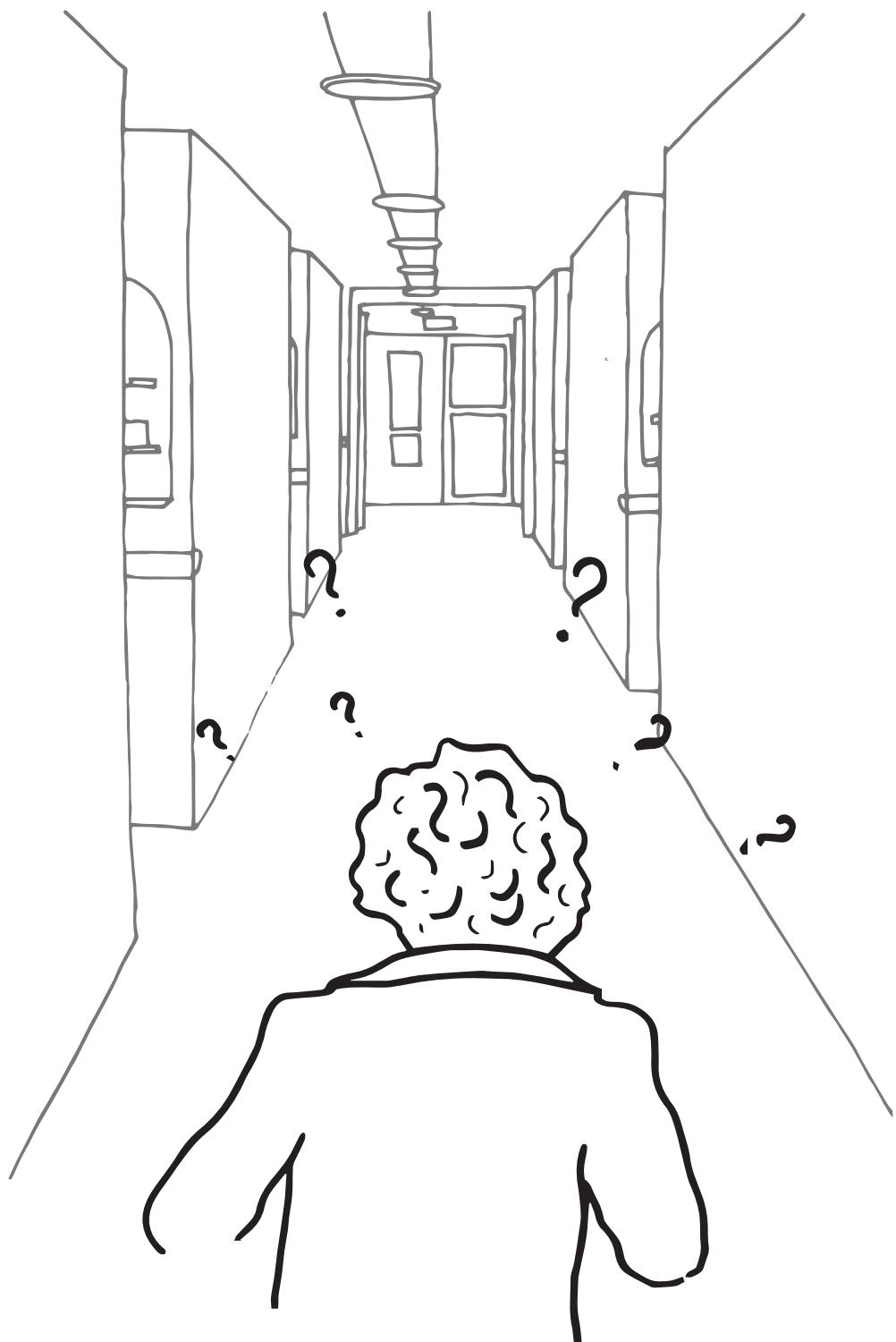


Designing for Care

Research book





Als ik de dingen niet meer weet.
Als ik de namen niet meer ken,
en al wat ik weet meteen vergeet,
zodat ik onherkenbaar ben.
Herinner mij dan, stralend in de zon,
vol levenskracht, toen ik alles nog kon.

- Will Stipsen

Colophon

Delft University of Technology
MSc Architecture, Urbanism and Building Sciences
MSc3 Dutch Housing Graduation Studio 2019-2020
AR3AD133 Designing for care

Student

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Preface

The Studio 'Designing for Care – towards an Inclusive Living Environment' focuses on the topic of the daily environment for the elderly who are in need of care. One of those elderly people was my grandfather. When I was 18 years old, my grandfather moved to a nursery home. He suffered from Alzheimer's disease which developed quickly from a light- to heavy version of dementia. This made a strong impression on me. The person he once was disappeared slowly.

The care facility where my grandfather stayed was very outdated. Although the building did not function optimal for people with dementia (designed with its long small corridors, small bathrooms and old-fashioned design), the care that was given was with great love, patience and respect for my grandfather. I admire those who took care of him, in this final stage of his life.

In the Master programme at TU Delft, we are expected to take our 'role' in the world of architecture. The last few years have made clear to me that designing for the vulnerable has become something I want to do. Besides participating in the Msc2 studio 'A Second Youth - towards an inclusive living environment', I also did an internship at EGM Architects where I helped designing several care institutions. Therefore, doing the graduation studio 'Designing for Care' is the best way to finish my Master studies at TU Delft.

Reading Itinerary

This graduation projects consists of two booklets. The first booklet, the booklet in front of you, is the research booklet. It contains the anthropological research conducted in the transformed elderly home Huis Assendorp and the additional research related to the research question *“To what extend can the concept of an open society help creating an architectural setting in which people with dementia no longer have to move to an enclosed care facility?”*. The research conducted leads to conclusions and design tools. These design tools are used in the design process. The translation of these tools can be read in the second booklet of this graduation project: the design booklet.

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1. Introduction

This studio focuses on the topic of elderly who need care and how they will live in the future. In the Netherlands our current built environment is not suited for the challenges our aging society will bring upon us. The main question of the studio is: *'How do we want to live when we are old and when we need care and what kind of buildings and neighbourhoods do we need to make that possible?'* In this studio students are encouraged to develop new concepts for dwellings and neighbourhood that include the vulnerable elderly instead of excluding them from society.

The amount of elderly in the Netherlands will increase significantly in the upcoming years. According to the CBS (2018) by 2030 a quarter of the Dutch population will be aged 65 or older. Due to the growing number of elderly people, the number of elderly people with dementia is also increasing. Where in 2018 'only' 270.000 people suffered from dementia, this is expected to be over 620.000 people in 2050 (Alzheimer Nederland, 2018). An increase of 230% !

When suffering from dementia, in the Netherlands, you have to live at home as long as possible (due to the separation of living and care). As soon as the person 'poses a danger to herself', she has to be transferred to an enclosed care facility where she will spend the last phase of her life. For someone with dementia, moving is catastrophic and can even aggravate the disease process. In addition, someone who is sick does not have to be deprived from her freedom.

The current built environment does not respond to the needs and desires of elderly, especially for those who suffer from dementia. Therefore, we have to look into new living concepts that will fit the needs of the elderly, now and in the future.

During the fieldwork week, I stayed in Huis Assendorp in Zwolle. There I met a woman named Erica. Erica is suffering from dementia. Because of her dementia she had to move to an enclosed care facility and I thought this to be very unfair since Huis Assendorp supposed to be a living environment

where you could stay for the rest of your life. This was an issue that I wanted to get involved with, which led me to the following research question.

*“To what extend can the concept of an **open society** help creating an architectural setting in which **people with dementia** no longer have to move to an **enclosed care facility**?”*

My goal is to develop a new concept where people can live until they die, even when they suffer from dementia. A design where people take care for each other and where people with dementia are seen as a valuable part of society, instead of a prisoner or a helpless child; an inclusive environment. Of course, architecture alone cannot create this. A different mindset is needed of the co-residents, caretakers and society. Yet, I strongly believe that architecture can create (and is essential in creating) the preconditions that make such a caring concept possible.

My design assignment is to design an open society where people can live until they die, even when they suffer from dementia. To make this possible, research is a key element before starting my design process. The research in this booklet is structured as follows: In the first part the observations, analysis and conclusions of the fieldwork are shown. This led to the first design tools for my design. The second part describes what is meant by an open society and which design tools should be taken into account. The third part provides a descriptive overview of dementia, the disease and its meanings for architecture. For this part not only literature is consulted but also two case-studies are investigated. Afterwards I looked into what an enclosed care facility is. For the Dutch housing tutorial I wrote a paper about Healing environment for elderly. In the fifth part I will share the main conclusions of my findings. The full paper can be read in Appendix A. Finally I looked into the design location.

All the findings in this research booklet will result in tools for my design.

2. Research Methodology

The way the research for my design is conducted is as follows. The research started with an anthropological research during the fieldwork week. To get acquainted with the way elderly live now, Habion arranged that we could stay for a week in Huis Assendorp in Zwolle, a transformed nursing home. To record the lives of the elderly, different methods were used; observing, sketching, narrative mapping, conducting interviews with residents and care takers and taking photographs.

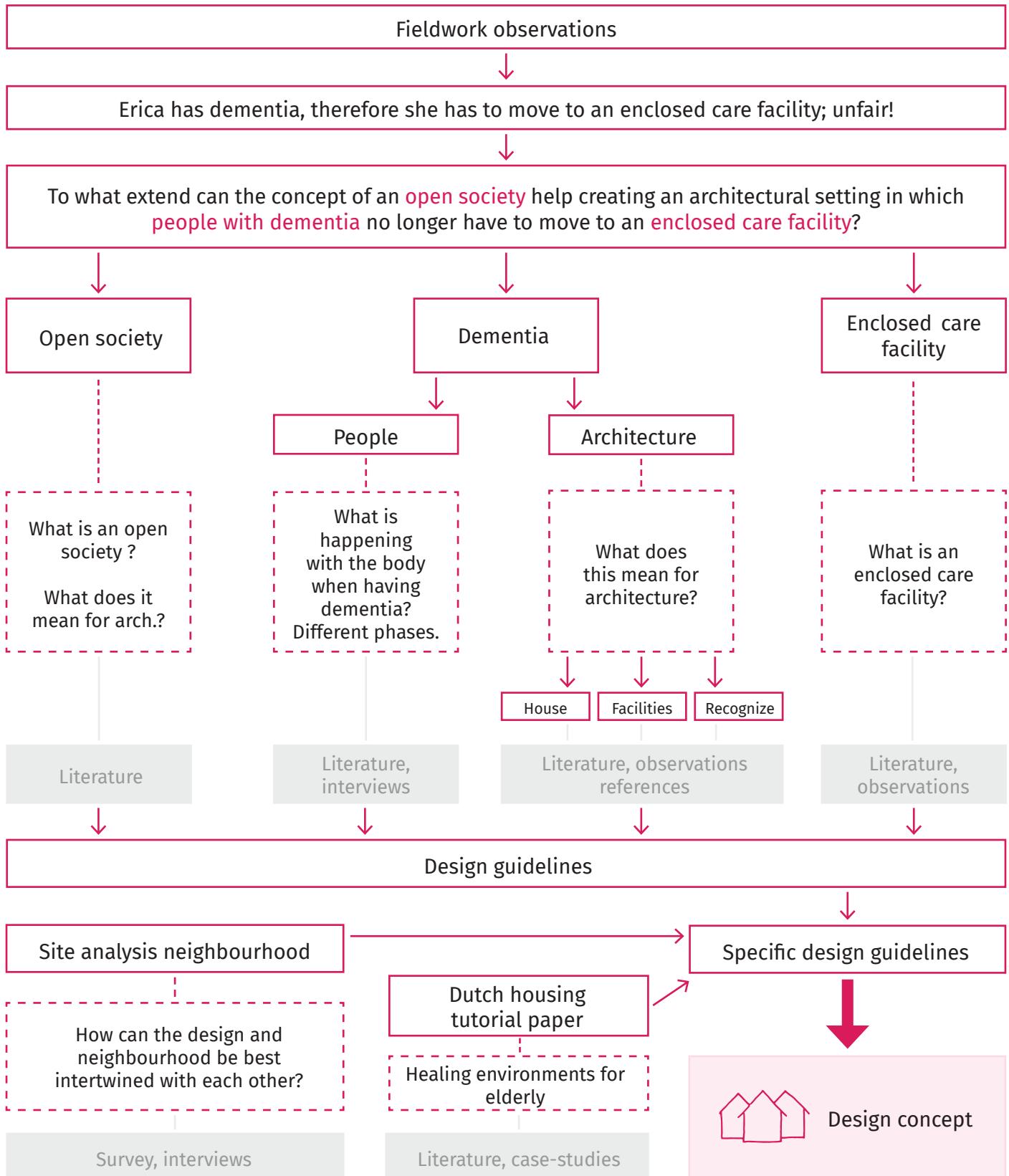
Further research was conducted by using literature, not only from the field of architecture but also from urbanism, healthcare etc. Also a few case studies were studied.

To give a clear overview my research strategy the scheme on p.13 was made. In this scheme the relations between the different research topics are shown and how they will result into design guidelines for my design concept and later on; the final design.

The research therefore forms an essential theoretical framework for the decision making in the design process.

Research strategy

“Towards a dementia proof society”





3. The story of Erica



Erica lives in Huis Assendorp. Since a while she is suffering from the first symptoms of **Dementia**. She is oblivious, confused and wanders through the hallways at night.



Erica lives together with her **dog Dushi**. Due to her symptoms she forgets to let her out every now and then. Luckily other residents from Huis Assendorp will pick up Dushi to let her out.



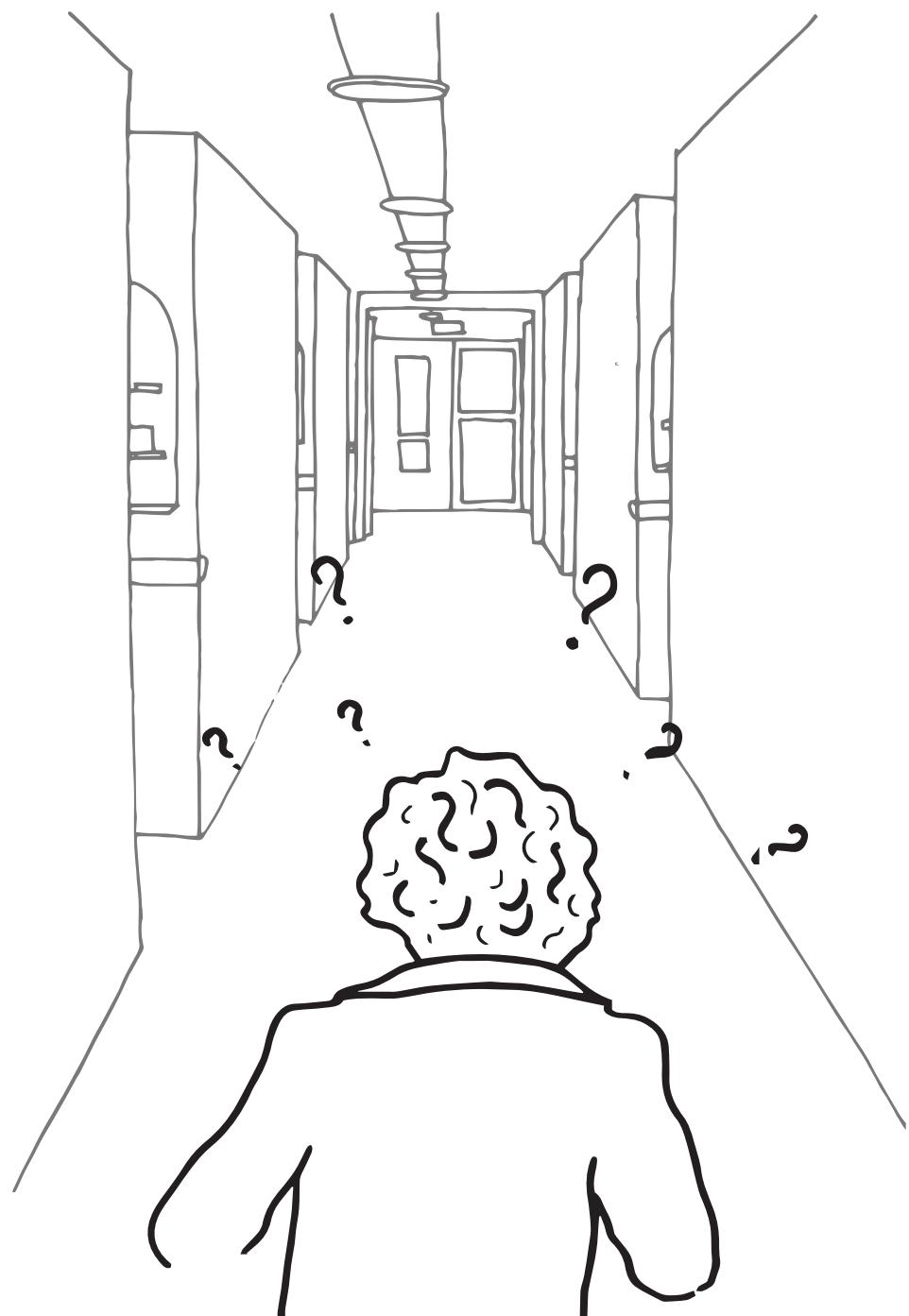
Erica had lost her **keys**. After searching and wandering for hours, they were found in her **bag** she was carrying the whole time.

Because of her Dementia, Erica can no longer stay in Huis Assendorp. With her wandering she is a danger to herself and others. The caretaker PGVZ is looking for a new place for her in a care facility. This means Erica has to **move**. NOT FAIR, since Huis Assendorp supposed to be a living environment where you could stay for the rest of your life.



Umbrella question

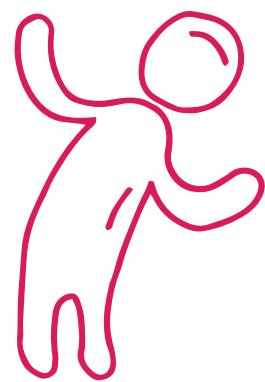
To what extend can the concept of an **open society** help creating an architectural setting in which **people with dementia** no longer have to move to an **enclosed care facility**?



4. Fieldwork

The observations, analysis and conclusions of the fieldwork are ordered in the following way: Body - House - Building - Neighbourhood.

Note: all the residents in the photos were asked for permission to make the photos!



4.1 Body



Residents taking care of each other - Photo made by Rozemarijn Peeters



Observations

Personal stories from residents

While staying in Huis Assendorp the residents told me a lot of stories about themselves. With these stories I tried to reconstruct a day in the life of to get a grip on the daily activities of the residents, the differences and similarities and the things they encounter.

Erika

Erika woont in huis Assendorp, maar is een beetje verwaart. Ze stelt ze zich, tijdens het koffie uurtje in het theehuis, 3 x aan me voor. Ze vraagt waar ik vandaan kom en wat ik hier doe. Als ik vertel over dat ik studeer, vertelt ze over haar kleindochter die ook gaat studeren. Vervolgens vraagt ze of ik ook studeer. Een van de dagen kom ik een verduurzaamde hondje in huis tegen. Na veel rondvragen blijkt deze van Erika. Ze gaat vaak met hem naar buiten. Op weg naar buiten vergeet ze de laatste tijd vaak waar ze naar opweg was. Ze denkt dan dat ze haar hondje al heeft uitgelaten en gaat dan weer naar buiten, zonder dat ze überhaupt buiten is geweest. Rict, een andere bewoner, vici dit op en zij haalt het hondje van Erika nu af en toe op om uit te laten. Erika was ook haar sleutels kwijt, daardoor liet ze haar deur op een kier : om te voorkomen dat ze zichzelf buiten sloot. Een dag kwam ik haar tegen op de gang. Ze had haarjas vast en was aan het mopperen dat iedereen te laat was voor het koffie uurtje. We stonden echter op de 2e verdieping. Je brachte haar naar het theehuis op de begane grond. Eenmaal daar zei ze : 'ohne kind, hier is het niet gezellig om, koffie te drinken! Je kunt beter naar het theehuis. We waren bij het theehuis, maar ze herinnerde het niet. Vervolgens liep ze weg, weer naar buiten. 's Nachts zorgt Erika ook voor problemen; ze dwingt door het gebouw en klopt aan bij haar buren; die dat erg vervelend vinden. Haar buren wagen dan ook regelmatig PGV2 zodat nu naar een mogelijkheid haar te verhuizen.

Ria Marrie

Woont sinds februari hier in huis Assendorp. Komt uit Amsterdam, maar moest na de scheiding van haar man op zoek naar een ander woonruimte. Na lang zoeken kwam ze in Zwolle terecht. Heeft het hier erg naar de zin. vindt dit gemixed wonen met jong en oud heel gezellig. Ze gaat graag naar de activiteiten die buiten het huis worden gegeven zoals bijv. de Gymnastiek. Daarnaast gaat Ria 4 x per dag haar hondje Bowie uit laten met een vast groepje andere vrouwen (en honden) uit het huis. Als mensen ziel zijn nemen ze diens hondje ook mee. Ria heeft een zoon die woont in Zutphen.

Bettie de Gunst

Woont hier vanaf het begin. Heeft Parkinson, zit daarom hier. Zit in rolstoel. Gaat iedere dag koffie drinken beneden. Iedere keer dezelfde mensen vind ze niet leuk. Lunch met elkaar, ontbijt alleen. Diner met elkaar, 's middags rust moment. Woont op de verdieping aan de straat kant, vind ze leuk: heeft ze wat te kijken. Anders duren de dagen wel heel lang. 'Hij wil wel, maar hij kan niet.' Over het sjelen. Sto vroeg op om er iets van te maken. Restaurant niet!

Jan Veenman

Woont hier nu een half jaar op de 2e verdieping. Komt uit Zwolle. vind het fijn dat alles in de buurt is. Iedere dag koffie in het theehuis. Op vrijdag borrel en hapjes in het café / restaurant. Nu niet want wortel verbrand. Gaat vaak naar buiten. Nabij gelegen park kan je lekker koffie drinken. Voornamelijk veel ouderen in theehuis. Jonge mensen zijn aan het werk of studeren. Mensen zelf heeft geen zorg nodig. Wel hulp met het beddengaan. Geen hobbies, wel leuk om voetbal te kijken.

Mans en Annelie

Beide wonen vanaf het begin in huis Assendorp en zijn beide erg actief in huis. Ze zet Mans tot voor kort in de bewoners commissie en doet hij het beheer van de logeerkamer. Annelie helpt bij verschillende activiteiten in het huis. Annelie en Mans zijn een stel, hoewel ze wel een eigen woning in huis Assendorp hebben. Ze gaan nu zelfs van woning ruilen, omdat de buurtrouw van Annelie rolt en ze niet tegen die geur kan. Beide lopen buiten met Rollator, maar in huis vaak zonder. Annelie drinkt iedere avond om 20.30 uur koffie met een aantal bewoners. Dit zijn bewoners met en zonder zorg. Bij het koffie drinken is er geen zorg aanwezig maar zorgt Annelie voor iedereen. Bewoners die niet zelfstandig kunnen komen, worden opgehaald. Bewoners die hulp nodig hebben met drinken worden geholpen met drinken.

Lourens Hoenders

Schilder, woont in het ADH deel van huis Assendorp. Ja vaak terug te vinden in het schilders Atelier op de 1e verdieping in huis Assendorp. Hij zit in een rolstoel. Zijn hele appartement is hierop ingericht; verlaagde keuken etc. Naast schilderen spaart hij olifanten. Zijn hele huis staat er vol mee. Hij heeft zo'n 4 vitrine kasten vol. Hij doet en kan bijna alles zelf. Ook zijn slaapkamer en badkamer zijn helemaal aangepast aan hem. In zijn berging in huis heeft hij een opslag plek vol met schilderijen. Hij heeft het naar zijn zin in huis Assendorp.

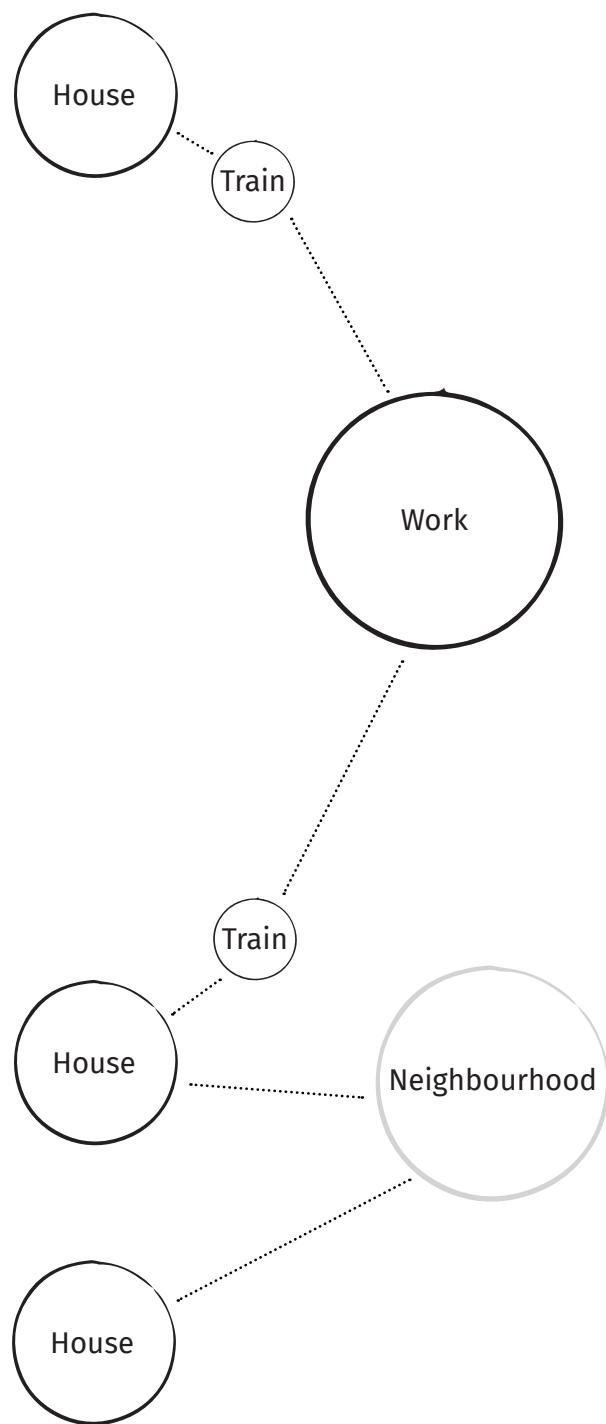
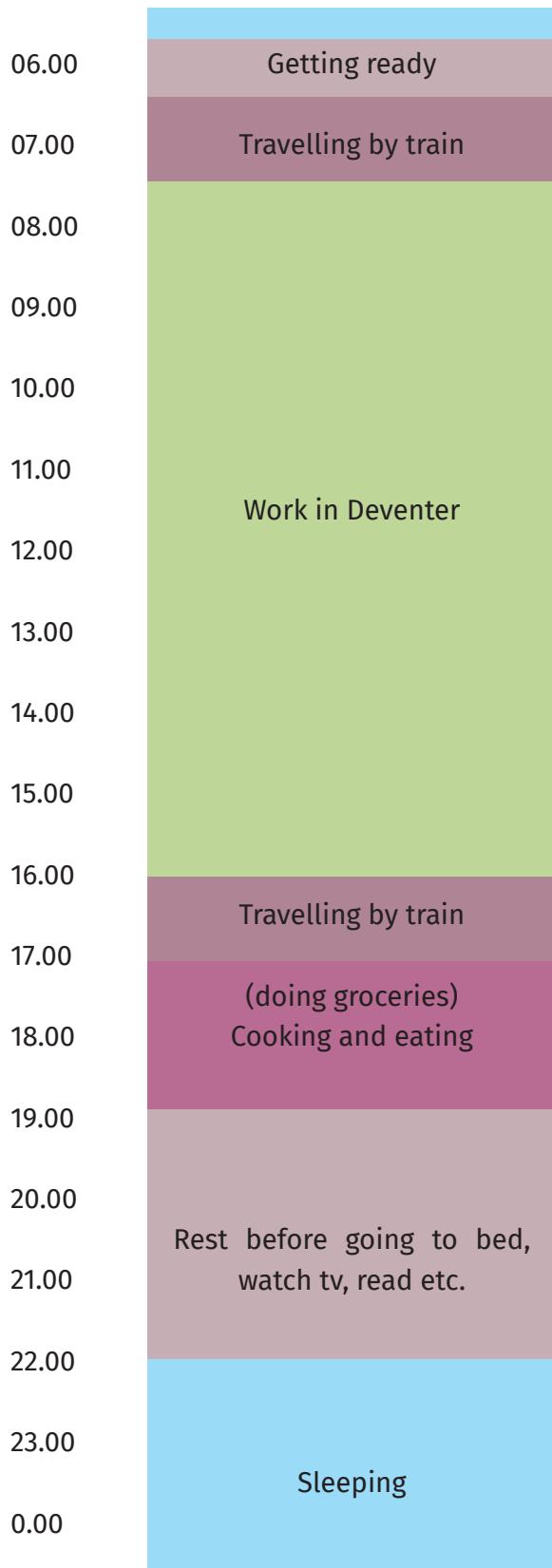
Mw. van der Weegh

Woont sinds december in huis Assendorp. Is heel blij met haar appartement. Veel licht, geen drempels en dus veilig. Ze heeft een hondje Cassie; laat ze iedere dag zelf uit. vindt ze fijn, lekker bewegen. Ze houdt nog zelf. Dochter komt ook af en toe mee de kleinkinderen eten. Ze past al 10 jaar op voor haar kleinkinderen. Zit graag in stoel bij het raam, in het licht. Heeft wel strook plakplastic op de ramen. Tussen deur tussen woon - slaapkamer wordt niet gebruikt! Beide kanten staan kosten voor.



Analysis

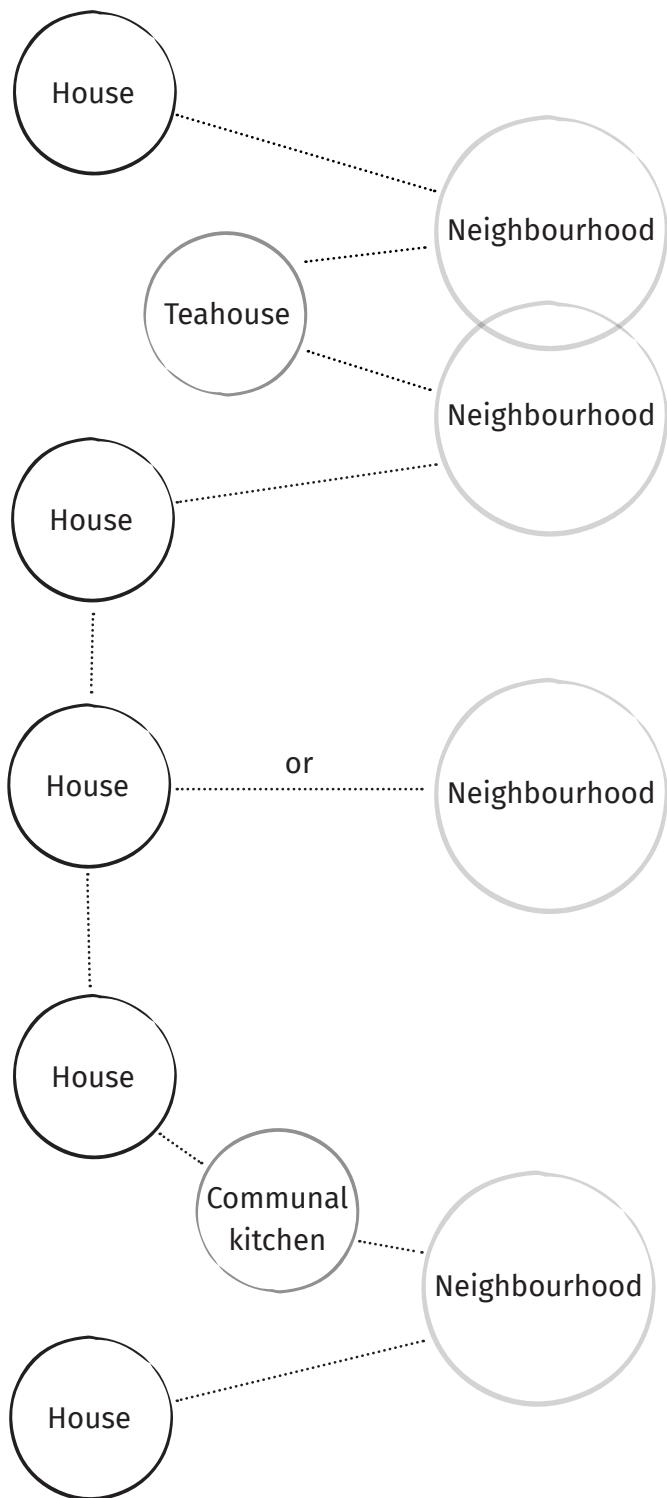
Timeline of Carolus, resident without care





Analysis

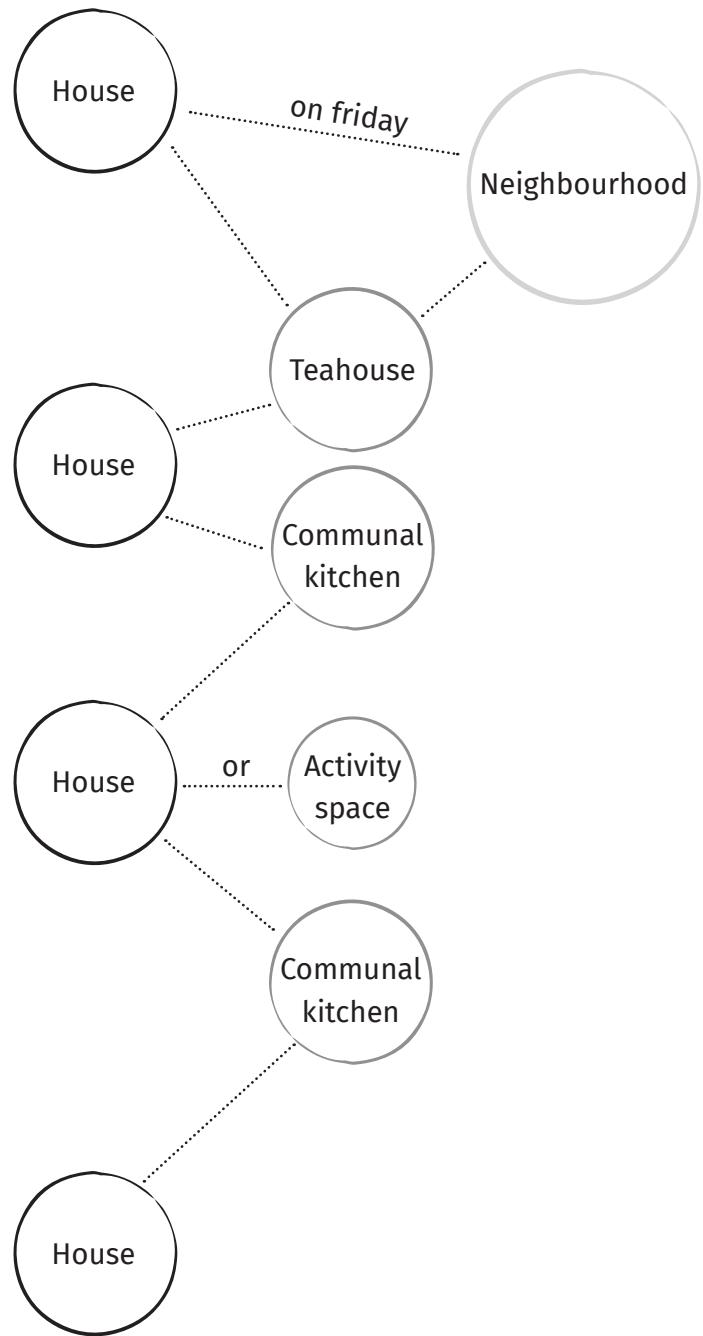
Timeline of Riet, resident without care





Analysis

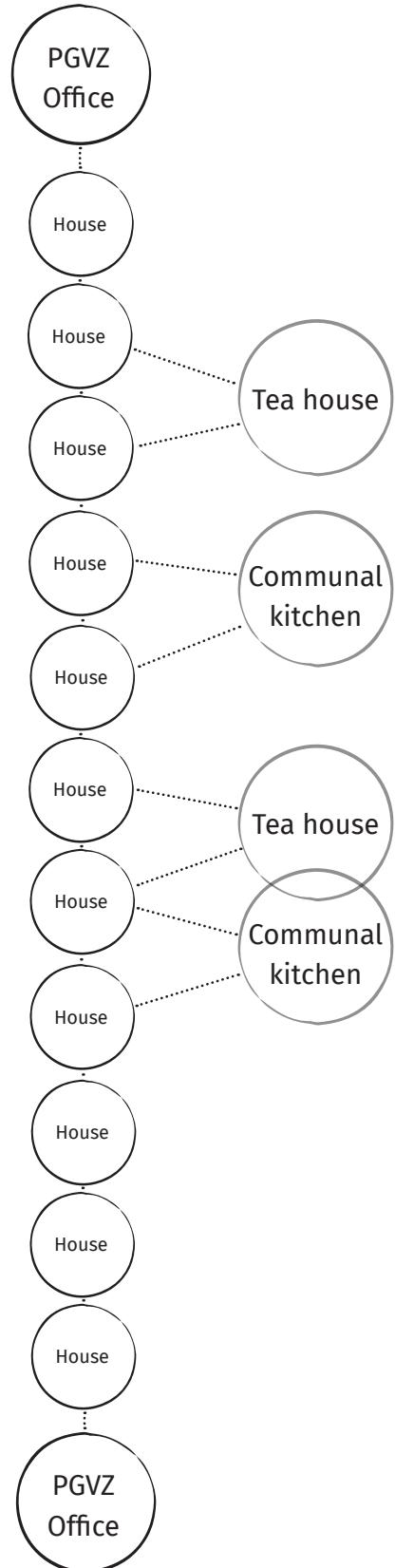
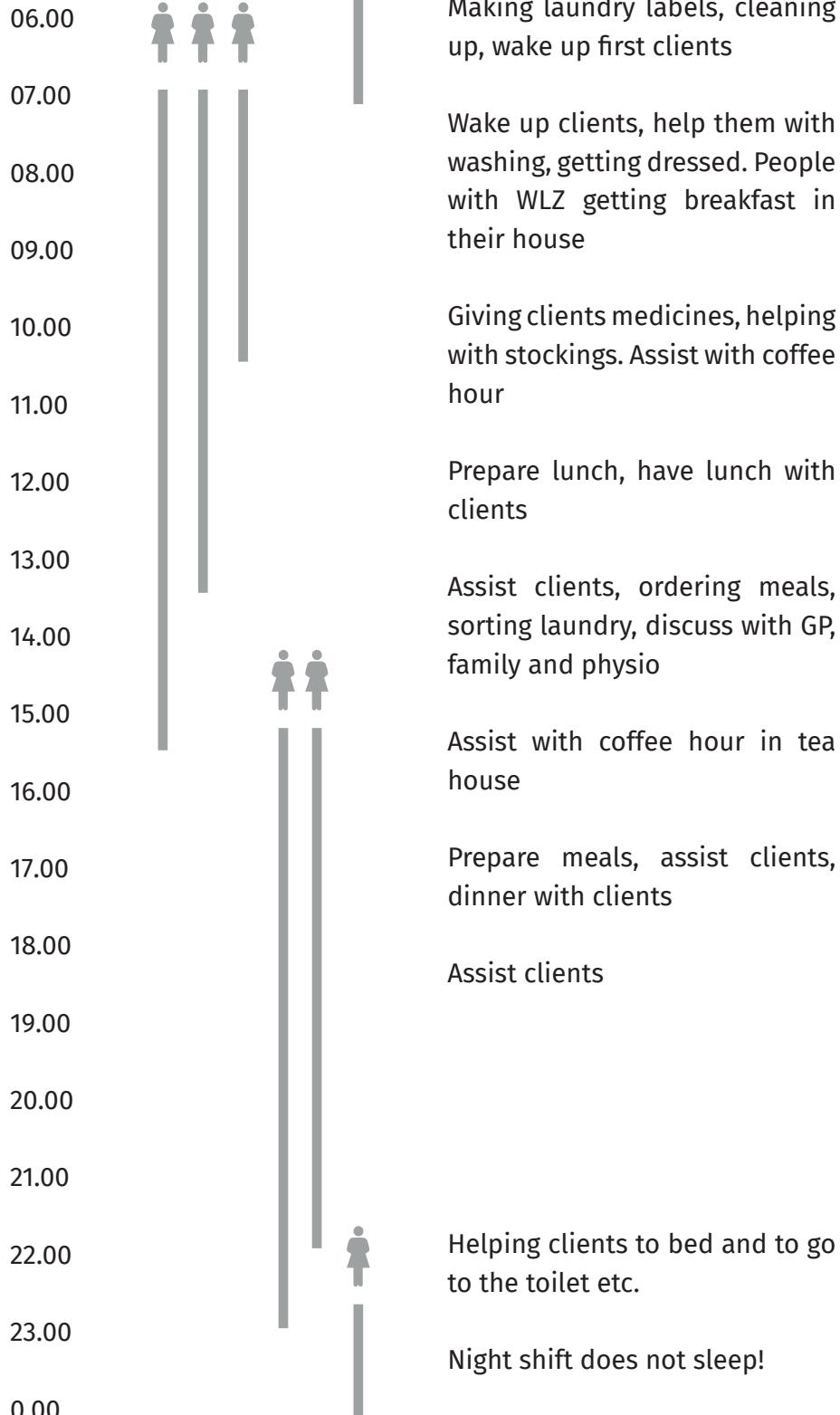
Timeline of Betty, resident with care





Analysis

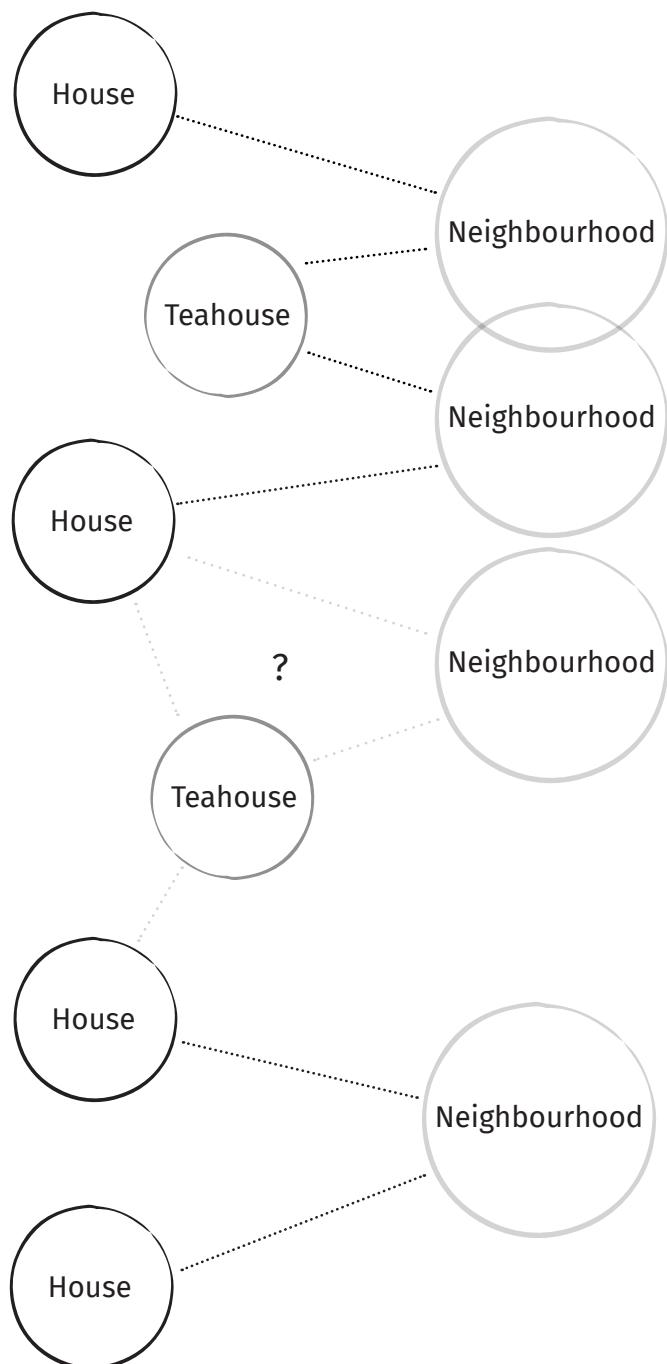
Timeline of the caretakers





Analysis

Timeline of Erica, resident with Dementia



Welkom
in Huis Assendorp



Teahouse during coffee hour - Photo made by Rozemarijn Peeters



Betty, one of the residents. Photo made by Ellen Kieft

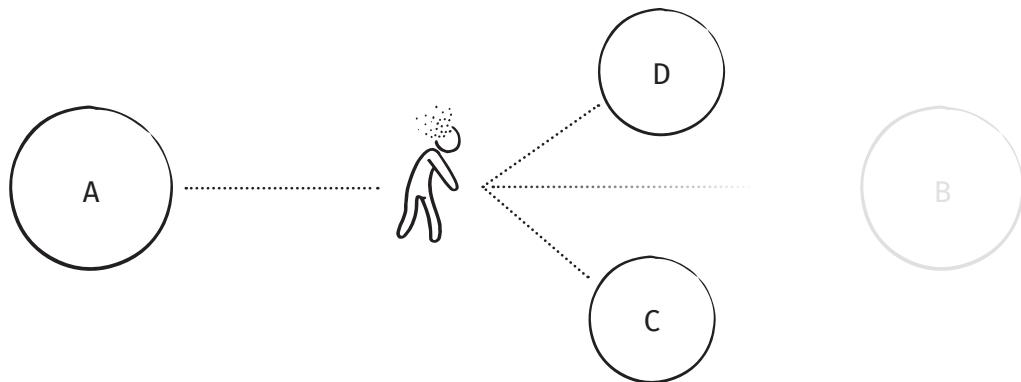


Conclusions

Time-lines and routes



People without dementia move **directly** from location A to location B.



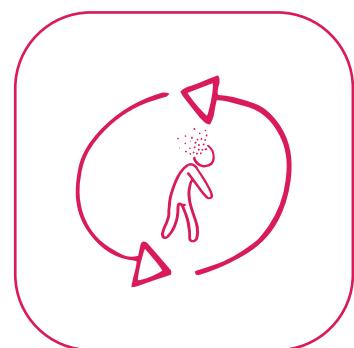
When people with dementia want to go from A to B, they get **distracted** along the way, which causes them to wander and **forget** about location B.

Because of the linear design of the building, with its **similar corridors**, someone with dementia gets lost. They cannot walk in **circles**, as they prefer to do. This makes them **confused** and makes them **wander** through the building.



Design tools

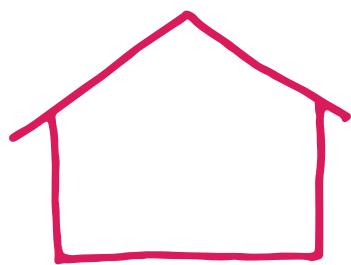
Body



Walk in **circles**

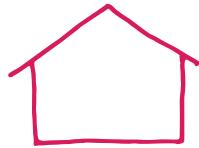


Recognizability



4.2 House

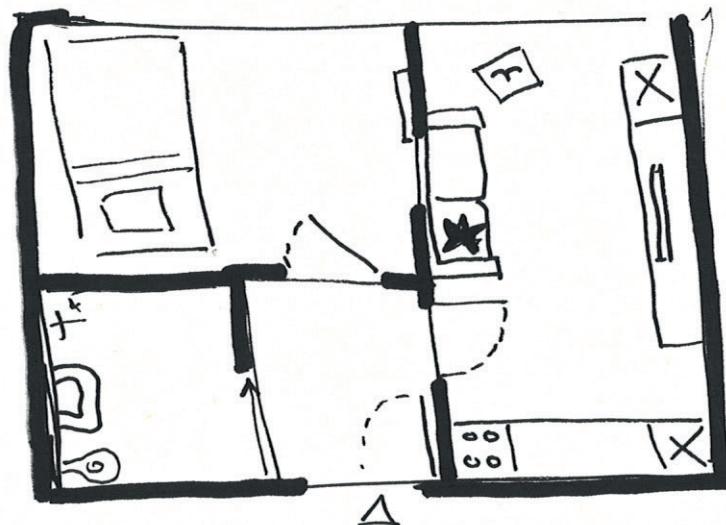
By observing and analysing ones direct livingspaces, one can not only learn about its resident, but also about the qualities of the built environment.



Living spaces of the residents

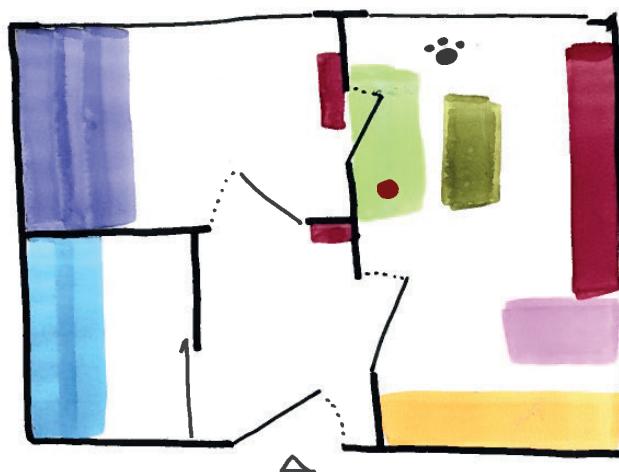
Jan Veenman

Observation



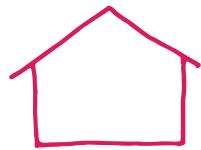
Analysis

Outside



Hallway

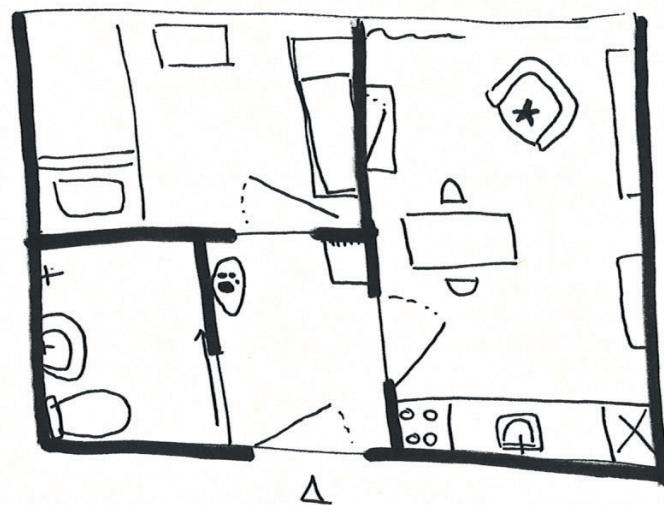
Legend	
	= kitchen
	= bed
	= favorite spot
	= table
	= sanitary ware
	= closet
	= armchair / sofa
	= pet's place
	= coffee table



Living spaces of the residents

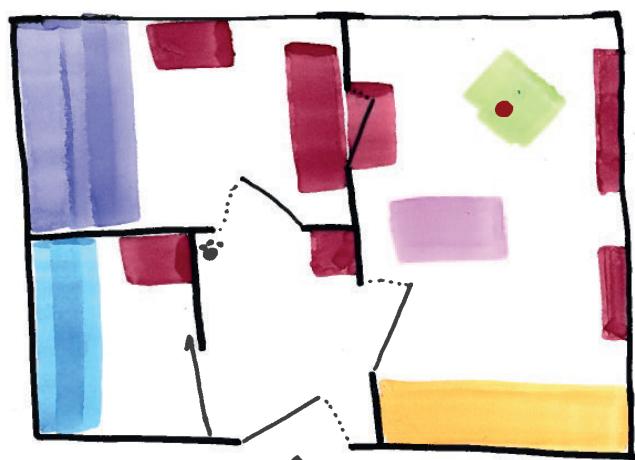
Riet van der Weegh

Observation

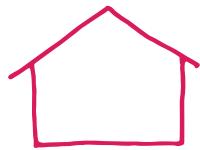


Analysis

Outside



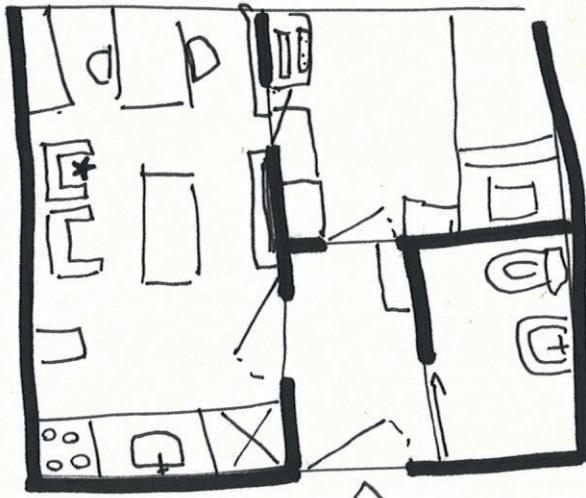
Hallway



Living spaces of the residents

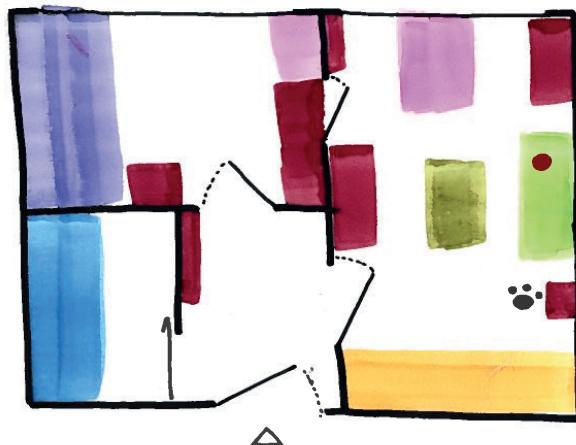
Ria Marrie

Observation

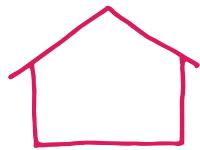


Analysis

Outside



Hallway



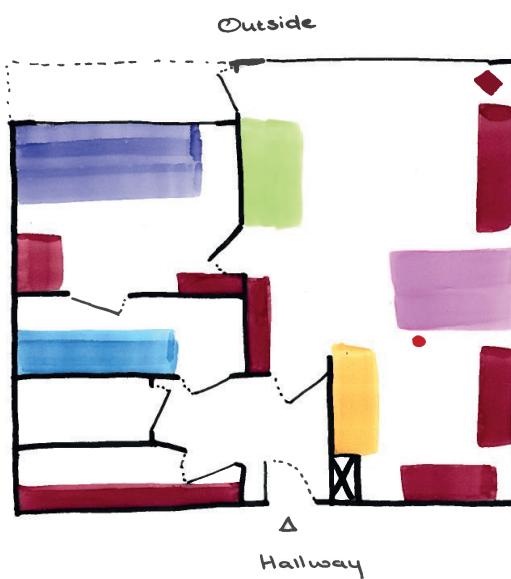
Living spaces of the residents

Lourens Hoenders

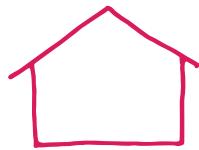
Observation



Analysis



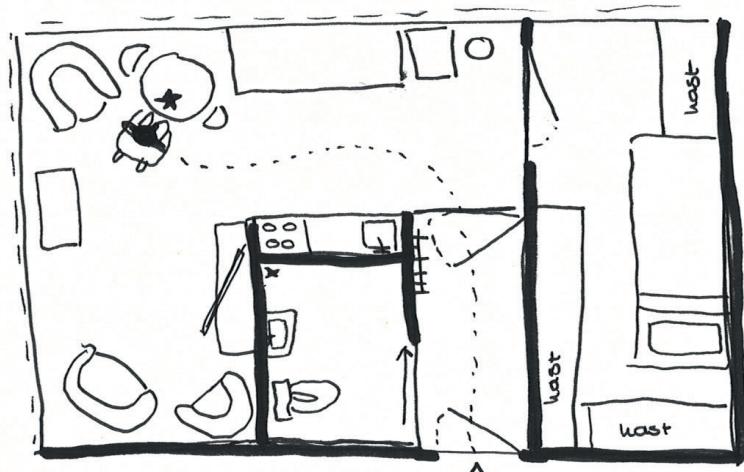
'A lowered kitchen specially made for me by the municipality'
- Lourens Hoenders



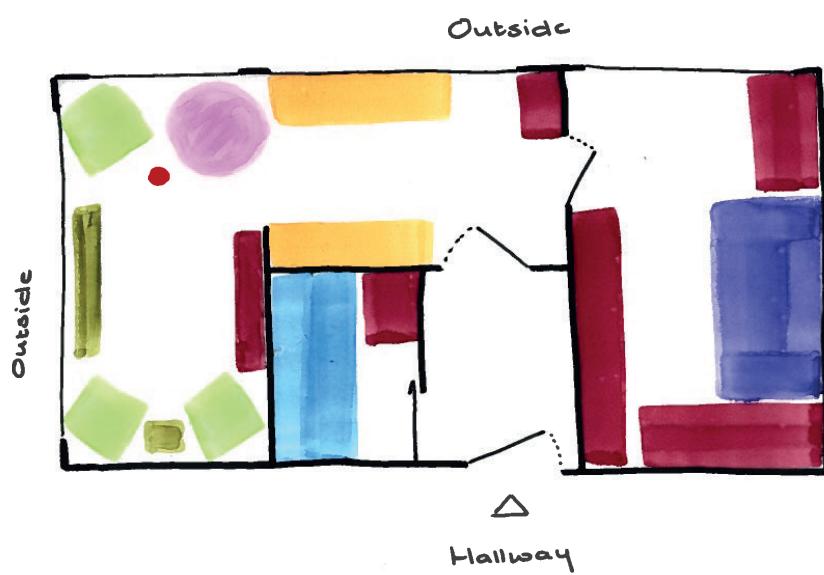
Living spaces of the residents

Betty de Gunst

Observation

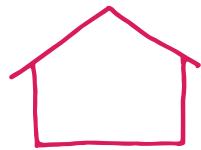


Analysis



'I always have to call to be moved'

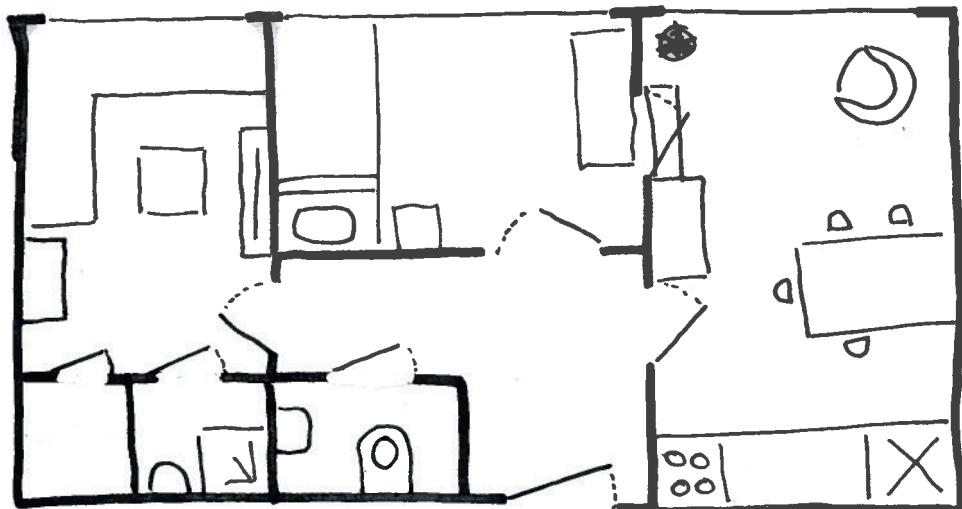
- Betty de Gunst



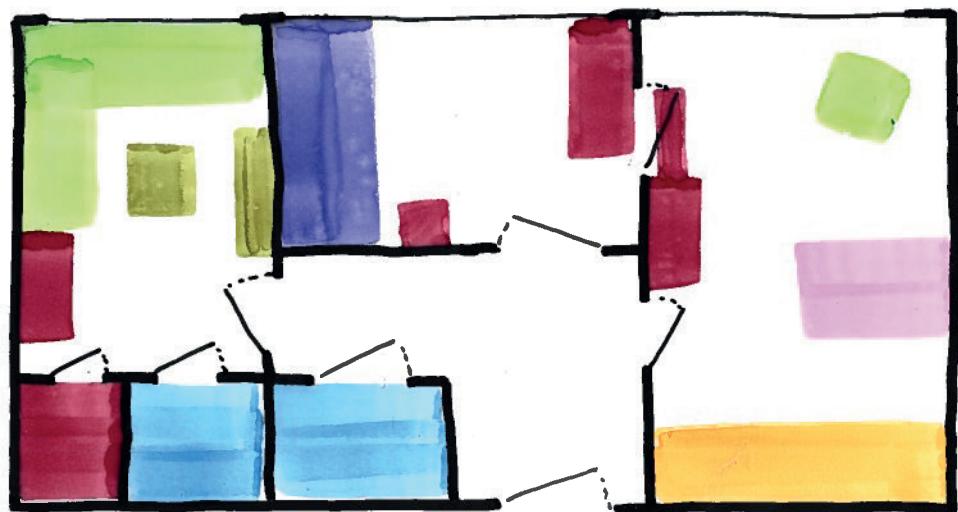
Living spaces of the residents

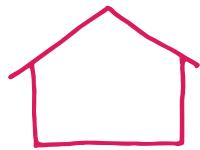
Erica van Enk

Observation



Analysis



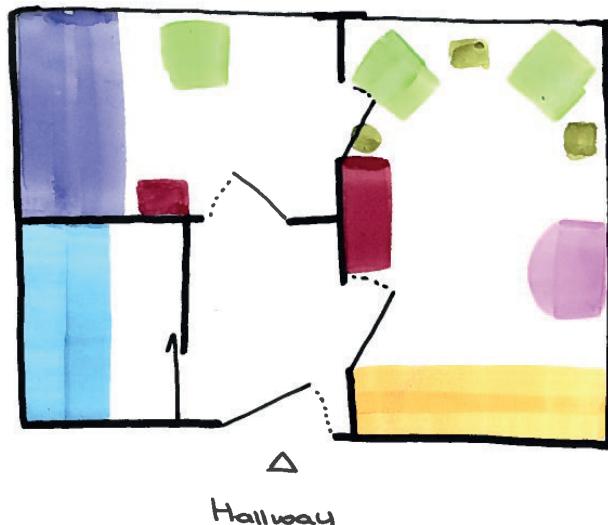


Living spaces of the residents

Other residents

Analysis

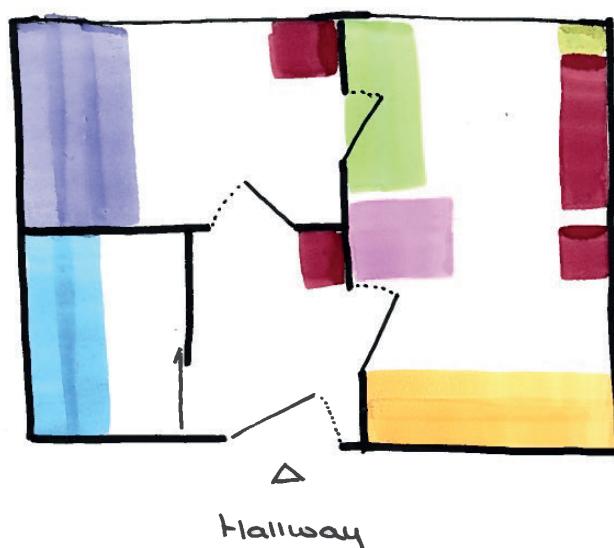
Outside



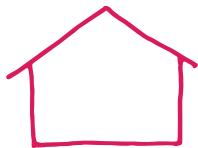
Hallway

Analysis

Outside

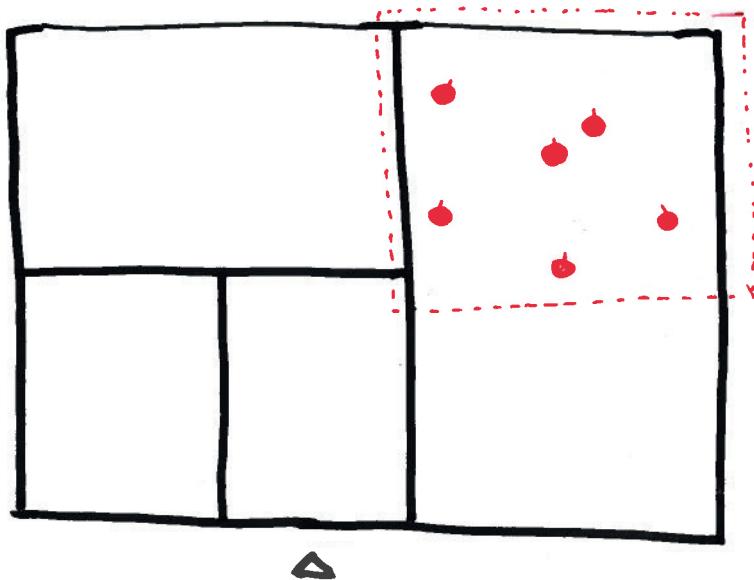


Hallway



Living spaces of the residents

Analysis



All the residents were asked what their **favourite spot** is in the house. In the scheme above the favourite spots are marked. Note:
All spots are faced towards the window.

Why:

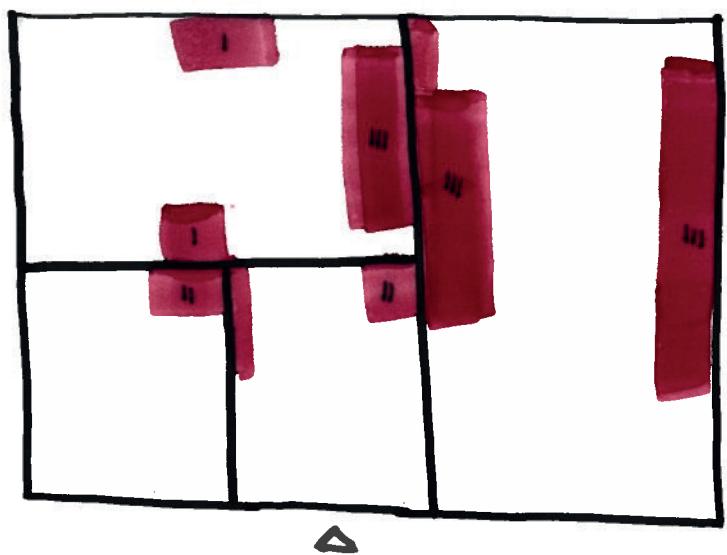
- Looking outside, towards activity
- Looking outside, towards nature

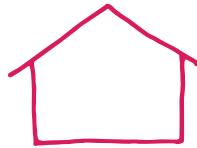
During the fieldwork, people complained about the **storage space** in the house; there is too little. This can be seen in the analysis, in red where people put most cabinets etc.

Interesting to see is that in front of the door between bedroom and living room, most of the time, a cabinet is placed.

Why:

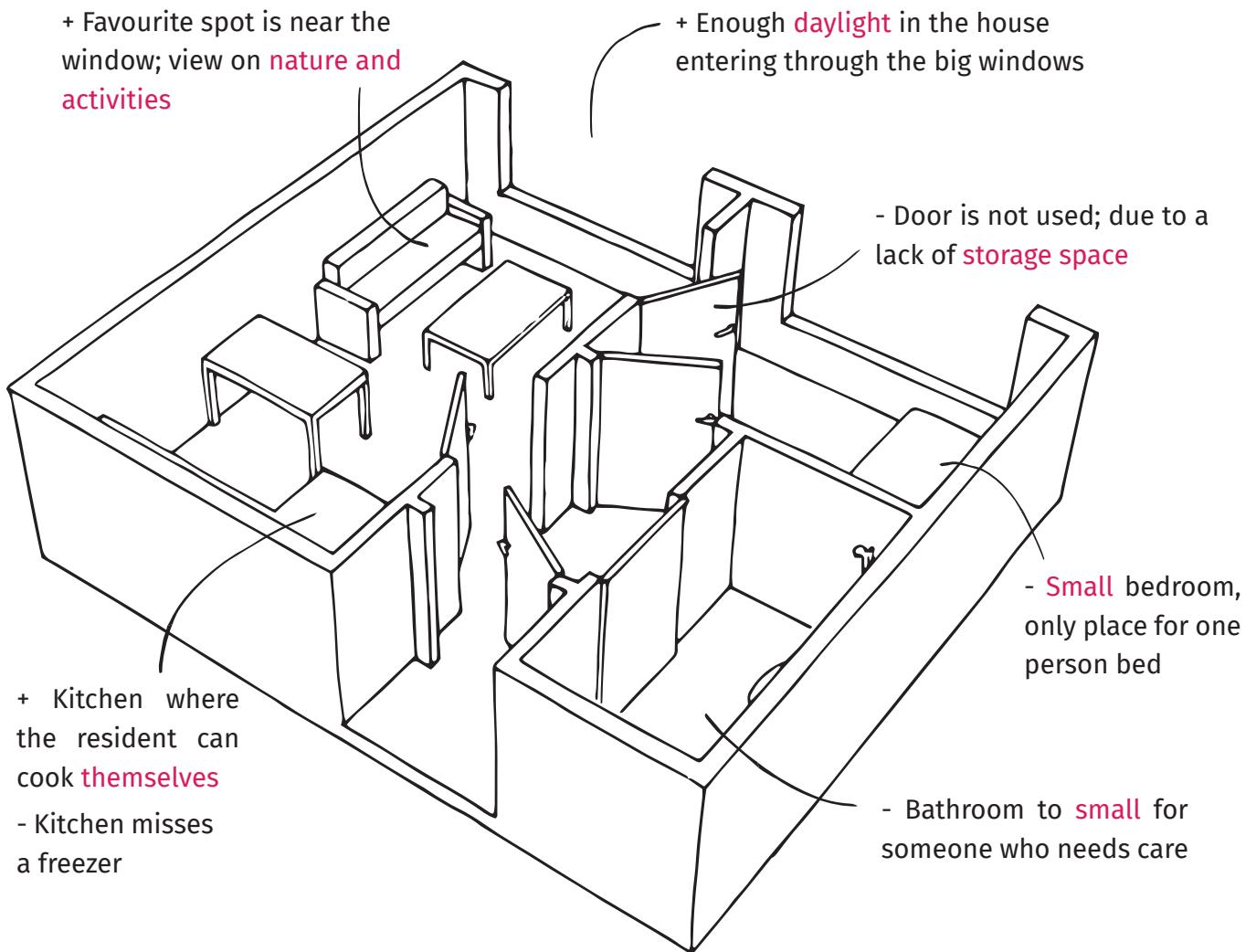
- Lack of storage space



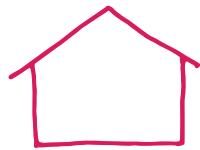


Conclusion

Livingspaces of the residents



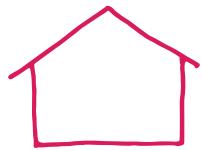
The house is too small for someone who needs care. When in need of more care the resident has to move. **The house is not lifecycle proof**



Observations

House and hallway in the Molenhof

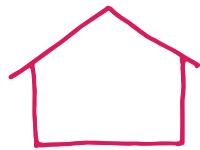




Observations

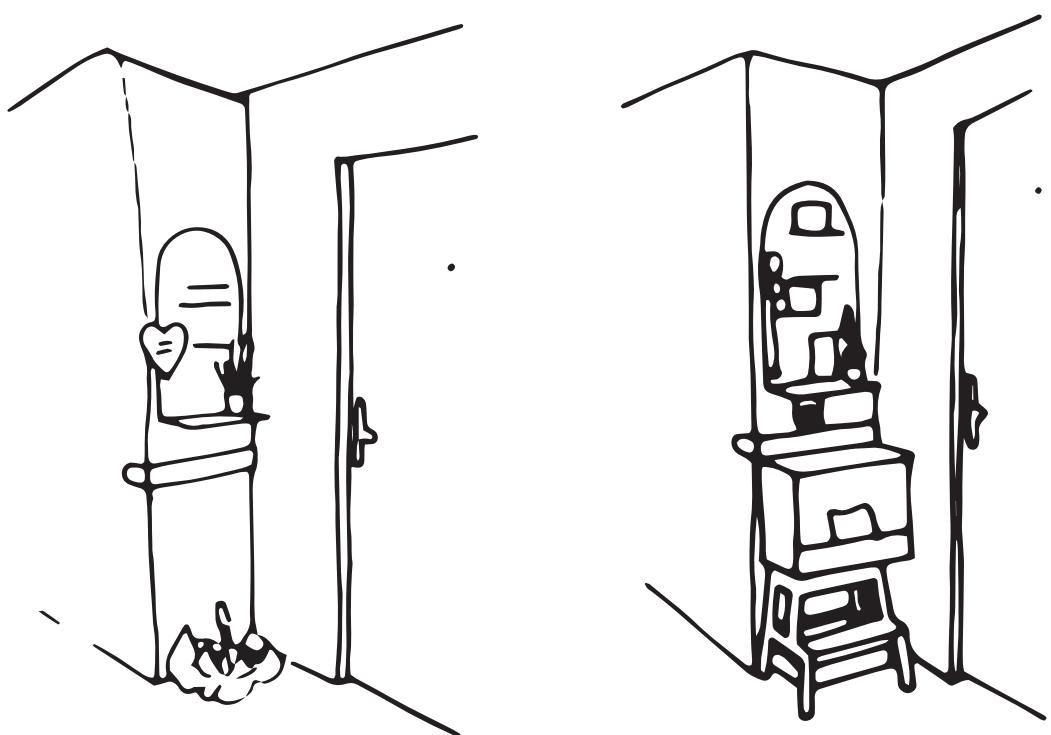
House and hallway in the Molenhof

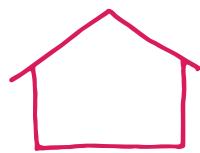




Analysis

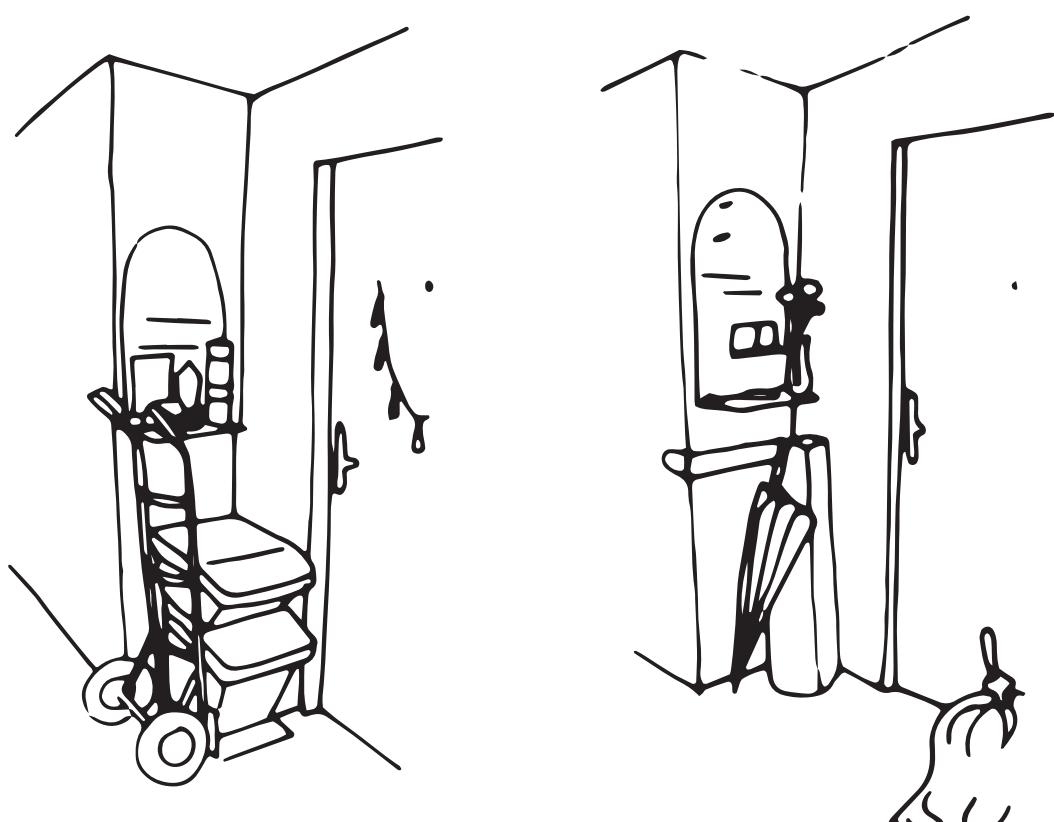
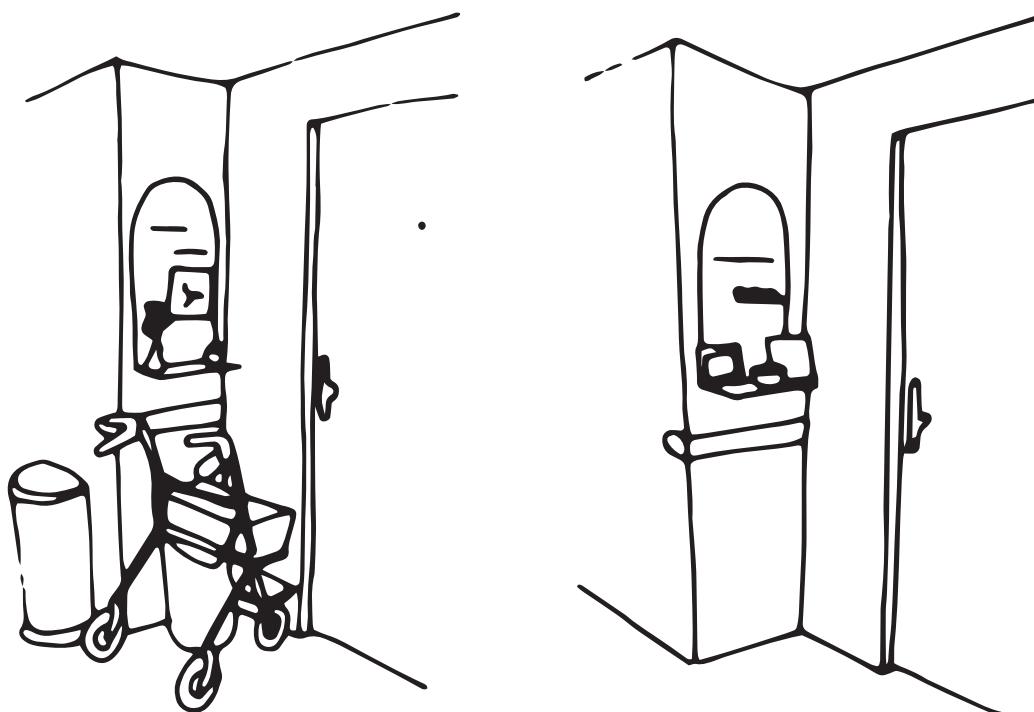
House and hallway in the Molenhof

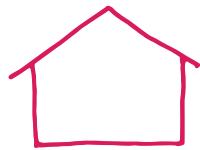




Analysis

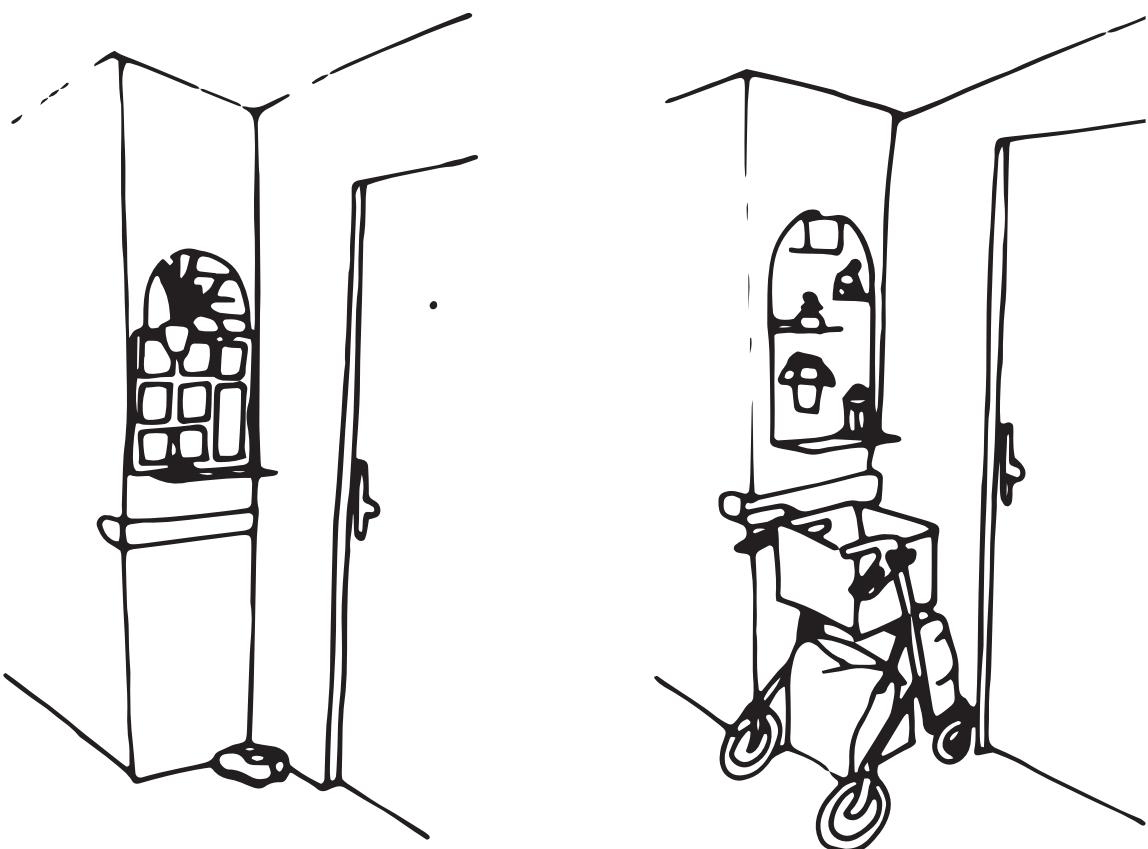
House and hallway in the Molenhof

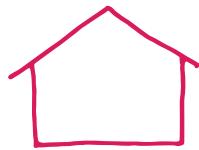




Analysis

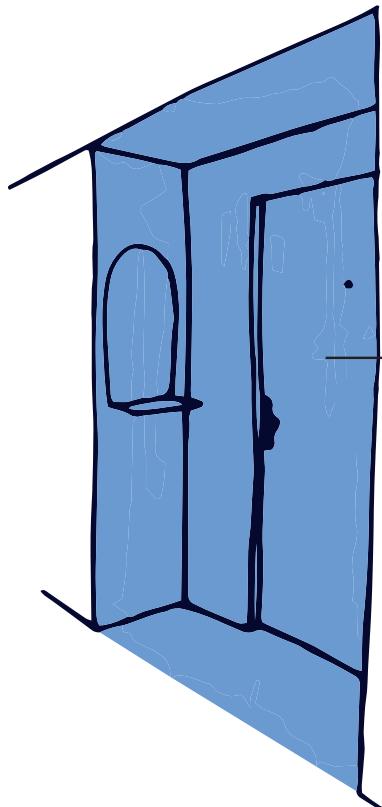
House and hallway in the Molenhof





Conclusions

House and hallway in the Molenhof

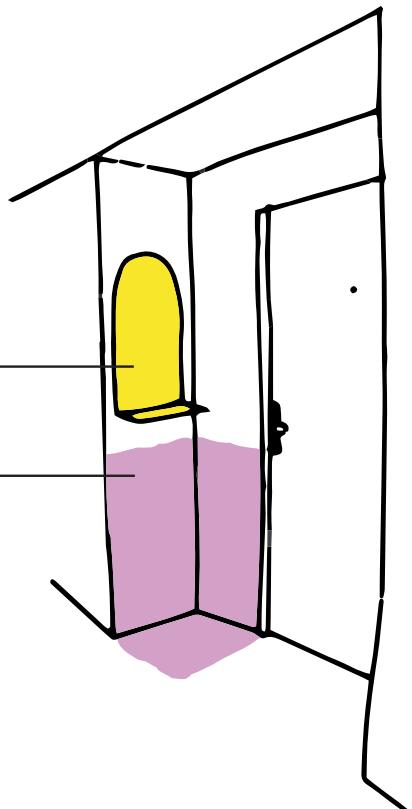


Transitional zone between private (the house) and public (the hallway). Space that can be personalized by the resident.

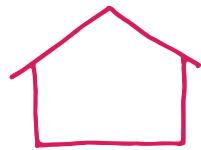
Two zones:

Space for name plate, plants and images to make the house recognizable

Space used as extra storage space; placing walkers, garbage, umbrella's etc.



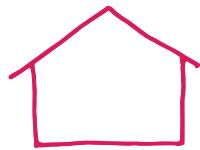
The residents personalize their front door to make their house recognizable. For someone with dementia recognizability is key to find their own home.



Observations

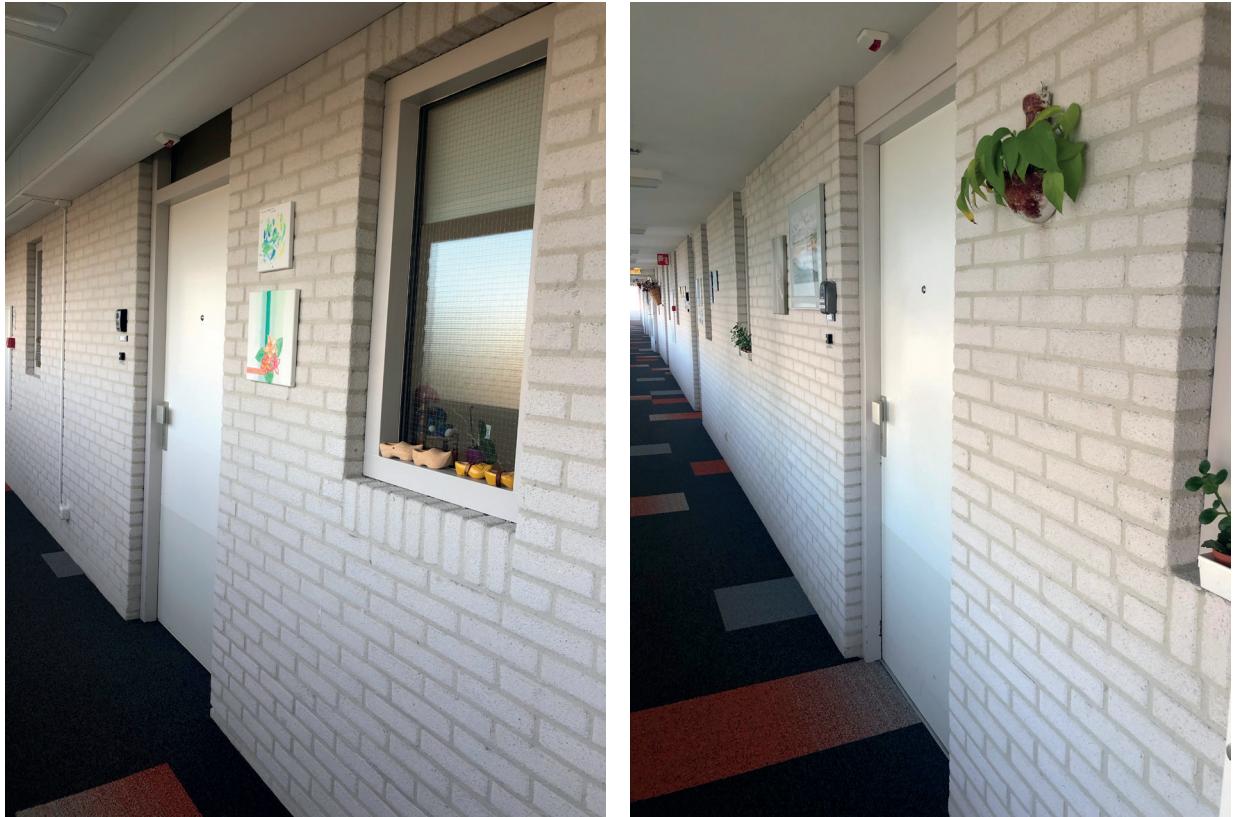
House and hallway Achter de Hoven

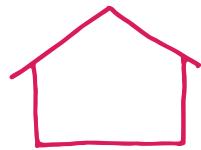




Observations

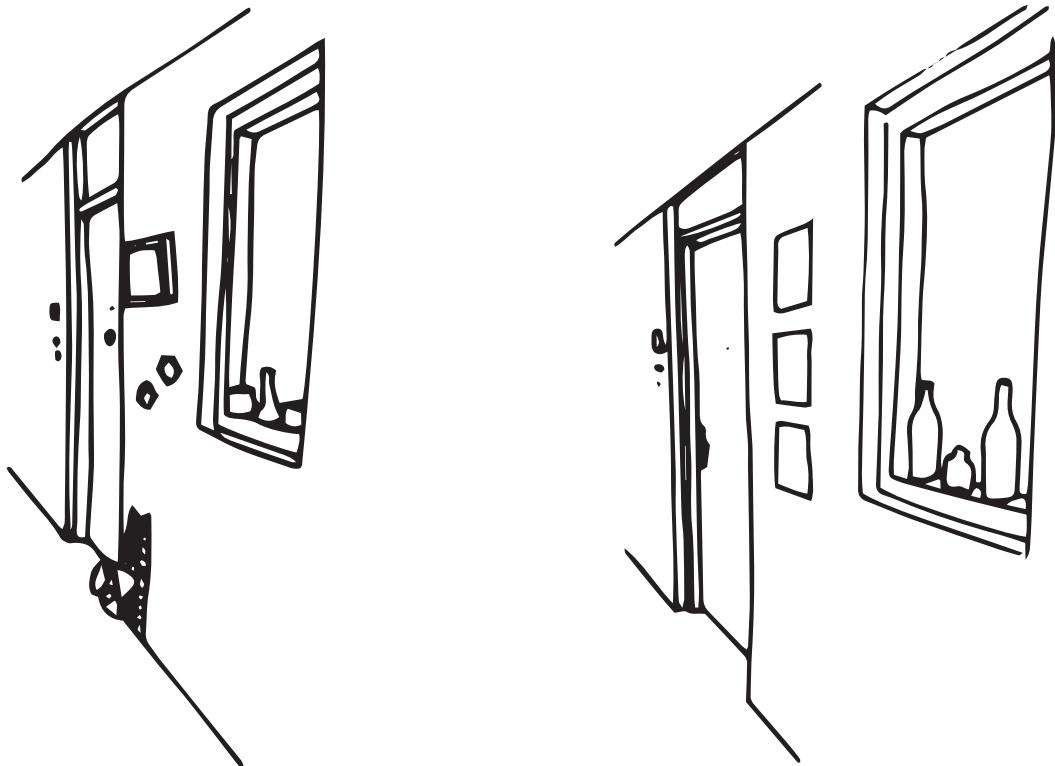
House and hallway Achter de Hoven

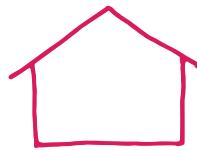




Analysis

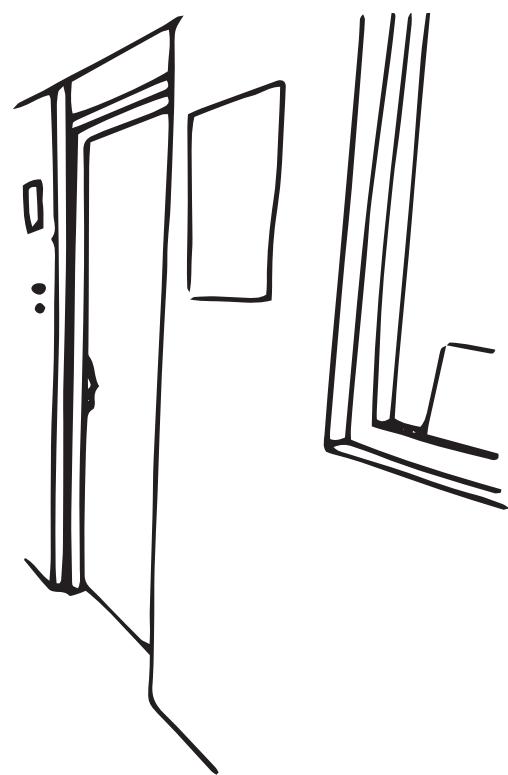
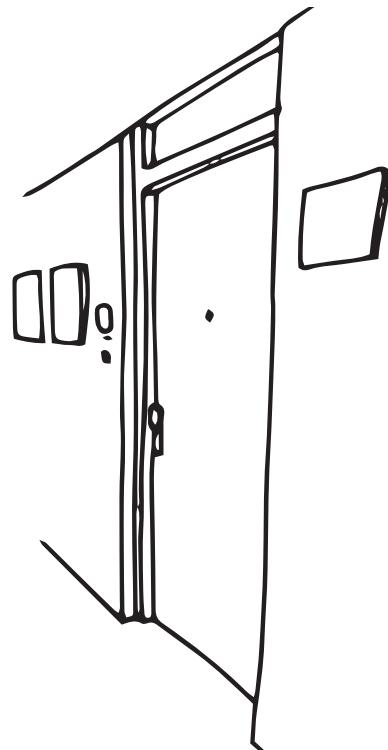
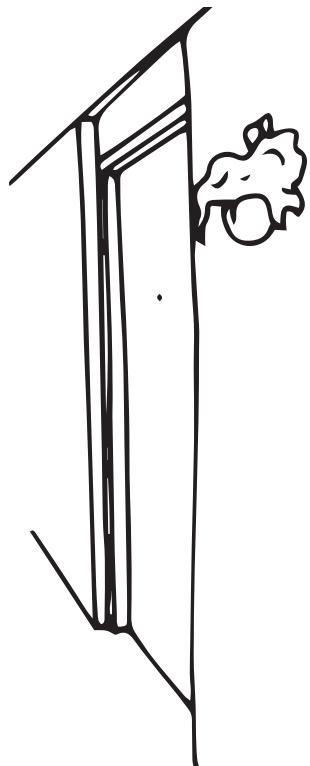
House and hallway Achter de Hoven

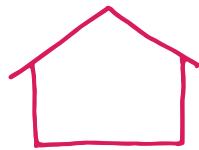




Analysis

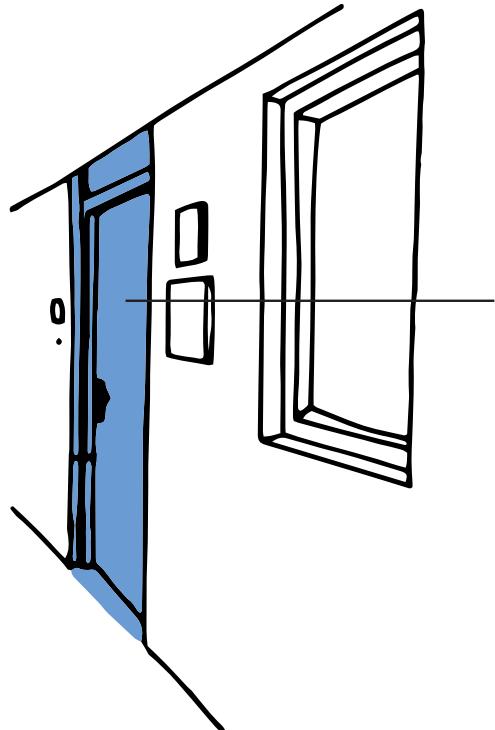
House and hallway Achter de Hoven





Conclusions

House and hallway Achter de Hoven

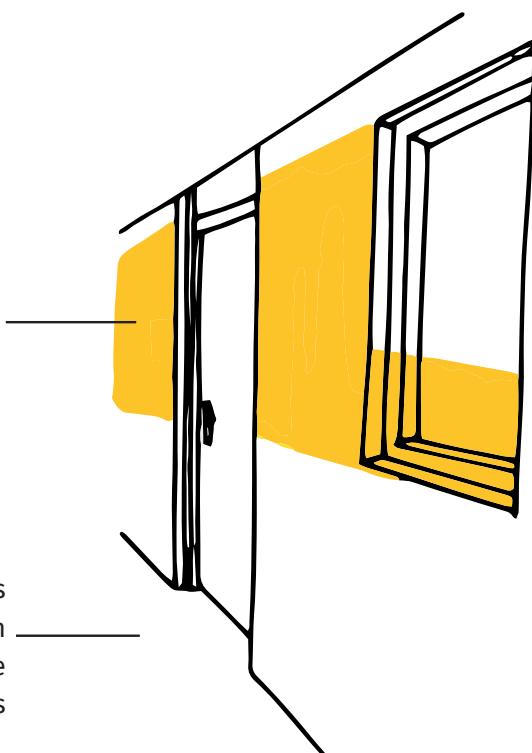


Transitional zone between private (the house) and public (the hallway).

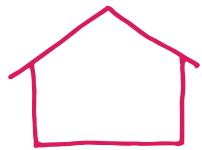
Space that the residents appropriate to personalise and make their house recognizable

This is done with paintings, plants, pots, cans, dolls etc.

Using a carpet with different coloured areas can be confusing for elderly, especially when the eyesight declines. One might consider the coloured areas interspersed with dark areas as 'holes' into which you can fall.



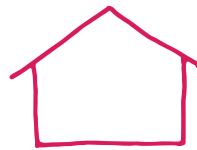
The residents personalize their front door to make their house recognizable. For someone with dementia recognizability is key to find their own home.



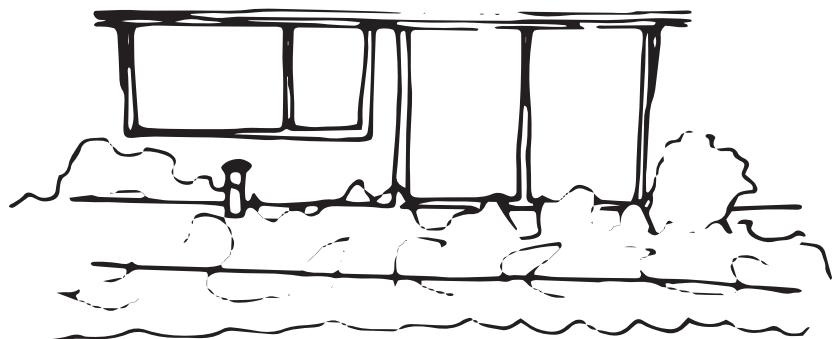
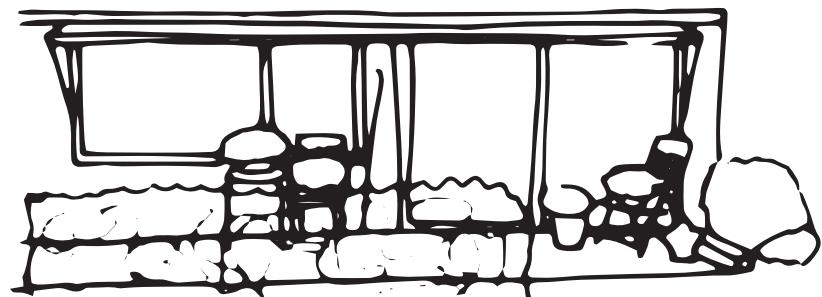
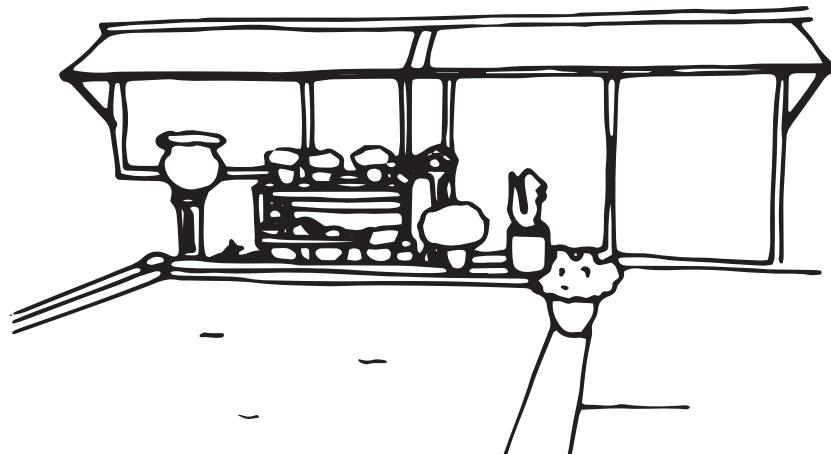
Observations

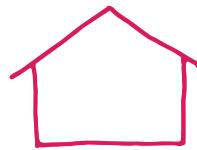
Outside spaces



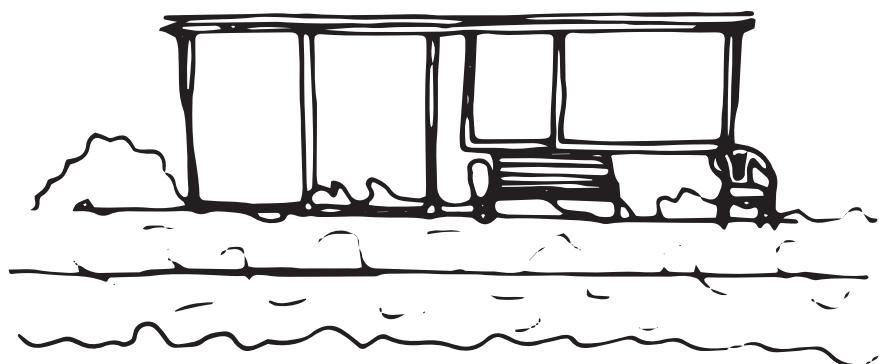
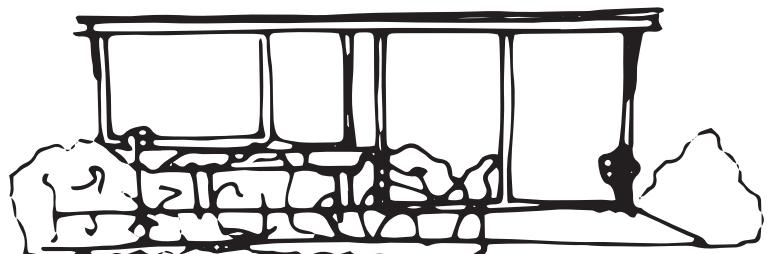
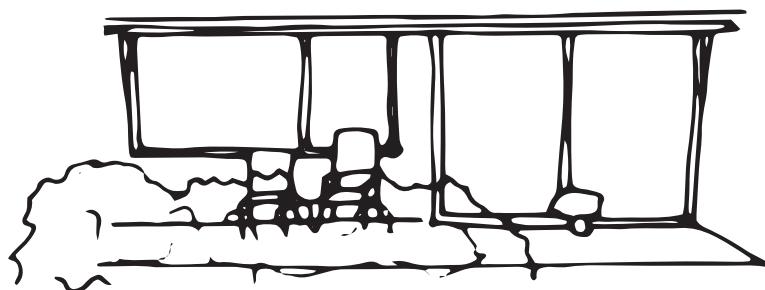


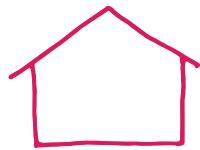
Analysis Outside spaces



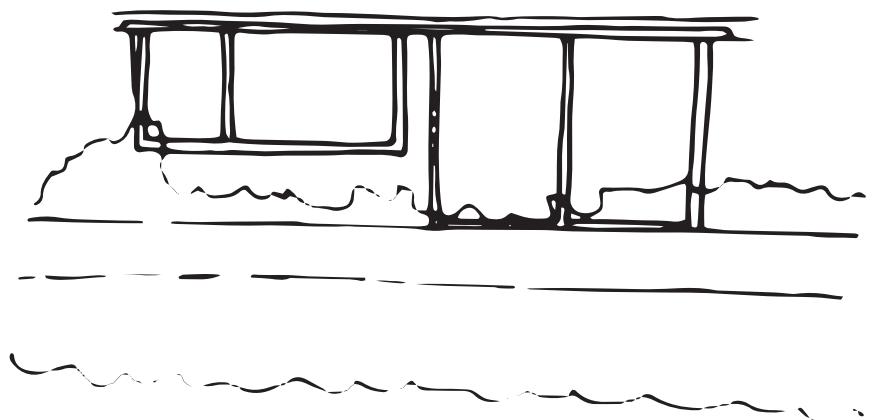
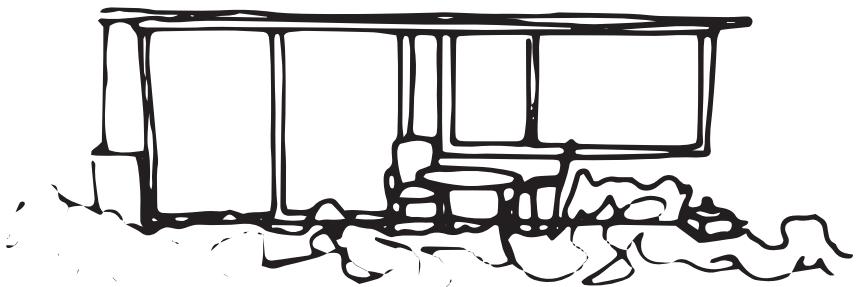


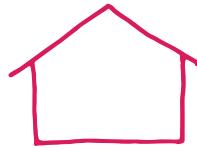
Analysis Outside spaces





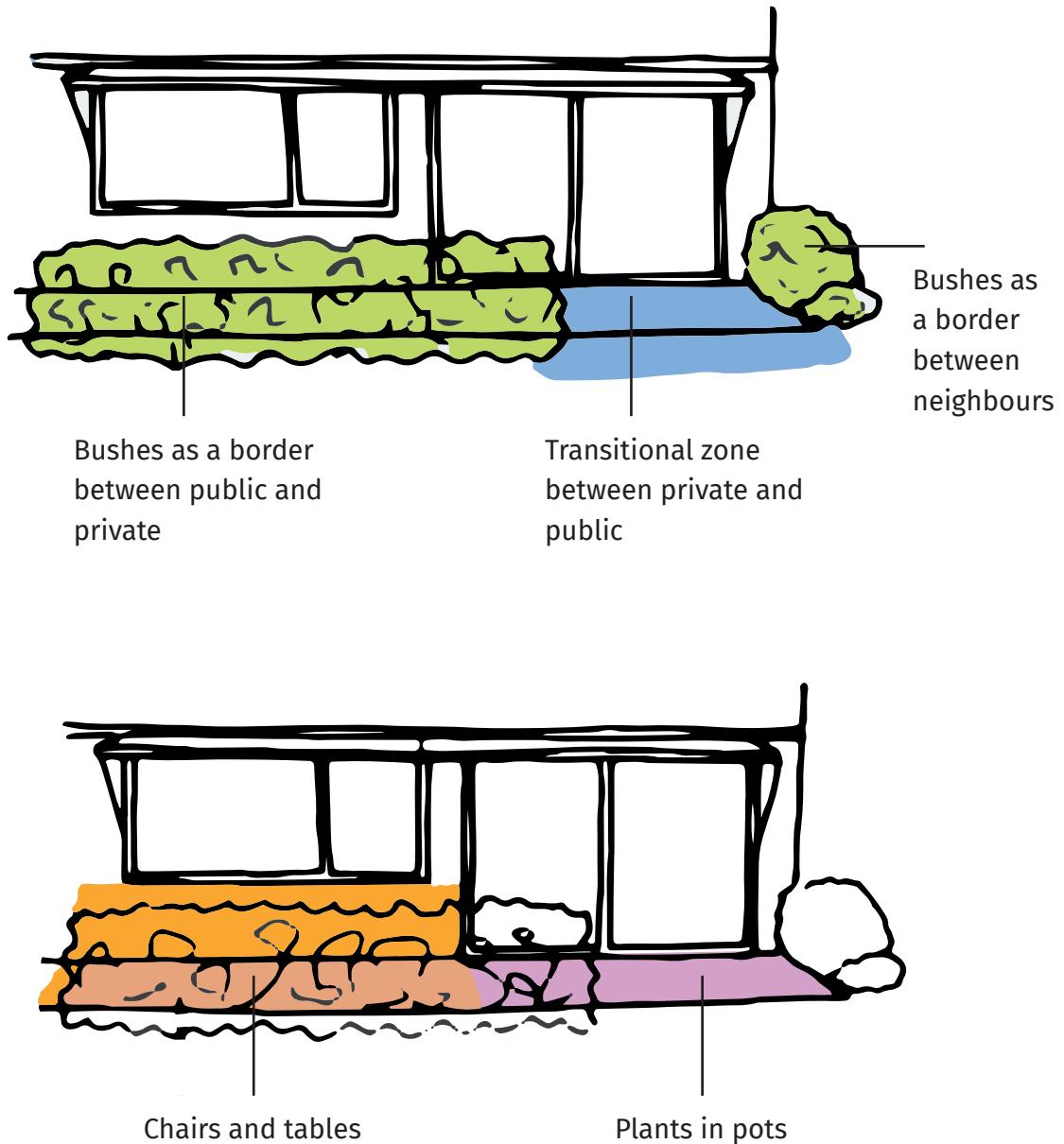
Analysis Outside spaces



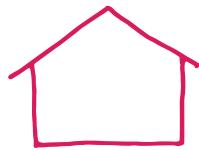


Conclusions

Outside spaces



The small gardens are **personalized** with pots, plants, chairs and tables. A lot of the residents place the chairs and tables behind the bushes for more **privacy**.

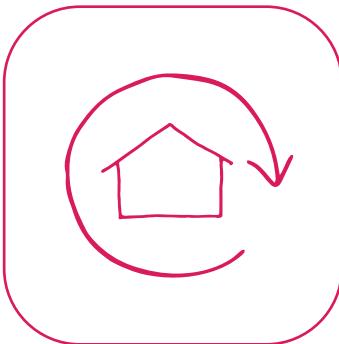


Design tools

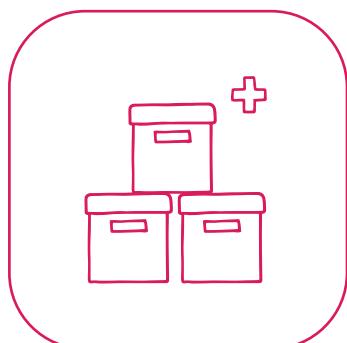
House



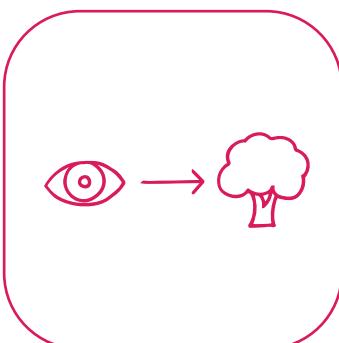
Bigger bathroom



Lifecycle proof house



More storage space



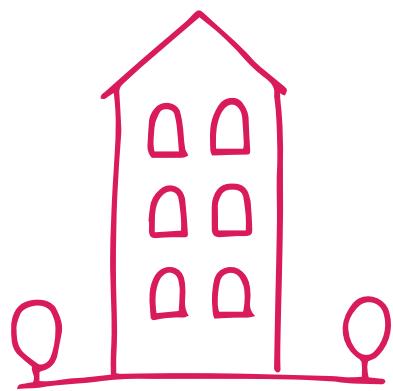
Room with a view (on nature)



Recognizability
is key to find the
house



Privacy has to be
maintained, even
when receiving care.



4.3 Building



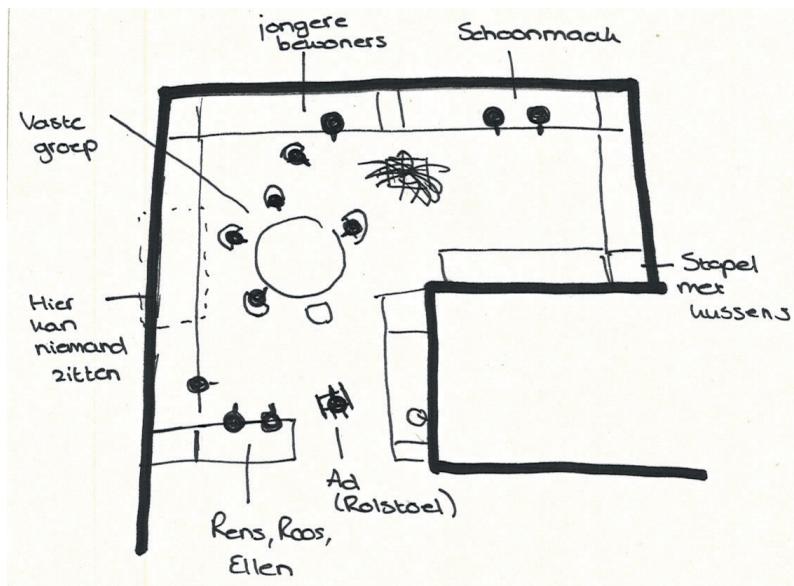
Empty teahouse- Photo made by Rozemarijn Peeters



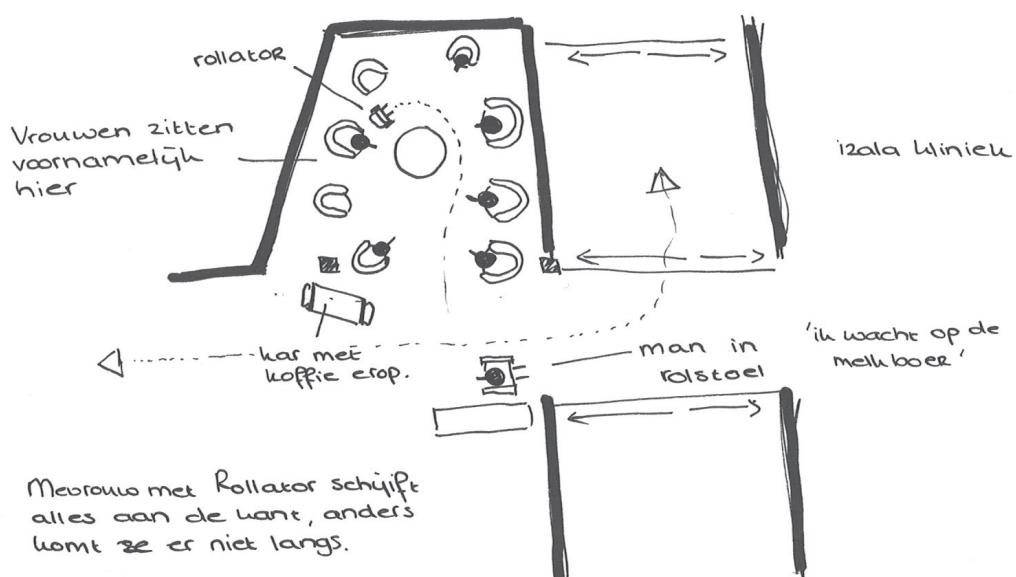
Communal areas

Tea house

Observation



Observation

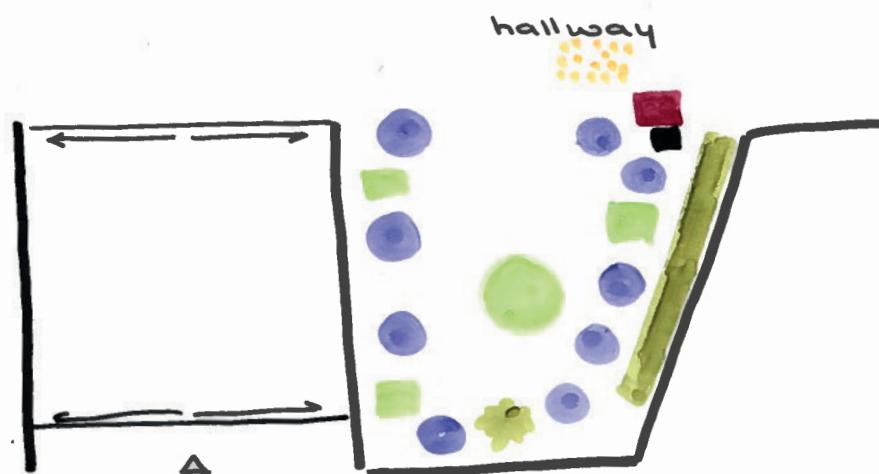




Communal areas

Tea house

Analysis



	= kitchen		= chair / armchair
	= table		= sofa
	= cabinet		= coffee table
	= lamp		= Plants

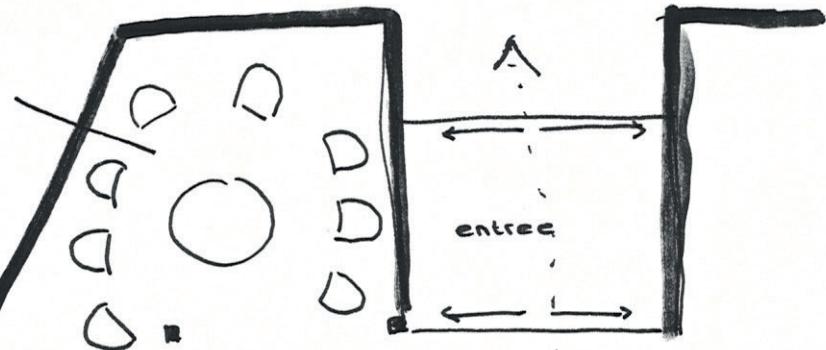


Communal areas

Tea house

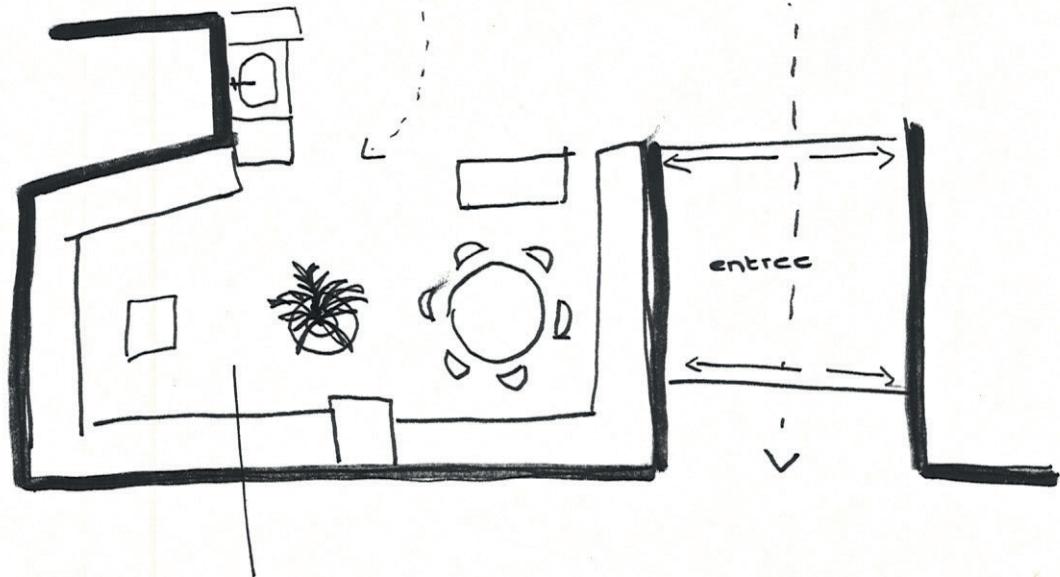
Observation

Koffie i.d.
middag
15.30 - 16.30



huis

fysio



Koffie in de ochtend
10.00 - 11.00 uur



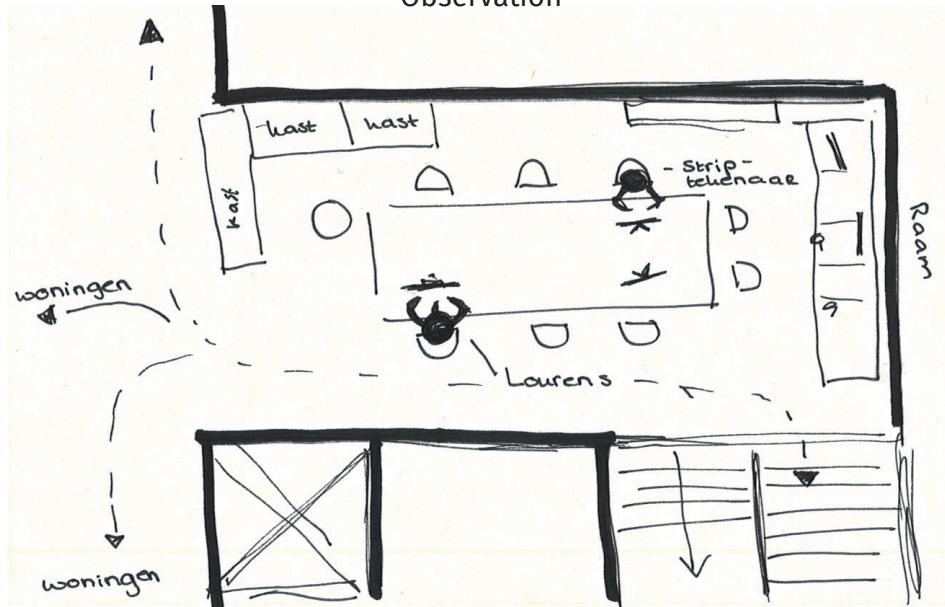
Atelier - Photo made by Rozemarijn Peeters



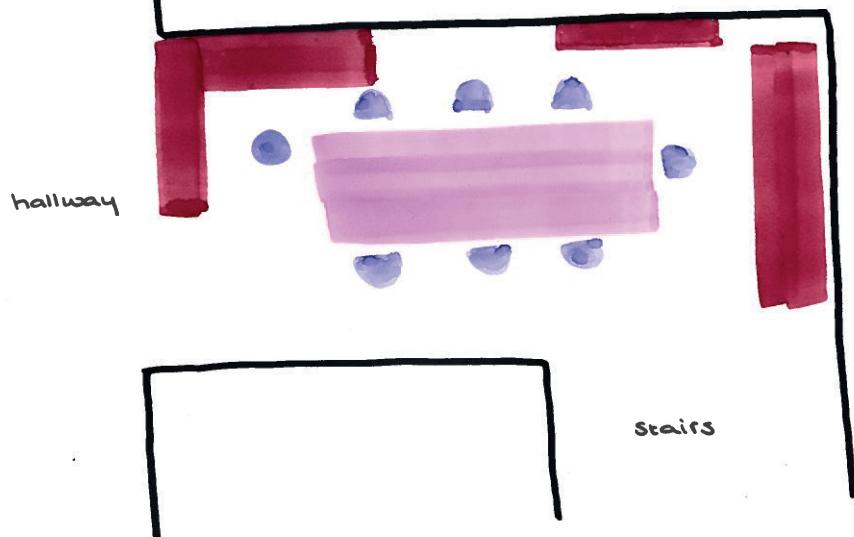
Communal areas

Workshop space

Observation



Analysis

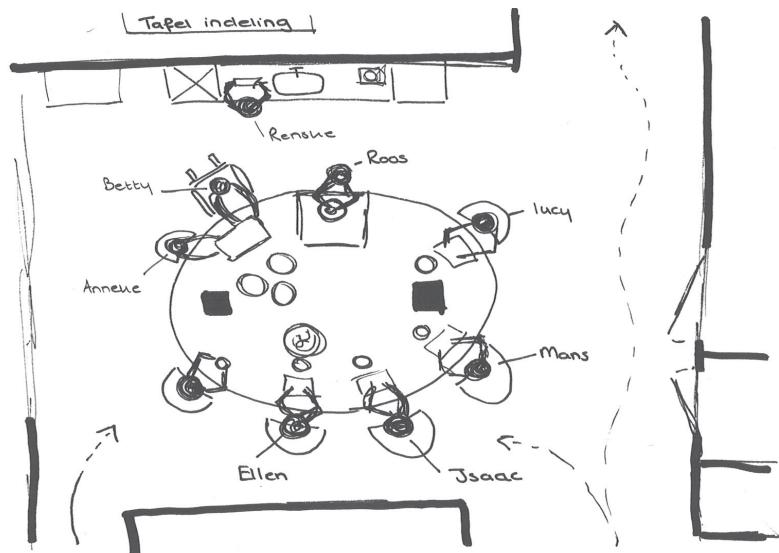




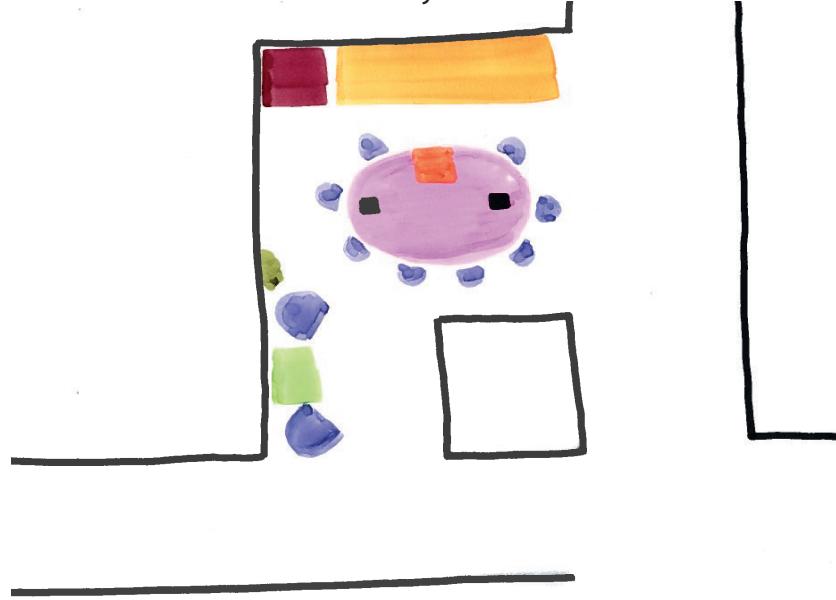
Communal areas

Kitchen 1st floor

Observation



Analysis





Kitchen 1st floor - Photo made by Rozemarijn Peeters

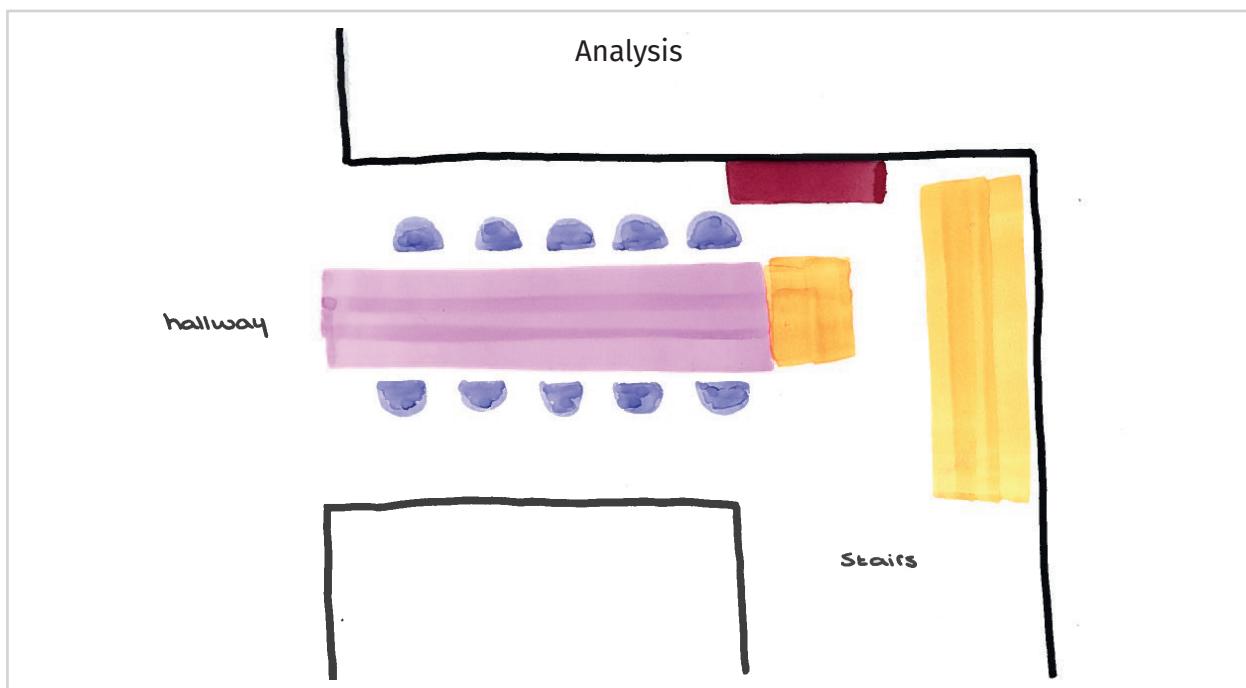
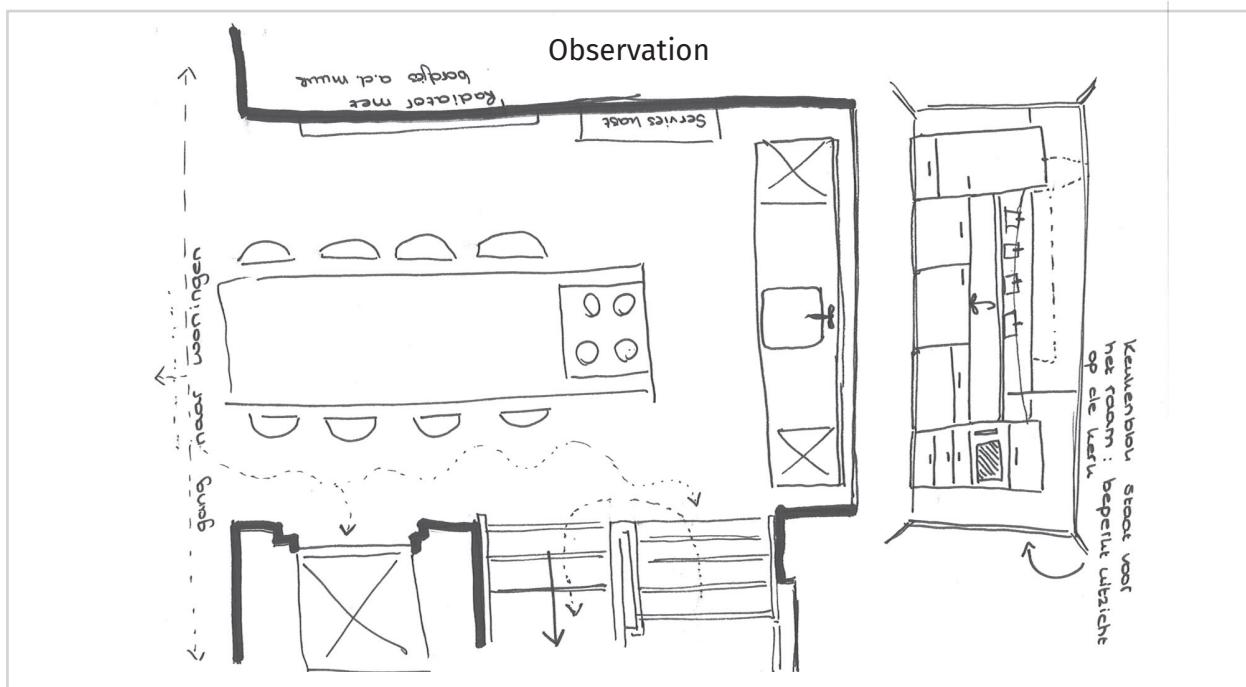


Kitchen 2nd floor - Photo made by Rozemarijn Peeters



Communal areas

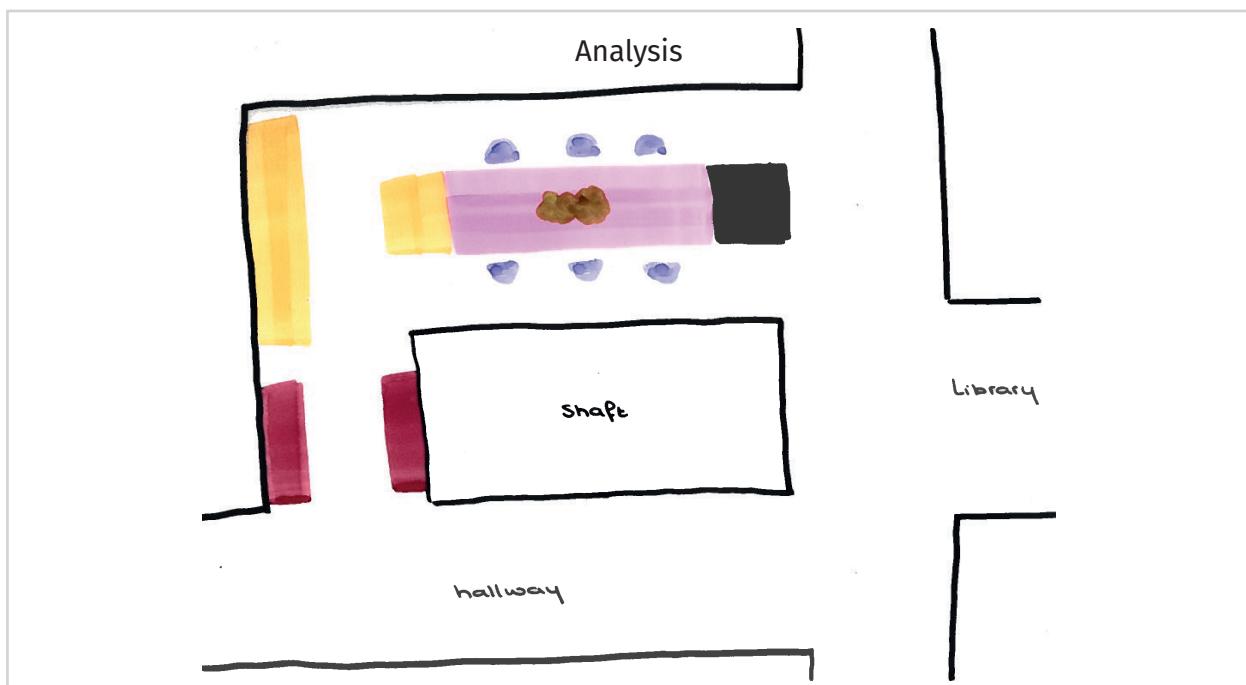
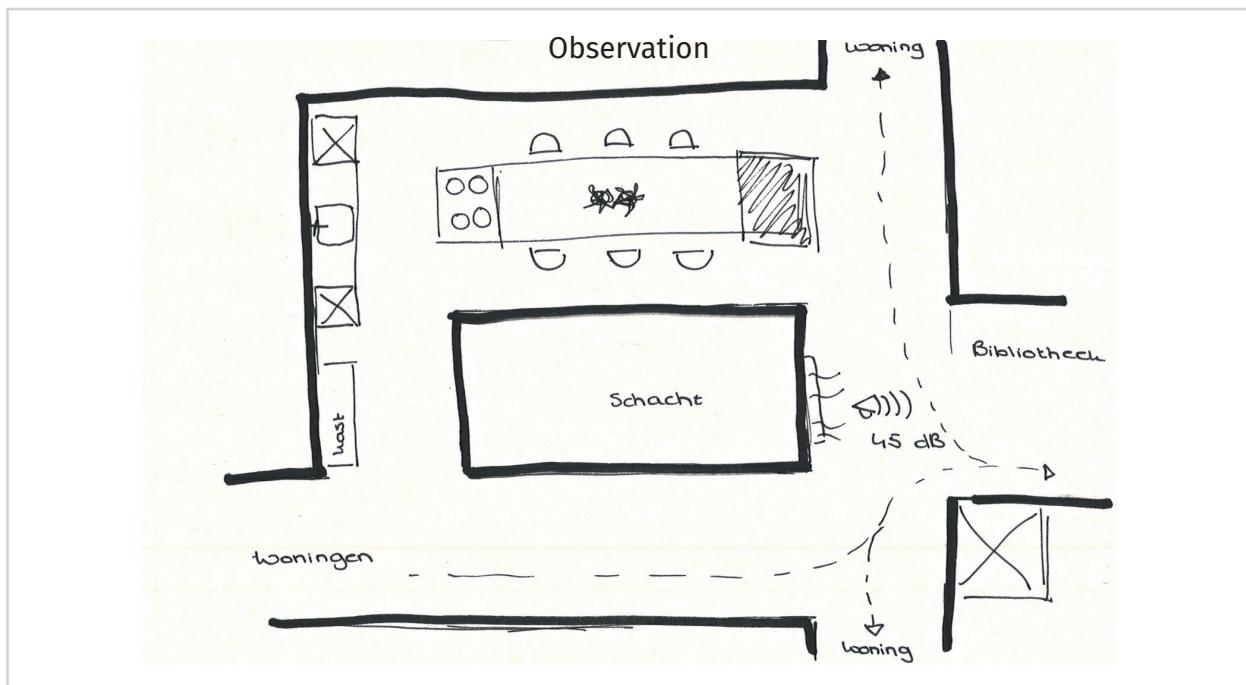
Kitchen 2nd floor





Communal areas

Kitchen 3rd floor





Kitchen 3rd floor - Photo made by Rozemarijn Peeters



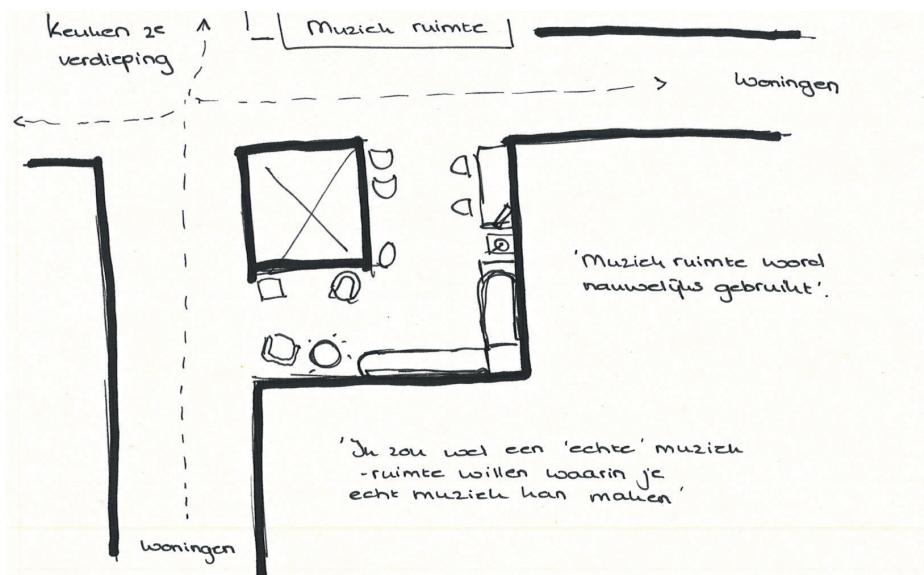
Music space - Photo made by Rozemarijn Peeters



Communal areas

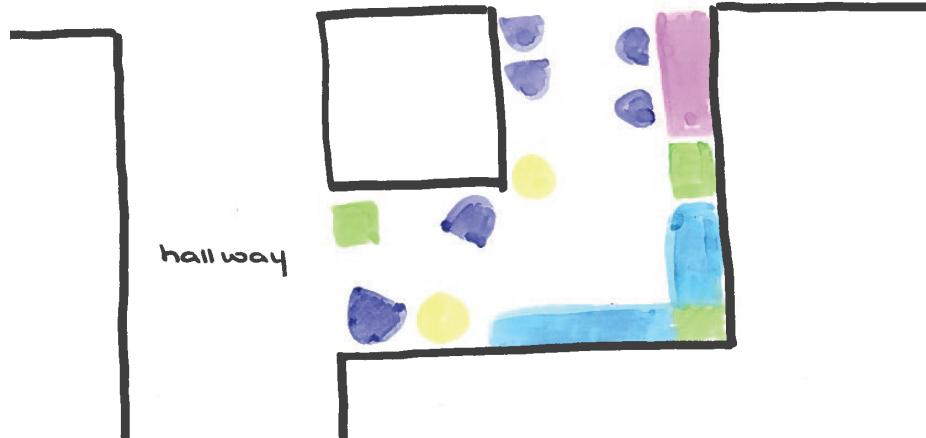
Music space 2nd floor

Observation



Analysis

hallway

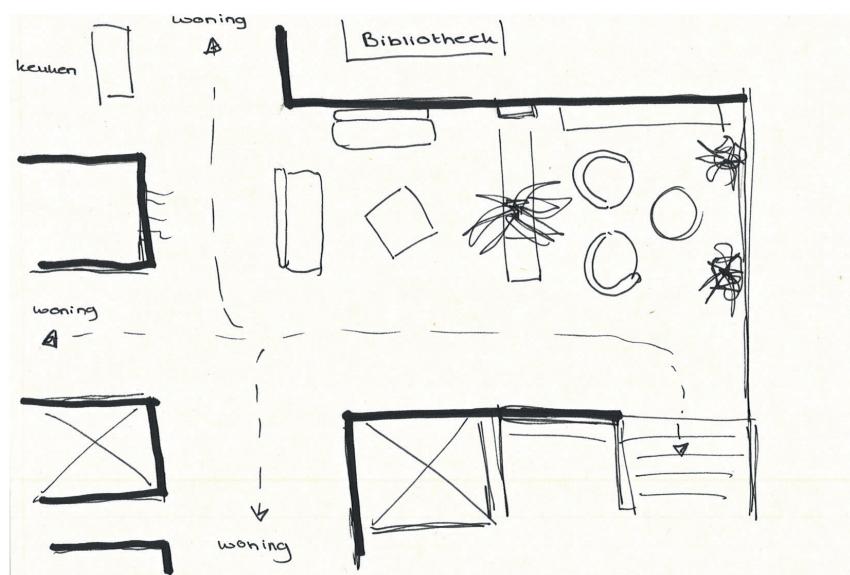




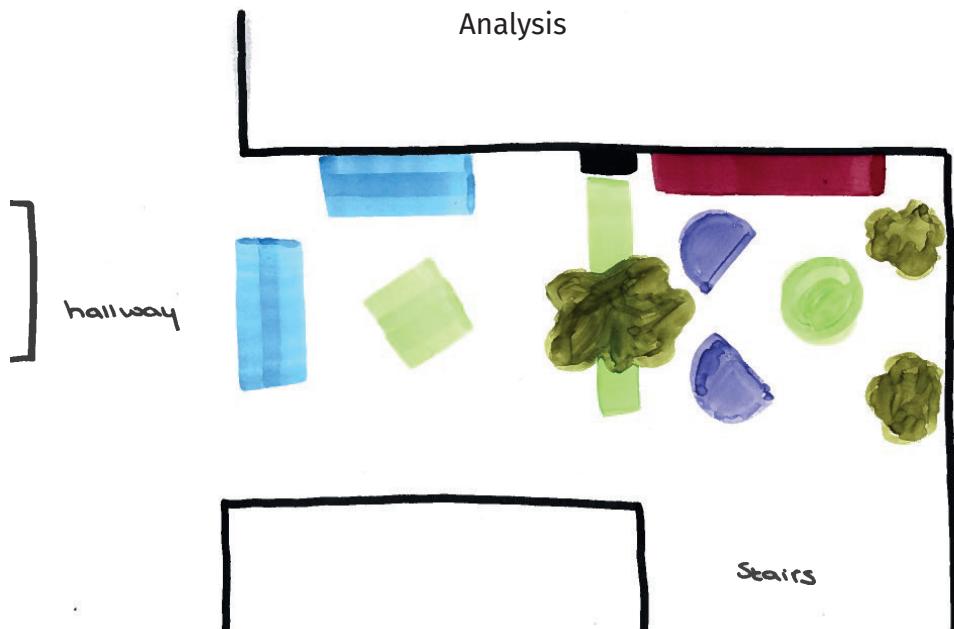
Communal areas

Library 3rd floor

Observation



Analysis





The library - *Photo made by Rozemarijn Peeters*



Communal areas

Ranking

1.



Tea house



Kitchen 1st fl.

Used every day during our fieldwork trip

2.



Workshop space

Used various times during the fieldwork trip

3.



Kitchen 3rd fl.



Kitchen 2nd fl.



Library



Music space

No use during the fieldwork trip



Communal areas

Conclusion



Tea house

Tea house: **Popular** space for the residents. **Coffee** is a very important part of the day. The sofa against the wall is not used; people put chairs in the middle.

Two reasons:

- People want to sit close to each other '**gezellig**'.
- Not practical for people with **mobility** problems.

Huge division between care and no care part. Due to the financial system of care in the Netherlands

Kitchen on the first floor is used, because there is no alternative. For people with dementia it is to **noisy**, to much incentives. People walking by is **disturbing**.



Kitchen 1st fl.



Workshop space

Popular space for creative residents. Organised painting club is popular. Large space outside their home where residents can be creative.

Easy accessible for residents who are less mobile, chairs can be stowed away and wheelchair can be used instead of chair.

People walking by can be disturbing.

Not furnished for someone with less mobility. Space is to **narrow** for someone with walker or wheelchair. Space **can not be used to make music** in, because of the open plan. Gives **noise disturbance** for the rest of the building.



Music space



Library

People walking by is **disturbing** when reading. Air is blown into the room through a ventilation grille; **unpleasant draft** and makes noise.

No need to use this kitchens, since residents have their own kitchen in their house. Some residents use only the big oven in there.



Kitchen 3rd fl.



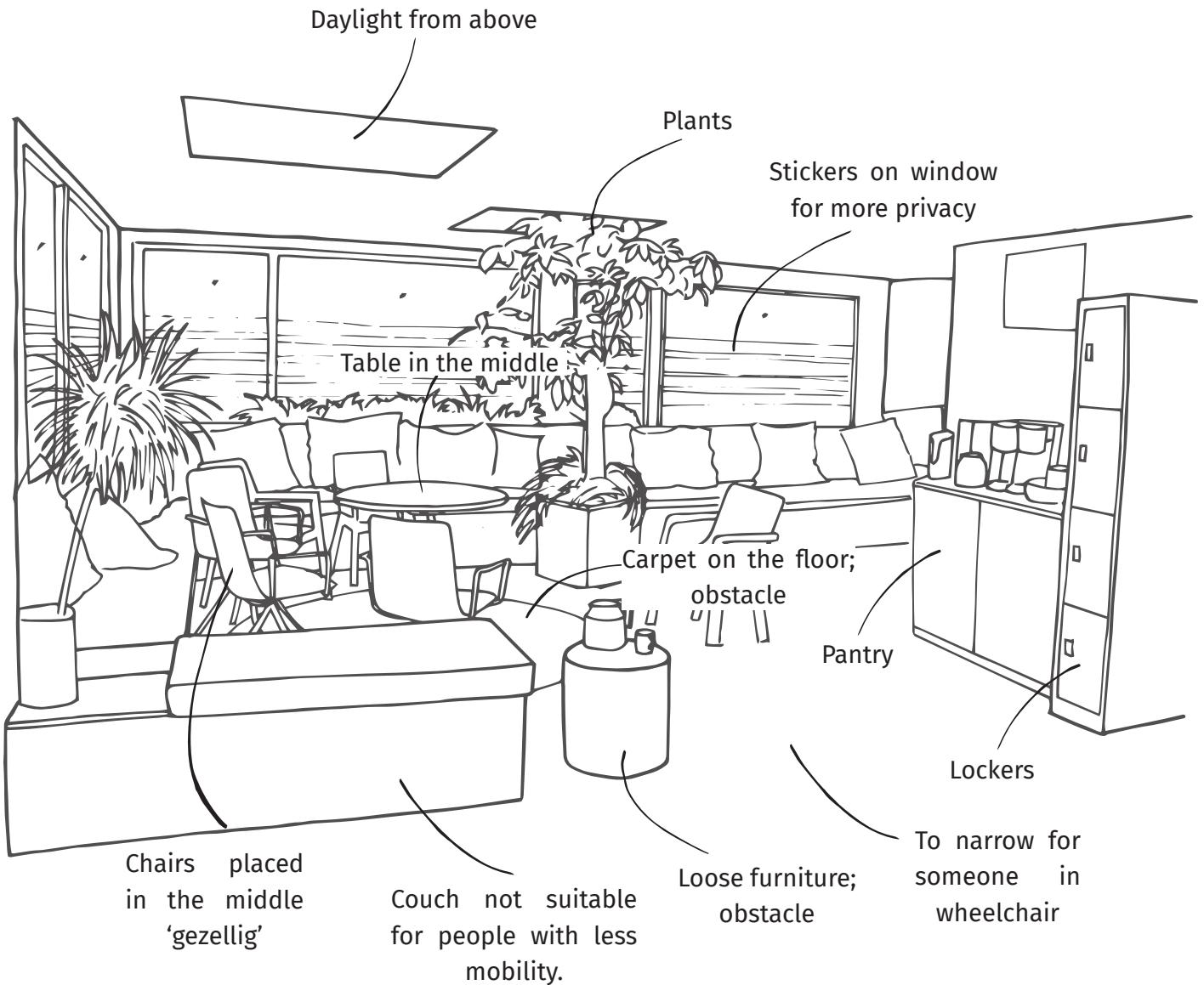
Kitchen 2nd fl.

Spaces need to have certain **activities** to be attractive for people.



Communal areas

Conclusion



Why spaces **do not** work:

- No Activity
- Poorly accessible
- Disturbance

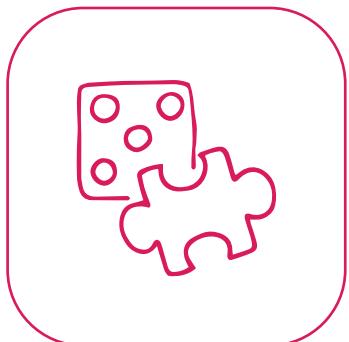
Why spaces **do** work:

- Activity
- Social interaction
- Accessibility



Design Tools

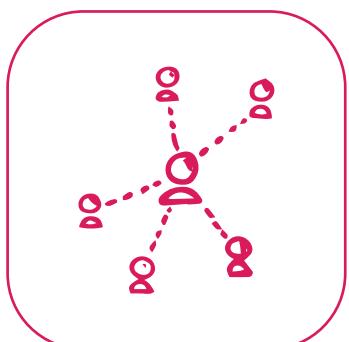
Building



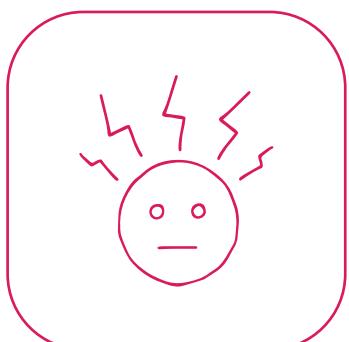
Activities to be attractive



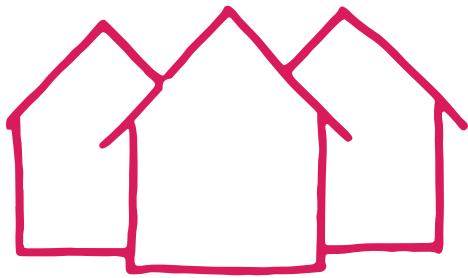
Easy accessible, also for people who are less mobile



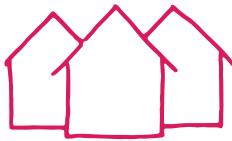
Enhance social interaction



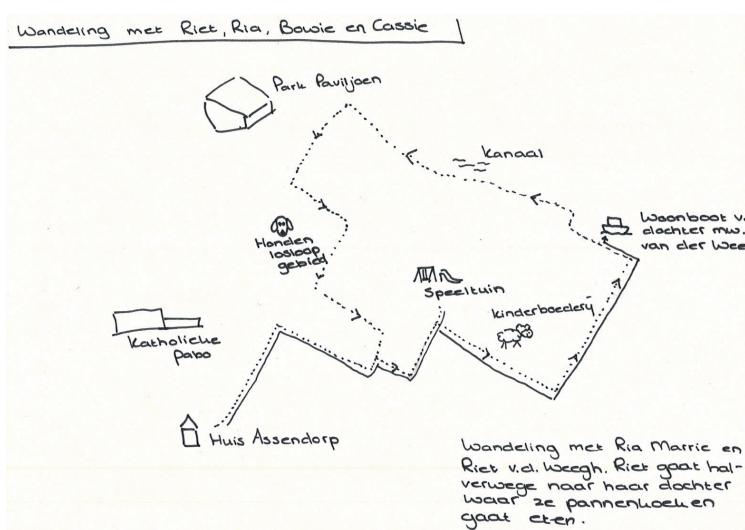
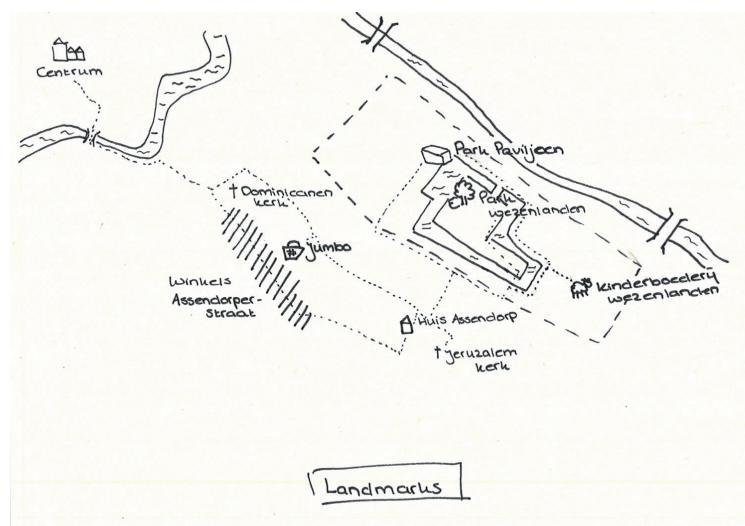
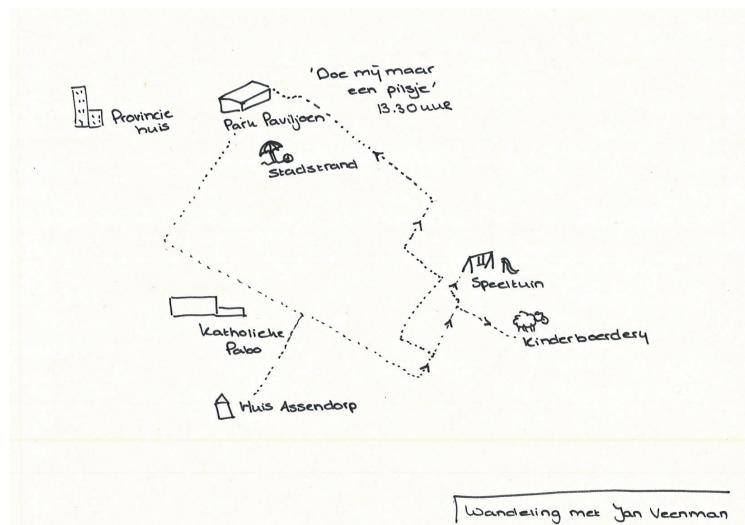
No disturbance

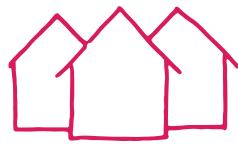


4.4 Neighbourhood



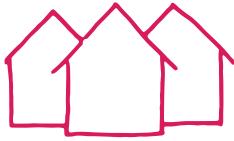
Observations Neighbourhood





Analysis Distances





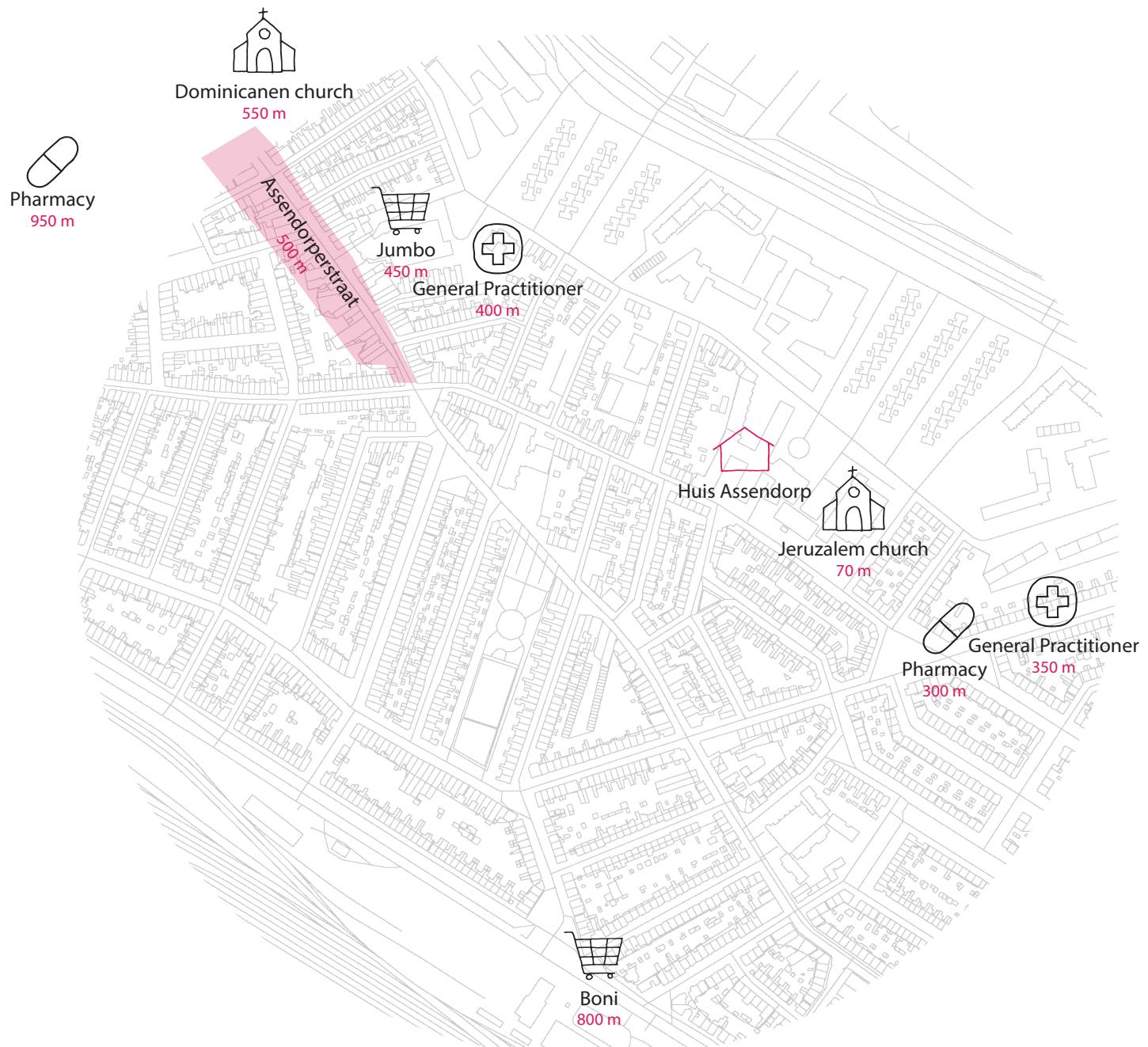
Analysis

Facilities nearby



City center

1500 m

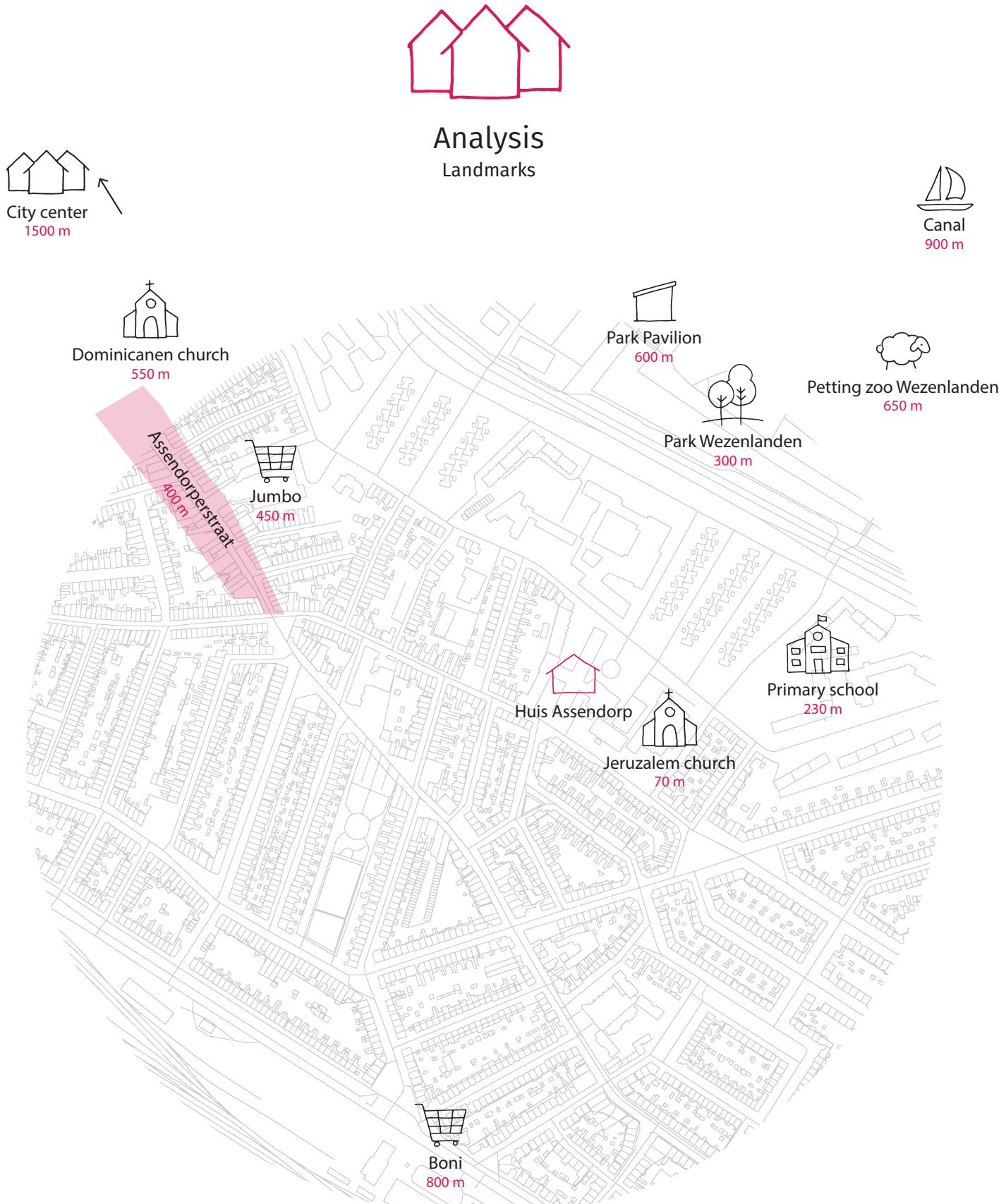




In front of the pharmacy - Photo made by Rozemarijn Peeters



Family houses in the Assendörp neighbourhood - Photo made by Rozemarijn Peeters



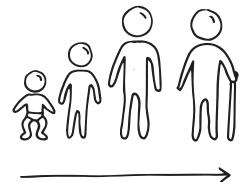


Analysis Characteristics

During our visit day we spoke with 12 randomly chosen local residents. They told us the following:



Close neighbourhood, where people **know, help and take care** of each other.



Many people have lived in the Assendorp neighbourhood **all their lives.**



Assendorp is a mixed neighbourhood, young people and older people live **together**.



Assendorp is a **mixed** neighbourhood in terms of house types. There is a mix of small workers' homes, medium-sized family homes and villas.



The **Assendorperstraat** is the centre of the neighbourhood. Here are all kinds of facilities such as a Jumbo, action, hairdresser etc.

‘What gives more satisfaction than **helping each other?’**

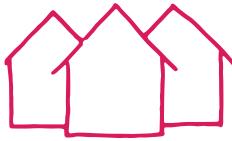
- Resident Assendorperbuurt



Villas in the Assendorp neighbourhood - Photo made by Rozemarijn Peeters



Medium sized houses in the Assendorp neighbourhood - *Photo made by Rozemarijn Peeters*



Analysis Neighbourhood

During our visit day we spoke with 12 randomly chosen local residents. They told us the following:

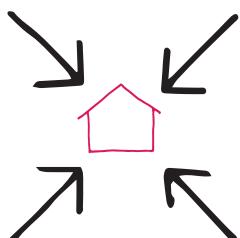
100 % knew the Huis Assendorp building.

50 % has visited the building once.

The people we have spoken to all know the building. They are quite positive about the concept of young and old people living together. However, they do not visit the building themselves at this moment. The general tendency is that they have nothing to look for in the building. The building, as it is now, offers them nothing. This could change, in their opinion, if the building would offer something the neighbourhood does not have yet.

This is difficult, since the Assendorperstraat already has quite a lot of functions. Some people however name the possibility of a cafe with an outside terrace. This would help to make the building more inviting to the neighbourhood.

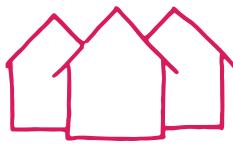
The building is not considered 'inviting'. It does not look like an 'enclosed bunker' but it is not 'open' either. Making the entrances more light, outstanding and inviting would help, according to some neighbours.



100 % of the people we have spoken to would go to the building if there was a certain **activity or function** in the building they would need, and the neighbourhood does not have.

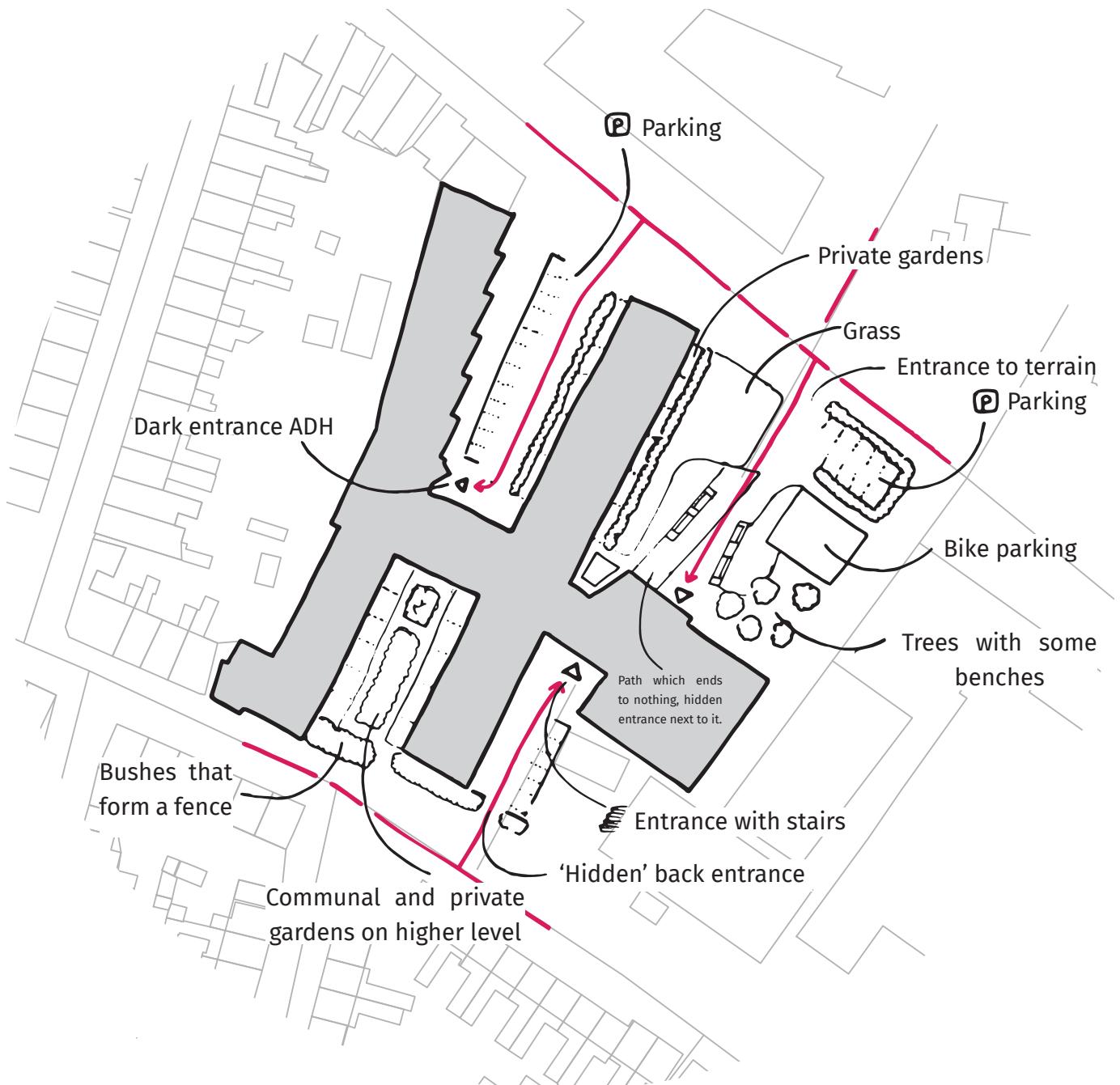
'I went to the building once, but I did not go in because the building was **not inviting enough.'**

- Direct neighbour of Huis Assendorp



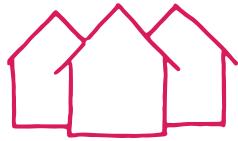
Analysis

Borders and Boundaries

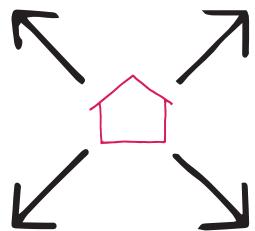




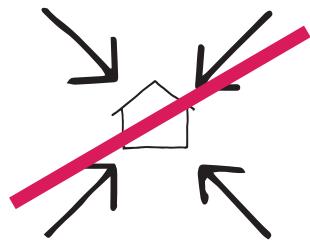
Hidden entrance of Huis Assendorp - Photo made by Rozemarijn Peeters



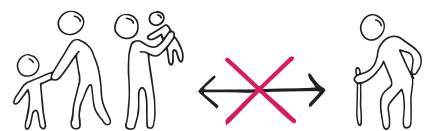
Conclusions Neighbourhood



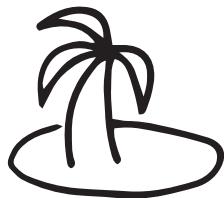
The residents go out
of the house



The neighbourhood
does not get in



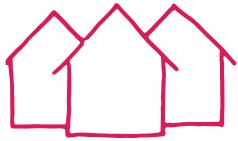
No connection
Neighbourhood and
residents



The house is an island in
the Neighbourhood

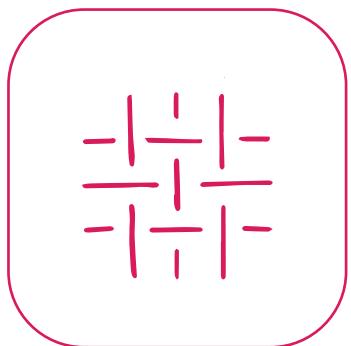


Landmarks help to
orientate



Design tools

Neighbourhood



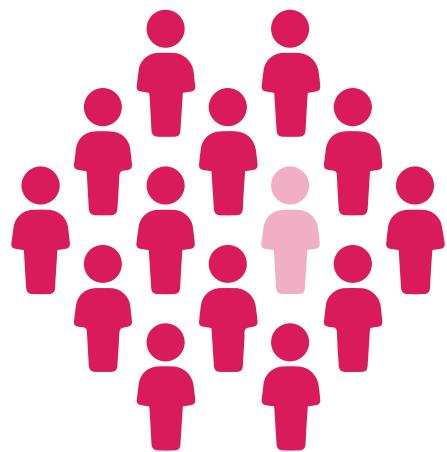
The house should **intertwine** with the neighbourhood



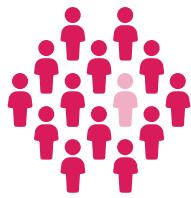
House must be **attractive** / inviting for the neighbourhood



Recognizability



5. Open society



Open society

Definition

To what extend can the concept of an open society.... Before answering the main research question one must first understand what is meant with the term 'open society'.

In his lecture 'The Open City' Richard Sennet (2017) describes what an open system, according to him, is and what the key elements are to built an open city. He stresses the importance of an open system by first looking at a closed system. He says:

"In a closed system, a little bit of everything is happening all at once. Which is a recipe for low quality."

The open system is described as an assemblage from chance events, mutating forms and elements that can not be homogenized. To create an open urban system there should be an interaction between the physical creation and the social behaviour. The open system will stimulate the individual.

To built an open city there are three major components (Sennet, 2017); i. Ambiguous edges, ii. Incomplete form and iii. Unsolved Narrative.

i. Ambiguous edges: Difference between borders and boundaries. Boundaries; where things end (wall). Borders; where two species meet and interact (membrane). Current built environment functions as boundaries. All functions are isolated. Exchange between different racial, ethnic or class communities diminishes.

ii. Incomplete form: purposely left unfinished. Light architecture which can be added or internally revised when habitation needs change.

iii. Unsolved narrative; explore the unforeseen.

Summarizing all by 'open' Sennet (2017) means incomplete, errant, conflictual, non - linear. The open city possesses more borders and membranes. The open city is a bottom up place: it belongs to the people.

French philosopher Karl Popper: defined the open society as one "in which individuals are confronted with personal decisions"

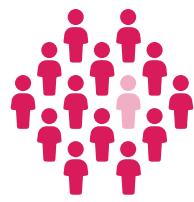
This is supported by the ideas of Jaap Bakema about the open society (in *Jaap Bakema and the open society*, 2018). According to him, an open society is about a caring society with concern for clients, the profession, the city and the earth. In an open society, architectural design should once again be an expression of man's needs to life a full life (Bakema in *Jaap Bakema and the open society*, 2018, p. 246-247). Bakema states:

"Architecture as an expression of human behaviour"

In this open society there is a place for everyone, its about diverseness and inclusiveness.

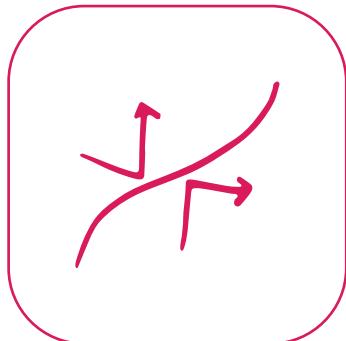
My definition

An open society is a society wherein the individual is stimulated to express themselves and their needs, where different groups are stimulated to interact and where concern and care for others is central. Its about diverseness and inclusiveness and letting go that not everything can be planned.

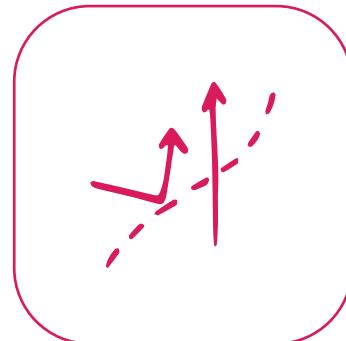


Open society

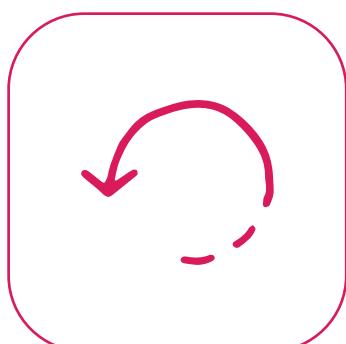
Design tools



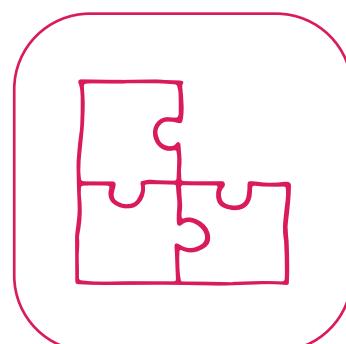
Boundaries: where things end



Borders: where species can interact



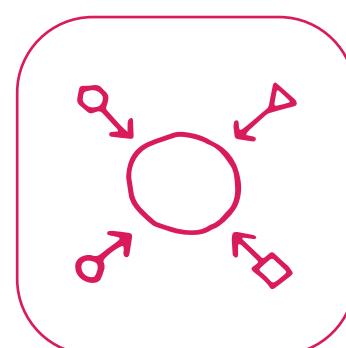
Unresolved narrative



Incomplete form



Expression of human behaviour



Inclusiveness



Diverseness

6. Dementia



6.1 Dementia & the People



Dementia disease

Literature research

When speaking of dementia we mean a progressive decline in intellectual and social capacity, which influences the daily functioning of a person (Alzheimer Nederland, 2009). It is the result of abnormal processes in the brain. Dementia is not, as is often thought, a disease. In the medical world is it seen as a syndrome that can have various causes.

The various causes can be Alzheimer's disease, vascular dementia, frontotemporal dementia, Parkinson disease and some other causes. However, the most common cause is Alzheimer's disease.

When suffering from the Alzheimer's disease, due to an accumulation of abnormal proteins in the brain, more and more nerve souls in the brain and/or connections between nerve cells break down. This makes the brain shrink and signals in the brain are no longer properly transmitted.

Every person with Dementia is different and therefore will experience a different disease process. Factors that influence the disease process are; age, personality, physical health, family history, cultural and ethnic background (Alzheimer Nederland, 2009). On average, the disease process takes around 8-10 years, until death occurs.

In general, there are three most common consequences for the daily functioning caused by dementia; i. Impaired Imprinting, ii. Poor filtering of incentives and iii. 'rolling back memory' (Reigershoeve, 2014).

i. Imprinting is the transfer of information from our short-term memory to our long-term memory. In the case of dementia, this imprinting is disturbed, the information cannot be stored.

Consequences for this are; getting lost in familiar surroundings, repeatedly asking the same questions, losing things, not being able to answer questions about recent things etc.

ii. Poor filtering of incentives is a problem for someone with dementia. Because of this, all senses are stimulated to a similar extend, which can overstimulate. This over stimulation can cause restlessness, stress, depression and gloom.

iii. When suffering from dementia, the memories in the long-term memory are crumbling down. This is done in a special order; first the most recent memories, then the older ones. The early memories are preserved the longest. Because of this rolling back memory one loses daily skills such as dressing and how to eat.

By understanding how someone with dementia experiences himself and the world around him, you can better respond to his or her needs. Dementia can be divided into four stages in which people with dementia experience their illness and the environment differently. A different approach is needed in each stage (Reigershoeve, 2014).

In the first stadium ('the threatened me') someone has just discovered that something is wrong with their memory. The person feels threatened and will do anything to hide the fact that she has forgotten something. This can cause tension, sadness and anger.

The second phase ('the lost me') is characterized by the increase of forgetting things. Someone cannot remember how old she is, where she is or who someone is, even if it is a close relative. They literally get lost. People in this phase often look relaxed and like to withdraw themselves.

In the third phase ('the hidden me'), someone with dementia is completely absorbed in his own world. This makes it appear that you cannot make contact with these people, because language has disappeared completely. Communication can then take place via touch.

In the fourth and last stage people do not respond to anything anymore, someone needs continuous care. This makes it seem as if these people are only physically present. People with dementia can still respond to love and touch. He or she can also enjoy music or smell smells. Dementia ultimately leads, directly or indirectly, to death. The final stage can last between six and nine years (Lentis, n.d.).

Although the concept of language disappears quite quickly, the interpretation of communication remains intact for a long time. So although they are no longer able to talk, they sense more things because they pay more attention to body language and intonation. No response does not mean that someone does not understand it (Reigershoeve 2014).

In order to provide insight into these four phases, an overview is given on page 106 of the various phases and characteristics associated with them.



Dementia disease

4 phases

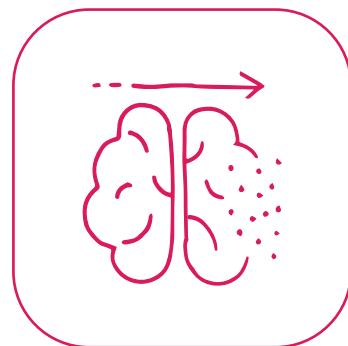
Four different phases of dementia can be distinguished. Sometimes phases run together, which makes it harder to distinguish. The loss of the 'I' experience occurs on a conductive scale.

	de bedreigde ik (the threatened me)	de verdwaalde ik (the lost me)	de verborgen ik (the hidden me)	de verzonken ik (the sunken me)
TIME	Lives in the present	Mixes past and present	Lives in the past	Lives in inner world
AWARE	Is aware of memory problem and deterioration, tries to hide problems	Limited awareness of memory problem and deterioration	No awareness of memory problem and deterioration	No awareness of memory problem and deterioration
EMOTIONS	Nervous, irritable, insecure, suspicious, angry, sadness and fear. Blame another.	Restless, fear, panic. Often shows emotions. Mood swings. Often 'on their way home'.	Often shows emotions. Mood swings. Cries / laughs for no apparent reason.	Emotions are difficult to perceive.
LANGUAGE	Verbal communication, uses correct words and sentences. Voice expresses emotion.	Verbal and non-verbal communication, problems with finding correct words. Voice is monotonous.	Primarily non-verbal communication. Major problems with wording. Voice melodic and slow. Repetition of words and sentences.	No verbal communication. Voice is weak and soundless.
PHYSICAL	Can perform most general daily life activities himself, sometimes needs help.	Needs guidance with general daily life activities. Sometimes incontinent by accident	General daily life activities must be taken over. Becomes more passive, can no longer walk independently. Incontinent.	Completely dependent on others. Complete passivity. Incontinent.
STIMULI	Conscious of environment	Usually, responds alert to environmental stimuli	Occasionally, stimuli from the environment still come in	Most of the stimuli from the environment don't come in anymore
ORIENTATION	Knows what time of day it is. Knows the way home. Recognizes family / caregivers.	Difficulties with time and day planning. Limited knowledge of way in and around the house. Limited recognition of family and caregivers.	No sense of time. Gets lost in own house and the immediate surroundings. No recognition of family and caregivers	Complete disorientation, has no idea of time, place and person.
OBJECTS	Recognizes the function of objects and uses them correctly.	Collects objects, often loses objects. Does not recognize the function of various objects and does not use them correctly.	A certain object can offer comfort. Hardly recognizes the function of objects.	Does not recognize the function of objects.

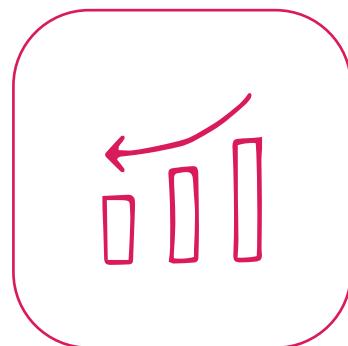


Dementia disease

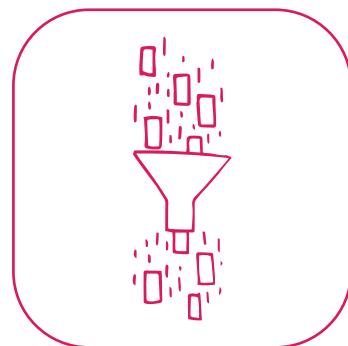
Design Tools



Default between
short term and
long term memory



Rolling back
memory



Poor filtering of
incentives



6.2 Dementia & Architecture



Dementia and Architecture

Literature research

This part of the research is conducted by consulting the book *Dimensie voor Dementie* by Nillesen & Opitz (2013). I will give a brief overview of their main findings.

The ideal living environment for someone with dementia has an old fashioned appearance, because the memory of the last 40-60 years is declining.

Three points of attention:

- stimulance through movement and sound
- walk
- materials and colour

Errors in construction, layout and interior trigger problem behaviour. Hearing, seeing, feeling and smelling remain active for a long time. Cognitive functions decrease slowly, while sensory perceptions remain.

Seeing small-scale housing as a new standard. If the place where the demented person lives is also nice for family to stay, they will visit more often. Small-scale care has a positive influence on the well-being of the staff, the quality of care and the quality of life of the resident.

The house must support the resident in the following: orientation, privacy, autonomy, domesticity, sensible intelligibility, encounter and activities.

Designing for dementia requires a different approach. Due to the illness, a person suffering from dementia cannot answer questions like: "How do you want to live, what do you like or think is important?". The spatial perception of

someone with dementia is also very different from that of someone with a healthy brain. Because the disease is different for everyone, the outcomes will differ.

The House:

The living space of someone with dementia must above all be a home. By home we mean a private room, a common living room, a private front door, a terrace or garden.

A basic Dutch house consist of an entry (hall), living-room, kitchen, toilet, bedroom(s), bathroom and garden. A house for someone with dementia is no different. However; the border between public and private is somewhere else. This can cause confusion for someone with dementia. A clear zoning of private and public spaces is very important for someone with dementia.

The Apartment:

The private room is the most important domain of someone with dementia, it is the only real private domain. Points of attention are: room size, use by residents and staff, need for privacy, placing in relation to sanitary facilities and rest of the home. The minimum size of the private apartment should be 15 m². A smaller space is perceived by healthcare staff as too small. In smaller rooms, people tend to receive fewer visits. Bigger rooms are used more often. Generally, the family values privacy more than the person with dementia.

When having dementia, using the bathroom independently becomes more difficult. That is why there are a number of additional requirements for the dimensions of the bathroom, if assistance is required. Rather a big shared bathroom, than a

small individual one. However more satisfaction is experienced when the bathroom is not or less shared.

Hallway:

Hallway is an important tool to help the demented resident to its destination. To support the orientation small hallways overlooking the living room with a limited amount of doors are preferred. A clear transition between spaces is important.

For people with dementia, movement is extremely important. Therefore, facilitating sufficient room to exercise is important. Rest moments must should also be incorporated in this. The construction of a walking circuit is a point of discussion. Is it 'satisfying a need' or 'symptom control' and can you reduce the urge to walk through other solutions?

It is important to make clear where the urge to walk comes from. Is the environment not stimulating enough and is that why they become restless?

Point of orientation will help the resident to orientate himself in the building.

Kitchen and living room

Just as in a normal house the kitchen and living room function as the heart of the house. Lots of activities take place. There should be room for multiple activities without disturbing each other. A clear overview between kitchen and living room is necessary. As few incentives as possible, seating areas oriented to incentives (rest in the back); to make it clear for the demented resident where they come from.

Also there must be enough wall-space for cabinets

and enough space for a wheelchair resident and its needs. Daylight and view should also not be forgotten.

Entrance

Designing a clear and recognizable entrance is key for someone with dementia to find the house. The degree of transparency determines accessibility. Visibility and connection to routes in public spaces are crucial. The front-door is a transition zone between public and private and is part of ones own identity. Seeing the front-door from the living room makes the residents more happy and stimulates to go out of the house more often.

Outside spaces

Creating an outside space ensures that residents go outside more often and has a positive influence on cognitive functions (if enough incentives). A visual connection between living room and garden helps the residents to experience seasons, day and night rhythm. The garden must be invitingly decorated with benches, plants, flowers, etc. By opening the garden to the neighbourhood, contact with the neighbourhood can be increased

Bright contrasting colours are preferred over pastels for people with dementia. Contrast between wall and floors is helpful, dark colours on the floor are not.

Small-scale forms of living are particularly preferred by family, who will visit more often. Linking two living rooms is not a good idea for the resident. An interconnecting door, often desired by the care worker, causes agitation for the resident.



Dementia and Architecture

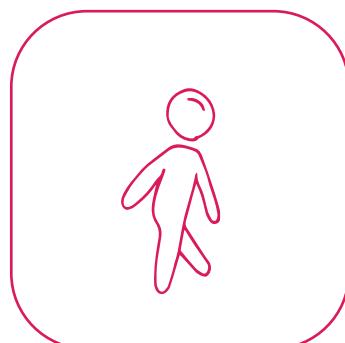
Design Tools



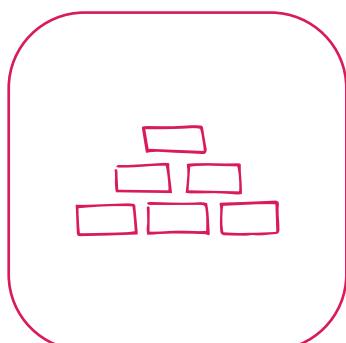
Small scale living



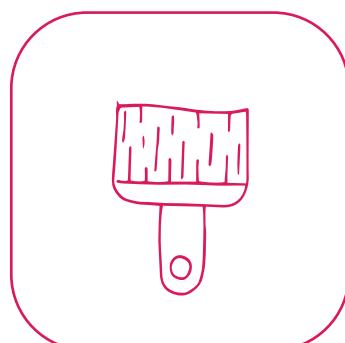
Stimulation via
movement and
sound



Walk



Materials



Colours



Dementia and Architecture

4 phases & its meanings for architecture

On page 104 an overview of the four phases of dementia is given. The characteristics of each phase have an influence on the perception of space. Therefore it is important to consider what this perception is and how we can use it in the design. In light pink the most important characteristics for architecture.

	de bedreigde ik (the threatened me)	de verdwaalde ik (the lost me)	de verborgen ik (the hidden me)	de verzonken ik (the sunken me)
TIME	Lives in the present	Mixes past and present	Lives in the past	Lives in inner world
AWARE	Is aware of memory problem and deterioration, tries to hide problems	Limited awareness of memory problem and deterioration	No awareness of memory problem and deterioration	No awareness of memory problem and deterioration
EMOTIONS	Nervous, irritable, insecure, suspicious, angry, sadness and fear. Blame another.	Restless, fear, panic. Often shows emotions. Mood swings. Often 'on their way home'.	Often shows emotions. Mood swings. Cries / laughs for no apparent reason.	Emotions are difficult to perceive.
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PHYSICAL	Can perform most general daily life activities himself, sometimes needs help.	Needs guidance with general daily life activities. Sometimes incontinent by accident	General daily life activities must be taken over. Becomes more passive, can no longer walk independently. Incontinent.	Completely dependent on others. Complete passivity. Incontinent.
STIMULI	Conscious of environment	Usually, responds alert to environmental stimuli	Occasionally, stimuli from the environment still come in	Most of the stimuli from the environment don't come in anymore
ORIENTATION	Knows what time of day it is. Knows the way home. Recognizes family / caregivers.	Difficulties with time and day planning. Limited knowledge of way in and around the house. Limited recognition of family and caregivers.	No sense of time. Gets lost in own house and the immediate surroundings. No recognition of family and caregivers	Complete disorientation, has no idea of time, place and person.
OBJECTS	Recognizes the function of objects and uses them correctly.	Collects objects, often loses objects. Does not recognize the function of various objects and does not use them correctly.	A certain object can offer comfort. Hardly recognizes the function of objects.	Does not recognize the function of objects.

To see how dementia is influencing the daily life and use of architecture I have written per phase what someone does on a basic day, which spaces they use and whether the person needs help with certain activities.



Dementia and Architecture

Day in the life of *the threatened me*



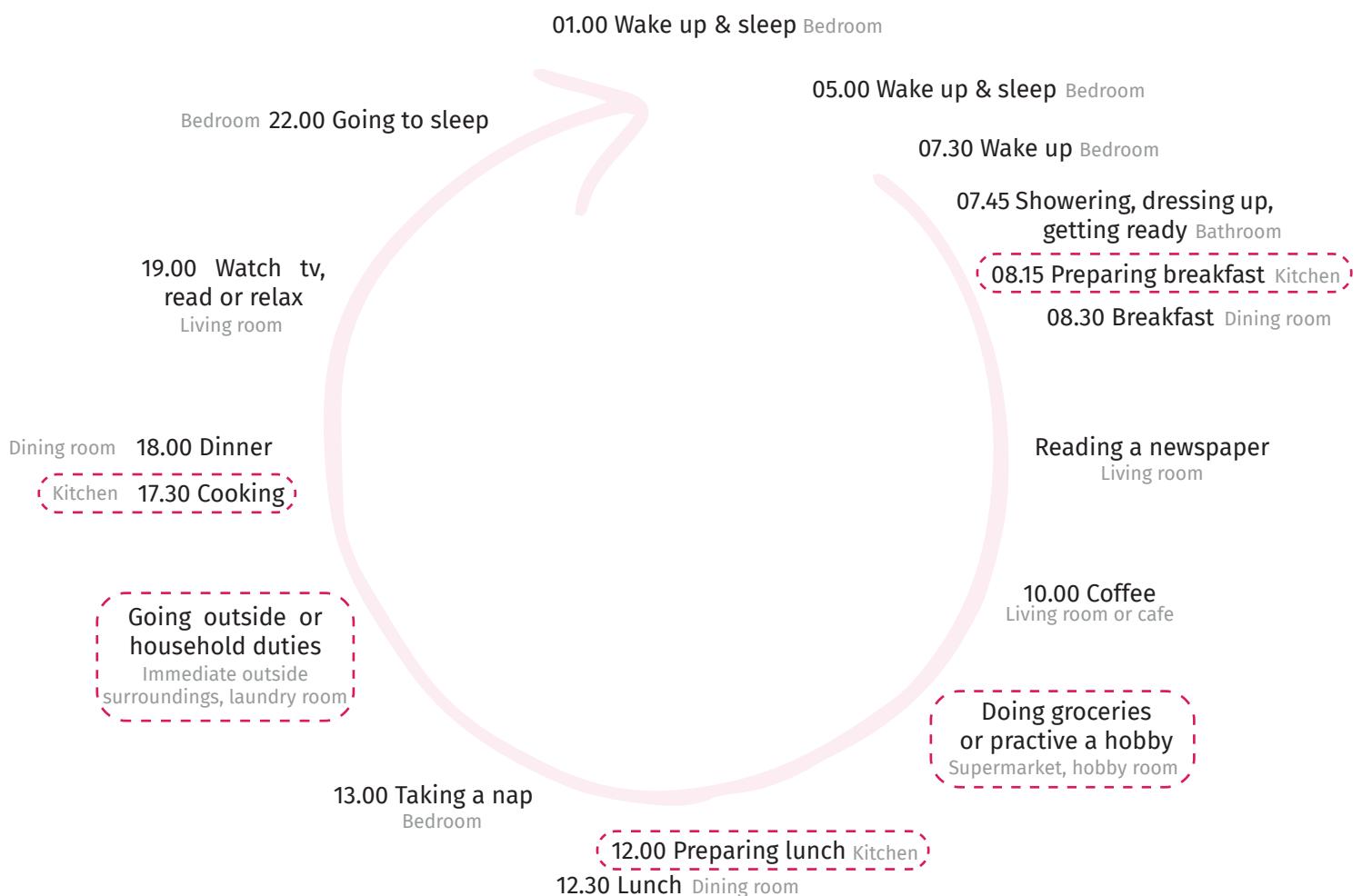
Forgetting small things, simple things cost more energy.



Dementia and Architecture

Day in the life of *the lost me*

Help needed



Need help with daily activities. Needs routine, repetition.



Dementia and Architecture

Day in the life of *the hidden me*

Help needed

01.00 Wake up & sleep Bedroom

05.00 Wake up & sleep

Bedroom 22.00 Going to sleep

07.30 Wake up Bedroom

07.45 Showering, dressing up,
getting ready Bathroom

08.30 Breakfast Dining room

Dining room 18.00 Dinner

10.00 Coffee
Living room

13.00 Taking a nap
Bedroom

12.30 Lunch Dining room

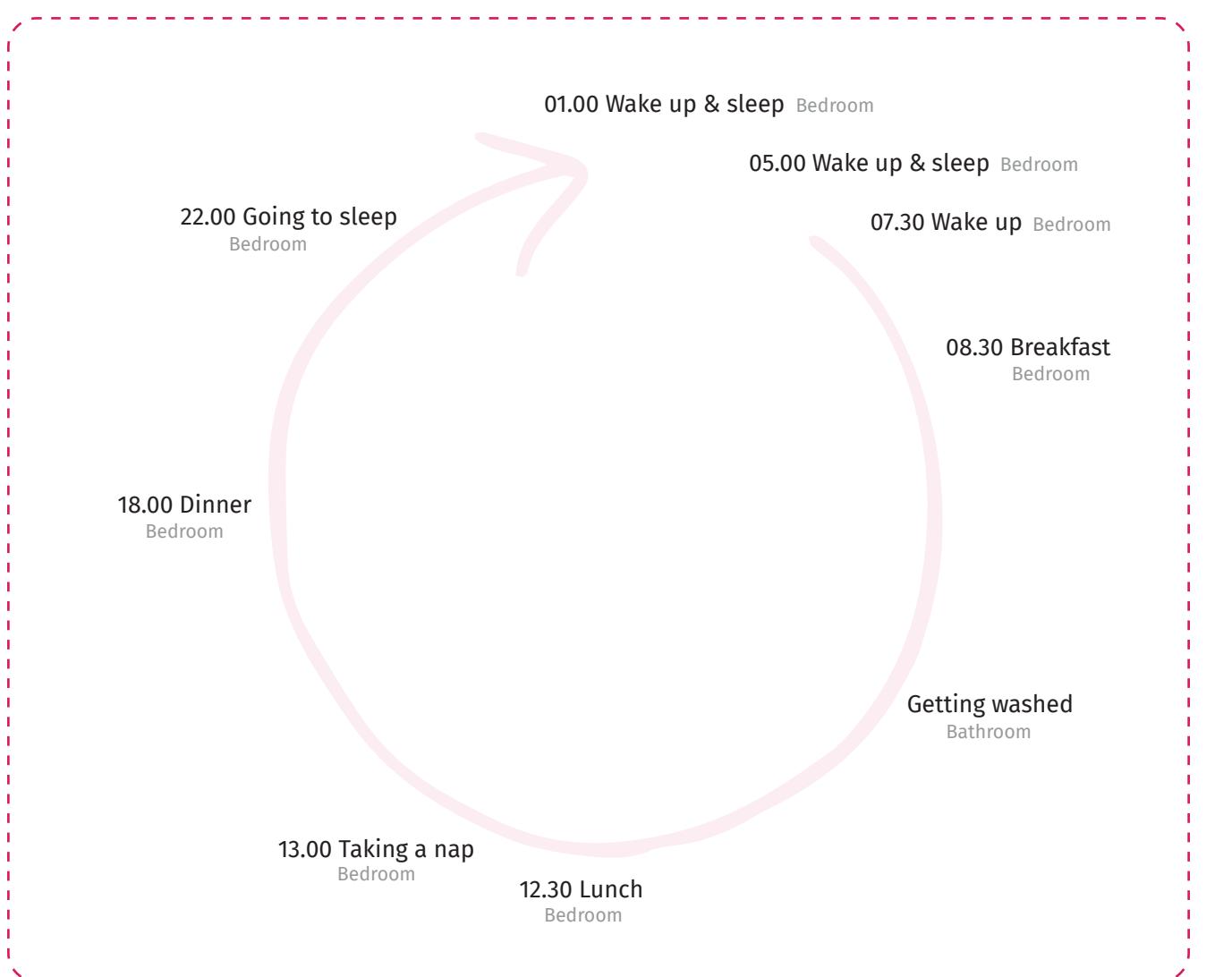
Full support with daily care required.



Dementia and Architecture

Day in the life of *the sunken me*

Help needed



Completely dependent on caregiver, professional needed.



Dementia and Architecture

4 phases and spaces

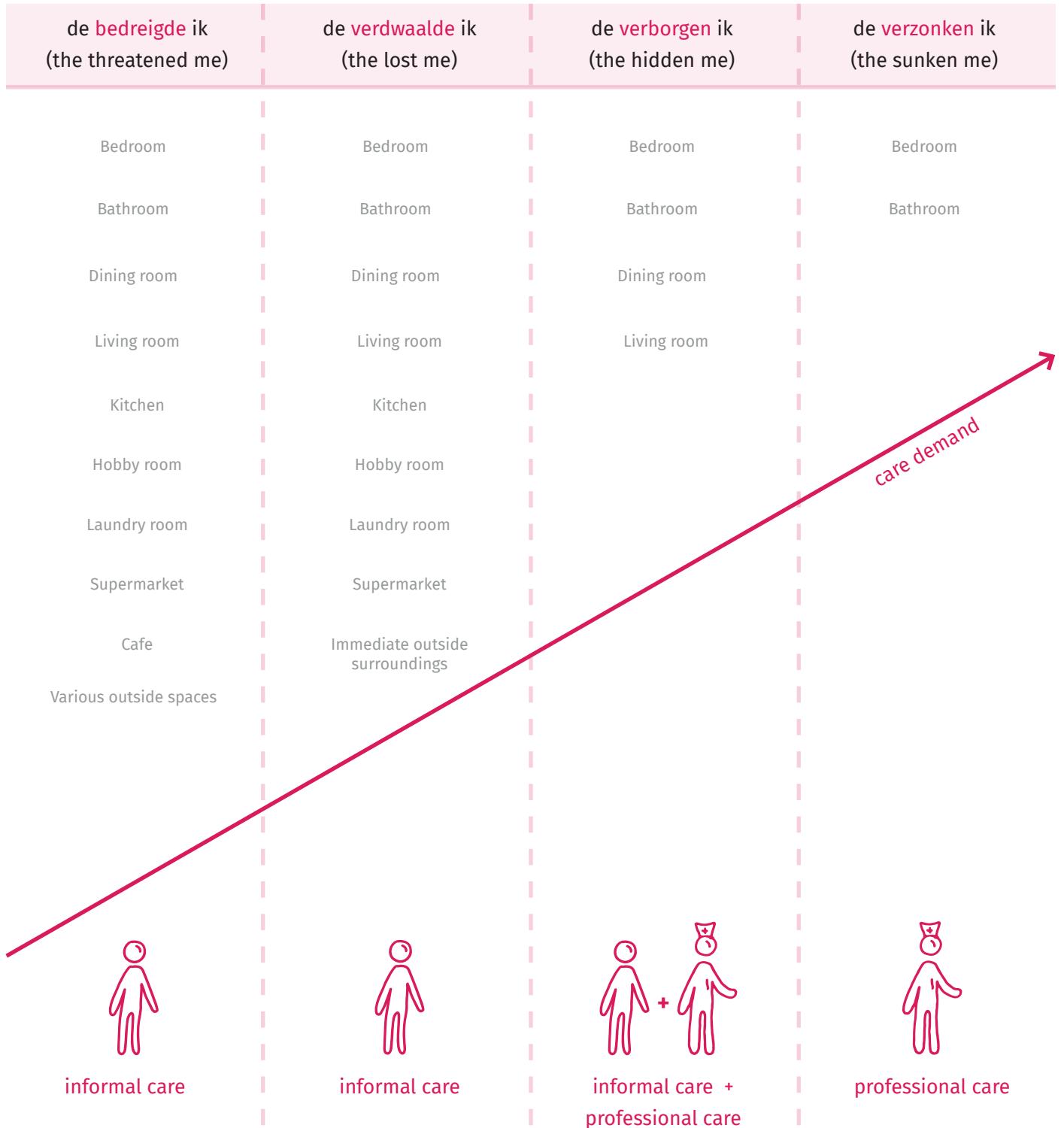
de bedreigde ik (the threatened me)	de verdwaalde ik (the lost me)	de verborgen ik (the hidden me)	de verzonken ik (the sunken me)
Bedroom	Bedroom	Bedroom	Bedroom
Bathroom	Bathroom	Bathroom	Bathroom
Dining room	Dining room	Dining room	
Living room	Living room	Living room	
Kitchen	Kitchen		
Hobby room	Hobby room		
Laundry room	Laundry room		
Supermarket	Supermarket		
Cafe	Immediate outside surroundings		
Various outside spaces			

It is striking that as the dementia process continues, the person with dementia will use less and less different spaces.



Dementia and Architecture

Stakeholders

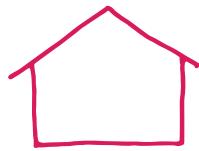


And while the use of space is decreasing, the demand for care is increasing. Where informal care is sufficient in the first phases, professional help must also be provided in the last two phases



6.3 Dementia

& Case-studies



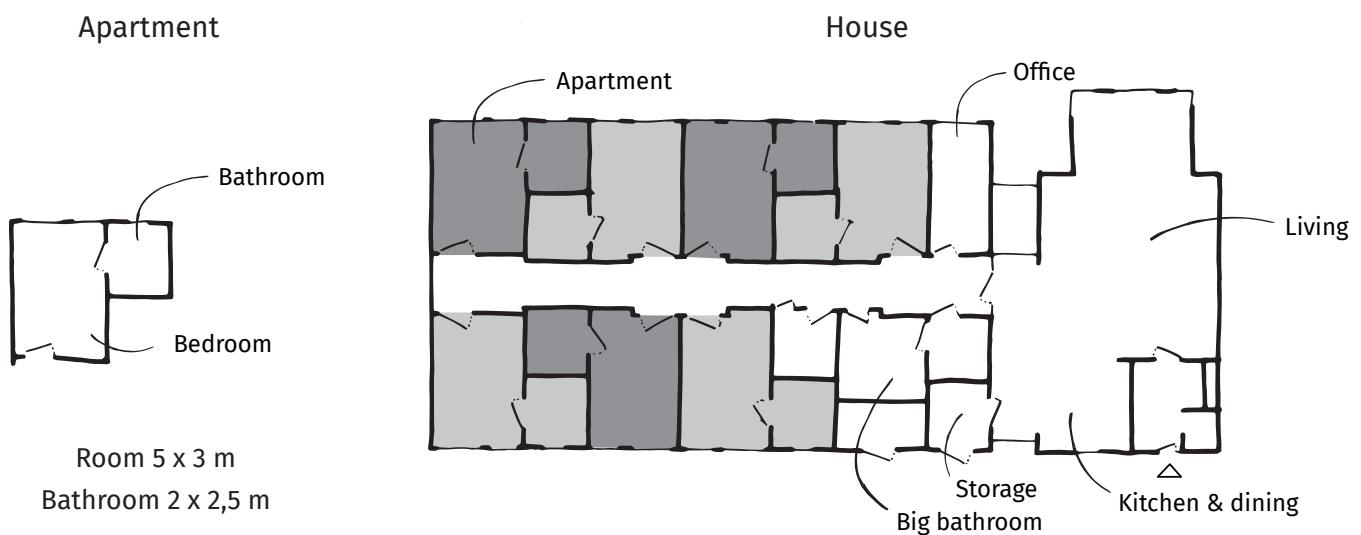
Dementia Case-studies

Reigershoeve

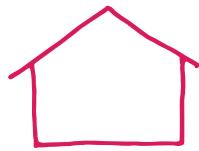


View of two homes at the Reigershoeve (Fairwooth, 2015).

The Reigershoeve is located in Heemskerk, the Netherlands. It is a residential care farm. At the Reigershoeve live 27 people with dementia, all in need of intensive care. The residents live in four group homes, with each seven residents. One of the four homes is intended for younger people with Dementia (age 65+).

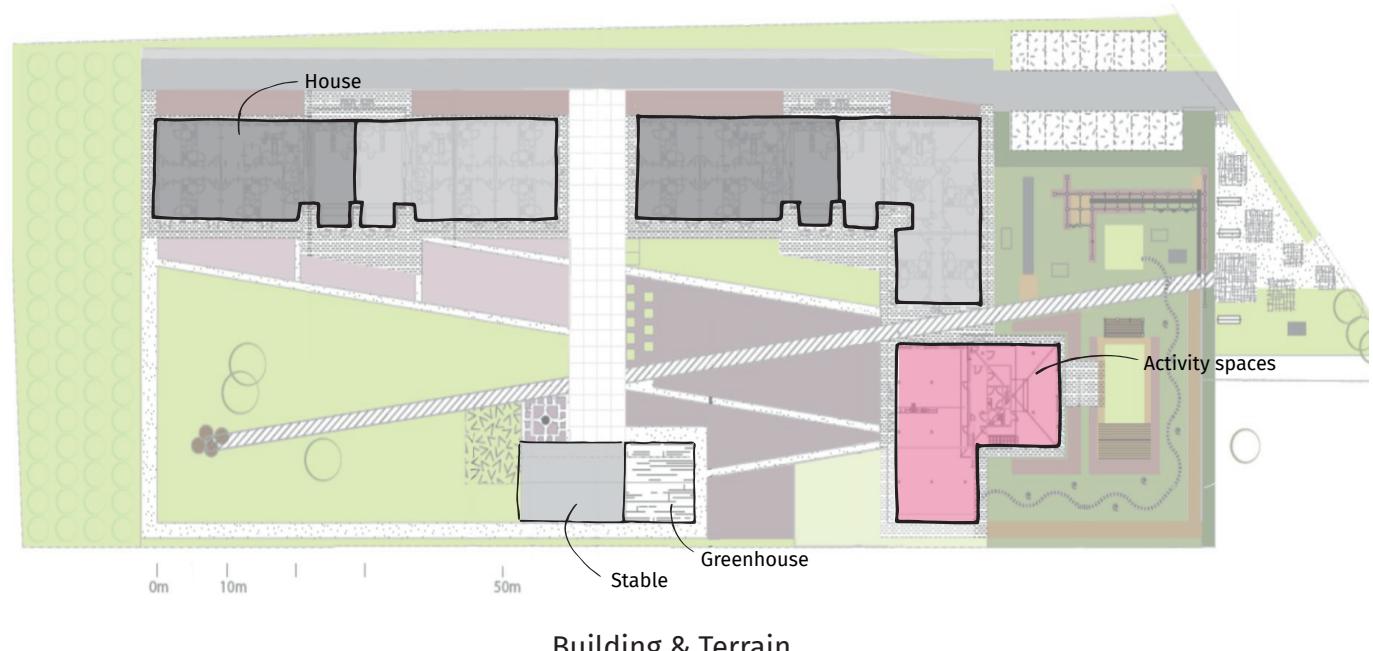


One house contains six or seven apartments; each apartment is 15m² and has its own bathroom. Every apartment has a small pantry with a sink, a few cabinets and a coffee machine. Cooking is not possible in the apartments. For cooking purposes there is a big shared kitchen and dining area. Adjacent to this is a spacious living room with various seating areas. The house also contains an office space for the caretakers, storage space, a disabled toilet and a special 'snoezel' bathroom.



Dementia Case-studies

Reigershoeve



The terrain consists of 3 separate buildings. In two of the three buildings there are 4 houses situated. The third building is where all the day-activities take place. The terrain on which these homes are located on has a rural character. You will find a greenhouse, vegetable garden, a stable and some animals; goats, chickens and ponies. There is even a playground for visiting (grand)children. All is accessible for people who are less mobile. Because of the fence around the terrain, the people with dementia can walk free in a safe environment. The Reigershoeve is therefore called a 'care farm' or in Dutch 'zorgboerderij'.

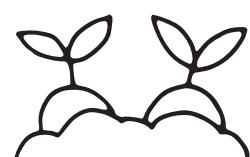
Facilities



Cafe 'De Vrolijke Merrie'



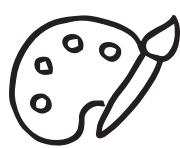
Animals



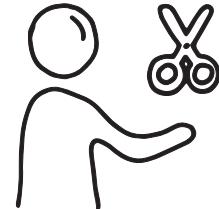
Vegetable garden



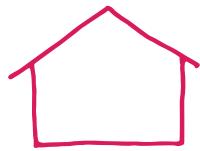
Greenhouse



Workshop space



Hairdresser

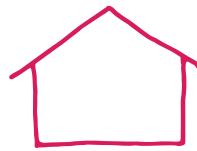


Dementia Case-studies

Reigershoeve



The Reigershoeve is located in Heemskerk, a small village in the province of Noord-Holland. The site is located at a distance of 1.5 km from the centre of Heemskerk in a rural area. The neighbourhood consists of only one street with a few farms widespread. The site is secluded by its neighbourhood through a fence around the terrain.



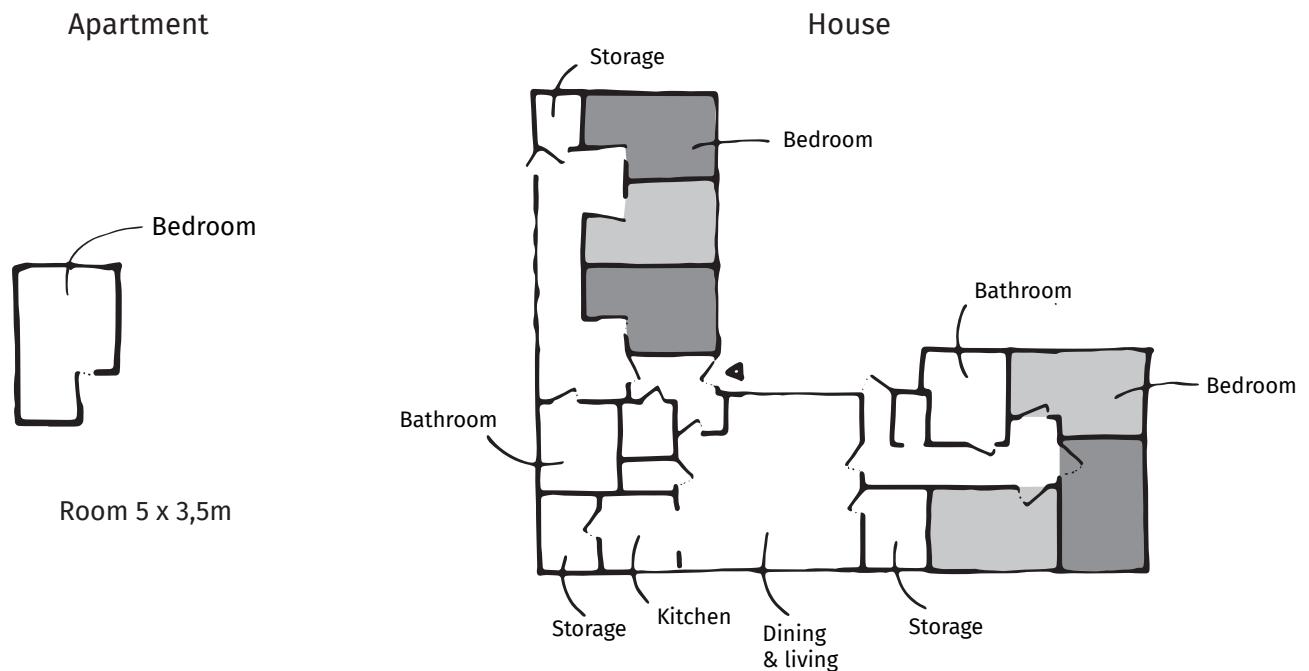
Dementia Case-studies

Hogeweyk

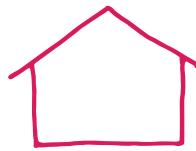


View of parts of the Hogeweyk (Burokade, n.d.)

The Hogeweyk mimics a real neighbourhood with streets, squares, alleys and a park. The residents live in one of the 23 homes, together with 6 to 7 room-mates with whom you share the same lifestyle.

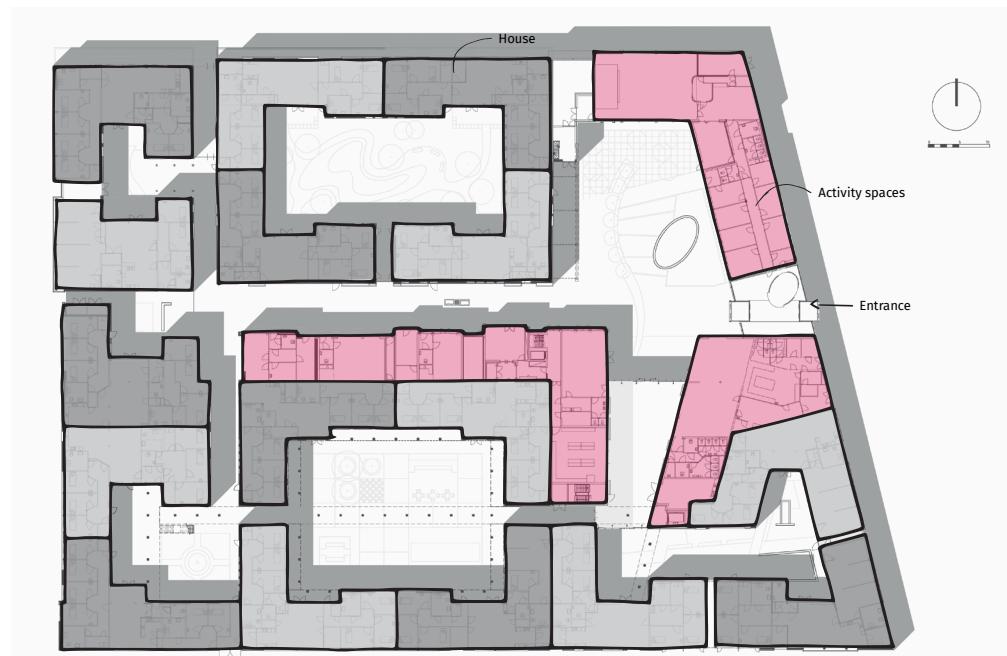


One house contains 6 rooms, per 3 rooms one bathroom is shared. In addition, the house has a shared kitchen, dining and living area. An office space for the caretakers and storage space.



Dementia Case-studies

Hogeweyk

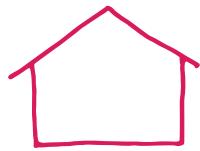


Building & Terrain

The terrain consists of 5 building blocks containing 23 houses (152 residents) and spaces for shared facilities. The shared facilities are situated on the boulevard, away from the houses. The houses are built in a corner, enclosing a garden or small square. Every garden / square has its own character and therefore looks different.

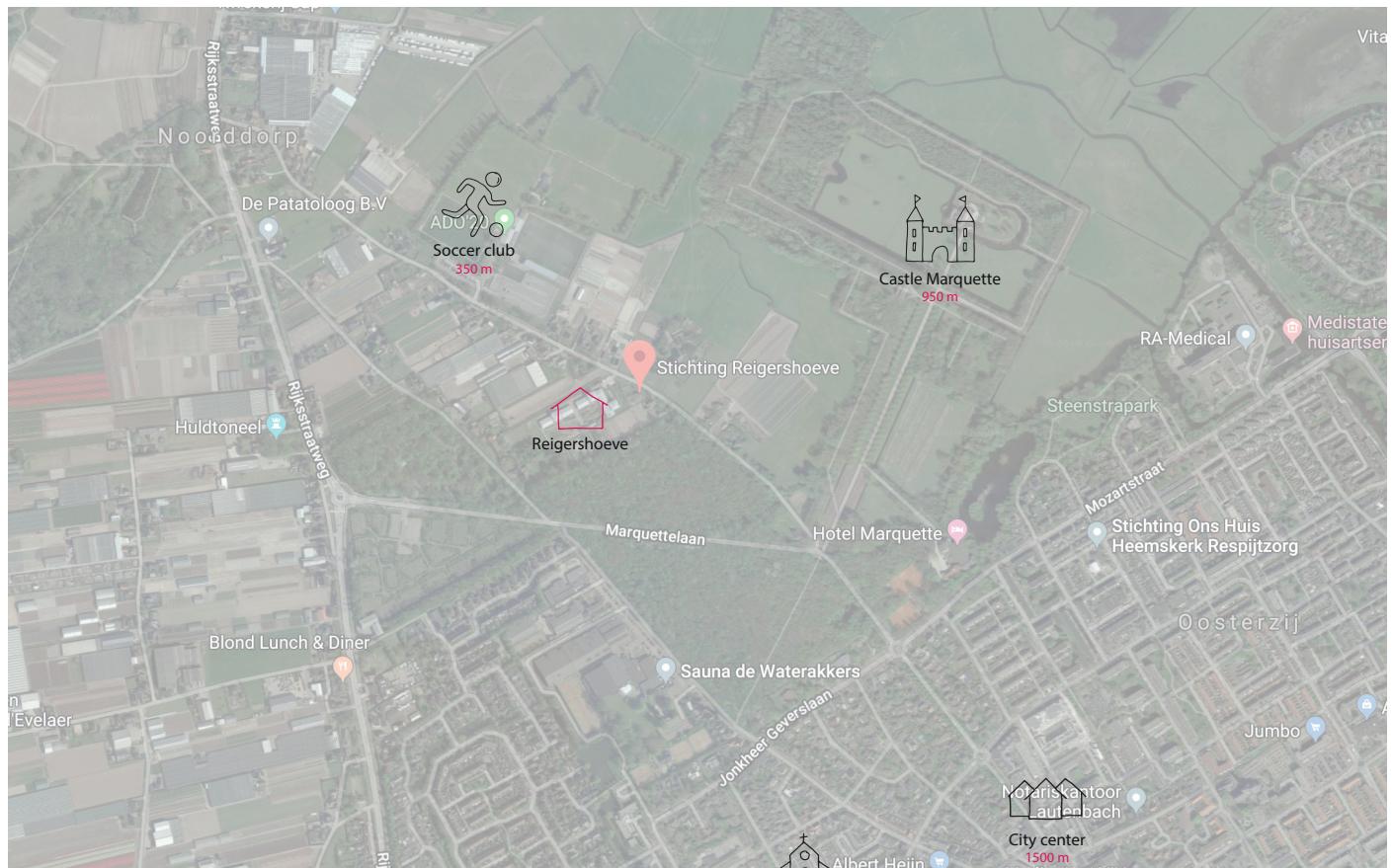
Facilities



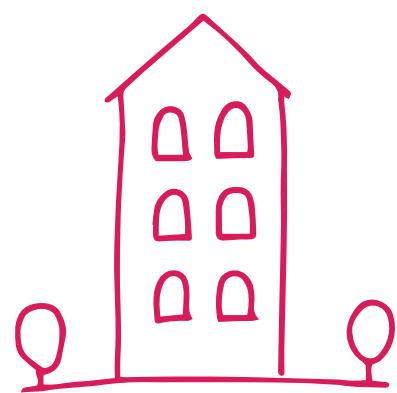


Dementia Case-studies

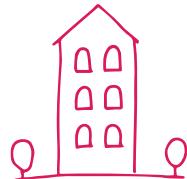
Hogeweyk



The Hogeweyk is located in Weesp, in the province of Noord-Holland. It is situated in between an industrial area and a residential area. The Hogeweyk is an isolated neighbourhood. It is situated 1.6 km from the city centre.



7. Enclosed care facility



Enclosed care facility

When Erica suffered from the first symptoms of dementia it was decided that she had to move to an enclosed care facility. The definition of an enclosed facility is

“A closet, room, or other comparable, stationary, and fully enclosed area equipped with secured locks or other functioning security devices that permit access only by a registered primary caregiver or registered qualifying patient.” (Law insider, n.d.).

The system of enclosed care facilities in the Netherlands has changed enormously in the last decade. Where you used to automatically move to a nursing home when you were of a certain age, nowadays this is no longer possible. Due to the organisational structure of the health care system in the Netherlands, people have to live longer at home, even though they might be in need of care. Only when getting a care indication 4-7 one can move to a nursing home.

This also applies to people with dementia, they move to a psychogeriatric department. When moved to a nursing home one then enters the so-called ‘intramural system’. Intramural care (literally: care within the walls) is health care that is offered during a continuous stay of more than 24 hours in a care institution, such as a hospital, nursing home or care home.

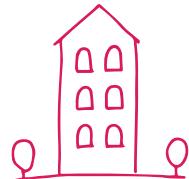
This system ensures that people are monitored

24/7 and that they cannot just go outside. People are literally locked up in the health care institution. This makes it seem more of a prison than a healthcare institute.

In my opinion this is a strange and outdated system. Someone who is suffering from dementia is not a criminal, and therefore should not be locked up.

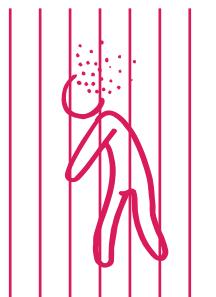
I experienced this ‘trapped’ feeling myself during my Msc2 studio ‘Towards an inclusive living environment’. During the studio we slept in an old school nursery home, where we could only go in and out with a key that only a few of us had. This felt like a curtailment of our freedom, one of the basic principles of the Dutch constitution.

Therefore, for my graduation studio, I intend to design an architectural setting where people with dementia no longer have to move to an enclosed care facility. If there are any problems with people who are wandering or get lost in the neighbourhood one should look per individual what the best suitable solution is. When it becomes too dangerous for someone to go outside, one should think of solutions such as a using a GPS or other domotica.



Enclosed care facility

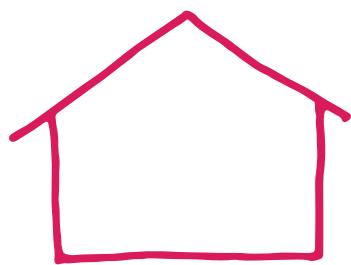
Design Tools



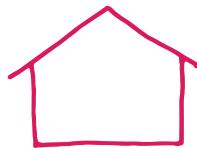
A sick person locked up
as a prisoner



Use domotica for those
who need it



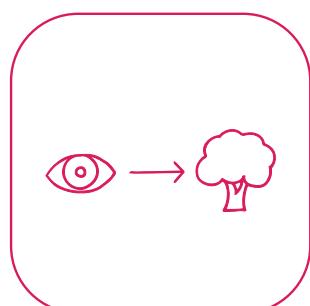
8. Dutch housing tutorial



Healing environments for elderly

Summary

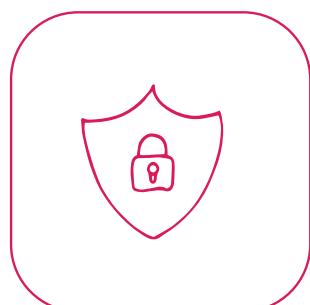
For the Dutch housing tutorial I did research on healing environments for elderly. The knowledge obtained in this paper is also useful for my design. Therefore I have included my paper in this research booklet. Below a short summary of the most important design tools is given. In appendix A the full paper can be read.



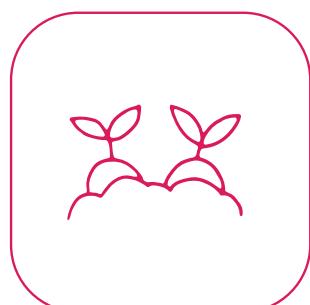
View on nature



Safety

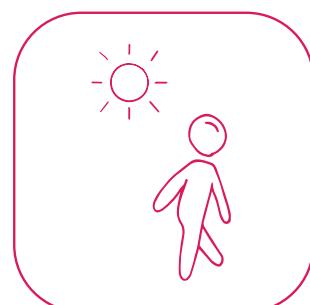


Privacy

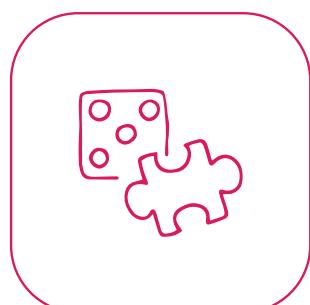


A healing garden

FACTORS
SPACES



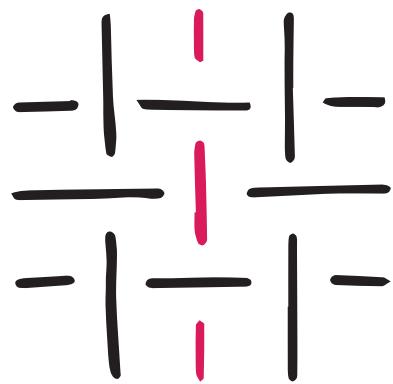
Sunshiny walk



Personal play /
hobby room

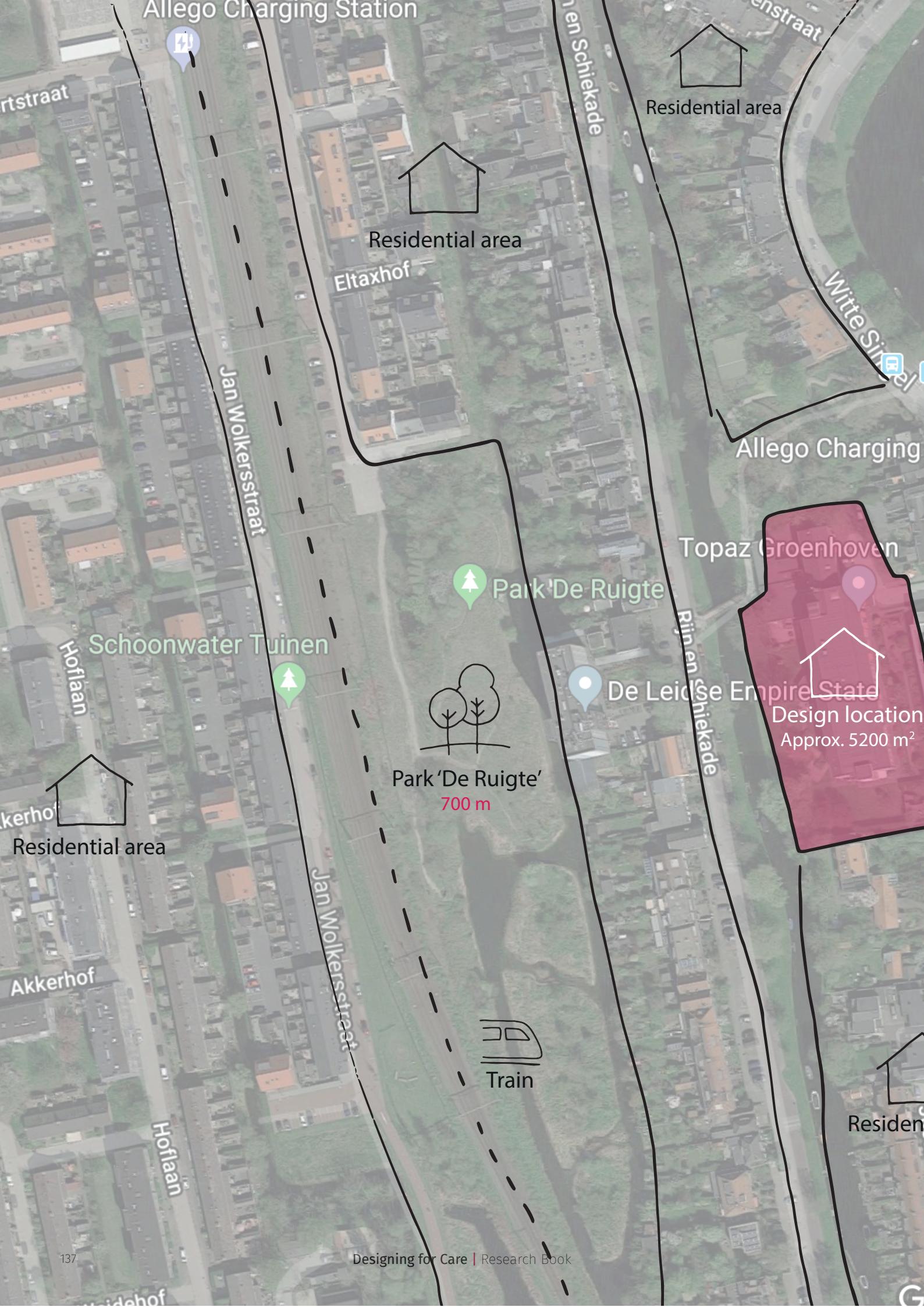


Treatment room



9. Design Location

Allego Charging Station





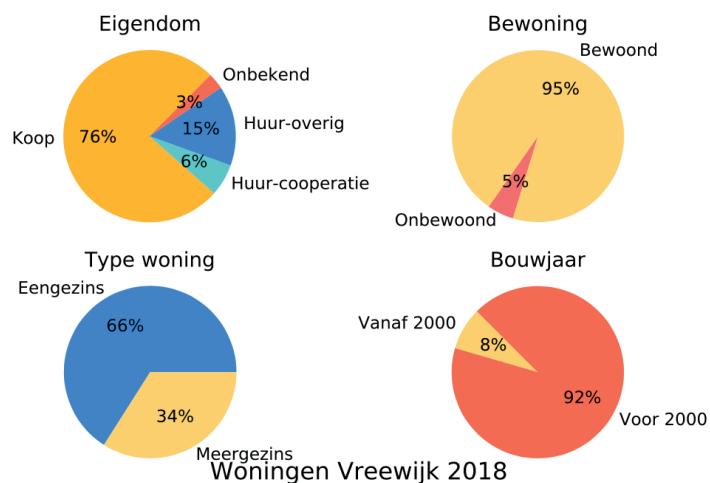


Site analysis

Neighbourhood 'Vreewijk'

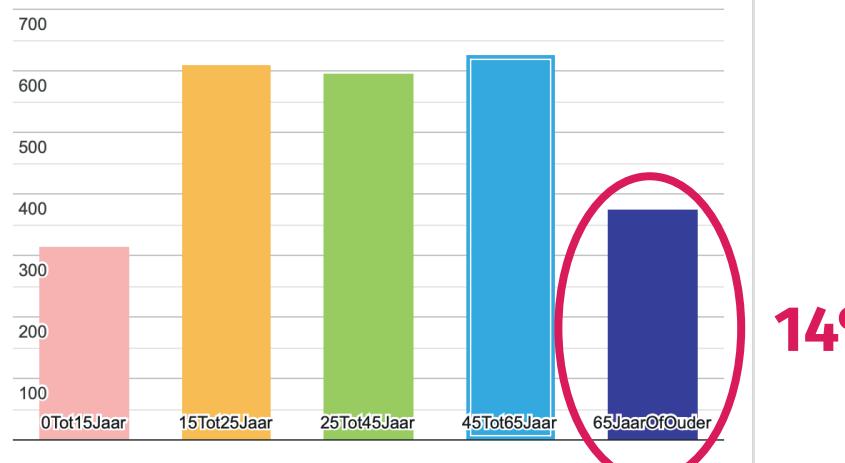
The plot is located in the neighbourhood called Vreewijk. There is some mix of functions in the area, but it is mainly a residential area. The following facts and figures provide a general overview of the neighbourhood and are from AlleCijfers.nl (2018).

Kenmerken van de 863 woningen in buurt Vreewijk



Percentages woning eigendom-, bewoning-, type- en bouwperiode.

Inwoners naar leeftijd in buurt Vreewijk



Bevolking, leeftijdsgroepen: aantal en percentage inwoners op 1 januari 2018 per leeftijdscategorie.

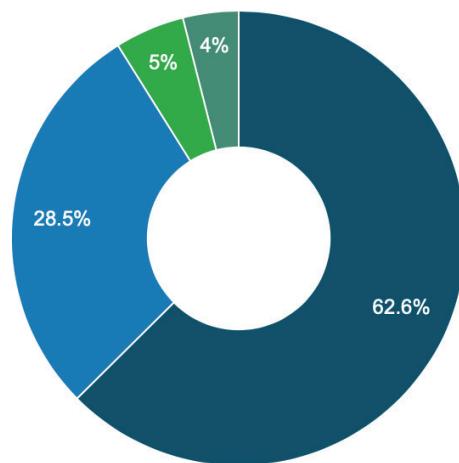
In the Netherlands the percentage of 65+ was in 2018 **18%** (CBS, 2018). In the Vreewijk the number of elderly people is slightly below the national average.



Site analysis Neighbourhood 'Vreewijk'

Burgerlijke staat - buurt Vreewijk

● Ongehuwd ● Gehuwd ● Gescheiden ● Verweduwd



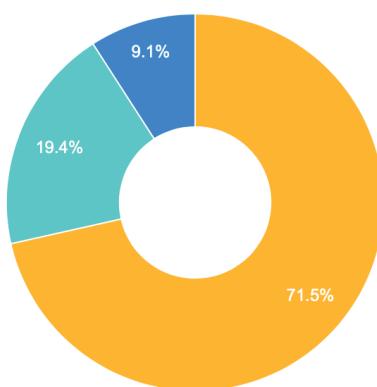
Bevolking, burgerlijke staat: aantal en percentage inwoners op 1 januari 2018 naar burgerlijke staat.

Autochtoon of migratie - kies het jaar:

Gebruik het filter om het jaar van de cijfers te selecteren en het verloop over de jaren te onderzoeken:

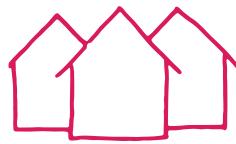
Jaar:

● Autochtoon ● Migratie Westers ● Migratie Niet-Westers



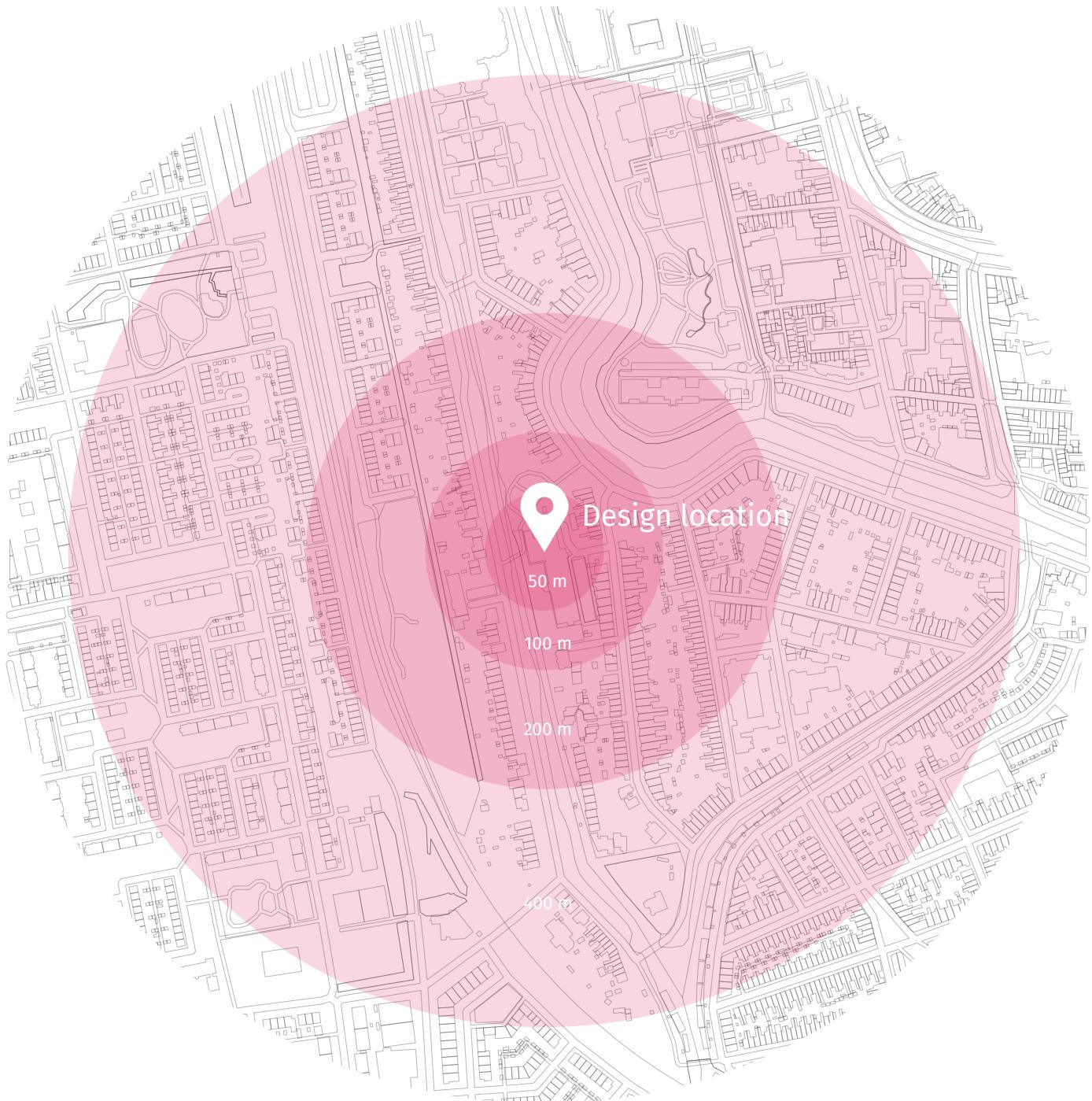
Donut diagram met een verdeling van de bevolking in buurt Vreewijk naar autochtoon, migratie westers en migratie niet-westers.

Source: AlleCijfers.nl

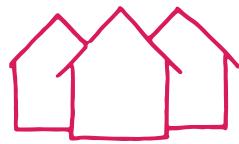


Site analysis

Distances

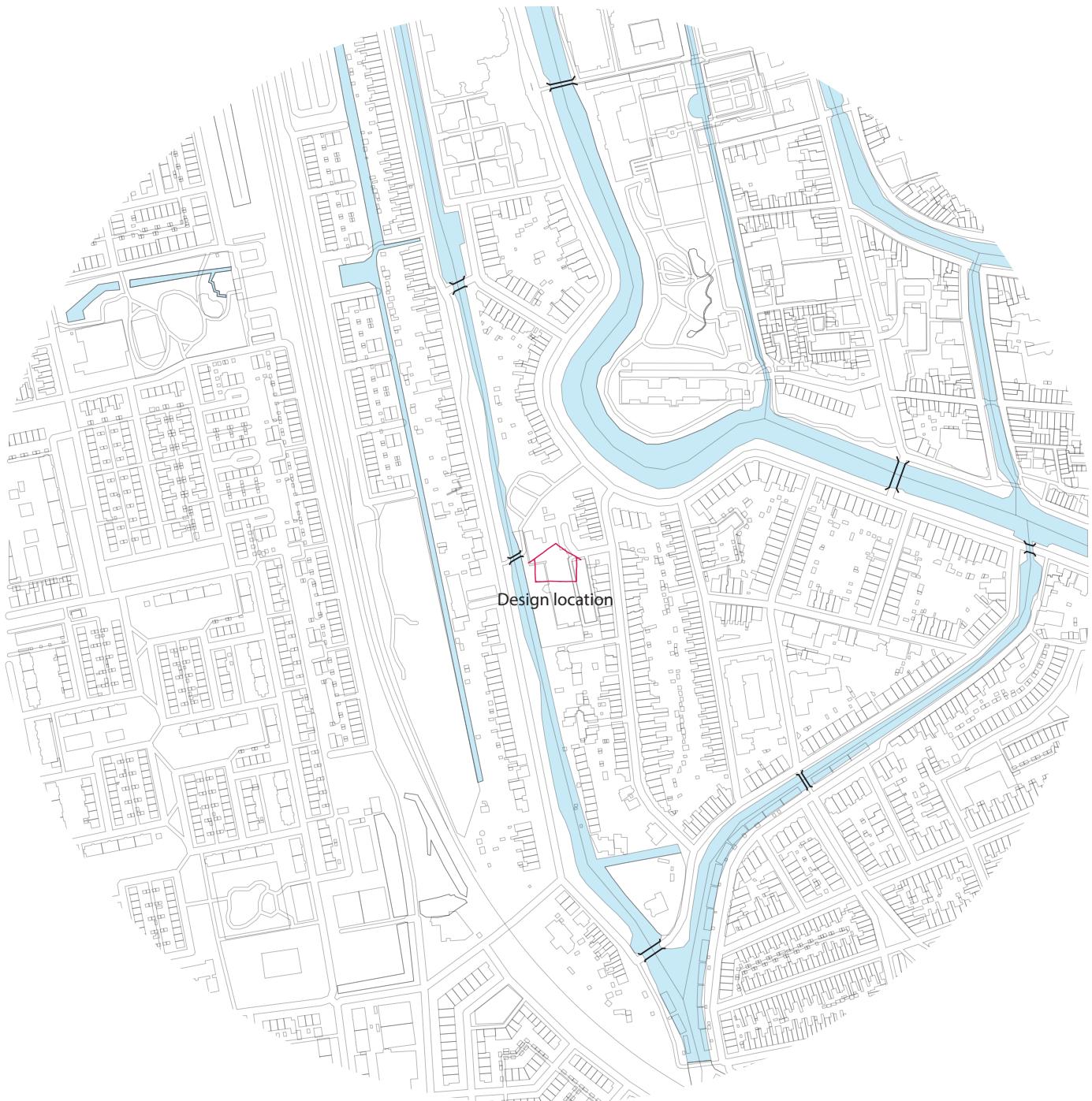


Scale 1:5000

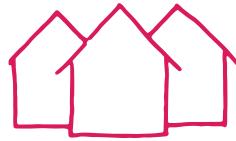


Site analysis

Water



Scale 1:5000

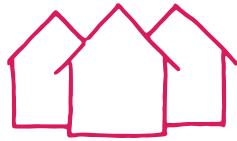


Site analysis

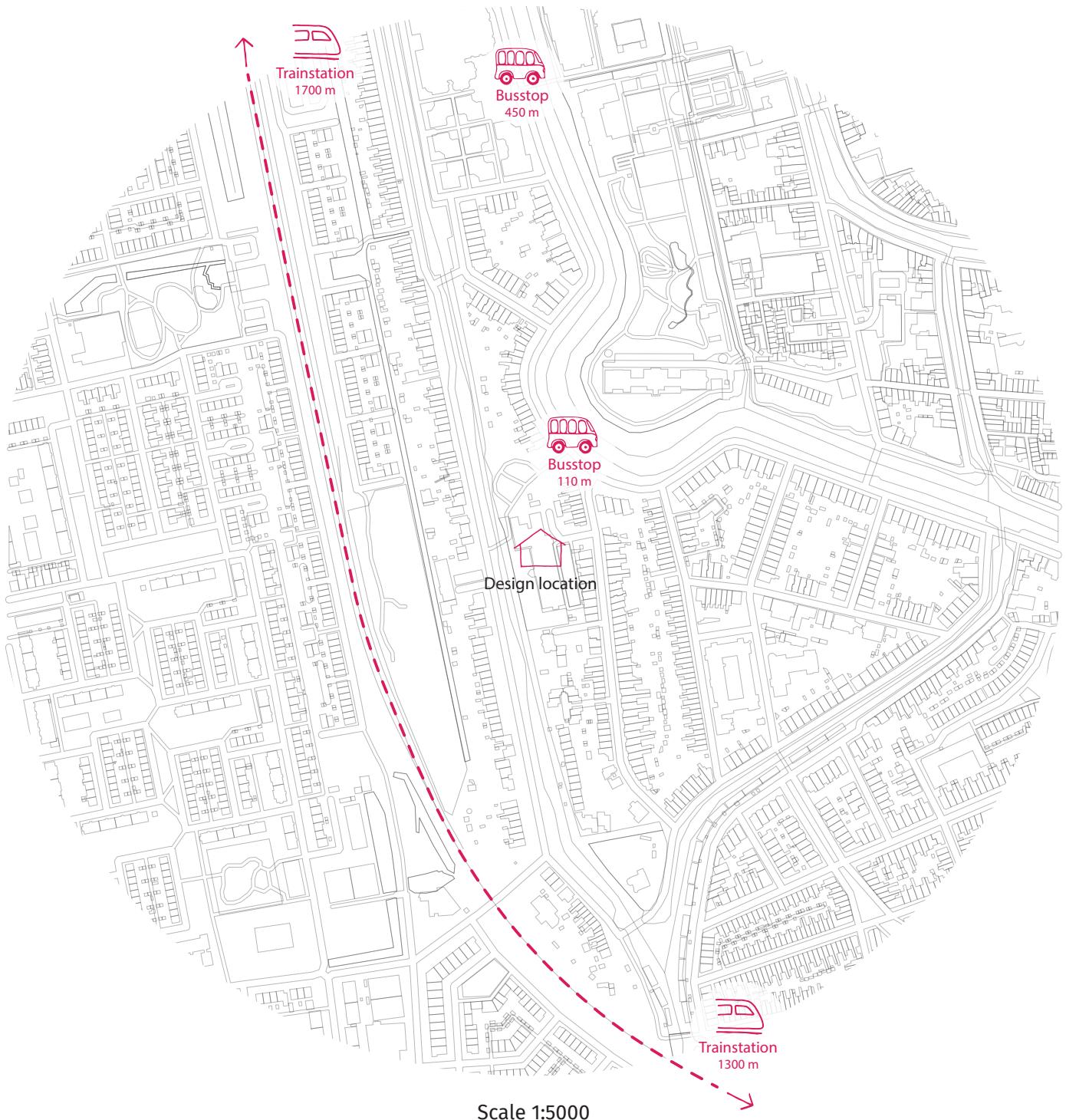
Green

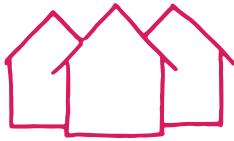


Scale 1:5000



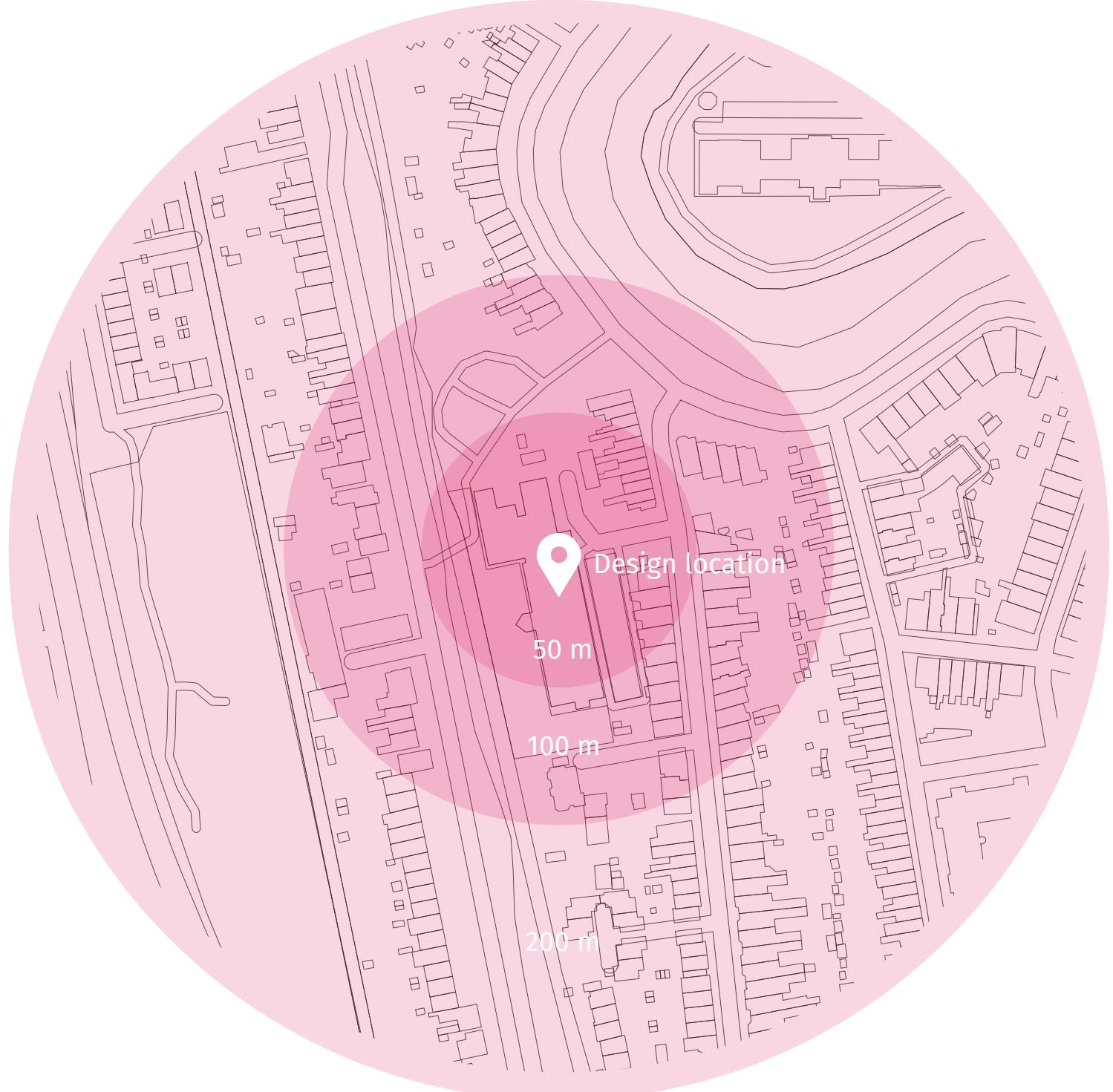
Site analysis Busstops





Site analysis

Distances



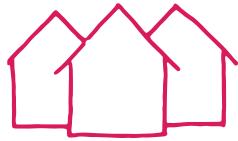
Scale 1:2000



Former nursery home on the plot 'Topaz Groenhoven' - Photo made by Rozemarijn Peeters

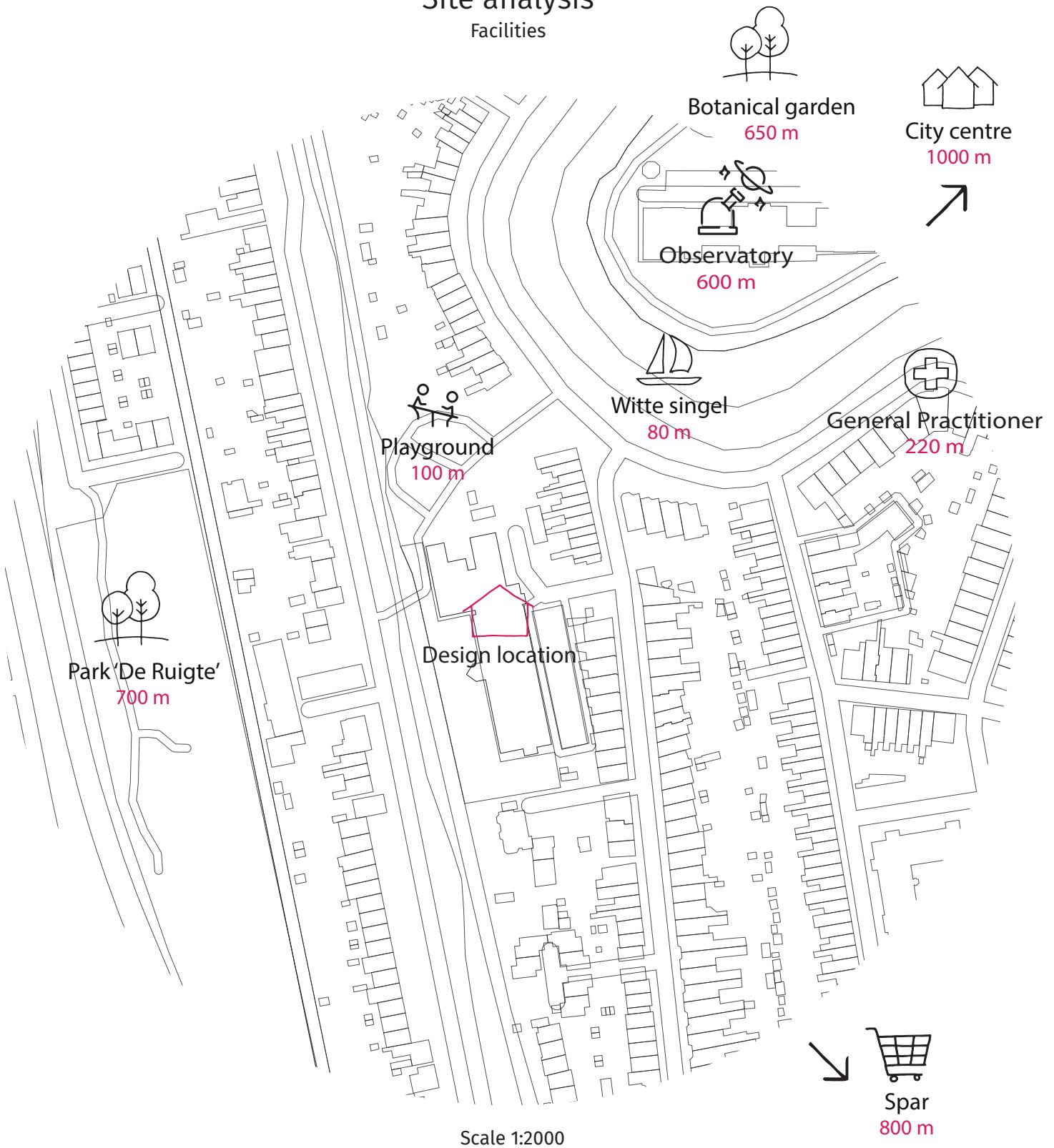


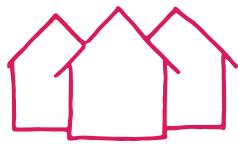
The observatory and the Witte Singel - *Photo made by Rozemarijn Peeters*



Site analysis

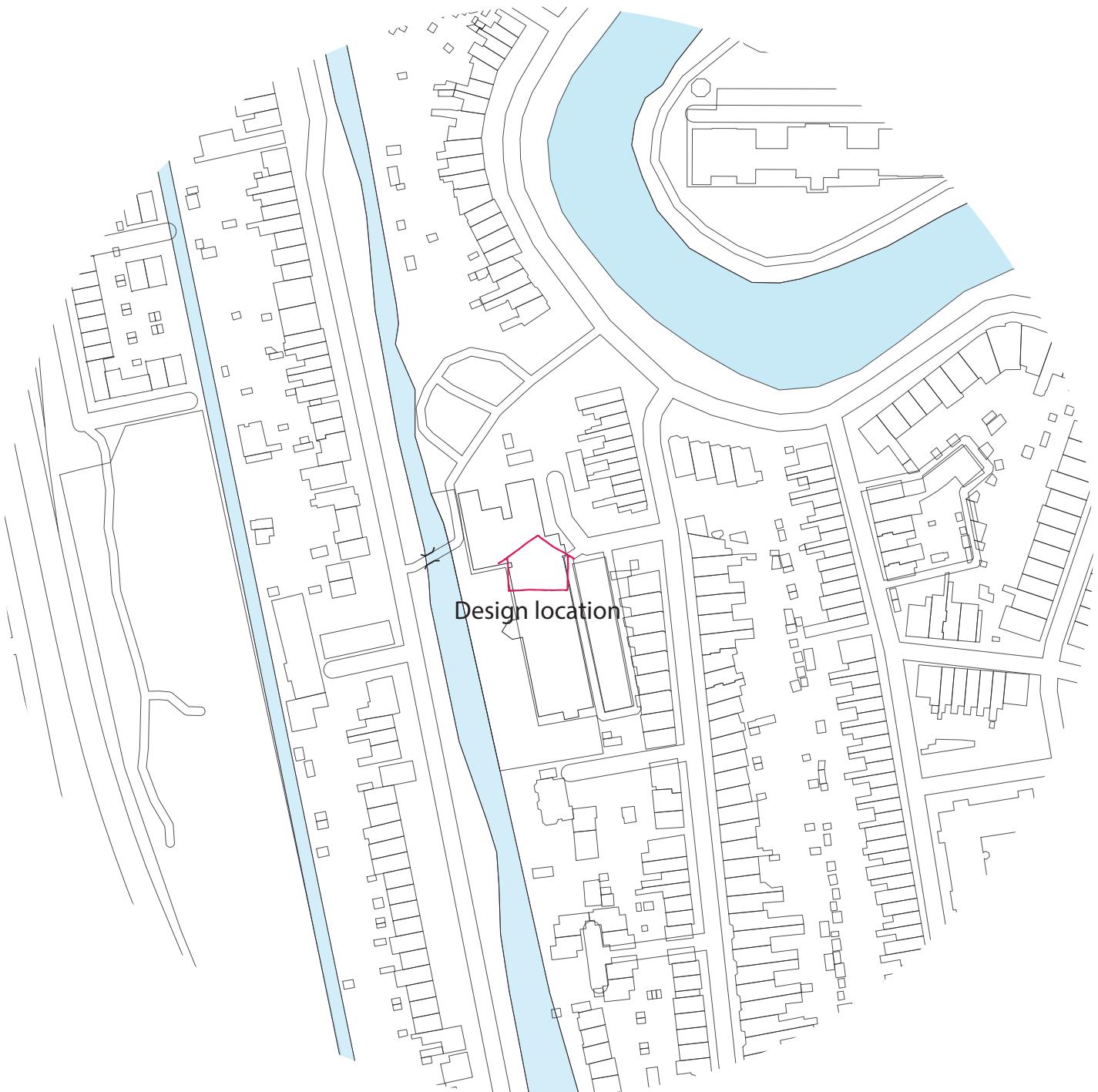
Facilities





Site analysis

Water



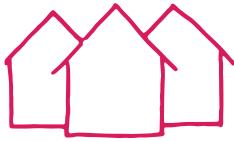
Scale 1:2000



Small water next to the plot - Photo made by Rozemarijn Peeters



The park on the north side of the plot - Photo made by Rozemarijn Peeters

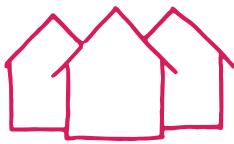


Site analysis

Green

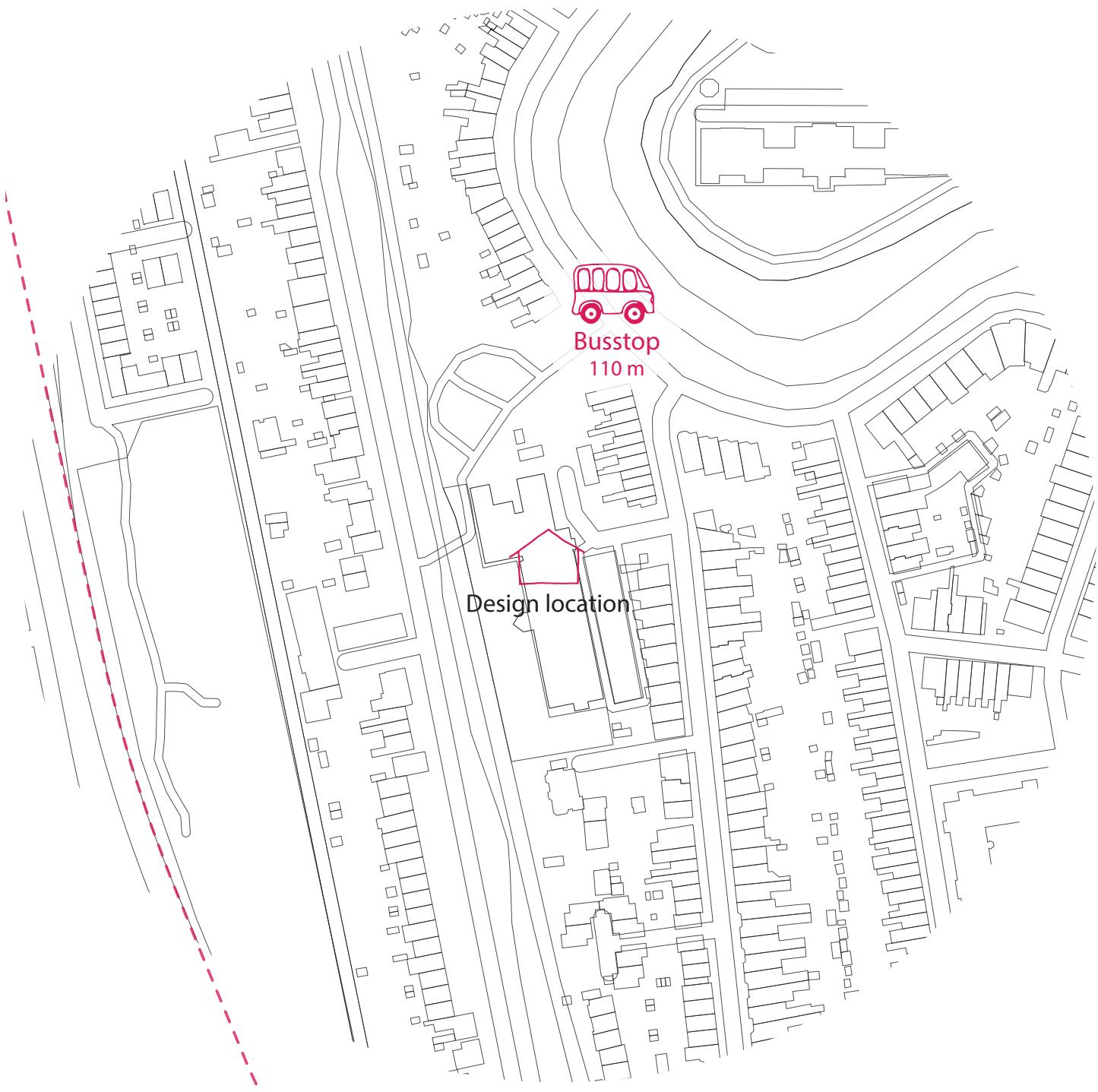


Scale 1:2000



Site analysis

Bus stop



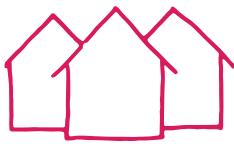
Scale 1:2000



Bus stop 110 m from the plot - Photo made by Rozemarijn Peeters



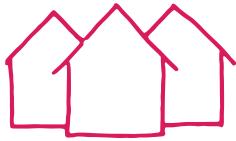
Witte Rozenstraat - Photo made by Rozemarijn Peeters



Site analysis Building heights

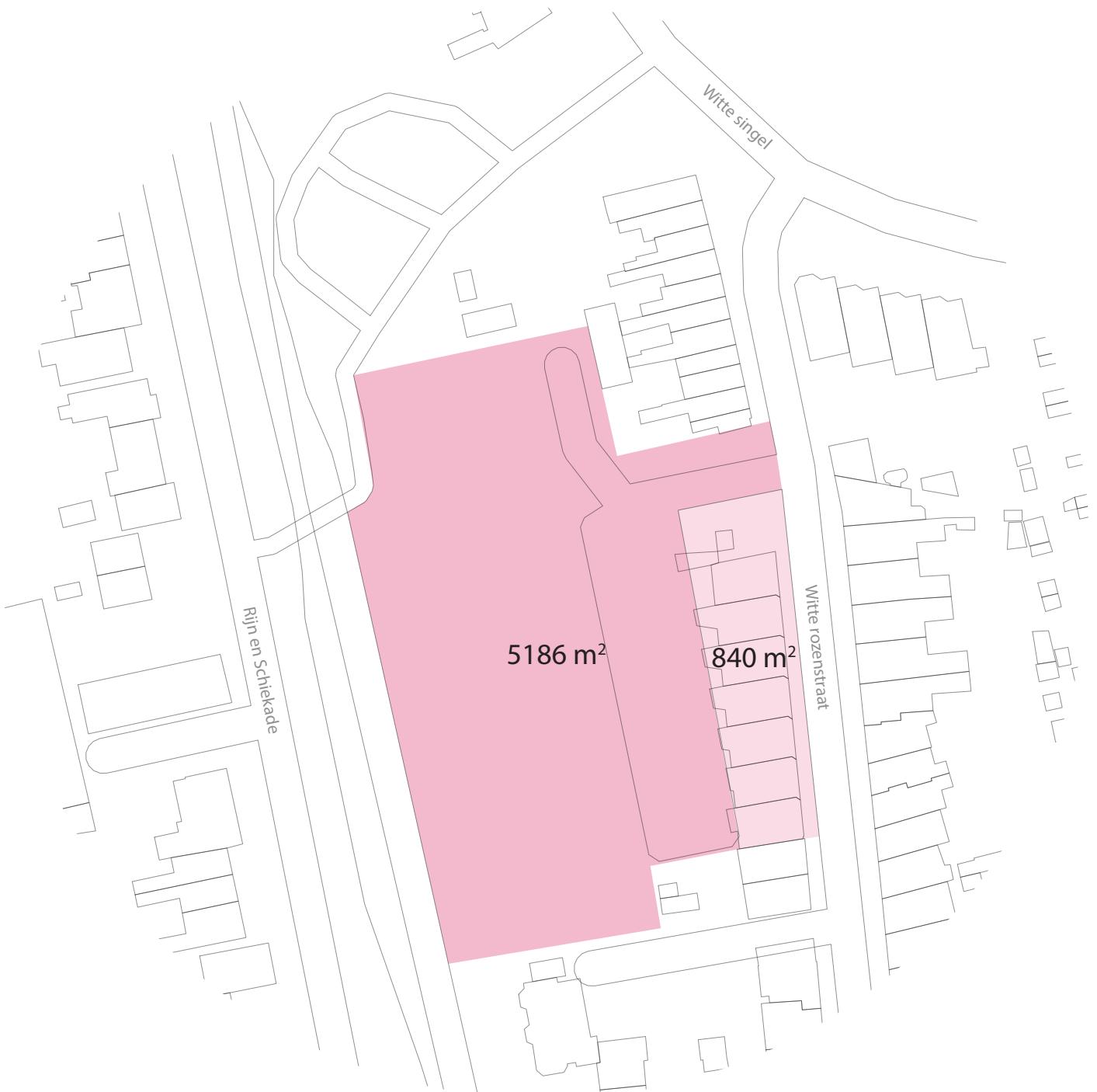


The building heights in the neighbourhood are almost everywhere the same. The most common heights are between 2-3 building layers. An exception is the student flat, with 11 layers, on the opposite of the plot.



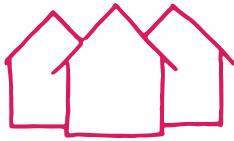
Site analysis

Design location



Scale 1:1000

The design location is located at the Witte rozenstraat 21, Leiden. In dark pink is shown what belongs to the site of the former nursery home 'Topaaz Groenhoven'. The sheltered homes, next to the Topaz building, are coloured in pink. Further research will show whether they should be retained or demolished.



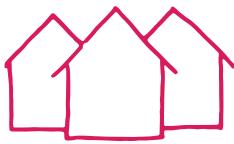
Site analysis

Main streets



Scale 1:1000

The plot is enclosed by three streets: Witte Singel, Witte Rozenstraat and Rijn en Schiekade. These three streets from the connection between the plot and the rest of the neighbourhood.



Site analysis

Short cut between two roads



Scale 1:1000

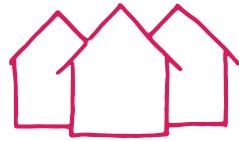
On the north side of the plot there is a small park with a playground a walking path runs through this park and forms a connection between the Witte Singel and the Rijn en Schiekade. During one of my site visits I noticed that many cyclist, mostly students, use this path as a short cut between the two parts of the neighbourhood. The bridge plays an important role in this.



Short cut and sight on the student flat - Photo made by Rozemarijn Peeters



Witte Rozenstraat - Photo made by Rozemarijn Peeters



Site analysis Surrounding streets

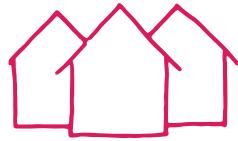


Witte Rozenstraat



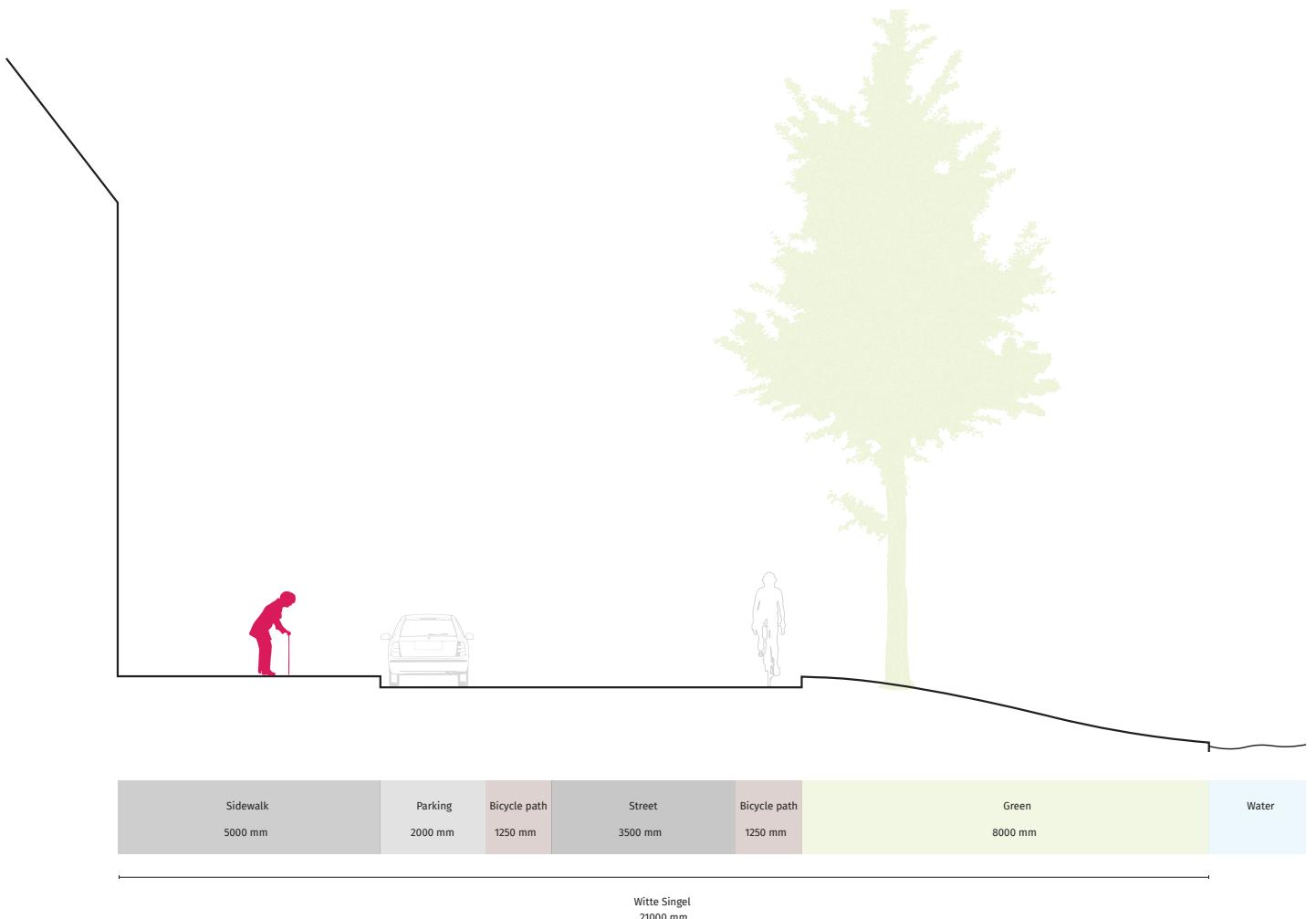
Sidewalk	Parking	Street	Parking	Sidewalk
2000 mm	2000 mm	4000 mm	2000 mm	2000 mm

Witte rozenstraat
12000 mm



Site analysis Surrounding streets

Witte Singel



Sidewalk
5000 mm

Parking
2000 mm

Bicycle path
1250 mm

Street
3500 mm

Bicycle path
1250 mm

Green
8000 mm

Water

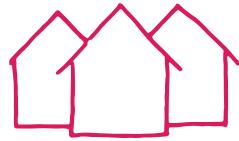
Witte Singel
21000 mm



Witte Singel - Photo made by Rozemarijn Peeters



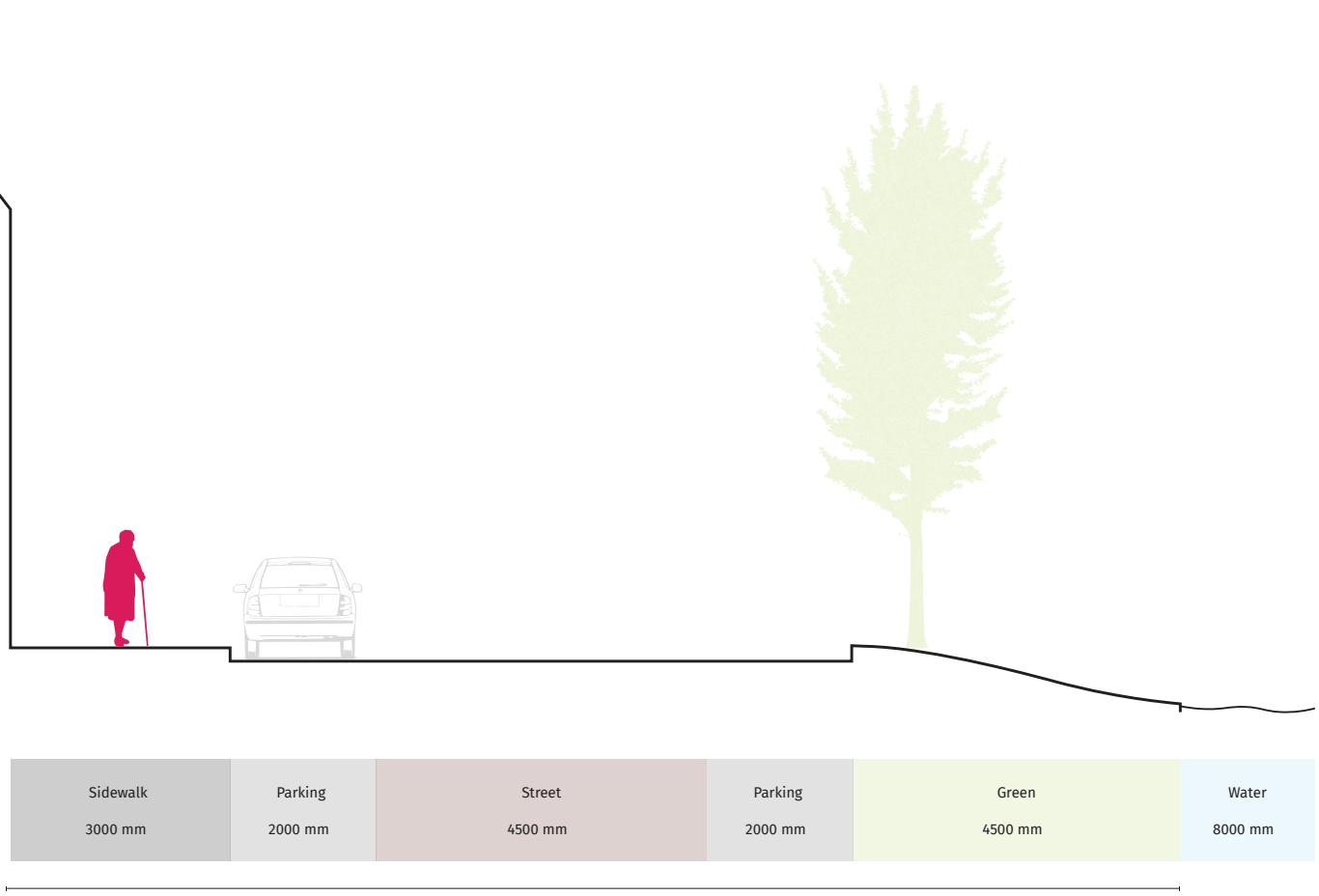
Rijn en Schiekade - Photo made by Rozemarijn Peeters

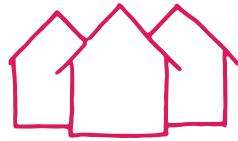


Site analysis Surrounding streets



Rijn en Schiekade



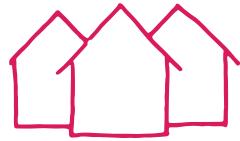


Site analysis

Building style



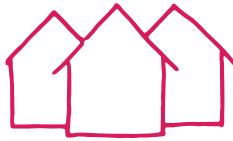
Diverseness in building styles. Most houses are built in the period 1850 - 1930. Each house has its own character, no house looks the same.



Site analysis Building style

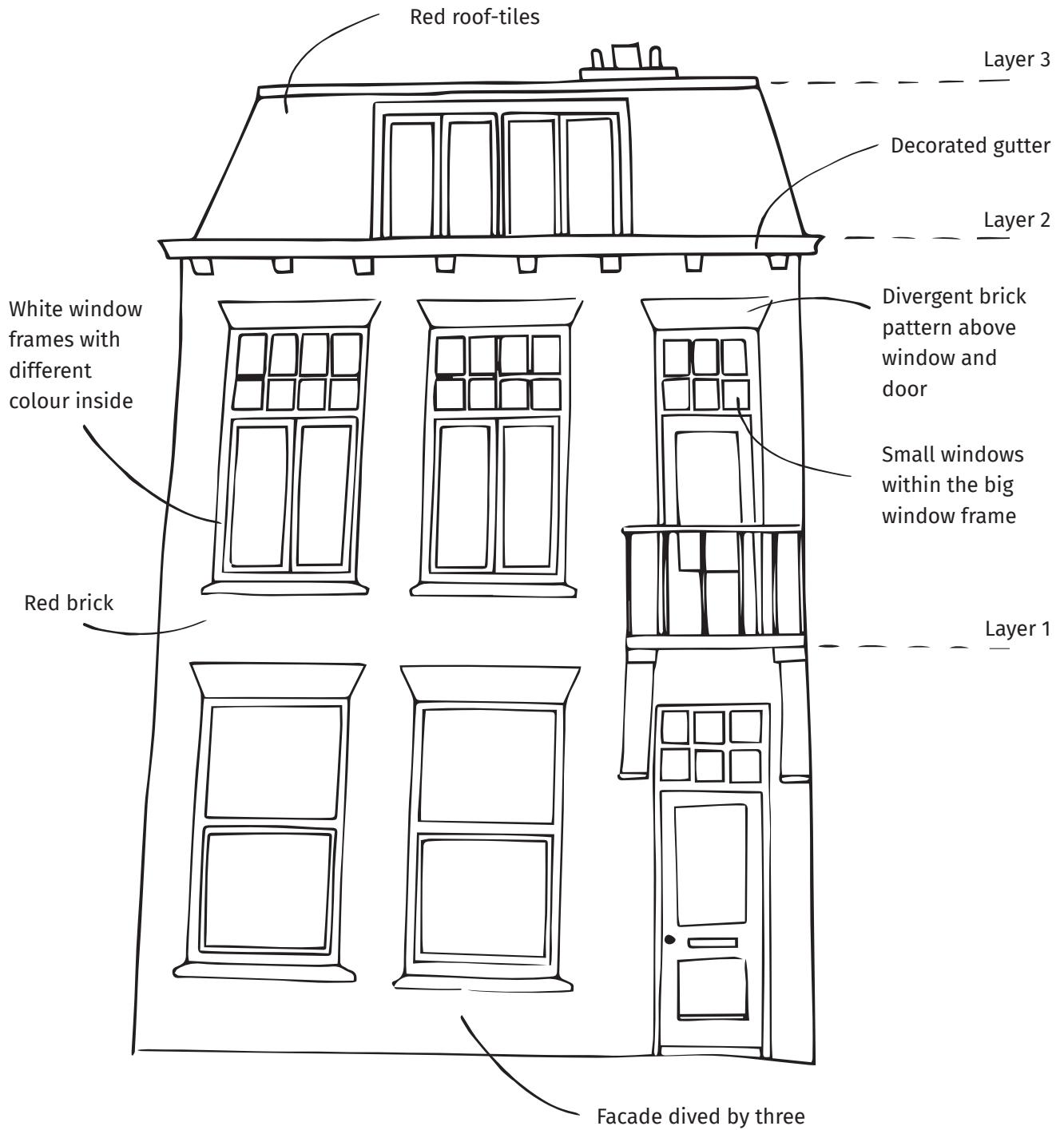


Though a set of rules does apply: no higher than two - three building layers. Use of red brick or plaster.

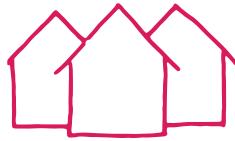


Site analysis

Building style



The overall building style in the neighbourhood is reminiscent of a traditional mansion or in dutch called 'Herenhuis'. A richly detailed architecture with traditional colours (i.e. red brick) is used.



Site analysis Construction year

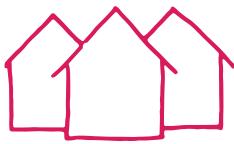


Code Waag. (2015). All 9,866,539 buildings in the Netherlands, shaded according to year of construction. Retrieved November 2019 from: <http://code.waag.org/buildings/#52.1242,4.7839,11>

Legend

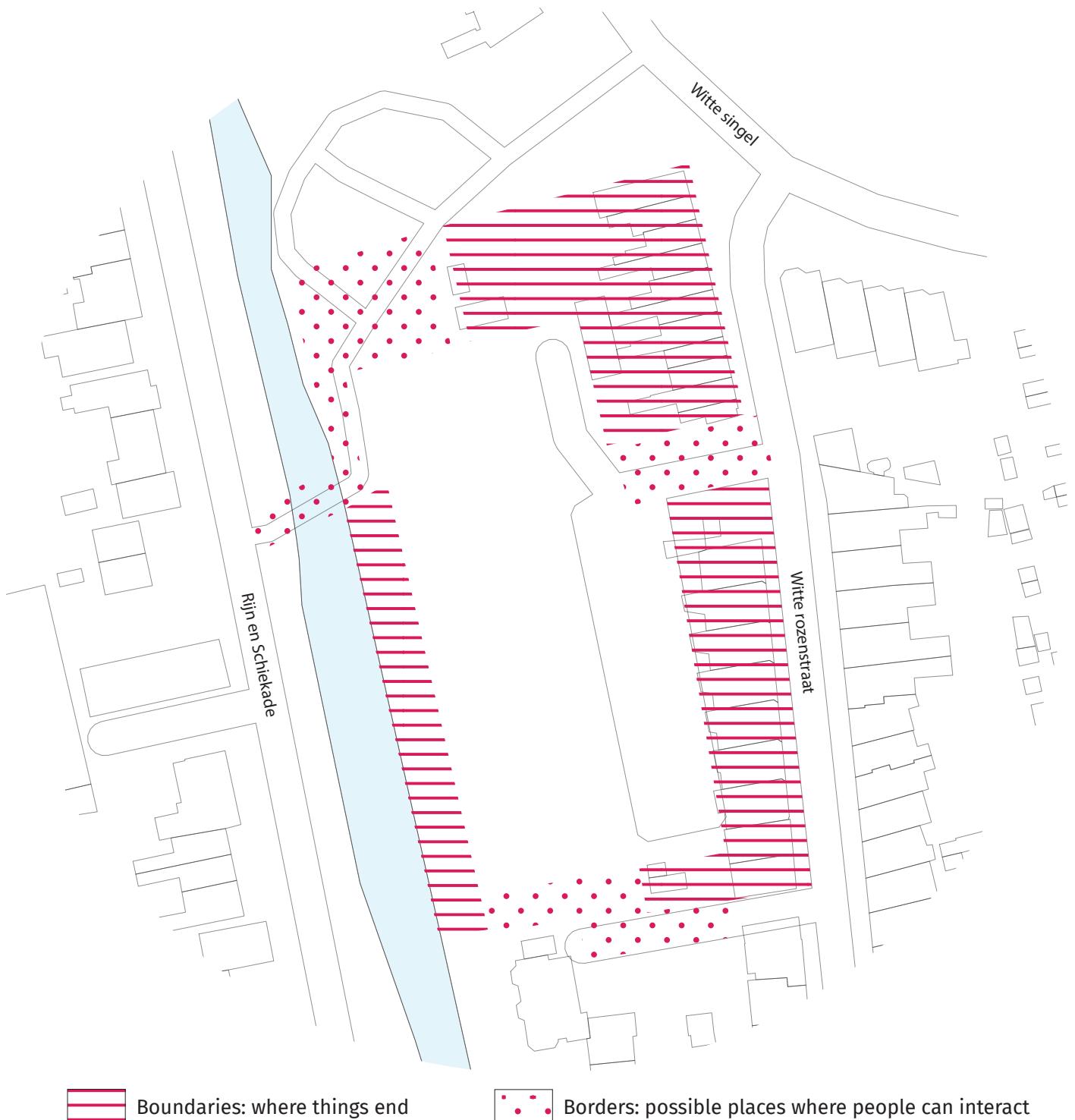
	< 1800
	1800 - 1850
	1850 - 1900
	1900 - 1930
	1930 - 1945
	1945 - 1960
	1960 - 1975
	1975 - 1985
	1985 - 1995
	1995 - 2005
	> 2005

Most buildings in the neighbourhood are built between 1850-1930. The year they are constructed can be seen in the characteristic building style for that time. The white rectangle indicates the design location.

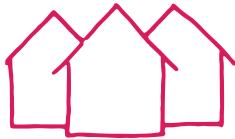


Site analysis

Borders and boundaries current situation



The open city Richard Sennett consist of Borders and Boundaries. Boundaries are where things end. Borders are where species can interact. In the image above the current borders and boundaries are shown.



Site analysis

History of the neighbourhood Vreewijk

The municipality of Leiden has a lot of documents about the neighbourhood of Vreewijk available. Below a fragment out one of these documents '*Wonen in een beschermd stadsgezicht*' (2011) is readable in Dutch, which describes the history of the neighbourhood Vreewijk.

"In 1881 begon projectontwikkelaar Hendrik Swaan met de bouw van herenhuizen op het terrein van een buitenplaats op Zoeterwouds grondgebied: Vreewijk. Het was een aantrekkelijke wijk voor welgestelde Leidenaren die de drukke, stinkende binnenstad wilden ontvluchten, maar toch van de nabijheid van de stad wilden profiteren. Het oude landhuis Vreewijk staat ook vandaag de dag nog steeds midden in de buurt. Heel bijzonder is dat de vereniging 'Eigen Haard' – de eerste vereniging van arbeiders die voor zichzelf fatsoenlijke woningen wilden bouwen – in 1892 arbeiderswoningen bouwde in de Gerrit Doustraat. In Vreewijk zijn ook opmerkelijke gebouwen van na de annexatie te vinden. Twee daarvan werden ontworpen door vrouwelijke architecten; toentertijd nog een echt mannenberoep. Zo is het kasteeltje bij de Trekvliet van de hand van mevrouw M. von Uexküll Guldenbandt (1911). Het daarnaast gelegen woonhuis op de hoek met de Witte Rozenstraat is een ontwerp van Tatiana Afanassjewa (1913-1914), de echtgenote van de hoogleraar Ehrenfest. Bekend is dat Albert Einstein hier regelmatig logeerde. Tevens opvallend zijn de herenhuizen van de beroemde architect Jesse aan de Witte Singel (1907 en 1912) en de voormalige universiteitslaboratoria bij de Hugo de Grootstraat (1895-1898), door J. van Lokhorst ontworpen in zijn eigen neogotische 'laboratoriumstijl'. In 2010 zijn deze gebouwen verbouwd tot appartementen."

- From '*Wonen in een beschermd stadsgezicht*' Gemeente Leiden, 2011



Neighbourhood Survey

Together with Ellen Kieft, I did a small neighbourhood survey see p. 162-163.



Beste Buurtbewoner,

Wij zijn twee architectuur studenten van de Technische Universiteit Delft en zijn op dit moment bezig met ons afstudeerproject. Voor ons afstuderen doen wij onderzoek naar nieuwe woonconcepten voor ouderen. In samenwerking met Habion, een woningcoöperatie voor ouderenhuisvesting gaan wij ons onderzoek toepassen op een locatie bij u in de buurt. Wij vinden uw mening heel belangrijk. Daarom zouden wij u graag een aantal vragen willen stellen.



Op de achterkant van dit blad hebben wij een korte vragenlijst samengesteld. Als u zo vriendelijk zou willen zijn om deze in te vullen en te mailen naar: r.v.m.peeters@student.tudelft.nl. U kunt de vragenlijst ook digitaal invullen via: https://docs.google.com/forms/d/e/1FAIpQLScvCN8Cojk_LiE-6l_dhl7s_oScnNzL_vMXQzWrz-qfA0nXAw/viewform?usp=sf_link of scan de QR-code onderaan de pagina.

Uw mening opschrijven is een kleine moeite en kost slechts enkele minuten van uw tijd, maar is voor ons onderzoek en de buurt heel waardevol!

Alvast bedankt!

Ellen Kieft en Rozemarijn Peeters





Neighbourhood Survey

Buurtonderzoek



1. Man/ Vrouw

2. Hoe oud bent u?

.....

3. Wat doet u in het dagelijks leven?

.....

4. Hoe ziet u ideale buurt eruit?

.....

.....

5. Hoe vaak komt u in aanmerking met ouderen?

.....

.....

6. Bent u bereid om iets te doen voor een oudere?

Ja, wat zou u willen doen? (ga door naar vraag 7).

Ja, ik doe op dit moment al iets voor een oudere, namelijk:

.....

Nee, waarom niet?

.....

.....

7. Wat zou u doen voor een oudere/buur?

	Dagelijks	Wekelijks	Maandelijks	Jaarlijks	Nooit
* Oogje in het zeil houden					
* Boodschapje doen					
* Rondje lopen met buur					
* Kopje koffie drinken					
* Helpen met persoonlijke verzorging					

Anders namelijk

.....

.....

8. Zou dit anders zijn voor ouderen met dementie? Zo ja waarom of wat zou anders zijn?

.....

.....

9. Wat weerhoudt u om iets te gaan doen met een oudere? Wat zouden obstakels kunnen zijn?

.....

.....

10. Wat zou u willen toevoegen aan de buurt? Is er iets wat u nu mist?

.....

.....

11. Wat zou een oudere voor u kunnen betekenen?

.....

.....



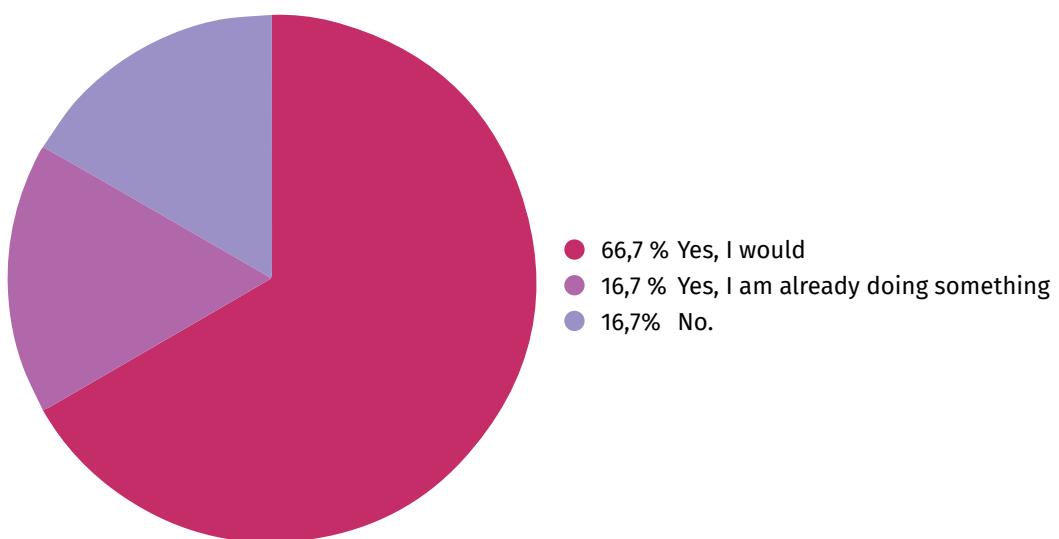
Neighbourhood Survey

Unfortunately we did not get that many responses as we would have hoped for, 13 in total. Nevertheless the most common answers can be used to get a slight insight in the wants and needs of the residents of the neighbourhood. All the results can be found in Appendix B. Below a summary of the most important findings for my research is given.

Ideal neighbourhood?

> Green, mix of young and old, different cultures. (50%)

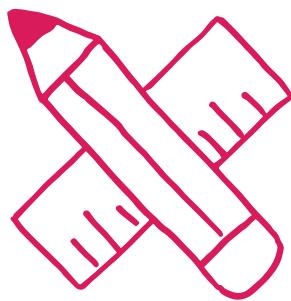
Are you willing to do something for an elderly person?



Would this be different for elderly with dementia?

Mixed answers. Most of the answers say no but....

- > Depends on how well you know someone
- > Dementia asks for extra knowledge on how to handle
- > Depends on the phase of the disease process

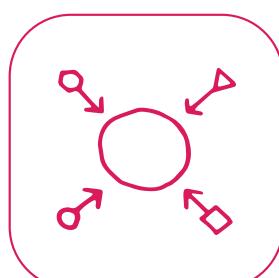
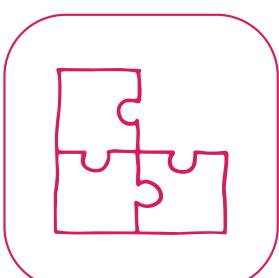
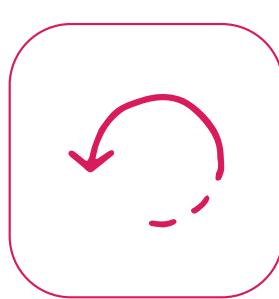
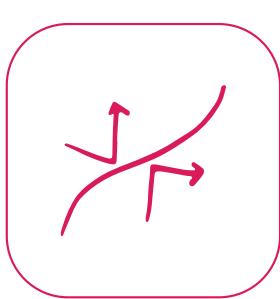
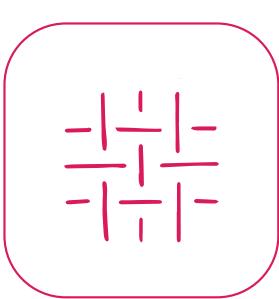
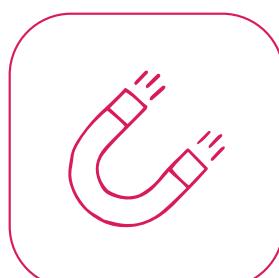
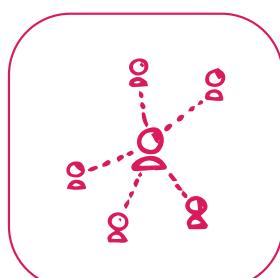
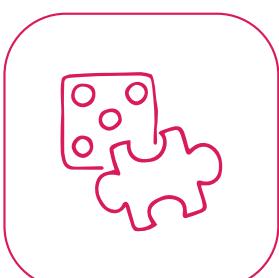
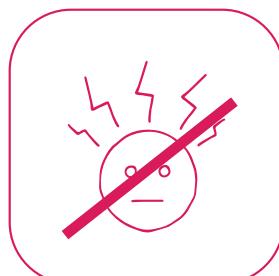
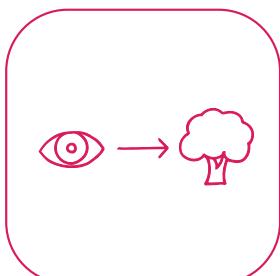
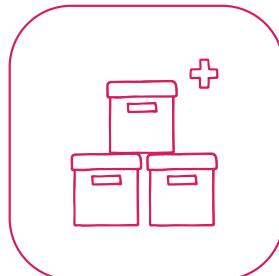
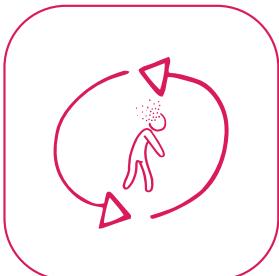


10. Design guidelines

This chapter summarizes all the design tools found during the research. These 'tools' form an essential theoretical framework for the decision making in the design process. The conclusion of the research will be the final design which can be read in the design booklet.



Design guidelines Summary



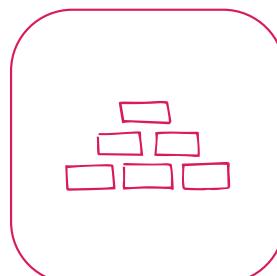
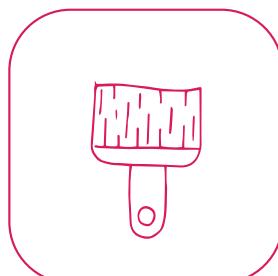
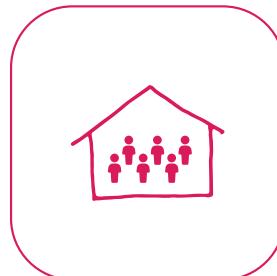
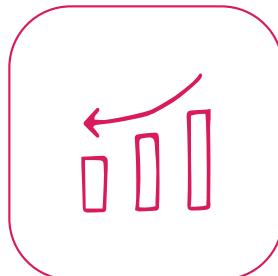
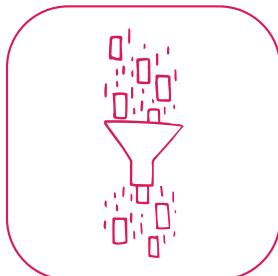
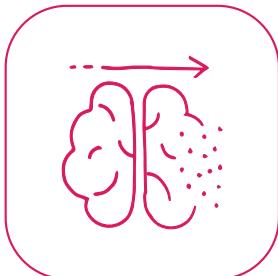
FIELDWORK

OPEN SOCIETY

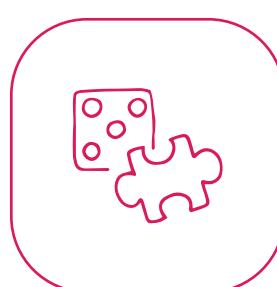
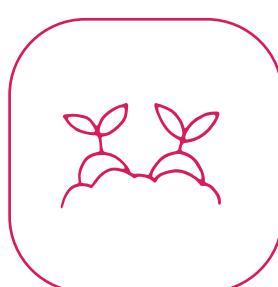
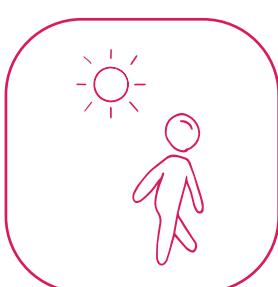
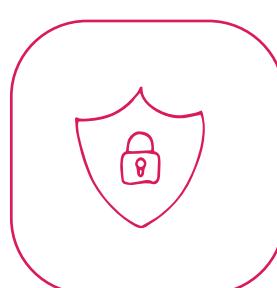
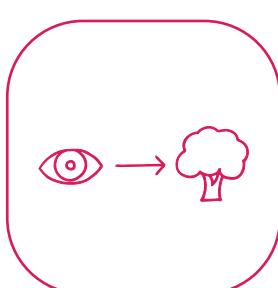


Design guidelines

Summary



ENCLOSED CARE FACILITY



DEMENTIA

HEALING ENVIRONMENT



Literature

Architecture

Alexander, C. (1977). *A pattern language: towns, buildings, construction*. Oxford university press.

van den Heuvel, D. (Ed.). (2018). *Jaap Bakema and the open society*. Archis Publishers.

Rapoport, A. (1990). *The meaning of the built environment: A nonverbal communication approach*. University of Arizona Press.

Sennett, R. (2017). *The open city*. In *The Post-Urban World* (pp. 97-106). Routledge.

Dementia

Lentis. (n.d.). *Dementie*. Retrieved from <https://www.lentis.nl/probleem/dementie/>

Nillesen, J., & Opitz, S. (2013). *Dimensie voor dementie. Kleinschalige woonvormen voor dementerende mensen*. Wiegerinck architectuur stedenbouw

Stichting Alzheimer Nederland. (2018). *Factsheet dementie per gemeente*. Retrieved from <https://www.alzheimer-nederland.nl/sites/default/files/directupload/factsheet-dementie-per-gemeente.pdf>

Stichting Alzheimer Nederland. (2009). *Alzheimerwijzer: Over omgaan met dementie*. Uitgeverij Cambium B.V., Zeewolde

Stichting Reigershoeve. (2014). *Informatie brochure over het liefdevol ondersteunen van mensen met dementie*.

Elderly

Centraal Bureau voor de Statistiek. (2018). *Prognose 18 miljoen inwoners in 2029*. Retrieved from <https://www.cbs.nl/nl-nl/nieuws/2018/51/prognose-18-miljoen-inwoners-in-2029>

Centraal Bureau voor de Statistiek (2018). *Huishoudensprognose 2018-2060: opmars eenpersoonshuishoudens zet door*. Retrieved February 2020 from: <https://www.cbs.nl/nl-nl/achtergrond/2018/51/huishoudensprognose-2018-2060>

Healing environments

Eijkelenboom, A., & Bluyssen, P. M. (2019). *Comfort and health of patients and staff, related to the physical environment of different departments in hospitals: a literature review*. Intelligent Buildings International, 1-19.

Huisman, E. R., Morales, E., van Hoof, J., & Kort, H. S. (2012). *Healing environment: A review of the impact of physical environmental factors on users*. Building and environment, 58, 70-80.

Yoo, I. Y. (2015). *A Study on Healing Environmental Factors in the Elderly Patients with Long-Term Care*. International Journal of Bio-Science and Bio-Technology, 7(5), 267-276.

Others

AlleCijfers.nl (2018). *Leiden Vreewijk*. Retrieved from <https://allecijfers.nl/buurt/vreewijk-leiden/>

Gemeente Leiden. (2011). *Wonen in een beschermd stadsgezicht*. Retrieved from <https://www.allecijfers.nl/buurt/vreewijk-leiden/>



Literature

leidserregionkaart.nl/pdf/Ontwikkelen/PDF/brochure_Zuidelijke_Schil.pdf

Lawinsider. (n.d.). *Definition of enclosed locked facility*. Retrieved from: <https://www.lawinsider.com/dictionary/enclosed-locked-facility>

Technische Universiteit Delft. (2019). *Graduation Manual: Master of Science Architecture Urbanism & Building Sciences*.

Images:

Burokade. (n.d.). *View of parts of the Hogeweyk*. Retrieved from <https://www.burokade.nl/projecten/zorgwijk-de-hogeweyk/>

Fairwooth. (2015). *View of two homes at the Reigershoeve* Retrieved November 2019 from <http://www.fairwooth.com/projecten/woonzorgboerderij-reigershoeve-heemskerk/>

Designing a healing environment for elderly towards a caring living environment



Alzheimer Village (NORD Architects A/S, 2016).

AR3AD021 - Dutch Housing Tutorial

Rozemarijn Peeters | 4382358

November 2019 | TU Delft

1. Introduction

As we age, we become wiser. According to a Dutch saying, age and knowledge go hand in hand as do age and the increased chances on illness and disability. Due to the organisational structure of the health care system in the Netherlands, people have to live longer at home, even though they might be in need of care. Living at home with an illness or disability entails all kinds of problems, something the current built environment is not suited for. In recent years research has been conducted on the influence of the built environment on the user's health. Research has shown that certain design aspects influence the user's health and can even promote the user's recovery creating a so called 'Healing Environment'.

In this study I try to determine whether the knowledge of the healing environments can be applied in designing for elderly and if so, to what extend. Based on a literature review in combination with two case studies, this research structured in the following manner: the first part describes what a 'Healing Environment' is. In the second part I provide a descriptive overview of the elderly; who are they? Afterwards, I try to answer which factors of a 'Healing Environment' are important for the elderly and what is already done with the knowledge of a 'Healing Environment' in designing for elderly today. Finally, I will summarise the findings and provide an answer to the main question: *Can knowledge of a healing environment be applied in designing for elderly?*

Appendix A.

2. A Healing Environment

2.1 *What is a healing environment?*

In recent years, attention for healing environments has increased. The question that arises is '*What do we mean by a healing environment?*'. According to Yoo (2015, p. 268) a healing environment is not a medical technology, but a set of conditions that patients can feel physically, psychologically, and socially in the space. A healing environment can relieve stress for patients, accelerates their recovery and can even reduce the number of hospitalisation days. The effects of the physical environment on the patients recovery and well-being have consequences for the design of a healthcare institute and asked for design solutions based on research (Huisman, Morales, van Hoof & Kort, 2012).

The lion's share of research conducted in the last decade concerns healing environments with regard to hospital design. However, research on healing environments in relation to elderly care is a less explored topic. Yoo (2015, p. 268) states that a healing environment can be of great importance to elderly patients suffering from chronic diseases; in maintaining a better health state, maintain or even upgrade the quality of life through disease control.

In her article Yoo (2015) describes that creating a healing environment for elderly can contribute to the quality of life and health related outcomes. This can be accomplished by offering a similar living environment to that at home and allowing elderly to maintain the same patterns. For dementia patients this means; the improvement of cognitive performances, functional performances, sleep quality and support way finding and spatial orientation. Furthermore, this also results in the reduction of falling incidents, less wandering behaviour, less agitation and lower medication use. For elderly without dementia, the effects can also be positive; improved quality of life, improved well-being and improved physical activity. These improvements in the general quality of life and patients' resilience indicate the importance of creating a healing environment for elderly.

2.2 *Healing environment factors*

By designing a healing environment, three factors can be distinguished: i. physical factors, ii. psychological factors and iii. social factors. Physical and psychological factors are mostly building-related factors. Under these three factors, subfactors can be differentiated. The various factors and its subfactors are differentiated in Table 1. (p. 4).

Physical factors	Psychological factors	Social factors
Comfort <ul style="list-style-type: none"> - Thermal comfort - Acoustic comfort - Air quality - Visual quality - Light - Hygiene - General comfort - Convenience - Walk 	Territoriality <ul style="list-style-type: none"> - Privacy - Independence / Liberty - Control 	Sociality <ul style="list-style-type: none"> - Interaction/communication - Resting - Education - Place for family and visitors
Stability <ul style="list-style-type: none"> - Quality of spatial layout - Safety / Security - Human movement - Way finding - Furniture arrangement 	Liveability <ul style="list-style-type: none"> - Intimacy - Materiality 	

Table 1. Factors of the healing environment (own production inspired by Yoo (2015), Eijkelenboom & Bluyssen (2019), 2019).

Appendix A.

3. Healing environment for elderly people

3.1 Who are the elderly?

To understand what factors are important for the elderly it is important to define which (sub-)group of elderly people is focused on in this paper. Due to the organisational structure of the healthcare system in the Netherlands, people have to live longer at home, even though their demand for care would suggest different. For the purpose of this study three types of elderly can be distinguished; i. Elderly living at home without any care, ii. Elderly living at home with care and iii. Elderly that no longer live at home and are in need of care. The third category, in which elderly live in a care facility, two categories of care can be distinguished; dementia care and somatic care. Somatic stands for chronic physical disorders such as Parkinson's disease, a chronic lung disease (e.g. COPD) or a stroke. Elderly in need of care due to physical defects of the body or a mix of different disorders can be categorised under somatic care.

3.2 A healing environment for the elderly

One of the leading experts in healing environments for the elderly is professor of nursing In Young Yoo from Jeonju University in South Korea. She specialises in elderly fall prevention and long-term care. In her 2015 research on healing environments she studied the environmental factors of significant importance for elderly people living in a long-term care facility. For elderly people she makes a distinction between the following factors and accompanying subfactors: i. physical factors (comfort, stability), ii. psychological factors (territoriality, liveability) and iii. social factors (sociality). Although these factors also play a role in creating a healing environment for (younger) hospital patients, the emphasis for elderly people lies on comfort and sociality, followed by safety, territoriality and liveability. Within the area of comfort, hygiene was found to be the most important subfactor whereas furniture arrangement, in the area of liveability was found to be the least important. In her study, Yoo found that hygiene, natural ventilation, lighting and the introduction of natural elements are of great importance in providing the most comfortable environment to elderly people (2015, p.270). Regarding the topic of sociality, Yoo found it desirable to create spaces that will enhance interaction. This result supports the findings of Huisman et all. (2012) who indicate that the setting of an area can increase the amount of social interaction (e.g. arranging chairs around small tables in the middle of the room increased interaction more than placing chairs against the walls). Yoo (2015, p.273) further emphasises the importance of social interaction since limited social contact can cause a feeling of loneliness and isolation, which has a negative influence on the mental state of elderly people. Also related to the mental state of the elderly is liveability, which manifests itself mainly in the degree of a 'home-like' atmosphere; decreasing the gap between 'home' and 'the facility' (p. 273). Liveability or 'home-like' character can be accomplished by using familiar furniture and design.

In addition to these factors affecting the ambiance, taking safety measures into account in the design of elderly care facilities is of the utmost importance. Physical changes that go hand in hand with the ageing process make older people prone to certain unfortunate events such as falling. The biggest challenge in this field lies not in the difficulty of incorporating safety measures into the design but rather in the intersection of safety and privacy. Preserving the territoriality within elderly care facilities is challenging. Finding the right balance between community and personal life will help restore self-esteem (Yoo, 2015, p.273).

In addition to providing the requirements of a healing environment on a more abstract level, Yoo (2015,p. 270) also describes how the aforementioned factors should translate into the building. Necessary spaces are: a place for family counseling, a resting room, a healing garden, a sunshiny walk, a program room, a treatment room (where physical, occupational and rehabilitation therapy can take place) and a place for personal play or a hobby. Yoo (2015, p. 272) states that, especially in a communal living area such as an elderly home, it is important to create a place with privacy which allows family to visit (more) often. The ability for family to visit is also subject to research by Huisman et al. (2012) that call the important role visitors play in patient's recovery. Furthermore, close family members turn out to have the biggest impact on patient's mental health. Consequentially, Huisman et al. (2012) also stress the importance of a resting room or quiet space that does not necessarily have to be the bedroom.

The presence of a healing garden has a positive effect on the elderly. Environmental elements such as an outside garden with a covered path were found to contribute to stress reduction and enhance physical activities of elderly in general (Yoo, 2015, p. 273). According to Huisman et al. (2012) the view of nature, or even a representation of nature can be used as a distraction for pain and thereby reduce the use of pain medication. The benefits of having an easily accessible outdoors also relate to the effects of daylight, yet (bright) artificial light should certainly not be forgotten. According to Eijkelenboom & Bluyssen (2019, p. 4) the view of sun rays shining through hospital room windows in the morning can be related to a decrease intake of pain analgesics, a decrease in the duration of stays and even a reduction in mortality rates. Morning light has a positive effect on patients three times stronger than evening light (Huisman et al., 2012). Seasonal depression patients saw their depressive symptoms decrease significantly when they where exposed to morning sunshine. A study on dementia patients showed that those exposed to two hours of morning sunshine each day became less anxious, a finding further illustrating the importance of a 'sunshine walk' (Yoo, 2015, p. 273). An additional advantage to creating a healing environment is that it not only alleviates patients from health issues or stress levels but also benefits the care takers (Yoo, 2015, p.268).

Appendix A.

4. Designed for the elderly

In this chapter I take a look at two projects recently designed with elderly people in mind. The first project is a transformed elderly care home, the other one is newly built. With these two case-studies I try to determine how the knowledge of a healing environment is used for the elderly.

4.1 *Huis Assendorp*

The first case-study is *Huis Assendorp*, located in Zwolle, the Netherlands. This former care home has been transformed into a normal residential building which offers a living space for people of all ages, with or without care. Not only elderly people live in this building, there also live a few students in the complex. The house was set up and furnished in consultation with the residents. This resulted in an open, lively community where everything revolves around freedom, self-esteem, independence with reciprocity as a starting point for the design.



Image 1. Painting area in *Huis Assendorp* (own illustration 2019).

The building houses 125 residents, each with their own apartment. The apartments are around 30 square meters in size and consist of a living room, kitchen, bedroom and bathroom. Besides these apartments, the house has also contains a number of communal spaces. There are three common kitchens, a tea house, a library, a music room and a painting area. Besides,

there also is space reserved for other facilities such as a physiotherapist, a beauty salon and a hair dresser.

During the fieldwork week for my graduation studio 'Designing for Care' I have stayed in Huis Assendorp for a week. I investigated whether the knowledge of healing environments was reflected in the design. First, I will describe which design elements about the house are positive; the factors of a healing environment that have received attention in the design. Secondly, I will describe what was missing at the moment, things that could be improved.

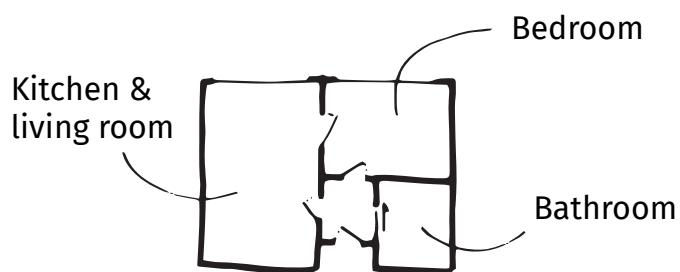


Image 2. Sketch of one apartment in Huis Assendorp (own illustration, 2019).

When visiting, one immediately notices the attention that has been put in the building's lighting. Every apartment has large windows that ensure enough daylight enters the rooms.

There are a number of communal areas in which activities took place. A number of activities were arranged during the week and the teahouse was full every morning and afternoon. This created a lively atmosphere in the building.

What I liked most about this living concept is the great amount of social control and people really taking care of each other. During multiple occasions people in need of care were assisted by others.

However, there are a few things which could be improved. The first thing, that really stood out; is the bad acoustics. The building is really noisy. You could hear your neighbour cough and closing the front doors made noise. This resulted in frustrations and irritations in the house.

Something that also could be revised is the ventilation system of the building. In the room we stayed in, there was a smell of smoke all week, because one of our neighbours was smoking. Since the house is a normal residential building, people were allowed to smoke in their apartments. As a result some residents switched apartments because of this.

The design layout of the apartments could be improved. The house offers living in the building for the rest of your life, even if you need care. Unfortunately this is not possible. The apartment is too small to facilitate fulltime care. I spoke to a women of the care organisation

Appendix A.



Image 3. Communal kitchen on the 1st floor (own illustration, 2019).

who told me that a few residents, who need full time care, probably have to move in the next few months.



Image 4. Empty 'music space' (own illustration, 2019).

One final thing that could have been done better was the design of (some of the) common spaces. Some of them were used quite often. However, others were most of the time empty. The communal kitchens were empty the whole week. Residents have their own kitchen therefore there is no 'need' to use the communal kitchens. Another example of unfortunate design was the music space. Located in an open area, combined with the poor acoustic quality, the space was not suited for actually playing music. One of the residents told: *"I would love to have a music room where I could play an instrument without disturbing others."* In general, the idea of the open common spaces is good, the implementation could be done better.

4.2 Reigershoeve

The second case-study is conducted on the Reigershoeve in Heemskerk, the Netherlands. Reigershoeve is a residential care farm. At the Reigershoeve live 27 people with dementia, all in need of intensive care. The residents live in four group homes, with each seven residents. One of the four homes is intended for younger people with Dementia (age 65+).

Every group home consists of six or seven apartments; each apartment is 15m² and has its own bathroom. The apartment have a small pantry with a sink, a few cabinets and space for a coffee machine. Cooking is not possible in the apartment. For cooking purposes, every home has a big communal kitchen and dining space. Adjacent to this is a spacious living room with various seating areas.

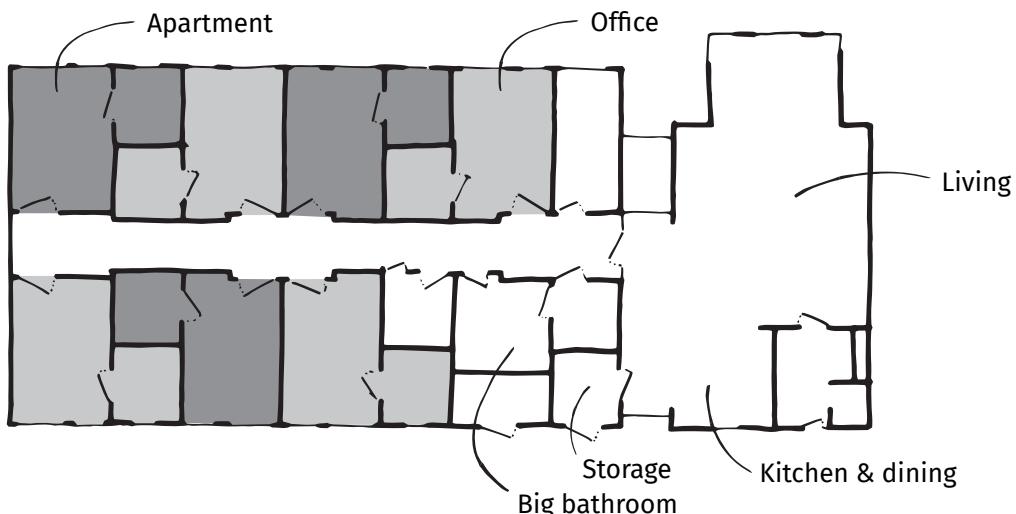
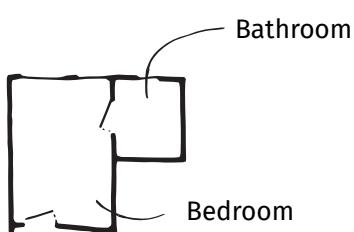


Image 5. Sketch of one home at Reigershoeve (own illustration, 2019).

The terrain on which these homes are located on has a rural character. You will find a greenhouse, vegetable garden, a stable and some animals; goats, chickens and ponies. There is even a playground for visiting (grand)children. The Reigershoeve is therefore called a 'care farm' or in dutch 'zorgboerderij'.



During my visit to the Reigershoeve I investigated whether the knowledge of a healing environment was reflected in the design. Although I only briefly visited the Reigershoeve, I could already recognise a lot of factors of a healing environment. All apartments have large windows, ensuring that enough daylight enters. Due to the 'green'

Image 6. Sketch of one apartment at Reigershoeve (own illustration, 2019).

Appendix A.

design of the terrain, every apartment has a natural view on the garden.

Each apartment has its own bathroom with a shower and a toilet. Having their own bathroom ensures privacy for the resident. Having the bathroom connected to the apartment is also important to the caregiver, bridging less distance between bed and bath. This becomes even more important when the resident becomes less mobile and needs more help. The size of the bathroom is big enough to shower someone in a wheelchair. For those bedridden, a larger bedroom is present in every home.

The garden is easily accessible through doors in the apartments or the shared back door. Paved paths have cross the garden for all functions to be easily accessible. The mix of functions in the garden and the accessibility makes it a lively area. Even for those that do not like to go out, there is always something to see.

Although the site is surrounded by a fence, it does not feel like the residents are locked up. Especially since they can go outside easily and the garden is rich in functions. Consequentially, residents still experience freedom while staying in a safe and secured environment. Furthermore, the place does not look like a care facility at all. This is important to stimulate family visits; it is a nice place to go to.



Image 7. View of two homes at the Reigershoeve (Fairwooth, 2015).



Image 8. View of the garden at the Reigershoeve (Reigershoeve, n.d.).

There are areas reserved for activities at the Reigershoeve. There is a cinema, a workshop, a studio, a bar and a hairdresser's space. These functions are placed in a separate building on the site. As a result, there is no noise nuisance for residents when they are in their own home. This ensures the residents do not get overstimulated.

The Reigershoeve is a nice green and safe environment, with a lot of activities in and outside the house. Despite the fact that this is one of the nicest care institutions for people with dementia I have seen so far, there are two things that could have been done better / differently. The first is the amount of daylight in the living room. The living room and kitchen are very spacious. This is good when people are less mobile. However, the ratio between window and floor space is somewhat out of balance. This makes the living room and kitchen seem quite dark. Adding more (day)light would have a positive effect living environment of the residents.

The second thing that I would be interested in to see is how this concept would work if it was not only for people with dementia. What would happen if not all the residents have dementia but there is a mix of people with and without dementia. This is not something that should immediately be changed in the Reigershoeve. In my opinion the Reigershoeve is already a huge step forward in designing for elderly with dementia. But it would be nice to think of mixing people when setting up a care facility such as the Reigershoeve.

Appendix A.

5. Conclusion

The main goal of this paper is providing an exploration whether the knowledge of a healing environment could be applied in designing for the elderly. The lion's share of recent research conducted on healing environments is related to hospital design. A healing environment is the condition that inpatients can feel physically, psychologically and socially in space. A healing environment can relieve stress for patients, accelerates their health recovery and can even reduce the number of hospitalisation days. By designing a healing environment three factors can be distinguished; physical factors, psychological factors and social factors. Under these three factors, subfactors can be differentiated (see table 1, p. 4).

Various studies have shown how a healing environment has effect on the quality of life, safety and health of the elderly. These factors are relevant as well for both elderly and elderly in need of care. However, some factors are more important than others. Comfort and sociality are found to be the most important factors, followed by safety, territoriality and liveability. These findings translate to a need for the following spaces: a place for family counseling, a resting room, a healing garden, a sunshiny walk, a program room, a treatment room (where physical, occupational and rehabilitation therapy can take place) and a place for personal play of a hobby. Factors that effect the healing environment for the elderly the most are: i. a view on nature, ii. safety and security and iii. privacy.

These findings sum up to a solid 'Yes' in answering the main question whether the knowledge of a healing environment can be applied in designing for elderly?

Awareness of factors that make a healing environment for elderly should translate into future designs. However, the term 'healing environment' might not fit the group concerned. Ageing and the accompanying disabilities are a new status quo instead of a temporary state. Since diseases such as Alzheimer and Parkinson can still not be cured, the term 'caring environment' would be a better fit. The current and future generation of architects should embrace the term 'caring environment' both in literature and practice and create a better environment for those who age.

6. Literature

Eijkelenboom, A., & Bluysen, P. M. (2019). Comfort and health of patients and staff, related to the physical environment of different departments in hospitals: a literature review. *Intelligent Buildings International*, 1-19.

Huisman, E. R., Morales, E., van Hoof, J., & Kort, H. S. (2012). Healing environment: A review of the impact of physical environmental factors on users. *Building and environment*, 58, 70-80.

Yoo, I. Y. (2015). A Study on Healing Environmental Factors in the Elderly Patients with Long-Term Care. *International Journal of Bio-Science and Bio-Technology*, 7(5), 267-276.

7. Images

NORD Architects A/S. (2016). [Alzheimer Village] Retrieved October 2019 from <https://www.nordarchitects.dk/alzheimer-dax>

Own illustration. (2019). [image 1] Photo made during fieldwork trip.

Own illustration. (2019). [image 2] Sketch of apartment Huis Assendorp.

Own illustration. (2019). [image 3] Photo made during fieldwork trip.

Own illustration. (2019). [image 4] Photo made during fieldwork trip.

Own illustration. (2019). [image 5] Sketch of a home at the Reigershoeve.

Own illustration. (2019). [image 6] Sketch of a apartment at the Reigershoeve.

Fairwooth. (2015). [image 7] Retrieved November 2019 from <http://www.fairwooth.com/projecten/woonzorgboerderij-reigershoeve-heemskerk/>

Reigershoeve. (n.d.). [image 8] Retrieved November 2019 from <https://reigershoeve.nl>

Appendix B.

Neighbourhood survey results

Buurtonderzoek-2					
Tijdstempel	Wat is uw geslacht?	Hou oud bent u?	Wat doet u in het dagelijks leven?	Hoe ziet uw ideale buurt eruit?	
2019/11/26 4:35:40 p.m. EET	Vrouw	25	Studeren	Groen	
2019/11/27 11:17 a.m. EET	Vrouw	55	Werken	Laagbouw, veel groen, historisch (zoals ik nu woon) met voorzieningen direct in de buurt	
2019/11/27 12:22:39 p.m. EET	Man	52	Docent	Mix van mensen. Jong, oud, verschillende culturen, achtergronden etc.	
2019/11/27 2:48:01 p.m. EET	Vrouw	73	Gepens. Veel sporten, veel clubs	Veel groen, rust, gevarieerde bewoners in alle opzichten sociale betrokkenheid	
2019/11/27 12:58:51 p.m. EET	Vrouw	58	student en vrijwilliger	Een mix van jong en oud, gezinnen, alleenstaanden, etc.	
2019/12/03 3:21:07 p.m. EET	Man	21	Student rechten	Stierwol, vredigzaam en gezellig	
2019/12/03 3:23:47 p.m. EET	Man	23	studeren	rustig, schoon en vellig	
2019/12/03 3:30:50 p.m. EET	Man	25	Werken/studeren	Goede batons tussen leeftijden, etniciteit en veel groen	
2019/12/03 3:31:56 p.m. EET	Man	21	Studeren	Een buurt waar alles kan/mag met duidelijke afspraak	
2019/12/03 3:45:06 p.m. EET	Man	23	Poging tot studeren	Louter studentencomplexen en verkamering	
2019/12/03 4:31:58 p.m. EET	Vrouw	20	Student geschiedenis aan de universiteit Leiden	Een schone omgeving met speeltuinen voor kindertjes, bankjes voor volwassenen, veel prullenbakken, veilige omgeving met overzichtelijke wegen en paden. Er is een groenvoorziening met een connectie met het water. Daarnaas	
2019/12/03 4:59:39 p.m. EET	Vrouw	20	Studenten	Groen, genoeg parkerplaatsen en stevige huizen	
2019/12/06 2:24:14 a.m. EET	Man	21	Studentenleven	Rustig, veel bewoners	

Hoe vaak komt u in aanmerking met ouderen?	Bent u bereid om iets te doen voor een ouderen/buur?	Wat zou u doen voor een ouderen/buur? [Oogje in het ziel houden]	Wat zou u doen voor een ouderen/buur? [Boodschappen doen]	Wat zou u doen voor een ouderen/buur? [Rondje lopen met een buur/oudere]
Niet				
Wekelijks	Nee, waarom niet?	Nooit	Nooit	Nooit
Regelmatig	Ja, ik doe op dit moment al iets voor een ouderen, namelijk:	Wekelijks	Maandelijks	Maandelijks
Veel	Ja, wat zou u dan willen doen?	Dagelijks	Wekelijks	Jaarlijks
in aanraking met.....:)	Ja, ik doe op dit moment al iets voor een ouderen, namelijk:	Dagelijks	Maandelijks	Maandelijks
Vrij veel;	Ja, wat zou u dan willen doen?.....	Wekelijks	Maandelijks	Wekelijks
in aanraking met.....:)	Ja, wat zou u dan willen doen?	Jaarlijks	Wekelijks	Maandelijks
1 x per week	Ja, wat zou u dan willen doen?	Maandelijks	Maandelijks	Maandelijks
zelden tot nooit	Ja, wat zou u dan willen doen?	Wekelijks	Wekelijks	Wekelijks
Zelden	Ja, wat zou u dan willen doen?	Wekelijks	Wekelijks	Wekelijks
Wekelijks	Ja, wat zou u dan willen doen?	Wekelijks	Wekelijks	Wekelijks
Enkel op's, omsons en docenten	Nee, waarom niet?	Nooit	Nooit	Nooit
Dagelijks tijdens het wandelen buiten.	Ja, wat zou u dan willen doen?	Wekelijks	Maandelijks	Jaarlijks
Net vaak	Ja, wat zou u dan willen doen?	Nooit	Maandelijks	Maandelijks
Wenig	Ja, wat zou u dan willen doen?	Nooit	Nooit	Wekelijks

Wat zou u doen voor een oudere/buur? [Kopje koffie drinken]	Wat zou u doen voor een ouder/buur? [Helpen met persoonlijke verzorging]	Anders nameeljk
Nooit	Nooit	Ik zorg voor mijn moeder, dat is genoeg
Maandelijks,jaarlijks	Nooit	
Maandelijks	Nooit	
Maandelijks,jaarlijks	Jaarlijks	-
Maandelijks	Nooit	
Maandelijks	Nooit	
Wekelijks	Nooit	
Maandelijks	Dagelijks,Nooit	
Zou dit anders zijn voor ouderen met dementie? Zo ja waarom of wat zou anders zijn?		
-	-	-
Nee	Tijd	
Ja, frequentie zou anders zijn	Tijd	
Vraagt meer kennis van dementie om goed om te kunnen gaan met de betrokkenen, om iets toe te voegen in zijn/haar leven...	Niets...misschien een te groot karakterverschil	
Dat is wel afhankelijk hoe goed ik deze oudere ken. Als je iemand goed kent of het klinkt goed, is het makkelijker om iets voor diegene te doen.	Er moet voor mij een bepaalde vrijheid in zitten. Als er teveel verwachtingen zijn, dan voel ik me "opgesloten" en dan haak ik af. Dus, voor mij geldt dat het niet te vast moet liggen.	
Nee, dit zou niet anders zijn voor ouderen met dementie	Ik vind het belangrijker om tijd met familie of vrienden te spenderen	
Ligt eraan in welke mate de dementie aanwezig is. Als men je niet herkent zou ik minder geneigd zijn wat te doen.	Tijd.	
Omdat ze er niet herkennen	Ze niet kennen.	
Nee, nog meer vermijden	Kosten-bate analyse	
Nee	Ik weet niet vanuit welke organisatie die soort activiteiten worden ondernomen.	
Afhankelijk van de gradatie, agressie		
Ja, vergt veel tijd en verdienen personen die hulp	Te weinig tijd	

Appendix B.

Wat zou u willen toevoegen aan de buurt? Is er iets wat u nu mist?	Wat zou een oudere voor u kunnen betekenen?
-	-
Niks	Niks
Ouderen lijken te verdwijnen uit de buurt. Zou goed zijn als er meer woonvoorzieningen zijn voor ouderen	Gezelligheid
Het is een redelijk gemixte buurt qua leeftijd. Ik mis niet direct iets.	Menselijk contact voegt altijd iets toe.
Een speeltuin	Veel levenservaring en wijsheid kunnen delen.
Een buurtsuper	Kennis overdragen van de vorige generatie
	Aanspreekpunt, connectiepunt met de jongere generatie.
Nee	
De boze buurbewoners	Niet veel
Ik zou het leuk vinden als er meer schone zitvoorzieningen zouden zijn.	het lenen van spullen zoals een grasmaaier of een boek.
Nvt	Niets dat ik me snel zou kunnen bedenken

