

Final (P5) presentation of TU Delft graduation project Heritage & Architecture Studio by Marijn G. Luijmes

# HET PLOFBOS

## RESEARCH

*The unintentional beauty of dealing with explosives*

## MASTERPLAN + DESIGN PROPOSAL

*A new life for the Plofbos*

24th of June, 2019

Examined by: Ir. W.L.E.C. Meijers, F.W.A. Koopman and Ing. P. de Jong

**“The *unintentional beauty* of  
dealing with **explosives.**”**







**Proposal:  
"A new life for Plofbos"**

# Presentation overview

- Introduction
- **Key points of analysis**
- **Position towards heritage**
- **Masterplan**
- **Proposal**

# Presentation overview

- Introduction
- **Key points of analysis**
- Position towards heritage
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# **Hembrug Terrein**

# Location



Fig.: Location of the Hembrug area

'Stelling van Amsterdam'

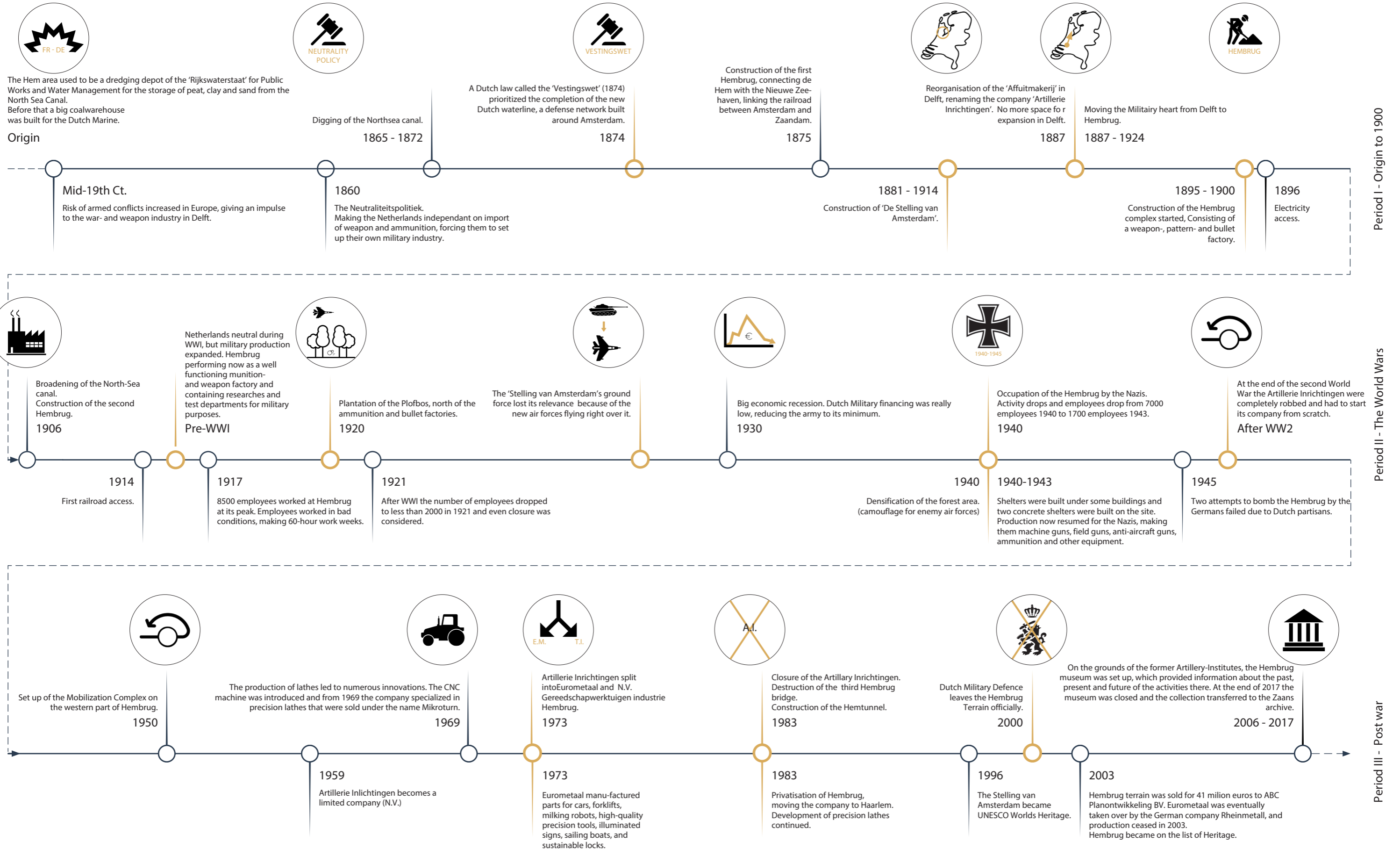


1914



**Today**

# 1.1 Timeline Hembrug



# History

- Former ammunition factory for the Royal Dutch Army
- Dates from the 1890's
- Particularly known for the production of the 'Hembrug Karabijn'.
- Strategically situated within the 'Stelling van Amsterdam'



'Stelling van Amsterdam'



# Strategic position

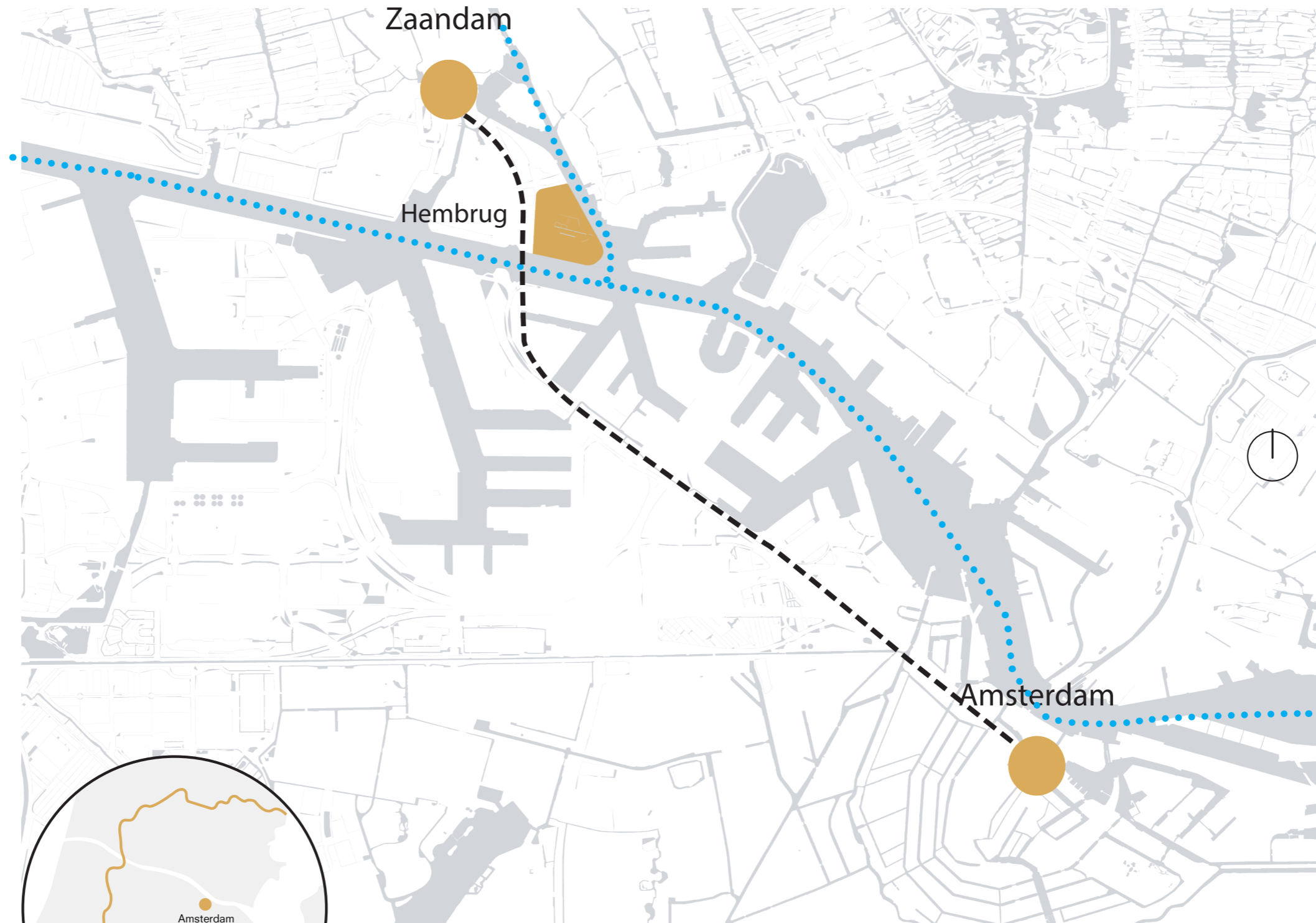


Fig.: Location of the Hembrug area



'Stelling van Amsterdam'

# Zones

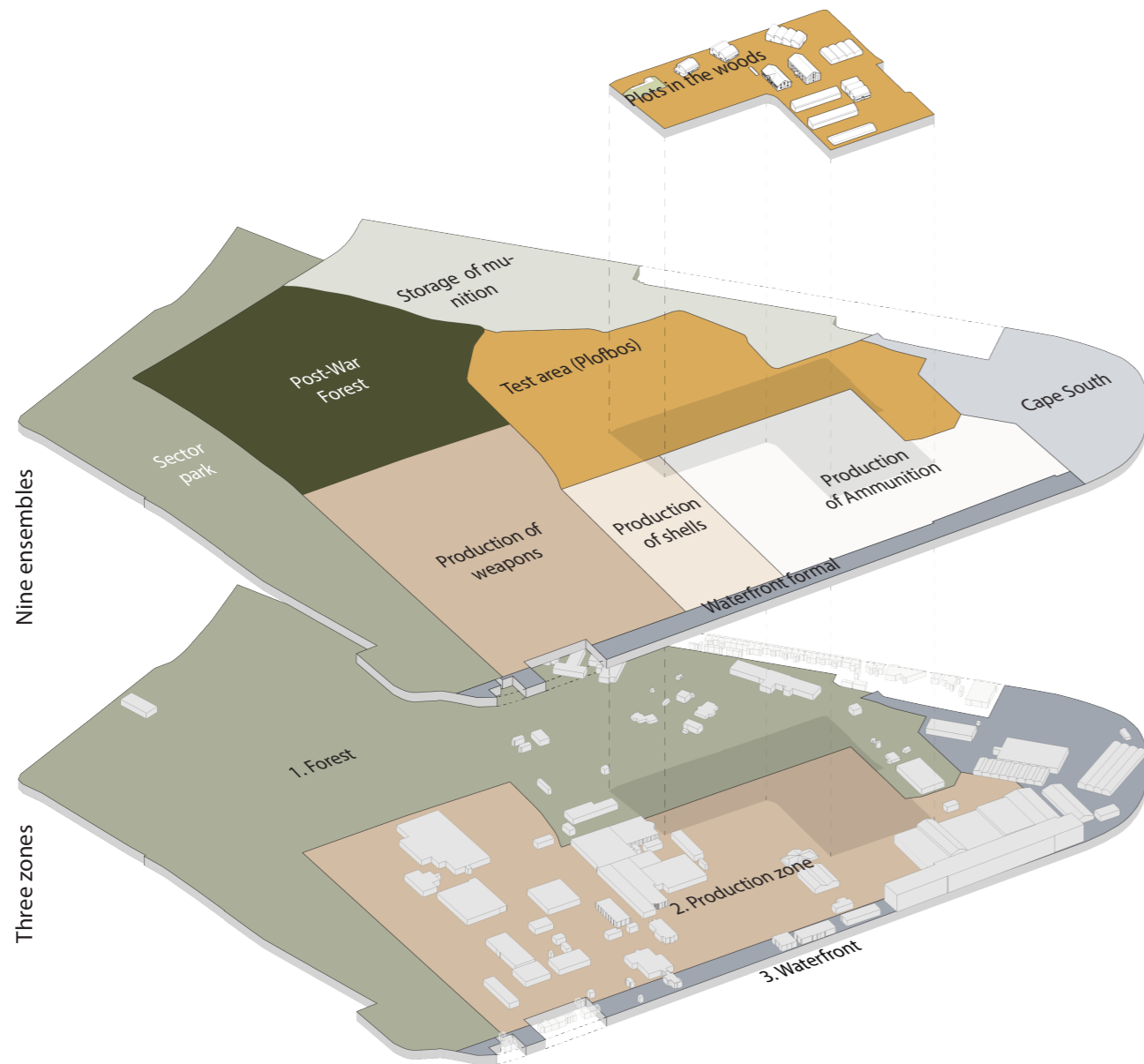


Fig.: Zones of Hembrug in 2018, based on Steenhuis Meurs, 2010, Cultuurhistorische Analyse Hembrug terrein, p. 5 - 7, 36 & 37

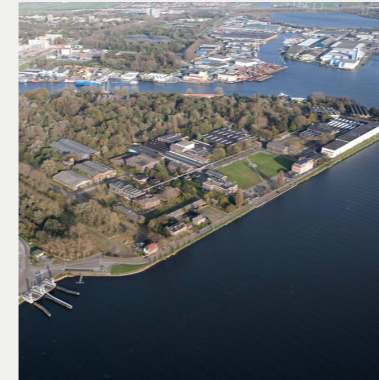


Fig.: Hembrug terrain



## Hembrug

-  Unique area and military heritage
-  Made public in 2003
-  Situated between zaandam and Amsterdam

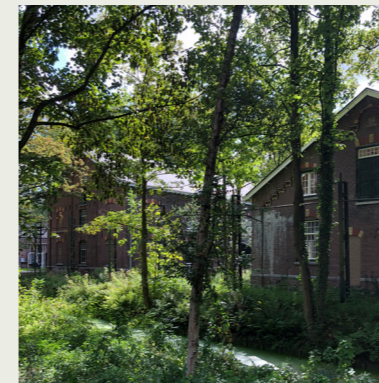
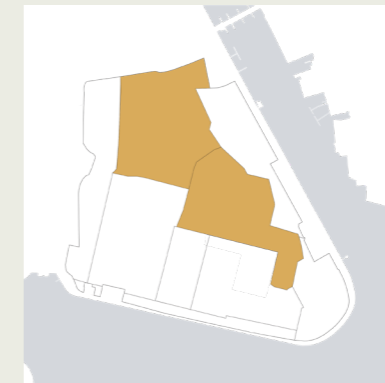


Fig.: Plofbos



## 1. Forest Zone




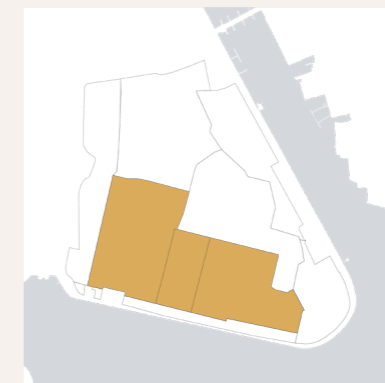
-  Green environment
-  Contrast/transition
-  Small scale



Fig.: Production zone



## 2. Production Zone




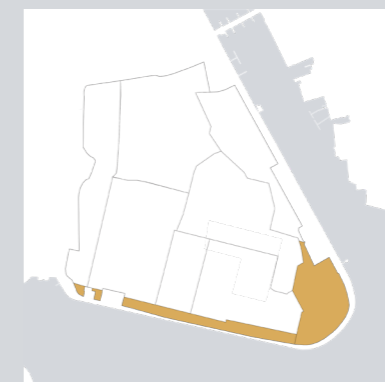



-  High diversity
-  Clustering of buildings
-  Presence of the main structures/sight lines



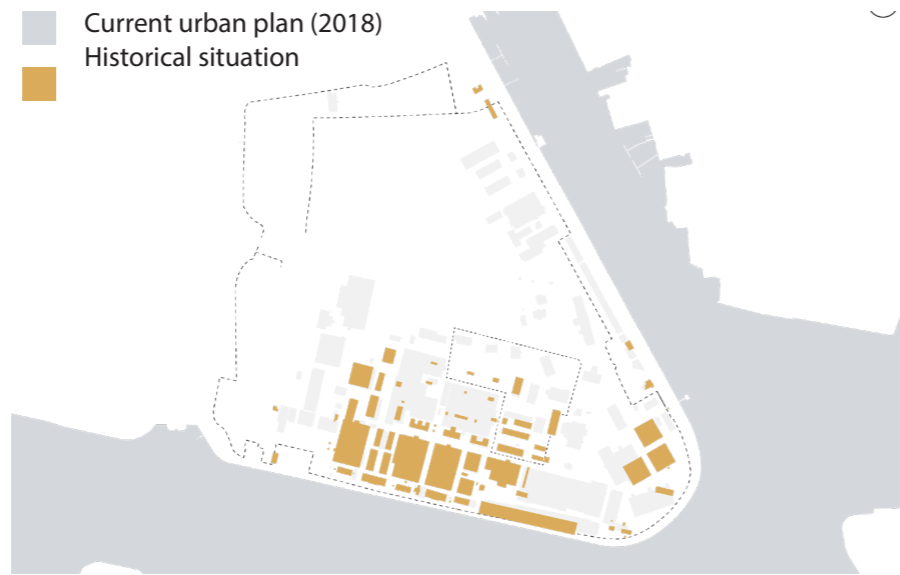
Fig.: Waterfront



## 3. Waterfront

-  - Monumental / iconic
-  Greenery along quay
-  Parallel to the Noordzee Kanaal

# Morphological development



1901

Dense and compact industrial layout, all optimized for production of the "Hembrugkarabijn" (M95-rifle), patrons, munition and storage.



1924

Expansion of the industrial zone. Addition of the Sectorpark and mobilisation complex in the far north, intensive use of the forest as test site.



1941

Occupation of Hembrug area by the German army. Addition of bunkers in the Cape South and the forest, small changes in industrial layout.



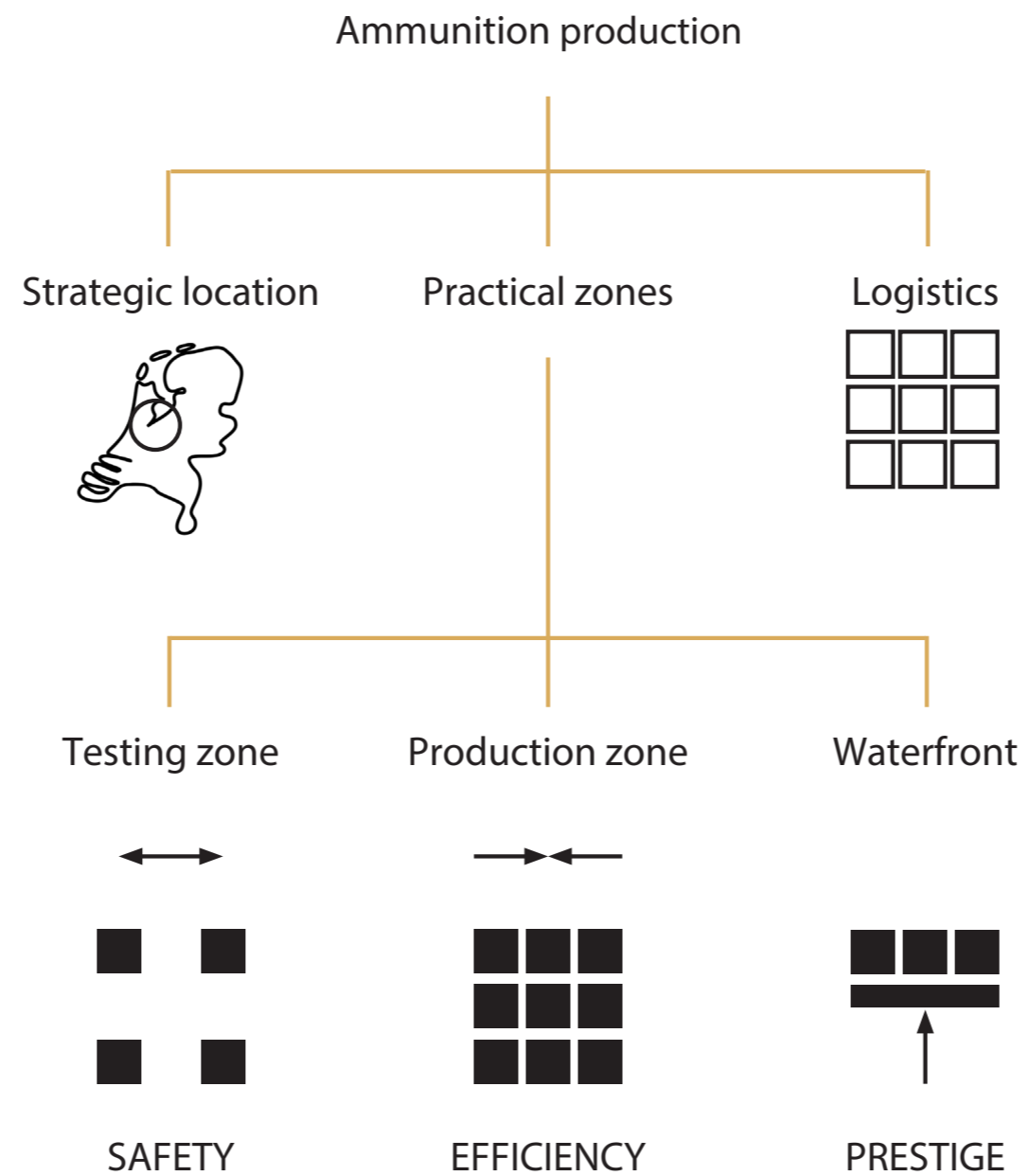
1996

Production shifted towards industrial machinery after WWII, resulting in a small dilution of the industrial built environment.

# Structure and orientation



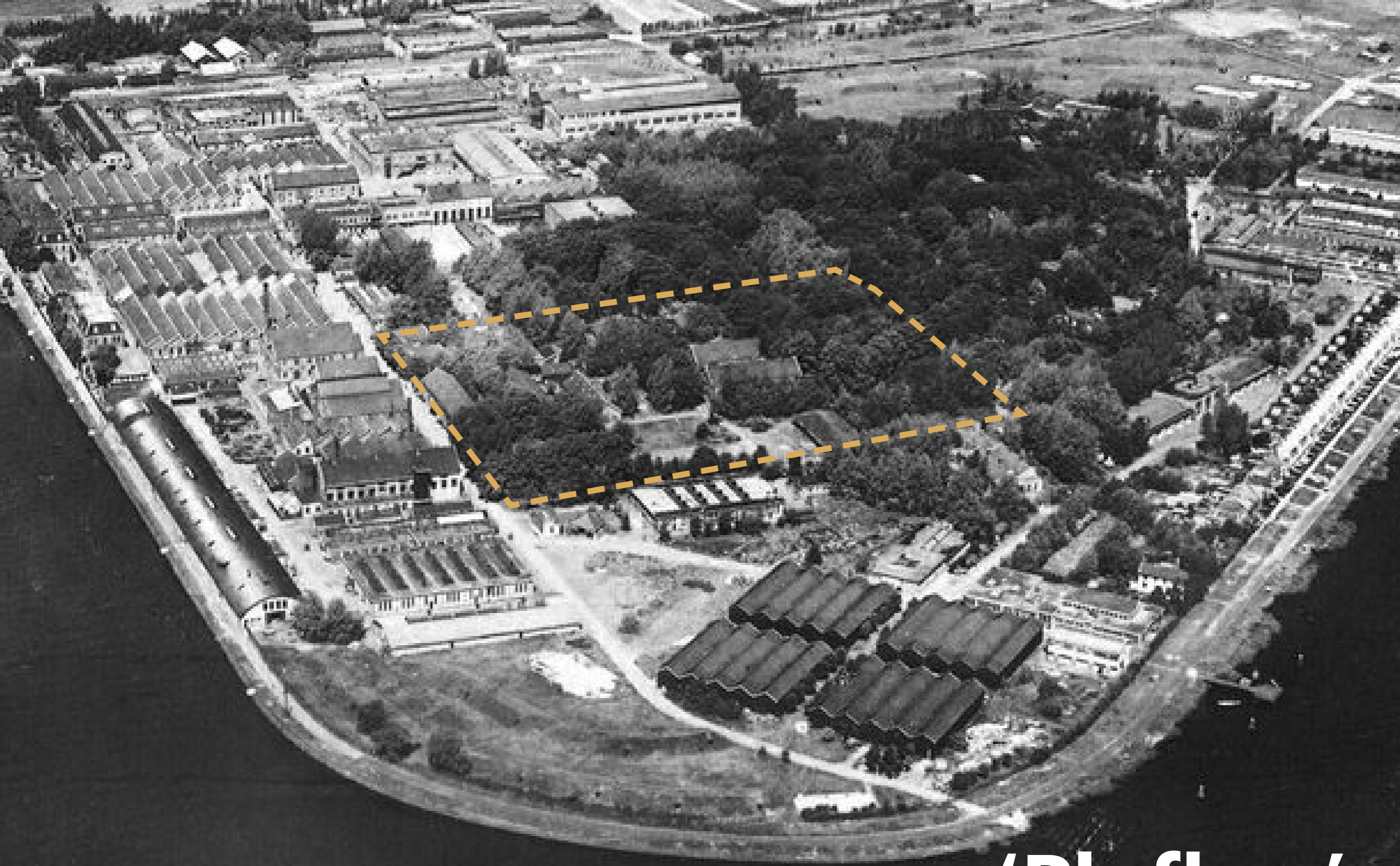
# 'Military Pragmatism'



**Plofbos**



1956



**'Plofbos'**

# Plofbos

Producing, storing and testing explosives.

# Safety measures

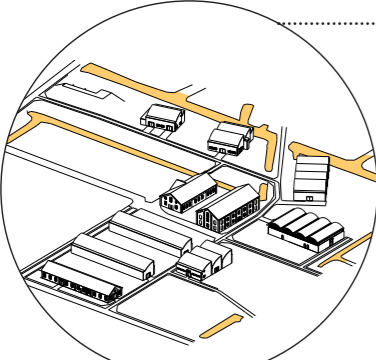


Fig.: Canal system as fire compartments

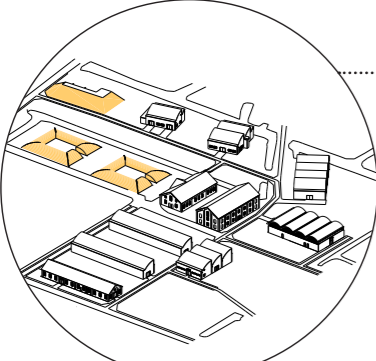


Fig.: Earth walls to sustain blast impact

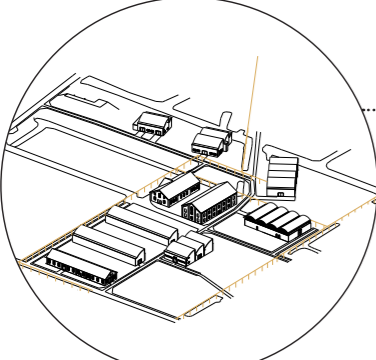


Fig.: Pipelines providing steam to heat the buildings, instead of flammable gas

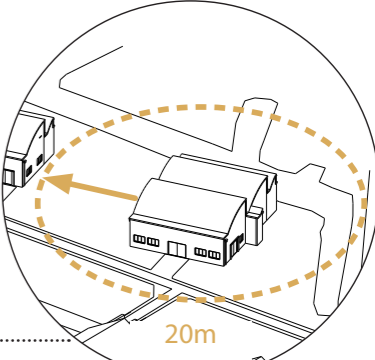
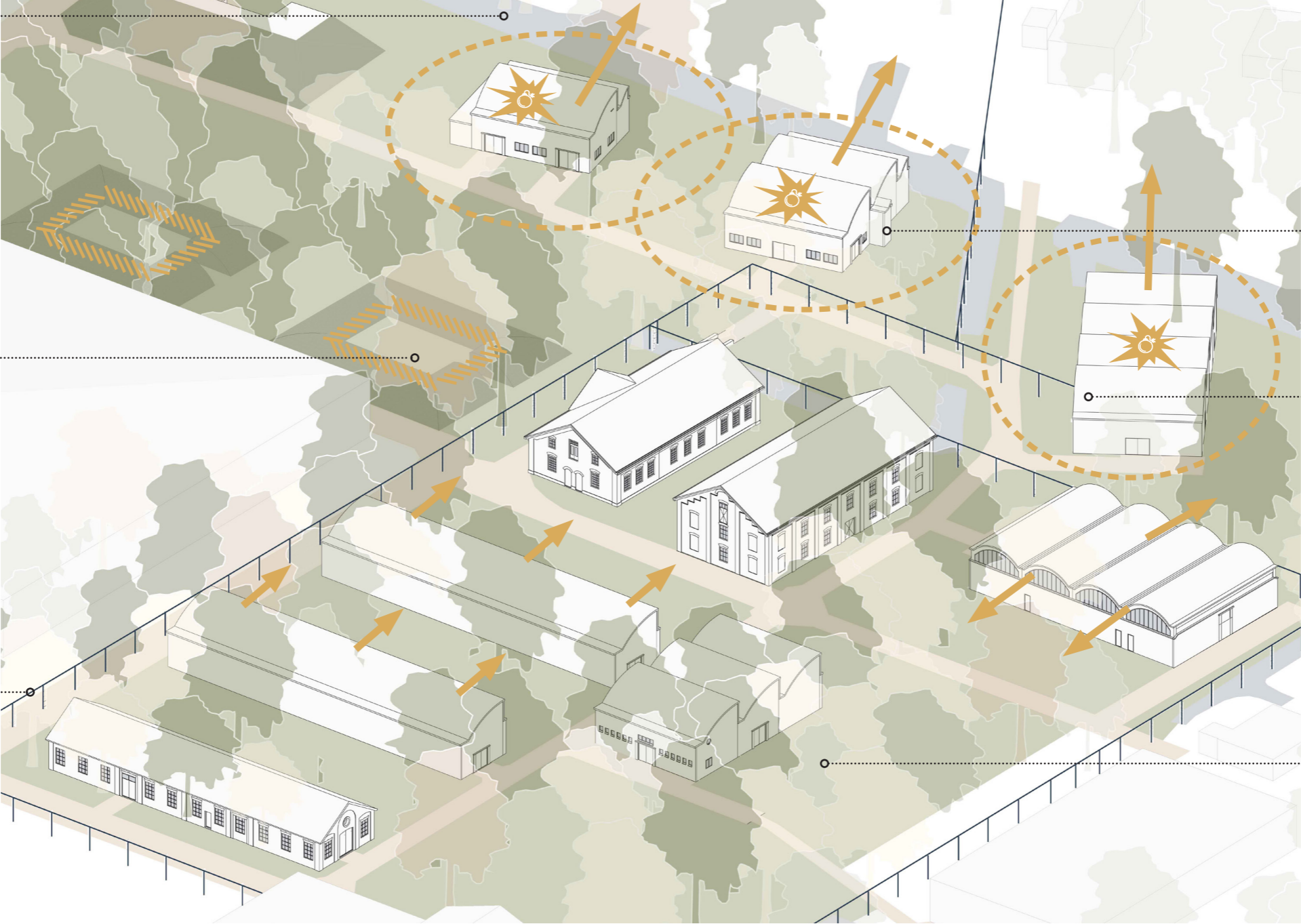


Fig.: Blast radius

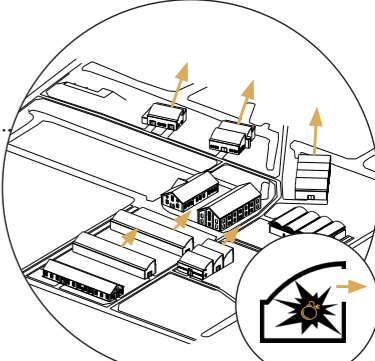


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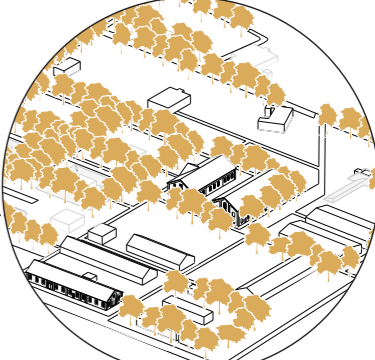
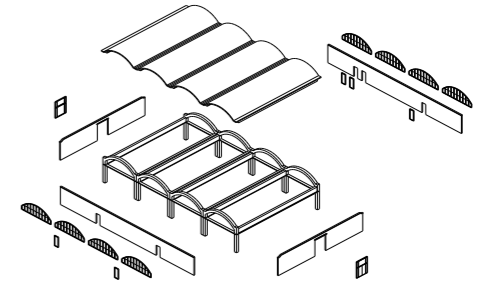
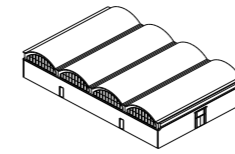
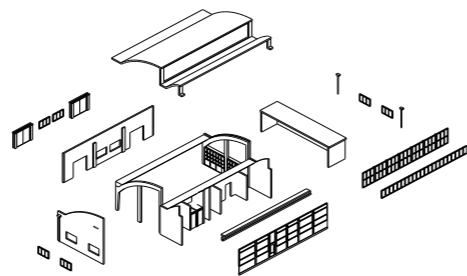
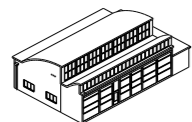
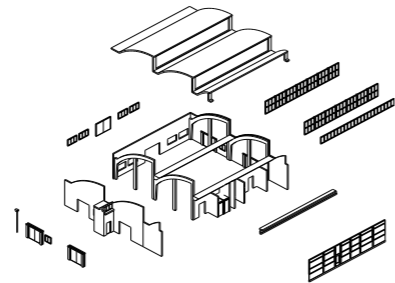
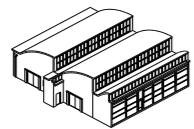
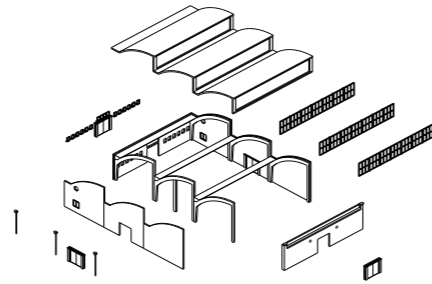
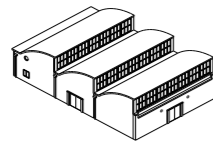
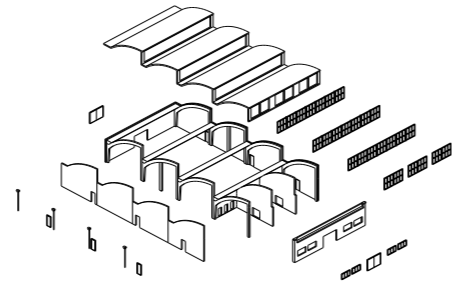
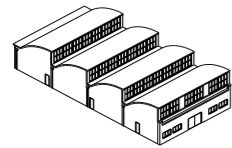
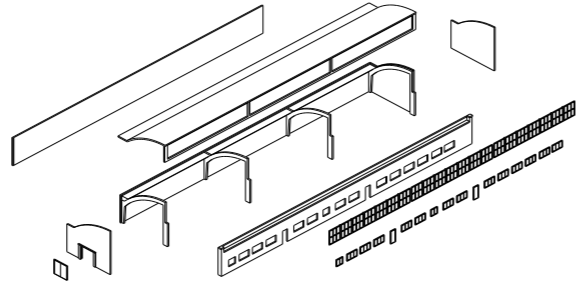
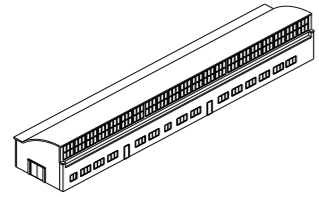
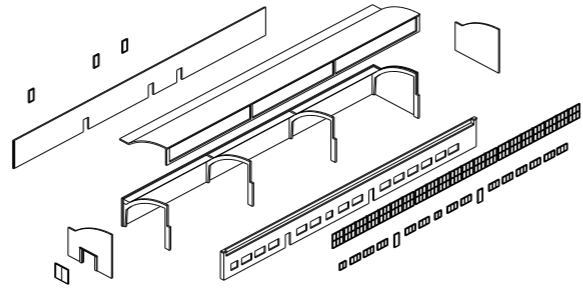
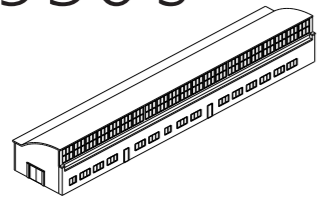
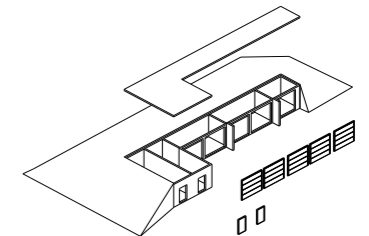
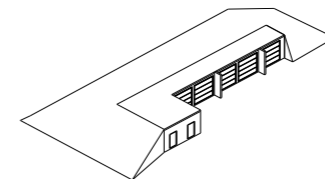
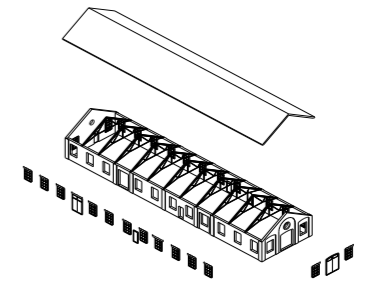
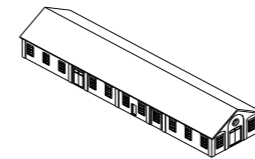
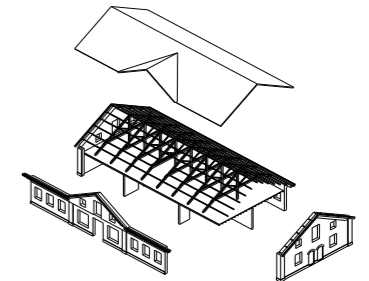
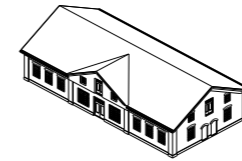
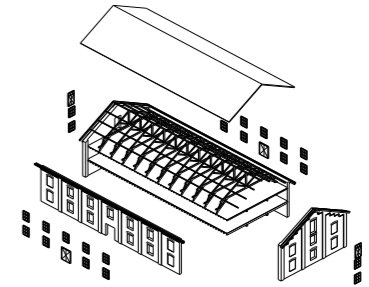
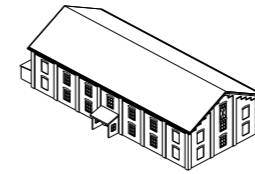


Fig.: Treelanes for camouflage

1950's



+ -1900



# 1919 vs 2019

- Explosive storage
- Ammunition production
- Military test site

1924

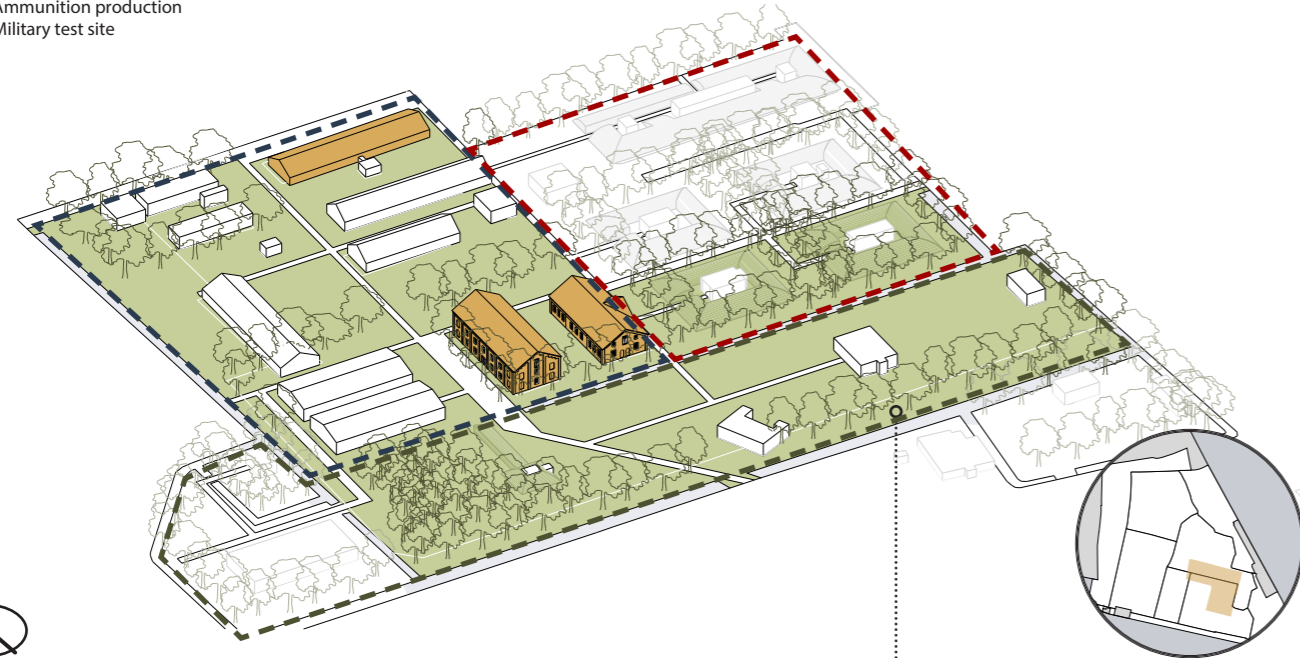


Fig.: Hembrug situation 1924

- Explosive storage
- Ammunition production

2018

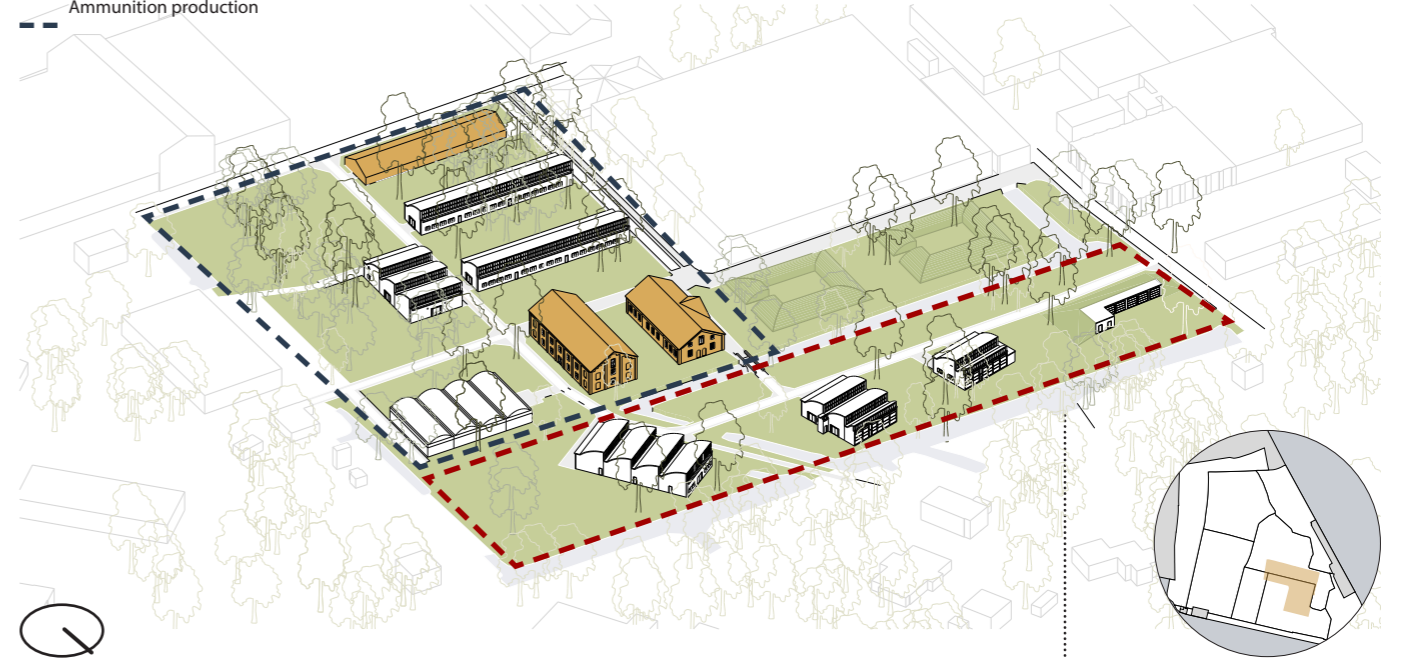
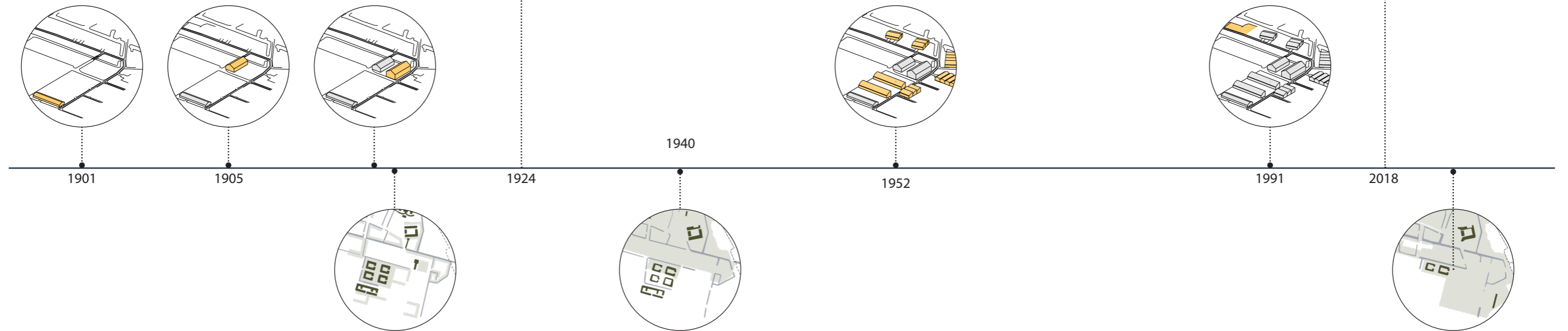


Fig.: Present day Hembrug situation





1914



**1956**

Time progresses

Nature flourishes

**What does Plofbos look like today?**



















# Safety measures

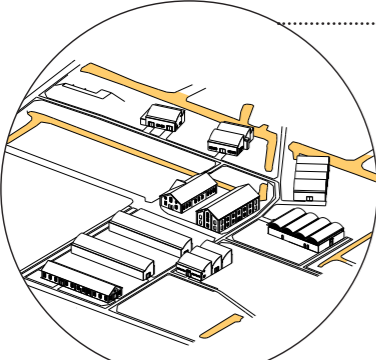


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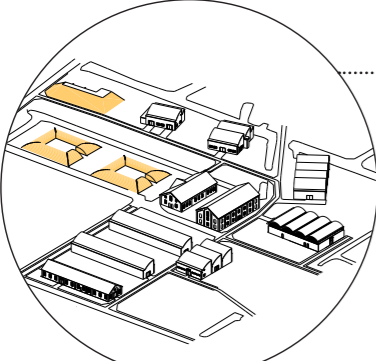


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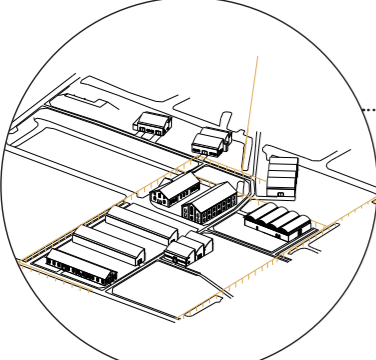


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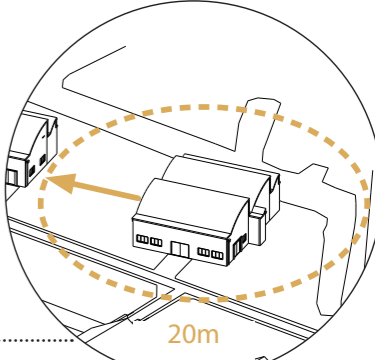
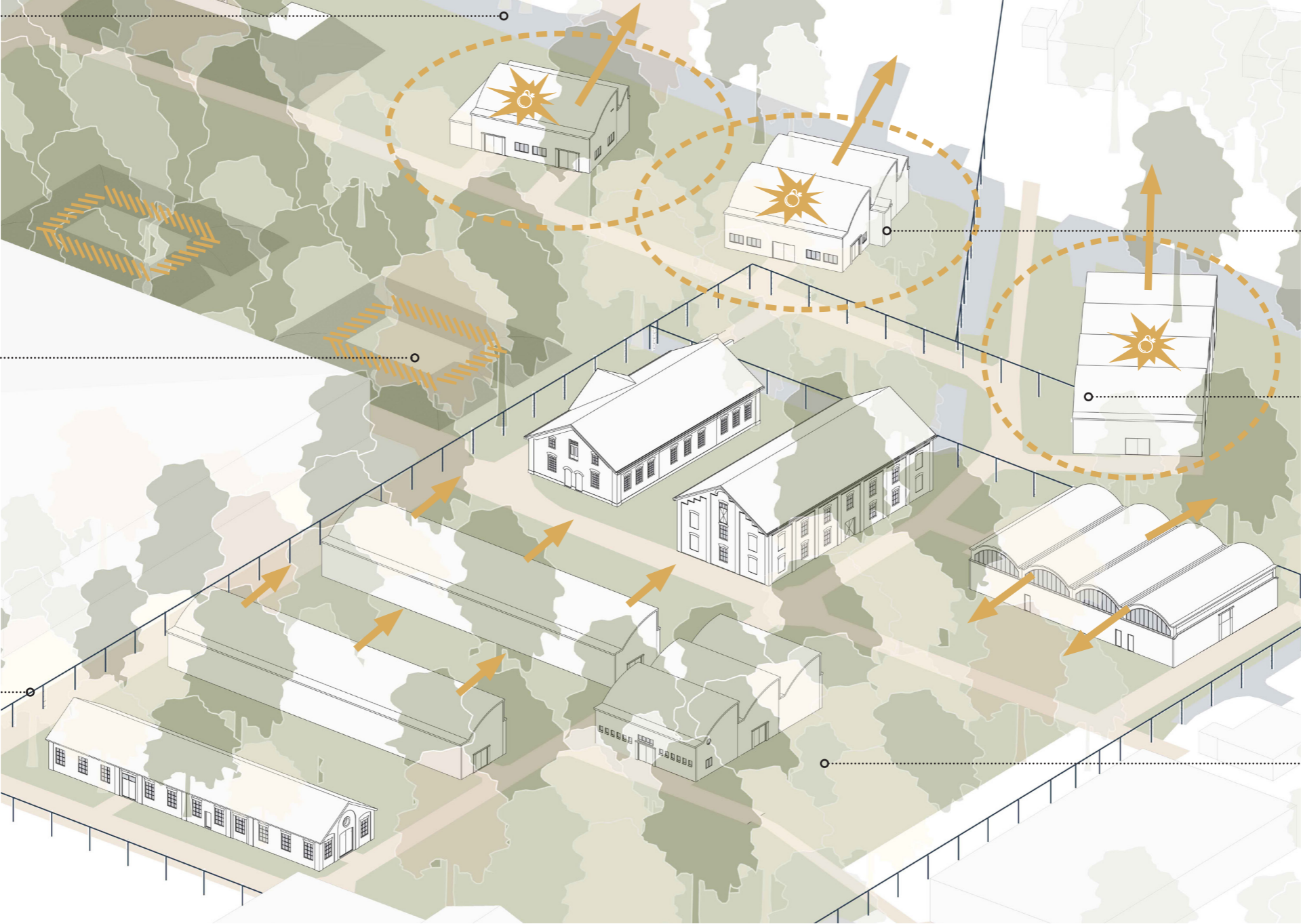


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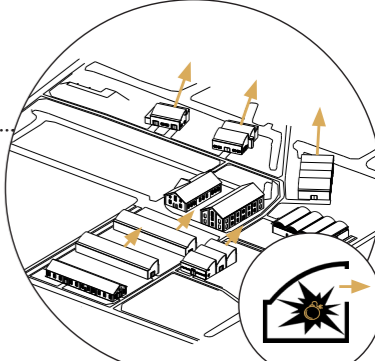


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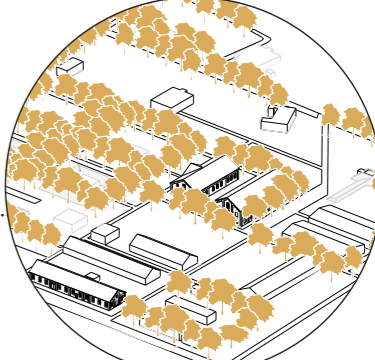


Fig.: Treelanes for camouflage

# QUALITIES

## Safety measures

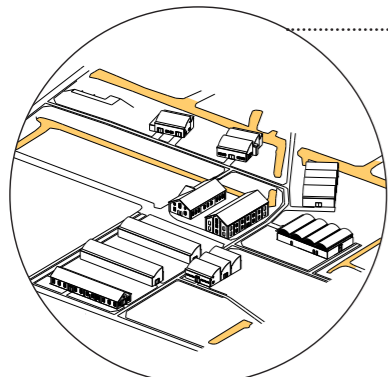


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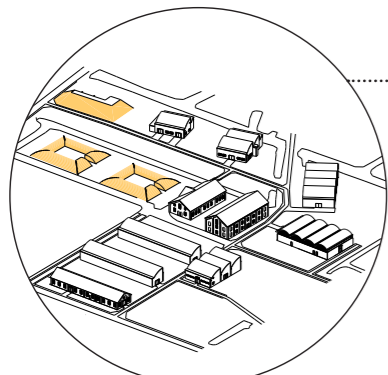


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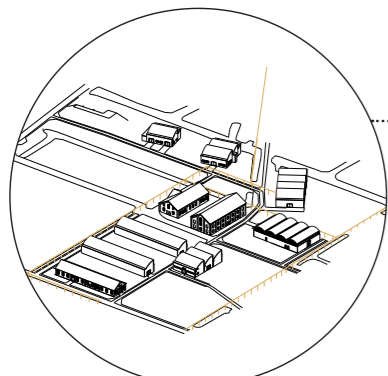


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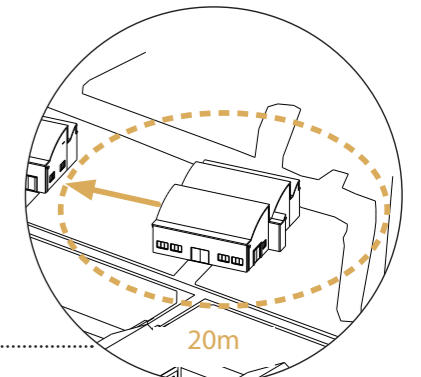
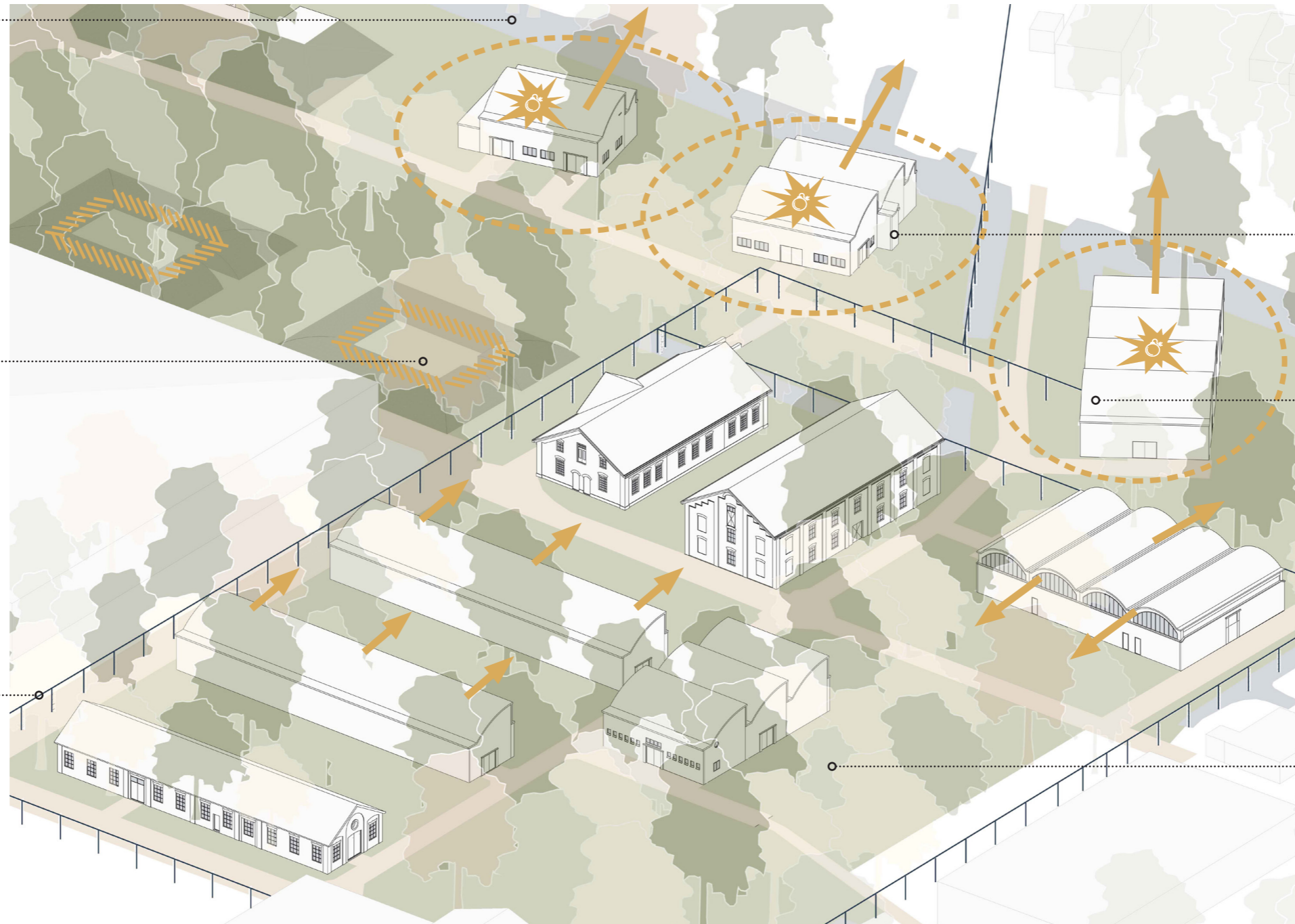


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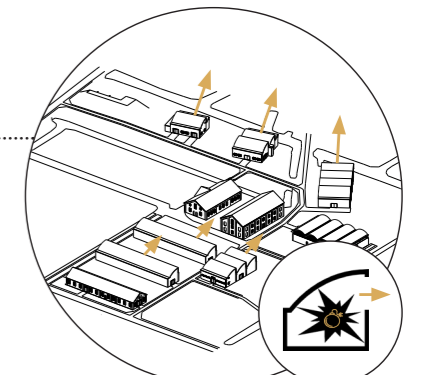


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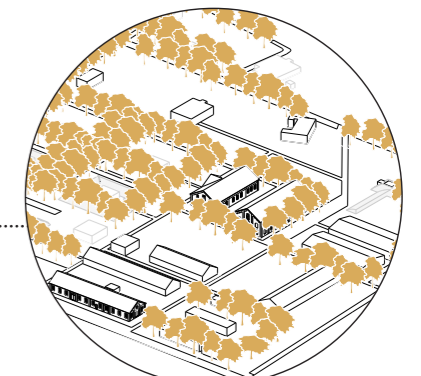


Fig.: Treelanes for camouflage

# Qualities of the forest and the buildings

Always changing

Show layers of time

Experience of seasons

Harbors secrets

Invites to explore and discover

## existing

1. small scale
2. open space
3. roofshape
4. canals
5. trees
6. earth walls
7. piping system
8. lightning decoy

## reason

limit concentration of explosives  
safety radius  
direct potential explosives  
fire compartment  
absorb shockwaves, camouflage  
absorb direct impact  
maintenance and safety  
prevent fire from lightning strikes

**individually represent cultural-historical value**

existing	reason
1. small scale	limit concentration of explosives
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individually represent **cultural-historical** value

**together** represent **experience** value



Intended



Unintended

'Decomposition' of military structure

Nature takes over

'New life' emerges.

Creative pioneers:

Artists, craftsmen, photographers...

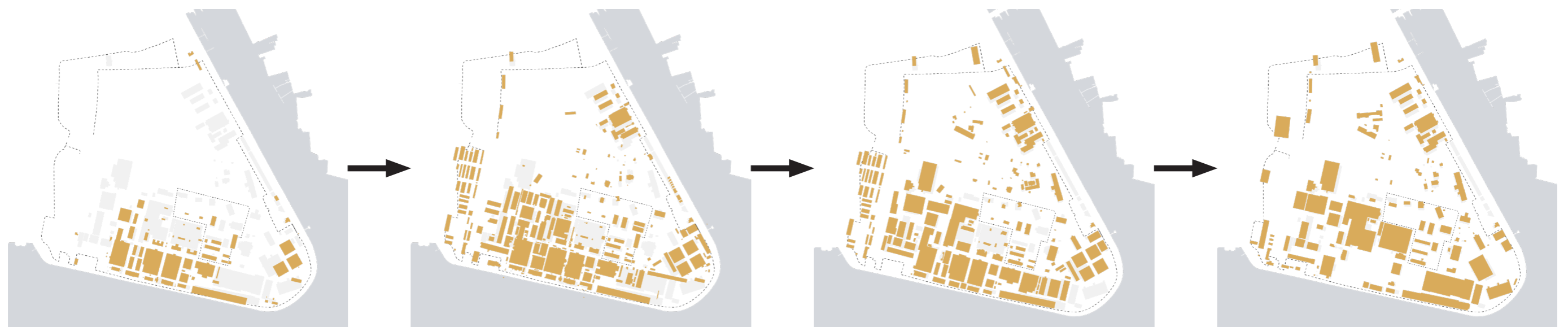


**Anology**

- Introduction
- Key points of analysis
- **Position towards heritage**
- Masterplan
- Proposal

**What is the role of the buildings?**

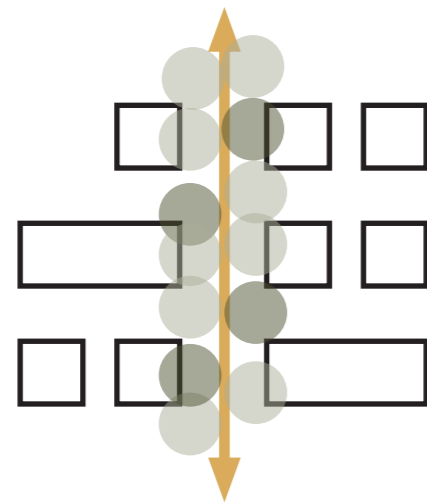
# What is the role of the buildings?



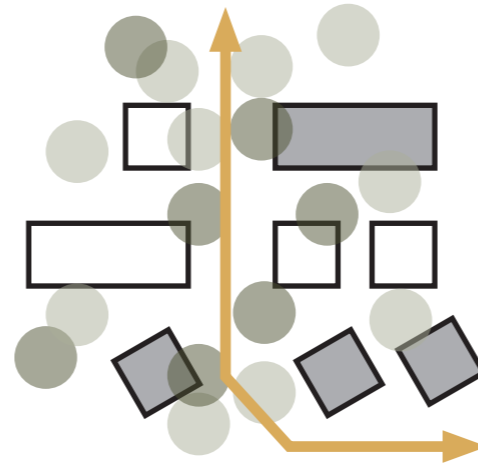
**buildings always change...**

# What is the role of the buildings?

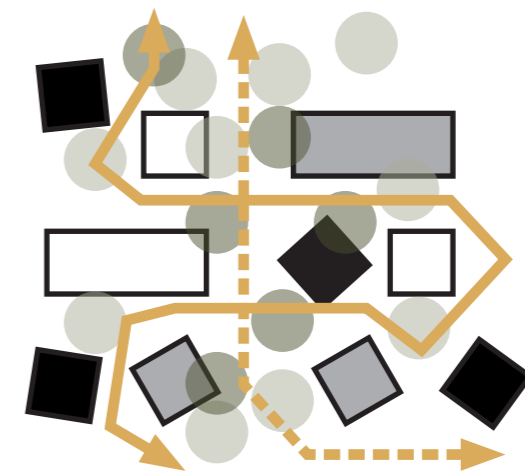
**“A process of decomposition”**



1900: Military structure.  
Intended efficiency



1950: Diversions and untidiness.  
Unintended qualities



2050: Amplified untidiness.  
Decay / crumbling structure.

# What is the role of the buildings?

- 'Tactile volumes' that are part of the forest

  - 'Historical layers'

  - Evidence of former function

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- Only '1900' generation hold municipal monument status

  - Utilitarian

  - Not unique



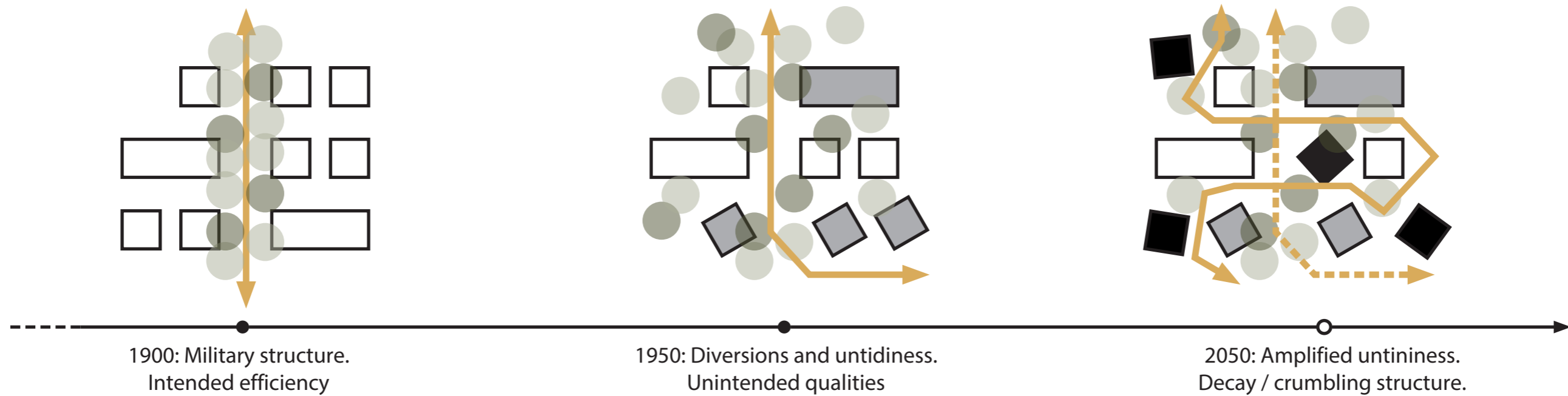


# What is the 'touchability' of the buildings?

- Maintain open space, volumetric presence, rhythm and sense of materiality
- May be altered, partially demolished, changed in form and material
- Preserve "lost" techniques: ornamental brick craftsmanship

- Introduction
- Key points of analysis
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- **Masterplan**
- Proposal

# A process of decomposition

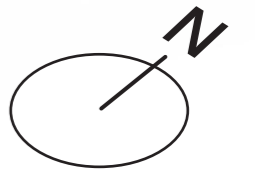
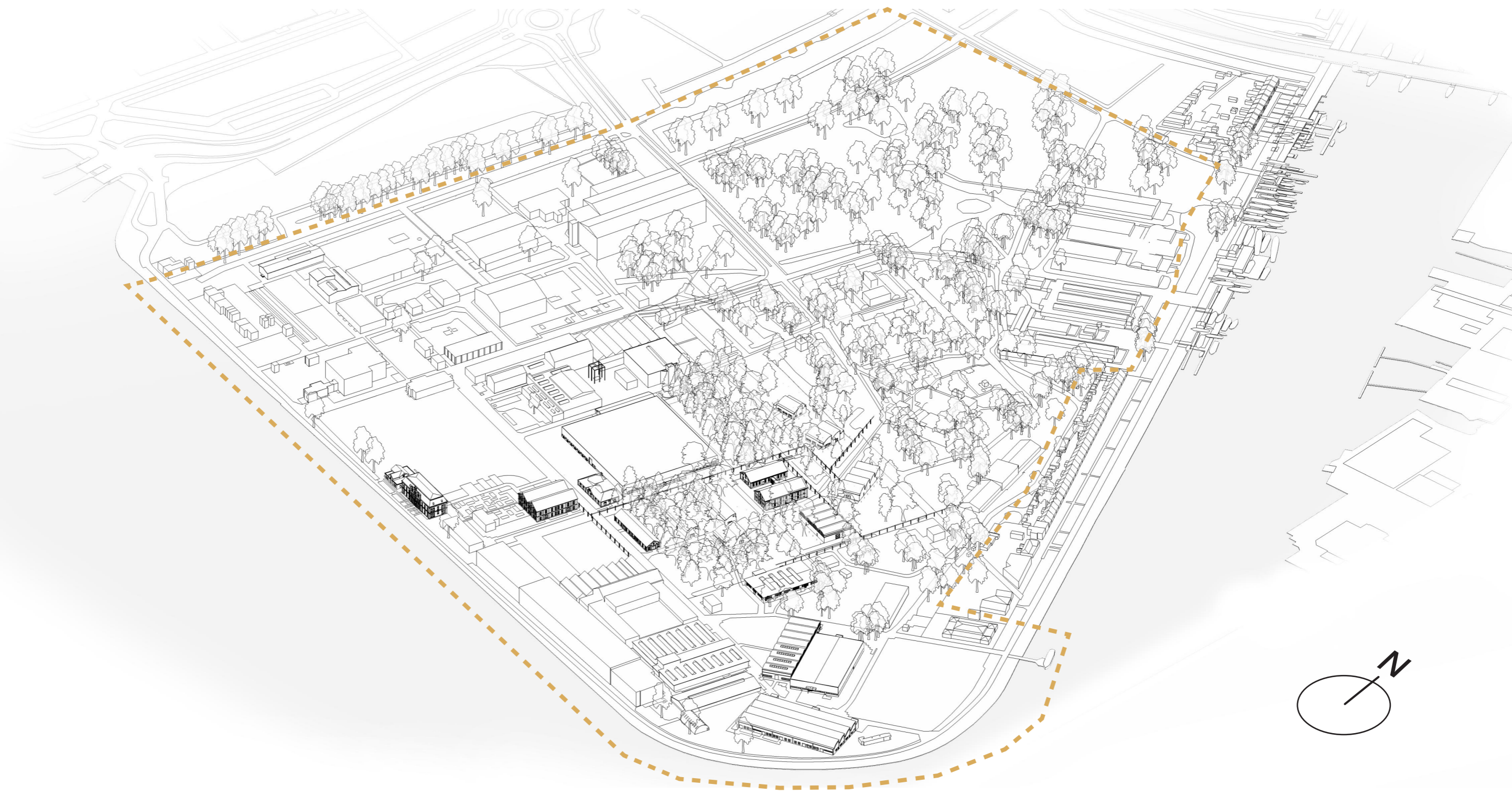


**How can the masterplan encourage this process?**

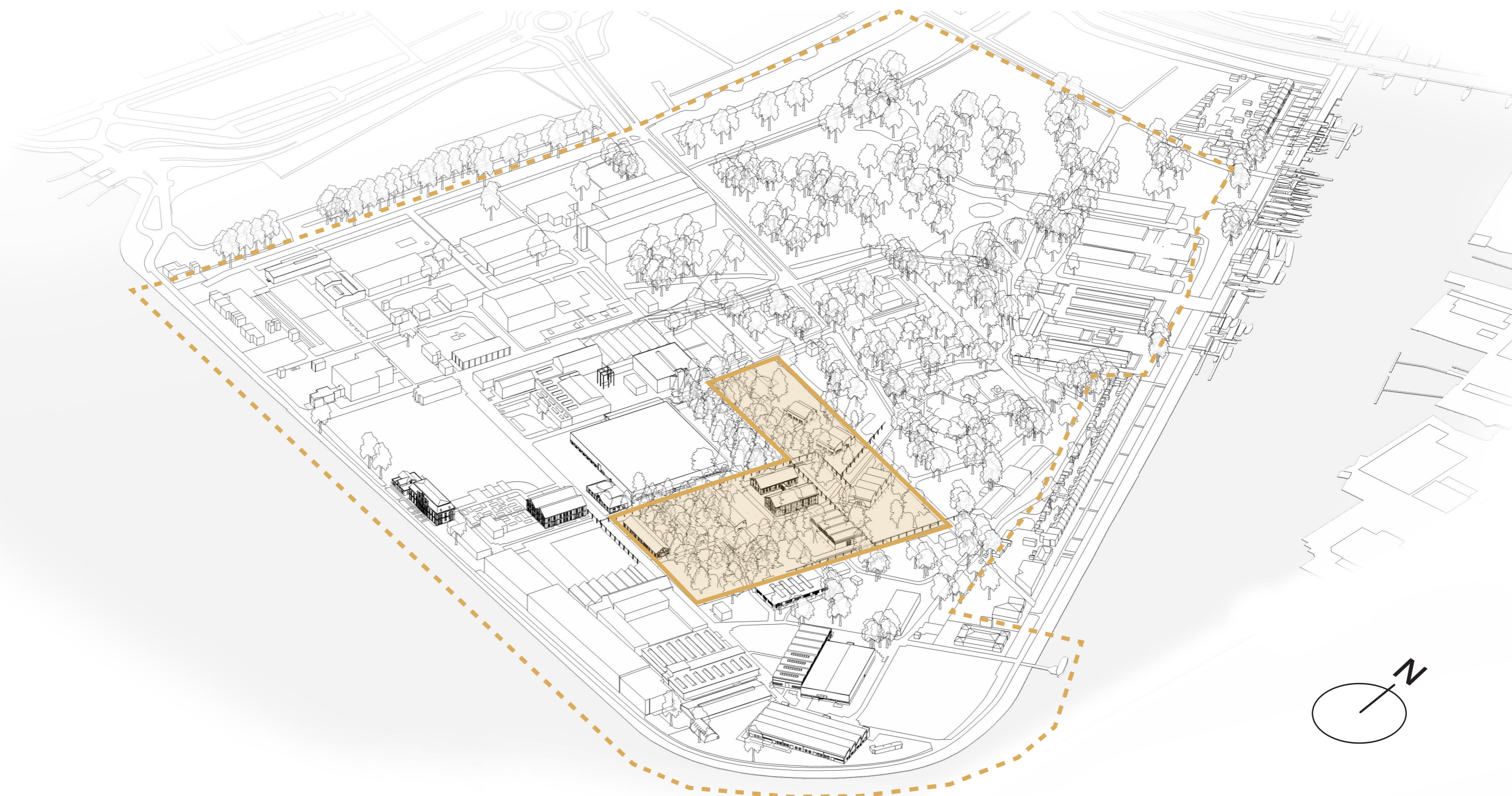
**Creating space**

**Leaving space**

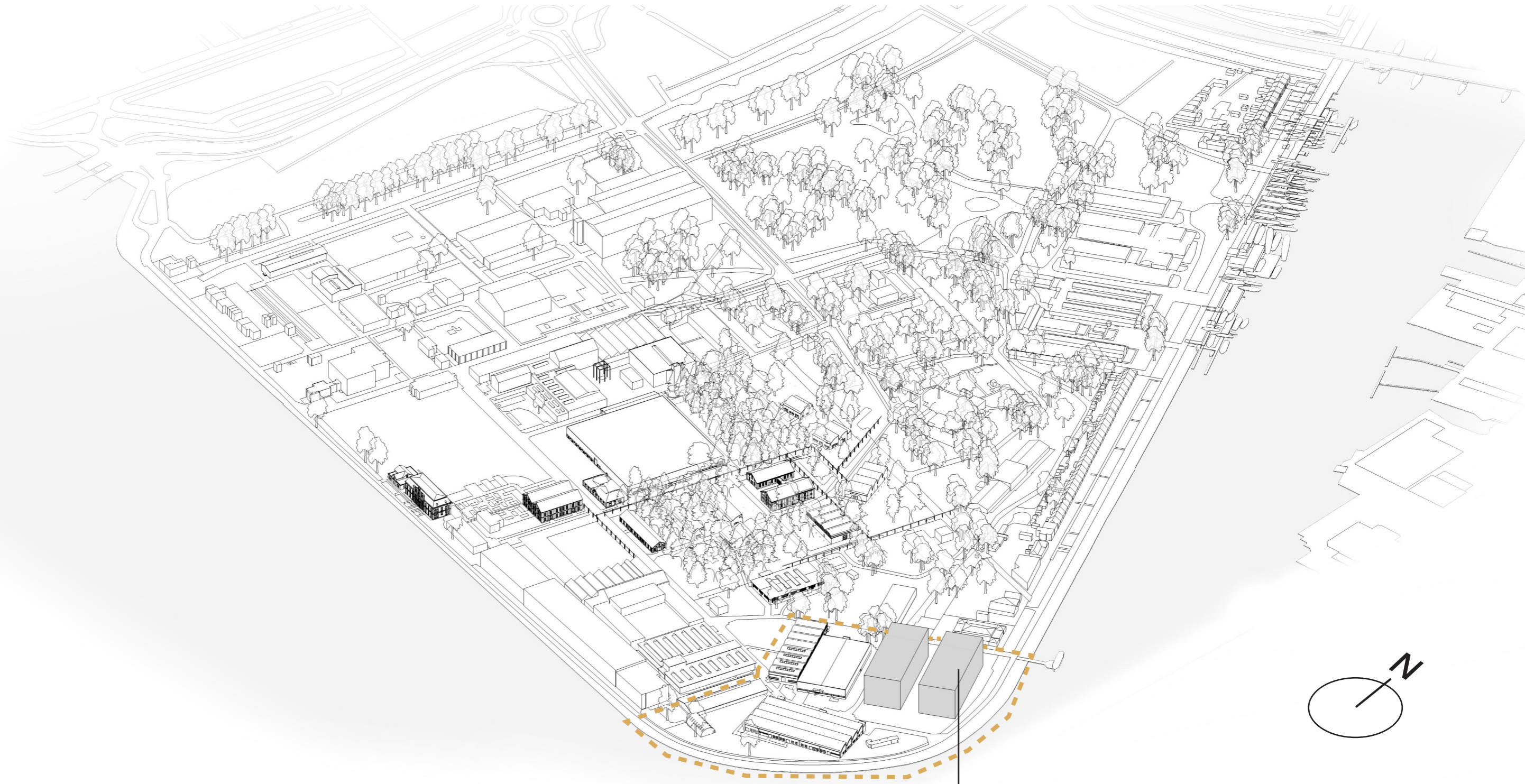
**How can the masterplan encourage this process?**



# 'Pavilions in the woods', a.k.a. Plofbos



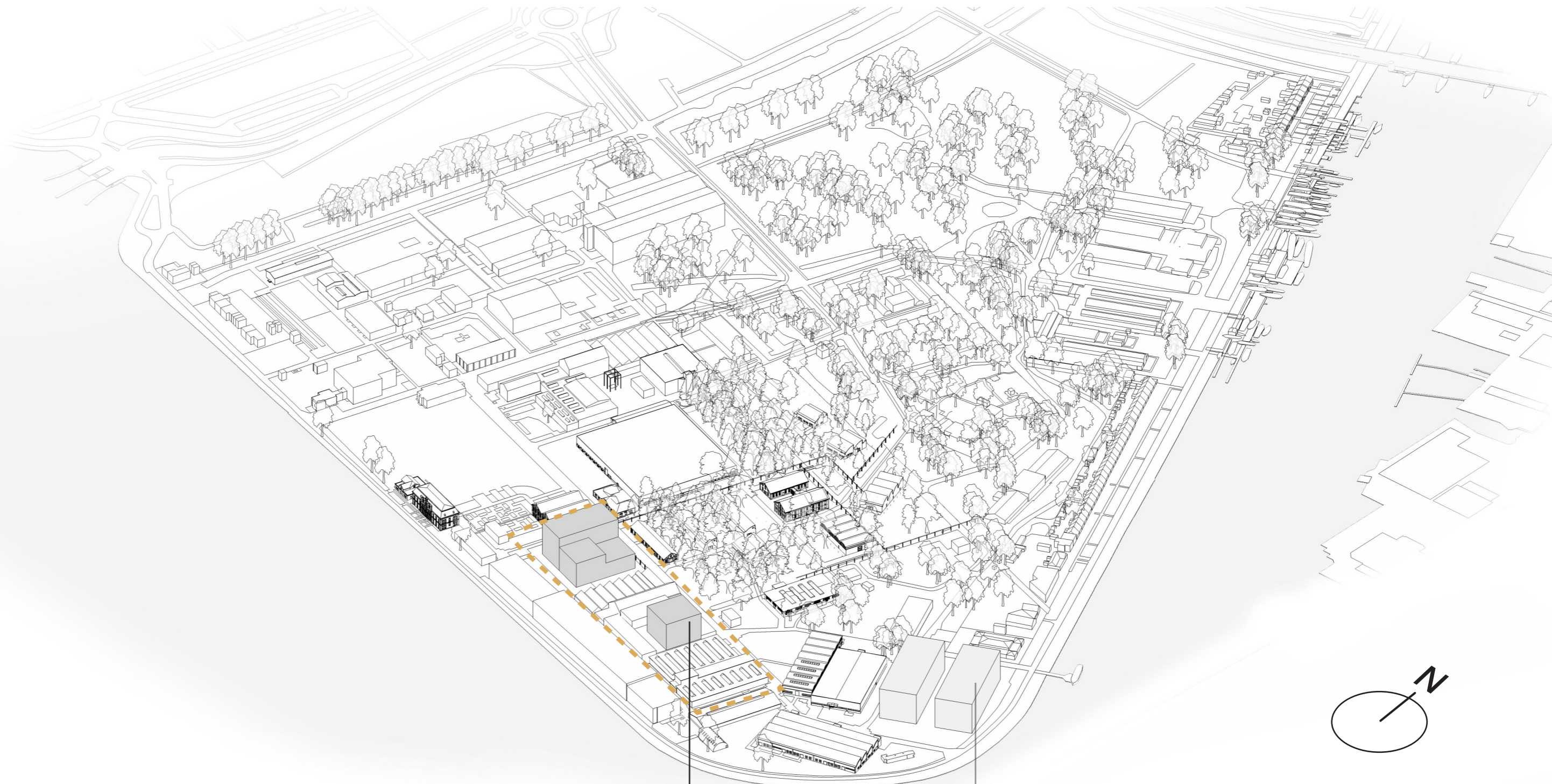
# Speculative planning: densifying



'Cape South

- Market
- Artist studio's
- Residential

# Speculative planning: densifying



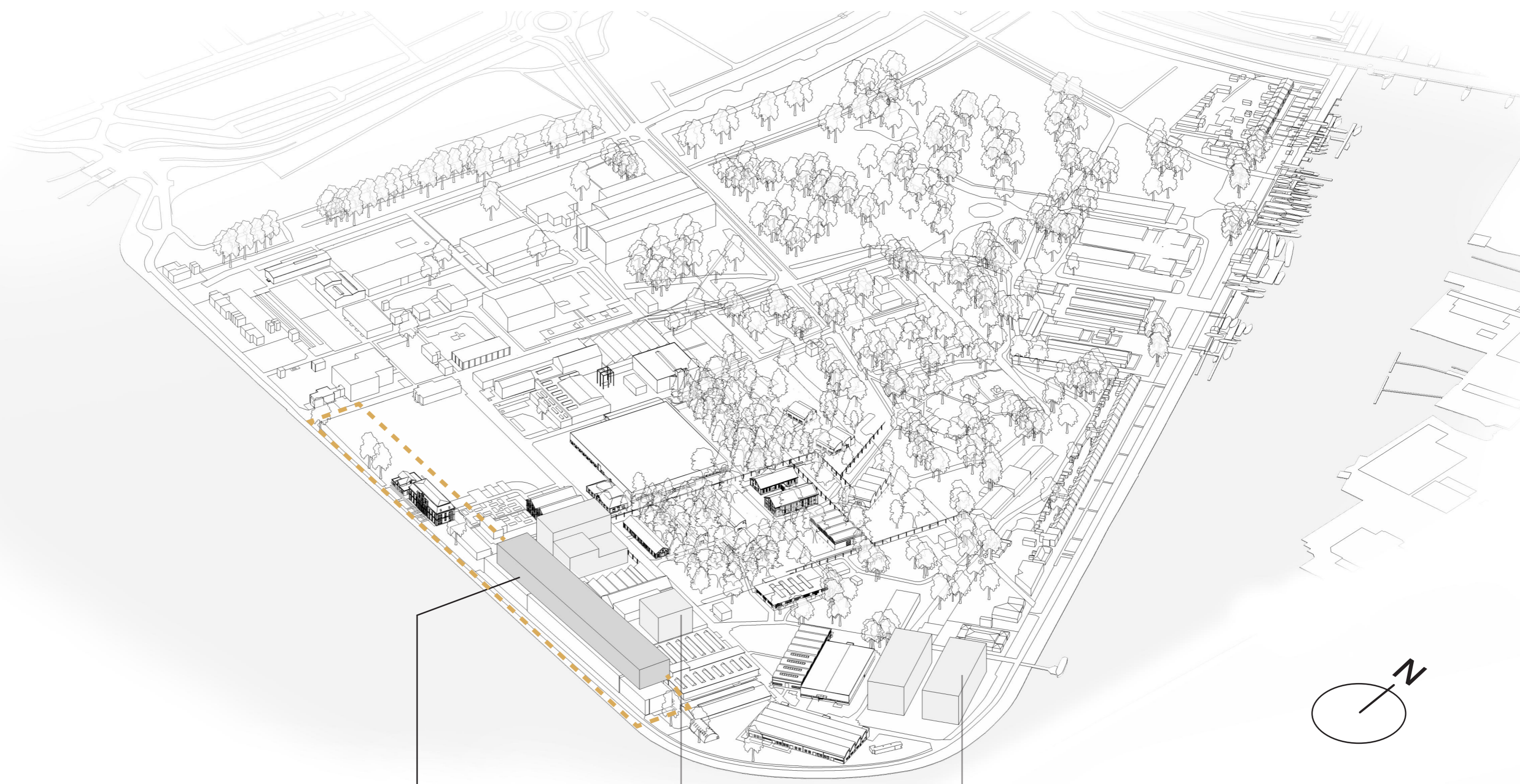
## 'The Ladder'

- Pool + Sports facilities
- Leisure
- Residential

## 'Cape South'

- Market
- Artist studio's
- Residential

# Speculative planning: densifying



## 'Waterfront'

- Hotel
- Leisure / events
- Offices

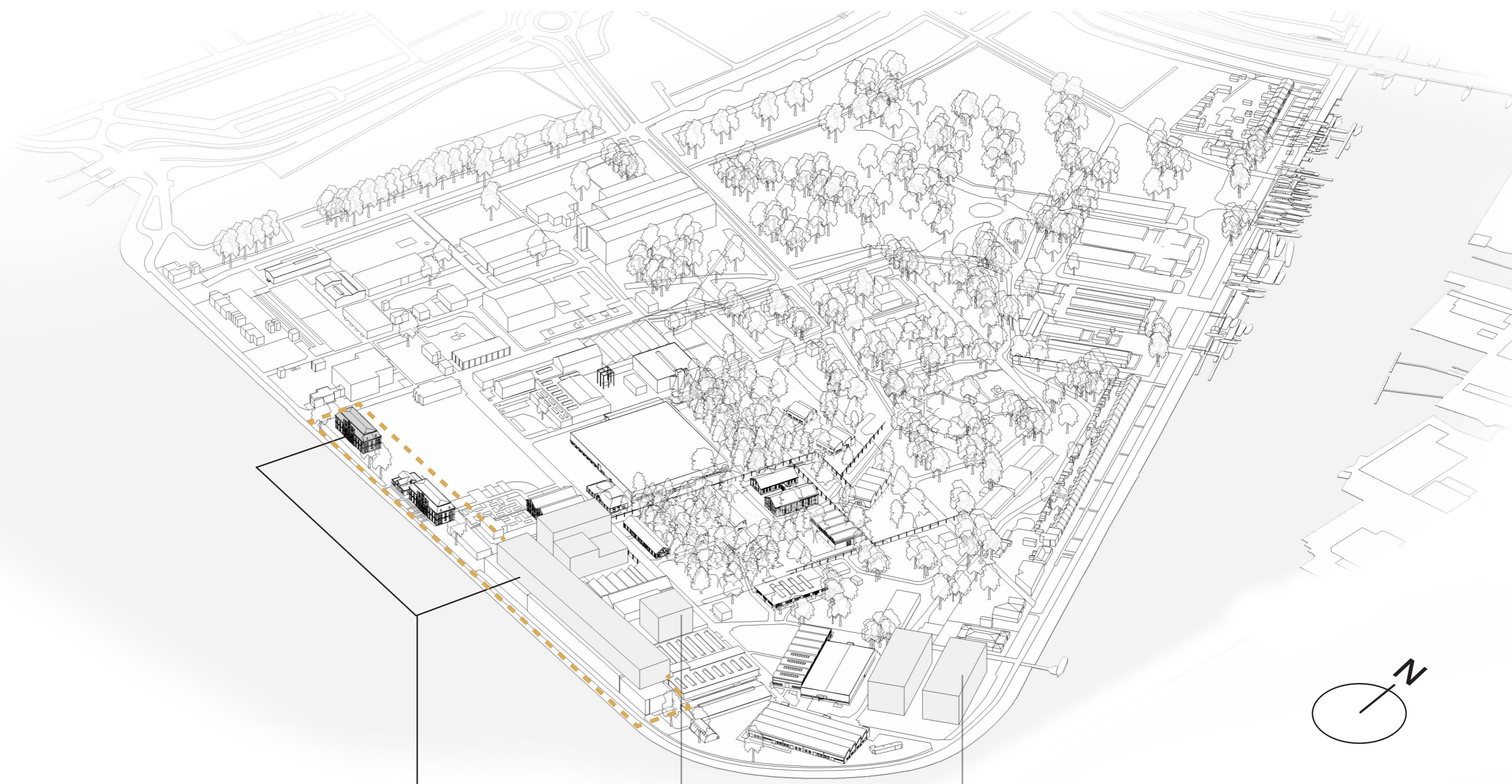
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# Speculative planning: densifying

## 'Campus South'

- Small workspaces
- Exhibition / public /commerce
- Mixed residential



## 'Waterfront'

- Hotel
- Leisure / events
- Offices

## 'The Ladder'

- Pool + Sports facilities
- Leisure
- Residential

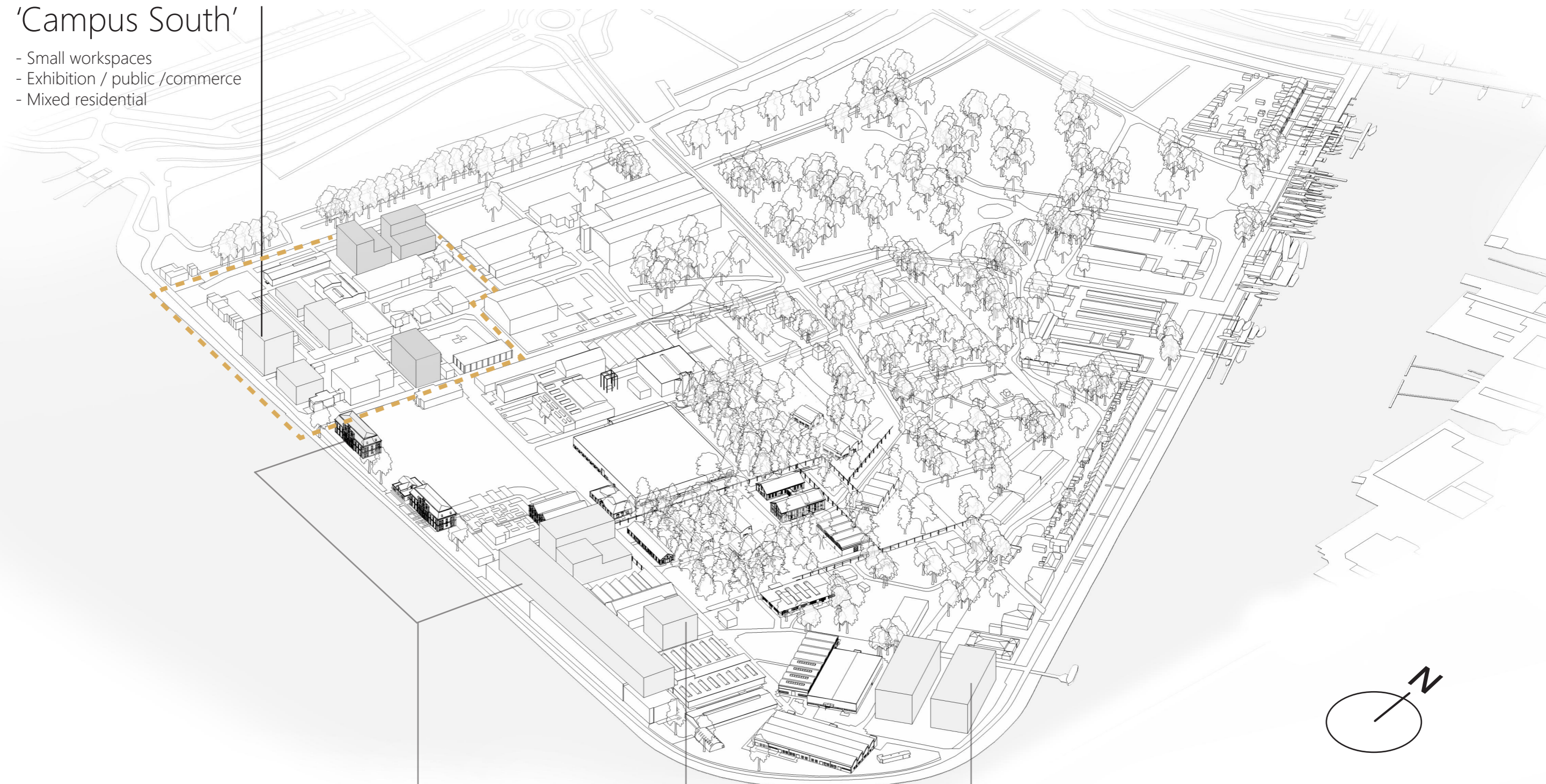
## 'Cape South'

- Market
- Artist studio's
- Residential

# Speculative planning: densifying

## 'Campus South'

- Small workspaces
- Exhibition / public /commerce
- Mixed residential



## 'Waterfront'

- Hotel
- Leisure / events
- Offices

## 'The Ladder'

- Pool + Sports facilities
- Leisure
- Residential

## 'Cape South'

- Market
- Artist studio's
- Residential

# Speculative planning: densifying

## 'Campus South'

- Small workspaces
- Exhibition / public / commerce
- Mixed residential

## 'Entrance zone'

- Primary parking
- Mixed residential
- Exhibition space
- Practicality stores / super-market

## 'Waterfront'

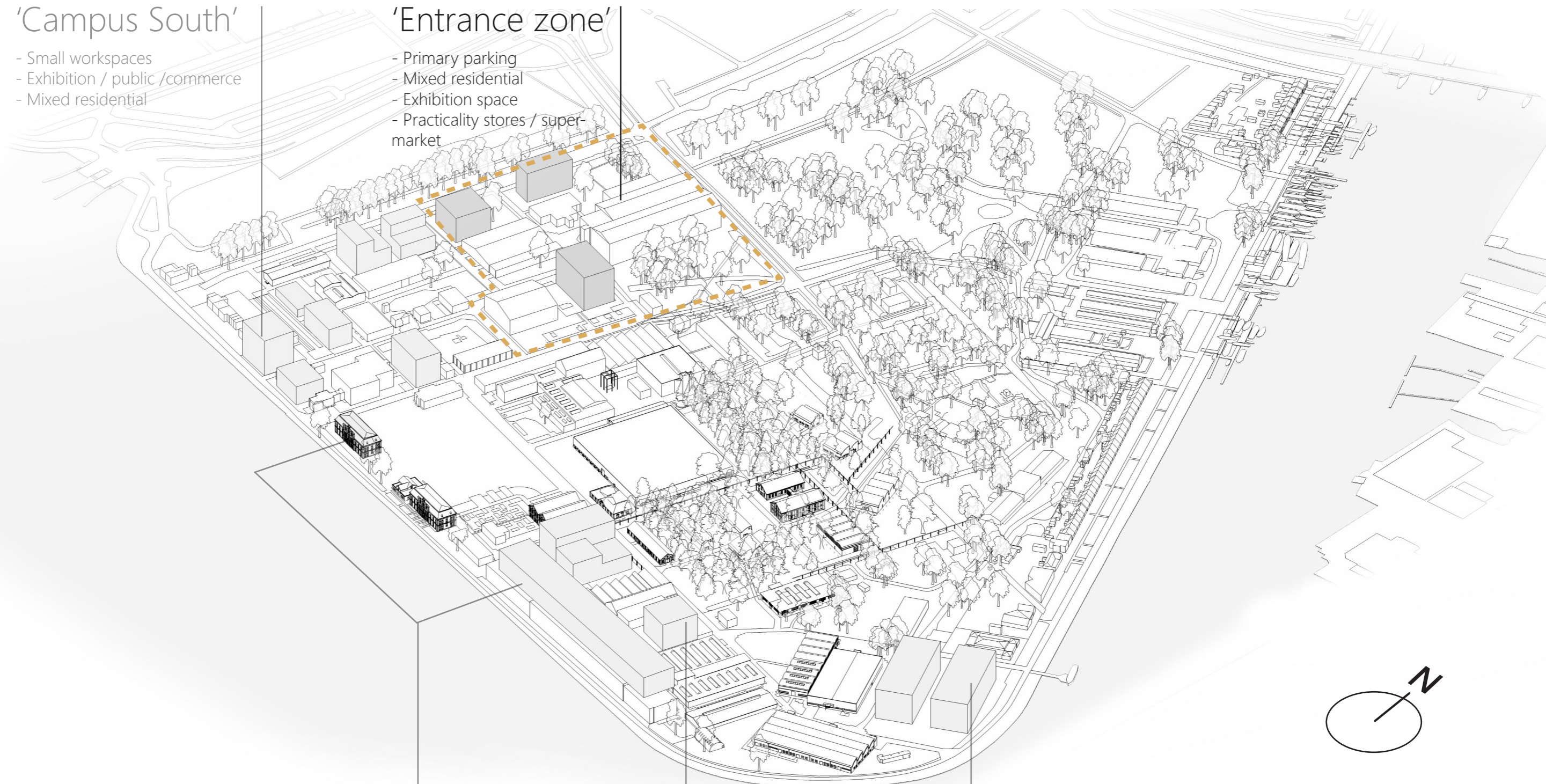
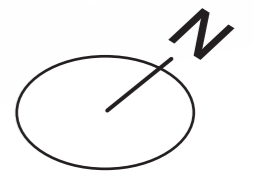
- Hotel
- Leisure / events
- Offices

## 'The Ladder'

- Pool + Sports facilities
- Leisure
- Residential

## 'Cape South'

- Market
- Artist studio's
- Residential



# Speculative planning: densifying

## 'Campus South'

- Small workspaces
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## 'Waterfront'

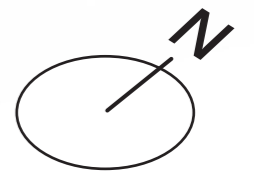
- Hotel
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- Pool + Sports facilities
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- Residential

## 'Cape South'

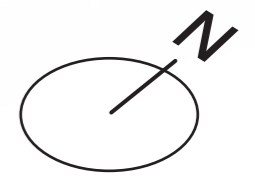
- Market
- Artist studio's
- Residential



# Main event space: Taets Building



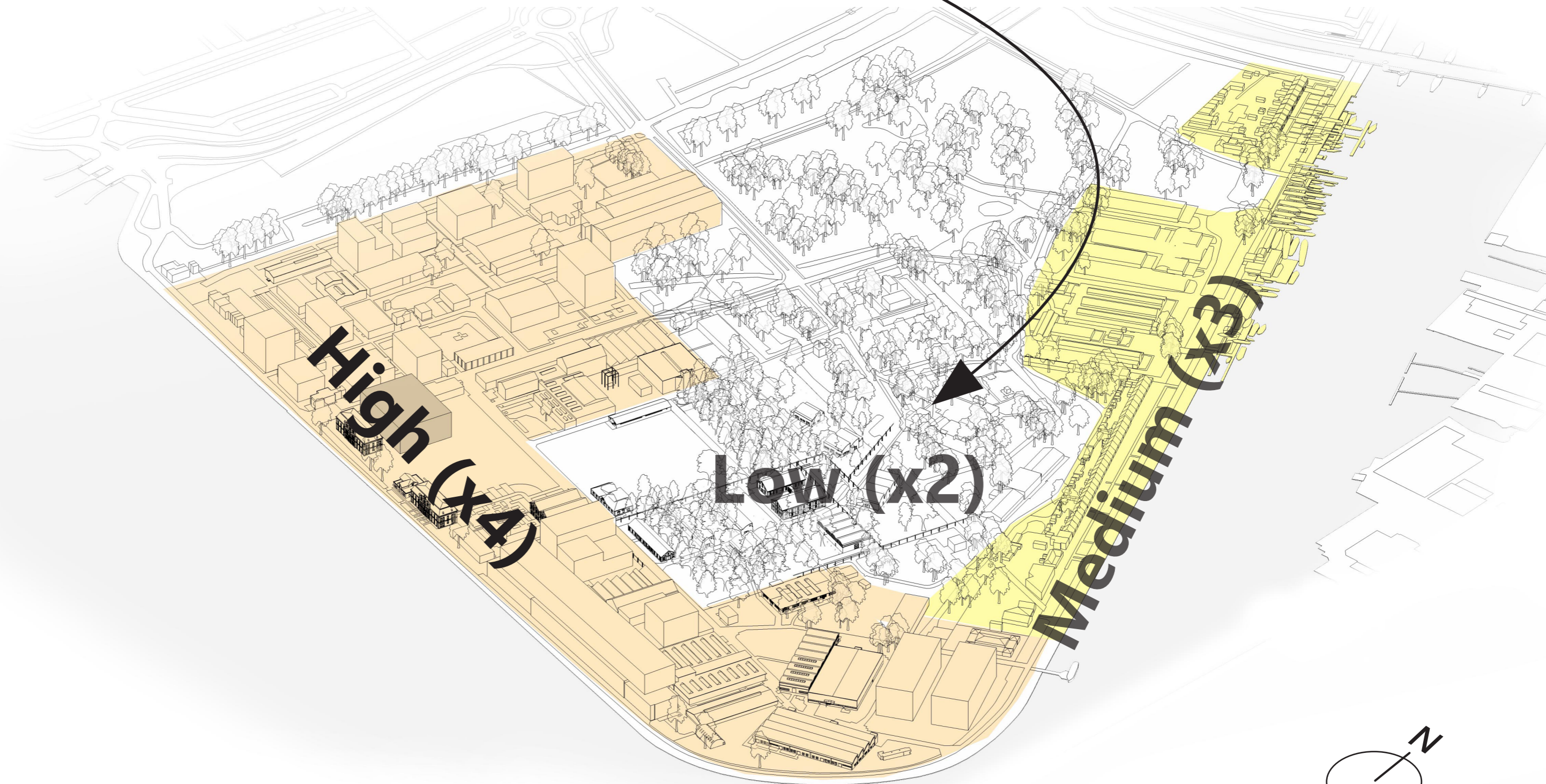
Moving Taets function  
+ New building



# Density zones



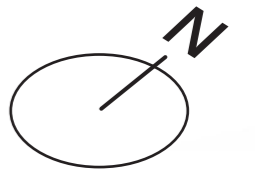
Leaving space



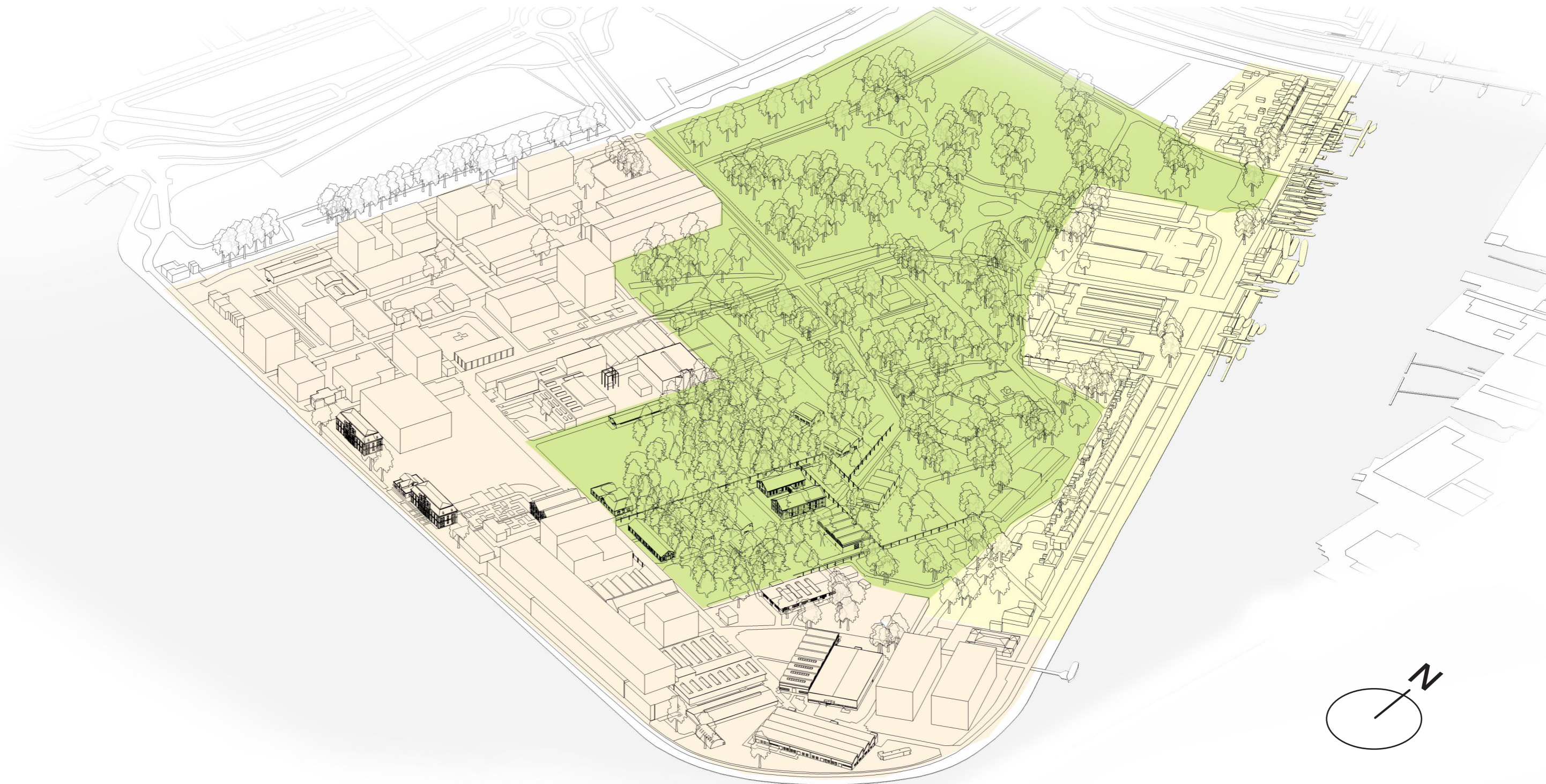
**High (x4)**

**Low (x2)**

**Medium (x3)**



# Reclaiming & clarifying forest borders

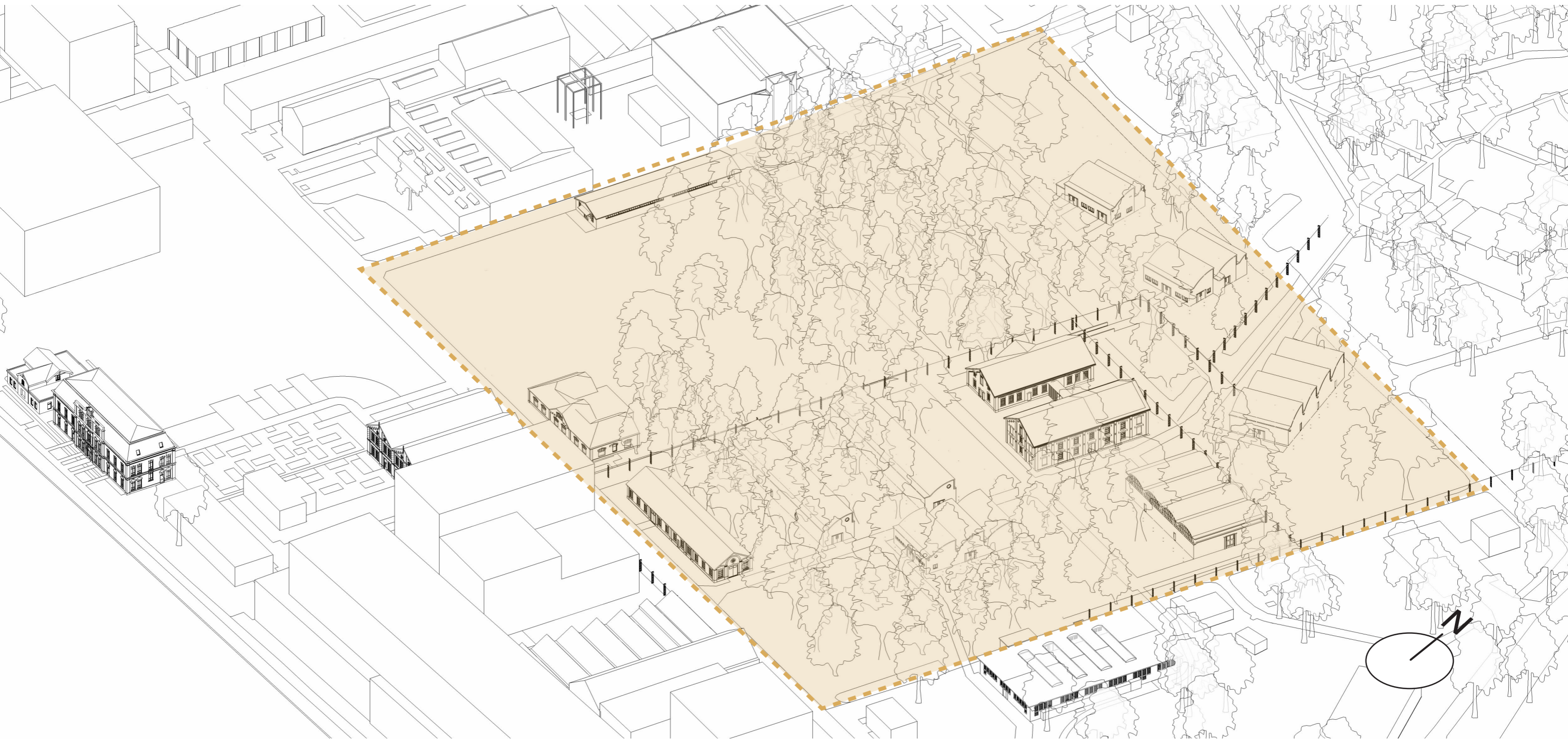


# Target groups

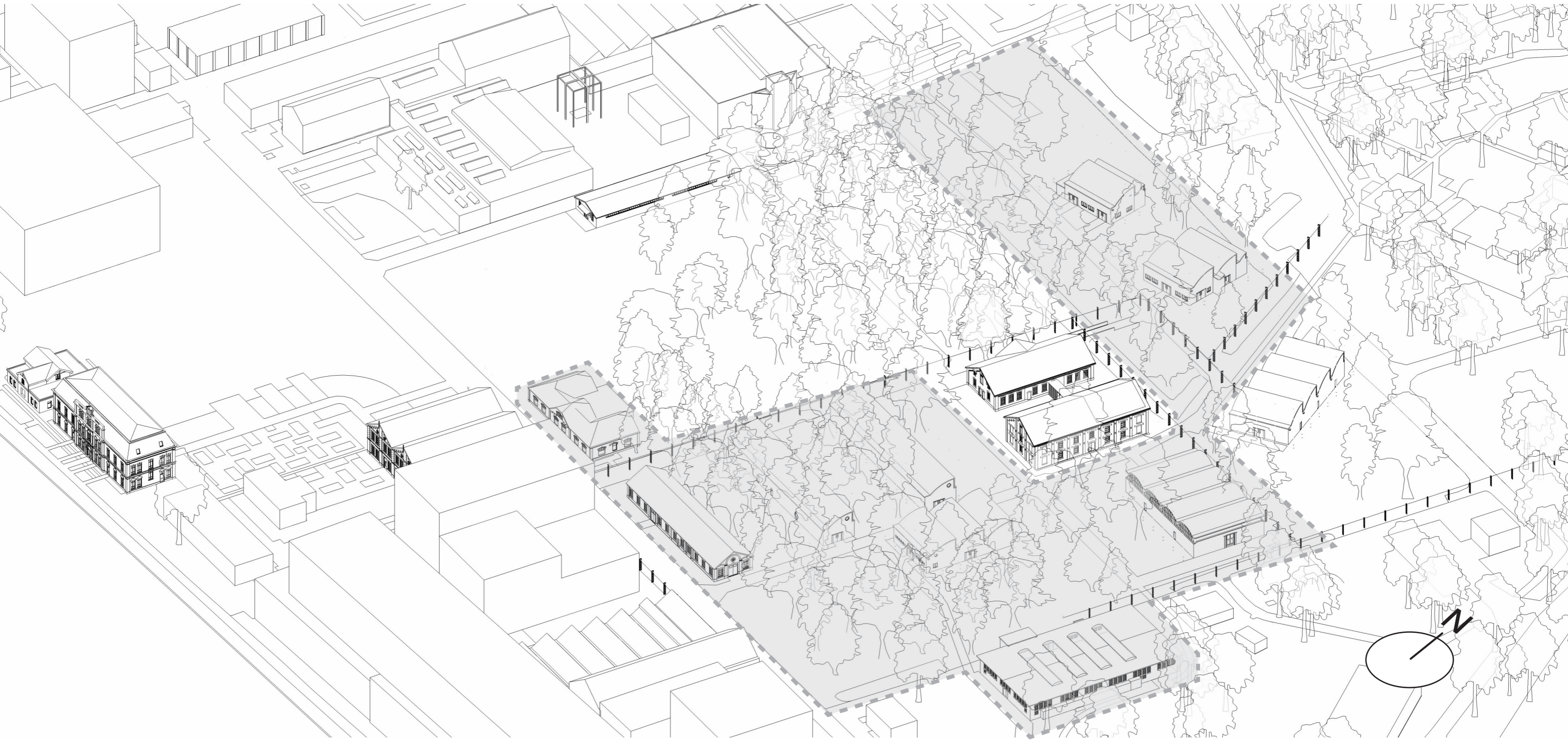
Pioneering creative sector

- Small creative industries
- Artists
- Musicians
- Craftsmen
- Workshops
- Wider public

# Plofbos

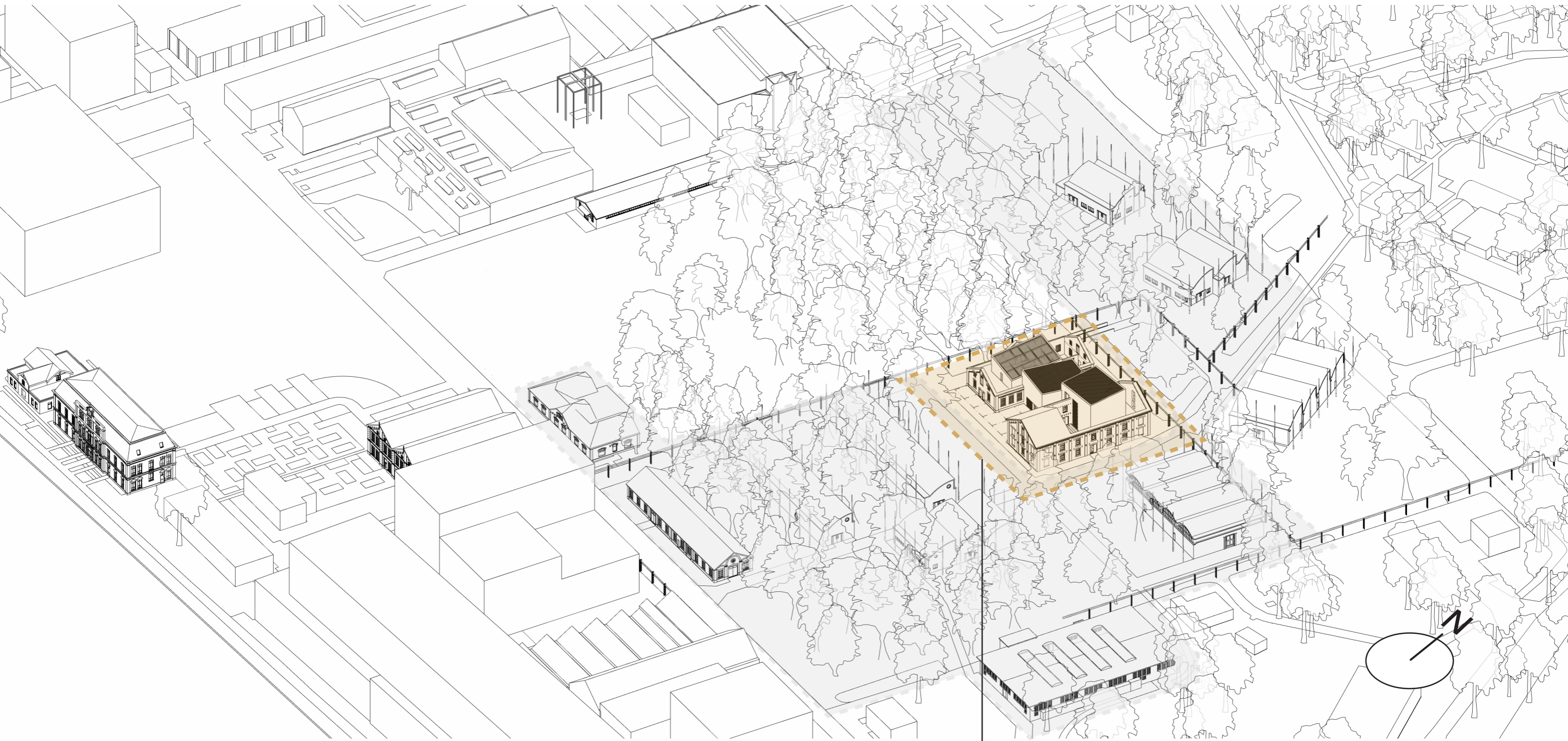


# Leave space





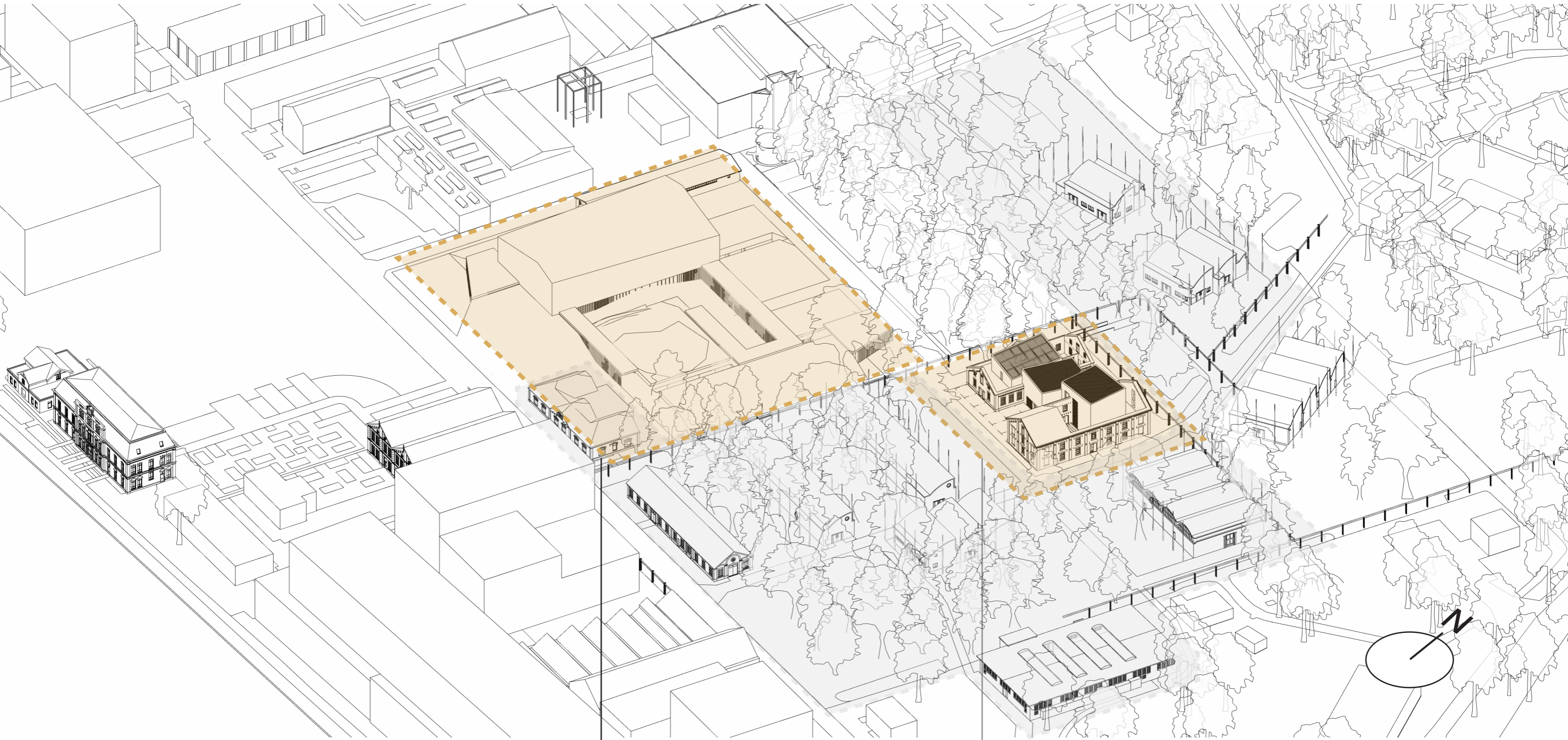
# Cultural centre - Local Arts Museum



## Cultural Centre

- Permanent exhibition spaces
- Temporary exhibition spaces
- Event office
- Cafe

# Music Centre



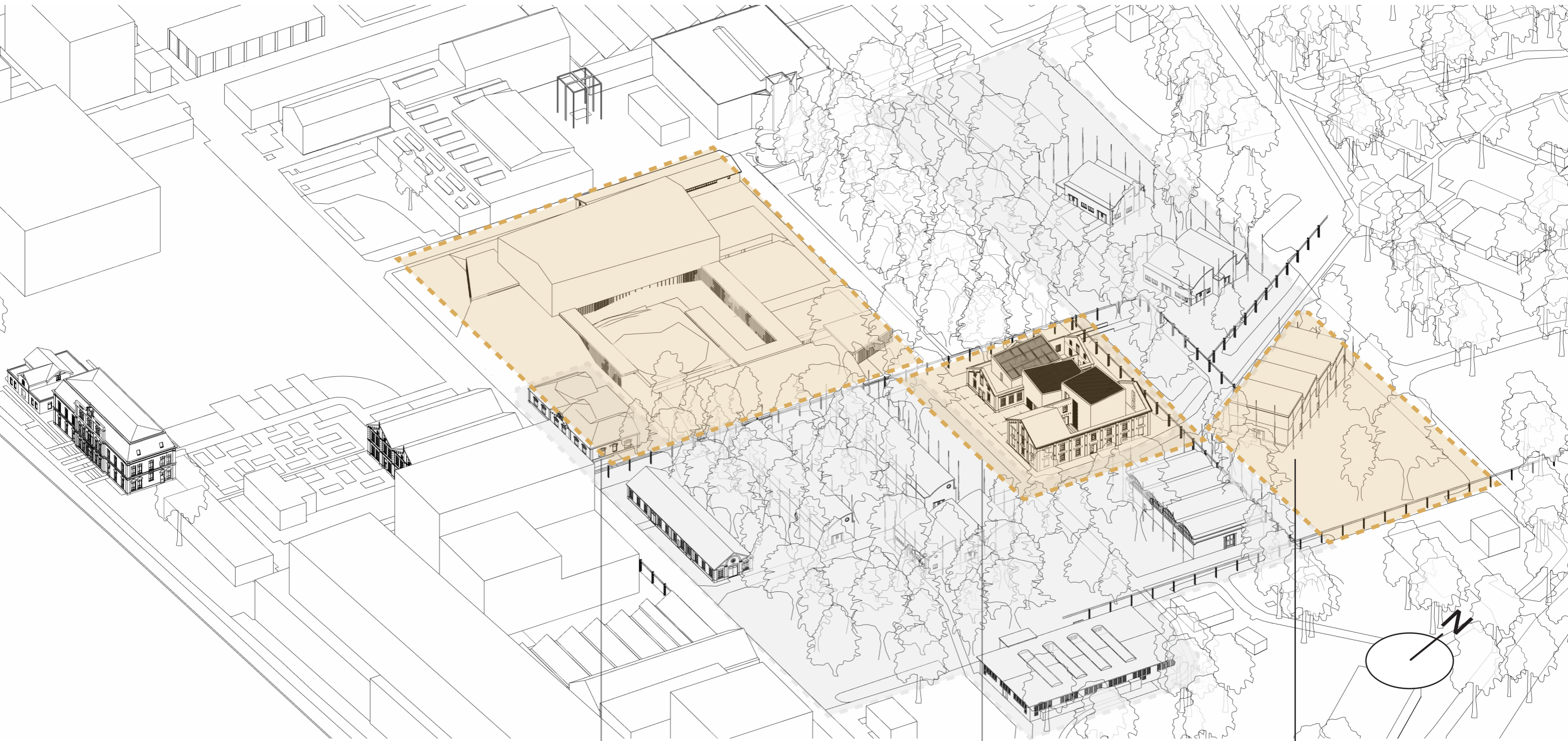
## Music Centre

- Repetition + recording studio's
- Music Lessons
- Gigs
- Cafe

## Cultural Centre

- Permanent exhibition spaces
- Temporary exhibition spaces
- Event office
- Cafe

# Multi-purpose: Auditorium + exhibition space



## Music Centre

- Repetition + recording studio's
- Music Lessons
- Gigs
- Cafe

## Cultural Centre

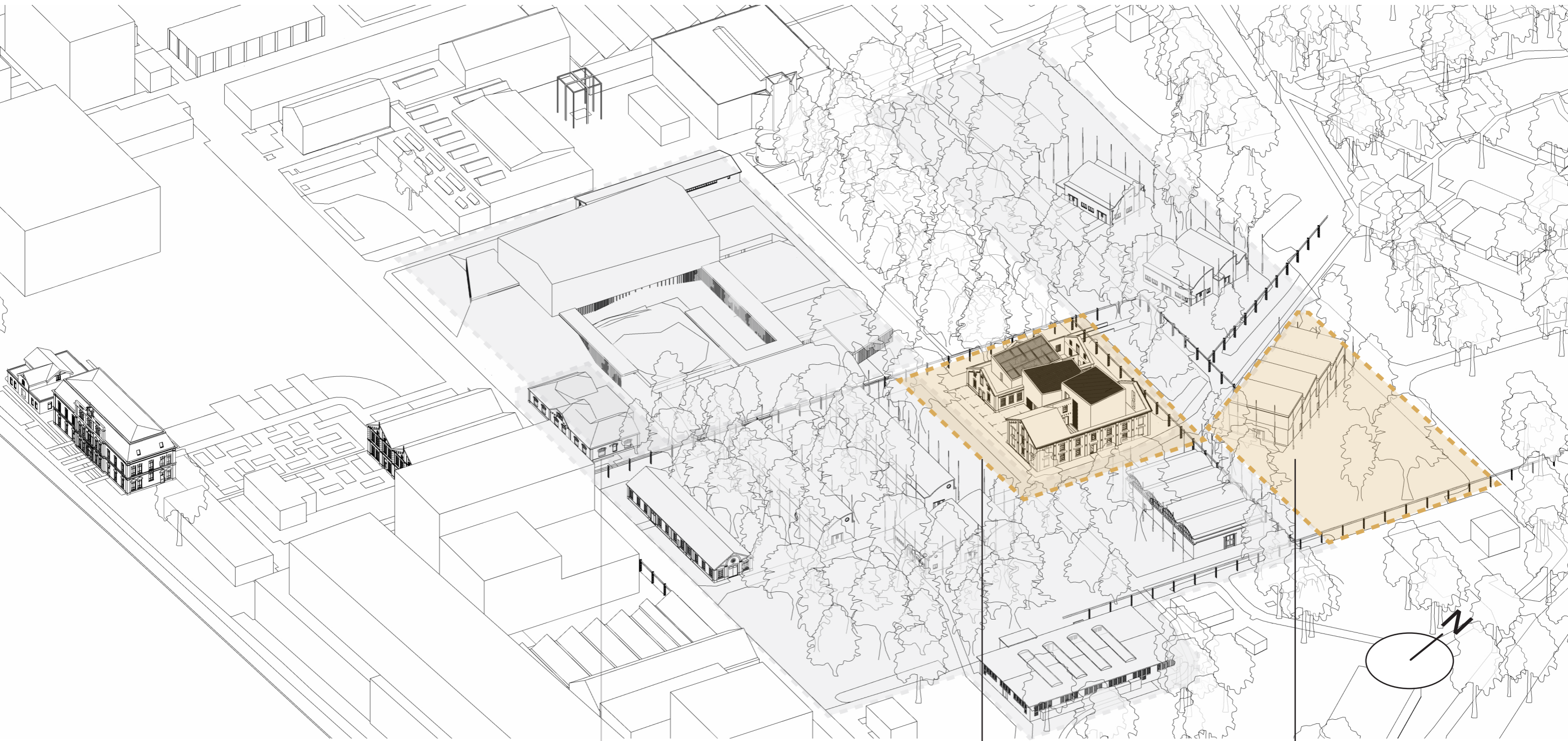
- Permanent exhibition spaces
- Temporary exhibition spaces
- Event office
- Cafe

## Multifunctional

- Acoustics for gigs
- Lighting for exhibitions
- Events
- Lectures

- **Introduction**
- **Key points of analysis**
- **Position towards heritage**
- **Masterplan**
- **Proposal**

# Multi-purpose: Auditorium + exhibition space



## Music Centre

- Repetition + recording studio's
- Music Lessons
- Gigs
- Cafe

## Cultural Centre

- Permanent exhibition spaces
- Temporary exhibition spaces
- Event office
- Cafe

## Multifunctional

- Acoustics for gigs
- Lighting for exhibitions
- Events
- Lectures

# Starting points for design

## Nature

Forest



Earth walls



Canals



Trees

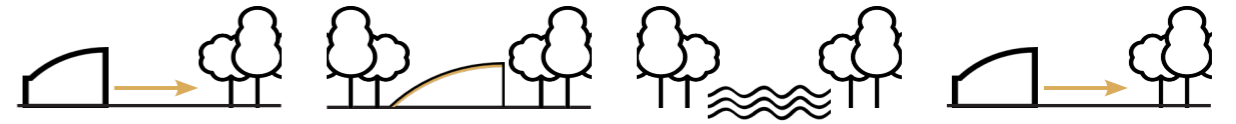


dense  
enclosing  
border

hidden  
evidence

evidence  
idyllic

patterns  
diversity  
monumental



## Spatial plan

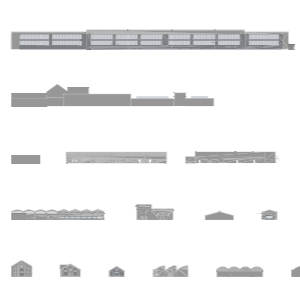
Open space



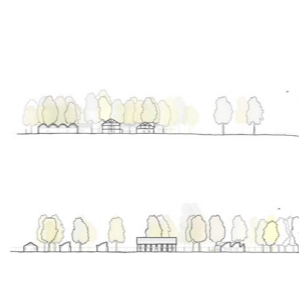
Rhythm



Scale



Transition



diversity  
relation

repetition  
open space

module  
unity  
small

contrast  
hidden



## Buildings

Ornamented facades



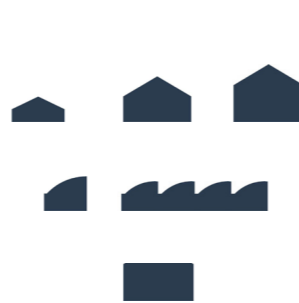
Shell roofs



Elements



Generations



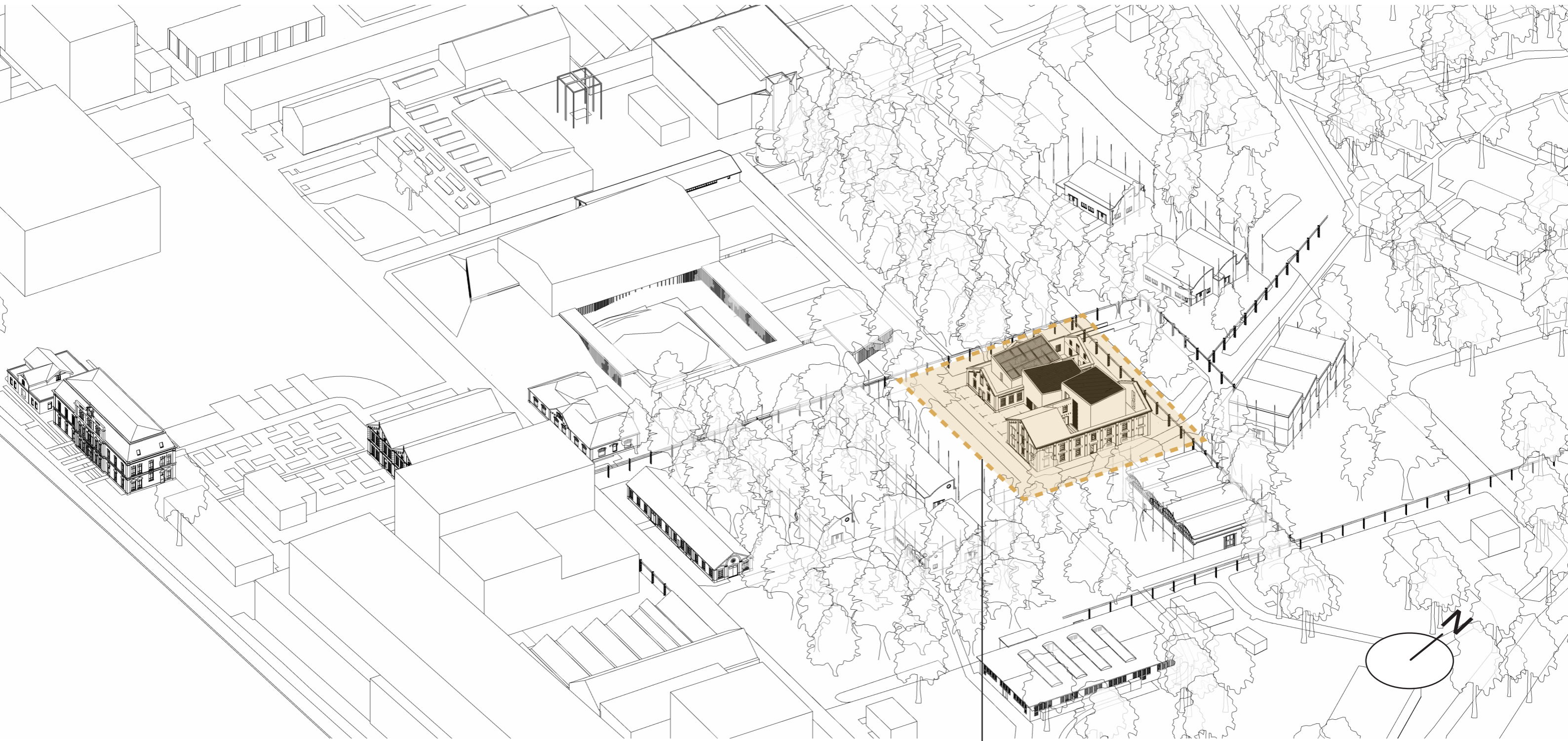
exterior  
details  
roofshape

structure  
light + space  
roofshape

military  
history  
evidence

continuity  
typology  
architecture





## Cultural Centre

- Permanent exhibition spaces
- Temporary exhibition spaces
- Event office
- Cafe





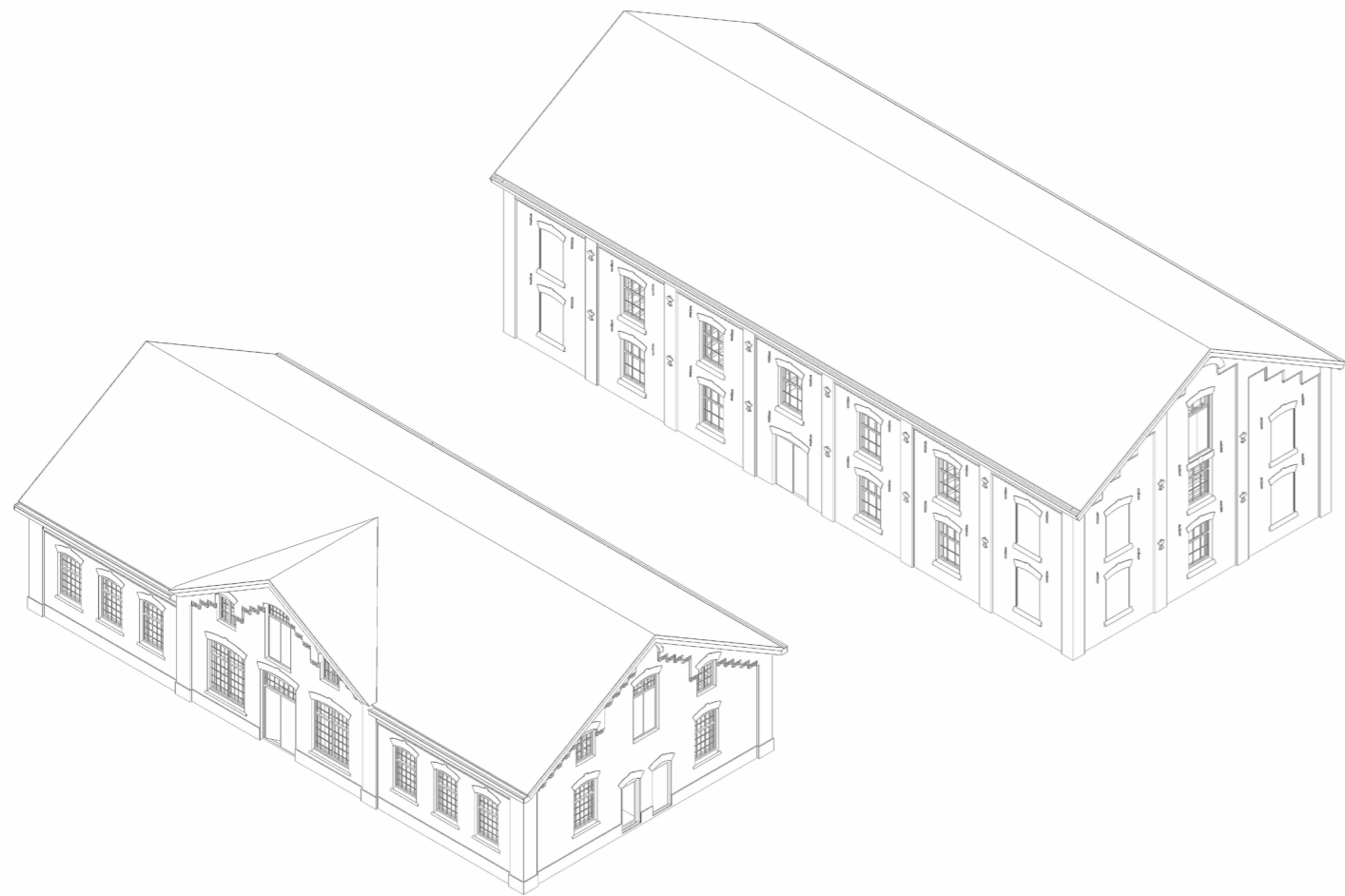
**CATALYST:  
ARTS & CULTURE CENTRE**

# How to make a building that:

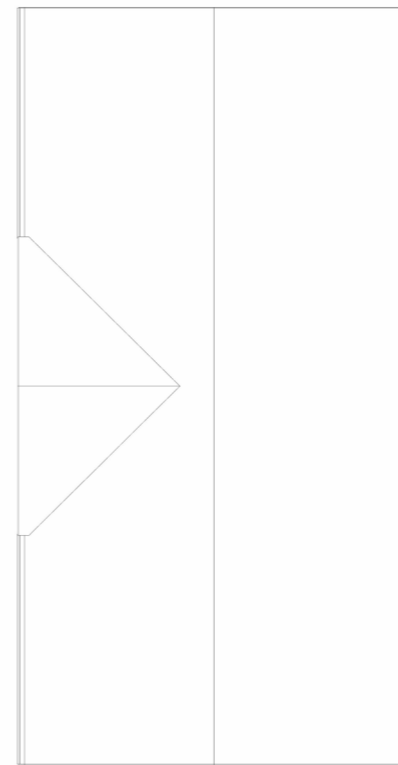
- SURPRISES: gravitates people towards it and appeals to *discover and explore*
  - INSPIRES: stimulates creative industry
  - EXPRESSES: decomposition and growth
- Acknowledges and amplifies historical value
  - Improves technical performance



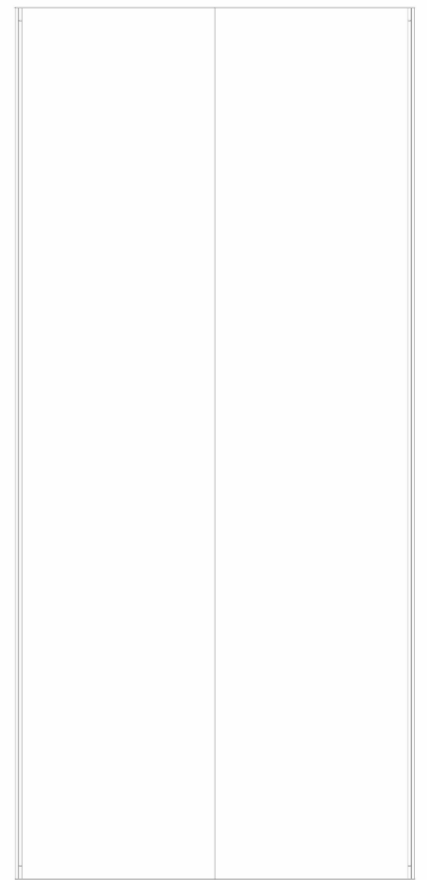
# “De Boerderijen”



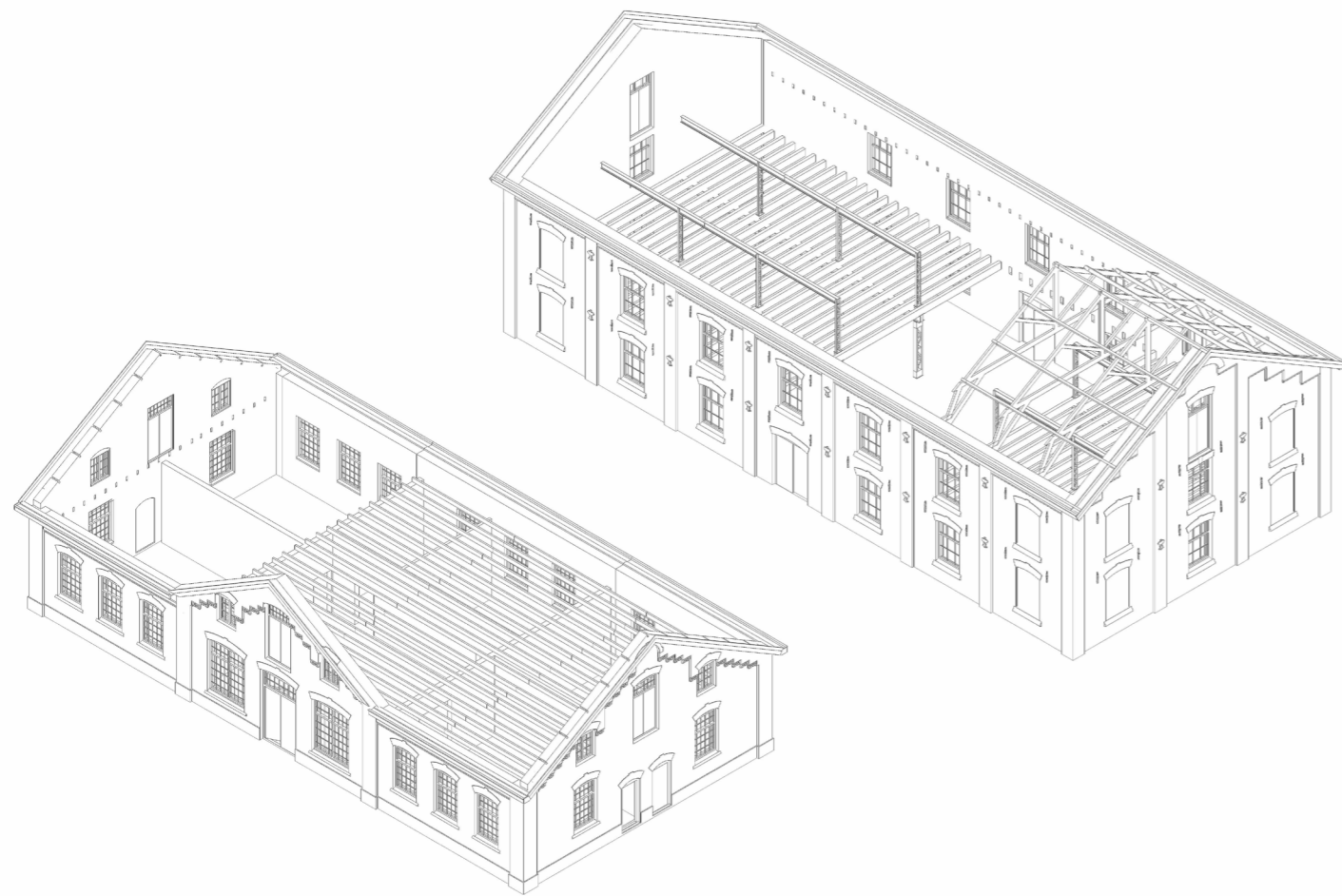
Isometric view



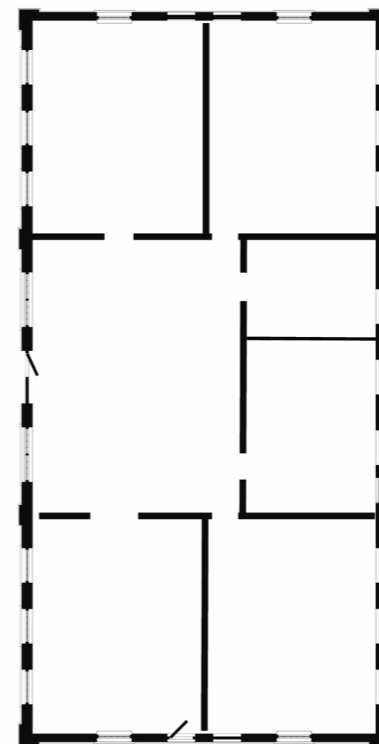
Plan view



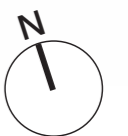
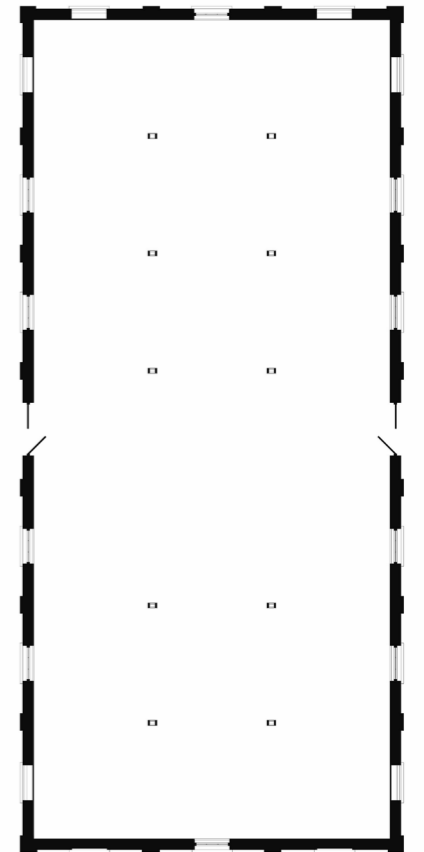
# Remove roof and parts of interior structure



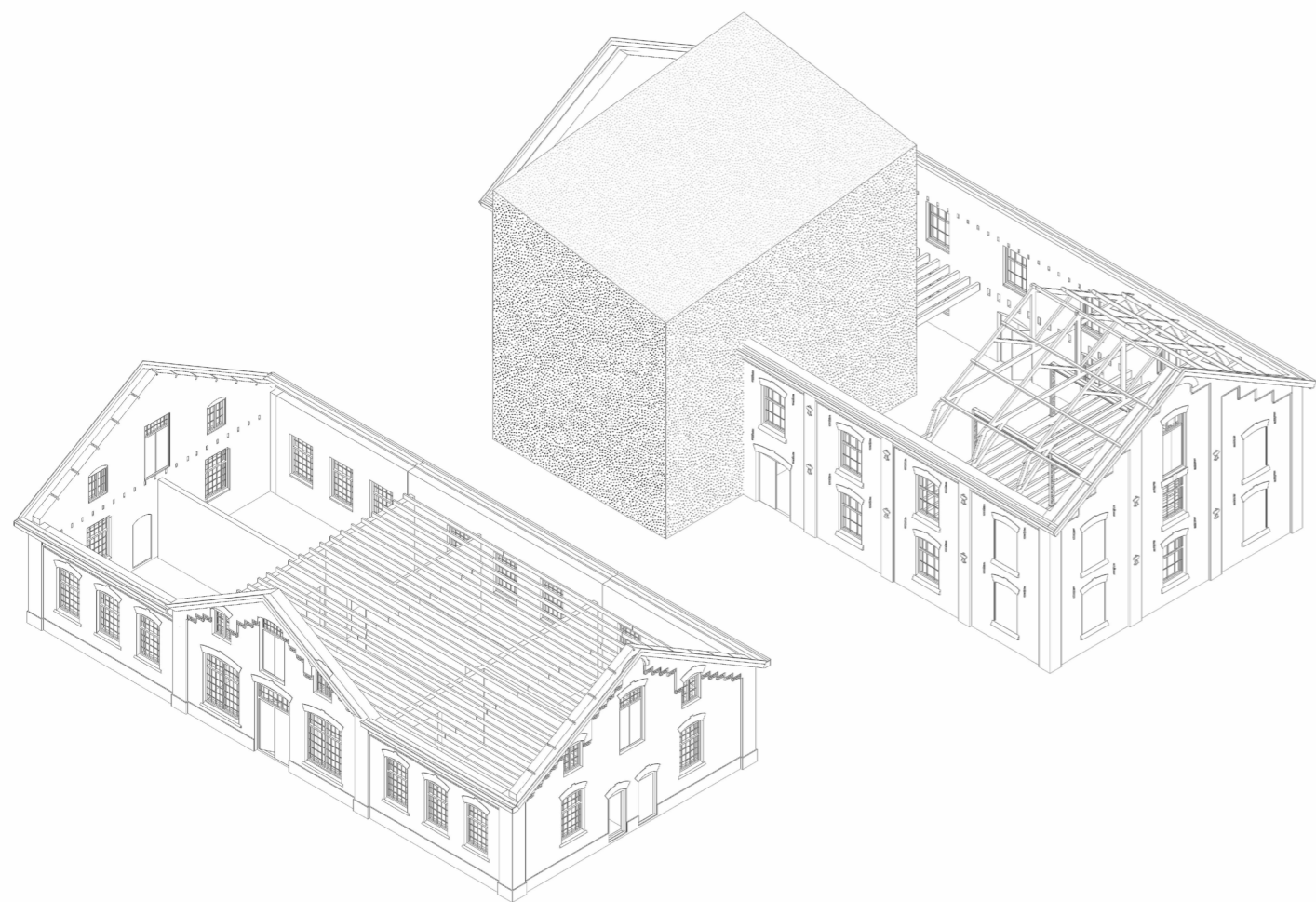
Isometric view



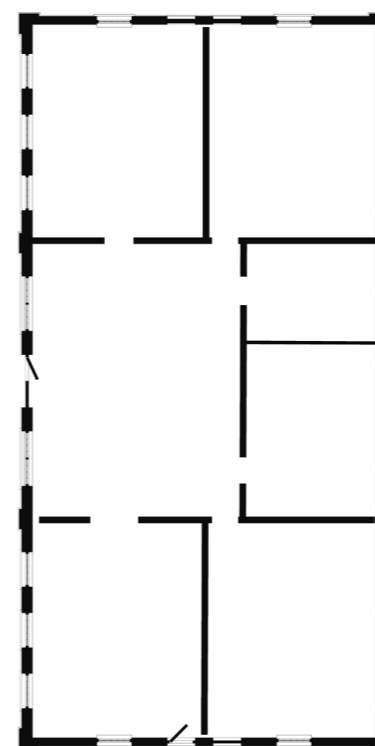
Plan view



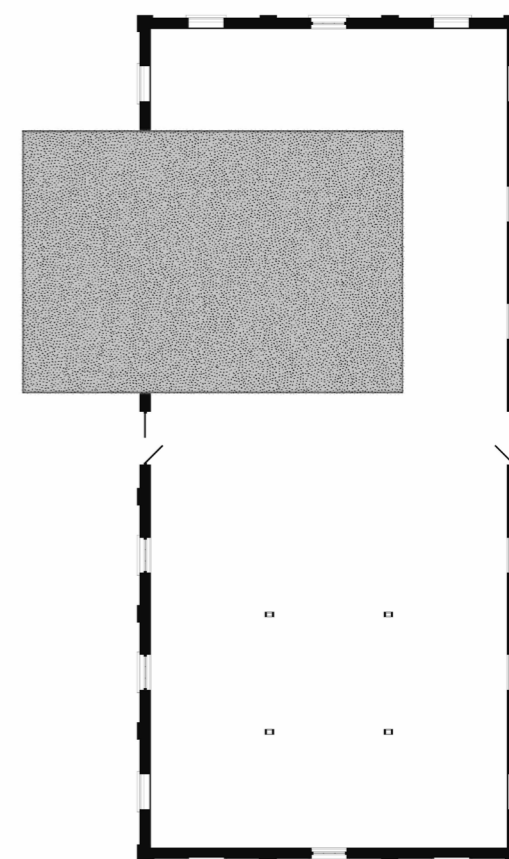
# New volumes within the empty shell...



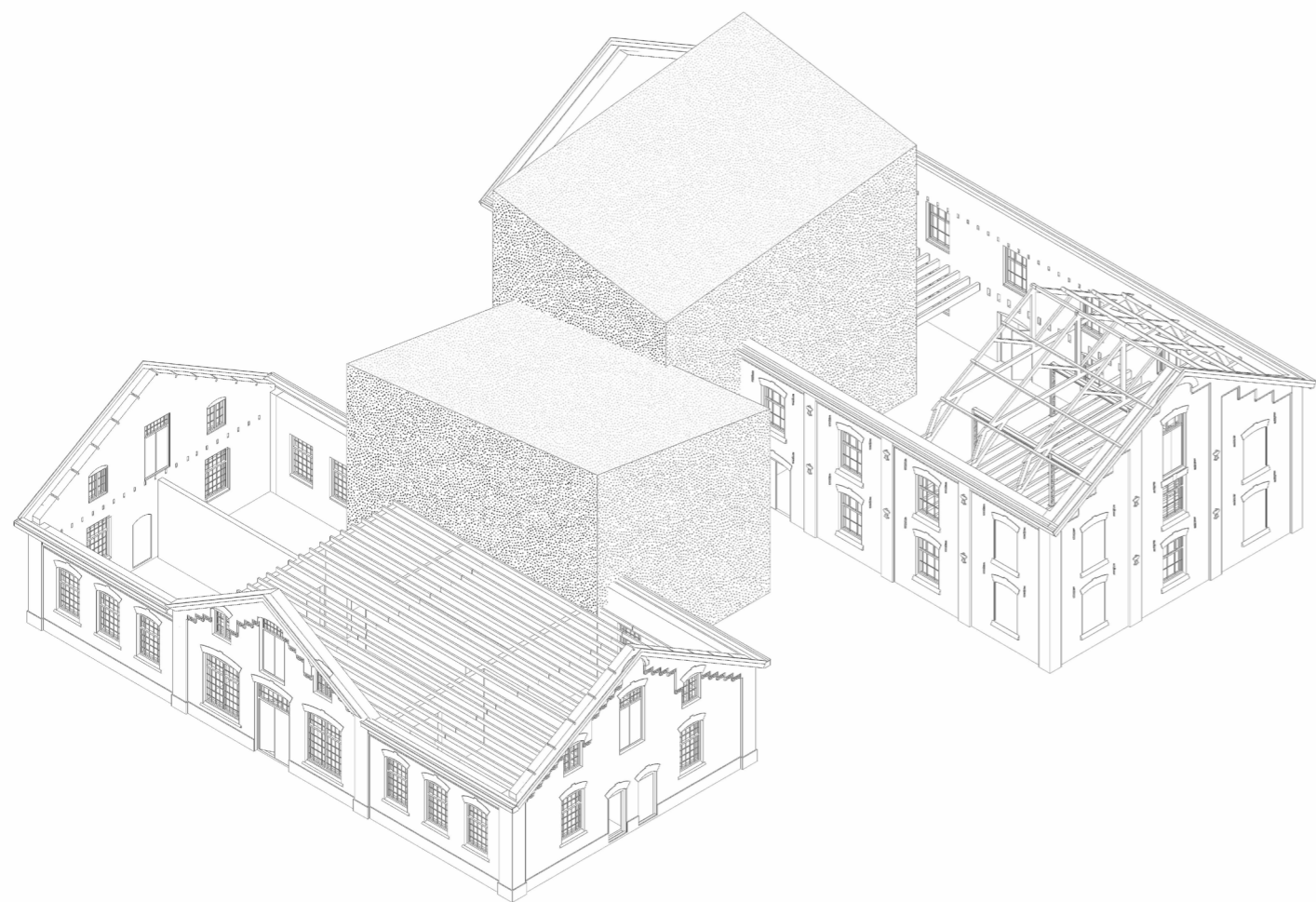
Isometric view



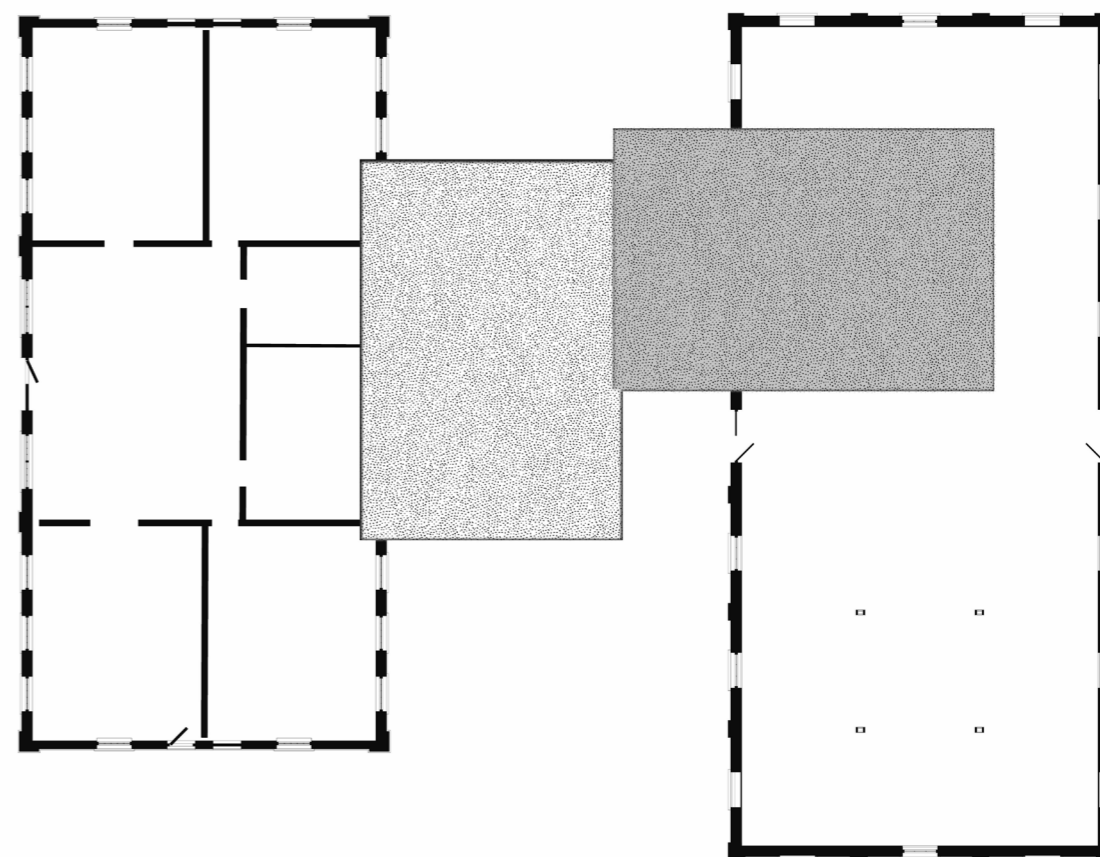
Plan view



**...placed on, *over* and *through* the existing...**



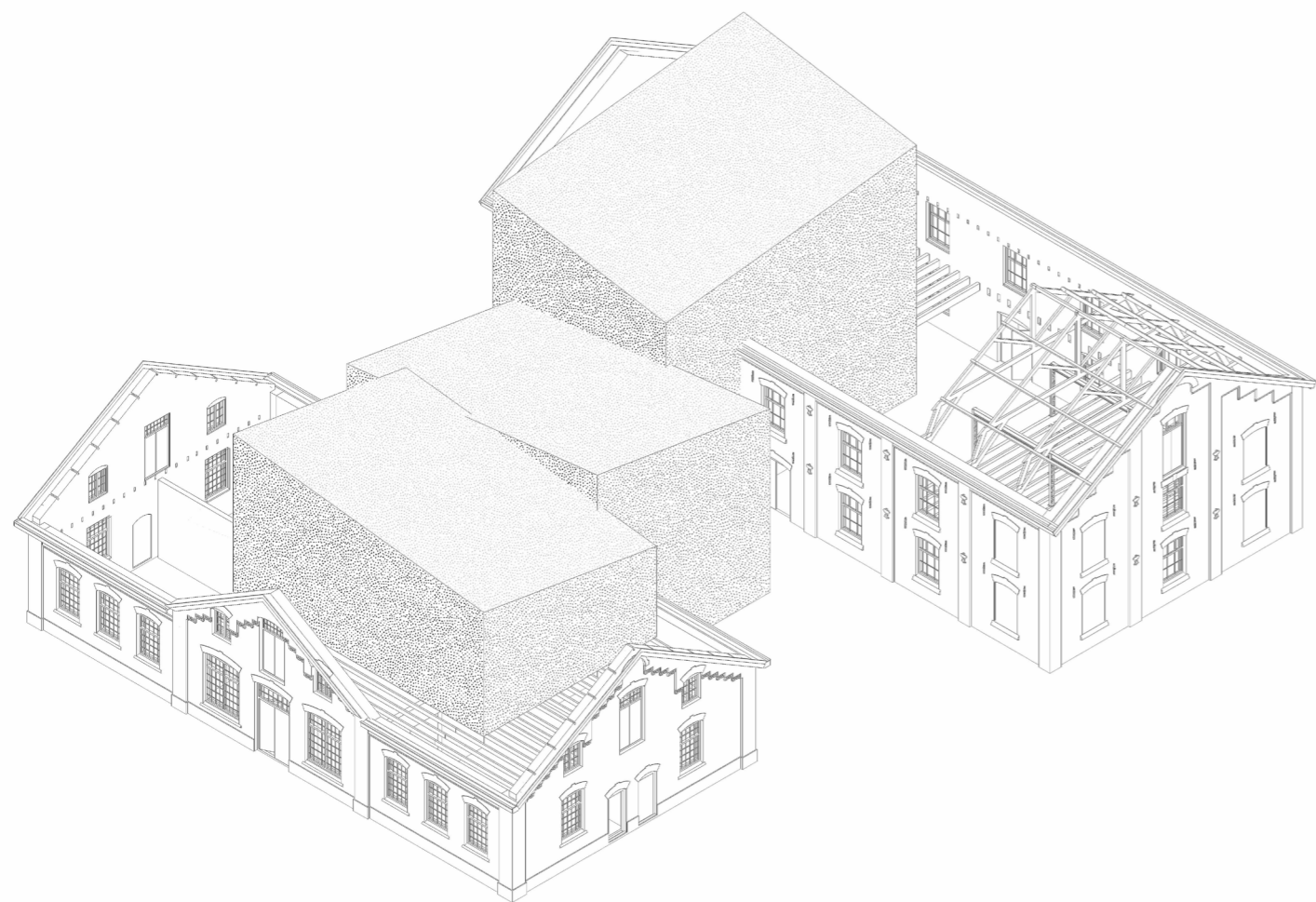
Isometric view



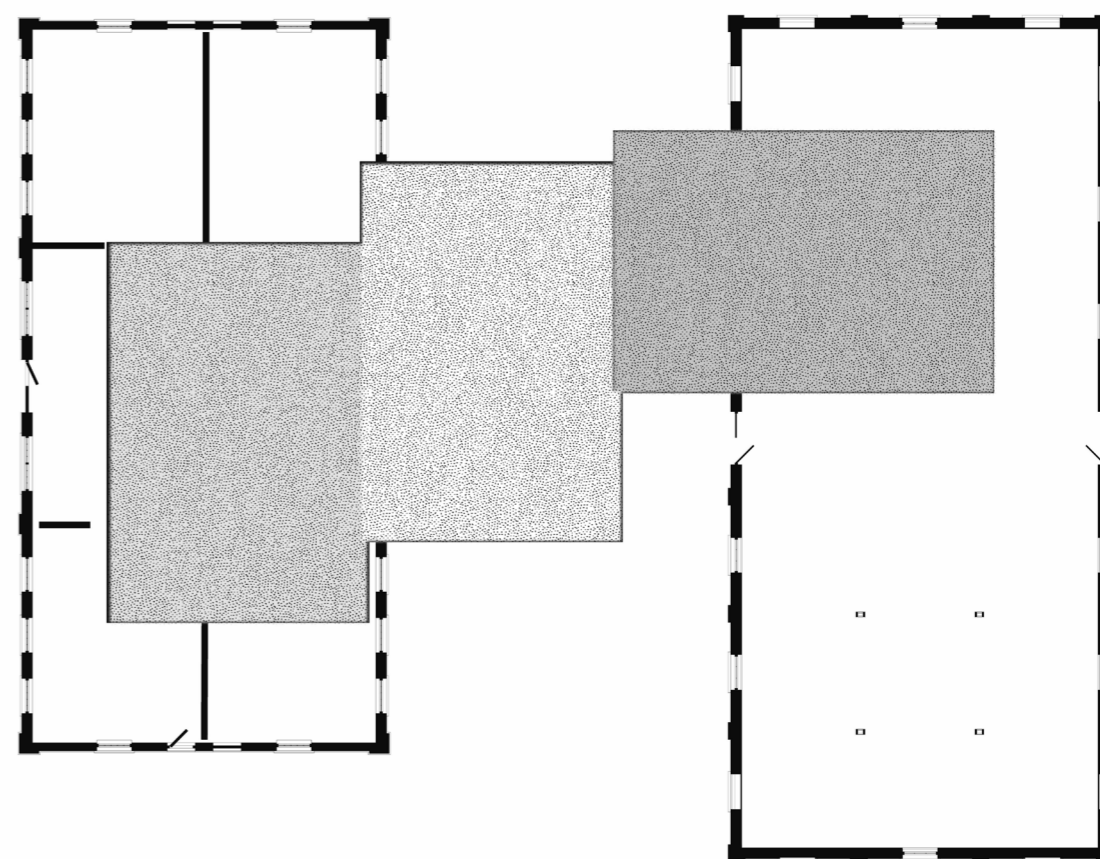
Plan view



# ...reinterpreting inside-outside boundaries...



Isometric view

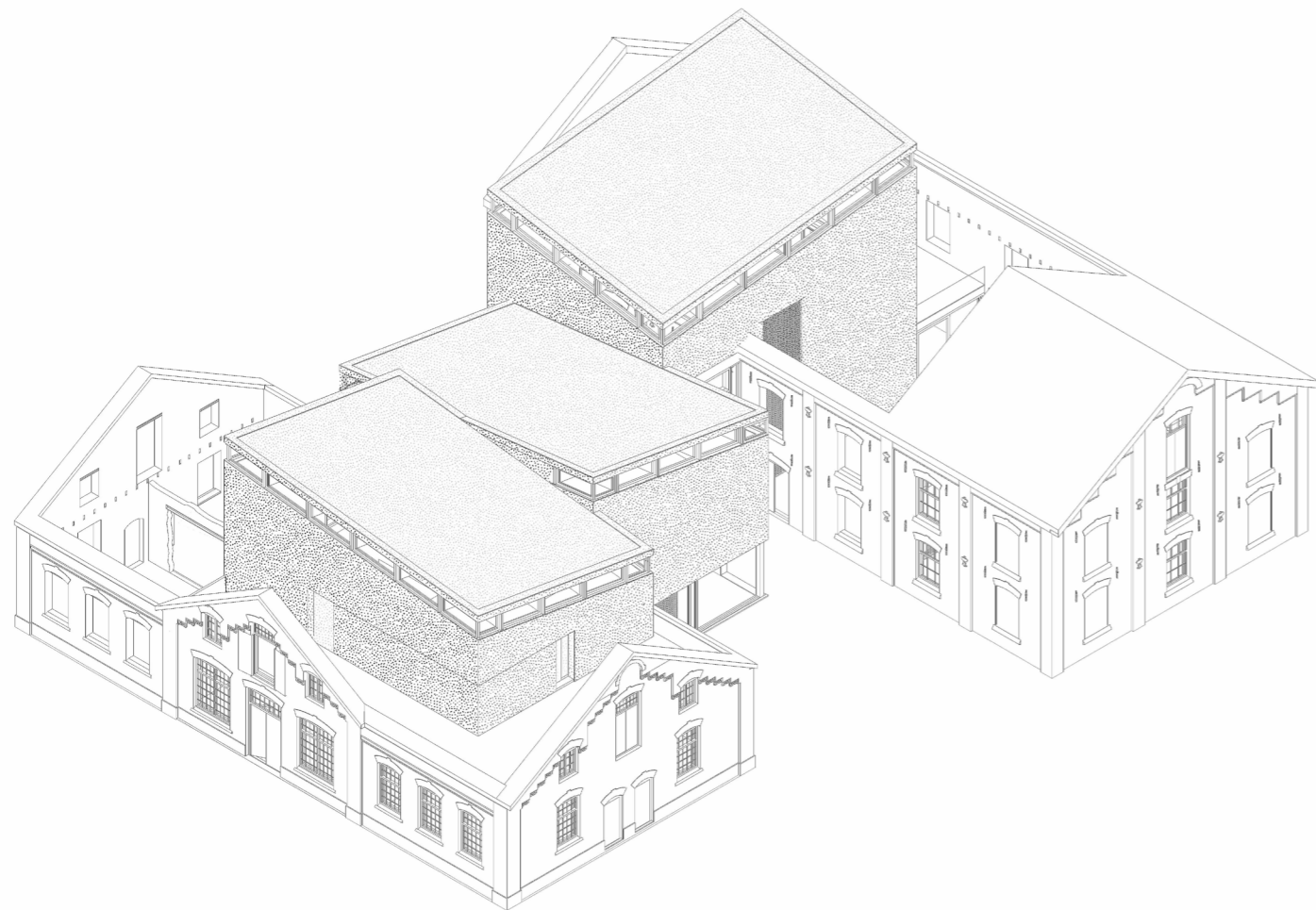


Plan view

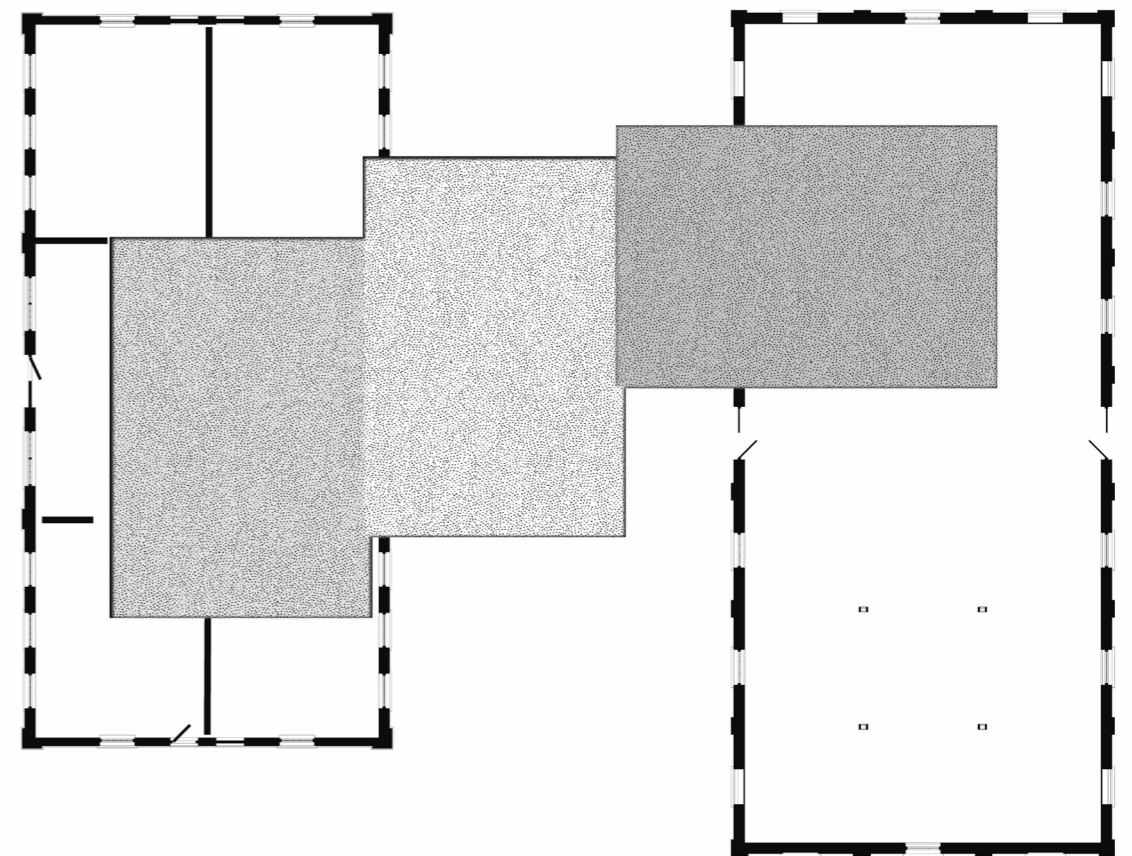




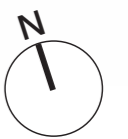
**...creating diverse and inspring spaces.**



Isometric view



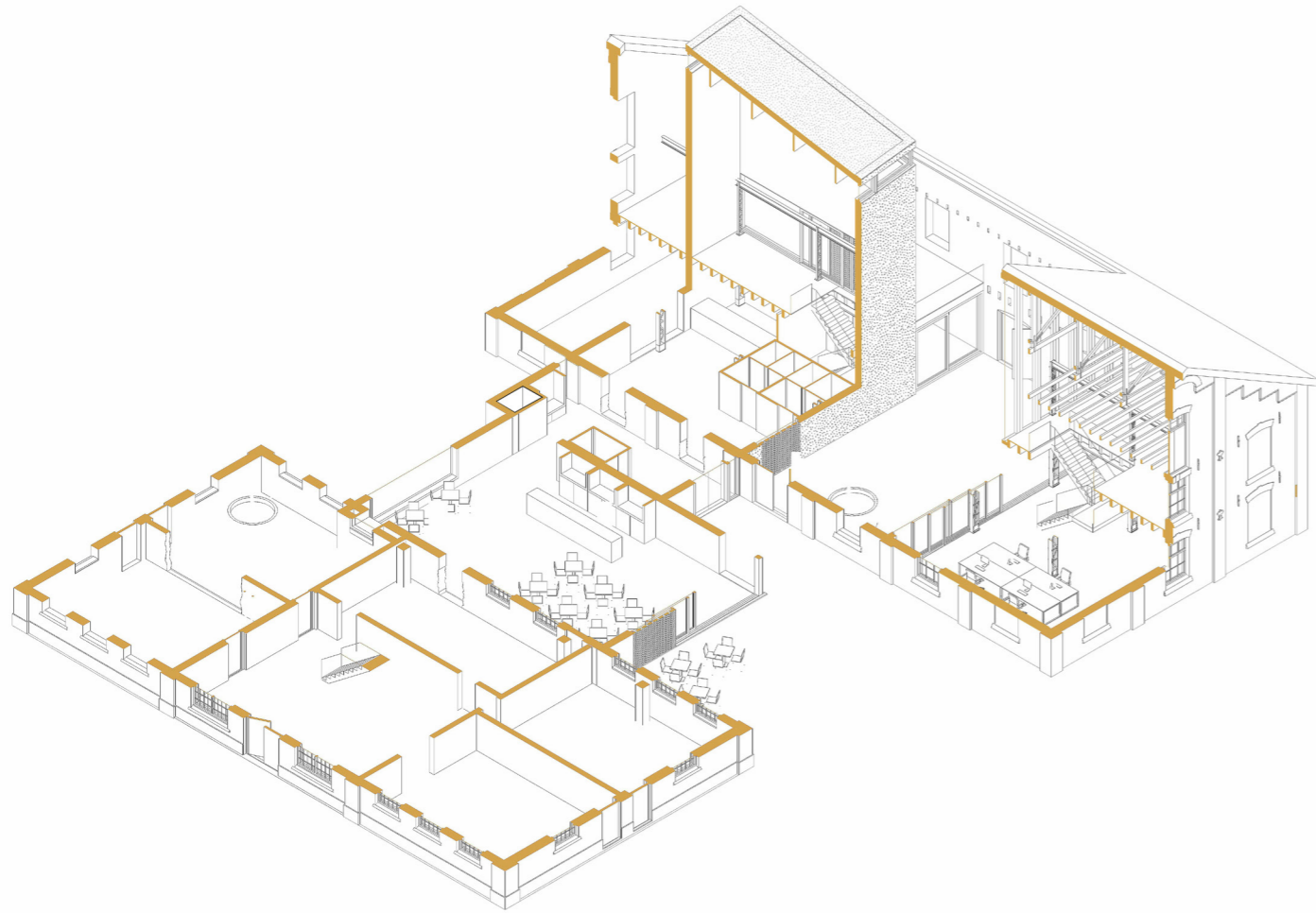
Plan view







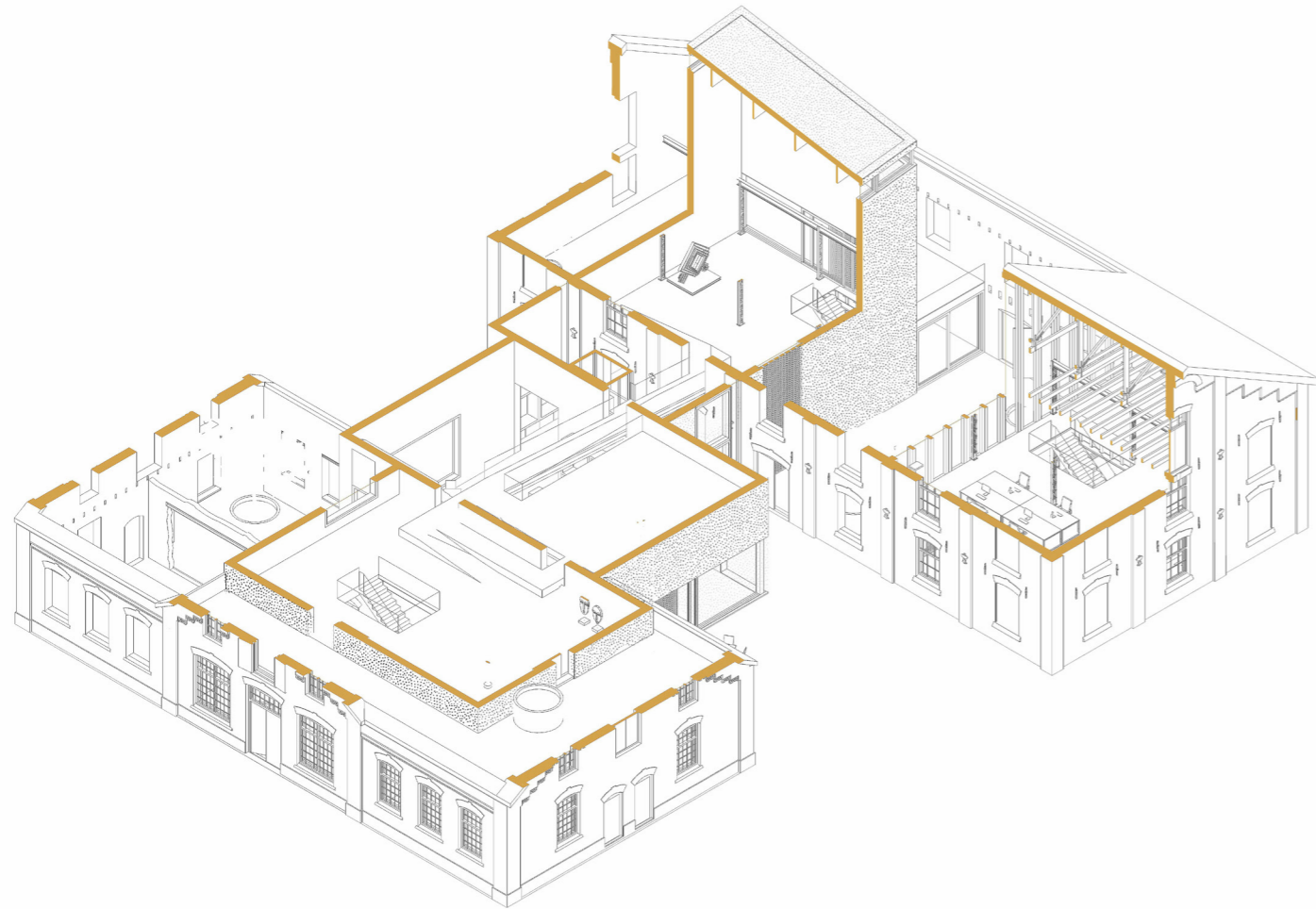




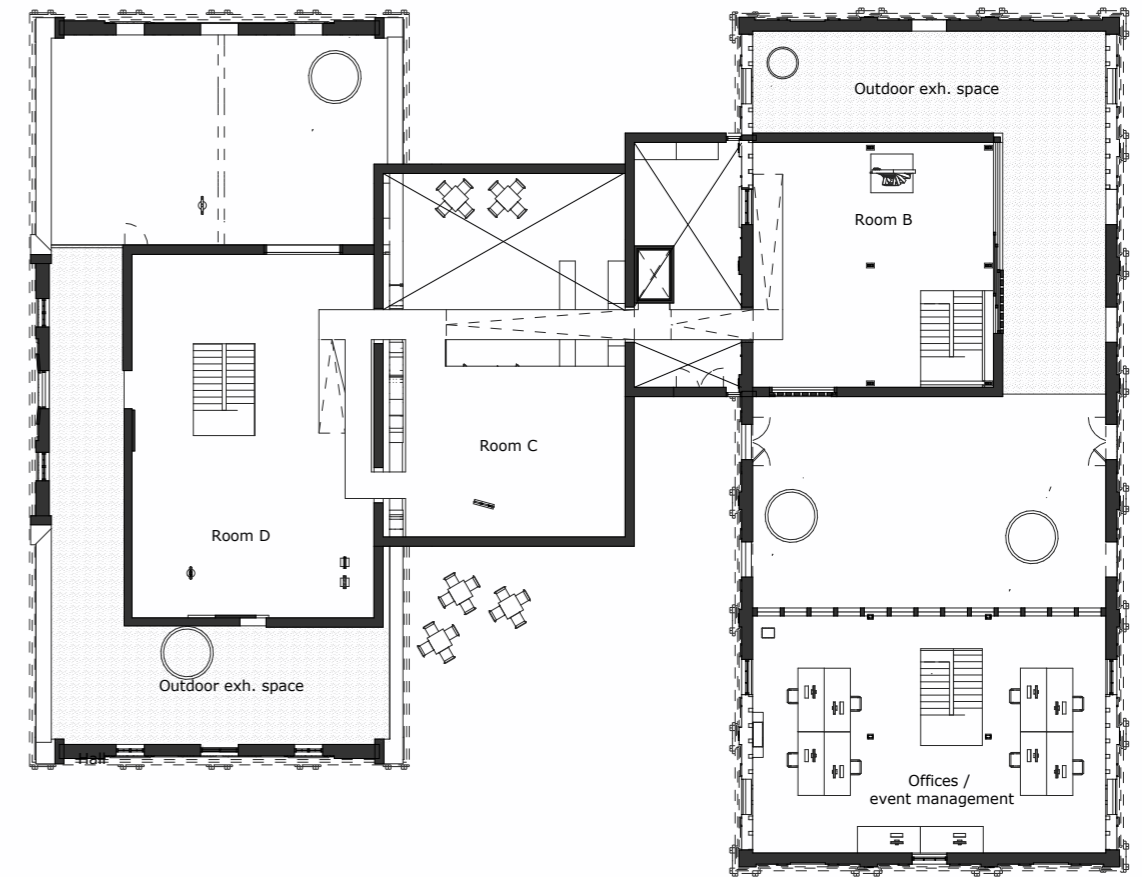
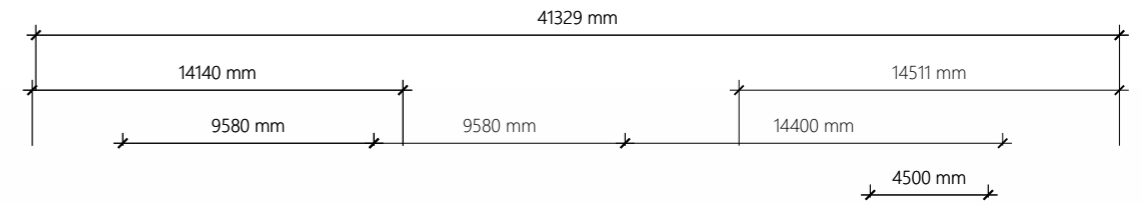
Isometric view



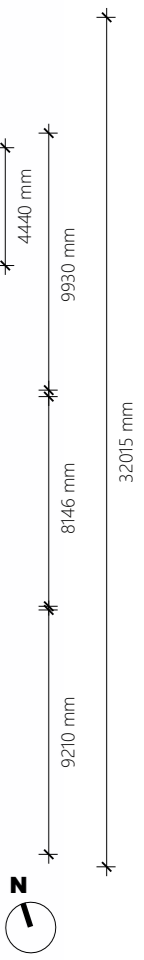
Plan view

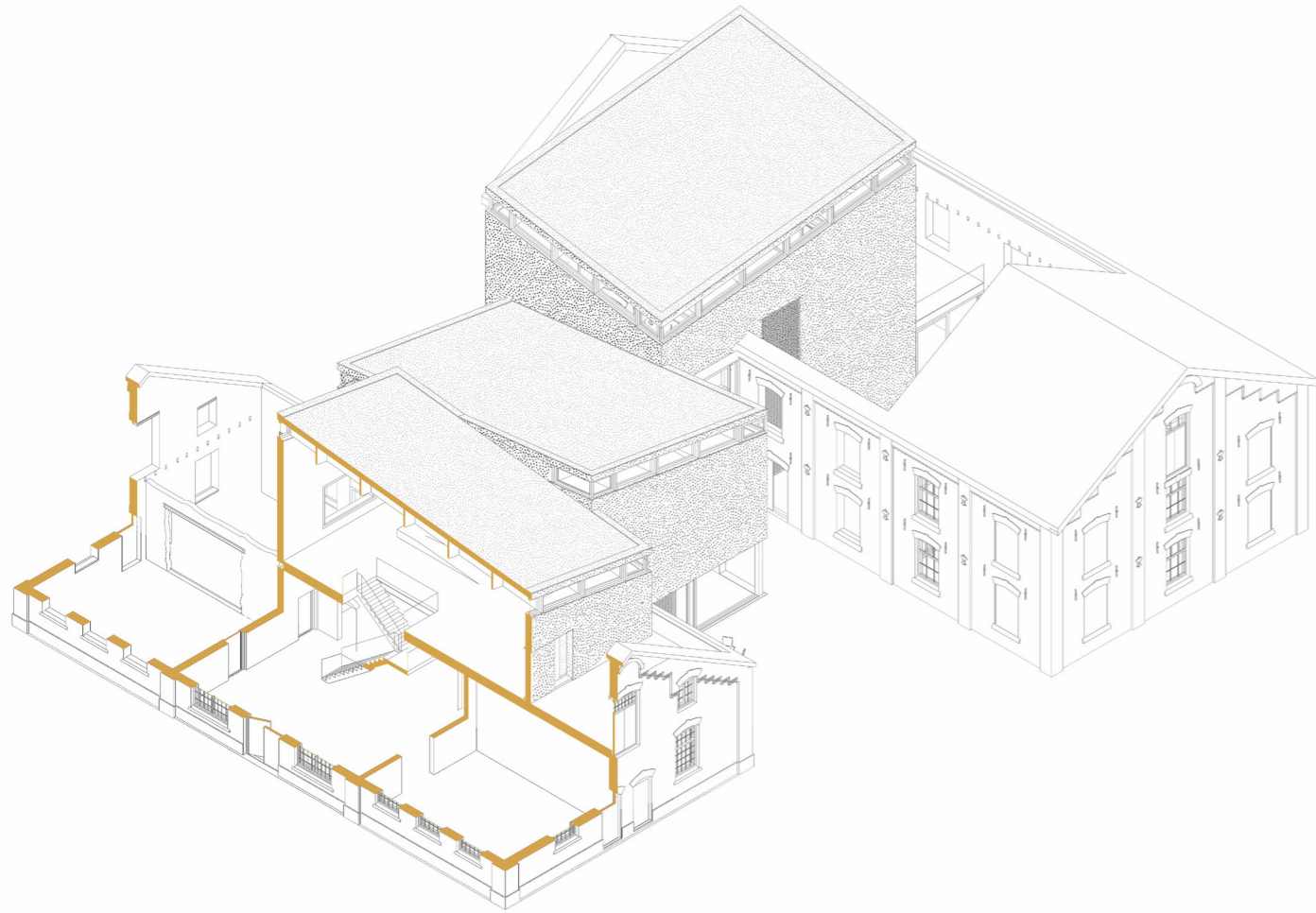


Isometric view

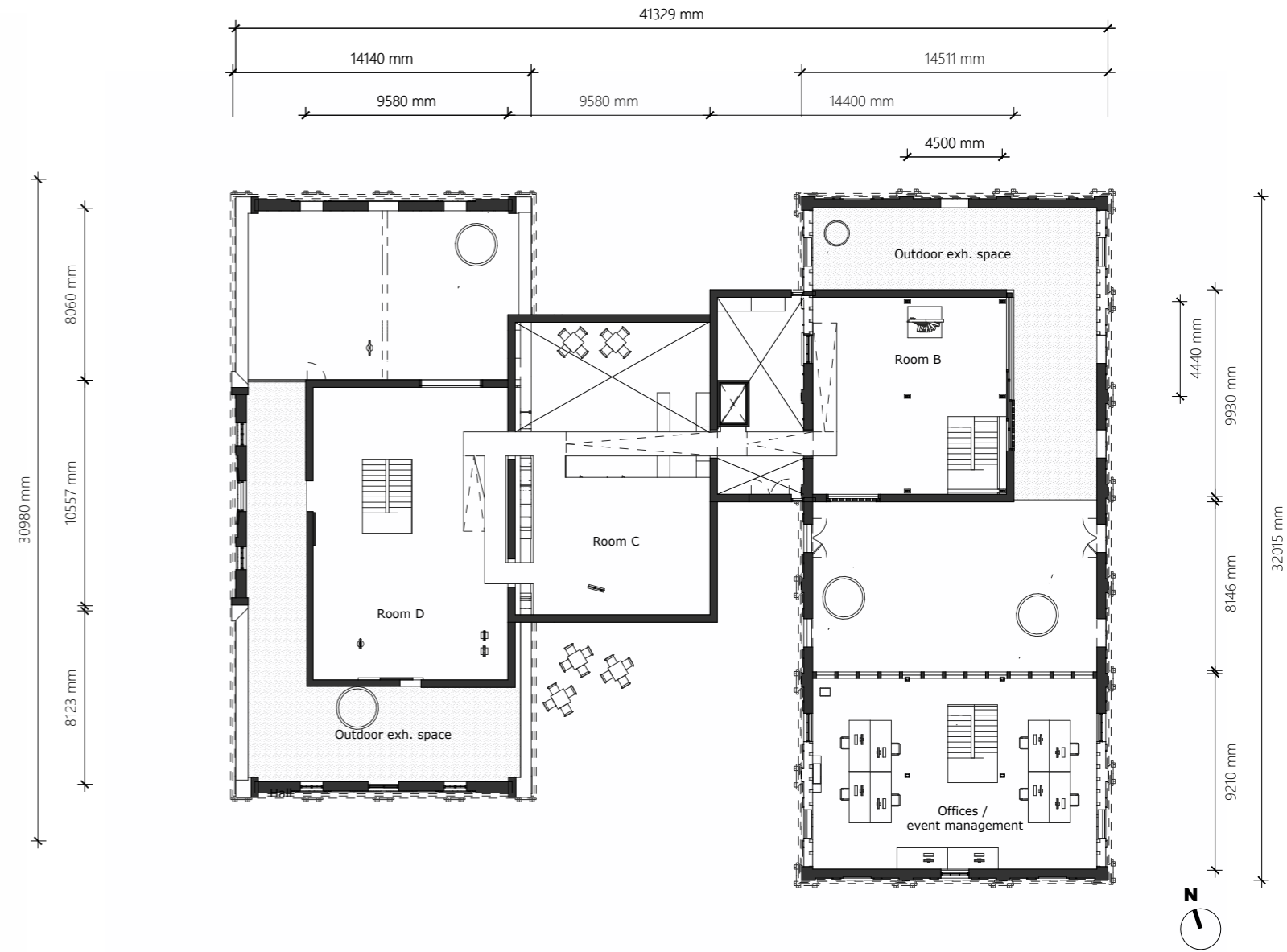


Plan view



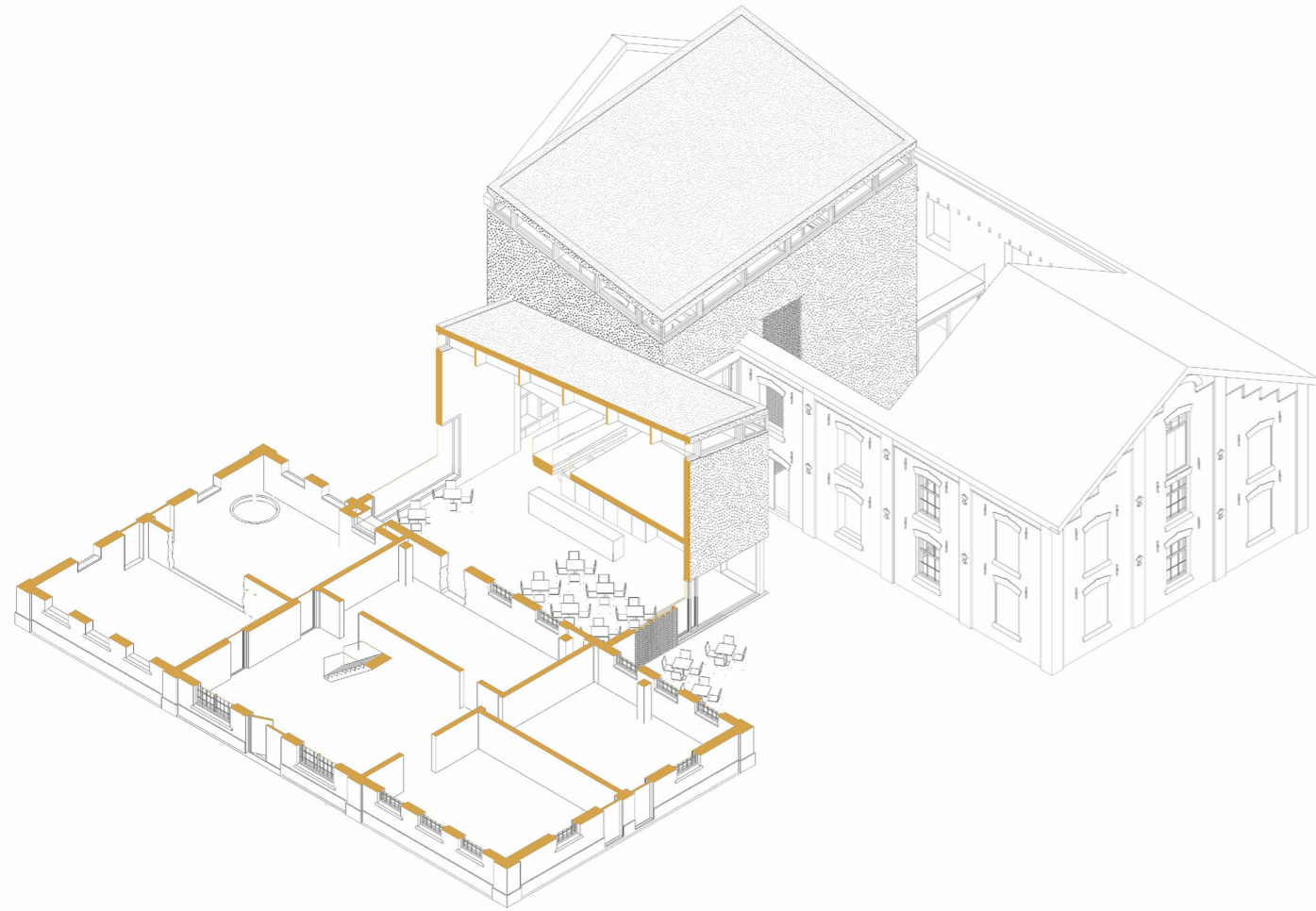


Isometric view

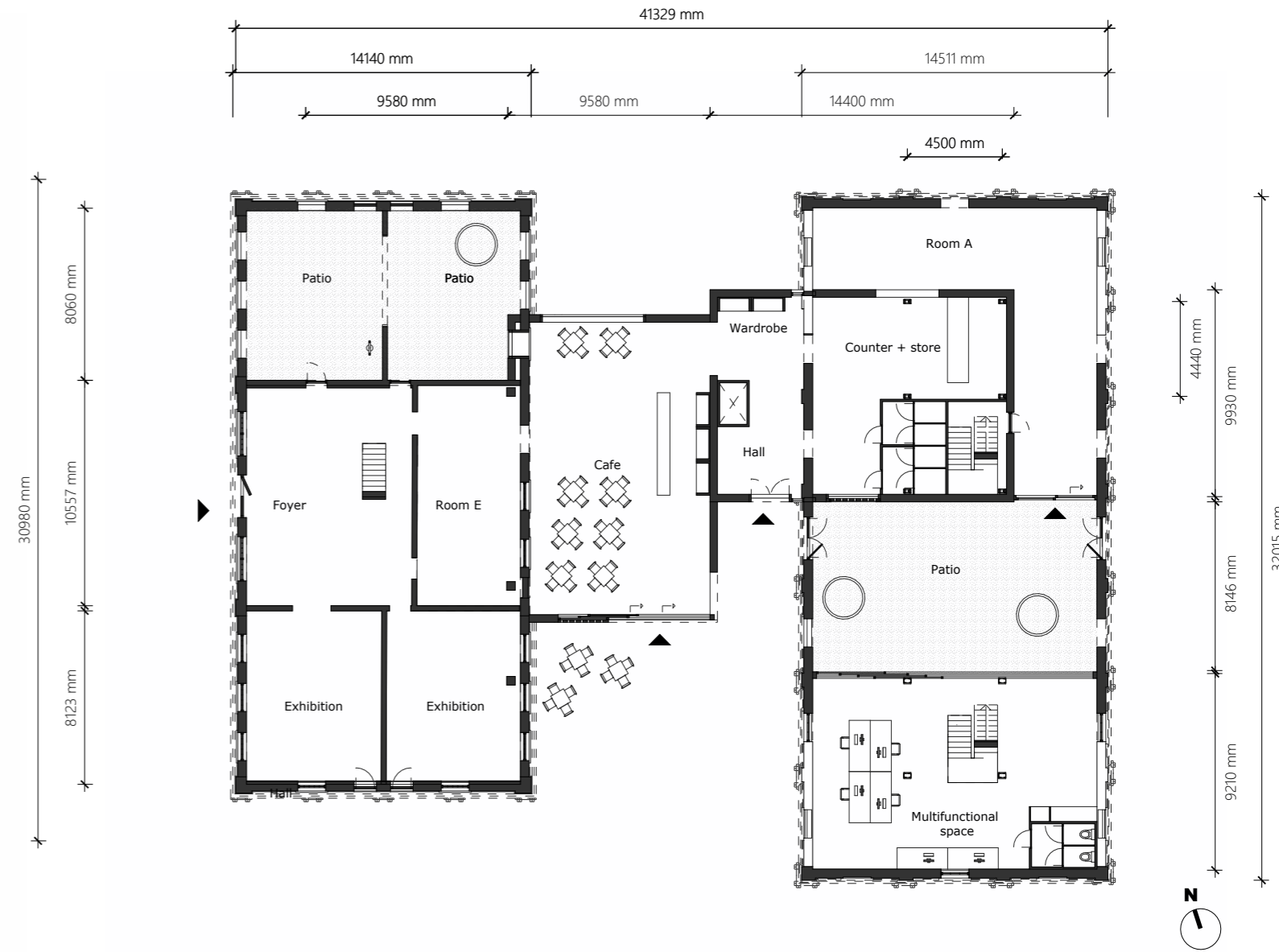


Plan view





Isometric view



Plan view

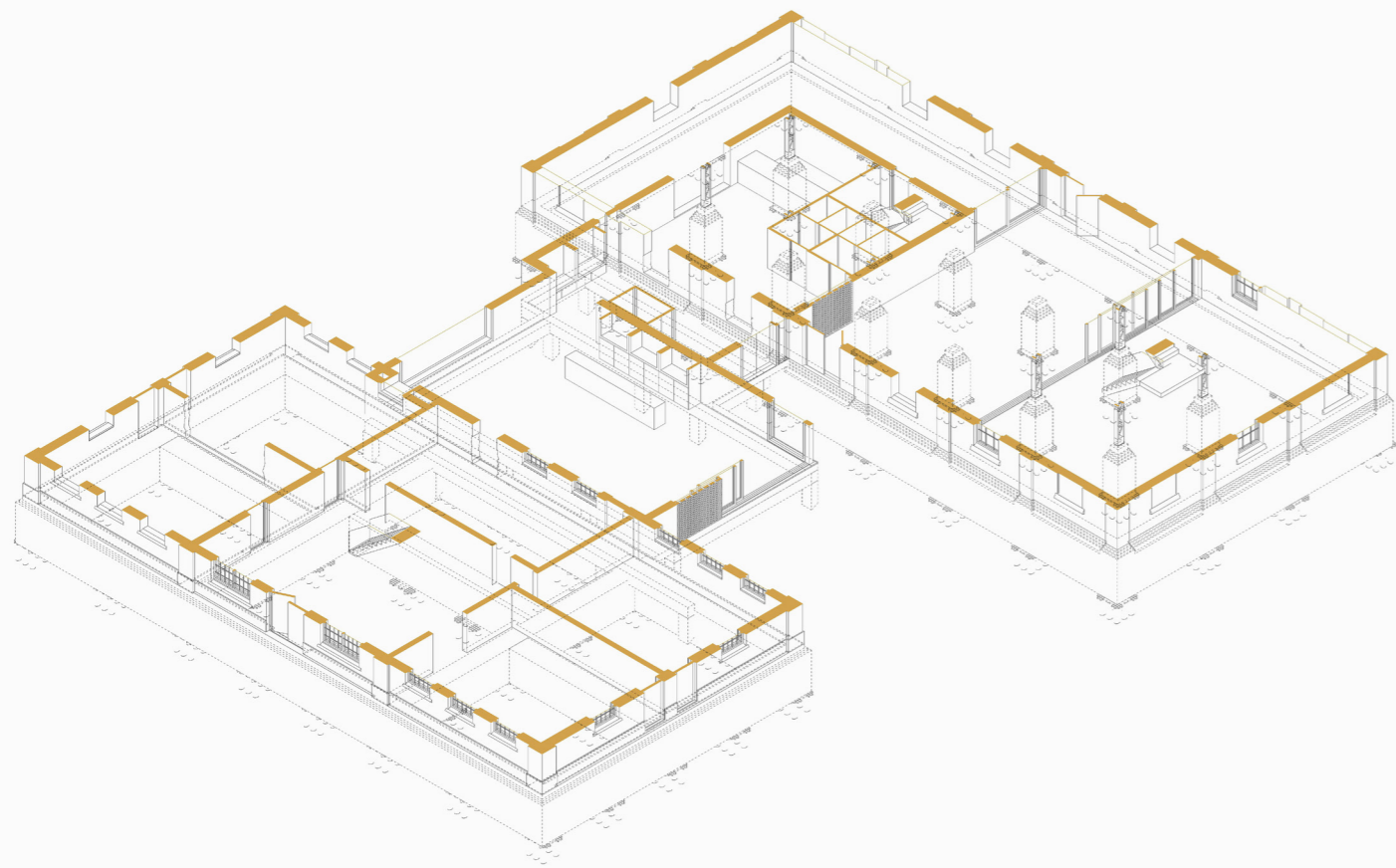




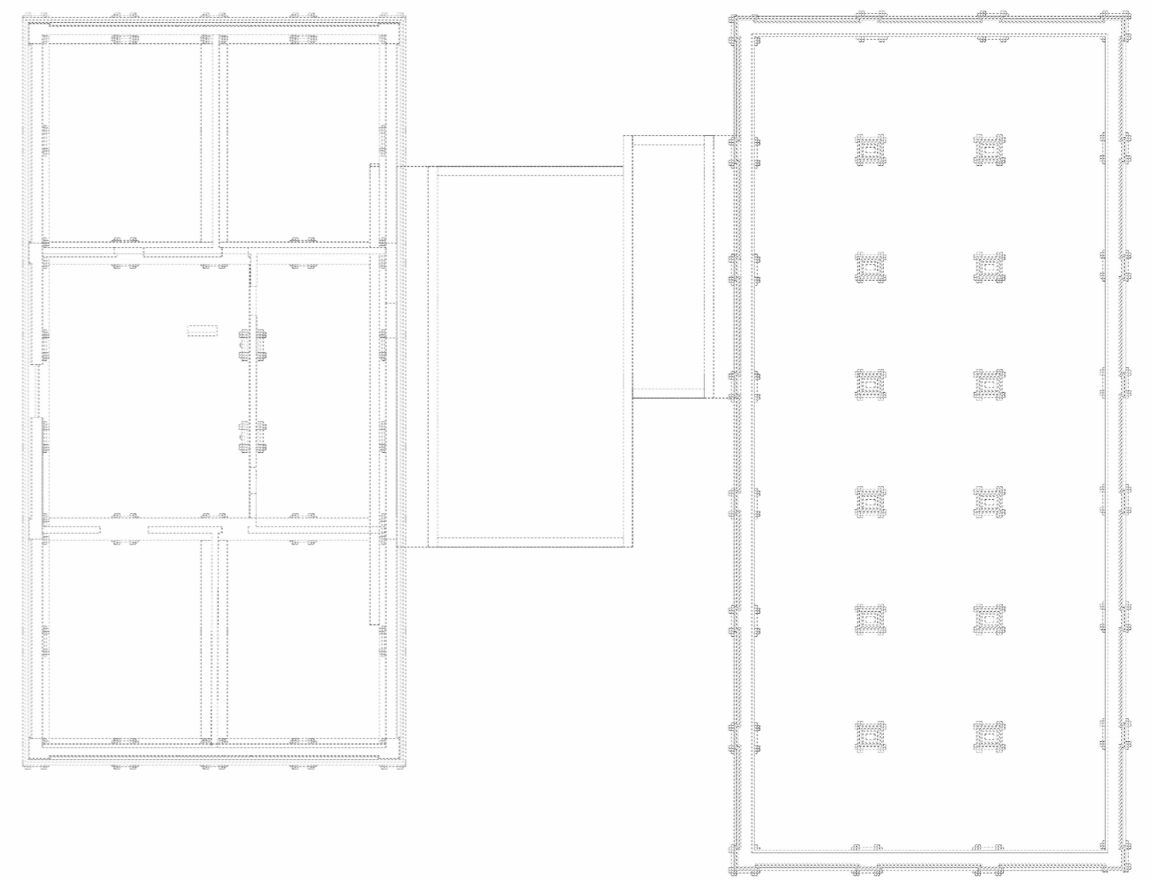




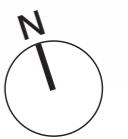


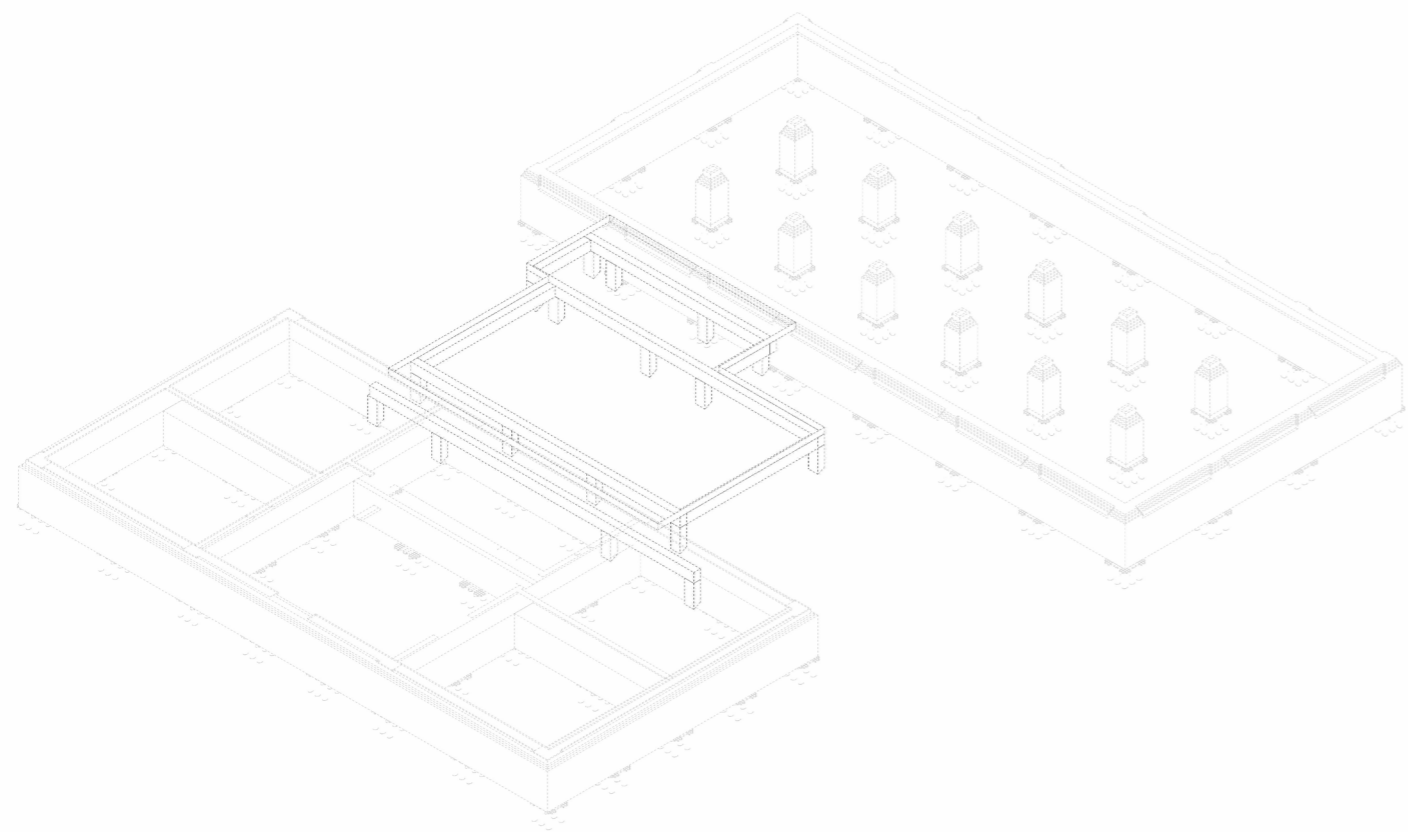


Isometric view

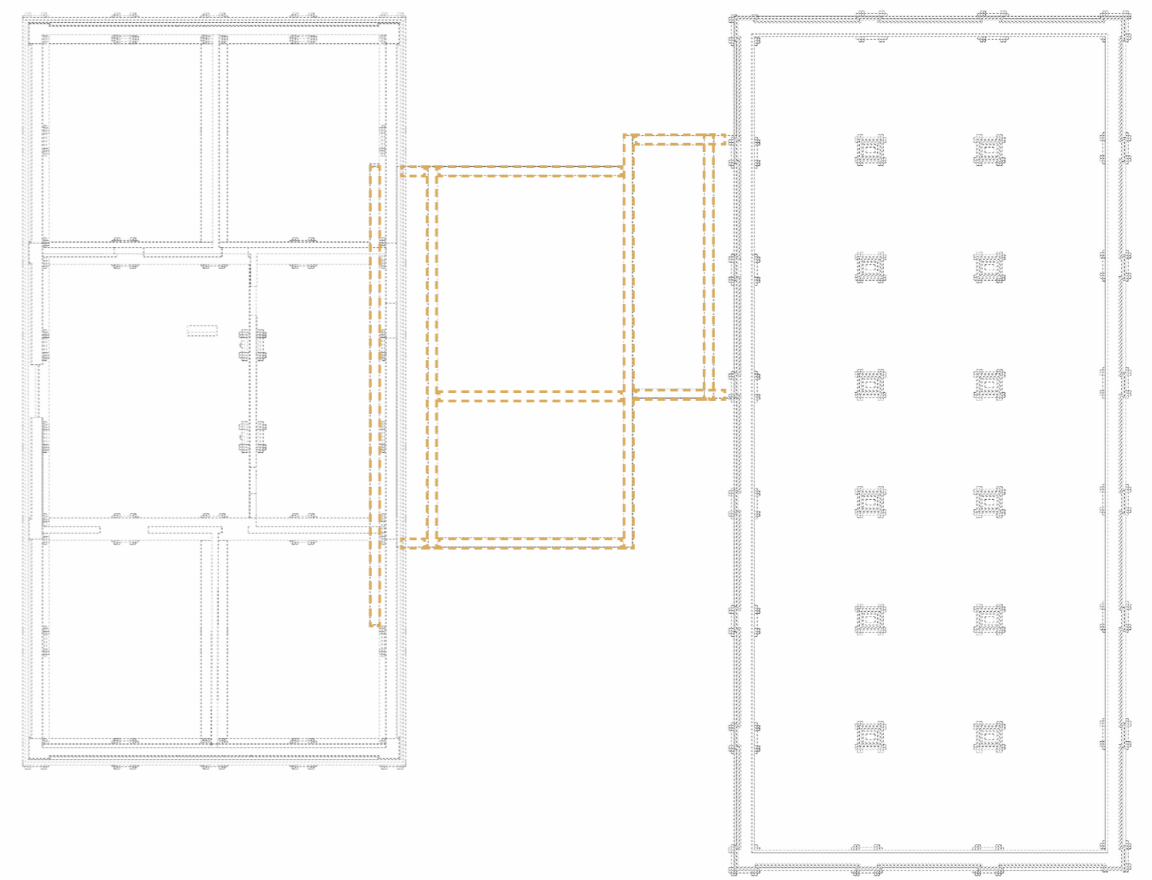


Plan view

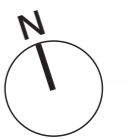


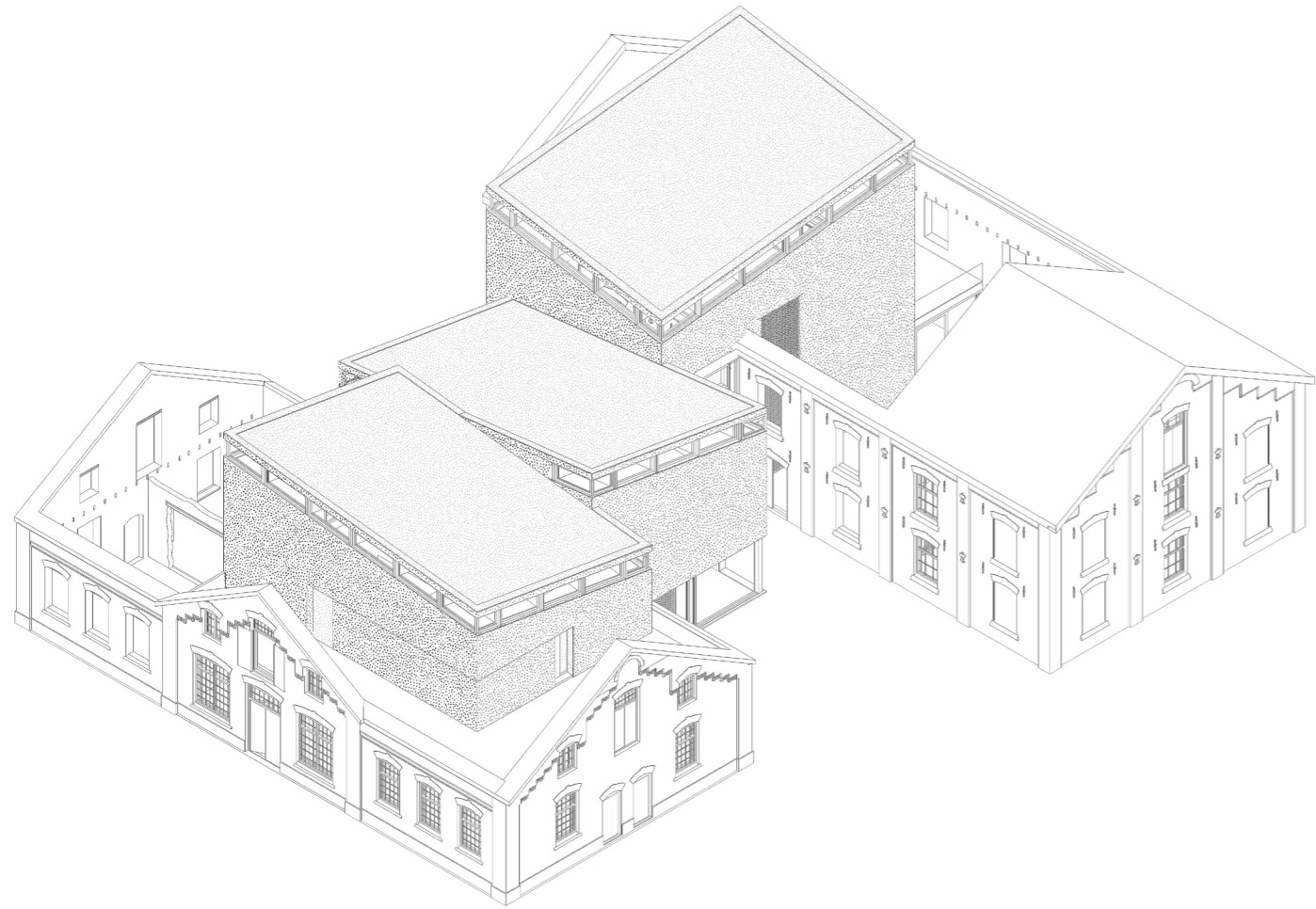


Isometric view

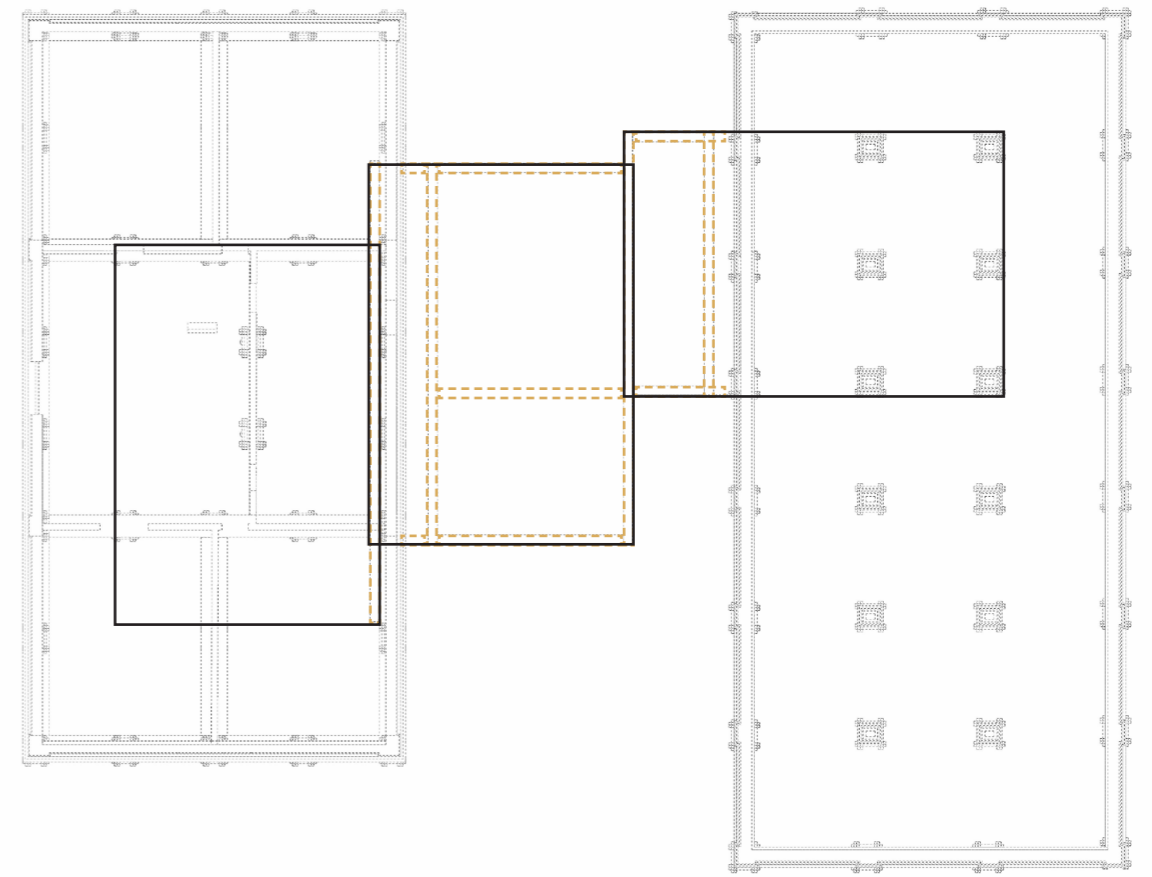


Plan view

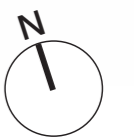


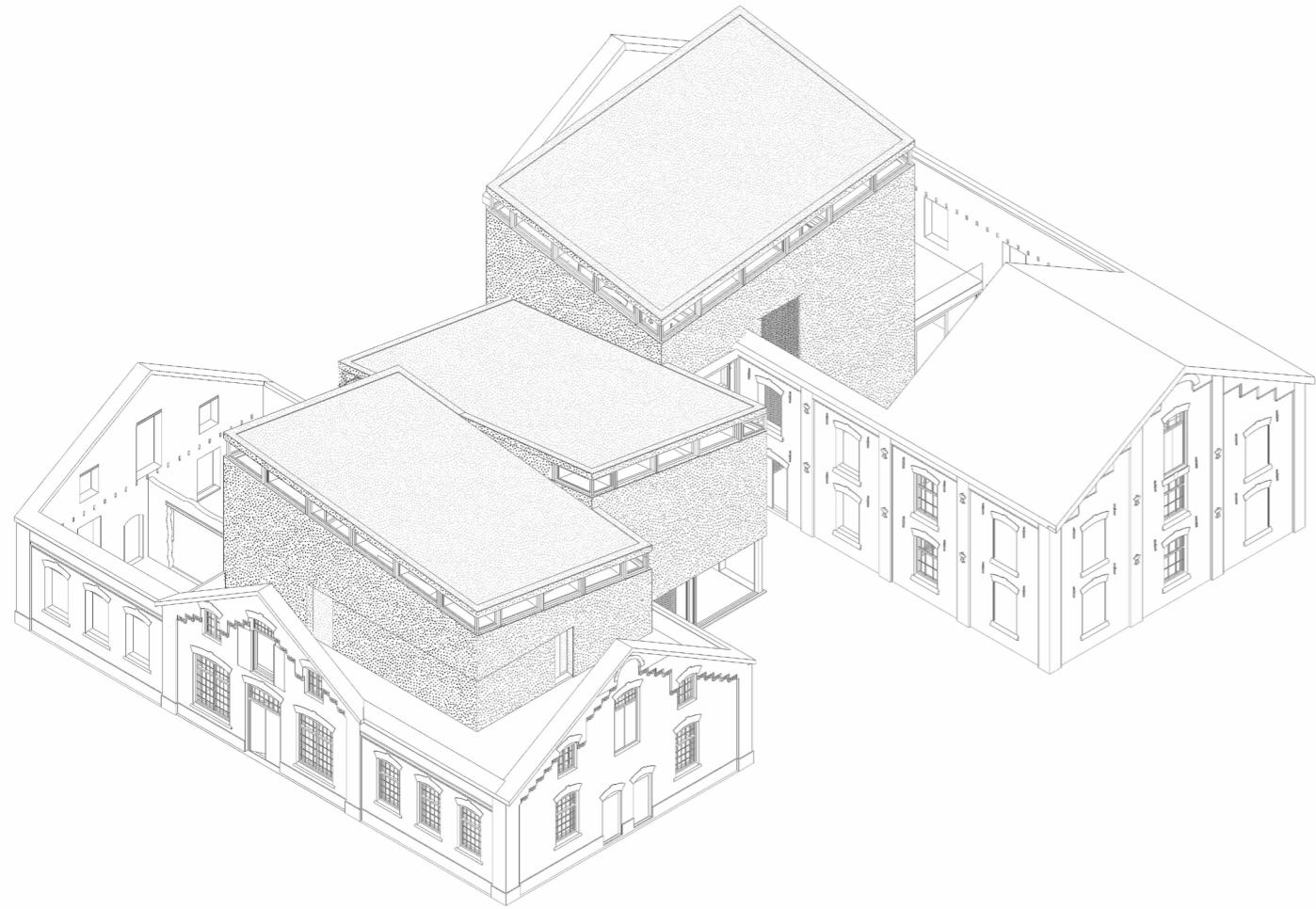


Isometric view

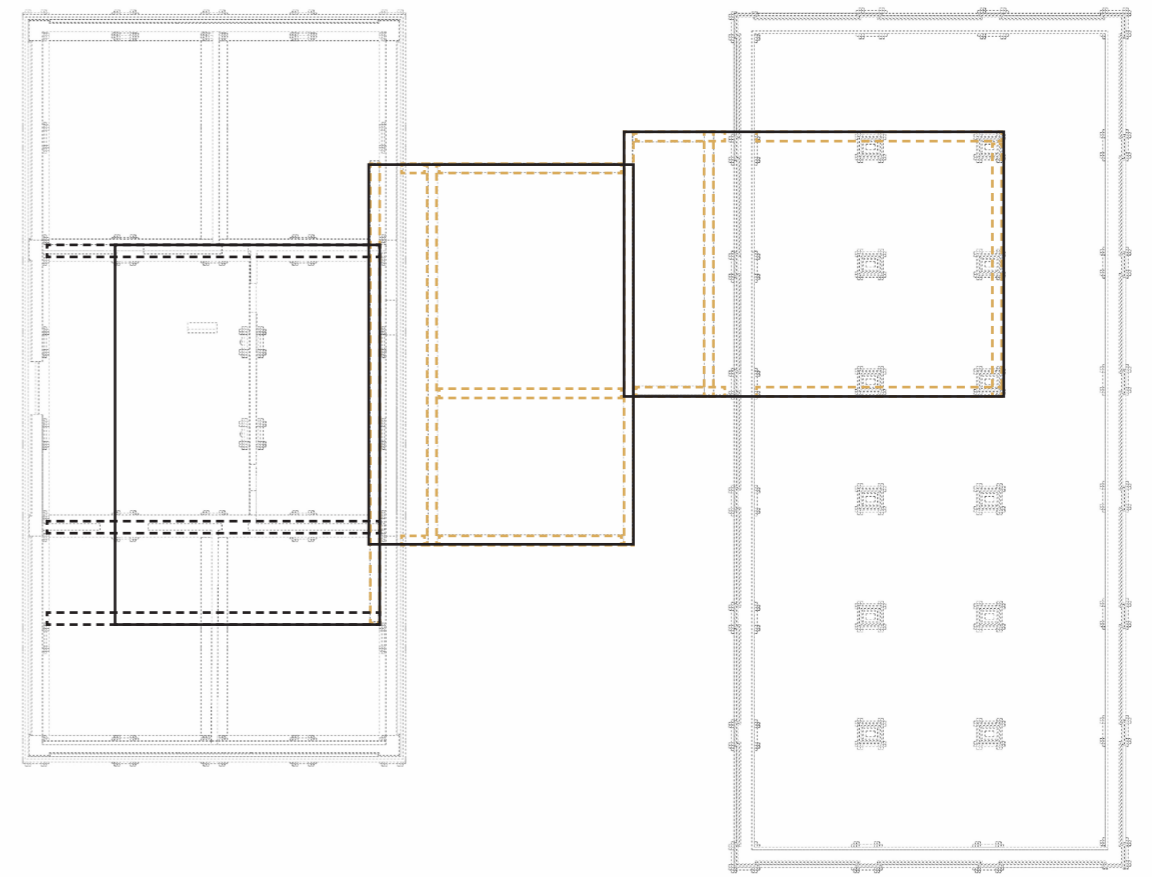


Plan view

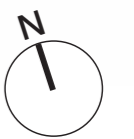




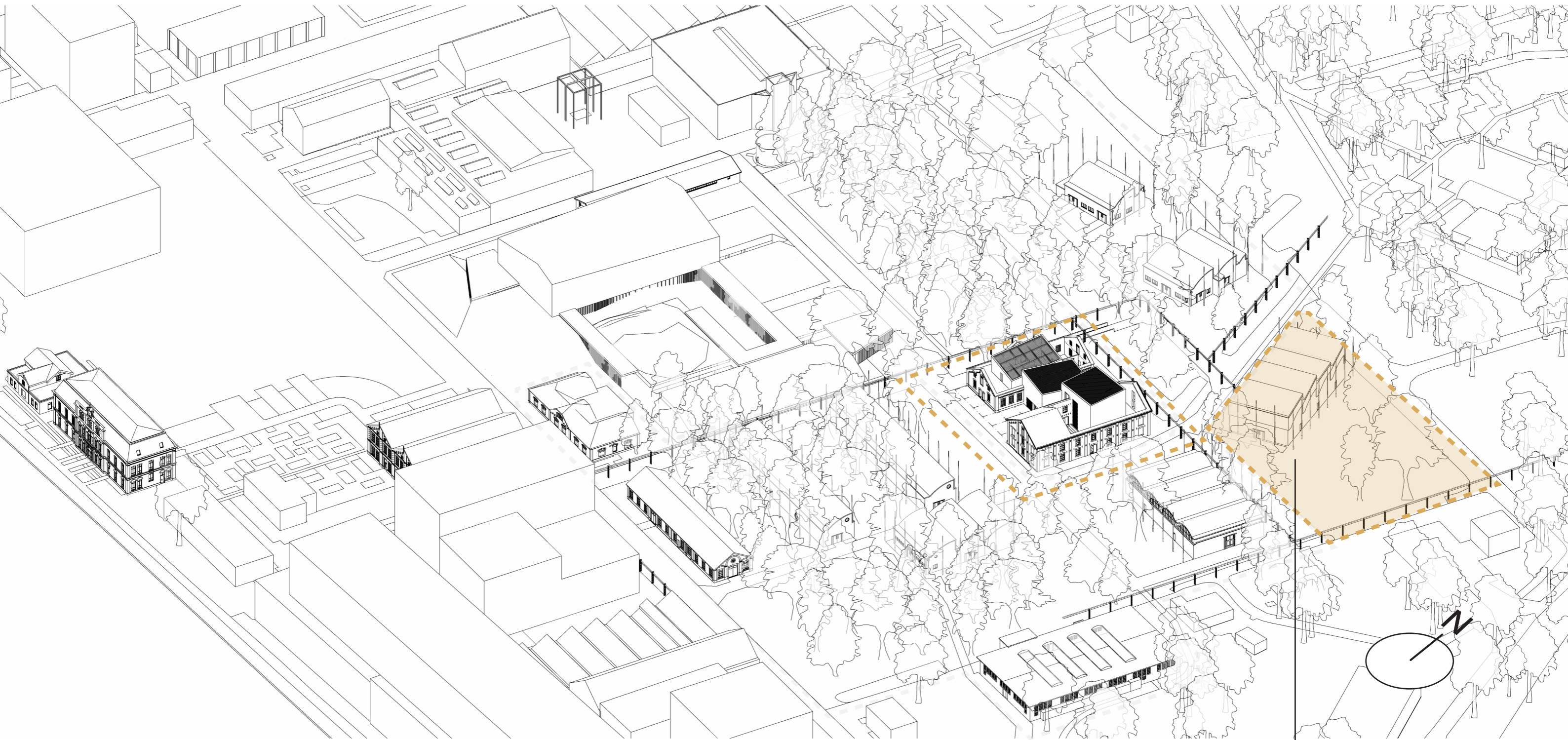
Isometric view



Plan view



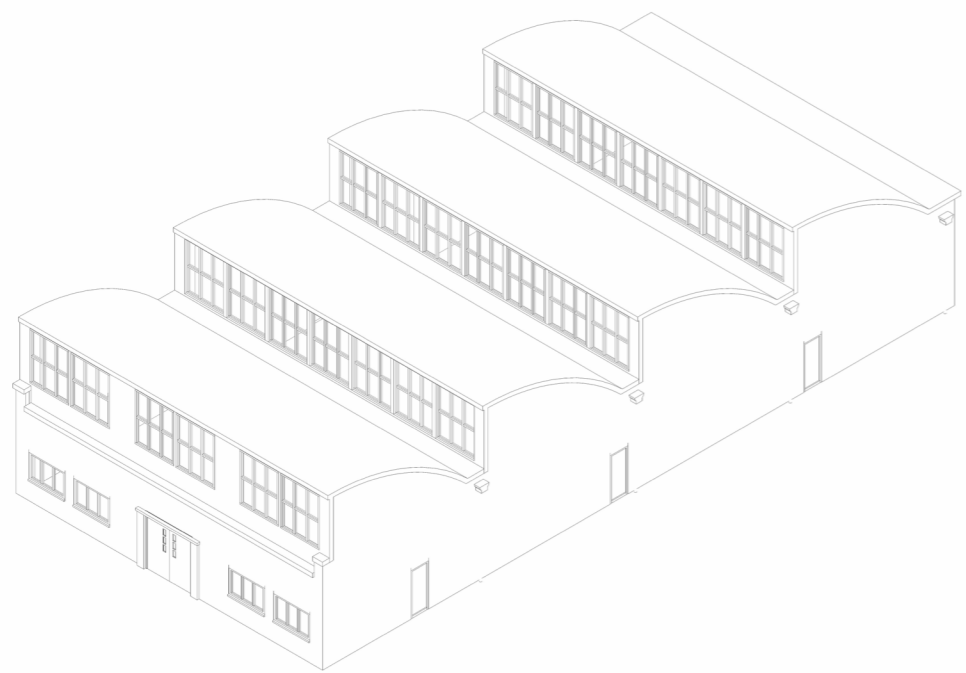
# Multi-purpose: Auditorium + exhibition space



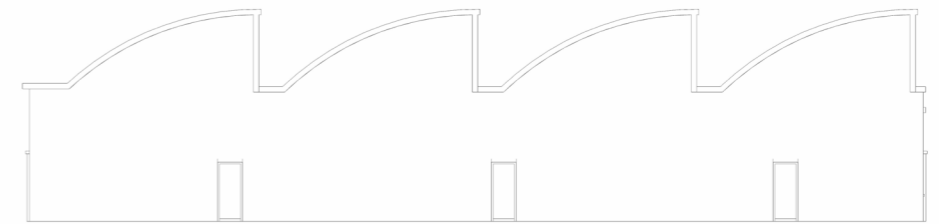
## Multifunctional

- Acoustics for gigs
- Lighting for exhibitions
- Events
- Lectures

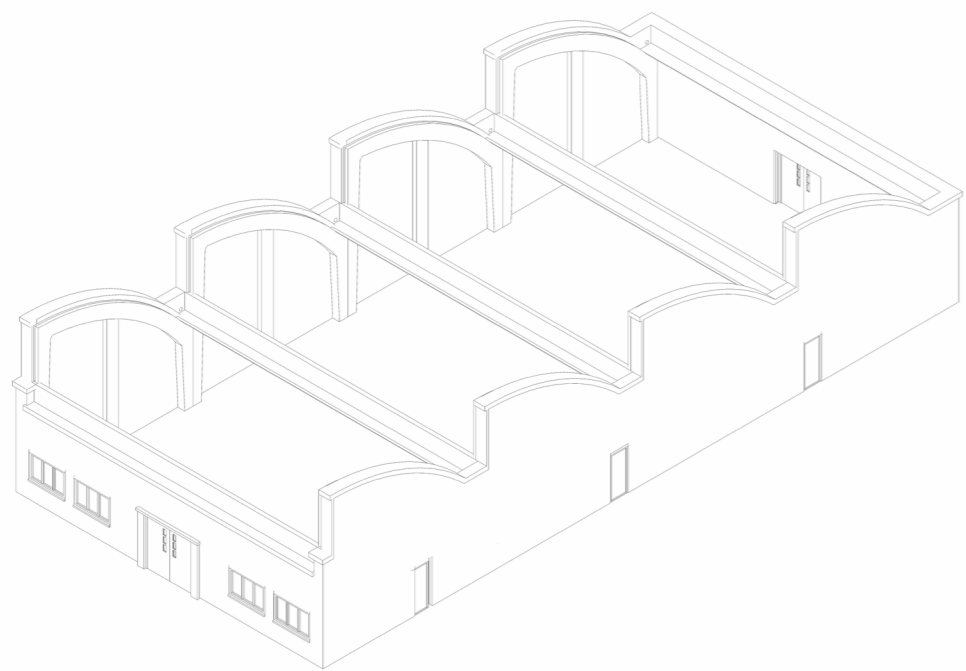




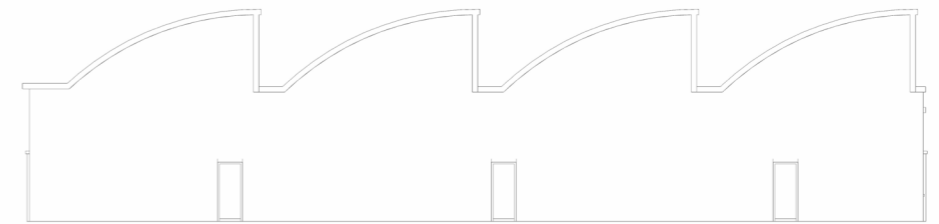
Isometric view



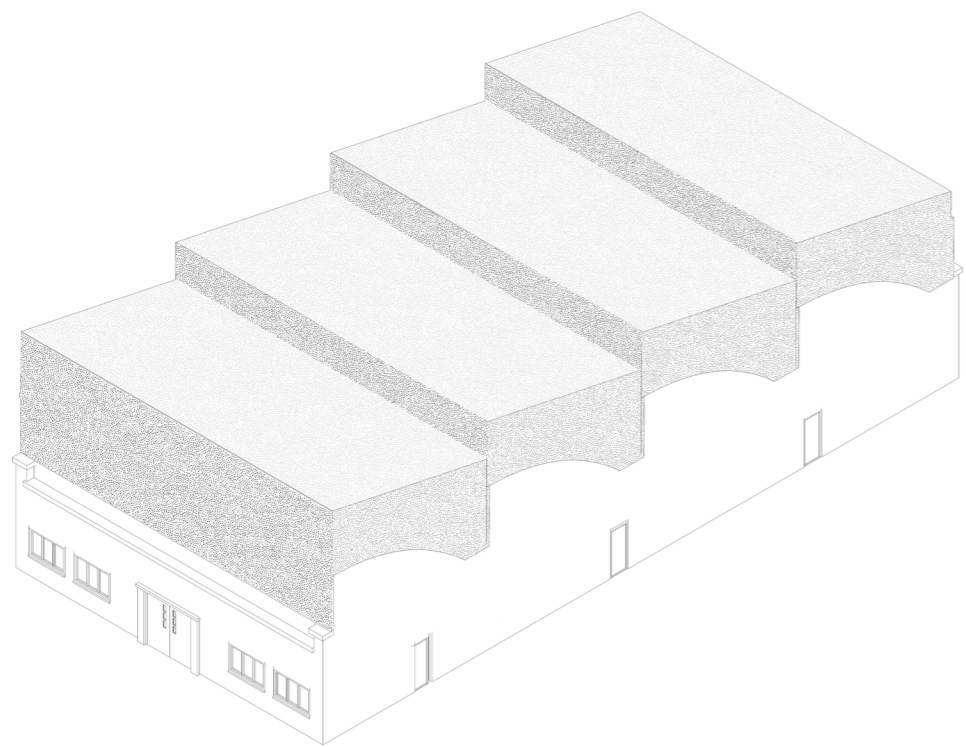
Elevation view



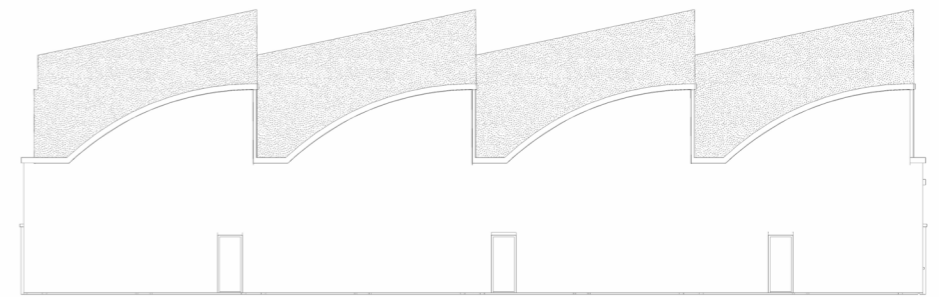
Isometric view



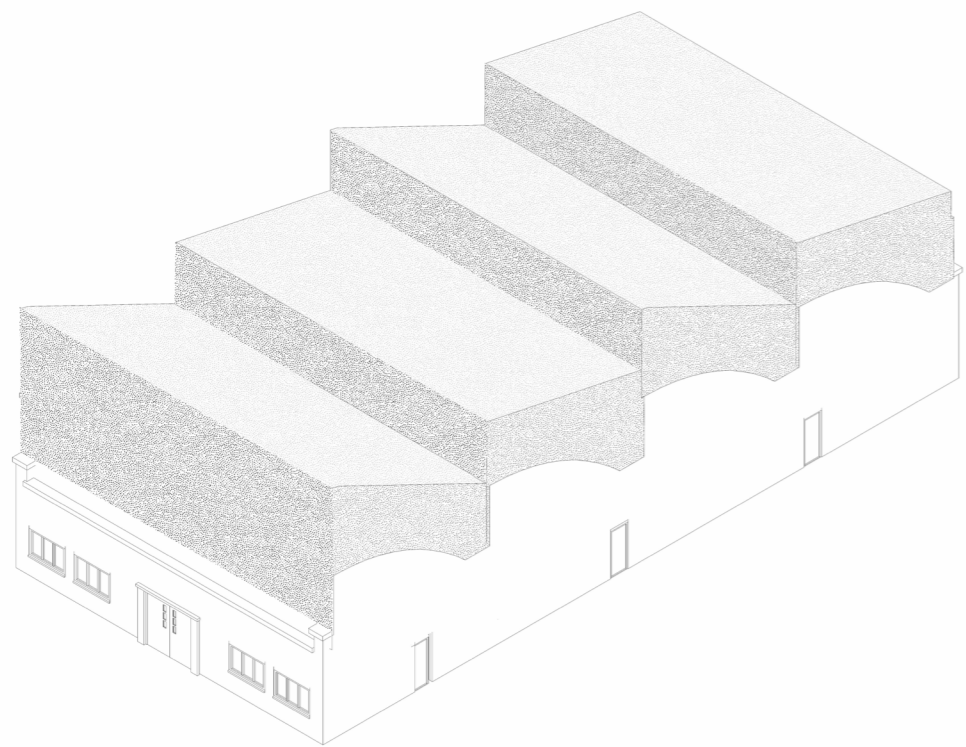
Elevation view



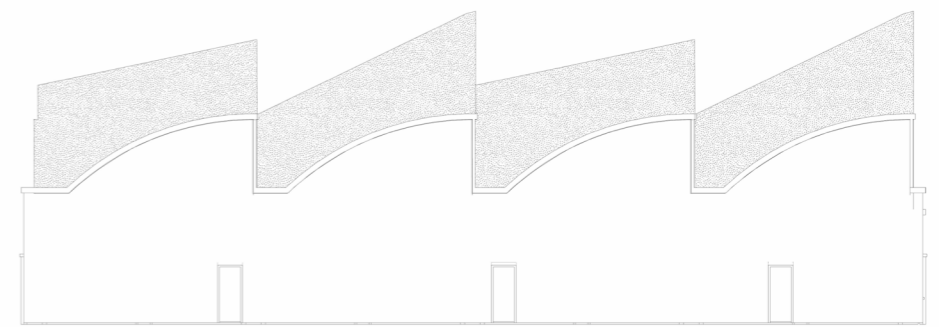
Isometric view



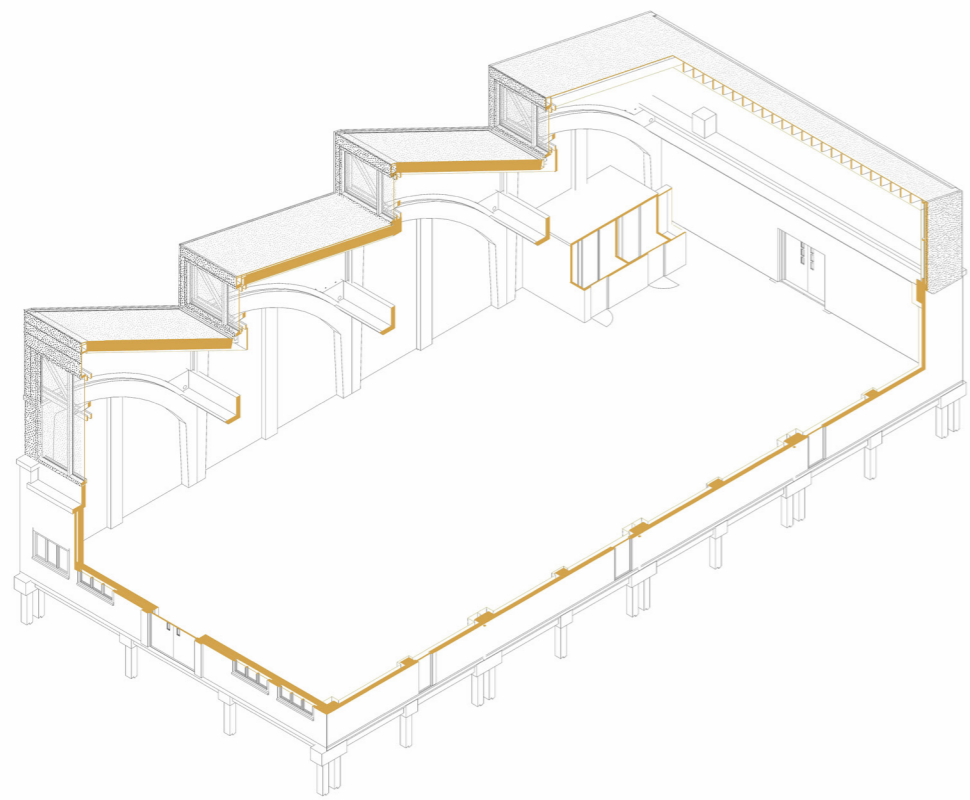
Elevation view



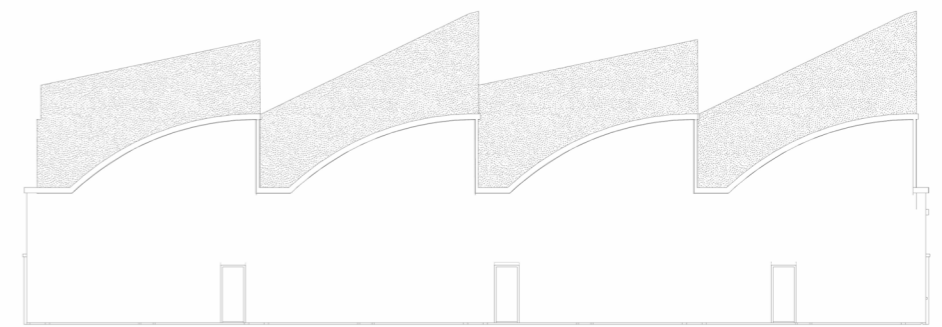
Isometric view



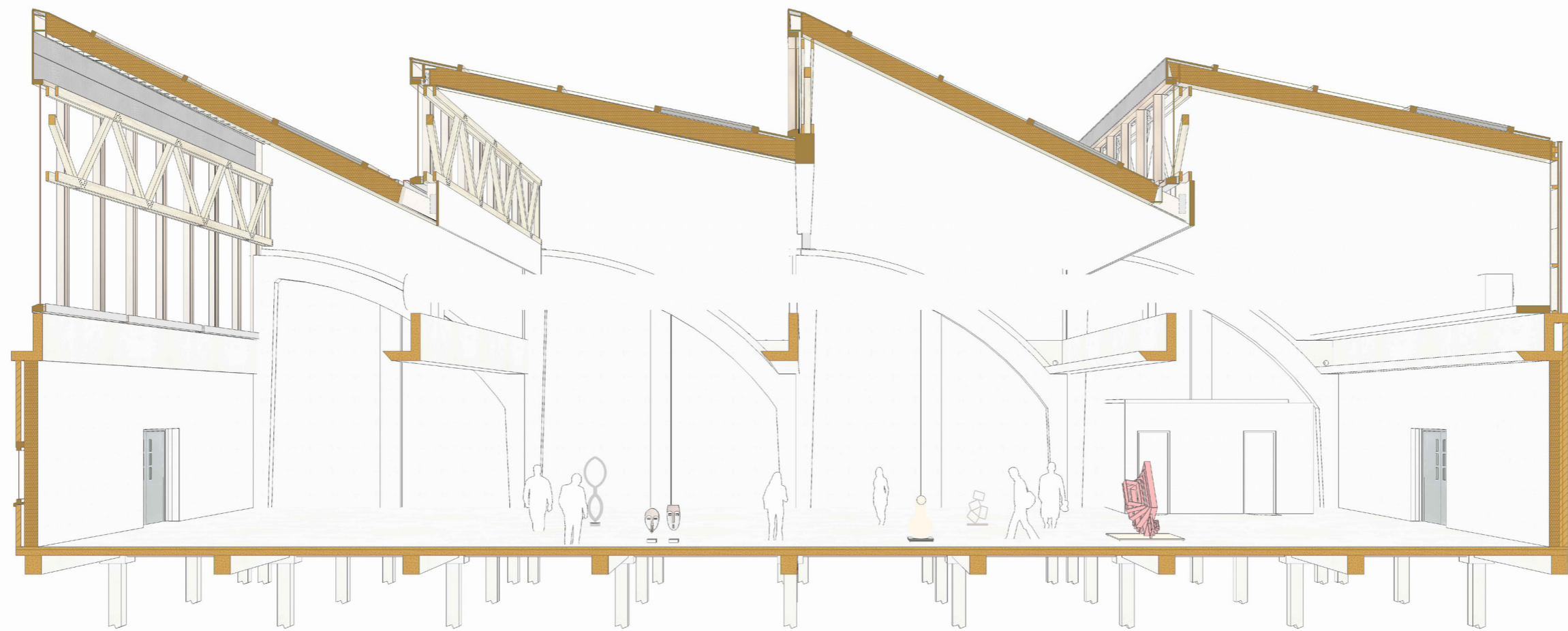
Elevation view



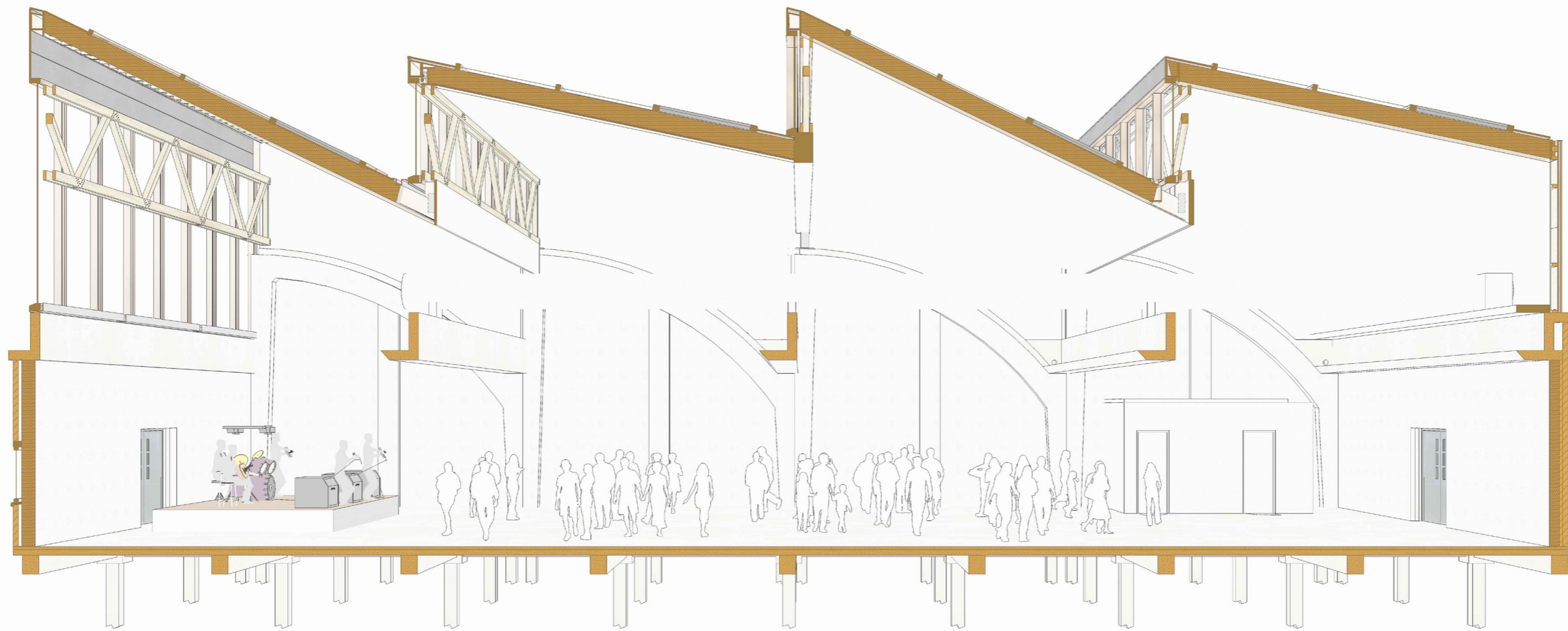
Isometric view



Elevation view



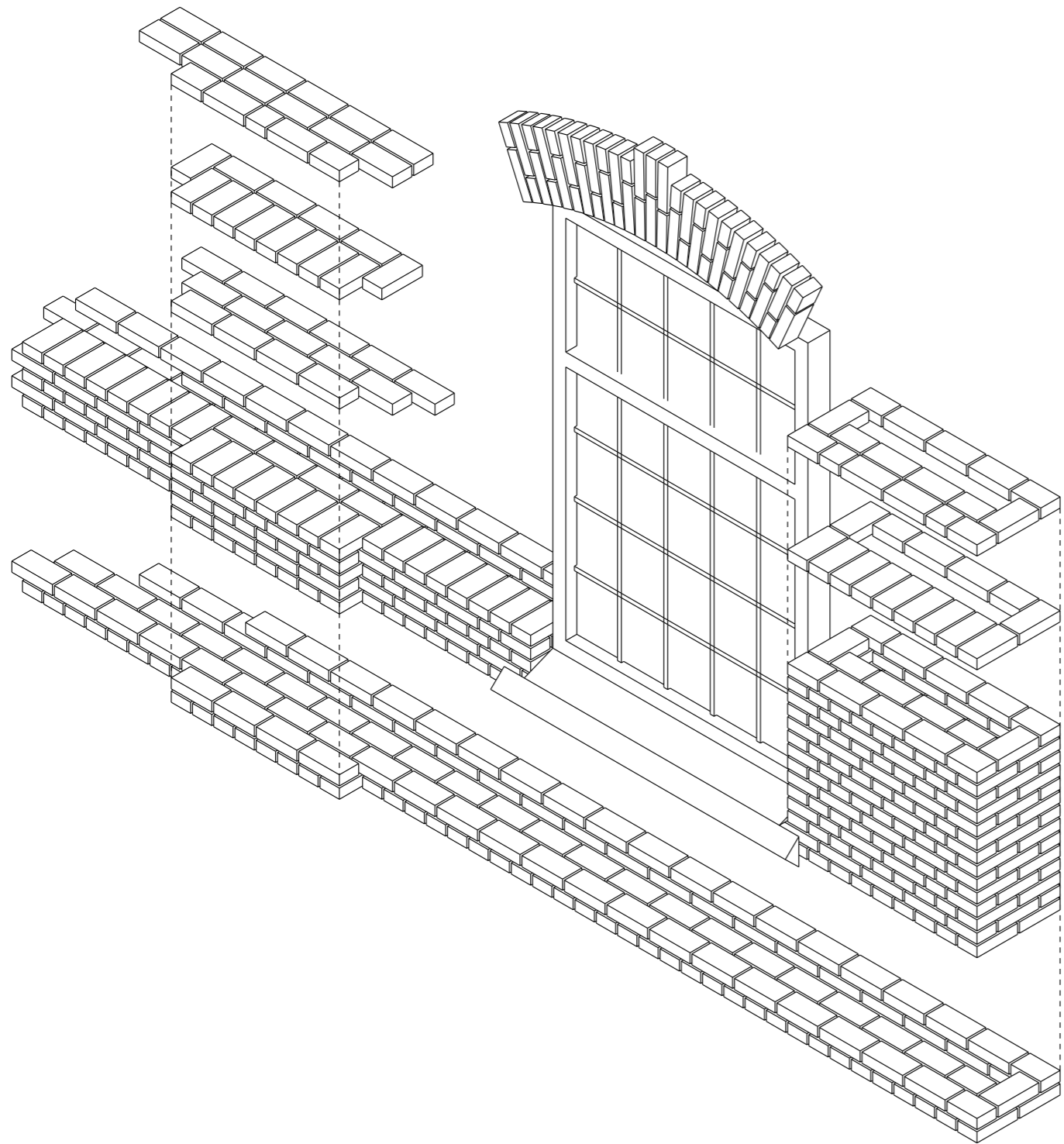
Exhibition



Events / gigs



# **Materialization and detailing**

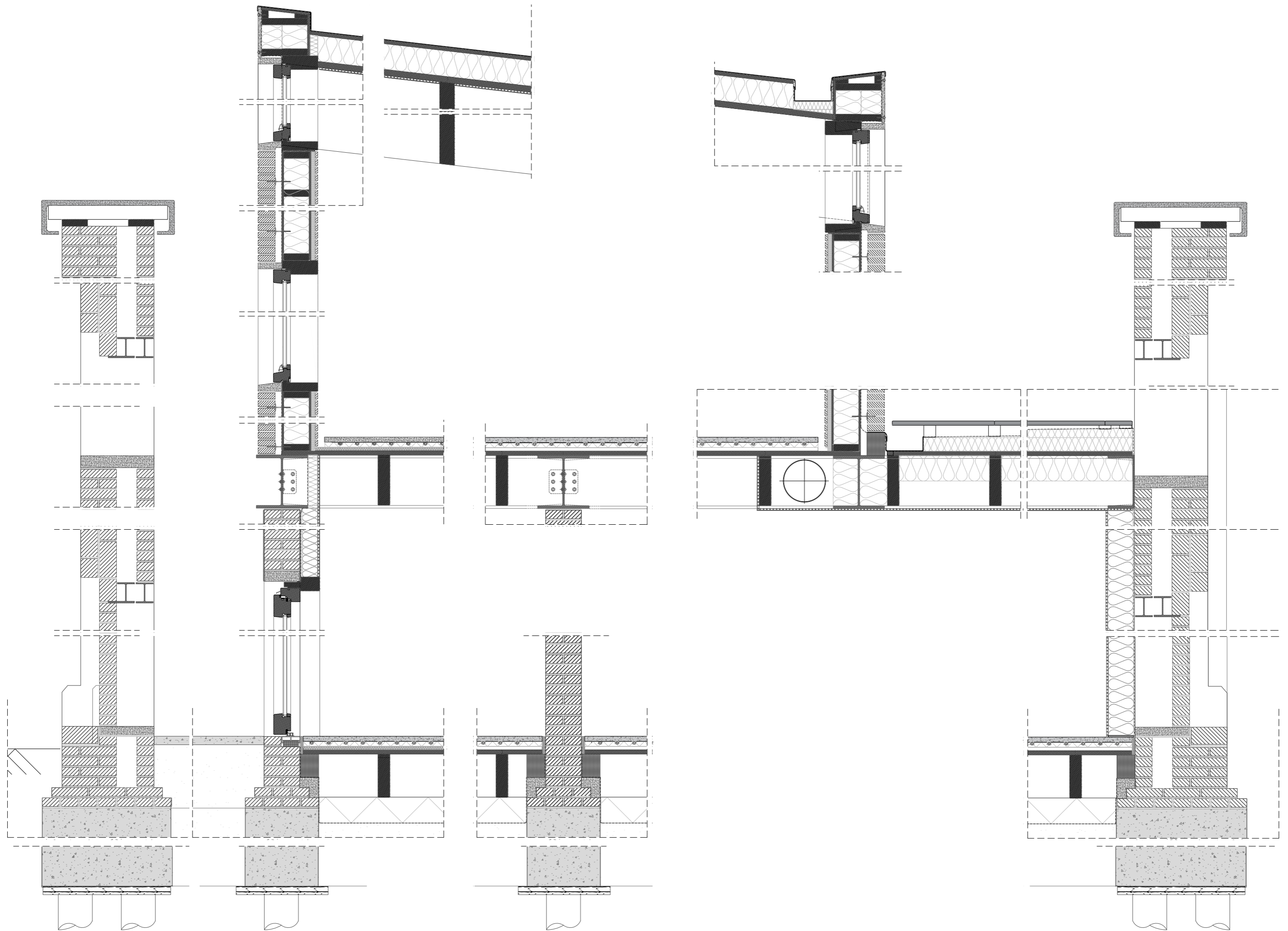


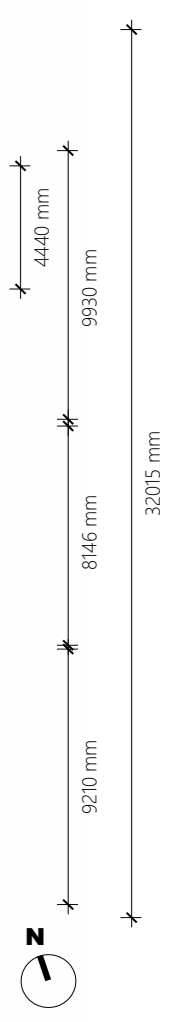
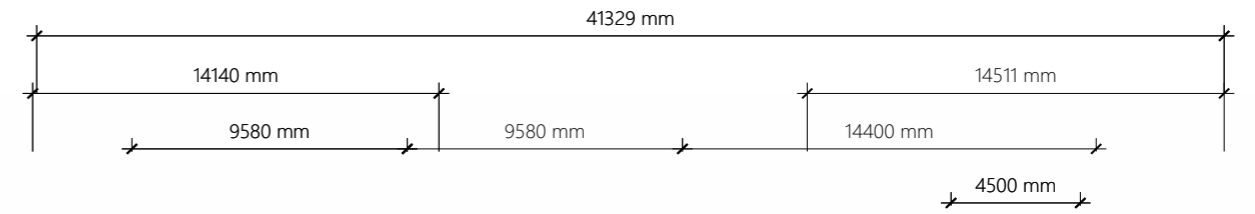
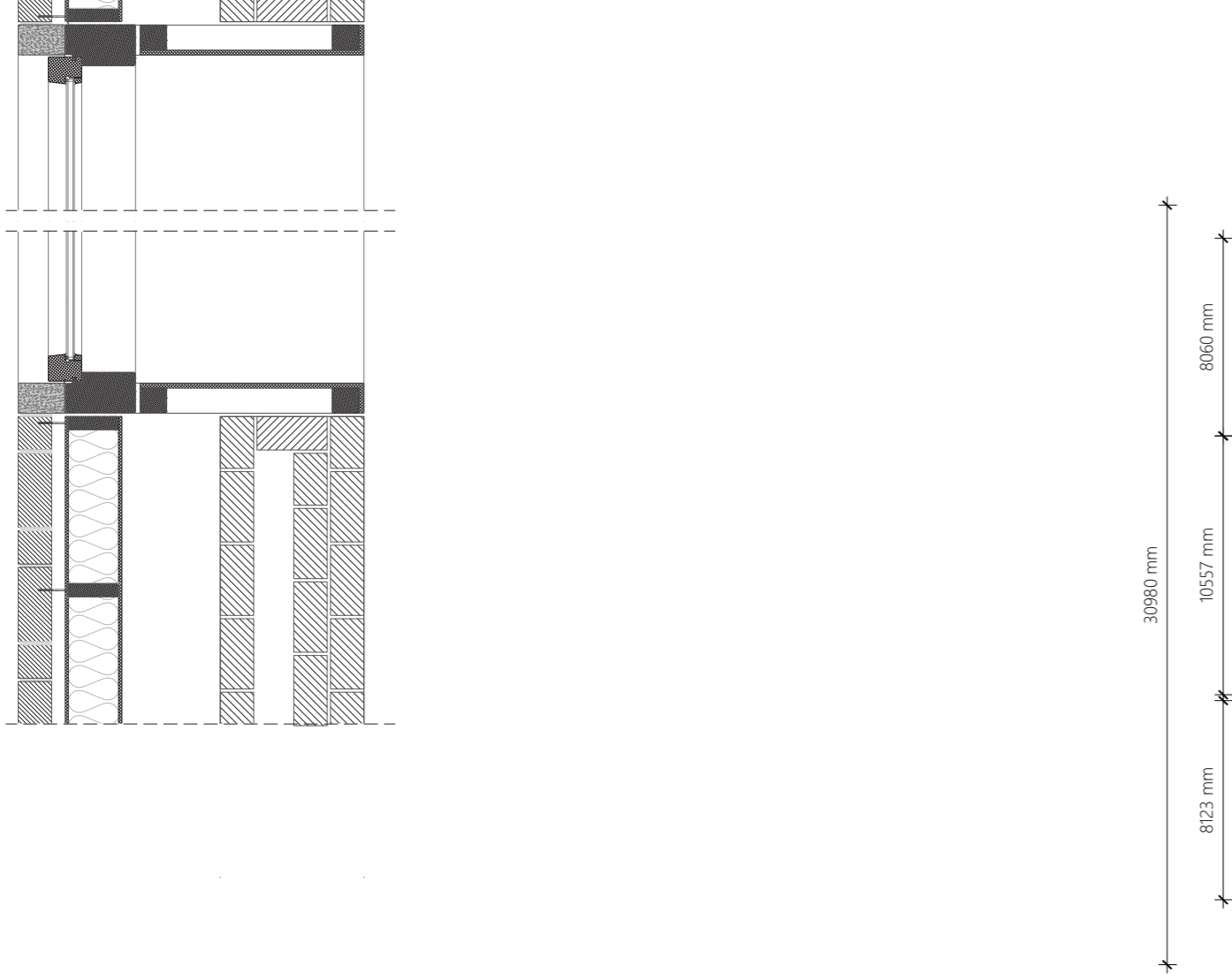
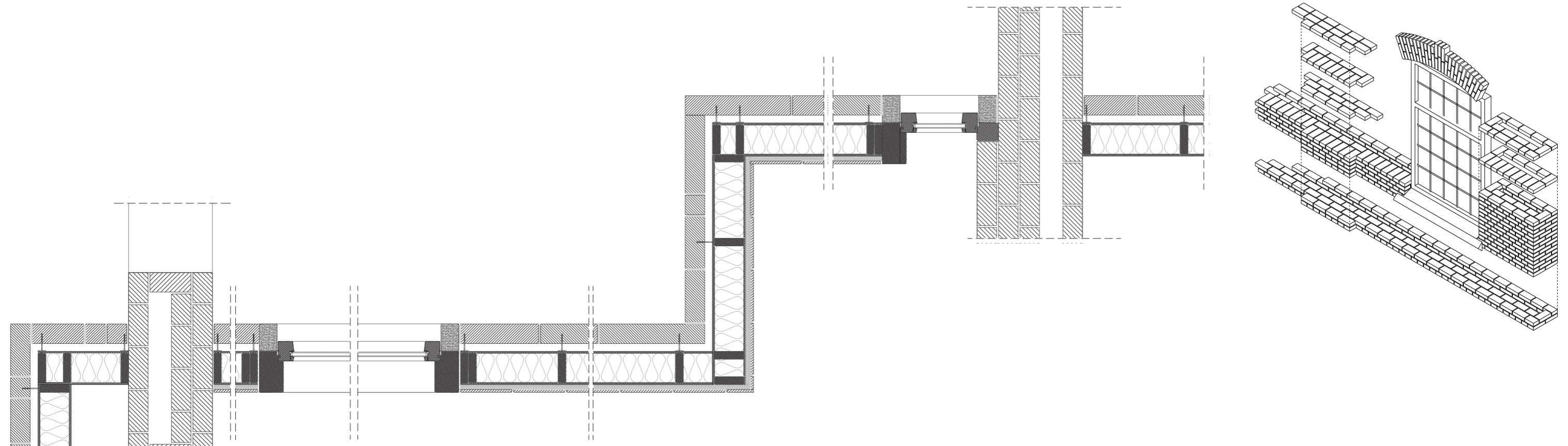


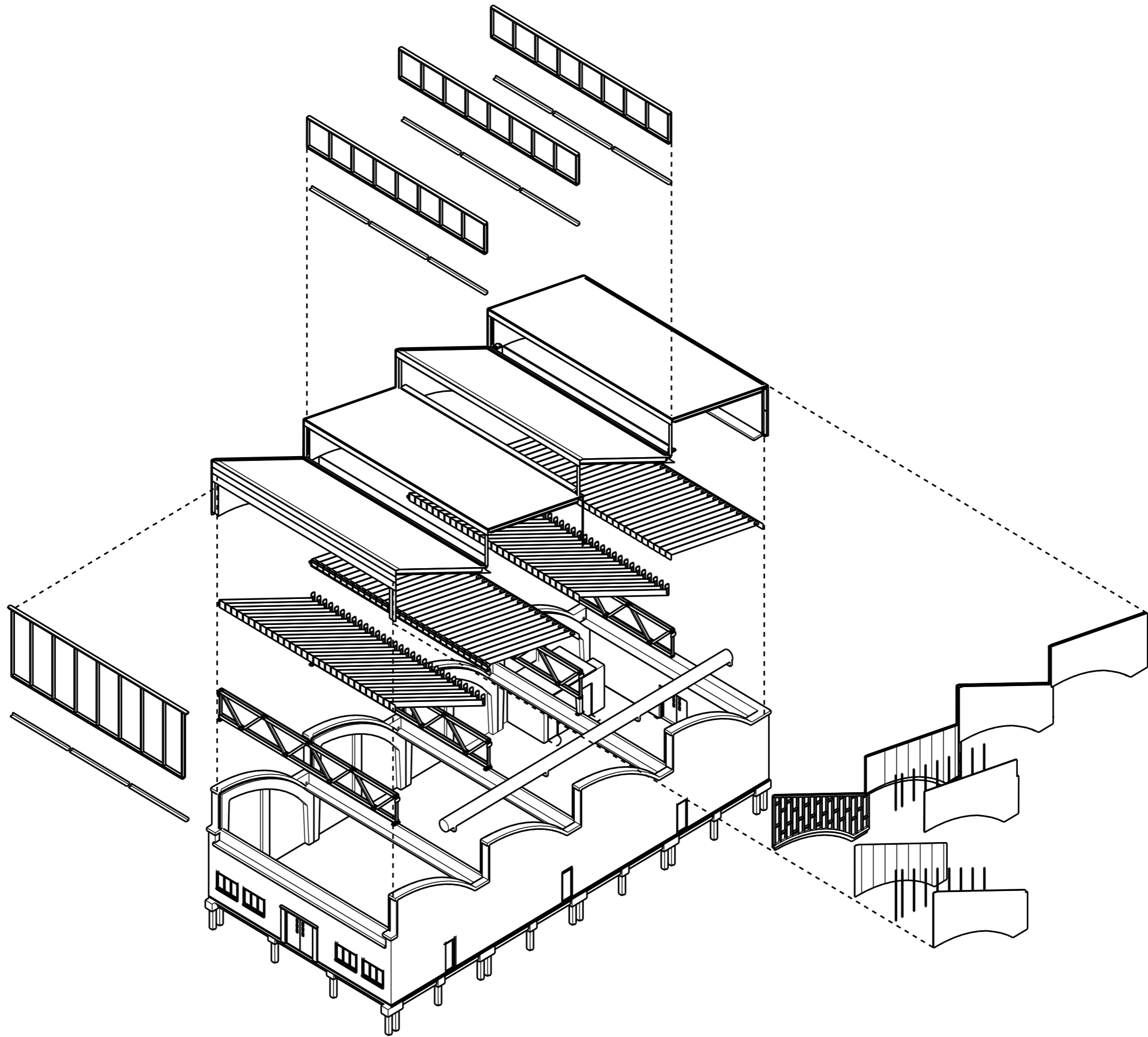








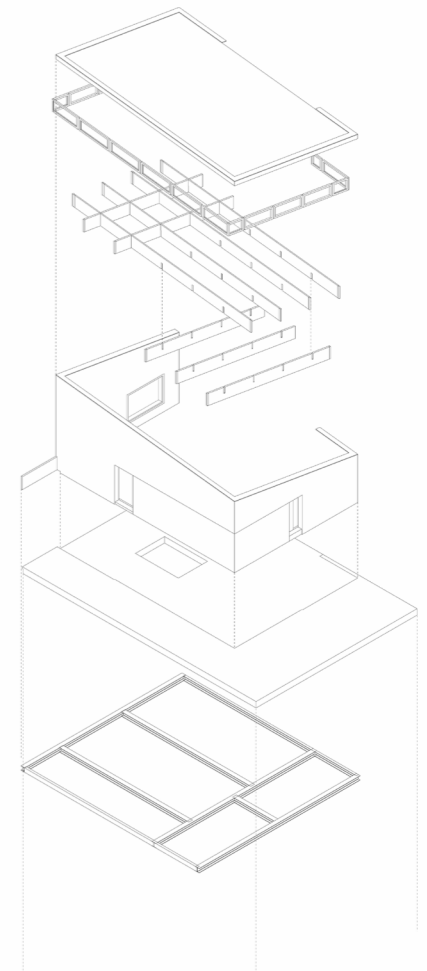
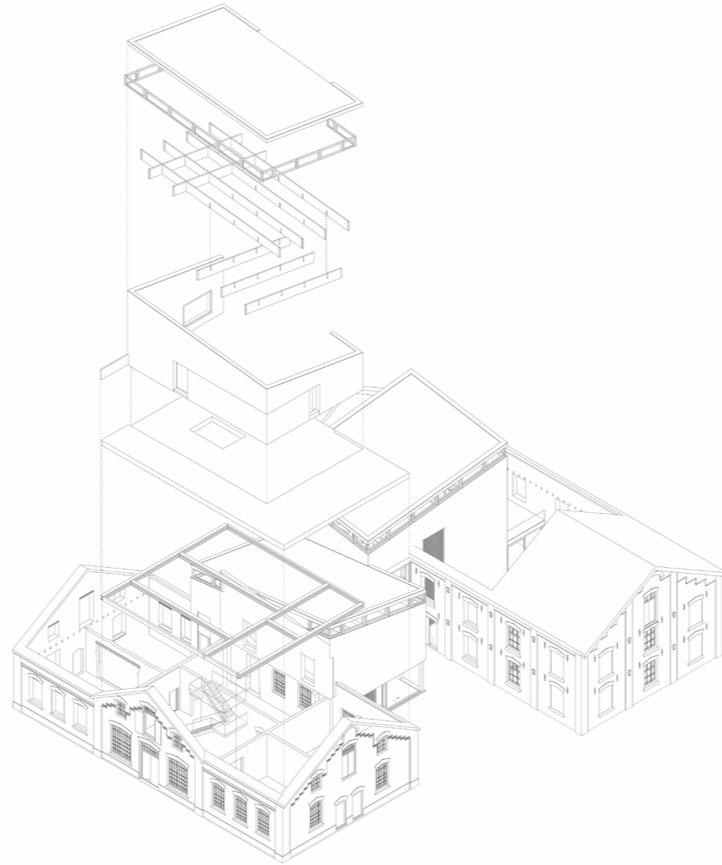
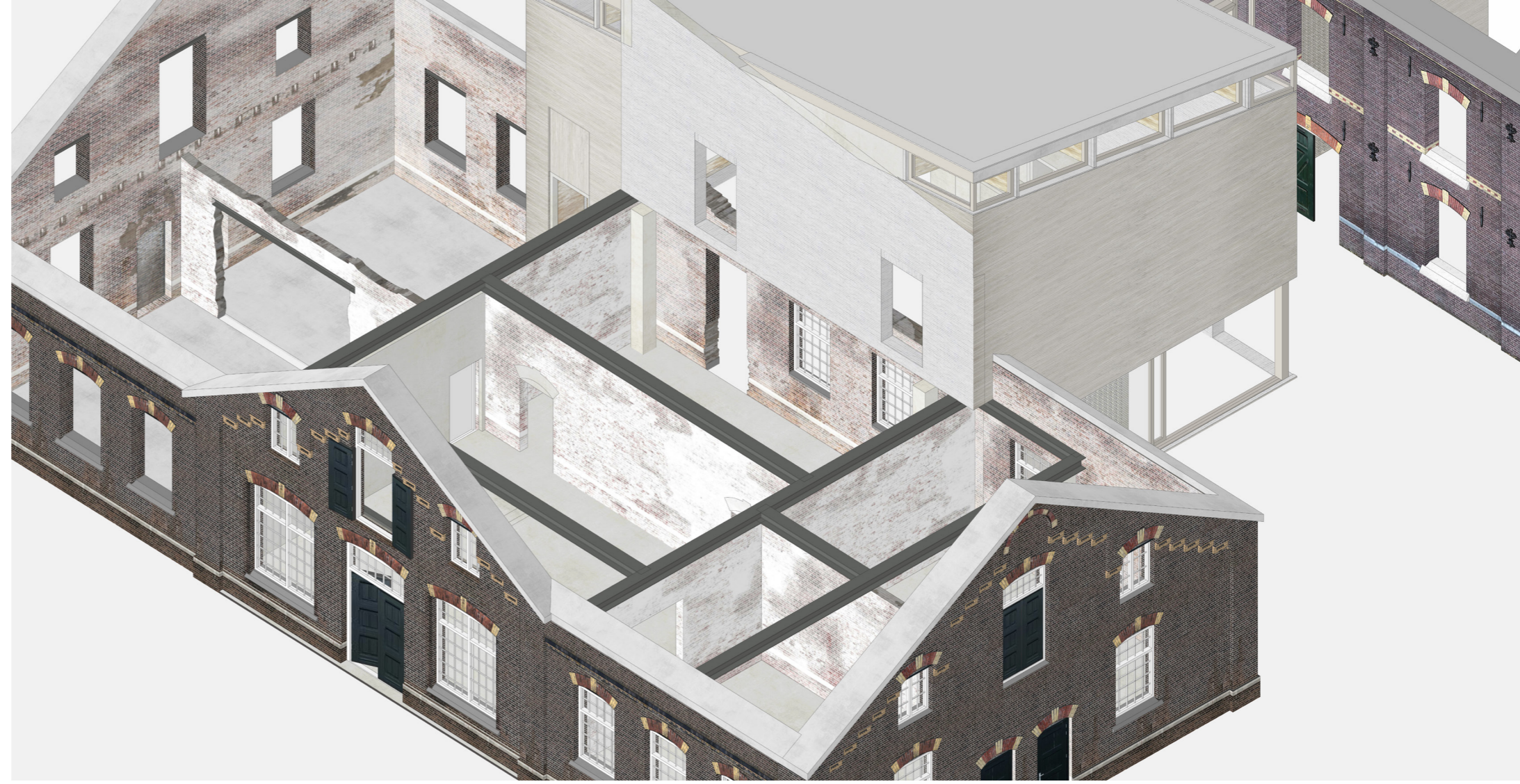
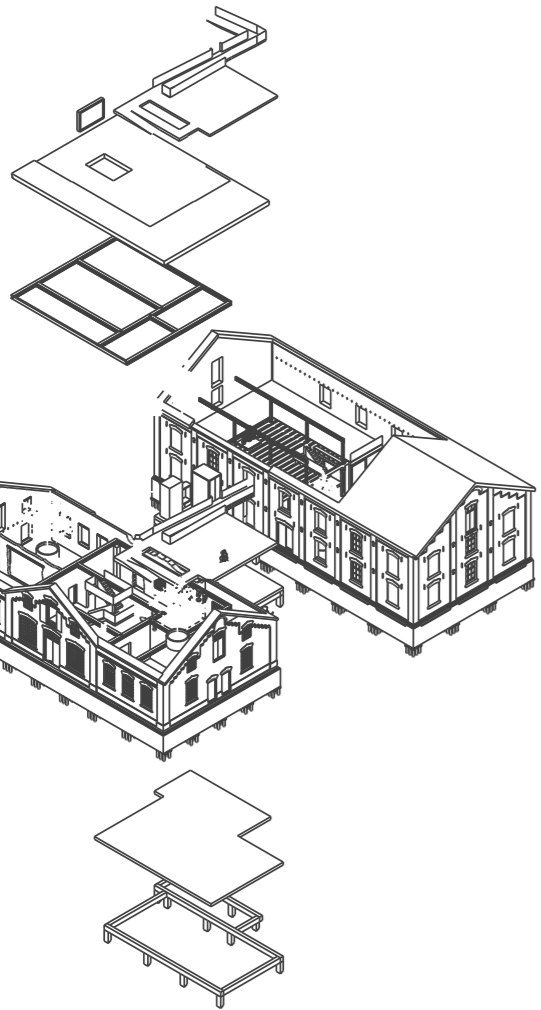
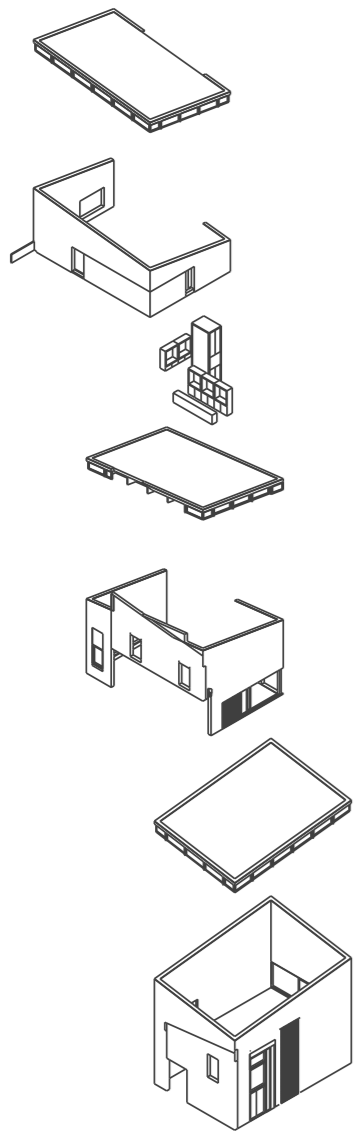






# Thank you





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