# SPLIT TO FIT

ARCHITECTURAL ENGINEERING
TU DELFT

PRESENTATION P4 AE
TIJS VAN DE VEN 05/10

## INTRODUCTION

PROBLEM STATEMENT
OBJECTIVE
FOCUS
OVERALL DESIGN QUESTION
RELEVANCE

## RESEARCH

COMPACT LIVING
WALK-UP FLAT
LOCATION

## DESIGN

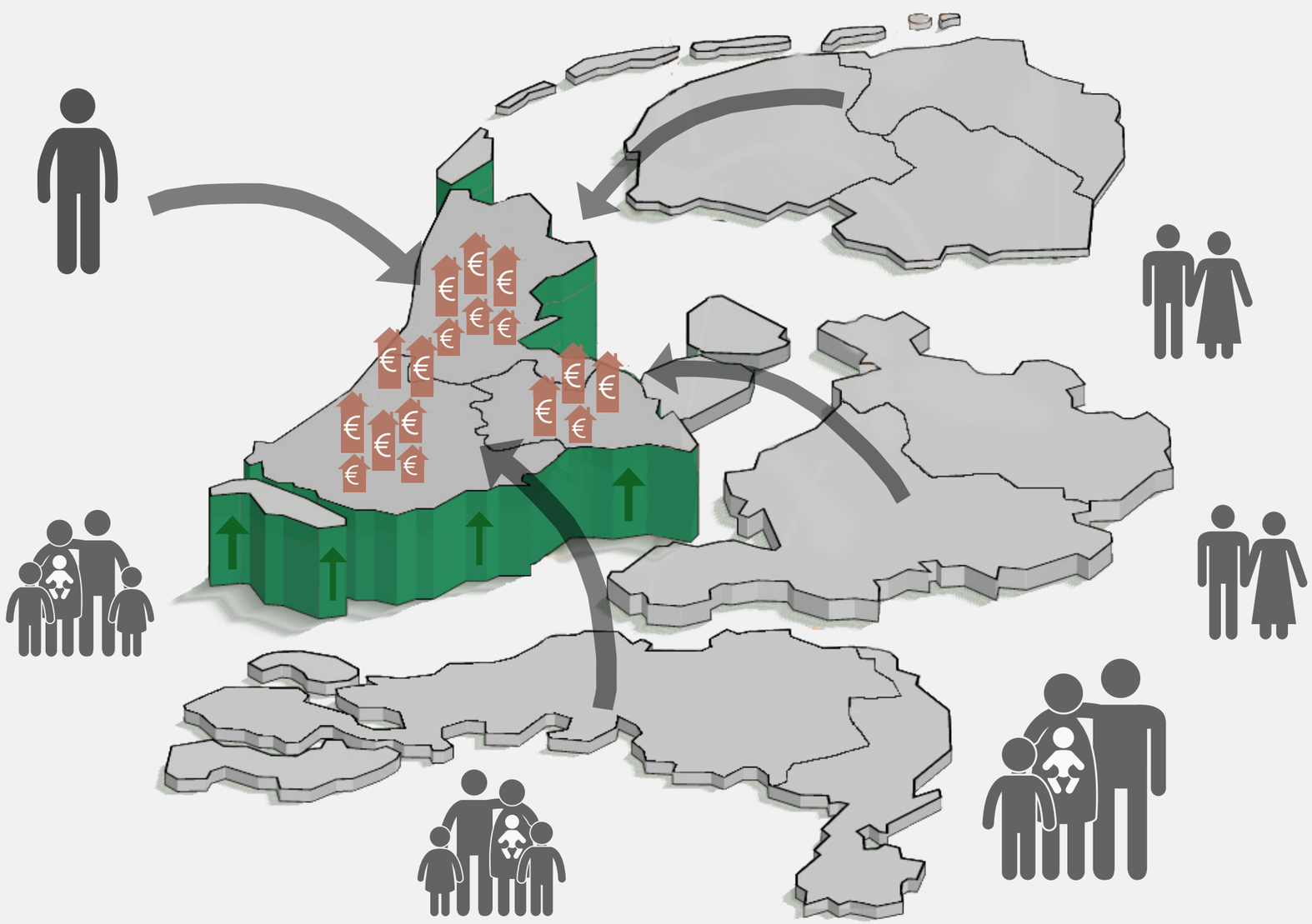
GUIDING ELEMENTS
OVERVIEW
DWELLINGS
SHARED SPACES
CLIMATE DESIGN
FAÇADE DESIGN

# PROBLEM STATEMENT



SUBSTANTIAL POPULATION GROWTH IN THE RANDSTAD

# PROBLEM STATEMENT



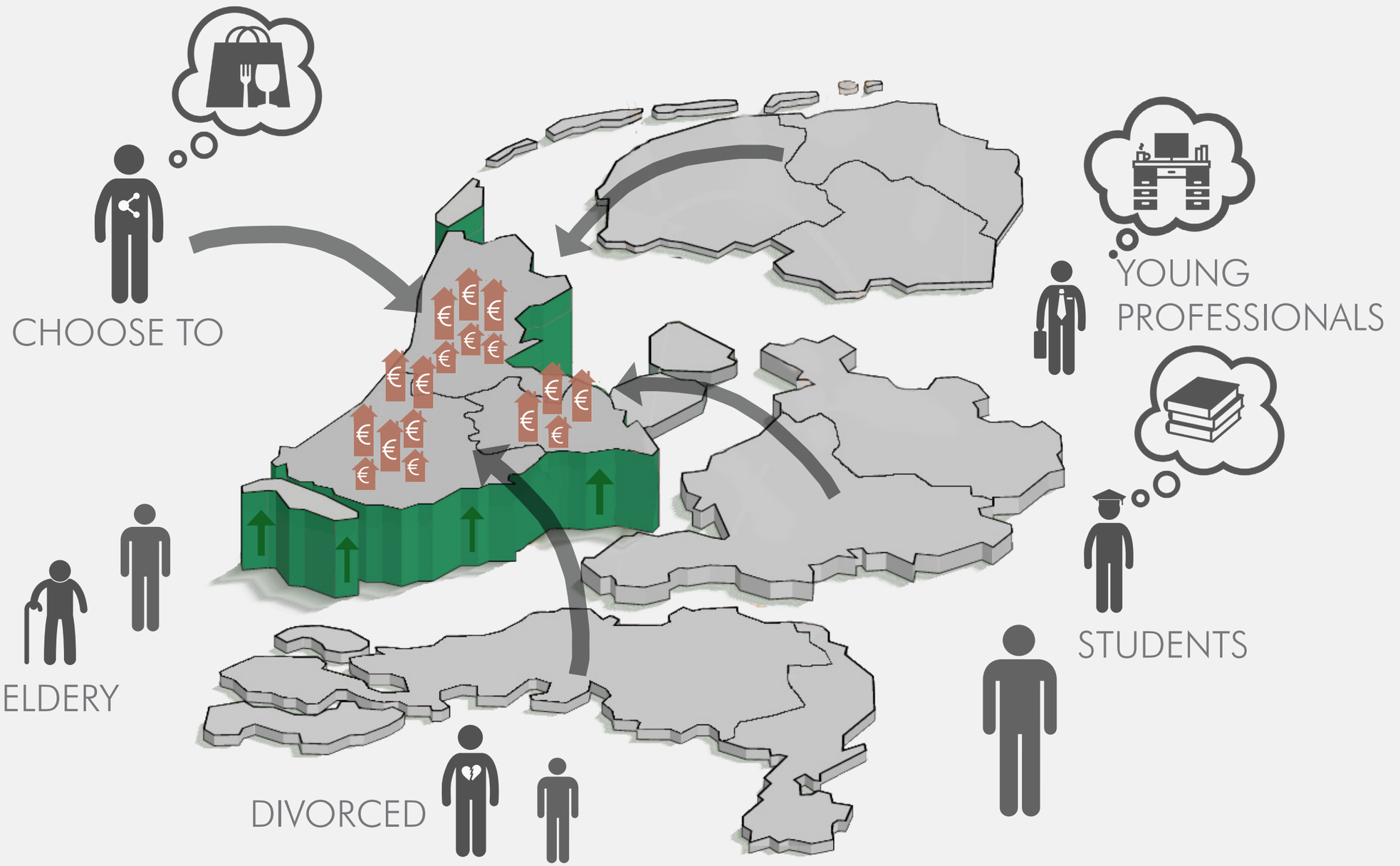
SUPPLY & DEMAND
HIGHER HOUSING PRICES

# PROBLEM STATEMENT



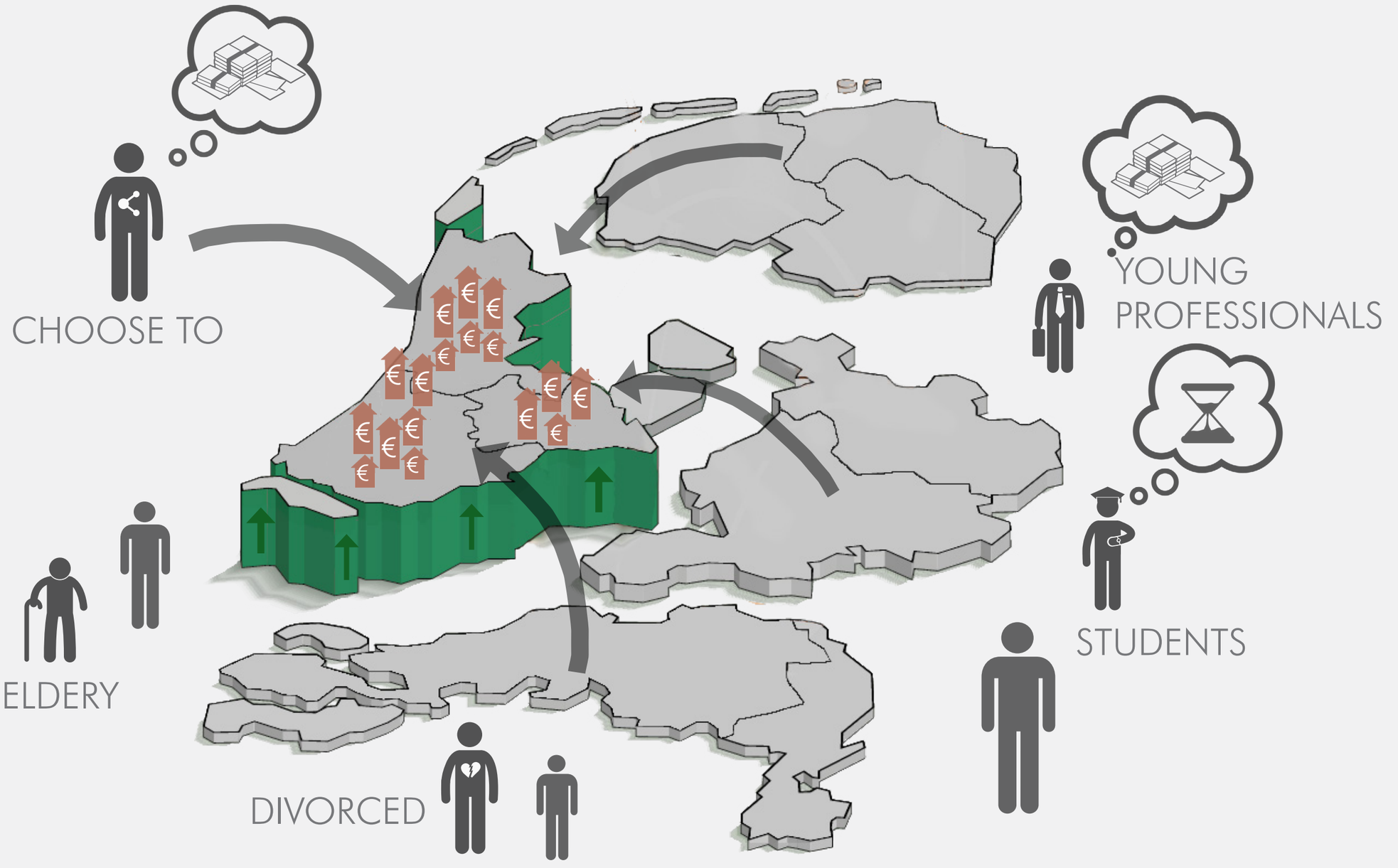
GROWTH OF SINGLE-PERSON HOUSEHOLDS

# PROBLEM STATEMENT



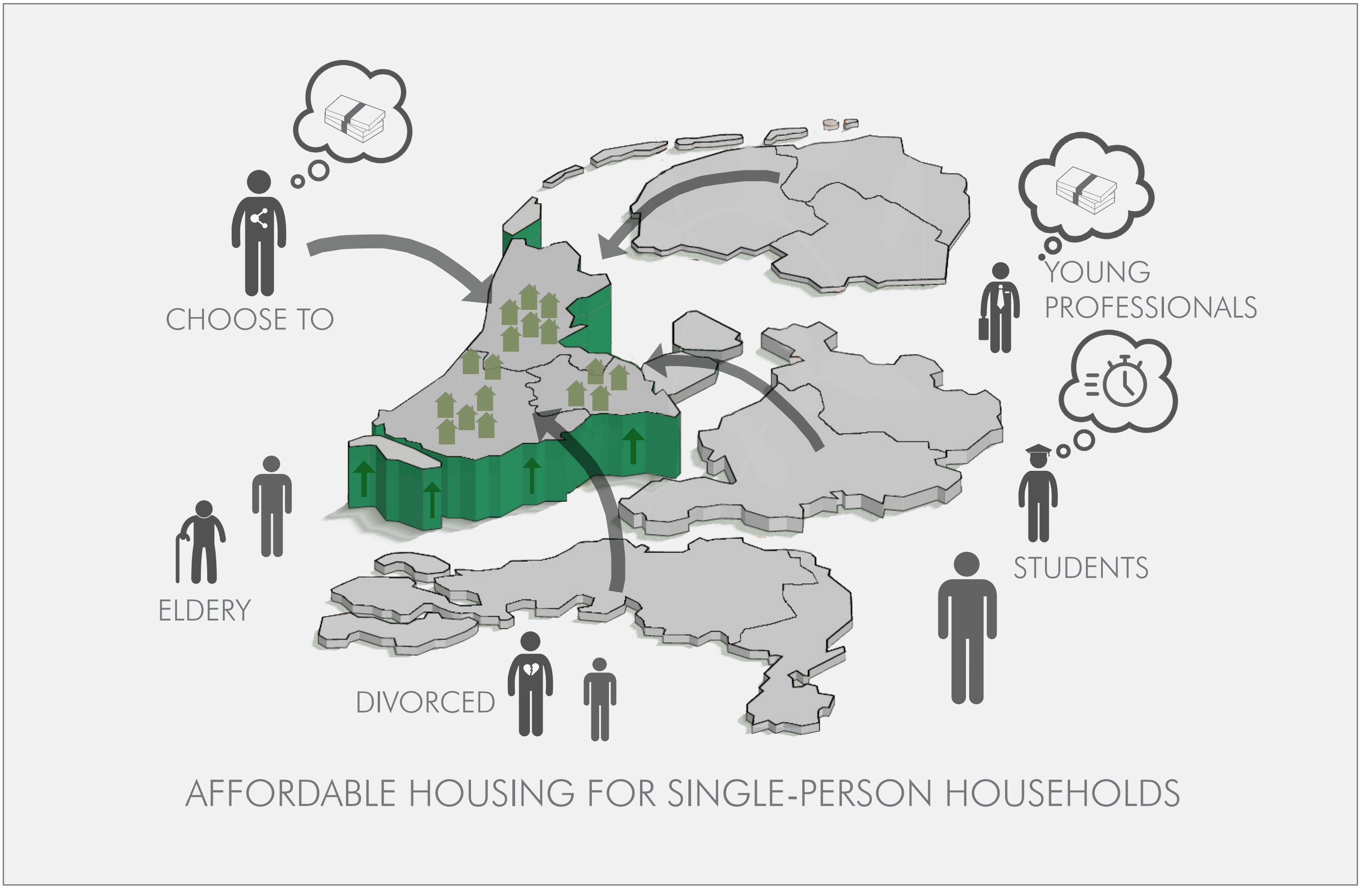

SAFE PLACE WITH PRIVACY AND A BUSY DYNAMIC CITY CENTER

# PROBLEM STATEMENT



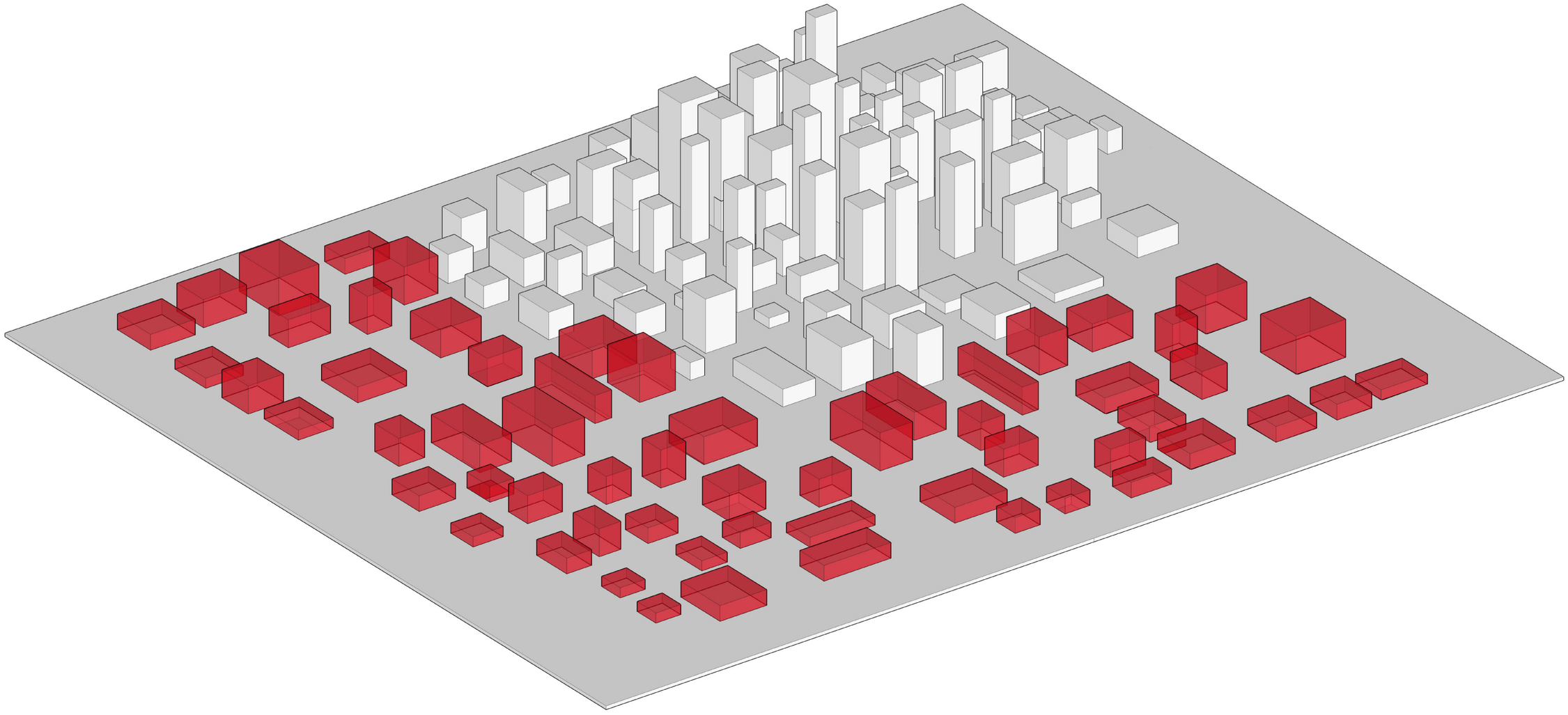

DWELLINGS ARE TOO EXPENSIVE
WAITING LISTS FOR SOCIAL HOUSING ARE VERY LONG

# PROBLEM STATEMENT



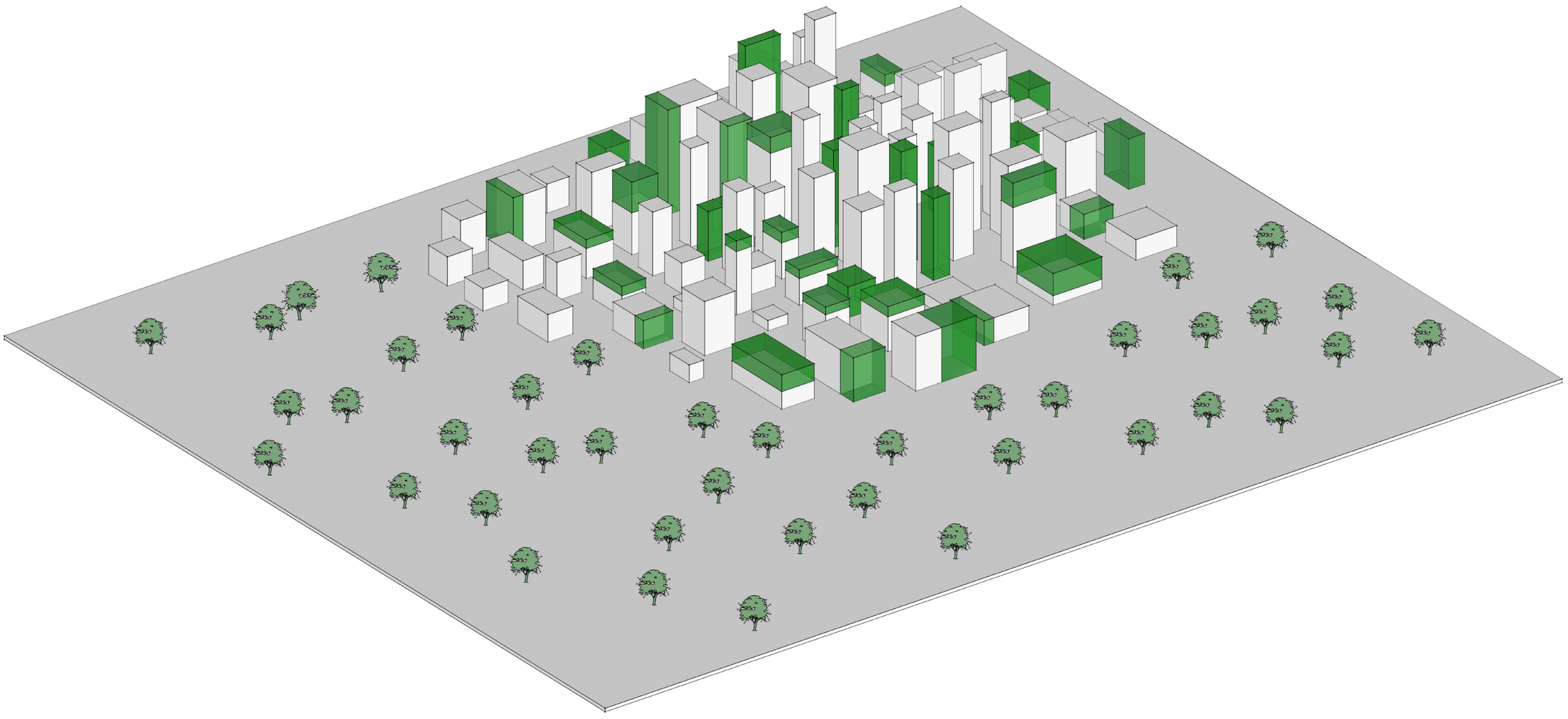

AFFORDABLE HOUSING FOR SINGLE-PERSON HOUSEHOLDS

# PROBLEM STATEMENT



CITIES DO NOT WANT TO EXPAND FURTHER IN SIZE

# PROBLEM STATEMENT



ABSORB POPULATION GROWTH WITHIN THE EXISTING CITY

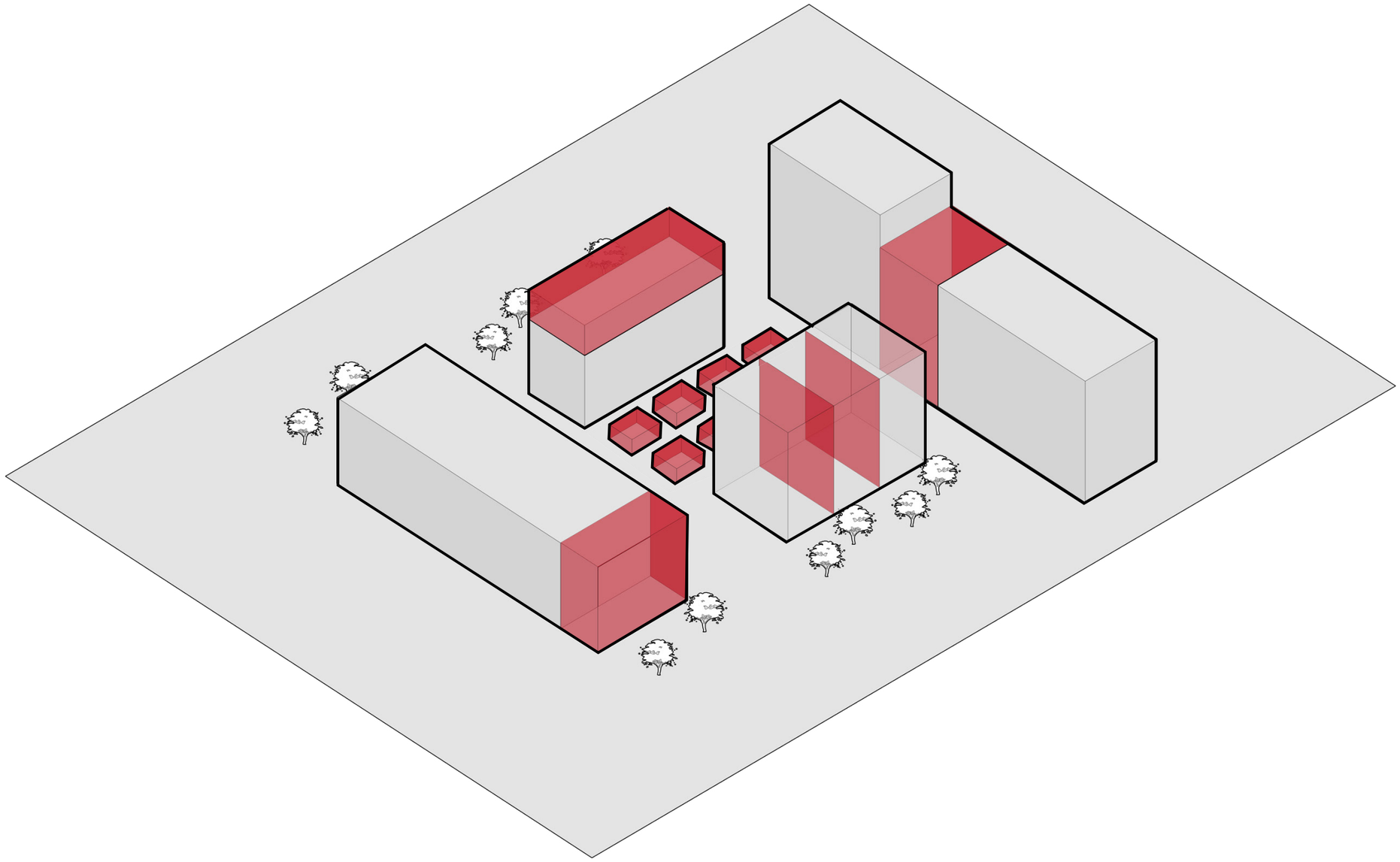
source; Stadsontwikkeling Rotterdam , 2016

# OBJECTIVE



MORE EFFECTIVE AND EFFICIENT
USE OF THE EXISTING STOCK

# OBJECTIVE



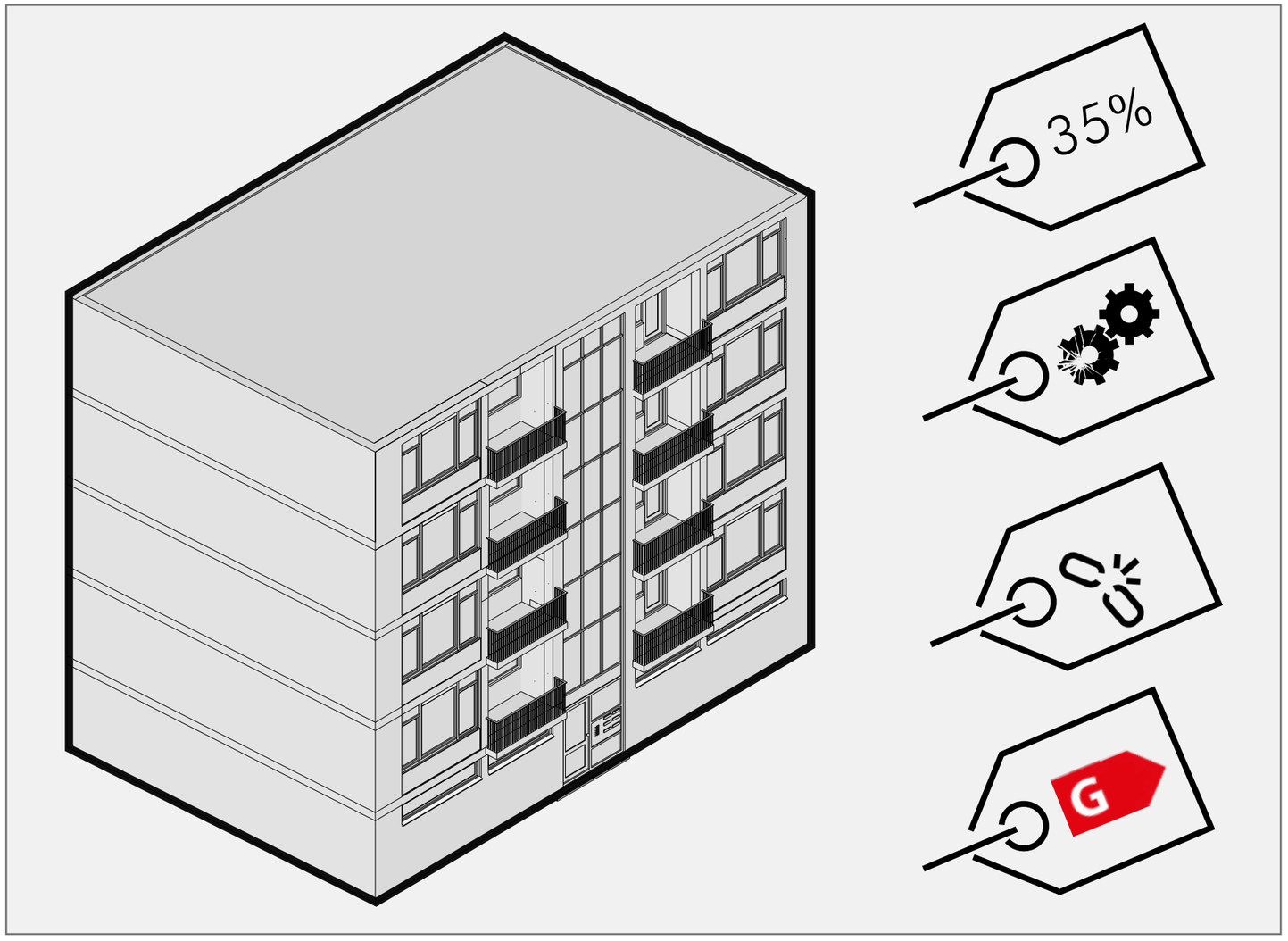
TOP-UP

SPLITTING

ATTACHMENT

TRANSFORM

# FOCUS




## POST-WAR WALK-UP FLAT

## BEYOND THE CURRENT

# OVERALL DESIGN QUESTION

How to renovate a post-war walk-up flat in Rotterdam, through the strategy of densification into affordable and comfortable dwellings for single households?

# OVERALL DESIGN QUESTION

CONTEXT

THEMATIC FOCUS

How to renovate a post-war walk-up flat in Rotterdam, through the strategy of densification into affordable and comfortable dwellings for single households?

PROGRAM

# RELEVANCE

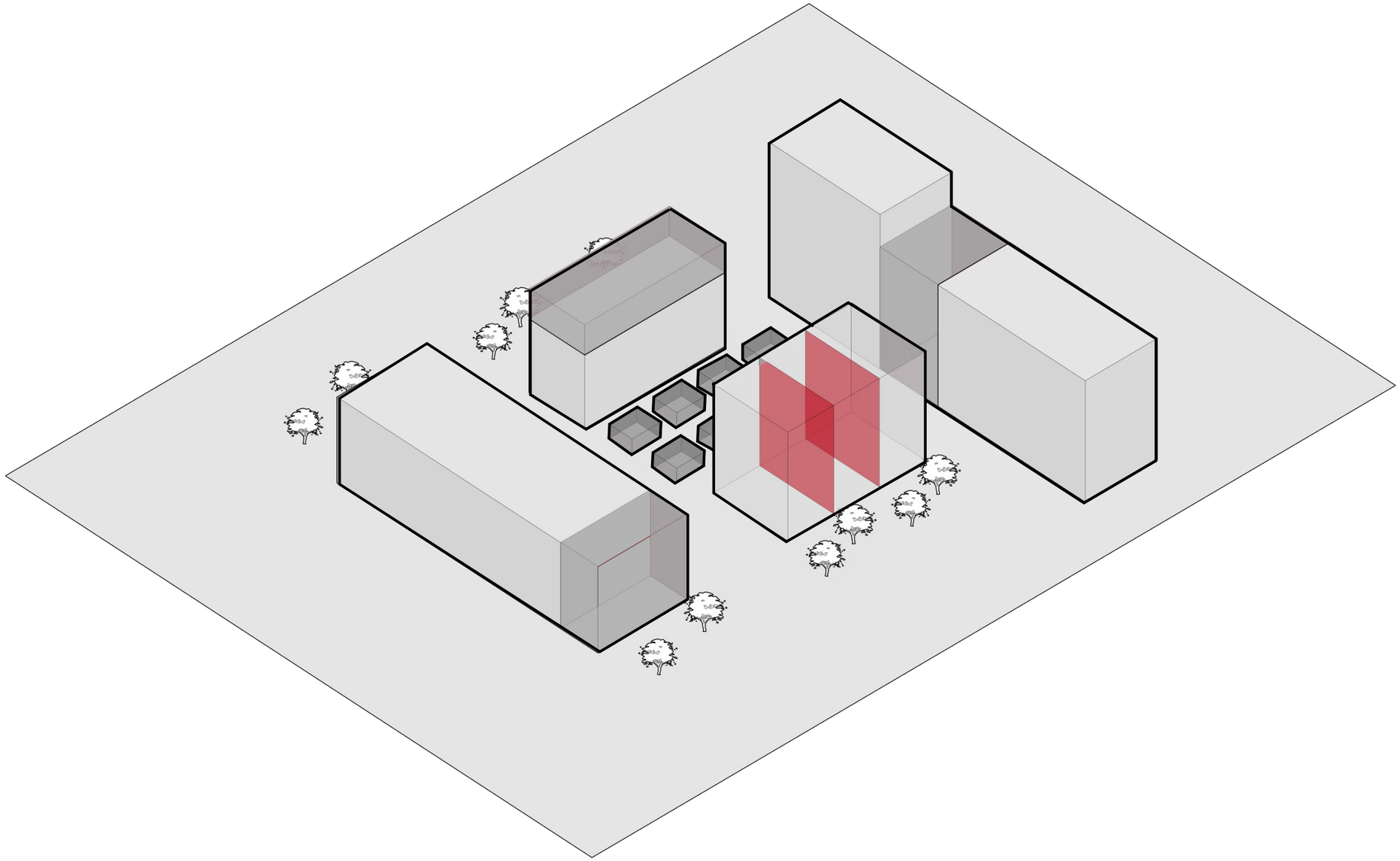


RECOGNIZE EXISTING QUALITIES AS A STARTING POINT

GENERIC BUILDING TYPOLOGY

# RESEARCH

# RESEARCH



TOP-UP **SPLITTING** ATTACHMENT TRANSFORM

# RESEARCH QUESTION

## RESEARCH QUESTION

What are the splitting potentials of a post-war walk-up flat and how can these be applied through renovation?

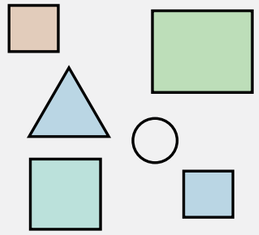
# COMPACT LIVING







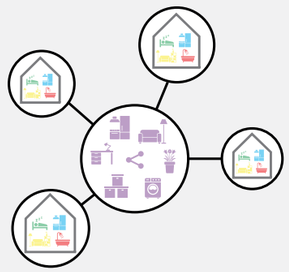
LOCATION



DIVERSITY DWELLINGS



EFFICIENCY



SHARING



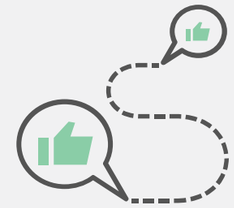
DAYLIGHT



GREEN



LONELINESS



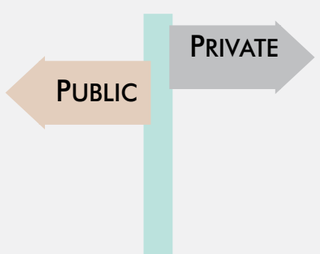
MEETING POINTS



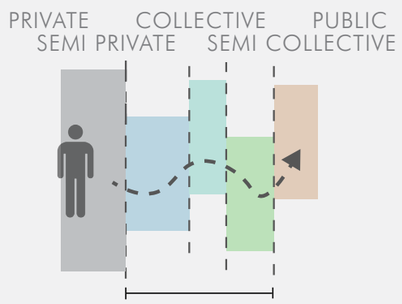
SOCIAL INTERACTION



HAVING CONTROL




CHOICE




TRANSITION BETWEEN PRIVATE AND PUBLIC

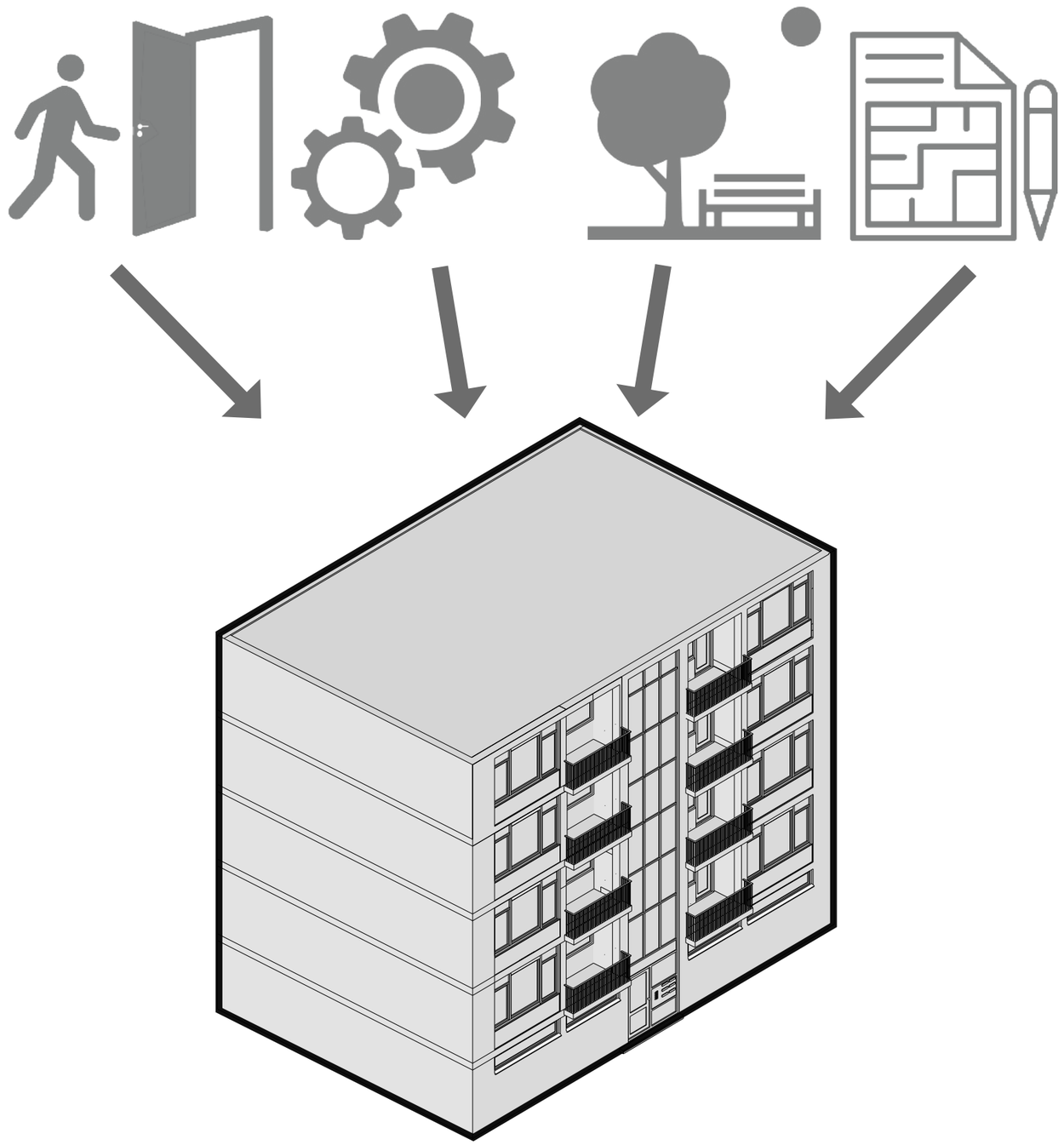
# RESEARCH BY DESIGN

VERTICAL INSTALLATION

INFILL

ACCESSIBILITY

OUTDOOR SPACE



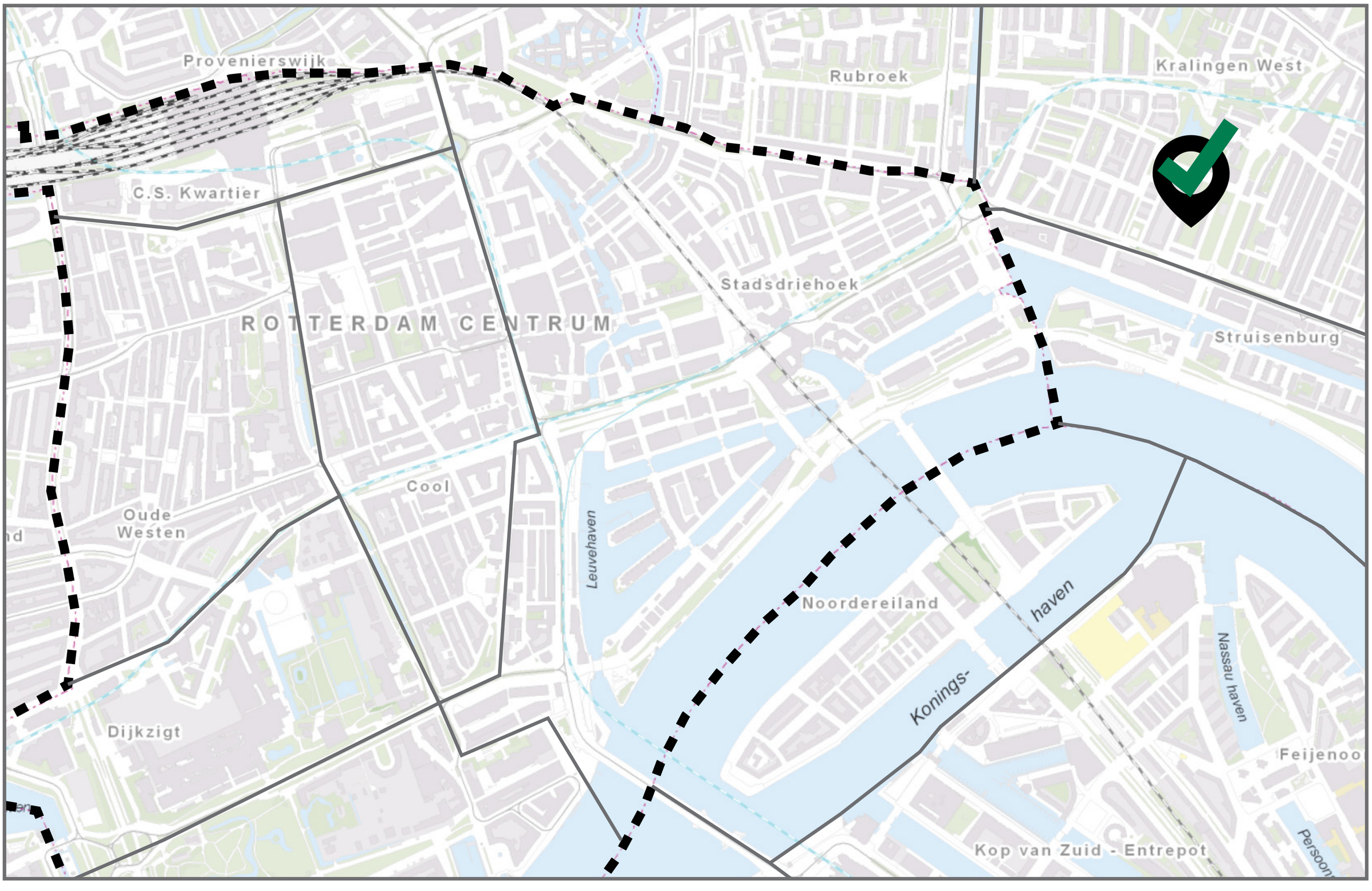
# LOCATION

How to renovate a post-war walk-up flat in Rotterdam, through the strategy of densification into an affordable and comfortable energy neutral dwellings for single households?

## REQUIREMENTS

CHARACTERS OF GENERIC WALK-UP
CITY CENTRE
COOPERATION
ENERGY LABEL G, F, E, D <C
POTENTIAL DENSIFICATION

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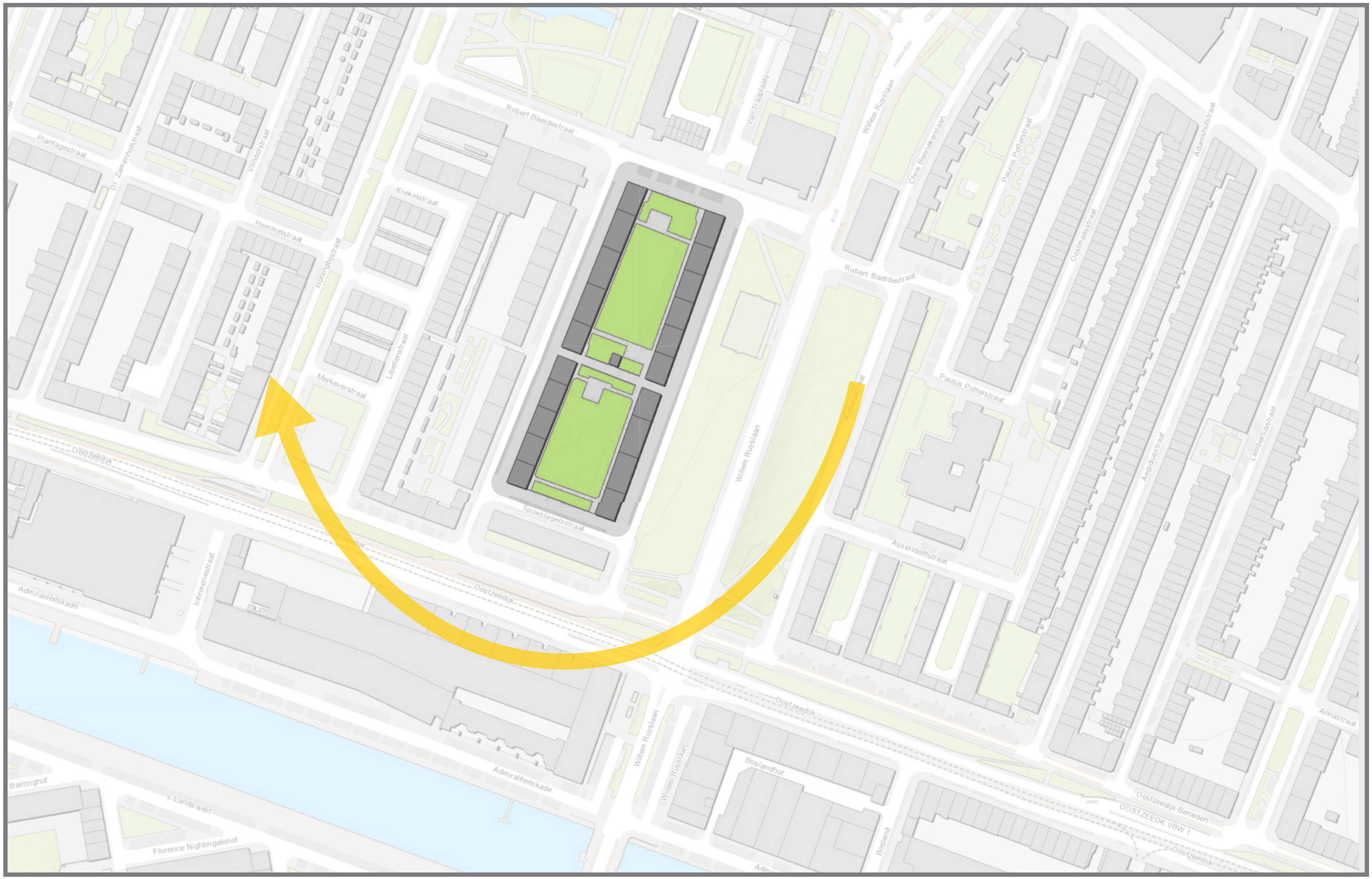
Rubroek
Kralingen West
C.S. Kwartier
ROTTERDAM CENTRUM
Stadsdriehoek
Struisenburg
Cool
Oude Westen
Leuvehaven
Noordereiland
Konings-haven
Nassau haven
Dijkzigt
Feijenoo
Kop van Zuid - Entrepot

# LOCATION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Van Traaijlaats
Willem Ruysiaan
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Paulus Potterstraat
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Plantagestraat
Dr. Zamenhofstraat
Vinderstraat
Krekelstraat
Hommelstraat
Honingbijstraat
Libellenstraat
Meikeverstraat
Oostzeedijk
Touwslagersstraat
Ruysdaelstraat
Assendelftstraat
Aegidiusstraat
Lambertusstraat
Annastraat
Admiraliteitskade
Infirmeriestraat
Bastinghof
's-Landswerf
Florence Nightingalehof
Boslandhof
Bosland
Oostzeedijk Beneden
OOSTZEEDIK VBW 1

# LOCATION


Plantagestraat
Dr. Zamenhofstraat
Vlinderstraat
Hommelstraat
Honingbijstraat
Krekelstraat
Meikeverstraat
Libellenstraat
Robert Baeldestraat
VanTraaplaats
Willem Ruysdaan
Chris Bennekerslaan
Paulus Potterstraat
Oostmaasstraat
Adamshofstraat
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Oostzeedijk
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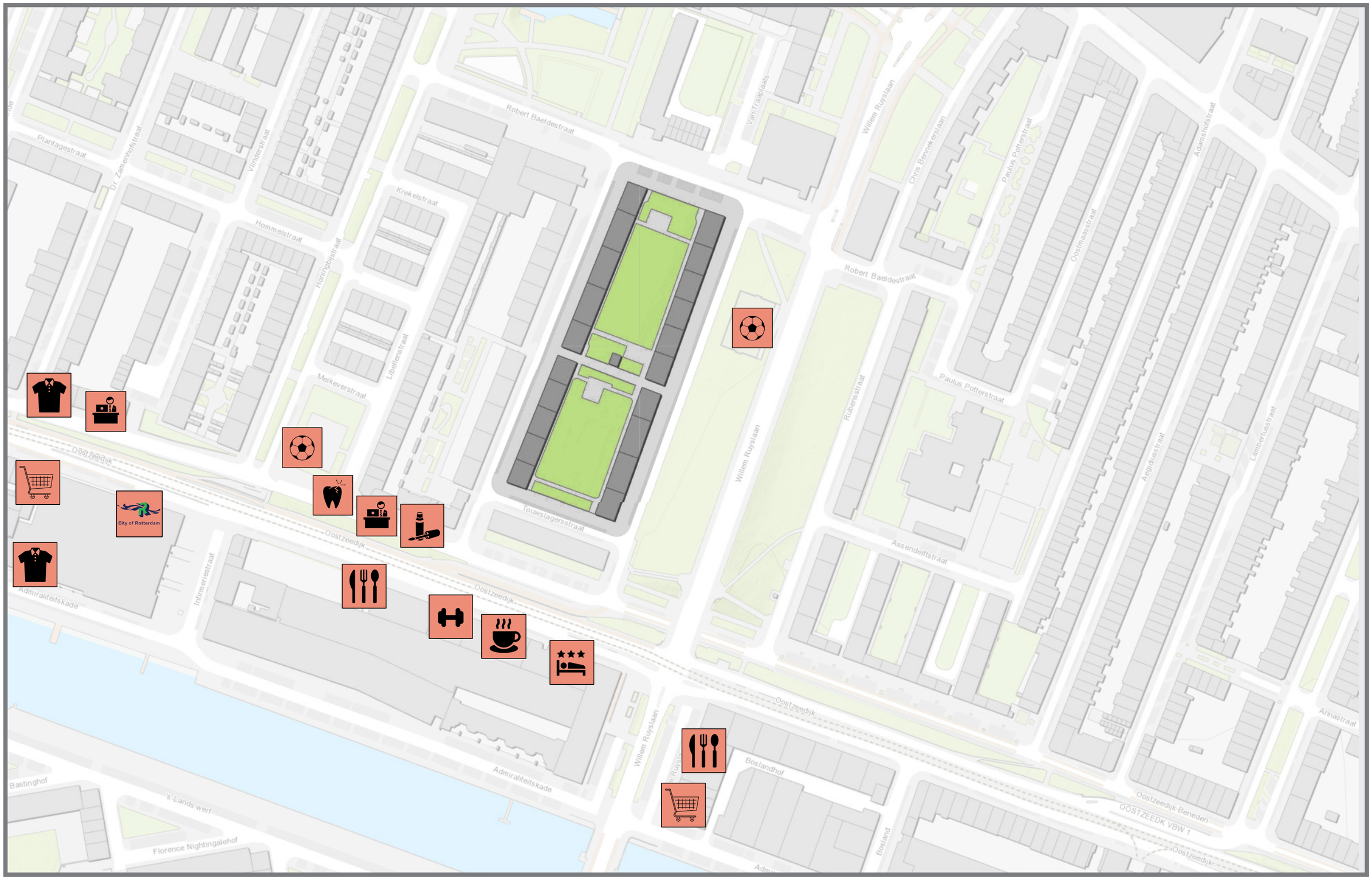
Infirmeriestraat
Bastinghof
's-Lands werf
Florence Nightingalehof
Boslandhof
Bosland
Oostzeedijk Beneden
OOSTZEEDIJK VBW 1

# LOCATION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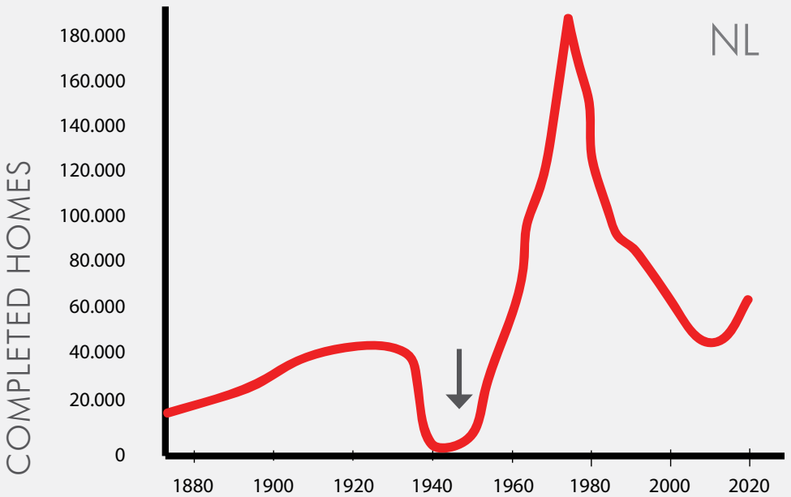
's-Lands werf
Florence Nightingalehof
Boslandhof
Bosland
Oostzeedijk Beneden
OOSTZEEDK VBW 1

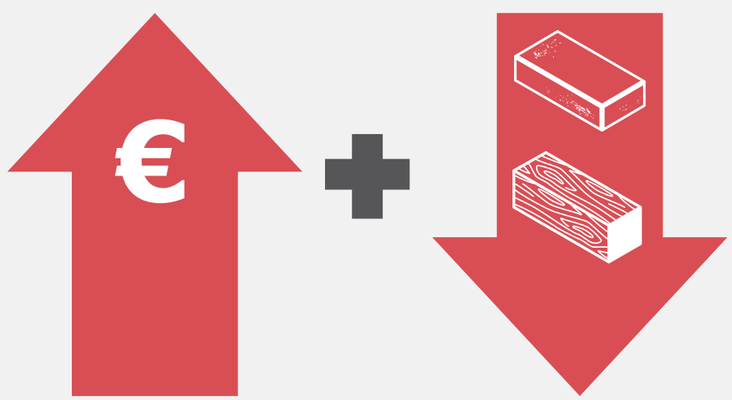
# LOCATION



# ORIGIN WALK-UP FLAT



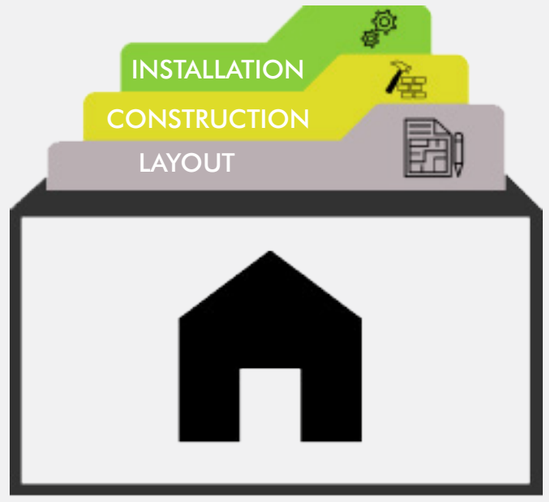

SLOW START




SHORTAGE

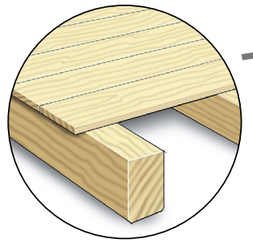


EFFICIENT AND EFFECTIVE

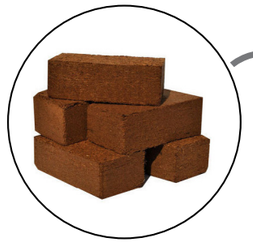



STANDARD TYPE

# CONSTRUCTION WALK-UP FLAT

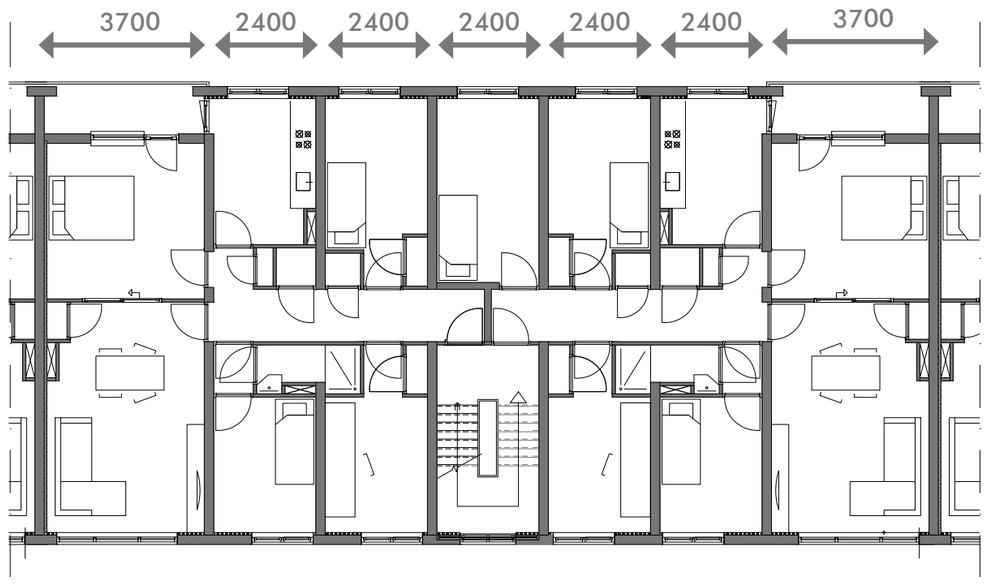




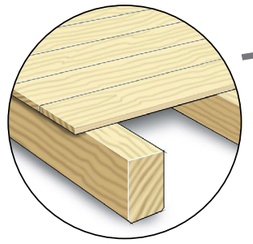




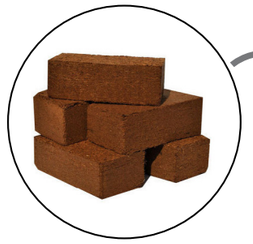




# CONSTRUCTION WALK-UP FLAT

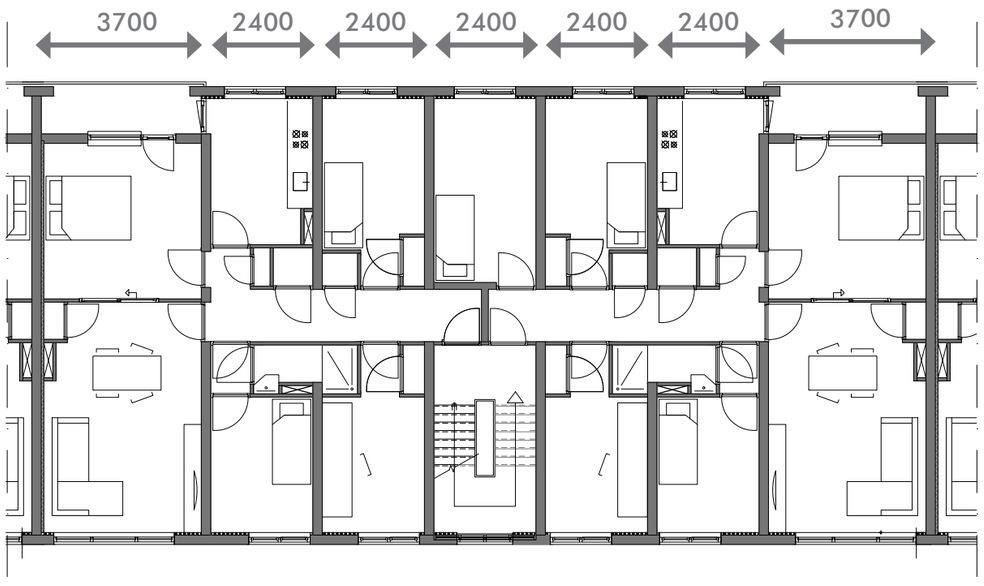








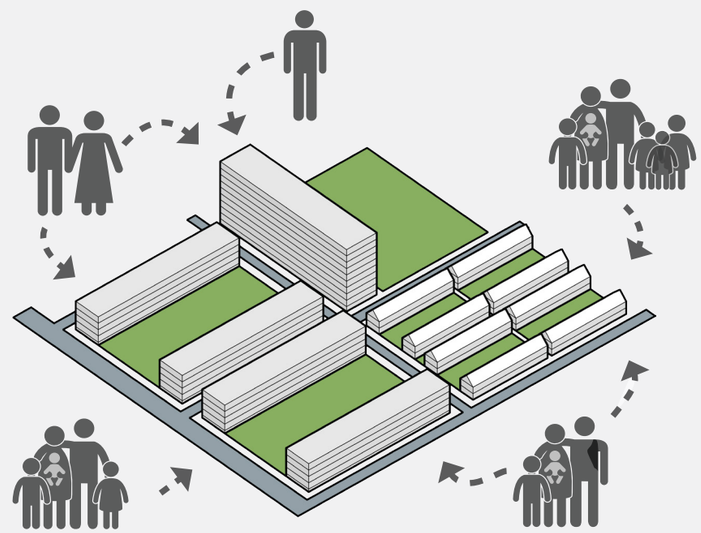




# URBAN DESIGN



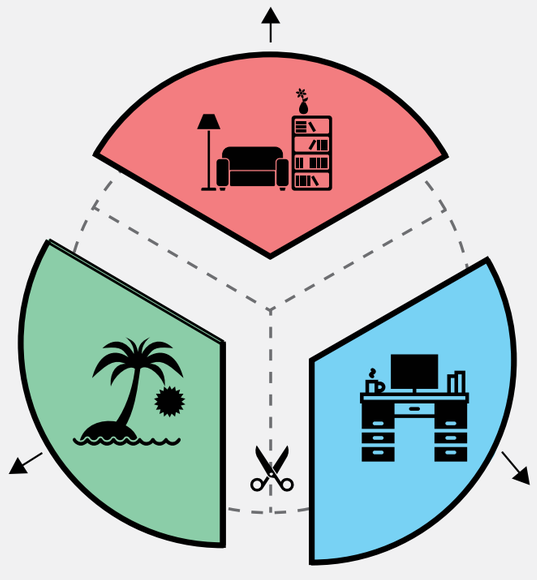

PHILOSOPHY; *WIJKGEDACHTE*



LIGHT, AIR & SPACE



COLLABORATION



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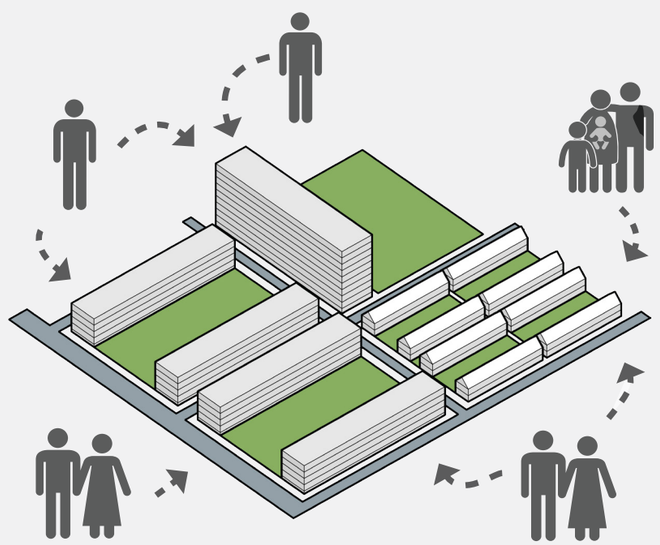
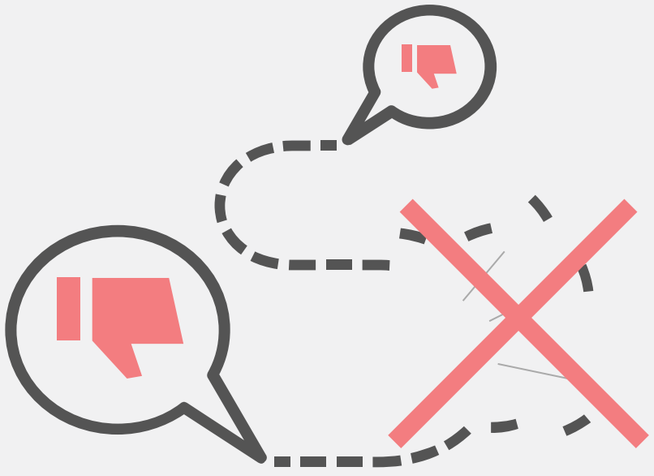
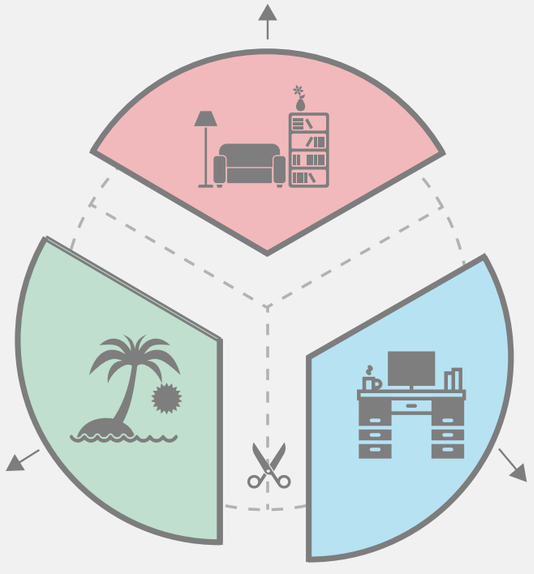


LIGHT, AIR & SPACE



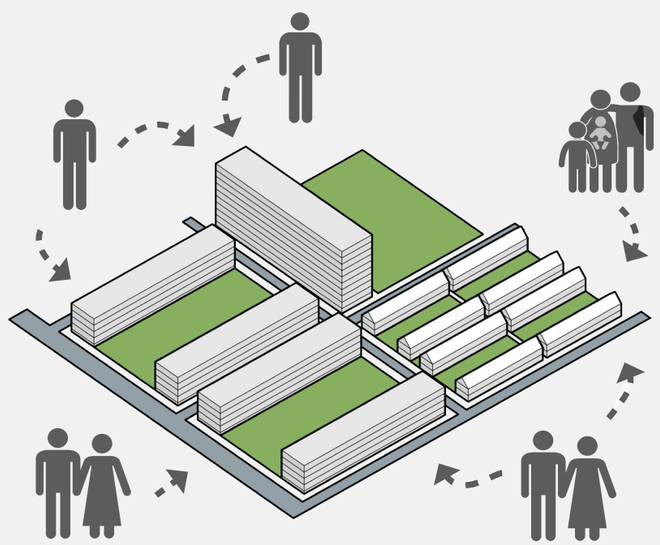
SOCIAL PROBLEMS
DIFFICULTY SOCIAL CONNECTIONS



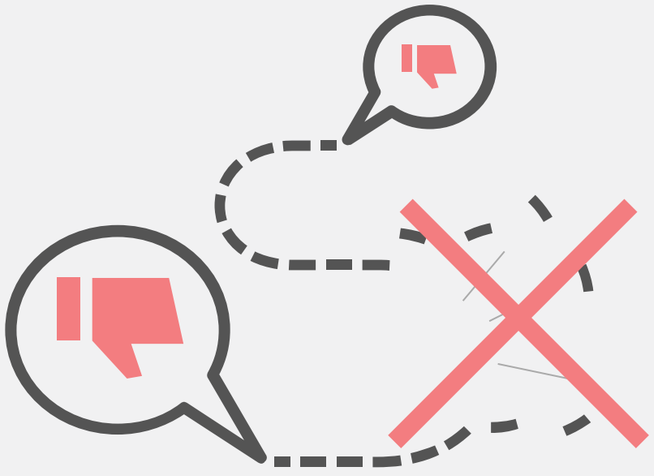
# URBAN DESIGN




~~PHILOSOPHY; *WIJKGEDACHTE*~~



LIGHT, AIR & SPACE



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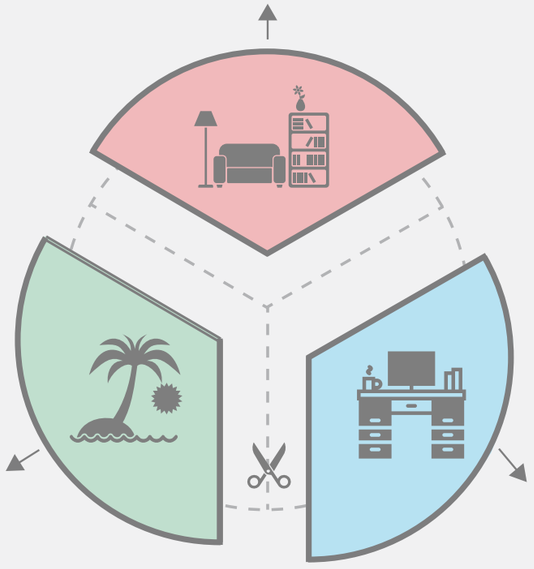
DIFFICULTY SOCIAL CONNECTIONS



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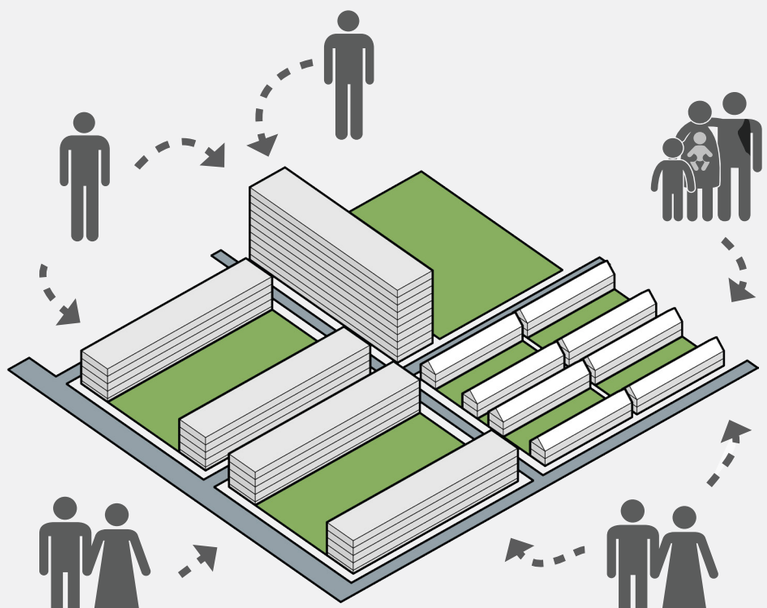
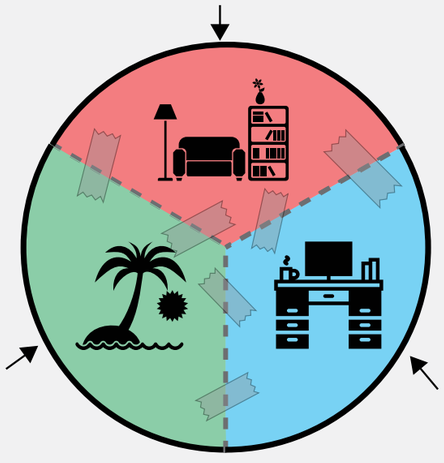
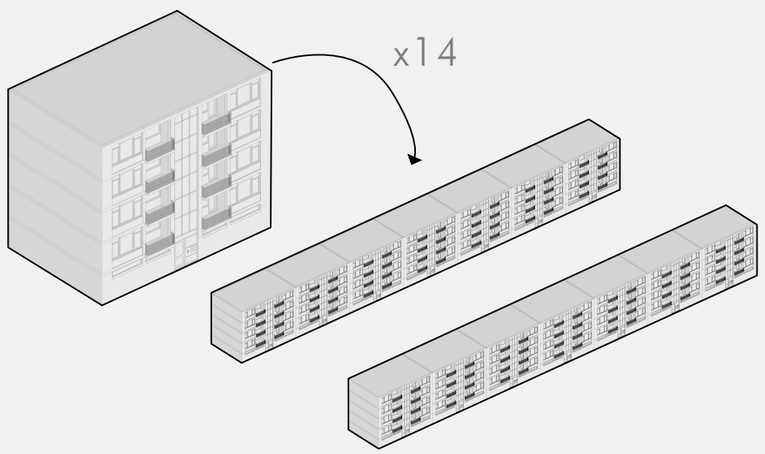




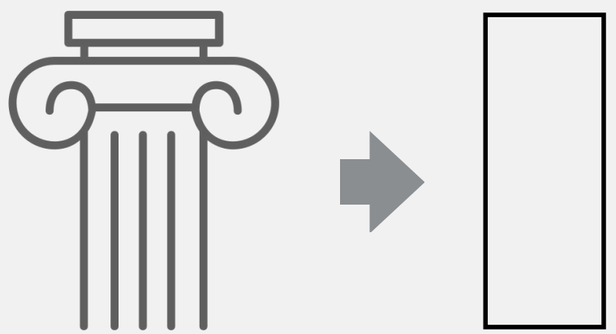
SOCIAL INTERACTION



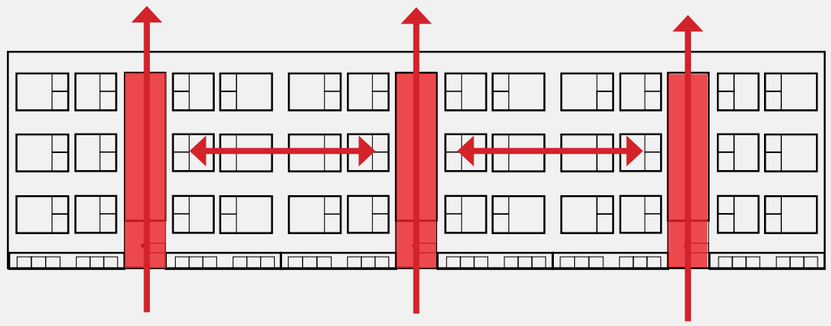
# ARCHITECTURAL APPEARANCE



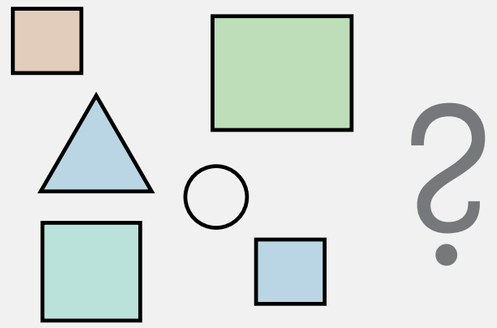

REPETITION



MINIMAL ORNAMENTATION



SOBER FLAT FAÇADES WITH
A MONOTONOUS RHYTHM



DIVERSITY
DWELLINGS

# LOCATION







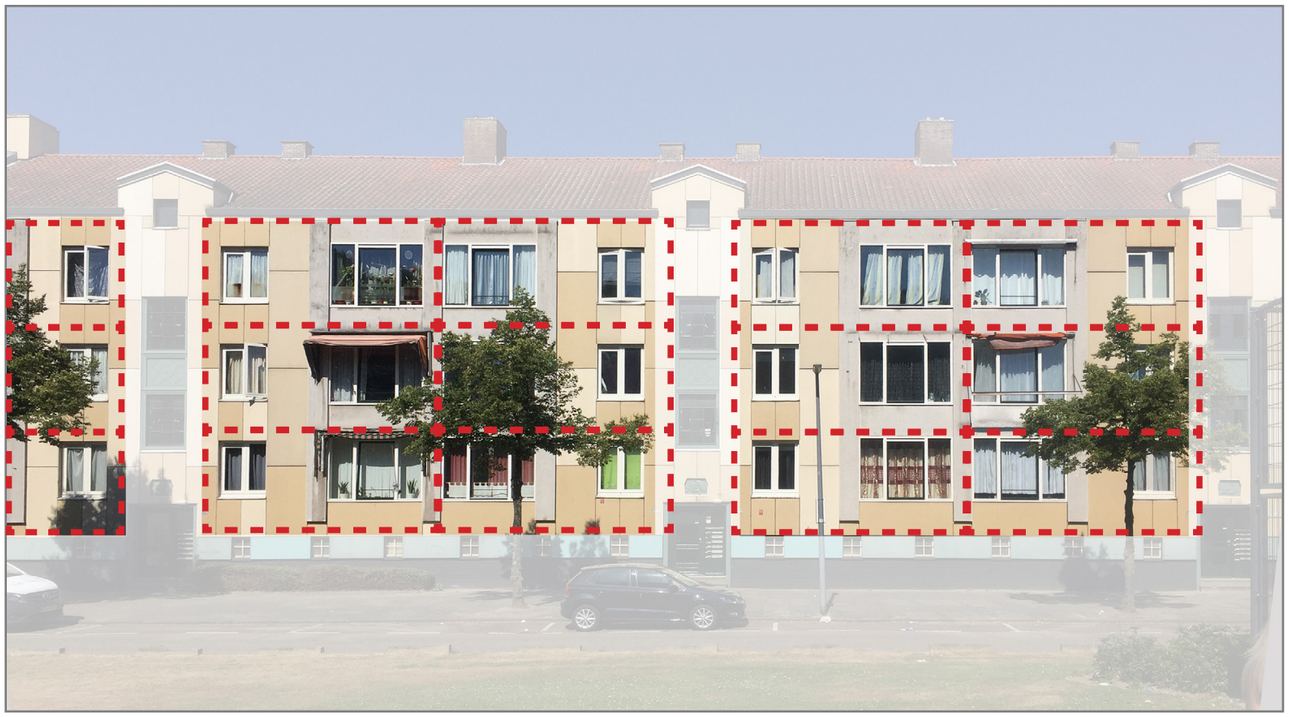
# LOCATION







# LOCATION



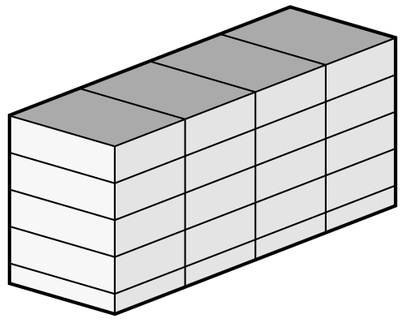




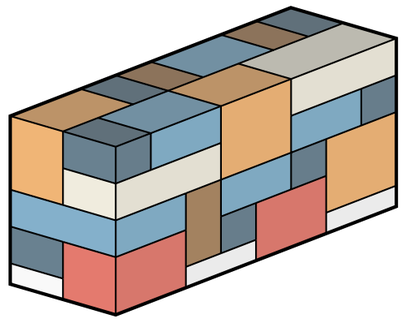



# DESIGN

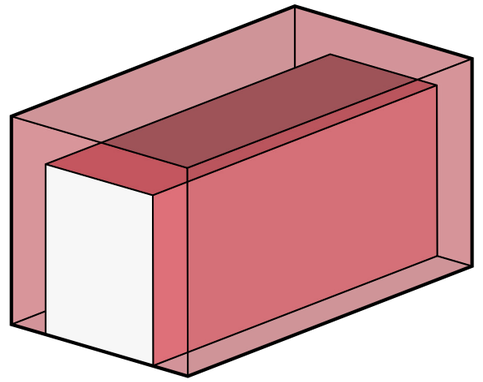
# DESIGN ELEMENTS



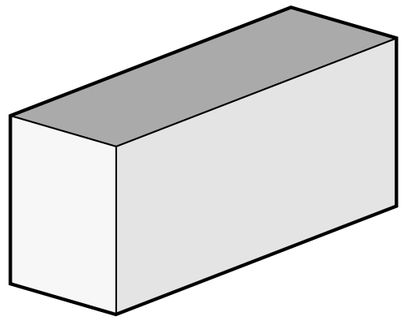
MONOTONOUS



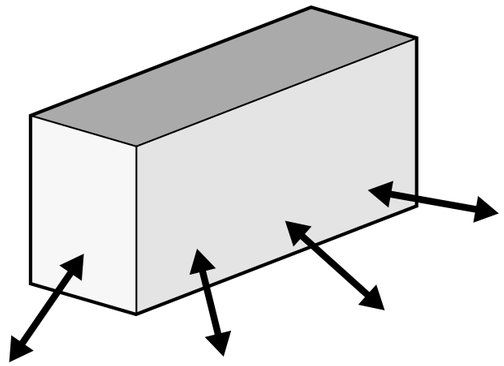
DIVERSITY



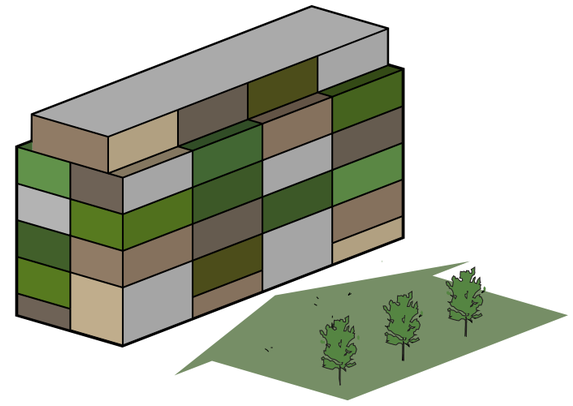
TOP-UP & ATTACHMENT



CONTEXT?



CONTEXT!



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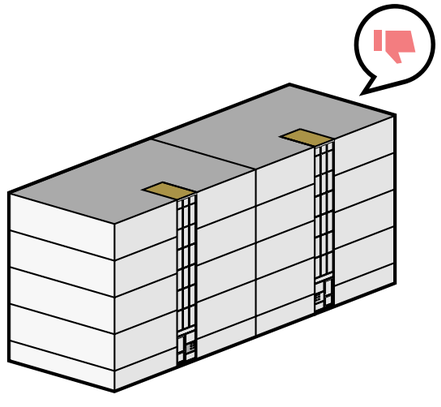

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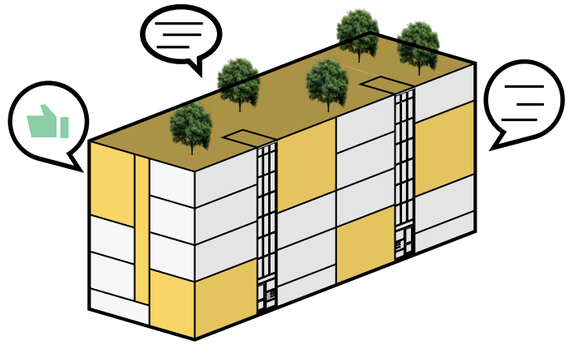
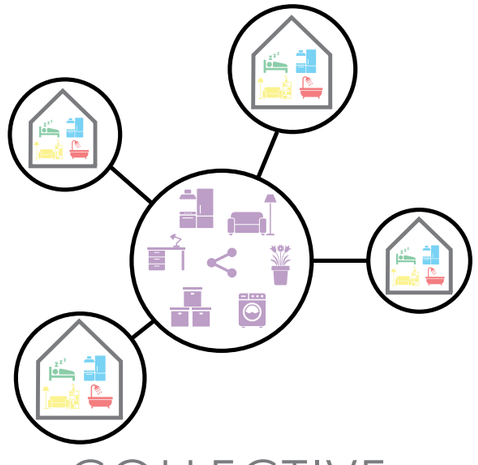


SOCIAL INTERACTION



COLLECTIVE

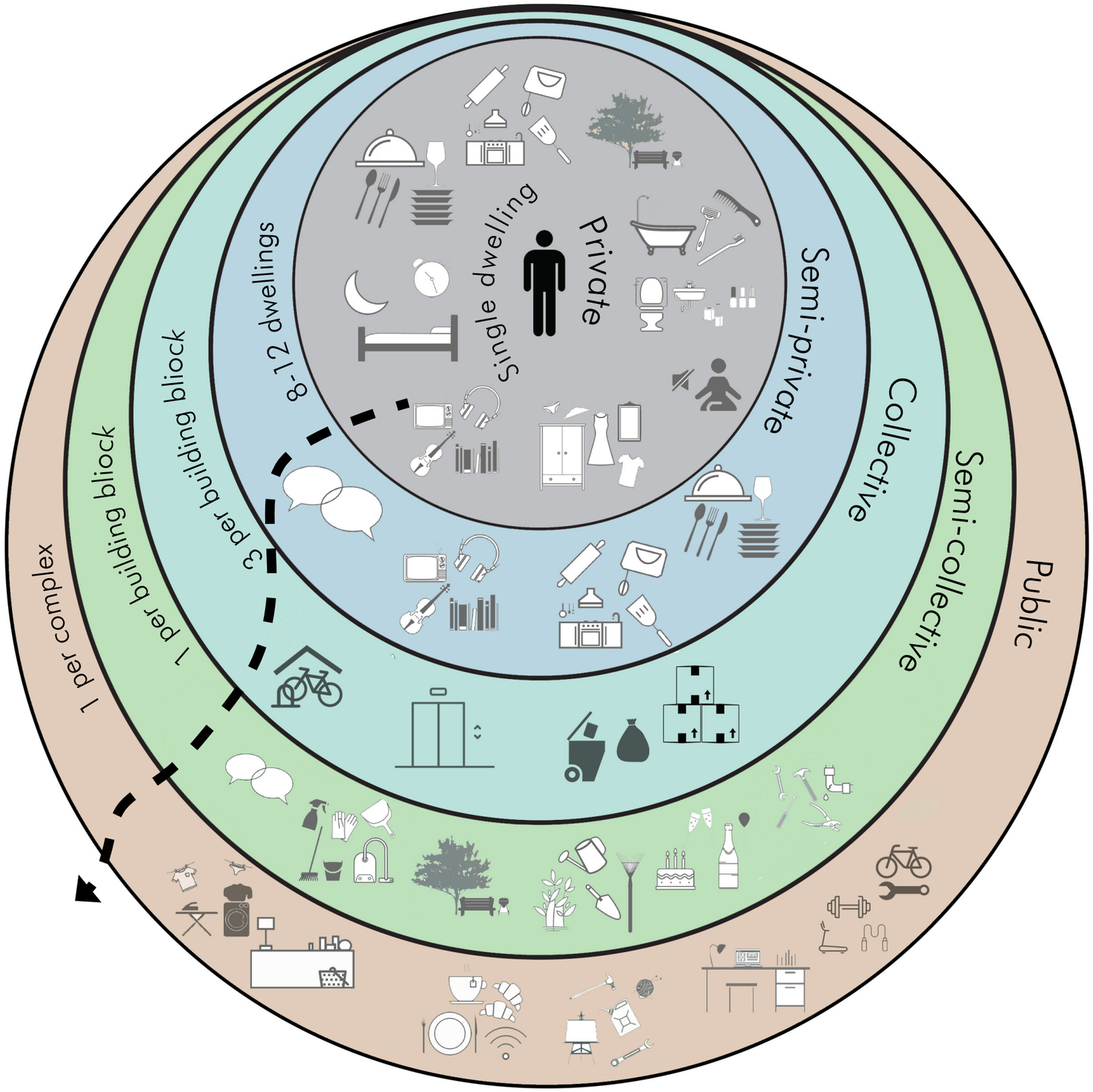
# PROGRAM

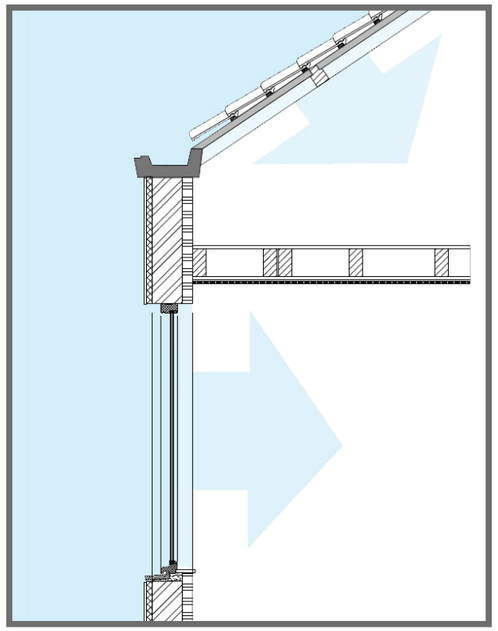
**SEMI-PRIVATE**
COOKING STUDIO
LIVINGROOM

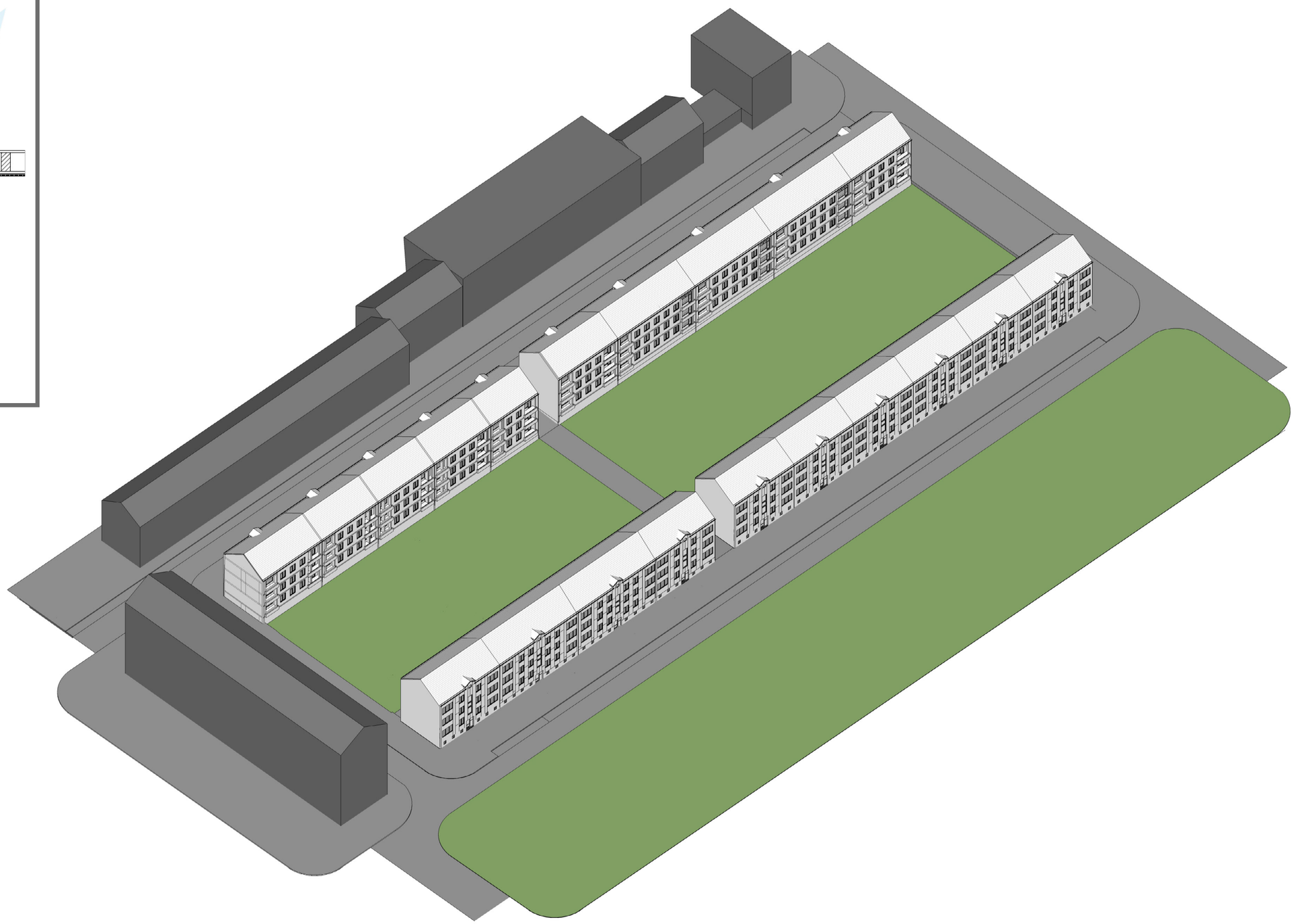
**COLLECTIVE**
ELEVATOR
INSTALLATION
STORAGE
BICYCLE PARKING

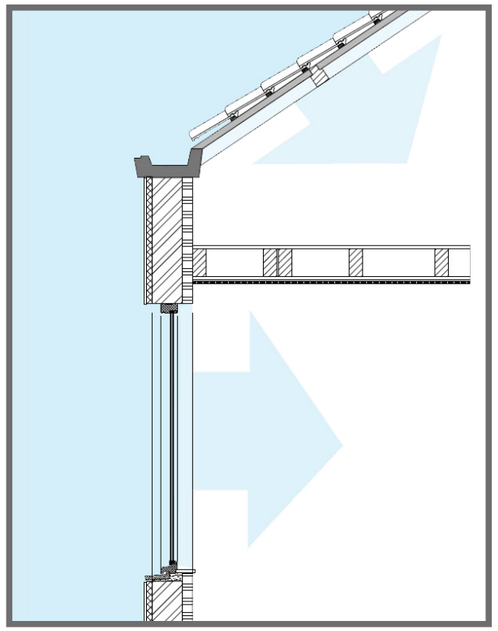
**SEMI-COLLECTIVE**
COURTYARD
RECYCLING AREA
WORKSHOP
TERRACE

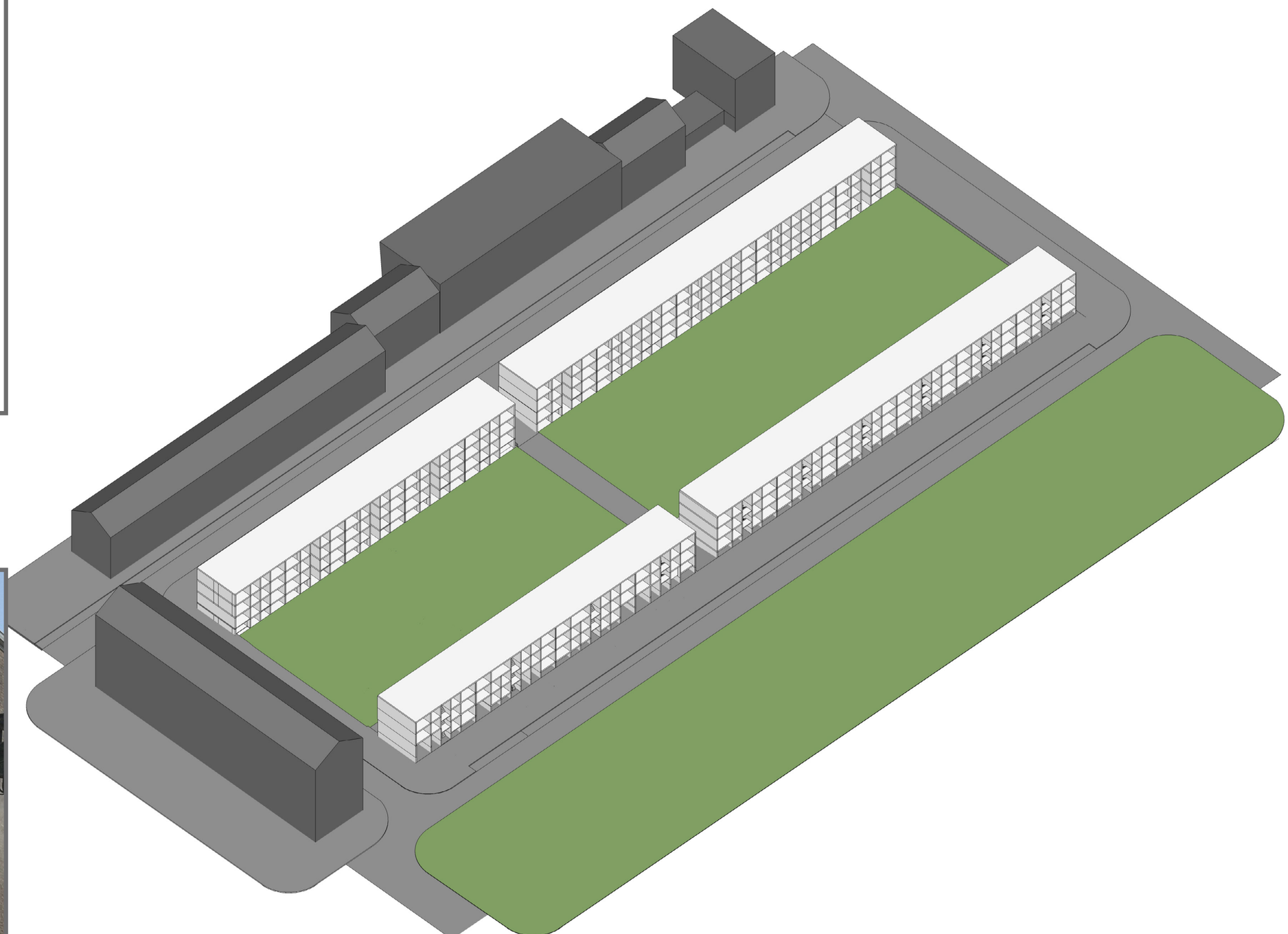
**PUBLIC**
CAFE / RESTAURANT
WORKSPACES
LAUNDRY
SHOPS
FITNESS
BICYCLE REPAIR



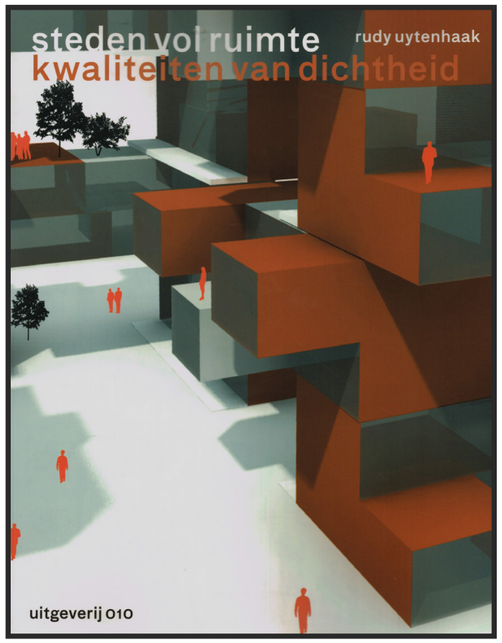


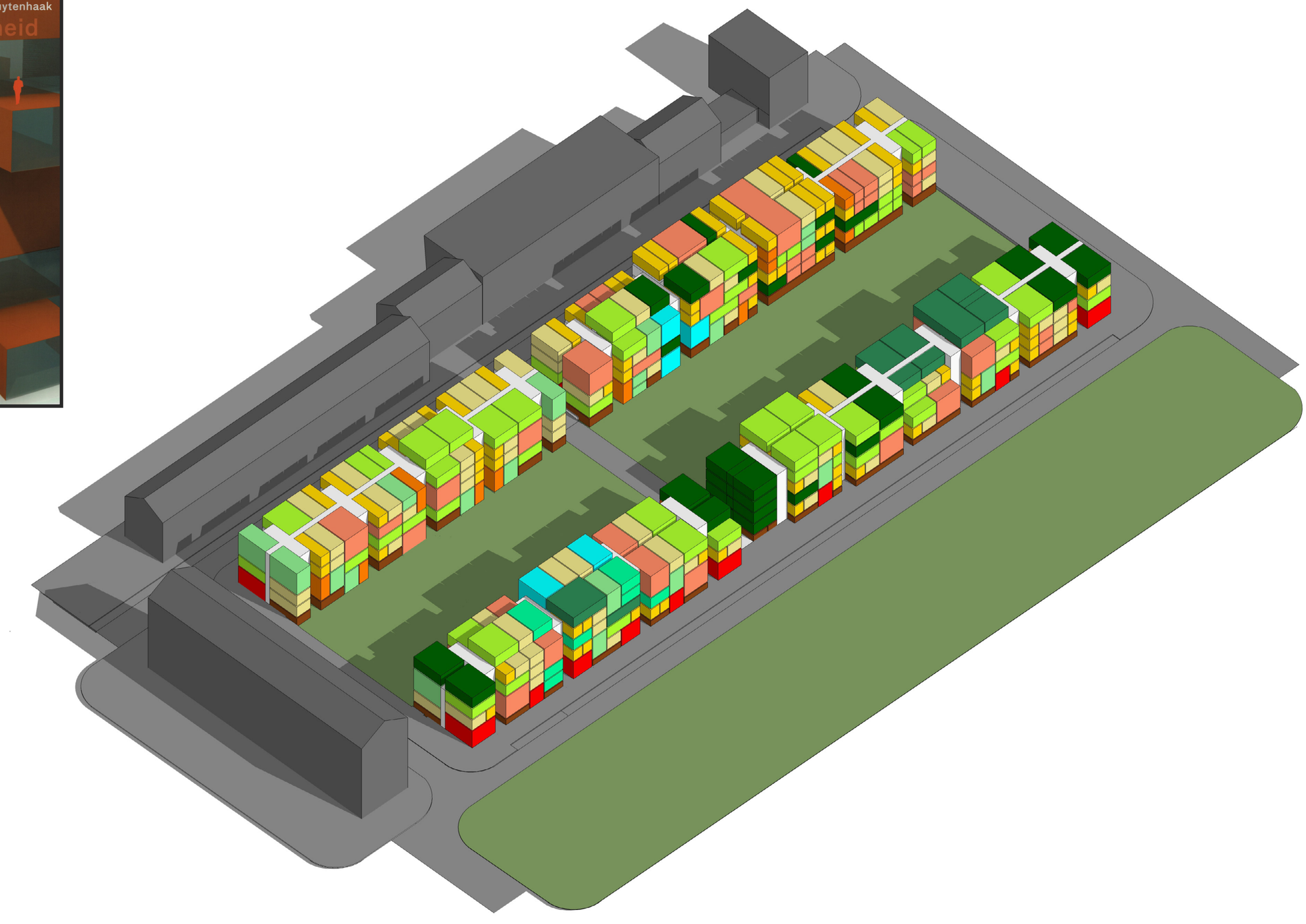




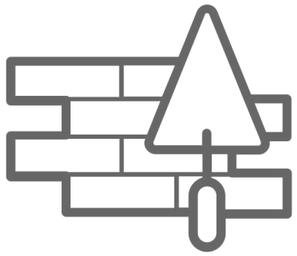




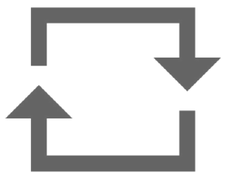

steden vol ruimte
kwaliteiten van dichtheid
rudy uytenhaak
uitgeverij 010



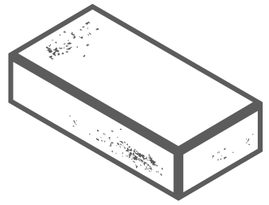
# ARCHITECTURAL OVERVIEW



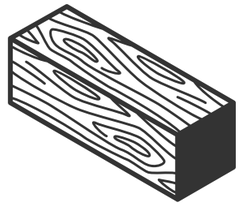
*'WEDEROPBOUW'* CHARACTERISTICS



REPETITION WITH MORE DIVERSITY



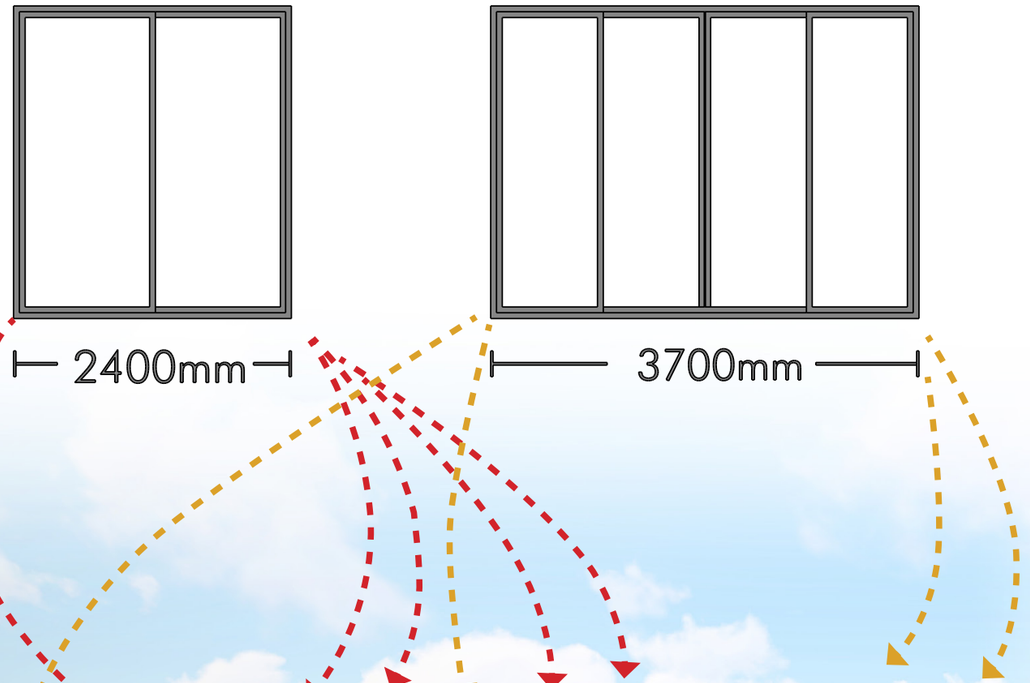
BRICK ELEMENTS LOADBEARING AND STATIC

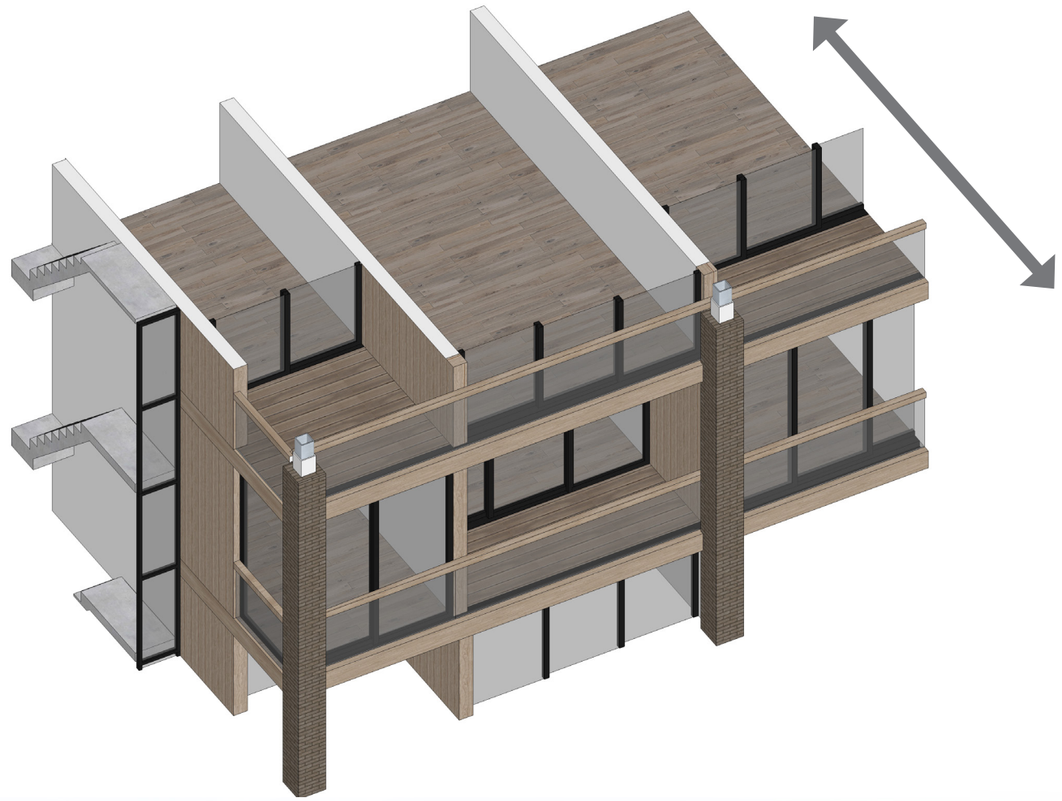


WOODEN COMPONENTS FLEXIBLE DYNAMIC

TRADITIONAL BUILDING METHOD
SOBER ARCHITECTURE ROTTERDAM

# ARCHITECTURAL OVERVIEW

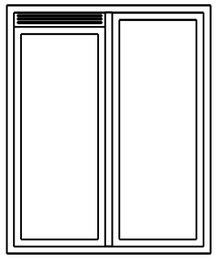




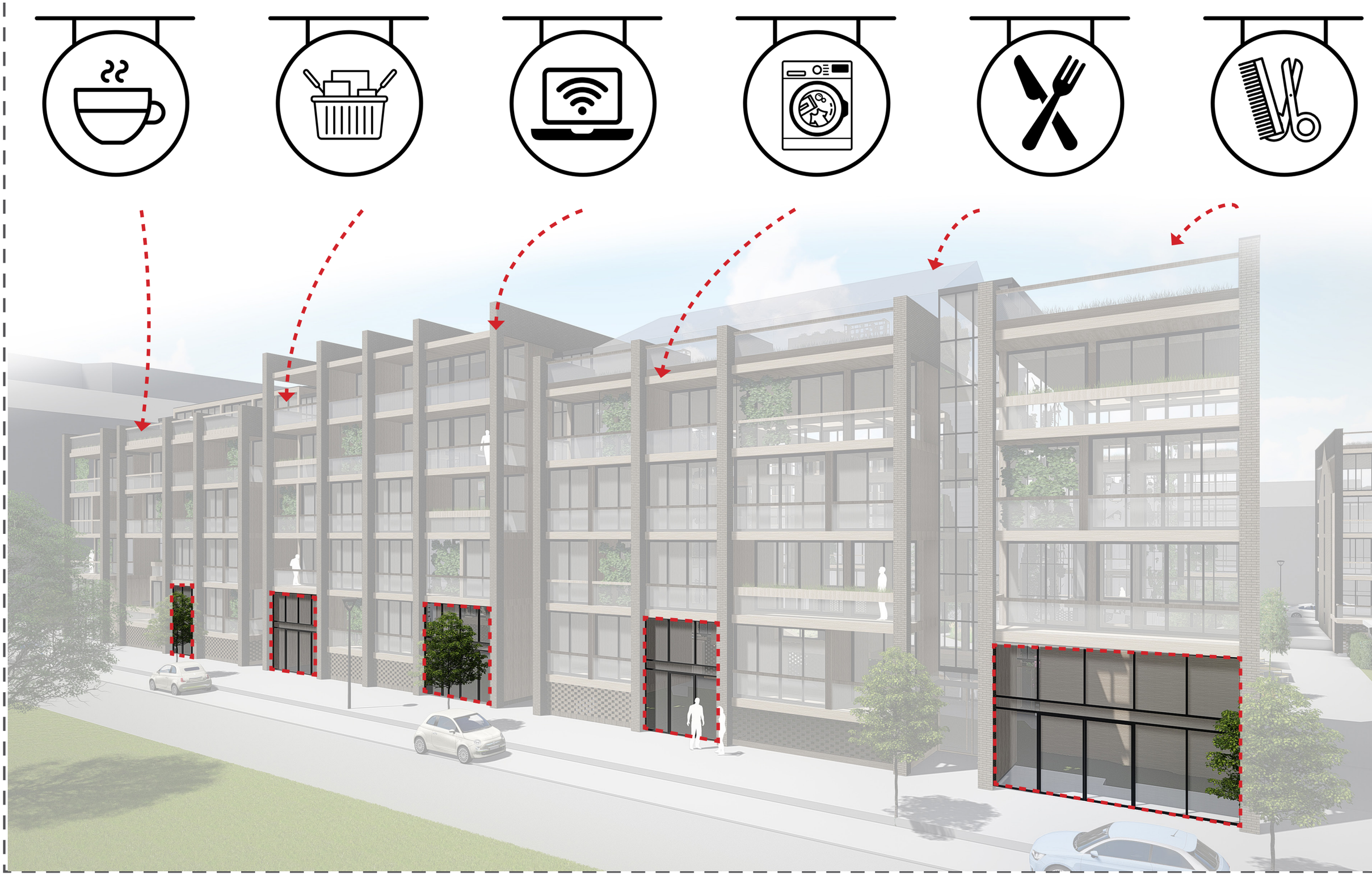
# ARCHITECTURAL OVERVIEW



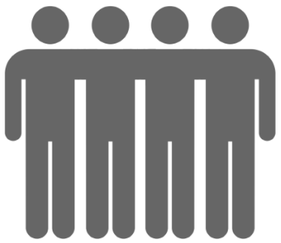




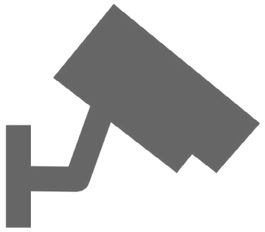
# ARCHITECTURAL OVERVIEW



# ARCHITECTURAL OVERVIEW



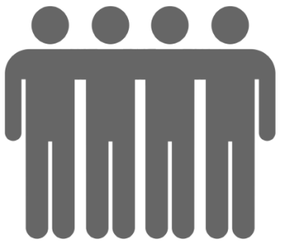
LIVEABILITY



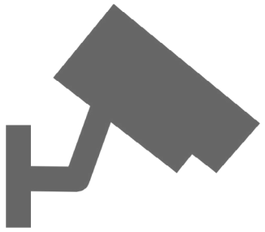
SECURITY



# ARCHITECTURAL OVERVIEW

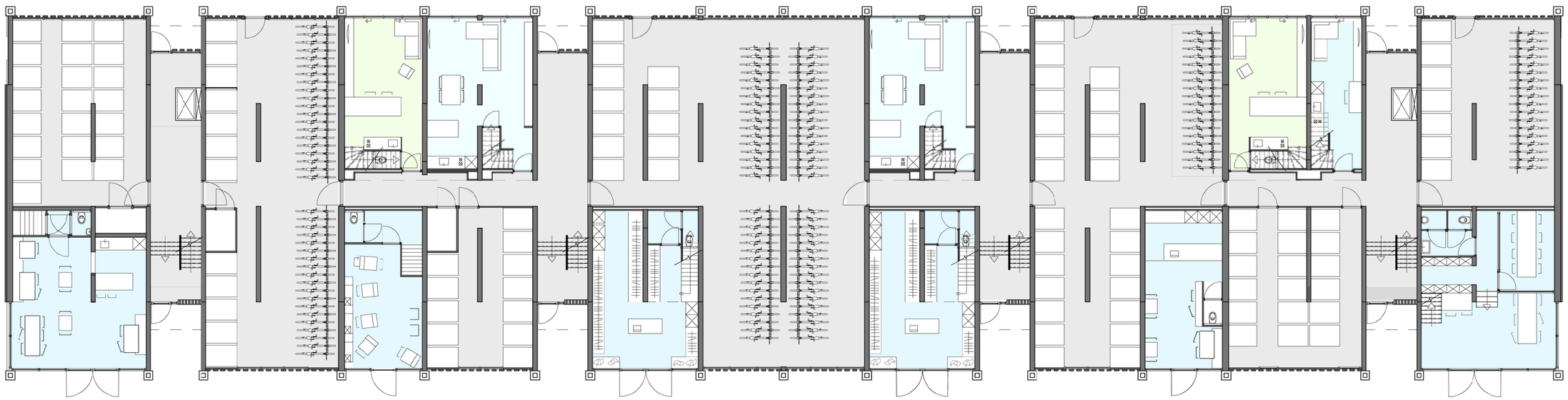


LIVEABILITY

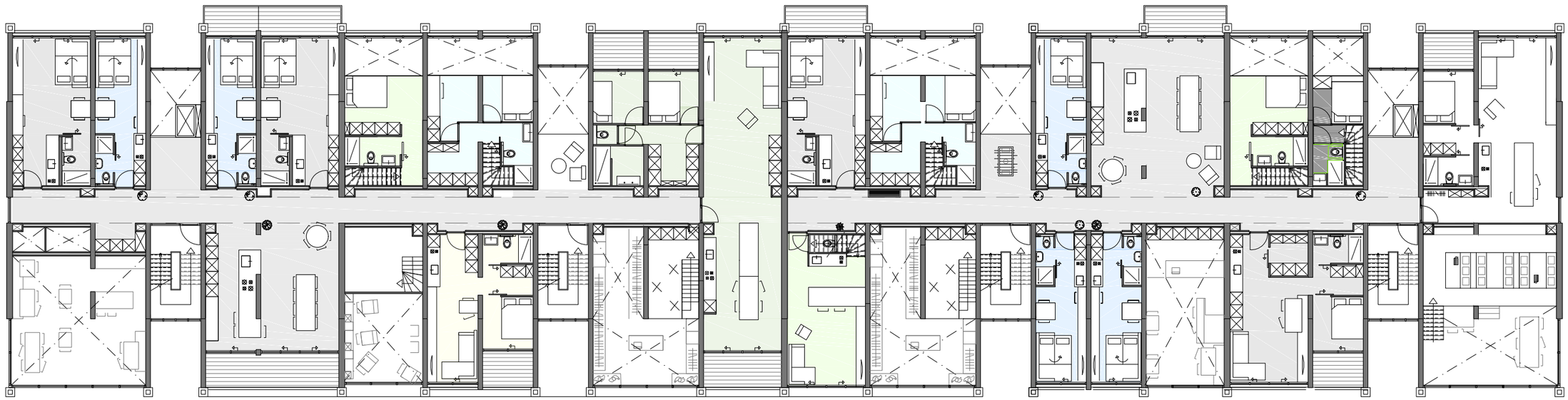


SECURITY

# GROUND FLOOR & 1ST FLOOR



Begane grond

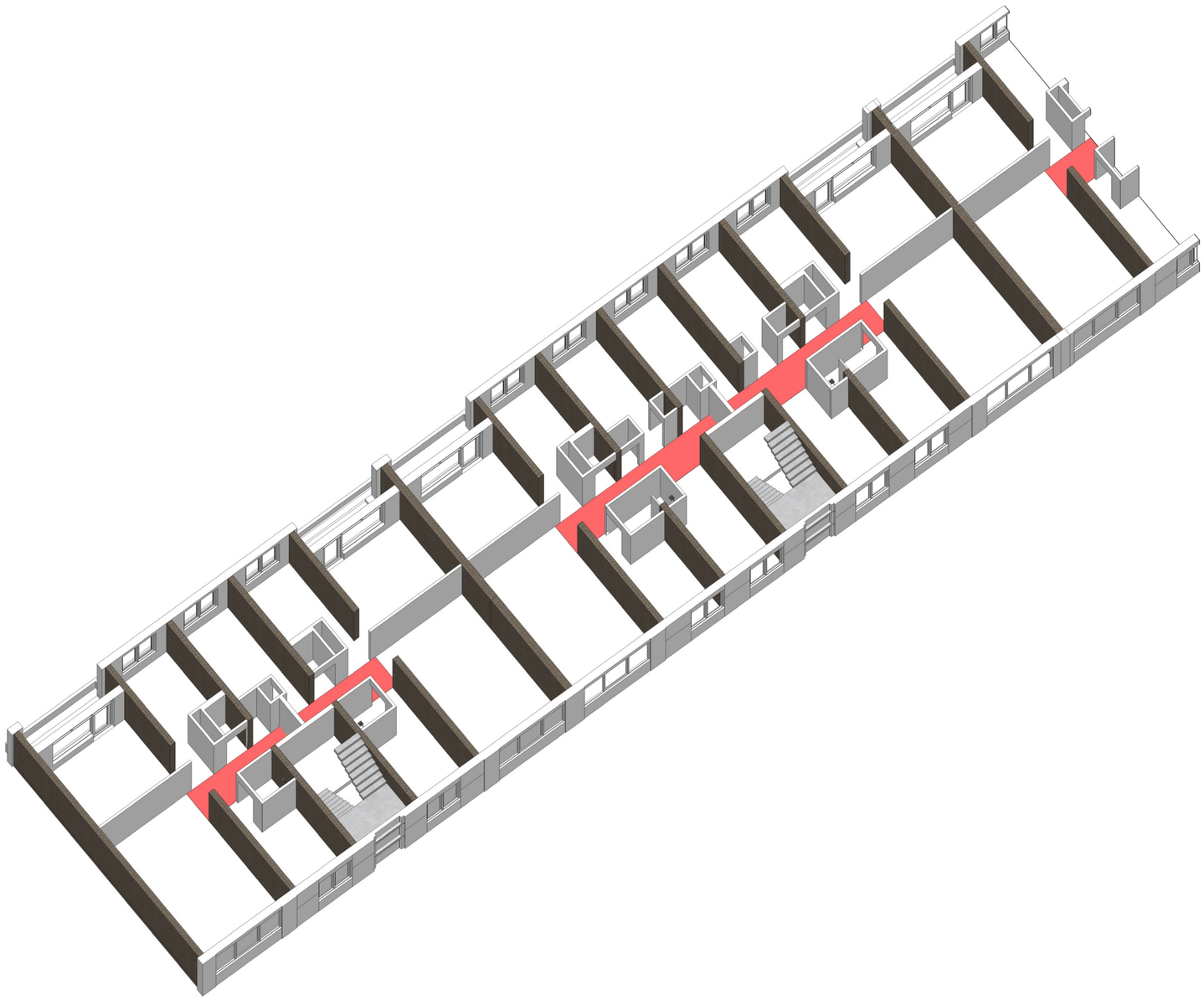


1e verdieping

# ACCESSIBILITY

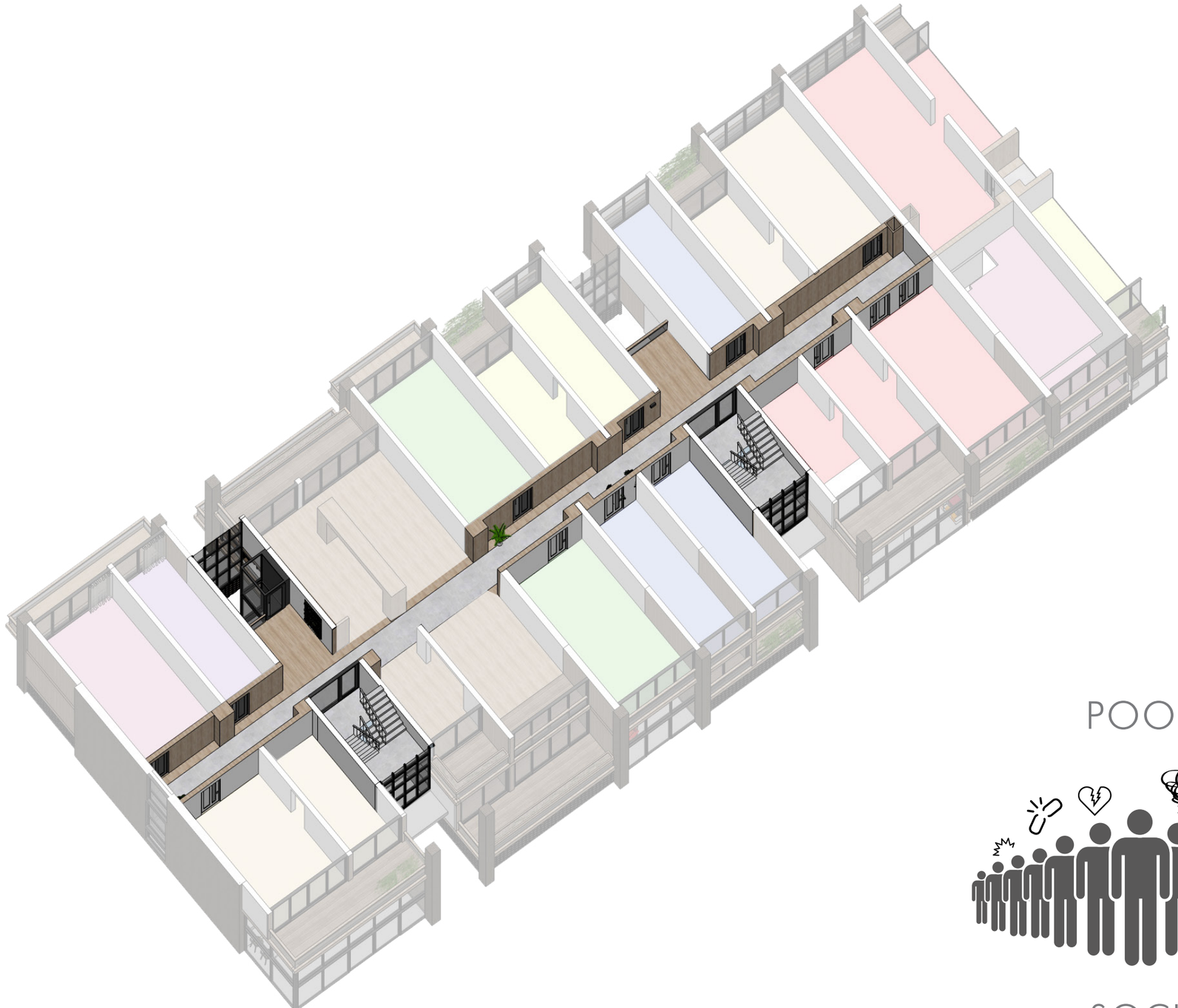


# ACCESSIBILITY



TWO WALK-UP ACCESS COMBINED

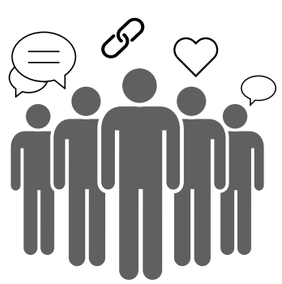
# ACCESSIBILITY



POOR



GOOD



SOCIAL INTERACTION

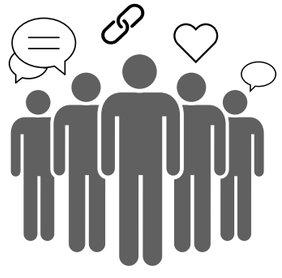
# ACCESSIBILITY



POOR



GOOD

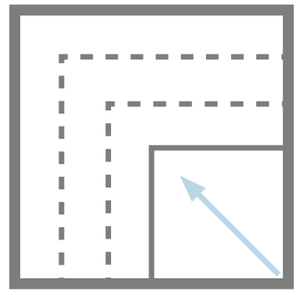


SOCIAL INTERACTION

# VERTICAL INSTALLATIONTRANSPORT





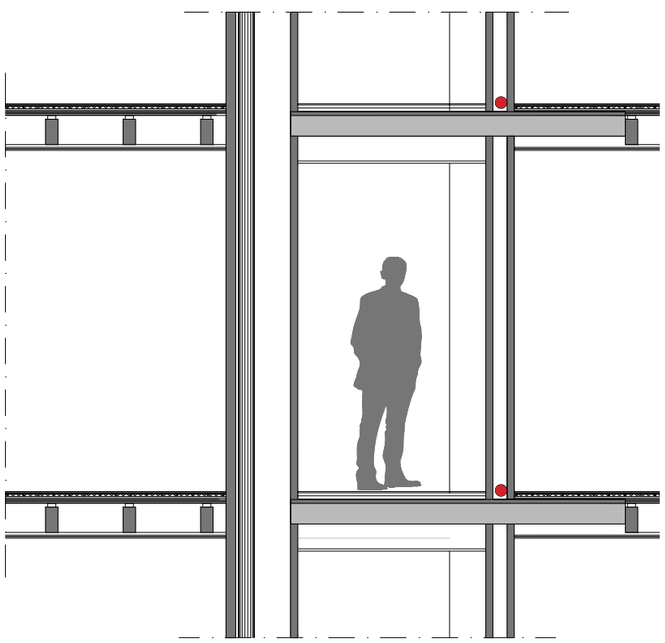


ACCESSIBILITY & PARTITIONABILITY

# VERTICAL INSTALLATIONTRANSPORT

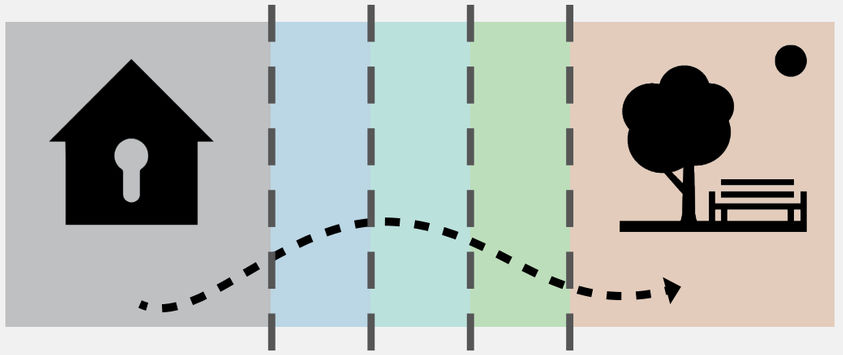




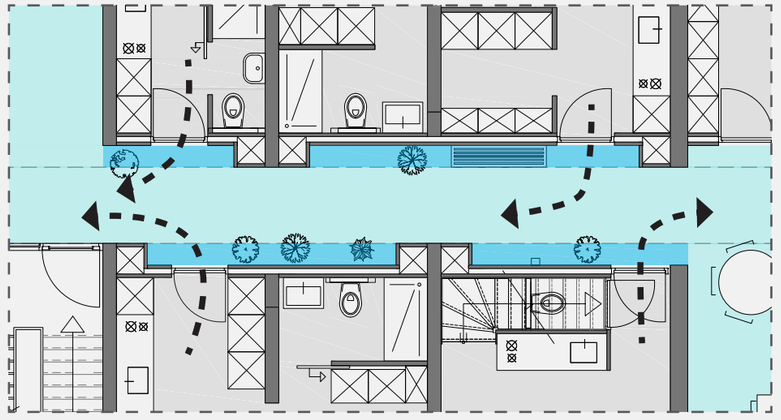


# VERTICAL INSTALLATIONTRANSPORT





HYBRIDE ZONE

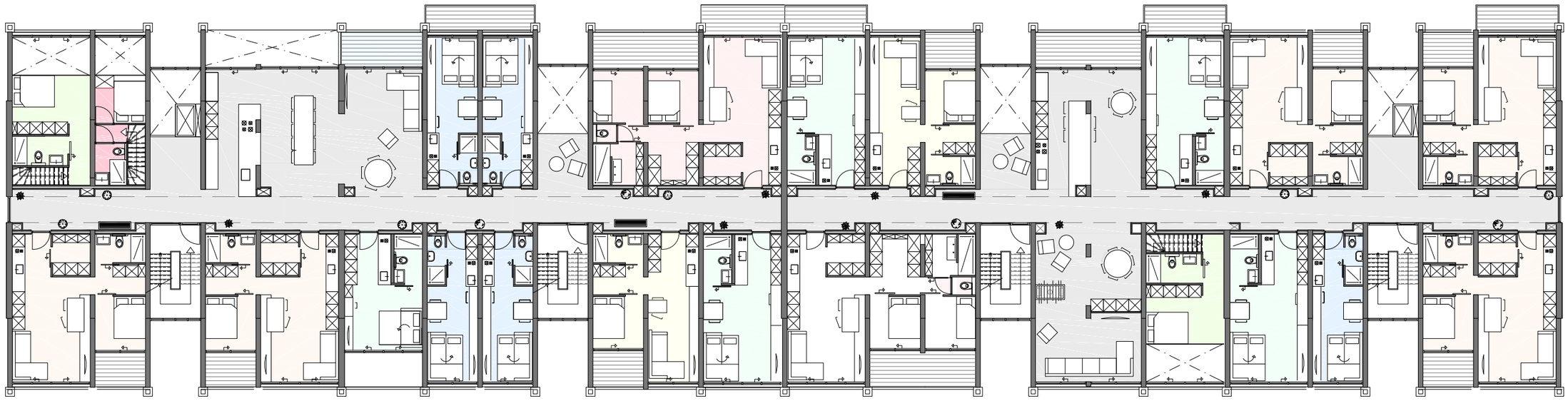


SEMI - PRIVATE

# DWELLING DIVERSITY

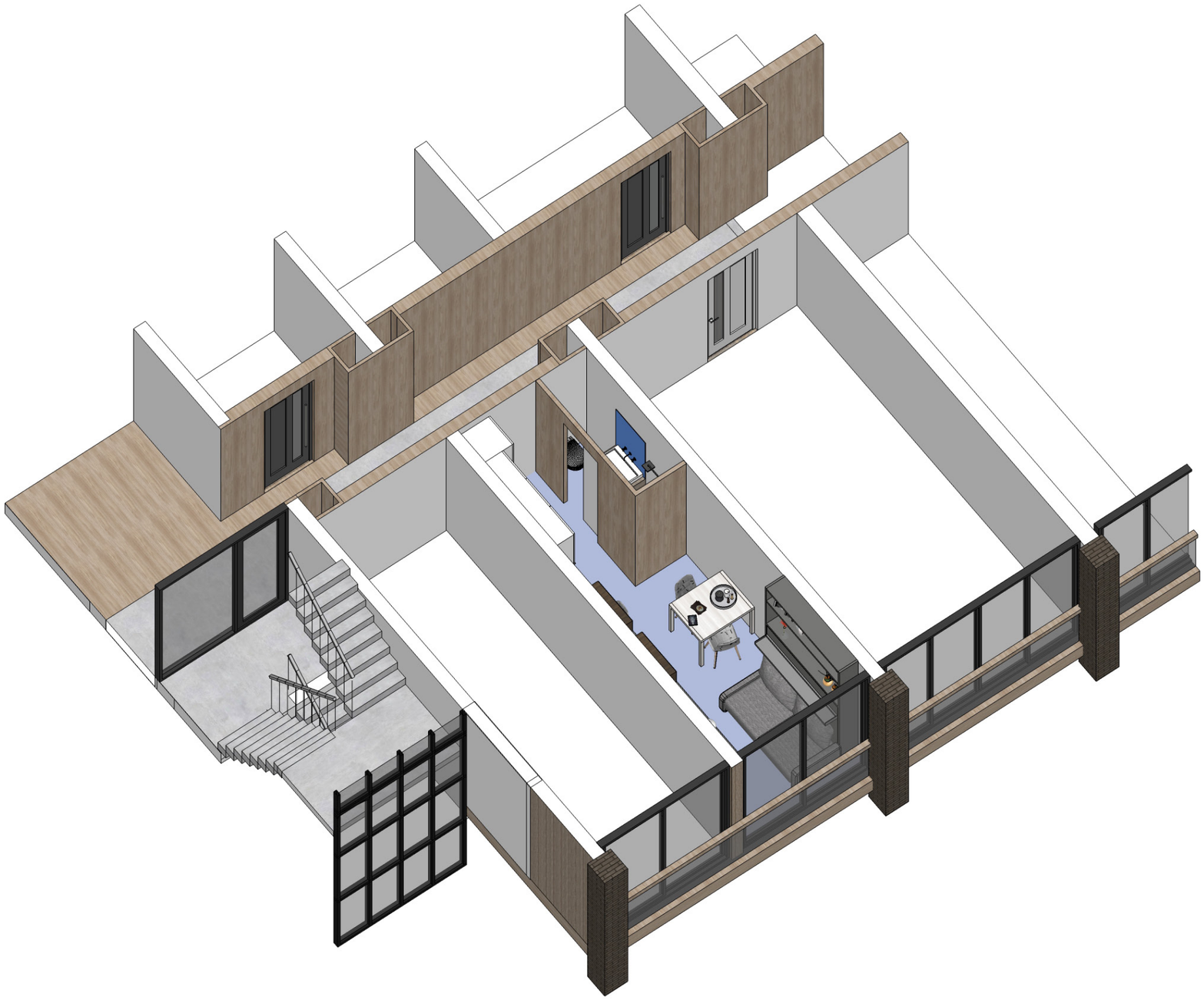


2e gewijzigd



3e gewijzigd

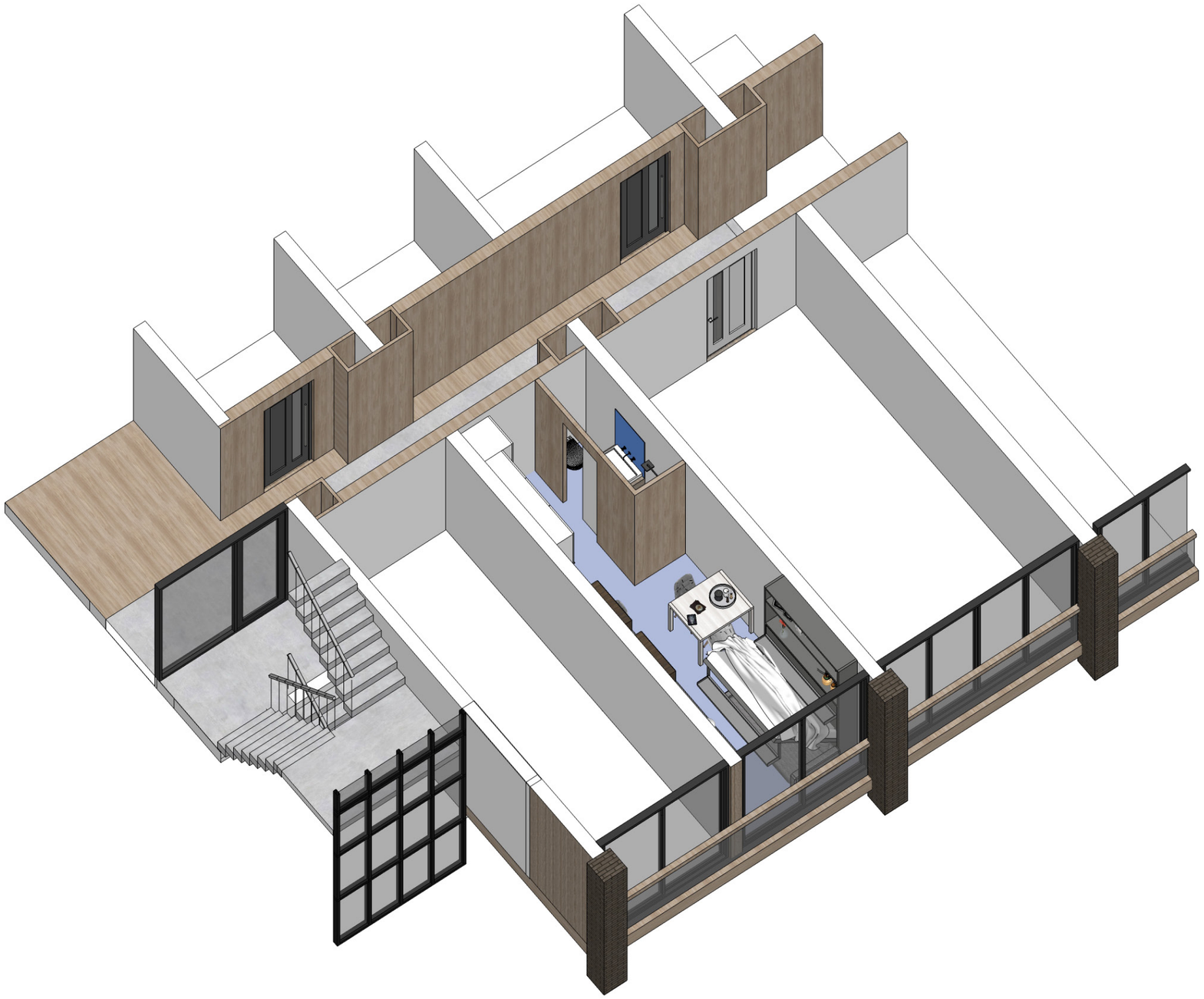
# APARTMENT TYPE A



17 $m^2$

SPACE
SAVING
FURNITURE

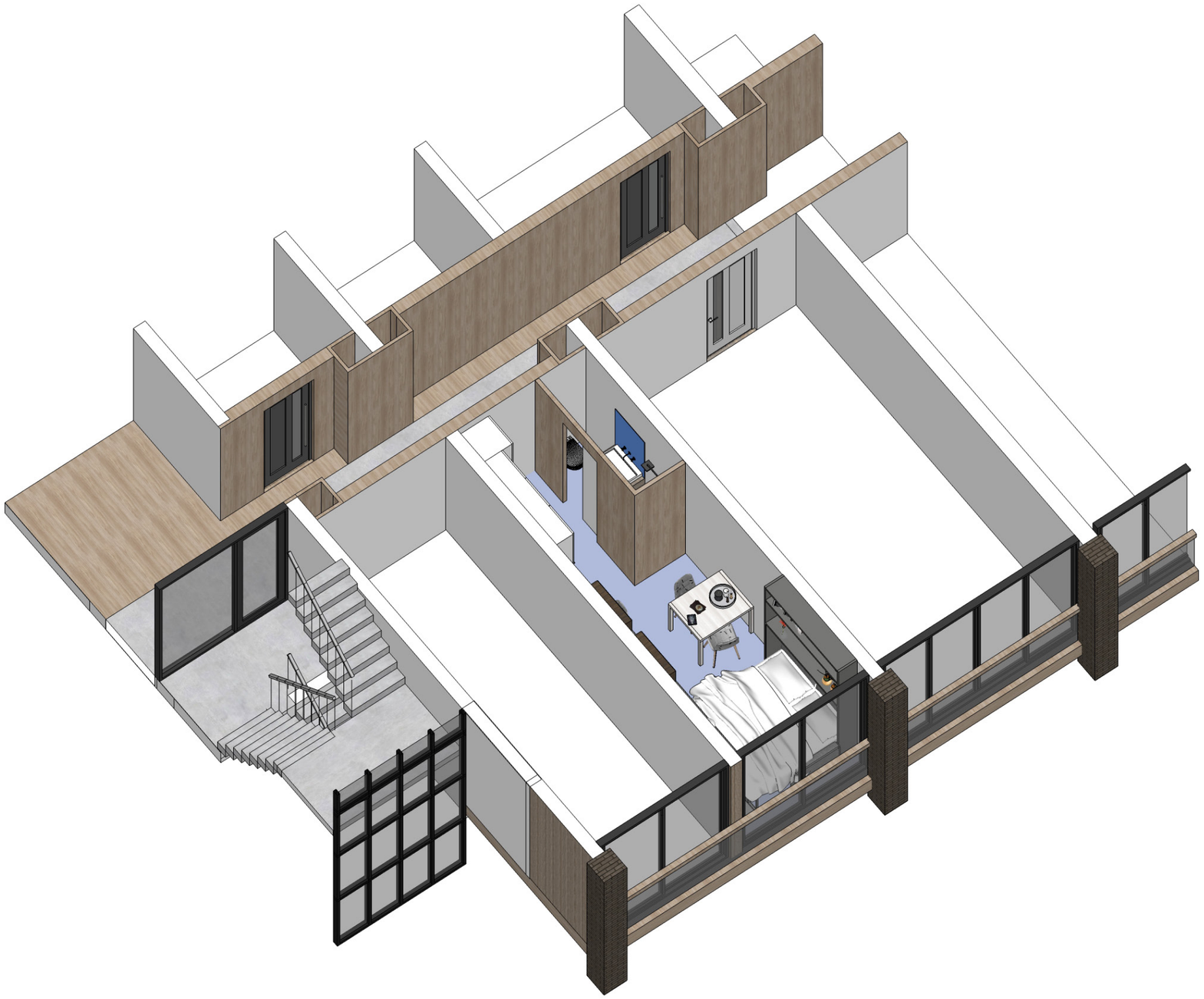
# APARTMENT TYPE A



17 $m^2$

SPACE
SAVING
FURNITURE

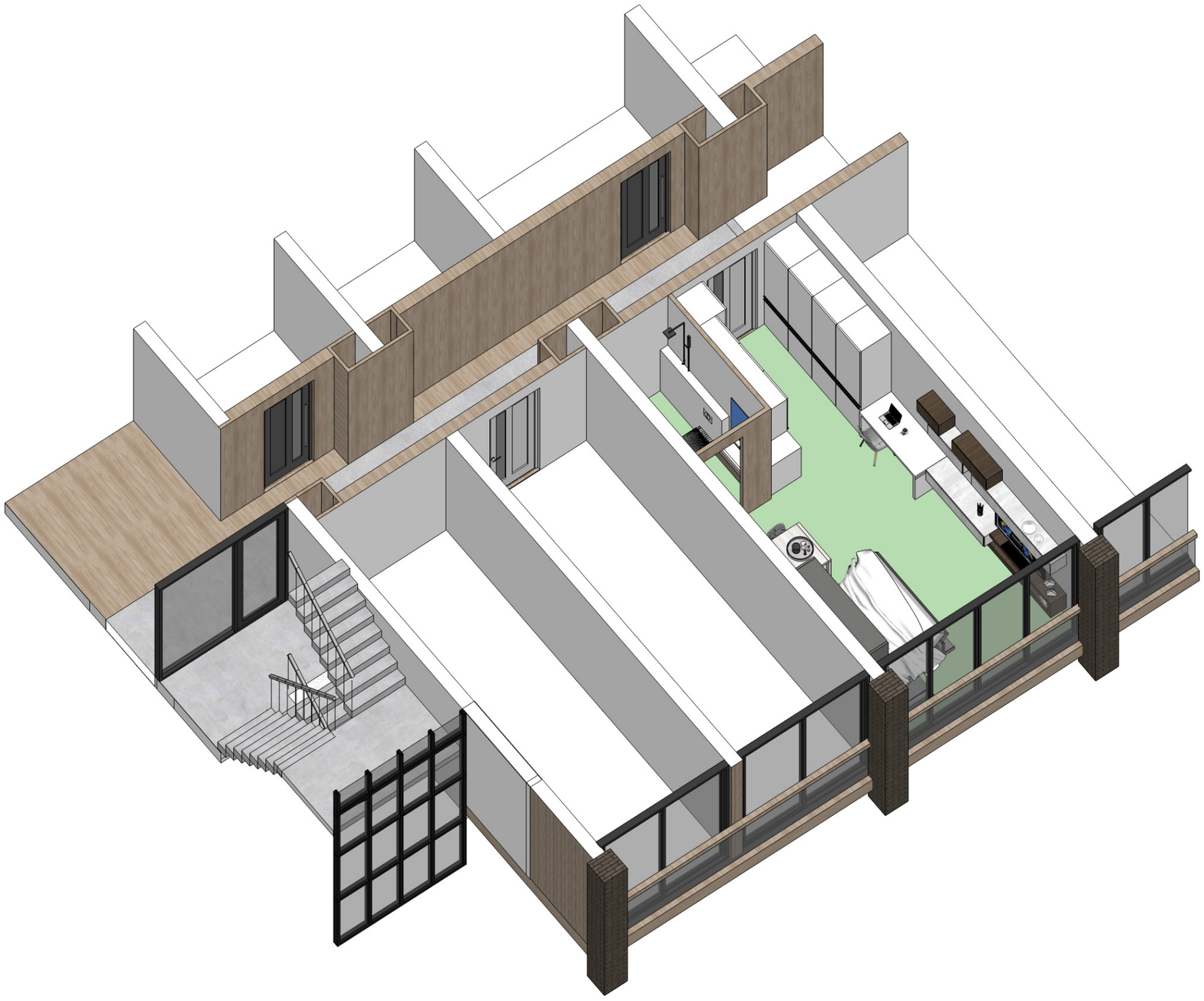
# APARTMENT TYPE A



17 $m^2$

SPACE
SAVING
FURNITURE

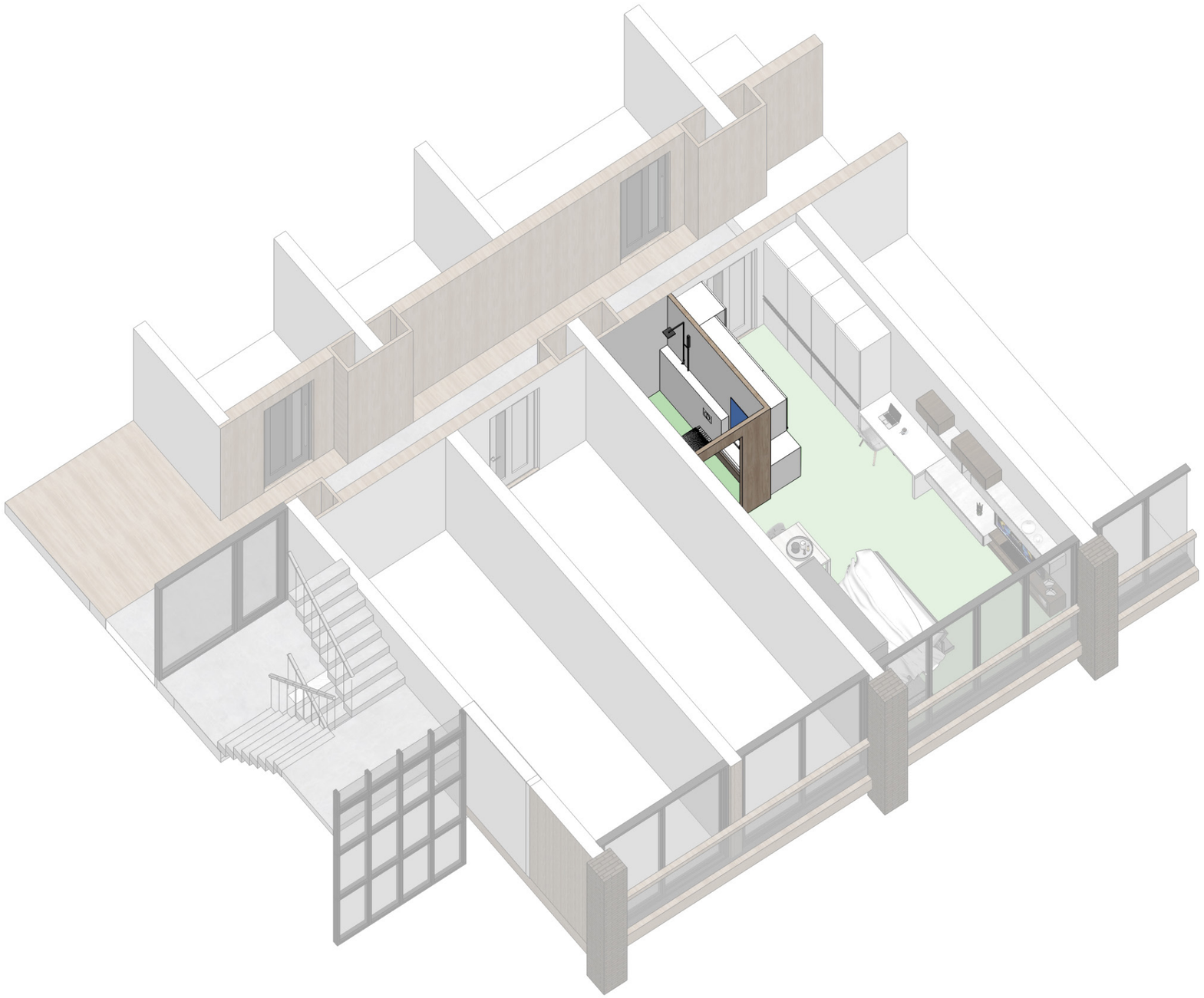
# APARTMENT TYPE B



26 m²

COMPACT ELEMENT

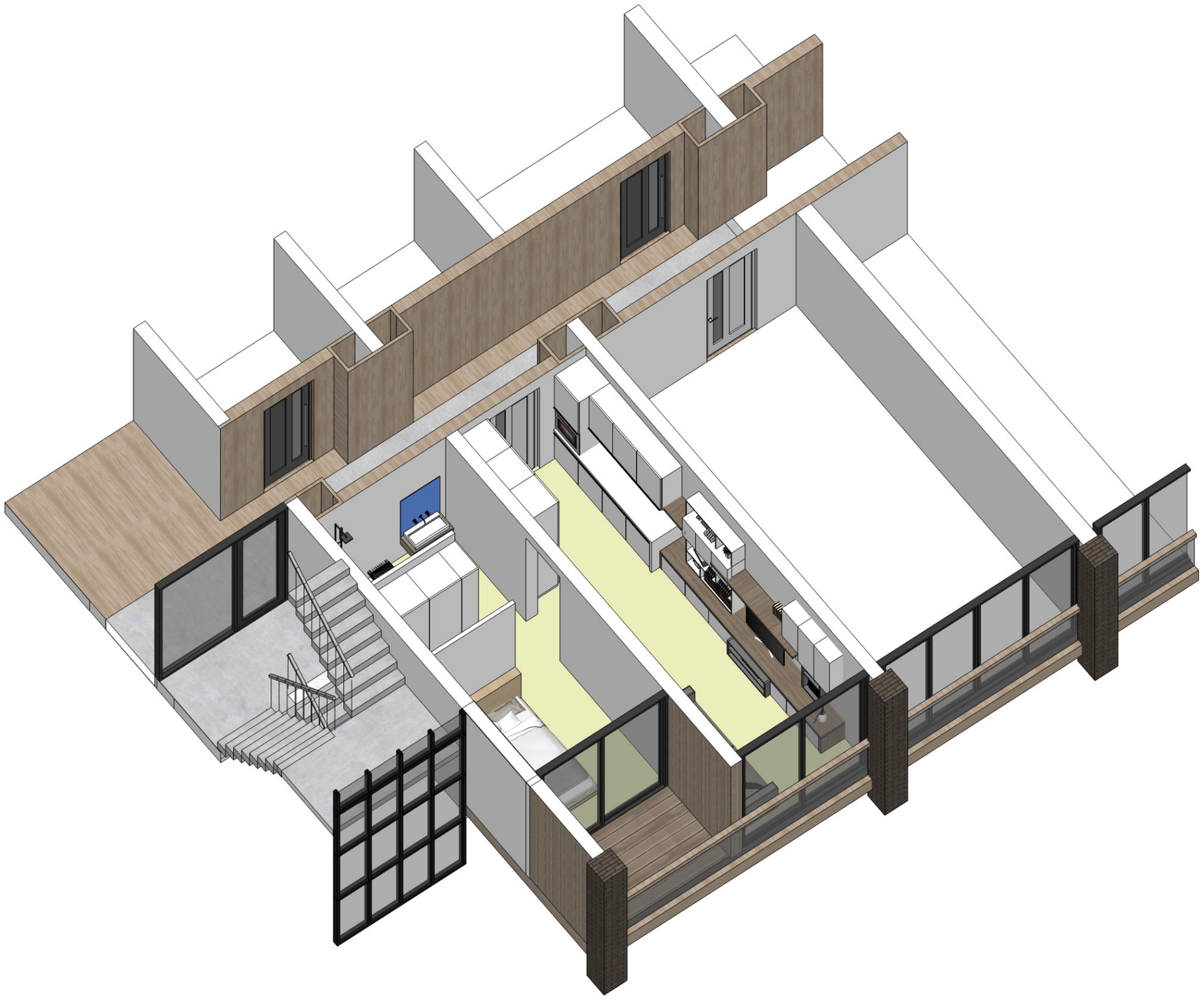
# APARTMENT TYPE B



26 m²

COMPACT ELEMENT

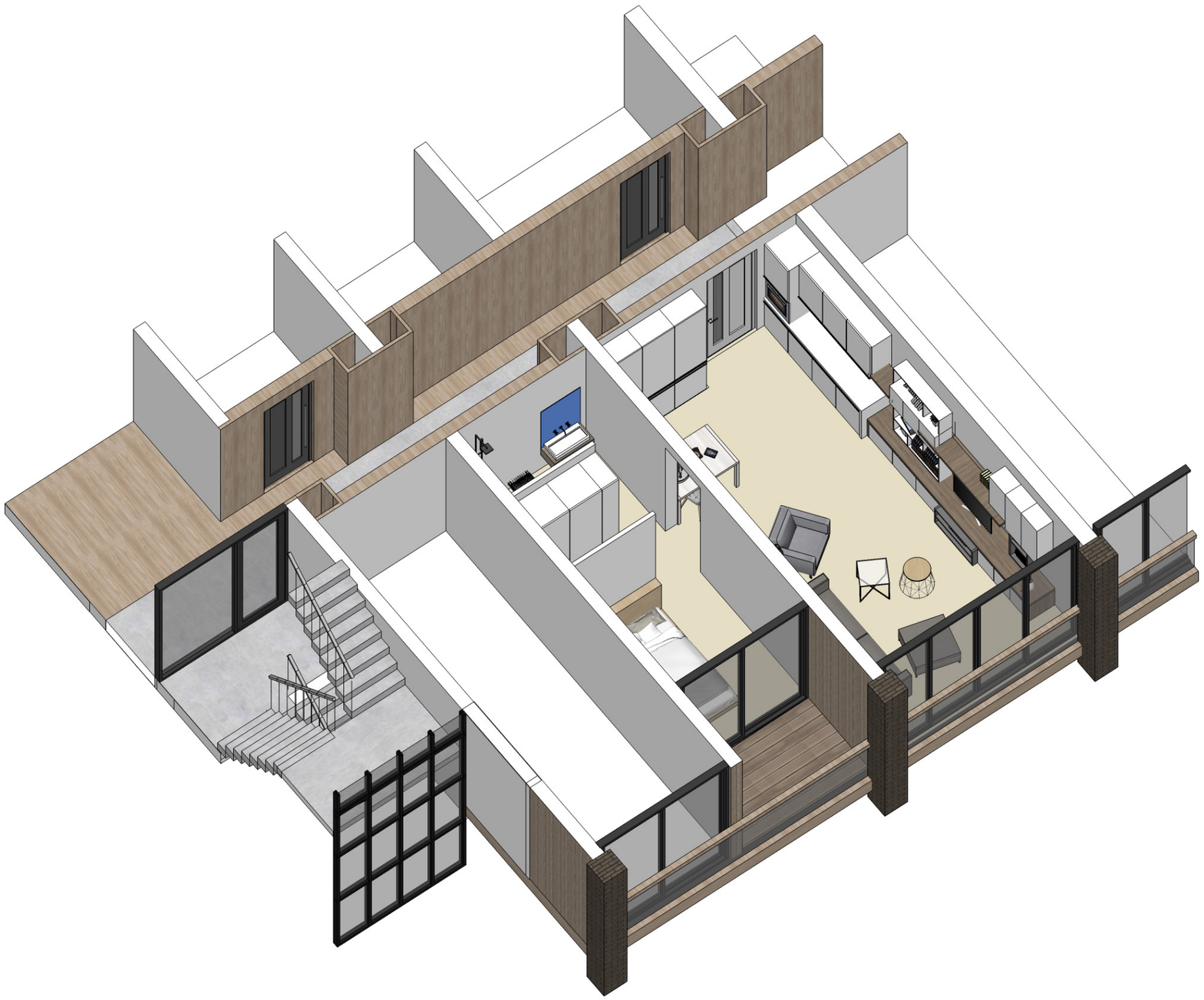
# APARTMENT TYPE C



35 m²

COMBINE
*BEUKEN*

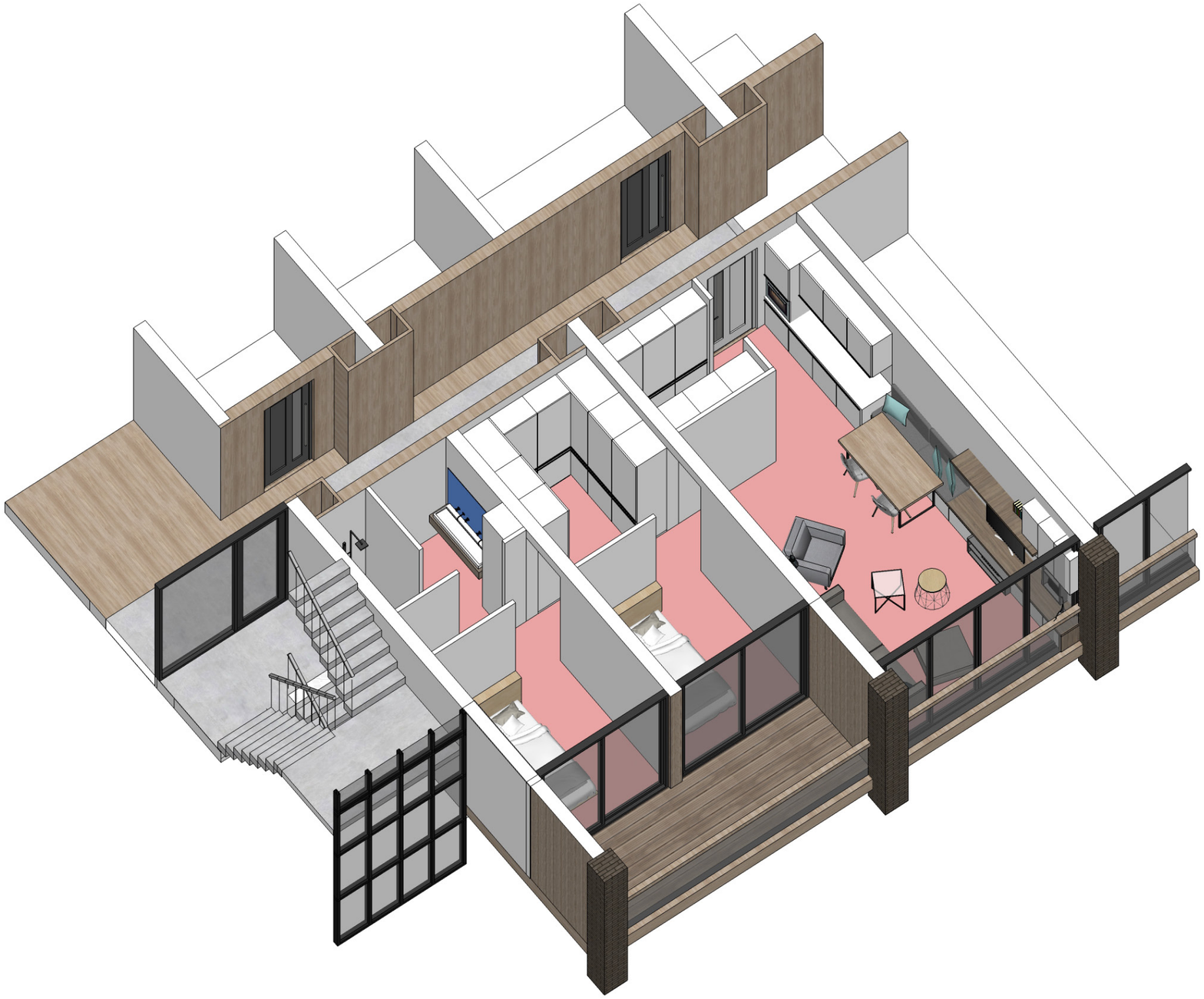
# APARTMENT TYPE D



44 m²

COMBINE
*BEUKEN*

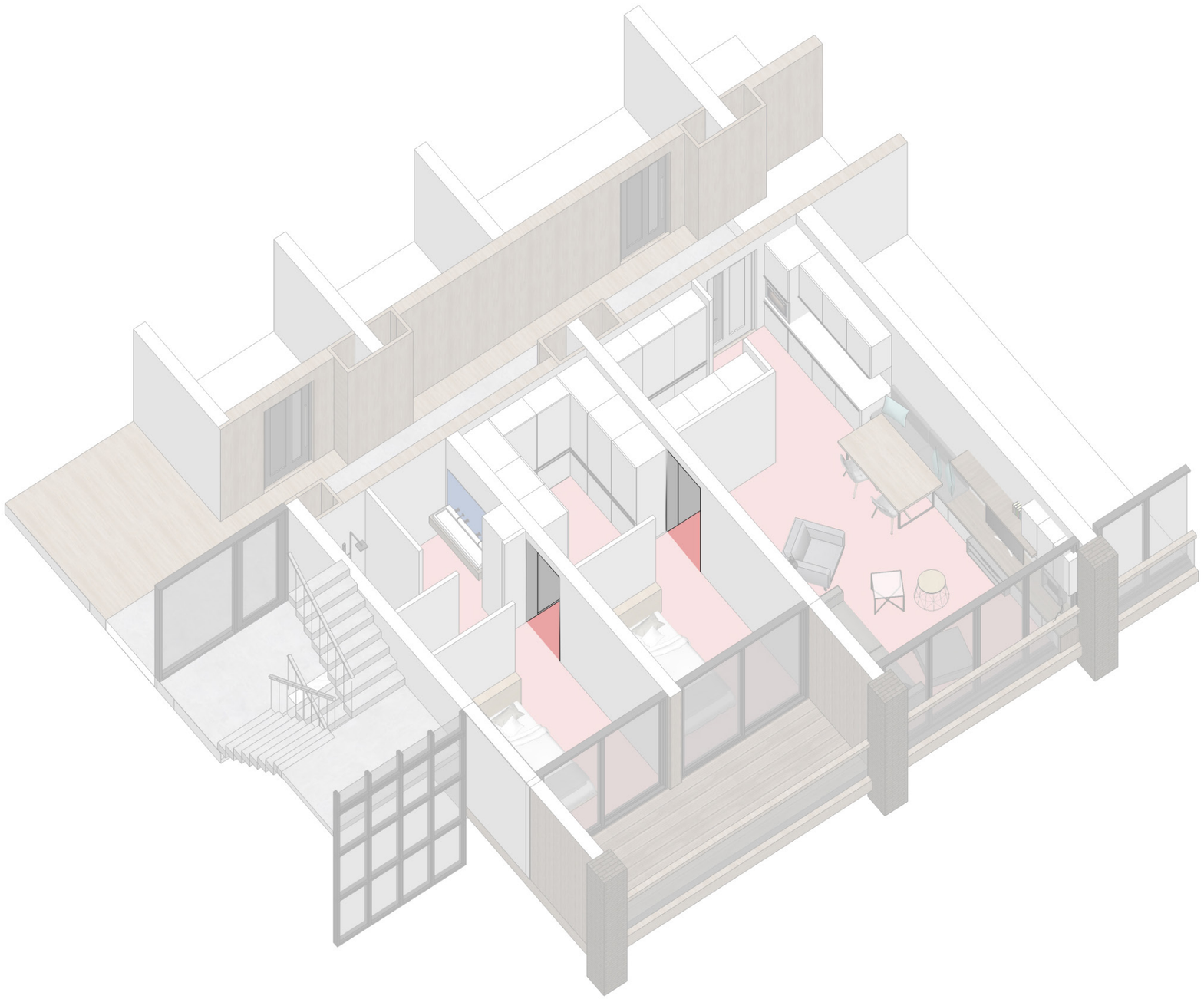
# APARTMENT TYPE E



62 m²

COMBINE
*BEUKEN*

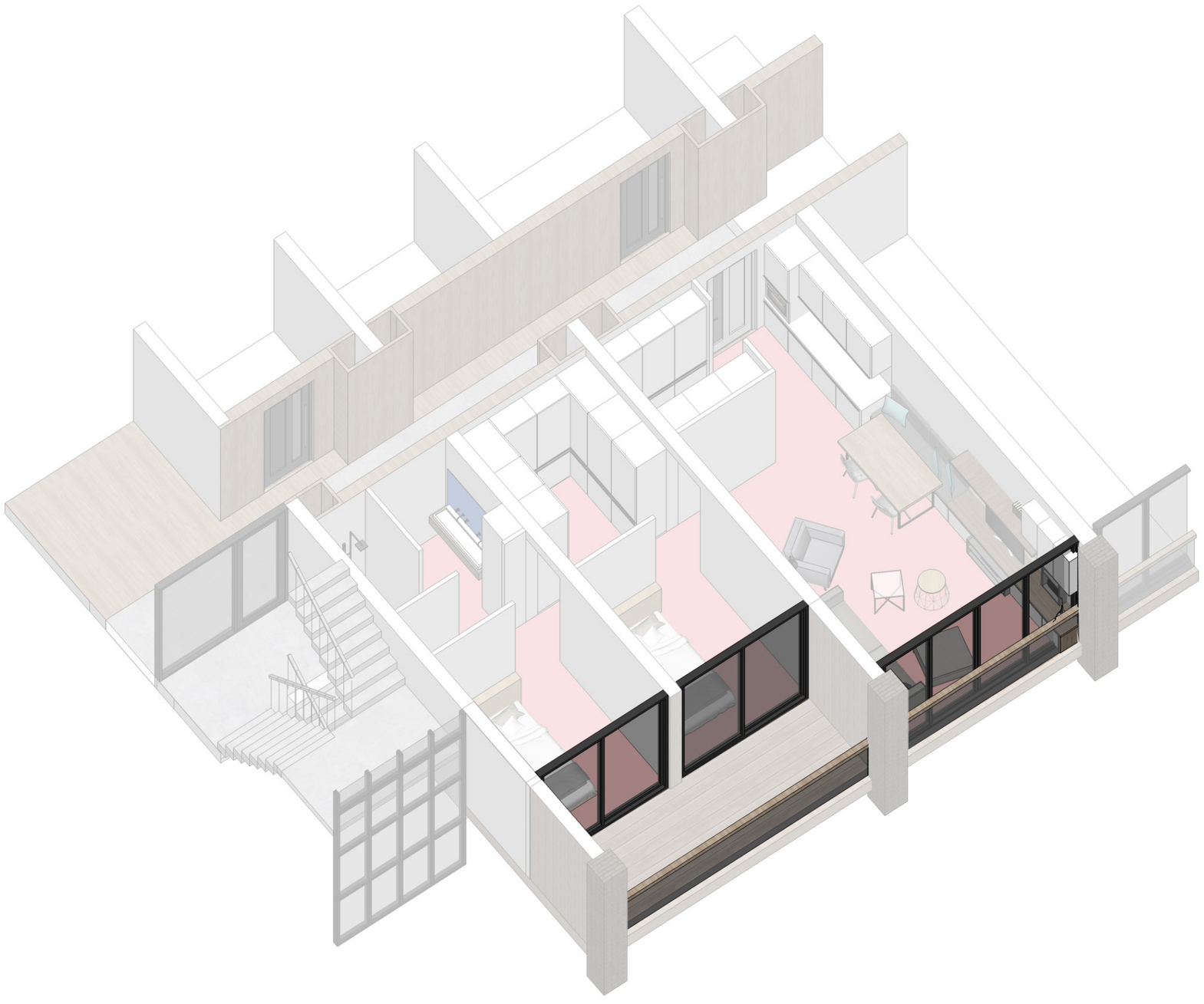
# APARTMENT TYPE E



62 m²

COMBINE
*BEUKEN*

# APARTMENT TYPE E

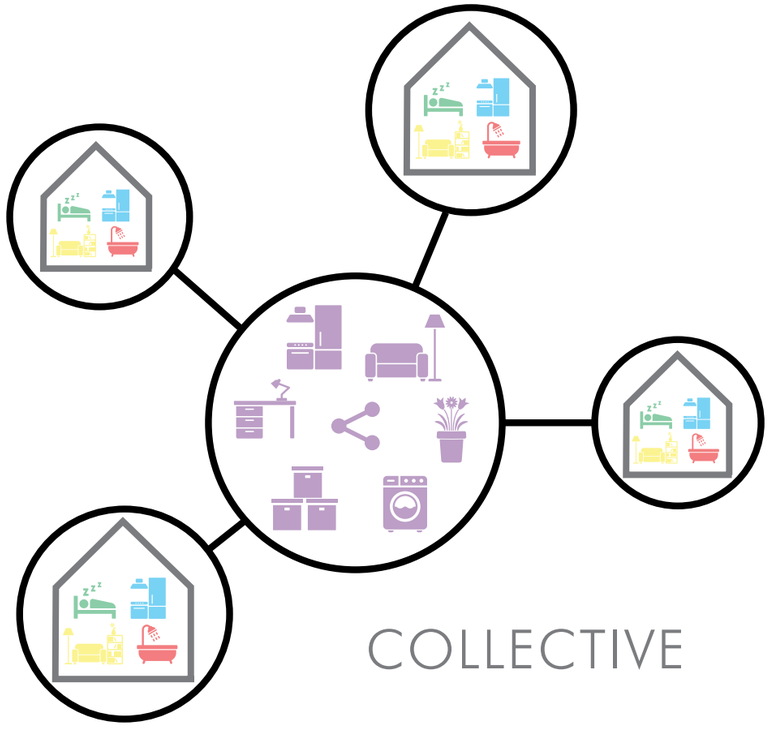


62 $m^2$

DAYLIGHT
SPACIOUS

# SHARED SPACES

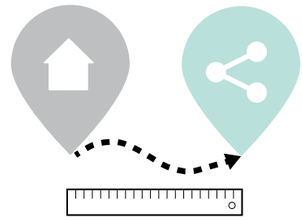




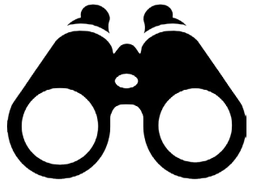
COLLECTIVE

# SHARED SPACES

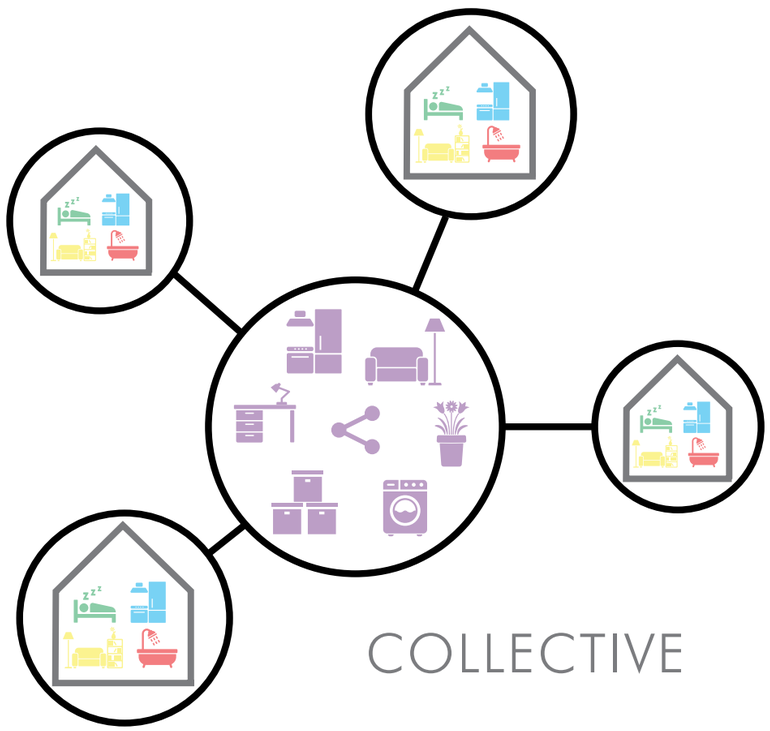




PROXIMITY
HOME-FUNCTIONS



VISIBILITY
FUNCTIONS



COLLECTIVE

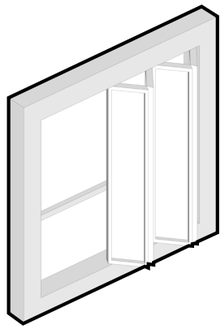
# SHARED SPACES



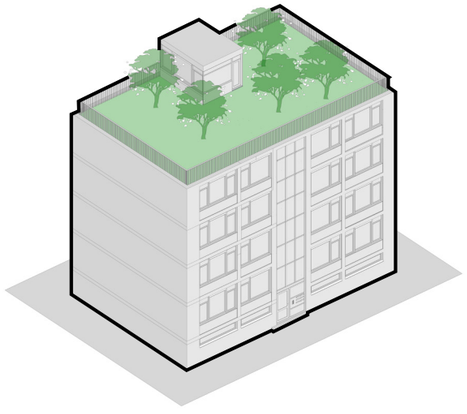
# SHARED SPACES



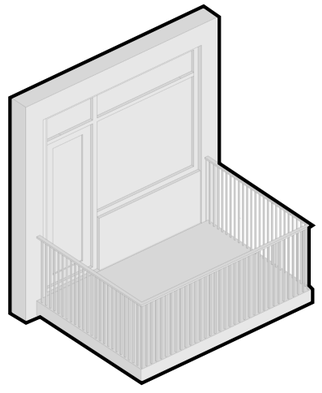
# OUTDOOR SPACE



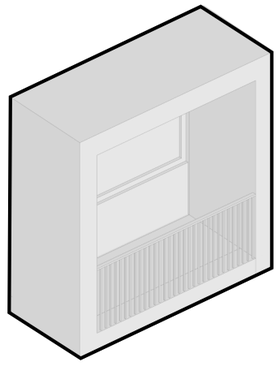
FRENCH
BALCONY



ROOF
GARDEN



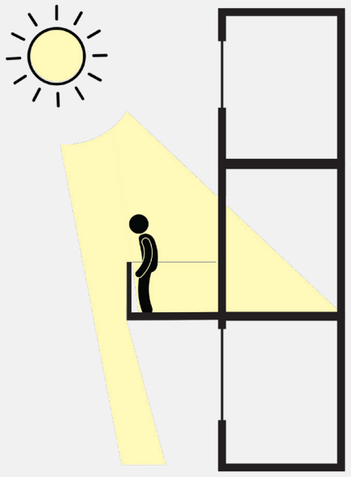
EXTERNAL
BALCONY



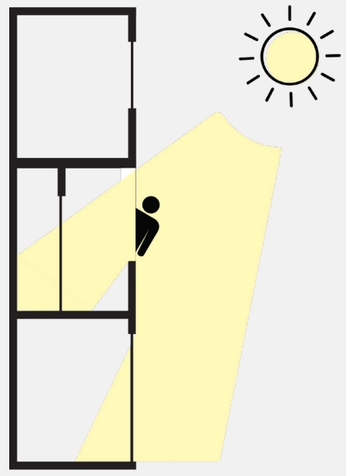
INTERNAL
BALCONY



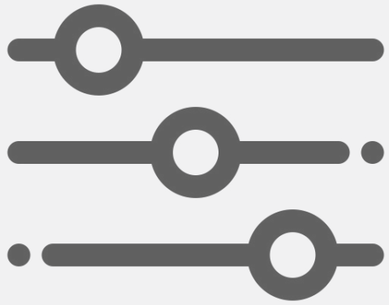

COMFORT



LIVEABILITY
DAYLIGHT

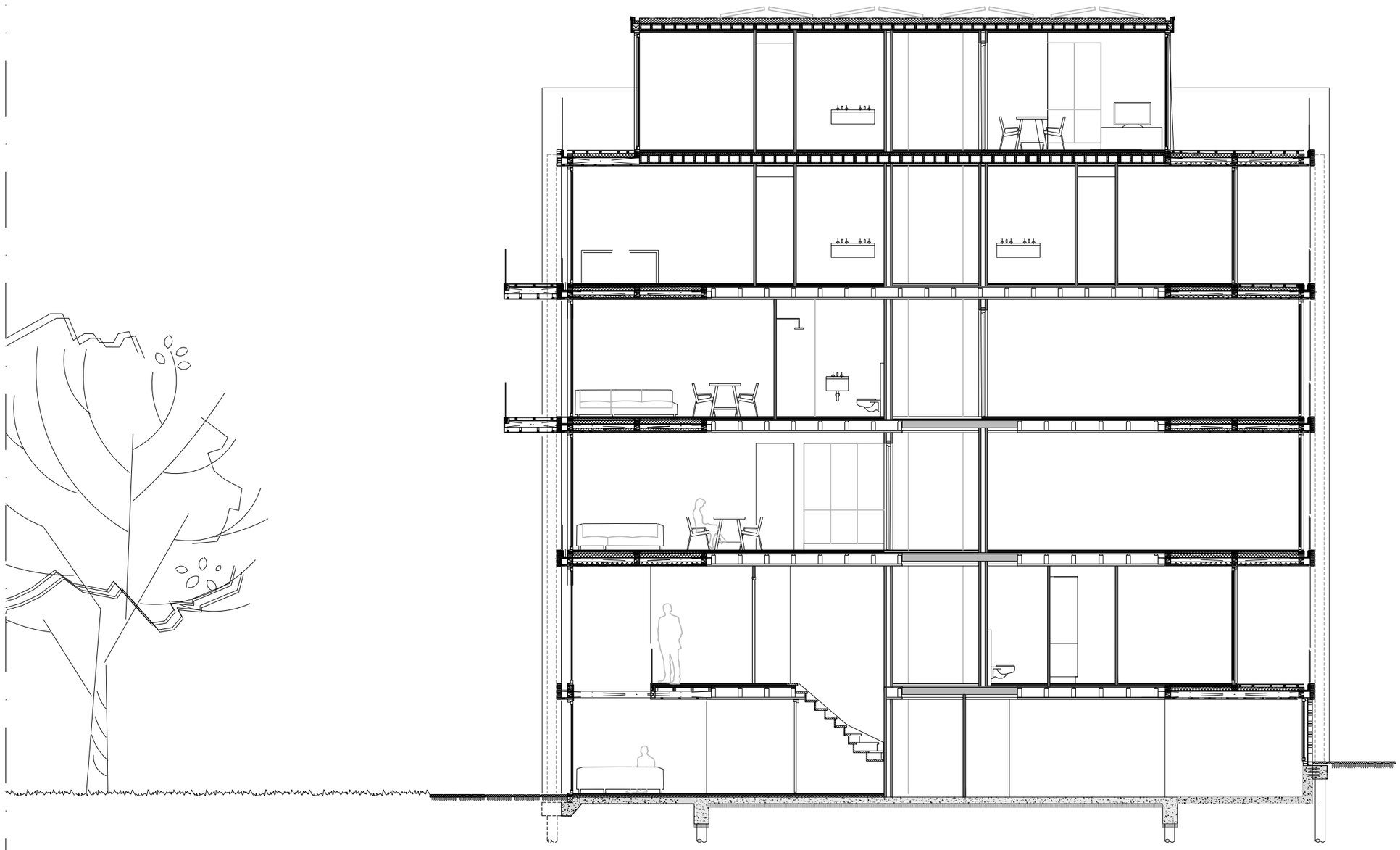


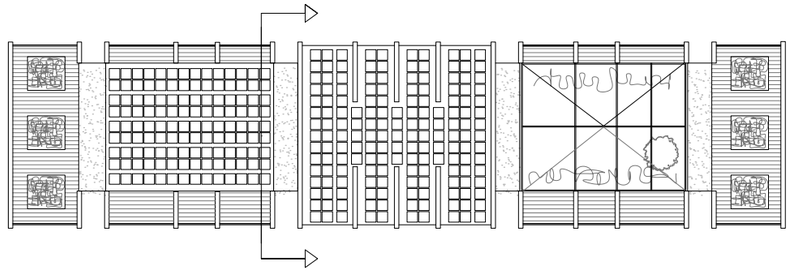
PRIVACY
DAYLIGHT



OPTIONS

# SECTION

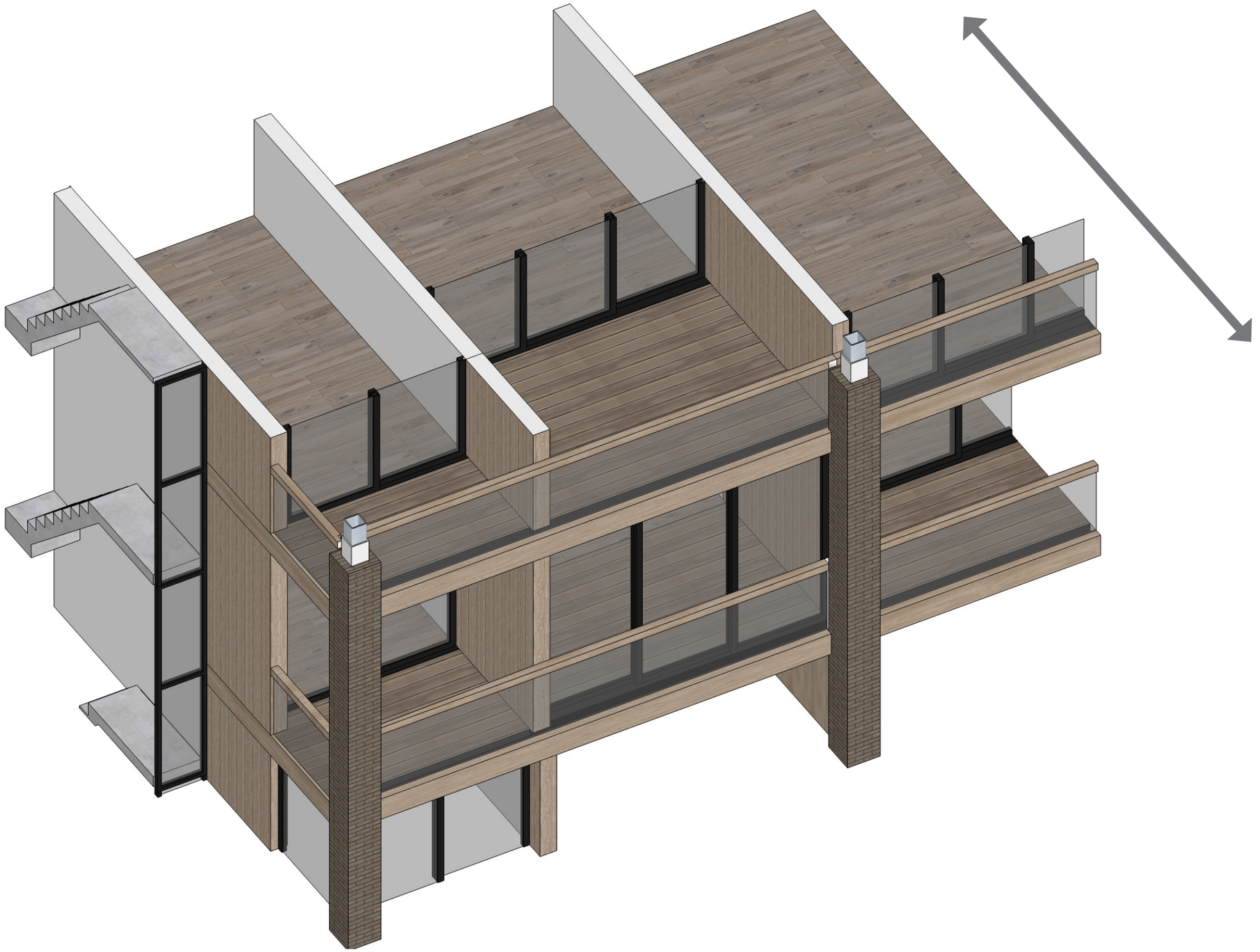




# ANIMATION INSIDE GARDEN



# OPTIONS OUTDOOR SPACE



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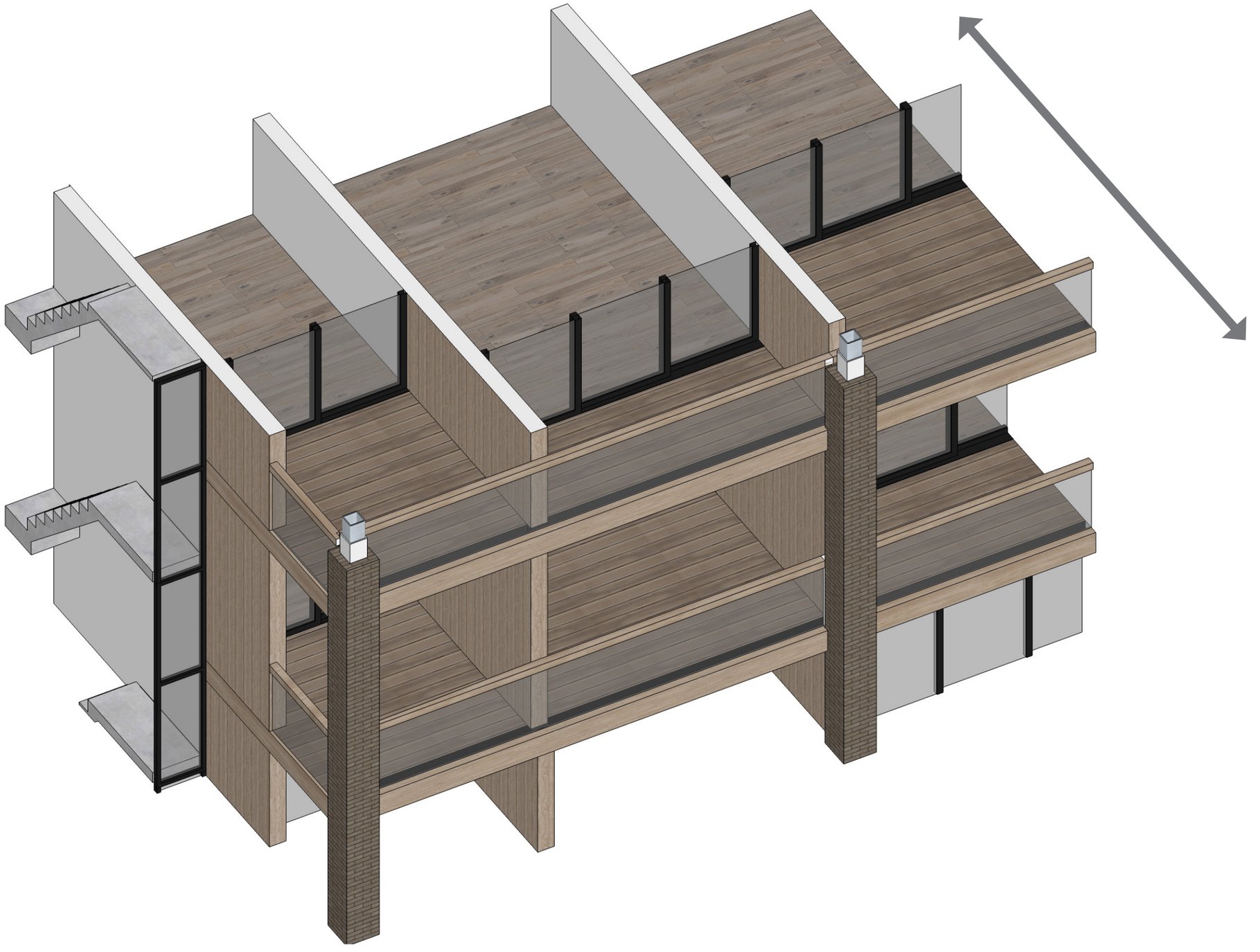
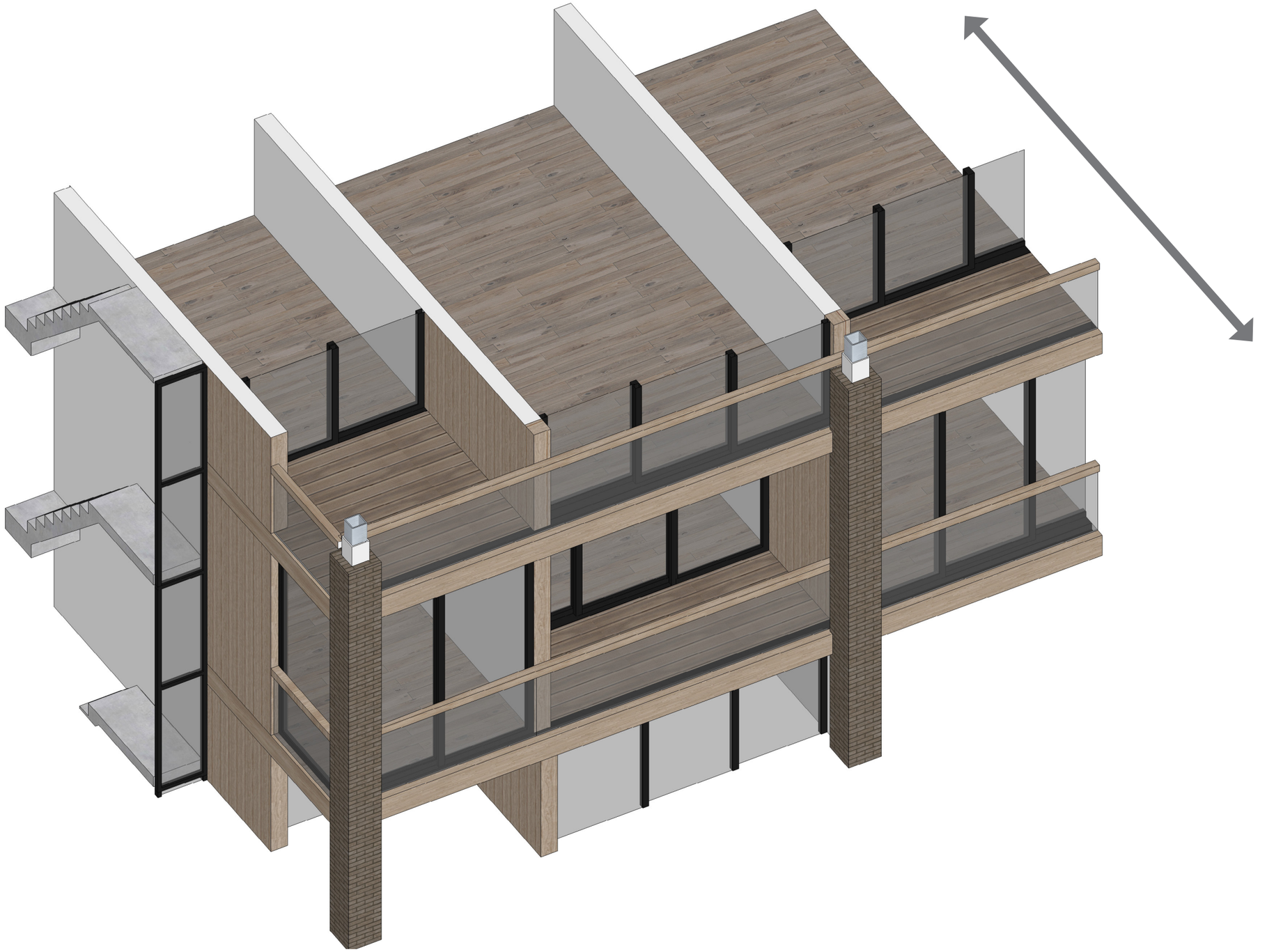
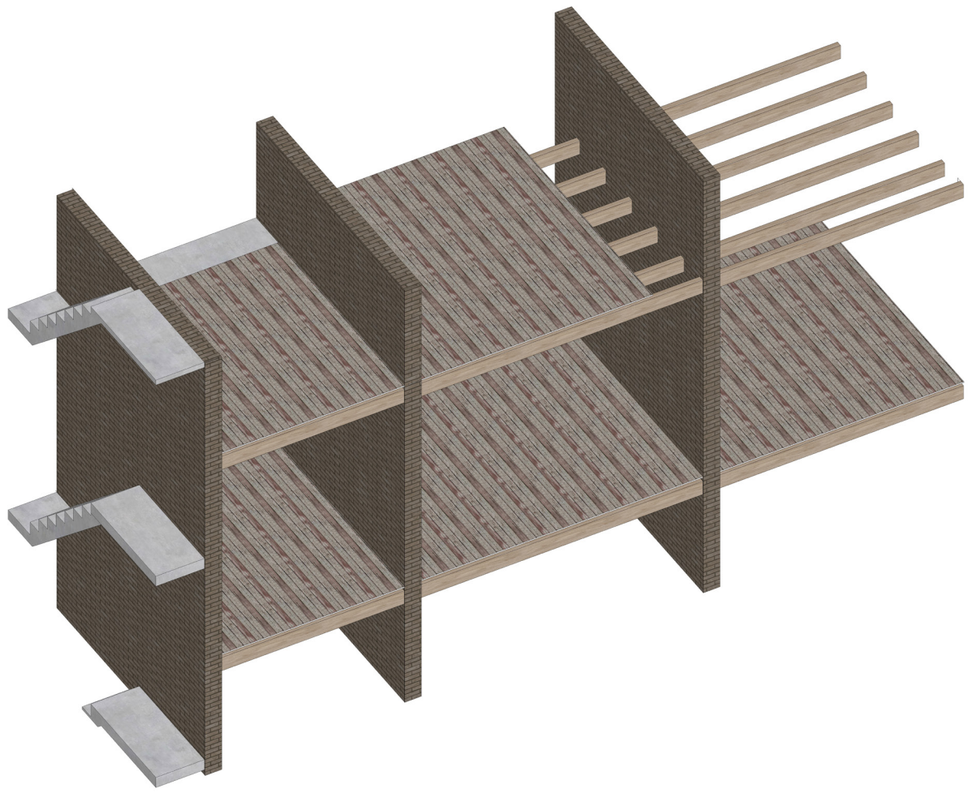


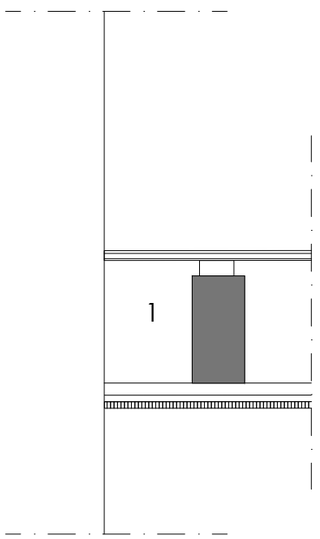
# OPTIONS OUTDOOR SPACE



# STRUCTURE STEP BY STEP

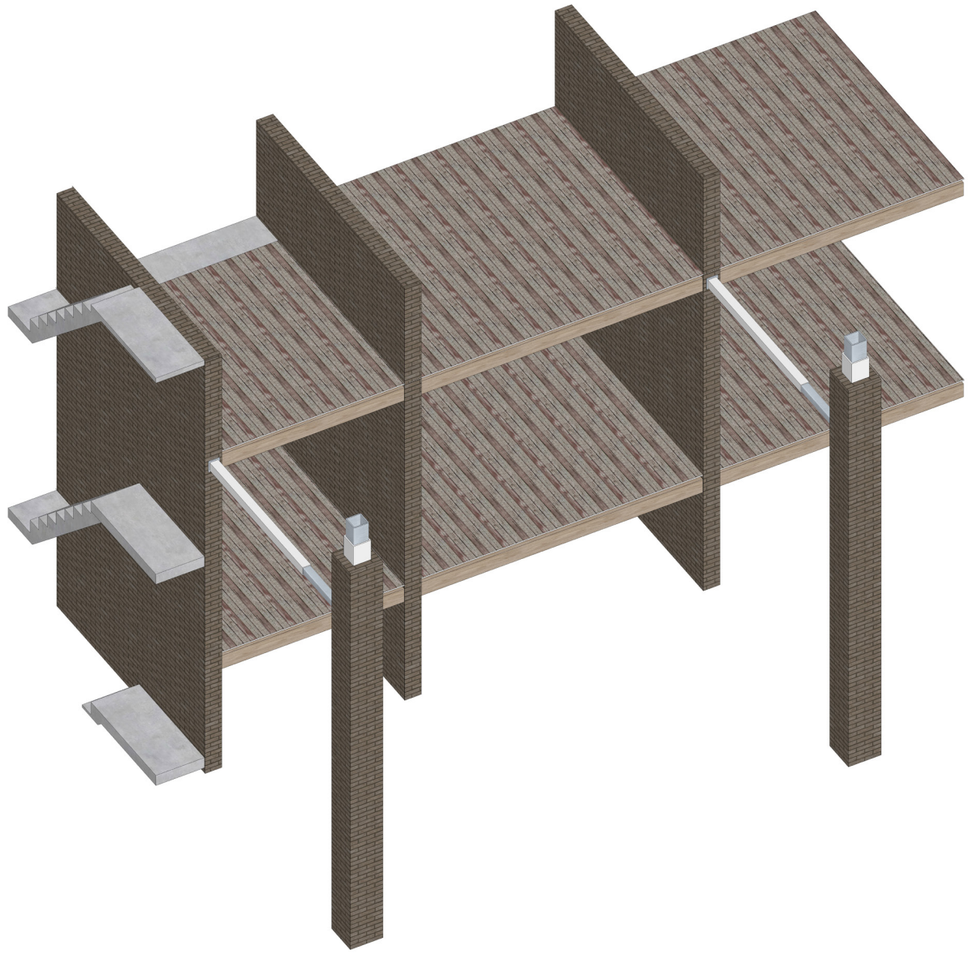
1. Existing wooden floor

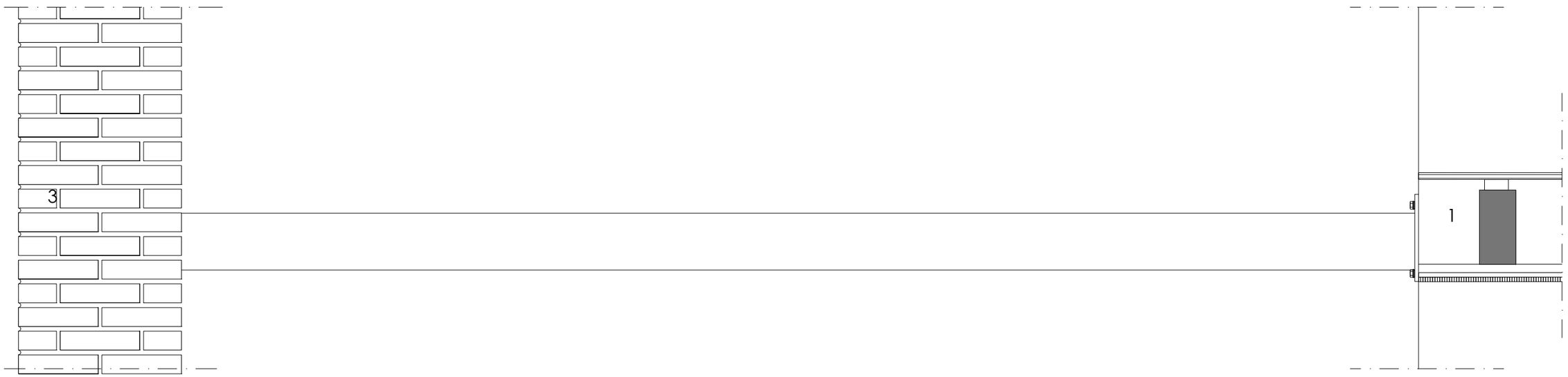




# STRUCTURE STEP BY STEP

1. Existing wooden floor
2. Tube beam 200mm chemically anchored
3. Tube column with brick 430mm





# STRUCTURE STEP BY STEP

1. Existing wooden floor
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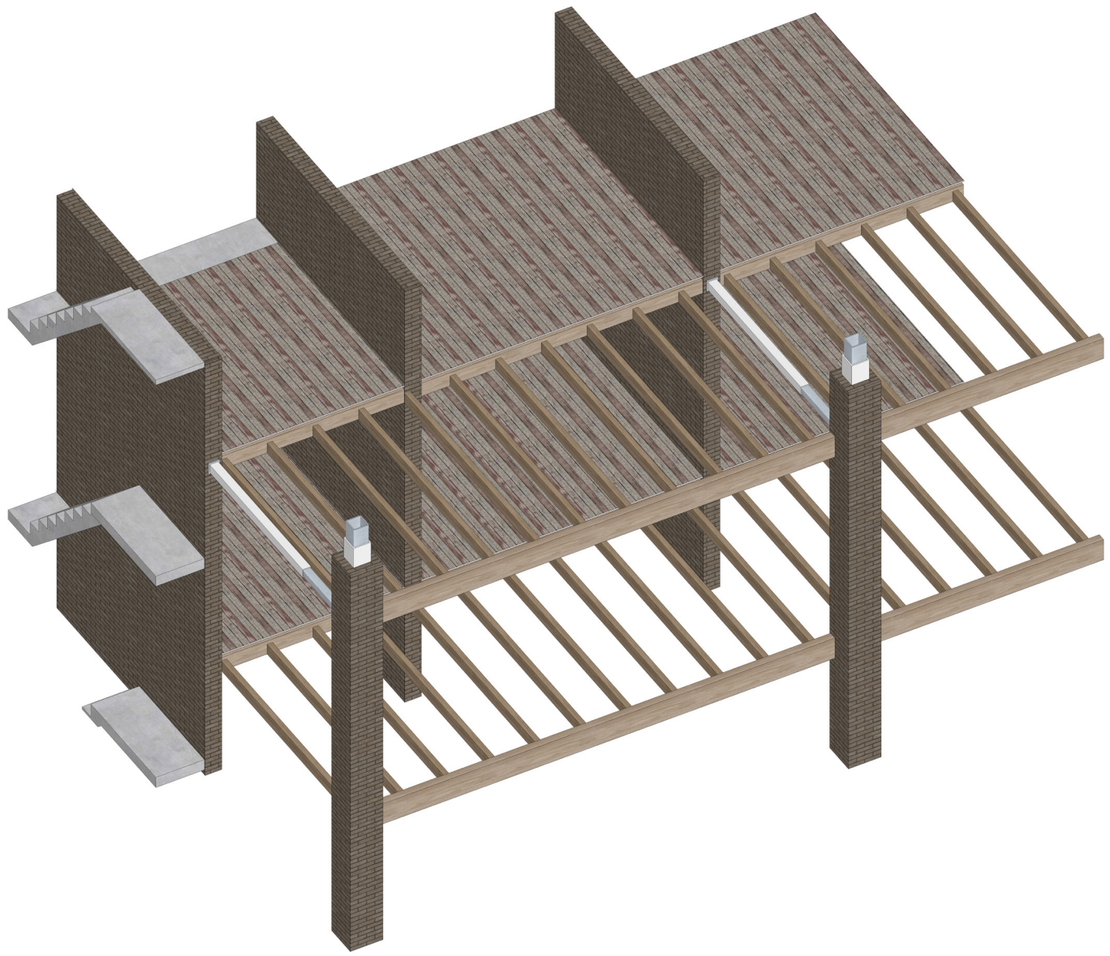
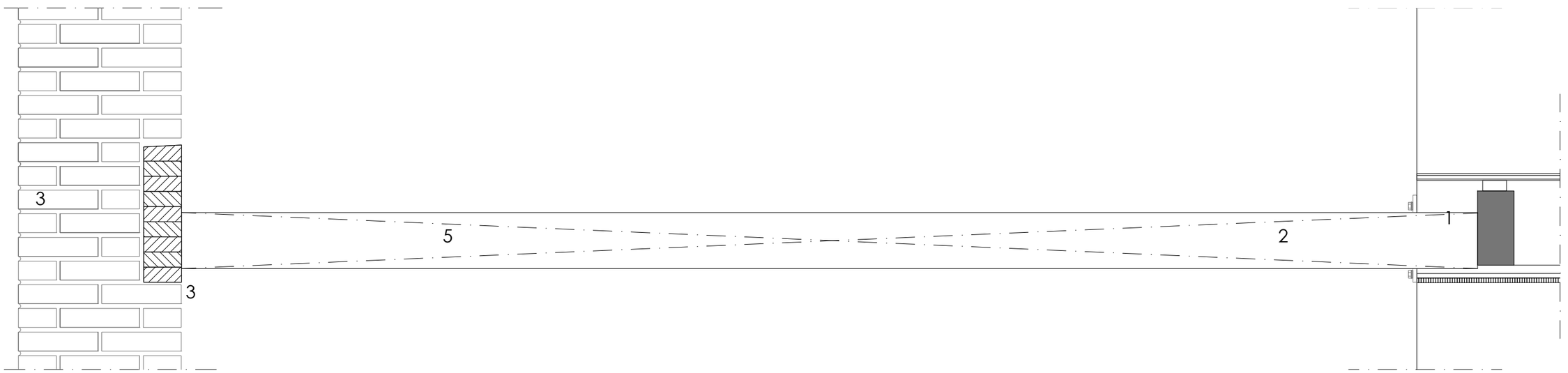
5. Wooden beam 146 x 56mm h.o.h. 450mm





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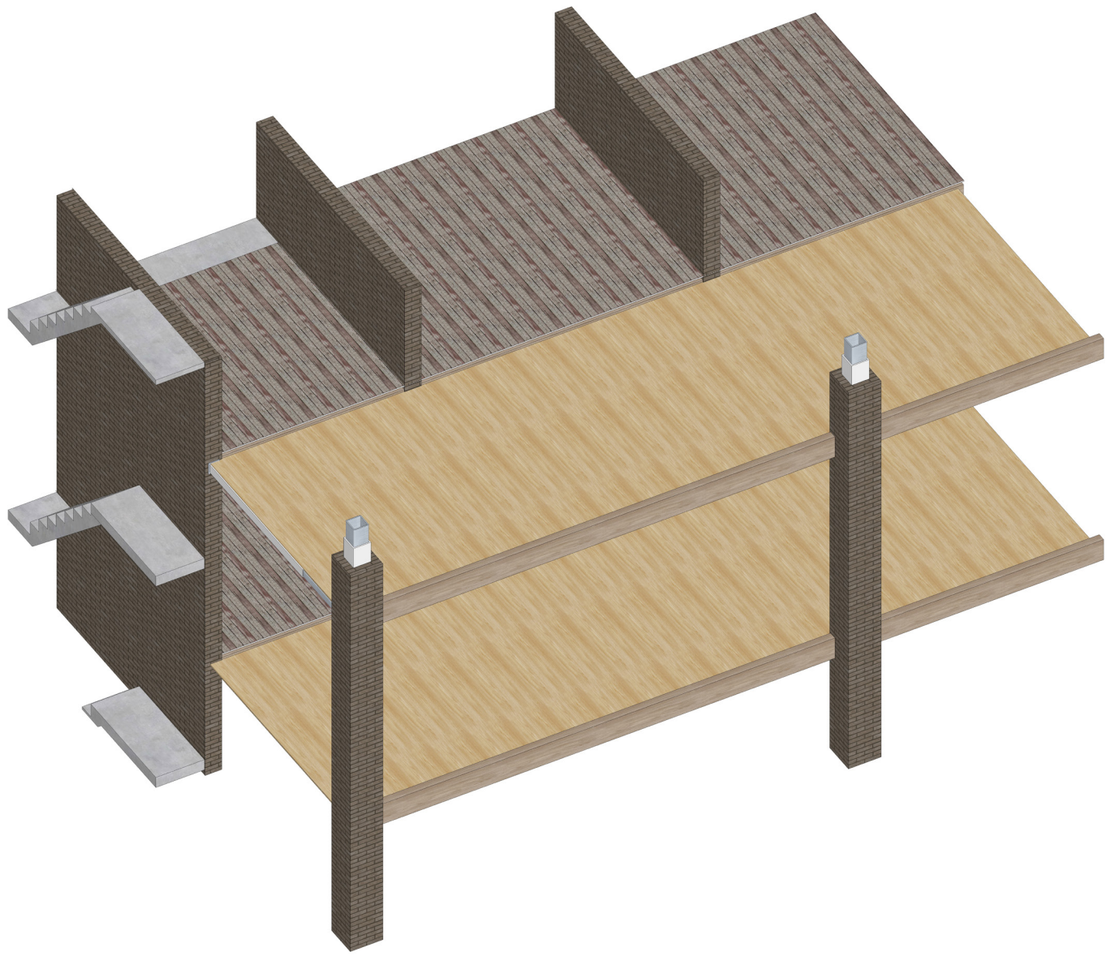

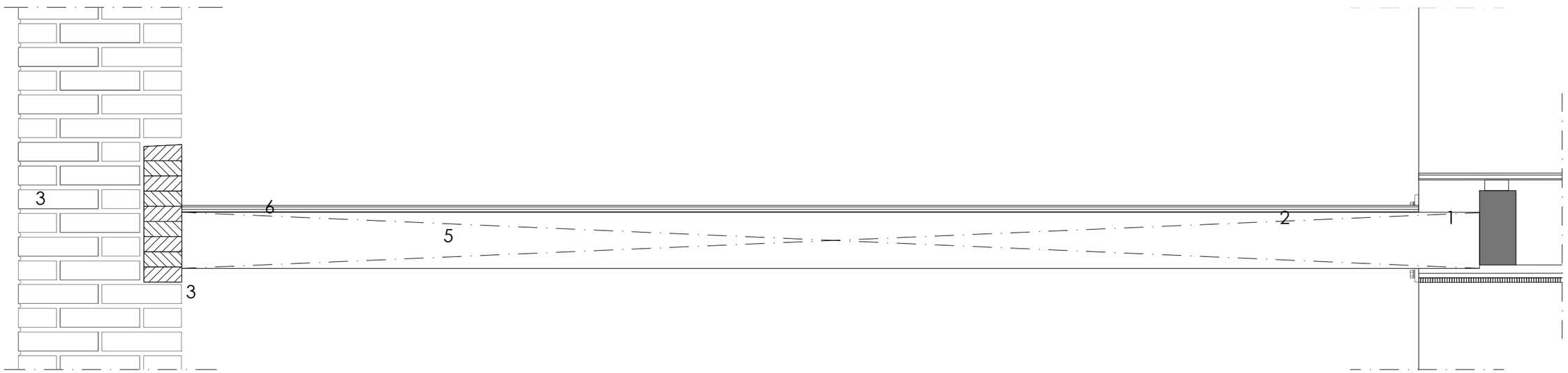

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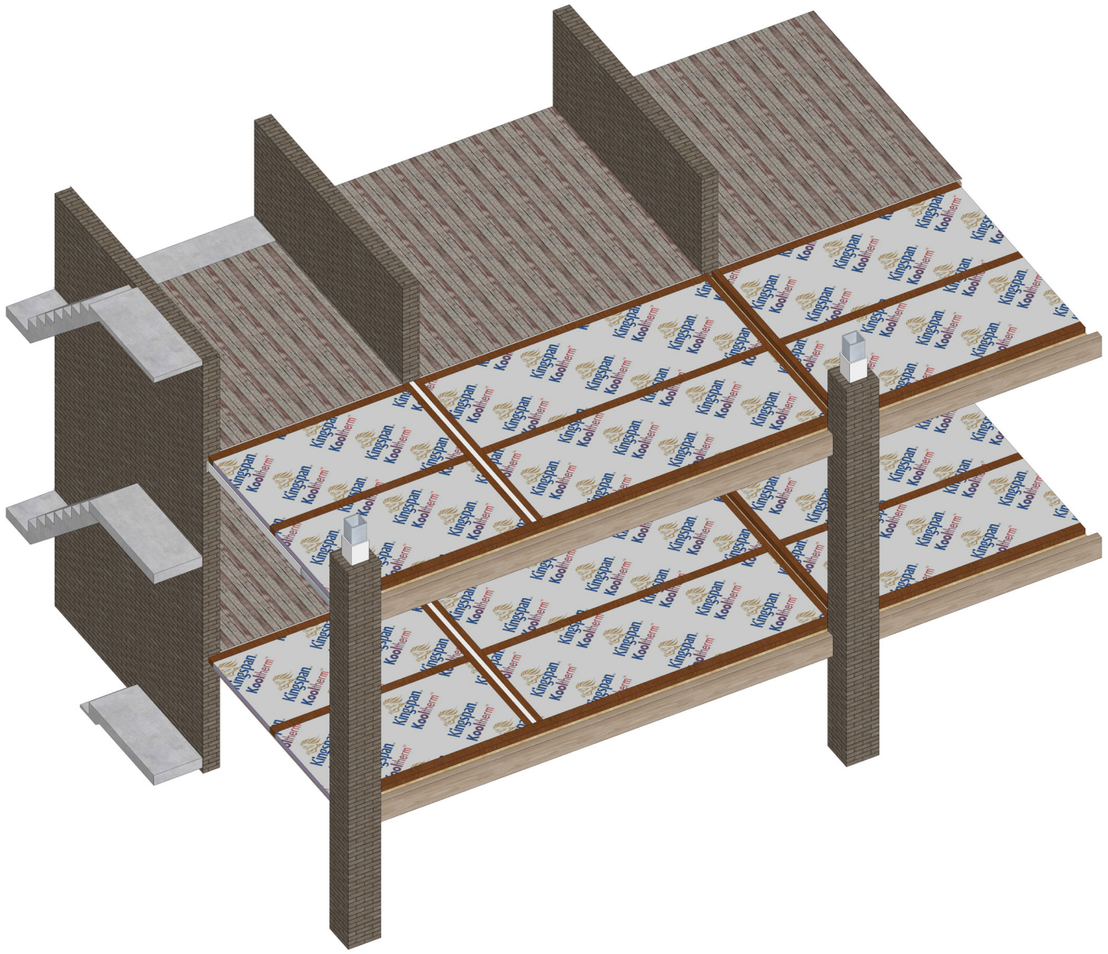


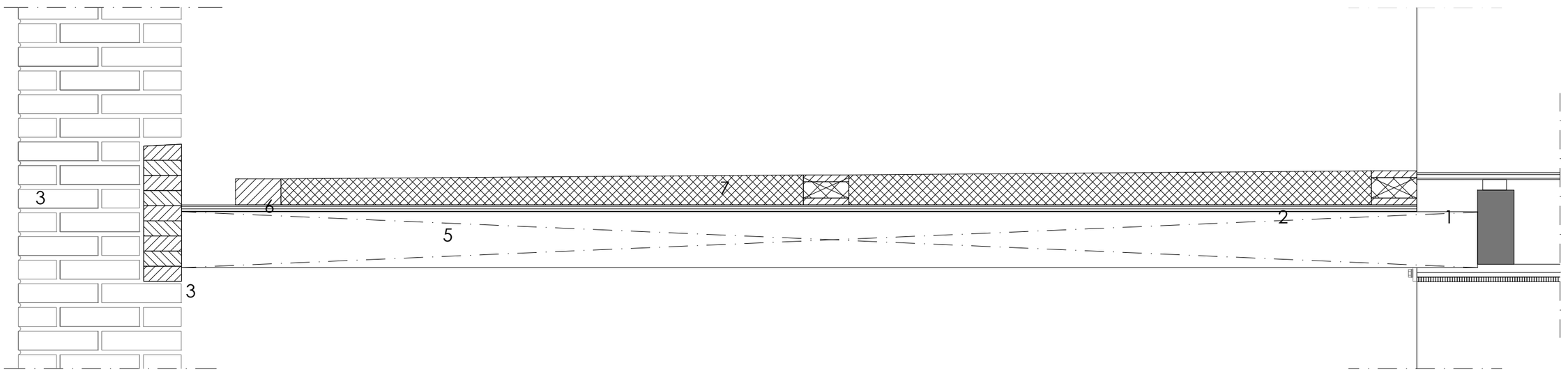

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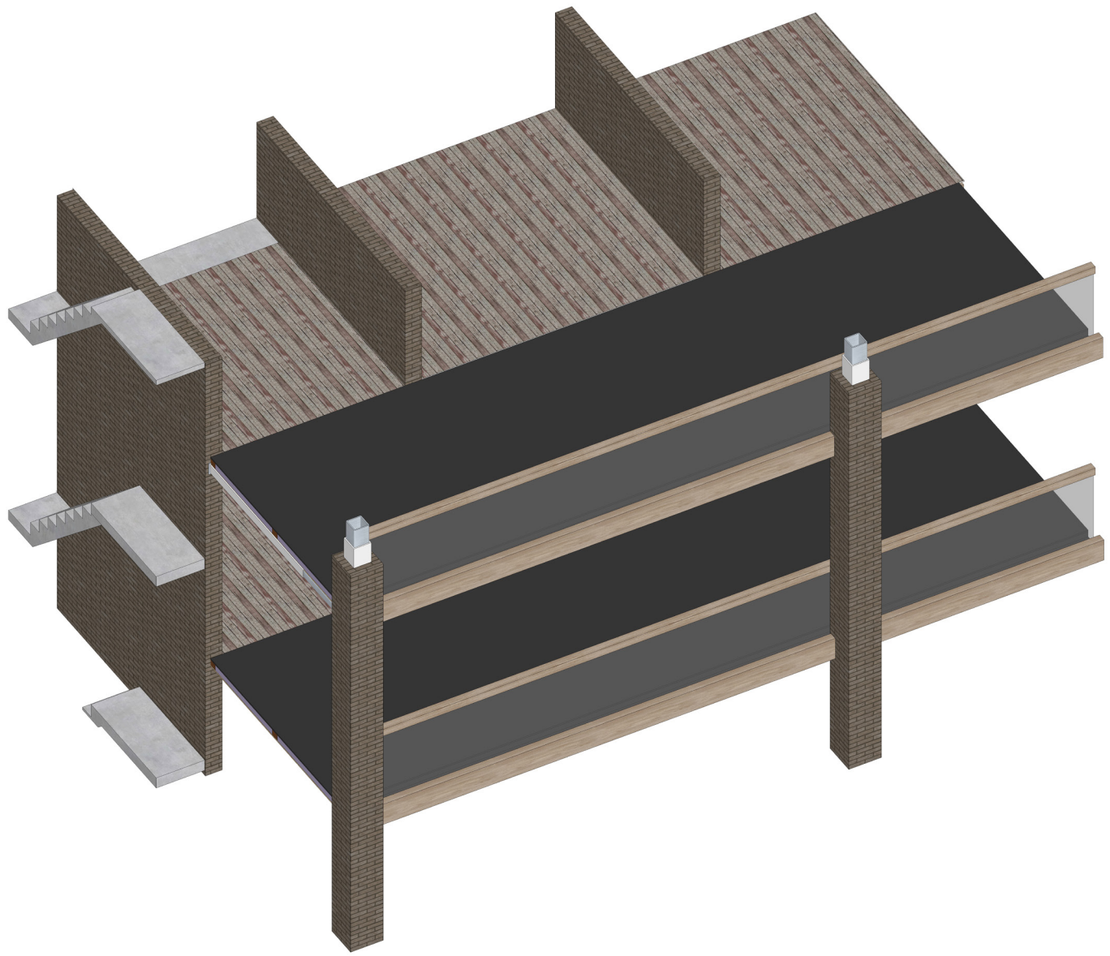
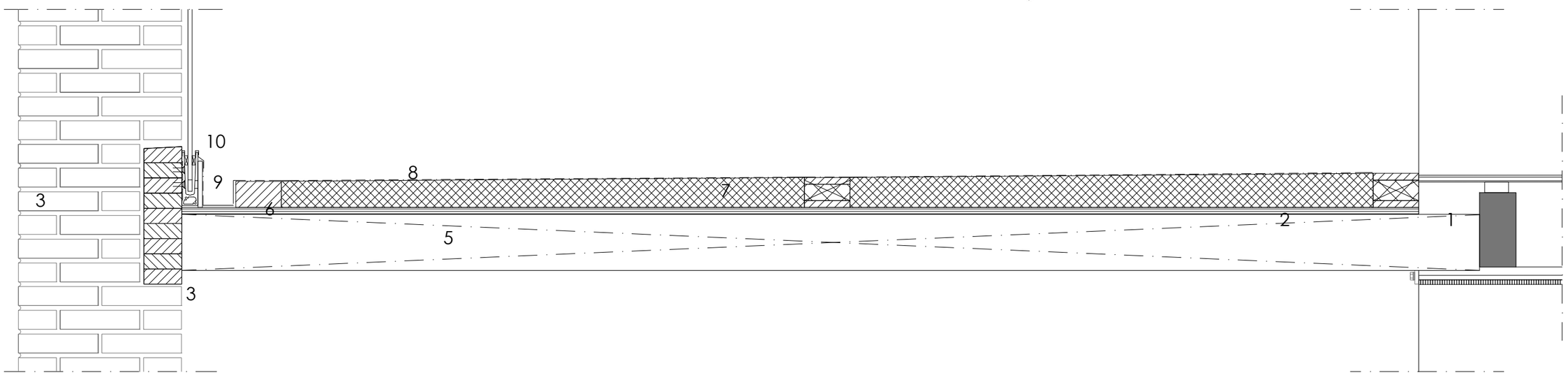
8. Two layerd roofing
9. Hidden gutter
10. Mounting  profile glass balustrade





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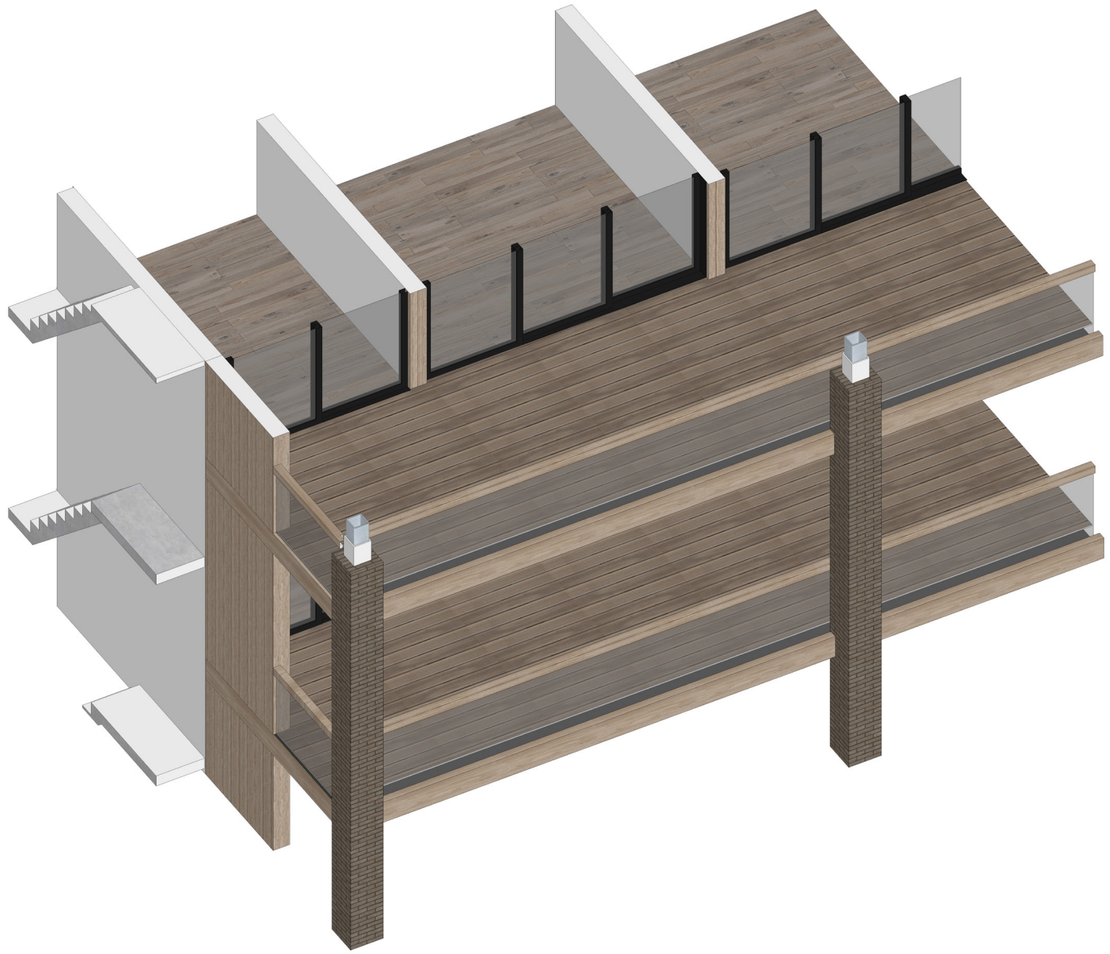
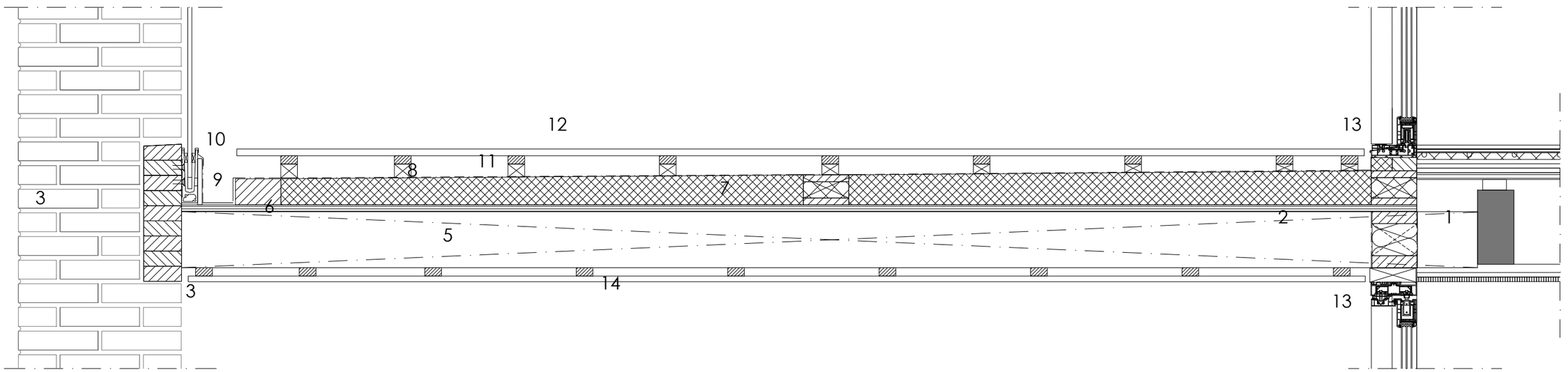
9. Hidden gutter
10. Mounting  profile glass balustrade
11. Adjustable beam support
12. Outdoor decking 18mm
13. Schüco Corona CT 70 HS
14. Ceiling plate





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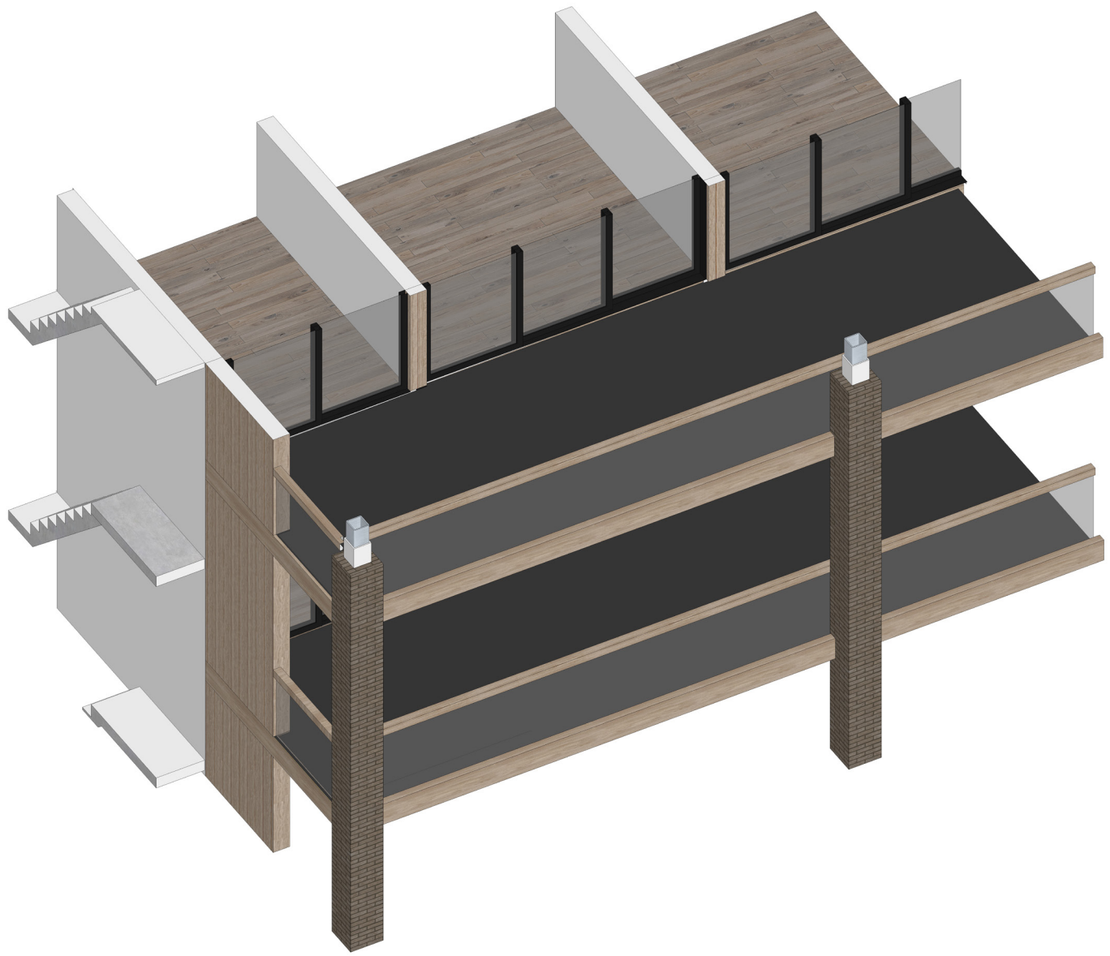

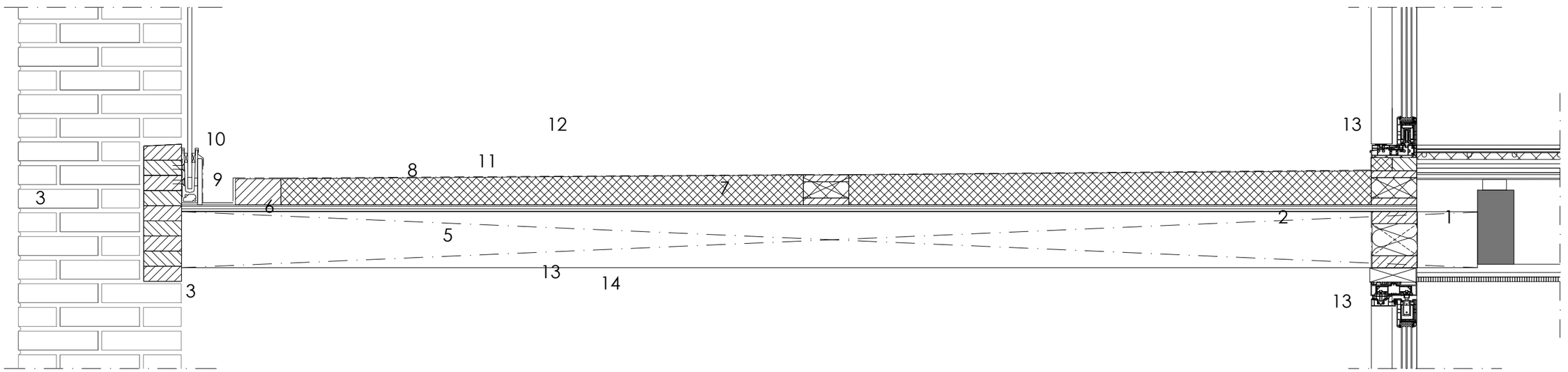

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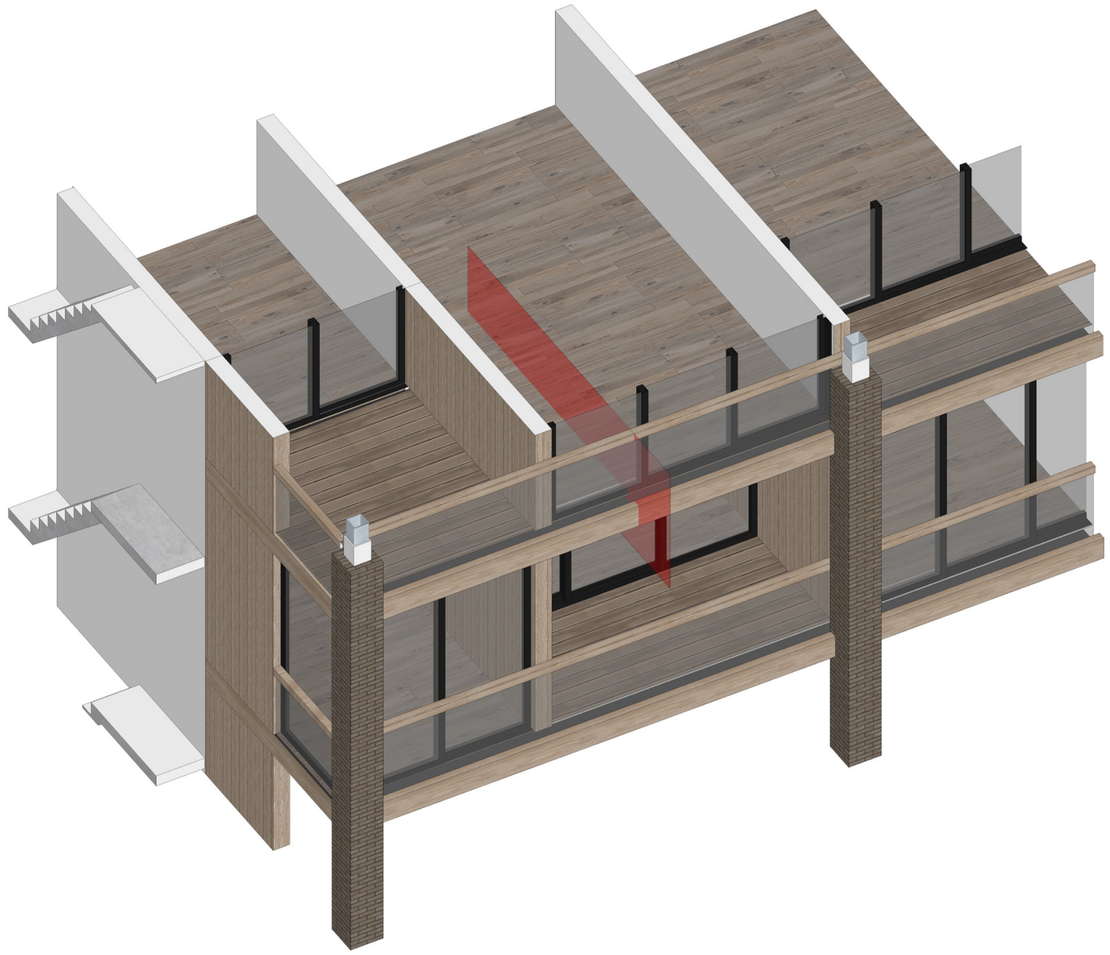
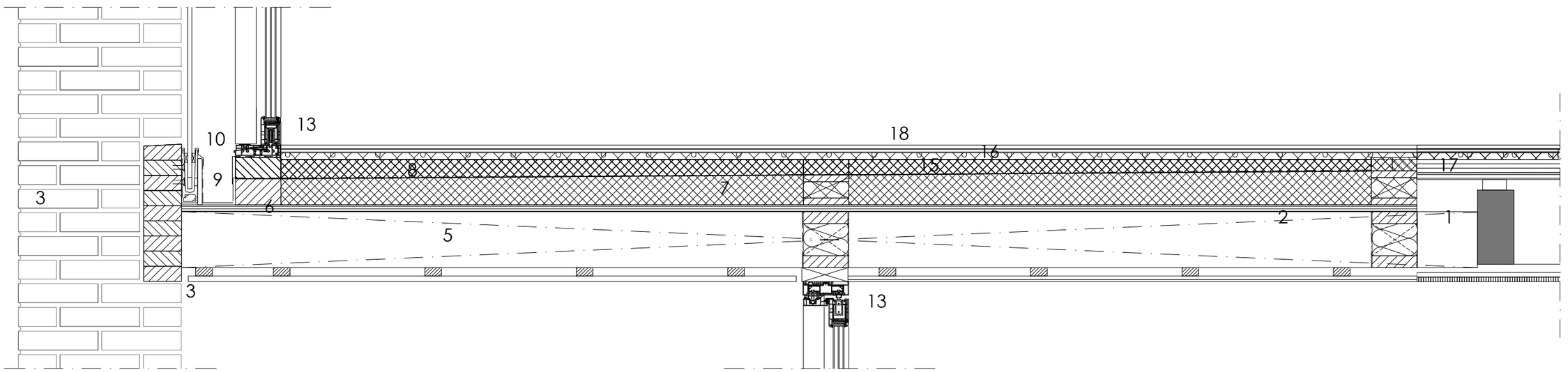
15. Kingspan TT46 FM Slope 20-40mm Rc > 1,35 m² K/W
16. Fonterra Reno drywall system incl fl. heating 18mm
17. Gypsum fiber finish plate min. 10mm
18. Floor finishing





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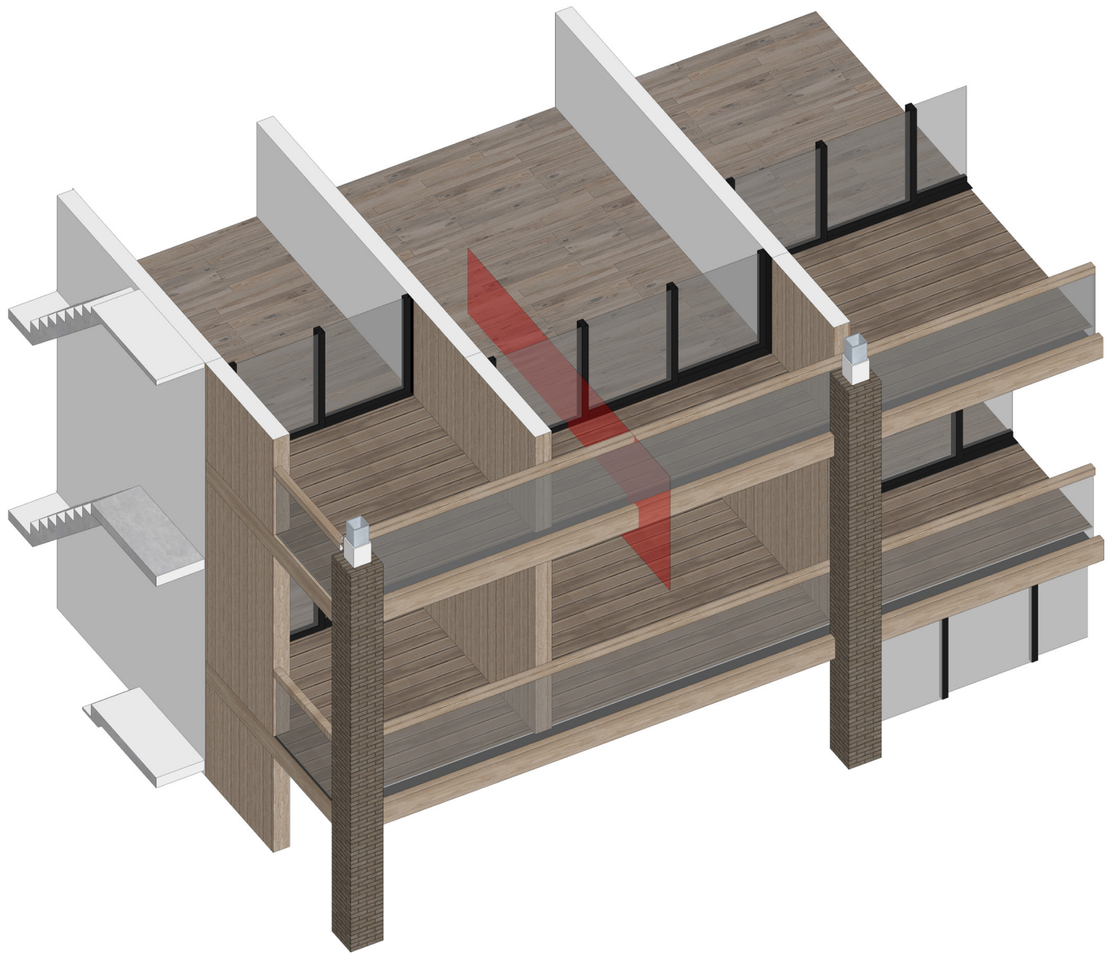

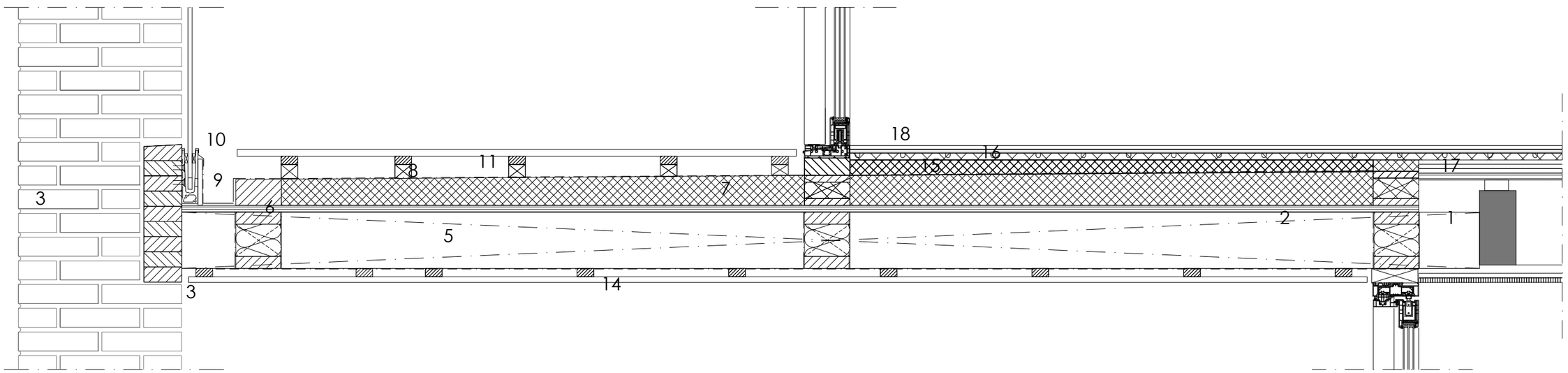

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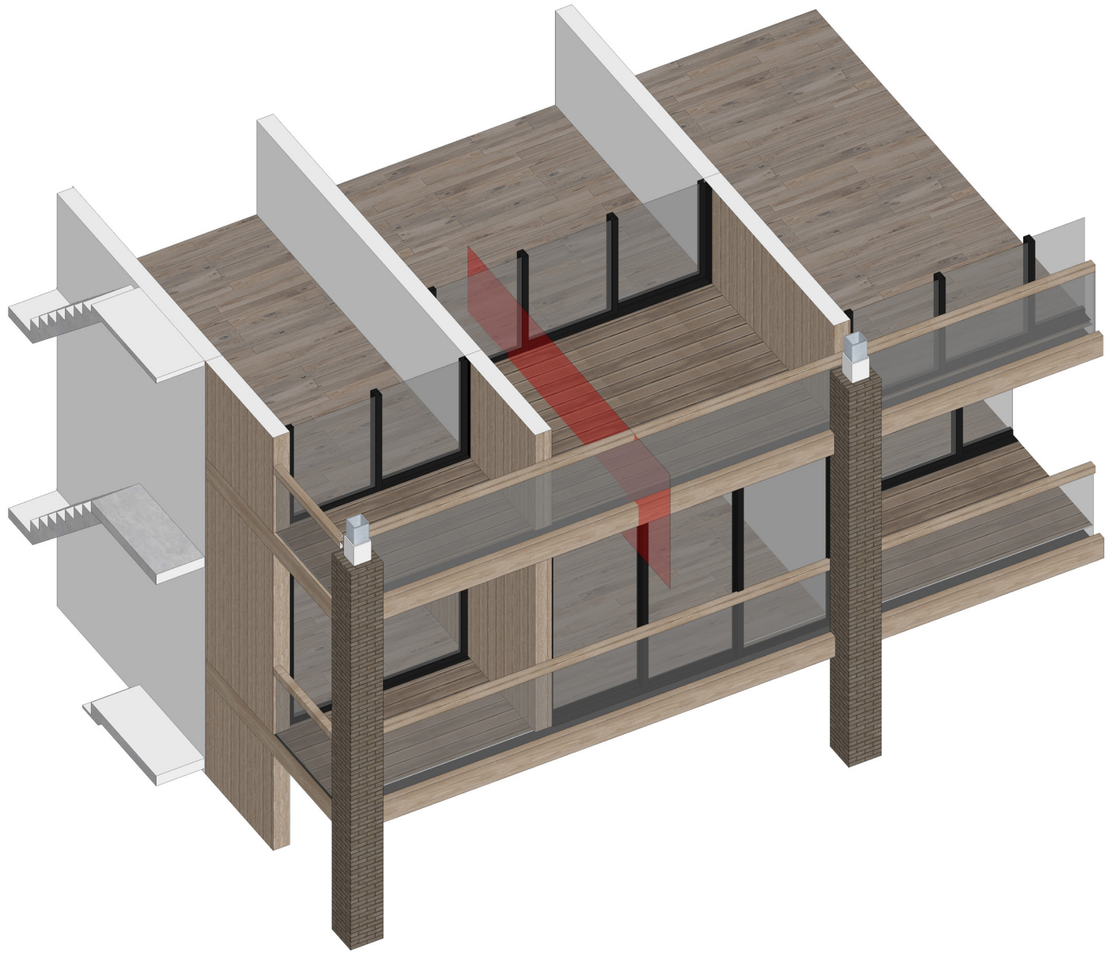
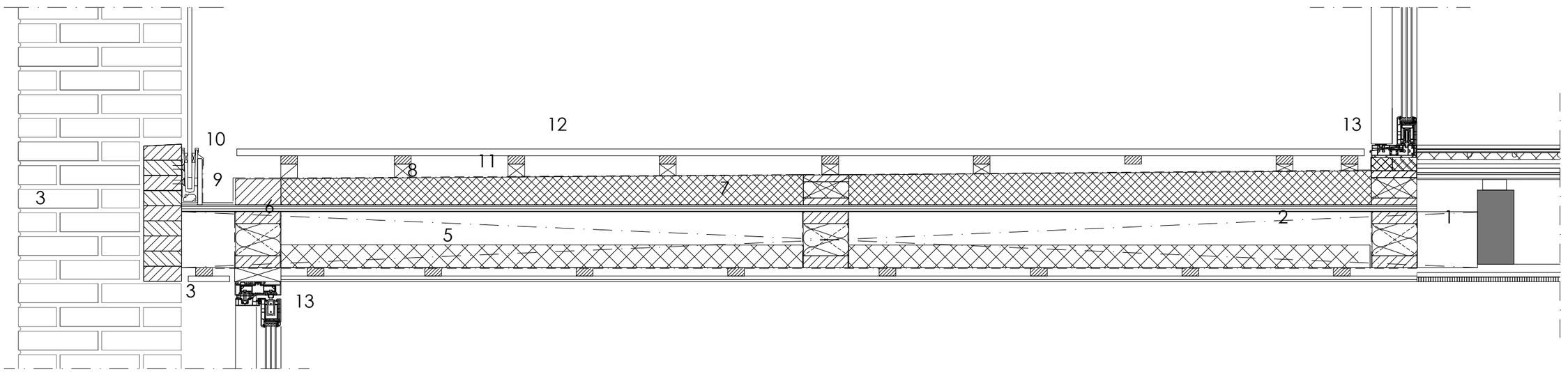
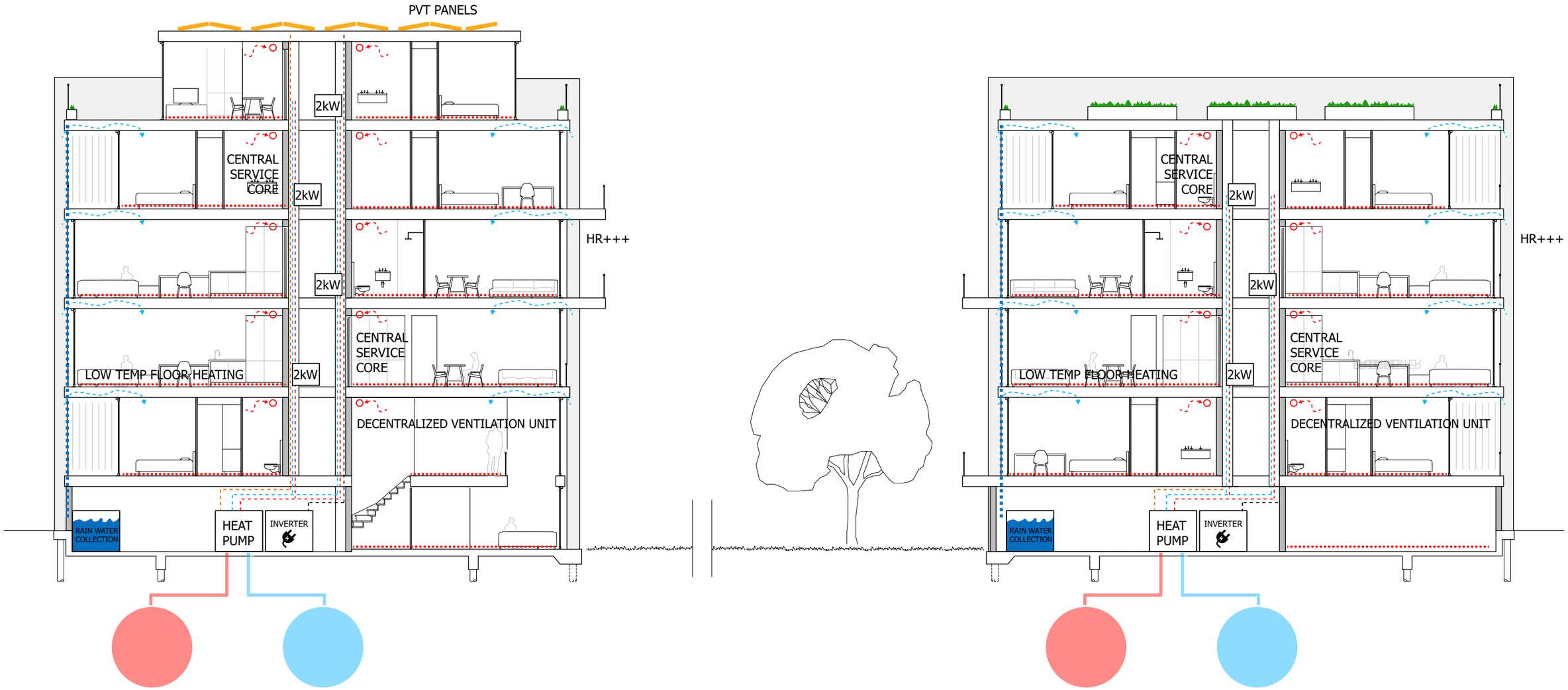




# CLIMATE PRINCIPLE



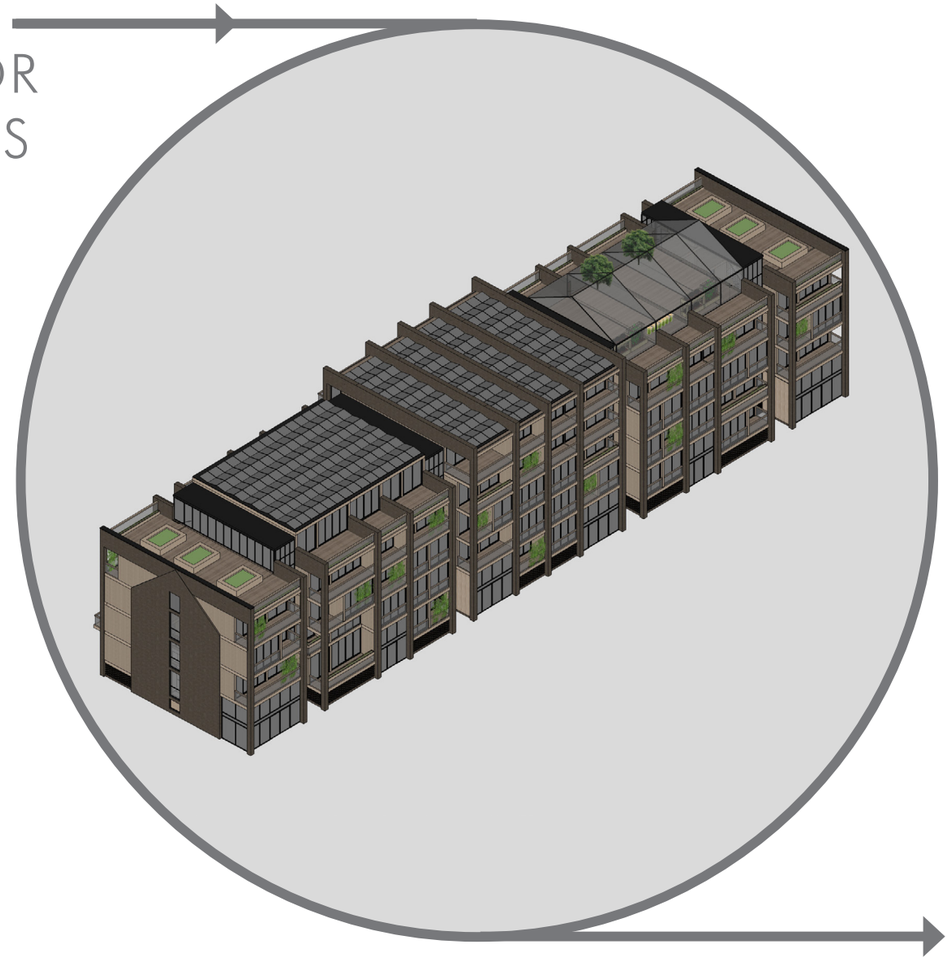
# CONCLUSION

## PROBLEM STATEMENT

1. HOUSING SUPPLY FOR SINGLE HOUSEHOLDS

2. AFFORDABLE AND COMFORTABLE

3. LONELINESS AND SOCIAL PROBLEMS



## DESIGN

1. 120 LARGE APARTMENTS TO 390 SMALL APP.

2. SMALLER FLOOR AREA SHARED SPACE DAYLIGHT SPACIOUS OPTIONS

3. MEETINGPOINTS LIVABILITY AND SECURITY

# THANK YOU FOR YOUR ATTENTION!

# QUESTIONS?