build a sustainable food system. The Farm to Fork Strategy also sets specific targets for aquaculture, in particular the reduction of sales of antimicrobials[1] and a significant increase in organic aquaculture[2].

In 2040, the consumption of meat will drop to the lowest levels. Due to an increasing pescatarian society, the global seafood consumption will reach a level of 25.5 kilograms per capita in 2040, and thereby maintain a year-on-year growth trend that has already spanned 60 years, with increased fisheries and aquaculture production and growing market demand fueling the rise. (The Food and Agriculture Organization of the United Nations)

Aquaculture creates jobs and economic development opportunities in the EU's coastal and rural communities. This sector can also help: decarbonise the economy; fight climate change and mitigate its impact; reduce pollution; contribute to better preserving ecosystems (in line with the objectives of the Biodiversity strategy and the Zero-pollution ambition for a toxic-free environment); and be part of a more circular management of resources. A strategic and long-term approach for the sustainable growth of EU aquaculture is therefore more relevant today than ever. This approach should also set the path for the recovery of the EU aquaculture sector in the aftermath of the COVID-19 crisis, and ensure its longer-term sustainability and resilience.

The Common Fisheries Policy Regulation[3] already called for a coordinated EU strategic approach to support the growth of the EU aquaculture sector while ensuring its economic, environmental and social sustainability. Despite of progress made thanks to the "Open Method of Coordination" laid down by the Regulation as well as EU funding, the aquaculture sector is still far from reaching its full potential in terms of growth and meeting the increasing demand for more sustainable seafood[4]. The EU imports over 70% of the seafood that it consumes[5]. Aquaculture products overall (including imports) represent 25% of EU consumption of seafood, while EU aquaculture products represent only 10% of EU consumption. EU aquaculture accounts for less than 2% of global aquaculture production. EU Aquaculture production remains highly concentrated in terms of both EU Member States and species farmed, so there is significant potential for diversification. Aquaculture in the EU, when compared to aquaculture in other countries, is subject to some of the strictest regulatory requirements for quality, health and the environment. But even so, EU aquaculture can still further improve its

[1] According to the Farm to Fork Strategy, the Commission will 'take action to reduce overall EU sales of antimicrobials for farmed animals and in aquaculture by 50% by 2030'.
[2] The Farm to Fork Strategy sets the objective of having 'at least 25% of the EU's agricultural land under organic farming by 2030 and a significant increase in organic aquaculture'.
[3] Regulation (EU) No 1380/2013.
[4] A detailed analysis of the economic performance of the EU aquaculture sector produced by the Scientific, Technical and Economic Committee for Fisheries (STECF) STECF can be consulted at https://stecf.jrc.ec.europa.eu/reports/economic.
[5] If we consider exports of EU fisheries and aquaculture products, according to the 2020 report on the EU Fish Market of the European Market Observatory for Fisheries and Aquaculture Products (EUMOFA), the self-sufficiency rate for fisheries and aquaculture products was about 42% in 2018. Self-sufficiency is defined as the capacity of EU Member States to meet demand from their own production, and can be calculated as the ratio of domestic production over domestic consumption.

environmental performance, and thereby contribute to the objectives of the European Green Deal and related strategies.

This Communication reviews the Commission's Strategic Guidelines for the sustainable development of EU aquaculture adopted in 2013[6]. These guidelines have been the main pillar of the strategic coordination of aquaculture policy in the EU. By 2015, on the basis of these guidelines, EU Member States adopted Multi-annual National Strategic Plans (MNSPs) for aquaculture. The implementation of these MNSPs was supported by the exchange of good practices among EU Member States facilitated by the Commission and funding through the European Maritime and Fisheries Fund (EMFF) and other EU funds.
The Commission has invited EU Member States to review their MNSPs taking into consideration consultations on the new guidelines laid down in this Communication. The future European Maritime Fisheries and Aquaculture Fund[7] (EMFAF) will continue to provide support to EU Member States to help implement the strategic vision for the sector, as reflected in those MNSPs and their Operational Programmes, including through local actions[8].

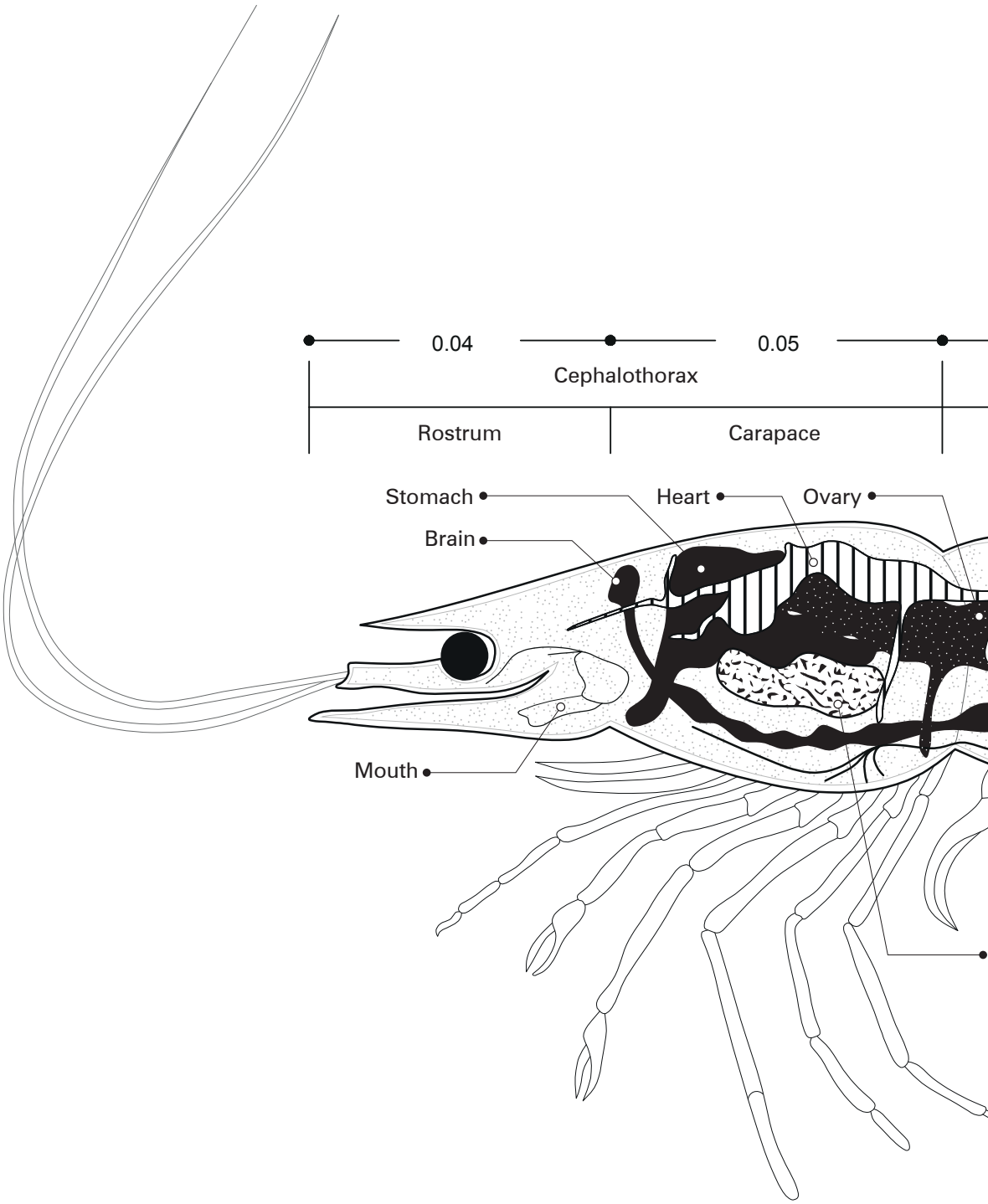
2. THE NEW STRATEGIC GUIDELINES

The European Green Deal is the EU's new growth strategy and aims at stimulating the economy and creating jobs while accelerating the green transition in a cost-efficient way. The strategic guidelines laid down in this Communication aim to offer a common vision for EU Member States and all relevant stakeholders for the further development of aquaculture in the EU in a way that contributes to that growth strategy. In particular , these guidelines aim to help building an EU aquaculture sector that: (i) is competitive and resilient; (ii) ensures the supply of nutritious and healthy food; (iii) reduces the EU's dependency on seafood imports; (iv) creates economic opportunities and jobs; and (v) becomes a global reference for sustainability. They should also help EU consumers make informed choices of sustainable aquaculture products and to ensure a level playing field for aquaculture products marketed in the EU. These guidelines should also help guide the use of the many instruments and funds available to support EU aquaculture, as well as to support the implementation of applicable EU legislation.

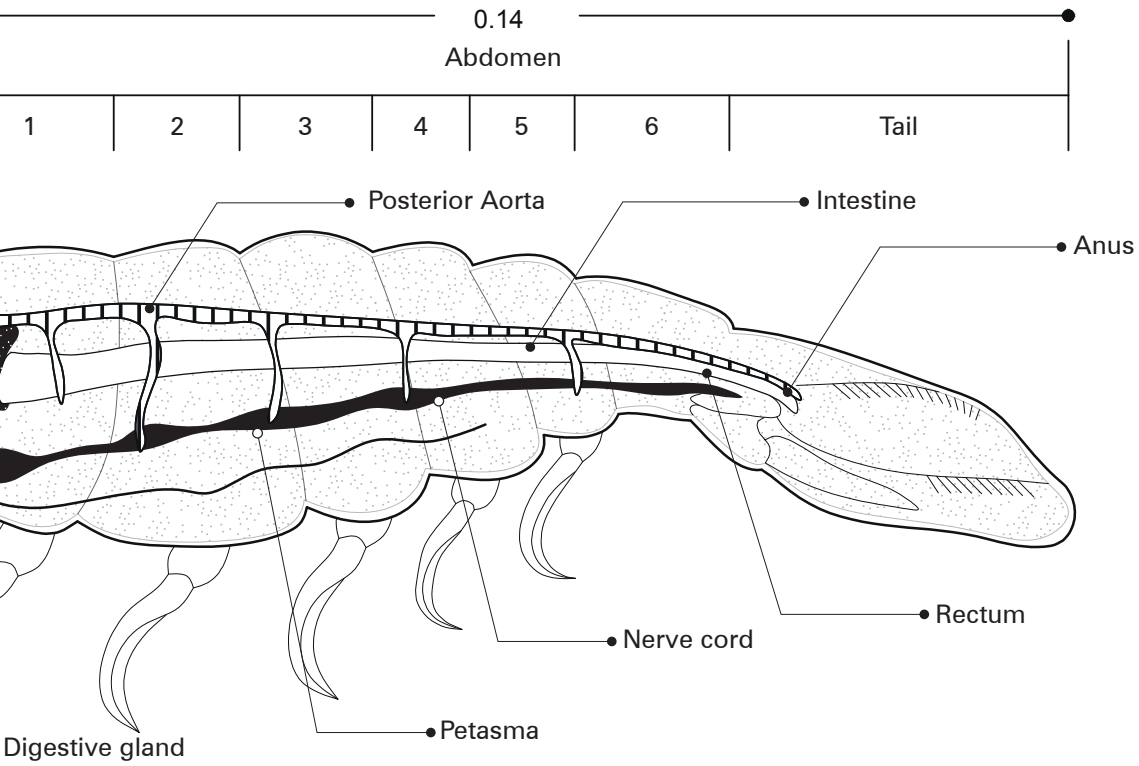
Achieving this vision will require addressing different challenges and opportunities of the EU aquaculture sector in order to reach the following inter-related objectives:

(1) building resilience and competitiveness;
(2) participating in the green transition;

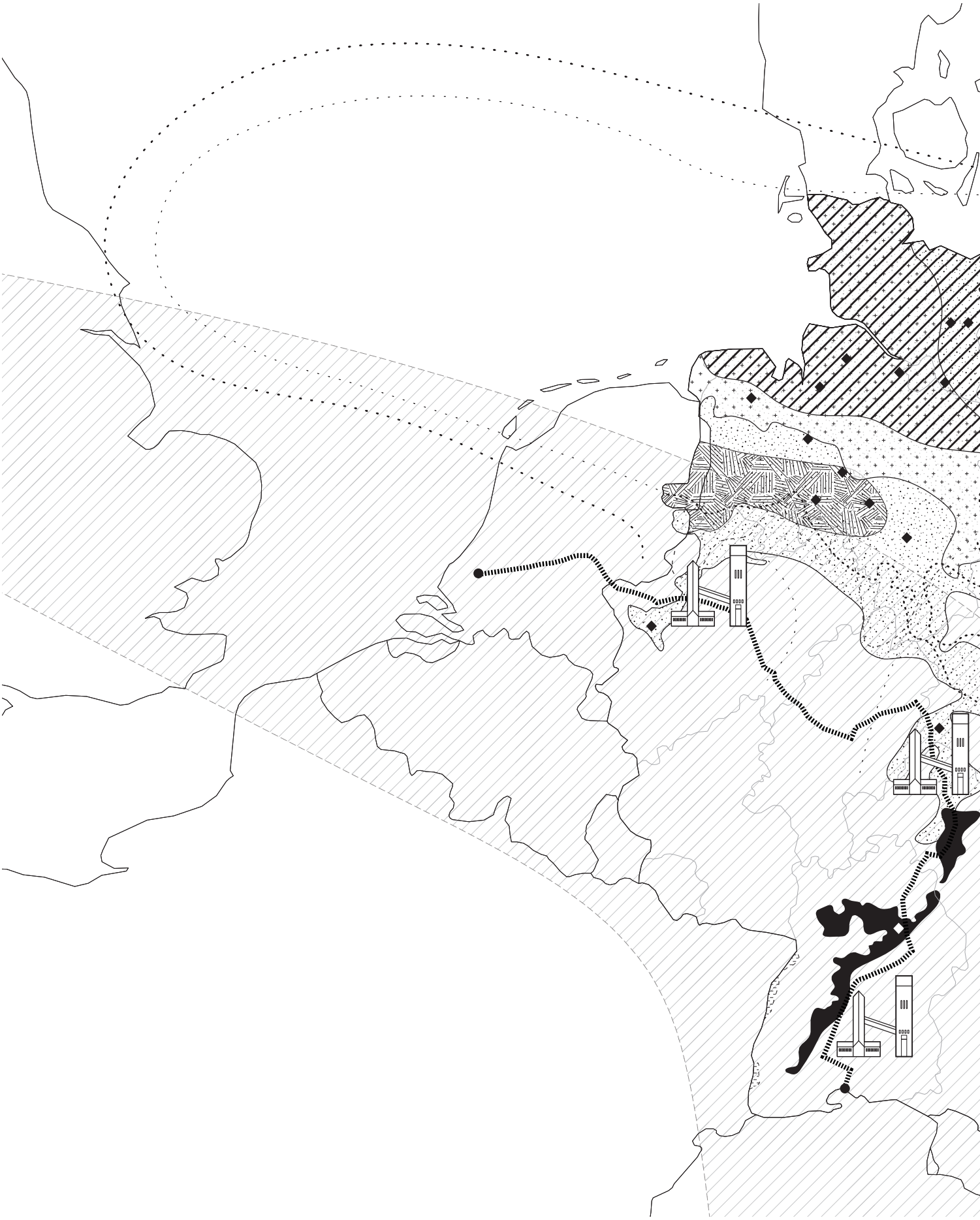
[6] COM (2013)229 final of 29.4.2013.
[7] The text of the political agreement on the proposal for the Regulation on the EMFAF is available in this website:
https://www.europarl.europa.eu/meetdocs/2014_2019/plmrep/COMMITTEES/PECH/DV/2021/02-22/EMFAF_consolidated_clean_EN.pdf. This text is pending a legal revision and the final adoption by the Council and the European Parliament.
[8] According article 23 of EMFAF Regulation (text of the political agreement, cf. footnote 7), support to aquaculture under the EMFAF shall be consistent with the multiannual national strategic plans for the development of aquaculture.



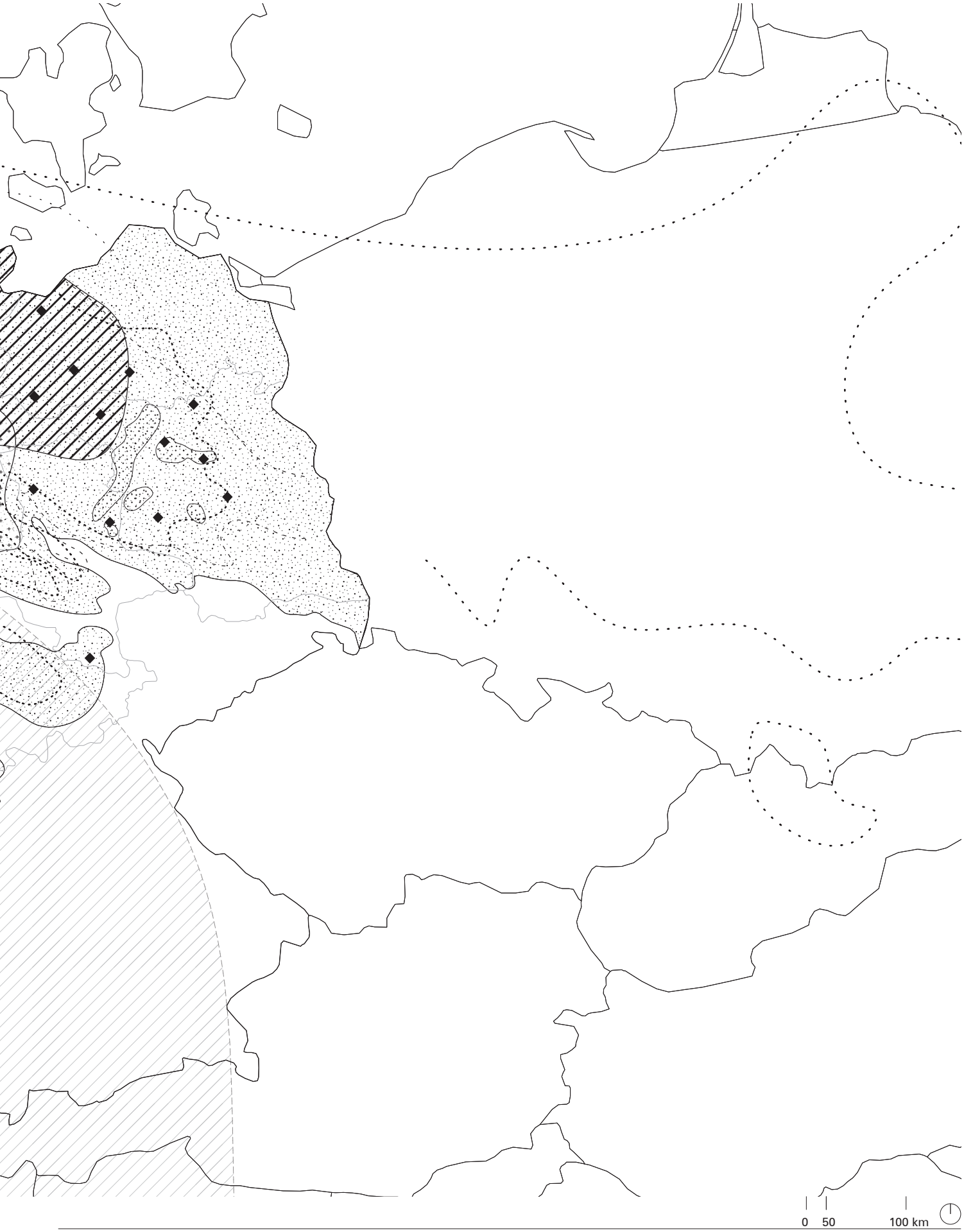
The anatomical section of the White Pacific Shrimp, relating the healthy growth of the animal with the atmospheric characteristics of the farm, which mimics the tropical climate of the Ecuadorian Mangroves.

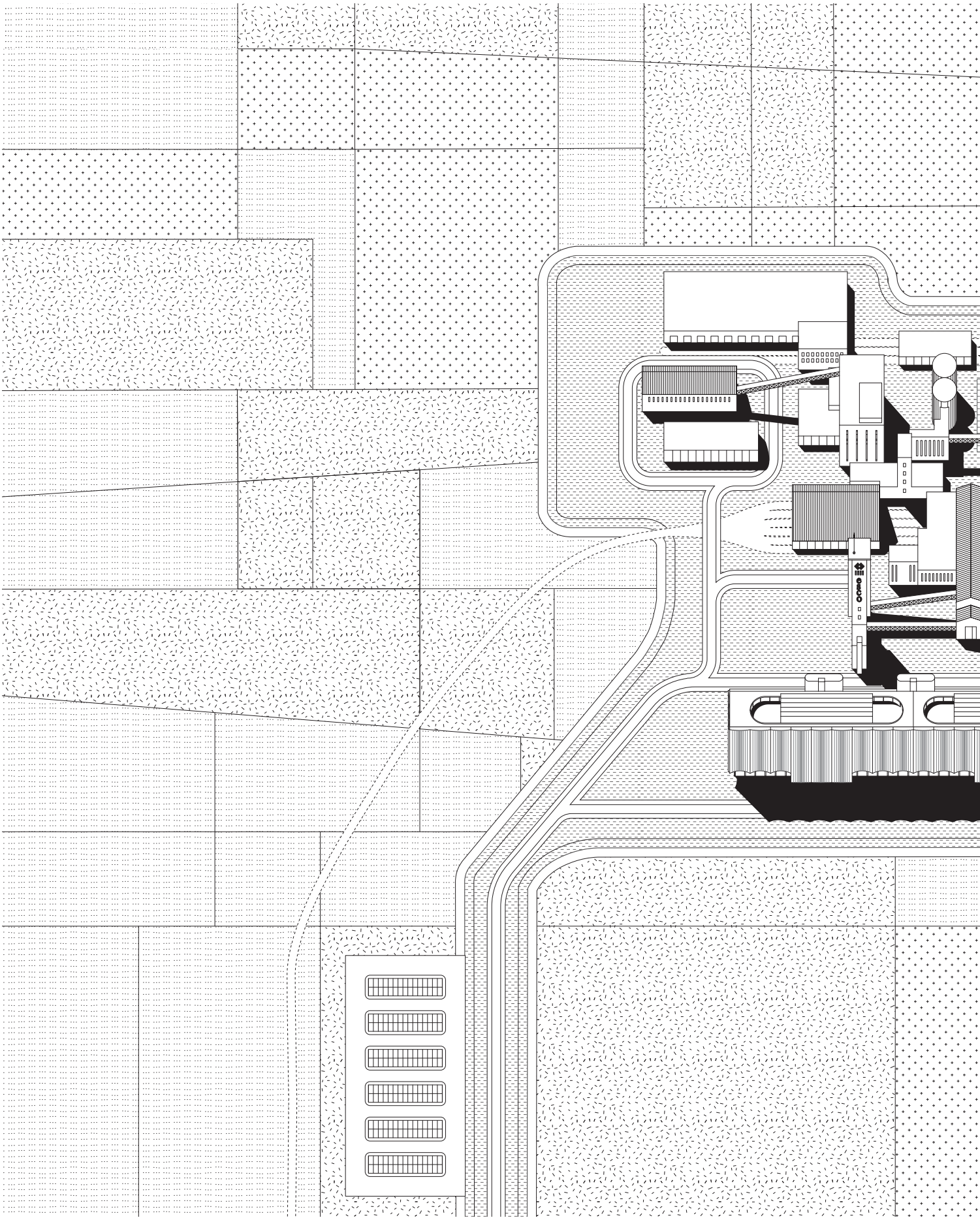

0.14
Abdomen
1
2
3
4
5
6
Tail
Posterior Aorta
Intestine
Anus
Rectum
Nerve cord
Petasma
Digestive gland


0
0.5
1 cm

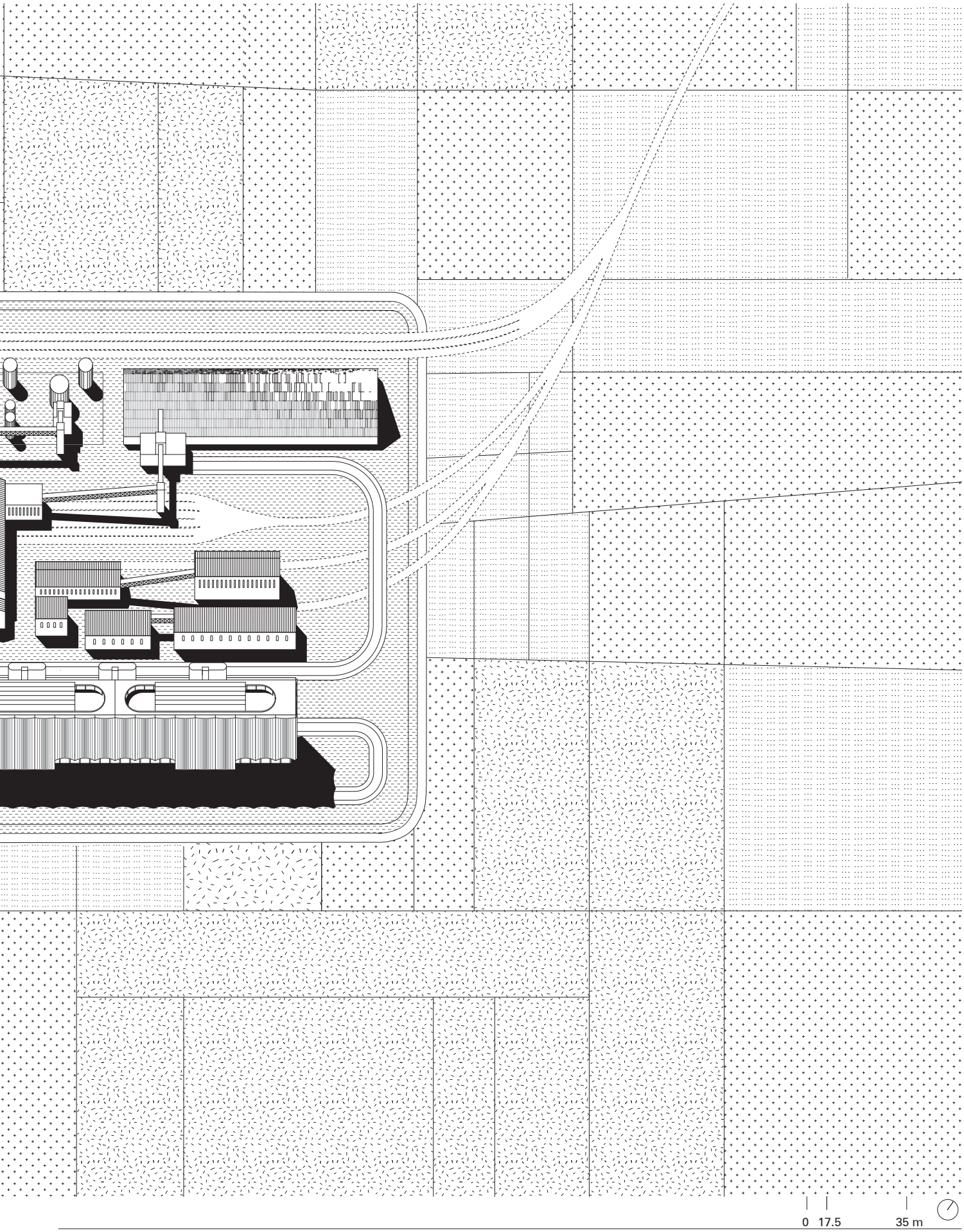


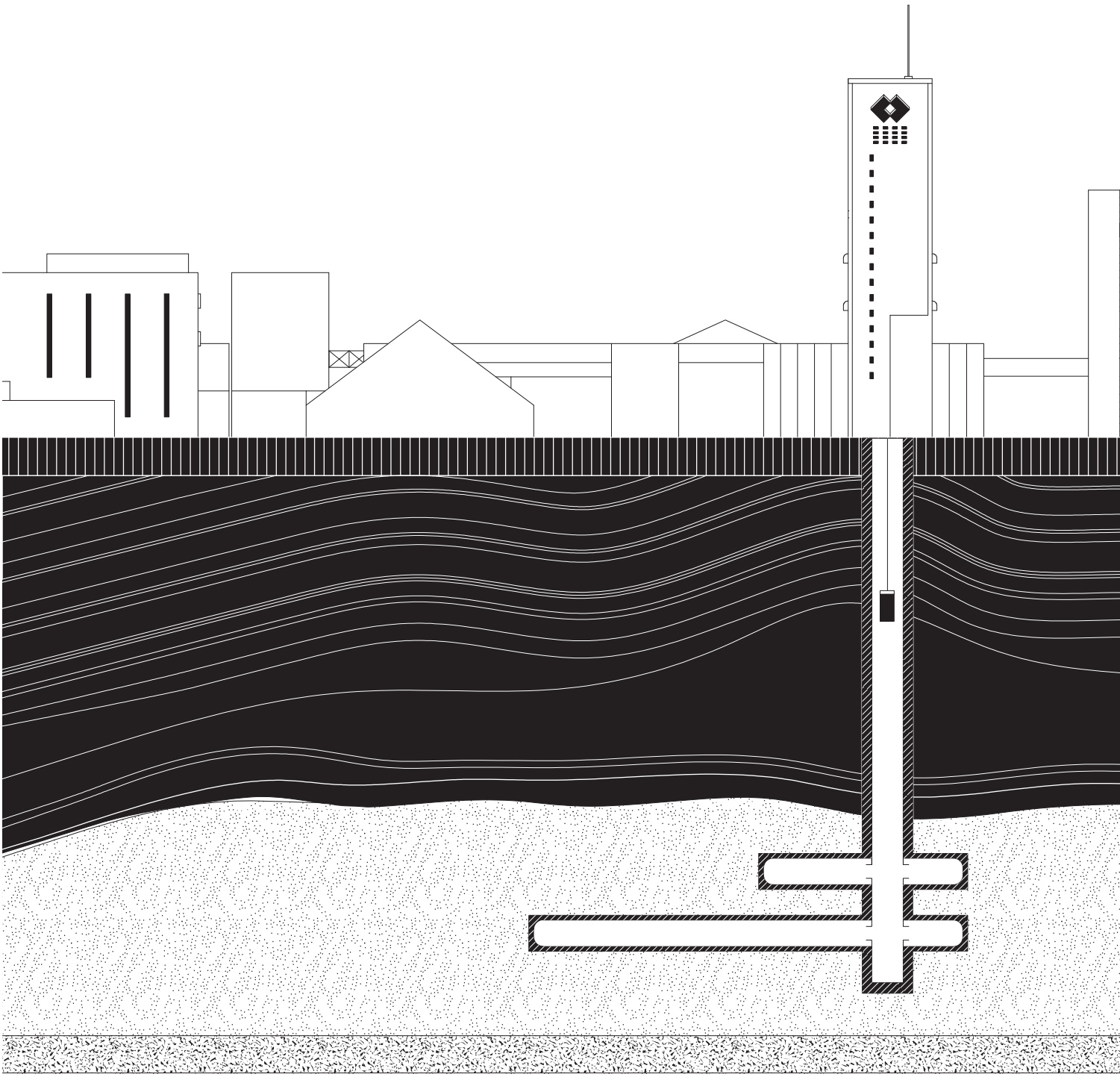
Germany, a country inside the Blue Banana and the largest salt producer in Europe, anticipates a new prototypical and strategic network that works in symbiosis with the existing salt factories.


0 50 100 km

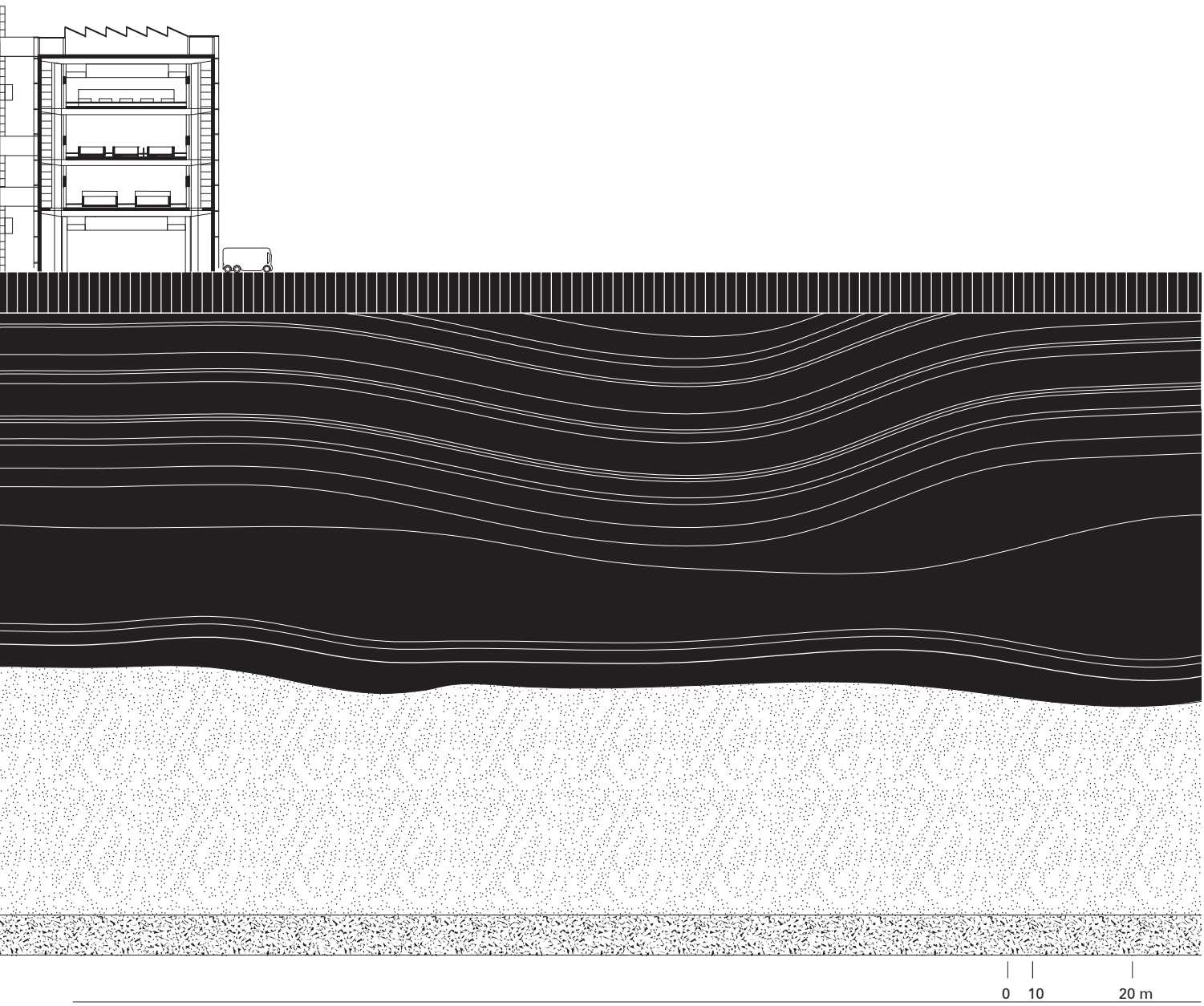


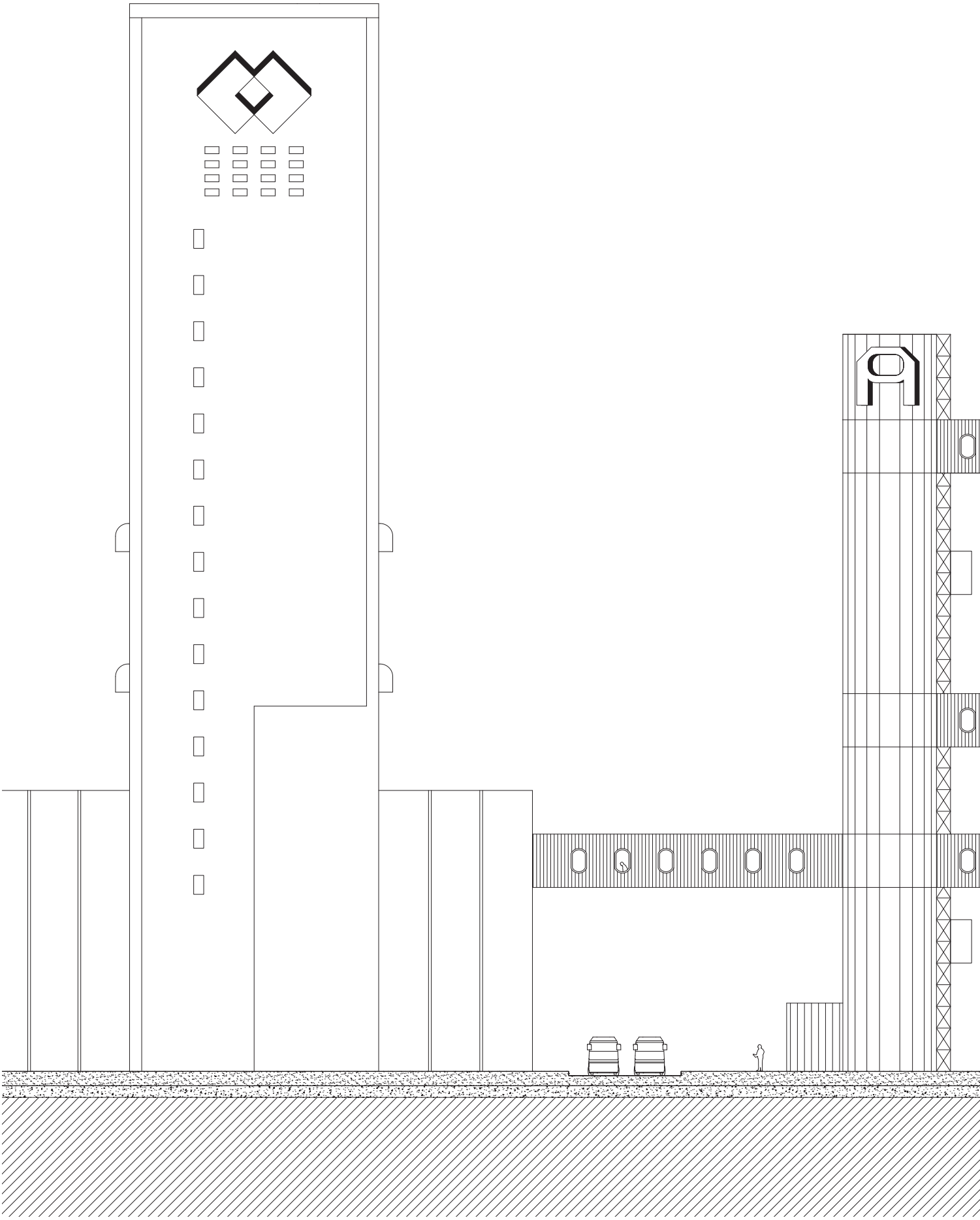
The site plan illustrates the location of the contribution, which is located next to the Borth salt mine located in Rheinberg, surrounded by an agricultural landscape and just 200 kilometers away from Delft.


0 17.5 35 m

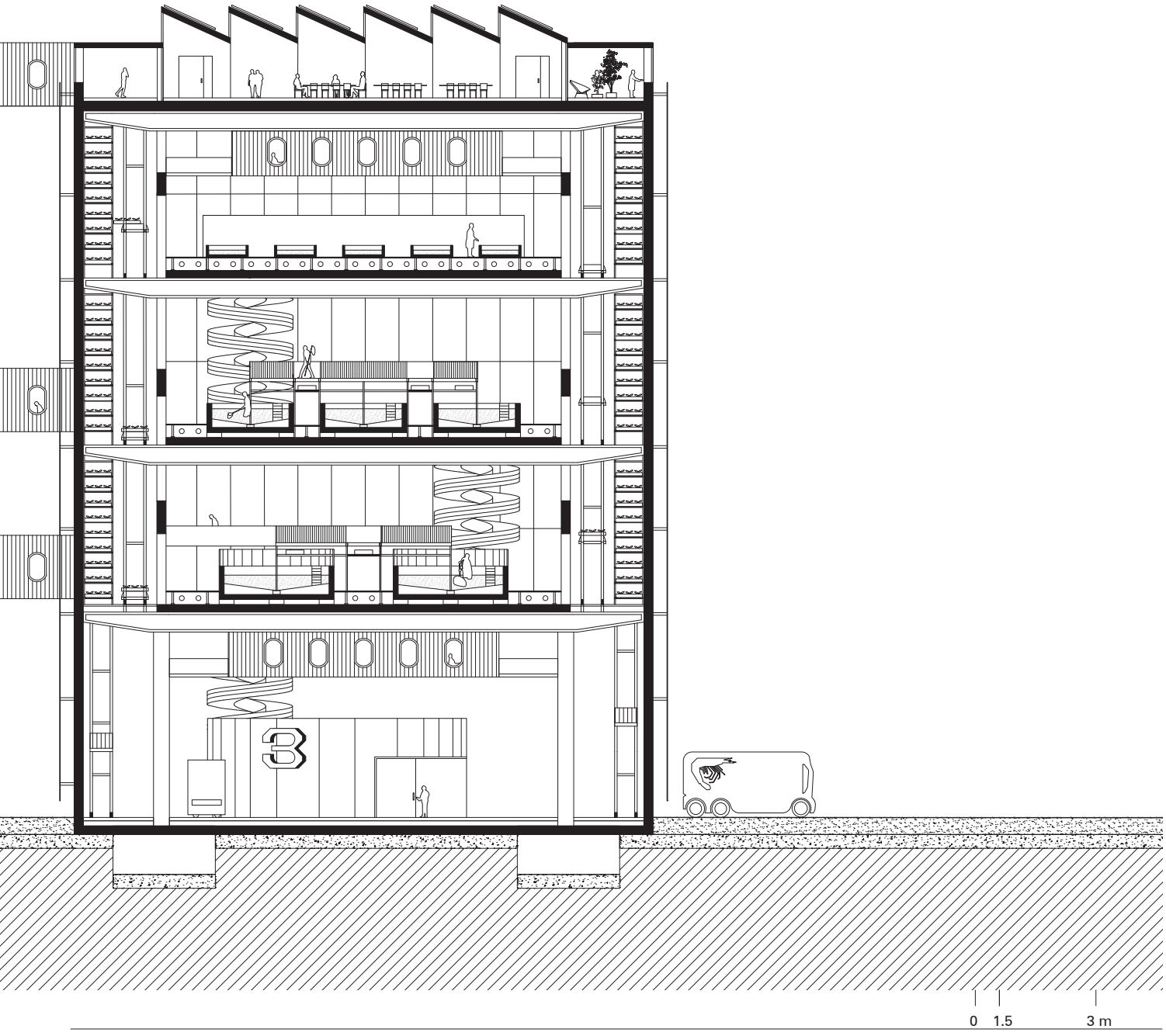


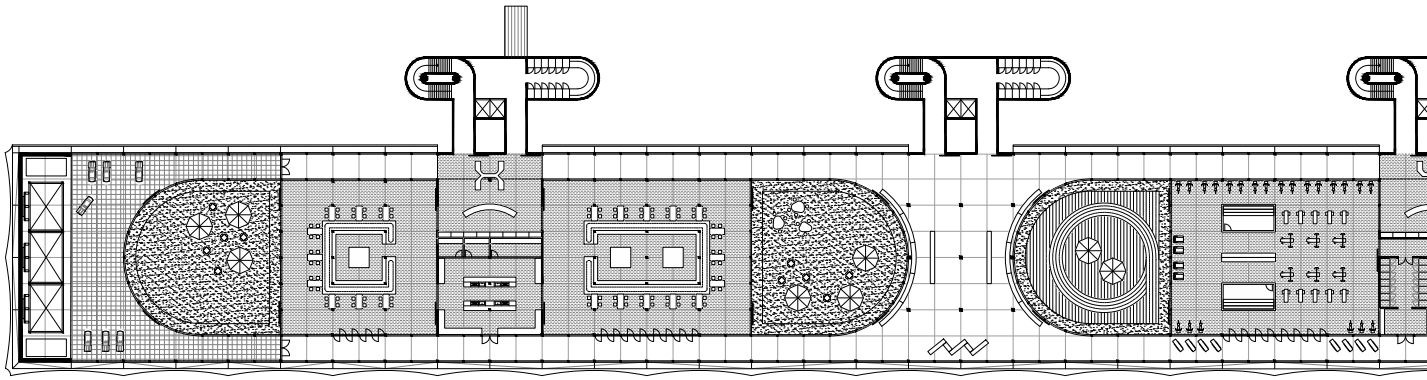
The section depicts the soil conditions of the site and the relationship between the existing factory and the new farm, along with outlining the shared resources such as salt extraction and residual heat.


0
10
20 m

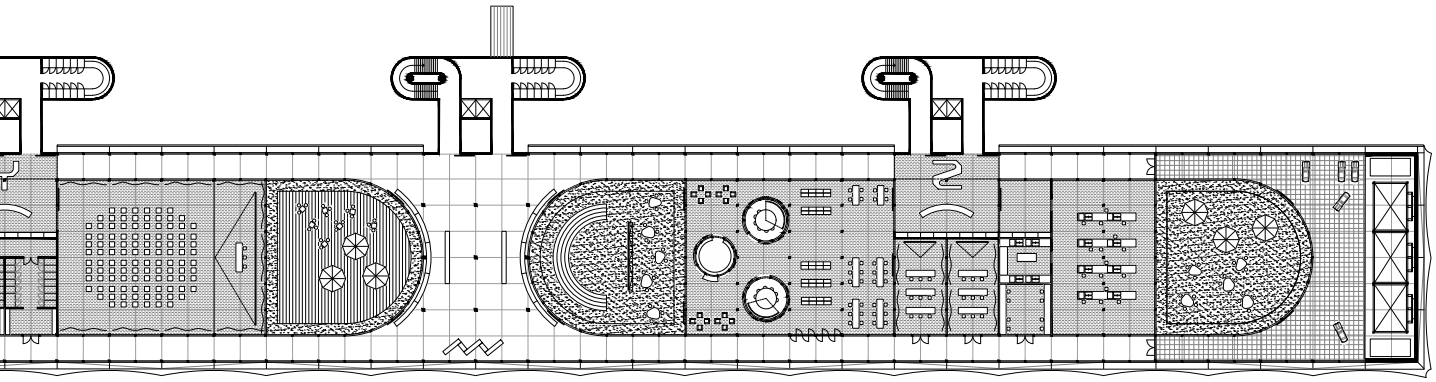


The section depicts the vertical production that takes place inside the dark and sealed volume that operates with a recirculating water purification system to create a circular combination between shrimp and leafy green production.

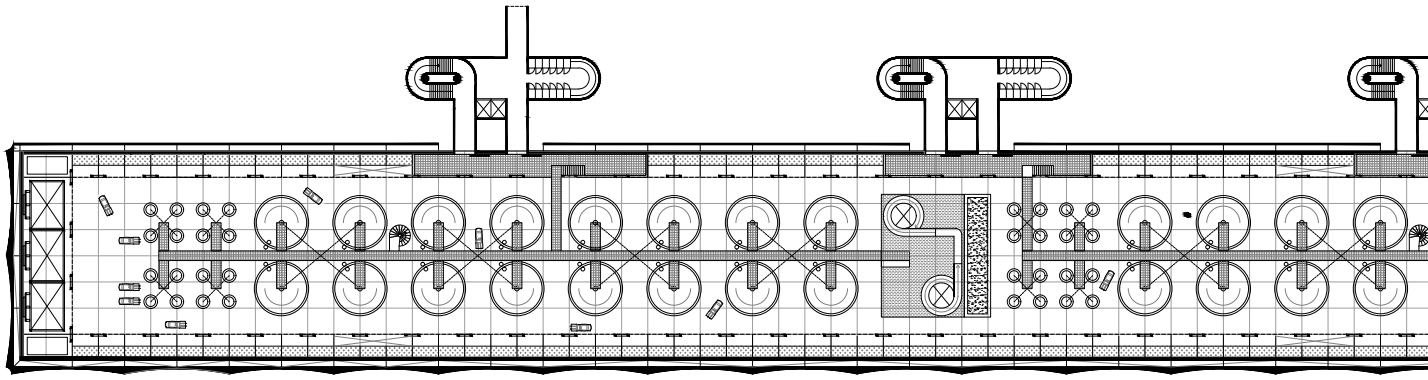

0
1.5
3 m



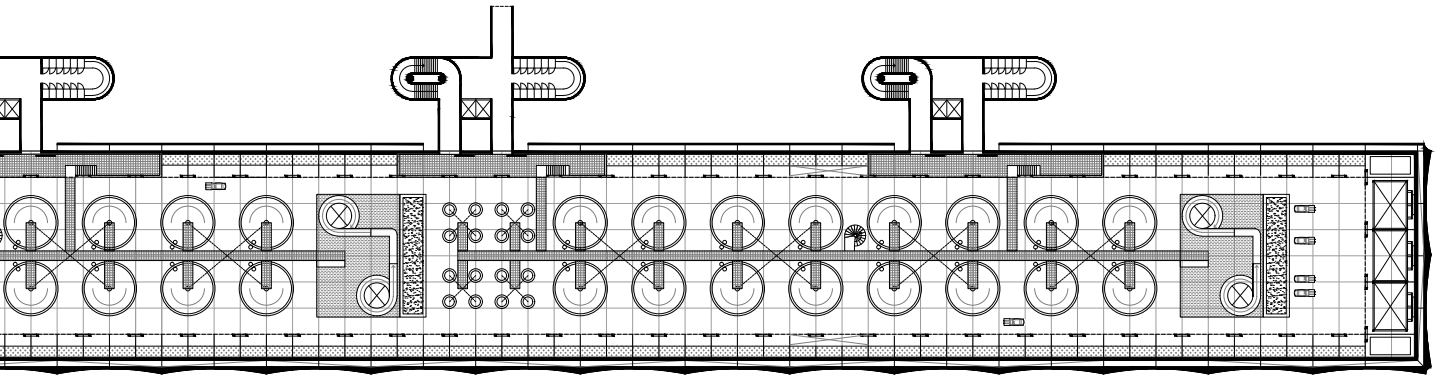
Spaces for visitors and students, such as a training center and public canteen, are located on top of the farm, reinforcing landscape views to revaluing the industrial site.



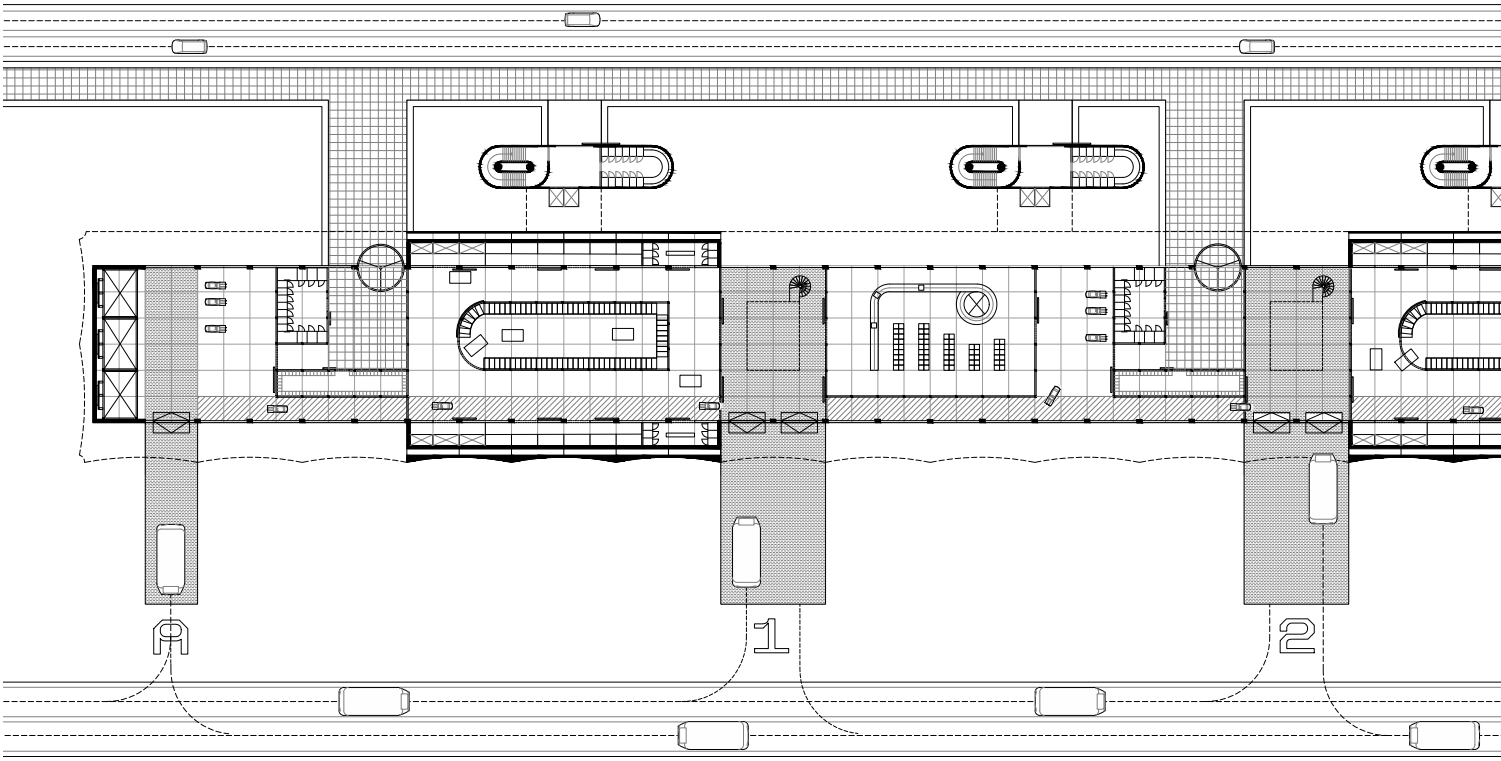
0 7.5 15 m



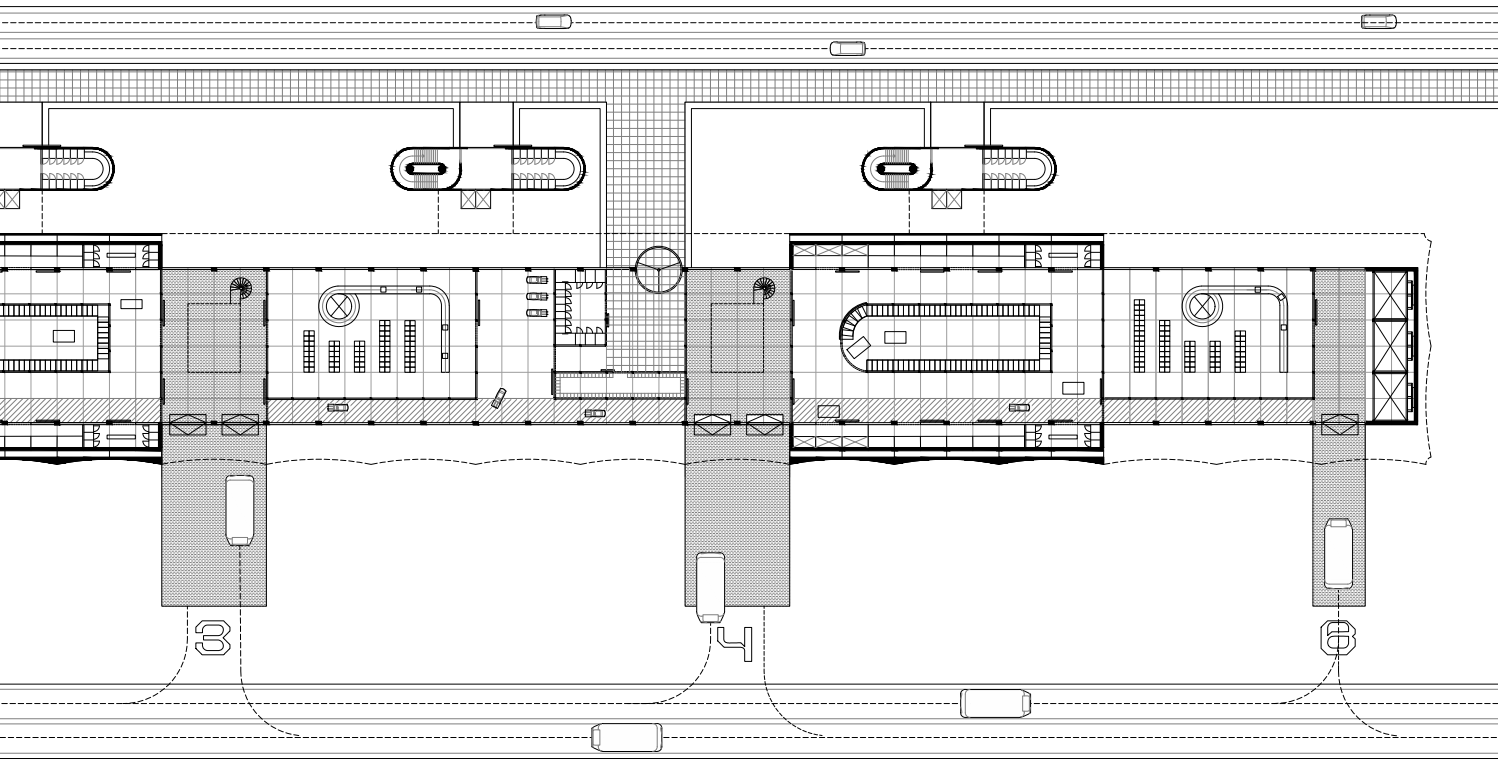
The growing floor is dimensioned to produce two tons of shrimps each week, following the tank rotation system applied in shrimp farming.



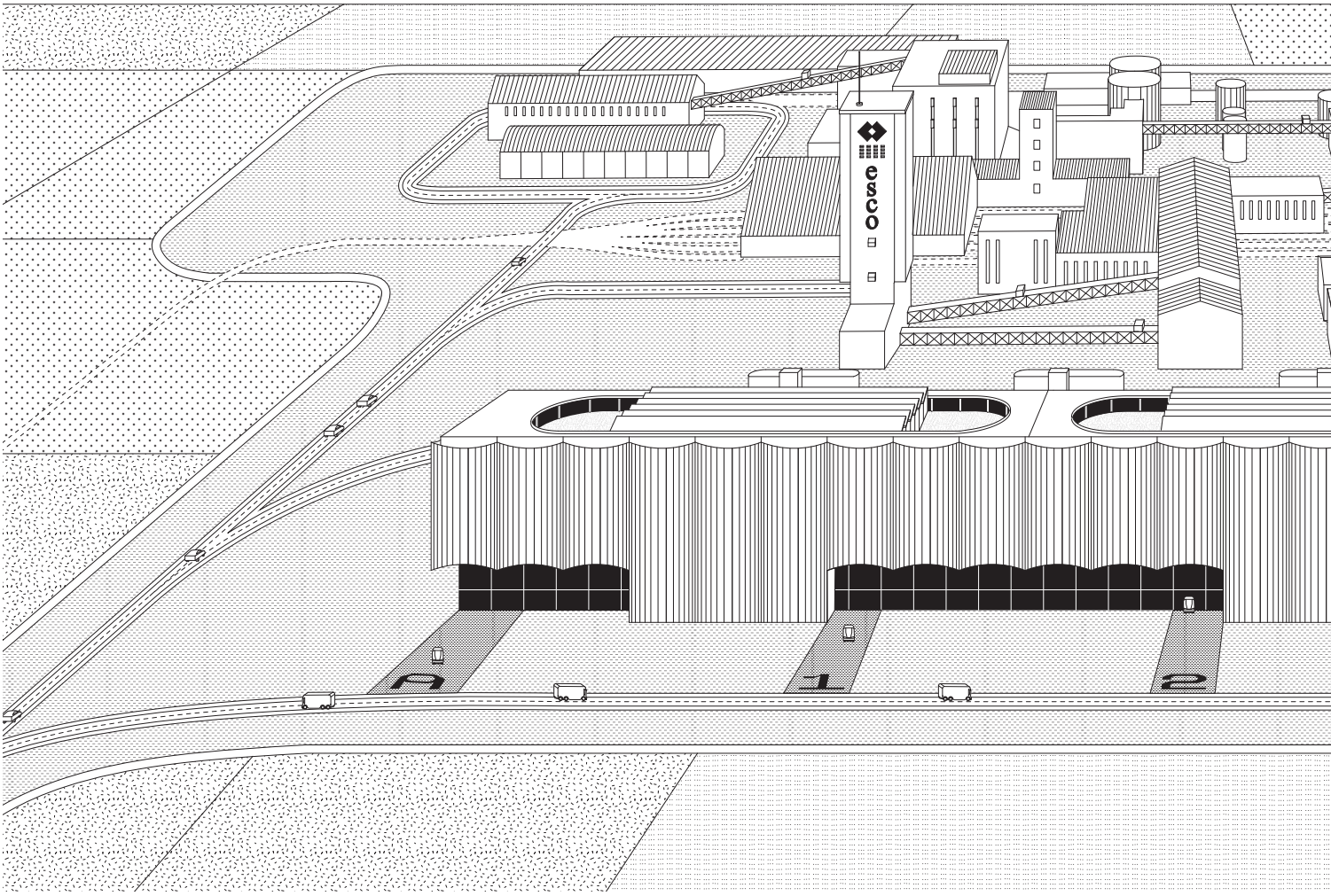
0 7.5 15 m



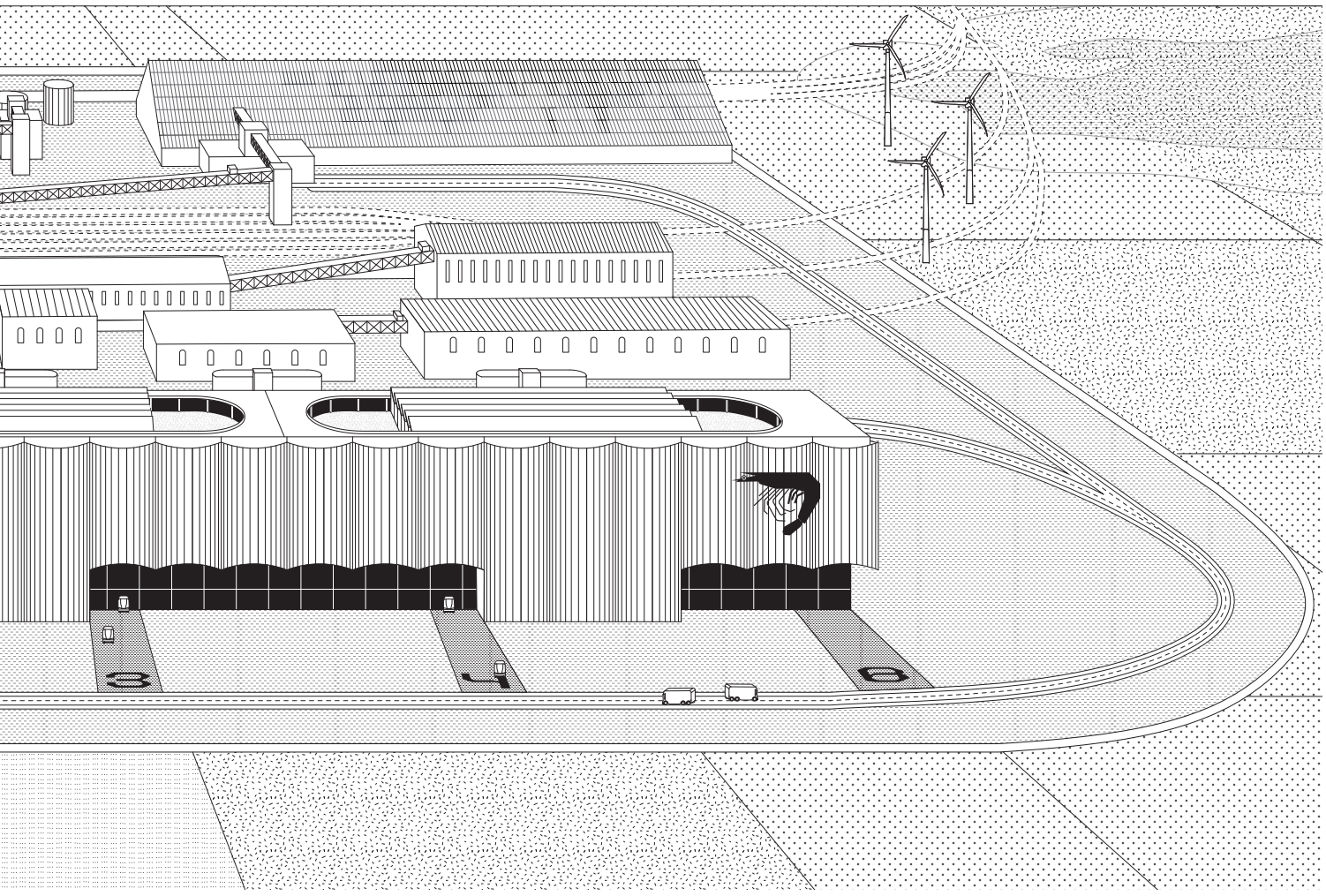
The ground floor illustrates the dynamic functioning of the trucks, which form a choreography with the control system and the vertical production.



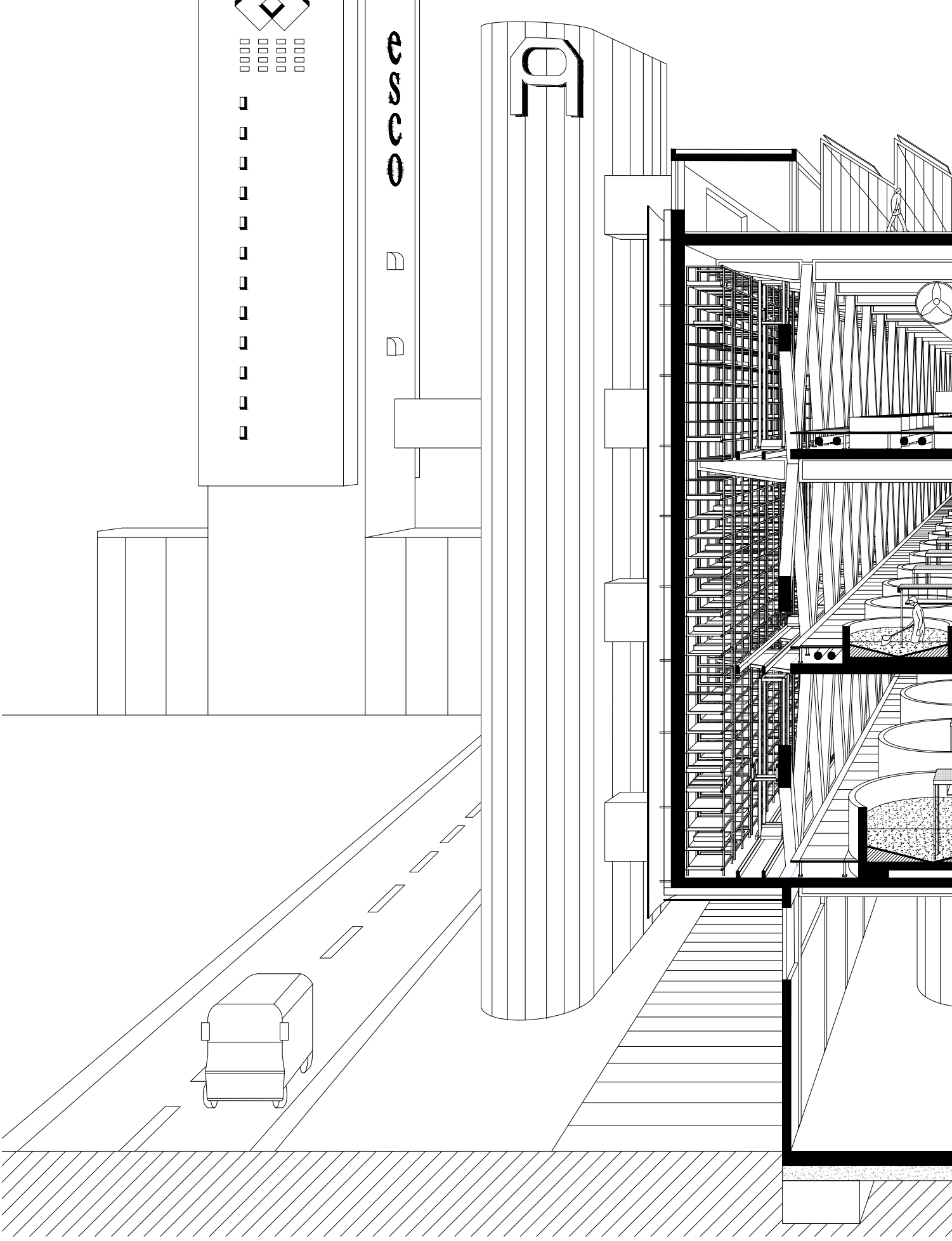
0 7.5 15 m



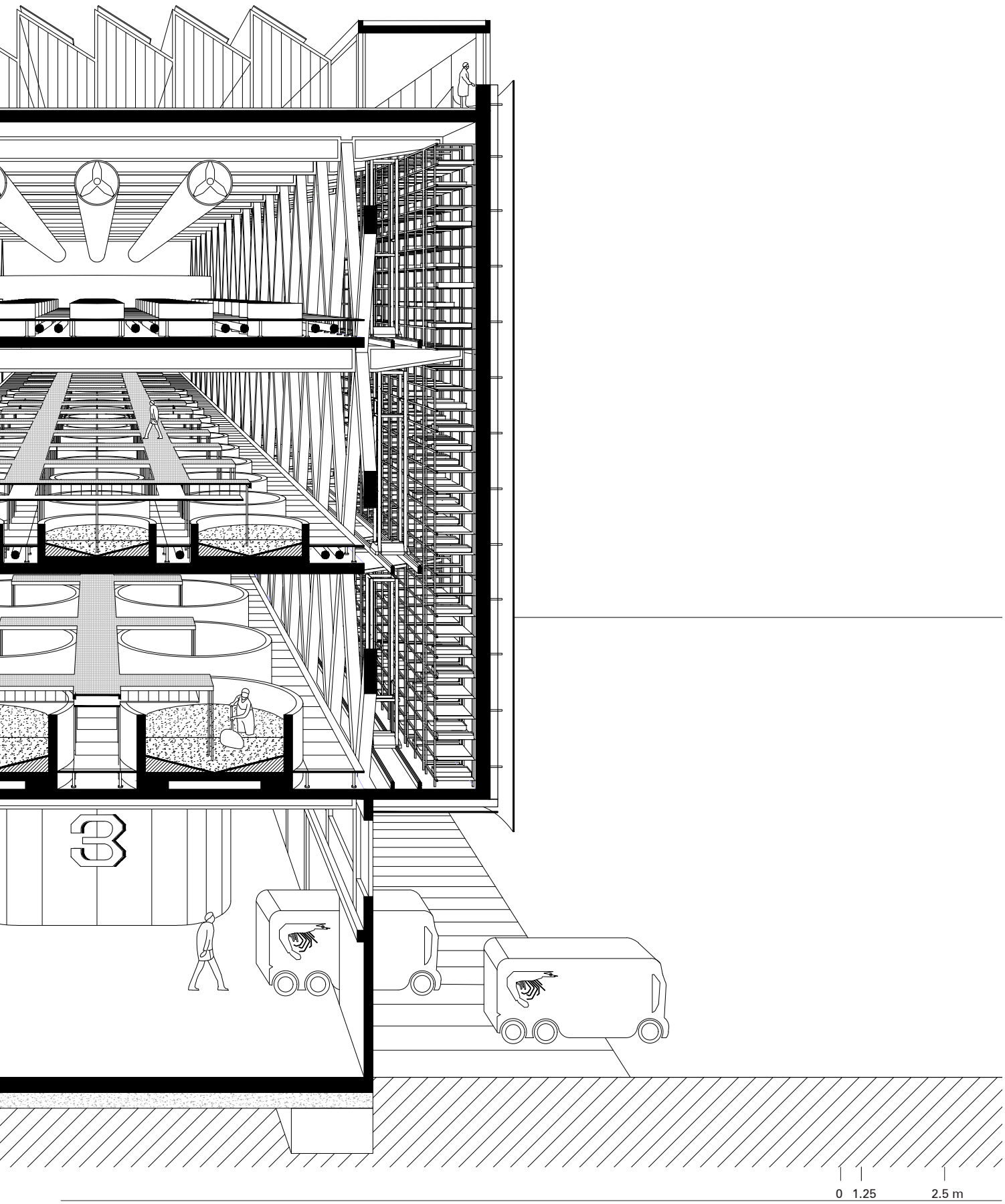
Approaching the new age of shrimp farming, monolithic construction blur the boundaries between artificial and natural, creating a new collective understanding of the ocean and the culture of fishing.

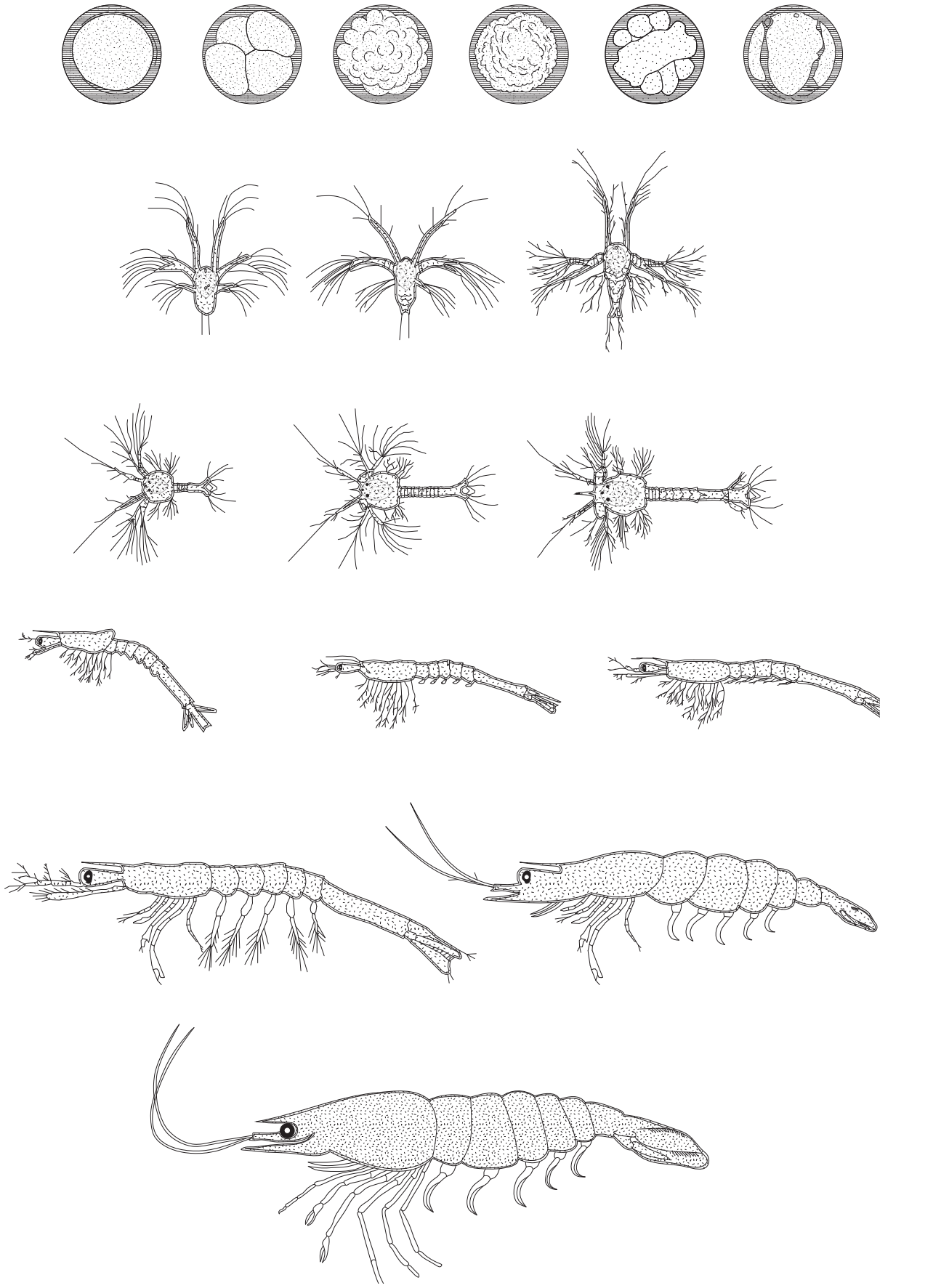


0 15 30 m

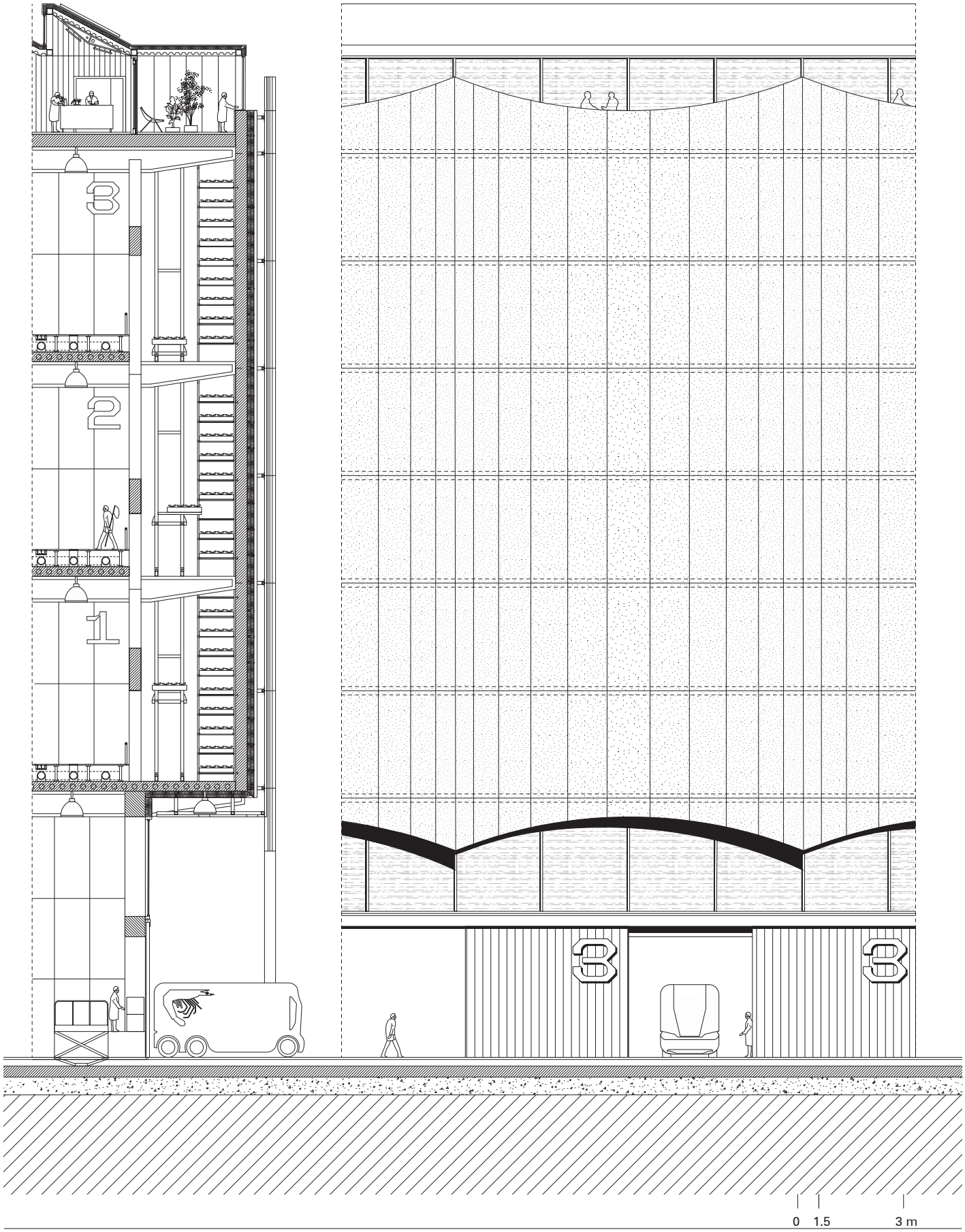


The perspective shows how the sublime repetition and scale bring spatial qualities to the sealed dark volume, where the sturdiness of the tanks is combined with light walkways to create two different levels.


3
0 1.25 2.5 m



The 112-day incubation cycle of the White Pacific Shrimp reveals the different stages of development, not only determining the spatial qualities for each phase, but also creating a repetitive rhythm that combines animal welfare with productivity.



The construction detail of the facade responds to the Strategic Guidelines for a Sustainable Aquaculture document from the European Commission, specifying not only the combination of shrimp and leafy green production, but also the use of glossy panels made out of recycled plastic from the ocean.

Propositions

1. With one third of global fish stocks flagged as overfished, land-based aquaponic farms replace traditional fishing to restore endangered marine fauna through the reproduction of indoor natural ecosystems.

2. At the Blue Banana, shrimp farms are located in the German Salt Belt, creating an ecological symbiosis between salt factories and aquaponics while redefining the meaning of agriculture.

3. Expanding the European Commission guidelines for competitive farming, a new approach to compactness strives to develop the vertical farm as a building type, reconsidering the relationship between aquaculture and the global biosphere, through the promotion of water recirculation and the harnessing of animal disposal.

4. To ensure animal welfare while optimizing production, the factory works relating the shrimp's life cycle with a layout of 48 growing tanks, displaying a repetitive and constant rhythm to provide not only fresh but also additives-free products.

5. Approaching the new age of shrimp farming, monumental industrial buildings produce fresh live shrimps that arrive at the supermarket every week triggering a new collective understanding of the ocean and the practice of fishing.

This contribution is part of *Supermarket*, a collective project on the spatial implications of the food industry in the Netherlands and beyond, redesigning the now considered essential architecture of a supermarket.

Pink is Not a Color envisions a new land-based aquaponic shrimp farm that replaces the practice of traditional fishing, reflecting on the planet extinction of marine species. It is sited next to the existing Borth salt mine located in Rheinberg, North Rhine-Westphali, Germany.

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