A NEW KIND OF NEIGHBOR

building a multigenerational housing community to improve social cohesion

Desiré Verlaan
5944694

P5 Presentation
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PROBLEM

Reality

Growth
and Aging

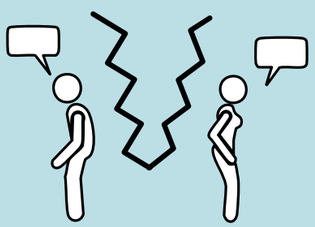
Individu
above
collective

49,3%
1-person

Result

Weak
social
bond

Feeling
lonely



No contact

DESIGN SITE – TARWEWIJK ROTTERDAM

N

RESEARCH

QUESTIONS

Can a multigenerational housing community concept promote social cohesion, in for example the Tarwewijk?

1. What **architectural features and shared spaces** encourage social interaction between different generations in multigenerational housing?

2. How can a housing community **balance privacy with communal spaces**, and how does this affect residents' well-being?

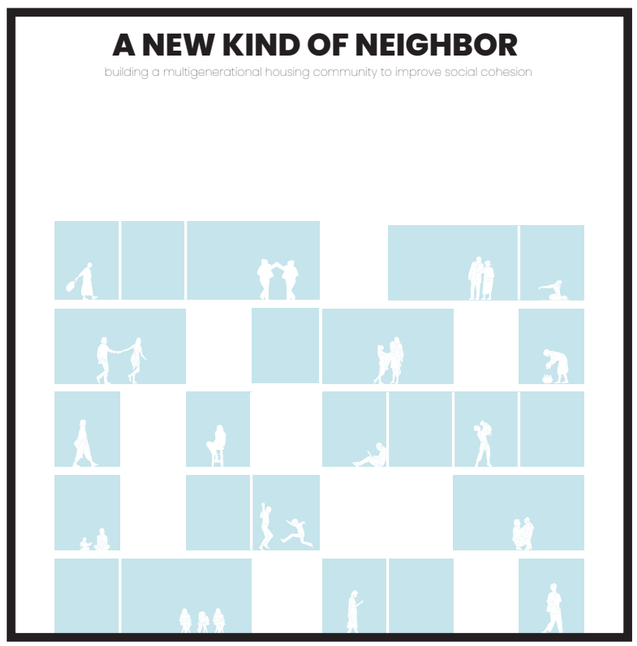
3. What **housing types and amenities** can meet the diverse social needs of multigenerational residents while fostering understanding between generations?

4. What **design insights from projects focused on community building** can be used to improve social cohesion in future housing developments?

METHODS

Fieldwork

Literature Research



Case Studies

	Grønne Eng Cohousing (AP.1)	Groene Mient (AP.2)	De Warren (AP.3)	OurDomain (AP.4)	The House of Generations (AP.5)
Amount of housing units	75	33	36	1.559	304
Outdoor spaces	Enclosed garden, private and communal garden, rooftop terraces	Enclosed garden, private gardens, vegetable gardens	Rooftop garden, greenhouse	Public park, balconies face park, rooftop gardens	Outdoor green spaces, roof terraces
Indoor communal spaces	Shared office, fitness room, youth space, rehearsal room		Children's playroom, co-working places, music studio, multifunctional room, several living rooms and kitchens, meditation room	Cinema room, lounge, game room, music room, study/ work places	Circulation system with diverse smaller collective spaces like living room, kitchen
Shared facilities	Guest rooms, laundry, bicycle workshop	Pavilion in garden for gatherings	Auditorium, bike parking, guest room, laundry, maker space	Bike and car parking, maker space, laundry, (paid) fitness room	Daycare centre, cafe, theatre
Housing types	Townhouses and apartments	Townhomes	Compact apartments with varied sizes (studio to family)	Apartments of varying sizes (studio, 1-2 bedroom)	Nursing homes, elderly homes, youth homes, family homes, homes for physically impaired
Access system	Entrance at street level and gallery access	Entrance at street level	Central staircase, encourages interaction	One large central staircase, with additional small staircases and connected to arrow corridors	Uniform staircases, hallways leading through communal spaces
Focus on multigenerational			Promote interaction among generations	Providing different housing types	Designed to cater to all generations

Neighborhood Mapping

Site Analysis

DESIGN GUIDELINES

Social connectivity

Privacy

Livability

Tarwewijk context

NEIGHBORHOOD SCALE

Frequent interaction
Shared responsibility
Divers public space
Clustering homes
Activate streetscapes
Accessible greenery
Clear boundaries
Benches
Neighborhood amenities
Inclusive routes
Shared courtyards
Community network

BUILDING SCALE

Intergenerational communal spaces
Flexible layout
Gathering areas
Low-rise for interaction
Homes around shared spaces
Transition zone for privacy
Slow pace routing
Identifiable façades
Visual connections
Community board
Central access system
Collective entrance

HOUSING SCALE

Promote belonging
Connection with nature
Aging in place
Private outdoor spaces
Personal control
Various sizes
Optimize natural light
Furniture for zoning
Adjustable boundaries
Storage space
Lively front door area
Intimacy variations

GOAL

Reality

Growth and Aging

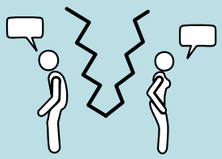
Individu above collective

49,3% 1-person

Result

Weak social bond

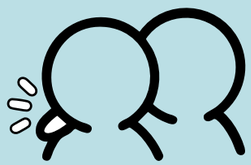
Feeling lonely



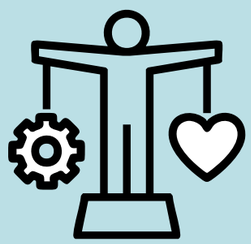
No contact

Solution

Connecting generations



Mutual support



Balance privacy and communal

TARGET GROUPS

SINGLES

ELDERLY

COUPLES

FAMILY

PROGRAM OF REQUIREMENTS

PUBLIC

Café
120-150 m²

Hair dresser
50-65 m²

Shops
70-150 m²

Paid
Free

Library
200-300 m²

Music studio
100-120 m²

Work space
60-70 m²

Hobby / maker space
40-55 m²

Vegetable Garden
300-400 m²

Existing park

Dance studio
120-150 m²

COMMUNAL

Indoor space 200-400 m²

Work space
40-50 m²

Laundry room
35-50 m²

Flexible space
50-60 m²

Living area
40-60 m²

Dining / kitchen
40-60 m²

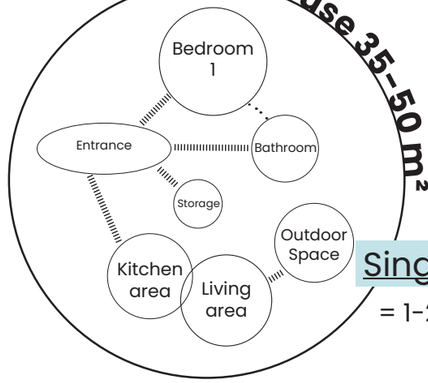
Outdoor space 550-700 m²

Courtyard with seating
300-400 m²

Roof terrace
250-300 m²

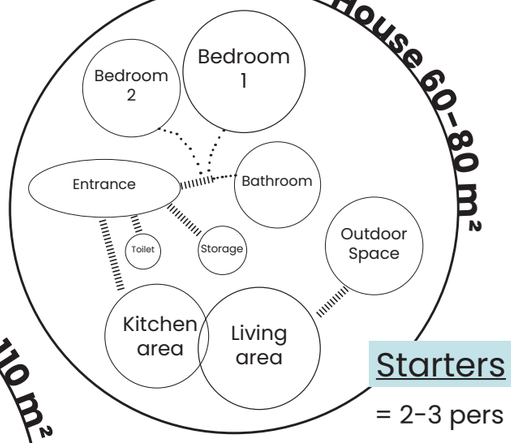
PRIVATE

House 35-50 m²



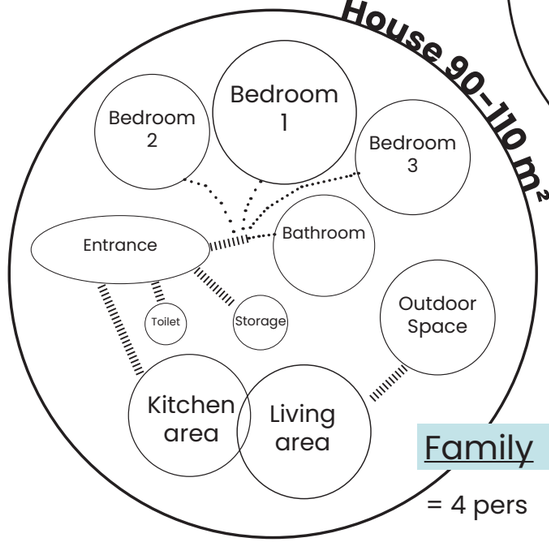
Single / Elderly
= 1-2 pers

House 60-80 m²



Starters
= 2-3 pers

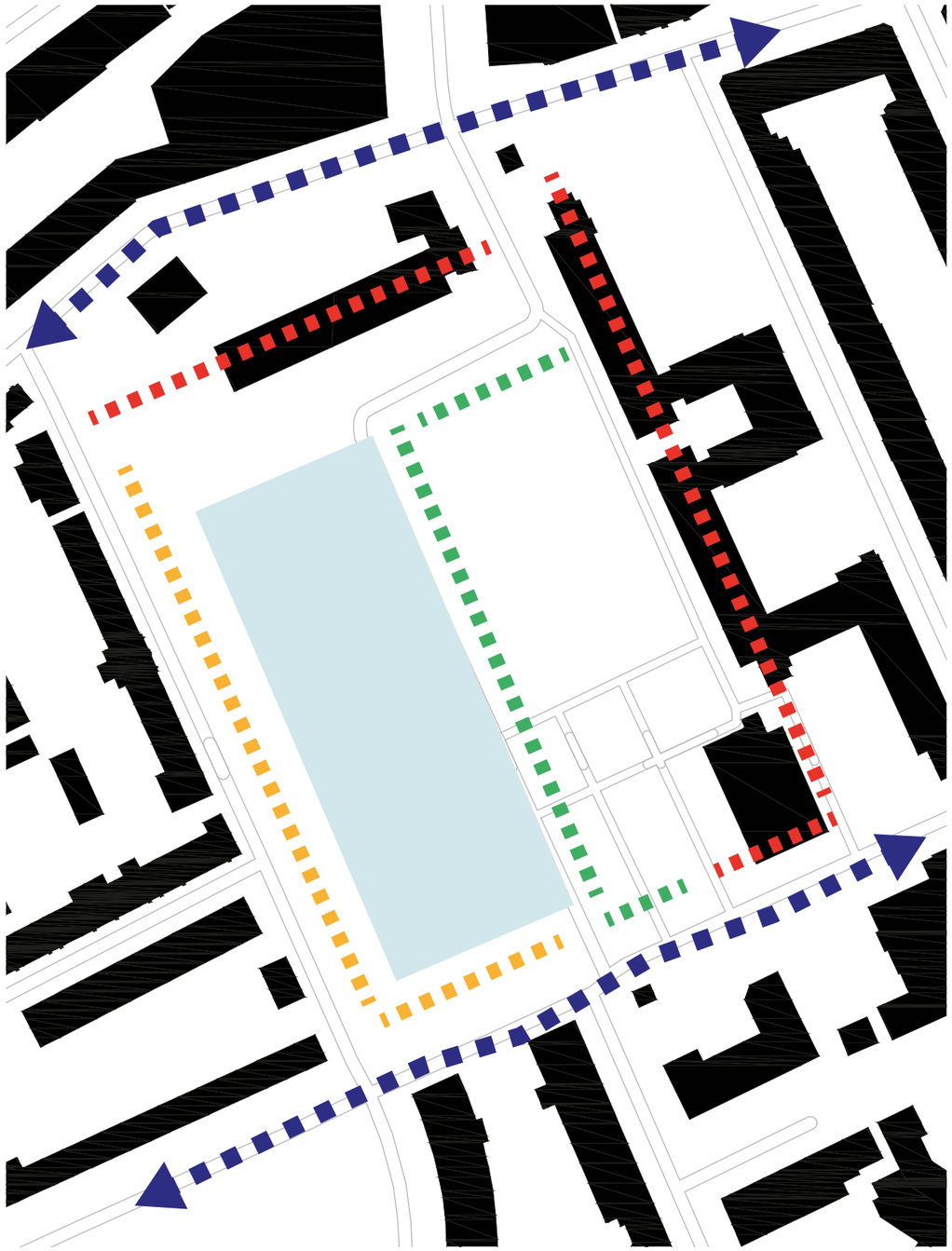
House 90-110 m²



Family
= 4 pers

VOLUME DEVELOPMENT

IDENTIFIED BORDERS



Buildings Area

Hard Border - Streets

Hard Border - Buildings

Hard Border - Missing

Soft Border - Greenery

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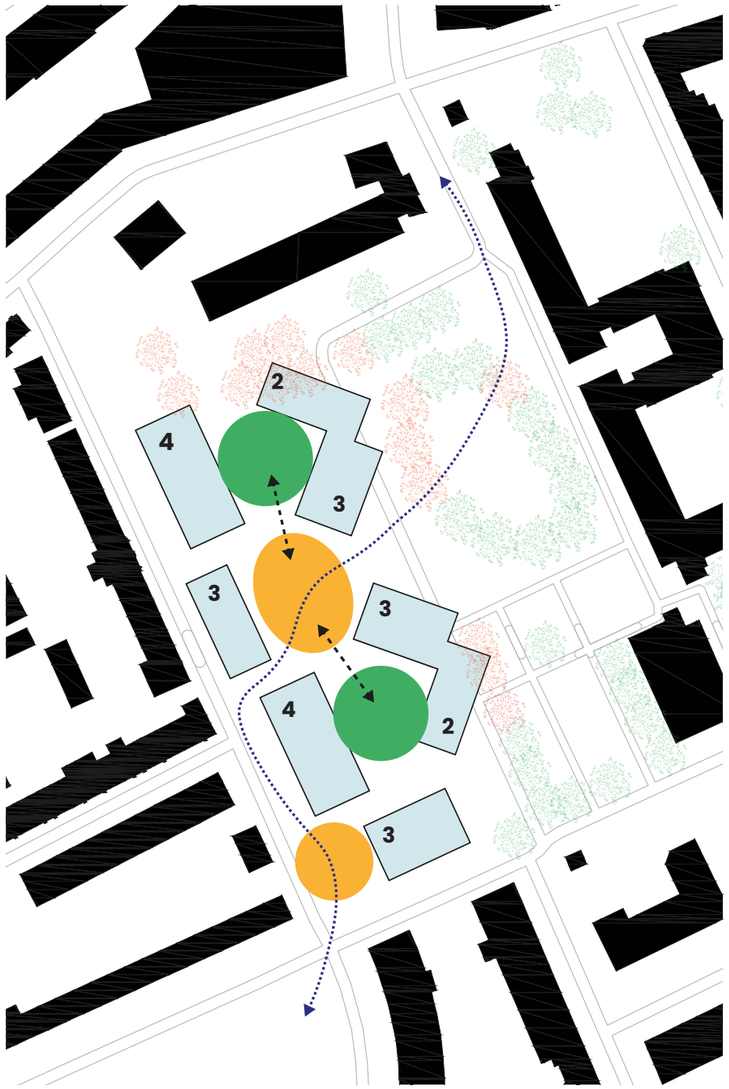
MASS STUDY

1



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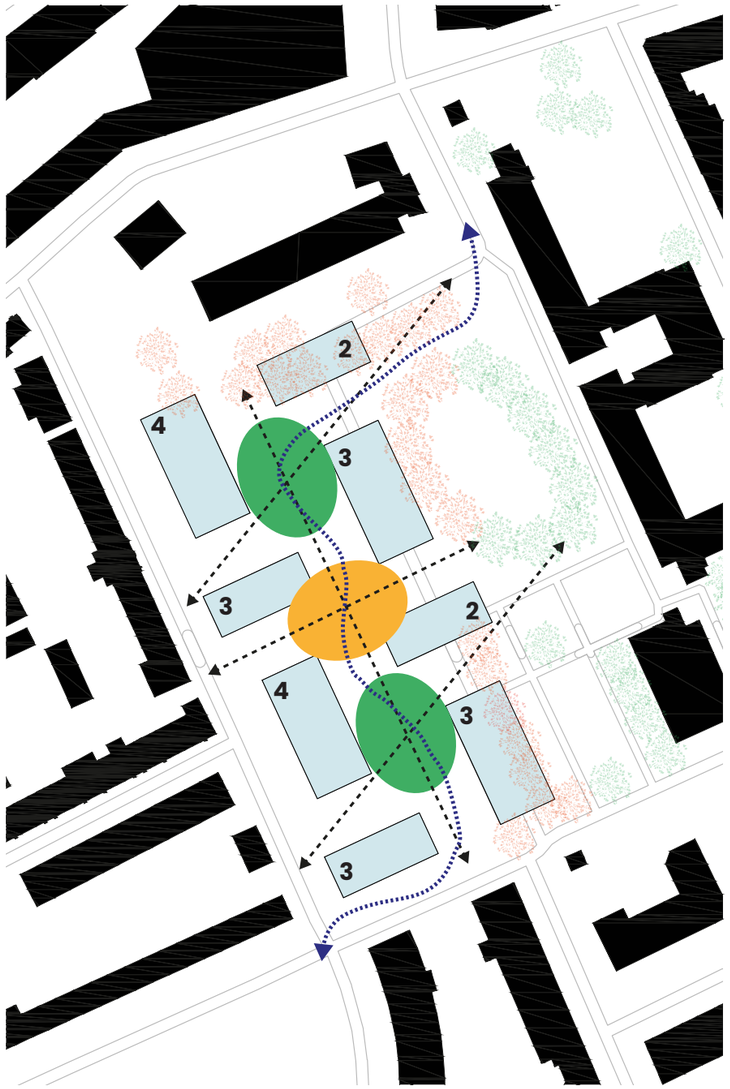

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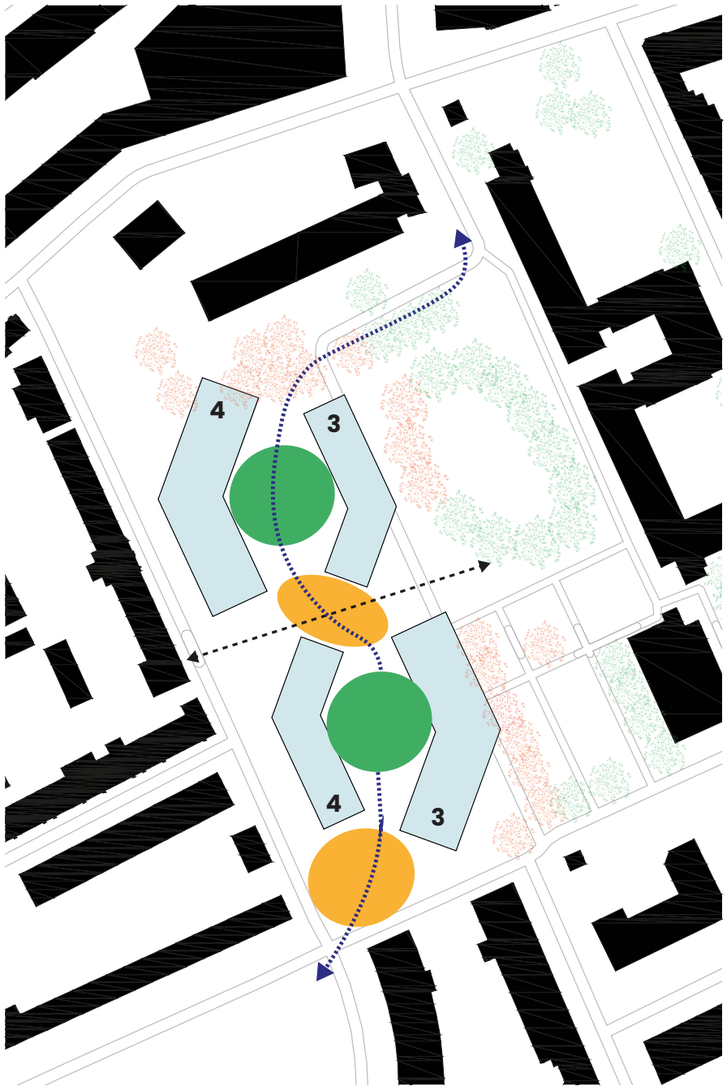

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New buildings

2 / 3 / 4 Building levels

Busy area - Square

Calm area - Garden

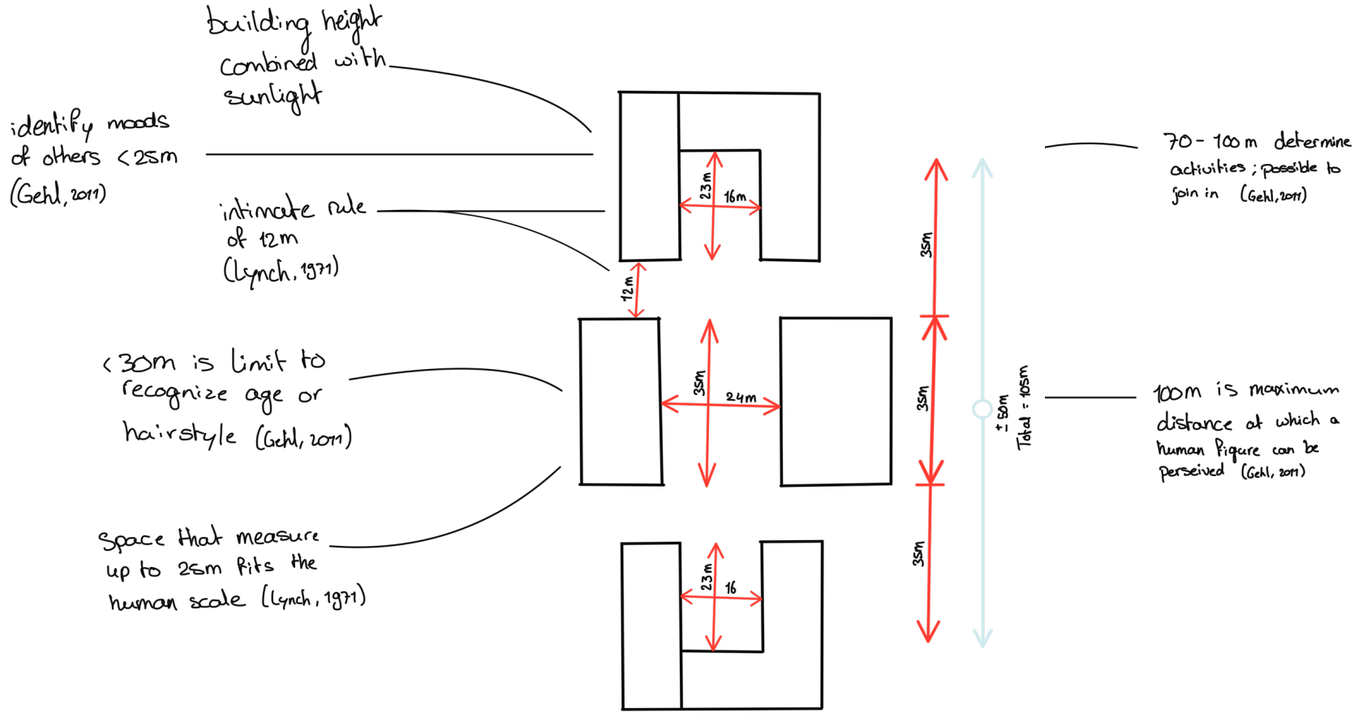
Lively route

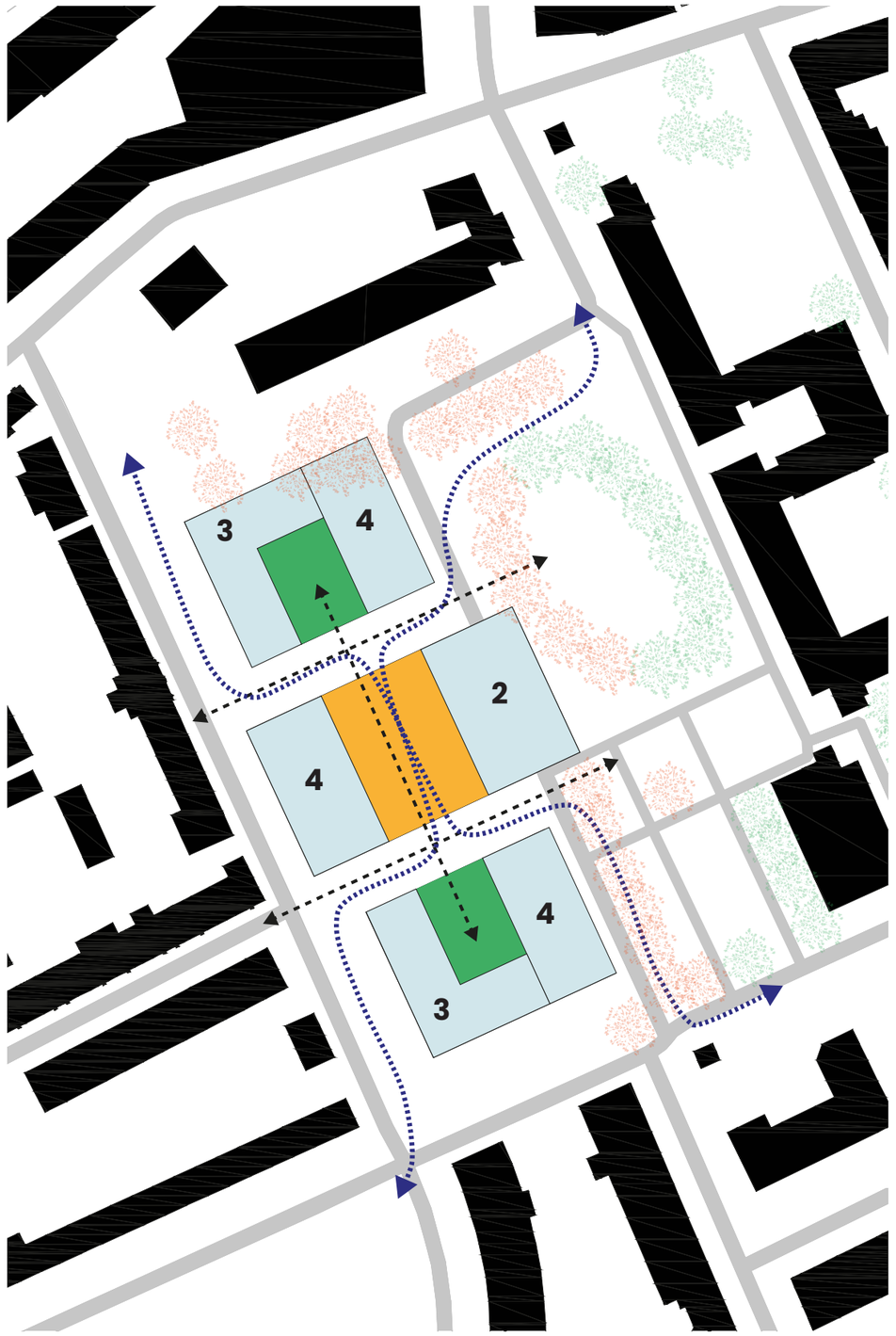
Visual connection

Greenery (preserve)

Greenery (remove)

FINAL MASSING





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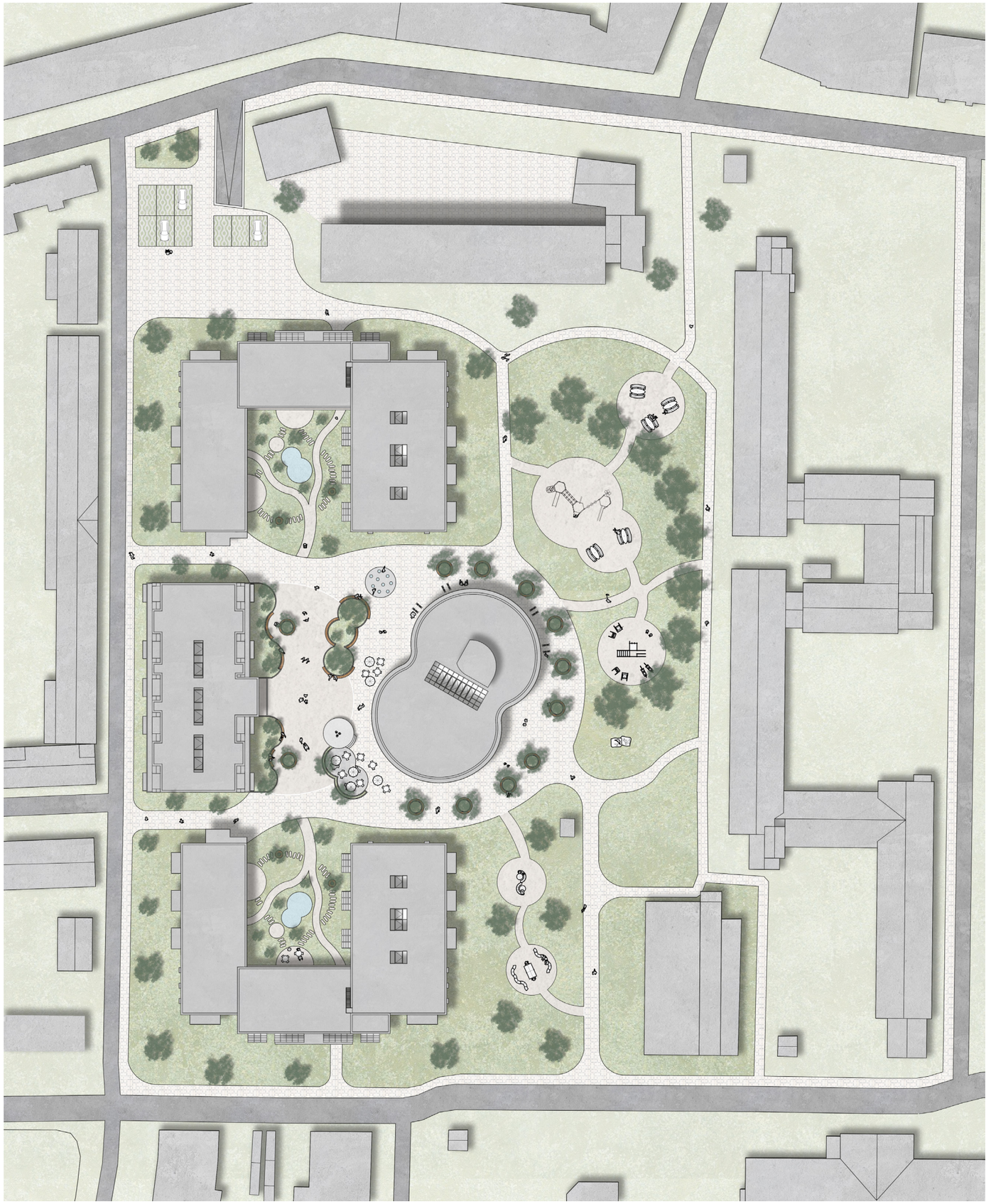


MASTERPLAN

SUN PATH

Mar

10:00

13:00

16:00

July

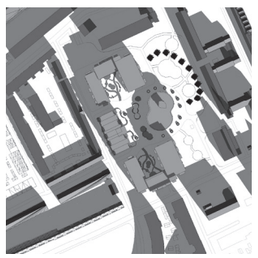
10:00

13:00

16:00

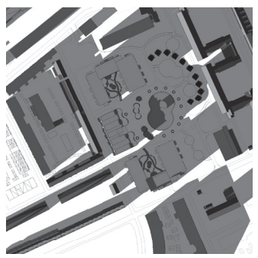
Oct

10:00



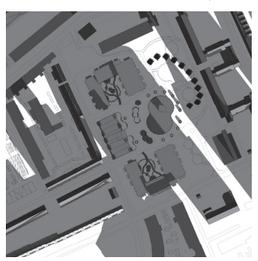
13:00

16:00



Dec

10:00



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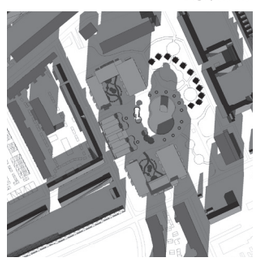

16:00

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Optimize natural light

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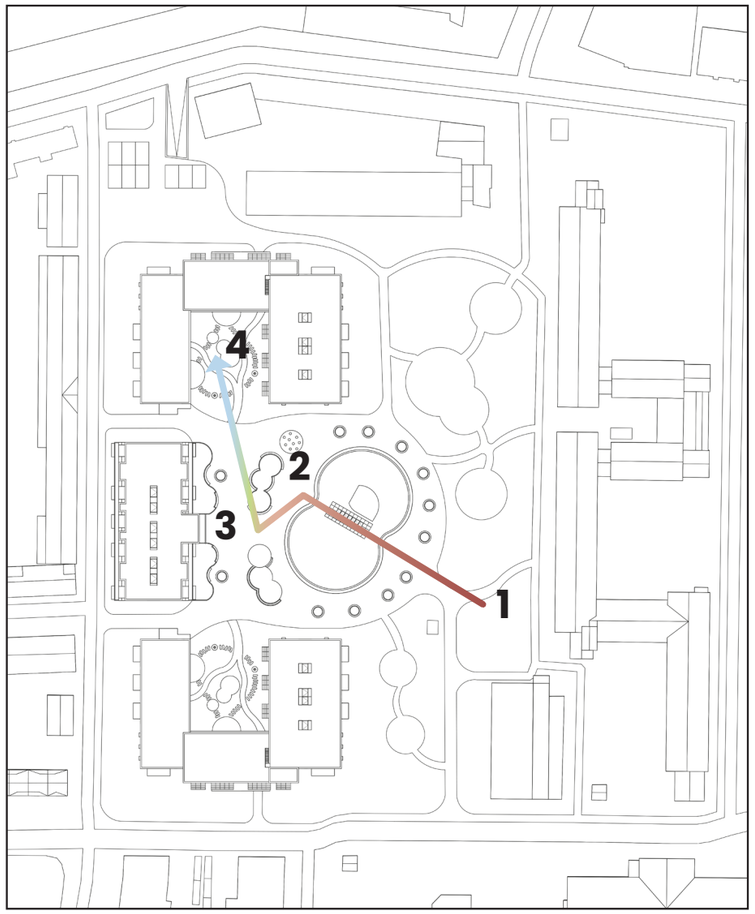
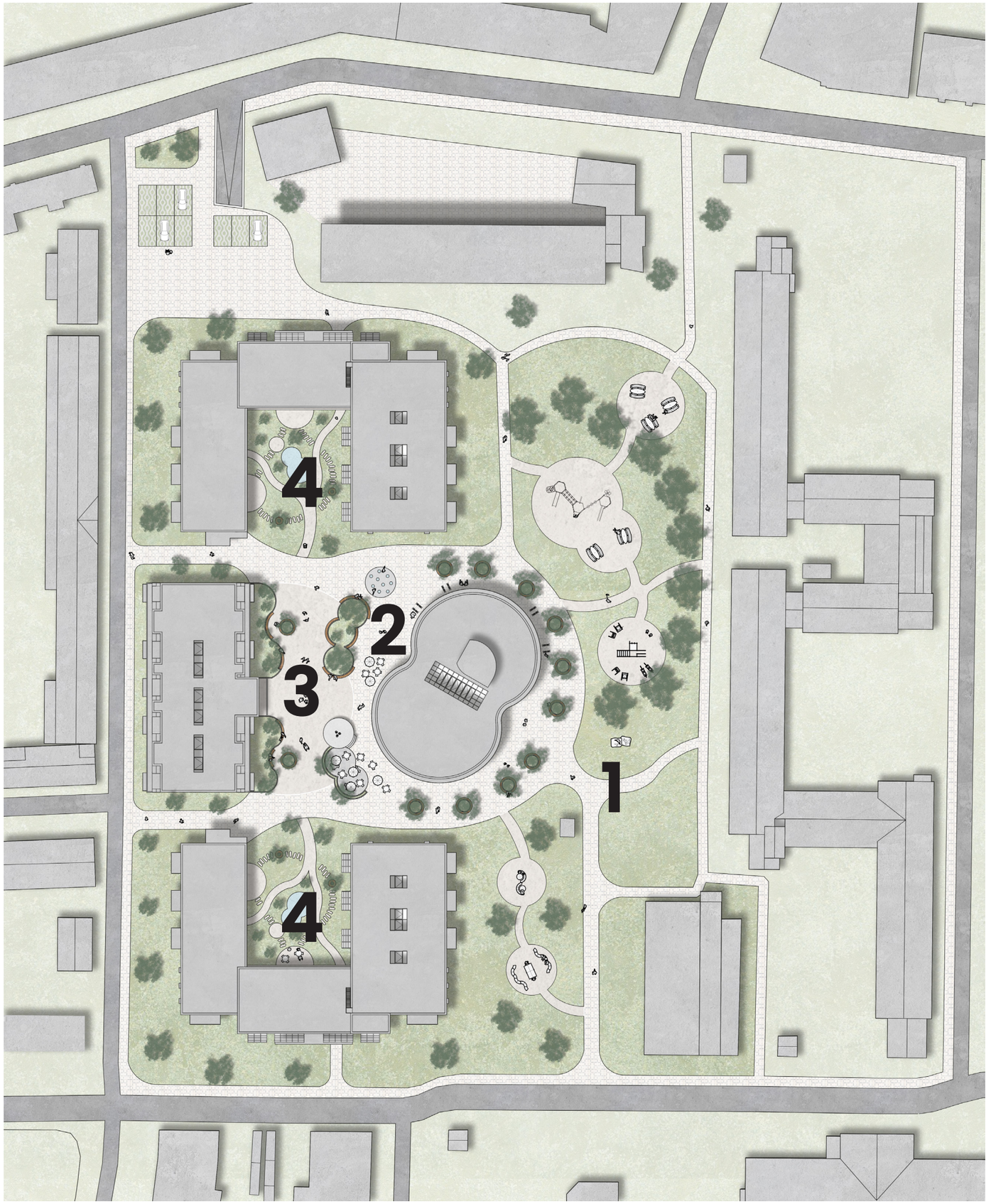
ATMOSPHERES

lively to calm transition



lively — calm

1. Public park
2. Square - public
3. Square - calm
4. Semi-private garden



Divers public space

Accessible greenery

Shared courtyards

1- PUBLIC PARK

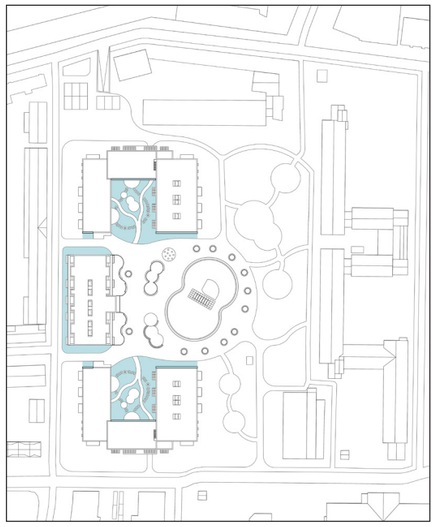
2 - SQUARE - PUBLIC

3 - SQUARE - CALM

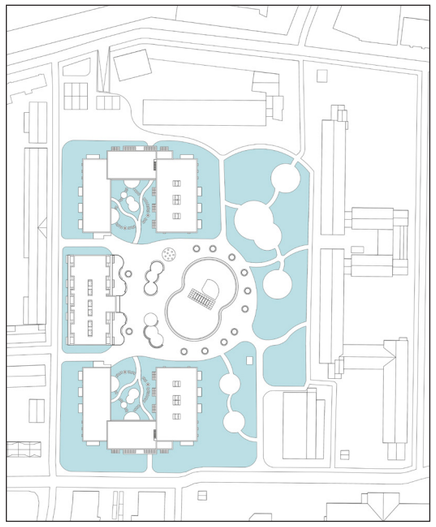
4 - SEMI-PRIVATE GARDEN

ECOSYSTEM

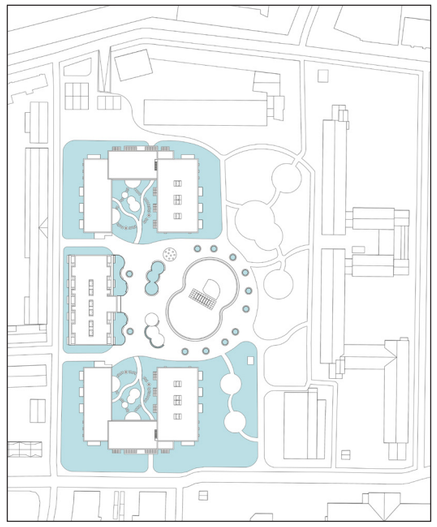
birds



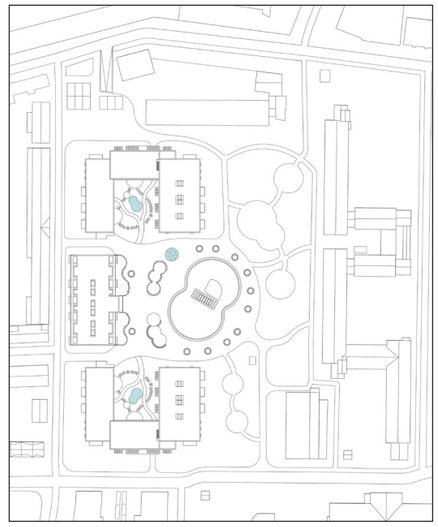
insects



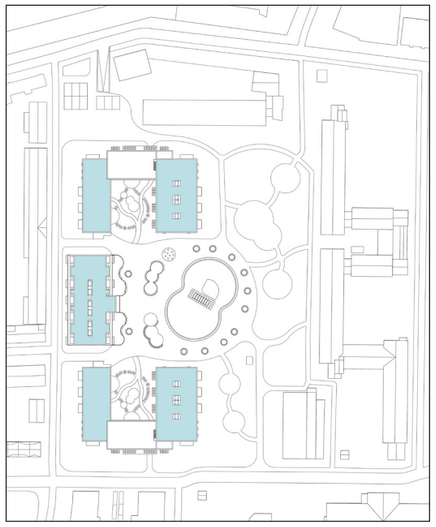
added greenery

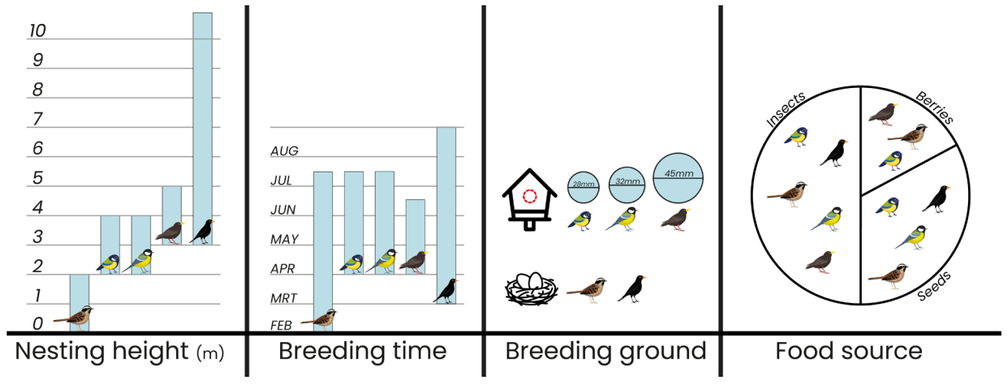


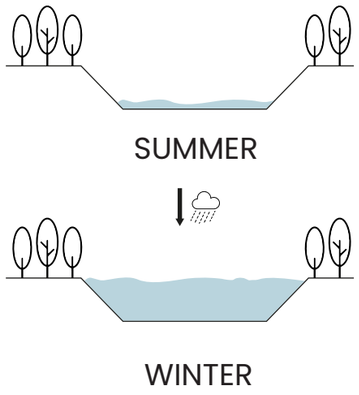
water integration

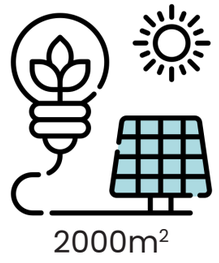


service roofs



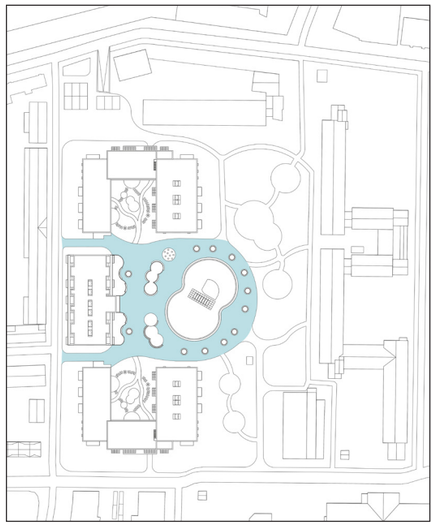




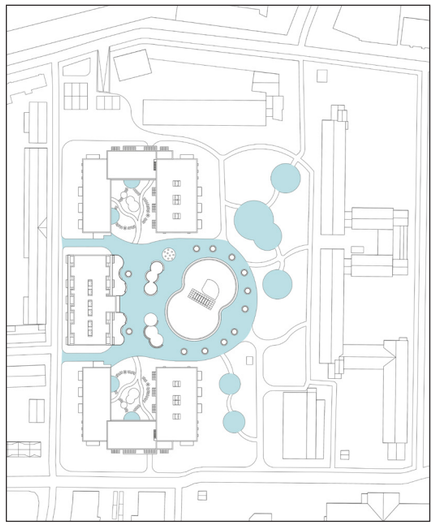


SOCIAL INTERACTION

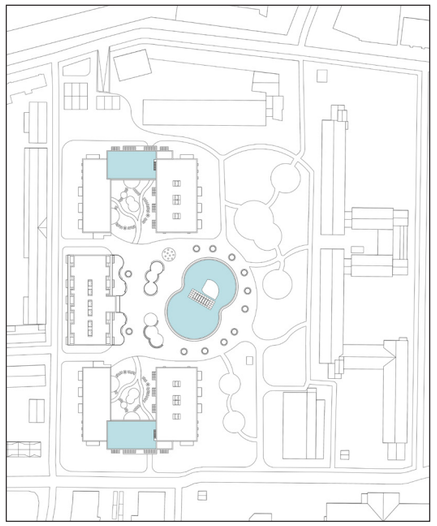
central square

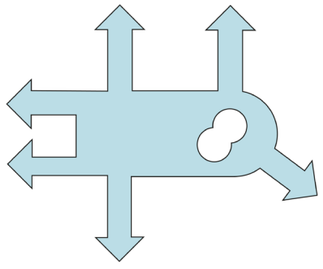


gathering space

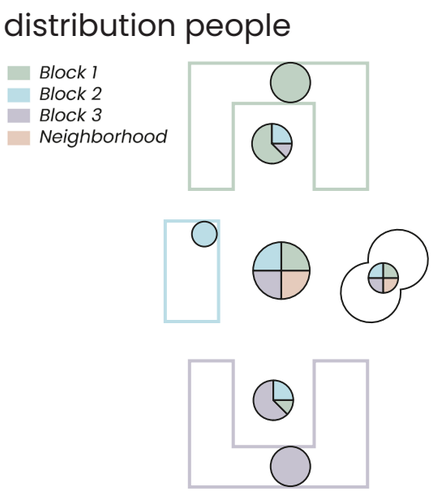


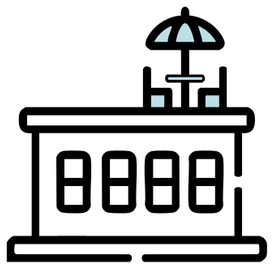
roof terraces





distribution people





ACCESSIBILITY

Cars

	Norm*	Amount of dwellings	Amount of parking
<40m²	0,1	22	2,2
40-65m²	0,5	59	29,5
65-85m²	0,8	32	25,6
85-120m²	1	17	17
			74,3

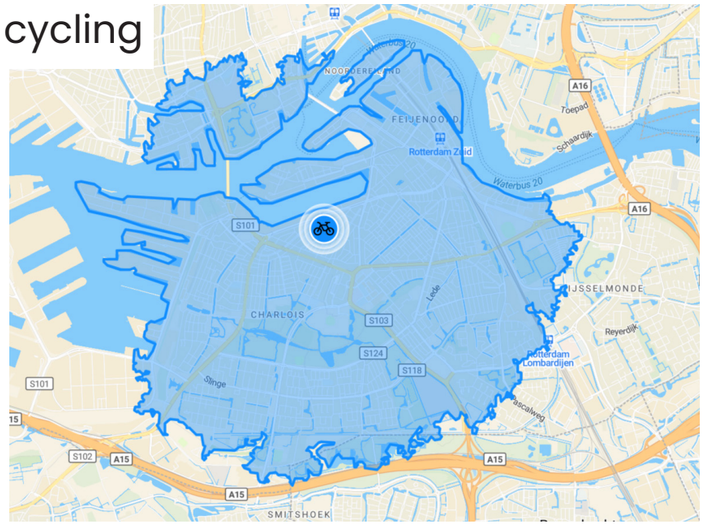
Bicycle

	Norm*	Amount of dwellings	Amount of parking
<40m²	2	22	44
40-65m²	2	59	118
65-85m²	3	32	96
85-120m²	3	17	51
			309

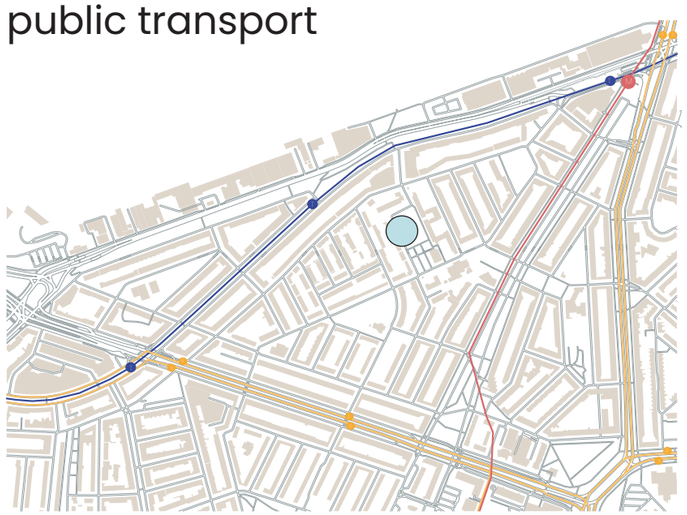
15-min city

walking

cycling



public transport



*(Overheid.nl, 2022)

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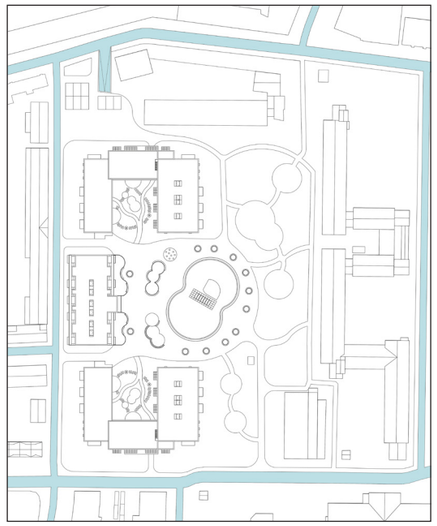
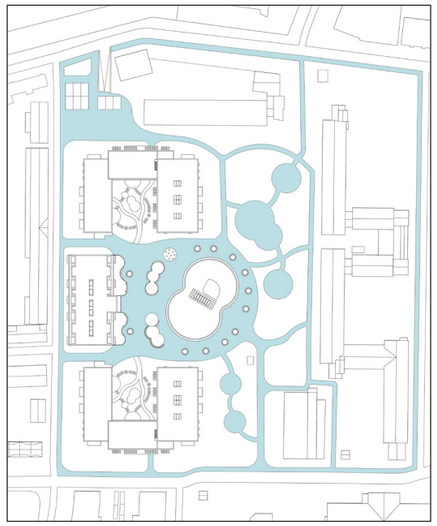
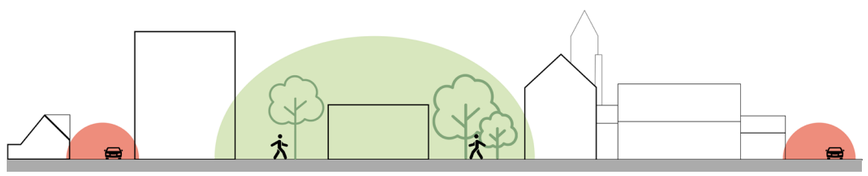
PARKING

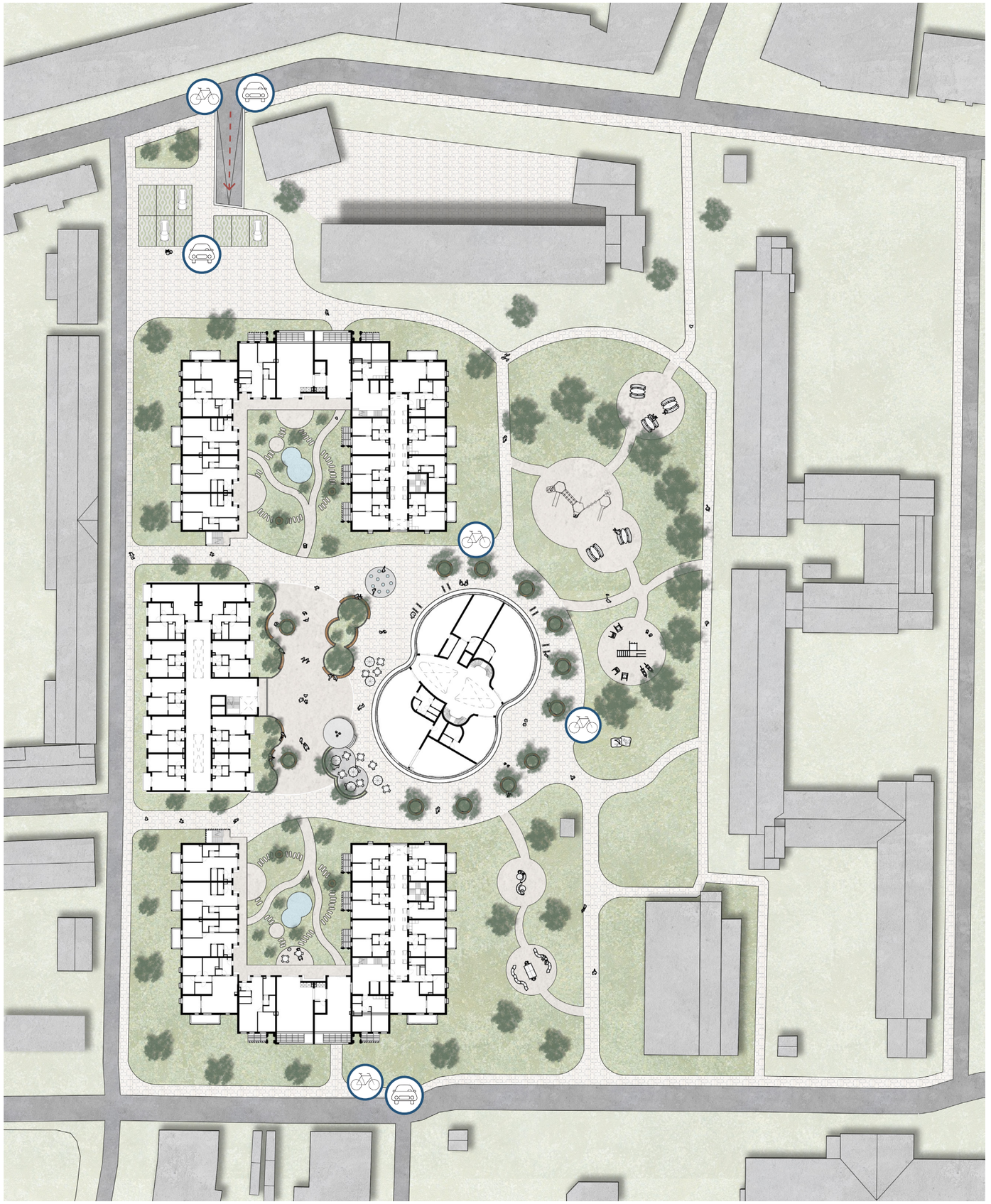
fast traffic



slow traffic







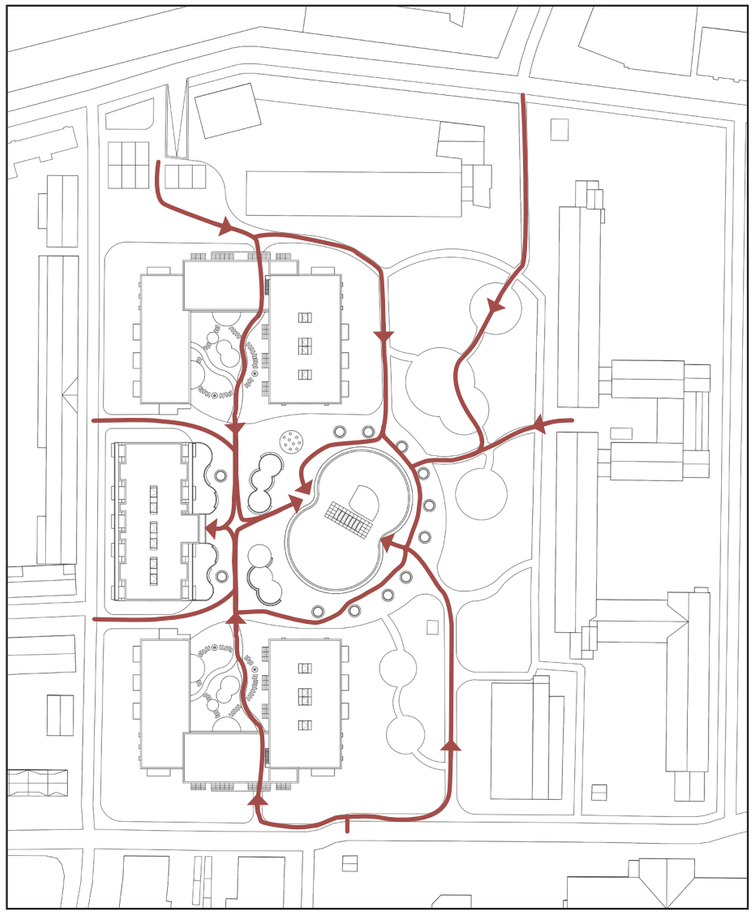
Frequent interaction

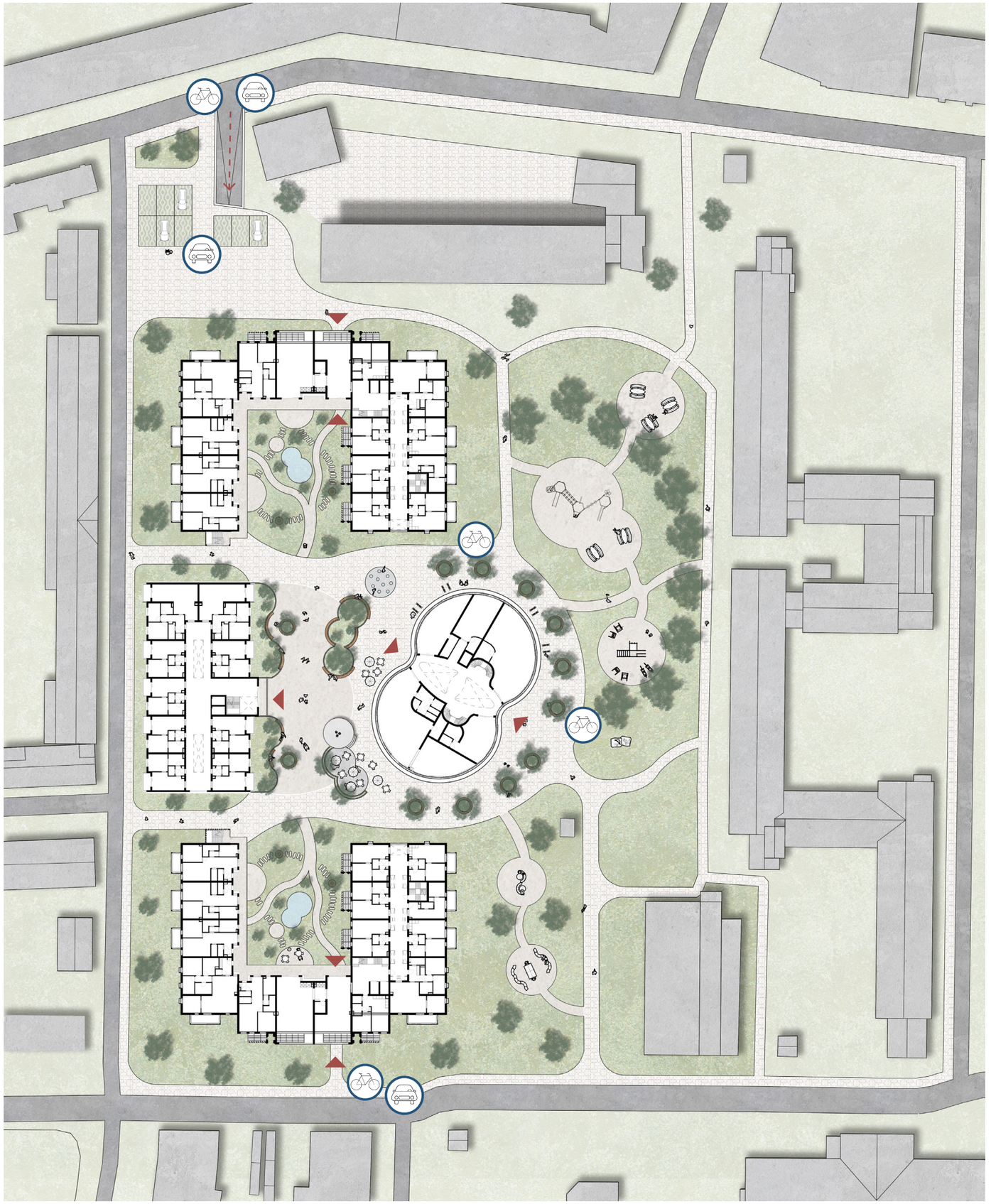
Slow pace routing

N

ENTRANCES

walking routes





BUILDING HEIGHTS

Low-rise for interaction

DESIGN

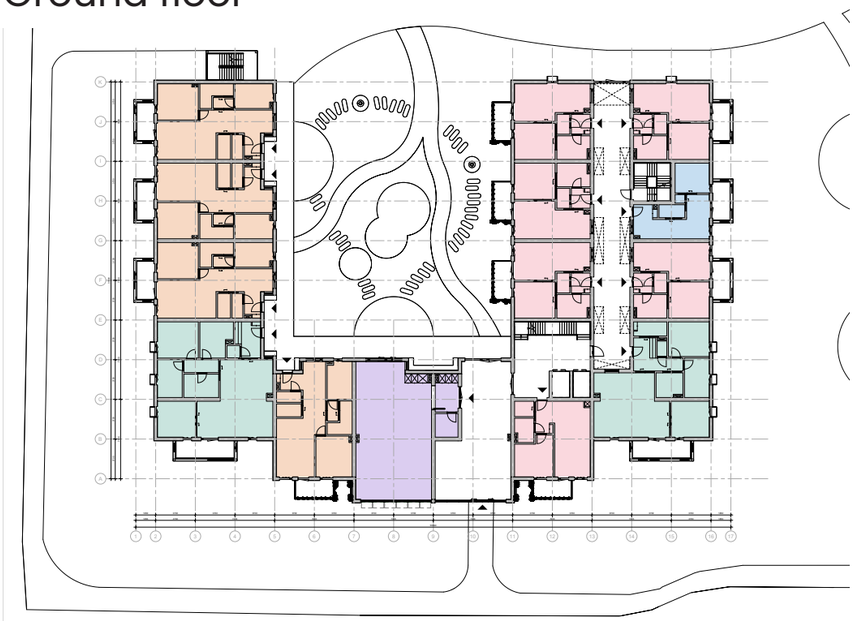
“STARTING BY SEEING EACH OTHER”

RESIDENTIAL BUILDING

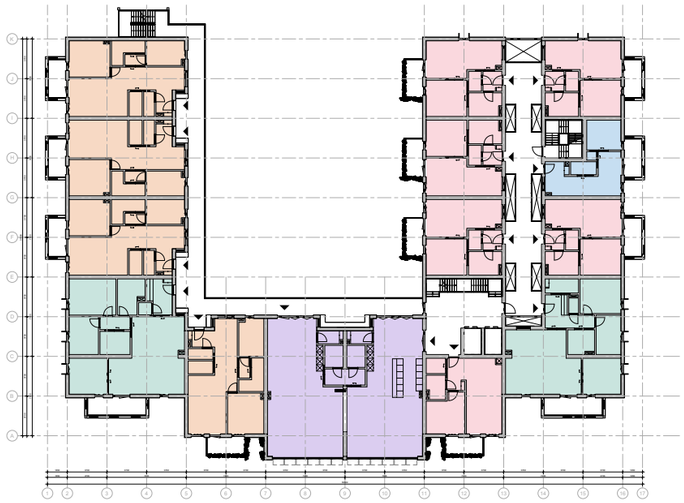
FLOORPLANS
1:200

Type 1 35m²
Type 2 50m²
Type 3 73m²
Type 4 100m²
Communal space
Access system

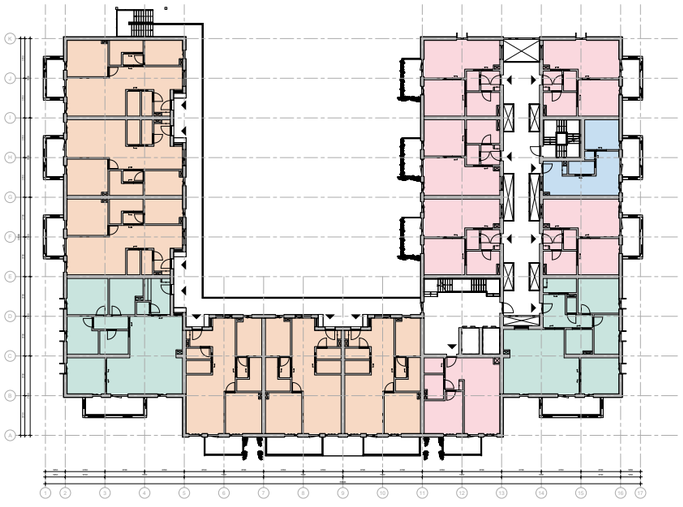
Ground floor



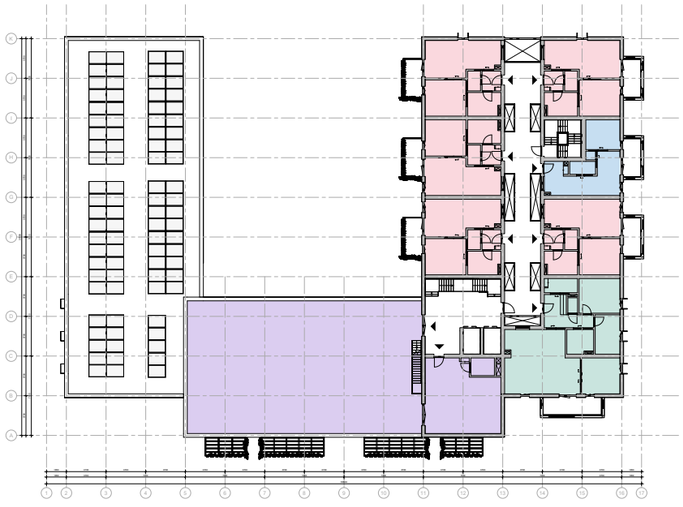
First floor



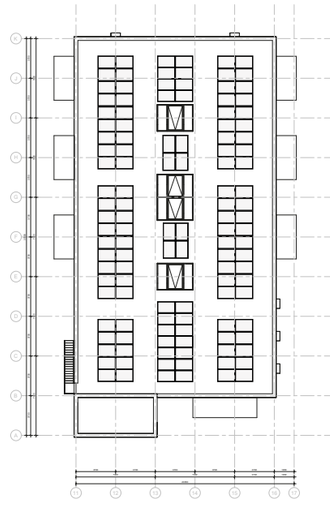
Second floor



Third floor



Roof



Shared courtyards

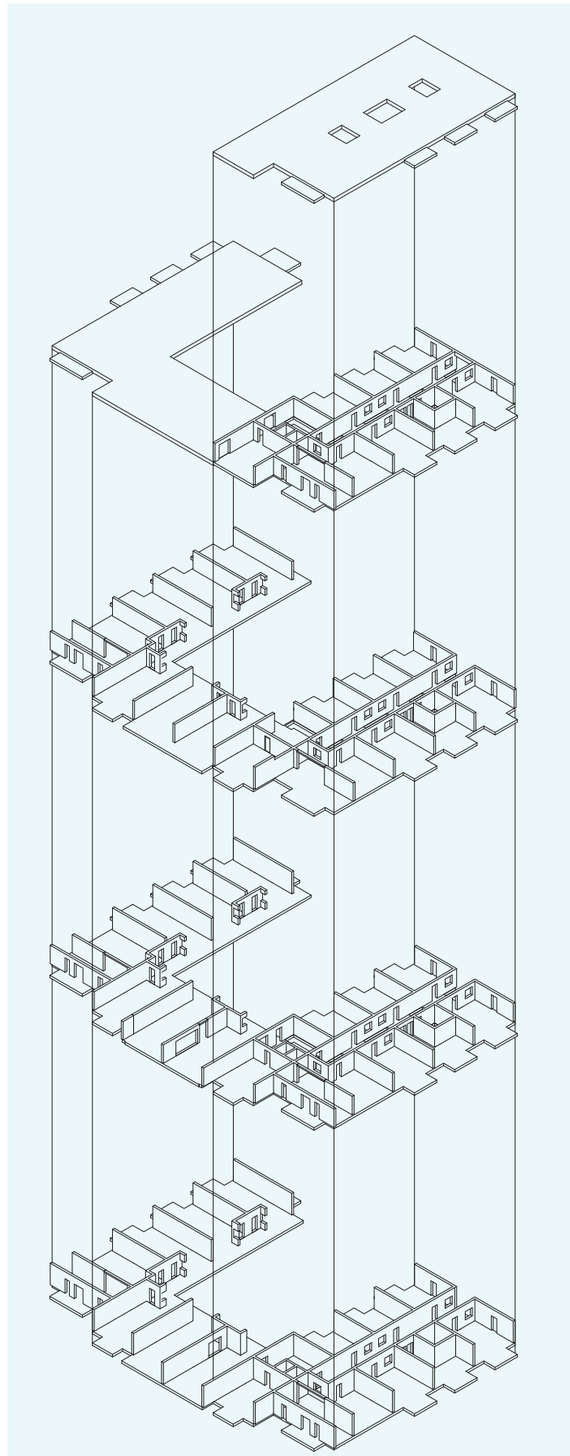
Intergenerational communal spaces

Central access system

Various sizes

N

STRUCTURE - RECYCLED CONCRETE



First floor

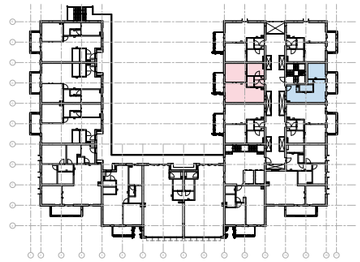
Load-bearing wall

Span floor

N

APARTMENT TYPES

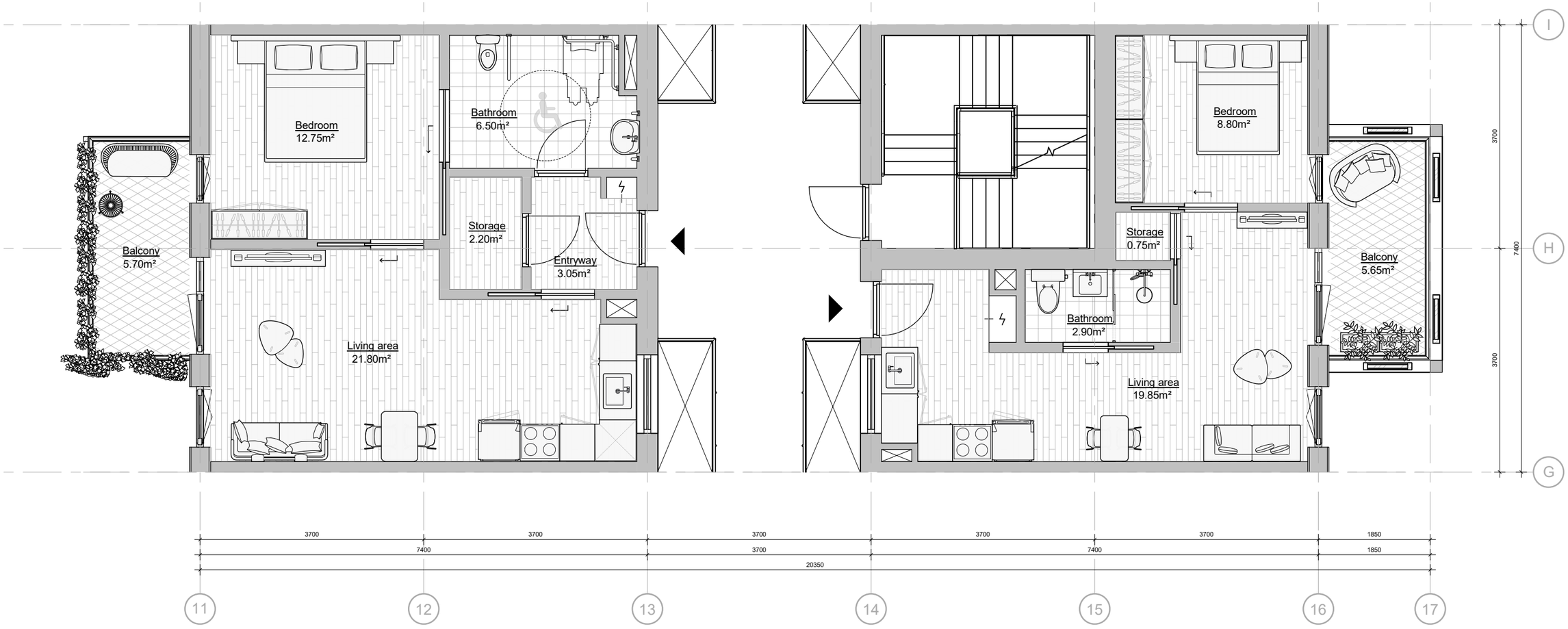
1:50



Private outdoor spaces

Various sizes

Storage space



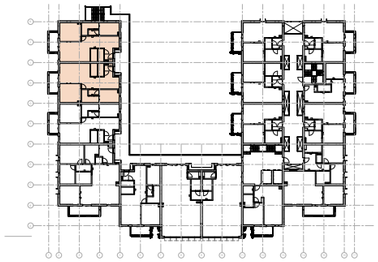
Type 2 - 50m²

Type 1 - 35m²

N

APARTMENT TYPES

1:50



Type 3 - 73m²

Private outdoor spaces

Various sizes

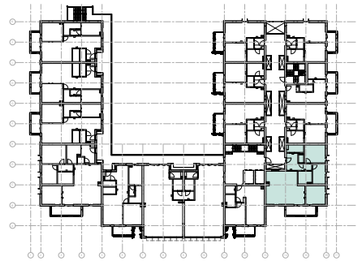
Storage space

Transition zone for privacy

N

APARTMENT TYPES

1:50



Type 4 - 100m²

Private outdoor spaces

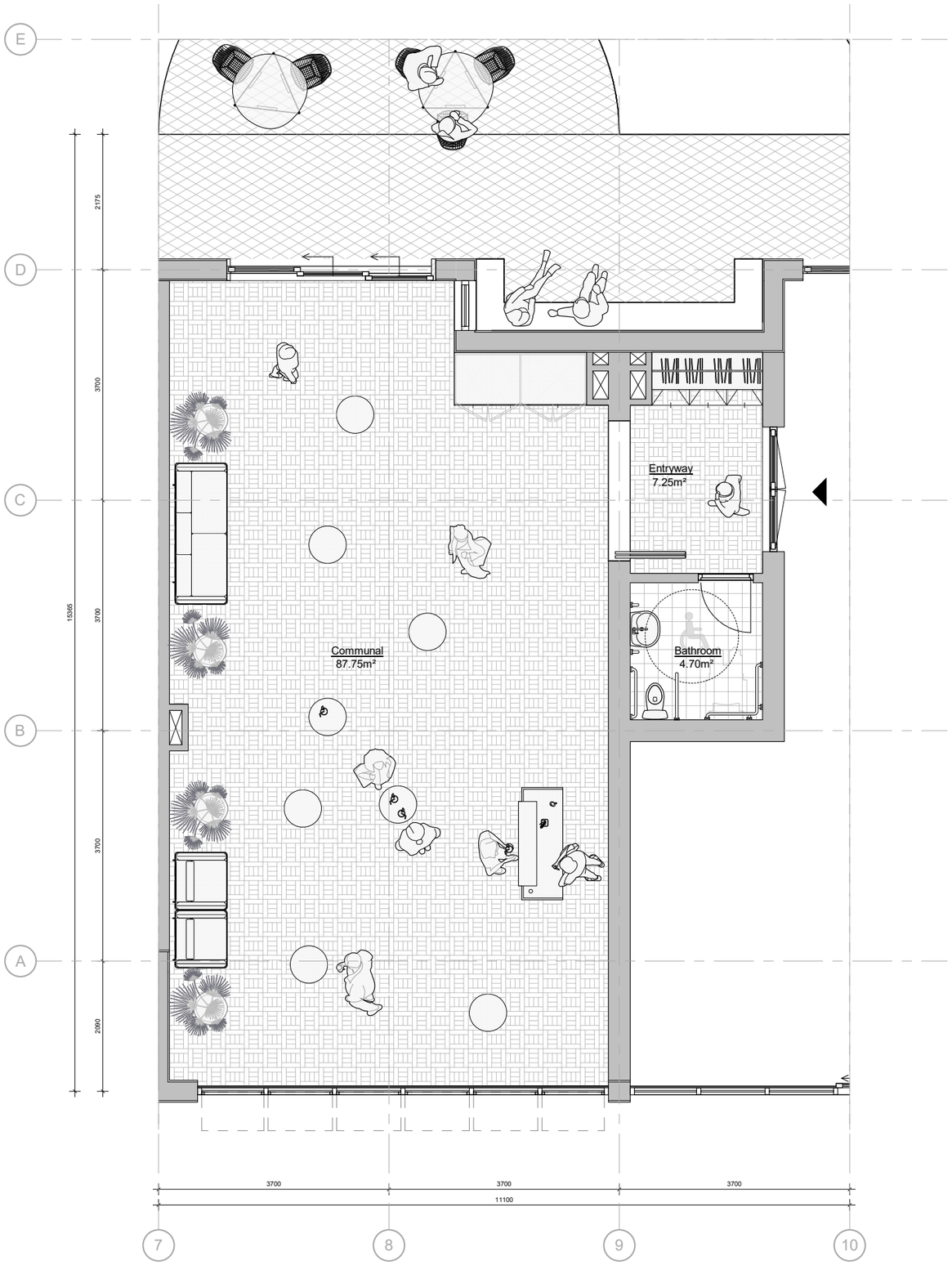
Various sizes

Storage space

Personal control

COMMUNAL SPACE - FLEXIBEL

ground floor 1:50



Community network

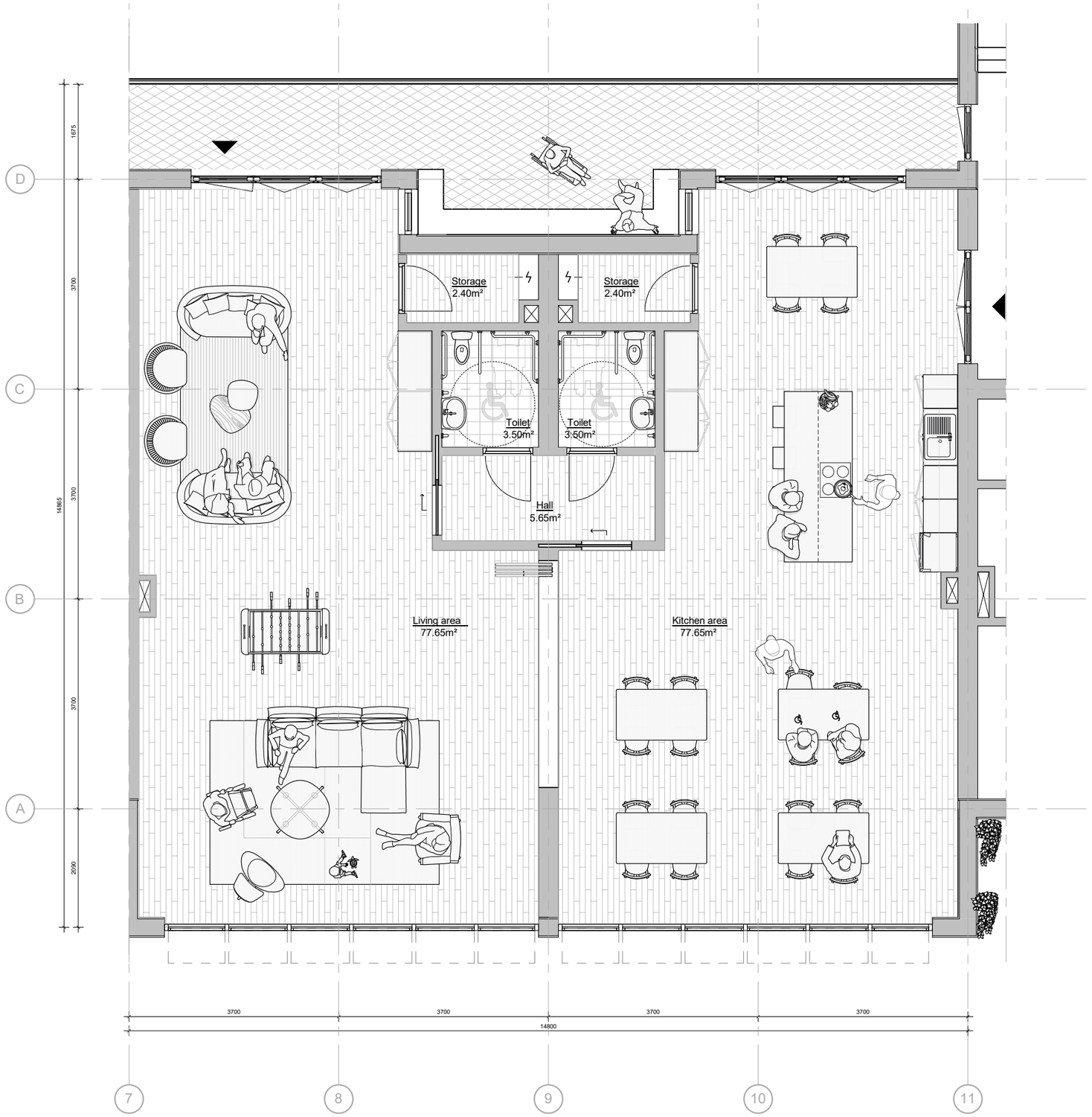
Gathering areas

Promote belonging

N

COMMUNAL SPACE - LIVING AND KITCHEN

first floor 1:50



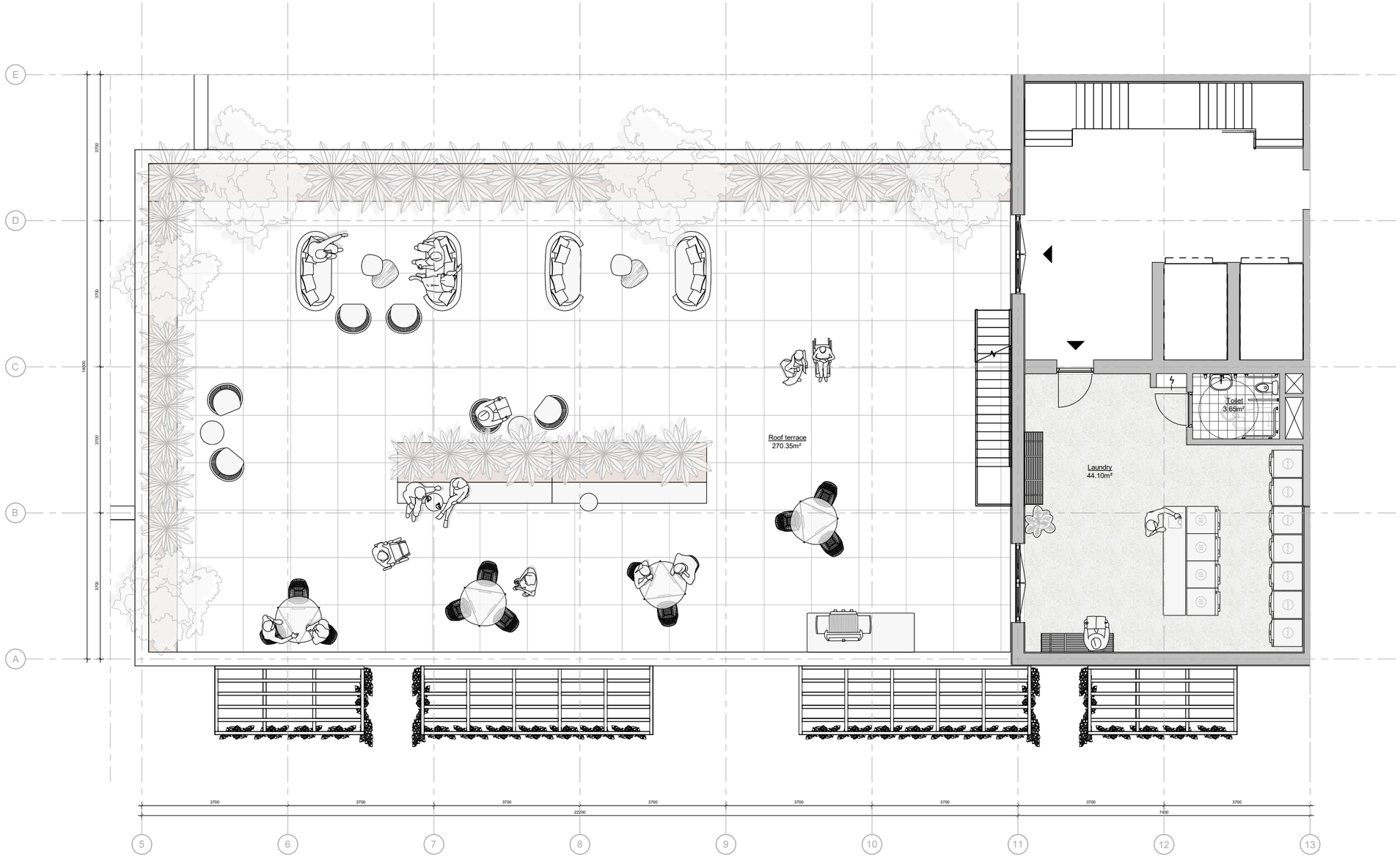
Community network

Gathering areas

Promote belonging

COMMUNAL SPACE – LAUNDRY AND ROOF TERRACE

third floor 1:50



Community network

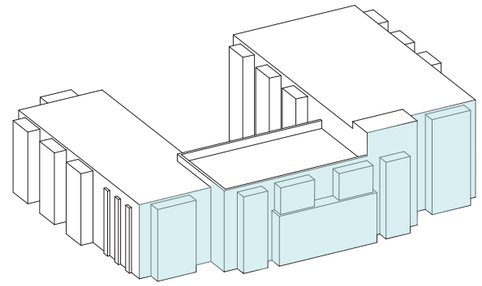
Gathering areas

Promote belonging

N

FACADE - SOUTH

1:100



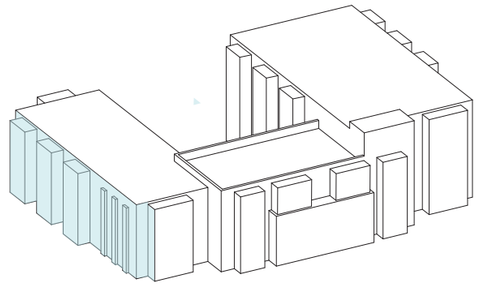
Low-rise for interaction

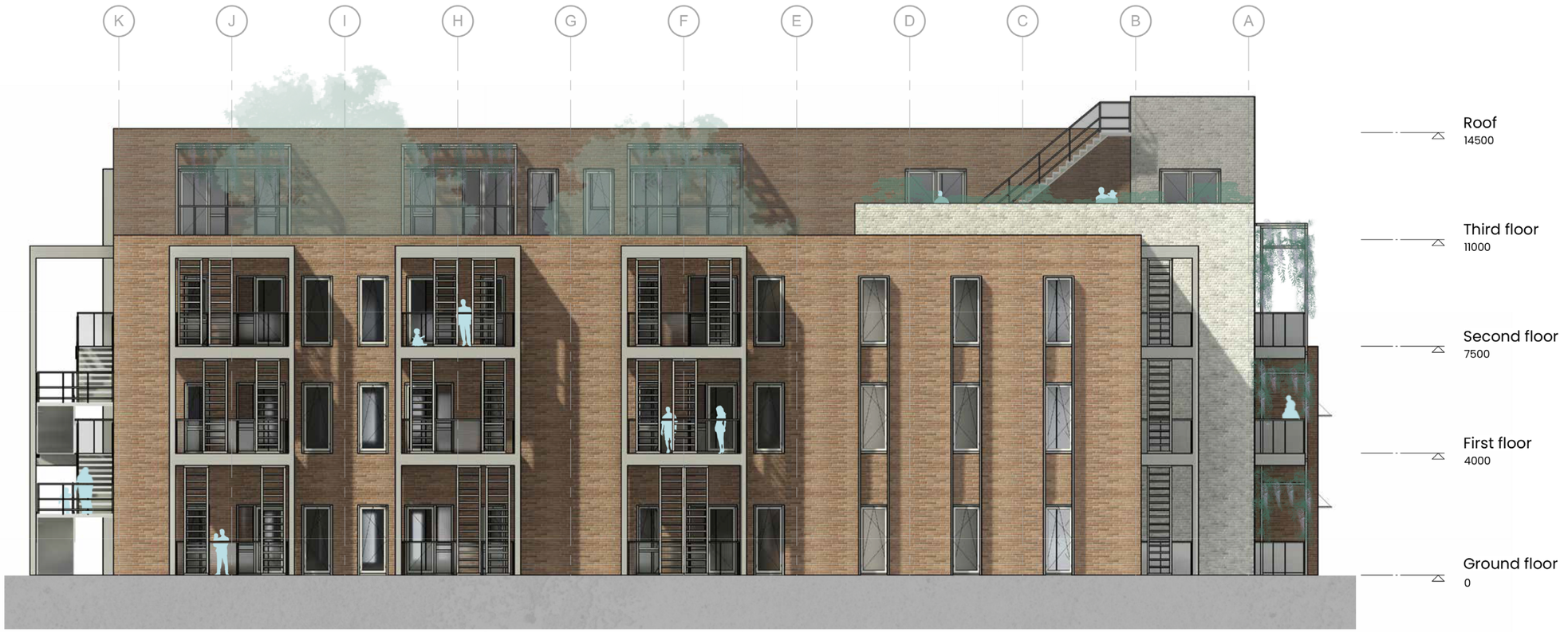
Visual connections

Collective entrance

FACADE - WEST

1:100



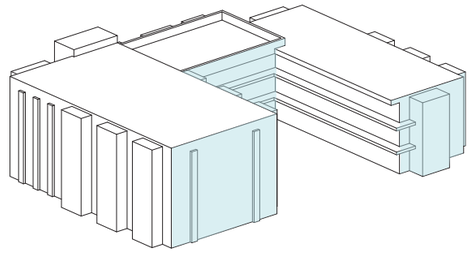


Low-rise for interaction

Visual connections

FACADE - NORTH

1:100



Low-rise for interaction

Visual connections

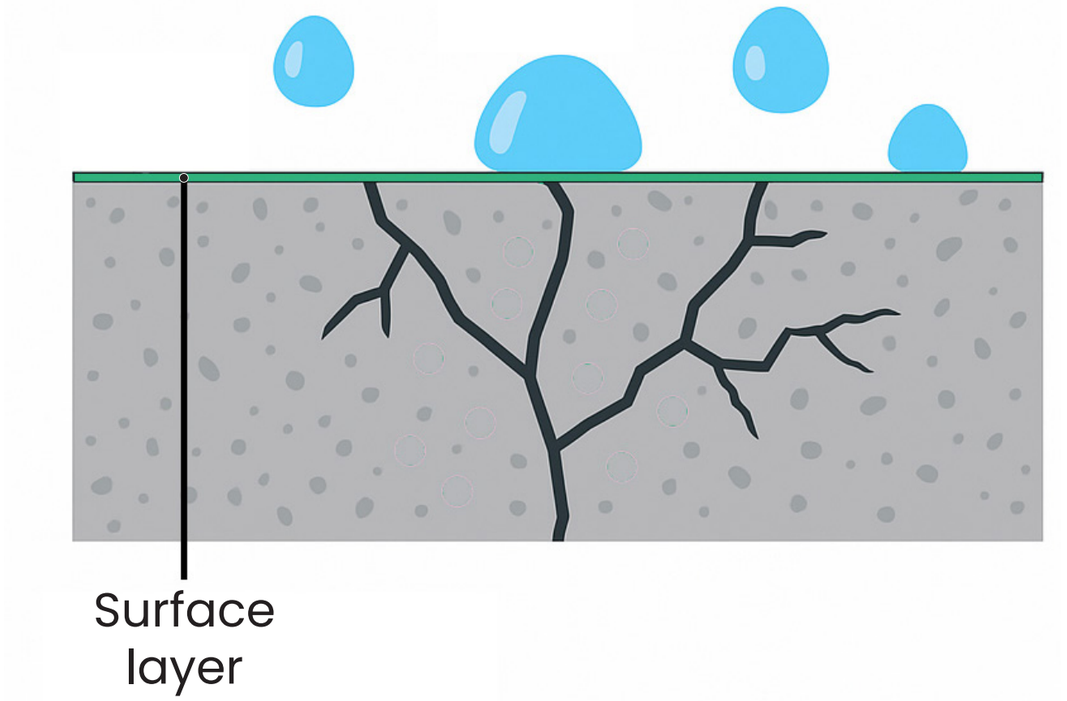
Connection with nature

SUSTAINABILITY AND CIRCULARITY

FUNCTION	MATERIAL	REUSE	REDUSE	DISTANCE	LABOR
load-bearing slab structure	**Concrete**	granulate from demolished buildings on location mixed into new concrete	new resources	0km	intensive; poured in situ
facade	**EcoBrick > thinner than traditional bricks**		new resources, production energy, amount of transport trucks	125km	intensive; placed in situ but lighter than traditional bricks
thermal isolation	**Métisse**	textile	textile waste mountain	200km	no toxic substances

RESEARCH - HYDROPHOBIC CONCRETE

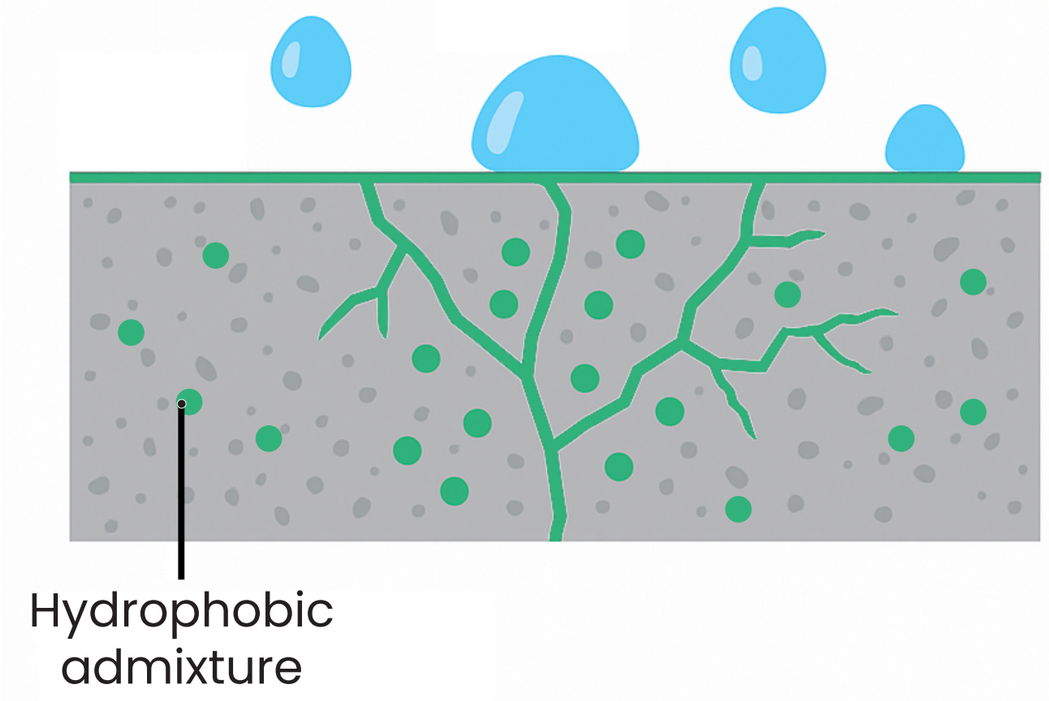
SURFACE TREATMENT



cracks or damage make concrete
lose its waterproofing

ADMIXTURE

waterborne stearic acid emulsion

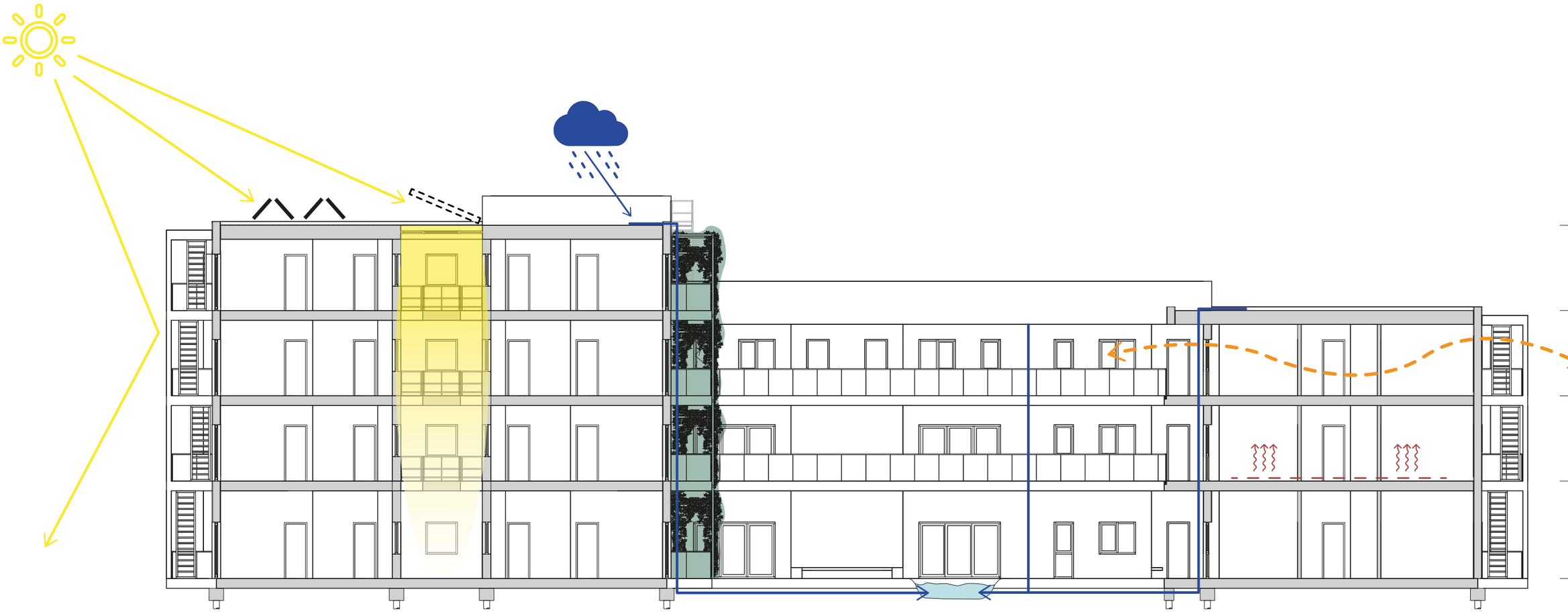


biodegradability and origin
from natural sources

CLIMATE DESIGN

Optimize natural light

Connection with nature



Shutters for sun protection

Electricity with solar panels

Natural light into corridor

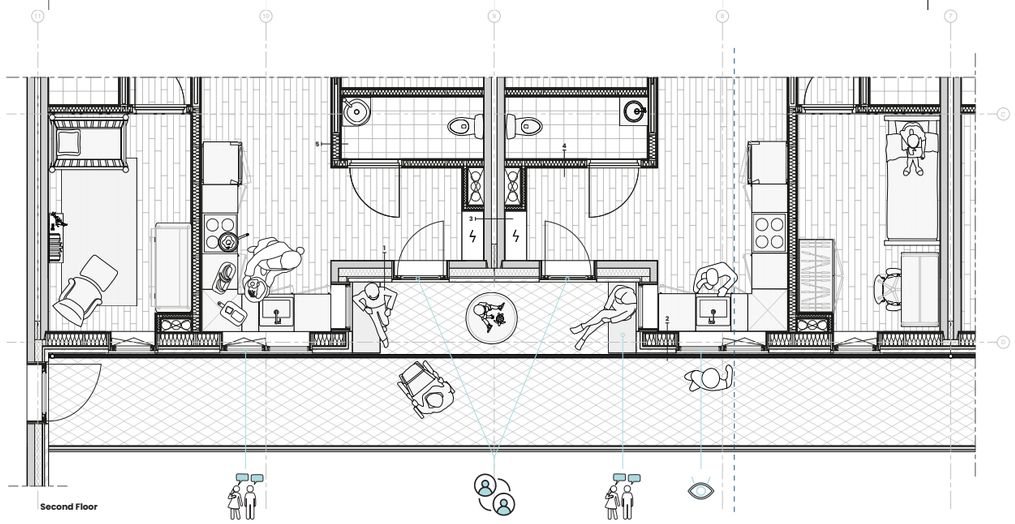
Greenery for sun protection and positive impact on residents

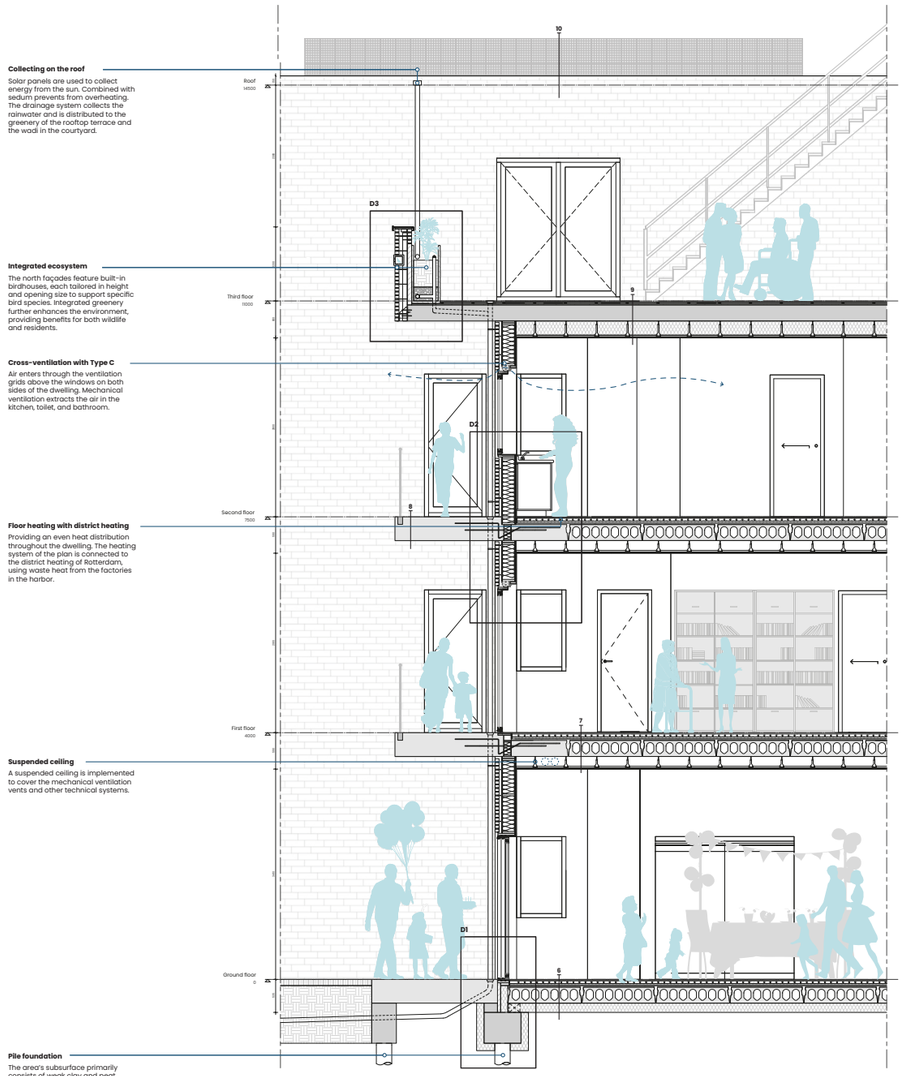
Water collection on the roofs and distribution toward the wadi in courtyard

Type C with cross-ventilation

Floor heating with district heating, using waste heat from factories in harbor

FRAGMENT 1:20





Collecting on the roof

Solar panels are used to collect energy from the sun. Combined with sedum prevents from overheating. The drainage system collects the rainwater and is distributed to the greenery of the rooftop terrace and the wadi in the courtyard.

Integrated ecosystem

The north façades feature built-in birdhouses, each tailored in height and opening size to support specific bird species. Integrated greenery further enhances the environment, providing benefits for both wildlife and residents.

Cross-ventilation with Type C

Air enters through the ventilation grids above the windows on both sides of the dwelling. Mechanical ventilation extracts the air in the kitchen, toilet, and bathroom.

Floor heating with district heating

Providing an even heat distribution throughout the dwelling. The heating system of the plan is connected to the district heating of Rotterdam, using waste heat from the factories in the harbor.

Suspended ceiling

A suspended ceiling is implemented to cover the mechanical ventilation vents and other technical systems.

Pile foundation

The area's subsurface primarily consists of weak clay and peat layers, which lack the necessary bearing capacity. Therefore, a pile foundation is needed.

Wall Structure

1. Wall – load-bearing facade
350mm
65mm EcoBrick
25mm cavity
waterproof membrane
135mm recycled XPS insulation (Rc 4.8m²K/W)
120mm solid concrete
5mm plaster finish

2. Wall – non-load-bearing facade
350mm
65mm EcoBrick
40mm cavity
12mm fireproof Cembrit board
200mm timber construction frame with Métisse insulation (Rc 5.1m²K/W)
vapour barrier
12mm plywood
12.5mm plaster board
8mm plaster finish

3. Wall – load-bearing dividing wall
350mm
10mm plaster finish
120mm solid concrete
90mm cavity
120mm solid concrete
10mm plaster finish

4. Wall – interior
150mm
5mm plaster finish
12.5mm gypson board
12.5mm gypson board
90mm timber frame with Métisse insulation
12.5mm gypson board
12.5mm gypson board
5mm plaster finish

5. Wall – interior with pocket door
170mm
5mm plaster finish
12.5mm gypson board
12.5mm gypson board
110mm timber frame with Métisse insulation
12.5mm gypson board
12.5mm gypson board
5mm plaster finish

Floor Structure

6. Floor – foundation
535mm
20mm floor finish
50mm concrete screed with floor heating
waterproof membrane
30mm insulation
25mm concrete screed
260mm concrete hollow core slab
150 EPS insulation (Rc 4.2m²K/W)

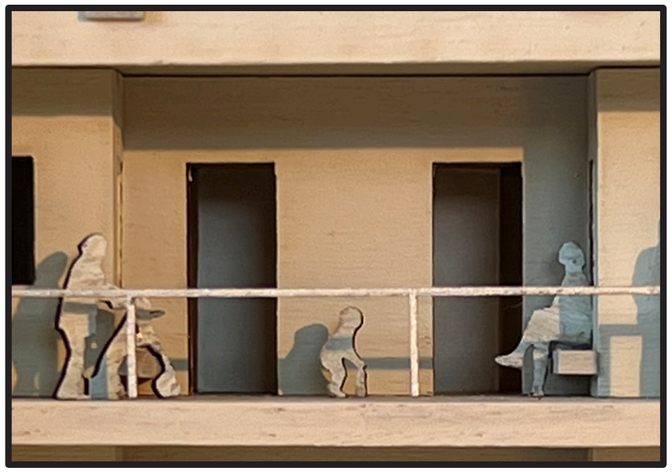
7. Floor – interior
590mm
20mm floor finish
50mm concrete screed with floor heating
waterproof membrane
30mm insulation
25mm concrete screed
260mm concrete hollow core slab
200mm PlyGyp® S suspended ceiling
6mm plaster finish

8. Floor – gallery
385mm
385mm prefab concrete slab with anti-slip texture

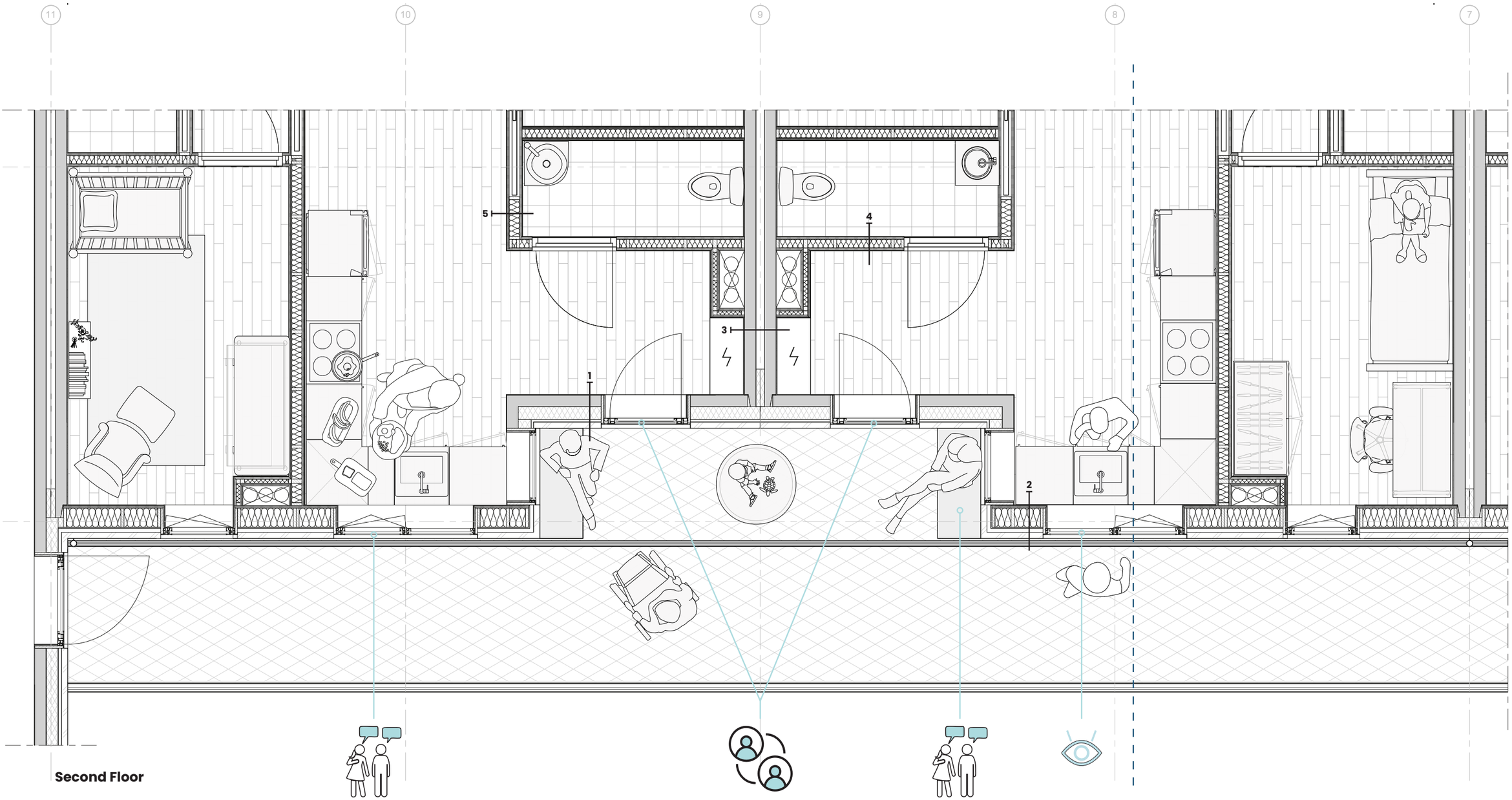
9. Floor – roof terrace
600mm
20mm ceramic tiles
20mm tile carriers
waterproof membrane
25mm concrete screed
260mm solid concrete slab
270mm PlyGyp® S suspended ceiling filled with Métisse insulation (Rc 6.4m²K/W)
5mm plaster finish

10. Floor – roof service
650mm
solar panels
50mm sedum with substrate layer
filter fleece
40mm drainage element
root protection layer
waterproof membrane
25mm concrete screed
260mm solid concrete slab
270mm PlyGyp® S suspended ceiling filled with Métisse insulation (Rc 6.4m²K/W)
5mm plaster finish

FRAGMENT 1:20



FRAGMENT – PLAN
1:20



Second Floor

Frequent interaction

Visual connections

Promote belonging

Lively front door area

N

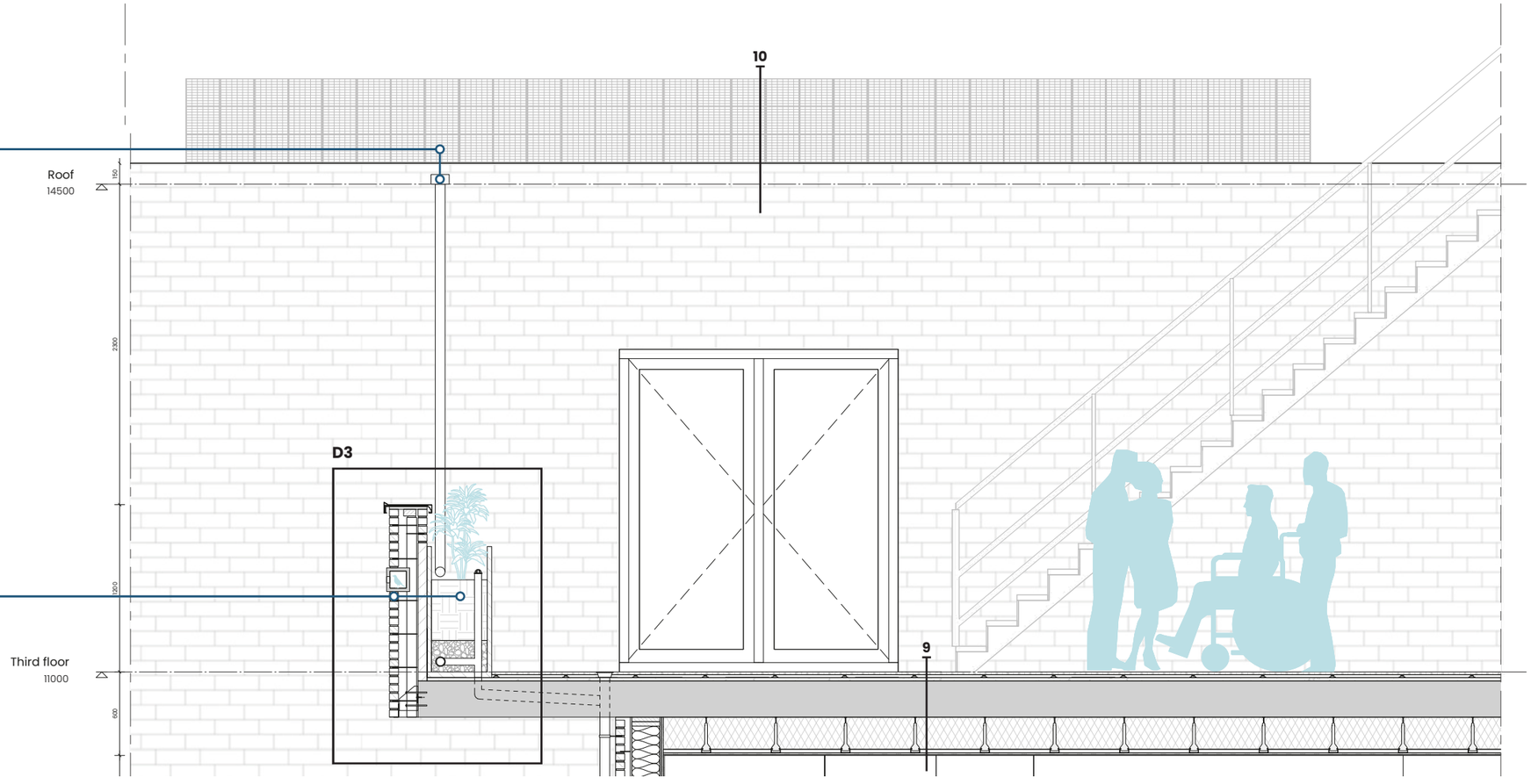
FRAGMENT – ROOF TERRACE
1:20

Collecting on the roof

Solar panels are used to collect energy from the sun. Combined with sedum prevents from overheating. The drainage system collects the rainwater and is distributed to the greenery of the rooftop terrace and the wadi in the courtyard.

Integrated ecosystem

The north façades feature built-in birdhouses, each tailored in height and opening size to support specific bird species. Integrated greenery further enhances the environment, providing benefits for both wildlife and residents.



Frequent interaction

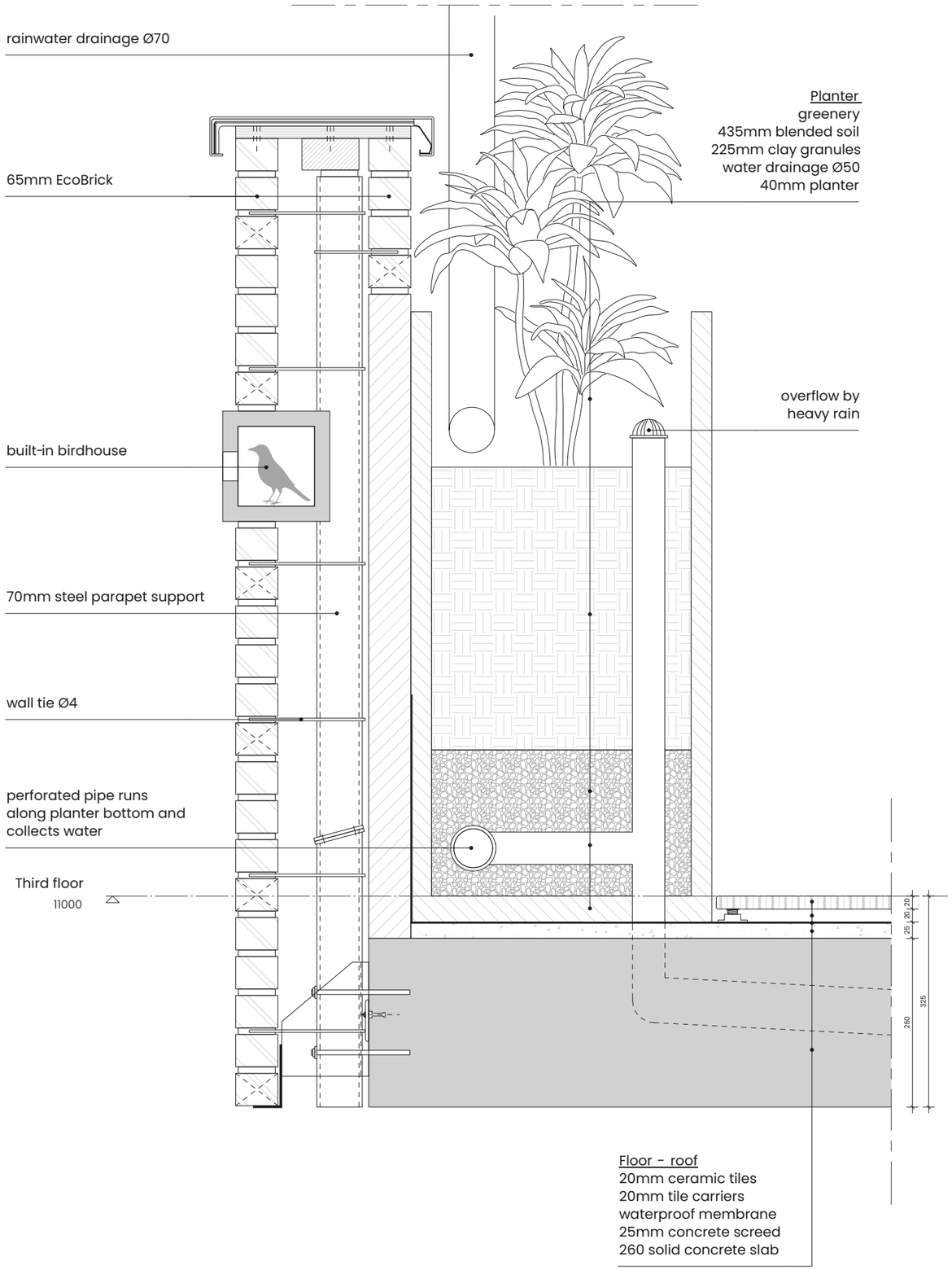
Gathering areas

Connection with nature

Optimize natural light

DETAIL 3 - ROOF TERRACE

1:5



FRAGMENT - SECOND FLOOR
1:20

Frequent interaction

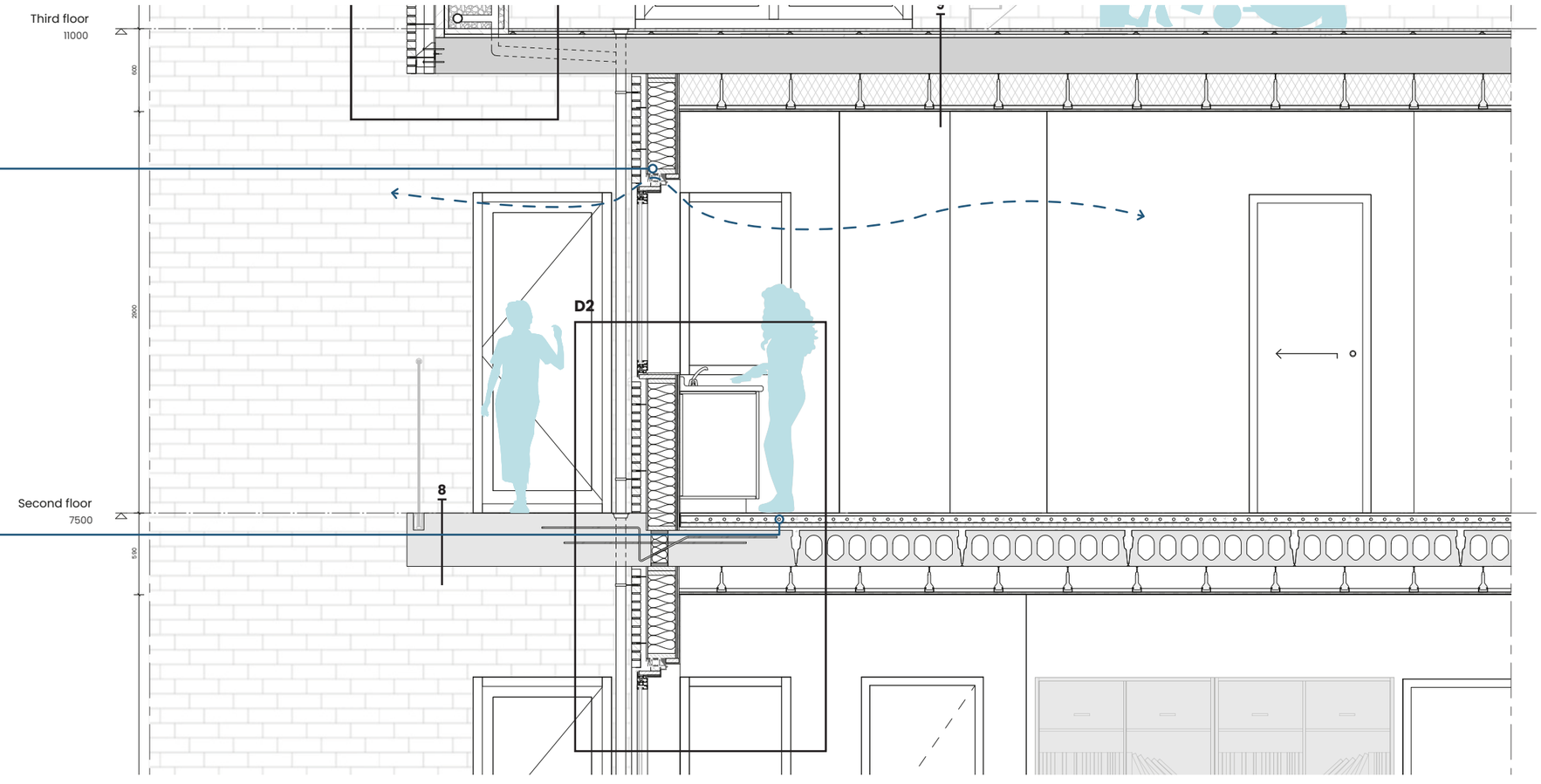
Visual connections

Cross-ventilation with Type C

Air enters through the ventilation grids above the windows on both sides of the dwelling. Mechanical ventilation extracts the air in the kitchen, toilet, and bathroom.

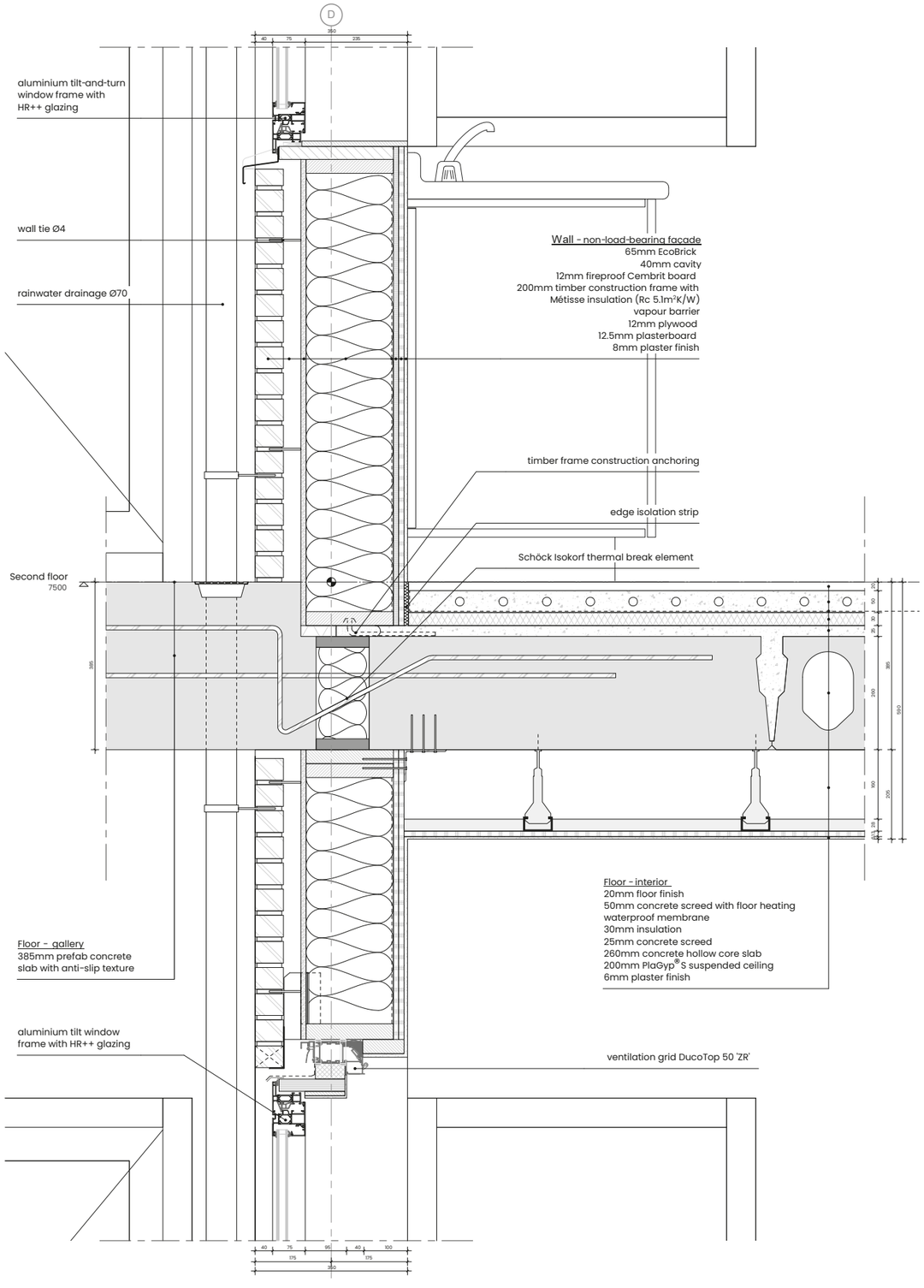
Floor heating with district heating

Providing an even heat distribution throughout the dwelling. The heating system of the plan is connected to the district heating of Rotterdam, using waste heat from the factories in the harbor.



DETAIL 2 - SECOND FLOOR

1:5



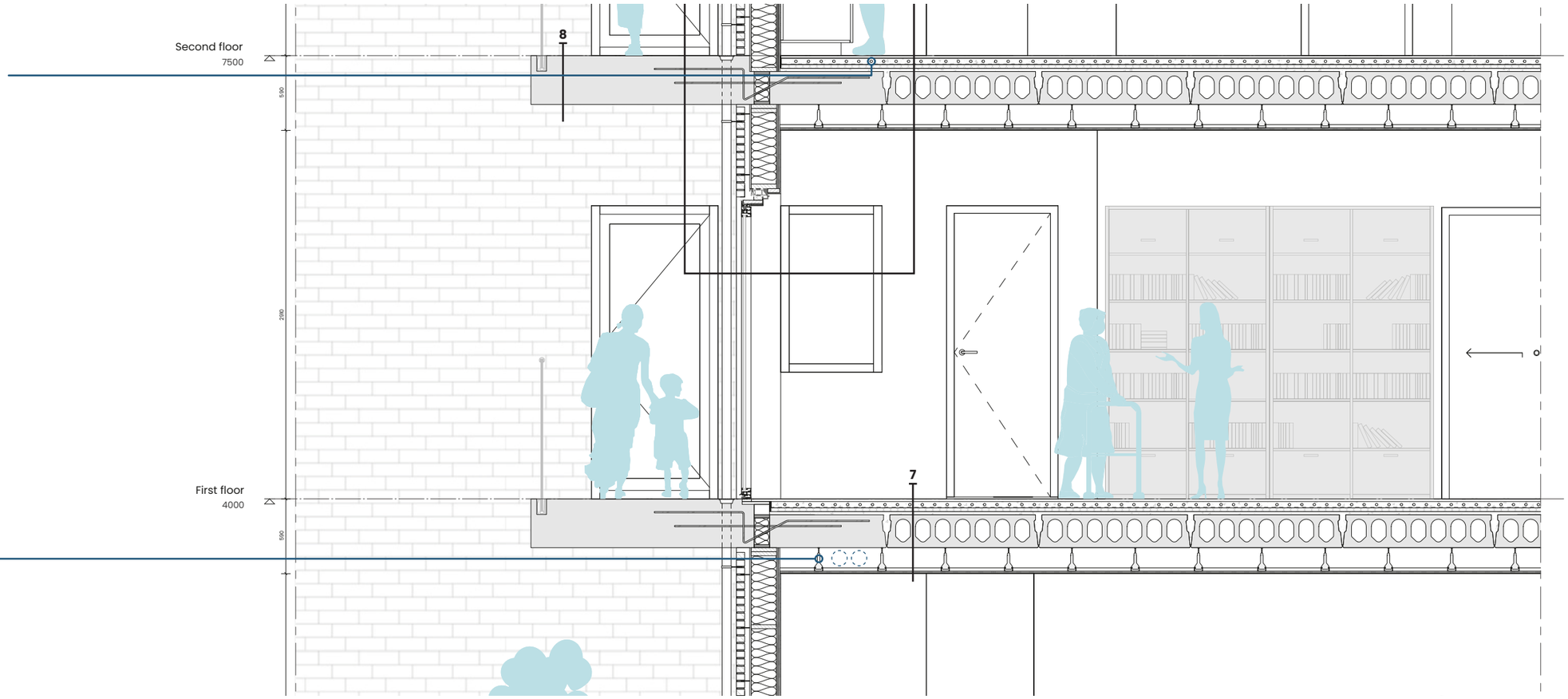
FRAGMENT - FIRST FLOOR
1:20

Floor heating with district heating

Providing an even heat distribution throughout the dwelling. The heating system of the plan is connected to the district heating of Rotterdam, using waste heat from the factories in the harbor.

Suspended ceiling

A suspended ceiling is implemented to cover the mechanical ventilation vents and other technical systems.



Frequent interaction

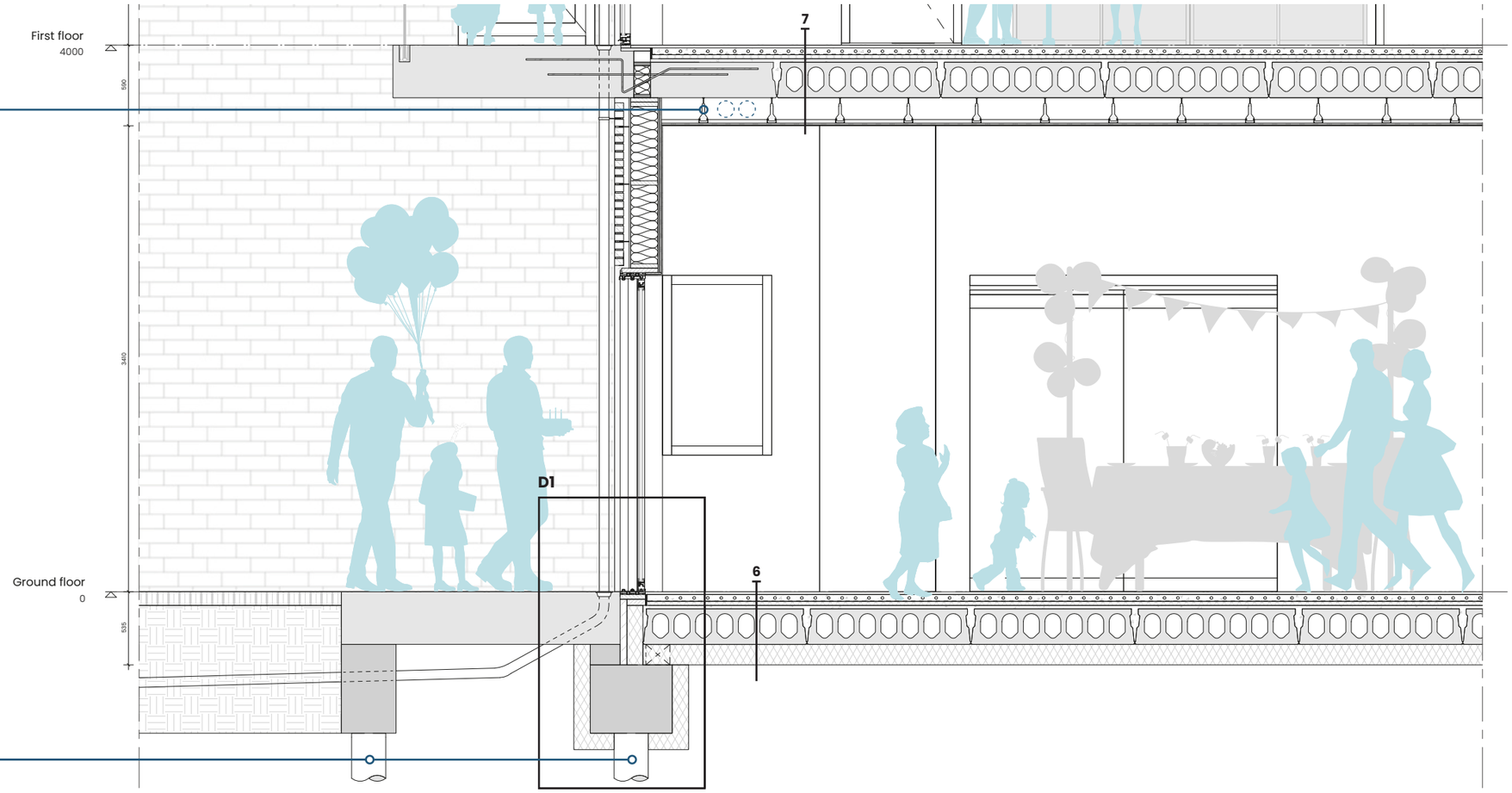
Gathering areas

Visual connections

FRAGMENT – FOUNDATION
1:20

Suspended ceiling

A suspended ceiling is implemented to cover the mechanical ventilation vents and other technical systems.



Pile foundation

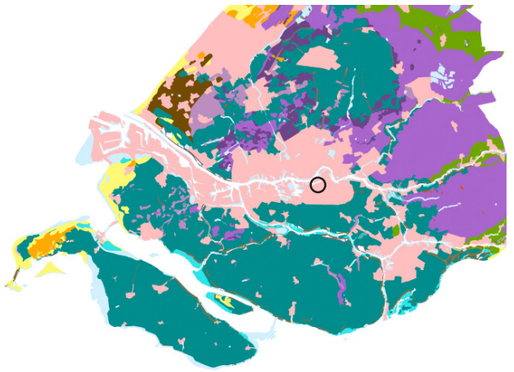
The area's subsurface primarily consists of weak clay and peat layers, which lack the necessary bearing capacity. Therefore, a pile foundation is needed.

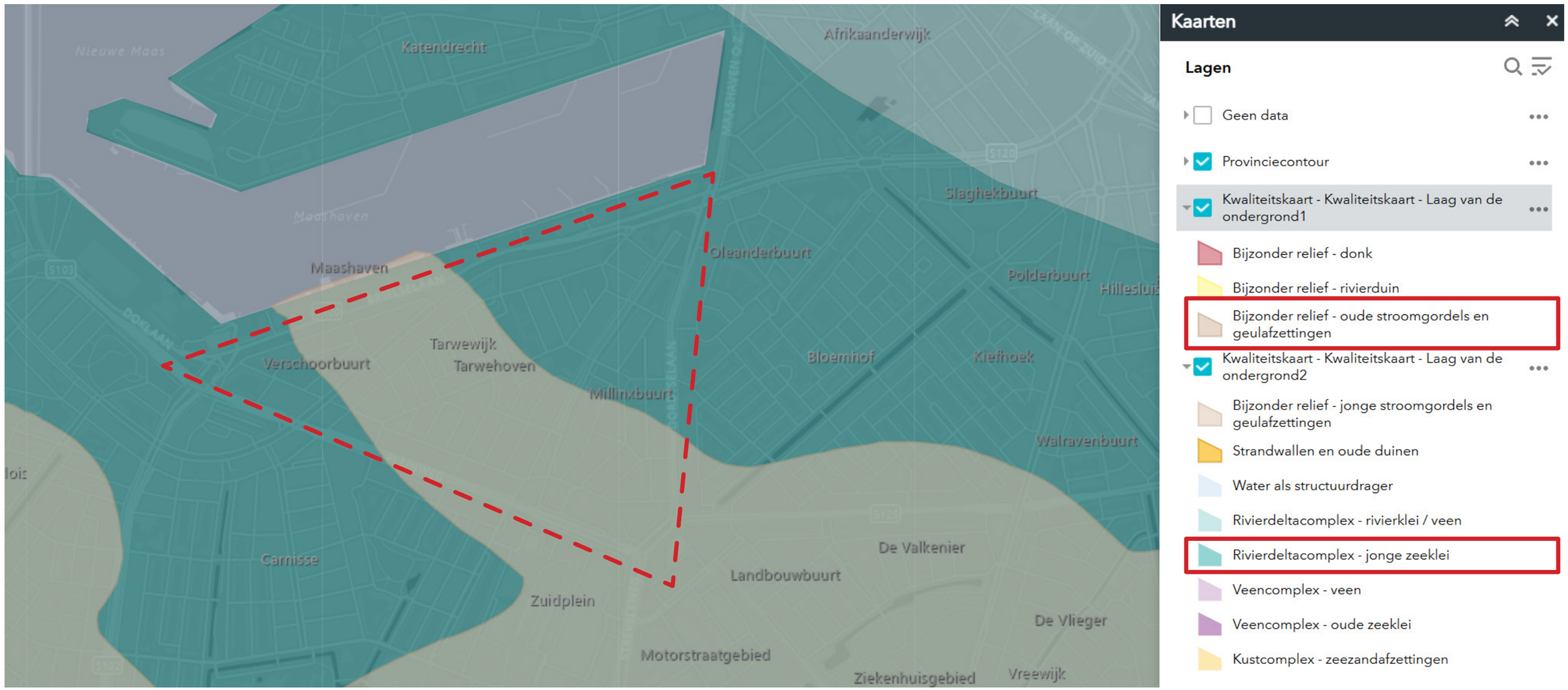
Frequent interaction

Gathering areas

Visual connections

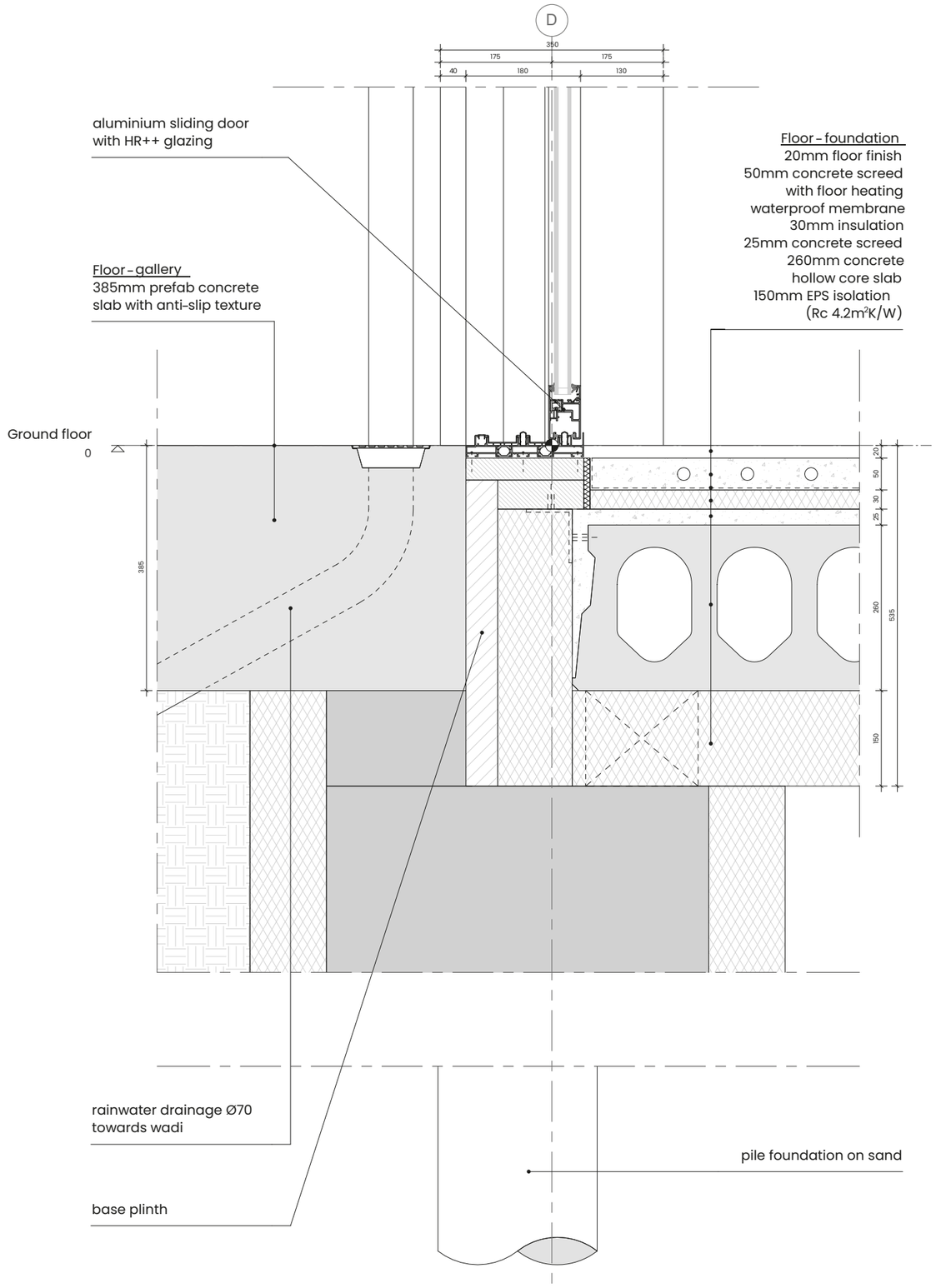
RESEARCH - SOIL AND FOUNDATION





DETAIL 1 - FOUNDATION

1:5

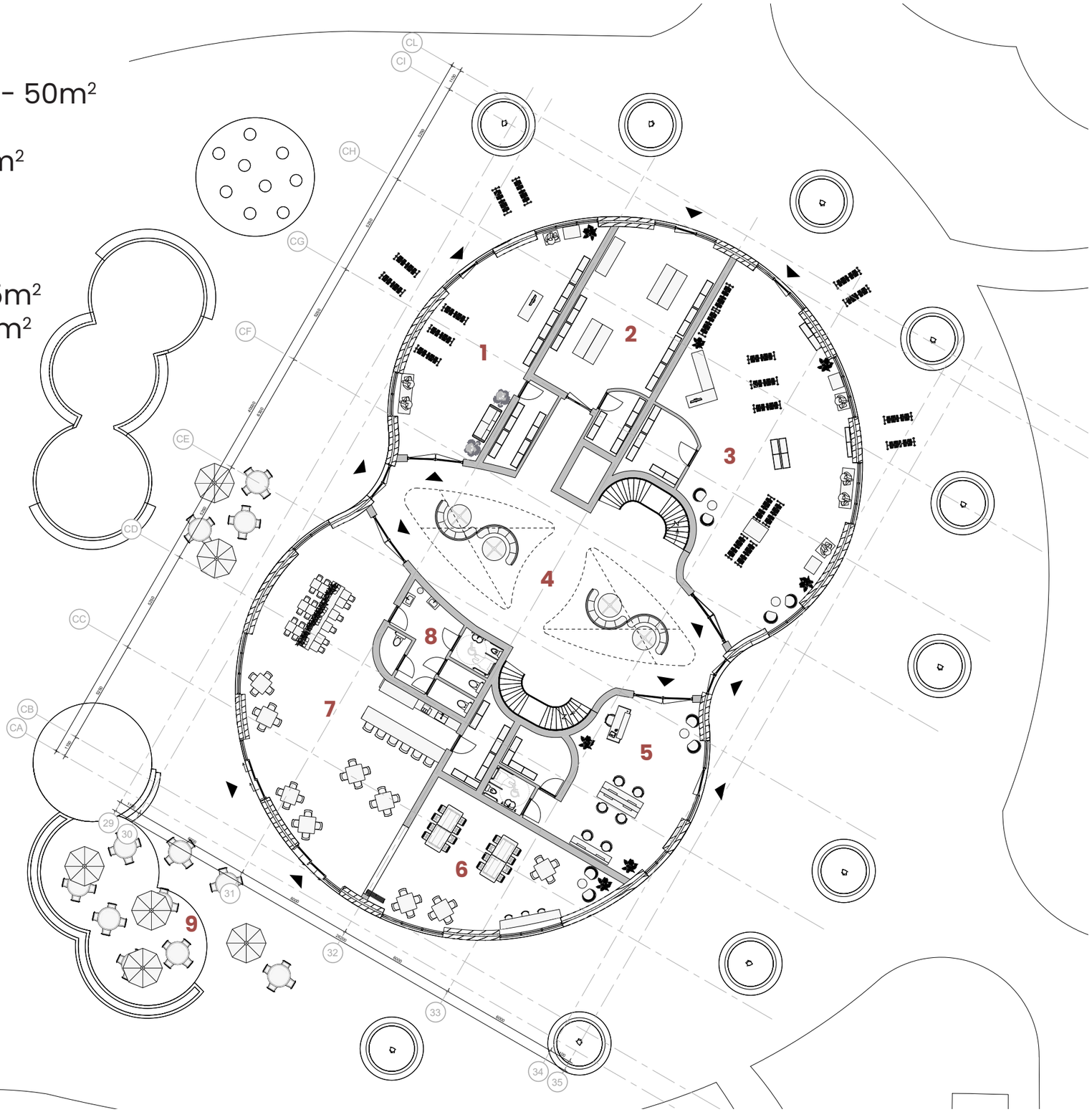


COMMUNITY CENTER

FLOORPLAN - GROUND FLOOR

1:100

1 Shop - 70m²
2 Hobby/maker space - 50m²
3 Shop - 135m²
4 Central atrium - 150m²
5 Hairdresser - 60m²
6 Workspaces - 60m²
7 Café - 130m²
8 Public bathroom - 25m²
9 Outdoor terrace - 70m²
▲ Entrance



Neighborhood amenities

Community network

Gathering areas

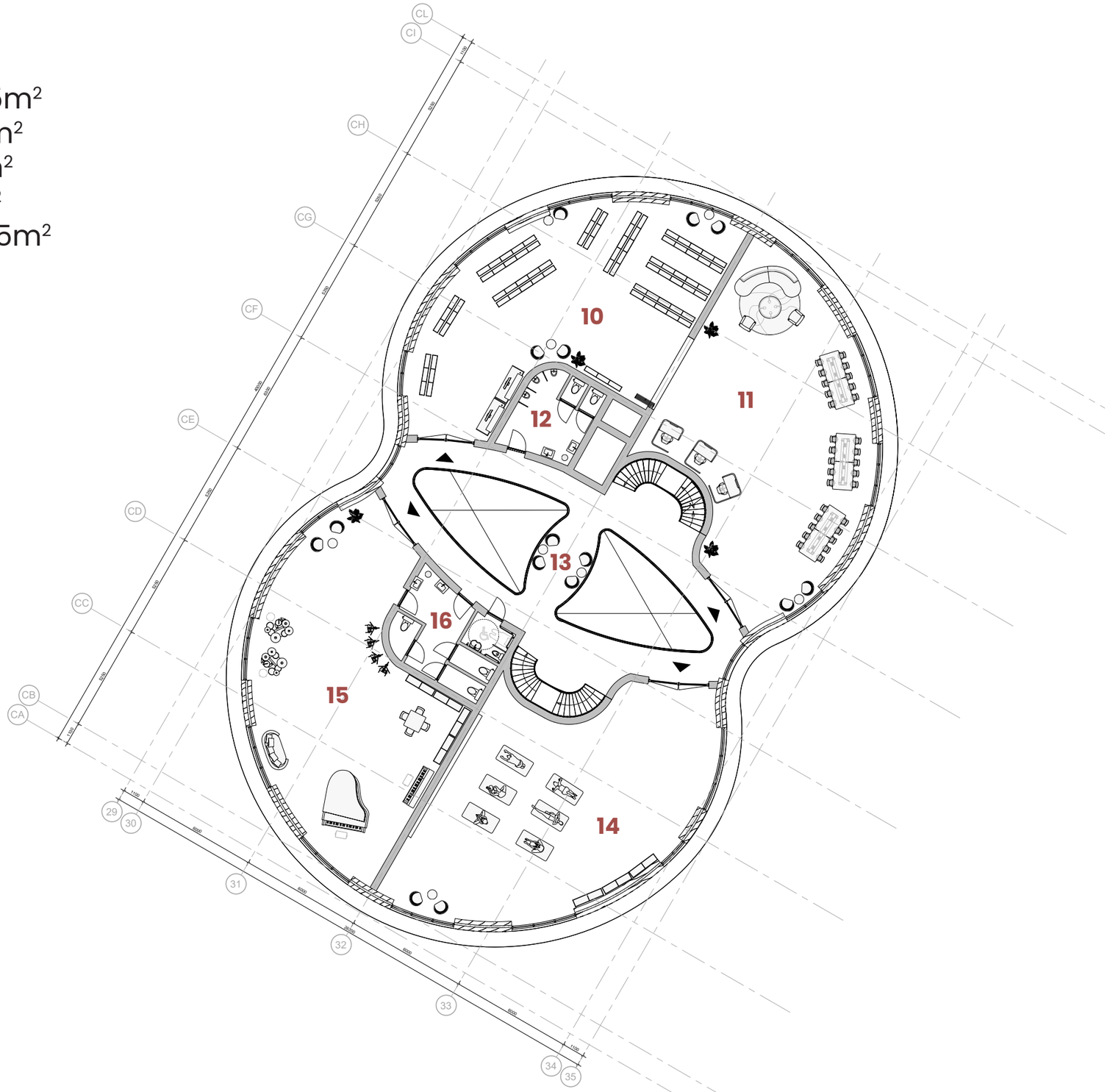
Visual connections

N

FLOORPLAN - FIRST FLOOR

1:100

10 Library - 120m²
11 Workspaces - 130m²
12 Public bathroom - 15m²
13 Central atrium - 95m²
14 Dance studio - 120m²
15 Music studio - 120m²
16 Public bathroom - 25m²
▲ Entrance



Neighborhood amenities

Community network

Gathering areas

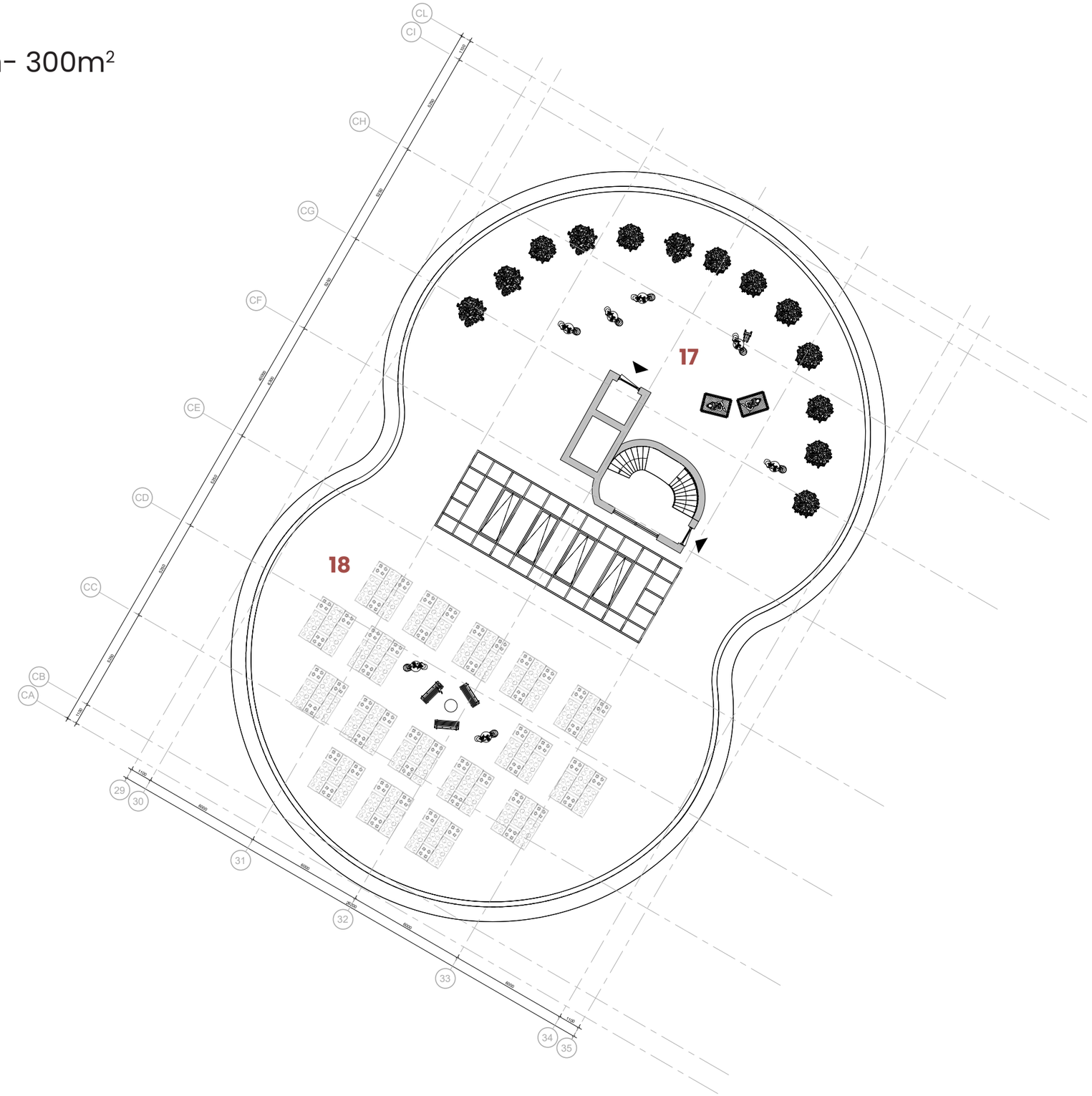
Visual connections

N

FLOORPLAN - ROOF TERRACE

1:100

17 Terrace - 300m²
18 Community garden- 300m²
▲ Entrance



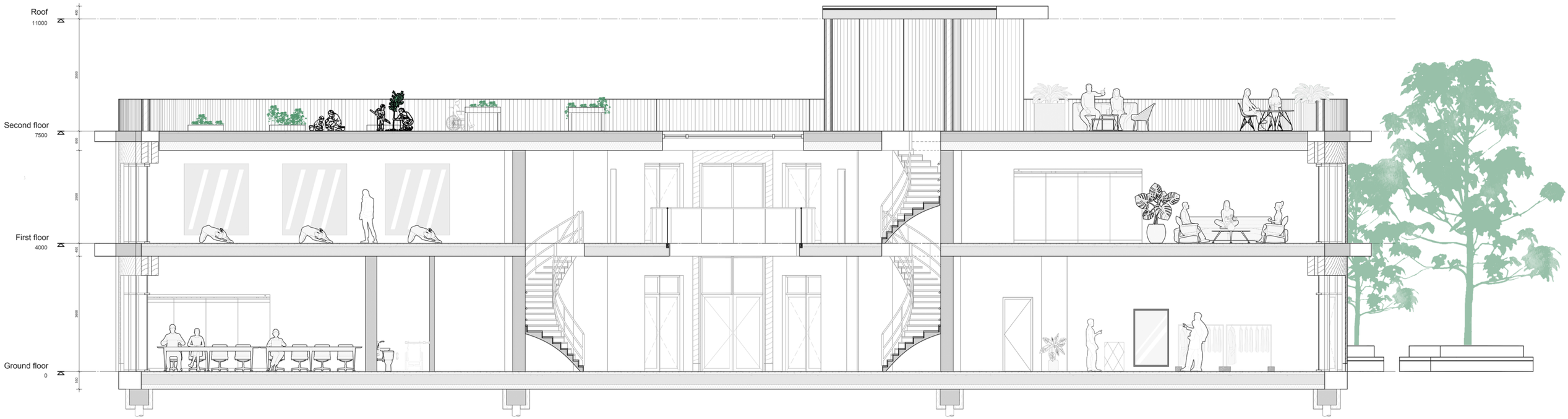
Neighborhood amenities

Community network

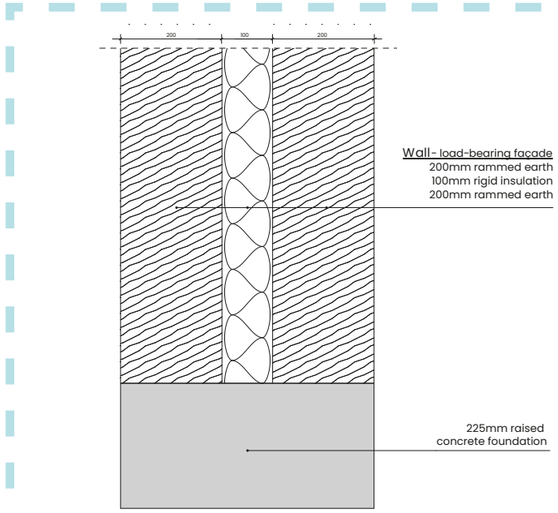
Gathering areas

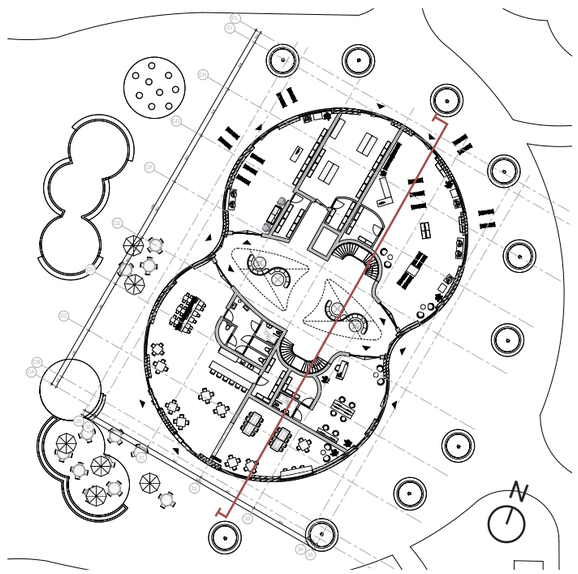
Shared responsibility

SECTION
1:50



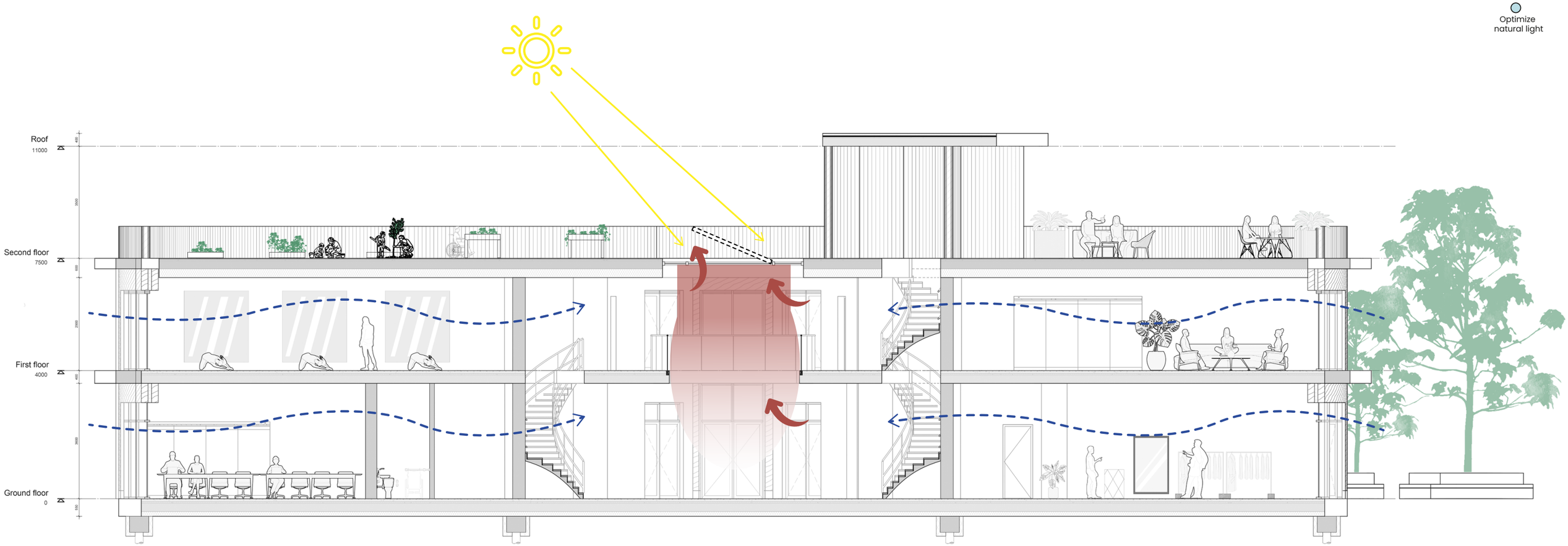
rammed earth





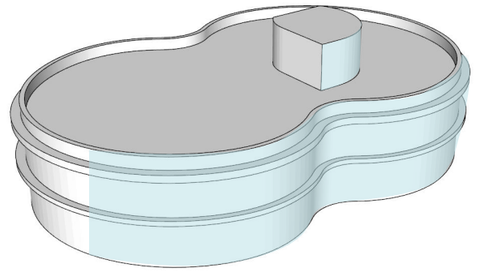
SOLAR CHIMNEY EFFECT

Optimize
natural light



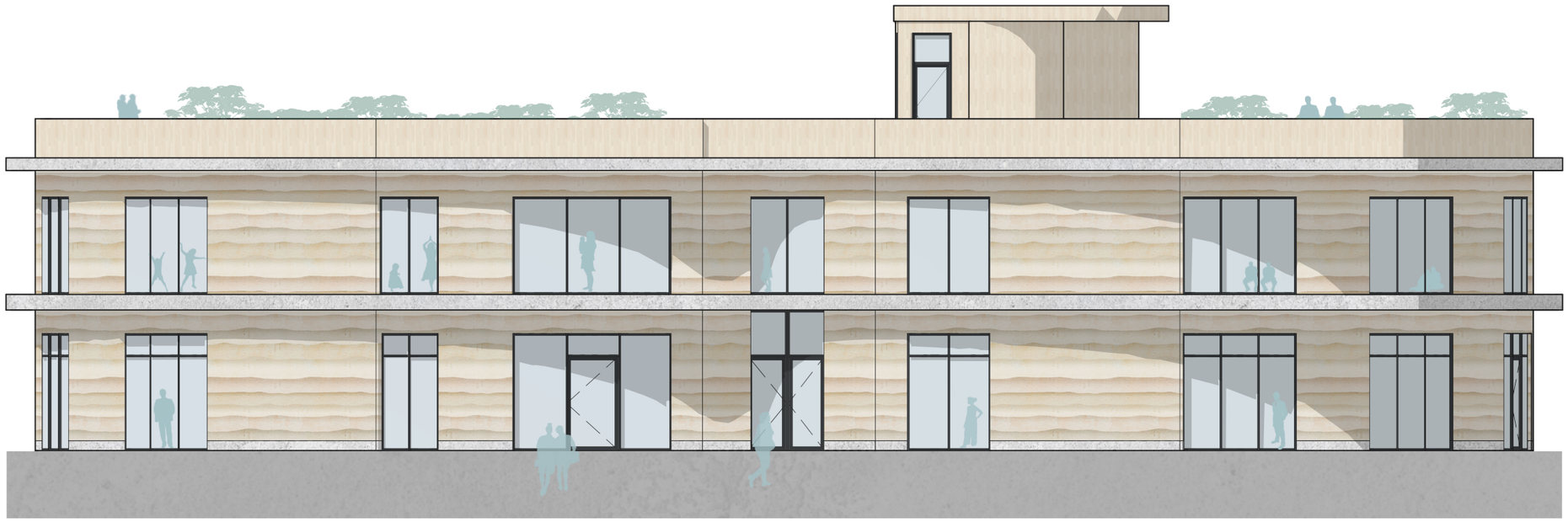
FACADE - EAST

1:100



Visual connections

Optimize natural light



Roof
11000

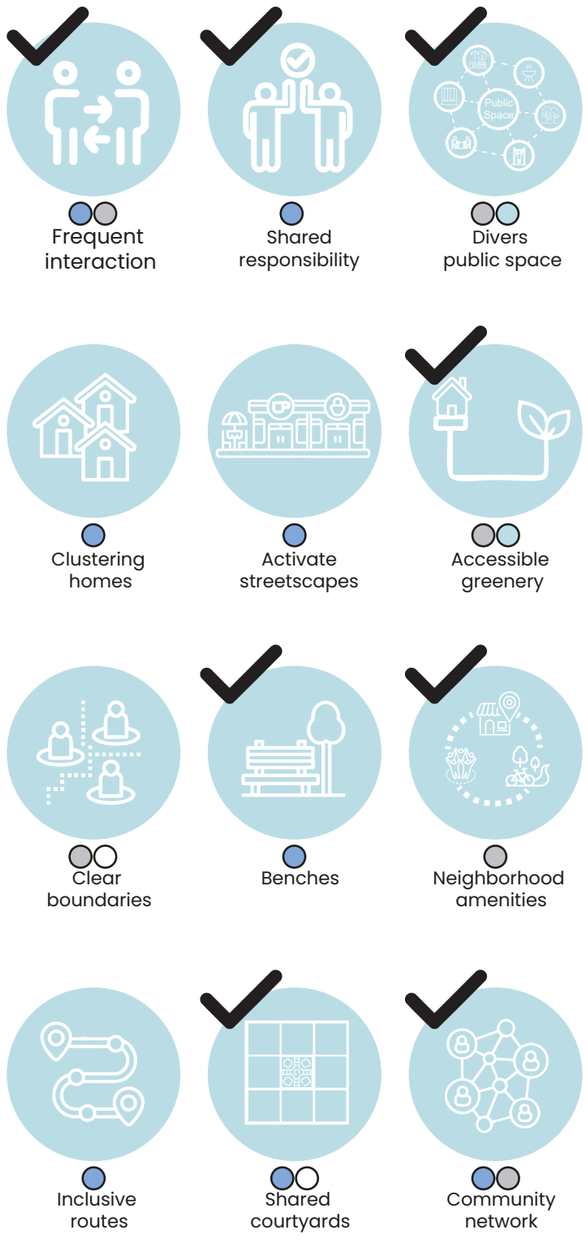
Second floor
7500

First floor
4000

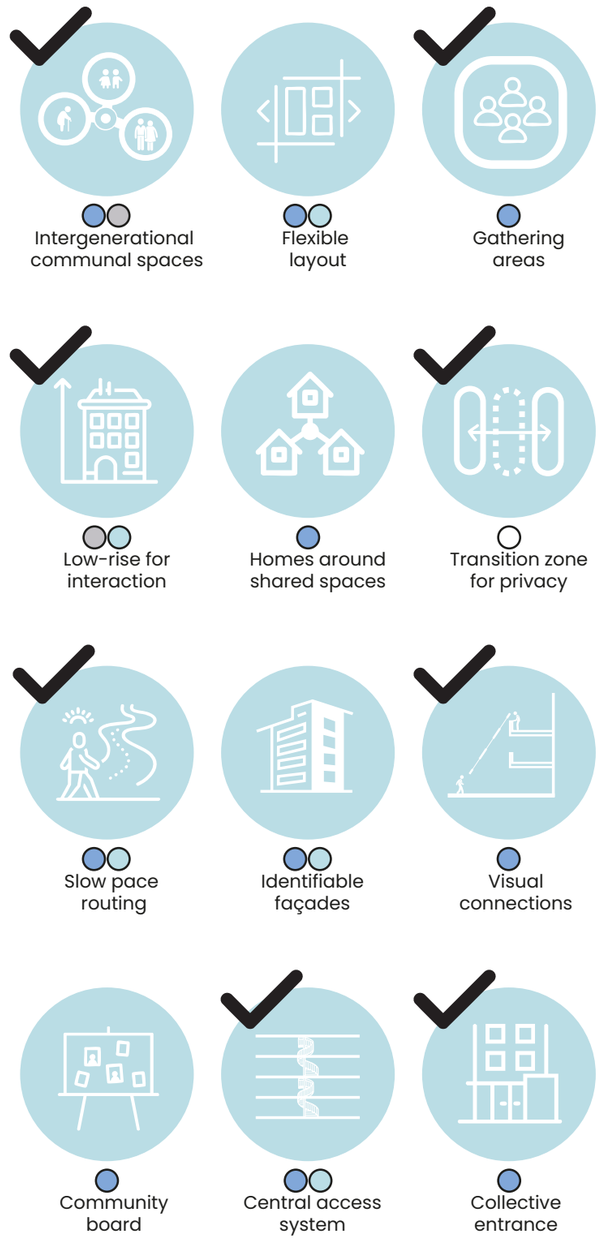
Ground floor
0

IMPLEMENTED DESIGN GUIDELINES

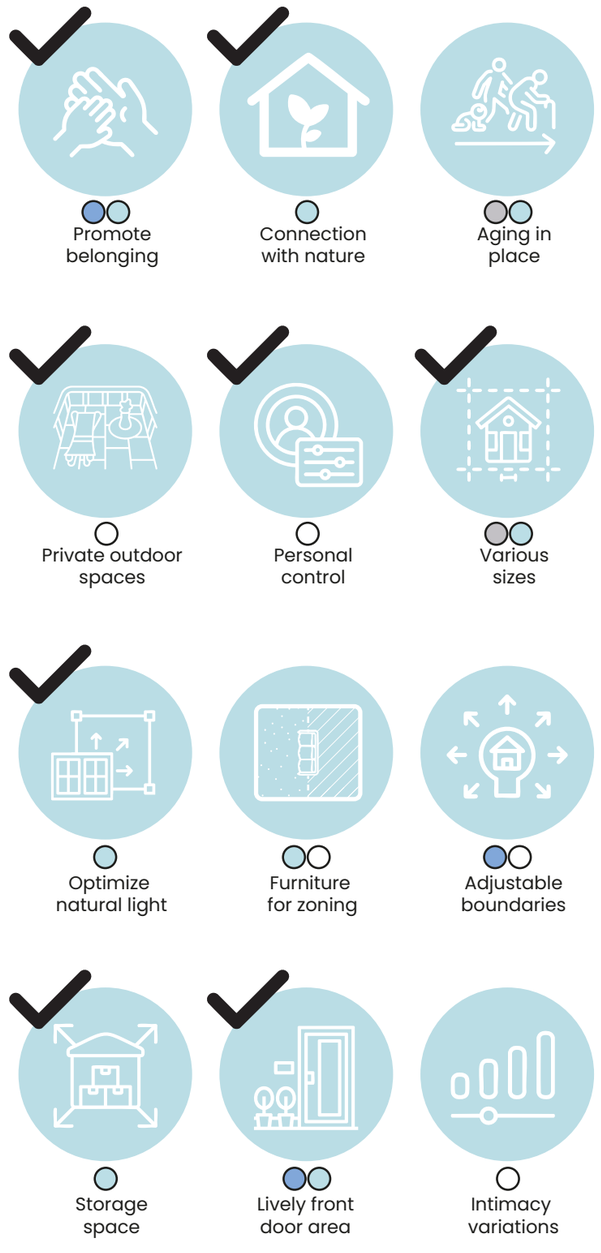
NEIGHBORHOOD SCALE



BUILDING SCALE



HOUSING SCALE



A NEW KIND OF NEIGHBOR

building a multigenerational housing community to improve social cohesion

Desiré Verlaan
5944694

P5 Presentation
19 june 2025