



THE GREEN TRANSITION

THE TRANSFORMATION AND DENSIFICATION OF POST WAR STAIRCASE ENTRANCE BUILDINGS

WHAT DID I WANT TO ACCOMPLISH?

truly relevant,
preferably within the Netherlands,

exploring many subjects, I decided to focus on post-war apartment
buildings.

lived in Rijswijk and Rotterdam in staircase entrance apartment
buildings.

PROBLEM STATEMENTS



390.000 CURRENT SHORTAGE
1.300.000 NEEDED FOR 2038



850,000 STAIRCASE ENTRANCE
DWELLINGS WITH POOR SUSTAINABILITY



15% Increase in Paved
Surfaces Since 2000

THE GOAL

Develop a strategy to densify and improve post-war staircase-entrance apartment buildings while addressing the housing shortage



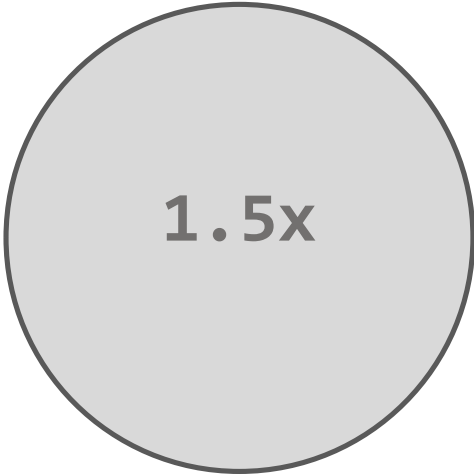
EXPAND & IMPROVE THE EXISTING

OPPORTUNITIES

850,000 Staircase-Entrance Apartments

We're Already Renovating—Why Not Expand and Improve?

- new homes
- expand existing apartments
- energy-neutral buildings



1.5x

1.5x Densification: A Solution for the Housing Crisis

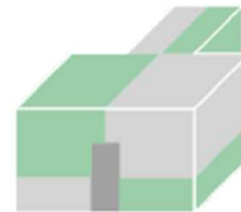
$1.5x \ 850,000 = 1,275,000$
425,000 New Homes = Housing Shortage Solved

THE TARGETGROUP

- 1870 - 1916 early fin de siècle



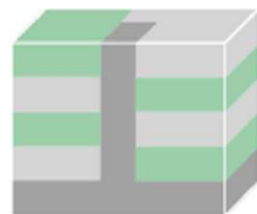
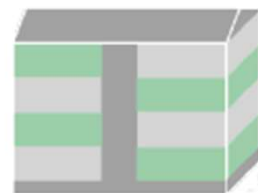
- 1890 - 1916 fin de siècle



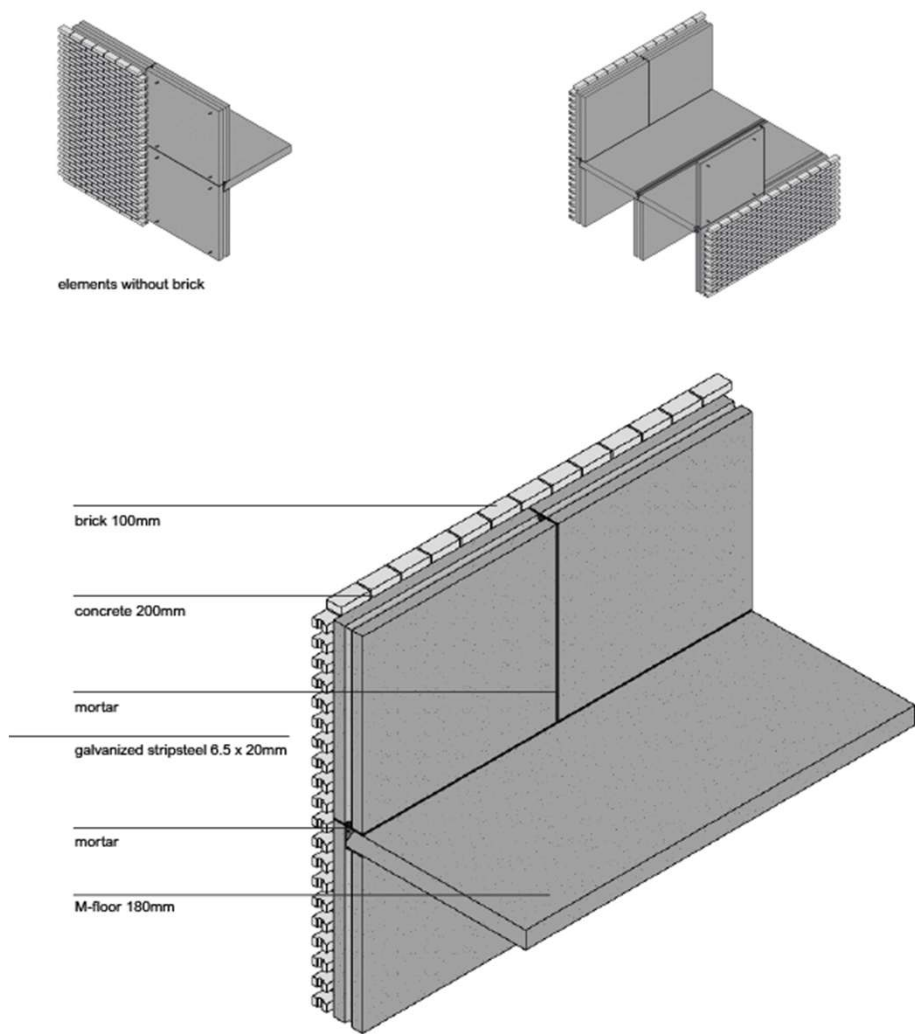
- 1916 - 1940 inter war



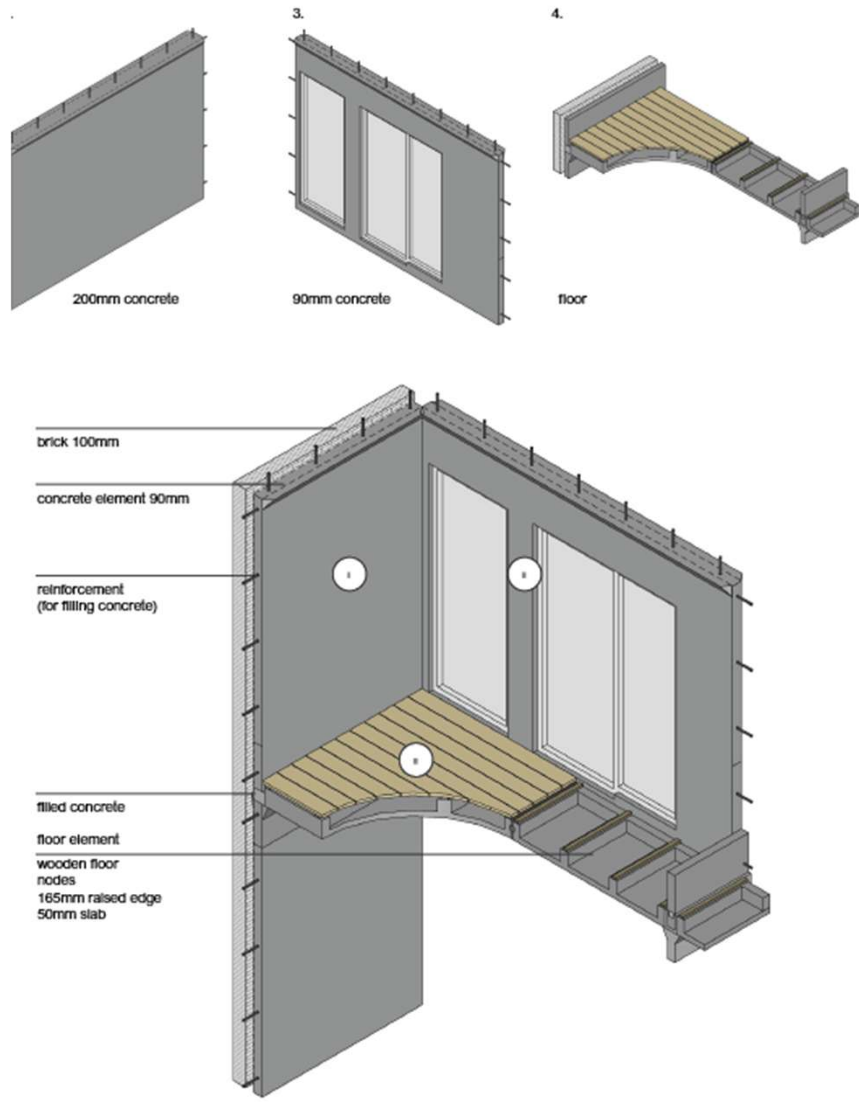
- 1946 - 1965 post war



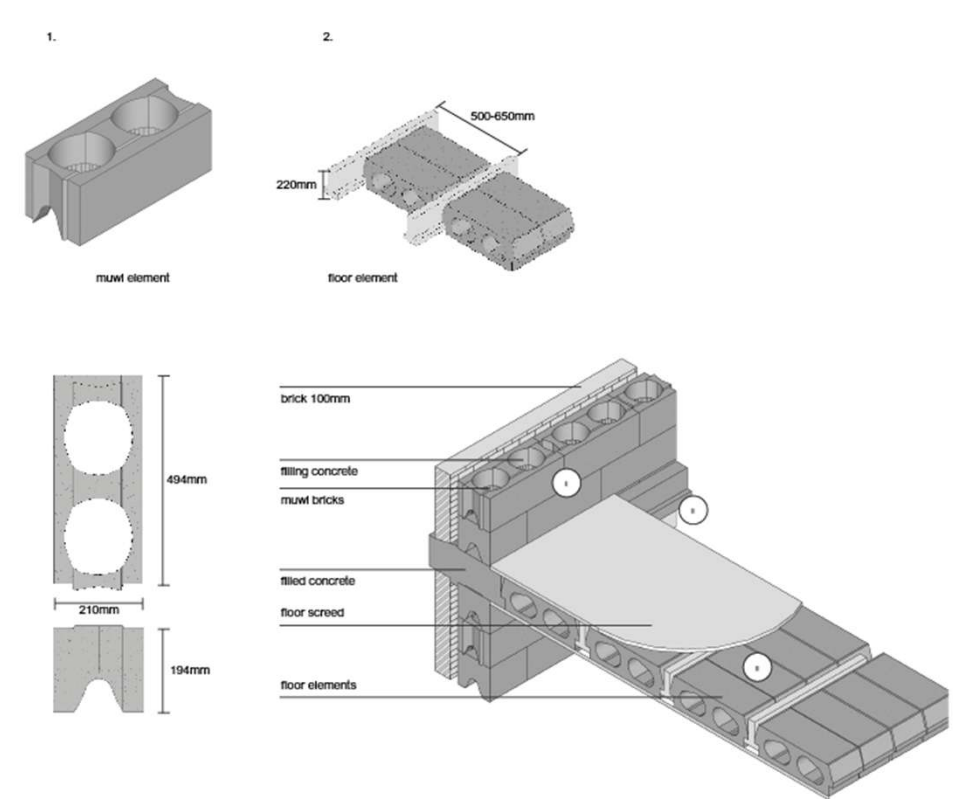
TECHNICAL RESEARCH



BMB

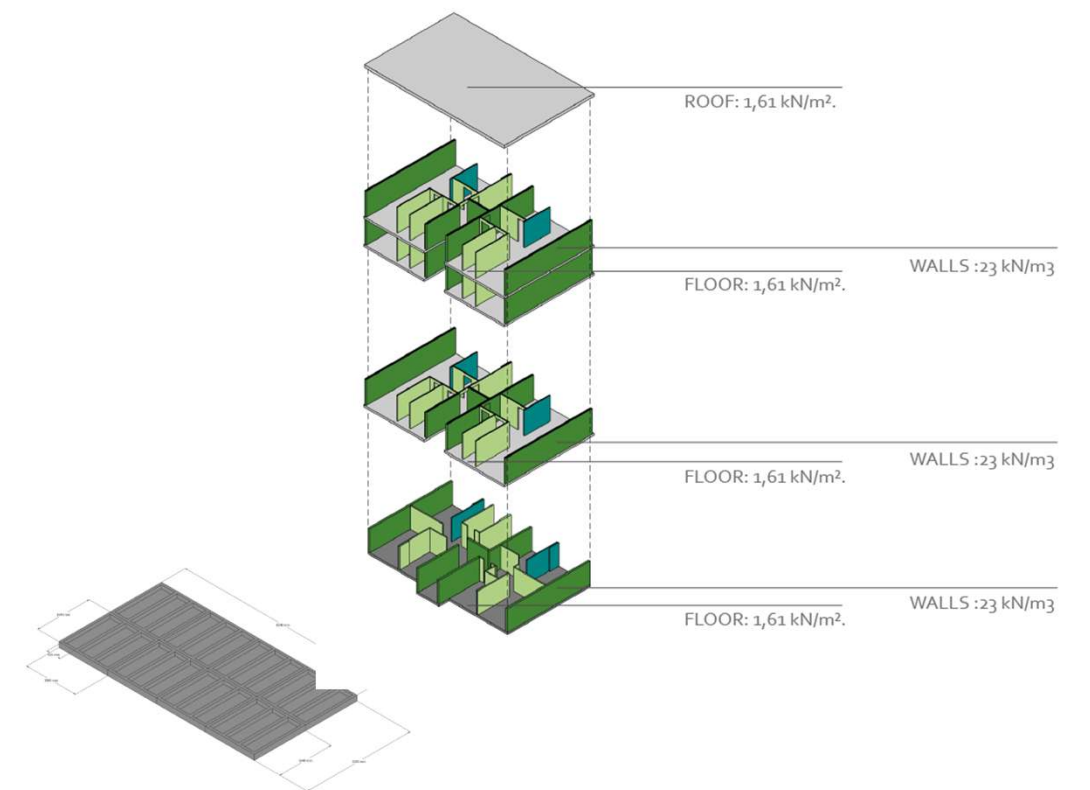
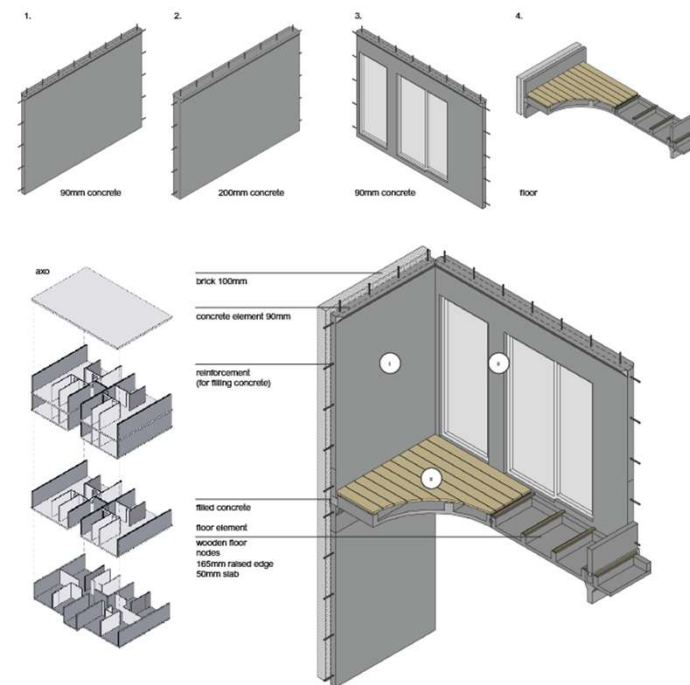
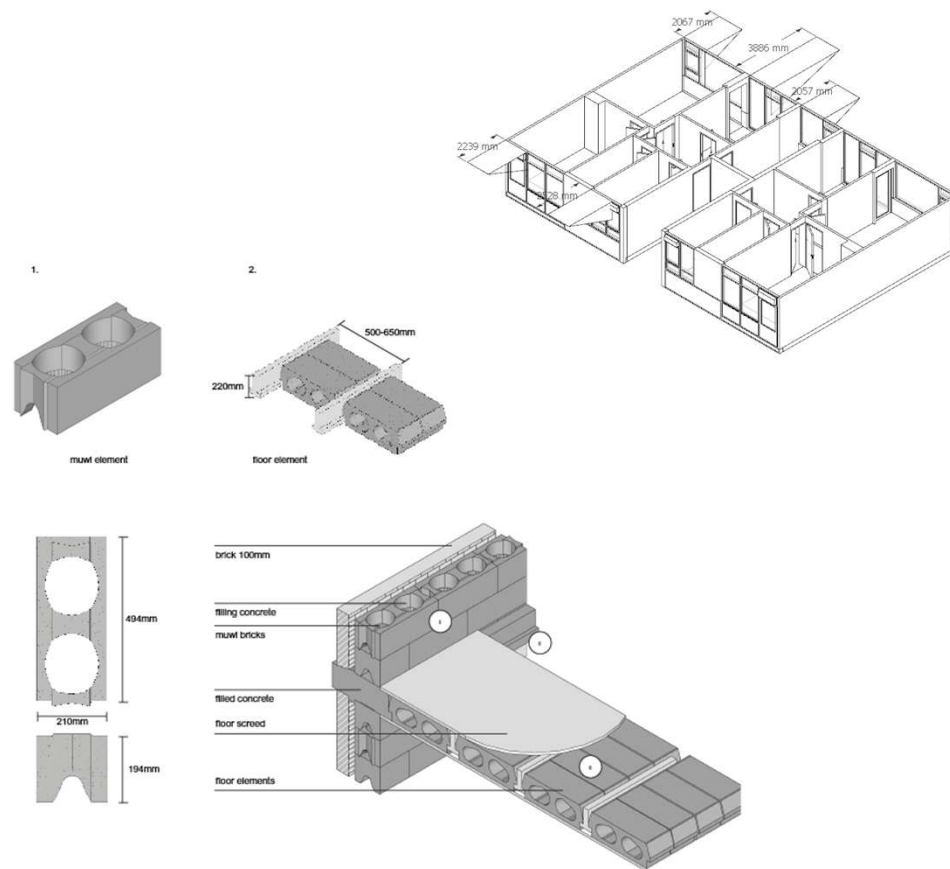


ROTTINGHUIS



MUWI

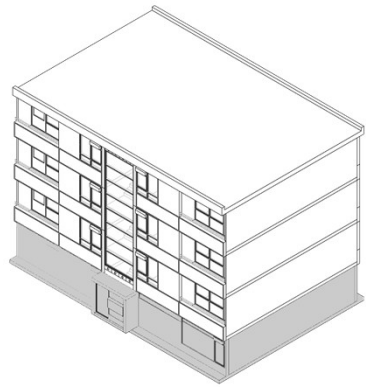
TECHNICAL RESEARCH



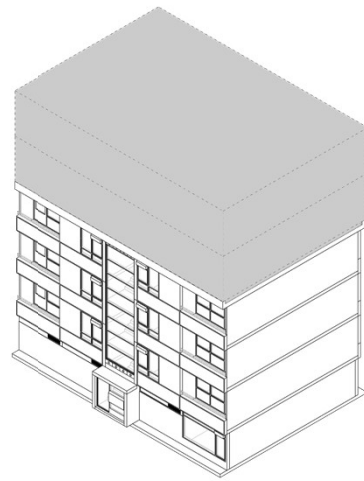
CONCLUSIONS

- SIMILAR CAPABILITIES
- 200MM LOADBEARING WALLS
- SIMILAR DWELLING PLANS
- 12% EXTRA WEIGHT FOUNDATION

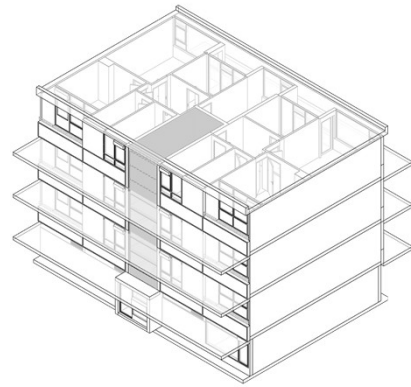
TECHNICAL RESEARCH



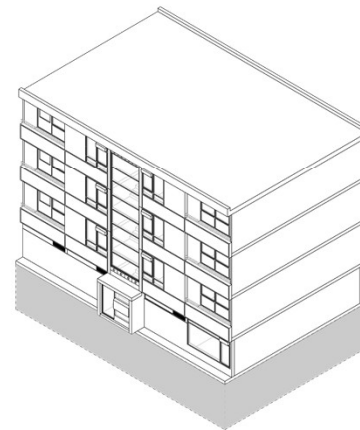
STORAGE TRANSITION



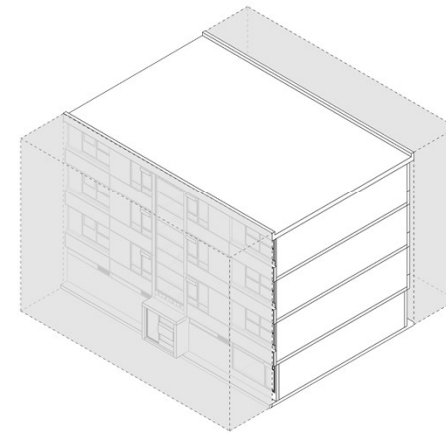
TOP-OP



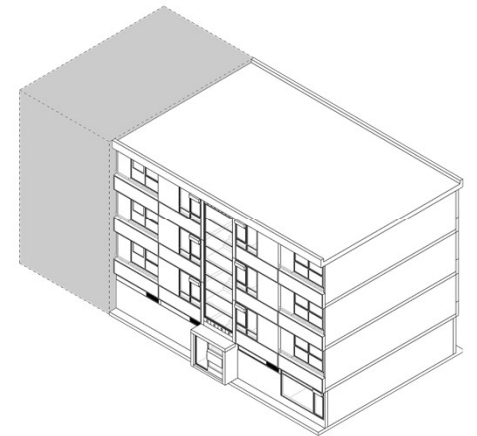
GALLERIES



BASEMENT

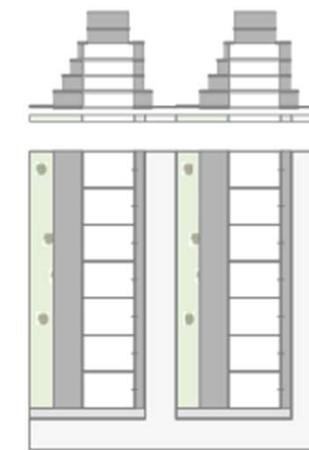
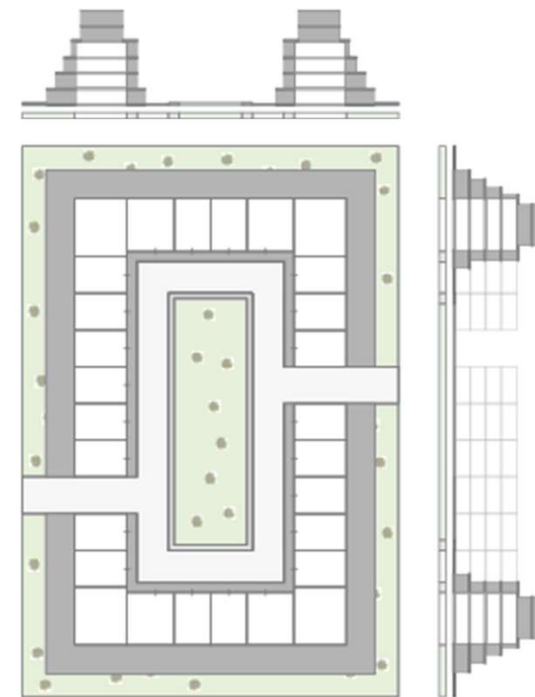
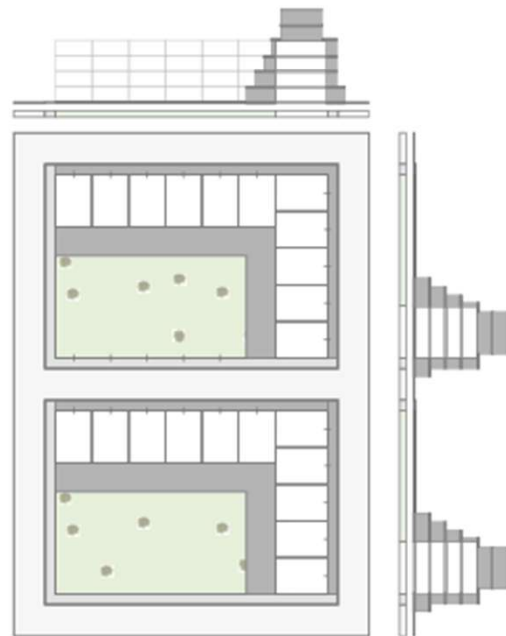
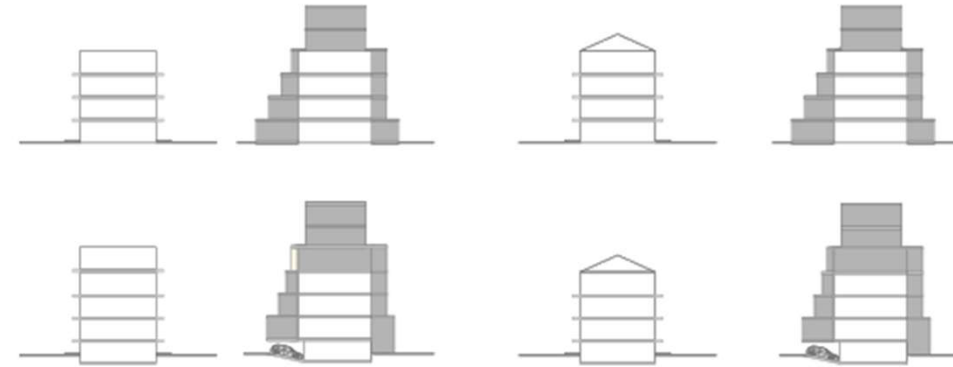
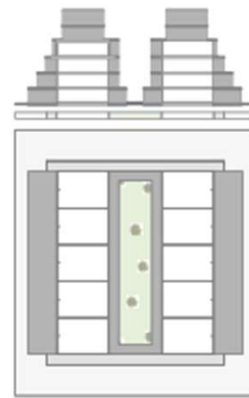
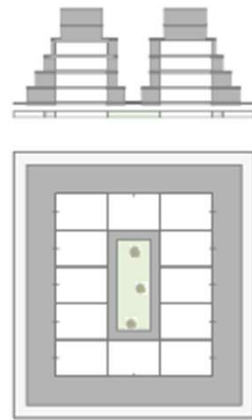


EXPAND DEPTH



EXPAND NEXT

URBAN RESEARCH



THE POST-WAR HOUSING STOCK: STAIRCASE ENTRANCE APARTMENTS

URBAN

- ANONYMOUS FACADES
- OFTEN LOW QUALITY GREEN
- LOW SOCIAL SECURITY



BUILDINGS

- SUSTAINABILITY
- UNIFORM ARCHITECTURE
- LOW DWELLING VARIETY
- NO FUNCTION VARIETY
- SMALL BALCONIES

FEATURES



SUSTAINABLE



VARIETY



FLEXIBILITY



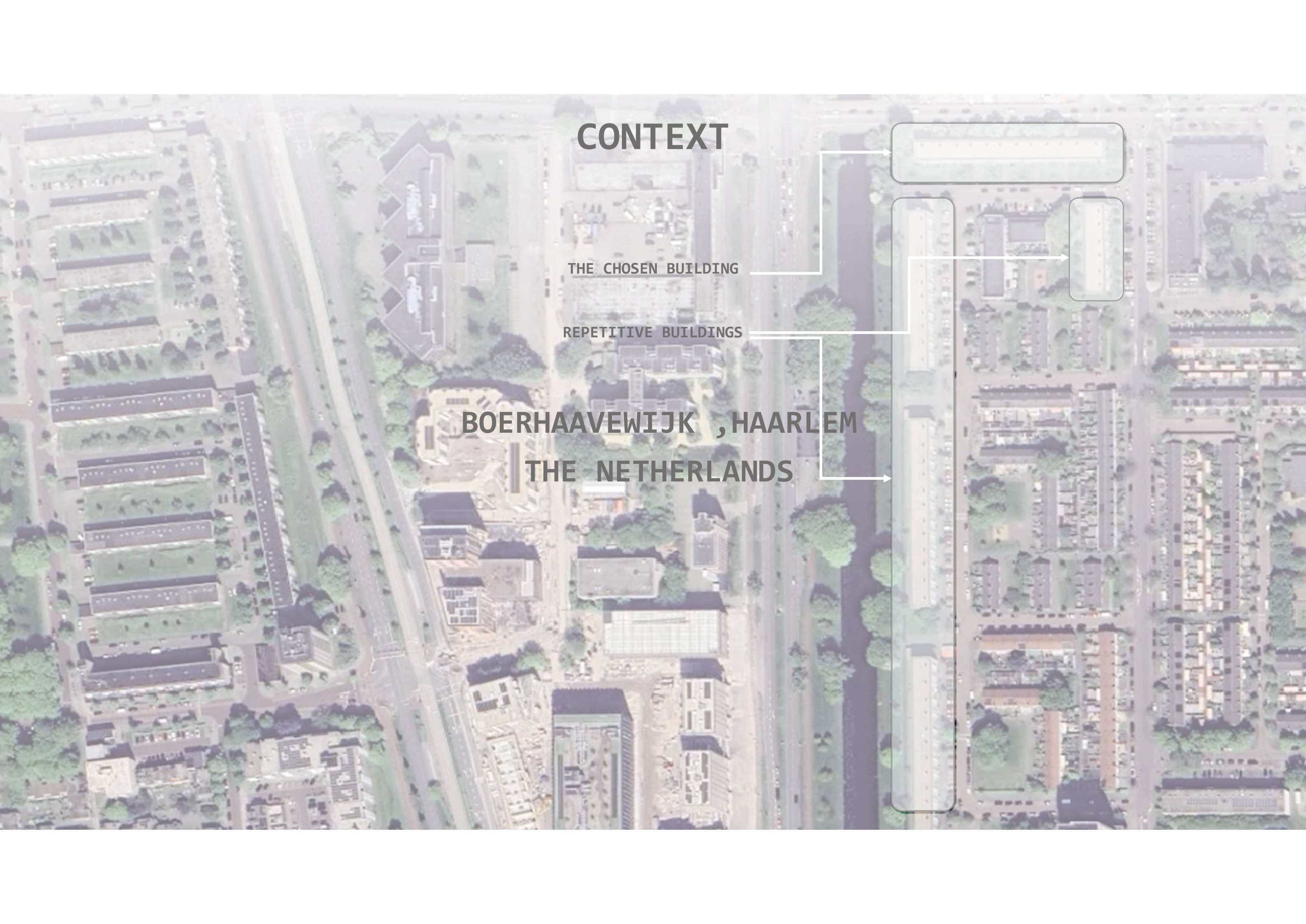
GREEN



BIOBASED



HEIGHT



CONTEXT

THE CHOSEN BUILDING

REPETITIVE BUILDINGS

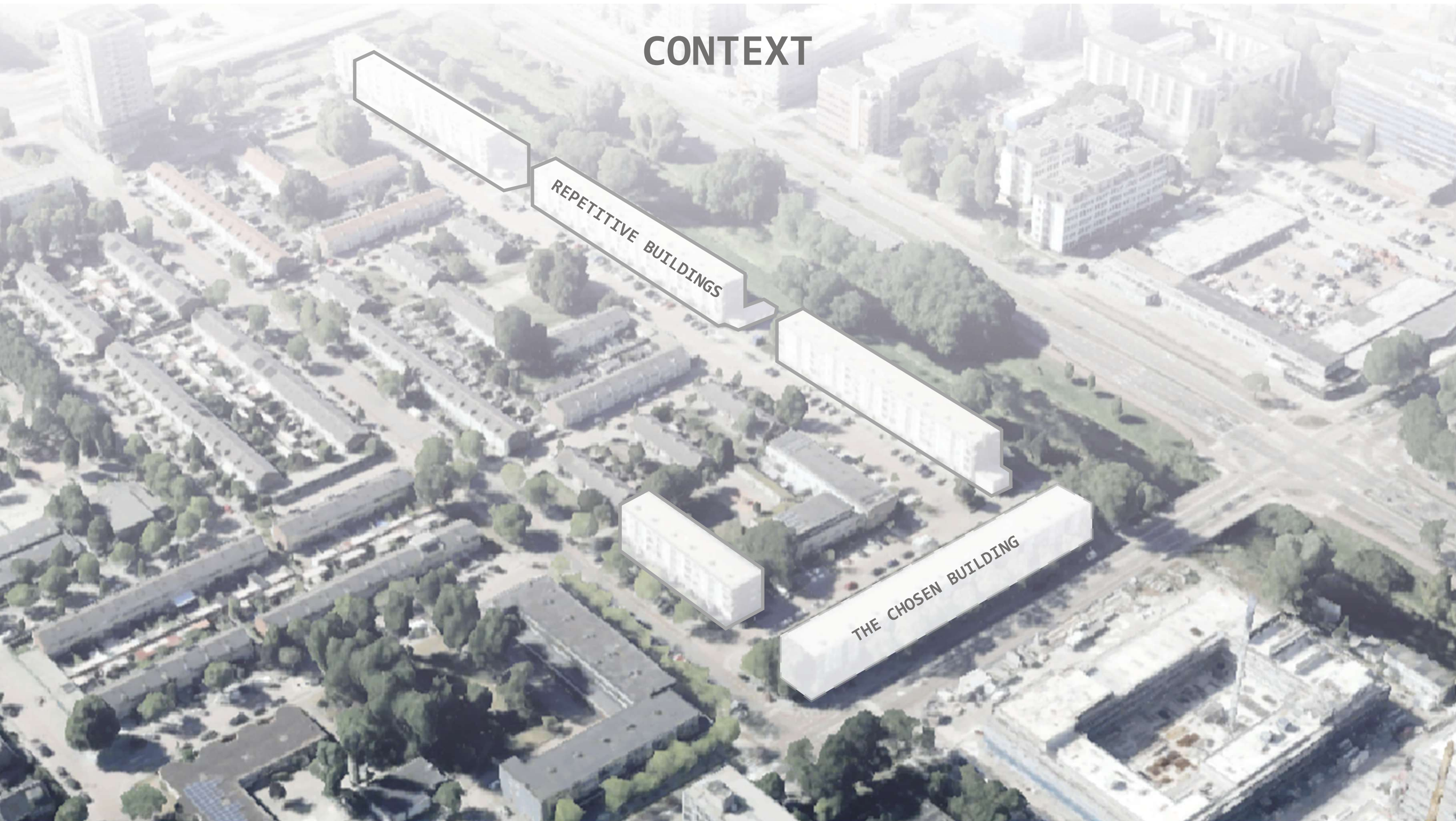
BOERHAAVEWIJK, HAARLEM

THE NETHERLANDS

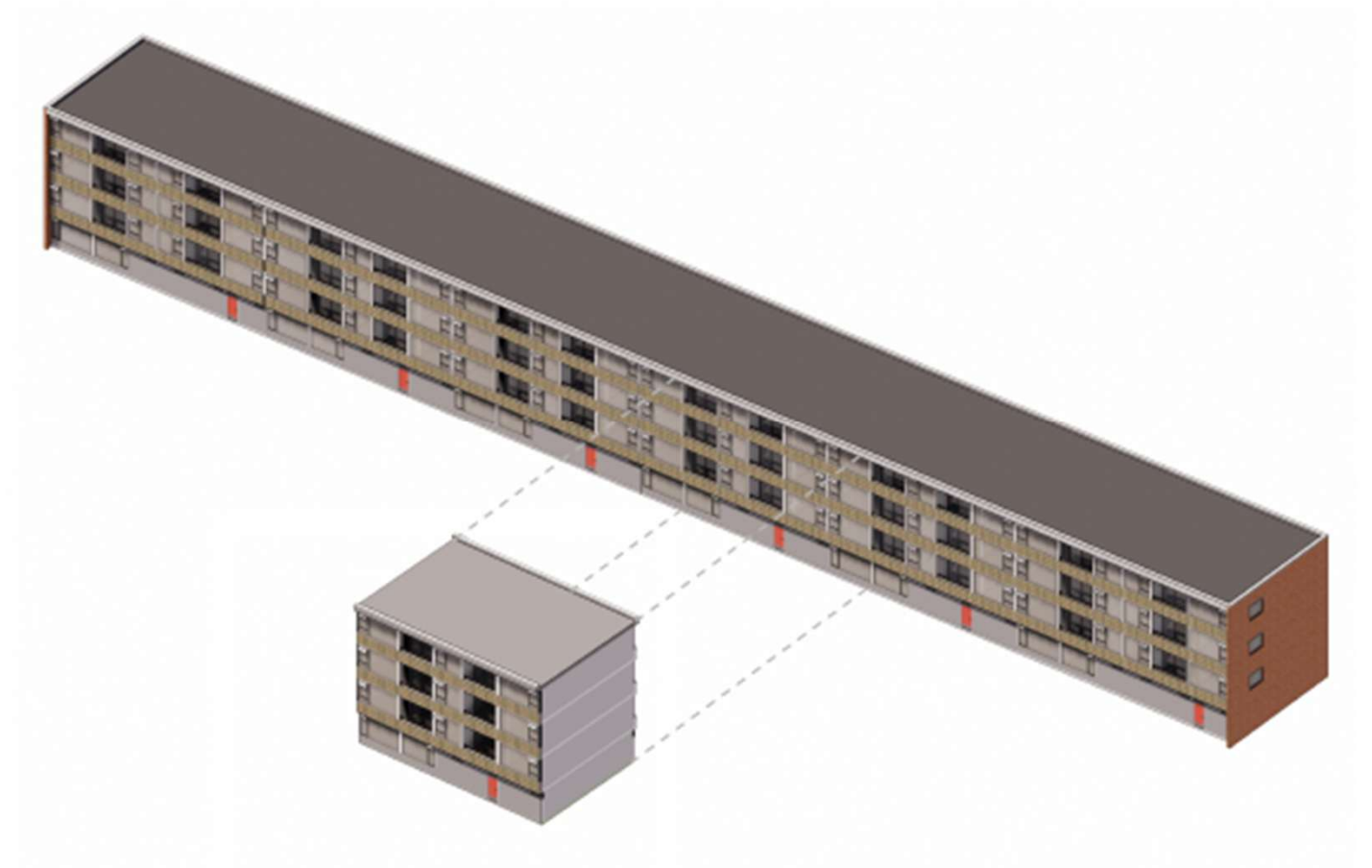
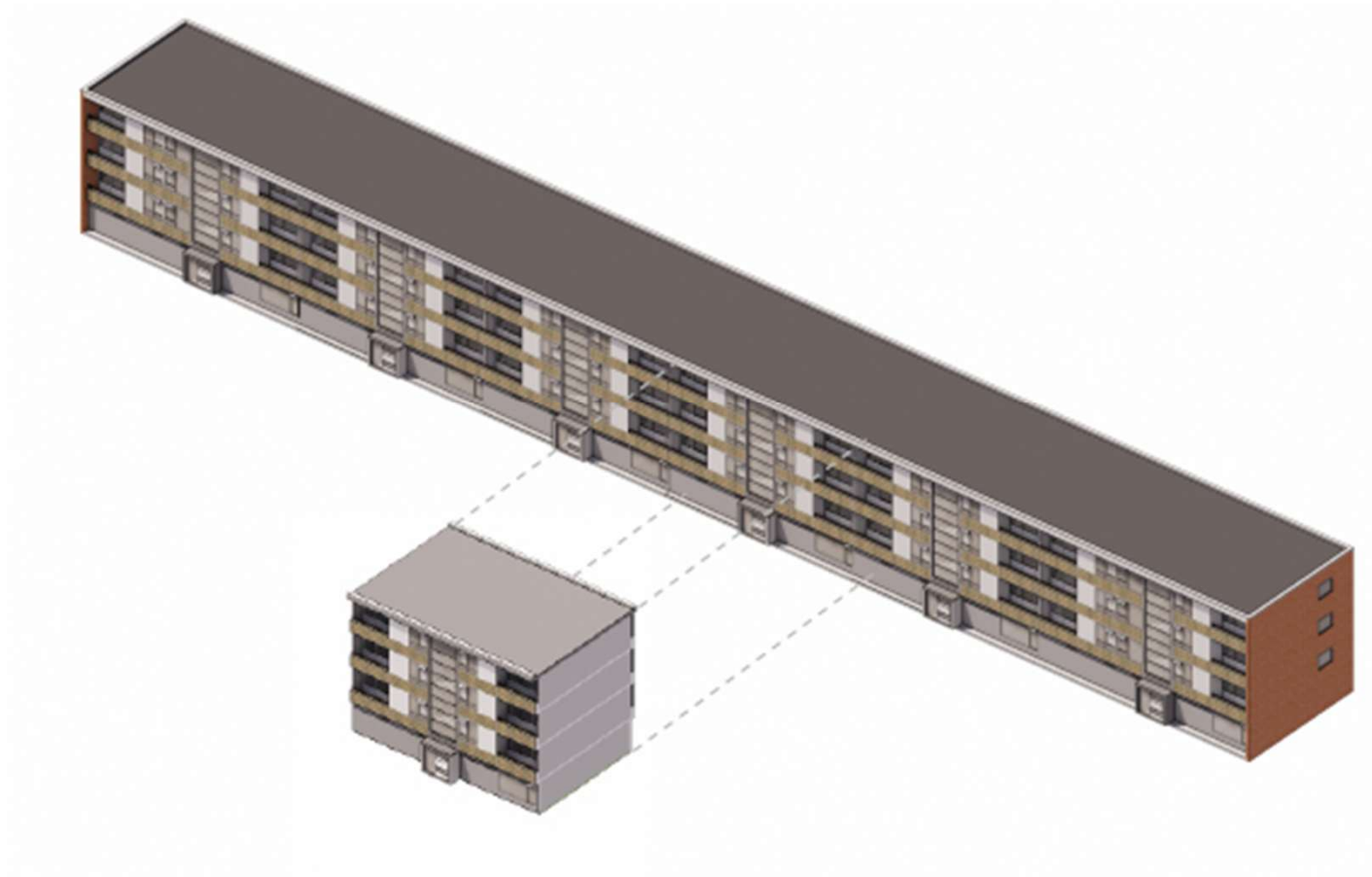
CONTEXT

REPETITIVE BUILDINGS

THE CHOSEN BUILDING

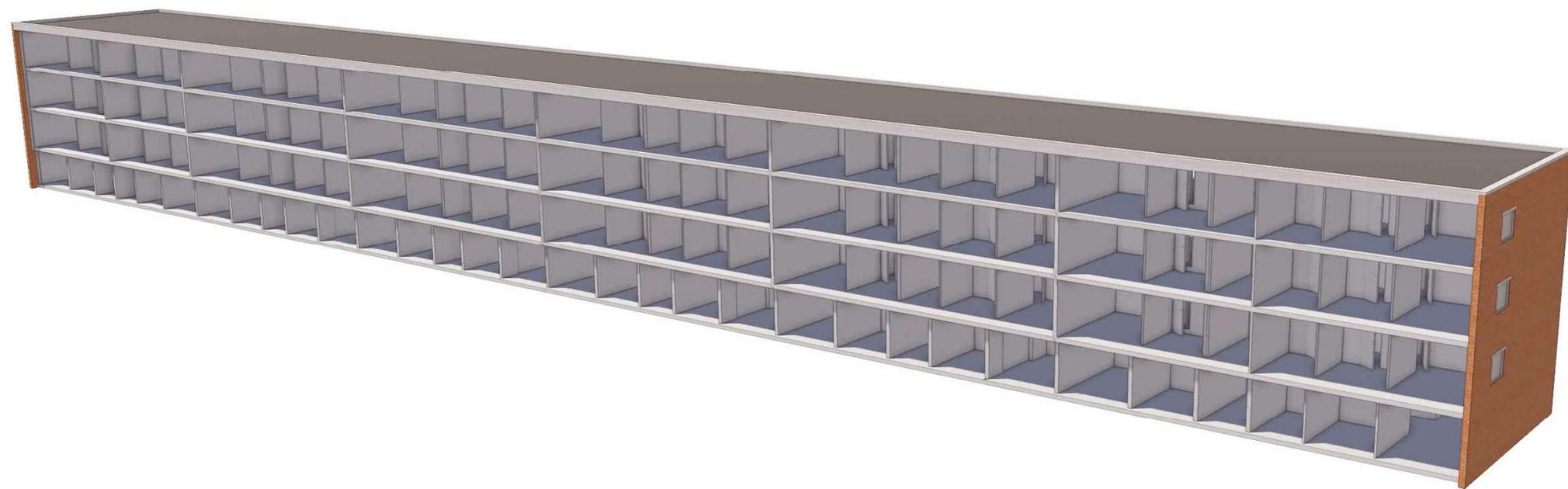


THE BUILDING

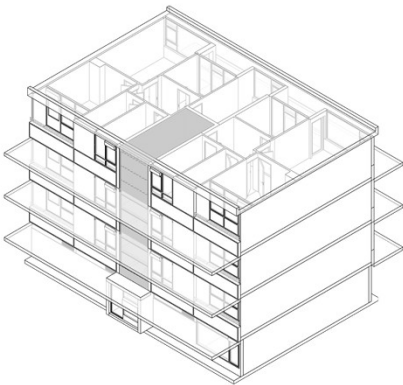


- REPETITIVE PLAN
- STORAGES ON GROUND FLOOR FACADE

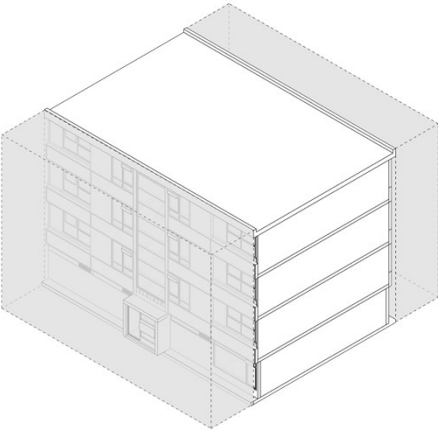
THE BUILDING



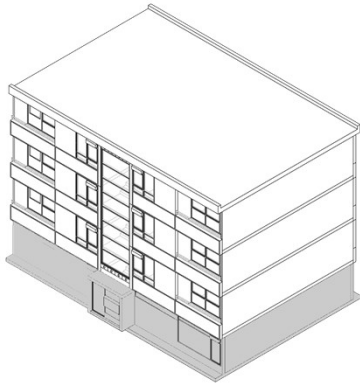
STRATEGIES



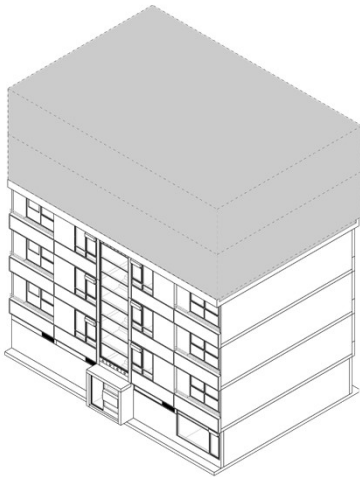
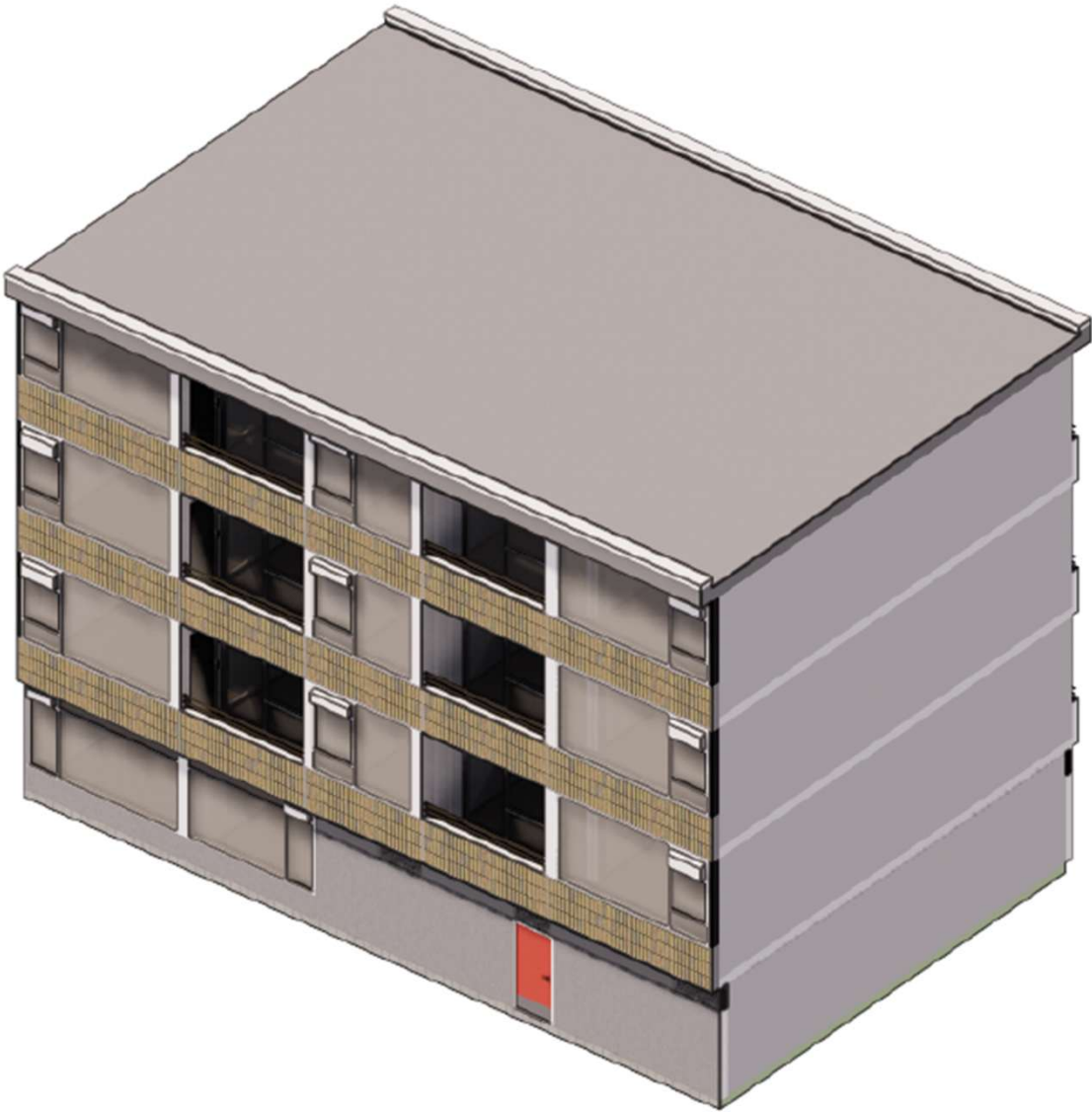
GALERIES



EXPAND DEPTH



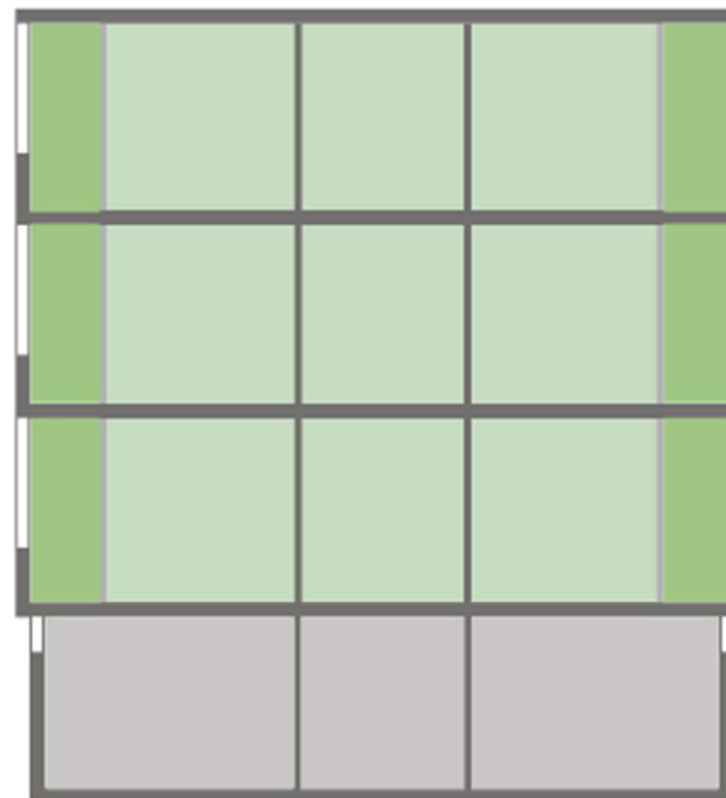
STORAGE TRANSFORMATION



TOP-ON

SECTION EXISTING BUILDING

- DWELLINGS
- STORAGES
- BALCONIES



• ANONYMOUS LOWERGROUND FACADE

TWO SIDES – PUBLIC / PRIVATE

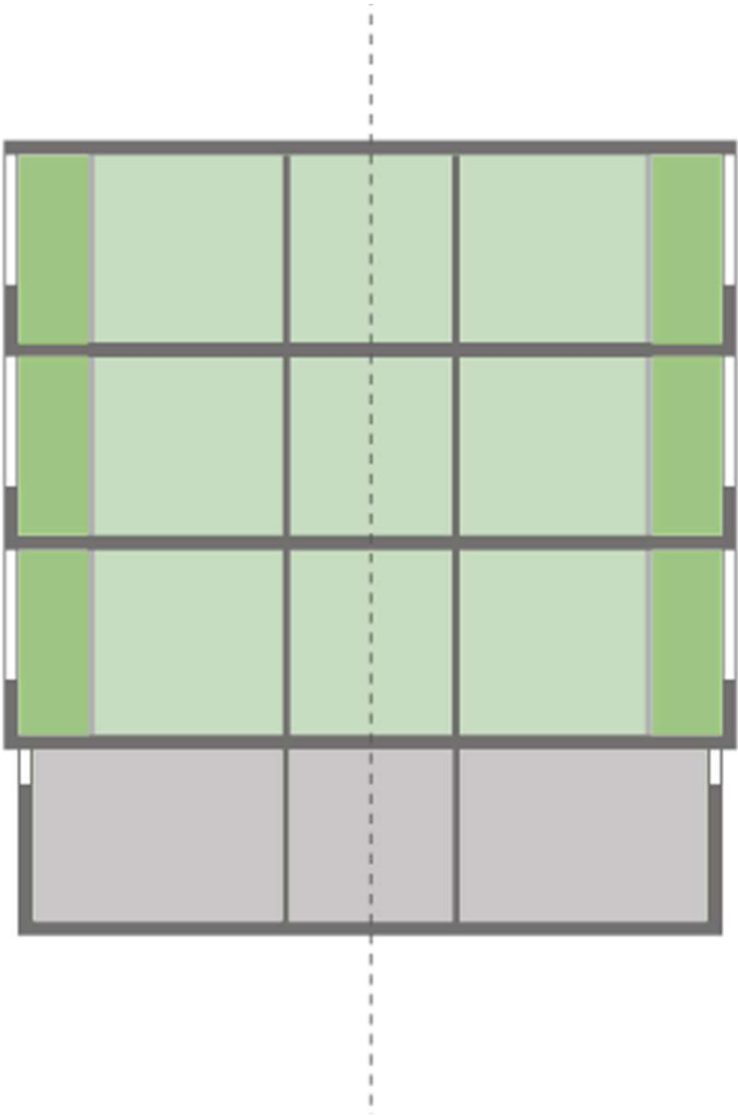
PRIVATE SIDE

SOUTH-WEST

OPEN SPACE

CALM STREET

BALCONY SIDE



PUBLIC SIDE

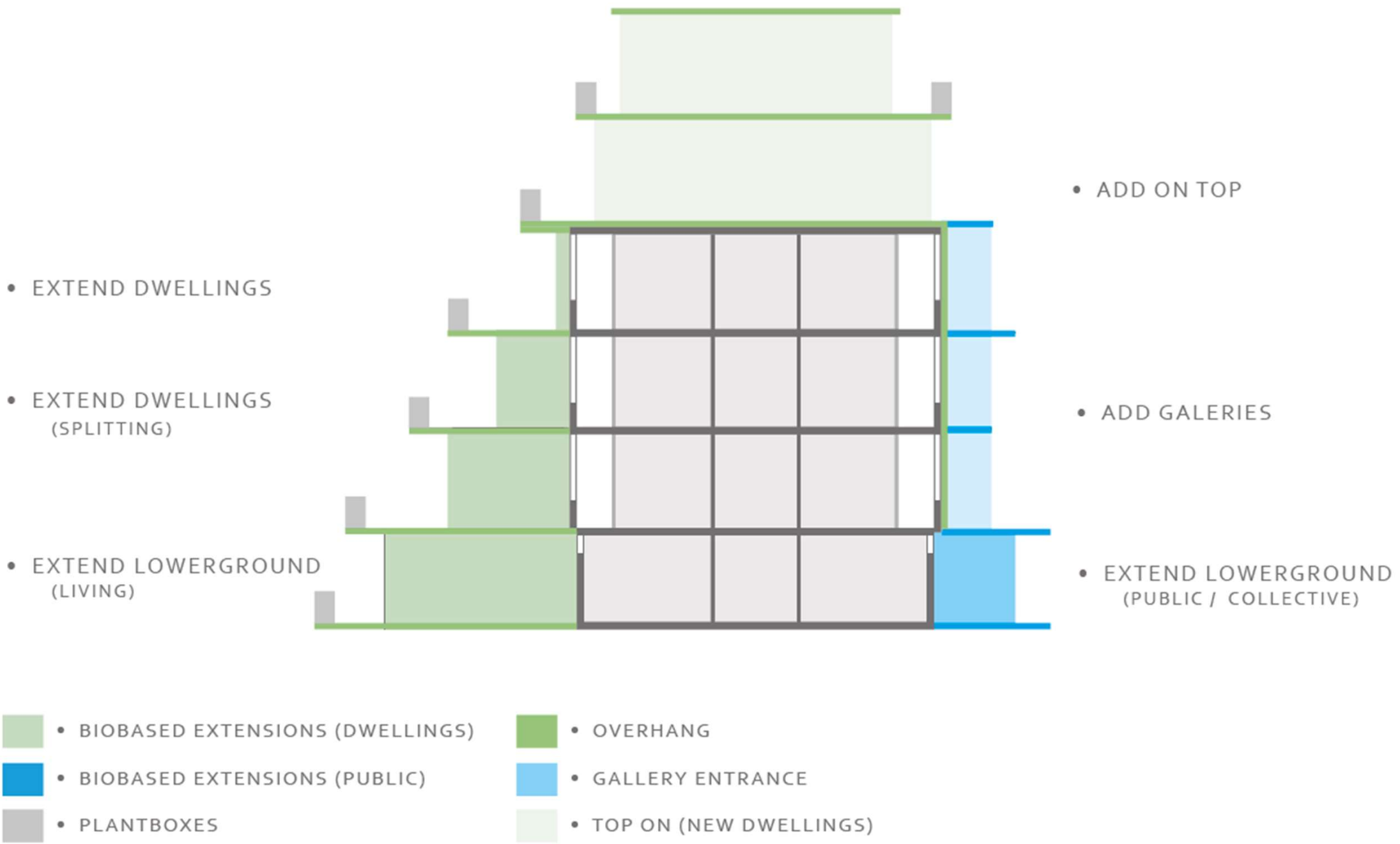
NORTH-EAST

URBAN SPACE

BUSY STREET

GALLERY SIDE

SECTION STRATEGY



Overhangs and planters provide privacy

Diverse dwelling types

Storages in the middle, no sunlight needed

dwellings connect to public space



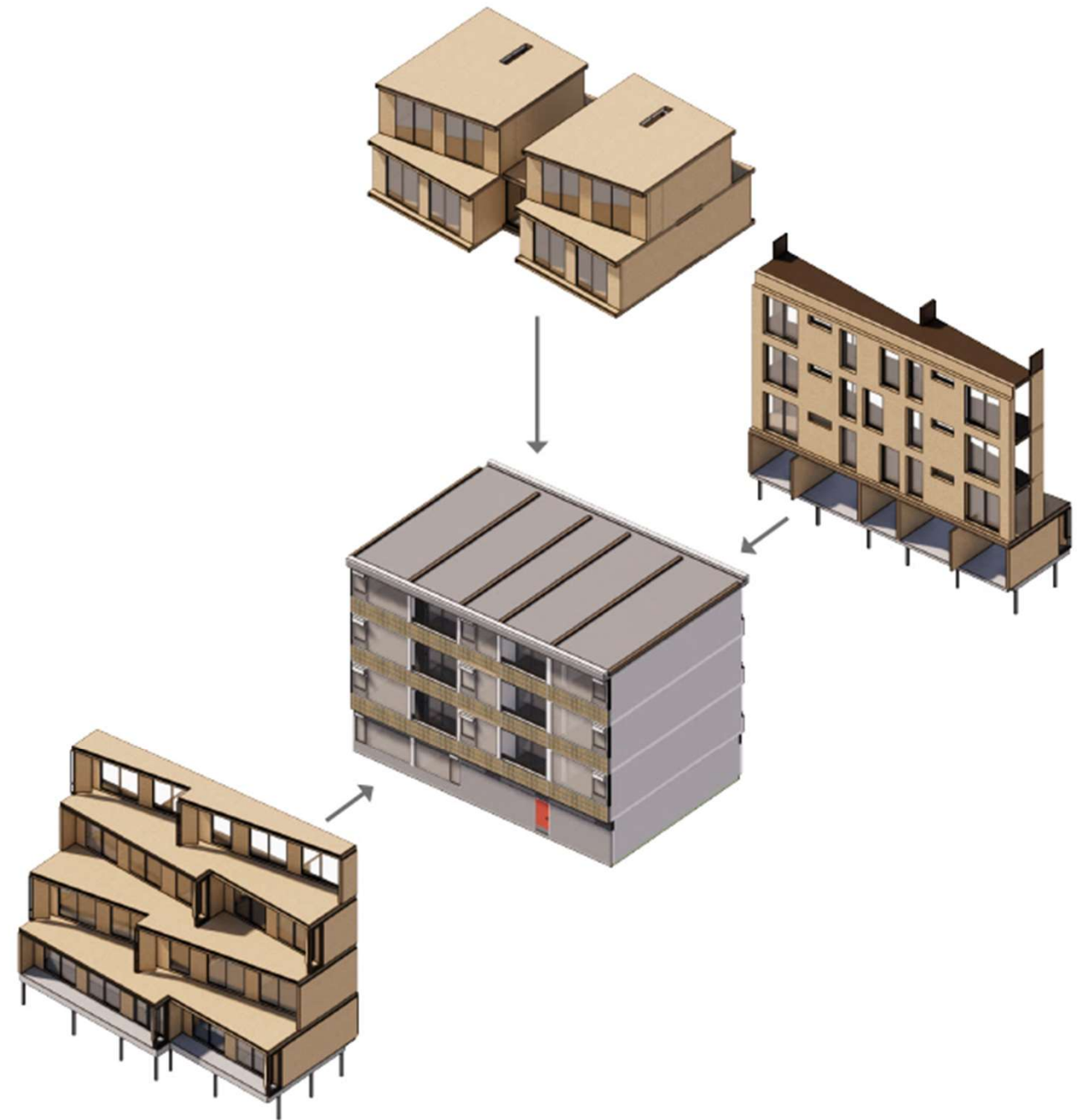
public and collective spaces connect to urban tissue

Gallery as a Collective Balcony offers shared outdoor space, encouraging social interaction.

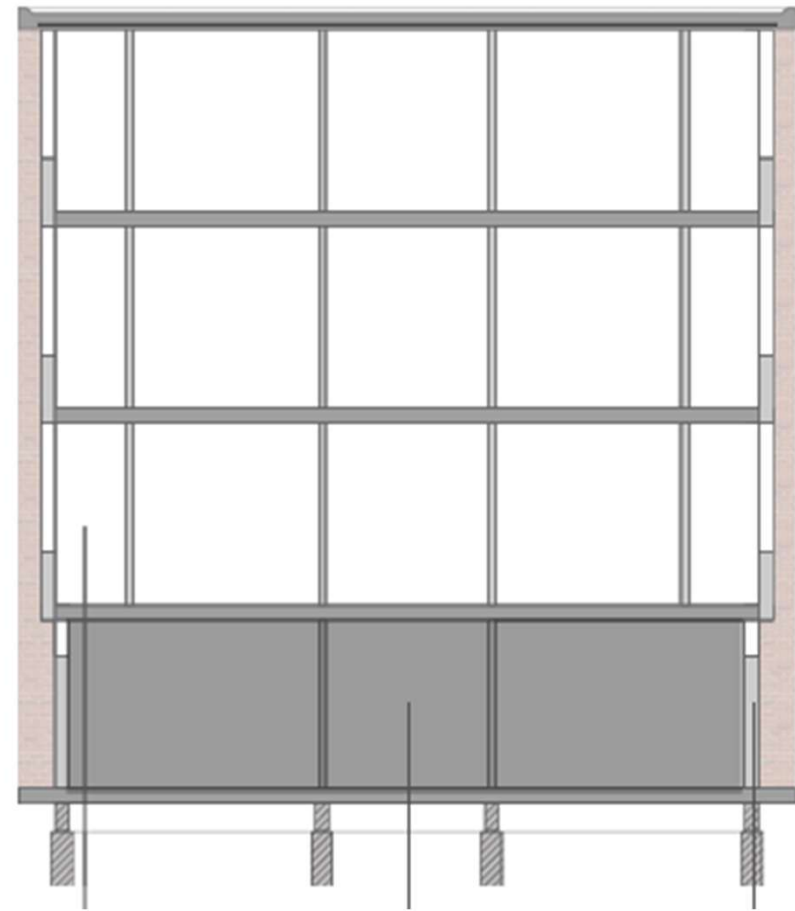
Elevator access Improves accessibility for residents with limited mobility.

Key Renovation Strategy: Lightweight Expansion

- **12% Additional Capacity**
- **Remove Existing Façade**
 - Reduces weight on the existing foundation.
- **Add Lightweight Structures on Top**
 - Utilize existing ventilation canals to minimize disruption.
- **Expand with Lightweight Materials**
 - Build a new foundation to support the expansion.
 - Divide wind load between the old and new structures.
 - Use screw injection piles to avoid vibrations during construction.



TECHNICAL SECTION EXISTING

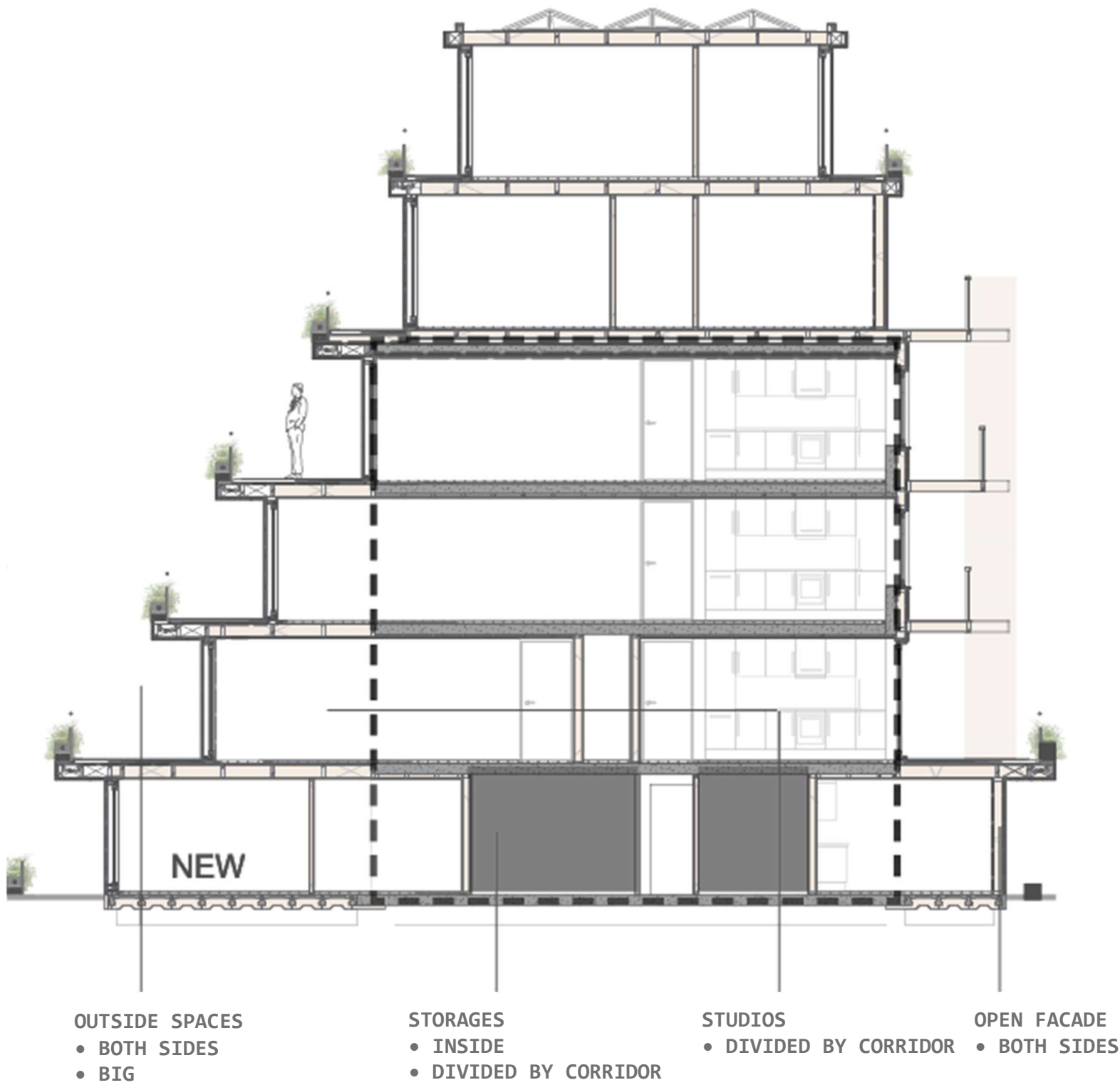


OUTSIDE SPACES
• BOTH SIDES
• SMALL

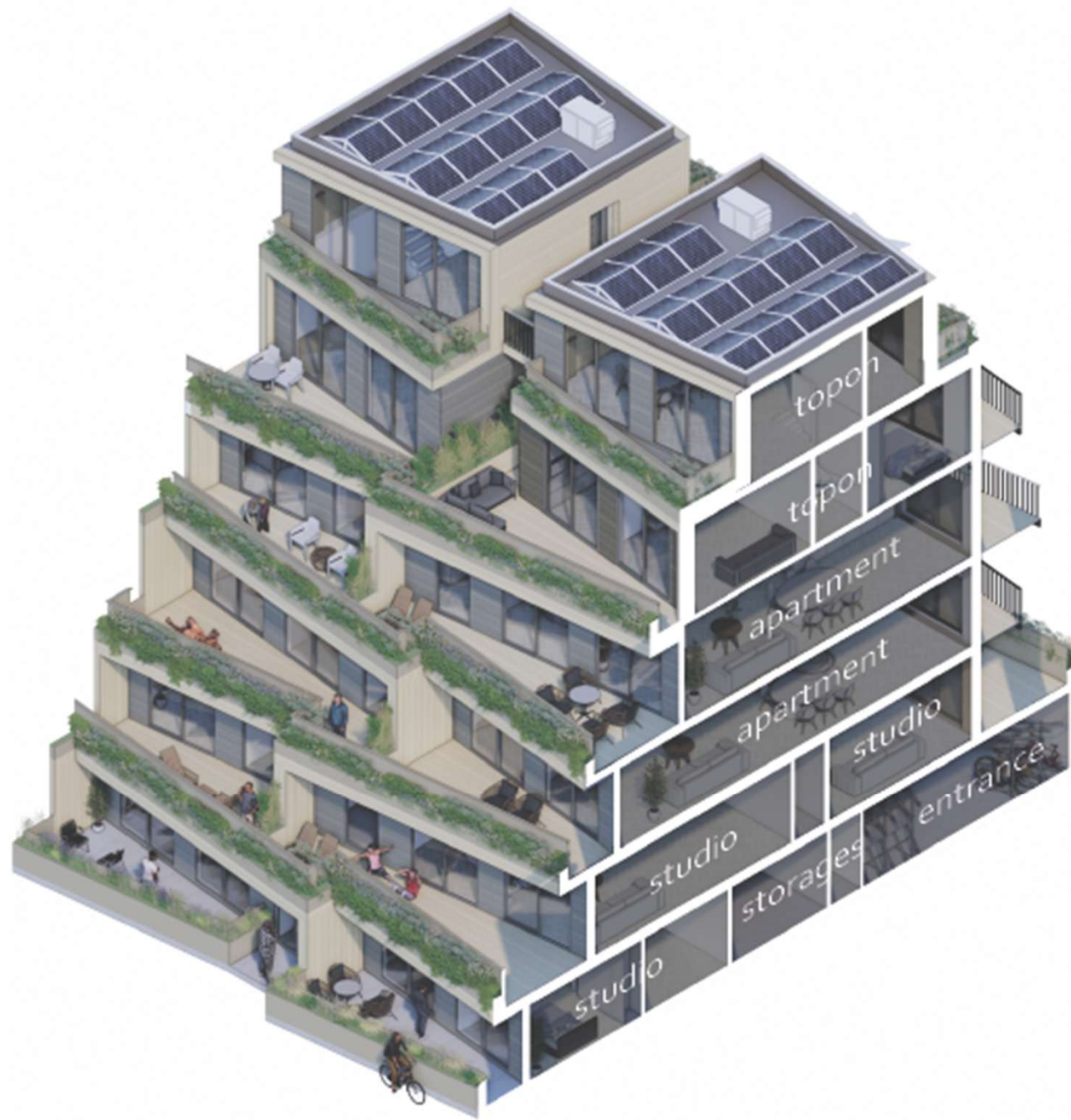
STORAGES
• BOTH SIDES

ANONYMOUS FACADES
• BOTH SIDES

TECHNICAL SECTION NEW



FUNCTION AND SIZE TRANSITION



- top-on dwellings
- expanded existing apartments
- 1st story studios
collective spaces
- ground floor apartments
- public collective functions

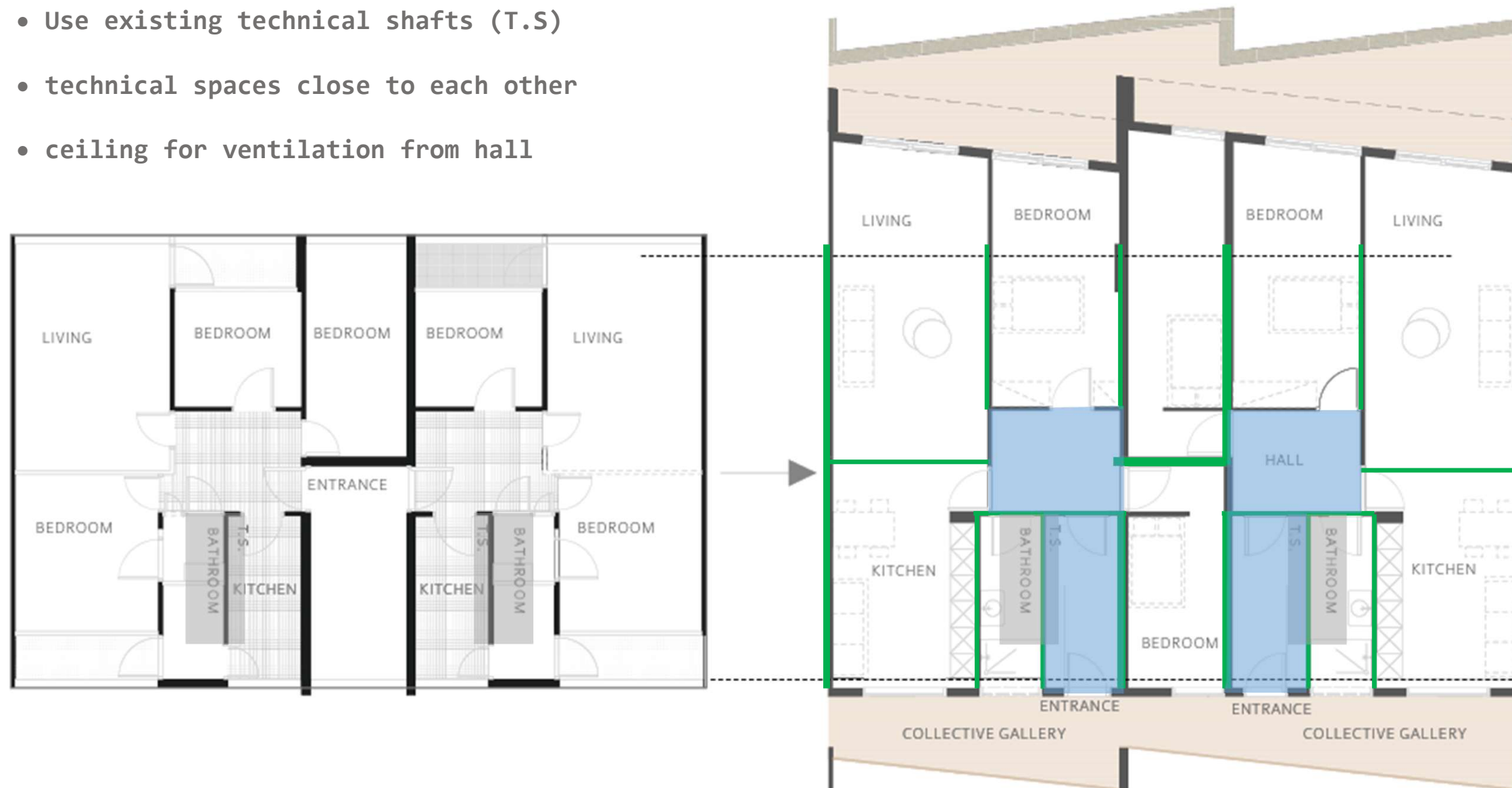
DWELLING PLANS

- use existing concrete walls as much as possible
- storages do not need sunlight
- technical spaces close to each other



DWELLING PLANS

- use existing concrete walls as much as possible
- Use existing technical shafts (T.S)
- technical spaces close to each other
- ceiling for ventilation from hall



URBAN EXPLANATION

PUBLIC / COLLECTIVE / GALLERY SIDE (NORTH)



COLLECTIVE ROOFGARDEN

- two stories
- places to sit, south oriented

ENTRANCE

- with place to sit
- connected with bicycle storage
- next to collective spaces
- postmail boxes

EMERGENCY STAIRS

- both sides

PUBLIC SPACES

- shops
- small businesses
- flex places

BIG STREET

PRIVATE SIDE (SOUTH)



COLLECTIVE ROOFGARDEN

- two stories
- places to sit, south oriented

EMERGENCY STAIRS

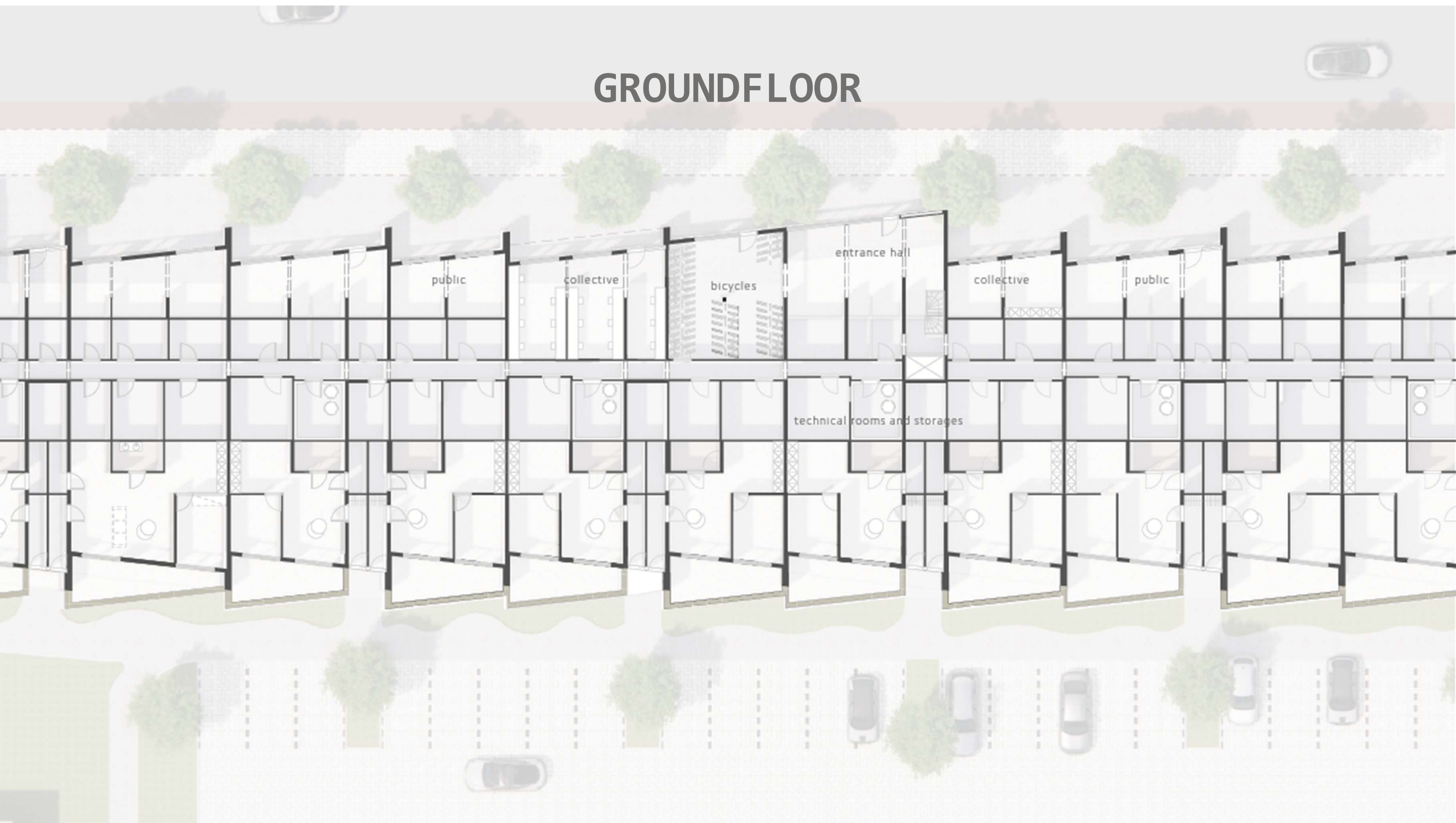
- both sides

GROUND FLOOR APARTMENTS

- own groundfloor entrances
- from public to semi, to private

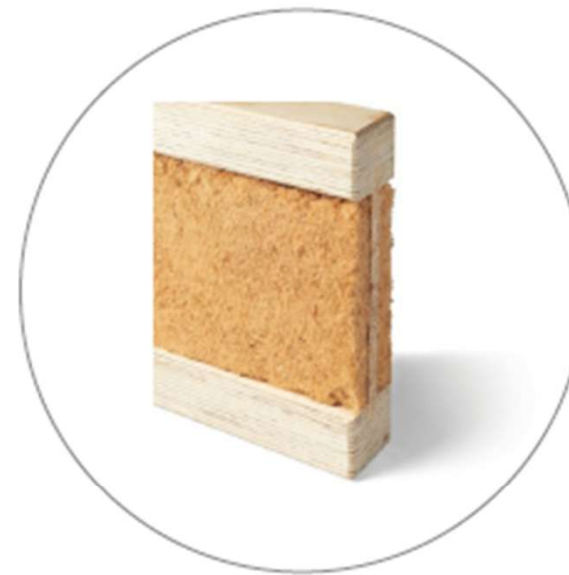
CALM STREET

GROUND FLOOR



SIP (STRUCTURAL INSULATED PANEL)

SWIFT, EASY & LIGHTWEIGHT



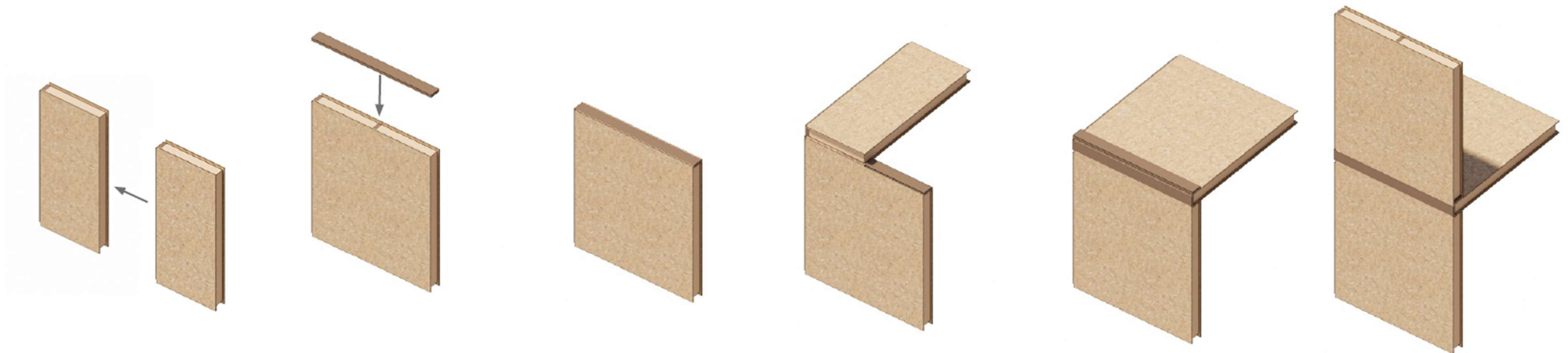
- 205 mm SIP
- 2X 15mm OSB
 - 175mm wood fibre insulation
 - timber studs 175 x 63 mm

- BIOBASED WOODFIBRE INSULATION

- BIOBASED OSB

SIP (STRUCTURAL INSULATED PANEL)

SWIFT, EASY & LIGHTWEIGHT

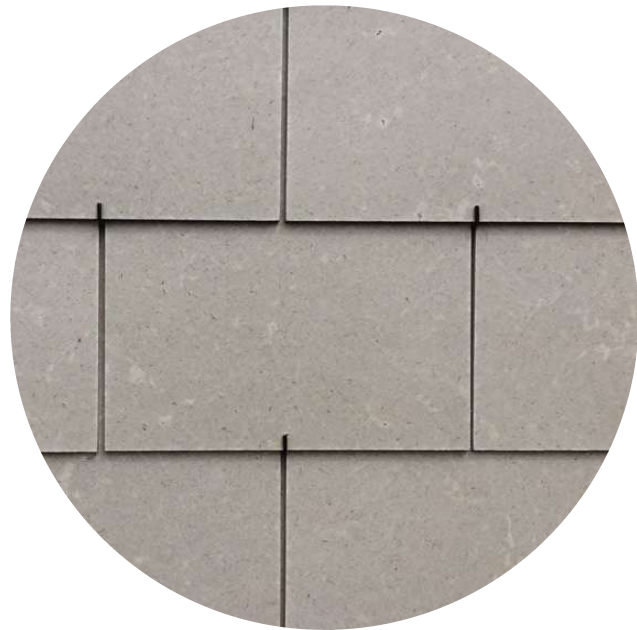


- BIOBASED WOODFIBRE INSULATION
- BIOBASED OSB

- INTERIOR WALL SIPS 110mm
- FACADE SIPS 205mm
- DWELLING DIVIDING AND LOADBEARING 205mm
- FLOORSIPS 275mm



MATERIALS



**BIOBASED COMPOSITE
planters**



**THERMOWOOD NATURAL
facade horizontal**



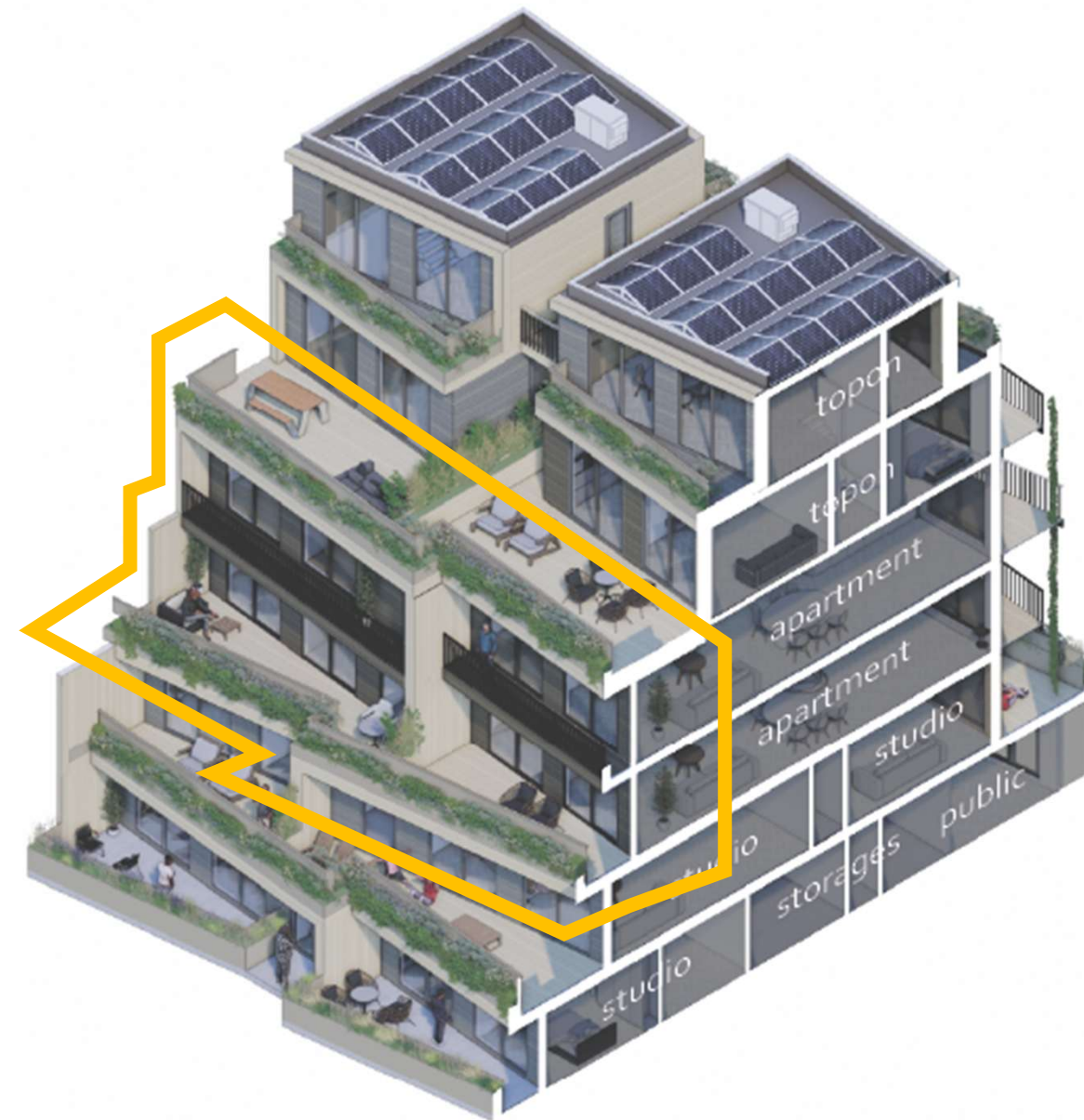
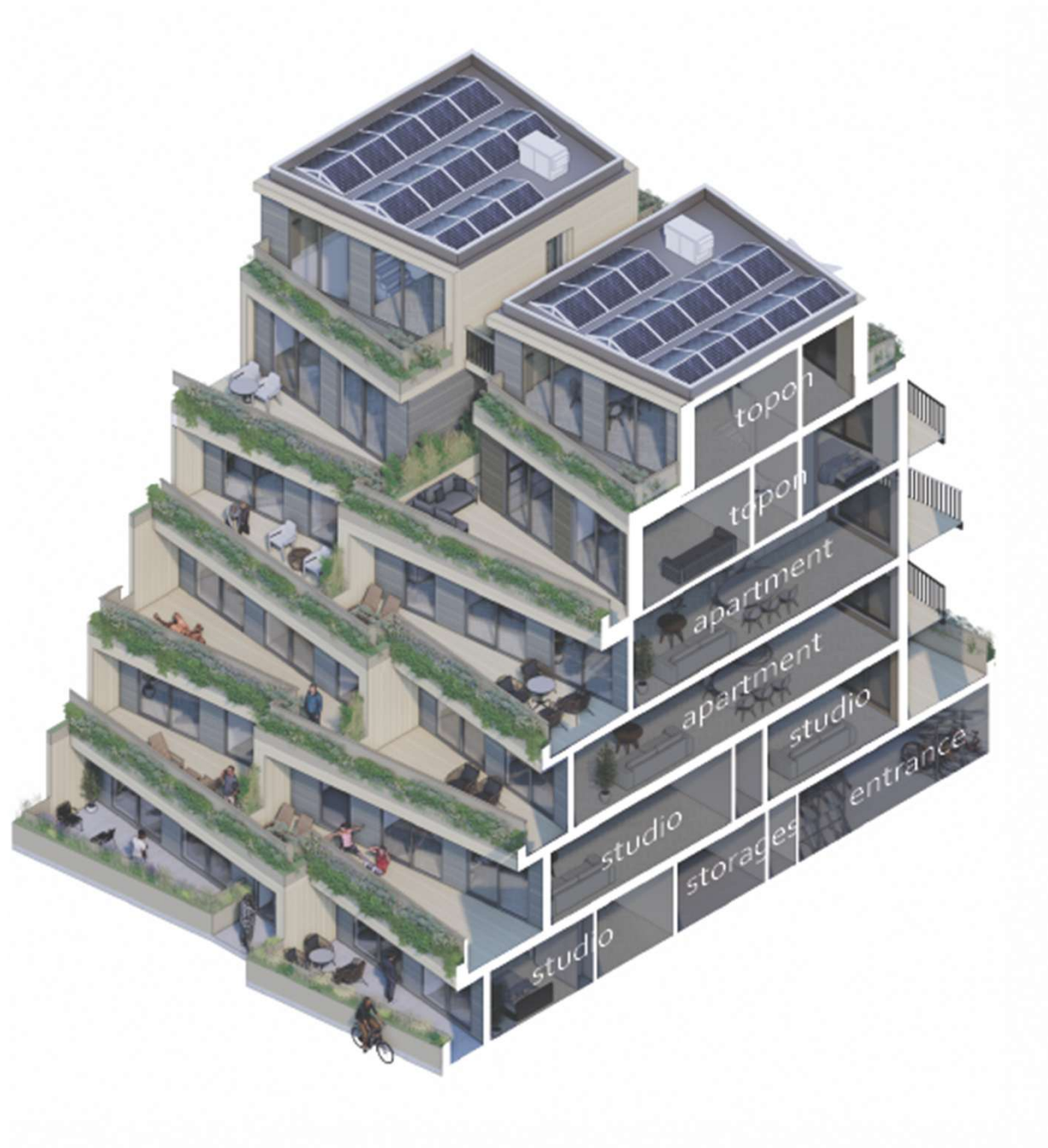
**THERMOWOOD GREY
facade vertical infill**



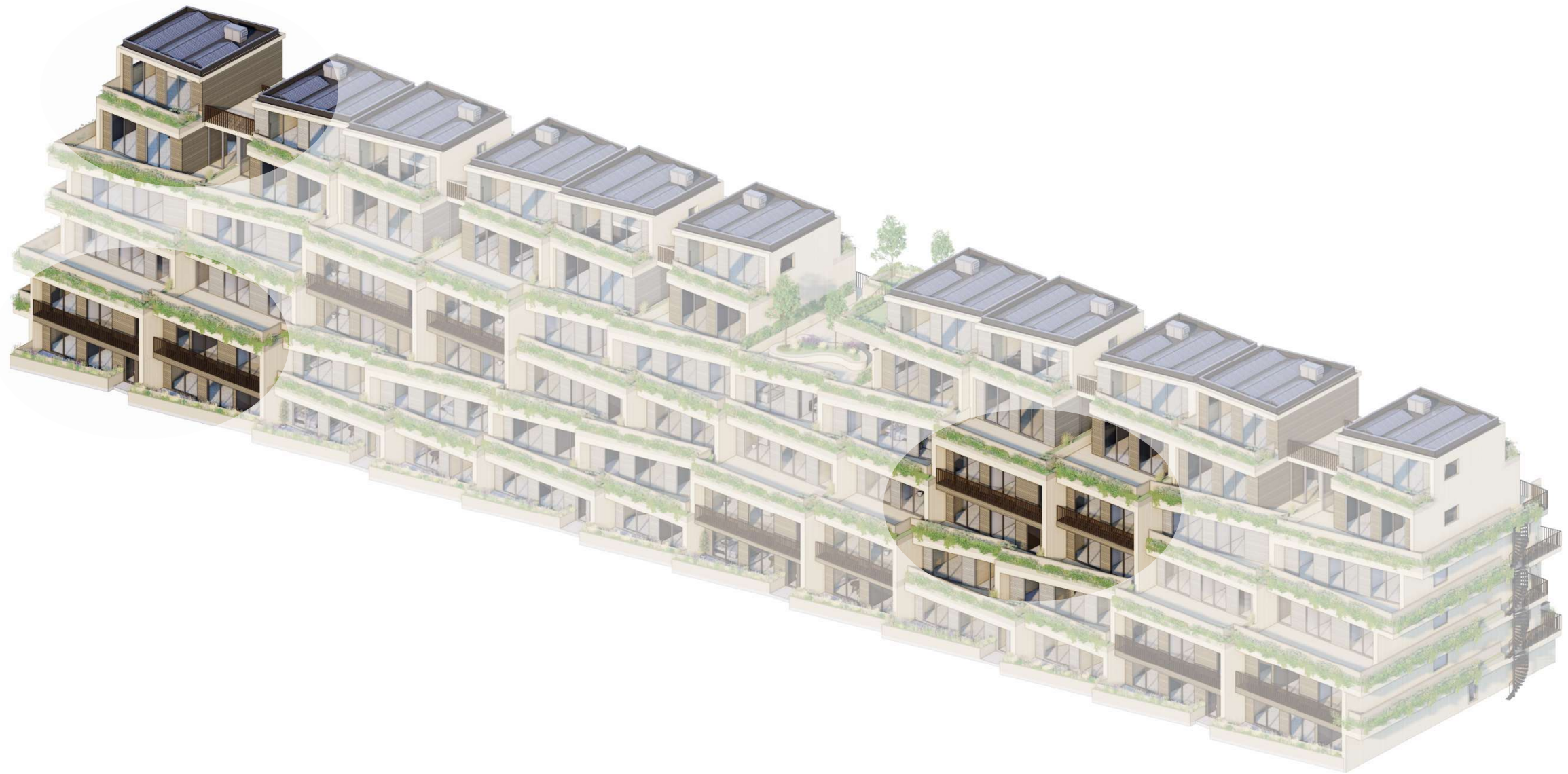
**THERMOWOOD BROWN
facade vertical infill**

The façade materials are attached to a framework. This makes them easier to adapt and replace

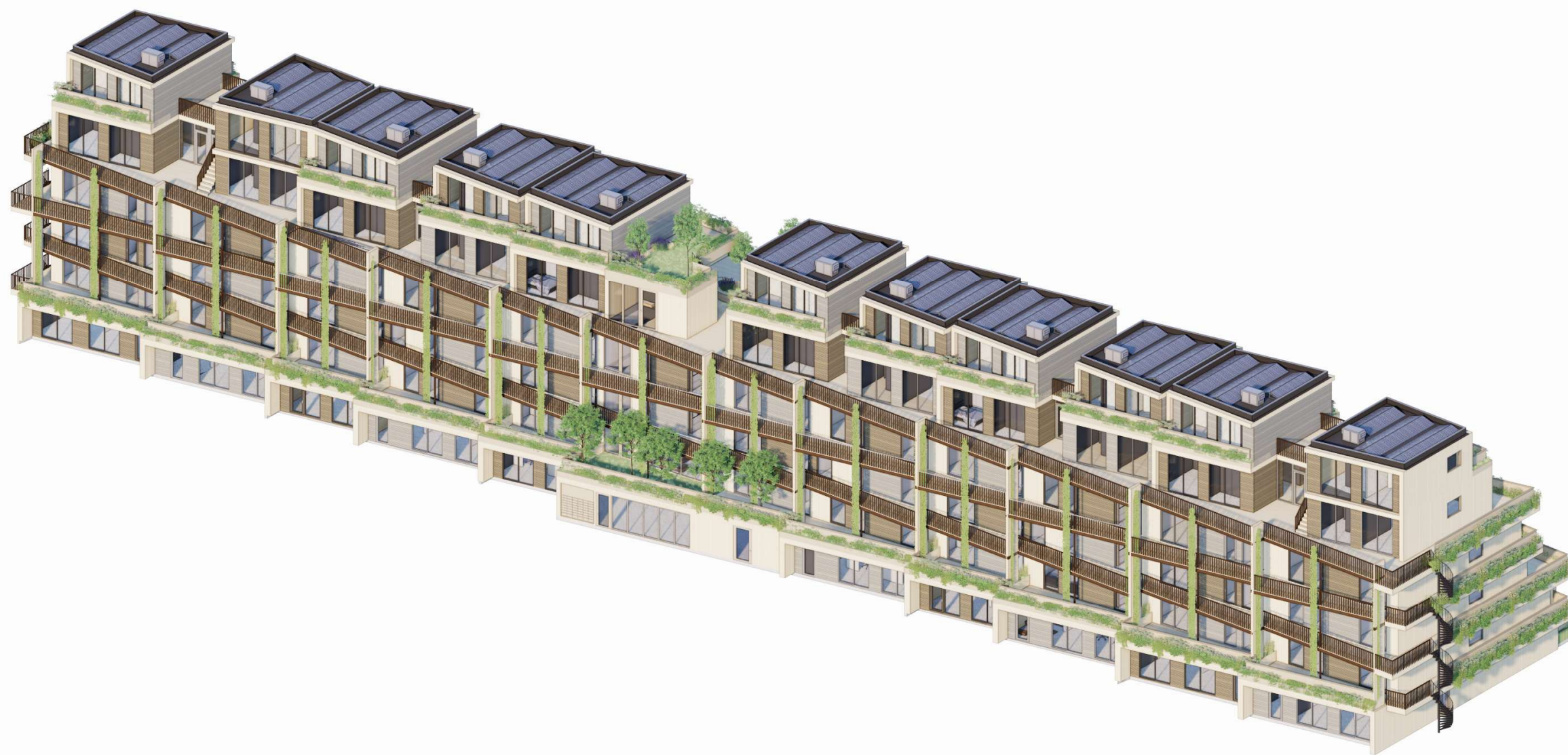
MAIN BUILDING VARIANT



ISOMETRIC



ISOMETRIC



CLIMATE SCHEME

SOLAR PANELS

- 26 solar panels per roof
- 400Wp

PLANTBOXES

- With automatic watering system
- making use of rainwater

LOWERED CEILINGS

- for ventilation type D

FLOORHEATING

- connected to heat pump
- Cooling in summer. • Heating in winter.

THERMAL HEATING STORAGE

- Open Aquifer Thermal Energy Storage system
- Cooling in summer. • Heating in winter.

VENTILATION BOX

- type D collective. 1200x 650x 800mm

RAIN WATER

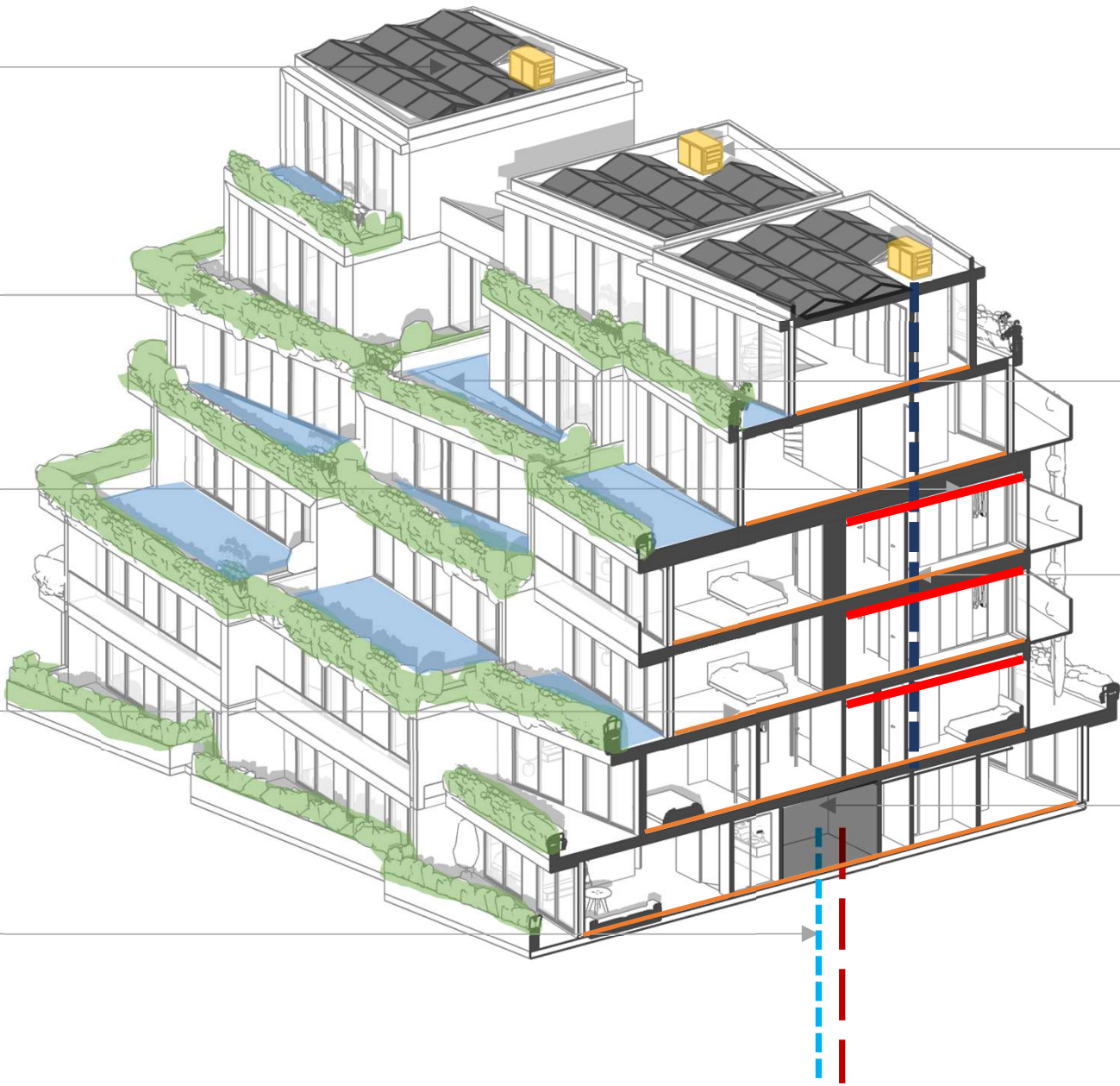
- used for plantboxes

PIPE DUCT

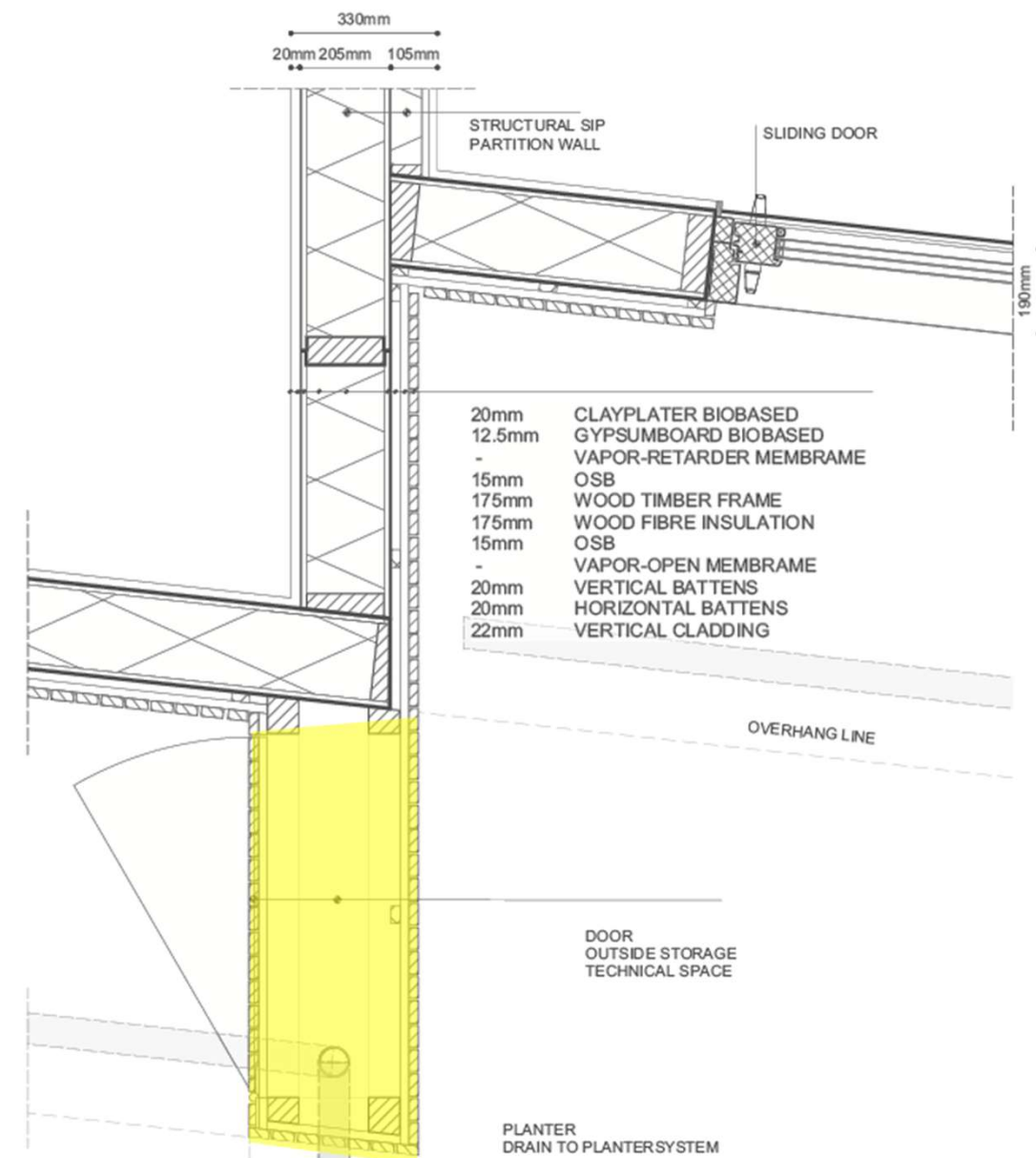
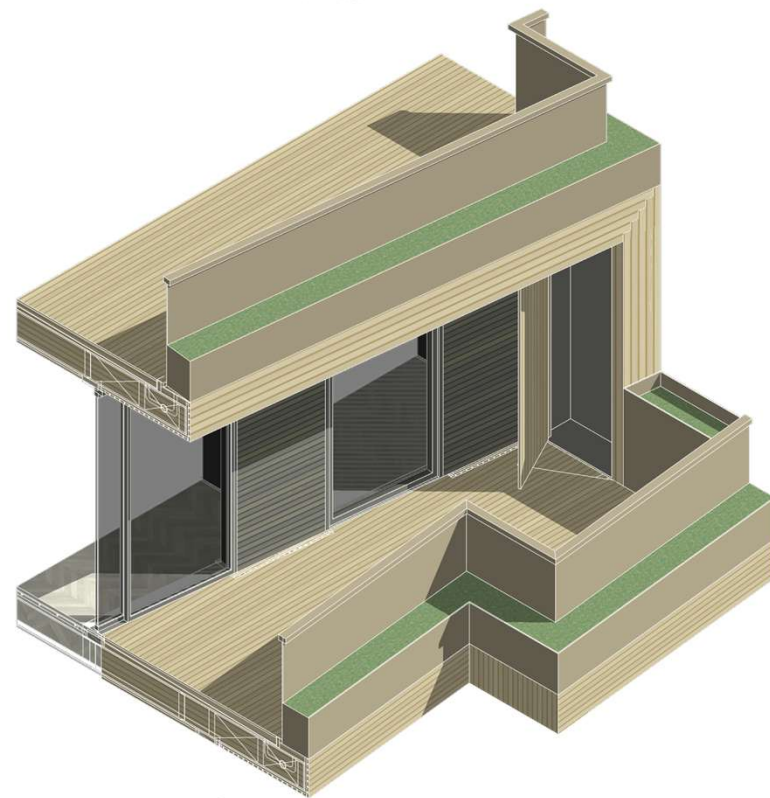
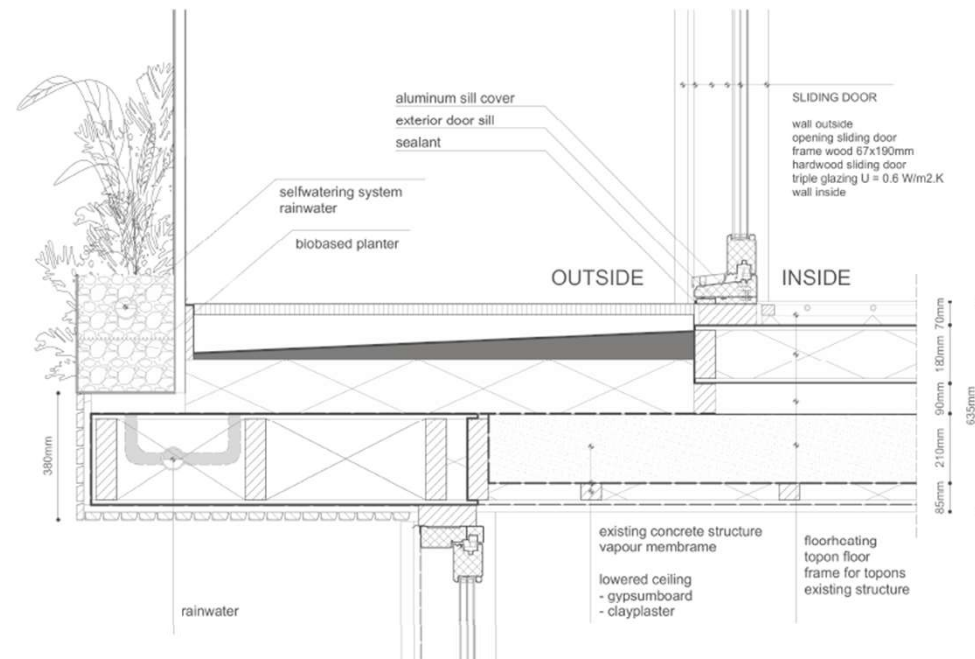
- riser pipes toilettes
- ventilation ducts
- plumbing pipes

TECHNICAL ROOM

- with heatpump
- Insulated for noice



WATER SYSTEM



URBAN



GREEN SPACES TO STAY

- biodiversity improving plants
- 'park feeling'
- paths

SOLAR PANELS

- parking spots with solar panels on roofs

GREEN SPACES TO STAY

- benches
- biodiversity improving plants
- 'park feeling'



URBAN

URBAN



EYEVIEWS



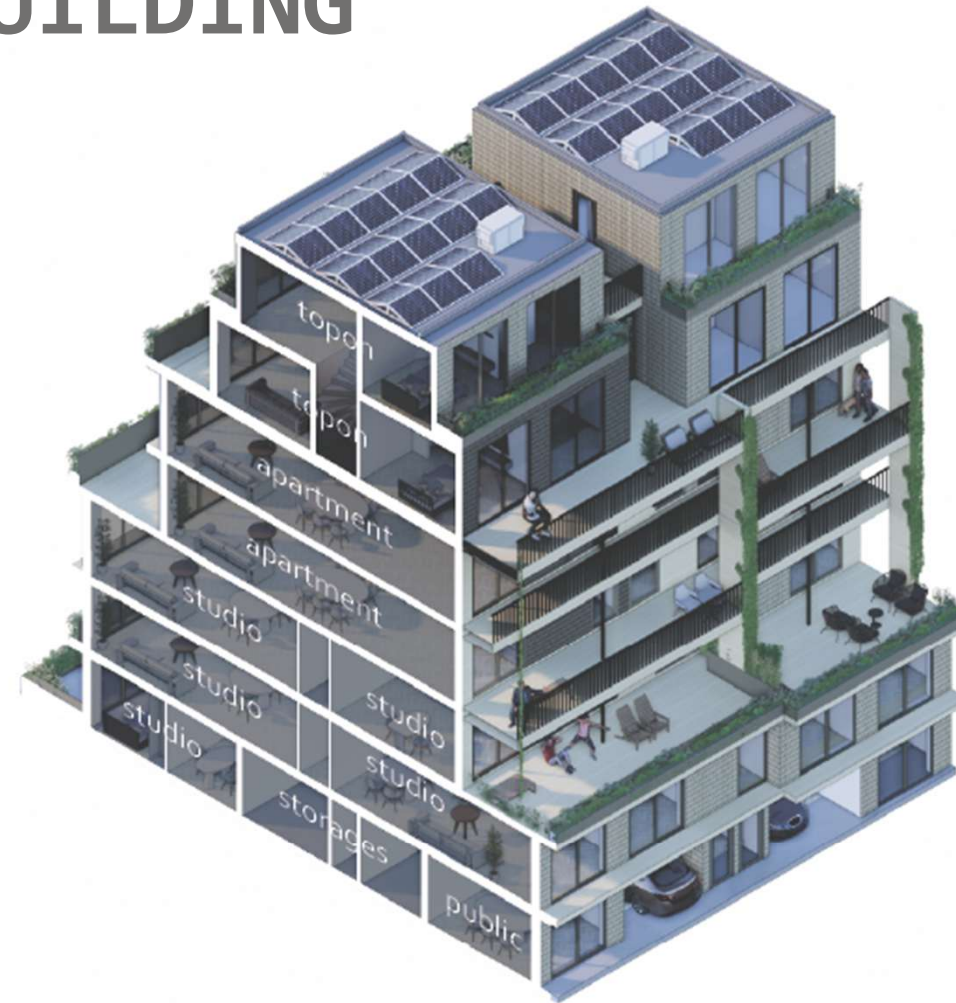
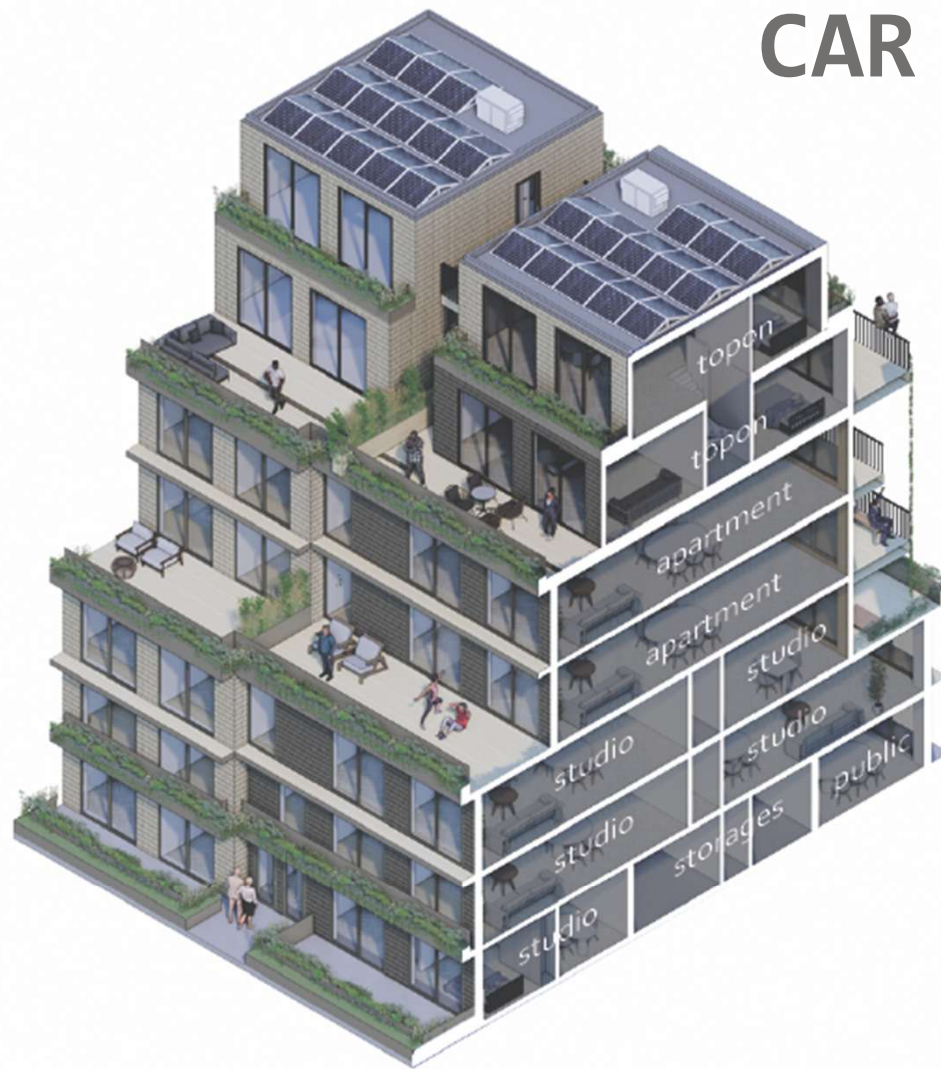
EYEVIEWS



INTERIOR

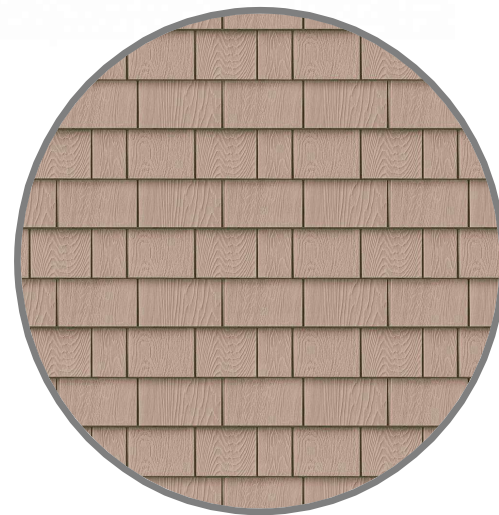


CAR BUILDING



DESIGN LANGUAGE

- ORTHOGONAL
- BLOCKLANGUAGE
- BIGGER PLINTH



MATERIAL

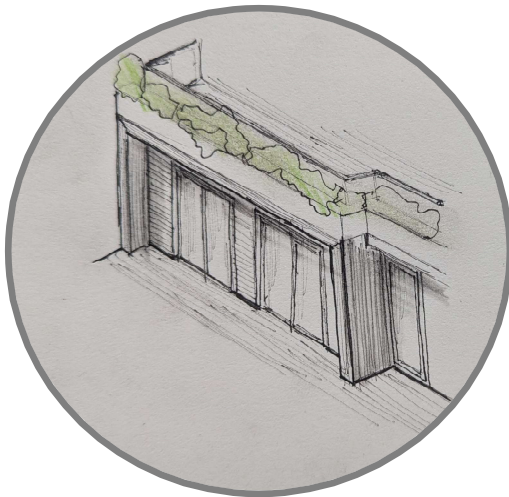
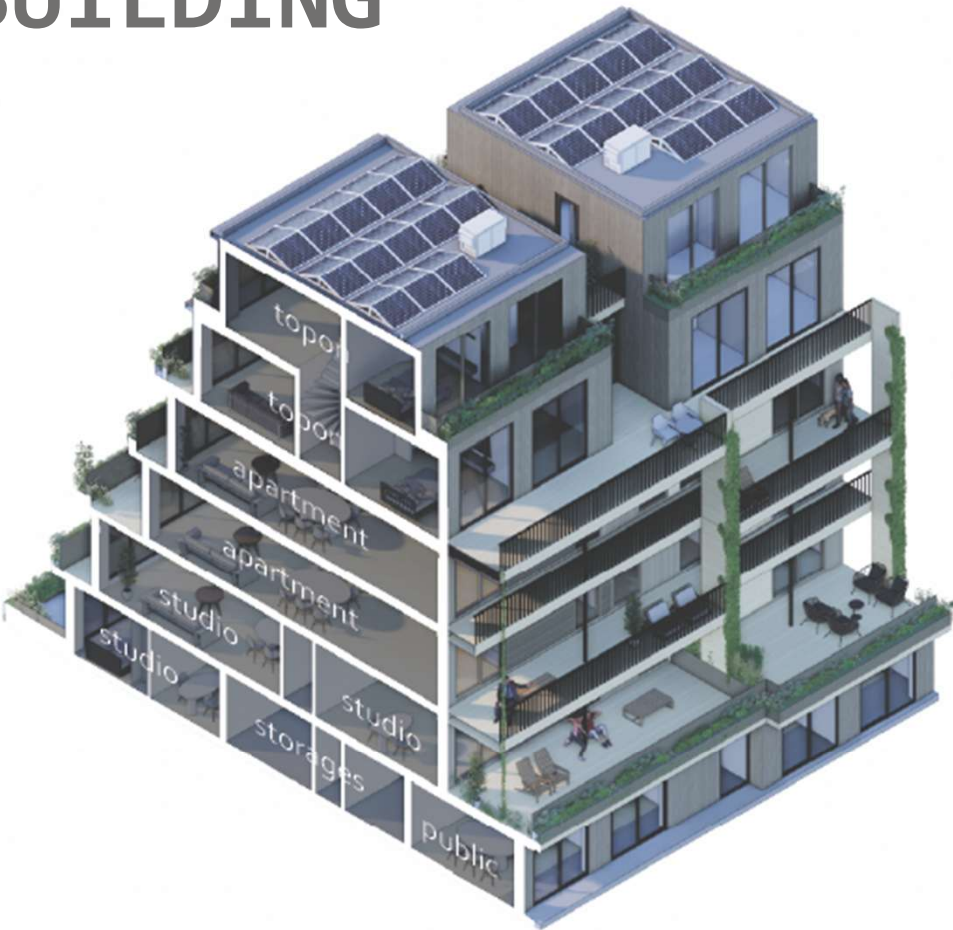
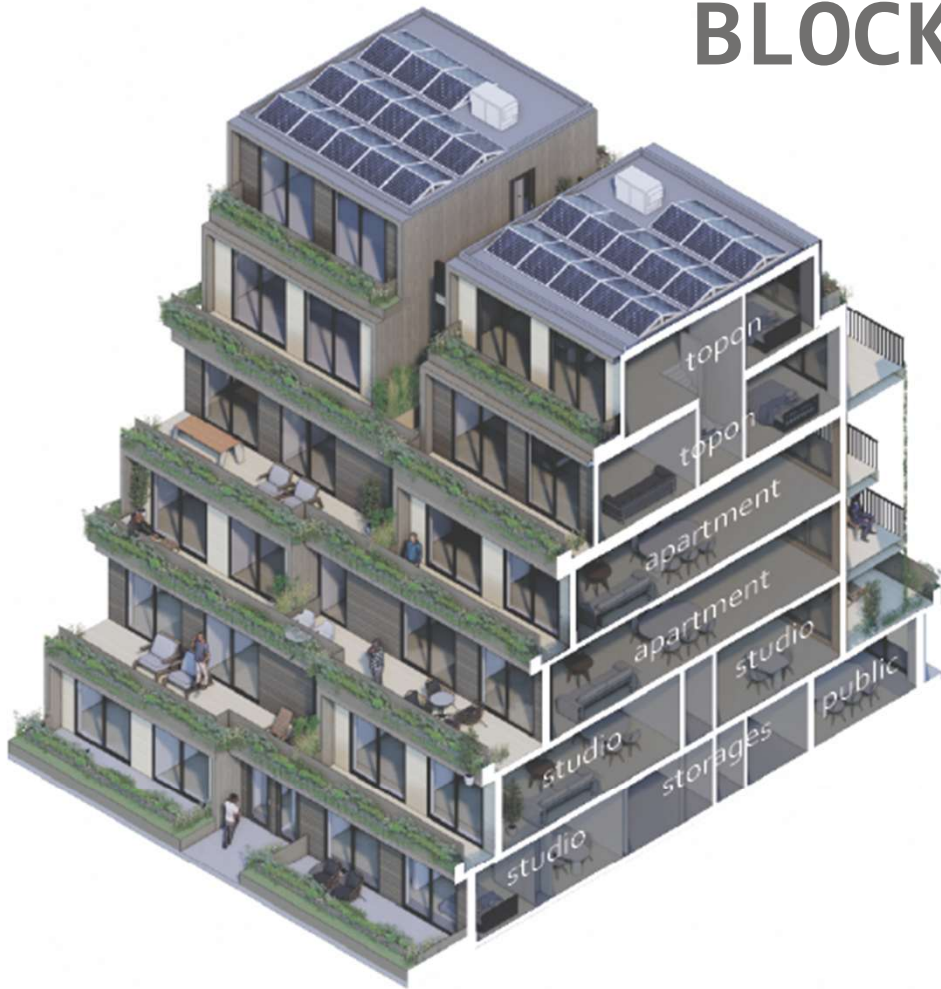
- WOODEN 'TILES'
- DARK
- LIGHT
- BIOBASED COMPOSITE



TARGET GROUP

- FOR LESS PARKING SPACE AREA
- RELATIVE MORE STUDIO young people

BLOCK BUILDING



DESIGN LANGUAGE

- ORTHOGONAL
- FOLDED LANGUAGE



MATERIAL

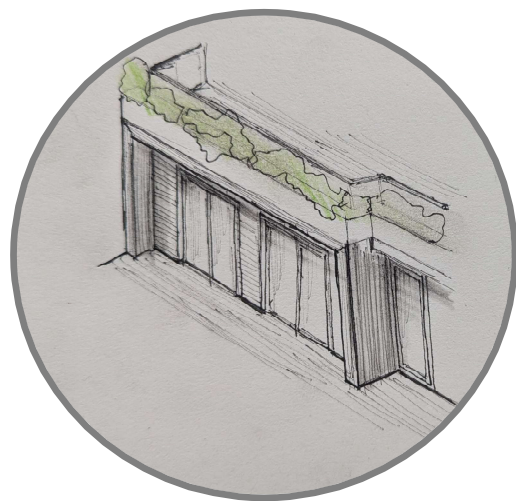
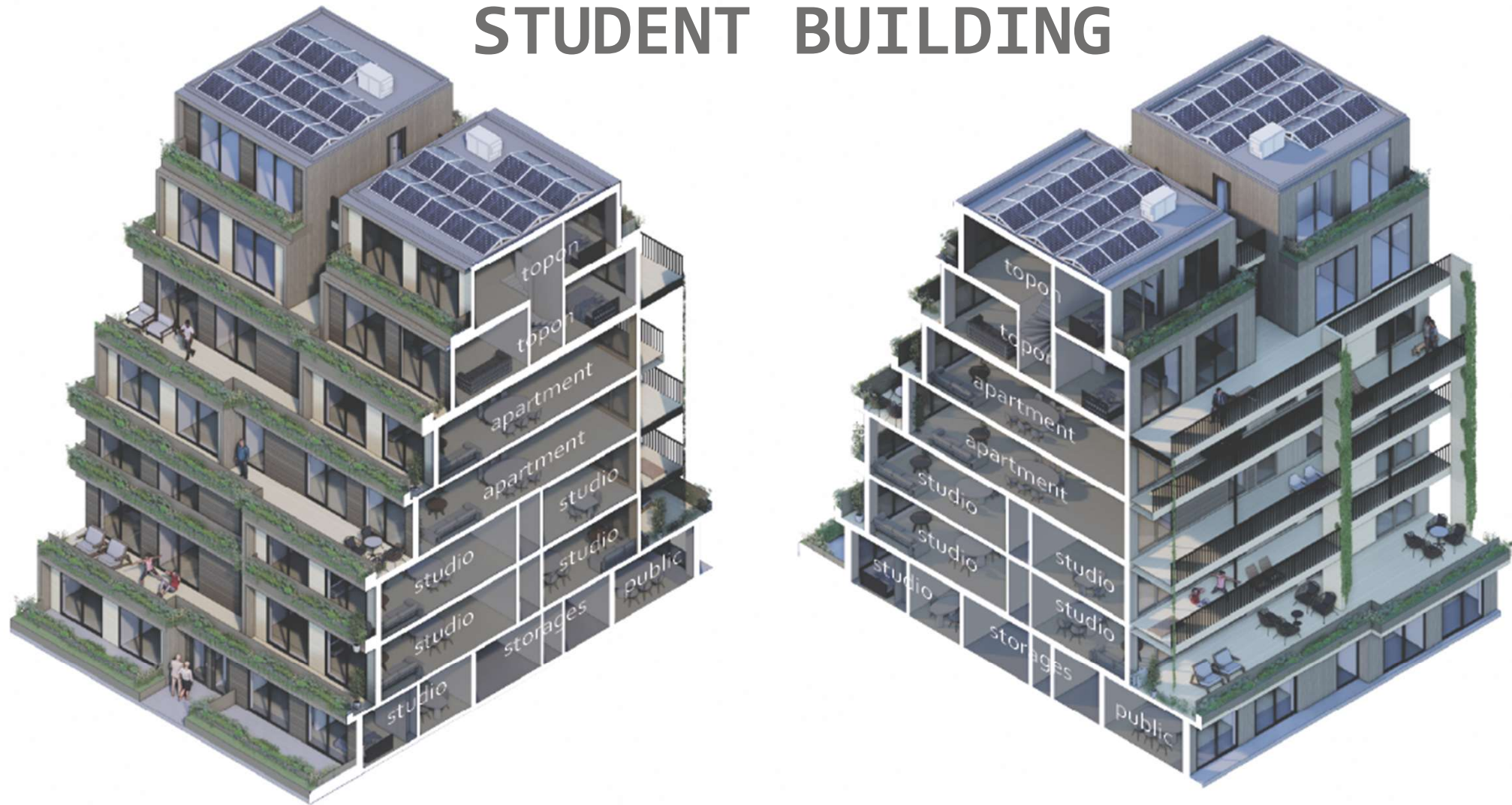
- WOODEN 'TILES'
- DARK
- LIGHT
- BIOBASED COMPOSITE



TARGET GROUP

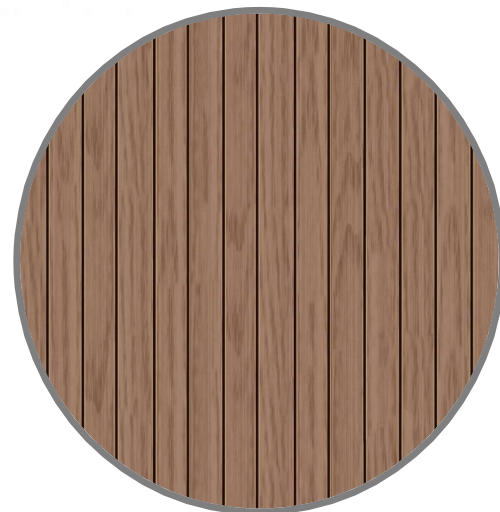
- MIXED

STUDENT BUILDING



DESIGN LANGUAGE

- ORTHOGONAL
- FOLDED LANGUAGE



MATERIAL

- WOODEN 'TILES'
- DARK
- LIGHT
- BIOBASED COMPOSITE



TARGET GROUP

- MIXED
- RELATIVE MORE STUDIO young people

URBAN

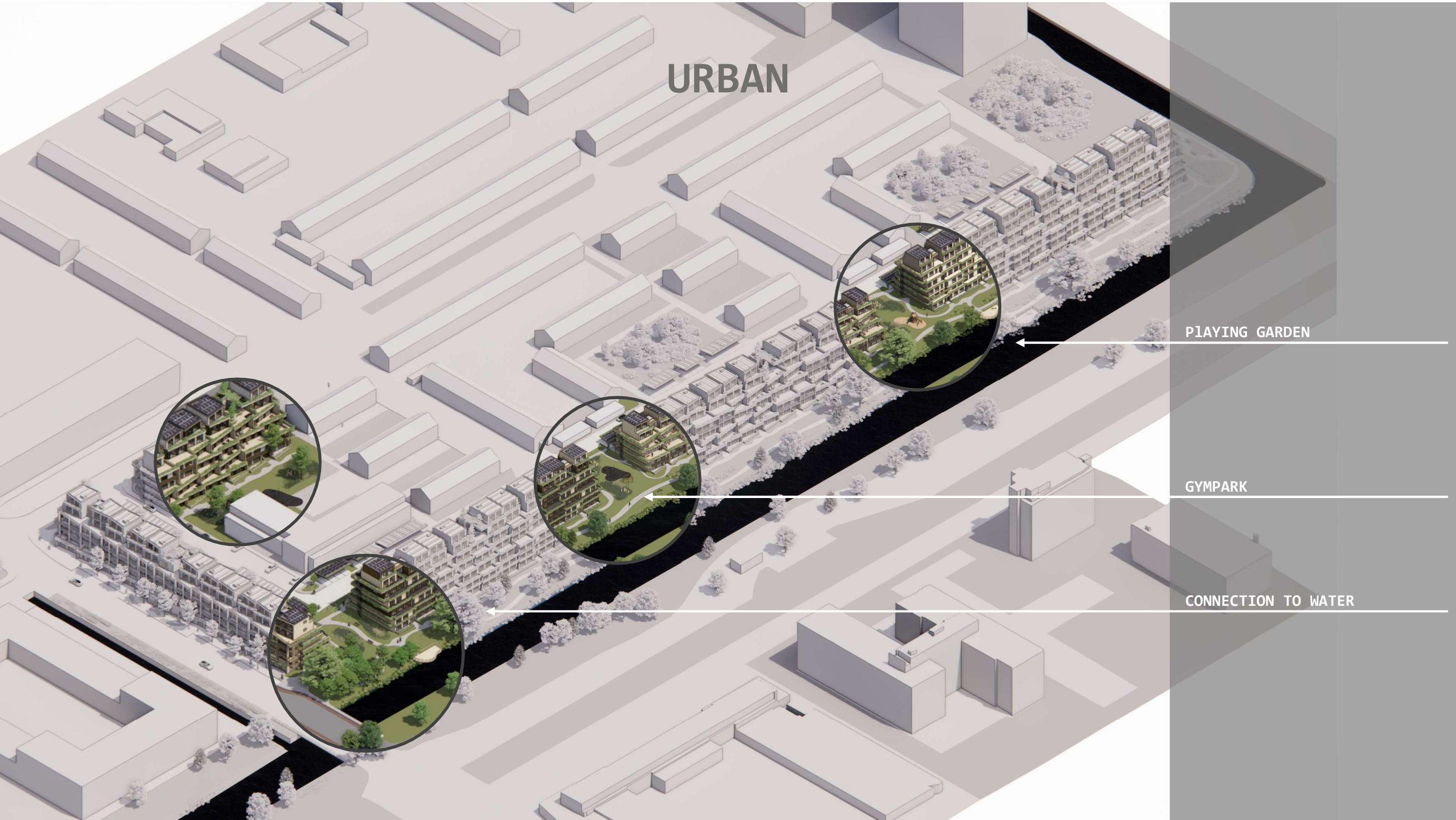


URBAN

PLAYING GARDEN

GYMPARK

CONNECTION TO WATER

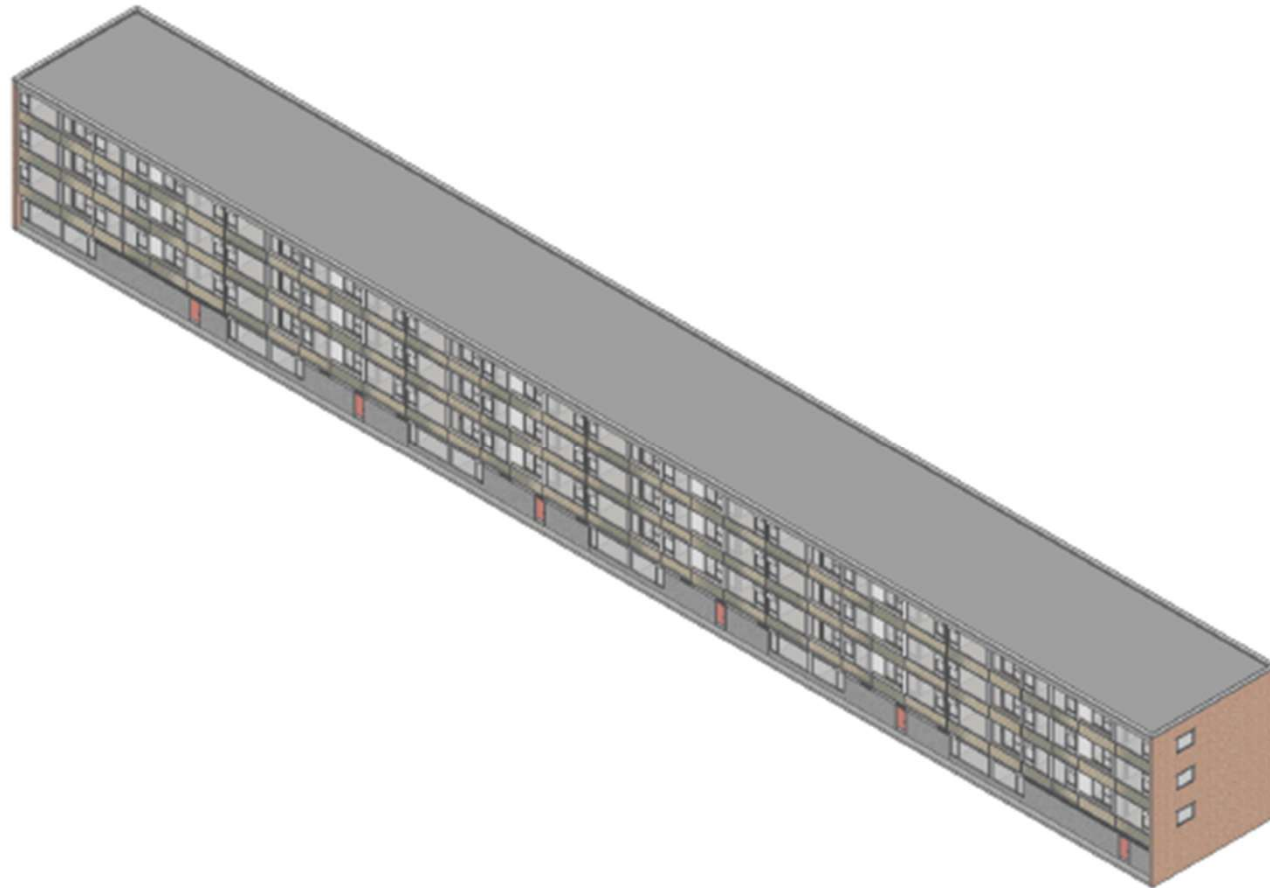


ORIENTATION

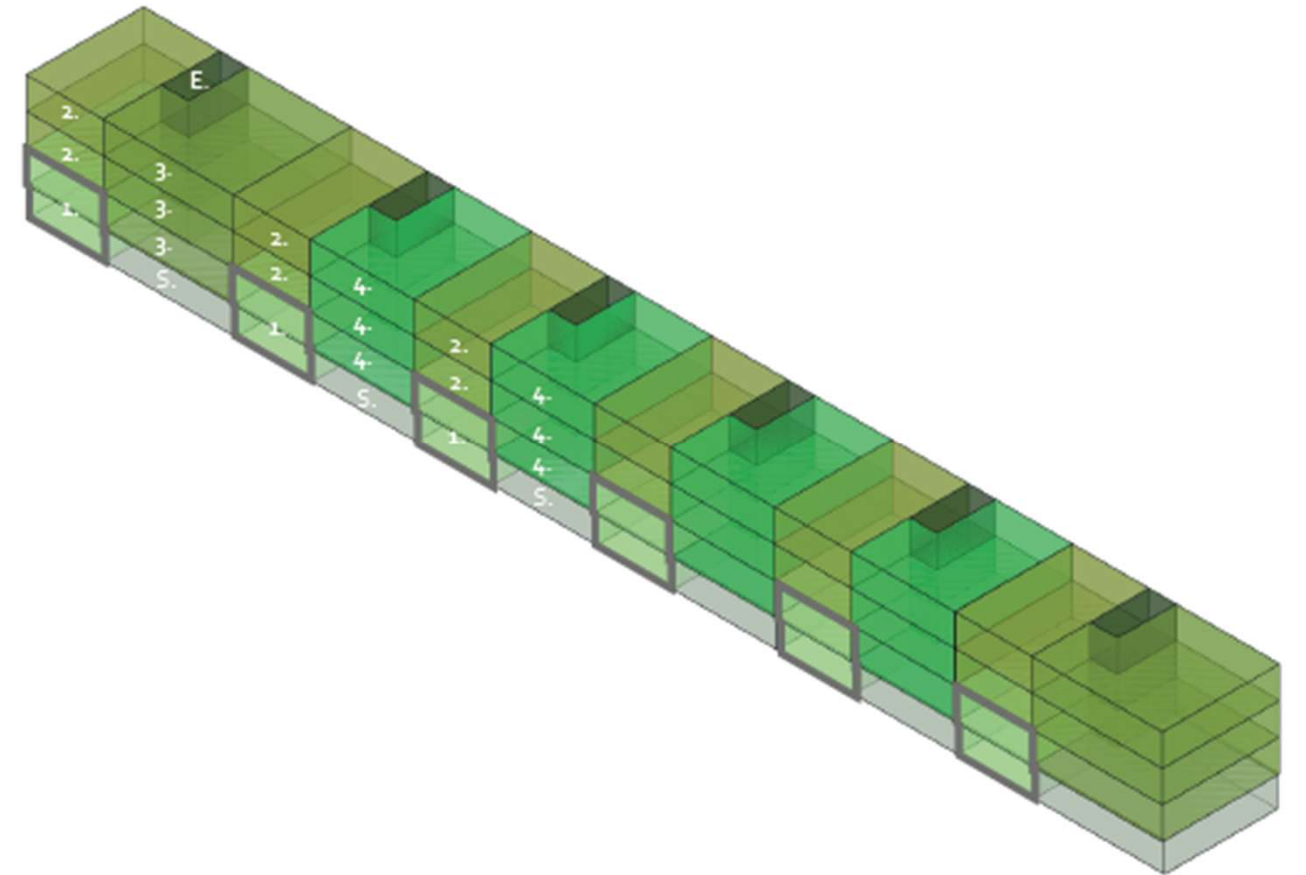




NUMBERS

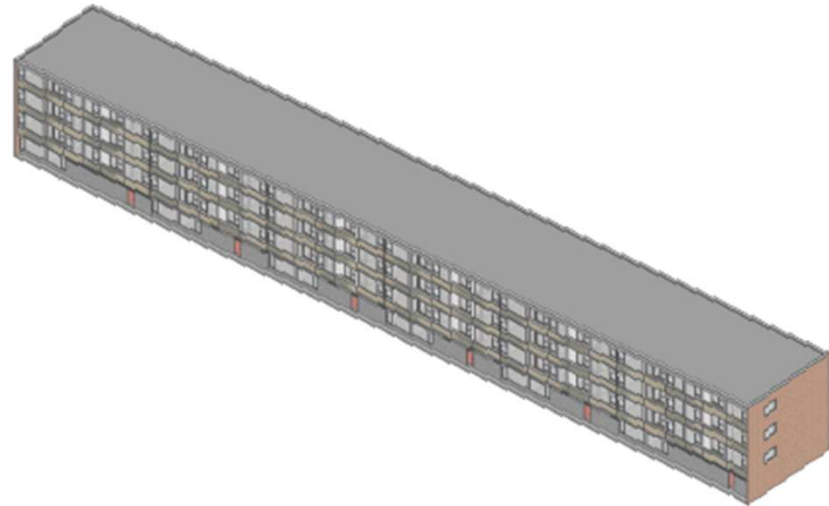


3.276m²



36 dwellings

NUMBERS



5.172m² living space

67 dwellings

500m² collective/public

FACTOR OF 1,86 dwelling amount

FACTOR OF 1,74 M² living space

CONCLUSION

variety in building and urban scale

Connects the buildings with the urban tissue

Connection and integrations with green

Improved liveability and biodiversity

A densification of 1.74 that solves the shortage



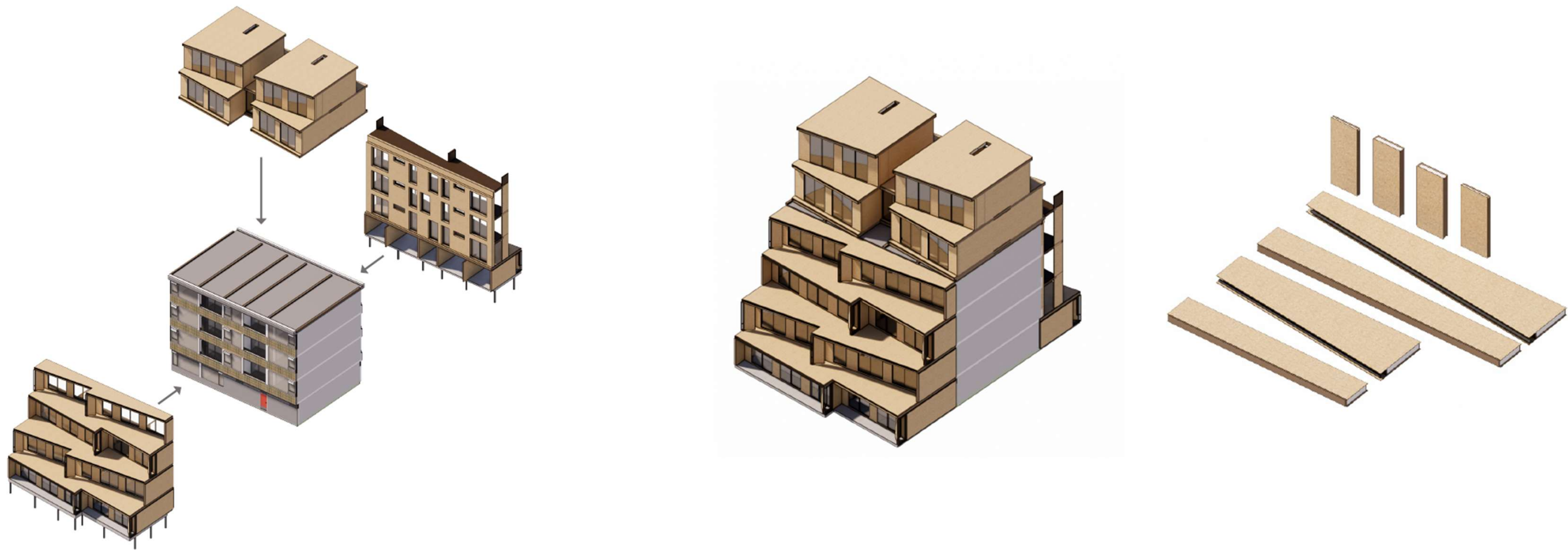
CONCRETE STRUCTURES

*Why demolish when the concrete frame remains strong?
Retaining it minimizes CO₂ emissions and environmental
costs*

IN CONTRAST WITH THE EXISTING:

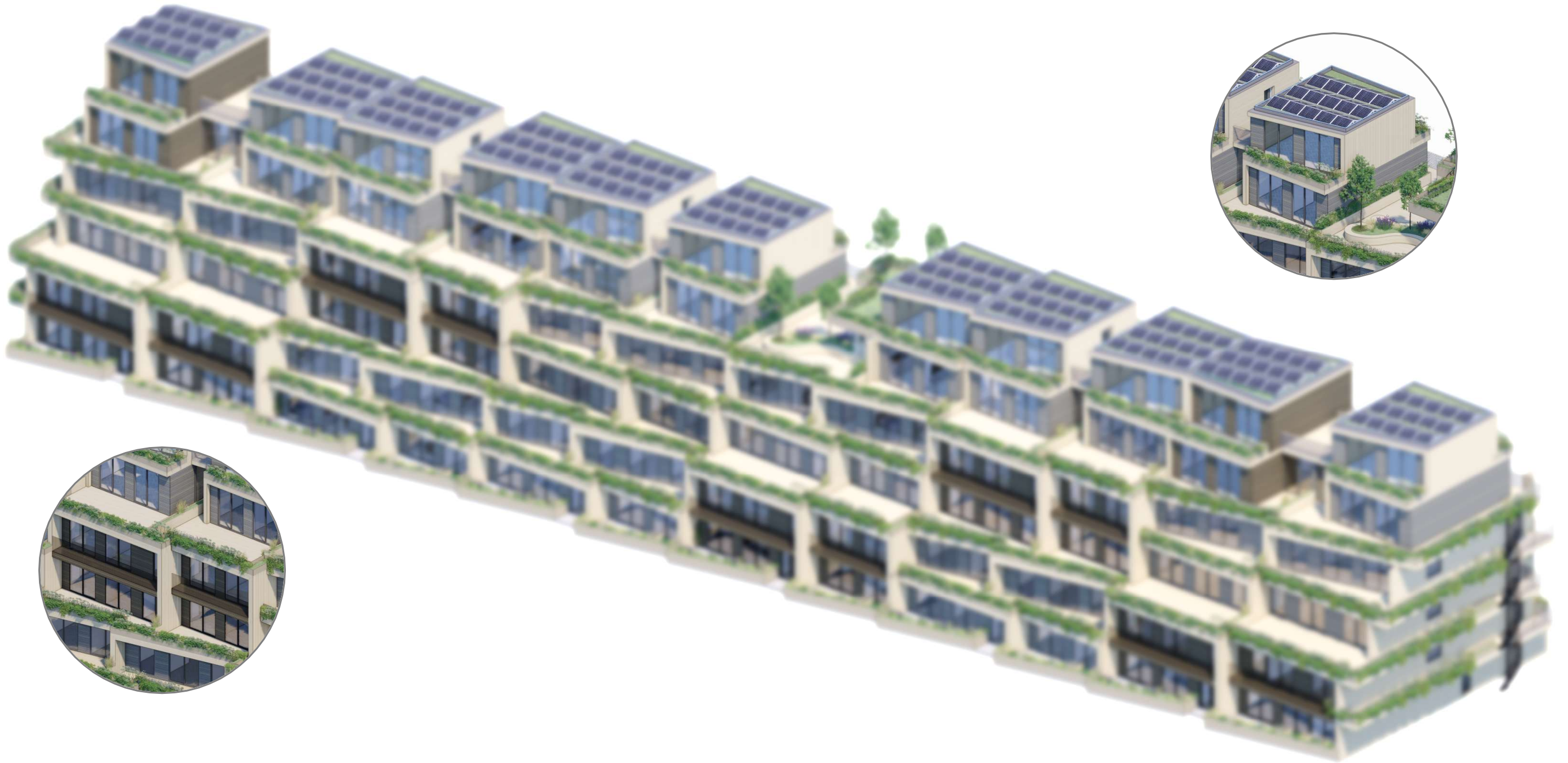
expand with biobased materials.

A PREFAB COMPONENT BIOBASED TRANSITION

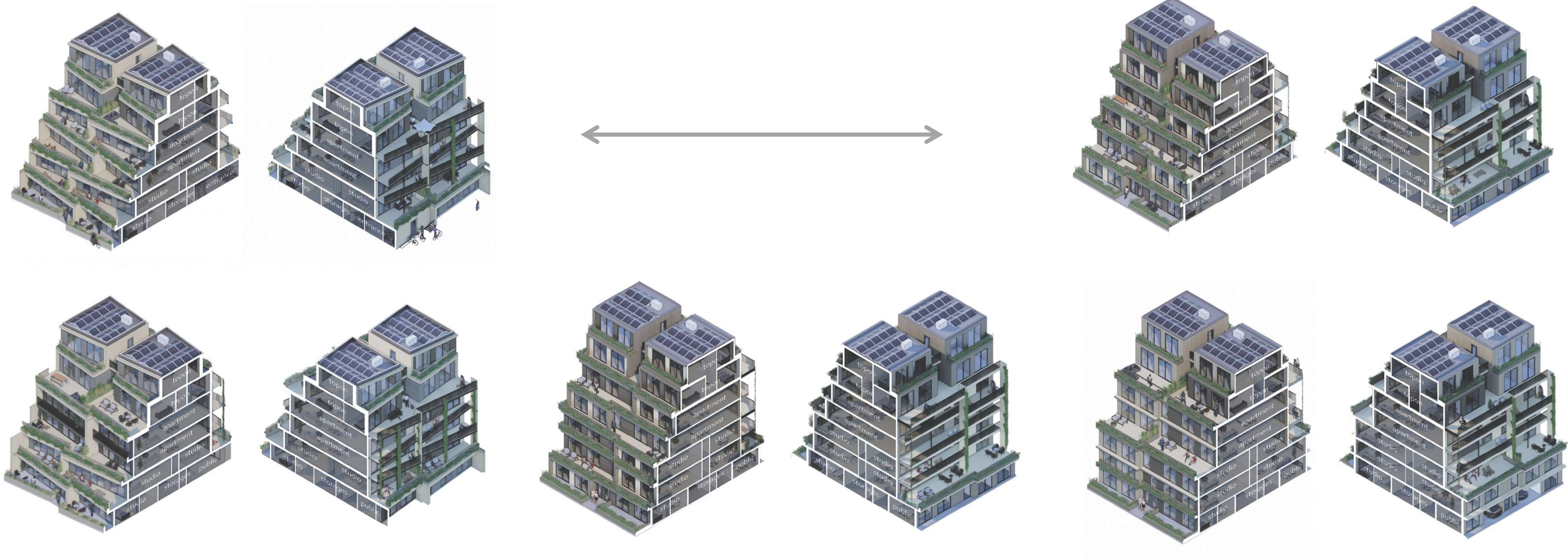


- INTERIOR WALL SIPS 110mm
 - FACADE SIPS 205mm
- DWELLING DIVIDING AND LOADBEARING 205mm
 - FLOORSIPS 275mm

DWELLING PLANS



SYSTEM VARIATIONS



WATER SYSTEM

