

Imagine...

Physical Disabilities and Inclusive Living: Social Integration through Architectural and Urban spaces



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2 million
people in the Netherlands
who has a physical disability

=

12%
of the population
in the Netherlands

2 million

people in the Netherlands
who has a physical disability

Motor disabilities or im-
pairments

Physical impairments
(incl visual or auditory)

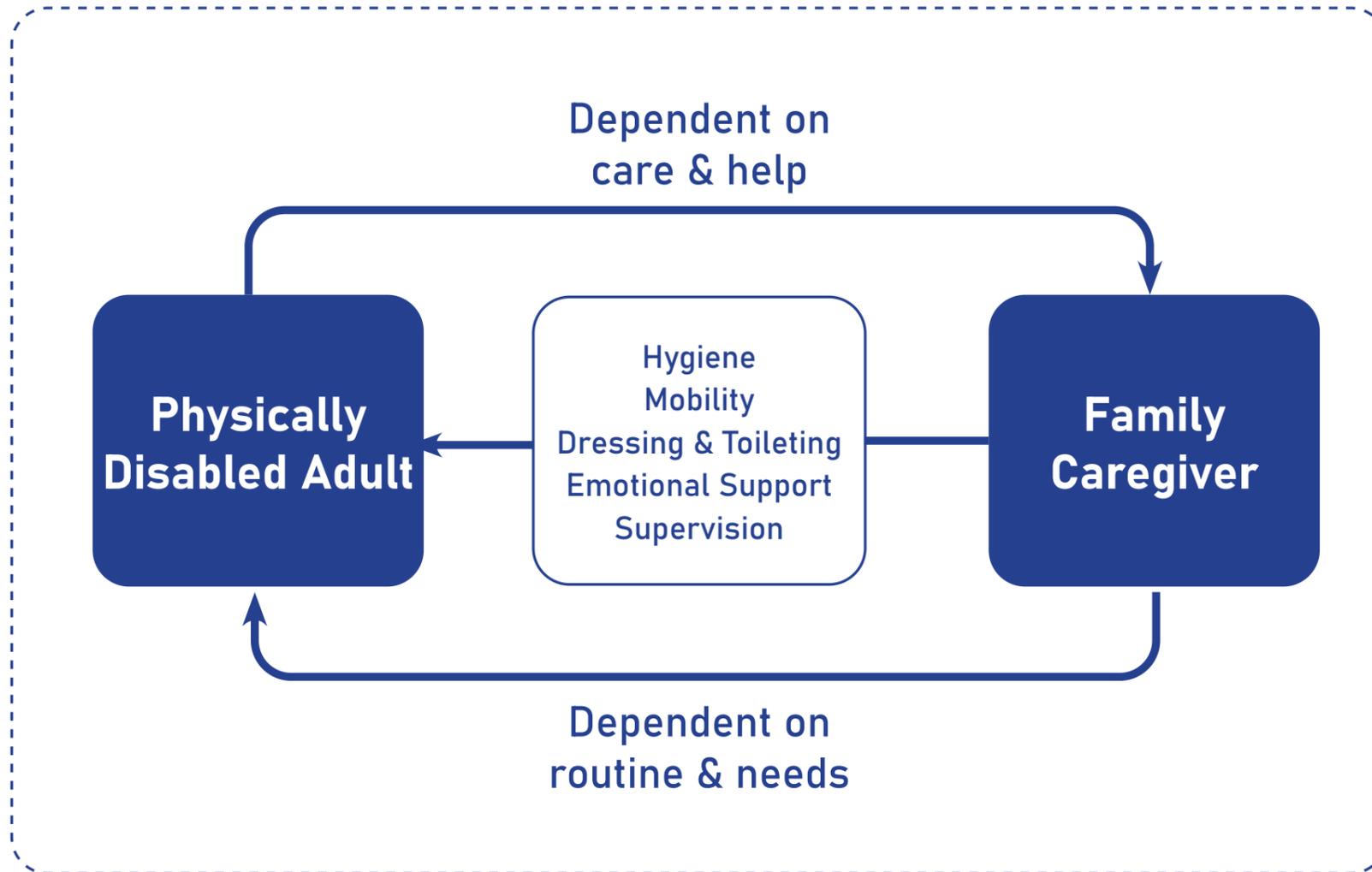


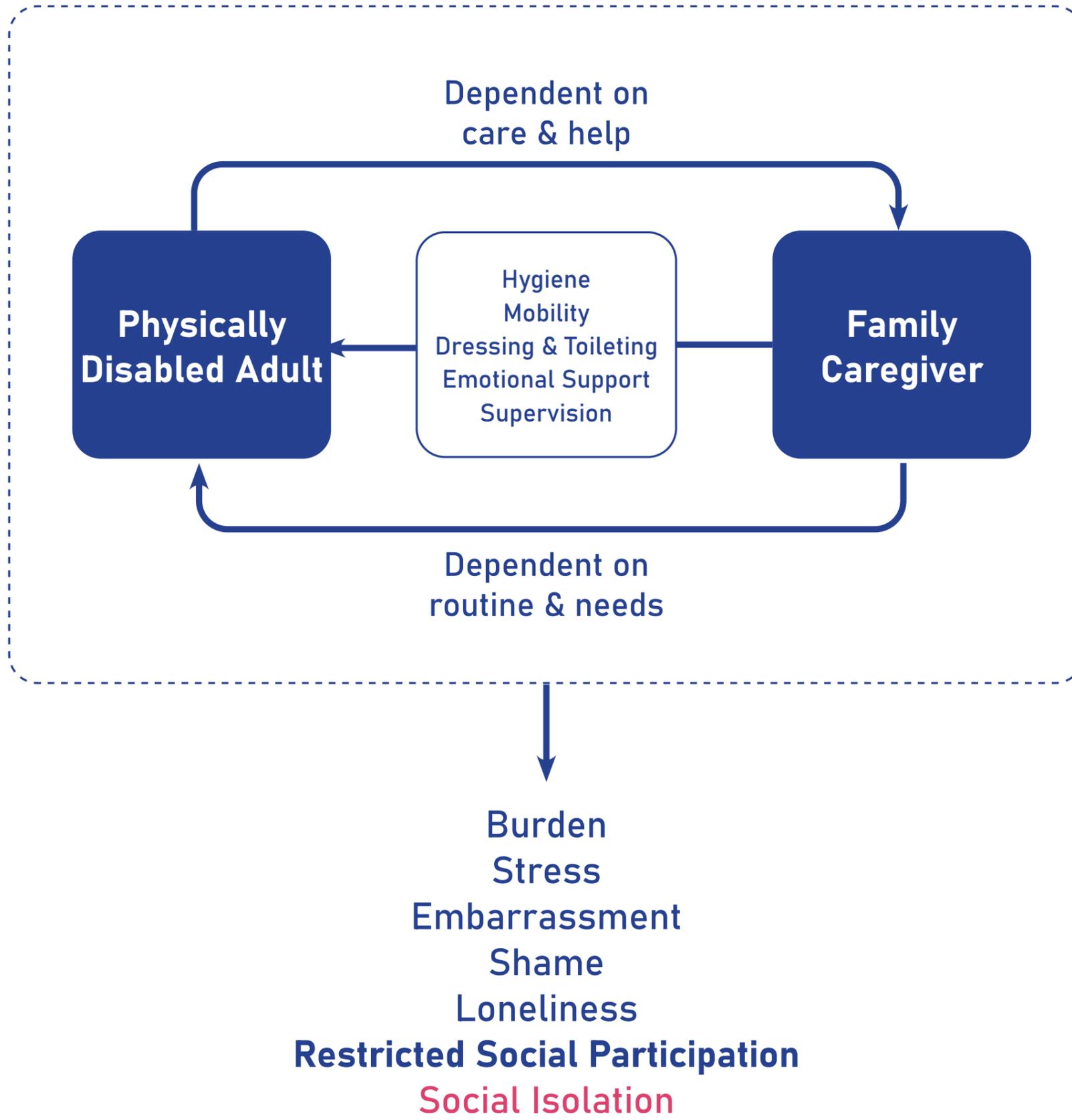
is the larger group

Physical disabilities
not only affect the
individual but also
their families

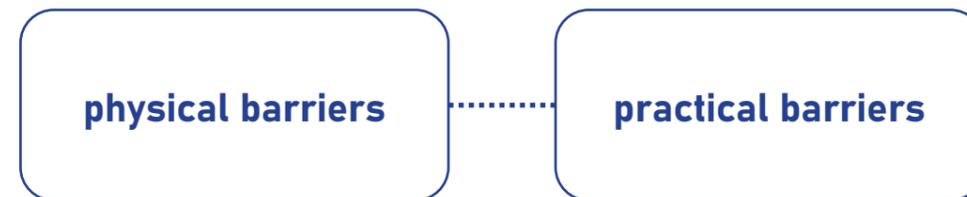


Especially the family
caregivers who pro-
vide support for the
disabled family
member who is
unable to complete
the tasks of daily life
independently





There has been a good number of policies issued in the Netherlands aiming to allow as many people as possible to participate fully in the society.



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3 How should the architectural and urban living environments of PDA and FC change to integrate them more in the society?

What kind of **architectural and urban living environments** can be integrated in the **daily lives** of the **physically disabled adults (PDA)** and their **family caregivers (FC)** to reduce their **social isolation**?

1 How does a day in the life of a physically disabled adult (PDA) and their family caregiver (FC) look like?

2 What living conditions help PDA and FC to feel more socially integrated in the society?

RESEARCH

Fieldwork with Interviews





joined 2 support group meetings at two different locations

got in contact with 4 PDA and 2 FC

visited them at their own homes



visited two different activity centers, volunteered for 2 weeks in total

got in contact with 9 PDA

met them at their daycare locations, some of them invited me to their homes

Patrick (40)

My chat with Patrick showed me how important **SOCIAL INTERACTION** is to feel less isolated.

'... it can get quite lonely sometimes'

Wil (60)

My chat with Wil showed me how important finding their **(NEW) SENSE OF PURPOSE** is to feel less isolated.

'... I am very lucky that I can be helpful to others'

Jan (60)

My chat with Jan showed me how important **PRIVACY** is to feel less isolated.

'... With my condition, I don't know how I will feel when I wake up, so I need my own time and space'

Maya (45)

My chat with Maya showed me how important **INDEPENDENCE** is to feel less isolated.

'... It is important for me and my family to continue our lives the way we did before my diagnosis - so I should be as independent as possible.'

RESULTS

What did I learn?



CONCLUSION 1

There are 3 main points to focus on while designing living environments to combat social isolation:

Independence & Autonomy

allowing individuals to function independently in their daily lives

Sense of Purpose

creating an “after the disability” phase which is worth living for

Social Interaction

while respecting the boundaries of PRIVACY

CONCLUSION 2

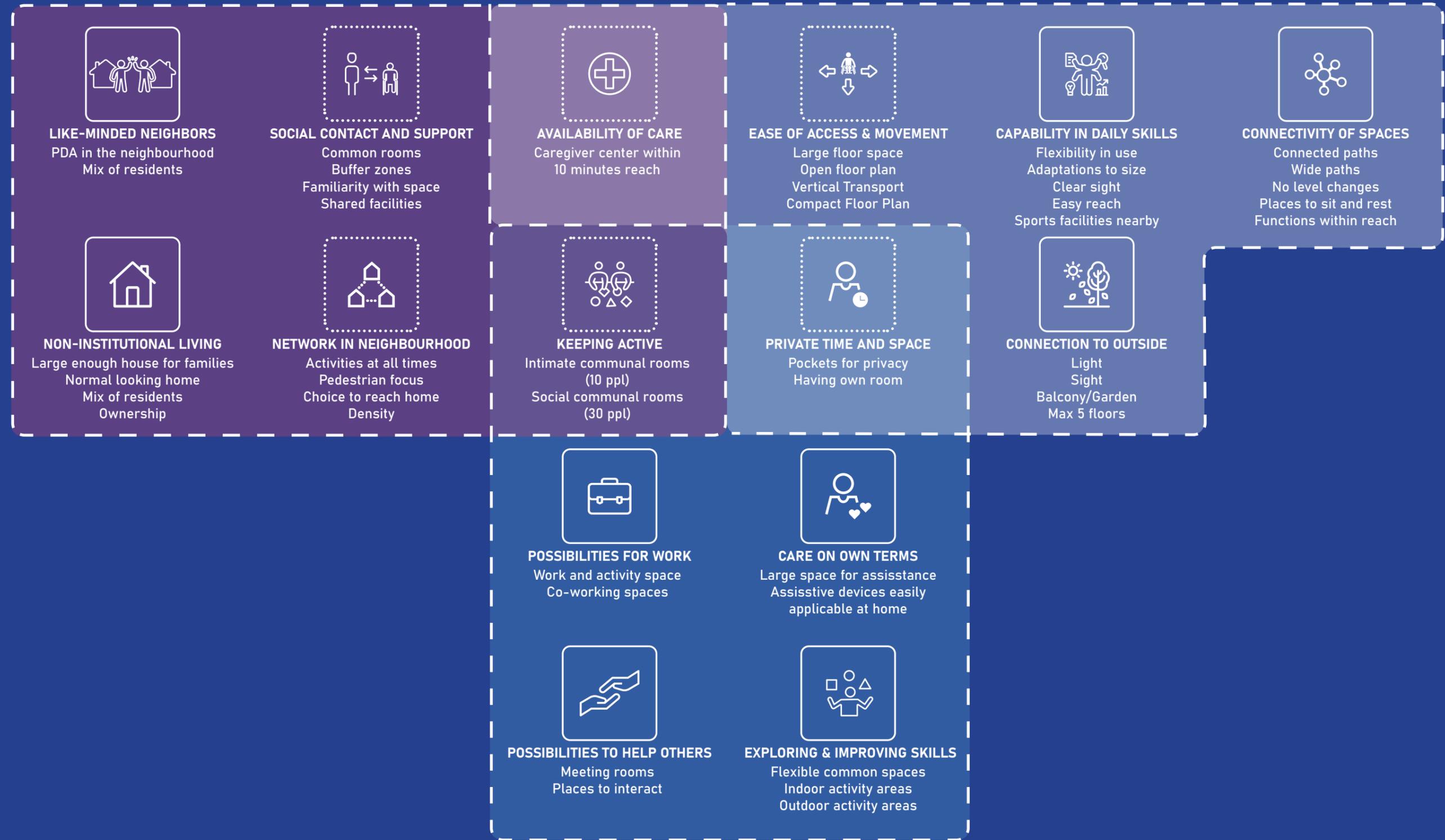
There is a stigma in our society which emerges from “not knowing the target group well”.

Our current living environments use a separatory strategy rather than an integratory one: this causes individuals to live in bubbles in which they feel the most comfortable.

DESIGN GUIDELINES & APPLICATIONS

SOCIAL INTERACTION

INDEPENDENCE & AUTONOMY



SENSE OF PURPOSE

MAIN CONCEPT

“An Inclusive Living Environment” offers public functions, social amenities and housing which are all available for everyone - regardless of their age, ability or family configuration - where a healthy environment of interaction and understanding can be created.

MAIN CONCEPT

A living environment where a strong community and social network can be formed where disabilities and care is not a burden or something to be ashamed of, but it is accepted, understood, and shared.



Share the Care

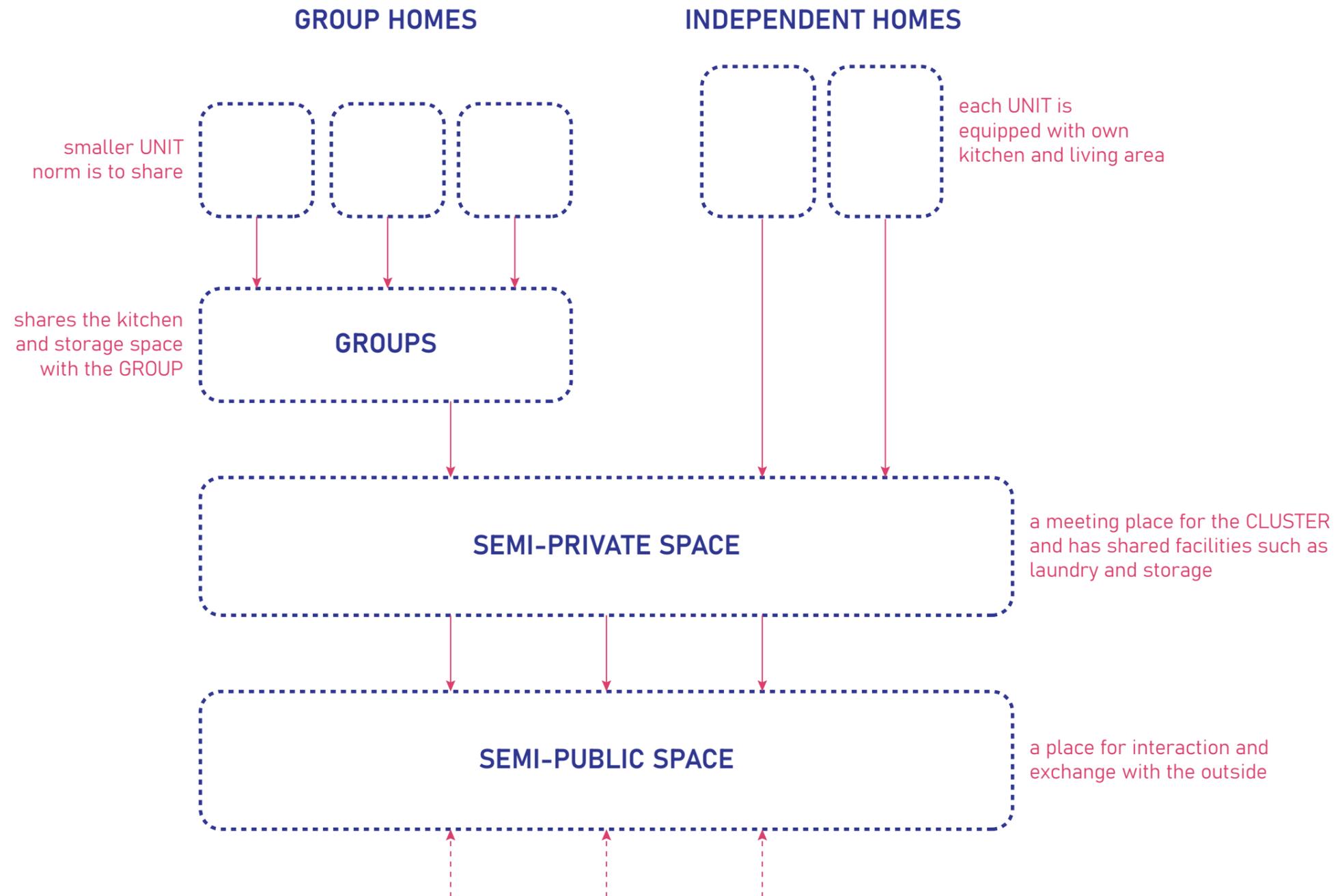
By forming **healthy communities** where social bonds are formed between individuals that live in proximity to one another, **light care can easily become a “shared value”**

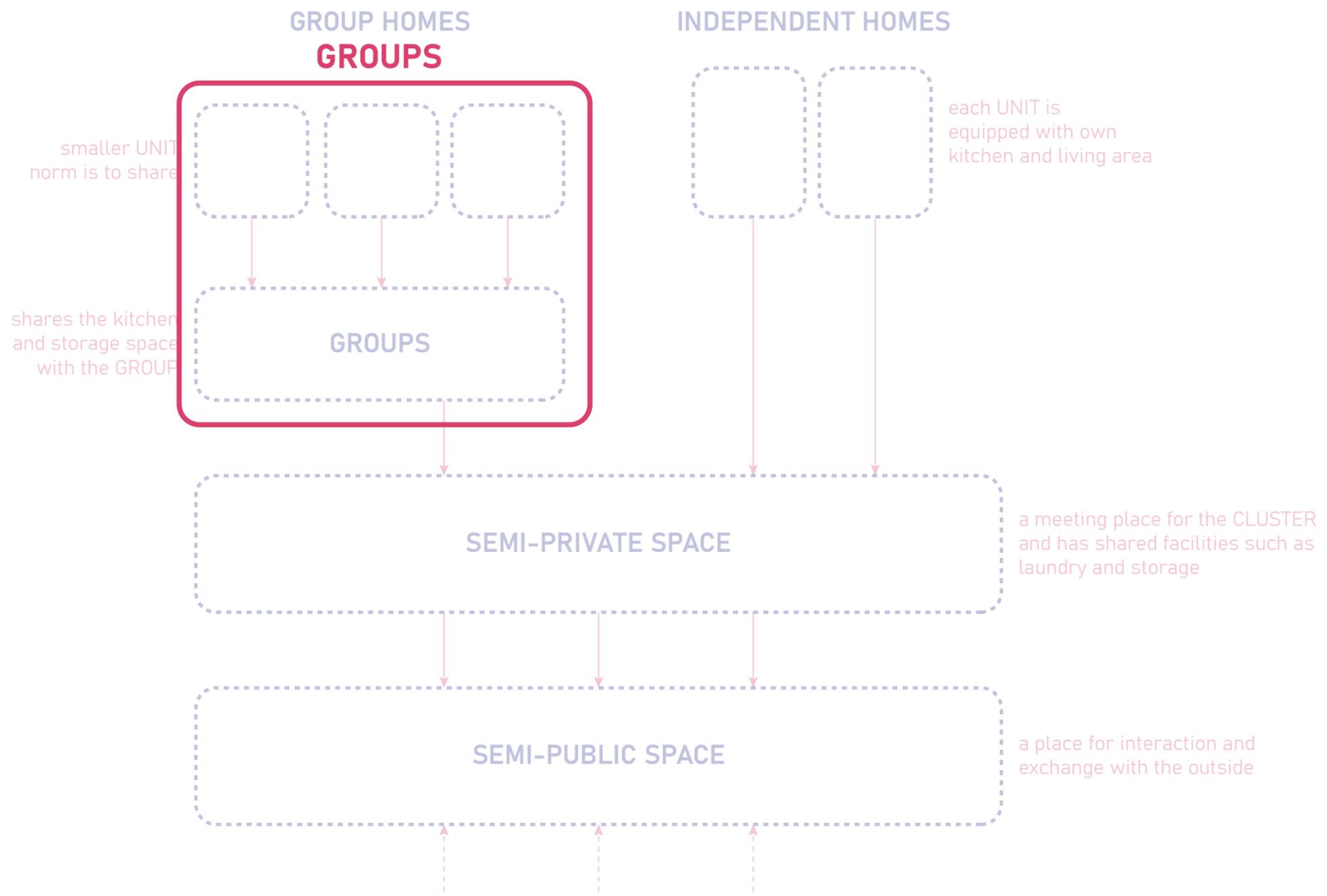
This helps to release the pressure, burden and shame that is primarily experienced by physically disabled adults and their families, and reduce their social isolation

DESIGN

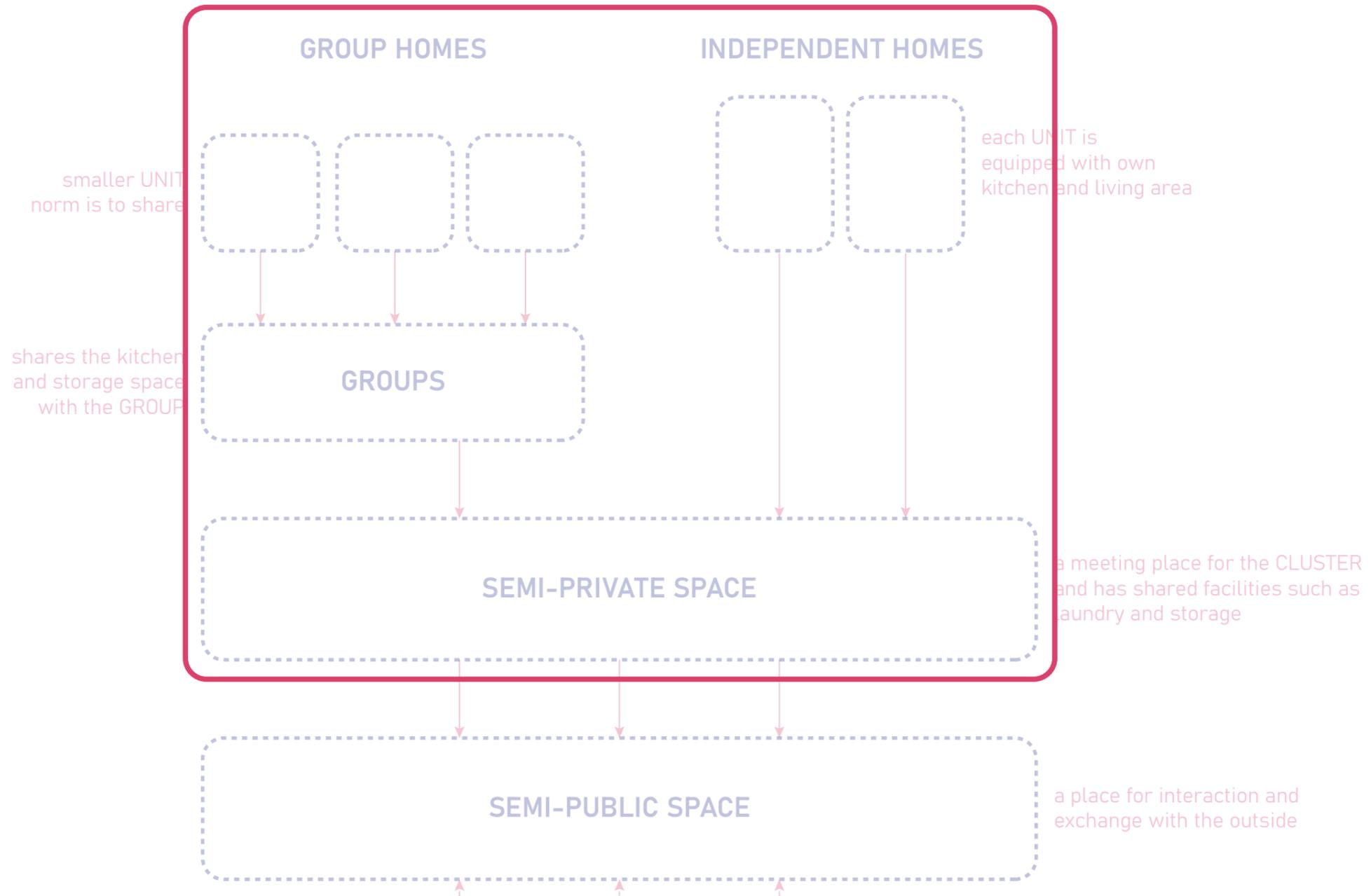
From Research to Design

PROGRAM

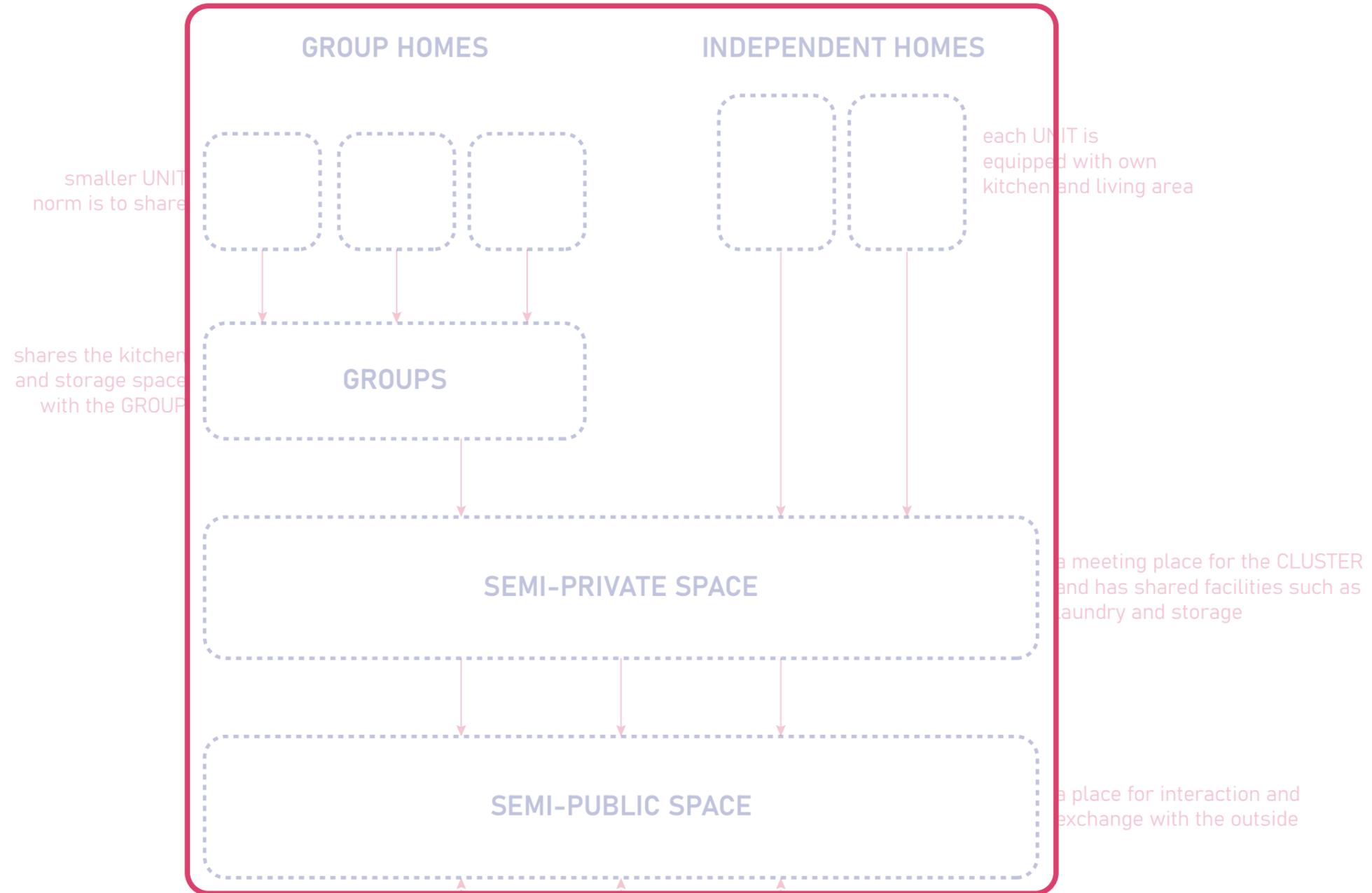




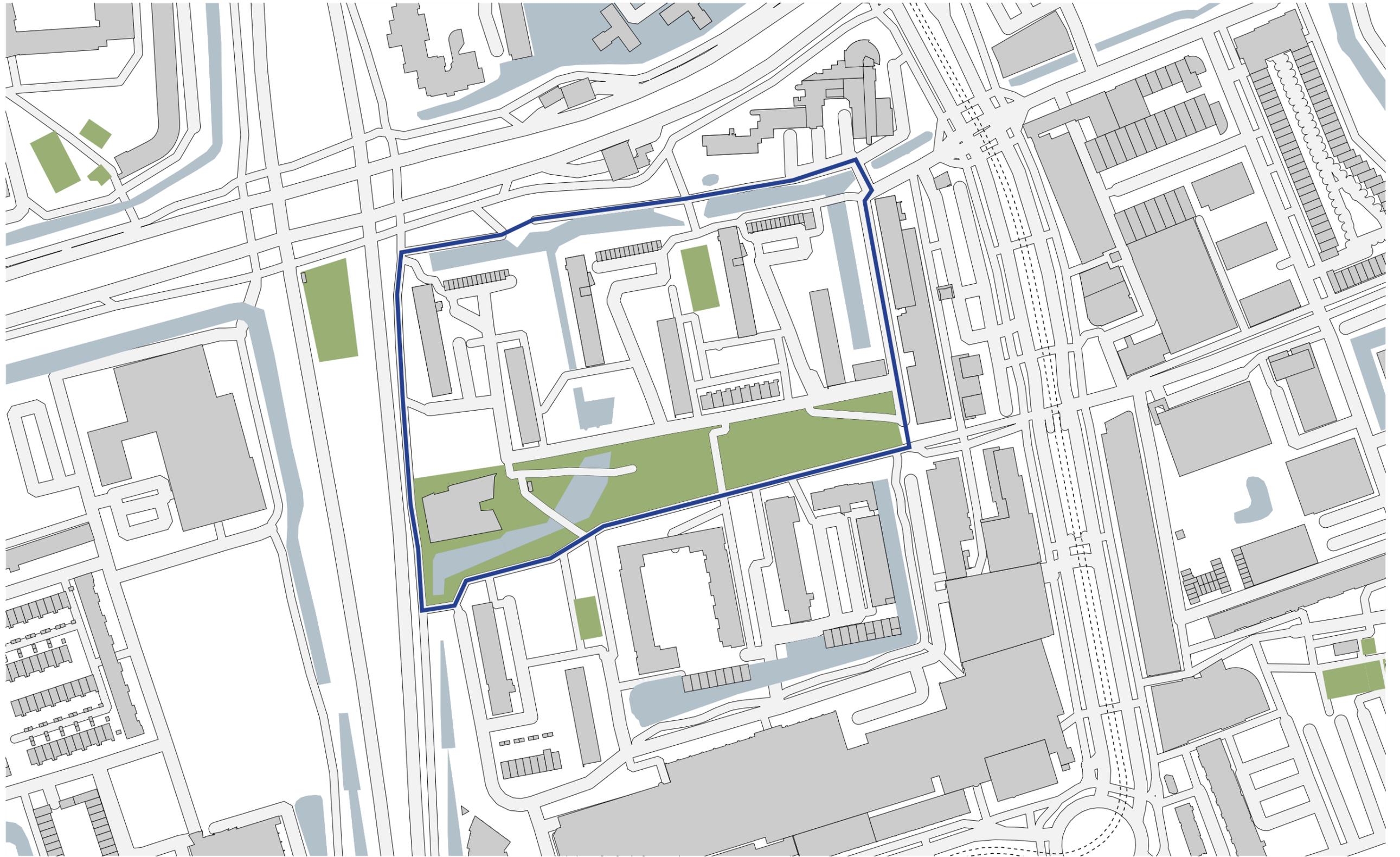
CLUSTER



COMMUNITY



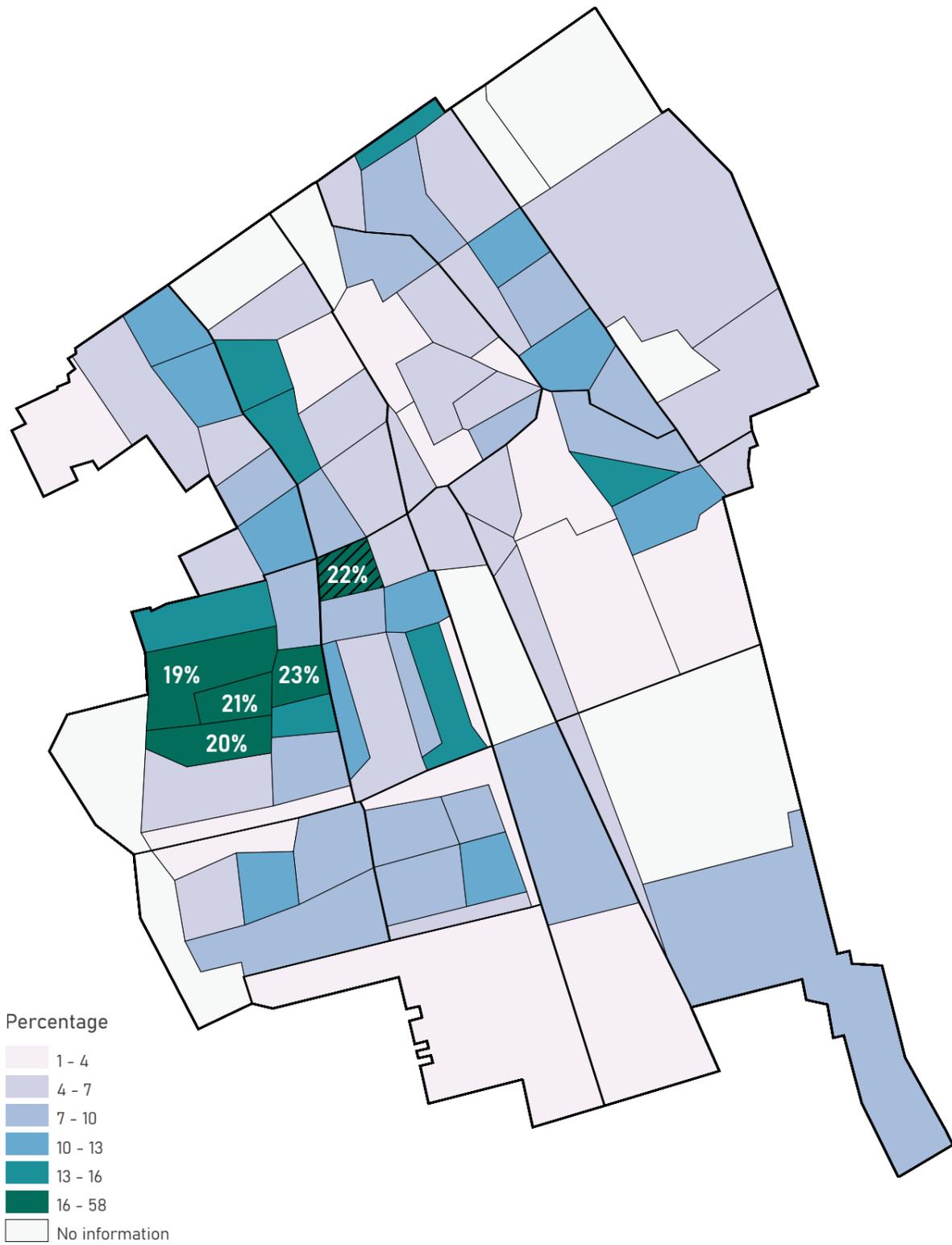
LOCATION CHOICE



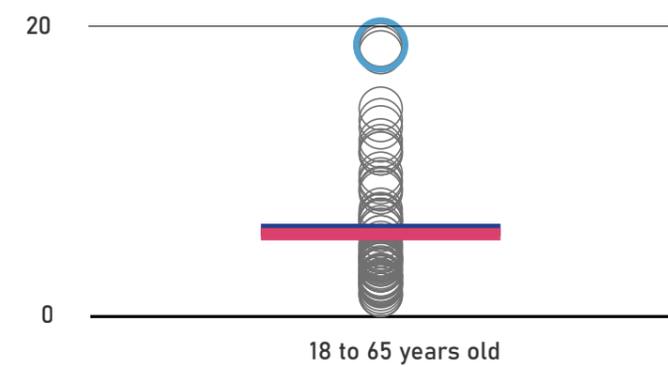
SITE CHOICE

Why Poptahof Noord?

1. POPTAHOF NOORD IS THE NEIGHBOURHOOD WITH 2ND HIGHEST PERCENTAGE OF PDA IN DELFT.

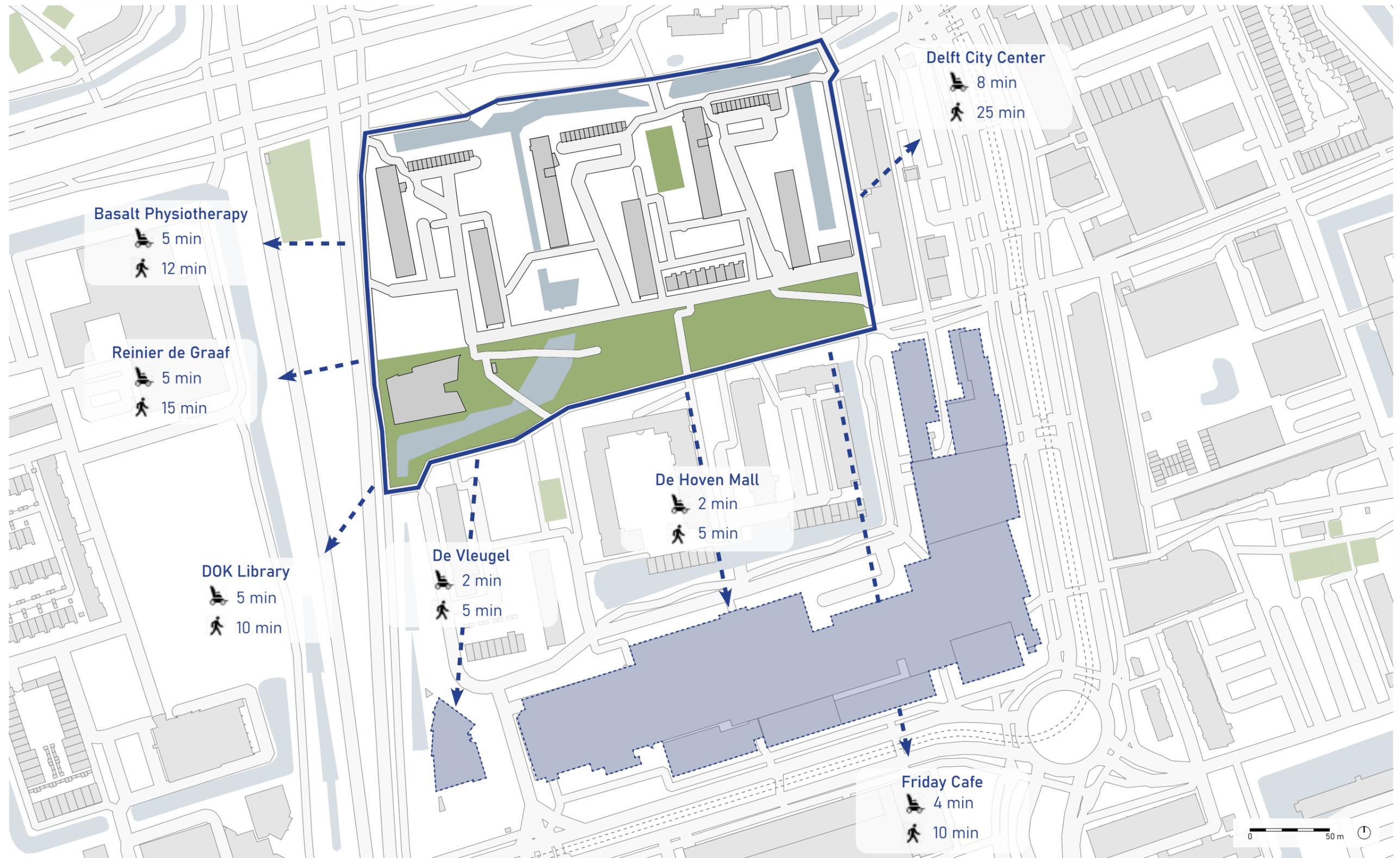


Residents	Netherlands	Delft Municipality	Poptahof Noord
17.000.000 residents	9.6%	8.8%	22.1%

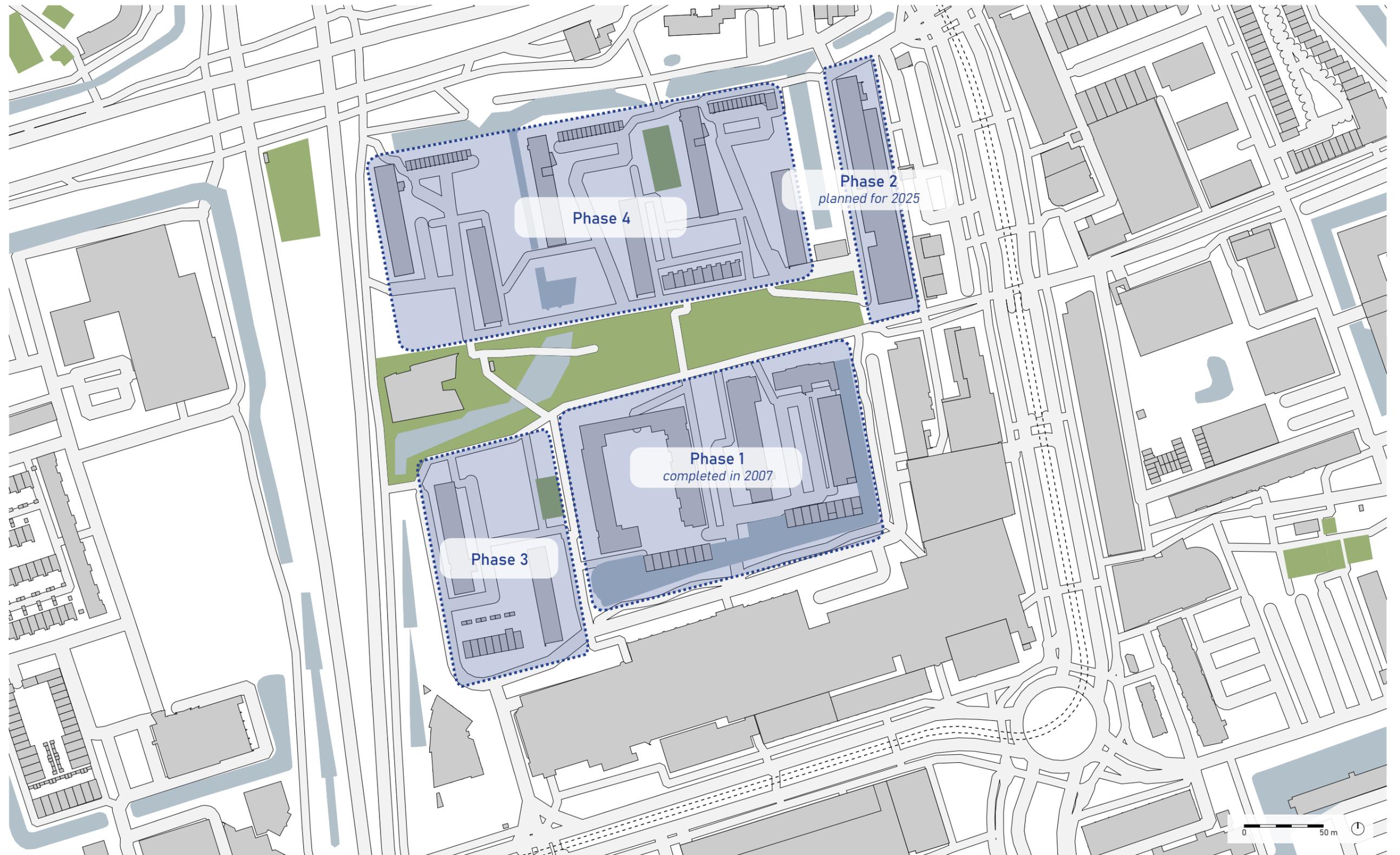


○ Neighbourhoods ■ Netherlands ■ Delft ○ Poptahof Noord

2. CENTRAL LOCATION & NECESSARY FUNCTIONS FOR THE PDA AND FC (DETERMINED BY THE RESEARCH) ARE NEARBY.



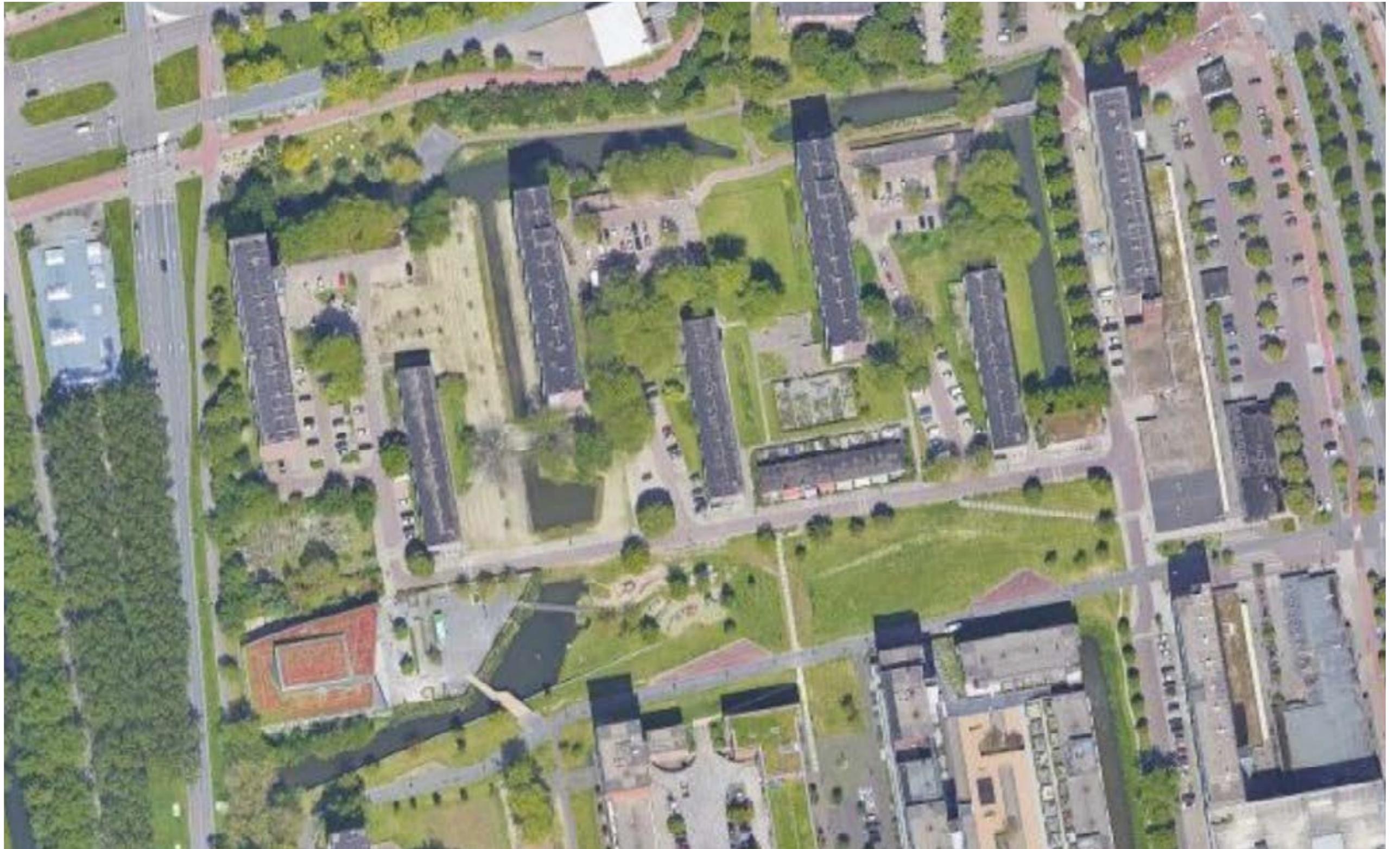
3. NEIGHBOURHOOD OF POPTAHOF NOORD AND ZUID ARE BOTH UNDER REDEVELOPMENT AT THE MOMENT, SINCE 2003.



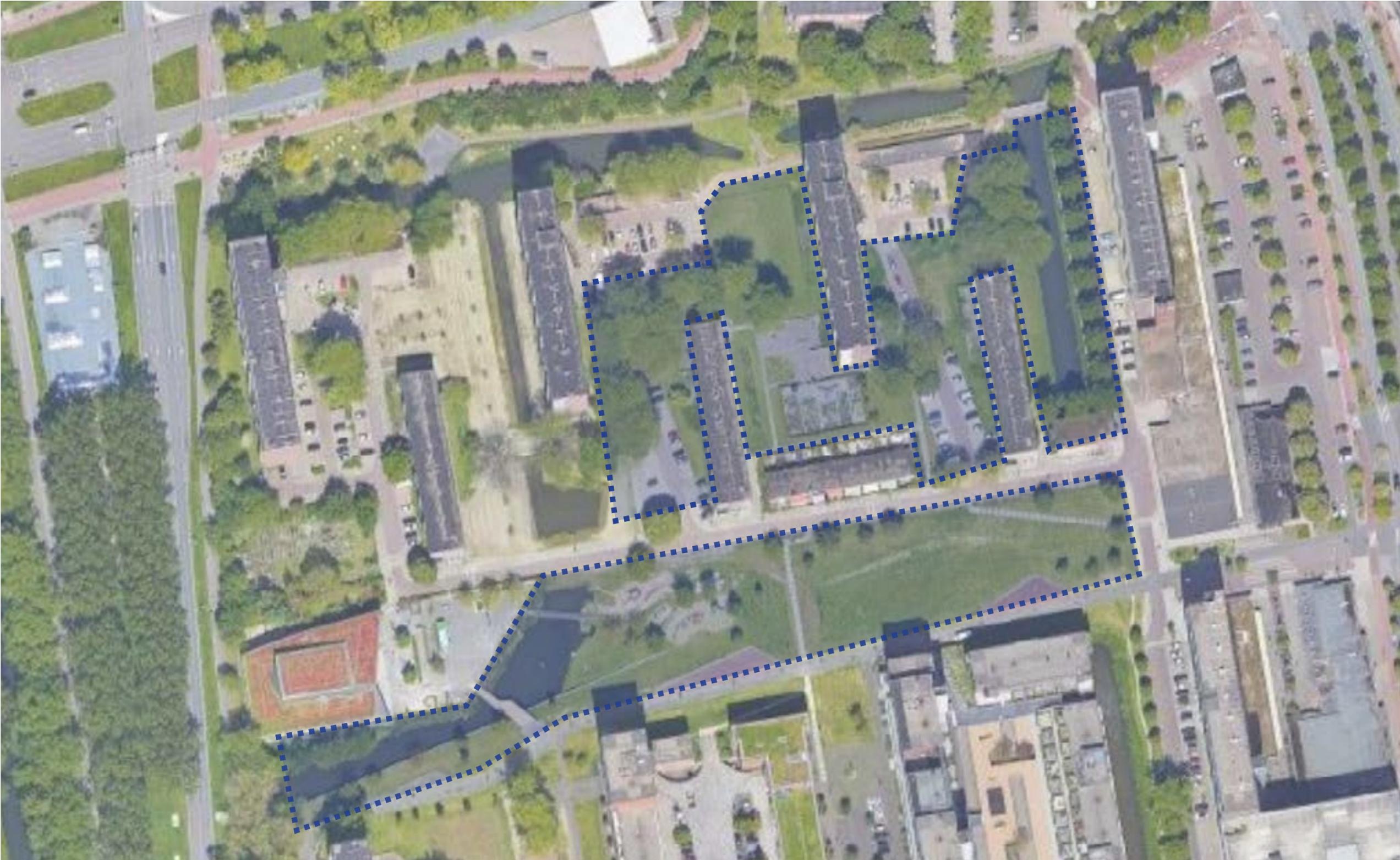
SITE ANALYSIS

How does **Poptahof Noord** look like now?

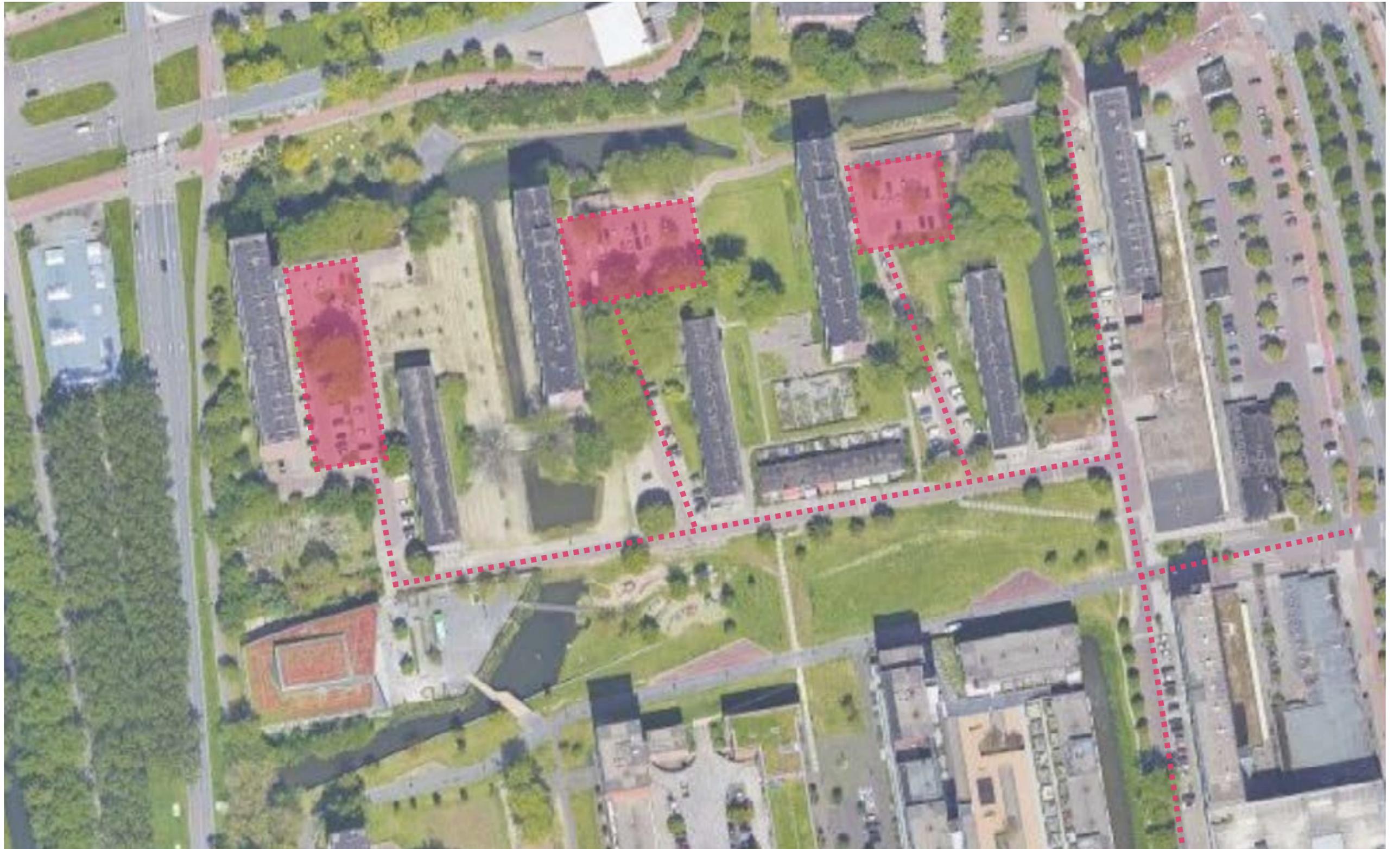
CURRENT CONDITION OF POPTAHOF NOORD



STRENGTHS

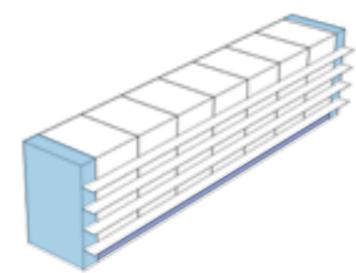


WEAKNESSES



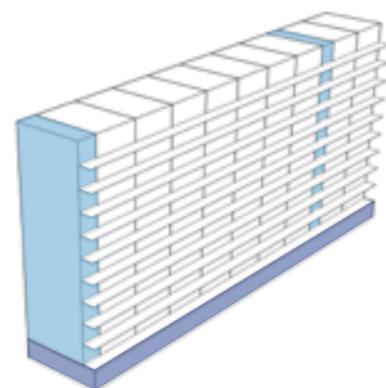


12 meters wide
60 meters long
5 floors in total
ground floor for storage
7 dwellings on each floor
28 dwellings in total (per building)
2 cores - no elevators

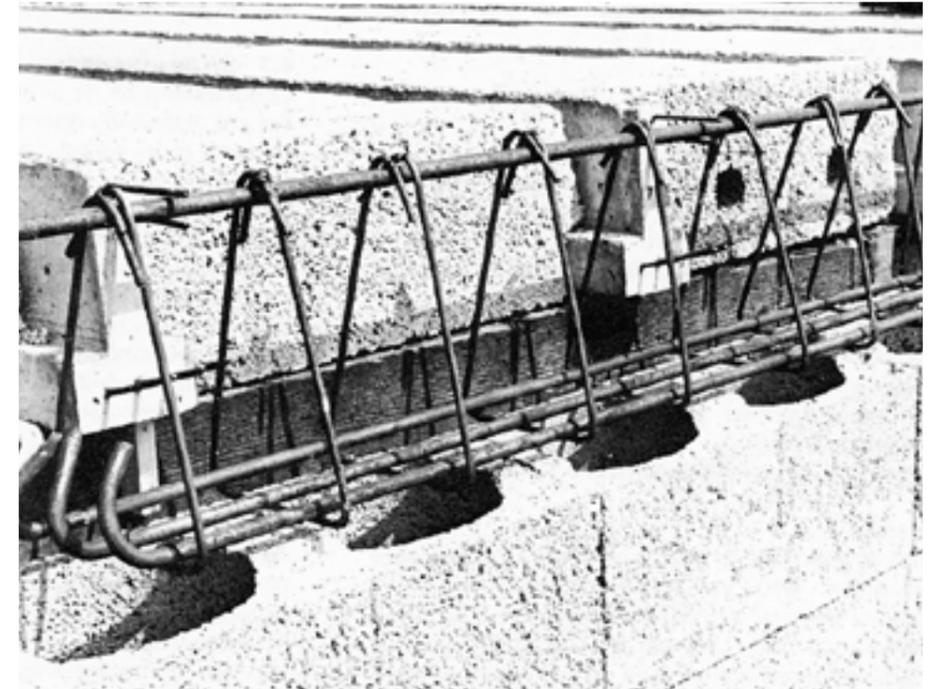
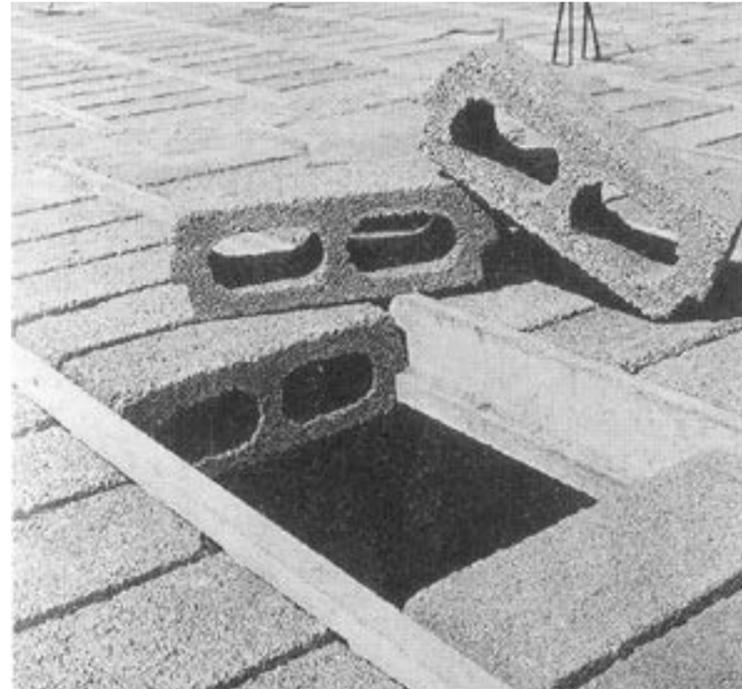
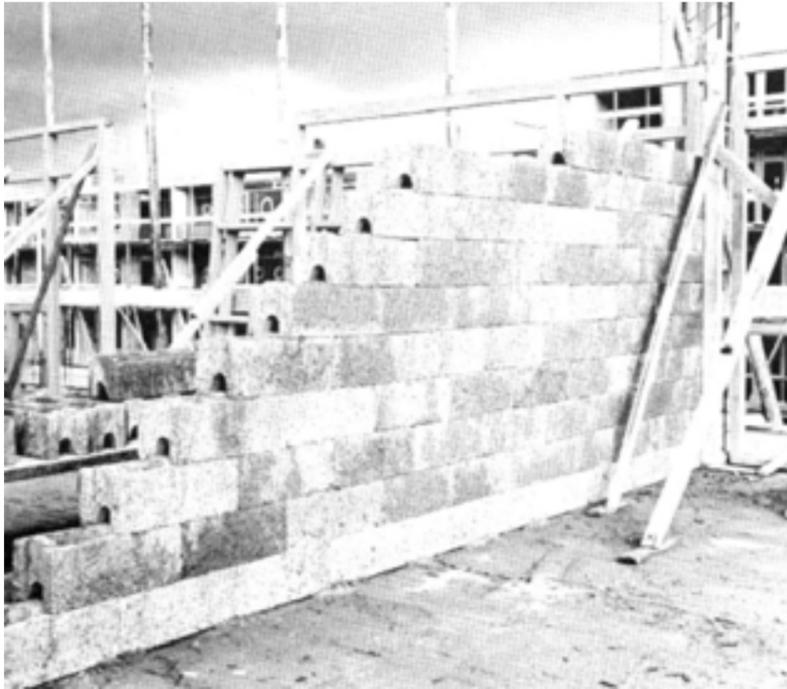




12 meters width
70 meters long
11 floors in total
ground floor for storage
9 dwellings on each floor
100 dwellings in total (per building)
2 cores - elevators are present

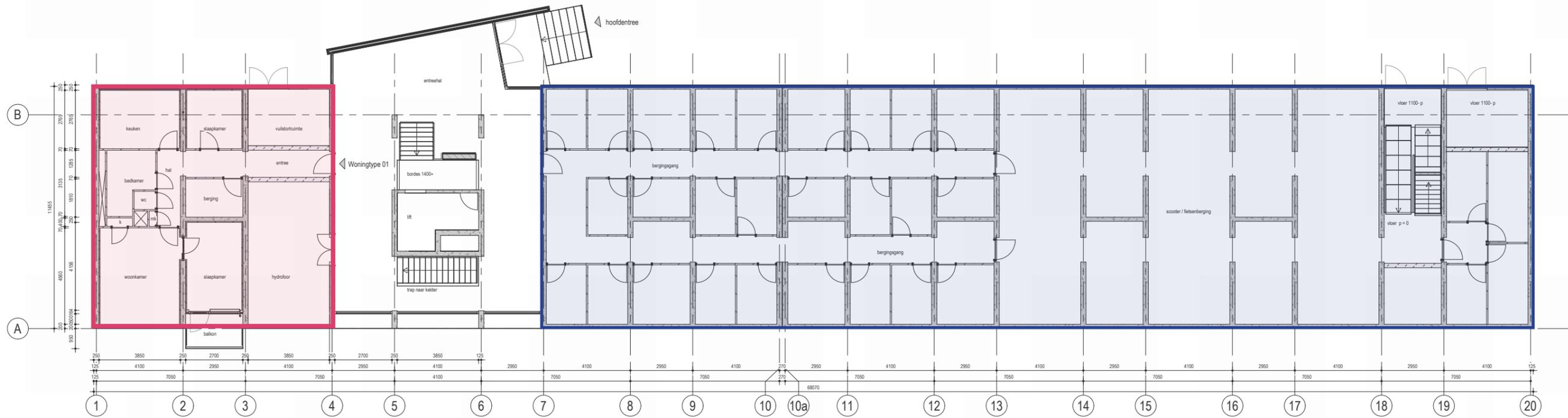


MUWI SYSTEM

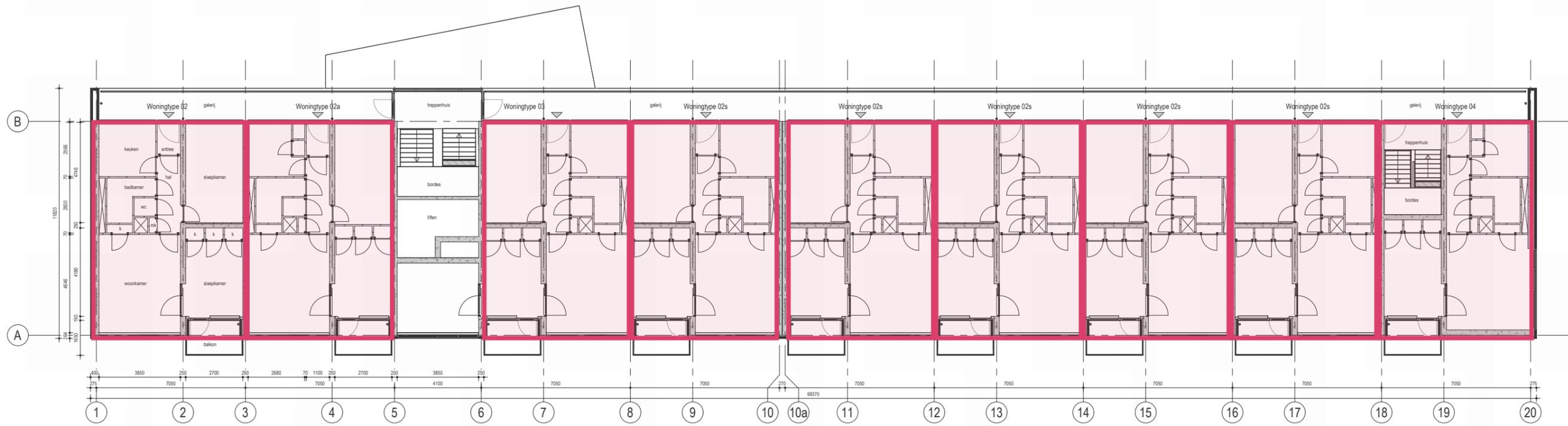


BUILDING CHOICE





Begane grond
1:100



1e t/m 11e verdieping
1:100





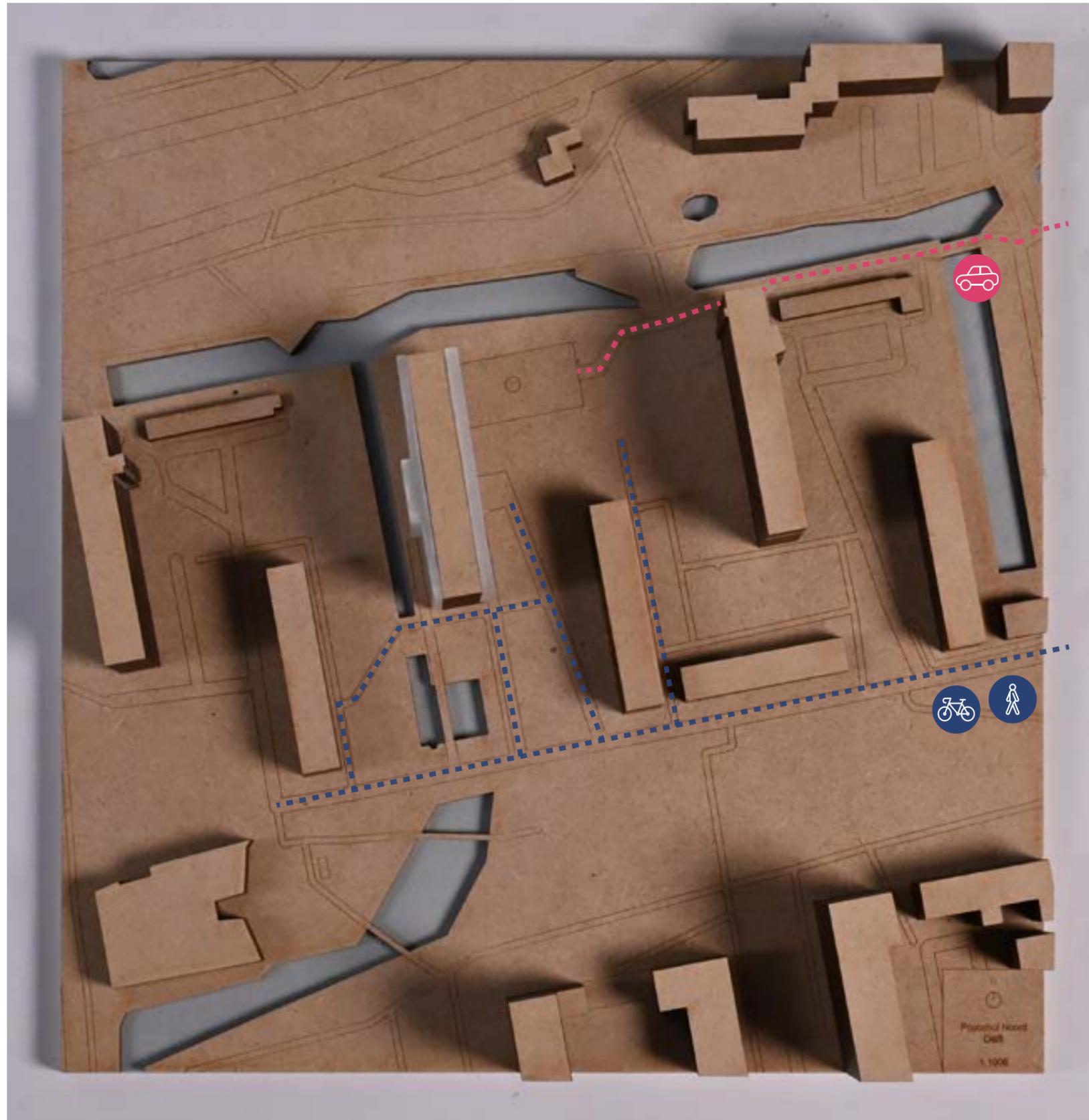
Voorgevel
1:100

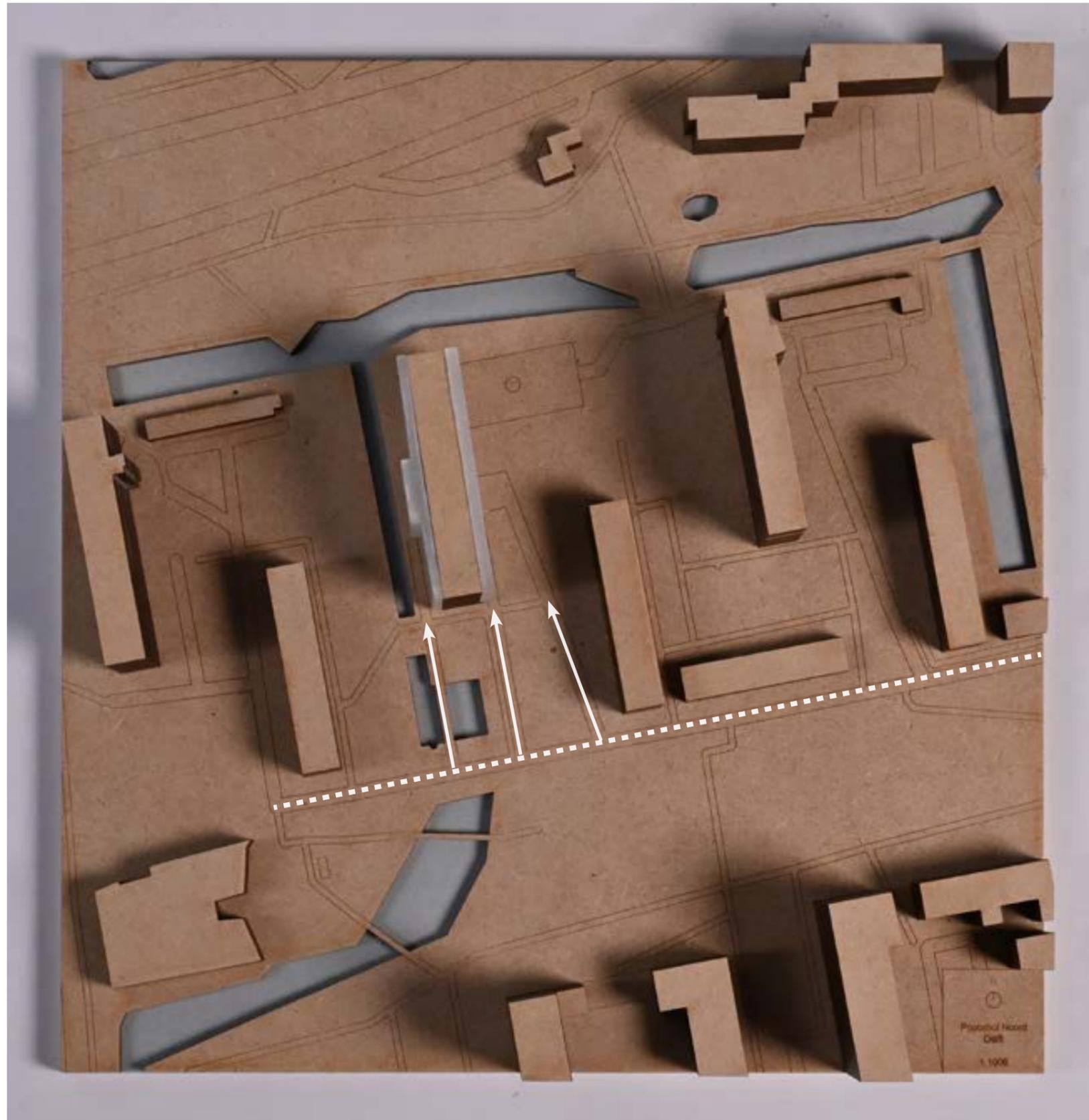


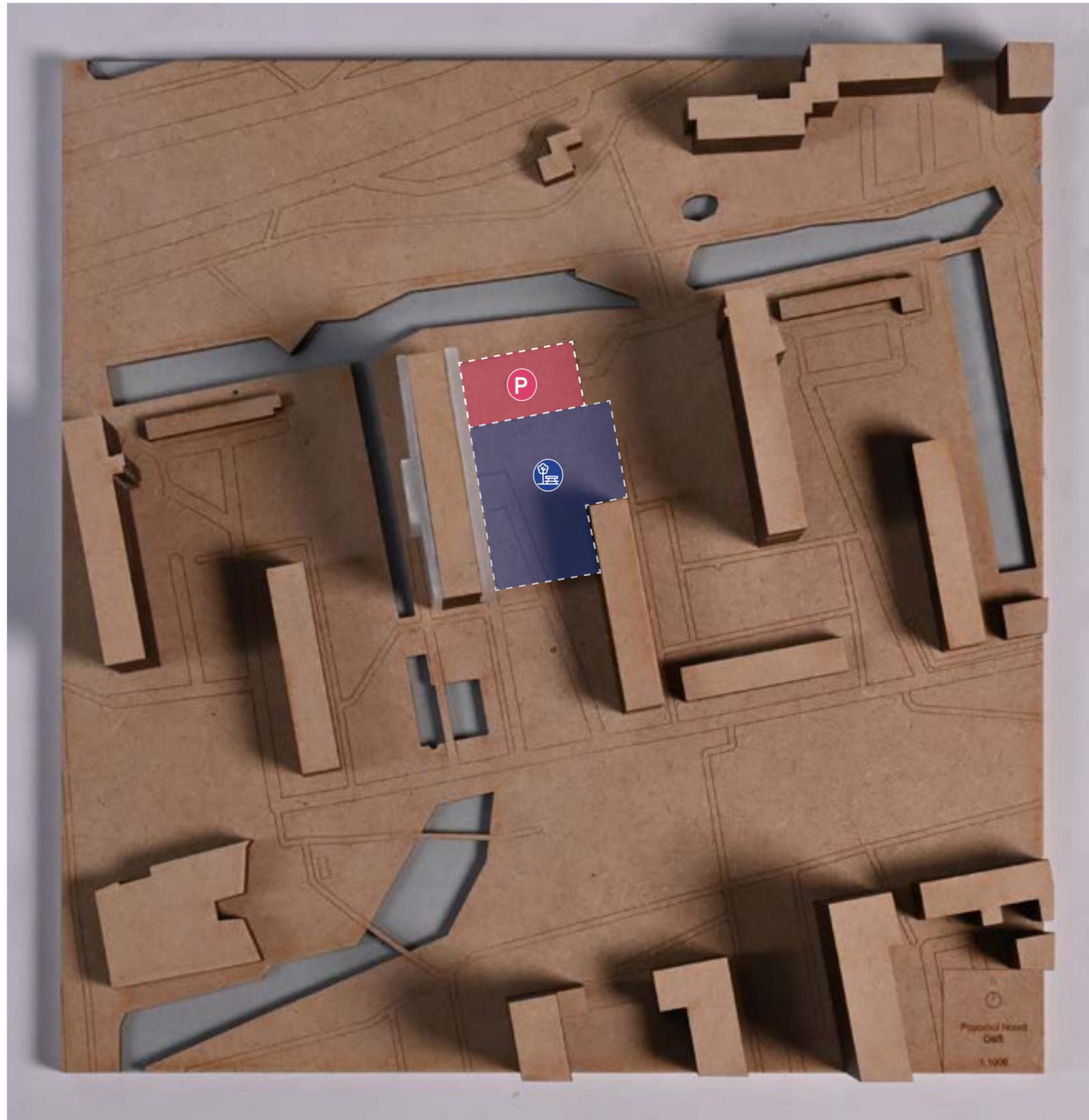
Achtergevel
1:100

DESIGN

Transformation of “Patrijs” in Poptahof Noord

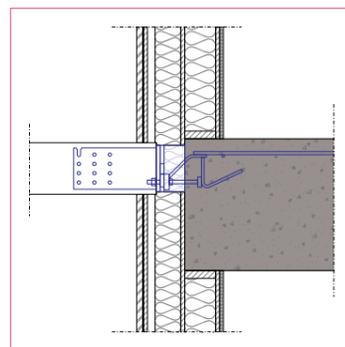
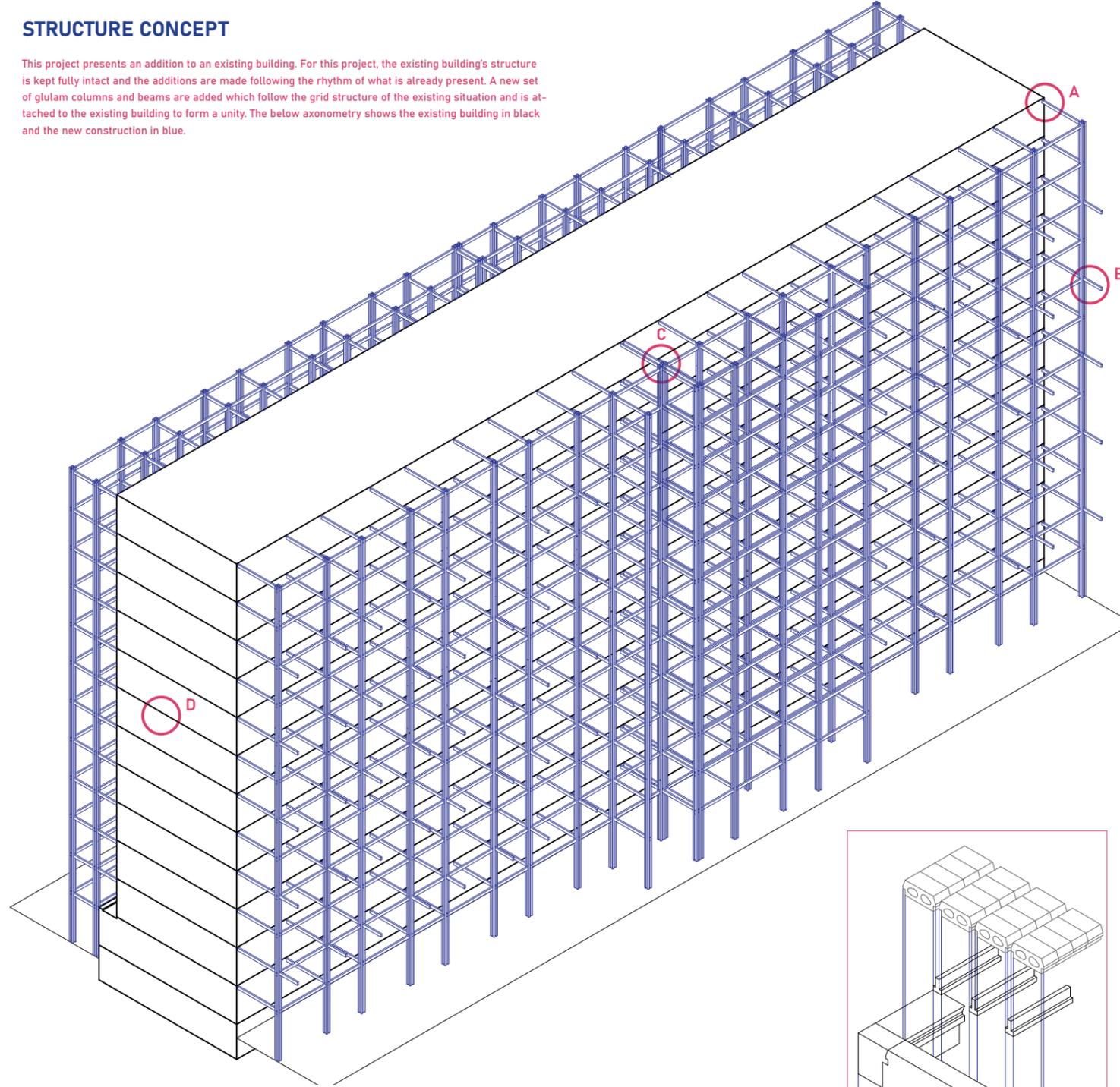






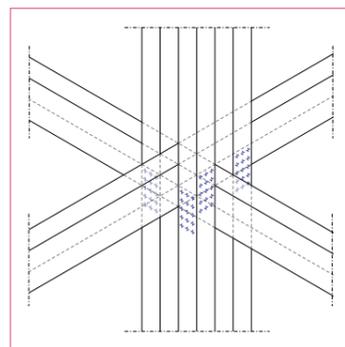
STRUCTURE CONCEPT

This project presents an addition to an existing building. For this project, the existing building's structure is kept fully intact and the additions are made following the rhythm of what is already present. A new set of glulam columns and beams are added which follow the grid structure of the existing situation and is attached to the existing building to form a unity. The below axonometry shows the existing building in black and the new construction in blue.



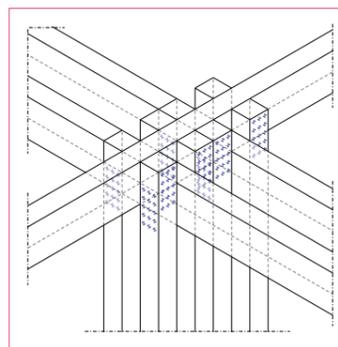
A

Detail A shows how the new glulam beams are connected to the existing construction. To create a connection where lateral and horizontal forces are transmitted, IsoPRO HBQ system is used. This system transmits both positive shearing forces and horizontal forces and includes a (minimum of) 80 mm of insulation between the beams which are getting connected to solve the issue of thermal bridging.



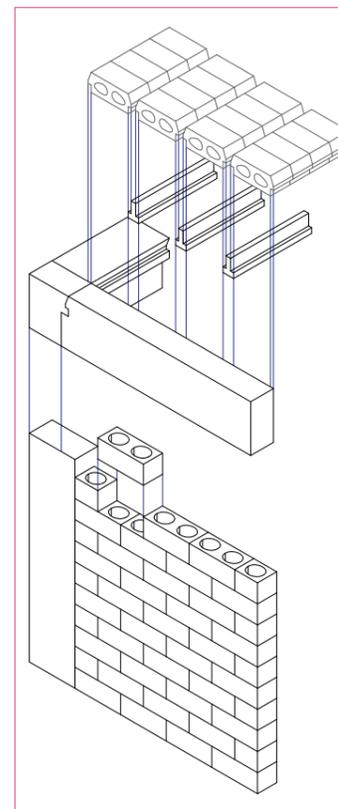
B

Detail B shows how the beams and columns are connected with one another. Beams pass perpendicular to each other in between the four columns. Both beams are attached to all four of the columns using stud connectors which form rigid connections between the elements to ensure stability.



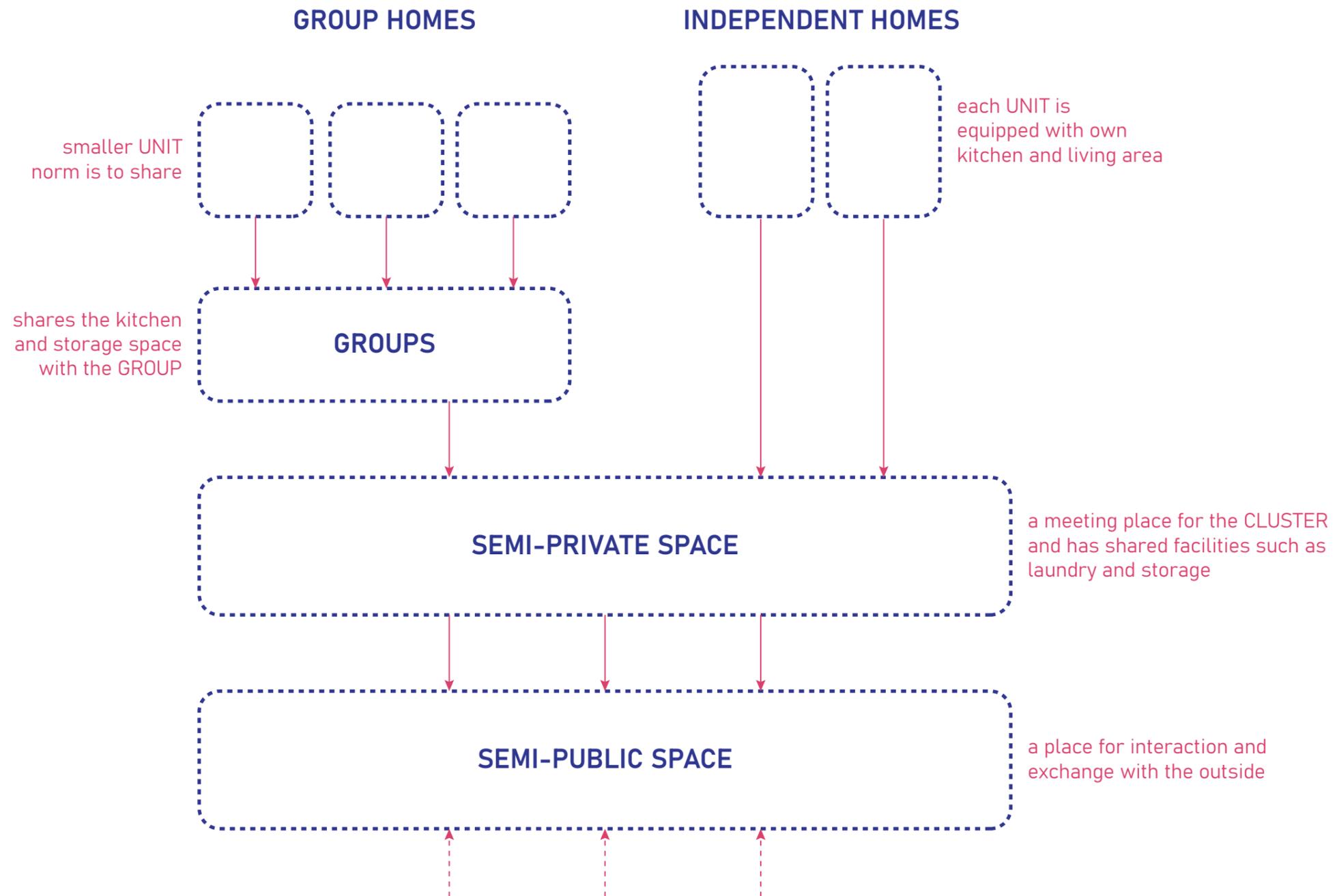
C

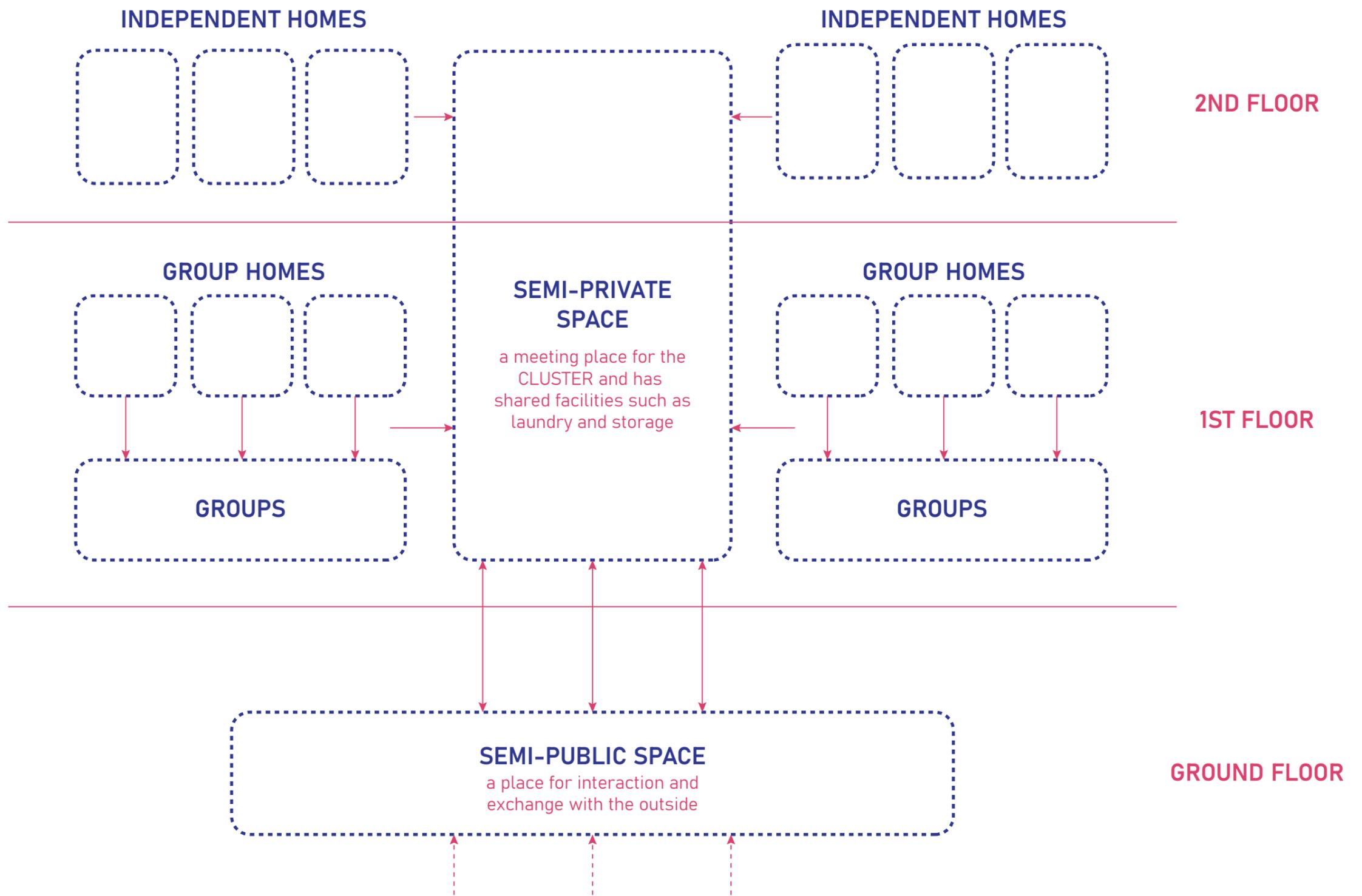
Existing structure of the building includes a movement joint located in the middle of the building to ensure movement is possible for when the building is exposed to heat or other factors. This existing movement joint is mirrored with the new structure for the same technical reasons, but also to expose the existing construction using the new elements.

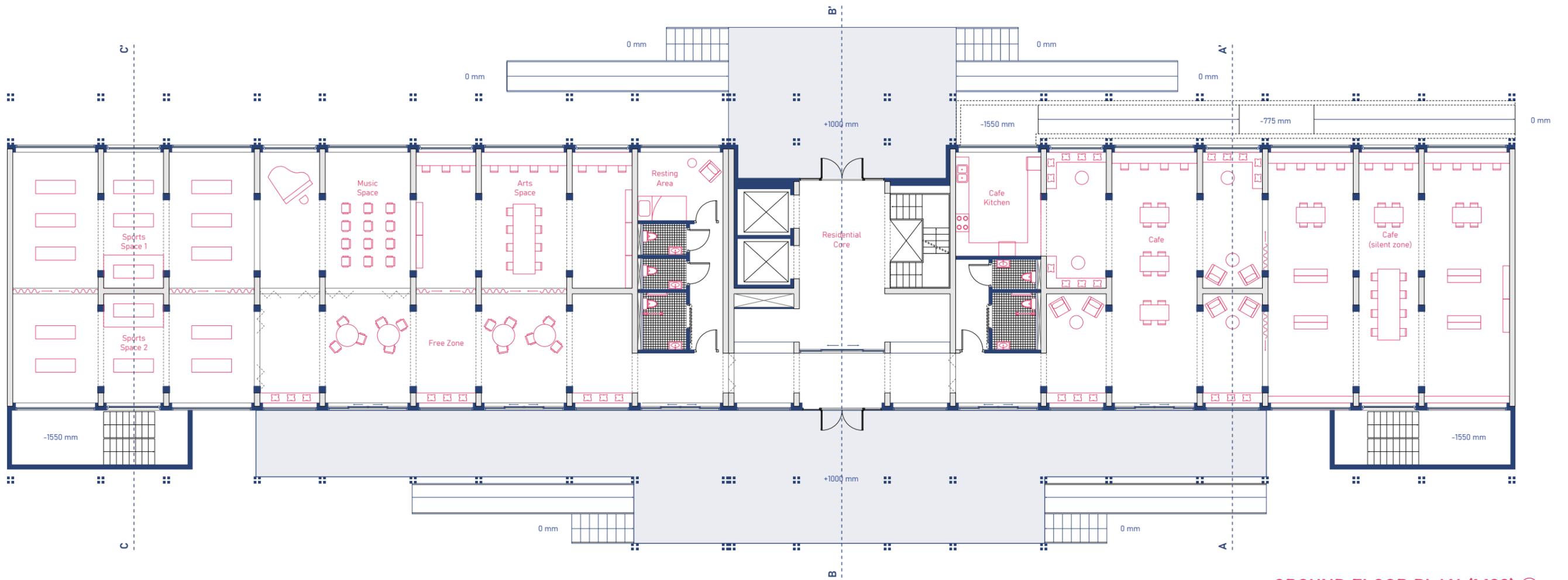


D

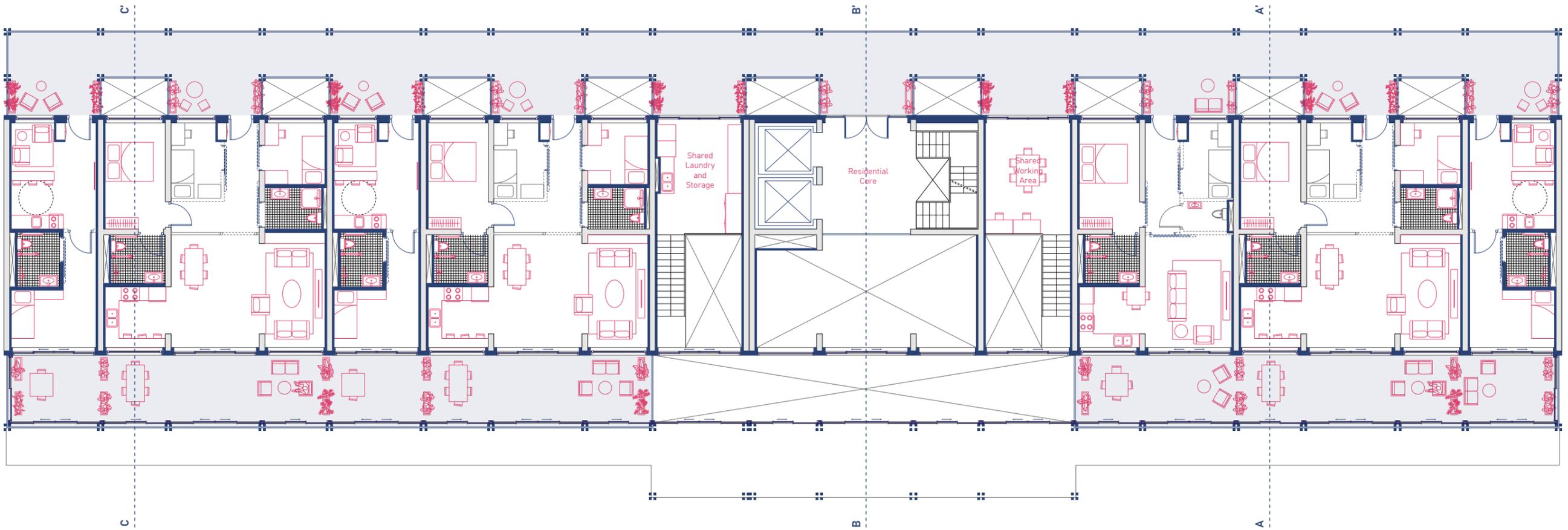
Existing building has been built using the MUWI construction system. In this specific building, walls (excluding basement and ground floor) are built using MUWI wall blocks with two columns on either side. On the walls, concrete is poured on site to effectively secure the connection of the beams which run perpendicular to the wall. Between these beams, MUWI floor blocks are placed.



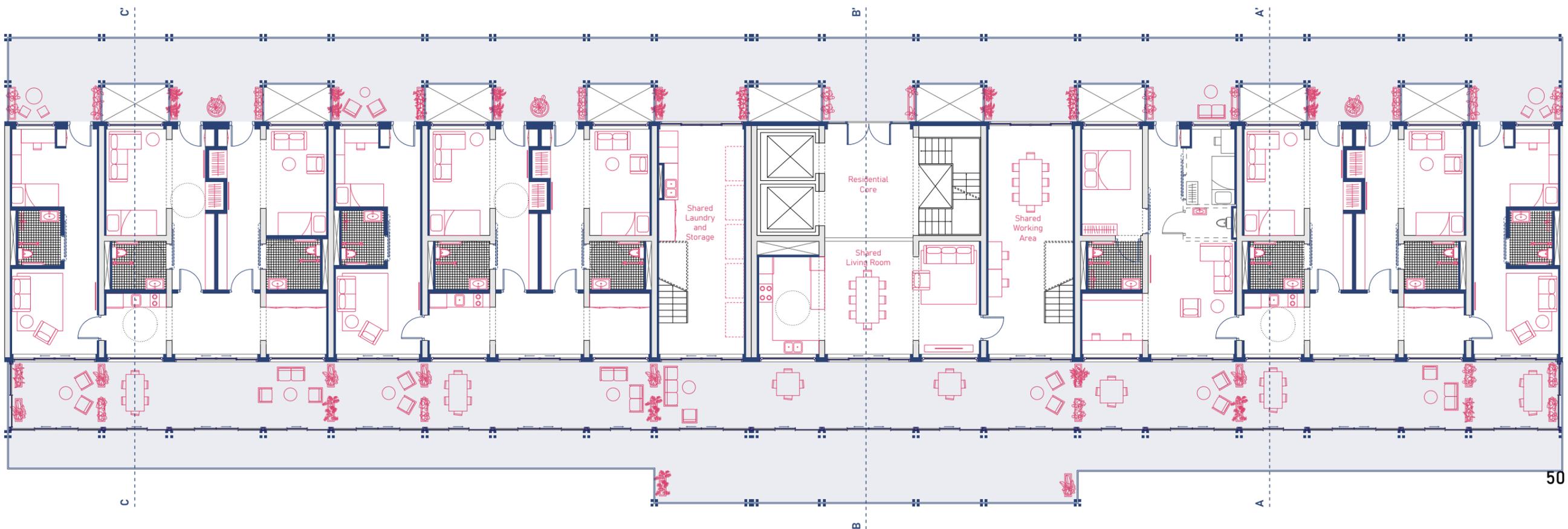




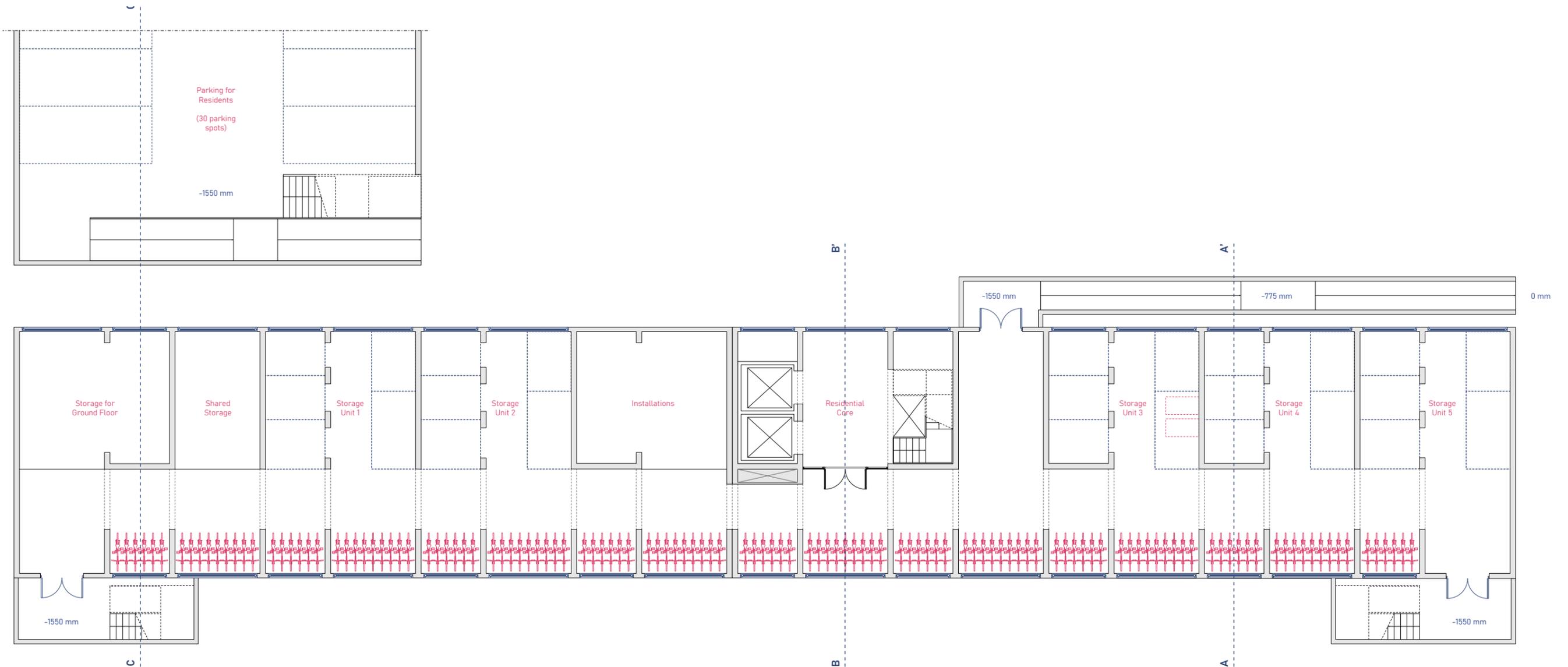
GROUND FLOOR PLAN (1:100) ↻



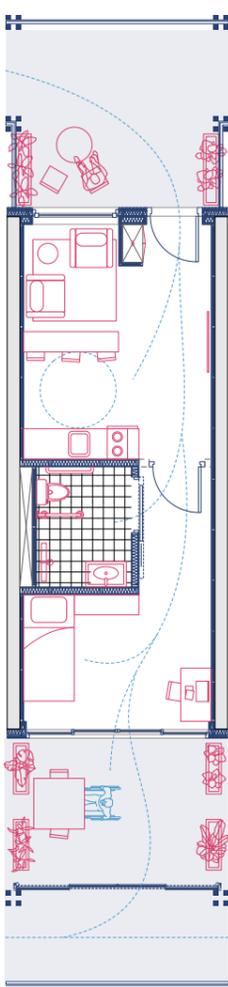
SECOND RESIDENTIAL FLOOR PLAN (1:100) ⊕



FIRST RESIDENTIAL FLOOR PLAN (1:100) ⊕



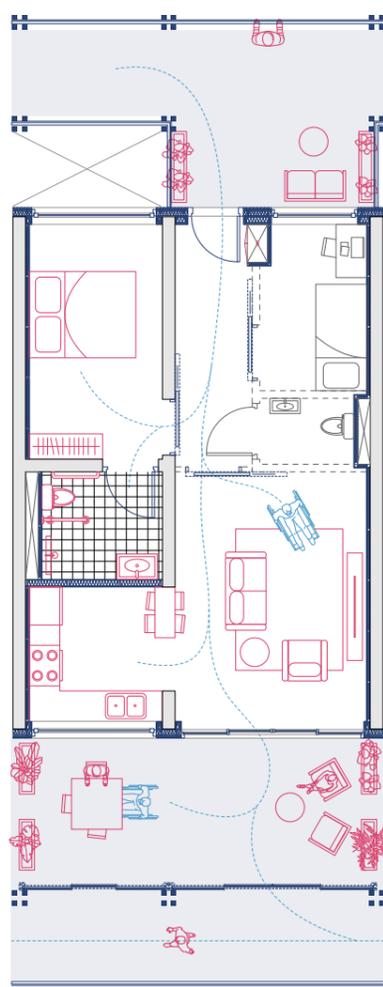
BASEMENT PLAN (1:100) ⊕



STUDIO UNIT (1:50)
(38 m²)



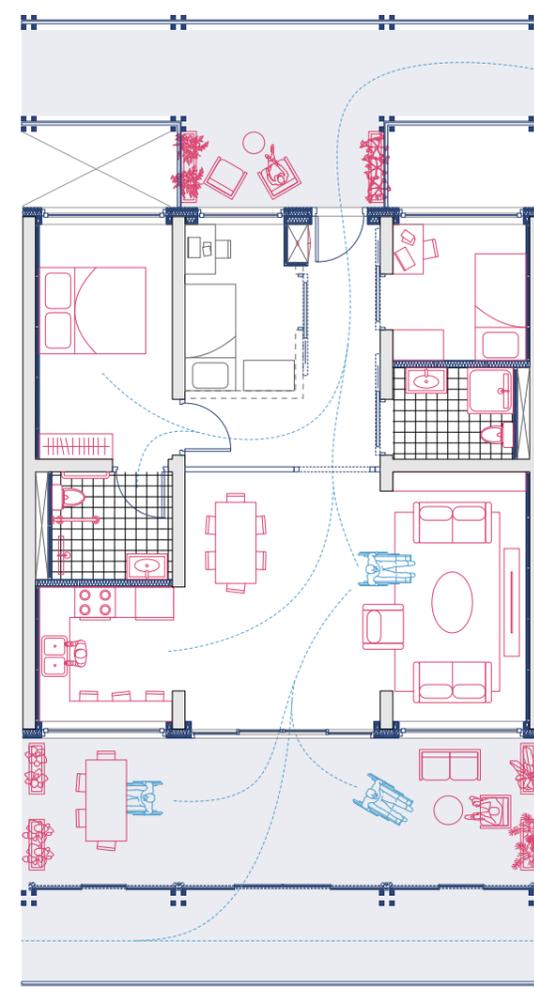
Studio unit is split into two parts, a living area facing east and sleeping area facing west. This configuration allows the user to step into their living area from their front door. The house has a private kitchen area suitable for one person or a couple, the toilet/bathroom space is large enough to be used with wheelchair or other supporting equipment and the house has two outside spaces: one on the east side for embracing the morning sun and one on the west side - covered with glazing to trap the heat so that the space can also be used during sunny winter days.



STANDARD UNIT (1:50)
(65 m²)



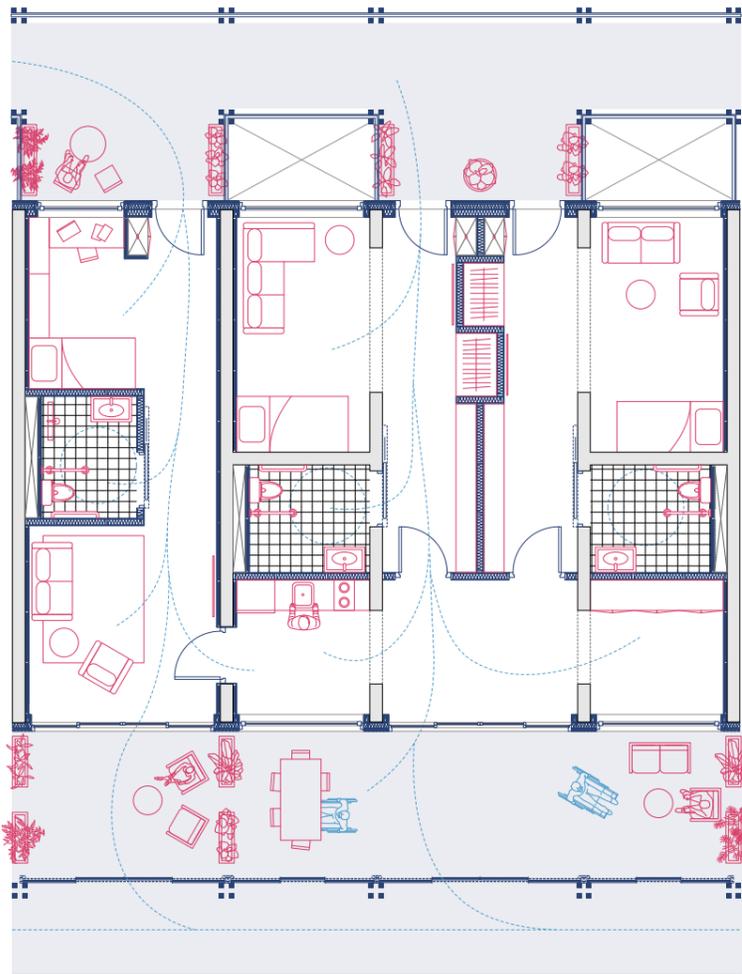
Standard unit has the exact same size as the existing units present in the building. This unit has a master bedroom with its own accessible bathroom. There is space available for an extra bedroom/workspace and an additional wc, if desired. The unit is split into two parts: the east side where the bedrooms are facing, letting the morning sun in and the west side where the living room and kitchen are oriented towards, allowing the afternoon sun to light up the room. From the living room, it is possible to step out to the balcony - covered with glazing to act as a winter garden - facing the west.



FAMILY UNIT (1:50)
(95 m²)



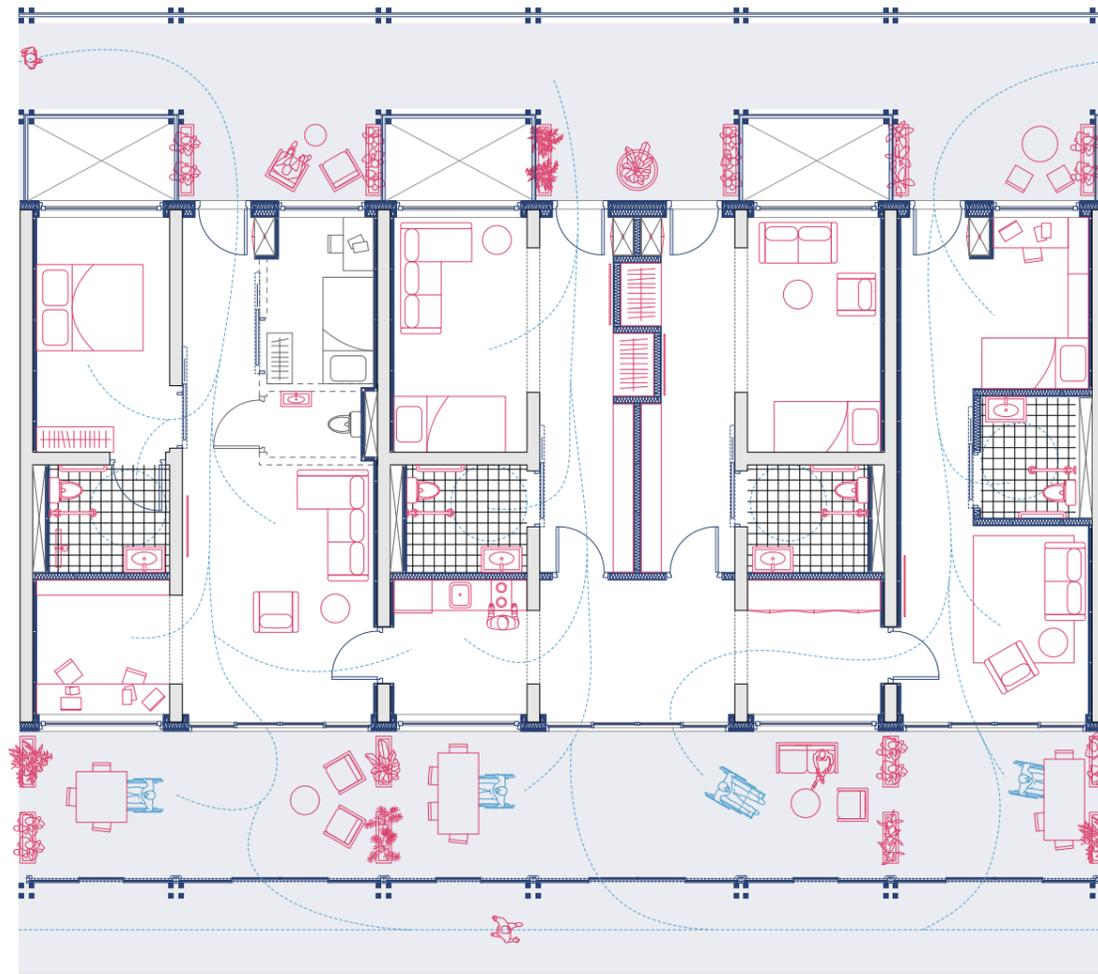
Family unit is the largest among all the independent units. In addition to the master bedroom and bathroom - which is easily accessible with a wheelchair or other supporting equipment -, there is one (or if desired two) extra bedrooms/workspaces. To cater for the needs of the families, the house has an additional smaller bathroom. The unit is split into two parts: the east side where the bedrooms are facing, letting the morning sun in and the west side where the living room and kitchen are oriented towards, allowing the afternoon sun to light up the room. From the living room, it is possible to step out to the balcony - covered with glazing to act as a winter garden - facing the west.



SMALL GROUP (1:50)
(1 STUDIO + 2 ROOMS)



Small group includes one studio and two smaller rooms, all of which share the kitchen, storage space, living area and the winter garden facing the west. All units are designed to be easily used with a wheelchair or other supporting equipment, equipped with accessible bathrooms and large open spaces to allow wheelchair manoeuvres. The studio unit has an additional living space of its own, facing west towards the winter garden. All bedrooms are facing the east balcony, creating a more private atmosphere for the east balcony compared to the west.



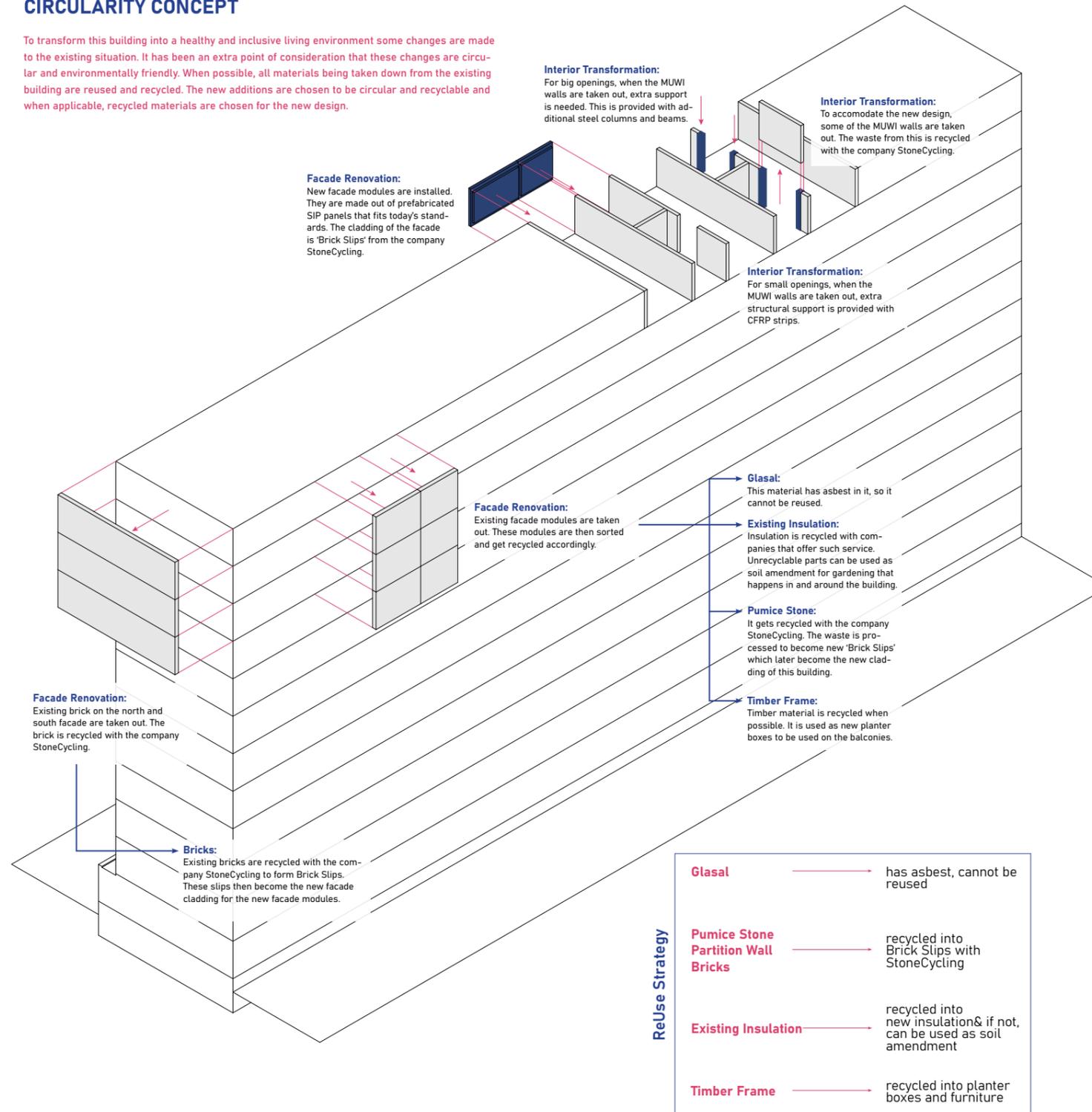
LARGE GROUP (1:50)
(1 STUDIO + 2 ROOMS + 1 STANDARD UNIT)



Large group includes one studio, two smaller rooms and one standard unit, all of which share the kitchen, storage space, living area and the winter garden facing the west. All units are designed to be easily used with a wheelchair or other supporting equipment, equipped with accessible bathrooms and large open spaces to allow wheelchair manoeuvres. The studio unit has an additional living space of its own, facing west towards the winter garden. Same goes for the standard unit, which can also have an additional bedroom and bathroom if desired. Large group introduces diversity to the group - by allowing enough space to host a family or a single parent. All bedrooms are facing the east balcony, creating a more private atmosphere for the east balcony compared to the west.

CIRCULARITY CONCEPT

To transform this building into a healthy and inclusive living environment some changes are made to the existing situation. It has been an extra point of consideration that these changes are circular and environmentally friendly. When possible, all materials being taken down from the existing building are reused and recycled. The new additions are chosen to be circular and recyclable and when applicable, recycled materials are chosen for the new design.



Structure
Structure of the building is maintained fully. All the load-bearing beams and columns are kept intact and where necessary, extra support is created using steel column and beams and CFRP strips.



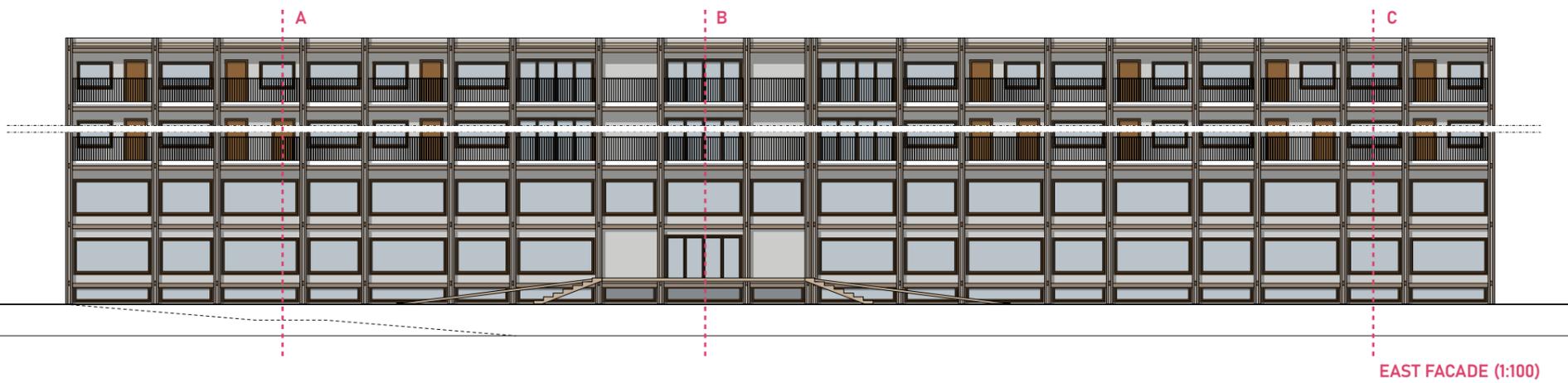
Services
Services are renewed completely. Existing building uses gas for heating and shafts (possibly) have asbest. For this reason, All shafts and services are renewed with more durable and circular solutions.



Partition Walls
To follow the design concept, the transformation requires some of the partition walls to be taken down. However, since the MUWI walls are also a part of the structure, it has been a key point in the design to have as little partition walls taken down as possible.

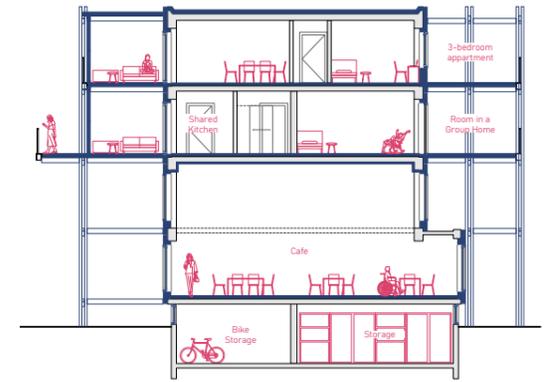


Facade
Existing building's insulation and performance does not meet today's requirements. To fulfill a healthy living environment for the new residents, entirety of the facade is taken down and recycled to be used for other purposes.



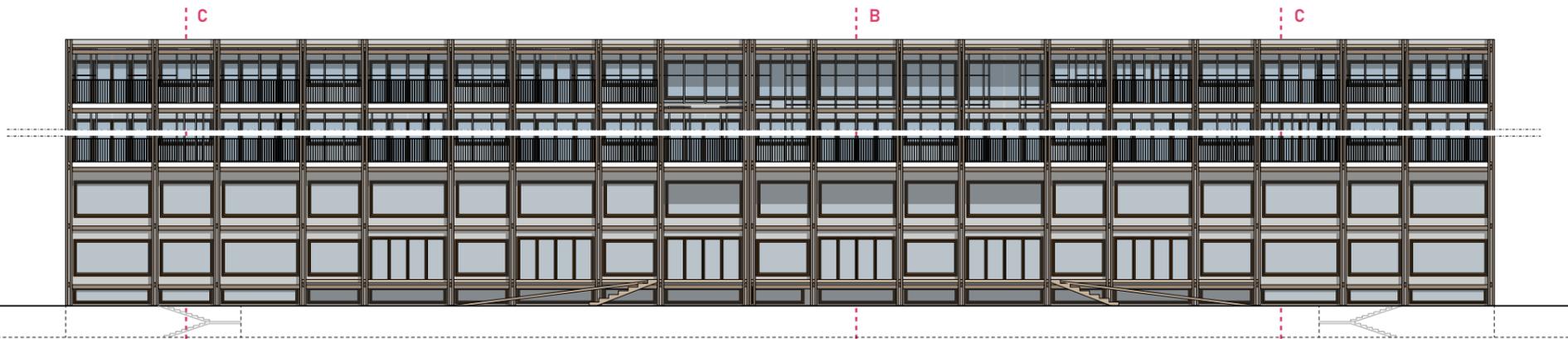
EAST FACADE (1:100)

East side is the "pragmatic side" of the building. This is the side where all the entrances are located, where all the sleeping areas are facing and where the residents can feel more comfortable. This allows the residents to have a side where they can retrieve from social interaction and be on their own. What characterizes the east facade is the presence of small porches at the entrances of each unit. Residents can soak the morning sun by stepping outside, taking a fresh breath before starting their day. East facade is fully open and has balcony depth of 2m + 2m, to allow easy movement using a wheelchair or other supporting equipment. Windows are all 60 cm above the floor level, allowing people on wheelchairs to also have a clear sight towards outside. The railing of the balcony, made out of timber slats, are also 90 cm tall, allowing wheelchair users to feel safe while still having an outlook towards the view. On the ground floor, the private entrance to the apartment is located on the east side as well, further supporting the pragmatic and private character of the east facade. The entrance on ground floor is set back by 2 meters, following the residential facade line.



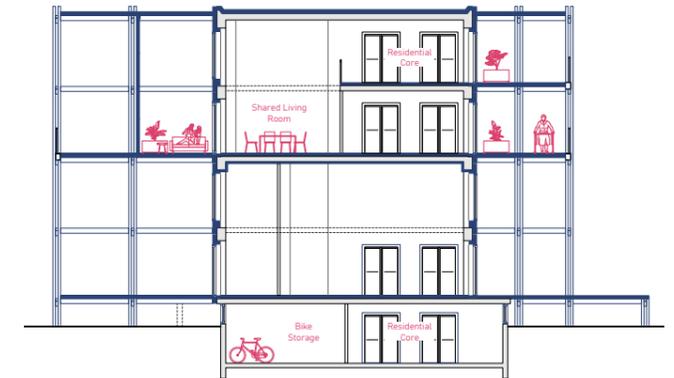
SECTION A (1:100)

Section A shows the different floors and the difference in use. Basement has bike storage space on the west and group storage areas on the east. Ground floor has double height and has floor to ceiling windows to create more interaction with outside. On the east side, there is a ramp leading to the basement where the residents can access easily with their bikes. On the upper floors, it is clear to see that the living side and sleeping side are divided for both units.



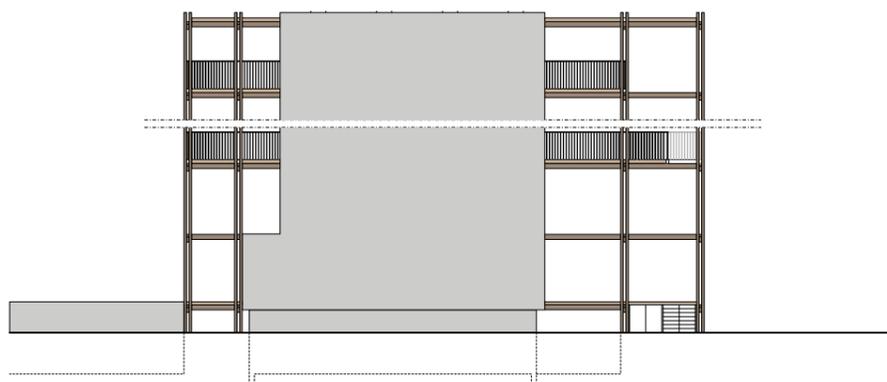
WEST FACADE (1:100)

West side is the "social side" of the building. This is the side where all the balconies/wintergardens are located, where all the living areas are facing and where the residents can feel more social. This allows the residents to have a side where they can go to when they feel lonely or if they wish to have social interactions. What characterizes the west facade is the presence of shared balconies accessible from the living area of each unit. Residents can soak the afternoon sun by stepping outside, taking a fresh breath after a long day. West facade is partially covered, allowing the residents to make the choice of using it covered or open, depending on the season and/or preference. Balconies have a depth of 3m. On the first residential floor, the communal space has an additional 3 meters of outside space and this outside is accessible via the 1.5 meter passage from the balconies. Windows on this side are all from floor to ceiling, allowing for a clear sight towards outside. The railing of the balcony, made out of timber slats, are also 90 cm tall, allowing wheelchair users to feel safe while still having an outlook towards the view. On the ground floor, the public entrance to the facilities is located on the west side as well, further supporting the social and open character of the west facade. The entrance on ground floor is aligned with the balconies on the upper floors.



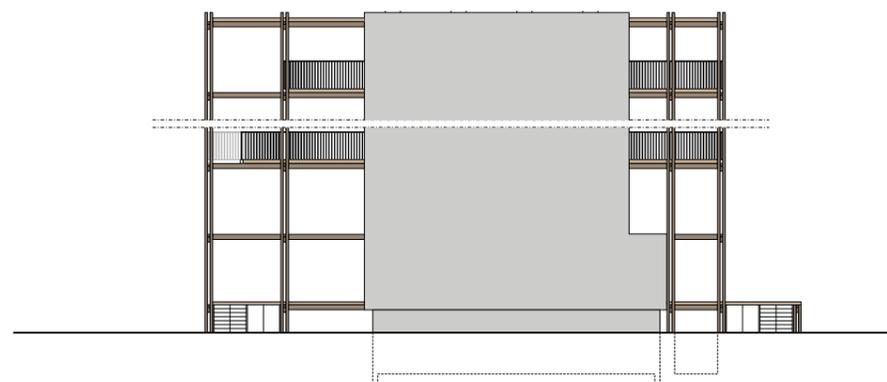
SECTION B (1:100)

Section B shows the relationship between the floors. It is clear to see the residential elevators running centrally in the building. From the elevators, there is direct access to double-height ground floor where semi-public facilities are located and also to the shared communal space on the residential floors. On east side, the ground floor includes the residential entrance and the west side includes the public entrance with a slightly larger porch space to allow for interaction.



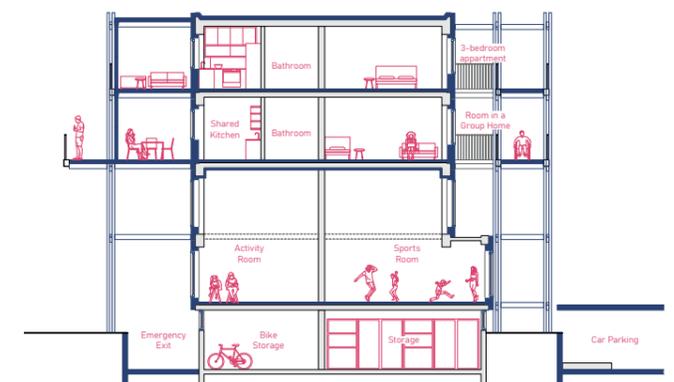
NORTH FACADE (1:100)

Existing north facade has no openings, since the MUWI wall system does not allow for many openings. An interview with an architect who is experienced with buildings with MUWI system revealed that these "kopgevels", and especially the exposed concrete slabs are very important to maintain during the renovation to ensure stability. For this reason, north facade it cladded using the new gray-coloured brick slips while exposing the look of the concrete slabs. From the north facade, it is possible to see the half-sunken parking garage.



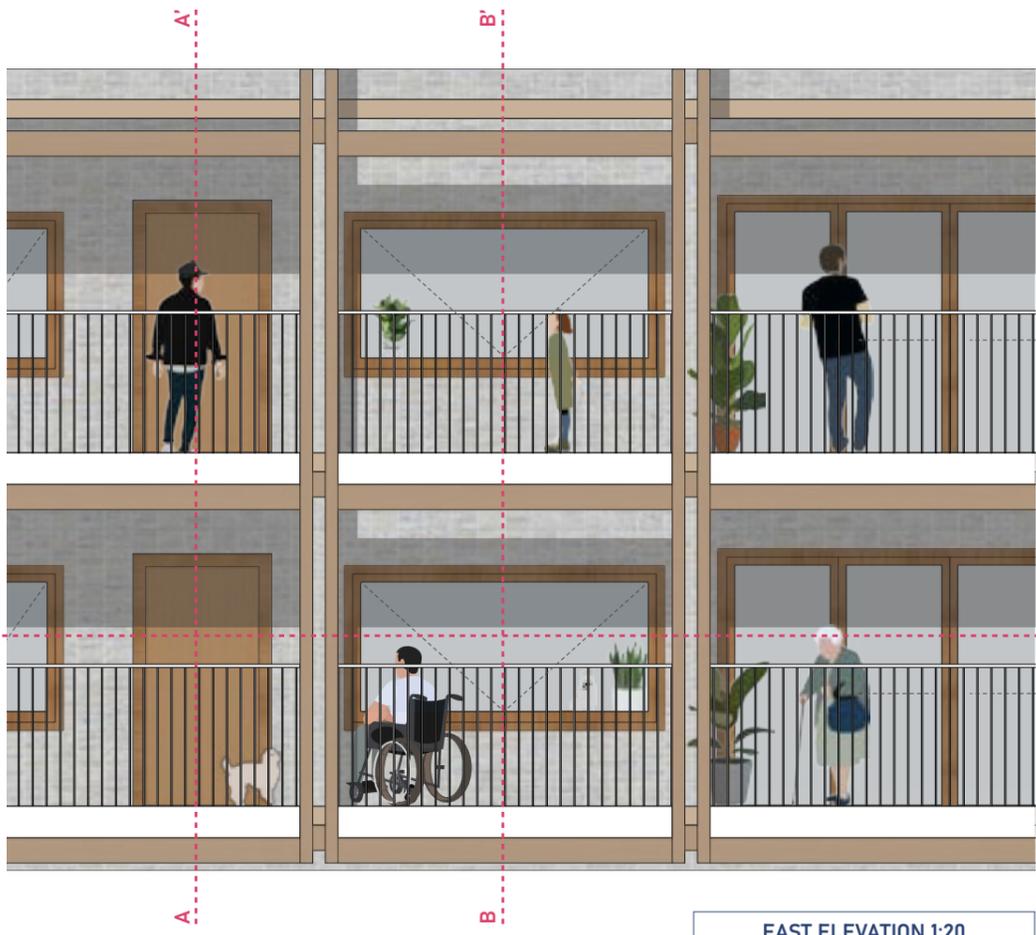
SOUTH FACADE (1:100)

Existing south facade has no openings, since the MUWI wall system does not allow for many openings. An interview with an architect who is experienced with buildings with MUWI system revealed that these "kopgevels", and especially the exposed concrete slabs are very important to maintain during the renovation to ensure stability. For this reason, south facade it cladded using the new gray-coloured brick slips while exposing the look of the concrete slabs.

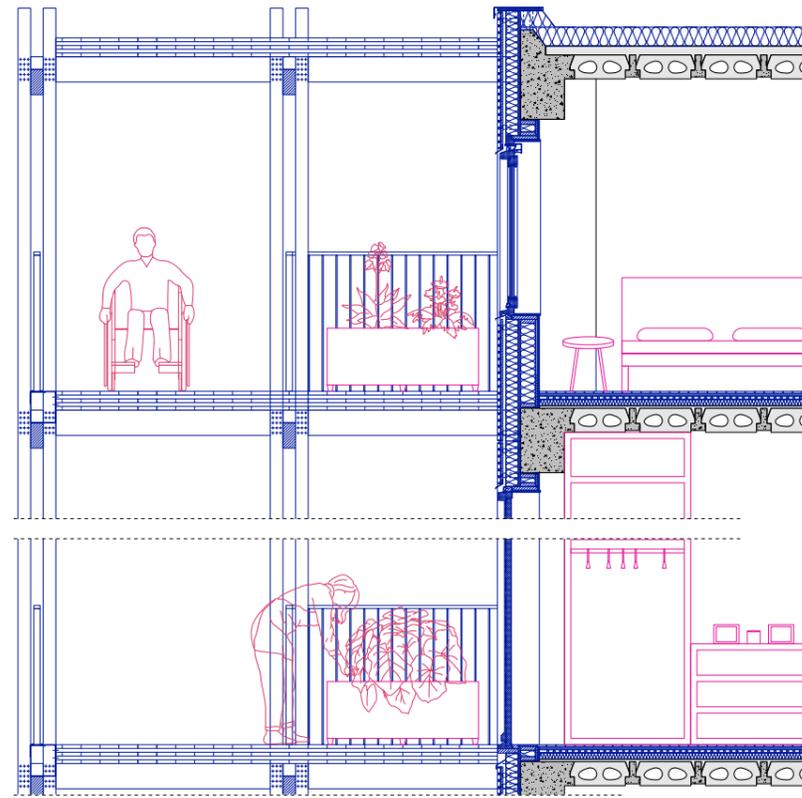


SECTION C (1:100)

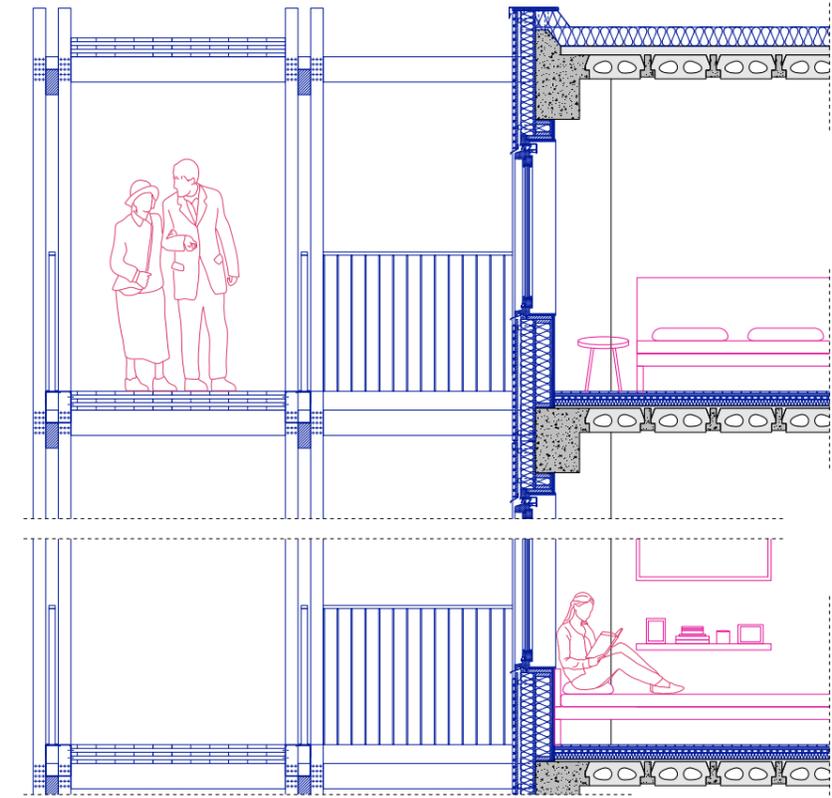
Section C shows the alignment of the room between the residential floors. On both floors, the toilets, kitchen spaces and sleeping areas are neatly aligned to allow for technical installations to be placed as efficiently as possible. On the west side it is possible to see the slightly overhanging balcony on the first residential floor which allows residents to easily move on the west side, allowing for interaction and socializing. This overhang also creates moments of eye-contact with the upper floor, ensuring extra interaction. On the east side, balcony has void to create interaction between the two floors by creating moments of eye-contact. On the basement, there is also the half-sunken parking garage for the residents. This garage is not connected with the main building due to safety reasons.



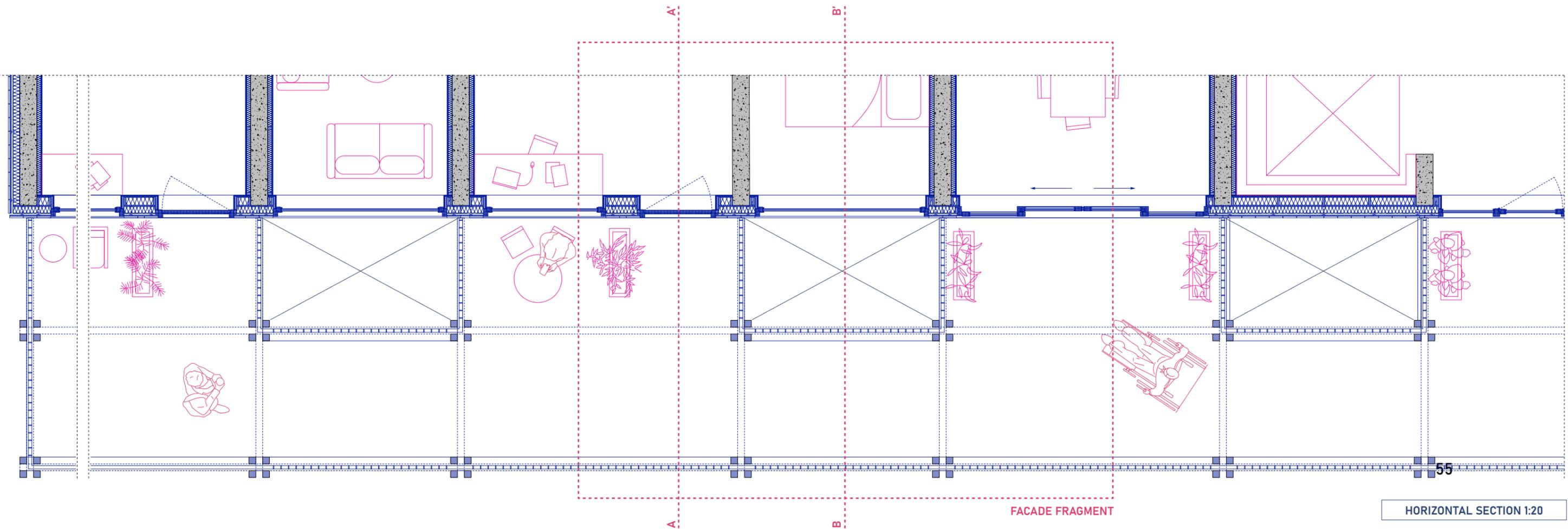
EAST ELEVATION 1:20



SECTION AA' 1:20



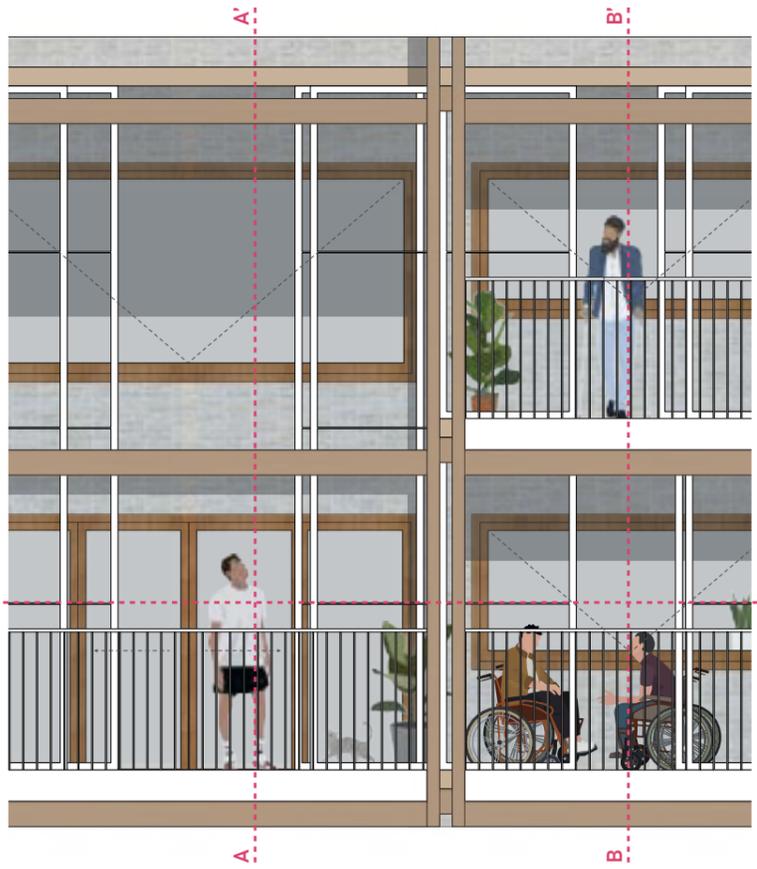
SECTION BB' 1:20



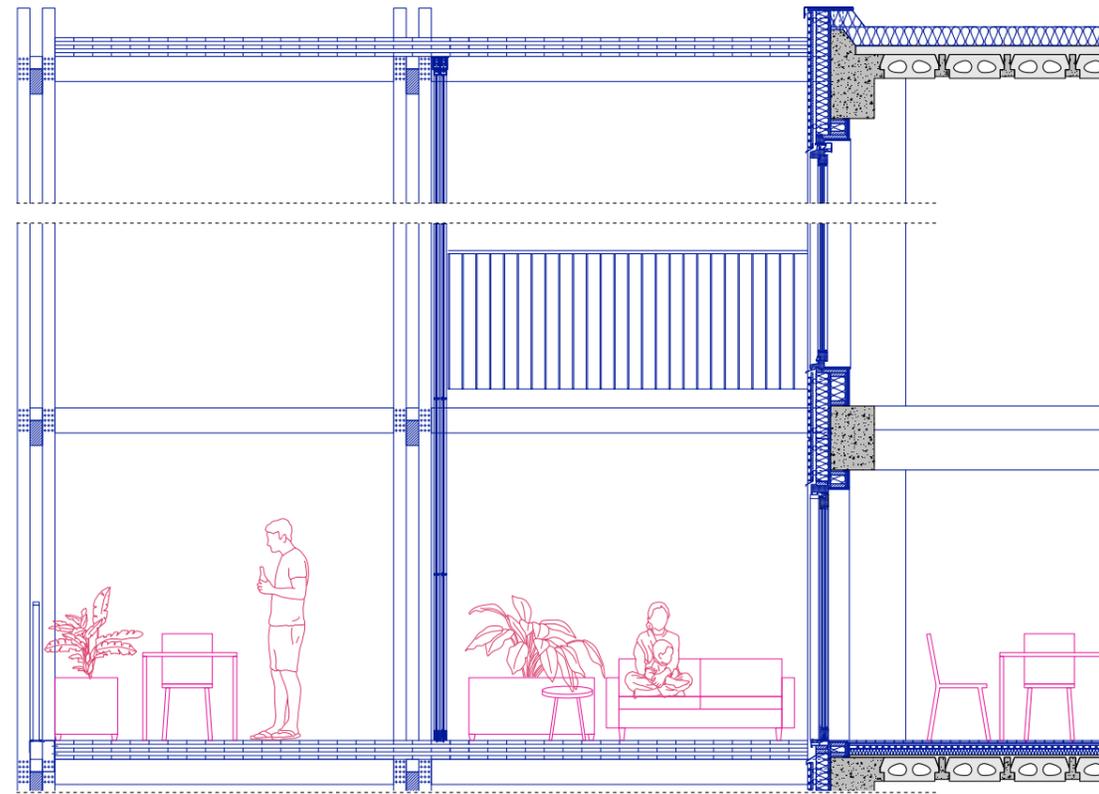
HORIZONTAL SECTION 1:20

FACADE FRAGMENT

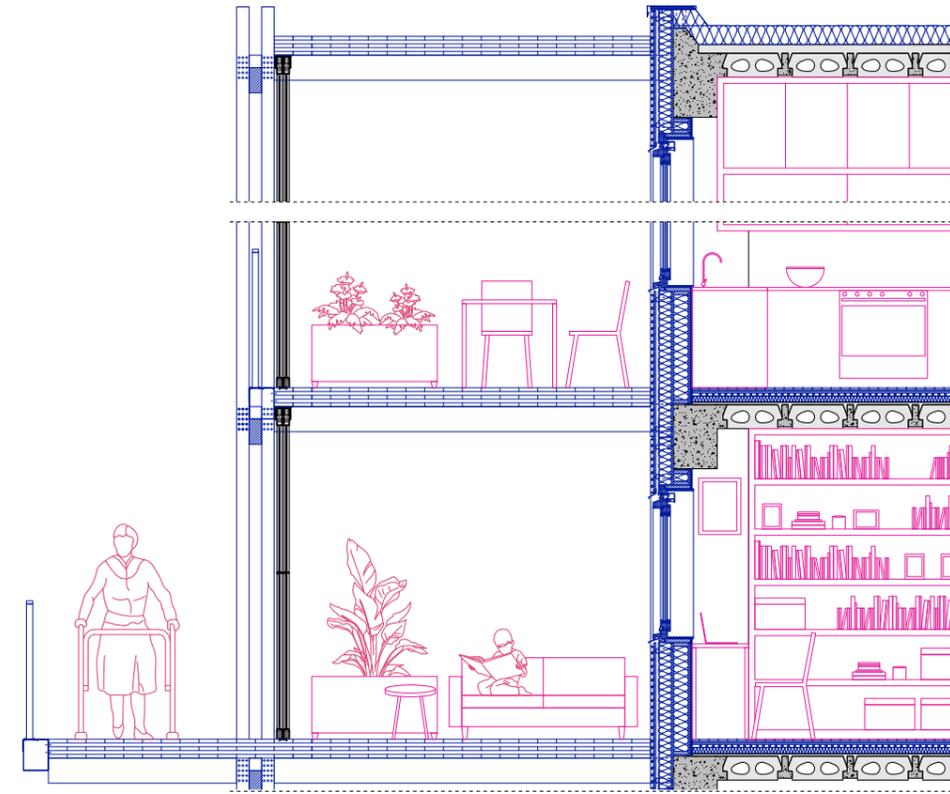




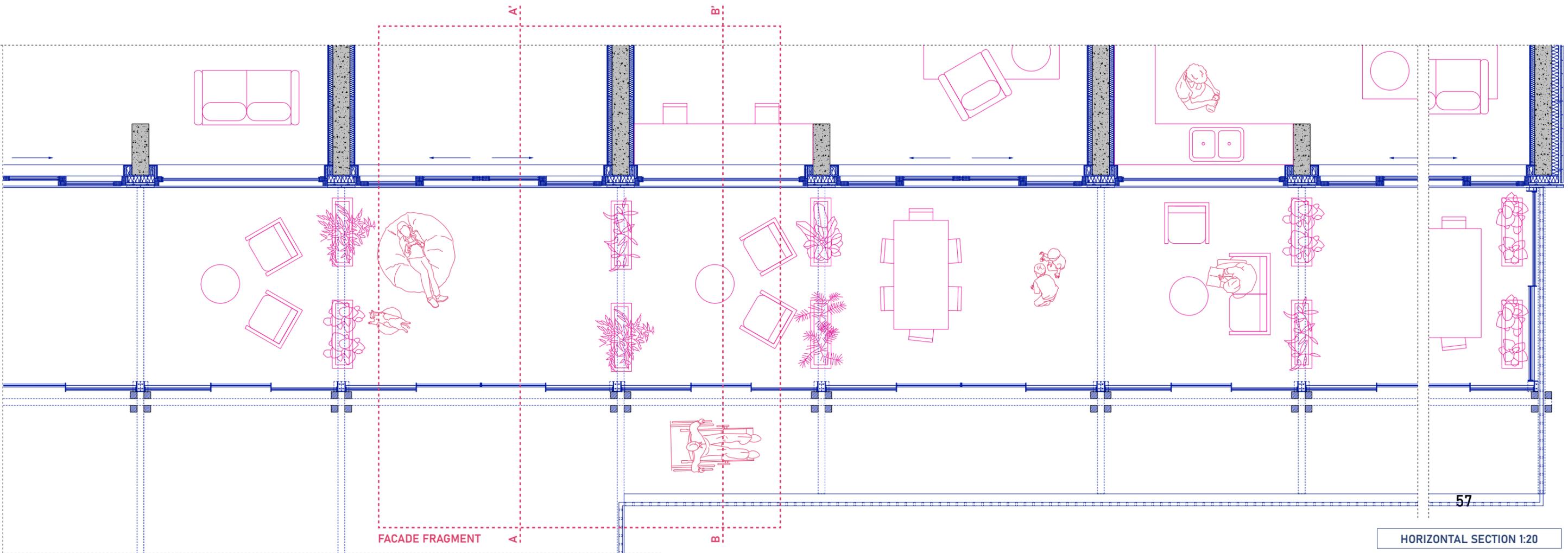
WEST ELEVATION 1:20



SECTION AA' 1:20



SECTION BB' 1:20

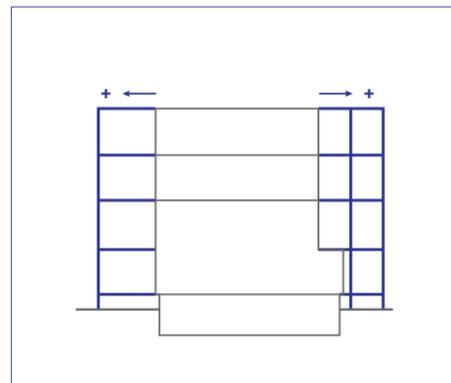
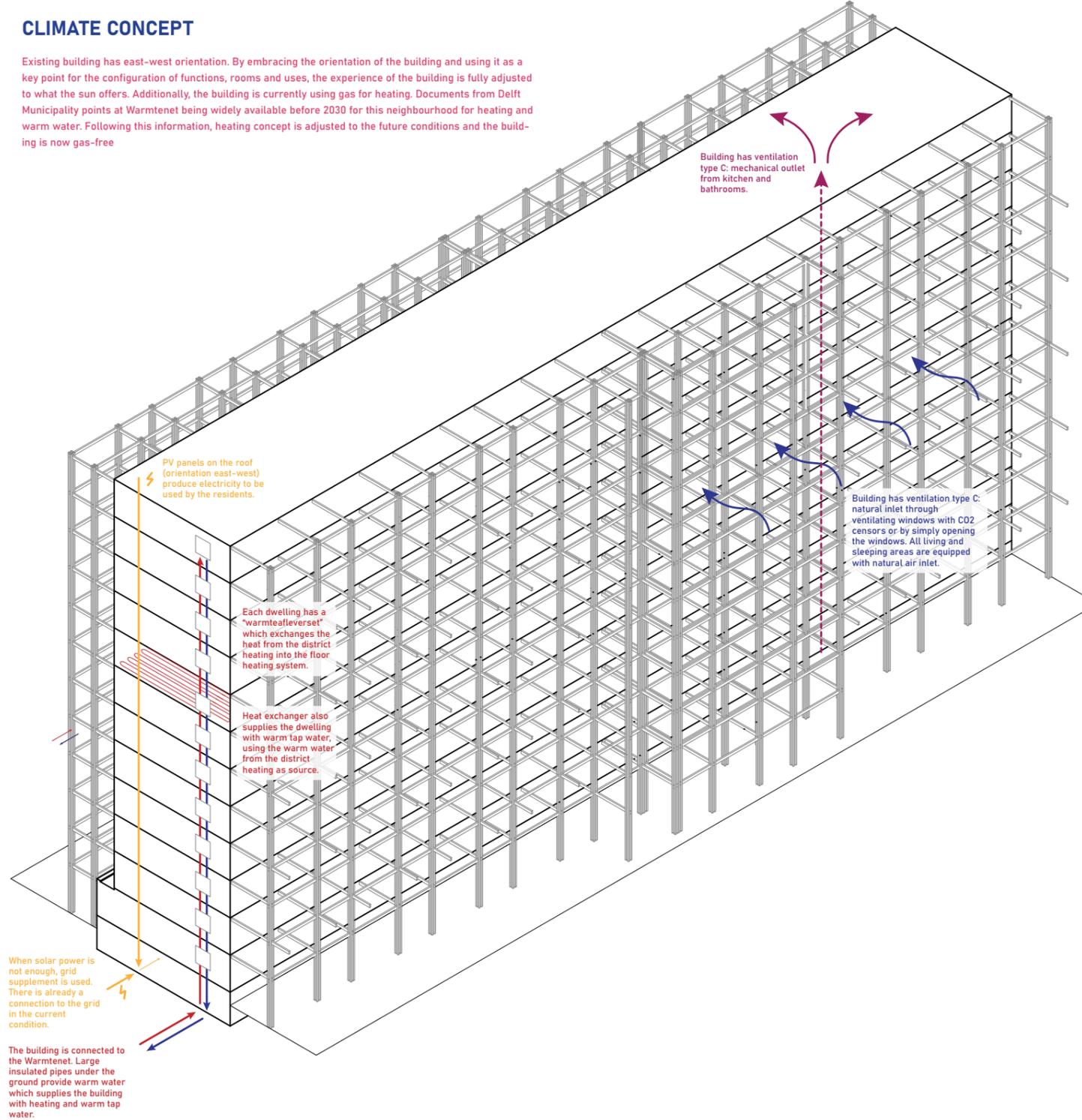


HORIZONTAL SECTION 1:20

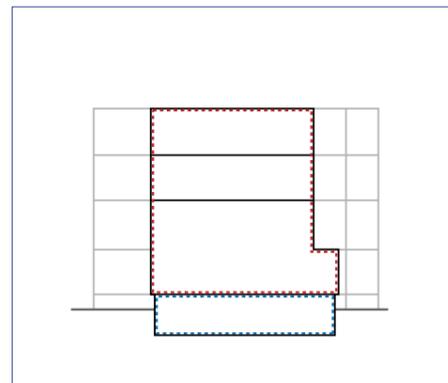


CLIMATE CONCEPT

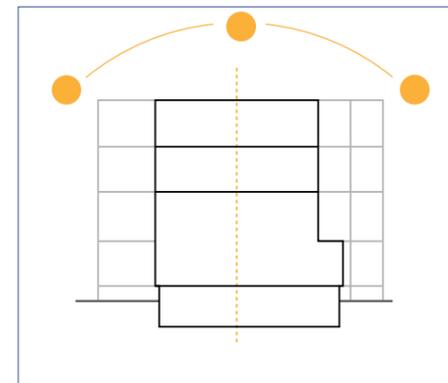
Existing building has east-west orientation. By embracing the orientation of the building and using it as a key point for the configuration of functions, rooms and uses, the experience of the building is fully adjusted to what the sun offers. Additionally, the building is currently using gas for heating. Documents from Delft Municipality points at Warmnet being widely available before 2030 for this neighbourhood for heating and warm water. Following this information, heating concept is adjusted to the future conditions and the building is now gas-free



Most important attribute of the building is that it is kept intact as much as possible and only additions are made to the existing structure to ensure a safe and comfortable outdoor space to all residents on all floors. These additions are made using engineered wood products. Using engineered wood allows for as little new material as possible while ensuring minimum impact on environment & on the current condition of the existing building.



The building has a clearly defined thermic line. Upper floors including the semi-public ground floor is insulated well with extra insulation placed on the facade and on the floor & roof. This extra insulation creates the opportunity to make use of floor heating which is a low temperature heating system. Existing basement, which is currently uninsulated, is left uninsulated and is assigned the storage function for the residents and for the facilities on the ground floor.



The building has east-west orientation. While reconfiguring the homes and the additional program, this orientation took a central point. In the new design, west side - or the "afternoon side" - is where all the living functions are oriented: West is where people are meeting, interacting and it is the lively side of the building. And east side - or the "morning side" - is where all the private spaces and bedrooms are oriented: This way, residents can wake up to the morning sun and be on their own until they wish.



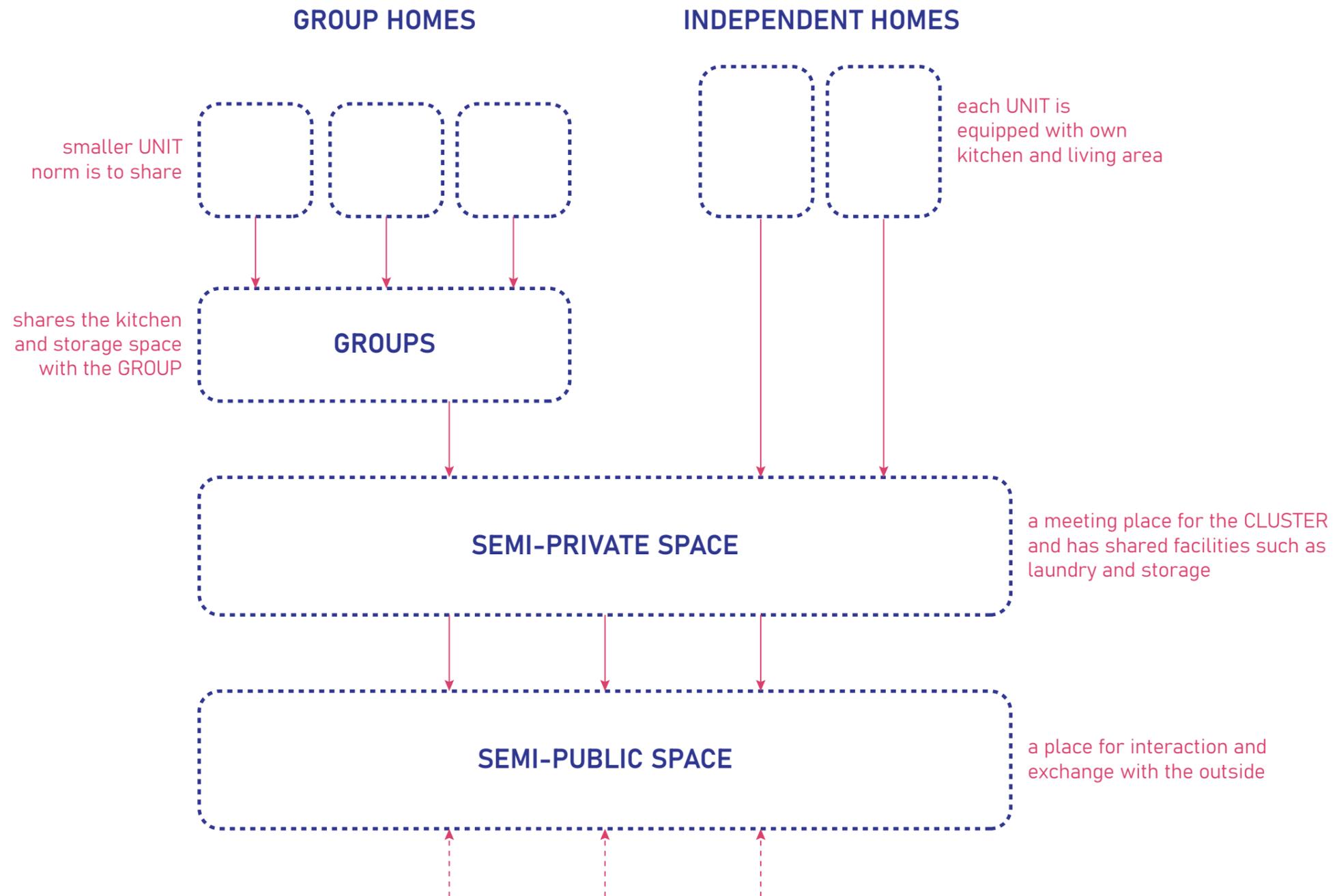
Share the Care

By forming **healthy communities** where social bonds are formed between individuals that live in proximity to one another, **light care can easily become a “shared value”**

This helps to release the pressure, burden and shame that is primarily experienced by physically disabled adults and their families, and reduce their social isolation



Thank you. Questions?



DESIGN GUIDELINES & APPLICATIONS

SOCIAL INTERACTION

INDEPENDENCE & AUTONOMY



LIKE-MINDED NEIGHBORS
PDA in the neighbourhood
Mix of residents



SOCIAL CONTACT AND SUPPORT
Common rooms
Buffer zones
Familiarity with space
Shared facilities



AVAILABILITY OF CARE
Caregiver center within
10 minutes reach



EASE OF ACCESS & MOVEMENT
Large floor space
Open floor plan
Vertical Transport
Compact Floor Plan



CAPABILITY IN DAILY SKILLS
Flexibility in use
Adaptations to size
Clear sight
Easy reach
Sports facilities nearby



CONNECTIVITY OF SPACES
Connected paths
Wide paths
No level changes
Places to sit and rest
Functions within reach



NON-INSTITUTIONAL LIVING
Large enough house for families
Normal looking home
Mix of residents
Ownership



NETWORK IN NEIGHBOURHOOD
Activities at all times
Pedestrian focus
Choice to reach home
Density



KEEPING ACTIVE
Intimate communal rooms
(10 ppl)
Social communal rooms
(30 ppl)



PRIVATE TIME AND SPACE
Pockets for privacy
Having own room



CONNECTION TO OUTSIDE
Light
Sight
Balcony/Garden
Max 5 floors



POSSIBILITIES FOR WORK
Work and activity space
Co-working spaces



CARE ON OWN TERMS
Large space for assistance
Assistive devices easily
applicable at home



POSSIBILITIES TO HELP OTHERS
Meeting rooms
Places to interact



EXPLORING & IMPROVING SKILLS
Flexible common spaces
Indoor activity areas
Outdoor activity areas

SENSE OF PURPOSE

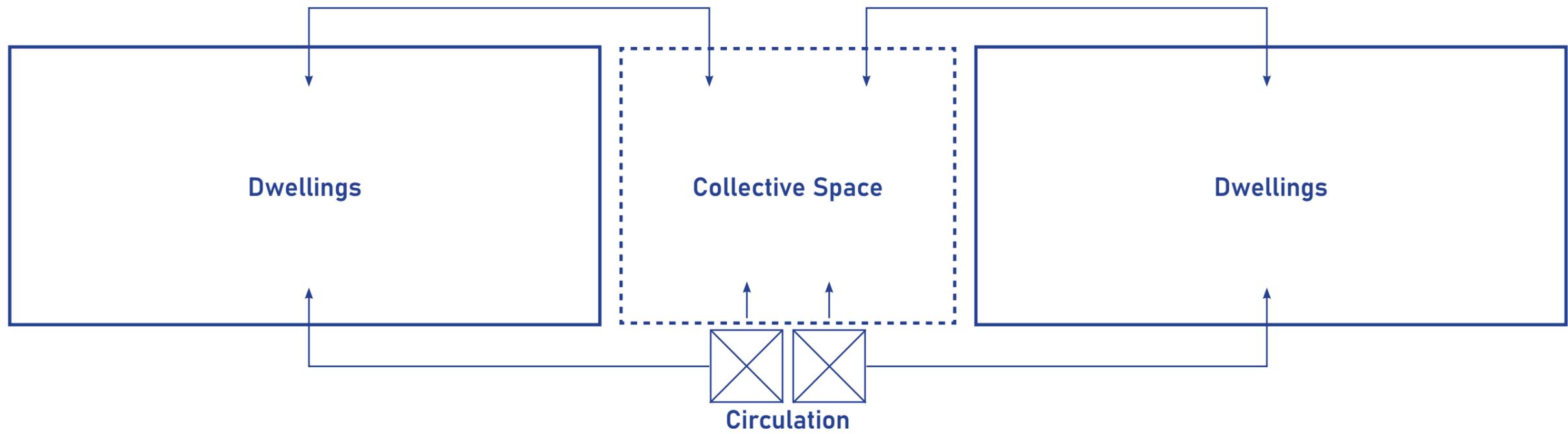


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Vibrant Side
Collective Functions are located



Pragmatic Side
Private Functions are located

