

# Dementia in the Built Environment

DESIGN BOOKLET



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Delft University of Technology  
Faculty of Architecture and the Built  
Environment

Course:  
AR3AD110  
Dwelling  
Designing for Care: Towards and  
inclusive living environment

Tutors:  
Birgit Jürgehake  
Frederique van Andel  
Lex van Deudekom  
Peter Boerenfijn

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# Preface

The reason I chose to study Architecture in Delft is because I believe in healing environments and in my opinion architecture has an immense impact on the wellbeing of people, both physical and mental. Unfortunately, there hasn't been a lot of attention for these aspects in the bachelor or in the studios I chose to follow in MSc 1 and Msc2. When I was doing an internship at Vakwerk Architecten, the year before my graduation, I was reminded of my motivation to study architecture. So when I heard about Dr. Birgit Jürgehake and her graduation studio focussing on creating an inclusive environment for elderly the choice was made.

After a year in this studio, I can say that I have never liked studying so much as in my graduation year. It has been though and emotional researching such a difficult topic as dementia, but being able to talk about healing environments and truly understand your target group was the biggest motivation.

This booklet shows the fieldwork that has been done and the design focussing on dementia in the built environment.

# Gratitude

First of all, I would like to thank my tutors.

Birgit Jürgehake, thank you for all the tutoring and insights. Thank you for sharing your experiences with dementia, you are probably one of my biggest sources during this graduation in terms of understanding the effects of having a person with dementia in your daily life.

Frederique van Andel, thank you for being so invested in my research. Thank you for checking up on me, giving me extra guidance when I was extremely stuck with my research and for sending an limitless amount of sources for both my research and design.

Lex van Deudekom, thank you for your directness with every tutoring. Because of you I learned way more about building technology than I could have expected from my graduation

year. Thank you for always going one step further and explaining me how the building construction works on site and what that means for my design.

Peter Boerenfijn, thank you for being so invested in our graduation studio. Without your tours in the nursing homes and the opportunity to stay in a nursing home I wouldn't have such a understanding of the needs of the elderly. This has been a great start of this graduation studio.

Furthermore, I would like to thank my friends and family. They have been supporting in every step of my education at the University of Technology in Delft. They were there to celebrate moments and they were there when I needed motivation or someone to talk to. I couldn't have done this without them.

# Chapter 1



## Fieldwork

Figure 2: DEMENTIA (AORTA, 2016), edited by author

## 1.1

### A DAY IN A WHEELCHAIR

## TREKPLEISTER

In Trekpleister we faced the most challenges with circulation. Because it's a small store, the space in general was very limited, making our circulation very restrictive, especially in corners and turns.

## Pros:

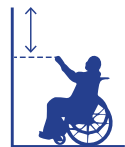


**Smooth surfaces:**  
The floor material was smooth and properly flat, avoiding any issues with the wheels.

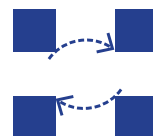


**Sloped entry:**  
Being on an old street, the store's entry was on a slope which required extra effort to access.

## Cons:



**Height issue:**  
Many items were placed too high, being out of reach and out of sight to wheelchair users.



**Tight corridors:**  
Corridors didn't have sufficient spacing, so the maneuvering of corners was very hard.

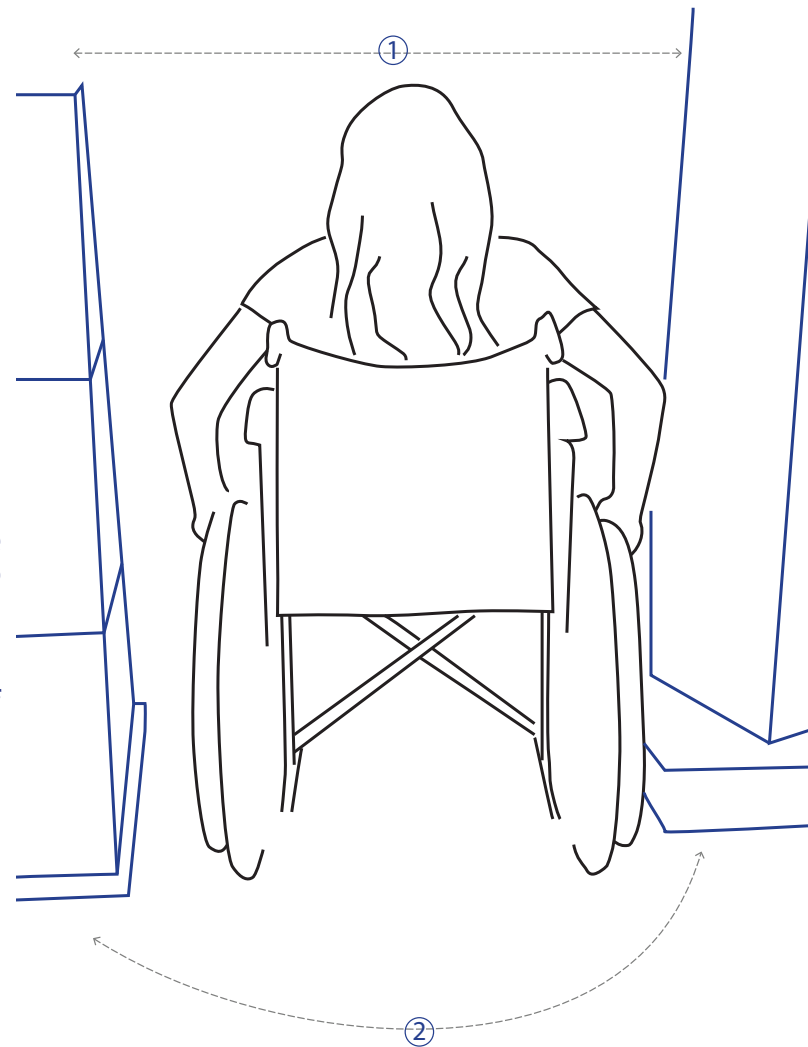
1. Height:  
Not all items are within reach.
2. Multi-tasking:  
Hard to hold onto belongings while struggling to reach.



1. Corridors:  
Insufficient spacing.

2. Corners:  
Many intersections of objects.  
Impossible to maneuver the  
wheelchair without running into  
products on all sides.

3. Effort:  
Harsh maneuvers require a lot of  
physical strain.



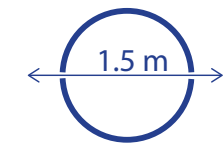
## ALBERT HEIJN

Generally, in Albert Heijn we experienced the least spatial barriers. However, some of the resources in the store were not well designed for users in wheelchairs and those were challenging.

### Pros:



Smooth surfaces:  
The floor material was smooth and properly  
flat, avoiding any issues with the wheels.



Proper spacing:  
Corridors had sufficient spacing which  
made maneuvering of corners and curves  
much easier.

### Cons:



Height issue:  
Many items were placed too high, being  
out of reach and out of sight to wheelchair  
users.

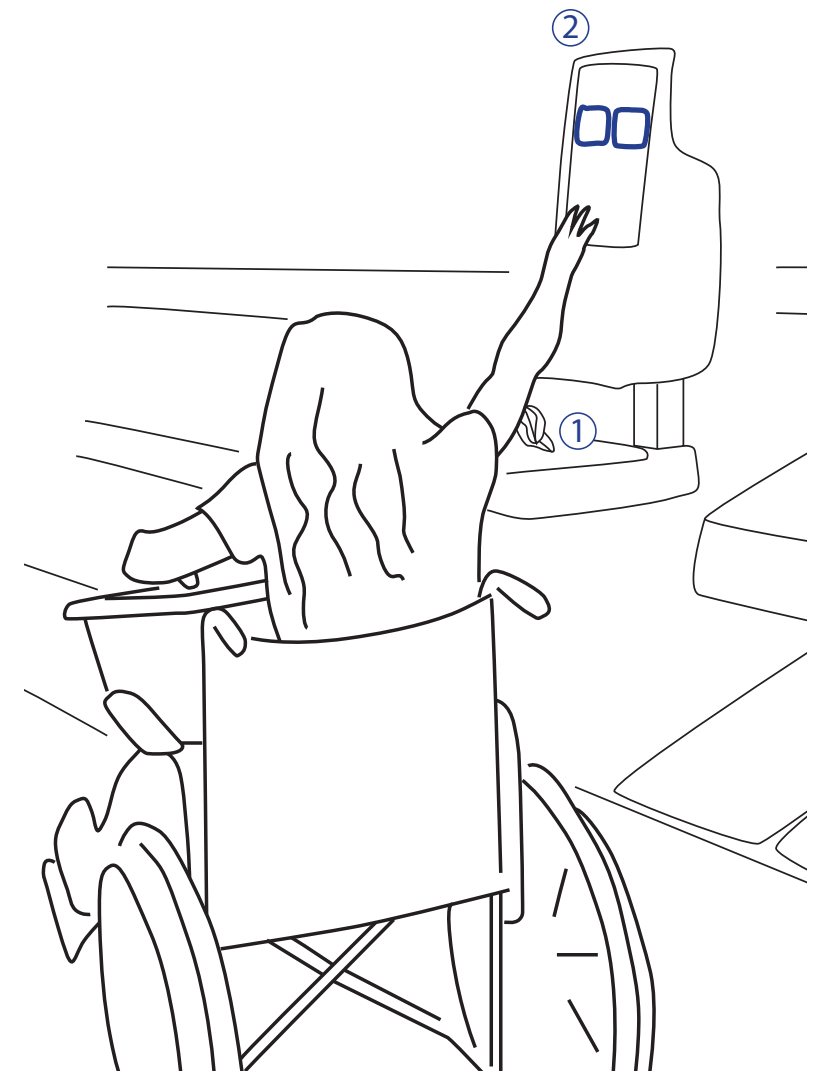


Tight corridors:  
Corridors didn't have sufficient spacing,  
so the maneuvering of corners was very  
hard.

1. Scanning:  
Within reach and visible.
2. Screen:  
Within reach, visible with effort.
3. Card machine:  
Within reach, but screen was partially not visible. Can easily be tilted down



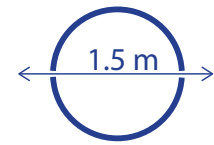
1. Weighing:  
Within reach and visible.
2. Screen:  
Visible but not within reach. Not possible to select item from list above; solution was to type its name below.





## MARKT

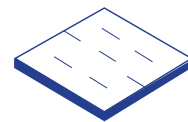
Visiting the Markt area was more challenging than expected. Although it was very spacious, the flooring conditions were not ideal for wheelchairs.

**Pros:**

**Proper spacing:**  
The space was very open and ample, which made the avoiding of obstacles much easier.



**Assistance needed:**  
Rolling the wheelchair through long distances was tiring, so sometimes help was needed.

**Cons:**

**Rough surfaces:**  
The old brick flooring were very uneven and hard to move the wheelchair without physical strain.



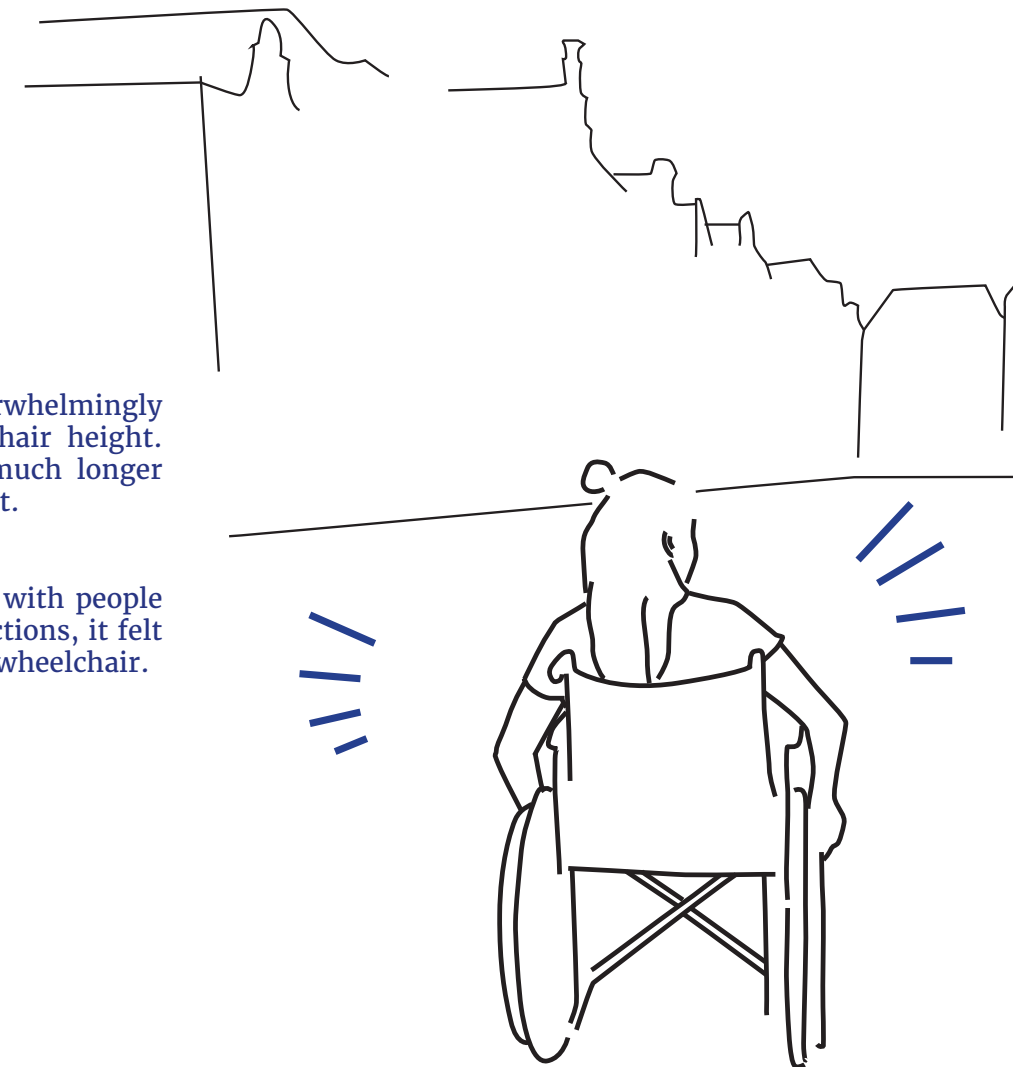
**Sloped entry:**  
The floor in the Markt area was unlevelled, so it took a lot of energy to control the wheelchair.

**1. Scale:**

The markt was overwhelmingly large from the wheelchair height. Large distances took much longer in the chair than by foot.

**2. Traffic:**

In such an active area, with people and bikes from all directions, it felt vulnerable to be in the wheelchair.



1. Obstacles:  
Whether bricks, potholes, or drains, floor obstacles were very present in the Markt area. With large distances, this became a physical struggle in a wheelchair.

2. Slopes:  
Slopes streets caused uneven weight on the wheelchair, making it hard to control its direction. The only way to solve this is using more force on one arm than the other.

3. Assistance:  
With all of these challenges, asking for help was better than having to endure physical struggles.



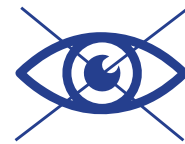
## A T M

After the experience of the height limitations in other stores, we were curious to how accessible ATMs were. Sadly, due to its location, this ATM unit was even worse than we had initially expected.

## Pros:



**Height issue:**  
The keys on the ATM machine were reachable for wheelchair users, but not easily visible.



**No visibility:**  
Because of its angle, the screen of the ATM was hardly visible to the eye level in a wheelchair.

## Cons:

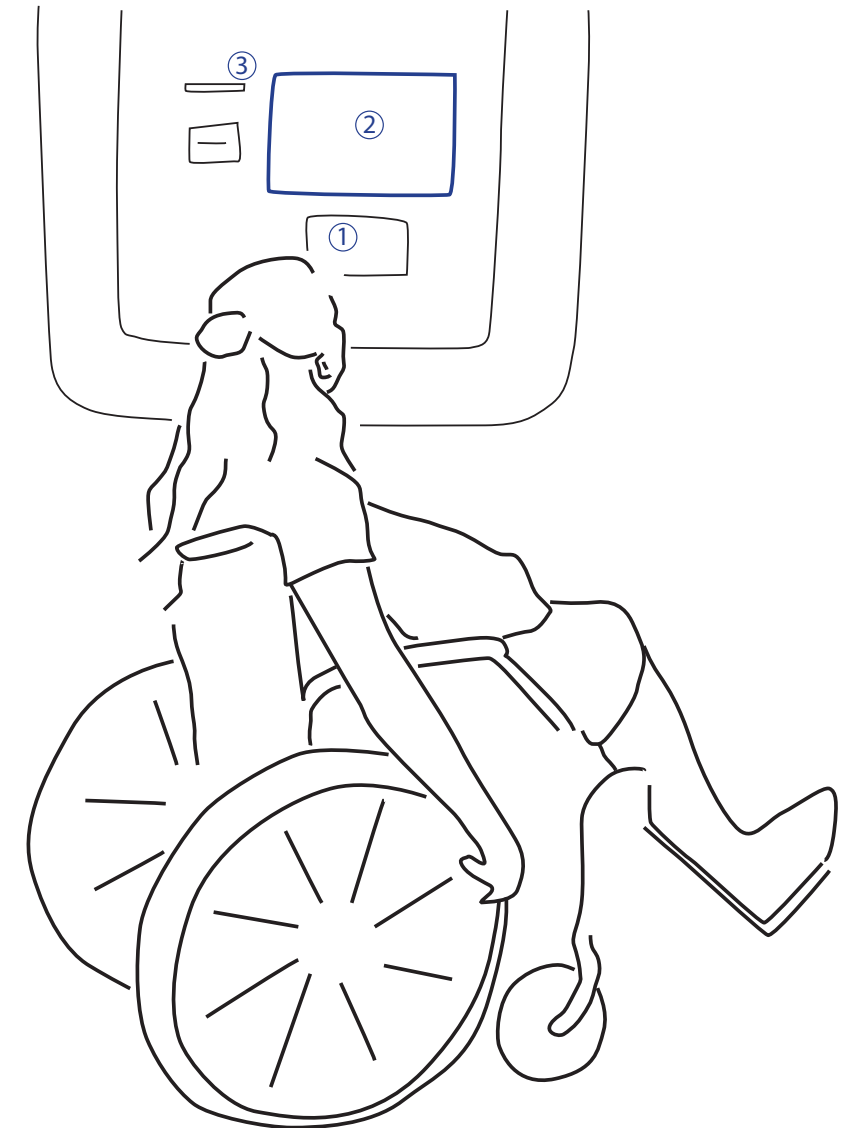


**Sloped entry:**  
The floor in the area was unlevelled, so it took a lot of energy to control the wheelchair.



**Traffic:**  
Being at an intersection, this spot felt unsafe to a wheelchair user due to constant traffic flow.

1. Keyboard:  
Within reach and visible.
2. Screen:  
Within reach but hardly visible.
3. Card slot:  
Within reach, but requires effort.



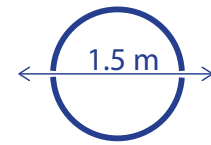
## HEMA

Generally, our experience in HEMA was better than in other stores. The layout was sufficiently spacious that we could navigate the store comfortably and able to maneuver the wheelchair easily.

### Pros:

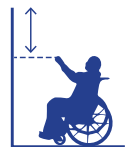


**Smooth surfaces:**  
The floor material was smooth and properly flat, avoiding any issues with the wheels.



**Proper spacing:**  
Corridors had sufficient spacing which made maneuvering of corners and curves much easier.

### Cons:

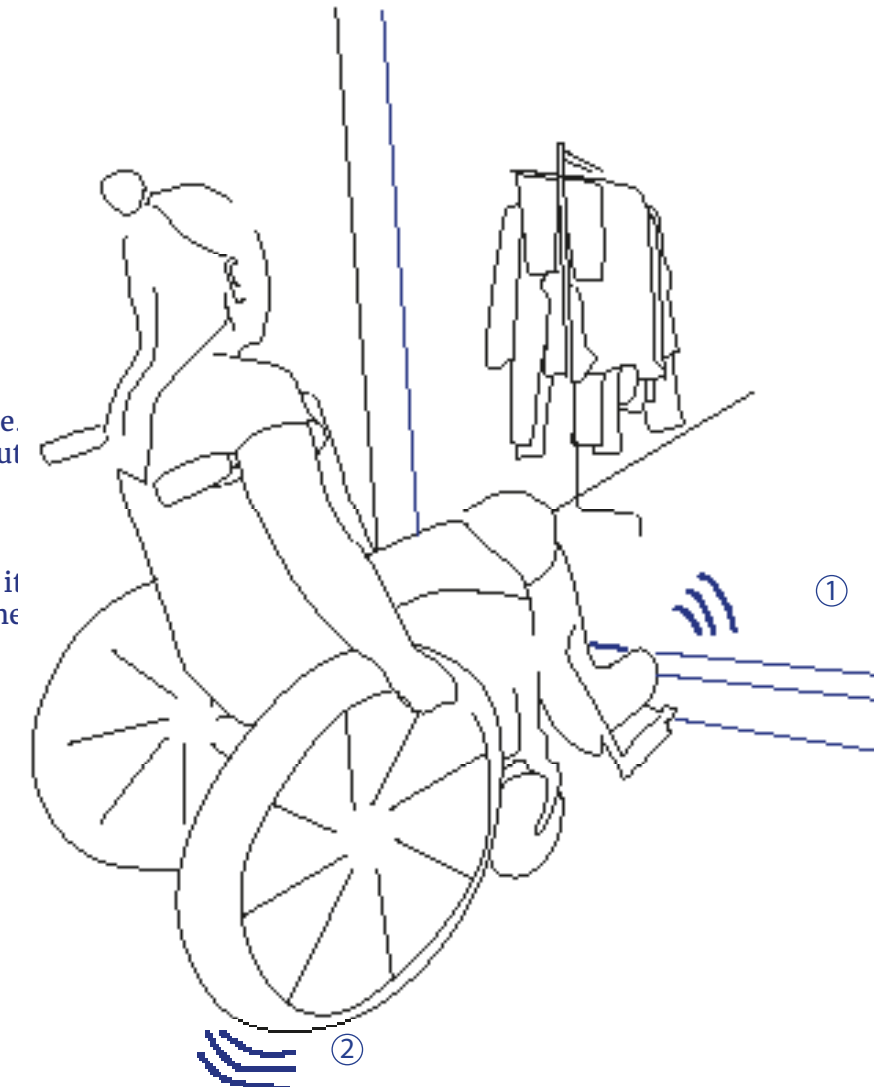


**Height issue:**  
A few items were placed too high, being out of reach and out of sight to wheelchair users.



**Entry obstacle:**  
The doorway had a small level change that made it very hard to enter without help.

1. Entry obstacle:  
Small step makes a big difference. Very hard to enter the store without someone's help.
2. Back wheel:  
Weight of back wheel makes it harder to push front wheel over the step.

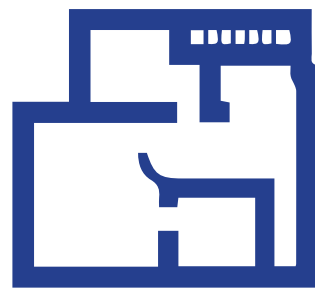


1. Height:  
Products on high shelves are very hard to reach. Only way to pull them down is to remove the outfit from hanger. Hard to select specific size.



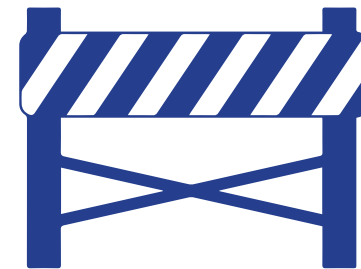
## SUMMARY

A reflective summary on our personal experience of a day in a wheelchair:



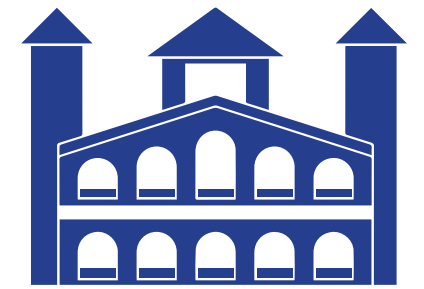
### Variety:

The accessibility of buildings may vary a lot, and doesn't seem to be properly standardized. Different locations in the same city may present very different conditions to a wheelchair user, some with advantages, many with disadvantages.



### Obstacles:

As wheelchair users we face more obstacles than when walking. This makes us question if the built environment is maybe designed mainly for able-bodied people in mind? Are the needs of mobility impairments being overlooked?



### Historic:

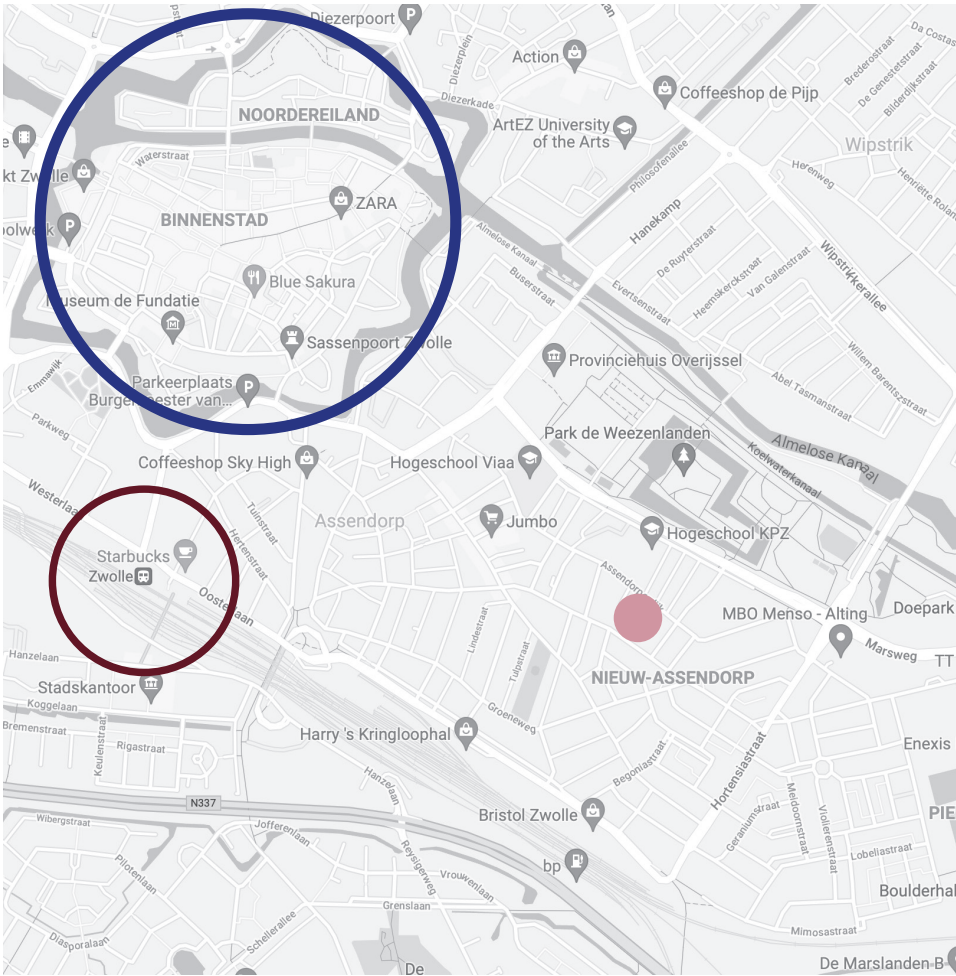
A lot of the obstacles we faced were elements of Delft's historic center. The sloped streets and brick flooring may be charming, but they also make the accessibility through the city very limited to wheelchair users.

# 1.2

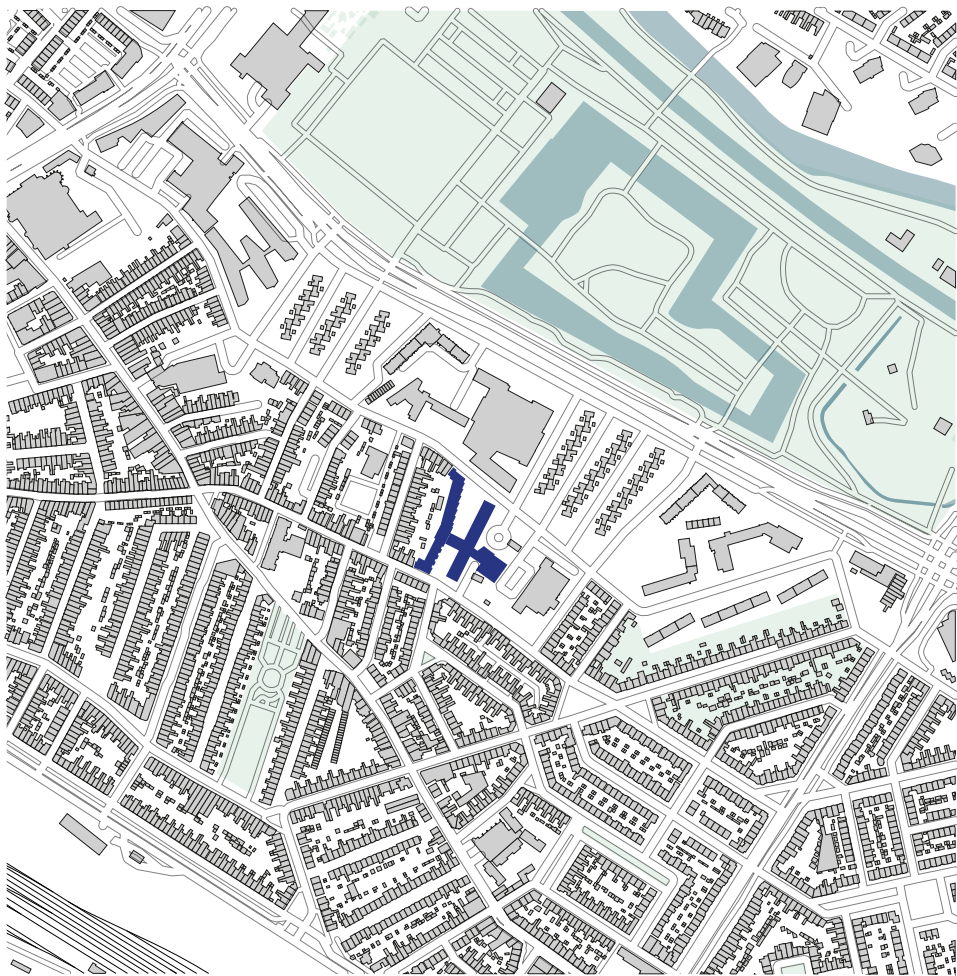
STAY IN HUIS ASSENDORP



ZWOLLE

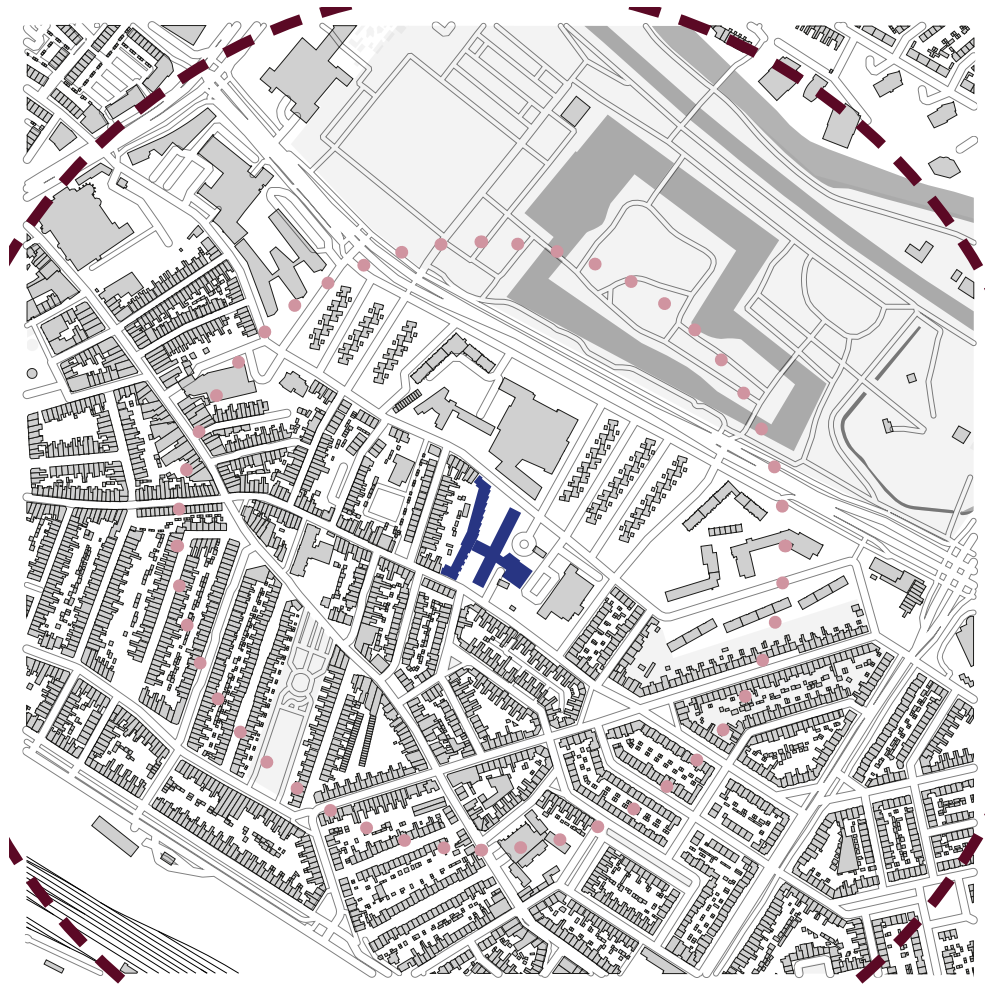


HUIS ASSENDORP



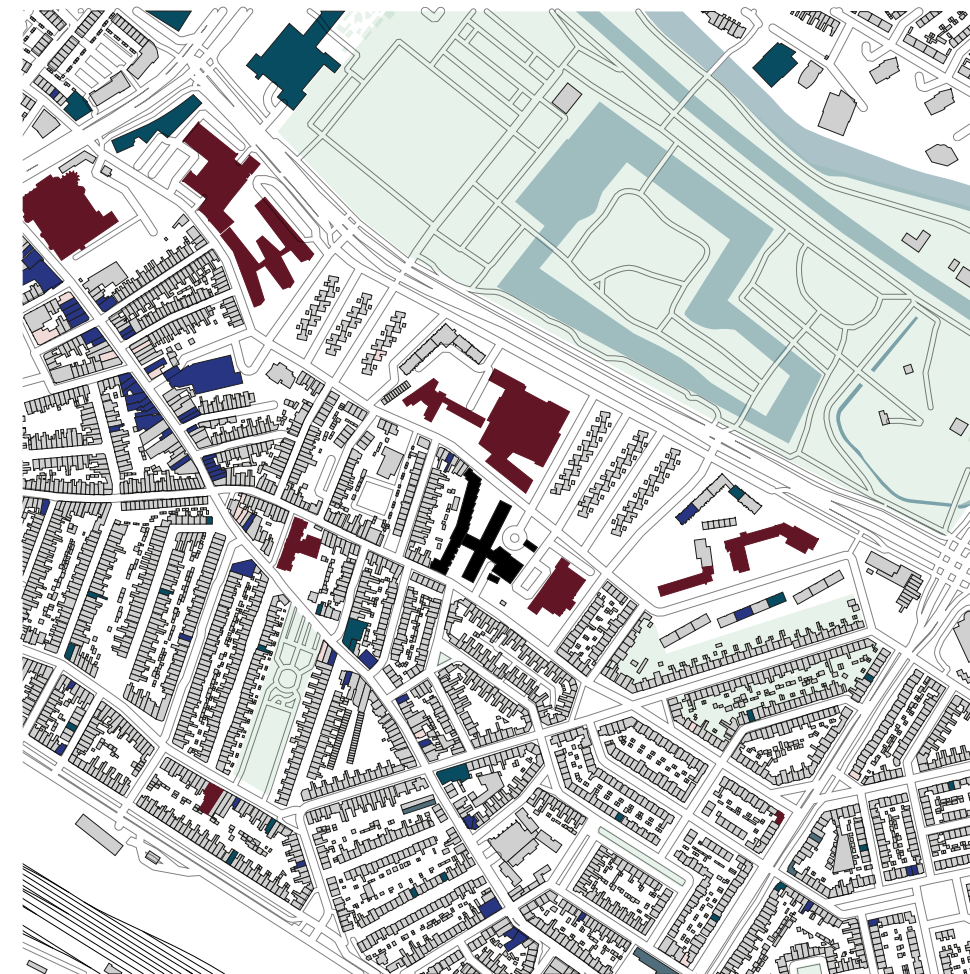


## WALKING DISTANCE



- 5 minute walk
- 10 minute walk

## FUNCTIONS



- Office
- Office
- Restaurant
- Retail
- Schools and religion

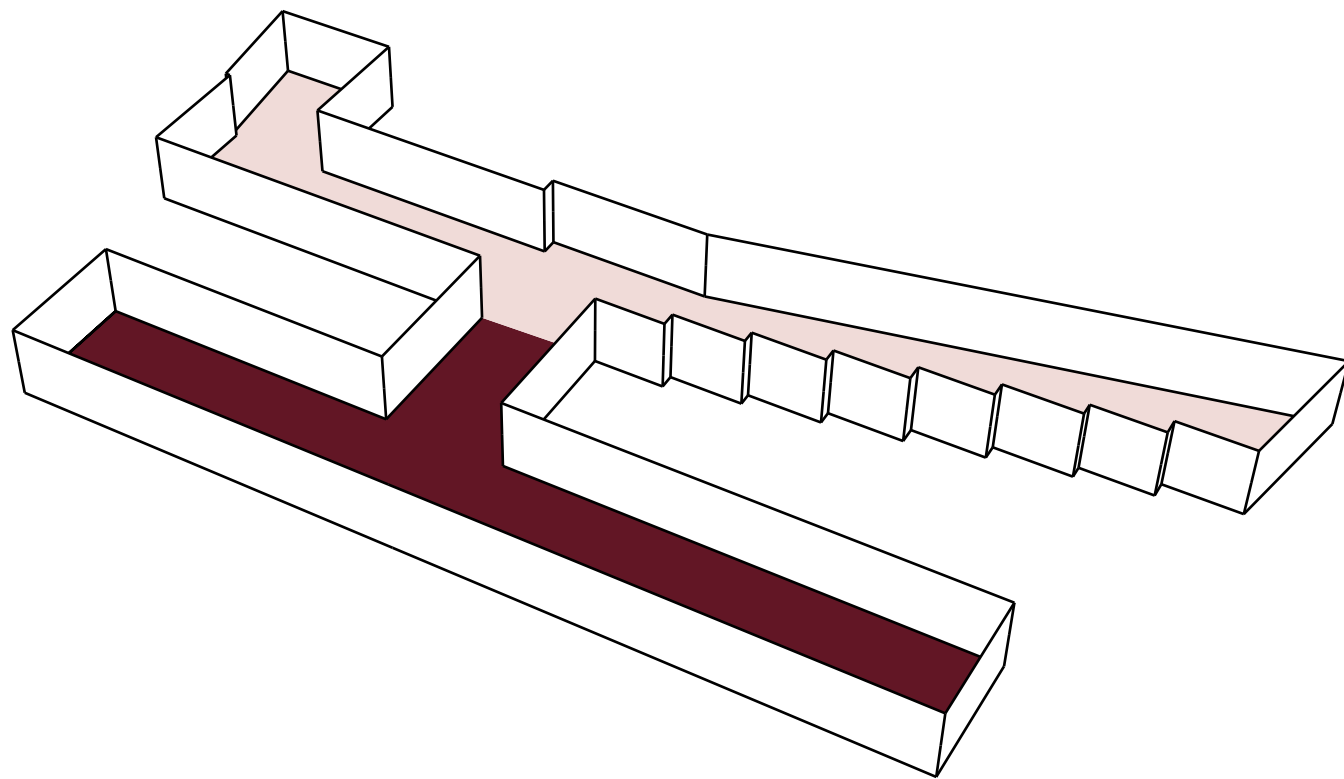


HUIS ASSENDORP





## FLOORPLAN



**A**

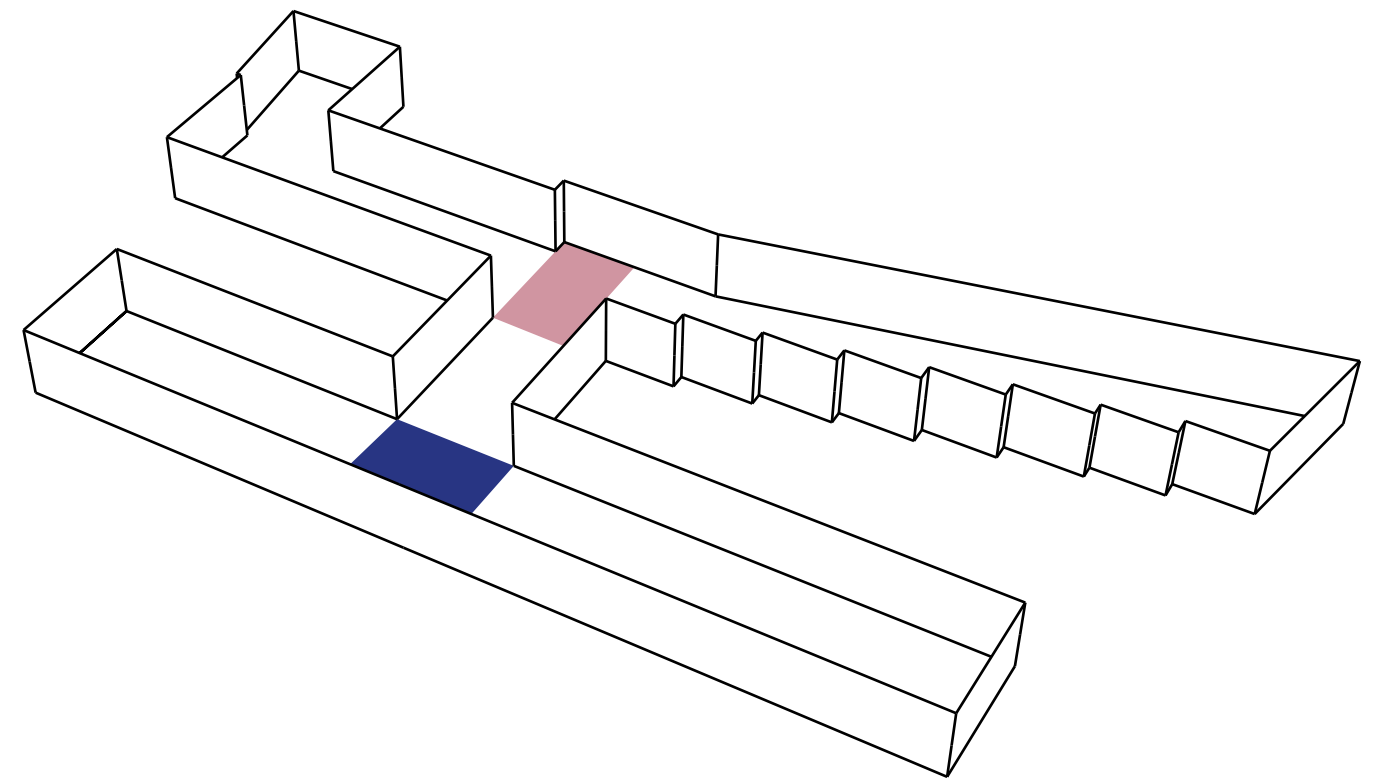
### Achter de Hoven

Larger apartment units, located on the western wing of the building

**B**

### Main Building

Main building with the remaining residential units and majority of communal spaces



**A**

### Common Shaft 1

Collective space for the residents, located on every floor

**B**

### Common Shaft 2

Collective space for the residents, located on every floor, includes:

ACHTER DE HOVEN





RENOVATED





## LIBRARY



### Pros:

- Proper Lighting

Proximity to windows provide good amount of natural lighting

- Home Design

Choice of furniture and decor makes the space feel very comfortable and inviting to residents, bringing a



### Cons:

- Improper Seating

Seats in this area are not ideal for elderly users, either lacking arm-rests or being too low

- Book Shelf

Due to its depth, the bookshelf piles multiple books are piled in single shelves, making books in the back very hard to reach



## ATELIER

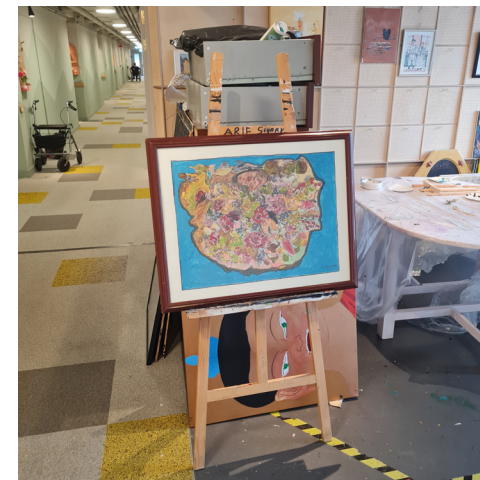


### Pros:

#### - Location

The atelier is well-located in the atrium between the shared hallways.

This allows exposes residents to the are and makes the room inviting to everyone.



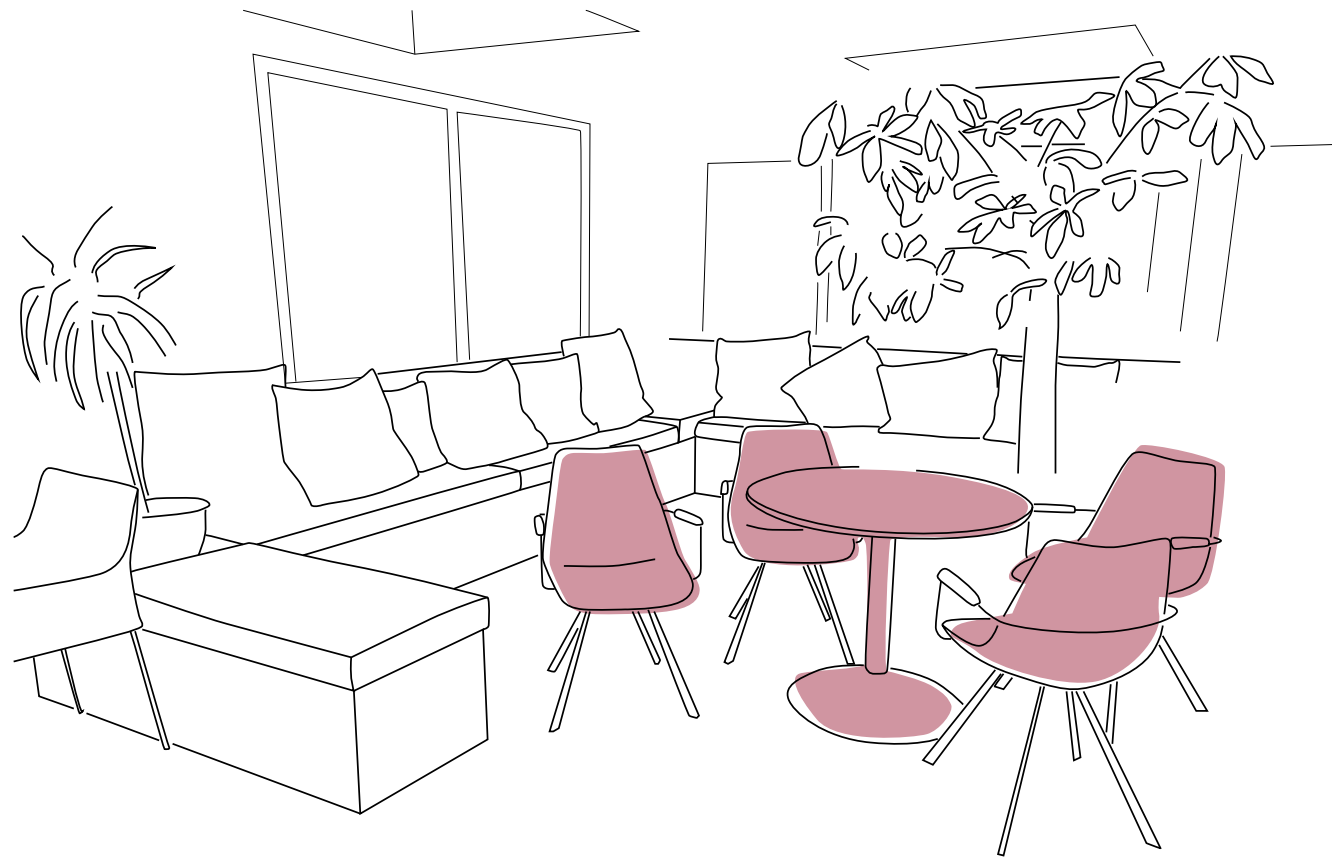
### Cons:

#### - Limited Space

Due to the scale of the room, this space feels a bit tight for an entire art atelier. It can only fit one table, limiting the amount of residents who can attend art activities at once



## THEETUIN



### Pros:

#### - Location

Being right at the building's entry, theetuin is a very central and so ideally located as a meetup area

#### - Lighting

Because of the many skylights, this room is very well-light, bringing outdoor qualities into the building.



### Cons:

#### - Improper Seating

Seats in this area are not ideal for elderly users. While they have the right height, they lack armrests.

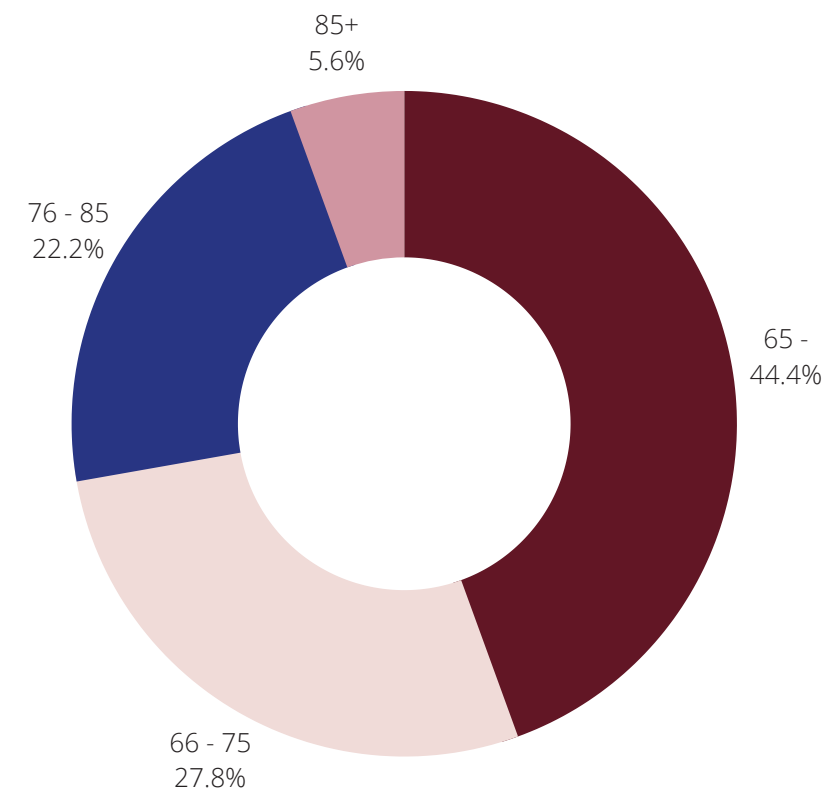
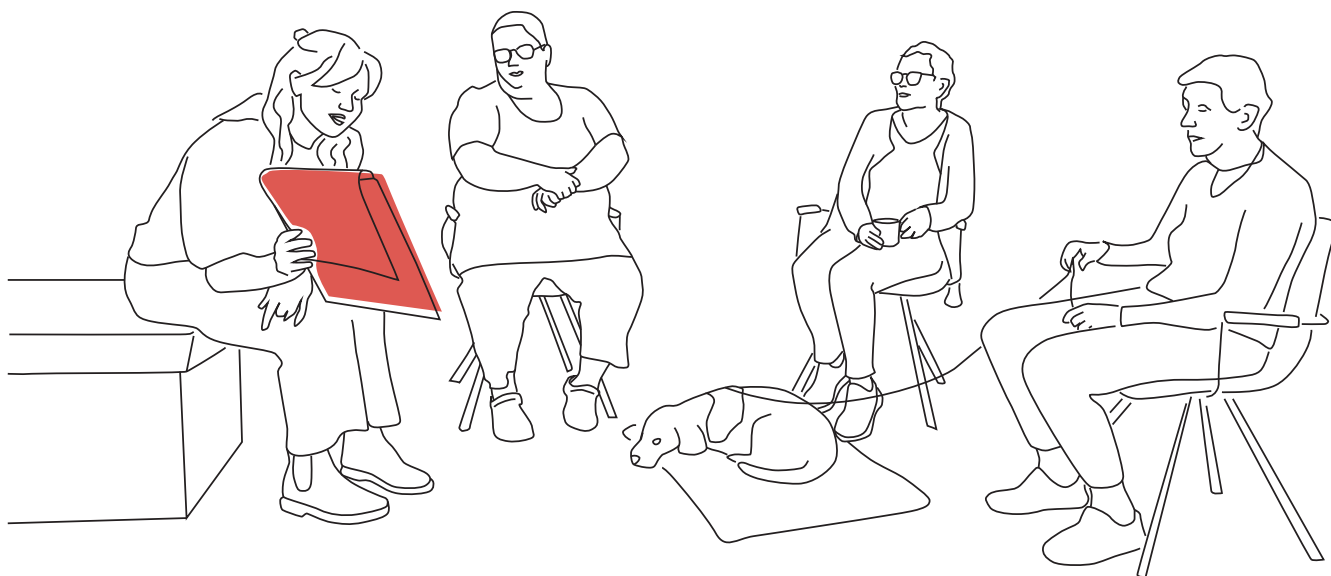
- Due to that, the single table in this area is the most used seating

- As a result, most residents chose to sit in the adjacent room





## THE CHOICE GAME



Before our arrival in Huis Assendorp we made a plan on what we wanted to do during our stay and how we were going to connect with the residents. Part of this plan was our choice game. We used this as an ice-breaker to connect with residents and ask them if it would be okay to interview them.

Our choice game consisted of 7 themes with options in which the residents had to choose one option. This worked as a great ice-breaker and it was a nice way to get to know them better.

There were 18 participants,  
 44.4% younger than 65 years old  
 27.8% between 66 and 75 years old  
 22.2% between 76 and 85 years old  
 and 5.6% older than 85.

In the next view pages you can see the options that were part of the choice game and the results.

## BATH OR KITCHEN?

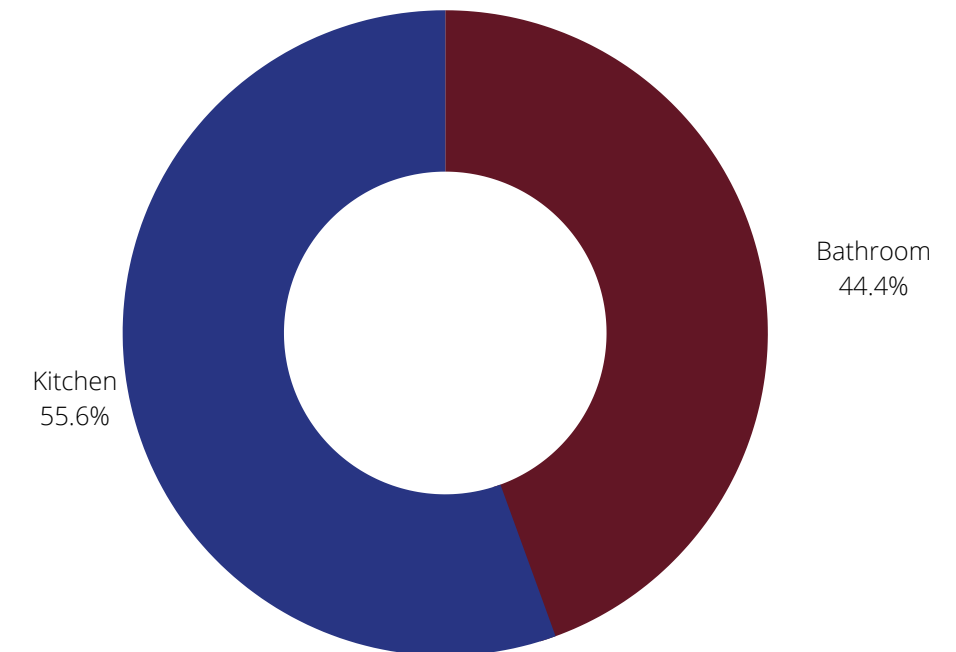
Toegankelijk bad voor ouderen of een luxe keuken met alle voorzieningen?



Luxe badkamer met inloopbad, helemaal op maat voor ouderen



Luxe keuken voorzien van alle moderne apparatuur



CHAPEL, LIBRARY OR PUB?

Which collective space would you use the most: chapel, library, or pub?



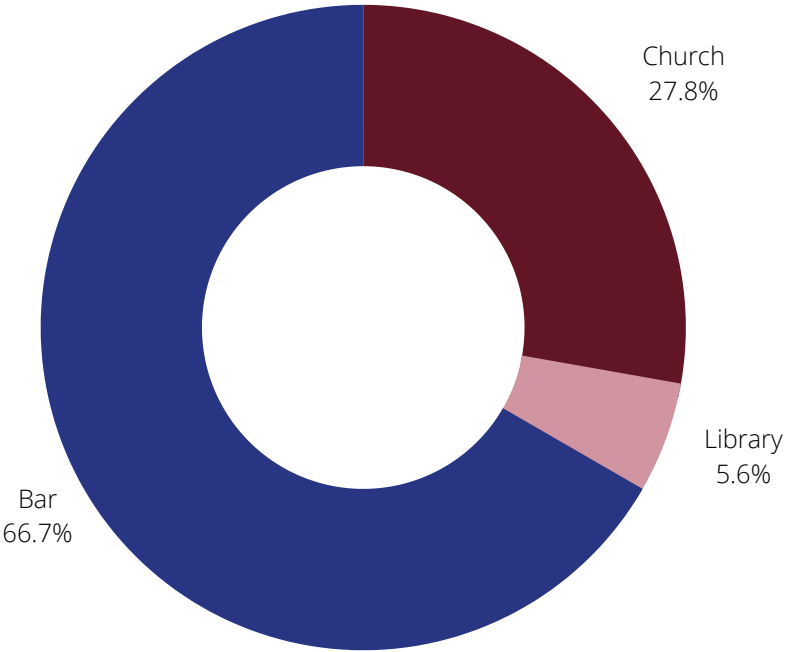
Chapel or space of worship reserved for residents



Shared library collection, with comfortable reading areas



Collective bar, for fun nights activities with other residents



## AUDITORIUM OR GALLERY?

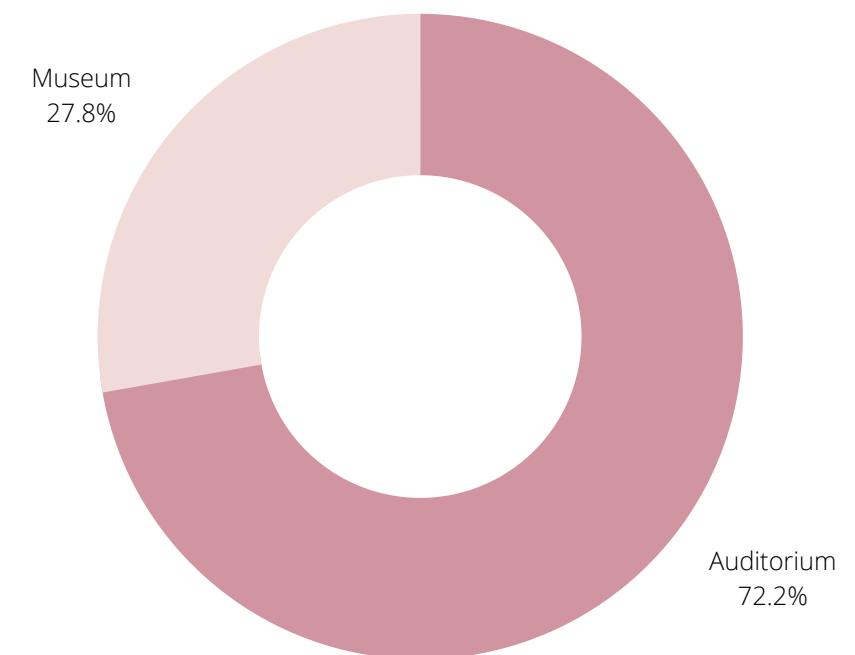
Having direct access to a community auditorium or a museum gallery?



Designed with ramping system, for facilitated wheelchair access. Ideal for lectures, theatre, and movie nights.



Free entry and direct access to museum or gallery, with both permanent and rotating exhibitions.





## CLOSET, PANTRY OR LAUNDRY ROOM?

A spacious walk-in closet, a large pantry, or a fully equipped laundry room?



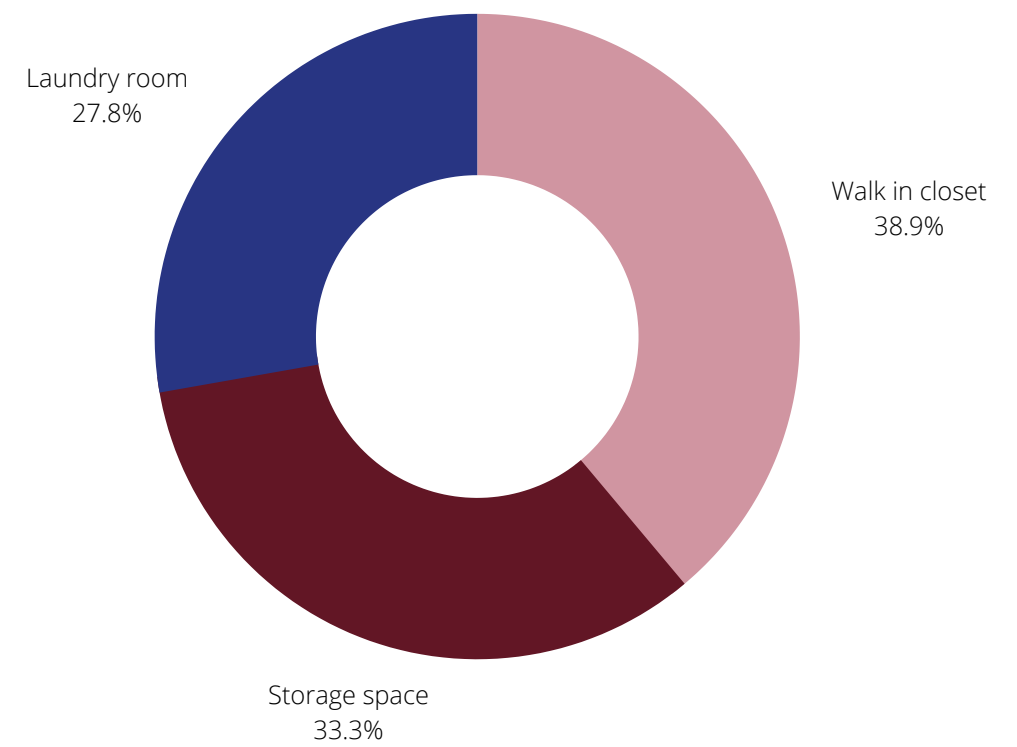
Large closet space with proper hanging and storage



Spacious room to organize your food storage



With proper space for folding and hanging laundry.



GAME ROOM OR ART STUDIO?

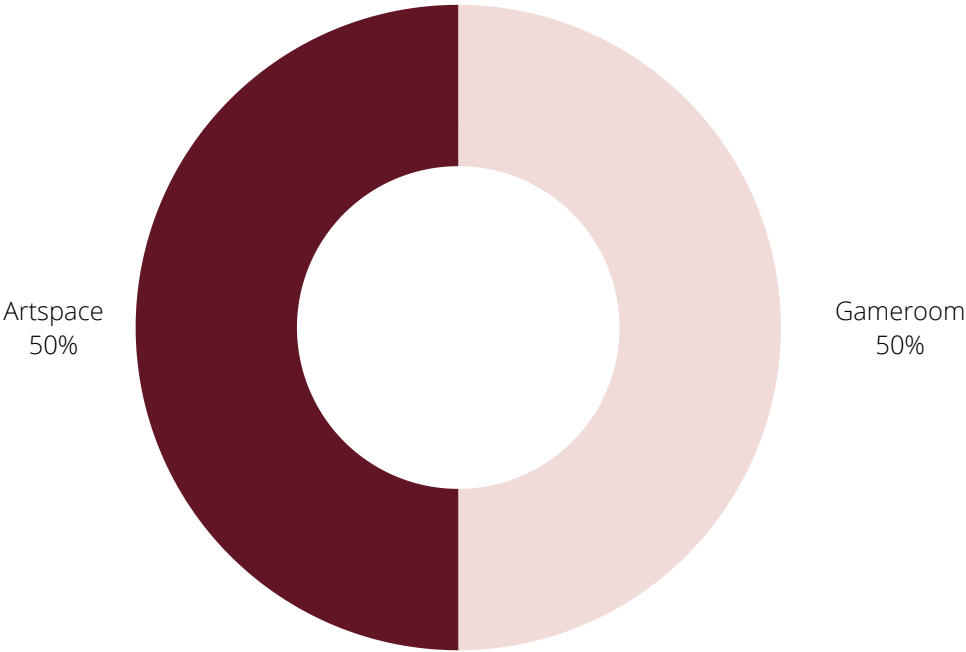
Game room or art studio?



Room for recreational activities like billiard, chess, poker, and more.



Atelier for various art activities including craft, painting, sculpting, and more.



WINTER GARDEN OR BALCONY?

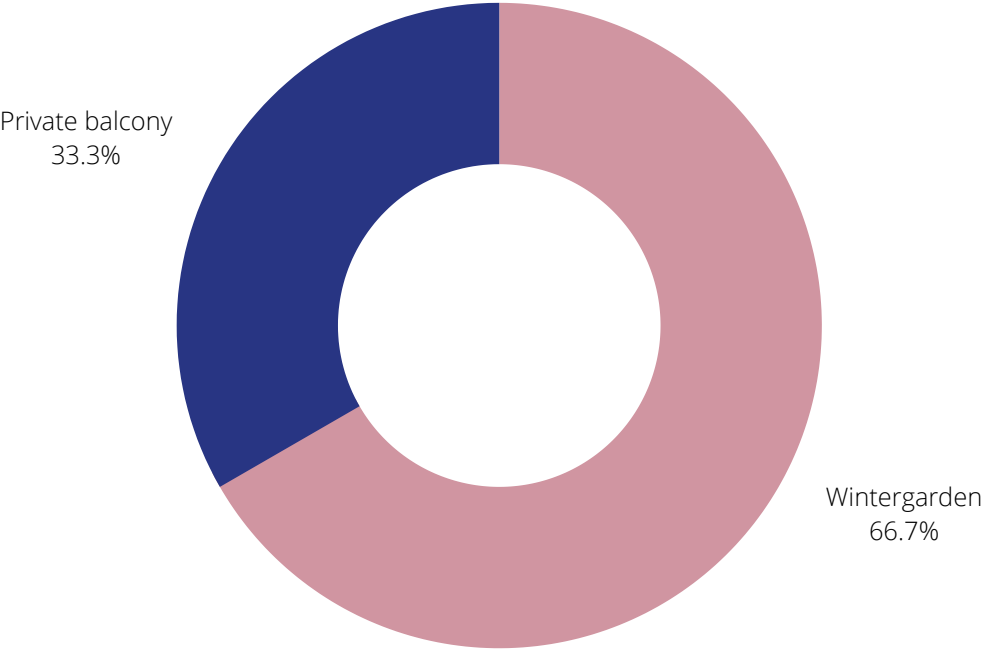
Shared winter garden or private balcony?



Winter garden or greenhouse for all residents



Spacious private balcony, for each residential unit



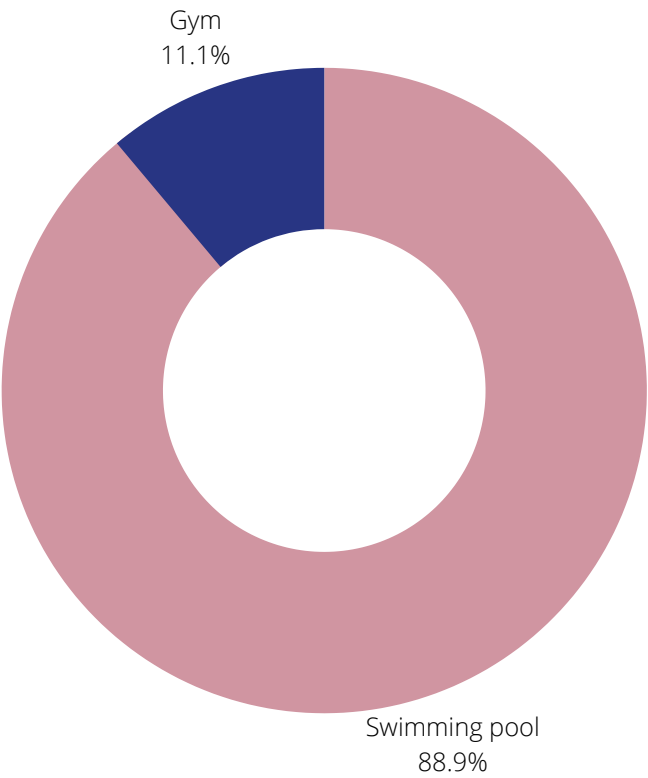


SWIMMING POOL OR GYM?

Swimming pool or gym?

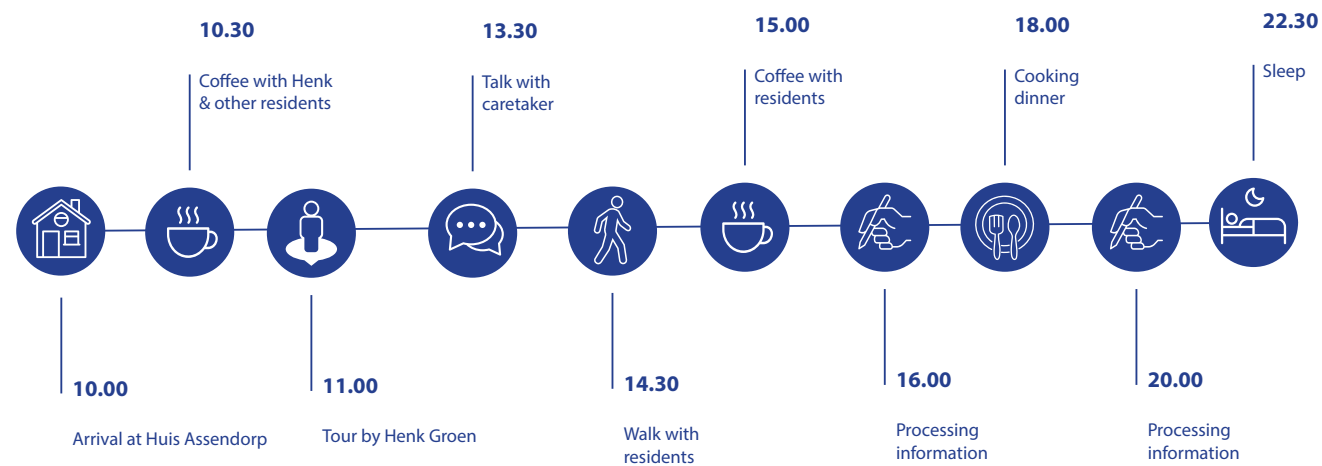


Indoor swimming pool with jacuzzi, either for relaxing or for hydro gymnastics. Fully equipped gym for physical activities.





## MONDAY



### 10.00 arrival at Huis Assendorp

Upon our arrival we we're received by Henk Groen, who's not only a resident of Huis Assendorp but also a lead member of the board. **11:00** After a cup of coffee together and lovely chit-chat, Henk took us on a tour of the property. Starting on the ground floor, we were shown many of the important shared spaces in the building, including sit-down areas, the coffee room, the tea area, and housemaster offices. In addition to these, we we're surprised to see leasable office spaces, one of which was currently being rented by a pedagogy organization.

**11:30** Making our way to the first floor, Henk generously showed us to his apartment, where we learned more about his background and career in the transport business. His apartment was previously a fisiotherapy room, therefore having a layout that differs greatly from the other apartments. While telling us about his home, Henk excitedly gave us the keys to our temporary home: the Huis Assendorp guestroom. **12:00** We continued our tour through the building. We saw our guestroom and the appartment Jan Bart and Rens will sleep in. On every floor you can find a common room, like kitchens, a library and a small art space.

**12.15** We finished the tour given by Henk Groen, ran to the supermarket to get groceries (the Jumbo is a 5 minute walk).

**13.30** We went back to the Theetuin. Here we met a woman that works here. She does some catering and activities. We asked her where we could do the daily coffeeshour. She suggested to do it in the Theetuin because they already do coffeetime everyday at 10. So we went back to our room to write and distribute the coffee pamphlets.

**14.30** We joined one of the caretakers on a walk with some of the inhabitants. We each pushed a wheelchair and took them to the farm. This was a perfect way to see some struggles and have a nice talk with them. We noticed that it's a short walk but the residents are in a complete different room. We also noticed that is gives a connection with the community.

Although the park was really close, it's impossible for the residents to go by themselves.

- The sidewalk changes to roadlevel
- Changes in surfaces (from gravel to dirt, from dirt to asphalt)
- Bumps or holes in the dirt road
- Bike lane corners

**15.00** We made coffee and tea for the residents and talked with them. This was also a perfect chance to do our "choice game" so we managed to ask 4 people to do this.

**16.00** We are taking a moment for ourselves and we are reflecting on how everything is going, writing information down and we try to plan the rest of the day.

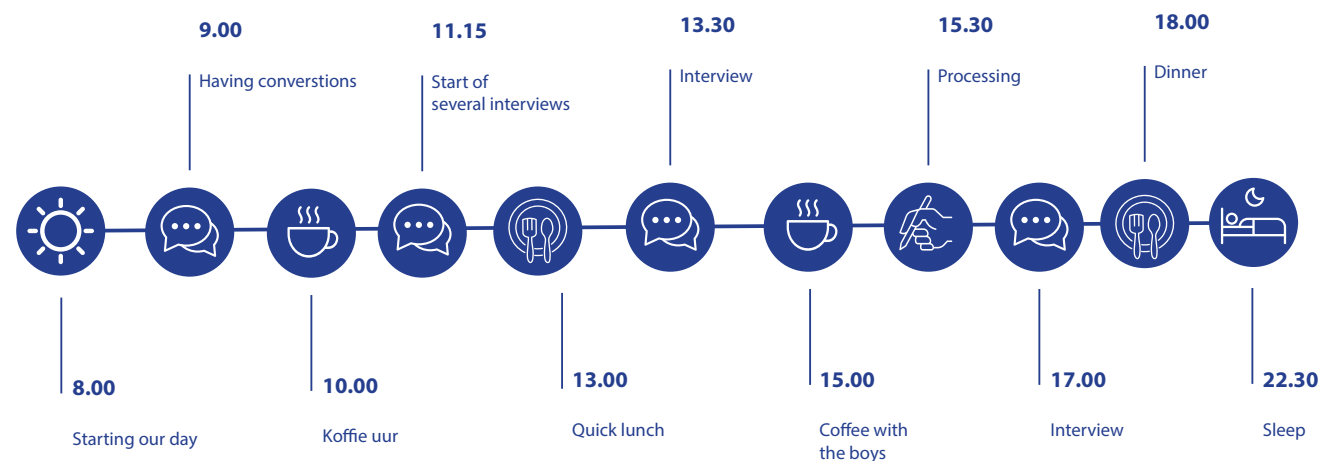
**17.30** Let's discover and meet people! Turns out it is not a great time to meet people in an elderly house. All the hallways are empty, only some staff and visitors are walking around.

**18.00** We decided it's time to cook dinner. We have a fully equiped kitchen in our guestroom, but we decided to cook dinner in the common kitchen. We hope to meet people here.

**19.30** We chilled for sometime, processed the information we got today and talked about the rest of the week

**22.30** Normally we both sleep later, but we find everything really exhausting so we are really tired, we are going to sleep.

## TUESDAY



**08.00** We started our day with some breakfast, coffee and discussing our plan for the day.

**09.00** We decided to go downstairs and see if we could find people to talk to. We couldn't find a lot of people and we felt a bit awkward. How are we going to find people to do interviews with? Where will we find them? What are we going to do? We figured out we should just try to start a conversation. We walked into the coffeeroom, and we were sitting there for a few minutes and then started a conversation with Teunis. And we sat there for an hour with him and asked him if we could come by later today.

**10.00** We were still sitting in the coffeeroom and then 3 ladies picked us up because they saw our phamplet and they wanted to have coffee with us. Kyra did the choice-game with them, had a talk and asked them if we could stop by for an interview. Alexia made drawings and observed what was happening.

**11.15** We walked up with Joke to her room. We talked with her about her room, how she ended up her and made some drawings.

**11.30** We ran into misses Nibourg, she was doing her exercise (walking on the hallway with her walker). We had a long conversation and we asked her if we could look into her room. We asked her the interview questions and made a quick floorplan of her room.

**12.00** We went to the room of Teunis to do the same interview, we sat her for an hour. He lived here for a longer time and he is really active, so he told us a lot of insides and he really judged how everything works here. So it was a nice way to get to know the place.

**13.00** We had a quick lunch in our room and

tried to process some stuff in our booklet. This way we hope we don't forget anything.

**13.30** We sat in the apartment of Anneke for an hour and talked about her life and asked her the same interview questions.

**15.00** We drank some coffee with the boys and discussed how it was going and what they are doing.

**15.30** We are sitting in our room and we are processing the sketches and notes in our booklet.

**17.00** We interviewed Truus Wedzinga-Brinkhuizen. She was a bit hesitant about the choice-game and the interview. So we were a bit nervous to do the interview because she seemed really reserved. But Kyra asked her a view questions about how she was, what her hobbies were and what she liked in her house. And after this she wouldn't stop talking. So we were there for 45 minutes and we had the chance to ask all our interview questions.

**17.45** We are taking some time again to process all the information, drawings and interviews.

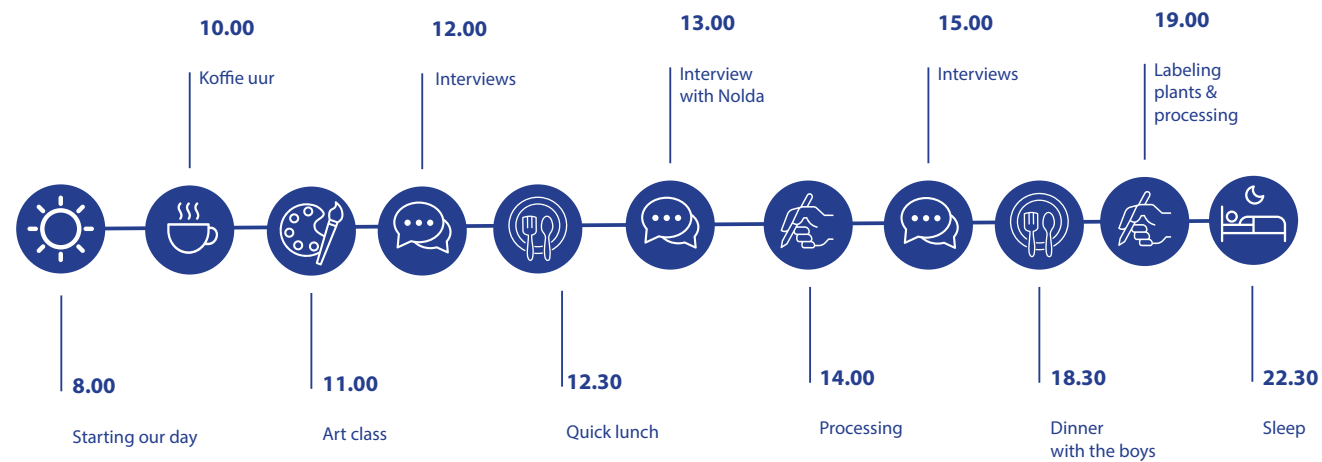
**18.30** We are having dinner

**19.30** We are finishing some of the drawings of today and we are translating the interviews.

**20.30** It's time to relax a bit and stop working on the drawings and interviews, we are watching a movie together.

**22.30** We are going to sleep.

## WEDNESDAY



**08.00** We started with some breakfast, coffee and discussing our plan for the day.

**09.00** We went to the grocery store to get lunch and dinner. We noticed there are not a lot of spots to rest on your way to the Jumbo.

**10.00** We did some coffee with the residents in the Theetuin. The three ladies (Truus, Joke and Anneke) also came to see us and brought another friend. We did the choice-game again and everyone was really enthusiastic and wanted to join the game. So far we have 13 responses and we could get 2 more interviews out of it.

**11.00** We went to visit the artists and Kyra had some conversations. There were 6 people painting and only 2 of them live in the building. The other 4 are from the neighborhood and 1 of them works as a cleaner in the physical therapy centre. They really loved that they could come here to paint. They do this every Wednesday and they have an exhibition in October.

**12.00** We talked to someone of the care organisation. Her name was Janet, she was working all by herself during the day and she was responsible for the meals and activities. It was a lot of work to make the sandwiches, bring them to the rooms, pick people up who wanted to eat in the diningroom and give them the sandwiches. She also cooks the dinner, but she gets some extra help around 3. She would love a bigger and more homey kitchen in the building. At the moment she cooks in a small separate kitchen that doesn't have the space she needs.

**12.30** We are having lunch and we are comparing our findings.

**13.00** We went to visit Nolda and asked her the interview questions and some questions about her experience in the board.

**14.00** We went back to our room to work on our findings.

**15.00** We are having an interview with Riet in her apartment. She has a garden, so we sat in her garden for a bit.

**16.00** We had an interview with Marga

**17.00** We are processing our drawings, informations and sketches

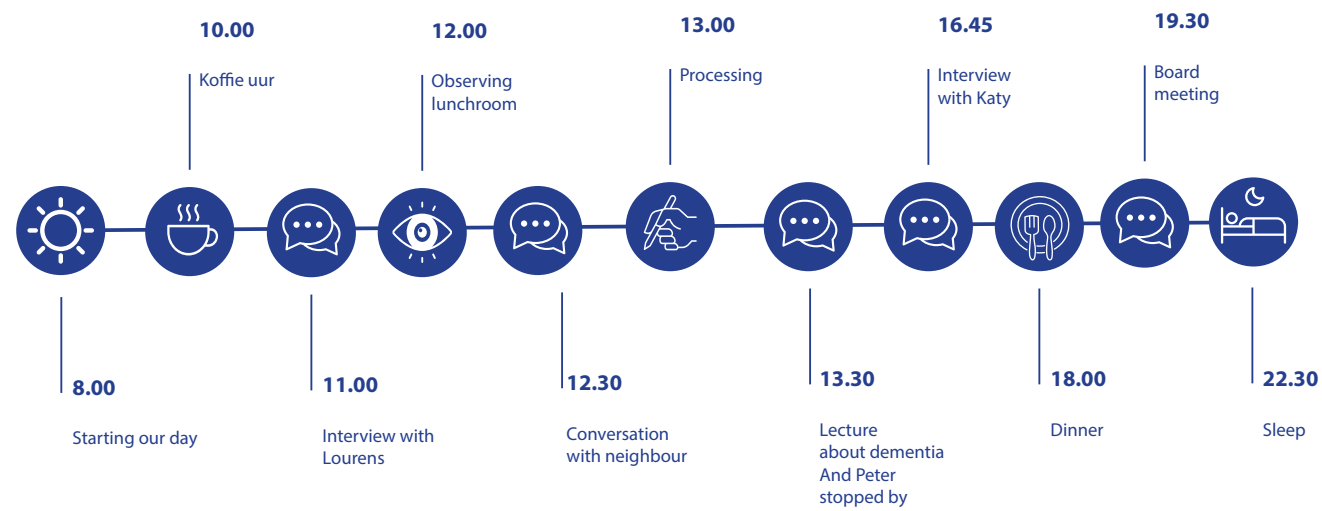
**18.30** We are cooking together with the boys, this is a moment to compare our experiences and learn from each other.

**19.30** A lady asked us to help her labelling the flowerplants for 'burendag'. And we did, so we spent some time together to label them.

**20.30** We are making drawings and process everything in a booklet.

**22.00** We are so exhausted of all the interaction and information, so we are going to bed even earlier.

## THURSDAY



**08.00** We started our day with some breakfast, coffee and discussing our plan for the day.

**10.00** We drank some coffee in the Theetuin together with the boys, we had some conversations and another response for the choice-game. We also managed to get another interview

**11.00** We went to visit Lourens' room, he is a member of the painting group and we asked him our interview questions and we made a floorplan.

**11.45** Quick lunch in our room

**12.00** We went to the space where they serve lunch. Alexia made some drawings of the room and Kyra talked to the people that were joining the lunch.

**12.30** Kyra saw our neighbor outside, he was going for a smoke. She went outside to talk with him. He told her he moved here to have some interaction and to be closer to his daughter. He is 65 and still able to take care of himself, but he has cancer and his daughter is picking him up to go with him to the hospital.

**13.00** We went back to our room to process our sketches and notes.

**13.30** Kyra is joining a lecture from the health organisation about dementia. Afterwards she managed to ask some question about the way architecture could influence the well-being of people with dementia.

**15.00** Peter came for a visit

Peter came by Huis Assendorp. We could share some experiences, ask some questions and it was really nice to talk to him.

**16.00** Alexia is making drawings of the movement in the Theetuin. Kyra is taking a walk around the building and is making pictures of the direct surroundings.

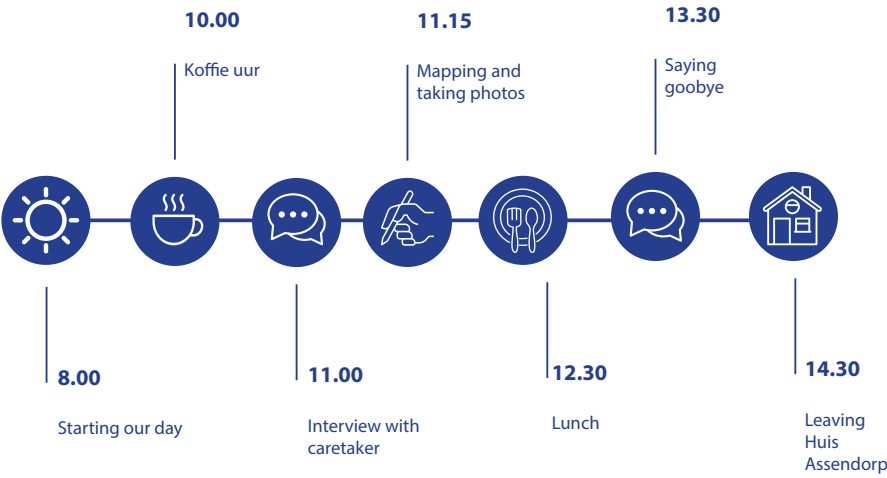
**16.45** We are interviewing Katy, we met here in the hallway. She is the youngest resident we have seen.

**18.00** We are having a quick dinner with the boys before we are going to the board meeting.

**19.30** We are joining the board meeting for the group of owners. It is not the kind of information we are looking for and not really interesting for our research, but it was nice to see a lot of the residents together.

**22.30** We are going to sleep

FRIDAY



08.00 We started our day with some breakfast, coffee and discussing our plan for our last day.

10.00 We drank some coffee in the coffeeroom this time. Here we had interaction with different people then the former days.

11.00 Kyra had an interview with one of the caretakers.

11.15 We are using our time to map the building, wheelchairs and walk around to make more pictures.

12.30 We are having lunch in our room and we are packing our stuff.

13.30 We are saying goodbye to the residents and thank them for the week.

14.30 We are leaving Huis Assendorp



DOORS



## MW. NIBOURG



Mw. Nibourg lives in room 138E and is 90 years old. She lived her whole life in a townhouse in the other side of Zwolle. She became ill, needed to go to the hospital and had to go to Huis Assendorp afterwards. She wanted to go to different houses, but they were all full. Her room was almost fully furnished when she came in, she only has some cabinets, a small coffeetable and a comfortable chair.

The most important item in her room was a picture of her dog.

She needs care during the day and she has problems and infections with her airway. Due to this she cannot go outside when it's a little bit cold. Because of this she is limited to the hallway. She walks there 3 times a day because she has to from her physical therapist.

She is really happy here and wouldn't change anything to her room or the building. But she doesn't like to be taken care of. The care takers ask her several times per day if she wants to go for a walk and she hates this.



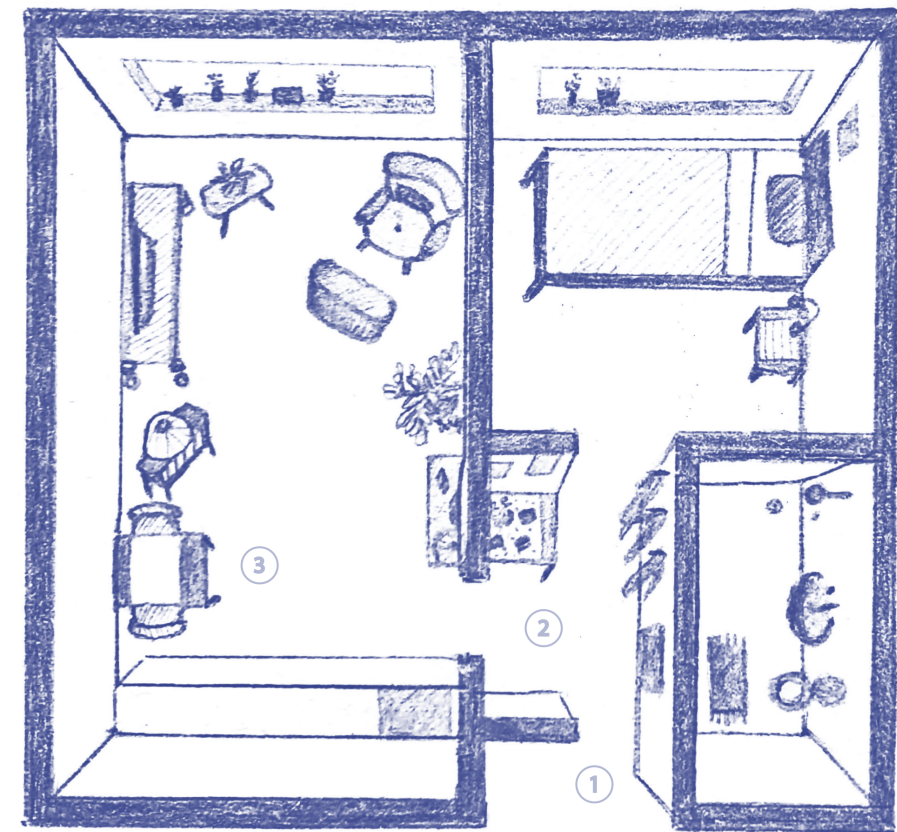
PLANTS: 3

ARTIFICIAL  
FLOWERS: 9

LAMPS: 4



FRAMES: 23



- 1 Door open  
resident often leaves the door open, so the interior of the apartment is visible from the corridor
- 2 Foyer  
entry area feels quite small and overlaps doors
- 3 Dining  
space is too small for a large dining table



## JOKE



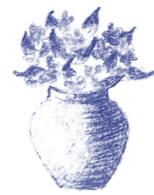
Joke lives in room 32 Achter de Hoven and is 73 years old. She lives here since February 2021. Lived with her parents all her life, never married. They all died, lived alone in the house, moved to Huis Assendorp because her sister was living here.

Her sister died because of covid a few weeks later but now she has a friend, with whom she eats. She wouldn't change anything to the apartment, she loves the building. Loves hanging out with everyone, she doesn't need care but she joins a lot of the activities. Takes care of dogs of the residents.

I asked her what her favorite object is and it would be everything. Which is understandable, because she lived in a big house and needed to choose already what she could take. So she took all her favorite items.



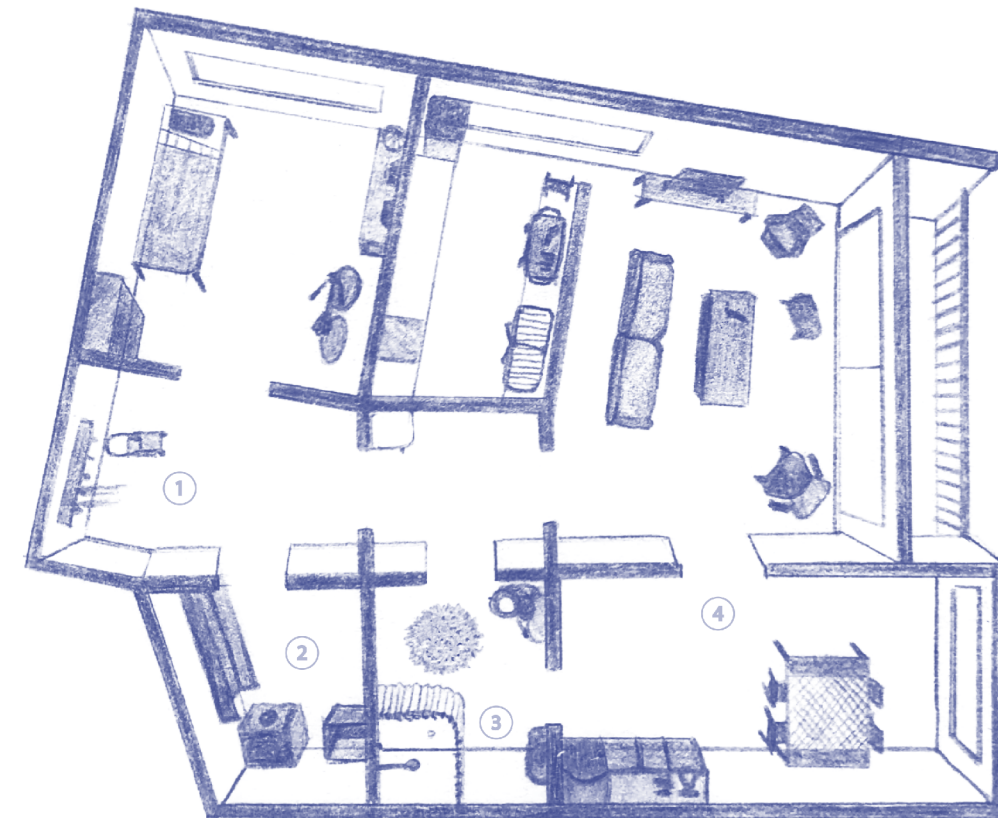
FRAMES: 7



FLOWERS: 6



STUFFED ANIMALS: 2



- ① Foyer  
odd shape leads to a lot of lost underused space
- ② Storage room  
utilized for laundry machine boxes, and supplies
- ③ Shower curtain  
added to previously open shower
- ④ Additional bedroom  
used as dinning room and living room extension



## ANNEKE



FLOWERS: 11



LAMPS: 10



TEA CUPS: 21



FRAMES: 10

Anneke Heusinkamp lives in 140b, is 67 years old and lived here for 4 years.

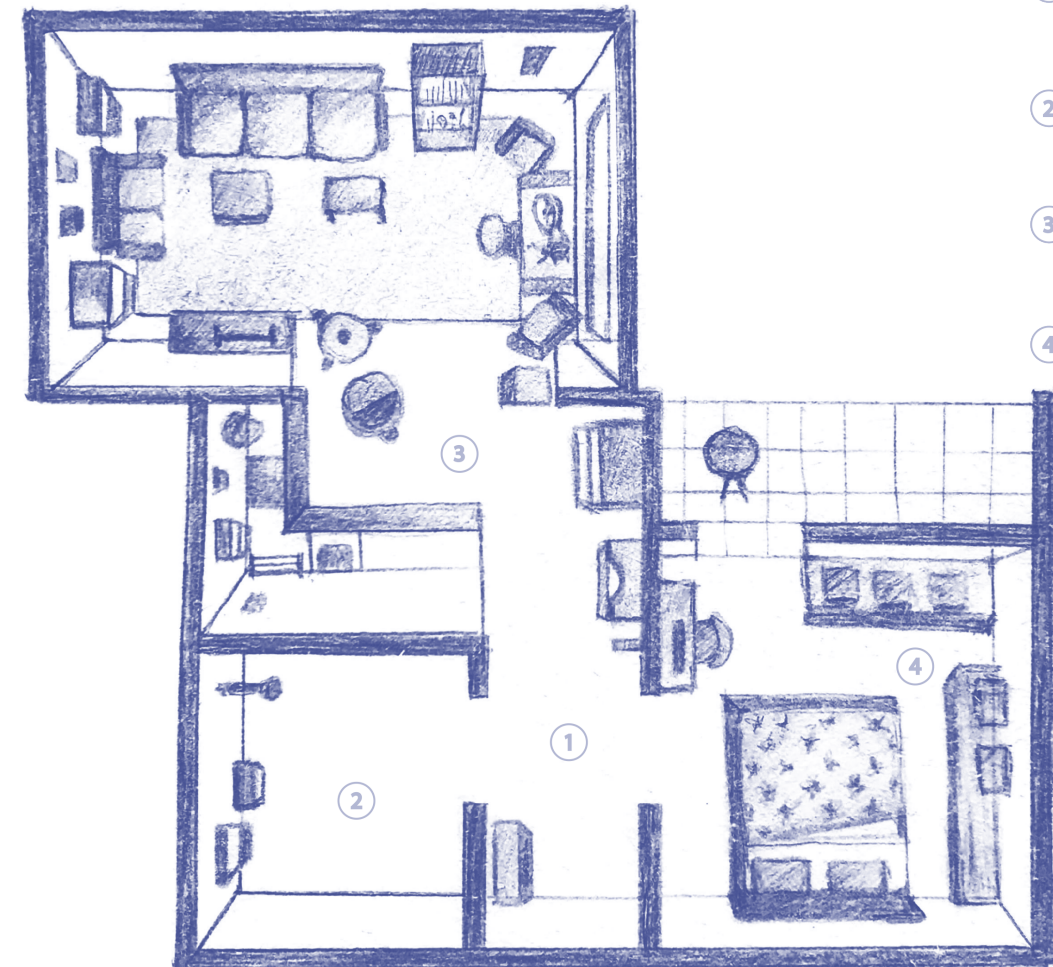
She lived in a church with a comparable organisation. She lived here with her husband but he passed away. Afterwards she met a guy in the church who became her boyfriend. There were too many memories in this building, so she moved to Huis Assendorp. And her boyfriend moved here as well. They both have their own apartment, but they can see each other whenever they want.

A few years ago they organised several activities, like Christmas dinner or an Easter brunch. But now because of Covid this is not happening and she really misses it.

We asked her what she would change to her apartment. She would like more storage space. But other than that she is really happy with her room!

With the building and common rooms she is also quite happy, she wouldn't change anything.

She likes the idea that if she needs care, it's easy to get this. But now she lives completely independent. There is only a help for cleaning and she orders her meals. But she does a lot of things together with her boyfriend or friends.

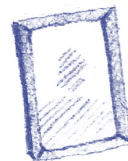


- ① Foyer  
space feels small, especially with door overlap
- ② Bathroom  
more spacious than in other apartments
- ③ Kitchen  
layout allows for extra space in cooking area
- ④ Bedroom  
many piled boxes due to insufficient storage space

## TEUNIS



CATS: 1

MEDICAL  
GLOVES: 1

FRAMES: 9



LAMPS: 2

Teunis lives in room 16 Achter de Hoven, is 46 years old and lived here for 3 years. He lived with his parents his whole life, but then they both passed away in a time of 3 months. Then he decided to move to Huis Assendorp because he needed care and he couldn't live in the big house by himself.

It was really heavy for him to move here, because he lived here not so long and then covid came. 19 people died, mainly in his hallway. So that was really traumatising.

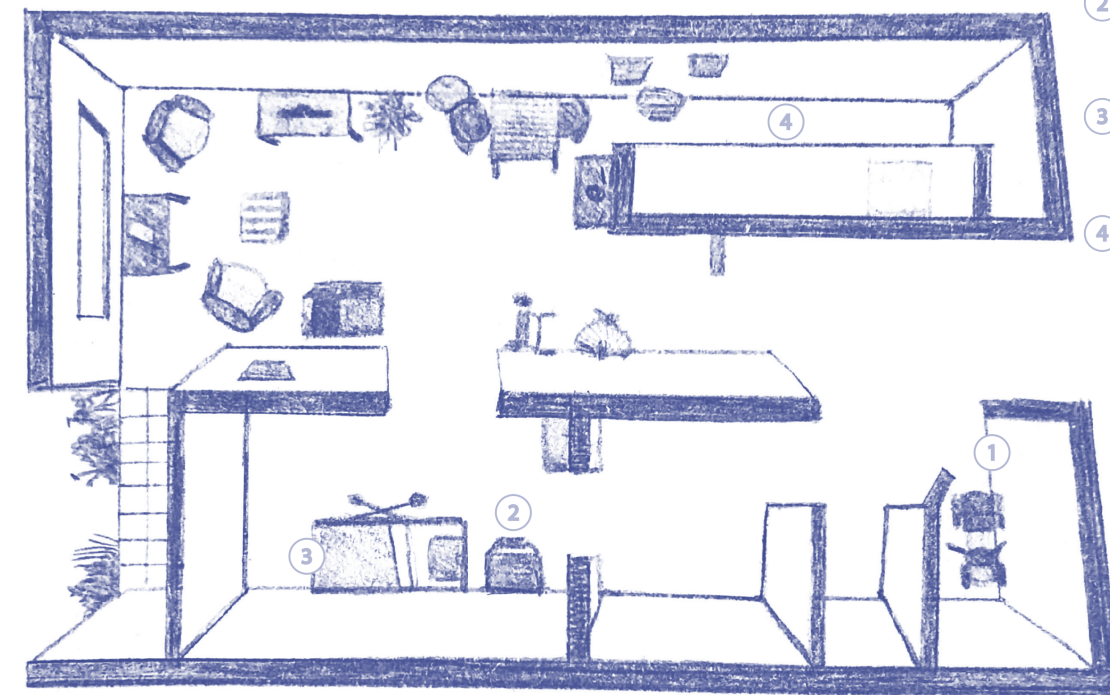
He lived on the second floor first, but now lives on the ground floor. This is bigger. He has troubles to park his scootmobile, but he took the door away of one of the extra bedrooms and now parks it there.

He has his own group of caretakers (from the same group but they come externally). He wanted to have different people because he wants to go to bed around 22.30, the group of caretakers in the building bring everyone to bed around 7 or 8. This was not okay for him. He lives there with his cat, Tony, he is 20 years old and it's his most important possession.

We asked him what he would change to his apartment. He is quite happy with it, but he would like an organised space for his scootmobile. He does have some things he would change to the building:

- The toilet are too low, so the caretakers need to come to toilets a lot of time because people cannot get up anymore.

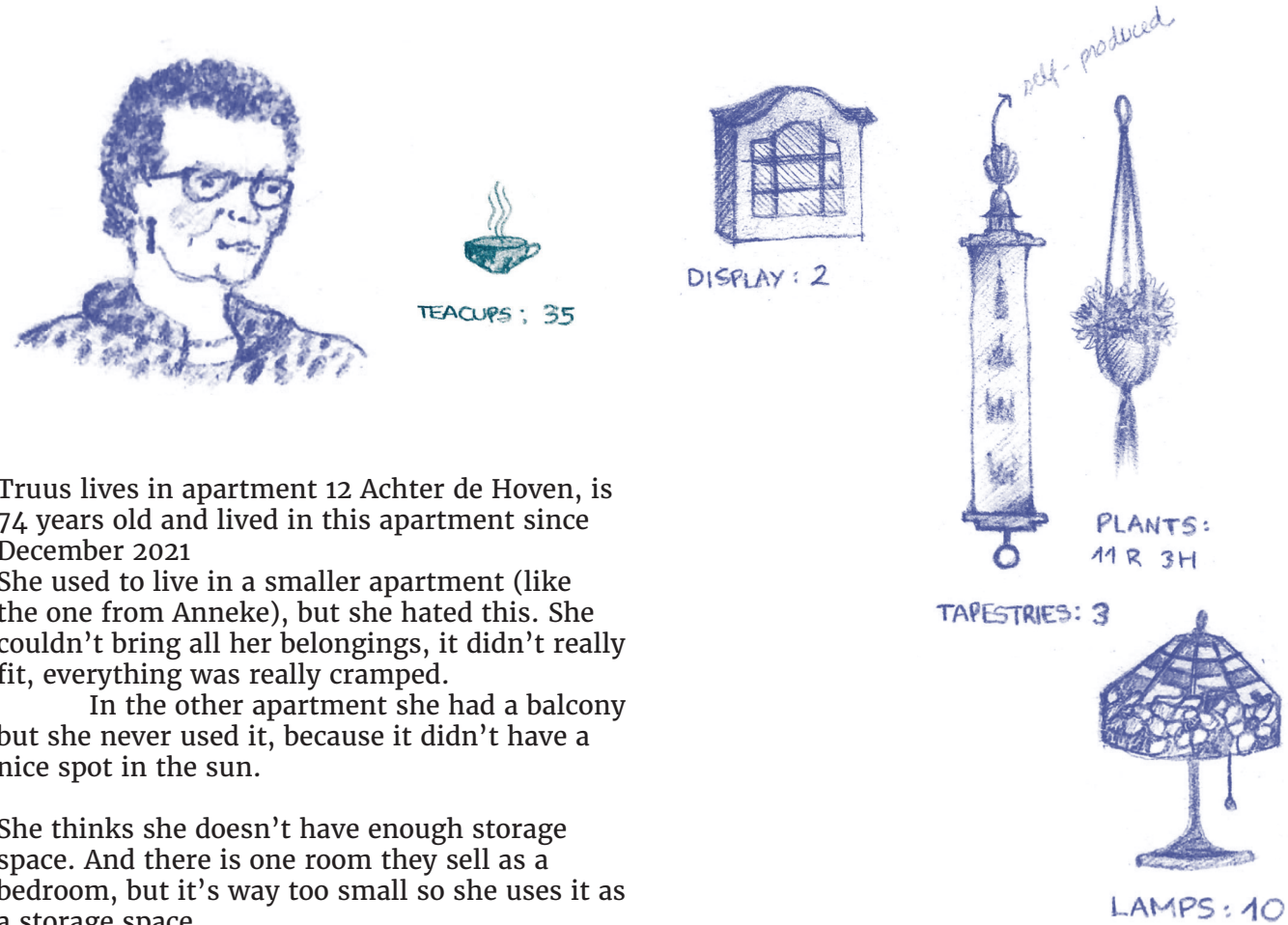
- There should be more spots in hallways to catch your breath and some more support to walk around.
- There should be someone that maintains the kitchen, all the equipment gets lost, so there is no way to cook there.
- There were benches outside, but they had 'hangjongeren' so they removed these. Which is crazy because elderly need it to move around.
- There is a laundry room in the basement, but it's impossible to go there with your scootmobile and there is no space to rest or catch your breath.



- 1 Storage room  
used to store his scooter,  
due to lack of space in the  
hallways
- 2 Medical supplies  
bedside storage used for  
medical supplies
- 3 Furniture  
adapted furniture, with  
medical aesthetics
- 4 Narrow kitchen  
tight space to move in with  
a scootmobile



## TRUUS



Truus lives in apartment 12 Achter de Hoven, is 74 years old and lived in this apartment since December 2021

She used to live in a smaller apartment (like the one from Anneke), but she hated this. She couldn't bring all her belongings, it didn't really fit, everything was really cramped.

In the other apartment she had a balcony but she never used it, because it didn't have a nice spot in the sun.

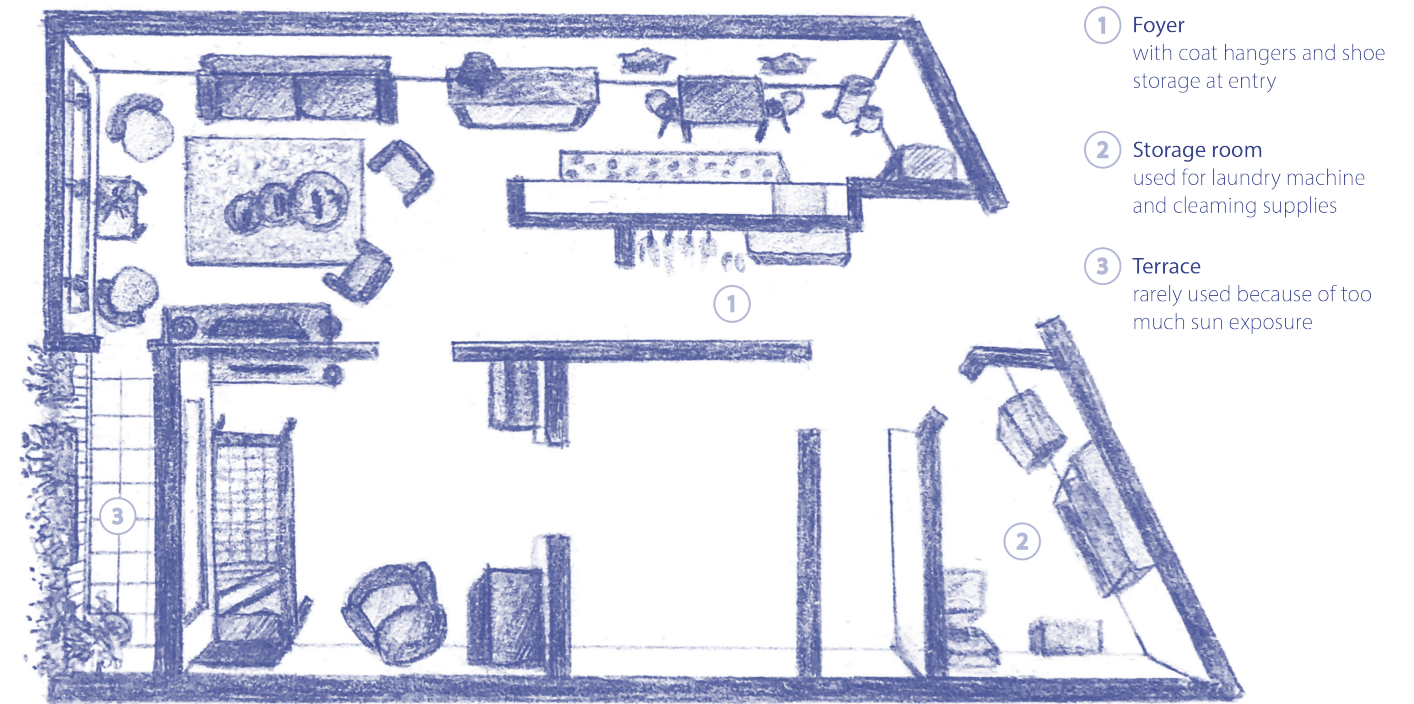
She thinks she doesn't have enough storage space. And there is one room they sell as a bedroom, but it's way too small so she uses it as a storage space.

She now has her own laundry machine, but before she needed to go to the basement to do her laundry. This was really difficult because they were always occupied and then she needed to go back to her room and wait. There should be a waiting and relaxing area.

She really doesn't like the health care in the building. She does like to have coffee sometimes with the residents. But she has 2 friends with whom she spends time, but she loves her time for herself.

She had 6 children, 3 dogs, 4 cats and a husband, so she doesn't like to take care of other people. She still has a dog, called Kiki, this would be her favorite and most important possession.

She would like to have more storage space and a spare bedroom. For the entire building she would like to have a better laundry room with a space to relax.



- ① Foyer  
with coat hangers and shoe storage at entry
- ② Storage room  
used for laundry machine and cleaning supplies
- ③ Terrace  
rarely used because of too much sun exposure

## NOLDA



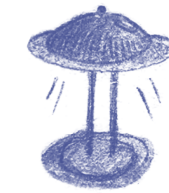
Nolda lives in apartment 88 Achter de Hoven, she is 78 years old and lived here for 3 years. She used to live in a townhouse with 3 bedrooms and a big garden. This was getting too expensive and too big for her, so she wanted to move. Besides she wanted to move now she is still in control, but the idea that there is care if she needs it gives her piece of mind. She chose this apartment because she really wanted to have a balcony.

If she would change something to her apartment she would love to have a slightly bigger balcony. She would like it if she doesn't look into other rooms.

In the building she misses a fitness centre, she now goes to the gym and does cognitive fitness. But she would love it if it would be in the building.

When she moved to this apartment she needed to throw a lot away, this was really hard for her. Her bathroom has 2 entrances, one entrance from the hallway, one from her bedroom. She blocked the door in the bedroom by putting closets in front of it, because she doesn't have space otherwise to put a closet in her bedroom.

Nolda is part of the board so she spends a lot of time in this. She also tries to speak to Habion about stuff that should be different.



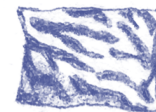
LAMPS: 6



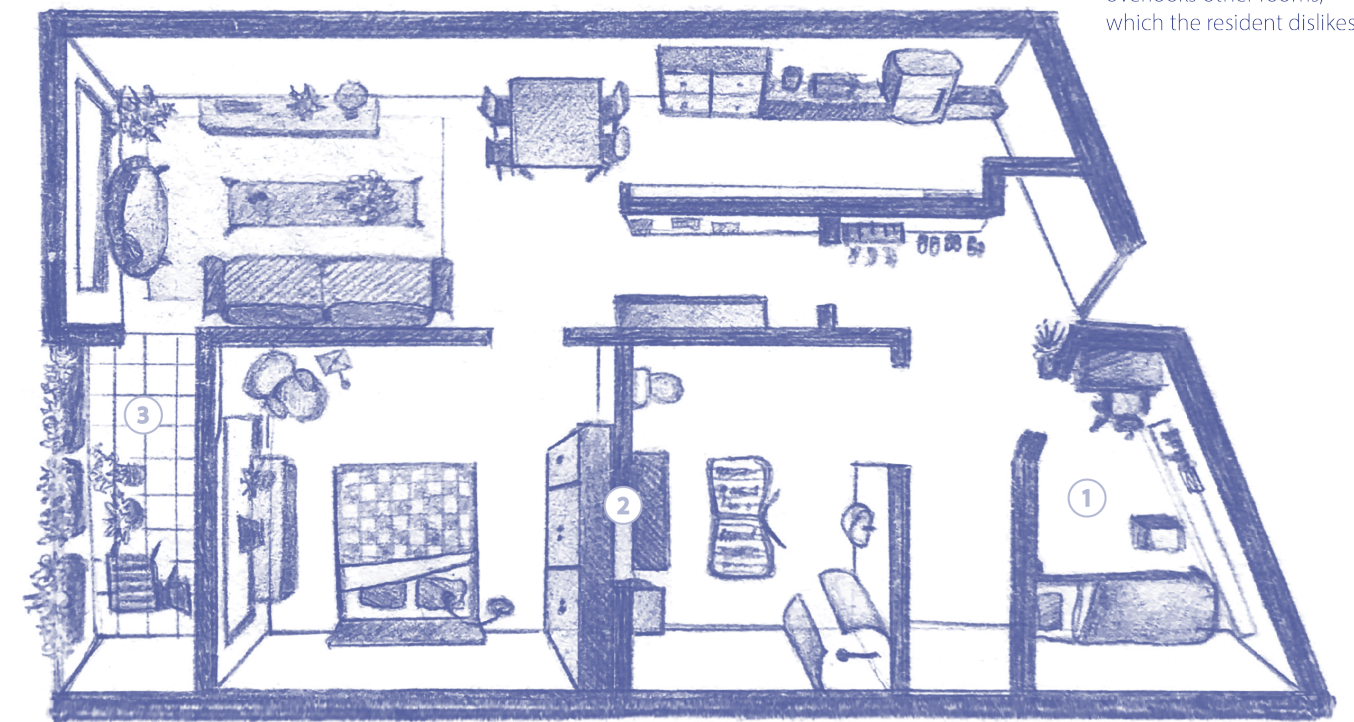
CHEMISTRY TOOLS: 22



PLANTS: 5



PILLOWS: 5



- ① Storage room used as a bedroom for when her grandson visits
- ② Insufficient storage bathroom 2nd door is blocked to make space for additional wardrobe
- ③ Terrace overlooks other rooms, which the resident dislikes

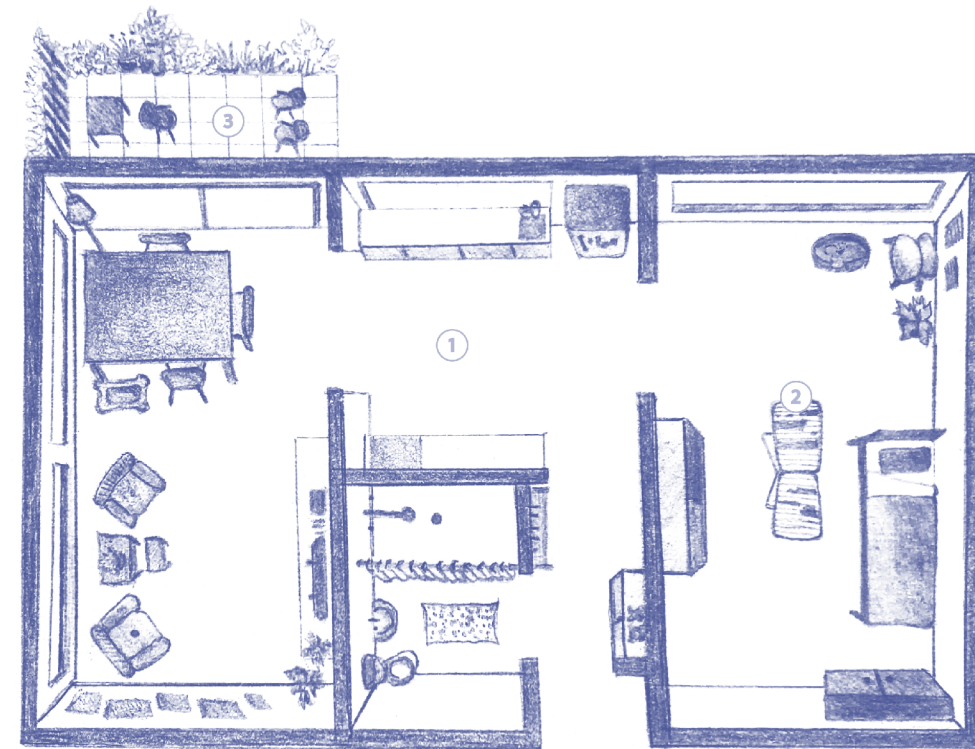
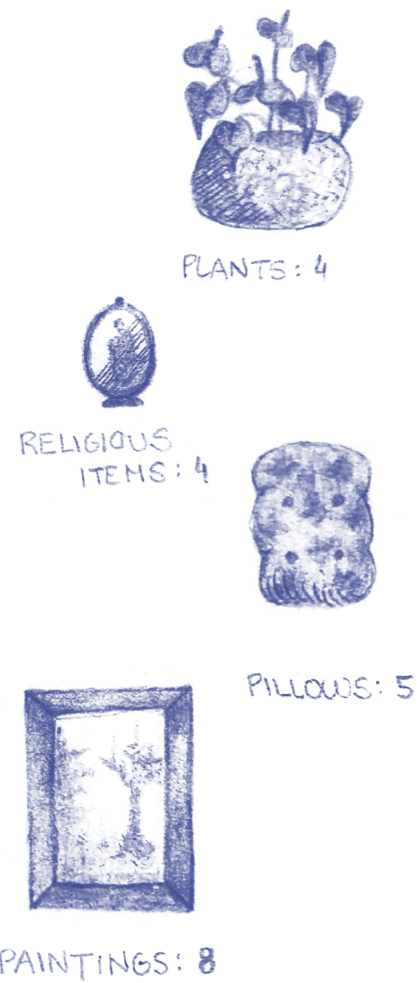


## RIET



*“Every year is a gift”*

Riet lives in apartment 136D and is 74 years old. She lived in a 30m<sup>2</sup> apartment in this building before, but it was too small and cramped for her. So she moved to a corner apartment on the ground floor. She now has a beautiful garden with sliding doors and windows on every side. She used to live in Oldenzaal but she wanted to move closer to her daughter and grandchildren so she moved to Zwolle. She is extremely happy and grateful for everything she has, but she would like a little bit more storage space and a dishwasher. When we asked her what she misses in the building, she would like to have a more comfortable laundry area on the ground floor. It's now situated in the basement, it's too hard for her to go there so her housekeeping does her laundry. She lives here together with her dog Cassie.



- ① Kitchen  
very spacious kitchen with more counterspace
- ② Drying rack  
placed in bedroom instead of terrace of living area
- ③ Terrace  
feels like a garden since it's on the ground floor, but could be larger

## MARGA



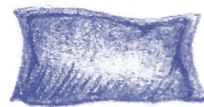
Marga lives in room 56 Achter de Hoven, she is 64 years old. Marga moved here because she is going through a divorce and she is just really happy she could find a space on such short notice. She really wanted a seperate kitchen, not a kitchen that's not in open connection with the living room. So she is really happy with her room. At this point she doesn't have all the furniture yet. She is missing a table and some comfortable chairs or a sofa. But her bedroom, kitchen and bathroom are completely furnished right now. She goes down for the coffeemoments to meet people. She tried to connect with the neighbours but she didn't manage to do this. The hallway where she lives is really closed, there are no windows from the apartments to the hallway and the windows that are there are blinded. I asked her if it would be better to have bigger windows, but she thinks people like their privacy. She thought a small common space in the hallway could lead to more social contacts.



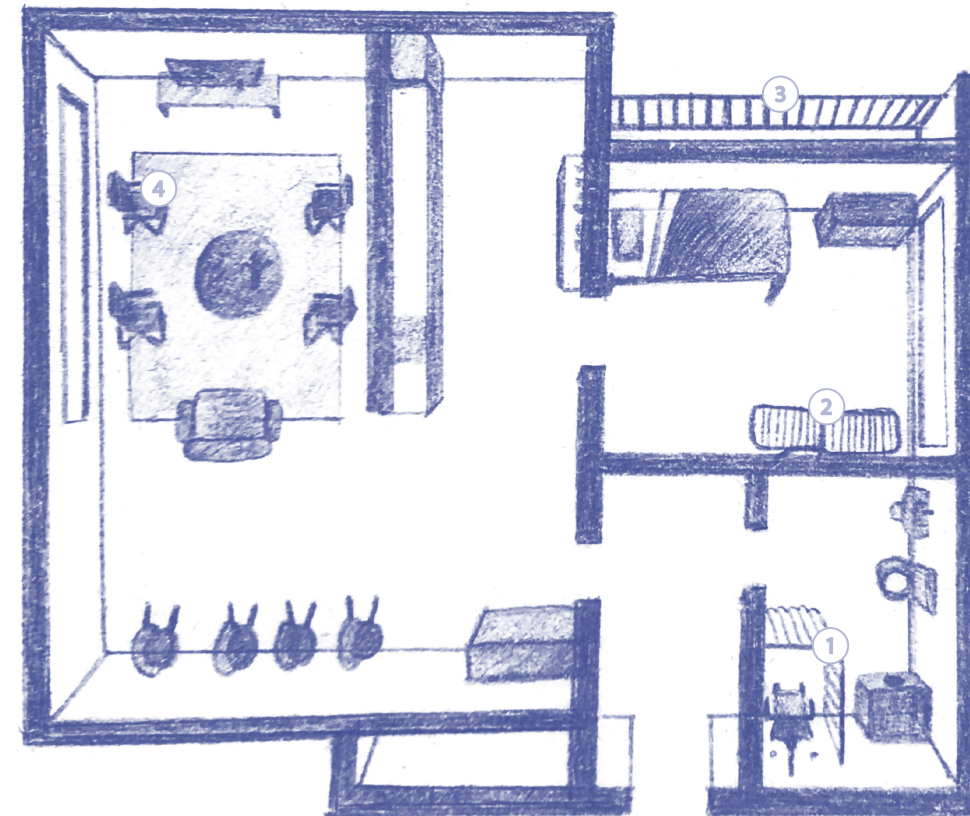
BEACH CHAIR: 4



PLANTS: 6



PILLOWS: 2



- ① Shower  
addition of waterproof chair  
as well as curtain
- ② Drying rack  
placed in bedroom instead  
of terrace of living area
- ③ Terrace  
view to nearby twonhouses,  
nicer view than others
- ④ Beach chairs  
for temporary use while she  
buys new furniture

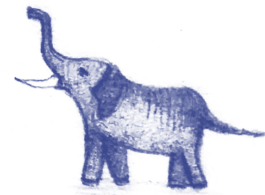
## LOURENS



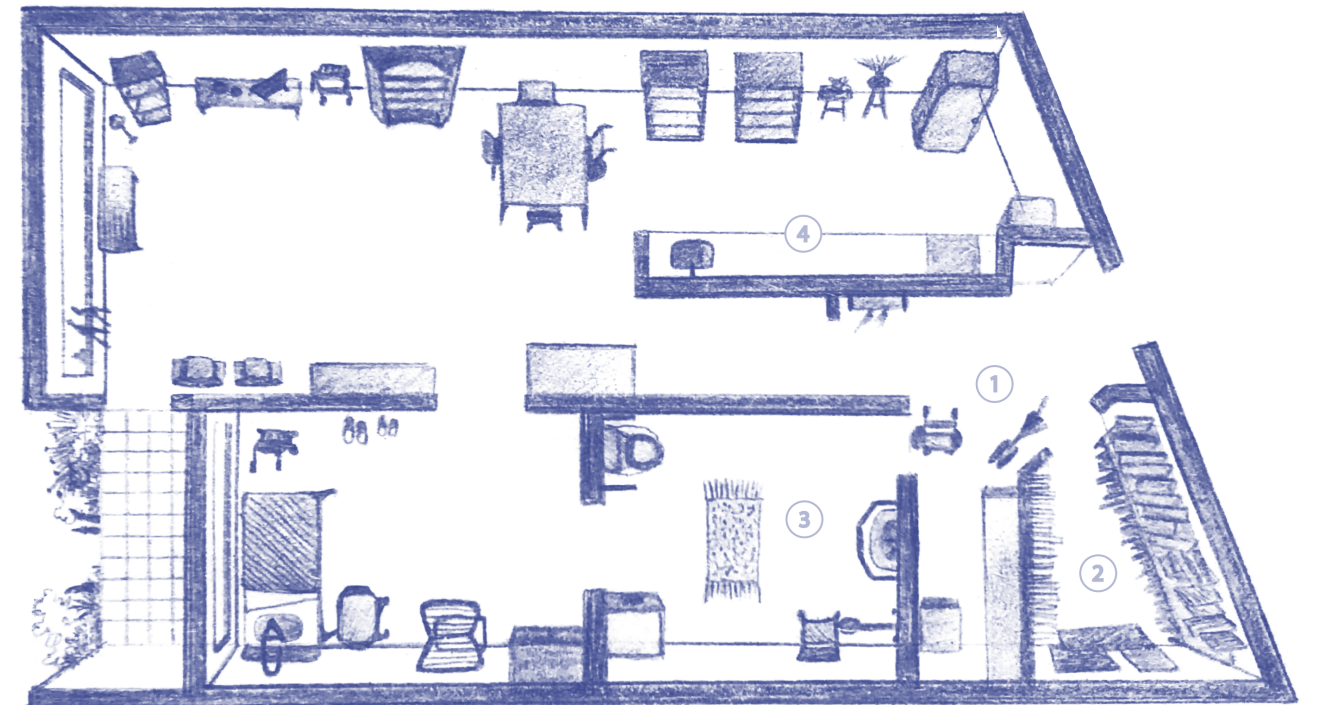
Lourens lives in apartment 8 Achter de Hoven, he is 65 years old and lived here for 5 years. Before he moved here he was in a live and care group. He has been to 3 centres to rehabilitate.

His kitchen has been adapted to his needs by the municipality. He is in a wheelchair, so they lowered the counter top and removed the kitchen cabinets. He had an aneurysm which is why he couldn't live in his house anymore. He thinks his apartment is perfect, especially with the adapted kitchen. Also the building is perfect, he can go everywhere in his wheelchair.

Lourens is part of the painting group, he paints almost every day.



FLOWERS: 7



- 1 Foyer  
used to store wheelchair  
and wheelchair bike
- 2 Storage room  
entirely used for storage of  
paintings and art supplies
- 3 Bathroom  
adapted with rails and chair,  
medical aesthetic
- 4 Kitchen  
adapted counter height for  
wheelchair use



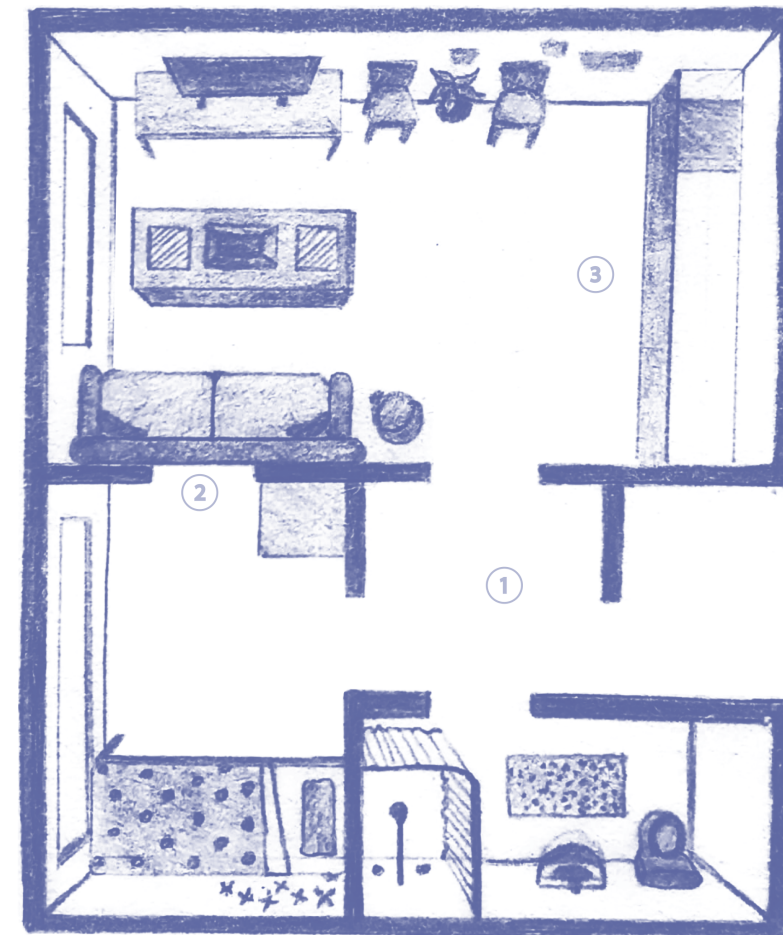
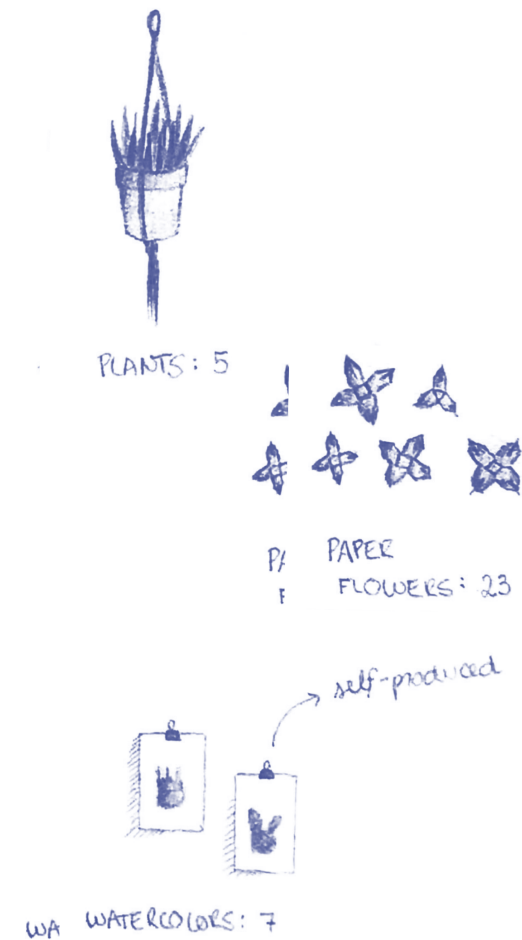
## KATY



... years old.  
 ... play  
 professional football at PEC Zwolle. She was nervous to stay in an elderly home, because she compared it to the retirement homes in the US. She was very pleased to see this house, she likes how the young people and the elderly live together. For her it is a bit different because she cannot speak Dutch, so there is a language barrier. Luckily for her there are 2 more girls from PEC Zwolle in the building.

We thought the room was quite small, but when we asked her if she would want something different in her room, she compared it to her dormroom in the US and in that case this room is way bigger and she doesn't need to share it.

We asked her if she would like to see something different in the building, she would love to have a gym.



- ① Foyer  
entry area feels quite small and overlaps doors
- ② Blocked door  
extra door blocked to make room for the sofa
- ③ Kitchen  
overlaps with living area, too small to fit a table



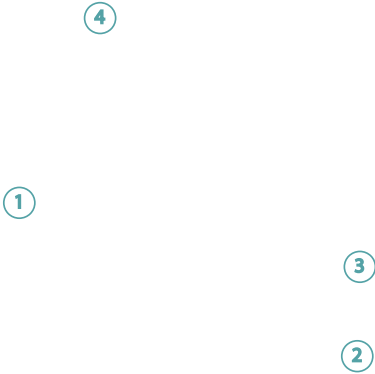
THEETUIN

The area around the Theetuin is for certain the most used of all the common areas in Huis Assendorp.

A lot of our observation exercises were produced in this room.

Theetuin 22.09 10:00am

- ① Chairs are rotated to adapt to circle of conversation and unify the two parts of the room
- ② Chairs are pushed closer to make room for wheelchairs and scooters
- ③ Central table is moved to allow facilitated access for wheelchair users
- ④ Walkers are “parked” in various locations while residents are seated



Theetuin 23/09 10:00am

① To ensure the wheelchair user is included in the circle of conversation an existing chair is pushed back

② Chair is added for the arrival of more residents and guests

③ Because of limited space, the scooter parks next to the coffee cart, limiting easy access to beverages and closing off the conversation circle

④ Walker is also parked nearby the coffee cart, further blocking access to the area

②

③

①

Theetuin 23.09 3:00pm

① Wheelchair user settles near theetuin to join other conversation

② In order to sit next to her friend, a resident adds a chair on the room's corner, next to a wheelchair user

③ Walker is parked coffee cart's original place, so the cart is placed on the other side of the column

Table and chairs move to make room for wheelchair user on the corner

## LECTURE ON DEMENTIA

### Lecture about dementia by PGVZ

Signs of dementia:

- daily activities are harder
- getting lost
- problems with sight
- no social activities
- losing stuff
- change in character

It helps to give them a specific spot for some of their important belongings, like keys

The visual problems change every moment, sometimes they see everything the other moment they trip over a doorstep.

People with dementia are often also suffering from dementia.

Patients can get confused, see and hear things that aren't there.  
People with dementia take less initiative with activities.

Give people with dementia and a depression feel better when they have something to do, they feel more successful.

Relaxation is helpful with for example lightning.

People with dementia get confused with day and night.

How to help someone with dementia:  
Stand in front of them so they can see you  
Let them know you are there  
Let them do their daily activities individual where possible  
No testing

People go back in time, so they don't understand

the current technology. Make sure there is stuff from the past.

Stimulate several senses

Give them daily structure

Stimulate exercise and moving (memories connected to movement will be easier to remember)

Have personal belongings in their room so they can understand they live in the apartment.

They don't remember words, they know what they need but they don't recall the word.

If people forget for example their passed loved one, make a memorial corner so they understand.

Domesticity is important to make them feel at peace.

Make a walking circuit so they will walk back to their room.

Make the rooms recognizable.

Music will help them feel relaxed and familiar.

No closed doors

Have mixed groups.

Have a garden full with experiences.

Have different areas and spaces in the building so they can be in different spots.

### Interview with caretaker Sandra

- bathrooms should be bigger
- rooms are too small when you are in a wheelchair
- have chairs or railings in the bathrooms
- Gea needs most care, elevator to carry her, two apartments
- miss Nieuwenhuis has dementia and it could help her if there are more impulses
- give levels a color to make it recognisable
- might be better to have everyone in one hallway that needs care
- they would like to have a desk again at the entrance

### Interview with caretaker Janin

- Have a diningroom with kitchen, now its seperated
- Have more homey rooms

# Chapter 2



## Site Analysis

## 2.1

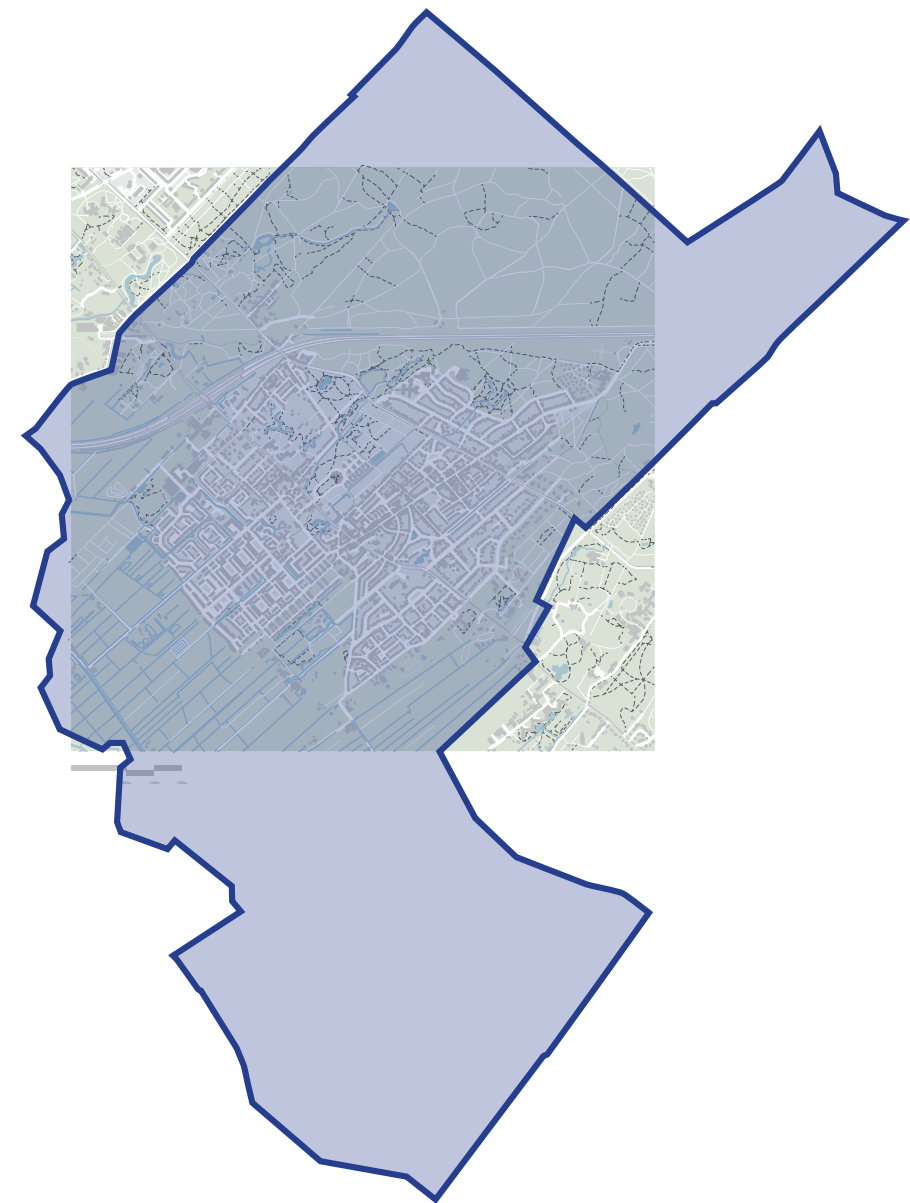
### OVERVIEW



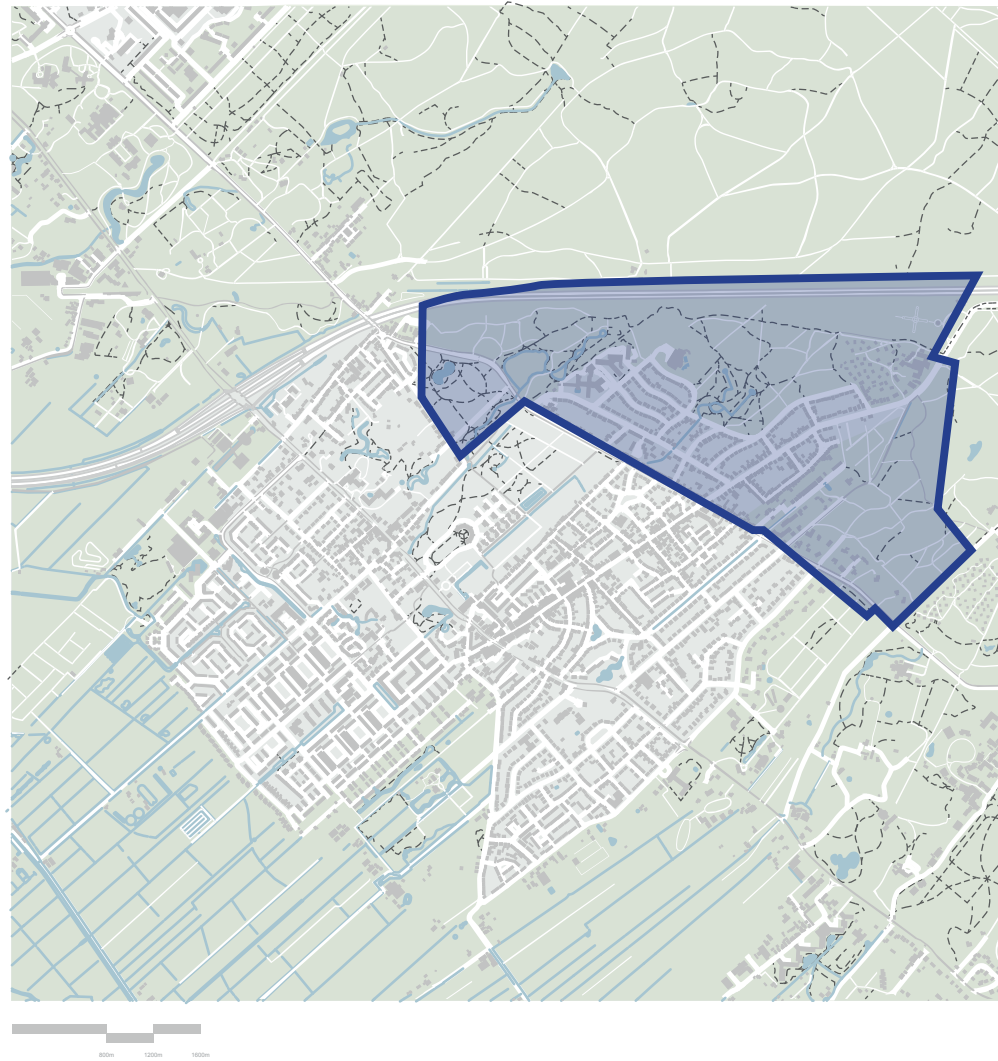
## DRIEBERGEN - NETHERLANDS



## DRIEBERGEN - RIJSENBURG

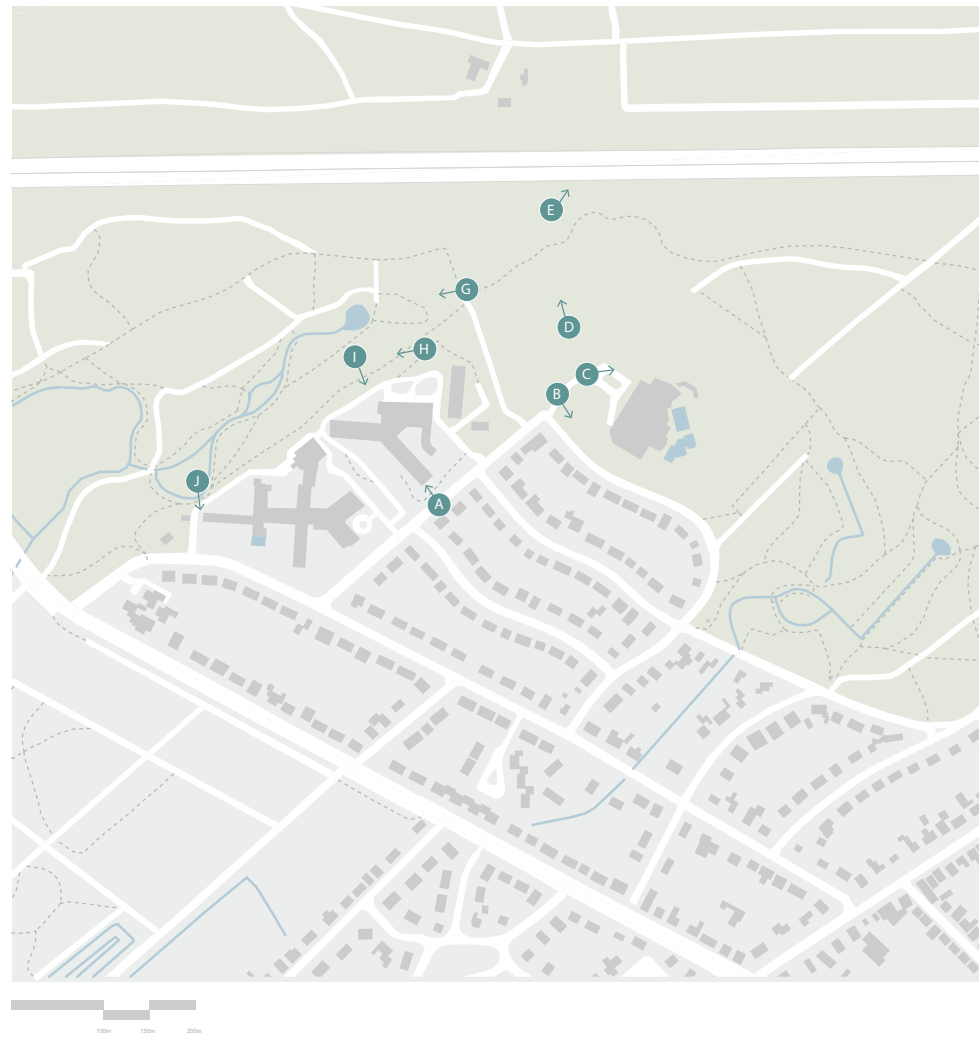


## DRIEBERGEN - NOORD



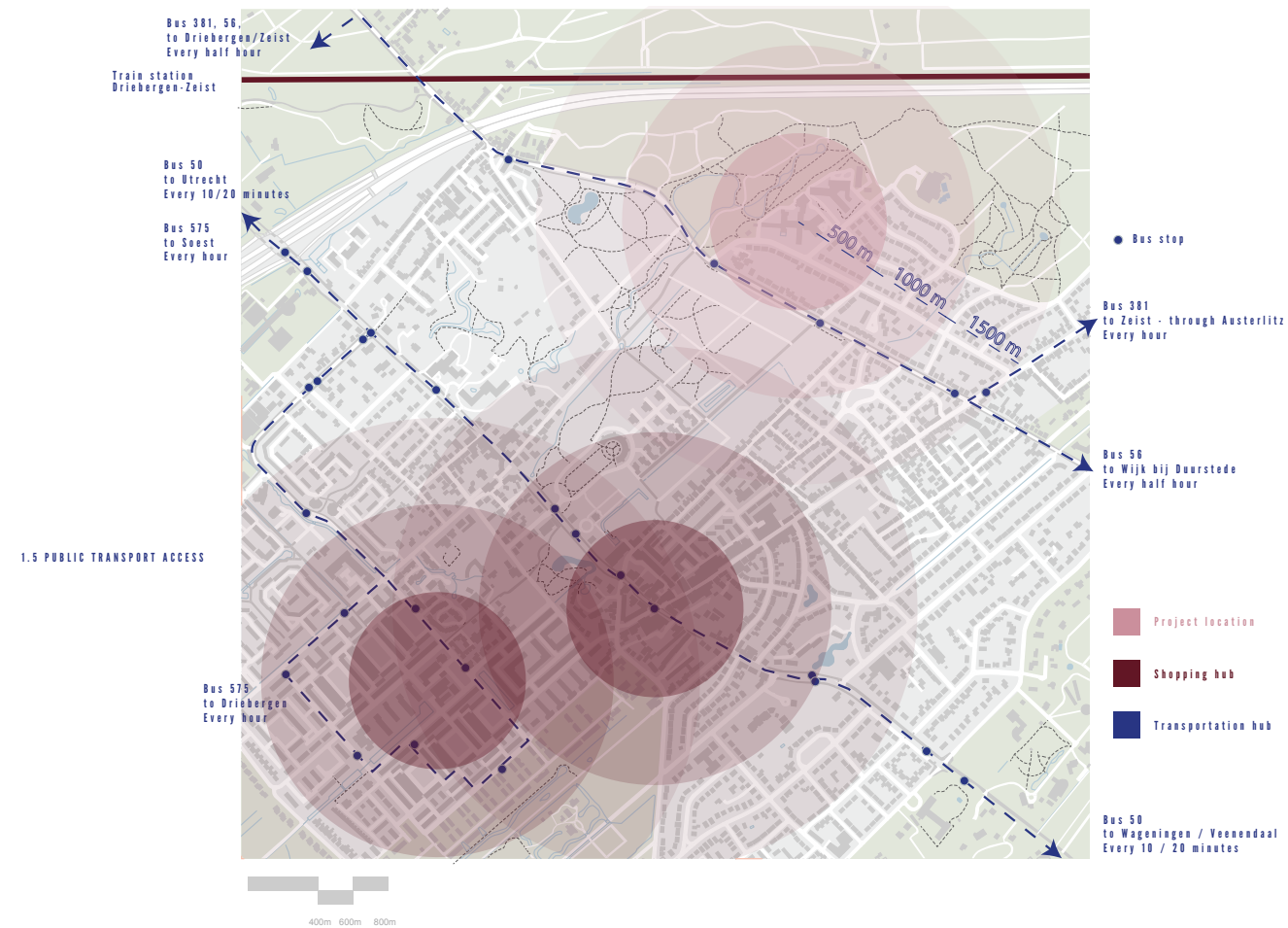


## SITE-IMPRESSION

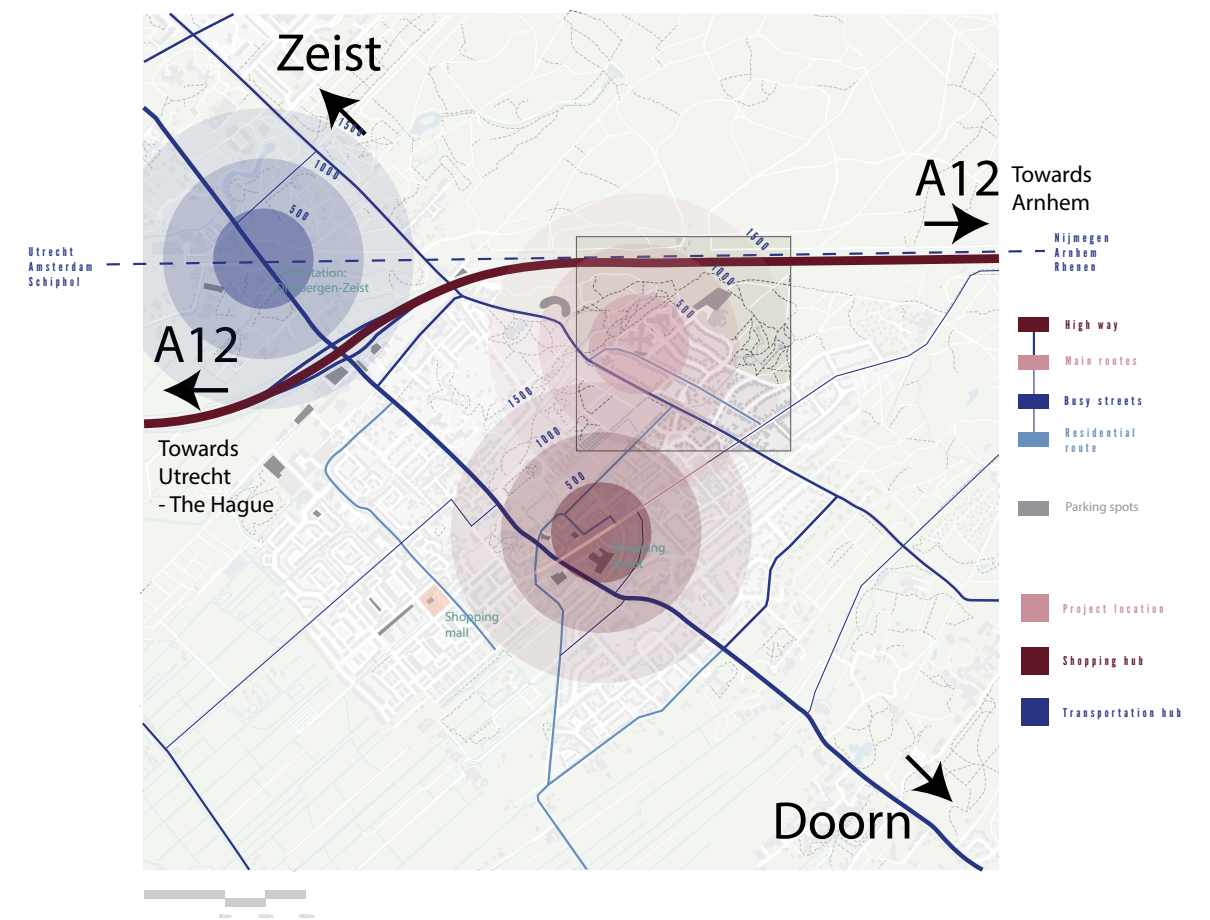




## ACCESSIBILITY



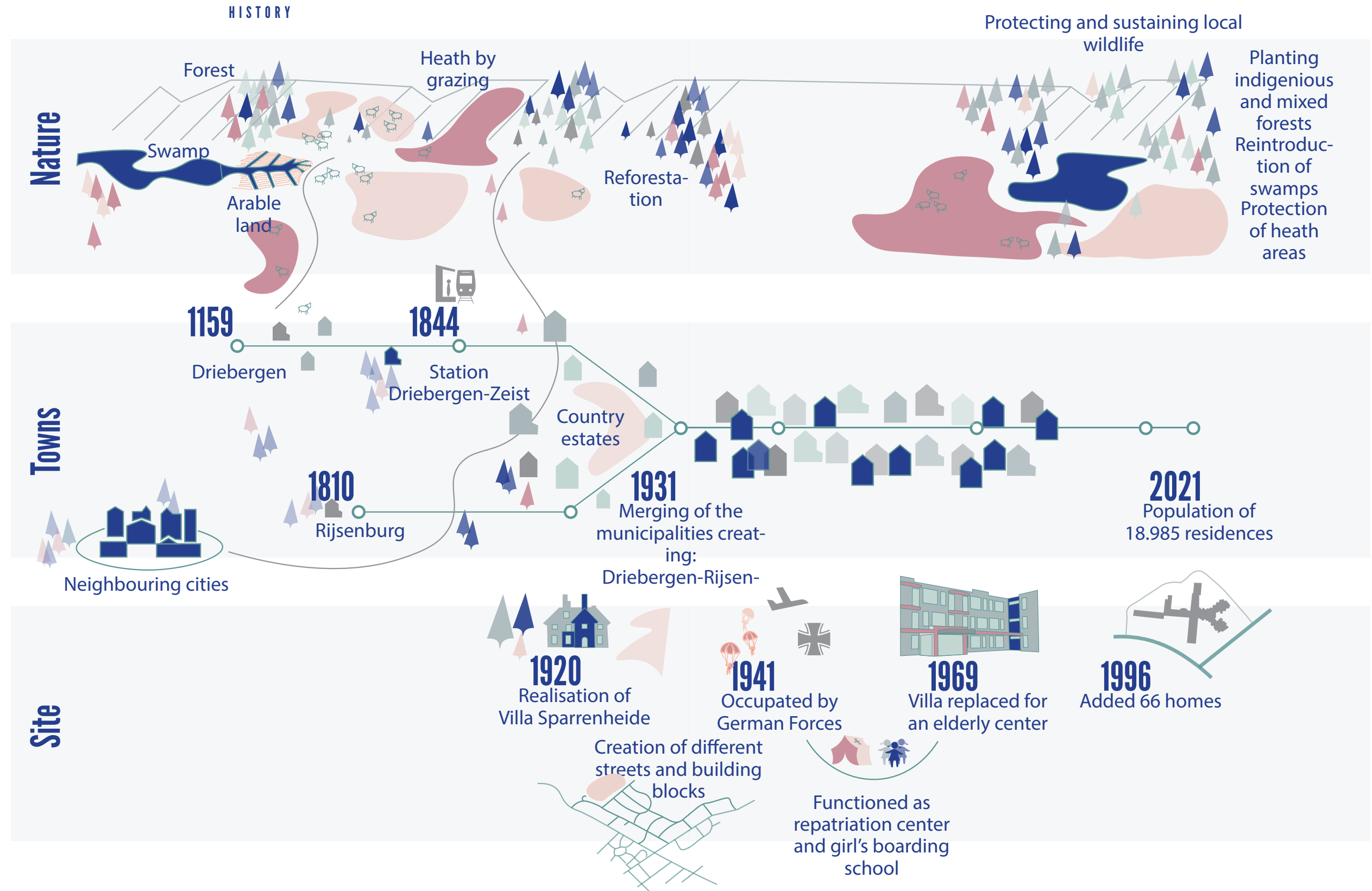
## ACCESSIBILITY BY CAR



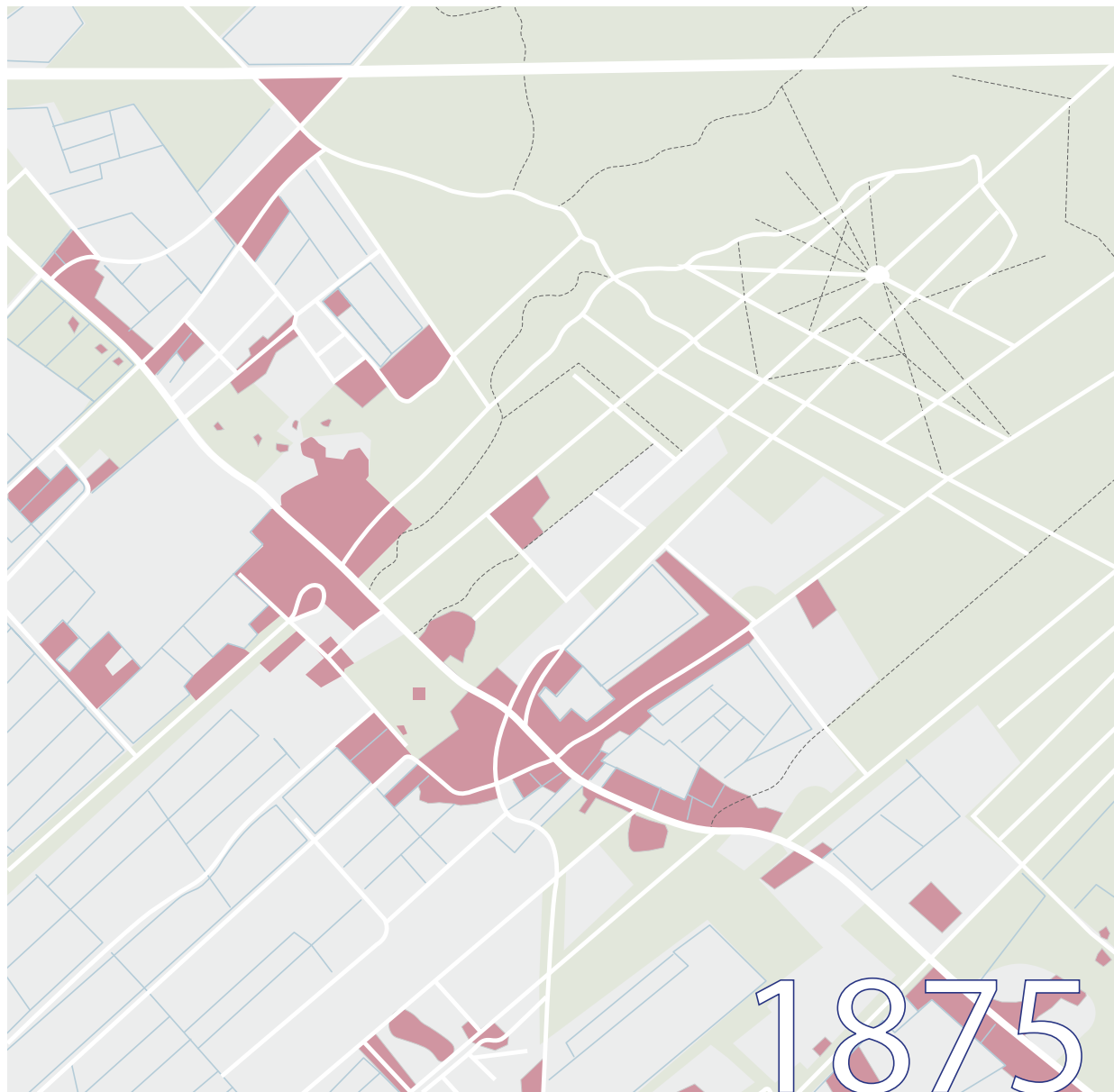


# 2.2

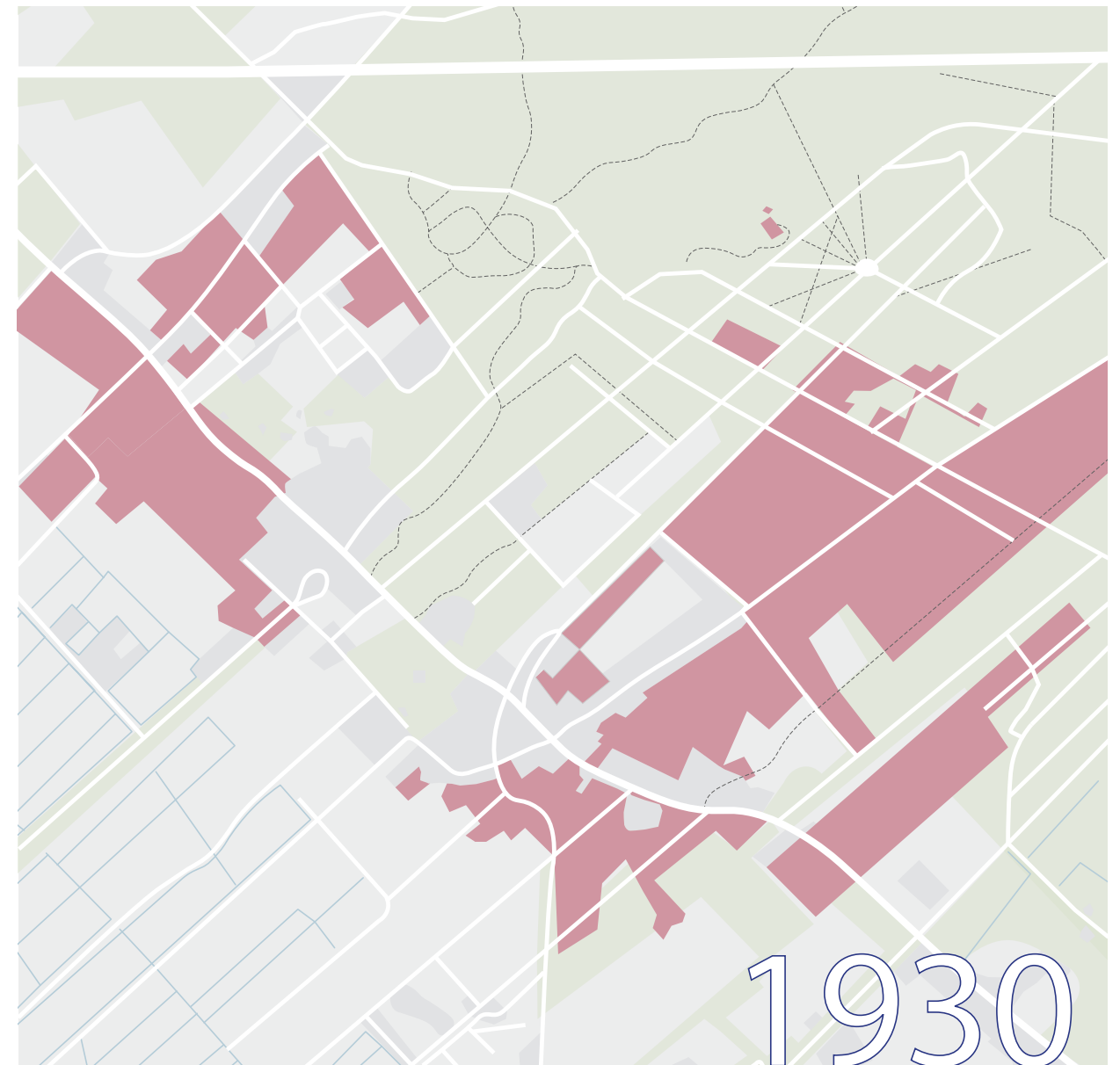
## BACKGROUND



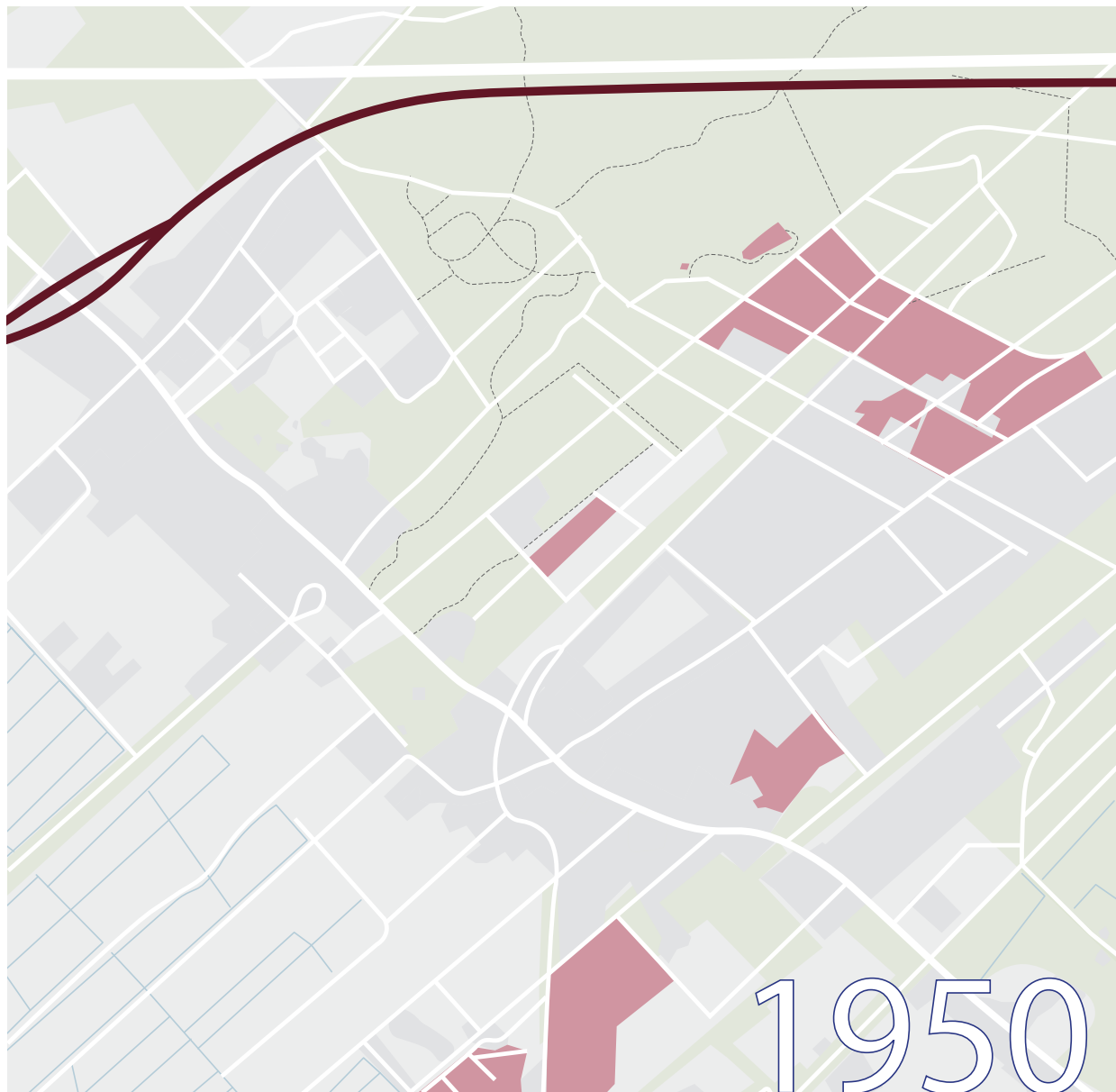
DEVELOPMENT - 1875



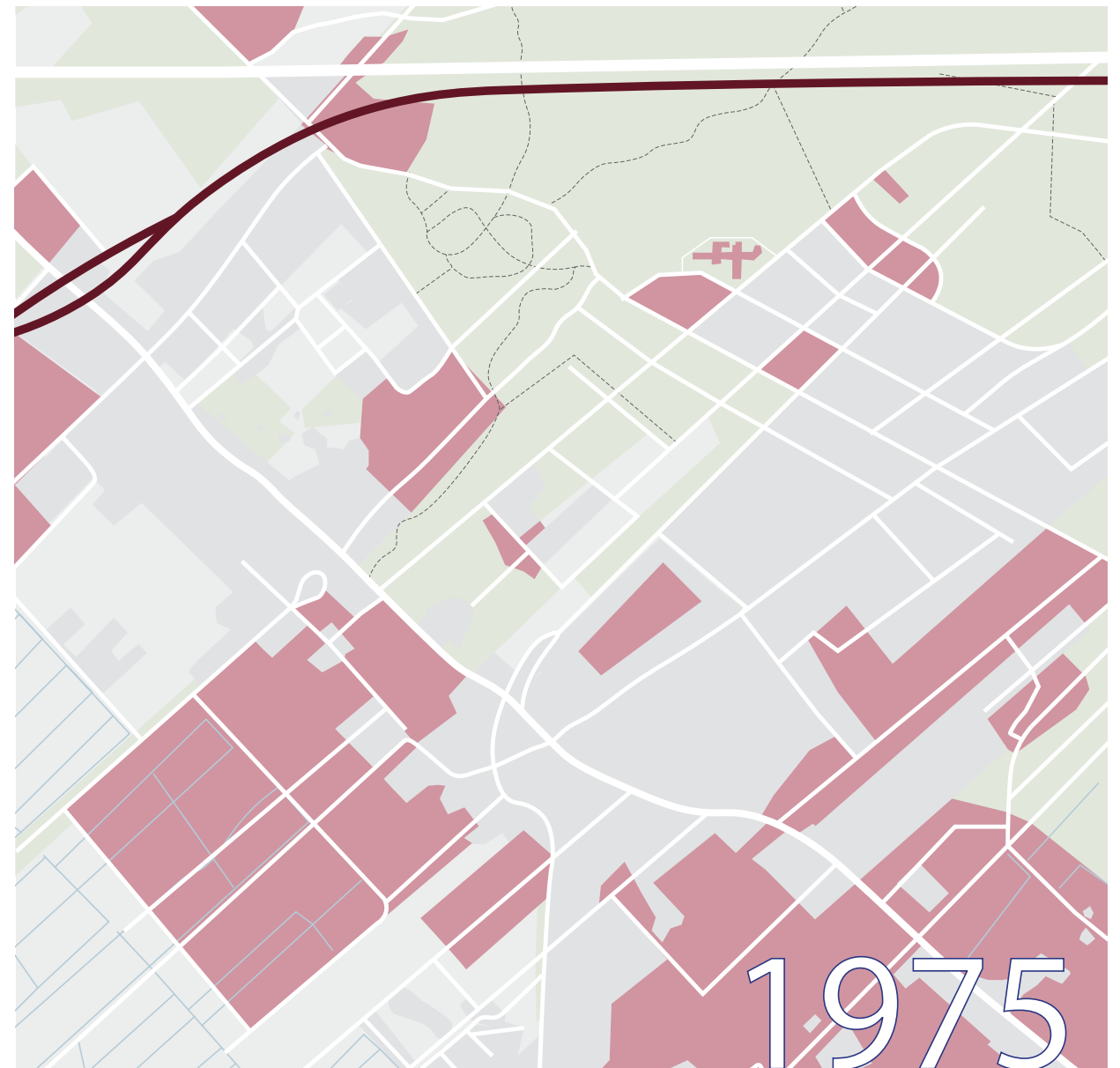
DEVELOPMENT - 1930



DEVELOPMENT - 1950

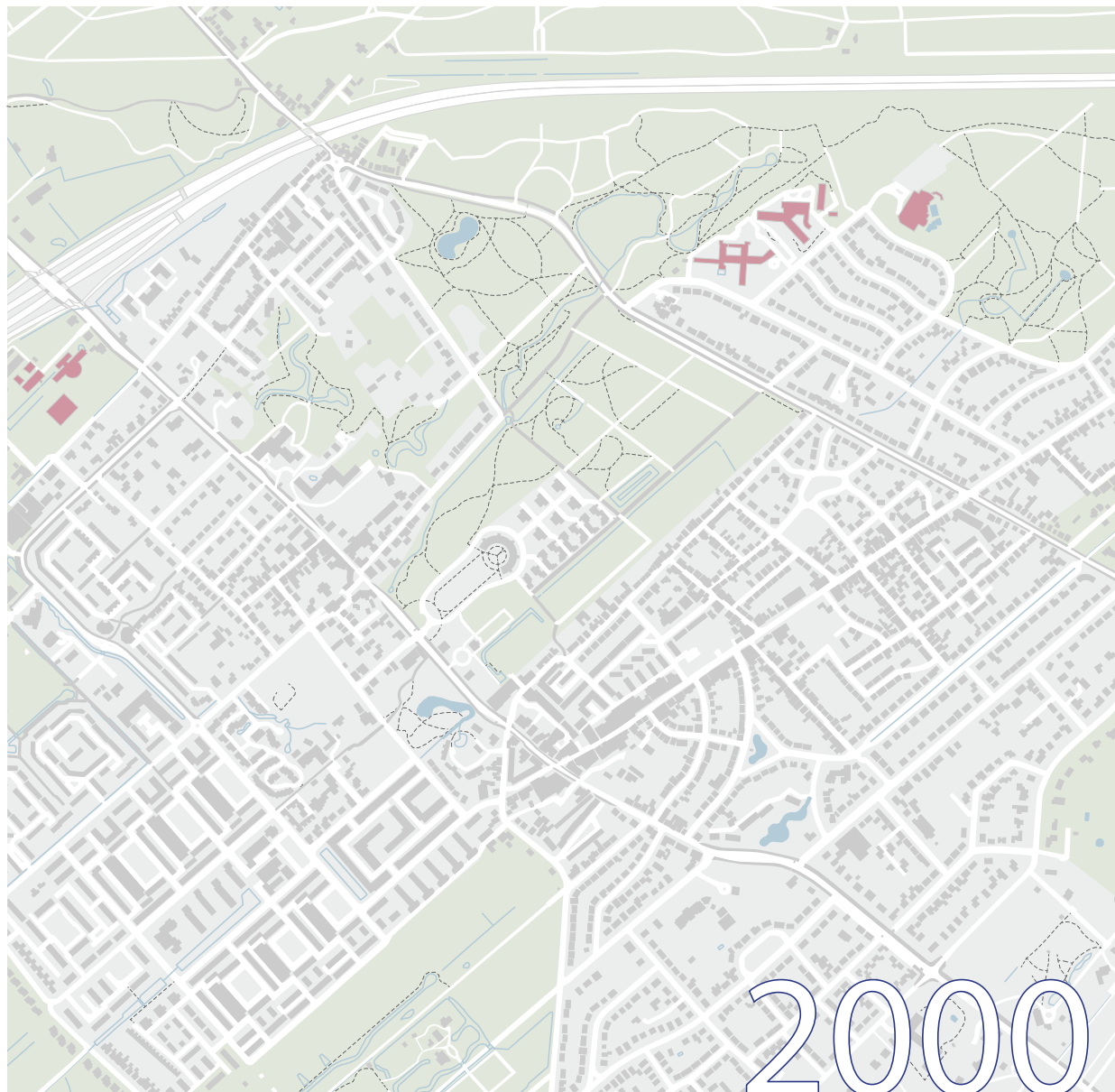


DEVELOPMENT - 1975

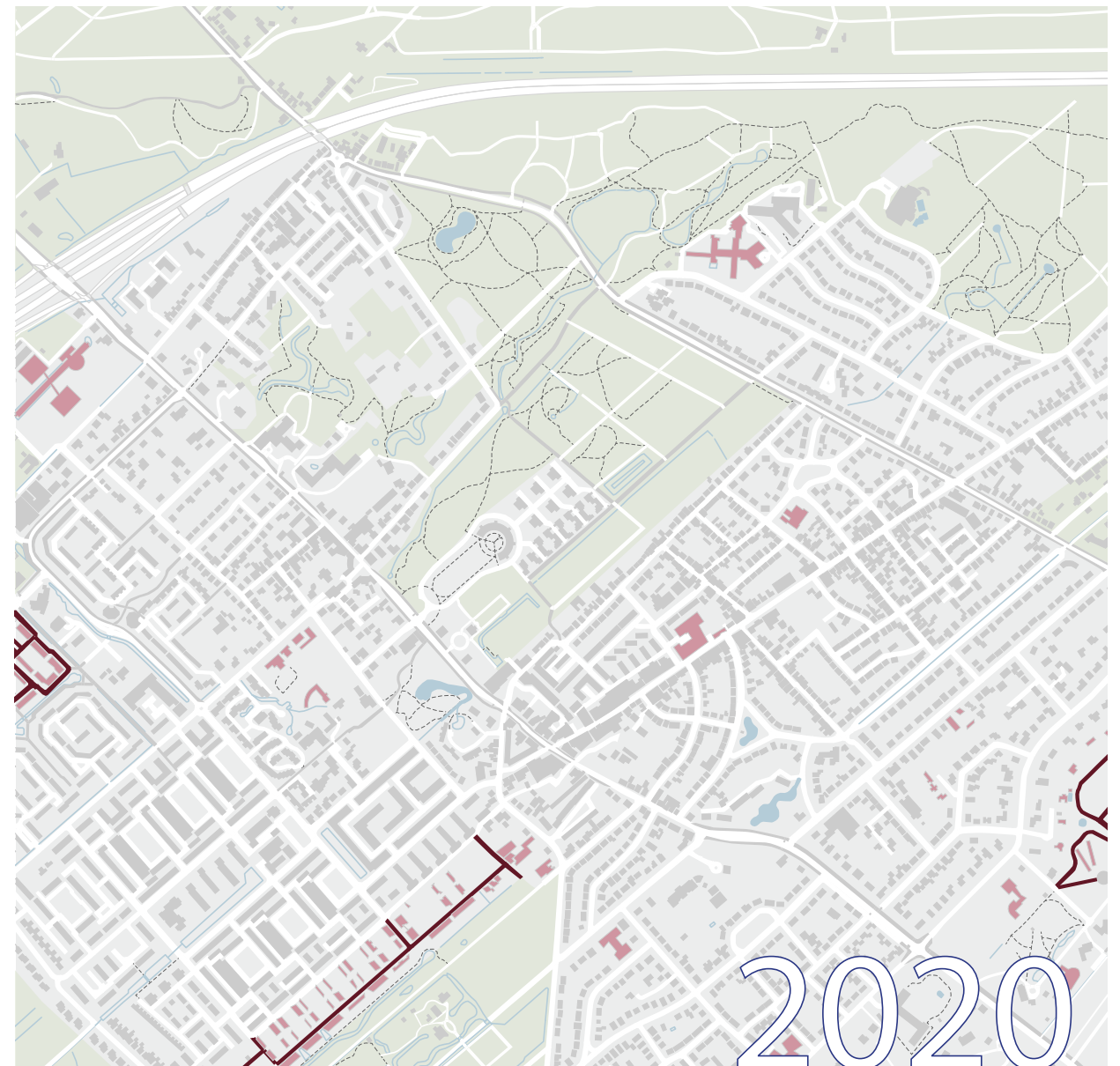




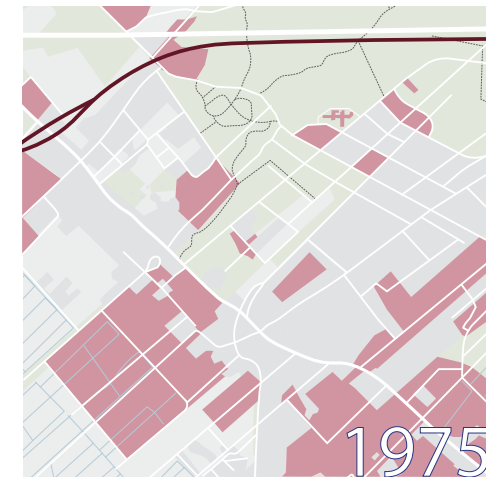
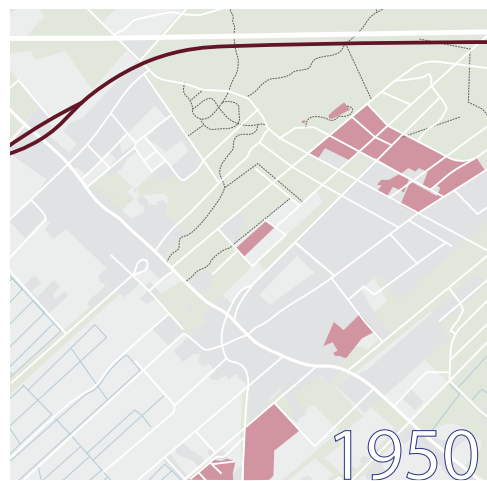
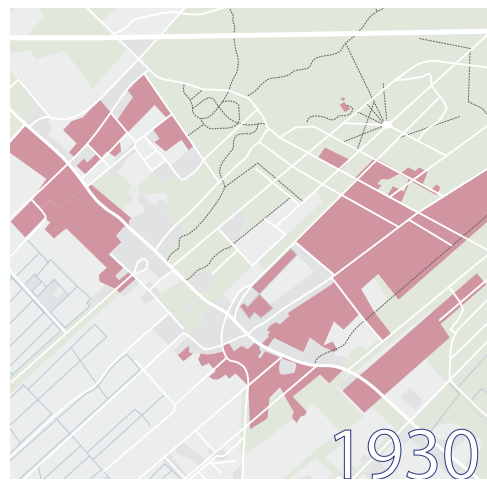
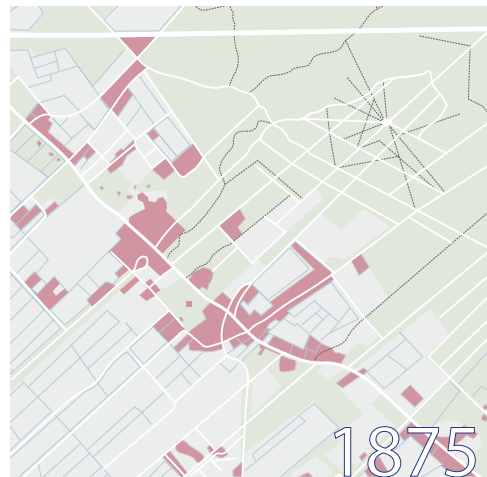
DEVELOPMENT - 2000



DEVELOPMENT - 2020

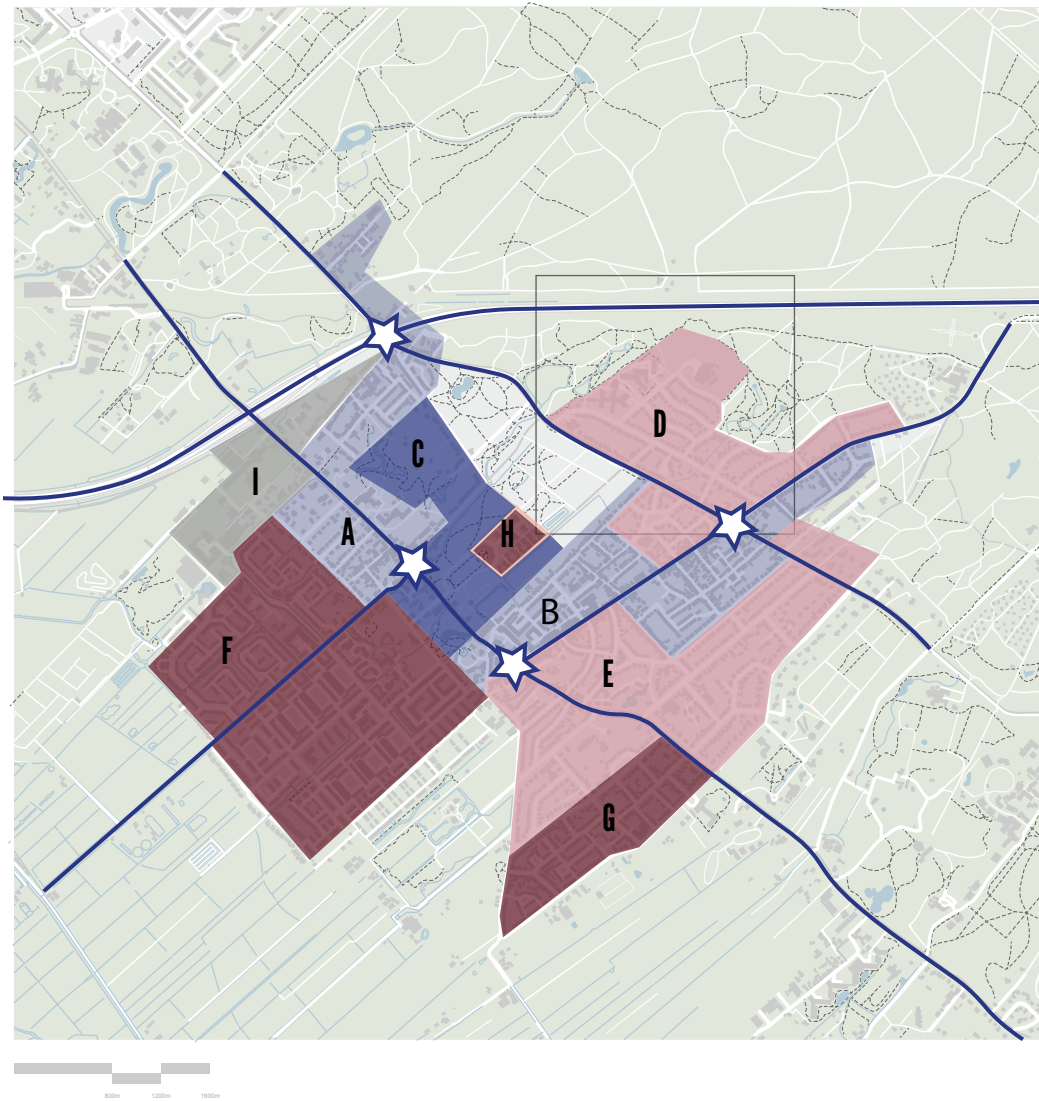


DEVELOPMENT - 1875-2020





## TYPOLOGIES



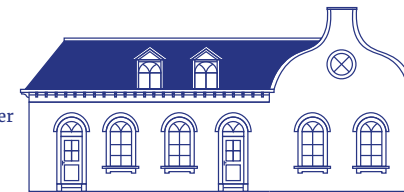
- Image determining route
- Connection hubs
- (Pre-war) village area
- Post-war residential area
- Villa area
- Business area
- Country estates

## TYPOLOGIES OF PRE-WAR

### A (Pre-war) village area Rijsenburg

Eclectic style  
culture-historic towncenter  
with the Catholic church

materials used:  
- bricks  
- white plaster  
- (clay) roof tiles



### B (Pre-war) village area Driebergen

Big variation of housingtypes  
- working-class homes (arbeidershuizen)  
- mansions (herenhuizen)  
- villa's  
The houses have mostly closed facades  
in the center, but at the outskirts the  
homes have small front yards separating  
the front with the street

materials used:  
- bricks  
- white plaster  
- (clay) roof tiles



### C Country Estates 19th-20th century

Big variation of architecture styles  
(Semi-)Detached homes with big gardens  
all around the building.

materials used:  
- bricks  
- wood  
- plaster  
- (clay) roof tiles



## TYPOLOGIES OF VILLA AREA

Different (semi-)detached homes on avenues.  
The residential areas are made of a need for building plots.  
The designs are made in consideration of the landscape.

In the area different architectural styles can be noticed:  
- The Hague school (Haagse school) and Delftse school (1930)  
- Eclectisme (1900's)  
- The Amsterdamse school (Haagse school from 1930)

In the most north part (at Driebergse Bos), which is build after 1920.  
While this area doesn't possess a dominant architectural style,  
it has mostly larger plots with sturdy sized houses in a forest surrounding.

materials used:  
- bricks  
- wood  
- (clay) roof tiles

D



E



## TYPOLOGIES OF POST-WAR

Focused on the housing expansion:  
the use of appartement complexes, bungalows  
and terraced house (rijtjes woning)

The buildings have characteristic  
flatroofs or saddleback roofs.  
When they have gardens they have small front  
and moderate back gardens, with limited  
to no space between building plots.

materials used:  
- bricks  
- wood  
- (clay) roof tiles

F



G

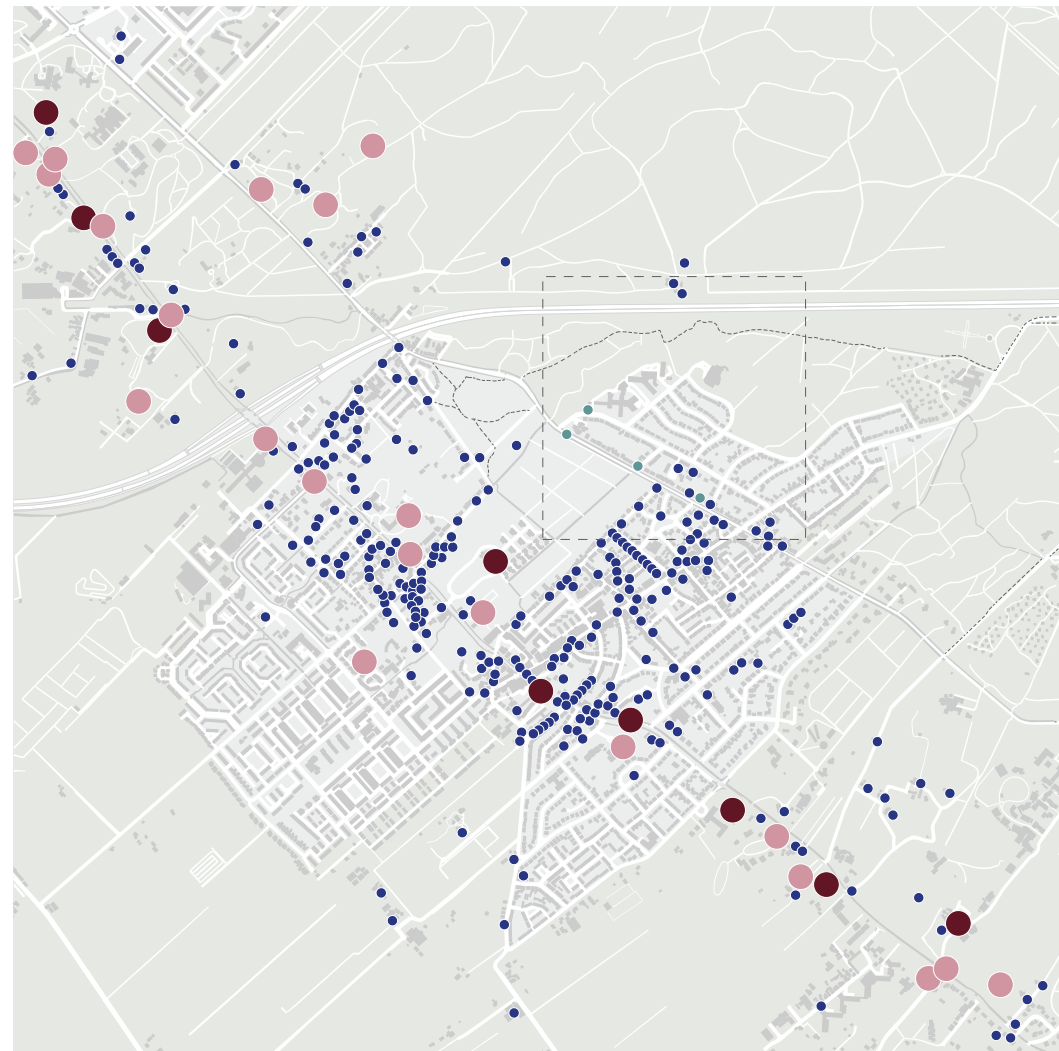


H





## MONUMENTALITY



- Monumentality:
- Historic buildings
  - Preserved Castles and country estates
  - Destroyed Castles and country estates

## HISTORIC BUILDINGS NEAR SITE

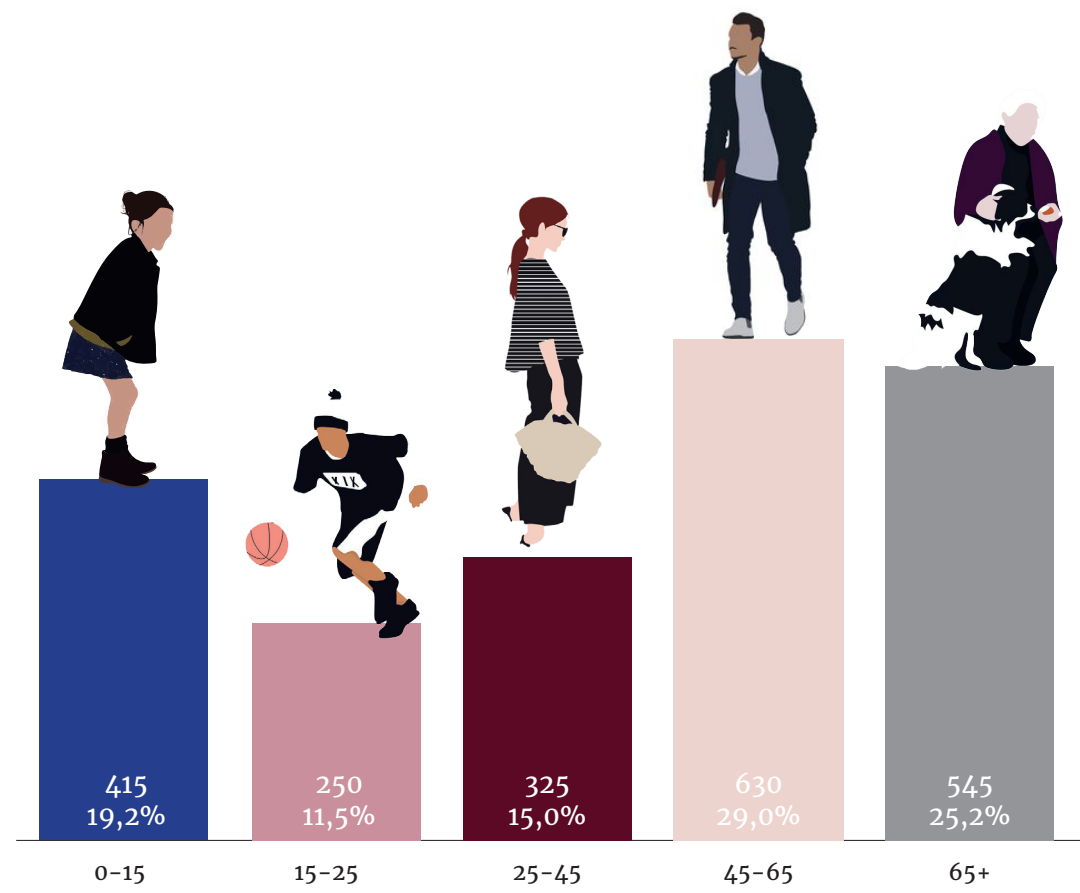


- Monumentality:
- Historic buildings
  - Historic buildings near site

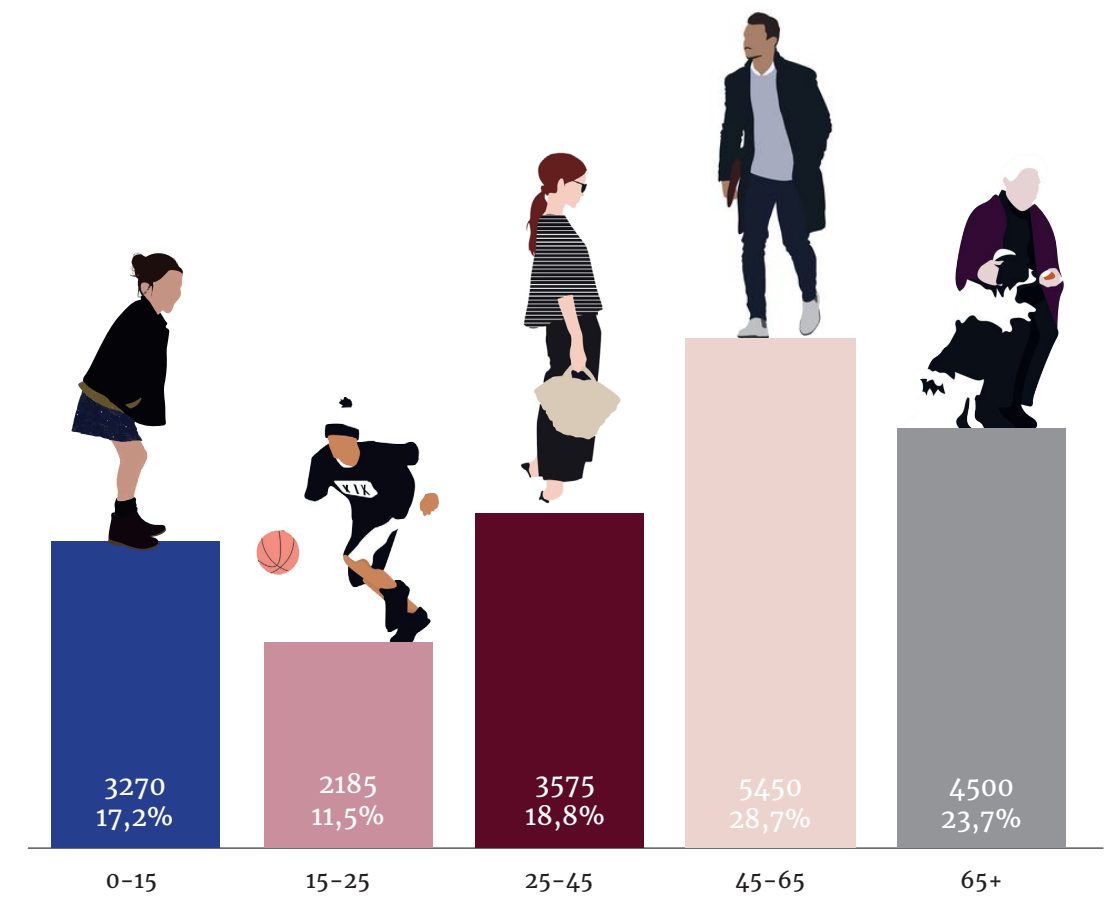
# 2.3

## POPULATION

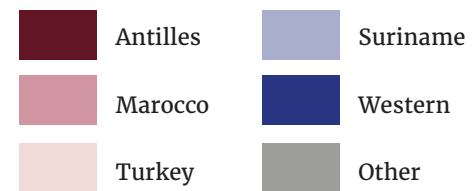
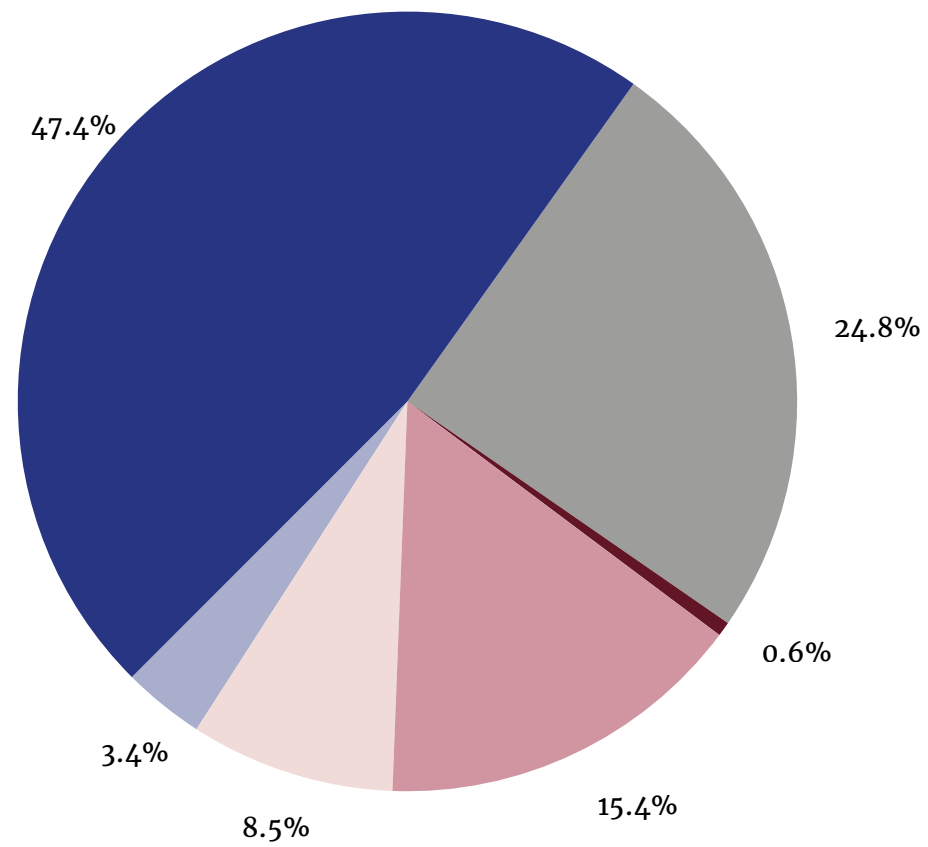
AGE DRIEBERGEN-RIJSENBURG



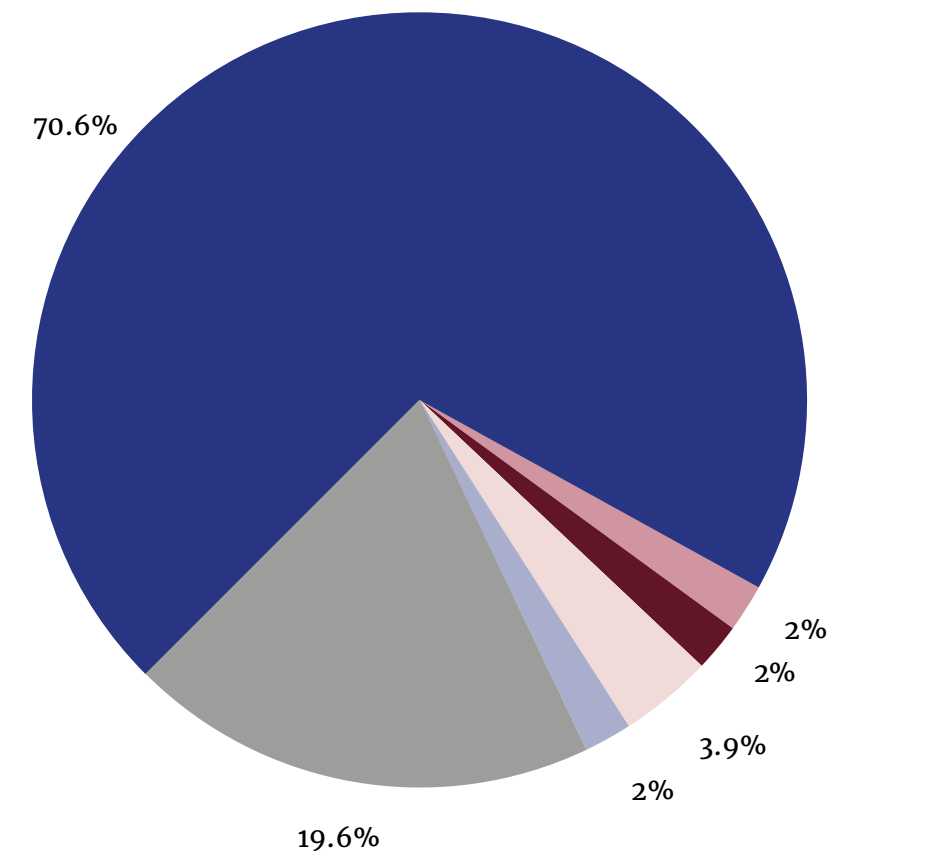
AGE DRIEBERGEN-NOORD



ORIGIN DRIEBERGEN-RIJSENBURG

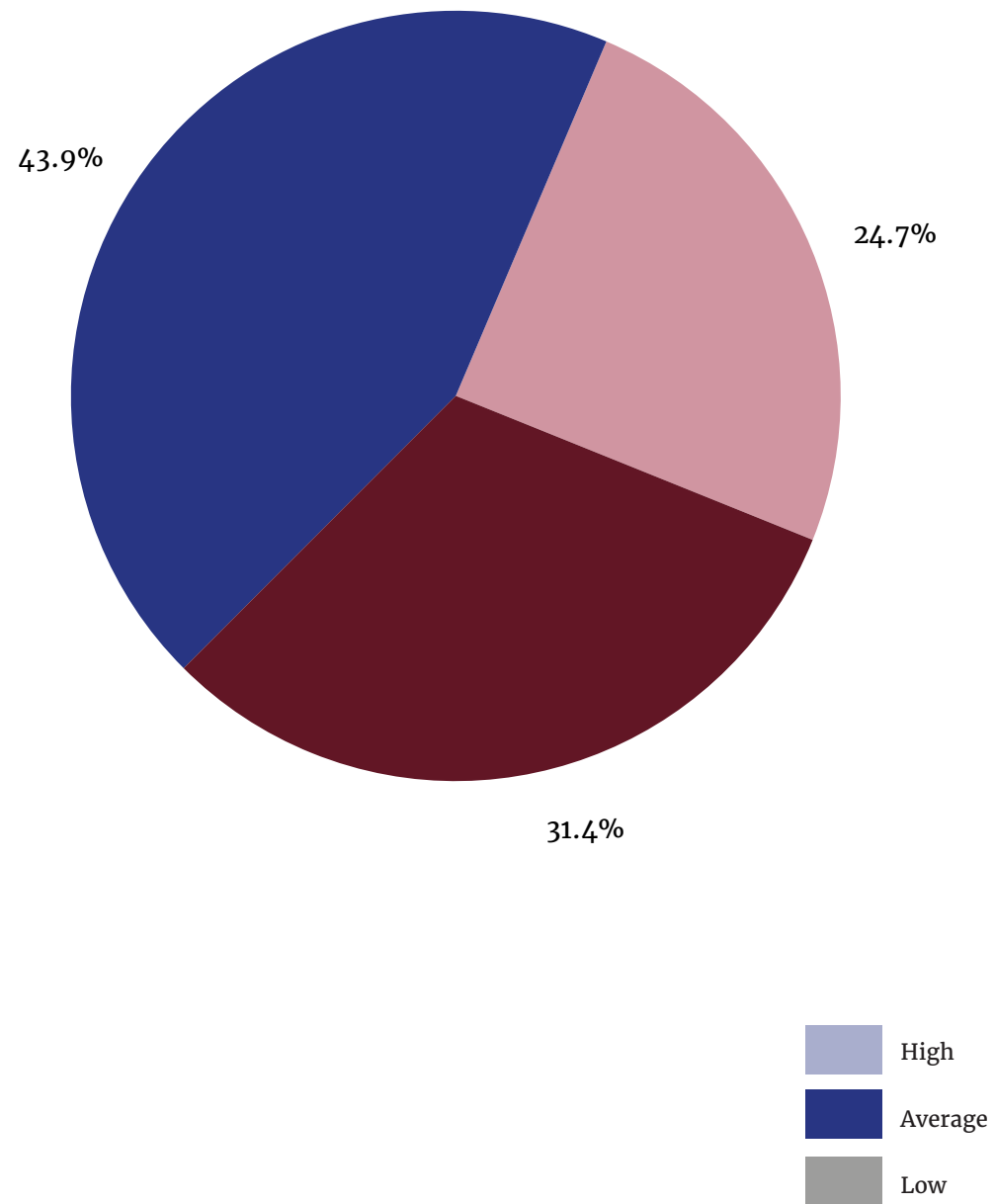


ORIGIN DRIEBERGEN-NOORD

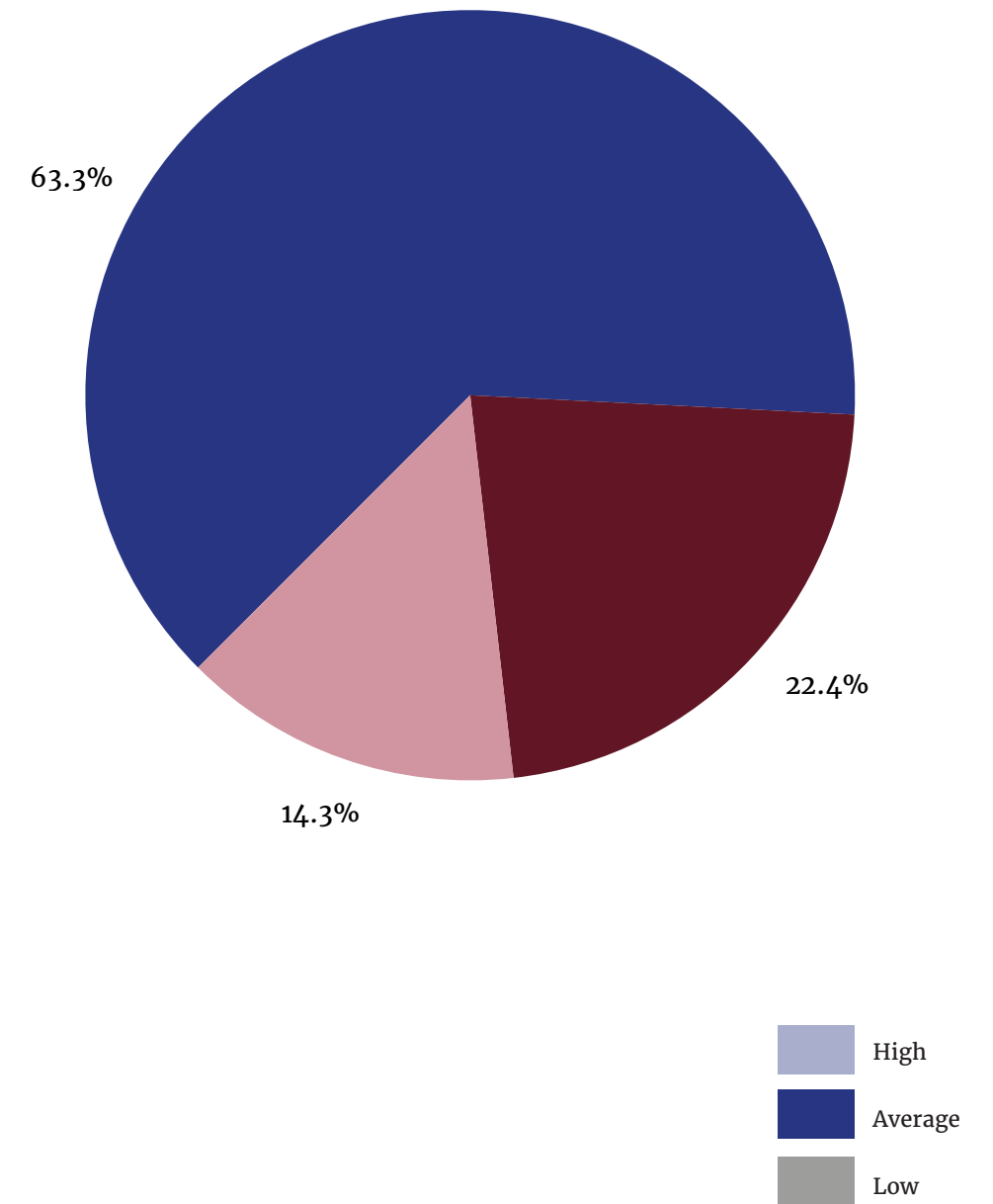




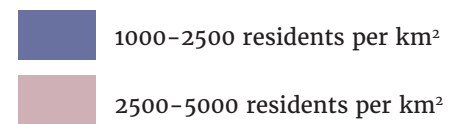
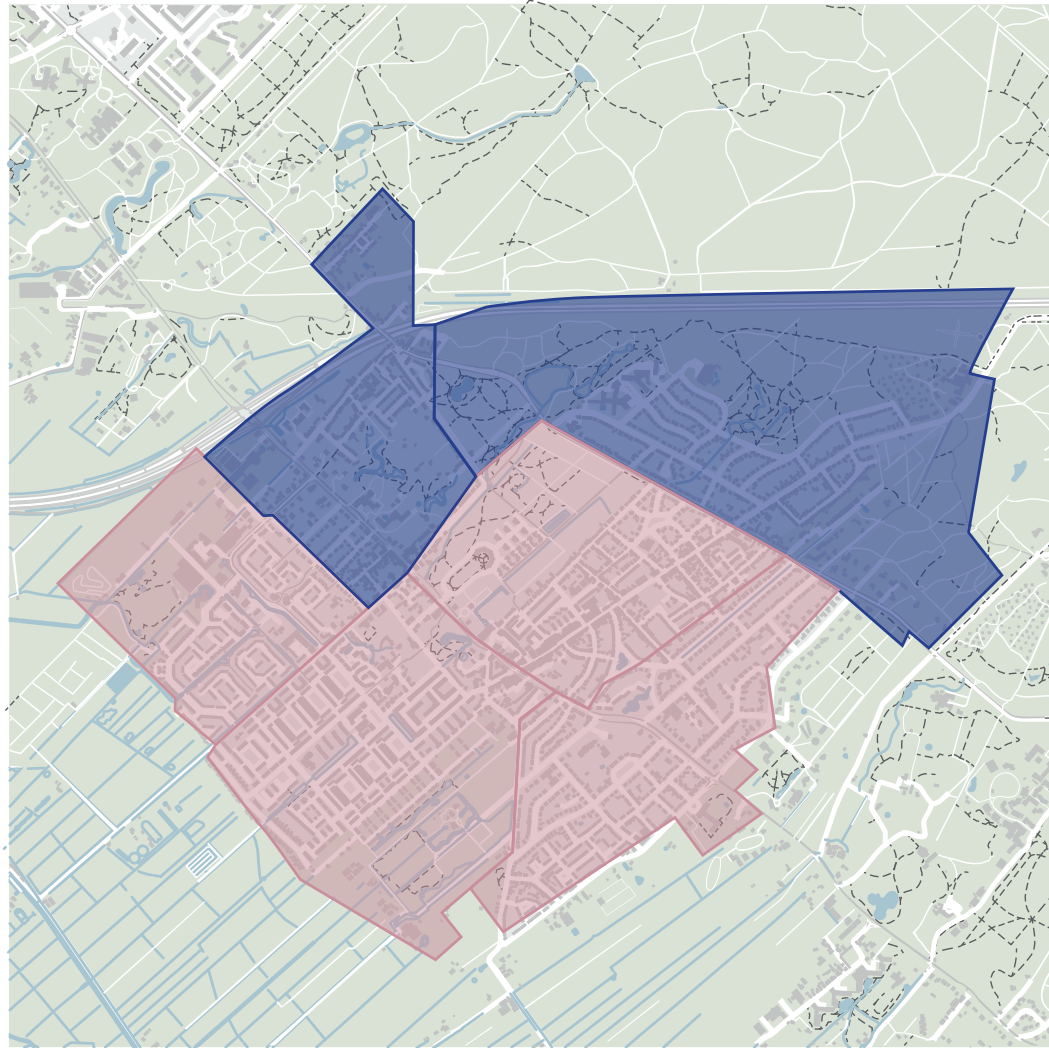
LEVEL OF EDUCATION DRIEBERGEN-RIJSENBURG



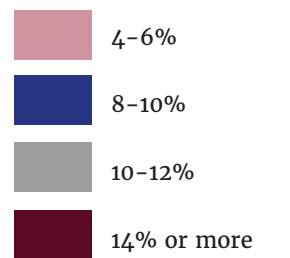
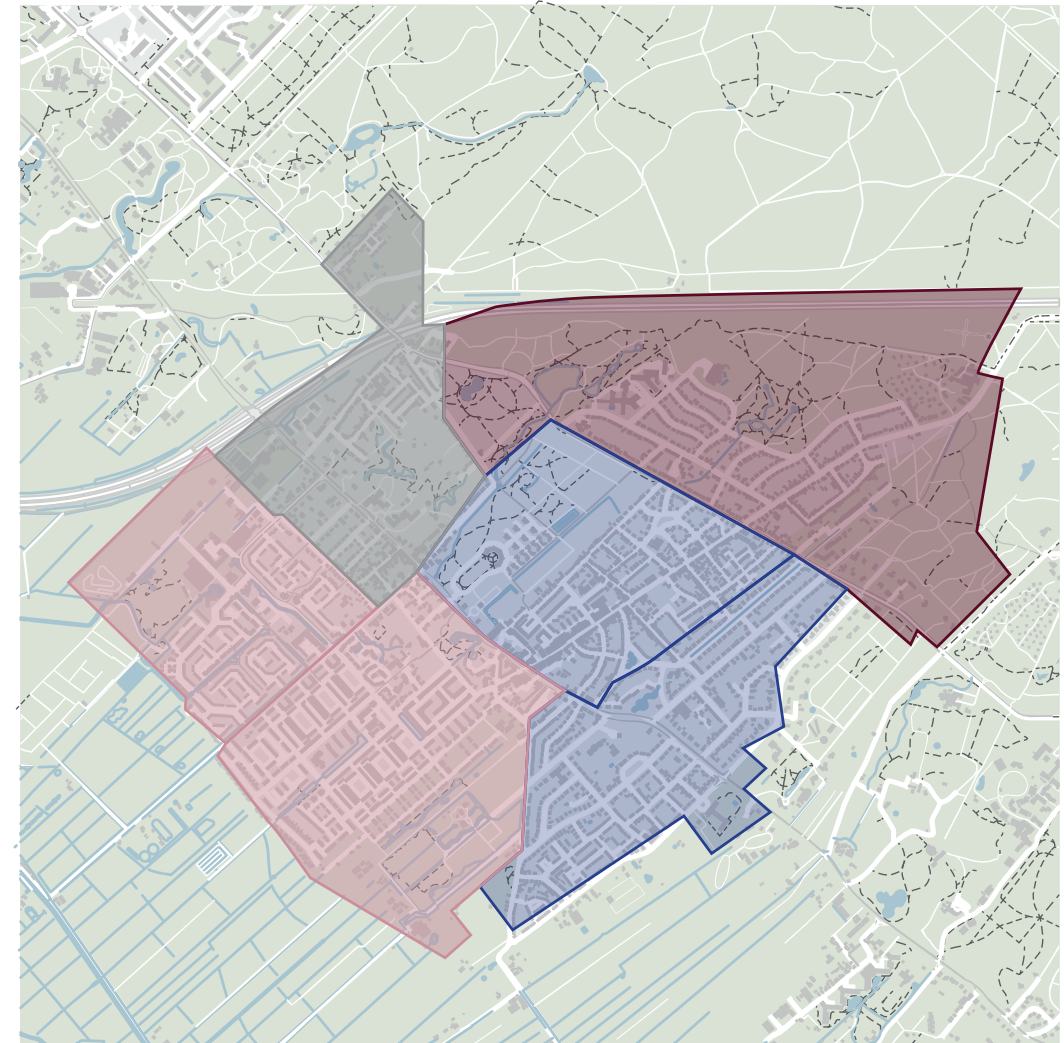
LEVEL OF EDUCATION DRIEBERGEN-NOORD



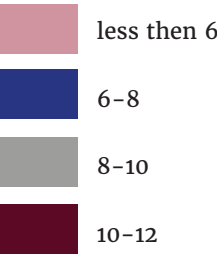
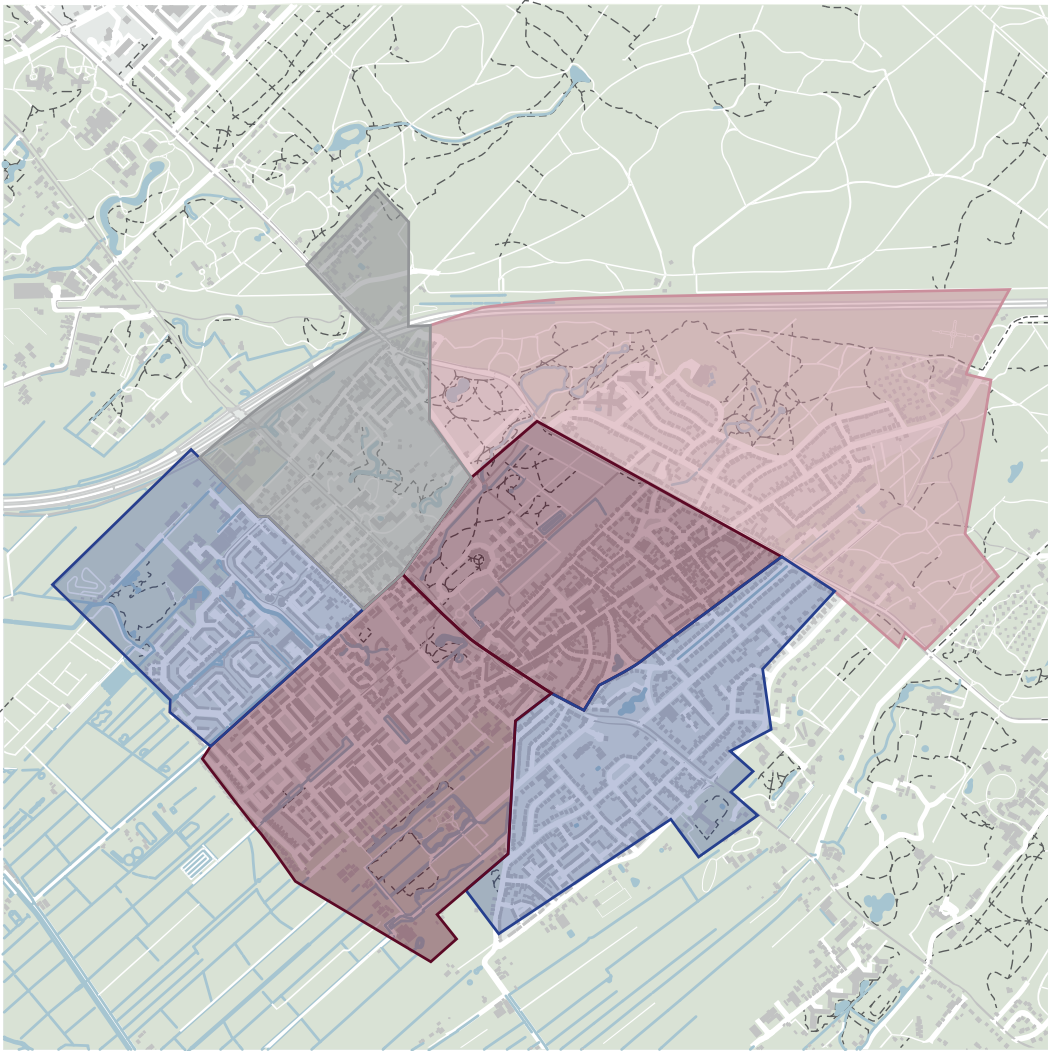
POPULATION DENSITY



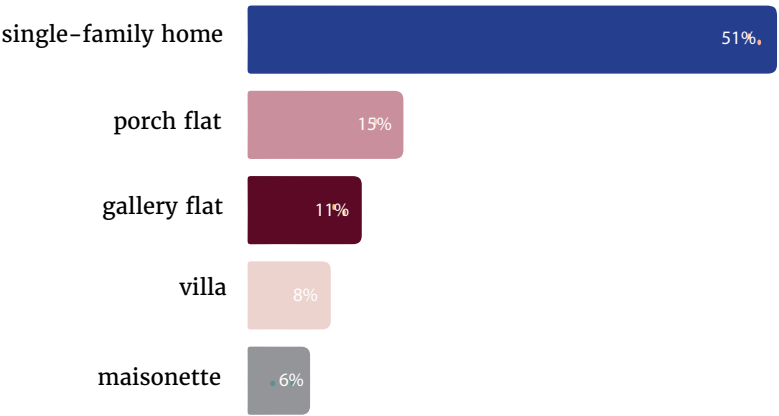
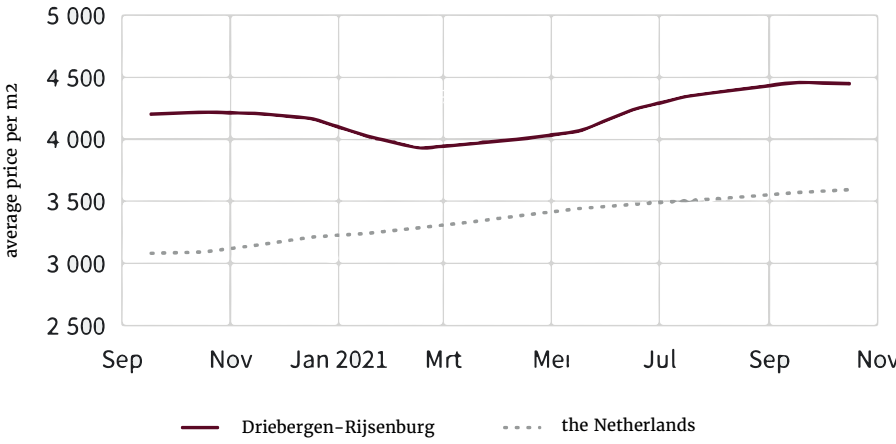
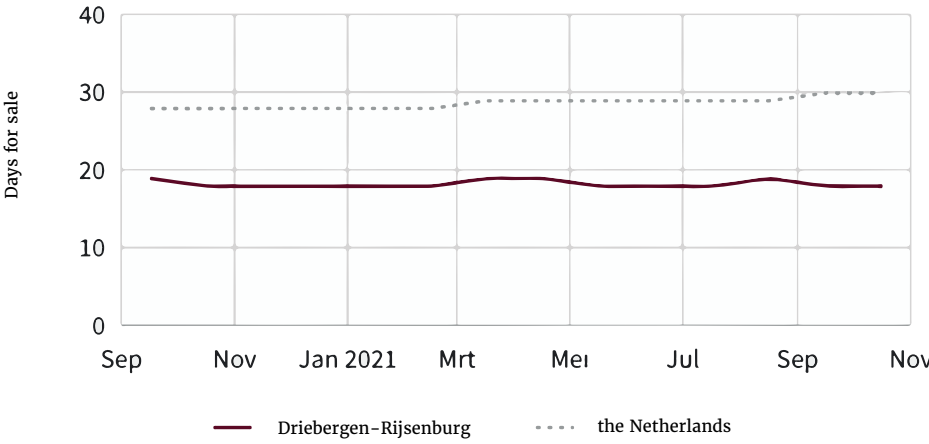
DEATH RATES PER 1000 RESIDENTS



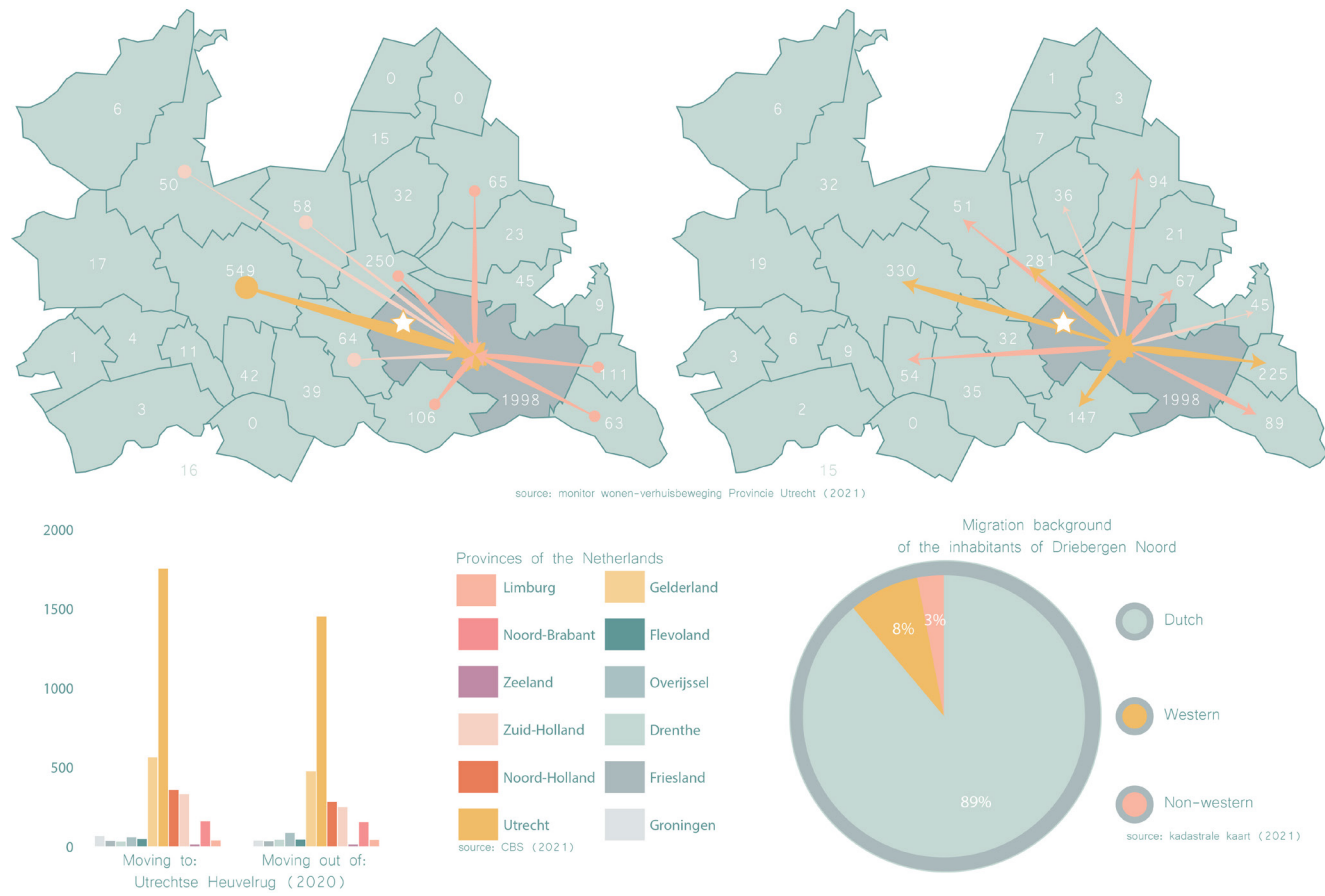
BIRTH RATE PER 1000 RESIDENTS



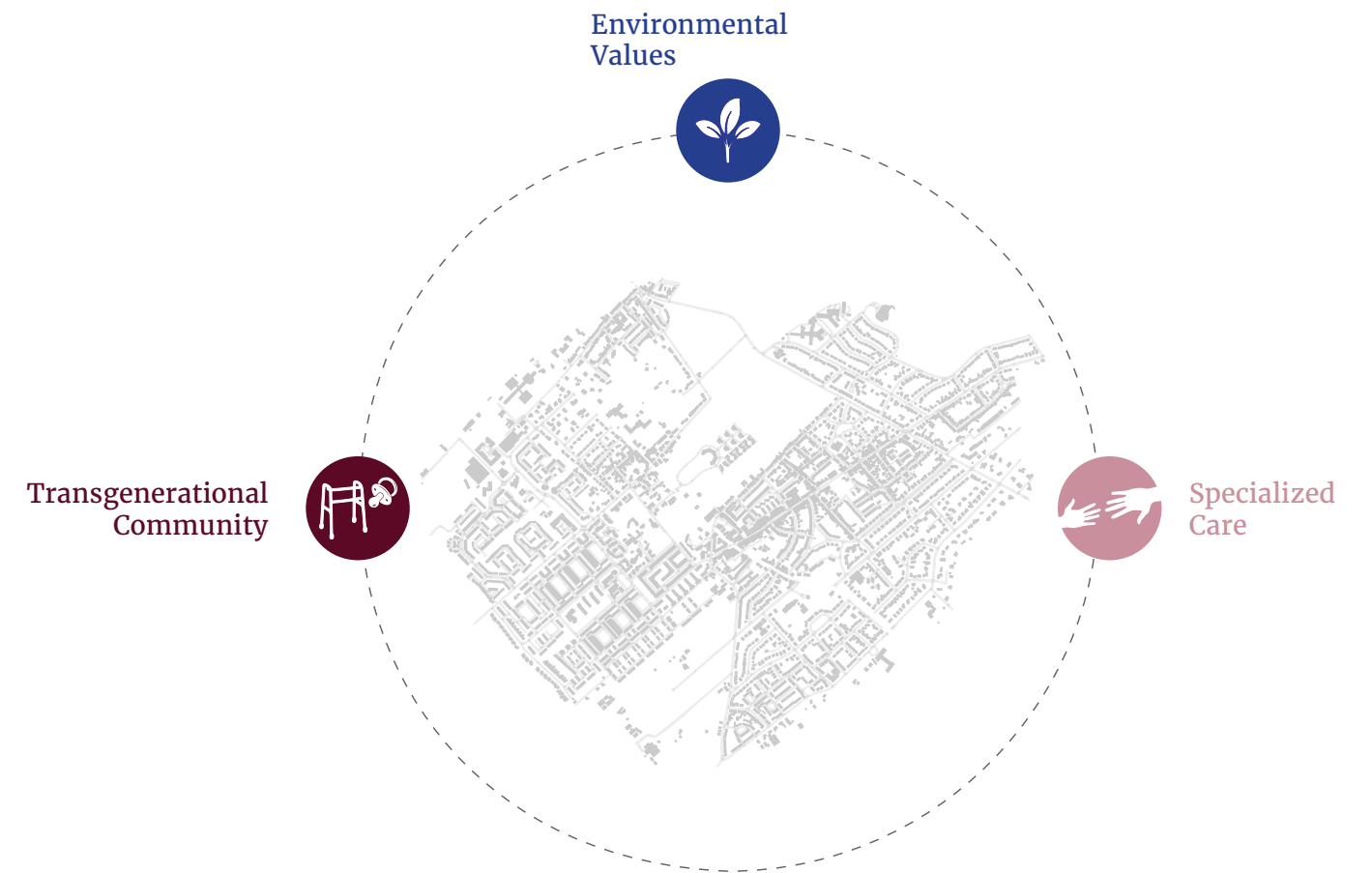
HOUSING MARKET



## UTRECHT MIGRATION



## CULTURE





## CULTURE



**Environmental Values**  
Kraaybeekhof Community Garden:  
A community garden that offers and promotes  
environmentally conscious production of food



**Community Integration**  
Communal garden is a shared re-  
sponsibility between local  
producers and residents.



**Promoting Self-sufficiency**  
Tools and resources for in-home  
vegetable gardens to be made  
by residents.



**Enhancing Awareness**  
Various courses teaching locals  
about sustainable production and  
environmental consciousness.



**Specialized Care**  
Manege Lis Hartel  
A horse-back riding school with specialist guid-  
ance for riders with disabilities.



**Enhanced Opportunities**  
Creates the possibility for people  
with disabilities to engage in  
athletic activities.



**Athletic Integration**  
Without restricting the club to dis-  
abled riders only, disabled  
people become included in a  
“mainstream” environment







### Lievegoed

Manege Lis Hartel  
Small-scale living for people with disabilities, offering residents independent living with additional care.



### Living Together

Creates the possibility for people with disabilities to live within the city instead of isolated in medical institutions.



### Independence

With everyone looking out for each other, people who usually require specific care are still able to live with independence.



### Transgenerational Approach

Building Community  
Architecture firm specializing in participatory design aiming for the development of more inclusive neighborhoods.



### Community Participation

Participatory design methods allow the community to take part in a collaborative approach to improving their neighborhoods.



### Future-proof Design

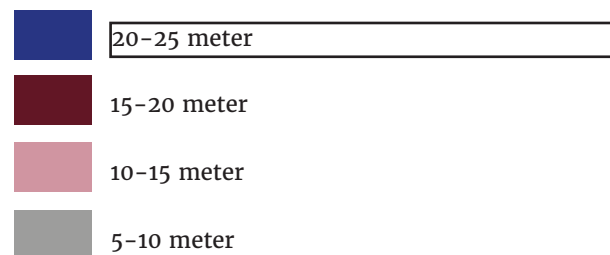
Several projects focus on spaces that unify a range of ages and generations.



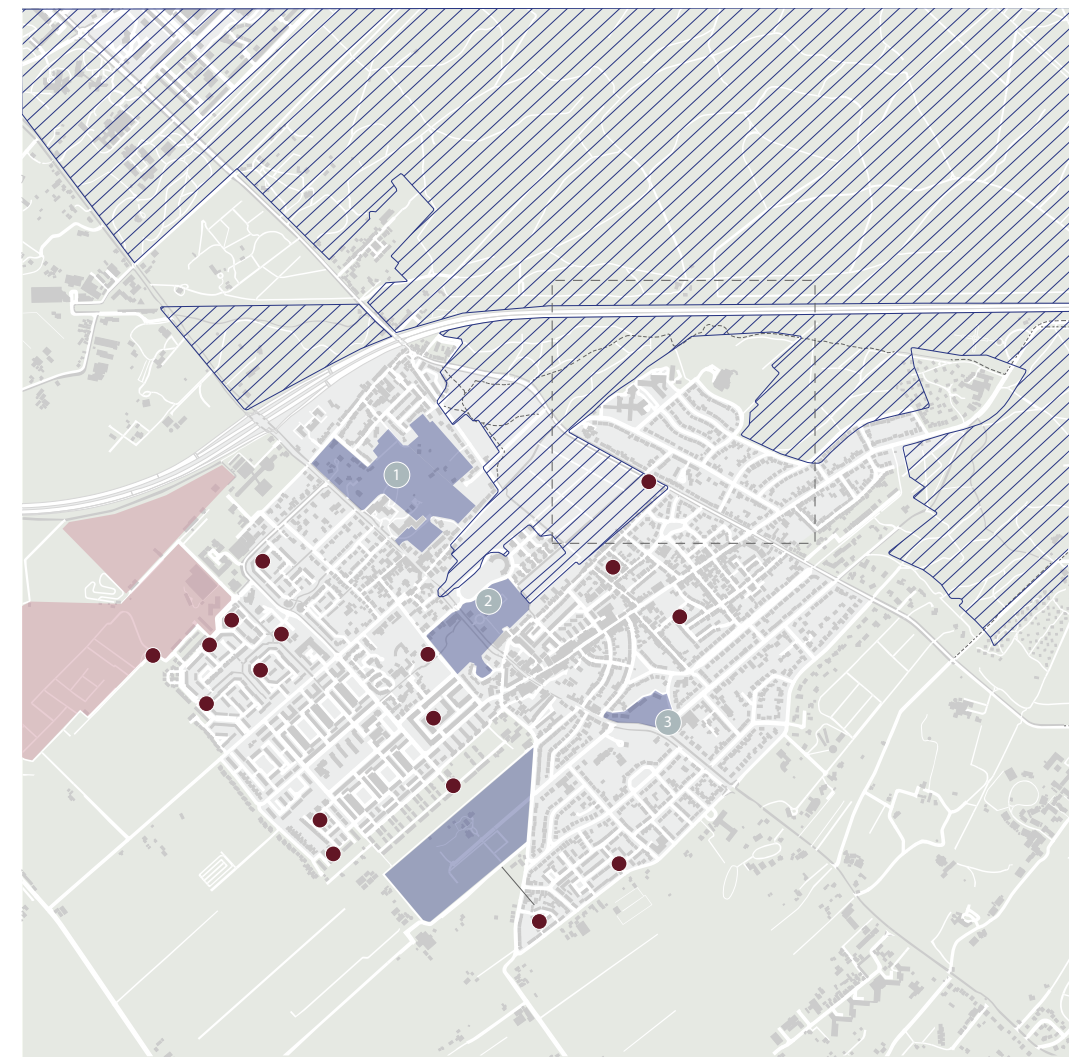
# 2.4

URBANISM

## BUILDING HEIGHT



## GREEN ZONES AND PARKS



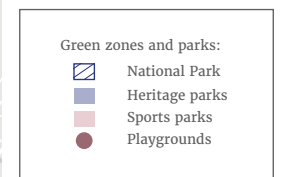
Former country estate founded in the in 1818-1828 as a tribute for the husband of Margaretha de Jongh.



Originally part of Sparrendaal estate, designed in 1857 as a garden for the home of an Amsterdam merchant.

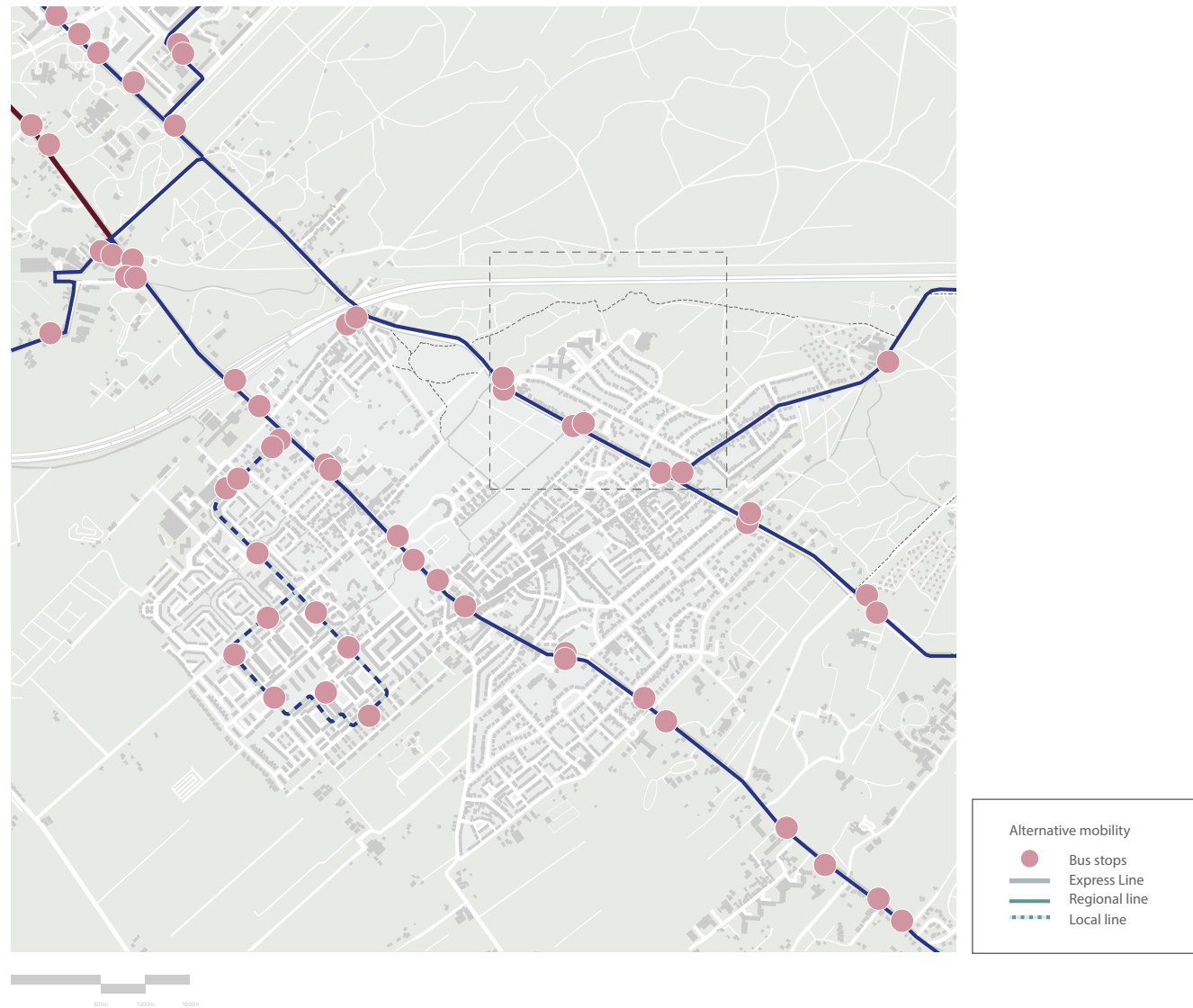


Former garden of the neo-gothic that was part of the Welgelegen estate, built in 1817 by W. Koopman.

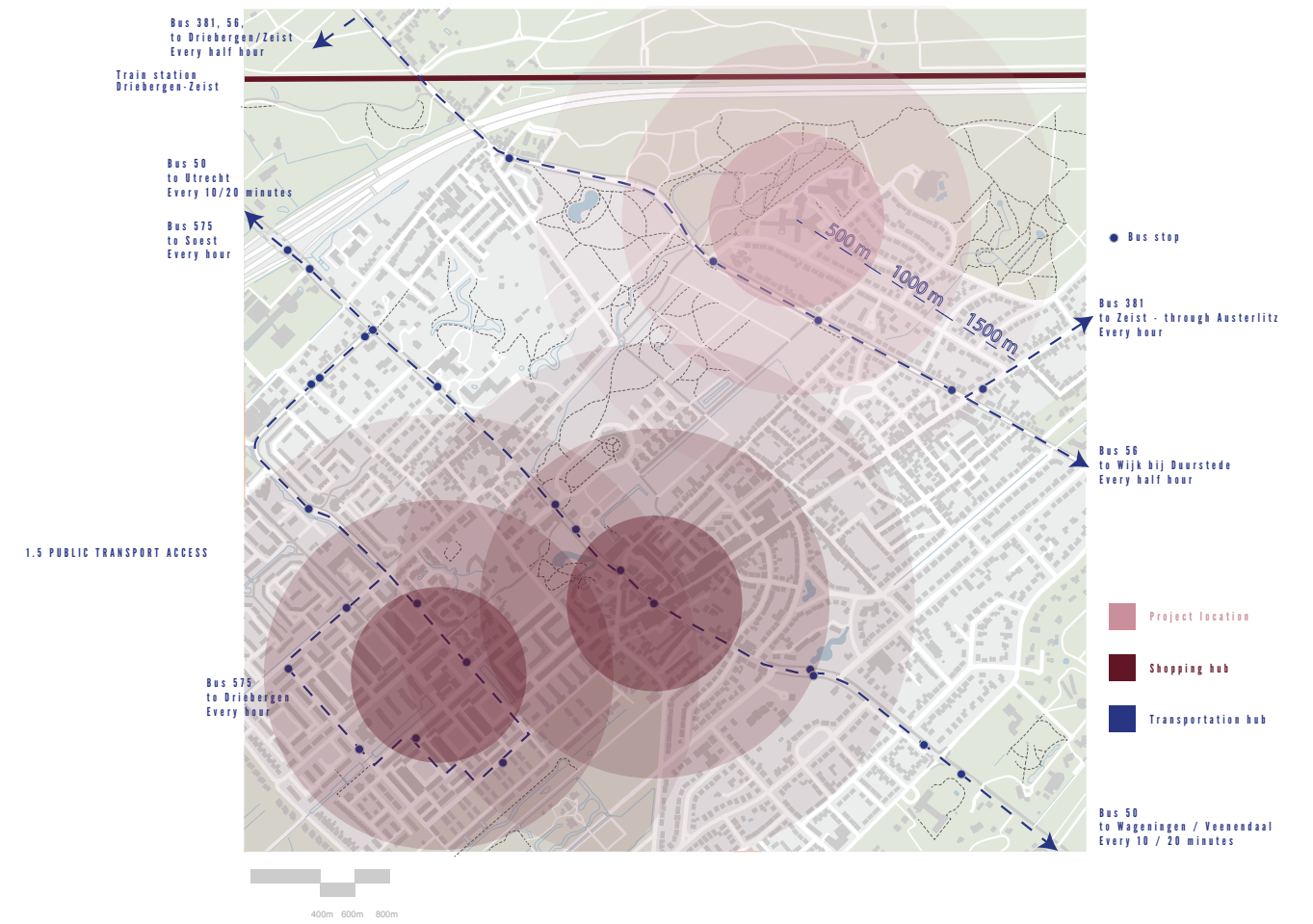




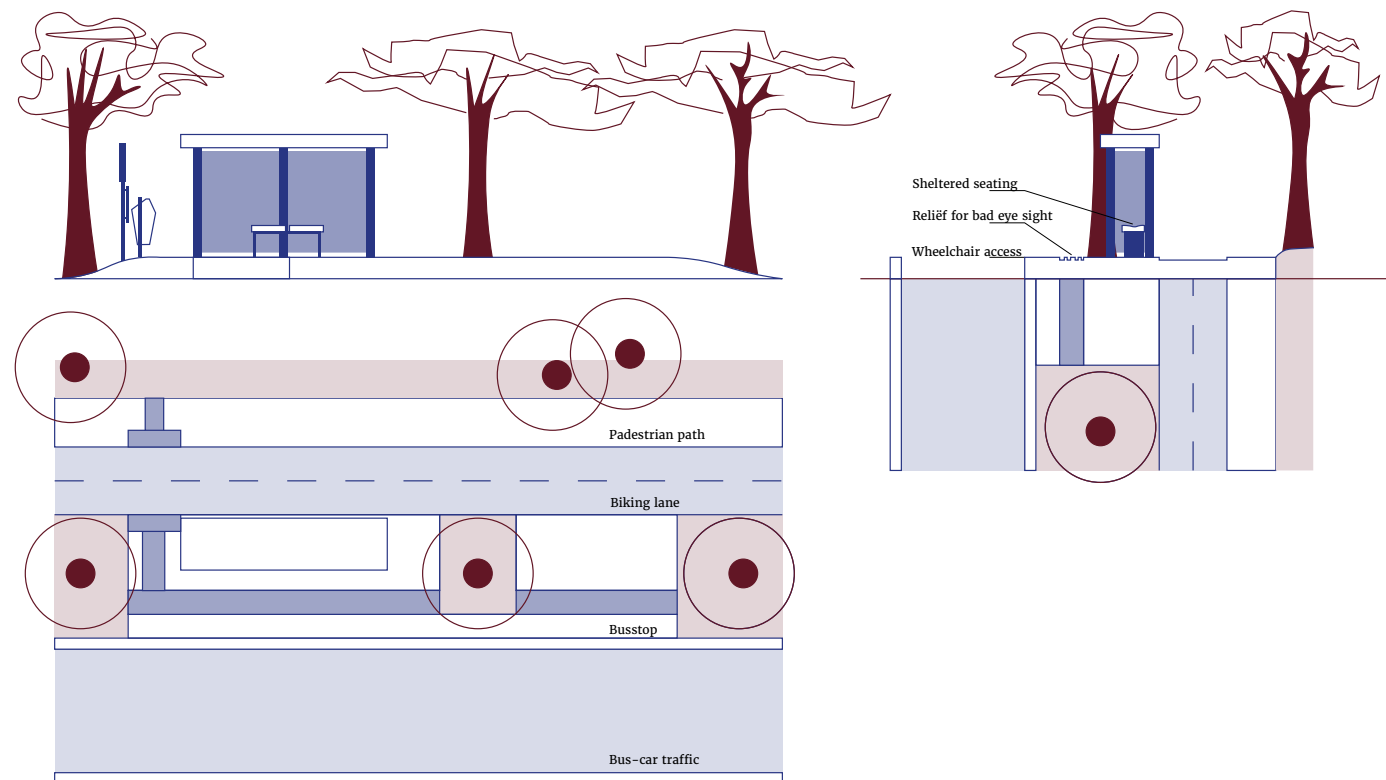
## PUBLIC TRANSPORT



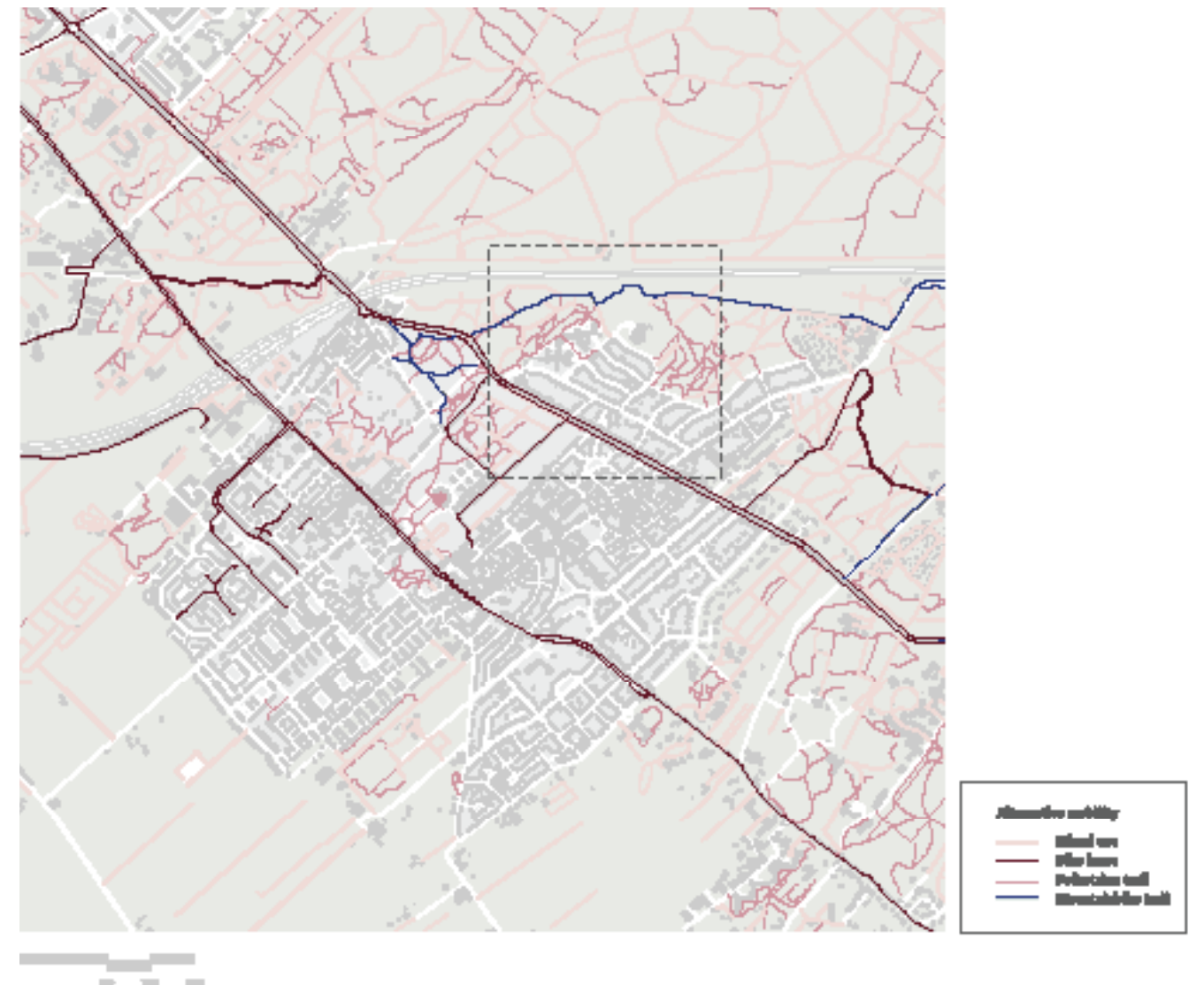
## PUBLIC TRANSPORT ACCESS



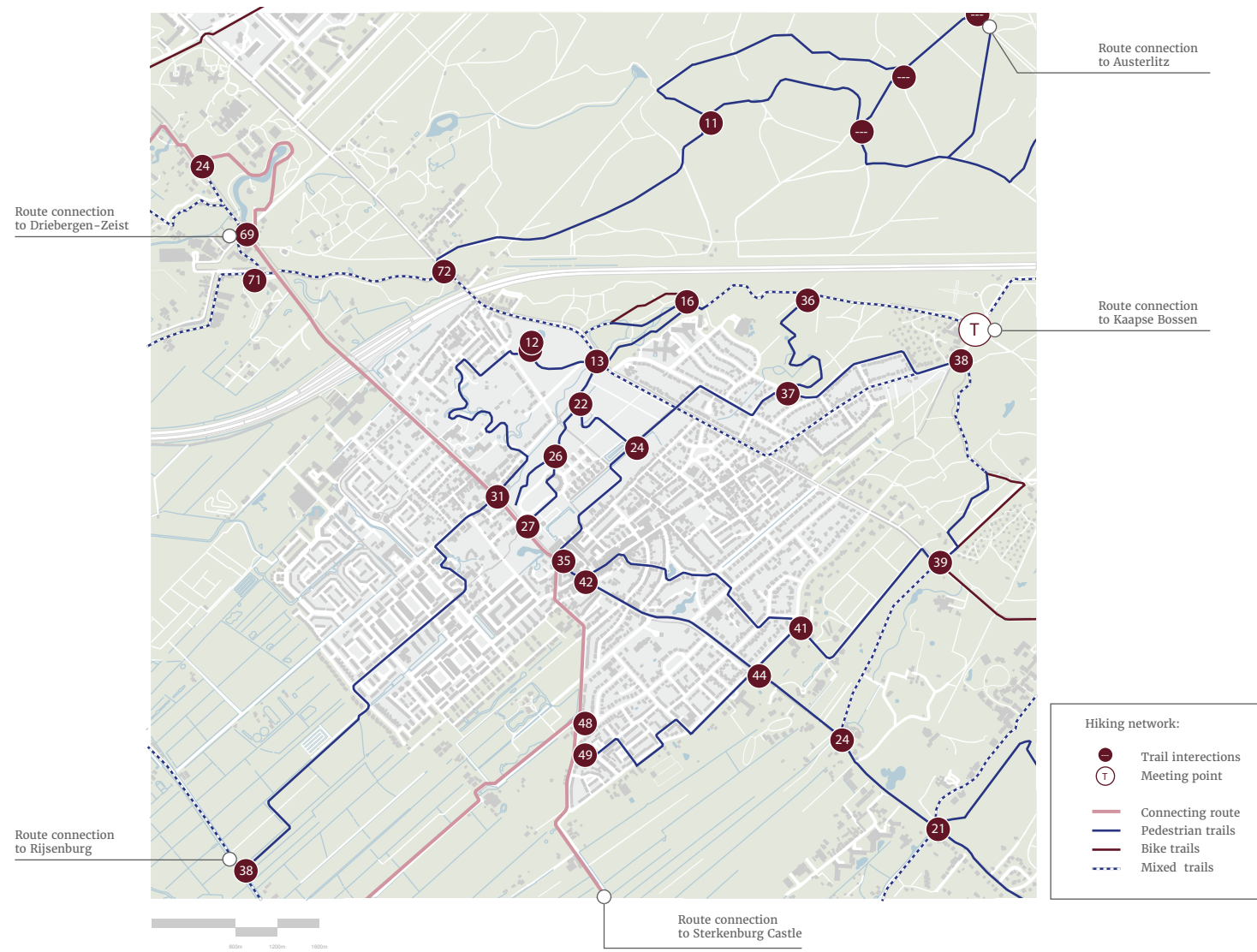
## BUS-STOP DESIGN



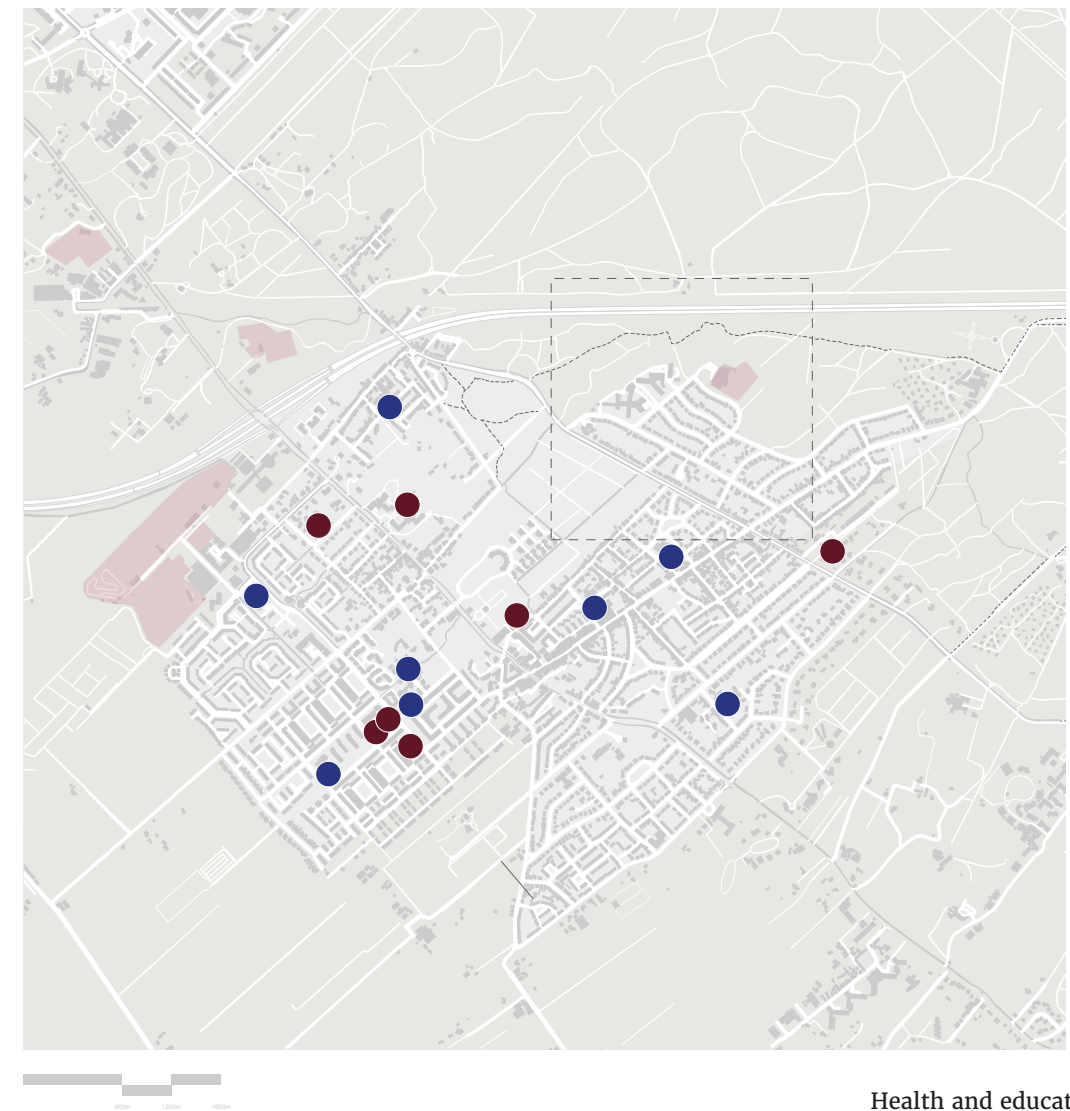
## BIKE AND PEDESTRIAN



## HIKING PATHS



## SCHOOLS

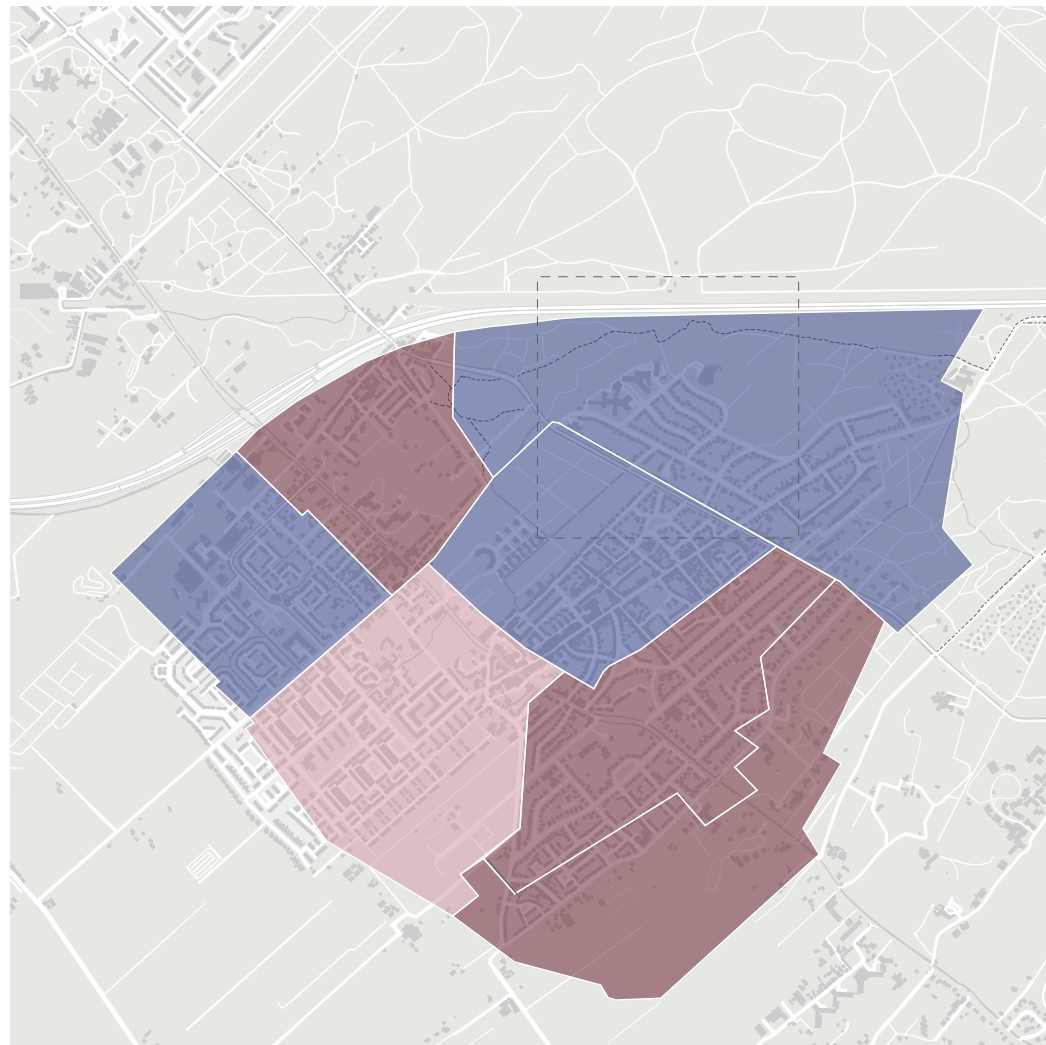


Health and education:

- Primary schools
- Health clinics
- Sports complex



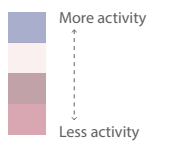
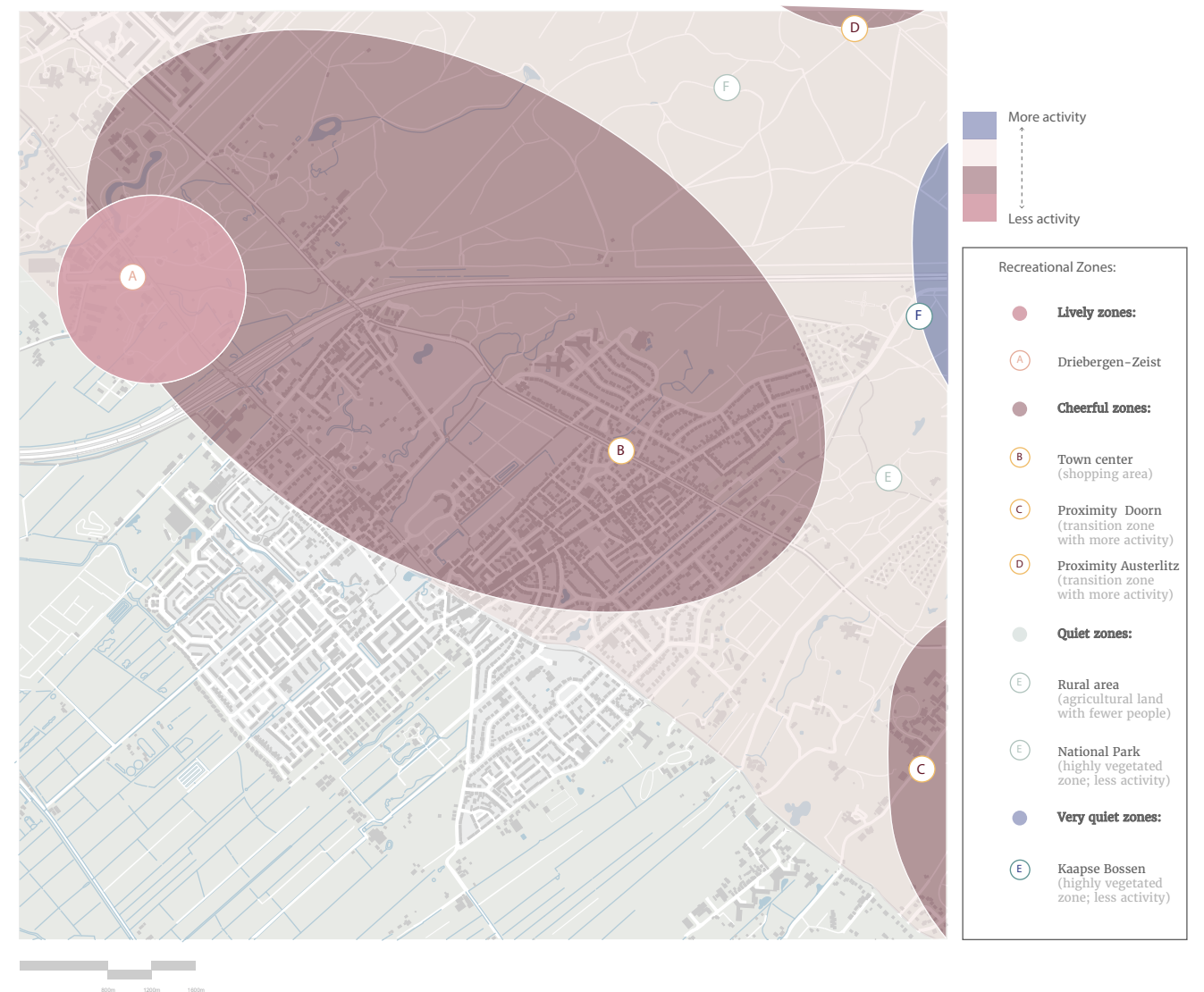
## EDUCATION



Distance to Primary School:



## ACTIVITY ZONES



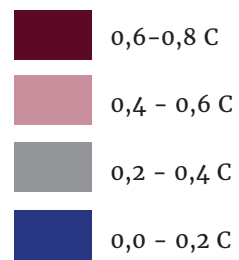
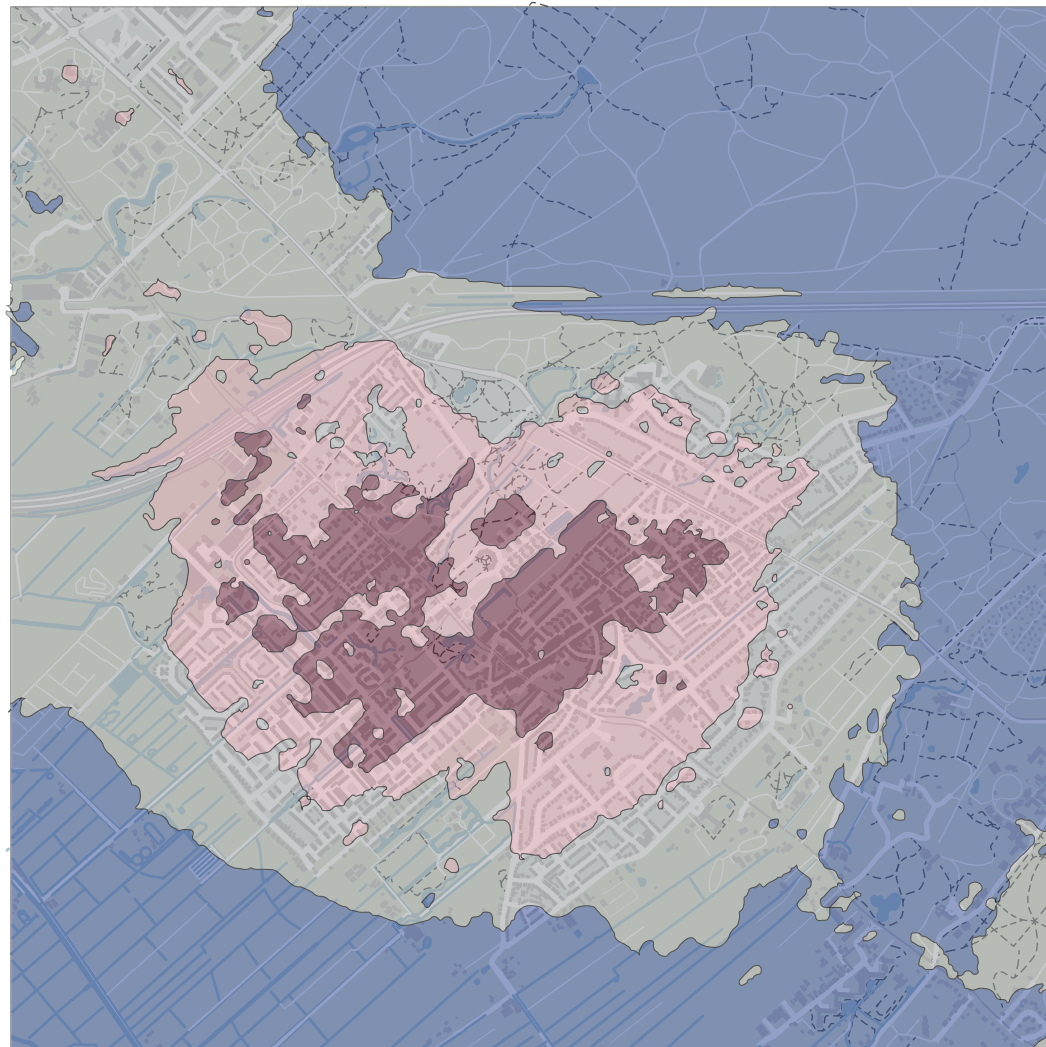
Recreational Zones:

- Lively zones:**
  - A Driebergen-Zeist
- Cheerful zones:**
  - B Town center (shopping area)
  - C Proximity Doorn (transition zone with more activity)
  - D Proximity Austerlitz (transition zone with more activity)
- Quiet zones:**
  - E Rural area (agricultural land with fewer people)
  - E National Park (highly vegetated zone; less activity)
- Very quiet zones:**
  - E Kaapse Bossen (highly vegetated zone; less activity)

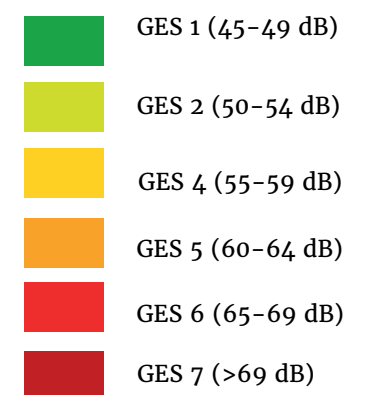
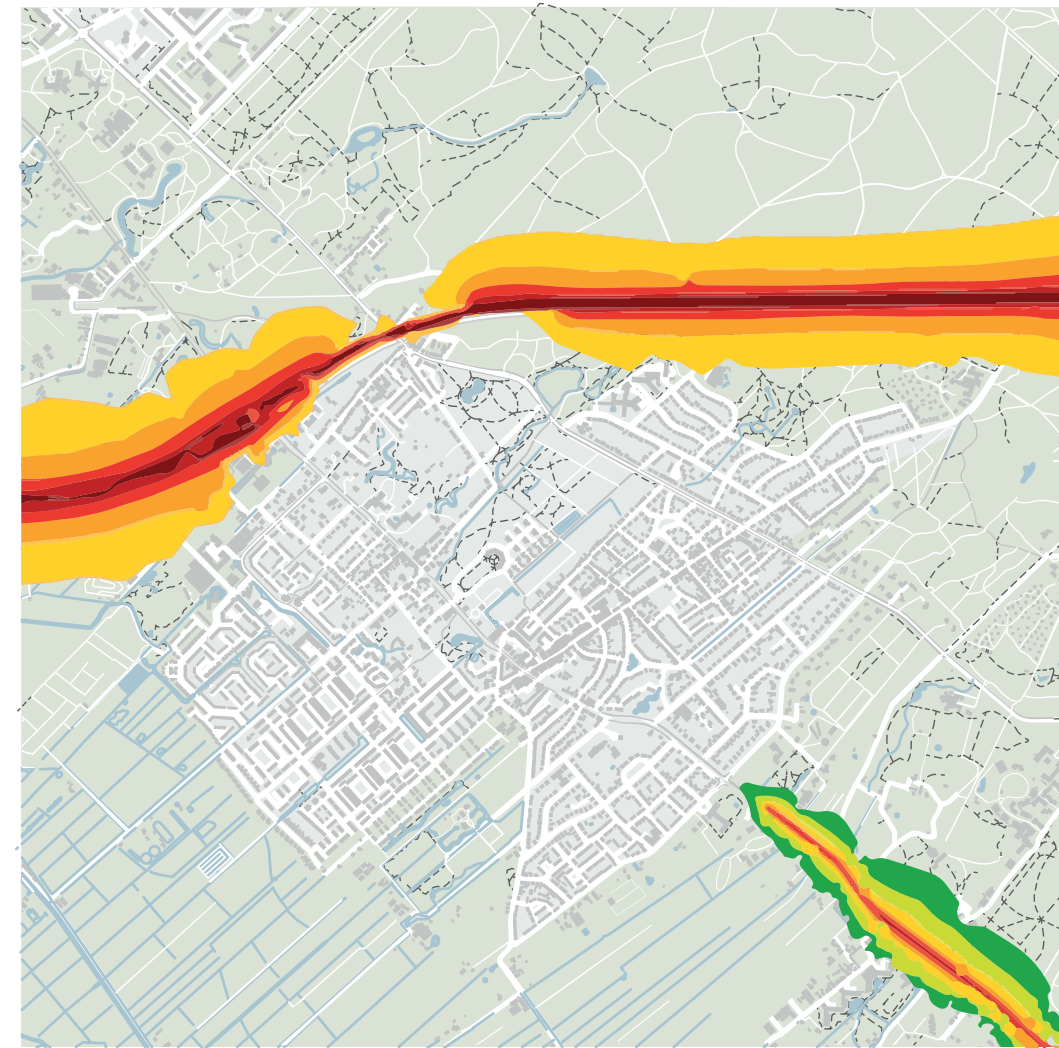
# 2.5

ENVIRONMENT

## URBAN HEAT ISLAND EFFECT

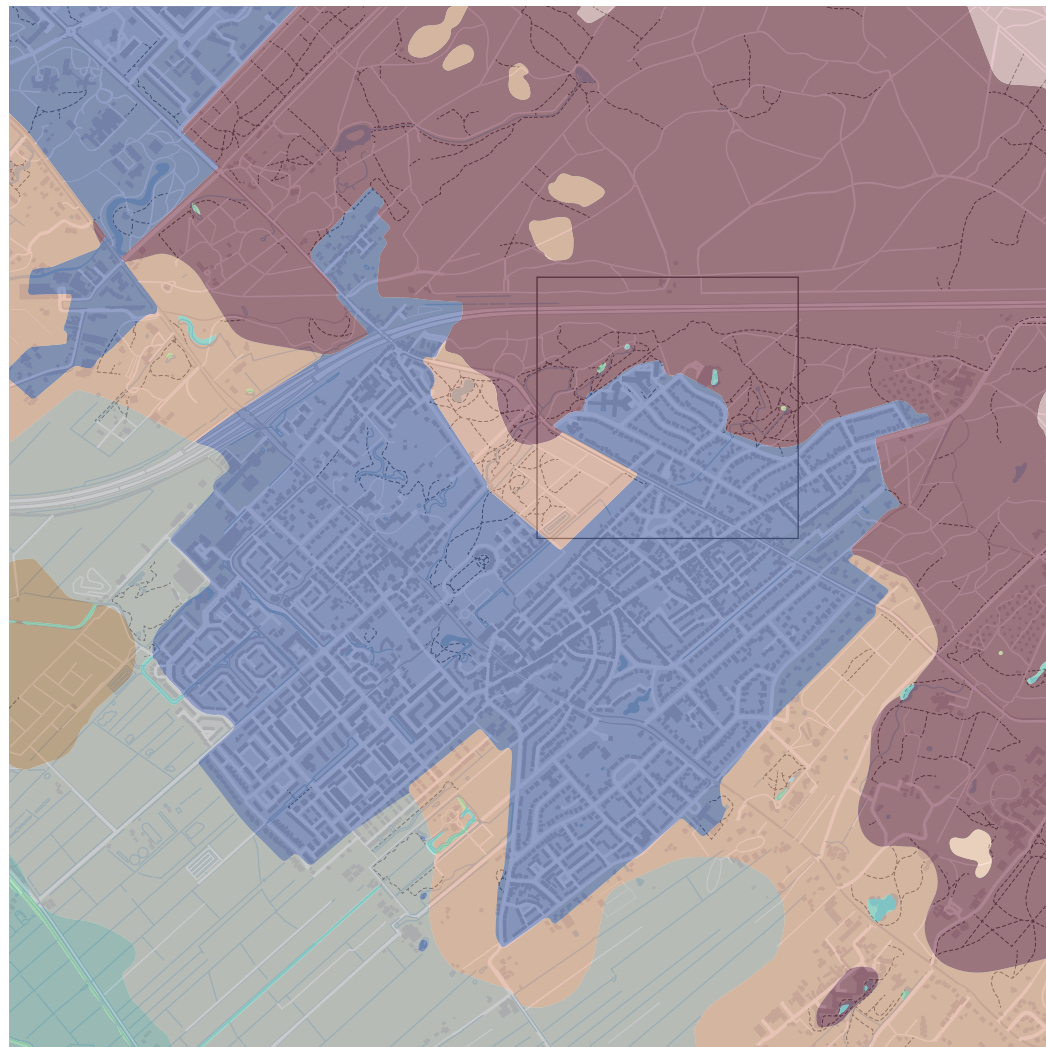











## NOISE



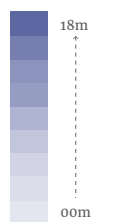
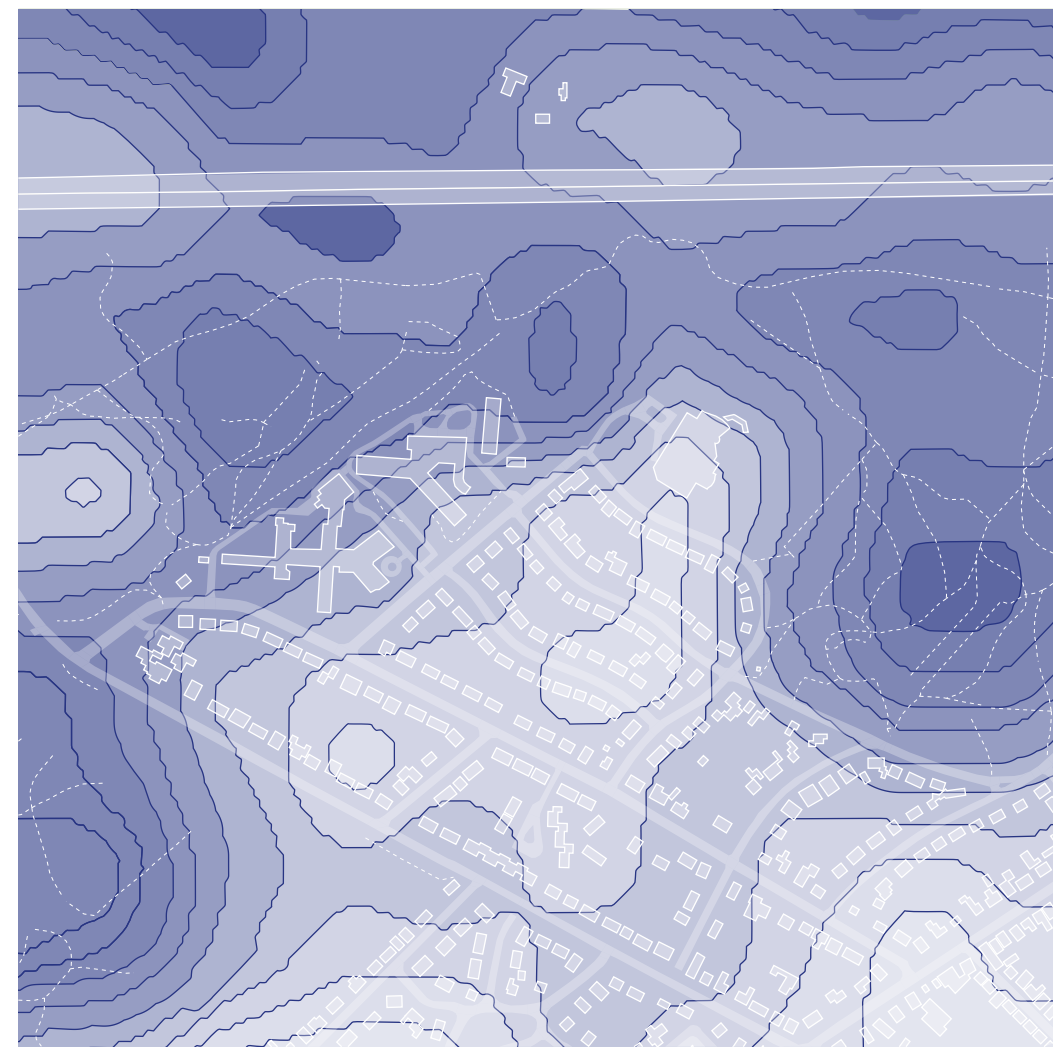


## SOIL



- |   |                       |   |                 |
|---|-----------------------|---|-----------------|
|  | Stuwwal               |  | Rivierkomvlakte |
|  | Stuwwalplateau        |  | Stroomrug       |
|  | Landduinen            |  | Rivierdal bodem |
|  | Gordeldekzandwelingen |  | Bebouwing       |
|  | Dekzandrug            |   |                 |

## TOPOGRAPHY



# Chapter 3

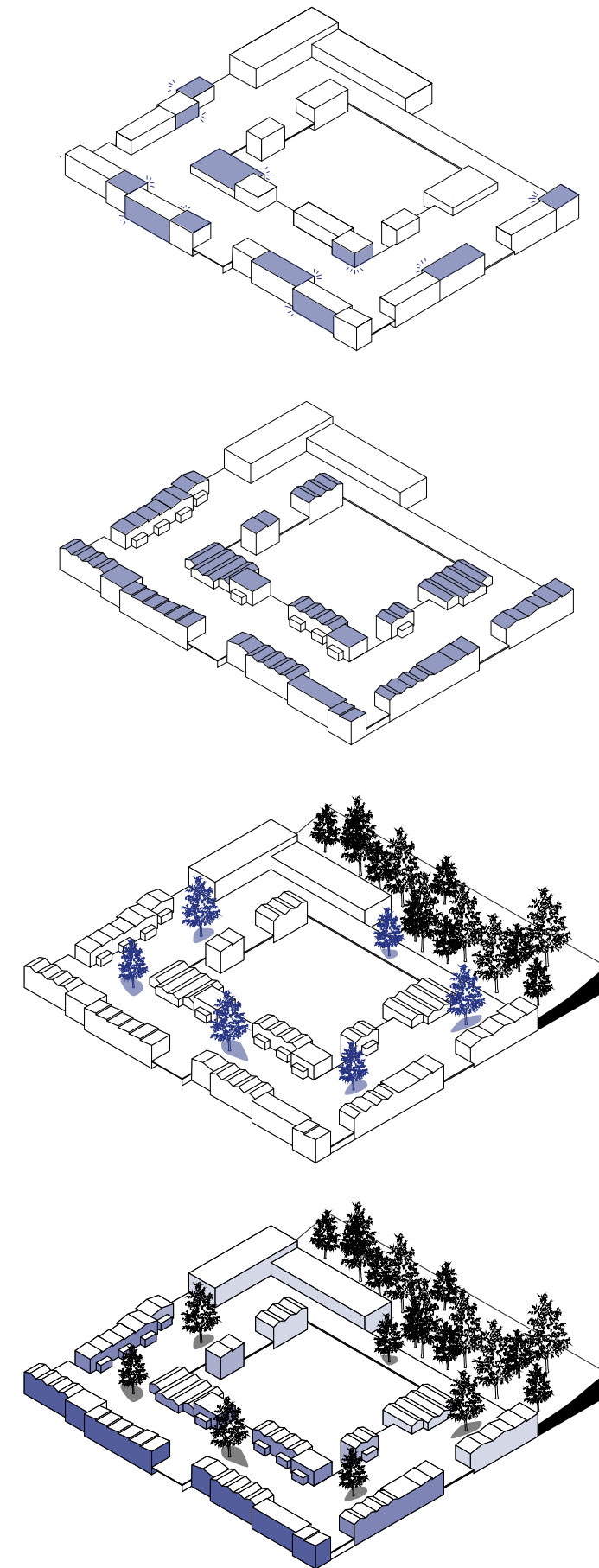
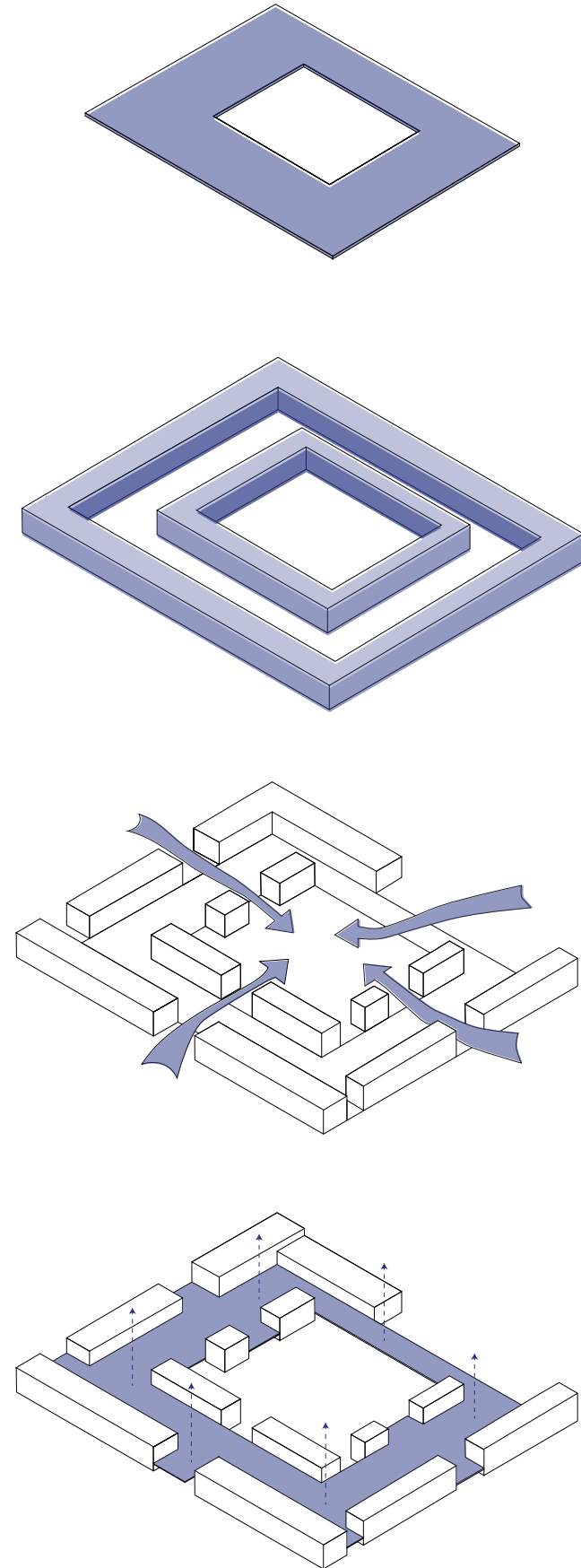


## Design

### 3.1

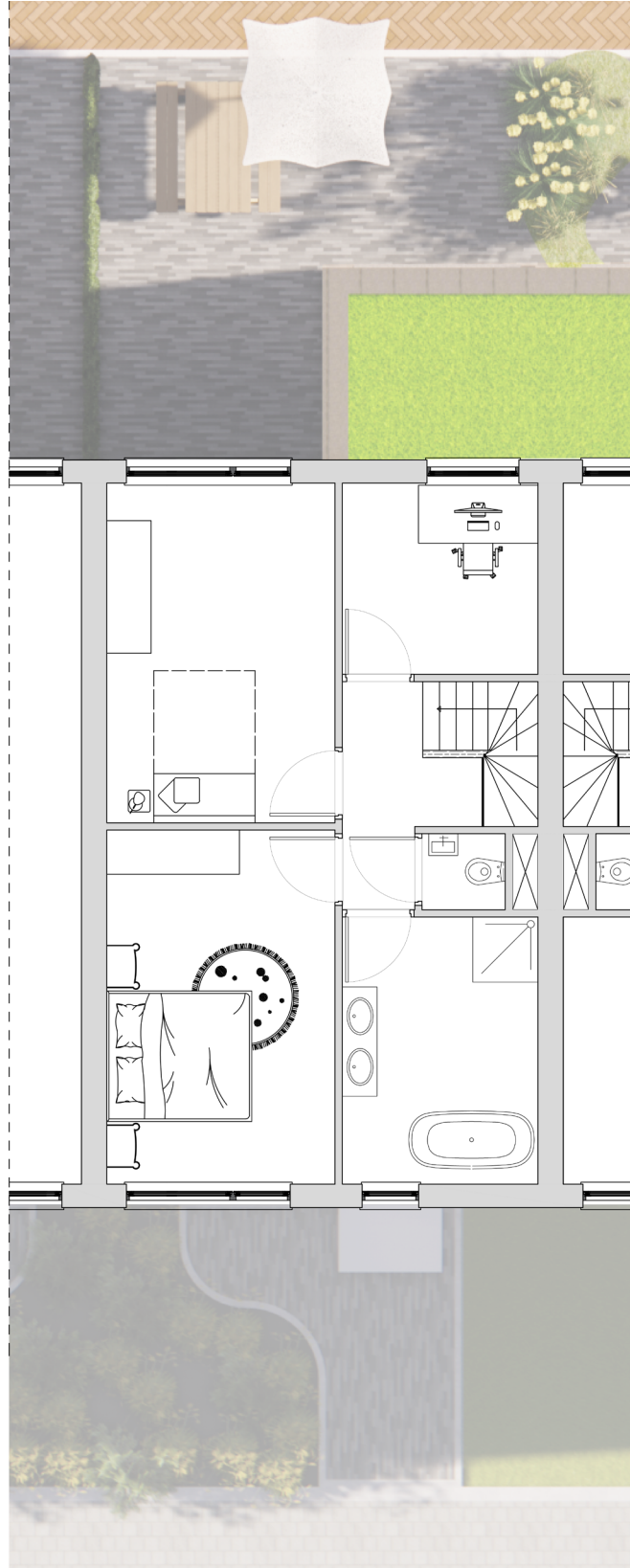
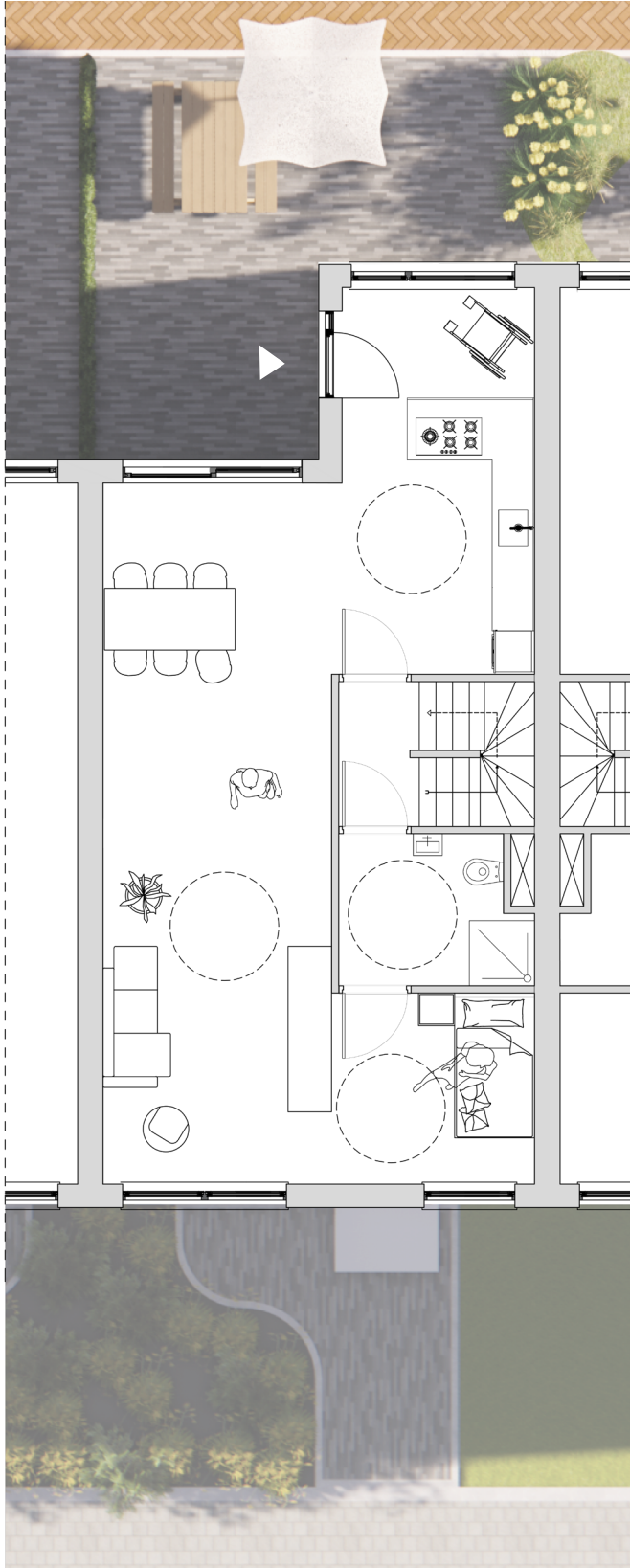
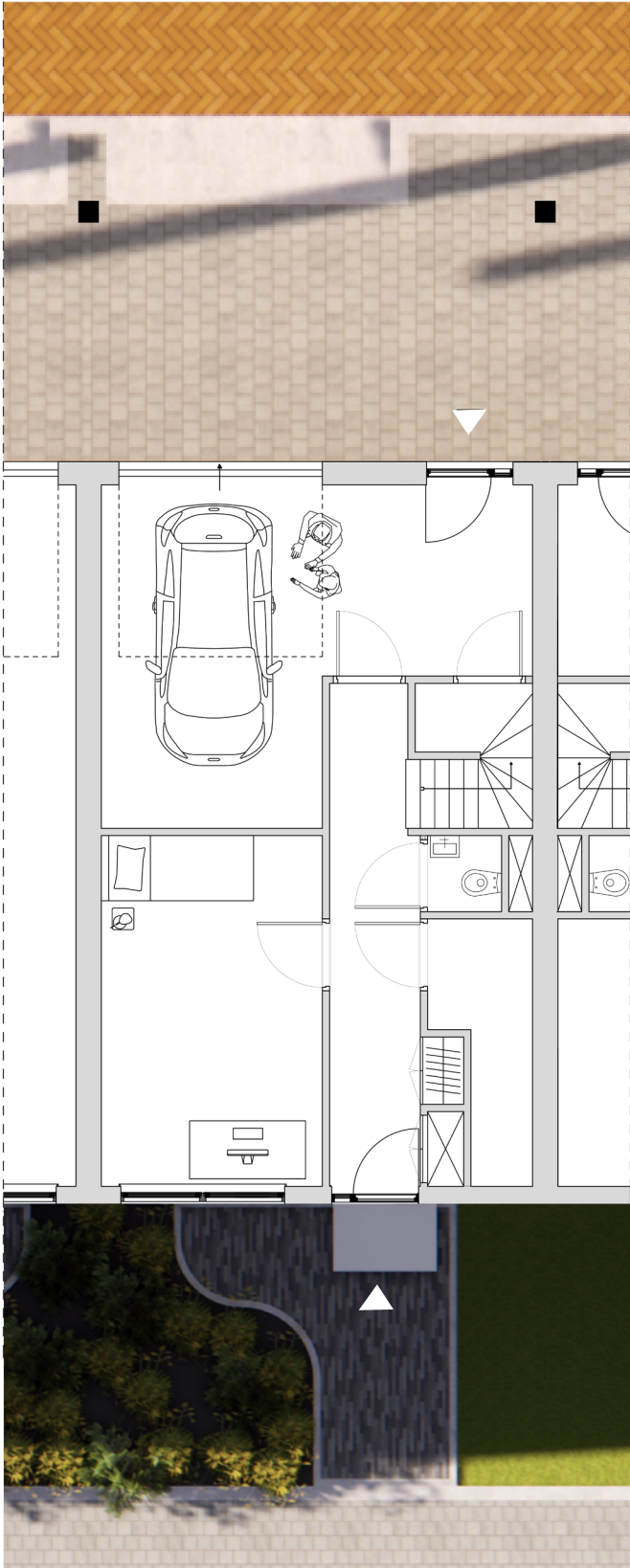
DESIGN

Figure 2: DEMENTIA (AORTA, 2016), edited by author



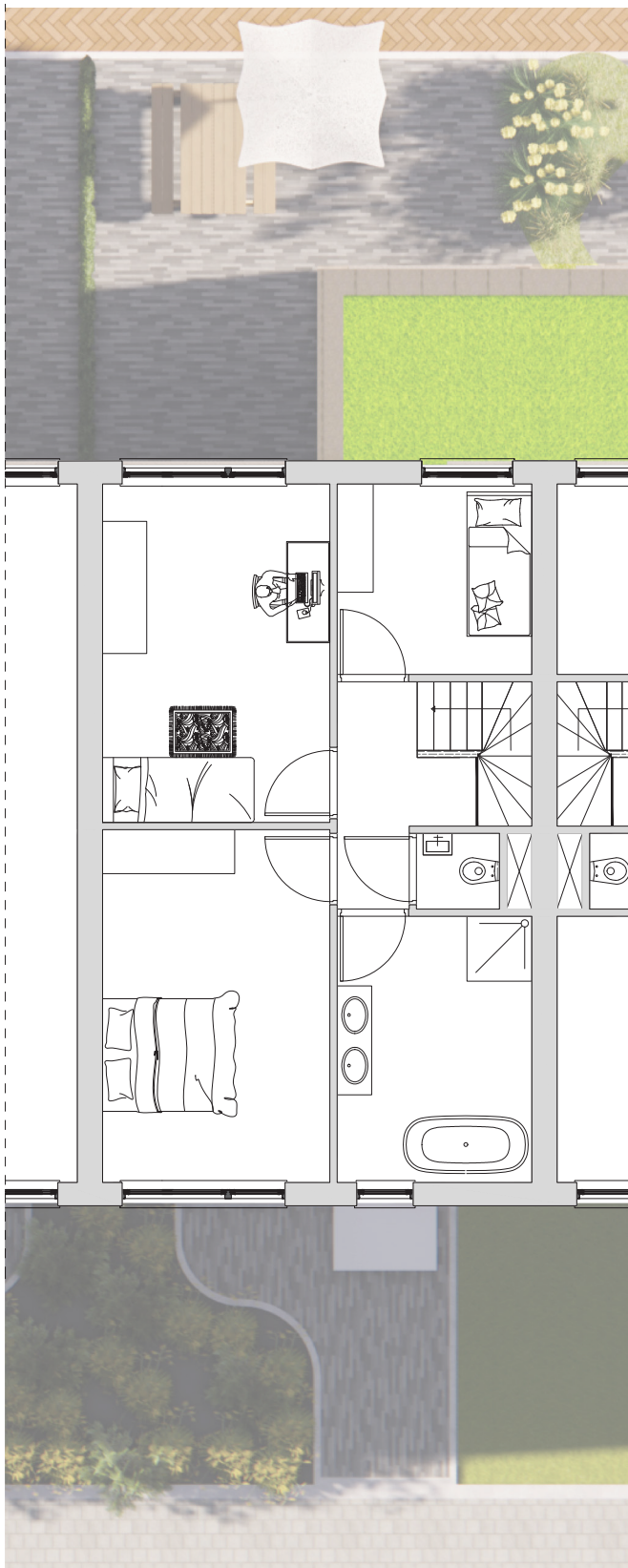
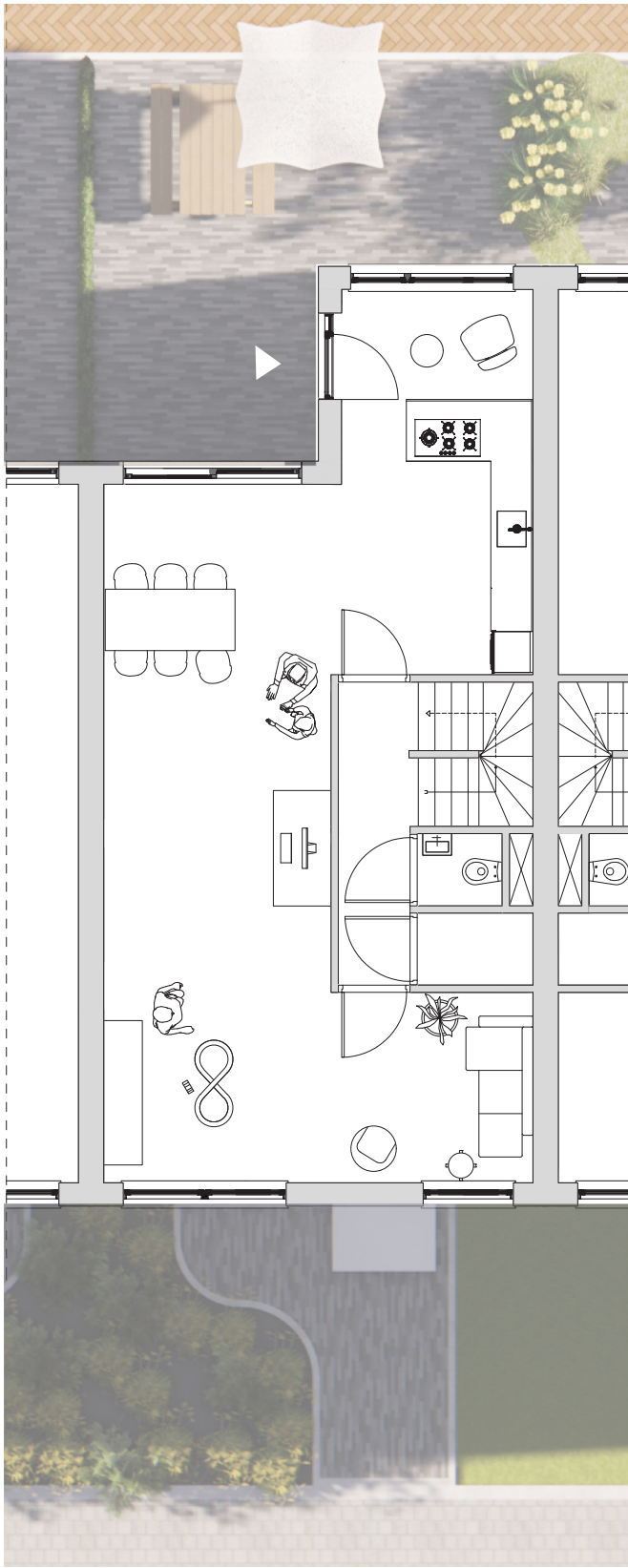
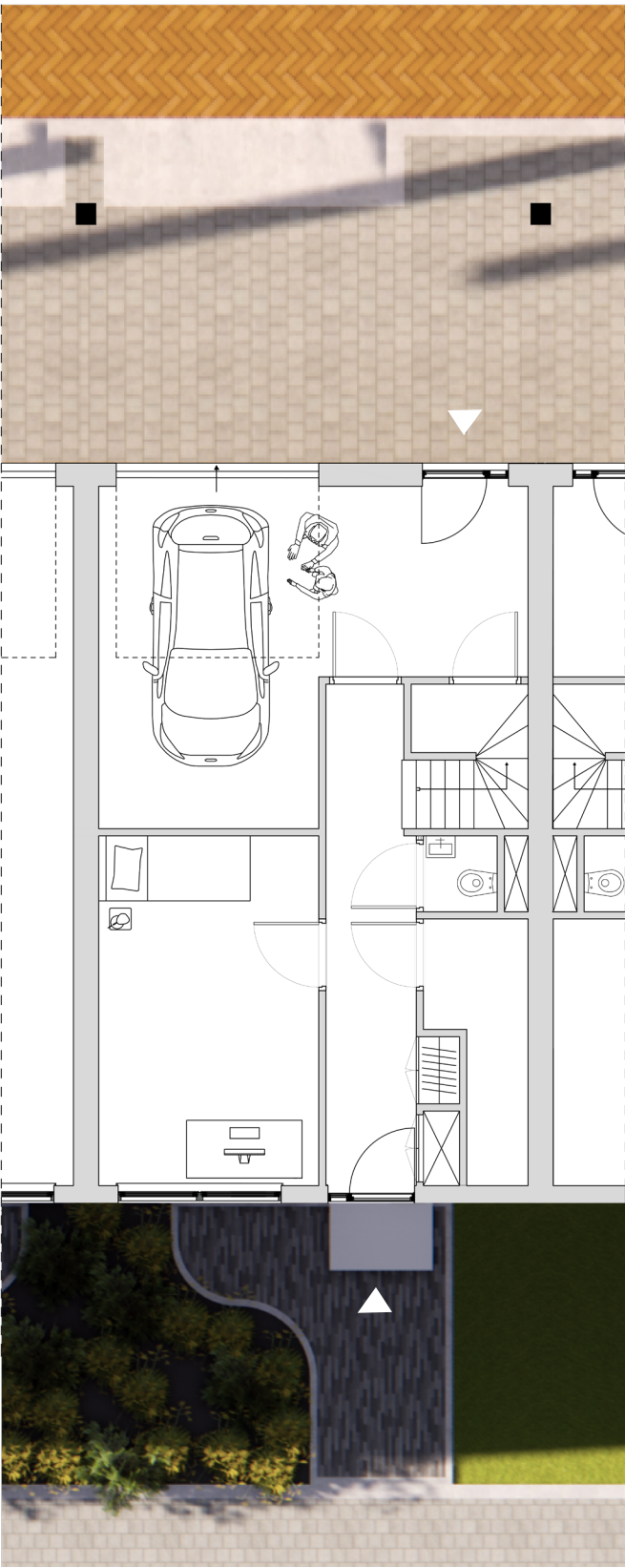


FLOORPLAN TYPE A DEMENTIA



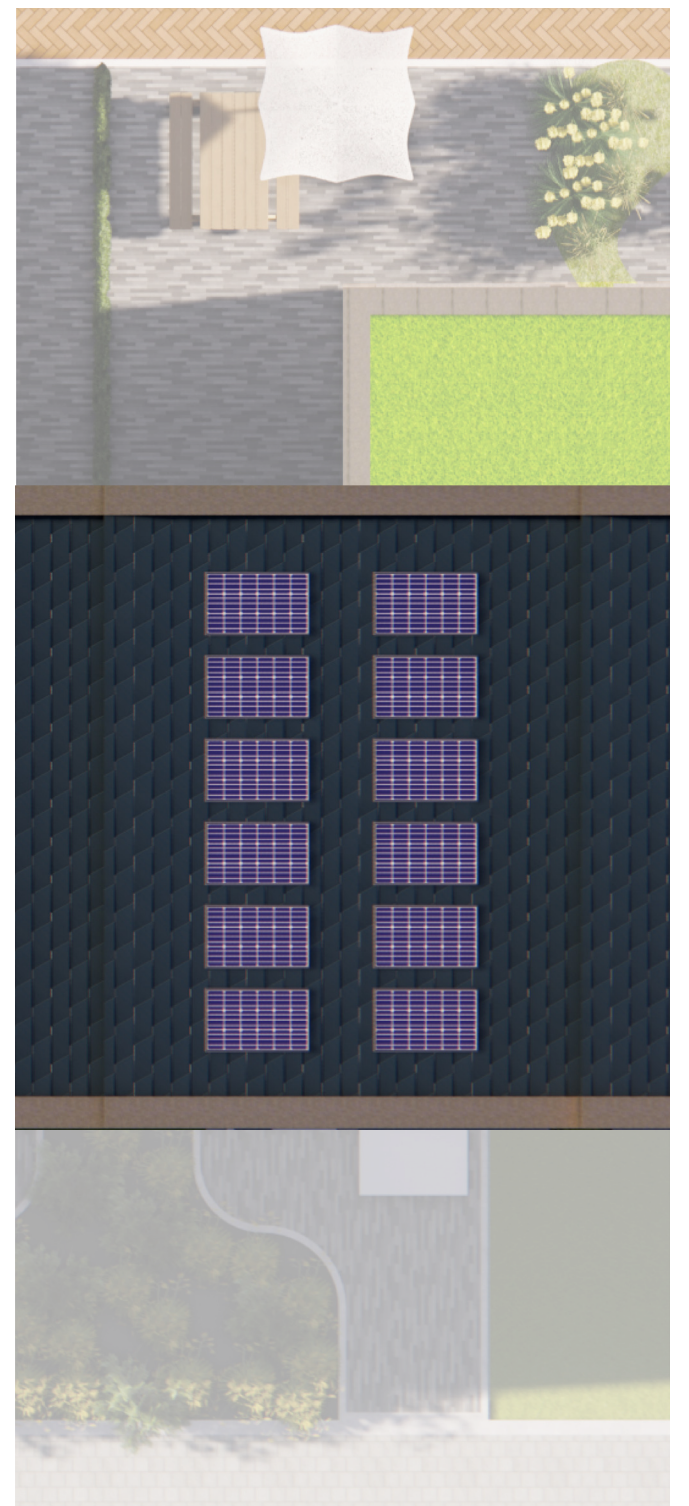
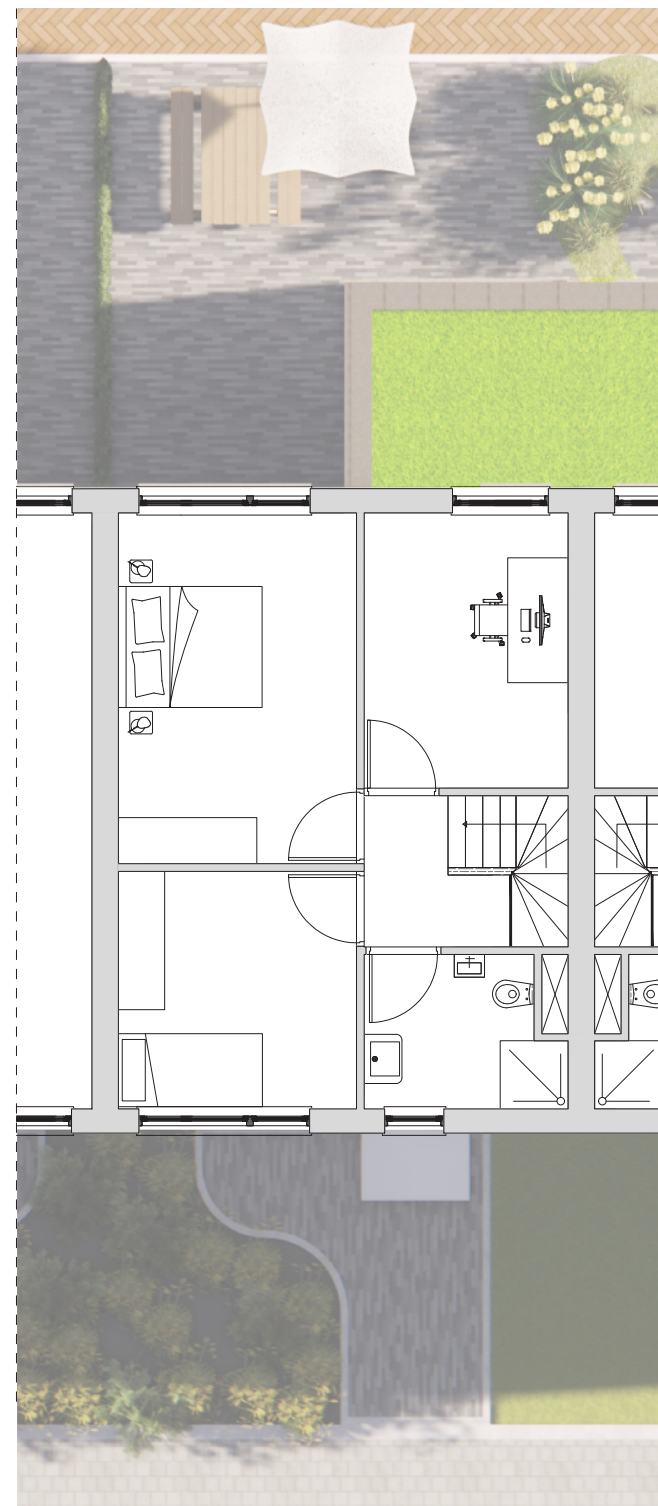
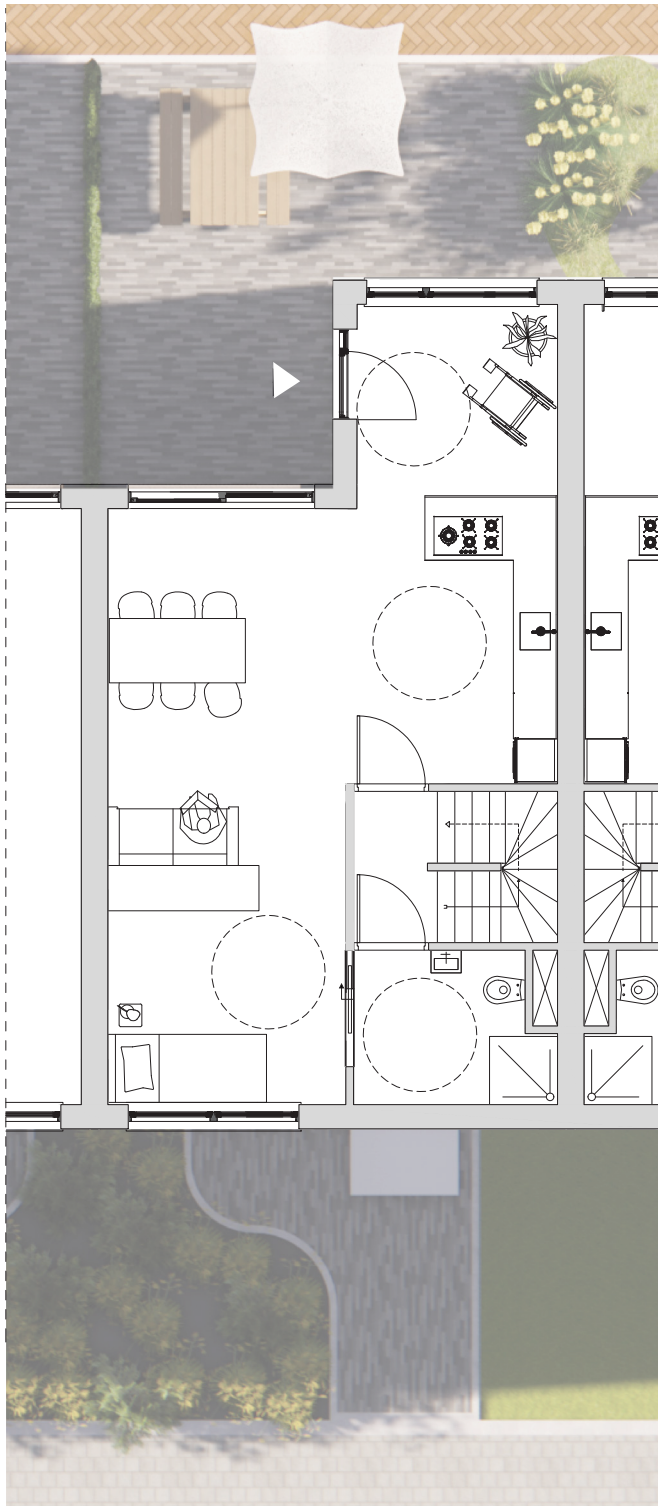
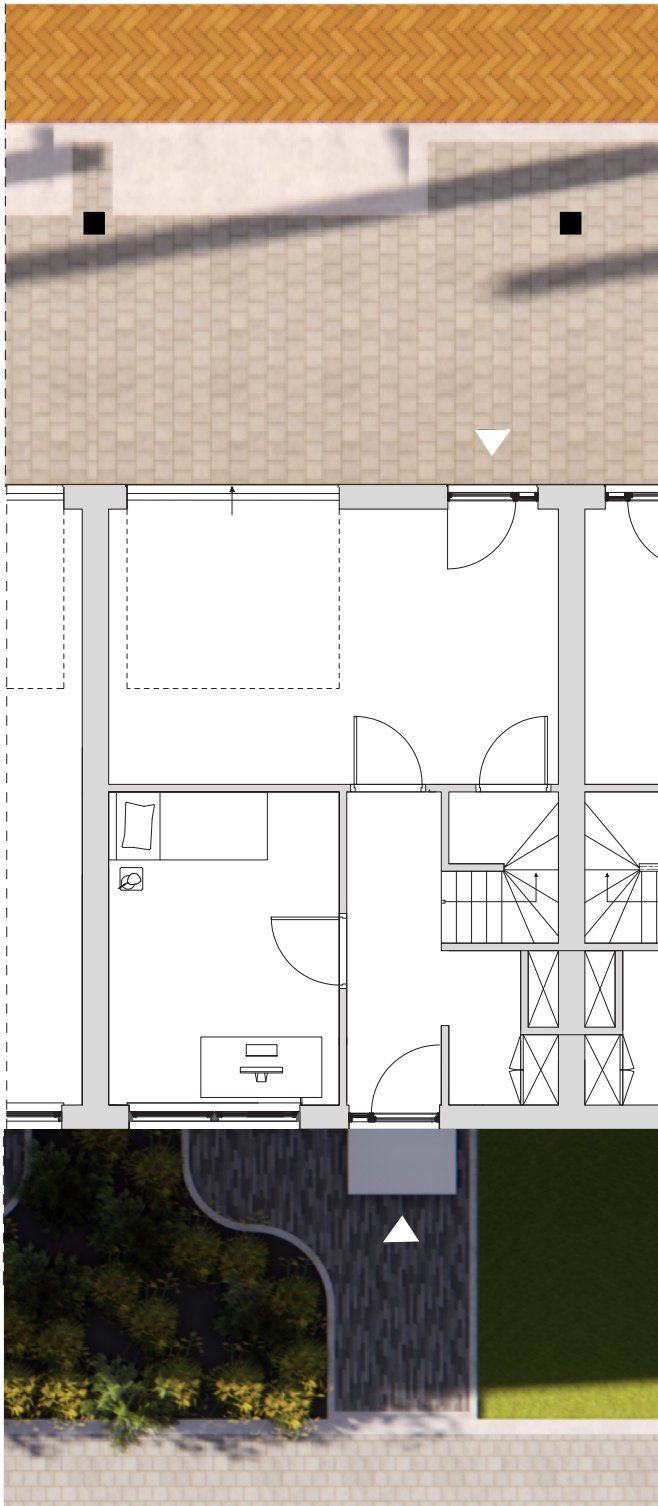


FLOORPLAN TYPE A FAMILY



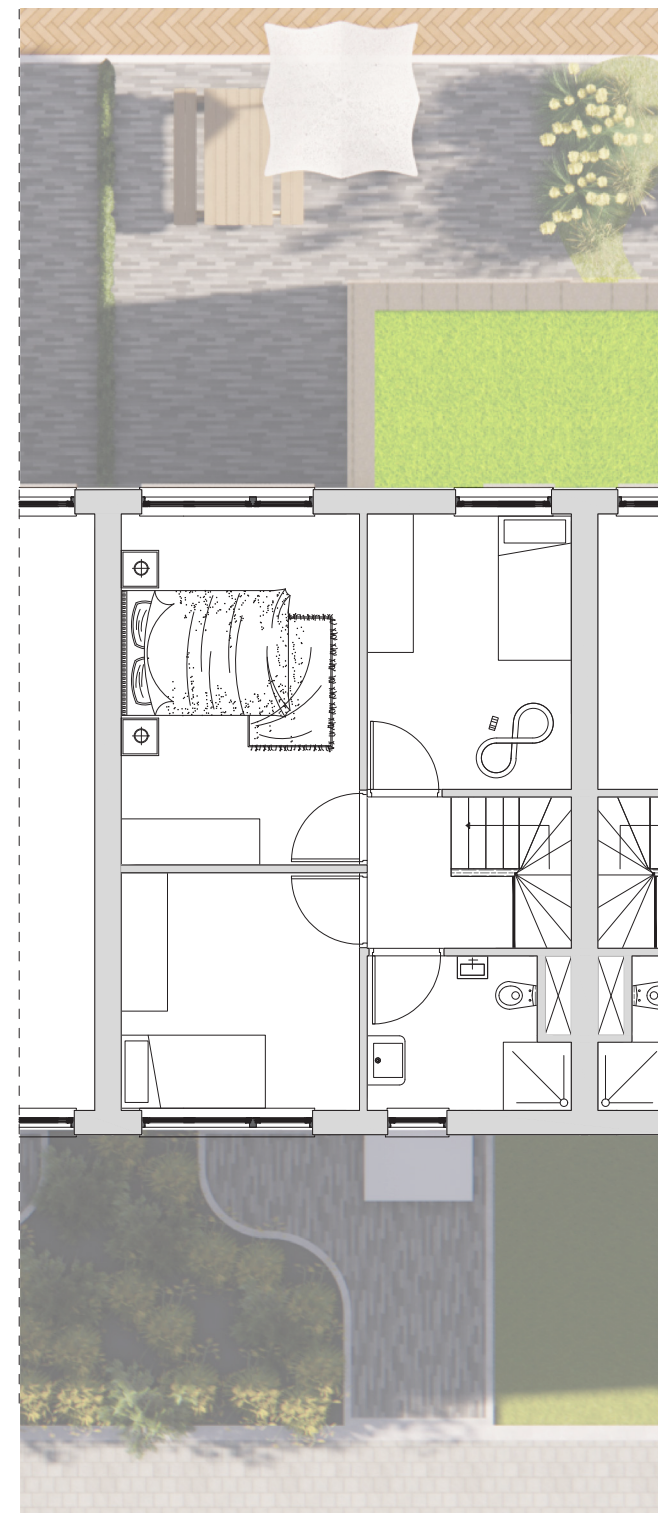
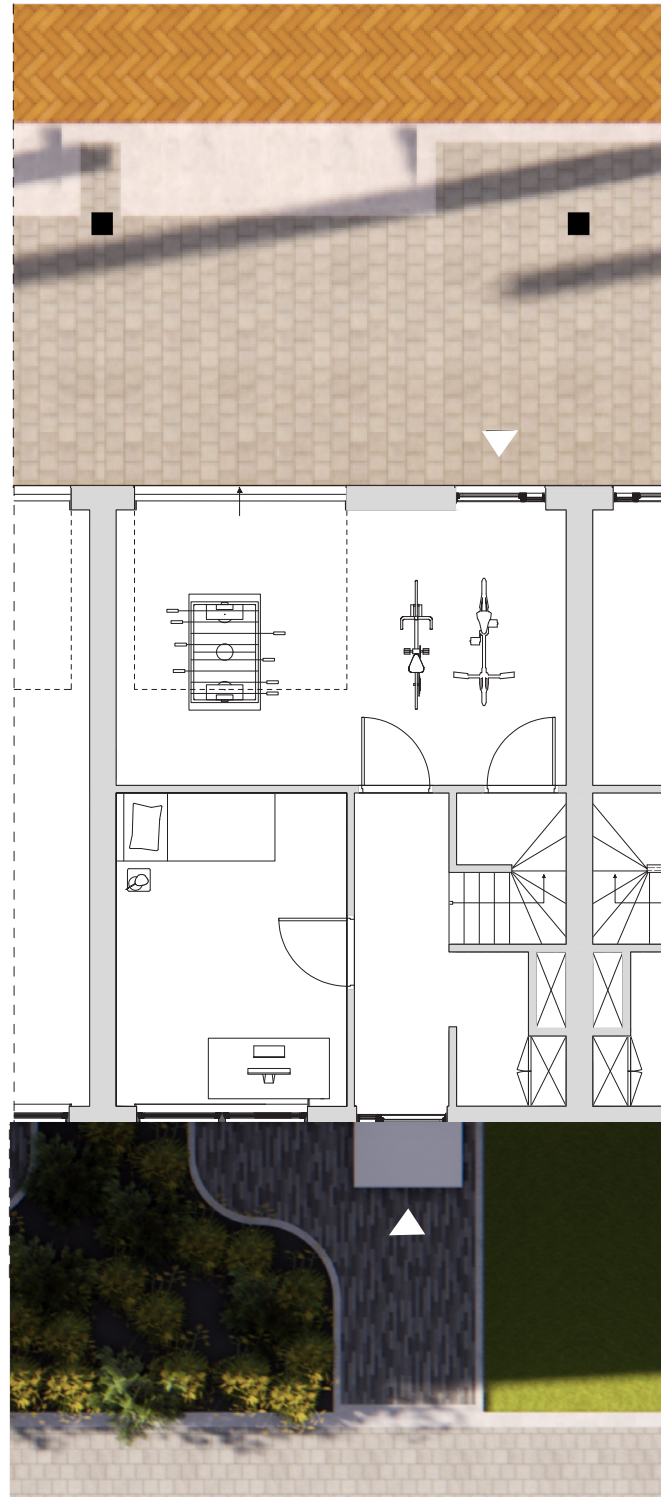


FLOORPLAN TYPE B DEMENTIA

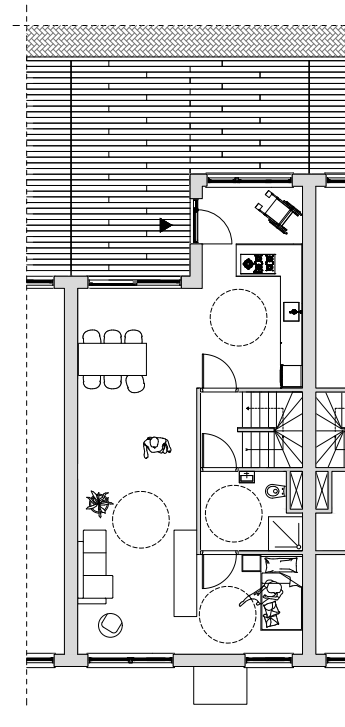
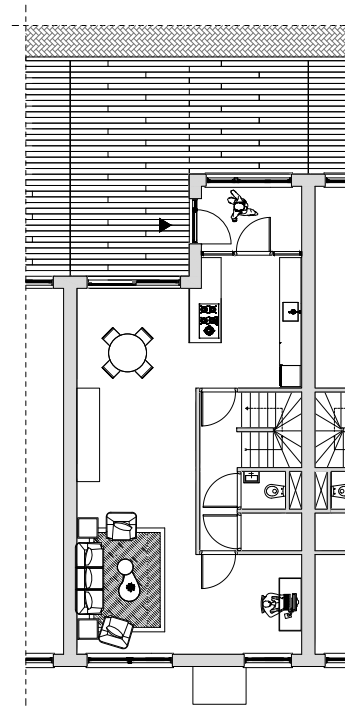
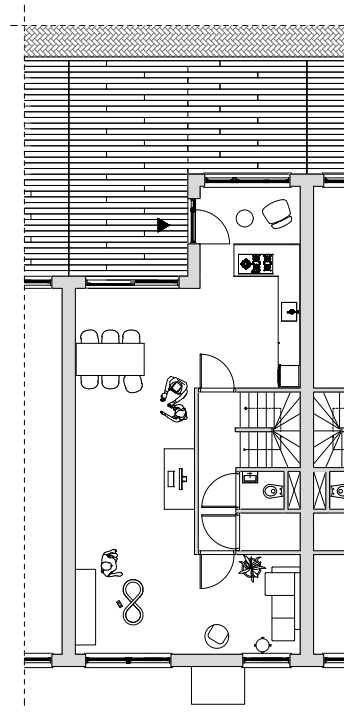
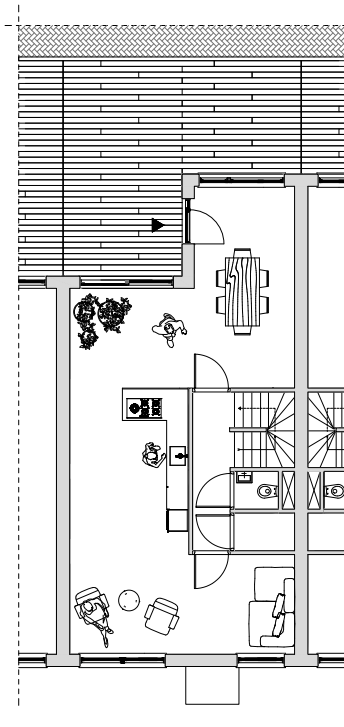
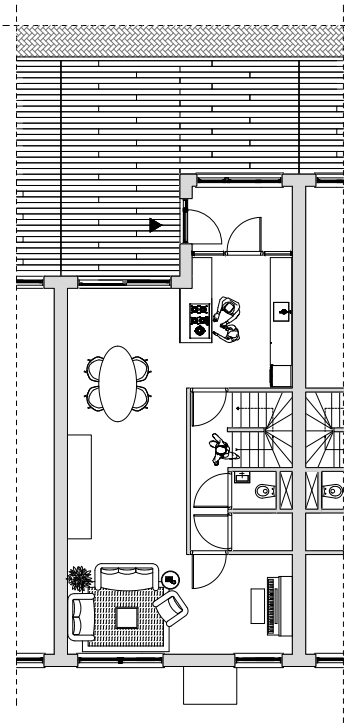
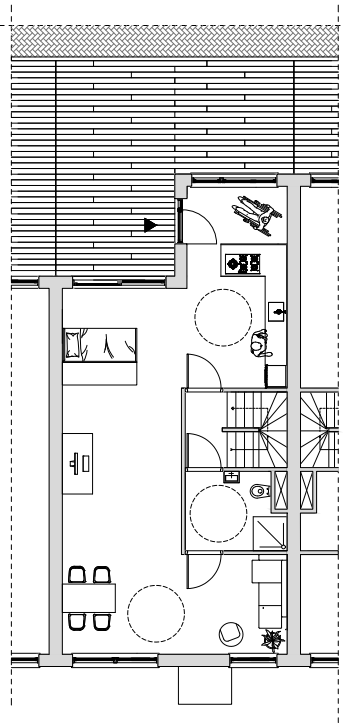




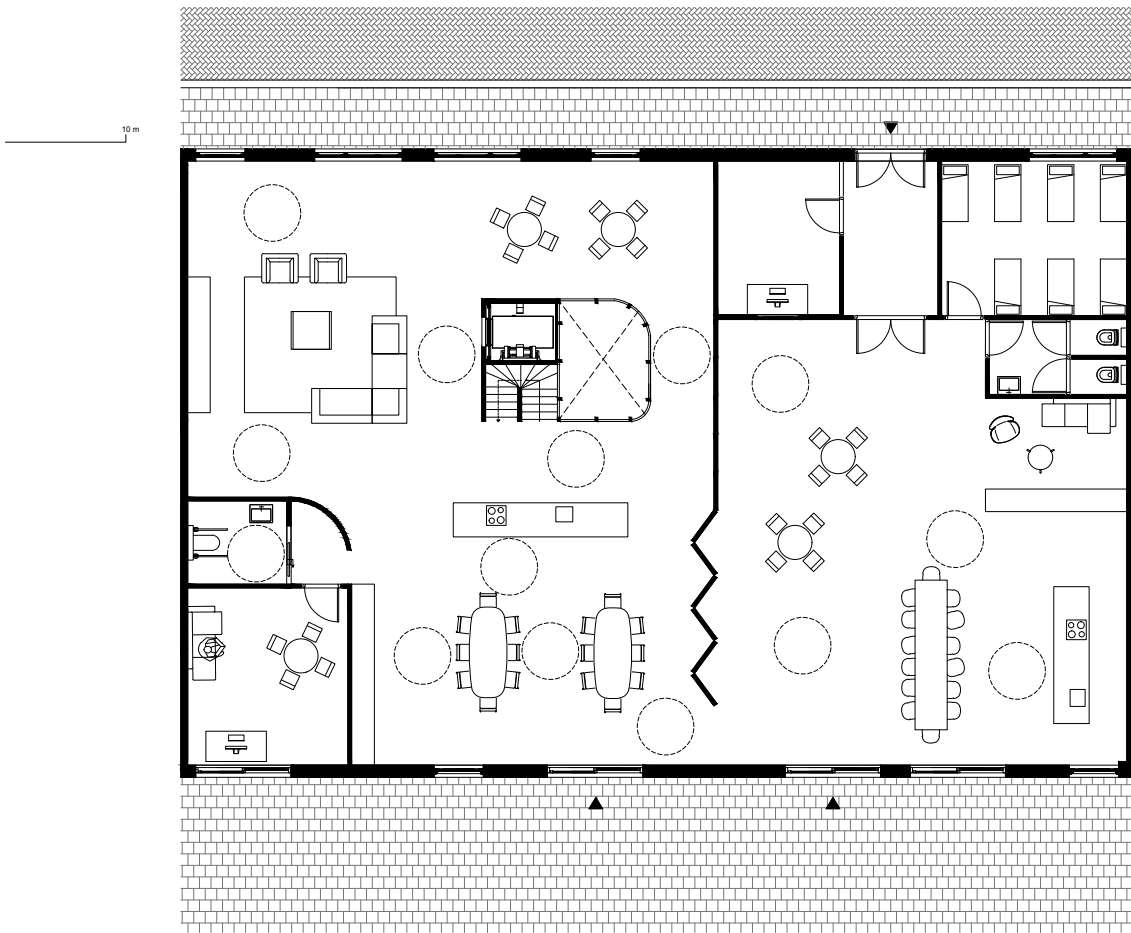
## FLOORPLAN TYPE B DEMENTIA



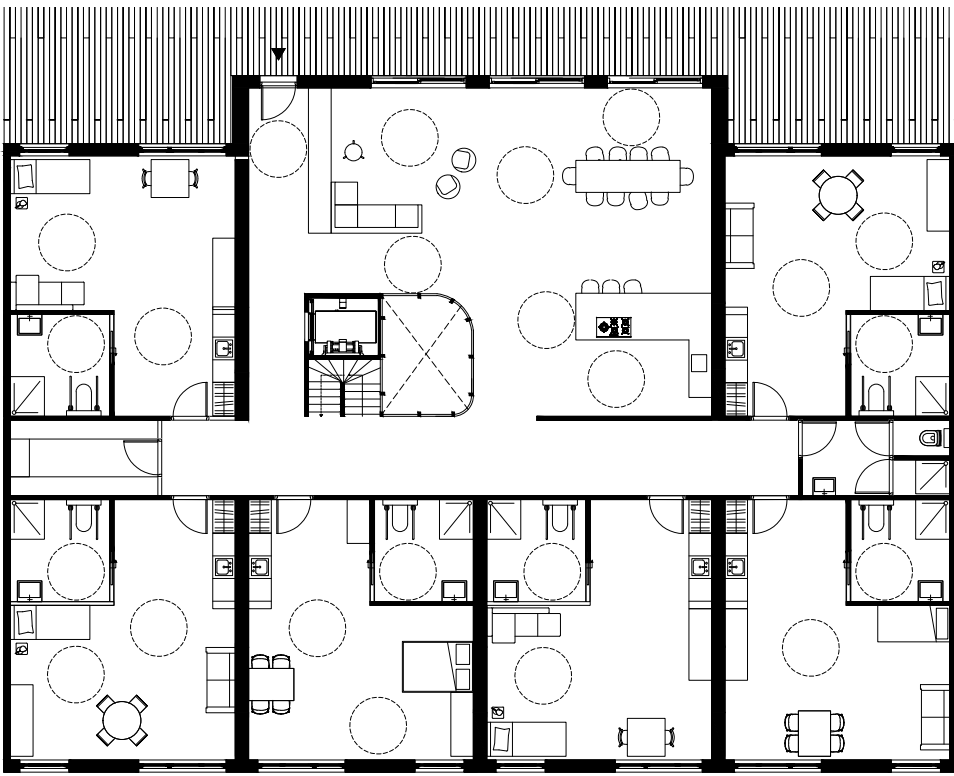
VARIATION FLOORPLAN FIRST FLOOR



FLOORPLAN GROUND FLOOR CAREGROUP 1:200

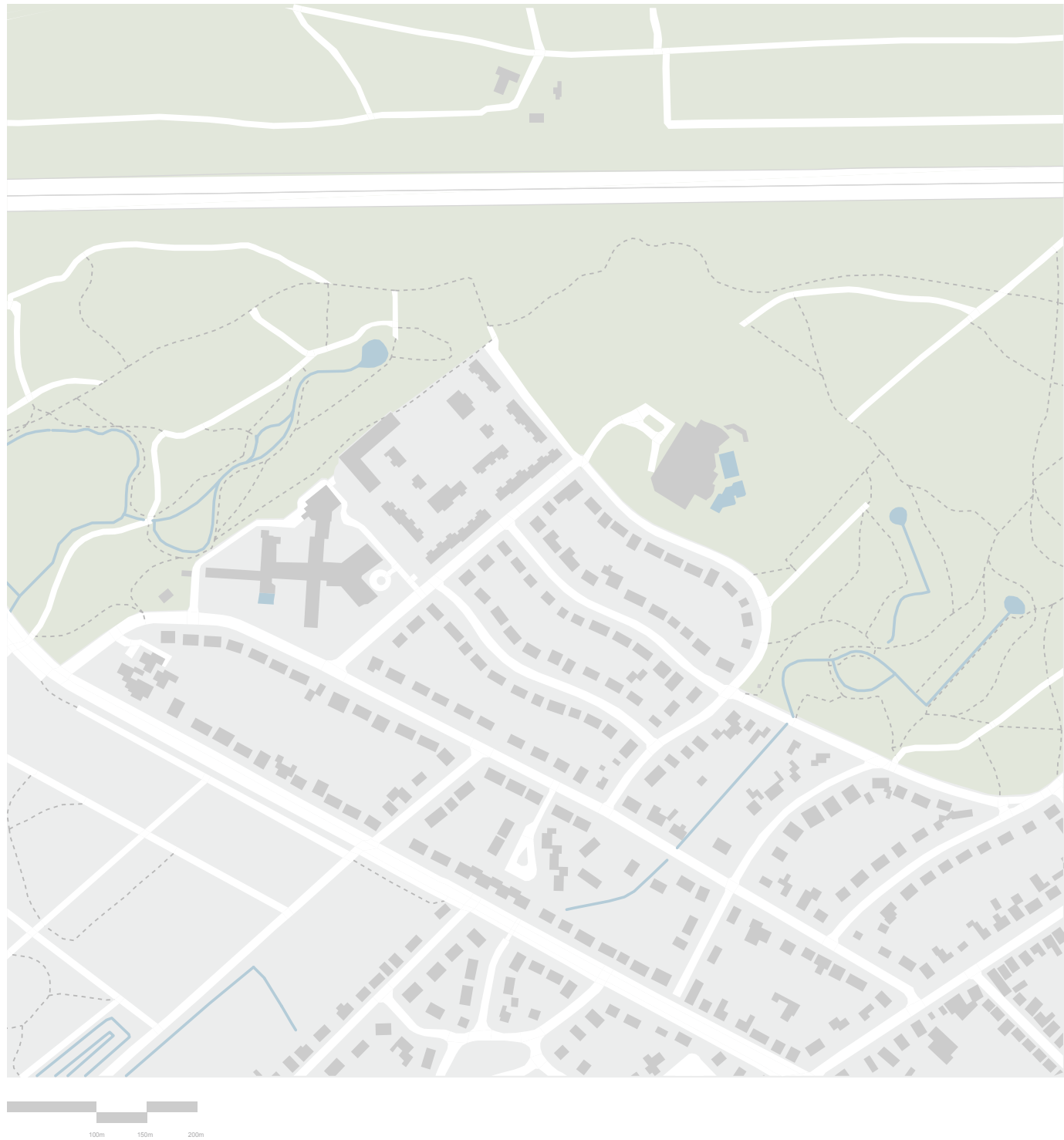


FLOORPLAN FIRST FLOOR CAREGROUP 1:200





## SITE





GROUND FLOOR 1:1000



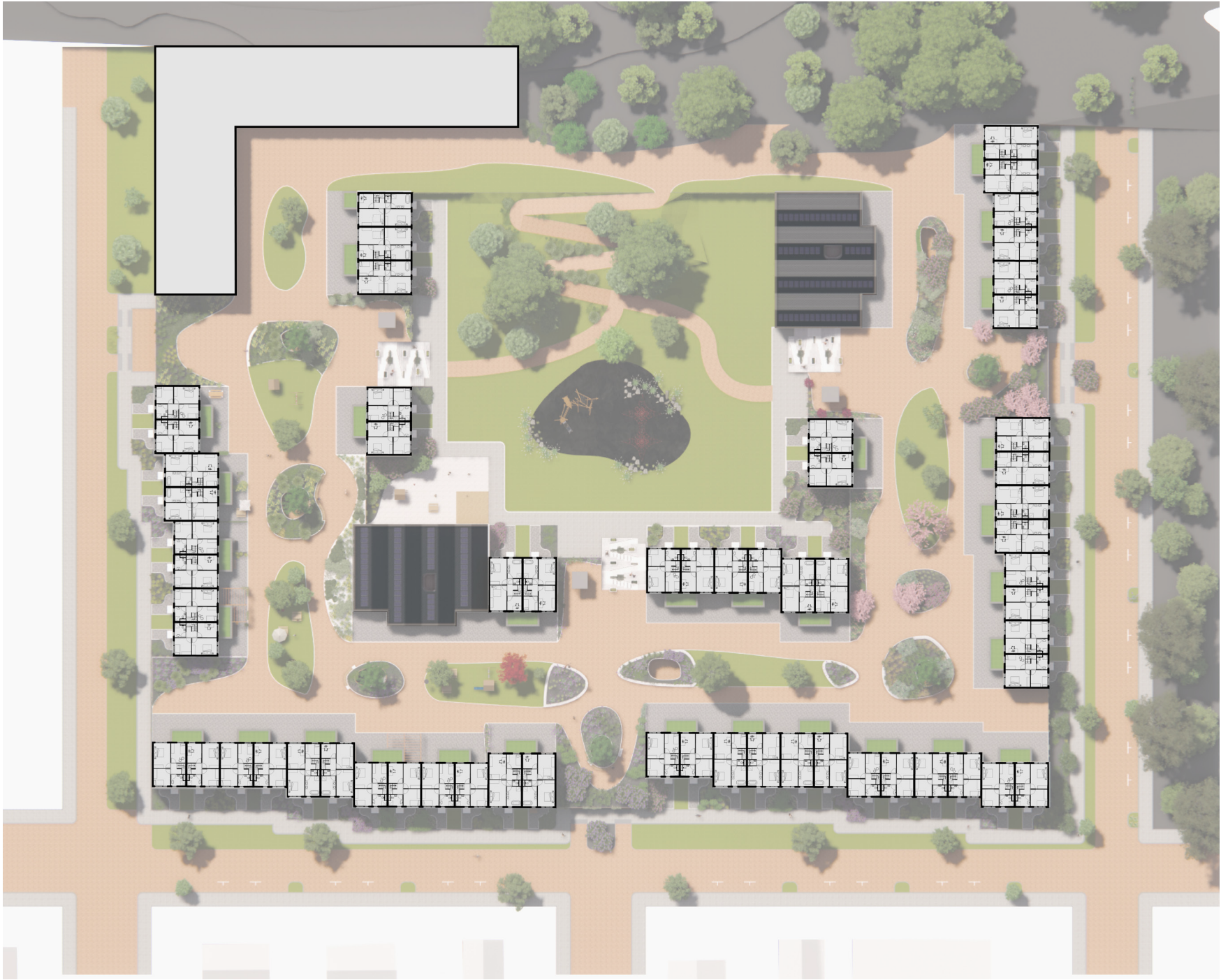


FIRST FLOOR 1:1000





SECOND FLOOR 1:1000





ROOF 1:1000



ELEVATIONS 1:1000



NORTH



EAST



ELEVATIONS 1:1000

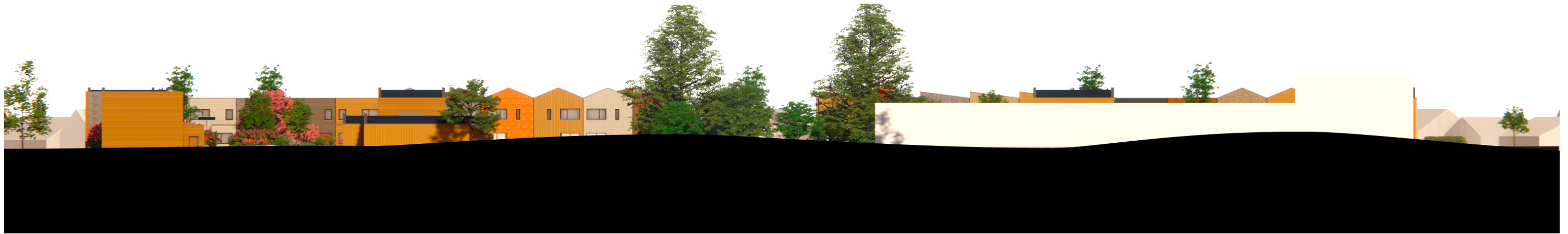


SOUTH



WEST

NORTH ELEVATION 1:500



EAST ELEVATION 1:500





SOUTH ELEVATION 1:500





SECTION A'A' 1:500



SECTION B'B' 1:500





SECTION B'B' FRAGMENT 1:100





SECTION B'B' FRAGMENT 1:100

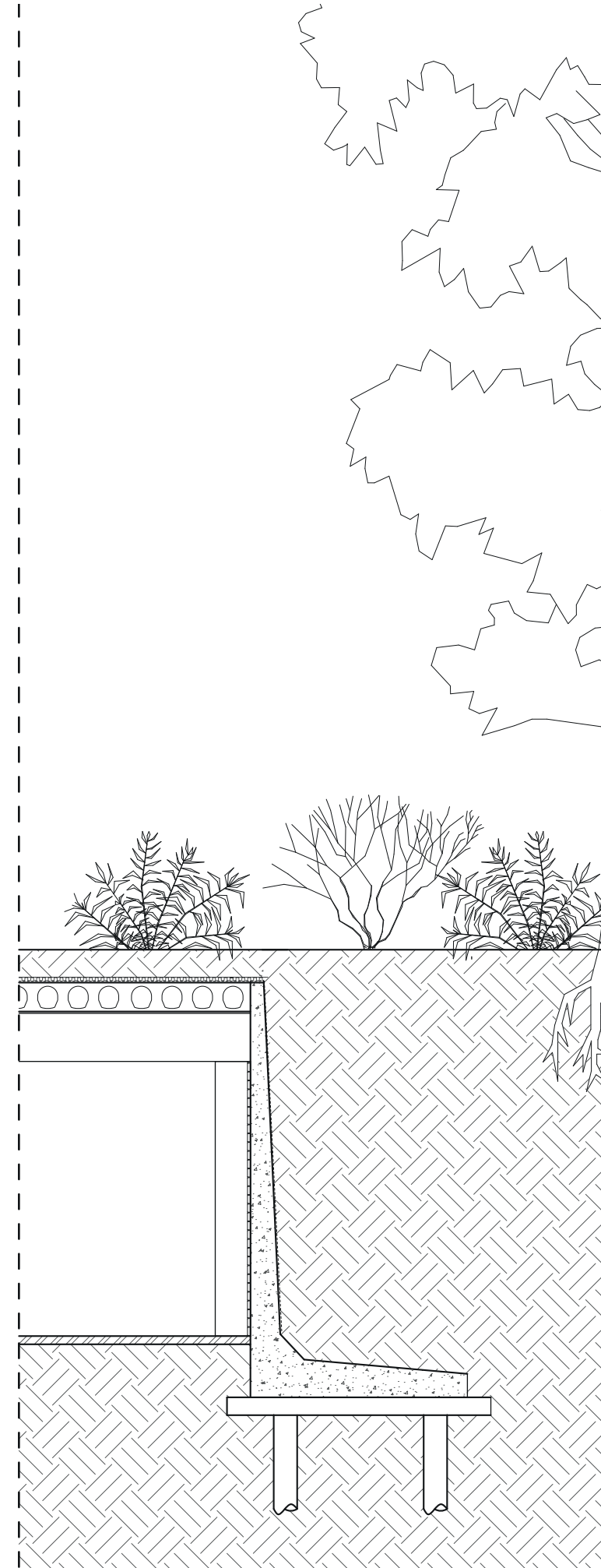
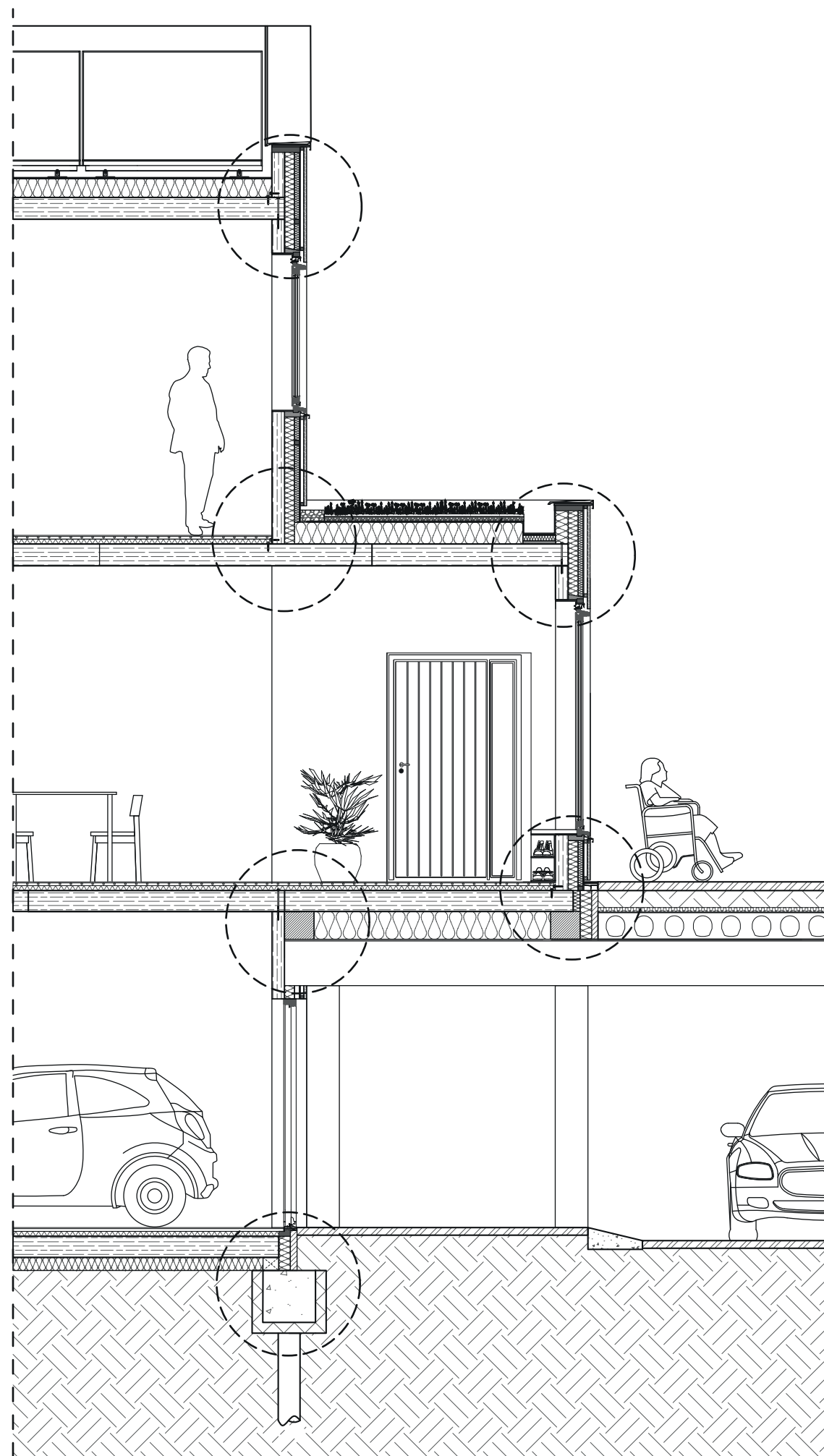




# 3.2

BUILDING CONSTRUCTION

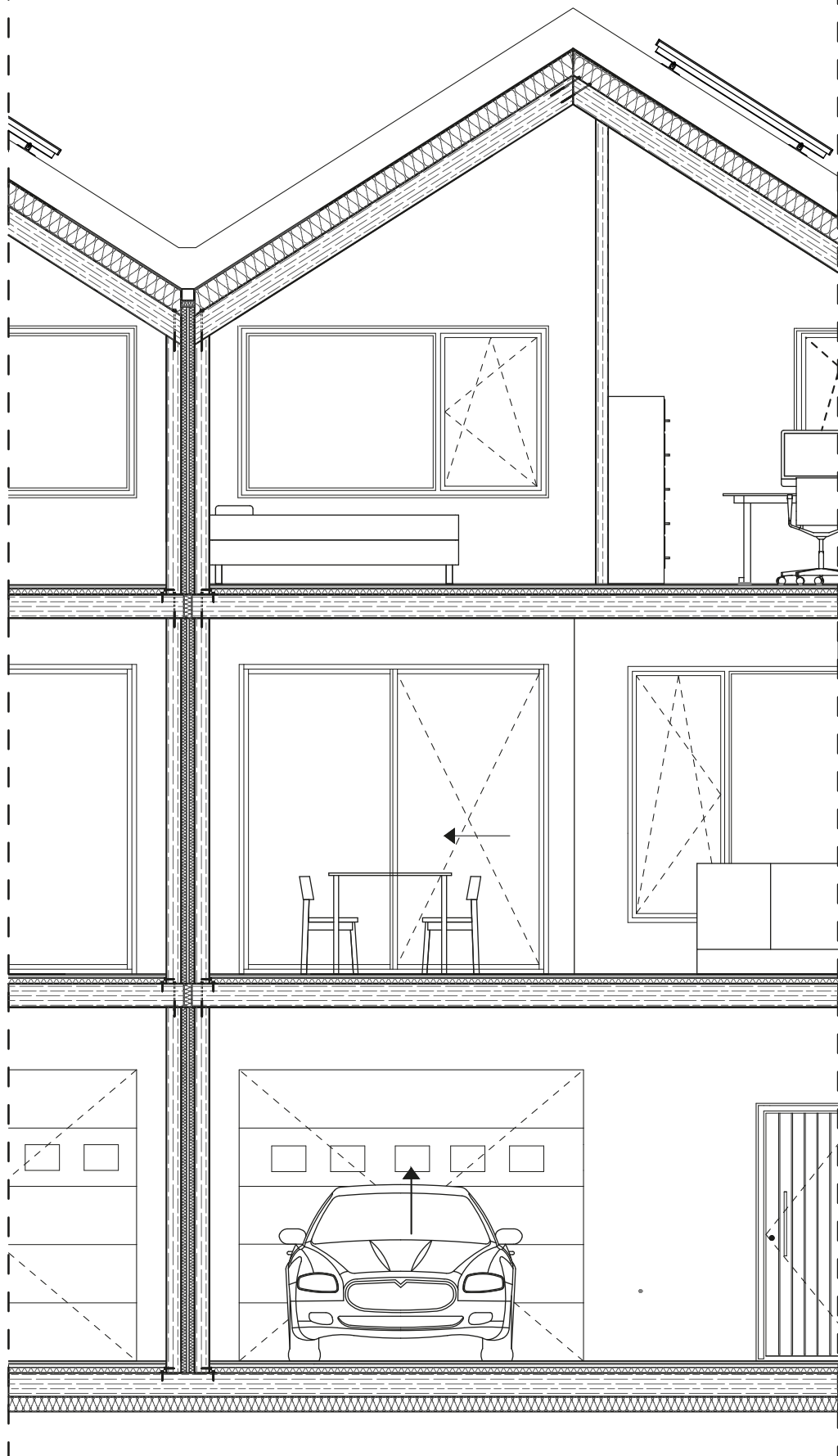
VERTICAL SECTION 1:50



FACADE 1:50

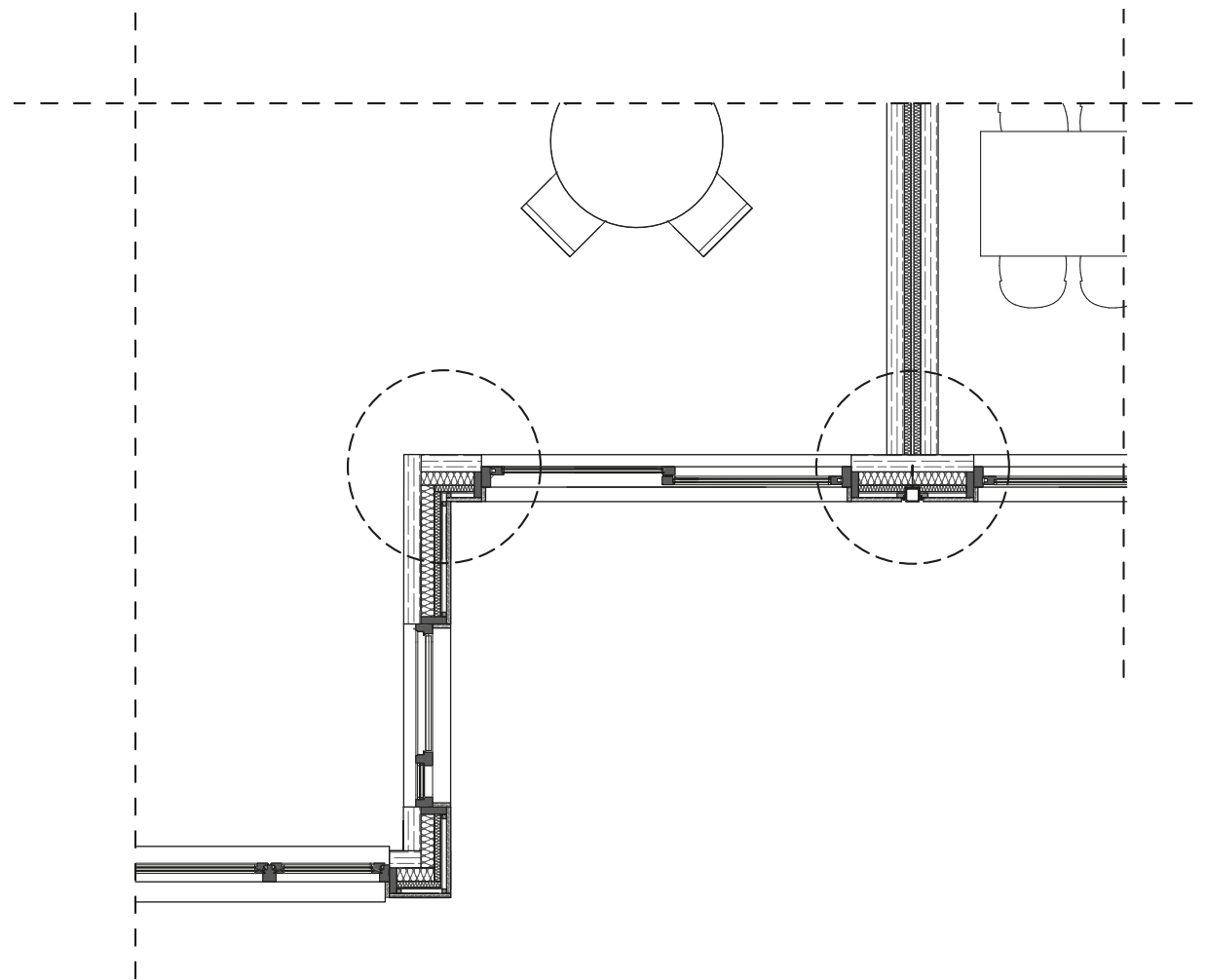


INTERIOR SECTION 1:50

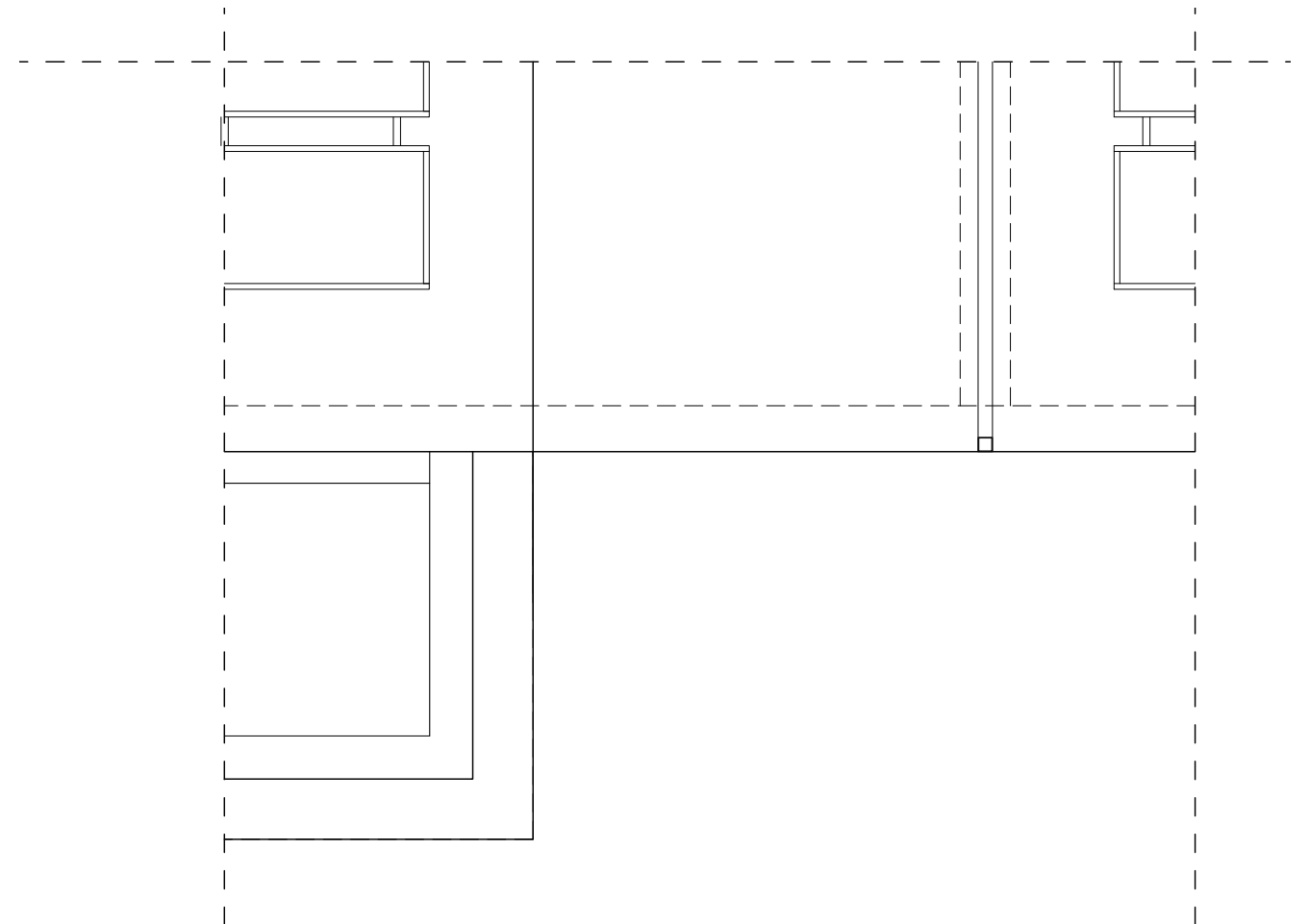




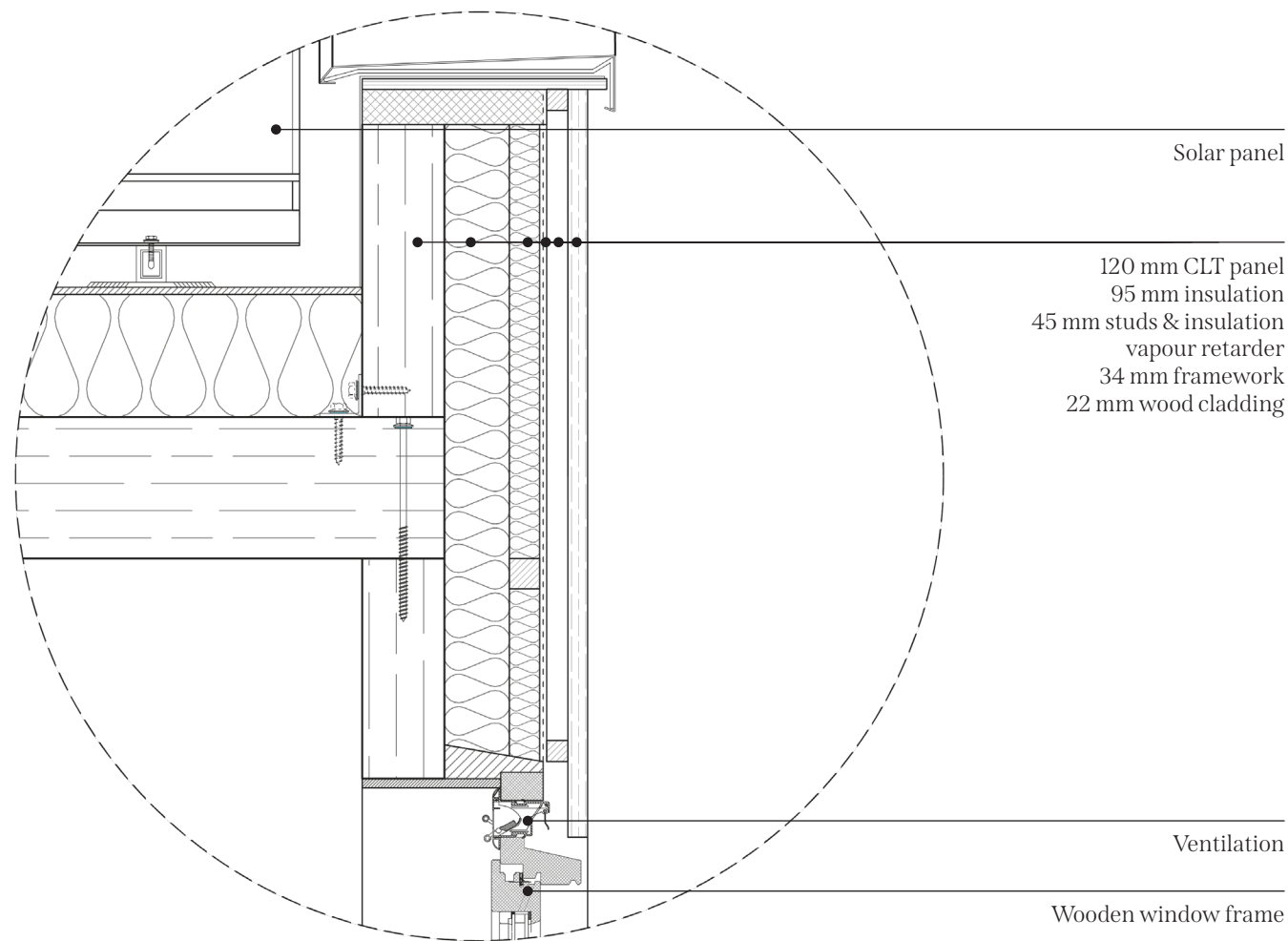
HORIZONTAL SECTION 1:50



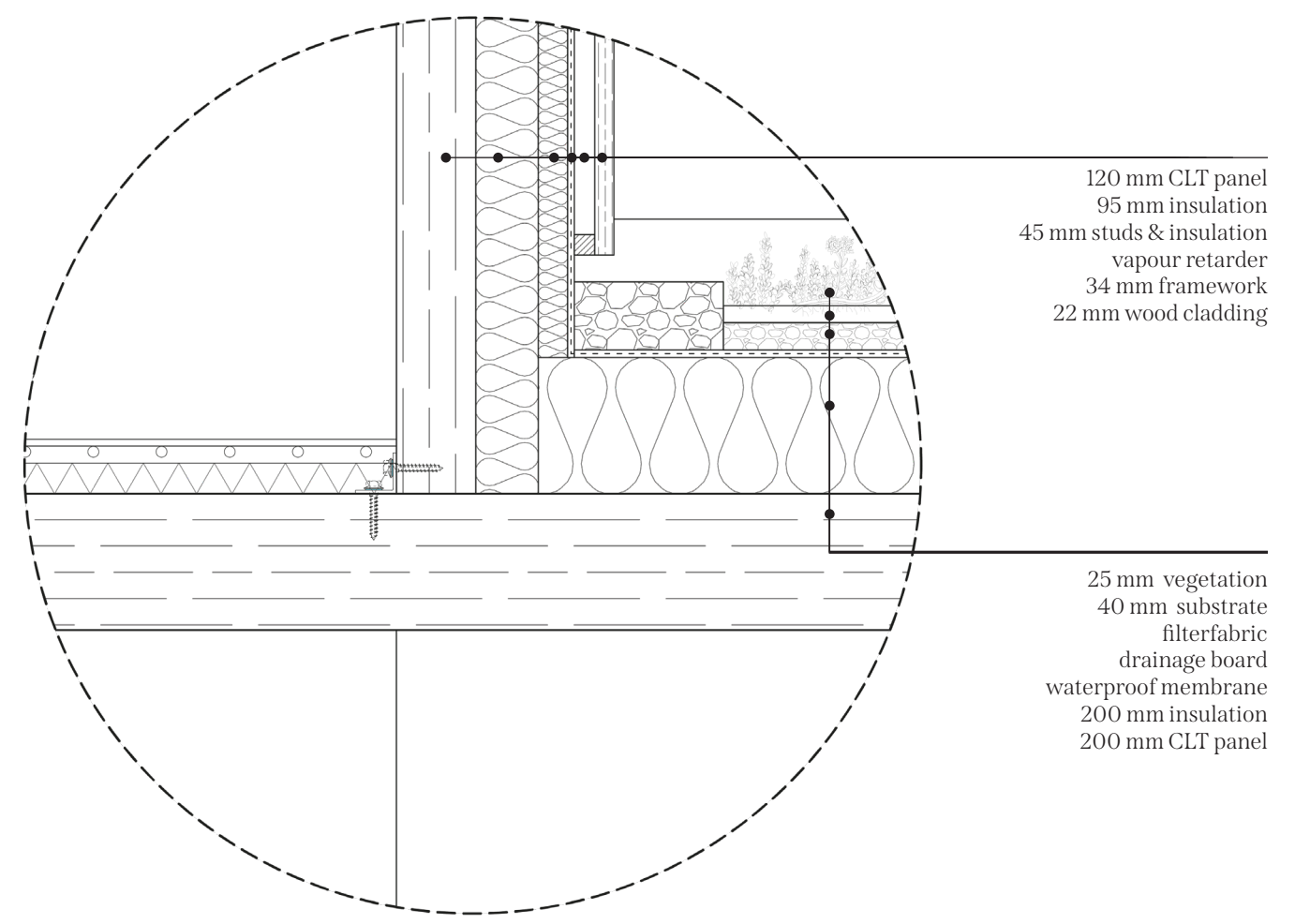
ROOF 1:50



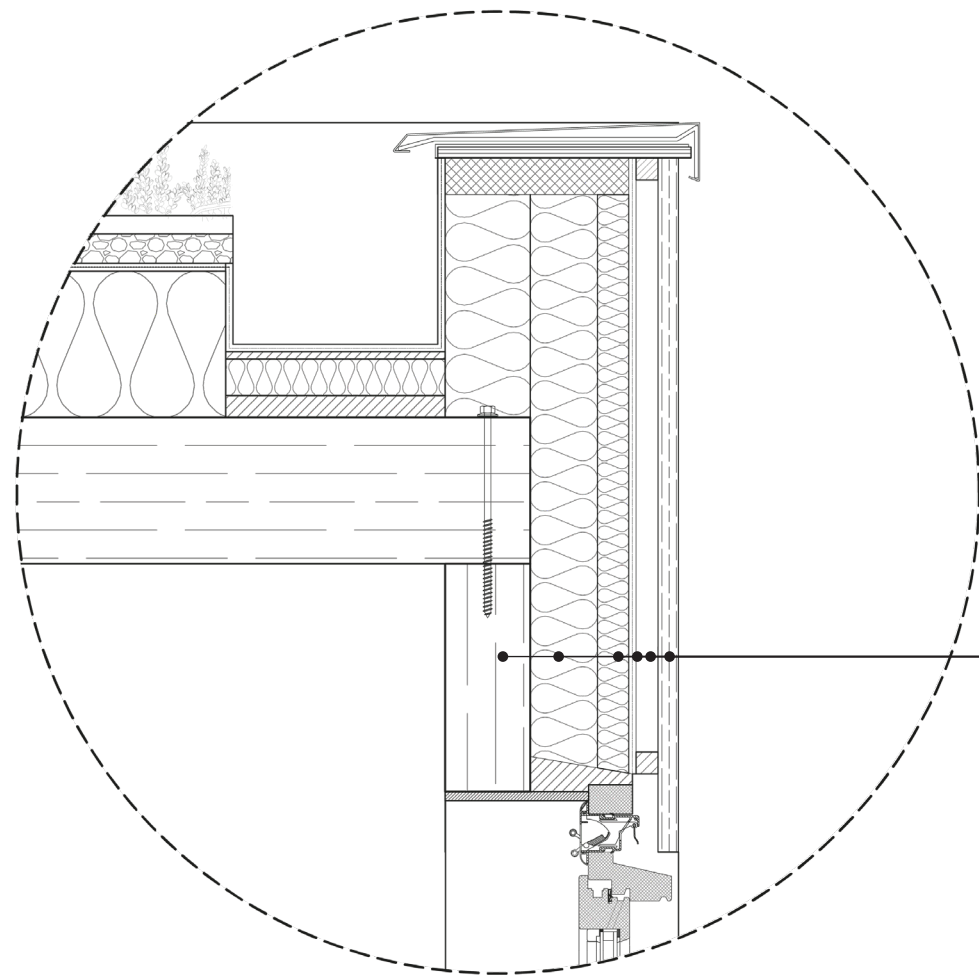
DETAIL 1 1:10



DETAIL 2 1:10

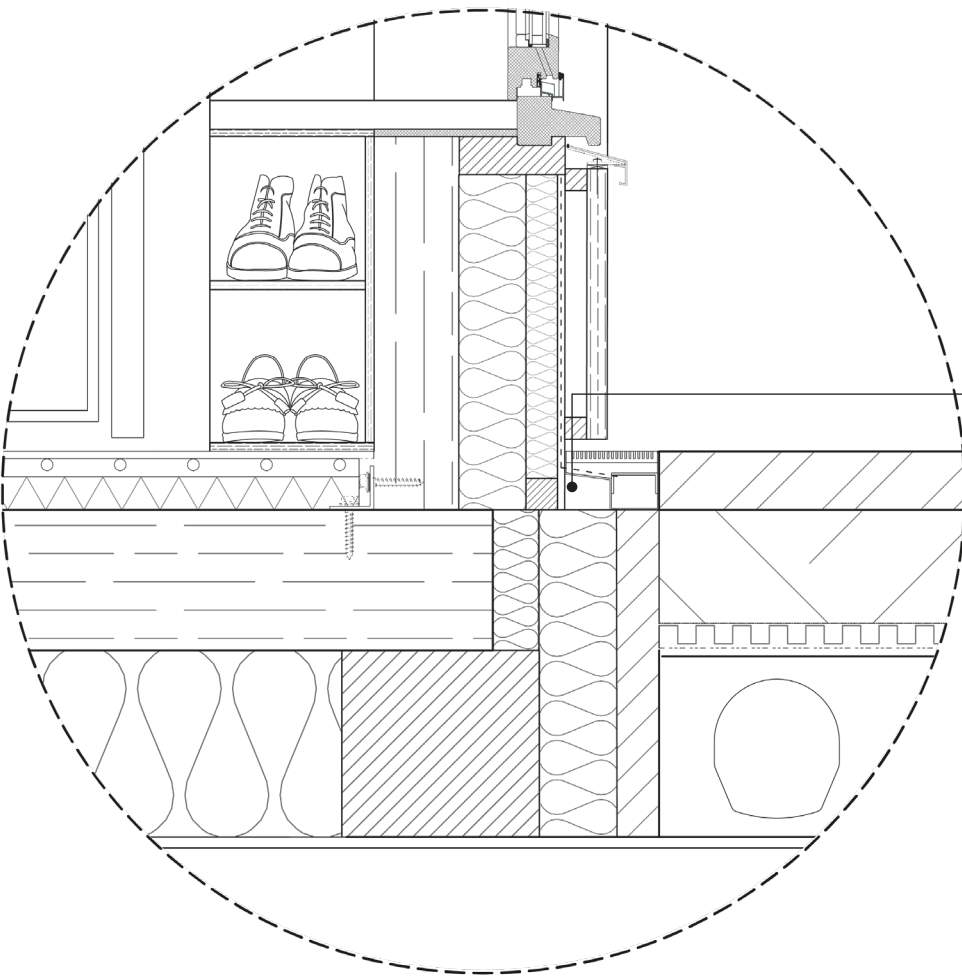


DETAIL 3 1:10



120 mm CLT panel  
95 mm insulation  
45 mm studs & insulation  
vapour retarder  
34 mm framework  
22 mm wood cladding

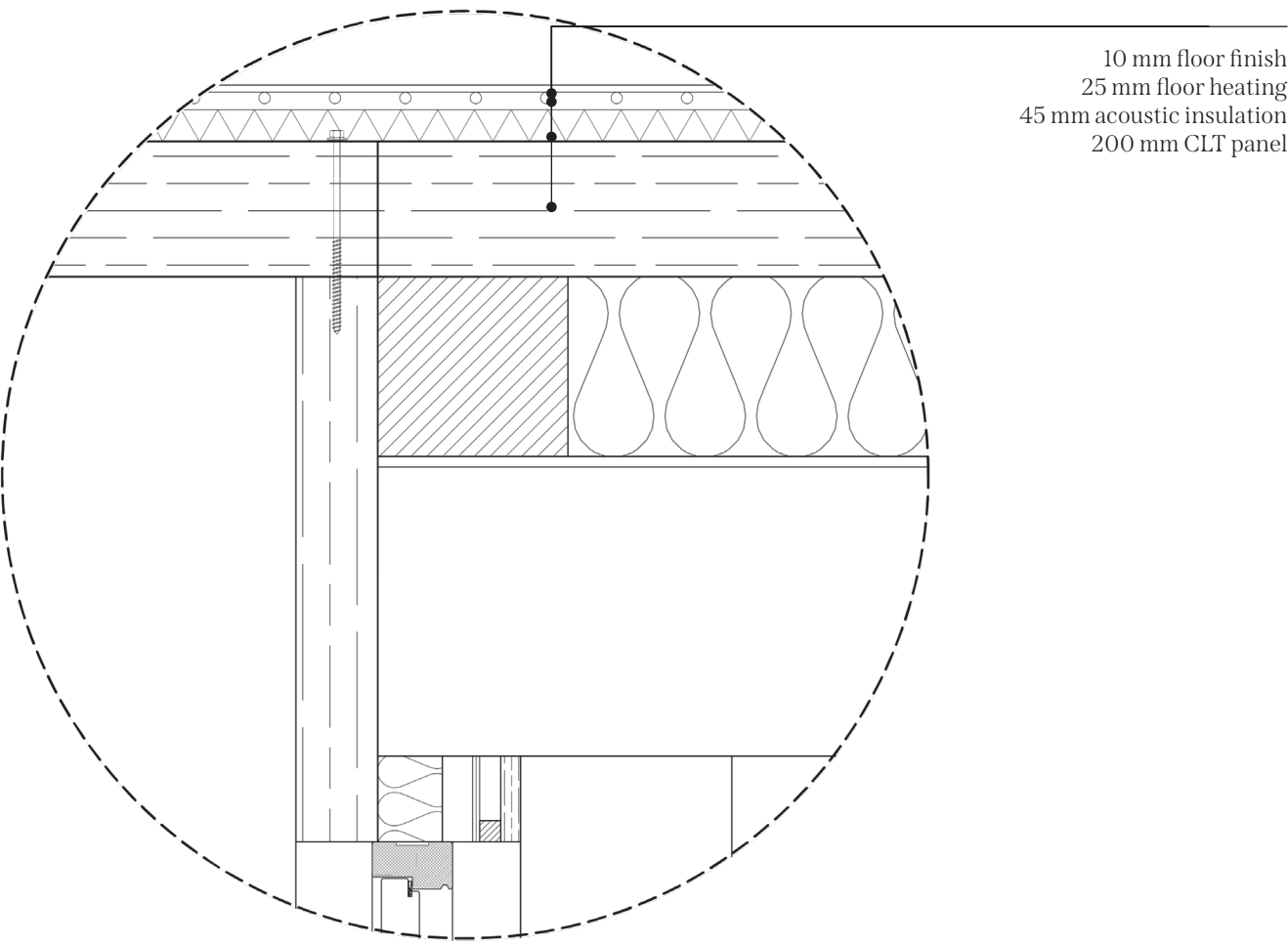
DETAIL 4 1:10



water drainage

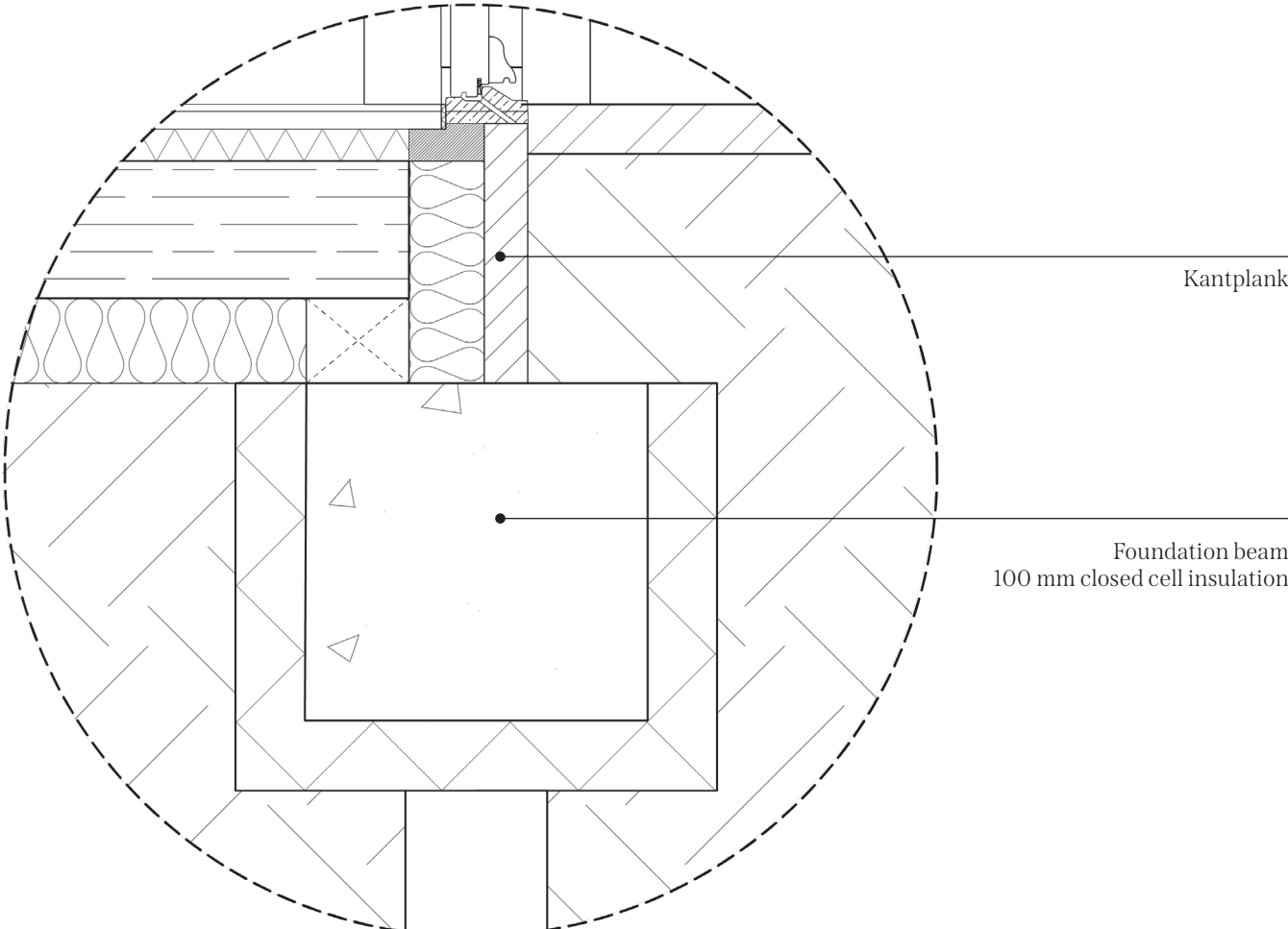


DETAIL 5 1:10



10 mm floor finish  
25 mm floor heating  
45 mm acoustic insulation  
200 mm CLT panel

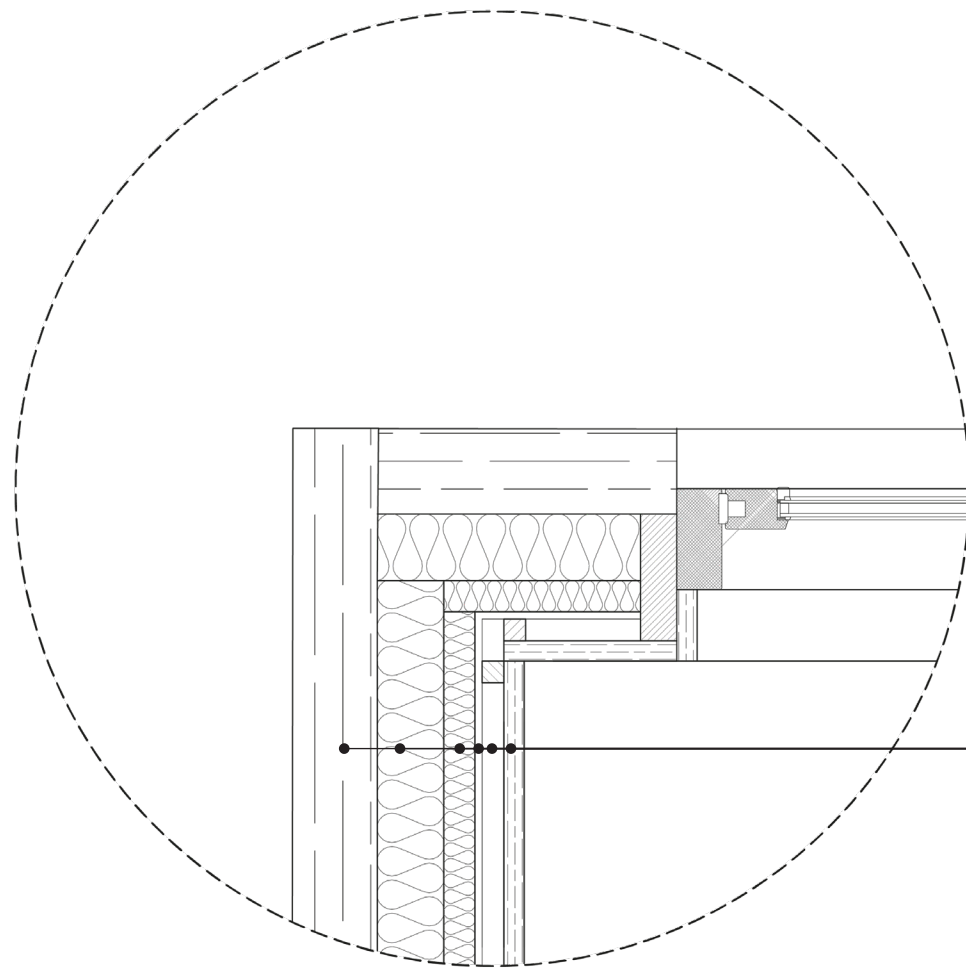
DETAIL 6 1:10



Kantplank

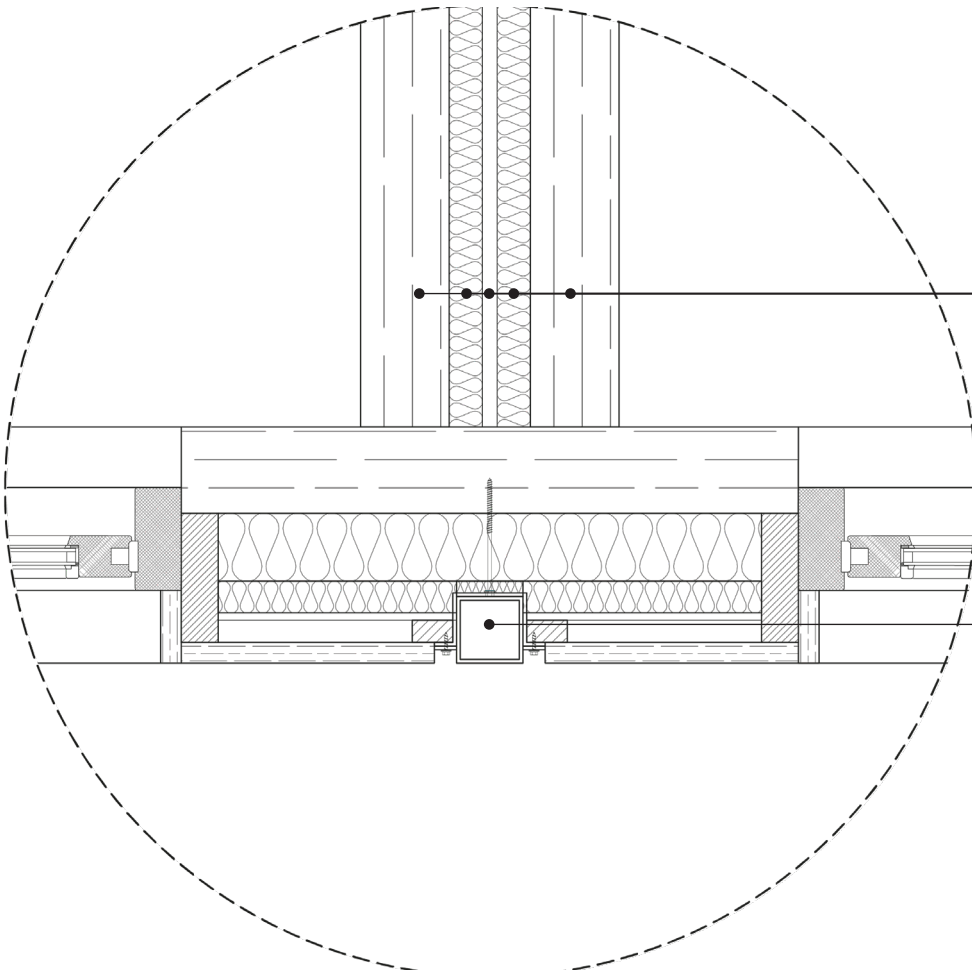
Foundation beam  
100 mm closed cell insulation

DETAIL 7 1:10



120 mm CLT panel  
95 mm insulation  
45 mm studs & insulation  
vapour retarder  
34 mm framework  
22 mm wood cladding

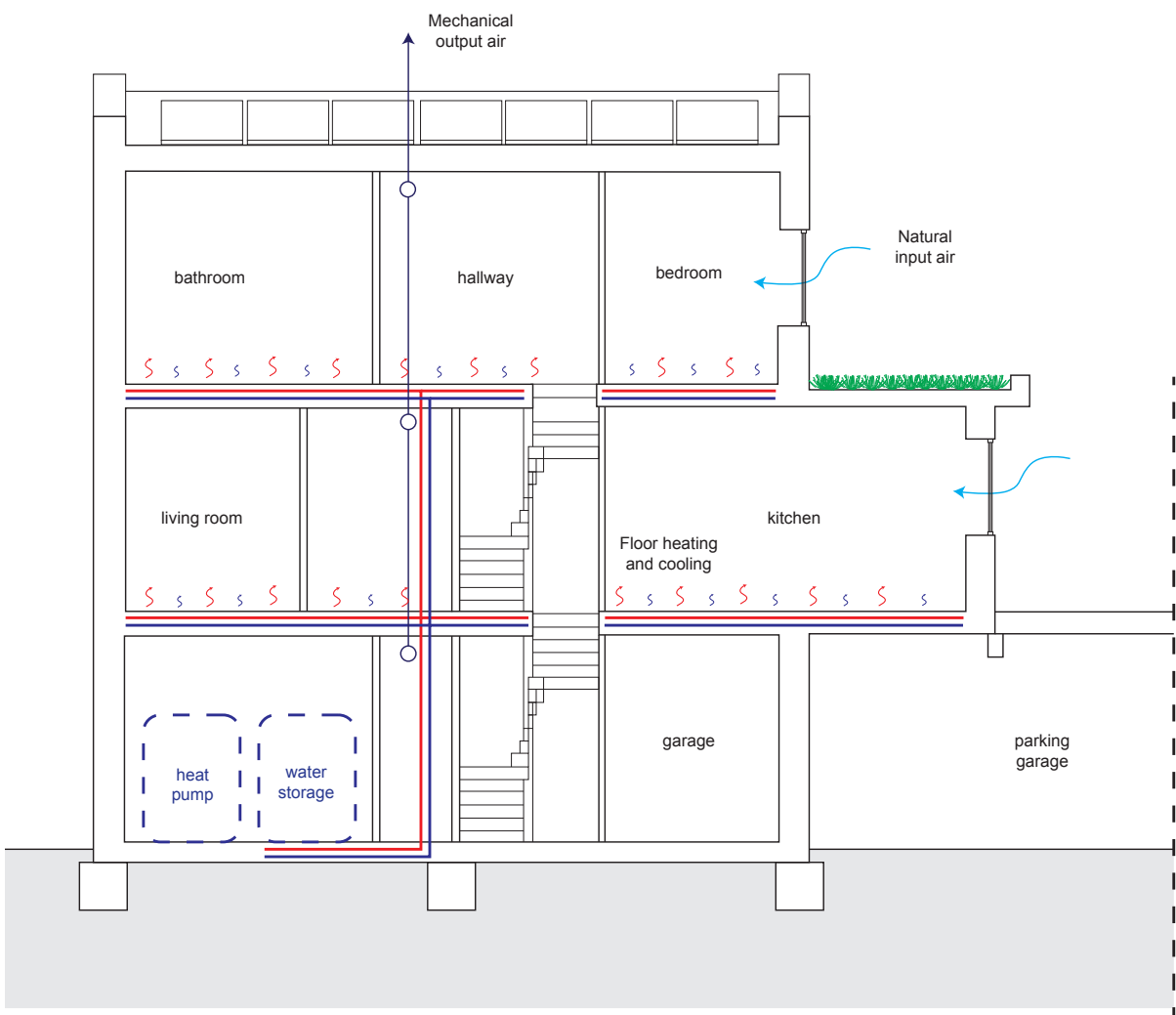
DETAIL 8 1:10



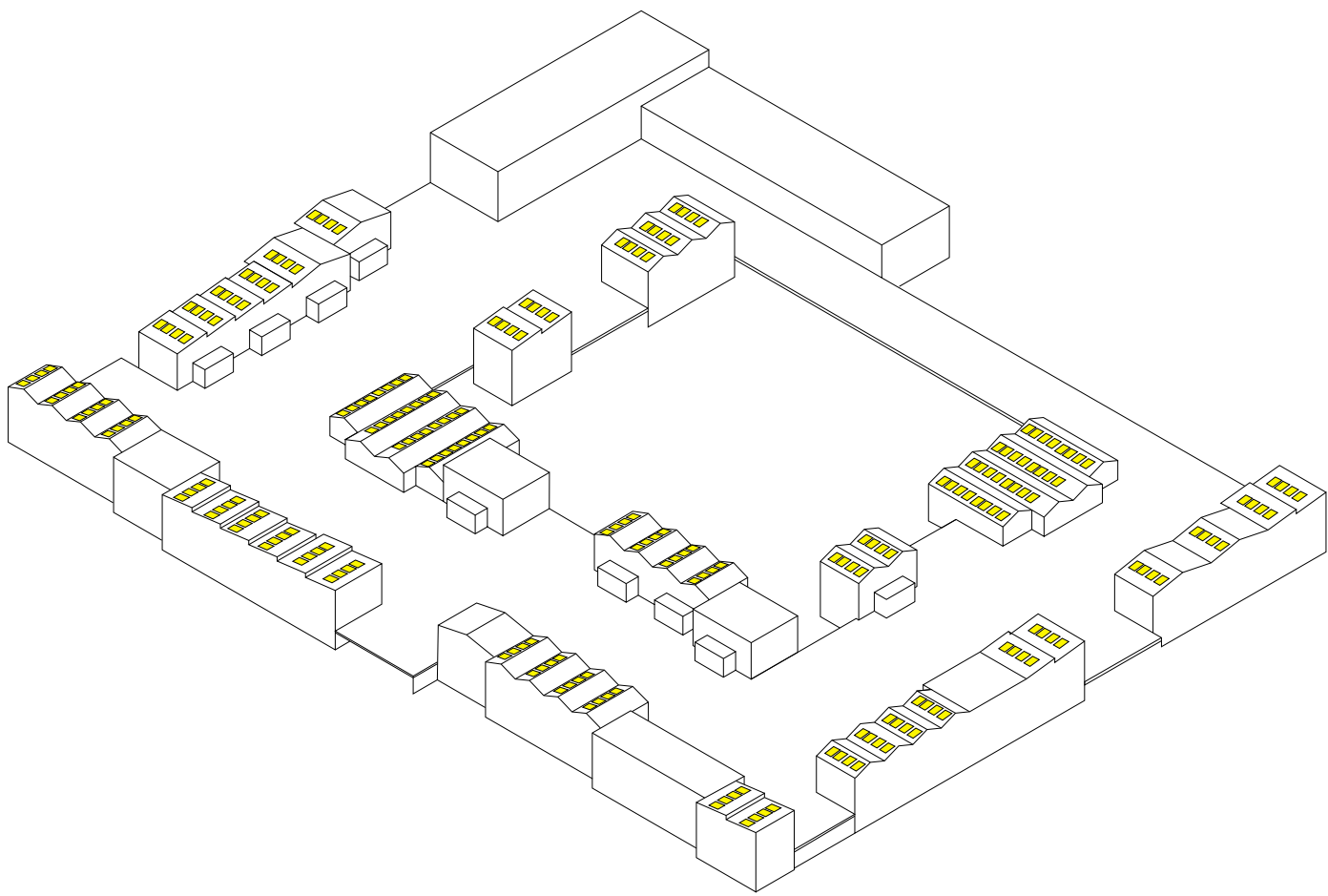
120 mm CLT panel  
45 mm insulation  
20 mm gap  
45 mm insulation  
120 mm CLT panel

hwa-afvoer

CLIMATE CONCEPT



SOLAR PANELS





## WATER

