# Urban Forest Hotel Amsterdam

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Interiors Buildings Cities
P5 Presentation
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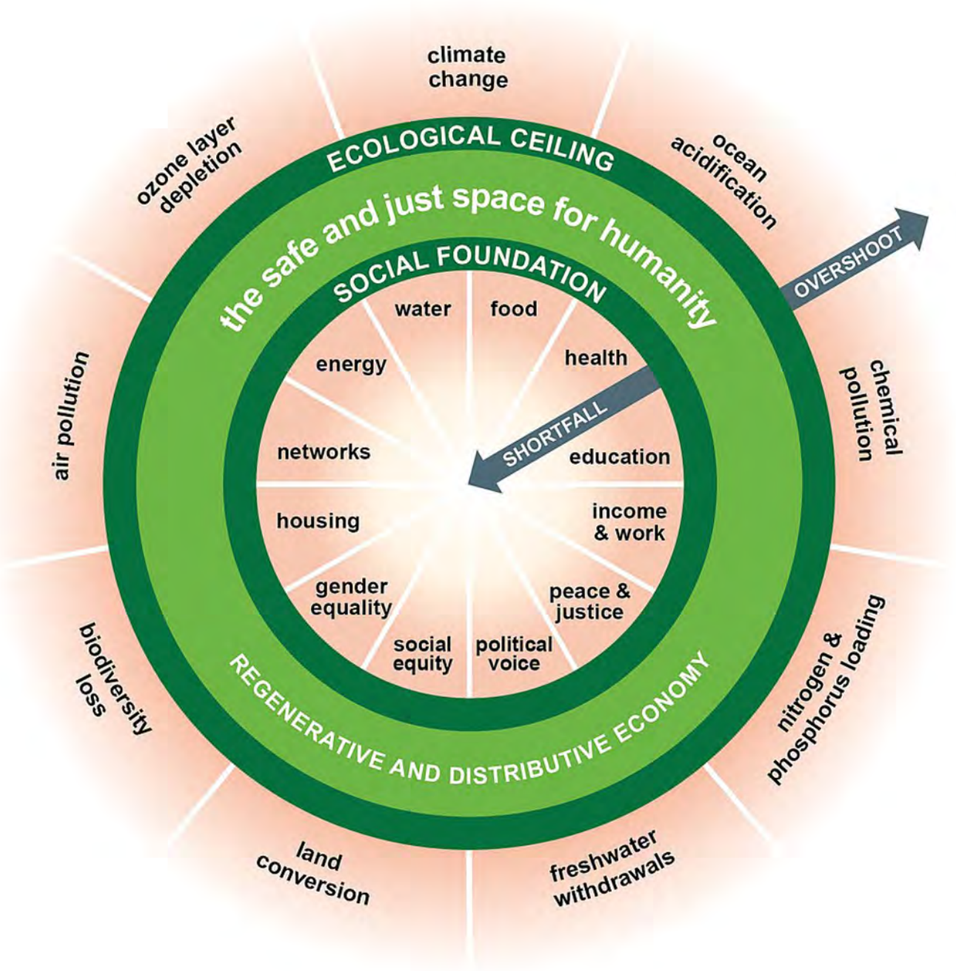
1. Theme
2. Site
3. Project


climate change
ozone layer depletion
ocean acidification
chemical pollution
nitrogen & phosphorus loading
freshwater withdrawals
land conversion
biodiversity loss
air pollution
ECOLOGICAL CEILING
the safe and just space for humanity
SOCIAL FOUNDATION
REGENERATIVE AND DISTRIBUTIVE ECONOMY
OVERSHOOT
SHORTFALL
water
food
health
education
income & work
peace & justice
political voice
social equity
gender equality
housing
networks
energy

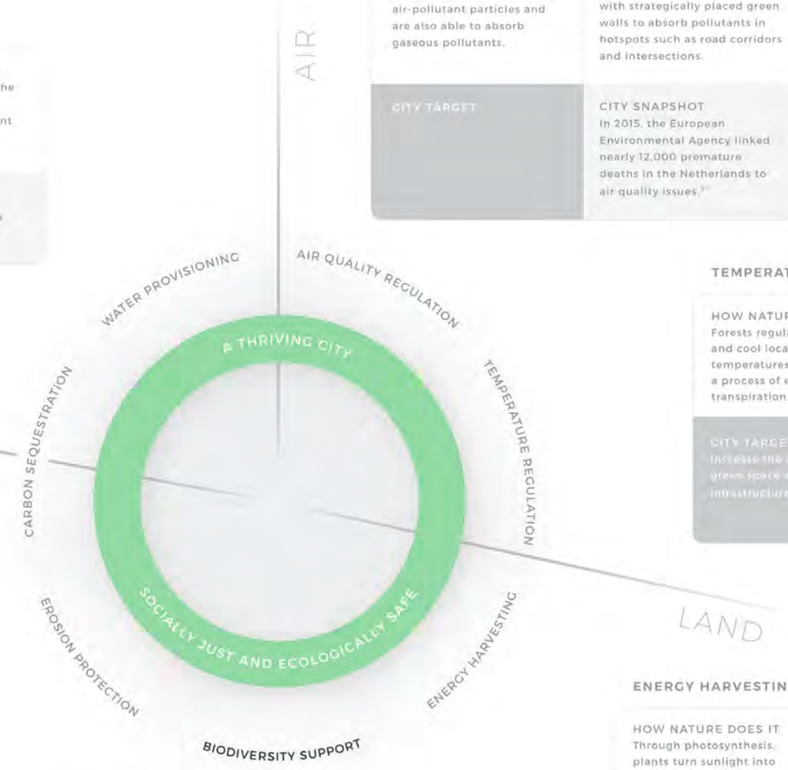
## WHAT WOULD IT MEAN FOR AMSTERDAM TO THRIVE WITHIN ITS NATURAL HABITAT?

### WATER PROVISIONING

| HOW NATURE DOES IT | TO WORK LIKE NATURE |
|---|---|
| Coastal dunes purify water as it infiltrates and filters through the sand. | Amsterdam is supporting the Sand Motor project which promotes dune development on the city's surrounding coastlines.[47] |
| CITY TARGET | CITY SNAPSHOT<br>Renewable water resources make up only 12% of city supply.[48] |

### AIR QUALITY REGULATION

| HOW NATURE DOES IT | TO WORK LIKE NATURE |
|---|---|
| Leaves can capture ultrafine air-pollutant particles and are also able to absorb gaseous pollutants. | Amsterdam is experimenting with strategically placed green walls to absorb pollutants in hotspots such as road corridors and intersections. |
| CITY TARGET | CITY SNAPSHOT<br>In 2015, the European Environmental Agency linked nearly 12,000 premature deaths in the Netherlands to air quality issues.[51] |




### TEMPERATURE REGULATION

| HOW NATURE DOES IT | TO WORK LIKE NATURE |
|---|---|
| Forests regulate rainfall and cool local air temperatures through a process of evapo-transpiration. | Amsterdam could reduce heat island effect by increasing urban green infrastructure. |
| CITY TARGET<br>Increase the area of green space as green infrastructure.[52] | CITY SNAPSHOT<br>At present, temperatures in Amsterdam can be up to 5°C warmer than surrounding areas due to urban heat island effect.[53,54] |

### CARBON SEQUESTRATION

| HOW NATURE DOES IT | TO WORK LIKE NATURE |
|---|---|
| Land-based and sea-based plants absorb and store $CO_2$, as do phytoplankton in the ocean.[50] | Amsterdam could set goals for sequestering and storing carbon in land- and sea-based plants. |
| CITY TARGET<br>Reduce the city's total $CO_2$ emissions to 95% below 1990 levels by 2030, and to 65% below by 2050.[13] | CITY SNAPSHOT<br>Dutch greenhouse gas emissions fell by 2.2% in 2018, contributing to a total reduction of 14.5% below 1990 levels.[49,50] |

### EROSION PROTECTION

| HOW NATURE DOES IT | TO WORK LIKE NATURE |
|---|---|
| Marine plants and molluscs, such as oysters, slow down waves and reduce their power to erode the shore.[51] | Amsterdam could create oyster substrates to support a reef barrier and bolster erosion protection. |
| CITY TARGET | CITY SNAPSHOT<br>In the Netherlands, 12 million $m^3$ of sand is replenished annually, but 20 million $m^3$ would be needed to keep pace with rising sea levels.[51,52] |

### BIODIVERSITY SUPPORT

| HOW NATURE DOES IT | TO WORK LIKE NATURE |
|---|---|
| Forests provide protective locations for nests and dens, as well as structures to support plant growth.[56] | Amsterdam is promoting and tracking sedum, grass and herb roofs, as well as rooftop gardens. |
| CITY TARGET<br>Make Amsterdam a city for people, plants and animals, with green spaces in all neighbourhoods, and well-kept parks and forests.[22] | CITY SNAPSHOT<br>In 2018, Amsterdam had at least 200 green roofs, with a total surface area of approximately 120,000 $m^2$.[54,55] |

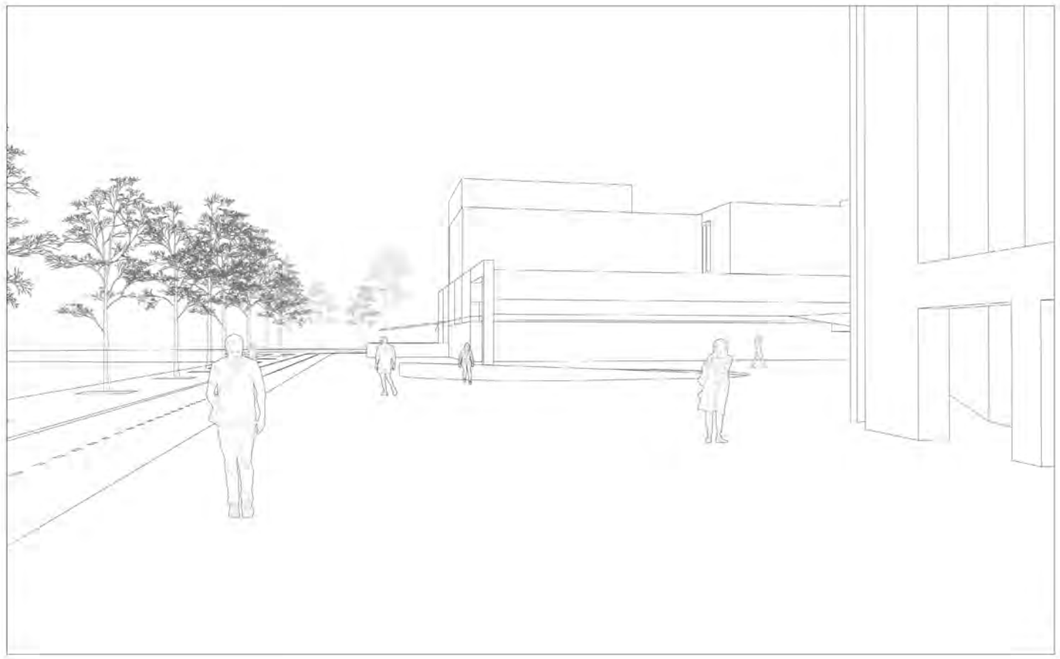
### ENERGY HARVESTING

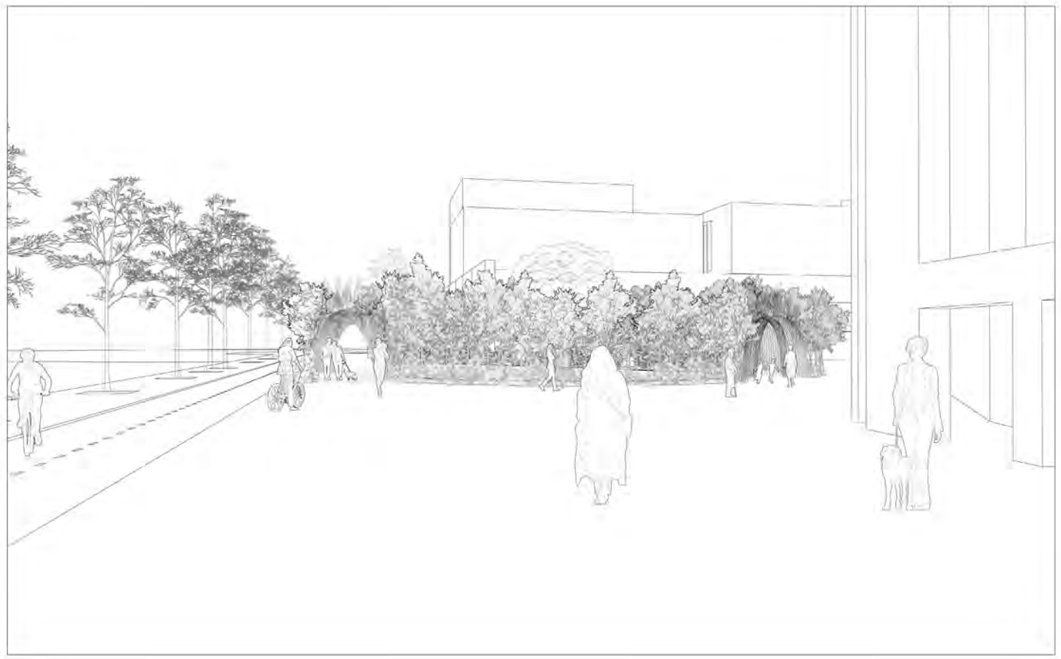
| HOW NATURE DOES IT | TO WORK LIKE NATURE |
|---|---|
| Through photosynthesis, plants turn sunlight into energy. | Amsterdam is using wind turbines and photovoltaics to generate renewable energy. |
| CITY TARGET<br>Utilise two thirds of all solar energy potential (1800 MW) by 2040 – enough to power 450,000 households.[57,58] | CITY SNAPSHOT<br>In 2018, renewable energy sources accounted for 7.4% of total Dutch energy consumption – up from 6.6% the previous year.[59] |

**Gerichtsbaum / court linden**
Diebold Schilling the Younger, Luzerner Schilling, 1513

Tiny Forest (Delft)

## A tiny forest in front of Amsterdam's City Hall





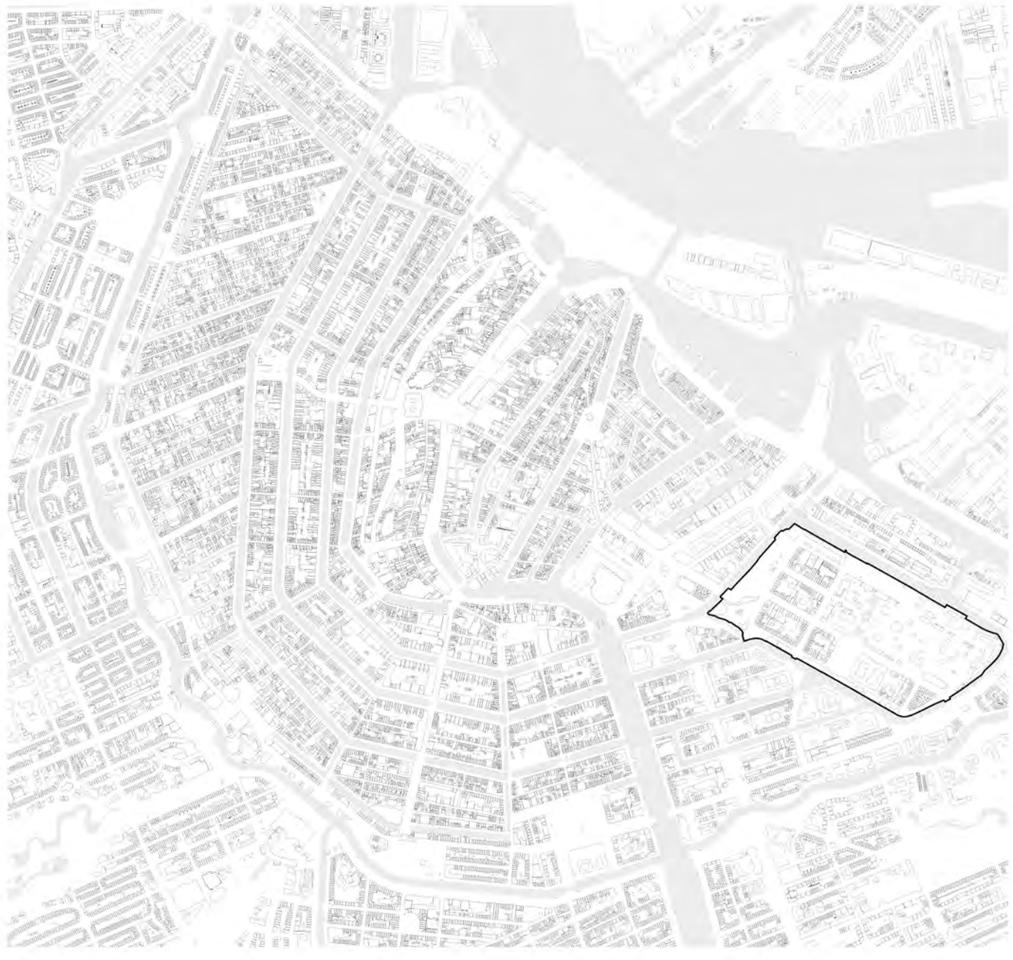
## Linden tree in the centre

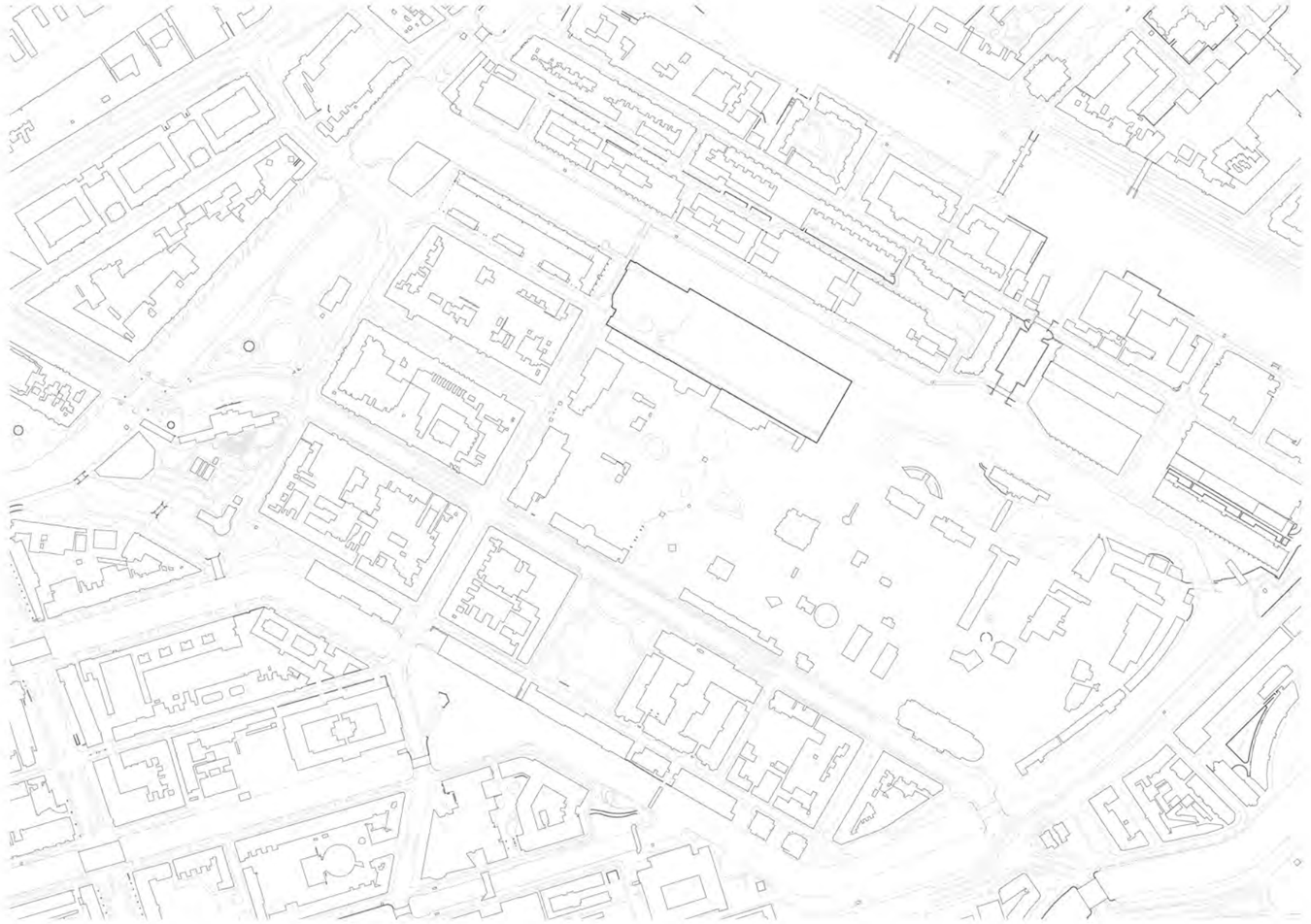
1. Theme

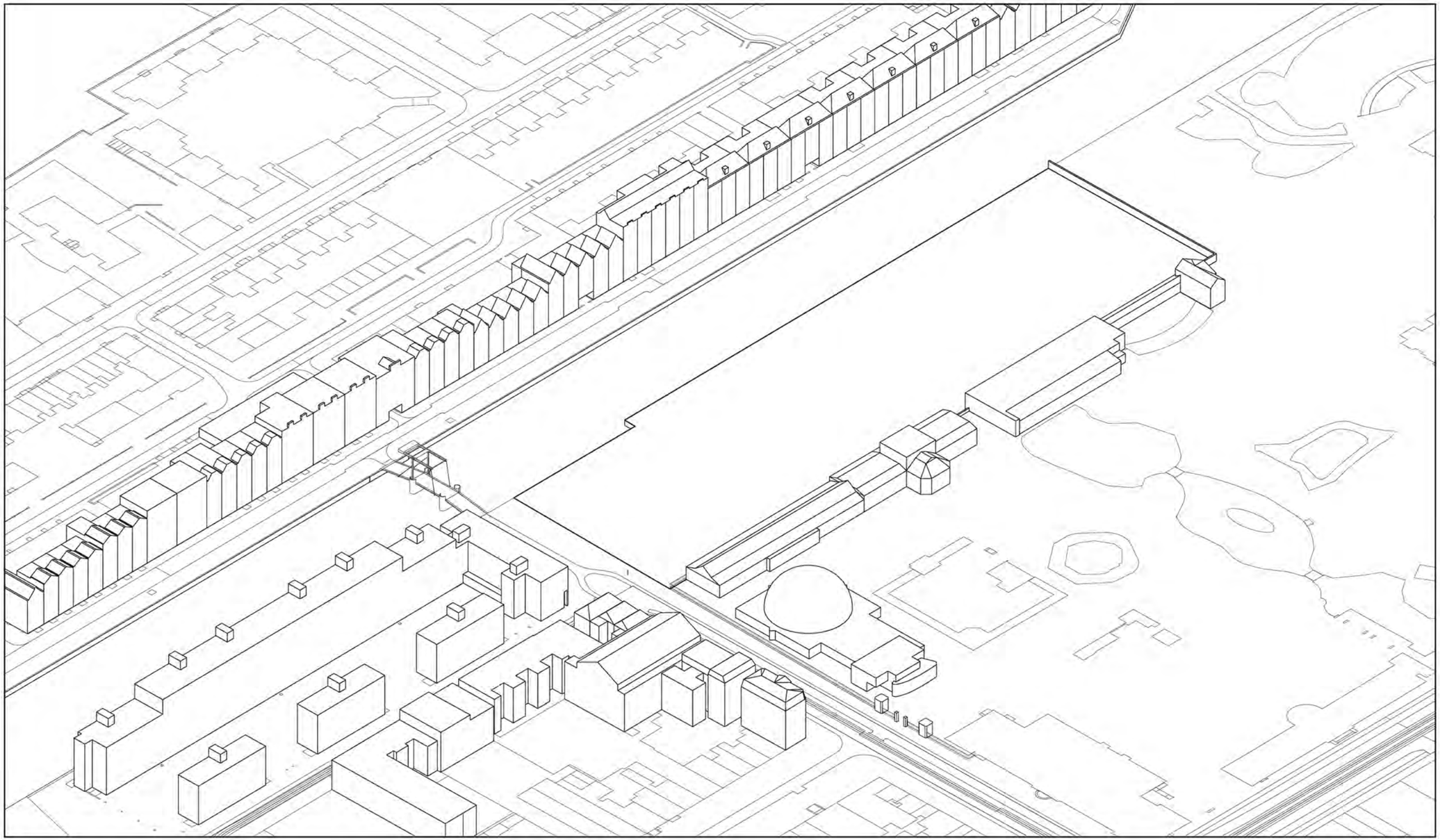
2. Site

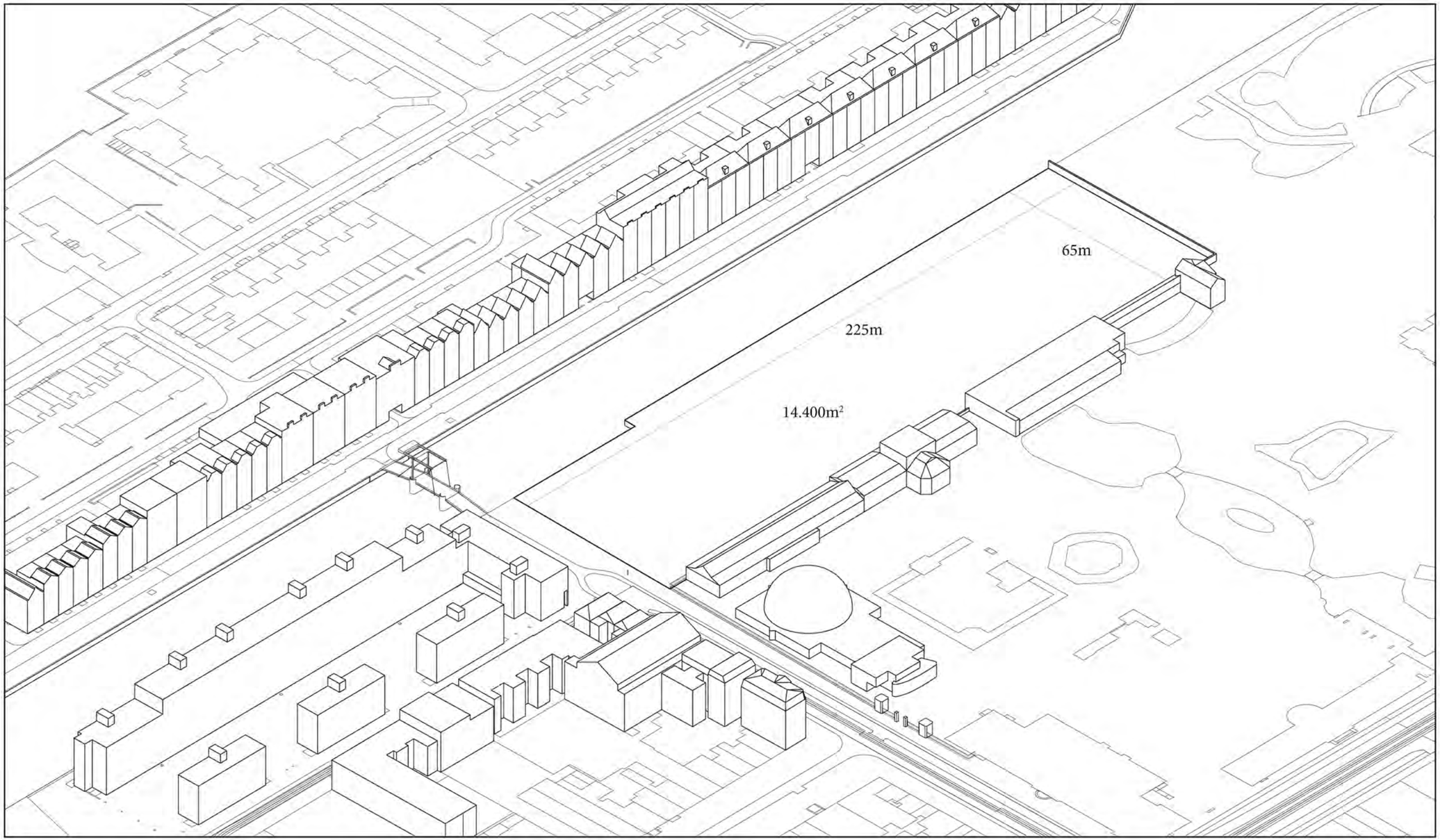
3. Project

The Plantage within Amsterdam








65m
225m
14.400m²

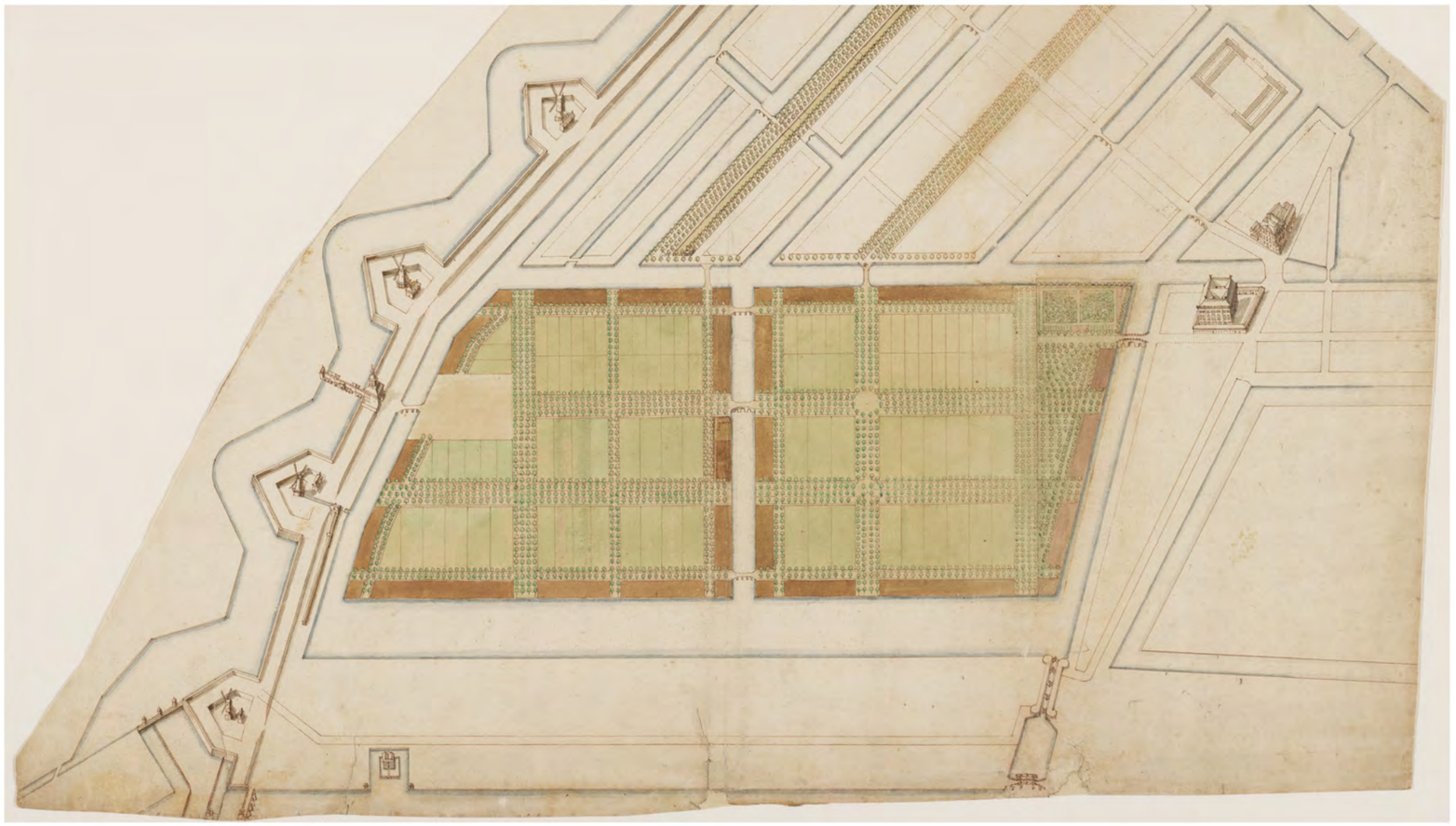
Site in comparison to BK City


HOTEL

# The Birth of the Plantage
1610-1682

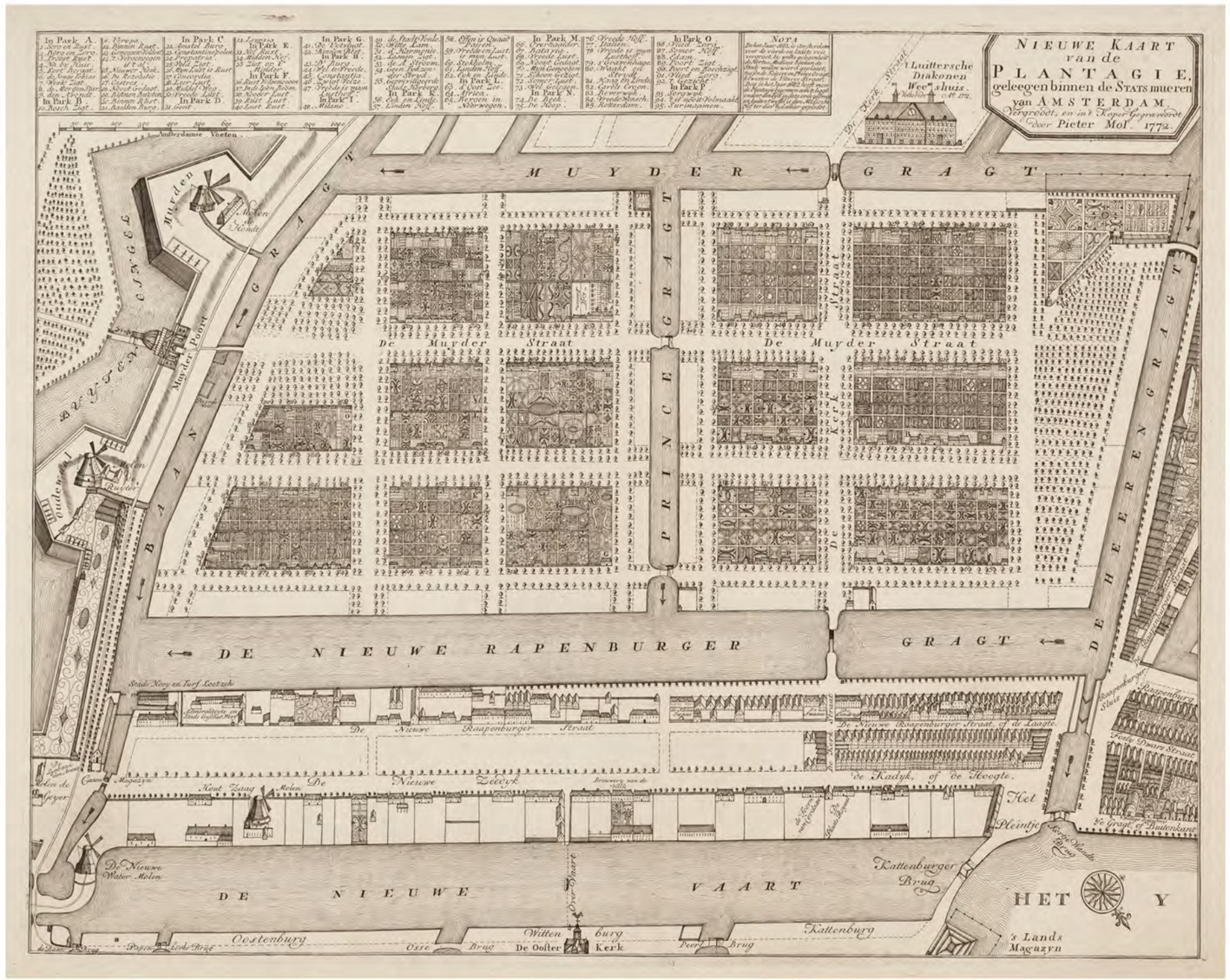

Map of Amsterdam by Nicolaes Berchem, 1688-1695

## The Birth of the Plantage
1610-1682

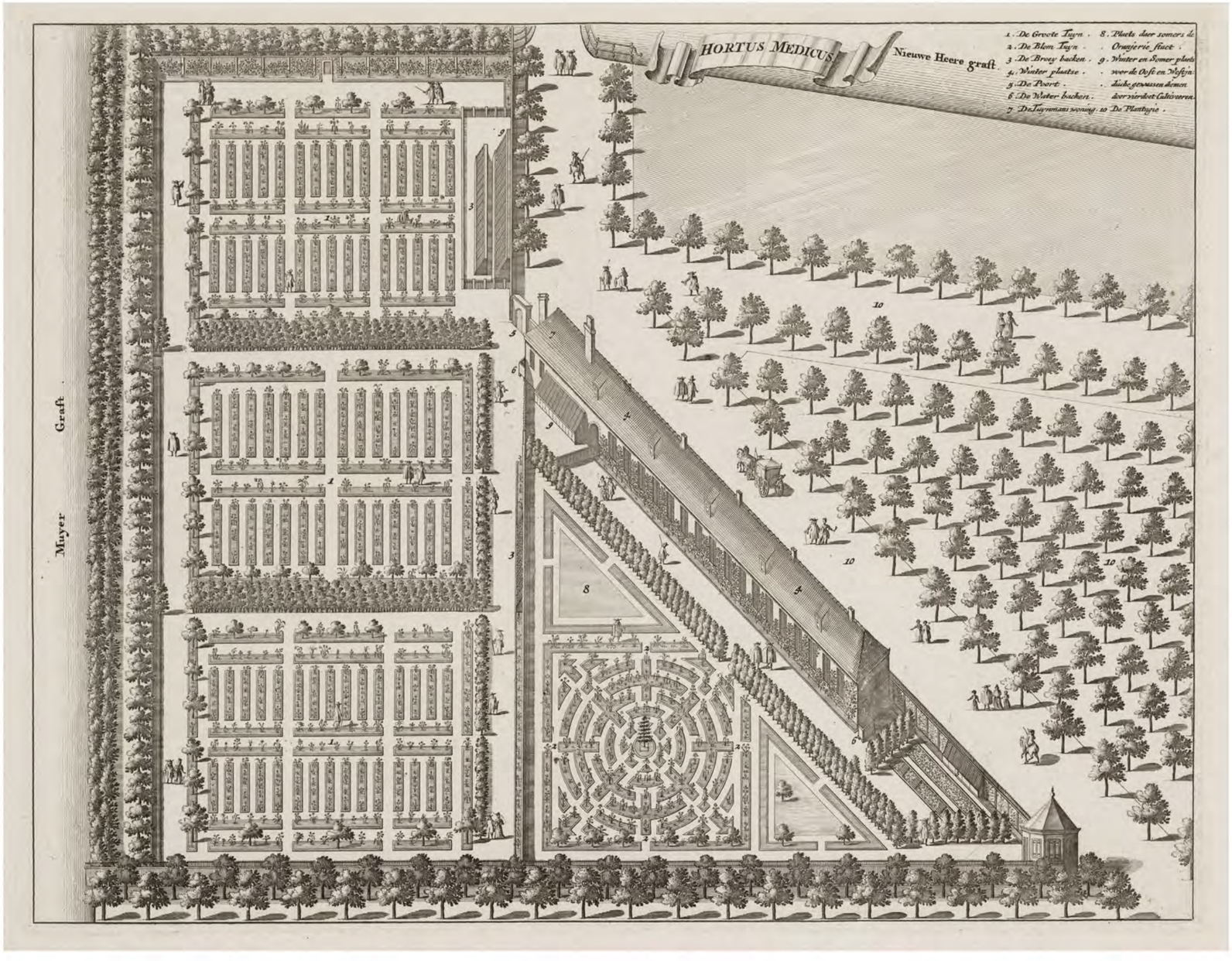


Design proposal for the Plantage by city engineer Jacob Bosch, 1682

# Map of the Plantage by Pieter Mol, 1772



# The Plantage as Pleasure Garden
1682-1795




Axonometrical plan of the Hortus Medicus, anonymous, 1693

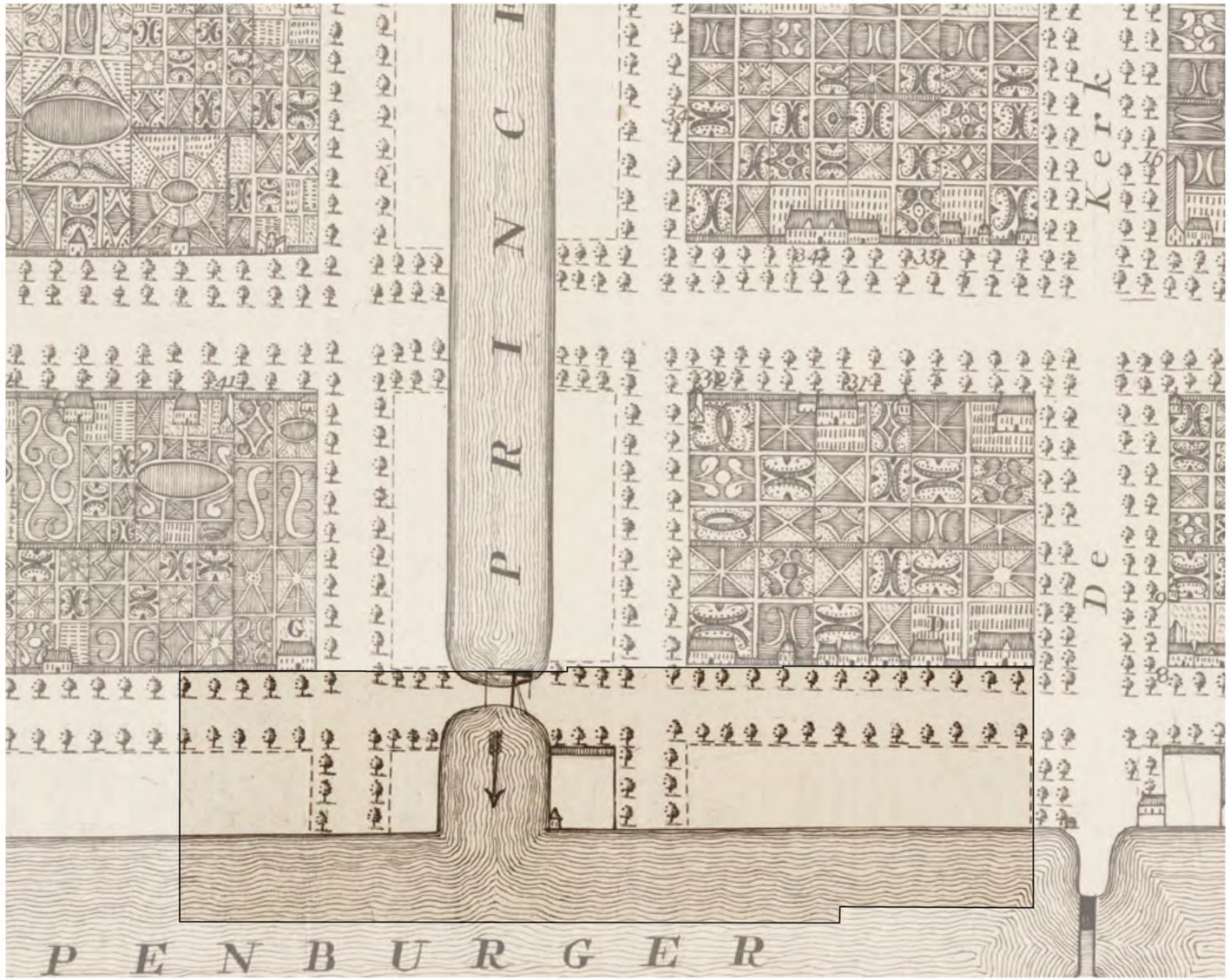
## The Plantage as Pleasure Garden
1682-1795

Gezicht op den middelwegh of Muider Straet in de Nieuwe Plantagie naer de Muider Poort, D. Stopendaal; A. en H. de Leth, 1725

*Gezicht op den* MIDDELWEGH *of* MUIDER STRAET *in de Nieuwe Plantagie naer de Muider Poort toe.*

*Vüe du Grand Chemin du Plantage vers la Porte de Muyden.*

**Site in relation to original Plantage**
Detail of Pieter Mol's map of the Plantage, 1772



**View onto site**
Nieuwe Prinsengracht as seen towards the present Entrepotdok, Jurriaan Andriessen, 1785 ca.

## Section through site in the 18th century

# Section through site in the current situation

**Zoo controversy**
Gallery of predators in Artis, drawing by Noach van der Waals, 1875

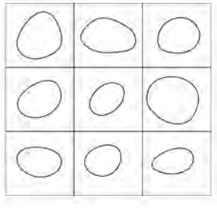
**David Hancocks**
Zoo architect, director and critic

"I would like to see zoos somehow getting involved in discussions around ecosystems, instead of limiting themselves to talking about how to conserve a giraffe, which is a good and noble thing - but the important place to focus on is your own backyard."

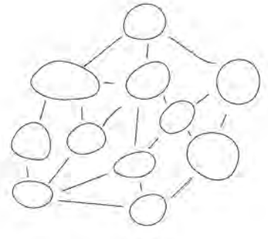
In: *Het nieuwe Artis*. Directed by Willemiek Kluijfhout, 2018.

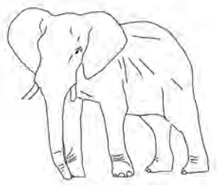
**The zoo of the future?**

from exotic to native



from species to ecologies





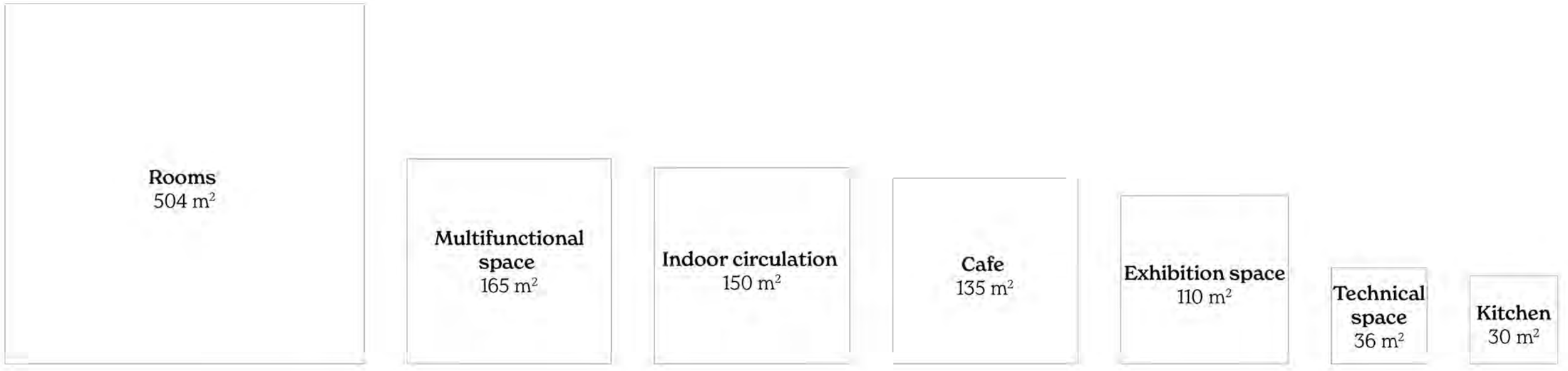
from megafauna to small life forms

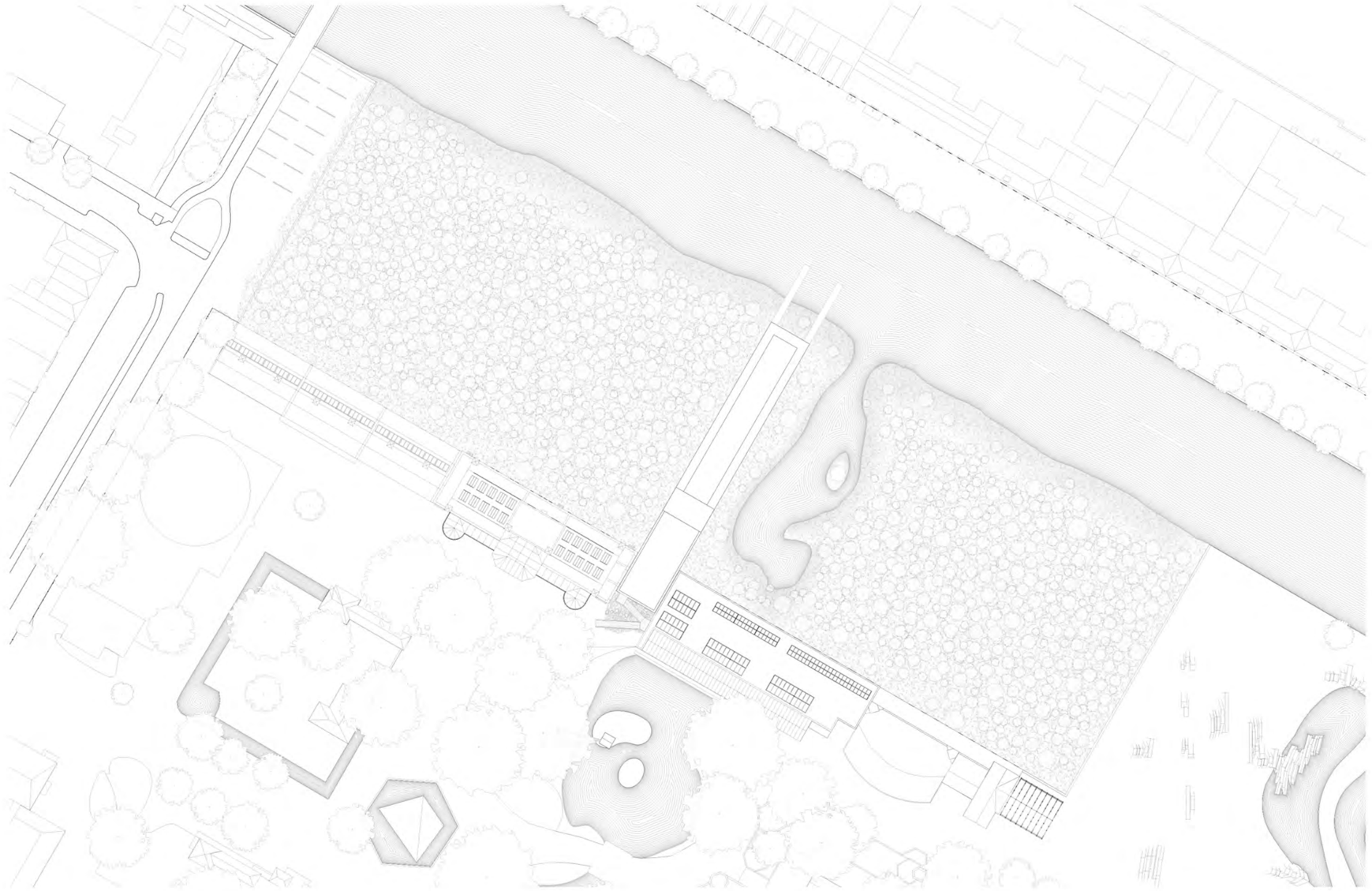
from artificial confinements to living habitats

1. Theme
2. Site
**3. Project**

The Urban Forest Hotel is a place where hotel guests, Amsterdammers and other visitors will find a small but profoundly natural forest of native trees within the city. It is a space where human and non-human animals can come and live together. Located besides the Artis zoo, it is a place that questions our relationship to nature as humans. The project tries to nurture empathy for the environment that we humans share with our fellow denizens of the natural world.

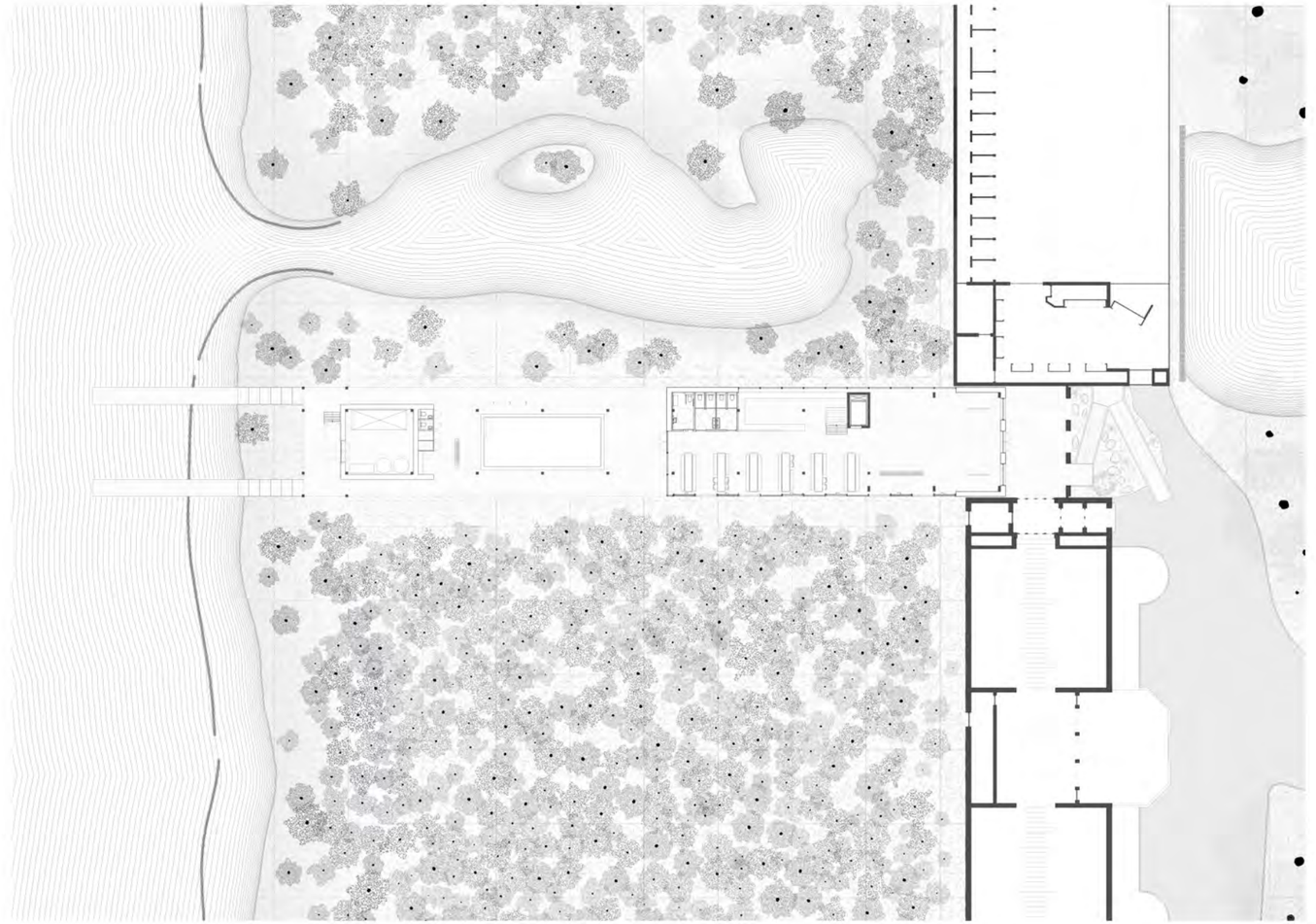
# Program


Rooms
504 m²
Multifunctional space
165 m²
Indoor circulation
150 m²
Cafe
135 m²
Exhibition space
110 m²
Technical space
36 m²
Kitchen
30 m²
Rooftop garden
420 m²
Pool
50 m²

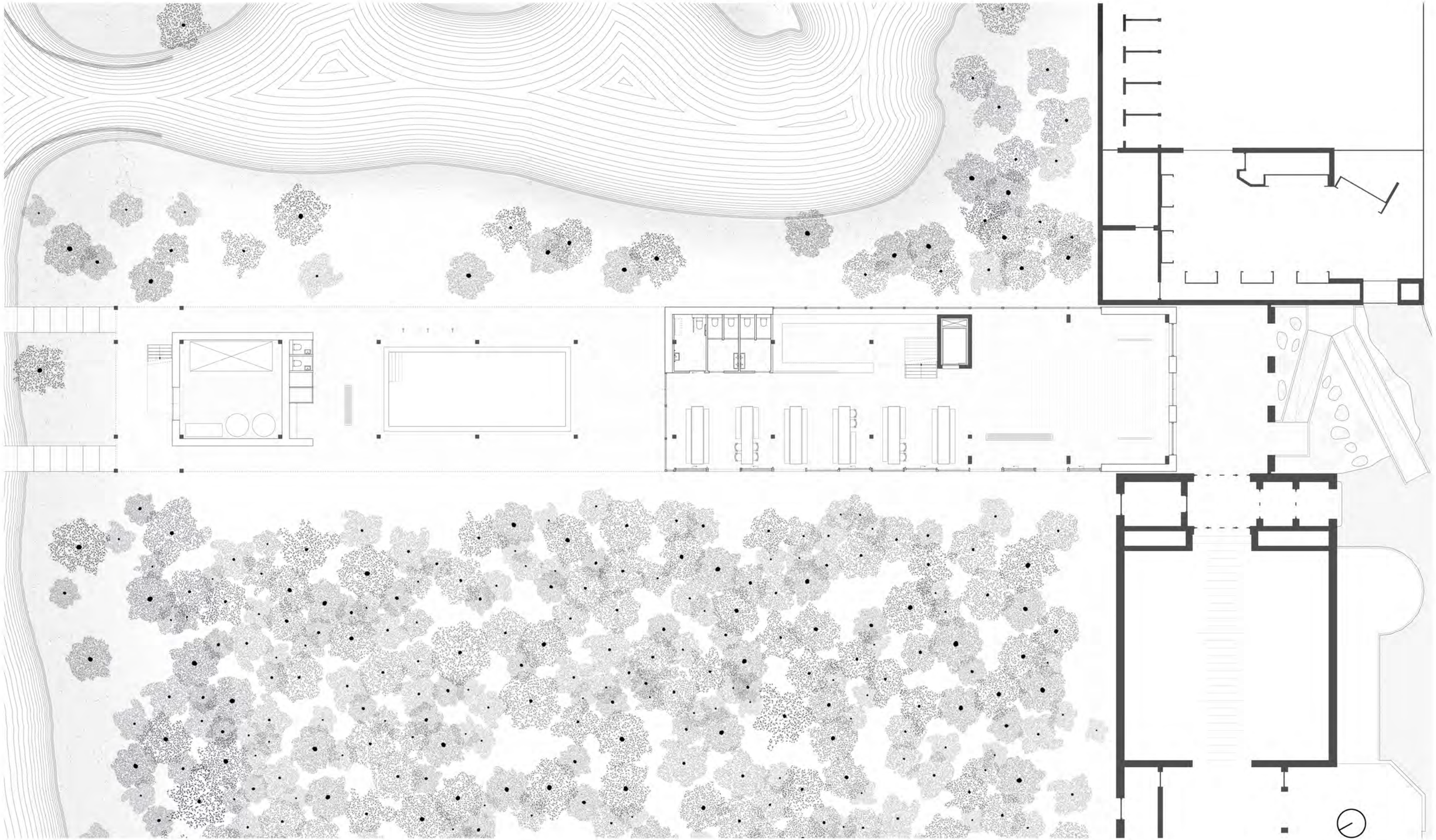


# Elevation - Artis facade

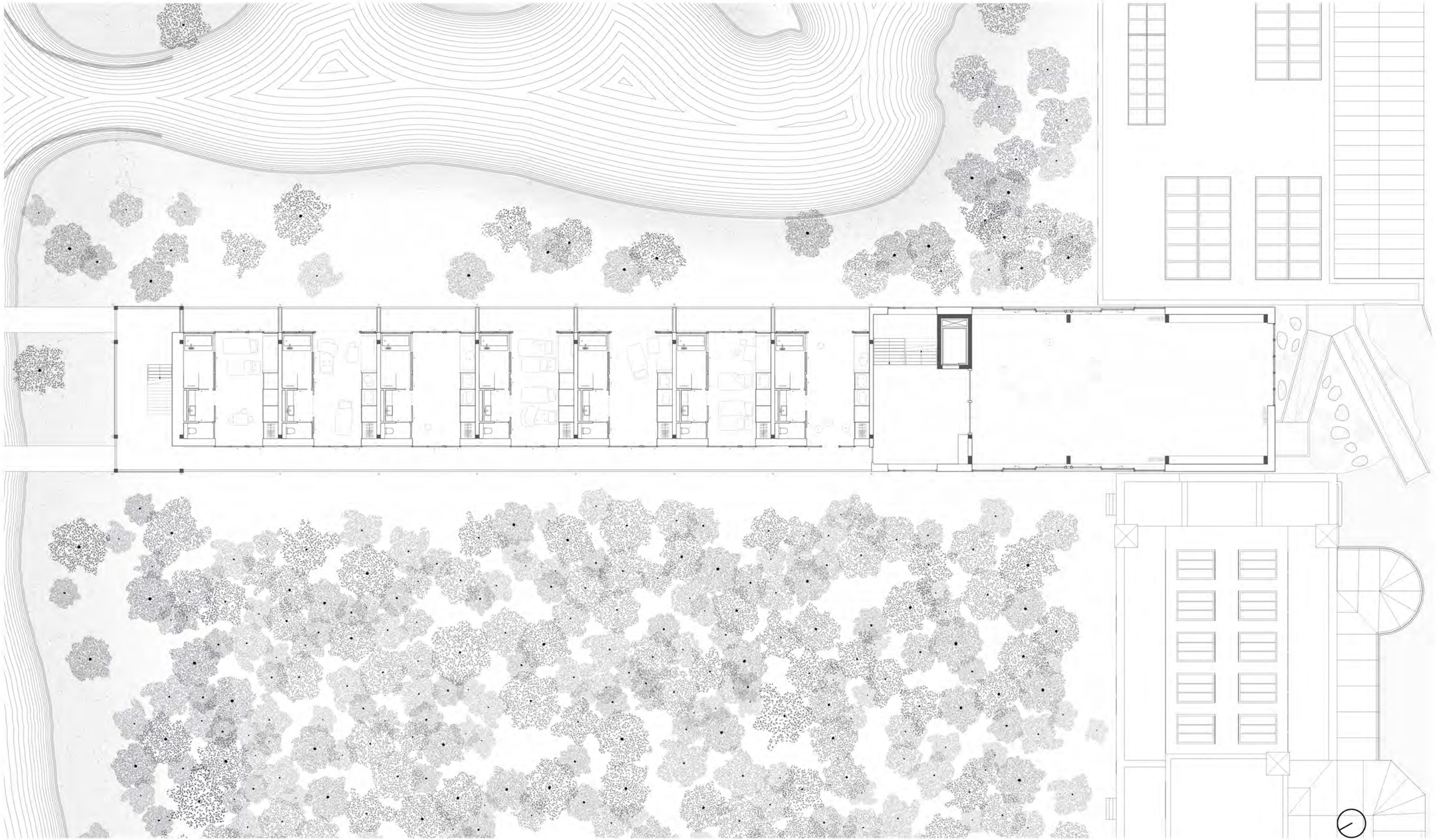
Ground floor

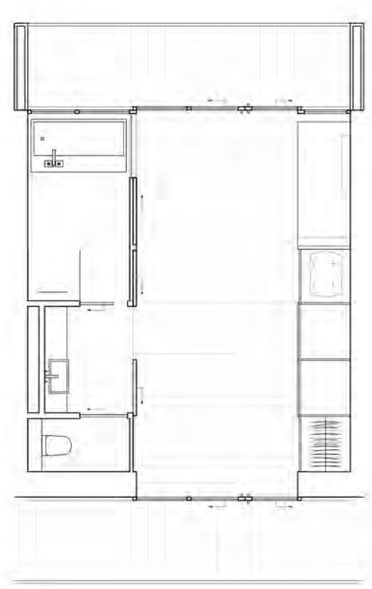


Ground floor



First floor

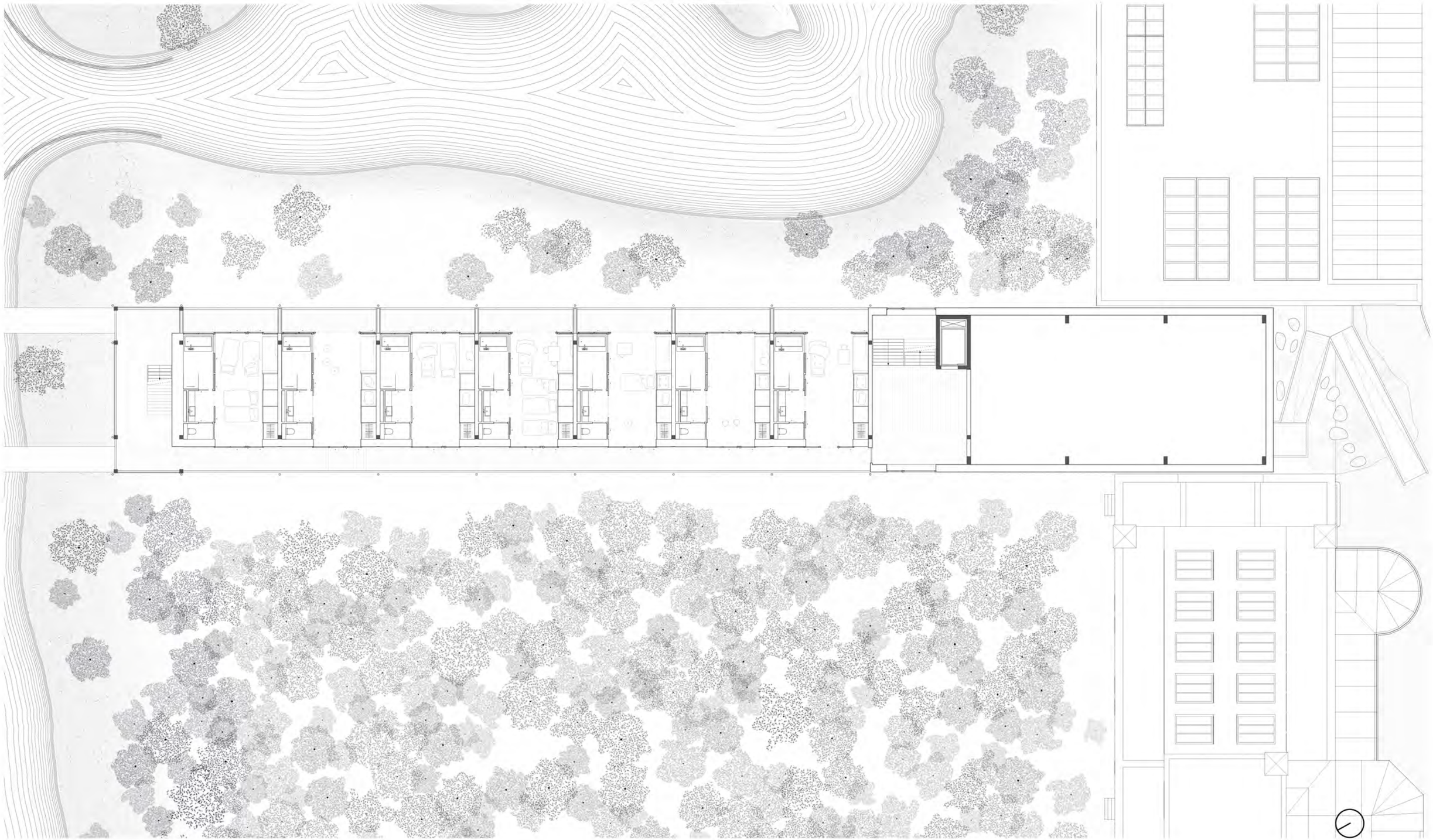




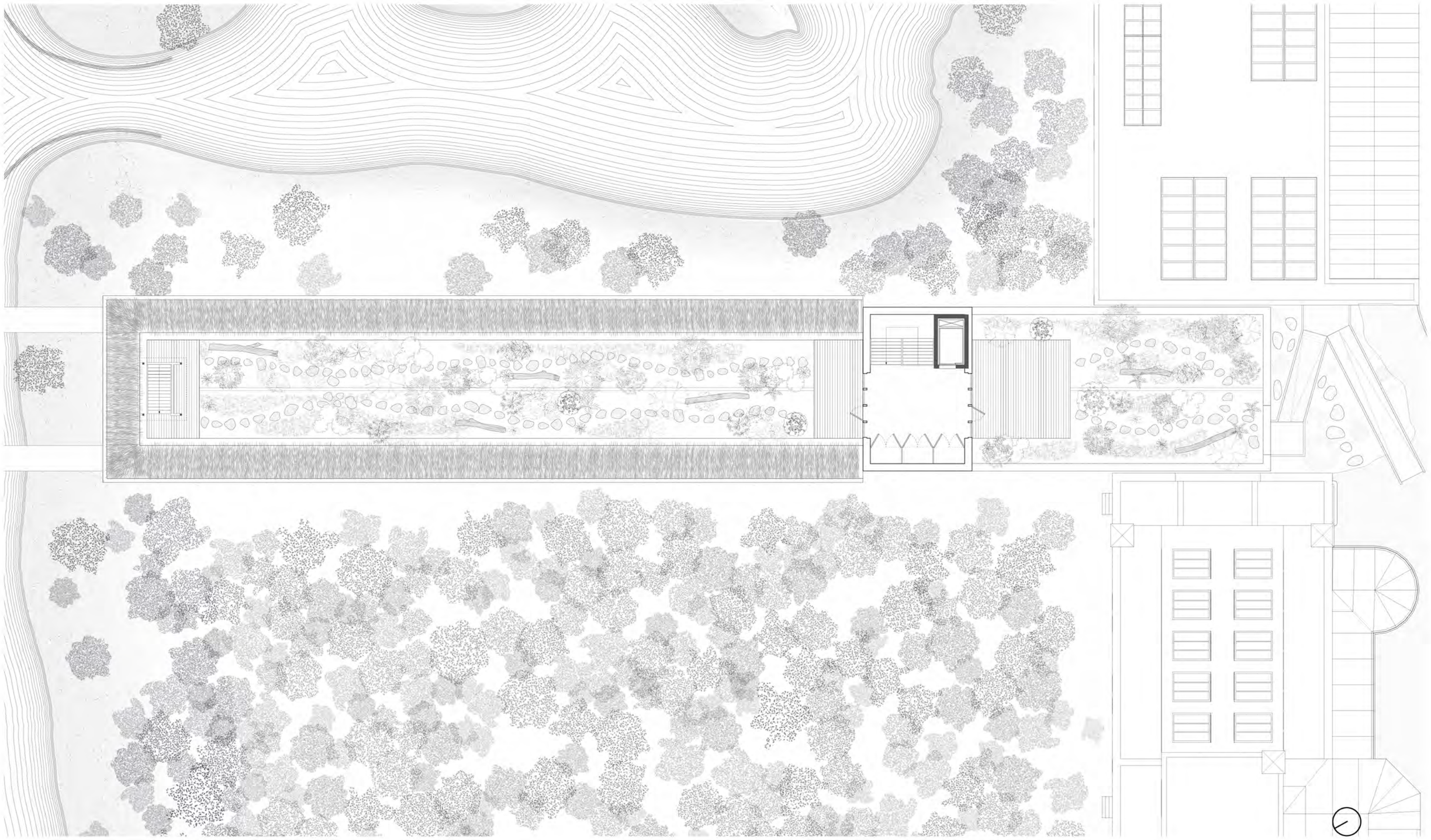
Night mode: futons laid out

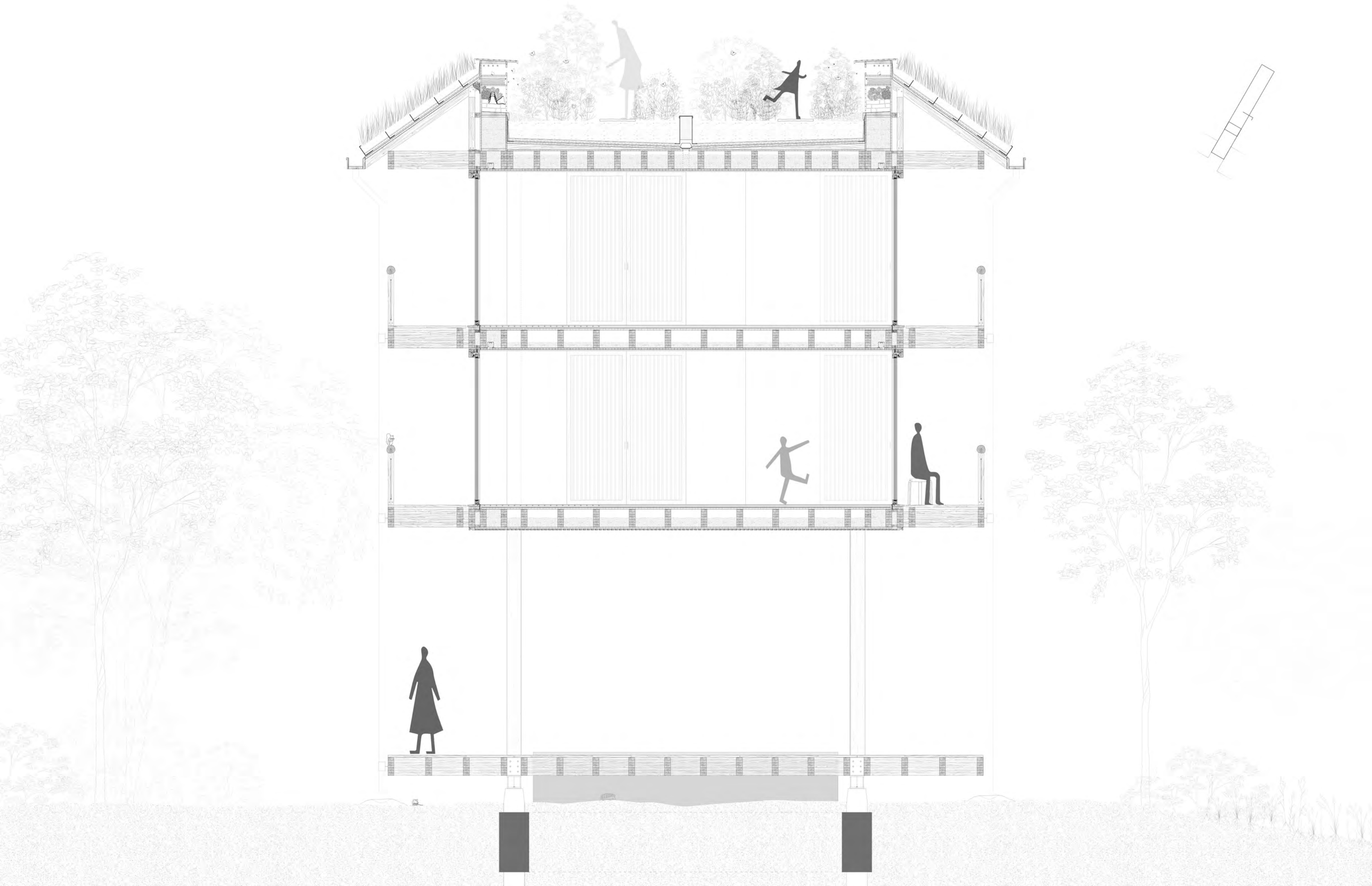
Multifunctional space

Second floor

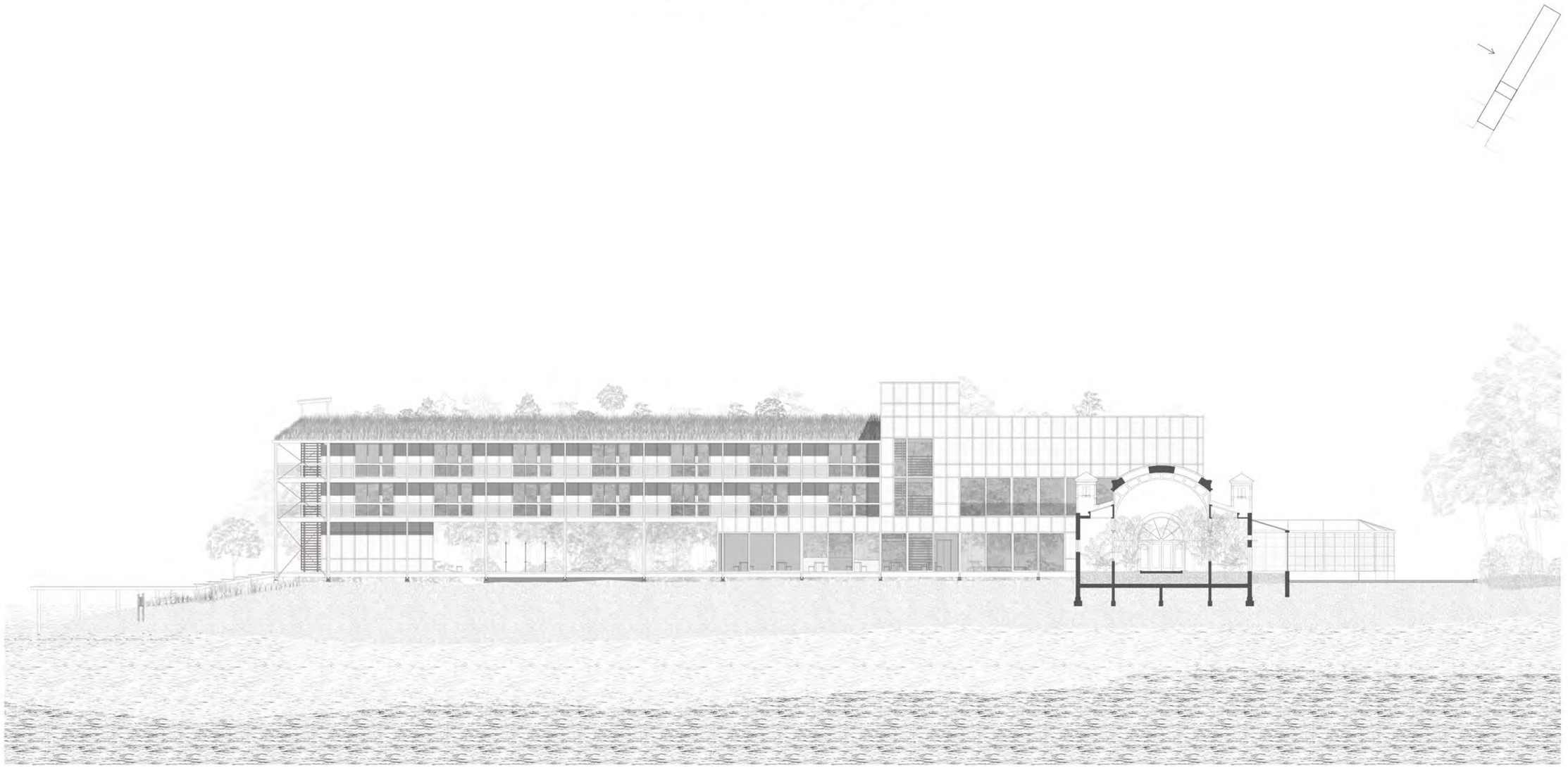


# Rooftop

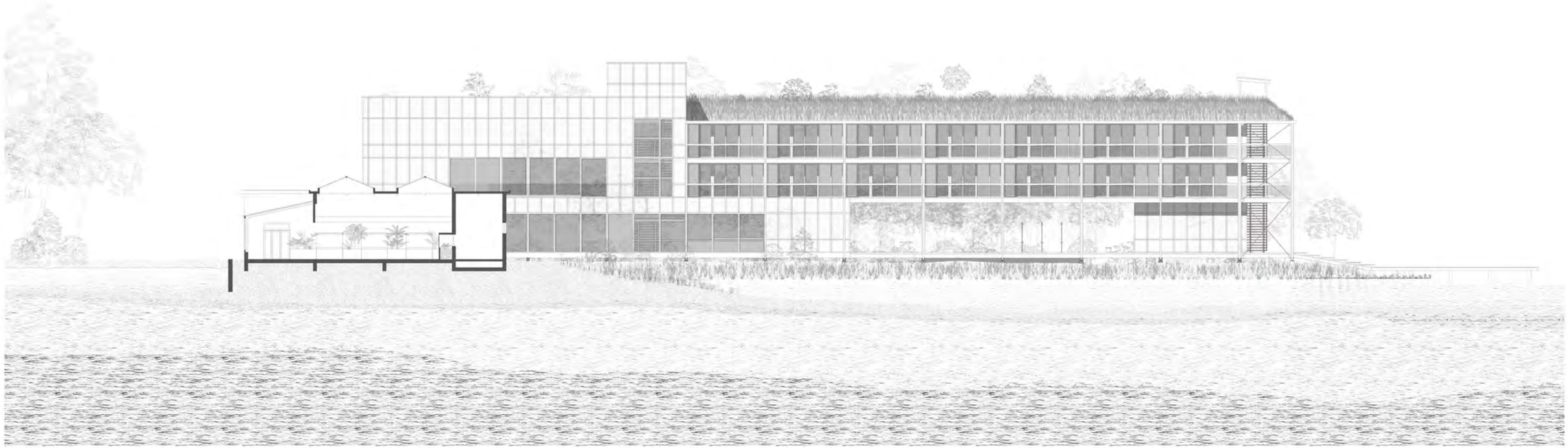




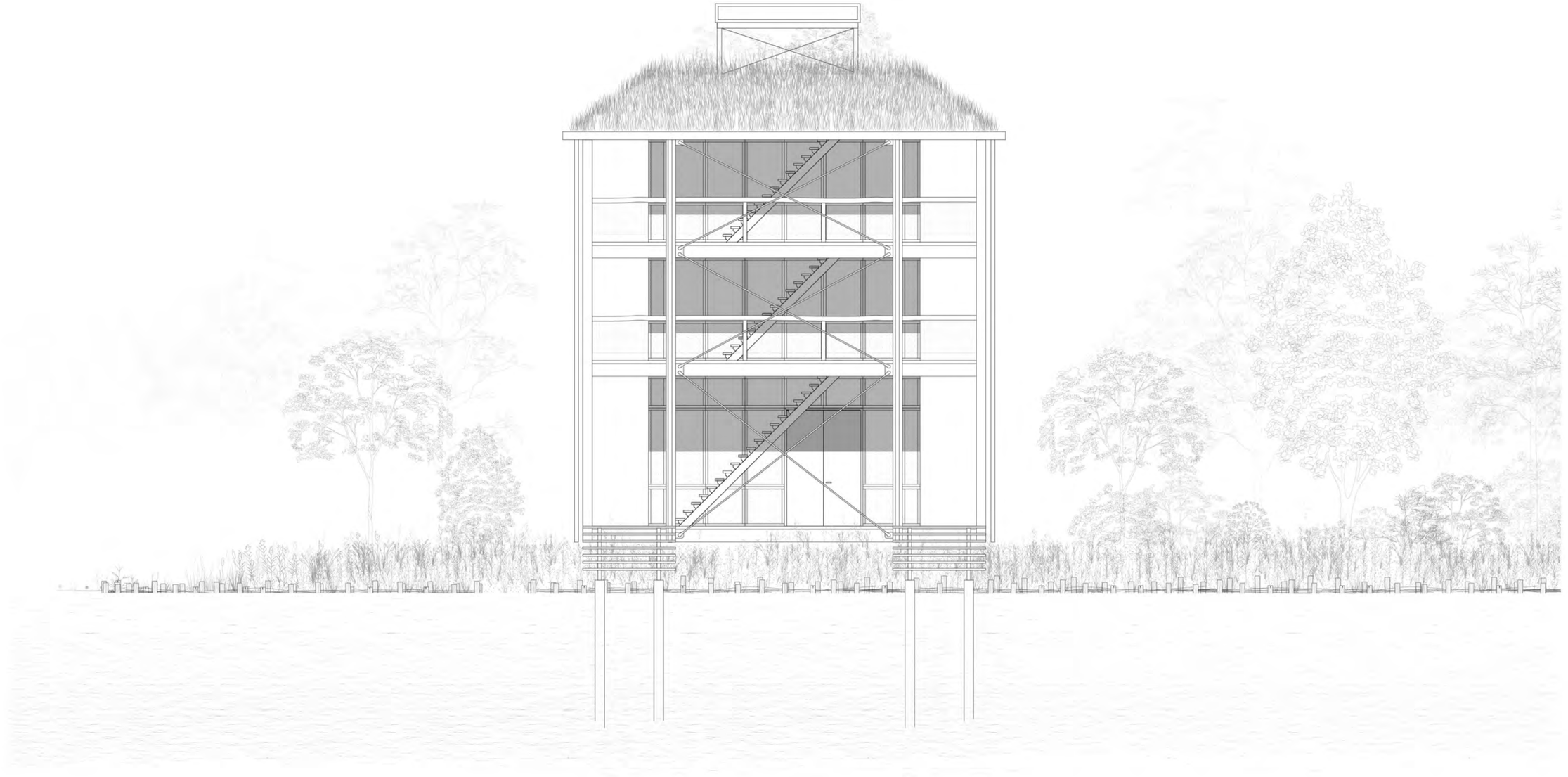
# Elevation - Street facing facade



Elevation - Facing new water



Elevation - Facing canal



# Phasing

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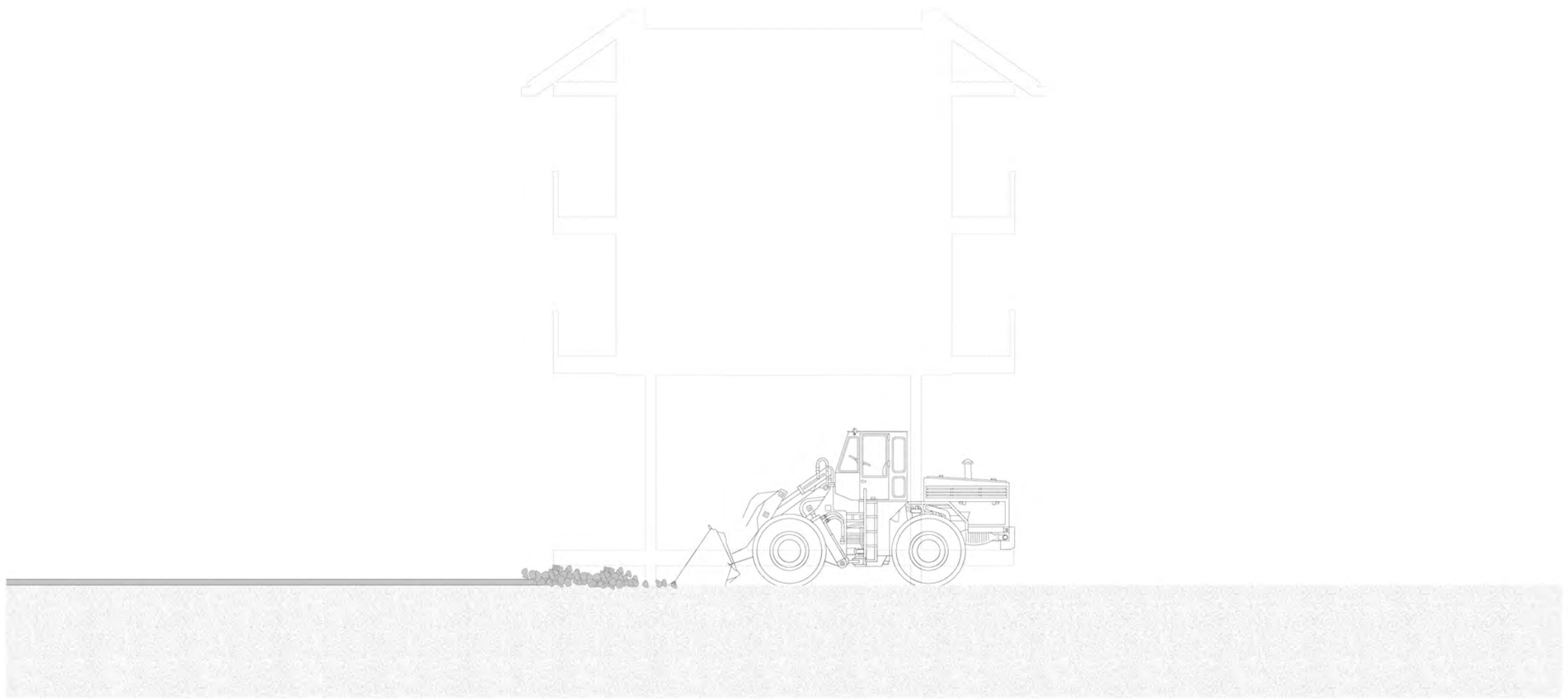

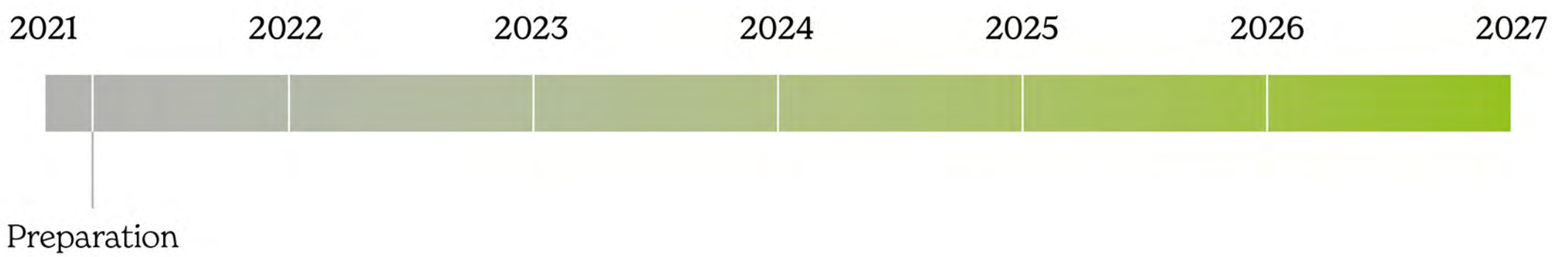

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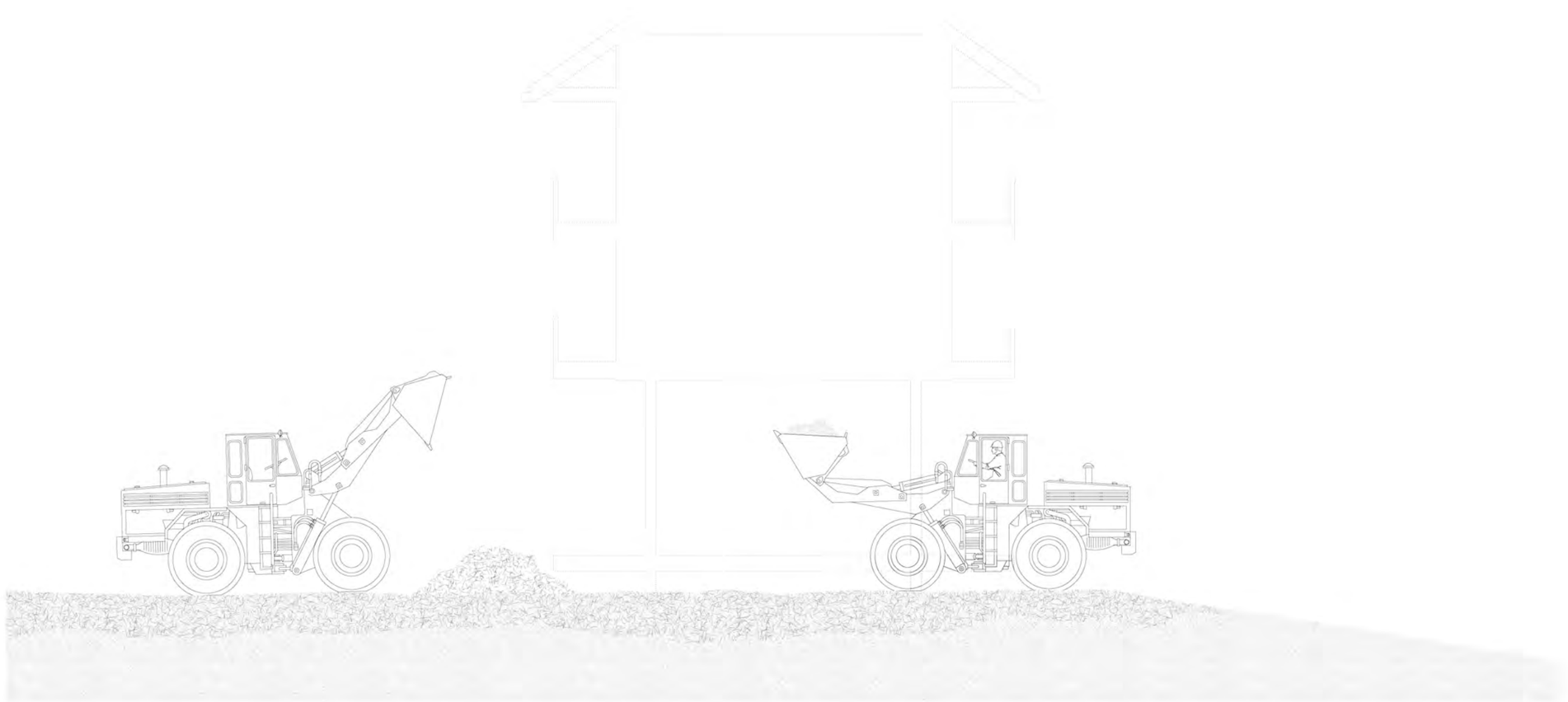

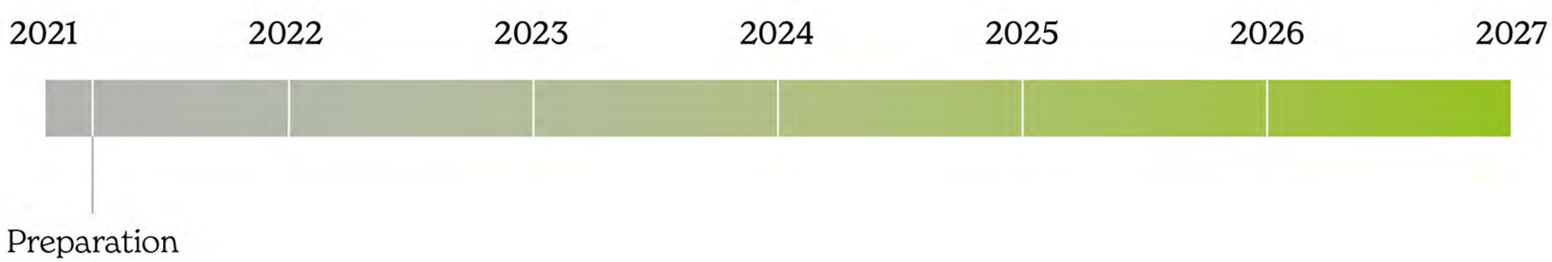

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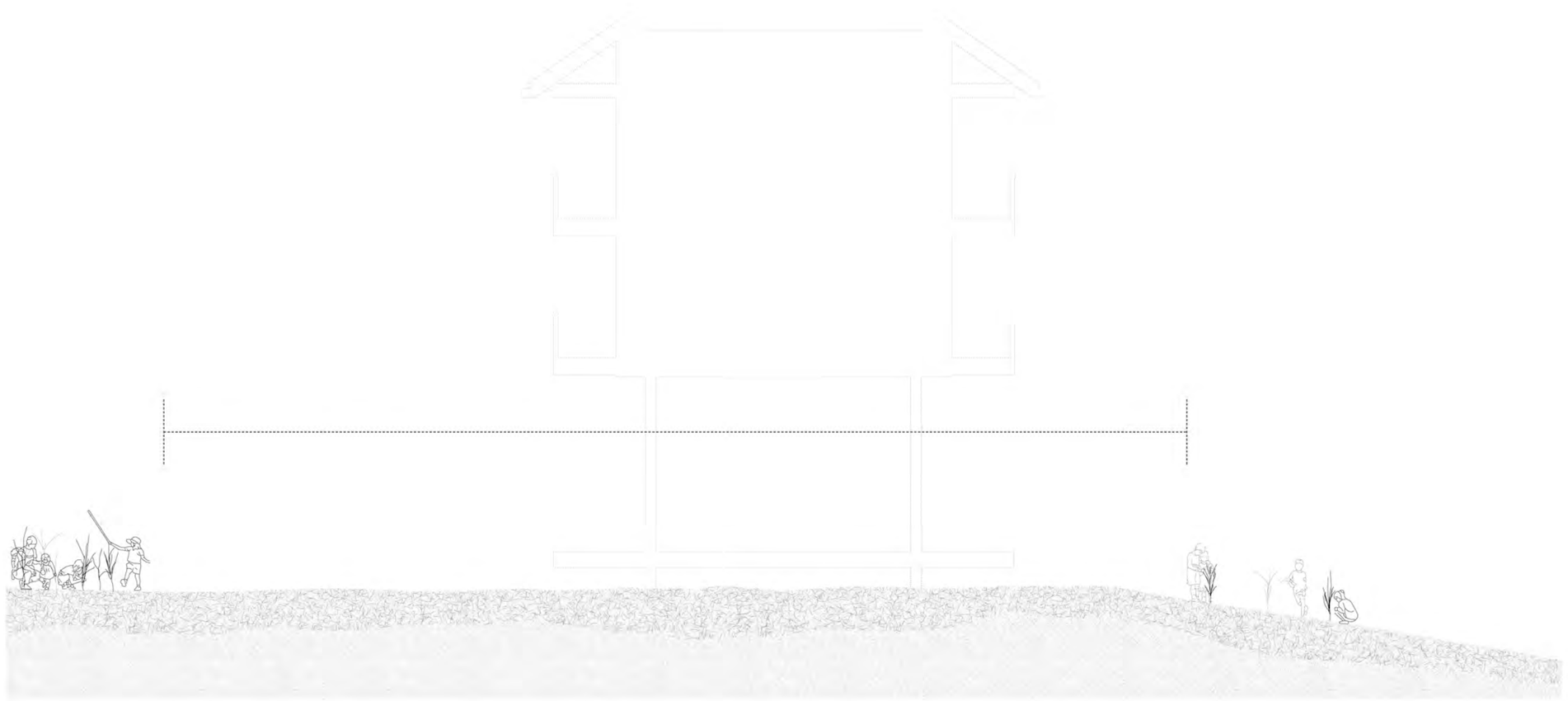
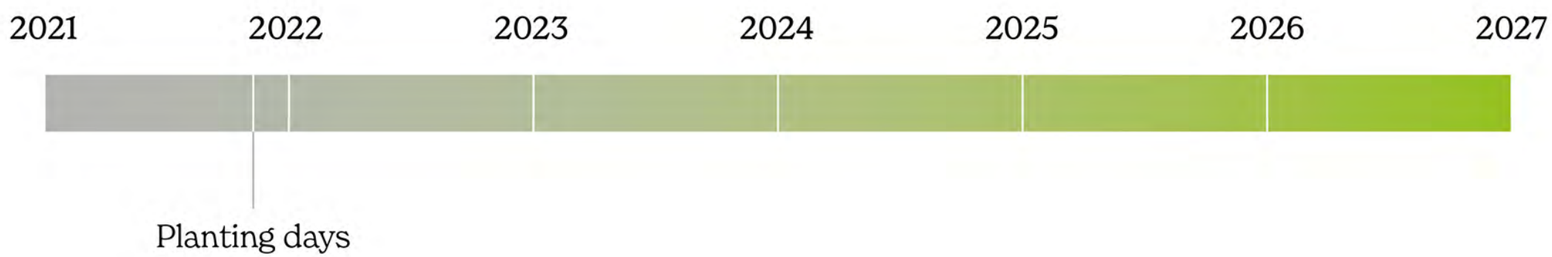
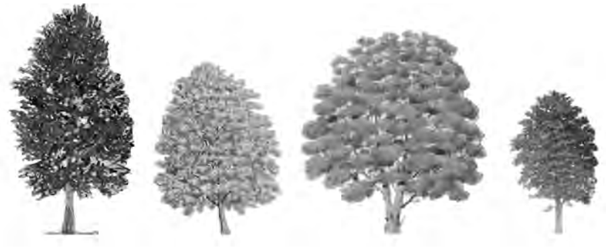






**Canopy layer**
25-40m

1. Large-leaved linden (Tilia platyphyllos)
2. Common ash (Fraxinus excelsior)
3. European beech (Fagus sylvatica)

Small Leaved Lime (Tilia cordata)
Common Aspen (Populus tremula)
Sessile Oak (Quercus petraea)
Wych Elm (Ulmus glabra)
Common Alder (Alnus glutinosa)
English Oak (Quercus robur)
White Birch (Betula pubescens)
Black Poplar (Populas nigra)

**Tree layer**
15-30m

1. White Birch (Betula pubescens)
2. Bird Cherry (Prunus padus)
3. Field Maple (Acer campestre)
4. Common Pear (Pyrus communis)

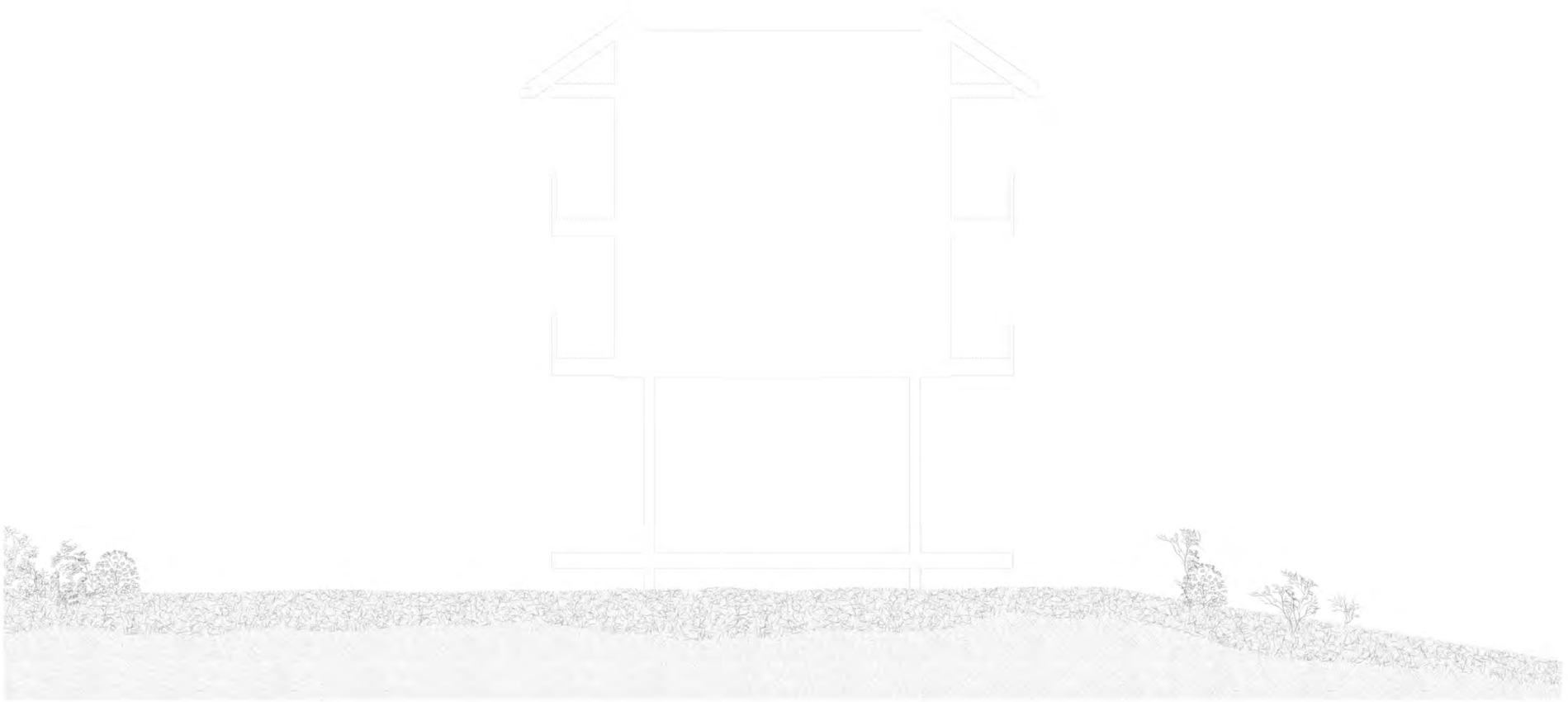
Silver Birch (Betula pendula)
European Hornbeam (Carpinus betulus)
White Willow (Salix alba)
European White Elm (Ulmus laevis)
Common Ash (Fraxinus excelsior)
English Elm (Ulmus minor)
Crack willow (Salix fragilis)

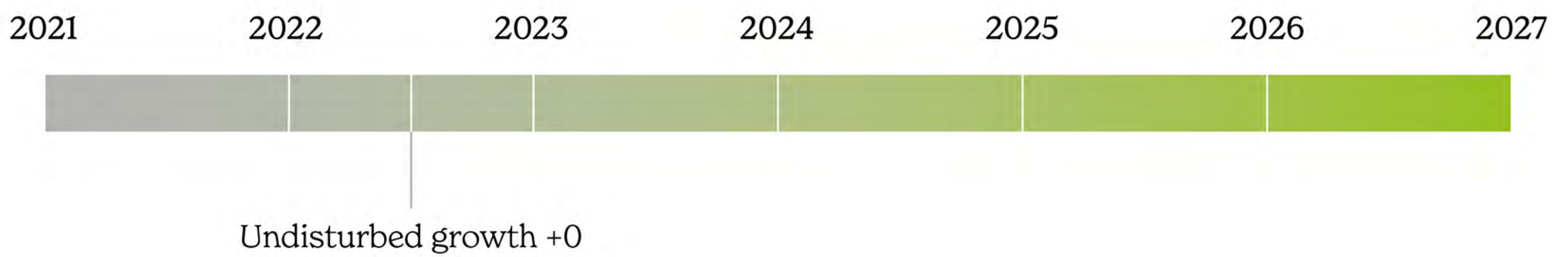
**Sub-tree layer**
5-15m

1. Goat Willow (Salix caprea)
2. Midland Hawthorn (Crataegus laevigata)
3. Bay Willow (Salix pentrandra)
4. Common Holly (Ilex aquifolium)
5. Crab Apple (Malus sylvestris)

Common Sallow (Salix cinerea)
Common Hazel (Corylus avellana)
Rowan (Sorbus aucuparia)

# Phasing





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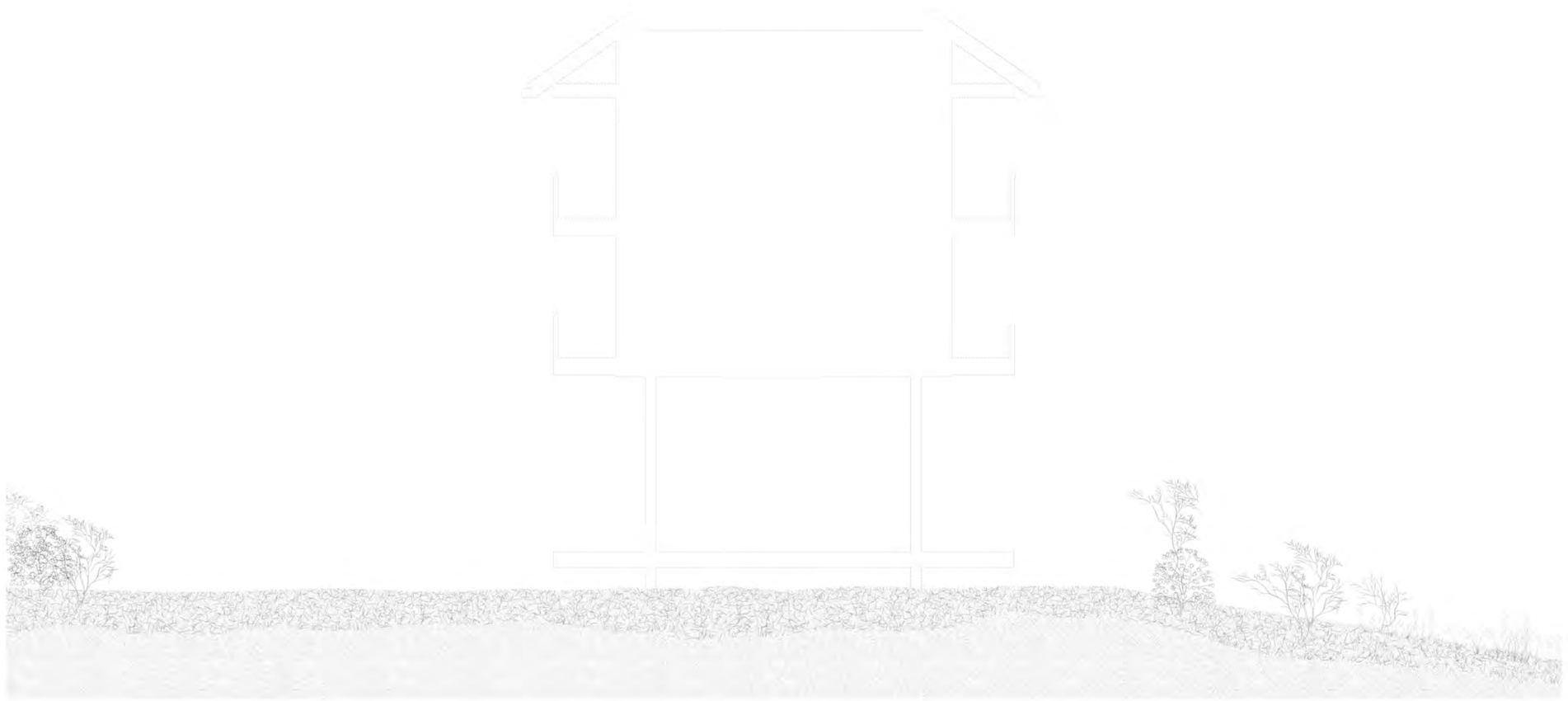

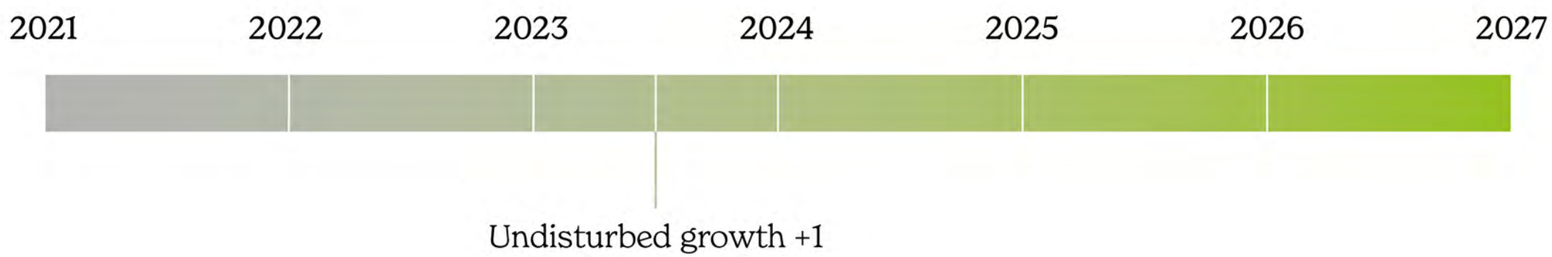

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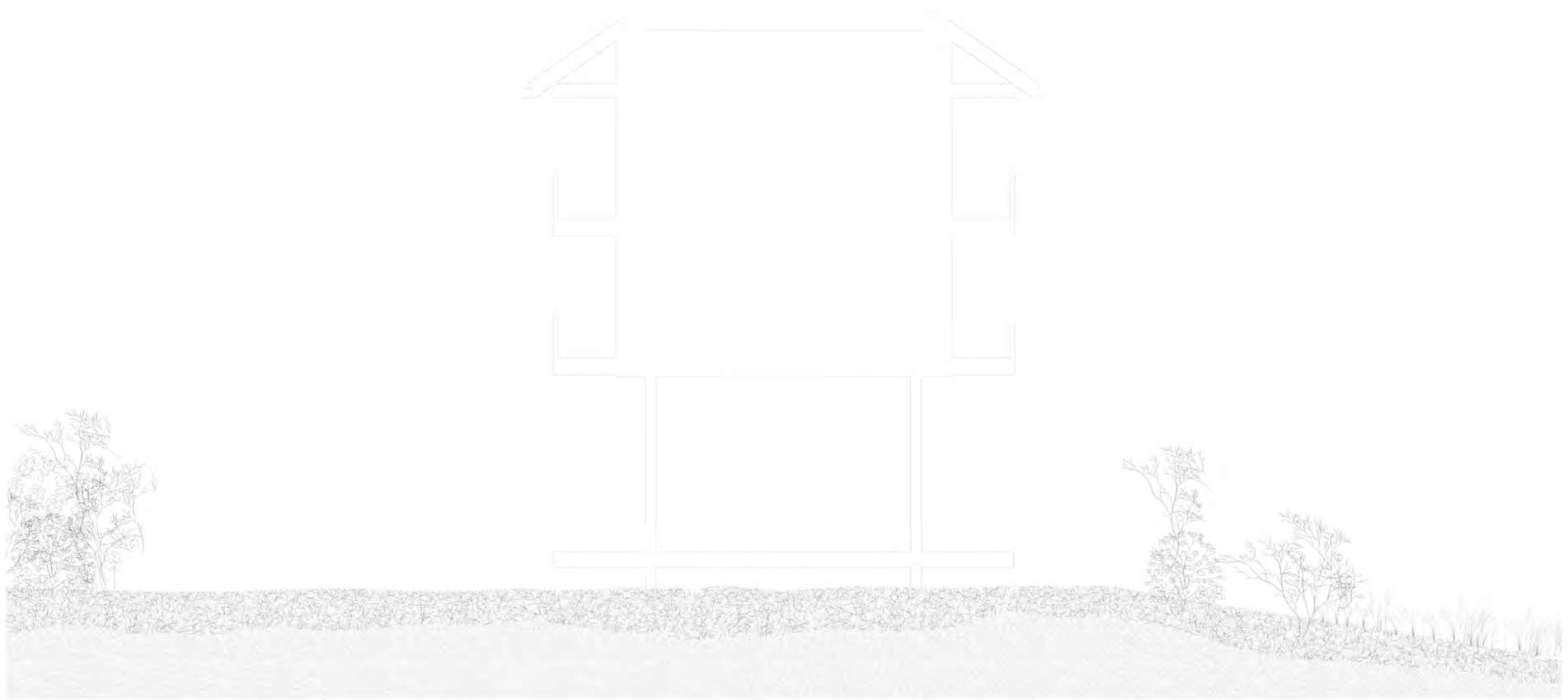

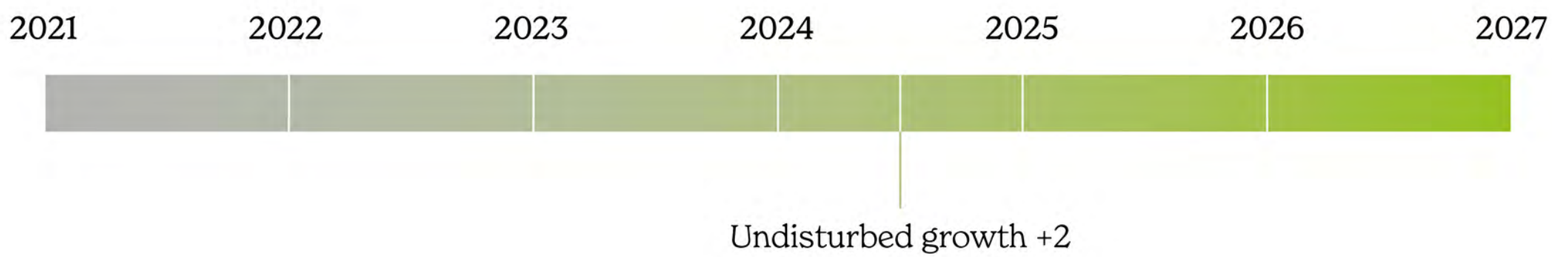

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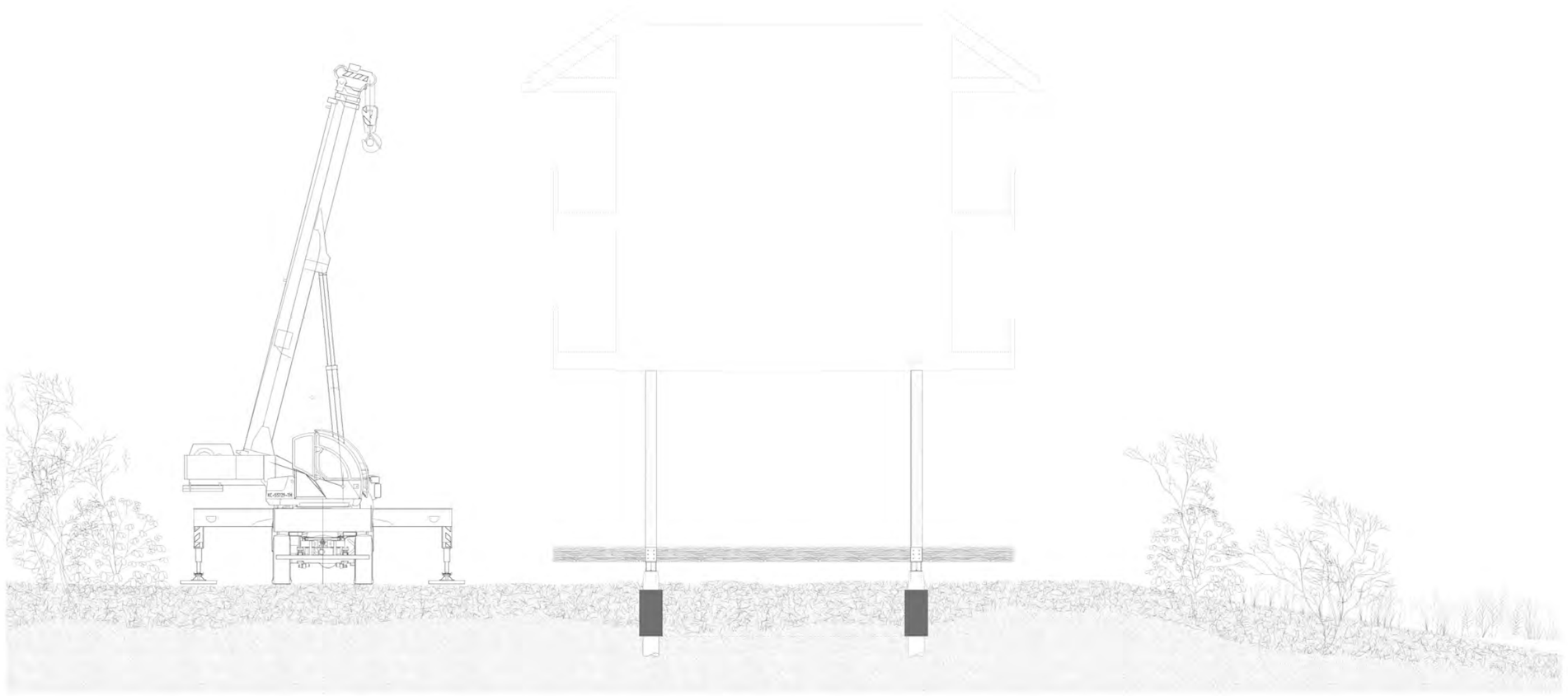
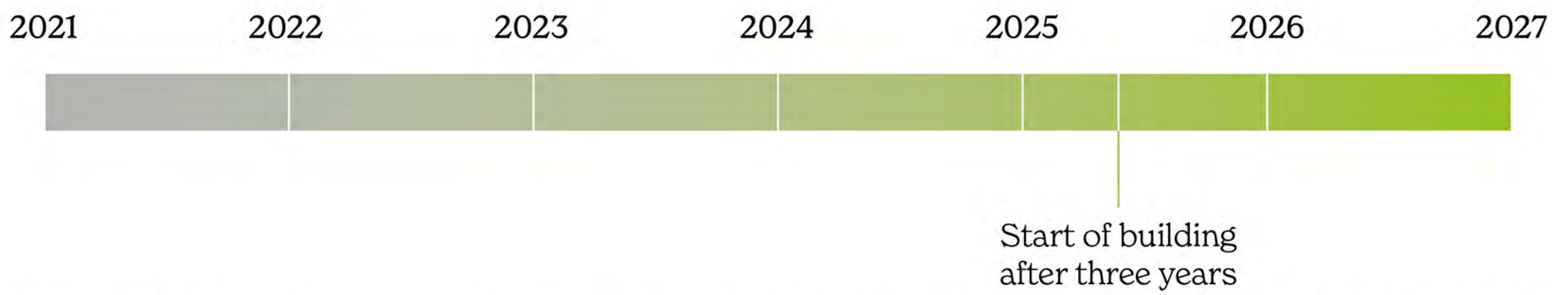
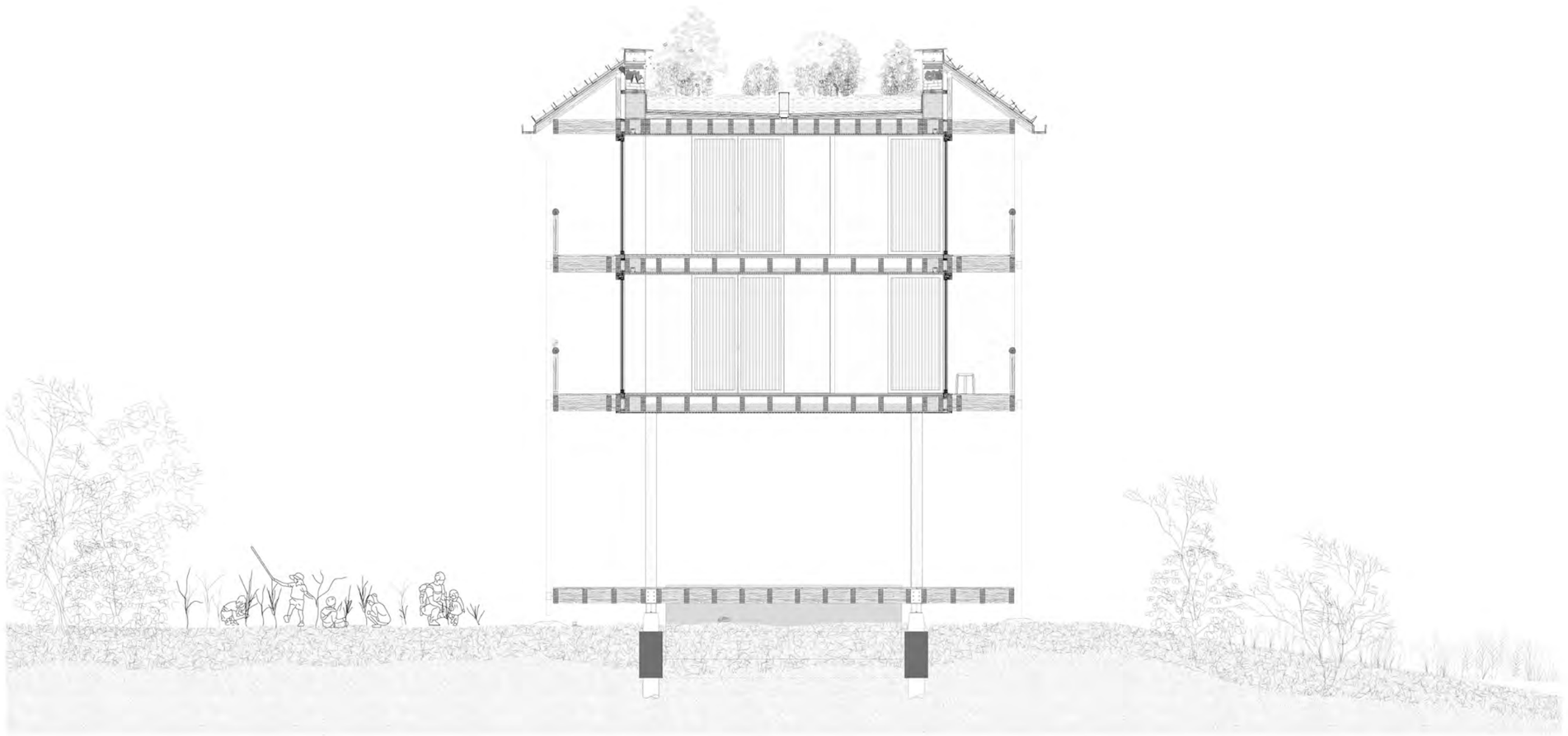
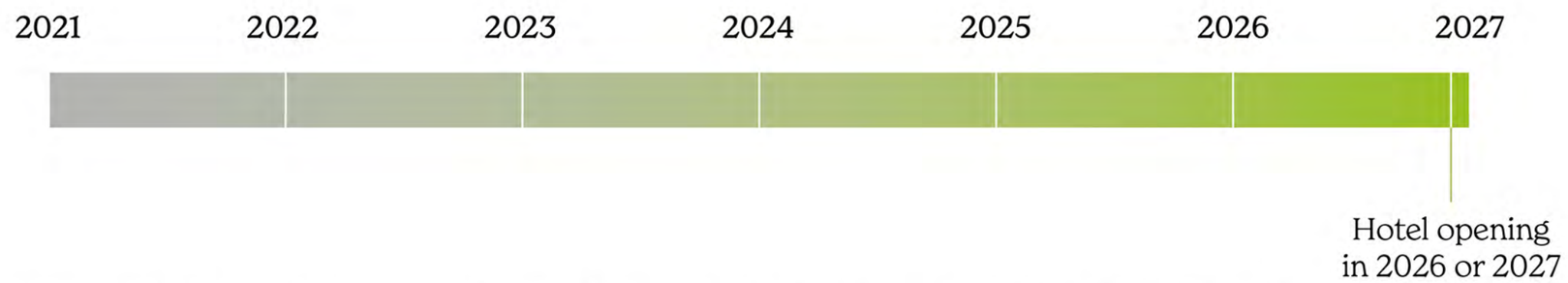


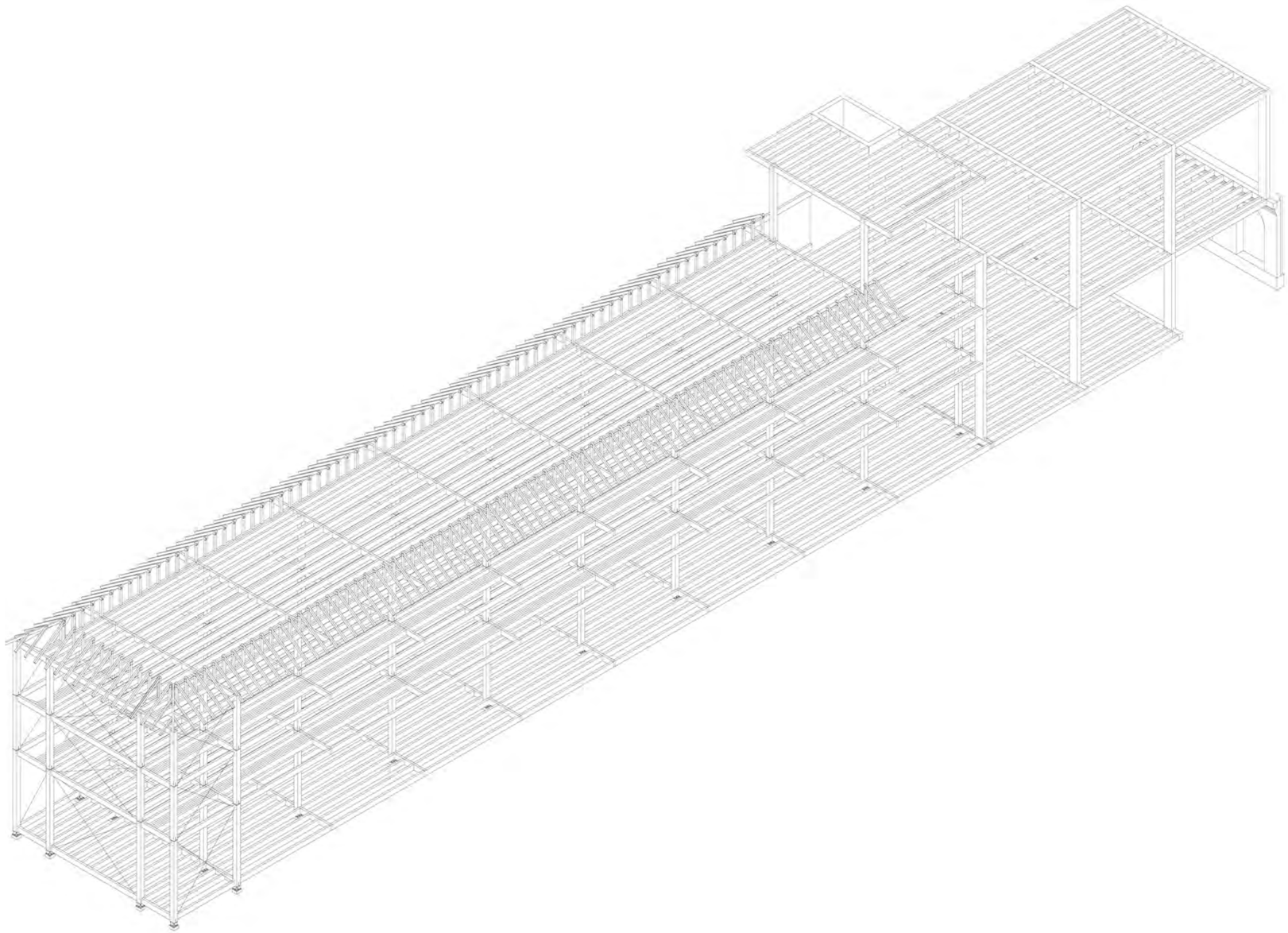

2021
2022
2023
2024
2025
2026
2027
Start of building
after three years

# Phasing

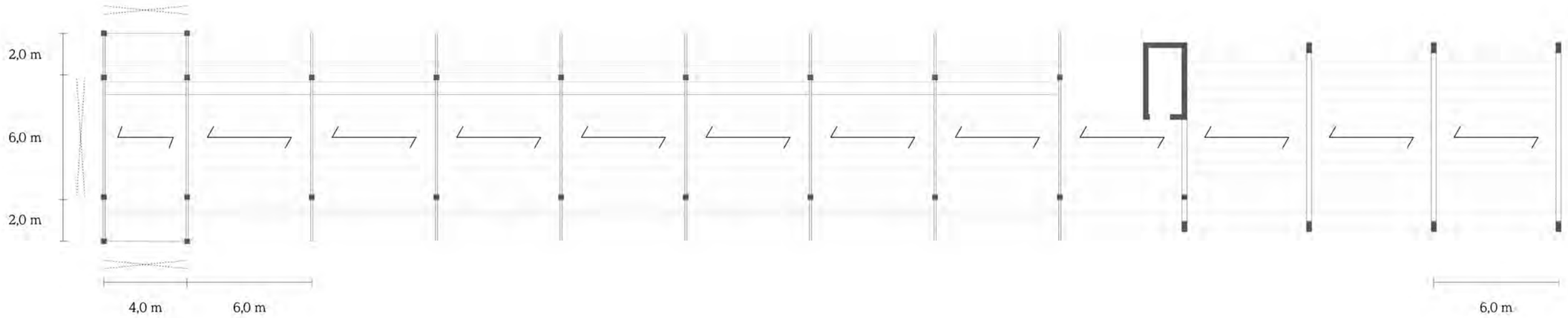



2021
2022
2023
2024
2025
2026
2027
Hotel opening
in 2026 or 2027

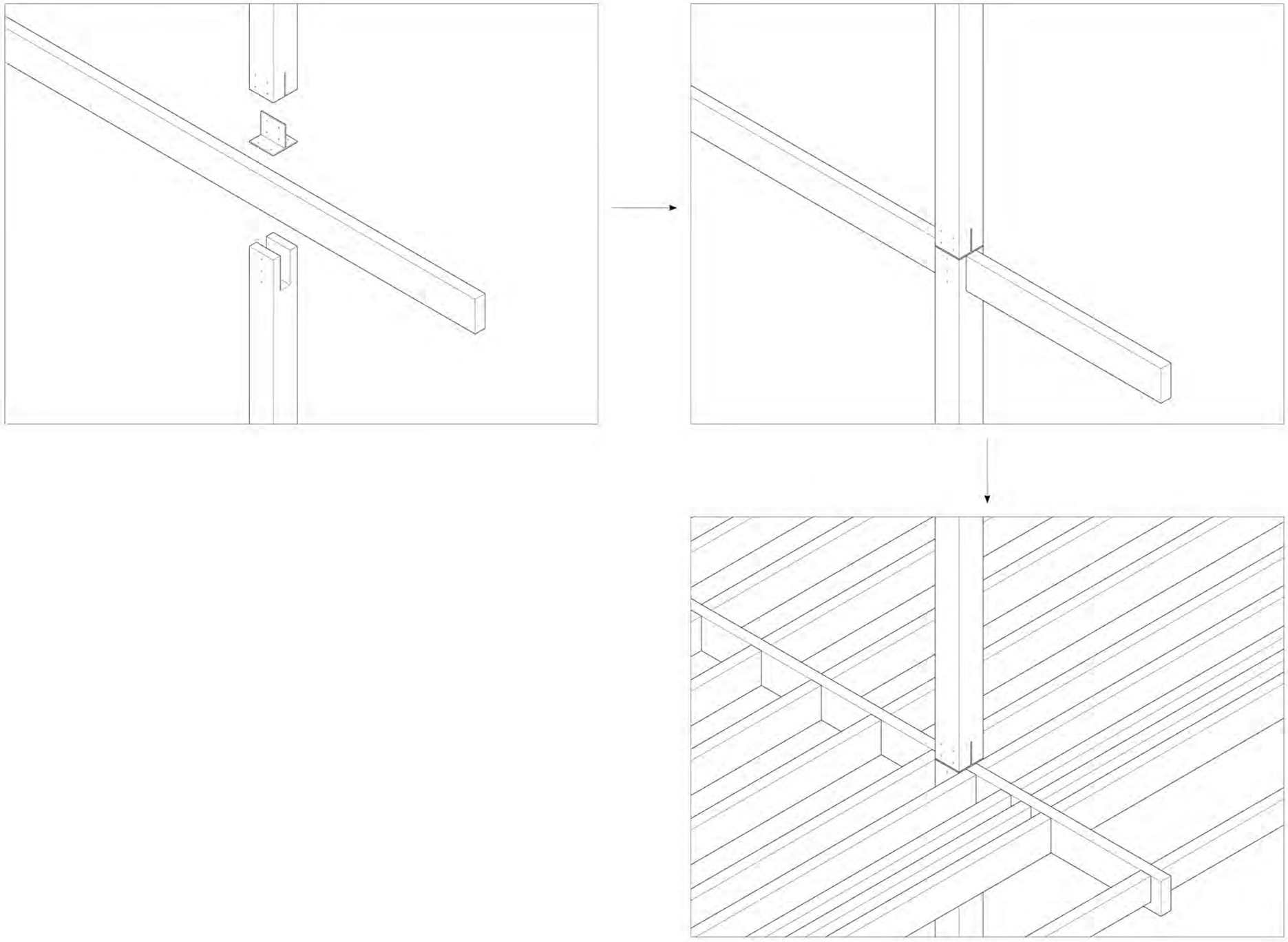
# Axonometry of structure



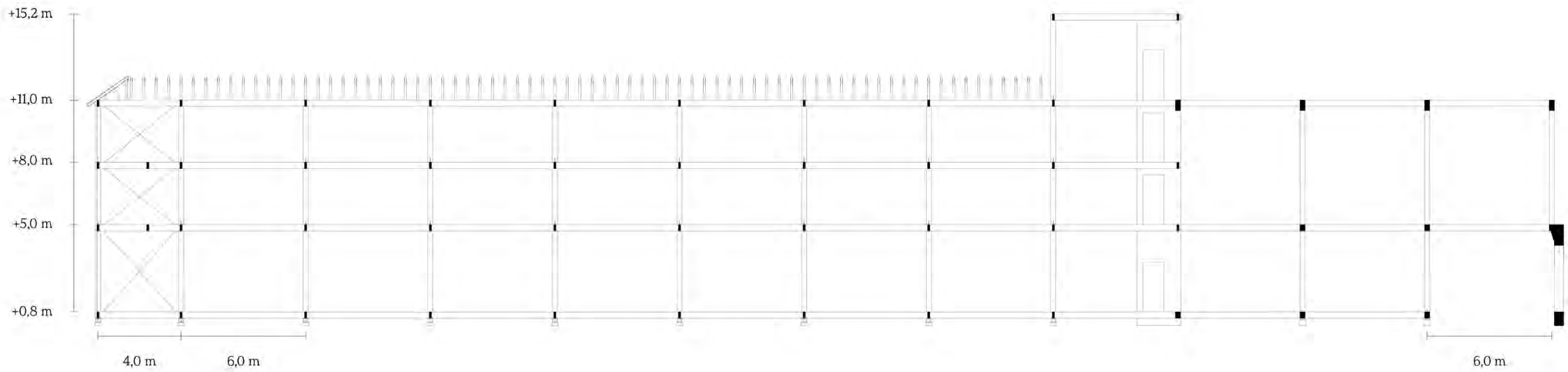
# Structural floor plan



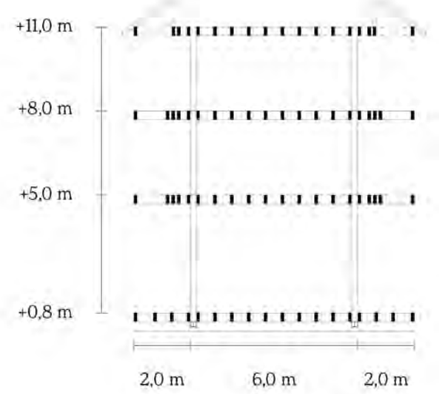
Timber structure detail



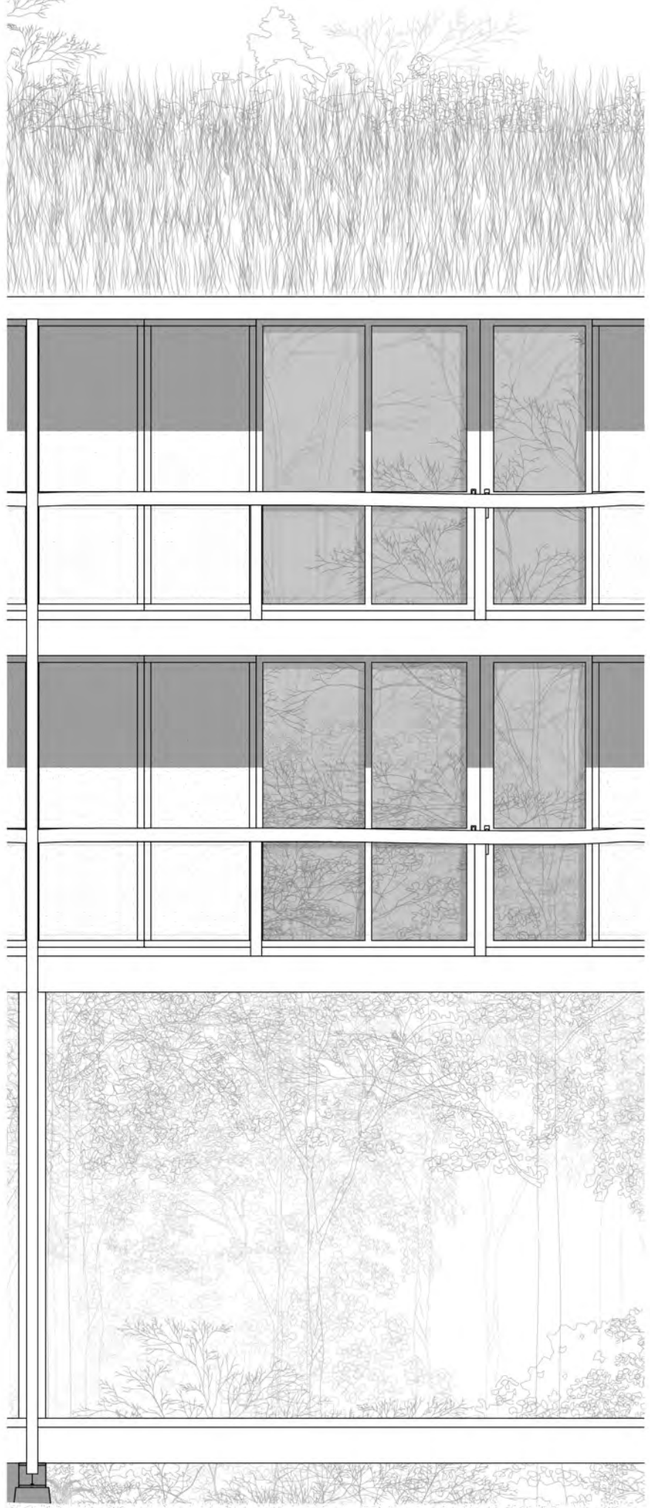
# Structural section

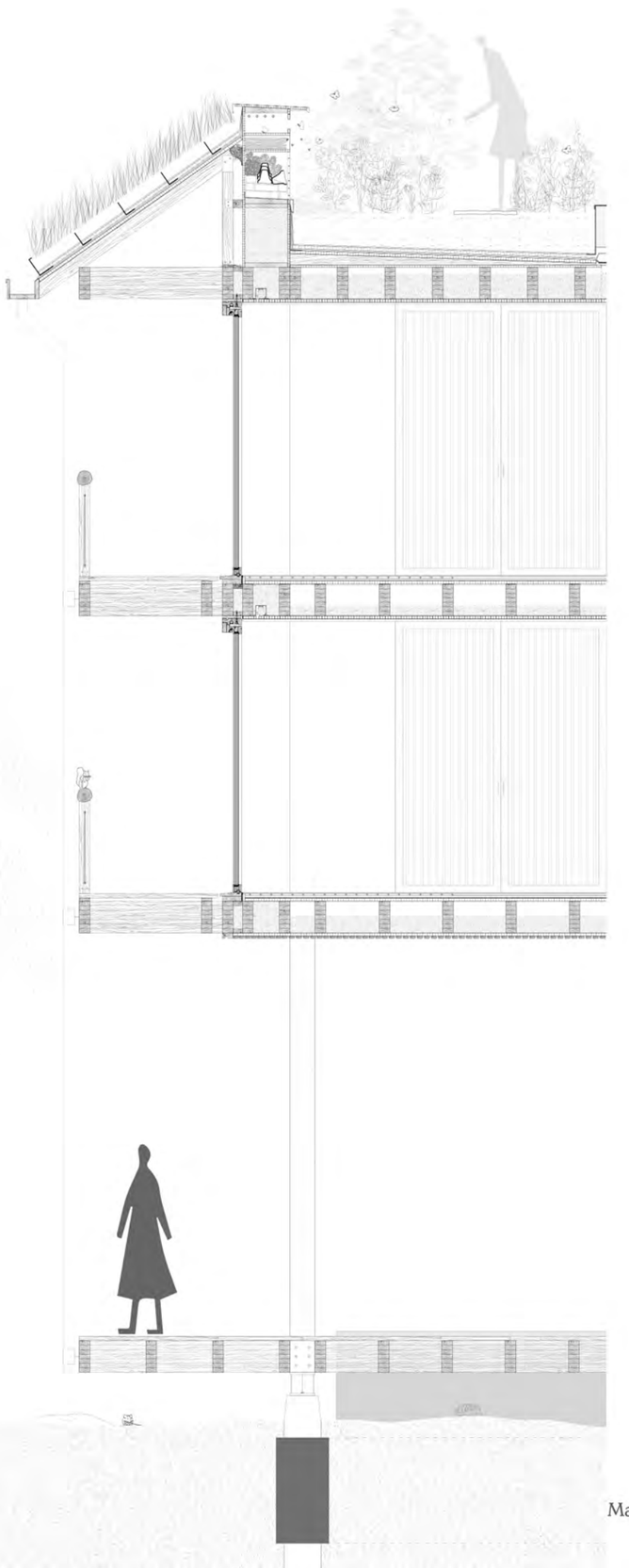


# Structural section

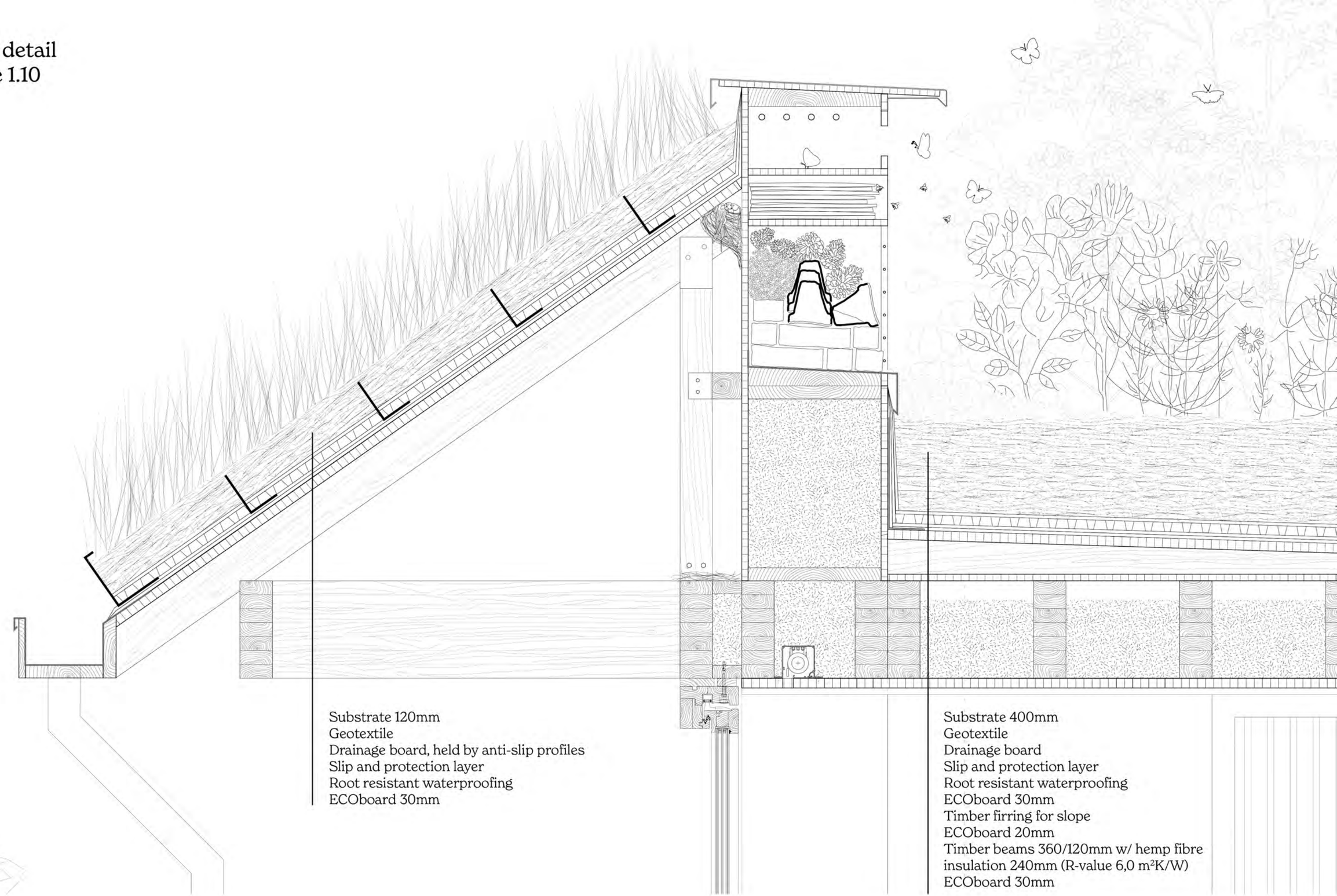


## Facade and section





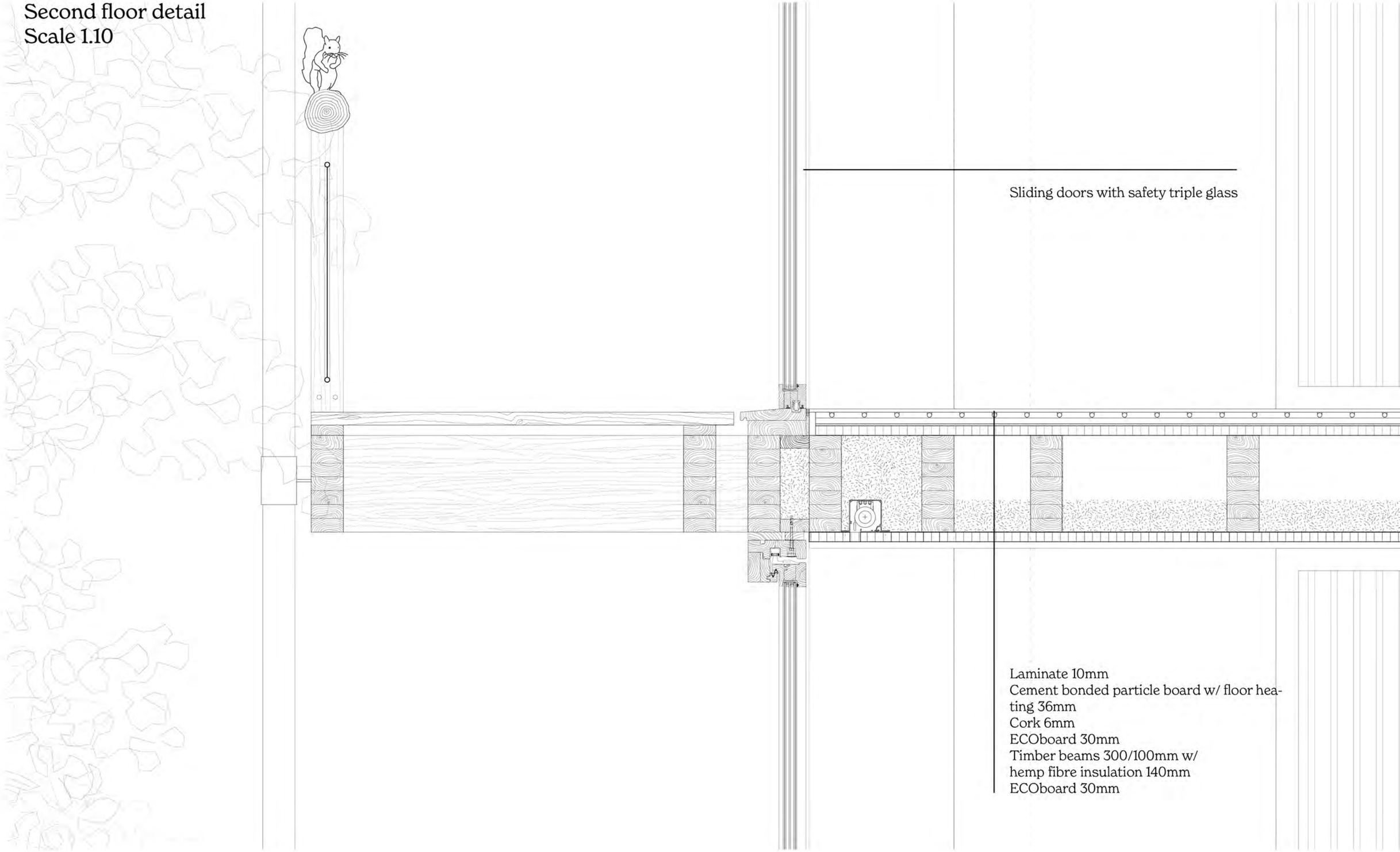
Roof detail
Scale 1.10



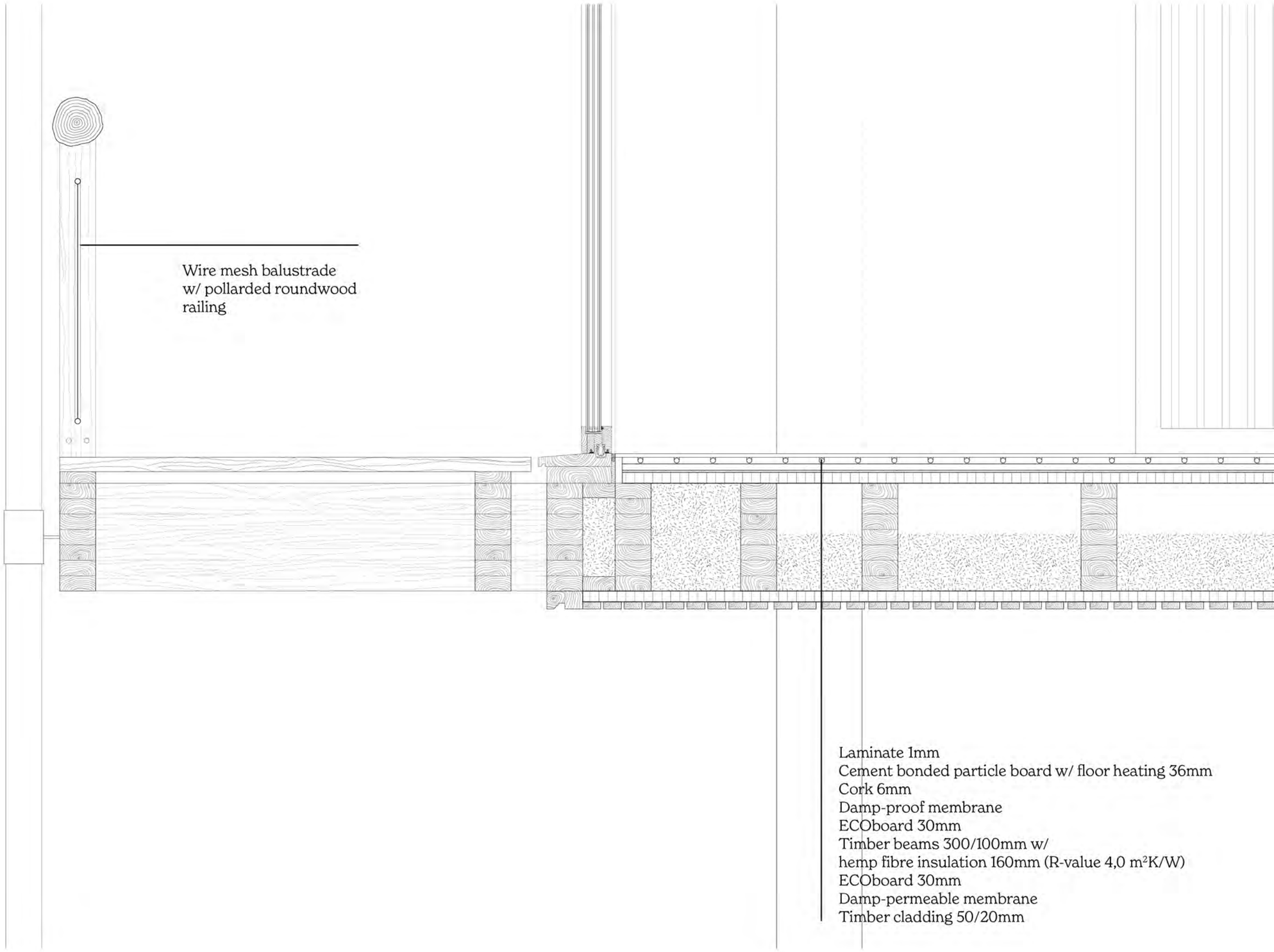
Substrate 120mm
Geotextile
Drainage board, held by anti-slip profiles
Slip and protection layer
Root resistant waterproofing
ECOboard 30mm

Substrate 400mm
Geotextile
Drainage board
Slip and protection layer
Root resistant waterproofing
ECOboard 30mm
Timber firring for slope
ECOboard 20mm
Timber beams 360/120mm w/ hemp fibre insulation 240mm (R-value 6,0 $m^2K/W$)
ECOboard 30mm

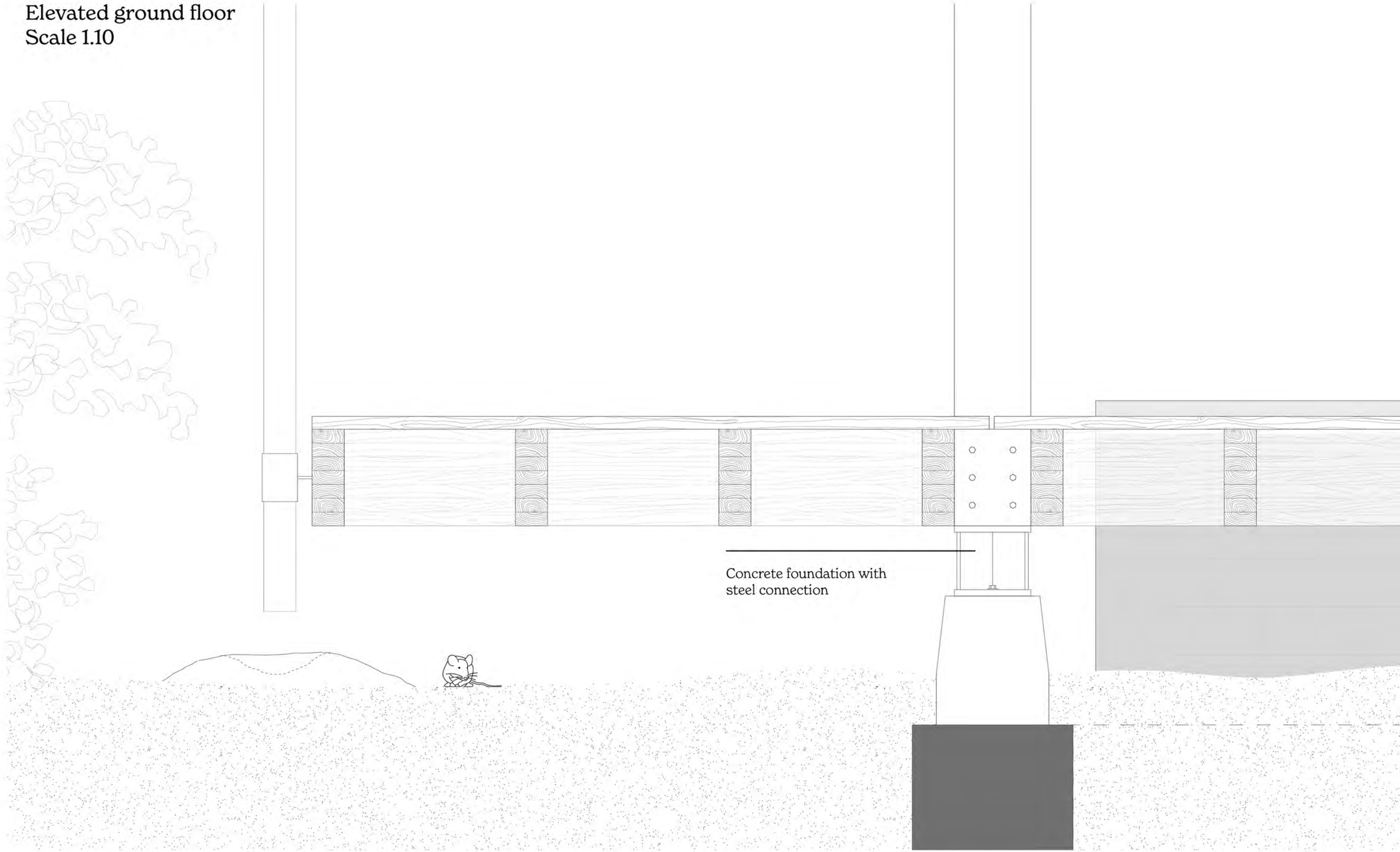
# Second floor detail
Scale 1.10



# First floor detail
Scale 1.10

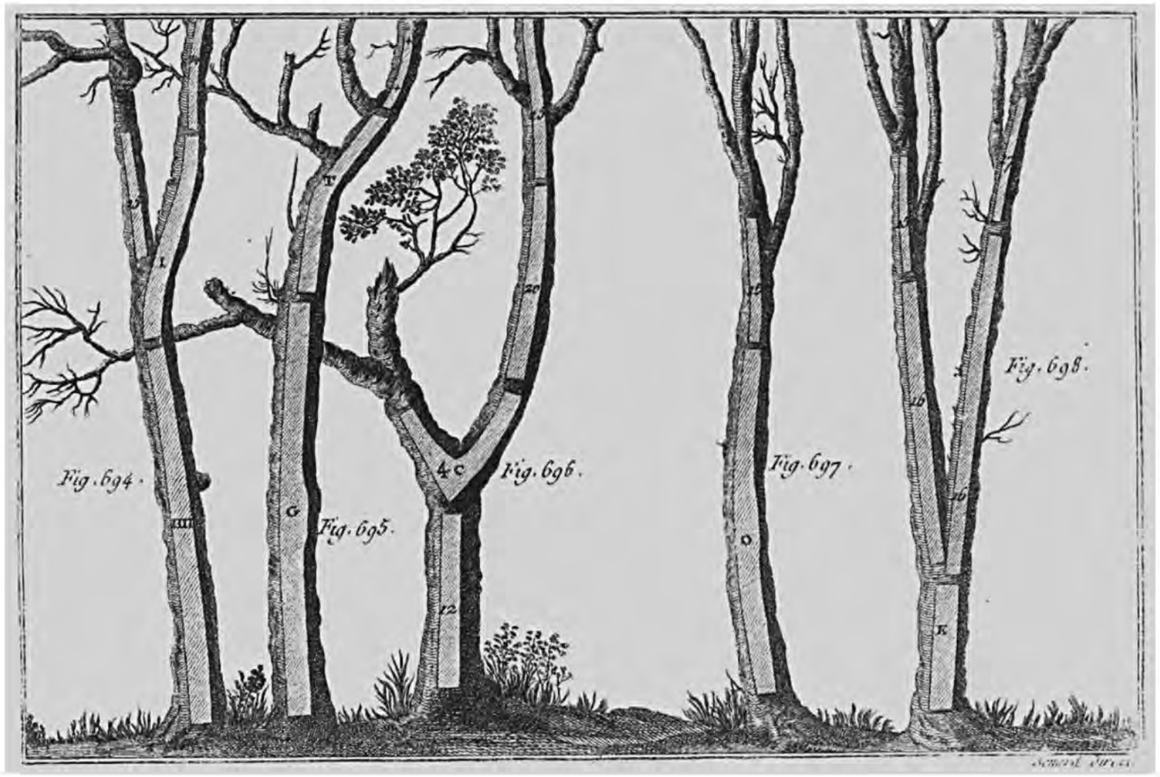


Elevated ground floor
Scale 1.10



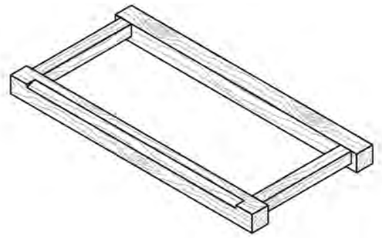
## Oak coppice

**The procurement of timber sections from oak trees**
Illustration for the purpose of shipbuilding in the 17th century

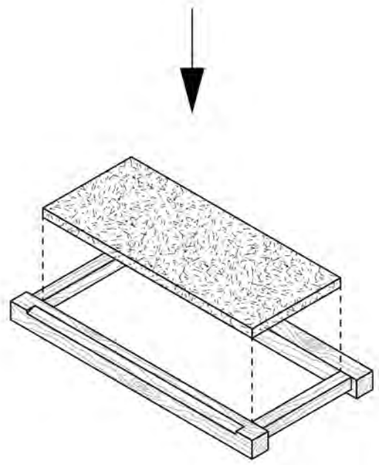


**The ecological value of pollarding**
Life and rot

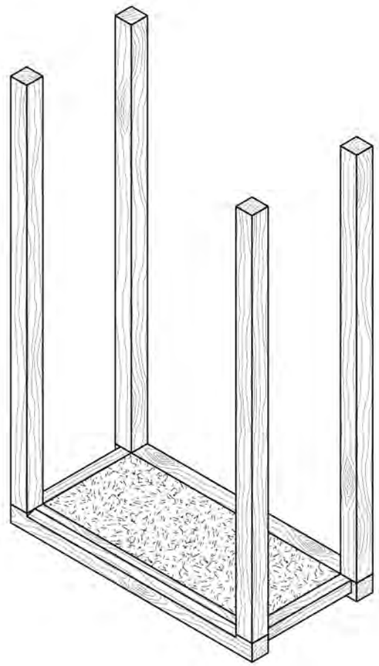
**Pollarded timber and hempcrete facade element**
Production process 1 / 10



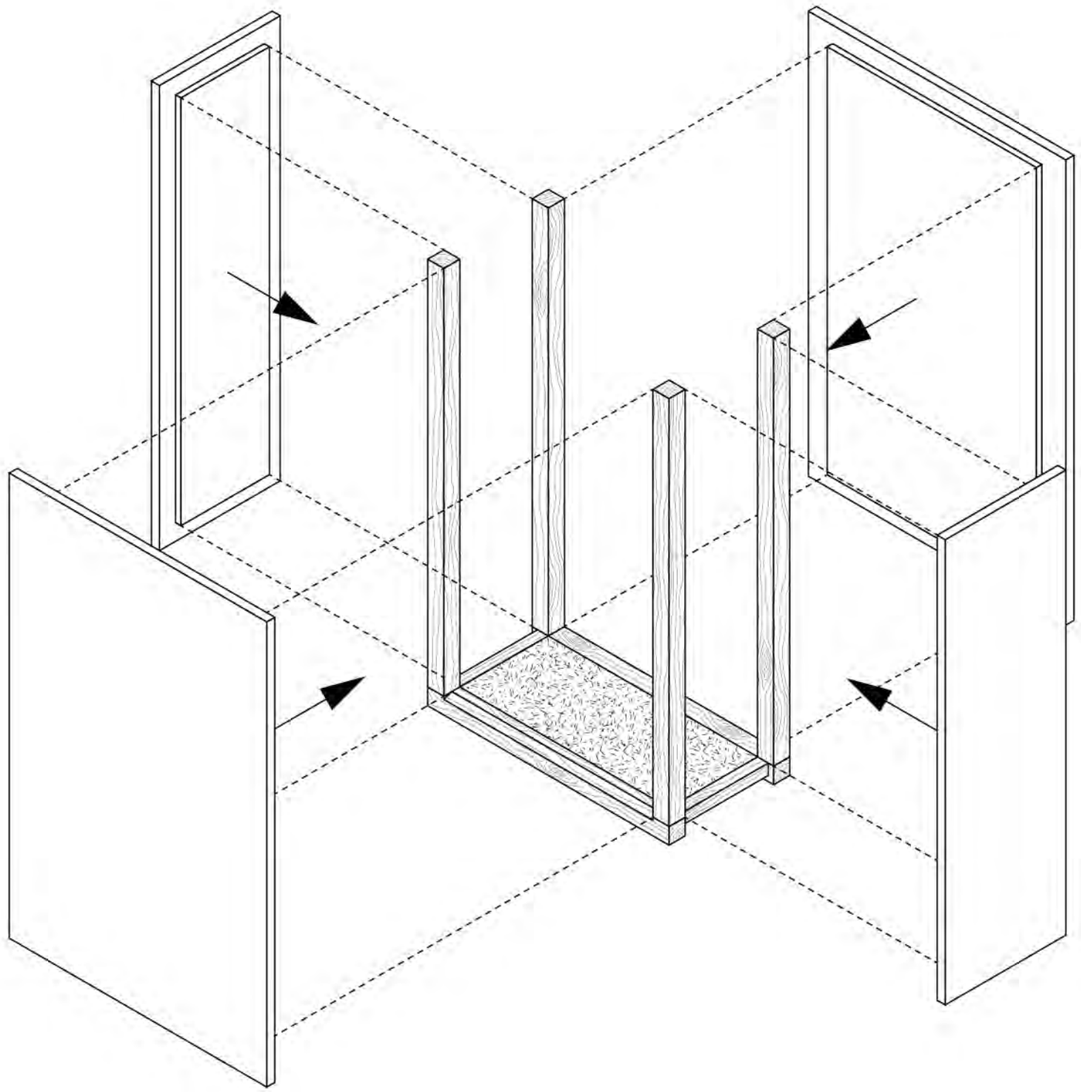
**Pollarded timber and hempcrete facade element**
Production process 2 / 10



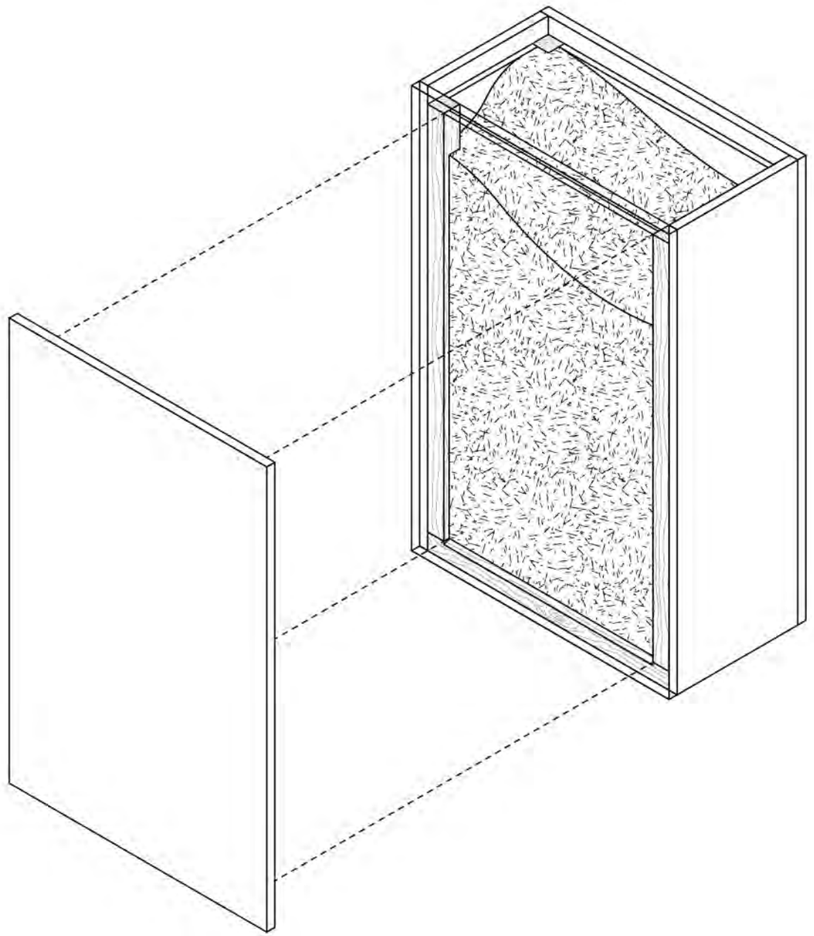
**Pollarded timber and hempcrete facade element**
Production process 3 / 10



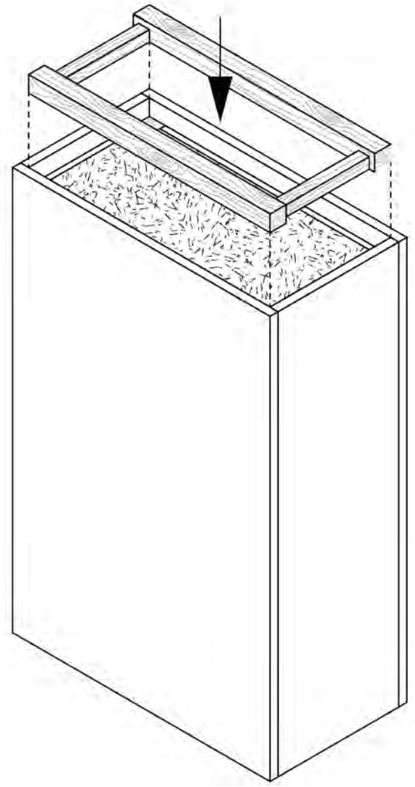
**Pollarded timber and hempcrete facade element**
Production process 4 / 10



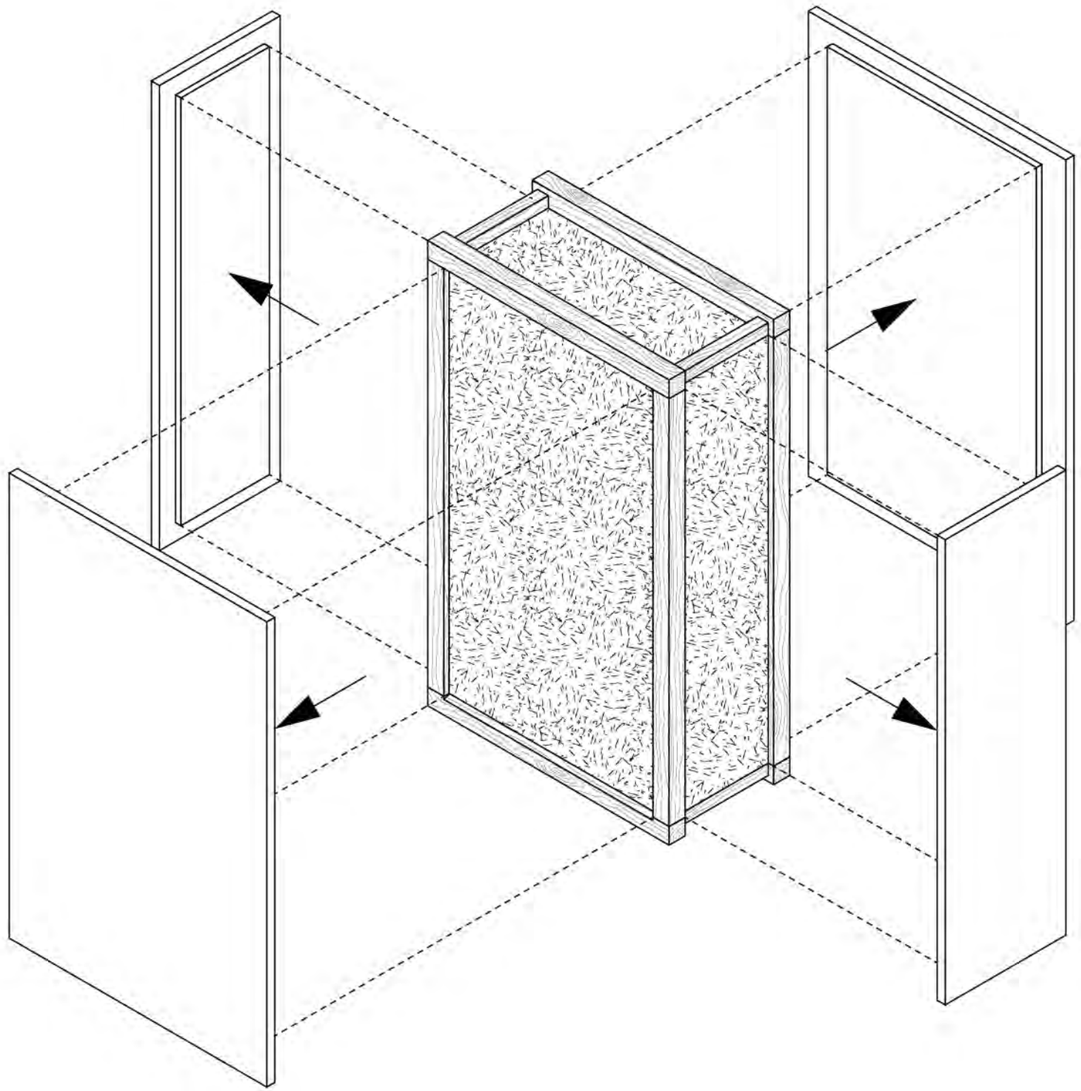
**Pollarded timber and hempcrete facade element**
Production process 5 / 10



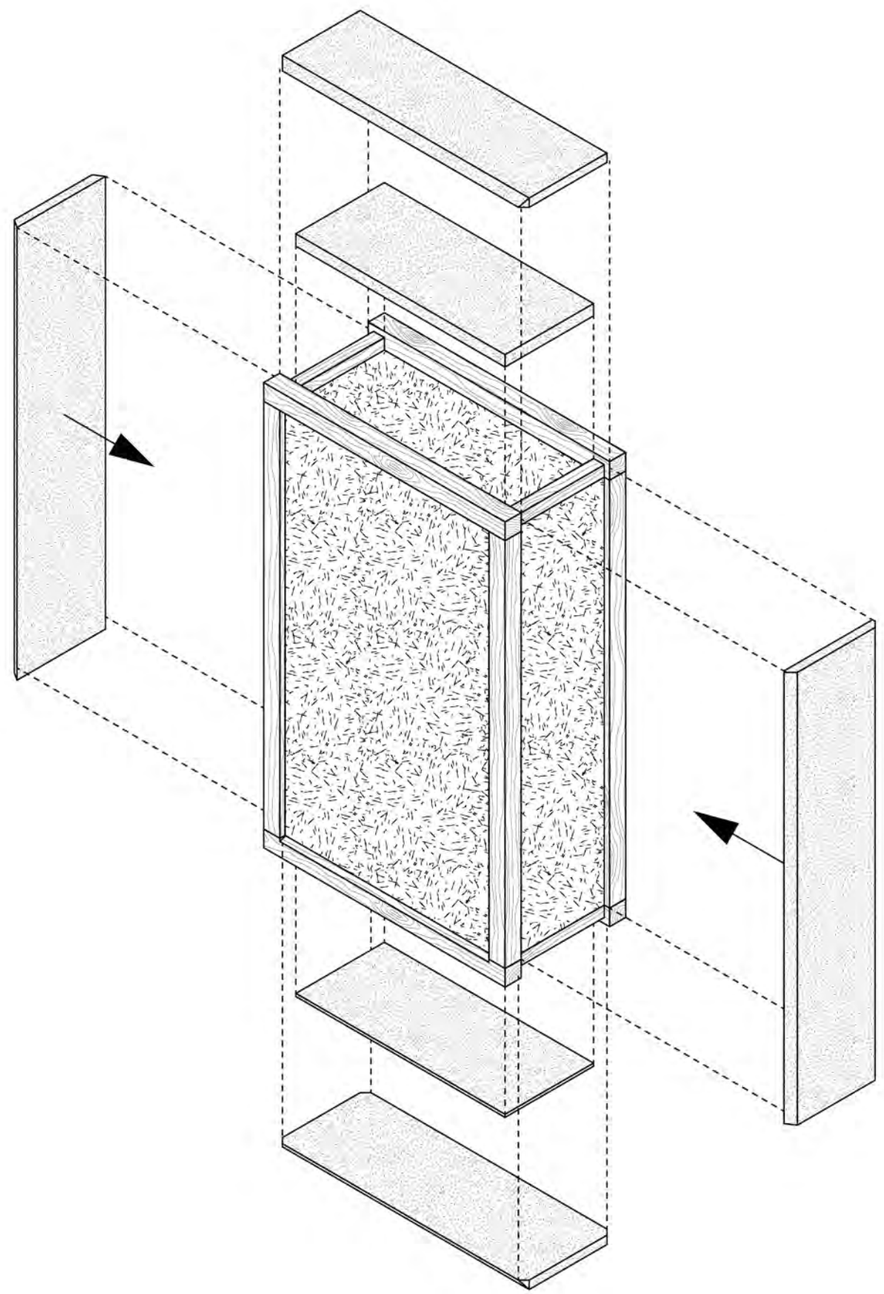
**Pollarded timber and hempcrete facade element**
Production process 6 / 10



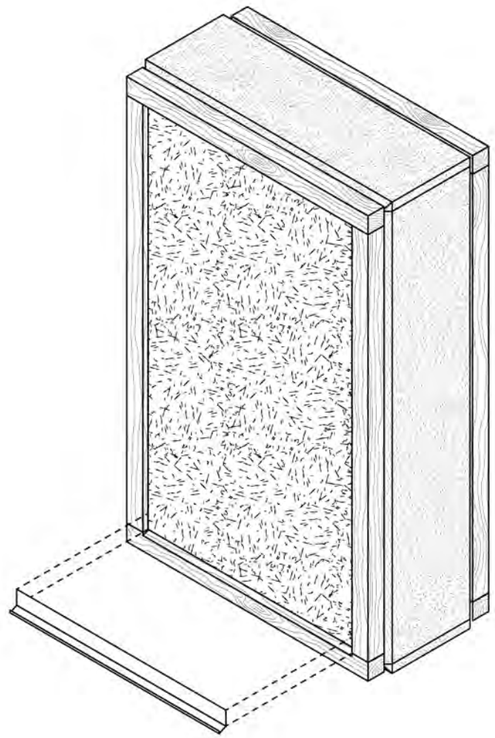
**Pollarded timber and hempcrete facade element**
Production process 7 / 10



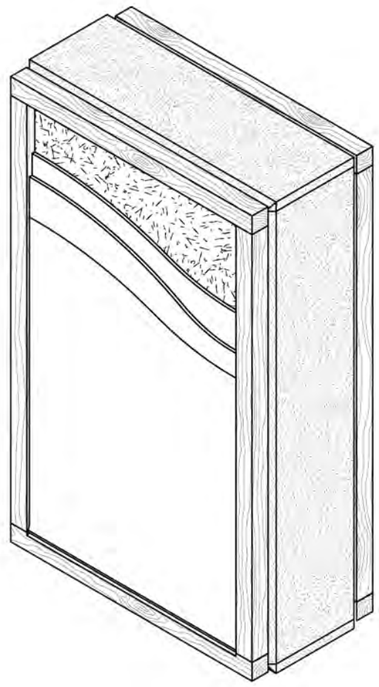
**Pollarded timber and hempcrete facade element**
Production process 8 / 10

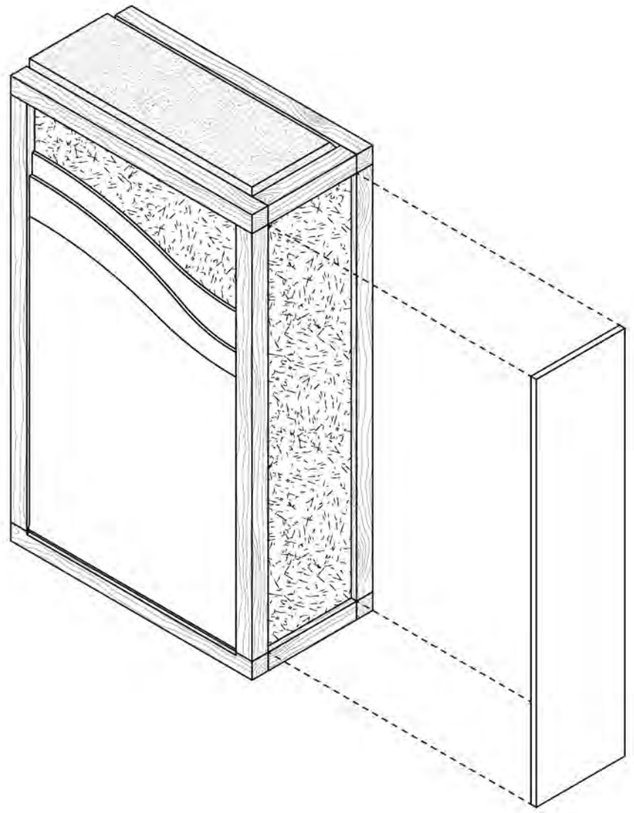


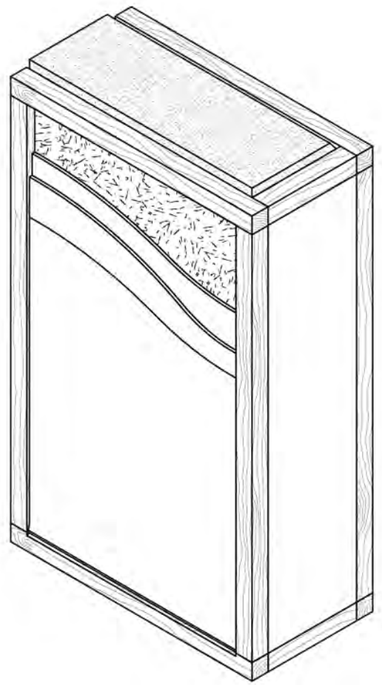
**Pollarded timber and hempcrete facade element**
Production process 9 / 10



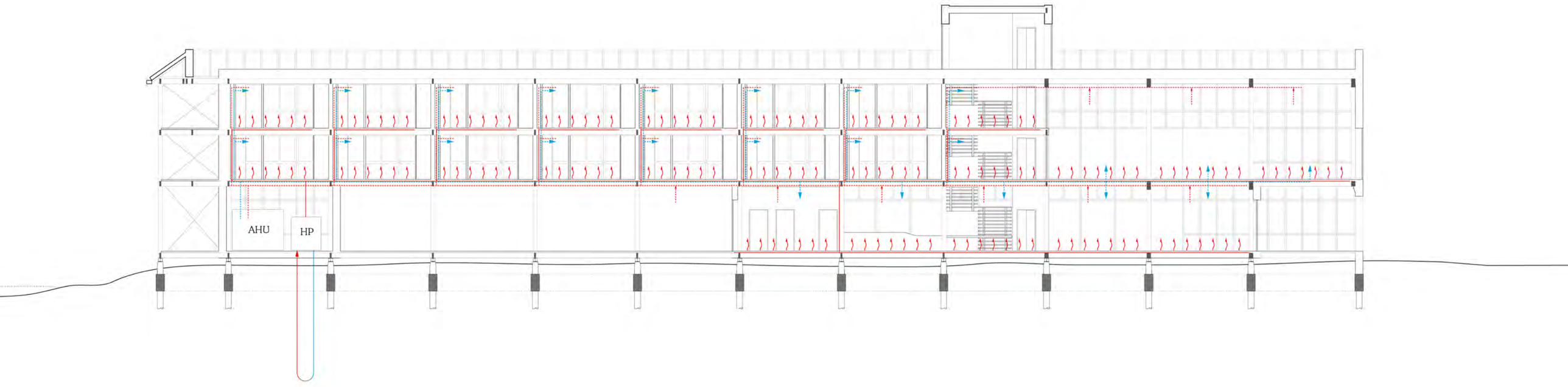
**Pollarded timber and hempcrete facade element**
Production process 10 / 10



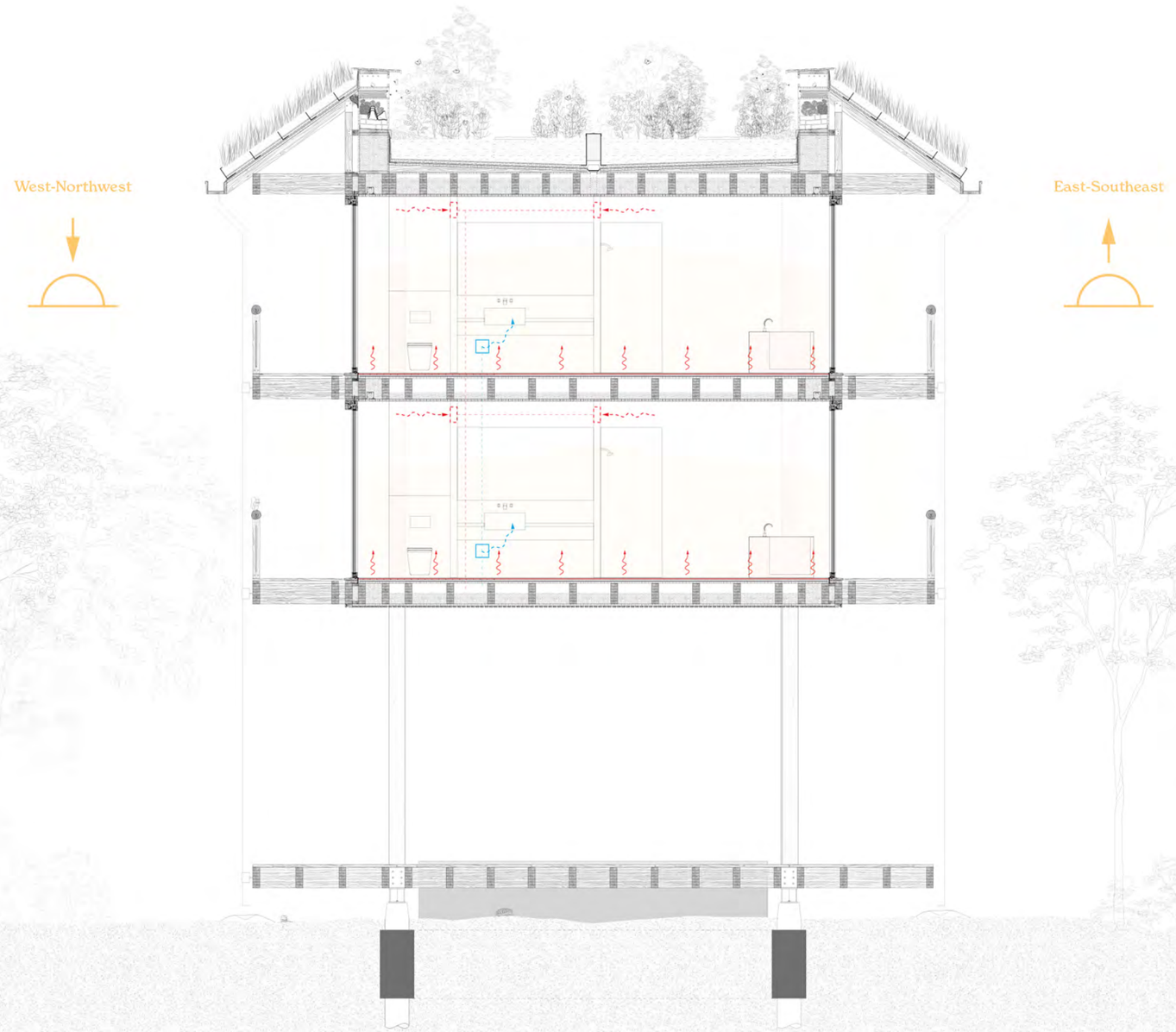




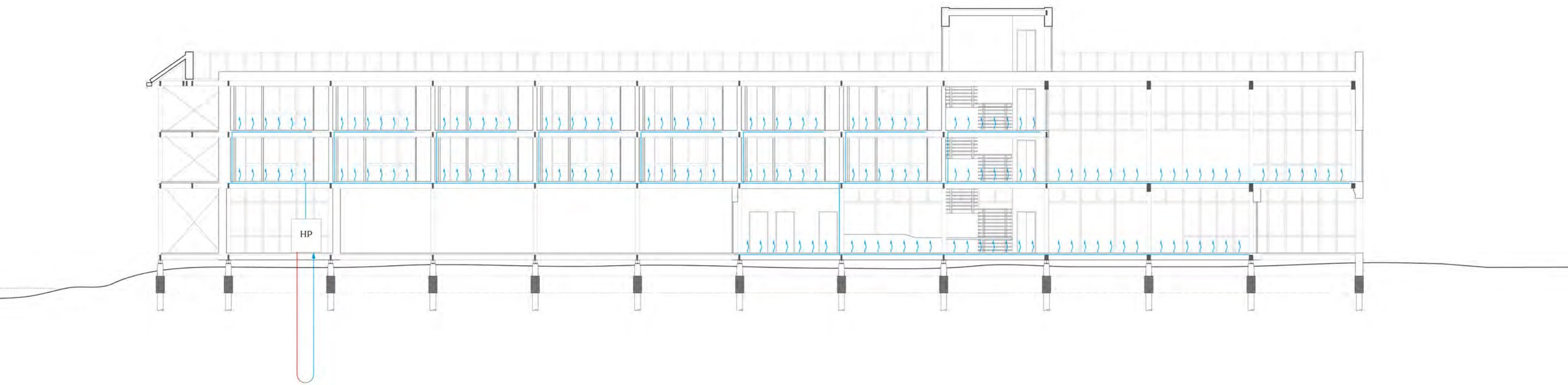
# Climate installations | Winter situation



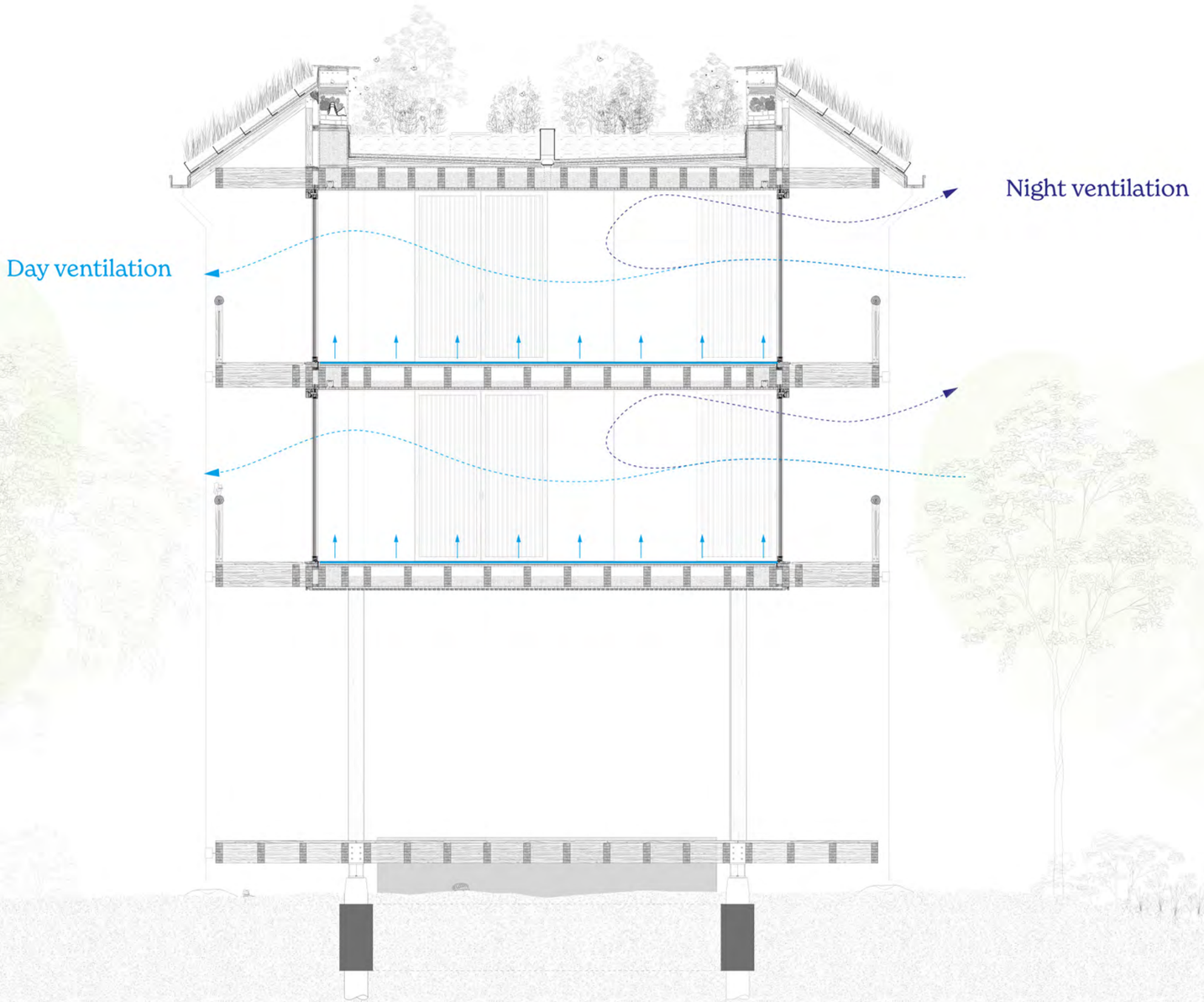
# Indoor climate | Winter situation

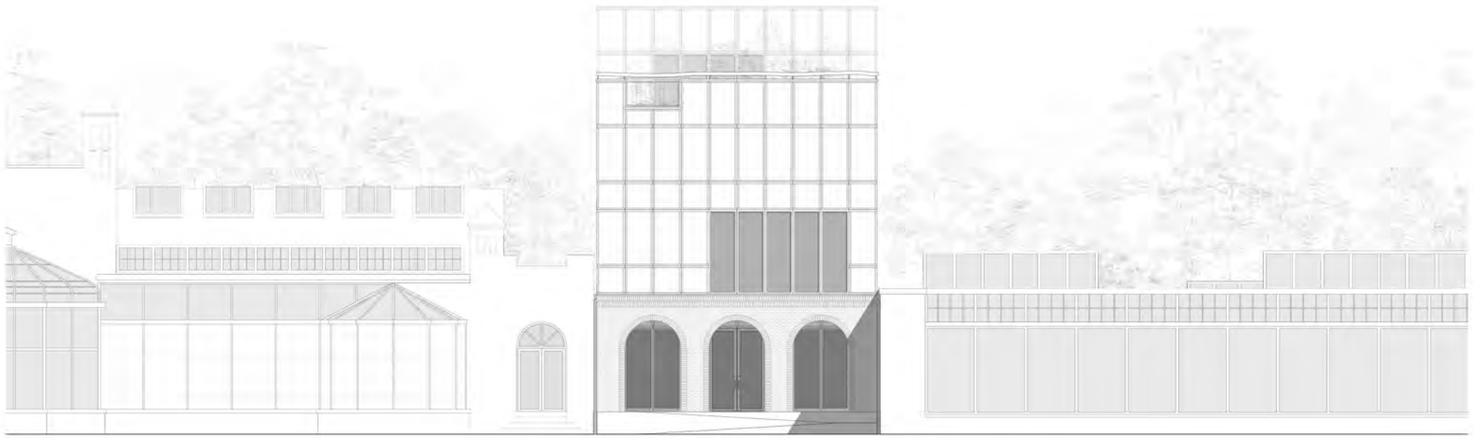


# Climate installations | Summer situation



# Indoor climate | Summer situation





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Interiors Buildings Cities
P5 Presentation
13 January 2022

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