RESEARCH REPORT

THE OLD HARBOUR

The Next Step in the Housing Career of Modern Elderly

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Date: Januari 10, 2022

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Advanced Housing Graduation Studio spring 2021

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1. INTRODUCTION

The Netherlands is coping with a housing shortage. It has been like this for years now, especially since the ministry of Housing was cancelled in 2010, since it was deemed obsolete. The former tasks of the ministry were placed in other ministries and the minister function that was responsible for housing was cancelled in 2017 (Obbink, 2020). In 2018, the minister of interior affairs, Kasja Ollongren, who was given housing on top of her other functions, announced that by 2030, 1 million new homes needed to be build, to try to resolve the housing shortage (BNR webredactie, 2018). For my graduation project, for the studio M4H: For Modern Households Rotterdam of the chair of Architecture and Dwelling of the faculty of Architecture at the Technical University Delft, the assignment given is to design for the modern households that will live in these million homes. The location for this is one of the piers of the Merwe-Vierhavens in Rotterdam.

To prepare for the design all the participants of the studio as a group researched the topic of modern households and the 1 million homes assignment to get a grip on the design assignment. Therefore, I will start this report with a summarized version of that research in chapter 2. I will follow this up, in chapter 3, with my individual research into one of those modern households that will be the focus group for the design of my building. In the case of my research, that group will be the elderly of the Netherlands, focusing on who they are and what their needs are.

My research will continue after that in chapter 5 in the form of case studies, four projects that fit the different types of elderly in the Netherlands.

As a group we were also tasked with designing an urban master plan for the design site at the Merwehavens. We did this by first analysing other former harbour areas in Rotterdam and Amsterdam and transplanting those designs on the site. This urban master plan will be summarized and the conclusions will be shown in appendix 1. Each student chose one building block as a design location for the individual part of their graduation project.

As a starting point for the design the case study projects were transplanted on the building site to see how the reference projects would work on this location. This can be seen in appendix 2. That will end with the concept design and show how it came to be. This is the design I presented at the P2 presentation.

I hope you enjoy reading this research report.

2. MODERN HOUSEHOLDS GROUP

As part of the group research we looked into the one million homes challenge, mentioned in the introduction, and at the same time who were the modern households that are going to live in these new homes. For this initial research we looked at all the age groups that live in the Netherlands, from children to retired elderly. To do that, my group and I looked at several scales. First we looked at a national scale, i.e. how is the housing in the whole of the Netherlands. What was the division between age groups and how much is each age group projected to grow? This was followed with the situation in Rotterdam and we ended with the area of our project, the Merwe Vierhavens in Rotterdam.

We presented this during the P1 and it was also the start of picking the modern household I was most interested in and to use that as a starting point for my personal research and eventual design.

For me the most striking aspect was the growth of the number of elderly in the Netherlands. That is why I will focus my research on that group. On top of their growth, groups of elderly people are currently living in houses that are too large for them and better fitting for families. Causing a part of the housing shortage.

On the next page, two slides from that presentation will be displayed showing some of the findings. Some conclusion that we found were that the majority of the growth of the population stems from the elderly population and that the lack of housing is often the aforementioned mismatching of the current housing stock and not that there are too little houses in the Netherlands.

National scale
Households

The amount of households will keep growing. This has different reasons. First, the population will grow, which is a small contributor, we have the aforementioned immigrants, which means more households. But another aspect is the growth of single households. All this contributes to a growth of households with 924.000 to 8.0 million between 2020 and 2035 and after that it will grow less quickly to about 9.2 million in 2050.

The largest growth of households will be the single households, households consisting of only one person. This group will grow with 82% until 2035. These households come from all the age groups, but especially the single households in the 75+ age group will grow rapidly. This is often caused by the growing life expectancy of inhabitants in the Netherlands, but also the death of a spouse, causing the other person to become a single household.

This growth in households is an average of the Netherlands, however there is a clear difference in where in the Netherlands the population will grow faster. The largest growth in population will be in the Randstad and surrounding areas, with the smallest growth occurring at the edges of the Netherlands and even a decline in southern Limburg.

Sources:
ABF Research. 2020. Primos 2020 - Prognose van bevolking, huishoudens en woningbehoefte tot 2050.

Gebiedsontwikkeling. 2020. 1 miljoen woningen nodig? Bouw niet bij, maar transformeer. https://www.gebiedsontwikkeling.nu/artikelen/1-miljoen-woningen-nodig-bouw-niet-bij-maar-transformeer/ retrieved on 10-03-2021

Figure: Expected growth of institutional population from 2010-2050, based on numbers CBS.

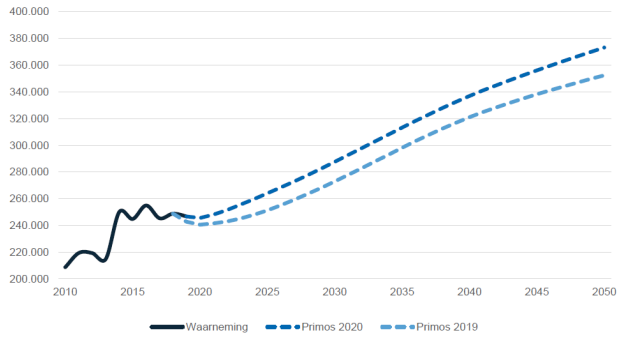
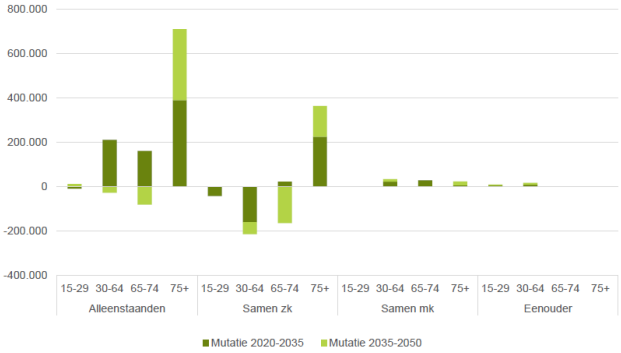


Figure: Increase and decrease of households by type and age



1 abf Research (2020)

National scale
Conclusion

1 million homes added by 2035

population growth for 2035 expected to be 7,9% resulting in 18.8 million people.

natural growth will decrease, while migration increases.

Increase in households, not only in pop. a increase in one person households.
- a mismatch between housing needs and existing housing supply young people are still the biggest group entering the city, and the foreign group is increasing in % vergrijzing (more old people)

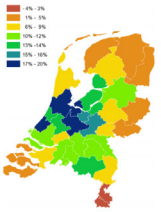
city (urban region, randstad mostly) is still the epicentre of the problem: here are the needs and shortages

The one million houses that have to added, is NOVI's answer to a growing population, and changing housing demands.
it is part of a long term strategy, from now to 2035, to match housing stock with demand.

This is mostly a problem for the urban regions of the Netherlands.

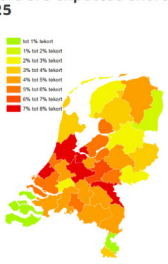
To summarize, the population of the Netherlands will continue to grow until 19,3 million by 2050. A growing population also means that the amount of households will increase 9.2 million in 2050. The largest growth of households are the single-person households, and will grow with 82% until 2035. This group consists mainly of 75+ people. Currently, there is a big gap between the housing stock and the housing demand. In order to ensure and achieve a proper functioning of the housing market, the housing stock should be expanded by approximately 1.1 million homes before 2030. That is why we need to build an additional 1 million homes before 2030.

Where is the expected growth? 2020-2035



Household growth per housing market area (2020-2035):
The strongest household growth will take place in the housing market area of Amsterdam (20%), Utrecht (19%) and The Hague (18%). In Rotterdam there is a growth of 10-12%. There is also growth expected in the regions of Ede (16%) and Amersfoort (15%).

Where are expected shortages? 2025



In 2025, there will be a deficit of around 6.6% in the Randstad. This concerns almost 233.000 homes, or 55% of the total (national) housing shortage.

source: abf Research (2020)

3. PERSONAL RESEARCH

Introduction

After the collective research done by the other students of the group and me into the modern households and the one million home challenge, the aspect that struck me most was that the need for houses does not necessarily mean that there are not enough houses. A lot of the shortage comes from the fact that elderly, residents of the Netherlands above the age of 55, stay in their larger homes too long, meaning that families cannot move into these dwellings. This is however a result of a shortage in suitable houses for the elderly, e.g. single level housing with larger doorways and possibilities for future aid in living.

Therefore I want to focus my personal research on the population above the age of 55. The research question is:

What are the functional needs of a building suitable for residents above the age of 55, whether they are healthy or physically impaired and considering that they come from different social and economic backgrounds?

To get a better understanding of the current situation of elderly housing and to get a little bit of context surrounding the topic, I will first look into the history of elderly housing in the Netherlands, in chapter 3.1. This will start around the 12th century with the hofjes for elderly women that are still present in many Dutch cities. From this point in time I will continue with several other examples. The aim of this part is to find out the architecture, organisation and living conditions of the elderly housing at different time periods and how they evolved over time, to place my own building in this historical context as a new chapter.

My research will continue in chapter 3.2 with the current situation of the older part of society in the Netherlands, focussing on two groups in the 55+ and retired population groups. Some aspects that will be examined are the size of the population group above the age of 55 until retirement and retired people, how that changes over time and the social and economic backgrounds of these two groups.

Another question will be: How the 55 to retirement and retired people live now.? This question will be answered in chapters 4 and 5. Chapter 4 will be about field research, in the form of a questionnaire in chapter 4.1, a visit to a project in chapter 4.2 and finally a participant observation in chapter 4.3. Chapter 5 will focus on four case study analyses that I have done into housing for the population above the age of 55. Two of these case studies focus mainly on housing blocks for people above the age of 55 that are still living without care and the two other case studies focus on elderly housing with care.

(This introduction is a summarized version of the Research Plan, which is also included in appendix 4 Research plan)

© AD

Honkvaste ouderen houden woning bezet

Senioren blijven plakken in hun onaangepaste huis, zelfs als ouderdom en ziekte op de loer liggen. Dat blijkt uit onderzoek van de ANBO en woonorganisatie Woonz onder ruim 12.000 mensen. Veel ouderen vinden verhuizen een te grote stap, maar belemmeren zo de doorstroming.

Edwin van der Aa 01-04-15, 08:18 Laatste update: 11-01-16, 19:33

Image 1, source: https://www.ad.nl/binnenland/honkvaste-ouderen-houden-woning-bezet~ac412238/

Tekort van 80 duizend woningen voor senioren, en dit cijfer stijgt alleen maar

04-05-2019 18:13 | Geld en werk |

Auteur: Jan Ponsen

In het hele land is een groot tekort aan geschikte huizen voor ouderen. En dat tekort groeit de komende jaren snel. "Overheid en gemeenten weten dit al jaren maar doen hier nog te weinig aan: laks en onvoorstelbaar", zegt belangenvereniging ANBO.

Image 2, source: https://eenvandaag.avrotros.nl/item/tekort-van-80-duizend-woningen-voor-senioren-en-dat-wordt-nog-veel-meer/

Bevolkingscijfers

Nederland in 2050: veel meer ouderen en eenpersoonshuishoudens, en dat heeft consequenties

Ouderen van een zorgcentrum in het Rotterdamse Crooswijk genieten van een ijsje. Beeld ANP, Jerry Lampen

Image 3, source: https://www.trouw.nl/binnenland/nederland-in-2050-veel-meer-ouderen-en-eenpersoonshuishoudens-en-dat-heeft-consequenties

'Tekort aan seniorenwoningen'

'Zorg voor zelfstandige ouderen moet en kan beter: meer woningen rap nodig'

15 januari 2020 16:46

Aangepast: 15 januari 2020 17:00

Image 4, source: https://www.rtlnieuws.nl/nieuws/nederland/artikel/4986936/zorg-voor-zelfstandige-ouderen-moet-ingrijpend-veranderd

3.1 HISTORY ELDERLY CARE NL

3.1.1. Introduction

Elderly care in the Netherlands has changed a lot since one of the first types of specific elderly housing, the hofjes in the 12th century, one of the first organised housing types for elderly. Currently, we have retirement homes for older people who need care for 24 hours a day on one hand and so called Mantelzorg, unpaid care for your older relatives, on the other hand. But those types of care have not been around for a long time.

In this chapter I will examine hofjes, proveniershuizen and housing for the poor, among others, on a historical context level, but also on an architectural level. Doing this will create a time line, starting in the 12th all the way until the 21st century. I will start with the hofjes, a form of housing for older women that started in 12th century, but of which several examples still exist today in cities like Amsterdam.

3.1.2. Hofjes

The hofjes, an example is the Begijnhof in Amsterdam visible in figure 5, were first used for religious purposes. Women who abstained from marriage lived there and they basically were normal houses surrounding a courtyard. These forms of religious hofjes or Begijnhofjes started to arise in the 12th and 13th century (Schrever, 2019).

A not so much religious version of these were the normal hofjes. In total around 144 were build in the Netherlands, with most being built in cities in Noord-Holland and Zuid-Holland. These newer versions started in the 14th century, however they became really popular in the 17th and 18th century. The primary reason for this popularity was that most were built out of charity for the older female part of the population, a group that was often deemed as a weak part of the population that was not able to take care of themselves. Building these hofjes as a wealthy citizen of the Netherlands was positive for the image, but sometimes they were also build after the wealthy person died, as a form of legacy. As stated above, these were mainly for the older females. And despite these hofjes were built out of charity, the residents still had to pay a fee to live there. So masked as a form of charity, it was still for the wealthier part of the population, not for the poor elderly women (Deen, 2004).

Some time later, starting in the 15th century, older men started to move into Proveniershuizen, a type of elderly housing, which will be explained in the next chapter.

Figure 5: The Begijnhof in Amsterdam, build during the 12th century, however most original buildings were replaced in the centuries after that. Source: https://www.amsterdamoudestad.nl/bezienswaardigheden/oude-stad/begijnhof

3.1.3. Proveniershuizen

The proveniershuizen, of which an example is shown in figure 6, were the alternative for the independent older males. Just like in the hofjes for the women, the men had to pay to live in the proveniershuizen. However this meant that for the remainder of their life they would be taken care of, they had a place to sleep, a place to spend the day and a place to eat, food was provided as well. This meant getting old and living towards your death without care. (Vroegindewey, n.d.).

This type of housing was originally not only for older men. So called proveniers, people that bought a place to stay for a longer time, started to pay guest houses, hospitals and orphanages to stay there, which started in the 12th century. After this specific houses, the proveniershuizen, were built. The proveniers that lived there from the 12th century and onward were not necessarily older, a lot of them were also younger and just wanted a carefree live and paid a lot of money for that. The proveniershuizen only started to house the older men in large quantities in the 17th century, so much later than their inception, but also much later than the hofjes that housed the older female population (Historiek, 2019).

An example of such a house and the organisation can be seen in figure 7. Each person had one room and shared everything else, like bathroom and dining facilities. The example shown is interesting, since it originated as a hofje for women in 1414, but was transformed into a proveniershuis for

Figure 6: The Proveniershuis in Haarlem, photo taken in 1978, source: Delft Architectural Studies on Housing, Proveniershof Haarlem (NL), Dash2018/June, P82

men in 1706. This is where we can see similarities with the hofje. Like a hofje, a proveniershuis was often build around a courtyard. In this example there are two rows of dwellings, which means that not every dwelling is connected to the courtyard. But with the use of hallways the outer dwellings can reach the courtyard. The dwellings themselves were not that special, it was often just one room with a little bit of storage space, however in this example it was possible to combine several rooms and create a larger dwelling, but that would be significantly more expensive (Wilms-Floet, 2018, P 81-87).

The amount of money that the men had to pay to live there for the rest of their lives varied. On average it was 2.570 guilders in the 18th century, but it depended on the age of the residents. A younger man had more years to live and would therefore cost more money to provide for and was charged more money. These amounts were a lot of money at the time and it had to be paid at once, so it was not possible to pay a little and pay the rest the coming years (Historiek, 2019).

These examples, however, were still for the wealthier part of the older population of the Netherlands. Most of the population that was older and therefore not able to work again was poor. For this part of the population, wealthier citizens first built Oudemannenhuizen. These were more charity focused than the hofjes, since the people living in them did not have to pay anything. They were called Oudemannenhuizen (houses for old men), because they were first build for the men, since they needed them first, since men were deemed to take care of themselves, but if they had no money they could not do so (Deen, 2004).

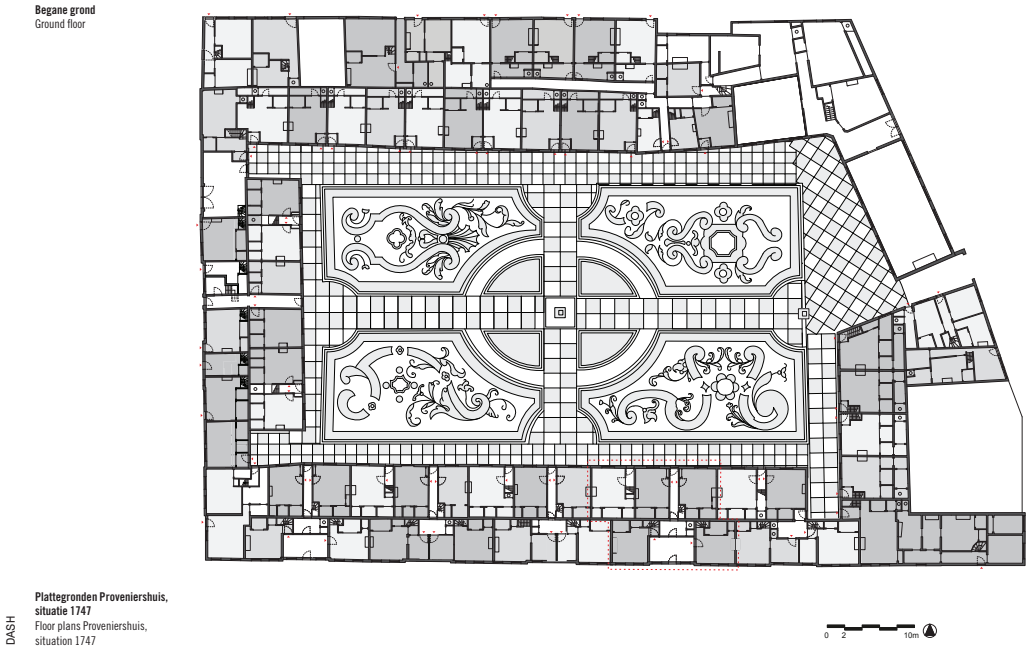


Figure 7: The Proveniershuis in Haarlem Source: Delft Architectural Studies on Housing, Proveniershof Haarlem (NL), Dash2018/June, P84

3.1.4. Oudemannenhuizen

Around the same time as the proveniershuizen started to house the older part of the population, the 17th century, the poor male population that was unable to work anymore, lived in Oudemannenhuizen. In this case poor means that they were not able to pay a large amount of money at once to live the rest of their lives in a proveniershuis. In essence they did not differ too much from the hofjes and proveniershuizen, it were often small houses surrounding an inner courtyard. However the key difference was that living there was free, but they had to live according to strict rules. The rulers of the houses were wealthy citizens, that were often also rulers or had influential functions. The rulers overlooked everything in the Oudemannenhuizen, from the general organisation to the feeding of the residents and providing the clothes the residents wear (ONH, 2013).

Around 1800 the wealthier citizens decided to also start building houses like these for the women, called Oudevrouwenhuizen (houses for old women). The reason for this was that not only the men were poor after they were not able to work anymore, women had the same problem and that meant that hofjes were too expensive (Vroegindewey, n.d.).

An example of a house that had both a men and women section is the Luthers Diaconiehuis in Amsterdam, which currently houses the Maarten Luther Museum. This house was build in 1772 by the Luther community to house older men and women. At the very beginning it was mainly large sleeping and dining halls as is visible in figure 8. Despite the rather large size of the building, it needed to be extended and in 1858 they added another building to it, mainly to take care of the ill and separate them from the rest. Here we can already see

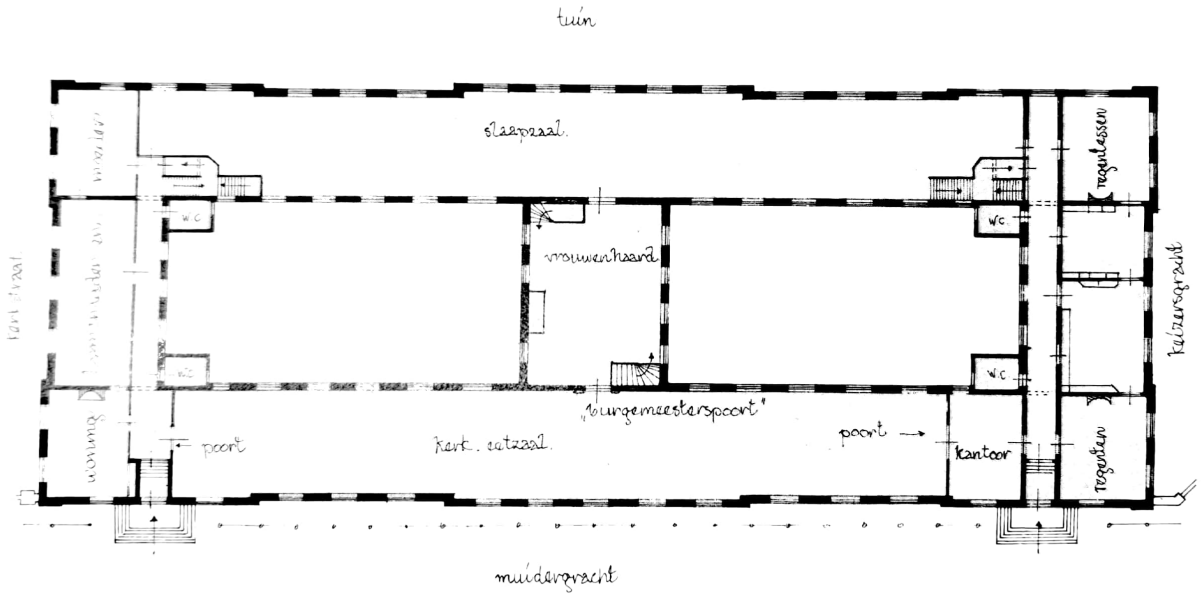


Figure 8: First floor of the Luther Diaconiehuis (Van Vrijberghe de Coningh, 1977, p47)

a change in the way the building was organised. The residents still had shared sleeping rooms, but this time they were much smaller, for 12 people. Each floor also had smaller rooms, but the room for the caretakers and the bathrooms were only on the ground floor. The ground floor of the extension is visible in figure 9 This building got changed again between 1969 and 1974. This time the large sleeping area got split up into smaller rooms as well, to house a maximum of 4 people (Van Vrijberghe de Coningh, 1977).

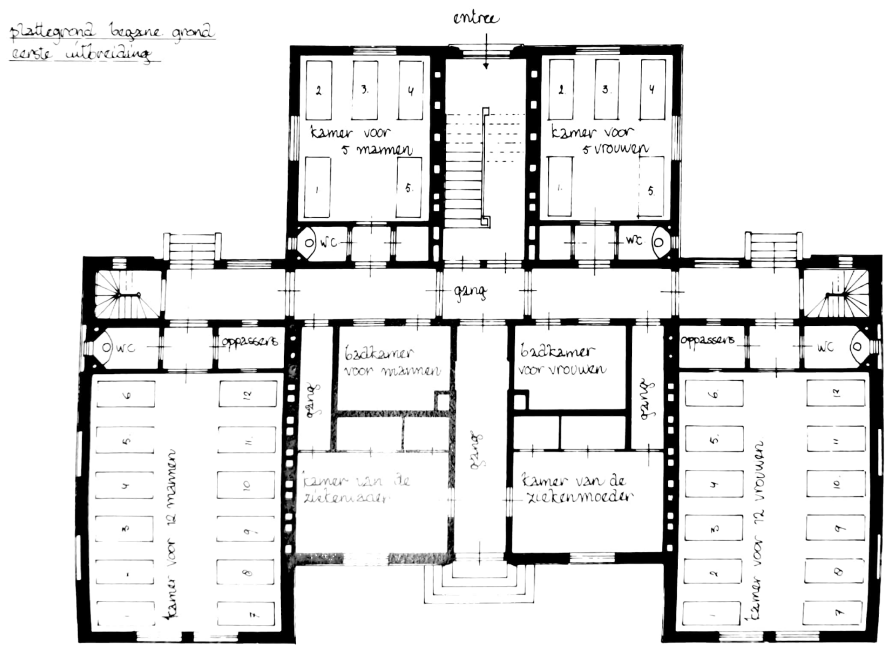


Figure 9: Ground floor of the first extension of the Luther Diaconiehuis (Van Vrijberghe de Coningh, 1977, p63)

3.1.5. Houses for the poor

The hofjes and proveniershuizen remained a form of housing for the elderly until the second world-war. The Oudemannenhuizen and Oudevrouwenhuizen on the other hand slowly started to merge with the housing for the poor at the beginning of the 20th century. Since the older not working part of the population was the poorest part, the merging of housing for the old and housing of the poor was not a strange idea. The housing that came out of this was called pensiontehuis (sheltered housing). The pensiontehuis had small apartments for the elderly and shared facilities like a kitchen and a dining area. However at the start of the 20th century however there was still a strong divide between the catholic church and the protestant church. Both wanted to help the elderly, but the catholic church had already taken care of the elderly for a long time now, the Begijnhof is an example. As we read before this was however not for the poor part of the population. Catholic elderly housing focussed mainly on the wealthier part of society, the part that could afford to live in hofjes. The protestants on the other hand did focus especially on the poor part of the elderly population. Their aim was to tackle the social and economic spectrum as a whole. This meant that until at least 1945 protestant elderly care in the Netherlands was predominantly care for the poor, which is the part that could not afford to pay for elderly housing or could not rely on family to take care of them. Until the end of WWII (1945) the care of the lower class elderly population in the Netherlands was mainly done by the protestant church, with an aim to tackle the social & economic spectrum of care as a whole (Mens & Wagenaar, 2009, p. 17-22).

3.1.6. A change in help for the elderly from the government

In the previous section I described the way in which elderly housing has changed, but the way the government took care of the older part of society started to change in the beginning of the 20th century. More specifically this started in 1913 with the Invaliditeits- en Ouderdomswet (impaired and old age law), which ensured a small compensation from the government for physically impaired people and population above the age of 70, an old age at that time and therefore deemed as similar to the physically impaired. However, this was very little, and the family was obliged to add money to this allowance (Mens & Wagenaar, 2009, p. 17). So this still meant that the elderly still relied on their children or on charity. Nevertheless, this compensation was a first step to a more drastic change after the second world war.

3.1.7. After the second world war

The minister of social affairs in 1947, Willem Drees, enforced a law called the Noodwet Ouderdomsvoorzieningen. The main purpose of this law was to allow people above the age of 65 to stop working. It was called an insurance, but there were a lot of debates about it being more like a state organised retirement fund. Despite some resistance the law was enforced on May 24th 1947 and was nicknamed Noodwet Drees, a poster advertising this law can be seen in figure 10. Its main purpose was to ensure that every older person above the age of 65 would get financial aid without having to work for it and that nobody would be excluded. However retirement was not really something most people did, meaning that they still earned a wage, but there was a limit to the amount of money you could earn. If you earned too much you would not get

Figure 10: Poster describing the Noodwet Drees. Source: Een gedurfd voorstel. Willem Drees en de ouderdagsvoorziening by Jelle Hans Gaemers

money from the government. Did you earn a little bit of money? In that case the amount of financial aid was reduced (Gaemers, n.d.).

On top of that there were differences depending on where you lived. If you lived in an expensive city, like Amsterdam, you got more than when you lived in rural areas of the Netherlands. Willem Drees knew that the amounts of the financial aid would be too little to sustain yourself and become financially independent. On the other hand it did mean that the population above the age of 65 were less dependent on their children. This ensured that Drees would be seen as the father of the Dutch welfare-state that we are now and the beginning of the change for the elderly as the poorest part of the population to the wealthier part of the population now (Gaemers, n.d.).

Just after the second world war there was a massive shortage of houses for the elderly. In 1950, 37.304 elderly lived in specifically designed elderly houses. In these houses less than 30% had their own room and 15% lived in two person rooms, meaning that more than half lived in large shared rooms with at least four others, but often more (Mens & Wagenaar, 2009, p. 36).

In 1956 the Algemene Ouderdoms Wet (AOW) (Translation: General Old Age Law) was enforced as the successor to the Noodwet Ouderdomsvoorziening. This law, together with a retirement fund ,ensured that the 65+ population was financially independent (Sbi formaat, n.d.).

The AOW was followed up by the Wet op Bejaardenoorden in 1963. This allowed a possibility for the government themselves to build retirement homes

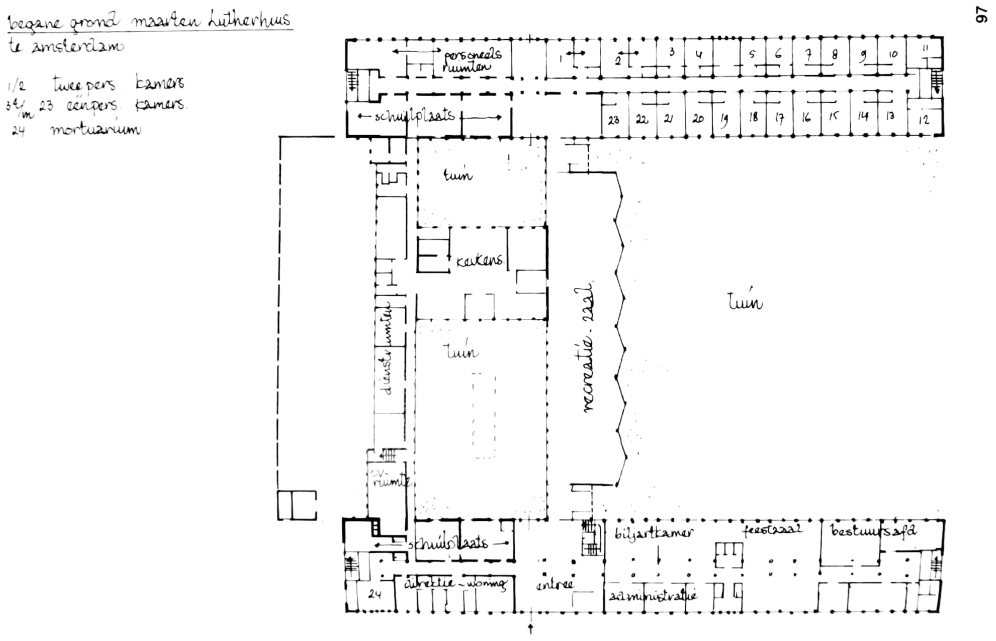


Figure 11: Ground floor of the Maarten Lutherhuis in Amsterdam (Van Vrijberghe de Coningh, 1977, p97)

and try to stop the shortage. These homes were in essence similar to the old versions of elderly housing in the sense that the elderly had to pay to stay there. What was different this time was that the elderly were able to afford it because of the AOW (Gulmans, 2014).

An example of such a Bejaardenoord was the Maarten Lutherhuis in Amsterdam, which opened in 1967. This building could house around 300 elderly people that were still relatively healthy. Each person would have their own room, but there were also couple rooms. An overview of the ground floor with several of these rooms and also shared facilities can be seen in figure 11.

These care units had no functions like a kitchen however, the main purpose of these rooms was sleeping and also living, but eating was done in a shared dining room. Floor plans of several of a single and couples room can be seen in figure 12

On top of these care units, there were also several dwellings for fully independent elderly, that could still take care of themselves. Floor plans for these kind of dwellings can be seen in figure 13 (Van Vrijberghe de Coningh, 1977).

However these houses were not perfect. Aspects like abuse and intimidation were not rare and this was shown in the television program called De Ombudsman in 1970. This caused the government to respond and the same year they published the Nota Bejaardenbeleid, which ensured that 12.000 new elderly houses would be built each year. Furthermore, the older homes where the elderly lived together in large rooms would be replaced by modern homes with separate rooms. As a final result of the program, elderly

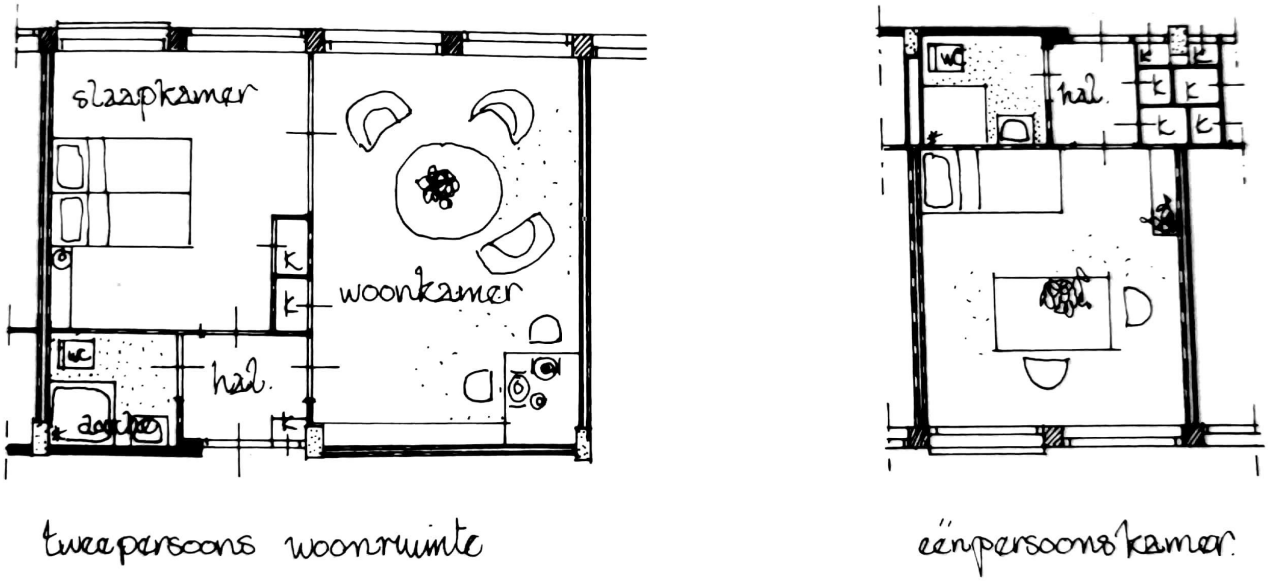


Figure 12: Dwelling plans Maarten Lutherhuis (Van Vrijberghe de Coningh, 1977)

got privacy and were treated with respect. This made the homes popular with the healthy elderly as well, causing the elderly that really needed help with everyday tasks to not get in the retirement houses. Because of this the 2nd publication by the government was issued, De 2e Nota Bejaardenbeleid. With this publication the government tried to keep the elderly home as long as possible, by only allowing older people to move into a retirement home when they were not able to take care of themselves anymore (Gulmans, 2014). This leads to one of my problems mentioned in the introduction, where the elderly stay in their own larger homes for longer, causing a shortage for families.

3.1.8. Mantelzorg

Because the retirement homes were only for people that could not take care of themselves anymore, a new way of care was introduced in the Netherlands for the people that needed a little bit of care, Mantelzorg. It was introduced in the 1970's by J.C.M. Hattinga Verschure, someone who wanted to introduce social aspects into medicine and care. The idea of Mantelzorg was the informal care of the elderly, possibly with the help with professionals. It was mainly meant to not fully rely on professional caregivers. The main purpose of this was to try and keep the elderly in their own home as long as possible. This was because there

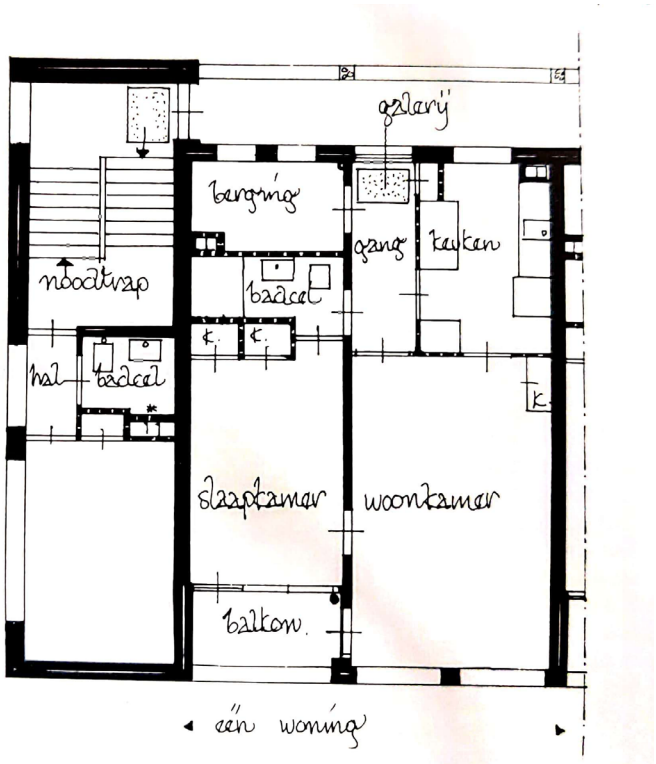


Figure 13: Dwelling plan independent elderly housing Maarten Lutherhuis (Van Vrijberghe de Coningh, 1977, p 110)

was a slight issue. The Netherlands was a wealthy country and was spending a lot of money on the care for elderly, however somewhere in the 1980's this spending on care for the elderly became too expensive and they had to reduce the spending. The Netherlands at that time had become rather unique compared to other countries. 14,5 % of the population above the age of 65 was living in retirement homes in 1980, where neighbouring countries like Belgium and Germany only provided retirement homes for 5% and 4,5% of the elderly people. The large number of elderly in retirement homes also had a negative effect on their health. (Mens & Wagenaar, 2009, p. 117-118). The Mantelzorg that came as a response was free care and therefore could help with the cost problems.

3.1.9. Wet Langdurige Zorg (WLZ)

The second nota and the introduction of mantelzorg meant the end of regular elderly living in retirement homes that started at the end of the second world war. It was still possible to live in retirement homes if they wanted to, it was just strongly discouraged and rather expensive. This continued from the 1970's until 2015. Retirement homes still existed and were necessary for people who needed a lot of care. However, elderly without much need for care mostly continued to live in their own homes, sometimes supported by a little care from relatives or neighbours, in the form of Mantelzorg.

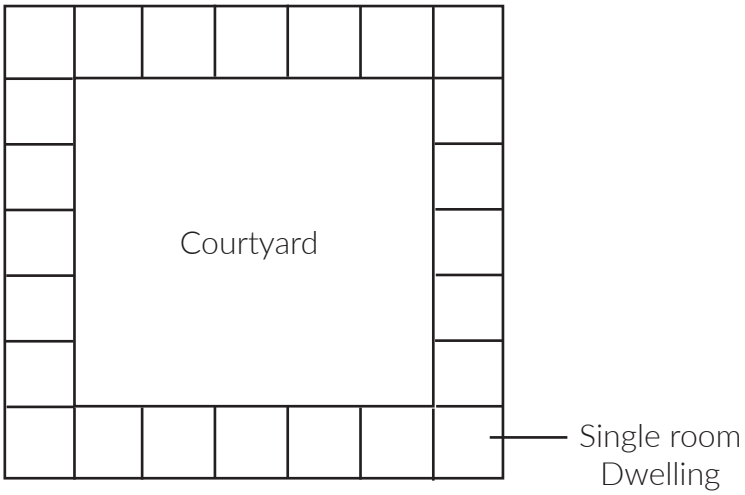
In 2015 a new law was enforced, called the Wet langdurige zorg (Wlz). In short this law meant that you were only allowed to move into a care facility like a retirement home when you needed help 24 hours a day, mainly due to dementia or severe physical disabilities. These disabilities have to be permanent, which means that the possibility of it ever going away is (almost) not there. This means that if you want to move into a retirement house because you have difficulty with walking or some other daily activities you cannot move to a care facility, because you don't require help 24 hours a day. Retirement homes have therefore become a final solution, the final step in your life (Zorginstituut Nederland, n.d.).

3.1.10. Conclusion

To conclude, the elderly and their housing have changed drastically during the last century. Elderly people used to live in houses for the poor or used to rely on charity, but after the changes the government made in financial aid for the older part of society, they could provide for themselves. This did not last long and now relatively healthy elderly do not live in retirement homes anymore, either because they want to live home for as long as possible, or because they are simply not allowed to by the government. On the next page there is a short and summarised overview of the changes that I described in this chapter.

It is important to look deeper into the statistics of modern elderly in the Netherlands and their current needs and possibly future needs. Therefore, the next chapter will focus on the Dutch elderly of today, who are they and what kind of housing do they need.

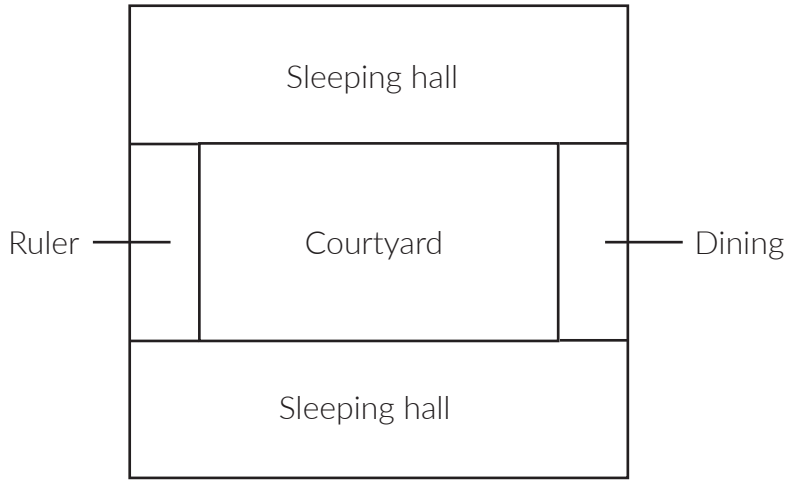
OVERVIEW OF THE CHANGES OF THE VARIOUS TYPES OF ELDERLY HOUSES OVER TIME



Hofjes and proveniershuizen

12th century - 1900

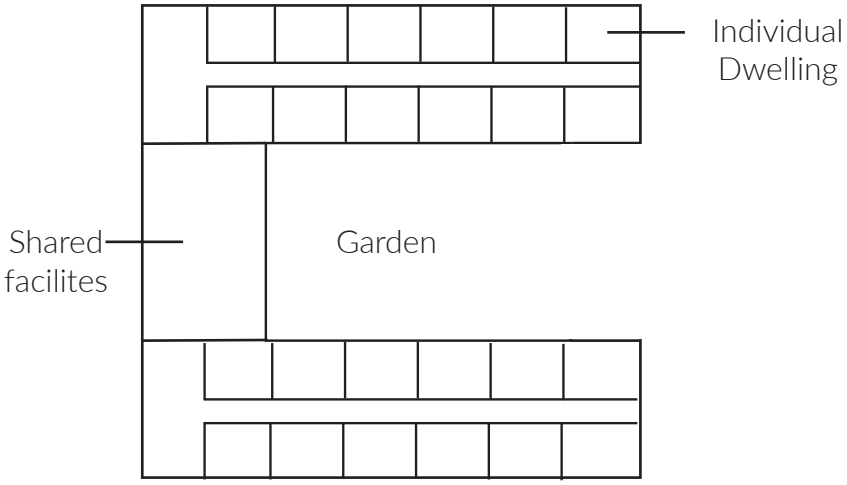
Small, often one room, dwelling surrounding a large courtyard. Facilities like kitchens and bathrooms were shared with the other residents



Oudemannen- and Oudevrouwen huizen & Houses for the poor

1700-1945

Large sleeping rooms. Almost no privacy and the residents were only given a bed and a chest or small wardrobe for their personal belongings. The rooms gradually got smaller towards 1900, but there was still little privacy.



Retirementhomes

1945- now

A return to individual dwellings. However this time the dwellings were larger and the dwellings had their own bathrooms. Often the dining facility is shared. The retirement homes have not changed that much, but it is now (2021) much harder to get accepted into a retirement home

3.2 MODERN DUTCH ELDERLY

3.2.1. Introduction

The modern elderly cannot be put into one category. There are differences within the group of people above the age of 55 and those differences are predicted to change in the future. Therefore I first need to define the differences between the groups. This will first be done on an age basis, to create more specific age groups within the 55 years or older category. These new and smaller groups will be my main groups. These groups can in turn be separated on different grounds. First I will investigate the health, both physical and mental. After that I will look at societal status, mainly focusing on the relationship status of the elderly. This will in turn be followed up by their current housing habits and their likelihood of leaving their current house. After this the wealth aspect is analysed. How many elderly have enough money to maintain themselves for the rest of their lives? These are the main topics that I will examine in this chapter, but I will also examine several smaller aspects that might have an influence on the groups.

3.2.2. Who

When I started researching the older population it is often starting at the age of 55. Within this age group there are of course large differences, most of the 55 year olds are still working, while someone who is 75 is probably retired. Therefore a relevant question is: Why is the starting boundary set at the age of 55?

The starting boundary of 55 can probably be traced back to the age that most couples have their children moved out and become so called empty nesters. Statistics, visible in figure 14, show that the average age for the first child in the Netherlands is 30 and the average age for having a second child is around 32 (Statista, 2020). However, young people leave their home later, due to several reasons. Youth in the Netherlands however, are still one of the earlier leavers, especially compared to the southern countries like Spain and Italy.

In 2017, young people left home earliest in the three northern Member States – Sweden (18.5 years), Denmark (21.1 years) and Finland (22.0 years), as well as in Luxembourg (20.1 years). Young people also tended to leave home before the age of 25 in Estonia (22.2 years), Germany, France and the Netherlands (all 23.7 years) as well as the United Kingdom (24.7 years) (Eurostat, 2019).

Taking in mind the average age of people getting their first child, around 32 years old, and adding up the average age of 23 to 24 years old of children leaving their homes, parents are on average

55 to 56 years old when they become empty nesters.

My reasoning above was mainly for the establishing an age to use as a starting point. Of course there are also couples or single persons at the age of 55 that do not have children.

As mentioned before, the group of people in the Netherlands that is above the age of 55 is very diverse. To divide this group into smaller groups with similar people the first age group will be 55-67. This group can be seen as the working elderly. The reason for this is that the current retirement age in the Netherlands is slowly increasing. For a long time it was 65, but it is currently at 66 and 4 months, but it will grow to 67 in a few years and not too long after that towards 68. If we look at a table provided by the Rijksoverheid, we can see that for the current 55 year old born in 1966, the retirement age is around 68 (Rijksoverheid, 2019).

The rest of the group of elderly will fall in the group of retired persons, so the population above the age of 68.

Therefore we have two general groups to use moving forward, working elderly and retired elderly. I will now continue looking into the growth of these two groups.

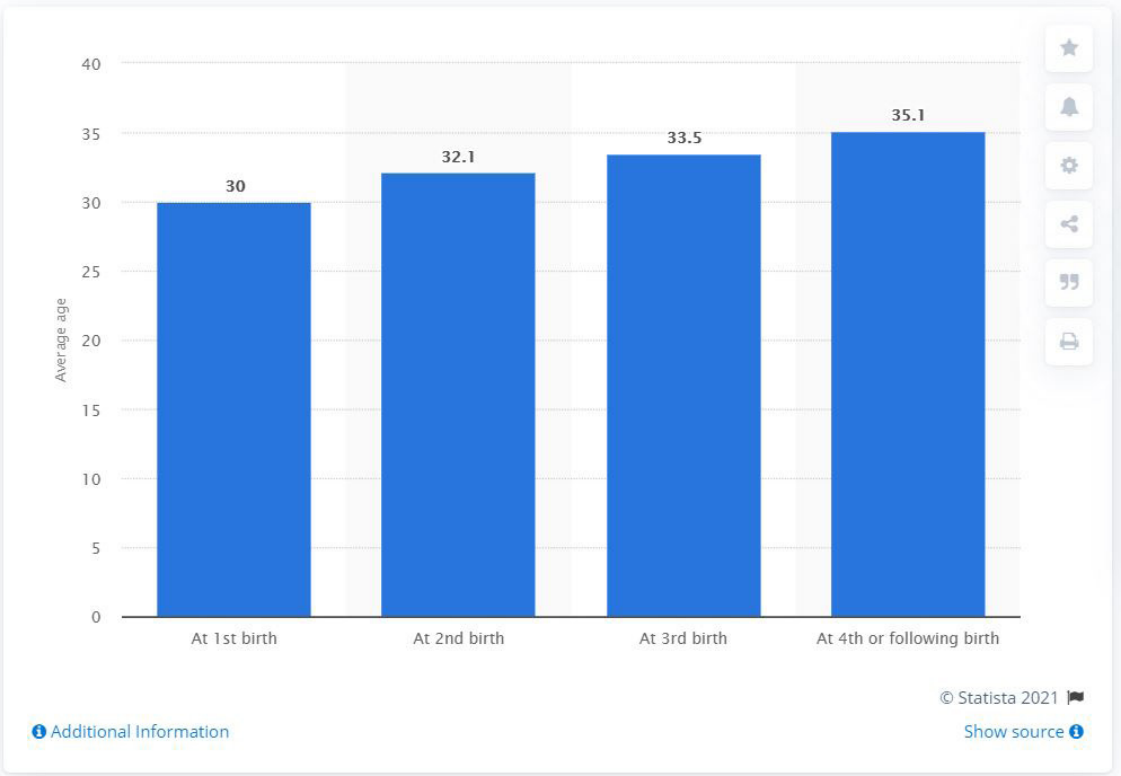


Figure 14: Statistics showing the average age of getting children. Source: https://www.statista.com/statistics/520840/average-age-mother-at-birth-in-the-netherlands-per-child/

3.2.3. Growth of the population

As stated before, the main reason for choosing the elderly as the group to design for, was that this part of the population would increase a lot, as shown by several news articles, but in this paragraph I will go more in depth into the predictions when it comes to the amount of elderly in the near future.

If we look into the history of the population of the Netherlands, we can already see that the number of people above the age of 65 has grown more than tenfold. From 0.3 million or 6% of the entire population in 1900 to 3.4 million or 19.5 % of the entire population in 2020. Within this group, the number of people above the age of 80 is 824.000 in 2020 which was 4,7% of the entire population in the Netherlands and almost a quarter of the entire group above 65 (Volksgezondheidenzorg.info, 2020).

The number of elderly, especially those aged 80 years or older will grow rapidly. CBS (2021) predicts that in 2050 that group will be two to three times larger than it is now.

3.2.4. Health of the current population above the age of 55

First we need to establish that the population in the Netherlands is getting older in a healthier way. We can see this when looking at the percentage of elderly that participate in a form of sport or physical activity, visible in figure 15 on the previous page. The percentage of 55-64 year olds that partake in physical activities per week has grown from 40% in 2001 to 47 between 2014 and 2017. However, the biggest growth can be found in the 80 plus category. In this category, the percentage participating in physical activities has grown from 12% to 21% in the same time frame (Van den Dool, 2019, p. 12).

Tabel 2.3 (Wekelijkse) sportdeelname, bevolking 18 jaar en ouder (in procenten)

	2001-2005	2006-2009	2010-2013	2014-2017
Totaal 18-plus	49	49	52	52
18-54 jaar	56	57	59	58
55-64 jaar	40	43	47	47
65-79 jaar	30	33	38	42
80-plus	12	17	20	21
65-plus *(samenvatting)*	27	30	35	38

Bron: Gezondheidsenquête/Leefstijlmonitor, CBS i.s.m. RIVM, 2001-2017. Bewerking: Mulier Instituut.

Figure 15: Statistics showing the weekly sport activity participation rate per age group Source: (Van den Dool, 2019)

This does however show that the number of people participating in physical activities is declining. This is mainly due to the fact that the people get problems with mobility when they grow older. Where only 20% of the population between 65-74 have problems with mobility, this grows to around 70% for the group older than 85. Showing a large decrease in mobility in little of 20 years, visible in figure 16 (Schoemaker, Van der Wilk, van Wieren et al, 2011, p. 28).

As it is shown that mobility becomes one of the largest issues for people when they get older , dwellings need to adapt to their inhabitants and allow for easy movability in the house. For this, changes need to be made to allow for better movement throughout the house/building. For instance a regular wheelchair has a width of 90 cm, but it is recommended to have areas with a width of at least 120 cm to allow for easy movement with the wheelchair. On top of that a height difference of less than 2 cm between floors and thresholds or other barriers throughout the entire dwelling is also recommended for people with mobility issues. The bathrooms should be easily accessible from the main areas in the dwelling such as the living room and bed room, to minimize the distance for the residents. The possible use of a wheelchair also means that windows should start no higher than 60 cm (KOC, 2014, p 7-8).

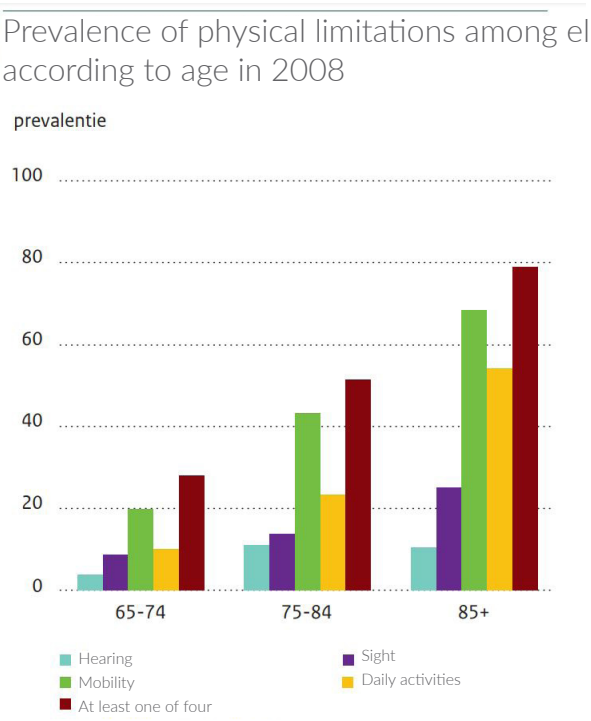


Figure 16: Statistics showing how the issues with mobility (Green bar) increase with the years. Source: Schoemaker, Van der Wilk, van Wieren et al, 2011, p. 28 Translated by author

3.2.5. Care

Diminishing health also means that the need for care might increase. As we saw in the short history of elderly care in the Netherlands in the previous chapter, we know that getting into retirement homes is getting harder than for instance in 1970. Therefore, a lot of elderly rely on Mantelzorg, the informal care by either their family or friends, see chapter 3.1.8. But what is it exactly and how does it work?

The term Mantelzorg is only applied when the help that is provided is voluntary and without pay. However, it is not the same as voluntary work. As stated on the website mantelzorg.nl, Mantelzorg is something you encounter in your life, voluntary work is something you chose to do (Mantelzorg, n.d.).

Mantelzorg is often enough for the elderly, but does rely on having either friends or family that are willing or are able to spend all this time on their elderly relatives. In 2016, 10 % of the population above 65 in the Netherlands said that they received Mantelzorg (CBS, 2020). Therefore, some elderly who live a very solitary life or have busy friends and family might still need nurses to take care of them. This leads us to look at another aspect of the elderly, their societal status. How many elderly people are married and how many of them have children?

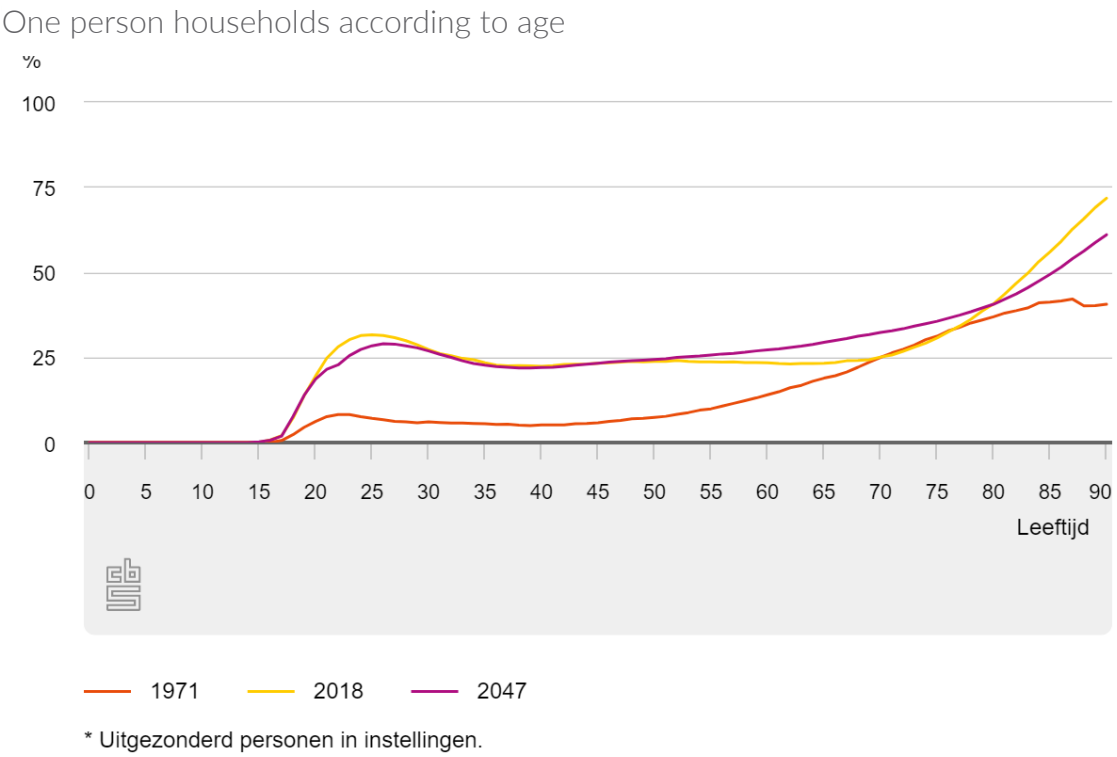


Figure 17: The percentage of single person households per age. Source: https://www.cbs.nl/nl-nl/achtergrond/2018/26/honderd-jaar-alleenstaanden Translated by author

3.2.6. Societal status

Being older also means that the possibility exists that your spouse might pass away. On top of that, divorce happens more and more often. This leads to the fact that 25 percent of the current population between 55 and 67 is single, which is expected to grow to 30 % in 2047. For the population aged 75 or older that is currently 30%, but that will grow to 35%. However we can also see in the graph of figure 17 that this percentage will actually decrease in 2047 compared to the measurement in 2018. This can be explained with the increased life expectancy, which makes that spouses pass away at a later age (CBS, 2018).

In 2014, 13% of the population above 70 in the Netherlands had no children (anymore) or there were no longer living in the Netherlands. 7% of the elderly above the age of 70 had both no children and no partner (CBS, 2020).

If we look at the educational level, we can see that the elderly have the highest percentage of low educated people, although this group forms the wealthiest part of society. More than 50% of the population above 65 had a low educational level, meaning that they had only finished a VMBO education or did not finish high-school altogether. This was only 27% and 14% for the groups aged 45-64 and 25-44 respectively (Volksgezondheidenzorg.info, 2019).

3.2.7. Current housing habits

Currently, 51% of the population above the age of 55 lives in a family house, i.e. a row multi story row house. (Blije, Gopal, Steijvers, et. al, 2021 p.19) However, this amount differs per age group, since 59% of the 55-64 year old are living in family houses, and only 31% of the population above 85 is living in family houses (Blije, Gopal, Steijvers, et. al, 2021 p.19).

Another striking fact is that 44% of the 55-64 year old group lives in a dwelling larger than 120 m2, while this percentage is only 2% lower for the group aged 65-74. If we look at the group above 55 as a whole, 71% lives in dwellings larger than 90 m2 (Blije, Gopal, Steijvers, et. al, 2021 p.20).

Research by Trendmonitor Wonen en

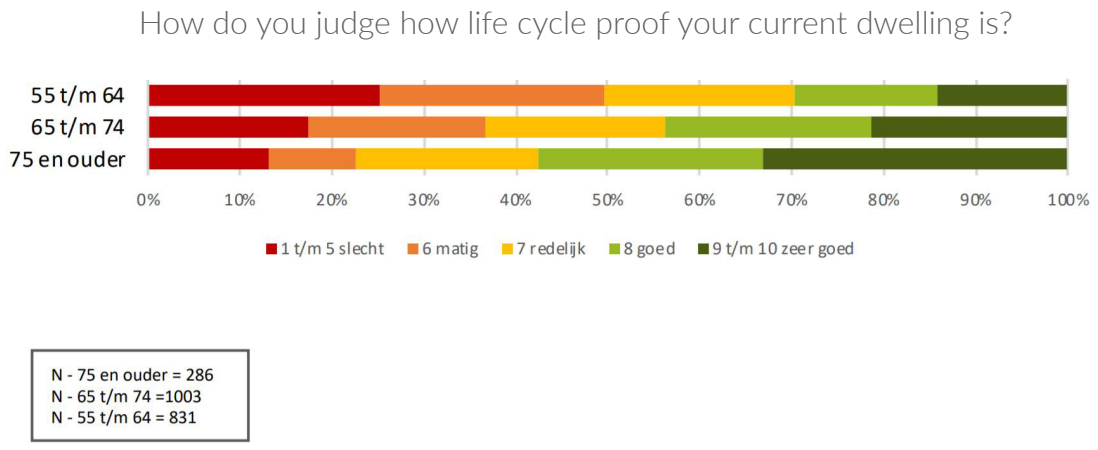


Figure 18: Statistics showing how the population grades how life-cycle proof their current dwelling is. Source: https://marketresponse.nl/wp-content/uploads/MR-Trendrapportage-Levensloopbestendigheid.pdf Translated by author

Welzijn on how life cycle proof the dwellings of elderly are, visible in the figure 18. This was done by asking people above the age of 55 on how life cycle proof they grade their dwellings. Aspects for this include one level dwellings or easy adaptability of the dwellings. This research shows that almost 50% of the population between 55 and 64 grades the ability to change the current dwelling, to make sure that they can keep living in their current dwelling, average to below average (Blije, Gopal, Steijvers, et. al, 2021 p.16).

It is therefore important for architects of new elderly, to design them in such a way that future changes are possible, which in turn will allow the residents to live in these dwellings as long as possible.

3.2.8. Housing needs

As part of a choice experiment by Arentze and Ossokina (2019), the researchers created a toolbox that stated several housing needs for the Elderly population in the Netherlands. They subdivided this toolbox into three categories: higher value dwellings, a reference dwelling as a middle ground and a lower value dwelling. The research focusses purely on apartment dwellings. The different categories differ on several aspects. For instance the reference dwelling has a size of approximately 90 m2, whereas the higher and lower value dwellings have sizes of 110 m2 and 70 m2 respectively. On top of that it is preferred that the high category dwelling has a 12 m2 garden, the reference dwelling a 12 m2 balcony and the lower value dwelling a 5 m2 balcony. Another sometimes overlooked characteristic is the building size. The reference dwelling is located in a building with 20-80 dwellings, whereas the higher value dwelling is located in a building with less than 20 dwellings. Another aspect that is valued highly, are common spaces, both inside and outside.

Therefore, based on this information I can get an indication for dwelling sizes and general amount of dwellings for my building. If I want to focus on the average older person, I should have dwellings that are around 90 m2, but lower value dwelling should also fit in, since I want to mix elderly from different economic backgrounds.

Aretnze and Ossakina (2018) also talk about the functions in the dwelling. Here, two striking parts are that open kitchens (in the living room) are preferred and that it is preferred to not have an extra door between living room and bedroom (Arentze & Ossokina, 2019, p. 12).

3.2.9. Moving statistics

In the research that was done by Blije, Gopal, Stijvers et al (2021, p. 21), we can see that when the population grows older the people want to move into specific housing designed for the elderly. Where it is only 26 % for the group between 55 and 64, it is 67% for the group above 75 years old. On top of that, it is also stated that 60% of the population above 55 years old, would prefer to remain at least in the same town/city. (Blije, Gopal, Steijvers, et. al, 2021 p.29) This confirms that there is a need for dwellings for aging in place, preferably in a location close to where the people have lived most of their lives.

3.2.10. Wealth

As stated in the final part of the previous chapter, the elderly have become much wealthier in the last couple of decades, compared to the elderly just before the second world war. The main reason for this is the purchase of a home when they were younger, which has become more valuable over time. We can for instance see that the median net worth of the elderly had more than doubled in 2016, compared to 10 years earlier, from 49 thousand Euros to 109 thousand Euros (RTL Z, 2016). On top of that, the Netherlands as a country has become richer. This is reflected in the income of the general population, but especially in the income of the older part of the population. We can see this in the diagram of figure 19 on the previous page, which also shows that the general population in 2000 had a higher percentage of low income than the person earning the money for the population above 65. This is a trend that is still going on: despite some peaks, the amount of low income among elderly has generally decreased in the last 20 years (CBS, 2017).

3.2.11. Daylight

An important aspect for elderly is daylight. Daylight determines their natural rhythm and allows the elderly to get enough sleep during the night. If elderly don't get enough exposure to daylight during the day, this will have an impact on the quality of their sleep. This is an important issue, since more than half of the elderly population has trouble with some sort of insomnia. This causes a slow reaction speed and mood swings. (Mandemaker, Hoof & Schoutens, 2007, p. 2). An advice that Mandemakers, Hoof & Schoutens (2007) give is that the amount of light that comes into the dwellings of elderly, needs to be higher than for dwellings of younger people.

Figure 19: The decline of households with a low income, the darker blue is the population above 65. Source: https://www.cbs.nl/nl-nl/nieuws/2017/10/ontwikkeling-inkomen-en-vermogen-65-plussers-na-95 Translated by author

3.2.12. Adaptability

As mentioned before, it would be ideal if dwellings would be able to develop with the aging of their residents. To achieve this, dwellings might need to adapt time to time. De Vreeze & Van der Vossen (1999) give 12 steps which can be used as a guideline for this adapting process. The steps are as follows:

1. Primary living spaces on the ground floor

2. Possibility for an extra living/sleeping space on the ground floor

3. Neutral room sizing to allow for different functions

4. Possibility of removing non bearing walls to change rooms

5. Possibility of making rooms independent in the dwelling for moving in of helpers or to create a workspace

6. Expansion possibilities

7. Circulation to higher floors through straight staircases

8. Possibility for changing the kitchen location

9. Second sanitary space

10. Separate washing space

11. Allow for expansion of the kitchen

12. Wheelchair friendly design

These steps are mainly an advise to make future adaptability easier, without too large interventions. The book is from 1999, so this means that it might be slightly outdated, but the ideas can still be useful to keep in mind.

3.2.13. Conclusions

Looking at the different aspects, the user group identification, their health, societal status, housing, wealth and additional aspects, the following conclusions can be made.

-55+ is used as the indication to identify the elderly people of the population. From this large group, 2 main groups could be derived: 55 years old until retirement and the group after retirement. The reason for using the age of 55 as the border to identify elderly, is mainly based on the notion that the children of elderly people are moved out. Using the average age of when people get children and the average age of the children moving out, makes 55+ a solid average to appoint 'elderly people'.

-The amount of time spent on physical activity decreases with age, as we would suspect given the decreasing mobility. However, that number is rising since a couple of years, meaning that the elderly get more active.

-Currently, more than half of the population above 55 lives in a multi story row house and a large part of the group between 55 and 64 lives in dwellings larger than 120 m2.

-If we look at the housing needs of elderly, we can see that the preferred dwelling is one level, with enough outdoor space.

-The need for moving to housing which is specifically designed for elderly, grows significantly between the ages of 55 and 75. However, most of these elderlies cannot move to a suitable place at the time they want to. Therefore, it would be better if people between 55 and 75 could move earlier, which would give them more time in the process.

-Another striking aspect that came forward in this study, was the use of enough daylight in a dwelling. When people get older, daylight becomes much more important and can improve the sleep cycle of the elderly as well.

All these aspects will mainly be used as general guidelines for the design of my own building.

4. FIELD RESEARCH

In the previous chapter I mainly investigated the Dutch elderly through literature research. This research did give some insights, but talking to or observing older people might enhance these insights. Therefore, this chapter will consist of three parts.

Firstly a questionnaire that I made and sent out to a 16 people I know that fit into this category. This questionnaire was mainly to get a more general idea of the living conditions and housing preferences.

The second part is a visit to Knarrenhof, an elderly housing concept in Zwolle, the Netherlands. During this visit, two of my colleagues and I observed the housing project, but also talked to several residents and visited their homes.

The third and final part of this chapter is a participant observation I did, where I observed my grandmother in her dwelling. The purpose of this part was to see how my grandmother uses her space and if there were any difficulties in using the dwelling.

4.1 QUESTIONNAIRE ELDERLY

4.1.1. Introduction

To get a simple understanding of current housing situations of people above 55, I decided to make and distribute a questionnaire to 16 people I know in this age group.

The questionnaire was set up into 3 parts. There was a general part, which included elements like their age, occupation and education type. After that, a part about their housing was included, with questions about their current housing type, the size and location of their dwelling and about positive and negative aspects of their dwelling. The third and last part of the questionnaire was more specific about their ability to perform daily tasks and the likelihood of them staying in the dwelling if something might happen.

Here, I describe several findings from that questionnaire.

4.1.2. Main findings

-Most of the people in the age group of 55+ live in dwellings that consist of multiple floors.

-Despite this, most think they can keep living in these dwellings for the rest of their lives.

-Furthermore, the majority of the interviewees wrote down that a stair lift might be one of the changes which they would make to their dwelling in the future, to allow for easy access to the upper floors.

-The few that did think they would move to a different dwelling in the future would like to stay in the same town/city

-A common complaint that became clear in the questionnaire, was the lack of storage in their current dwelling, indicating that enough storage is of great importance for older citizens.

-Another striking aspect was that a few of the questioned people already live in senior apartments, even a few that are aged below 60.

4.1.3. Conclusions

The questionnaire was mainly added to get an impression about the current living situation of elderly of 55+, their perception of their homes and their thoughts on the possibility of moving.

What was most striking for me, was that some younger elderly already lived in elderly specific dwellings, telling me that it is not a strange idea for younger elderly to move to a dwelling designed specifically for elderly. On top of that, it was interesting to find that a stair lift would preferably be one of the first additions to make their current dwellings more adaptive for their aging. This indicates that a single level dwelling would be a good idea for most elderly, taking the declining mobility in mind. The last thing that can be used from this questionnaire, is that ample storage is preferred by almost everyone.

4.2 KNARRENHOF

Het Aalhof, Zwolle

Figure 20, Photographer: Knarrenhof

Construction period: 2017 - 2018
Client: Knarrenhof
Architect: INBO
Landschapsarchitect:
Ground area: 9.500 m^2
Built area:
Number of dwellings: 48 housing units
Communal functions: Garden as the center of the complex
Service/care functions: All important functions are located on the ground floor of the dwellings
Special offers: The project is realised after a community is formed and together with that community

4.2.1. The concept

To look at different elderly concepts, a few people of the study group and I visited Knarrenhof in Zwolle. The project consists of 2 so called hofjes, a reference to the hofjes of chapter 3.1.2. with each being surrounded by houses. The houses are a mix between social housing and normal houses that are for sale.

Literature
Oussoren, G. (2020, March). Omzien naar elkaar, net als vroeger. Eigen Huis, pp. 20-25.
Stichting Knarrenhof. (2016). Meer bereiken met minder. [Brochure]. Stichting Knarrenhof

4.2.2. Our visit

During our visit it was a sunny Friday afternoon. We picked such a day to see how the people would interact in the hofjes. When we arrived we noticed that there was a stark difference between the 2 hofjes, visible in figure 21. In the first hofje (the lower one in the map) there were not a lot of people outside and if they were, they stayed mainly in their own garden. The second hofje (the top one in the map) was also not too busy in the common courtyard, but there was a lot more activity near the edges, close to their own gardens.

We spoke to several residents and visited houses in both of the hofjes. In the first hofje, we only visited 2 social rent houses, but in the other hofje we visited both social housing as well as two other houses that the owners had bought.

Figure 21 Overview of dwellings map by INBO

4.2.3. The first hofje

When we entered the first hofje, we met and spoke to one of the initiators of the project. She is a 68 year old woman and she is living in one of the social housing units, number 34 in the map. Before she moved to Knarrenhof she lived in an apartment building in Zwolle. She invited us in for some tea and explained the concept. In the conversation she also mentioned what she liked about the final result and some things she did not like about it. One of her biggest complaints had to do with the organisation of the dwelling. It is a rather large dwelling for social housing, but that was mainly due to the large upper floor, visible in figure 22. This floor is the exact same size as the entire ground floor. On top of that, this floor only has a small window, making it a very dark room. When you get older the stairs may become difficult to climb, making the room hard to access and therefore probably unused. A floor plan of this dwelling can be seen in figure 23 on the next page. Another issue, one she mentioned several times, was that the bathroom was too large, causing the kitchen to come more into the living room. She would have preferred that the living room would be slightly larger and the bathroom a bit smaller. However, this was probably done to make the bathroom accessible with a wheelchair, meaning that it could not be smaller than its current size.

A positive element about the hofje that the 68 year old woman mentioned, was the helpful neighbourhood. She illustrated this with an example from a few years ago, when she had just moved in. The woman was hit by a car, causing her several injuries. Her neighbours were all very helpful and would come

Figure 22 Attic
Photographer: Mick Hiskemuller

by quite often, which is something that would probably not happen in a different type of housing situation. This caring environment includes a more negative side as well, according to this woman. She mentions that the caring of and contact with the neighbours can be a bit too much sometimes, since all the dwelling are rather close together.

Another issue that this woman experienced was that the normal dwellings were wider than the social housing units. Therefore, the normal dwellings include a living room which is stretched from front to back, creating daylight on both sides. The social housing units on the other hand were split, with the living room facing the hofje and the bedroom was located at the back.

After this interesting conversation we spoke to a woman that lived a few houses away, in number 39. Her dwelling was also part of the social housing in the hofje. She was much more positive than the 68 year old woman we were before, as this woman mentioned the social aspect of the concept as one of the more positive elements of the hofje. However, the complaints about the dwelling were the same. The large upper floor and the large bathroom were seen as a poor use of space by this woman as well. The second woman does like the upper floor for storage, but it does not have to be this large.

4.2.4. The second hofje

When we entered the second hofje, it felt different. One thing we noticed was a large tree, which changed the atmosphere a lot. As we entered, we saw a group of women talking to each other and we approached them. They all invited us in, which made it possible

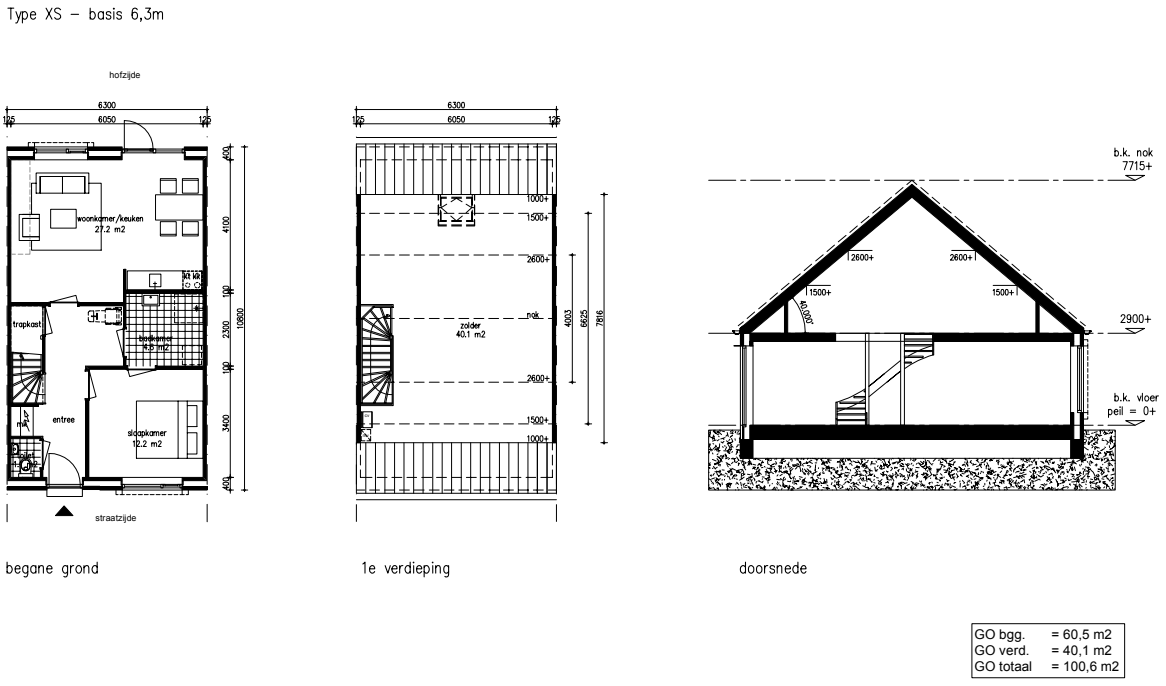


Figure 23
Floor plans and section of the social housing unit
Image by INBO

for them to show the differences in the dwellings, since they all lived in another type of dwelling.

The first dwelling we entered was a social housing unit, number 21 on the map, was similar to the two dwellings of the former hofje that we had seen. The resident of this dwelling had the same complaints about the dwelling organisation as the two women of the first hofje had. This woman used to live in an apartment building that was next to the hofjes. She stated that if that building would have had an elevator, she would not have moved to this place. Now that she has moved here, she mentioned that she actually enjoys the social interaction that comes with the hofjes structure. Furthermore, this woman stated that especially during corona times having more interaction in the garden was a positive experience and something she expected not to have in her old apartment. Another interesting thing she mentioned was that she liked the height of the ceiling of the dwellings. However, the woman experienced a negative side of the height as well: the cleaning of the heigh doors is quite difficult, since a stool or a small ladder is needed to reach the top. A side not to this is that the woman was rather small and therefore would probably have this issue in other dwellings as well.

After this interesting visit, we were invited in one of the normal dwellings in the second hofje, number 16. We immediately noticed the difference that the long living room made. These dwellings are also wider than the social housing units: 7.30 meters in comparison to 6.20 meters of the social housing units. Furthermore, the bathroom was considerably smaller and much more practical, having doors on both the hallway side and the bedroom side. The bedroom was also directly accessible from the living room. Another noticeable

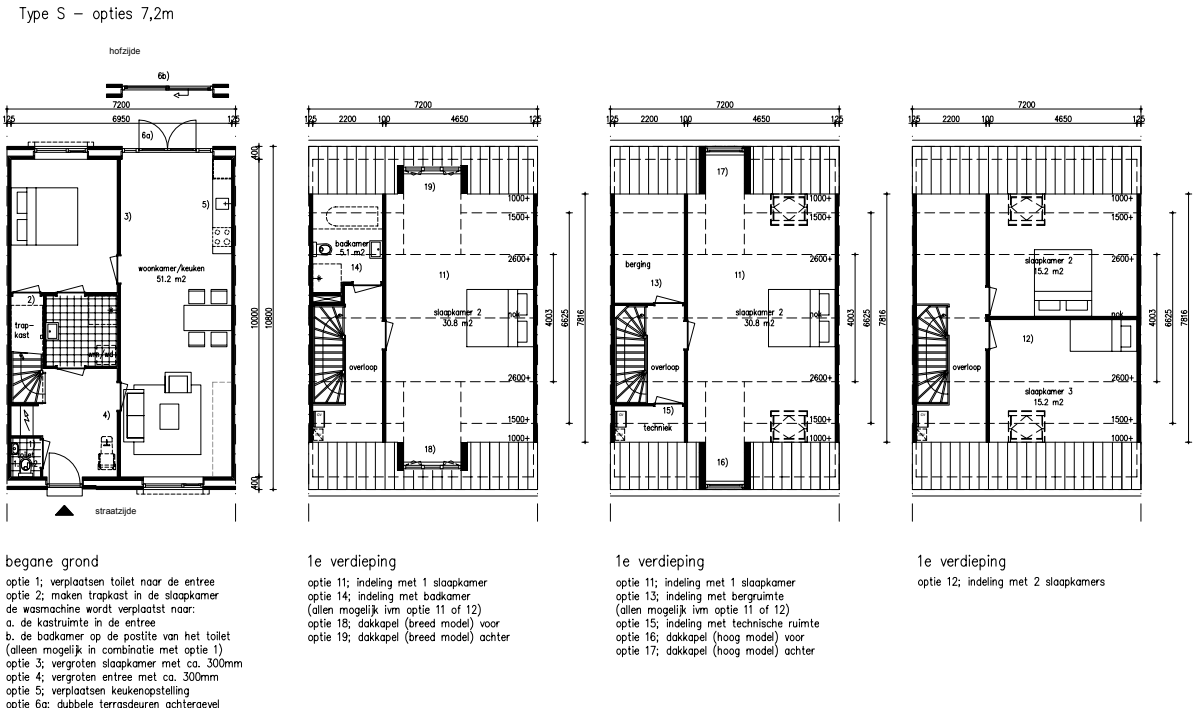


Figure 24 Floor plans and section of the housing unit with a width of 7.2 meters and several options for the first floor, image by INBO

difference with the social housing, was the wall on the upper floor. Since the owners bought the house, they could arrange the upper floor as they liked it. This made room for a wall to separate the stairs from the rest, which made quite some difference compared to the social houses. This upper floor also had 2 windows, changing the feeling completely.

The last dwelling we visited was also the largest dwelling, at 8.20 meters wide. This was dwelling number 7. Here we noticed a significant change in size and it gave the owners the option to get a second bedroom on the ground floor. The upper floor was similar to the previous dwelling, number 16, but here there were no walls or other separators, which created a large space that was more or less used as a storage space for the couple living there. The owners mentioned that they really enjoy the area and the social aspects, but also acknowledged that they were lucky with the costs of the dwelling when they bought is. They mentioned that newer projects were much more expensive than this project, even though this project is just a few years old.

4.2.5. Conclusion

In the hofjes in Zwolle, my project group and I discovered multiple interesting aspects and some inspiration, which could help us in designing dwellings for elderly people. One interesting element of this concept was that it did not start with a building, but with a group of people. The community came first. In general, most of the people living in Knarrenhof enjoy being surrounded by others. However, some of the residents would have liked more privacy, which could for instance be established with higher separations between gardens. Furthermore, the residents seem to like the houses in general. However, some issues with space use were mentioned. For instance, the large first floors were seen as a nice place to store items, but also as a strange and large area. Such a large and open plan would be more welcome on the ground floor.

It can be concluded that the project in general was met with enthusiasm by the people living there. Positive elements were found in the nice houses, the social interaction with neighbours and the personal care that this can bring when illness or injuries limit someone. Negative elements were found in the space distribution of the social rent houses. It was mentioned that the bathroom was too large and that this extra space could be used to increase the living room. On top of that, the large first floor was seen as mostly useless space. Since elderly people have more trouble with mobility (which makes them not want to climb the stairs much), it seems like a strange design choice to include such large upper floors. Lastly, the whole concept of the hofjes was seen as positive in general, although not everyone liked to …participate in events and to have constant social interaction. This type of residents do like to see other people, but feel like they are watched constantly. For this group, a possibility for more privacy would be preferred.

4.3 PARTICIPANT OBSERVATION

4.3.1. Introduction

To get an idea of how the elderly might live once they grow older and become less mobile, I decided to observe my grandmother for a day and see how she uses her house. To give a little bit back story, she used to live in a large house built in the beginning of the 20th century before she moved to an "Aanleunwoning" (Sheltered accommodation). This is a type of dwelling which is located next to a retirement home, allowing for help nearby if necessary. This means that she now lives in an apartment built specifically for elderly who might be less mobile. This is, among other things, visible by the large doorways and large bathroom that allows for wheelchair access.

The purpose of the observation is to see how the dwelling functions and if the organisation is logical. Therefore, the observations will be done by marking the path of movement through the dwelling, visible in figure 25. A short conversation during which I asked about her experience in the dwelling was also part of the observation. In this conversation, I asked my grandmother how her new house differs from her old dwelling and if she sees the change as a positive experience or if she still has some doubts about the current dwelling.

4.3.2. The observation

The first thing that struck me was that not much happens on one of her regular days. My grandmother mainly sat on the chair, marked with an arrow on the floor plan on the next page. To move around the house she mainly uses a walker. This walker is parked next to the aforementioned chair and her main route from the chair to other areas is

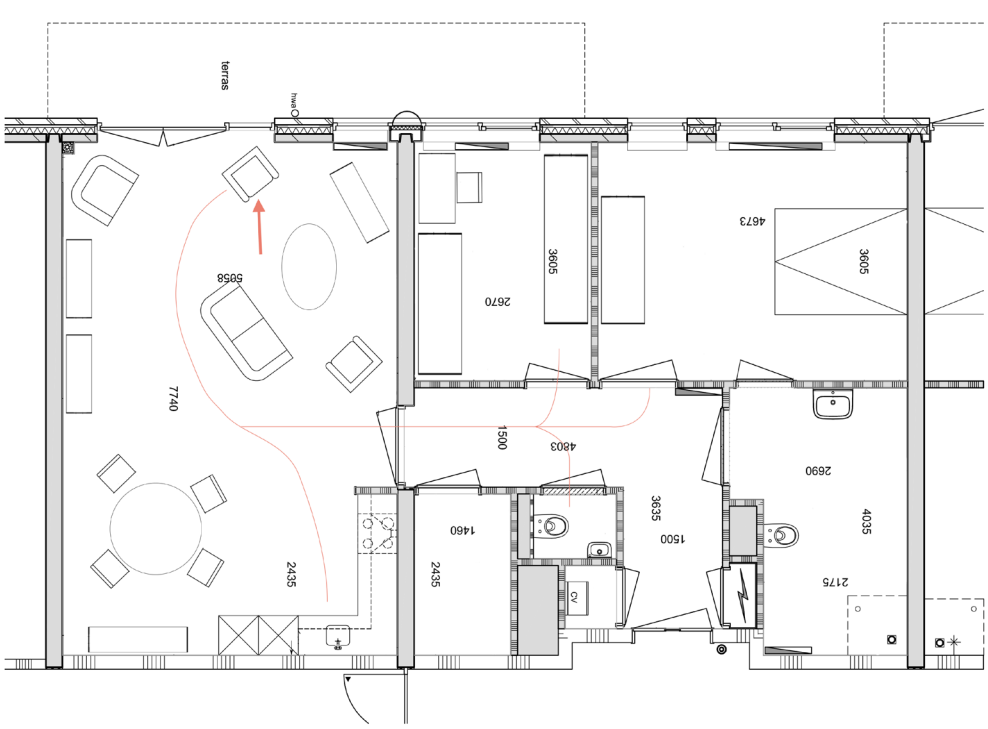


Figure 25 floor plan of the dwelling

around the couch. If she does not use the walker she mainly uses tables and the couch to lean on. The possible use of a walker means that the living room needs to allow for enough space between furniture.

While my grandmother sits in the chair the largest part of the day, she drinks coffee or watches TV. She only gets up to get something in the kitchen, which is part of the living room or in the main storage room, which is located just on the outside of the living room. Another reason to get up, is to use the toilet, which is located in the hallway as well.

Next to the seating area, the kitchen is used mostly during the day. The observation of the use of the kitchen shows that my grandmother does not have much trouble with using this area. Everything is easily accessible here and not very complex, which is supported by the fact that she does not really cook anymore. Yet, my grandmother did mention that she thinks that the oven could be moved slightly down, since it can be a bit too high when she needs to take something hot out of it, causing a possible incident.

Another event that happened during the observation, was that my grandmother needed to buy some groceries at the store. However, since she does not drive a car anymore and cycling is not an option either, I had to drive her to the store. The building she lives in has an elevator that goes all the way down to the car park located in the basement. Therefore, moving to the car is easy and quick, without any obstacles that could be hard when mobility is limited.

Figure 26 The kitchen of the dwelling

After the observation I asked my grandmother what she liked about the dwelling. She mentioned that she liked the wide doorways and the lack of doorsteps most about her new house, visible in figure 28. Dual access to the large bathroom was also something she liked a lot, visible in figure 27. On top of that, my grandmother mentioned the ample amount of storage and the large balcony as positive elements of the dwelling as well.

Next to these positive elements, my grandmother also perceived a few negative elements in the dwelling. To start with, she mentioned that the kitchen does not get a lot of daylight, which means that it can be quite dark in this area. Luckily, the colours of the kitchen are quite bright, which compensates a bit for the darkness. Furthermore, she mentioned that the toilet is a bit low, which makes standing up after the use of the toilet difficult. The corridor that connects the dwellings to the elevator is perceived as a missed opportunity. This is mainly due to the fact that the dwellings are quite closed off and that the corridor could be a place to have some interaction with other residents, which is not happening much currently. This means that someone who does not come out as much does not have a lot of interaction with the other residents.

Figure 28 Extra wide doorway

Figure 27 Two doors access to the bathroom

4.3.3. Conclusion

In an observation session at my grandmother's "aanleunwoning" to get more insight in the use of such a dwelling, I discovered that not much activities take place during a regular day. However, for the things that my grandmother needs to do during the day, the dwelling is great. This is mainly due to the generous size of the living room, the lack of doorsteps and the wide doorways. The incidence of daylight and several smaller organisational aspects could be improved, but for an elderly with low mobility, the dwelling functions well.

Looking at the observation in general, I did learn about some subtle aspects that make the dwelling very usable for my grandmother. However most of the aspects she liked are mandatory for elderly housing, like the large doorways and lack of doorsteps. Due to the time it takes to observe for a whole day I will leave the observation part by just one observation, but it did give me a good insight into the daily activities of an older person living on her own.

5. CASE STUDIES

In the following chapter I will analyse four different case studies. All the case study projects focus on elderly housing, but on different groups. Two projects focus on 55 plus elderly that can still take care of themselves, but the other two projects focus on elderly care housing.

The projects that will be analysed are:

1. De Makroon in Amsterdam by de Architekten Cie.

2. OCMW Nevele in Nevele, Belgium by 51N4E

3. Center for Seniors in Steinfeld, Austria by Dietger Wissounig

4. De Akropolis in Amsterdam by Studioninedots

On the next page the criteria for the analyses are given and the chapter will end with a comparison between the project and a small conclusion with some main take aways that struck me after analysing the projects.

5.1 De Makroon
Nieuwe Passeerdersstraat 1, Amsterdam

5.2 OCMW Nevele
Graaf van Hoornestraat 26, Nevele, Belgium

5.3 Center for Seniors in Steinfeld
10. Oktober-Straße 30, 9754 Steinfeld, Carinthia, Austria

5.4 De Akropolis
Zeeburgereiland, Amsterdam

Criteria:
-Urban morphology, dwelling typologies, access typologies
- Private, collective, public as well as semi-public/ semi-private areas
- Places or elements in the building that contribute to the production of collectivity
a. Indicate these spots or areas by means of a certain colour in the drawing
b. Circulation / movement; Draw the route that a resident follows from main entrance to home and the routes associated with daily activities such as taking out rubbish, collecting
newspaper from the letterbox, etc.
c. Mark the elements in the design that are important for the collective (bench, glass opening, etc.)

Specific analytic criteria:
-Care facilities
-Easy access aspects in dwelling

The goal:
The goal of the case study research is to find out what each group needs. This means that the case studies are meant for either people of 55 years old or retired people, in some cases for both . This is to find out what each group needs. This will ensure that I find out what should be the starting point for the dwelling, needed for the empty nester, before it will be adapted to fit the other groups.

5.1 De Makroon

Nieuwe Passeerdersstraat 1, Amsterdam


Photographer: Architekten Cie.

Construction period: 2012 - 2015
Client: Osira Amstelring, Amsterdam
Architect: de Architekten Cie.
Landschapsarchitect: Hosper
Ground area: 6000 m^2
Built area: 27.200 m^2
Number of dwellings: 134 apartments, 15 sheltered accommodations, commune for 16 people, 9 places in care hotel
Communal functions: 830 m2 commercial space
Service/care functions: 4.120 m2 health care center
Special offers: 179 parking spaces, garden in the middle, close to the center of Amsterdam

SPECIFICITY: A former catholic senior housing building was torn down and replaced by this building in the centre of Amsterdam. Since it is located in a city, instead of often on the edge of a city or outside the city, this project might be interesting.

Literature

Architectenweb. (2016, January 14). Zorg- en wooncomplex de Makroon geopend. Retrieved April 14, 2021, from https://architectenweb.nl/nieuws/artikel.aspx?ID=38204

Crone, J. (2015). De Makroon: wonen zonder zorgen. ArchitectuurNL, 70(4), pp. 24-26.

Rooijers, E., Ten Katen, M. (2016, August 3). 'De zorg- en vastgoedwereld gaan elkaar steeds beter verstaan' Vergrijzing en nieuwe regels brengen belegger en zorg samen. Het Financieele Dagblad, pp. 2.

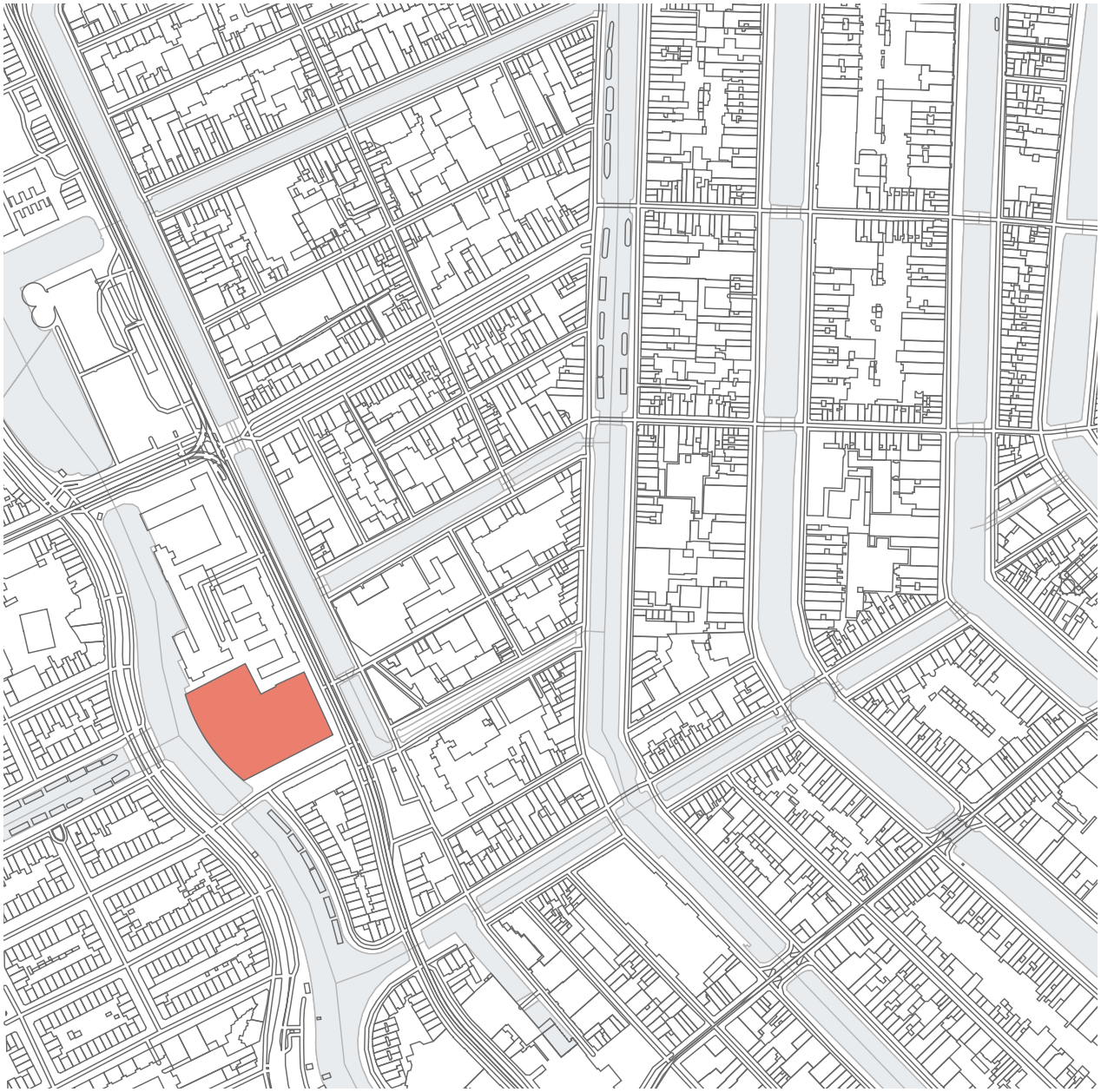
Syntrus Achmea. (n.d.). De Makroon: Goed voor mekaar!. [Brochure]

De Makroon
Location

Address: Nieuwe Passeerdersstraat 8,
1016 XP Amsterdam, The Netherlands
Number inhabitants: 872.779 (2020)
Area: 219,49 km2

Source: earth.google.com/

De Makroon
Location



Map edited by author. Source base map: cadmapper.com

50 m 100 m 150 m 200 m 250 m

1:5000

De Makroon
Abstract

De Makroon is located in the center of Amsterdam. Designed by Architekten Cie. It replaced the catholic care home that stood there in the past but was outdated and needed to change. The building that replaced it tried to fit in, without copying the style of other buildings. It also tried to not look like it houses primarily elderly. The residents that live there can be divided into several categories. There are care units on the first floor. These are dwelling for elderly that need care on a regular basis and can't live on their own any more. On that same floor is a care hotel, a place for elderly that need temporary help, for instance for when they have an injury or just had surgery but can't stay in a hospital. The rest of the building, the 4 floors above it, is for people older than 55 years of age. There are lots of different dwelling sizes, ranging from 60 m2 to 140m2. All dwellings have very high ceilings, at 4 meters high. The ground floor is used for that group as well, however most of the ground floor is used for commercial purposes, a restaurant and shops.

It is this combination of care units and normal dwellings for independent elderly that interests me. Apart from a courtyard and some commercial functions on the ground floor, no effort is made to increase connectedness between the different age groups that reside there, the care unit is located on only one floor, separated from the rest, but I would like to find out how the rest of the building is organised.

De Makroon
General aspects with images

Photographer: Architekten Cie.

Photographer: Architekten Cie.

The main entrance to the building. At some points it is double height, and where it is not the visitors get a view into the care section of the building. This is what we see at the top of the image above. This main entrance area also gives direct access to the courtyard we see on the image on the right.

De Makroon
Ground floor organisation

1:500

Map edited by author. Source base map: https://cie.nl/page/740/de-makroon?lang=nl

De Makroon

Offices/Care facility

1:500

The only floor with care facilities is the first floor. This is the floor where all the care units are located. The rest of the building does not have care units. This means that the care wing is sandwiched between the ground floor and the dwellings for independent elderly located on the floors above.

First floor

Map edited by author. Source base map: https://cie.nl/page/740/de-makroon?lang=nl

De Makroon
Private/Public

Private

Collective

Commercial

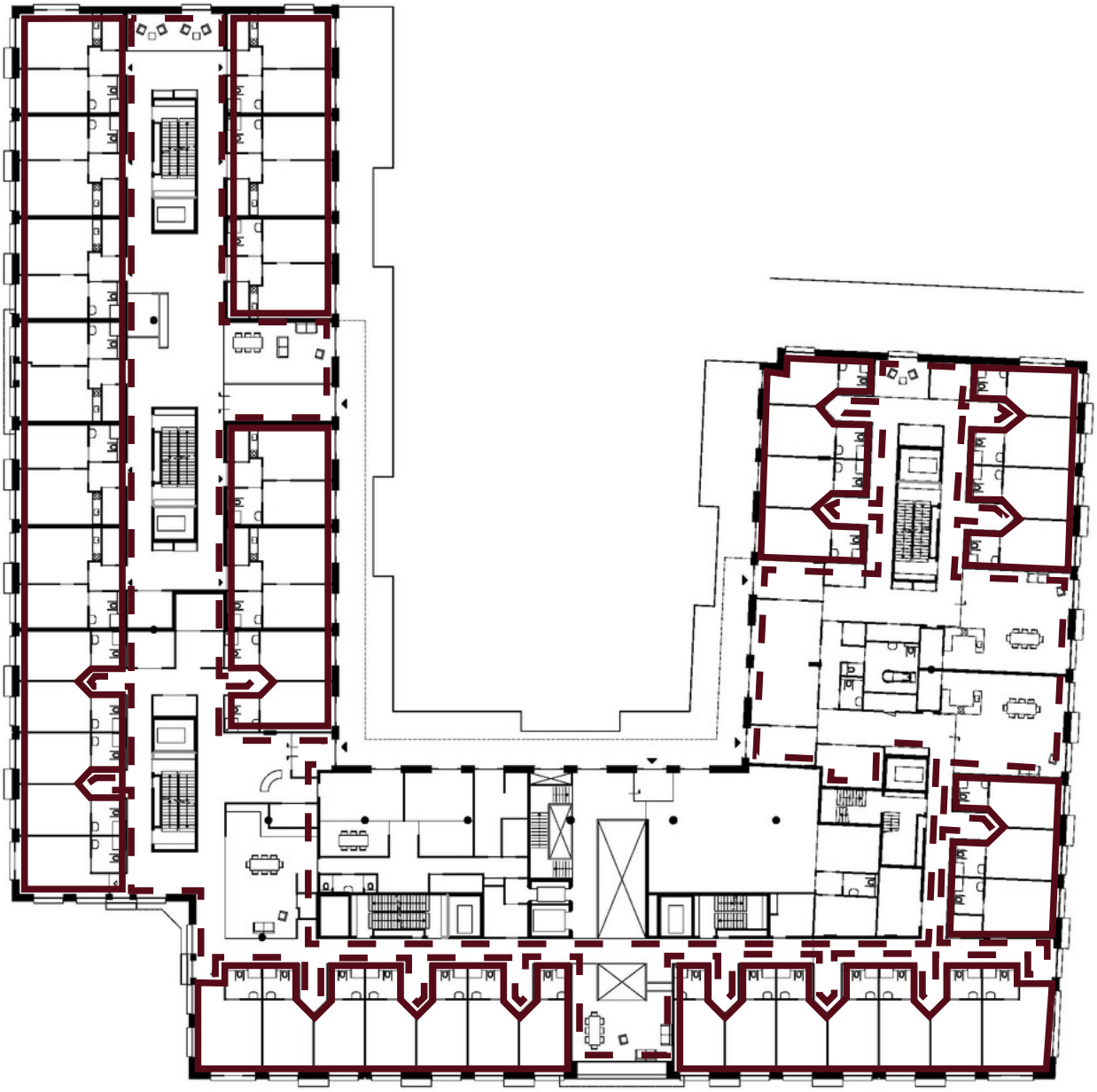
1:500

The ground floor has a mixed use. On the left side, which is the south-eastern part, is located on the water front and mainly consists of dwellings. The rest of the ground floor is for commercial purposes and is also located on the road sides.

Ground floor

Map edited by author. Source base map: https://cie.nl/page/740/de-makroon?lang=nl

De Makroon
Private/Public



1:500

Private

Collective

This floor has the care units. Therefore part of this floor is for care facilities as well, but also shared areas, like dining facilities, since the care units don't have their own kitchen and dining is a shared activity.

First floor

Map edited by author. Source base map: https://cie.nl/page/740/de-makroon?lang=nl

De Makroon
Private/Public

The floors above the care units are for the independent elderly. These floors have dwelling in varying sizes. These floors don't have the collective areas that the first floor had. The only shared part they have is the corridor that serves as the circulation for the building.

Second, third and fourth floor

Map edited by author. Source base map: https://cie.nl/page/740/de-makroon?lang=nl

De Makroon

Dwellings/Circulation

First floor

Second, third and fourth floor

The main circulation of the building is done by using a corridor in the middle of the building. This means that the dwellings are on either side of this corridor. This means that the dwellings either face inward towards the courtyard, or towards the street or the water, depending on the part of the building.

The building has ample staircase and elevator locations, 6 in total, located in the middle of the hallway for the first floor, but more towards the dwellings facing the courtyard. This is because floors from the second floor and up are slightly set back from the courtyard, causing the corridor to be narrower on these floors and therefore forcing the staircases more towards the courtyard facing dwellings.

Maps edited by author. Source base map: https://cie.nl/page/740/de-makroon?lang=nl

De Makroon
Dwelling organisation

Dwelling type 9 de Makroon

1:200
62 m2

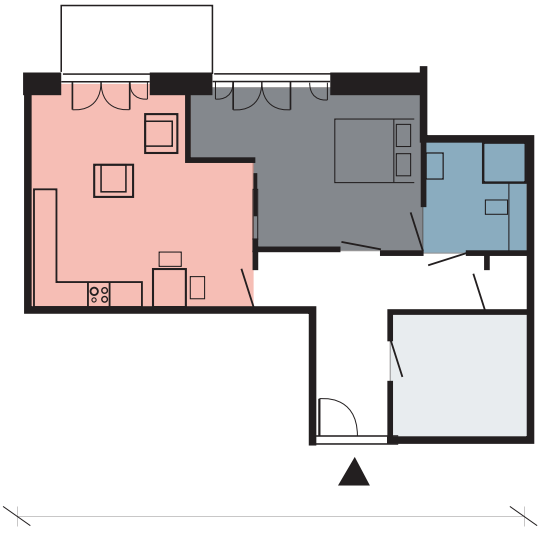
Sleeping area
Bathroom
Living area
Storage

Dwelling type 15 de Makroon

1:200
84 m2

Dwelling type 25 de Makroon

1:200
83 m2



The building has a lot of different dwelling shapes, however these often due to the strange angles of the building. There are several dwellings, the ones displayed on this page, that are used most often. As we can see the set up is very similar, with the main rooms located on the window side and the bathroom and storage facilities located near the entrance, the area with no natural light.

Maps edited by author. Source base map: https://cie.nl/page/740/de-makroon?lang=nl

5.2 OCMW Nevele

Graaf van Hoornestraat 26, Nevele, Belgium


Photographer: Filip Dujardin

Construction period: 2010 - 2012
Client: OCMW Nevele
Architect: 51N4E
Landschapsarchitect: LAND
Ground area: 7460m^2
Built area: 4400m^2
Number of dwellings: 54 units (28 m2)
Communal functions: Gardens and terraces and the hallway
Service/care functions:
Special offers: The rooms can open up to the hallways, creating a larger open space, to improve connections between residents.

SPECIALTY: The analyses of this building will mainly focus on the organisation of the building. Meaning the special way the rooms are organised in relation to the hallway. Therefore the focus is mainly on floor plans and sections, showing what kind of units are in the building. The focus will be on the new addition to the old care building, made by 51N4E.

Literature

Broes, T., Cicek, A., Colenbrander, B. (2014). Architectuurboek Vlaanderen N°11. Architectuur middenin. Antwerpen: VAI

Brunengo, C. (2015, March). Nevele care center extension, Belgium, 2012. Architecture d'aujourd'hui(405), pp. 42-43.

EUmiesaward. (2013). OCMW Nevele - Seniors Campus. Retrieved April 13, 2021, from https://miesarch.com/work/2946

Location

Graaf van Hoornestraat 26, Nevele, Belgium

Address: Graaf van Hoornestraat 26, Nevele (Deinze), Belgium
Number inhabitants: 12179 (2018)
Area: 0,99 km2

Source: earth.google.com/

OCMW Nevele
Location

Map edited by author. Source base map: cadmapper.com

50 m 100 m 150 m 200 m 250 m

1:5000

OCMW Nevele
Abstract

This is a care home for the elderly located in the small town of Nevele in the province Oost-Vlaanderen in Belgium. The building was build as an extension to the existing care home, but this existing part has been demolished in 2020 and they are now planning to build another extension in return.

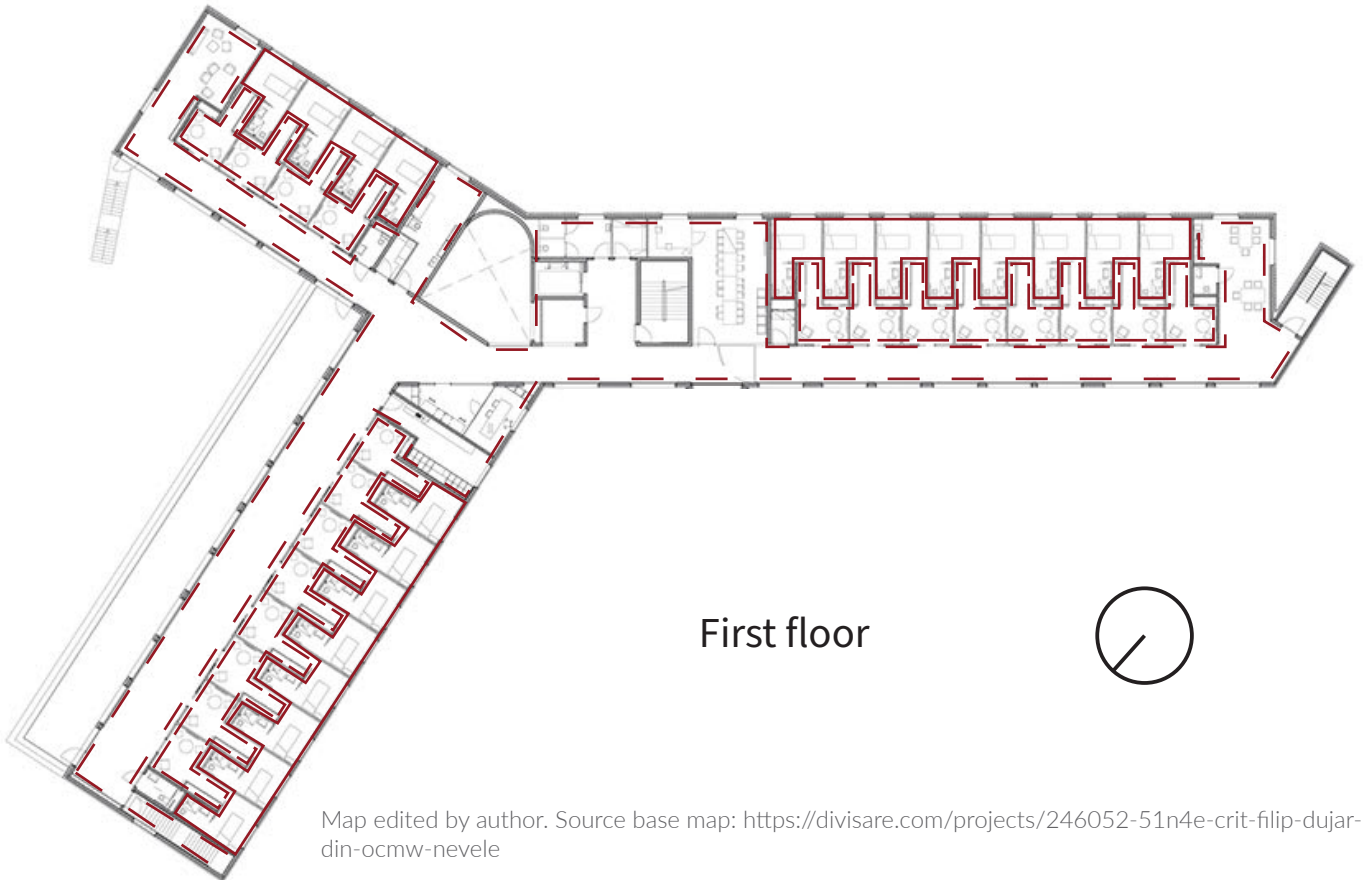
The building in itself is rather simple. It has a Y shape and consists therefore of three wings. Two of the wings have 2 building layers and one wing, that was connected to the old building, has three layers. The more interesting thing that happens is the way the rooms work. With an exception of some rooms of the ground floor, which are rather normal, most rooms have the same organisation. A sleeping area in the back, with a bathroom in the middle and ending with a living area, which is connected to a large hallway. This part, the living room and the hallway is what makes the concept interesting. There are large windows connecting them as well as a large sliding door. This sliding door opens up the room towards the hallway, creating a sort of semi-private area, where in theory other residents can just walk in to talk to the resident of that dwelling. This ensures a certain consecutiveness between the residents and tries to avoid isolation for the elderly.

OCMW Nevele

Ground floor organisation

Map edited by author. Source base map: https://divisare.com/projects/246052-51n4e-crit-filip-dujardin-ocmw-nevele

OCMW Nevele
Private/Public



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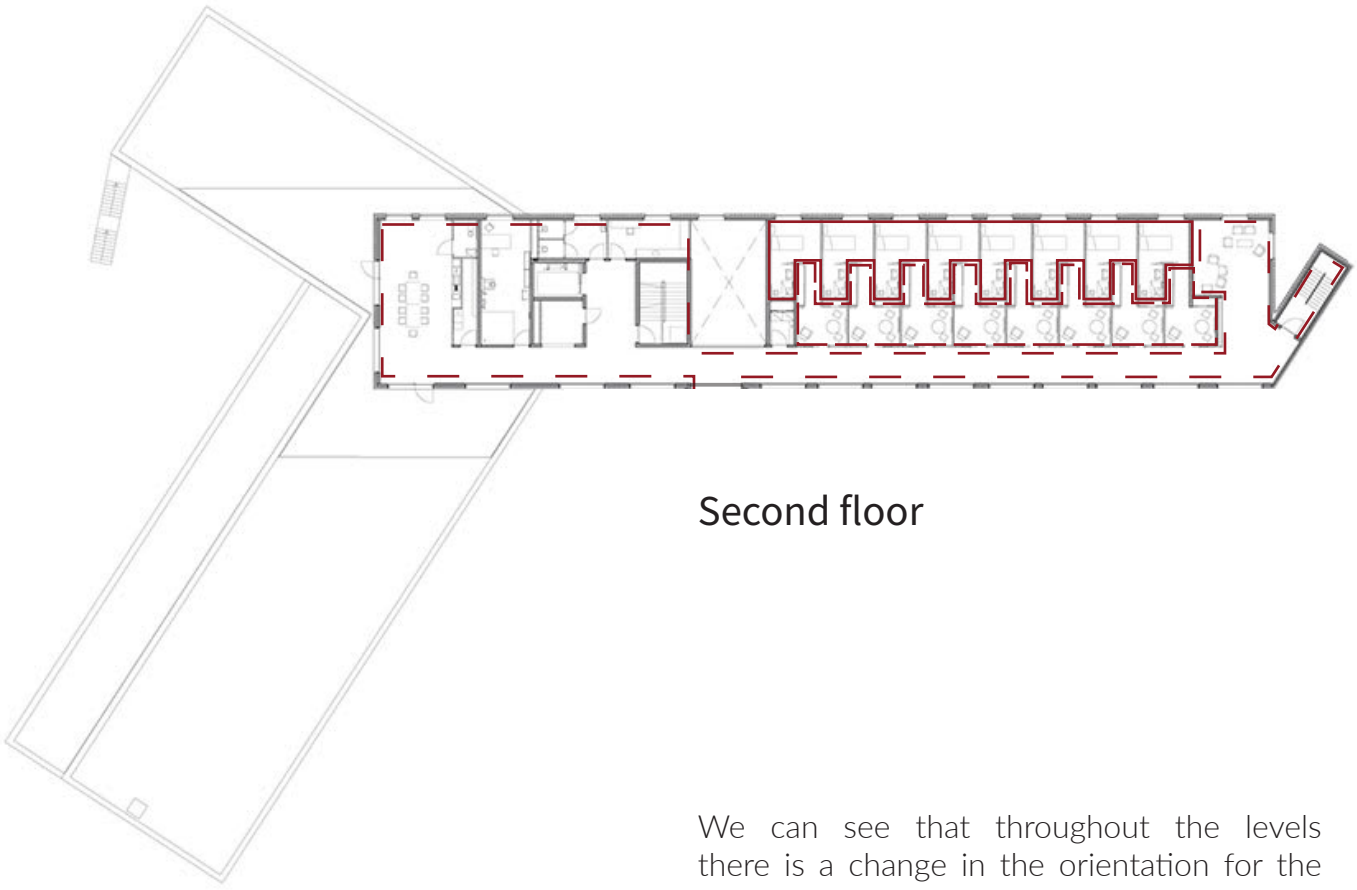
OCMW Nevele
Private/Public



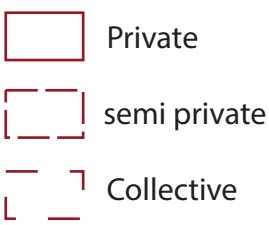
Second floor

We can see that throughout the levels there is a change in the orientation for the dwellings. Where the hallway on the ground floor is oriented towards the outside, away from the old building, on the higher floor that orientation changes, except for the part with the terrace, that is still oriented away from the old building.

The reason for this change in orientation is probably to connect the old building with the new building, without removing dwellings.

This also means that there is a change in private and public facade. On the ground floor, the entrance area, located on the south side of the building has the collective space oriented towards it, but as soon as we move up a level we can see that on that floor that has shifted to a private part, that is oriented towards the entrance area of the building.

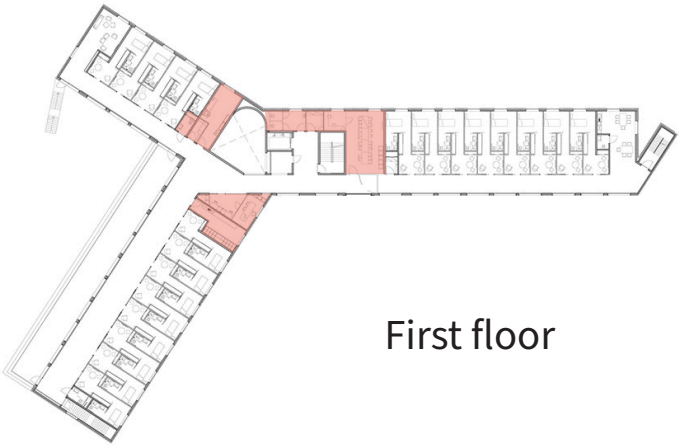
1:500



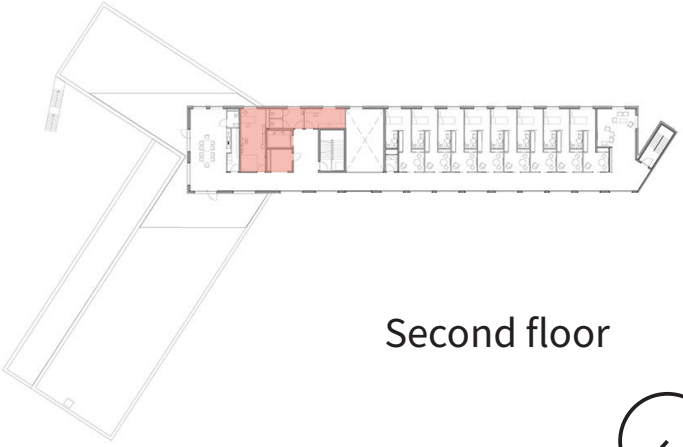
Map edited by author. Source base map: https://divisare.com/projects/246052-51n4e-crit-filip-dujardin-ocmw-nevele

OCMW Nevele
Care facilities 1:1000

Ground floor



First floor



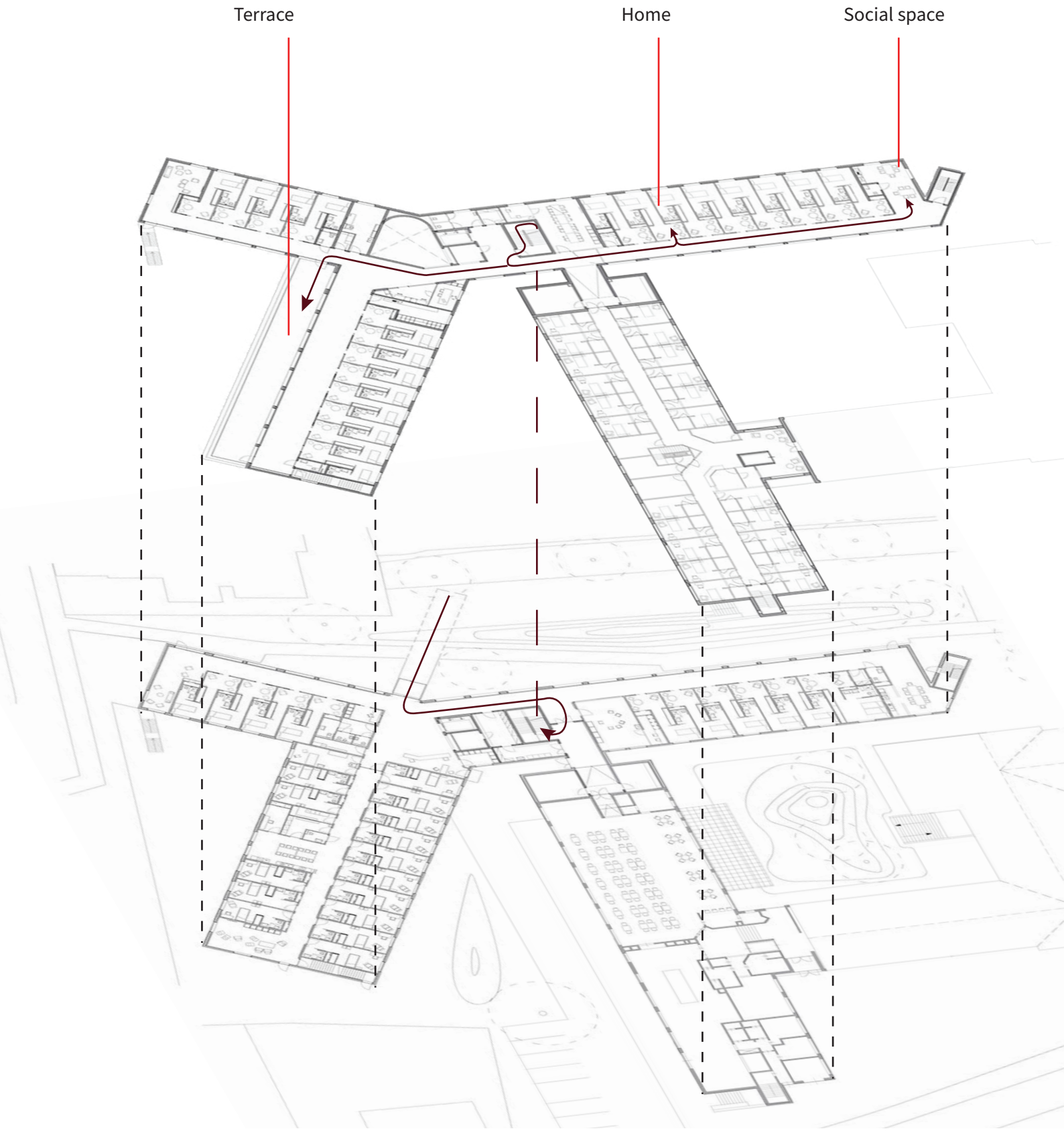
Second floor

On the floor plans on the left the care facilities are marked in orange. These are located on every floor.

Map edited by author. Source base map: https://divisare.com/projects/246052-51n4e-crit-filip-dujardin-ocmw-nevele

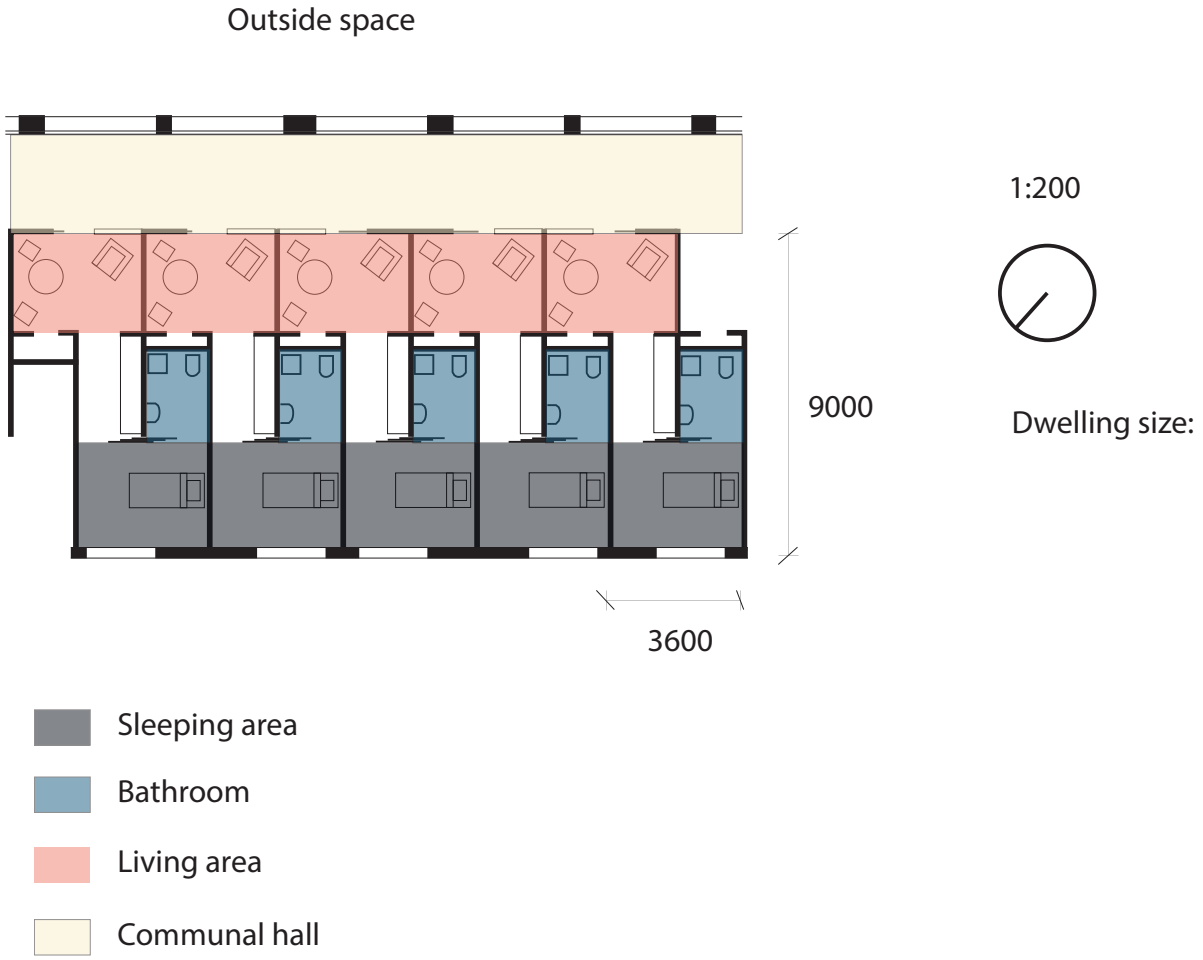
OCMW Nevele

Circulation



Map edited by author. Source base map: https://divisare.com/projects/246052-51n4e-crit-filip-dujardin-ocmw-nevele

OCMW Nevele
Dwelling organisation



Map edited by author. Source base map: https://divisare.com/projects/246052-51n4e-crit-filip-dujardin-ocmw-nevele

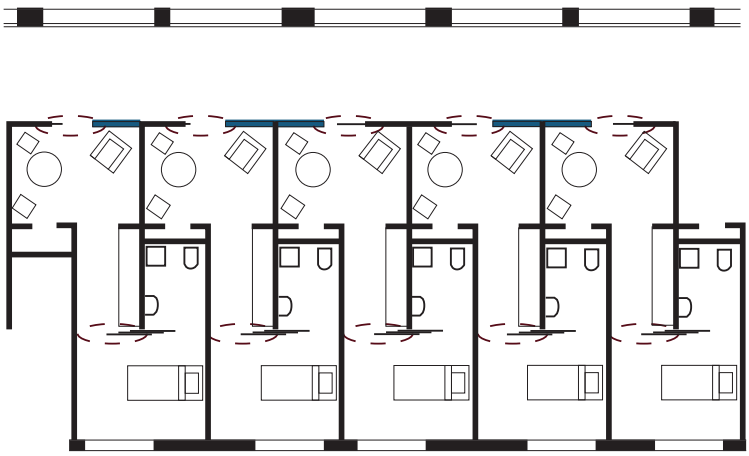
When the sliding doors are closed it is as if it is a normal apartment building, consisting of dwellings and a hallway. The bedroom area can in this scenario also be closed off from the other parts, increasing the privacy even more.

In the open configuration, the hallway and living room area are connected to each other, allowing other people to enter and use the hallway as a more communal leisure area, instead of just a space to go from place a to b. The special units from the building are not present in one of the wings on the ground floor, instead there are traditional rooms, on both sides of the hallway, instead of a hallway that has windows on one side, like in all the other wings. On the second floor this is changed and there is also the same dwelling types as the rest of the building. The space that is created, by only having one row of dwellings is used as a terrace now.

The part that is connected to the old building has 3 layers, whereas the rest of the building only has 2 floors.

Additionally we can see that the orientation of the rooms change for some parts of the buildings, meaning that on the outside you can see both the hallway and the sleeping area of the dwelling on one side.

OCMW Nevele
Collectiveness

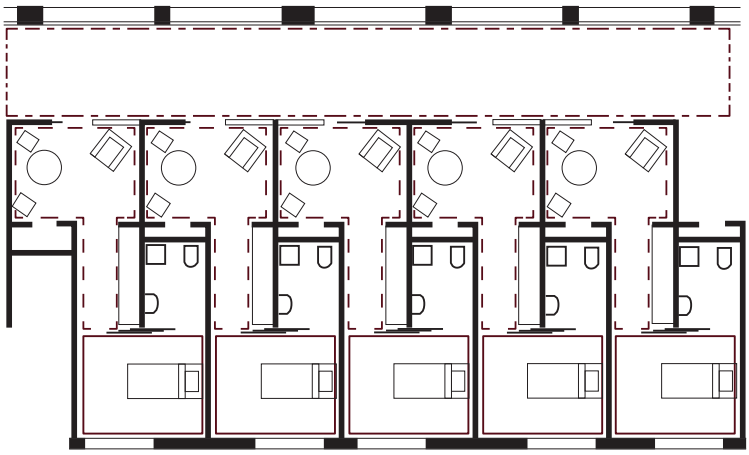


1:200

Dwelling size: 28 m2

Sliding doors
Large windows

Map edited by author. Source base map: https://divisare.com/projects/246052-51n4e-crit-filip-dujardin-ocmw-nevele



1:200

Dwelling size: 28 m2

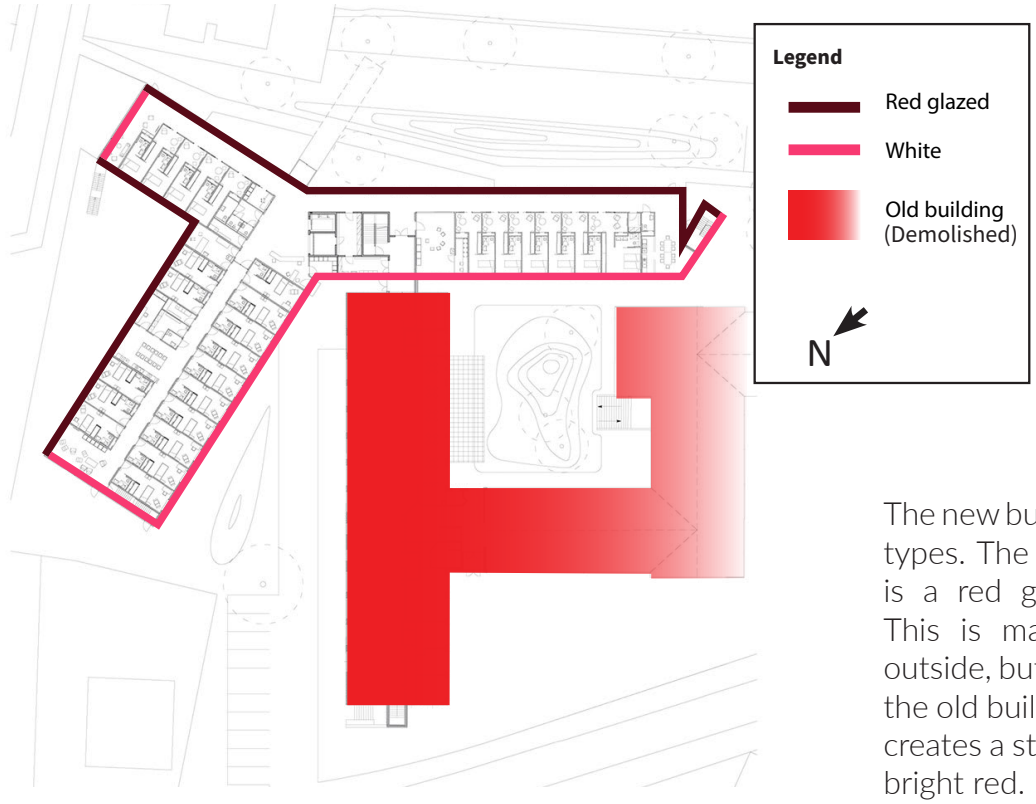
Private
Semi-private
Collective

Map edited by author. Source base map: https://divisare.com/projects/246052-51n4e-crit-filip-dujardin-ocmw-nevele

Image by Filip Dujardin

Image by Filip Dujardin

Facade style



The new building has 2 facade types. The most striking part is a red glazed tile facade. This is mainly towards the outside, but the walls towards the old building are white and creates a stark contrast to the bright red.

Map edited by author. Source base map: https://divisare.com/projects/246052-51n4e-crit-filip-dujardin-ocmw-nevele

Adapted map, source base map: Divisare. (n.d.). 51N4E , CRIT., Filip Dujardin · OCMW Nevele. Retrieved April 12, 2021, from https://divisare.com/projects/246052-51N4E--OCMW-Nevele-

Image by Filip Dujardin

Red Glaze

White facade next to old building

Image by Filip Dujardin

5.3 Center for Seniors in Steinfeld

10. Oktober-Straße 30, 9754 Steinfeld, Carinthia, Austria


Photographer: Peter Ott

Construction period: 2015
Client: Geriatric Health Centers of the City of Graz
Architect: Dietger Wissounig Architekten
Landschapsarchitect: Dietger Wissounig Architekten
Ground area: 3,658 m^2
Built area: 8,100 m2
Number of dwellings: 8 double rooms (28.0 m2)
34 single rooms (19.4 m2)
Communal functions: dining and Event hall, a library and a chapel
Service/care functions: wheelchair friendly bathrooms and care facilities.
Special offers: Public library open for everyone. Internal atrium and barrier free design

SPECIFICITY:

Literature

Fuchs, M., Hegger, M., Stark, T., & Zeumer, M. (2008). Energy manual: Sustainable architecture. Basel, Switzerland: Walter de Gruyter.

Schittich, C. (2007). Housing for people of all ages: Flexible, unrestricted, senior-friendly. Munich, Germany: Birkhaüser.

Center for seniors in Steinfeld
Location

Address: 10. Oktoberstraße 30, A- 9754 Steinfeld, Austria
Number inhabitants: 2021 (2021)
Area: 81.33 km2

Source: earth.google.com/

Center for seniors in Steinfeld
Location

Map edited by author. Source base map: cadmapper.com

50 m 100 m 150 m 200 m 250 m

1:5000

Center for Seniors in Steinfeld

Abstract

This is a care home for the elderly located in the small town of Nevele in the province Oost-Vlaanderen in Belgium. The building was build as an extension to the existing care home, but this existing part has been demolished in 2020 and they are now planning to build another extension in return.

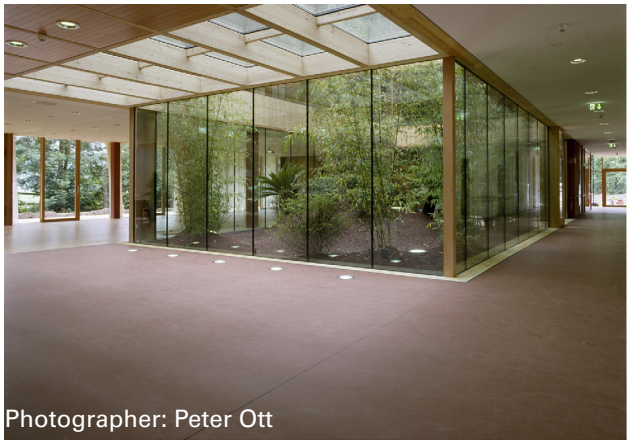
The building in itself is rather simple. It has a Y shape and consists therefore of three wings. Two of the wings have 2 building layers and one wing, that was connected to the old building, has three layers. The more interesting thing that happens is the way the rooms work. With an exception of some rooms of the ground floor, which are rather normal, most rooms have the same organisation. A sleeping area in the back, with a bathroom in the middle and ending with a living area, which is connected to a large hallway. This part, the living room and the hallway is what makes the concept interesting. There are large windows connecting them as well as a large sliding door. This sliding door opens up the room towards the hallway, creating a sort of semi-private area, where in theory other residents can just walk in to talk to the resident of that dwelling. This ensures a certain connectiveness between the residents and tries to avoid isolation for the elderly.

Center for Seniors in Steinfeld
General aspects and images


Photographer: Peter Ott


Photographer: Peter Ott

The dwellings in this complex are rather small, they mainly focus on sleeping, with the rest of the building facilitating the social and living spaces. The residents don't have balconies or other forms of private outdoor space, but they can open a door that has a railing in front of it. On top of that, the windows can be closed of from daylight with outside cladding that can slide over it and when closed, this cladding disappears into the facade again.


Photographer: Peter Ott

The core of the building is a large atrium filled with plants and trees. Each floor has bridges crossing it, to allow easy access to the other side of the building. The sides of the atrium have the staircases that lead to the upper floors.

Center for Seniors in Steinfeld
organisation functions besides dwellings

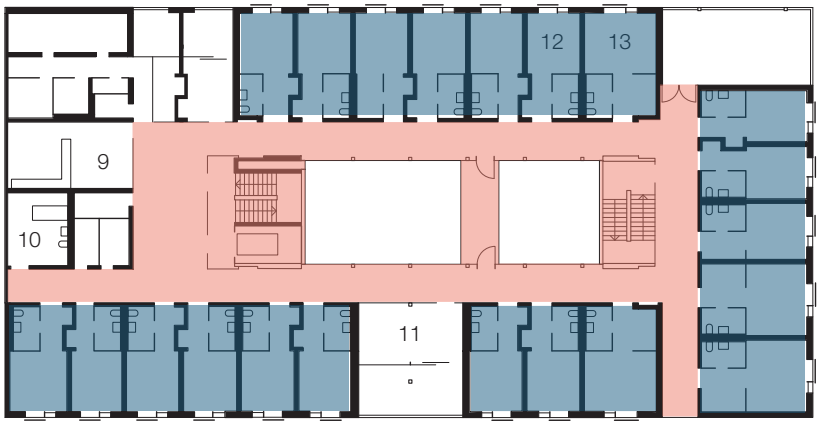
The other functions, that are not dwelling related, are located mainly on the ground floor, with the exception of caretakers areas, which are located on each of the top floors.

The functions on the ground floor not only service the residents, but also the people of Steinfeld, with the dining room being used by the children of the town, as well as having a public library and a chapel that is used by the entire town.

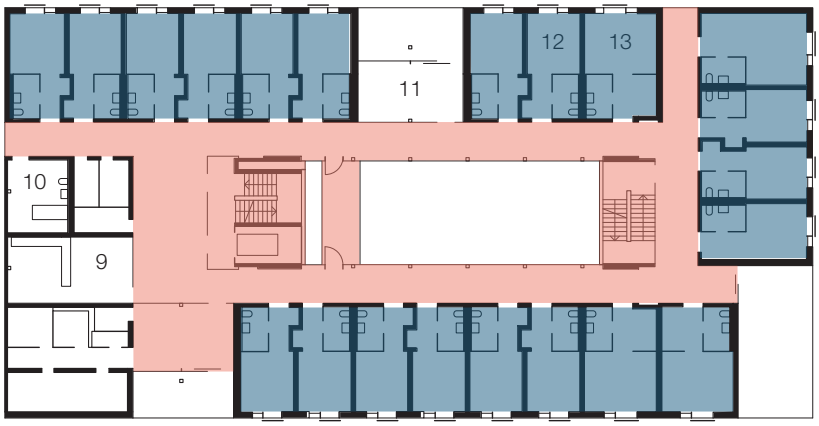
Map edited by author. Source base map: (Schitich, 2007)

Center for Seniors in Steinfeld

Dwellings/Circulation

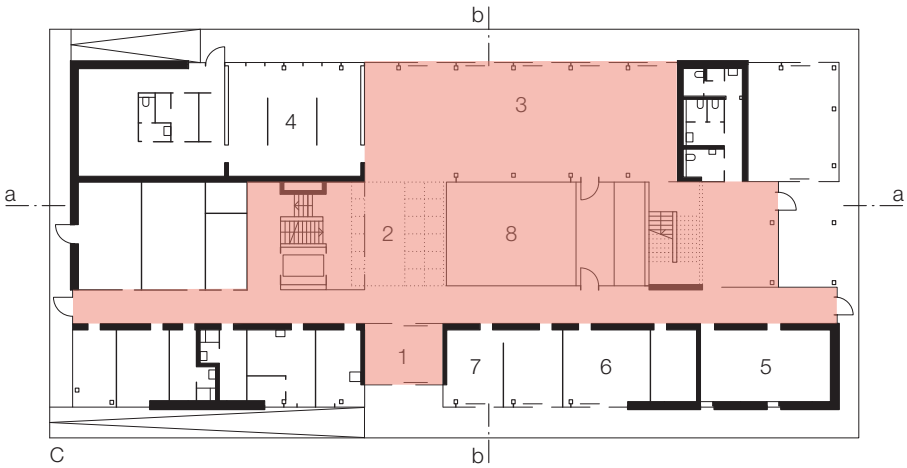


A



B

1:500



The ground floor is devoid of dwellings and only has collective functions and areas for circulation. On the floors above, this is different, since this is mainly dwellings on the edges, with the atrium as centrepiece of the whole building.

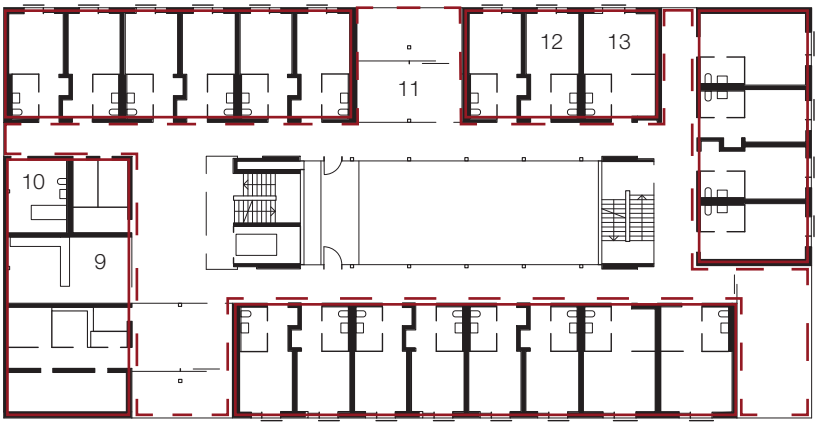
Map edited by author. Source base map: (Schitich, 2007)

Center for Seniors in Steinfeld

Private/Public

A

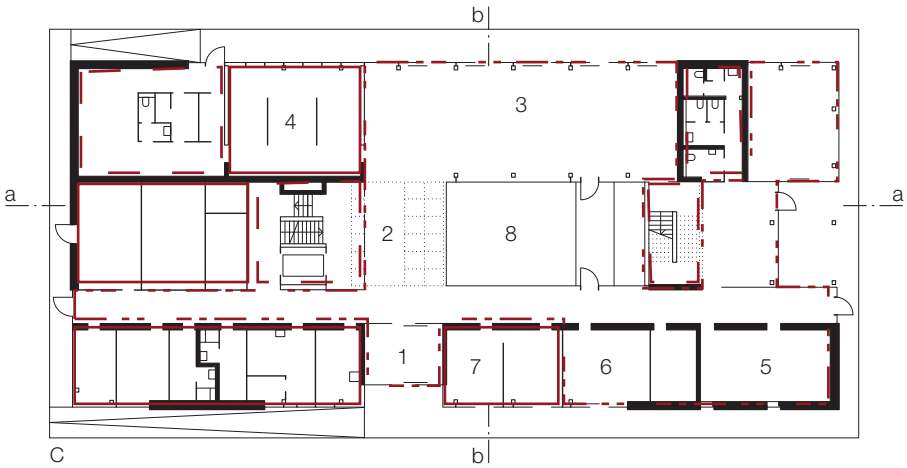
Second floor



B

First floor

1:500



Ground floor

Private

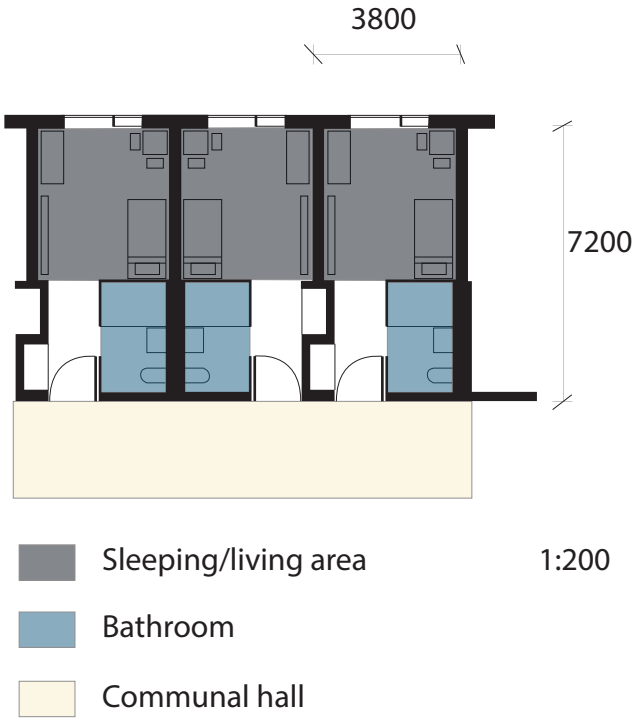
Collective

Public

The ground floor has mainly collective and public spaces, with a few exceptions, like the offices, which are private. The floors above are largely collective, with the dwellings being completely private.

Map edited by author. Source base map: (Schitich, 2007)

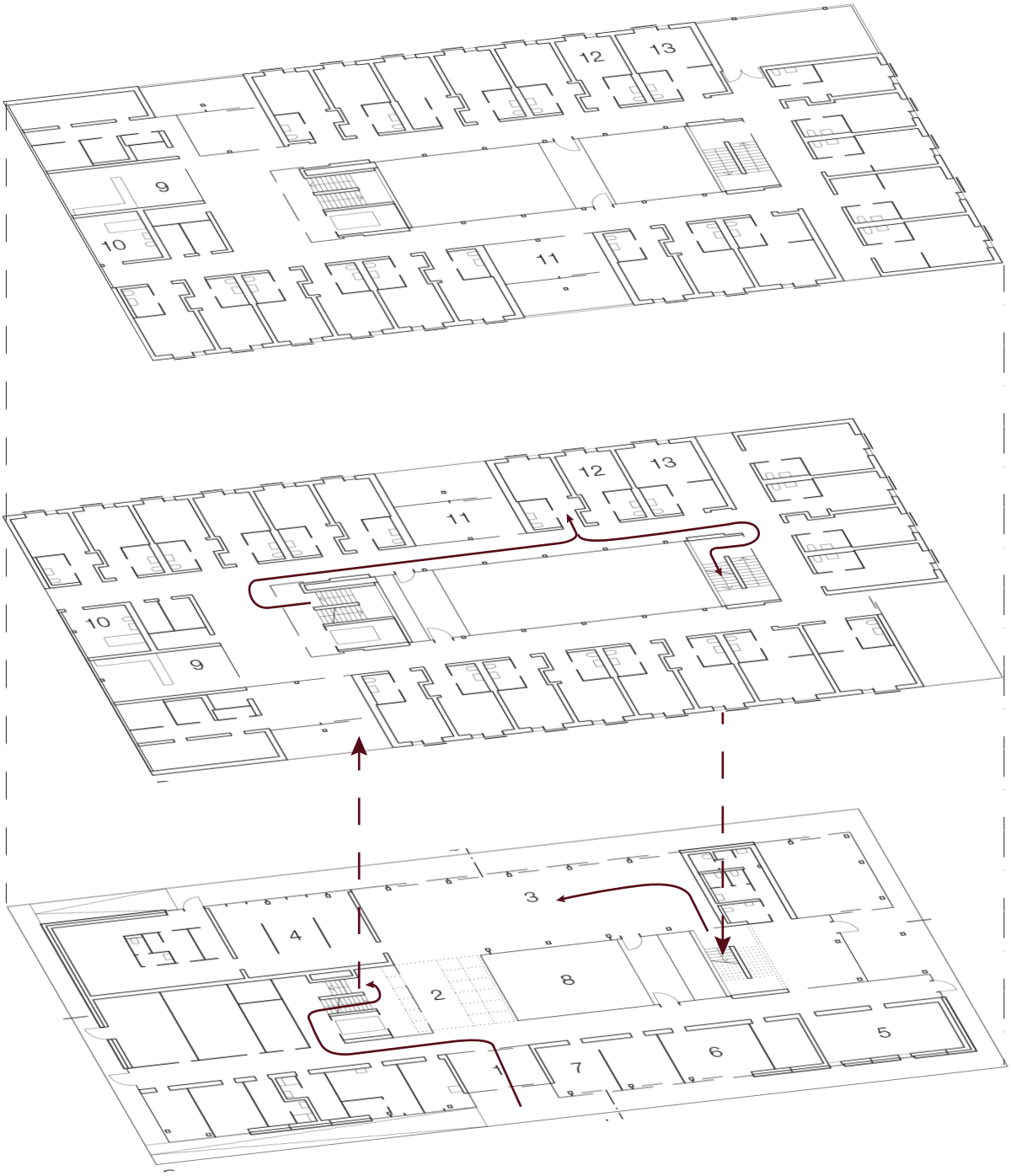
Center for Seniors in Steinfeld
Dwelling organisation



Map edited by author. Source base map: (Schitich, 2007)

The building has mostly dwellings for single person households, with a few dwellings for 2 people that is slightly larger. The dwellings themselves are rather simple. When you enter you have a small closet on one side and the bathroom on the other side. Past the bathroom there is the living/sleeping room. This room only has a bed and a table and some cabinets for storing items. On the other end is the window side, with a door that can open completely. The windows can be covered by wooden parts that slide in and out of the facade.

Center for Seniors in Steinfeld
Circulation



Map edited by author. Source base map: (Schitich, 2007)

5.4 De Akropolis
Zeeburgereiland, Amsterdam


Photographer: Peter Cuypers

Construction period: 2017 - 2018
Client: De Alliantie, Lingotto
Architect: studioninedots
Landschapsarchitect:
Ground area:
Built area: 10.872 m²
Number of dwellings: 82 housing units
Communal functions: Collective spaces, parking space, green roofs, community center
Service/care functions: General practitioner in house
Special offers: The building is a community with a mandatory membership to the organisation, to ensure social interaction between the residents

Literature

Akropolistoren. (2019, May). Het verhaal van de akropoistoren. Coöperatieve Vereniging Bewoners Akropolistoren, Amsterdam.

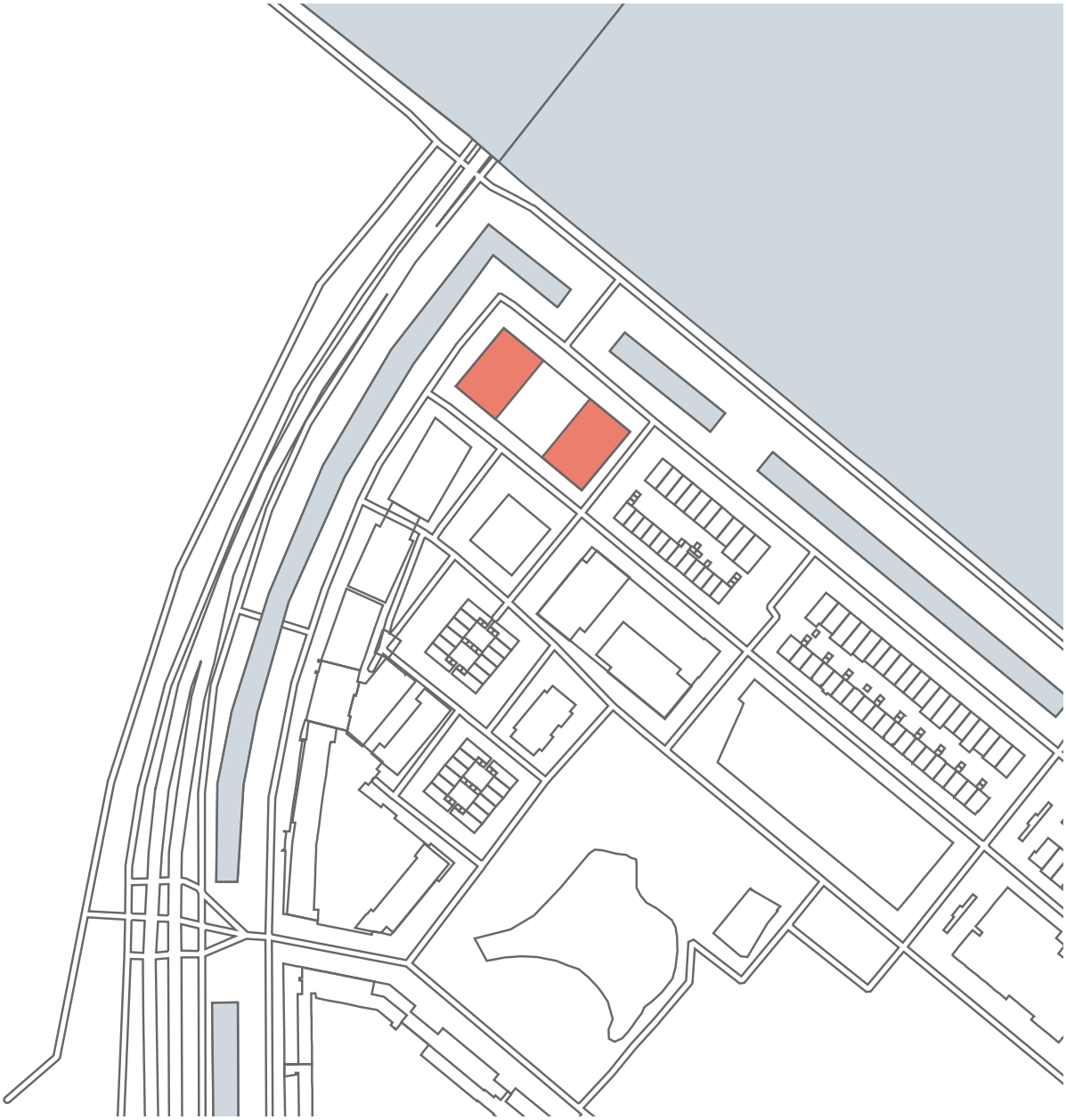
Witter, Y. (2020, January). Samen Oud 10 inspirerende woonzorgvoorbeelden. Aedes, The Hague.

De Akropolis
Zeeburgereiland, Amsterdam

Address: Sloe 49, 8032 Zwolle, The Netherlands
Number inhabitants: 128.831 (2020)
Area: 111,10 km2

Source: earth.google.com/

De Akropolis
Location



Map edited by author. Source base map: cadmapper.com

50 m 100 m 150 m 200 m 250 m

1:5000

De Akropolis
Abstract

The Akropolis in Amsterdam is a 14 story high building located on the Zeeburgereiland in Amsterdam. The building is meant for people aged over 55 and who originated from Amsterdam or the area around it. The building has 100 people living there, ranging from the ages 55 until 92. Half of the 82 dwellings are social rent houses and the other half is meant for people with middle income. This means that for both types there is a income limit. On top of that there is an organisation set up by the inhabitants of the building and membership is mandatory.

Despite the building being finalized in 2017. The plans for this living community started in 2004. This meant that most of the first inhabitants knew each other already long before the building even started. The building as different groups, that organize activities like cycling or cooking. Throughout the building there are several public areas where the inhabitants can come together.

When it comes to the organisation of the building, each dwelling is centred around a circulation core. On top of that the social rent and free market apartments are mixed, so there is no separation between social and economic classes that might be there.

De Akropolis

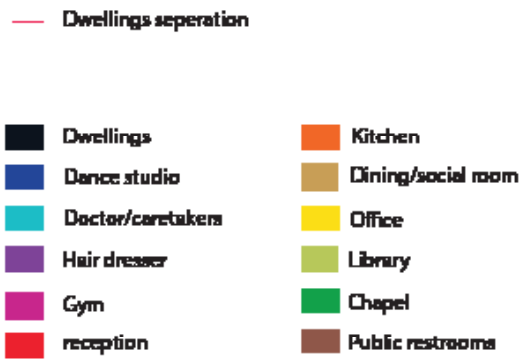
Ground floor functions and dwelling indications 1:500

Floors 1-3

Floors 8-14

Ground floor

Floors 4-7

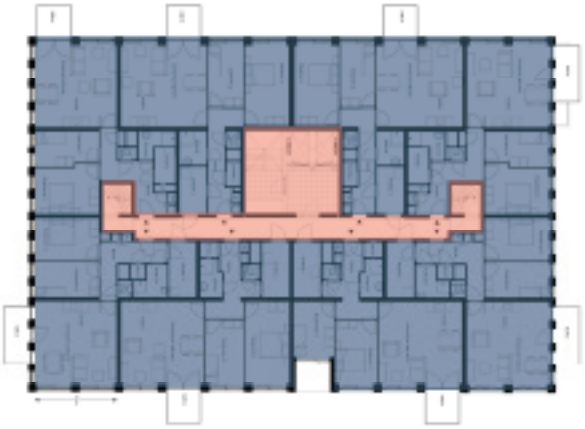


The ground floor is partially for dwellings, but also partially for the shared living room, that also has a small kitchen. The other part of the ground floor is used by a doctor.

Map edited by author. Source base map: https://www.dearchitect.nl/projecten/akropolisde-generaal-op-zeeburgereiland-studioninedots

De Akropolis

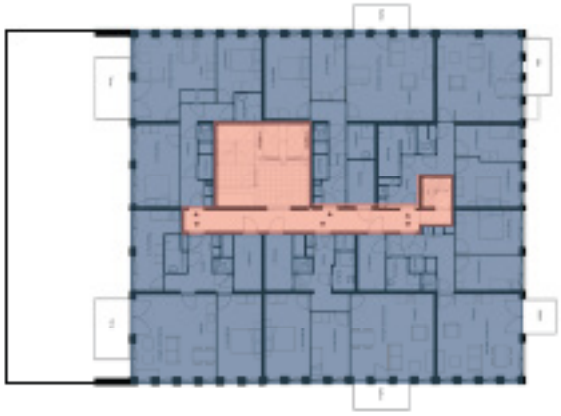
Dwellings/circulation 1:500



Floors 1-3

Floors 8-14

Ground floor



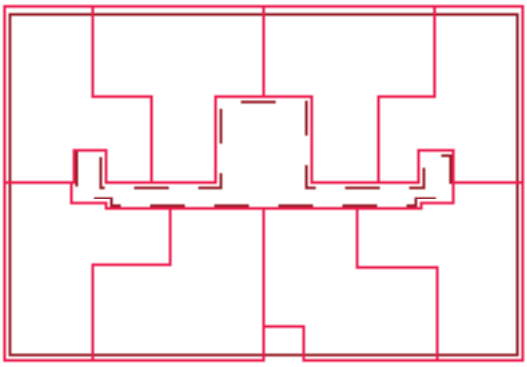
Floors 4-7

This building uses the core as the main circulation area. This means that all the dwellings are centred around this circulation core. As we move higher, we can also see that the floors get smaller. This is to make room for rooftop terraces on several levels throughout the building.

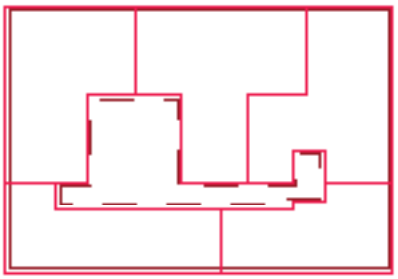
Map edited by author. Source base map: https://www.dearchitect.nl/projecten/akropolisde-generaal-op-zeeburgereiland-studioninedots

De Akropolis

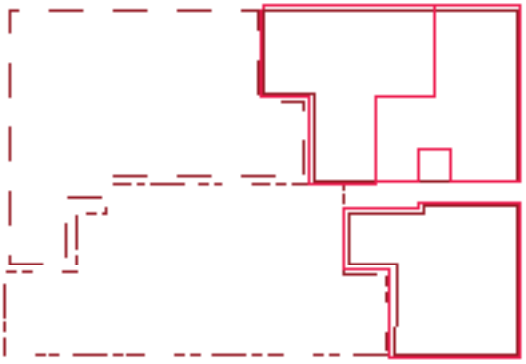
Private/public 1:500



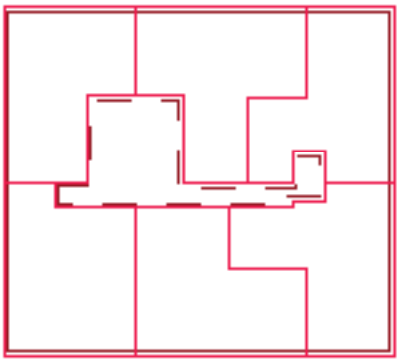
Floors 1-3



Floors 8-14



Ground floor



Floors 4-7

Apart from the ground floor, the floors are mostly private, with the exception of the circulation core.

Private

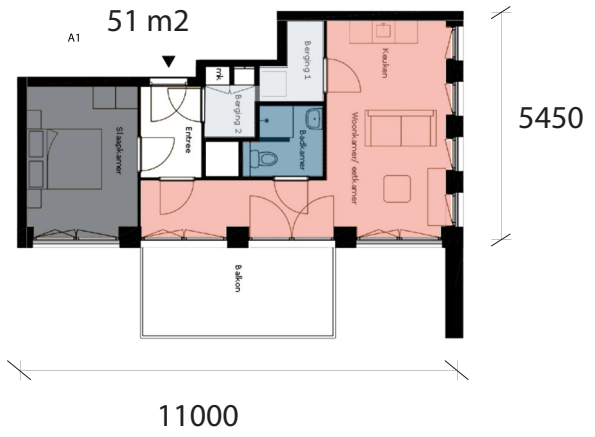
semi private

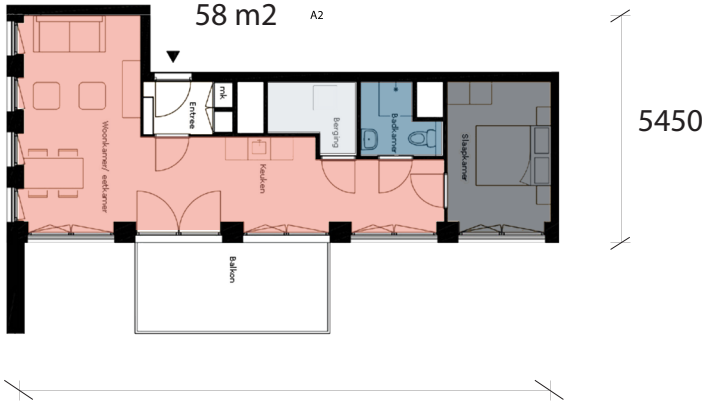
Collective

Map edited by author. Source base map: https://www.dearchitect.nl/projecten/akropolisde-generaal-op-zeeburgereiland-studioninedots

De Akropolis

Dwellings 1:200





Map edited by author. Source base map: https://www.dearchitect.nl/projecten/akropolisde-generaal-op-zeeburgereiland-studioninedots

De Akropolis

Dwellings 1:200

Sleeping area

Bathroom

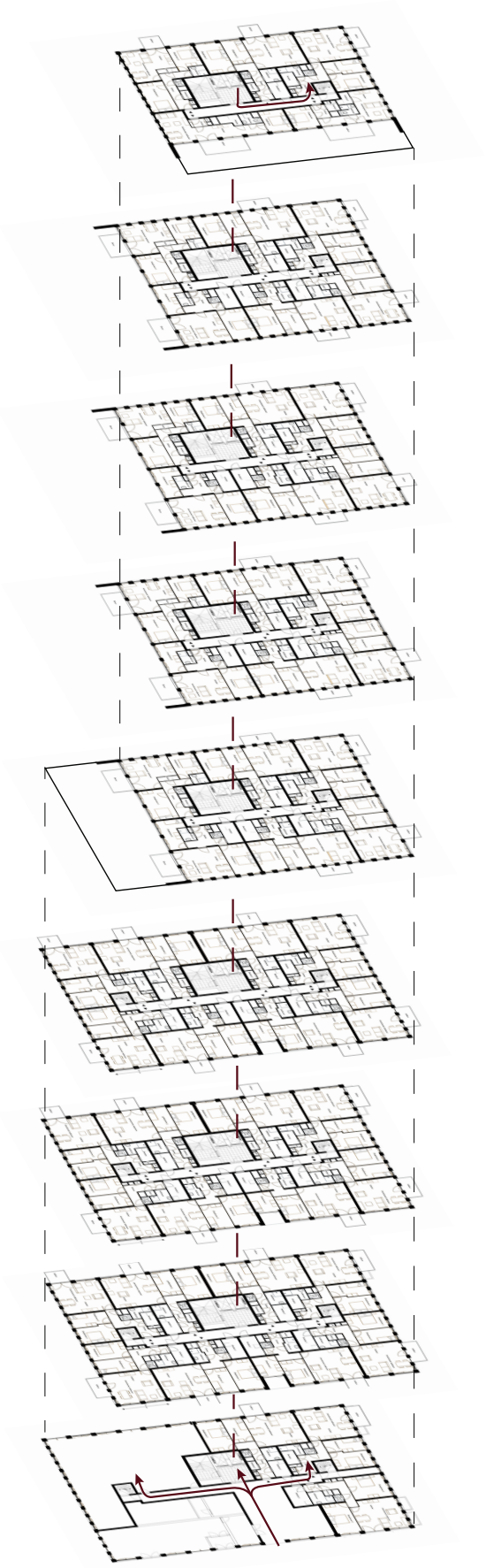
Living area

Storage

On these two pages are all the different dwellings. Some dwellings spear mirrored, but apart from that these are all the dwelling types. They differ in size and some are meant for social housing. However the setup is rather similar for most dwellings. The rooms that do not necessarily require daylight are located near to the circulation core. Parts like the kitchen, bathrooms and storage areas. The other parts like living room and bedroom are all rooms on the outside with access to daylight. On top of that almost all dwellings have access to a balcony. Also some dwellings have multiple bedrooms, but not all. The same goes for an extra bathroom or toilet.

Map edited by author. Source base map: https://www.dearchitect.nl/projecten/akropolisde-generaal-op-zeeburgereiland-studioninedots

De Akropolis
Routing



As stated before, most of the public functions are located on the ground floor, however the top floor has a shared living room as well. This means that the residents will often use stairs or elevators to move around in the building. Either to go outside or check their mail at the entrance or to go to the top floor to watch a movie with fellow residents. Or even go to the ground floor to cook with other residents in the shared kitchen.

Map edited by author. Source base map: https://www.dearchitect.nl/projecten/akropolisde-generaal-op-zeeburgereiland-studioninedots

5.5 CASE STUDY CONCLUSIONS

5.5.1. Dwelling function analyses
1:200

55 YEARS OR OLDER

75 M2

DE AKROPOLIS AMSTERDAM

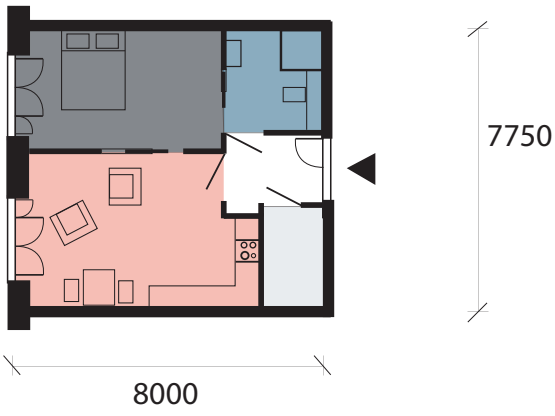
The most used dwelling type in the building consists of 2 bedrooms, a living room, separate bathroom and toilet, ample storage and includes a balcony for private outside space.

55 YEARS OR OLDER

62 M2

DE MAKROON AMSTERDAM

The most used dwelling in the building consists of one bedroom, a living room , a bathroom and storage, but no balcony.



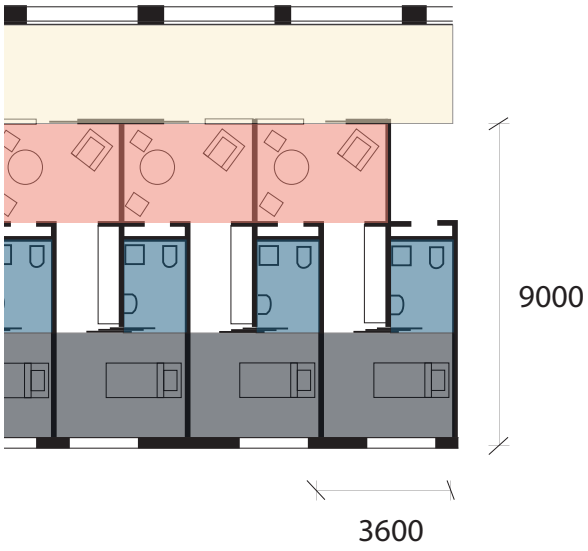
Sleeping area

Bathroom

Living area

Storage

LESS ACTIVE ELDERLY



28 M2

OCMW NEVELE

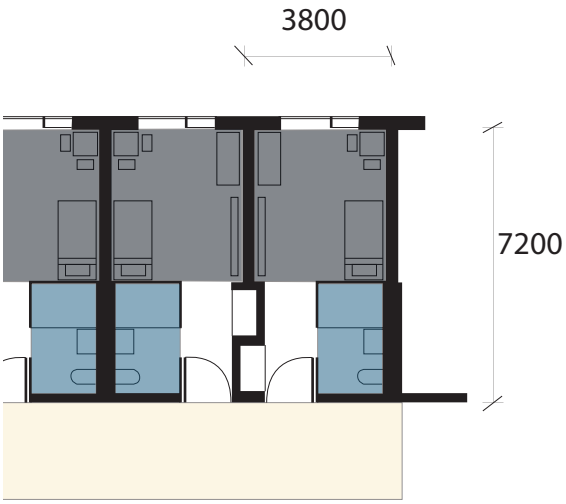
A much smaller dwelling with sleeping and living areas, but no kitchen. The living area can open up towards the communal hallway.

LESS ACTIVE ELDERLY

19.4 M2

CENTRE FOR SENIORS IN STEINFELD

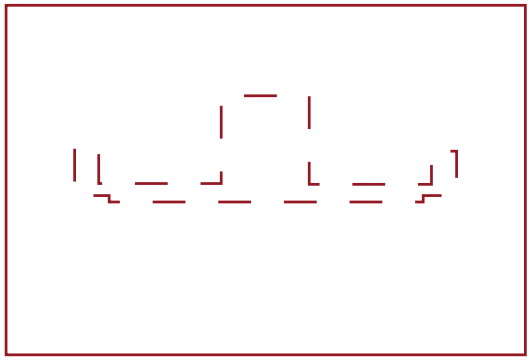
The single person dwelling for this building consists only of a bedroom with some living room functions, but most living will take place in the rest of the building



5.5 CASE STUDY CONCLUSIONS

5.5.2. Public vs private areas of the building (Not to scale because of the large difference in size and the lack of visibility of some projects when shown in the same scale)

55 YEARS OR OLDER



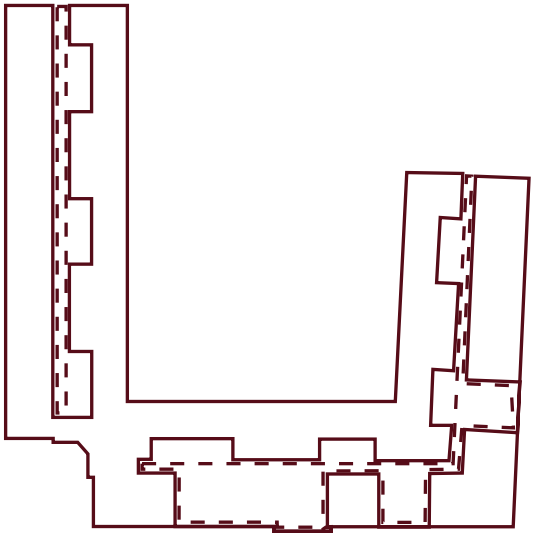
DE AKROPOLIS AMSTERDAM

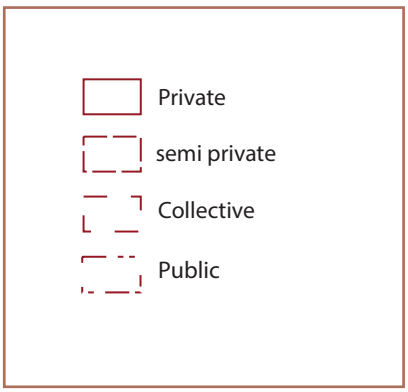
The second floor of the Akropolis. This building has some collective spaces on the ground floor, but all other levels are like this, a collective core that is used by all the inhabitants, surrounded by the private dwellings.

55 YEARS OR OLDER

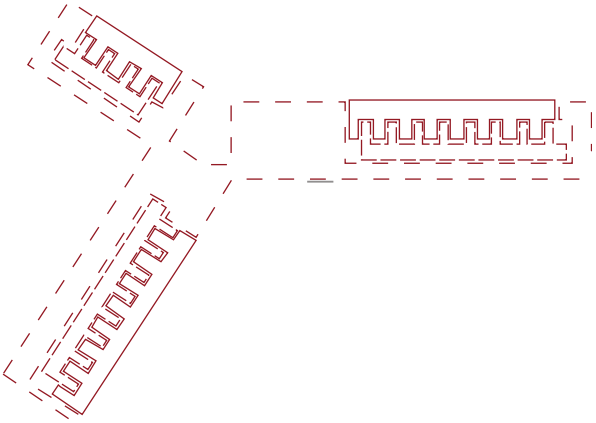
DE MAKROON AMSTERDAM

The second floor and higher of the Makroon. With the exception of the ground floor with public functions and the first floor with care facilities, each floor is arranged in this way, with private dwellings on the edges and collective transport space in the middle.





LESS ACTIVE ELDERLY



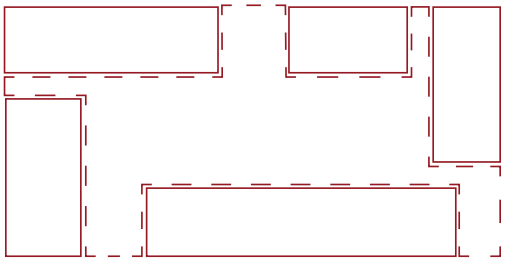
OCMW NEVELE

The first floor of OCMW Nevele, this floor is mostly public and collective. With the exception of the sleeping area of the dwelling, almost everything is semi private to collective. Including the living area.

LESS ACTIVE ELDERLY

CENTER FOR SENIORS IN STEINFELD

The first and second floor of the senior center in Steinfeld has private dwellings, with no windows and just door towards the collective space. Apart from the dwellings, everything else is shared space, including the atrium in the middle.



5.5 CASE STUDY CONCLUSIONS

5.5.3. Ground floor functions of the building (Not to scale because of the large difference in size and the lack of visibility of some projects when shown in the same scale)

55 YEARS OR OLDER

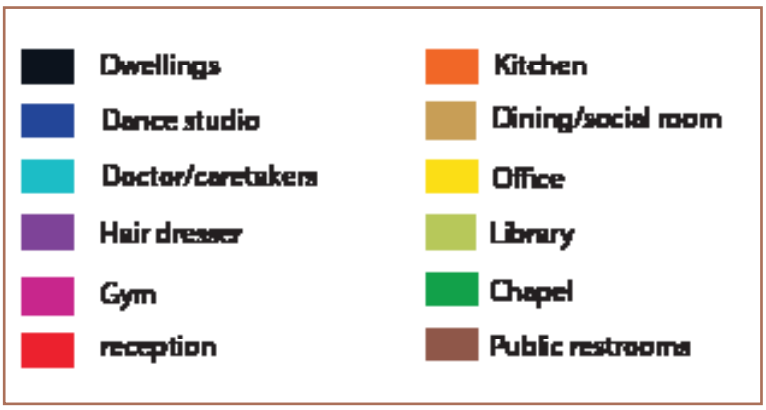
DE AKROPOLIS AMSTERDAM

The ground floor of the Akropolis has some dwellings, but is mostly the living room of the building, a shared social space that can be used by all inhabitants of the building, which also has a kitchen. On top of that there is a doctor on the ground floor. There are no commercial functions here.

55 YEARS OR OLDER

DE MAKROON AMSTERDAM

The ground floor of the Makroon is partially for dwellings, however there are also other functions like a gym or a dance studio, but most functions are not exclusive to the residents of the building, but more public.



LESS ACTIVE ELDERLY

OCMW NEVELE

The ground floor of the building is mostly used for dwellings, but there are also care facilities and social spaces that are also used for dining, since the dwellings themselves don't have kitchens.

LESS ACTIVE ELDERLY

CENTER FOR SENIORS IN STEINFELD

The ground floor of the building is mainly used for public functions, like a social space/dining space, but also a library and a chapel that are used by the whole village. The ground floor is freely accessible by the residents of the town, only the first and second floor are mainly for the residents.

5.5 CASE STUDY CONCLUSIONS

From the case studies we can learn several things. First of all and this does not come as a surprise, but the dwellings meant for retired elderly is much smaller than the dwellings for the people above 55 years old. Together with this we can also see that this reduction in personal space can be seen again in the amount of communal areas. Both the Center for elderly in Steinfeld and OCMW Nevele have much more communal areas throughout the building, whereas both buildings in Amsterdam only have few communal spaces, barely nothing compared to the other buildings.

A similarity between all buildings, suited for both 55 year olds and retired residents, is that the ground floor has a more public function. However the target groups differ. The Makroon in Amsterdam for instance has much more spaces focused on the general public, like a gym and a hairdresser whereas the functions for Nevele are purely for the residents and in Steinfeld we can see that the functions serve both the residents of the building and the residents of the town it is situated in.

Circulation in all buildings is also very similar. Most buildings, with the exception of Nevele, which does have part of the building the same way, have a corridor or other form of centralized circulation. De Makroon has a very recognisable corridor, The Akropolis has shorter corridor and Steinfeld has an atrium with circulation around it.

Another aspect of analyses was the aspect of care. As suspected the buildings focused on 55 year olds had less care facilities, but nonetheless they were there. Nevele and Steinfeld however, had much more care facilities.

When looking more in depth into the dwellings we can also conclude certain things. When the population gets older the functions get minimal. The focus is mainly on just having a place to sleep and a place to live, sometimes these are not even separated as is the case with Steinfeld. However we can see certain similarities. De Makroon for instance has sliding doors between the living room and the bedroom. Even though the dwellings are much larger in the Makroon, this is similar to the sliding doors separating the living and sleeping area of Nevele. Coming back to the differences however, we can see that the care units don't have kitchens anymore and that these units have very little space for storage.

Therefore a combination will be used for my design, larger rooms with storage, but also larger communal area's to allow for social interaction between the residents.

6. GENERAL CONCLUSION

The purpose of the research was to find out how and to answer the main question: 'What are the functional needs of a building suitable for residents above the age of 55, whether they are healthy or physically impaired and considering that they come from different social and economic backgrounds?'

To be able to answer the research question, I investigated the housing history of elderly in the Netherlands. The most striking part of the history research was the change of the elderly being the poorest part of society from the 12th century until the second world war, towards the wealthiest part of society. This was due to financial aid from the government, but also aspects like buying a house, which became worth more money over time. On top of that care for the elderly has changed as well. Where we first used to build a lot of retirement homes, we now have laws in place that limit the amount of elderly that can get 24 hour help in a retirement home.

Using the history as a starting point, my research continued towards the modern elderly person. In this phase, I investigated what the average elderly look like and what needs they have. Some conclusions to gather from my research are as follows:

-The amount of time spent on physical activity like sports decreases with age. This would be suspected indeed, given the decreasing mobility, however that number is rising since a couple of years, meaning that the elderly get more active.

-Currently, more than half of the population above 55 lives in a multi story row house and a large part of the group between 55 and 64 lives in dwellings larger than 120 m2.

-If we look at the housing needs, we can see that the preferred dwelling consists of only one level, with enough outdoor space.

-The need for moving to housing specifically designed for elderly grows significantly between the ages of 55 and 75. However, the largest part of this group cannot move to a suitable place at the time they want to, because there is a lack of elderly housing and if the older person is still deemed to healthy, this person is not allowed to move into a retirement home.

-Another striking aspect that came forward in this research, was the importance of daylight in an elderly home. When people get older, daylight becomes much more important for the health and rhythm of the elderly and it can also improve their sleep cycle.

As part of my research, a questionnaire was sent around as well. Looking at the results from this questionnaire, some key aspects of elderly living were found. One of these aspects was that the younger part of the 55+ age group lived in larger houses in which they would install a stair lift as their first age adapting change. This indicates that apartments without stairs are more suitable for this age group and that people above 55 are already thinking about mobility. Furthermore, storage space was something that most people felt they lacked in their current homes, no matter their age. Therefore, it is important to design enough storage space in the dwellings of my own project.

The last part of this research included

a visit to Knarrenhof, two hofjes for elderly in Zwolle which include social rent houses and houses for sale. One of the more striking aspects here was the use of upper floors. The large empty surface on a level that elderly have trouble reaching because of their decreasing mobility, felt quite useless. The best use of this floor was to use it as storage space, which does not seem a very functional use of the space. Another aspect that is interesting to consider in our own designs, is to create lower ceilings in elderly homes. Higher floor to ceiling distances might be preferable for younger people, but once they get older and shrink a little bit, cleaning becomes very difficult at that height. Therefore, our visit in Knarrenhof and the conversations on the use of the dwellings inspired us to probably use slightly lower doorways in our own designs.

With all this collected information, it is now possible to answer the main research question: 'What are the functional needs of a building suitable for residents above the age of 55, whether they are healthy or physically impaired and considering that they come from different social and economic backgrounds?'

One functional need that all groups/ people in the questionnaire considered, was the ability of easy mobility in their dwelling. This might be a single floor dwelling, or the use of a stair lift to move from floor to floor. Furthermore ample storage is something all the groups really appreciate.

The research also showed how elderly do not have easy access to constant care anymore. The group of elderly that does not yet qualify for specifically designed care housing, still need some care. Therefore, a building that allows for care between the residents might be a workable solution and can be seen as one of the functional needs of such a building. The Knarrenhof residents stated this several times. If you need help, there is always someone around who can help you. Therefore, designing a building which includes different age groups, some more mobile and active than others, might be a way to ensure that there is always someone around who is able to provide care. Probably the most important functional need for the not retired population is to prevent the designed dwelling to appear as a typical elderly home, since that makes this group feel old, which is perceived as a negative aspect.

One thing that also stood out from both the visit to Knarrenhof and the case study analyses was the use of communal spaces. In the shape of a large courtyard for Knarrenhof and De Makroon and an atrium for the Center for seniors in Steinfeld. This communal space encourages social interaction and might also aid in the overall communal feeling of a building. On top of that, my grandmother mentioned that she would have enjoyed more interaction in the hallway. So a communal aspect is certainly something that will be considered for my own design.

Another functional need that was found in this research, was the need for adaptive elements so that the dwelling can adapt to the increasing age of the residents. It might for instance be interesting to include an extra room in the dwellings. This room could than in a future setting be used as a permanent residence for a nurse to care for the residents. For the people who could not afford a larger dwelling that has an extra

room but need help, care units could be included to facilitate the same kind of care, without the need to move to another building.

From my participant observation with my grandmother I also found out that enough space in a dwelling is greatly appreciated, especially when the older person becomes less mobile. This allows for easy movement with a walker in the dwelling. Aspects like wider doors and no thresholds add to the improved movement through the dwelling as well.

Since most of the changes come with age. The main dwellings will be designed with the 55 plus population in mind, but with a flexibility that allows for changes in the future, like already making sure that bathroom can accommodate wheelchairs and that the bed placement can change if necessary. Since there are differences in wealth for the elderly as well, a combination of smaller, more affordable dwellings and larger dwellings with multiple rooms. This way people from different financial backgrounds can live in the same building. To make sure that the residents of the more affordable dwellings can have grandchildren or other relatives that stay the night, shared lodging rooms will be included on each floor. This way everyone in the building can have relatives over that might not live close by.

Therefore the building that I will design will be a building where everyone above the age of 55 can live. Whether they are healthy or have difficulties with movement and whether they are still working or retired.

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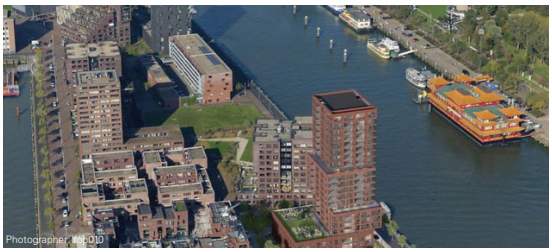
APPENDIX 1: MASTERPLAN

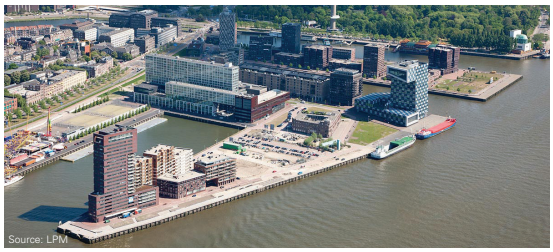
With the group we were tasked to create a masterplan for the pier. To do so we first analysed 4 different former harbour areas that were transformed into residential areas. These were the Mullerpier, Lloydpier and Kop van Zuid in Rotterdam and Borneo Sporenburg in Amsterdam. Based on these case studies we made several conclusions to take with us and to formulate our own concept and starting points. These were then implemented on the pier and what followed was a masterplan for a residential area with a green route throughout the plan. In the following couple of pages the Masterplan is summarized, using the maps and slides from the presentation and the location that was chosen as the design location is marked after this section.

Design question
Approach: reference projects


Photographer: René de Wit

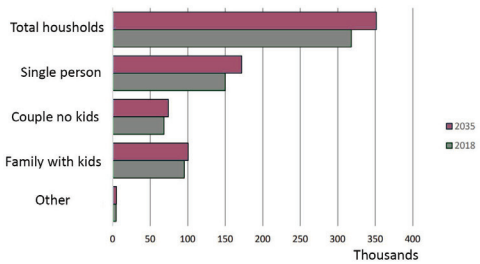

Source: ANP


Photographer: MP010


Source: LPM

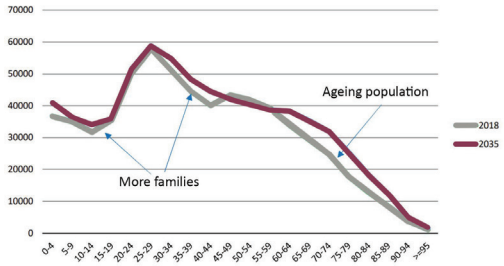
Demographics
Rotterdam

Expected percentage of household growth



- Mainly a growth in Single person households
- Also slight growth in families with and without children

Expected percentage of population growth per age



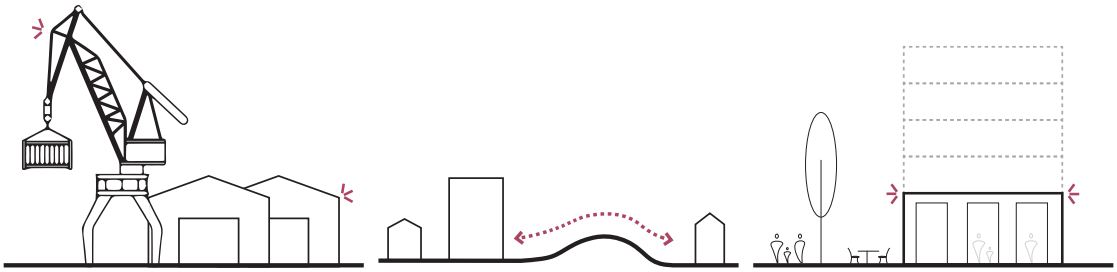
- Mainly a growth in the age groups above 65 years
- Slight growth in group 25-40

Source: Hoppesteyn, M., Permentier, M., Van der Zanden, W.. (2018, October 30). PBevolkingsprognose Rotterdam 2018-2035. Rotterdam: Gemeente Rotterdam

Masterplan
Concept and starting points

Developing a dynamic work-living area for the people of Rotterdam with respect to the identity of the harbour

Concept
3 starting points



1. Preservation of the harbour identity

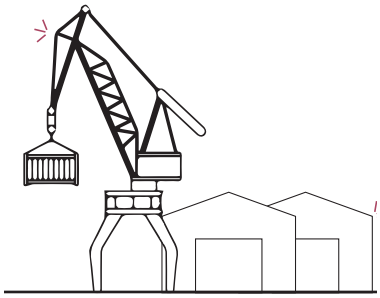
2. Implementing a strong spatial structure

3. Create a strong programmatic structure with surrounding areas

1. Preservation of the harbour identity

Respect the industrial character and preserve the characteristical elements.

- Preserve the **rich variety of buildings, quays, tracks, and constructions** in Merwehaven. These image-defining objects form the basis of the identity of the area and contribute to value development.
- A **green heritage route** is proposed that follows three key points in the masterplan where the monuments are preserved.



2. Implementing a strong spatial structure

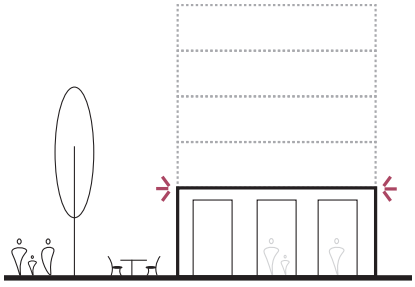
Restore the spatial connection with the surrounding area.

- Creating **good and safe connections** over water and land, at all levels and for all modes of transport.
- In order to connect the harbour with the city, **strong physical and functional connections** will be made to the adjacent neighbourhoods.

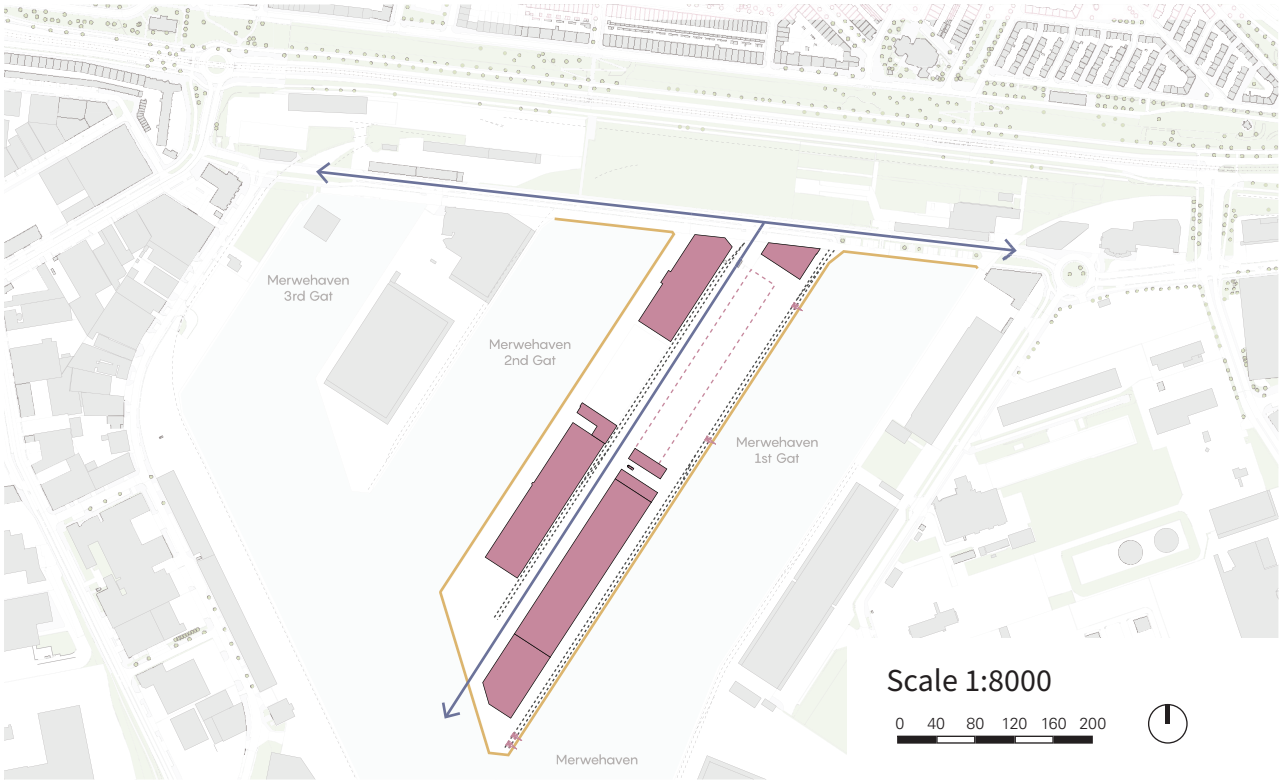
3. Create a strong programmatic structure with surrounding areas

Restore the programmatic connection with the surrounding area.

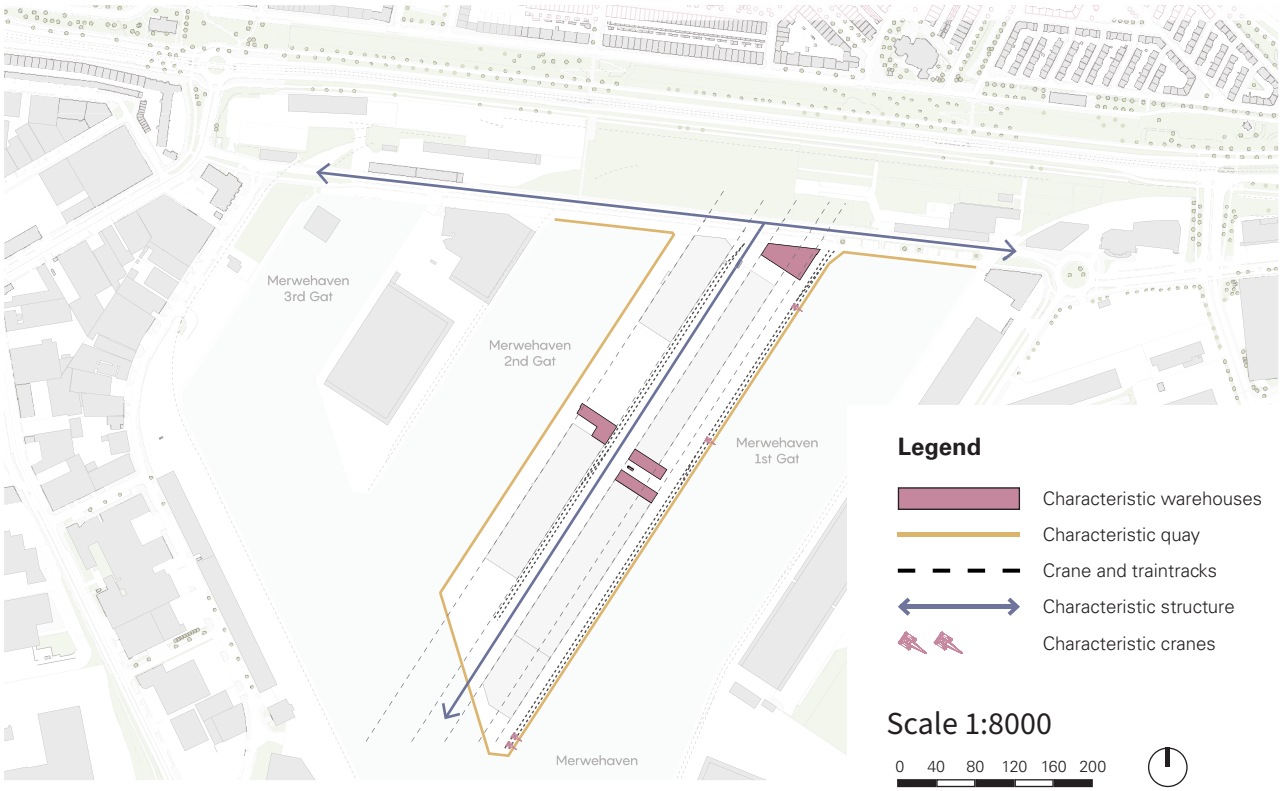
- Creating **high plinths** that define the image of the street with a **mix of commercial, cultural, and social facilities**.
- Realizing an **open innovation environment** with a varied mix of companies in different growth phases.
- In addition to the green heritage route, building block setbacks along the quay provide **space for greenery and leisure activities**.



Masterplan
Current situation

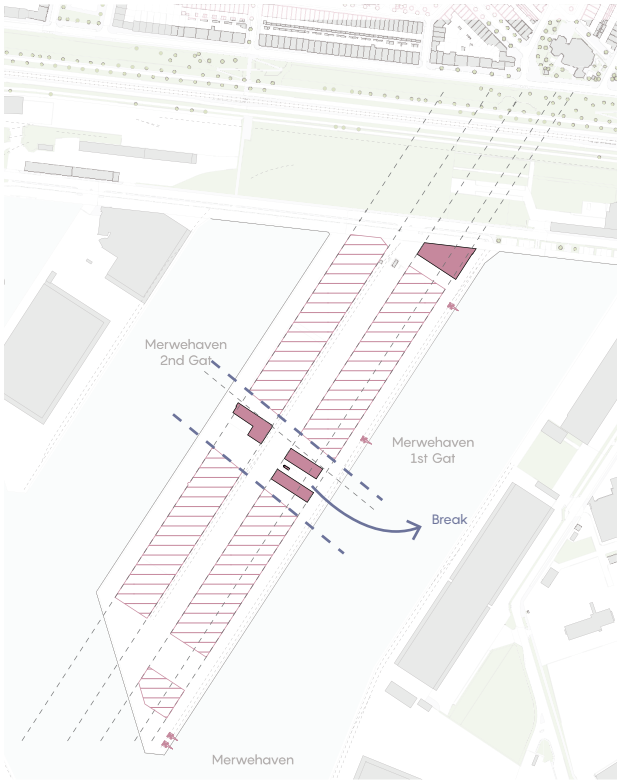


What to keep

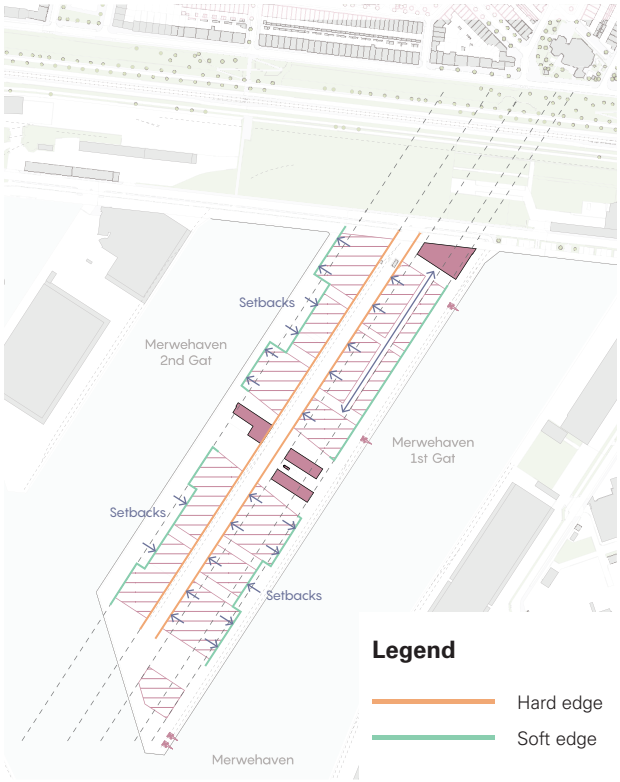


Masterplan

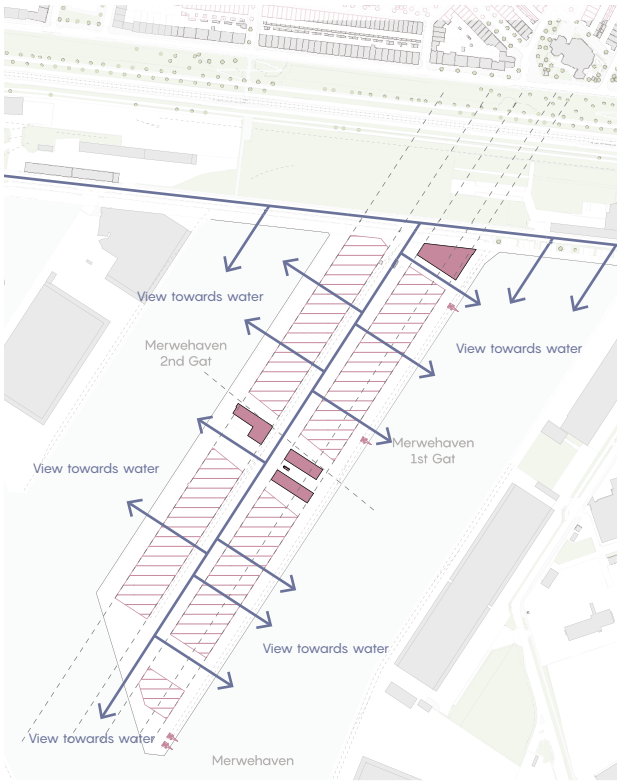
The break



Building lines



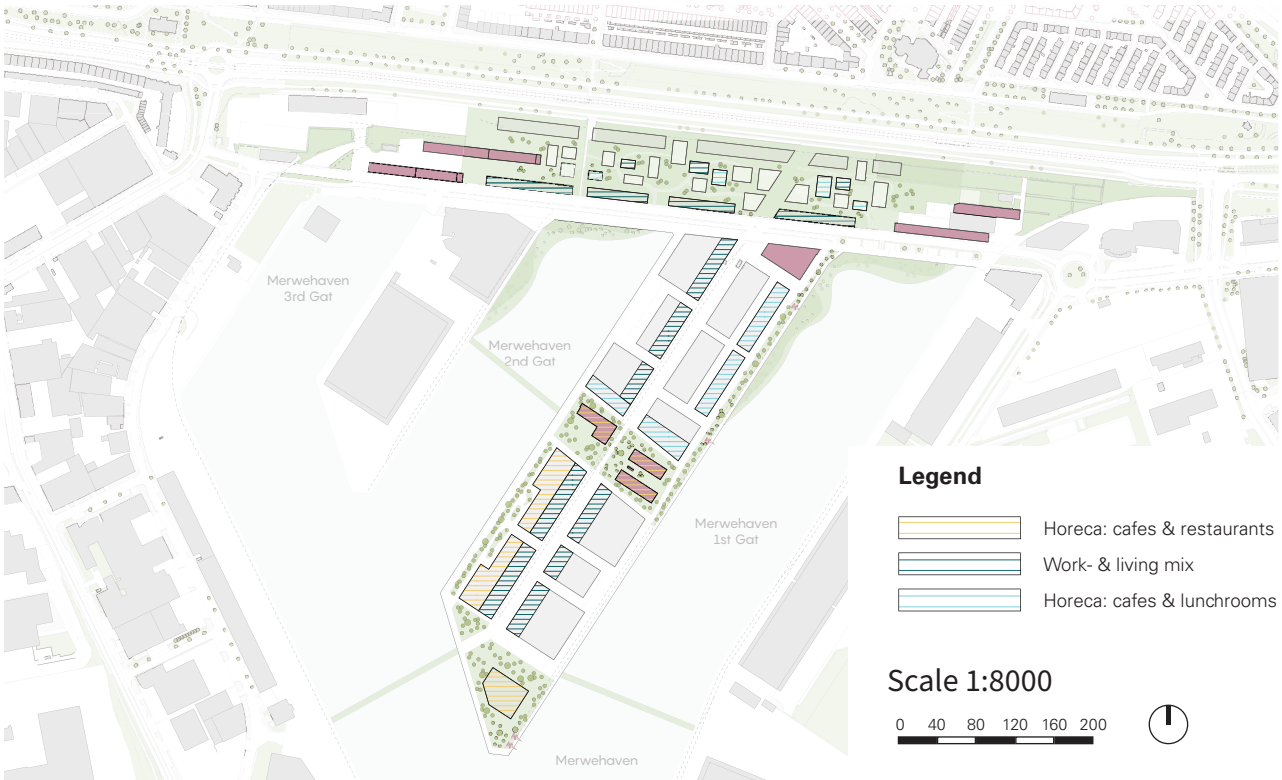
Direction of sightliness from the main street



Typologies

Masterplan
Sun

Typologies



APPENIDIX 2 P2 DESIGN

The quickstart was an assignment to get started with the design. The idea was to take the case study projects and transplant them onto the chosen site (which is discussed on the next page). So to begin I just placed the projects as they were without cutting on the plot, to get an idea of the dimensions of the plot. After this, taking into account the plot dimensions, I started cutting the floor plans to make them fit better. On top of this I tried mixing and matching different projects together to see how they worked together. After several options I tried to combine them together and create different floors and finally used the façades of each buildings to indicate in 3D how the building was build up.

In the next couple of pages is a summary of those transplants and the final result of the quickstart. However there were some issues with the way I shaped the building in 3D so therefore the shape did not stick until the concept design.

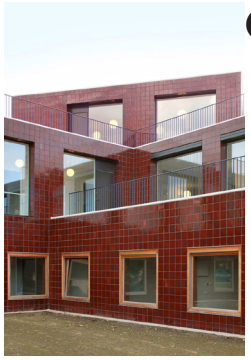
(The following appendix was part of the design for the P2 presentation and differs from the current design, which will be presented during the P4 presentation.)

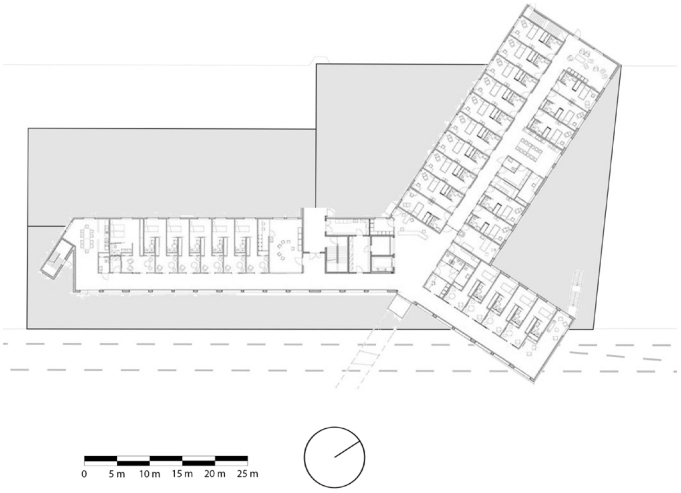
THE SITE

The site is rather large, it is 40 meters deep at the deepest point and 30 meters deep at the other parts. The length is slightly over 90 meters at the longest point, this differs since the part towards the park (NE) is angled slightly. One of the advantages of the site is the western orientation towards the water, this means that there will be afternoon sun at this part of the building and morning sun at the part on the road side. Another advantage is that only one part is connected to a street that allows cars, the rest of the building is only surrounded by roads used by bikers and pedestrians.

QUICK START DIRECT TRANSPLANT

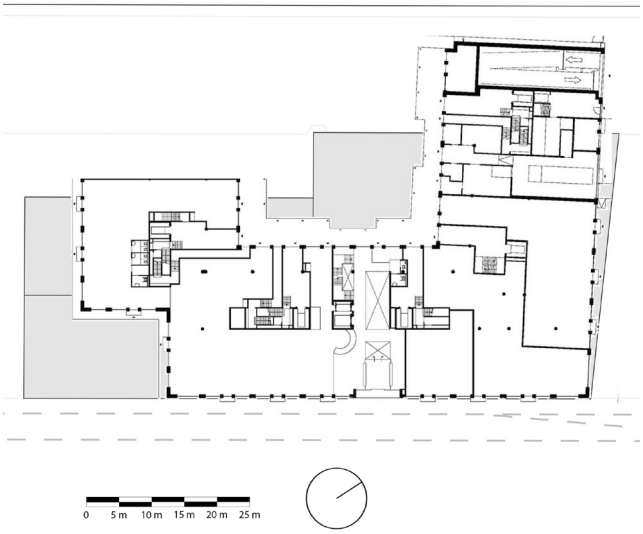
OCMW Nevele



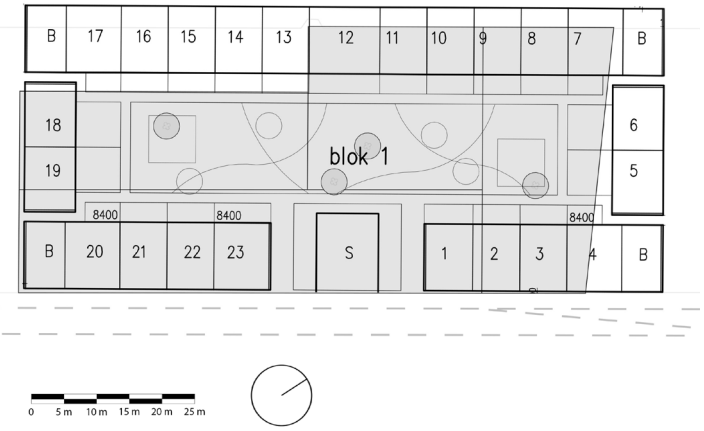


Steinfeld

De Makroon

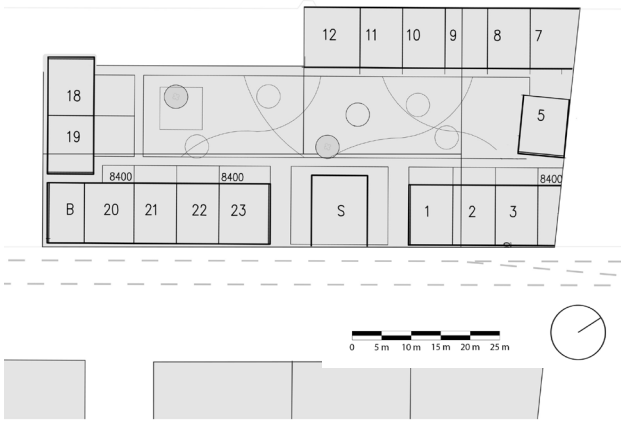


Knarrenhof



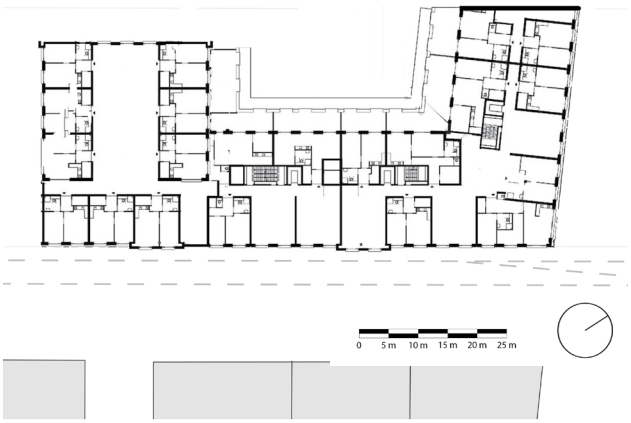
Knarrenhof

Rearranging the dwellings



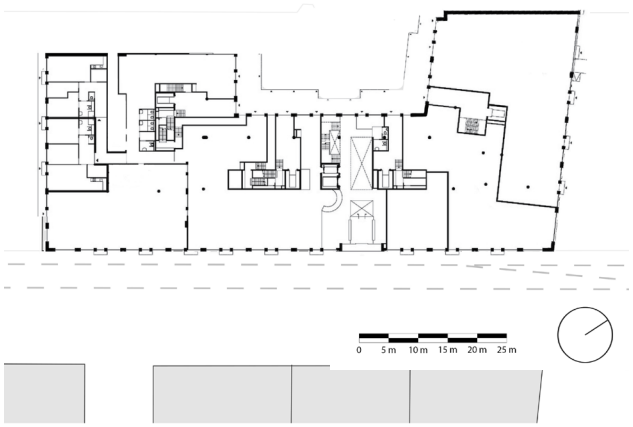
De Makroon

Using the second floor plans



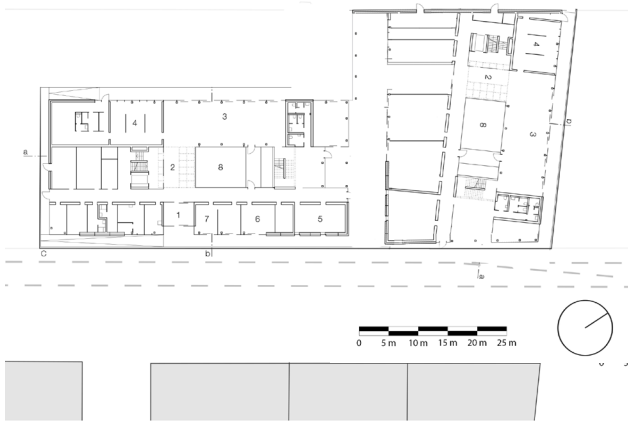
De Makroon

Using the ground floor plans



Steinfeld

Using the ground floor plans

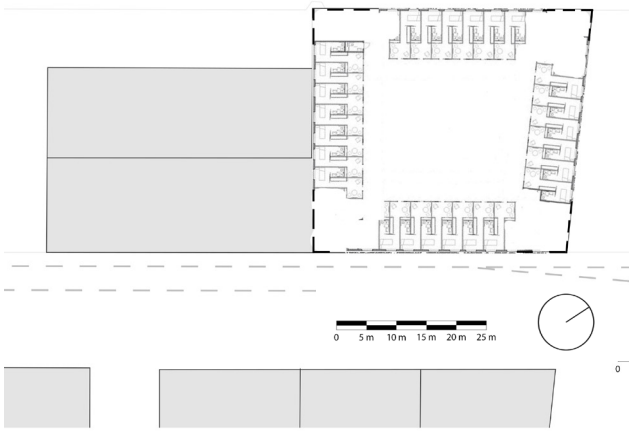


Steinfeld

Using the first floor plans

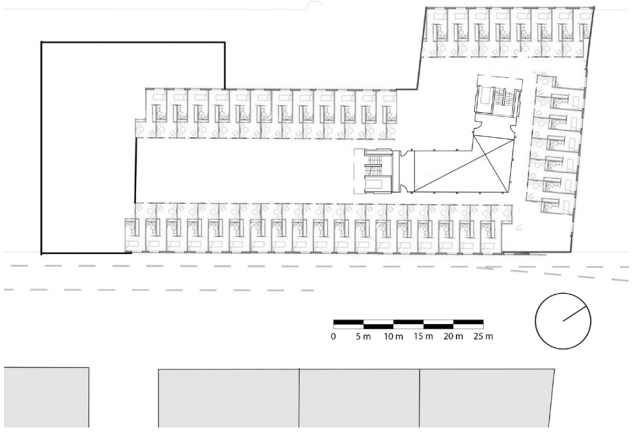
OCMW Nevele

Using a row of dwellings



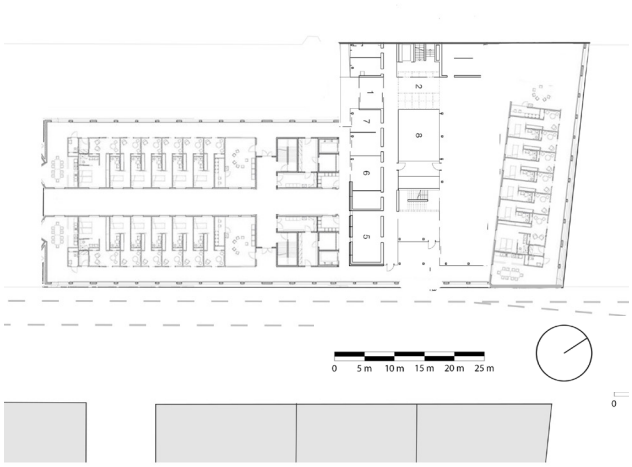
OCMW Nevele

Using a row of dwellings

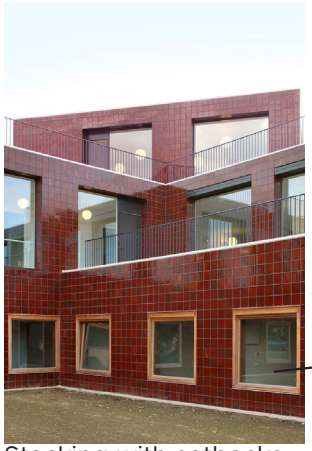


Steinfeld & OCMW Nevele

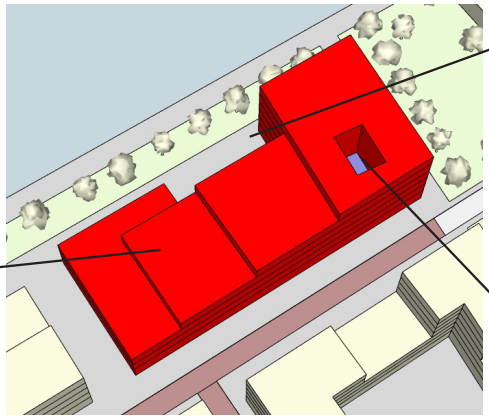
Using a row of dwellings & first floor plans



QUICK START FINAL VERSION

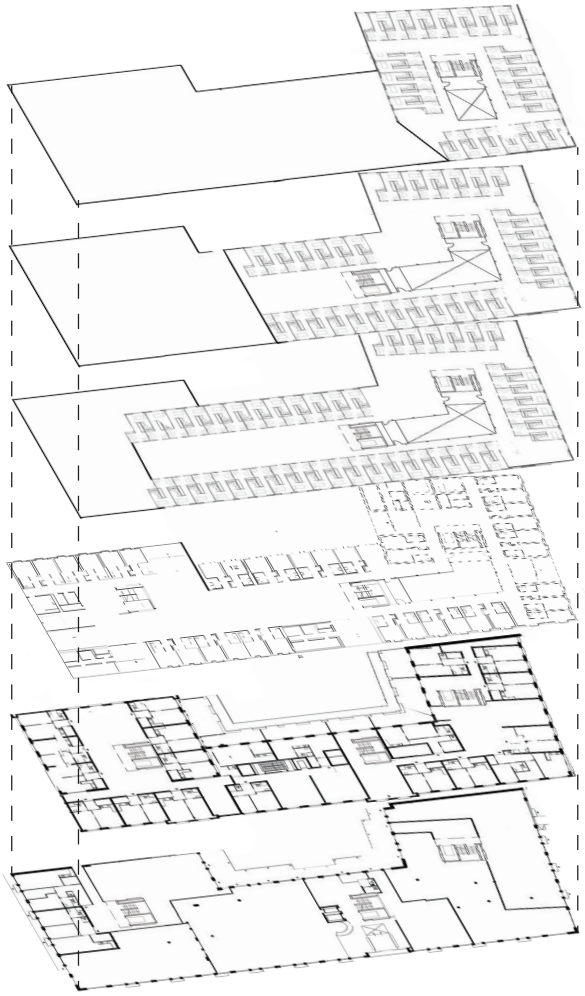


Stacking with setbacks



U shape for pocket

Atrium



OCMW Nevele
Fifth floor
Living

OCMW Nevele
Fourth floor
Living

OCMW Nevele
Third floor
Living

Steinfeld
Second floor
Living

Makroon
First floor
Living

Makroon
Ground floor
Living and commercial use

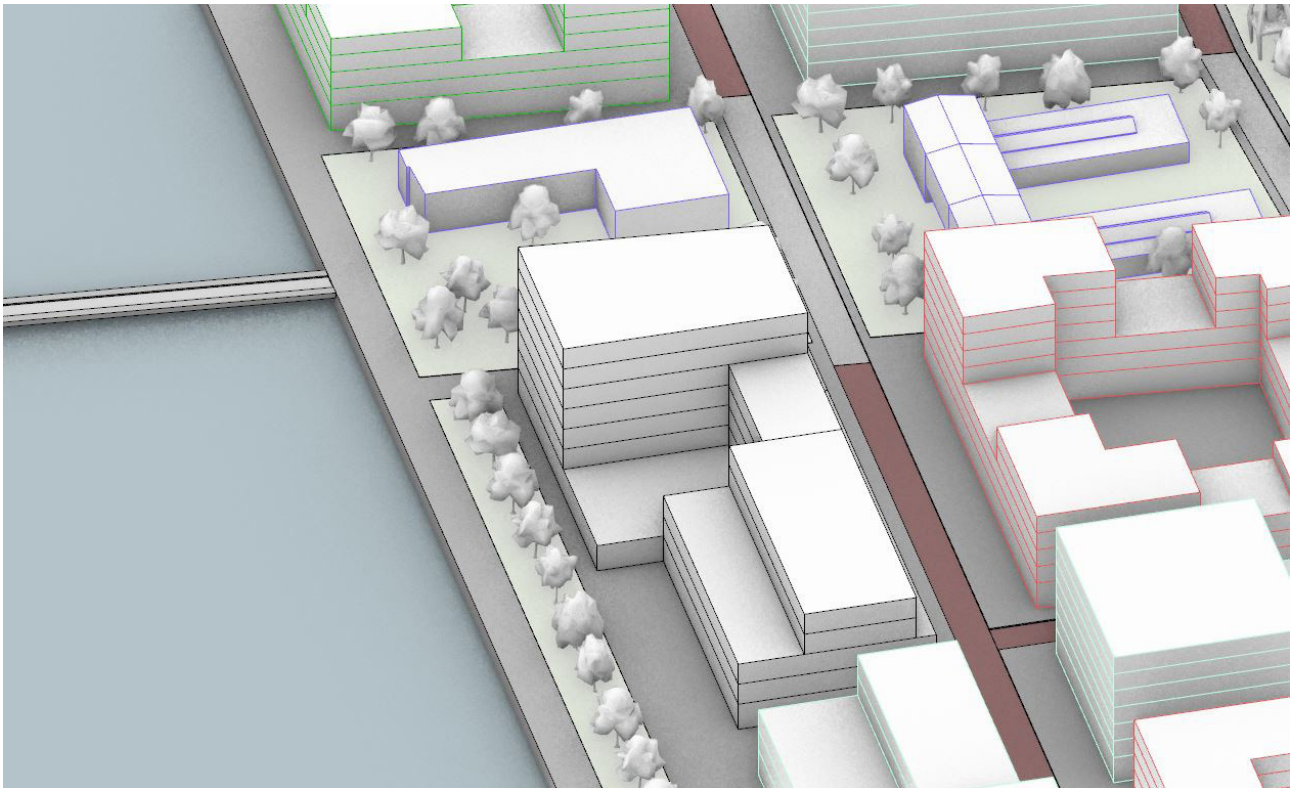
QUICK START & CONCLUSIONS

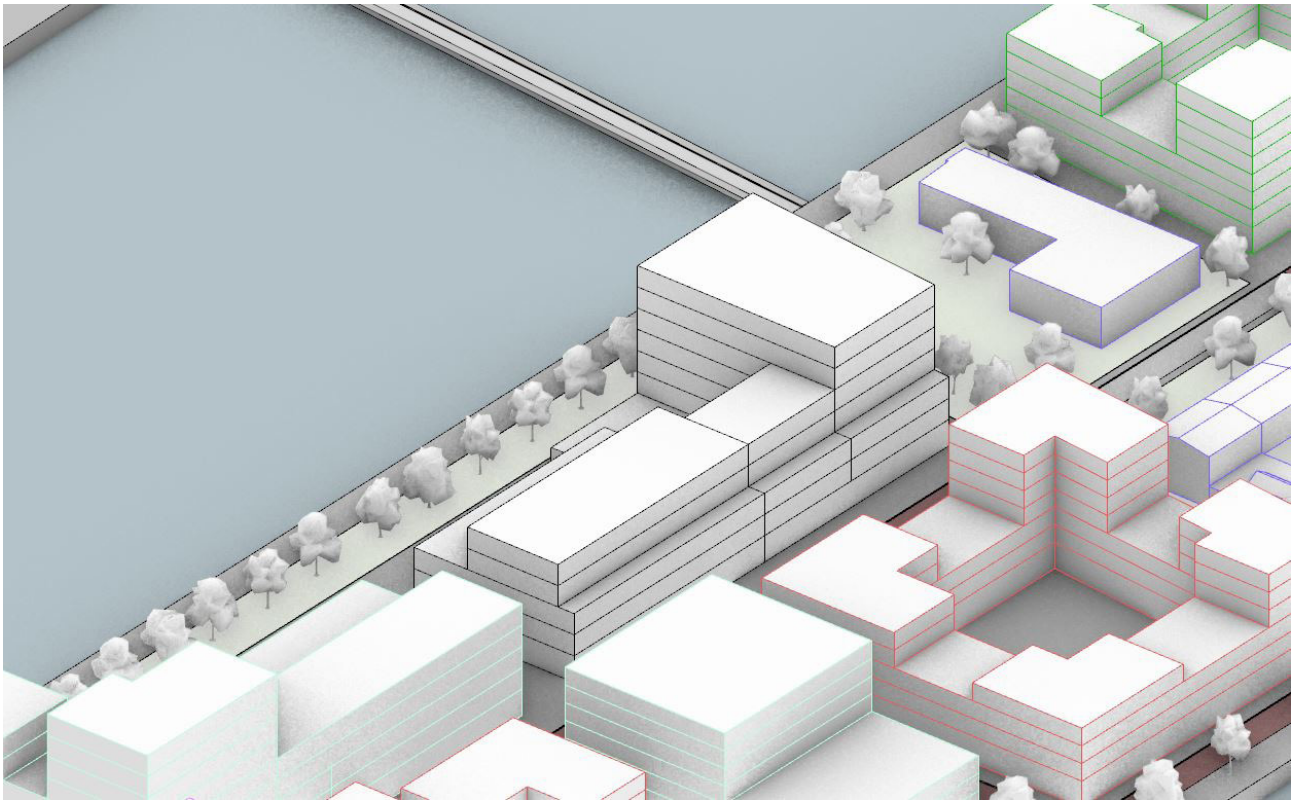
The Quickstart workshop proved to be a very helpful tool into getting started with the design. Of course we had some starting points from the urban masterplan, however this gave some interesting ideas for the eventual design.

By using aspects from the case study projects you really get a feel of the scale of the building. For instance this showed that the building is rather deep. This means that either the dwellings should be deep, or the corridor in the middle. However making a corridor with deep dwellings means that there might be a lack of daylight. Therefore the idea of an atrium, introduced by the Steinfeld case study might be a perfect implementation. This creates both daylight from both sides, but at the same time creates a communal interior space.

The way the building is stacked right now however does not work that well, therefore the first step that needs to be taken for the conceptual design is a mass study, which will be displayed on the page after the brief and residents.

CONCEPTUAL DESIGN





DESIGN BRIEF

Dwellings:

70-80 dwellings for both single person households and couples

Bedrooms connected to living room for easy access]

Avoid the use of large hallways, to limit spaces between rooms, use the living room as a connecting/central area

Additional room for either office or small spare bedroom for visiting children grandchildren

Storage space in the dwelling

Dwelling types:

Affordable smaller apartments for single person households (40-50 m2)

Affordable apartments for couples (70 m2)

More spacious dwellings for wealthier single person households (70m2) or couples(90m2)

Care units for residents that require 24 hour help with shared spaces

Additional functions:

Communal areas in the form of larger corridors and outdoor spaces on separate floors

Commercial facilities that benefit the residents like home care shops, hair dresser and doctor

Restaurants and cafés for both residents and neighbours

Parking space for the less mobile elderly in the building, use of parking hub for additional parking

MAIN DEMOGRAPHICS

55-67 YEARS OLD

Most likely still working

Possibly moved out children that want to visit

Singles:	**or**	**Couples:**
23-24% Single		**76-77% (2018)**
25-30% Single		**70-75% (2047)**

(CBS, 2018)

More active with hobbies and sport

Still a possibility of either being healthy or not so healthy

68 + YEARS OLD

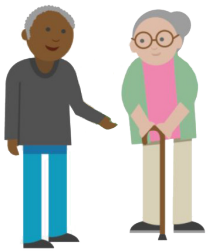
Retired

More home

Possibly grandchildren that want to visit

Singles:	**or**	**Couples:**
25-40%		**60-75% 68-80 (2018)**
>40%		**<60% 80+ (2018)**

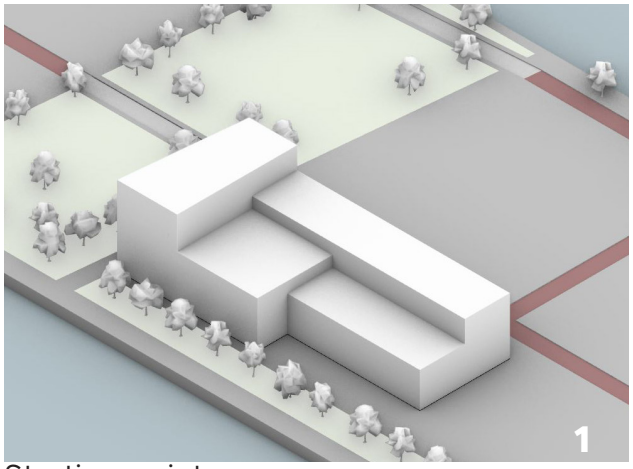
(CBS, 2018)



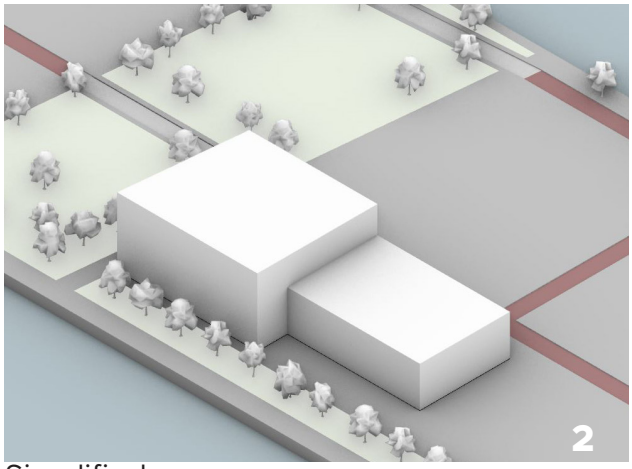
More likely to require help:
20% at start of retirement to almost 80% at 85+ has trouble with mobility (Schoemaker, Van der Wilk, van Wieren et al, 2011, p. 28)

MASS STUDY

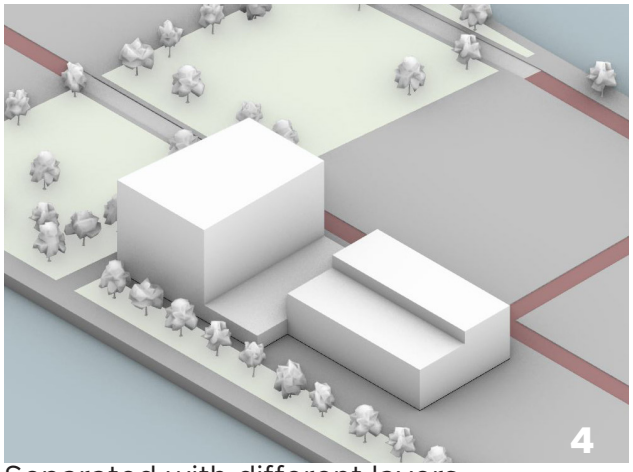
After quick start with initial building of master plan as starting point



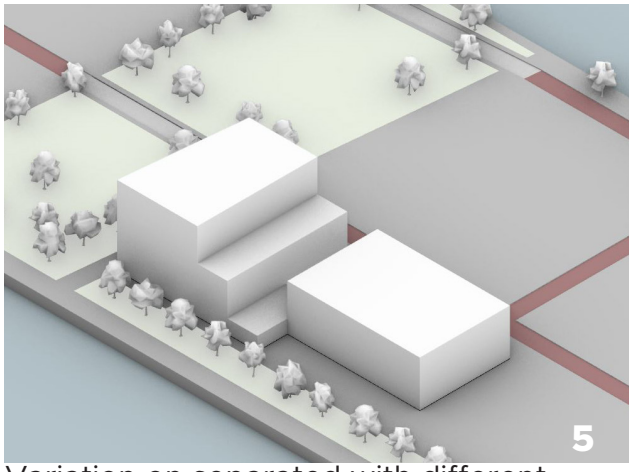
Starting point



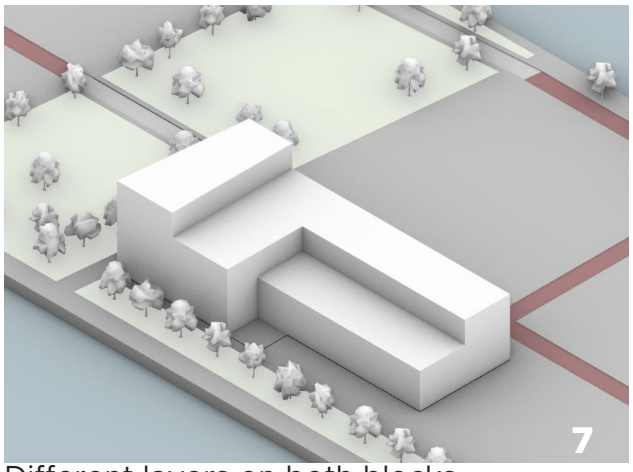
Simplified



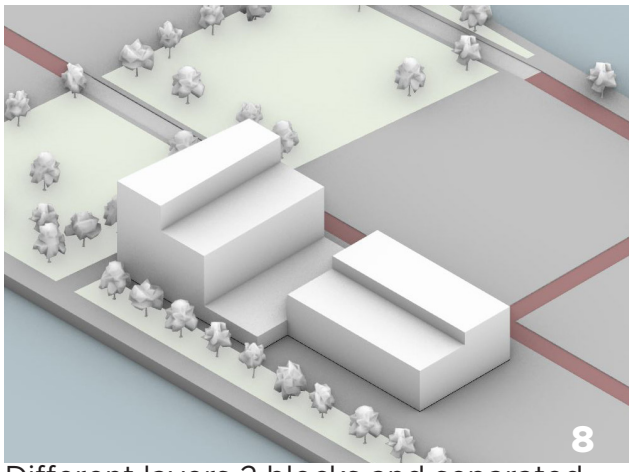
Separated with different layers



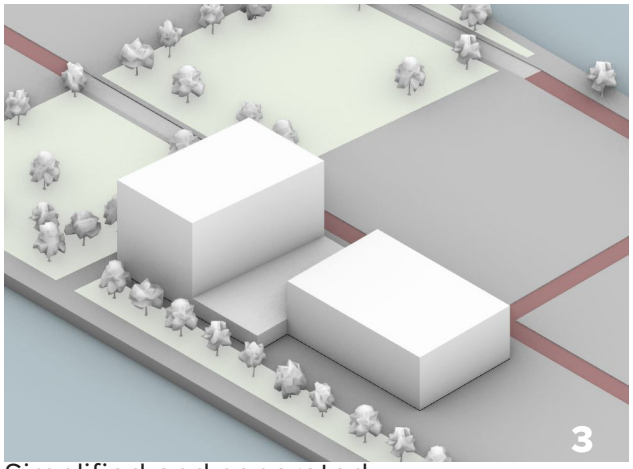
Variation on separated with different layers



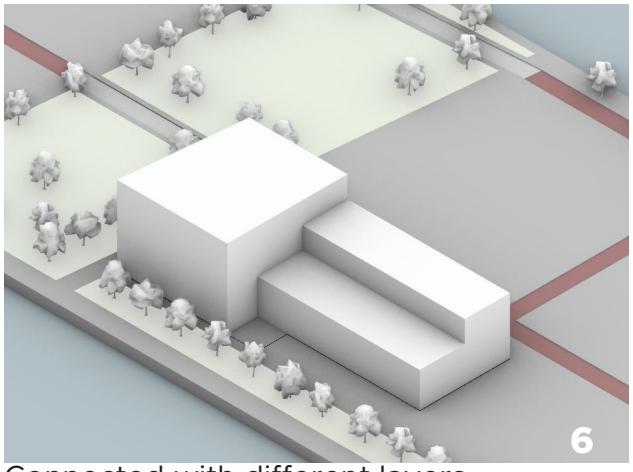
Different layers on both blocks



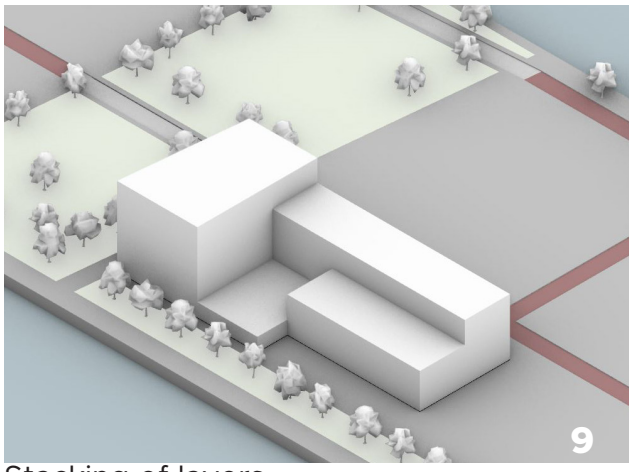
Different layers 2 blocks and separated



Simplified and separated



Connected with different layers



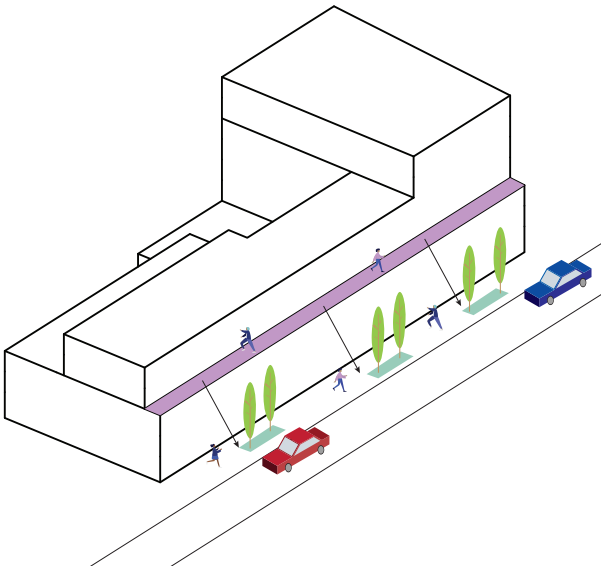
Stacking of layers

This Mass Study was an exercise to find a shape that would benefit the site while taking into account the limitations and guidelines given by the Masterplan. The guidelines were that the part that is located next to the park area is higher than the other parts. On top of that, the part next to the main street of the pier is higher than the part next to the water and finally there is set back in the part next to the water and furthest away from the park area.

This creates an L shape, with the part next to the park being rather deep and long making it difficult to fit in buildings. That is why several mass studies try to reduce this depth, for instance numbers 3, 4, 8 & 9. Also considering that the building is on the west side of the pier, the part next to the water will have afternoon sun, making it possibly a nice location to sit outside after work or to enjoy the later part of the day. Therefore this offers up the opportunity to have roof terraces on this side and this is why some studies have a staggered shape, like the starting point. This is the case for number 4, 6, 7,8 & 9.

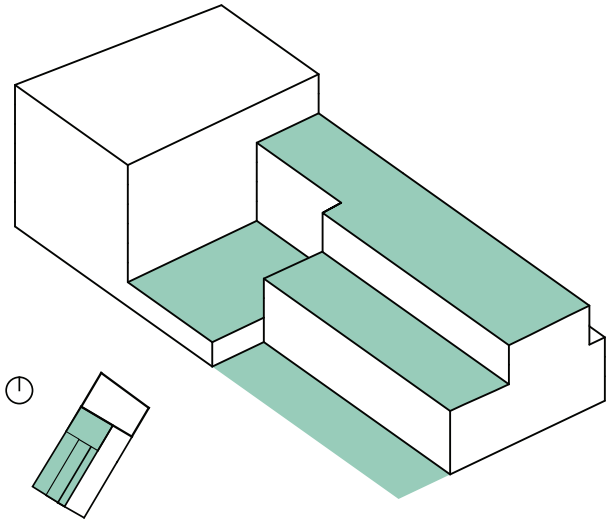
In the end version 9 has been chosen as the version to continue with as a base, since it offers workable dimensions for dwellings, but also offers the opportunity for ample outdoor space in a staggered manner.

BUILDING CONCEPTS



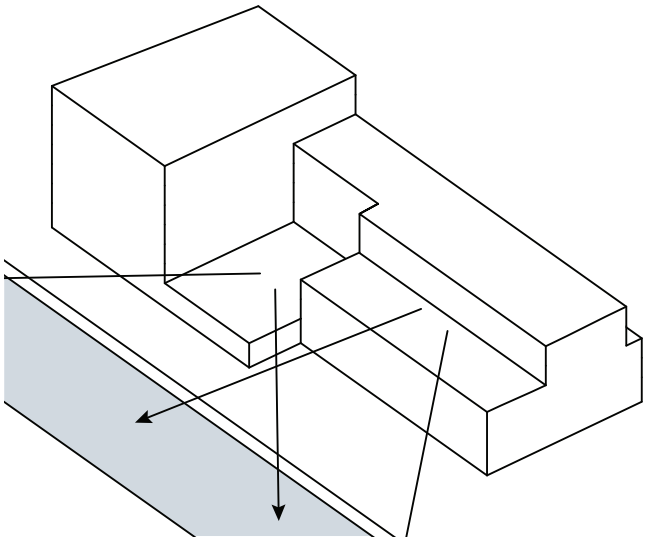
CONNECTION TO STREET SIDE

The street side is on the east side of the building. This means that this portion will get morning sun and therefore above the 3rd floor the building will get set back slightly so the residents living on that side can enjoy their morning there and on top of that it will connect that side of the building more with the street.



COLLECTIVE OUTDOOR SPACE

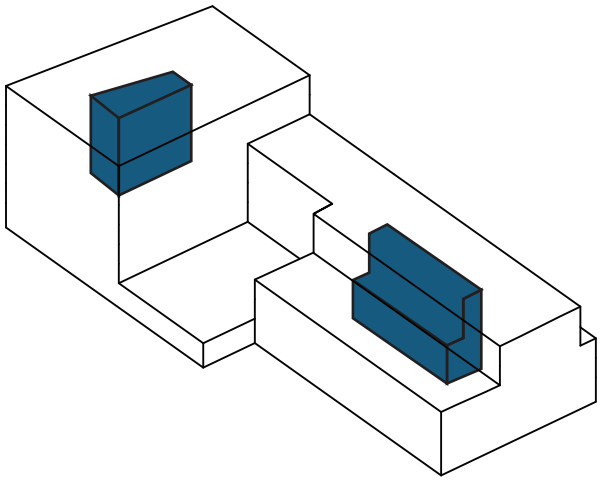
The building will feature several outdoor spaces throughout the building. This is mainly due to the fact that mobility might decrease over the years and that might make access to downstairs outdoor space difficult.



OPENING UP TOWARDS THE WATER

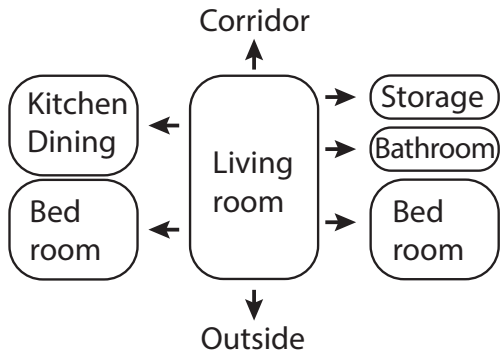
The building is located next to the water of the Merwehavens. This offers a unique view onto the former harbour area and therefore the terraces will be mainly focused on this part. This is also an orientation towards the west, meaning that the sun will shine on this part in the afternoon.

CONCEPTS



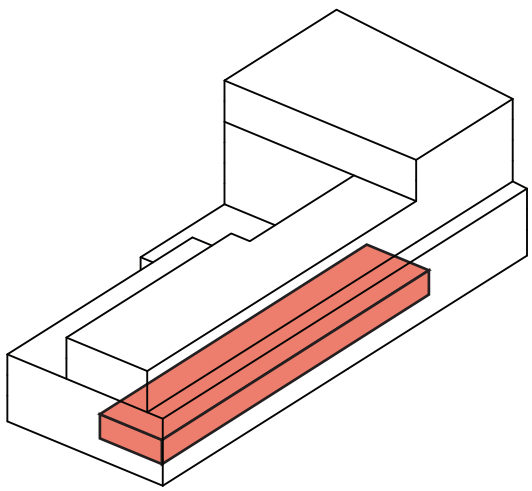
VOIDS AND ATRIUM'S

The building is rather deep. This means that normally you would only get light from one side of the dwelling. Elderly however need more light than younger people, so to allow for this, 2 atrium's will be included to allow for extra light during the day on the other side of the dwelling.



LIVING ROOM AS CONNECTING CENTER

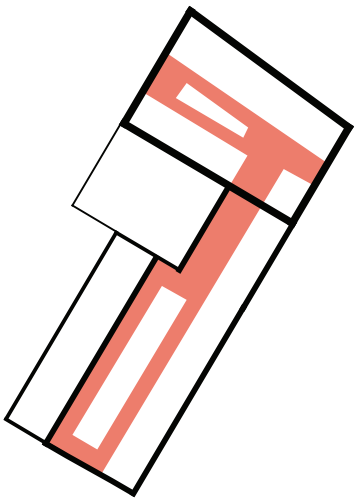
Mobility might be decreasing over the years, therefore it is important to keep this in mind when designing the dwellings for the elderly. This means that the access from the living room to the bedroom is especially important. This is why there will be a direct access point from living room to the master bedroom.



CARE-WING

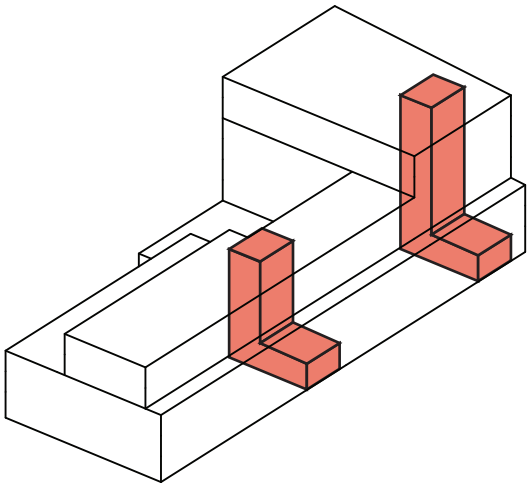
The building will feature dwellings for elderly from different economic backgrounds. This means that not all the elderly will have the luxury to get permanent help in house when necessary and to avoid them moving out, a care wing will be included for elderly that need 24 hour help.

CONCEPTS



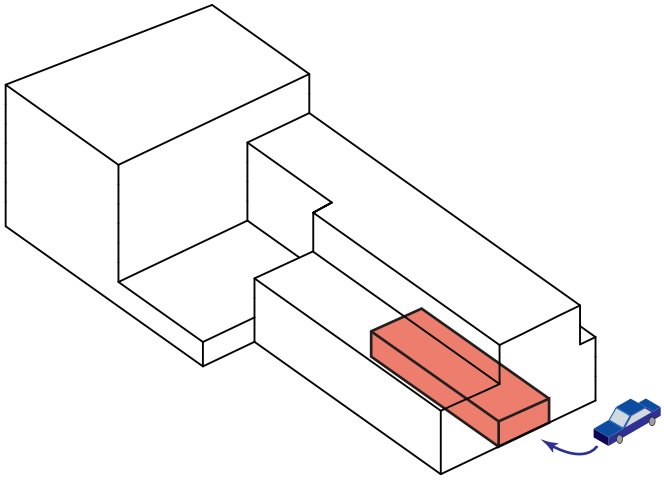
CIRCULATION

The circulation is organised as a corridor system. However it is much wider due to the shape of the block. Therefore 2 atrium's are used to break these up



VERTICAL CIRCULATION

Their will be 2 main points of vertical circulation, which can be entered from the street side as well as the inner parking area in the building. In addition several places in the building will feature secondary staircases.



PARKING FOR LESS MOBILE ELDERLY

The building will mostly use the parking hub that is nearby. However as mentioned in the research, mobility might decrease over the years for the elderly population. Therefore there will be parking inside the building. This will be limited and is intended for the less mobile residents of the building.

CONCEPT DWELLINGS 1:200

For the dwelling design, several of the case study dwellings will be used as a basis. For most of the dwellings in the new building, a few dwellings of the Makroon will be used. In particular the 3 that are displayed on the right.

Dwelling 9 will be the template for the smaller social housing units, for the single elderly, consisting of only a living room, bedroom, bathroom and small storage facility.

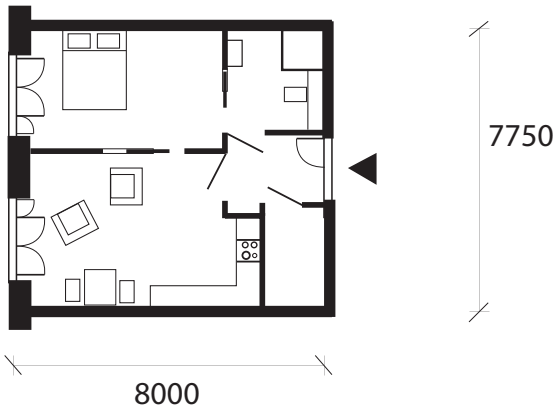
Dwelling 9 will be used as a template for both the more expensive dwelling for the slightly wealthier single elderly, as well as the slightly larger social housing unit for a couple. The difference will mainly be in the finishing of the room.

Dwelling 15 will be used as a template for the more expensive dwelling for the slightly wealthier couple. Consisting of an extra bedroom and a separate toilet.

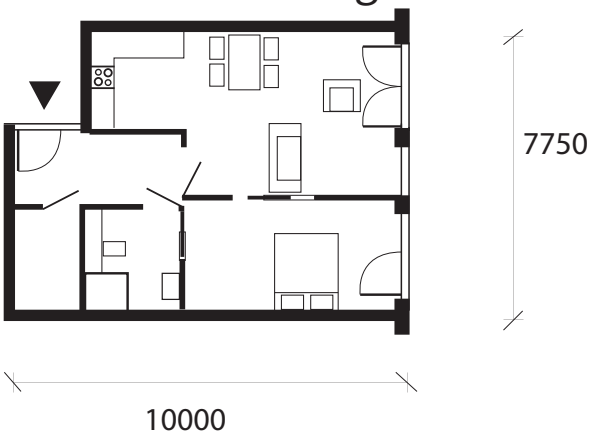
These dwellings will be changed in several ways, but the main layout will be used, since it correlates to the findings in the research, like the larger doors, but also the connection between living room and bedroom. On top of that the slightly larger storage facilities will be implemented as well, since that is something most elderly really appreciate.

The dwellings will be changed in dimensions slightly, to fit the grid in the building, a grid that is 3,6 meters wide. This causes dwellings to be either 7,2 meters or 10,8 meters. On top of that most dwellings will be 9,8 meters deep or 7,2, depending on the location in the building. For the corner dwellings there might be slight changes.

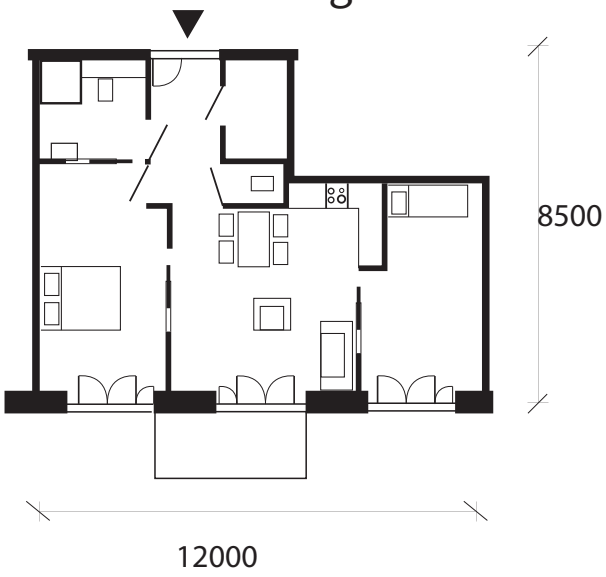
Makroon Dwelling 9



Makroon Dwelling 8



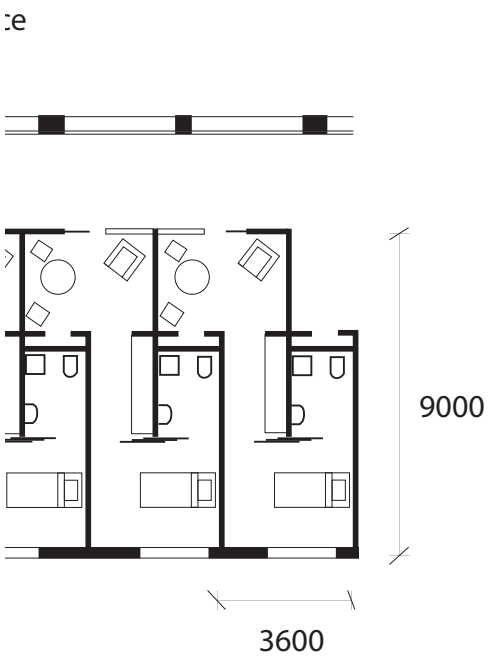
Makroon Dwelling 15



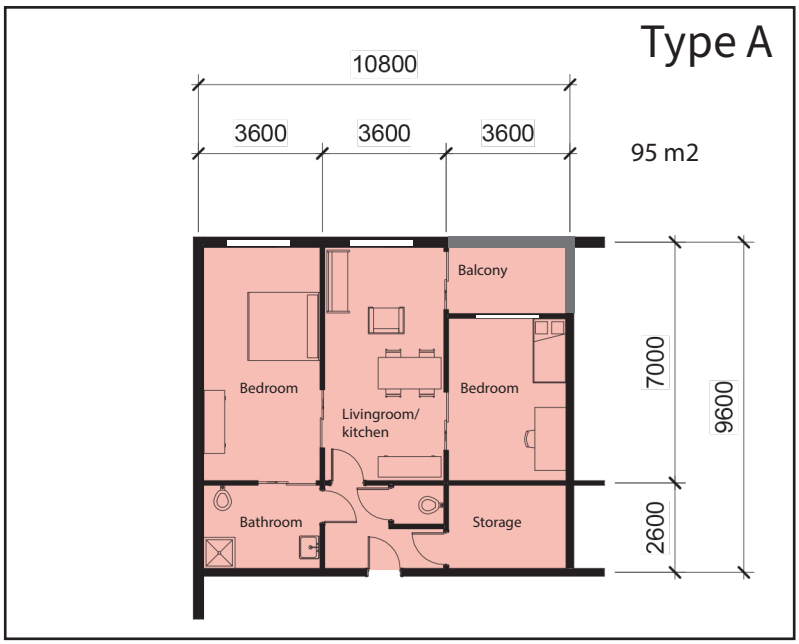
CONCEPT DWELLINGS 1:200

With most dwellings the idea is that when they need help, the extra bedroom/office can be used as a nurse station or a place the caretaker can sleep when necessary. However for the social housing units that will not work and on top of that they will not be able to afford that, so to make sure that they don't need to move away when they can't take care of themselves anymore, a care wing will be implemented and the dwellings for this area will be based on the Nevele project. The reason for this is the social interaction that this type of dwelling allows. Therefore not much of this dwelling design will be changed, it will mainly be changed in dimensions to fit into the implemented grid.

Besides the care units, there will also be guest rooms situated on several floors, for the same reason that the care units exist. The smaller units don't have extra bedrooms so these guest rooms allow for family and friends to stay over and spend the night in the building when necessary.

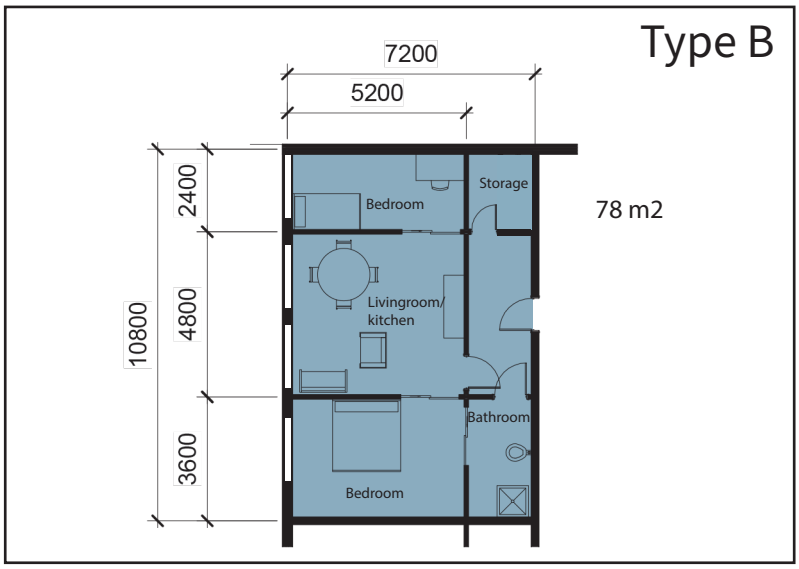


CONCEPT DWELLINGS 1:200

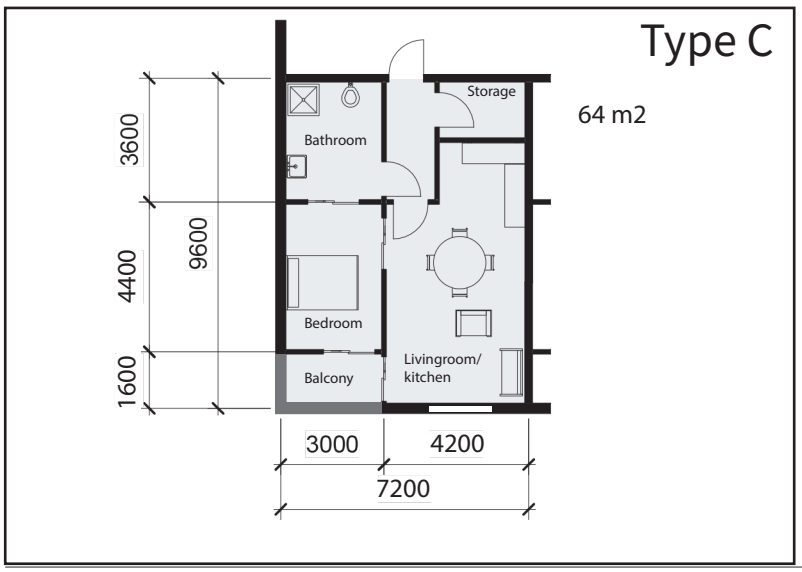


In total there will be 6 base types, that might vary slightly in several locations like on the corners or when there is an outside wall on another side.

Type A is the largest dwelling, based on type 15 of the Makroon, but changed to fit a more rectangular shape. This dwelling is meant for the wealthier couple. Next to the living room and small bedroom is a balcony, that is set back into the dwelling.



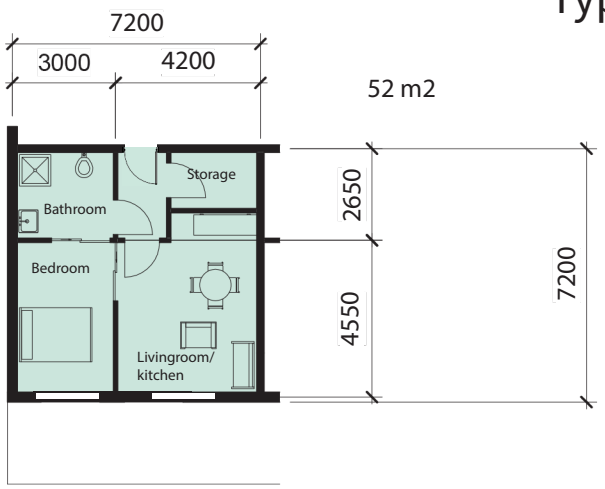
Type B is a condensed version of type A. It is less deep, but the same width. This dwelling is mainly meant for the slightly wealthier single elderly, that might also need an office or spare bedroom for a child or grandchild.



Type C is based on Dwelling 8 of the Makroon and can either fit a wealthier single person or can be used as social housing for a couple. In this case the guest rooms throughout the building can be used when children or grandchildren come to visit.

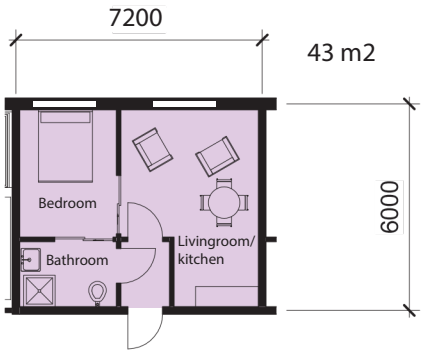
CONCEPT DWELLINGS 1:200

Type D



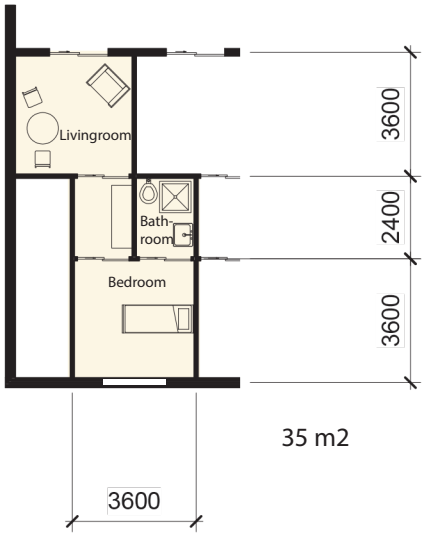
Type D is one of the smaller dwelling and is based on dwelling 9 of the Makroon. This dwelling is meant as social housing for the single elderly.

Type E



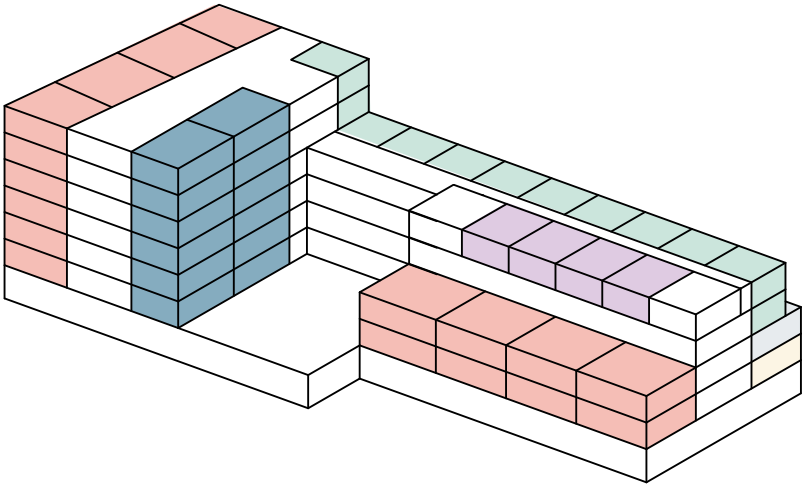
Type E is a more condensed version of Type D and is also meant as social housing for the single elderly. It is the smallest dwelling in the building at less than 45 m2. These dwellings will only be located above the atrium. The dwellings above the atrium are not certain yet, this is merely a test to see if it works

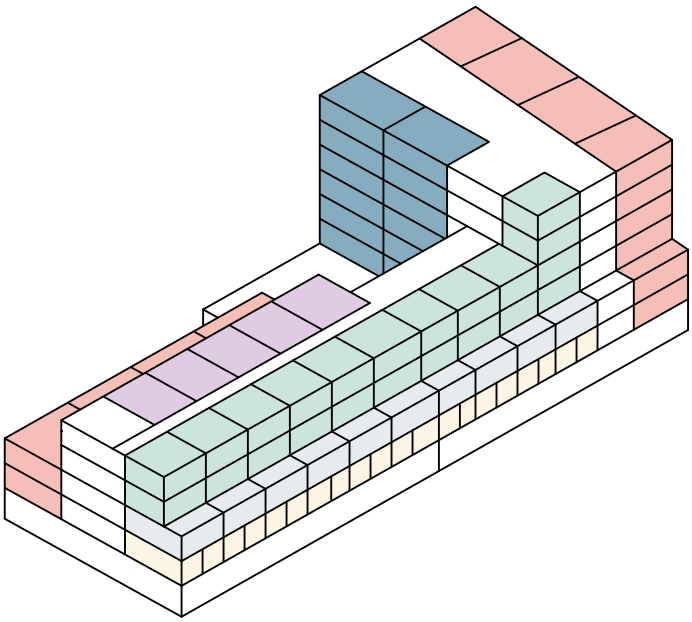
Type F



Type F is the care dwelling that is based on the Nevele dwellings. It features the same aspects like the sliding doors and connection to the hallway. These dwelling will be oriented with the sleeping area towards the east, meaning that they get morning sun on their facade, improving their natural sleep rhythm.

CONCEPT DWELLINGS PLACEMENT



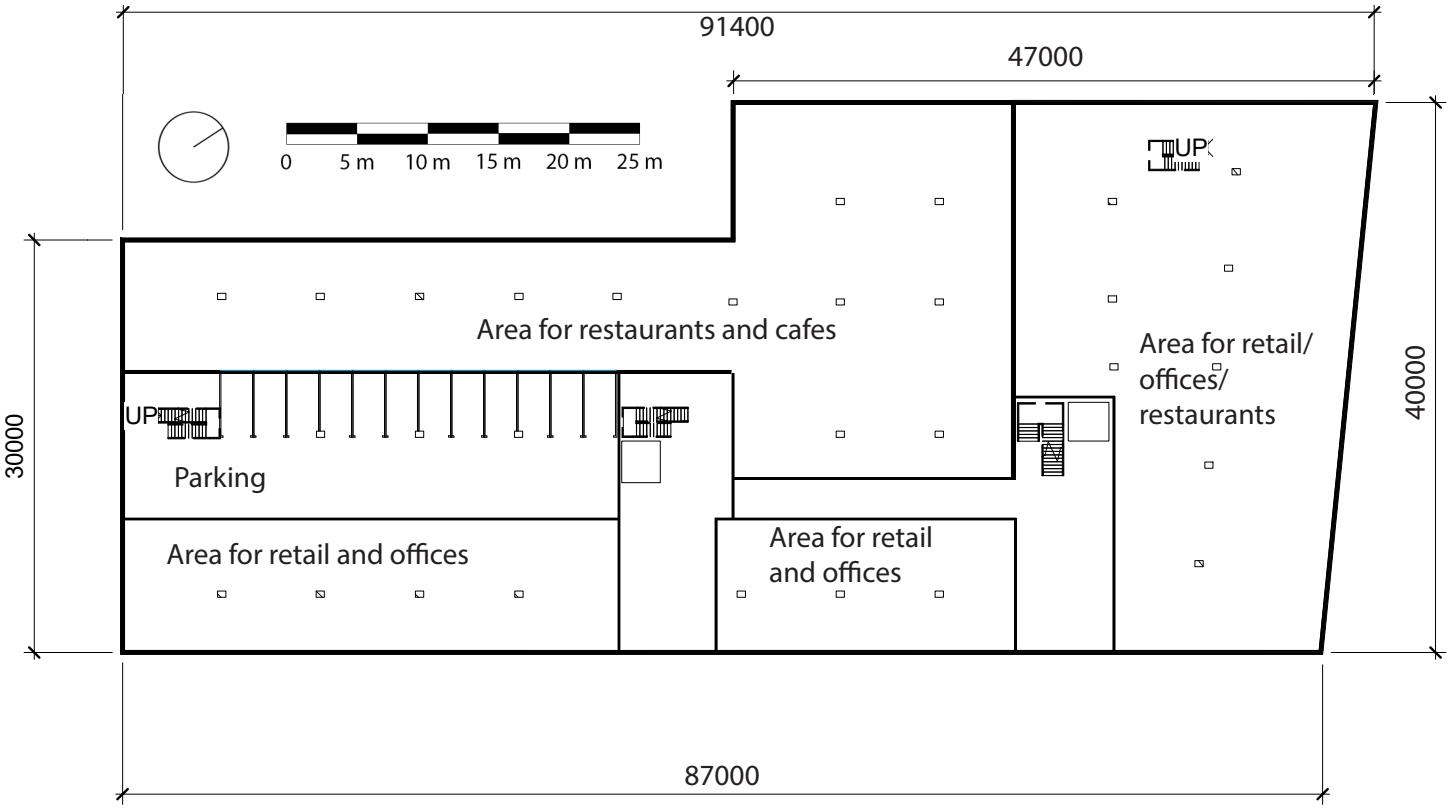


A
B
C
D
E
F

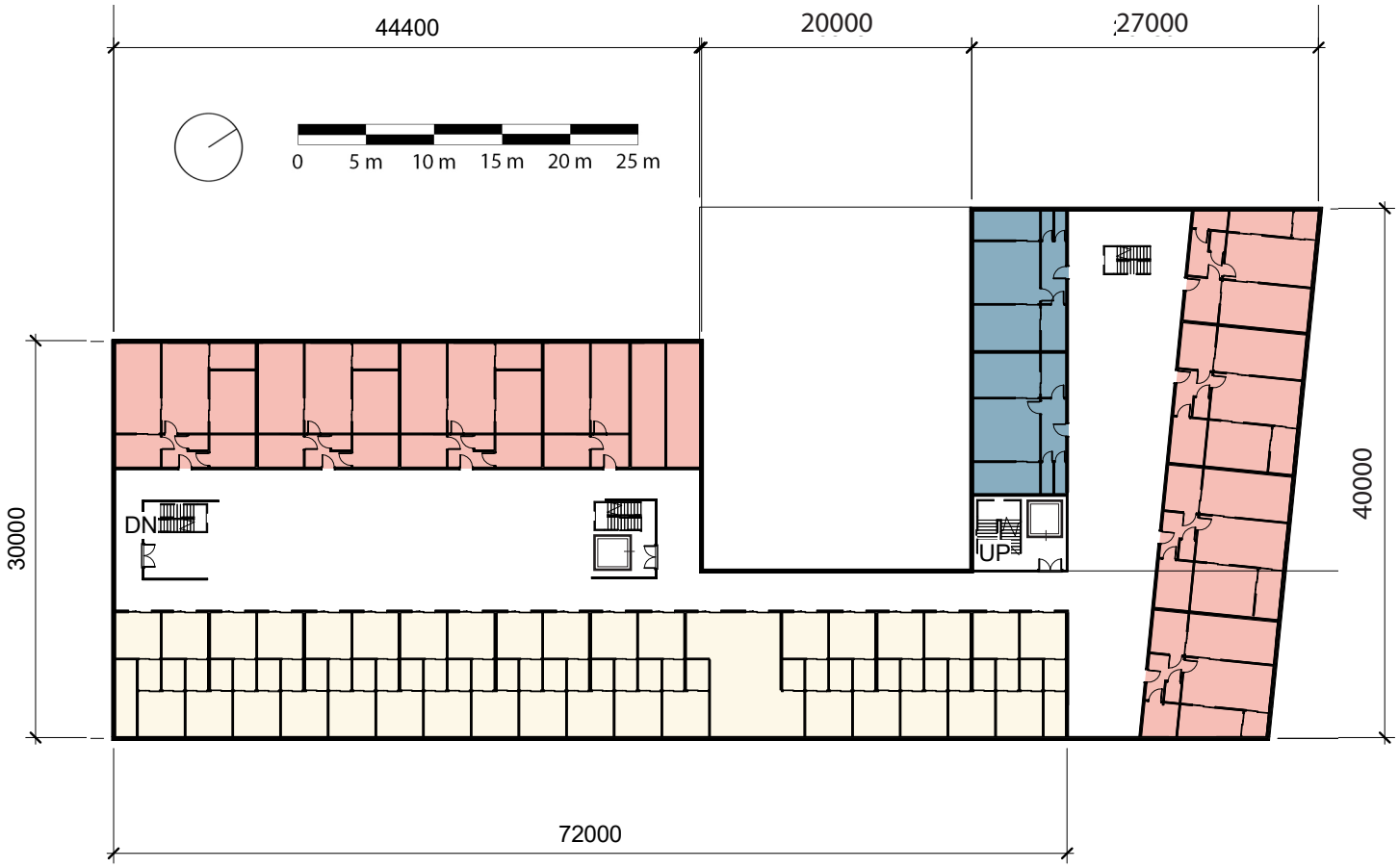
At the moment the dwelling type E is located above the atrium. This is not a definitive solution. I mainly did it after advise I got to look into this idea. I am not yet sure if this works, therefore I included it, but it is still an option, not a permanent solution. Taking it out is very simple and basically extends the atrium to the top.

There is still enough space for light to enter the levels below, however it is reduced because of this solution. Therefore after the P2 a study will be done to look at the impact the sun will have on this solution. If it greatly reduces the amount of light that enters the levels below it will be removed. However it does create more affordable dwellings in the building.

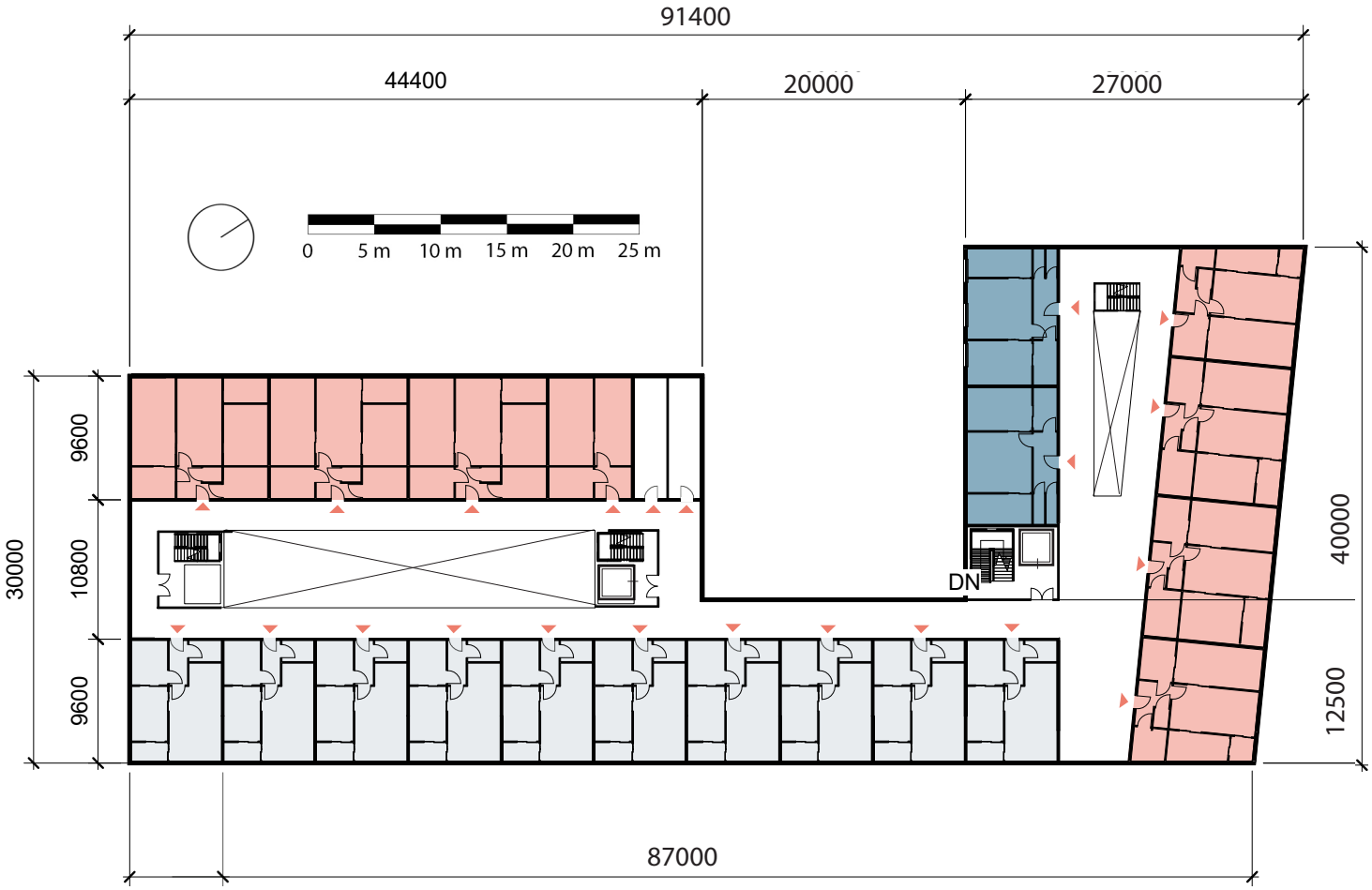
FLOOR PLANS 1:500



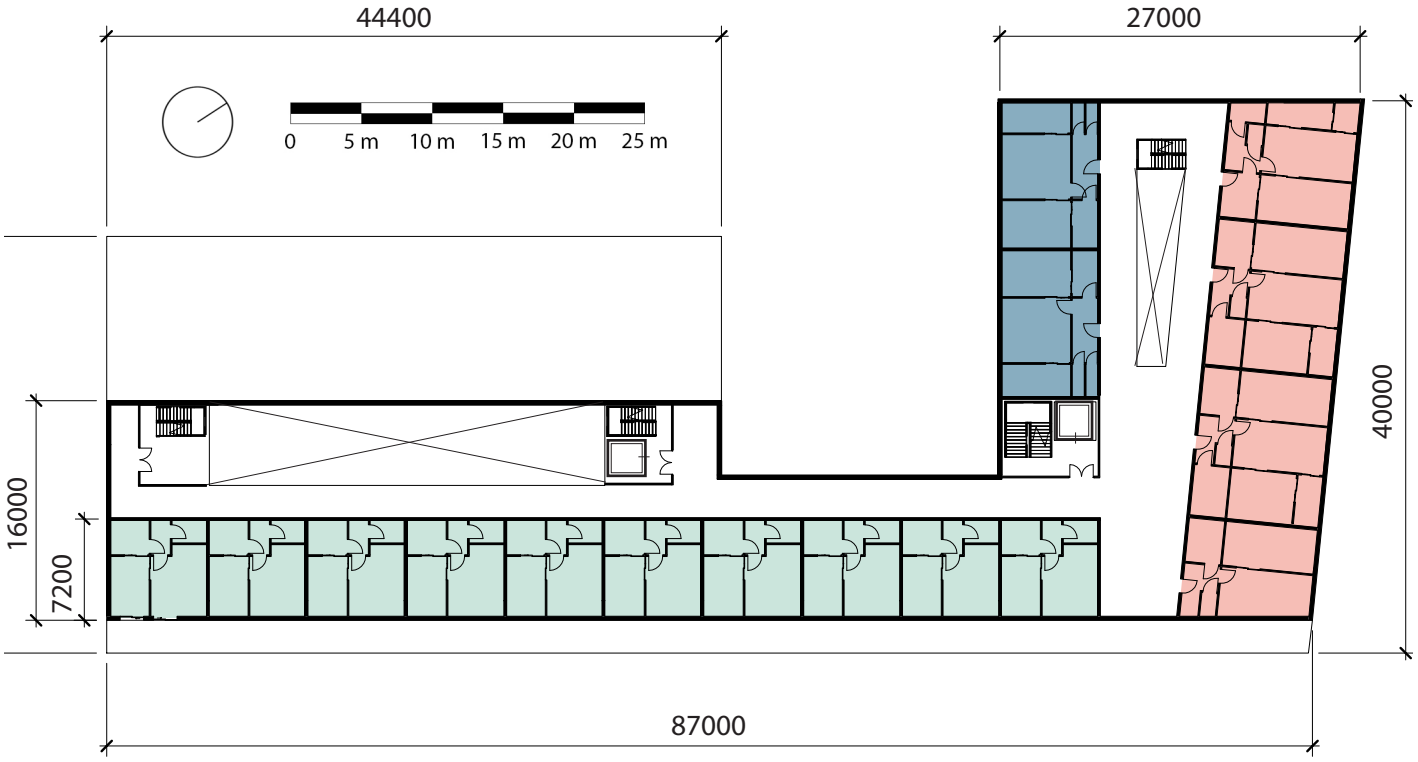
Ground Floor 1:500



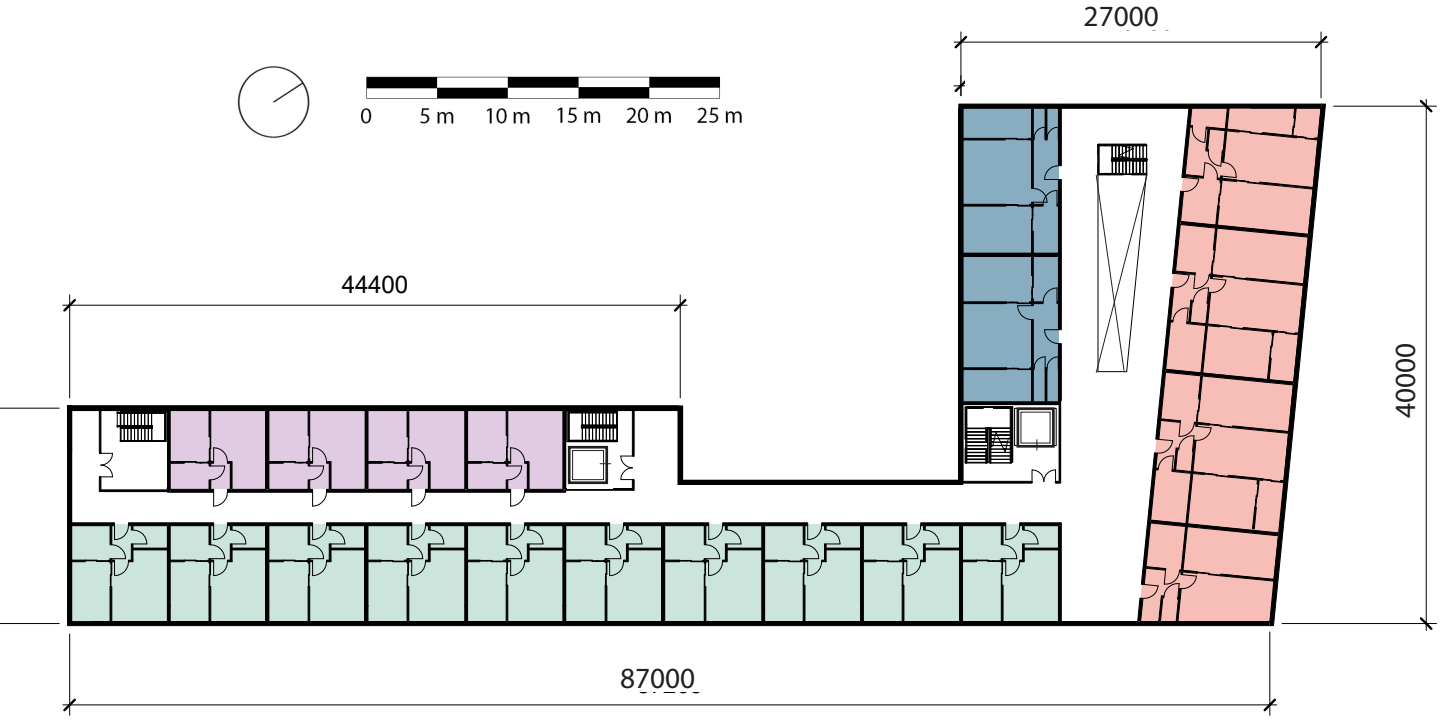
First Floor 1:500



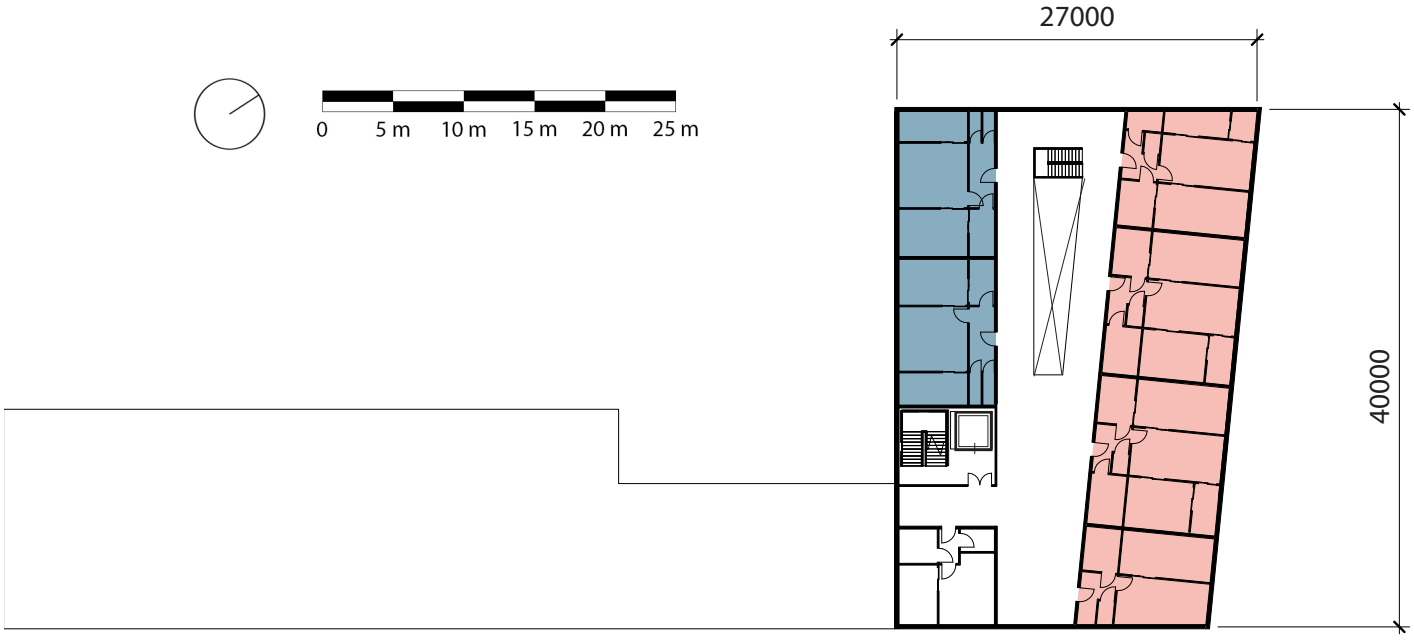
Second Floor 1:500



Third Floor 1:500

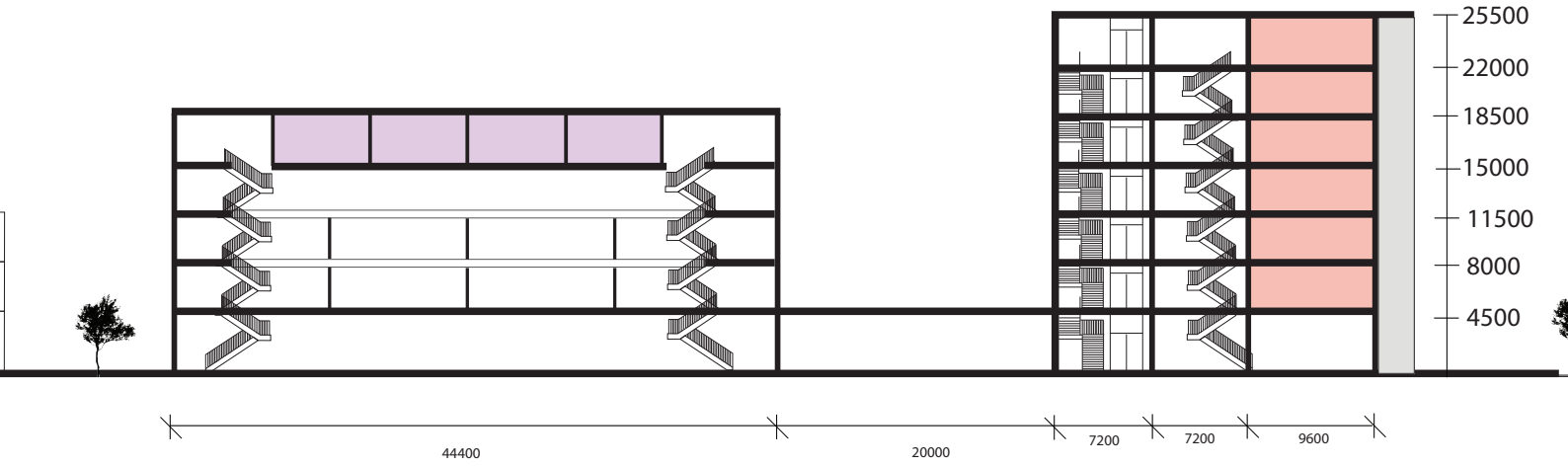


Fourth Floor 1:500

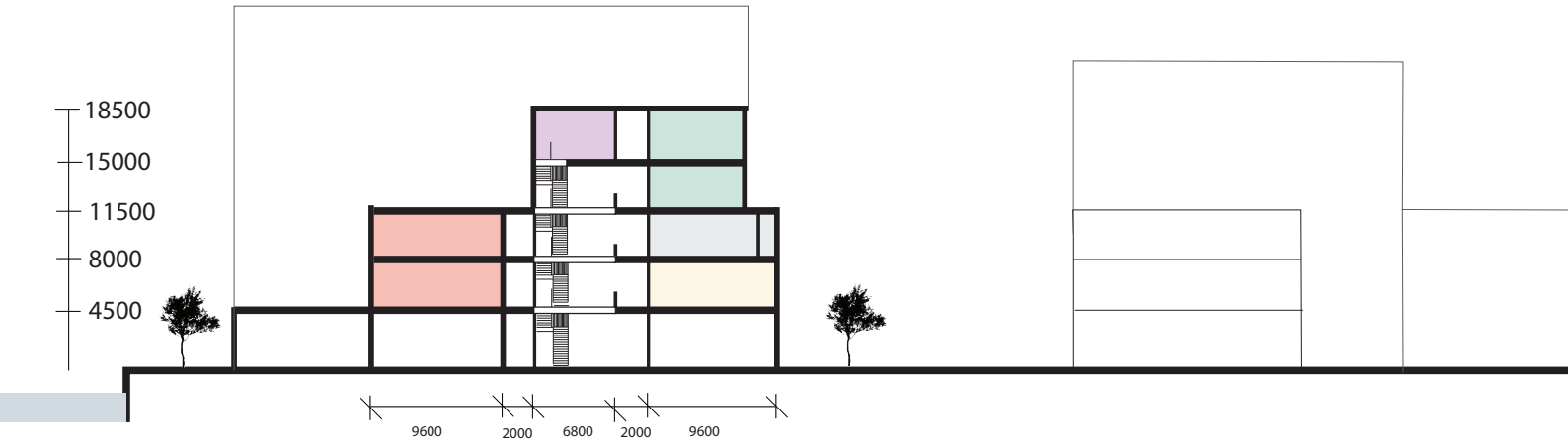


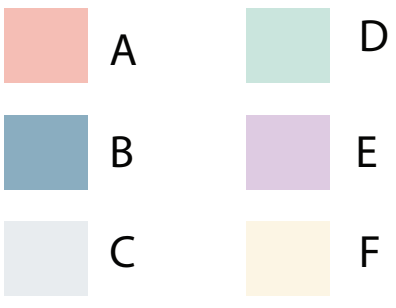
Fifth & Sixth Floor 1:500

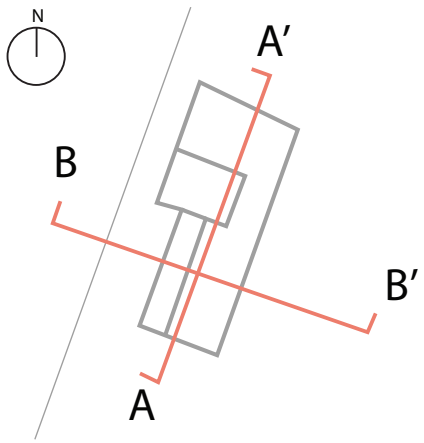
A-A′ 1:500



B-B′ 1:500







APPENDIX 3 GRADUATION PLAN

Graduation Plan

Master of Science Architecture, Urbanism & Building Sciences

Graduation Plan: All tracks

Submit your Graduation Plan to the Board of Examiners (Examencommissie-BK@tudelft.nl), Mentors and Delegate of the Board of Examiners one week before P2 at the latest.

The graduation plan consists of at least the following data/segments:

Personal information	
Name	**Ricardo Kemp**
Student number	4363485

Studio		
Name / Theme	Architecture & Dwelling/Advanced housing design	
Main mentor	Theo Kupers	Architecture
Second mentor	Ferry Adema	Building Technology
Third mentor	Anne Kockelkorn	Research
Argumentation of choice of the studio	The premise of the studio, creating a live-work environment in a location that was built for the harbours of Rotterdam, is really intriguing to me. Designing a livable area where people can feel at home in an area that was originally not build for a domestic function. During the bachelor I already did a small housing project. The scale and level of detail left something to be desired, so a large project that tackles the subject of housing a large group of people is something I really look forward to. Especially since we need more and more houses in the future. Also, the current situation with corona shows how important it is to have a good housing, because now you spend most time there.	

Graduation project	
Title of the graduation project	Aging in place for the growing number of elderlies
Goal	
Location:	Merwehavens, Rotterdam, The Netherlands
The posed problem,	There is a housing shortage in the Netherlands, however not necessarily due to a lack of houses, but also because certain population groups live in houses not designed for them. One of those groups is the older part of the population that still lives in large houses build for families with children. Mainly due to a lack of elderly houses build

	specifically for them. On top of that, this group will grow larger in the coming years. Finally older people want to live in their current location as long as possible and Dutch laws make it harder to get into retirement homes. So, the future needs houses for the older part of the population, that they can potentially live in for the rest of their life.
research questions and	What are the functional needs of a building suitable for residents above the age of 55, whether they are healthy or physically impaired and considering that they come from different social and economic backgrounds? Supporting questions: 1. How has housing for the elderly changed in the Netherlands, from housing through charity to nursing homes and Mantelzorg (historical research into housing)? 2. Where and how do-year-olds and retirees live now? (Case studies into current housing complexes for the groups)? 3. What are the differences in the needs in their living environments for both 55-year-olds and retirees? 4. What social and economic backgrounds should be taken into consideration?
design assignment in which these result.	A building for the elderly of Rotterdam that allows for changes over time to ensure that they can keep living and grow old in a familiar place as long as possible. This building should be fit for both the population above 55 years old, as well as the less mobile elderly. The different needs that these groups have should be implemented in the design and add to the living quality of all the groups. On top of that the building should be inviting to the younger groups and therefore not feel like another retirement home.

Process

Method description

Research

For the research I will be using different types of methods to answer those questions. Historical research into housing for the elderly in the Netherlands will be used to answer the first supporting question. Case study analyses, mainly a plan analysis of dwellings in buildings designed for people over the age of 55 and modern nursing homes will be used to answer the questions of where and how they live, but also a start for the question on the differences between the groups. This will be followed up by participant observations and questioning add to the findings to answer that question. To answer the fourth, a data analyses will be done to find data on the different aspects for both the people above 55 years old, but also the retirees, people older than 68 as it is the current age of retirement in the Netherlands.

Design

For the design, the main method will be using the case studies as a basis and applying aspects that come from the other research. This will mainly come down to the dwelling design. The total building design will be based on the guidelines given by the masterplan. The changes made will mainly be to either improve light and outdoor spaces, but also to increase the indoor quality. This will be done through a mass study and after analyzing those masses one will be designed further and the dwellings will be added to form a cohesive project.

Literature and general practical preference

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Reflection

1. What is the relation between your graduation (project) topic, the studio topic (if applicable), your master track (A,U,BT,LA,MBE), and your master programme (MSc AUBS)?

   The studio of the graduation project is called M4H: for Modern Households. The focus is on the modern households that will live in the Netherlands. Seeing that the number of elderly is growing in the Netherlands and will do so for the coming years, it is important to build for that part of society. Especially since getting good care is made much harder by the government. Therefore, good housing for the older part of society is important. To create a place where they want to live and can keep living for a large part of the rest of their lives.

2. What is the relevance of your graduation work in the larger social, professional and scientific framework?

   Elderly housing is often focussed on a specific part of the elderly. Either it is focussed on elderly that need help, i.e., retirement homes, or it is focussed on independent elderly. There have of course been examples where these groups are combined, for example one of the case studies analysed, De Makroon in Amsterdam, and of course the "Aanleunwoningen" we have in the Netherlands, but there it still feels like there is a barrier between the groups. This project tries to remove that barrier and make an inclusive design where all types of elderly can live and where they are also still in an urban setting.

Planning

P2 presentation June 8 (Week 4.8)

- Finalizing research report draft (Week 4.9 & 4.10)

Summer break (01/07/2021 - 01/09/2021)
- Make changes according to feedback
- Continuation design
- Building technology
- Completing Research Report and hand in

P3 presentation Date unknown (Week 1.10)
- materialization and facade design
- Refining of dwelling and building plans
- Continuation of building technology
- Writing a reflection

P4 Presentation Date unknown (Week 2.4/2.5)
- Final changes to the design
- Turn all products into presentable material
- Preparing final presentation

P5 Presentation Date unknown (Week 2.9/2.10)

APPENDIX 4 RESEARCH PLAN

Research plan

Aging in place for the growing number of elderlies

A home suitable for the housing career after the children move out

Keywords: Aging in place, Elderly, Aged above 55, Housing Career

Abstract: *The Netherlands is coping with a housing shortage, which will only increase the coming years. This is not only due to an increase in inhabitants in the Netherlands, but also because the houses people need are not available, like family houses. These houses are often occupied by empty nesters and older people* (Kamphuis, 2020). *The issue is that people now do not want to move into a retirement home, but rather grow old in a place they are familiar with, so called aging in place* (3Bplus, 2015). *A possible solution for this is a building for people aged 55 and older, so they move to a place to grow old in earlier, to allow families to move into their houses. However, to find out if this works this paper tries to answer the following question. What are the functional needs of a building suitable for residents above the age of 55, whether they are healthy or physically impaired and considering that they come from different social and economic backgrounds? To answer this, the history of elderly housing will be researched, especially the development of elderly housing in the last century. On top of that participant observation will be done with people from several different stages in life above the age of approximately 55. This is to understand how they use their house during the day and figure out what works or what does not work. In addition to that, a case study research will be conducted, by analysing dwellings designed specifically for each of the groups and finally comparing these to each other and comparing that outcome to the participant observations.*

Ricardo Kemp

Tutors: Theo Kupers & Anne Kockelkorn

Research plan Tutor: Heidi Sohn

Contents

1. Topic

Figure 1 Large rooms for the elderly
Source: https://www.anderetijden.nl/aflevering/56/Oud-zeer-zorg-voor-bejaarden

For a long time, up until the 1960's when new laws were made for the elderly, it was very common that the elderly belonged to the poorest part of society. They often had to rely on their children, but often due to large families or lack of money, they could not take care of them. This does not mean that there was no housing for the elderly. Since the middle ages large cities had so called hofjes for the women and proveniershuizen for the men, often build by wealthy citizens as a form of charity for the elderly (IsGeschiedenis, 2011). However, these were later altered to a place were the elderly had to work, since at that time elderly were seen as an unproductive part of society and there was no place for that in society (Mens & Wagenaar, 2009, p. 17). A successor came in the form of nursing homes for the elderly. These however, were very different from how we know retirement homes now. The elderly were separated based on gender and they were put in large rooms that they shared with more than 20 others, so there was no privacy or whatsoever (Gulmans, 2014). This however changed in the 1960's when the government of prime minister Drees enforced the Algemene Ouderdoms Wet, or AOW, a law that ensured that elderly received enough money from the government each month to do basic things like groceries and live (Giebels, n.d.).

Before the AOW, several steps were already taken into financial help for the elderly. In 1913 the Invaliditeits- en Ouderdomswet, which ensured a small compensation from the government. However, this was very little, and the family was obliged to add money to this allowance (Mens & Wagenaar, 2009, p. 17). After the second world war, the Noodwet Ouderdomsvoorziening was enforced in 1947, which allowed elderly to receive a small amount of money when they passed the retirement age of 65. This was seen as transitional arrangement. This meant that this amount slowly grew until it was the AOW was enforced and the amount was the same as the minimum income (Veldkamp, 1963). After the AOW we also saw the dawn of the modern retirement home. The organisers of the houses looked at elderly as one group, meaning that they made no distinction between social and economic differences between the elderly. On top of that the government had to specifically mention that elderly were part of society and not secondary to the working part of the environment, because that was still what most people thought just after the war. (Mens & Wagenaar, 2009, p. 11) These homes were very popular for the elderly and as a result there were long waiting lists, in some instances of more than 10 years. This was mainly because the idea of relaxing and being taken care of was a welcome idea for the just retired elderly, but at the same time they often felt like a burden to their children and therefore thought that going to a retirement home would be a good solution, for both themselves as well as their children (Jonkhoff, 2010). However, in the years that followed a lot of these retirement homes were build, but it turned out to be not as great as they thought it would be. Mainly still due to the long waiting lists causing the elderly to move to a retirement home far away from their old neighbourhood, but also because there was a lack of oversight on all the retirement homes, which resulted in the abuse and neglection of the elderly (Gulmans, 2014).

Now people do not want to move to a retirement house when they get old, they prefer to grow old and spend their final years in a place that they know, that is familiar to them (3Bplus, 2015). So called “aging in place”. After 2015 this was also no longer an a choice, since getting into retirement houses became much harder after a new law was passed, the Wet Langdurige Zorg (WLZ) which meant that people were only allowed to move into a retirement home when it is no longer possible to take care of yourself and there is no possibility that this will change in the future (Zorginstituut Nederland, n.d.). However, this often means either large changes to their existing homes or parts of their large homes stay unused, either because it is multiple stories high and they are not able to use the stairs anymore, or their house is simply too big. An overview of this history can be found in figure 2 below.

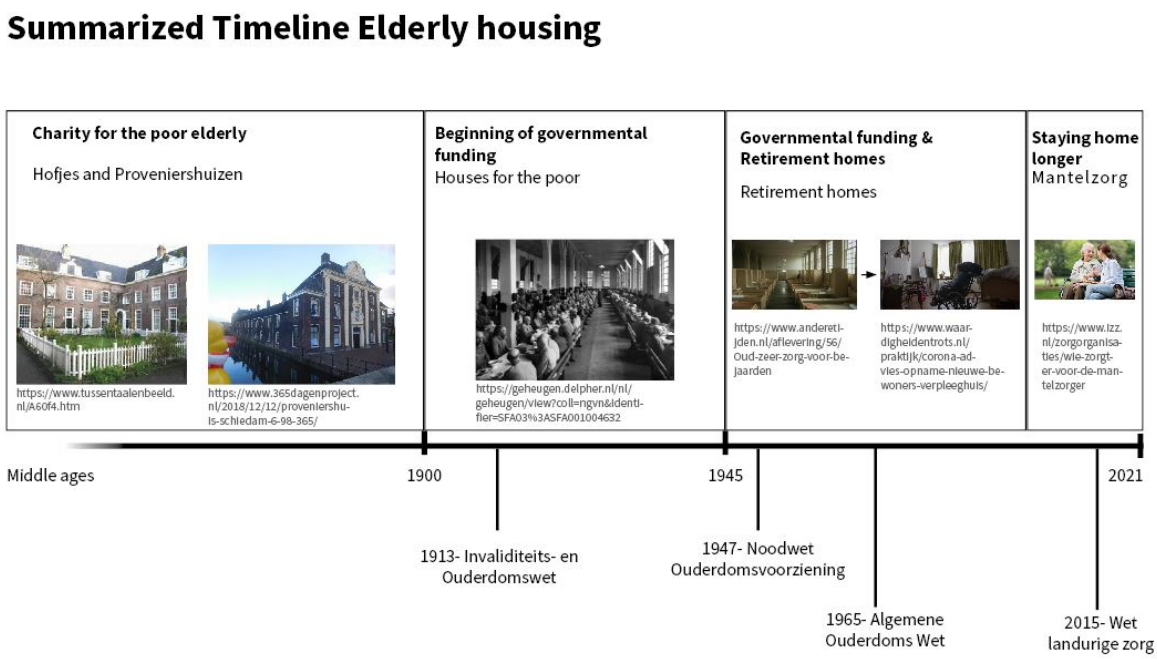

Figure 2 Timeline of the elderly housing, made by author, based on sources in the text.

For a long time already there has been a housing shortage in the Netherlands and it will only get bigger the coming years. This housing shortage is mainly due to people needing different types of houses (Gaaff, 2020). This has several causes. Firstly. young people that are forced to keep living with their parents. The rise in housing prices is one of the reasons for this but they still move out earlier than in a lot of other countries. For instance, a research into young men leaving their parents’ home by Lonneke van den Berg shows that the percentage of men aged 25 or older that still live at home is 20 percent in the Netherlands, whereas in countries like Spain and Italy it is 67% and 84% respectively (van den Berg, 2019, p. 15). Secondly there are families that are stuck with smaller houses and thirdly the elderly that cannot move out of their larger houses since there is a lack of apartments specifically designed for elderly (Kraniotis, 2021). The needs for families and elderly go hand in hand, since the elderly cannot move into retirement homes and therefore keep the houses suited for families occupied, causing those families to not find suitable housing (Kamphuis, 2020). This means that there is not a lack of housing for young families, but a lack of housing for elderly and even empty nesters that do not need the large houses anymore.

A possible solution that might help solve these issues is a building block where people can move to after their children move out, that is still located close to their old neighbourhood. The idea is that the houses in this building will be able to change to fit the changing needs that come with growing old. This building will in the end consist of people from different life stages after the age of approximately 55 years old. This means that you have people that are still mobile and still have jobs. People that are mobile and active but recently retired, so they have a lot of free time. People that are retired and need help with daily activities. On top of that there is a difference in social backgrounds and financial backgrounds. Where the elderly used to belong to the poorest part of society not too long ago, now the population above 65 is among the wealthiest part of the population. This is mostly since the majority owns homes on which they make a lot of profit when they sell it, because of the rise in housing prices. However, there are still elderly living in poverty, either due to not owning a home or low income during their working life (Nieuwsuur, 2017).

To avoid the generalisation made after the war where all elderly people were placed in one group, these social and economic aspects need to be considered (Mens & Wagenaar, 2009, p. 11). Therefore, the building should not only suit one type based on age, a one size fits all solution. There will be two distinct groups, first you have the empty nesters or 55 years and older until retirement and secondly you have the retirees, aged 68 and up. In these groups there will be differences. They might be wealthy or poor and require social housing, but they might also be ill or maybe active and fit. Therefore, care needs to be considered. “Mantelzorg”, the informal and unpaid care for the elderly, could take place in one way or another, where the younger and more mobile inhabitants can take care of the older inhabitants or maybe even healthy retirees taking care of 55-year-olds that need help (Mantelzorg NL, n.d.). So, a cycle occurs of helping and getting help while staying in the same building. The main idea is that they move to this building located nearby on their own terms, meaning that they do not have to wait until something happens and are forced to move to such a place, but if a situation occurs that they need help while they already live there, they can get it without moving again and therefore age in place in a familiar place.

The purpose of this research is to not only make clear that such a concept is necessary, but also to find out what is necessary for such a building to even be a possible solution to this problem. This type of building will try to be a continuation of the current housing for elderly and use what worked and try to improve on what did not work. On top of that I will find out how to convince empty nesters of the necessity, but also how to make such a complex attractive to live in and not only make it look like a dull home for people that are nearing the end of their life.

2. Research question

The main research question that belongs to this topic will be:

What are the functional needs of a building suitable for residents above the age of 55, whether they are healthy or physically impaired and considering that they come from different social and economic backgrounds?

Supporting questions will be:

1. How has housing for the elderly changed in the Netherlands, from housing through charity up to and well into the twentieth century to nursing homes after WWII and Mantelzorg in the last couple of decades? (historical research into housing)
2. Where and how do 55-year-olds and retirees live now? (Case studies into current housing complexes for the groups)?
3. What are the differences in the needs in their living environments for both 55-year-olds and retirees?
4. What social and economical backgrounds should be taken into consideration?

3. Method

For the research I will be using different types of methods to answer those questions. Historical research into housing for the elderly in the Netherlands will be used to answer the first supporting question. Case study analyses, mainly a plan analysis of dwellings in buildings designed for people over the age of 55 and modern nursing homes will be used to answer the questions of where and how they live, but also a start for the question on the differences between the groups. This will be followed up by participant observations and questioning add to the findings to answer that question. To answer the fourth, a data analyses will be done to find data on the different aspects for both the people above 55 years old, but also the retirees, people older than 68 as it is the current age of retirement in the Netherlands.

The historical research will mainly concern the housing for the elderly. This will be an analysis of the architectural history of elderly housing in the Netherlands and will be a continuation of the brief part written in the topic description. This will focus first on how the elderly housing was organized in the Netherlands, starting around 1900. The main reason for this is that before 1900 elderly care was mainly done as part of charity by the church or rich citizens to show how much they care, but after 1900 the government starts to issue laws that directly impacted the care for elderly and to ensure that they even had money for their final years (Deen, 2004). Then I will look at the different types of elderly housing there were, and this will also coincide with how society looked upon the elderly. For this part of the analyses, I will mainly use documentaries, for instance the documentary done by Andere Tijden in 2010 about the harsh living conditions in elderly housing in the 1950's in the Netherlands (Jonkhoff, 2010). But also, the book *De architectuur van de ouderenhuisvesting Bouwen voor wonen en zorg* by Noor Mens and Cor Wagenaar, which describes the housing for the elderly after the second world war. On top of that news articles and government documents from that time commenting on the decisions made at that time, how the laws in the Netherlands eventually changed and how that changed the elderly homes into the retirement homes in the Netherlands. The change afterwards to what we now call Mantelzorg in the Netherlands, unpaid care for elderly, will also be discussed and used as a starting point to emphasize why a complex that supports aging in place is necessary.

After this I will employ another method, Participant observations of people from the different target groups. This means spending a day with them but in a passive way, just observing how they use their space, look for possible flaws in the design of the space and aspects that work well or things that they miss. After that, a short conversation about their house, questioning why they live where they live, where they used to live and how they experience their house. Are there things missing or are some things a big improvement compared to previous homes?

This method will hopefully give a clear overview of the similarities in the way they live as well as key differences. This overview will help with defining the needs for groups and how they might be applied in an eventual dwelling.

The case study analyses are an analysis of several buildings that are currently either designed for people over the age of 55 or retirement homes for people that need daily care, so the two extremes that might live in the building of the project. The purpose for this is to find out what makes them fit the specific age group, but also to find out what similarities there are that can form a base for the dwellings on top of which several specific design aspects can be added later. First, De Akropolis in Amsterdam, a building for people above the age of 55 with a focus on social contact, mainly due to a mandatory membership to the buildings organisation that organises events, to stimulate contact between the residents (Studioninedots, n.d.). Second, De Makroon in Amsterdam, a senior complex with care housing as well as independent housing in the centre of Amsterdam (Architekten Cie., n.d.). Third, Steinfeld Retirement and Nursing home by Dietger Wissounig Architekten in Austria, a care facility with caretakers living in as well and communal dining and living facilities (Schittich, 2007, pp. 104-109). The fourth building is OCMW in Nevele, Belgium, by 51N4E, a care complex for elderly with a concept for extending the living room into the hallway, creating a larger communal space (51N4E, n.d.). This combination of care housing and independent housing might be interesting. By looking at the way these projects' function, i.e., how are the floorplans organised, how do the inhabitants use it and compare this to the other buildings designed for different age groups. A final building will be analysed slightly different, not focussing on the architecture but mainly on the concept. This is the Knarrenhof concept that is currently used in the Netherlands in several locations, like in Zwolle. This building is meant for active elderly that can take care of each other, but everyone from every age group is welcome. How does this work in practice? (Knarrenhof, n.d.)

These case studies will be analysed on the following themes:

-Context (Why was it build and where is it located)

-Inhabitant's profile (Who lives there?)

-Spatial program (Circulation, dwelling types, communal spaces, private spaces)

-Care facilities

-Ease of use of the dwellings (Spatially)

De Akropolis in Amsterdam/
studioninedots

Photo by: Peter Cuypers

De Makroon in Amsterdam/
Architekten Cie.

Photo by: De Architekten Cie.

Steinfeld Retirement and Nursing Home/
Dietger Wissounig Architekten

Photo by: Paul Ott

OCMW in Nevele, Belgium/
51N4E

Photo by: Filip Dujardin

Knarrenhof in Zwolle/
INBO

Photo by: INBO

The outcome of this comparison can be compared to the overview of the participant observations. Hopefully, this will give a conclusive idea of the differences in living environment for the different groups, but also an overview of similarities that can help form an advice for a complex that can house groups ranging from empty nesters that are still in the prime of their life and full of energy, as well as elderly that are nearing the end of their life and need help with daily tasks.

4. Relevance

This research will try to find out if building a complex for the later stages in your housing career is a viable option to solve part of the problem of a housing shortage in the Netherlands. By having a complex that is lived in by people in different stages in their lives they stay part of the society for longer.

For the future this also means that housing does not need to be designed specifically for elderly or for empty nesters, but that for a large portion of the population one solution will work, with exceptions of course. But this in turn might make it easier to quickly build these kinds of complexes.

Of course, this will not be the final solution, the thing that solves all the problems concerning elderly housing and them wanting to grow old near the place they lived most of their lives. The reason for this research is a design assignment in Rotterdam, therefore such a building would be suited for people living in Rotterdam, a large city. However, if you live in a small village somewhere on the outskirts of the Netherlands, such a complex would not be viable solution for such a small group and therefor it will not be so close to their homes. This is therefore mainly a solution for the larger cities in the Netherlands to allow for aging in place in a centralized location. For solutions in rural areas in the Netherlands perhaps smaller communities like for instance the Knarrenhof concept mentioned before is more suited.

Also, there is still the issue that people might not want to live in such a building. The purpose of this research is to show a way that people might be interested in living in such a building, but in the end, you cannot force people, so even though it might seem attractive, people might not want to give up their large house and that is something architecture might not be able to fix. In the end the people are free to do what they want, but this is just meant to show it can be done differently and show the necessity for maybe a bit more drastic solution like this. But this building will give a certain insurance for the residents. They might be very healthy and still in the prime of their life, but they know that when something happens to them, that makes them become immobile or otherwise in the need for care, the idea that they do not have to move to another place somewhere far away from family and friends might sound reassuring for a lot of people.

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Appendix:

Research Diagram