

# GARDEN-FRESH CITY

Rethinking garden cities: designing a socially and environmentally sustainable future

Denise Maassen | 4956076

Architectural Engineering

Valuable Neighbourhoods

Tutors: Mo Smit & Paddy Tomesen

Delft University of Technology

P5 | 4 November 2021

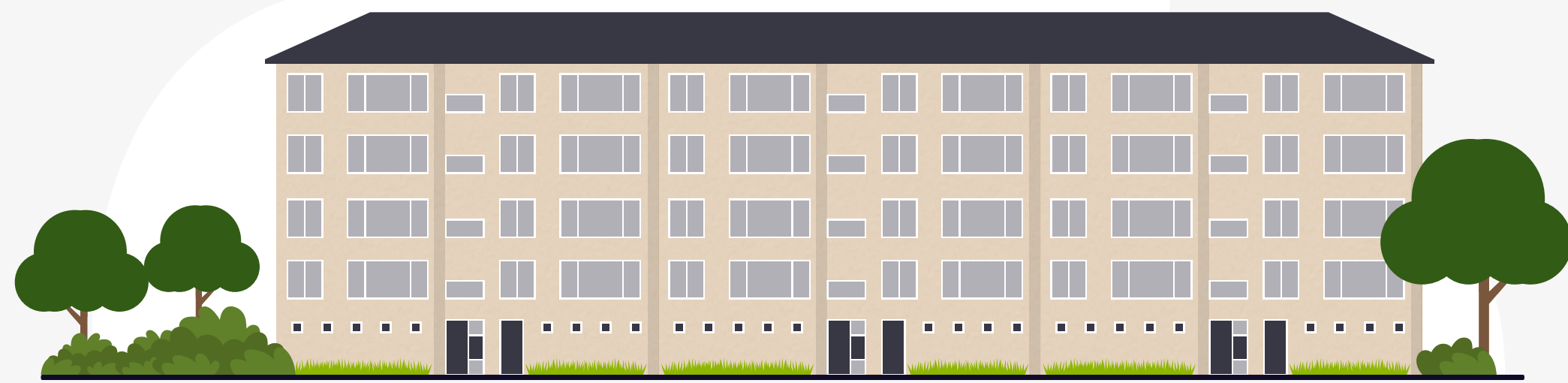


Vector created by pch.vector - [www.freepik.com](http://www.freepik.com)



# 1. SETTING

Western Garden Cities



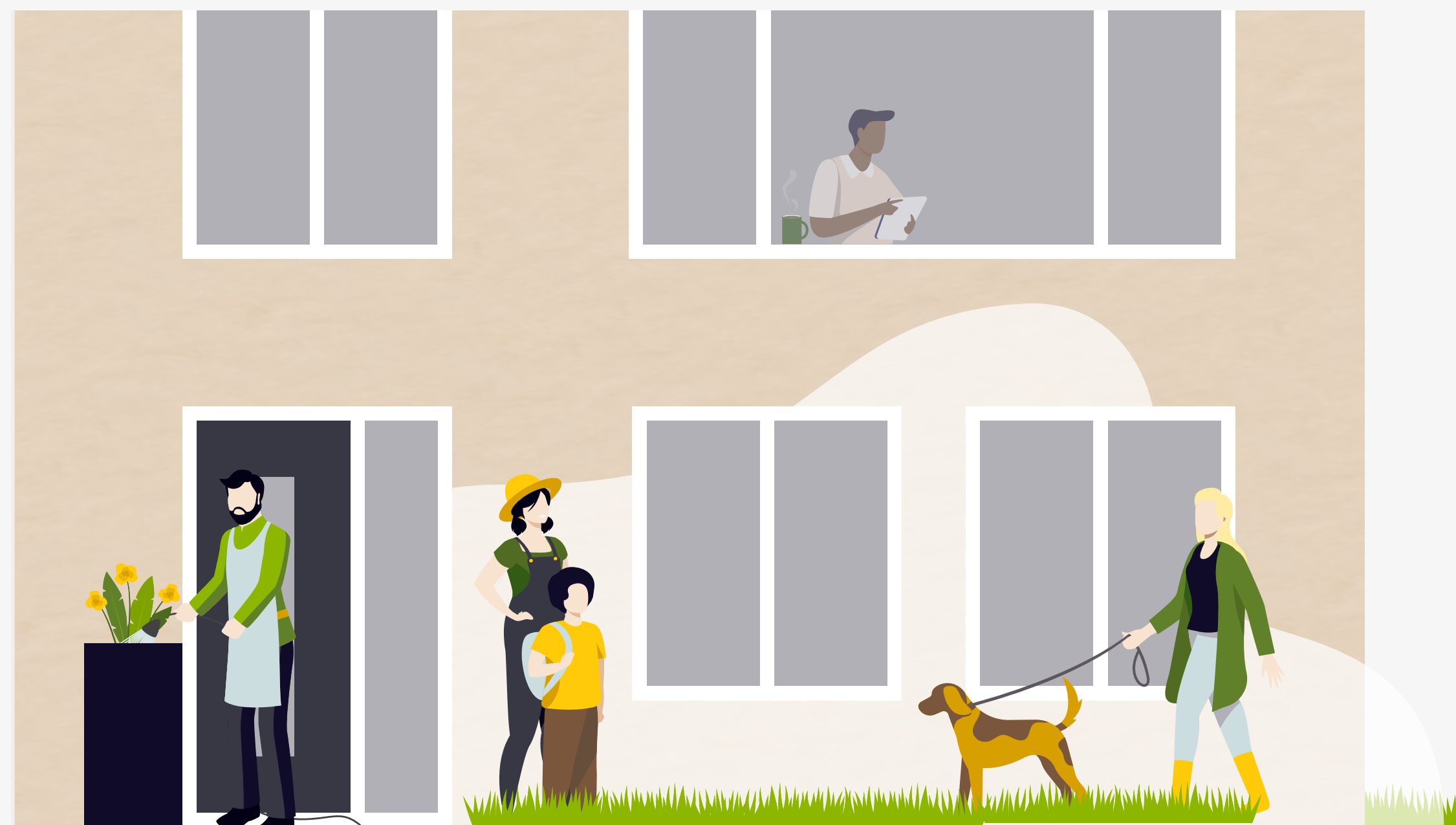
# 2. CONCEPT

Garden-Fresh City



# 3. FOCUS

Transition Zone



# 4. DESIGN

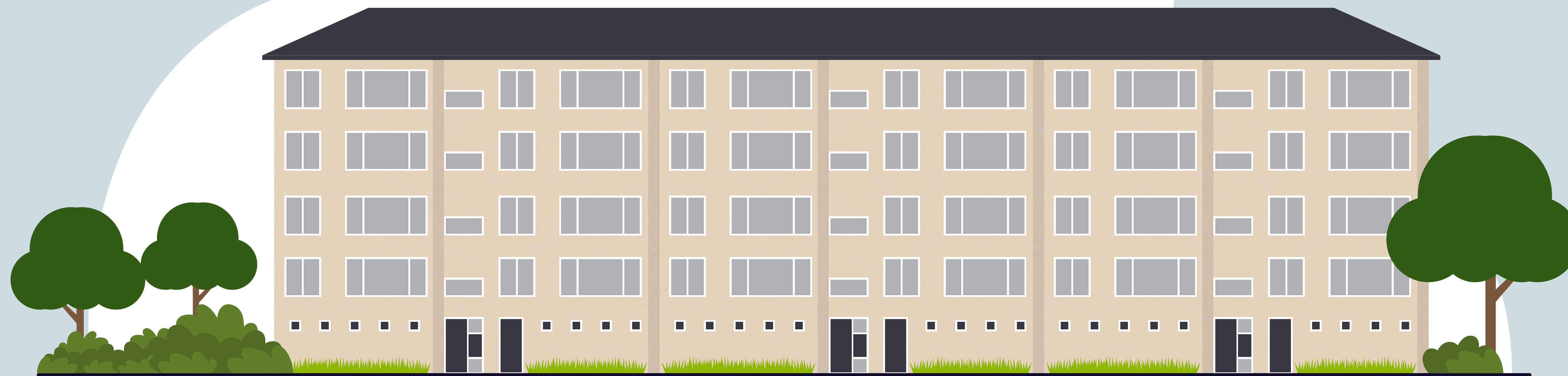
Neighbourhood NINE





I. SETTING:

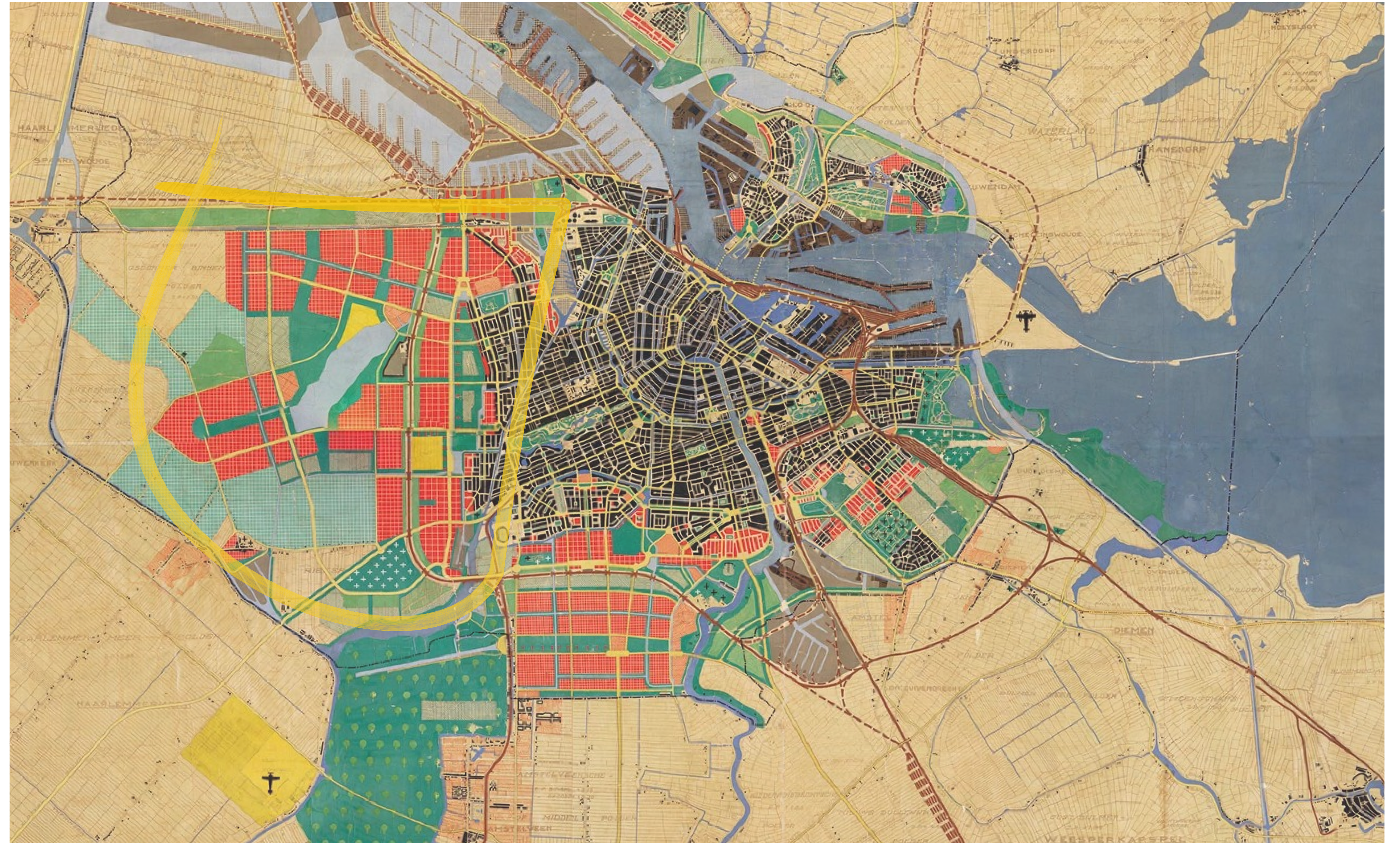
# WESTERN GARDEN CITIES





# WESTERN GARDEN CITIES

- General Extension Plan 1934
- modern design principles:  
light, air & space

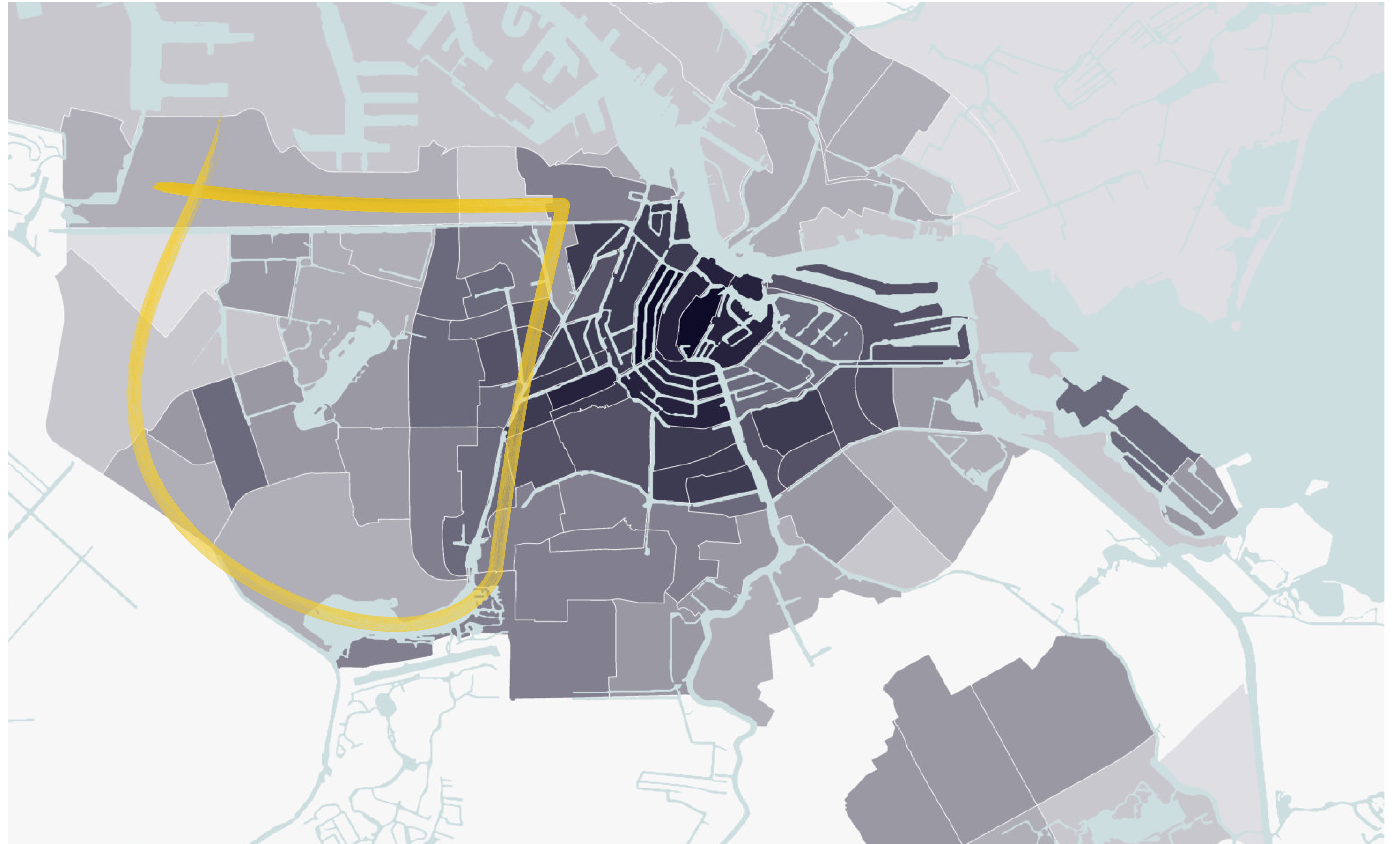




# BUILDING DENSITY

- lower floor space index in the Western Garden Cities
- national housing shortage
- growth within city borders: opportunity to densify

floor space index  
(ratio built m<sup>2</sup>/total m<sup>2</sup>)

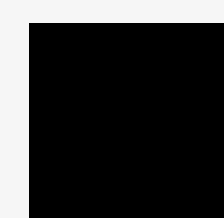




# LIVEABILITY

- the degree to which a place is suitable for living
- Western Garden Cities score low on socio-economic factors and building quality
- feelings of unsafety

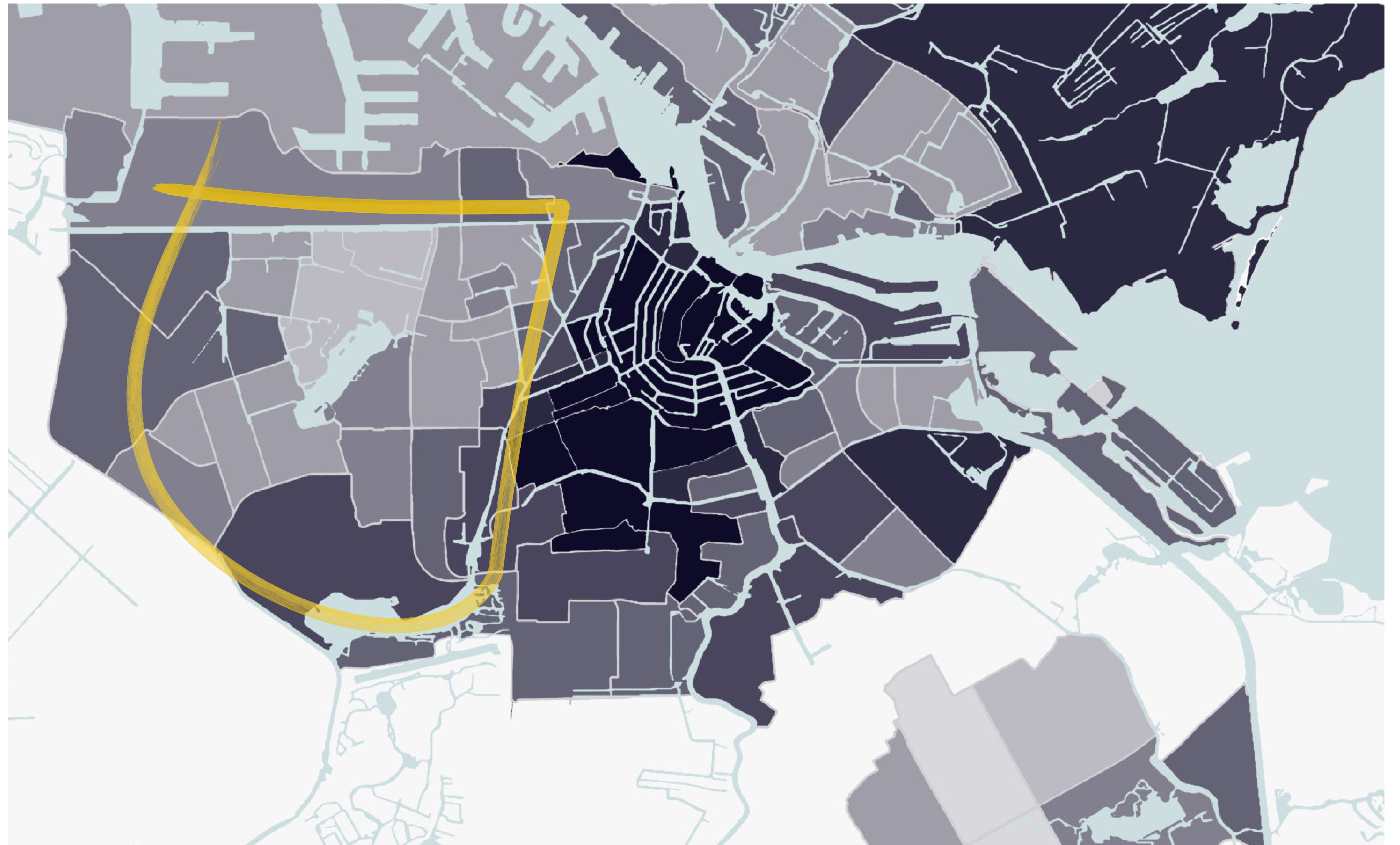
liveability index



excellent



poor





# NEIGHBOURHOOD NINE

- archetypal neighbourhood for Western Garden Cities
- constructed in 1953
- ‘portiekflats’:  
5-floor apartment blocks with common entrance and stairwell per 8 apartments

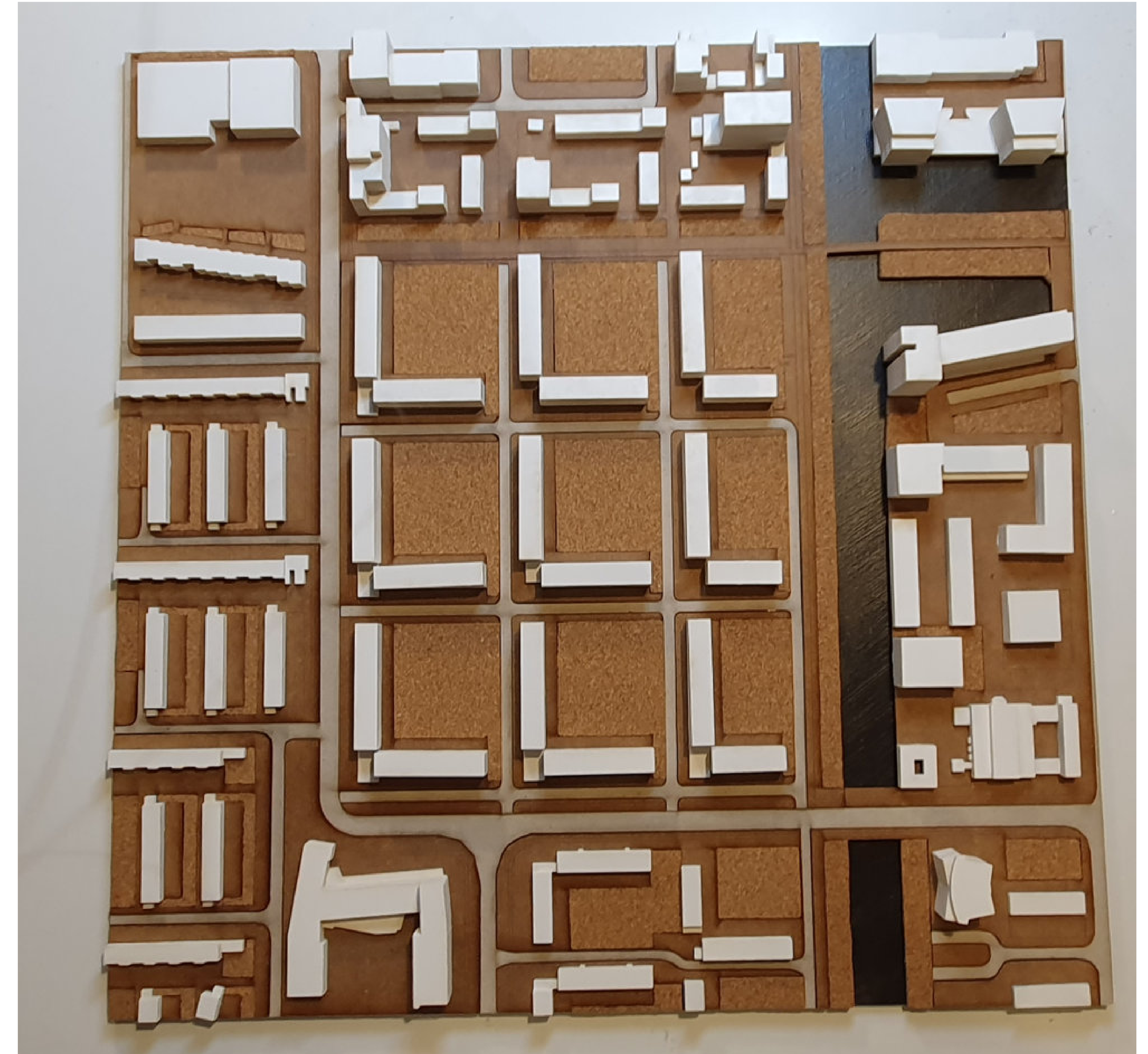
What causes low liveability?





# HOMOGENEITY

- repetition of building blocks
- 95% social housing, all owned by Stadgenoot
- hardly any variety in apartments
- 'buurt 9': lack of identity





# LACK OF CONNECTION

- closed plinth: limited visual connection between houses and the street
- lack of eyes on the street causes feelings unsafety and higher crime rates
- no opportunity to appropriate communal areas





# UNUSED GARDENS

- gardens are surrounded by fences without free access, due to unsafety
- consequently mostly unused
- primary function to look at it





# RENOVATED

- renovated in 1995, to extend lifespan by 25 years
- exterior insulation and further interventions on the interior
- no intrinsic changes to the design, weaknesses of the buildings remain
- current plans: exploitation for another 10 to 15 years, then demolition





2. CONCEPT:

GARDEN-FRESH CITY.





# GARDENS REDEFINED

- activate communal space
- food cultivation, share knowledge and recipes
- appropriation through private pottagers in front of homes
- strengthen connection between people and their neighbourhood





# INCREASED DIFFERENTIATION

- greater variety in housing stock
- facilitate to people from different socio-economic situations
- allow for appropriation to diversify street view





# LOCAL APPROACH

- aim to  
keep existing social fabric  
reuse local materials where possible





3. FOCUS:

TRANSITION ZONE





# TRANSITION ZONE

Research Question:

What is the potential of varying transformation strategies of residential building clusters in the Western Garden Cities to adapt their transition zone (between public and private space) and thereby improve the liveability of residents?





# TRANSITION ZONE

To compare the social and physical environment of 4 recently transformed (renovated or rebuilt) neighbourhoods in the Western Garden Cities and juxtapose perceived liveability of residents

high rise - new built

high rise - renovated

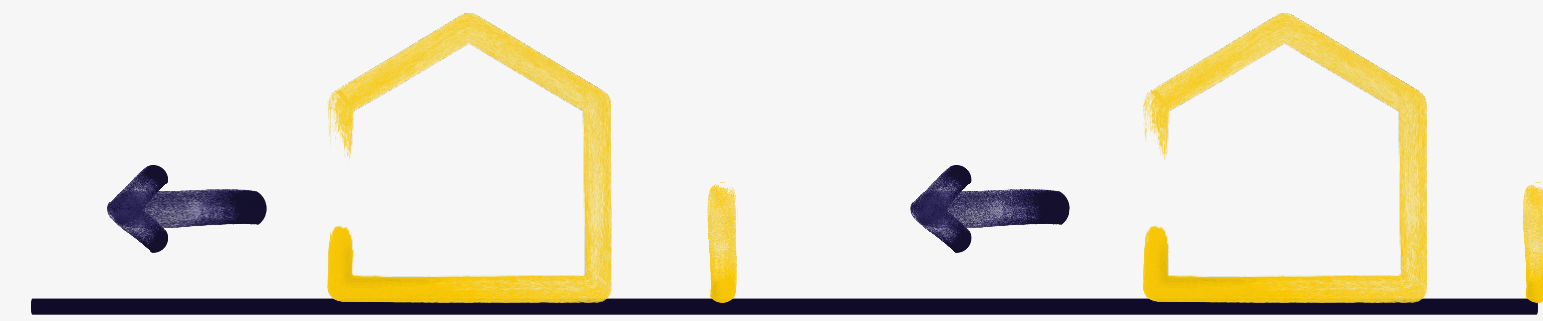
low rise - new built

low rise - renovated





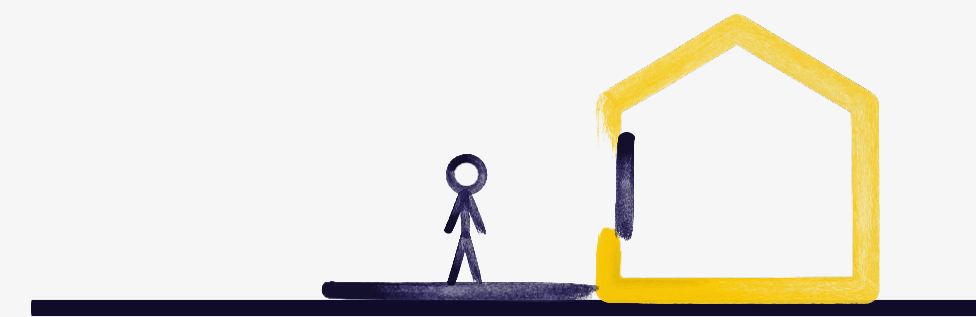
# TRANSITION ZONE



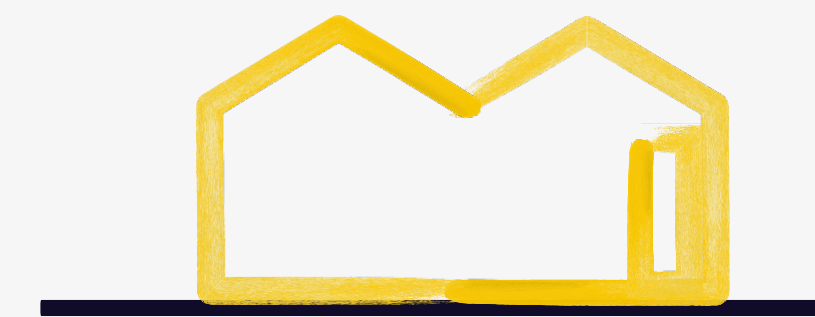
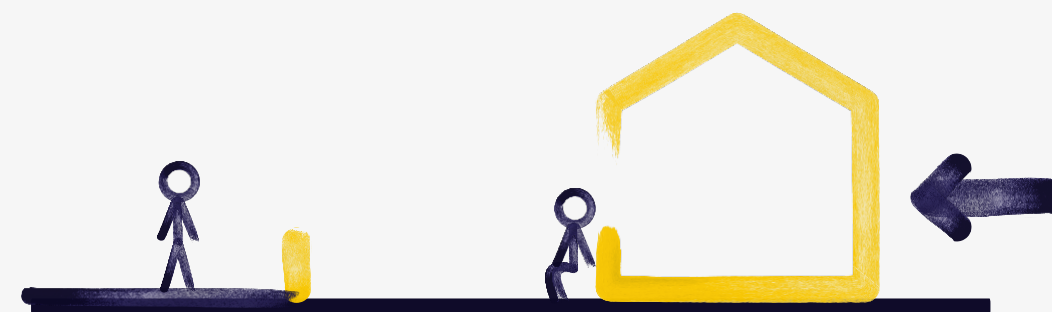
- buildings face each other



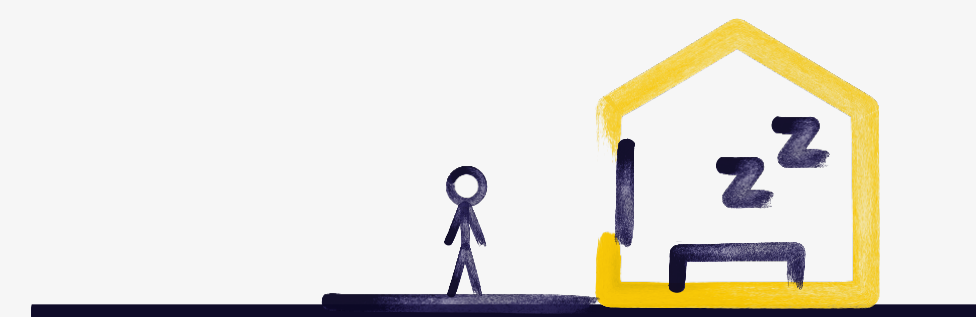
- openings in the plinth



- space for appropriation



- distinctive entrance



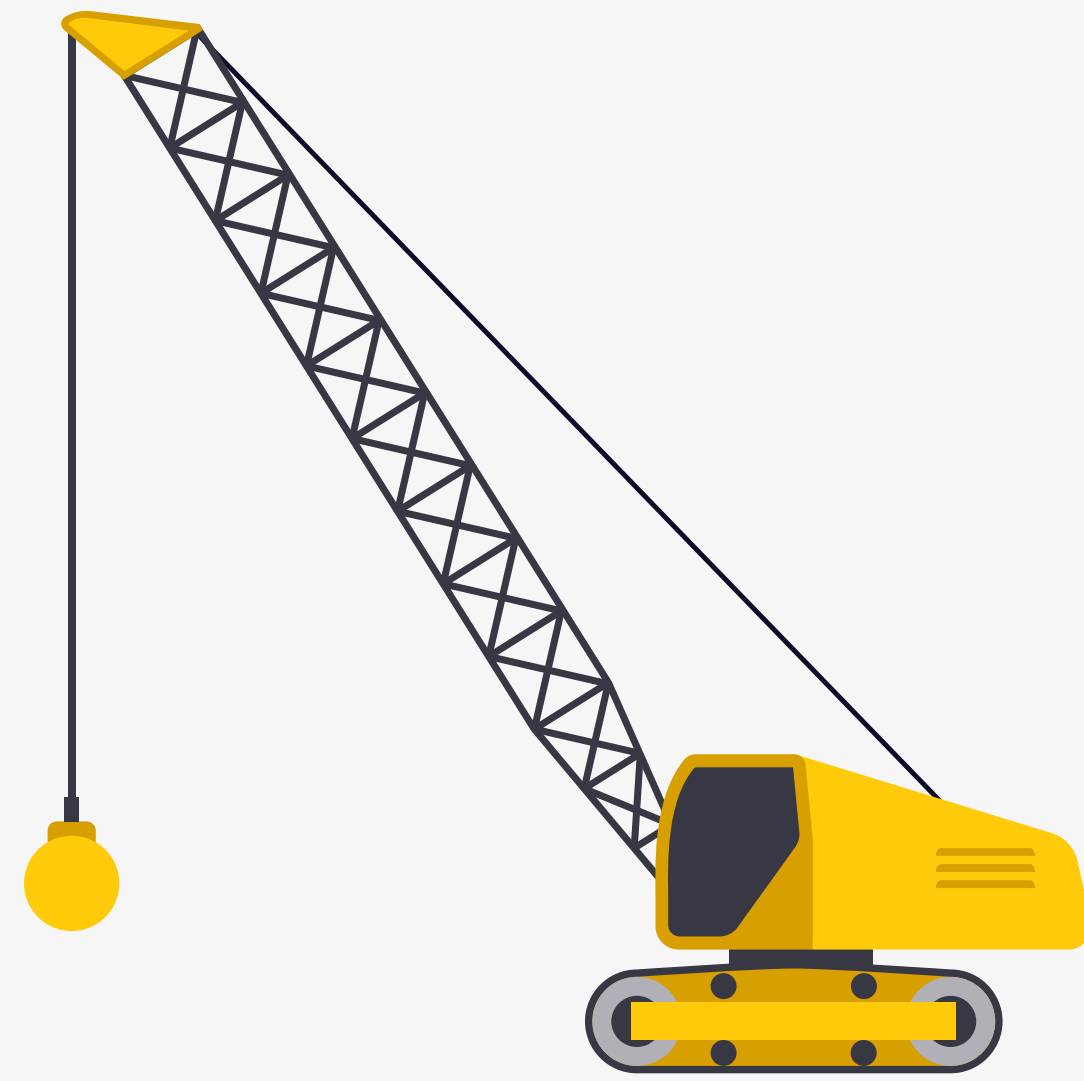
- kitchen adjacent to street



- remove obstructions

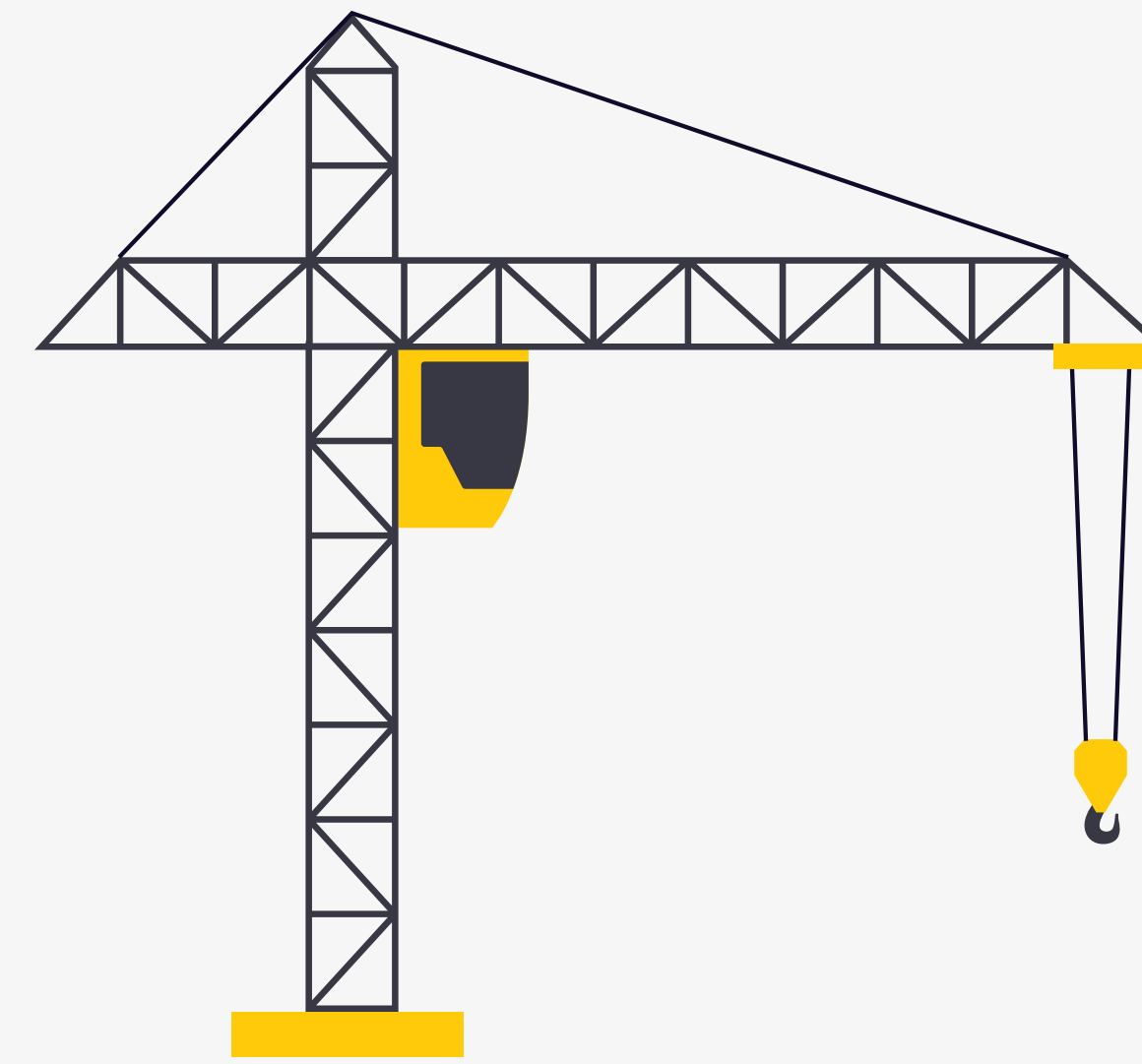


# TRANSITION ZONE



demolition

vs



renovation



4. DESIGN:

NEIGHBOURHOOD NINE





# NEIGHBOURHOOD

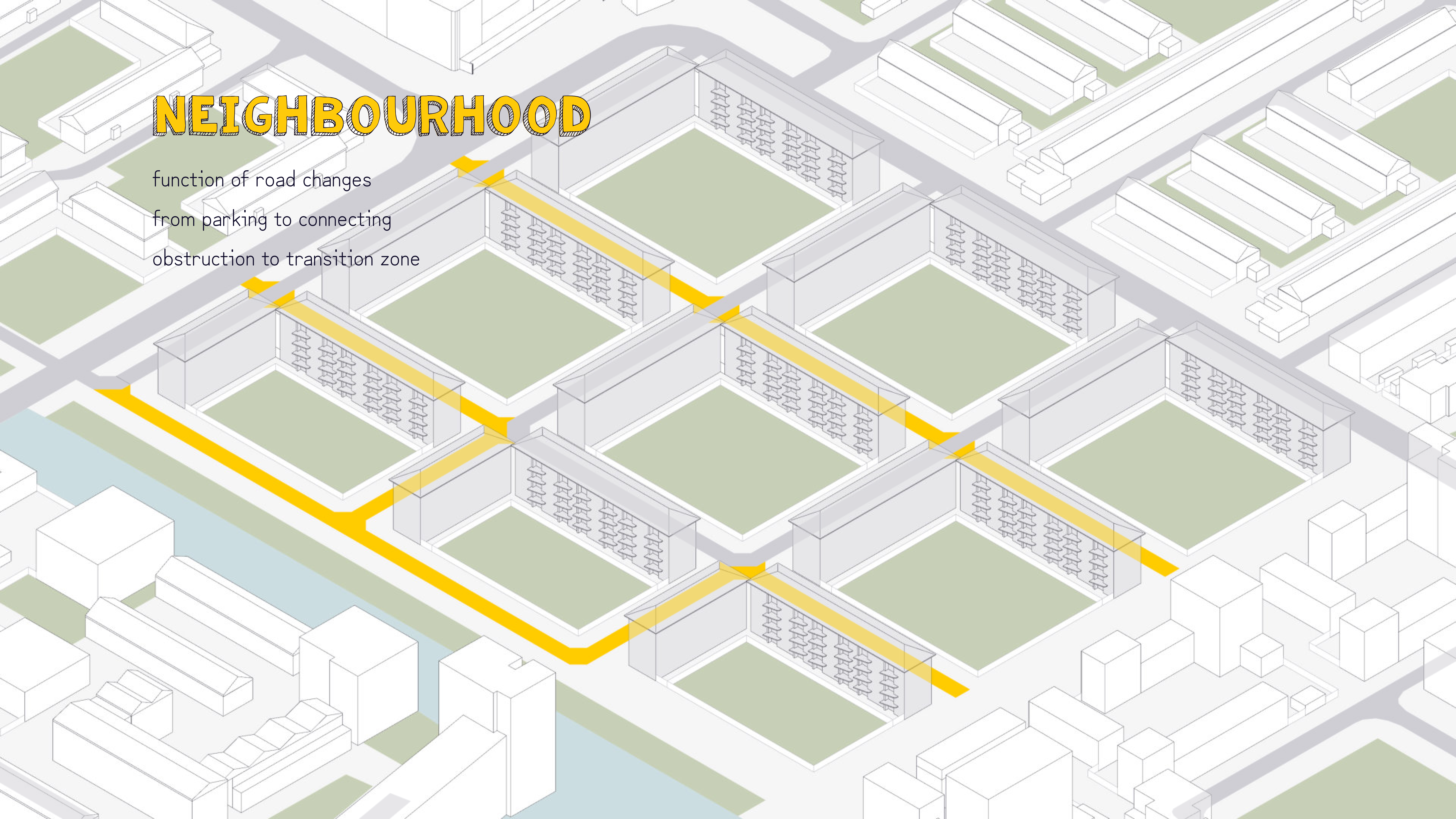
existing situation





# NEIGHBOURHOOD

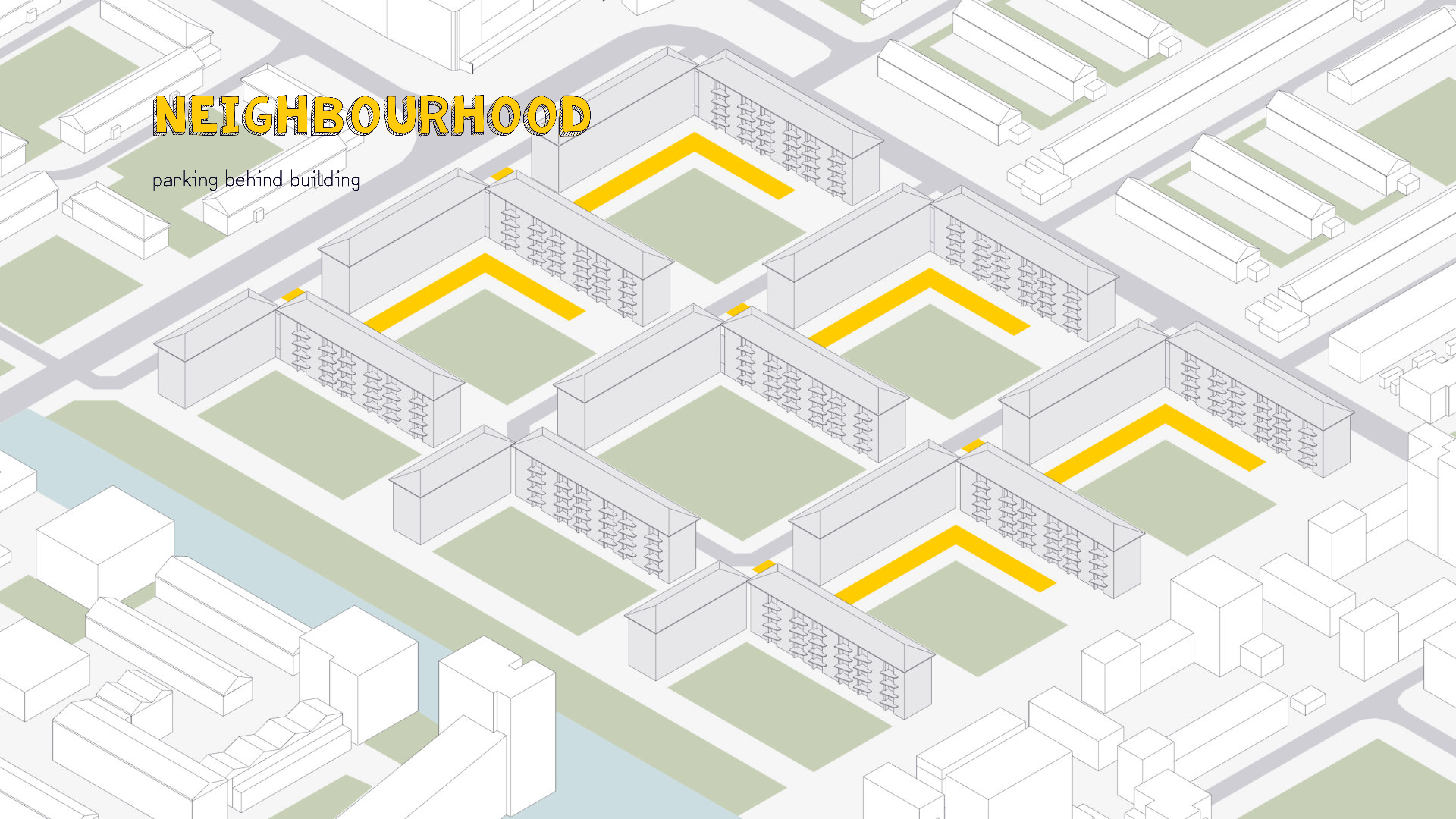
function of road changes  
from parking to connecting  
obstruction to transition zone





# NEIGHBOURHOOD

parking behind building





# NEIGHBOURHOOD

shifting commercial functions





# NEIGHBOURHOOD

commercial boulevard





# NEIGHBOURHOOD

towers replace the old shops

provide access to existing flats

small studio apartments

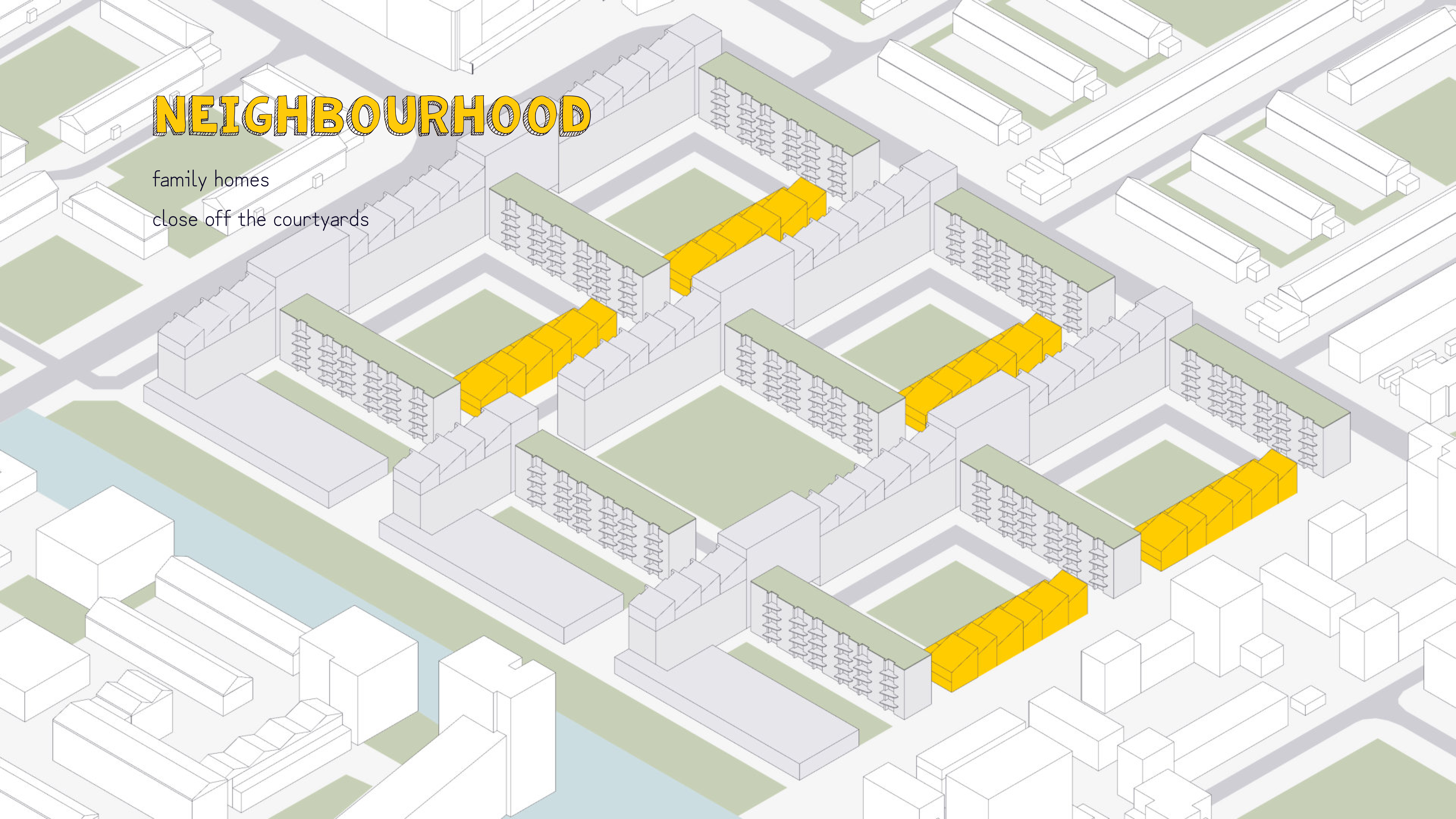




# NEIGHBOURHOOD

family homes

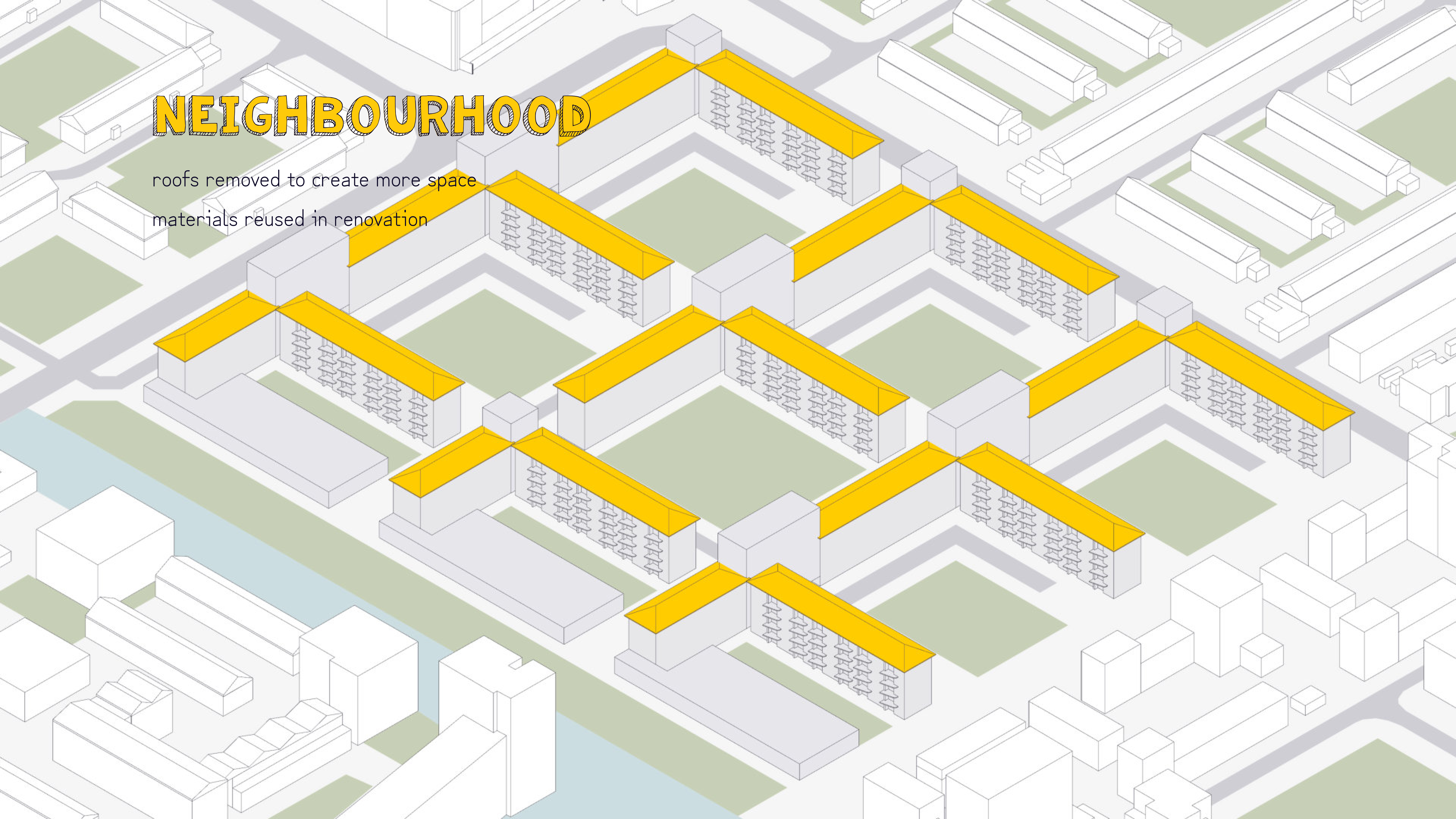
close off the courtyards





# NEIGHBOURHOOD

roofs removed to create more space  
materials reused in renovation





# NEIGHBOURHOOD

top up on the existing flats

larger apartments

help with circularity





# NEIGHBOURHOOD

increased FSI of 72%

differentiation in spaces

variety housing stock



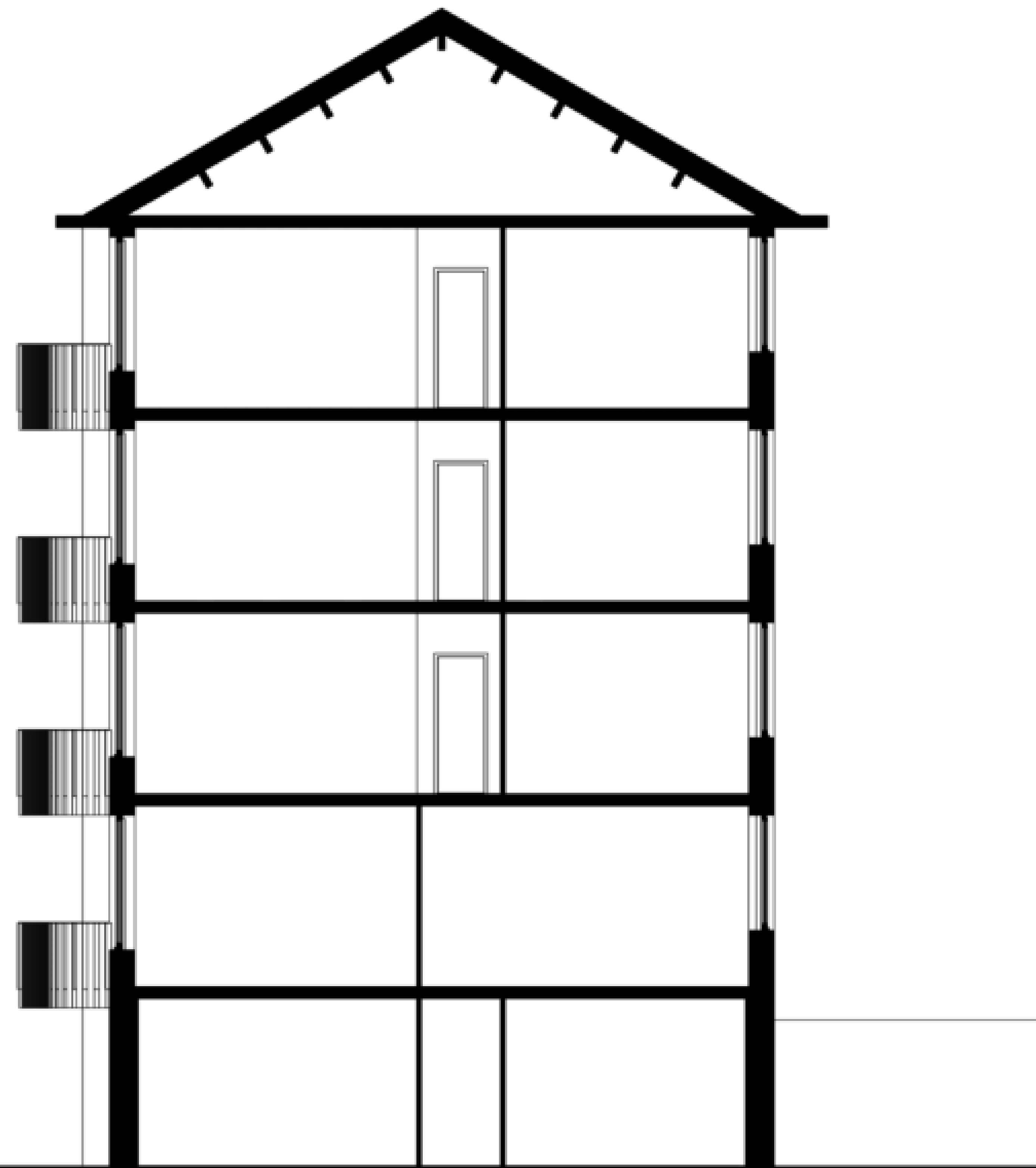


# FRAGMENT



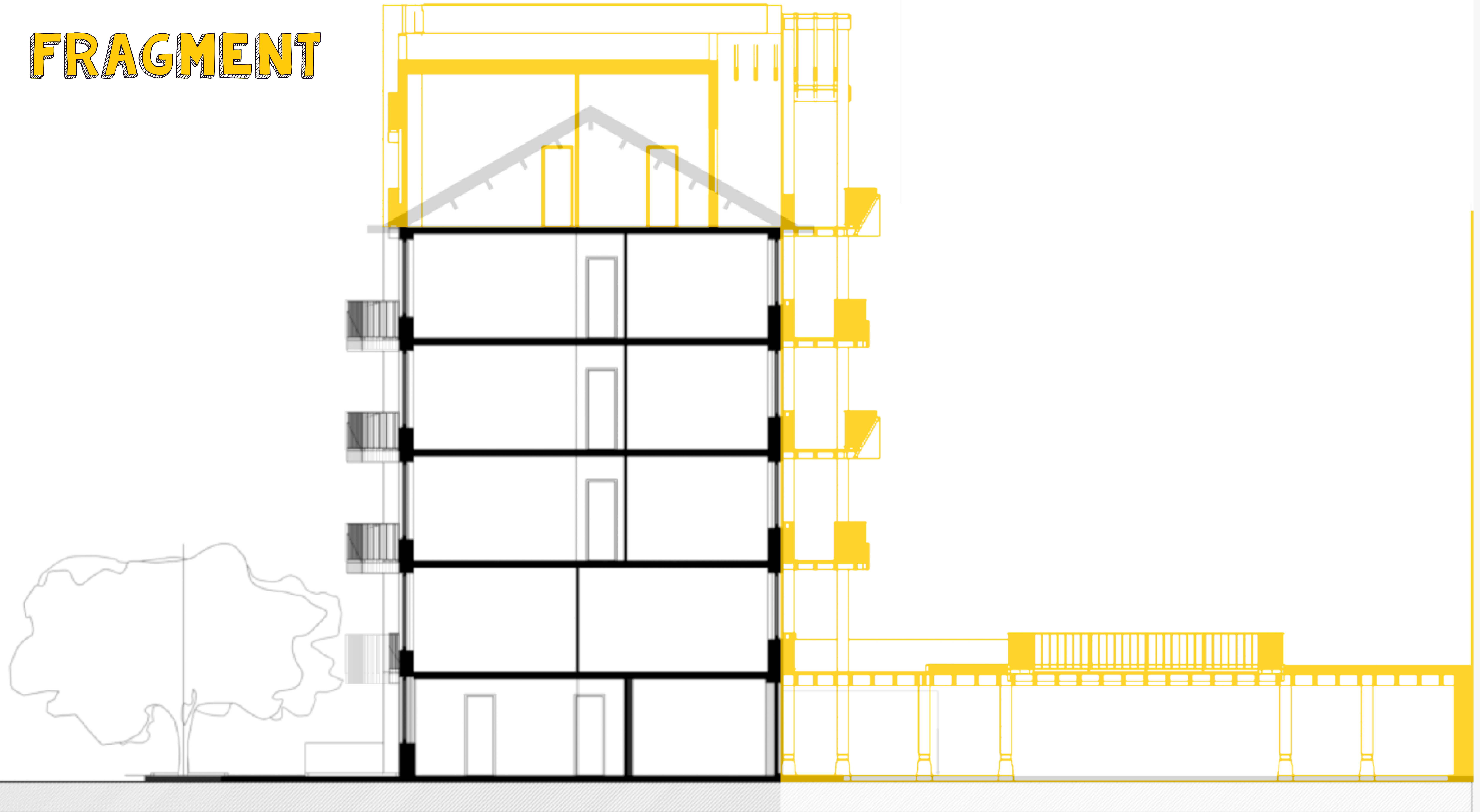


# FRAGMENT



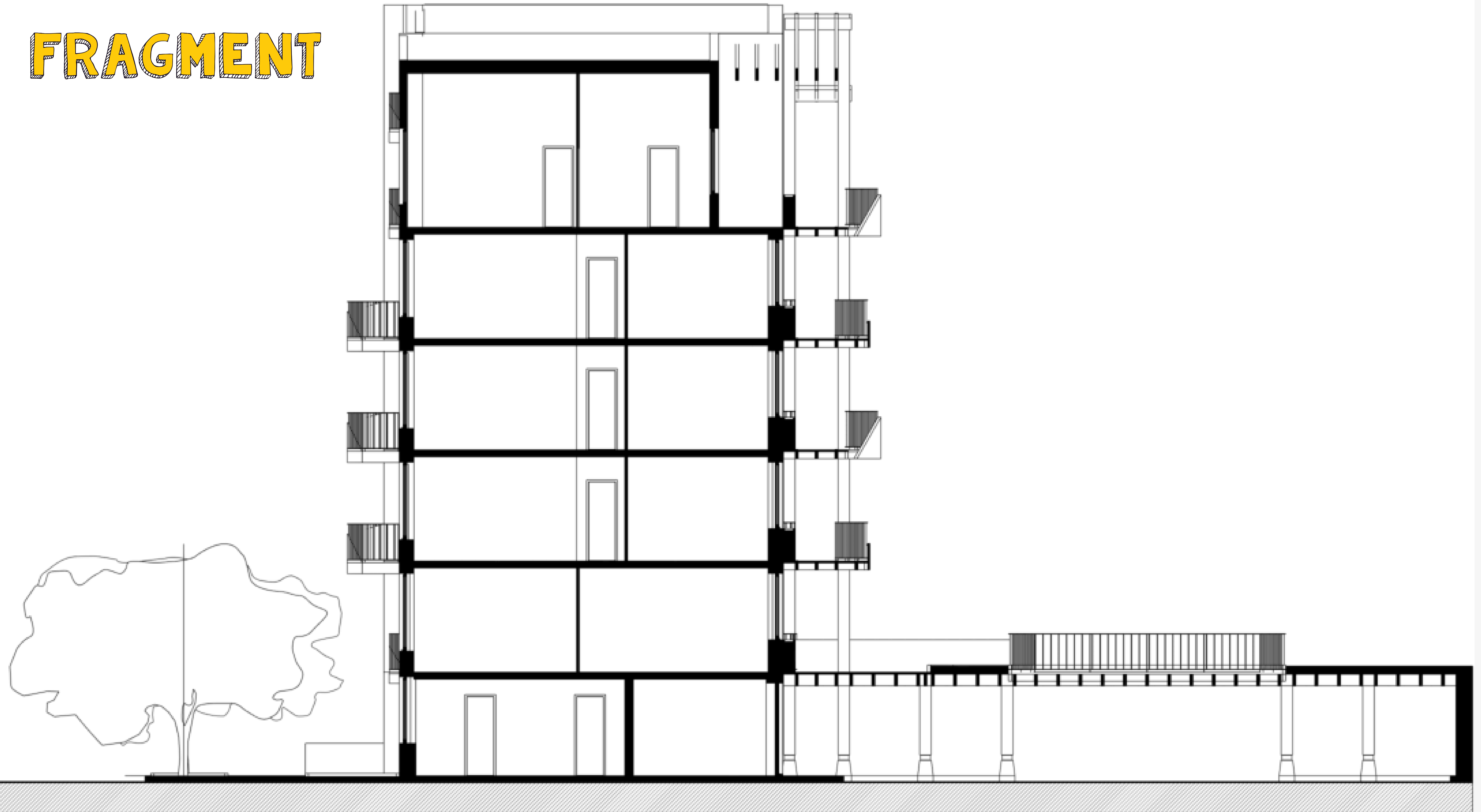


# FRAGMENT





# FRAGMENT





# REUSING MATERIALS

Roof tiles used to make new plaster  
combination with lime  
warm character and water resistant  
no chemical additives needed

Old beams used for shou sugi ban cladding





# GARDENS REDEFINED

Gardens in different scales, show

Deciduous plants offer shade in summer

In winter sun can shine through





# ENERGY

## Insulation

Insulation from 1995 not to current standard

Rc-value of  $3.1\text{m}^2\text{K/W}$ , minimum of  $4.7\text{m}^2\text{K/W}$

## PV Panels

Used to supply electrical energy for whole building

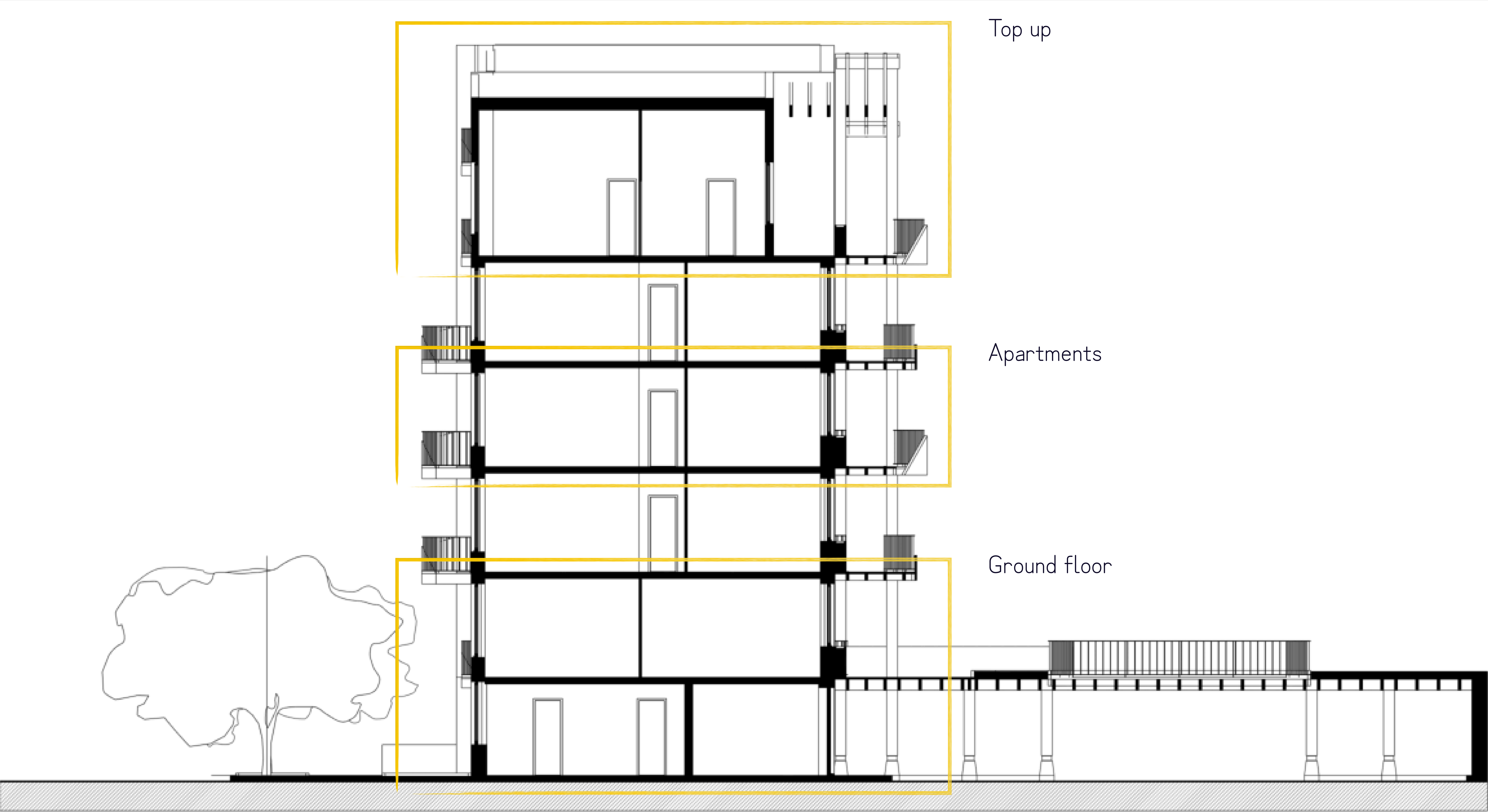
Decreases overall energy demand of neighbourhood

## Ventilation

Problems with mold due to insufficient ventilation

Natural ventilation decreased after insulation





Top up

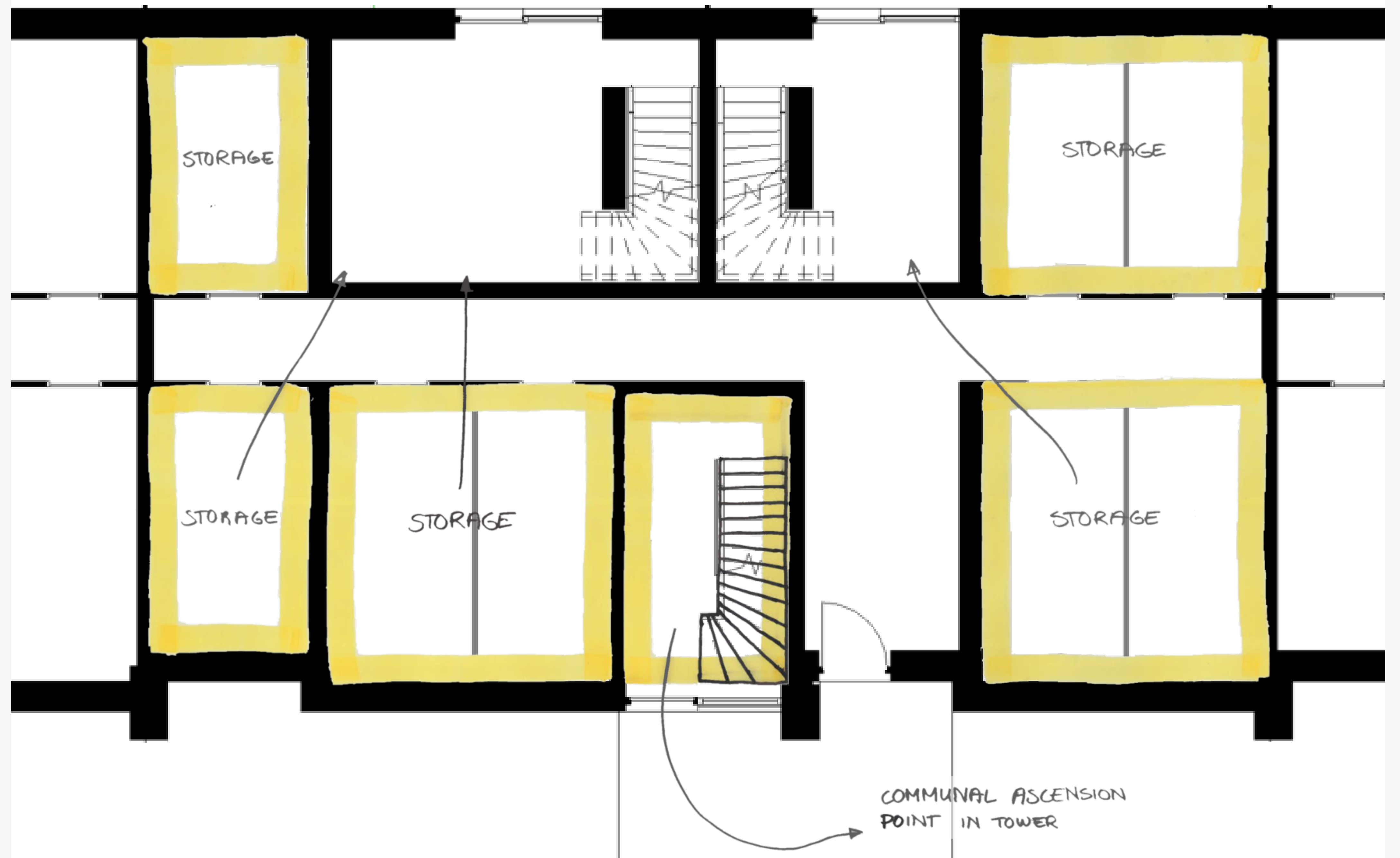
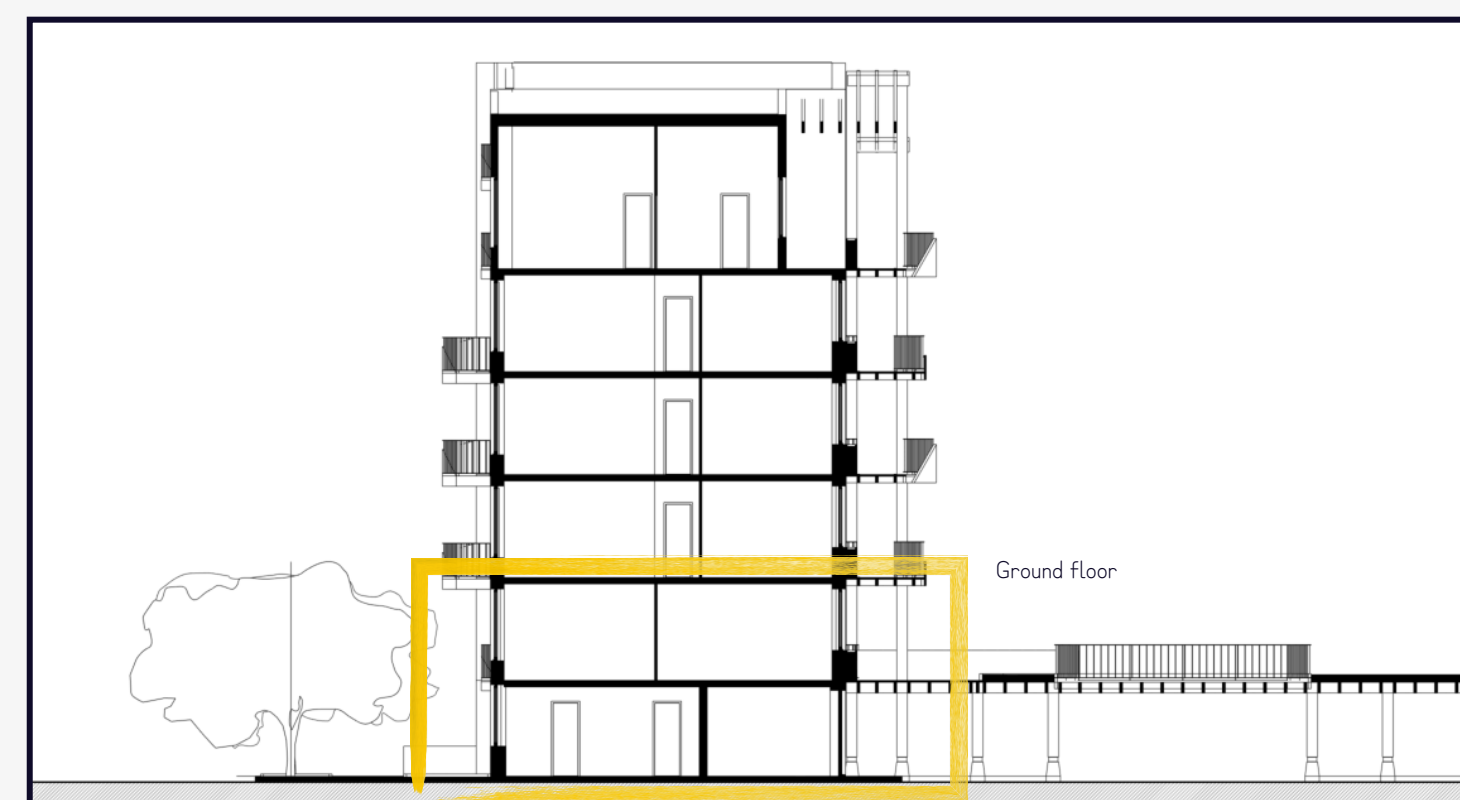
Apartments

Ground floor



# GROUND FLOOR

Plan old situation





# GROUND FLOOR

Plan new situation





# GROUND FLOOR

Elevation old sitation





# GROUND FLOOR

Elevation new situation





# GROUND FLOOR





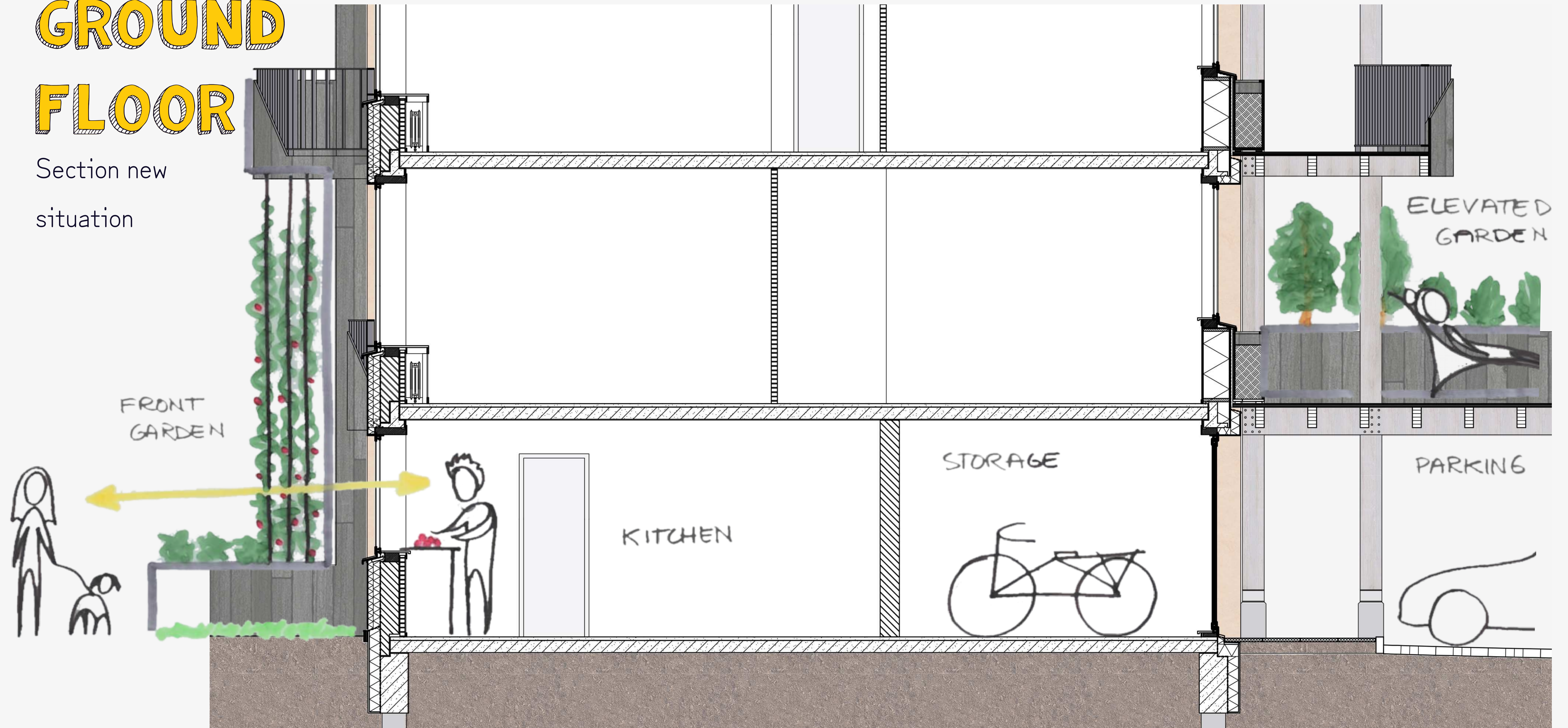
# GROUND FLOOR





# GROUND FLOOR

Section new  
situation





# GROUND FLOOR

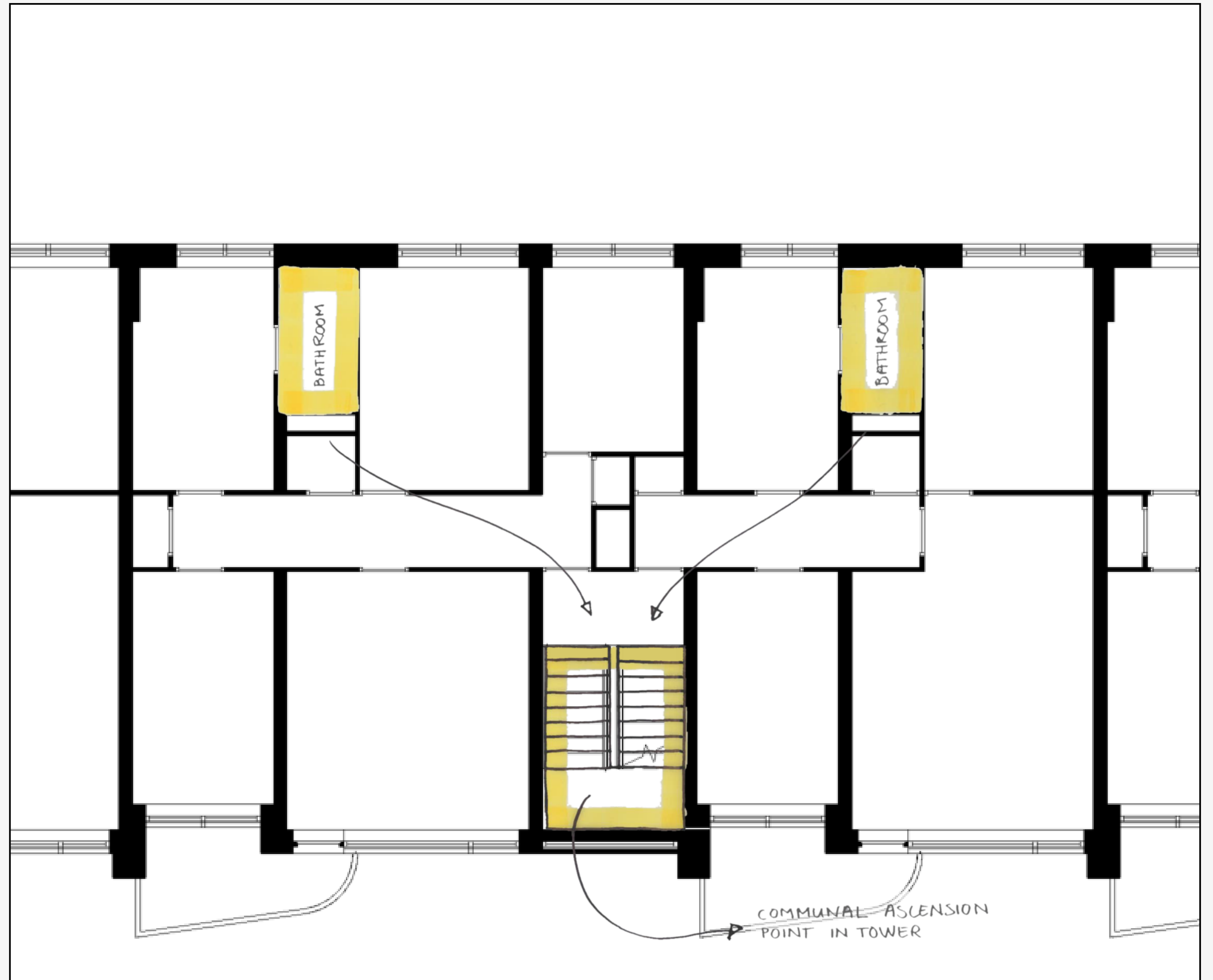
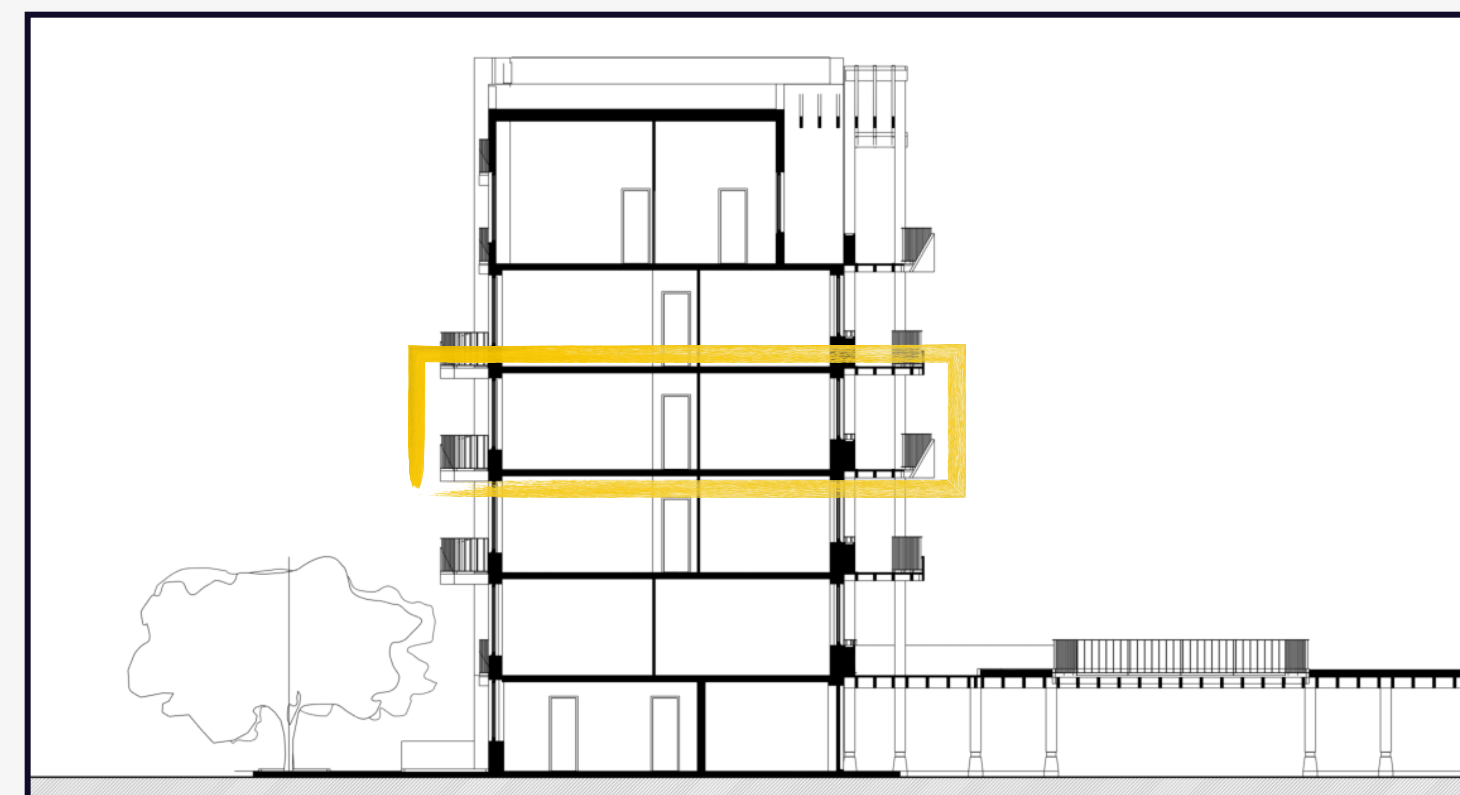
Section new  
situation





# APARTMENTS

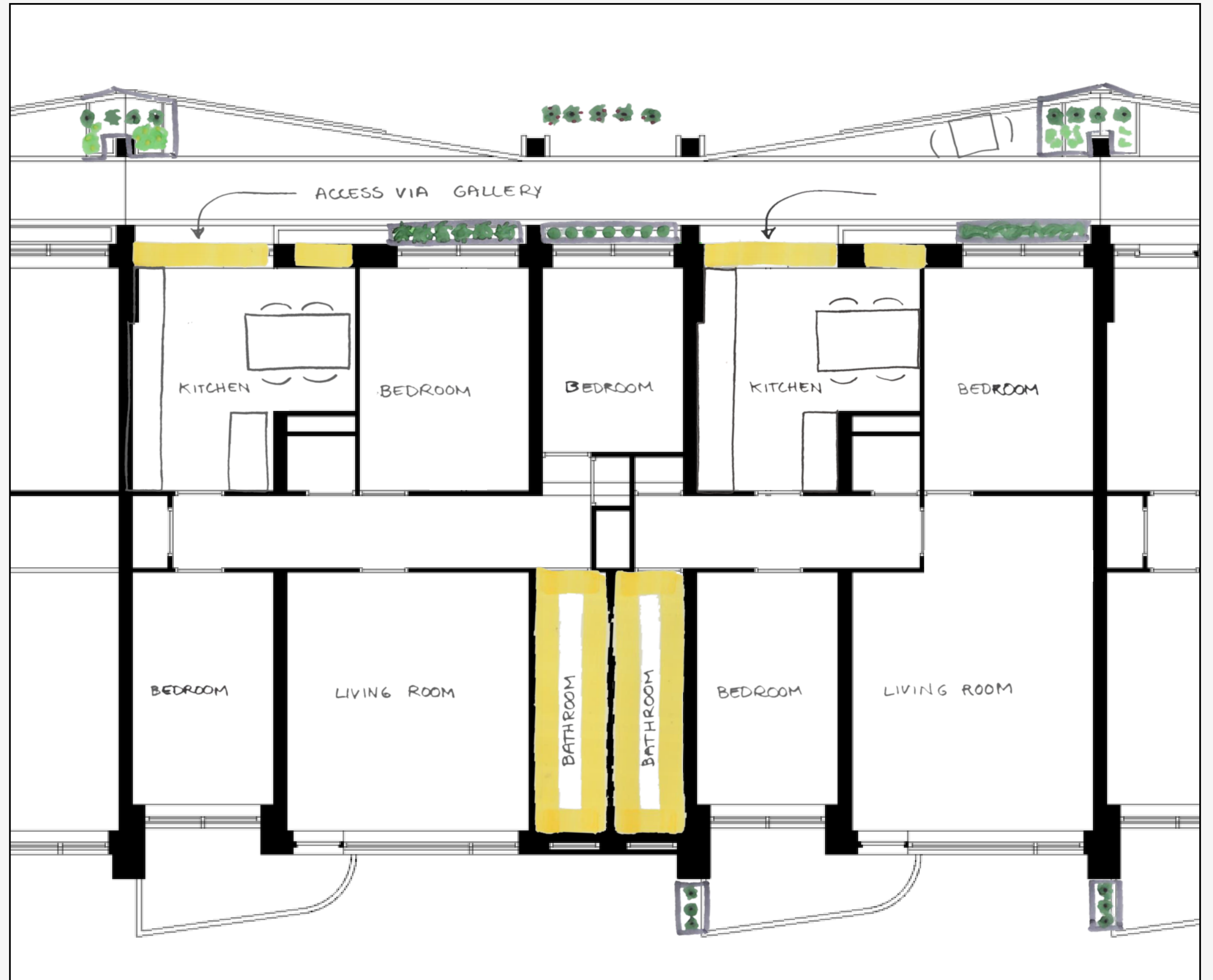
Plan old situation





# APARTMENTS

Plan new situation





# APARTMENTS

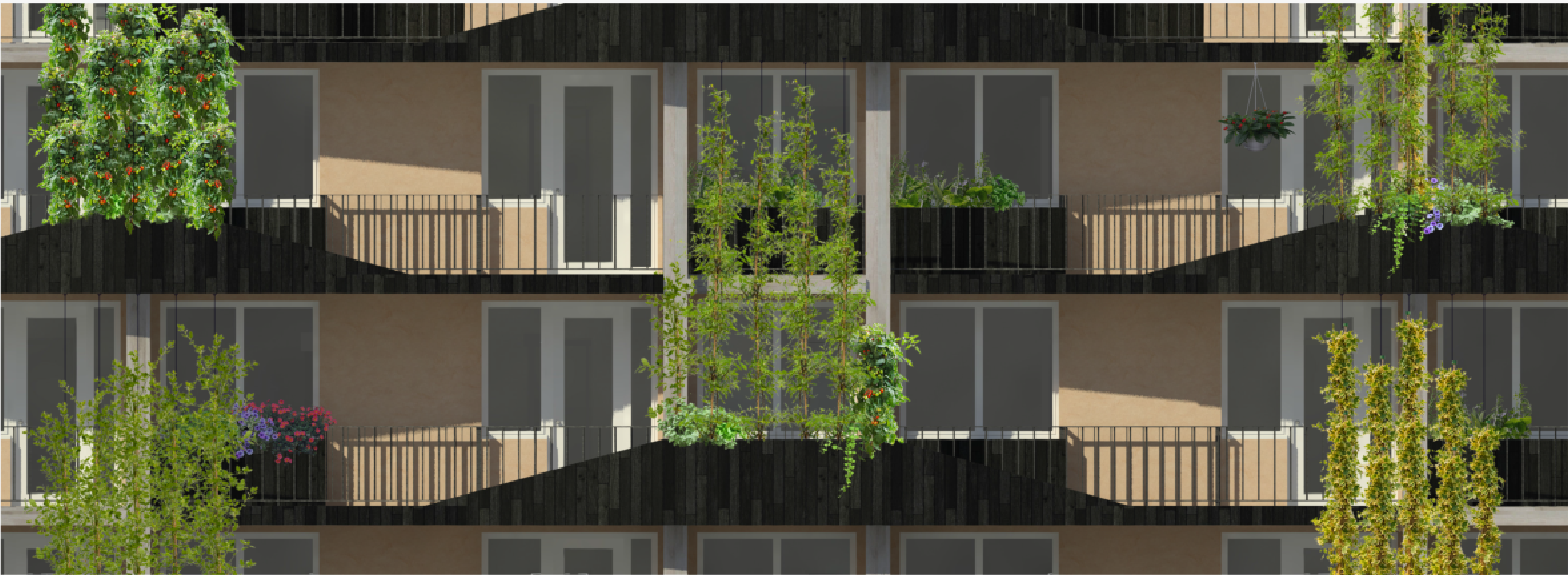
Elevation old situation





# APARTMENTS

Elevation new situation





# APARTMENTS





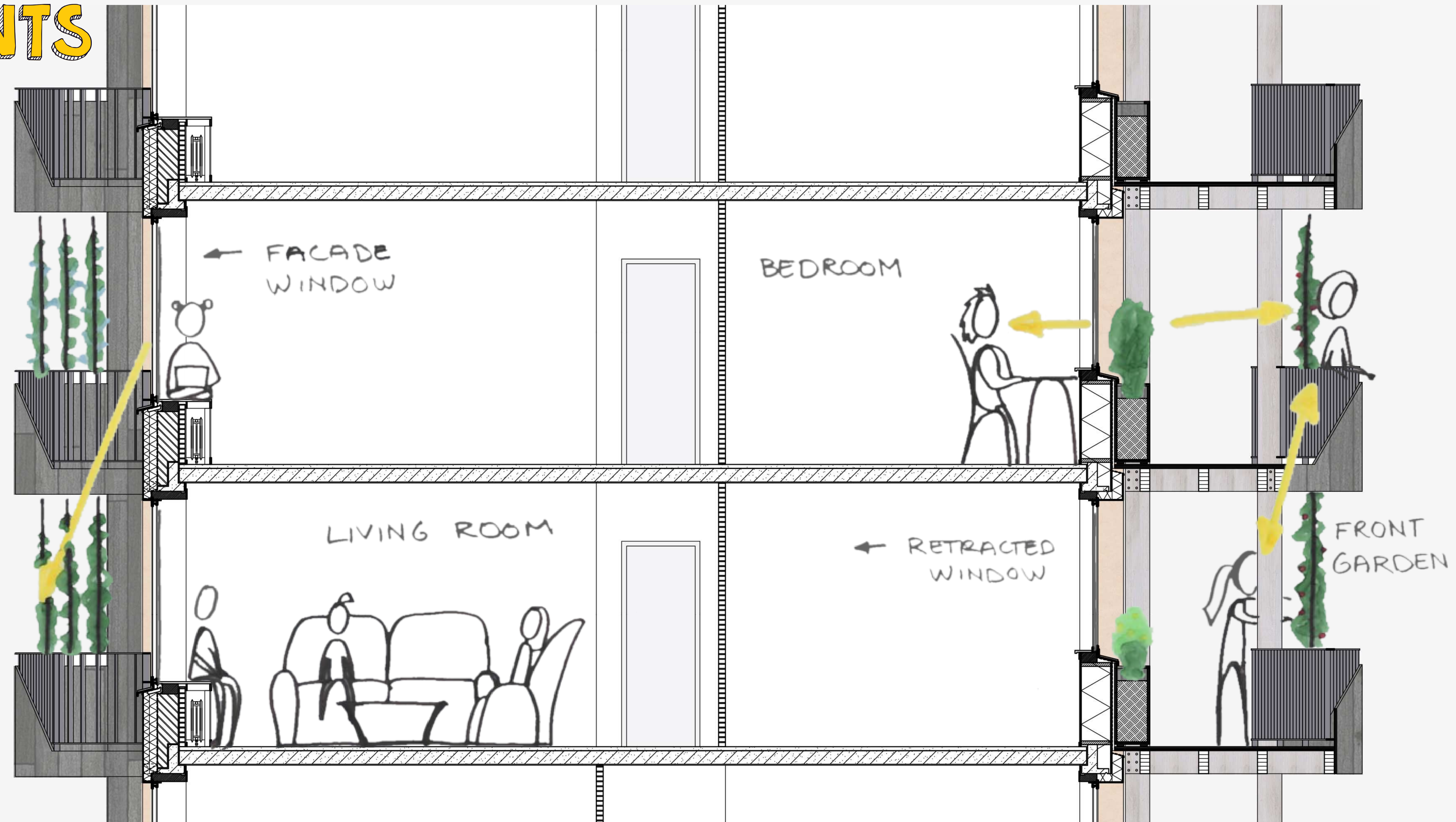
# APARTMENTS





# APARTMENTS

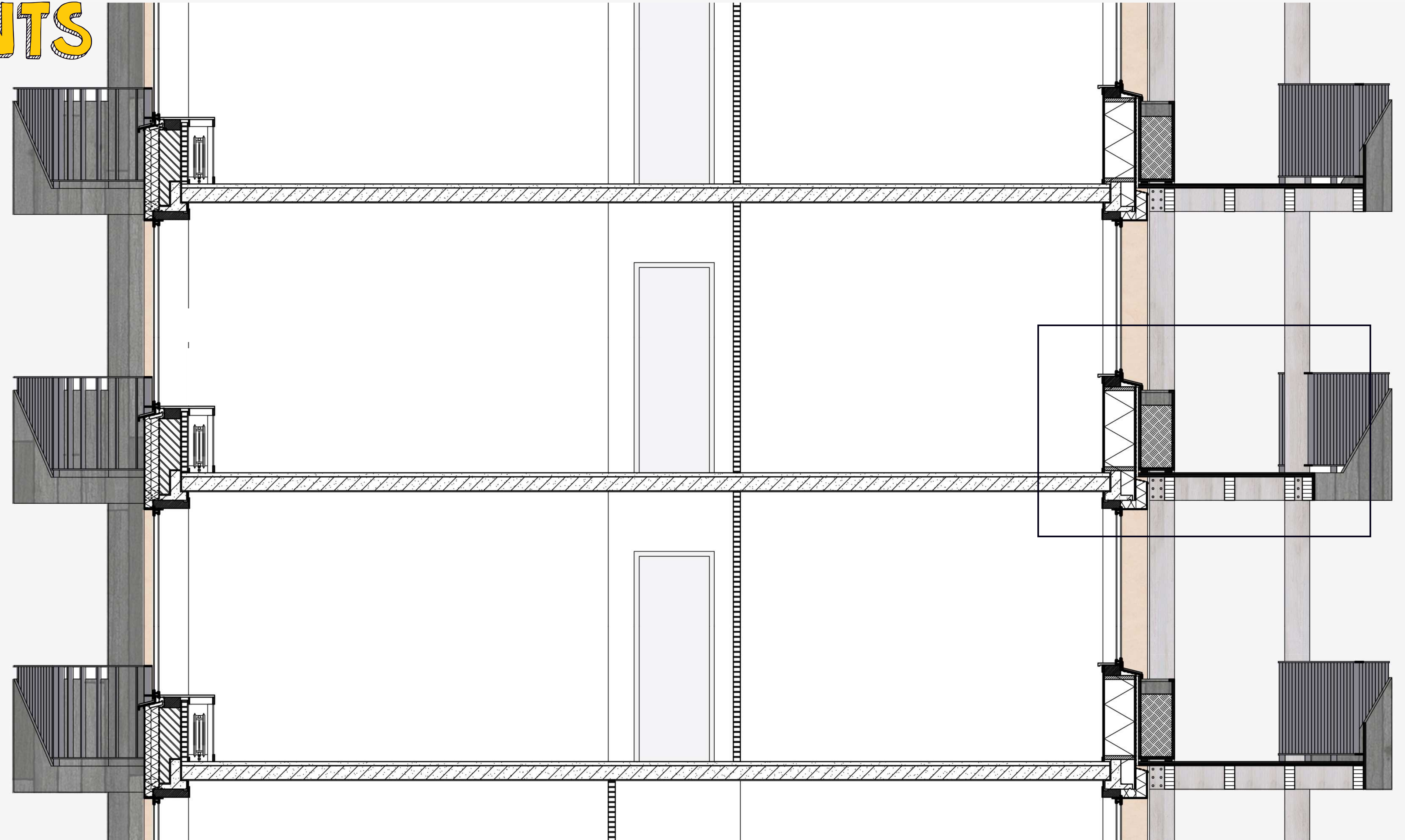
Section new  
situation





# APARTMENTS

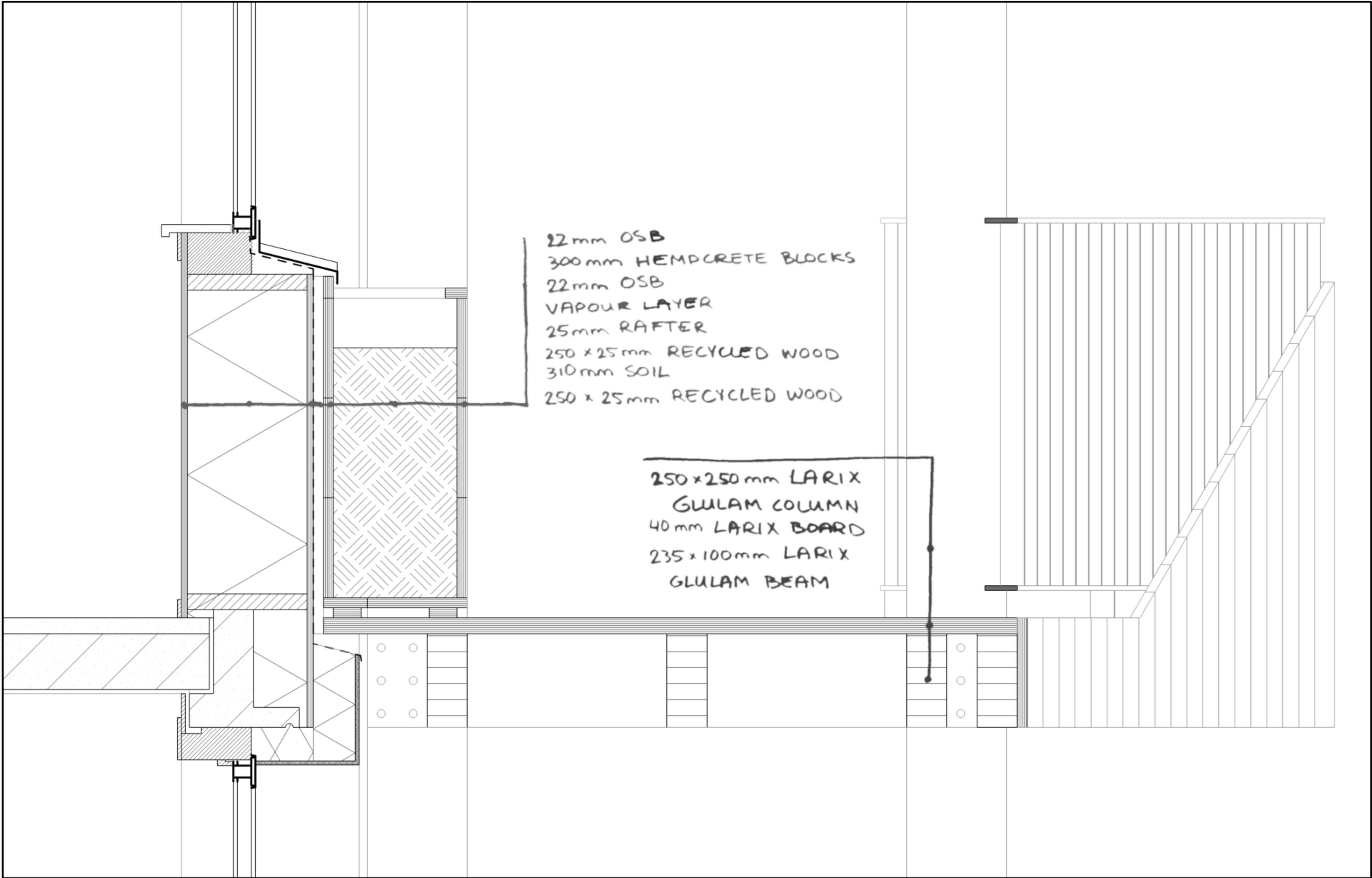
Section new  
situation





# APARTMENTS

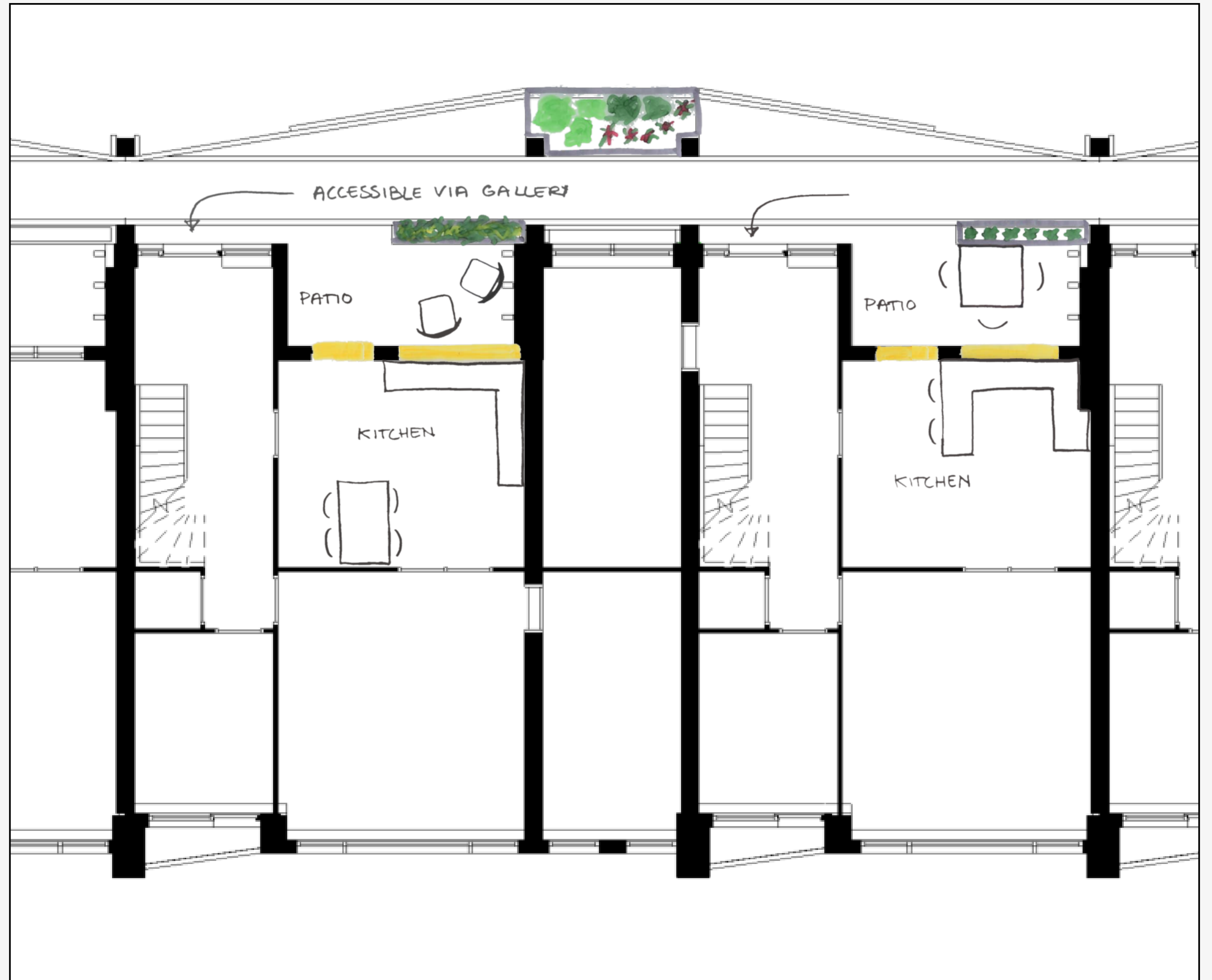
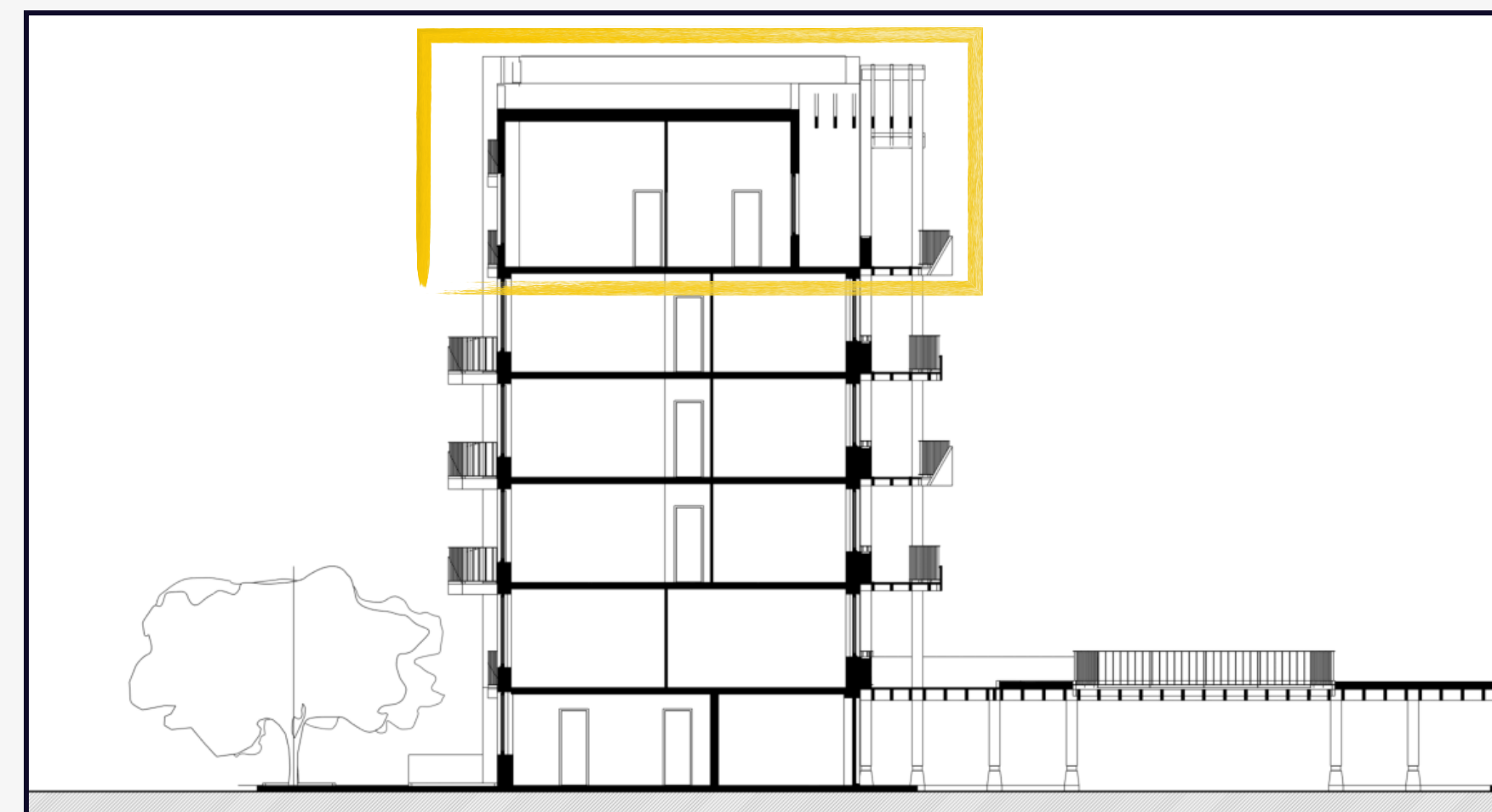
Detail





# TOP-UP

Plan





# TOP-UP

Elevation





# BUILDING METHOD

Light weight construction

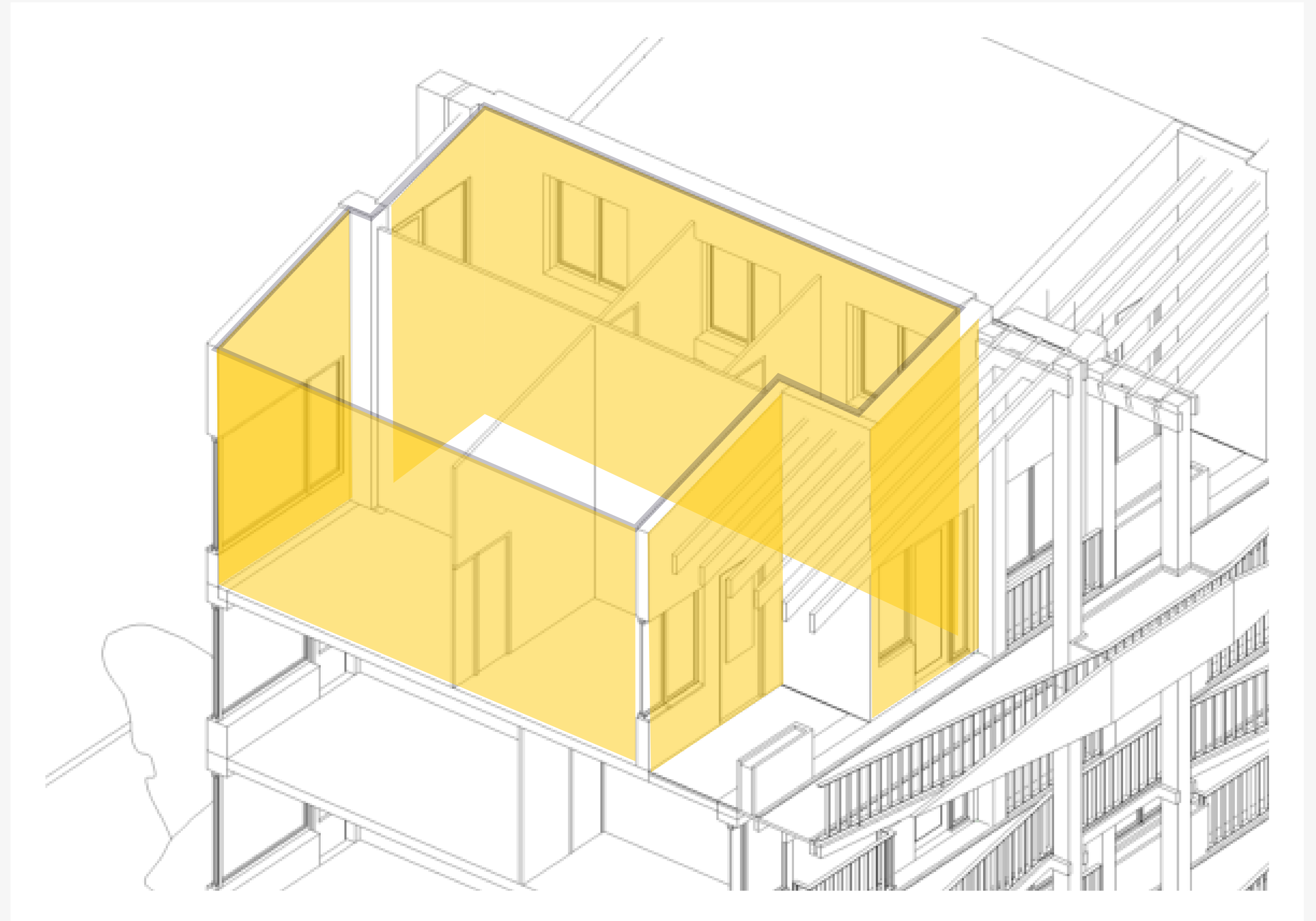
To allow for building on existing construction  
and to reduce loads on foundation

Sustainable materials

Wood is currently the most sustainable construction  
material available for mid rise buildings

Fast assembly

Prefabricated parts can be assembled quickly  
and limit disturbance in the neighbourhood





# FUNCTIONS NEW ROOF

## Water collection

to provide water for the plants on the gallery

distributed using ollas

can be used for toilets as well

excess water goes to pond in courtyard

## Energy production

the roof will be fitted with solar panels

these help meet the building's energy demand

## Solar chimney

the space underneath the solar panels will heat up

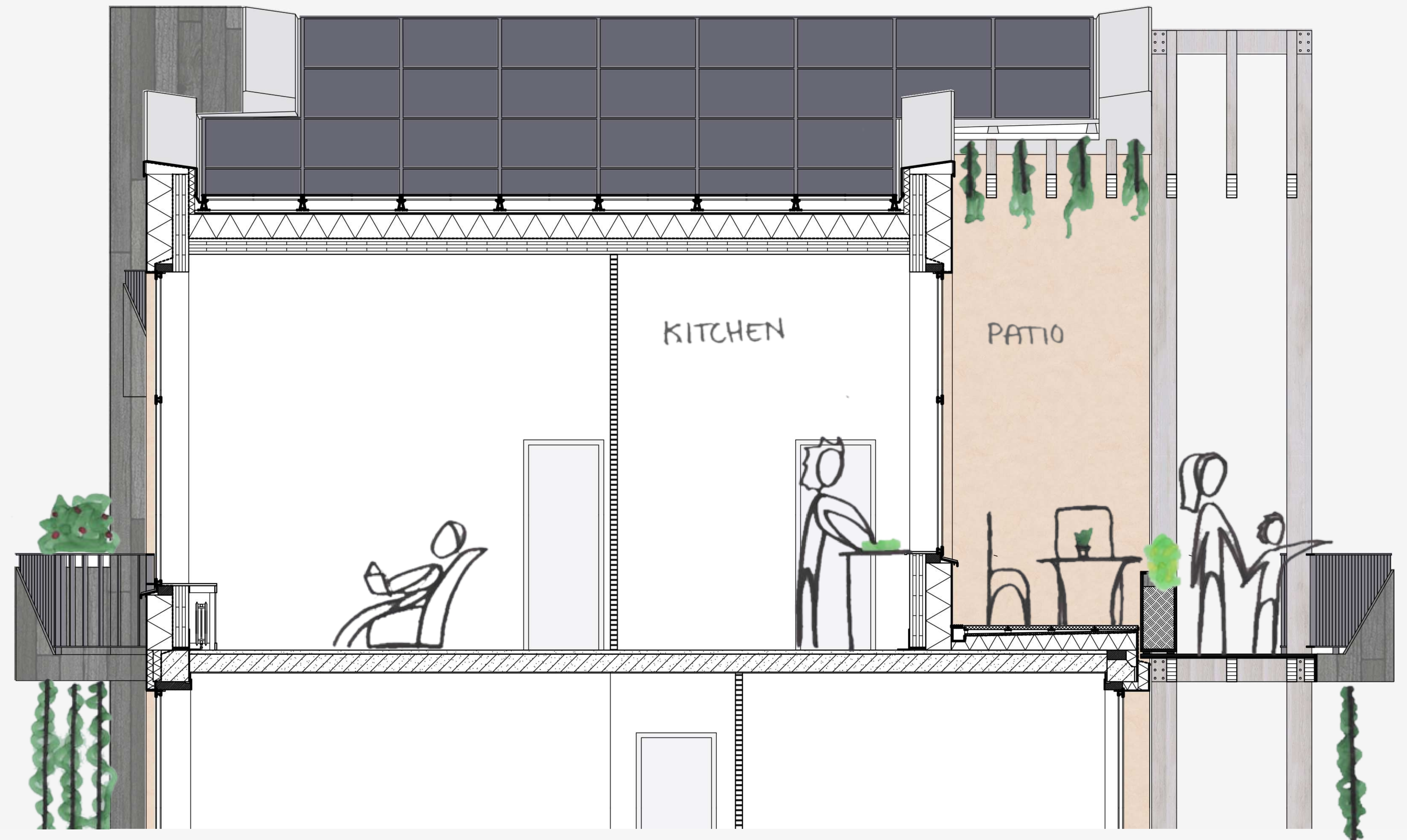
this will be connected to the ventilation system

ensures passive ventilation for the building



# TOP-UP

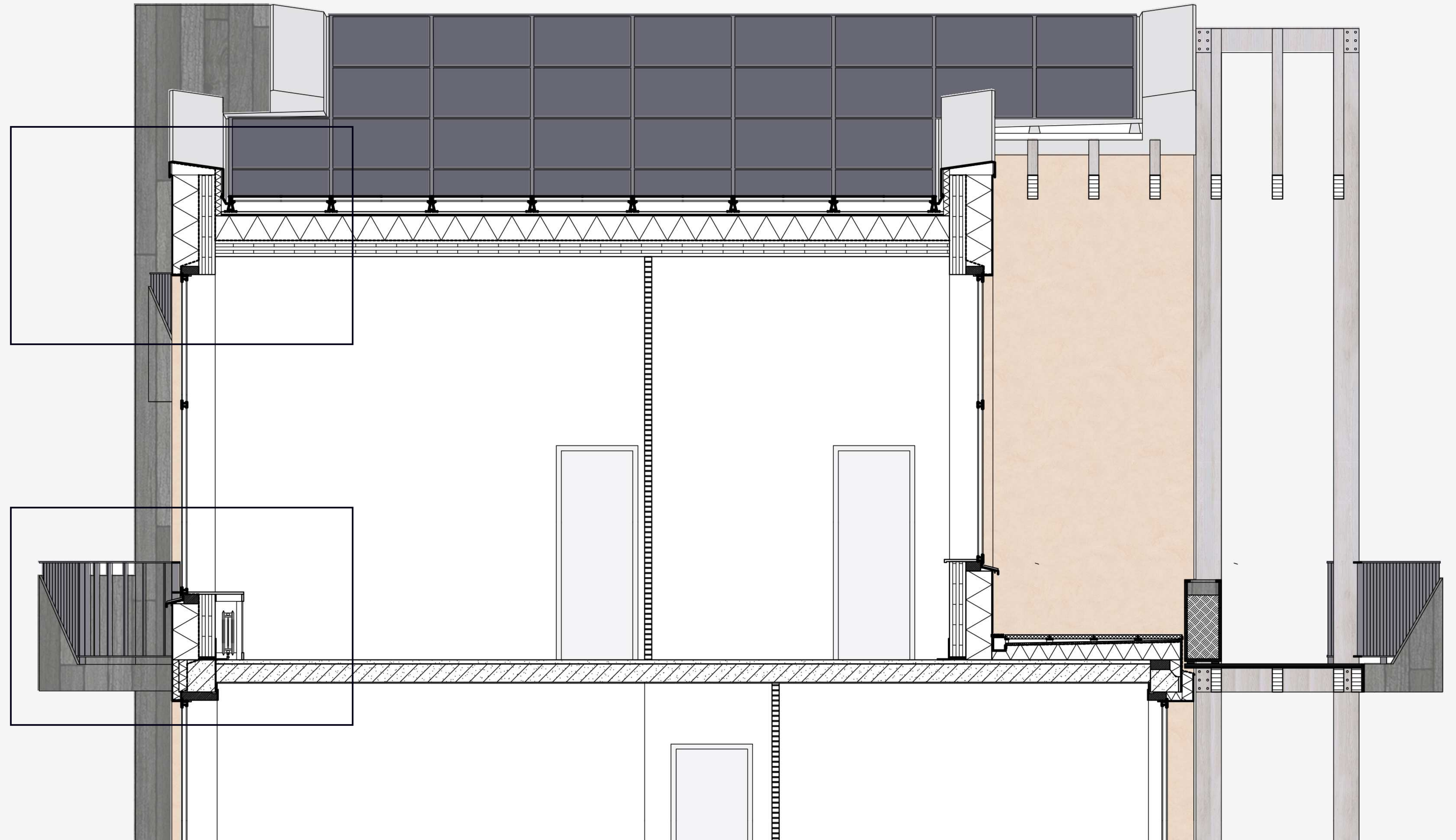
Section





# TOP-UP

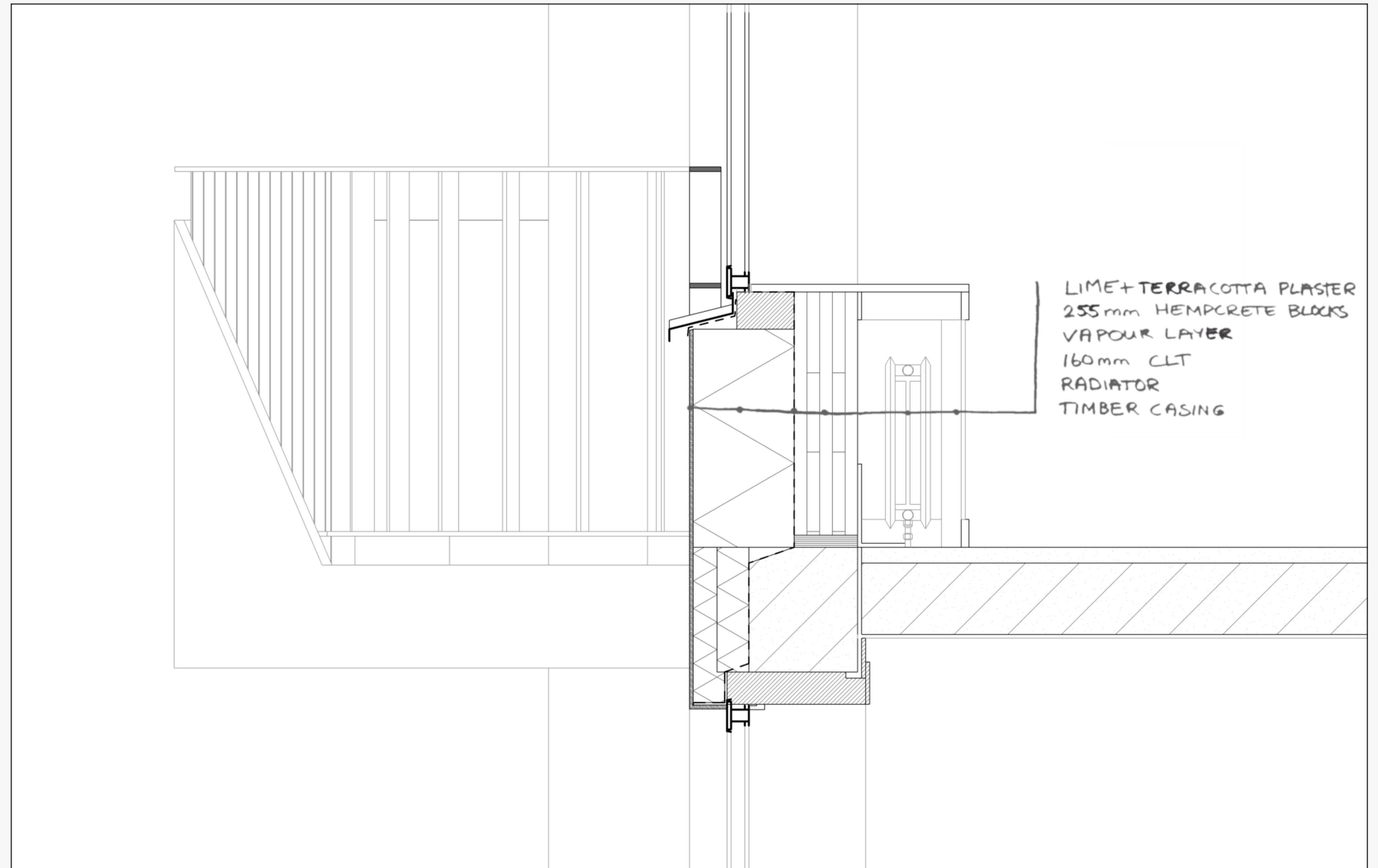
Section





# TOP-UP

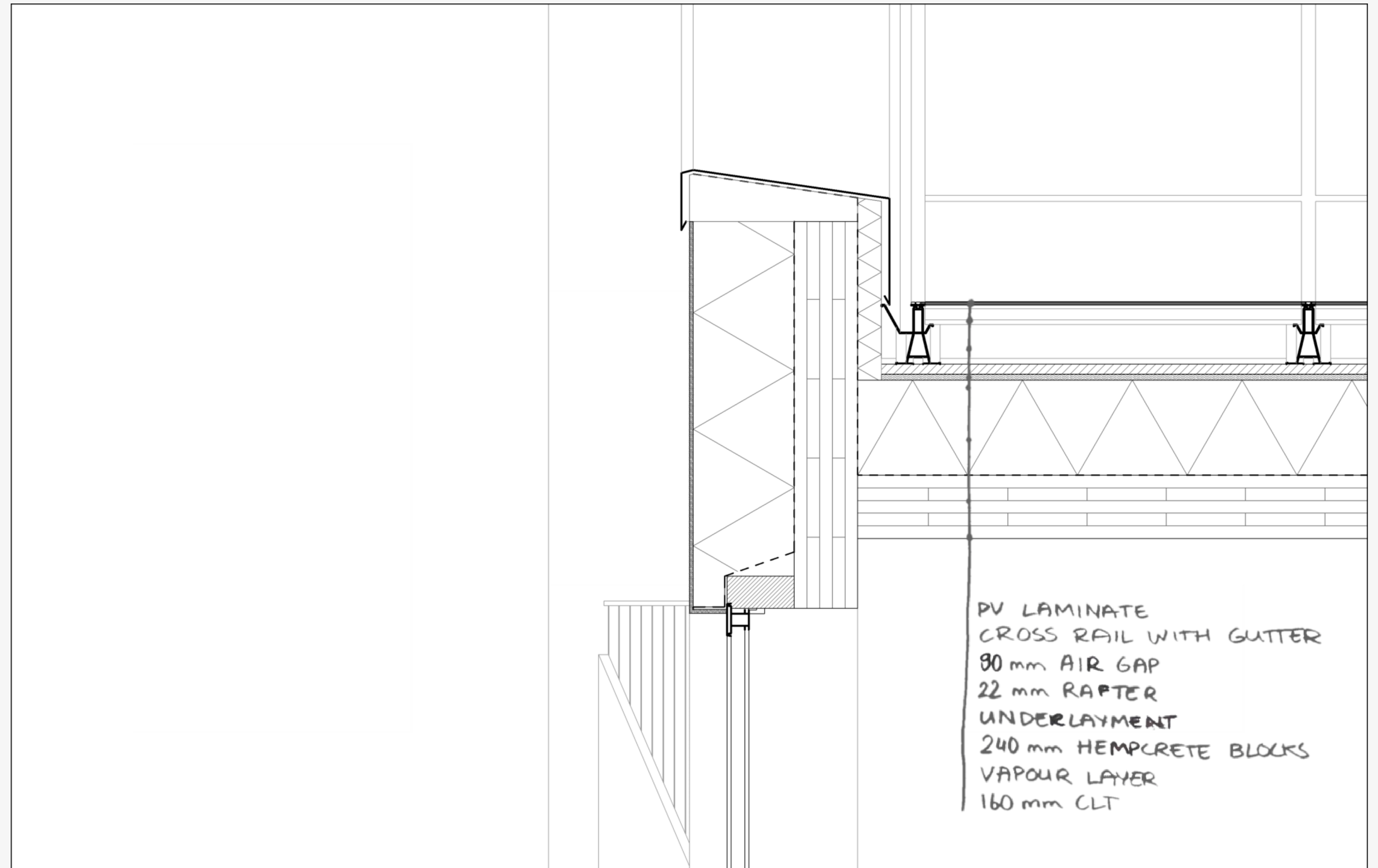
Detail





# TOP-UP

Detail





# GARDEN-FRESH CITY

Rethinking garden cities: designing a socially and environmentally sustainable future

Denise Maassen | 4956076

Architectural Engineering

Valuable Neighbourhoods

Tutors: Mo Smit & Paddy Tomesen

Delft University of Technology

P5 | 4 November 2021



Vector created by pch.vector - [www.freepik.com](http://www.freepik.com)



