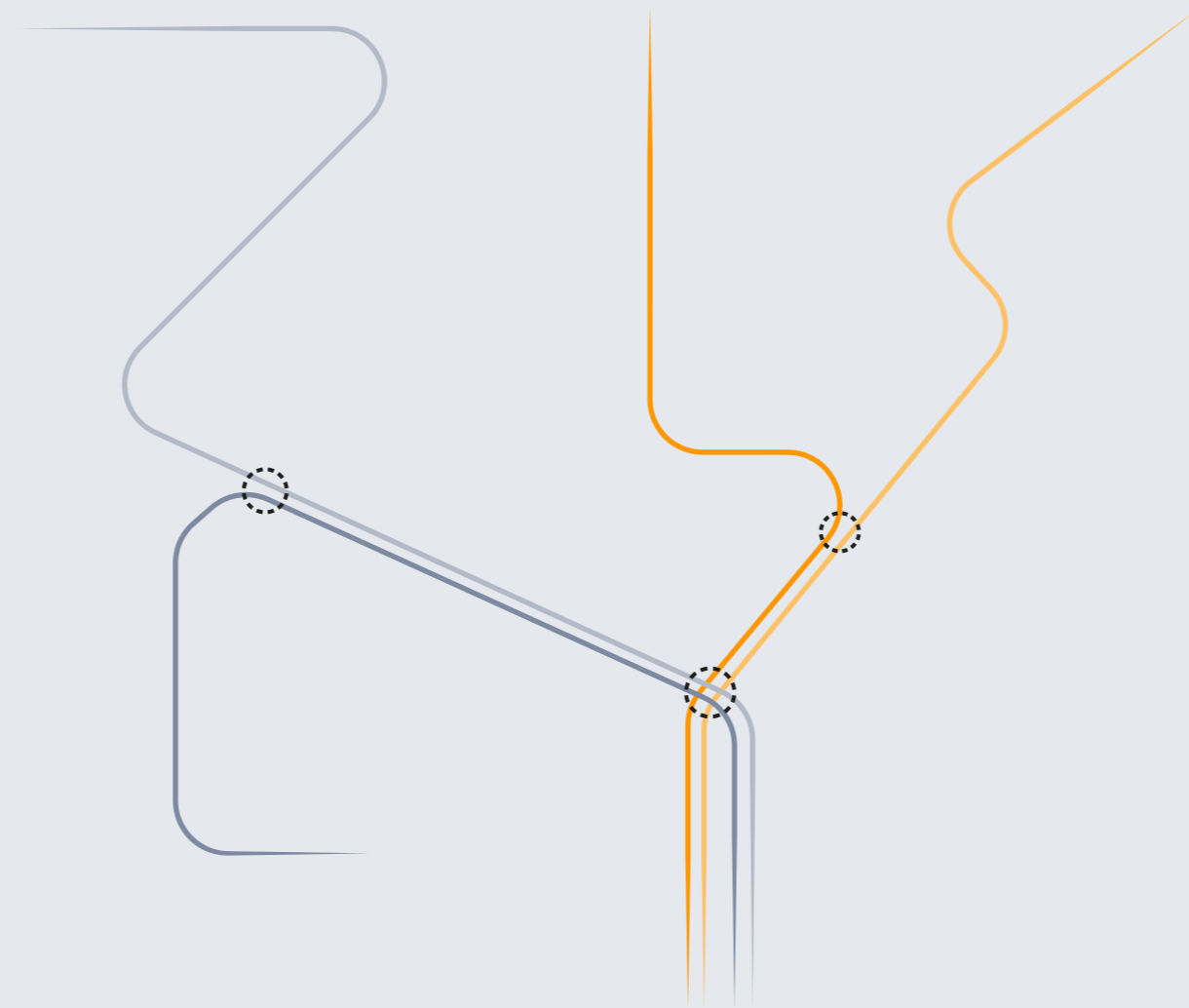


Daryna Chernyshova

5041058



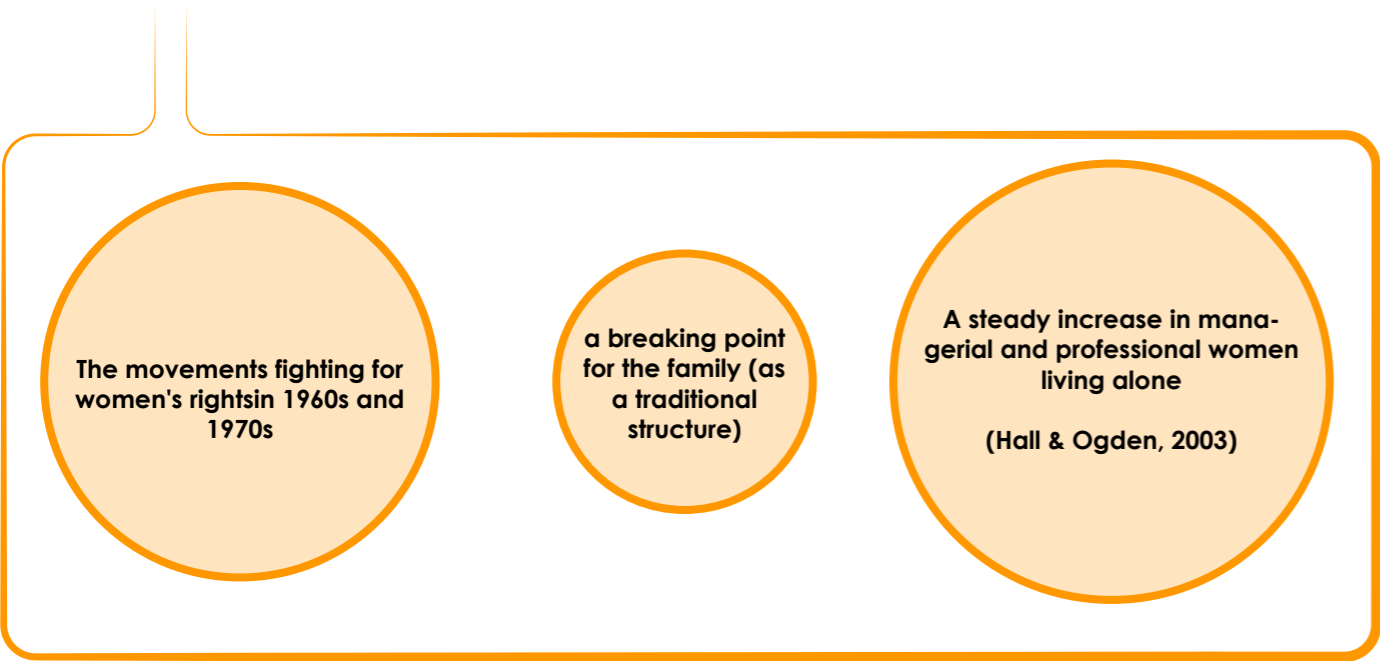
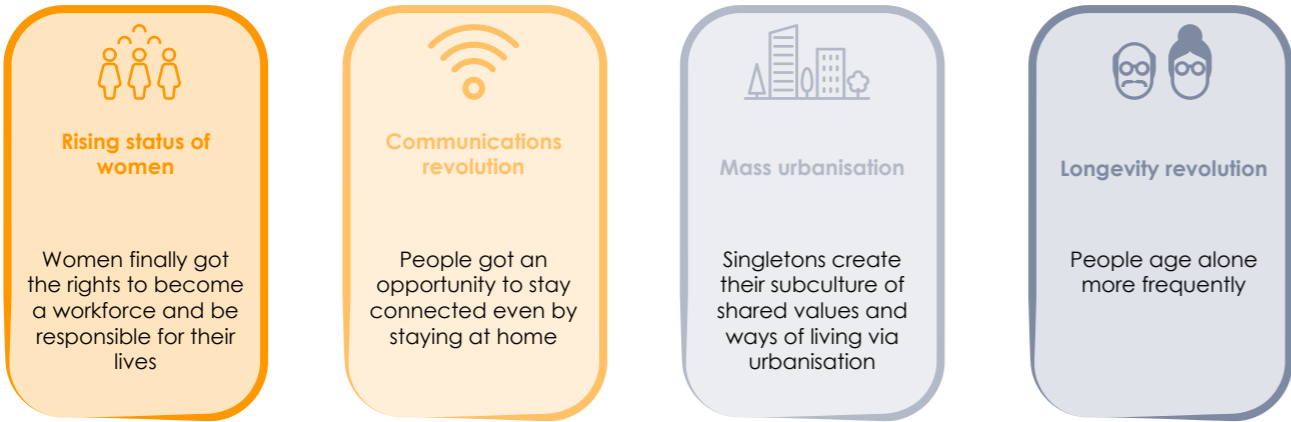
Dwelling design for solo living

Combating loneliness in modern single-person households using concepts of cohousing and coliving

Single-person household

Historical perspective

The steady increase of individualism arose from a combination of 4 social factors (Klinenberg 2012)



Percentage of respondents who considered unmarried people sick, immoral and neurotic in US (Furstenberg et al., 2004)



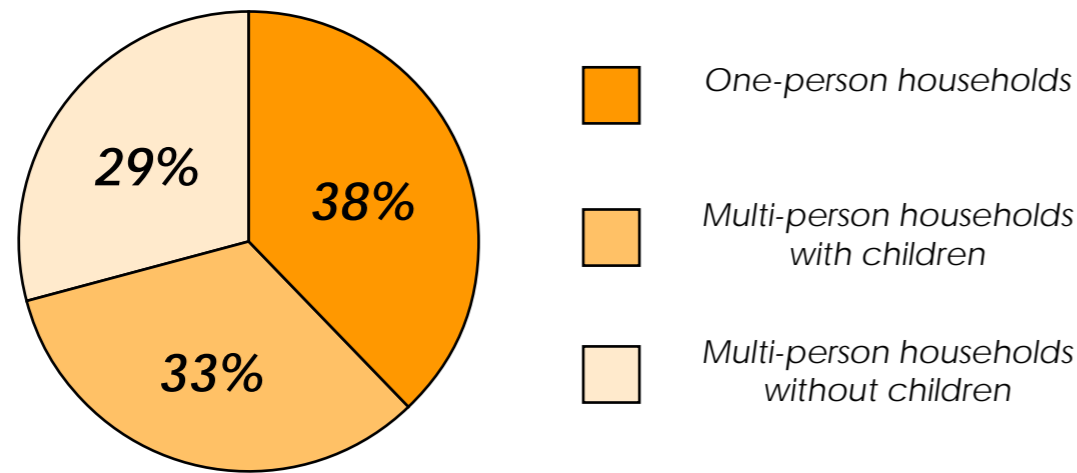
The median age for first marriage in England and Wales in the 1980s and 2009 (McLaren, 2012)

	MALE	FEMALE
1980s	23	21
2009	32.1	29.9

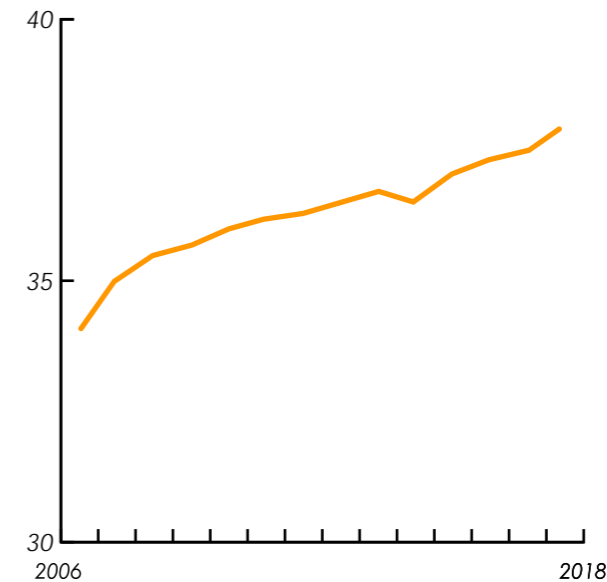
Single-person household

Relevance

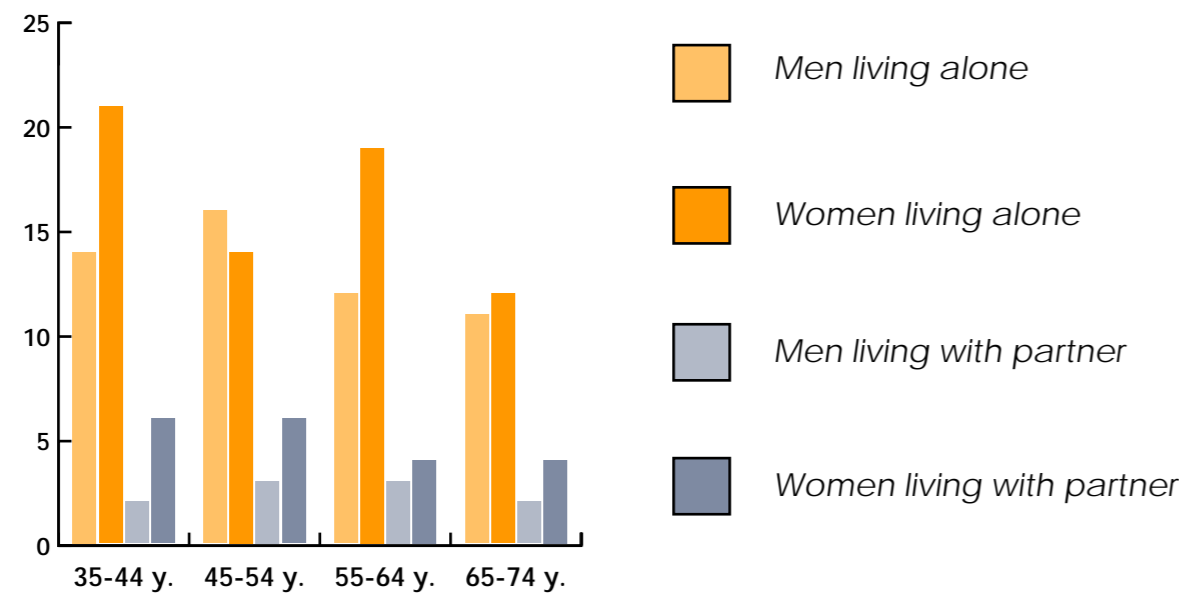
Total number of households in the Netherlands in 2019,by type



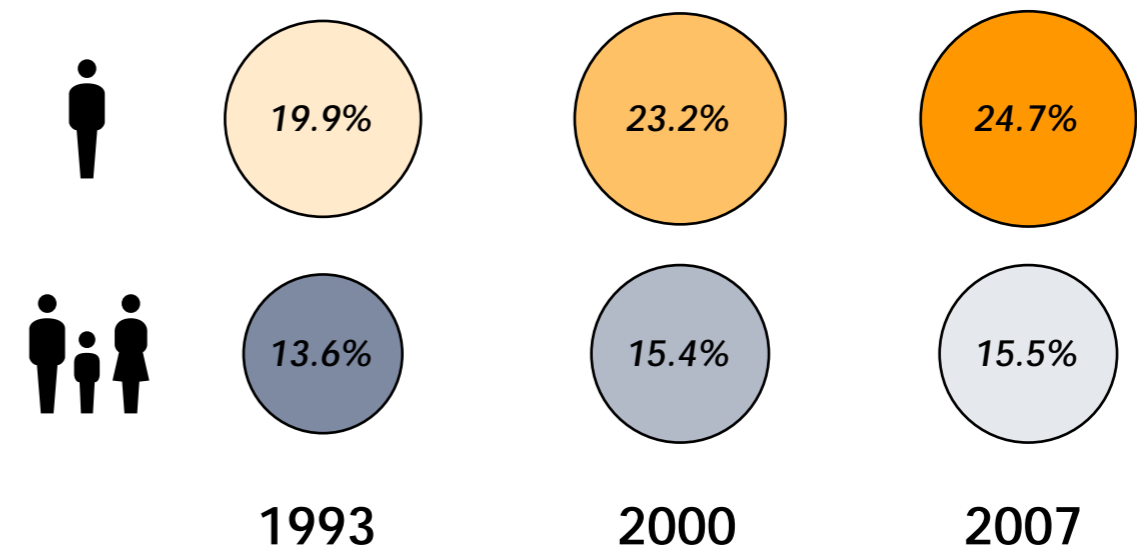
Percentage of one-person households in the Netherlands from 2006 to 2018



Percentage of loneliness depending on type of household in Germany



Common mental disorders in single and multi-person households



Research

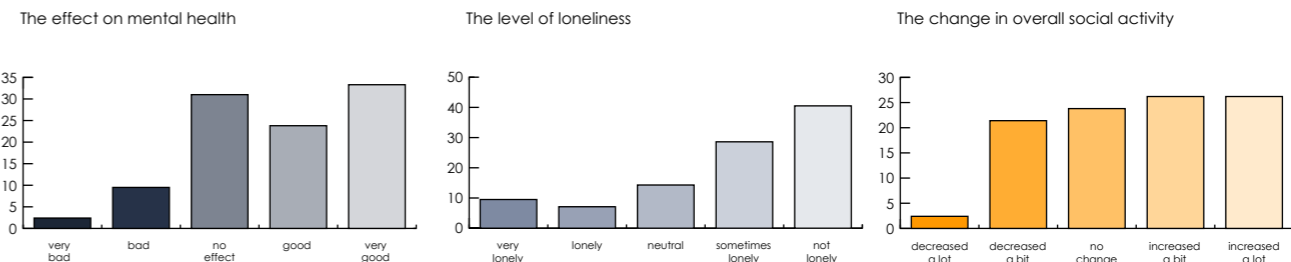
Main research question :

How cohousing and coliving should be designed to help singletons combat loneliness while preserving the required level of privacy?

Sub-questions :

- Why does the notion of a single-person household rise?
- Who are the people choosing to live alone?
- What are the requirements of people living alone and do they differ per sub-group?
- Which one of the concepts (cohousing or coliving) suits each subgroup of singletons better?
- What is the balance between private and shared areas in buildings designed for singletons?
- What are the design principles to stimulate community creation within the dwelling unit (coliving) and on building scale?
- What is the balance between being part of a community and preserving the notion of individualisation?

Data collected from questionnaire



Interviewees

Anton	Sofia	Stanislav	Nazar	Tetiana	Nadiya	Maria
23	23	25	25	23	73	25
IT specialist	Analyst	Entrepreneur	Entrepreneur	Realtor	Retired	Groomer
private apartment	co-living flat share student housing	private apartment cohousing student housing	private apartment cohousing student housing	private apartment	private apartment	coliving flat share
KYIV	LANCASTER LISBON LONDON	BRIGHTON LONDON	BRIGHTON BIRMINGHAM LONDON KYIV	KYIV	BORYSPIL	WARSAW

Main principles of successful dwelling design for singletons

Private dwellings with high level of comfort

High levels of privacy and security

Homogenous community on smaller scale

Vibrant community of singletons on building scale

The notion of choice

Constantly changing views (Not only facing inner courtyard)

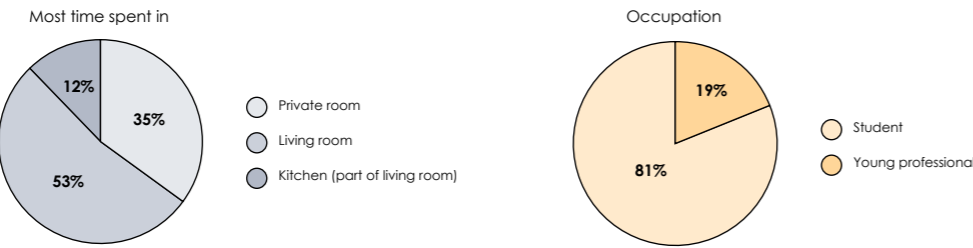
Private outdoor space (balcony/terrace)

Division between private area and area accessible by guests

Zoning per programme within the dwelling

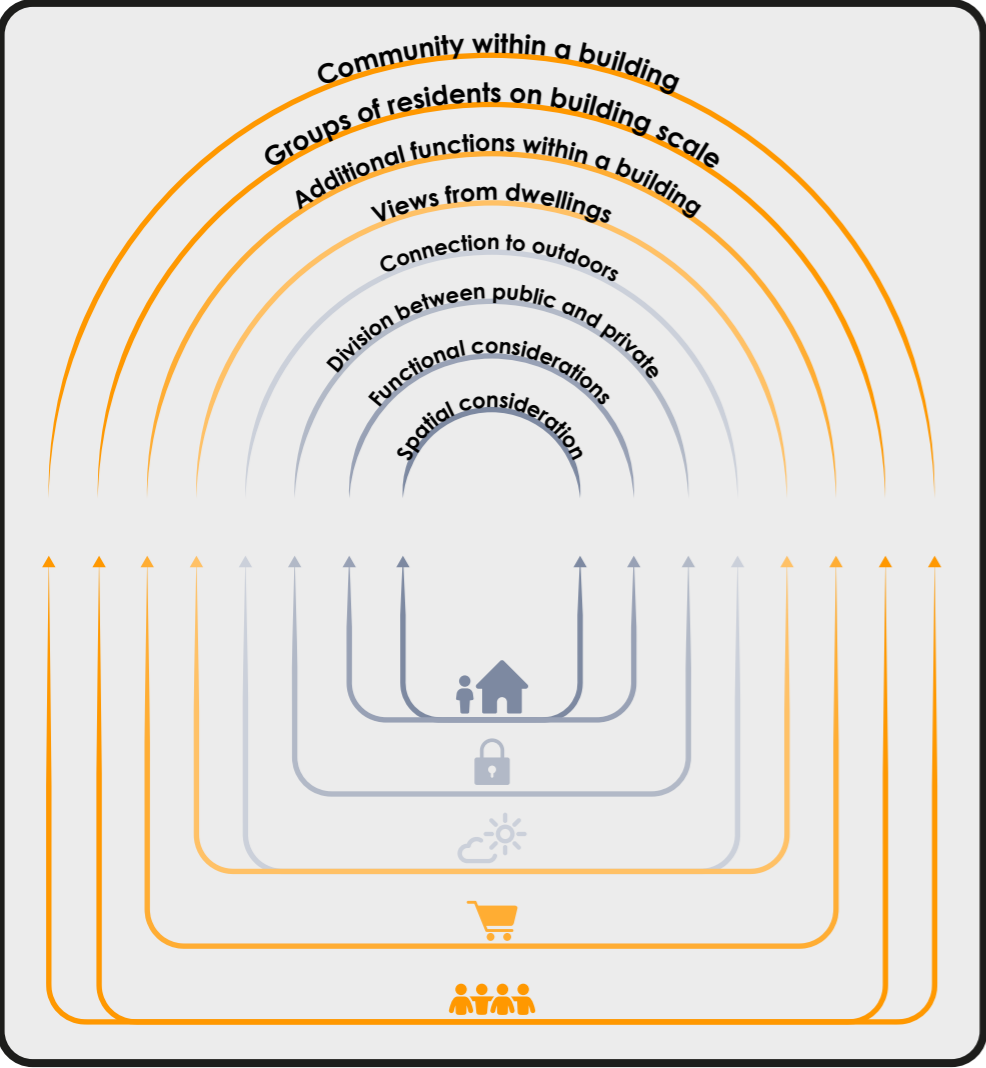
Small communal area per floor

Questionnaire

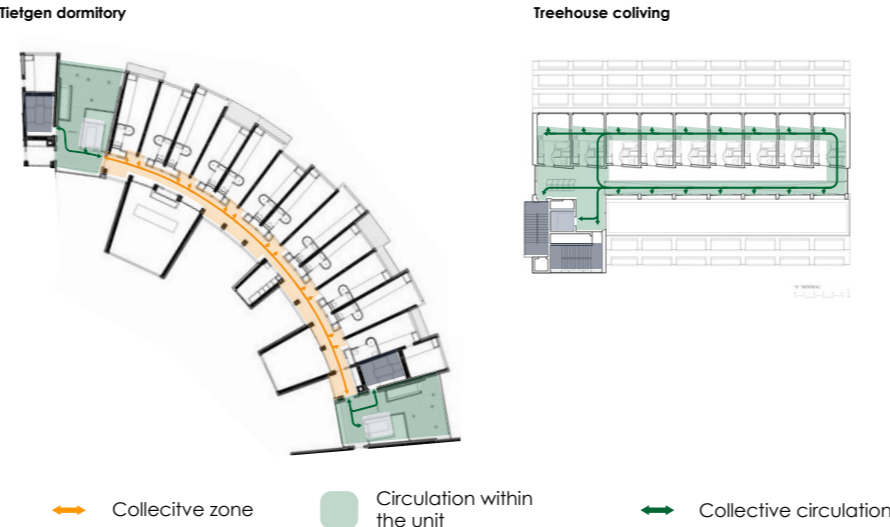


Dwelling design for solo living

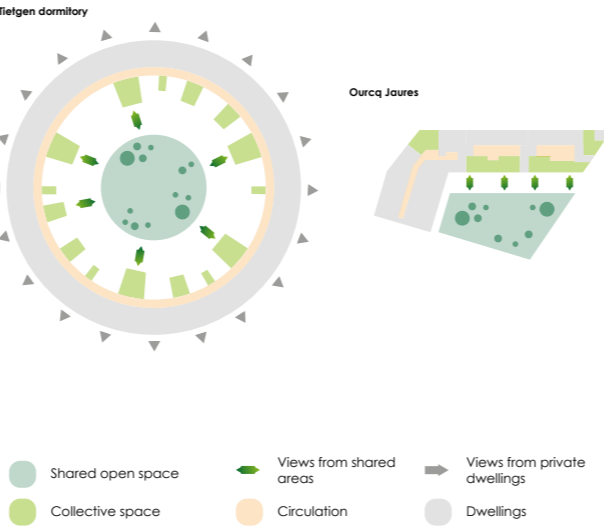
Topics to consider for dwelling design for solo living



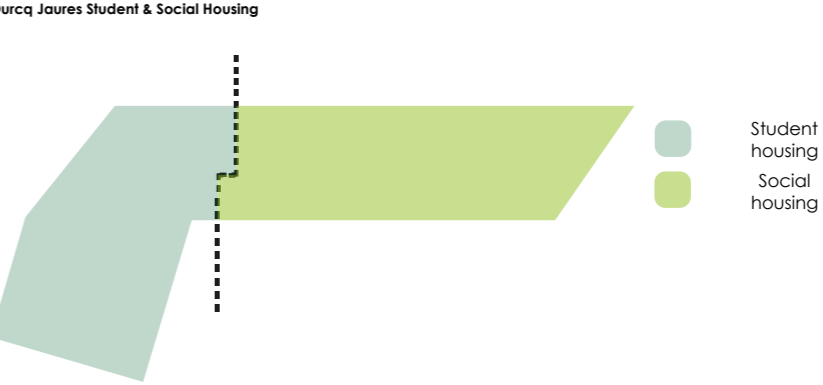
Community within the building



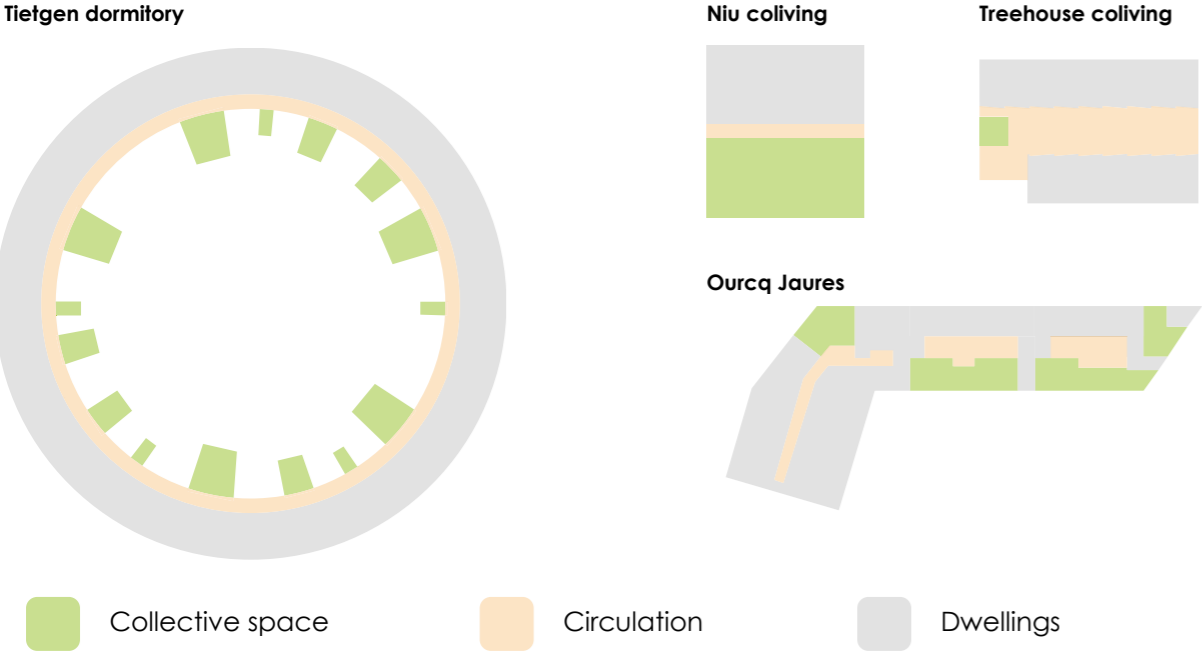
Views from apartments



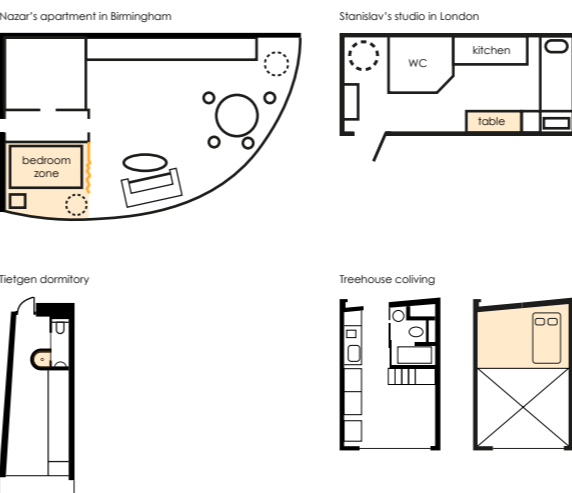
Groups of residents on building scale



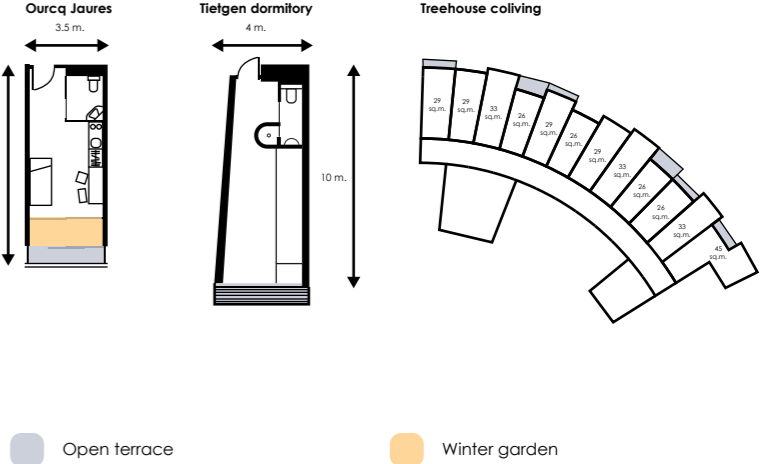
Division between public and private

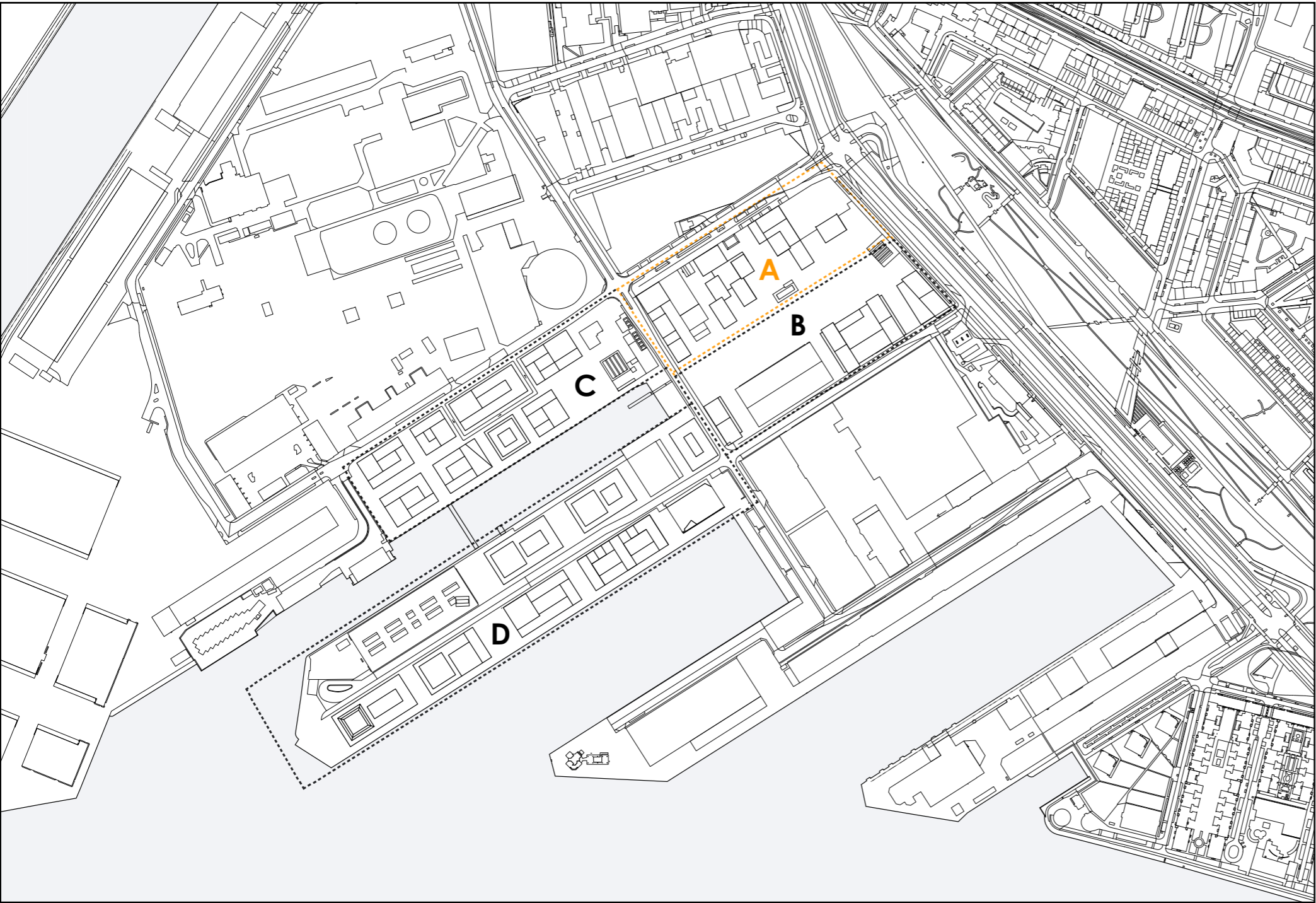


Spatial considerations



Connection to outdoors

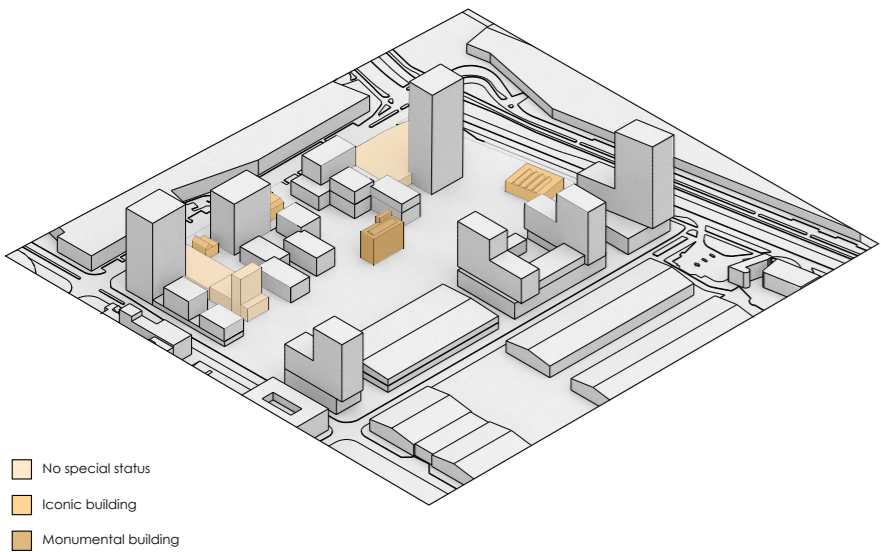




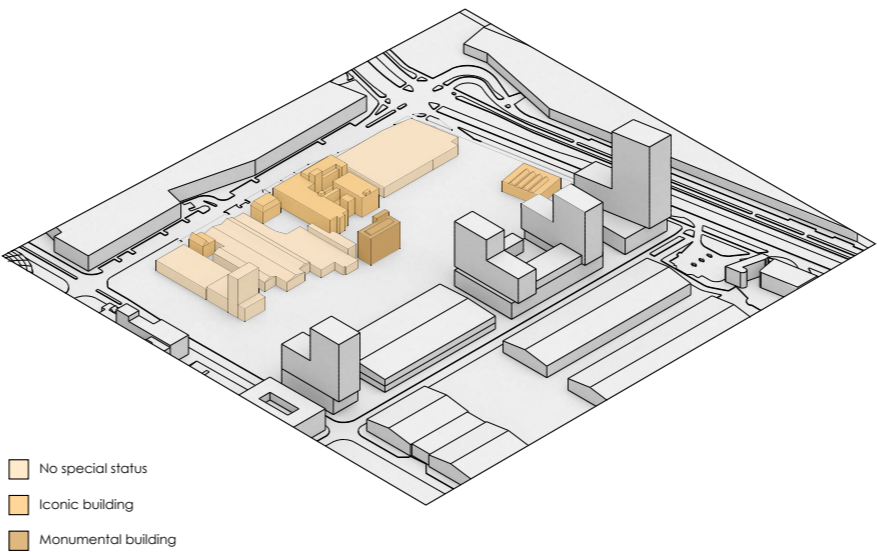
Concept diagrams

Quadrant A

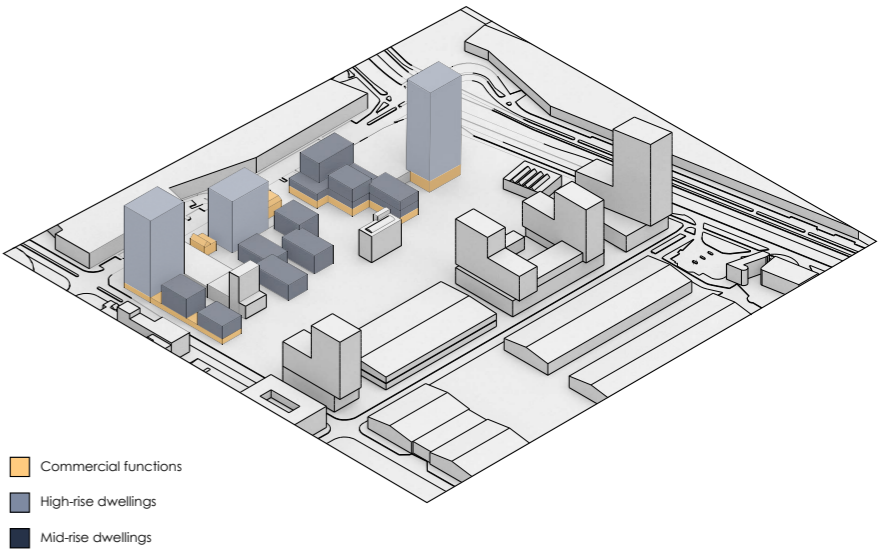
Updated urban plan



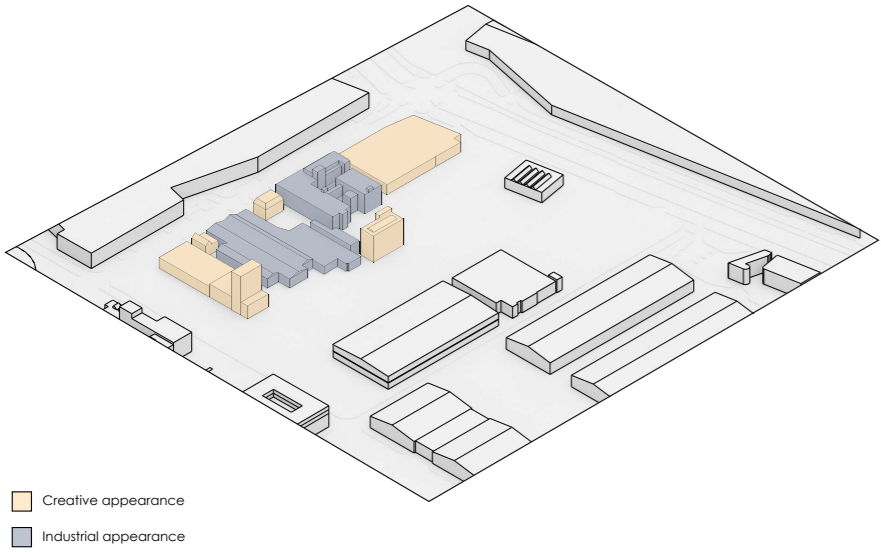
Initial situation



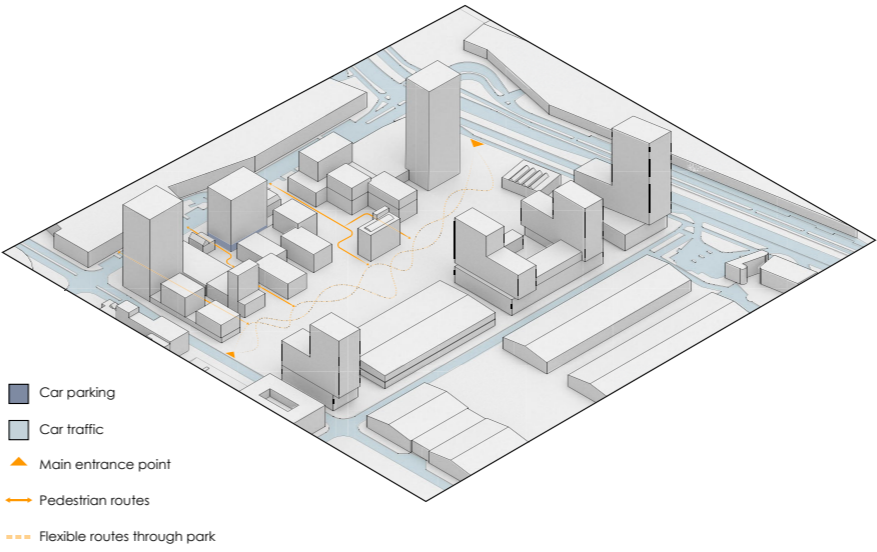
Dwelling vs commercial



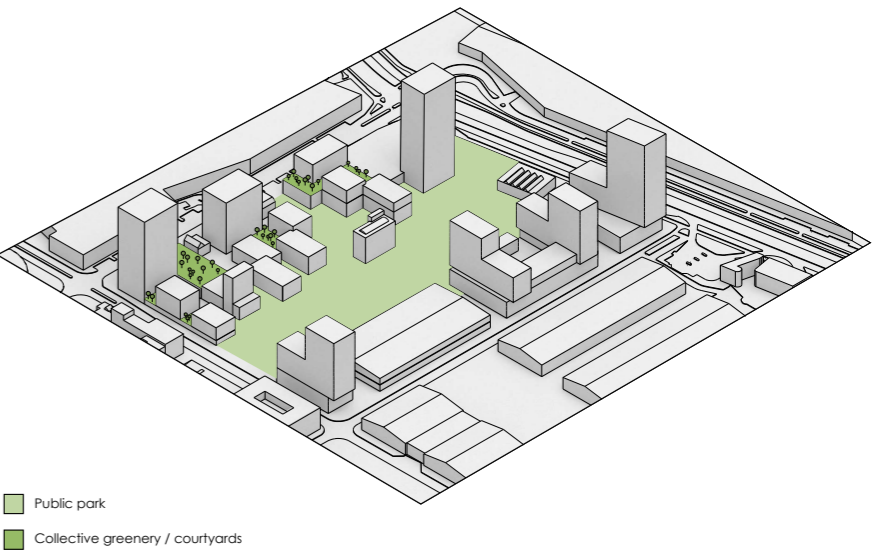
Appearance



Circulation (pedestrian and car)



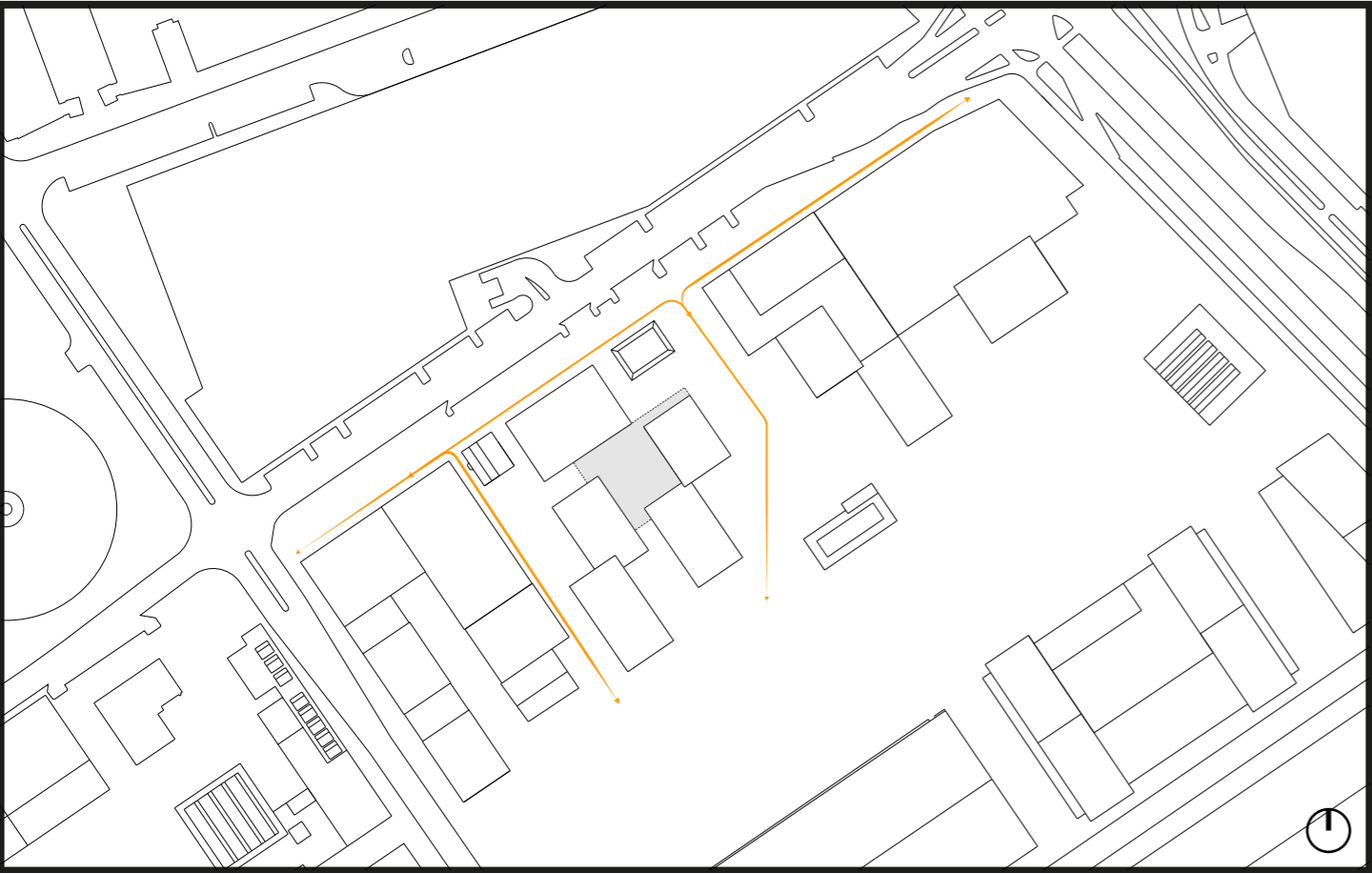
Greenery (public and shared)



Urban plan

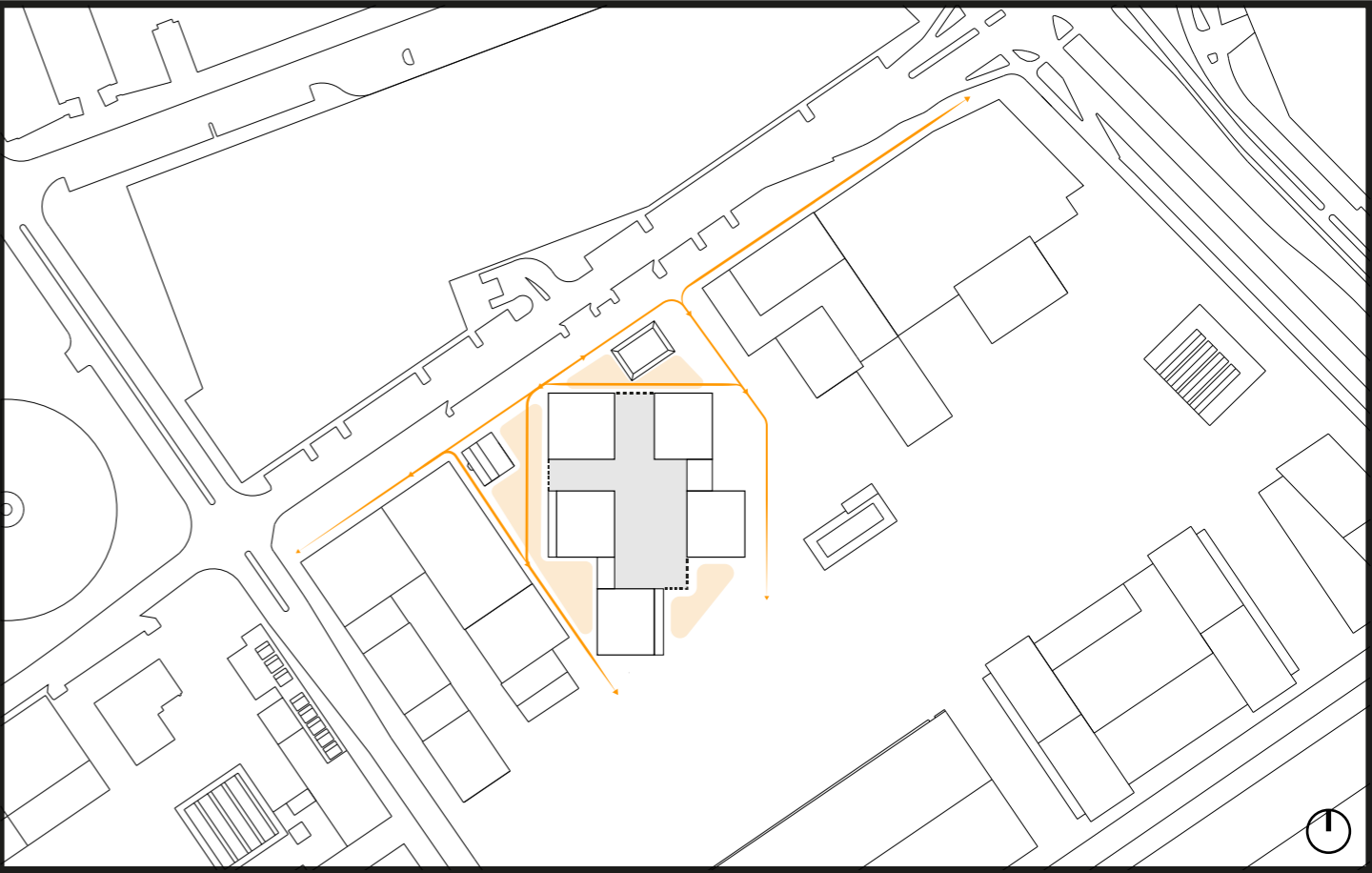
Concept

Initial urban concept



The initial urban concept provides a plot of 5 separate building shaped on a raised commercial plinth. While the facade facing the street on the NW is straight and calm, the plot reach the park in various volumes.

Proposed urban concept



The urban concept is changed by aligning volumes on the NS axis in order to reduce dwellings facing south to 0. Such change also gives more space for public squares around the building as well as facing Keileweg in a porous manner.

Overview plan

1/500

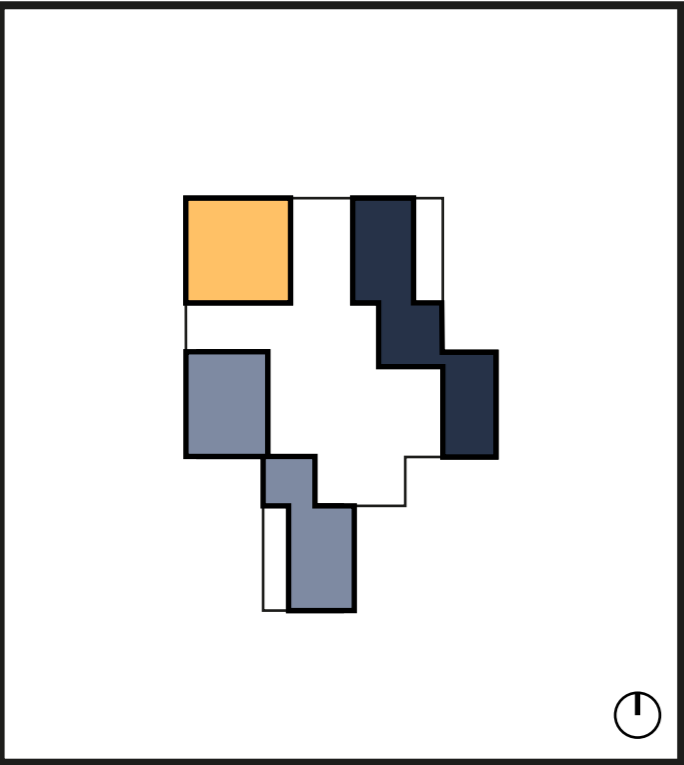


View from park

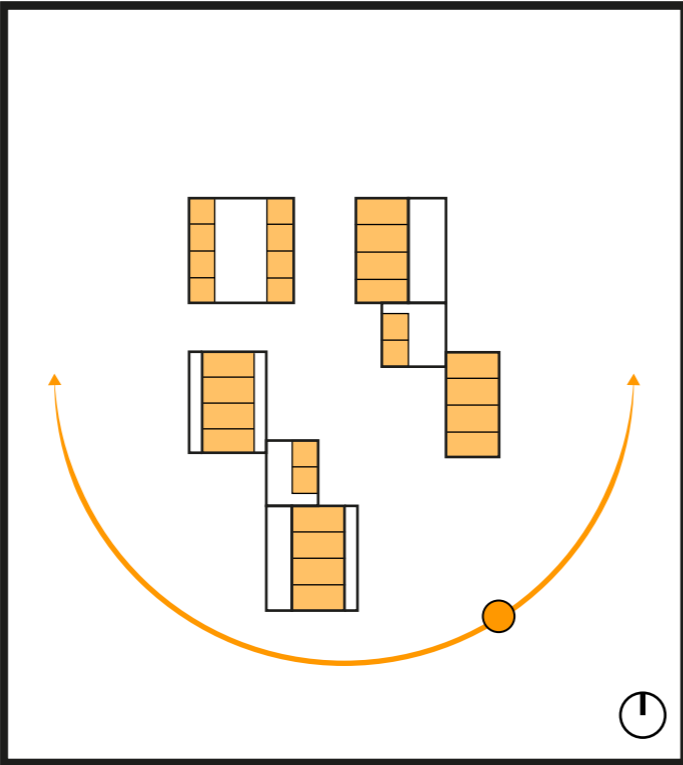


Diagrams

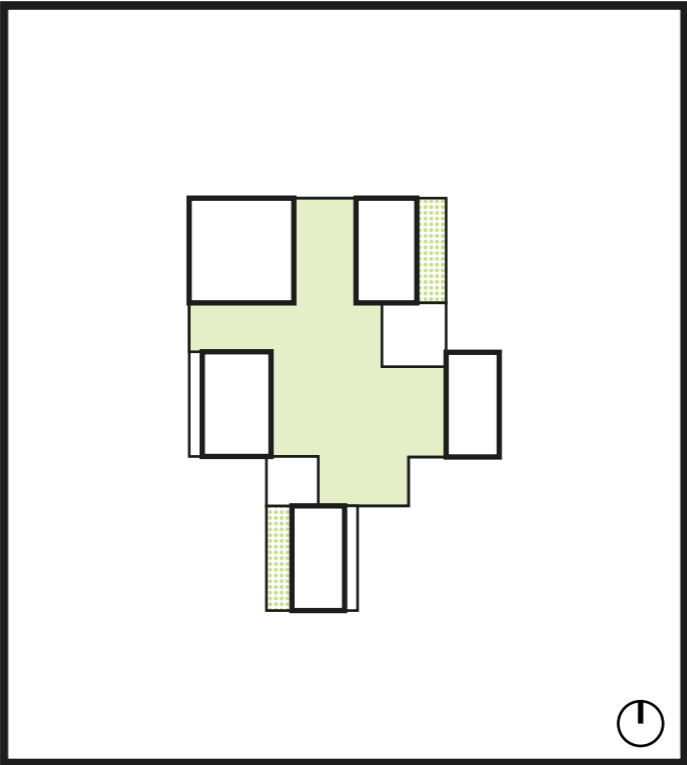
Concept overview



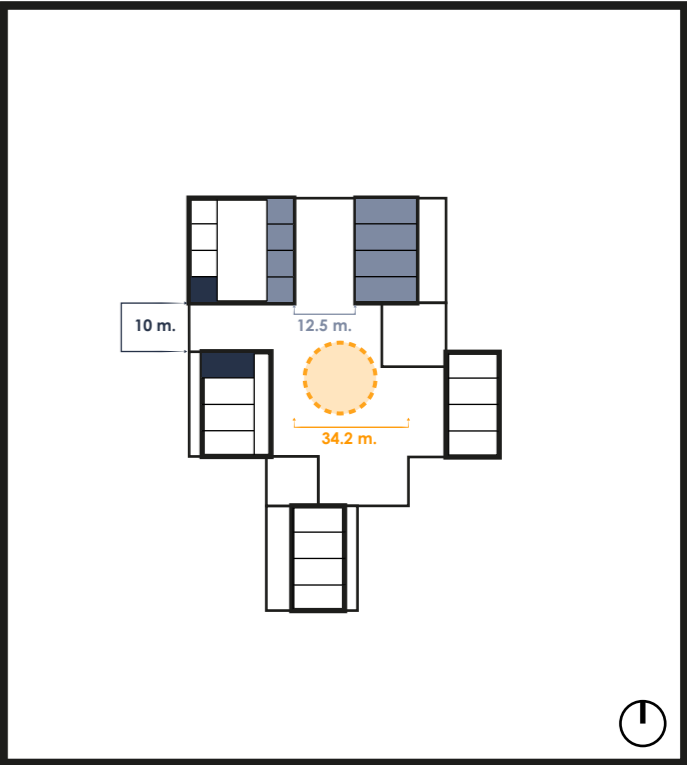
The project is divided into three main volumes: coliving tower and cohousing volumes. The difference in cohousing is in target groups; the one on the right is dedicated to younger singletons and provided with large shared areas and study spaces.



The volumes are turned to face east and west from the dwellings. This will allow good sun exposure for all houses within the complex as well as providing good conditions for open terraces in left bottom volume.



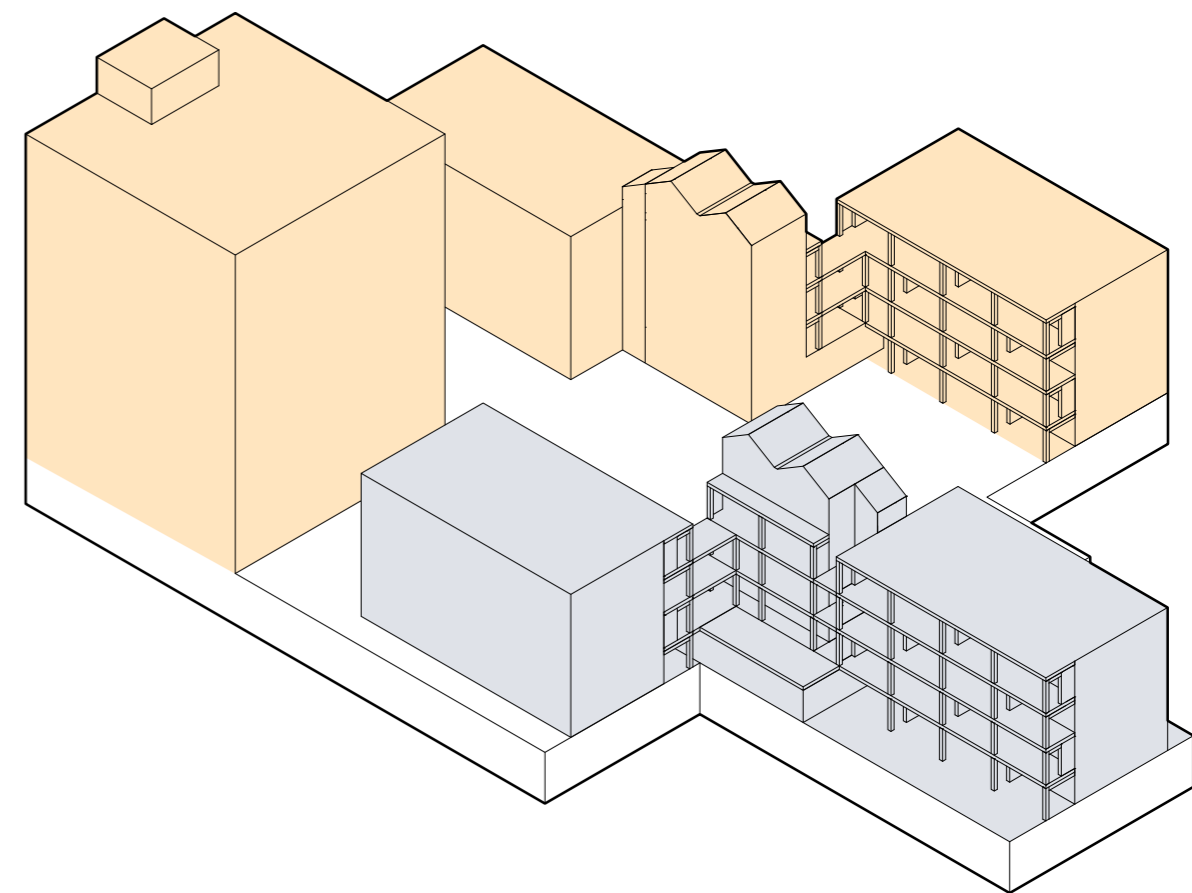
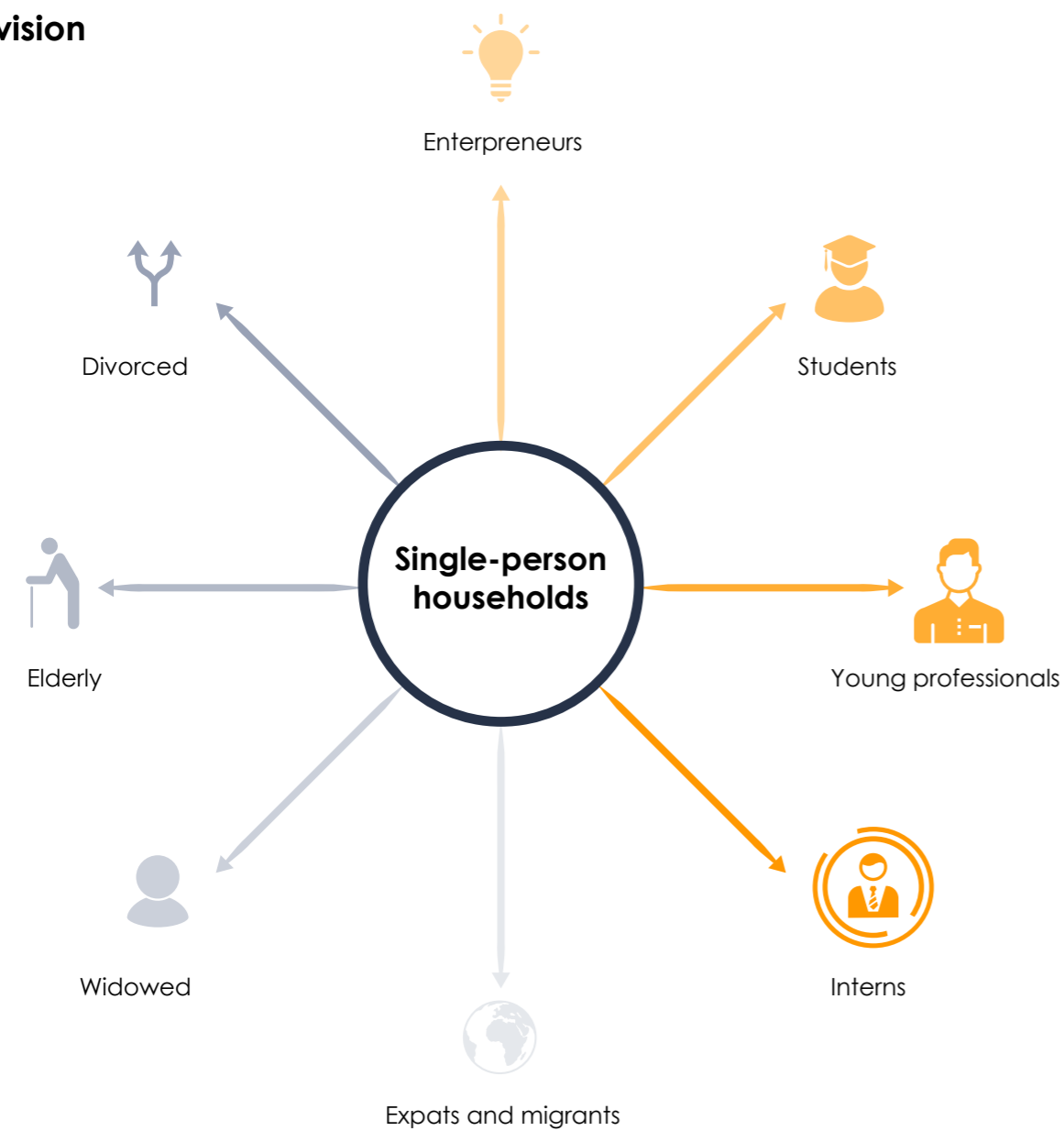
There are two types of green areas in the project. The public green space on the plinth for residents of all buildings within the plot. The shared green spaces per building. The green roofs are placed facing the park to connect with the neighbourhood visually.










The minimum distances between the buildings are 9.7 metres; however, there are no dwellings facing this space. On the north, the distance is 12.2 metres that are enough for sun exposure of houses on both east and west.

Target group

Sub-division

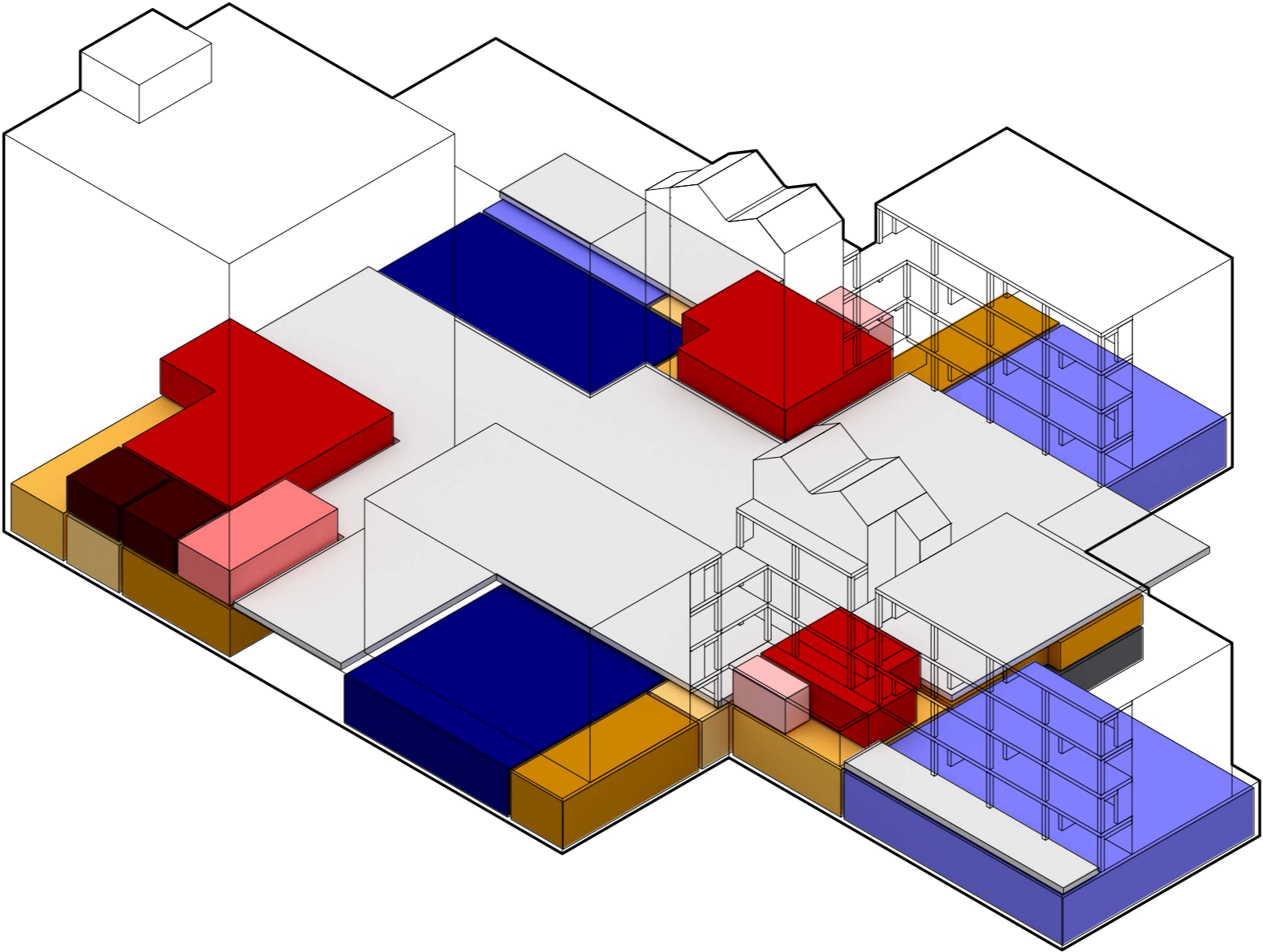
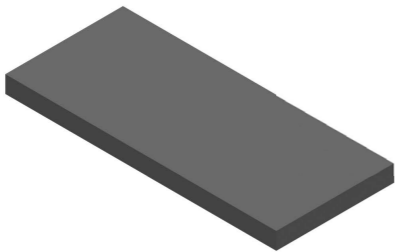
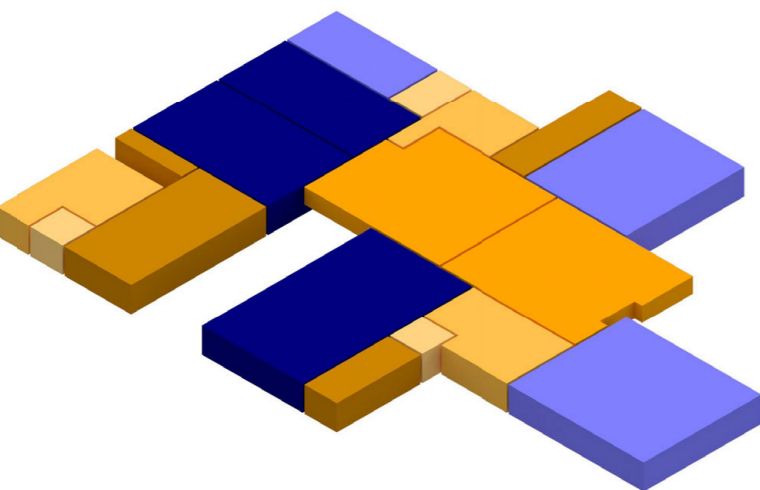
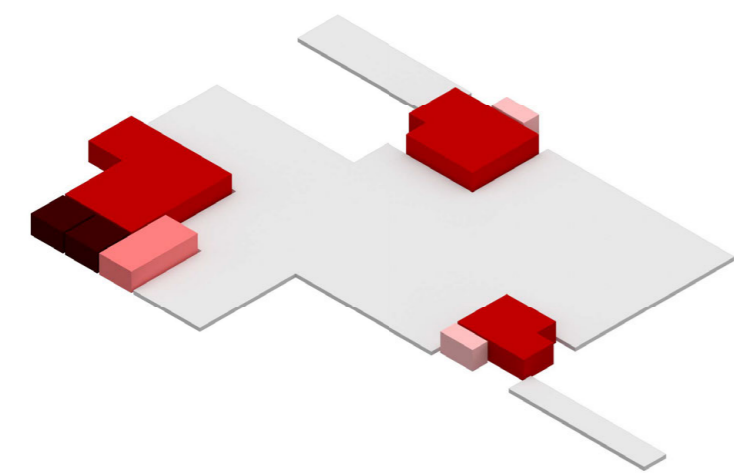


- | | | | |
|---|--|---|---|
|  | Require geographical mobility, short term housing |  | More vulnerable to loneliness due to the loss of existing social contacts |
|  | Give priority to the quality of the apartment over privacy |  | Prefer private dwellings while being vulnerable to loneliness |
|  | Tend to share dwellings |  | Prefer homogenous community |
|  | Lacking a sense of community | | |



Diagrams

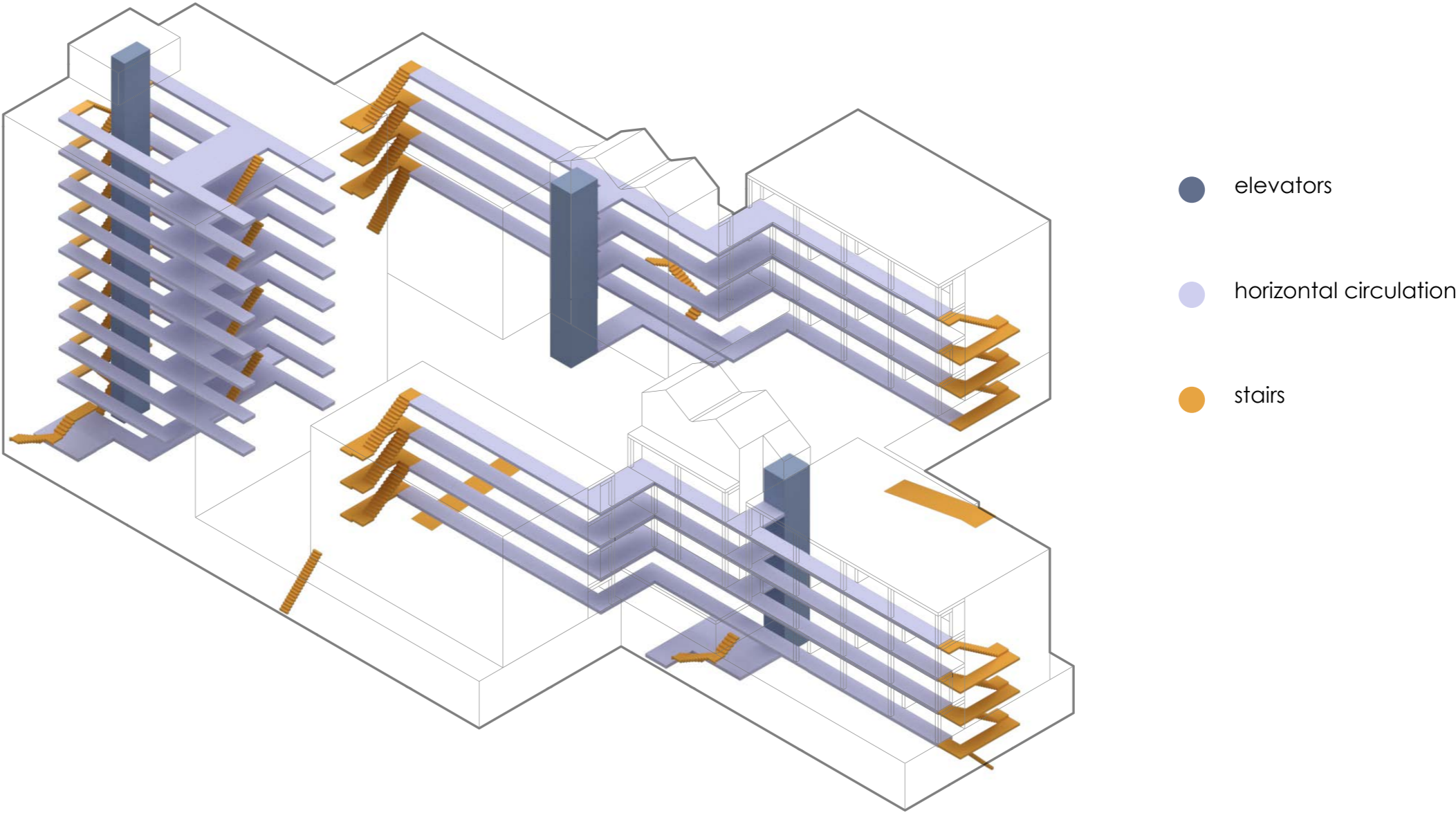
Additional functions



- shared open space
- laundry
- library
- flexible work/study space
- sport/lecture rooms
- garbage room
- reception
- storage space
- bicycle parking
- public cafe/restaurant
- public shops
- parking garage

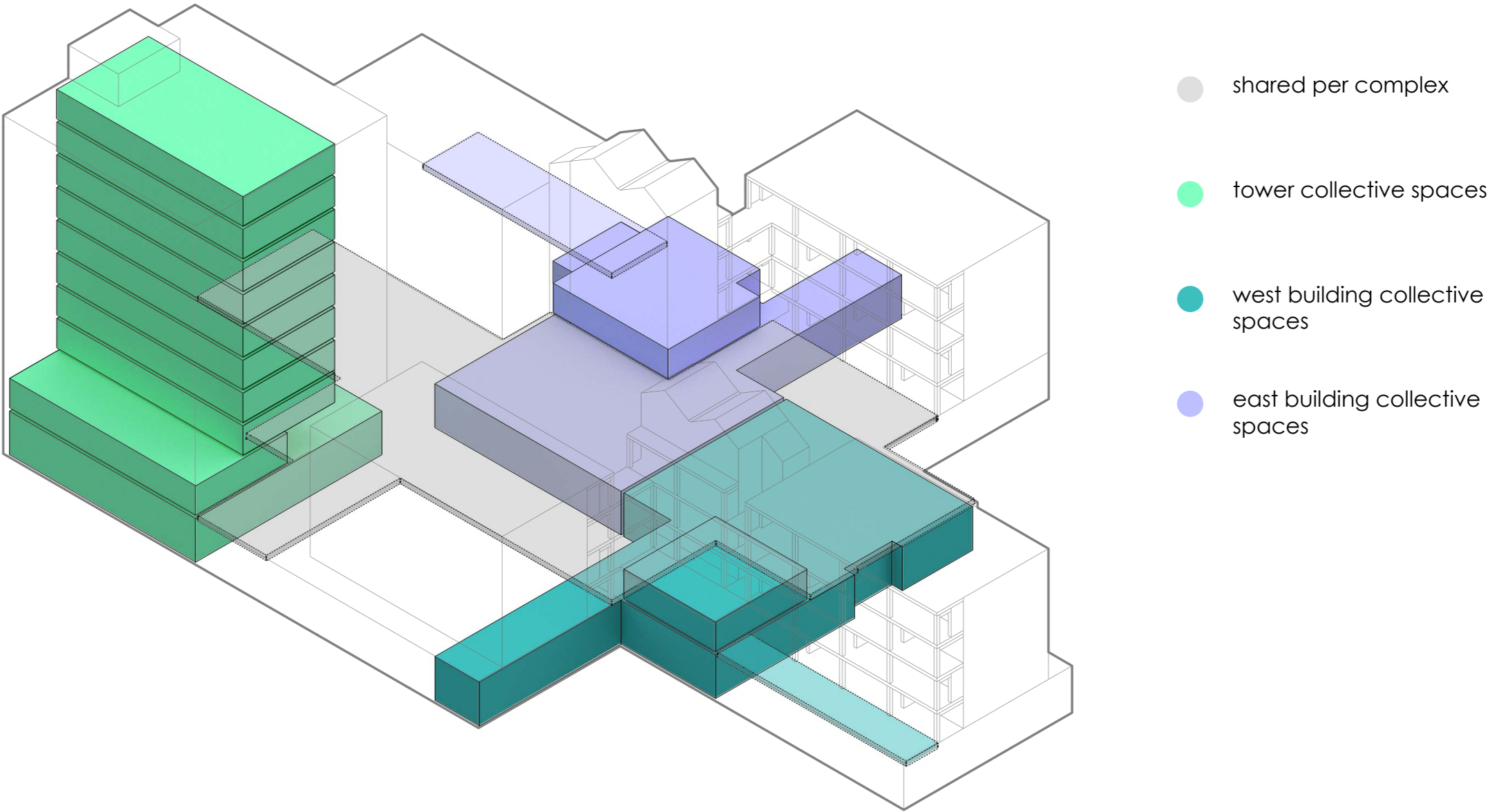
Diagrams

Circulation system



Diagrams

Public vs collective vs private

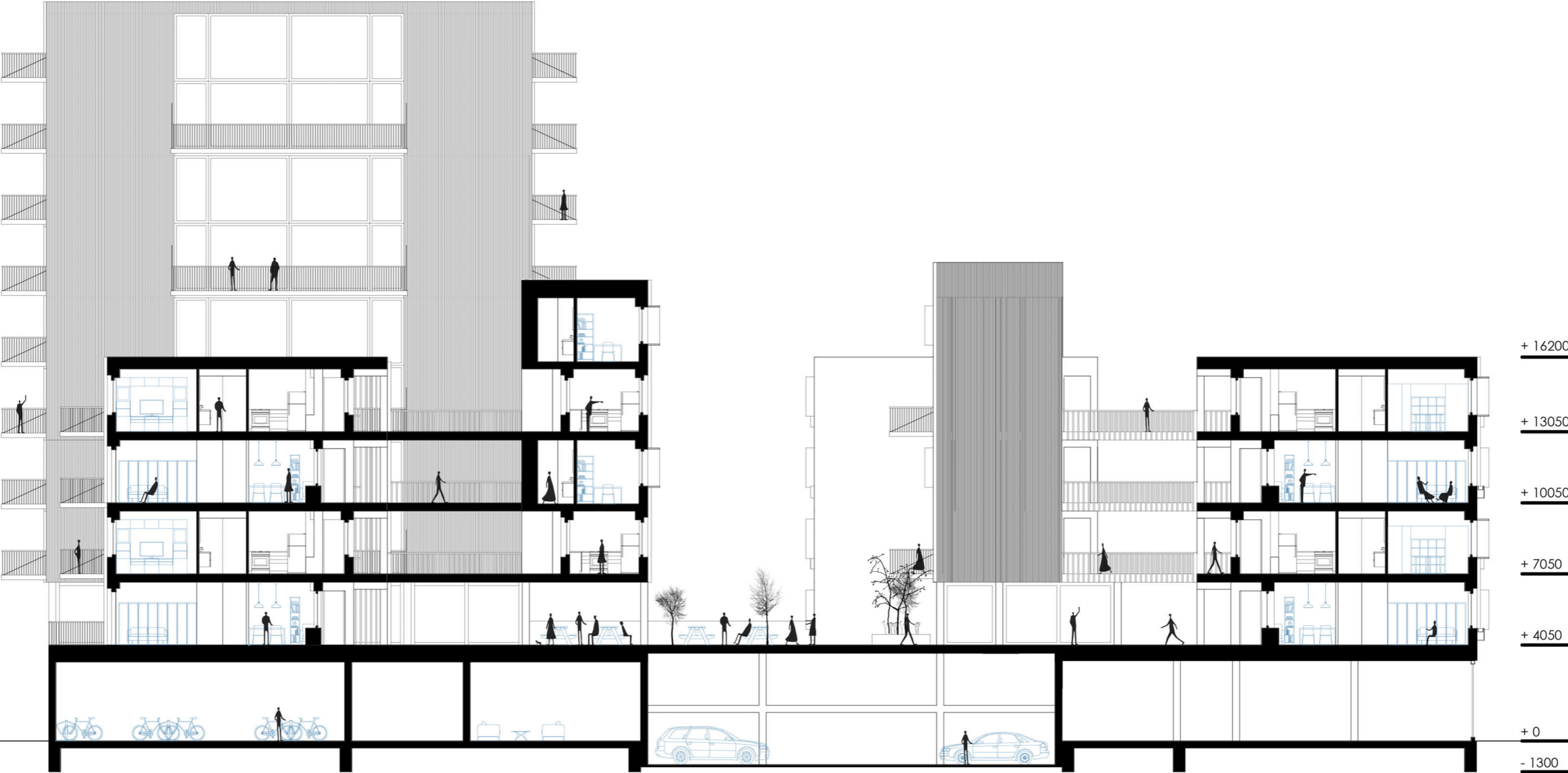
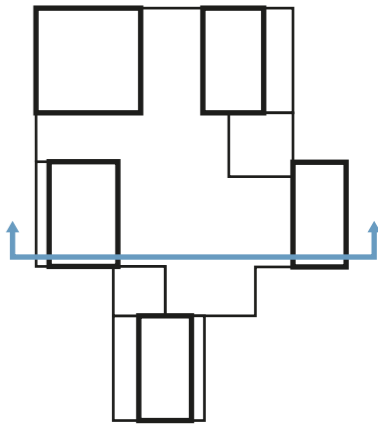


Collective plinth



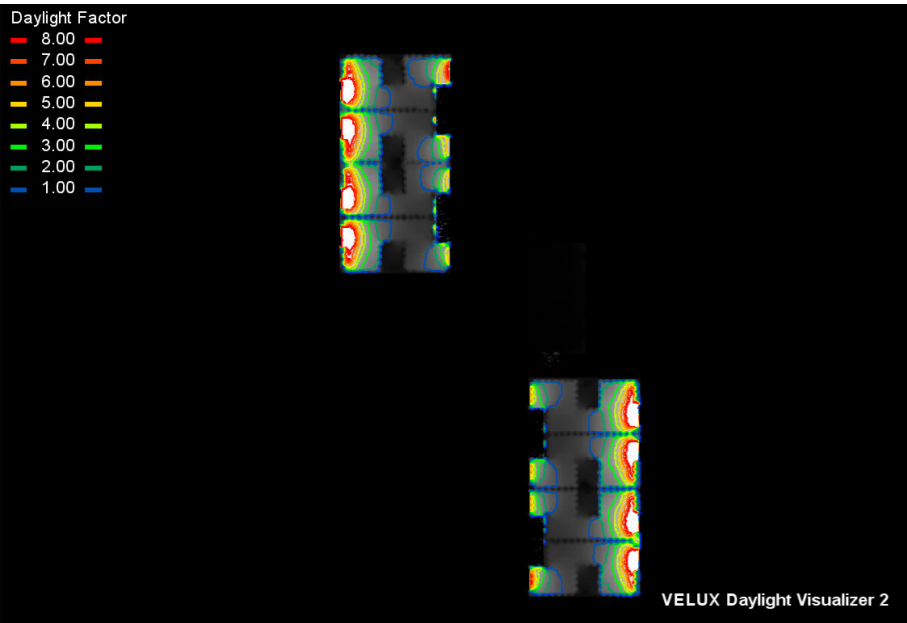
Section AA

1/200

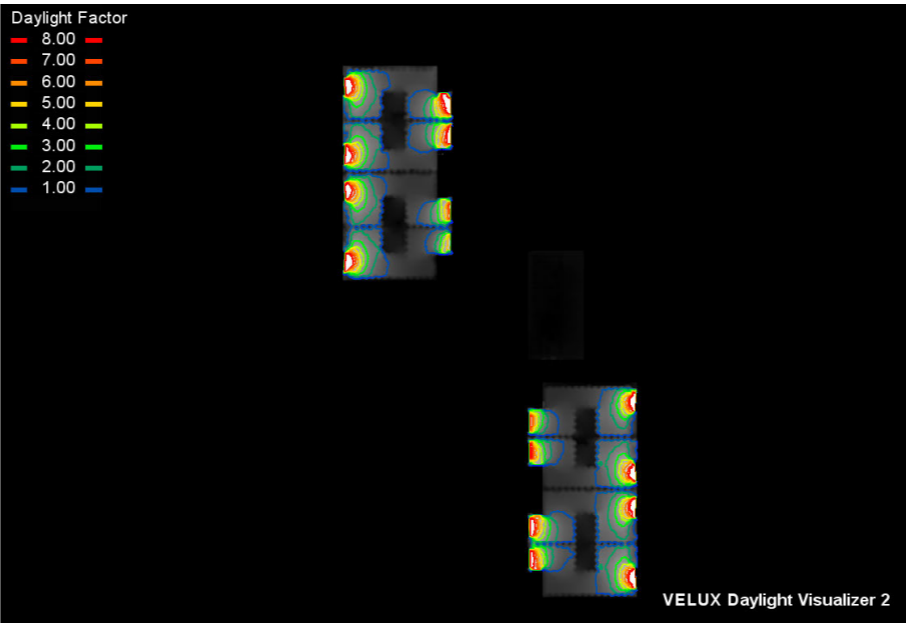


Diagrams

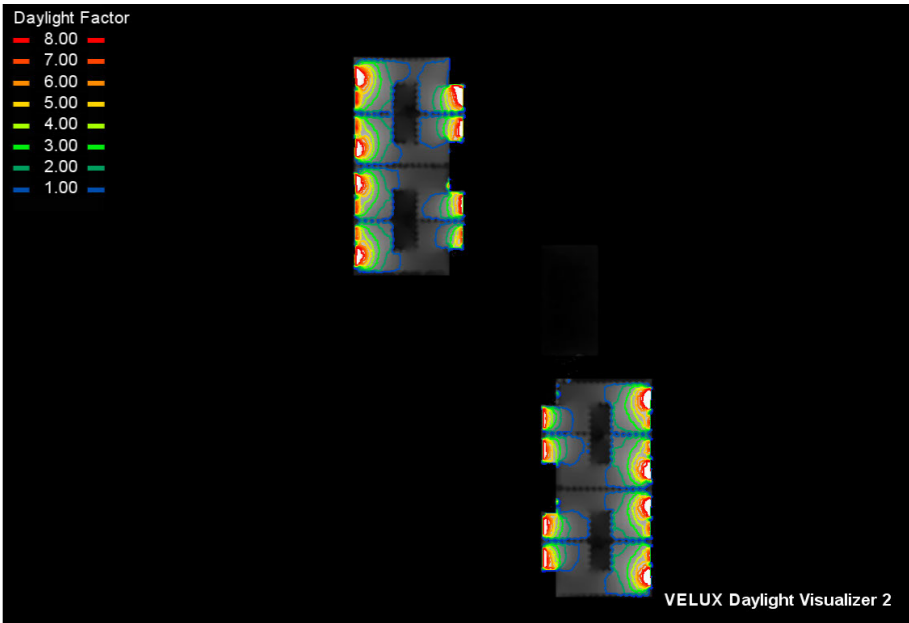
Dwelling orientation and natural lighting



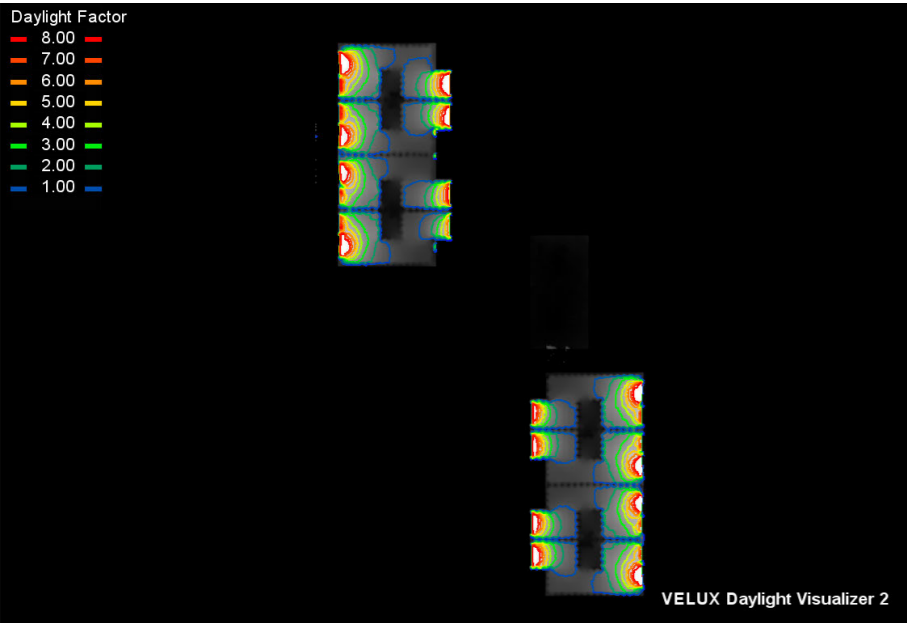
Initial building typology with 2.5 m. wide pathway



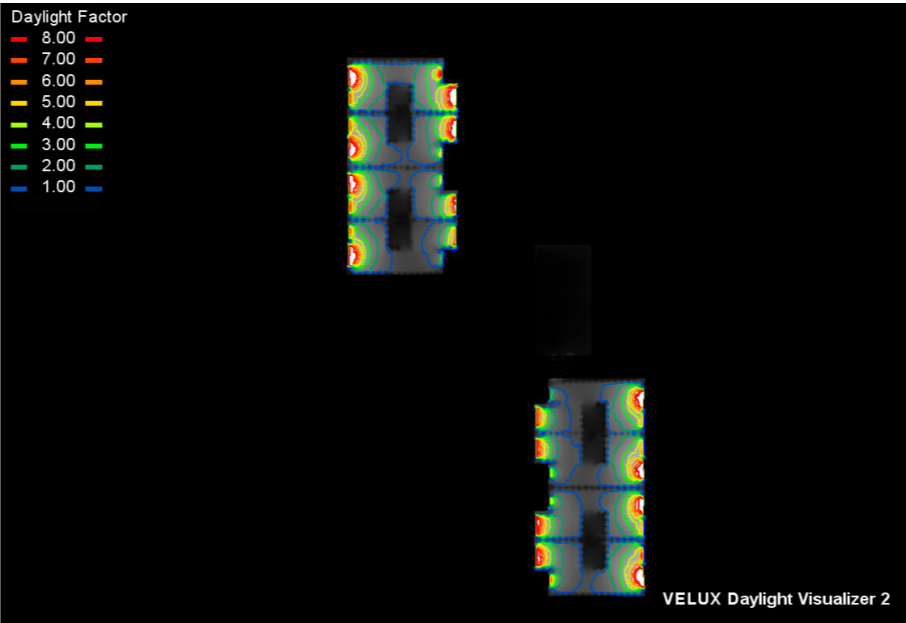
Initial building typology with 1.3 m. wide pathway



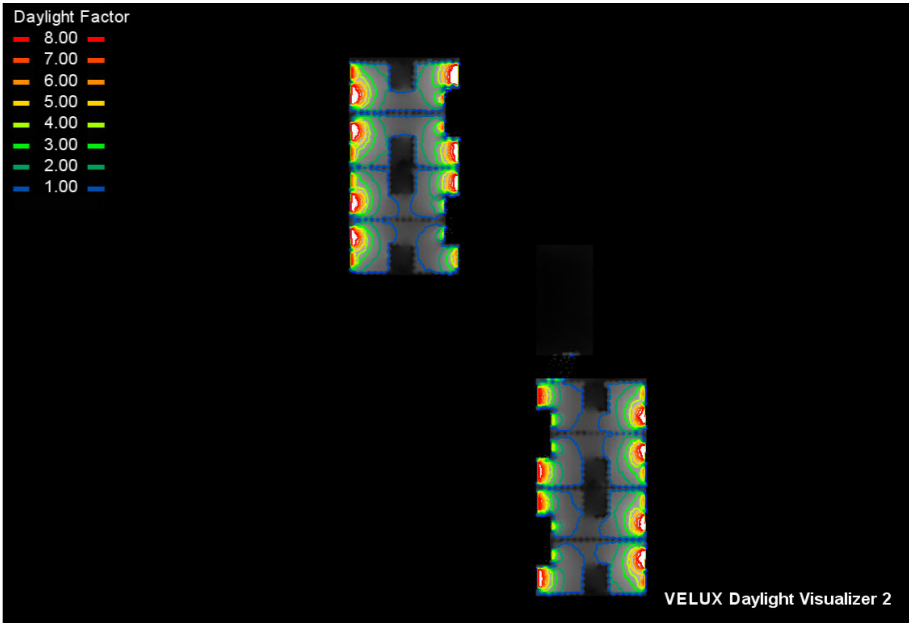
Initial building typology with 1.3 m. wide pathway and enlarged windows



Initial building typology with 1.3 m. wide pathway and enlarged windows on both sides



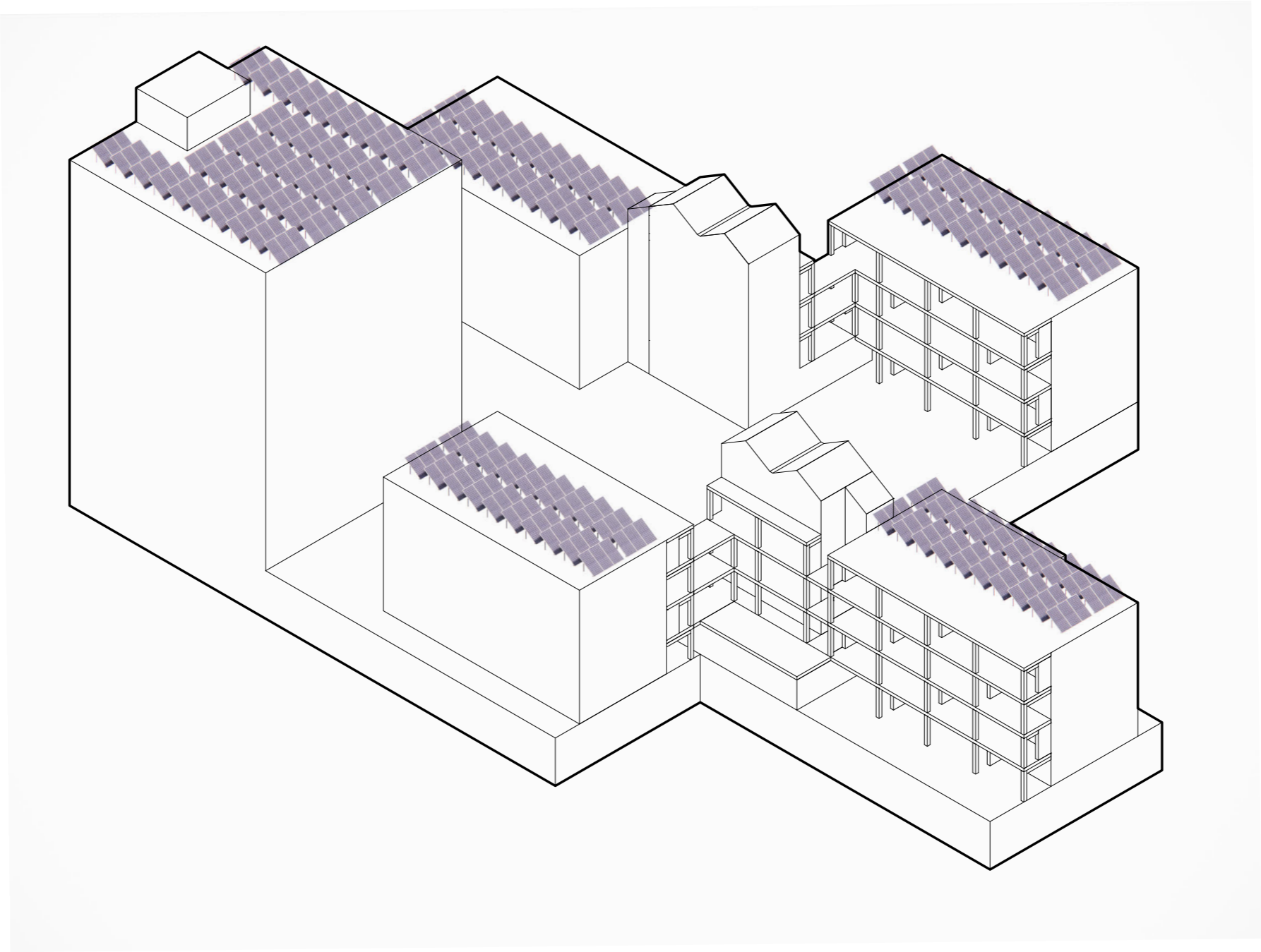
Initial building typology with 1.3 m. wide pathway and enlarged windows on both sides and kitchen window



Initial building typology with 1.3 m. wide pathway and enlarged windows on both sides and kitchen window (other level)

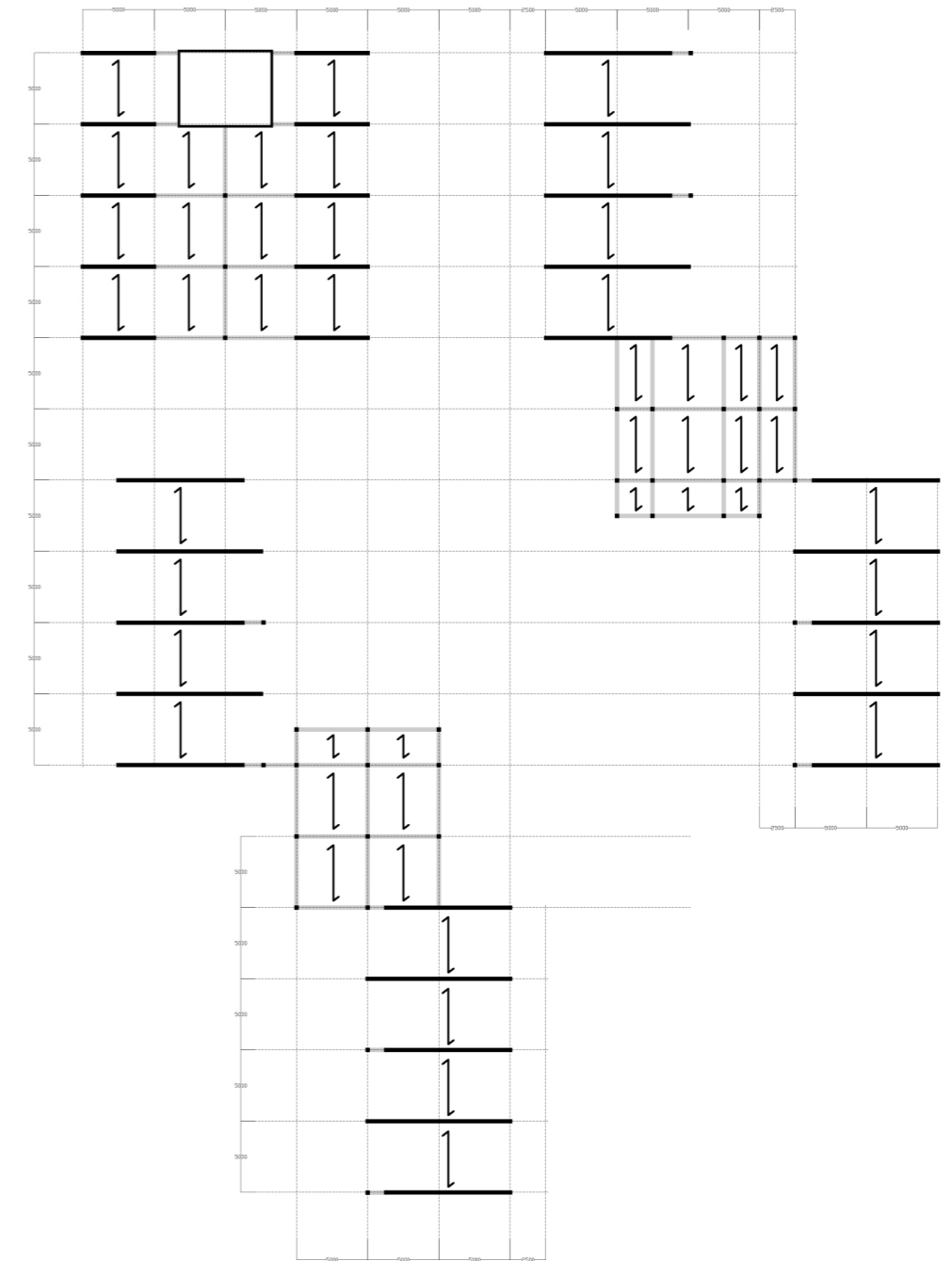
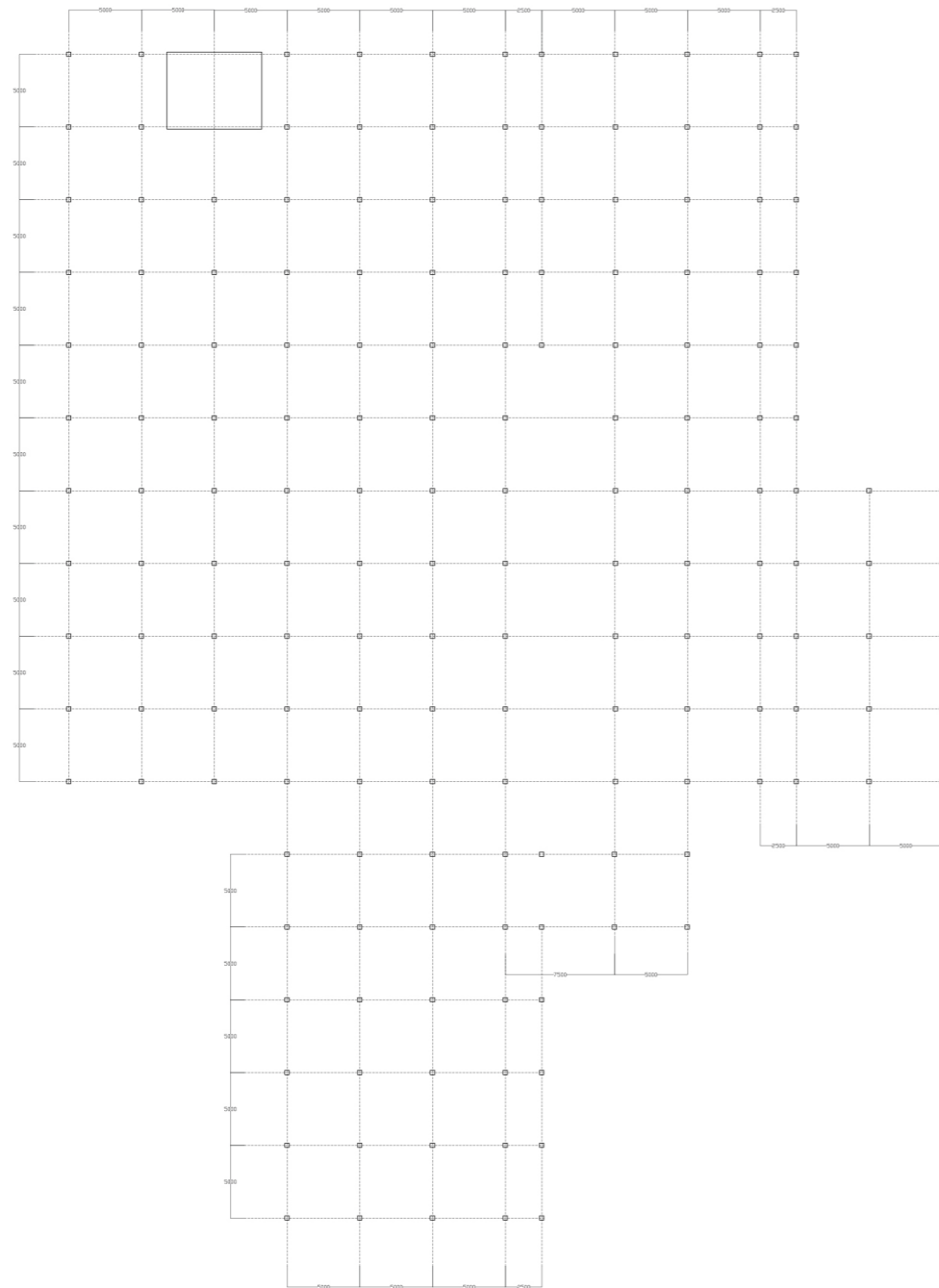
Energy production

PV panels



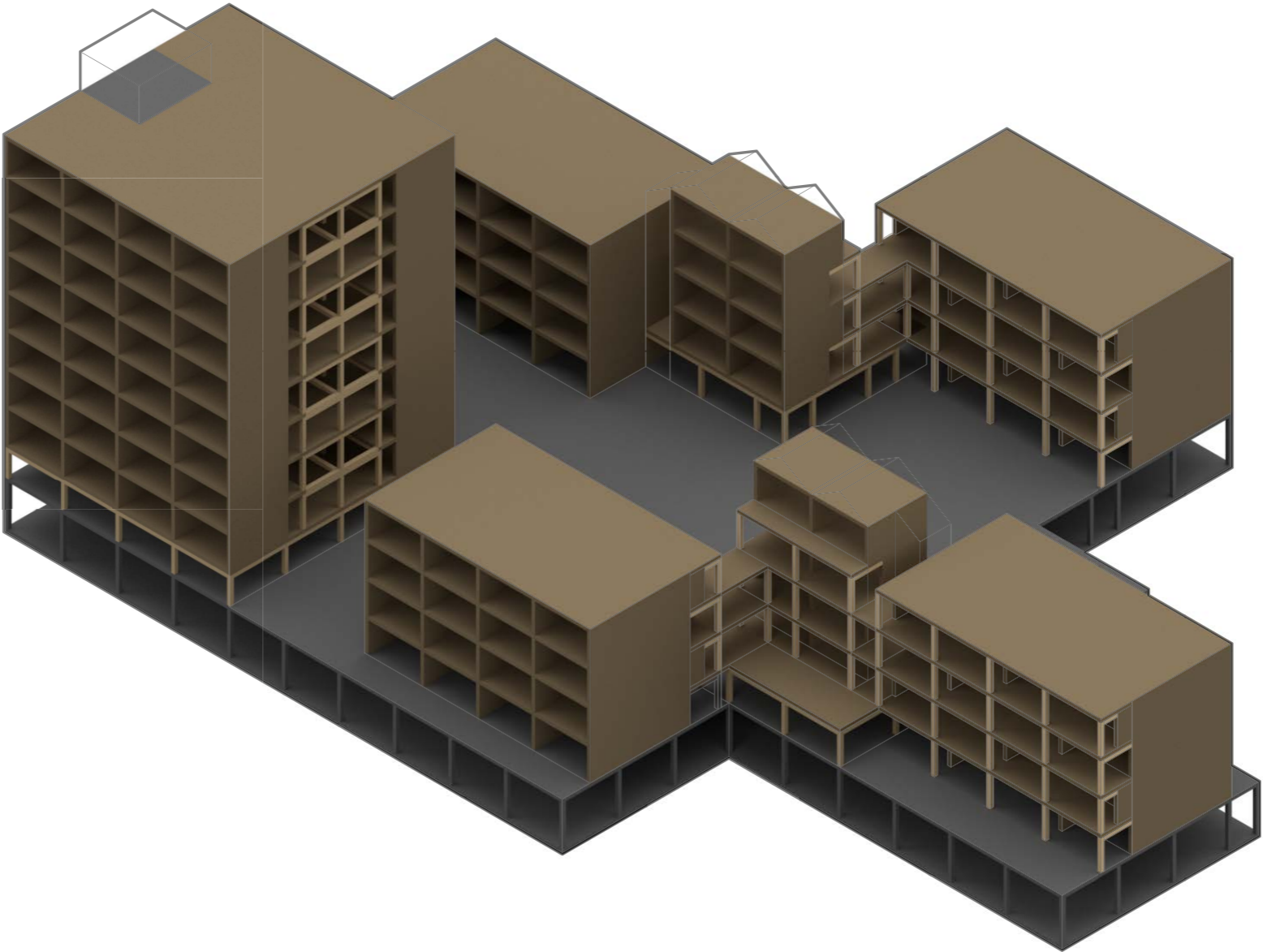
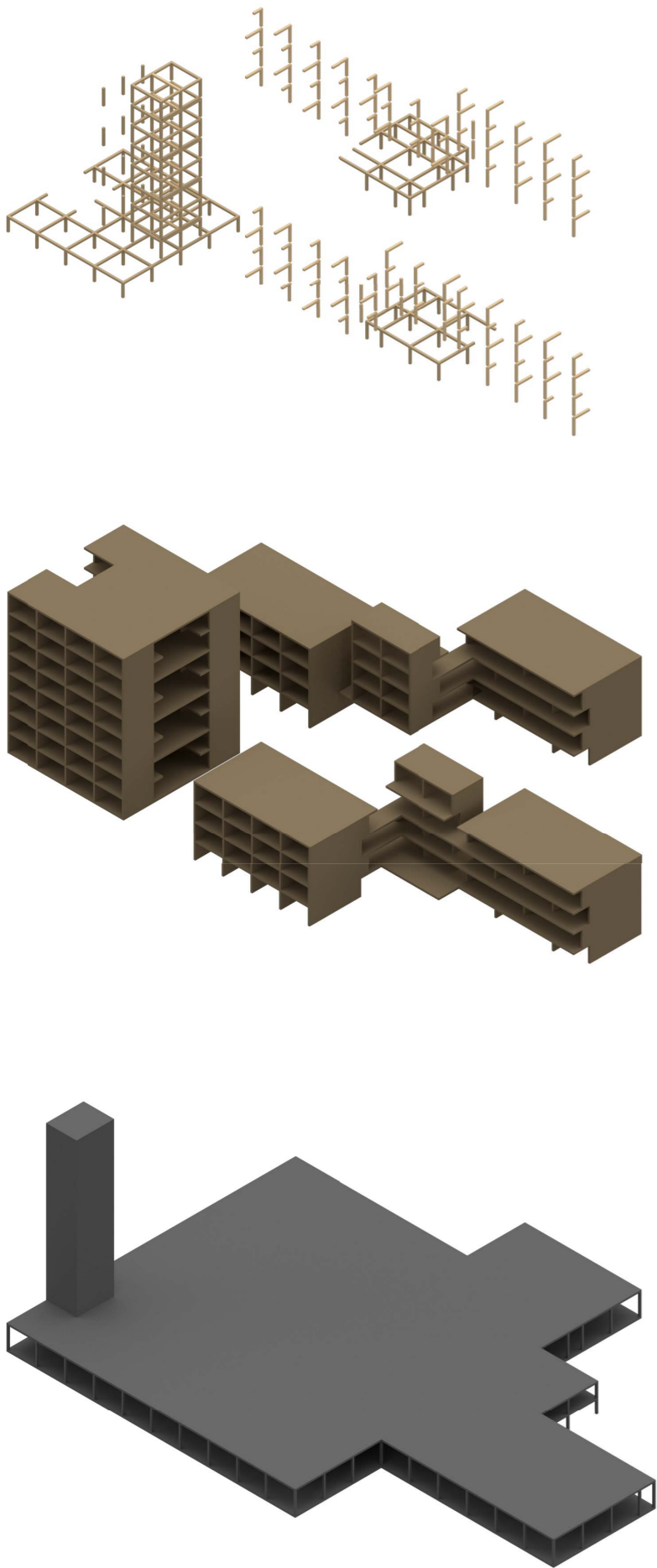
Structure

Span direction



Diagrams

Load-bearing structure

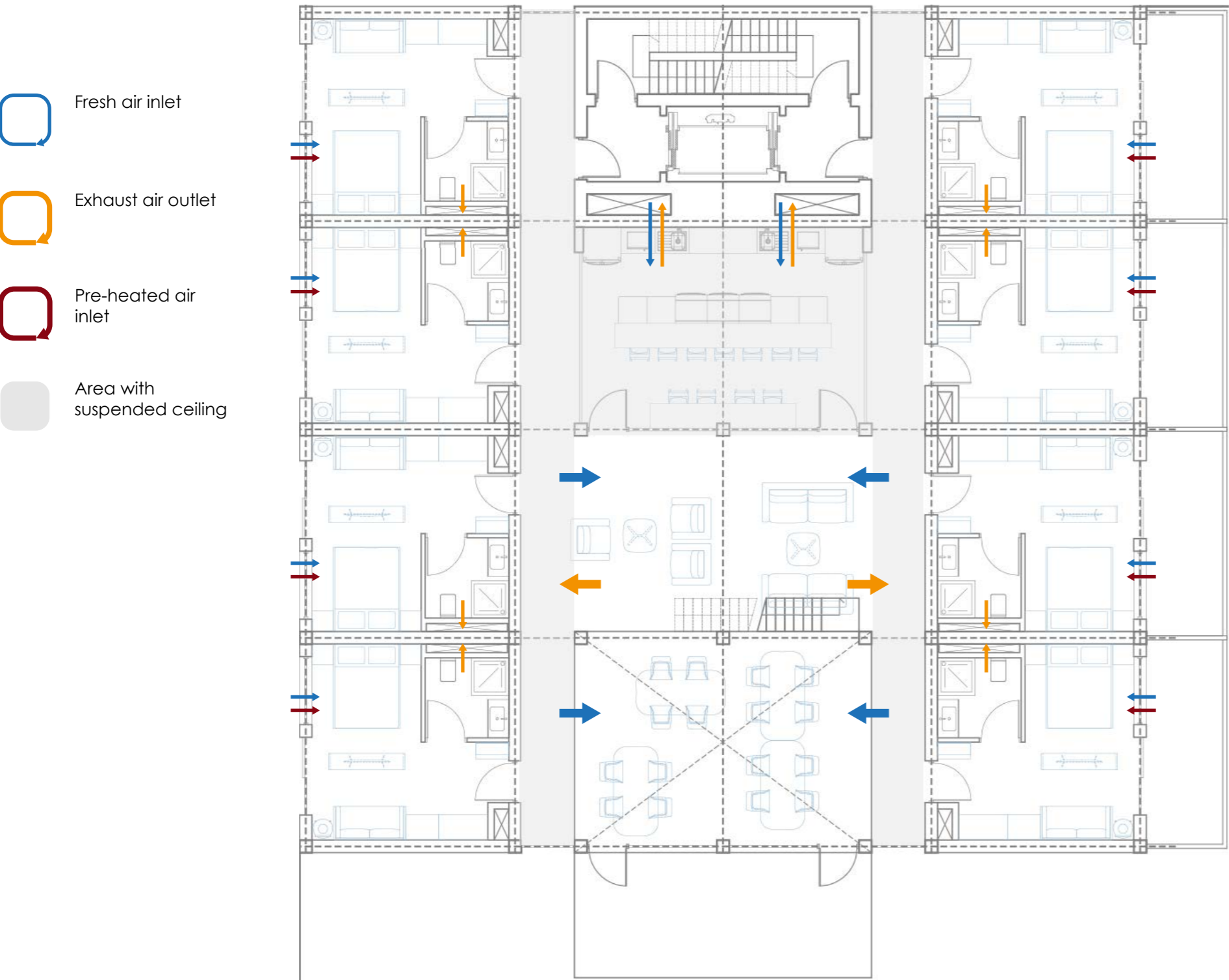


- concrete
- CLT walls and floors
- CLT columns and beams

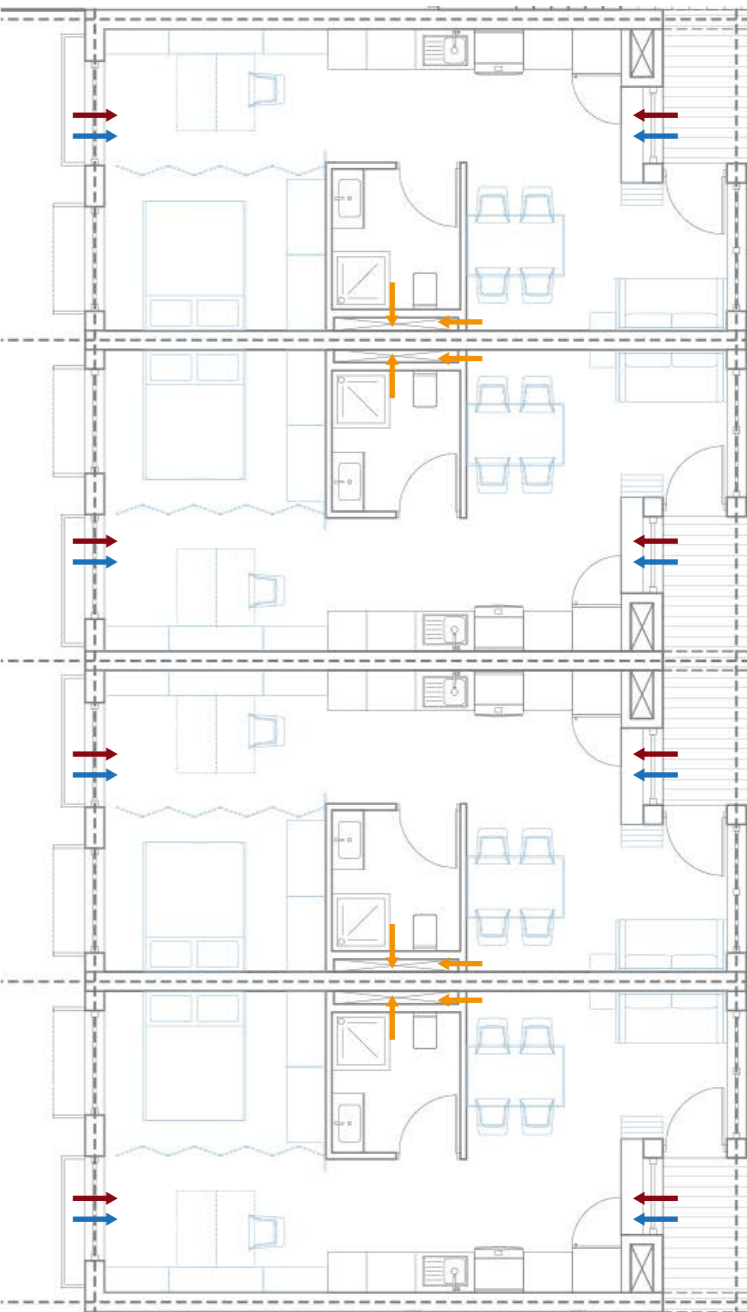
Diagrams

Climate design and sustainability principles

Tower climate system : centralised, semi-decentralised

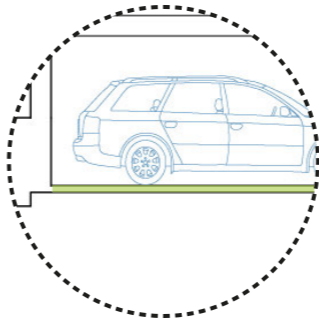
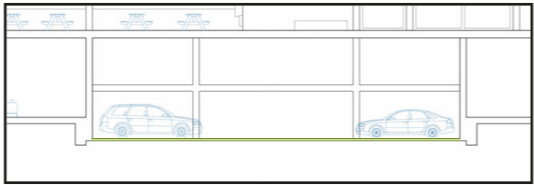
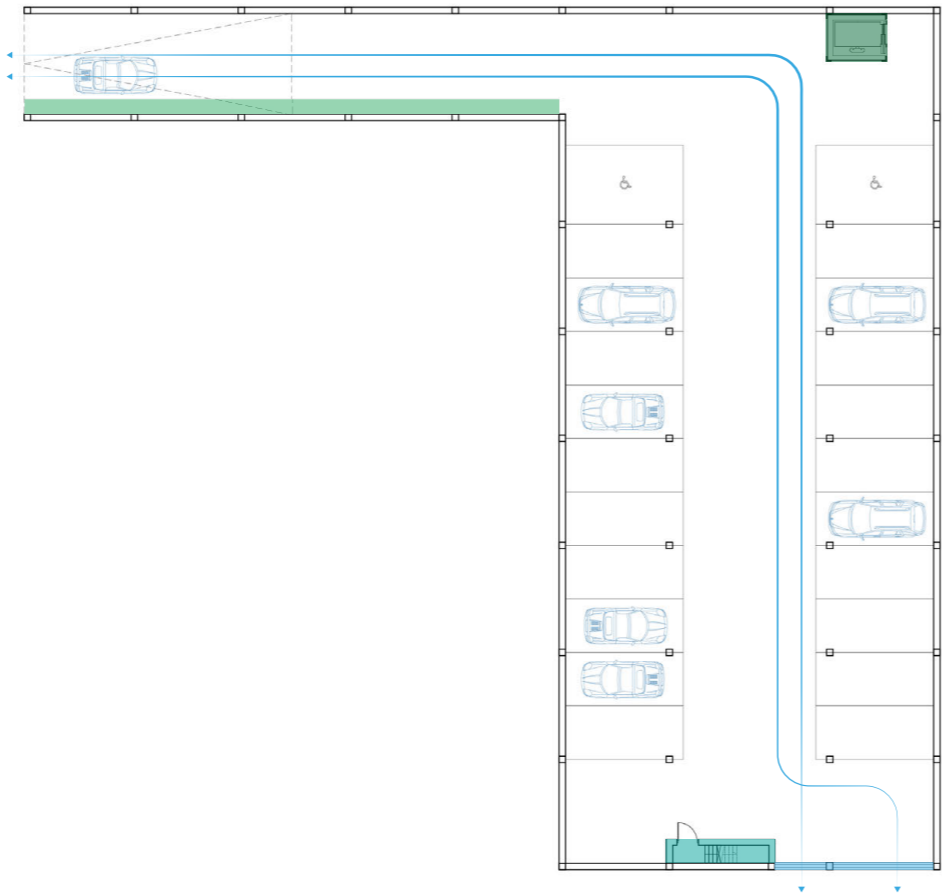


Mid-rise climate system : semi-decentralised



Basement

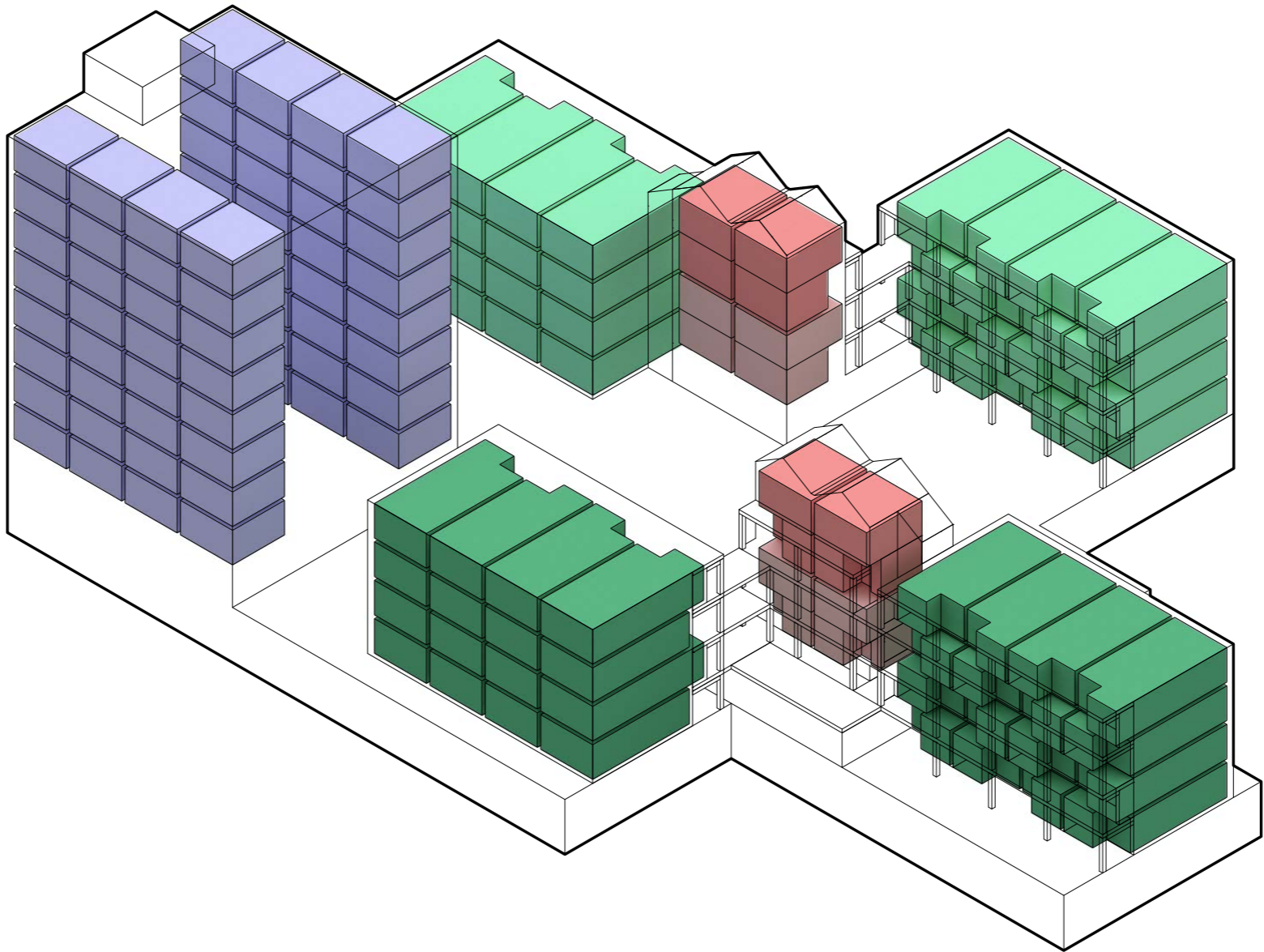
Parking solution



- air circulation
- fire escape stairs
- pedestrian entrance via ramp
- elevator
- paved surface

Diagrams

Dwelling typologies



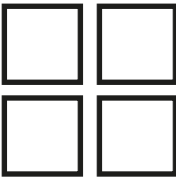
- 25 sq.m. coliving apartment
- 50 sq.m. apartment without balcony
- 50 sq.m. apartment with balcony
- 50 sq.m. 2-storey apartment
- 50 sq.m. 2-storey apartment with window on second floor

Collective functions

Tower coliving

Small 8-15 households

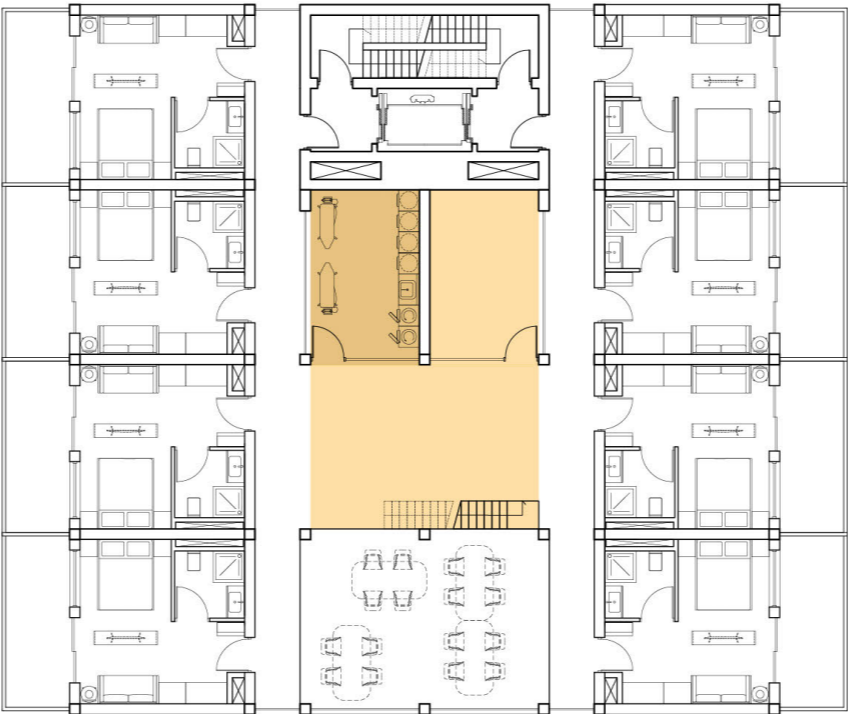
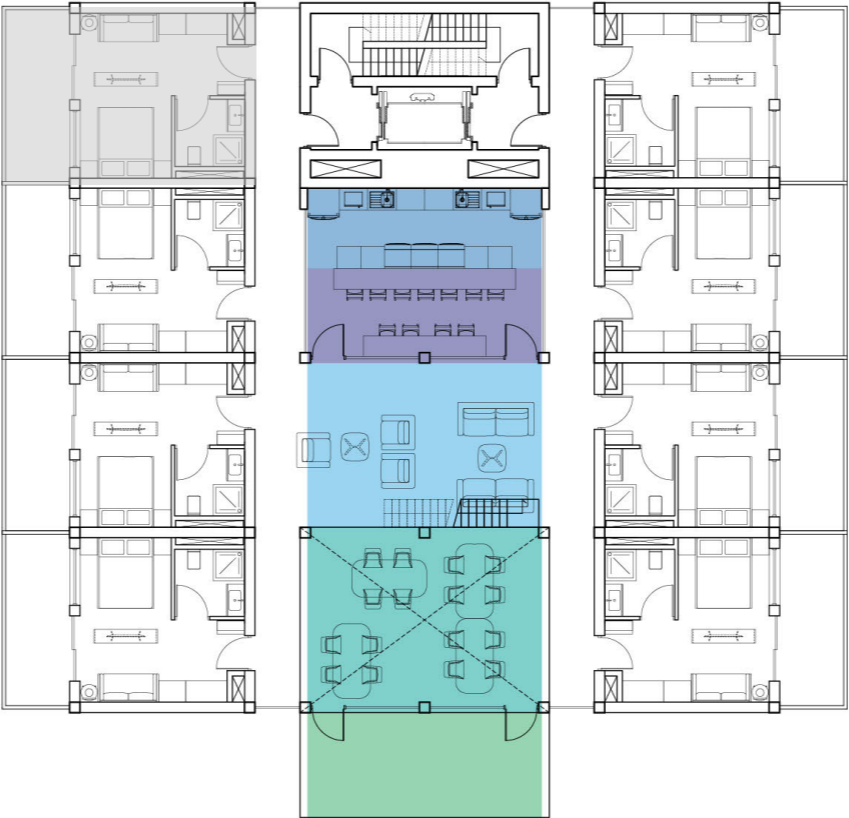
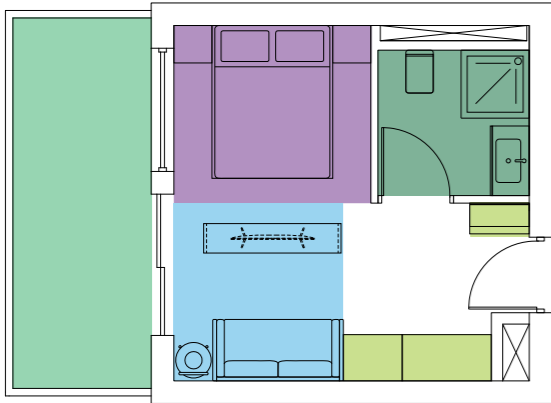
"An advantage of small communities is that they are less complicated and require less hands-on management, however, it is important that residents be highly compatible, which often results in a less diverse community."
(McCamant & Durrett, 2011)



4 coliving units in the tower



16 people per unit



- bedroom
- dining room
- kitchen
- living room
- study space
- private terrace
- WC
- storage
- flexible space
- shared laundry



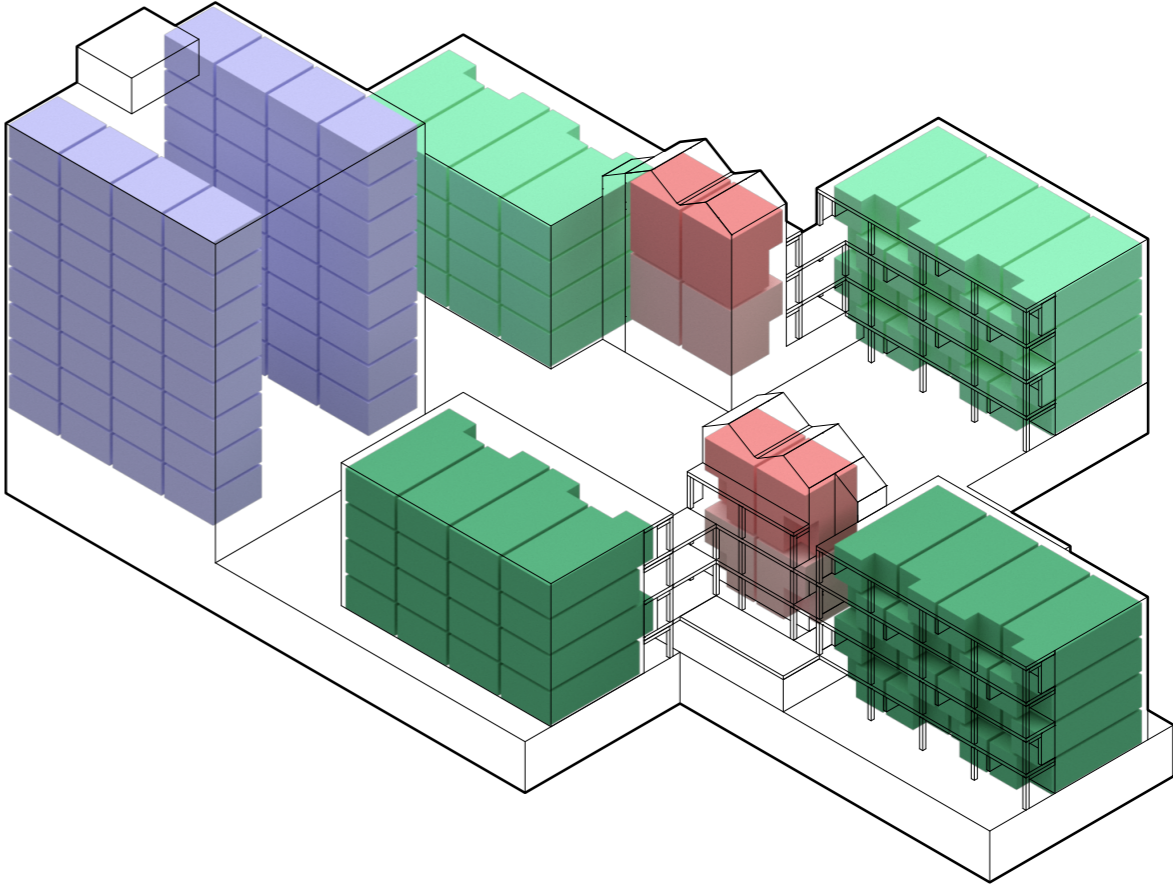
Dwelling typologies

Target groups

	25 sq.m.	50 sq.m.	50 sq.m.	50 sq.m.	50 sq.m.
	<div></div>	<div></div>	<div></div>	<div></div>	<div></div>
<div>Bedroom</div>	X	X	X	X	X
<div>Kitchen</div>		X	X	X	X
<div>Living room</div>			X	X	X
<div>Study space</div>	X	X			X
<div>Private terrace</div>	X		X	X	X
<div>WC</div>	X	X	X	X	X
<div>Storage</div>	X	X	X	X	X

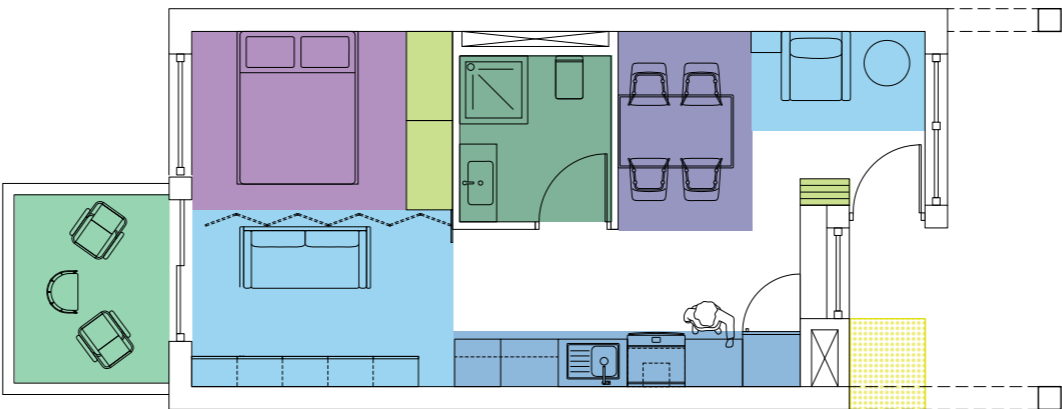
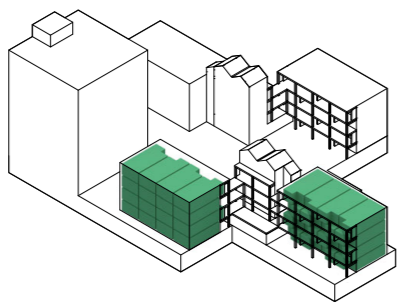
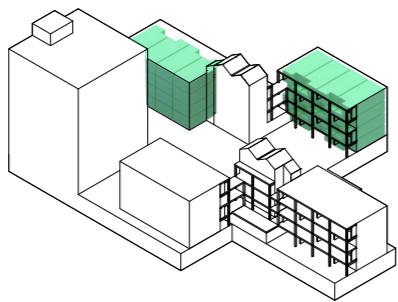
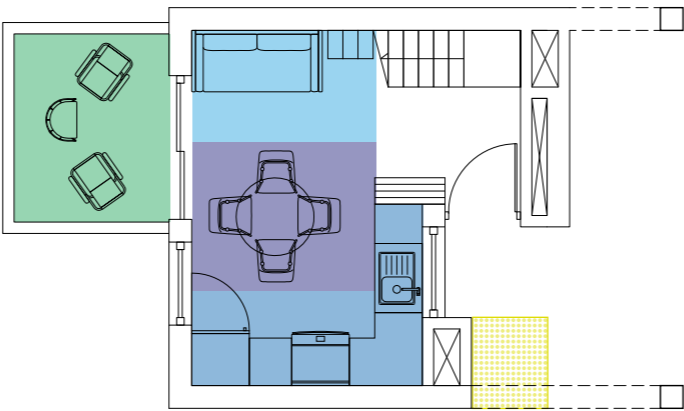
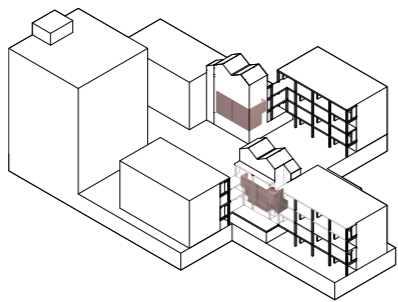
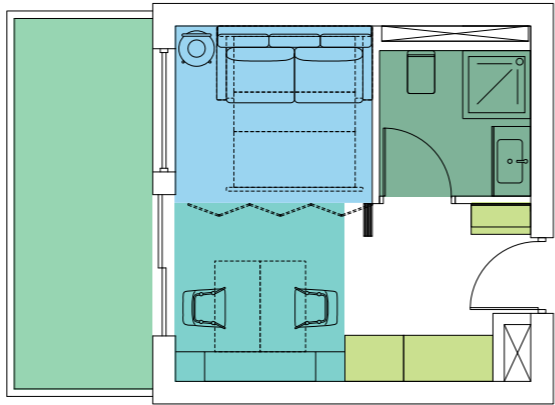
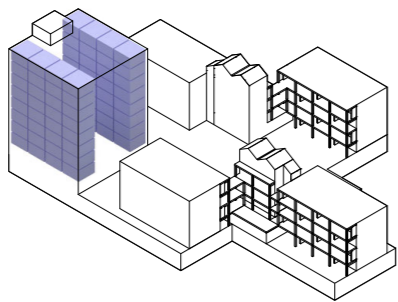
Target groups

<div>Students</div>	X	X		X	X
<div>Interns</div>	X	X		X	X
<div>Digital nimads</div>	X	X		X	X
<div>Entepreneurs</div>	X	X	X	X	X
<div>Young professionals</div>	X	X	X	X	X
<div>Expats</div>			X	X	X
<div>Divorced</div>			X	X	X
<div>Widowed</div>			X	X	X
<div>Elderly</div>			X	X	X



Dwelling types

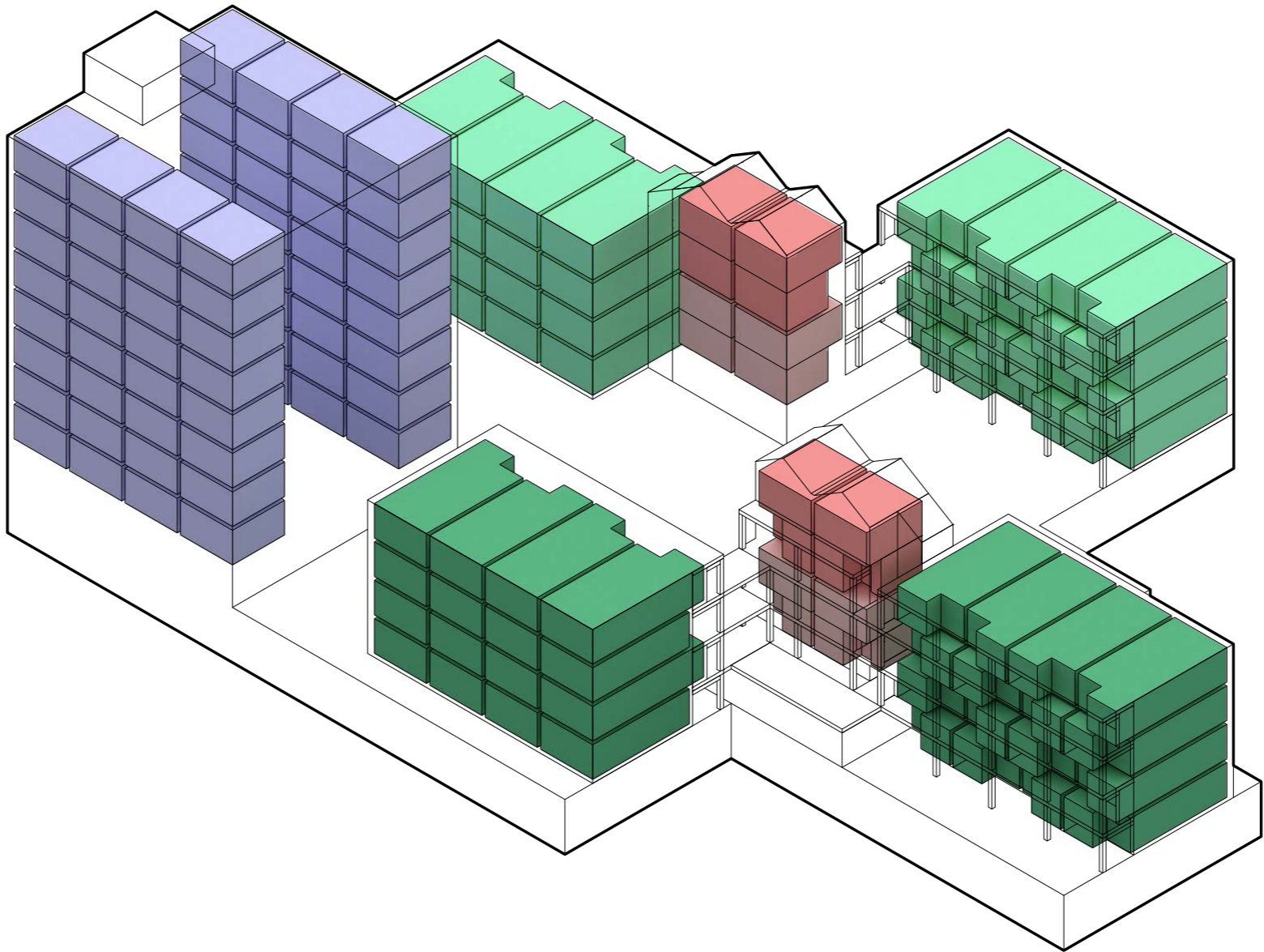
Programme



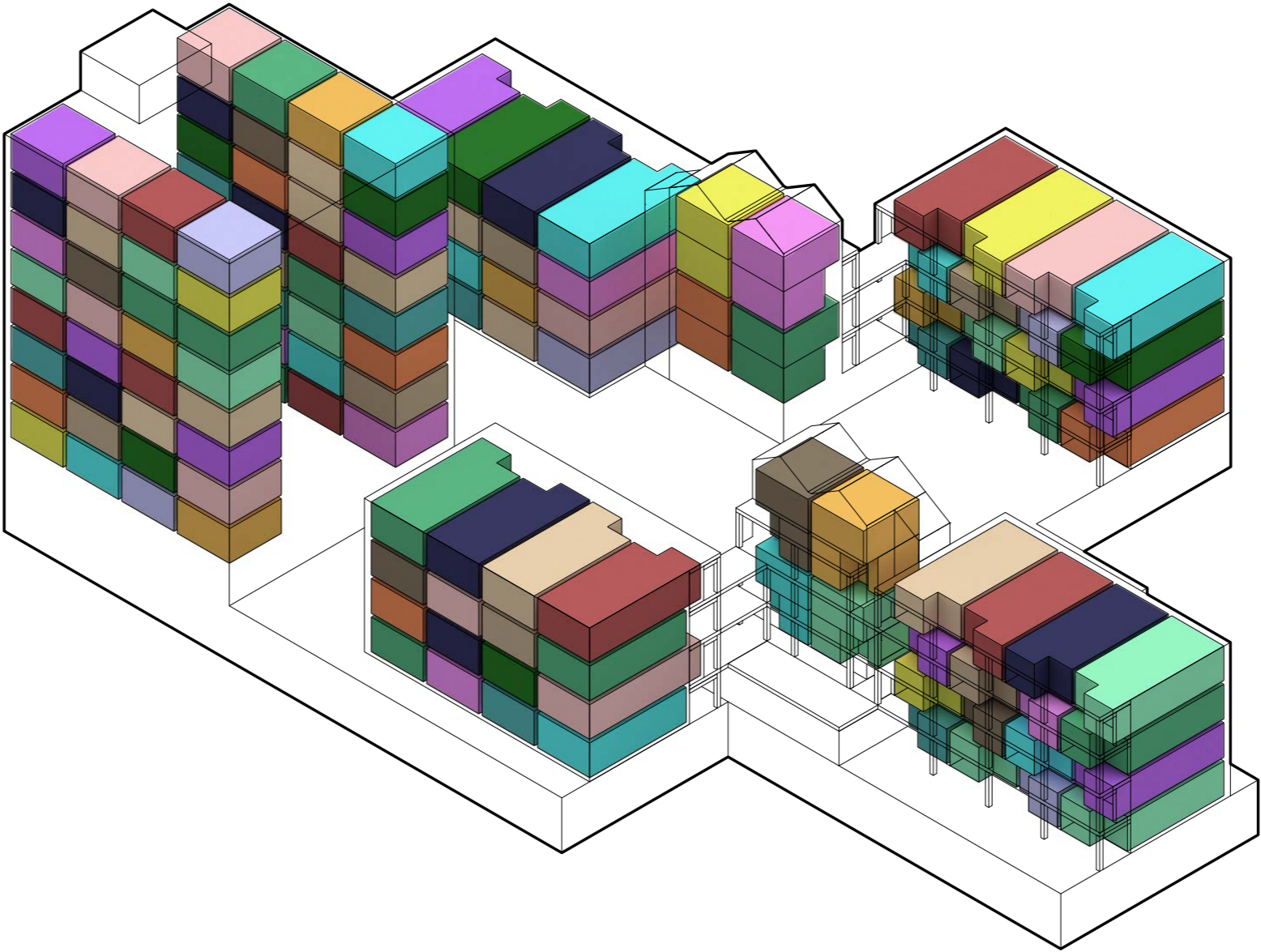
- bedroom
- dining room
- kitchen
- living room
- study space
- private terrace
- WC
- storage
- transition space

Diagrams

Dwelling typologies

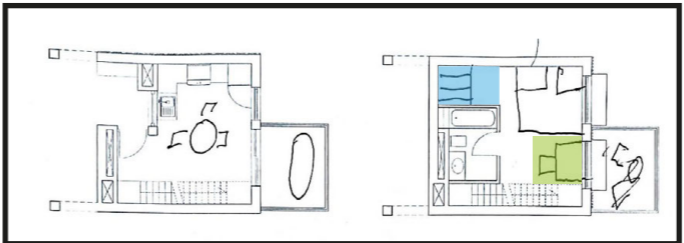
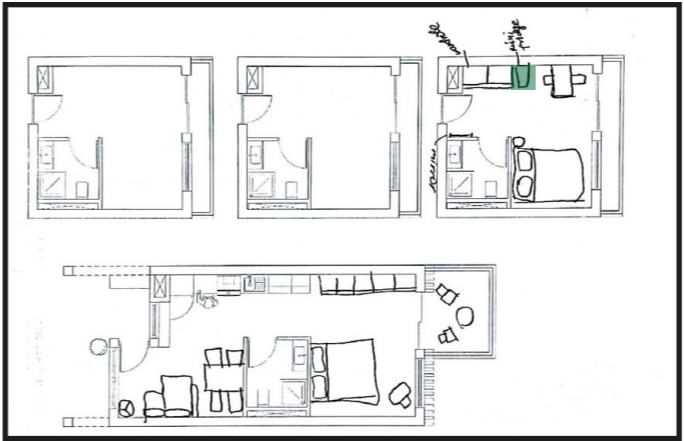
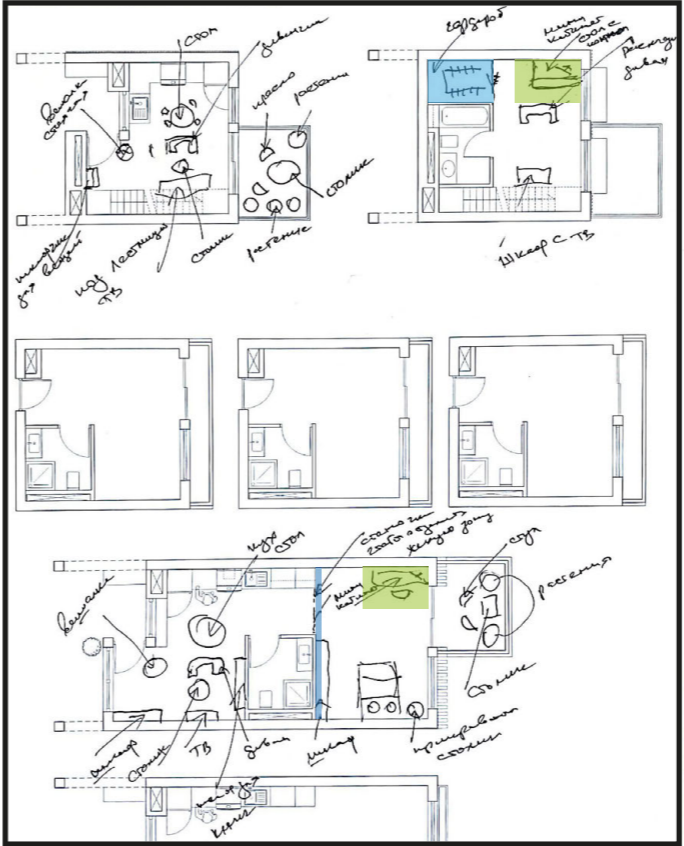
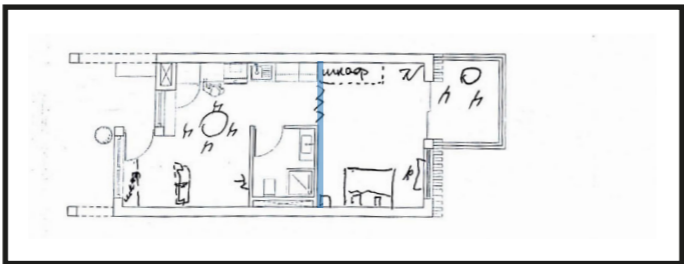
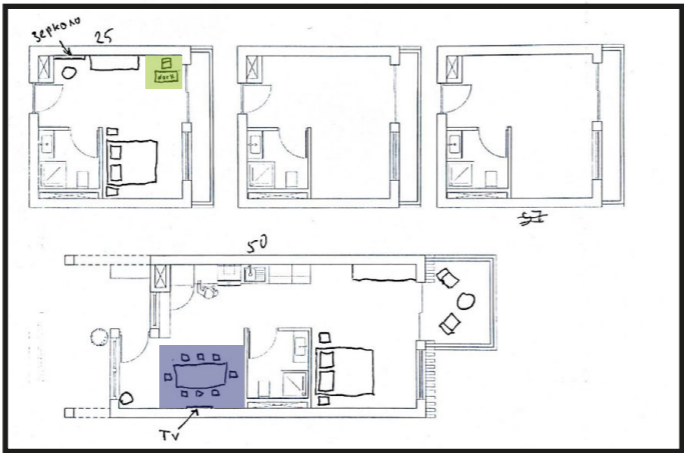


- 25 sq.m. coliving apartment
- 50 sq.m. apartment without balcony
- 50 sq.m. apartment with balcony
- 50 sq.m. 2-storey apartment
- 50 sq.m. 2-storey apartment with window on second floor



Conclusions

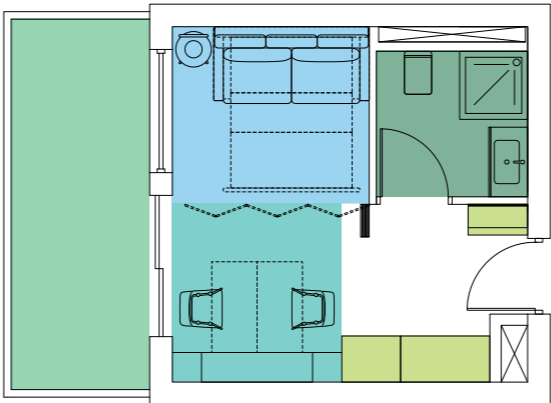
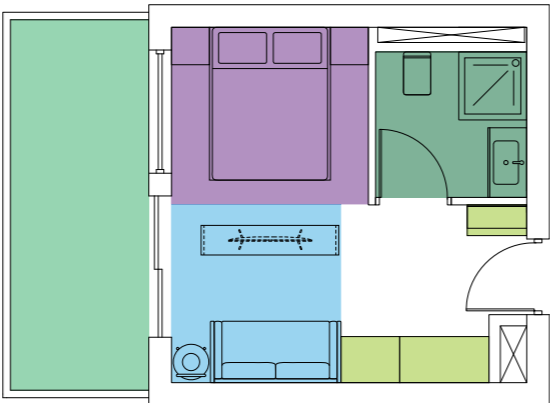
Plan interviews



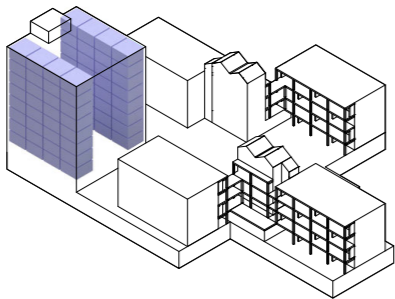
- Table for more than 4 people in the apartment for one person
- Splitting the apartment along the WC wall into private and collective zones
- Placement of wardrobe on 2nd floor of a 2-storey apartment
- Introduction of workspace in the apartment
- Small fridge in the coliving apartment

Typologies

Various functions



- bedroom
- dining room
- kitchen
- living room
- study space
- private terrace
- WC
- storage
- transition space

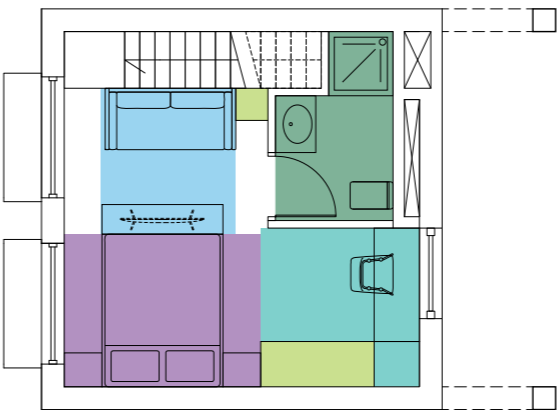
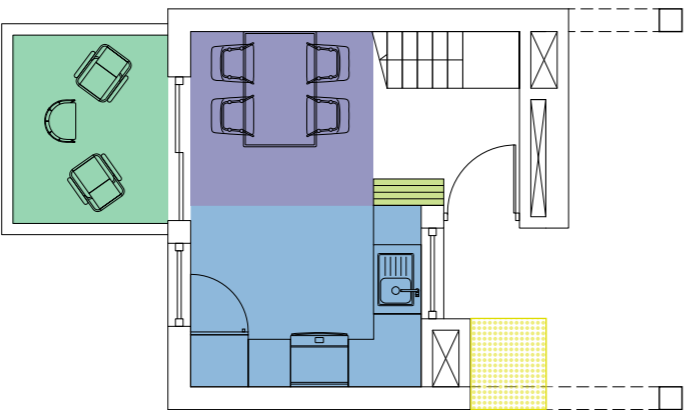
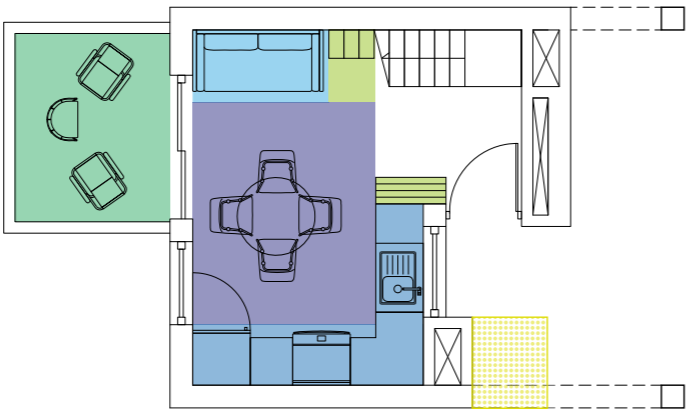
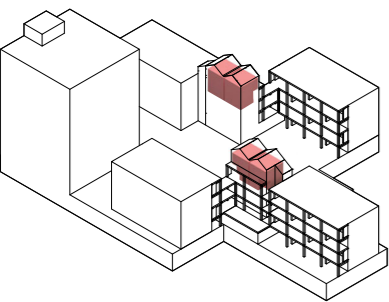
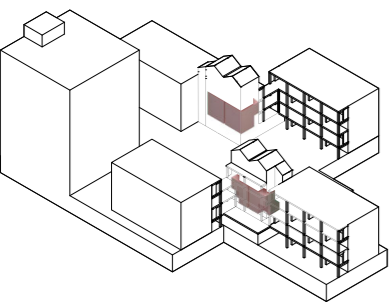


Interior 25 sq.m.



Typologies

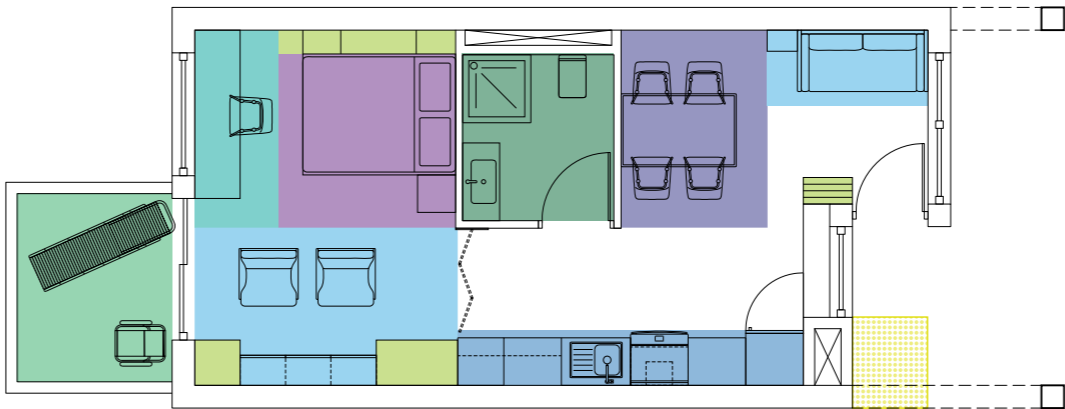
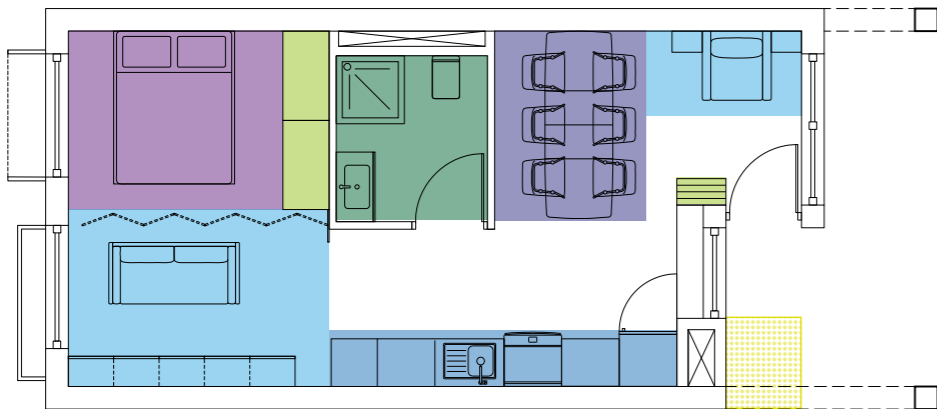
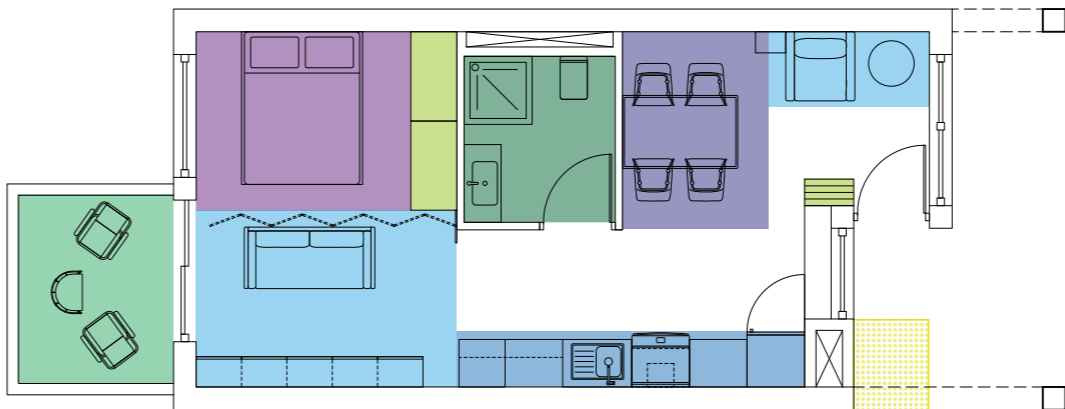
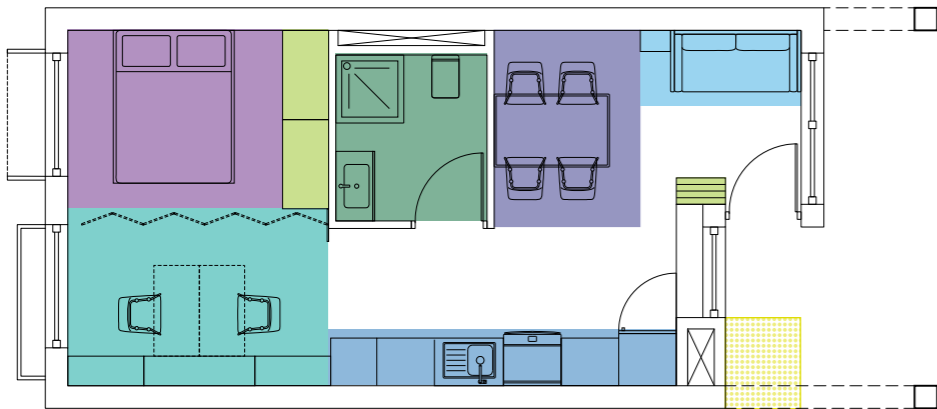
Various functions



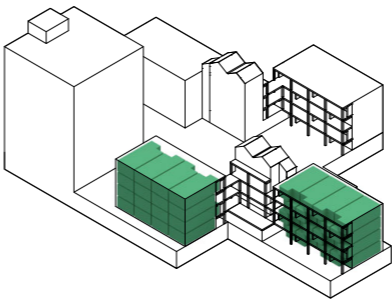
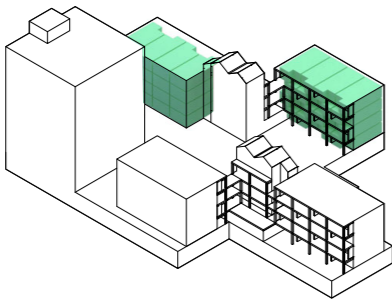
- bedroom
- dining room
- kitchen
- living room
- study space
- private terrace
- WC
- storage
- transition space

Typologies

Various functions



- bedroom
- dining room
- kitchen
- living room
- study space
- private terrace
- WC
- storage
- transition space





Basement

1/250

Loss of space in the private unit supported by the provision of communal spaces

Private units to be smaller than average unit size (with limited kitchen and laundry facilities)

Positioning of key facilities (activity sites) and access points on shared walkways

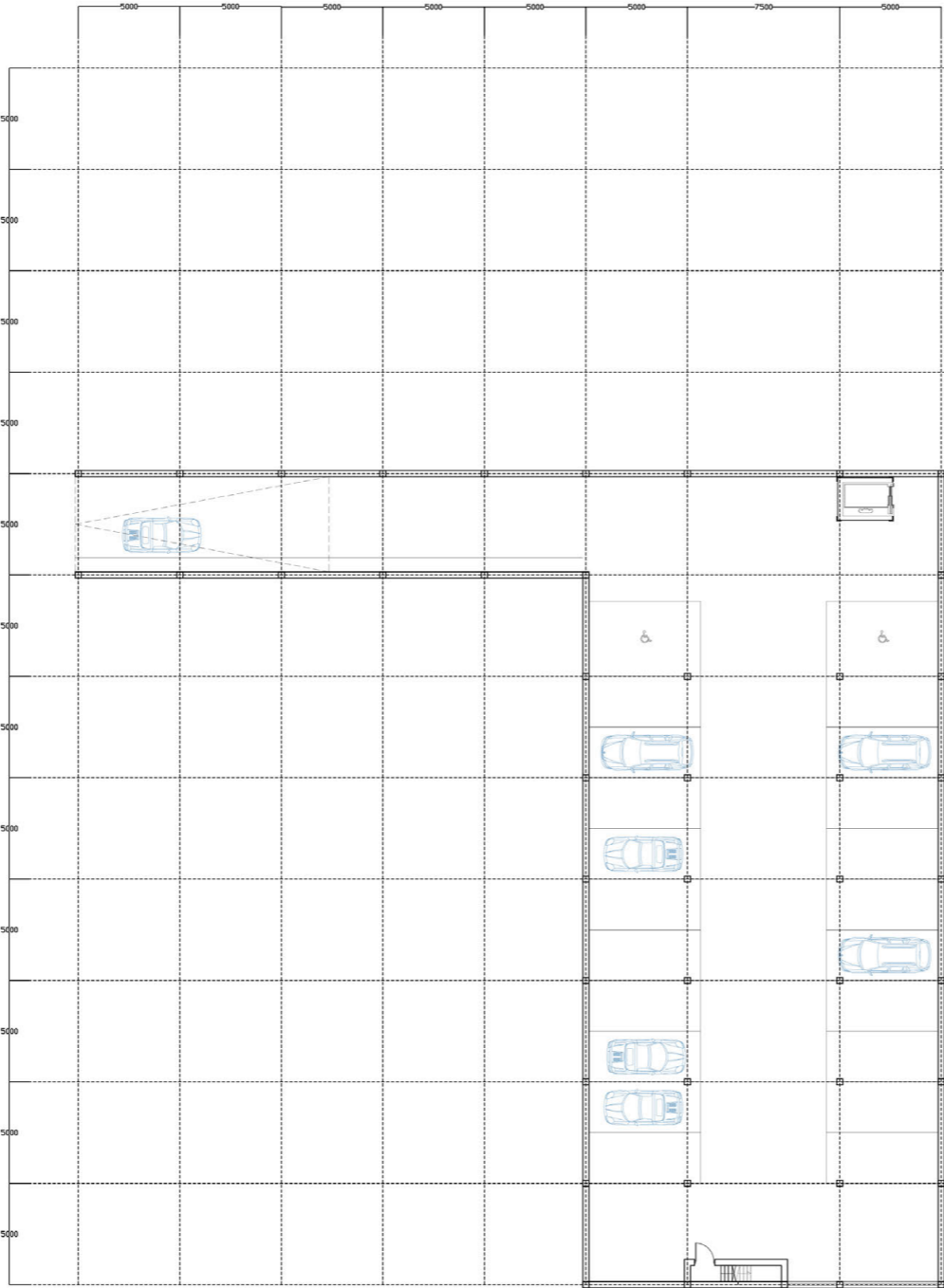
Provision of semi-private outdoor spaces close to private units for socializing

Gradual transition between public and private spaces

Car parking outside the community or car-free communities

Good visibility into all communal spaces

The provision of indoor and outdoor communal facilities



Private outdoor space (balcony/terrace)

Small communal area per floor

Constantly changing views (Not only facing inner courtyard)

Vibrant community of singletons on building scale

Homogenous community on smaller scale

High levels of privacy and security

Private dwellings with high level of comfort

The notion of choice

Ground floor

1/250

Loss of space in the private unit supported by the provision of communal spaces

Private units to be smaller than average unit size (with limited kitchen and laundry facilities)

Positioning of key facilities (activity sites) and access points on shared walkways

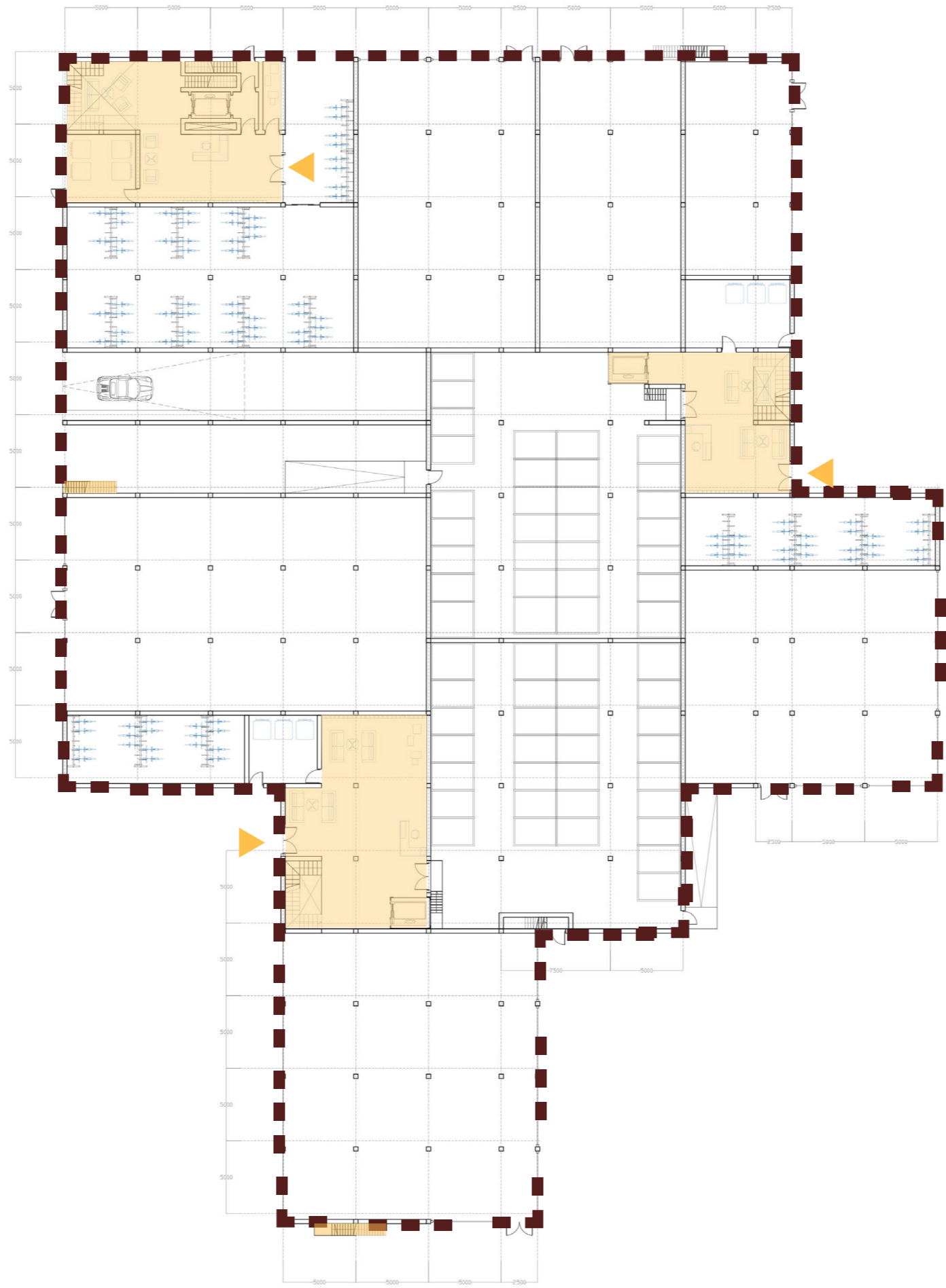
Provision of semi-private outdoor spaces close to private units for socializing

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The notion of choice

First floor

1/250



Loss of space in the private unit supported by the provision of communal spaces



Private units to be smaller than average unit size (with limited kitchen and laundry facilities)



Positioning of key facilities (activity sites) and access points on shared walkways



Provision of semi-private outdoor spaces close to private units for socializing



Gradual transition between public and private spaces



Car parking outside the community or car-free communities



Good visibility into all communal spaces



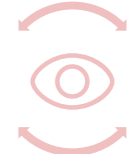
The provision of indoor and outdoor communal facilities



Private outdoor space (balcony/terrace)



Small communal area per floor



Constantly changing views (Not only facing inner courtyard)



Vibrant community of singletons on building scale



Homogenous community on smaller scale



High levels of privacy and security



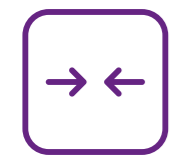
Private dwellings with high level of comfort



The notion of choice

Second floor

1/250



Loss of space in the private unit supported by the provision of communal spaces



Private units to be smaller than average unit size (with limited kitchen and laundry facilities)



Positioning of key facilities (activity sites) and access points on shared walkways



Provision of semi-private outdoor spaces close to private units for socializing



Gradual transition between public and private spaces



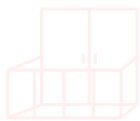
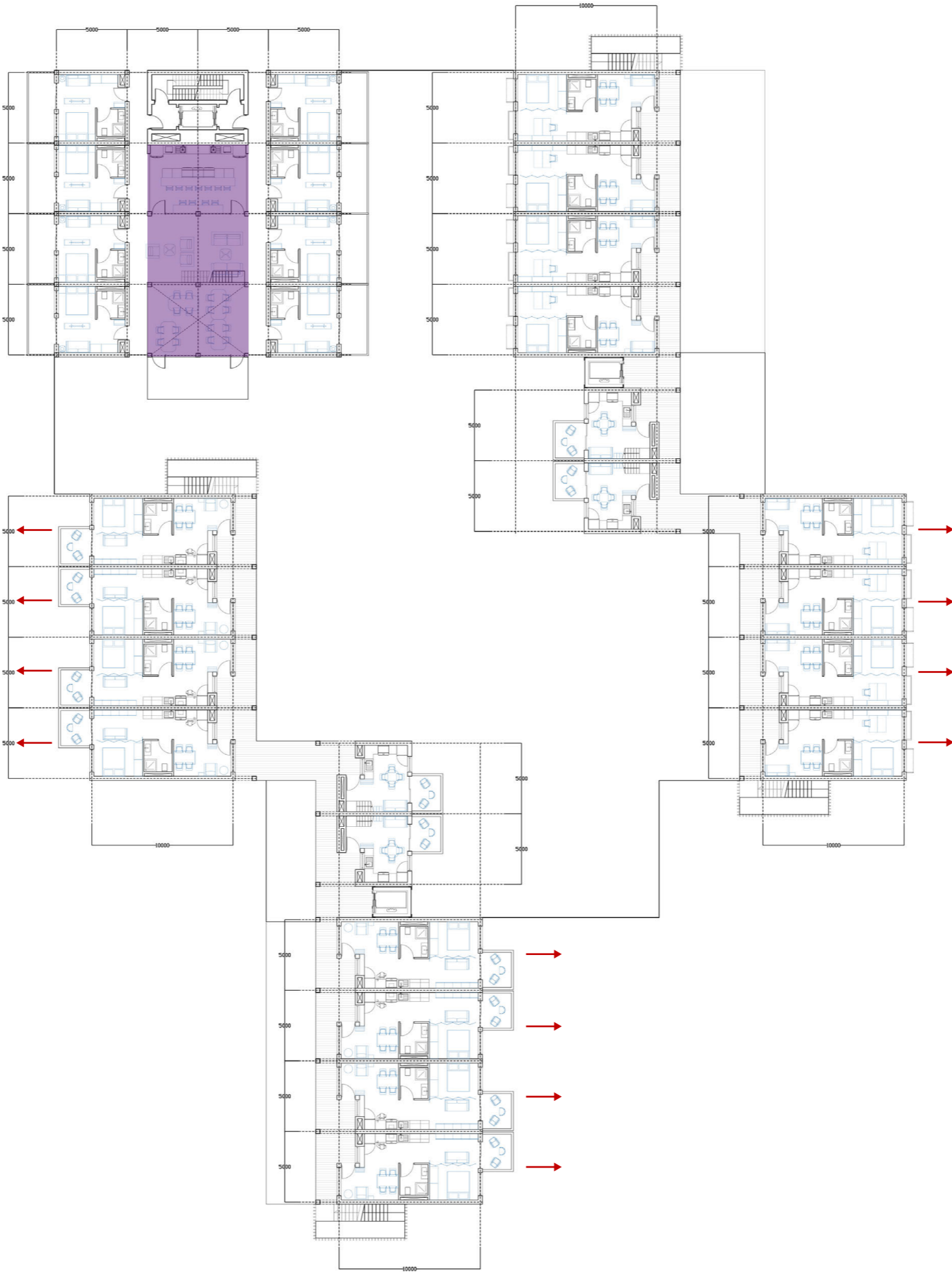
Car parking outside the community or car-free communities



Good visibility into all communal spaces



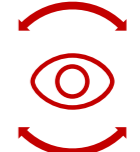
The provision of indoor and outdoor communal facilities



Private outdoor space (balcony/terrace)



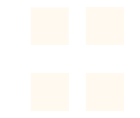
Small communal area per floor



Constantly changing views (Not only facing inner courtyard)



Vibrant community of singletons on building scale



Homogenous community on smaller scale



High levels of privacy and security



Private dwellings with high level of comfort



The notion of choice

Third floor

1/250



Loss of space in the private unit supported by the provision of communal spaces



Private units to be smaller than average unit size (with limited kitchen and laundry facilities)



Positioning of key facilities (activity sites) and access points on shared walkways



Provision of semi-private outdoor spaces close to private units for socializing



Gradual transition between public and private spaces



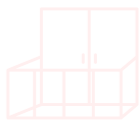
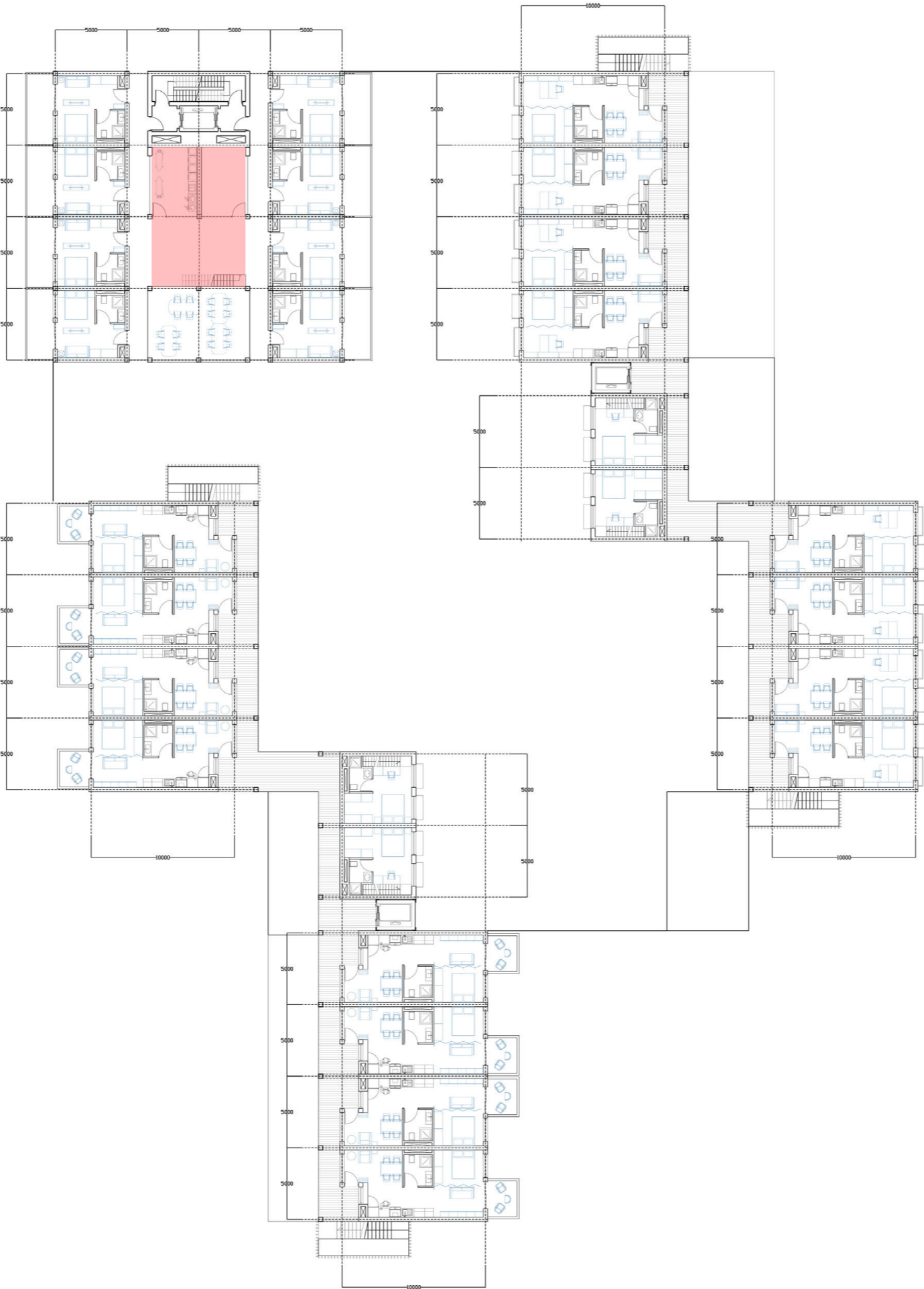
Car parking outside the community or car-free communities



Good visibility into all communal spaces



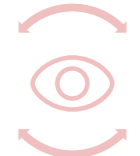
The provision of indoor and outdoor communal facilities



Private outdoor space (balcony/terrace)



Small communal area per floor



Constantly changing views (Not only facing inner courtyard)



Vibrant community of singletons on building scale



Homogenous community on smaller scale



High levels of privacy and security



Private dwellings with high level of comfort



The notion of choice

Fourth floor

1/250

Loss of space in the private unit supported by the provision of communal spaces

Private units to be smaller than average unit size (with limited kitchen and laundry facilities)

Positioning of key facilities (activity sites) and access points on shared walkways

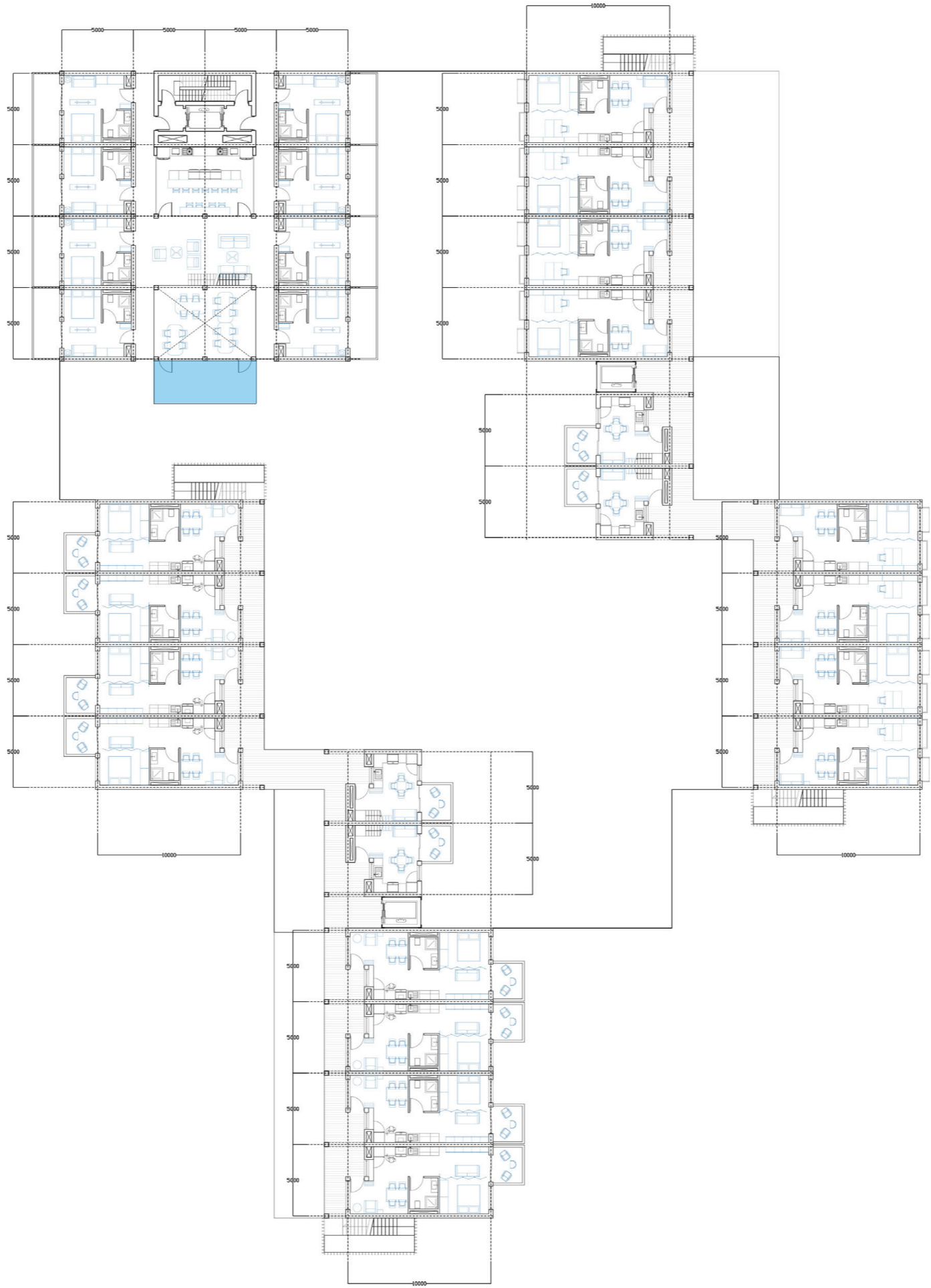
Provision of semi-private outdoor spaces close to private units for socializing

Gradual transition between public and private spaces

Car parking outside the community or car-free communities

Good visibility into all communal spaces

The provision of indoor and outdoor communal facilities



Private outdoor space (balcony/terrace)

Small communal area per floor

Constantly changing views (Not only facing inner courtyard)

Vibrant community of singletons on building scale

Homogenous community on smaller scale

High levels of privacy and security

Private dwellings with high level of comfort

The notion of choice

Fifth floor

1/250



Loss of space in the private unit supported by the provision of communal spaces



Private units to be smaller than average unit size (with limited kitchen and laundry facilities)



Positioning of key facilities (activity sites) and access points on shared walkways



Provision of semi-private outdoor spaces close to private units for socializing



Gradual transition between public and private spaces



Car parking outside the community or car-free communities

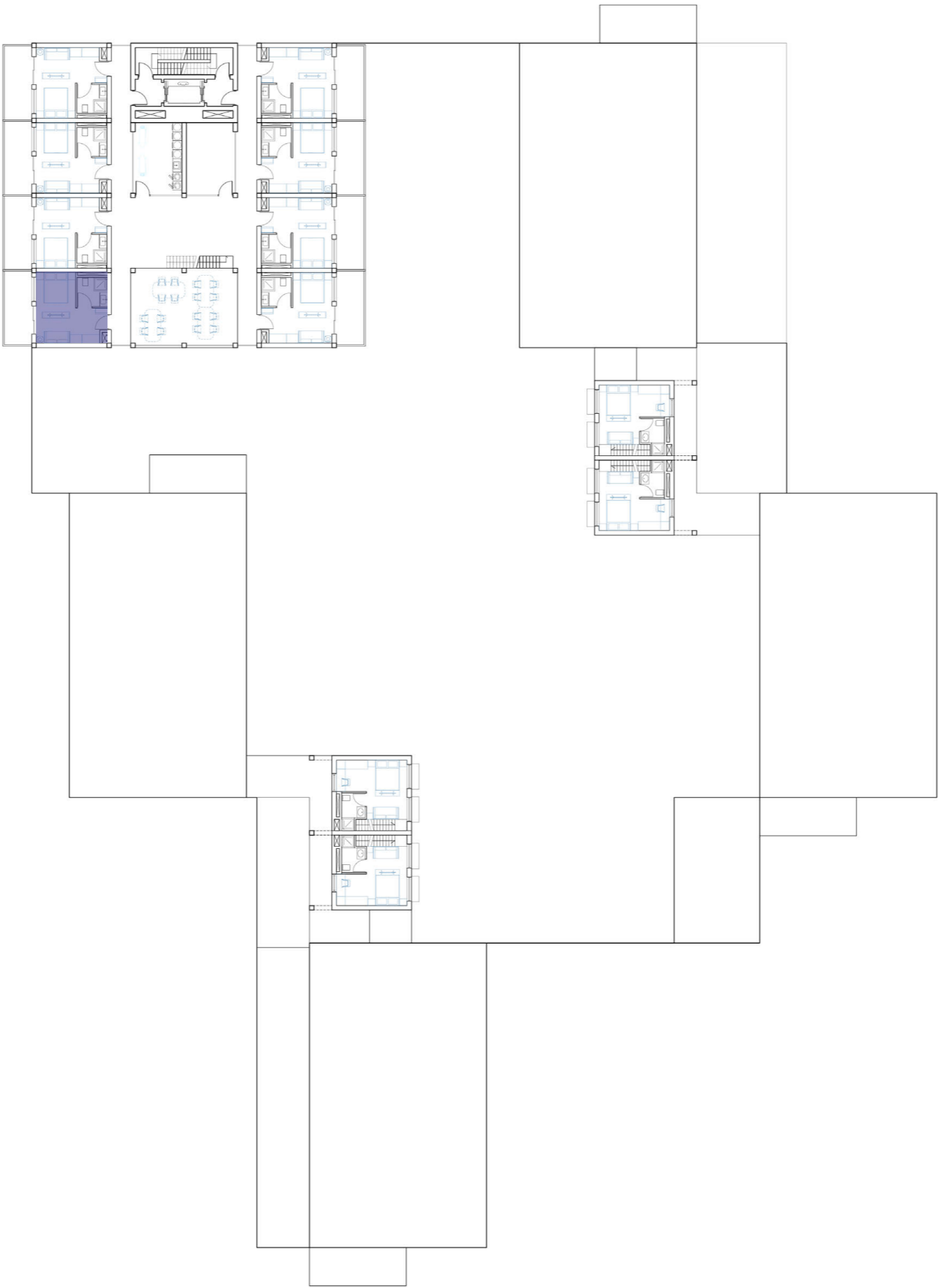


Good visibility into all communal spaces



The provision of indoor and outdoor communal facilities

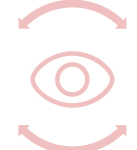
Principles for cohousing design that provoke social contacts (Frank & Ahrentzen, 1989)



Private outdoor space (balcony/terrace)



Small communal area per floor



Constantly changing views (Not only facing inner courtyard)



Vibrant community of singletons on building scale



Homogenous community on smaller scale



High levels of privacy and security



Private dwellings with high level of comfort




The notion of choice

P2 research conclusions

Sixth floor

1/500




Loss of space in the private unit supported by the provision of communal spaces



Private units to be smaller than average unit size (with limited kitchen and laundry facilities)




Positioning of key facilities (activity sites) and access points on shared walkways



Provision of semi-private outdoor spaces close to private units for socializing



Gradual transition between public and private spaces



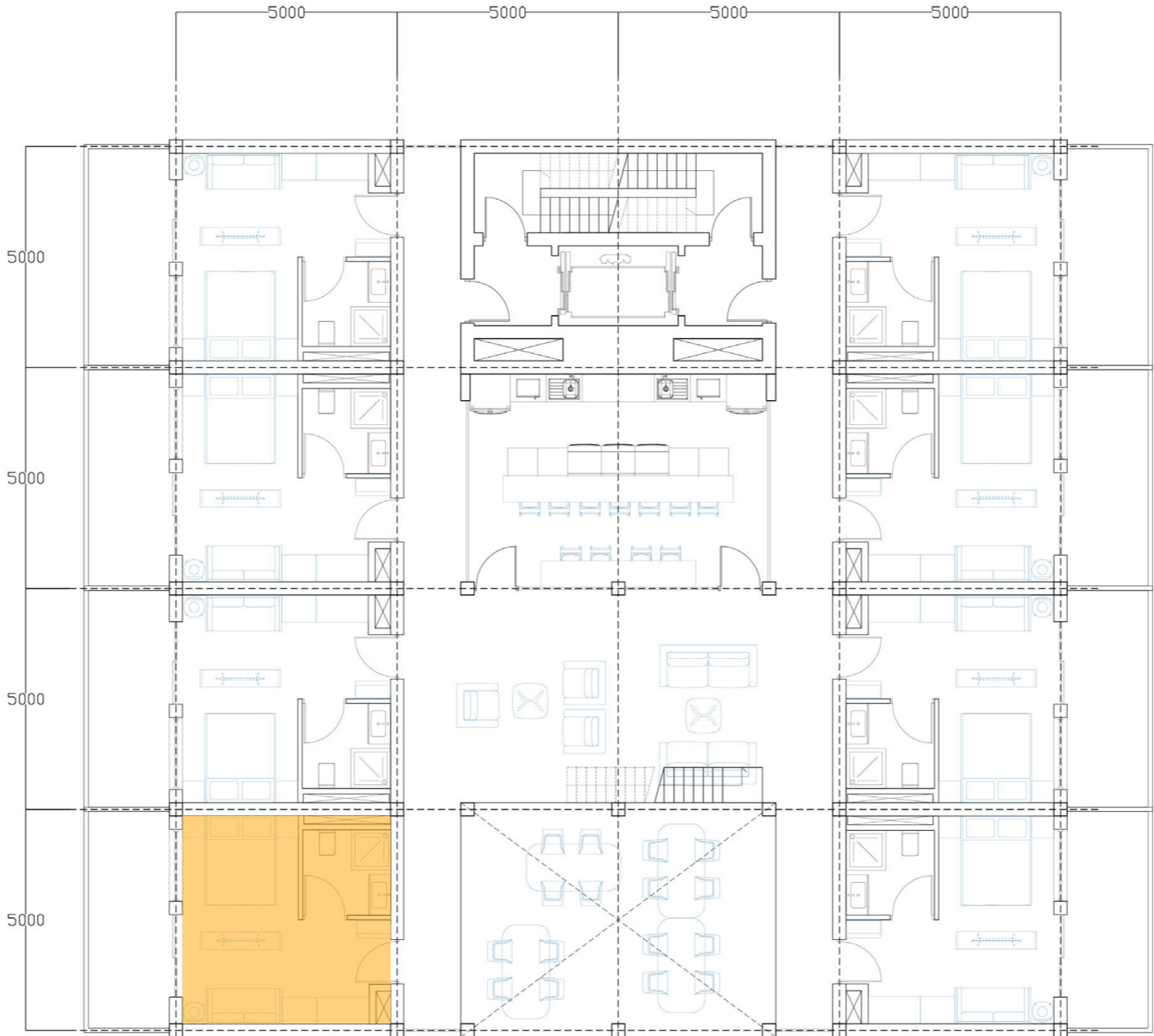
Car parking outside the community or car-free communities



Good visibility into all communal spaces



The provision of indoor and outdoor communal facilities





Private outdoor space (balcony/terrace)




Small communal area per floor



Constantly changing views (Not only facing inner courtyard)



Vibrant community of singletons on building scale



Homogenous community on smaller scale



High levels of privacy and security



Private dwellings with high level of comfort



The notion of choice

Seventh floor

1/500

Loss of space in the private unit supported by the provision of communal spaces

Private units to be smaller than average unit size (with limited kitchen and laundry facilities)

Positioning of key facilities (activity sites) and access points on shared walkways

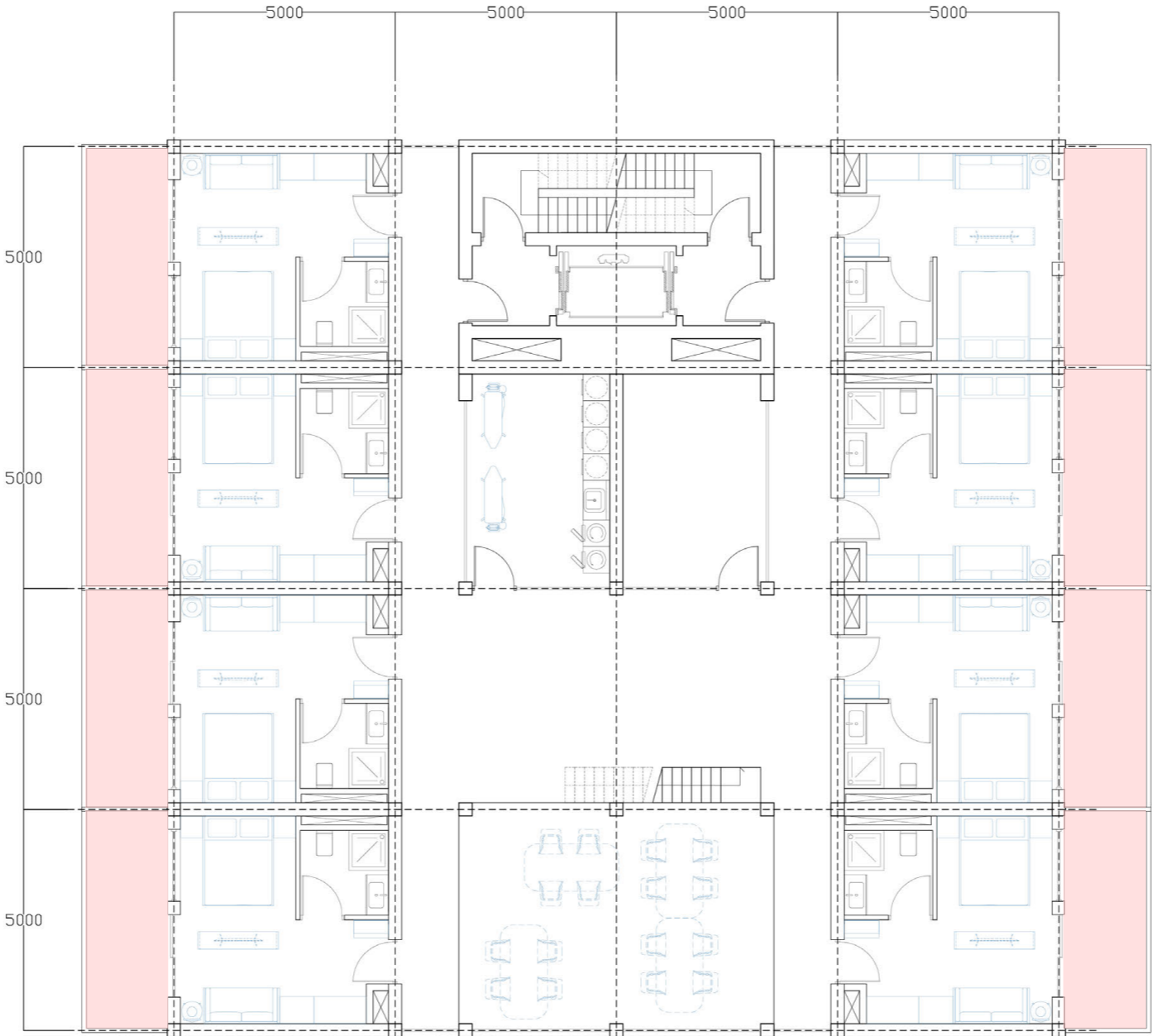
Provision of semi-private outdoor spaces close to private units for socializing

Gradual transition between public and private spaces

Car parking outside the community or car-free communities

Good visibility into all communal spaces

The provision of indoor and outdoor communal facilities



Private outdoor space (balcony/terrace)

Small communal area per floor

Constantly changing views (Not only facing inner courtyard)

Vibrant community of singletons on building scale

Homogenous community on smaller scale

High levels of privacy and security

Private dwellings with high level of comfort

The notion of choice

Eighth floor

1/500




Loss of space in the private unit supported by the provision of communal spaces



Private units to be smaller than average unit size (with limited kitchen and laundry facilities)




Positioning of key facilities (activity sites) and access points on shared walkways



Provision of semi-private outdoor spaces close to private units for socializing



Gradual transition between public and private spaces



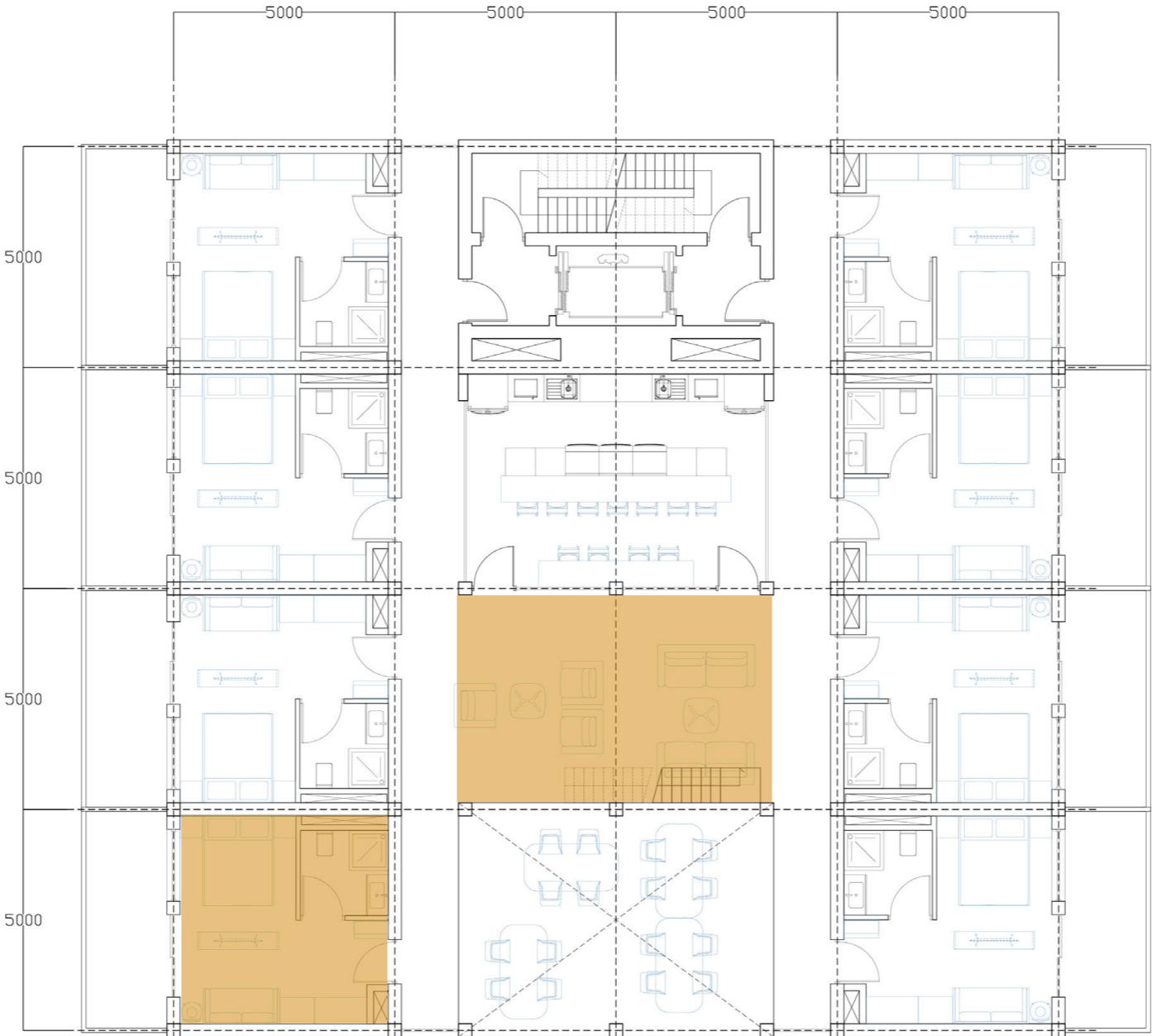
Car parking outside the community or car-free communities



Good visibility into all communal spaces



The provision of indoor and outdoor communal facilities






Private outdoor space (balcony/terrace)




Small communal area per floor



Constantly changing views (Not only facing inner courtyard)



Vibrant community of singletons on building scale



Homogenous community on smaller scale



High levels of privacy and security



Private dwellings with high level of comfort



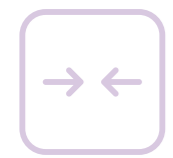
The notion of choice

Principles for cohousing design that provoke social contacts (Frank & Ahrentzen, 1989)

P2 research conclusions

Ninth floor

1/500



Loss of space in the private unit supported by the provision of communal spaces



Private units to be smaller than average unit size (with limited kitchen and laundry facilities)



Positioning of key facilities (activity sites) and access points on shared walkways



Provision of semi-private outdoor spaces close to private units for socializing



Gradual transition between public and private spaces



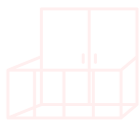
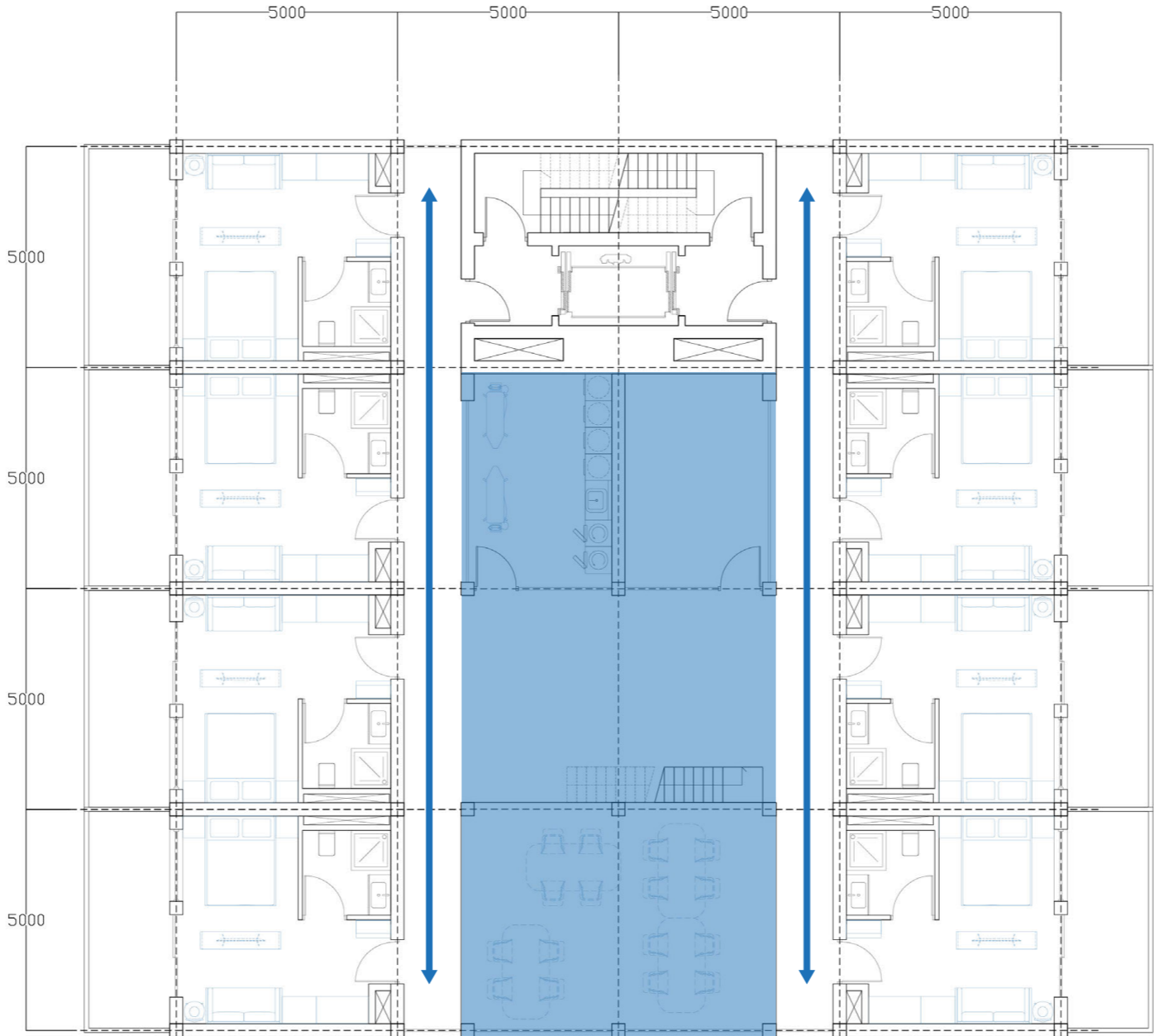
Car parking outside the community or car-free communities



Good visibility into all communal spaces



The provision of indoor and outdoor communal facilities



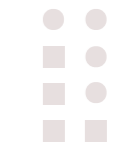
Private outdoor space (balcony/terrace)



Small communal area per floor



Constantly changing views (Not only facing inner courtyard)



Vibrant community of singletons on building scale



Homogenous community on smaller scale



High levels of privacy and security



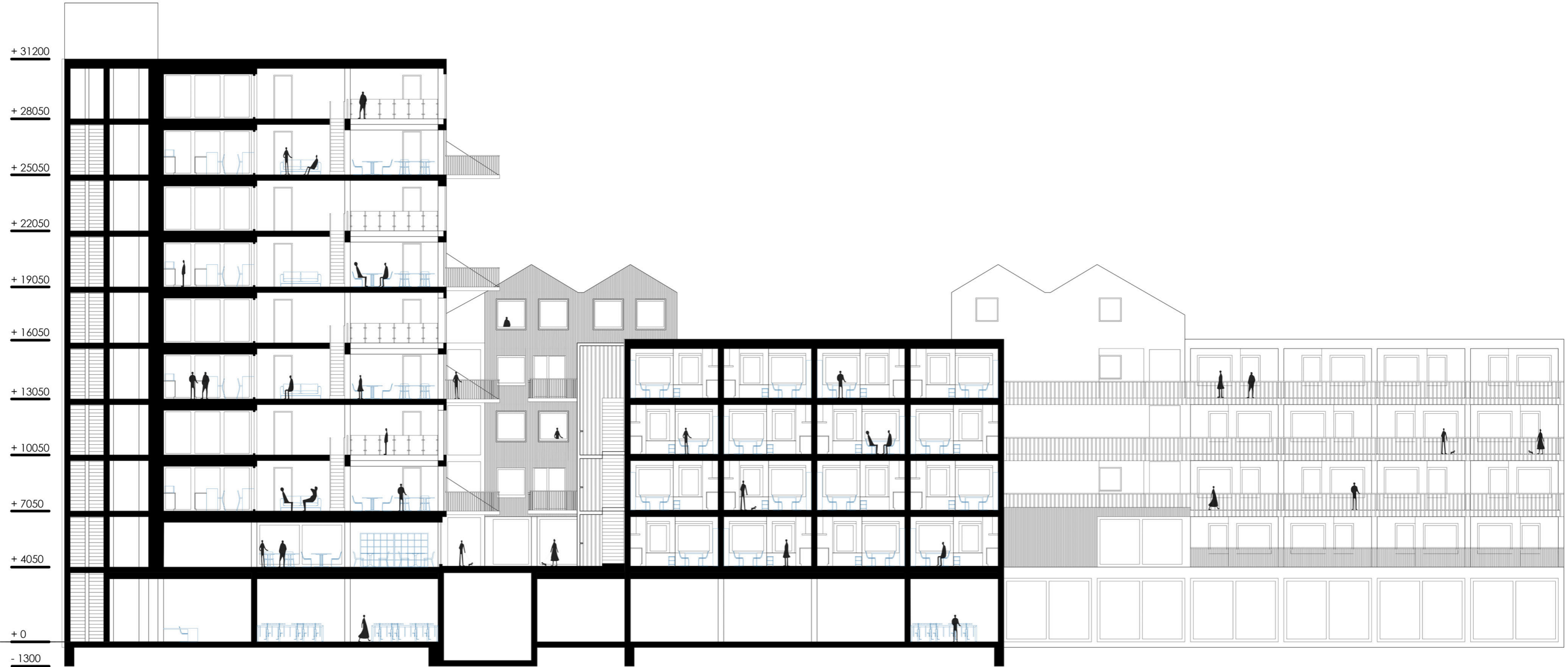
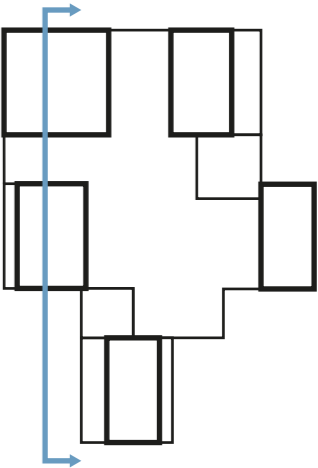
Private dwellings with high level of comfort



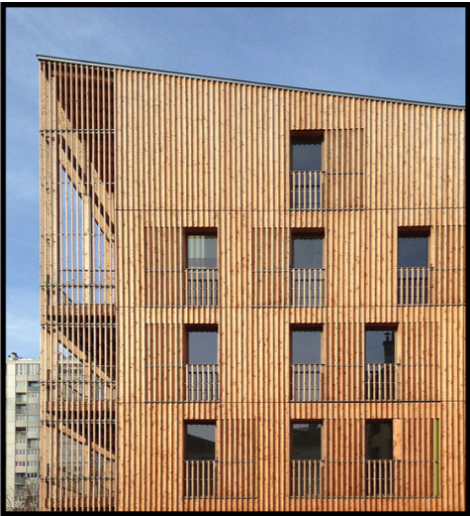
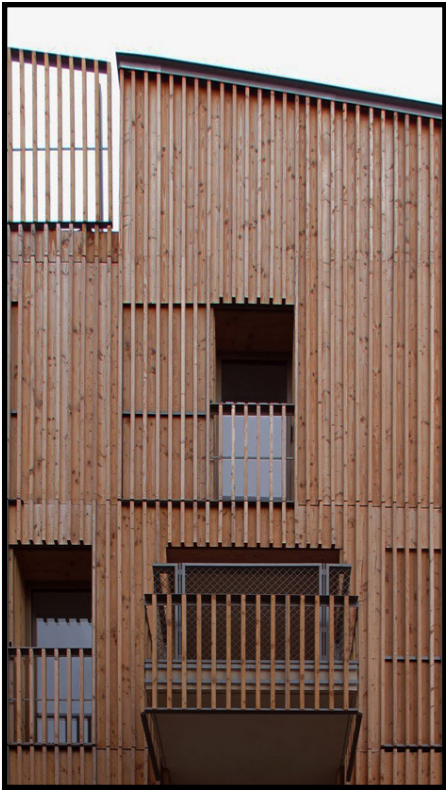
The notion of choice

Section BB

1/200



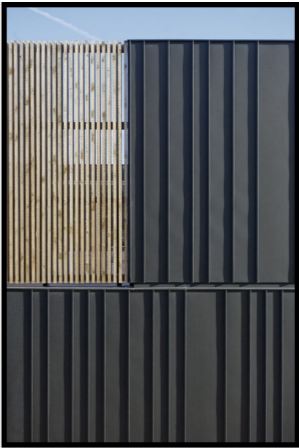
West elevation



Material - untreated pine
Paris housing blocks by Tectône Architectes



Material - brick facade
The Wedge by A-LAB architects

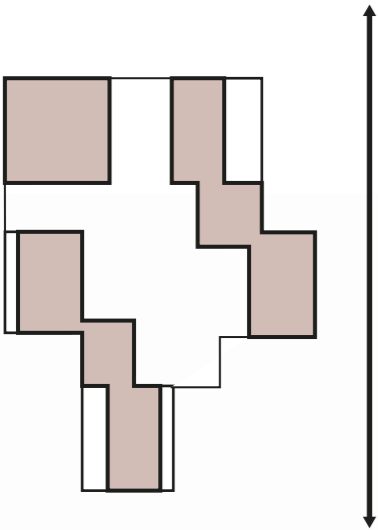


Material - dark pre-patinated zinc
*PROJECT BY PASEL.KUENZEL ARCHITECTS
ROTTERDAM, NETHERLANDS*



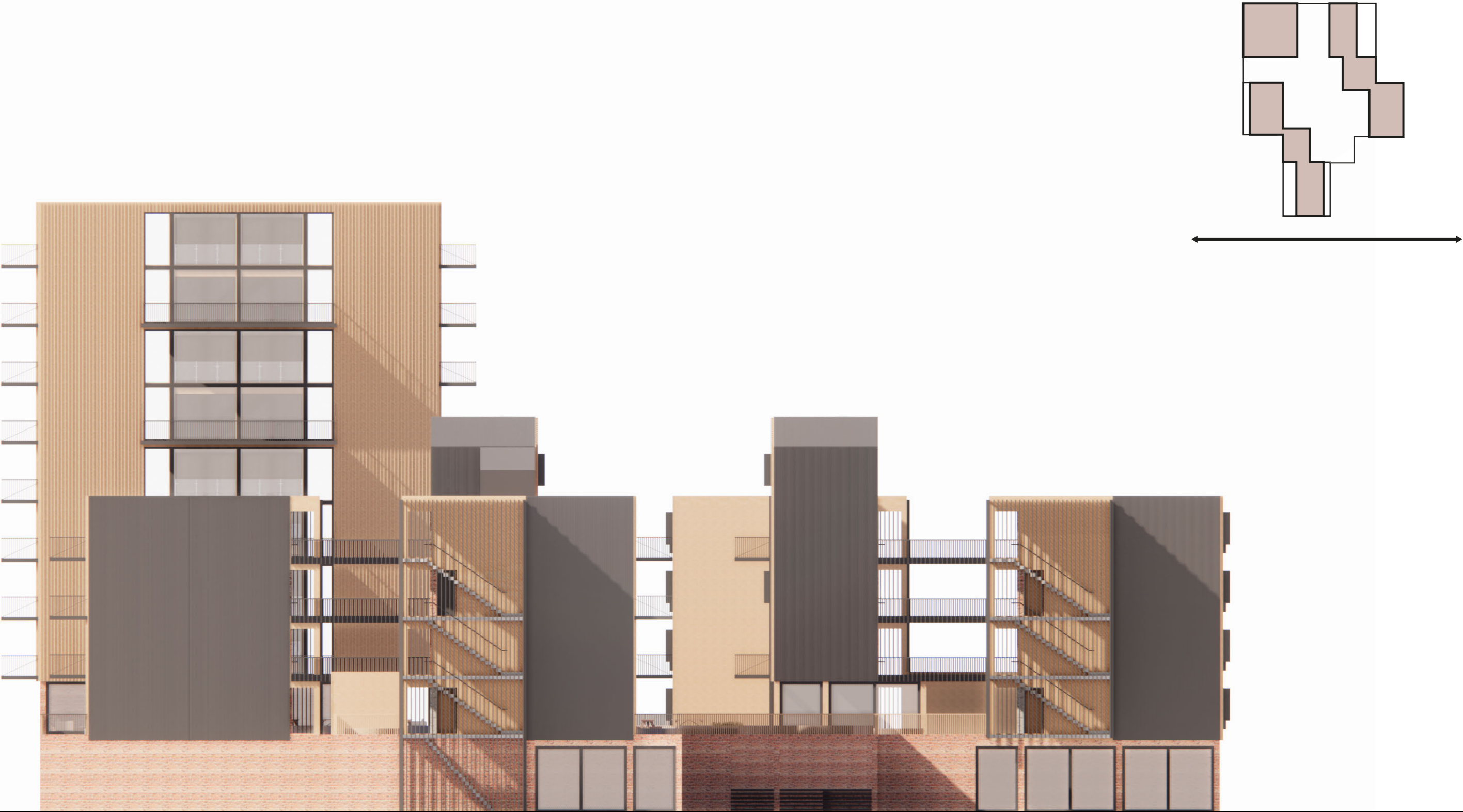
East elevation

1/250



South elevation

1/200



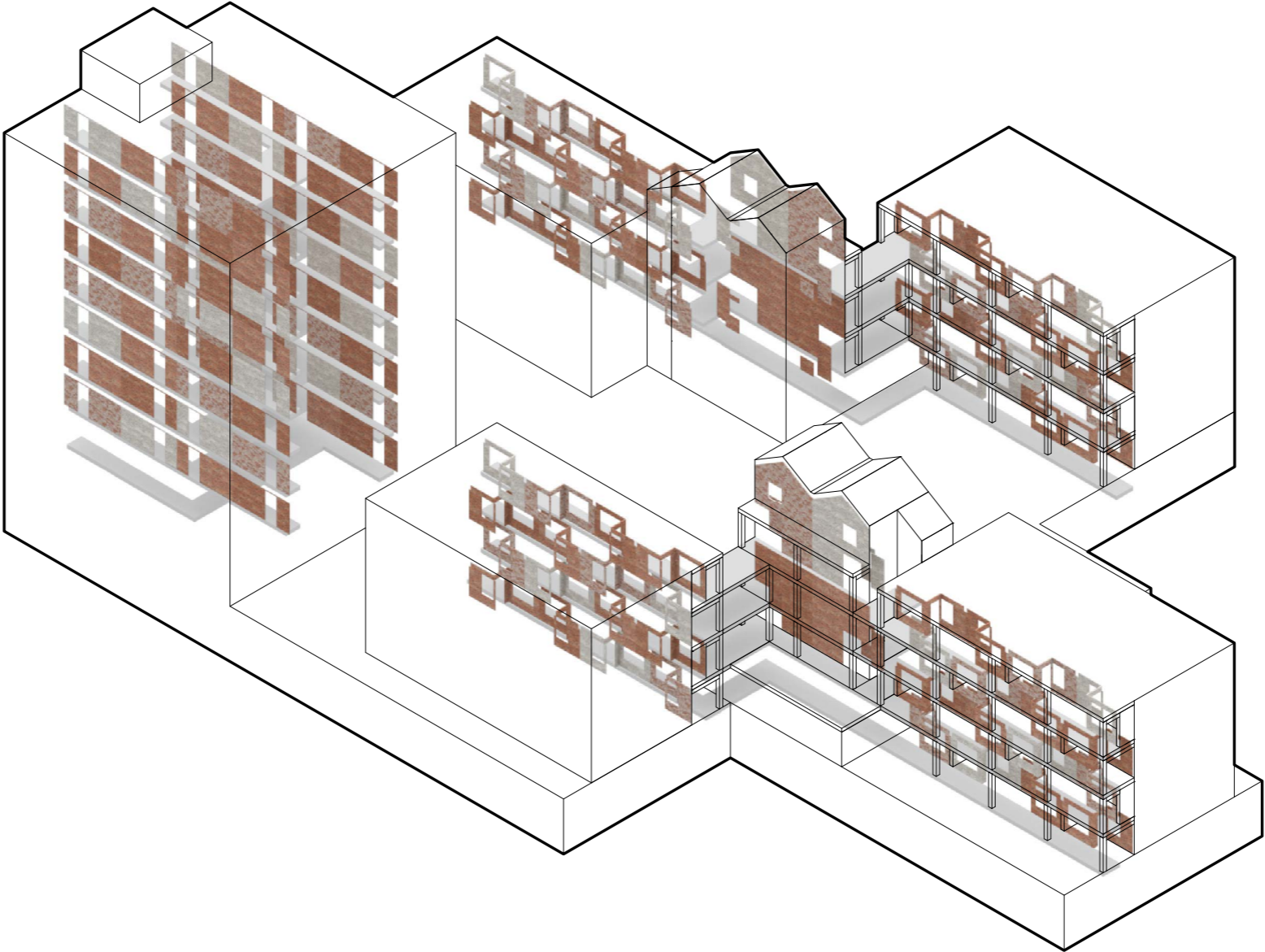
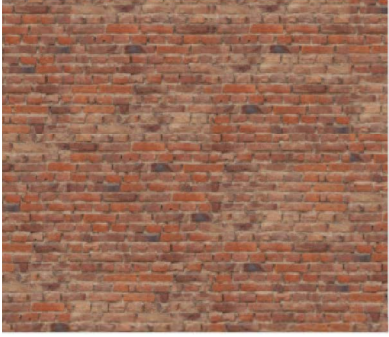
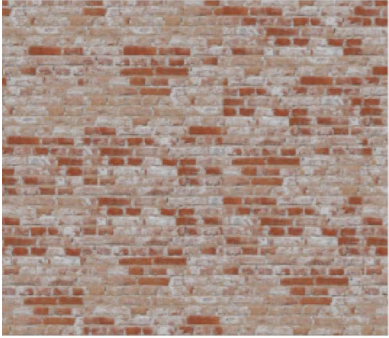
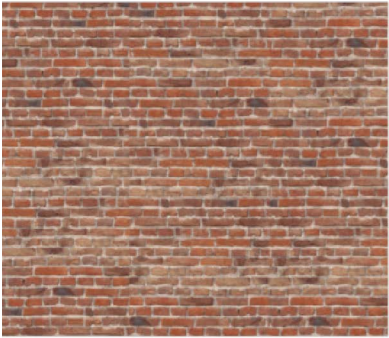
North elevation

1/200



Diagrams

Materials

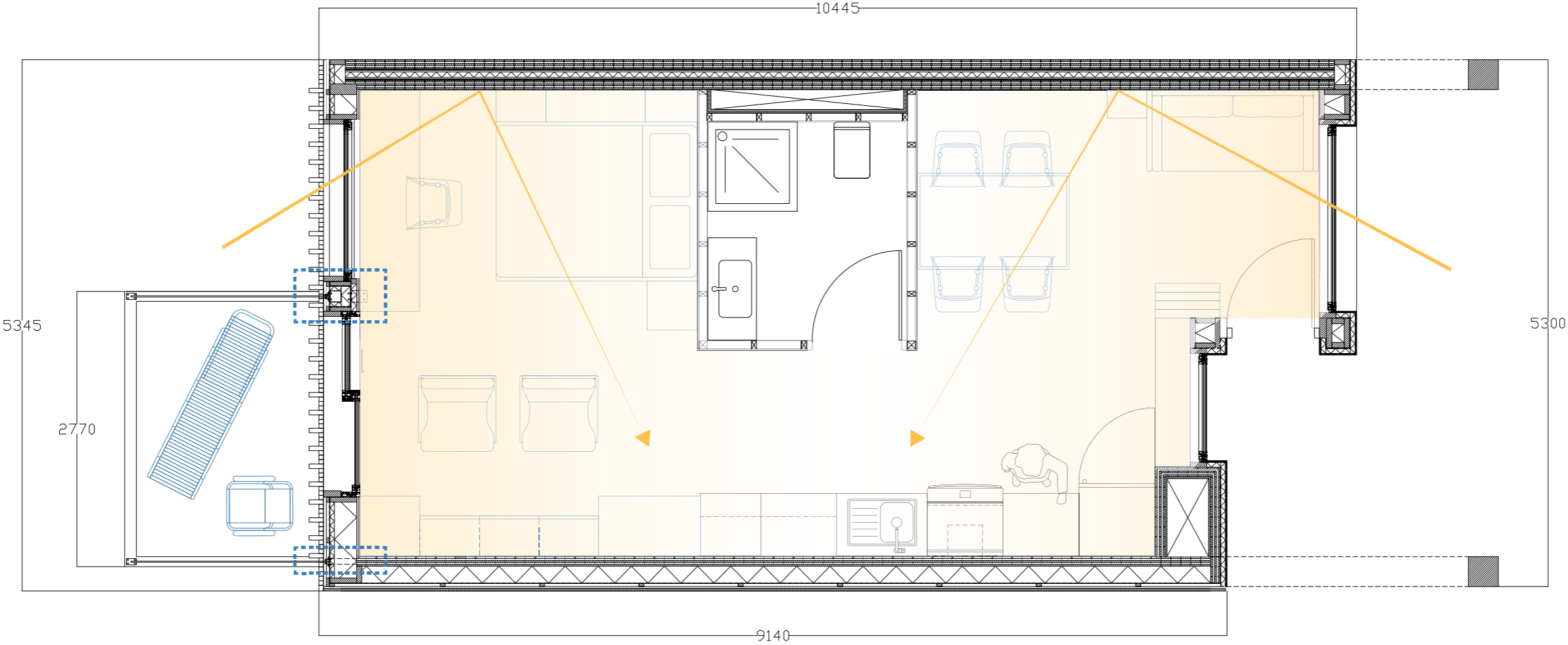


View from north (Keilewek)



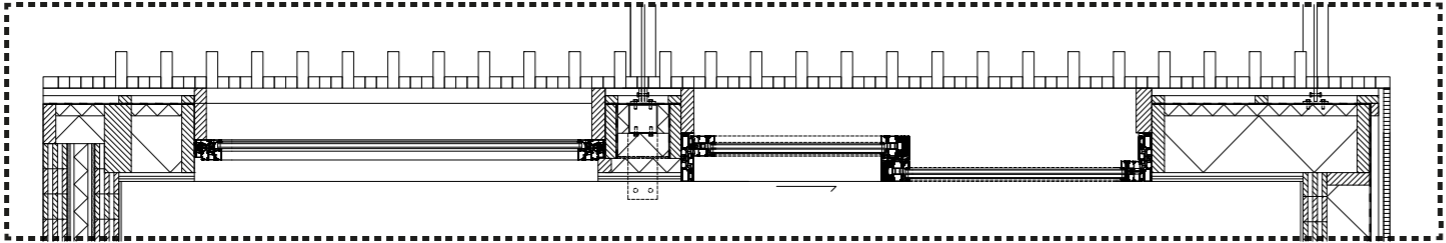
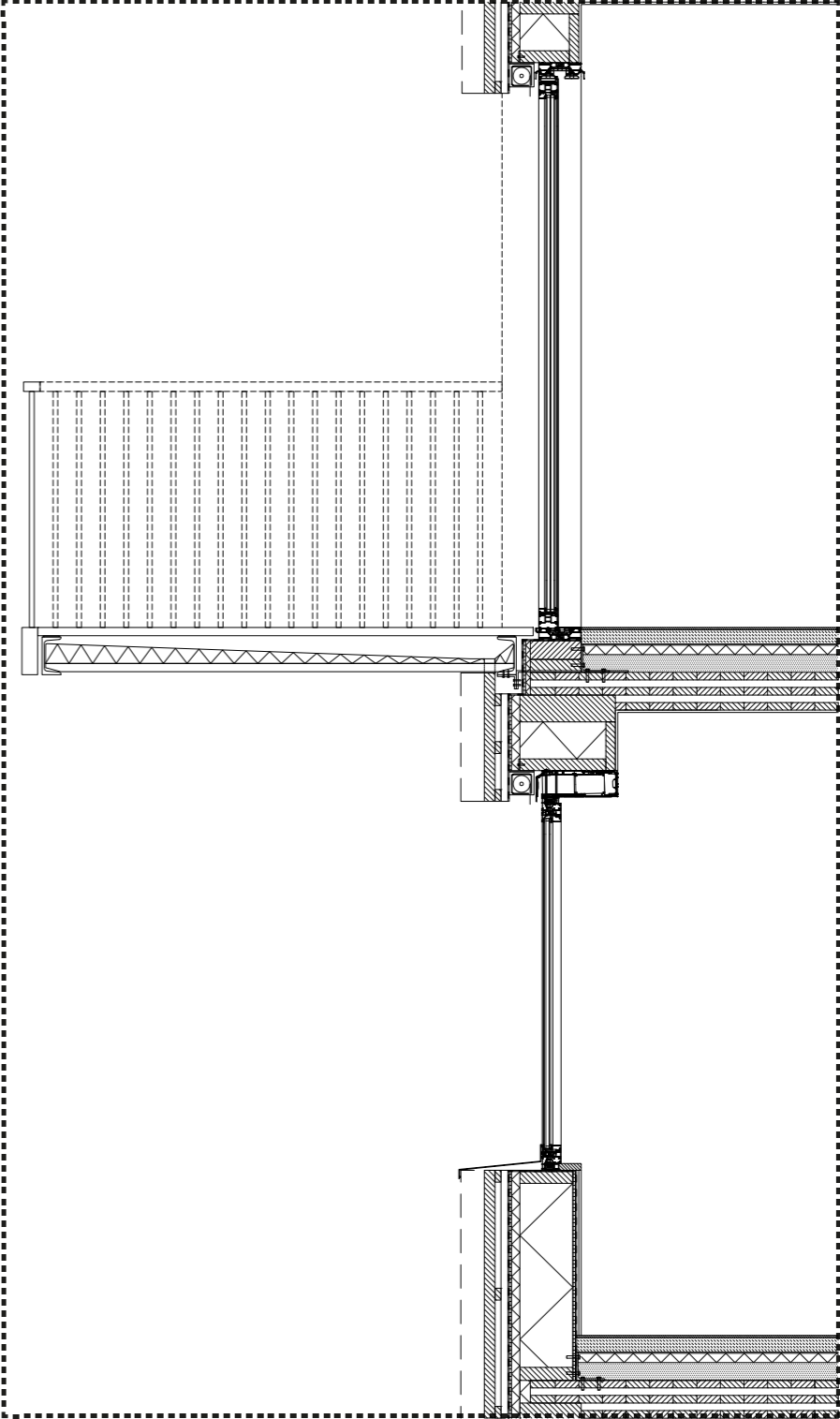
Dwelling plan

1/50



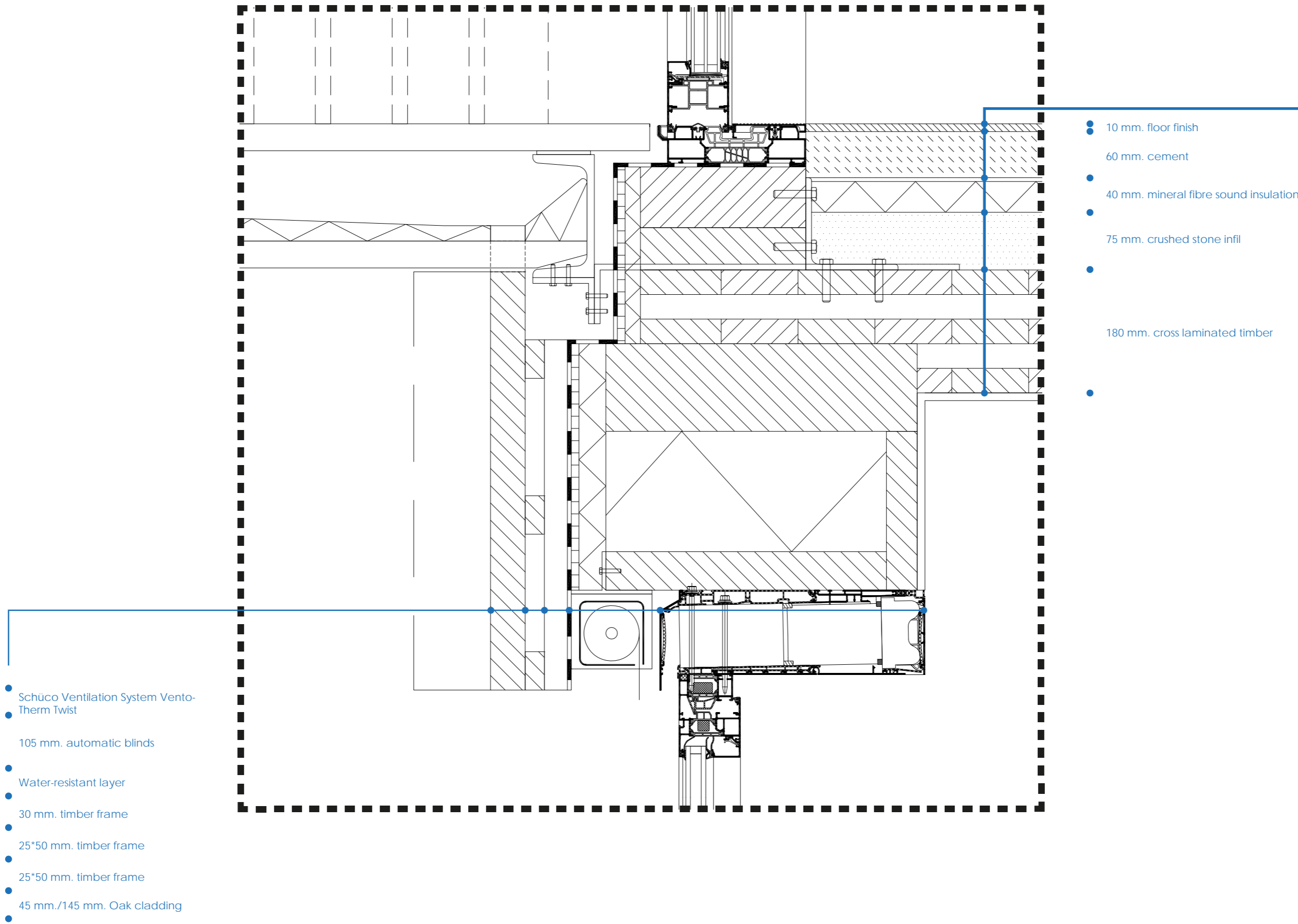
Facade fragment

1/20



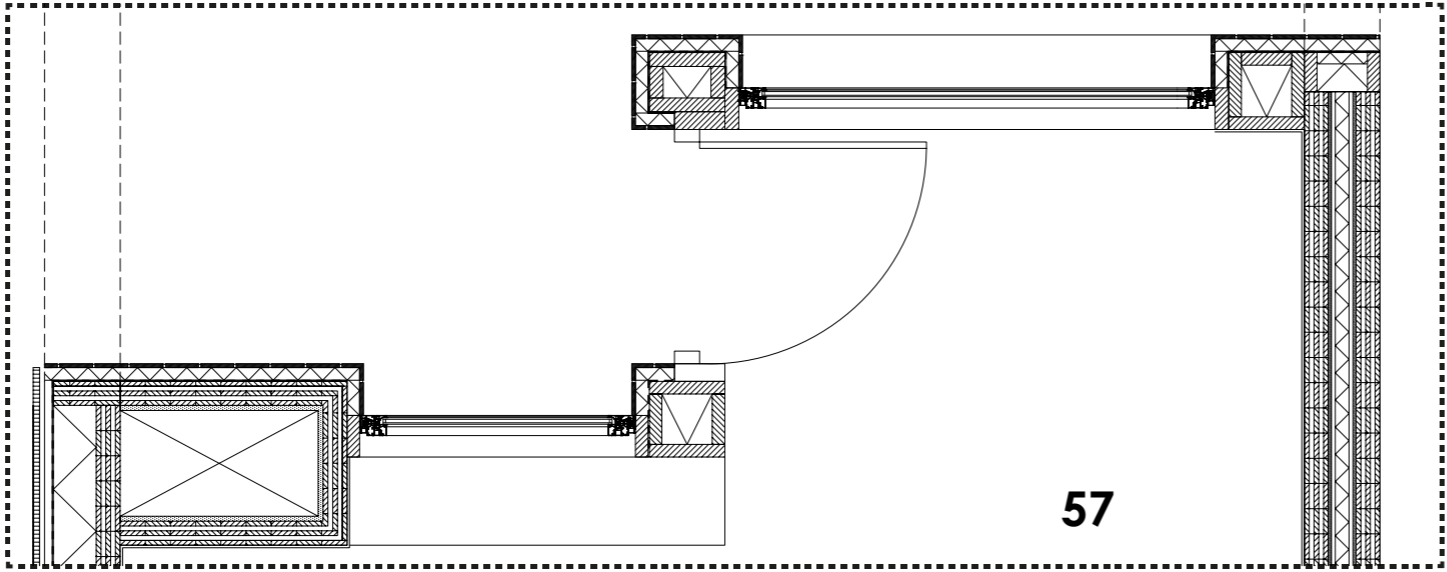
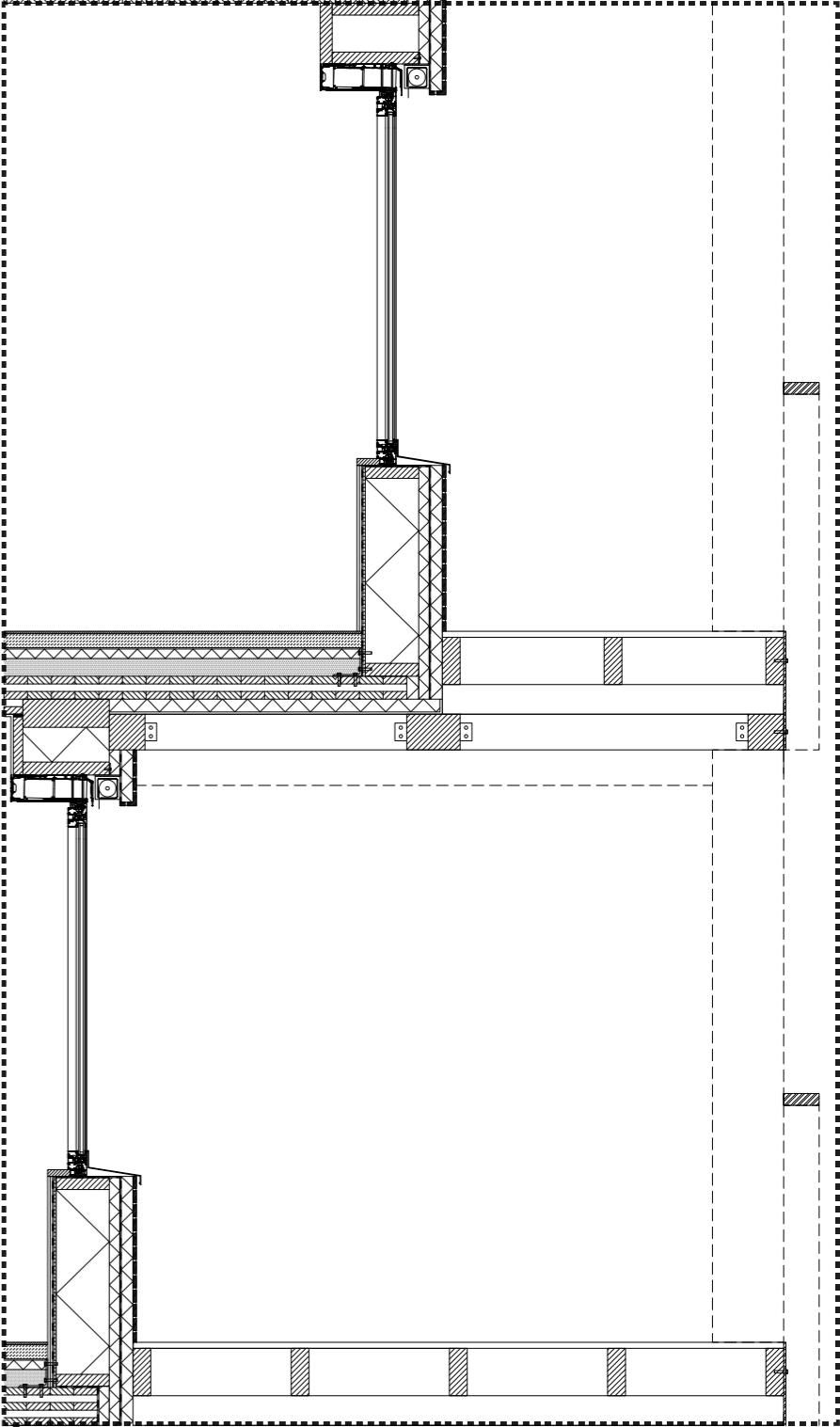
Detail A

1/5



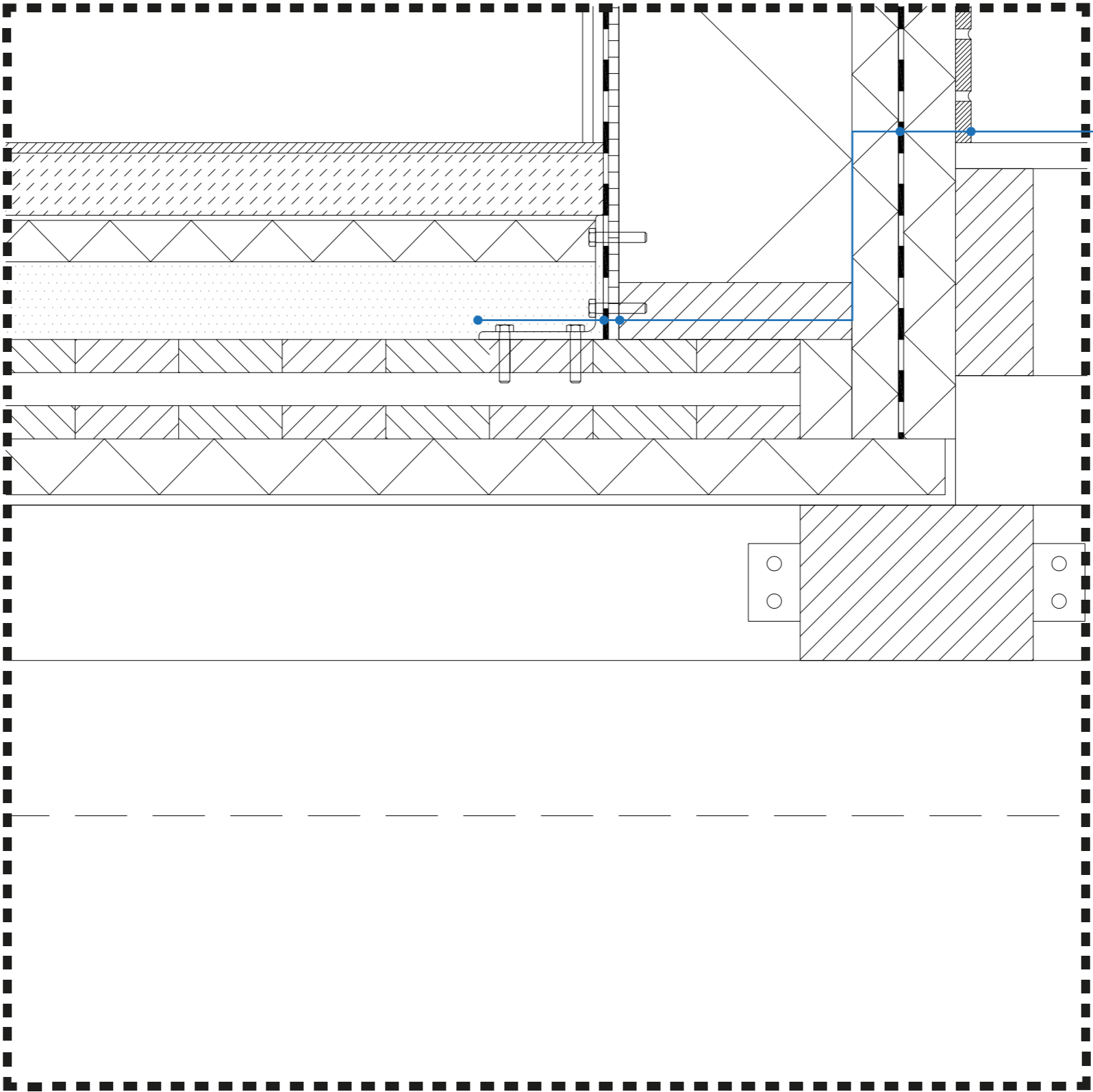
Facade fragment

1/20



Detail B

1/5



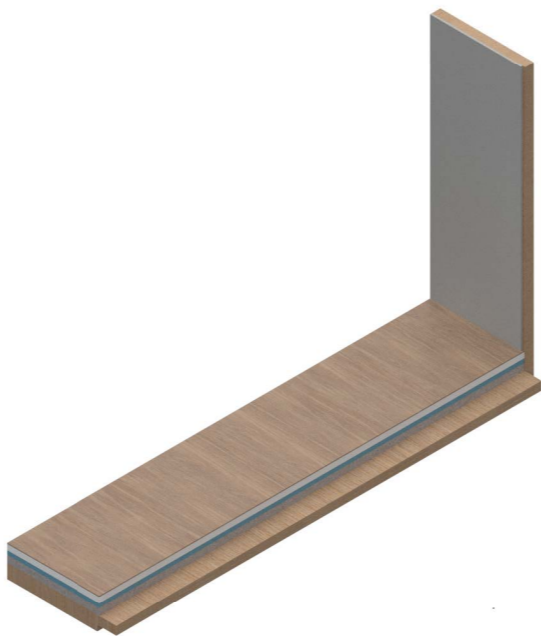
- 120 mm. * 120 mm. steel L-section
- 5 mm. water resistant layer
270 mm. mineral wool insulation
- Old mill thin bricks system
- 50 mm. insulation
- 15 mm. thin brick
-

Facade assembly

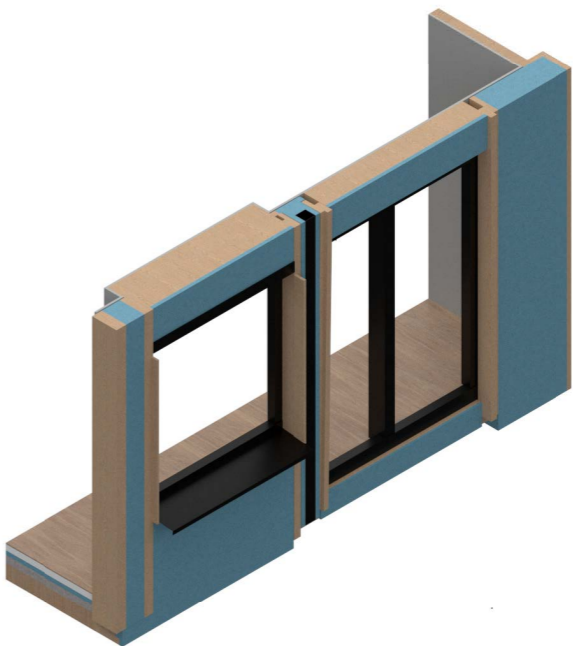
Step by step process



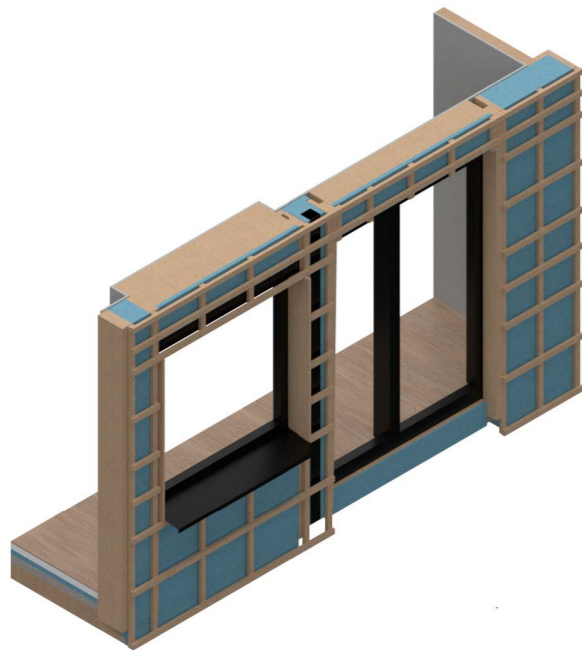
Assembly of CLT floors



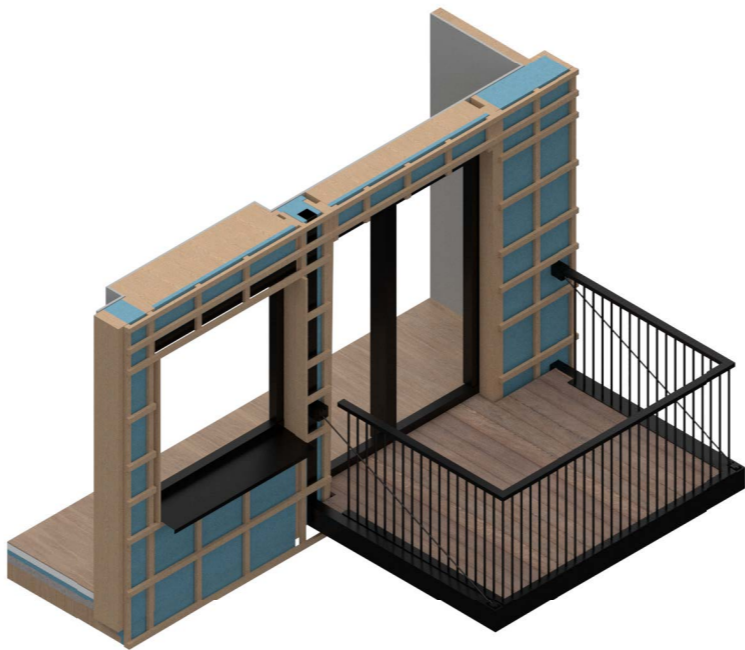
Assembly of load-bearing CLT walls



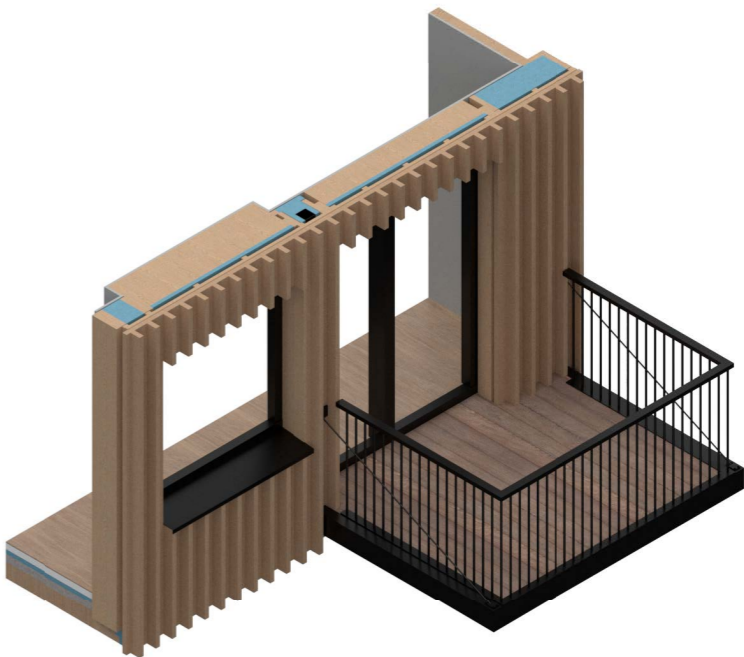
Assembly of prefabricated window frames with insulation layer



Assembly of timber frame



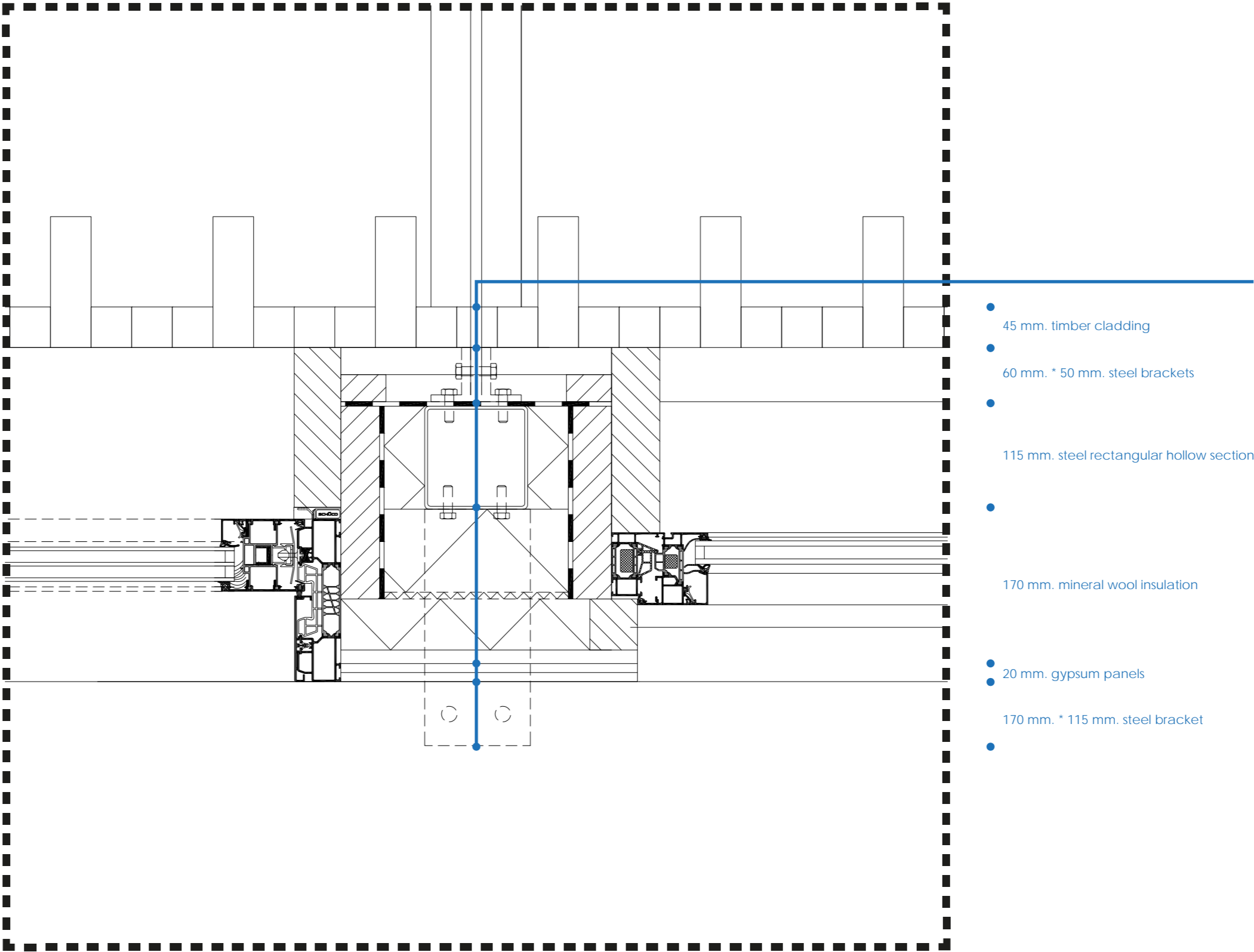
Assembly of prefabricated balcony and attachment to steel column integrated into facade



Assembly of timber cladding

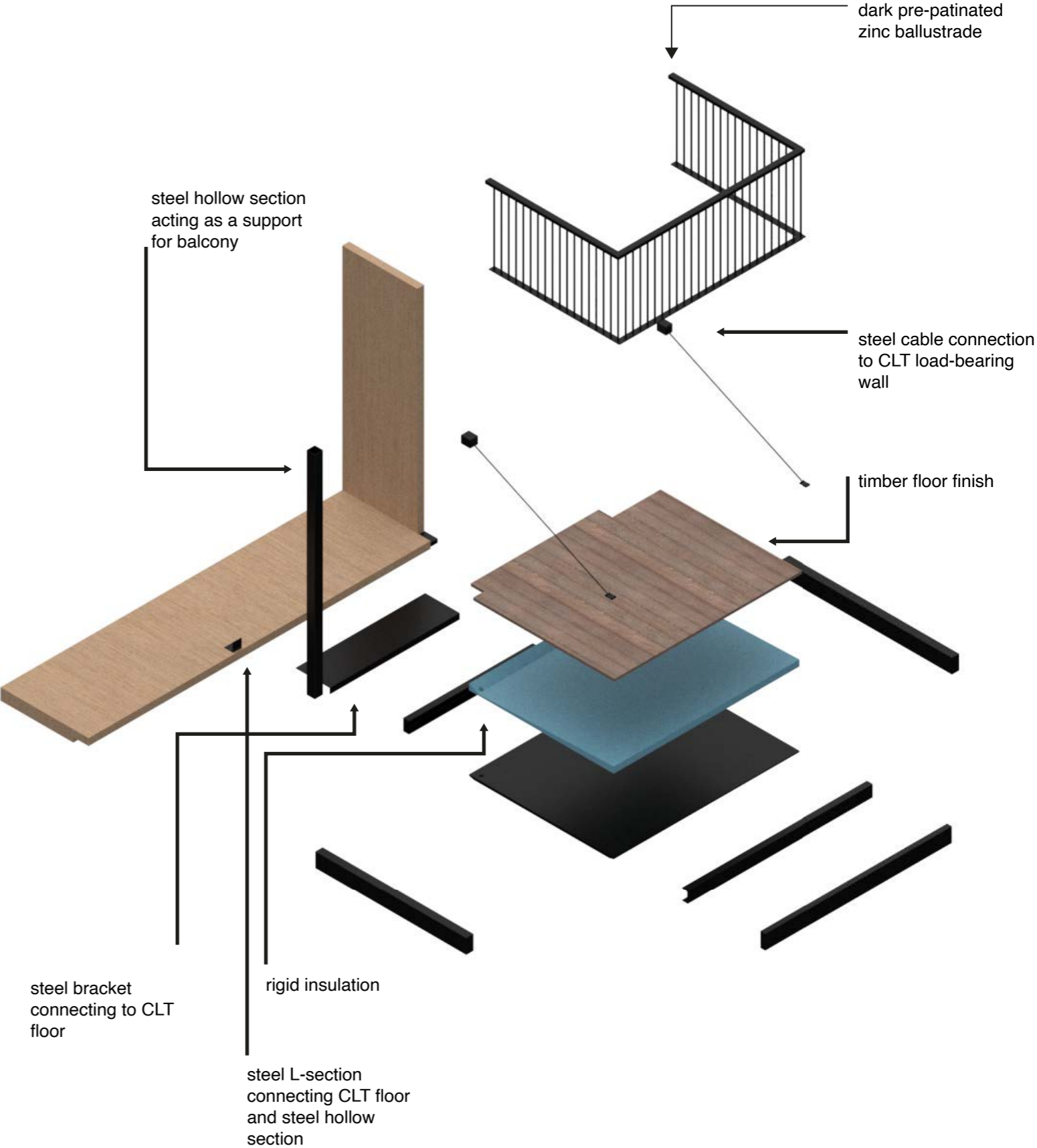
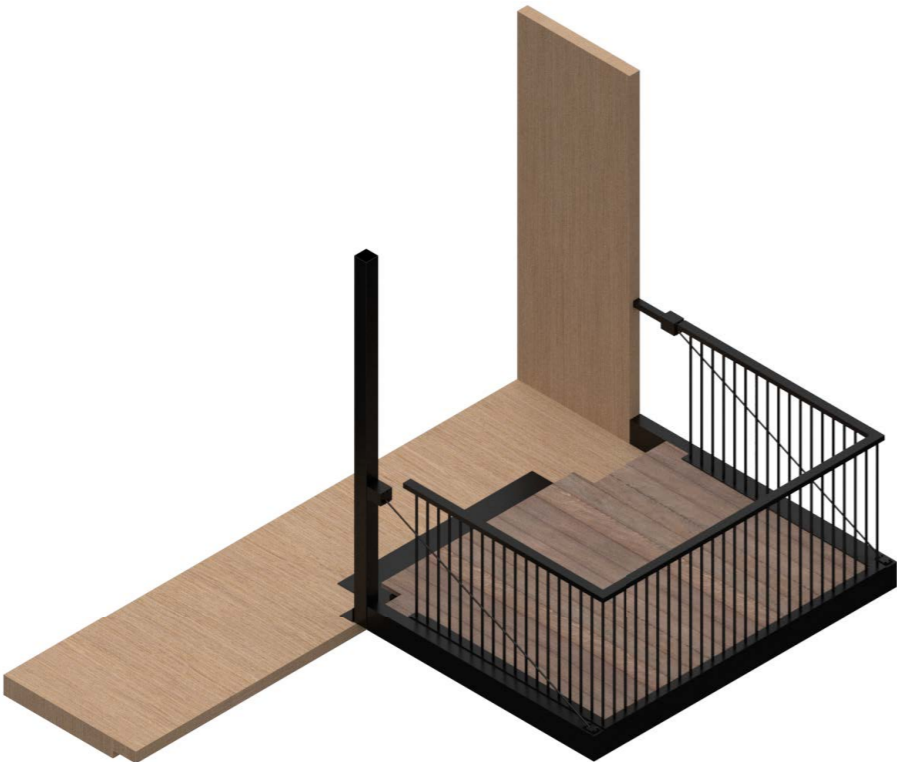
Detail C

1/5



Balcony assembly

Exploded view



Community creation

From public to private

Three clasifications of functional space (Kopec. 2006)

Primary spaces

Communal or common areas where most of a resident's communication and social interaction take place



Secondary spaces

Communal spaces where communication and social integration migrate to and from



Tertiary spaces

Private or personal areas where a resident goes to be alone



- shared per complex
- shared per building
- circulation space along dwellings
- personal transitional space





THANK
YOU