

<Harmonious coexistence>

St. Elisabeth nursing home complex renovation project

Zutphen, Provincie Gelderland

Yinan Yu

P5 presentation

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Context

general information

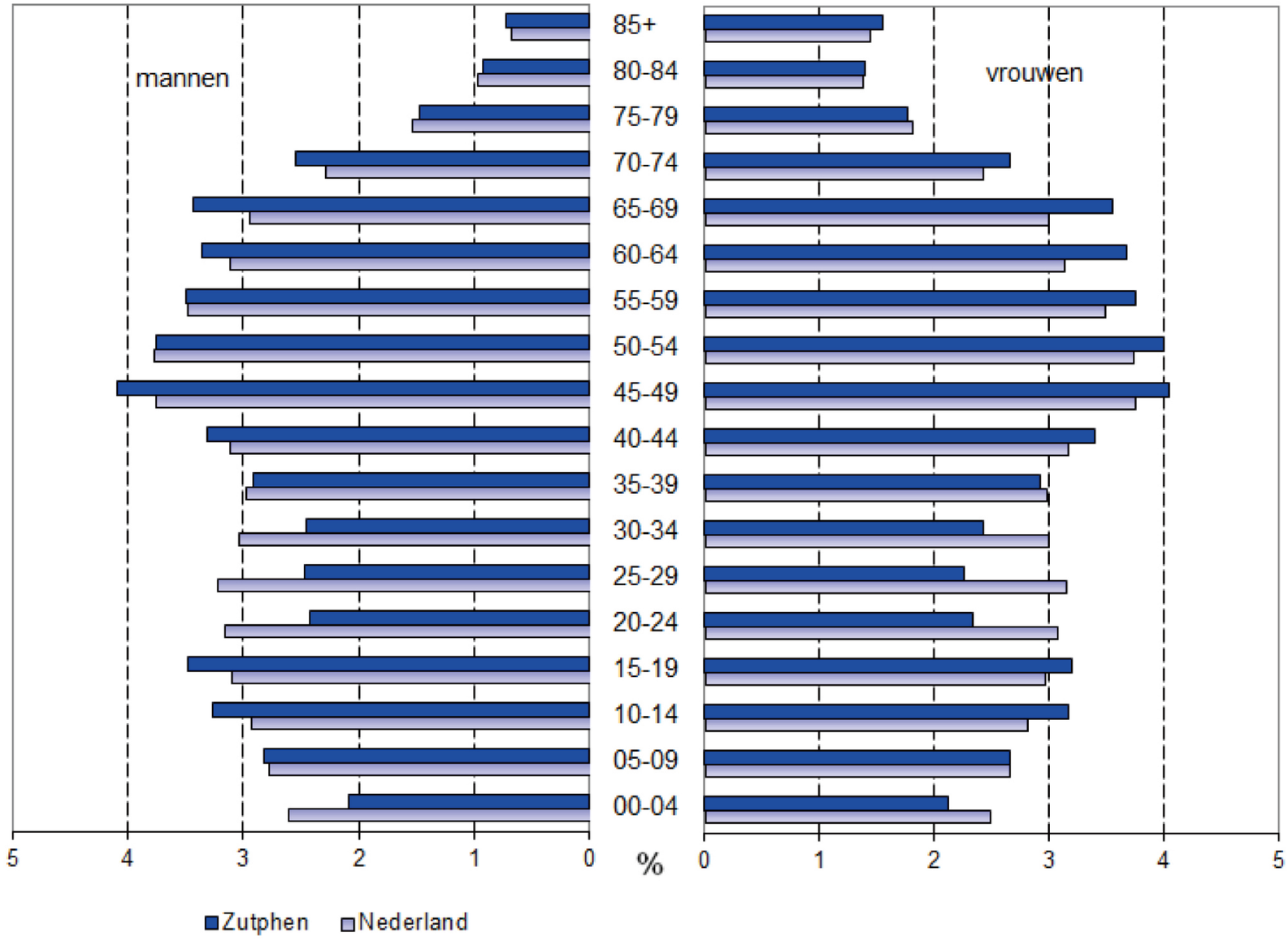


Image ©2018 Aerodata International Surveys Image ©2018 DigitalGlobe 200m

St. Elisabeth building complex is located on the boundary of the ancient city scope of Zutphen.

Surrounding elements: Berkel river, ancient city defense relics, schools.

Bevolkingspyramide op 1-1-2017 Zutphen en Nederland



Bron: C.B.S./Gemeente

Image Source: <Feiten en Cijfers 2017>, Gemeete Zutphen

In Zutphen there are fewer 20-34 year-olds and more 60 to 70-year-olds than average in the Netherlands

From the adjacent graph you can clearly see that the share of young people, in particular 20-34 year olds is smaller than the national pecentage. This is partly caused by the absence of it higher and university education. The big group 60-70 year-olds indicate that Zutphen the coming years with a further aging.

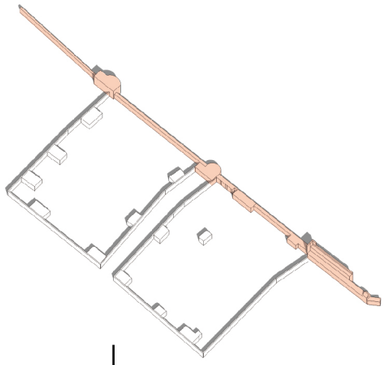
Function distribution of buildings in Nieuwstadt (around St. Elisabeth complex)

elderly house
dwelling
education
commercial
retailing
religious

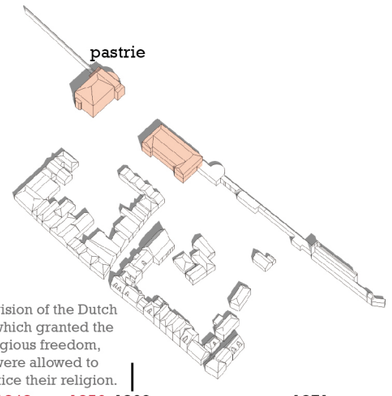
Context

heritage

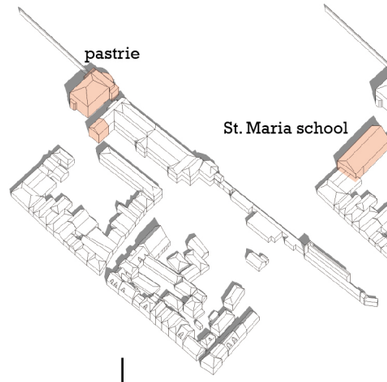
The city wall has already been built



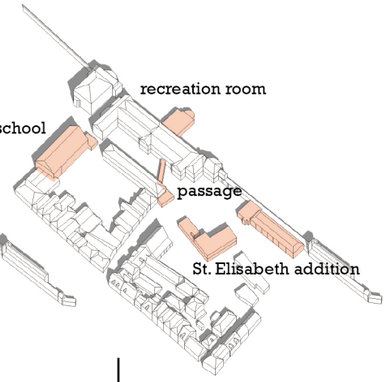
St. Elisabeth asylum and Pastorie were built

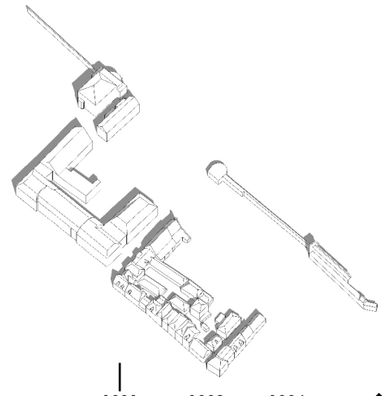


The pastorie was rebuilt
St. Elisabeth chapel was extended



St. Maria school was rebuilt
St. Elisabeth was extended (passage, recreation room were added)

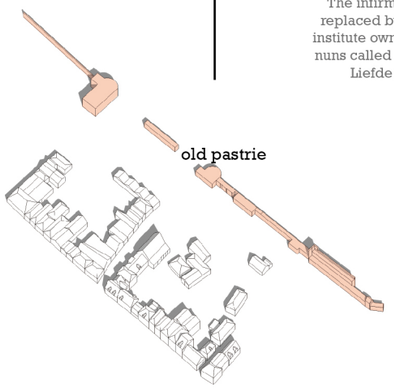




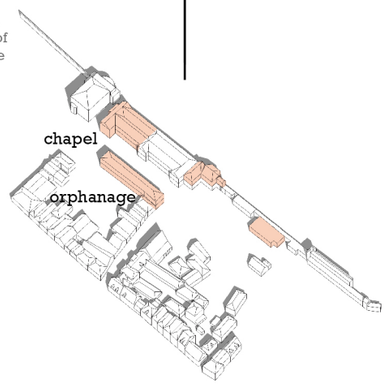
1565 1649 1795 1811 1848 1856 1863 1871 1878 1902 1912 1934 1955 1965 1980 1991 1992 1994

Due to the revision of the Dutch constitution which granted the right of religious freedom, Catholics were allowed to publicly practice their religion.

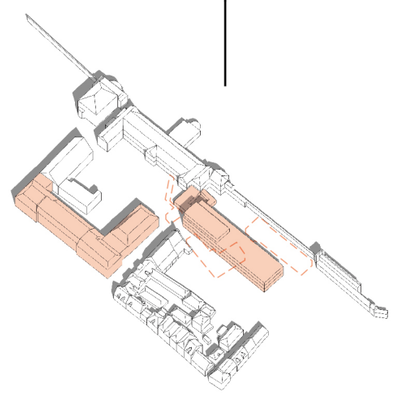
The infirmary housing was replaced by the St. Elisabeth institute owned by a convent of nuns called the Zusters van de Liefde from Tilburg.



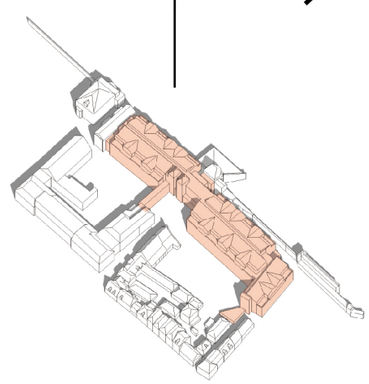
The city wall was broken into parts
The old pastrie was built



The orphanage was built
St. Elisabeth asylum(chapel) got extent (partly on the watch tower)



The passage, the orphanage and the south wing were demolished
New south wing was built
The western part of nursing home was rebuilt



All the St. Elisabeth buildings (except the chapel) and the upper part of watch tower were demolished in 1991 and reconstructed in the next year.

Timeline

City wall was intially built in the 13th Century, but broken into pieces in 1800s;
chapel was built in 1870s;
the upper part of watch tower was restored in 1992.









visibility



exterior and interior



spatial connection

Current situation of heritage relics attached to St. Elisabeth complex

Berkelpoort

Built in the 15th century.

Use value, Age value, Historical value and Art value.

Limited touristic facilities were assembled.

No more work is needed.

City wall section

Intially built in the 13th century, but broken into pieces in the 1800s.

Age value and Use value*.

Need to reconstruct its relation with surroundings to activate use value.



Watch tower

Originally built in the late 1500s, upper part was runined in the 1800s and restored in 1992.

Age value, Historical value and Use value*.

The position of it in urban texture need to strengthened.

Value assessment



St. Elisabeth main building

The history of it came from St. Elisabeth asylum which was built in 1863. In 1991, the whole main building was reconstructed.

Use value
(the historical value of its post-modernism facade only has specific meaning in the zutphen area, and I think it is generally insignificant.)

The whole building can be renovated/transformed.

Chapel

Built in 1863, extended in 1911 but some decorations were removed after 1936.

Age value, Historical value, Use value and Art value.

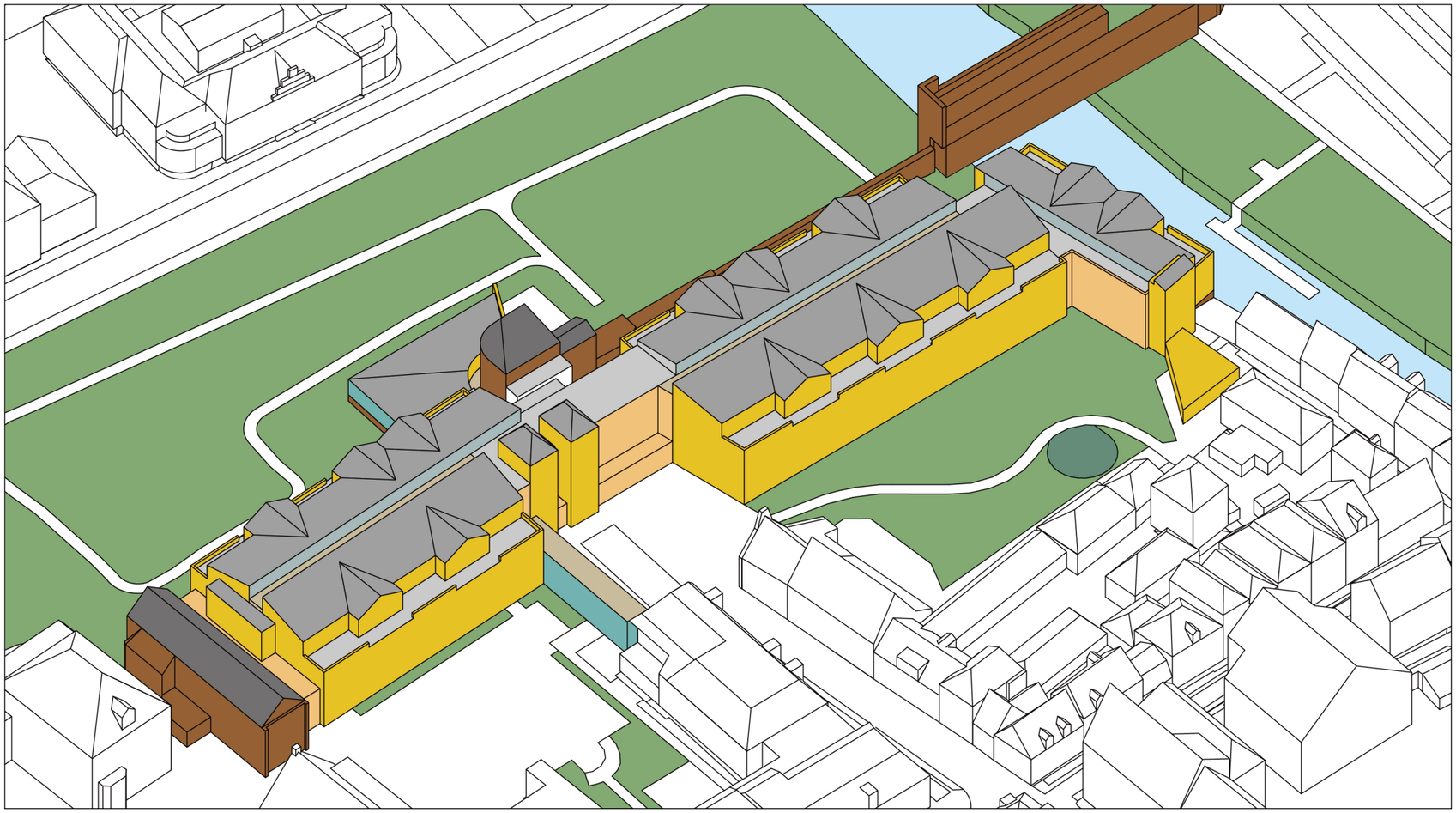
Currently it is used as a lecture hall which doesn't make full utilization of its use value. The simplified facade cannot express its initial art value, and the connection from the main building even ruined the art value.

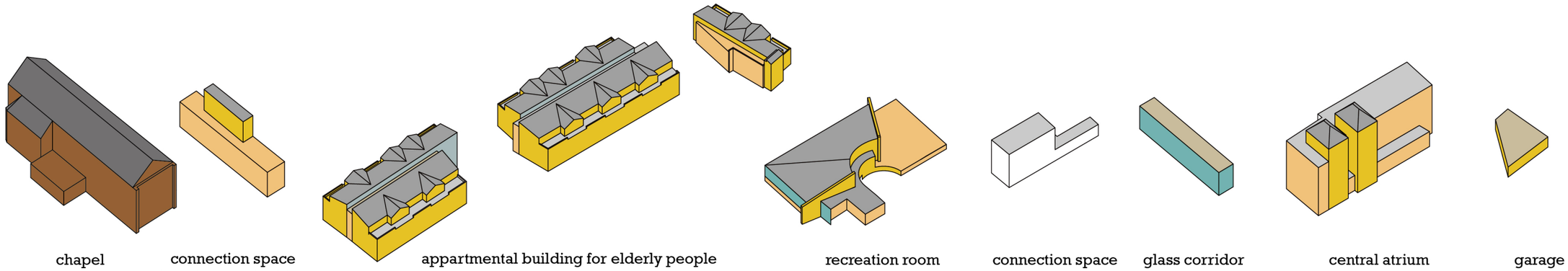
After removing/weakening the connection space, new programmes should be taken into account for it.
Restore its original design is also considerable.

Value assessment

Context

the main building





chapel

connection space
chapel - main building

appartmental building for elderly people

recreation room

connection space
tower - atrium

glass corridor

central atrium

garage

Morphological composation









Exterior impression of St. Elisabeth complex



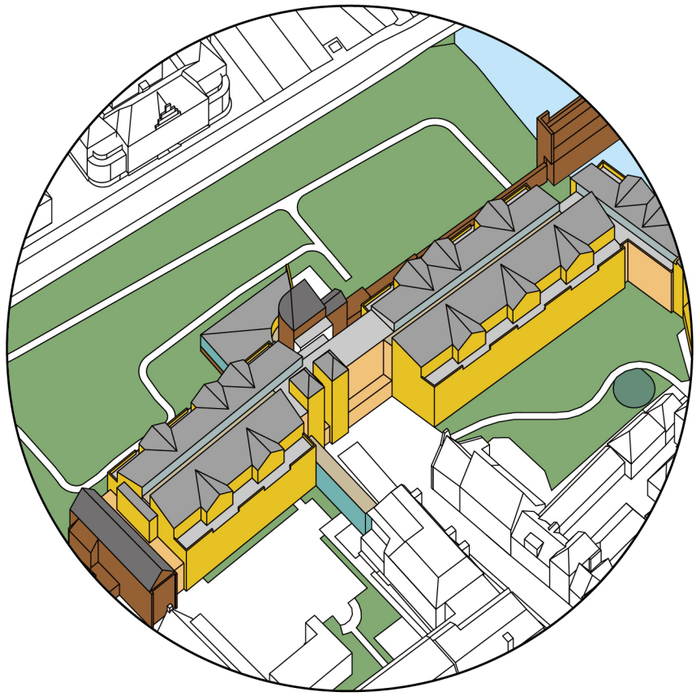






Interior impression of St. Elisabeth complex

Problems statement in building scale



St. Elisabeth complex

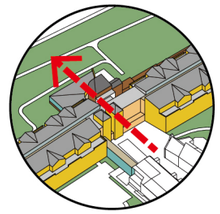
Huge volume blocks the historical tower



The rigid façade and distinct façade's color are discordant with the local atmosphere



The composation of complex blocks the accessibility to the green area for the public



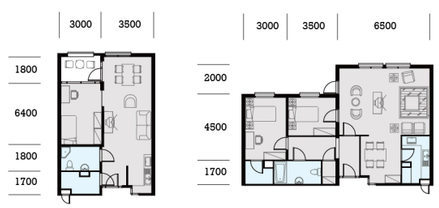
Corridor lacks natural light



some ground floor spaces are empty (kitchen, appartments)

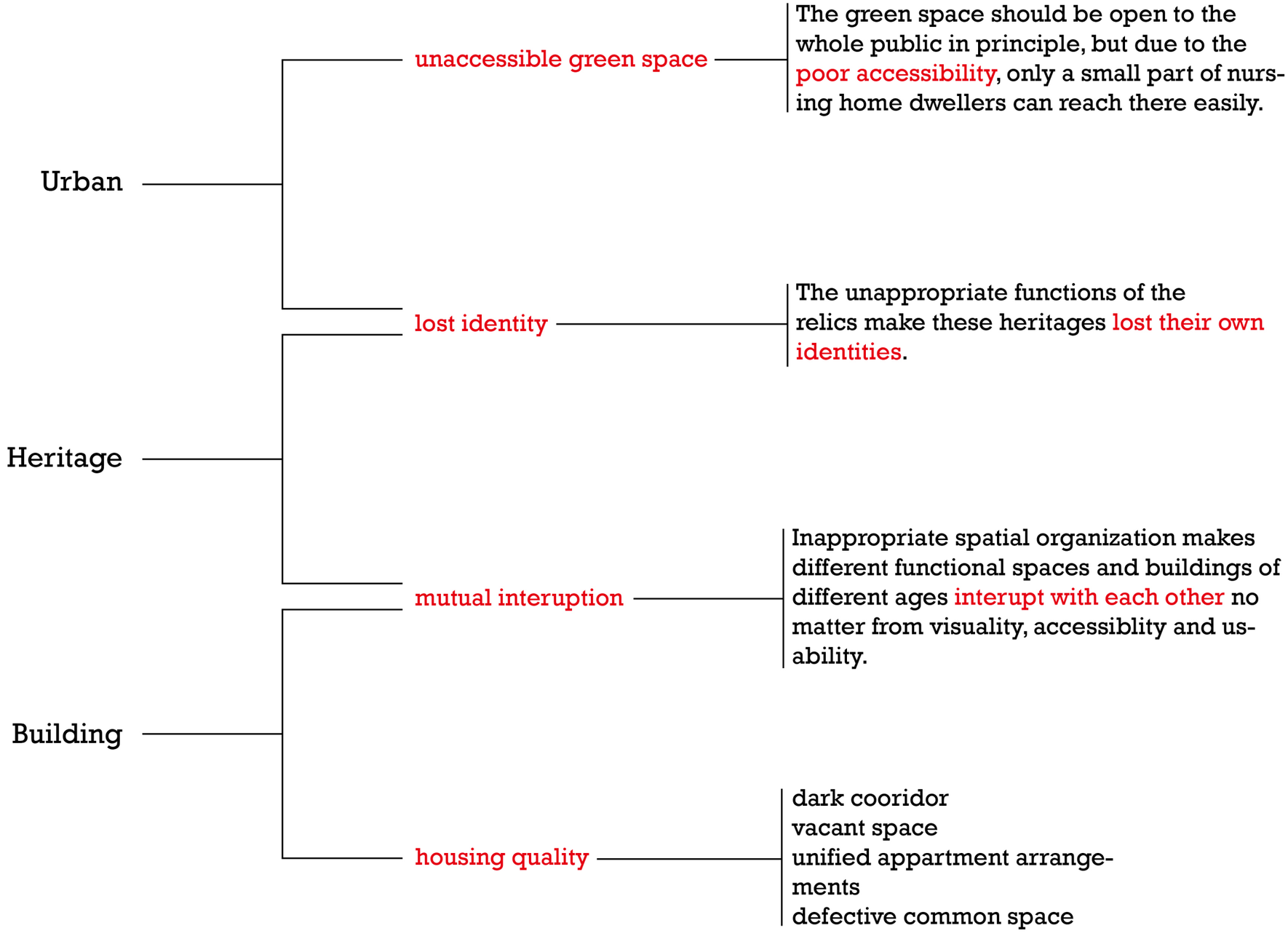


The interior arrangements of apartments are highly homogenized



The quantity and quality of the common space are defective.





Problems statement in social scale

How to make

...

different groups of people: elderly people, children, visitors;

different functional spaces: St. Elisabeth building, neighbour buildings in the block;

buildings in different heritage value: St. Elisabeth building, chapel, city wall, watch tower;

...

coexist harmoniously?

(The quality of forming a pleasing and consistent whole, by Oxford Dictionaries)

Goals:

Make different groups of people live together in the same area pleasantly without disturbing each other;

Make the new building complex integrated into local atmophere;

Make the historical relics have more positive relation with modern architecture and give full play to their value.

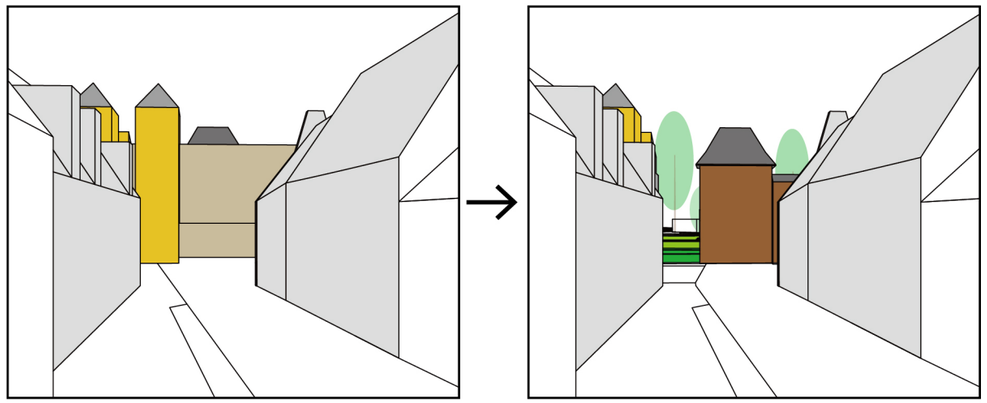
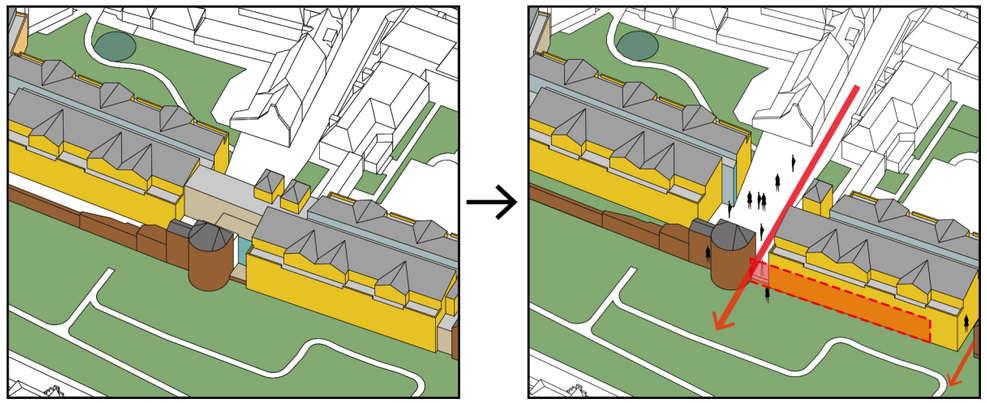
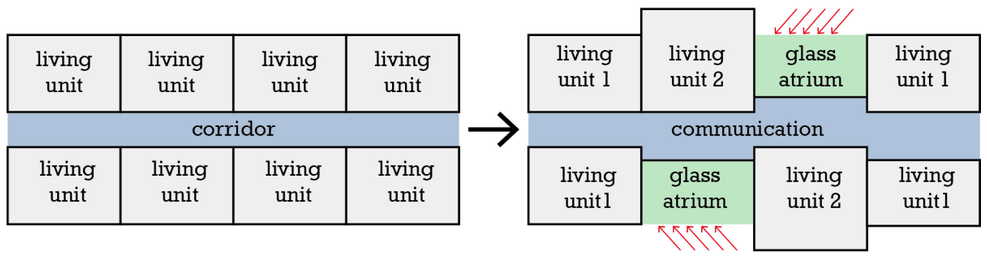
Research question

Design

concept and strategy



Concept: centering on historical relics, activate the local atmosphere by attracting more people to visit and to live in.

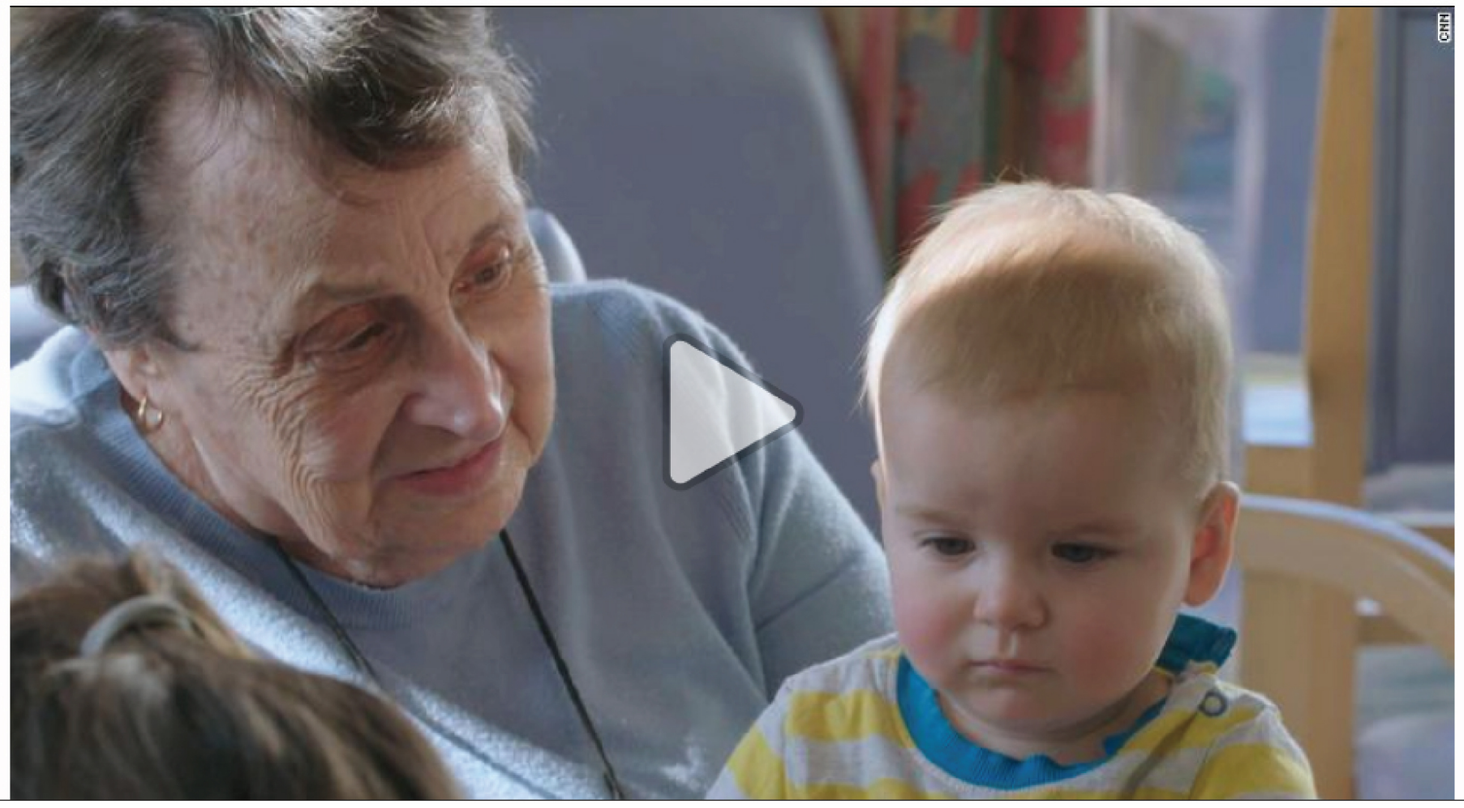
Urban	Free the tower; Make the green space can be easily touched.	
Heritage	Set new public functions for the heritages; Reveal its identity in the whole area.	
Building One more thing	Diversify interior arrangements; Develop the spatial quality of common space.	

Design strategy

Intergenerational care: Where kids help the elderly live longer

By Meera Senthilingam, CNN

Updated 1611 GMT (0011 HKT) February 18, 2018



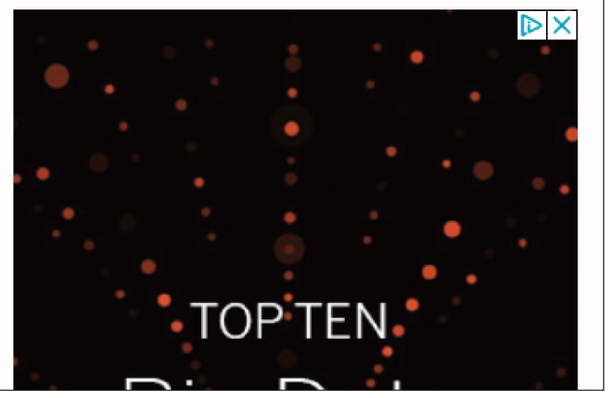
News & buzz

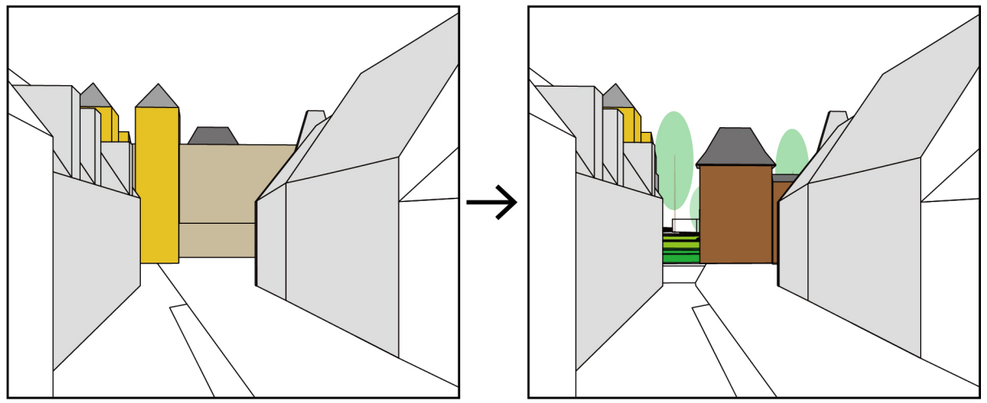
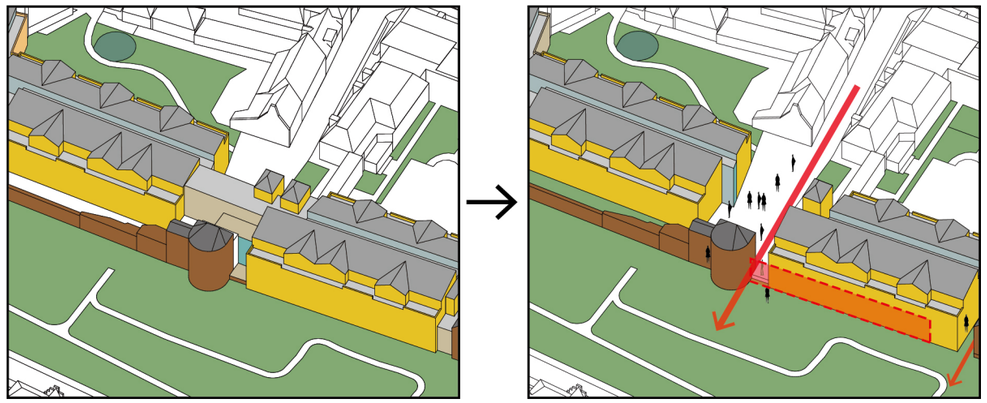
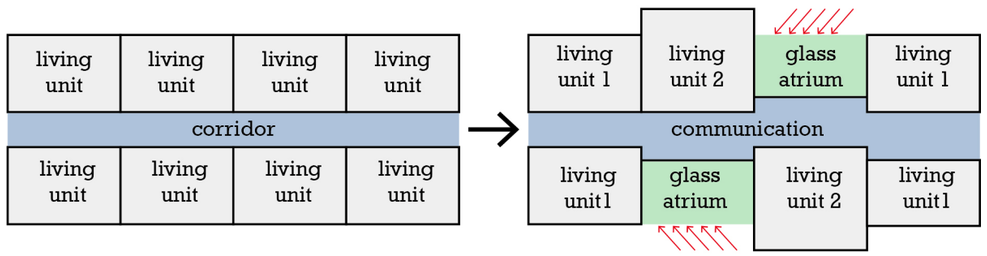
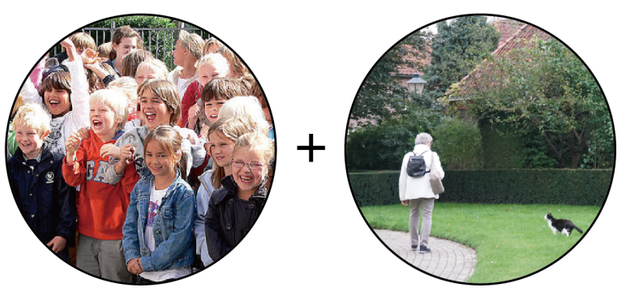


The seductive power of uniforms and cult dress codes



With California's aid-in-dying law on hold, patients are left to...



Urban	Free the tower; Make the green space can be easily touched.	
Heritage	Set new public functions for the heritages; Reveal its identity in the whole area.	
Building	Diversify interior arrangements; Develop the spatial quality of common space.	
Mental	Reduce their sense of loneliness by providing possibilities to invite people from different ages to stay temporarily or for a long time together with the aged.	

originally from St. Elisabeth nursing home



the aged

local people and out-of-town tourists



visitors

original from St. Maria kindergarten



children

attend daily operation

relax

regional education

play

Elderly care
St. Elisabeth nursing-home

Exhibition
local history
hitorical relics
religious history

Kindergarten
St. Maria school

live together

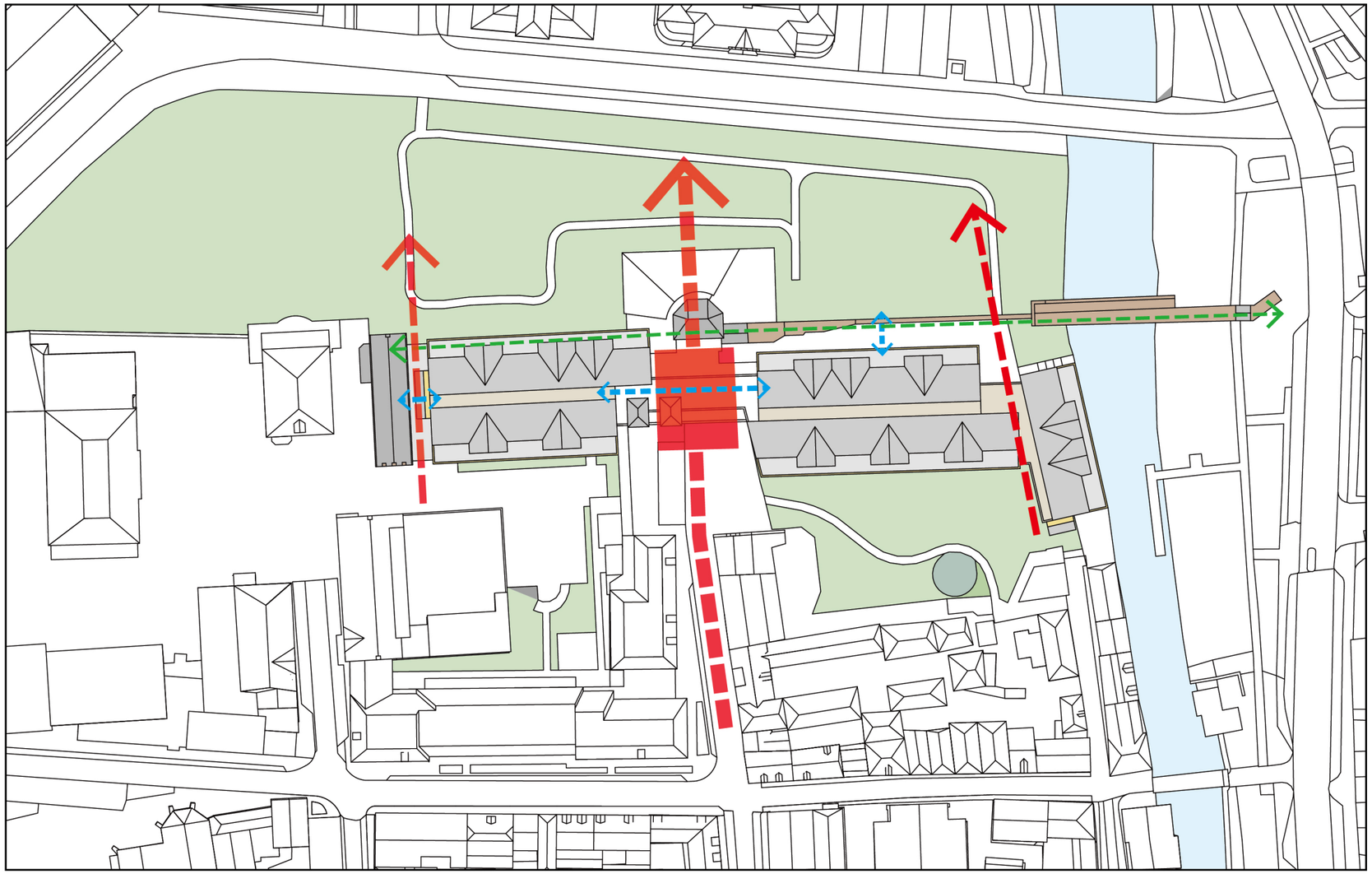


children of the aged

Public park
city wall theme
playground

boat tour and other tourist spots

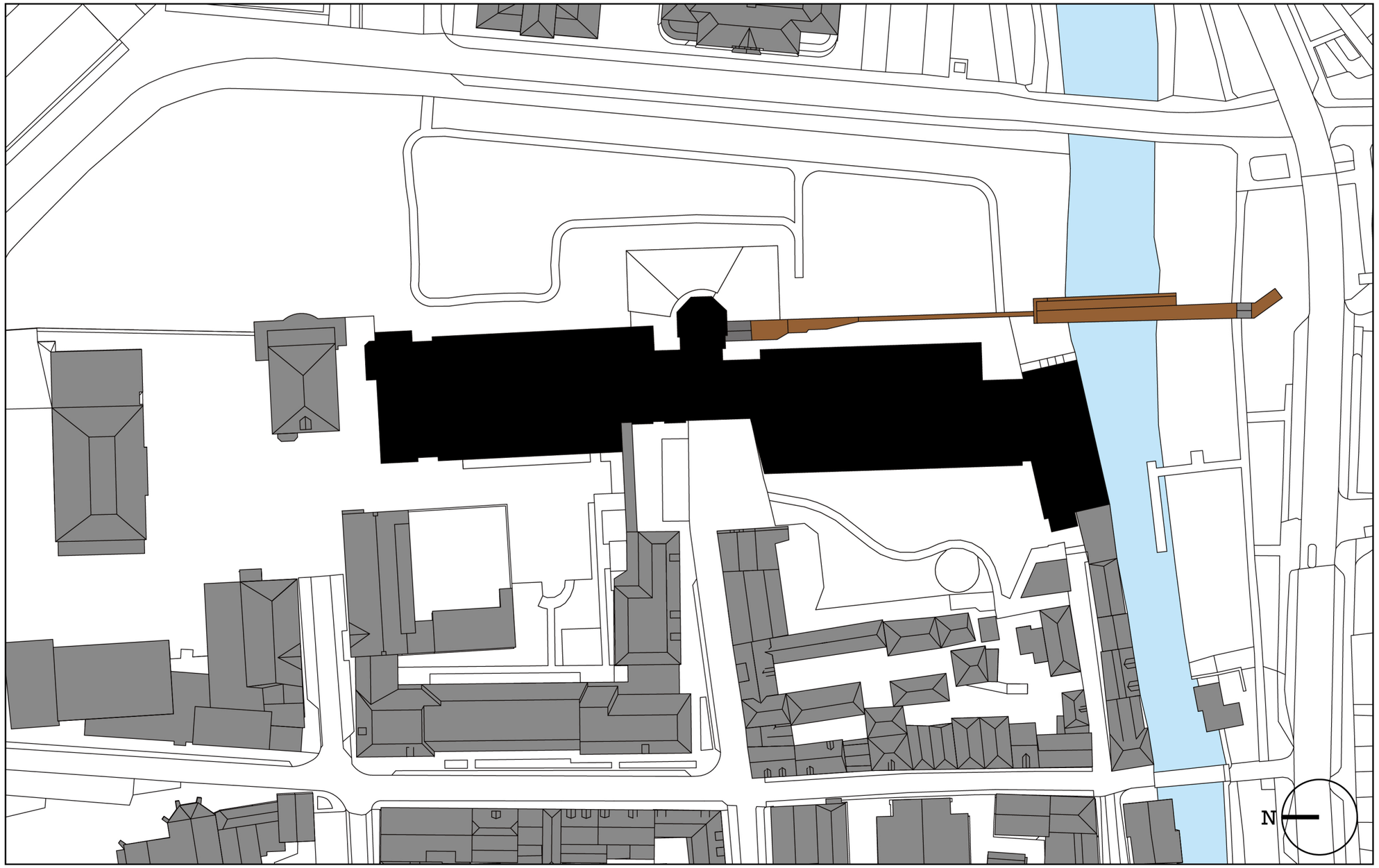
Program strategy



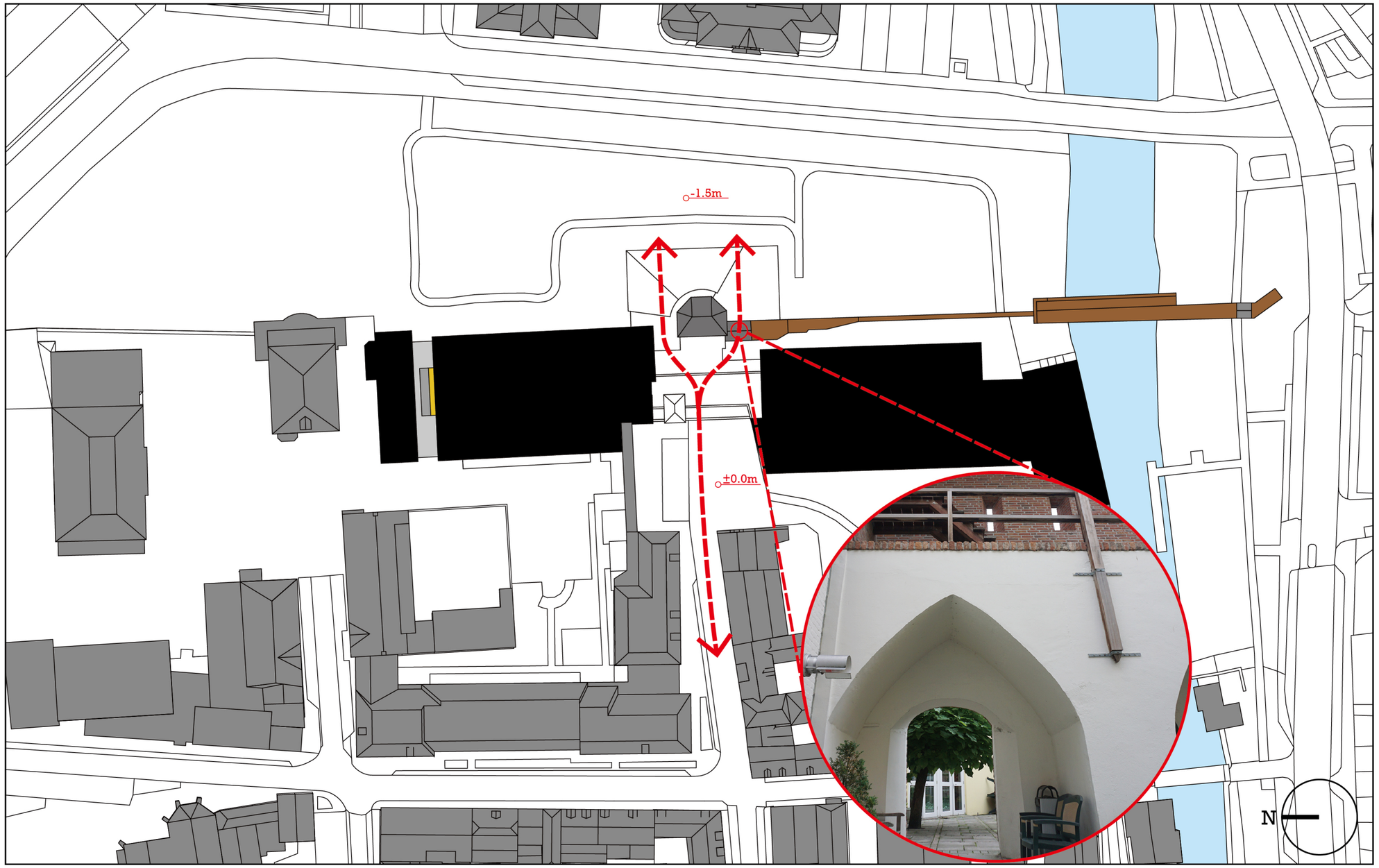
public square
axis
spatial connection
heritage axis

Starting point

Design
elaboration



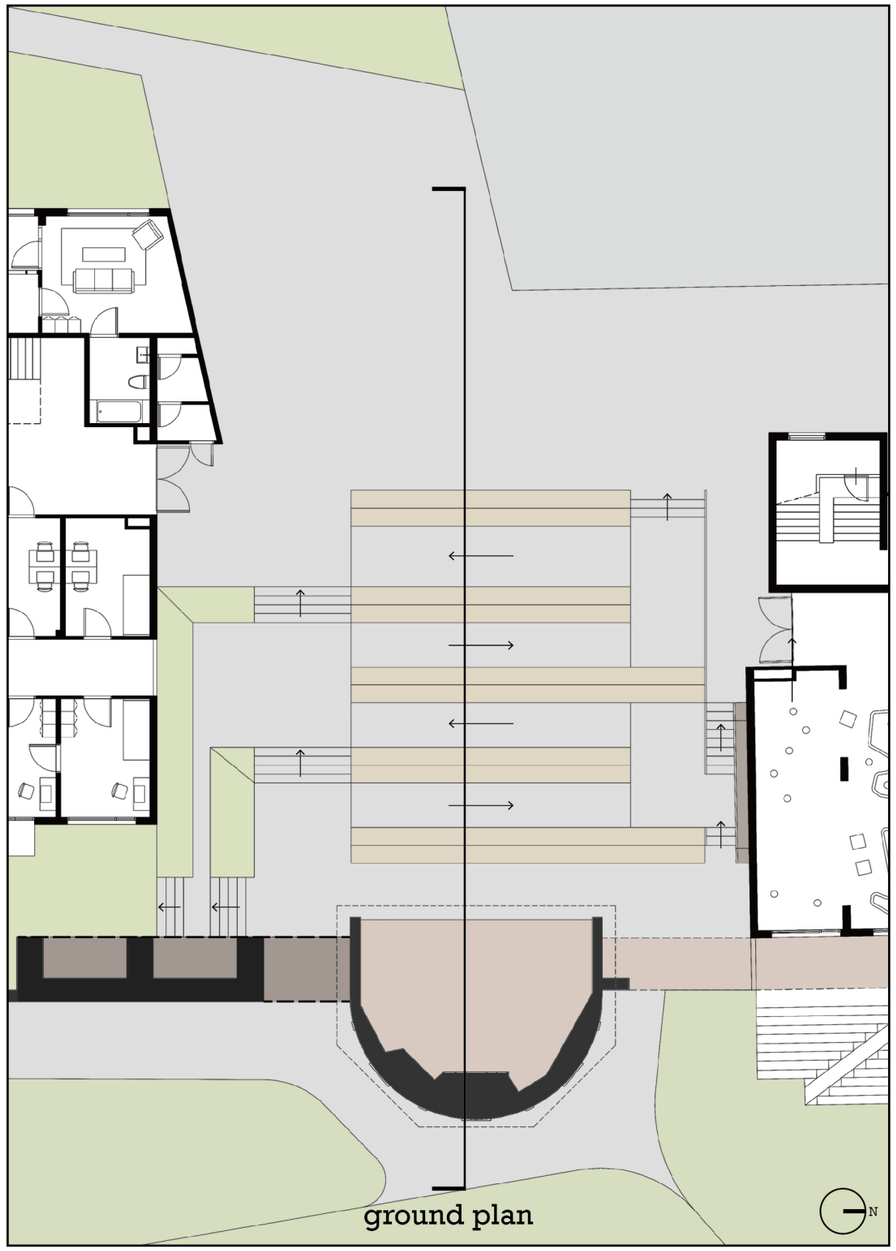
Current situation



Free the tower!



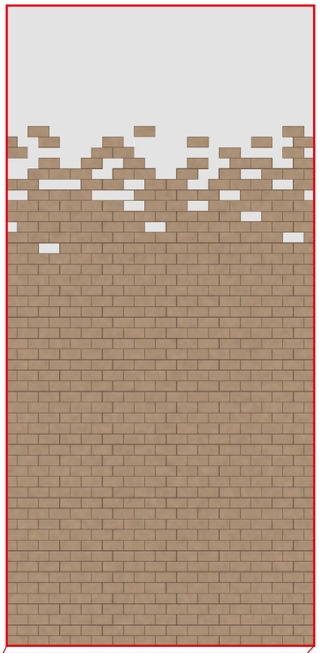
perspective section



ground plan

Sunken square



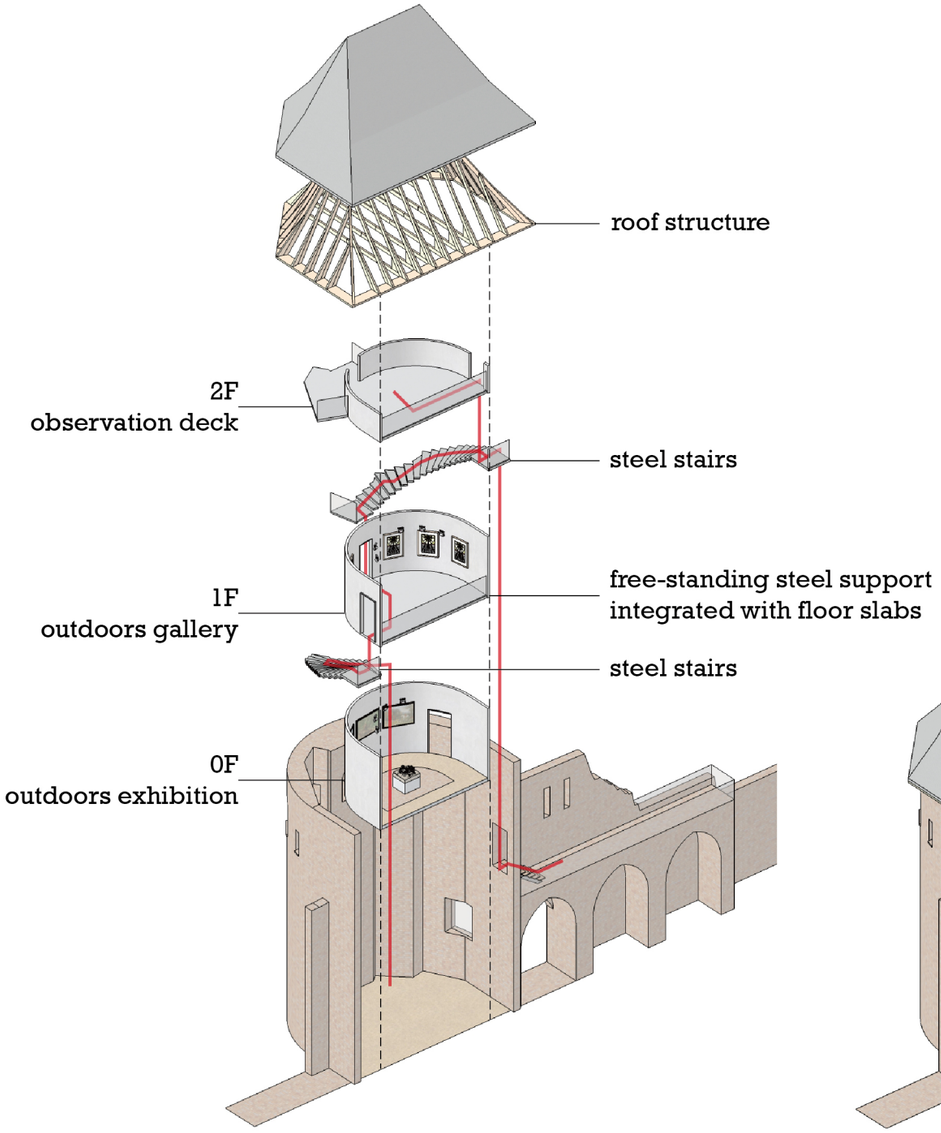


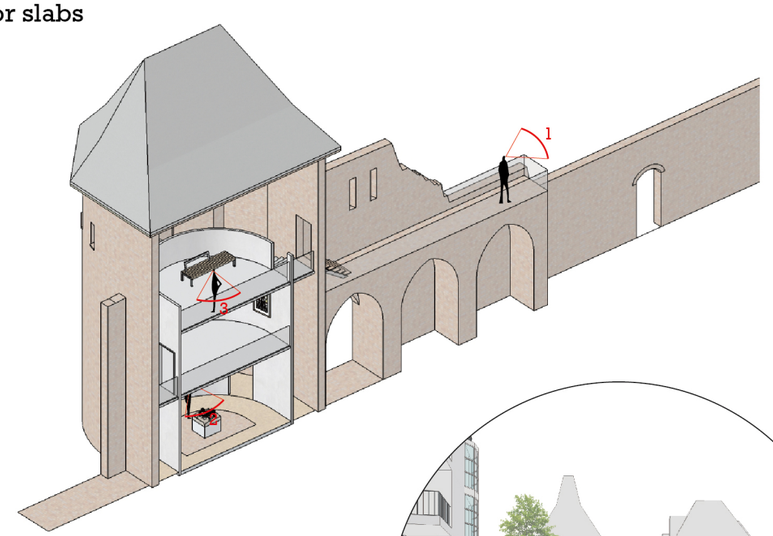




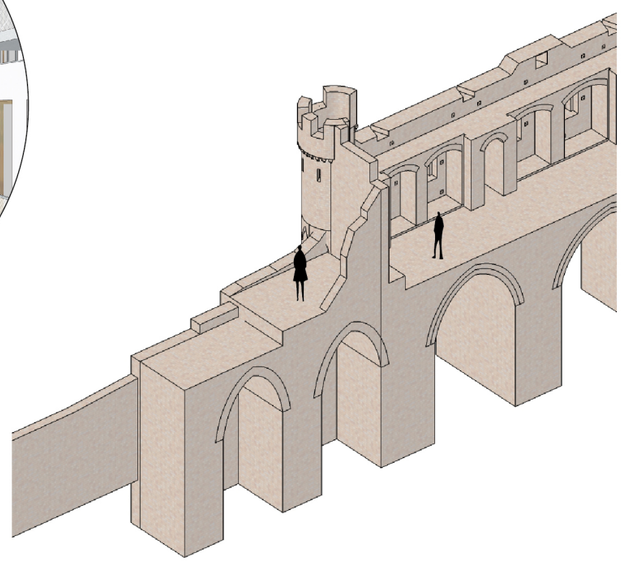
remained city wall
city wall red brick pavement
city wall red brick facade

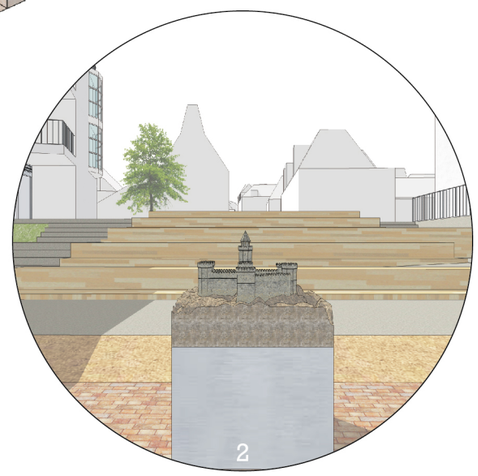
Continuation of the city wall

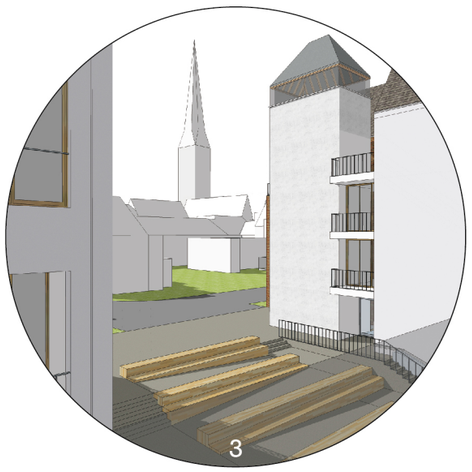








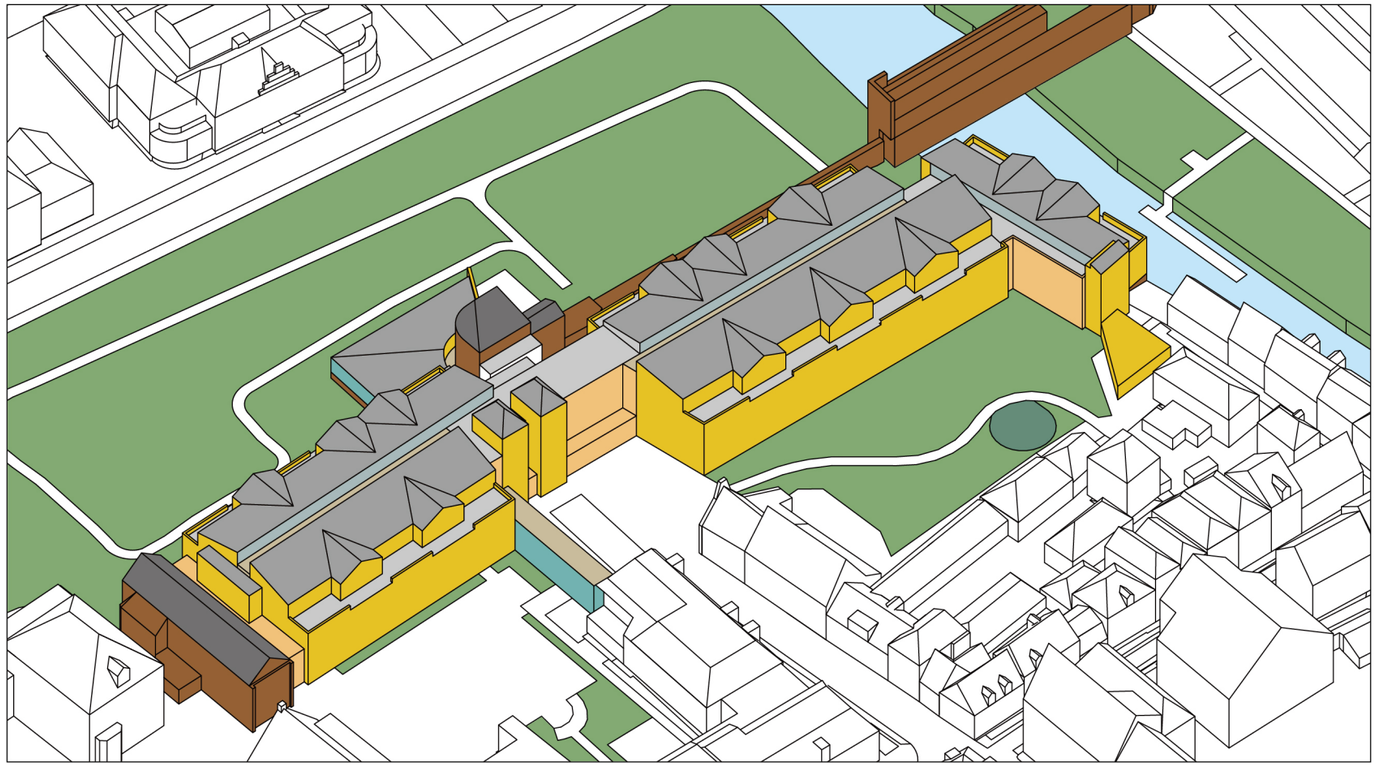




Intervention of the watch tower

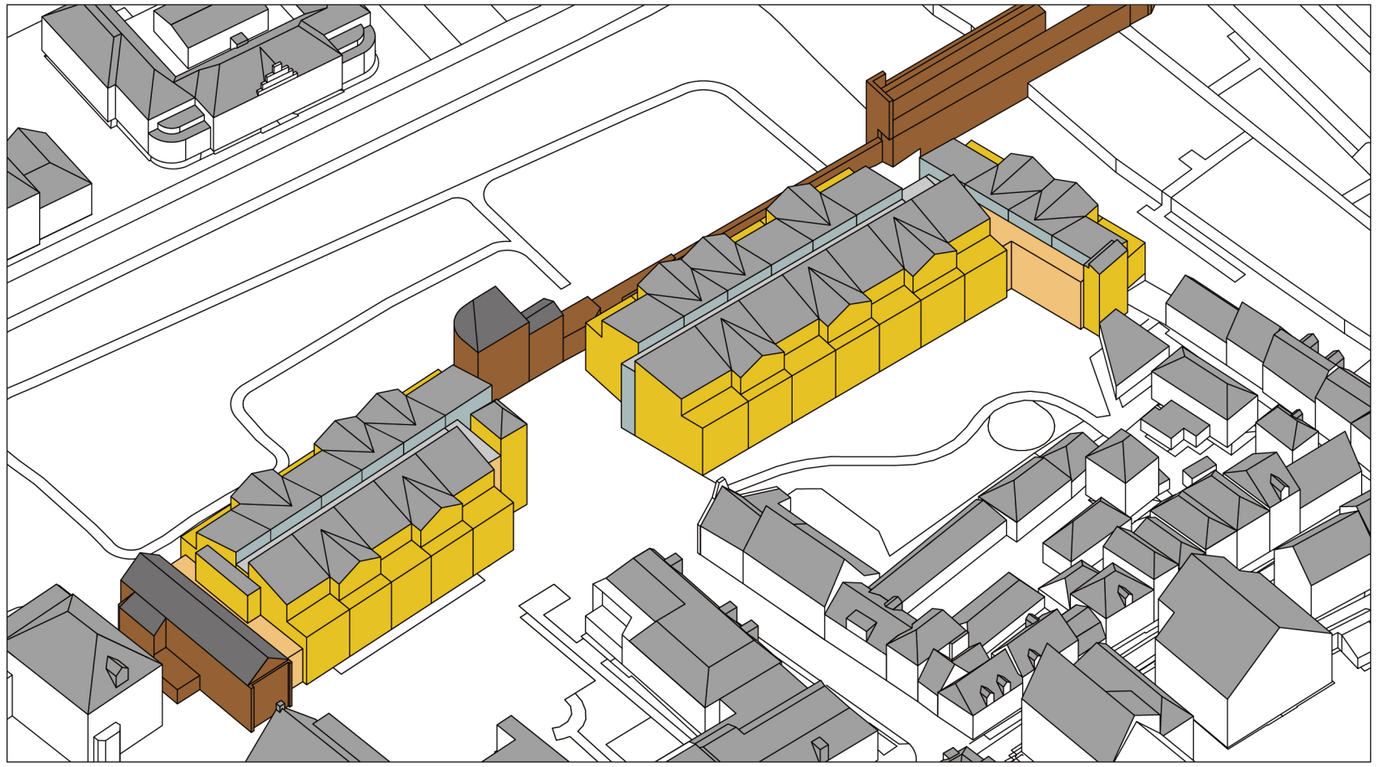


The site of public events at night



Current situation

The roof of St. Elisabeth main building was made up of lean-to roof, flat roof and dormer.



Units division

The facade and roof can be divided according to the orientation of units.

Consider the new roof shape to fit into the roof type of the neighbor buildings.

Transformation

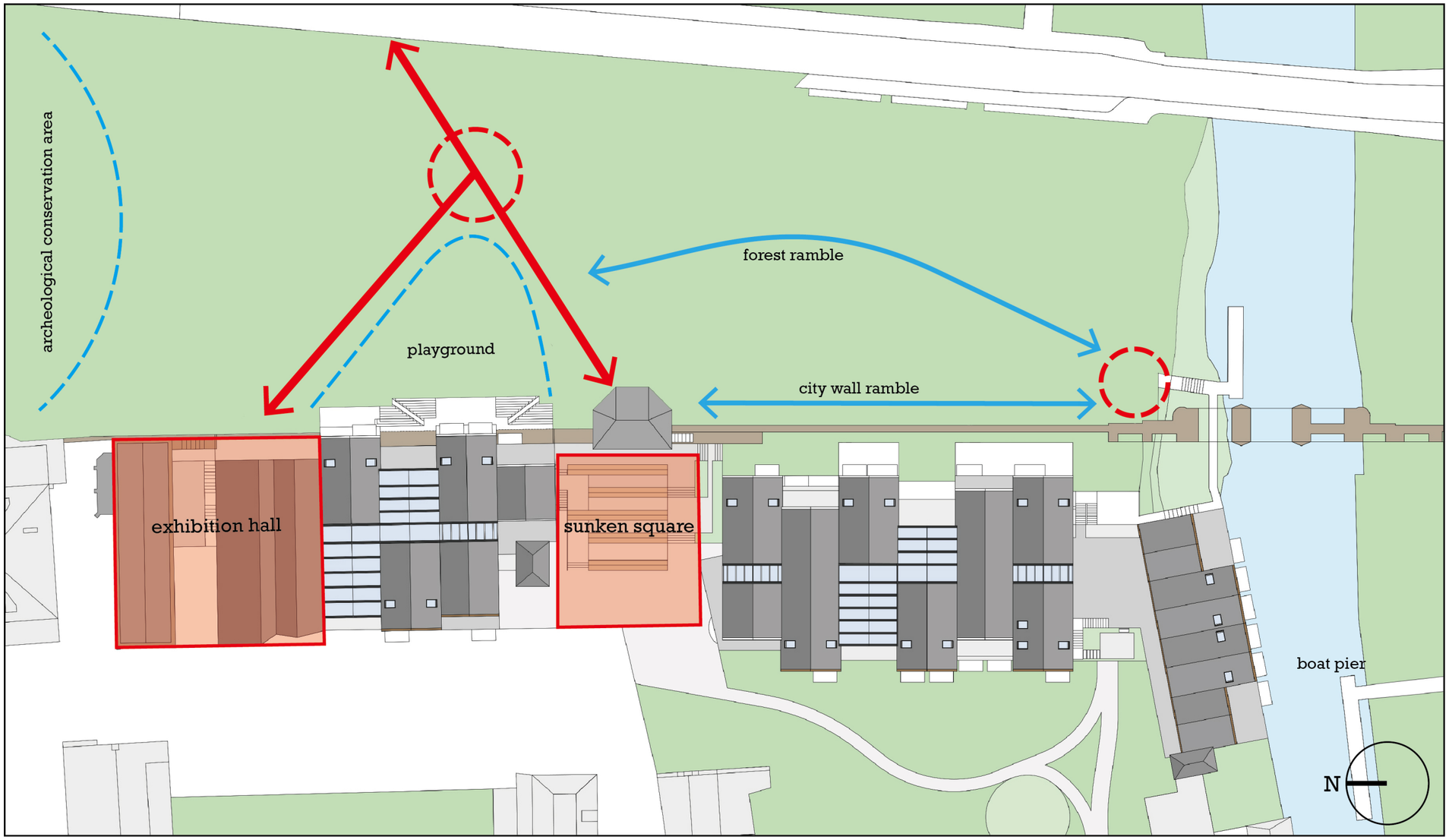


Slope roof adaption



Facade diversification

Transformation

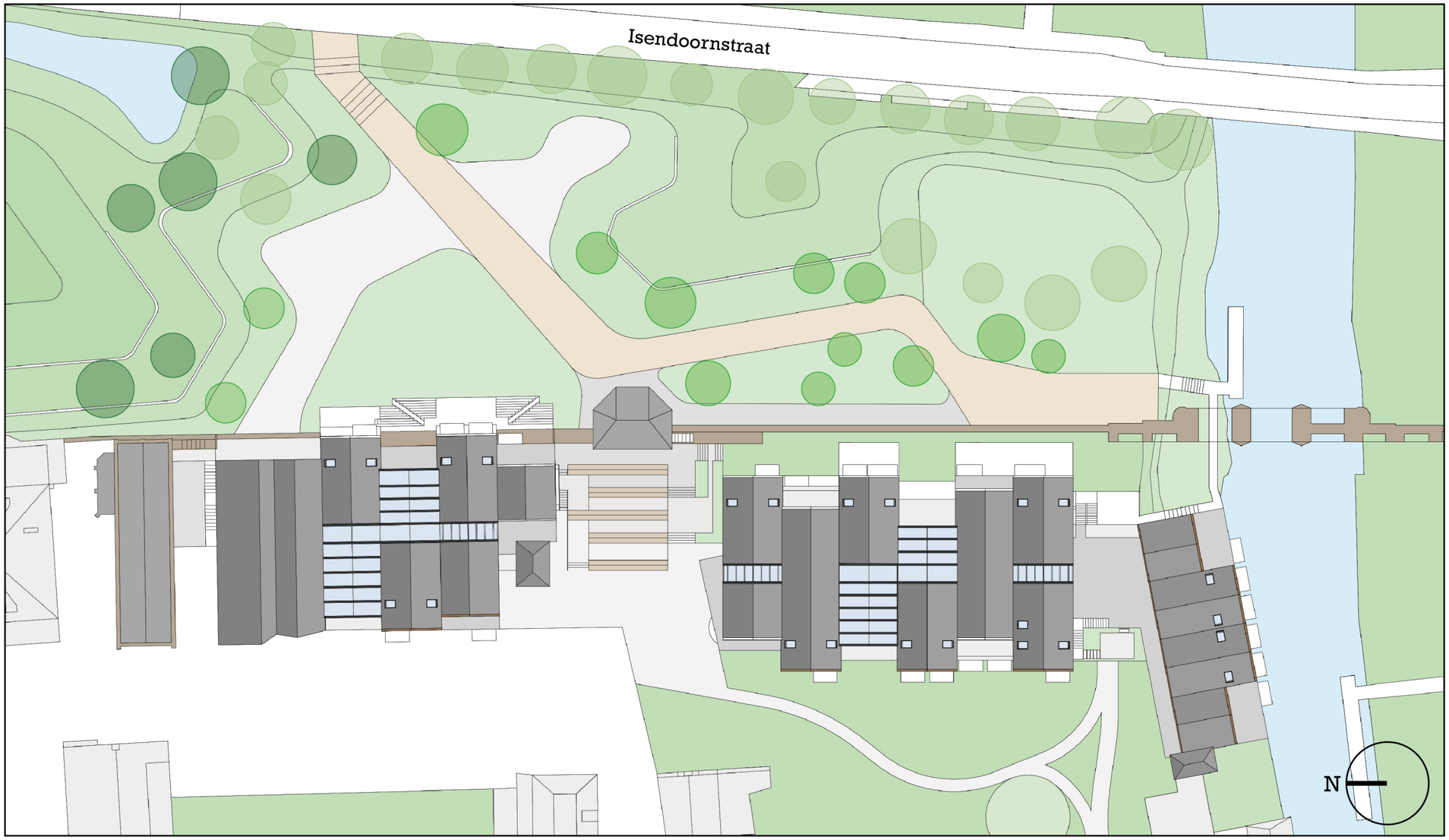


traffic route

rambling route

open field in the junction

Landscape organization



Common horse chestnut

Height: 20 - 25 (30) m
Crown: globular
Soil type: tolerant to hard surfaces, no asphalt
Wind resistance: moderate to good



River birch

Height: 10 - 15 m
Crown: round
Soil type: not too dry, no clay with a high pH
Wind resistance: very good



English oak

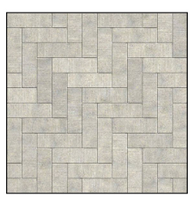
Height: 25 - 30 (40) m
Crown: round
Soil type: nutritious and moist
Wind resistance: good



Pavement



sand-gravel



grey brick tile

Landscape tree species

Lievevrouwestraat

Tengnagelshoek

Geweldigershoek

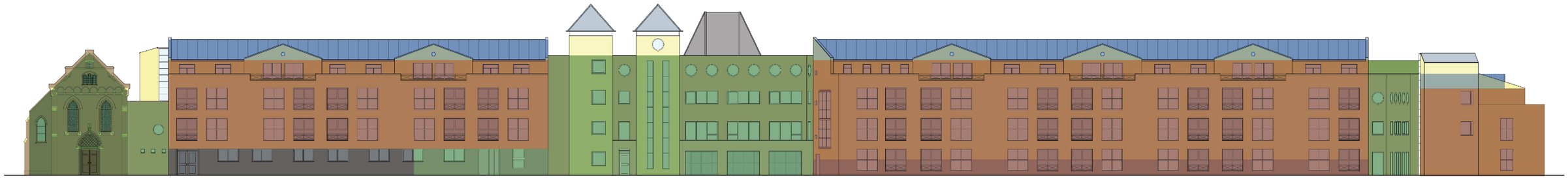
Halterstraat

Dieserstraat

Beekstraat

N

Masterplan



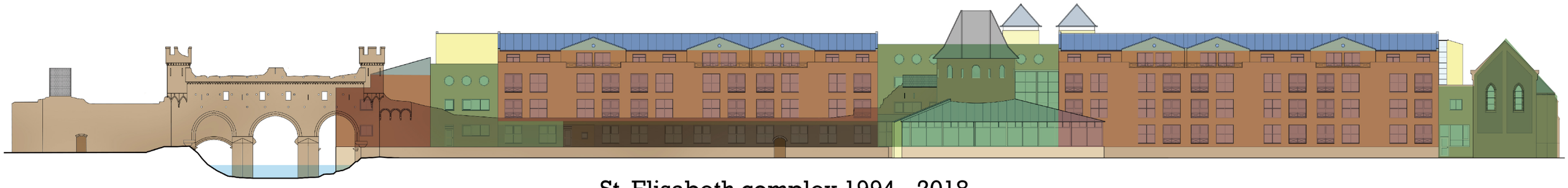
St. Elisabeth complex 1994 - 2018



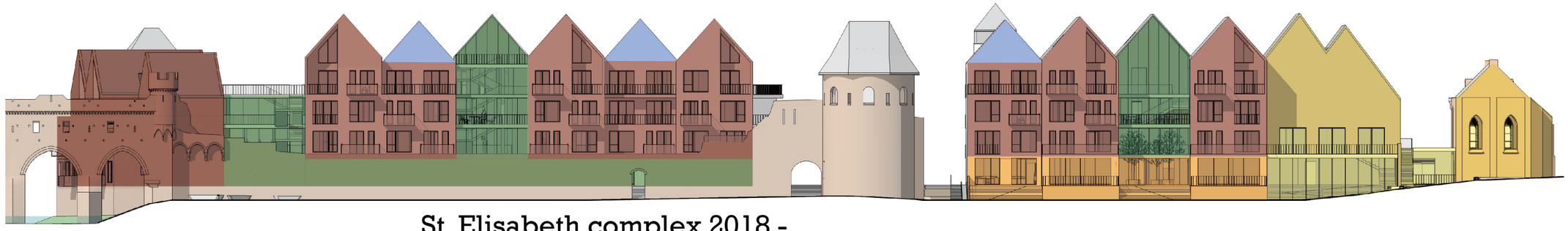
St. Elisabeth complex 2018 -

appartments
dwelling service
kindergarten
vacant
mechanical equipment
exihibition and recreation

Function allocation on west elevation



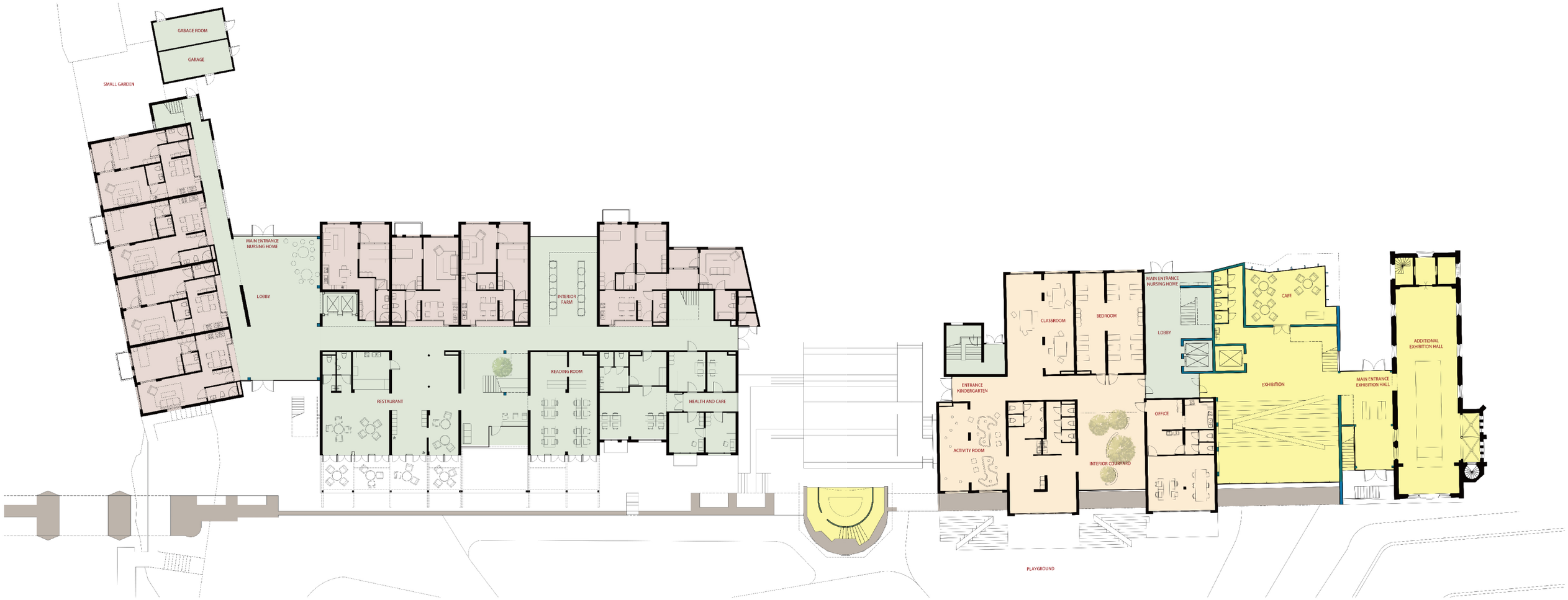
St. Elisabeth complex 1994 - 2018



St. Elisabeth complex 2018 -

appartments
dwelling service
kindergarten
vacant
mechanical equipment
exihibition and recreation

Function allocation on east elevation



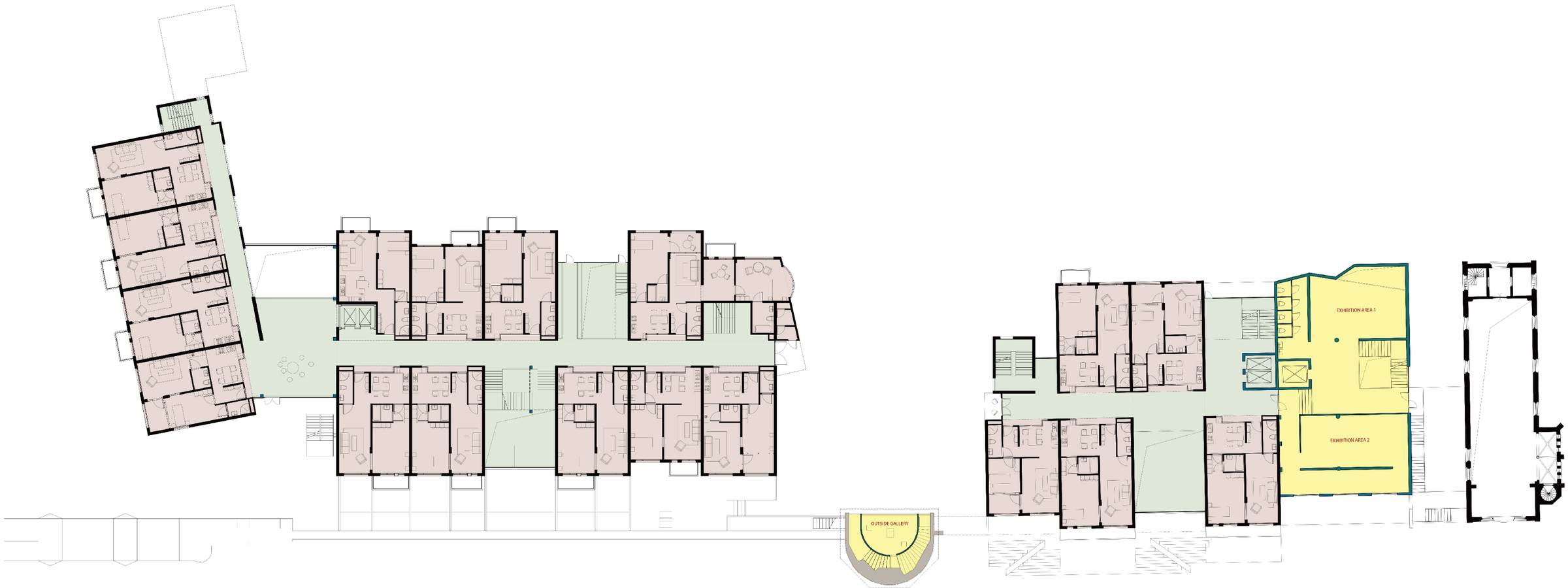
appartments
dwelling service
kindergarten

mechanical equipment
exihibition and recreation

current structure

additional structure

Function allocation on ground floor



appartments
dwelling service
kindergarten

mechanical equipment
exihibition and recreation

current structure
additional structure

Function allocation on first floor

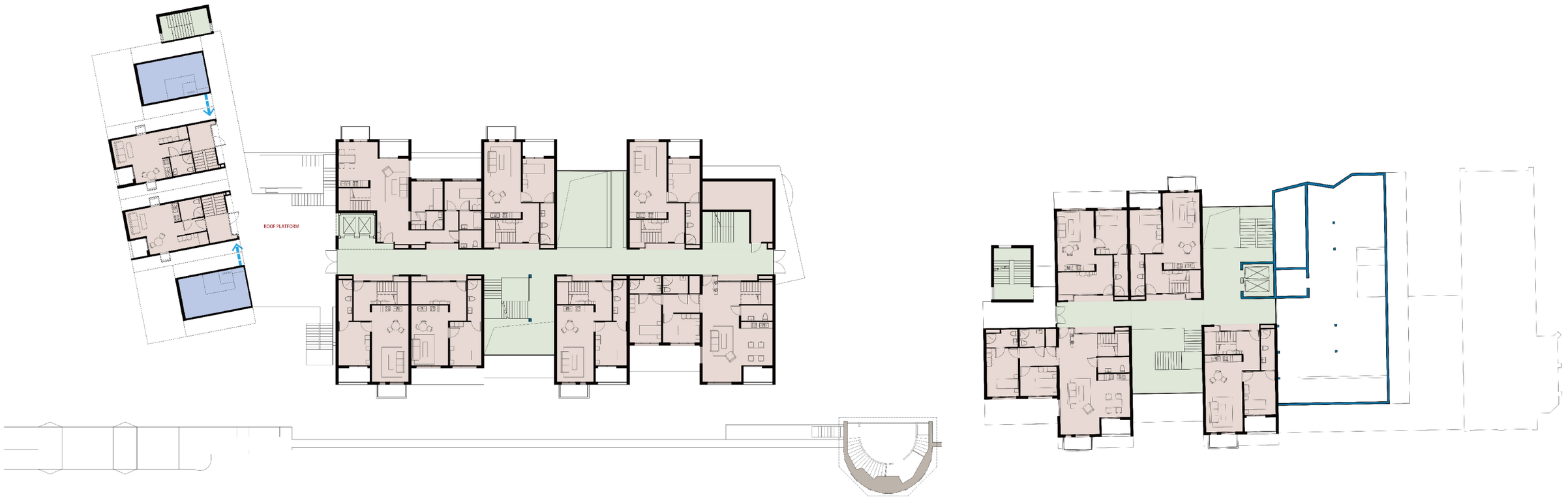




appartments
dwelling service
kindergarten
mechanical equipment
exihibition and recreation

current structure
additional structure

Function allocation on second floor



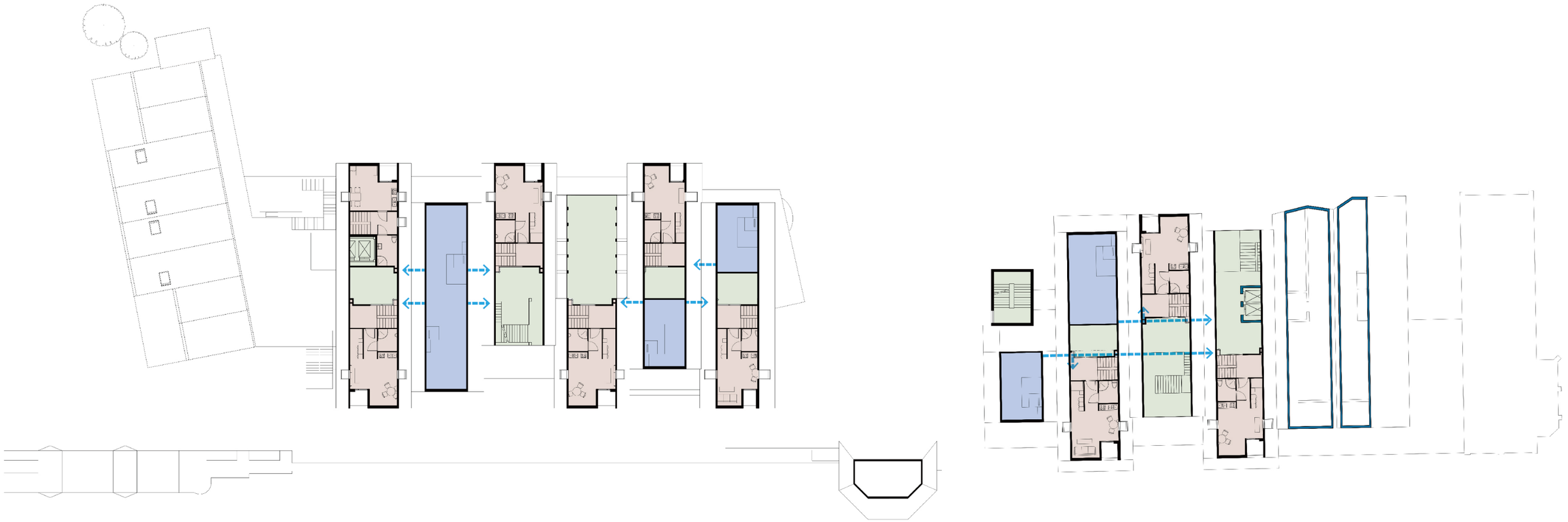
appartments
dwelling service
kindergarten

current structure

ventilating duct
mechanical equipment
exihibition and recreation

additional structure

Function allocation on third floor



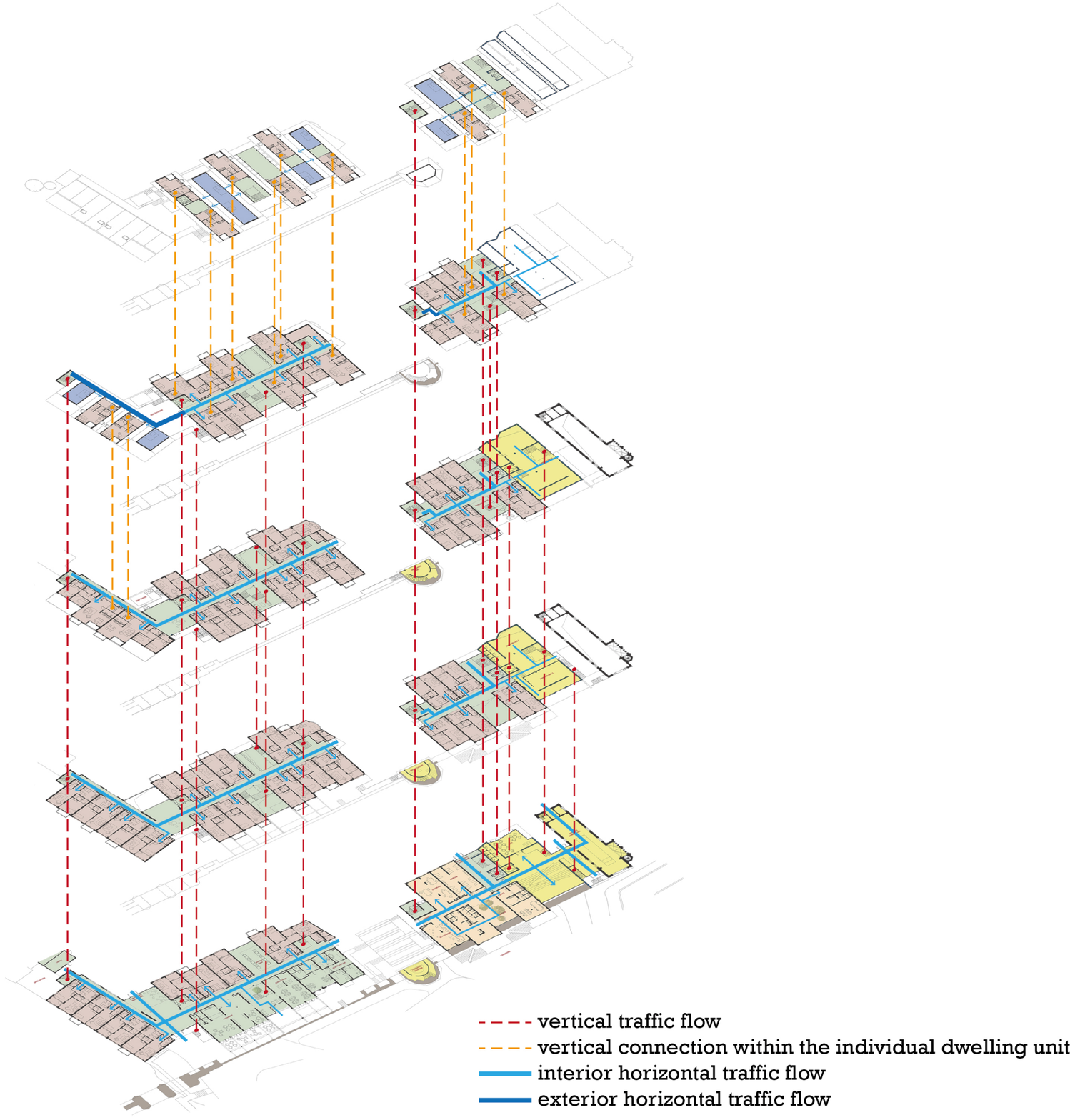
appartments
dwelling service
kindergarten

current structure

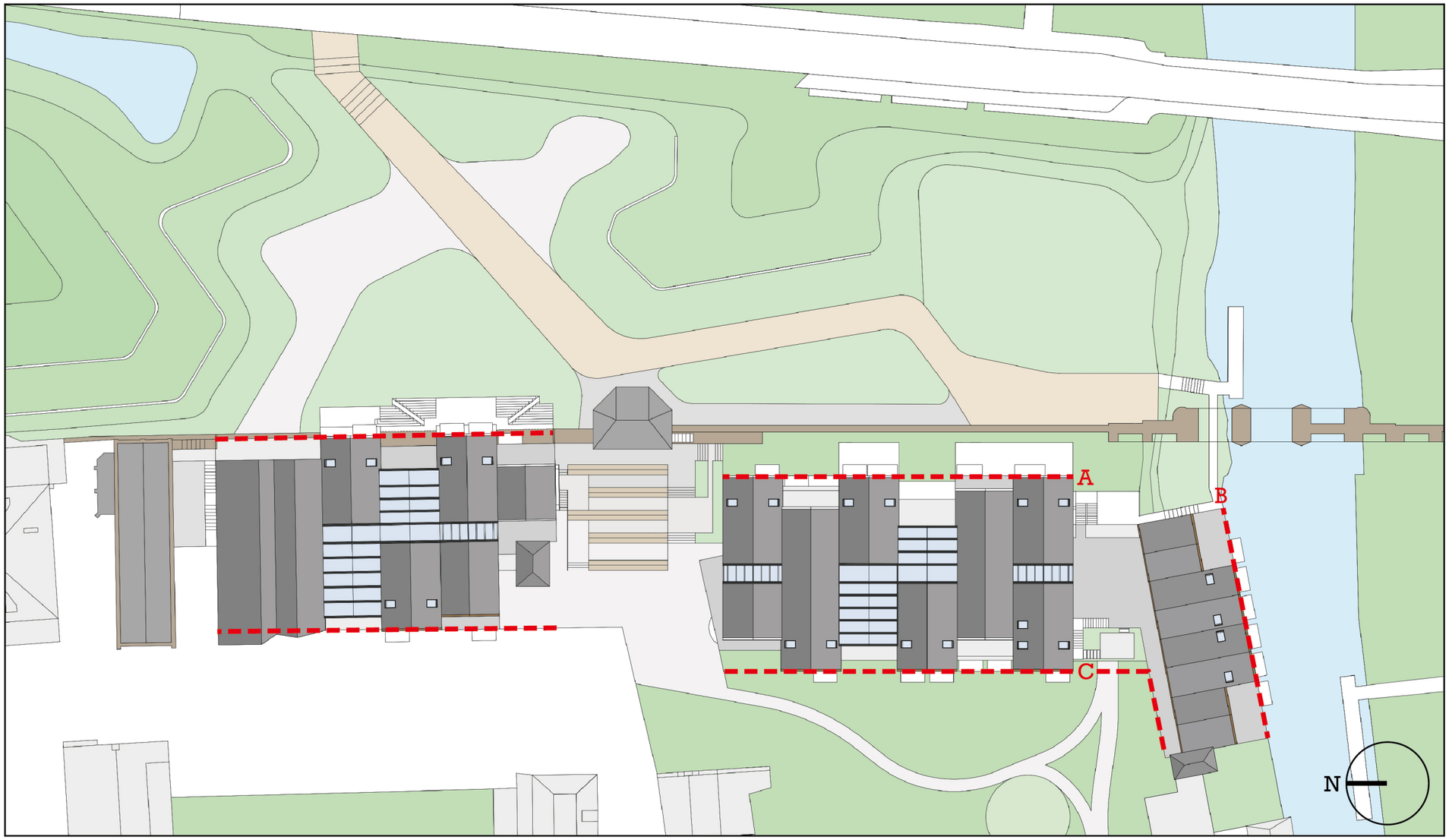
ventilating duct
mechanical equipment
exihibition and recreation

additional structure

Function allocation on attic floor



Circulation



Facade settlement



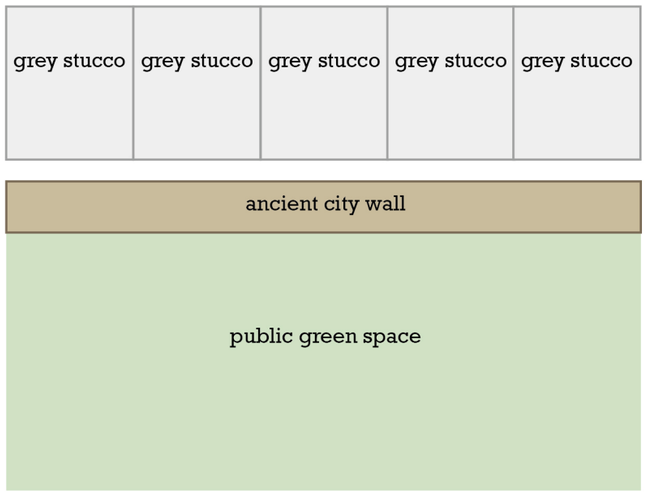
Onze Lieve Vrouwewal, Maastricht



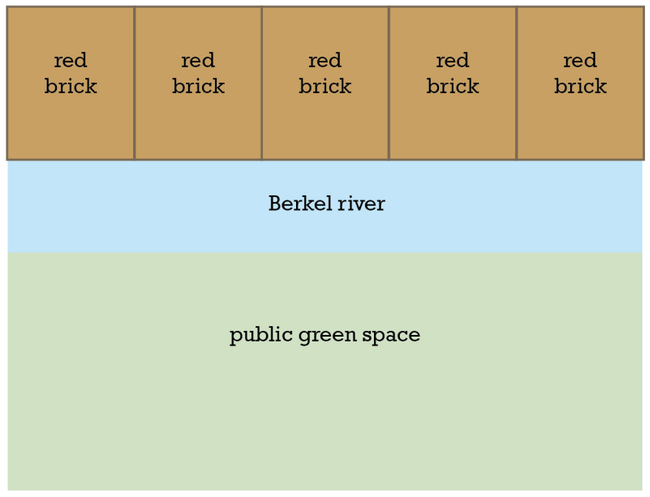
Rijkenhage, Zutphen



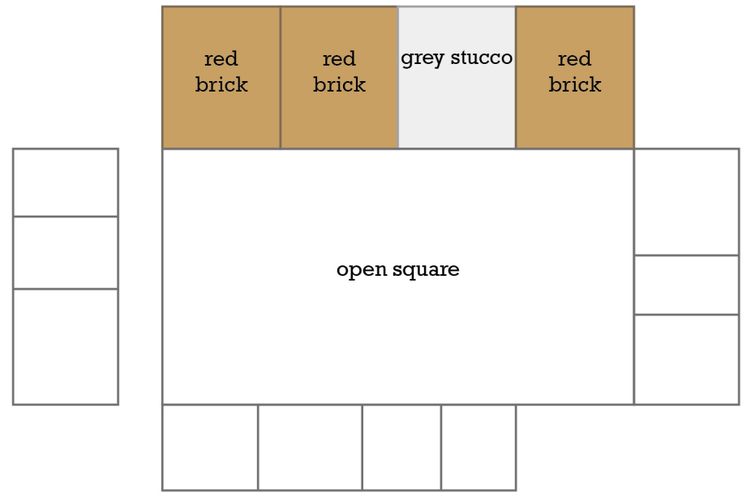
Broederenkerkplein, Zutphen



facade A



facade B



facade C

Elevation analogy

By using analogy, find the “appropriate” combination method of materiality on different facades facing to different spatial patterns.



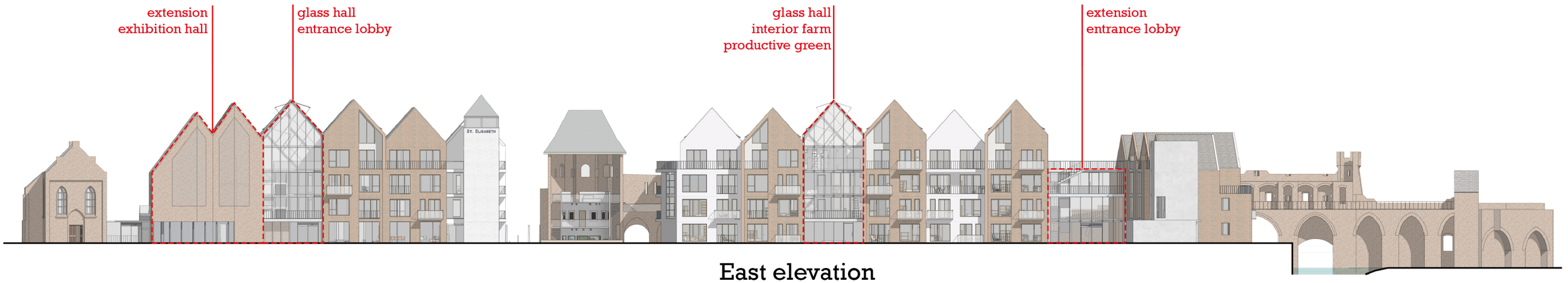
East elevation



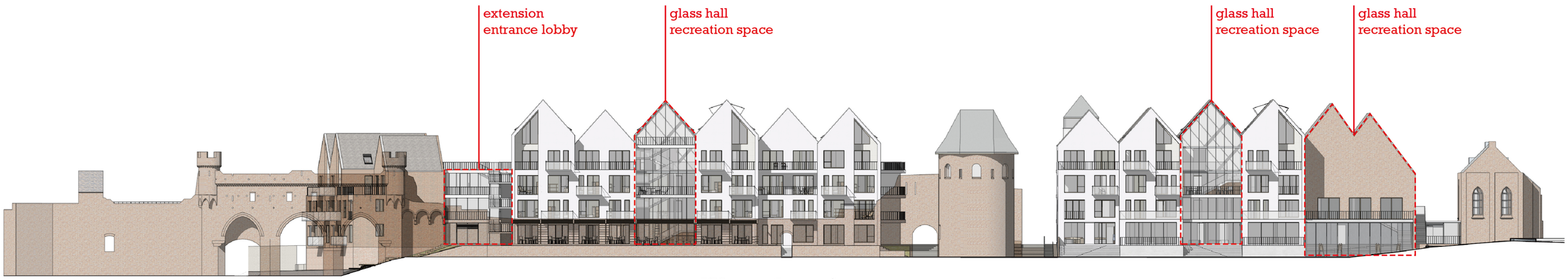
West elevation



South elevation



East elevation



West elevation

Interventions summary on elevation



entrance of the south wing



entrance of the north wing



Intervention - new entrances



recreation platforms



interior farm



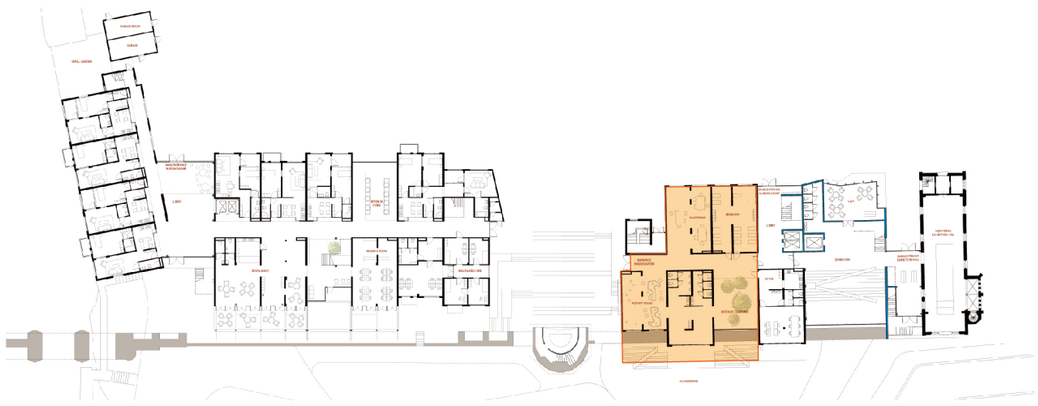
Intervention - glass hall



activity room and bedroom



activity platform



Intervention - kindergarten





Intervention - exhibition hall





Section A - A



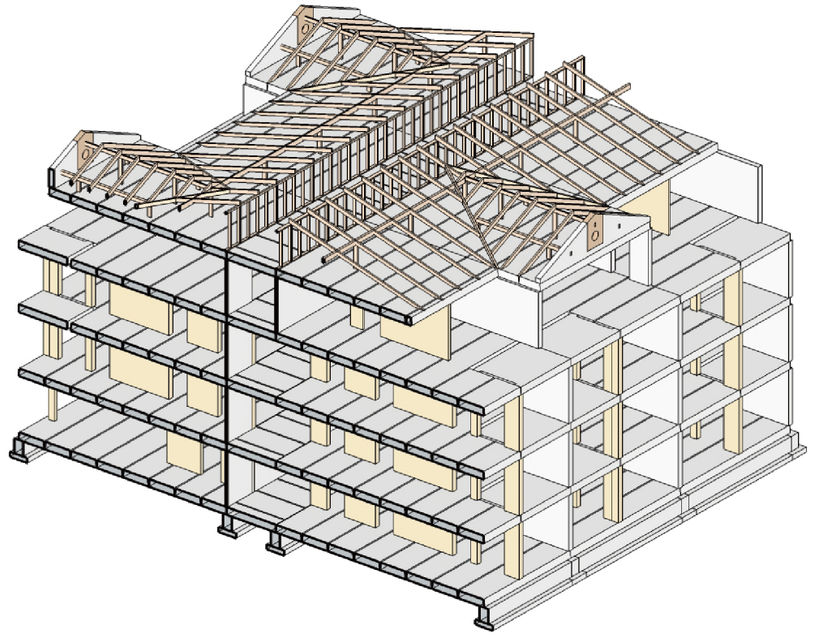


Section B - B

Design
building technology

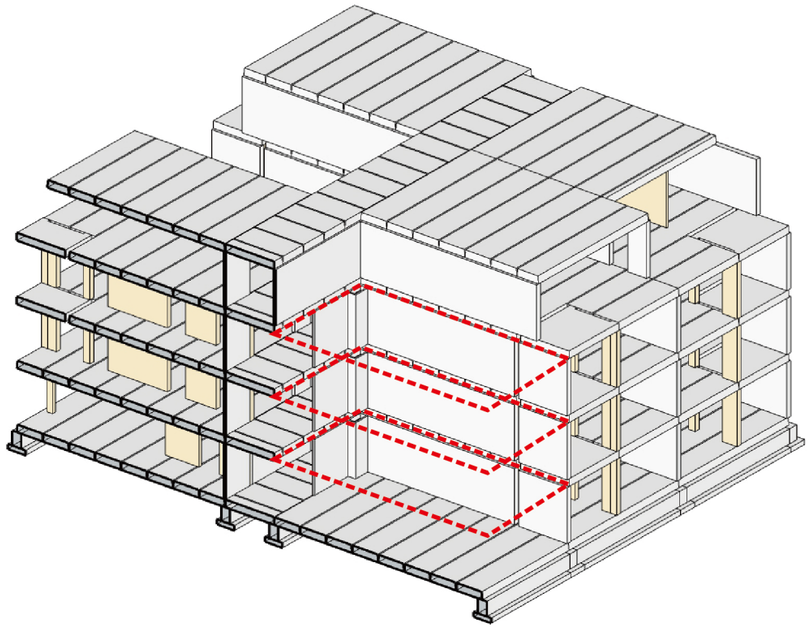


current appearance

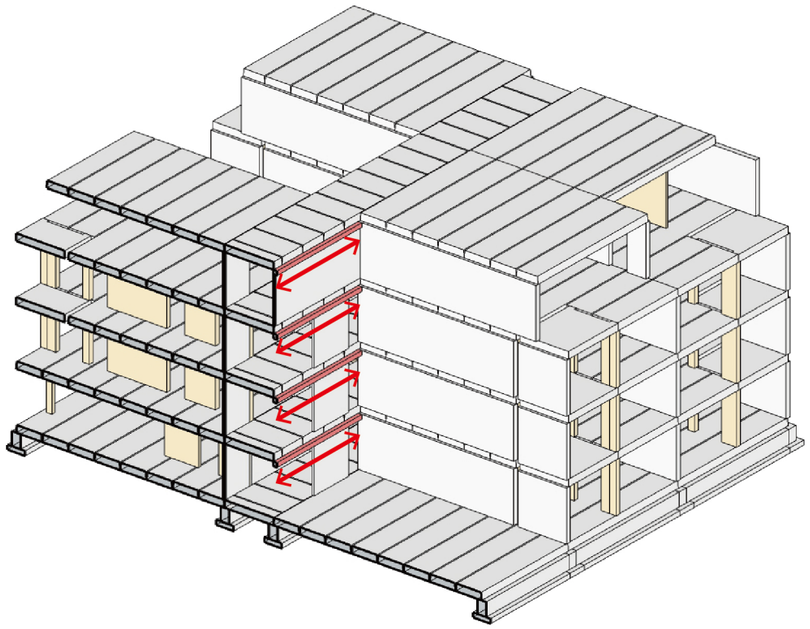


current structure

Construction process

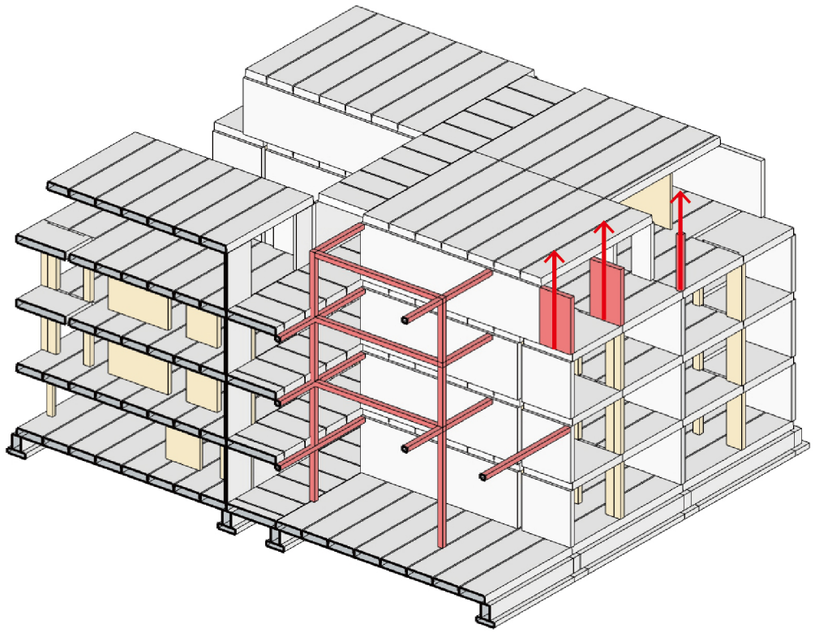


remove roof structure and existed floor slabs

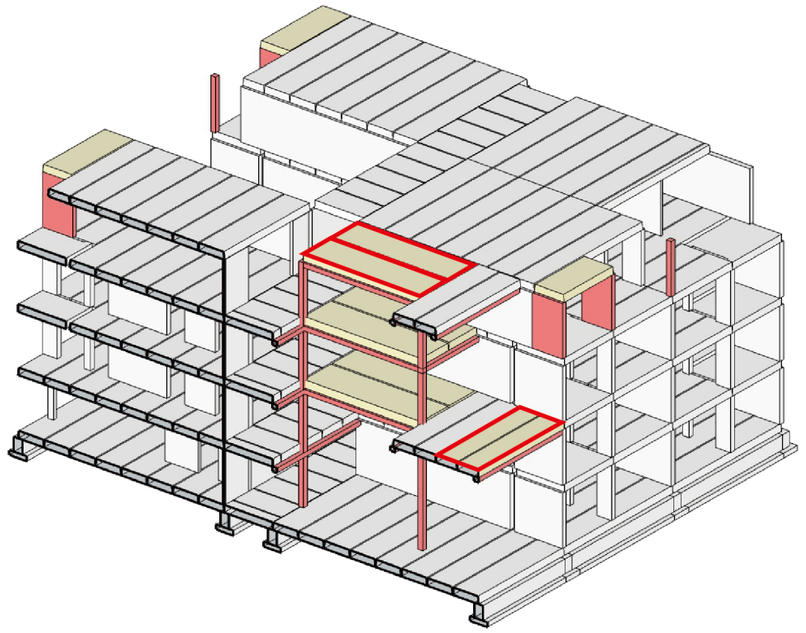


strengthen the beam along the corridor for preparing to remove the wall

Construction process

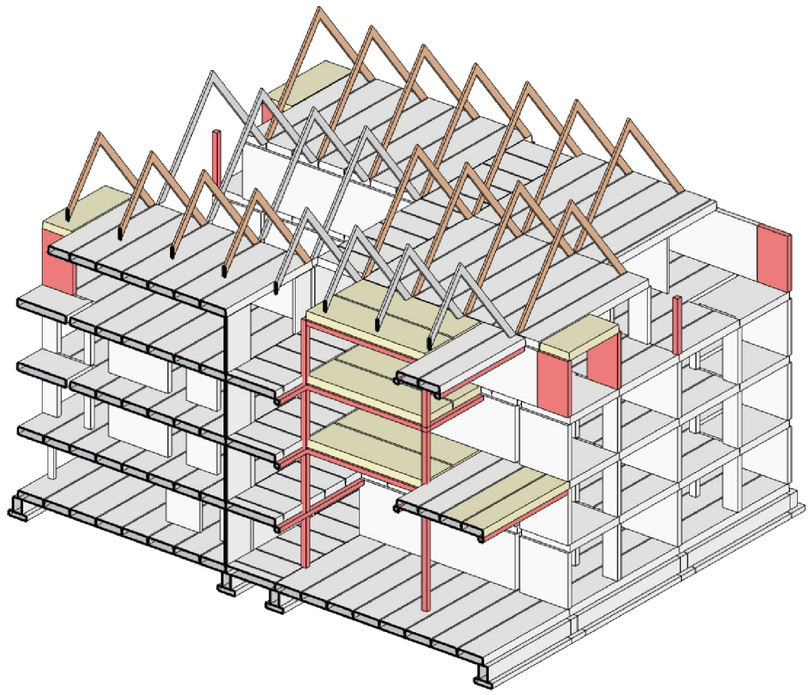


insert new steal structure and extend
existed load bearing wall

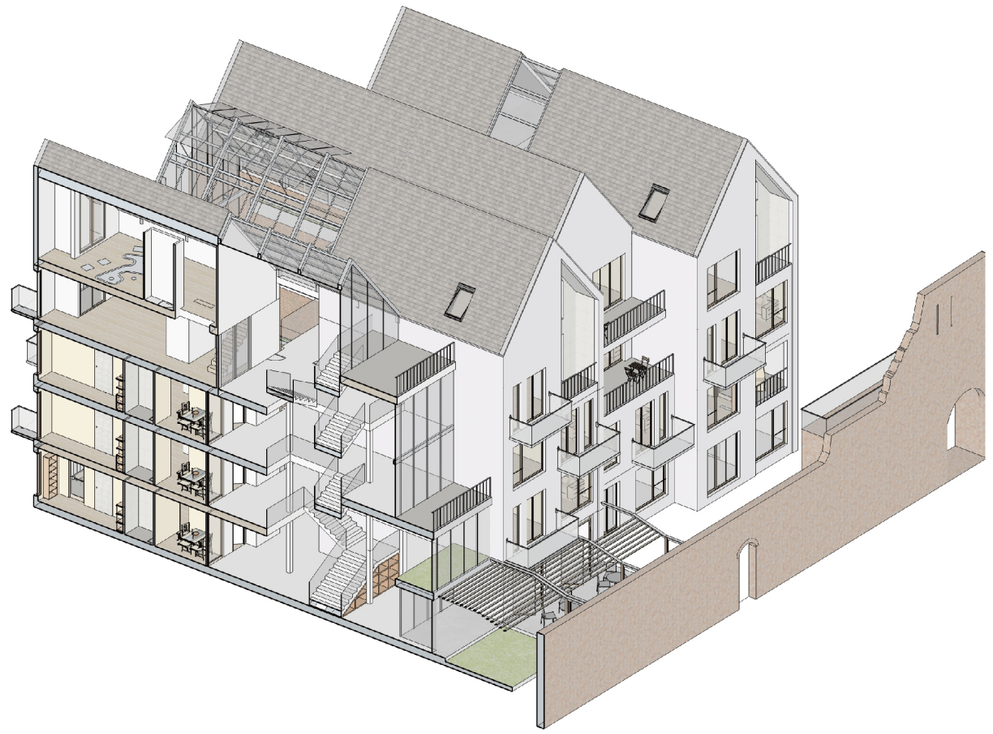


lay new lightweight floor slabs on the
steal structure

Construction process

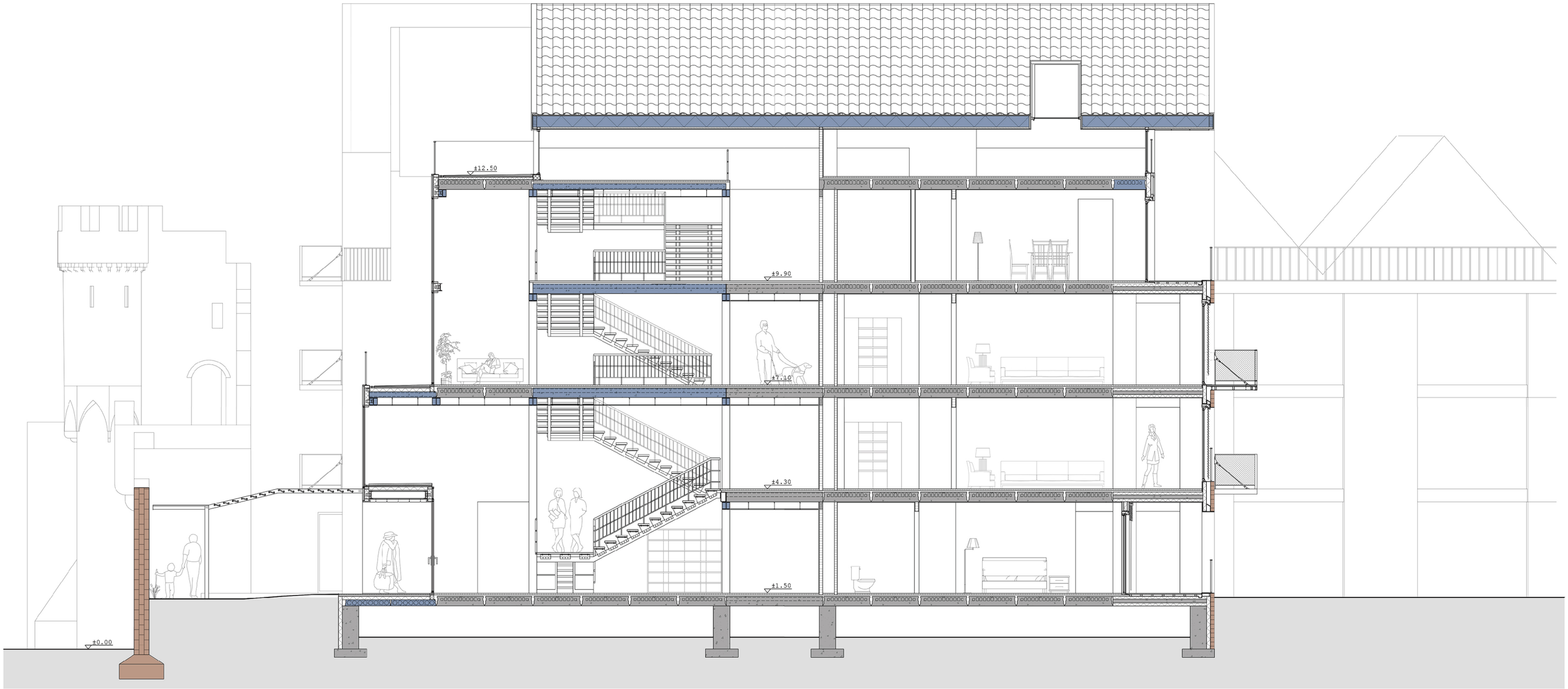


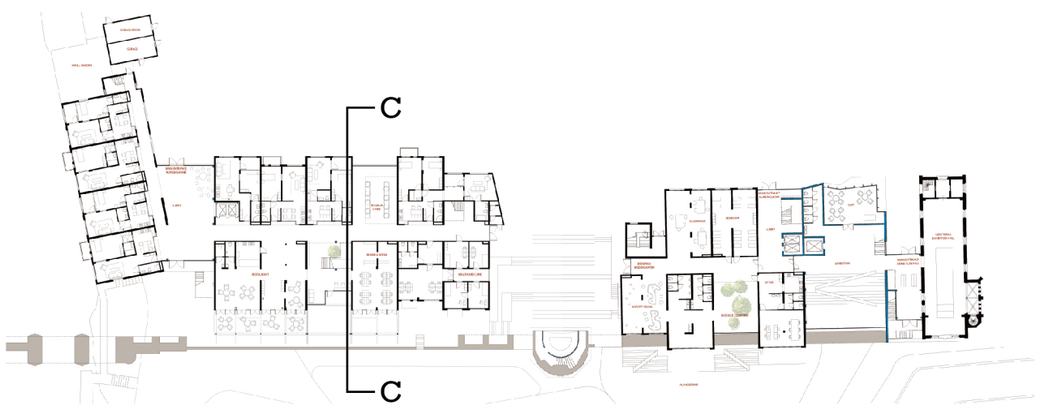
assembly new roof structure



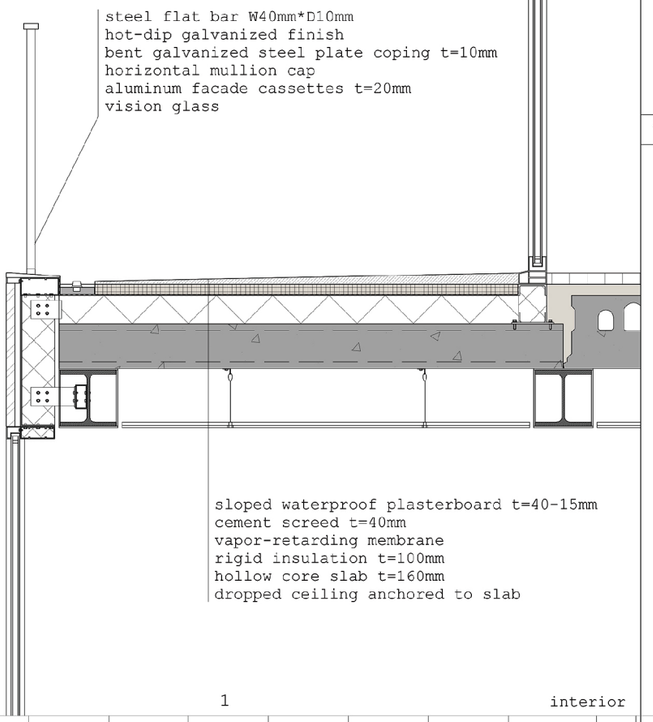
new appearance

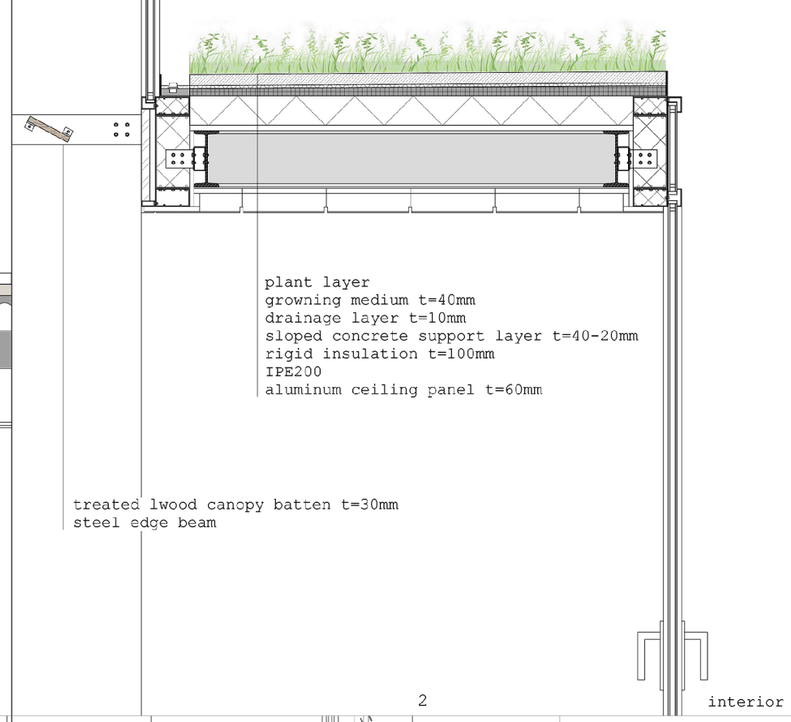
Construction complete

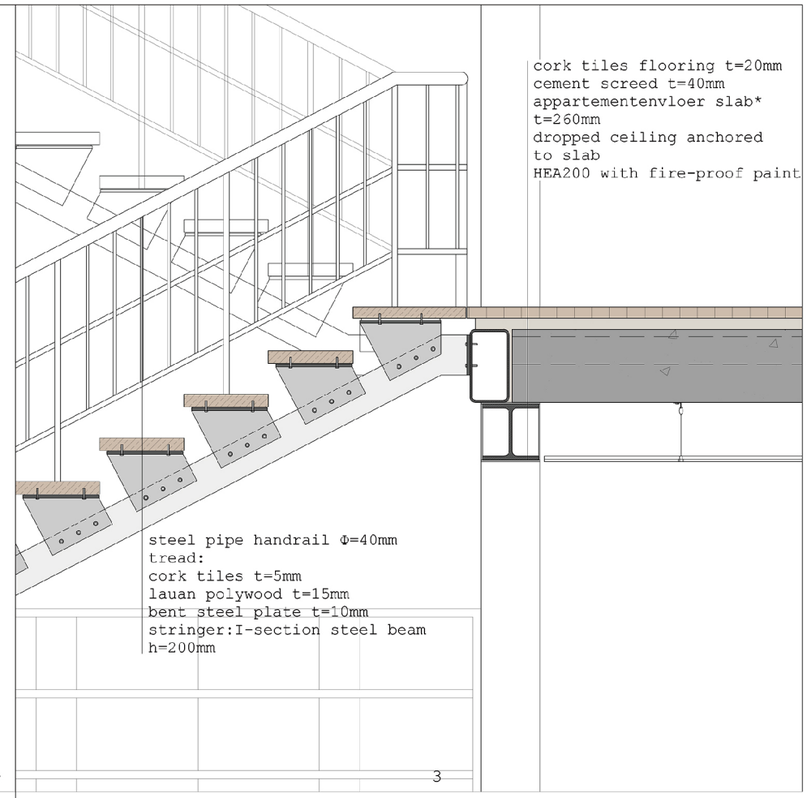


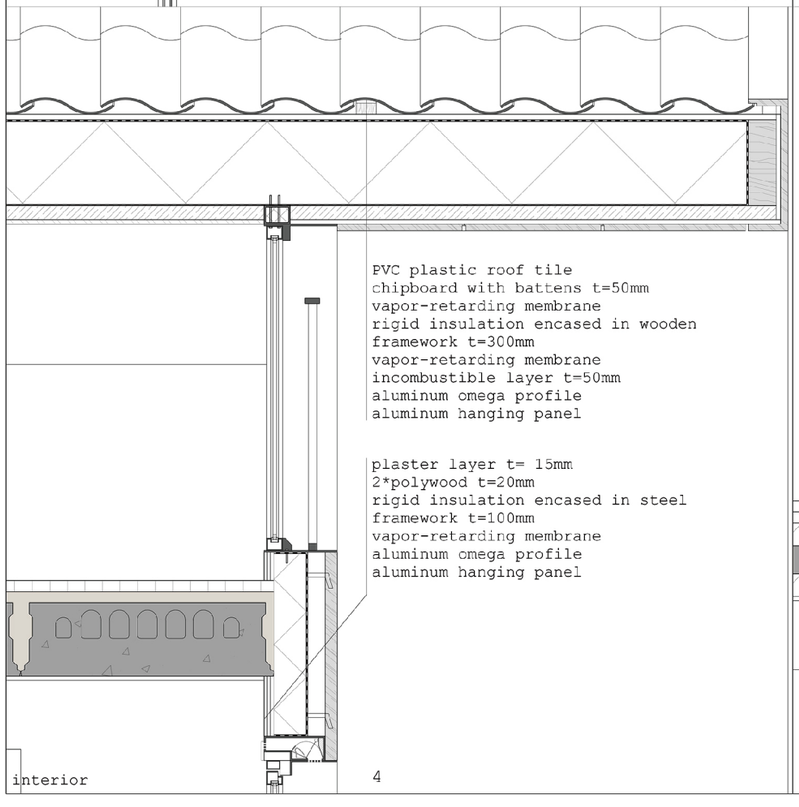


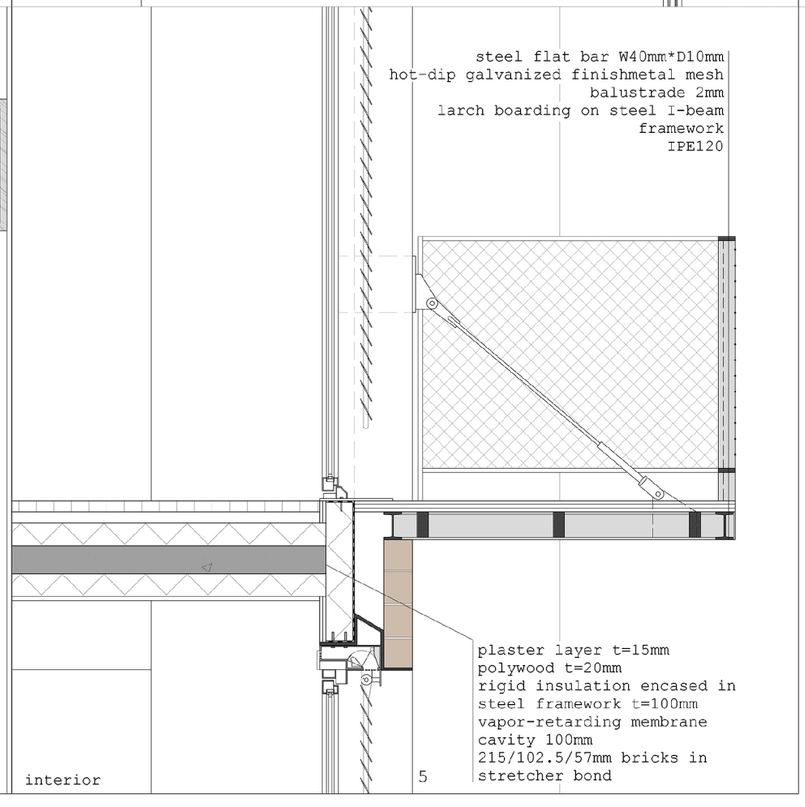
Detailed section C - C

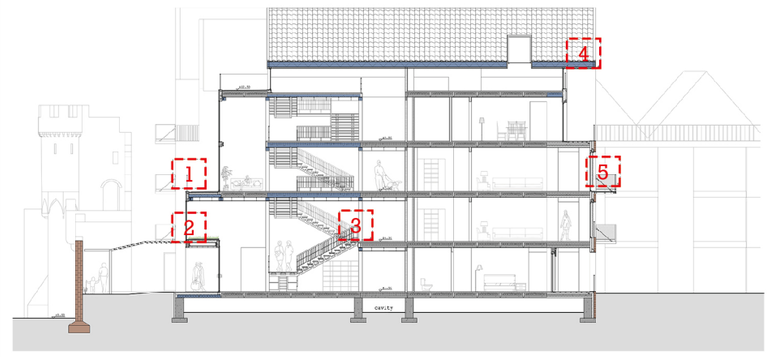

steel flat bar W40mm*D10mm
hot-dip galvanized finish
bent galvanized steel plate coping t=10mm
horizontal mullion cap
aluminum facade cassettes t=20mm
vision glass
sloped waterproof plasterboard t=40-15mm
cement screed t=40mm
vapor-retarding membrane
rigid insulation t=100mm
hollow core slab t=160mm
dropped ceiling anchored to slab
1
interior


plant layer
growning medium t=40mm
drainage layer t=10mm
sloped concrete support layer t=40-20mm
rigid insulation t=100mm
IPE200
aluminum ceiling panel t=60mm
treated lwood canopy batten t=30mm
steel edge beam
2
interior

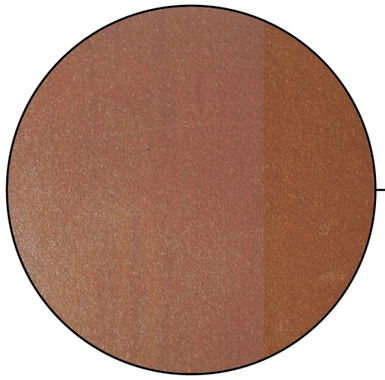

cork tiles flooring t=20mm
cement screed t=40mm
appartementenvloer slab*
t=260mm
dropped ceiling anchored
to slab
HEA200 with fire-proof paint
steel pipe handrail Φ=40mm
tread:
cork tiles t=5mm
lauan polywood t=15mm
bent steel plate t=10mm
stringer:I-section steel beam
h=200mm
3


PVC plastic roof tile
chipboard with battens t=50mm
vapor-retarding membrane
rigid insulation encased in wooden
framework t=300mm
vapor-retarding membrane
incombustible layer t=50mm
aluminum omega profile
aluminum hanging panel
plaster layer t= 15mm
2*polywood t=20mm
rigid insulation encased in steel
framework t=100mm
vapor-retarding membrane
aluminum omega profile
aluminum hanging panel
interior
4


steel flat bar W40mm*D10mm
hot-dip galvanized finishmetal mesh
balustrade 2mm
larch boarding on steel I-beam
framework
IPE120
plaster layer t=15mm
polywood t=20mm
rigid insulation encased in
steel framework t=100mm
vapor-retarding membrane
cavity 100mm
215/102.5/57mm bricks in
stretcher bond
interior
5


1
2
3
4
5

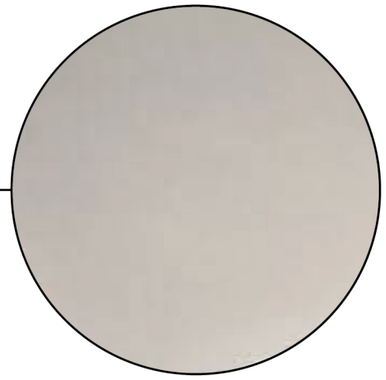
Details



weathering steel

red brick





aluminium panel



stucco

Section of facade

ground floor
interior

corten steel facade cassettes
aluminum omega profile t=30mm
vapor-retarding membrane
batt insulation t=60mm
sandlime brick wall* t=240mm
batt insulation t=60mm
vapor-retarding membrane
plaster board t=15mm

polywood t=20mm
rigid insulation encased in steel framework
t=100mm
vapor-retarding membrane
cavity 100mm
215/102.5/57mm bricks in stretcher bond

6

Attic
interior

PVC plastic roof tile
chipboard with battens t=50mm
vapor-retarding membrane
rigid insulation encased in wooden
framework t=300mm
vapor-retarding membrane
incombustible layer t=50mm
polywood t=25mm

8

third floor
interior

plaster board t=15mm
batt insulation encased t=60mm
sandlime brick wall t=240mm
vapor-retarding membrane
metal support with cavity t=70mm
aluminum omega profile with cavity t=70mm
aluminum hanging panel

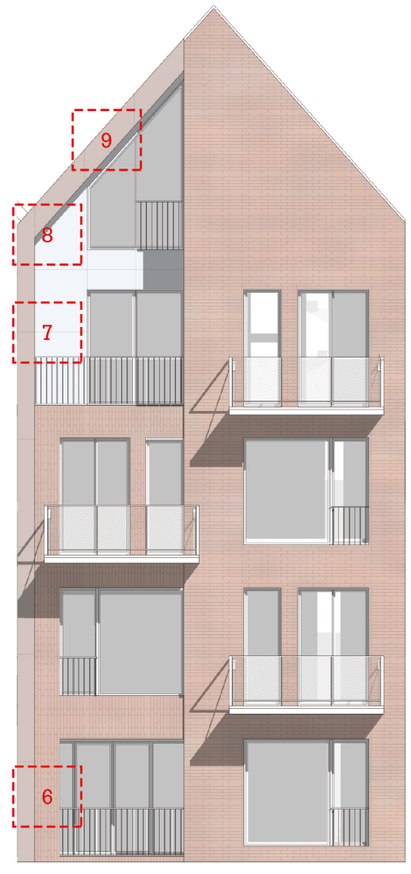
corten steel facade cassettes
aluminum omega profile
vapor-retarding membrane
batt insulation t=60mm
sandlime brick wall t=240mm
batt insulation t=60mm
vapor-retarding membrane
aluminum omega profile
aluminum hanging panel

7

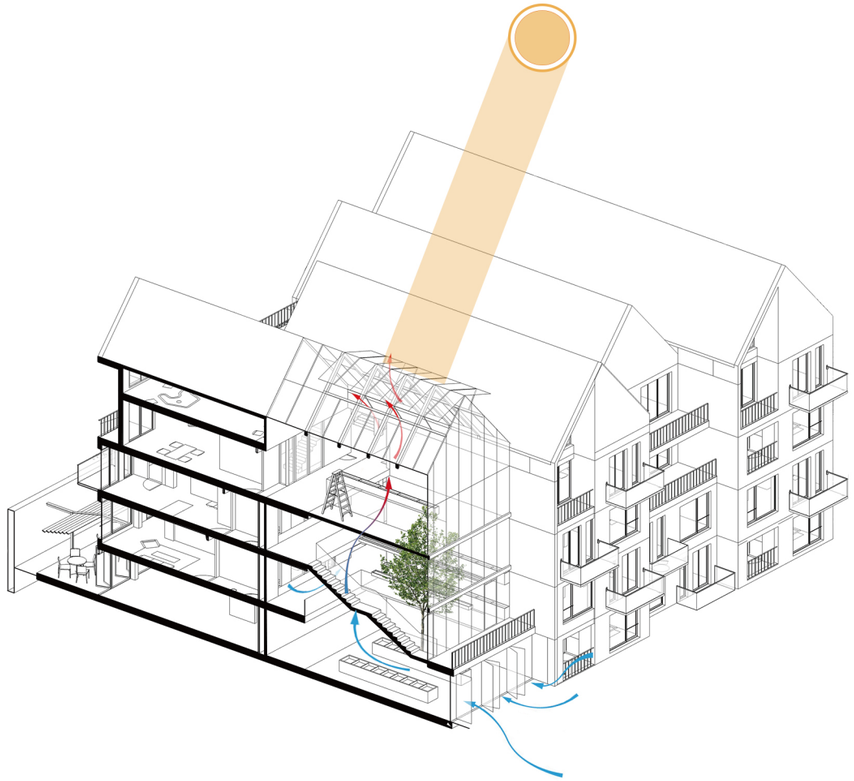
GMS channel
HEA200
corten steel facade cassettes
aluminum omega profile
vapor-retarding membrane
batt insulation t=60mm
sandlime brick wall t=240mm
batt insulation t=60mm
vapor-retarding membrane
aluminum omega profile
aluminum hanging panel

PVC plastic roof tile
chipboard with battens t=50mm
vapor-retarding membrane
rigid insulation encased in wooden
framework t=300mm
vapor-retarding membrane
incombustible layer t=50mm
polywood t=25mm

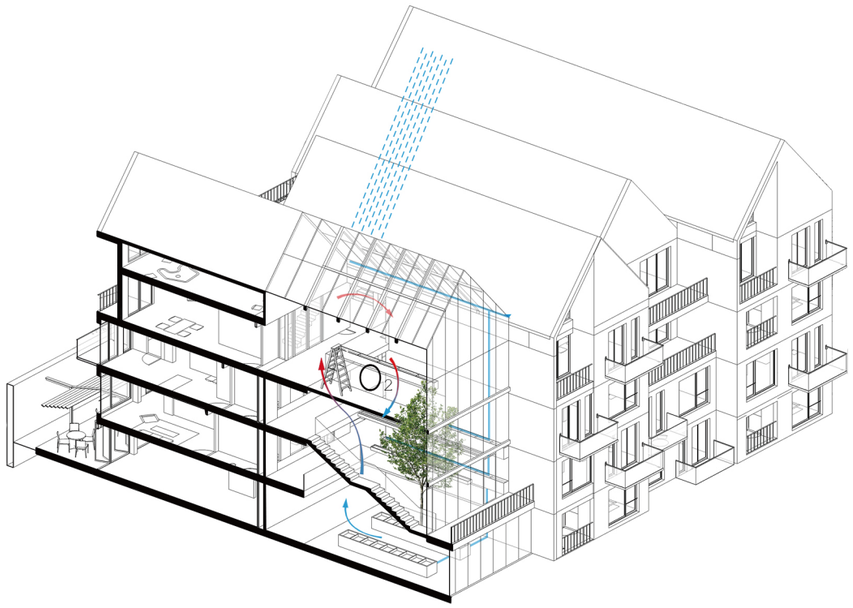
9



Details



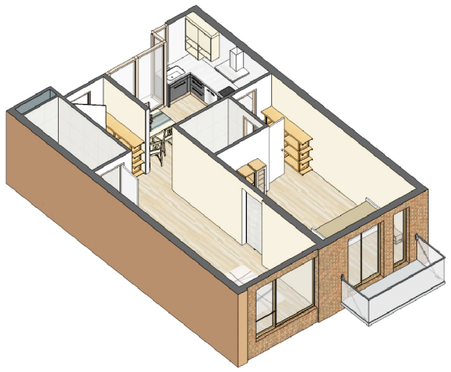
glass hall improves ventilation by the power of sunlight in sunny days



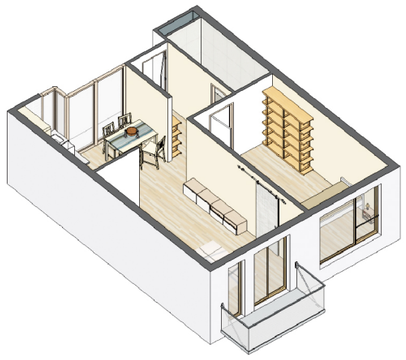
rainwater will be collected to irrigate interior greening, promoting oxygen circulation

Design

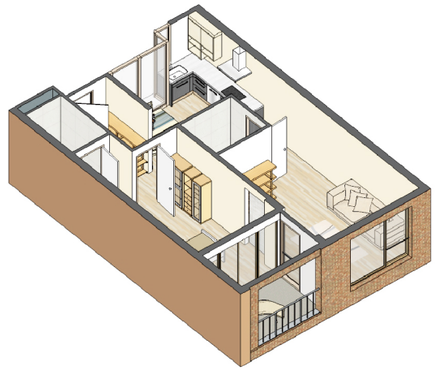
quality improvement



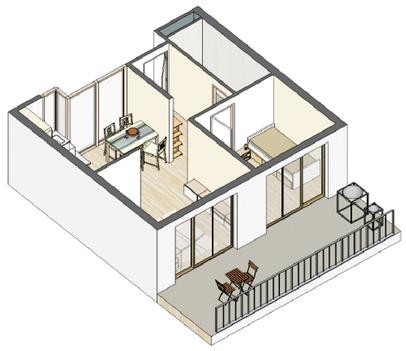
living room: 19.4m²
bedroom room: 19.7m²
bath room and toilet are seperated
with hanging balcony



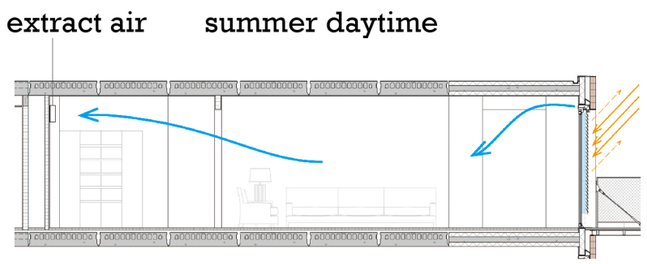
living room: 18.3m²
bedroom room: 15.7m²
bath room and toilet are combined
with hanging balcony

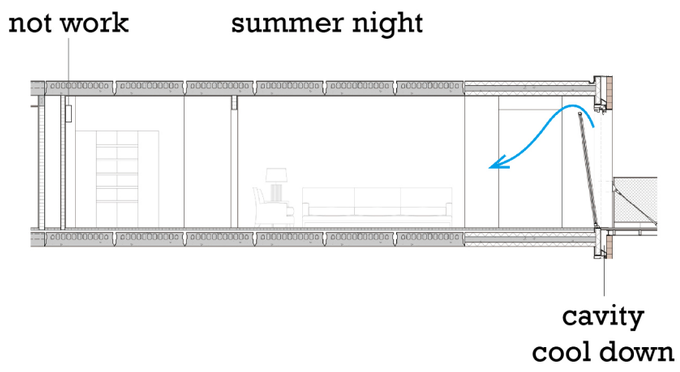


living room: 20.0m²
bedroom room: 15.2m²
bath room and toilet are seperated
with loggia

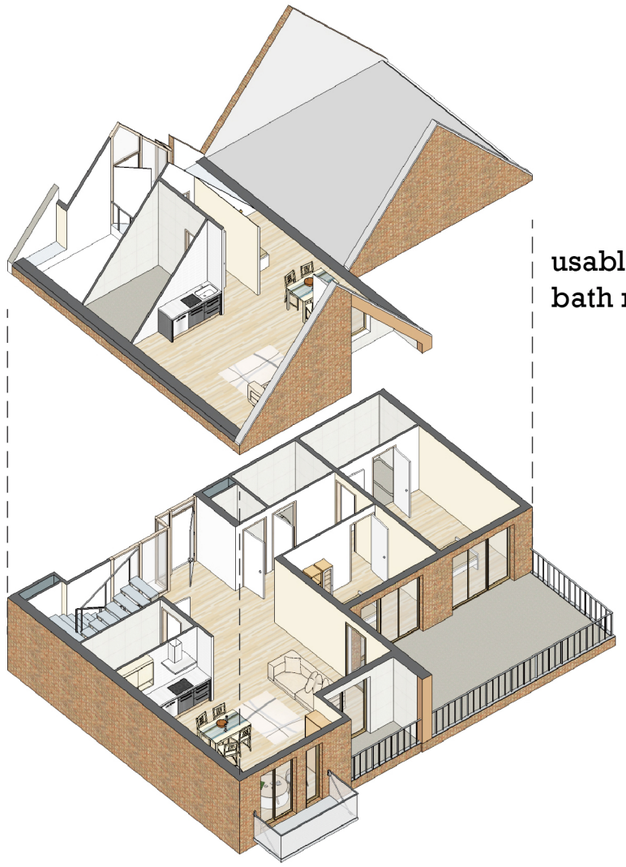


living room: 10.0m²
bedroom room: 8.4m²
bath room and toilet are bombined
with balcony platform 18.4m²

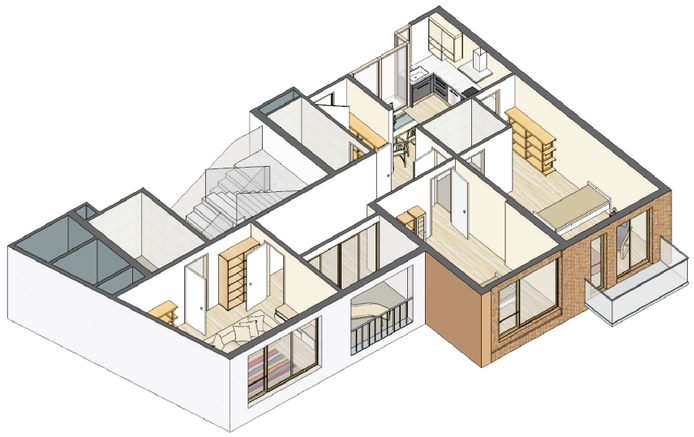




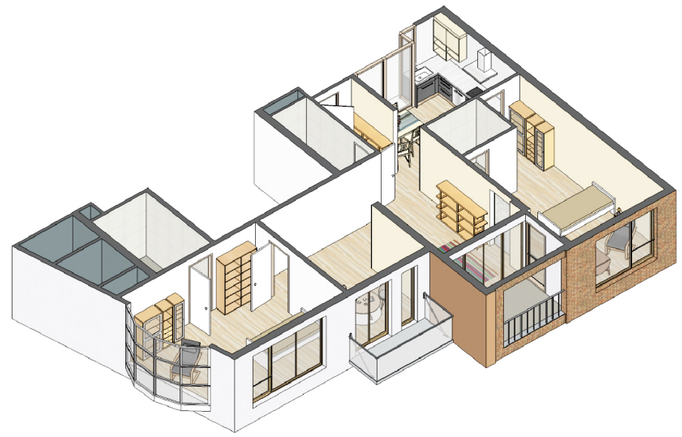
Dwelling sizes - single room



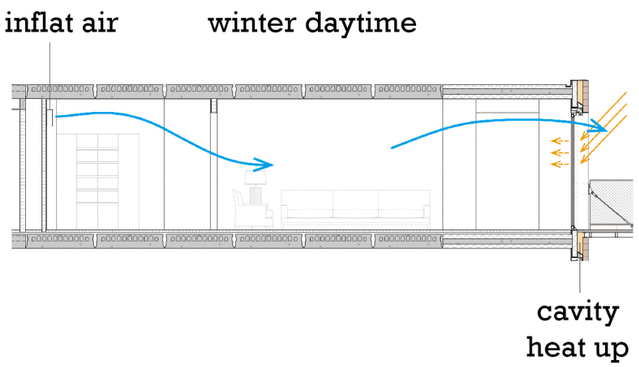
usable area: 28.4m²
bath room and toilet are bombined

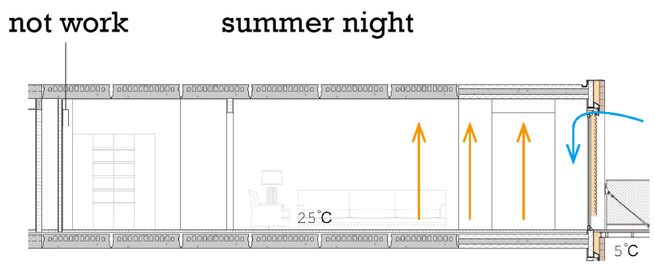


living room: 18.4m²
bedroom room: 14.2m², 19.5m²
bath room and toilet are seperated
with a loggia and a hanging balcony



living room: 25.2m²
bedroom room: 20.0m², 18.5m²
bath room and toilet are seperated
with a loggia and a hanging balcony





Dwelling sizes - domitory



With the improvement of the corridor lighting environment, large windows facing the corridors in each room can be realized. The windows shows the different arrangements between different tenants, make the corridor feel like a real street.

Corridor in concept



Corridor in reality



Corridor in the future



“Grey space”



Recreation space along the city wall for all the dwellers



Western facade



New facade in environment



Current green space



Enjoy it!


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Thank you!