

P5

**ADVANCED HOUSING DESIGN
DENSIFICATION STRATEGIES:**
invigorating
contemporary urbanities

Laszlo Barz
4145798

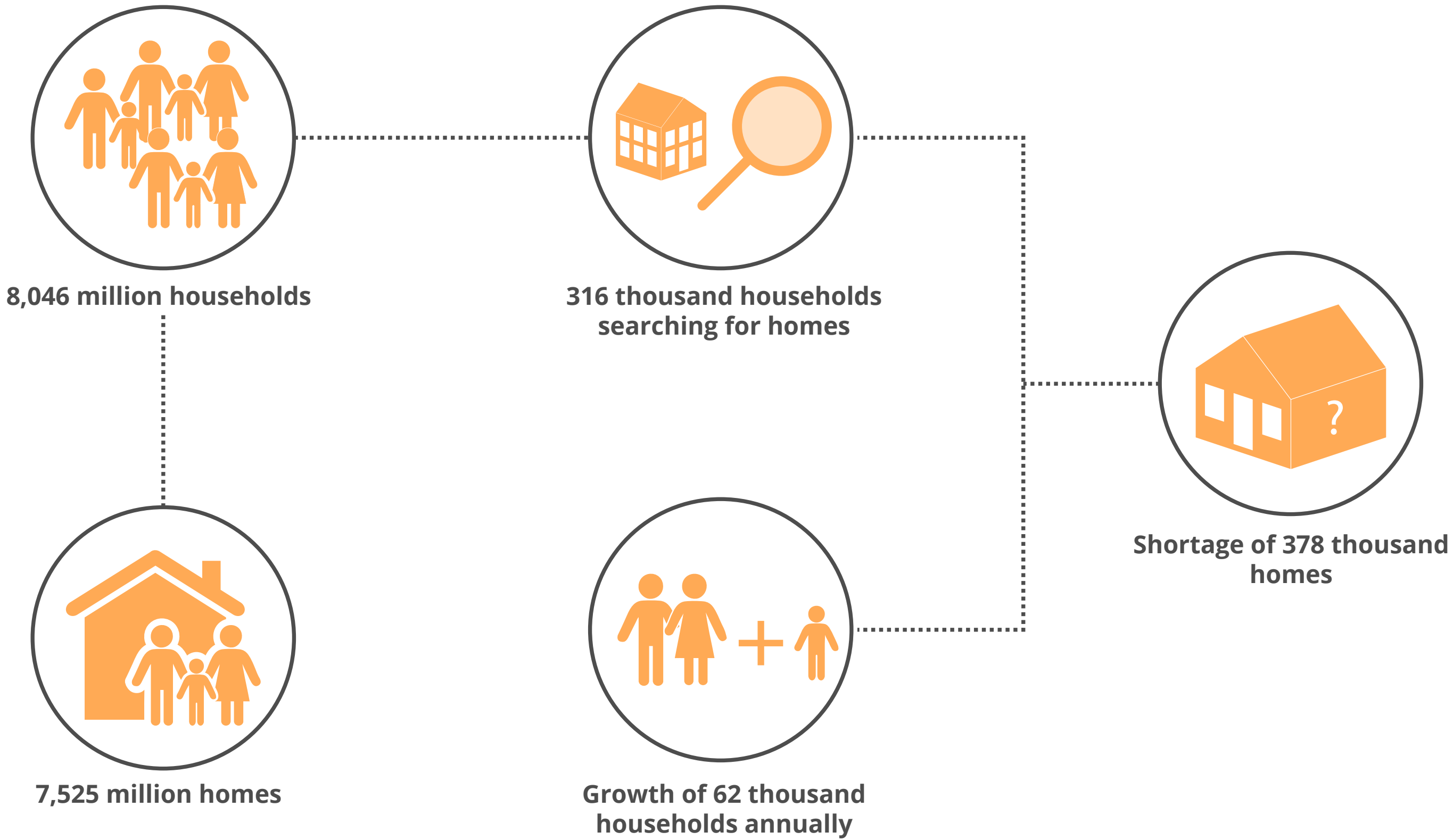
Harald Mooij
Florian Eckardt
Frederique van Andel
Arjen Meijer

Co-housing as a densification and reinvigoration strategy for post war neighborhoods in the Netherlands

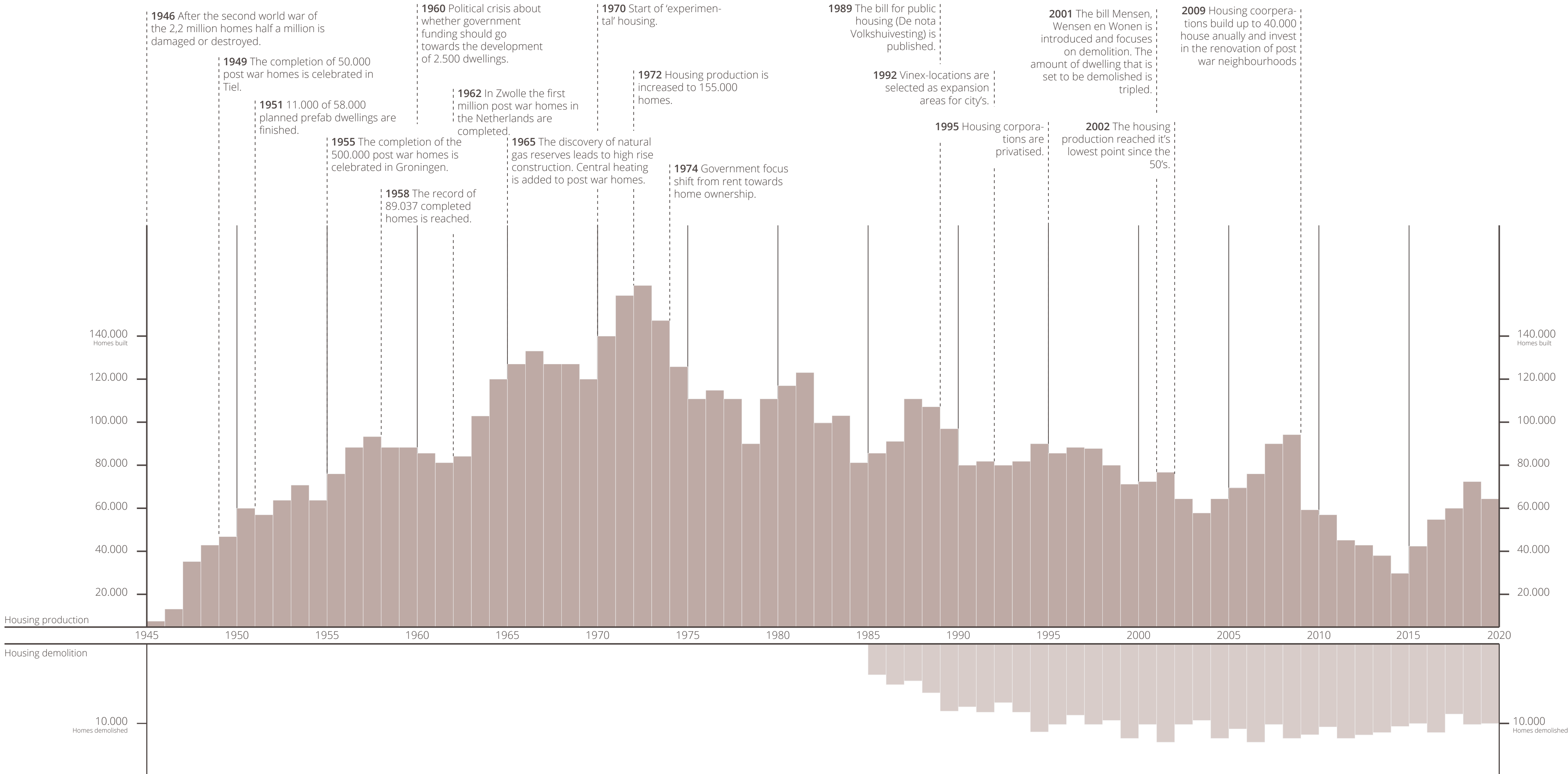
A typological study on densification strategies

**PROBLEM STATEMENT
SITE ANALYSIS
RESEARCH
DESIGN**

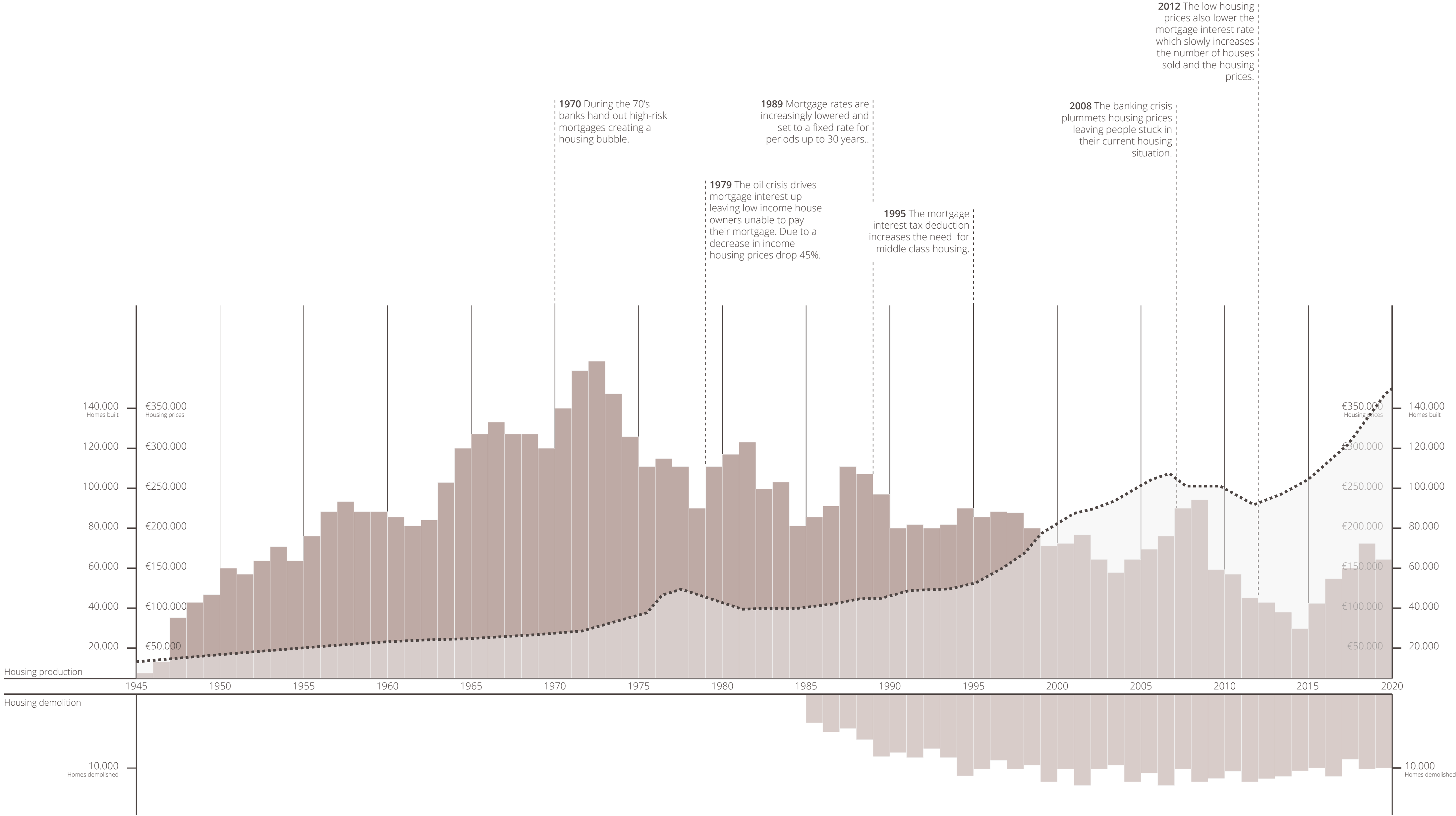
PROBLEM STATEMENT | The Dutch housing crisis



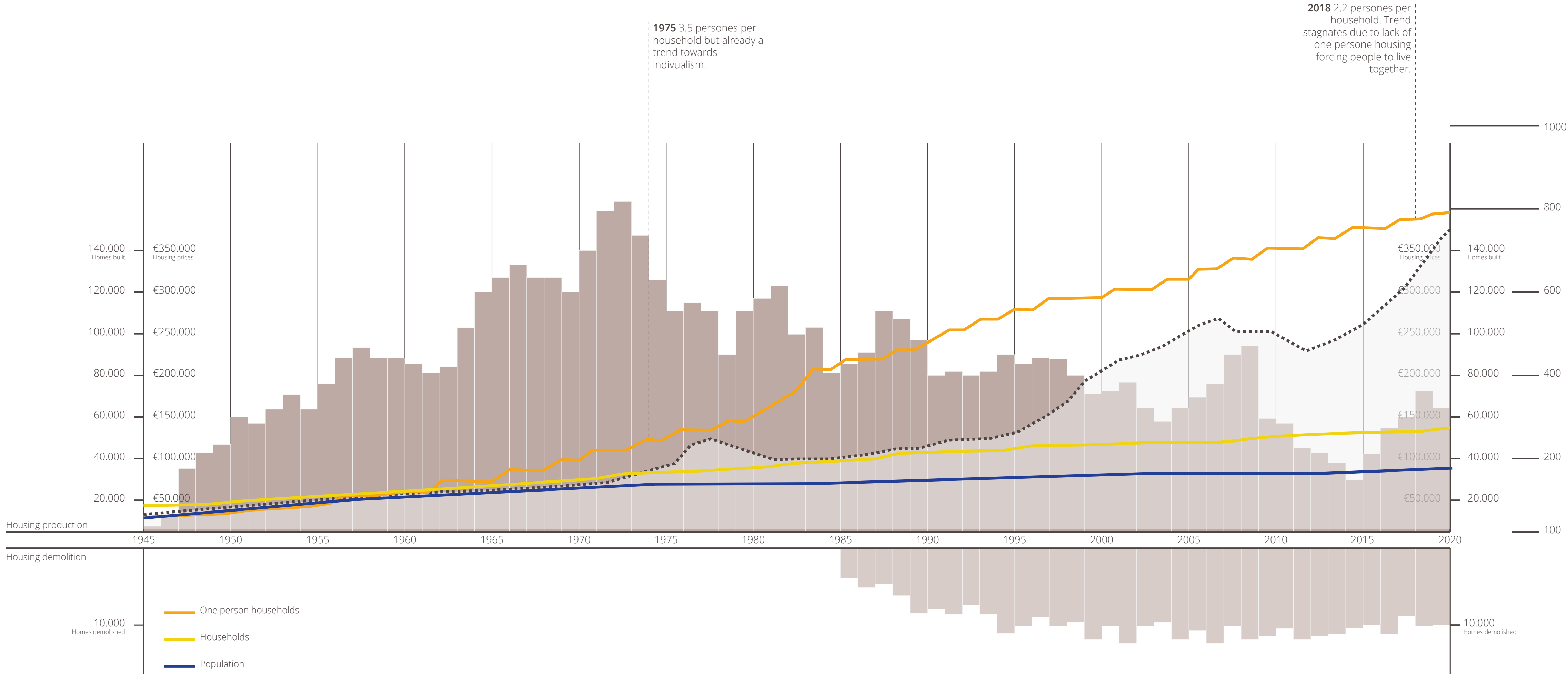
PROBLEM STATEMENT | Declining production

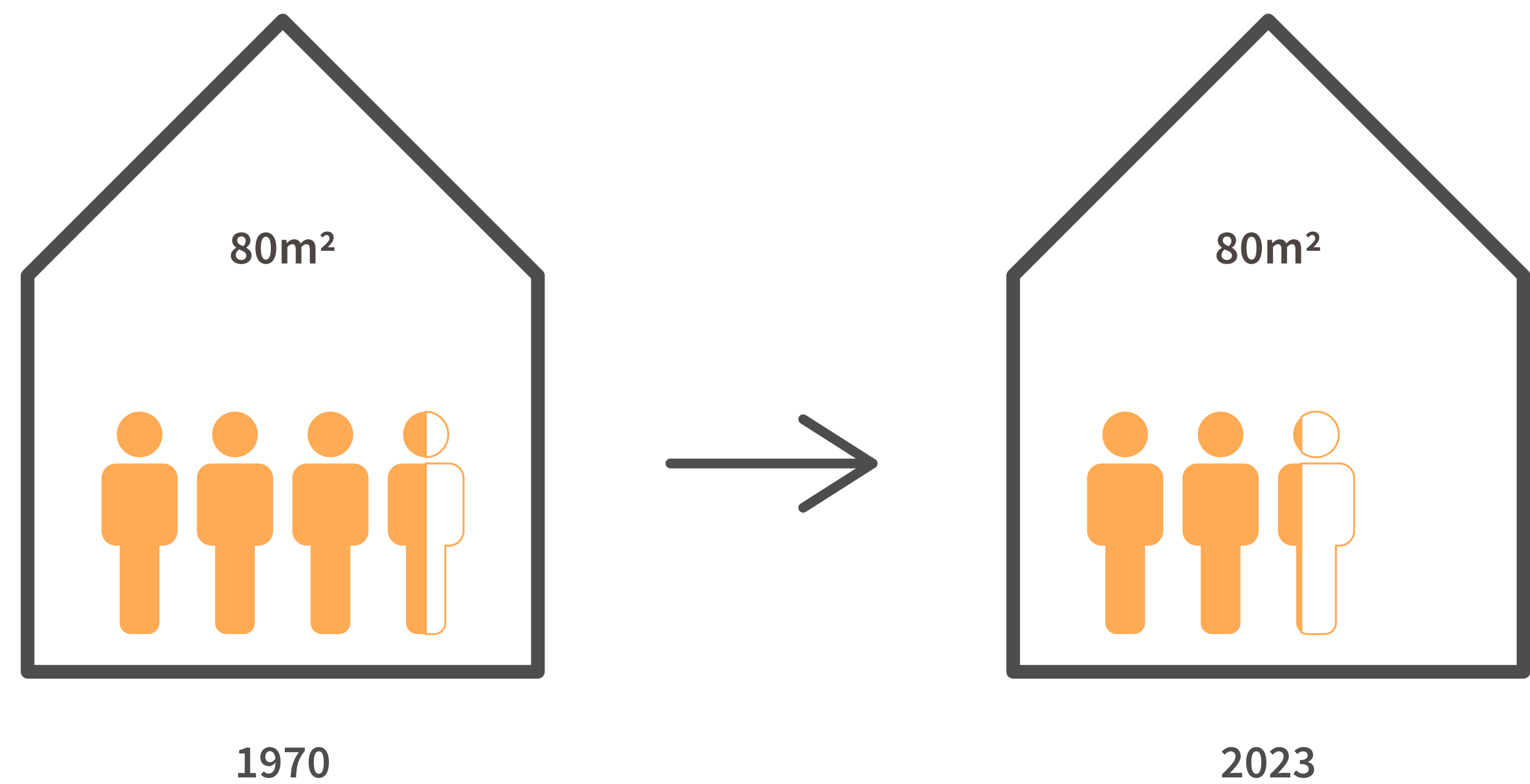


PROBLEM STATEMENT | Increase in housing prices

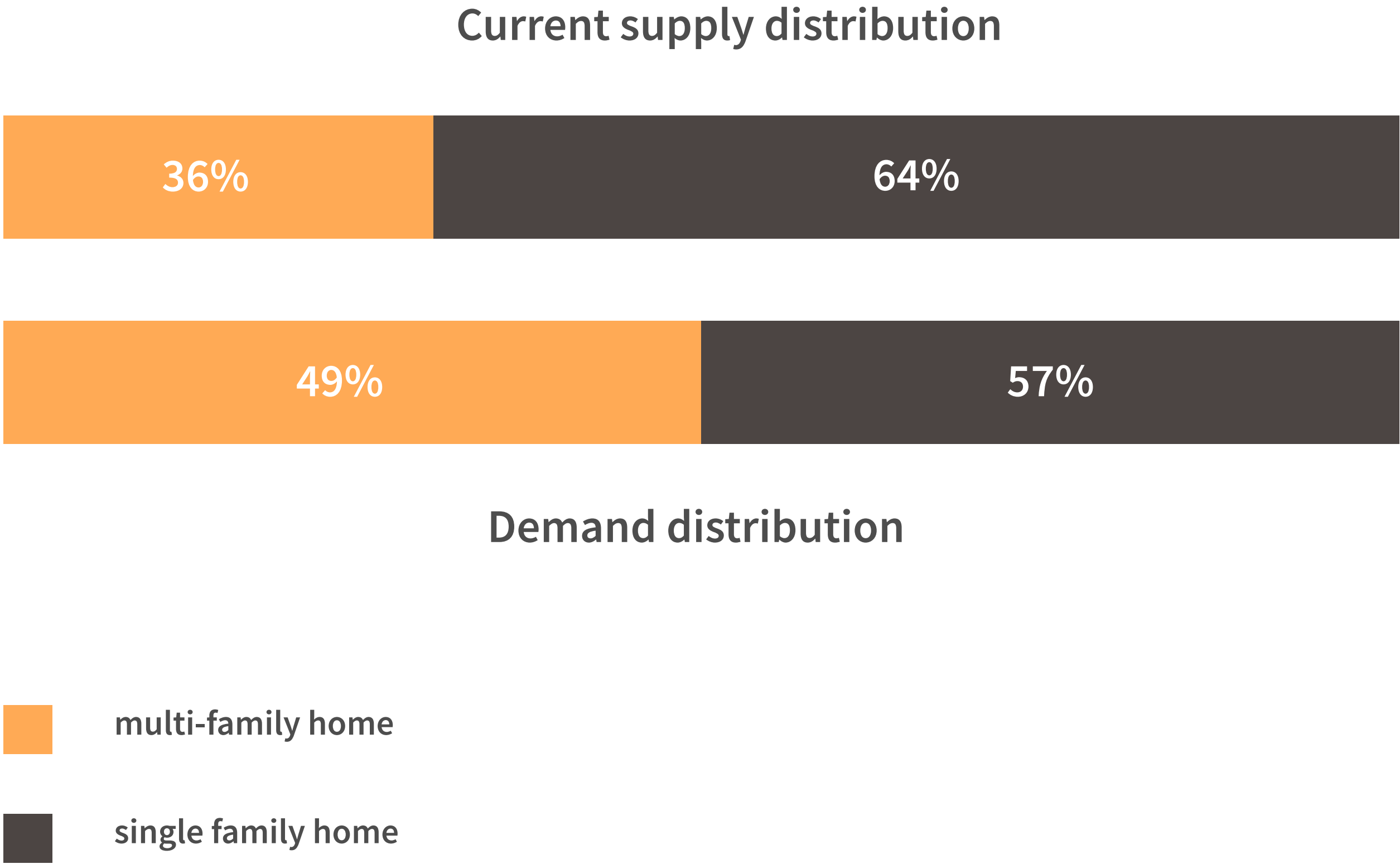


PROBLEM STATEMENT | Trend towards individualism



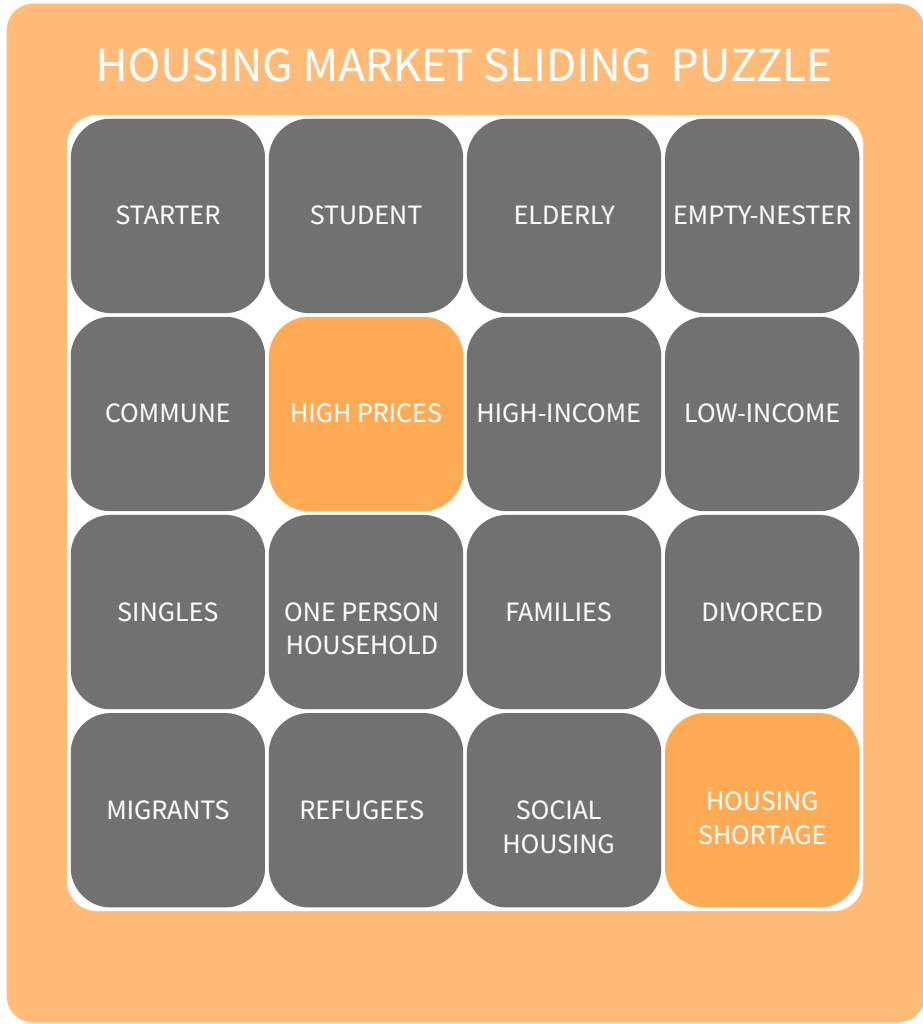


The average household size has decreased while the average housing size has remained the same.

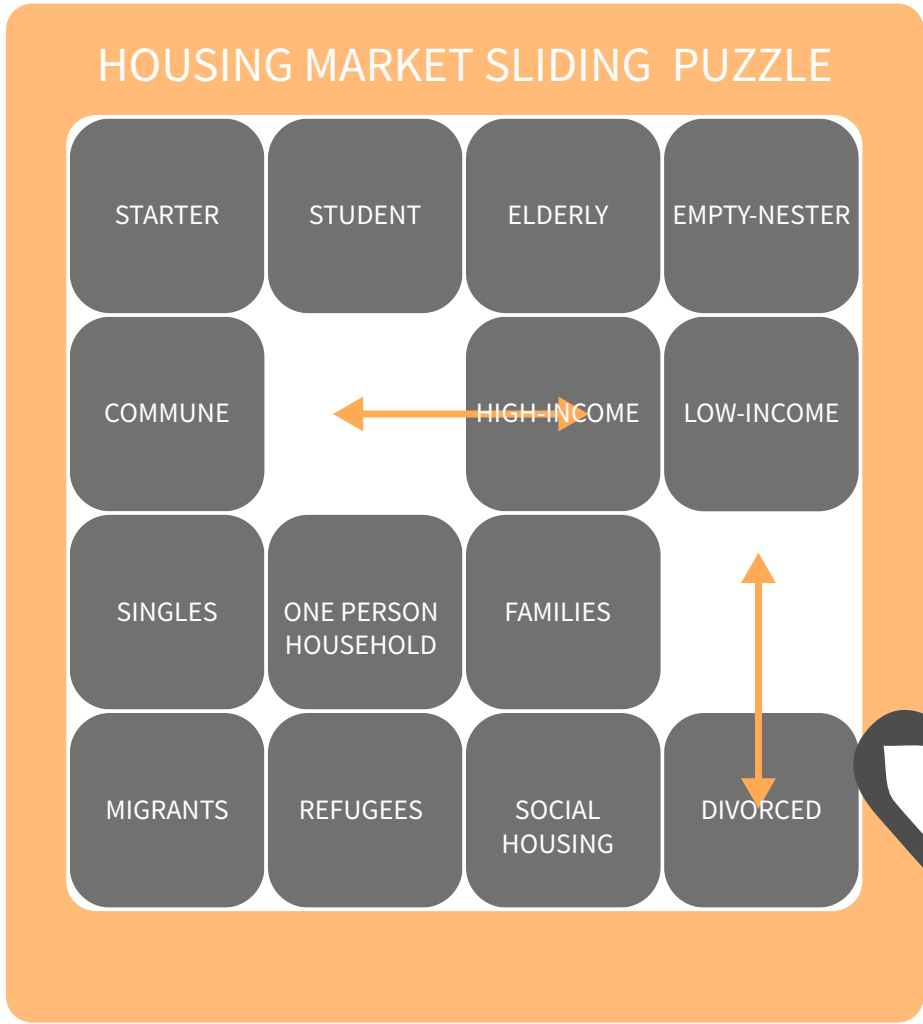


Demand for single family homes is changing and becoming more equal to the demand of multi family homes driven by the change in household and demand in city's

PROBLEM STATEMENT| lack of flow on the housing market

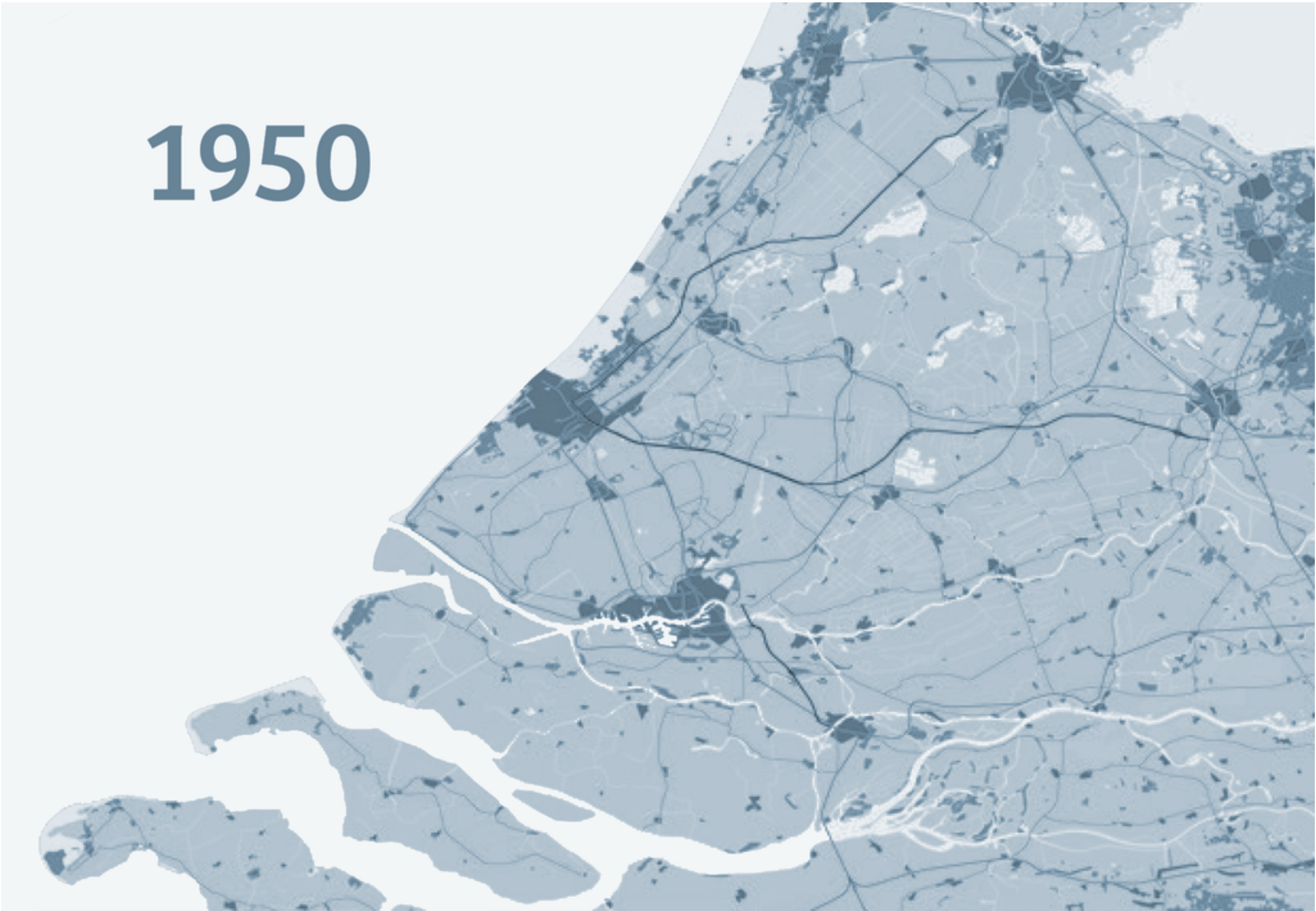


Current situation



Create flow on the housing market

PROBLEM STATEMENT | Where to build?



WHERE SHOULD WE DENSIFY?



PROBLEM STATEMENT| Post-war neighborhoods relevance



1.800 post-war neighborhoods in the Netherlands

1.8 million post-war homes

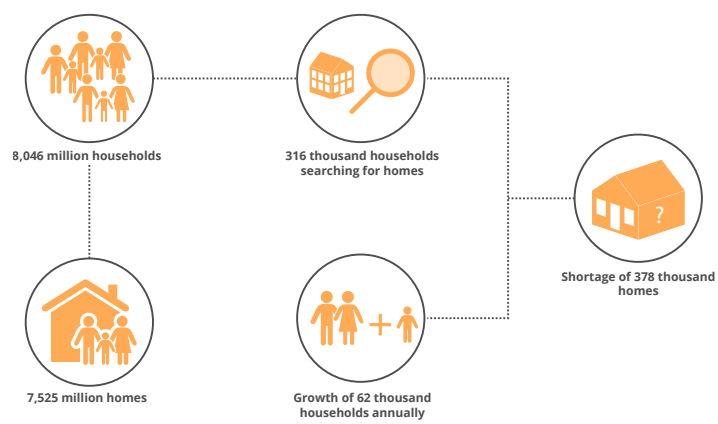
22% of total housing stock

PROBLEM STATEMENT| Post-war neighborhoods defenition

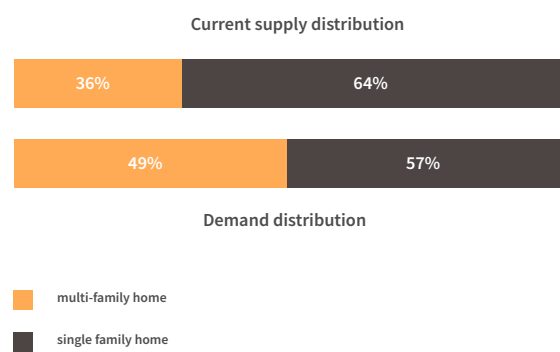


Built between 1945 en 1970

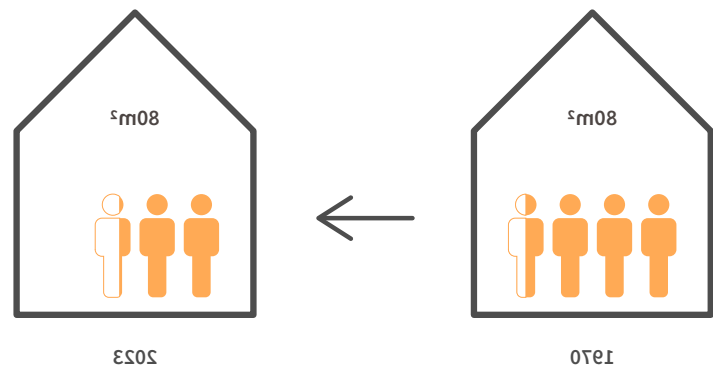
**50% of houses built between 1945 and 1970
or
average of 500 homes built between 1945 and 1970**



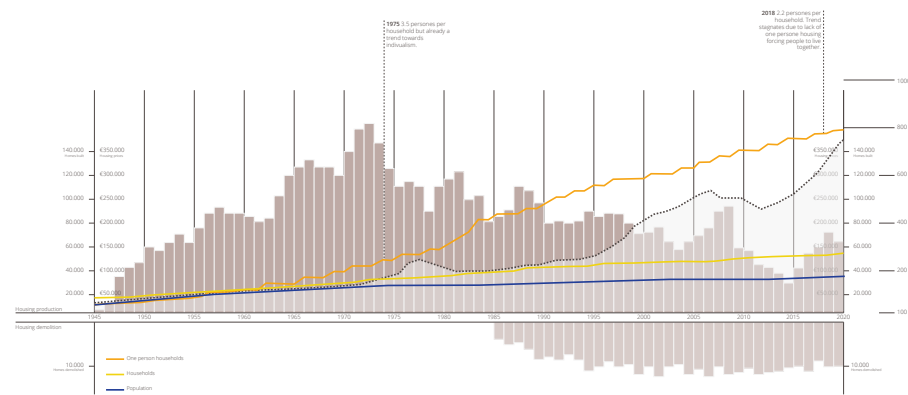
WE HAVE A HOUSING SHORTAGE



A MISMATCH OF THE CURRENT HOUSING STOCK



A TREND TOWARDS INDIVIDUALISM AND DIVERS FAMILY COMPOSITIONS



OUTDATED POST WAR NEIGHBOURHOODS



A LACK OF SPACE

WE NEED A DENSIFICATION STRATEGY!

“housing that features space and facilities for joint use by all residents, who also maintain their own individual households.”

(Franck, 1991)

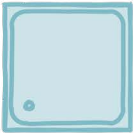
136x



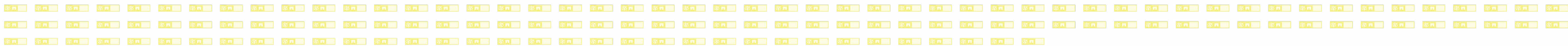
136m²



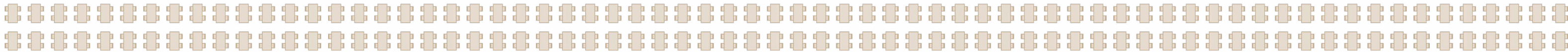
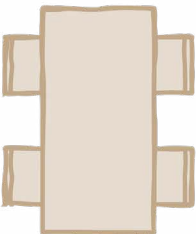
344m²



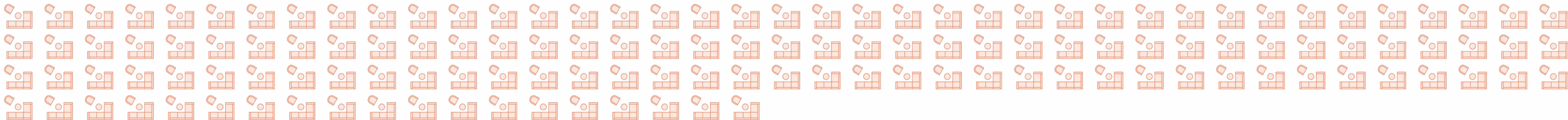
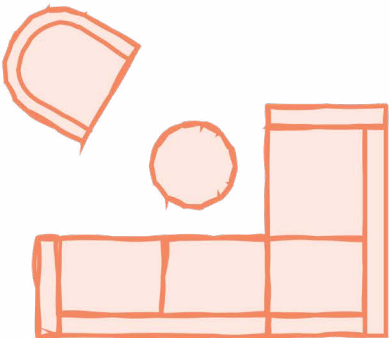
671m²



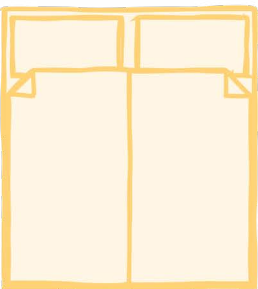
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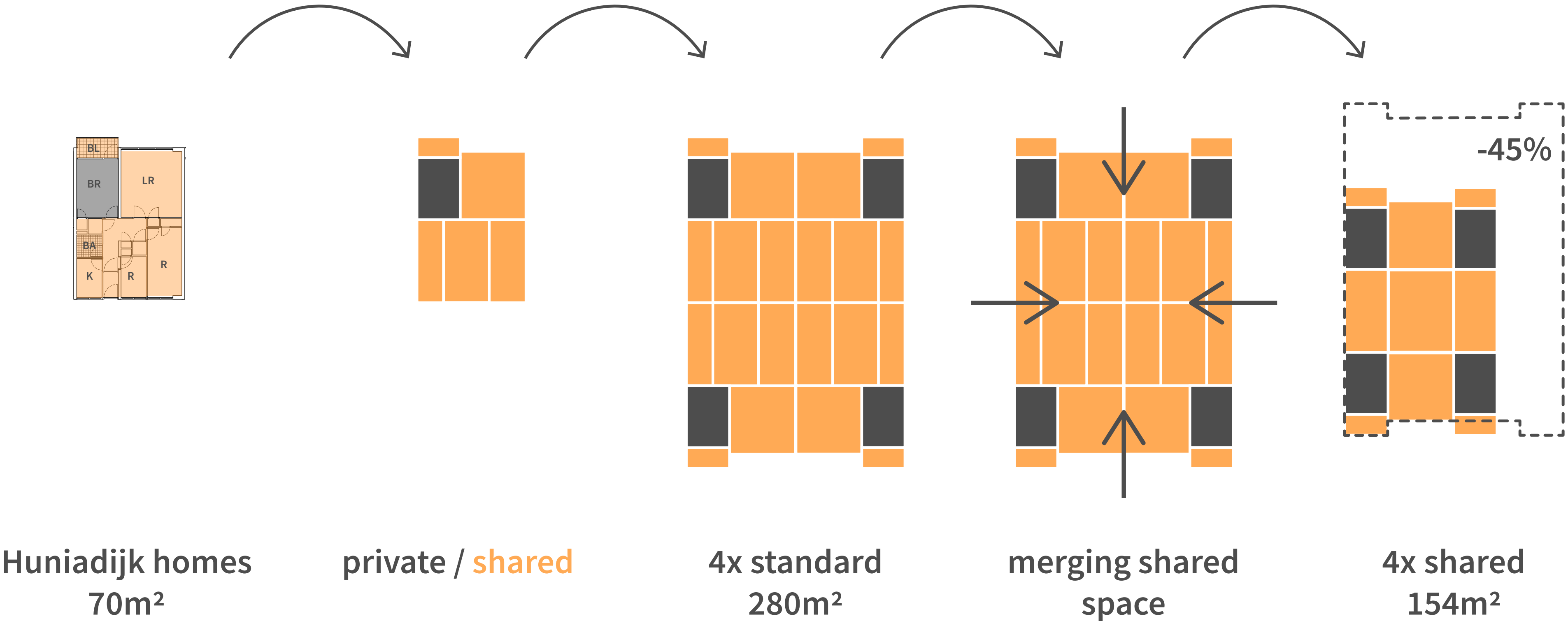


2475m²



2992m²





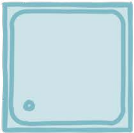
136x



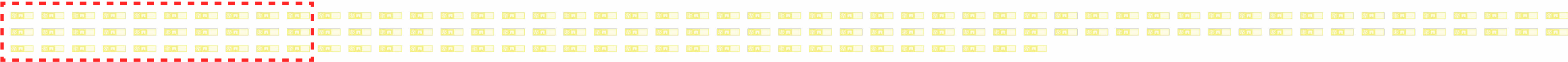
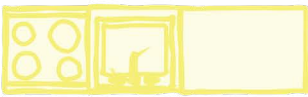
136m²



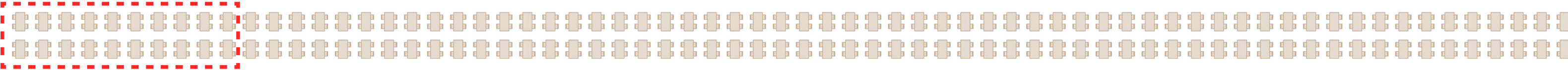
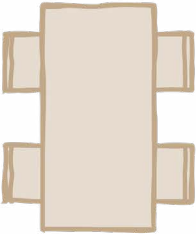
344m²



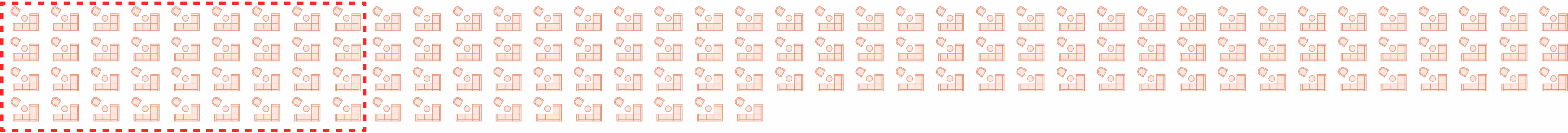
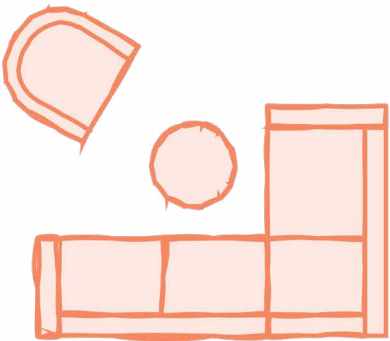
671m²



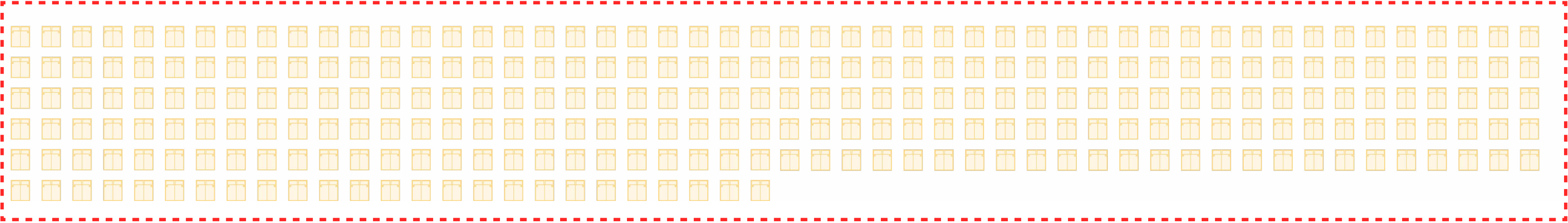
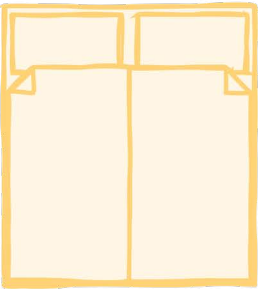
136x

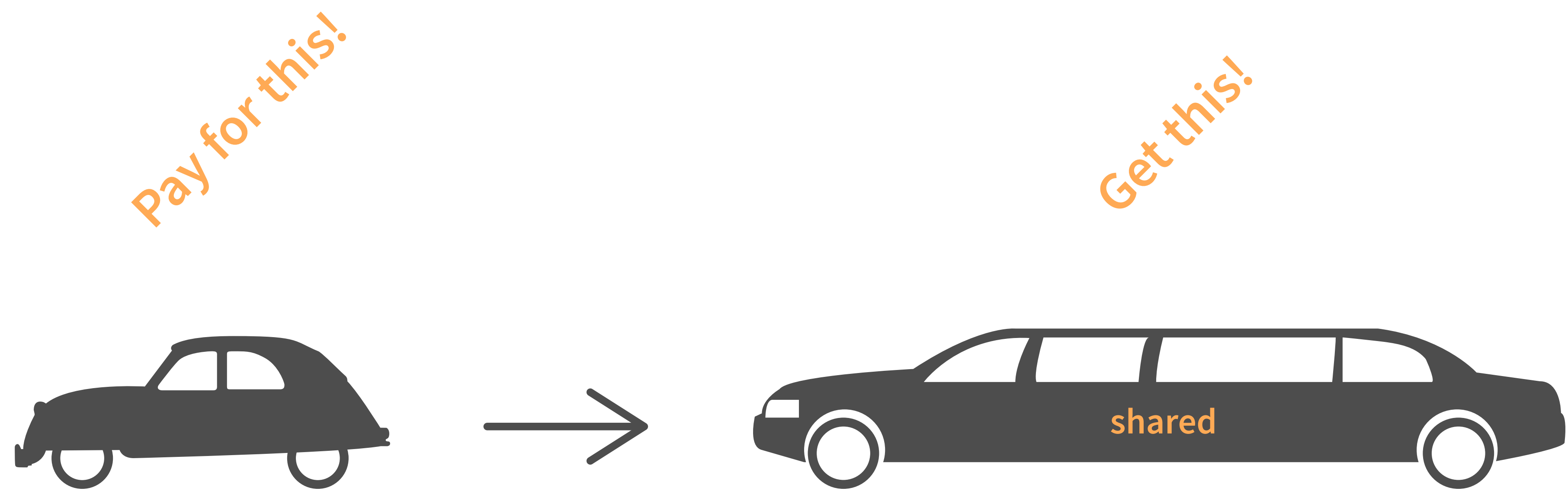


2475m²



2992m²



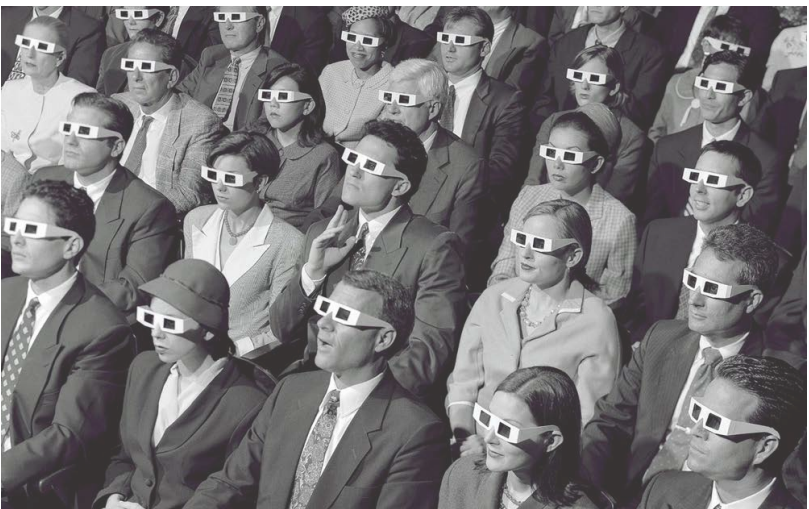




spa



roof garden



cinema



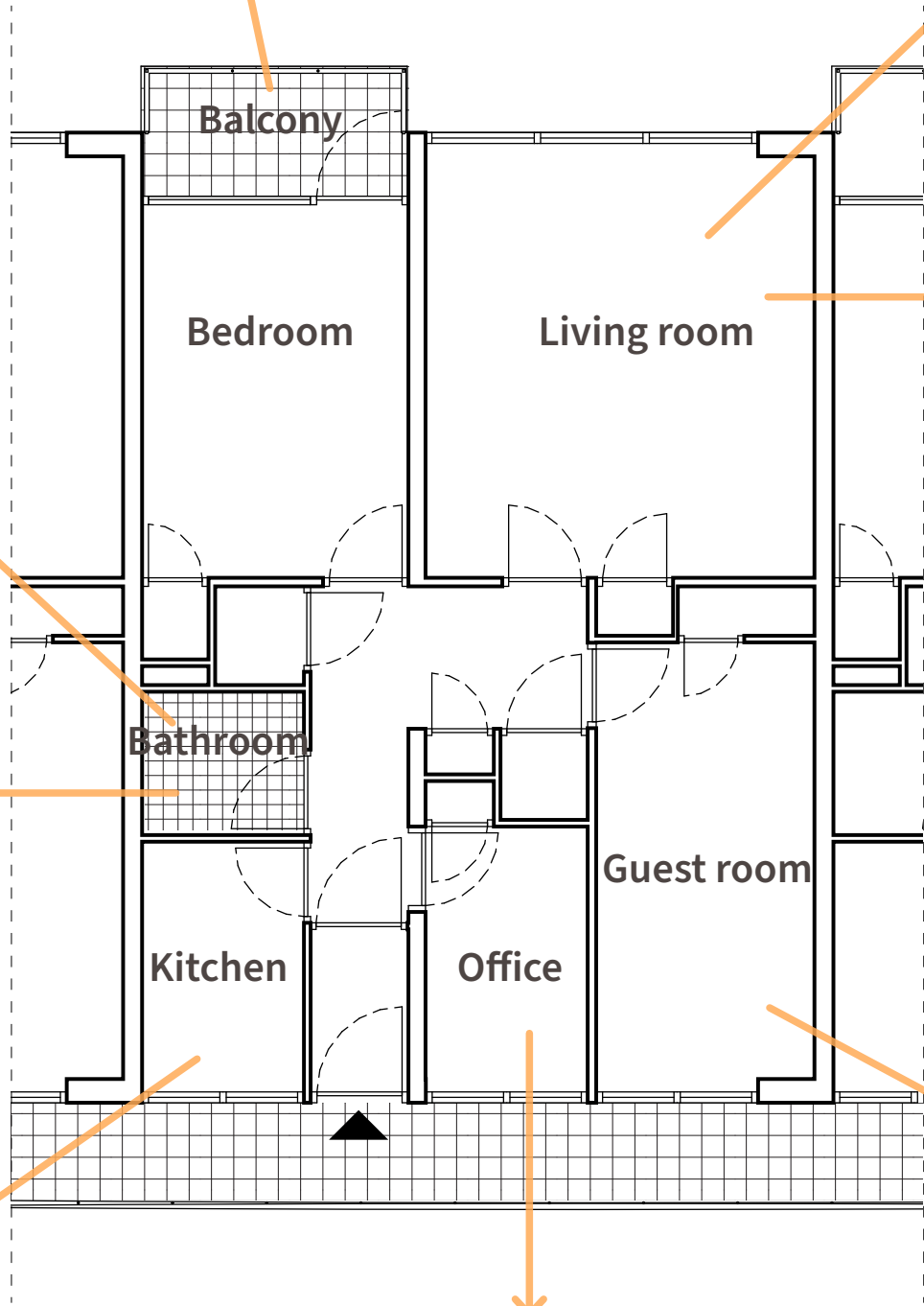
hobby room



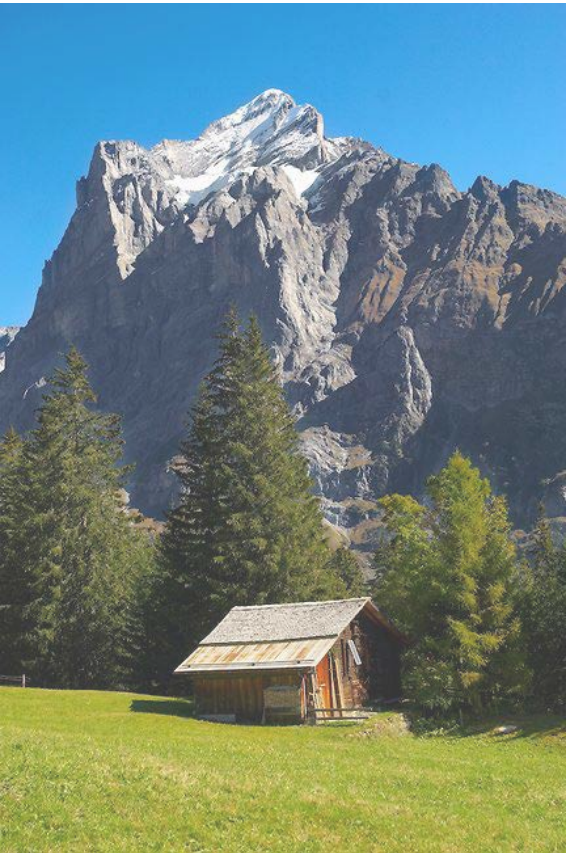
cafe & laundry



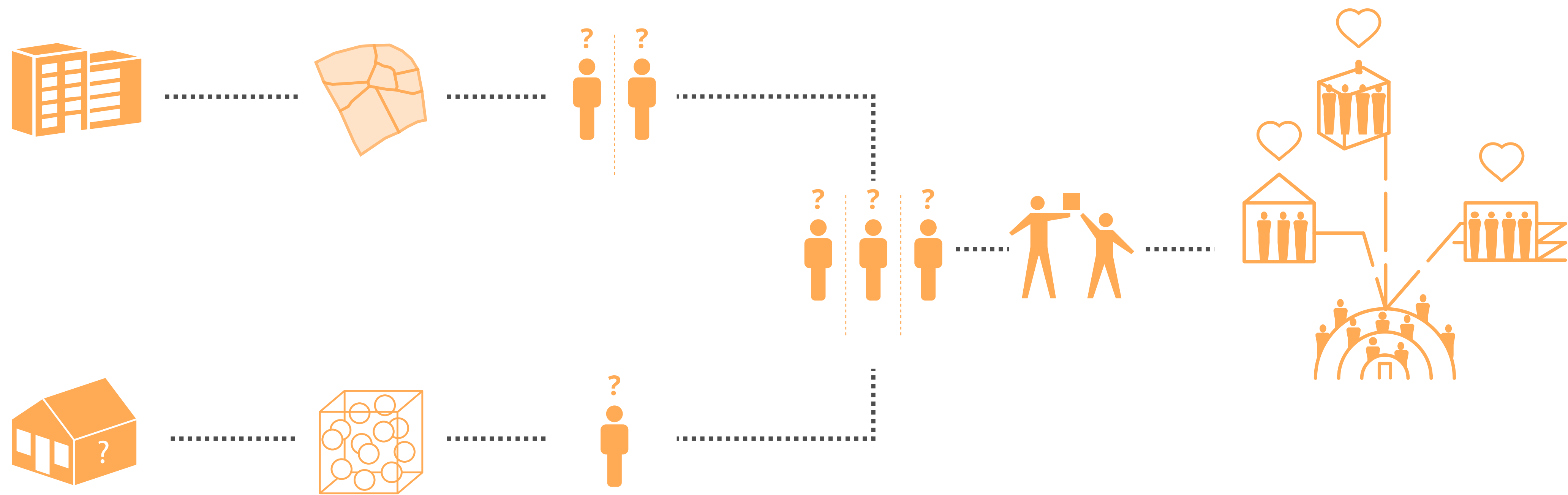
communal kitchen

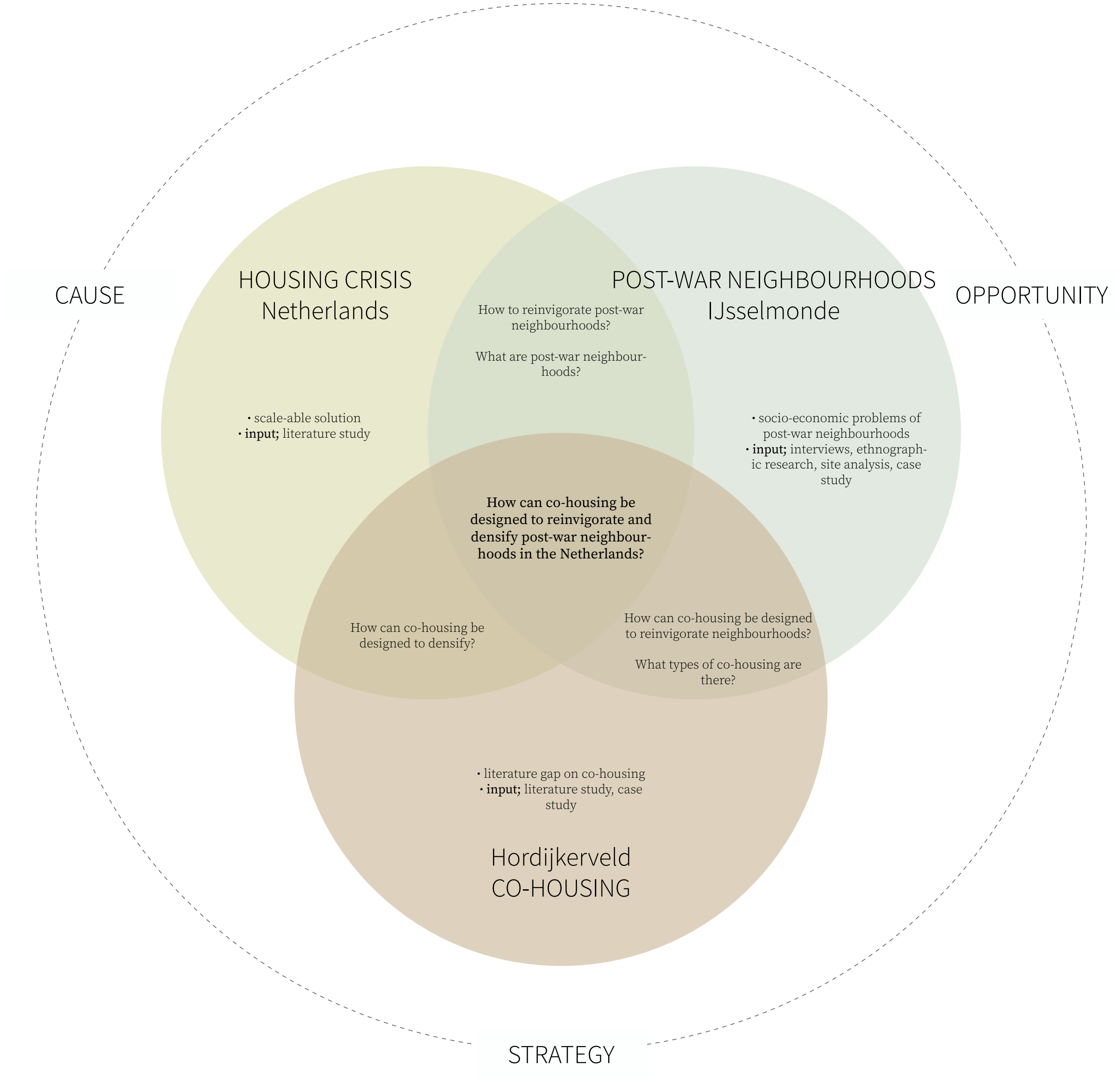


co-working space



guest house



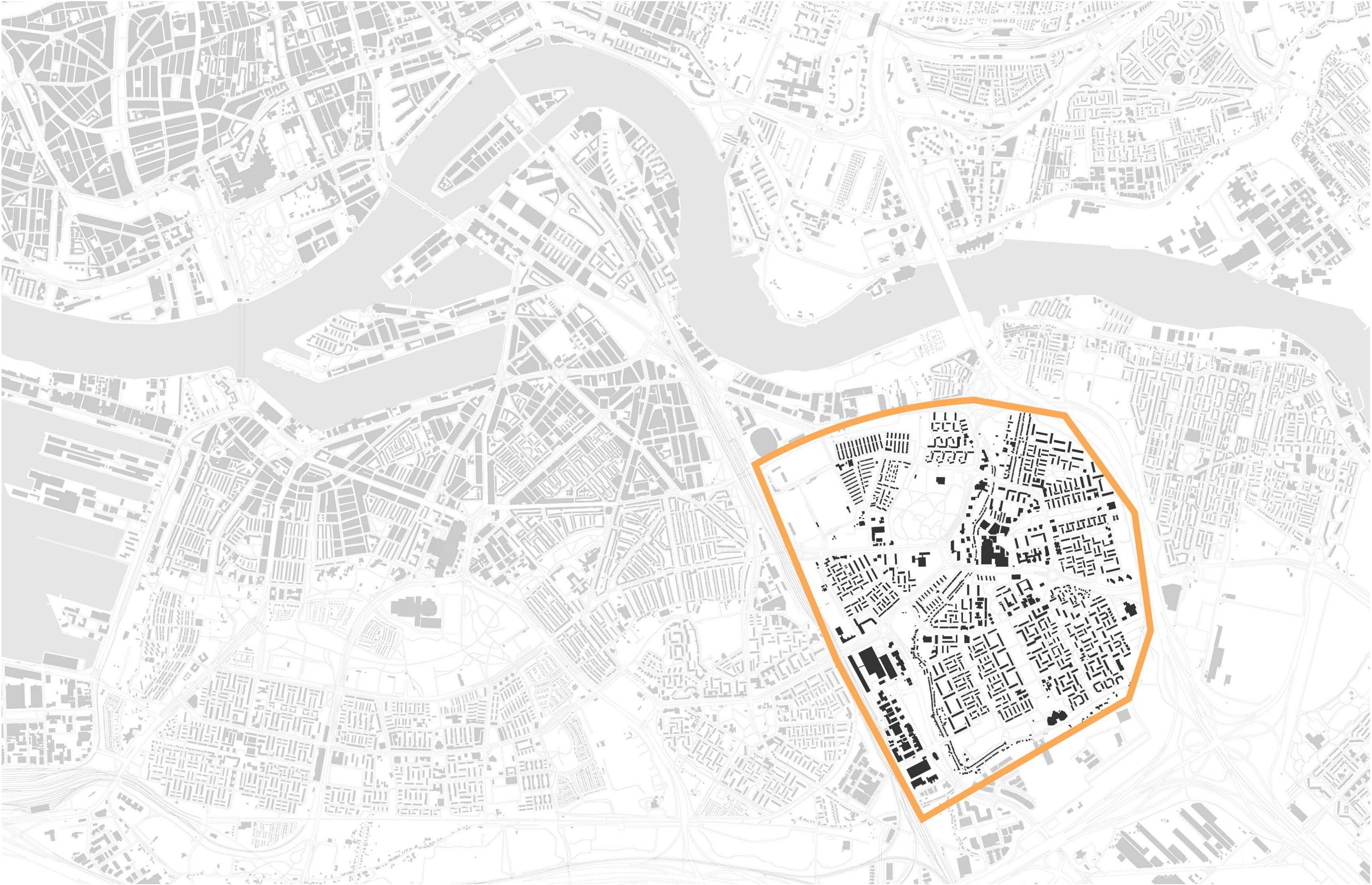






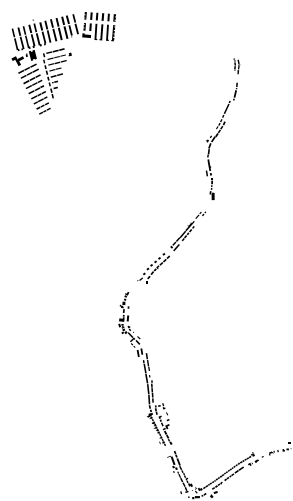
*HOW CAN CO-HOUSING BE DESIGNED TO REINVIGORATE
AND DENSIFY POST-WAR NEIGHBORHOODS IN THE NETH-
ERLANDS?*

LOCATION





LOCATION | development of IJsselmonde



Sportdorp
1918//1942



Kreekhuizen
1958



Hordijkerveld
1960



Reyeroord
1960



Groenenhagen
1962



Tuinenhoven
1962



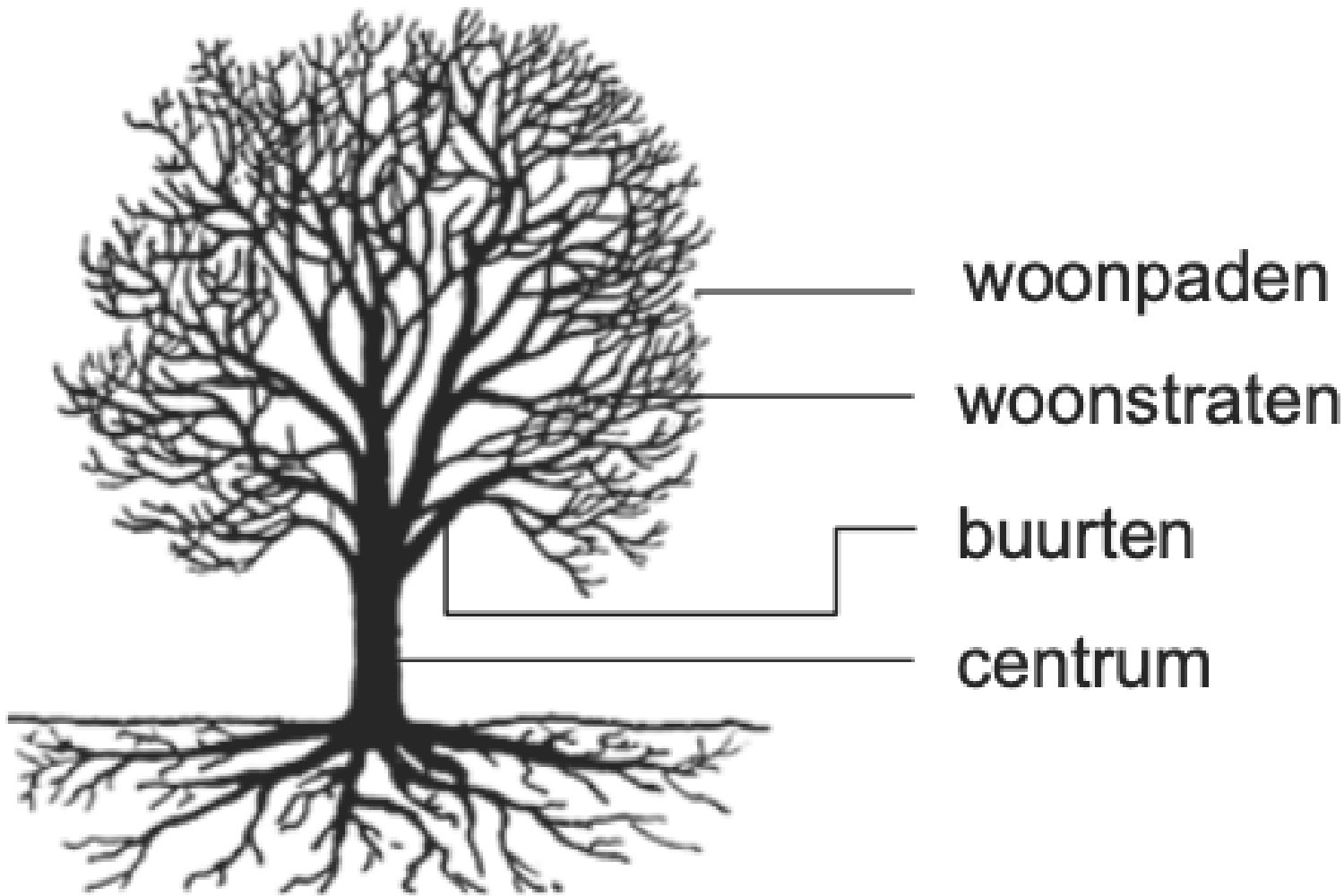
Centre
1963



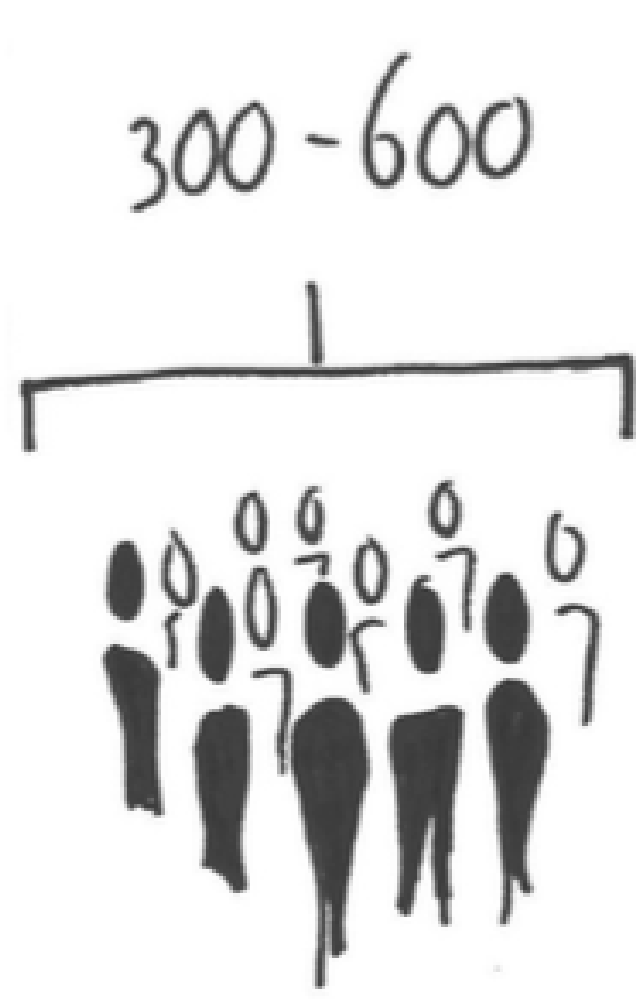
Development



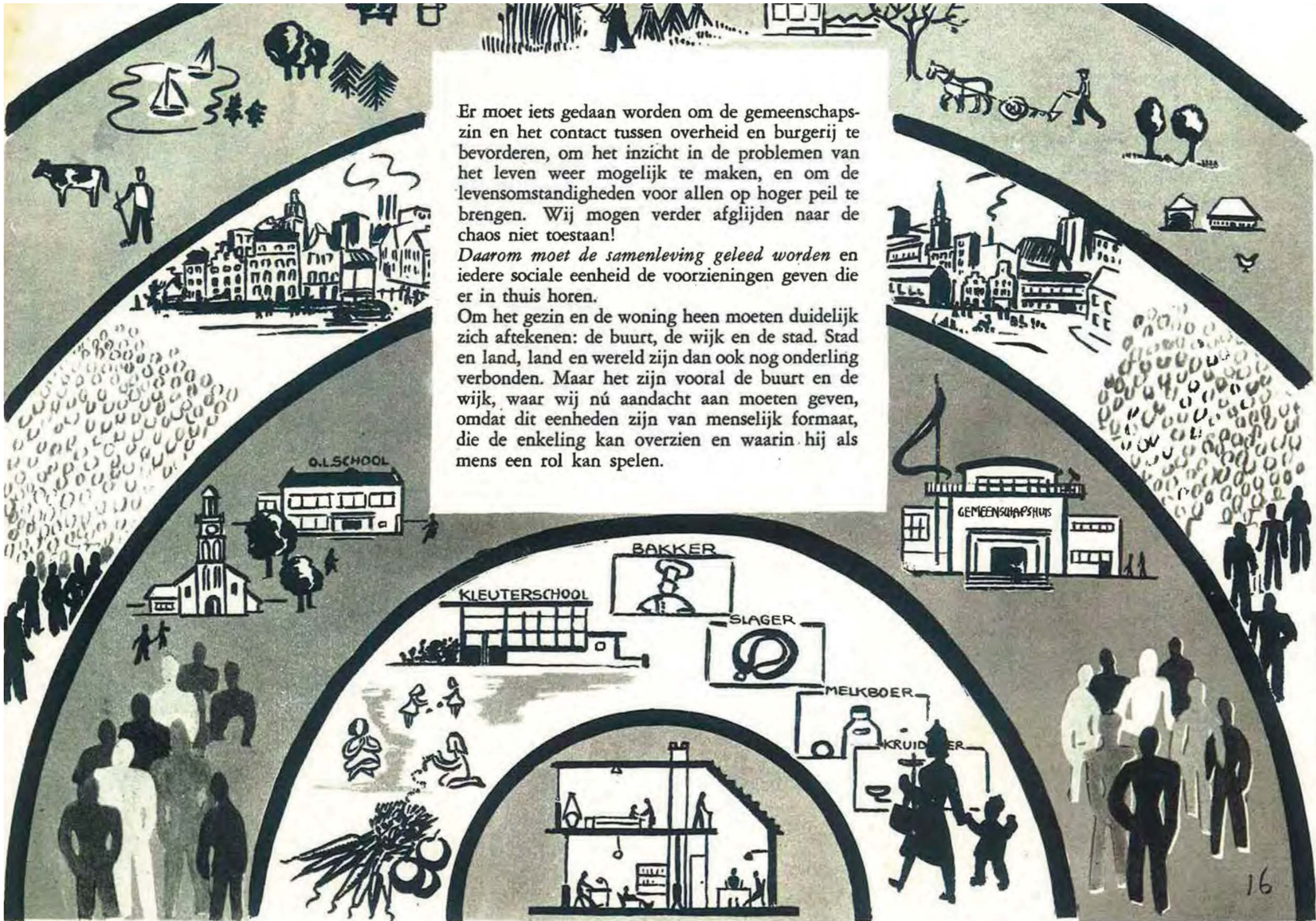
'Gelede stad'



Tree structure as road hierarchy

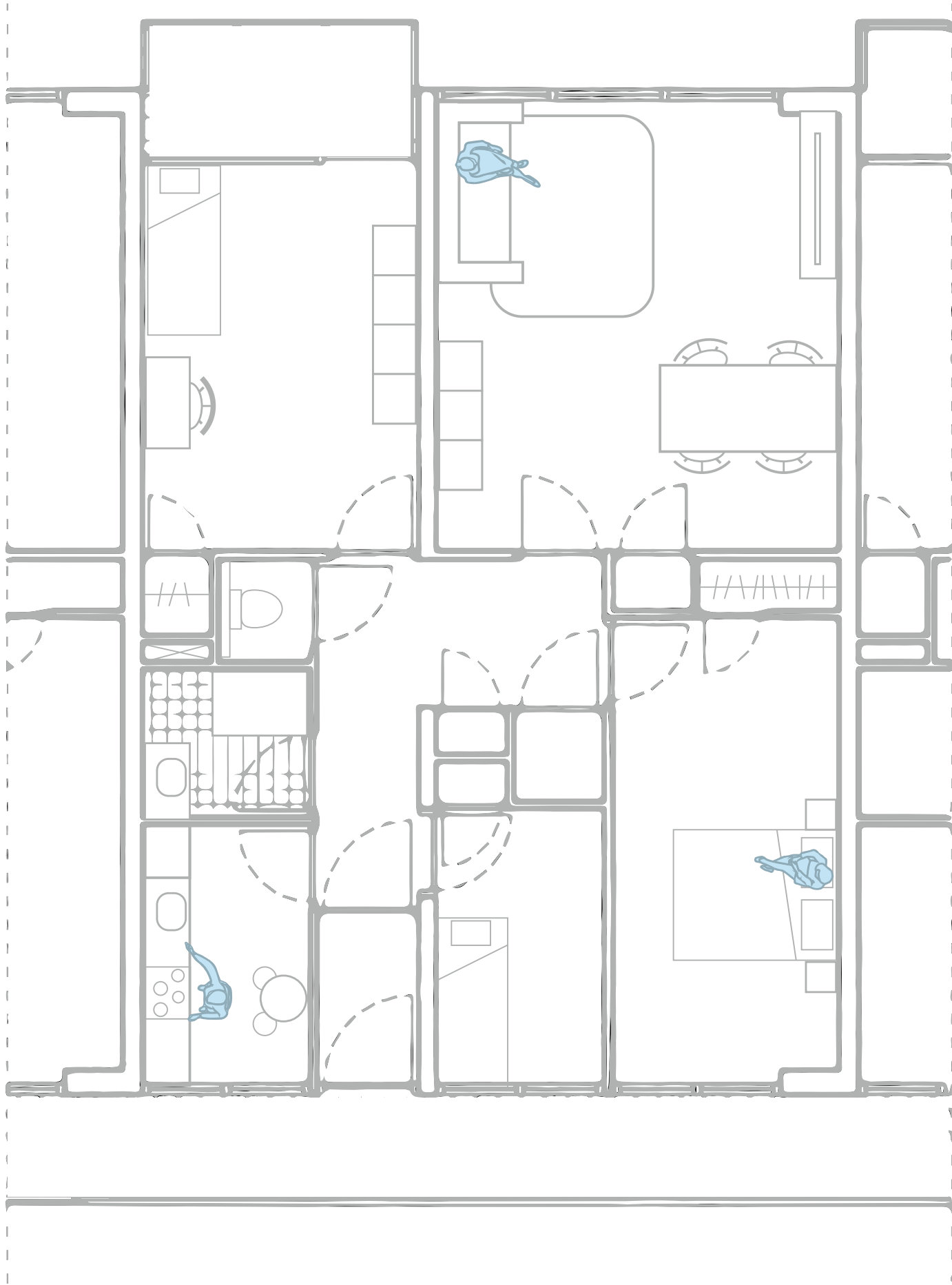


Face-to-face group



PROBLEMS

Harbers, A., Lörzing, H., Schluchter, S. (2008) Krachtwijken met karakter. Rotterdam, NAi Uitgevers, 227p.

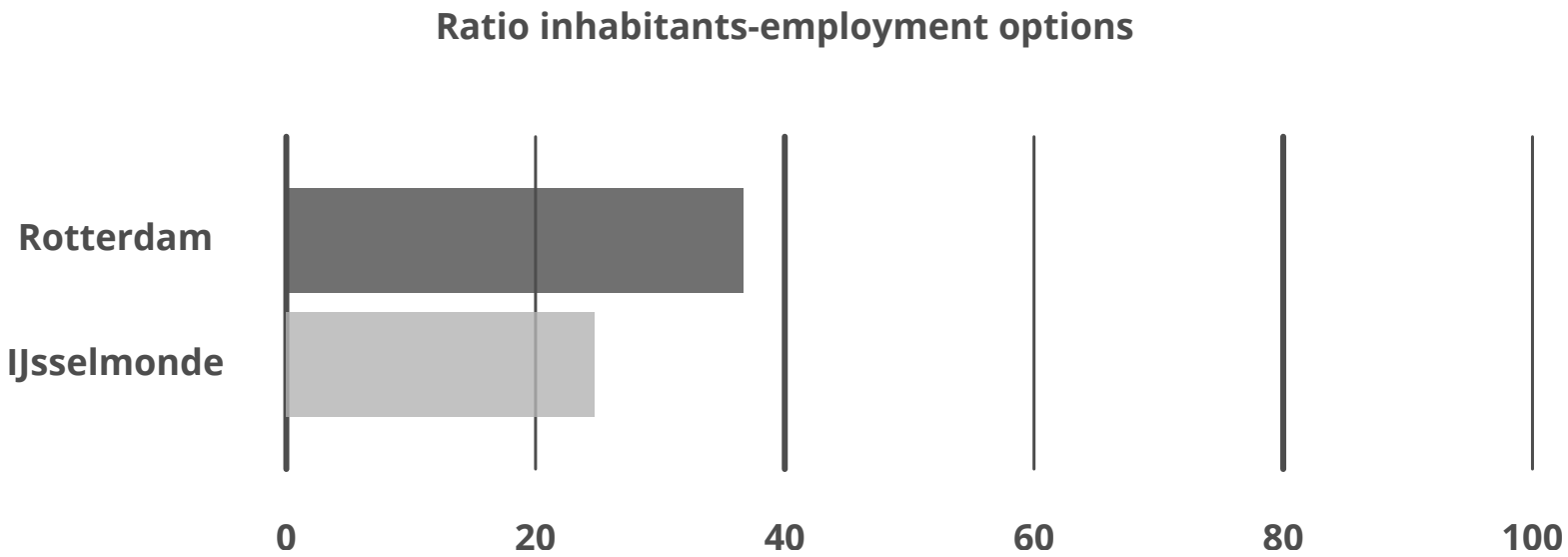


- Small houses for families with children, sometimes partly in decay



- Small houses for families with children, sometimes partly in decay
- Lack of union or community, moderate livability

16,2% unemployment

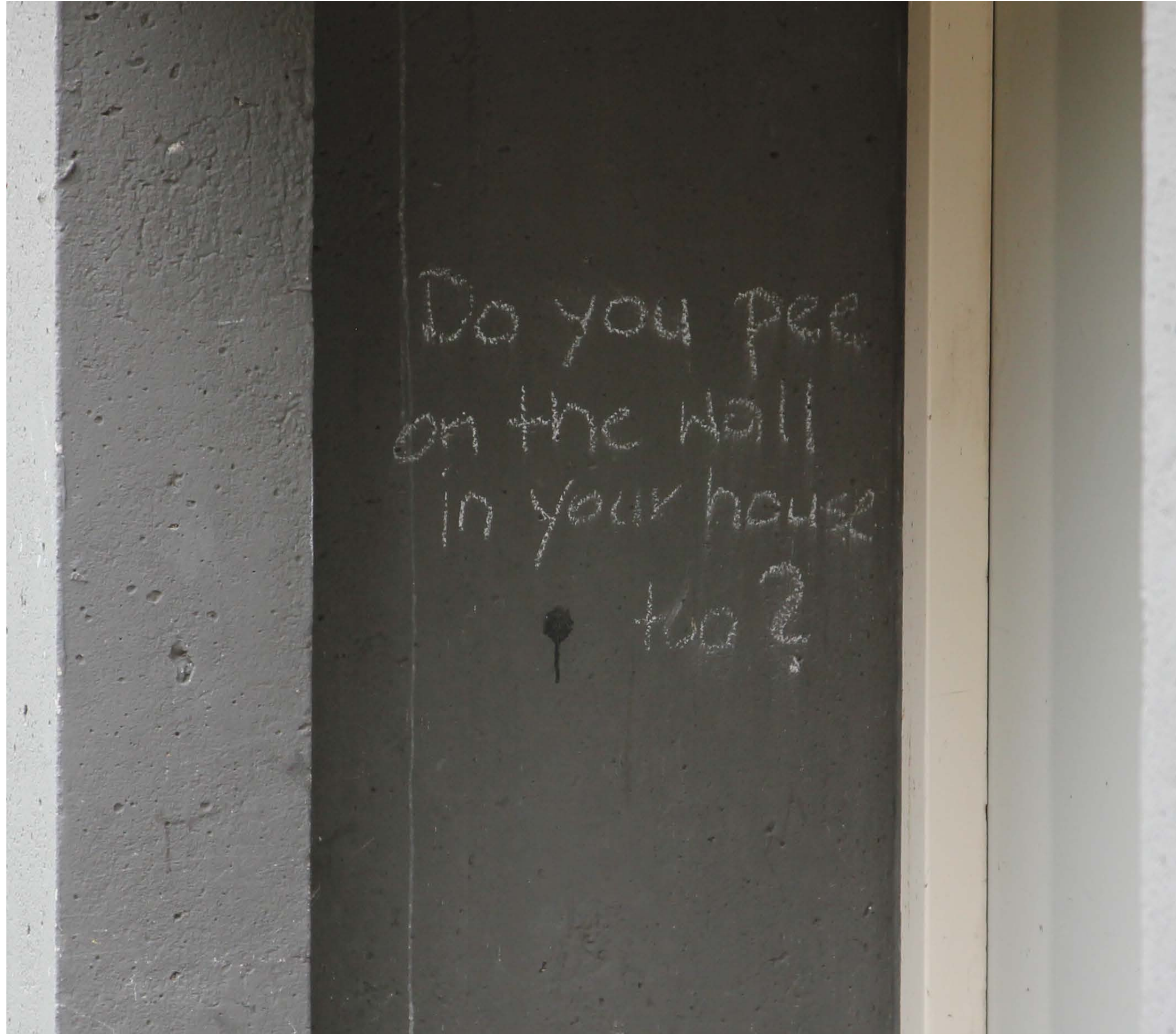


- Small houses for families with children, sometimes partly in decay
- Lack of union or community, moderate livability
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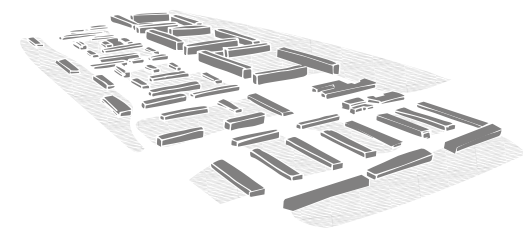
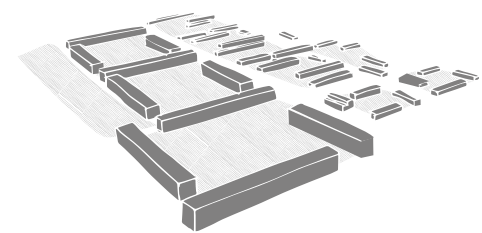
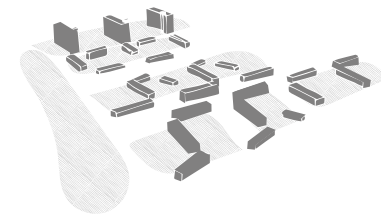
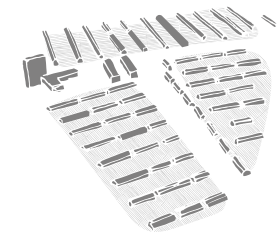
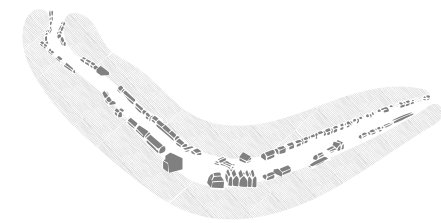
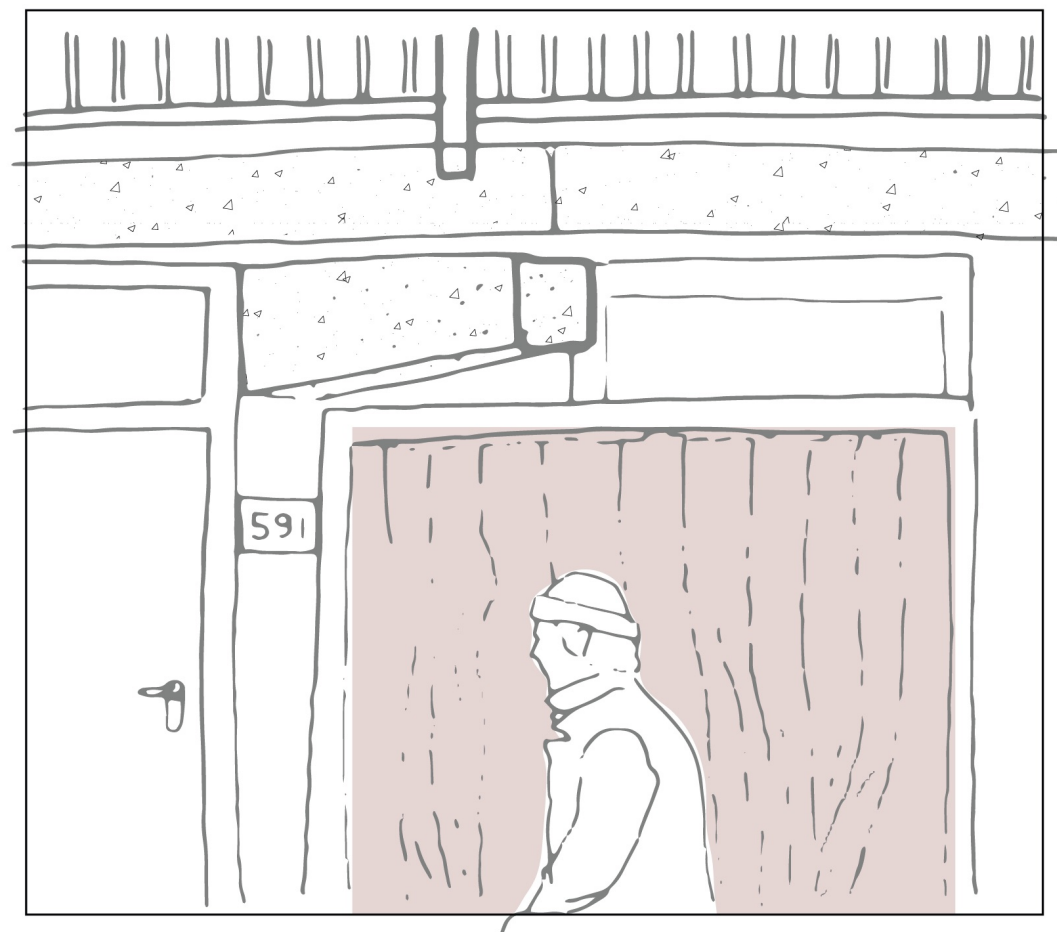
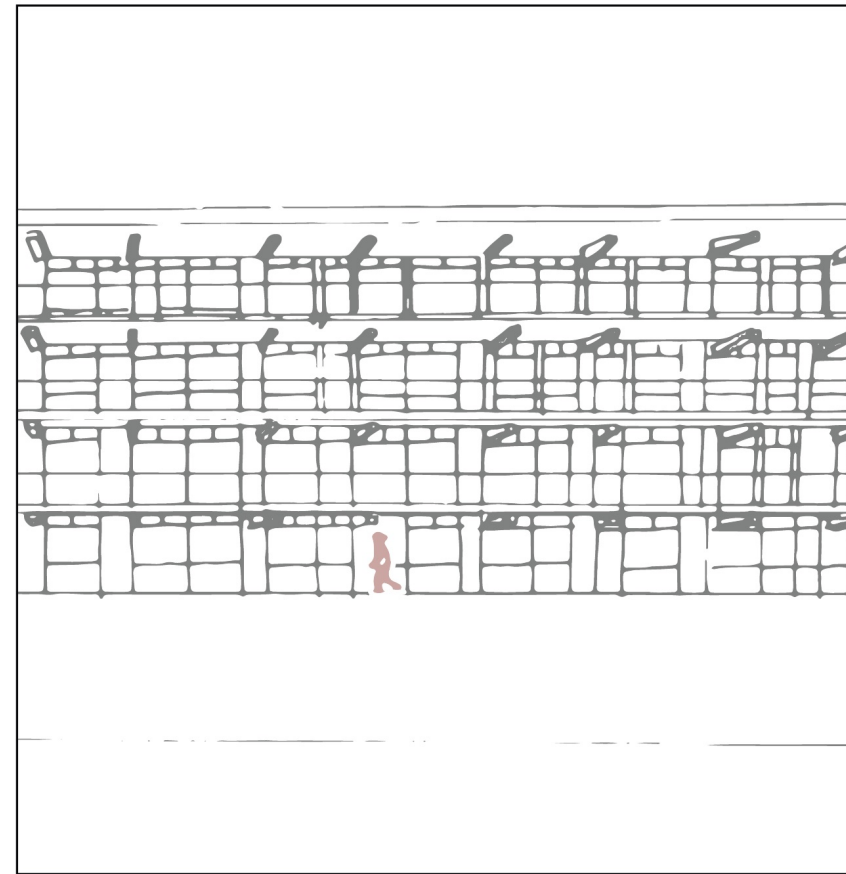
Average income: €23.000



- Small houses for families with children, sometimes partly in decay
- Lack of union or community, moderate livability
- Unemployment, little employment in the neighborhood
- Lack of facilities



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- **Rising crime rate, nuisance by youth**



- Small houses for families with children, sometimes partly in decay
- Lack of union or community, moderate livability
- Unemployment, little employment in the neighborhood
- Lack of facilities
- Rising crime rate, nuisance by youth
- **Homogeneous typologies and architecture**

OPPORTUNITIES

Harbers, A., Lörzing, H., Schluchter, S. (2008) Krachtwijken met karakter. Rotterdam, NAi Uitgevers, 227p.



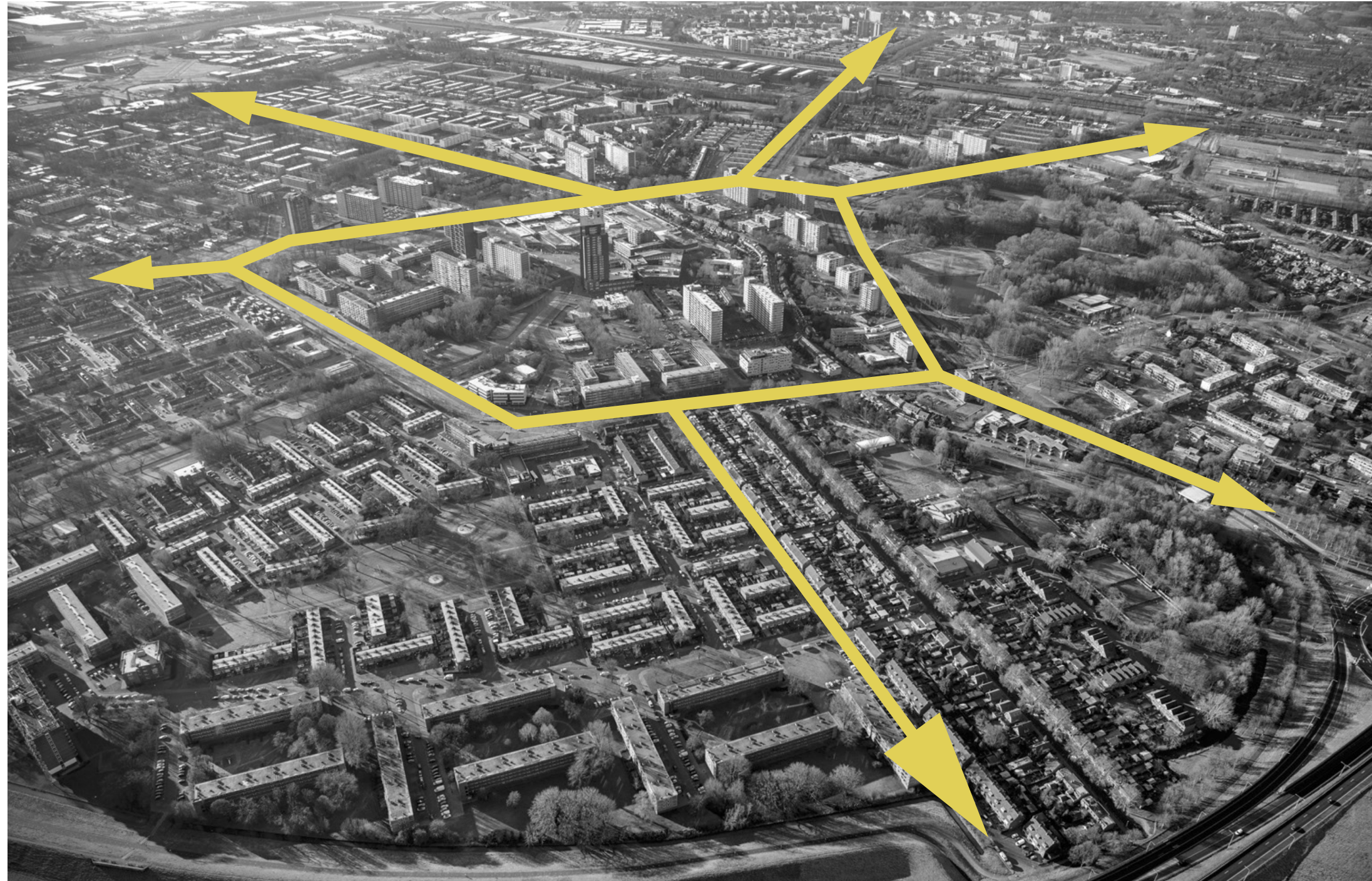
- Near city center



- Near city center
- Near main infrastructure



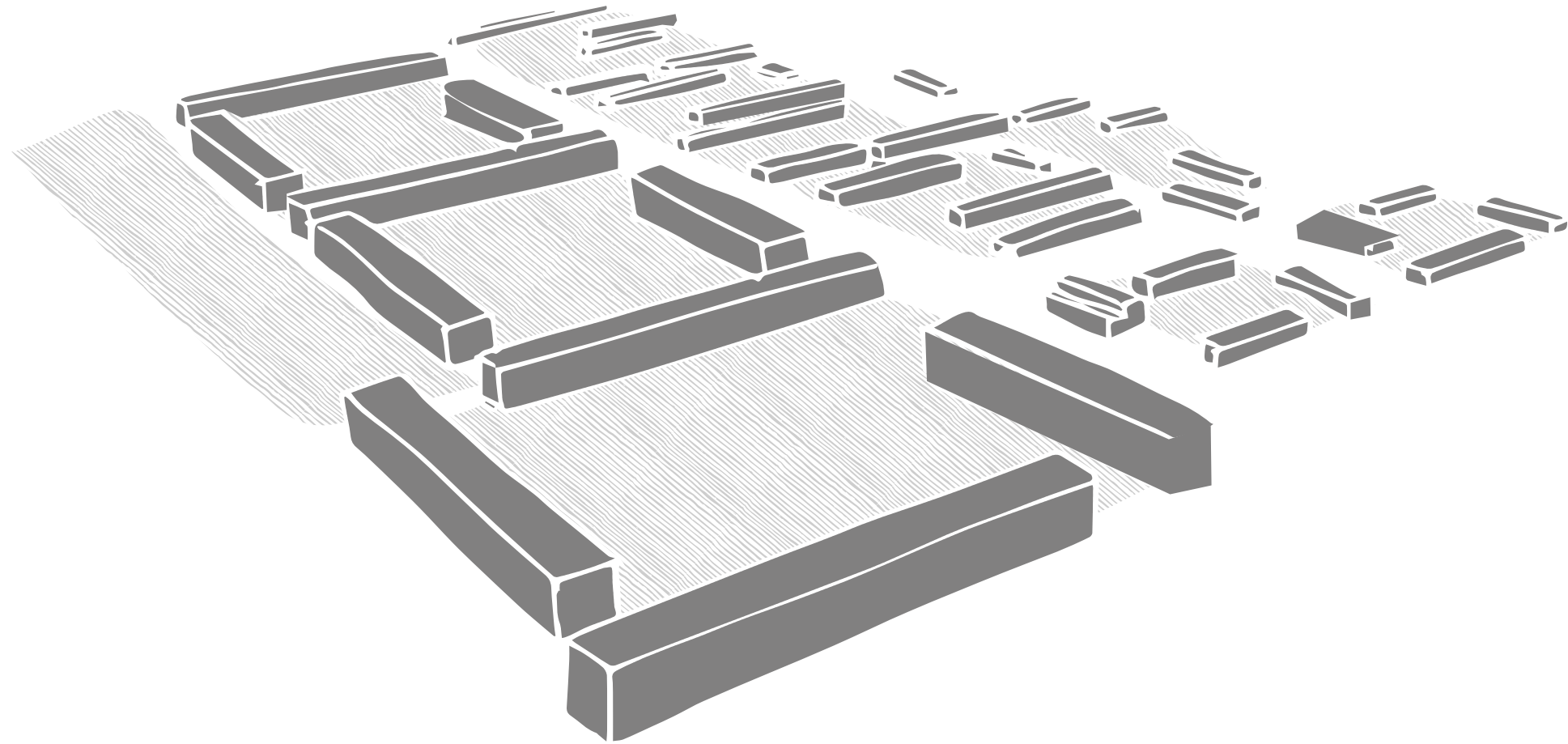
- Near city center
- Near main infrastructure
- At the border of urban area & Mixed functions



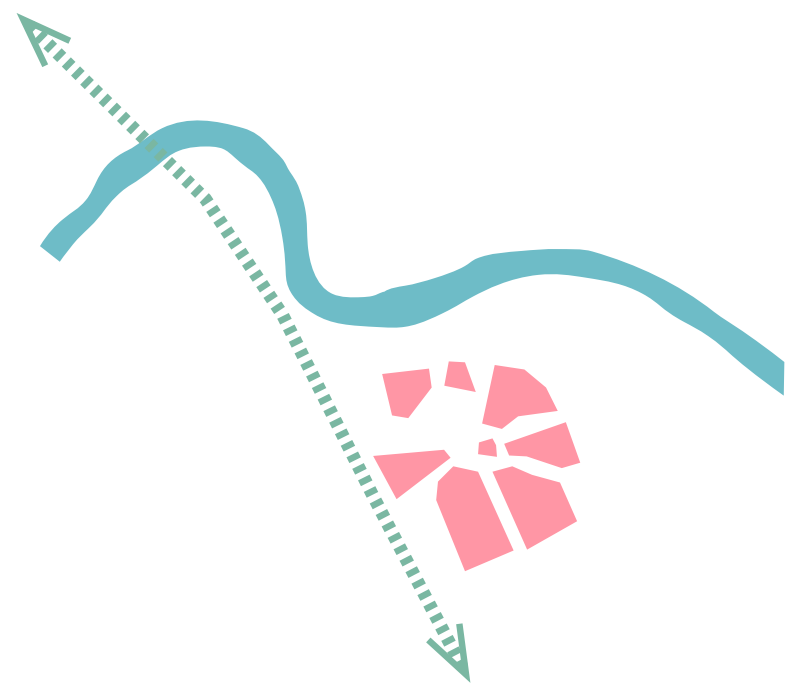
- Near city center
- Near main infrastructure
- At the border of urban area & Mixed functions
- Network of main roads



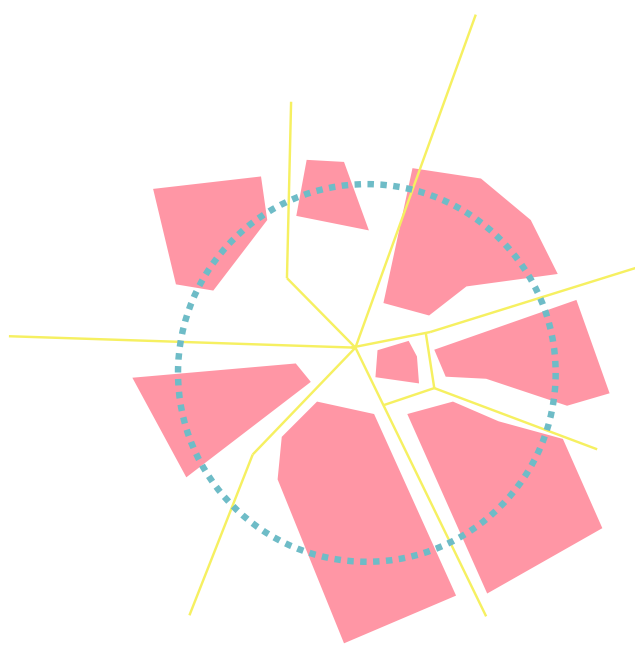
- Near city center
- Near main infrastructure
- At the border of urban area & Mixed functions
- Network of main roads
- Main structure of green and waterways



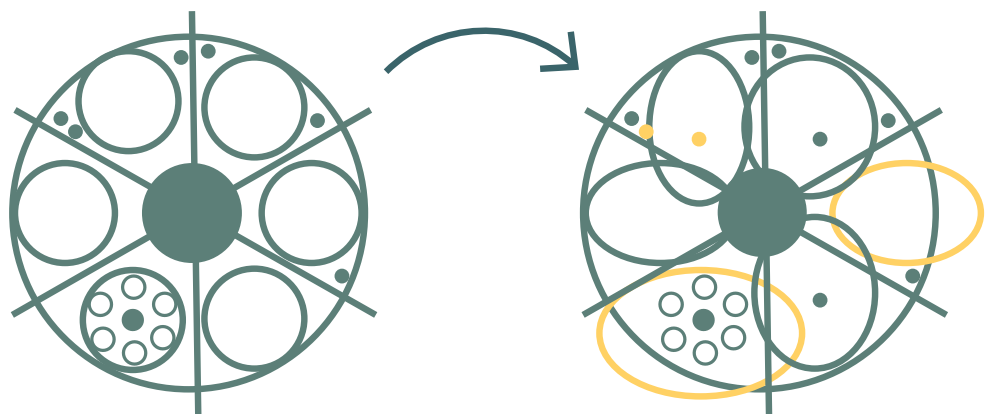
- Near city center
- Near main infrastructure
- At the border of urban area & Mixed functions
- Network of main roads
- Main structure of green and waterways
- **Old ribbon shaped structures**



CONNECT TO THE CITY



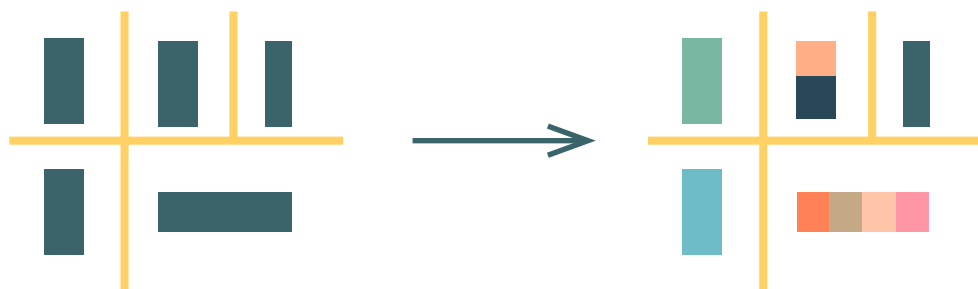
CONNECTING BETWEEN THE
NEIGHBORHOODS



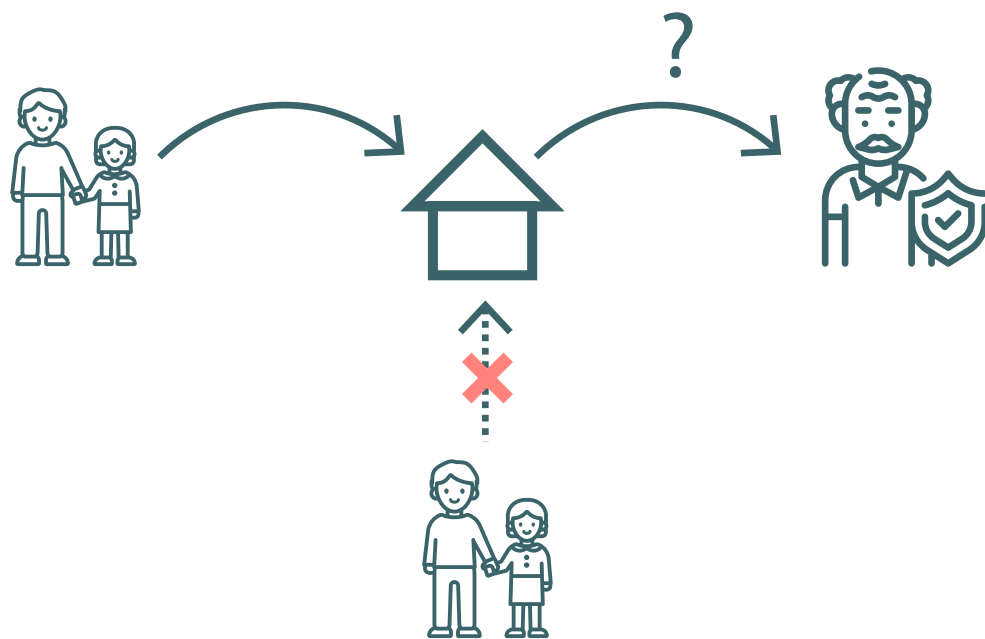
FUNCTION MIX



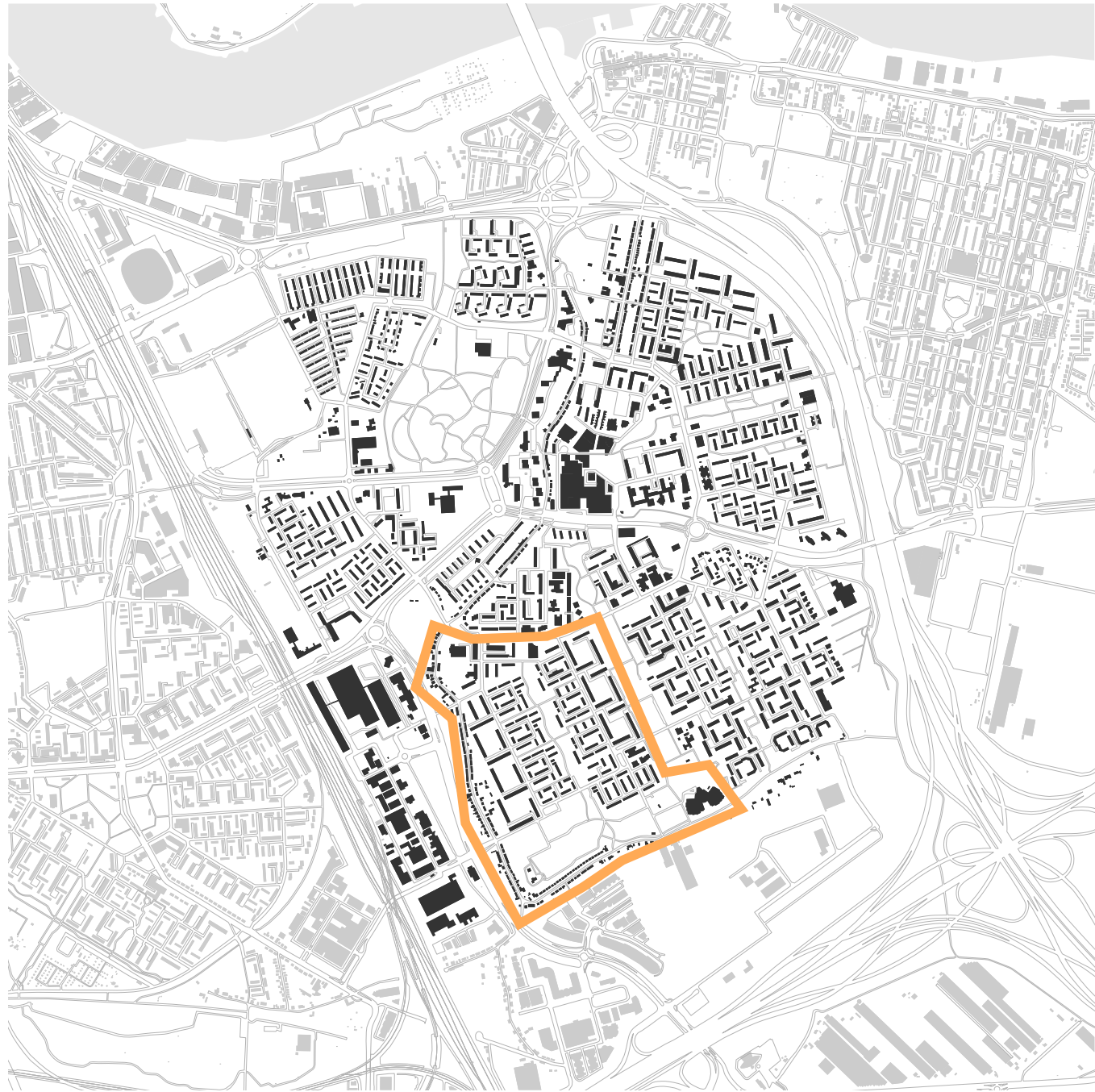
BRING HUMAN SCALE BACK INTO
PUBLIC SPACE



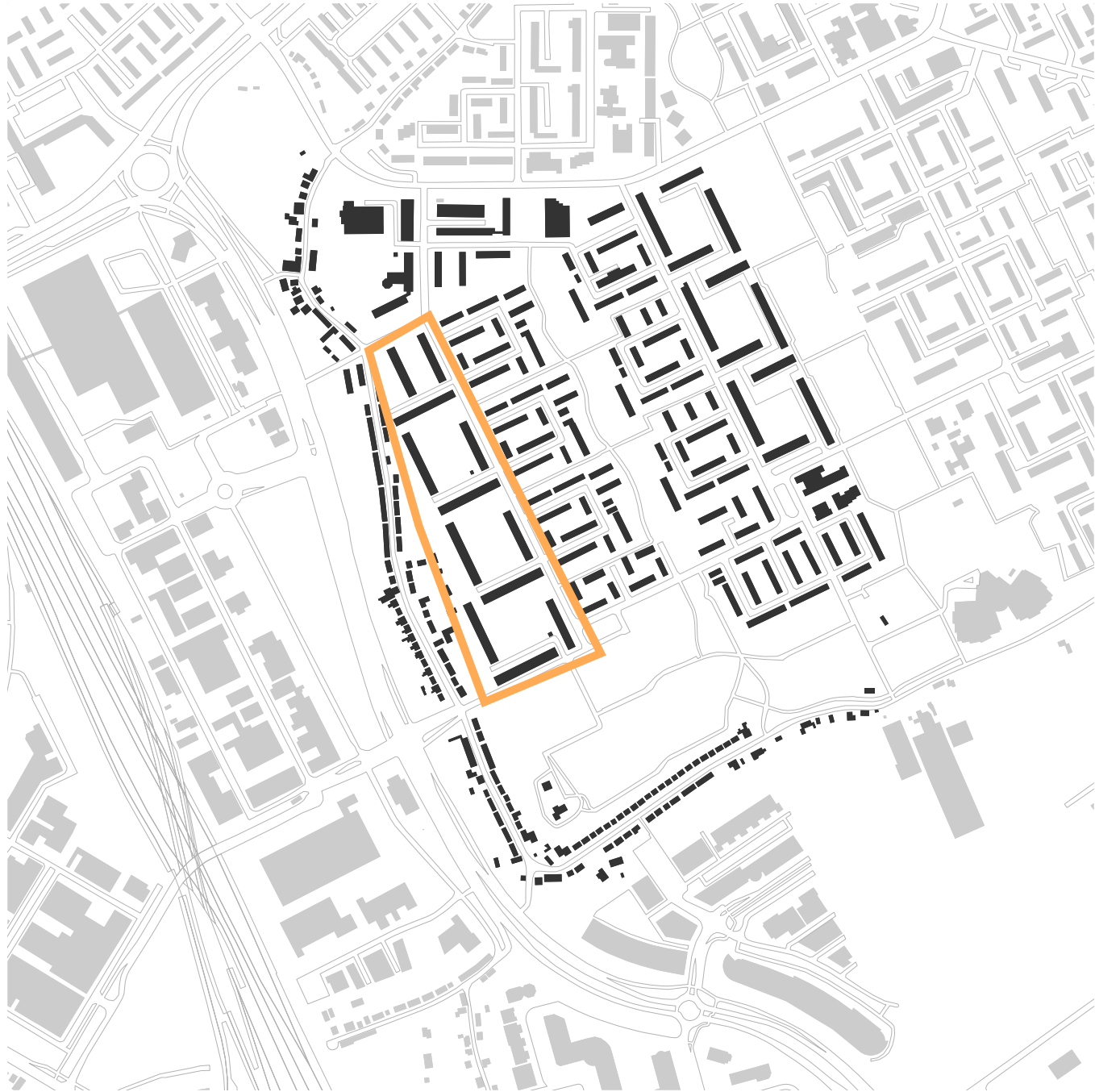
DIVERSIFY HOUSING STOCK AND
PUBLIC SPACE



ATTRACT NEW TARGET GROUPS
AND PROVIDE FOR EXISTING



IJSSELMONDE



HORDIJKERVELD

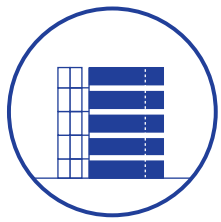
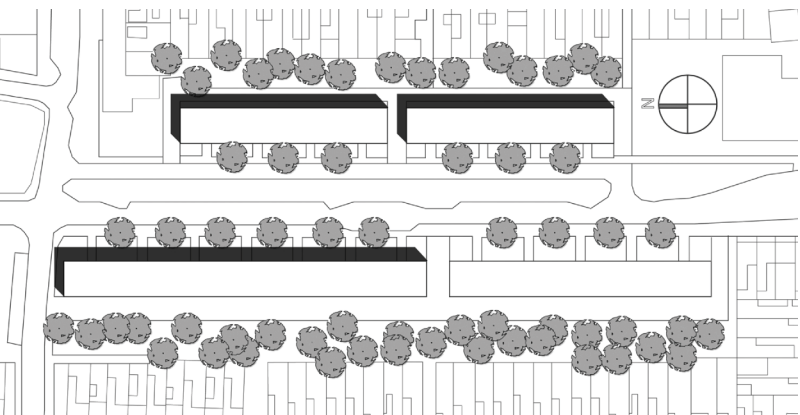


HUNIADIJK

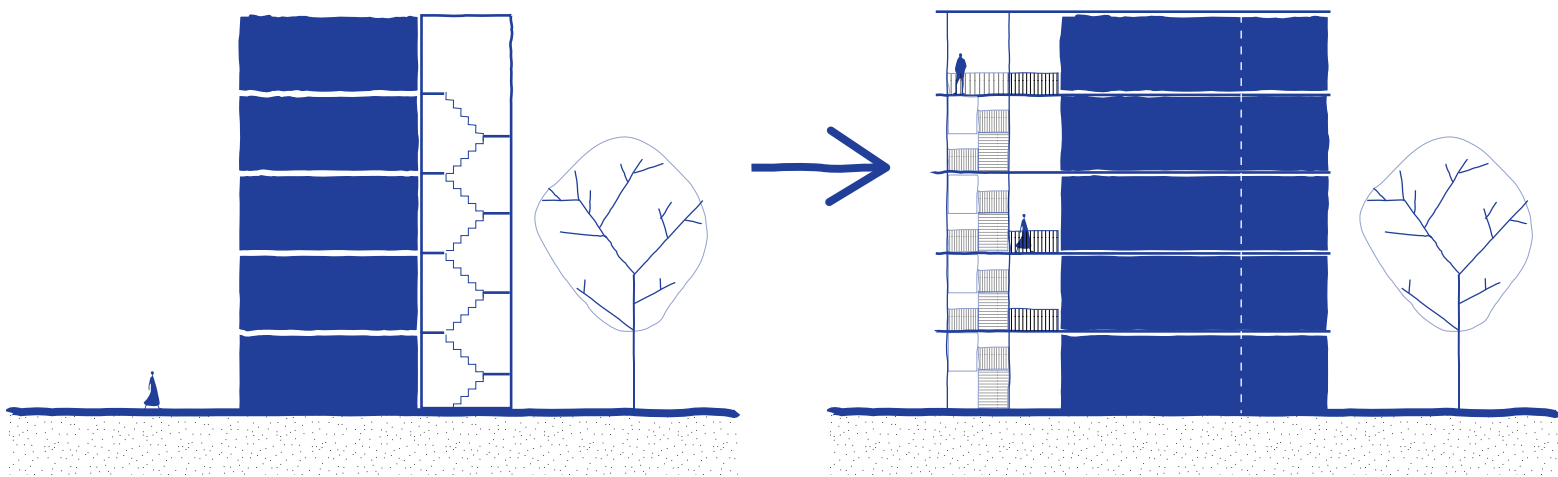


ROOSENDAAL, PORCH FLAT

Built: 1959
Architect: Kuiper, Gouwetor, De Ranitz Nispen
Renovation: 2002
Architect: Rijnvos Voorwinde Architecten



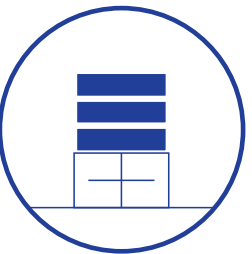
Porch-to-gallery approach: The staircase of the porch flat is added to the dwelling and a outdoor gallery is attached to make the dwelling accessible. The gallery is placed 2,5m from the facade creating bridges and a buffer zone between the dwellings and the circulation zones.



DEMOLITION



WRAPPING



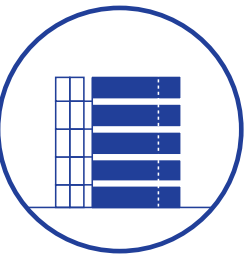
MAISONETTE



EXTENSION

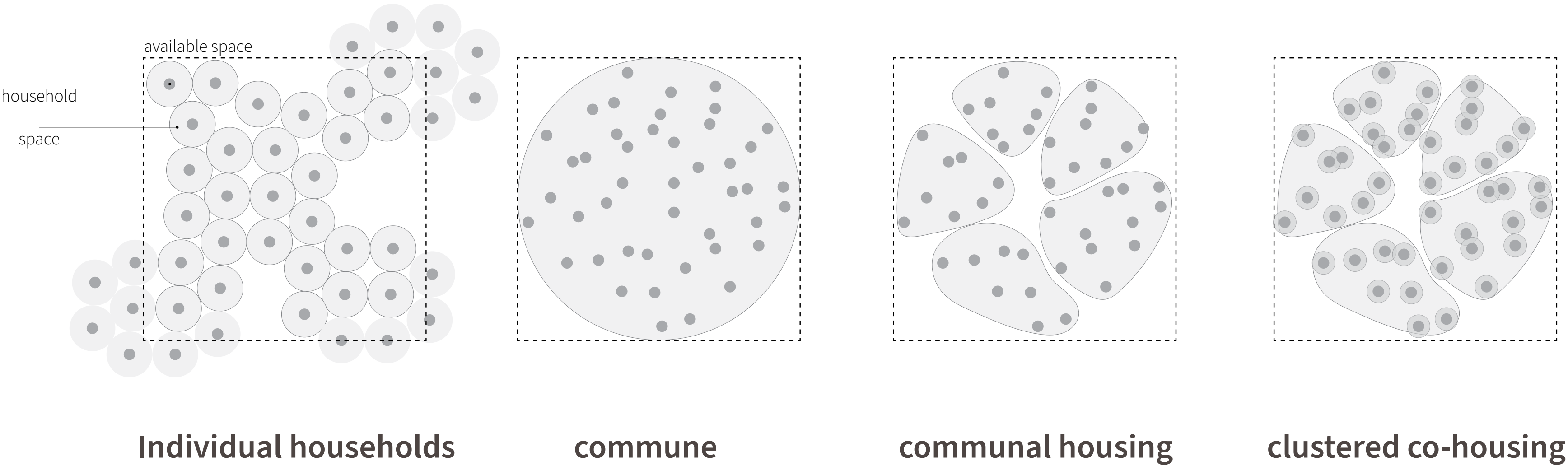


HIGH-RISE CONNECTION



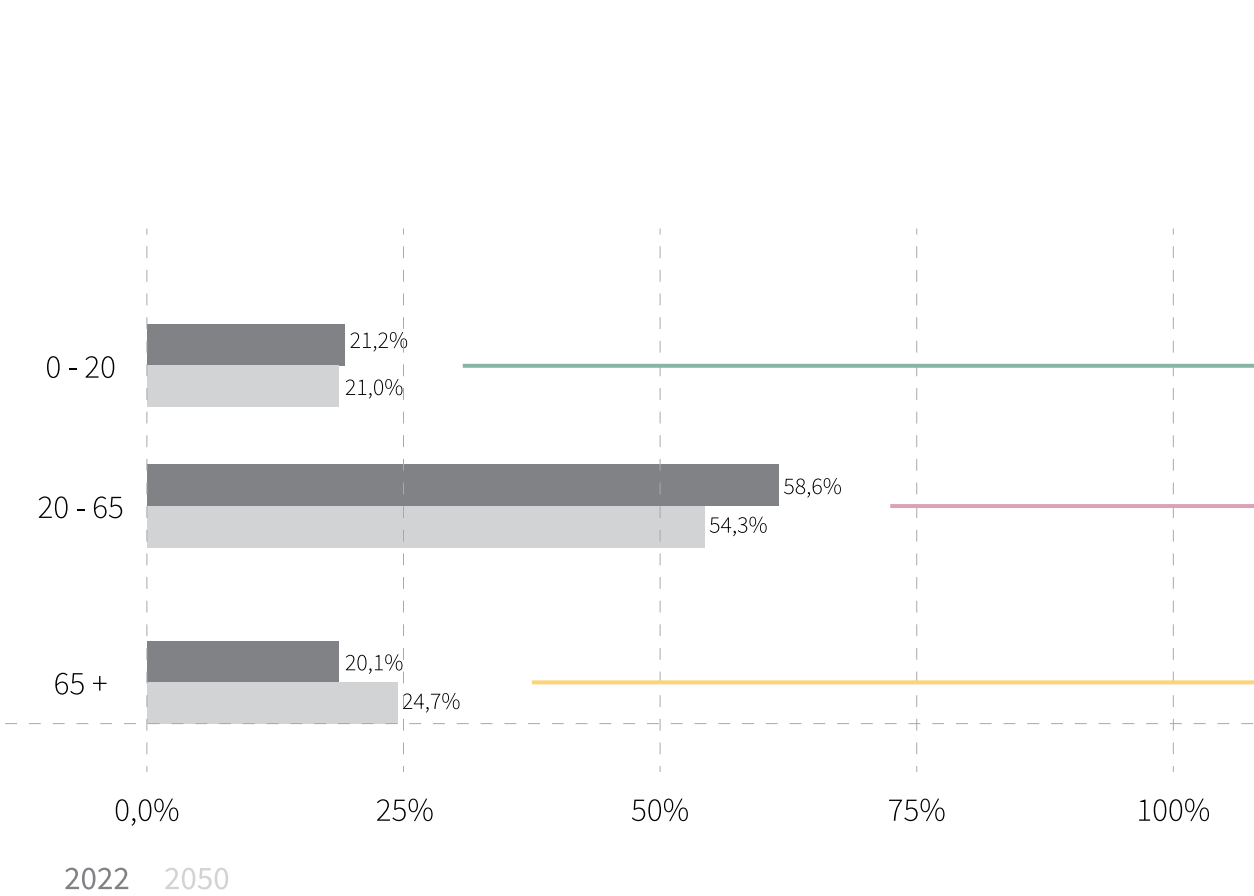
PORCH-TO-GALLERY

***HOW CAN CO-HOUSING BE DESIGNED TO REINVIGORATE
AND DENSIFY POST-WAR NEIGHBORHOODS IN THE NETH-
ERLANDS?***



CO-HOUSING| co-housing for who?

DEMOGRAPHIC CHANGE



<https://opendata.cbs.nl/#/CBS/nl/dataset/85089NED/table>

TARGET GROUPS

STUDENT
ELDERLY
SINGLES
COUPLES
FAMILY

TARGET SUB-GROUPS

SINGLE HOUSING STUDENT
LIVING AT HOME STUDENT
STUDENT IN GROUP HOUSING
ELDERLY GROUP HOUSING
SINGLE ELDERLY
SUPPORTED ELDERLY LIVING
ELDERLY LIVING WITH FAMILY
SINGLES WITH CHILDREN
SINGLES EMPTY NESTER
STARTER SINGLE
STARTER COUPLES
FAMILY WITH KIDS
EMPTY-NESTER

HOUSING CLUSTERS

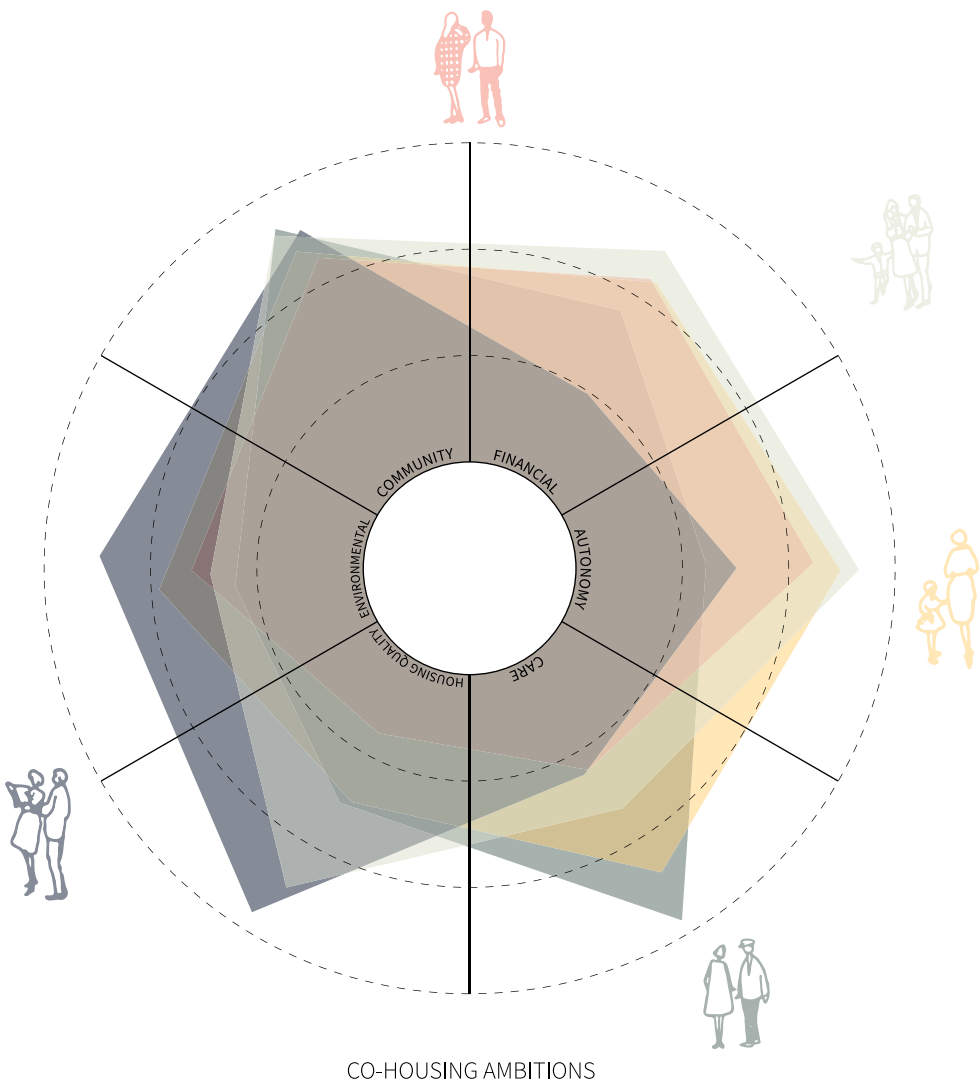
CARE CLUSTER
STUDENT/STARTER CLUSTER
SUPPORTED NESTING CLUSTER
ELDERLY CLUSTER
STARTER CLUSTER
SUPPORTIVE MIX CLUSTER

CO-HOUSING AMBITIONS

COMMUNITY
FINANCIAL
AUTONOMY
CARE
HOUSING QUALITY
ENVIRONMENTAL

FACILITIES

DAY CARE
COMMUNAL KITCHEN
COMMUNAL LIVING ROOM
CO-WORKING SPACE
ASSEMBLY HALL
WORKSHOP
GYM
SHARED GUEST ROOM
LAUNDRY ROOM
SHARED GARDEN
LIBRARY
STORAGE
COFFEE SHOP
BIKE PARKING



CO-HOUSING| co-housing for who?

HOUSING CLUSTERS

CARE CLUSTER

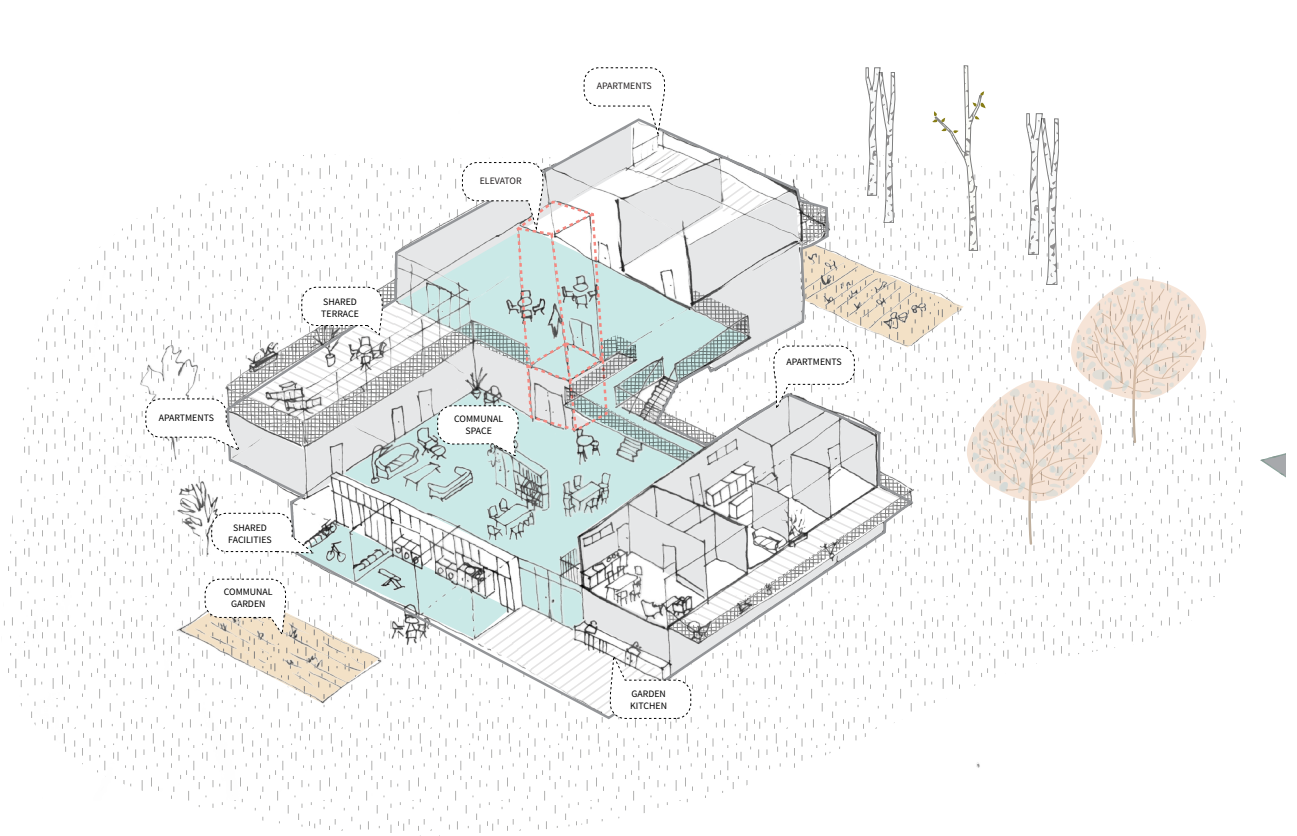
STUDENT/STARTER CLUSTER

SUPPORTED NESTING CLUSTER

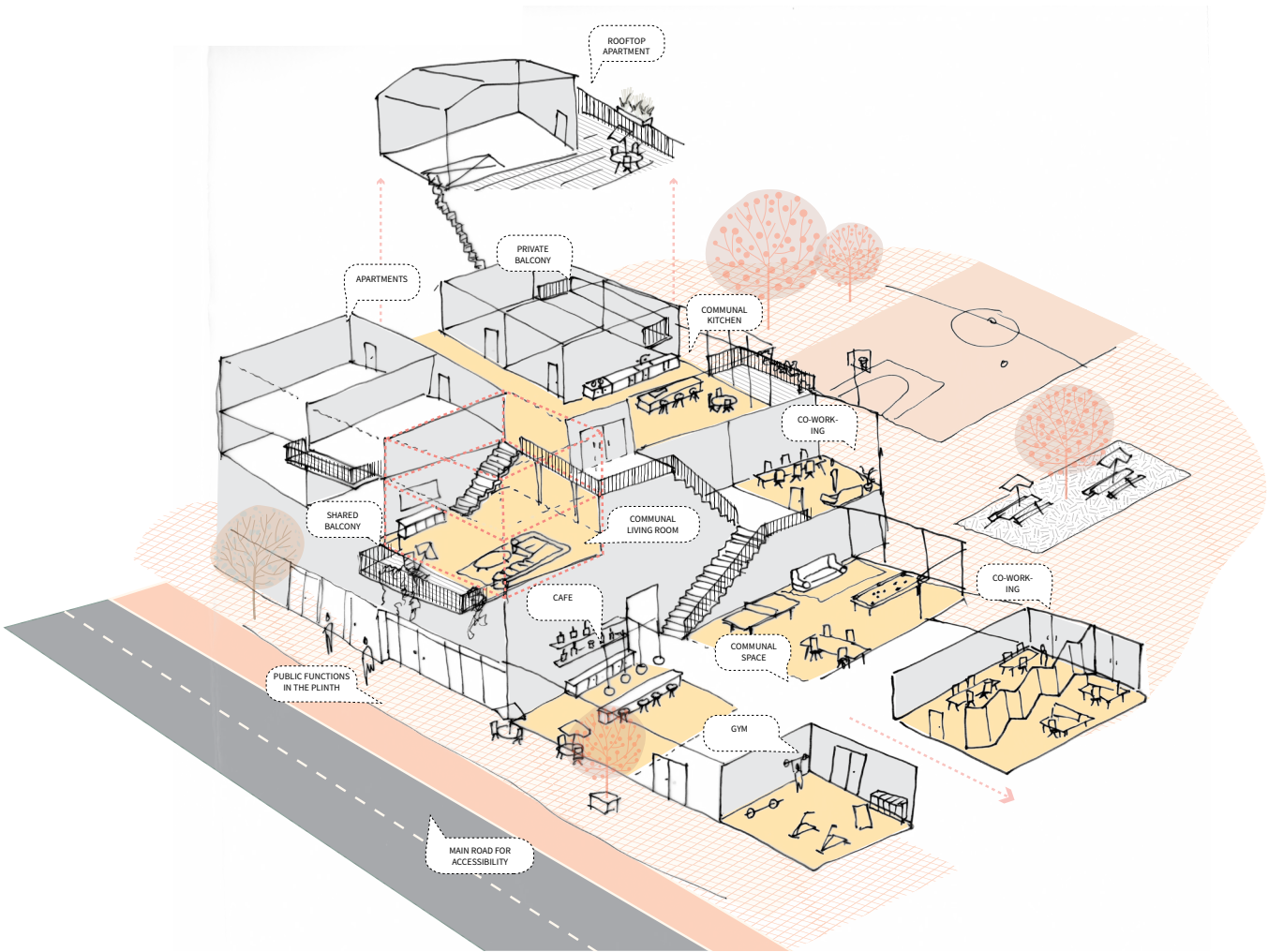
ELDERLY CLUSTER

STARTER CLUSTER

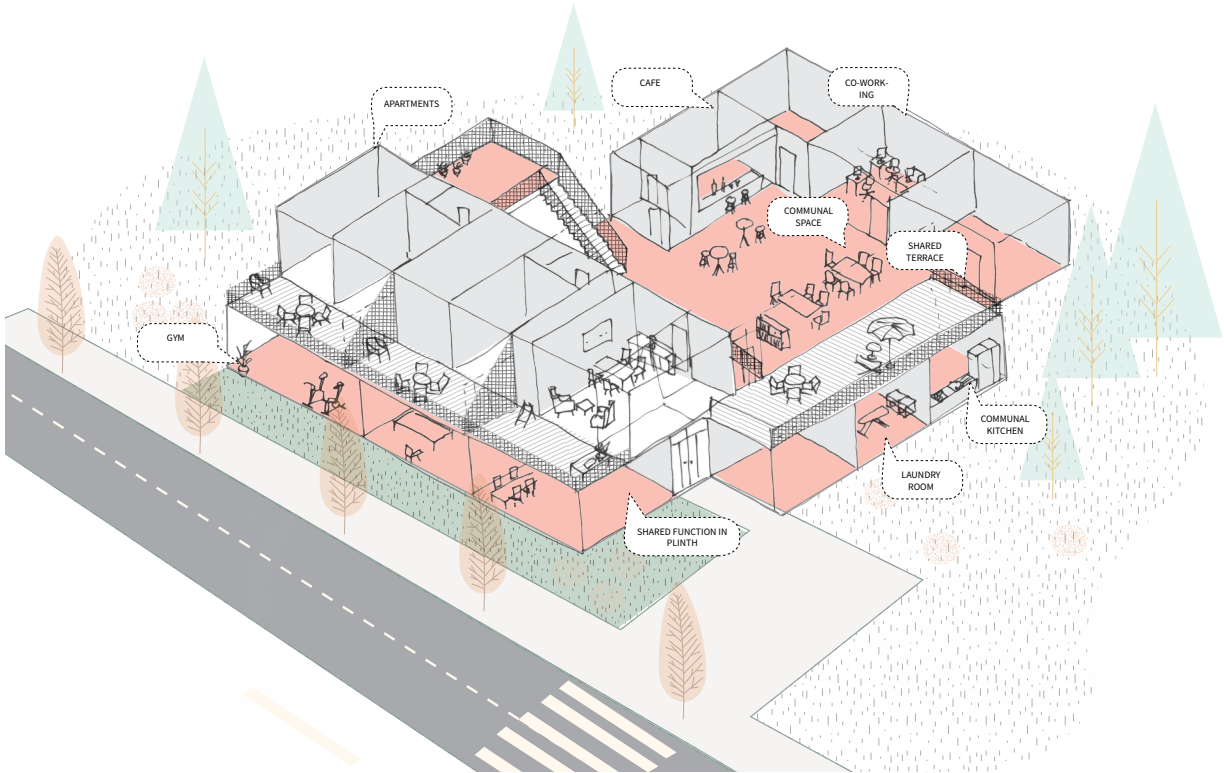
SUPPORTIVE MIX CLUSTER



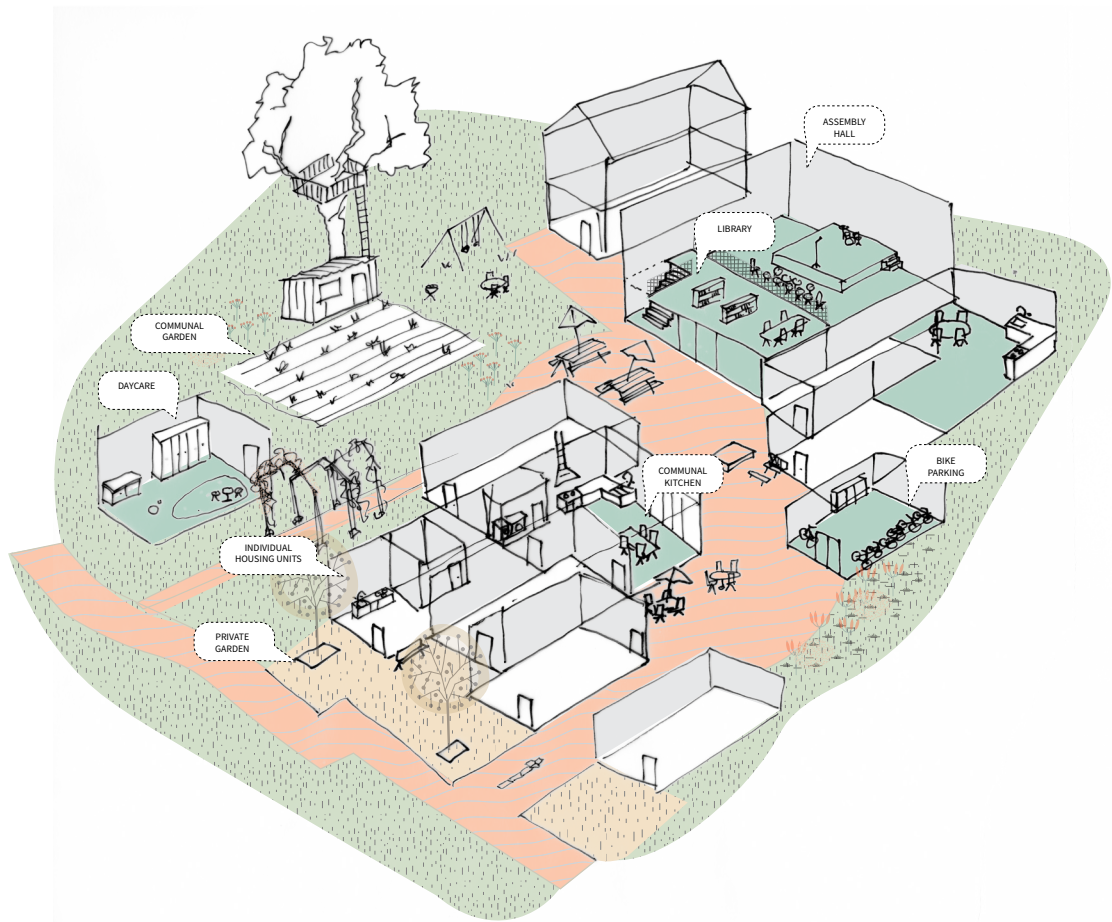
CARE CLUSTER



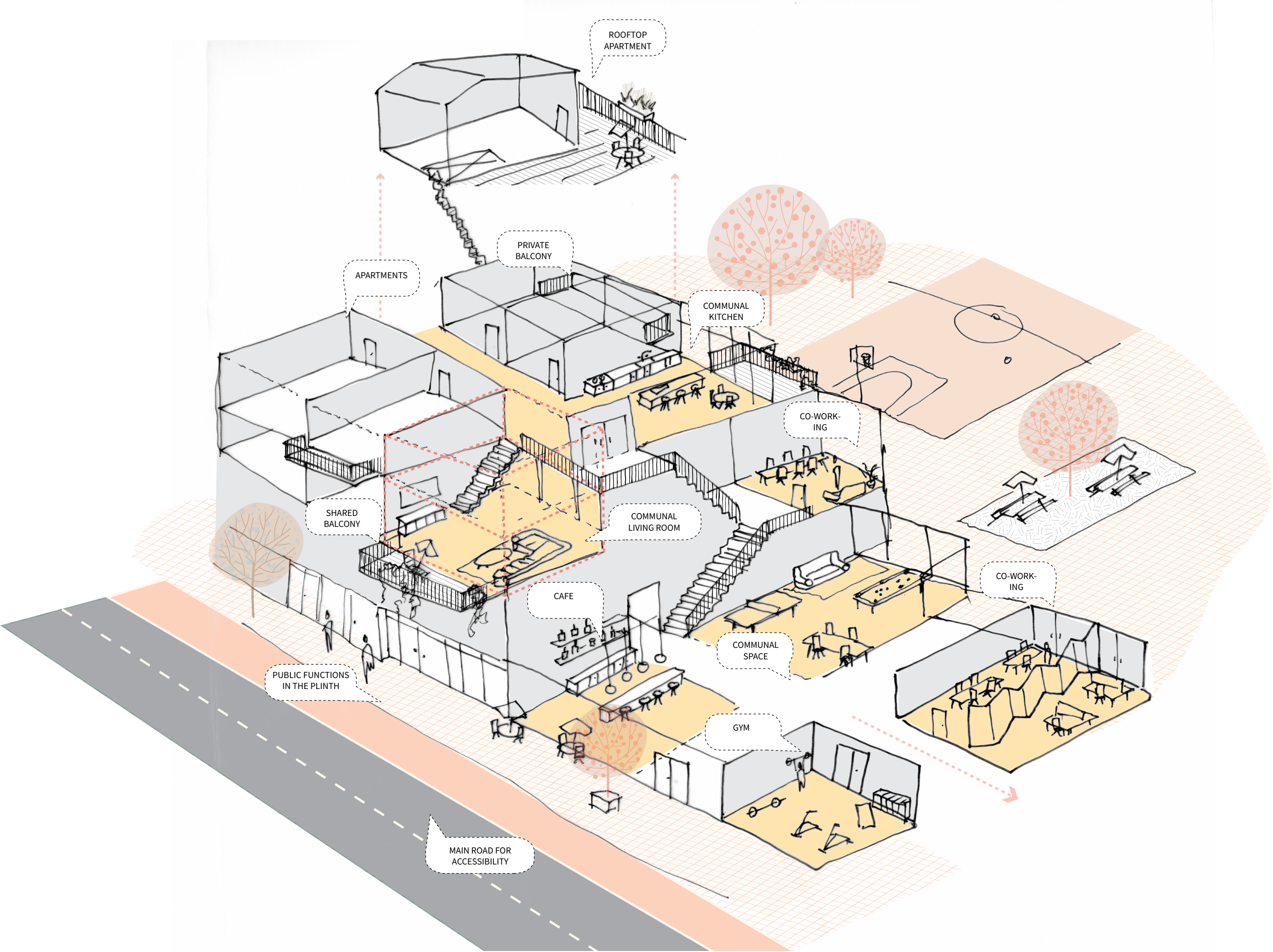
STUDENT/STARTER CLUSTER

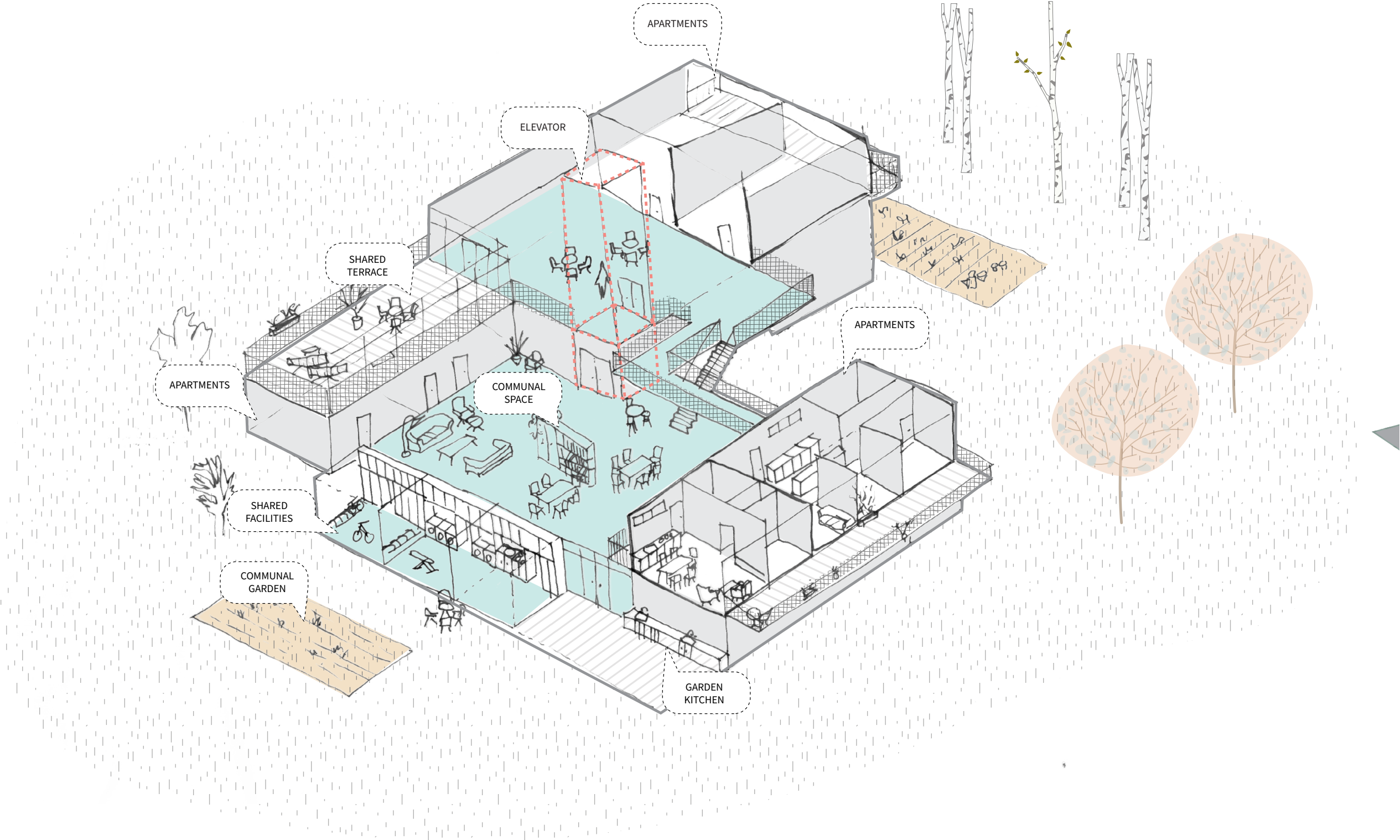


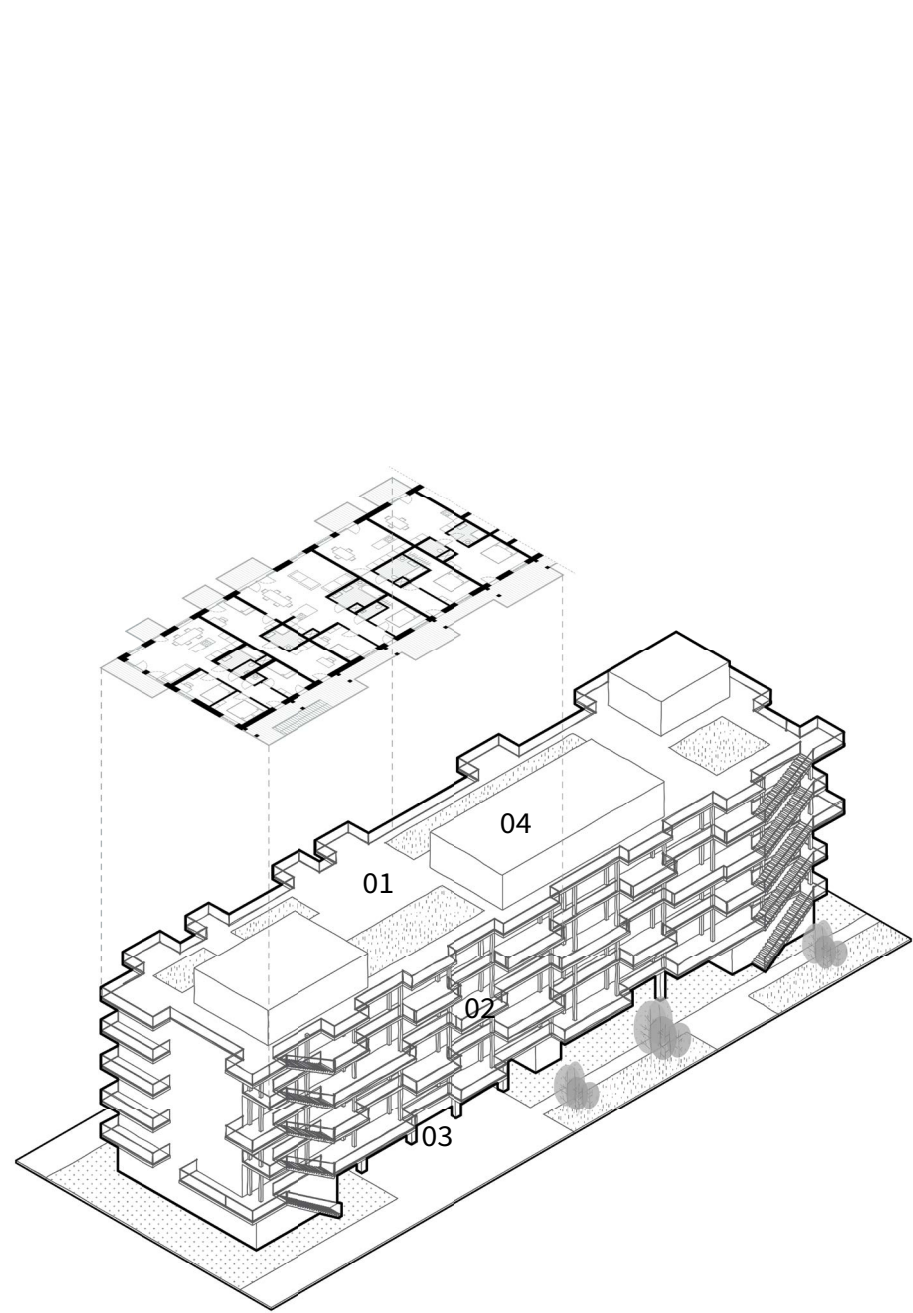
STARTER CLUSTER



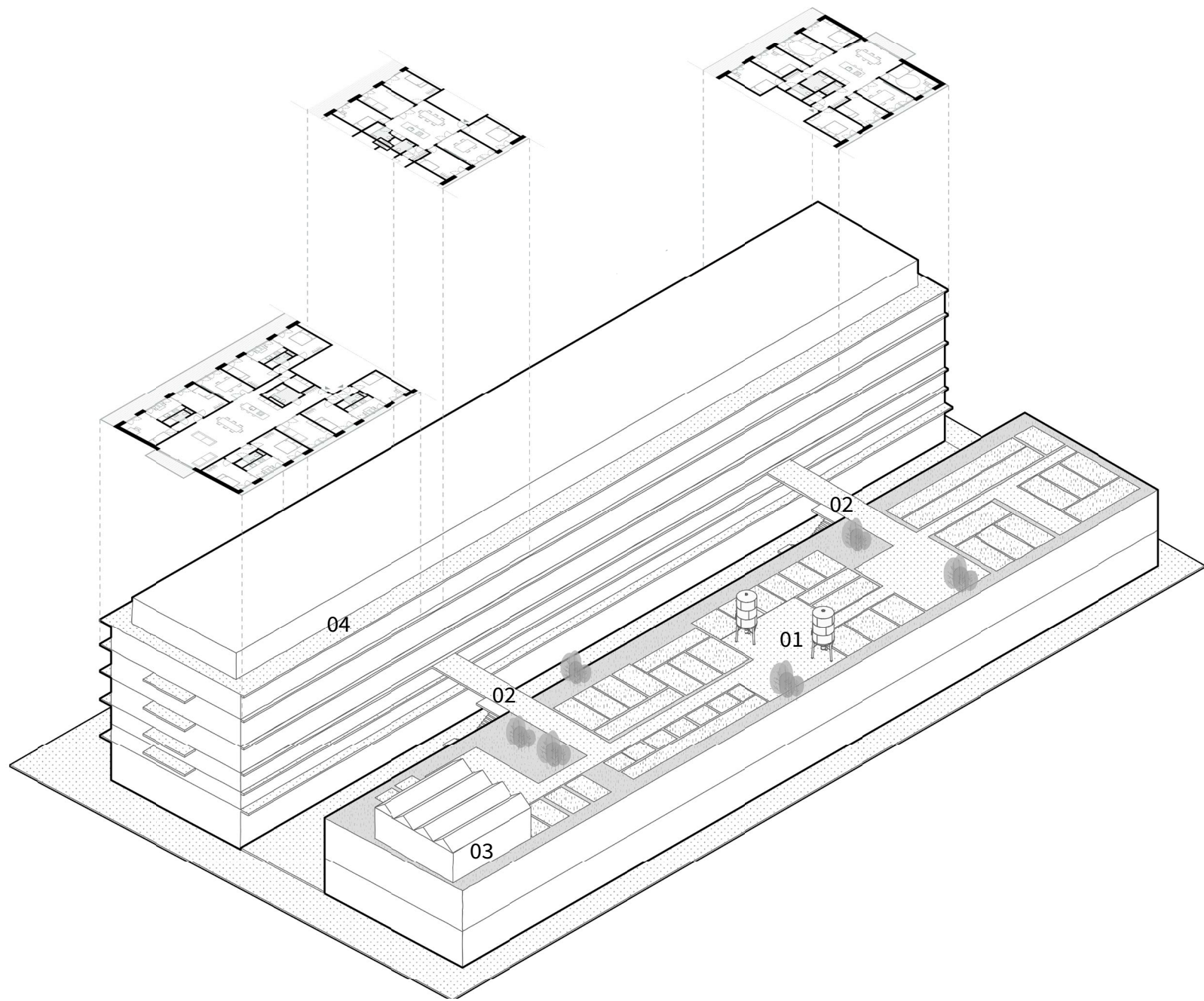
SUPPORTED NESTING CLUSTER



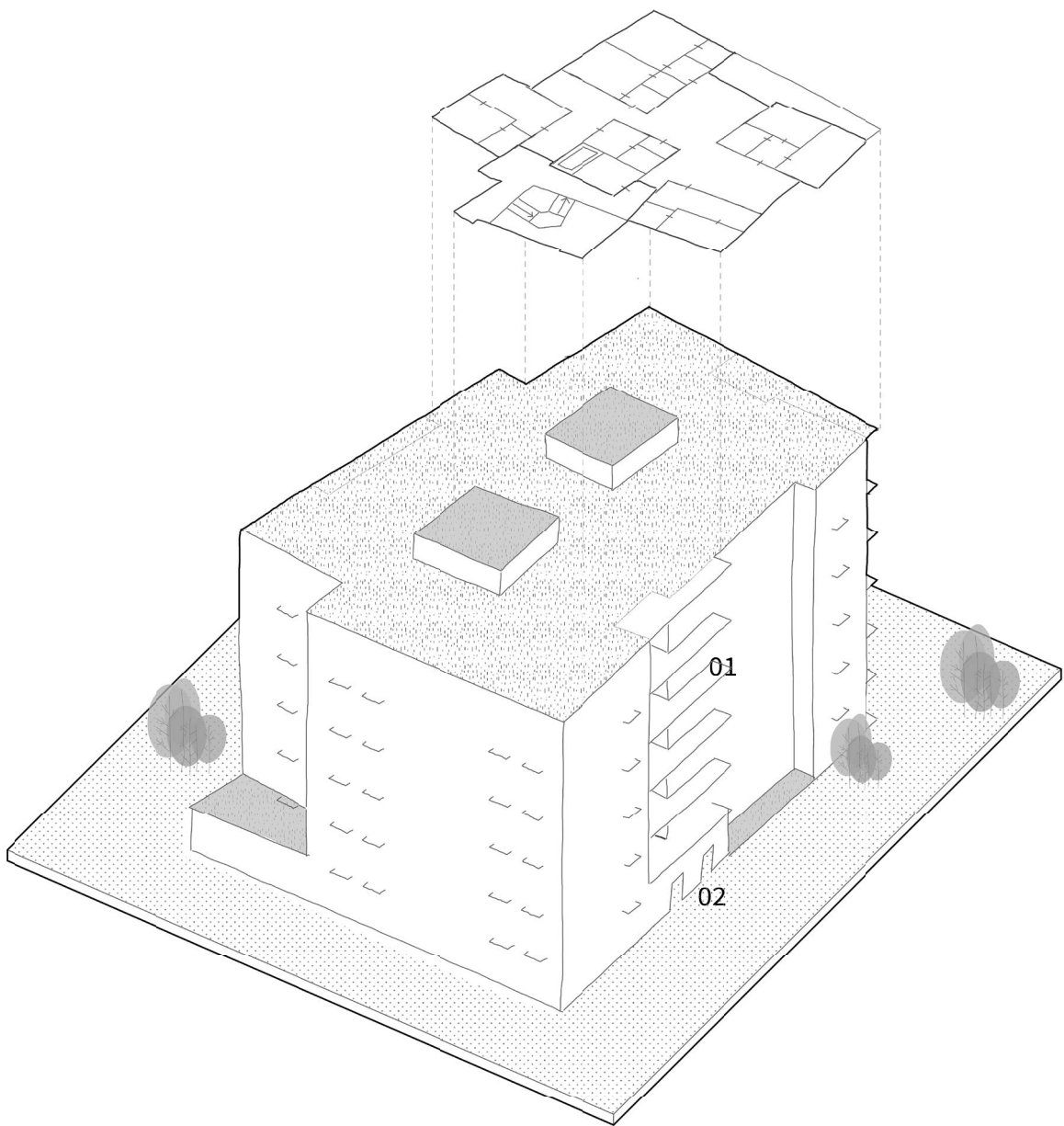




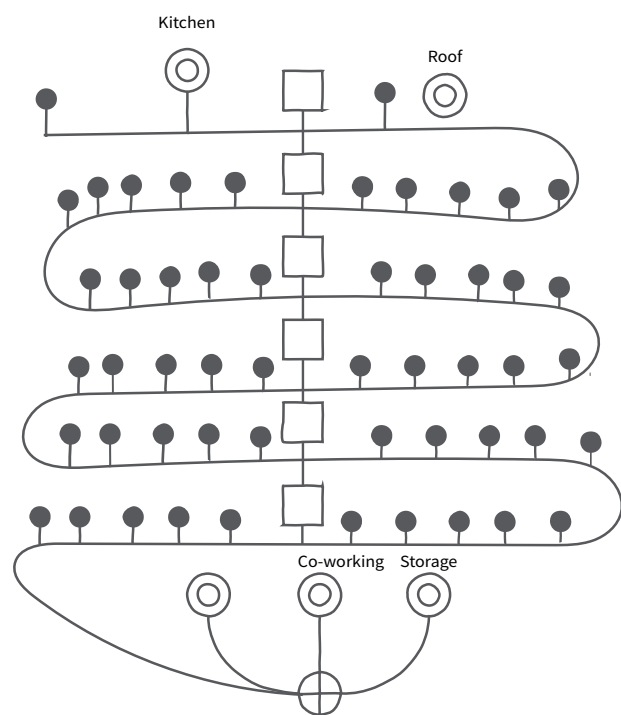
Gleis 21



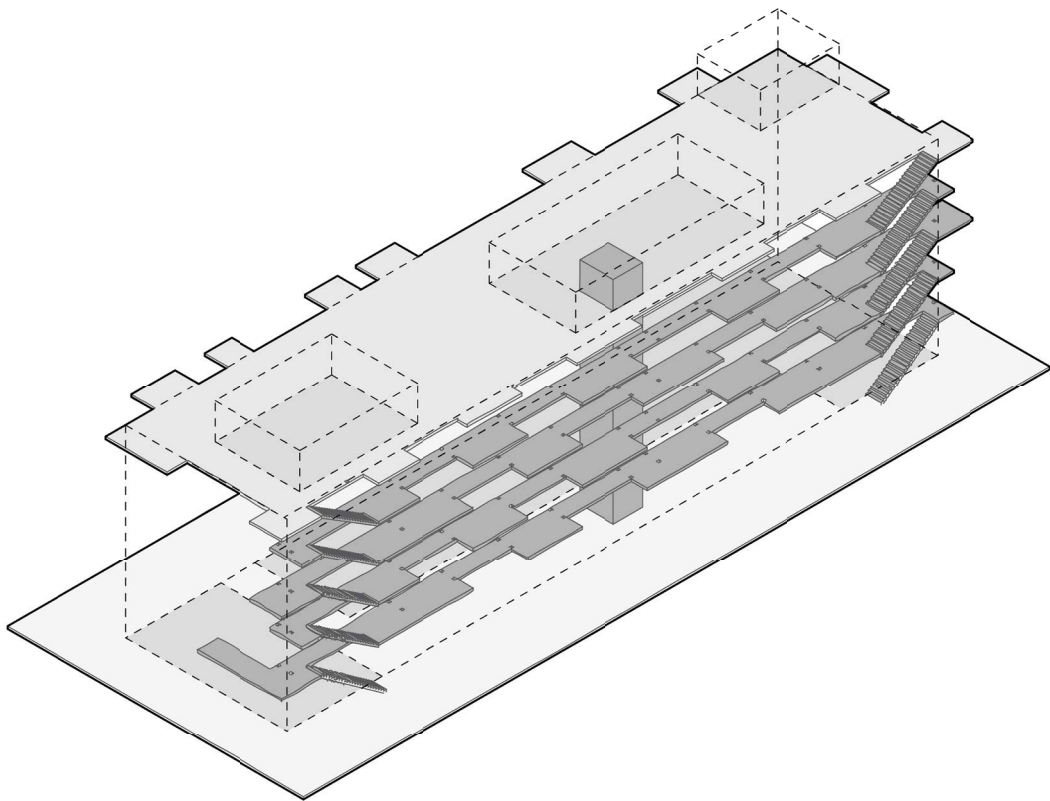
Fleur de la Campagne



Mehr als wohnen



- ⊕ Outdoor space
- ⊙ Shared space
- Elevator
- Private apartment

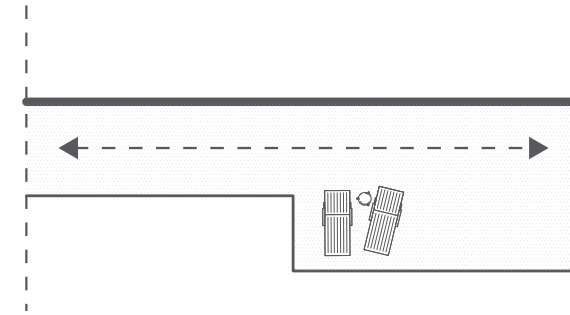


- Shared space
- Circulation space
- Outdoor space

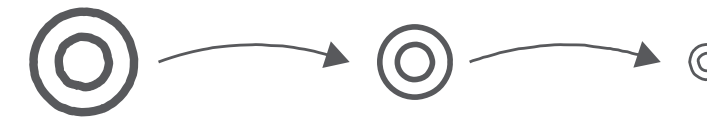
GLEIS 21 | VIENNA

- 01 Gallery with room for private space to inhabit.
- 02 Hierarchy in the shared facilities from publicly accessible on the ground floor to more private on the roof.
- 03 The shared spaces have an circular accessibility connecting them to the rest of the building.
- 04 Roofs are utilized for shared green zones for residents.
- 05 High diversity in apartment size.
- 06 Each apartment has private balcony and a public balcony on the gallery.
- 07 Flexible extra apartments that can be added.

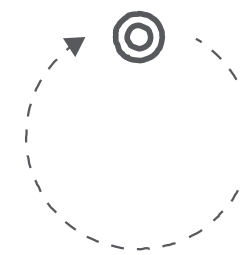
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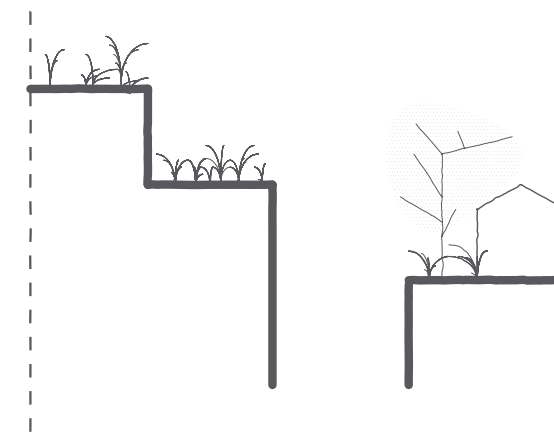
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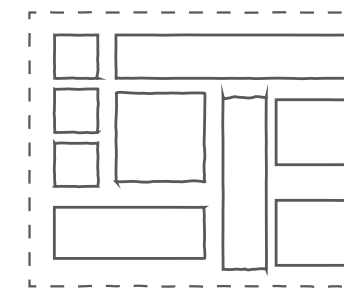
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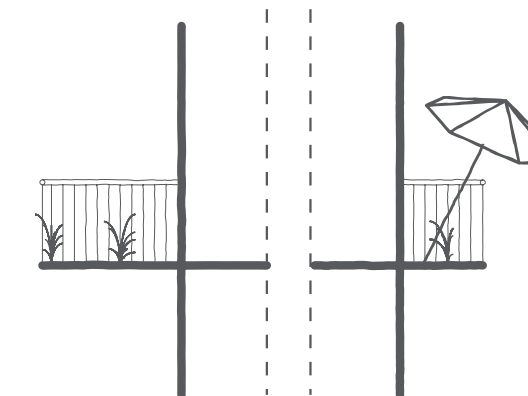
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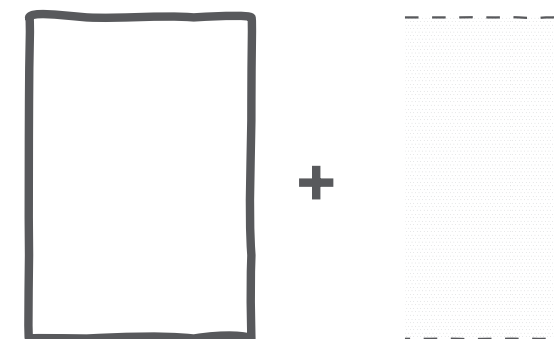
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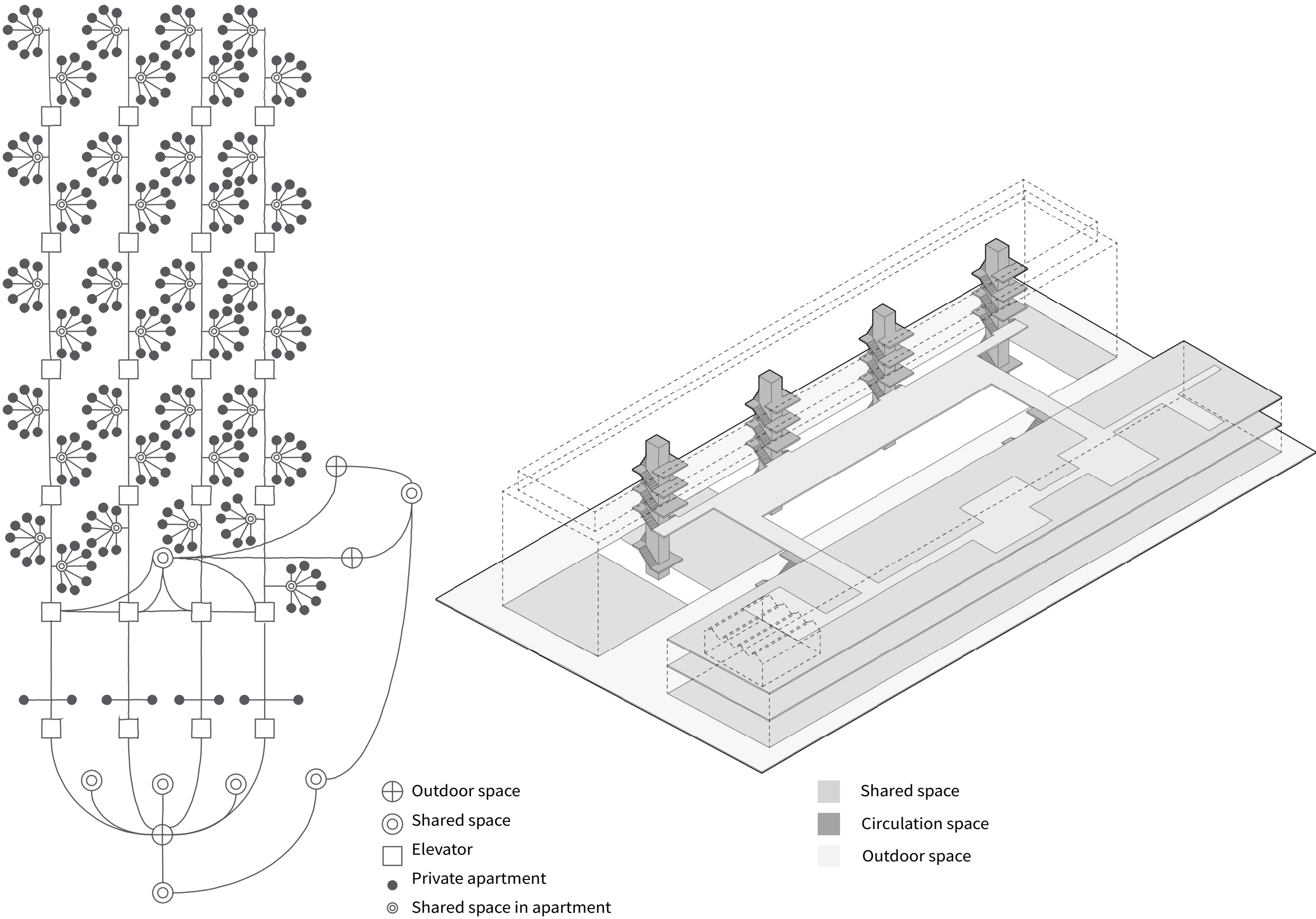


06



07

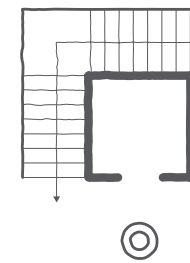




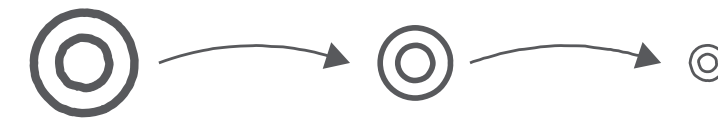
COOPERATIVE HOUSING FLEUR DE LA CHAMPAGNE | BIEL

- 01 Shared facilities located near elevator, bridge and stairs.
- 02 Hierarchy in the shared facilities from publicly accessible to more private.
- 03 The shared spaces have an circular accessibility connecting them to the rest of the building.
- 04 Roofs are utilized for shared green zones for residents.
- 05 Shared spaces within apartments are central and have access to the front door
- 06 Each apartment has private balcony for individual rooms and occasionally an extra shared balcony.
- 07 Equal individual room size per co housing unit.
- 08 Smaller private facilities when larger shared facilities are available.
- 09 Shared space within one co housing unit are divided into multiple smaller spaces but always connected.

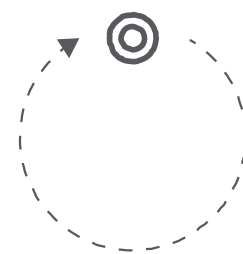
01



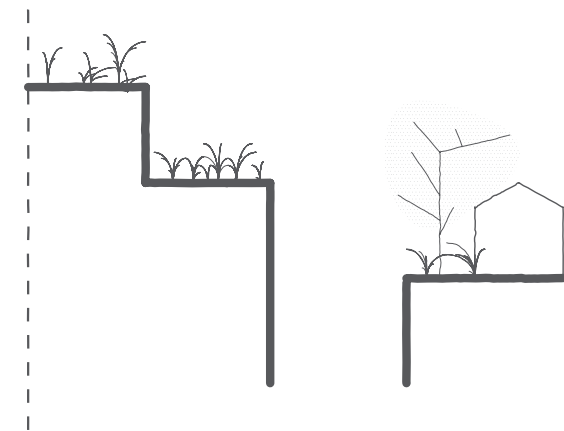
02



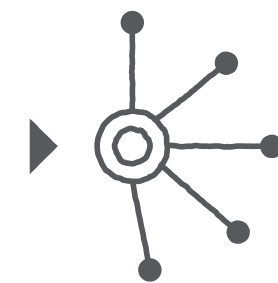
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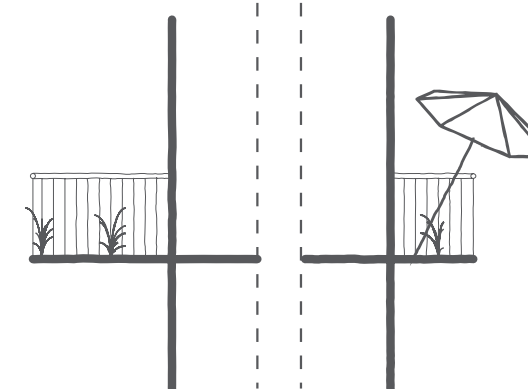
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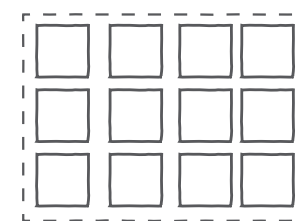
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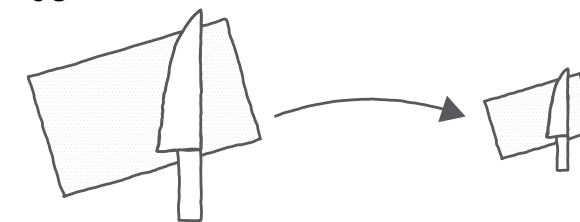
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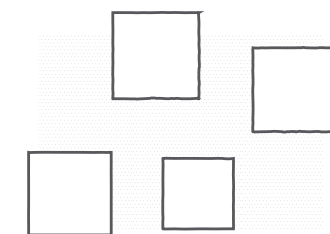
07

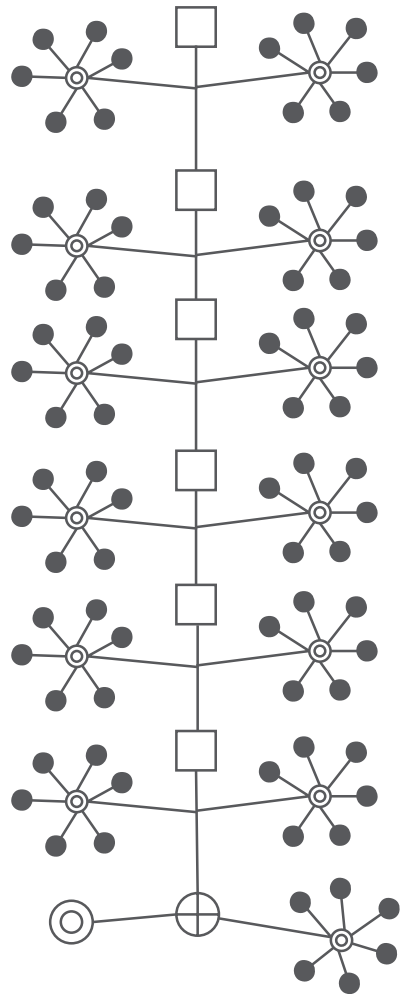


08

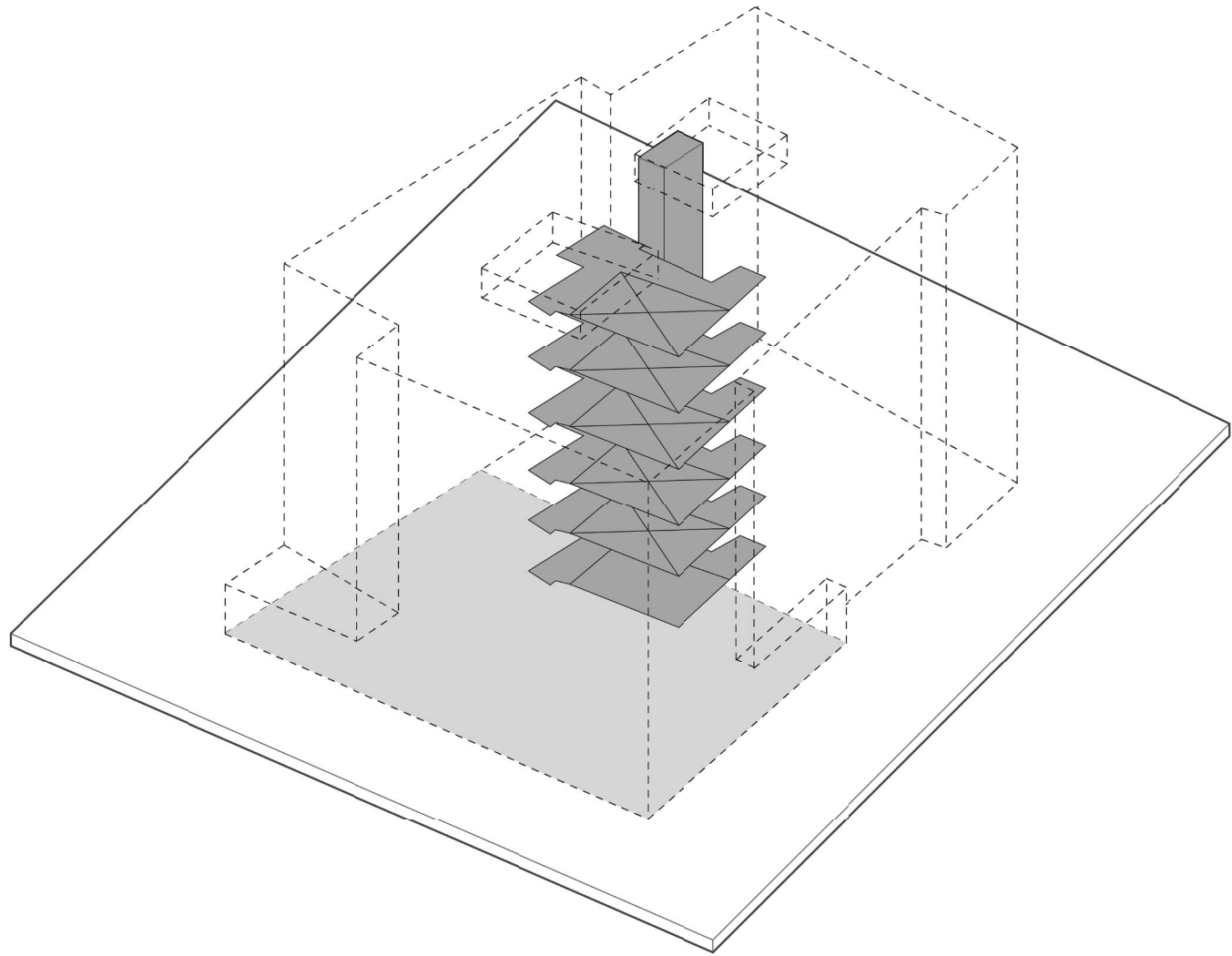


09





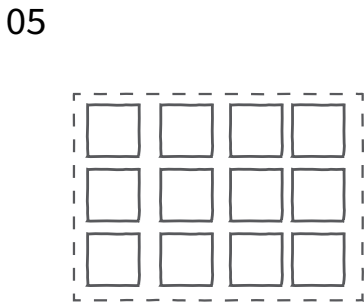
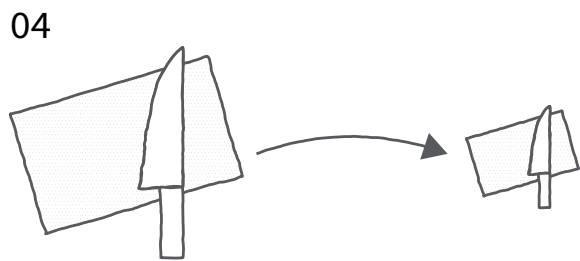
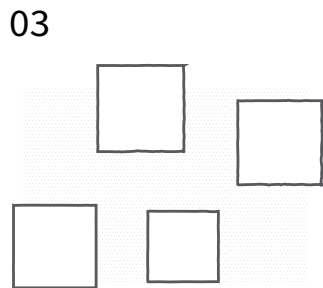
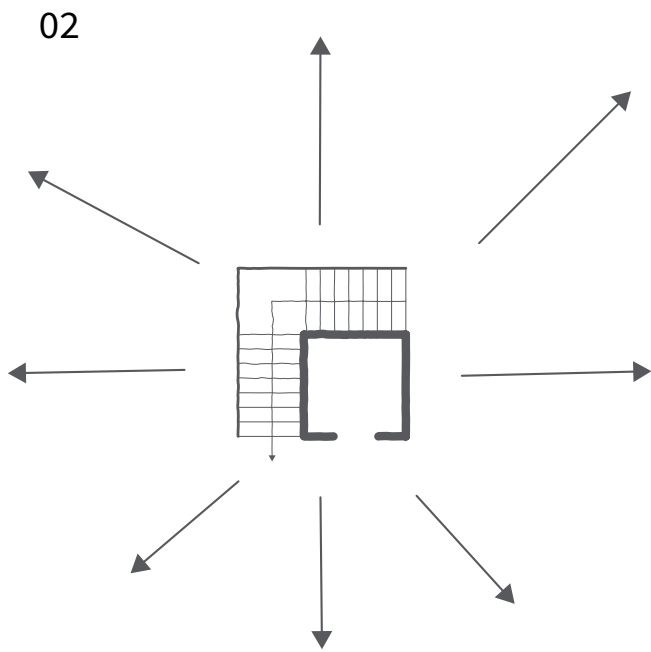
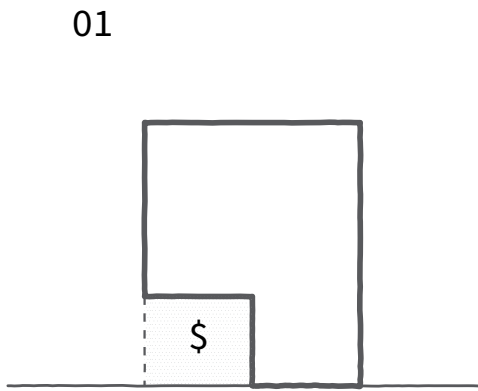
- ⊕ Outdoor space
- ⊙ Shared space
- Elevator
- Private apartment
- ⊙ Shared space in apartment

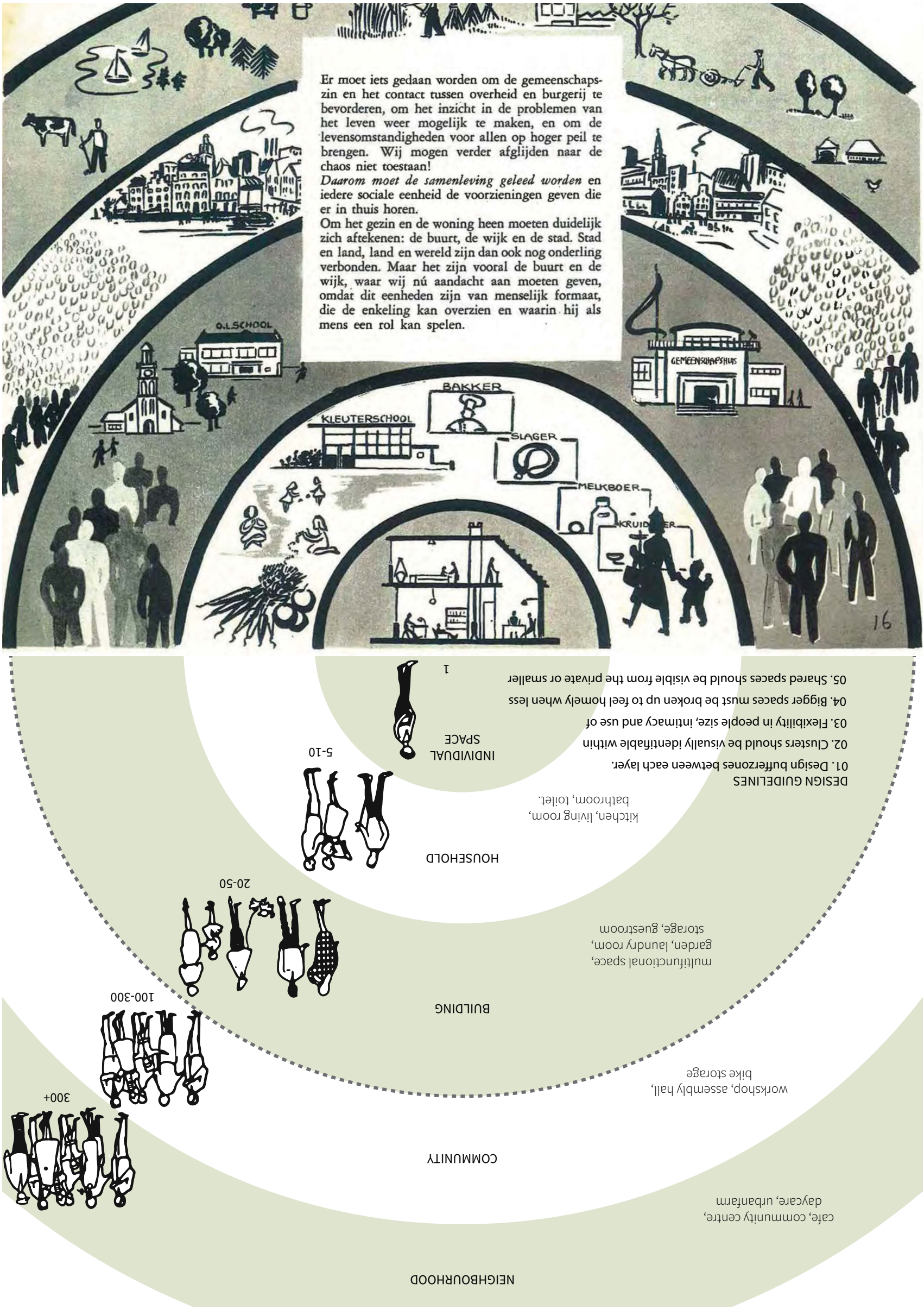


- Shared space
- Circulation space
- Outdoor space

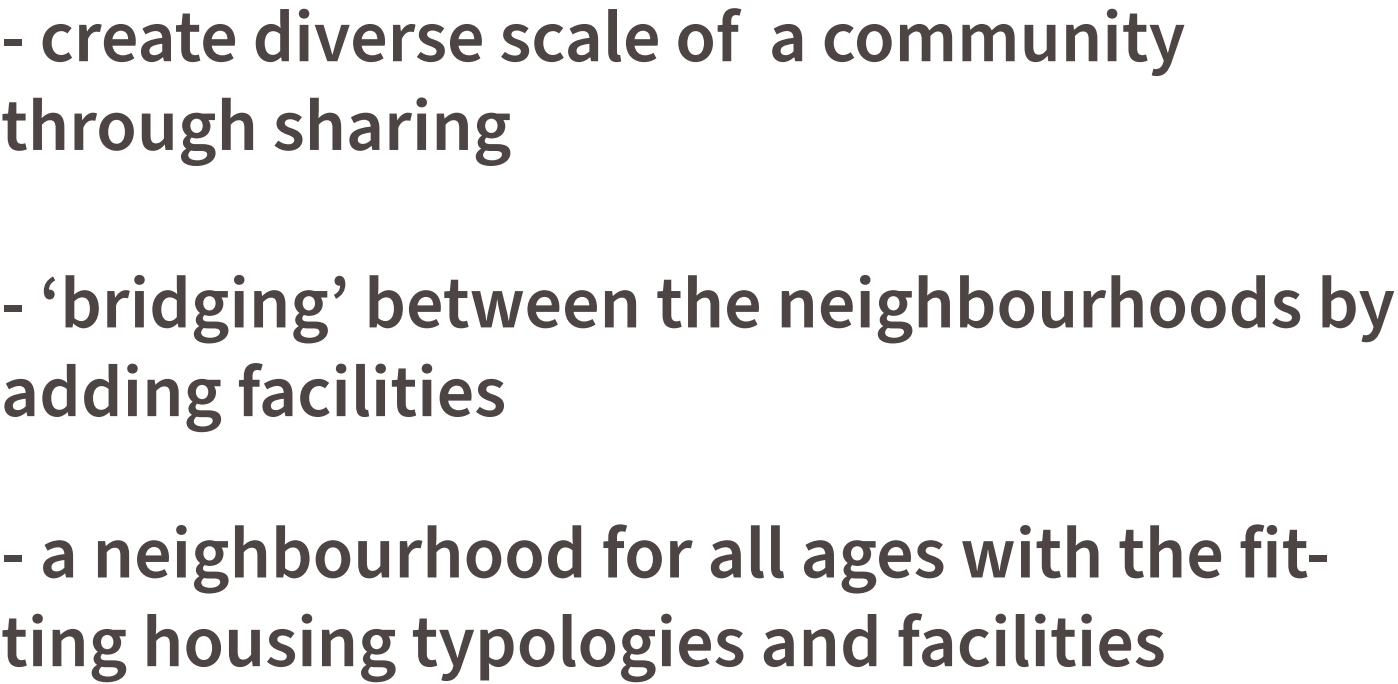
MEHR ALS WOHNEN | ZÜRICH

- 01 Rental spaces on the bottom floor.
- 02 Central circulation for engagement.
- 03 The shared space is shaped by the individual units.
- 04 Smaller private facilities when larger facilities are available
- 05 Equal apartment size

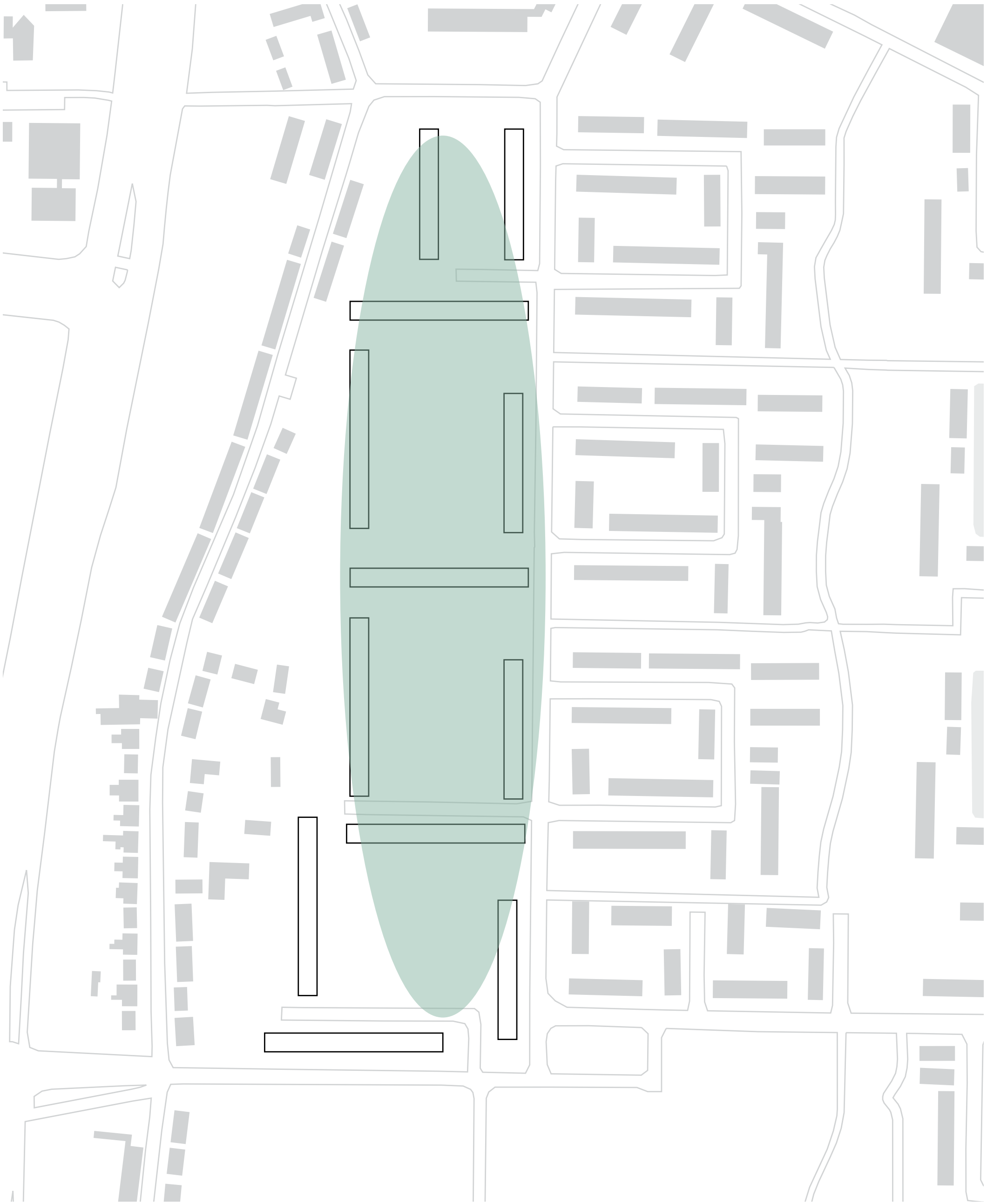


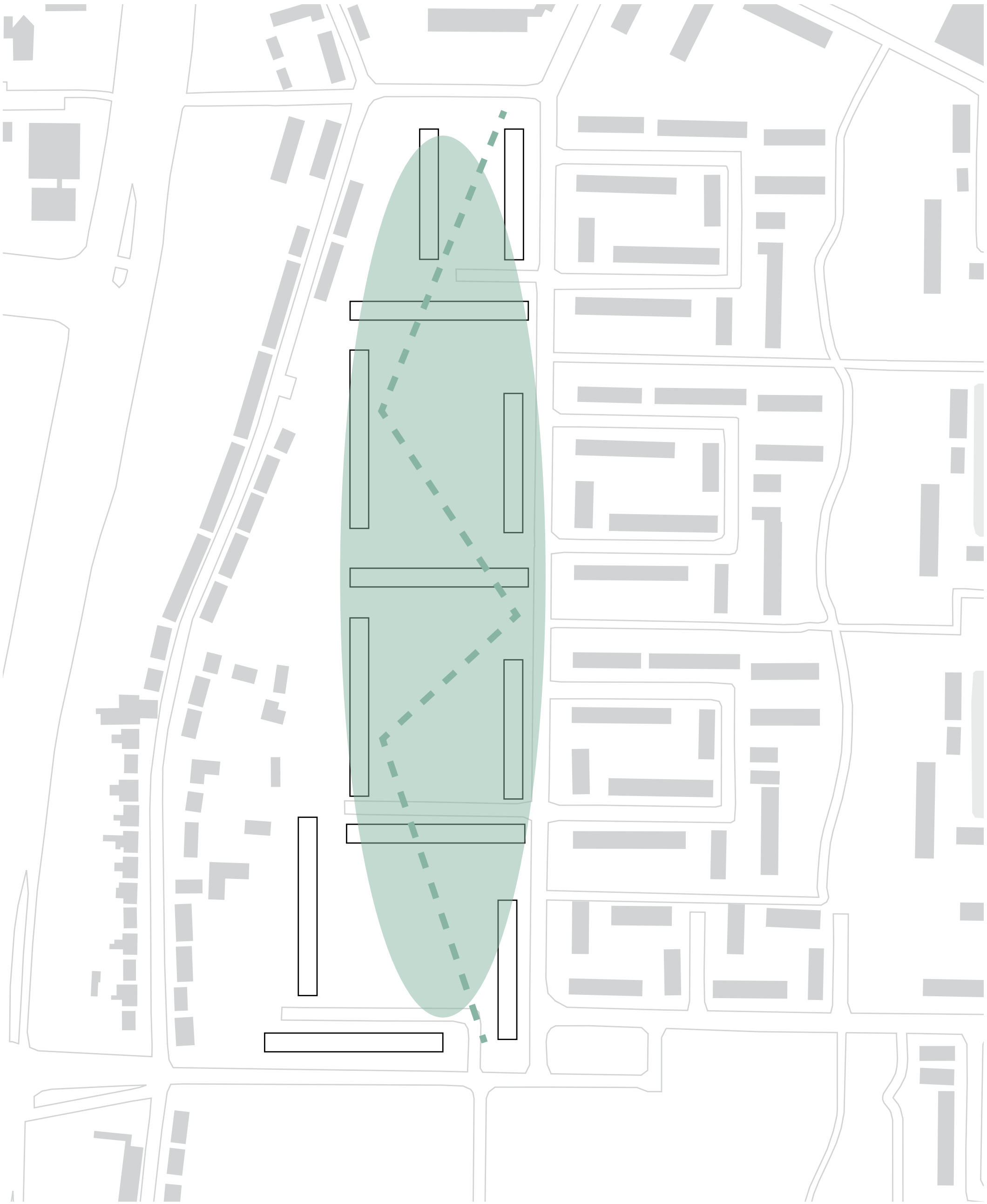


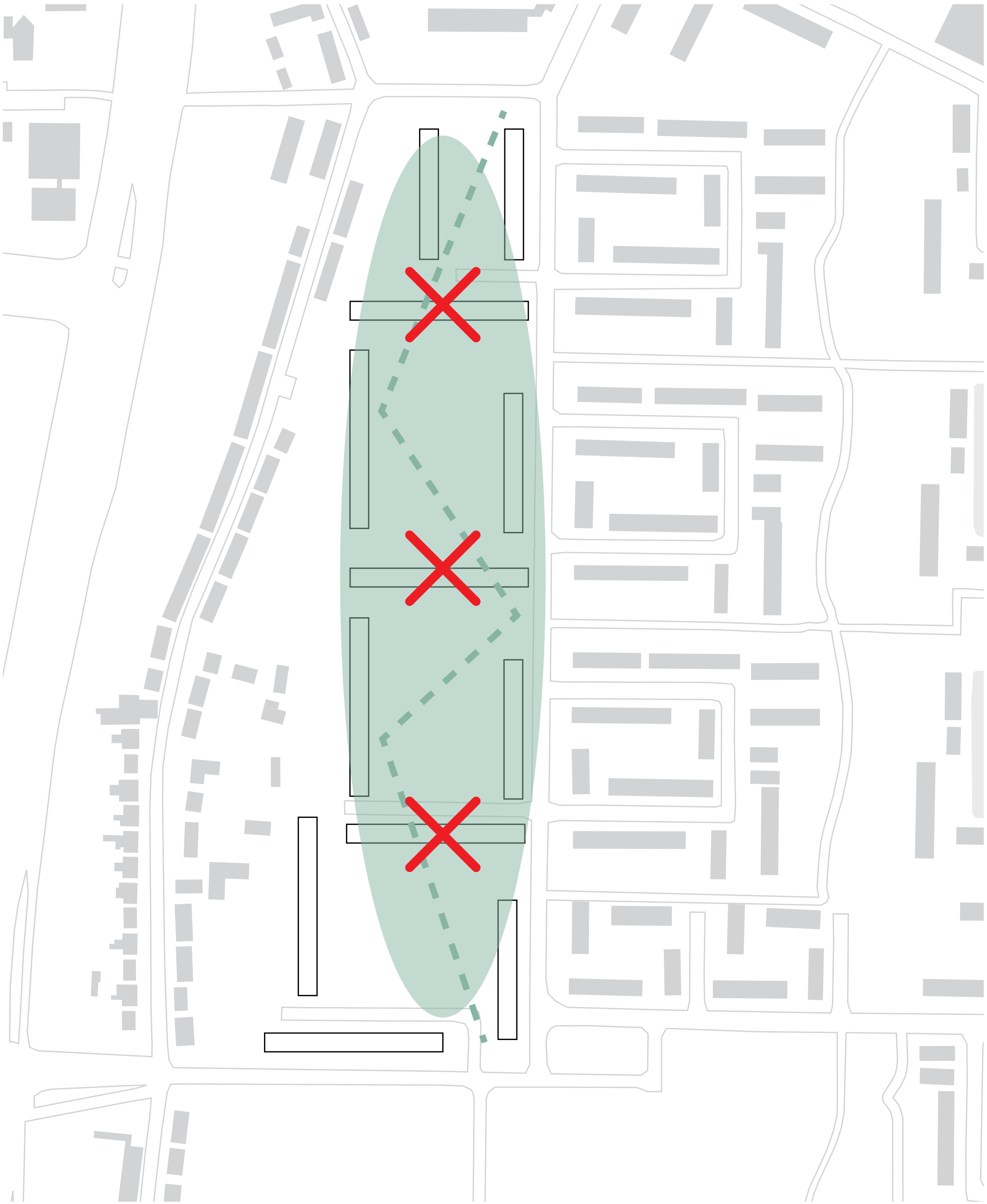
- create a community in a city context
- ‘bridging’ between the neighbourhoods
- a neighbourhood for all ages



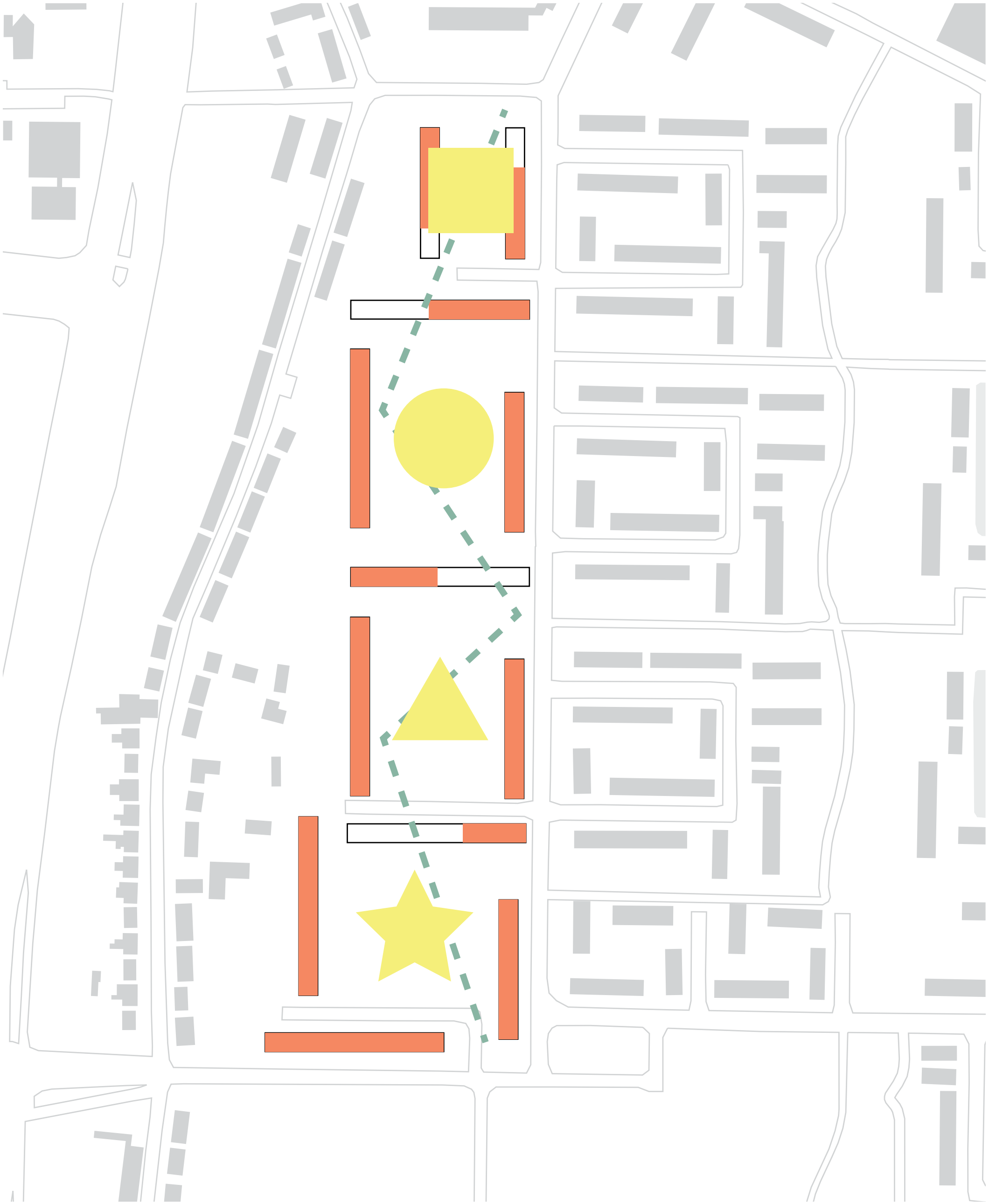


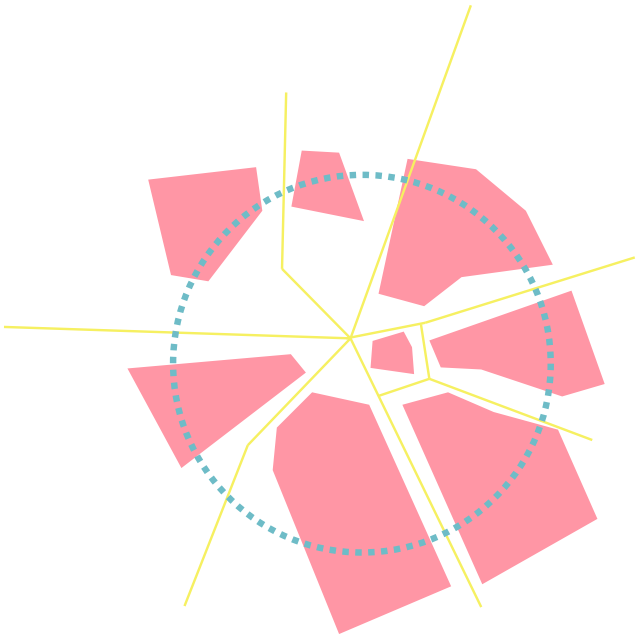
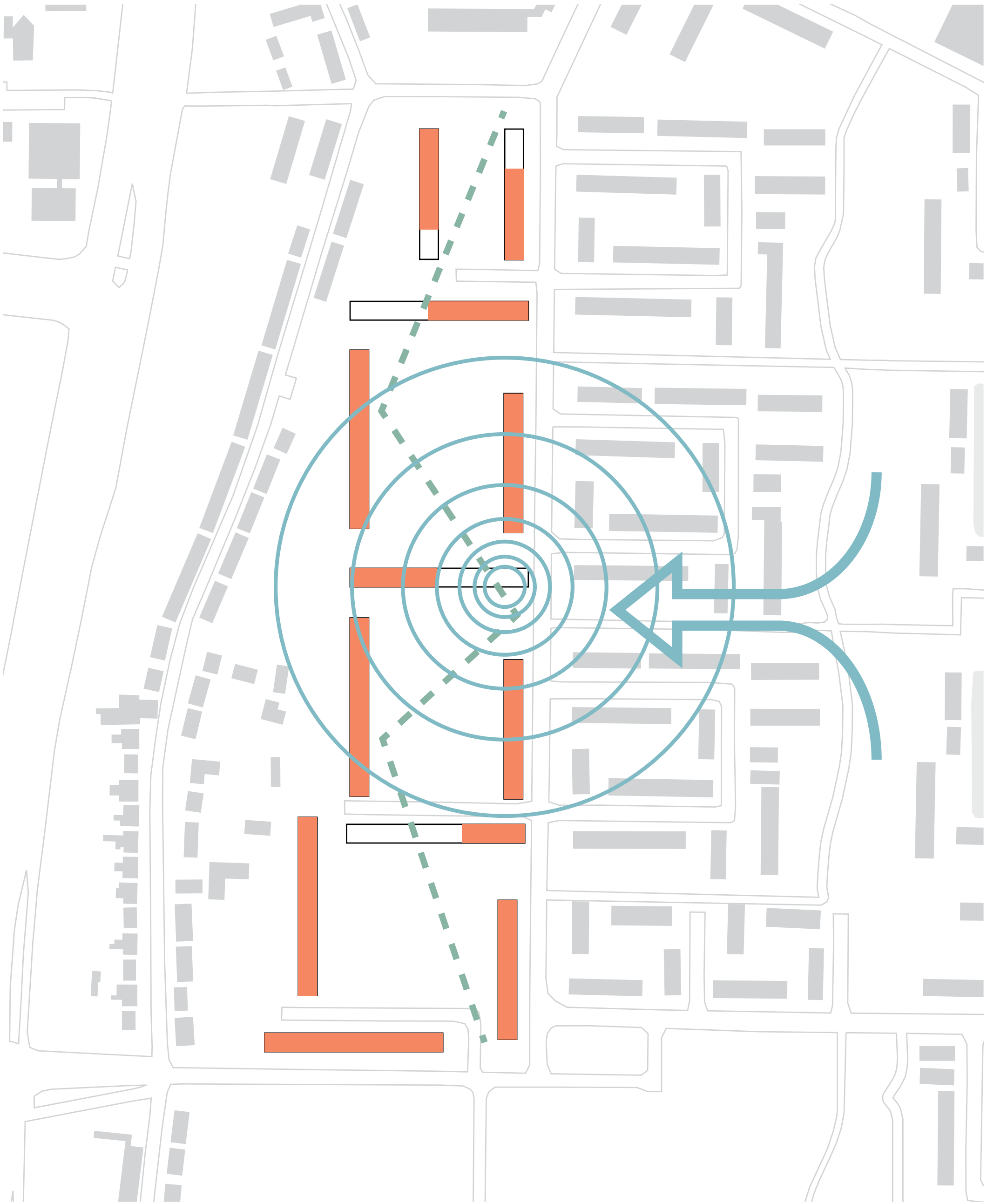




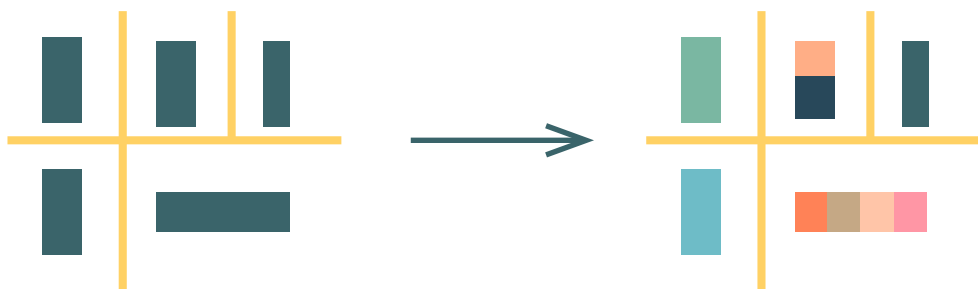
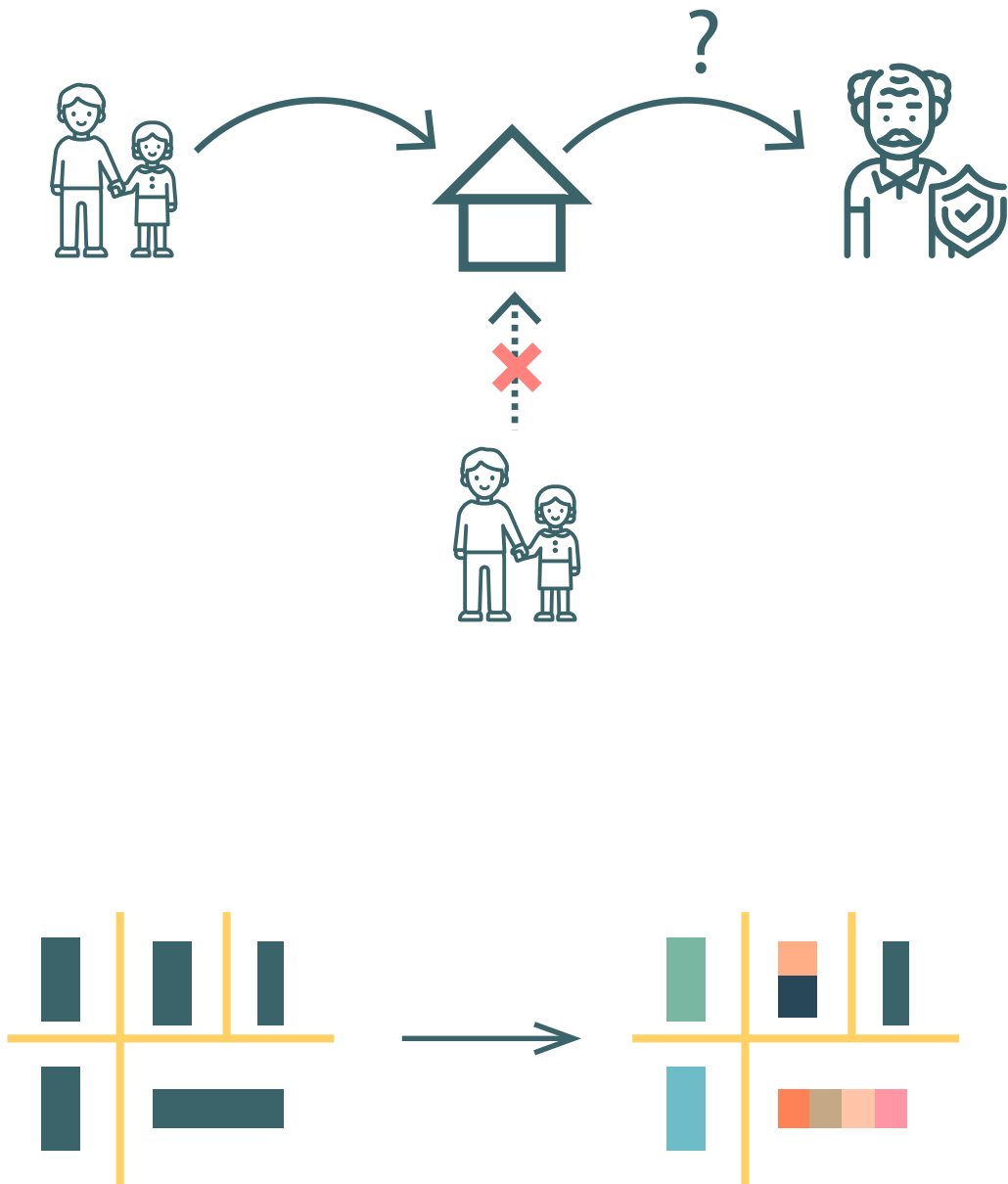
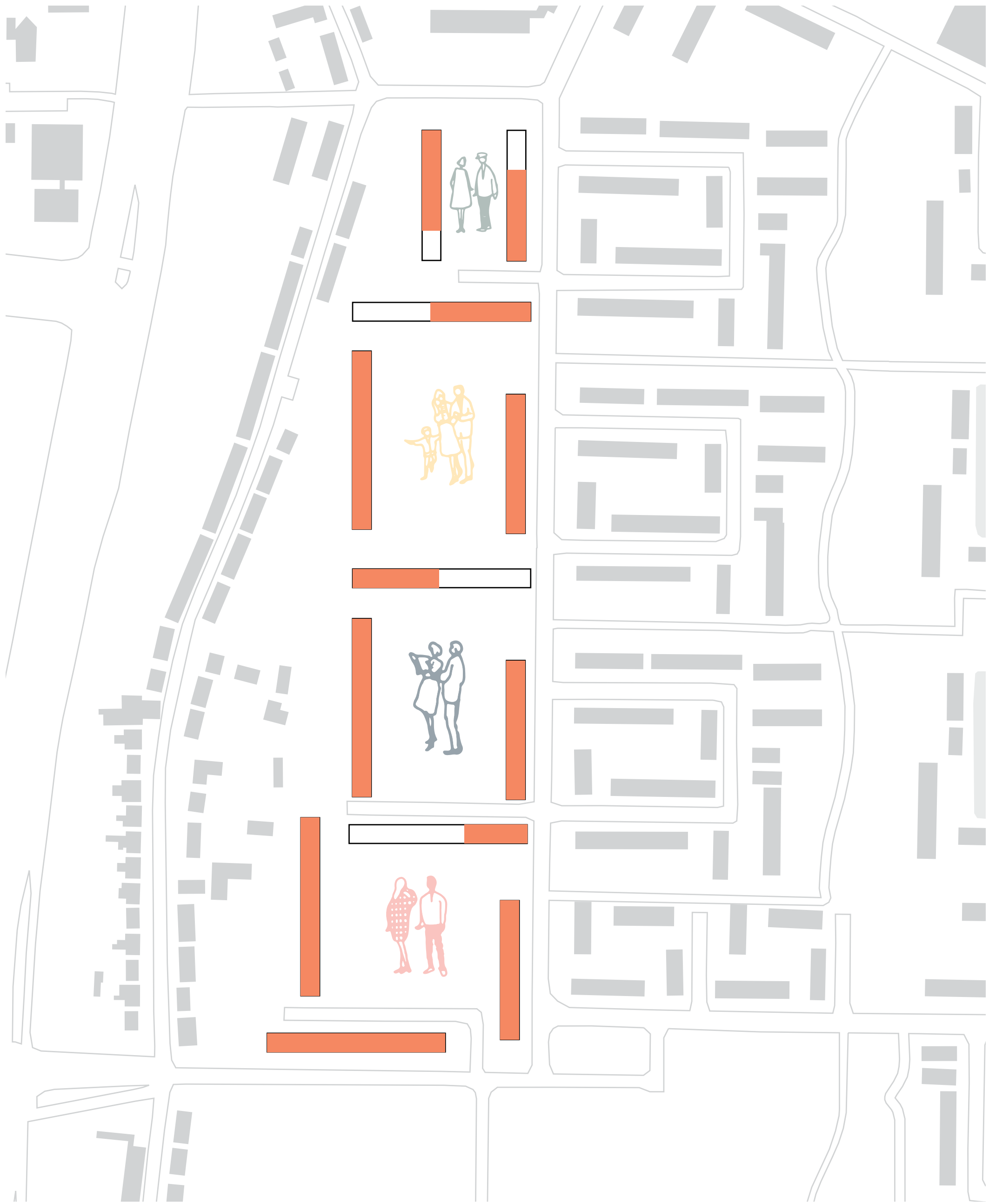


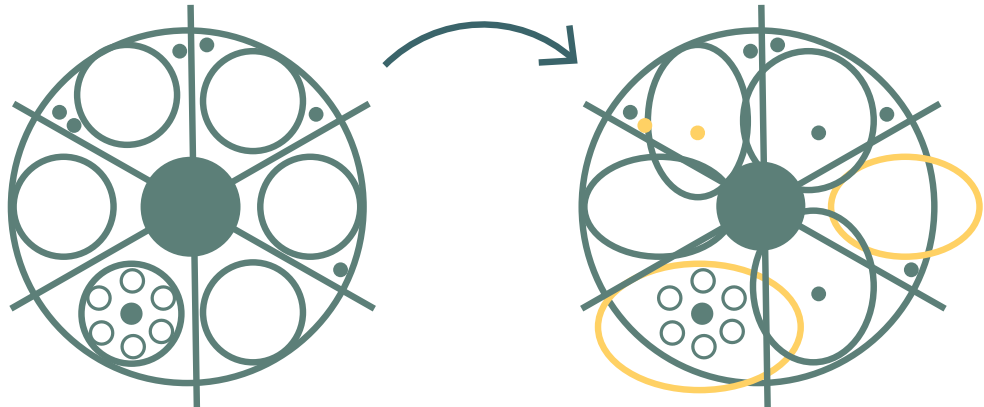
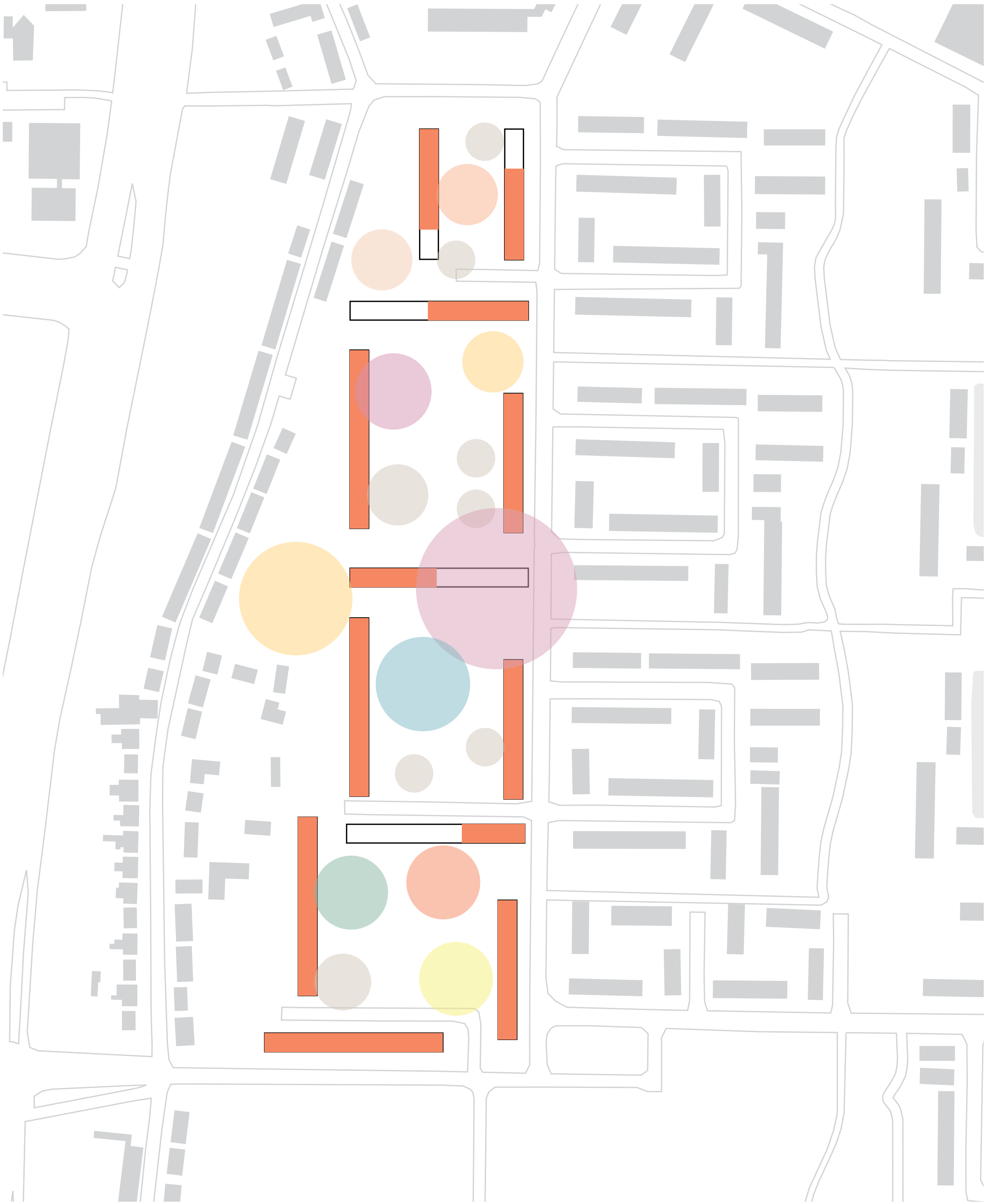


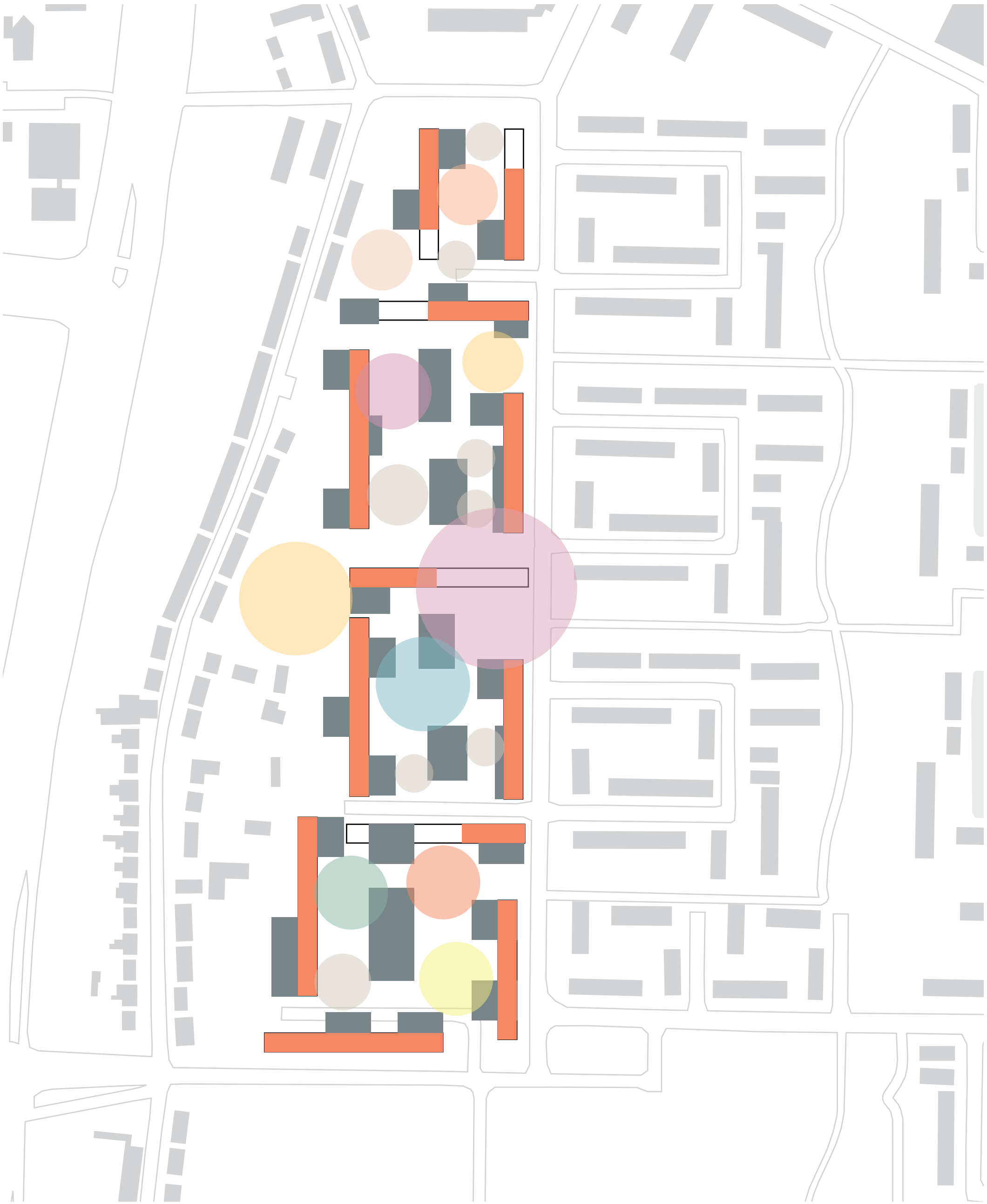




MASTERPLAN | placing target groups



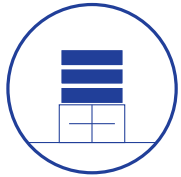




DEMOLITION



WRAPPING



MAISONETTE



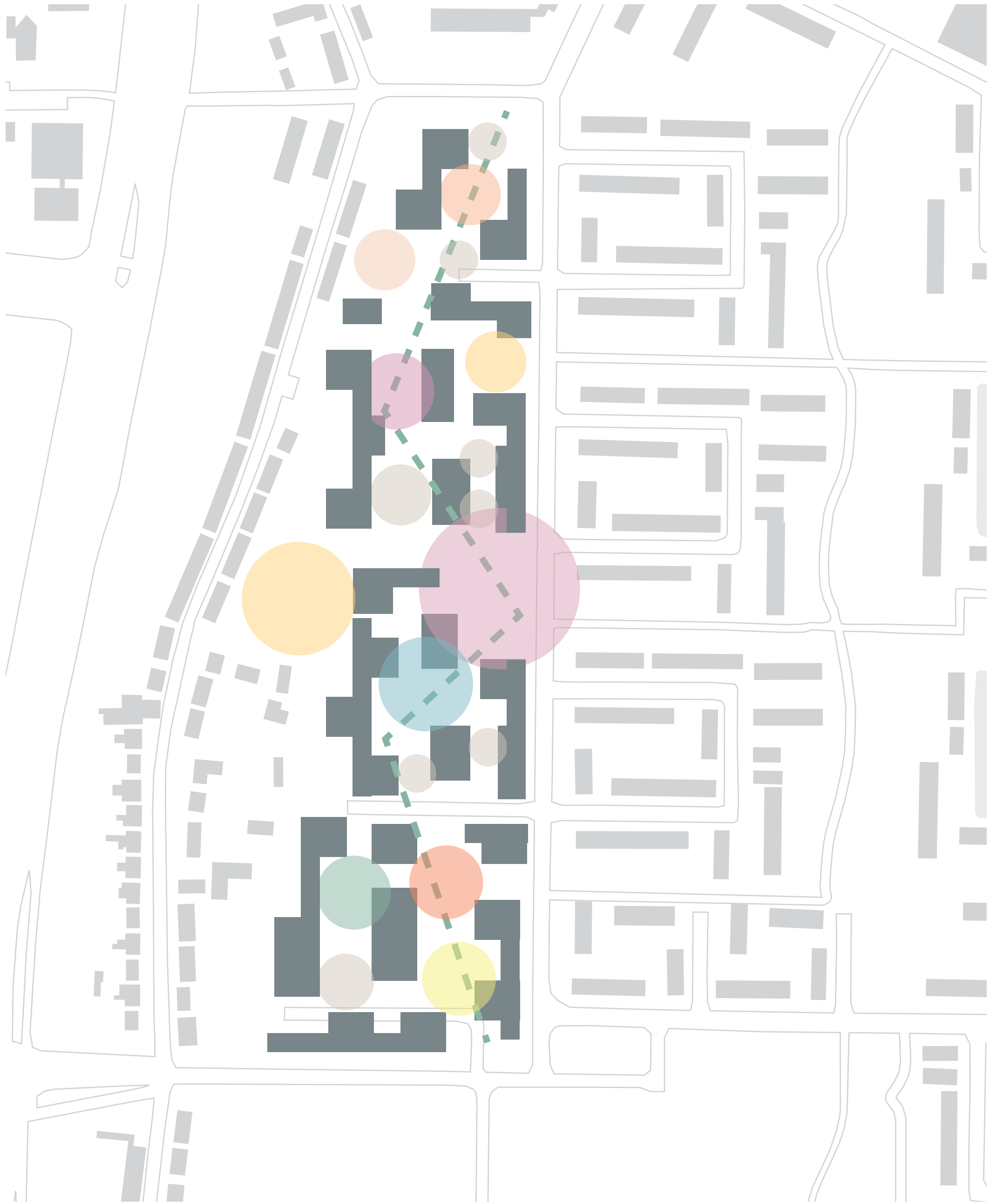
EXTENSION

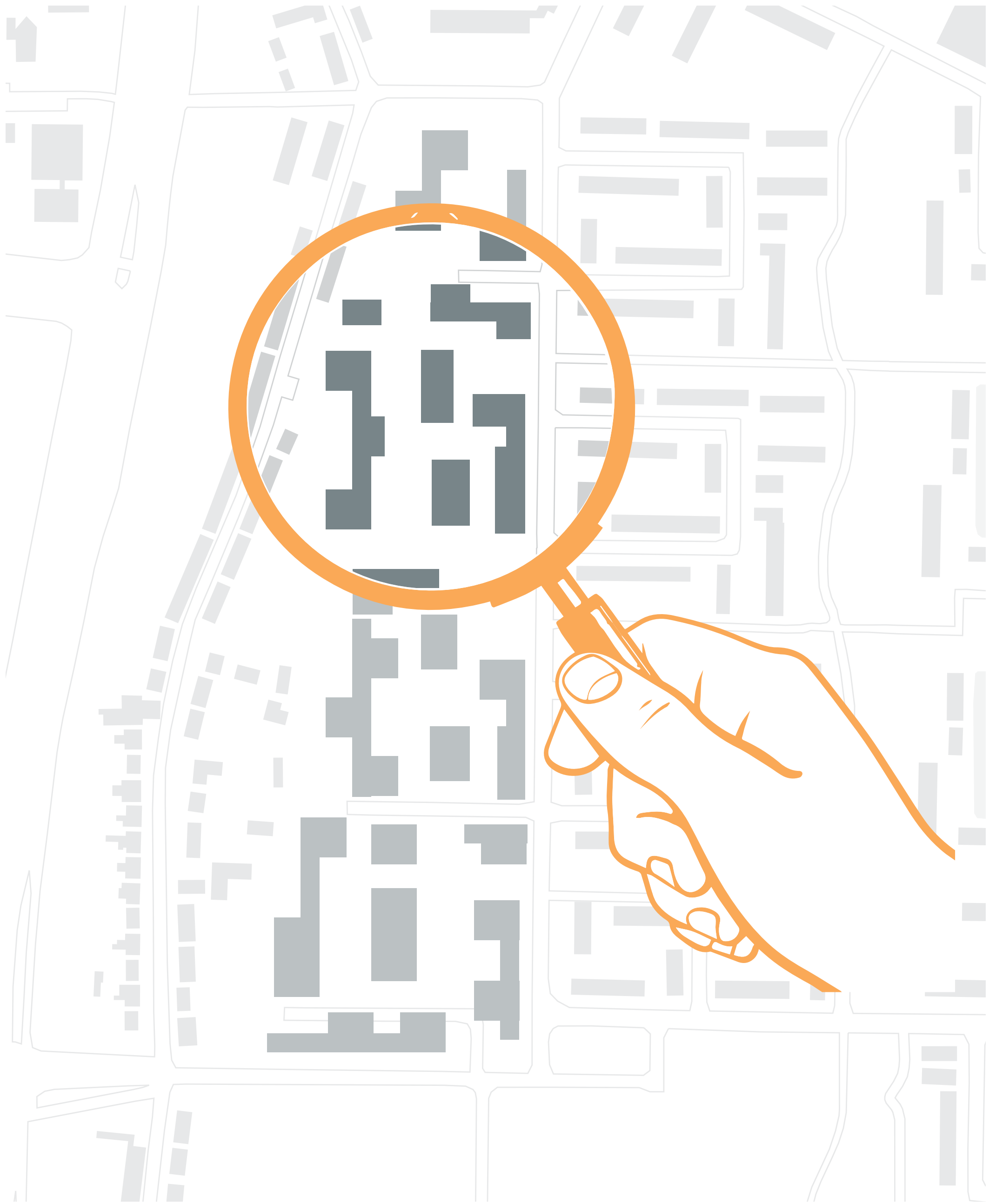


HIGH-RISE CONNECTION



PORCH-TO-GALLERY





MASTERPLAN | ground floor



MASTERPLAN | ground floor

urban farm

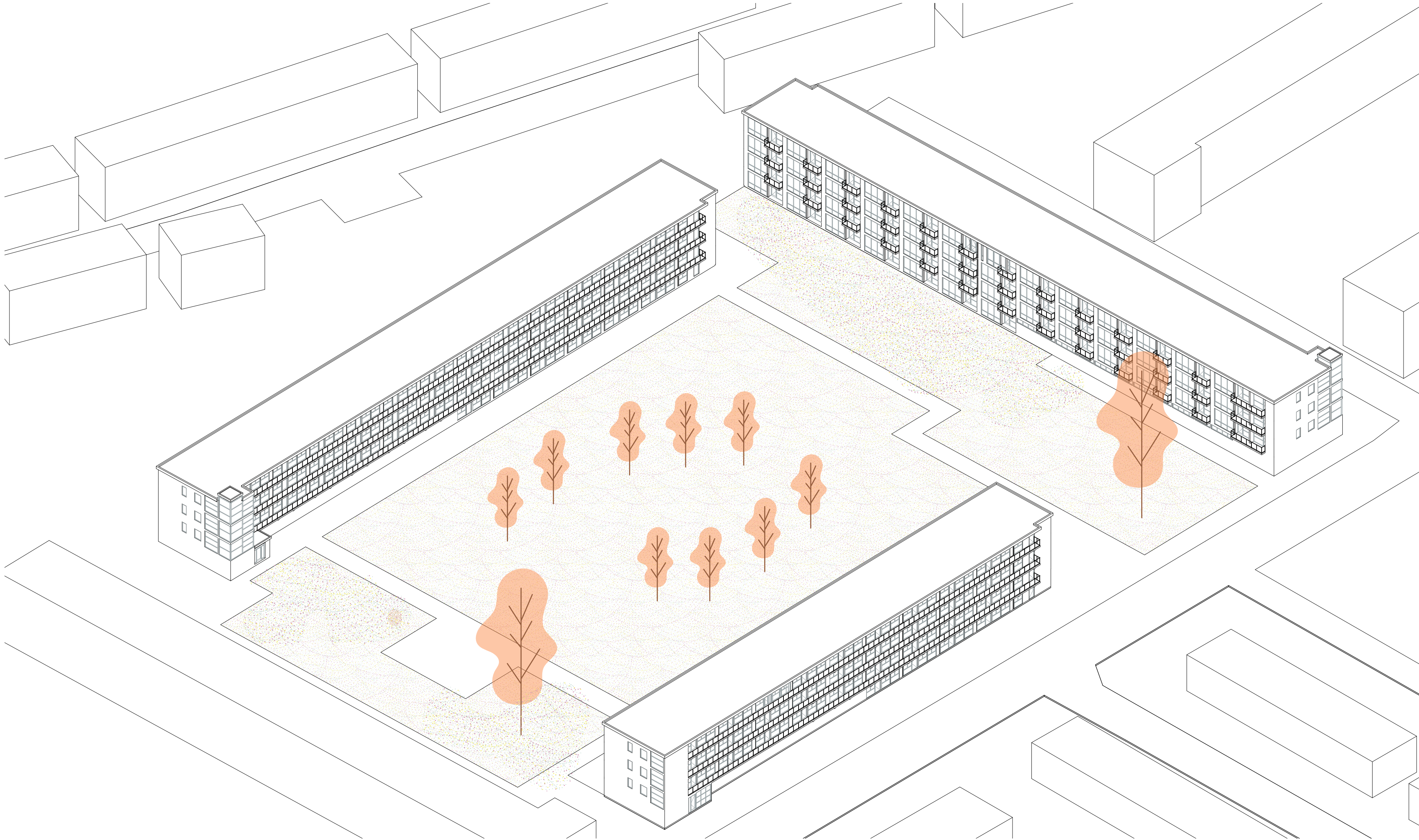
shared gardens

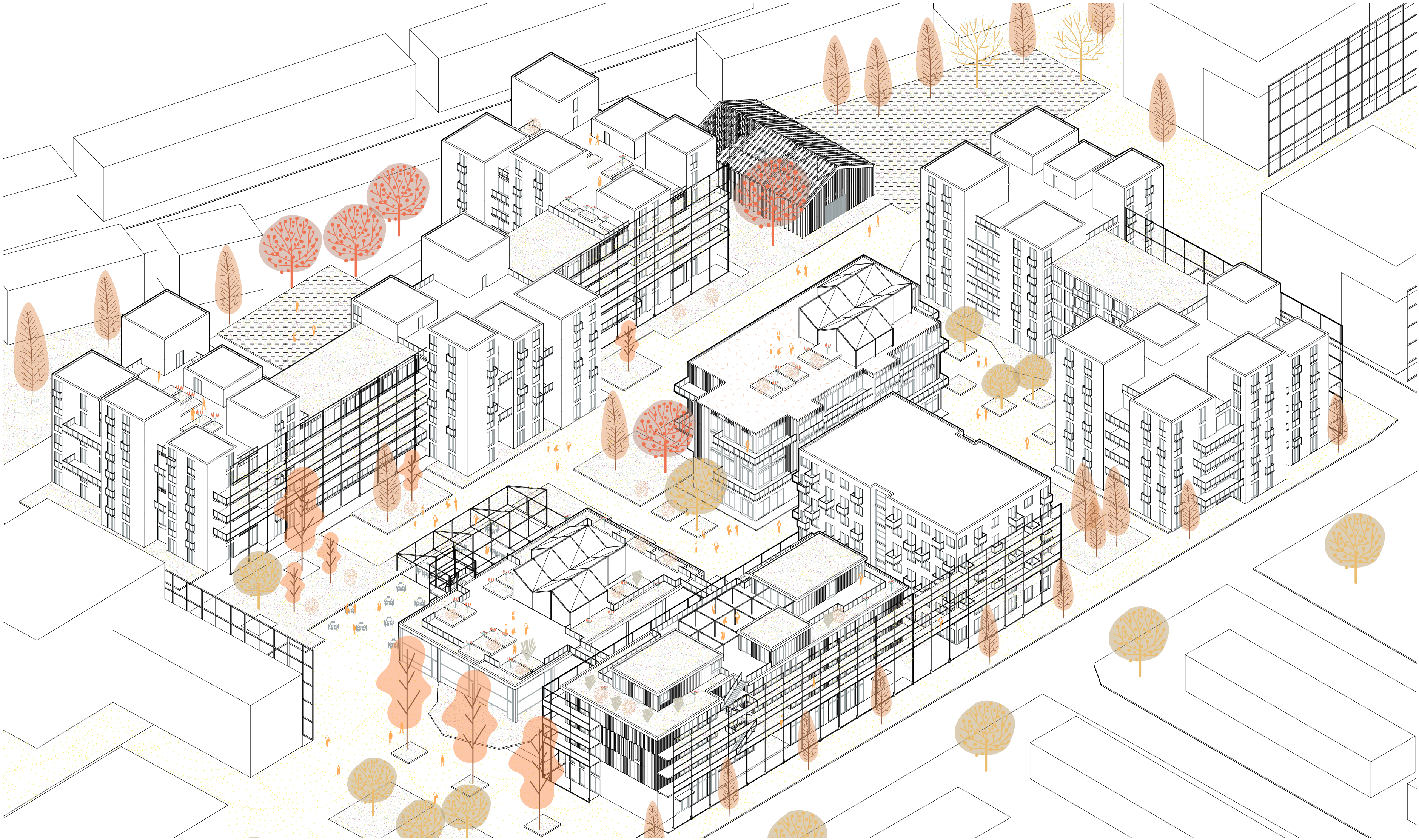
main axis through
the urban plan

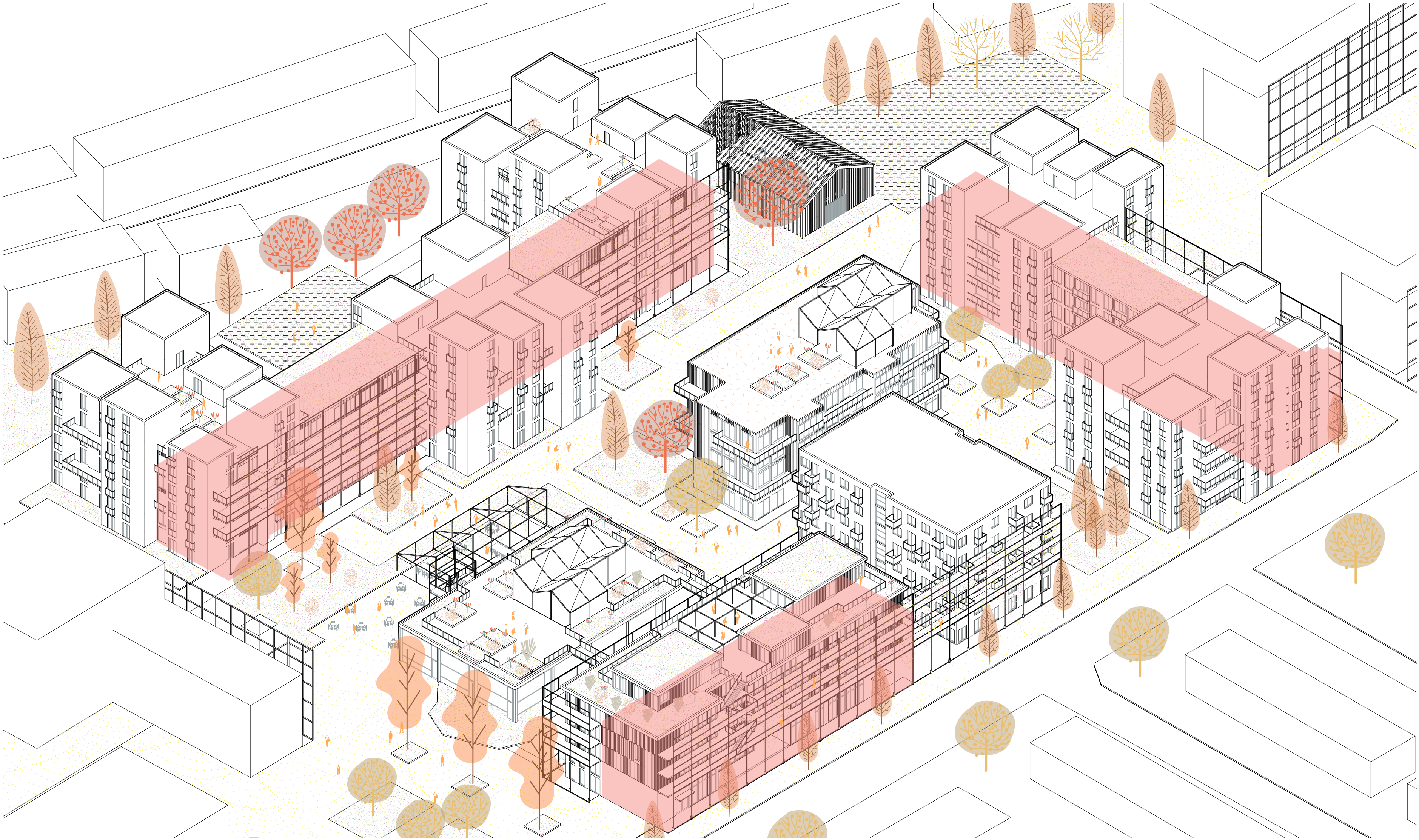
adventure green, kids

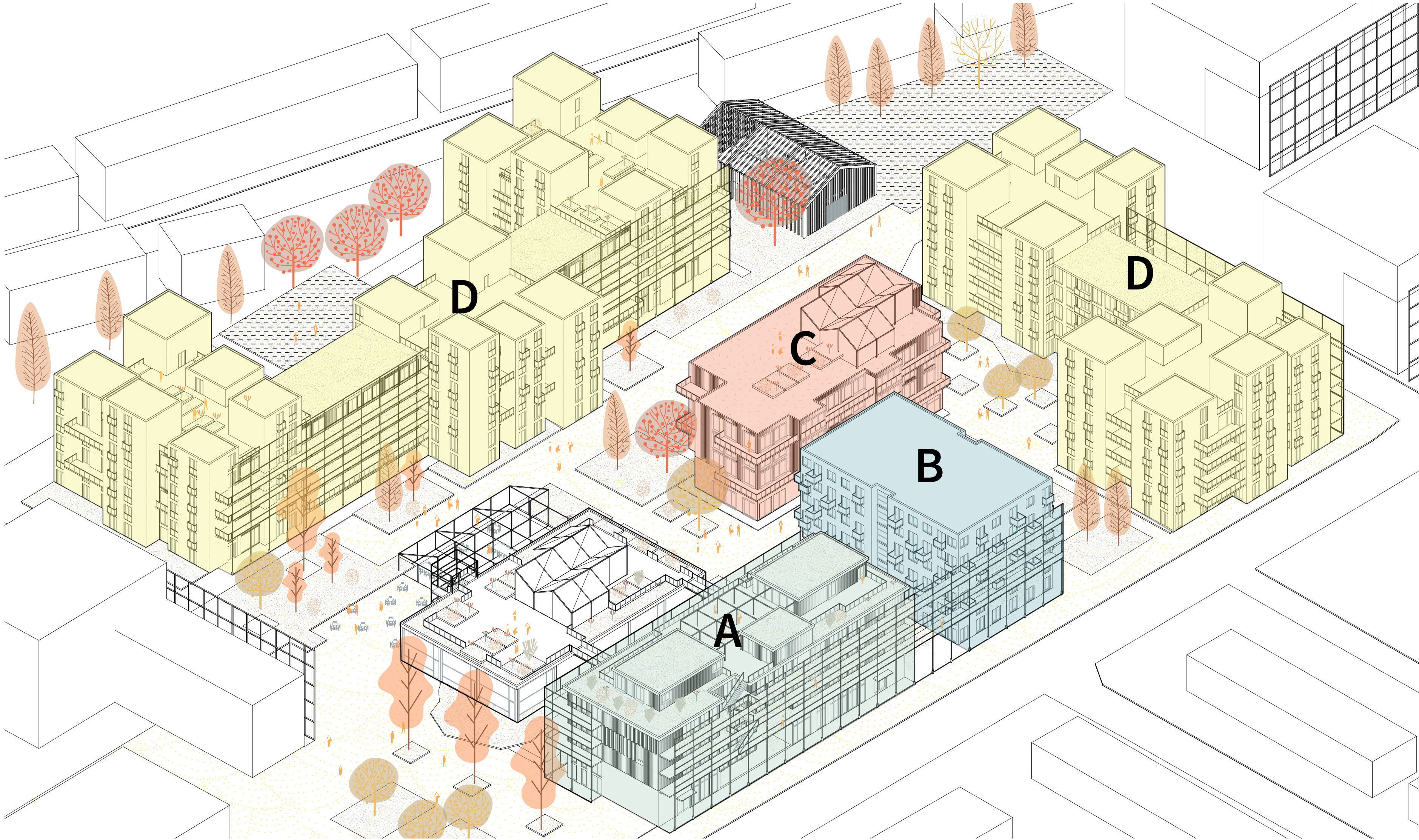
small scale green
buffering between
shared and residen-
tial

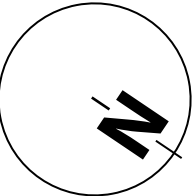
community center









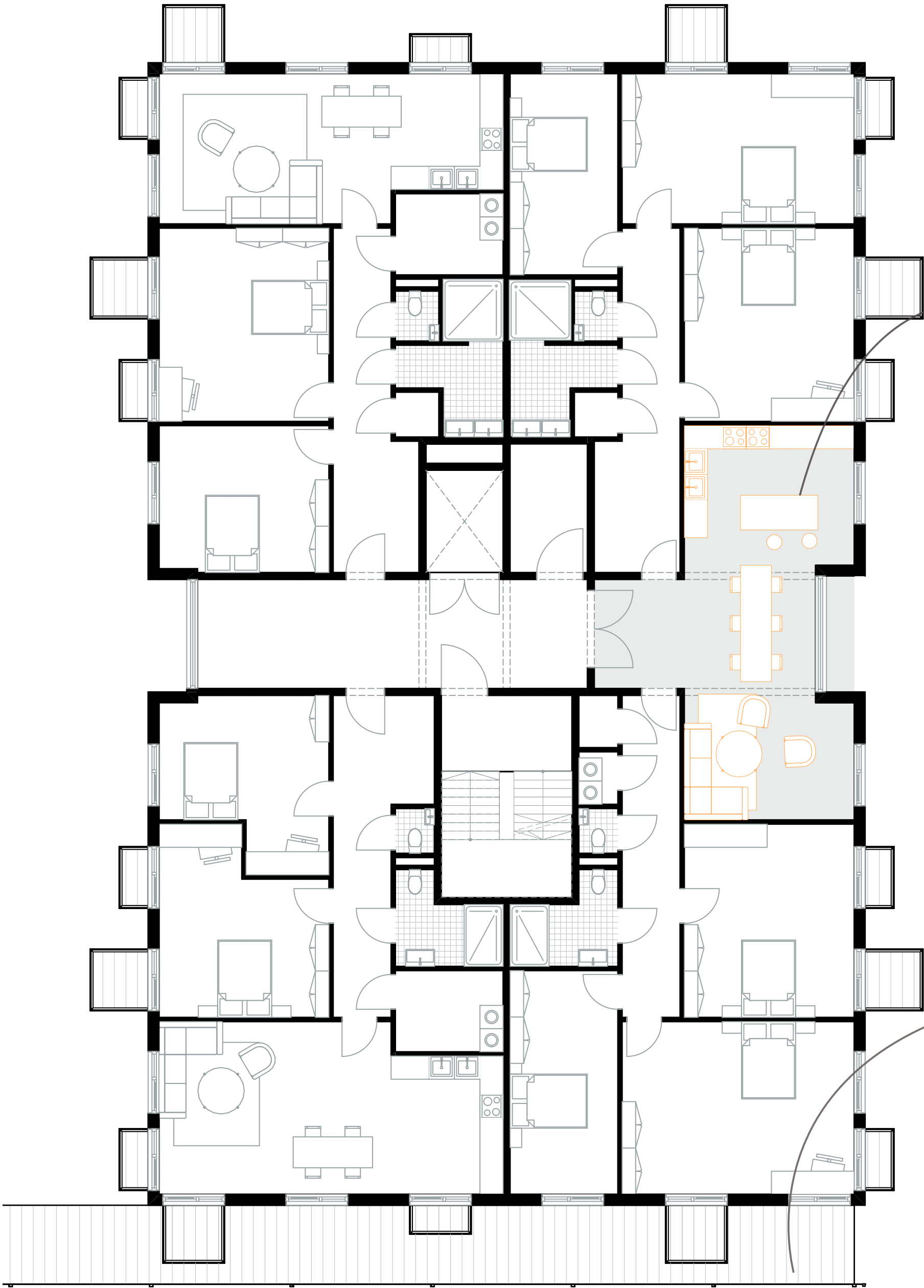




BUILDING B | shared spaces

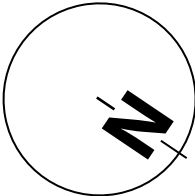
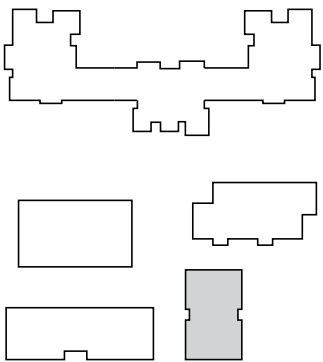
B / starter cluster

12
522 m²
51 m²
Core
starter couple / family



shared kitchen and living room

gallery connection to building A

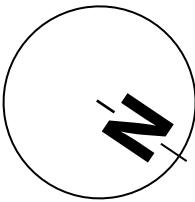
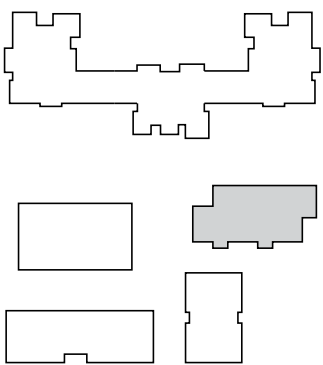
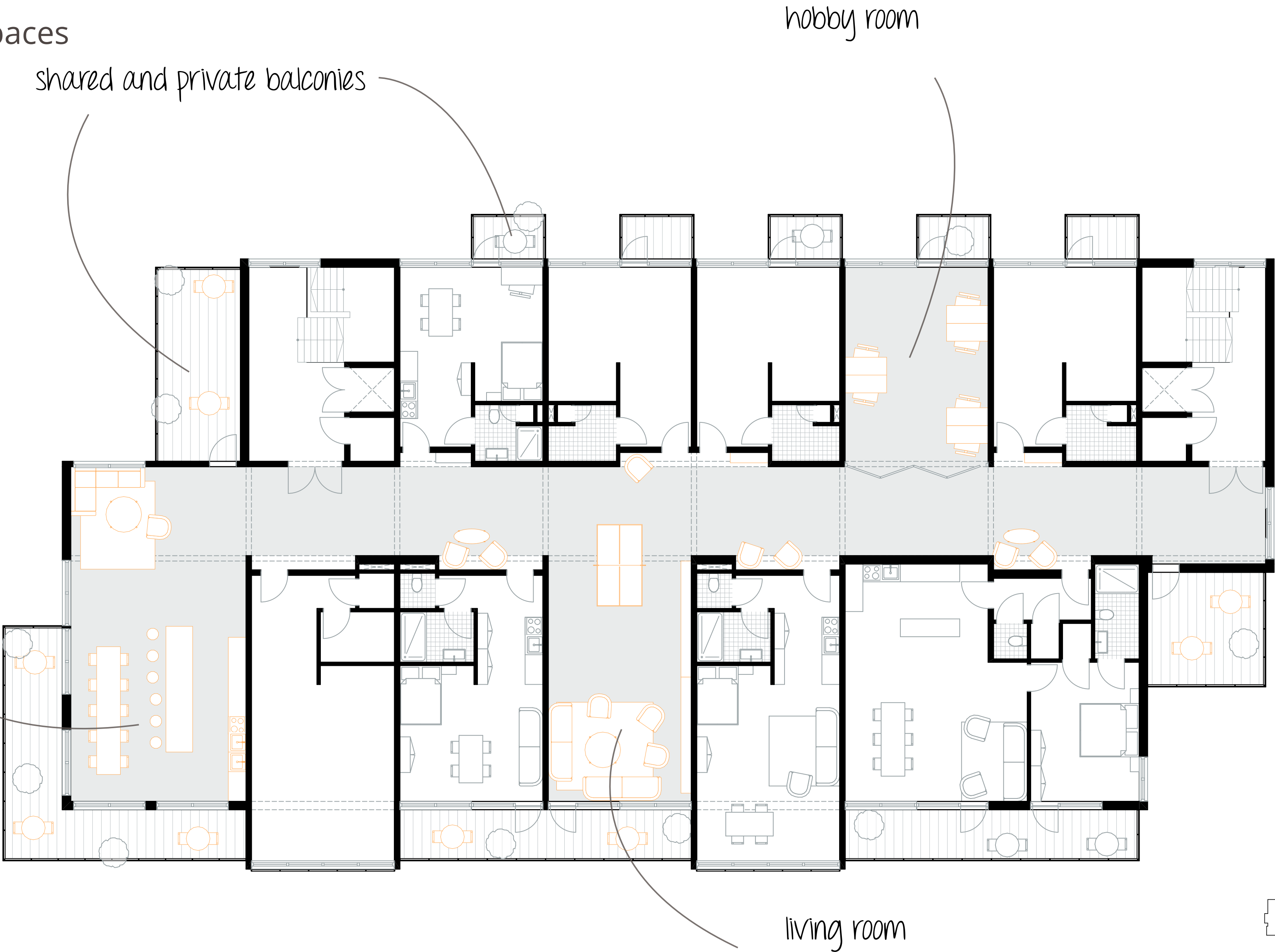


BUILDING C | shared spaces

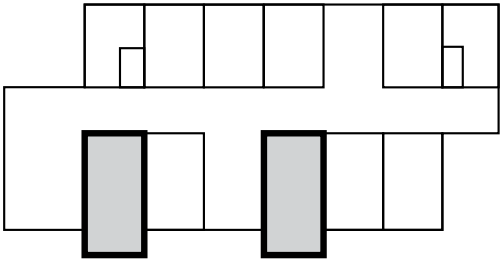
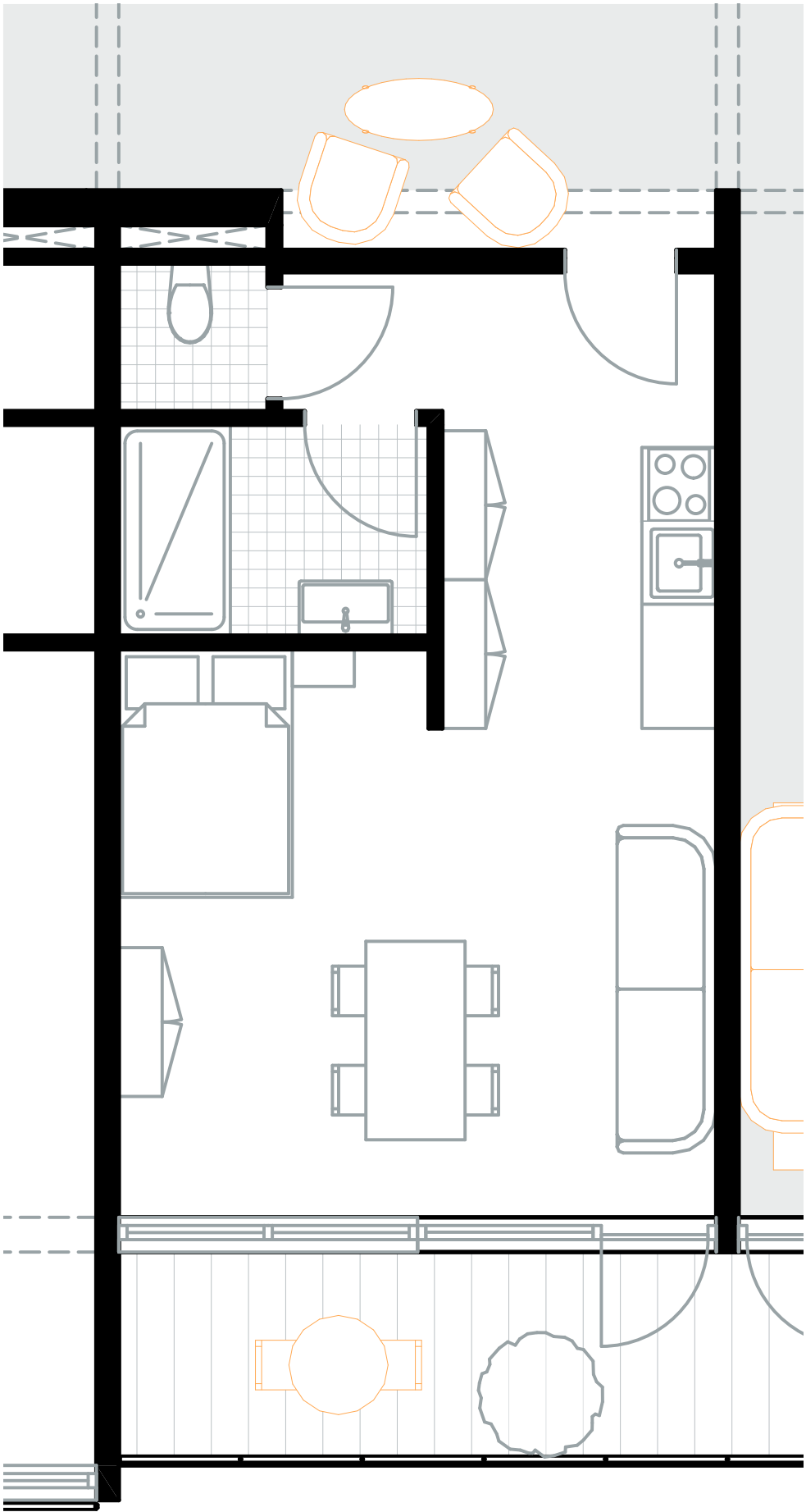
C - mix cluster

9
670 m²
260 m²
Corridor
student / starter/ elderly

shared kitchen

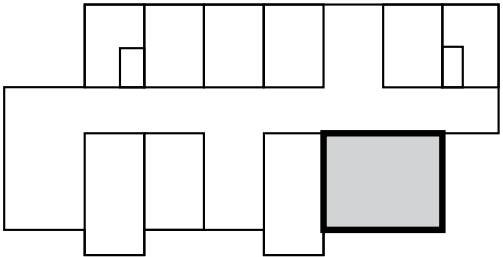
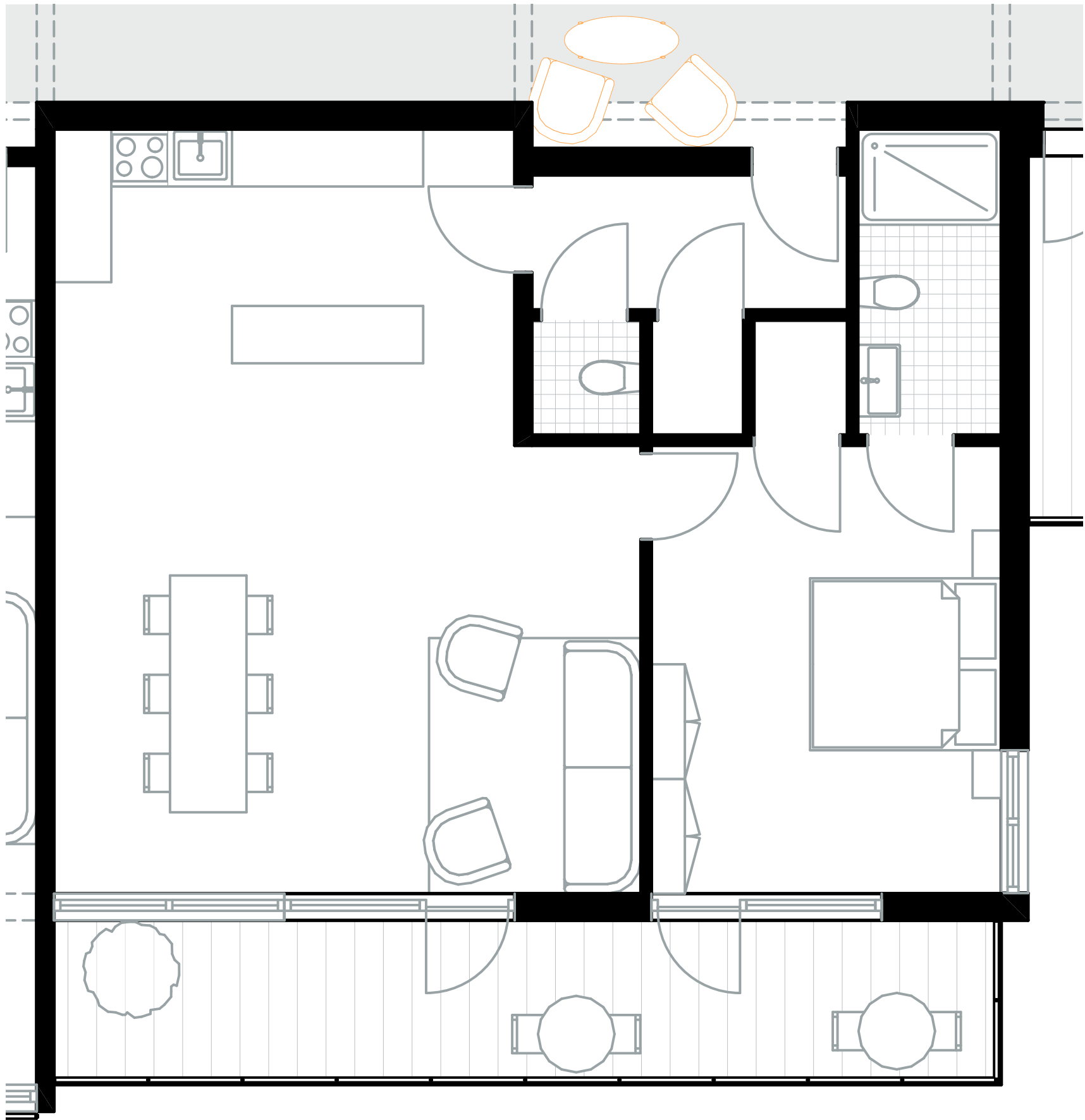


1
37m²
corridor
students / starter

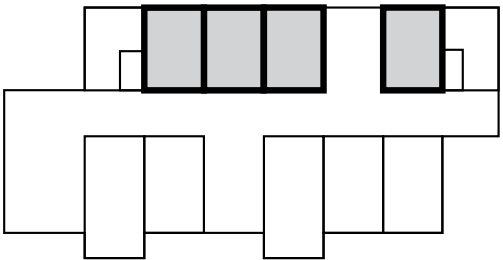
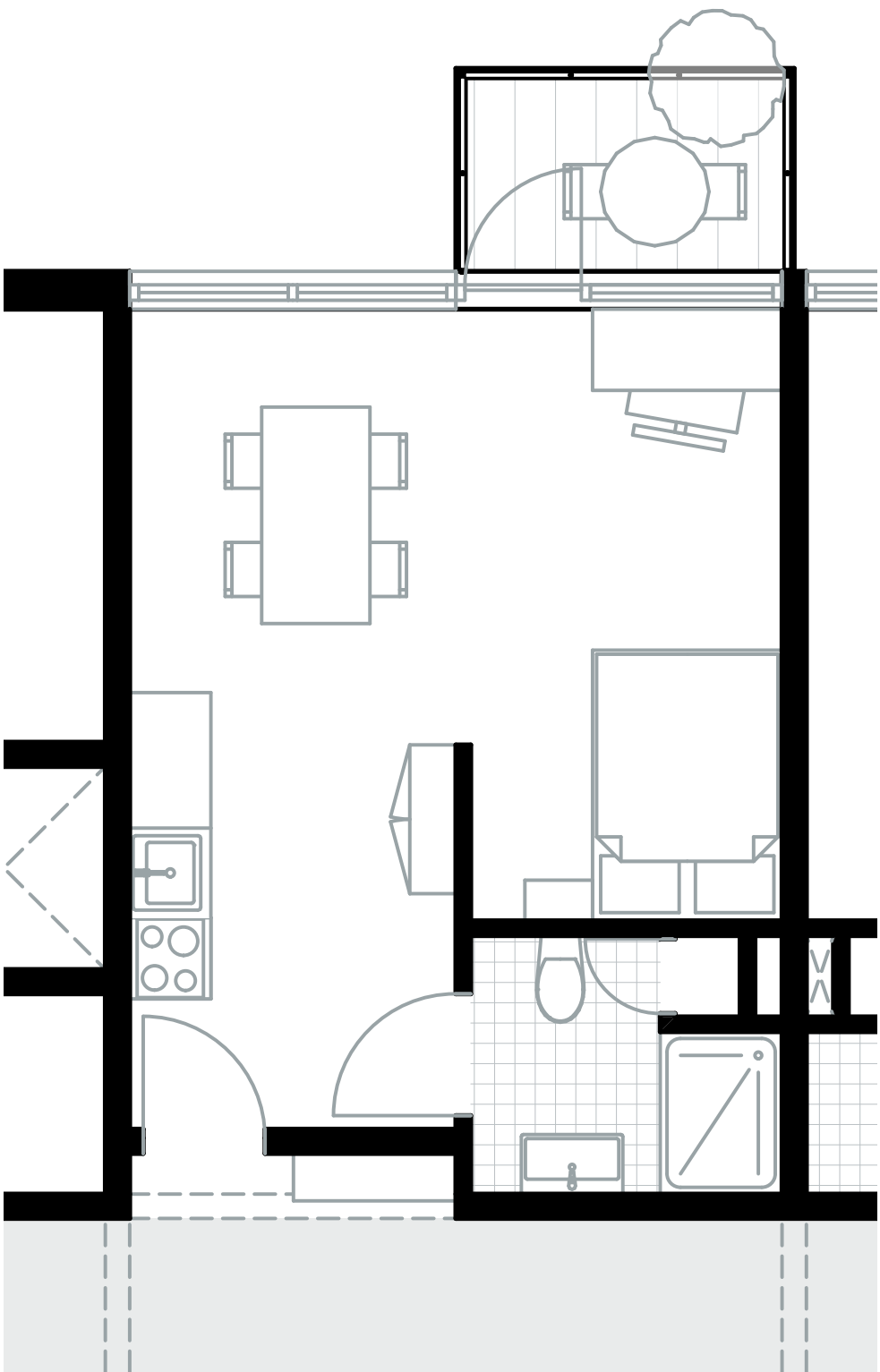


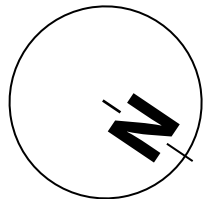
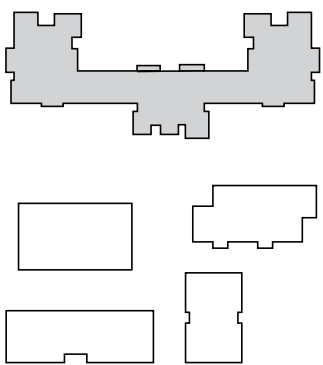
BUILDING C | C3

2
80 m²
corridor
empty nester / starter couple



1
32 m²
corridor
student

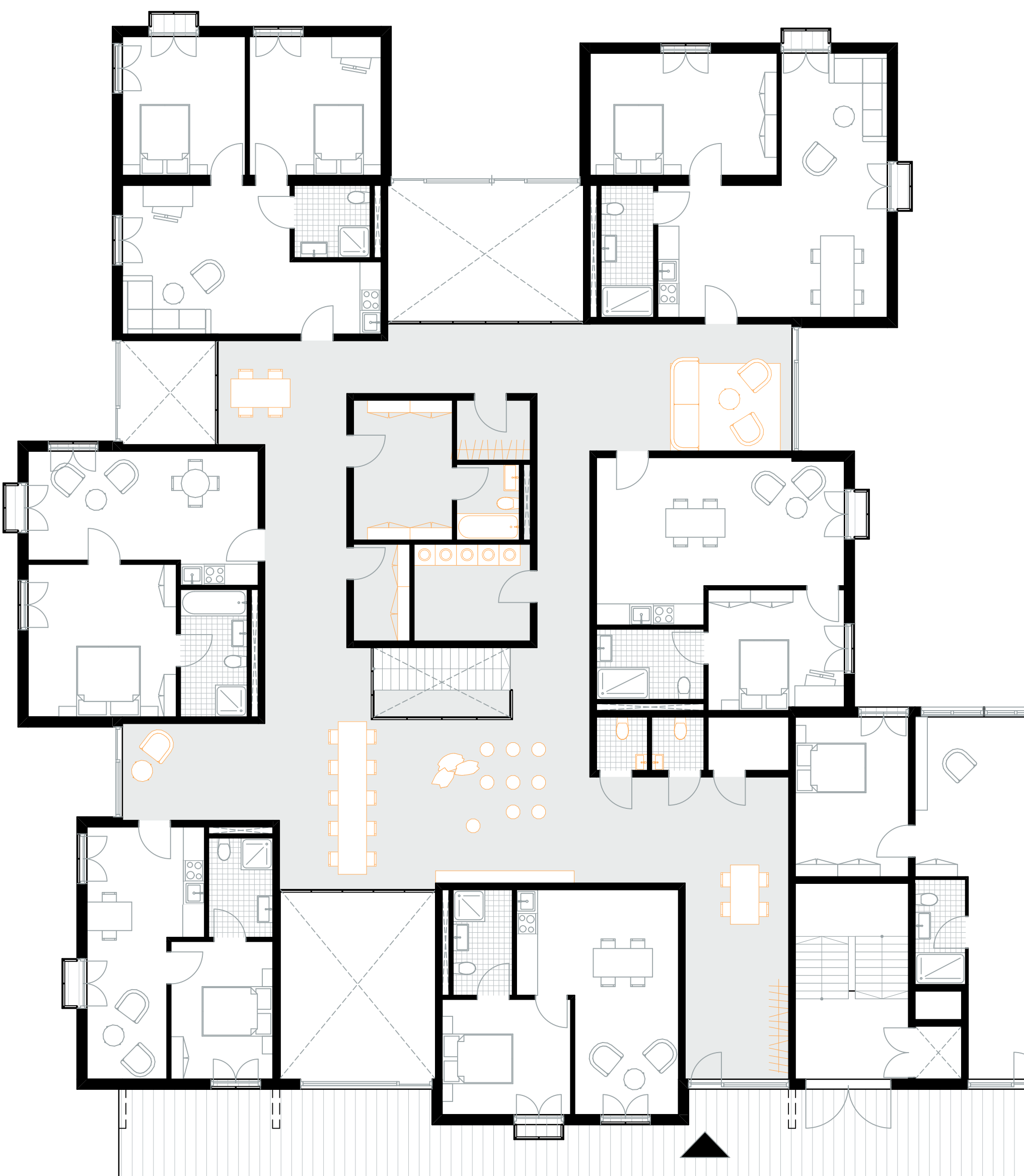




BUILDING D | cluster

D- care cluster

26
1200 m²
540 m²
Corridor
elderly / families



BUILDING D | Co-housing

Generation living Family de Hoop



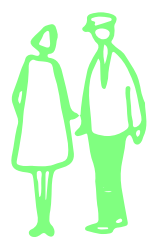
They like that grandma lives close by and like to cook for her.

Single elderly living Grandma de Hoop



Likes to play with her grandson and watches him when the parents are to work.

Elderly living Grandparents Durieux



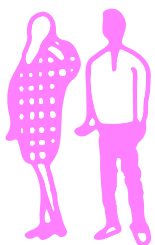
Enjoys cooking for the house and meeting everyone at the communal table.

Supported living Grandpa van Kints



The shared room next door can be shut of to create an extra bedroom for the grandkids who like to come and visit.

Working and living Kato & Pablo

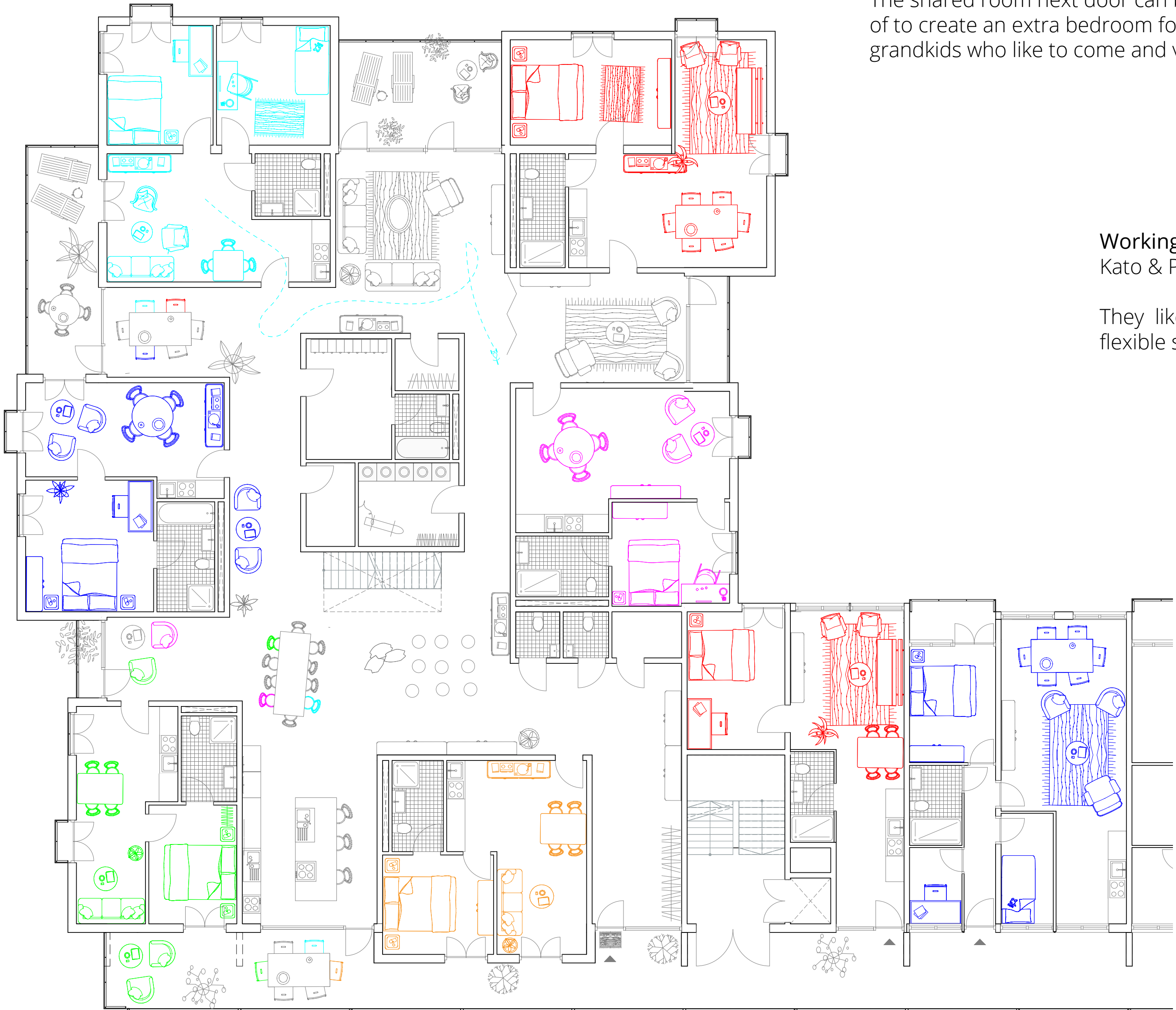


They like to use the extra shared space as a flexible studio.

Family living Family Nugter

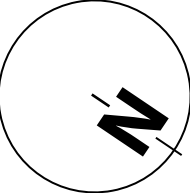
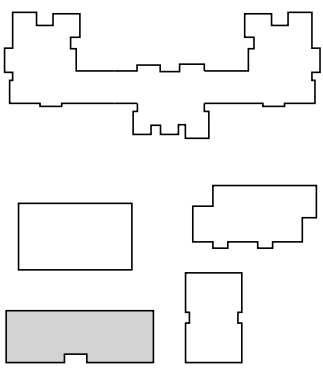


Although they are living outside of the co-housing cluster their daughter likes to play and go over to the neighbours who all know her



connecting the gallery to the
roofgarden

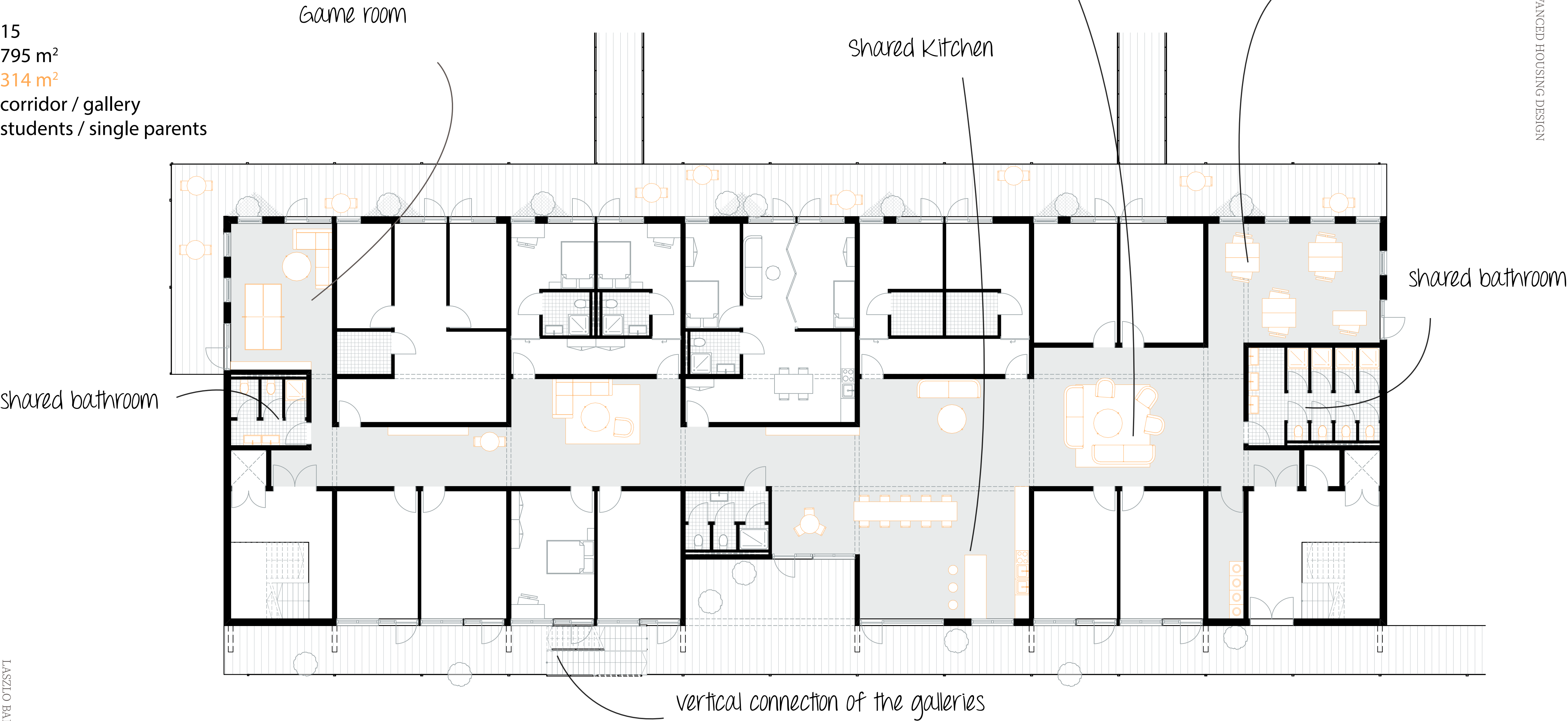
connecting the gallery to
building B to provide roof ac-
ces

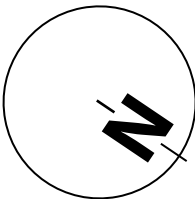
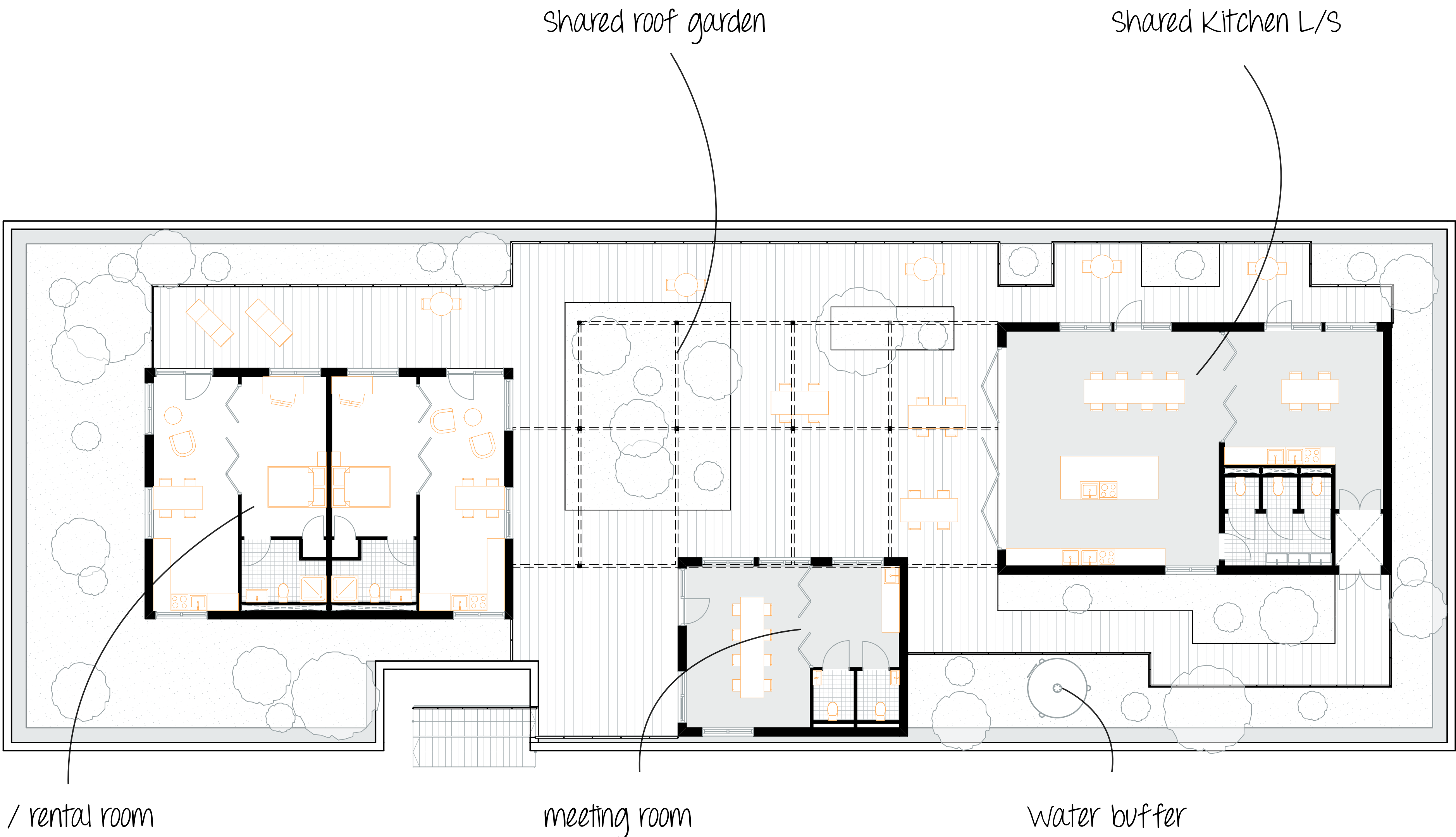


BUILDING A | private spaces

A - Student/ starter cluster

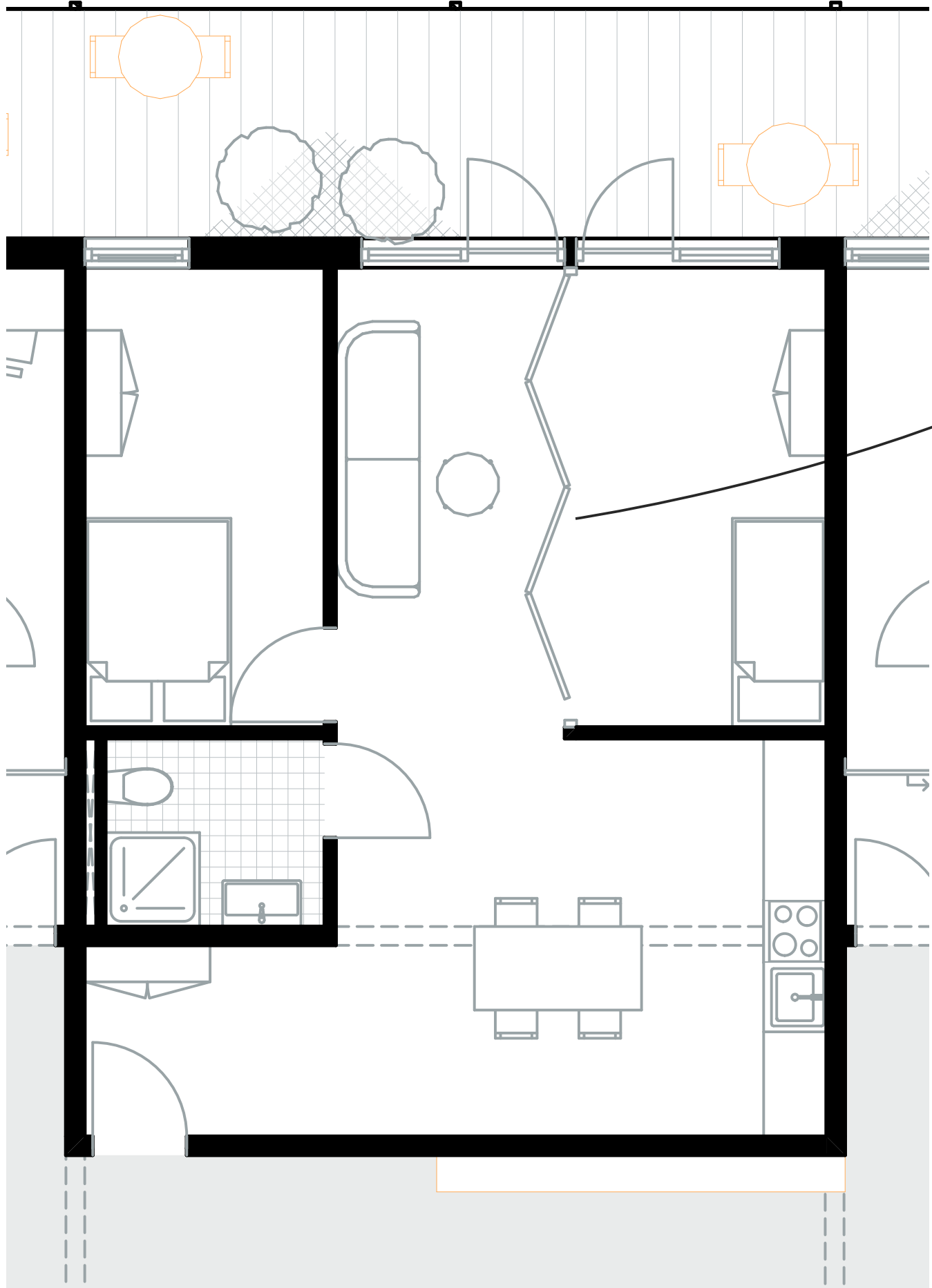
15
795 m²
314 m²
corridor / gallery
students / single parents



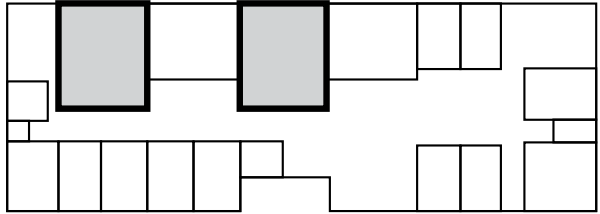


BUILDING A | A1

1+
60 m²
corridor / gallery
starter / single parent

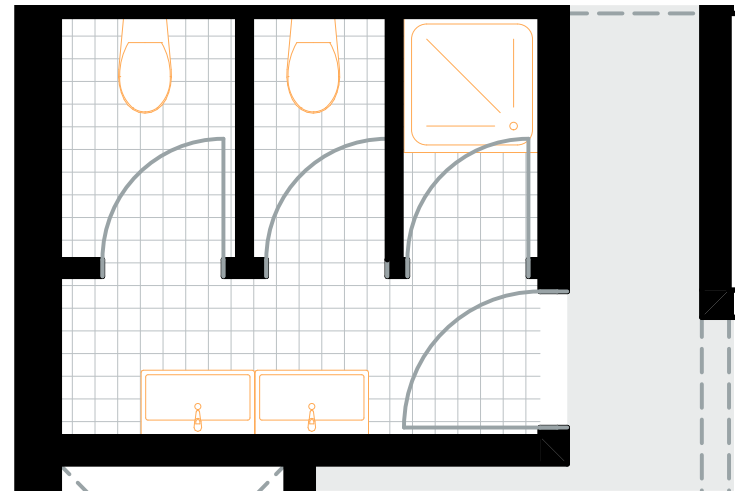


Flexible extra bedroom

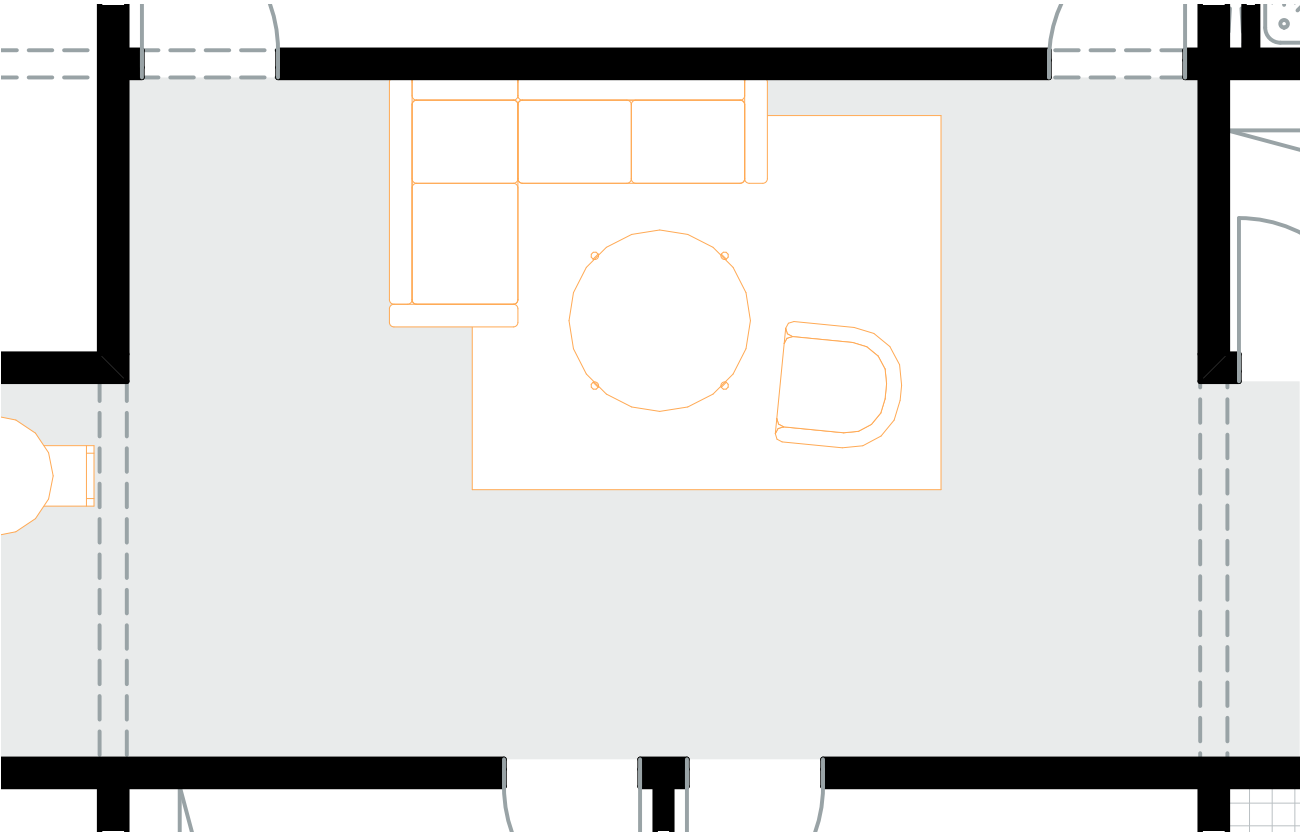
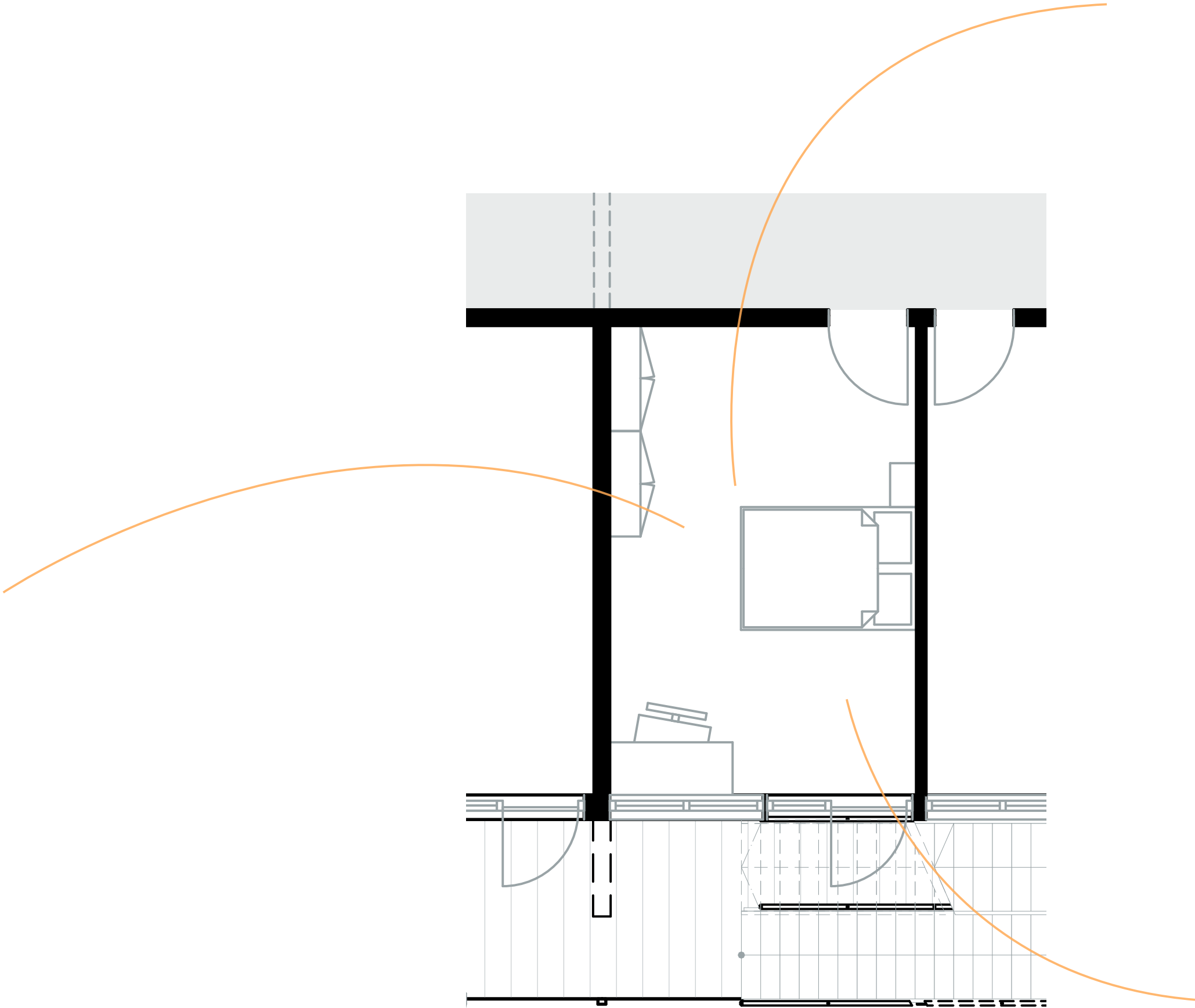


BUILDING A | A2

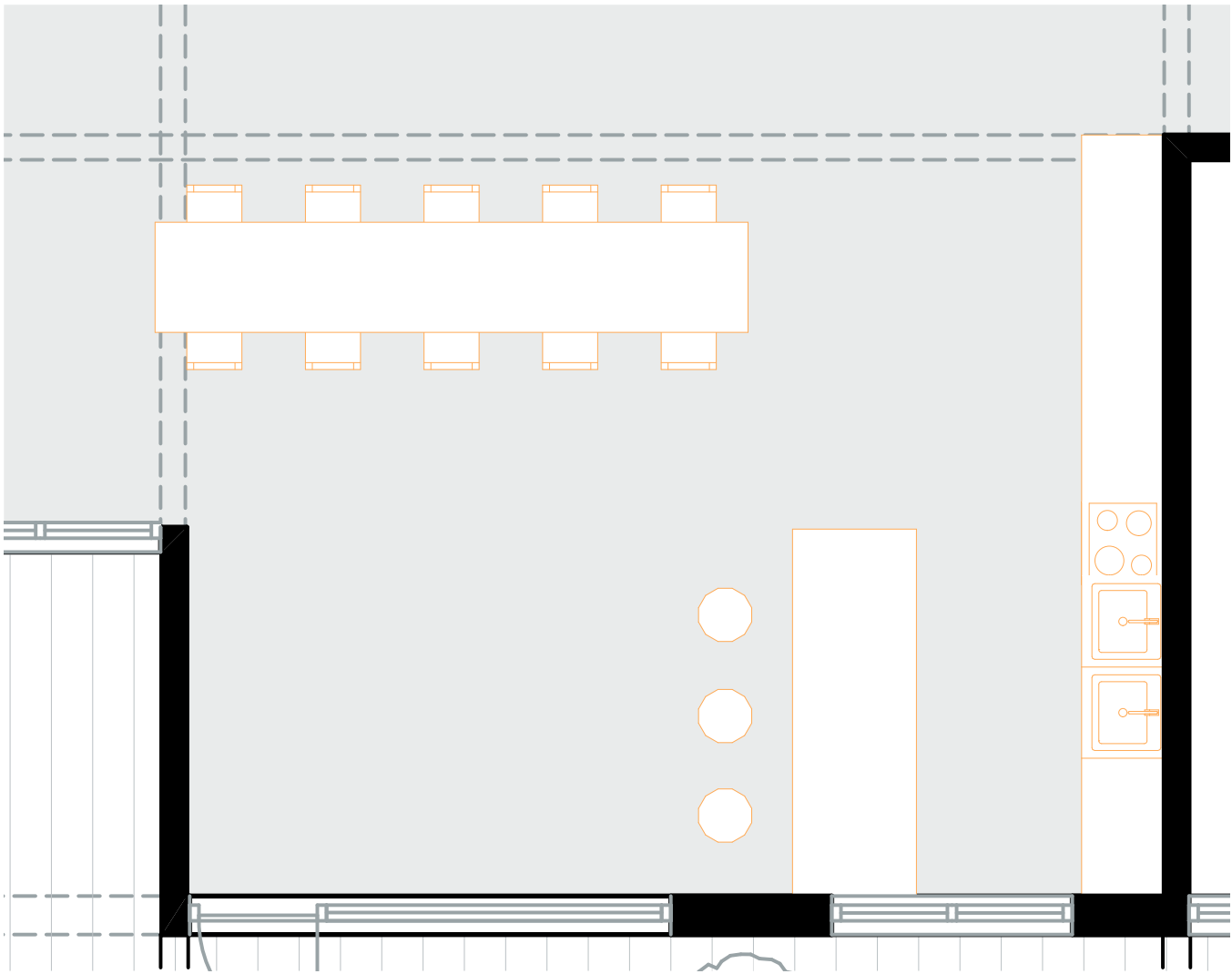
1
20 m²
corridor / gallery
student



Batrhoom



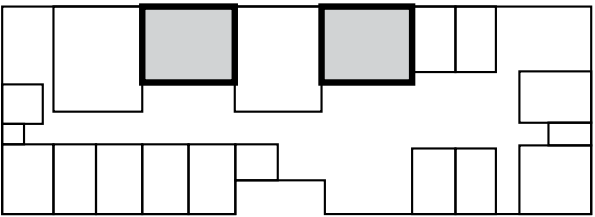
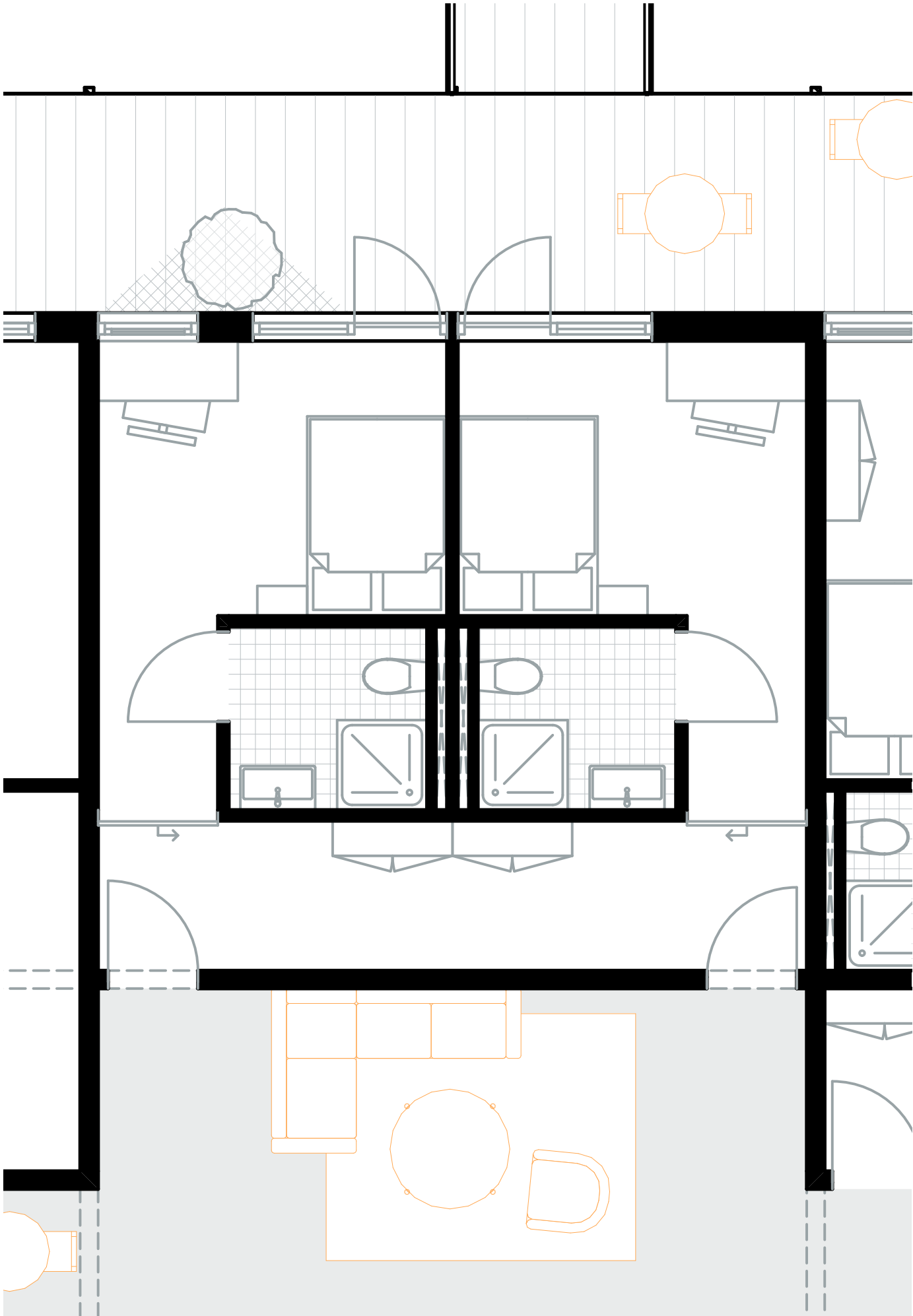
Living room



kitchen

BUILDING A | A3

2
40 m²
corridor / gallery
students / single parents



TOPICS



Ecology



Living



Energy



Materials

AMBITIONS



Rainwater buffering



Increase biodiversity



Less than 20% paved



Design with the existing water and green



Car free



Maximize outdoor space



Focus on daylight



Renewable energy

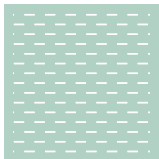


Make use of waste products



Use of natural materials

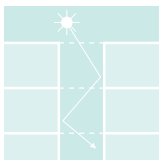
DESIGN CONDITION



Open tile structure



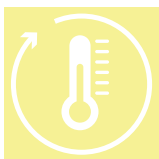
Green roofs



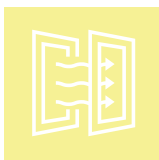
Daylight in corridors



Vegetable garden



District heating and heat pump



Mechanical ventilation



Wool for insulation



Wooden construction



Rainwater storage



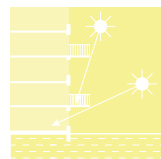
Insect homes and bird boxes in facade



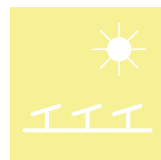
Decentralized heating



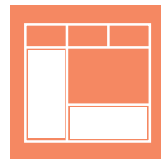
Emphasis on bike use over care use



Winter / summer

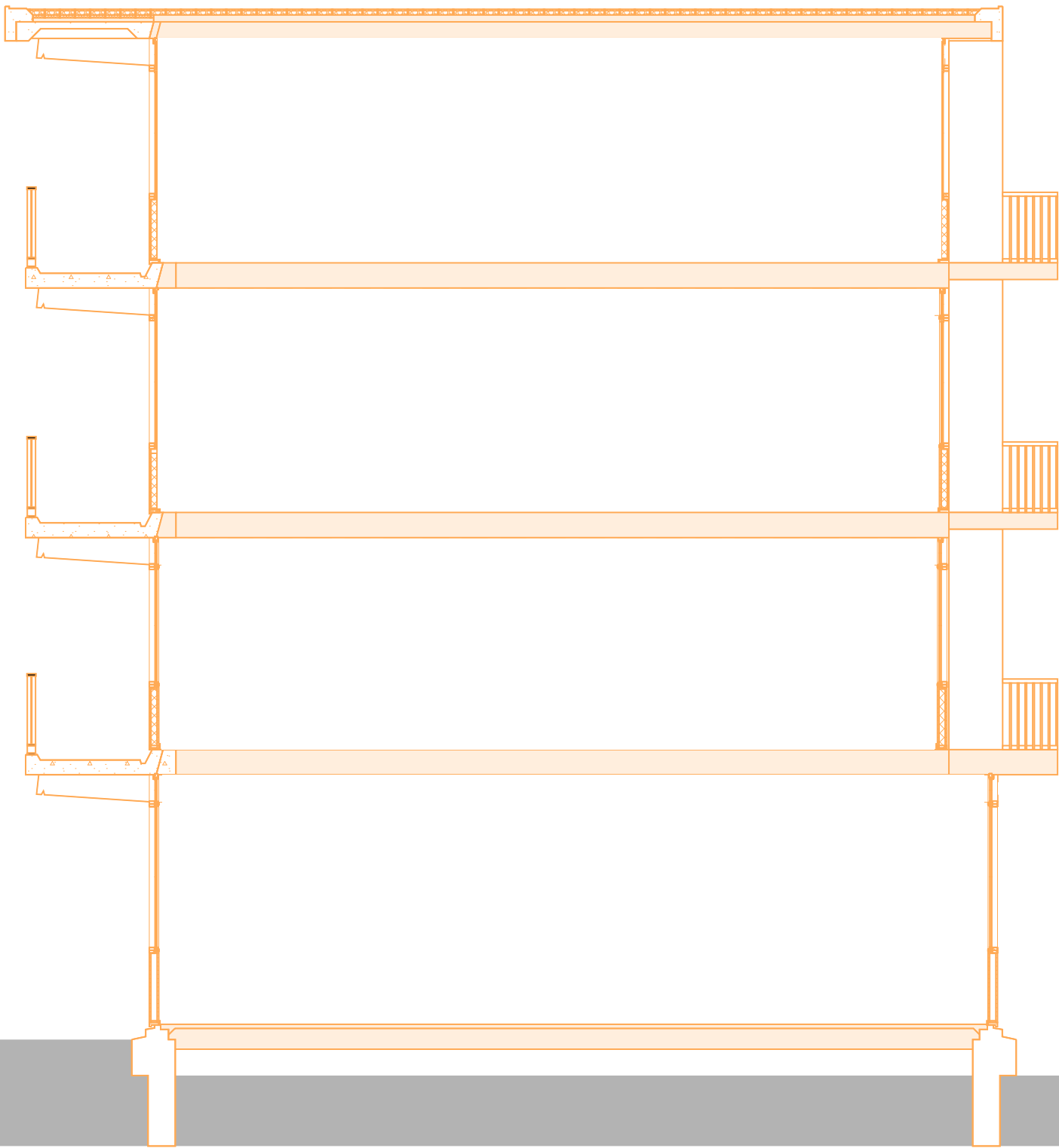


Make use of PV panels

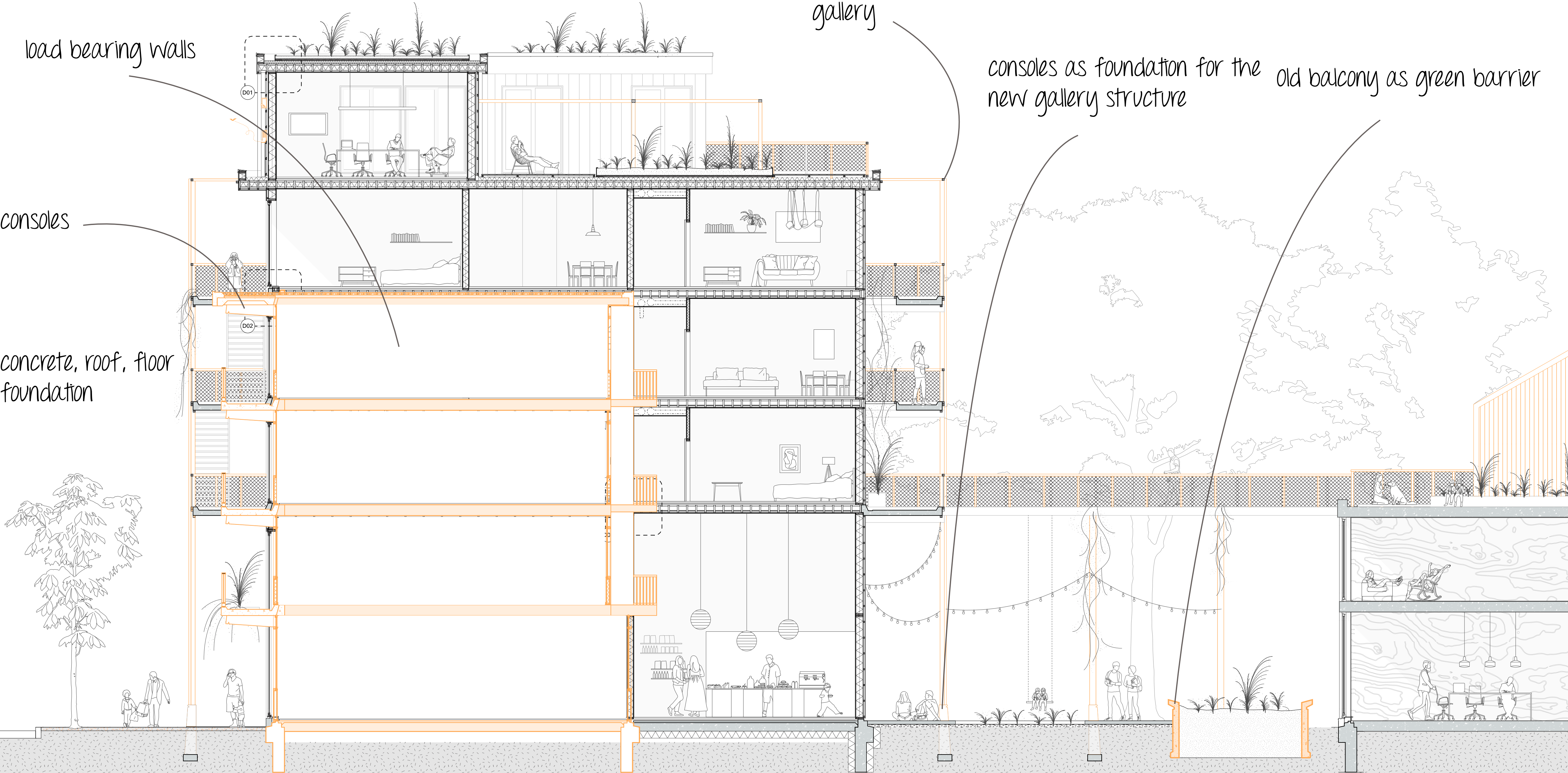


Old facade as new building parts

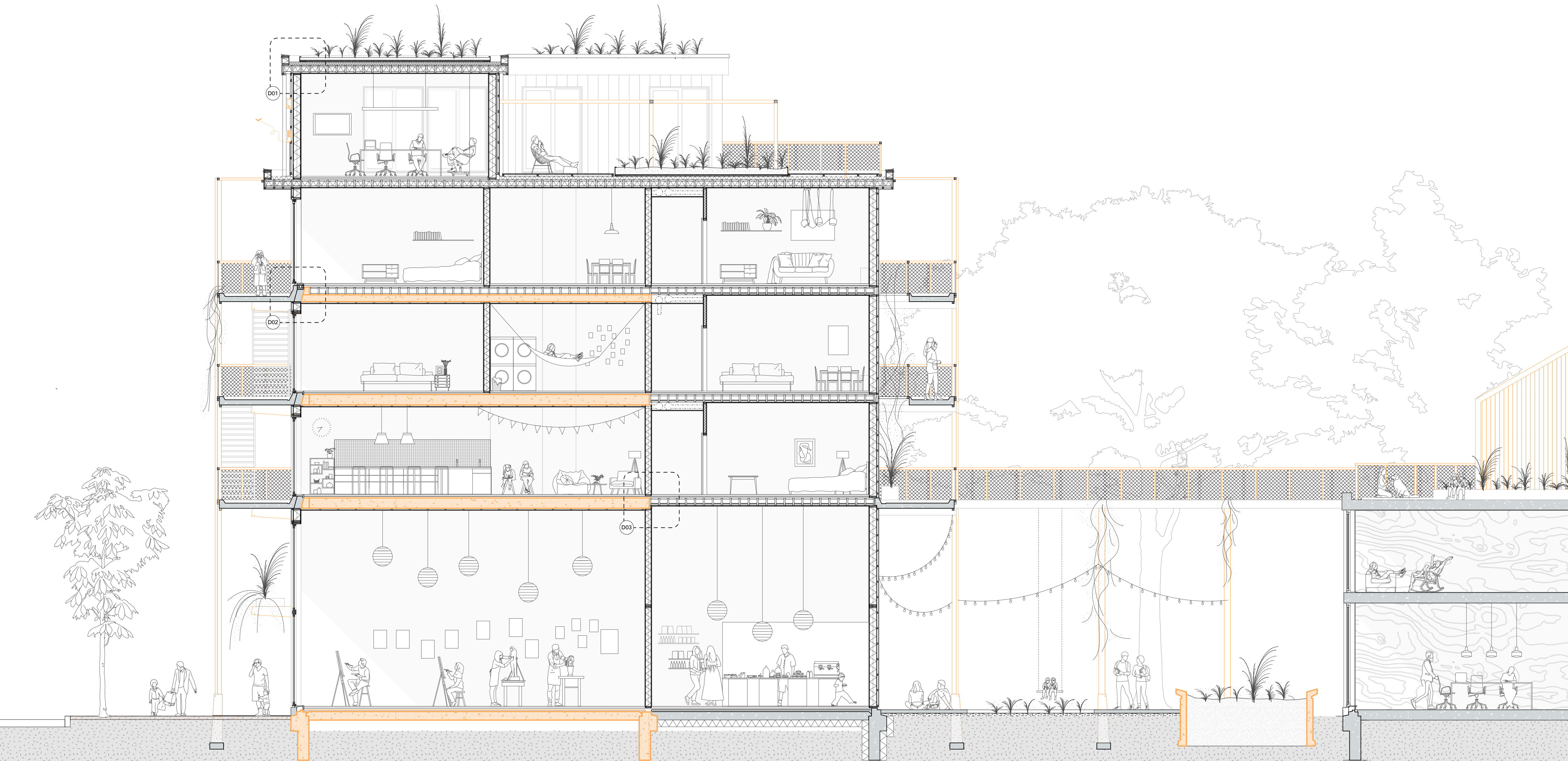
BUILDING A | existing section



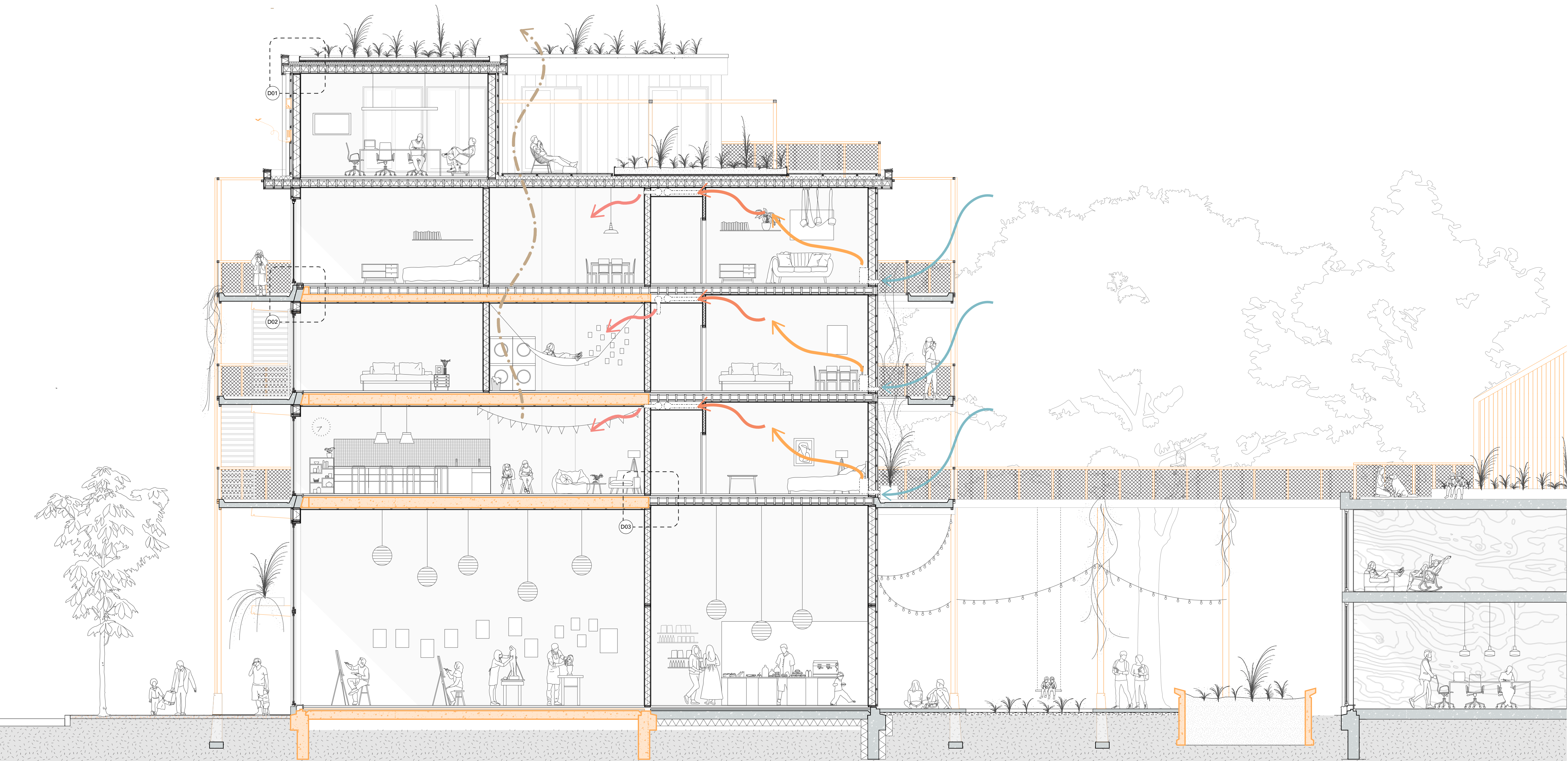
BUILDING A | old and new

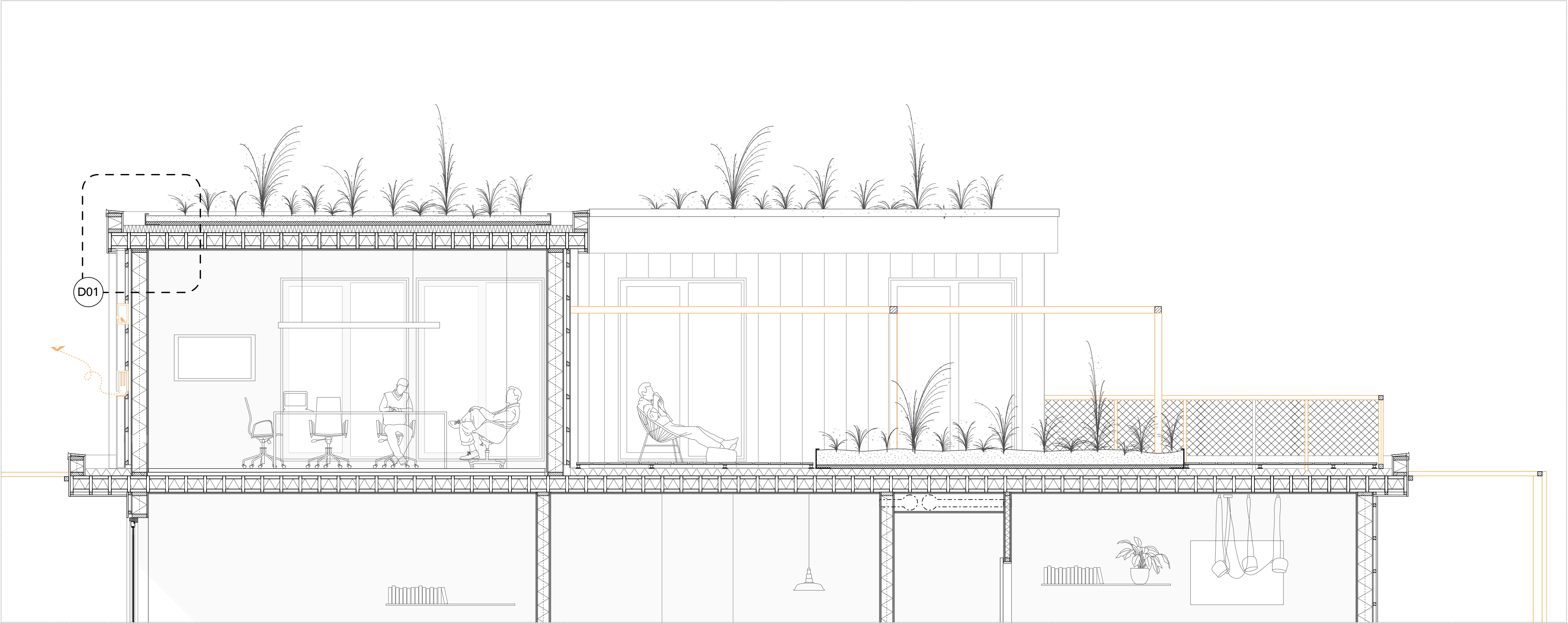


BUILDING A | reused elements integrated



BUILDING A | decentralized ventilation

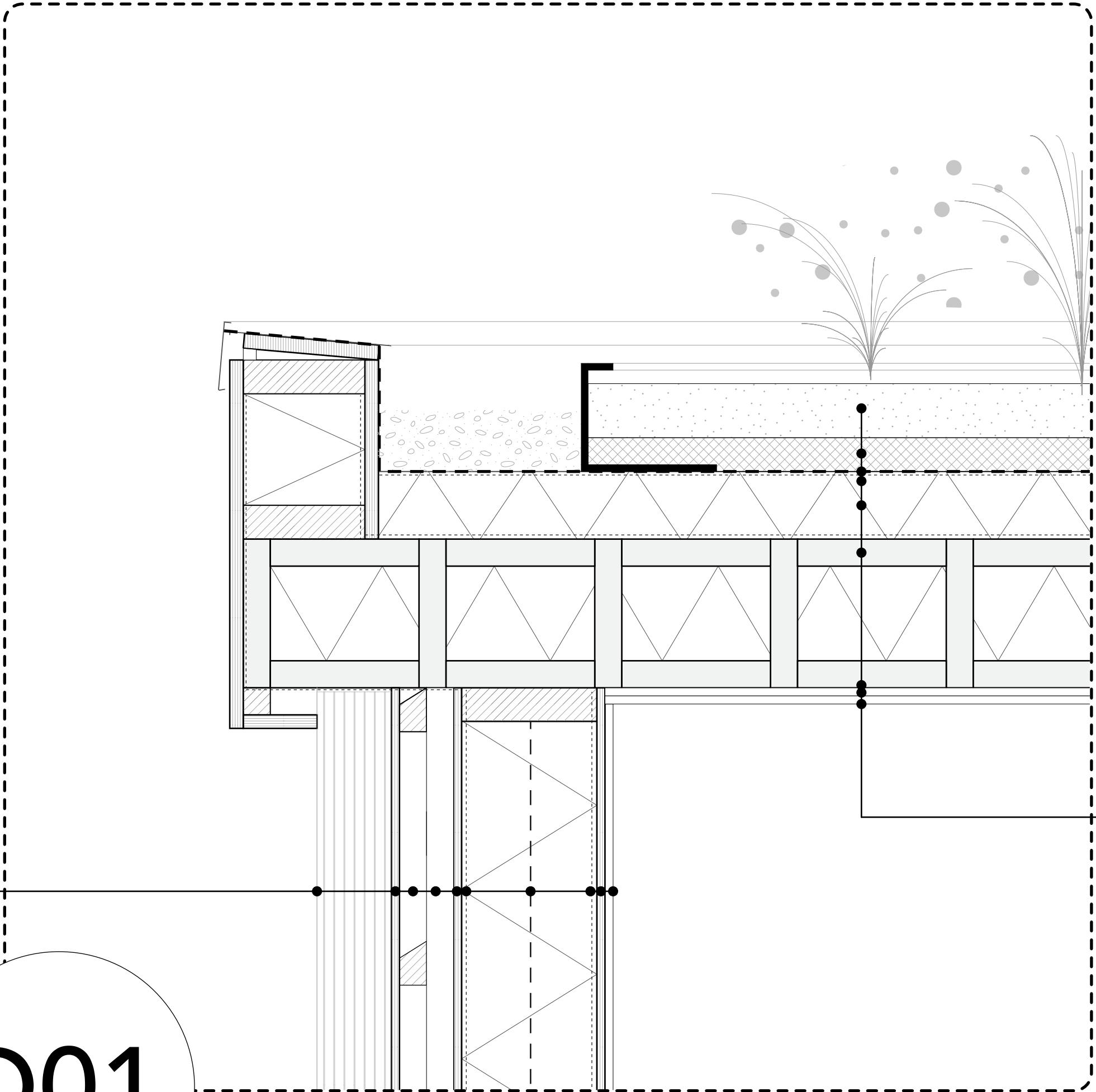
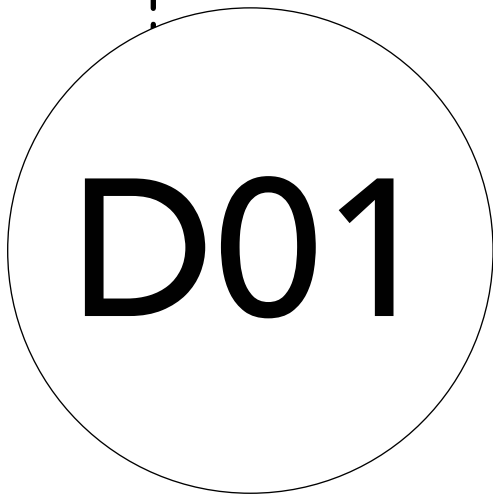




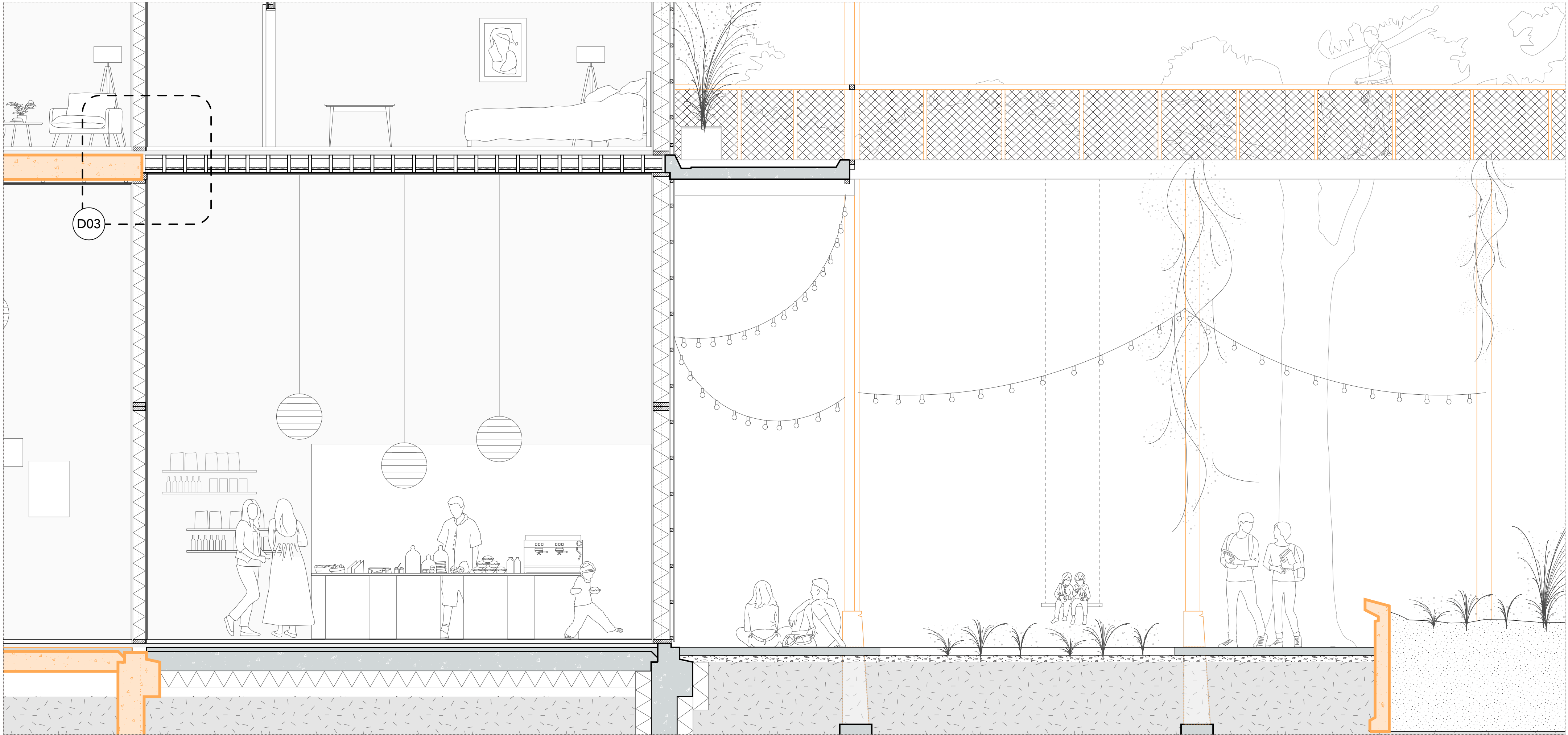
- Wooden profile facade 22mm) with integrated nest- ing cavities (110mm)
- Ventilation cavity with wooden battens, 40mm
- Vertical battens 40mm

- Prefab timber frame element, 224mm
- Wood fiber insulating board, 12mm
 - Water barrier
 - Sheep wool insulation $\lambda= 0,04 \text{ W/mK}$, 200mm
 - Timber frame (200mm)
 - Vapor barrier
 - Wood fiber insulating board, 12mm
- Plasterboard finish 6,5mm

- Sedum layer 80mm
- Moisture retention layer 50mm
- Root membrane
- EPDM
- XPS insulation 100mm
- Vapor barrier
- Lignatur insulated floor element 220mm
- Plasterboard finish 12mm

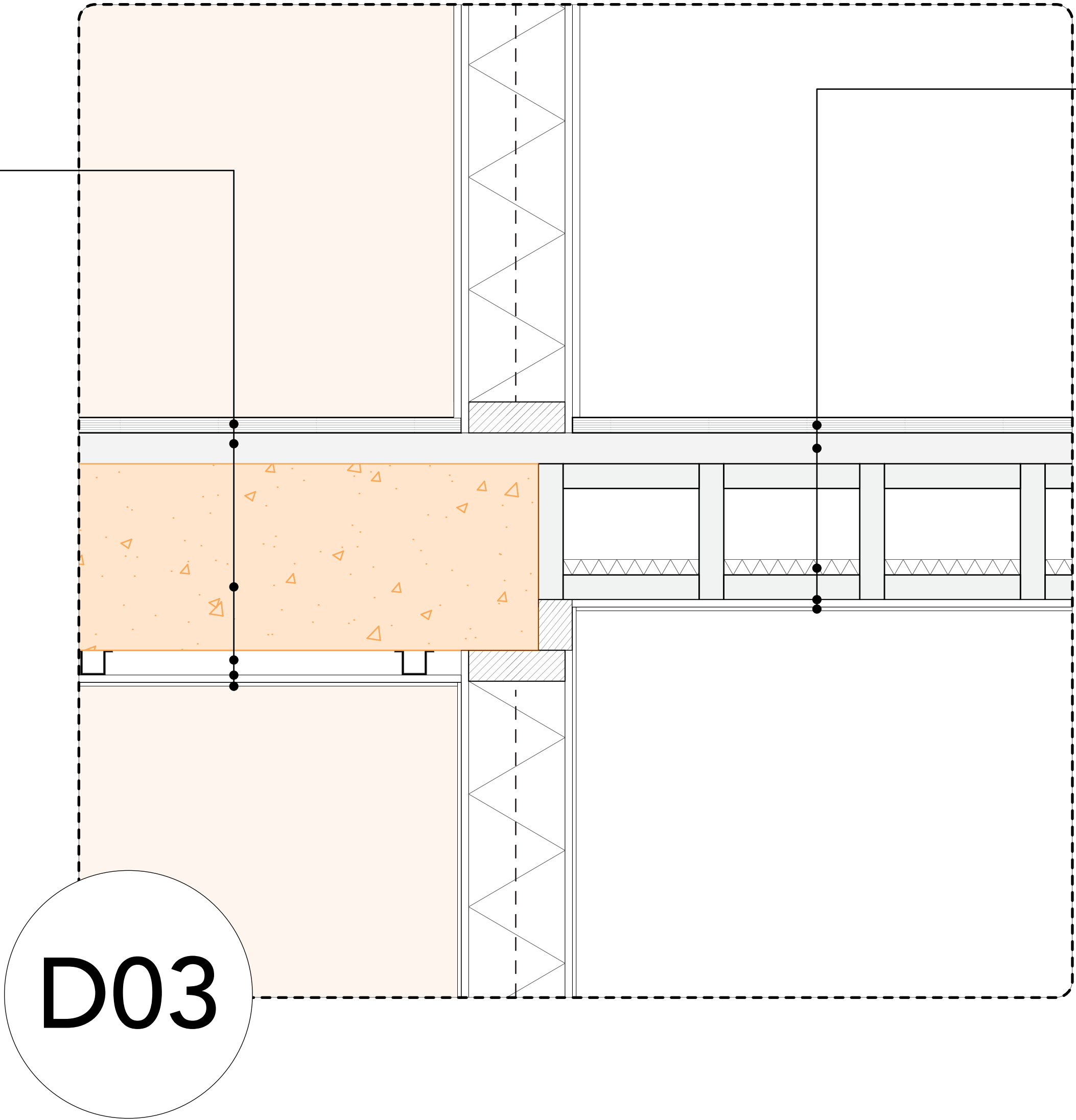


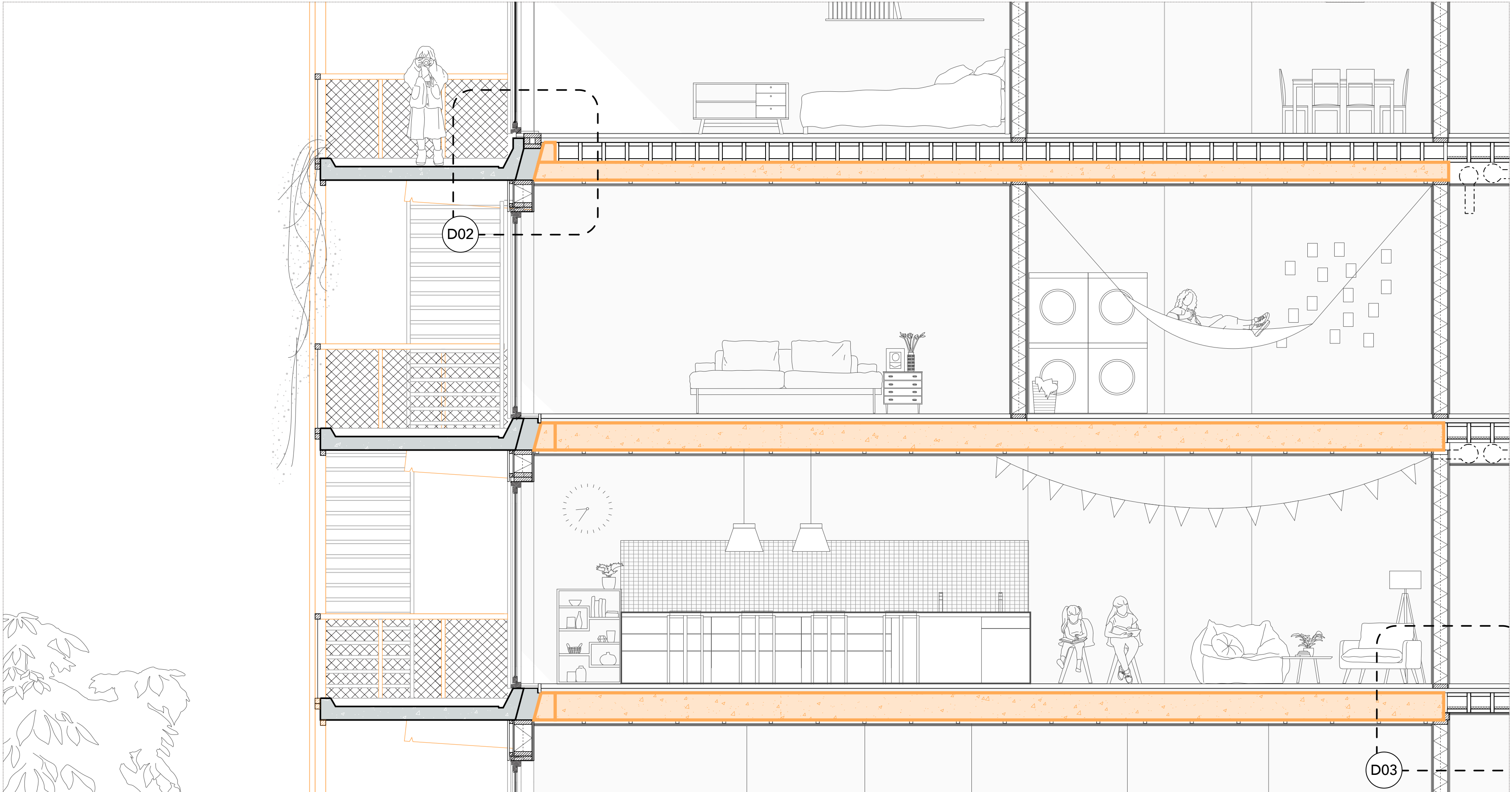
BUILDING A | shared facilities on ground floor



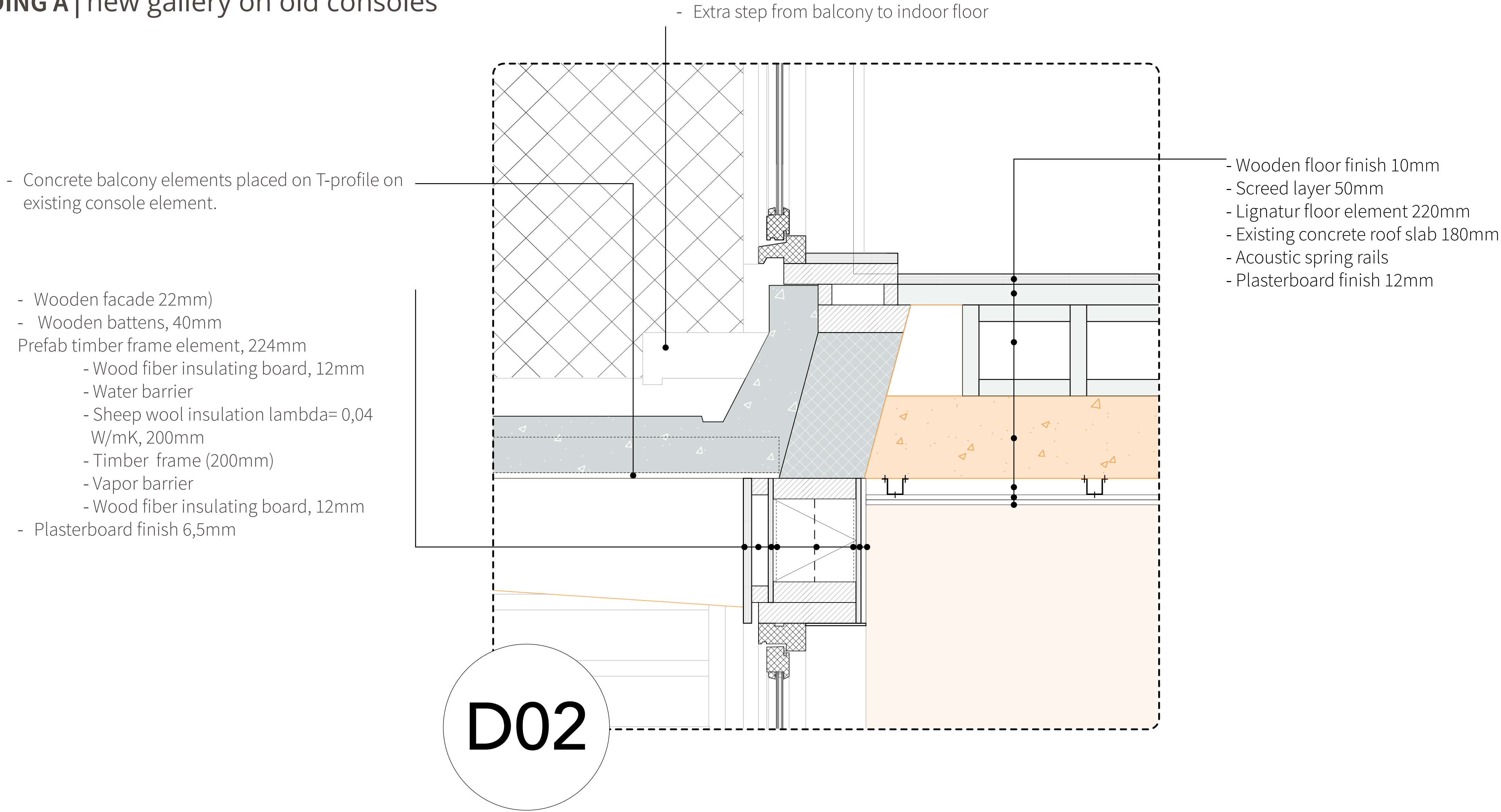
- Wooden floor finish 10mm
- Screed layer 50mm
- Existing concrete floor 300mm
- Acoustic spring rails
- Plasterboard finish 12mm

- Wooden floor finish 10mm
- Screed layer 50mm
- Lignatur floor element with integrated sound proofing, 220mm
- Plasterboard finish 12mm





BUILDING A | new gallery on old consoles



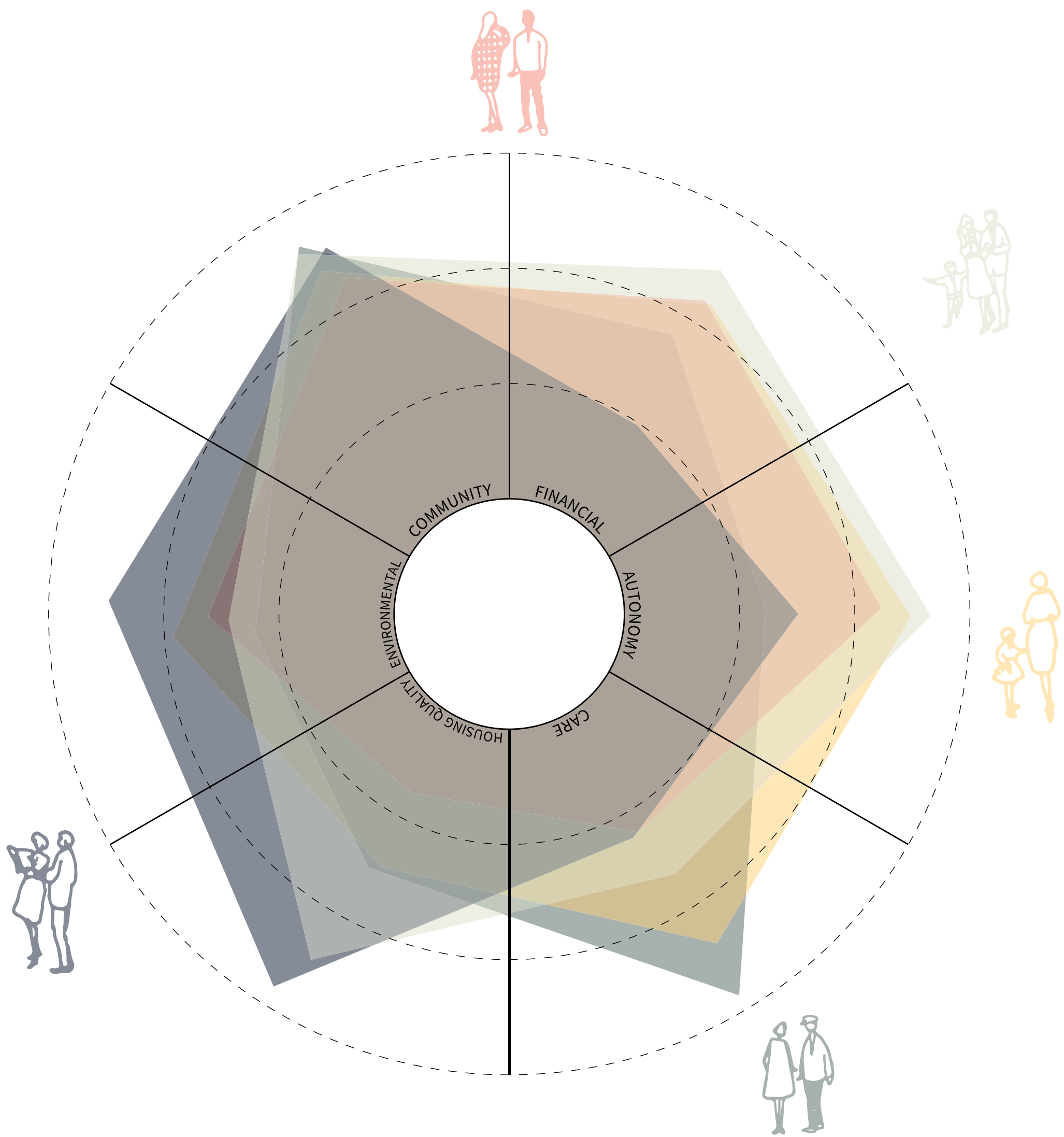


BUILDING A | old & new facade

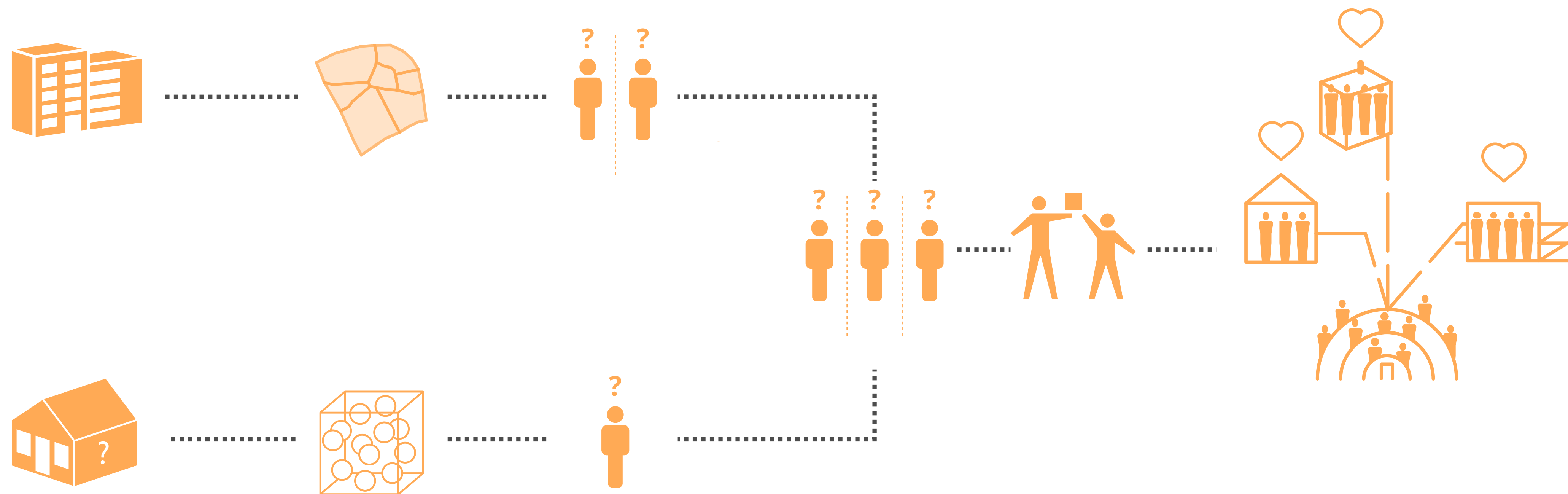


***HOW CAN CO-HOUSING BE DESIGNED TO REINVIGORATE AND
DENSIFY POST-WAR NEIGHBORHOODS IN THE NETHERLANDS?***

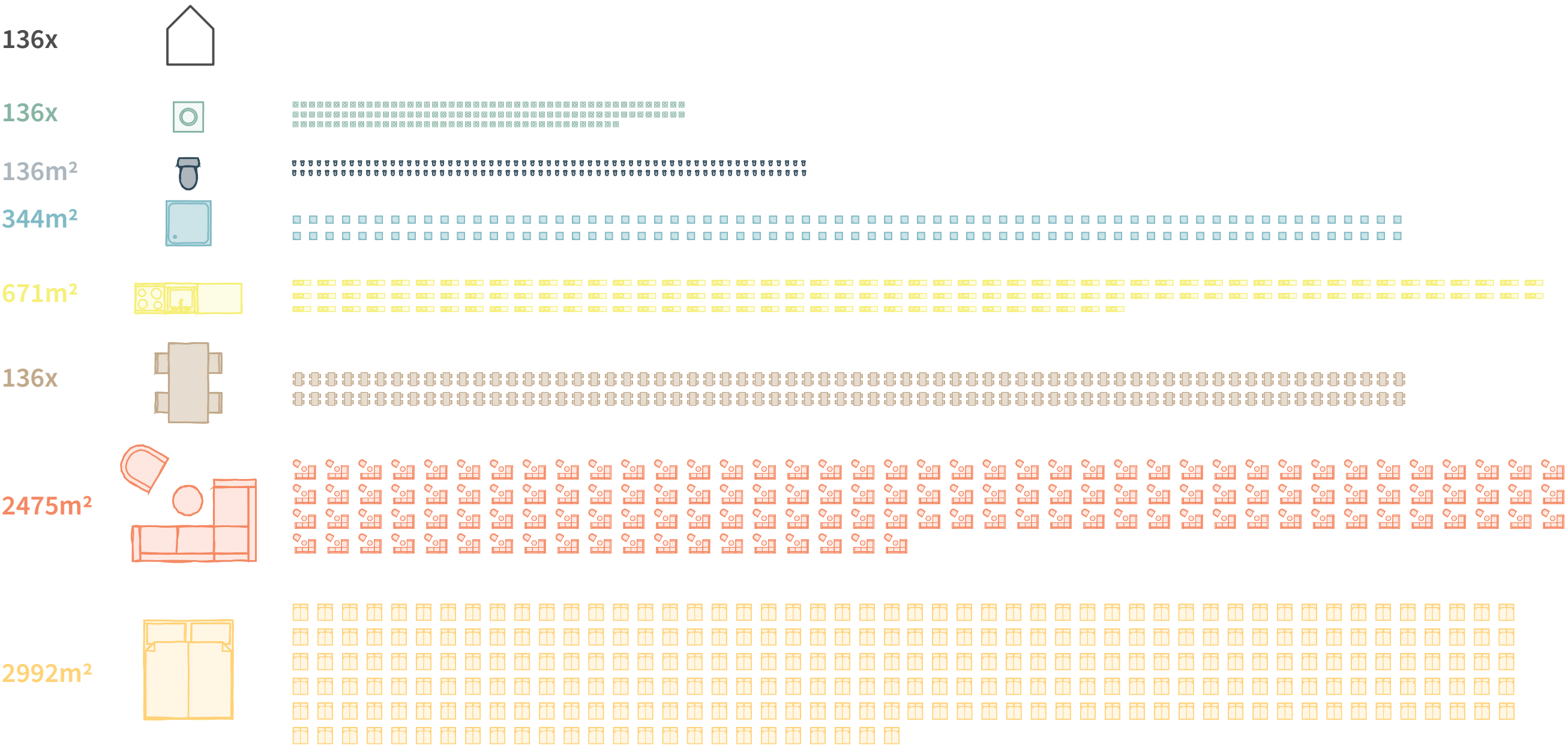
PROBLEM STATEMENT | diversification of target groups



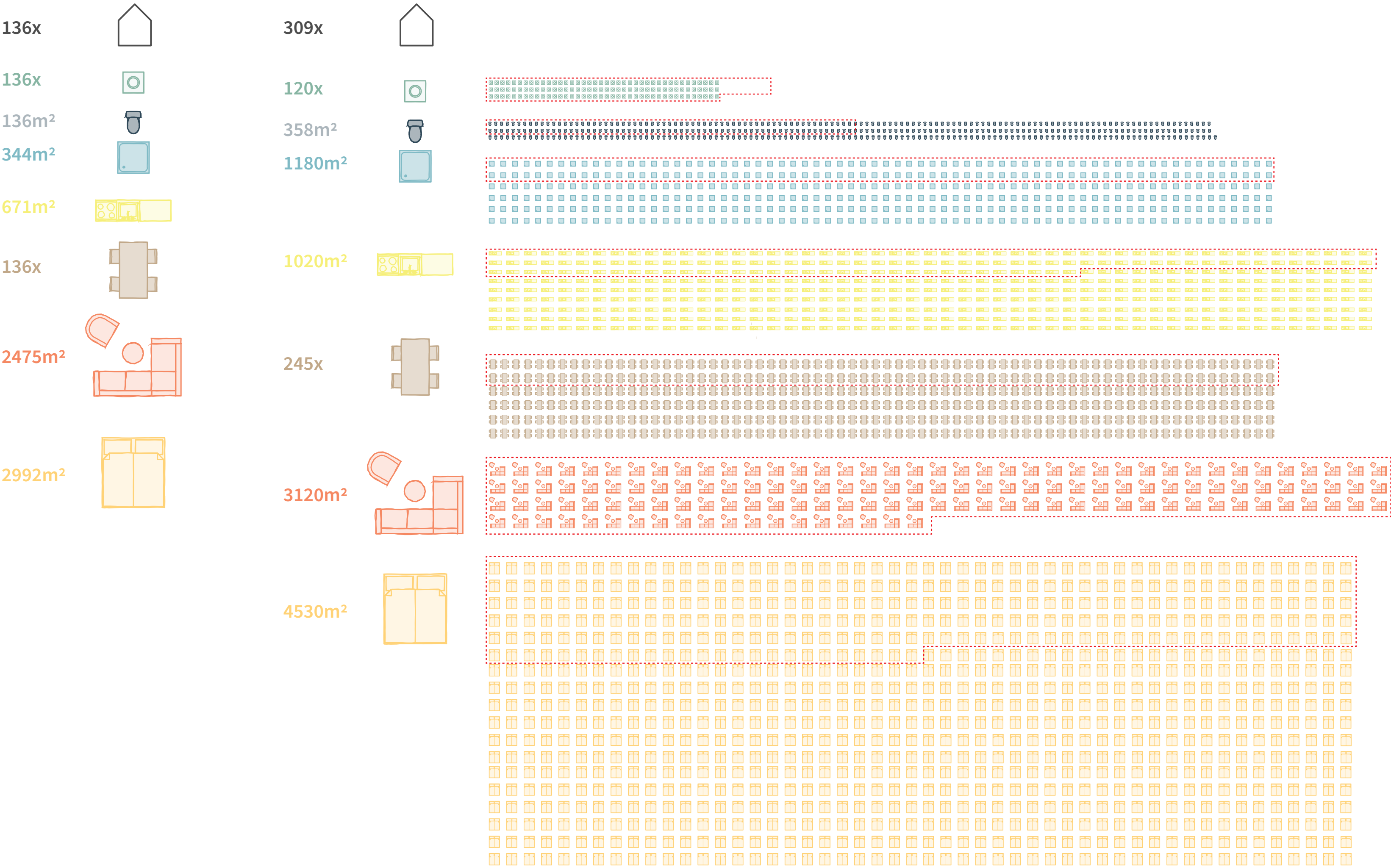
PROBLEM STATEMENT | a tool for mixing target groups

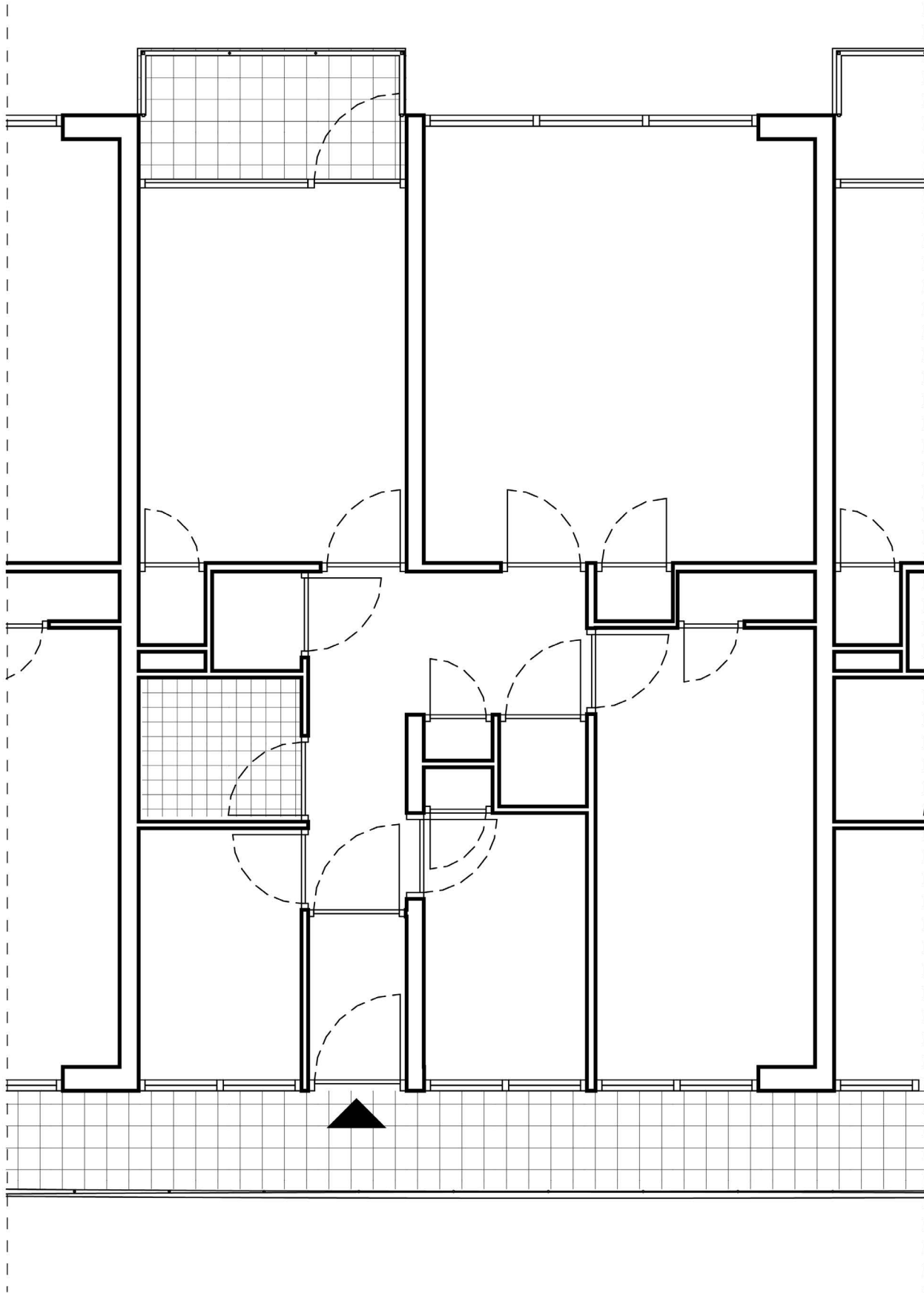


PROBLEM STATEMENT | space efficiency

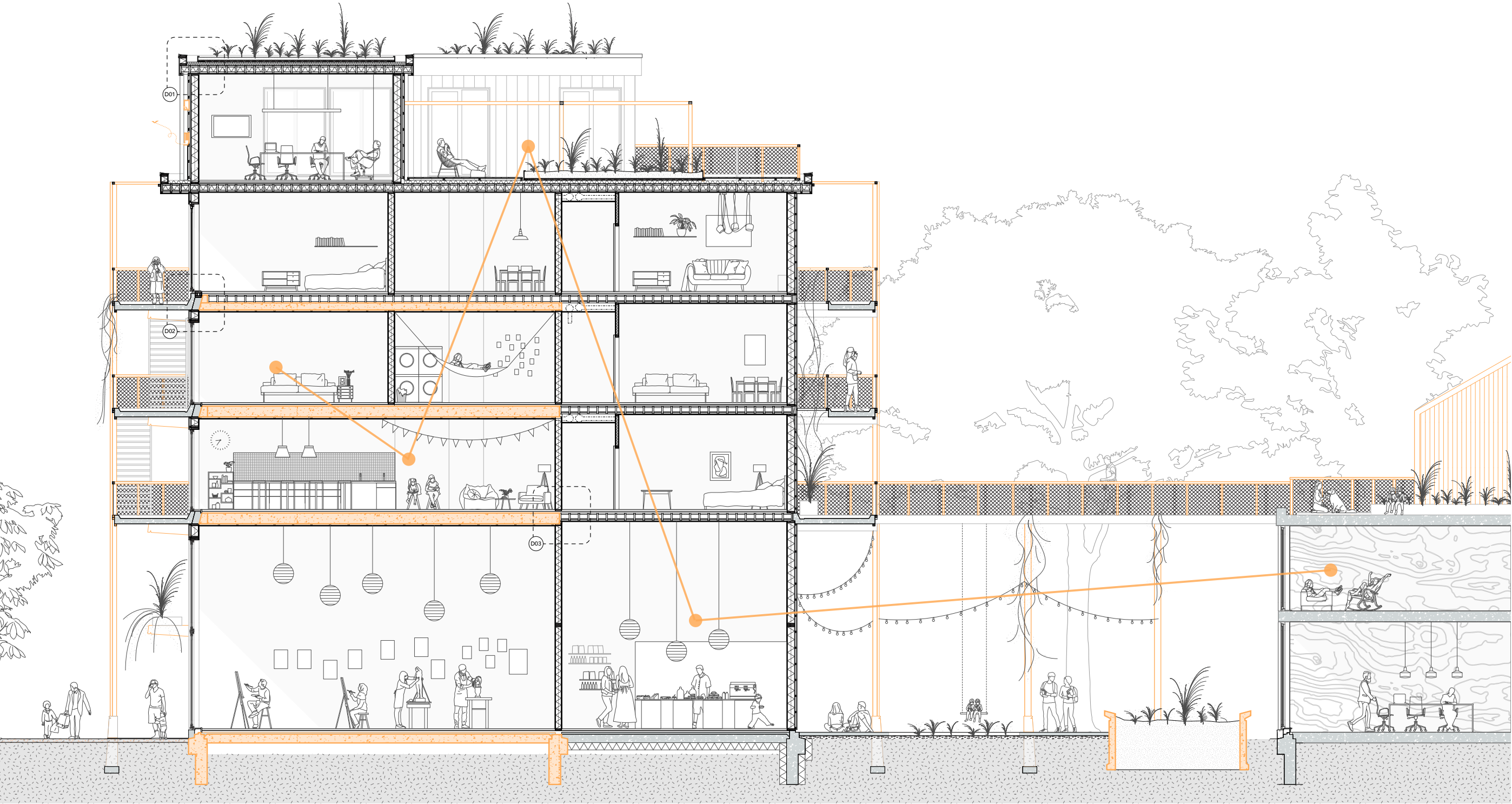
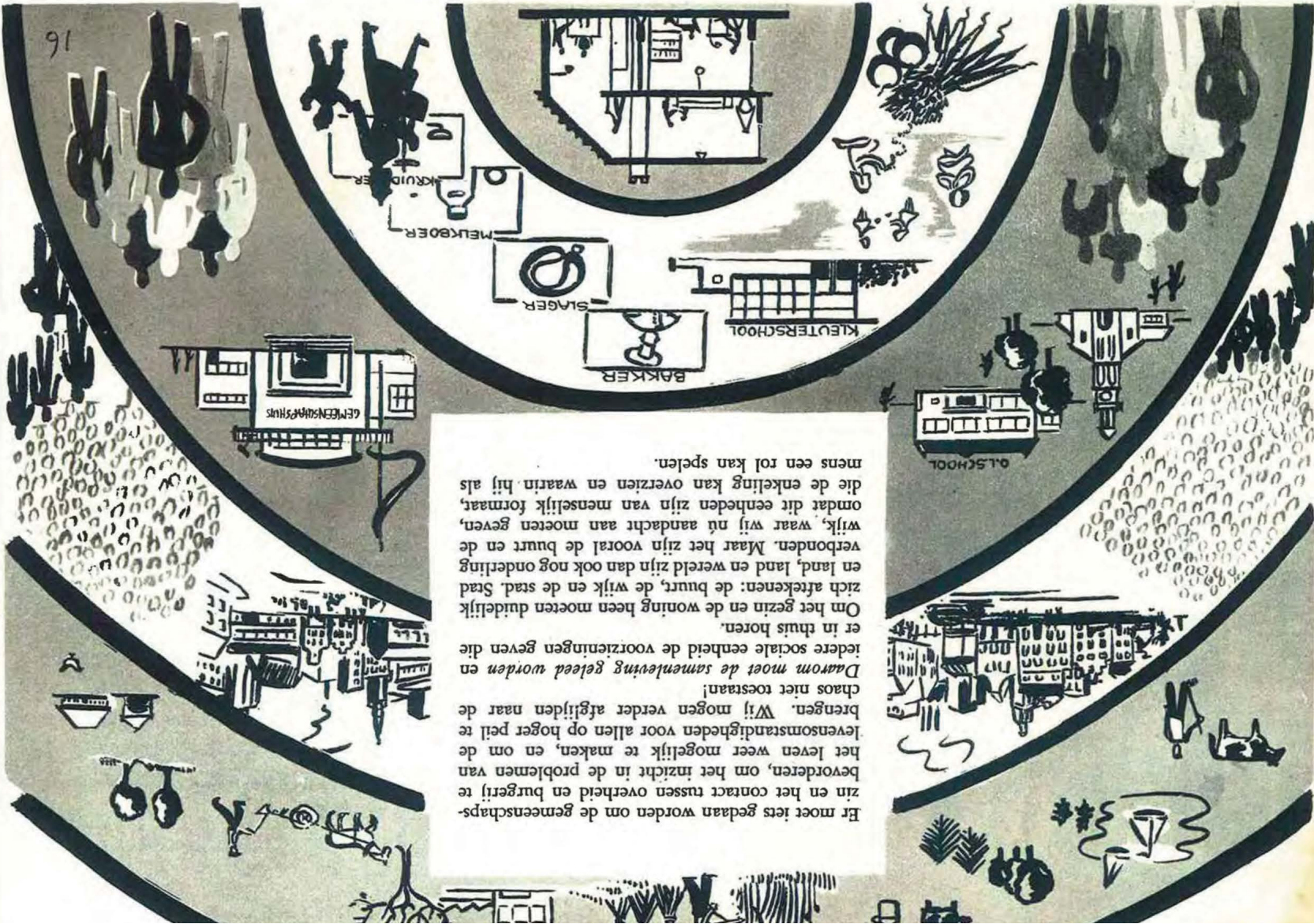
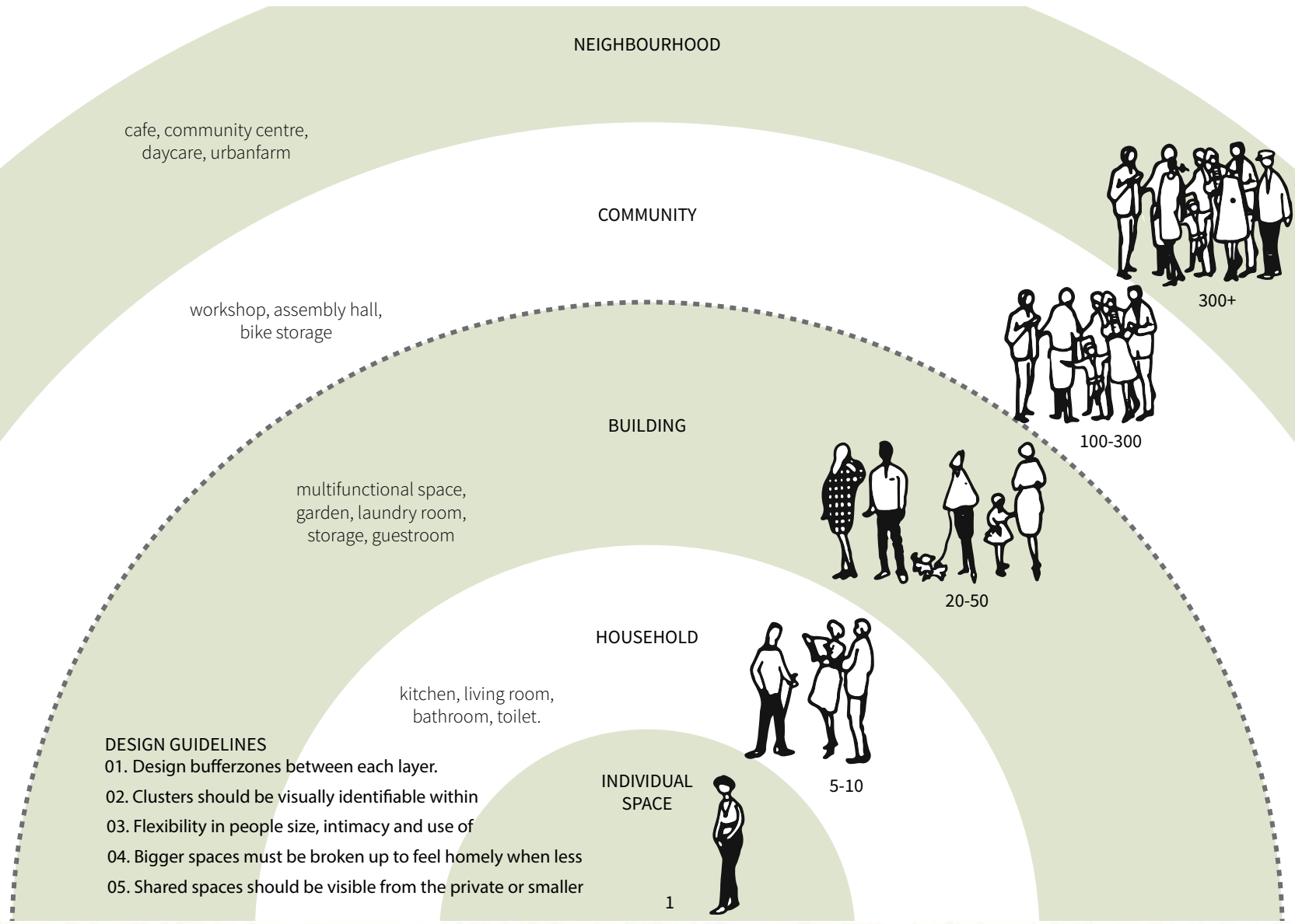


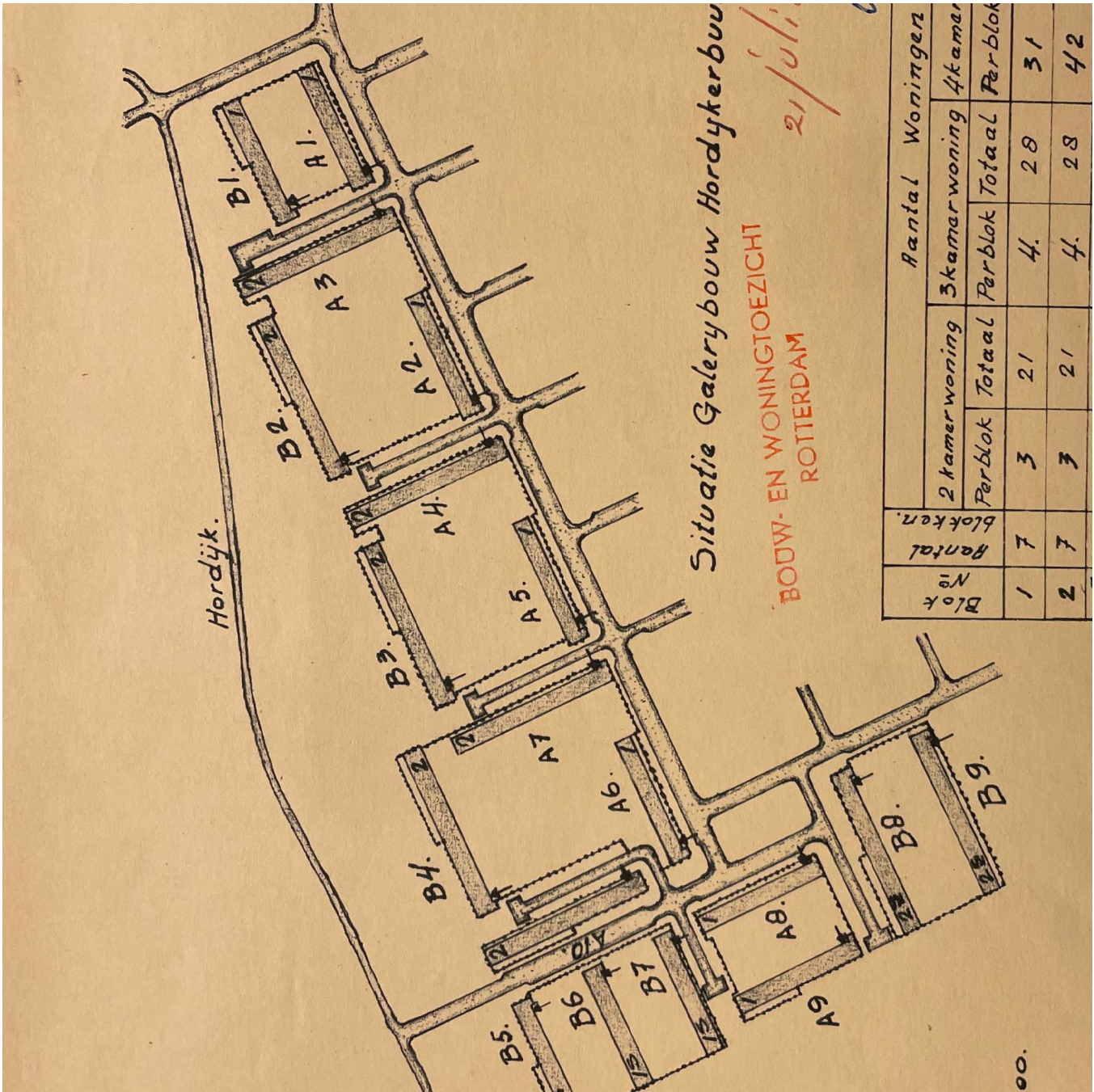
PROBLEM STATEMENT | space efficiency





PROBLEM STATEMENT | reviving the ‘wijkgedachte’





821 dwellings

136 dwellings in block D



609 dwellings
-212

136 dwellings in block D
+/-0



1382 dwellings
+773

309 dwellings D
+173

THANK YOU