P5 presentation



BUILDING BELONGING

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‘The eternal quest of the human being is to shatter his loneliness.’

Norman Cousins

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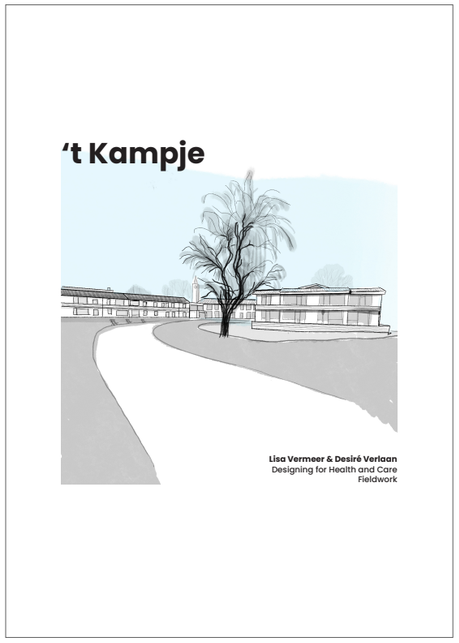
06
The final design

The problem

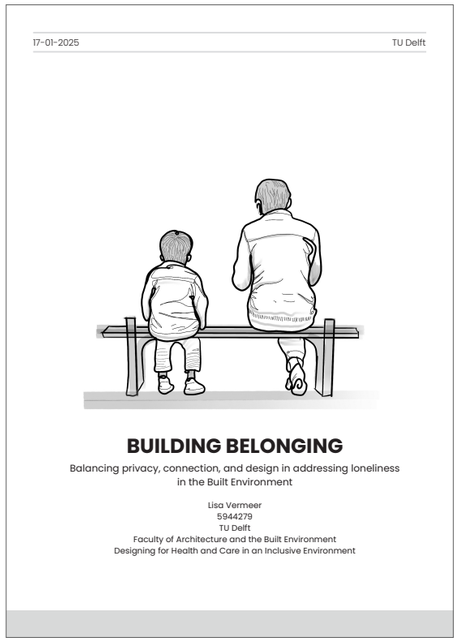
"In 2023, almost **50%** of people aged 18–34 in the Netherlands reported feeling lonely. For all other age groups, it's **47%**.

This is a major social health problem, and it's invisible—yet it leads to very visible outcomes: **depression**, early **dementia** or **physical decline**."

De Staat van Volksgezondheid en Zorg (2023)



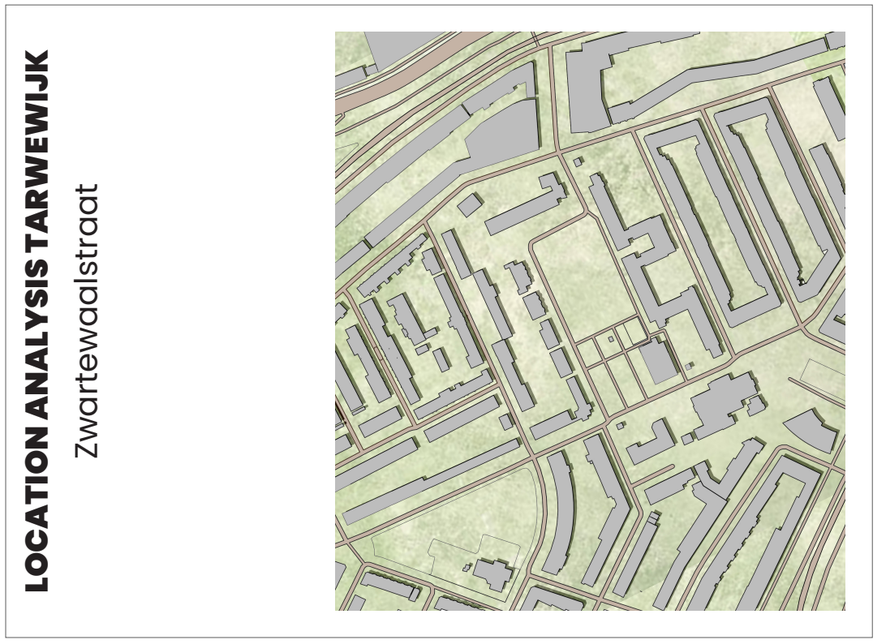
Fieldwork at ‘t Kampje



Research report



Case study analysis



Location analysis



Tarwewijk analysis

Goal



For everyone, aging in place

Fostering social connections and interactions

A sense of belonging

Scales

Neighbourhood level



Building level



Dwelling level



Research

How can the living environment reduce **loneliness** and **social isolation** while enhancing **social connectivity** across all age groups in the built environment, for example in the Tarwewijk in Rotterdam?

How can the layout and configuration of **(green) shared spaces** around, for example Tarwewijk's residential buildings, be crafted to enhance **social interaction** and mitigate **social isolation?**

How can the design of mixed-use residential buildings and their transition zones between **private** and **communal** areas support **social connectivity**

How can the **spatial layout** and **architectural features** of homes be tailored to encourage **social interaction** and **inclusivity** across generations?

Design guidelines

Neighbourhood



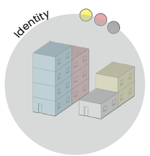
Visible green spaces to combine gardening with recreational and social activities.



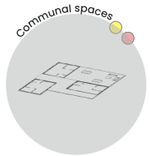
Pedestrian-friendly streets, 4 meters wide, to encourage flow and informal interactions.



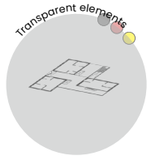
Benches every 100 meters, curved or angled for natural conversations.



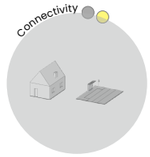
Use distinct architectural features and facades to create a sense of identity and pride for residents



Design central, visible, and easily accessible communal areas with greenery, seating, and aesthetic appeal.



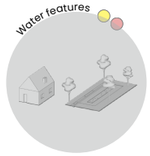
Use transparent elements such as glass walls or open staircases to enhance sightlines and connectivity.



Strong links to public transport and walkable routes.



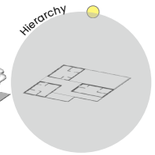
Space accomodating activities such as jogging, walking, playing and community events, flexible in use.



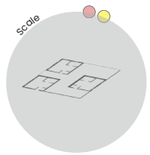
Fountains or rain gardens to reduce noise, alleciate heat, and enhance biodiversity for people to look at.



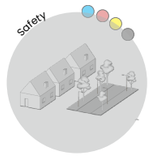
Include small, easily accessible outdoor spaces near homes for immediate recreational use. Complement these with larger parks and green areas for sports and leisure activities



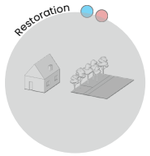
Include a hierarchy of sub-spaces to accommodate diverse activities and user groups.



Ensure transitional spaces are appropriately scaled—neither too small to discourage use nor too large to isolate users.



Natural surveillance with window facing activity zones and no high traffic streets



Trees and grass for shade, privacy, and sound buffering.



Lighting, well lit areas to reduce risks and encourage outdoor use all year round.



Alternating street spaces with squares and climate sensistive designs to enhance usability.

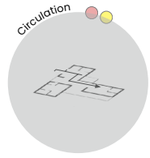


Green spaces within a 5-10 minute walk or 300 meters.

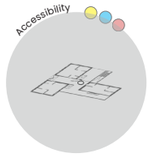




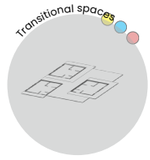
Building



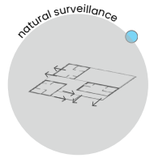
Create circulation paths that pass through or near communal areas to encourage spontaneous encounters.



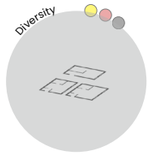
Ensure circulation spaces are accessible for individuals with limited mobility. Wheelchair, walker and other mobility aids.



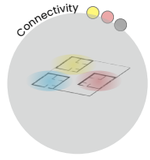
Incorporate semi-private zones such as front yards or balconies to encourage casual interactions.



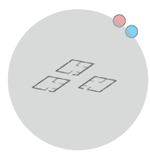
Integrate natural surveillance through strategic placement of windows and communal areas.



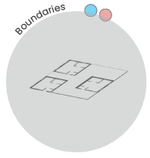
Design multi-generational and diverse housing typologies to foster inclusivity and reduce loneliness.



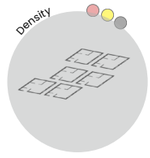
Foster emotional connections to the living environment by incorporating elements that reflect the community's character.



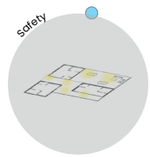
Provide shared spaces for interaction while ensuring residents have private areas to retreat.



Design clear boundaries between private and communal areas to maintain comfort and autonomy.



Consider the social implications of housing density, balancing the benefits of community interaction with the potential drawbacks of overcrowding.



Prioritize safety through well-lit and open designs that discourage the formation of unused or unsafe zones.

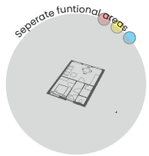


No higher than 4 stories.



Design clear, well-lit routes with good visibility to enhance safety and encourage the use of shared spaces.

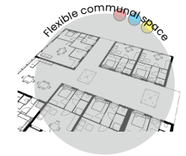
Dwelling



Ensure even small apartments have distinct spaces for sleeping, living, and dining to allow residents to regulate social interactions.



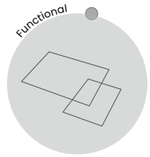
Allow residents to personalise both their private and shared spaces, fostering a sense of ownership and belonging.



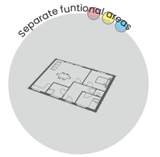
Design shared areas that encourage interaction, such as lounges, community kitchens, or gardens, while maintaining privacy.



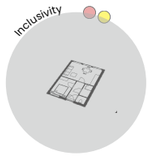
Ample Natural Light: Include large windows and balconies to provide access to natural light and visual connections with the outside world.



Prioritize functional forms and efficient layouts to maximize flexibility in space usage.



Ensure even small apartments have distinct spaces for sleeping, living, and dining to allow residents to regulate social interactions.



Create spaces that accommodate residents of all ages and abilities, promoting intergenerational interaction and inclusivity.



Minimize unnecessary corners and irregular shapes to avoid creating dead spaces



Tarwewijk

Social interaction

Privacy - safety

Belonging

PLACE TO LINGER

SIGHTLINES

MEETING SPACE

PRIVACY

CONNECTION

SOCIAL INTERACTION

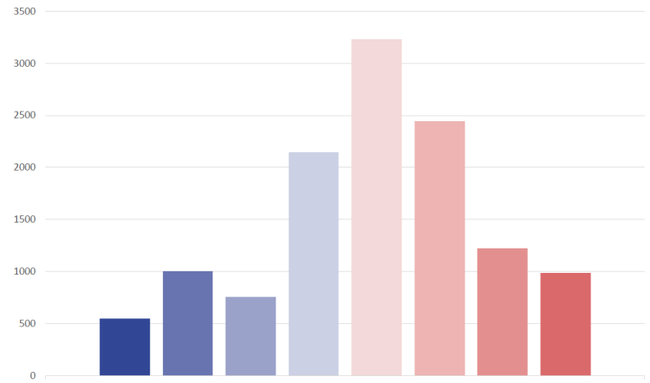
The Tarwewijk



The people

For who, why and how

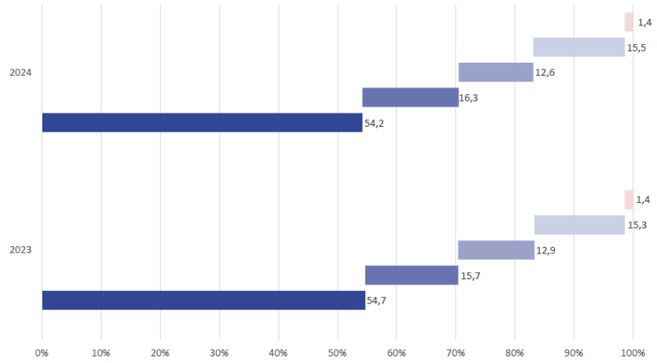
Age



LEGEND

- 0-3 years
- 4-11 years
- 12-17 years
- 18-26 years
- 27-39 years
- 40-54 years
- 55-64 years
- 65+

Household type



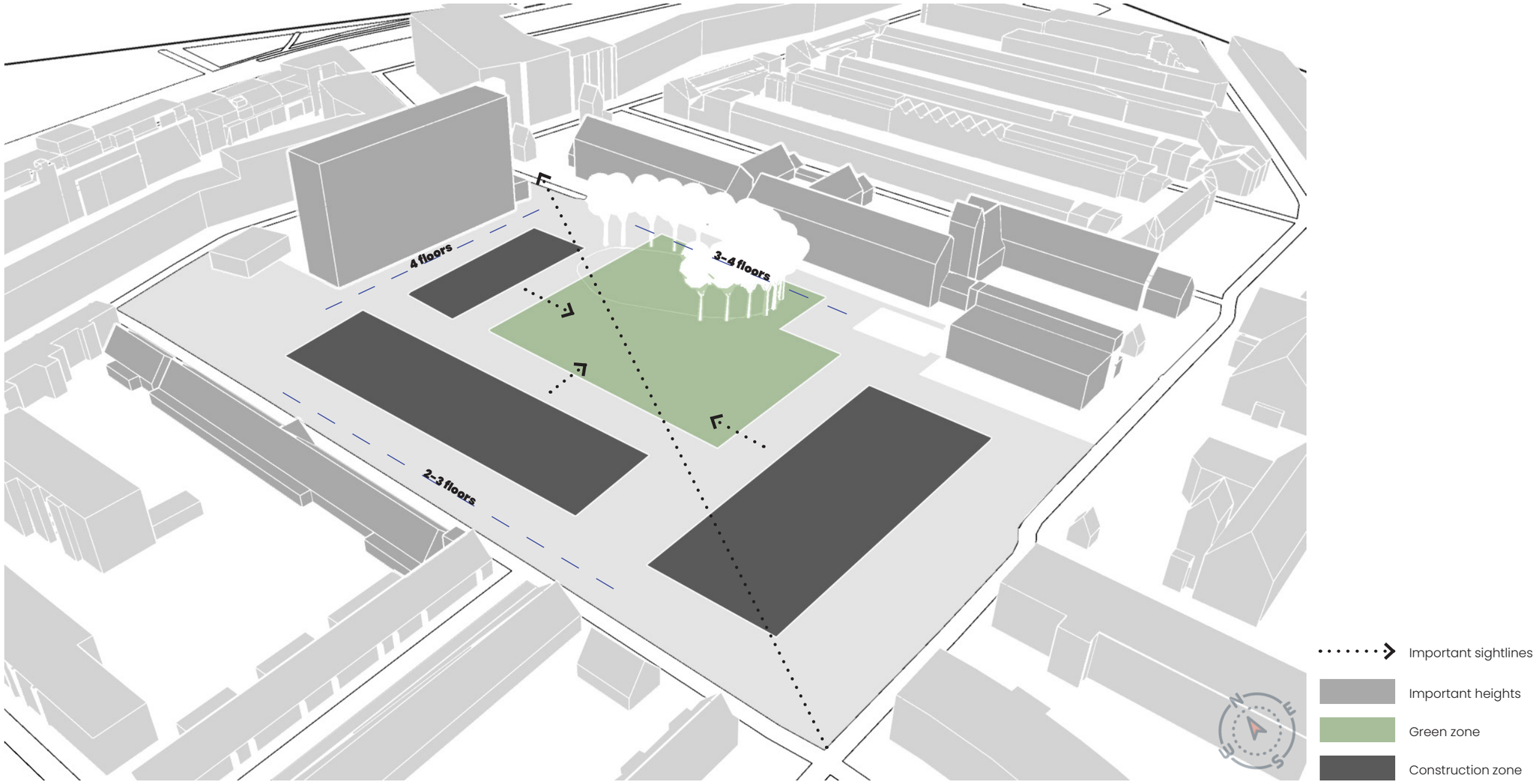
LEGEND

- 1 person household
- 2 person household
- 1 parent household
- 2 parent household
- Other household

Social cohesion & happiness rates



Urban strategy



HEIGHT SIGHTLINES DIAGONAL "INSIDE WORLDS" ZONES HUB FOR THE NEIGHBOURHOOD

Private

Semi private

Communal

House

15-25 units / 100m

Bathroom 8m2

Entrance 2m2

Bedroom 10m2

Vestibule 5m2

Bedroom 15m2

Living room 20m2

Kitchen 10-15m2

Separate toilet 1700x1100

Balcony/ outside space 10m2

Storage/ pantry 5m2

Medium 50-70 m2

House

Bathroom

Entrance

Bedroom

Vestibule

Living room

Kitchen

Separate toilet

Storage/ pantry

Balcony/ outside space

Small 40-50 m2

House

Bathroom

Entrance

Bedroom

Vestibule

Bedroom

Living room

Kitchen

Bedroom

Separate toilet

Storage/ pantry

Balcony/ outside space

Large 70-100 m2

Private rooftop garden for residents

Benches

Communal dining place

vegetable garden

BBQ

Green/shades



Public communal garden / park

Field/ dogpark

Benches

Garden

Playground

Square

Bridges

Water drainage

Mobility

Bike parking

Share bikes

Share cars

Communal space in the building

Kitchen

Dining room

Movie room

Community spaces FULL DAY USE

Postal office/cafe

Library/ study

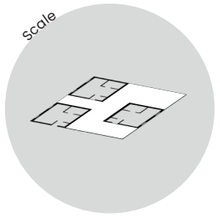
Gym

Repair shop



Design guidelines connection
Massing & landscape

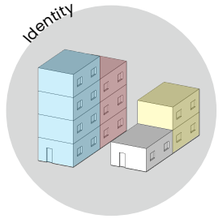
Architecture



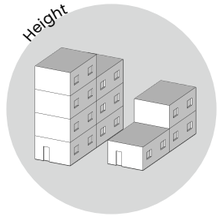
Ensure transitional spaces are appropriately scaled—neither too small to discourage use nor too large to isolate users.

- Connection between urban side and green side
- Social clusters
- Approachable
- Shared entrances

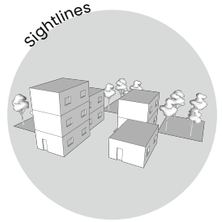
Health & Care : against Loneliness



Use distinct architectural features and facades to create a sense of identity and pride for residents



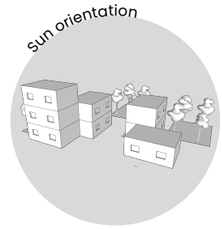
No higher than 4 stories.



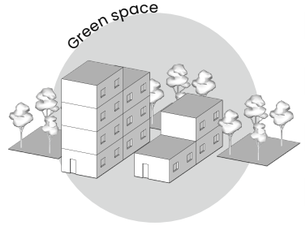
People can see eachother from the windows and balconies

- Identification
- Recogniction
- Sense of belonging
- Connection
- Visuals

Building technology

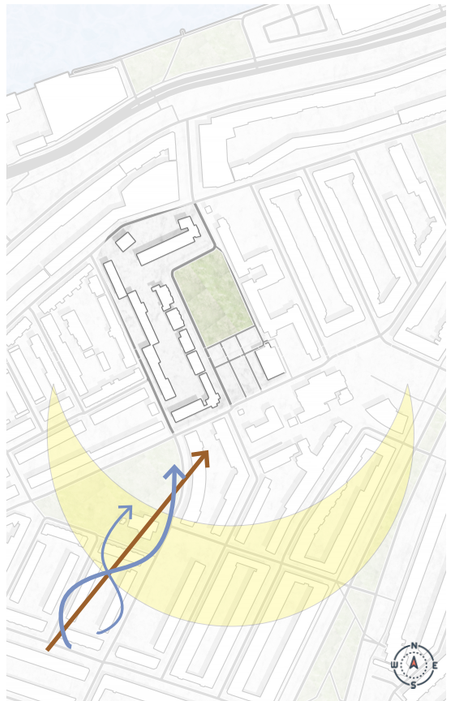


Ensuring that all dwellings have views in at least two directions.

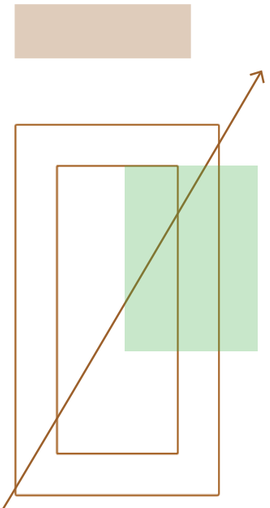


Include small, easily accessible outdoor spaces near homes for immediate recreational use. Complement these with larger parks and green areas for sports and leisure activities

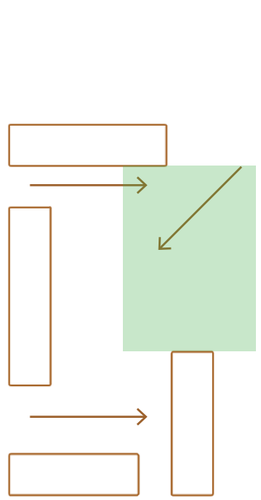
- Full use of the sun, no dark shadow corners with setbacks, double orientation
- Plenty of (visible) green space



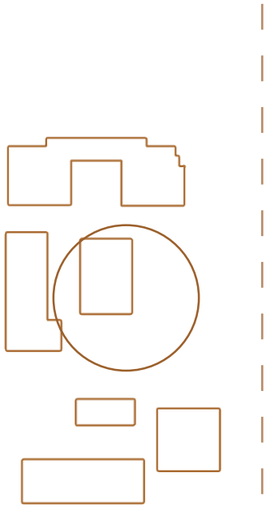
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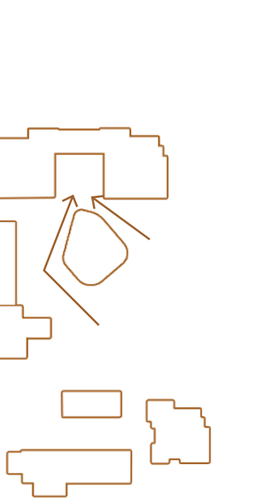
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3



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5

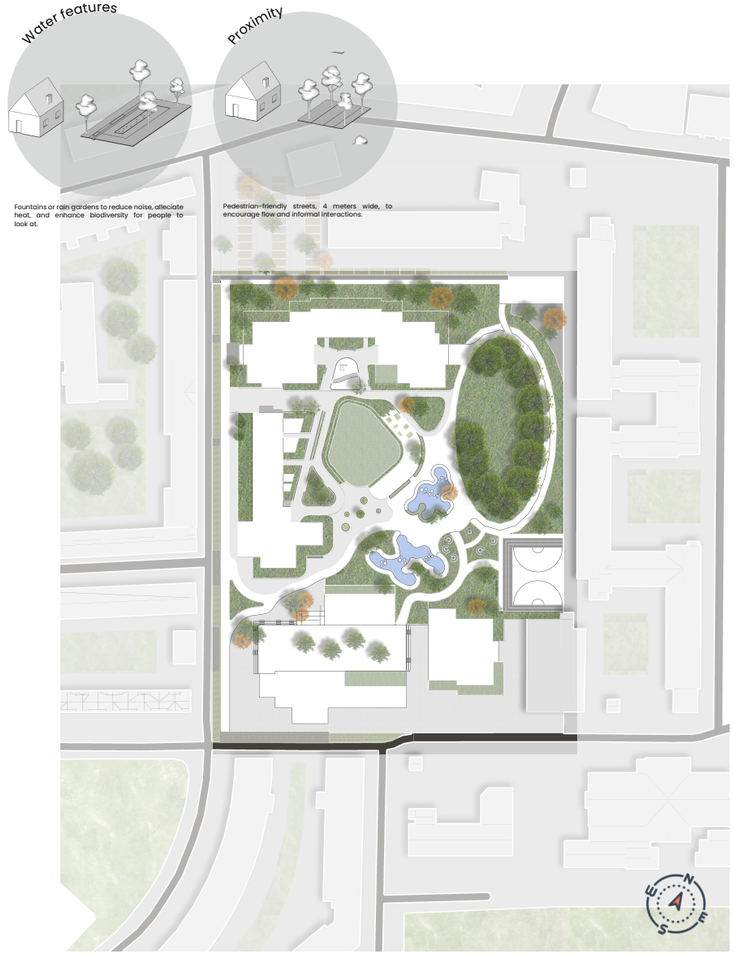
The neighbourhood scale





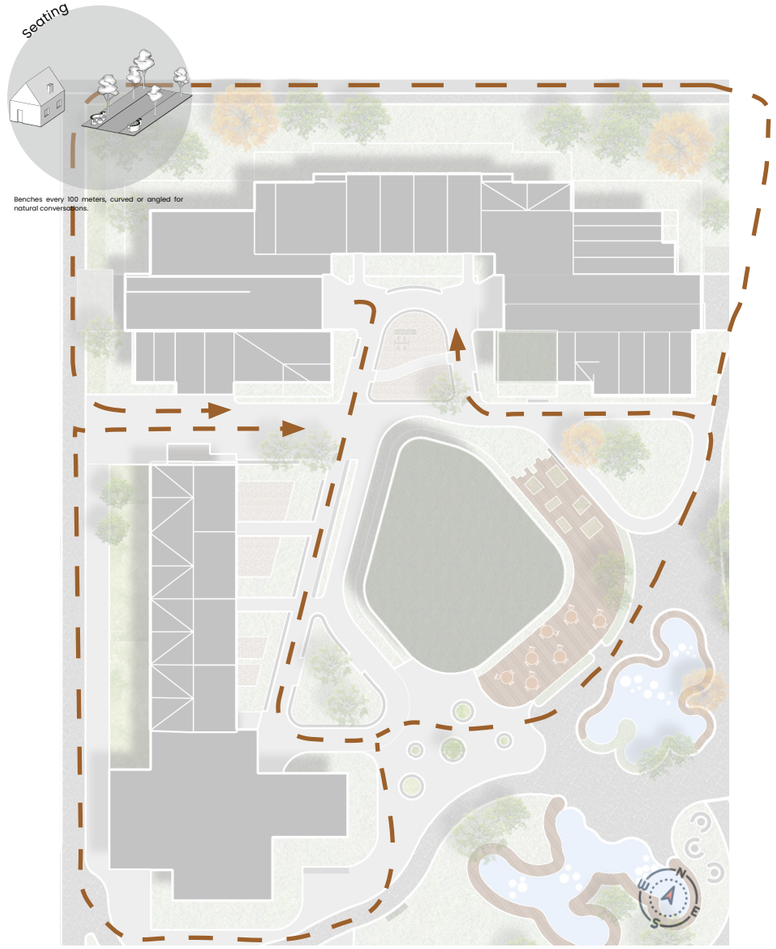
Diagonal enhanced

Central place to linger, to foster interactions for the whole neighbourhood



Greenery and water retention

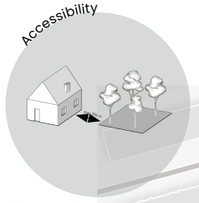
Cooling factor, safety, play element, re-use of rain water, social interaction



Walking routes and seating

In circles, near meeting areas. Benches a maximum of 100 meters apart.





Green spaces within a 5-10 minute walk or 300 meters.



3 different worlds

High activity park area (A), meeting area (B), semi private courtyard (C)

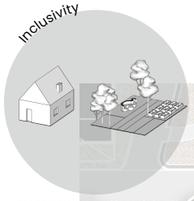


Natural surveillance with window facing activity zones and no highstatic streets.



Activities

From high level activity to calm, social interaction



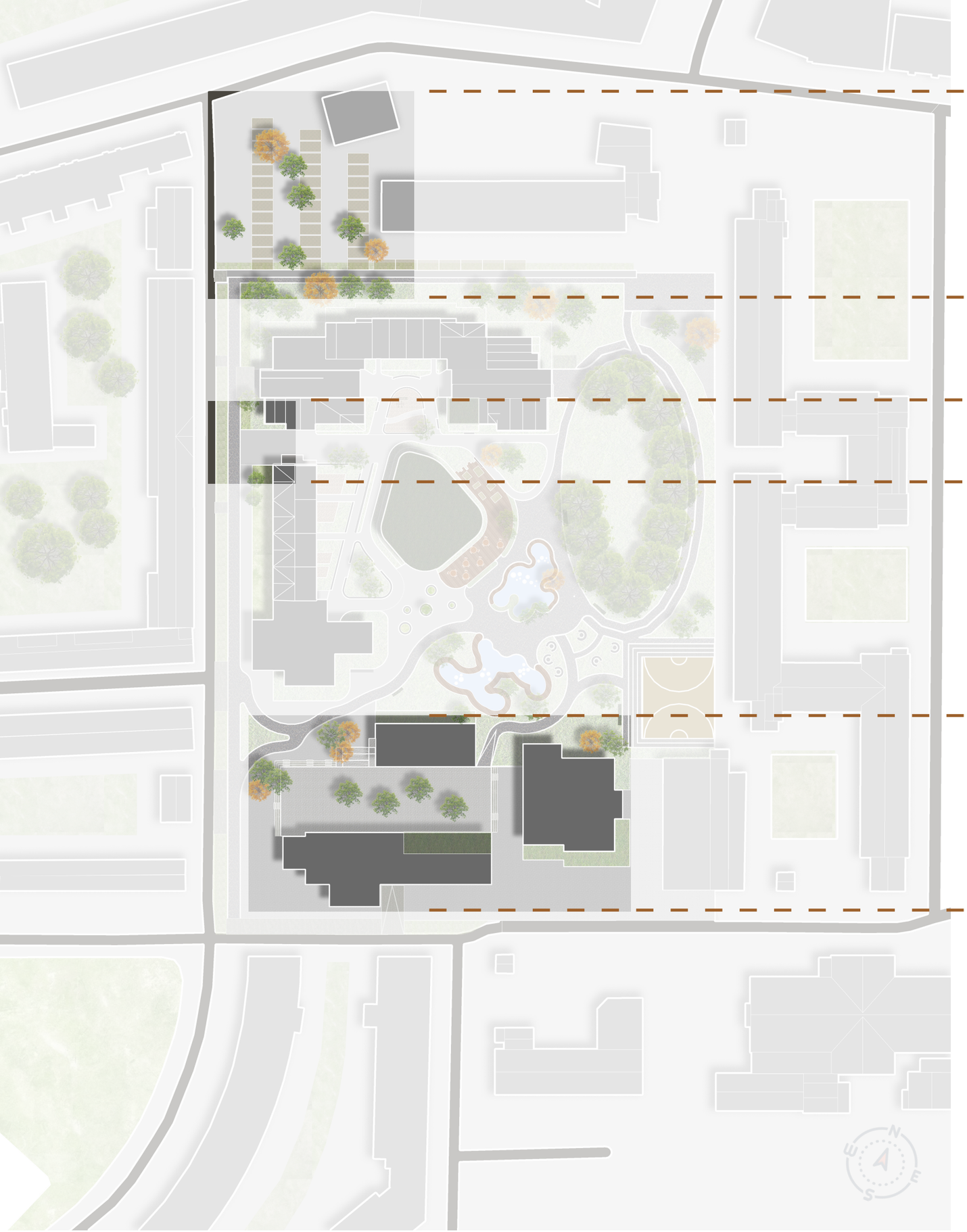
Visible green spaces to combine gardening with recreational and social activities.



Gardening

Communal garderning, in connection with the cafe for optimal maintenance.







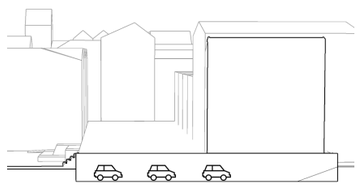
Ground level parking

Tree canopies
Green circular parking tiles
Electric vehicles



Kiss & Ride

Accessibilty, wheelchair,
Emergency vehicles

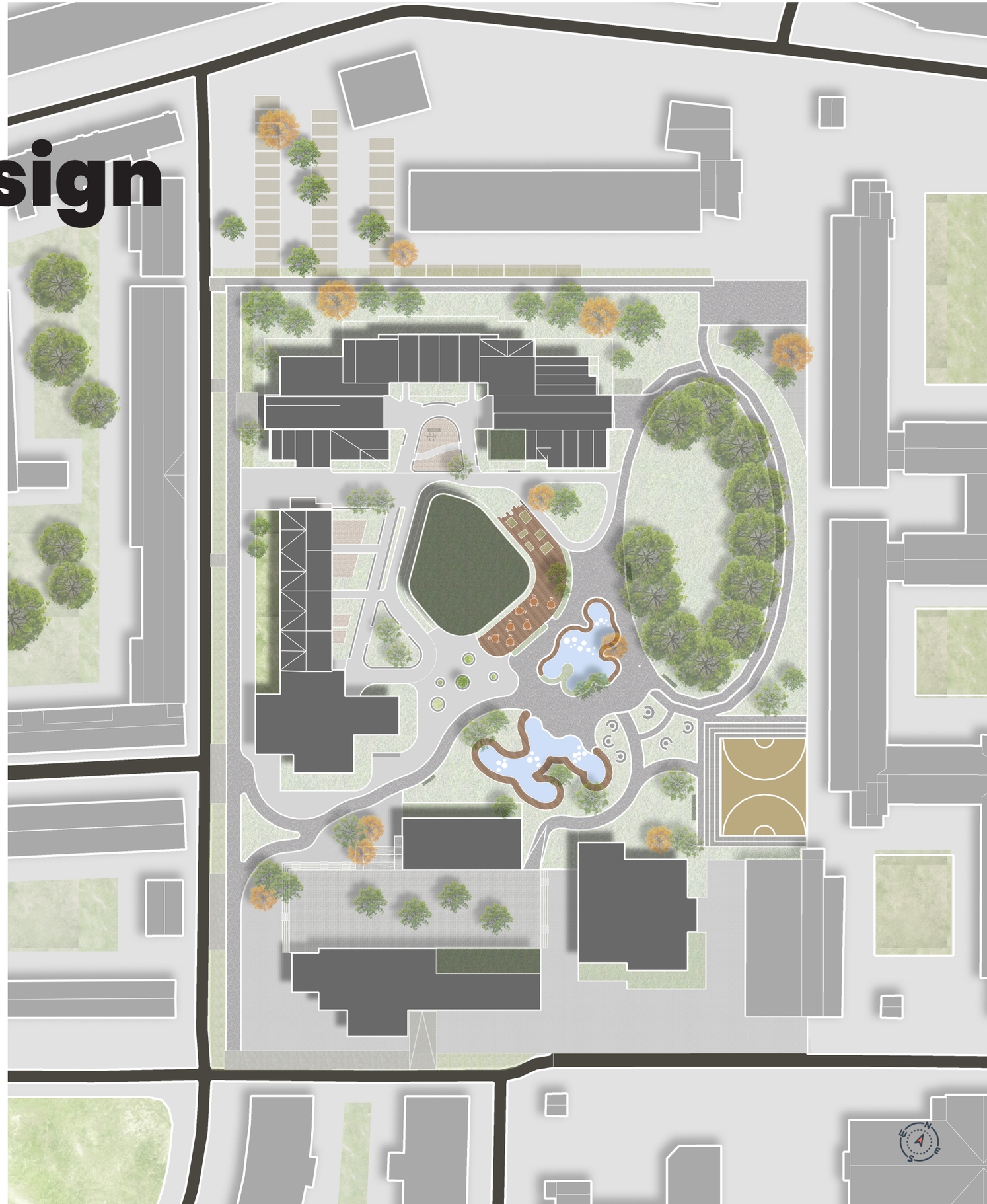


Parking garage

Public funtions
Ventilation
Daylight
Accessibility

Accessibility & parking

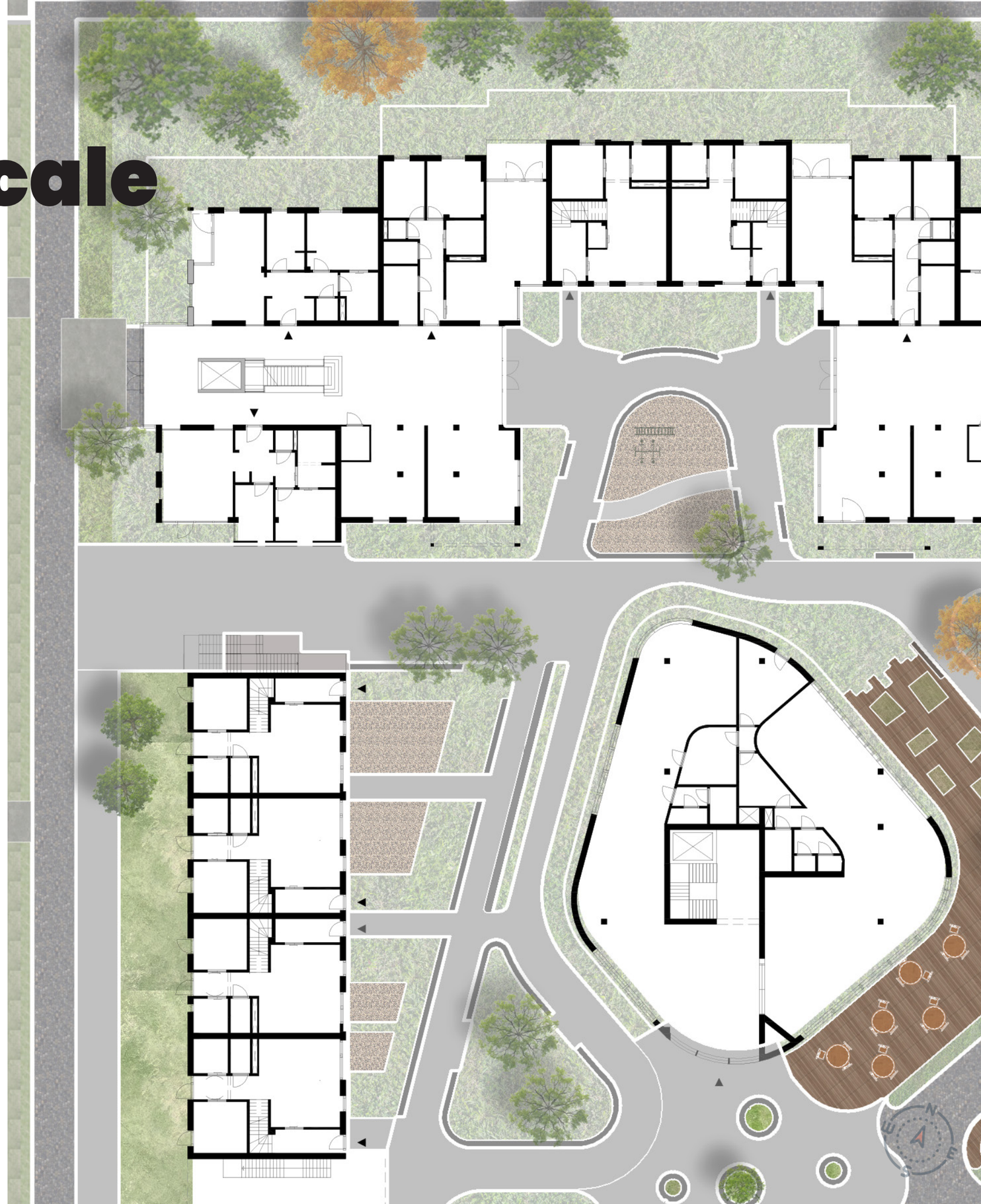
Landscape design





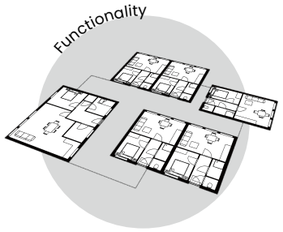


The building scale

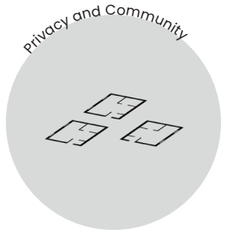


Design guidelines connection
Building scale

Architecture



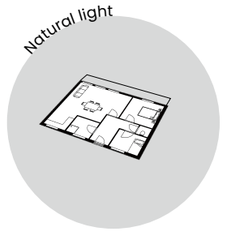
Minimize unnecessary corners and irregular shapes to avoid creating dead spaces



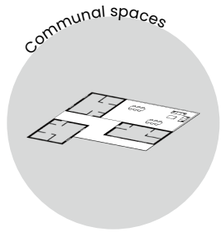
Provide shared spaces for interaction while ensuring residents have private areas to retreat.

- All have a central entry hall
- Connectivity to communal room
- Each their own outside space

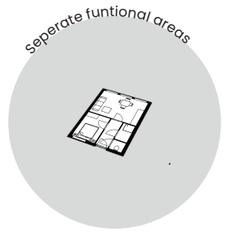
Health & Care : against Loneliness



Ample Natural Light: Include large windows and balconies to provide access to natural light and visual connections with the outside world.



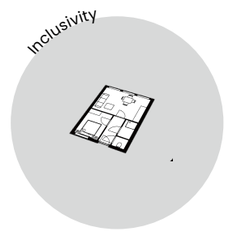
Design central, visible, and easily accessible communal areas with greenery, seating, and aesthetic appeal.



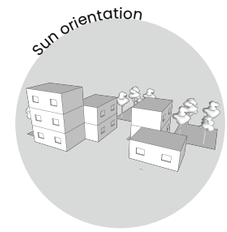
Ensure even small apartments have distinct spaces for sleeping, living, and dining to allow residents to regulate social interactions.

- Central shared entrances
- Bathrooms connected to bedrooms
- Always a hallway between the living room and the bedrooms-bathrooms
- All wheelchair accessible
- Atleast 2 bedrooms

Building technology



Create spaces that accommodate residents of all ages and abilities, promoting intergenerational interaction and inclusivity.



Ensuring that all dwellings have views in at least two directions.

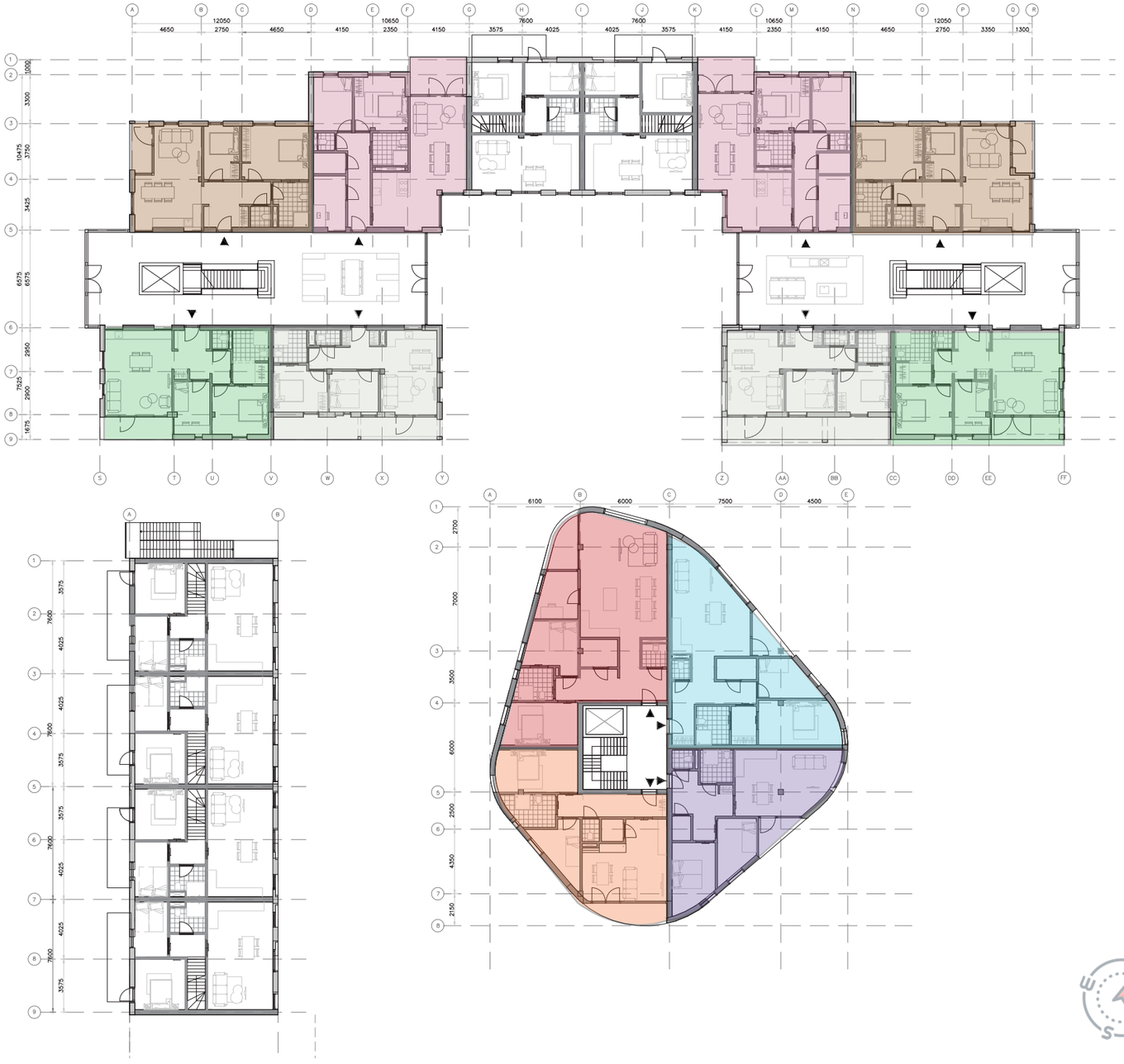
- All dwellings orientated on at least two sun orientations
- Balconies on the south are shaded
- Living rooms sun orientated



Entry halls and communal area

Entry point

Apartment types - First floor



57 m² - 2-4 persons

68 m² - 2-3 persons

71 m² - 2-3 persons

73 m² - 2-4 persons

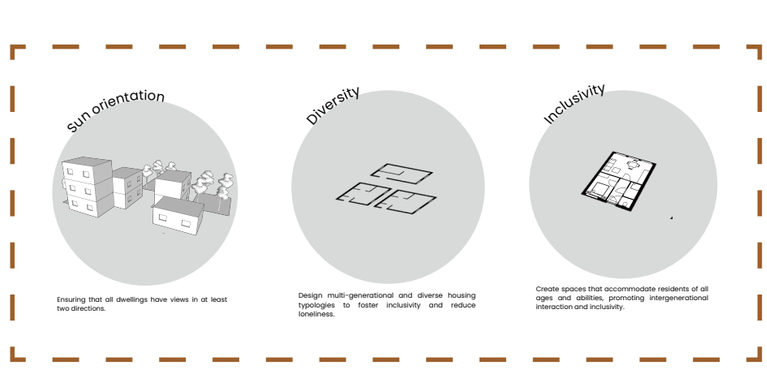
87 m² - 2-4 persons

87 m² - 2-3 persons

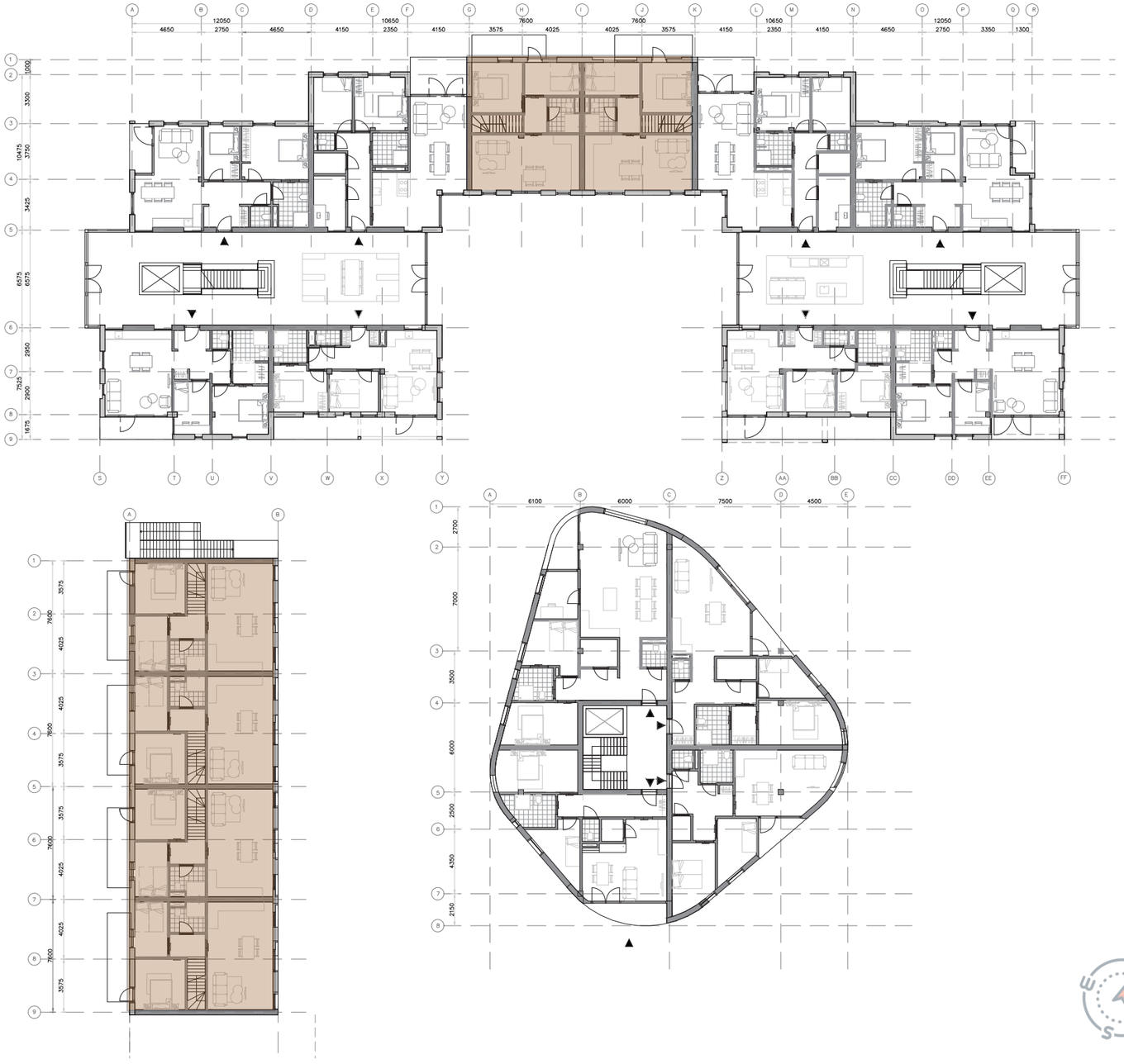
93 m² - 2-5 persons

109 m² - 2-5 persons



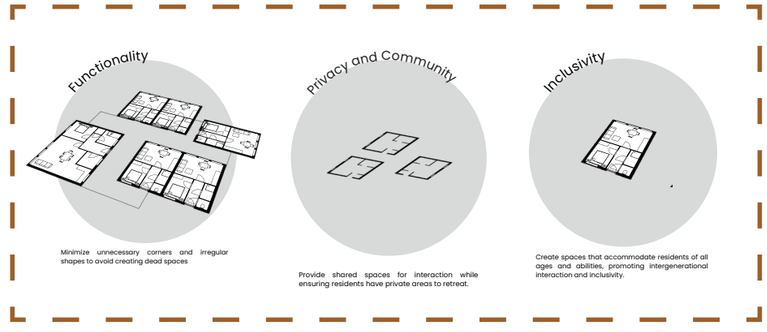


Apartment types - First floor

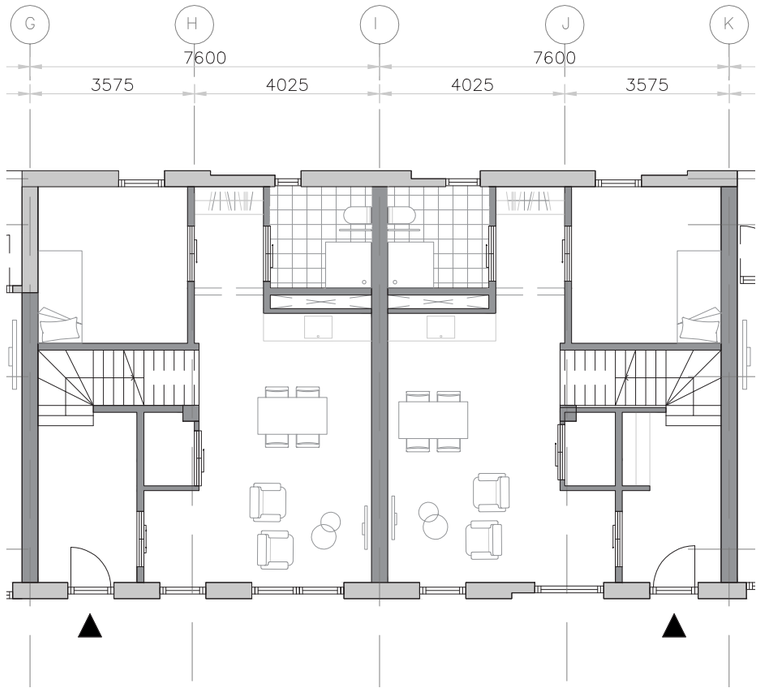


46 m² - 1-2 persons

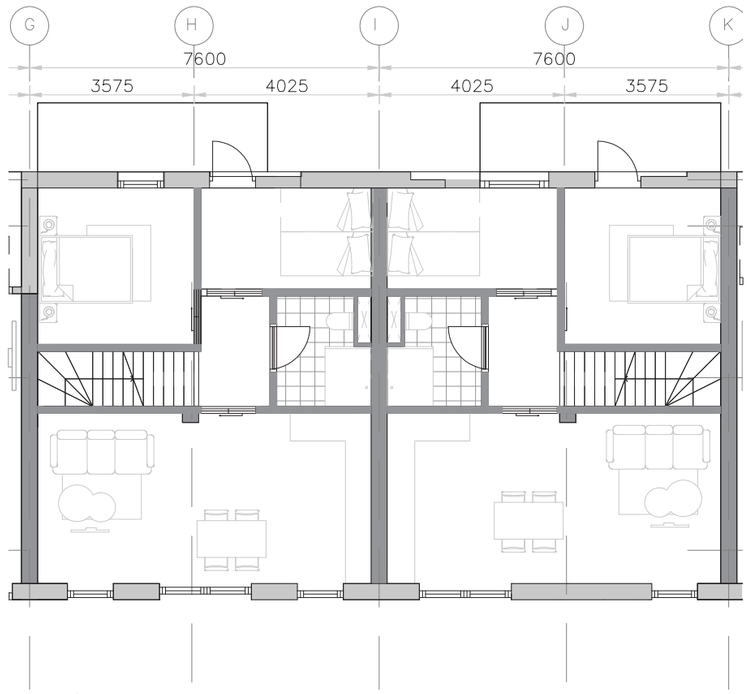
Or as intergenerational house/ Kangaroo/ shared living



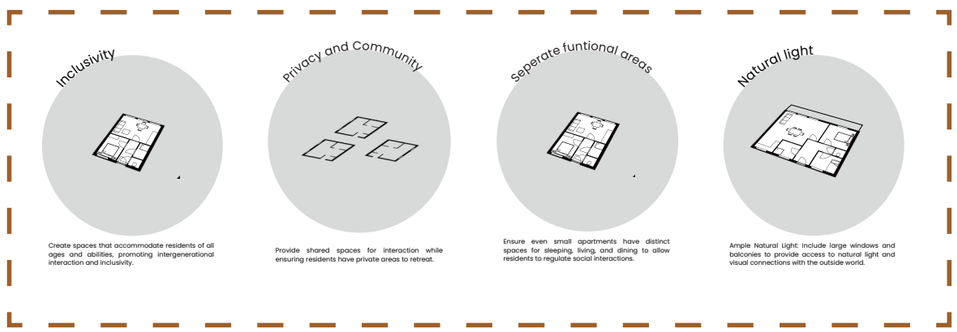
Intergenerational living option - Ground floor & First floor

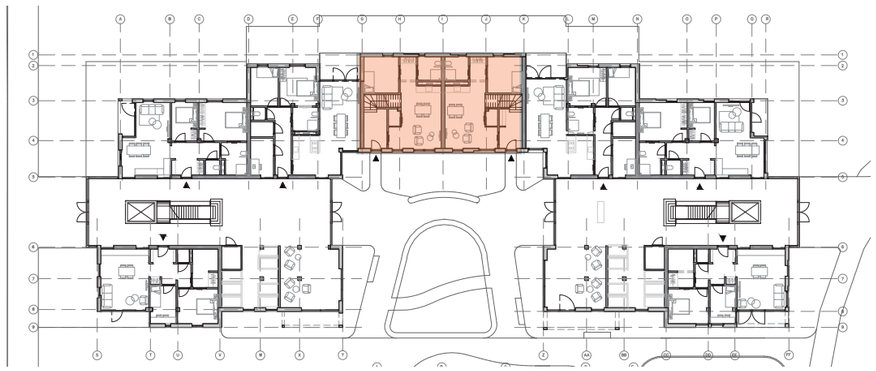


Ground floor -46m²

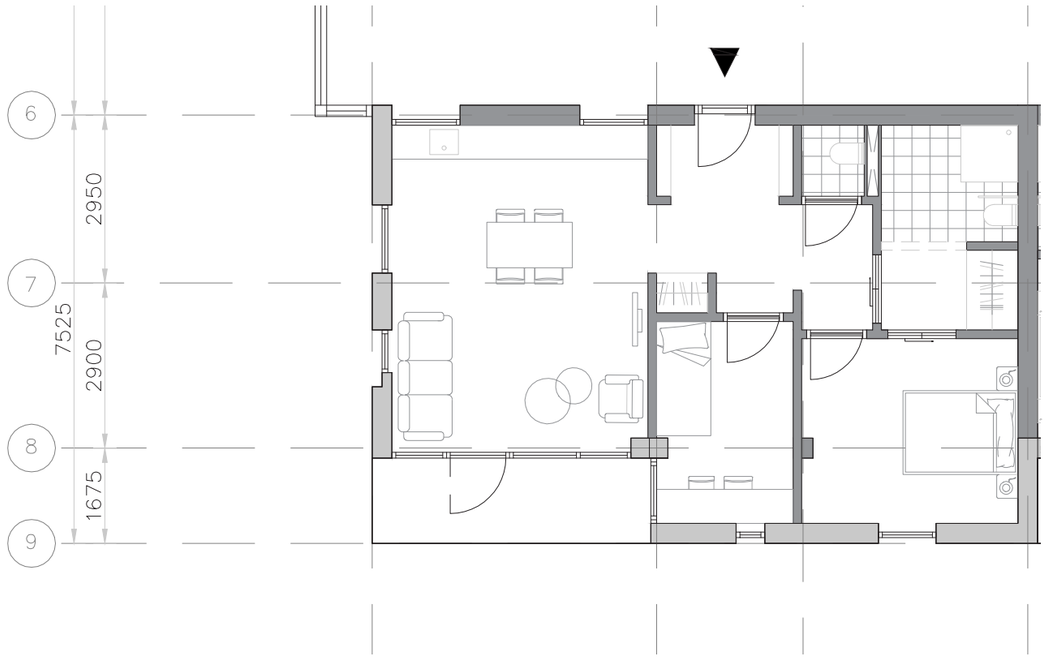


First floor- 53 m²

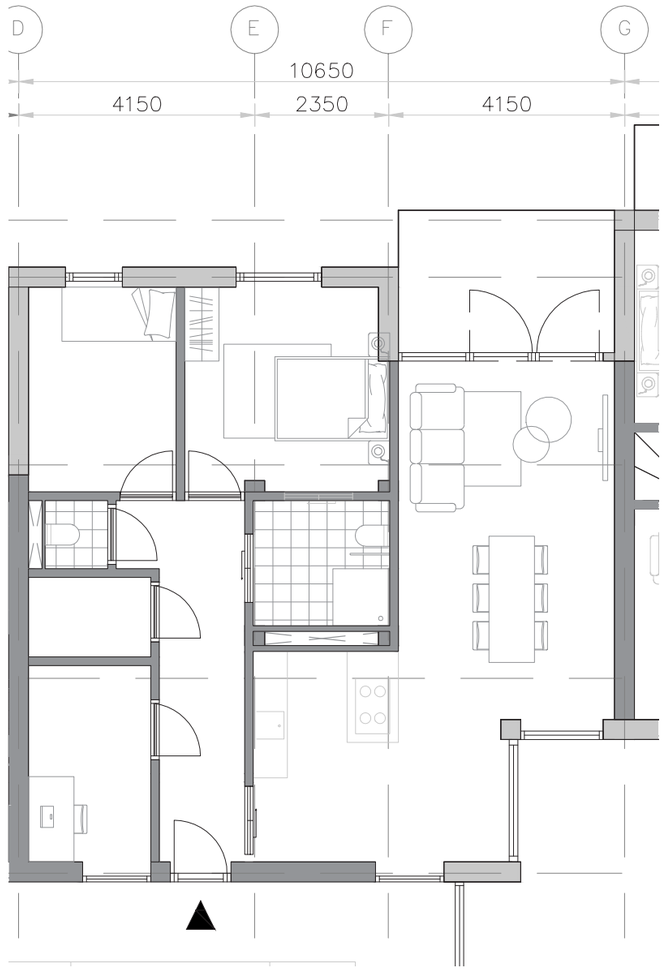




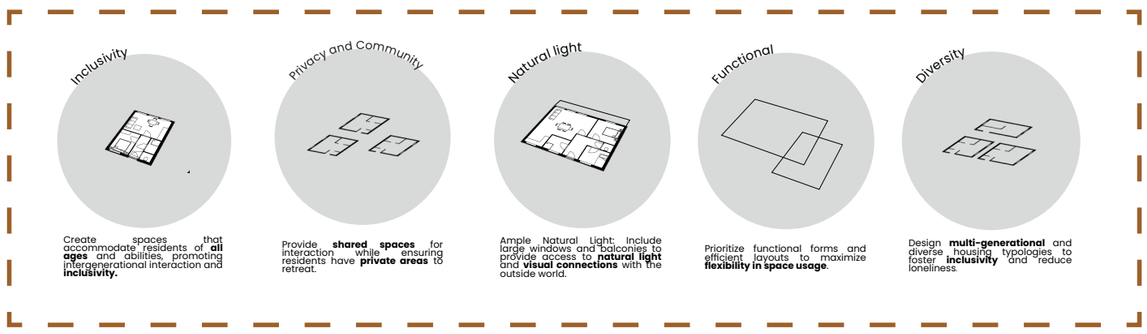
Apartment types - Ground, 1st, 2nd and 3rd floor

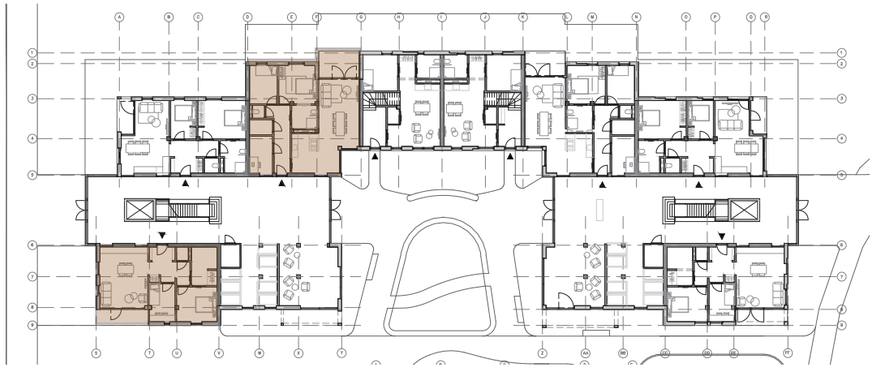


Ground floor -68m²



Ground floor- 93 m²





Construction

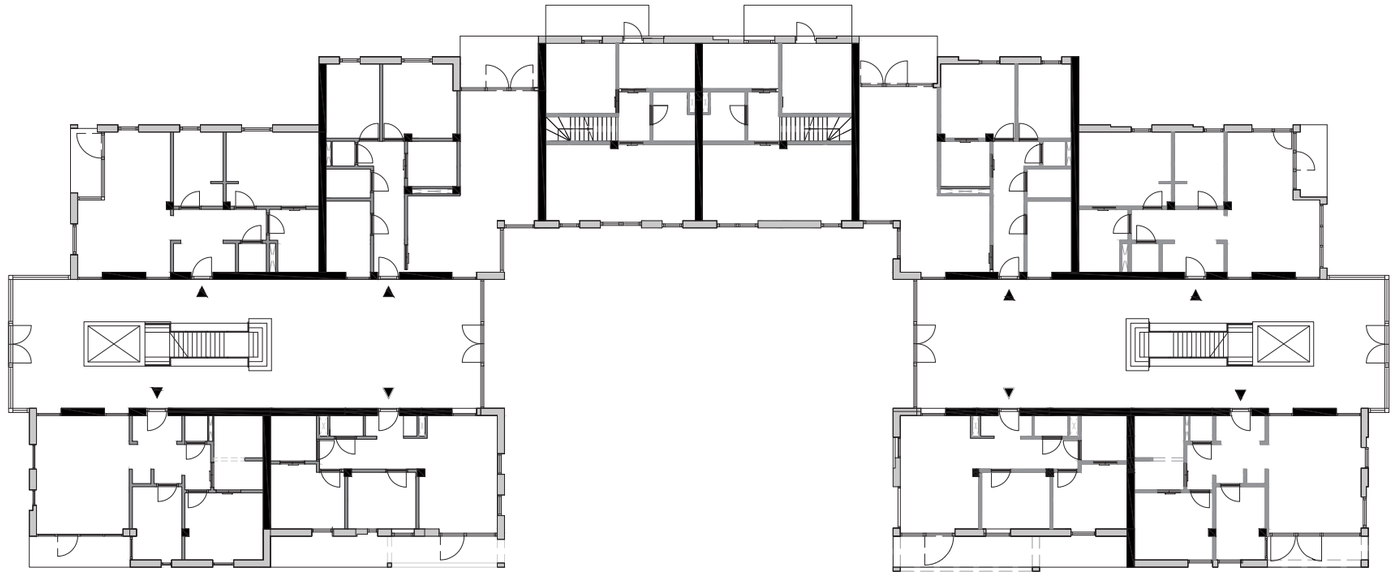
For who, why and how

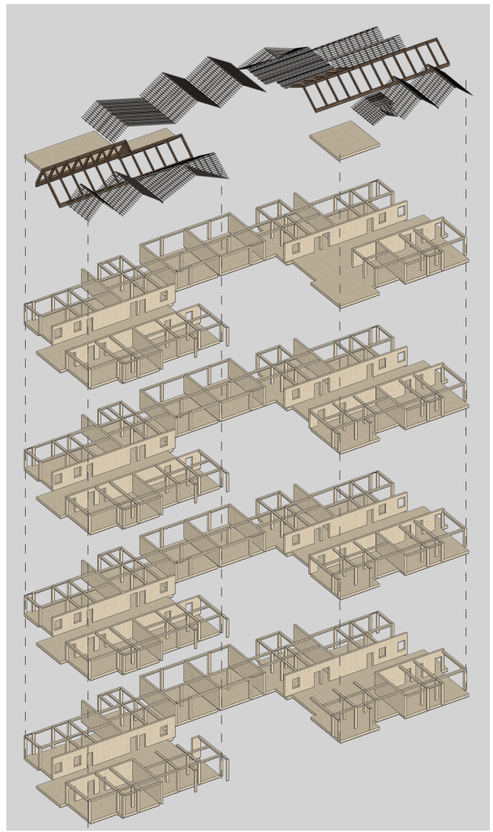
The construction combines:

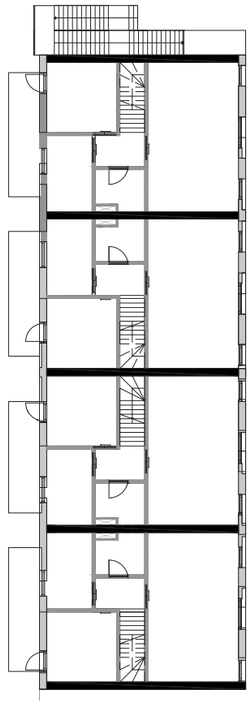
- CLT floors and walls (sustainable, CO2 storing, low waste)
- LVL beams and columns (high strength, low weight)

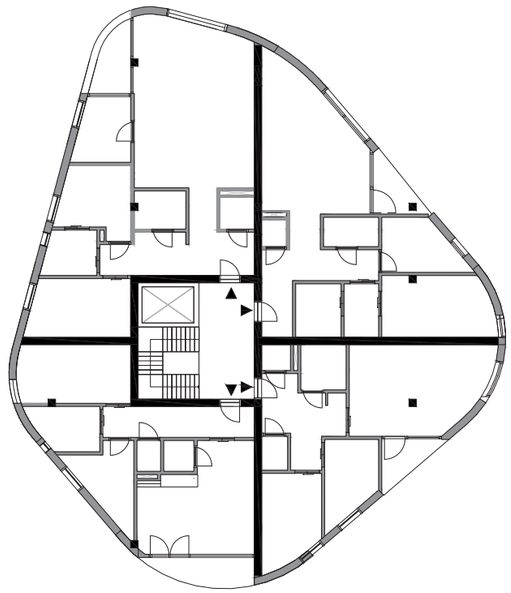
CLT offers great thermal, acoustic, and fire performance.

Load-bearing walls between apartments











Apartment types community building



87 m² - 2-4 persons

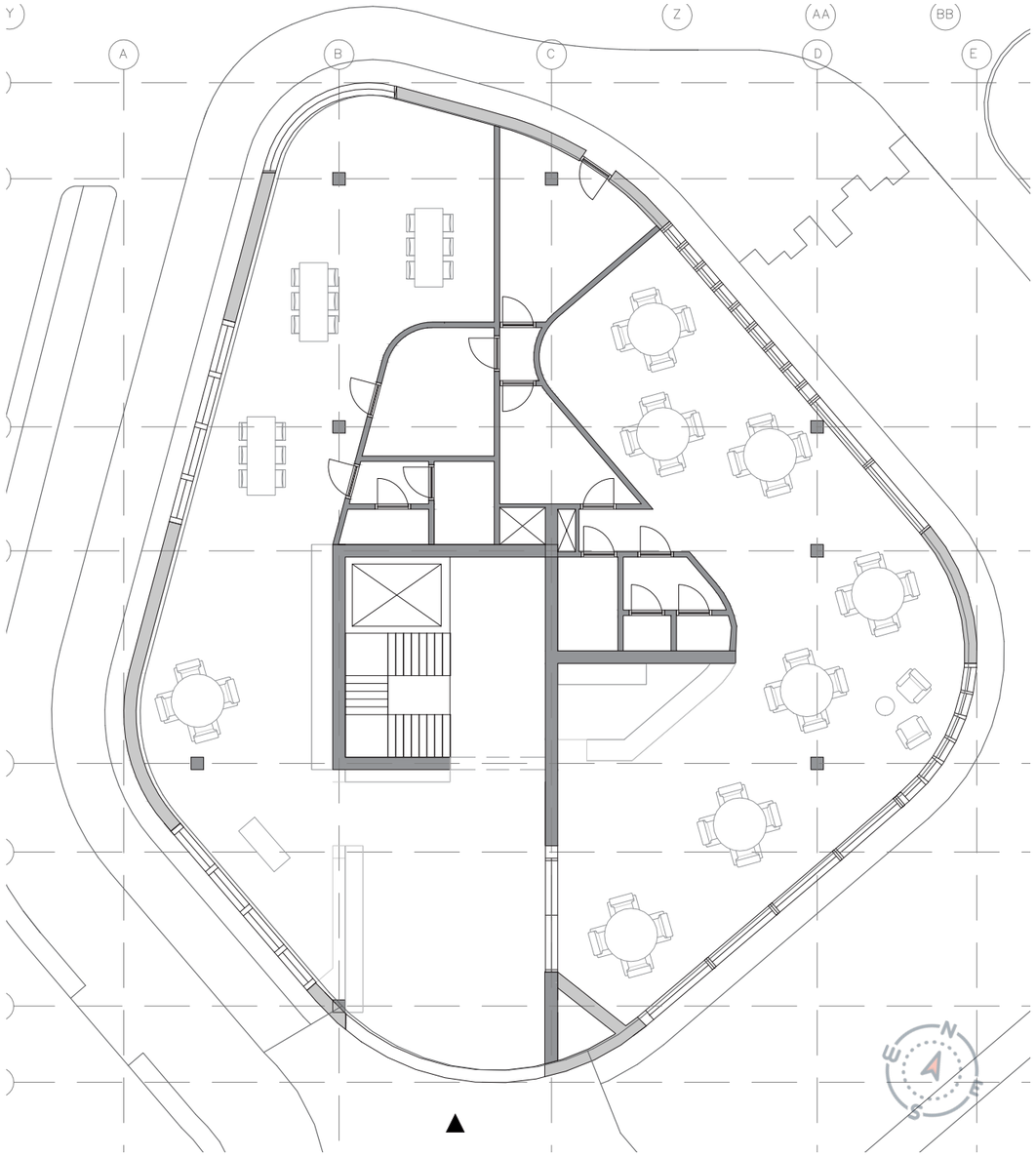
87 m² - 2-3 persons

93 m² - 2-5 persons

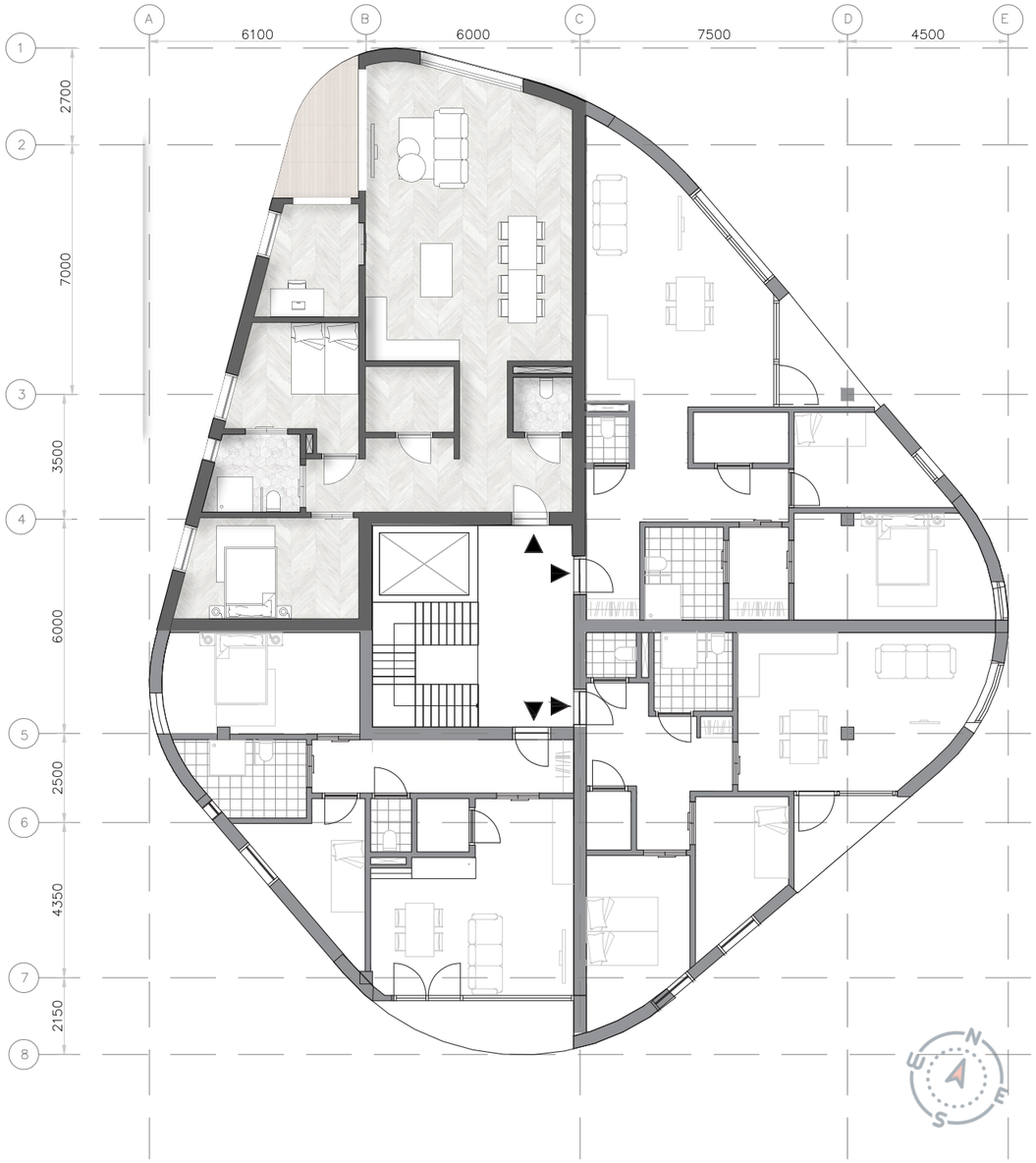
109 m² - 2-5 persons



Communal area apartment complex



Ground floor



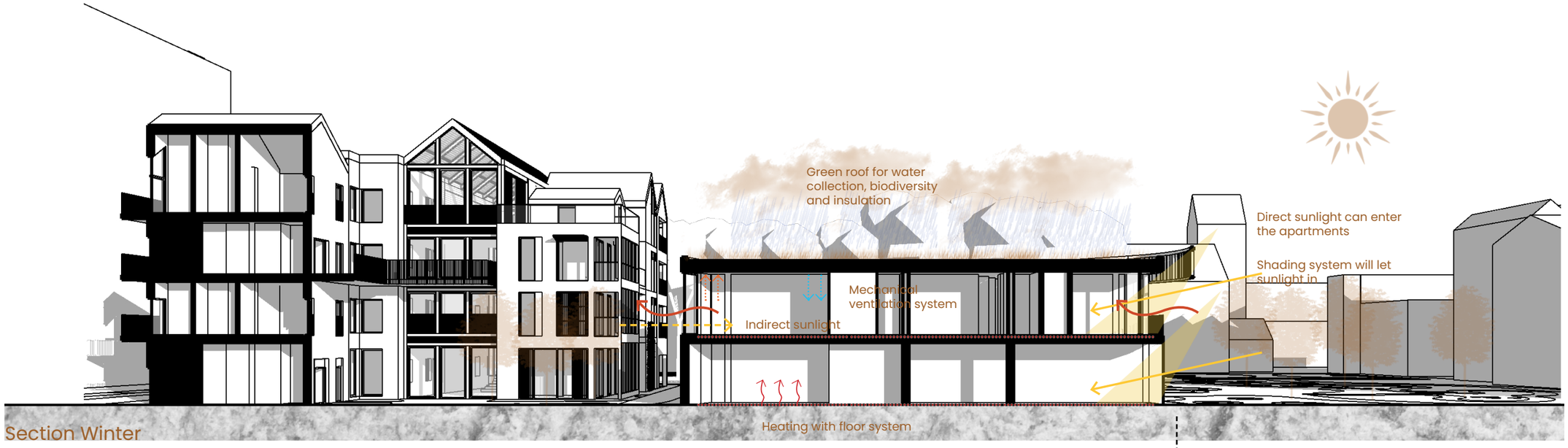
First floor



Climate public building



Section summer



Section Winter

Communal area apartment complex

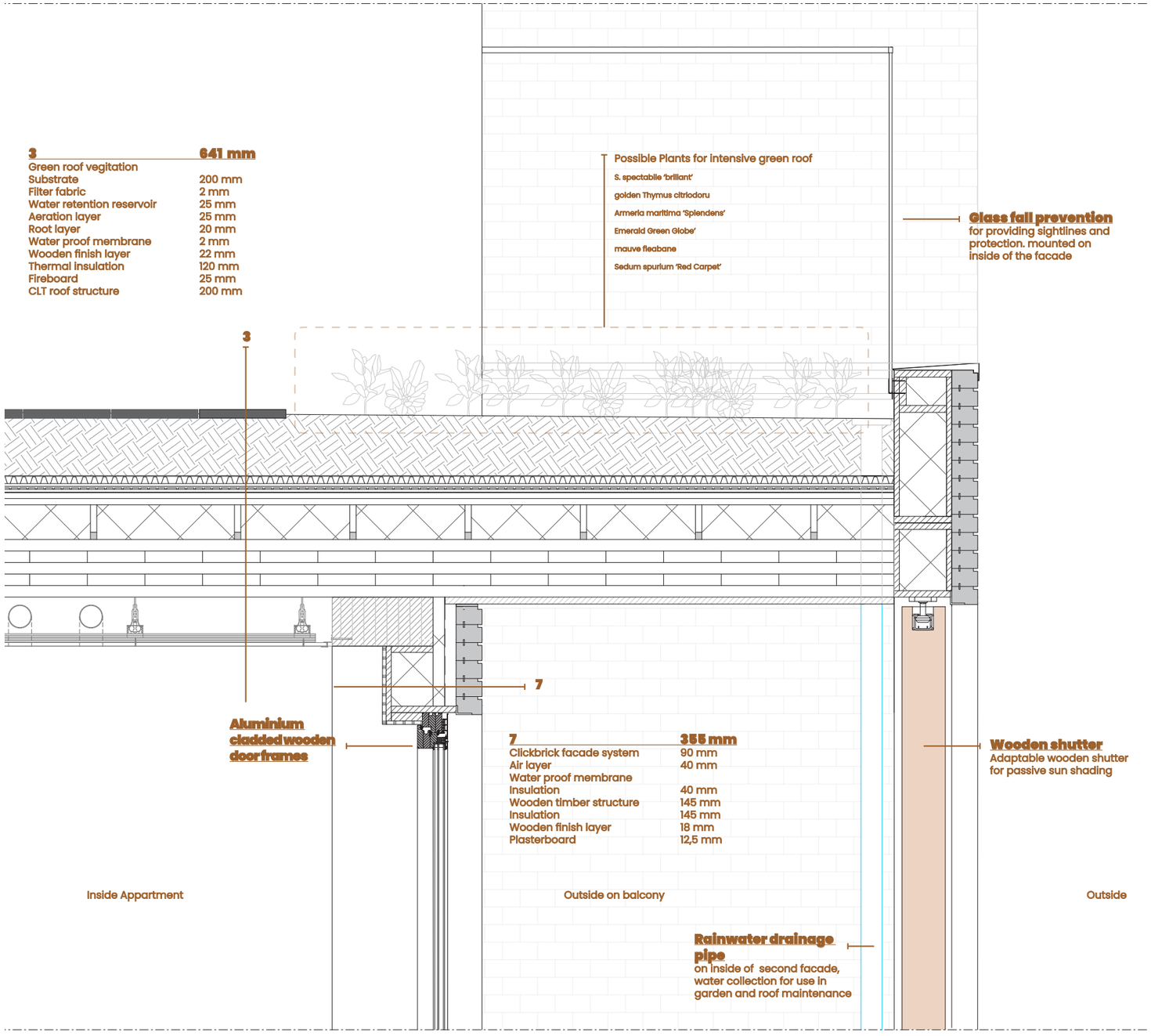


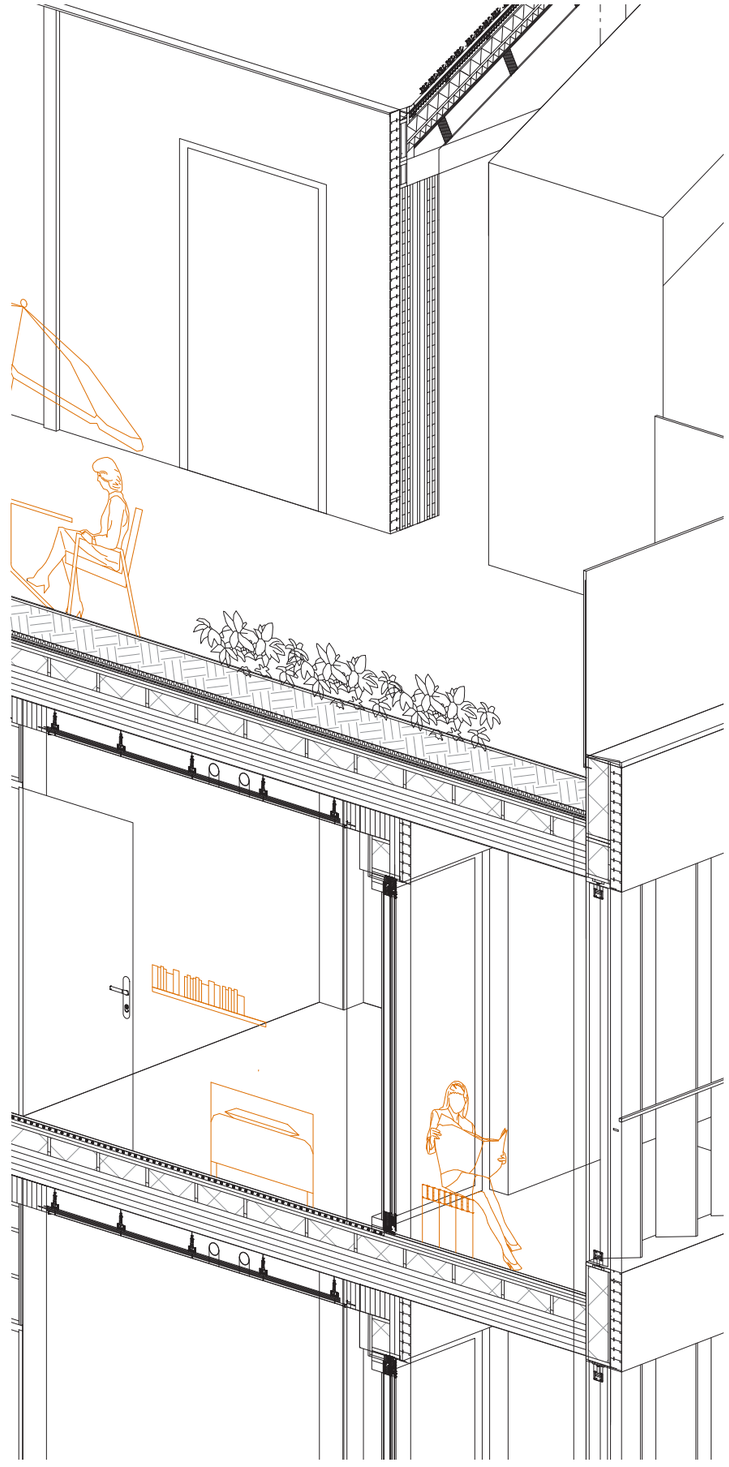


Third floor


3A
Green Earth
TEA TIME
HAPPY BIRTHDAY
Laundry

Private rooftop apartment building



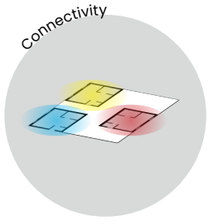


The apartment scale

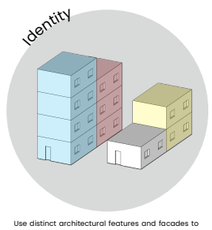


Design guidelines connection
Dwelling

Architecture



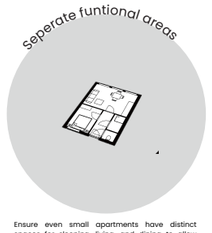
Foster emotional connections to the living environment by incorporating elements that reflect the community's character.



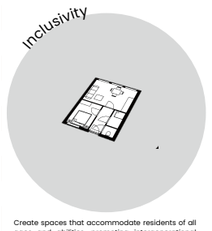
Use distinct architectural features and facades to create a sense of identity and pride for residents

- Personalisation boards in the hallway
- Multifuntional communal rooms
- Identifyable materials
- Parcelling

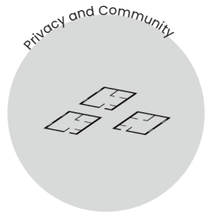
Health & Care : against Loneliness



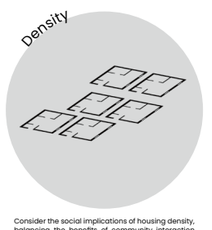
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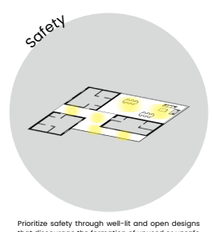
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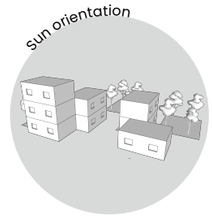
Consider the social implications of housing density, balancing the benefits of community interaction with the potential drawbacks of overcrowding.

- Balconies optionally shaded or not
- Tarwewijk art on walls
- Smaller windows where privacy is needed
- Density not too high

Building technology



Prioritize safety through well-lit and open designs that discourage the formation of unused or unsafe zones.



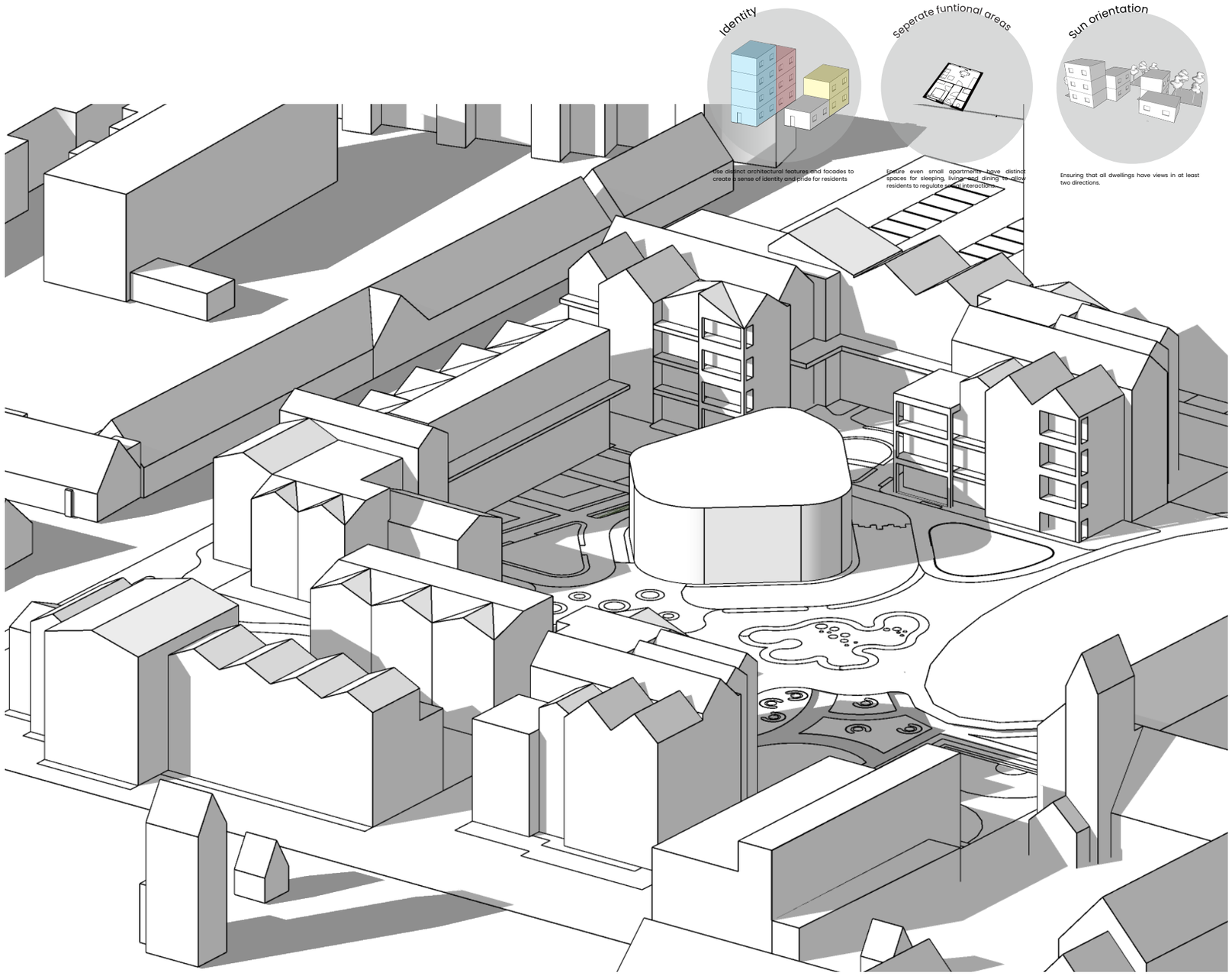
Ensuring that all dwellings have views in at least two directions.

- Shading systems
- intensive green roofs
- No dark corners in the floorplans
- 2 orientations minimum

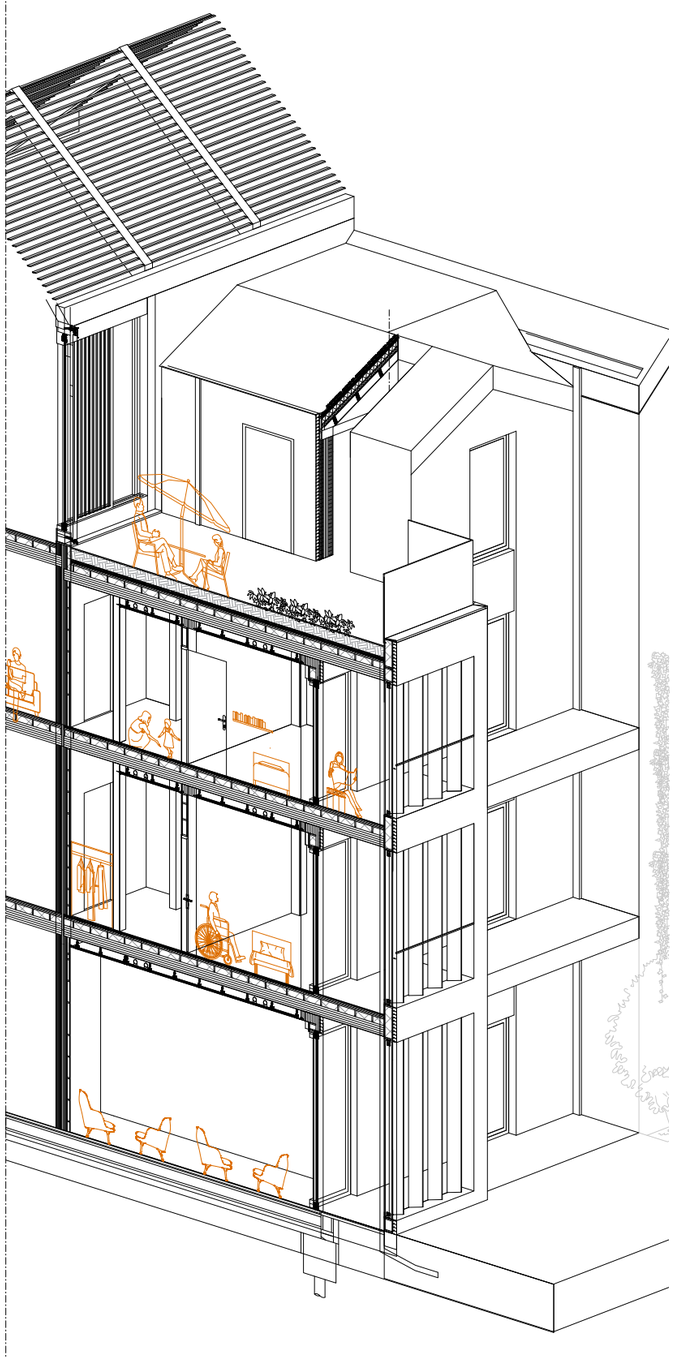
South elevation



The roofs



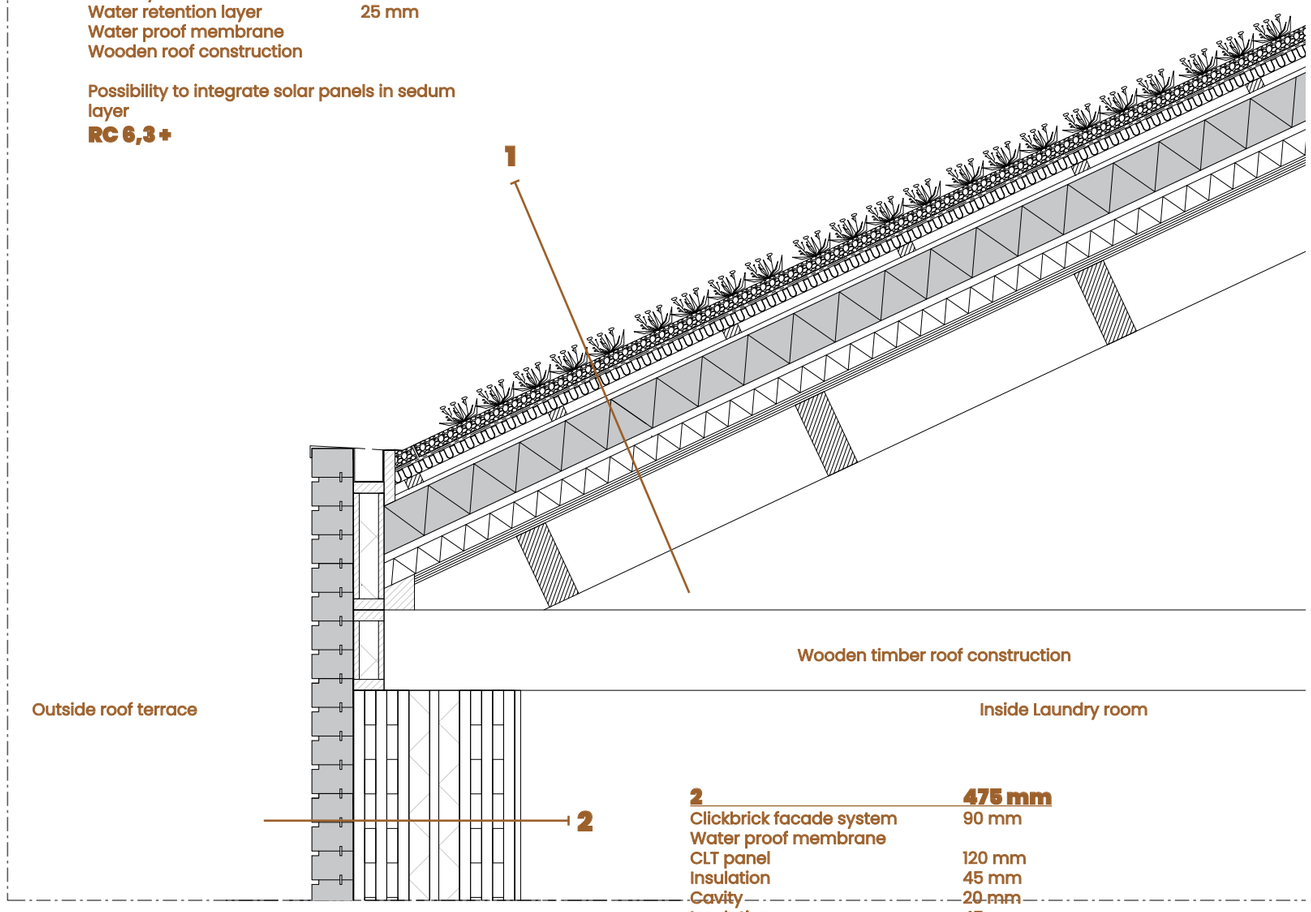
- Sloped roofs reflect local context
- Visually increase height
- Improve daylight and enable east–west solar panel orientation
- Channel water for reuse and green roofs



1	400 mm
Moss/sedum layer	20-30 mm
Substrate layer (extensive)	40 mm
Filter layer	1 mm
Water retention layer	25 mm
Water proof membrane	
Wooden roof construction	

Possibility to integrate solar panels in sedum layer

RC 6,3 +

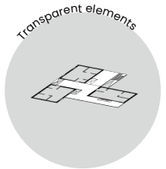


2	475 mm
Clickbrick facade system	90 mm
Water proof membrane	
CLT panel	120 mm
Insulation	45 mm
Cavity	20 mm
Insulation	45 mm
CLT panel	120 mm
Studs	22 mm
Plasterboard	13 mm

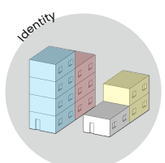
RC 4,7 +

Materials facade

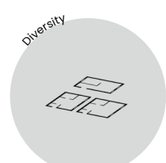




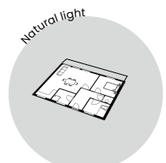
Use transparent elements such as glass walls or open staircases to enhance sightlines and connectivity.



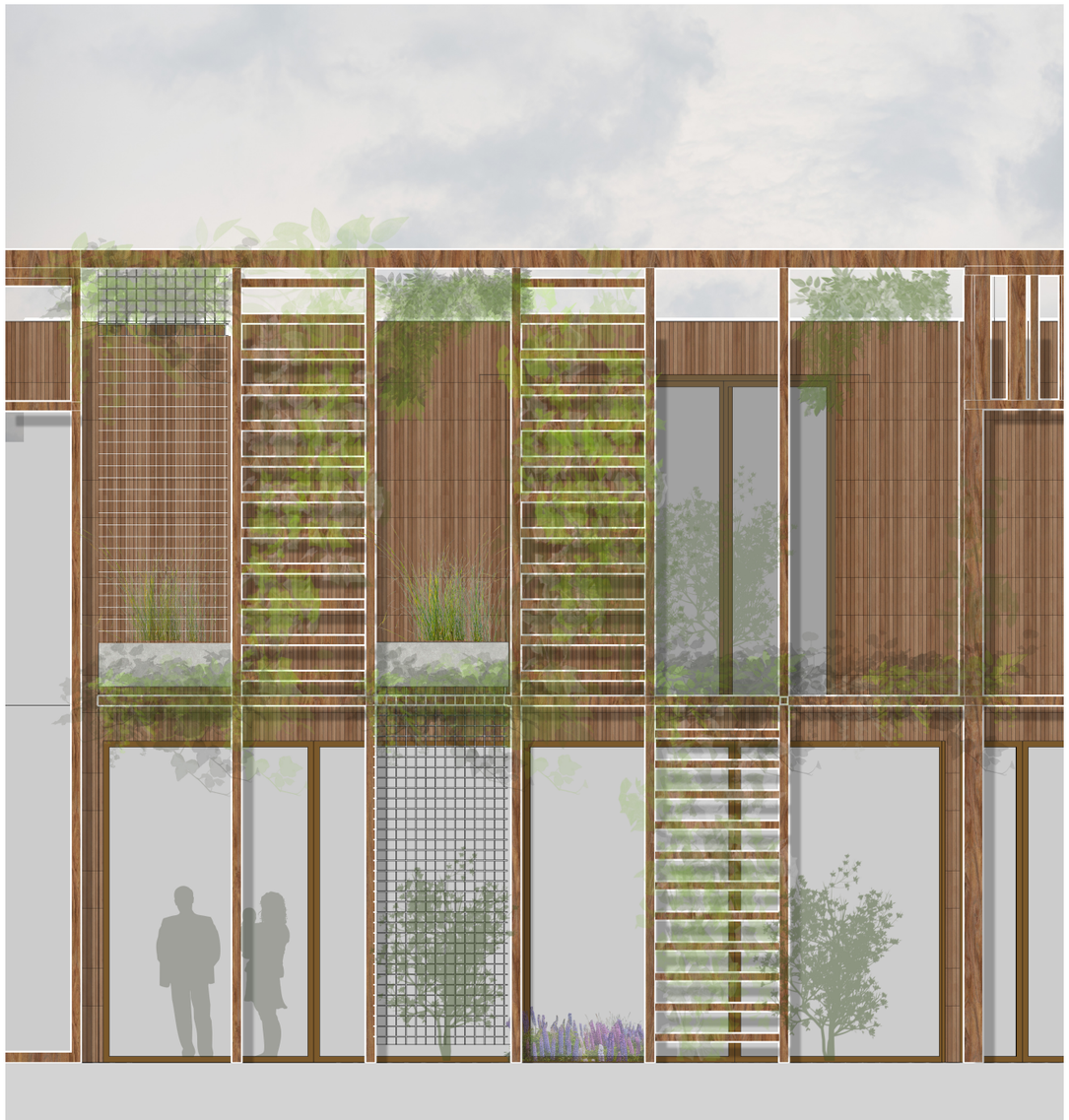
Use distinct architectural features and facades to create a sense of identity and pride for residents

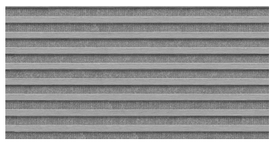


Design multi-generational and diverse housing typologies to foster inclusivity and reduce loneliness.



Ample Natural Light: Include large windows and balconies to provide access to natural light and visual connections with the outside world.

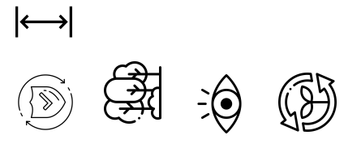






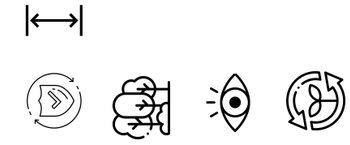




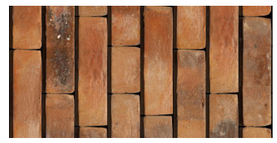












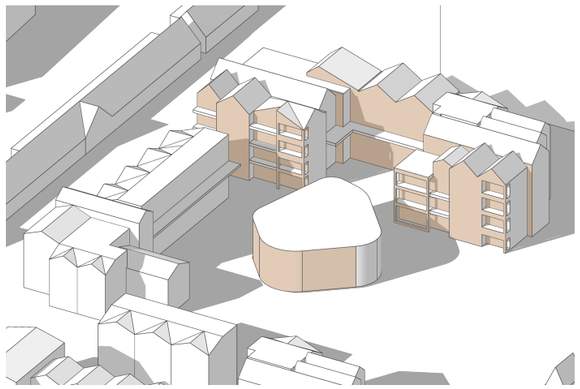






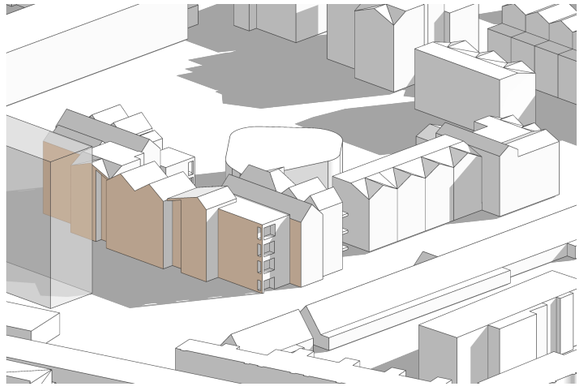


South facades



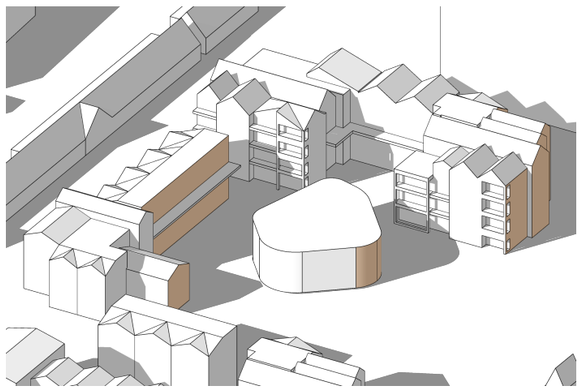


North facades





East facades





West facades



Passive climate systems

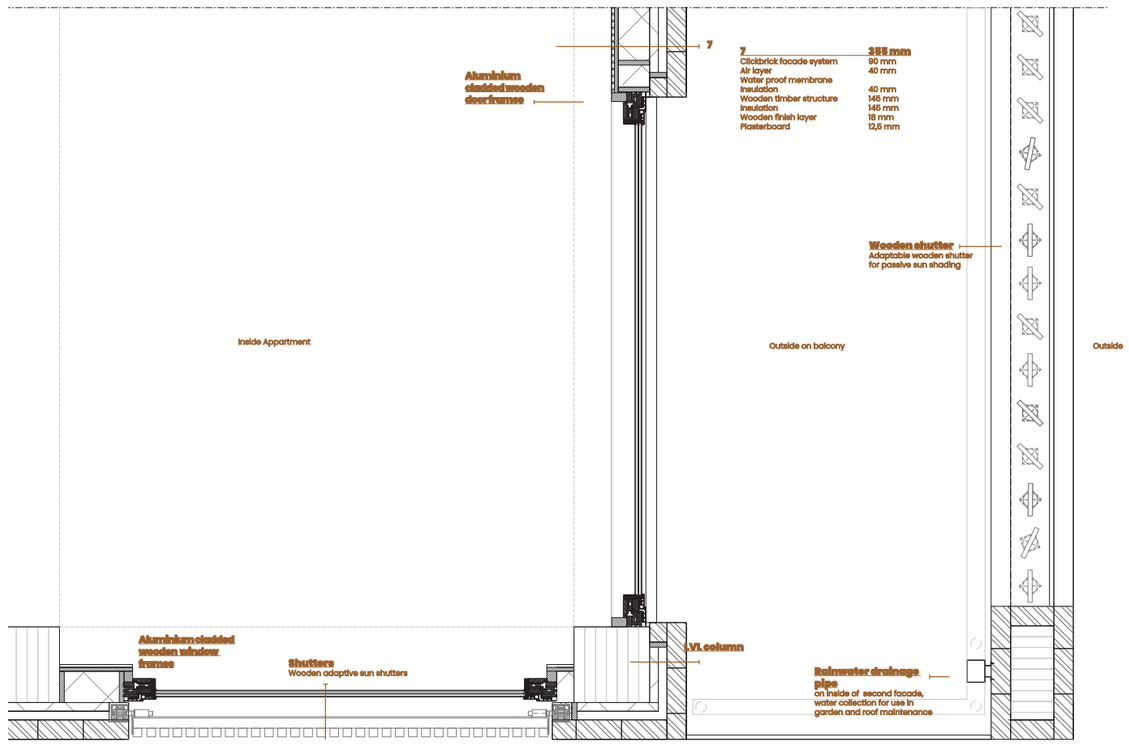
- Overhangs and setbacks for passive sun shading
- Adaptable shading shutters
- Double facade as buffer zone
- Green on ‘‘open’’ facades for shading in summer

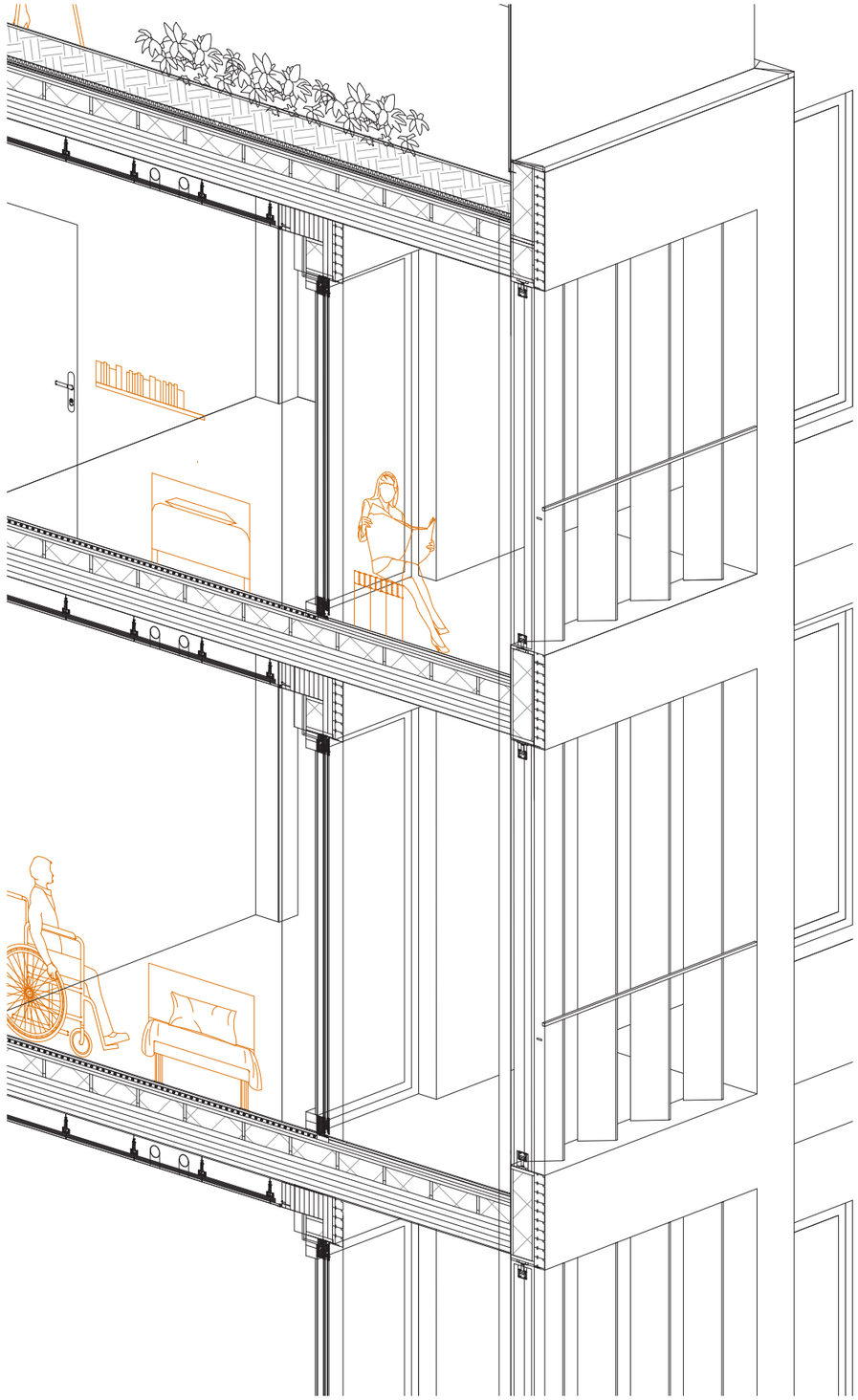


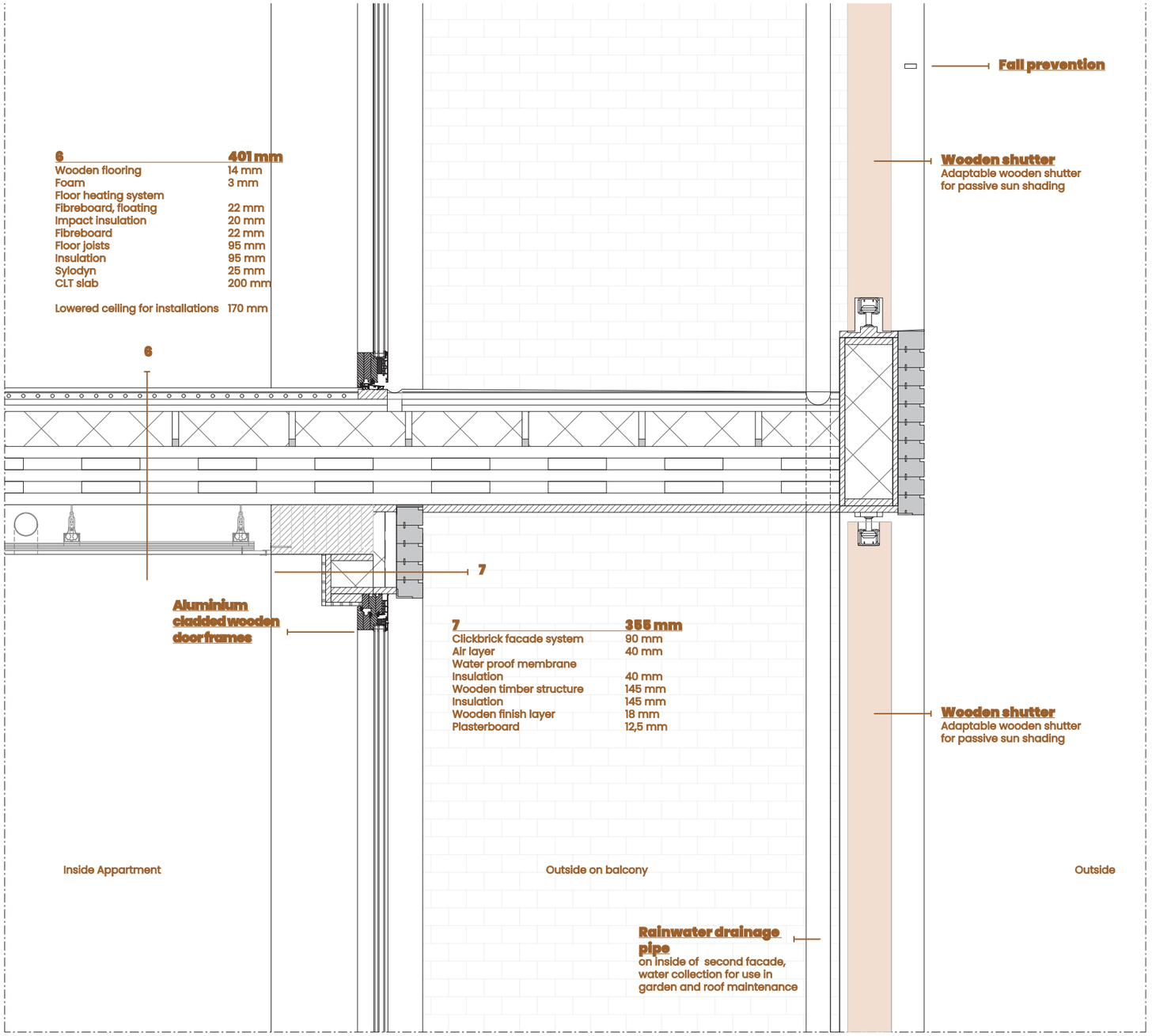


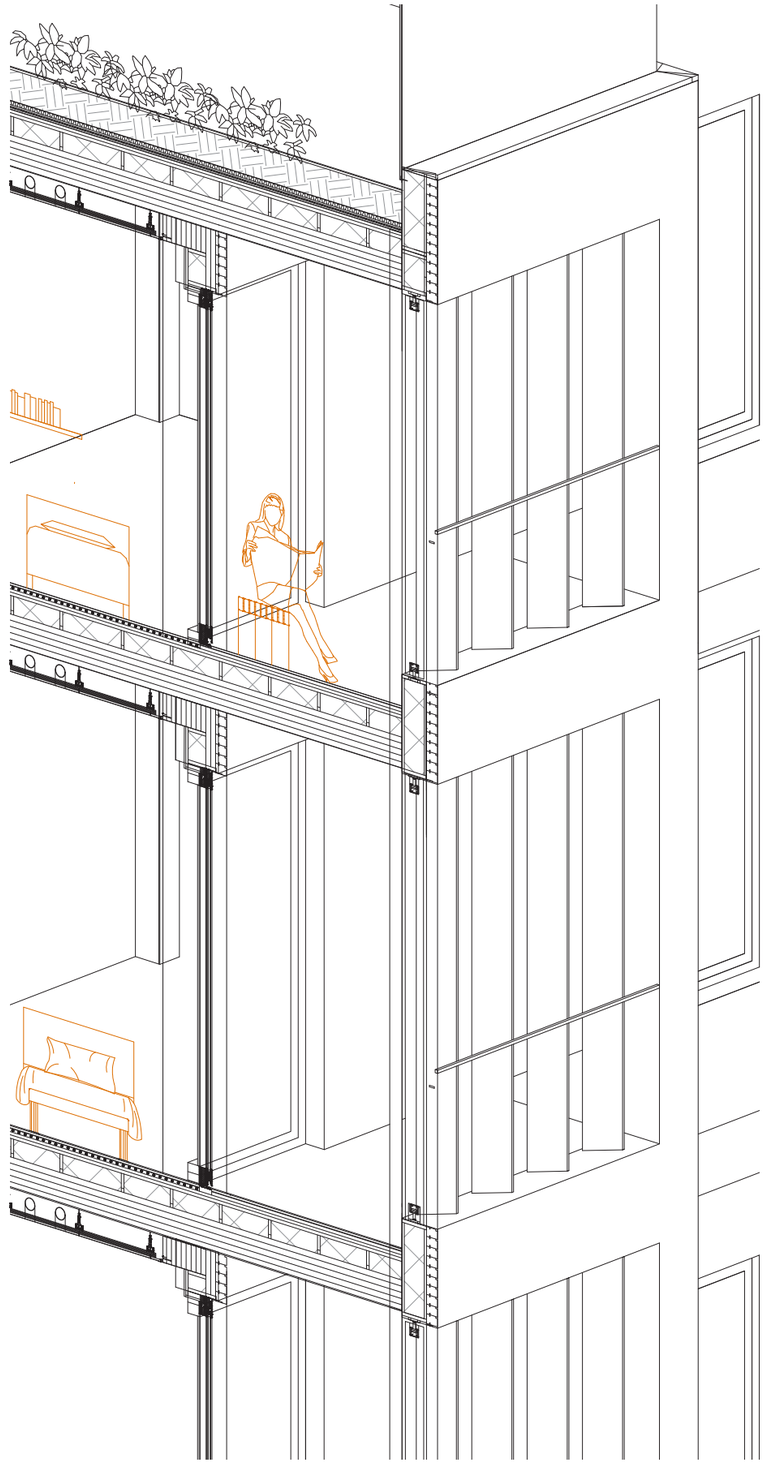




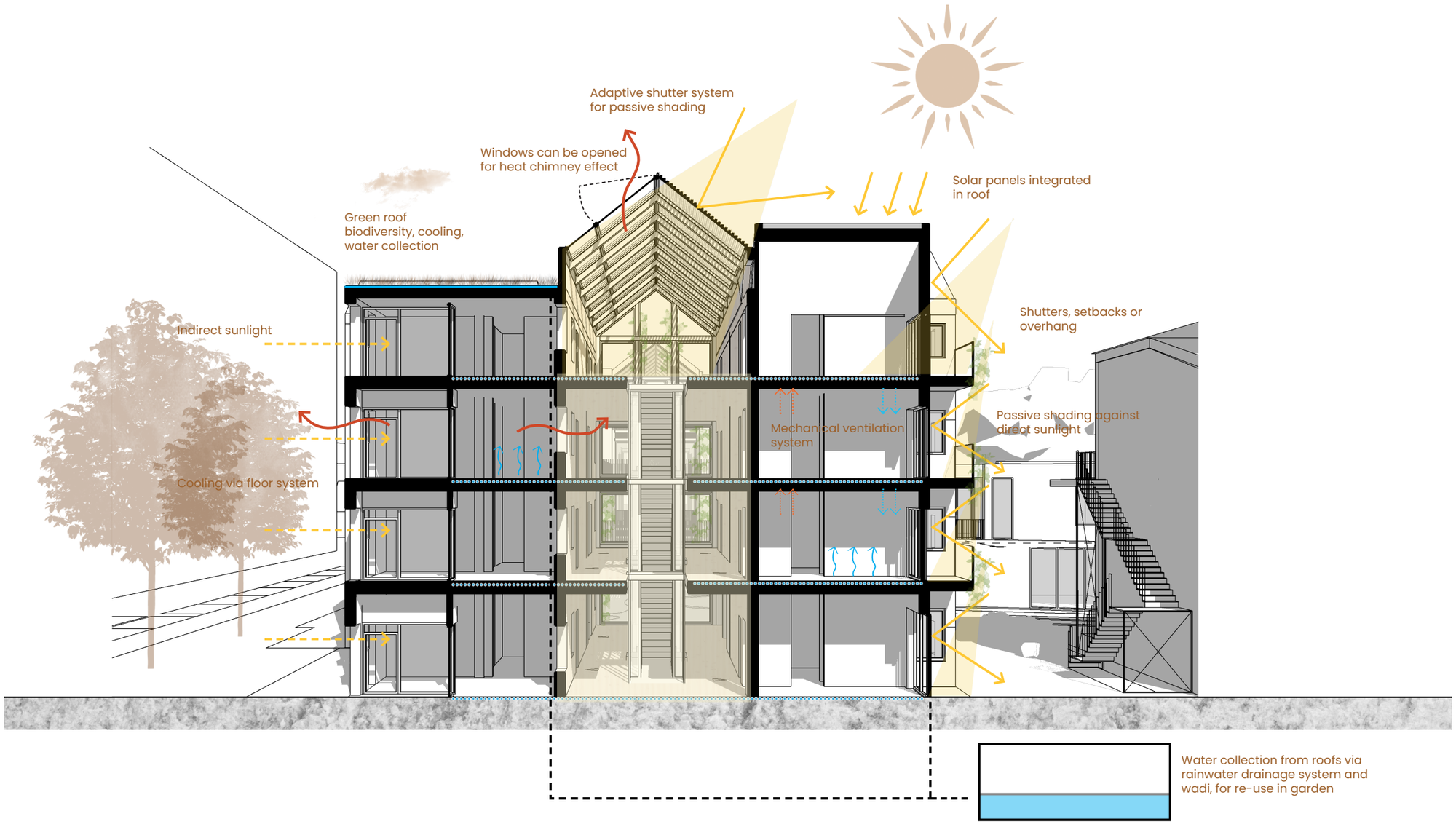


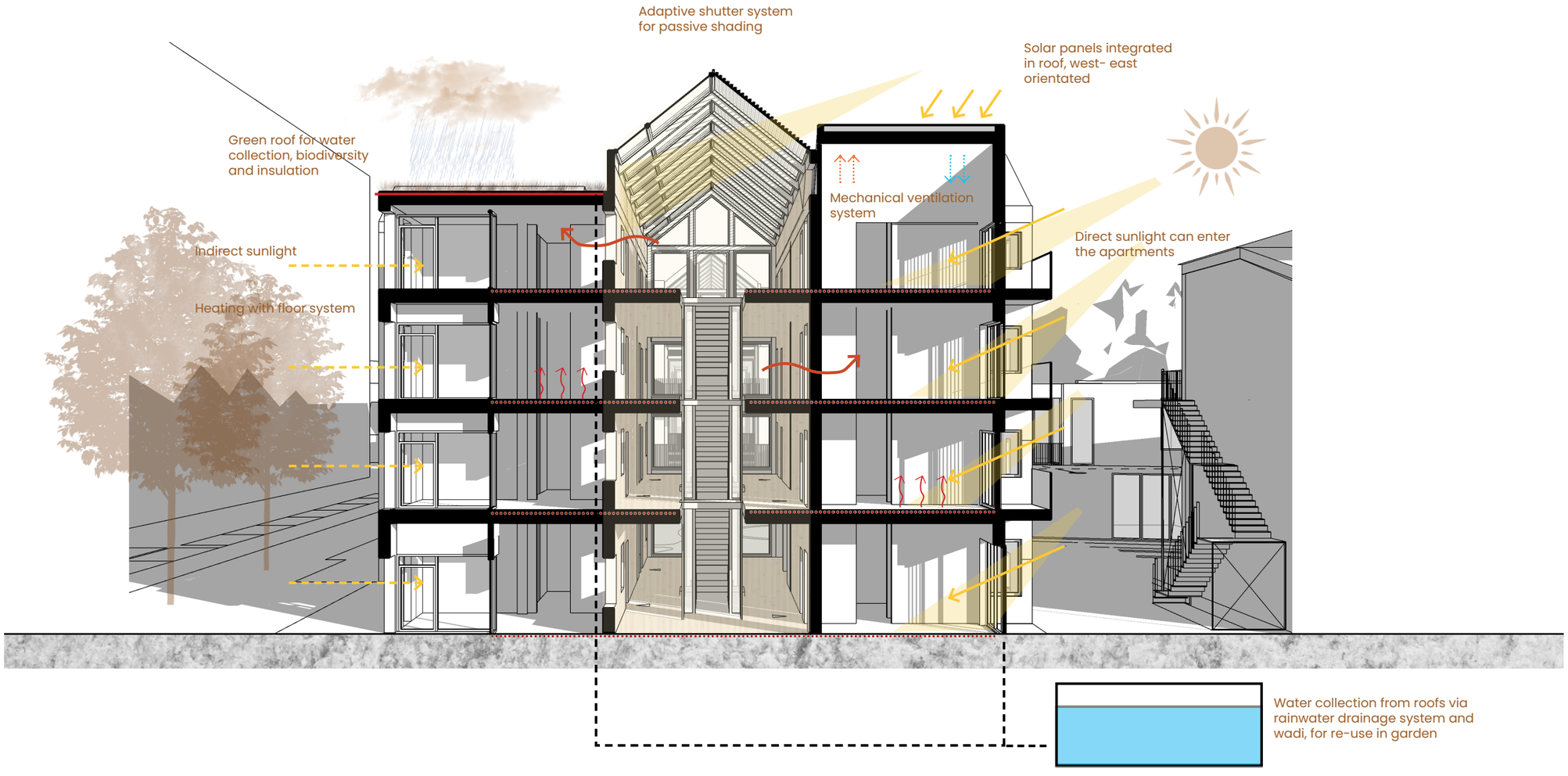



Fall prevention
Wooden shutter
Adaptable wooden shutter
for passive sun shading
6
401 mm
Wooden flooring 14 mm
Foam 3 mm
Floor heating system
Fibreboard, floating 22 mm
Impact insulation 20 mm
Fibreboard 22 mm
Floor joists 95 mm
Insulation 95 mm
Sylodyn 25 mm
CLT slab 200 mm
Lowered ceiling for installations 170 mm
7
Aluminium cladded wooden door frames
7
355 mm
Clickbrick facade system 90 mm
Air layer 40 mm
Water proof membrane
Insulation 40 mm
Wooden timber structure 145 mm
Insulation 145 mm
Wooden finish layer 18 mm
Plasterboard 12,5 mm
Wooden shutter
Adaptable wooden shutter
for passive sun shading
Inside Appartment
Outside on balcony
Outside
Rainwater drainage pipe
on inside of second facade, water collection for use in garden and roof maintenance



Climate apartment building




Adaptive shutter system
for passive shading
Solar panels integrated
in roof, west- east
orientated
Green roof for water
collection, biodiversity
and insulation
Mechanical ventilation
system
Direct sunlight can enter
the apartments
Indirect sunlight
Heating with floor system
Water collection from roofs via
rainwater drainage system and
wadi, for re-use in garden

Neighbourhood level





Inclusivity



Visible green spaces to combine gardening with recreational and social activities.

Street



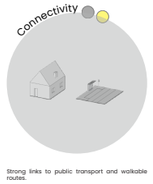
Pedestrian-friendly streets, 4 meters wide, to encourage flow and informal interactions.

Seating



Benches every 100 meters, curved or angled for natural conversations.

Connectivity



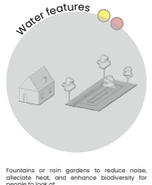
Strong links to public transport and walkable routes.

Flexibility



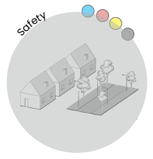
Space accomodating activities such as jogging, walking, playing and community events, flexible in use.

Water features



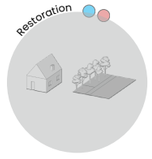
Fountains or rain gardens to reduce noise, alleciate heat, and enhance biodiversity for people to look at.

Safety



Natural surveillance with window facing activity zones and no high traffic streets

Restoration



Trees and grass for shade, privacy, and sound buffering.

Safety



Lighting, well lit areas to reduce risks and encourage outdoor use all year round.

Experience



Alternating street spaces with squares and climate sensistive designs to enhance usability.

Accessibility



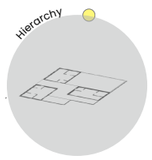
Green spaces within a 5-10 minute walk or 300 meters.

Green space



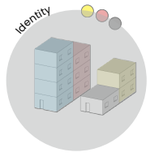
Include small, easily accessible outdoor spaces near homes for immediate recreational use. Complement these with larger parks and green areas for sports and leisure activities

Hierarchy



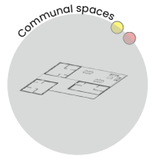
Include a hierarchy of sub-spaces to accommodate diverse activities and user groups.

Identity



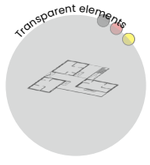
Use distinct architectural features and facades to create a sense of identity and pride for residents

Communal spaces



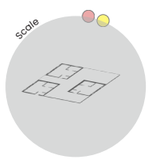
Design central, visible, and easily accessible communal areas with greenery, seating, and aesthetic appeal.

Transparent elements



Use transparent elements such as glass walls or open staircases to enhance sightlines and connectivity.

Scale



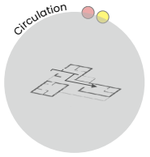
Ensure transitional spaces are appropriately scaled—neither too small to discourage use nor too large to isolate users.

Building level



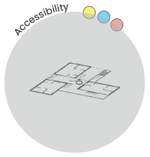


Circulation



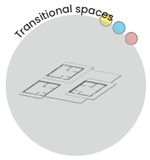
Create circulation paths that pass through or near communal areas to encourage spontaneous encounters.

Accessibility



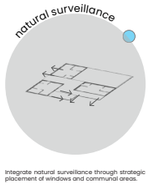
Ensure circulation spaces are accessible for individuals with limited mobility. Wheelchair, walker and other mobility aids.

Transitional spaces



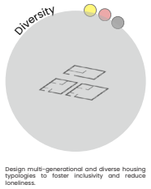
Incorporate semi-private zones such as front yards or balconies to encourage casual interactions.

natural surveillance



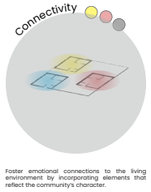
Integrate natural surveillance through strategic placement of windows and communal areas.

Diversity



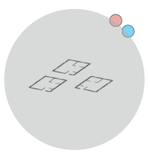
Design multi-generational and diverse housing typologies to foster inclusivity and reduce loneliness.

Connectivity



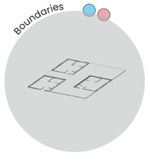
Foster emotional connections to the living environment by incorporating elements that reflect the community's character.

Safety



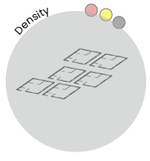
Provide shared spaces for interaction while ensuring residents have private areas to retreat.

Boundaries



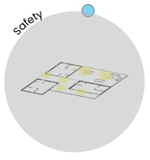
Design clear boundaries between private and communal areas to maintain comfort and autonomy.

Density



Consider the social implications of housing density, balancing the benefits of community interaction with the potential drawbacks of overcrowding.

Safety



Prioritize safety through well-lit and open designs that discourage the formation of unused or unsafe zones.

Height



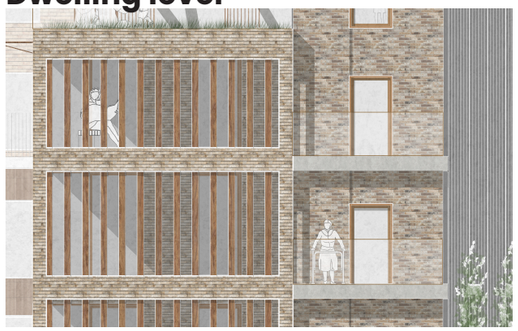
No higher than 4 stories.

Lighting



Design clear, well-lit routes with good visibility to enhance safety and encourage the use of shared spaces.

Dwelling level



Seperate funtional areas



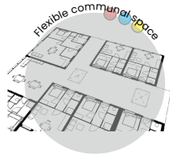
Ensure even small apartments have distinct spaces for sleeping, living, and dining to allow residents to regulate social interactions.

Personification



Allow residents to personalise both their private and shared spaces, fostering a sense of ownership and belonging.

Flexible communal space



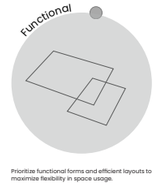
Design shared areas that encourage interaction, such as lounges, community kitchens, or gardens, while maintaining privacy.

Natural light



Ample Natural Light: Include large windows and balconies to provide access to natural light and visual connections with the outside world.

Functional



Prioritize functional forms and efficient layouts to maximize flexibility in space usage.

Separate funtional areas

Ensure even small apartments have distinct spaces for sleeping, living, and dining to allow residents to regulate social interactions.

Inclusivity

Create spaces that accommodate residents of all ages and abilities, promoting intergenerational interaction and inclusivity.

Functionality

Minimize unnecessary corners and irregular shapes to avoid creating dead spaces

Tarwewijk

Privacy - safety

Social interaction

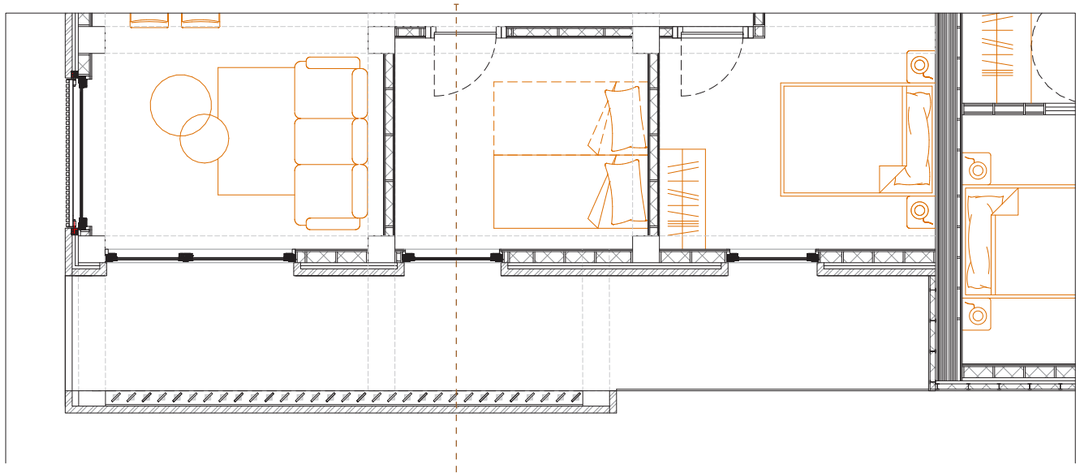
Belonging

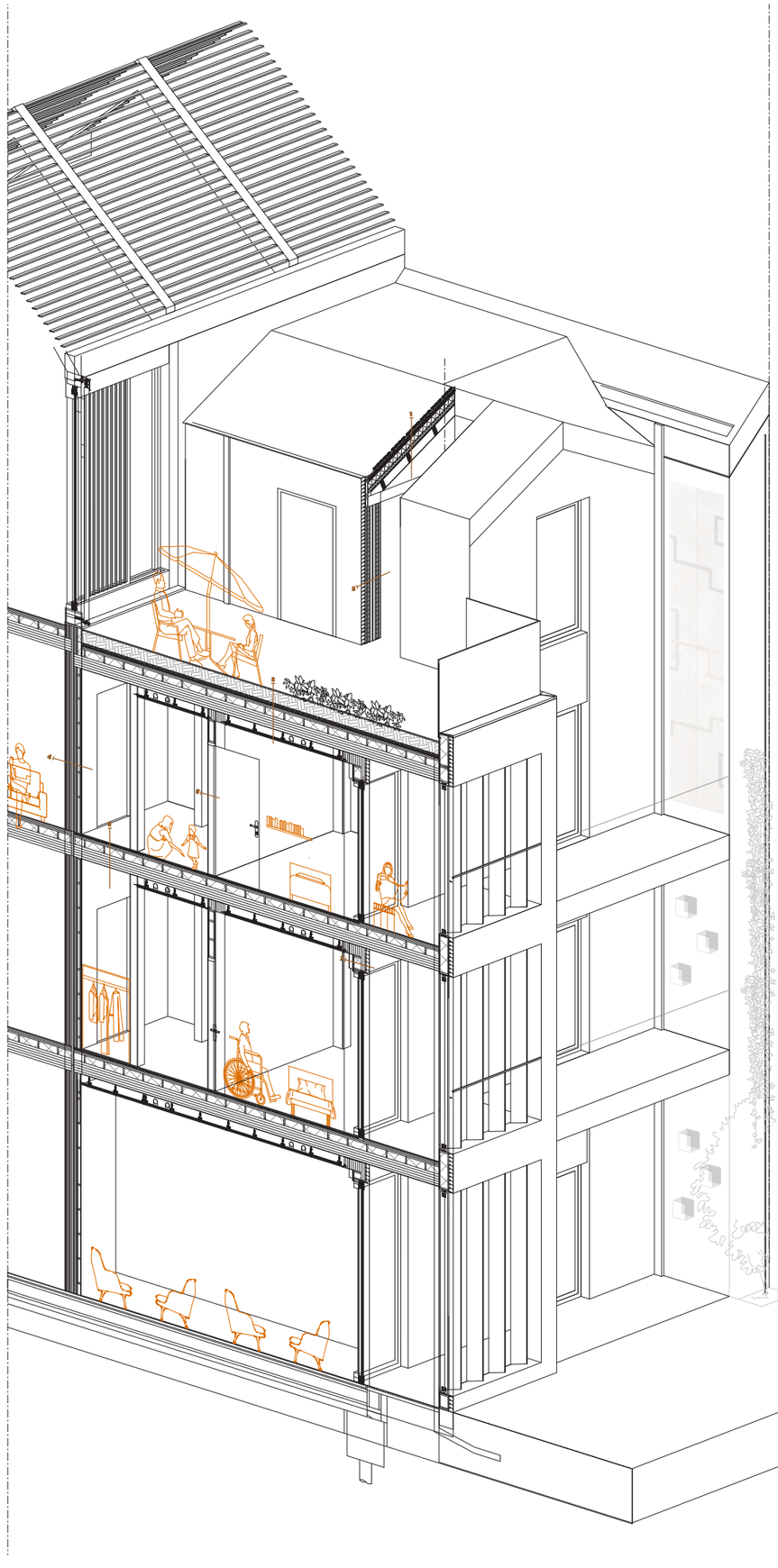

“Architecture alone cannot solve loneliness,
but it can invite connection, structure
belonging, and make space for care”



"The plans separate day and night zones. Hallways provide buffer zones. Living rooms face communal courtyards to encourage visual connection without intrusion."







1 — **400 mm**

Moss/sedum layer	20-30 mm
Substrate layer (extensive)	40 mm
Filter layer	1 mm
Water retention layer	25 mm
Water proof membrane	
Wooden roofconstruction	

Possibility to integrate solar panels instead of sedum

2 — **478 mm**

Clickbrick facade system	90 mm
Water proof membrane	
CLT panel	120 mm
Insulation	45 mm
Cavity	20 mm
Insulation	45 mm
CLT panel	120 mm
Studs	22 mm
Plasterboard	13 mm

3 — **641 mm**

Green roof vegitation	
Substrate	200 mm
Filter fabric	2 mm
Water retention reservoir	25 mm
Aeration layer	25 mm
Root layer	20 mm
Water proof membrane	2 mm
Wooden finish layer	22 mm
Thermal insulation	120 mm
Fireboard	25 mm
CLT roof structure	200 mm

4 — **380 mm**

CLT (with accoustic grooves)	120 mm
Insulation	45 mm
Cavity	20 mm
Insulation	45 mm
CLT	120 mm
Plasterboard	13 mm

5 — **190 mm**

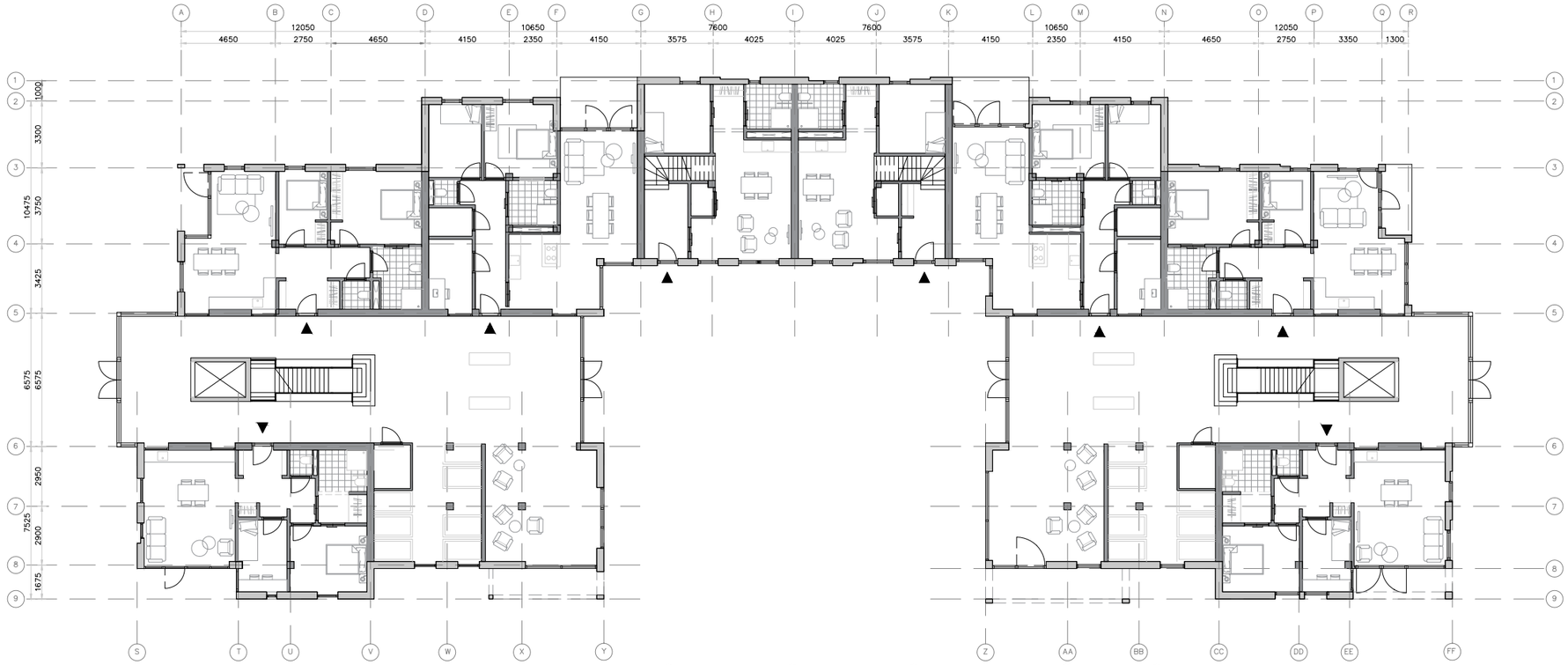
2x Plasterboard	13 mm
Timber frame	90 mm
Insulation	
2x Plasterboard	13 mm

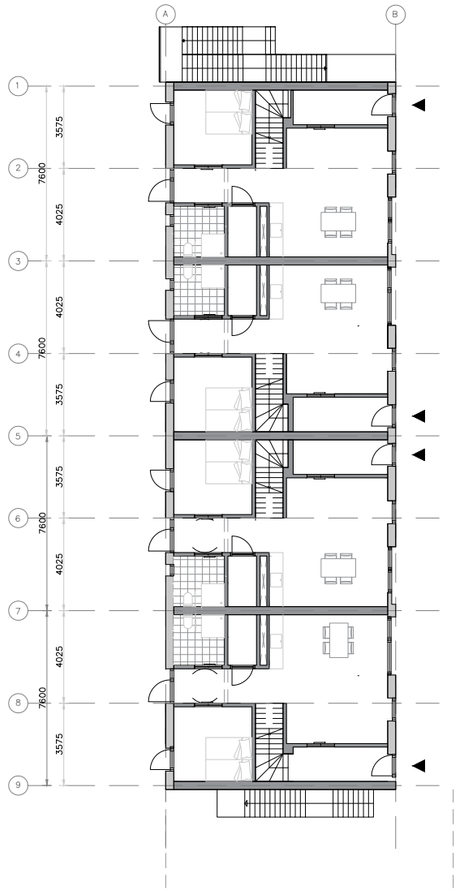
6 — **401 mm**

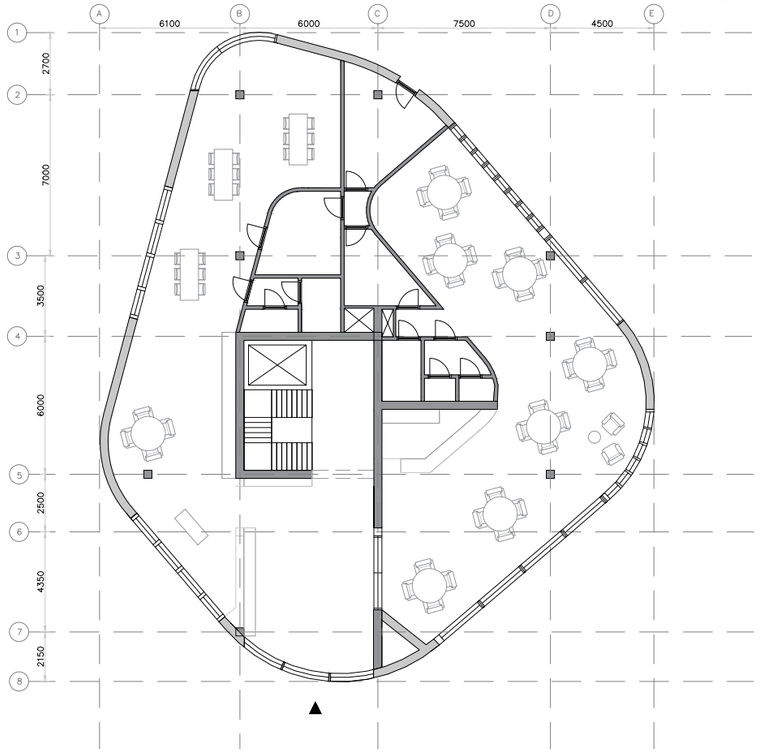
Wooden flooring	14 mm
Foam	3 mm
Floor heating system	
Fibreboard, floating	22 mm
Impact insulation	20 mm
Fibreboard	22 mm
Floor joists	95 mm
Insulation	95 mm
Sylodyn	25 mm
CLT slab	200 mm
Lowered ceiling for installations	170 mm

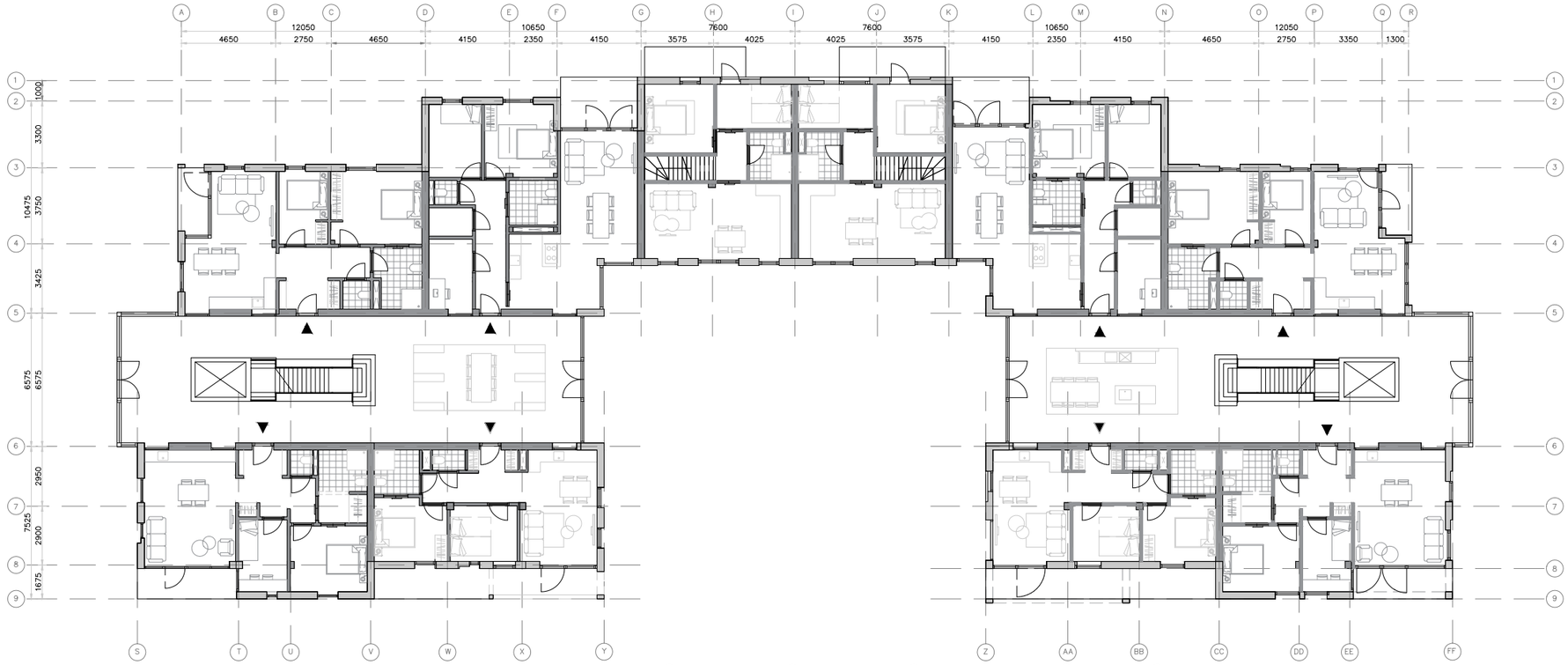
7 — **355 mm**

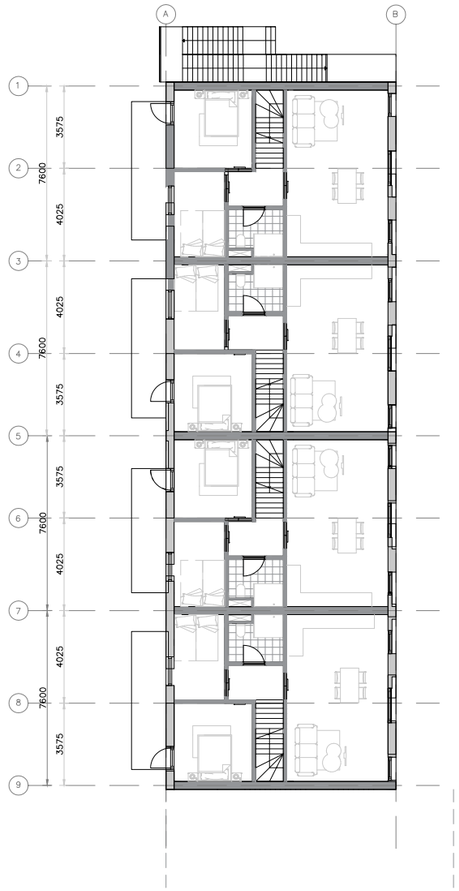
Clickbrick facade system	90 mm
Air layer	40 mm
Water proof membrane	
Insulation	40 mm
Wooden timber structure	145 mm
Insulation	145 mm
Wooden finish layer	18 mm
Plasterboard	12,5 mm

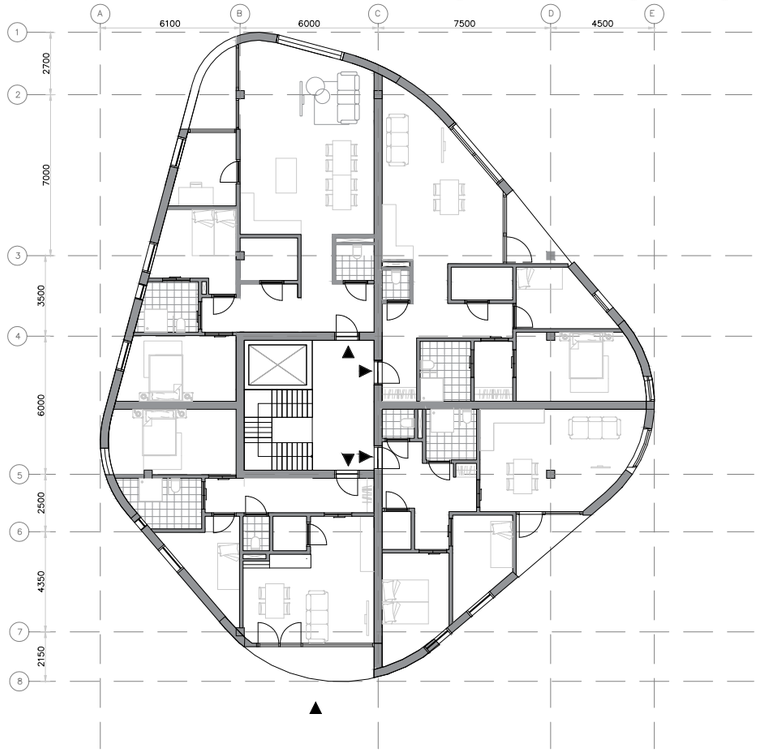

A B C D E F G H I J K L M N O P Q R
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12050 10650 7600 7600 10650 12050
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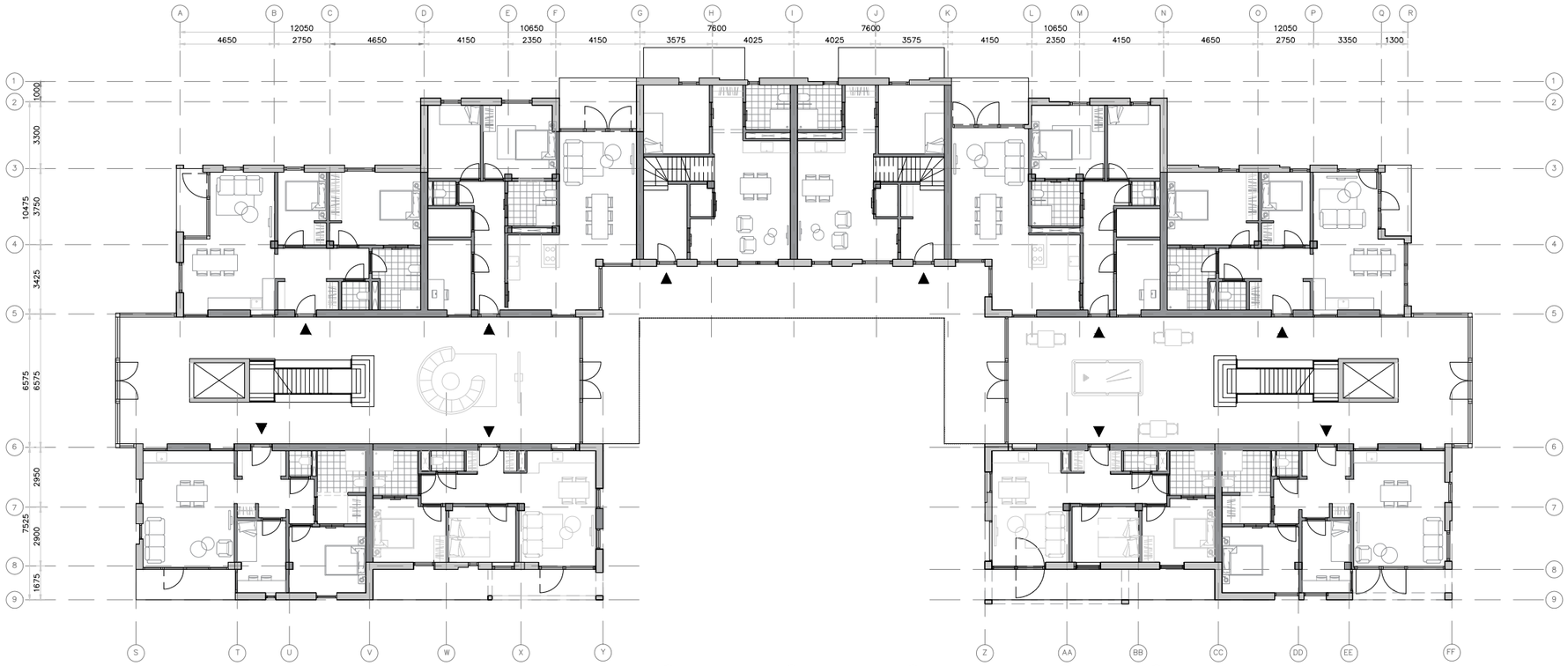

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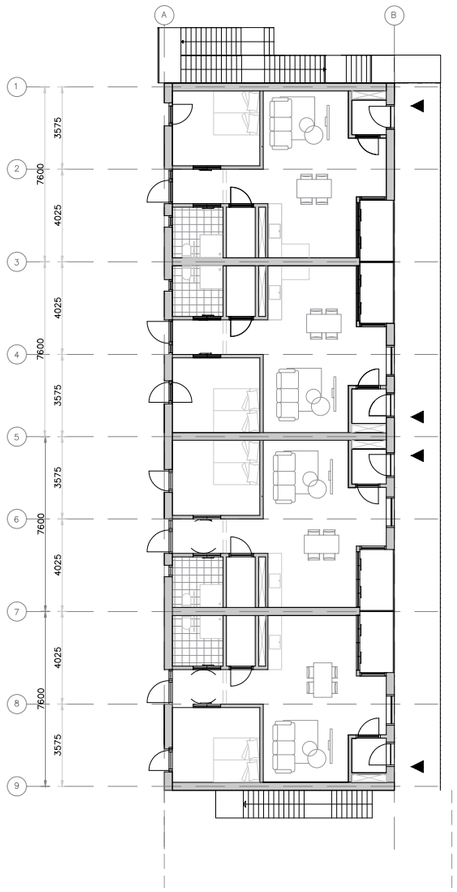

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1 2 3 4 5 6 7 8
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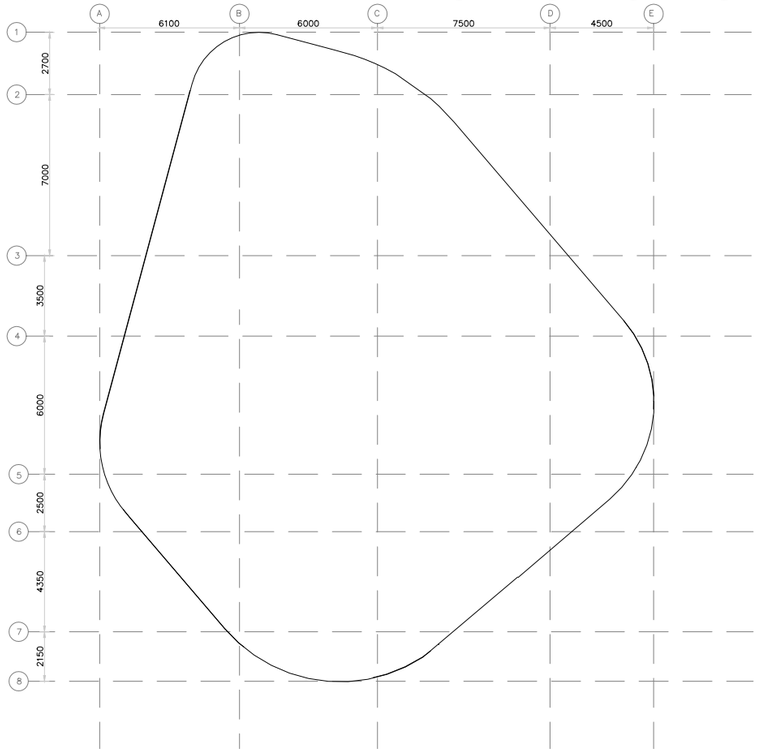

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12050 10650 7600 7600 10650 12050
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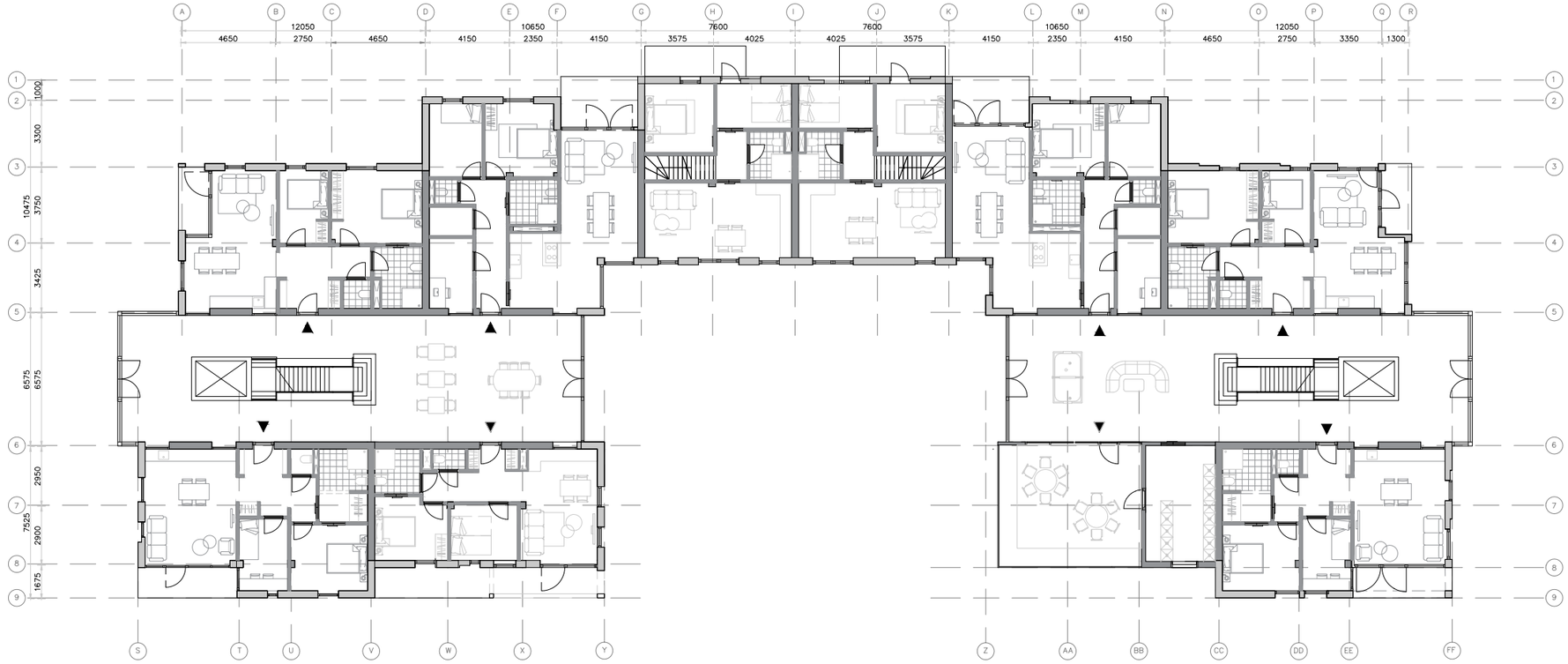

A B
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7600 7600 7600


A B C D E
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2700 7000 3500 6000 2500 4350 2150


A B C D E F G H I J K L M N O P Q R
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12050 10650 7600 7600 10650 12050
1 2 3 4 5 6 7 8 9
1000 3300 3750 3425 6575 6575 2950 2900 1675
10475 7525
S T U V W X Y Z AA BB CC DD EE FF


A B
1 2 3 4 5 6 7 8 9
3575 7600 4025 4025 7600 3575 3575 7600 4025 4025 7600 3575


A B C D E
6100 6000 7500 4500
1 2 3 4 5 6 7 8
2700 7000 3500 6000 2500 4350 2150


A B C D E F G H I J K L M N O P Q R
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1 2 3 4 5 6 7 8 9
1000 3300 10475 3750 3425 6575 6575 2950 7525 2900 1675
S T U V W X Y
Z AA BB CC DD EE FF



