# INDEPENDENT ELDERLY LIVING, INTEGRATED INTO AN INFORMAL CARE STIMULATING NEIGHBOURHOOD

Graduation Report - Advanced Housing Design (AR3AD100)

Faculty of Architecture & The Built Environment, Delft University of Technology

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Graduation Report
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# **Independent elderly** living, **integrated** into an **informal care** stimulating **neighbourhood**

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# LIST OF DEFINITIONS

**Informal care:** Informal care is care and support given by people who do not do it as their profession and therefore are not paid for it. They help because they have a personal connection with the client or resident, out of love, friendship or from an idealistic commitment (Zorg voor Beter, 2022).

**Social interaction:** Social interaction is the process of reciprocal influence exercised by individuals over one another during social encounters. Usually it refers to face-to-face encounters in which people are physically present with one another for a specified duration (Little et al., 2016).

**Social cohesion:** Social cohesion refers to the extent of connectedness and solidarity among groups in society. It identifies two main dimensions: the sense of belonging of a community and the relationships among members within the community itself (Manca, 2014).

**Reciprocity:** The practice of exchanging things with others for mutual benefit (Cherry, 2023).

# PREFACE

This graduation report is the final outcome of the Advanced Housing Design Graduation studio, part of the Architecture Track of the MSc Architecture, Urbanism & Building Scienses at Delft University of Technology. The studio of Advanced Housing Design is focussing on invigorating contemporary urbanities through the use of densification as a strategy to tackle the housing shortage the Netherlands is dealing with. The fact that the housing shortage is such a socially relevant problem has made me choose this studio. I want to use the knowledge I gained in recent years during my Architecture studies at Delft University of Technology to help find solutions to these current problems. The fact that I can influence as an architect how people live and how the built environment can affect people's well-being is something I find incredibly beautiful. Within architecture, this aspect of (social) well-being has always been a fascination of mine. This fascination has also ensured that I was triggered by the specific problem within this housing crisis of a shortage of suitable housing for the elderly, a vulnerable group in society.

Therefore this research aims to create a design strategy for densifying an existing residential area, where elderly people with light care needs can live independently, but integrated into the neighbourhood where neighbours are stimulated to provide informal care. This is needed because elderly currently need to live longer independent at home, due to transformations in long term care. The design strategy that emerged from the research was used for the densification design project of this graduation studio, located in Groot-IJsselmonde. Hopefully the outcomes of this graduation project, both in research and design, can be used as a base and inspiration in the design of future densification projects.

During my graduation I found out the importance of the built environment when it comes to social cohesion in a neighbourhood and the chance of people looking after each other. I really hope in the future the built environment, and therefore the design of new projects, will play a role in the changing from an individualistic society towards a participation society.

I want to thank everyone that supported me during my graduation project. First of all my tutors: Frederique van Andel, Harald Mooij and Florian Eckardt, who all helped me during the process with providing clear and constructive feedback in several meetings, which I always experienced as very helpful. Second, my husband, family and friends that have been a major support in times that the process was sometimes overwhelming me. This helped me to eventually come up with the graduation project you see right now in front of you.

# SUMMARY

The Netherlands is currently dealing with a housing shortage. Within this housing shortage, there is a specific shortage in suitable elderly housing. With the Reformation of Long-Term Care elderly need to live longer independently at home whereby an explicit appeal is made to the social network of the elderly for the provision of (informal) care and support. If neighbours are encouraged to provide informal care to elderly people in their neighbourhood, they contribute to the possibility of the elderly living at home independently for longer, and the pressure on current informal caregivers is also reduced. Therefore, the purpose of this research is to form a design strategy by answering to following main question: "What design strategy can be used to design independent livings for elderly with a light need of care, integrated into an existing neighbourhood, in such a way that it stimulates neighbours to provide informal care?"

To answer this question the developments in the history of elderly housing were studied to see what we can learn from it nowadays. Elderly housing went from 'integrated' in the city (in bad circumstances), to clustered and isolated outside the city, to clustered inside the city, with a focus on the connection with the neigbourhood. Now we not only need to focus on the connection of complex residents with the neighbourhood, but on the integration of elderly in the neighbourhood itself, because they need to live longer independent at home. In addition case studies of historical projects were done, which gave insight into design elements that could be still helpful nowadays. By providing different scales of interaction different places of encounter can be created and form a gradient in socially active places. Providing buffer zones between private, semi-private, semi-public and public spaces also contributes to this.

Furthermore, the needs and wishes of elderly were researched by literature review and semi-structured interviews. Needs and wishes on the scale of the dwelling and the scale of the neighbourhood, on physical, functional and social aspects, could be found. Physical aspects like accessibility, activity and recognition are important. On the functional aspect it is important to make it as easy as possible for elderly to use key facilities. Social aspects like providing a contact rich, and multi-generational living environment are important to create a socially sustainable environment.

The same methods were used to research what could stimulate neighbours to provide informal care. Social cohesion plays a very important role in this. Knowing and seeing your neighbour is very important for the willingness to provide informal care to your neighbour. Once people know their neighbour and see the help he or she needs, they are willing to provide it.

Therefore, in the last sub question of this research case studies from recent projects that are designed with the stimulation of social cohesion in mind are conducted. This gave insight in how design can effect the social cohesion and therefore stimulate people to provide informal care. First of all the connection to the surrounding is important. Furthermore, dwellings should be designed for a mix of households and organized around a shared place. The shared place should still have a feeling of security, so residents feel more comfortable to use them. A balance between public and private is therefore important. Providing for a transistion between private, semi-private, semi-public and public plays an important role in the stimulation of encountering each other.

By combining the outcomes of all the sub-questions, a design strategy is created that could be used to design independent livings for elderly with a light need of care, integrated into an existing neighbourhood, in such a way that it stimulates neighbours to provide informal care.



# 1

# INTRODUCTION

# 1 INTRODUCTION

## 1.1 Personal statement

"Starters, students, couples young and old, families, seniors, migrants and locals cannot find adequate homes or conditions for the lives they aspire to, while existing close-to-centre neighbourhoods slowly deplete in their static monocultural structures." This is what the Msc3 Studio of Advanced Housing is focusing on, invigorating contemporary urbanities through the use of densification as a strategy to tackle the housing shortage the Netherlands is dealing with. The fact that the housing shortage is such a socially relevant problem has made me choose this studio. I want to use the knowledge I gained in recent years during my Architecture studies at Delft University of Technology to help find solutions to these current problems. What is the best way to build additional housing, with the interests of the residents at the core? This interest of the residents is an very important aspect to me. Housing is a fundamental right; everyone has the right to have a home. The fact that I can influence as an architect how people live and how the built environment can affect people's well-being is something I find incredibly beautiful. Within architecture, this aspect of (social) well-being has always been a fascination of mine. This fascination has also ensured that I was triggered by the specific problem within this housing crisis of a shortage of suitable housing for the elderly, a vulnerable group in society. This problem is described further in the next paragraphs.



## 1.2 General problem statement

While housing production in The Netherlands declined sharply in the recent period, the size of the population continued to increase. In addition, the ongoing thinning of families in the Netherlands, to a large extent caused by the aging of the population, means that the number of households is growing faster than the population (figure 1). And it is precisely the number of households that is important for the size of the housing demand. The result is an increase in the housing shortage (van der Heijden & Boelhouwer, 2018). A recent report by the Dutch Ministry of the Interior and Kingdom Relations states that there is a shortage of 279,000 homes and that this will continue to increase until 2024. The new cabinet therefore wants around 1 million new homes to be built by 2030. Within this housing shortage, there is a specific shortage in suitable elderly housing (Van Staaij et al., 2022).

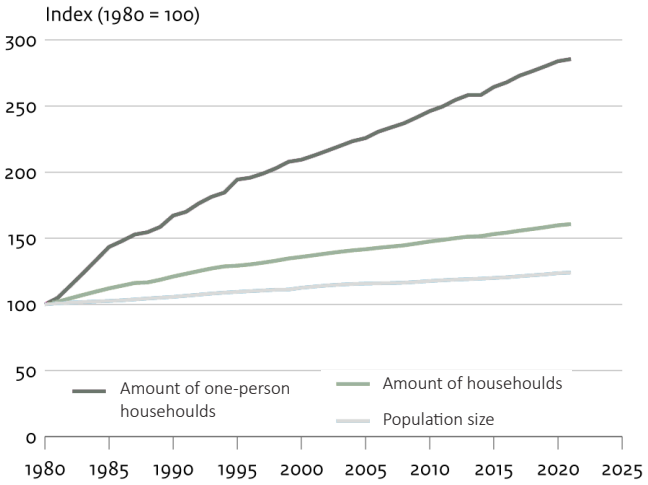



**Figure 1**: Population size and amount of households in The Netherlands (CBS, 2022)

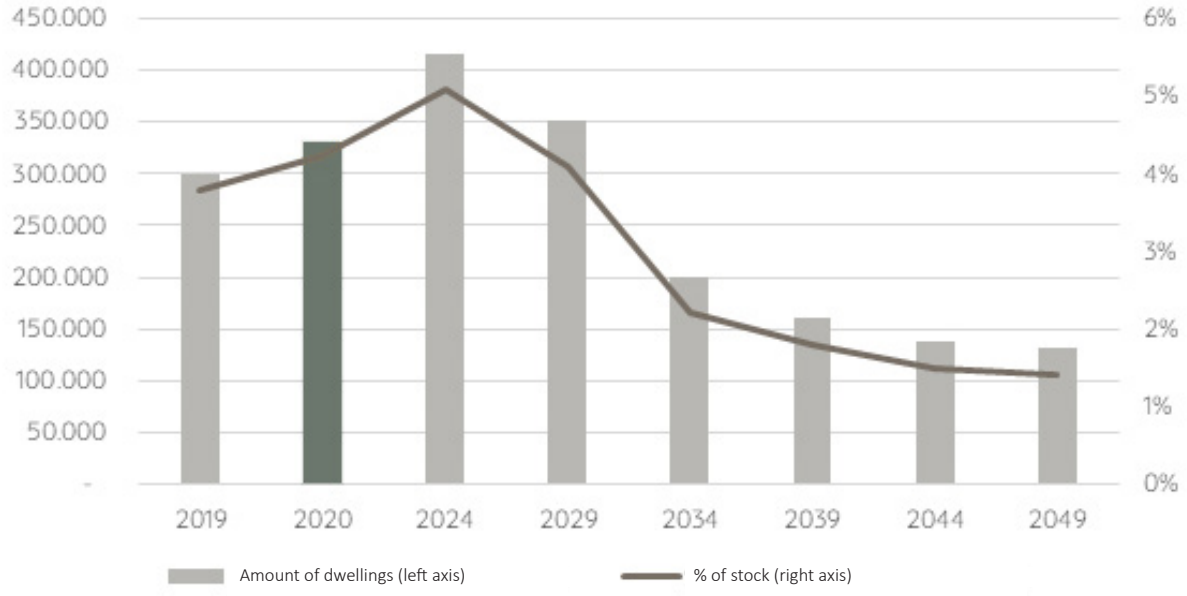



**Figure 2**: Forecast housing shortage in The Netherlands (PRIMOS 2020, edited by Capital Value)



Existing homes not
life-cycle proof



Neigbourhoods not suitable
(lack of facilities)




Alternatives lacking
(especially in desired neighbourhood)

**Figure 3**: Problems elderly housing
(made by author)

The elderly of today are living independently more often and for longer than the elderly of yesterday. Elderly people not only want this themselves (Groot et al. 2013), but national policy is also geared towards this. With the Reformation of Long-Term Care (Hervorming Langdurige Zorg), the government aims to have the elderly live independently for longer whereby an explicit appeal is made to the social network of the elderly for the provision of (informal) care and support. The ultimate goal is that elderly people will not move to a care facility until much later - when they require an intensive form of care - which will lead to less healthcare expenditure (Van Campen et al. 2017). A safe, healthy living environment can contribute to living independently at home for longer, and thus reduce healthcare spending, both collectively and individually. However, this safe, healthy living environment is far from self-evident: homes are not always life-course resistant, specific facilities are not always available in the home environment, and alternative housing in the desired living environment is lacking (Van Staaij et al., 2022) (Figure 3).

It is important that alternative housing is realized. After all, if older people continue to live in the home they have been living in for years - which is often a single-family home - their home will not become available for families and starters. This is holding back the flow in the housing market (Eskinasi & De Groot, 2017). An important reason why older people want to stay in their own homes is the fact that they do not want to leave their current living environment. This may be because they appreciate the amenities in the neighbourhood and because they are attached to their social contacts. It is therefore important that there is a suitable new offer for the elderly, in the residential area they know (Van Staaij et al., 2022).

## 1.3 Specific problem statement

It is now clear that the aging population and long-term care reform, combined with promoting flow in the housing market, will require new homes for the elderly. However, long-term care reform brings more problems.

The aging population, planned reforms in long-term care and the focus on more informal care put increasing pressure on informal caregivers. Also because of the increasing shortage of formal professionals, the social network as a safety net is becoming increasingly important for care and support of the elderly (Hinkema et al., 2019). However, 45% of informal caregivers already feel moderately to severely burdened by providing care (De Boer et al., 2009). Therefore, to relieve the pressure, there is a need for more informal caregivers. However, more informal care is not evident for all elderly people. For example, there are older people who live alone or have a limited social network which means they have fewer potential informal caregivers around them (Doekhie et al., 2014) (Figure 4). Therefore, policies aimed at older people living independently at home for longer emphasize the role of the neighbourhood in providing informal care (Mol, 2020). If neighbours are encouraged to provide informal care to elderly people in their neighbourhood, they contribute to the possibility of the elderly living at home independently for longer, and the pressure on current informal caregivers is also reduced.

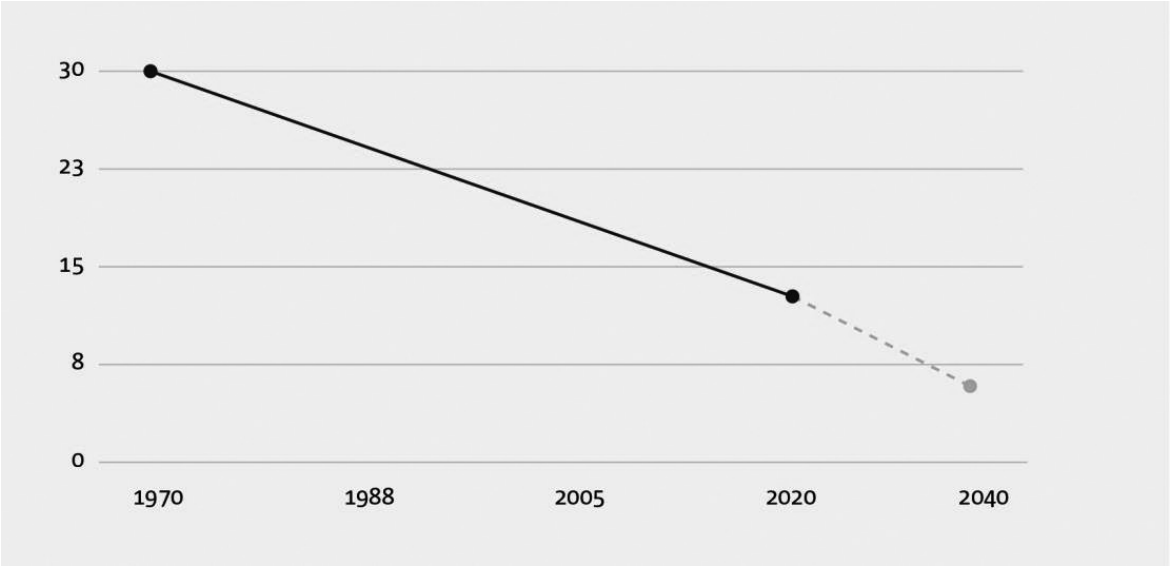



**Figure 4**: Number of potential informal caregivers per dependent decreases (PBL (2018), edited by Dienst Analyse en Onderzoek, 2022)

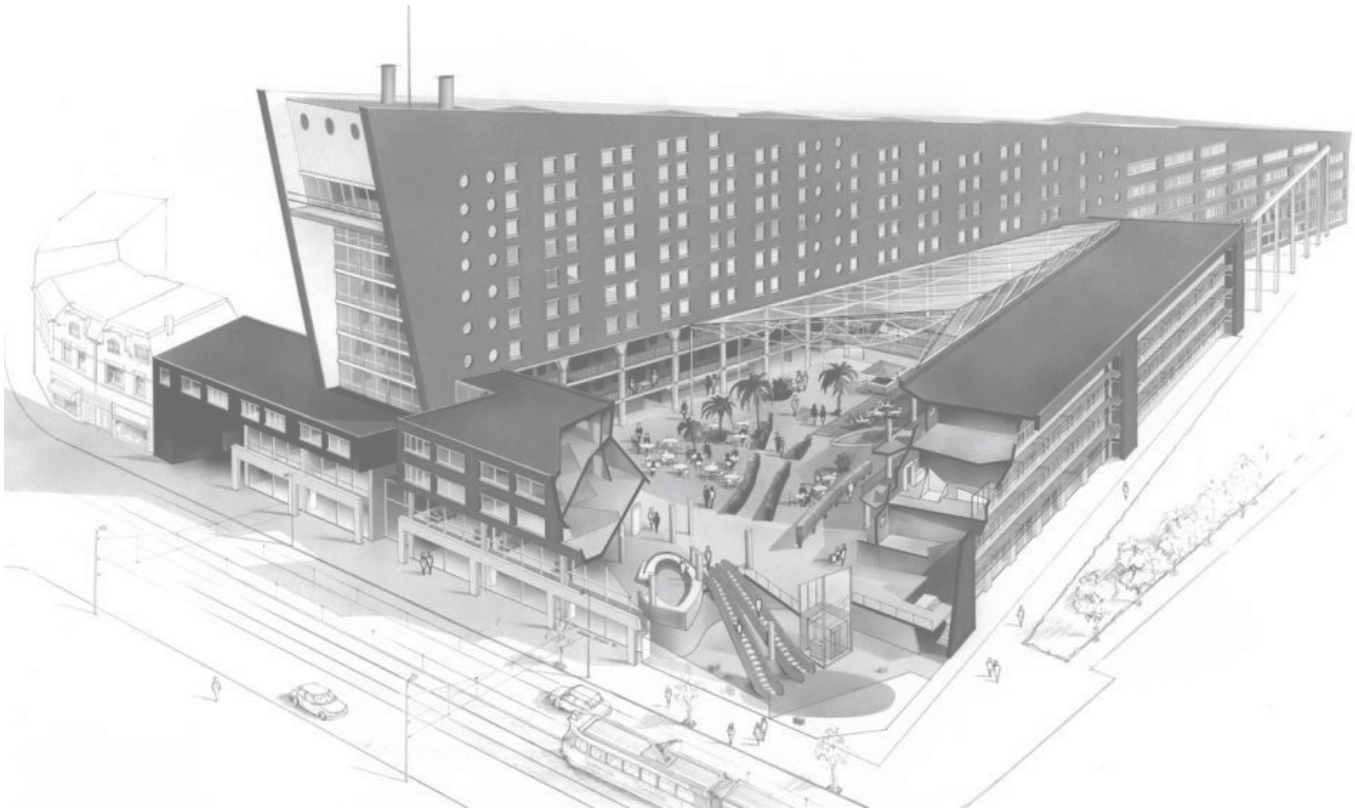


**Figure 5**: Living-care complex Bergweg
(Mens & Wagenaar, 2009: EGM architecten)

Recently, many new (clustered) housing (care) concepts have been developed to create more suitable housing for the elderly. The aspect of taking care of each other is also important in many of these concepts (Mol, 2020). However, the focus in these concepts is often on clustered/communal living in a standalone housing complex, like for example living-care complexes (figure 5). But how can older people live independently, integrated into an neighbourhood, instead of in a complex specifically designed for them? And how can the built environment contribute to stimulating informal care by neighbours? These are questions where this research emerged from.

## 1.4 Research questions

The purpose of this research is to create a design strategy for densifying an existing residential area, where older people with light care needs can live independently, but integrated into the residential area, and neighbours are stimulated to provide informal care. To achieve this goal, the following main question is posed:

***"What design strategy can be used to design independent livings for elderly with a light need of care, integrated into an existing neighbourhood, in such a way that it stimulates neighbours to provide informal care?"***

To answer this question, it is first of all important to investigate how housing for the elderly has developed over the years. This can provide insights into the changing position of the elderly in society and thus the way in which they are approached. It also provides insight into how the needs of the elderly have been taken into account in the design over the years. The following question is therefore posed: ***How has elderly housing developed through the history and what can we learn from it?***

It is also important to get to know the target group of elderly with a light need of care better and to investigate what the current needs and residential wishes of the elderly are, both on the scale of the home and the neighbourhood. Therefore, the following question is asked: ***What do elderly with a light need of care need on the scale of dwelling and the scale of the neighbourhood, to live longer independent at home?***

A better understanding is needed of what informal care neighbours could provide, but also what would encourage neighbours to provide informal care. The third sub-question focuses on this: ***What informal care can be provided by neighbours and what could stimulate neighbours to provide informal care?***

Finally, it is important to investigate how design can influence the stimulation of social integration and the provision of informal care. The final question is therefore: ***How can design stimulate social cohesion and therefore stimulate informal care?***

## 1.5 Theoretical framework

This paragraph describes interesting studies that have already been done within the topic of this research. The studies can be divided into four main categories, all connected to the questions of this research: history, needs and wishes of elderly with a light need of care, informal care and existing housing(care)concepts with a focus on social interaction.

History elderly housing

Mens & Wagenaar (2009) wrote a book about the developments of housing for the elderly in the Netherlands. Especially the historical developments in the social position of the elderly are considered important for this research. If we understand how the elderly relate to society and what might be able to improve this, we can take this into account in future-oriented designs for the elderly. But also elderly housing projects in history, like for example 'De Drie Hoven' designed by Herman Hertzberger and 'De Zonnetrap' designed by Luzia Curjel and Enrico Hartsuyker can give insight in the needs of elderly in terms of living. These are projects designed in the 1970s, partly as a result of new government policies that began to focus on complete living environments rather than isolated and monofunctional retirement homes in the 1970s. The interests of the resident are central to these designs (Den Boer, 2021).

Needs and wishes elderly

Several studies have already been conducted on needs and wishes of elderly. Dienst Analyse en Onderzoek (2022) has written a report that addresses the question of what is known about the residential care needs of the elderly, both quantitatively and qualitatively. The qualitative aspect is important to understand how elderly want to live.

Mol (2020) integrates knowledge from the housing, care, welfare and design domain and thus offers tools for realizing the optimal living (care) environment for the elderly. The collected information is integrated into a practical checklist with the building blocks and elements for realizing optimal living (care) environments for the elderly. The design elements are categorized into physical, functional and social aspects, both on the scale of the neighbourhood and the dwelling. This gives a comprehensive overview on the needs of elderly on severail domains and scales, and could therefore be very useful for this research.

On the scale of the neighbourhood Alkema (2019) researches a living environment which functions as a safety net for loneliness. A motivator to go outside again instead of a catalyst. In order to achieve this, she proposes various preconditions that would make a living environment suitable for the elderly. Also van de Meulengraaf (2014) has done research on what makes a living environment suitable for the elderly, in her case specifically elderly people with care needs. She has set conditions that can be included in the design of a neighbourhood. Main themes that are considered important as a result of her research are social safety, physical safety, social networks, stimulating informal care and mobility.

Informal care

Verbeek-Oudijk (2019) investigated the extent to which environmental factors are associated with the care received and provided in the home by people over 50. In doing so, she paid particular attention to possible social differences in how the influence of care provision may work differently for different target groups. Geldtmeijer's (2016) research seeks to uncover the causes of overload among informal caregivers and examines whether encouraging self-management among those in need of care can reduce this overload.

Most published research on informal care for the elderly focuses on the support provided by family members. However, Nocon (2000) has investigated the support of friends and neighbours who are the primary caregivers of frail elders. It is based on interviews with an opportunistic sample of friends, neighbours and older people, which probed for their views on support arrangements, the reasons why help was provided, and any difficulties encountered. Broese van Groenou & De Boer (2016) also investigated people's intentions to provide informal care. They developed a behavioural model about individual care giving, the Informal Care Model, based on various models of care and empirical literature. The model posits that, in response to the care needs of the care recipient, the intention to provide care is based on general attitudes, relationship quality, normative beliefs, and perceived barriers.

Housing(care)concepts

As mentioned before there are many recent initiatives in terms of house(care)concepts. Several studies have been done concerning these concepts. Maaskant (2018), for example, conducts research on mixing multiple generations in housing complexes. He does this through a case study of housing project the Saffier in Utrecht. In this qualitative study, through observations and interviews with residents and managers, a picture was formed of how social bonding between young and old occurs and how they experience it. Haarler (2017) conducted research on 'Hofjeswoningen' (Almshouses). 'Hofjes' contribute to feelings of safety, shelter and social contact among the elderly residents. Rusinovic et al (2019) conduct research on why older people choose to live in a commune and the advantages and disadvantages of living in a commune. Because an existing neighbourhood deals with a mix of generations, diving into 'mixed generation' concepts would be useful for this research.

All in all there is already a lot of literature or practices this research can be based on. In the next chapter there will be explained more into detail how these researches can be used to reach the aim of this research.

## 1.6 Hypothesis

After going through literature that could be useful for this research, the hypothesis would be that by combining the answers on each sub-question an exstensive overview with both 'dry ingredients' and design elements can be formed, that on their turn form a design strategy for independent living for elderly in an existing neighbourhoods that stimulates neighbours to provide informal care.

From the history of elderly housing we can probably learn that isolating elderly in institutional care homes outside the city has proved not to work. Design concepts from the seventies on the other hand, had a focus on social integration. Different scales of interaction and shared facilities where applied in these concepts, so that could be a working strategy. In terms of needs and wishes of elderly.

In terms of needs and wishes of elderly on the neighbourhood scale probably elements like barrier free routes, facilities, presence of green, places to meet and shared activities would be important. On the dwelling scale accessibility, thus wide enough rooms for wheelchair use, views on liveliness and the presence of a balcony/garden could be important.

When it comes to what stimulates people to informal care, the hypothesis would be that stimulating interaction, providing encounters and therefore increasing the social cohesion would be important

factors for people to are more likely to provide their neighbours with help.

The last sub-question will form the link between social cohesion and design elements. Elements that will contribute to this will probably have to do with the organization of dwellings around a central place, working with warm materials, and providing for different places to encounter for different resident interests in such a way that there is a balance between public and private so people will be more likely to use shared facilities.

# 2

# METHODS

# 2 METHODS

## 3.1 Starting point

The starting point of the methodology used to do this research is based on the ideas of Lefebvre (1991) in his book: The Production of Space. He illustrates the necessity of using more than one research method to document a given space (in this research the 'space' of elderly with a light need of care and their neighbours), by mentioning several interpretations of space in the 'spatial triad':

The first interpretation is the representational space, which is produced by historical processes and events. It is the passively experienced space, the reproduction of conceived symbols, ideals and processes that form an image of the space. This interpretation has to be understood through researching history and society in the particular context of a given space.

The second interpretation is based on the physical elements of space, the representations of space. It is a more analytical perception, which can be understood through mapping or modelling space. This view of space allows for measurement and conceptualization by humans.

The third representation of space is the spatial practices. It is the use and appropriation of space, which takes place within the products of the other spatial interpretations. The spatial practices come to existence through the relationship between daily routines and urban reality. It can only be put into expression by displaying empirical material that shows the events and movements in and through space.

## 3.2 Methods

This research will also make use of several methods:

For the first sub-question historical research is used as a method to get a grip on the position of elderly within society, and what we can learn from elderly housing design in history. Within this historical research there will be done a literature review based on the book of Mens & Wagenaar (2009), which will help to understand the representational space. Also the episteme of typology and phenomenology will be used by the (sensory) mapping and analysing of plans of e.g. 'De Drie Hoven' and 'De Zonnetrap'. The final outcome will be a timeline showing the main events within the history of elderly housing.

The second sub-question will be answered according to the different aspects and scales Mol (2020) uses in his research. The needs of elderly with a light need of care will be analysed physically, socially and functionally on both the scale of the neighbourhood and the dwelling. This will give a comprehensive overview. To research these needs the already written literature mentioned in previous chapter will be analyzed, compared and elaborated. But also the episteme of praxeology will be used by doing semi-structured interviews to understand the needs better and to get a grip on the spatial practices (use and appropriation of the current space). Groot-IJsselmonde, studied by the studio group, will be used as a case in this research, as a neighbourhood where many elderly are living. The outcomes will provide a more general 'ingredient list' that deals with the several aspects and scales.

To dive into the question about how the provision of informal care by neighbours can be stimulated mainly literature will be reviewed. The findings from literature will be complemented by experiences from people in Groot-IJsselmonde when it comes to informal care/help from neighbours. Both people that need the informal care and people that could provide it were interviewed.

The last sub-question is supposed to form the link between theory and practice, by doing case studies on projects that are designed with the idea of stimulating social interaction. 'Mixed generations' concepts have the intention of providing social interaction between several generations and stimulate looking after each other. Within these concepts specific case studies will be chosen, based on the condition that generations are mixed, as this is also the case in a neighbourhood. By (sensory) mapping plans, the physical representation of space will be researched linked to the before found 'ingredients'. This will turn the 'dry ingredients' into a design elements, which will lead to a design strategy.

Figure 5 (on the next page) shows for each sub-question what input leads to what output, and how this relates to the 'spatial triad' of Lefebvre (1991)

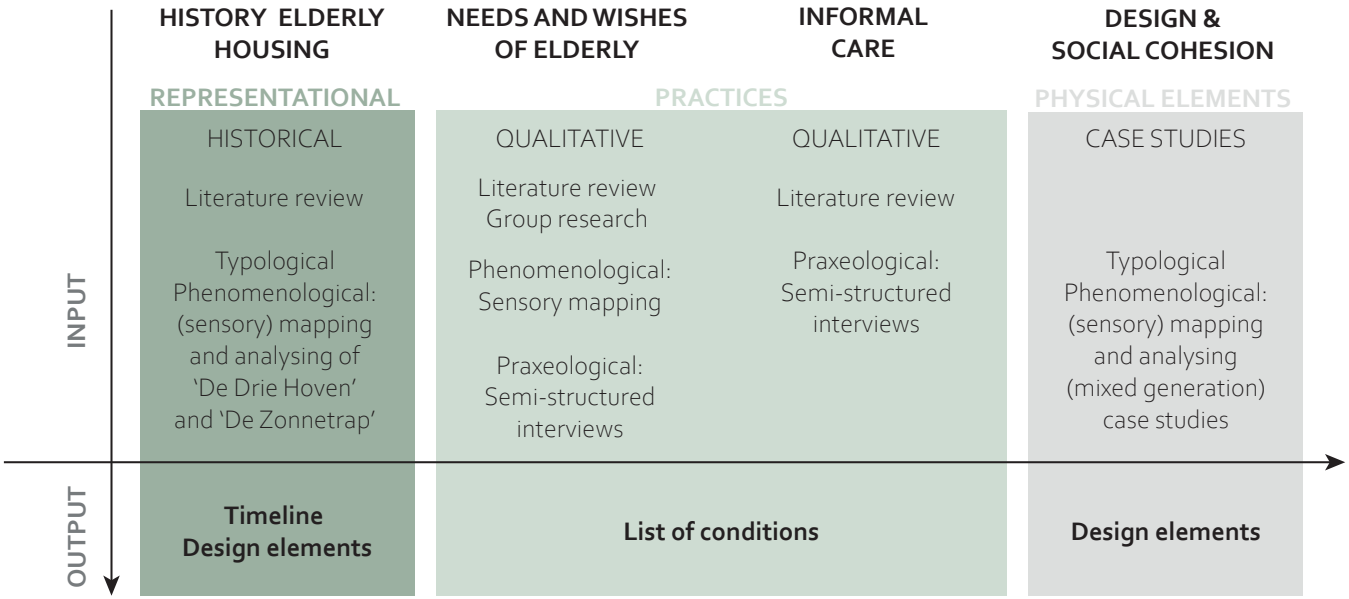



**Figure 6**: Methods (made by author)



# 3

# HISTORY ELDERLY HOUSING

# 3 HISTORY ELDERLY HOUSING

In this chapter developments in organizing dwelling for elderly will be described from the 13th century until now. How did the Dutch government and designers approach elderly dwelling? And how has the societies position towards elderly changed over time? By describing a timeline of all the developments that history shows there can be reviewed if we can learn something from the organization of elderly housing in history.

## 3.1 Timeline history elderly housing

### 13th CENTURY

Elderly housing and care dates back to the Middle Ages. The housing for the elderly did not differ much from ordinary housing at that time, and old age was accompanied by tremendous poverty. The care and housing for the elderly, or actually 'the poor', depended on a few (wealthy) benefactors in society. The so called 'Hofjes' in the Netherlands are examples of this (Mens & Wagenaar, 2009). The first so-called charity Hofjes were founded in the 13th century by wealthy people. Their name was often attached to the Hofje and thus, as it were, lived on. The management of the Hofjes was entrusted to a foundation run by regents, wealthy citizens who disinterestedly carried out the will of the founder. The houses in these Hofjes were intended for elderly people - usually unmarried women or widows - with little money, who were allowed to spend their old age there at a time when there were no social services. Some Hofjes were linked to a church or a guild (Codde & van Beresteyn, 2013) In these Hofjes the dwellings were not much different from other dwellings, but the major difference was the urban design of this type. A typical Hofje consists of a collection of identical cottages grouped around a

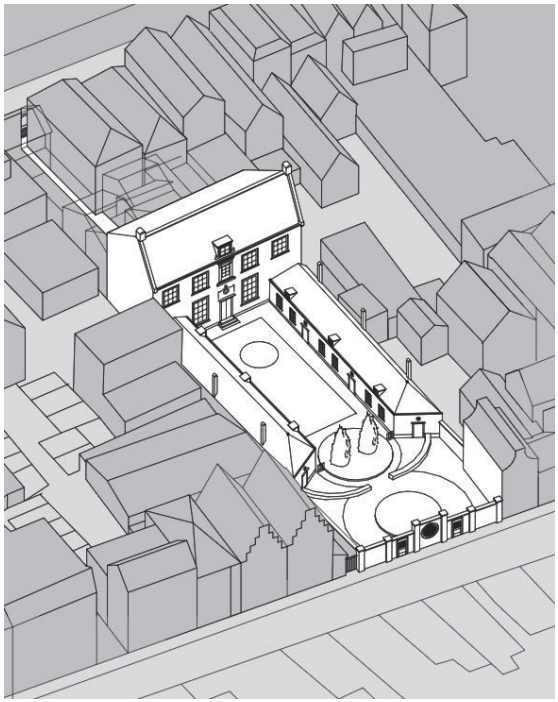


**Figure 7**: Archetypal hofje (Wilms Floet, 2021)

communal garden that is well-hidden in the fabric of the city: as architectural units they can be described as quiet, green oases with an aura of collectivity. In the archetypal Hofje, the individual front doors face the courtyard and the cottages back onto blank walls (Wilms Floet, 2021) (Figure 7). Because of this the Hofjes were separated from busy city life, allowing the elderly to live there collectively in peace and quietness (Mens & Wagenaar, 2009).




**Figure 8**: Hofje van Bakenes
(Mens & Wagenaar, 2009: Noord-Hollands archief)



**Figure 9**: Amsterdamse Deutzenhofje
(Mens & Wagenaar, 2009: Noord-Hollands archief)

In the following centuries, the Hofjes as a form of housing took off and more and more initiatives came from the wealthy bourgeoisie to create Hofjes. Some examples of Hofjes from this time are: Hofje van Bakenes in Haarlem (1395) (Figure 8), Amsterdamse Deutzenhofje (1692) (Figure 9), and Hofje van Nieuwkoop in the Hague (1658-1661) (Figure 10). Despite these initiatives, most of the elderly could not afford to live here and were still housed in the cheapest, and therefore worst, dwellings, dependant on mostly family for help (Figure 11). This period was namely still dominated by the view that the elderly were a problem for society. This problem was mainly created by the fact that the elderly group was not part of the working population but cost a lot of money in the form of housing and care while they were not able to accumulate this money themselves and therefore depended on private initiatives or church funds (Mens & Wagenaar, 2009).



**Figure 10**: Hofje van Nieuwkoop
(Mens & Wagenaar, 2009: RCAM)



**Figure 11**: Elderly couple in an alley in Rotterdam
(Mens & Wagenaar, 2009: Gemeente archief Rotterdam)

## BEGINNING OF 20th CENTURY

Apart from the 'Hofje', there were hardly any housing forms developed specifically for the elderly. This only changed at the beginning of the twentieth century. That is when the 'retirement home' ('pensiontehuis') came into being. These retirement homes were also called 'rest homes' ('rusthuizen') or 'homes for the elderly of days' ('tehuis voor ouden van dagen'). The typology of these retirement homes consisted of a complex with a large concentration of apartments for the elderly with a central place in the complex where the common facilities were located. These homes included a central shared kitchen and dining room (figure 12). The retirement homes are an example of what would be later called 'institutional living'.



**Figure 12**: Shared dining room in municipal care home for elderly of days
(Mens & Wagenaar, 2009: Stadarchief Amsterdam)

## 1920 - 1940



**Figure 13**: Homes for elderly Nieuwendam (1931)
(Mens & Wagenaar, 2009:
Nederlands architectuurinstituut)

The first attempts to build retirement homes on a somewhat substantial scale date back to the 1920s and 1930s. The realization of these complexes are strongly connected to the pillarization in the Netherlands. Each pillar was in some way competitive with another so from each pillar retirement homes were realized. The pillar's views on the elderly could be seen in the designs of the retirement homes. The Catholics in Brabant, for example, mainly relied on the hofjes and monastic structures. Housing for the elderly was built in a traditional architecture, mainly for the more wealthy elderly. The Protestants focused mainly on the housing of the poor and the retirement homes from the Protestant pillar were therefore also considered to be part of the care for the poor (Mens & Wagenaar, 2009).

While the construction of institutional housing for the elderly lagged somewhat behind in the 1920s, more space was set aside in the 1930s for specific homes for the elderly (bejaardenwoning) (figure 13, 14). These homes were often

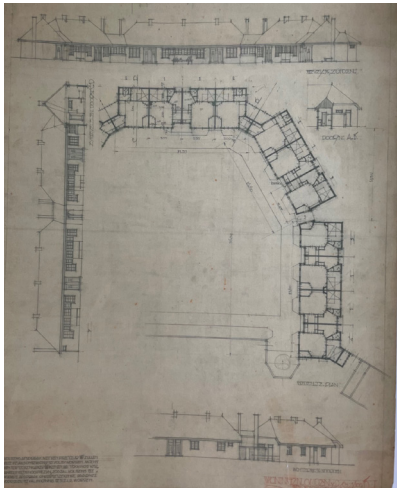


**Figure 14**: Homes for elderly Nieuwendam (1931) (Mens & Wagenaar, 2009: Nederlands architectuurinstituut)

small, mostly single-storey, and sometimes built in strips. The location for these homes were mainly reserved in the expansion plans of that time, such as the garden villages. The goal was independent living with the added benefit of central communal facilities. In this period, less was built by private initiatives and more by municipalities and housing corporations (Mens & Wagenaar, 2009).

Despite the fact that the efforts in the field of housing for the elderly were modest, even before the war it was not an unknown phenomenon. Some main forms of specific housing for the elderly had already been developed, notably the retirement home and the specific homes for the elderly. However, their number was limited and the number of elderly people who could use them still very small due to financial circumstances (Mens & Wagenaar, 2009).

## 1940s

For a long time, elderly care was seen as care for the poor; but this changed in the 1940s. Its basis was the fight against "old age poverty". Those who did not work had no income. Only a small proportion of the elderly could escape this poverty trap, and therein lay a large part of the problem, which manifested itself most poignantly in their wretched living conditions (Figure 15). So, first of all, something had to be done about their income situation. This was done by including care for the elderly in a new system of social security (Mens & Wagenaar, 2009).

This restoration of social security in the country was an important item on the government agenda after World War II. The great poverty and social insecurity had been a breeding ground for the emergence of




**Figure 15**: Elderly at the poorhouse in Amsterdam (Mens & Wagenaar, 2009: Stadsarchief Amsterdam)

the First and Second World Wars. Therefore, in 1948, the Noodwet Drees came into being and gave the starting signal for the welfare-state of the Netherlands (Figure 16). This law supported the elderly financially, making retirement homes accessible to all elderly. This sought to reduce the divide between poor, needy elderly and their wealthy peers. Now the elderly would no longer belong to the target group "poor" but would form a separate target group within society, supported by the government. Elderly housing was one of the most important tools to combat poverty in the country (Mens & Wagenaar, 2009). The Noodwet Drees was supposed to be valid for three years, but it was extended each time. Only during the third Drees administration the Algemene Ouderdomswet (AOW) was created, which would eventually come into force on 1 January 1957 (Joosten, 2013).

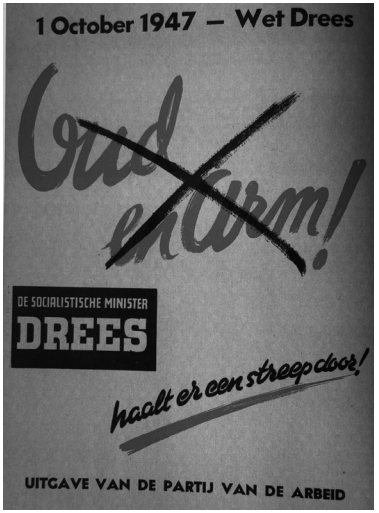



**Figure 16**: Affiche Noodwet Drees (Mens & Wagenaar, 2009: IISG)

1950s

Following on the Noodwet Drees elderly housing became the essence of elderly care in the Netherlands and housing for the elderly was therefore given a prominent place in the architectural assignments for the following years. Different main types where created, distinguished on the degree of the help needed (Mens & Wagenaar, 2009).

Home for the elderly

The typology of the specific elderly home (Figure 17) was further developed. It was a two-person home that was fairly similar to regular new construction homes, but with the major advantage that everything was on the ground floor. These houses had no relation to additional facilities and were aimed at enabling the elderly to live independently for as long as possible. Additional facilities were also



**Figure 17**: Elderly homes by Aldo van Eyck in Amsterdam (Mens & Wagenaar, 2009: Stadsarchief Amsterdam)



**Figure 18**: Retirement home Sint Servatius in Maastricht (Mens & Wagenaar, 2009: Historisch centrum Limburg)



**Figure 19**: Shared facilities in Willem Dreeshuis Amsterdam (Mens & Wagenaar, 2009: Stadsarchief Amsterdam/foto Algemeen Dagblad)

less necessary at this time because it was still common for the grocer, milkman or family doctor to come to the house. The home for the elderly was included between regular newly built homes in order to stimulate contact with the environment and to reduce the elderly's isolation (Mens & Wagenaar, 2009).

Retirement home

The retirement home (Figure 18) was also still built to house the elderly. This type of housing was mainly intended for elderly people with some degree of dependency, especially domestic help. This type consisted of a building with common functions (Figure 19) and one or two-person apartments. The common functions extended mainly to shared dining facilities and a kitchen, but in some cases also areas for recreation. The staff often lived in these buildings as well, and for those residents who were temporarily ill, there was the possibility of a short stay in specially equipped rooms for illness. The apartments were often very small and the toilets and bathrooms were for communal use and were located in the corridors. There was hardly any room for visitors or guests, so in some cases there were separate guest rooms. This type of housing occurred in two capacities. In small contexts with about 20 to 30 residents, or in large contexts where 100 to 300 residents lived (Mens & Wagenaar, 2009).

Nursing Home

Another type for elderly housing had existed for some time but was reconsidered and used differently. This was the nursing home or also called home for the disabled. This form of housing was intended primarily for the chronically ill and was more like a hospital. However, it could not fall into the hospital typology because it had far fewer medical facilities than a regular hospital and,



**Figure 20**: Burg. van Julsingha-boarding home and elderly homes (Mens & Wagenaar, 2009: Groninger archieven)



**Figure 21**: Serviceflat 'De Terp' in Amersfoort (Mens & Wagenaar, 2009: Archief Eemland)

unlike a hospital, a nursing home had only a bed house and no outpatient or medical ward (Mens & Wagenaar, 2009).

Combination of boarding homes and 'independent' homes for the elderly

There was also a combination of the typologies of the homes specific for elderly and the retirement homes. This combination was intended for people who wanted to and could continue to live independently but still wanted to use the facilities offered by the retirement homes (figure 20) (Mens & Wagenaar, 2009).

Service Flats

The aforementioned typologies were all subsidized, but by the end of the 1950s, the regular housing market was becoming increasingly important. There, too, housing was built for the elderly. In addition to housing for better-off independent senior citizens, private initiative produced the so-called service flats (figure 21); residential buildings with communal facilities that were paid for by the residents (Mens & Wagenaar, 2009).

## 1960s

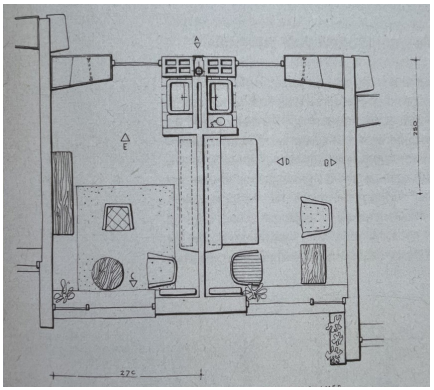


**Figure 22**: One-person room Huis in de Duinen (Mens & Wagenaar, 2009)

In the 1960s, the expansion of the welfare-state, a true population explosion and the overgrowth of the open land around the cities went hand in hand with one new housing development after another. Golden years dawned, also in housing for the elderly. Because there was still a considerable shortage of suitable housing for the elderly at the end of the 1950s, the main focus in the 1960s was on increasing production, which meant that the housing was very sober and the units were very small (Figure 22) (Mens & Wagenaar, 2009).

In this time the homes for the elderly had to comply with all kinds of "rules and regulations". These included minimum and maximum dimensions of rooms, corridors

and common areas. For example, the sitting room of an elderly person could not exceed twelve square meters, a bedroom was set at six square meters, a sitting room for two elderly people could be fourteen square meters and a bedroom for a married couple ten. Thus, an apartment of 24 square meters was already quite spacious. If the rooms did not have their own bath or shower facilities there had to be a communal bath for every twelve units. Each floor should have a balcony of at least five square meters, unless the rooms had their own balcony. The fact that the complexes could become quite large despite the minimal sizes of the residential units (figure 23) was caused by the large concentration of apartments (figure 24) and communal facilities. The regulations would degenerate into templates from which the designer had difficulty freeing himself (Mens & Wagenaar, 2009).

In order to increase production, standardization of construction methods was pursued. This was to save costs and to employ unskilled labor in the construction industry as a remedy for the high unemployment rate in the country. This resulted in an increase in scale and austerity of buildings. The new homes for the elderly not infrequently formed urban planning highlights, literally, they were among the first "skyscrapers" in the country (figure 25, 26, 27, 28). The fact that the elderly were housed in building types that had never been used on this scale before resulted in a paradox. Despite their intended emancipation, the elderly were increasingly seen as representatives of the completed past, strangers in the modern age. The starting point of post-war care for the elderly was the stimulation of the independence of the elderly, but in practice the elderly were asked little; others determined what was right. Subsequently, little was done to check whether the housing for the elderly did indeed meet the wishes of the target group. The desire to integrate the elderly into their social environment also turned out to be hardly realized. Most of the homes were inward-looking fortresses, built in

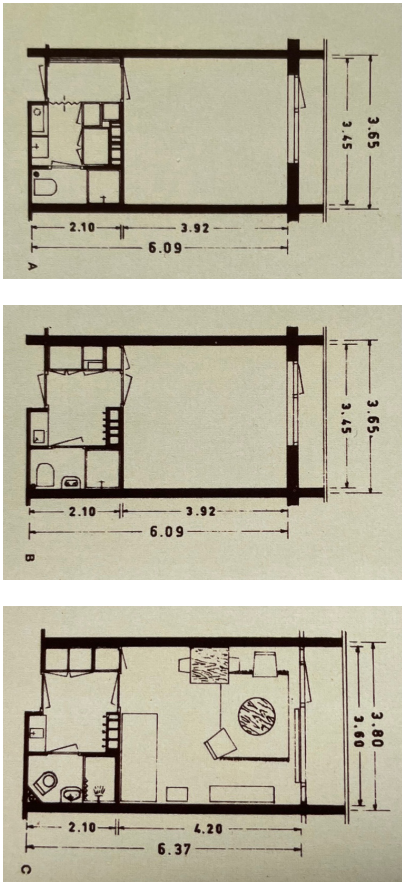



**Figure 23**: Floorplans of housing units retirement home (Mens & Wagenaar, 2009)

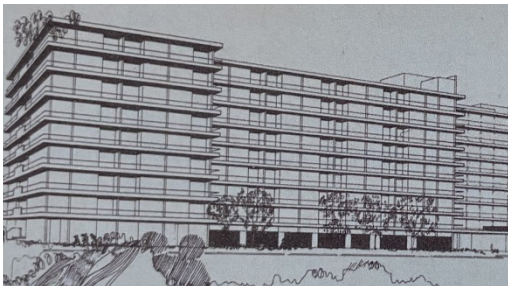


**Figure 24**: Retirement home Rotterdam Ommoord (Mens & Wagenaar, 2009)



**Figure 25**: Elderly flat Gorinchem
(Mens & Wagenaar, 2009: Nederlands Architectuurinstituut)

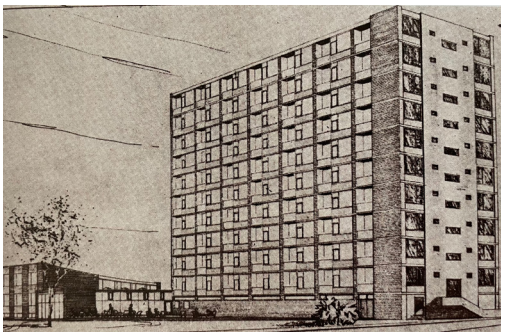


**Figure 26**: Complex for 338 elderly, Vlaardingen (Mens & Wagenaar, 2009)

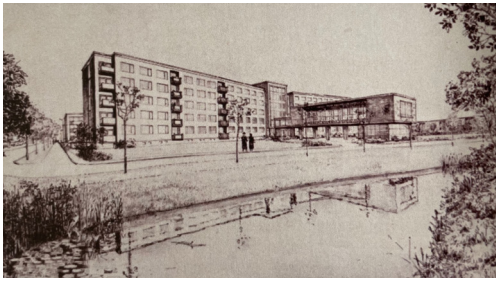


**Figure 27**: Retirement home Castricum (Mens & Wagenaar, 2009)

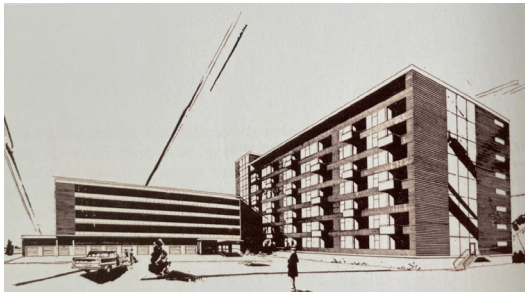


**Figure 28**: Retirement Capella aan den IJssel (Mens & Wagenaar, 2009)

new neighbourhoods where the elderly were strangers. What was intended as a contribution to the integration of the elderly into everyday society resulted in the opposite: concentrated in large, hospital-like buildings, they were literally set apart. "In our hygienically minded time we neatly set them apart in an "old age incubator" and then we have neatly solved another problem," observed one critical spirit. The architecture of elderly housing was also being criticized, especially the high-rise buildings: the idea arose that "these monuments of care for the elderly, towering above the everyday fray, were in fact nothing more than the waiting rooms of the Grim Reaper. C.K. Wiekart, a well-known architectural critic, focused on the very minimal dimensions of the apartments. When research was done into what the elderly actually thought of it themselves, it turned out that the vast majority preferred to live independently at home instead of going to a home for the elderly. The attachment to one's own neighbourhood, the high boarding prices, the parting of the pet, the difficulty in accommodating lodgers and the unattractive prospect of staying only among people of the same age played a major role (Mens & Wagenaar, 2009).

At the end of the 1960s, there was a growing conviction that housing for the elderly had ended up on the wrong track. Elderly people developed an aversion to moving into housing specially designed for them. For a long time it was not well known what elderly people that of the homes that were built for them, but an questionnaire made clear that elderly that were not already living in a retirement home wanted to keep it like that. Two third of the elderly that were eligible to move to a retirement home had no interest in living in that kind of buildings. Where did this aversion come from? Research of that time showed that the wish to live independent and the attachment to the familiar neighbourhood was one cause. Elderly were furthermore not keen on living together with only peers. All this critique on the homes designed for elderly marked the end of the golden years (Mens & Wagenaar, 2009).

Although many retirement homes were built, there was actually a shortage of nursing homes in the 1960s. The latter received no subsidy and therefore were hardly built. The introduction of the Exceptional Medical Expenses Act (Algemene Wet Bijzondere Ziektekosten, AWBZ) in 1968, which regulated the financing of long-term care, changed this and nursing homes were built. However, nursing homes still often had halls or multi-person rooms, and the character of a hospital. The "nursing model" prevailed: treatment was limited to attempts to reactivate the patient, which did not alter the fact that the patient spent most of the time in bed. During the building explosion that followed the introduction of the AWBZ, there was little time for reflection on what had been built (Mens & Wagenaar, 2009).

## 1970s

Critique on the nursing home (figure 29a,b) arose in the 1970s. The 'nursing model' was under attack. It underscored, according to critics, the aura of "the last waiting room," a place to be avoided. The nursing home was often described as something terrible. Did admission to a nursing home really benefit the patient? Surely that was ultimately the goal. But by 1970 there was a growing conviction that this was not the case. Even though this type was called the nursing home, a farewell to the 'nursing model' was the first thing that was needed. In its place came the 'rehabilitation model'. Rehabilitation became the main task of the nursing home. The introduction of the 'rehabilitation model' was an attempt to do diminish the hospital character, and with it the architecture of the nursing home changed. After all, the patient does not rehabilitate in bed, and the less he stays in bed, the greater the need not only for rehabilitation and treatment facilities, but also for accommodation where he can stay in more normal conditions than in the dormitories. More and more emphasis was placed on the importance of normalization: housing nursing home patients as normally as possible. This leaded to creating the most normal living environment possible, under the name of 'the living room model'. This model is



**Figure 29a**: Four persons room in nursing home Het Zonnehuis, Vlaardingen (Mens & Wagenaar, 2009: Het Zonnehuis, Vlaardingen)

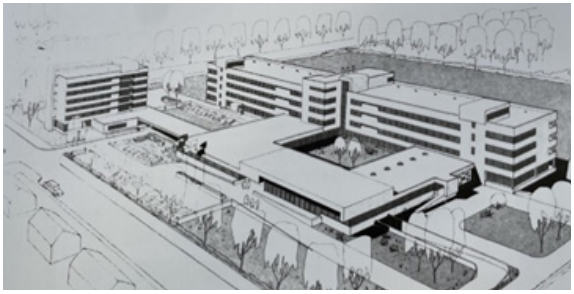


**Figure 29b**: Nursing home Rosendael, Utrecht-Overvecht (Mens & Wagenaar, 2009)

supposed to make the stay in a nursing home more homelike; there is more emphasis on living. People live together in groups with bedrooms grouped around a common living room (figure 30) (Mens & Wagenaar, 2009).

In parallel with the critique on the nursing homes, was the critique on the excessively large complexes for the elderly that were isolated in the suburbs, due to modernistic beliefs. The wish to integrate elderly into the residential environment arose. But designers increasingly concluded that the intention to integrate the elderly into the residential environment was almost impracticable. The vast majority of institutions were in newly built neighbourhoods, and it was difficult to build a bridge between home and environment there (Mens & Wagenaar, 2009).

At the one hand the integration of elderly in the residential environment was promoted by focussing more on independent housing for elderly instead of retirement homes. People believed that in the process, encouraging independence in the elderly had become a bit lost. Over the years, the retirement homes had increasingly become a care facility rather than a residential facility. In the retirement homes that were still being built, a change in architecture took place. Designers argued that the isolation of previously built retirement homes could be avoided by conceiving large buildings as small cities. In doing so, they wanted to make more use of existing urban structures, rather than tear them down. This change in thinking was the beginning of the urban renewal period. Acupuncture was preferred to large-scale operations outside



**Figure 30**: Recreation room in nursing- and recreation centre Birkhoven, Amersfoort (Mens & Wagenaar, 2009: Archief Eemland)



**Figure 31**: Theo Bosch, elderly homes en service centre Rozenstraat Amsterdam (Mens & Wagenaar, 2009: Nederlands Architectuurinstituut)

the city (figure 31, 32). Until the 1970s, hardly any retirement homes were built in the city. Now this became the subject of the new policy. So in the process, there also came back more of a focus on multifunctionality instead of the post-war separation of functions. Avoiding monotony and encouraging social contacts became important themes. The revaluation of the city, the street, the square, the spontaneity of the unplanned rather than the functional order of the "ordered city" left its mark on the architecture of housing for the elderly in the 1970s. De Drie Hoven (figure 33), designed in 1976 by Herman Hertzberger is a good example of this new direction. This project was designed based on the different scales that a city entails (Mens & Wagenaar, 2009). To see what we can still learn from this new way of designing elderly housing, the design of De Drie Hoven will be discussed in more detail in the case study in paragraph 3.2.

The turnaround in thinking about the architecture of housing for the elderly in the 1970s led to the desire for fundamentally new solutions. However, creating these new solutions was difficult to achieve within existing regulations at that time. In order to make experiments possible, exemption from the rules was needed, and this wish was granted by allowing experiments by law. Within the architecture of housing for the elderly, much experimentation took place from this point forward. One of the best known experiments is De Zonnetrap, designed by Curjel and Hartsuyker. This project was also approached as a city unto itself, with a focus on social interaction (Mens & Wagenaar, 2009). Just as De Drie Hoven this project is described in more detail in a case study in paragraph 3.3



**Figure 32**: Care home 'De Provenier', Rotterdam (Mens & Wagenaar, 2009: Nederlands Architectuurinstituut )

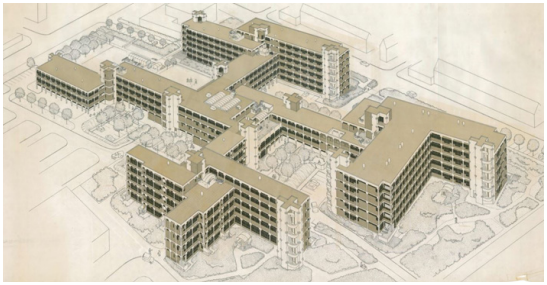


**Figure 33**: Herman Hertzberger, De Drie Hoven, 1976 (AHH, 2023)



**Figure 34**: Curjel en Hartsuyker, De Zonnetrap, 1970 (Van Gameren et. al., 2021)

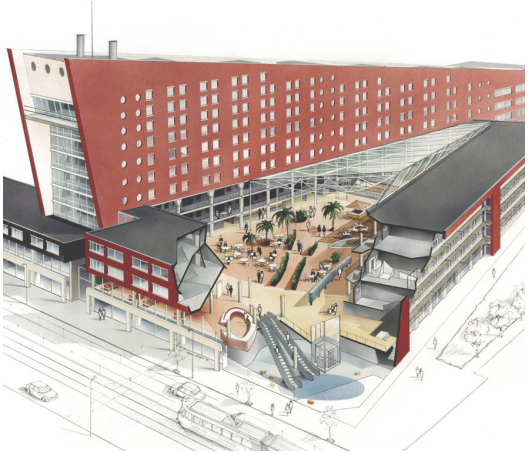


**Figure 35**: Bergwegcomplex, Rotterdam (Mens & Wagenaar, 2009: EGM architecten)



**Figure 36**: Bergwegcomplex, Rotterdam (Mens & Wagenaar, 2009: Marcel van Kerckhoven)

From the 80s on, several factors led to a fundamental policy shift in the Dutch care system in the 1990s. Namely: the separation of housing and care. The first reason that ultimately led to this separation was that in the early 1980s, the costs that elderly housing, and thereby elderly care, entailed for the government had risen to such an extent that cuts had to be made. The collective burden had to be reduced, so the government's response was to leave more to the market. In addition, the main theme in the development of care and nursing homes since the 1970s has been the relationship between housing and care. Care homes initially remained residential facilities, but the sorting out of able-bodied residents, which was also part of cutting the budget, made the care component increasingly important. The reverse occurred in nursing homes, where, as described earlier, increasing importance was placed on emphasizing the residential function. Thus, the two types actually grew towards each other, and this was the reason for experiments with consistent separations between living and care, in which living was made independent and care was added from outside. This led to the creation of the so-called residential care complexes (Woon-zorg complexen (wozoco's)) (figure 35, 36). As paradoxical as it may seem, the wozoco marks the departure from housing as a pillar of senior policy and housing for the elderly. Between 1987 and 1998, 580 wozoco's were built. The main difference from the traditional nursing home for which they are an alternative is the size and equipment of the apartments: they are in no way inferior to what can be expected in the regular market (Mens & Wagenaar, 2009).

Because the building of housing for the elderly was left more to the market, all kinds of different forms of housing for the elderly have emerged since the 1980s. The so-called "residential group" is one of them. Most housing groups are small; consisting of five to 15 households that have common facilities such as a



**Figure 37**: De Drie Hoven, Loenen aan de Vecht (Mens & Wagenaar, 2009: Architectenbureau Plas en van Twillert)

living room, dining kitchen, hobby room and guest room. In addition to the creation of new forms of housing for the elderly, which often still focused on grouping the elderly in a particular form of housing, there was a focus on the adaptation of the existing housing stock and the new construction of life-course-resilient housing was an important theme (figure 37) (Mens & Wagenaar, 2009).

Whereas the housing component was left to the market, the care component was still in the hands of the government. The main facility for elderly care was still the nursing home. Unlike before, nursing homes accommodated all categories of patients eligible for admission, and sometimes even groups not yet on a heavy care regime. Admission to a nursing home was still refunded by the AWBZ (Mens & Wagenaar, 2009).

2000 - present




**Figure 38**: Government document 'Program Longer at Home' (Ministerie van VWS, 2020)

As a result of the aging population in the Netherlands, already described in the introduction to this study, the number of elderly people in need of care continued to increase. To regulate who was entitled to which form of care and refunding from the AWBZ, care packages (Zorgzwaarte pakketten, (ZZP's) were established in 2007. Because people with the lightest forms of care already fell under a ZZP and were therefore soon entitled to intramural care and compensation, and this led to skyrocketing costs for the government, the government decided to implement extramuralization in care. Since 2013, seniors who need the lightest forms of care (seniors with ZZP's 1 and 2) can no longer enter a nursing home (Huisman, 2013). The elderly in category 3 would follow in 2014. Now the care packages started from care package 4, and had the following descriptions:

- ZZP 4: Sheltered living with intensive supervision and extended care.
- ZZP 5: Sheltered living with intensive dementia care.
- ZZP 6: sheltered living with intensive care and nursing services.
- ZZP 7: Sheltered living with very intensive care, due to specific conditions, with emphasis on supervision.
- ZZP 8: Sheltered living with very intensive care, due to specific conditions, with emphasis on care/nursing.
- ZZP 9: Recovery-oriented treatment with nursing and care.
- ZZP 10: Protected stay with intensive palliative-terminal care.

In 2015, changes in long-term care were legislated. The AWBZ disappeared and a new Long-Term Care Act (Wet Langdurige Zorg) followed, reimbursing only the most severe long-term care, leaving the rest to municipalities or the individual. Because of these cuts, the elderly will not be eligible for inpatient care until much later. Now only the elderly within care package 5 or higher were eligible for inpatient care. As a result, the elderly will have to live at home longer and inpatient facilities will be more focused on providing heavier care. The focus is now on allowing the elderly to live independently at home for longer, with the use of the social network for support and care (figure 38). For a long time the Netherlands was a true welfare state, but the government now expects all Dutch people to take care of each other from their "own strength," with as little help from the government as possible. Self-reliance is the magic word: needy people will have to rely more and more on their social environment (Joosten, 2013). This also brings new challenges when it comes to housing for the elderly (Mol, 2020).



**DE DRIE HOVEN - Herman Hertzberger**
Amsterdam, 1976
Source: AHH

As mentioned before De Drie Hoven by Herman Hertzberger and De Zonnetrap by Curjel & Hartsuyker were designed in the 1970's. During this time there was a focus on creating an integrated living environment for elderly instead of the isolated retirement homes. The social well-being of elderly was a driving force for the designs. Because this social approach was a real turning point in the history of elderly housing, and this research also has a focus on the integration of elderly in a neighbourhood, both the design of De Drie Hoven and De Zonnetrap will be studied to see what we could still learn from it nowadays. There will be searched for design elements that could still be applicable in current elderly housing designs.

## 3.2 De Drie Hoven - Herman Hertzberger

De Drie Hoven (1975) nursing home was designed as a social and cultural intersection in a neighbourhood in Amsterdam-West and conceived as a small city with different kind of accommodation in four different wings: homes for independent pensioners, a care home, a nursing home and accommodation for resident personnel (Het Nieuwe Instituut, 2016) (figure 39). The interaction, not only between residents of the complex, but also between complex residents and the neighbourhood were very important. Hertzberger wanted to create normal, meaningful contact between

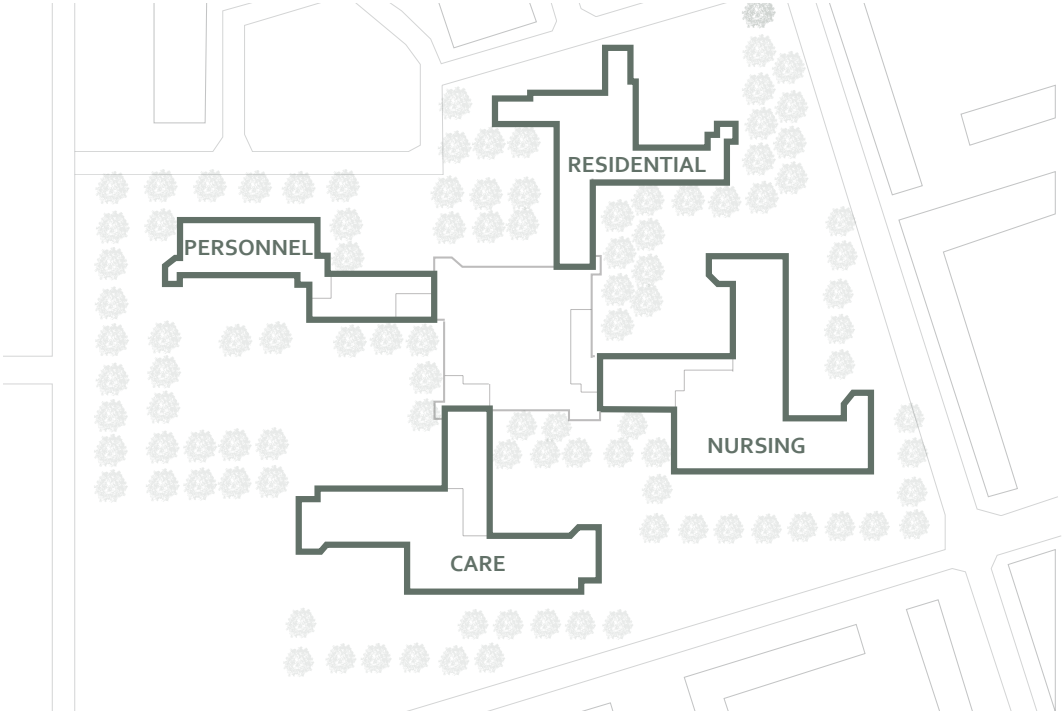



**Figure 39**: The four wings of De Drie Hoven
(made by author)

complex residents and neighbourhood residents (figure 40). Therefore he designed the outside of the ground floor with a double function: as a garden for the residents and a public park for the neighbourhood. There are attractive pathways that connect with the neighbourhood streets and pedestrian areas. The connection of these pathways is enhanced by the creation of passages underneath the building. These routes intersect with the various entrances of De Drie Hoven so that residents and locals meet 'coincidentally' (figure 41). Contact with the outside world is additionally encouraged by the organization of shared activities (Van Merrienboer, 2007).

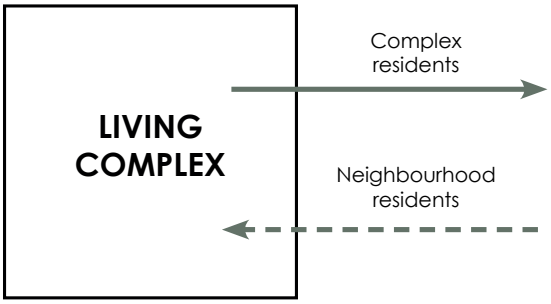



**Figure 40**: Goal design De Drie Hoven by Hertzberger (made by author)

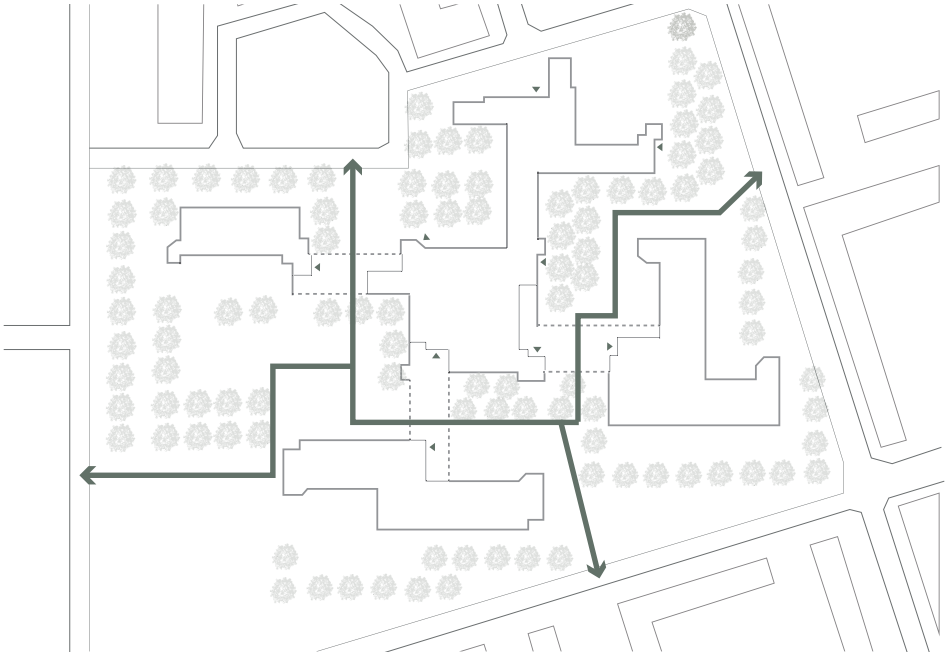


**Figure 41**: Outside 'public park', open for public in all directions because of passages underneath building, connected to neighbourhood streets and building entrances (made by author)

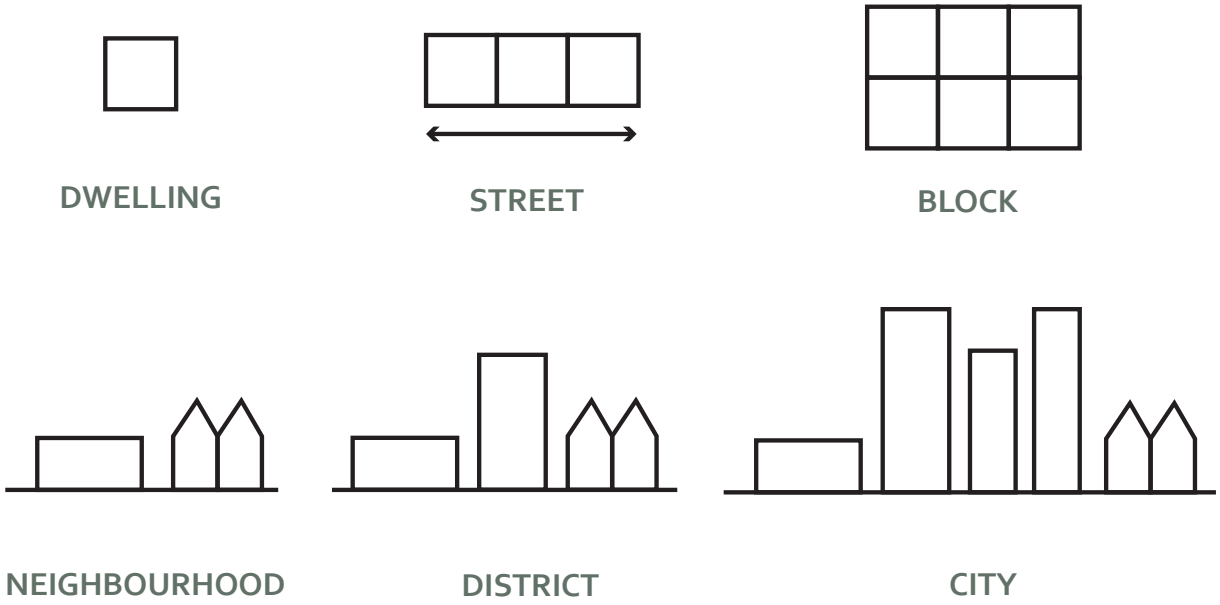



**Figure 42**: De Drie Hoven designed following the structure of a city (made by author)

The design of the building itself has a focus on the provision of opportunities to get in, and maintain, contact on a variety of scales. Hertzberger based the social planning of De Drie Hoven on the structure of a city. In this social arrangement, a growing in scale and complexity provides several contact levels: the dwelling – the street – the residential block – the neighbourhood – the district – and the city (figure 42). On each scale there are opportunities to interact. The dwellings are situated next to wide hallways that function as a 'street', connecting the dwellings of a 'block' with each other (figure 43). To increase the amount of interaction all kinds of seating and meeting areas are provided. Offsets in the facades of the dwellings for example, create a little 'front porch' for people to sit (figure 44, 45, 46). These front porches form a transition zone between the private dwelling and the public 'street'. The use of so called Dutch doors, which can partially open, also stimulate interaction (figure 47, 48 ). At the end of the 'streets' residents will reach a shared living room, which are meant to maintain contacts at the neighbourhood scale.

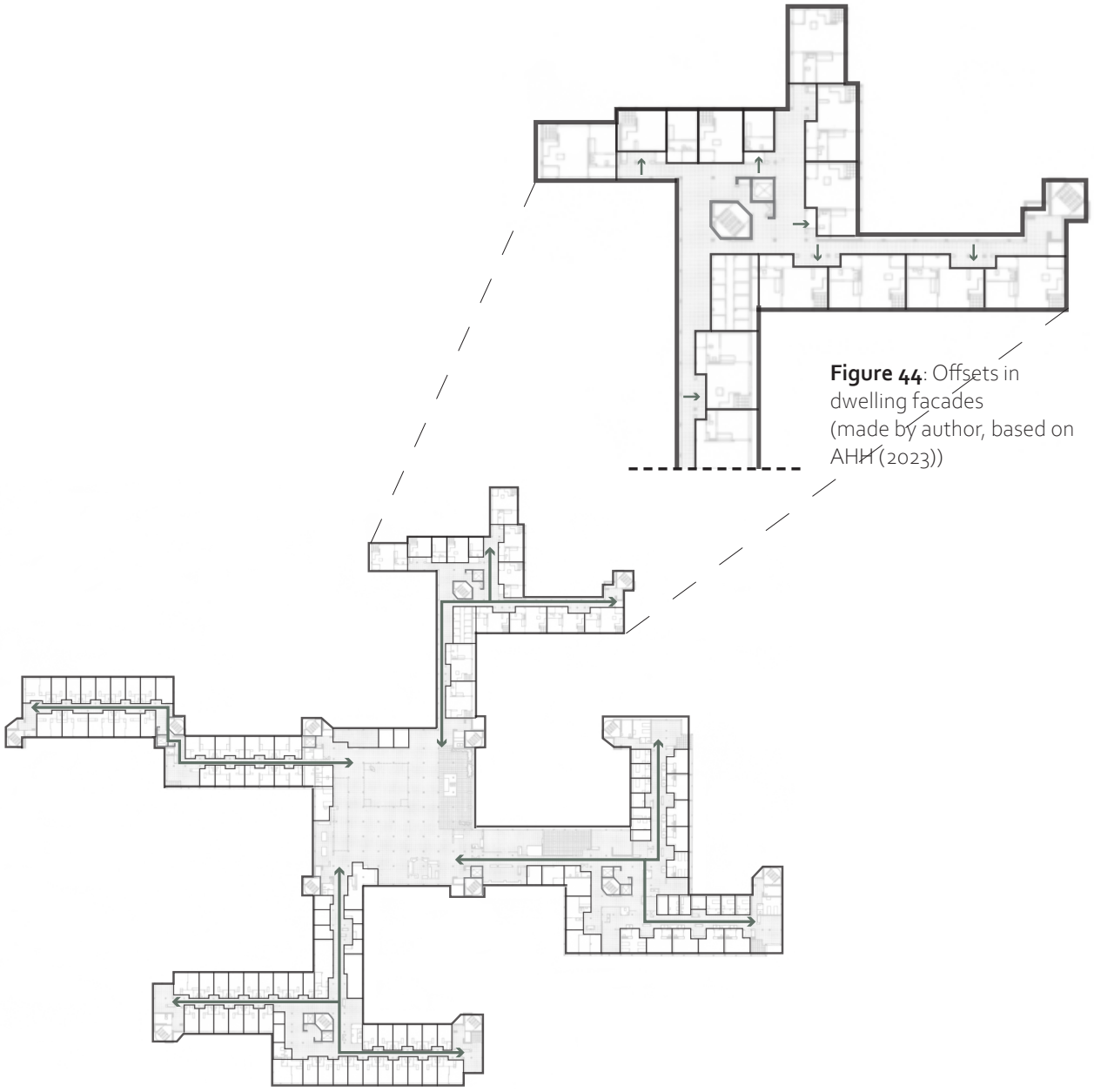


**Figure 44**: Offsets in dwelling facades (made by author, based on AHH (2023))

**Figure 43**: Hallways as streets in De Drie Hoven (made by author, based on AHH (2023))

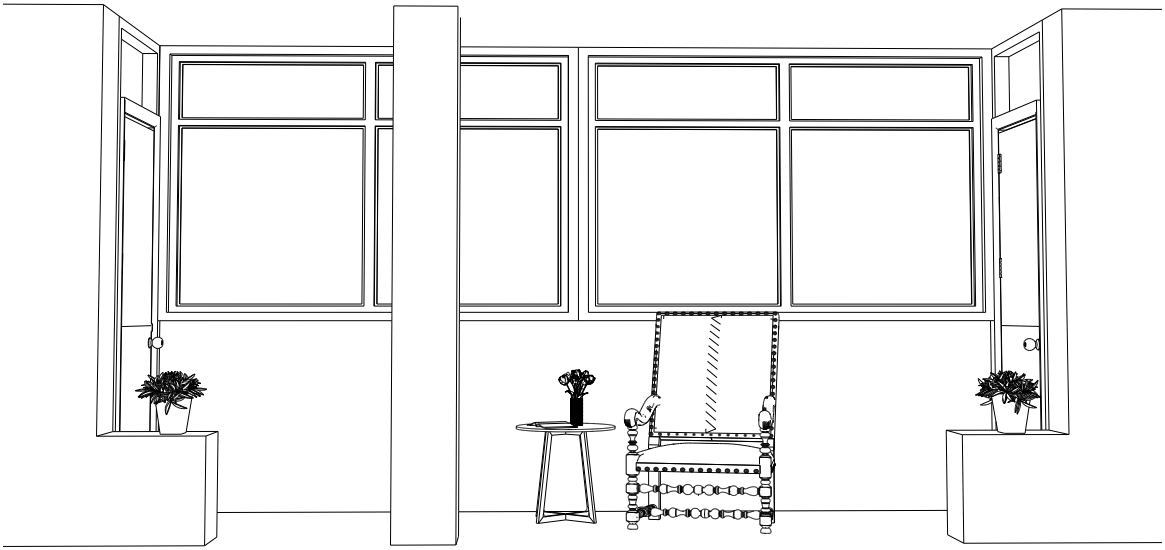


**Figure 45**: Front porch stimulates interaction with street
(made by author)



**Figure 46**: Front porch stimulates interaction with street
(AHH, 2023)



**Figure 47**: Dutch Doors stimulates interaction with street (AHH, 2023)

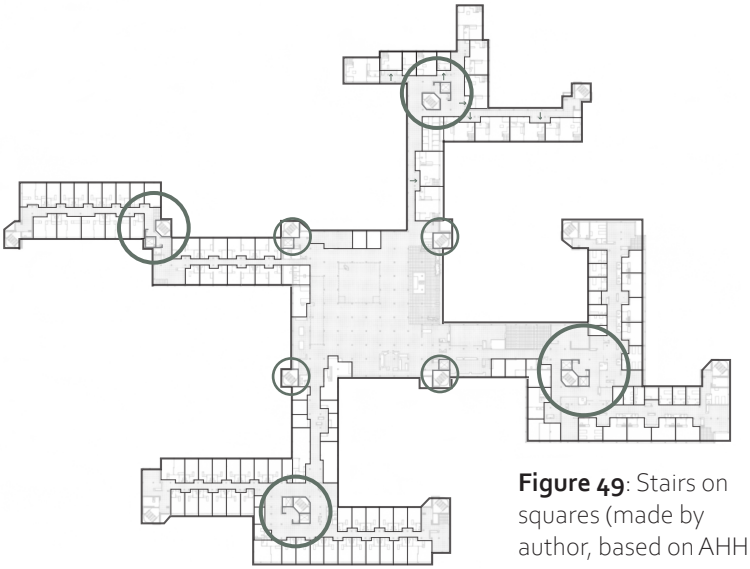


**Figure 49**: Stairs on squares (made by author, based on AHH (2023))

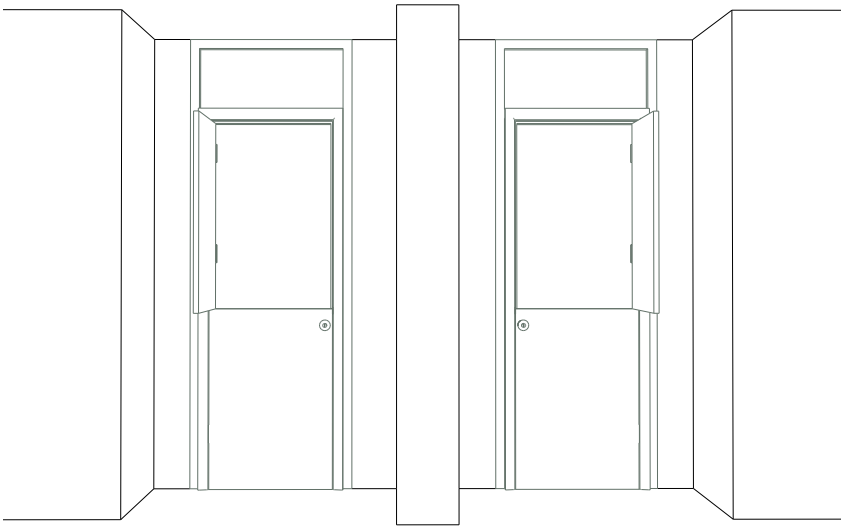


**Figure 48**: Dutch doors stimulate interaction with street (made by author)

The stairs, located on little 'squares' are meant to maintain contact on the (vertical) district level (figure 49) . These stairs also lead to shared roof terraces (figure 50, 51). All scales of interaction are located around and leading towards the central square, the 'city centre' (figure 52). This is the most appropriate place for exchanging contacts with fellow residents throughout the whole complex, but also with the 'outside world' (figure 53) (Van Merrienboer, 2007).



**Figure 50**: Shared roof terrace in De Drie Hoven (AHH, 2023)

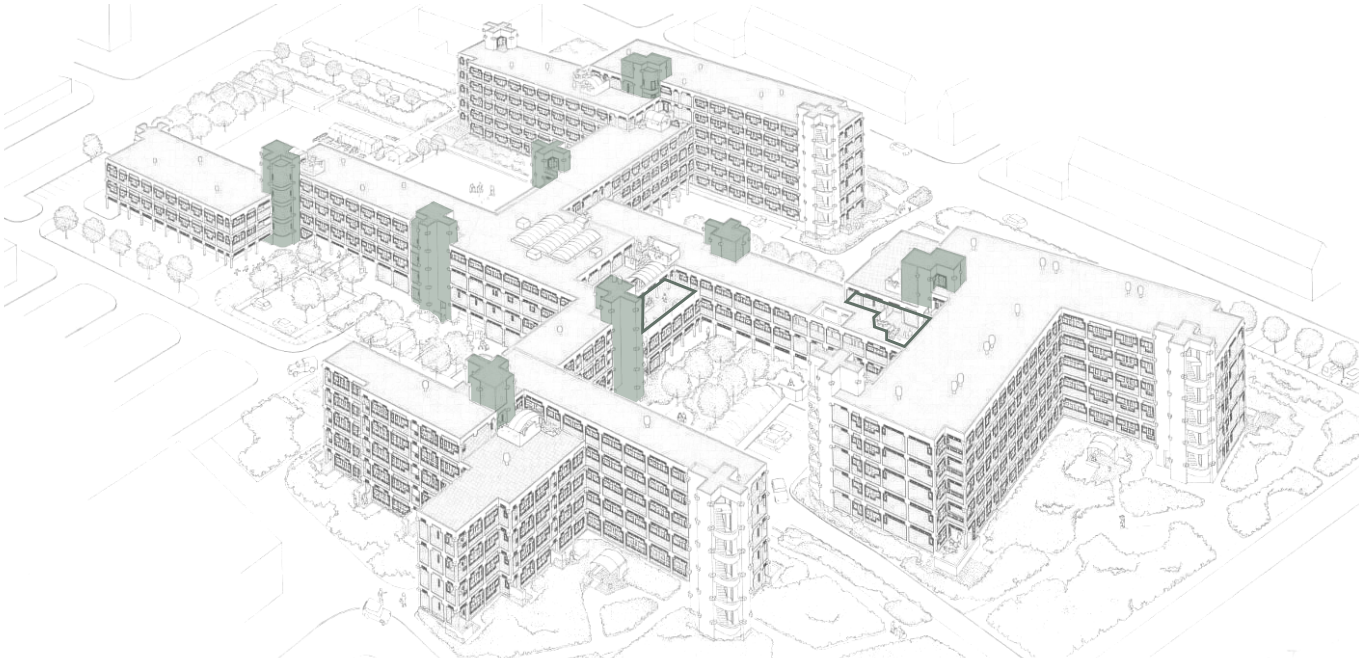


**Figure 51**: Stairs and roof terraces in De Drie Hoven (made by author, based on AHH (2023))

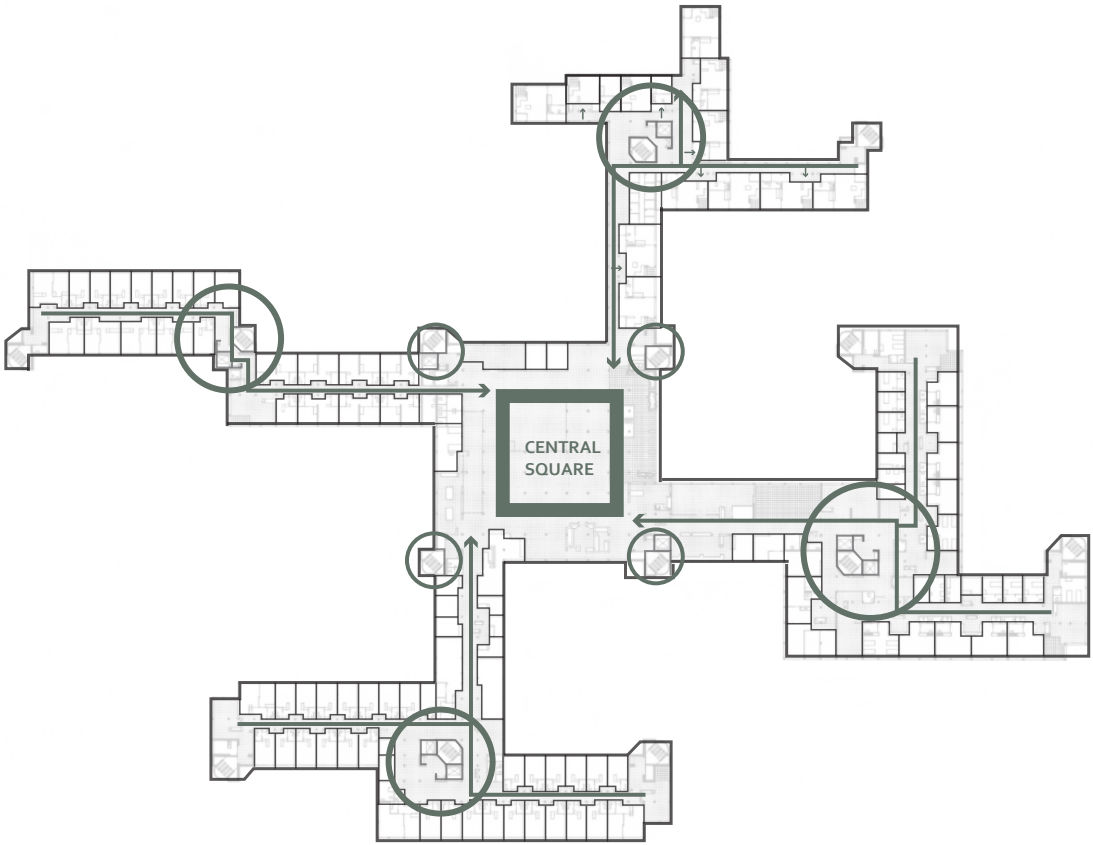



**Figure 52**: All scales of interaction are located around and leading towards the central square, the 'city centre'
(made by author, based on AHH (2023))



Figure 53 (AHH, 2023)

**The ‘city centre’, providing meeting areas and activities**



**DE ZONNETRAP - Curjel & Hartsuyker**
Rotterdam, 1970

Source: AHH

## 3.3 De Zonnetrap - Curjel & Hartsuyker

Elderly complex De Zonnetrap was designed during the 1970s as an experimental project with a focus on social interaction. The designers; Enrico Hartsuyker & Lucia Hartsuyker-Curjel, focused on multifunctionality instead of the function separation that arose after the war. The different types of residents and urban functions that come together in this complex aim to promote liveliness in this elderly complex (Het Nieuwe Instituut, 2016). This could reduce the isolation of the elderly.

De Zonnetrap is located in Rotterdam Lombardijen. The complex has 179 dwellings and is composed of three connected blocks consisting out of 5, 7 and 10 layers (Figure 54). Each block contains an open central space around which the dwellings are located. The hall in the northernmost block also contains communal facilities and rentable spaces such as offices, studios and stores such as a cobbler, a coffee shop and a snack bar (figure 55). These shared functions are also accessible to local residents, which increases interaction between the elderly and the neighbourhood. To accentuate the open character the hall is designed with voids and skylights (figure 56). On behalf of the orientation of the elderly, each block distinguishes itself by applying different geometric shapes and colours on the interior (figure 57).

Access to the dwellings takes place through interior galleries and corridors, which are situated around the central halls (figure 58). This creates vertical interactions between people on the galleries and people in the hall. The galleries are also interconnected to create bridges through the central hall (Figure 59).

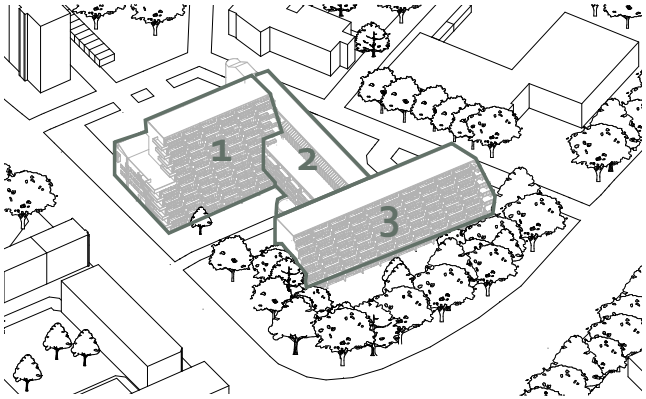



**Figure 54**: De Zonnetrap composed out of 3 blocks (based on Van Gameren et. al., 2021)

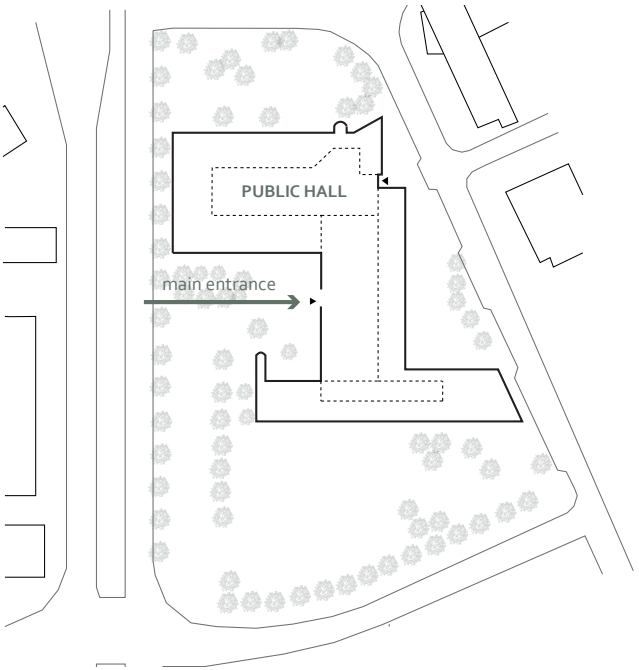



**Figure 55**: Northern hall is public hall (made by author)




**Figure 56**:
Public hall with voids and skylights
(based on Van Gameren et. al., 2021)



**Figure 57**: Use of colors and shapes for orientation (based on Van Gameren et. al., 2021)

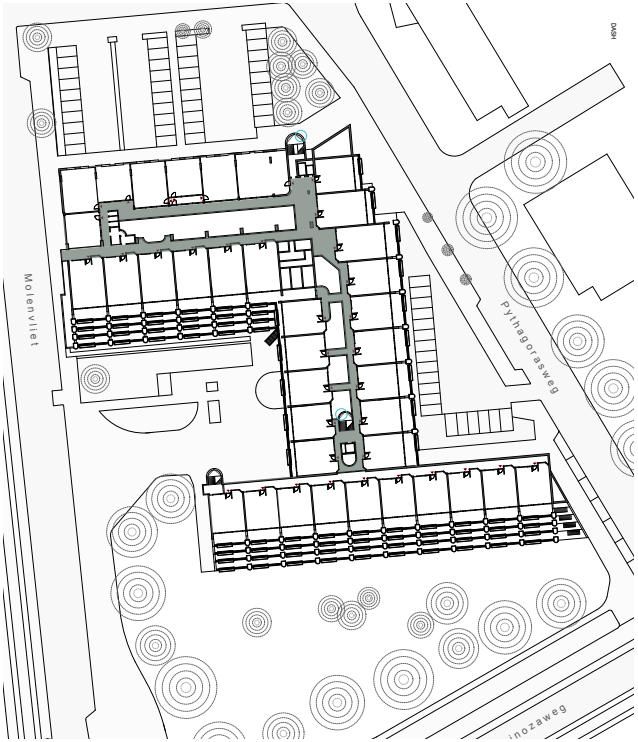



**Figure 58**: Galleries around halls with bridges
(based on Van Gameren et. al., 2021)

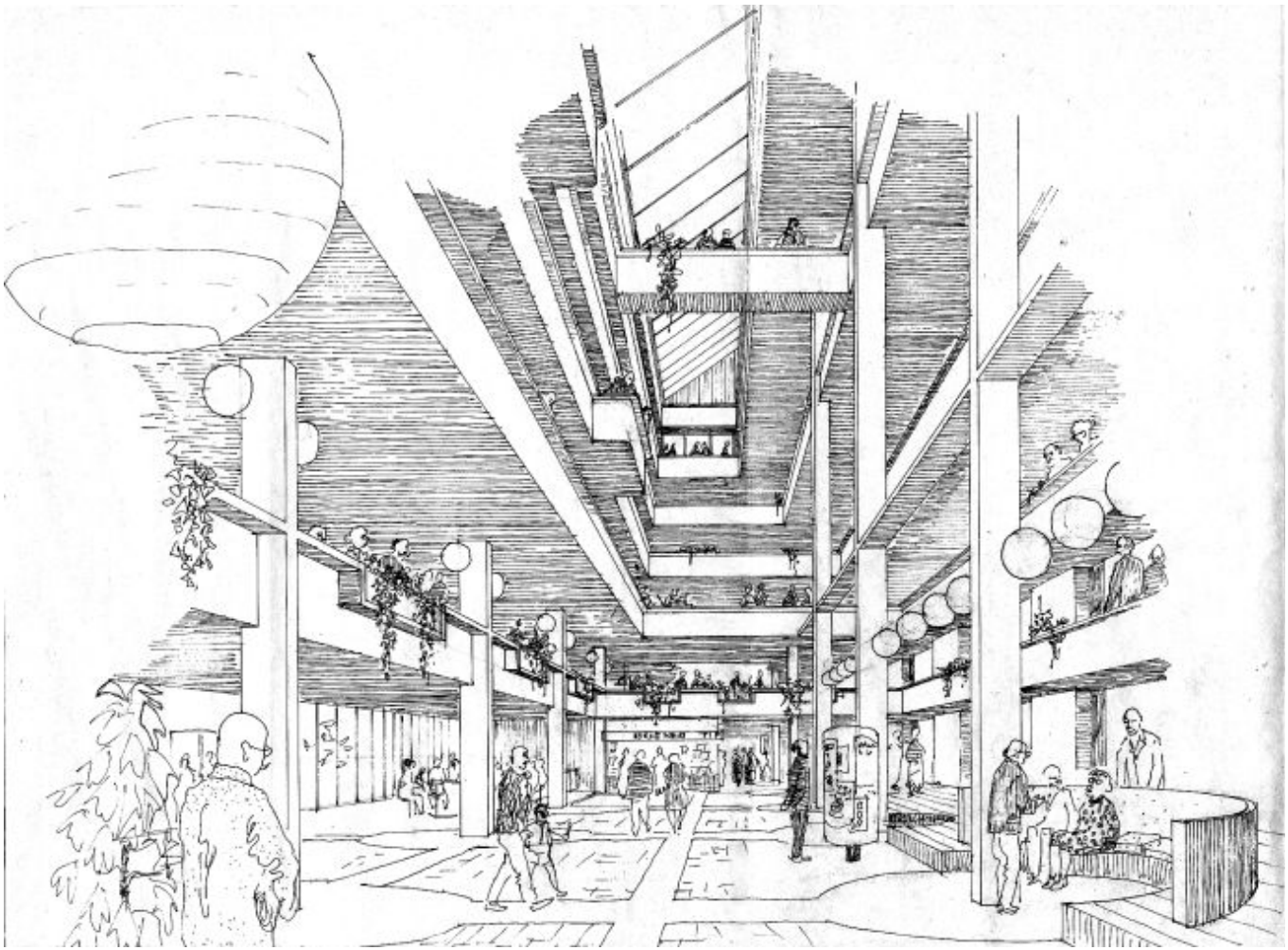


**Figure 59**:
Public hall with bridges
(Van Gameren et. al., (2021))

The dwellings in the Zonnetrap are stepped. This creates large terraces for all the dwellings (figure 60, 61). These terraces have concrete planters to make the environment look green (figure 62), and an intermediate fence to the neighbours - both intended for contact and fire safety. There are two different housing types: an apartment meant for one person, with an area of 56m2, and an apartment meant for two people with an area of 70m2. The dwellings are designed as 'walk-around dwellings'. None of the interior walls connect to the exterior walls. Living room, kitchen and bedroom are located around the central core with bathroom. This achieved a flexible layout that could be filled in by the elderly, and increased the freedom of choice. The larger apartment contains a small intermediate room that can be used, for example, as a craft and hobby room. Thus, activities that older people like to do were taken into account (Figure 63, 64).

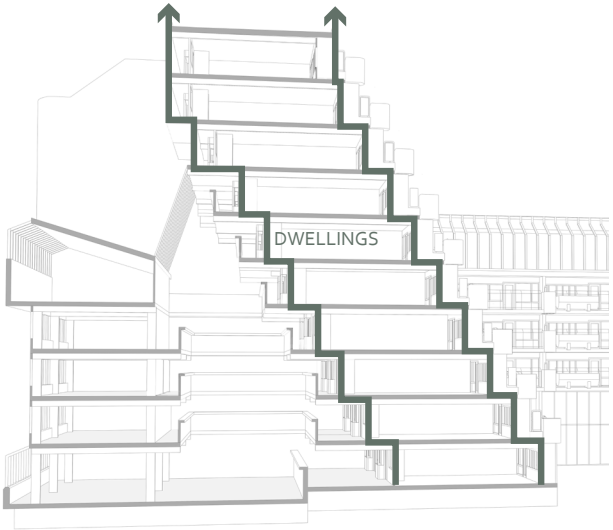


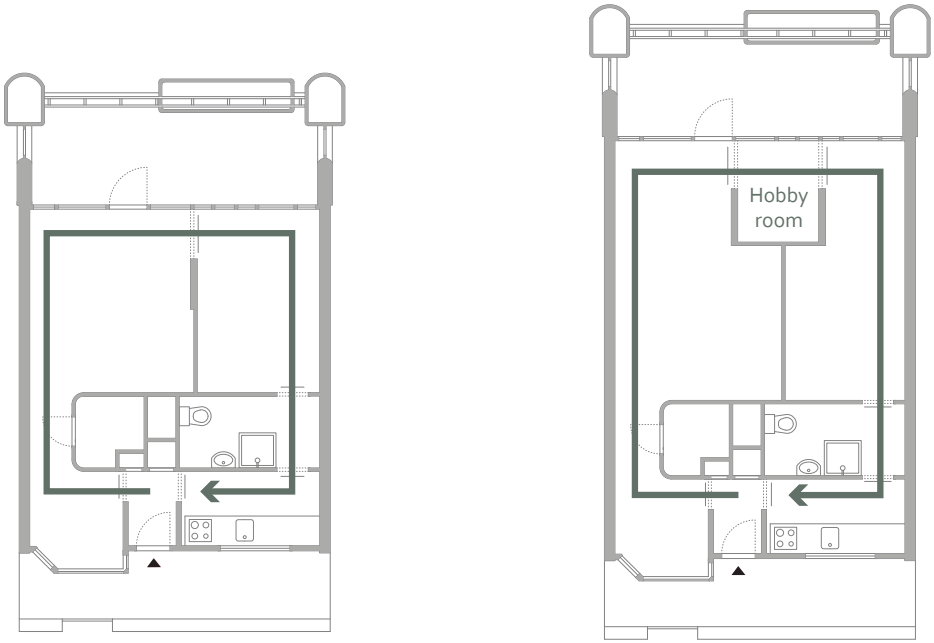

**Figure 60**: Stepped dwellings
(based on Van Gameren et. al., 2021)



**Figure 61**: Stepped dwellings with terraces
(Van Gameren et. al., 2021))



**Figure 62**: Planters on balcony
(based on Van Gameren et. al., 2021)




One-person apartment: 56m²

Two-person apartment: 70m²

**Figure 63**: Dwelling typologies with 'walk-around' floor plans in De Zonnterap (based on Van Gameren et. al., 2021)

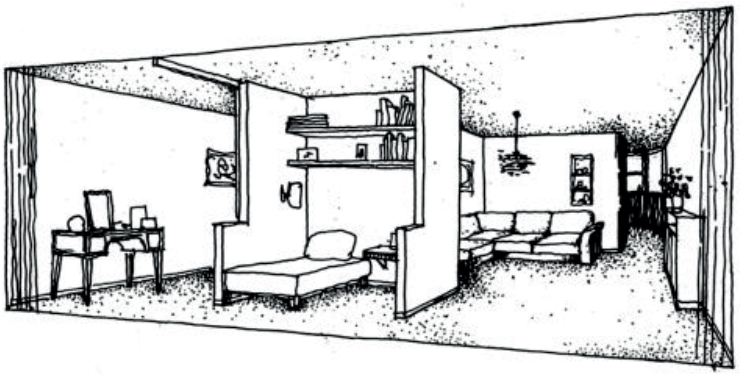


**Figure 64**: 3D impression two-person apartment De Zonnetrap (Van Gameren et.al., (2021))

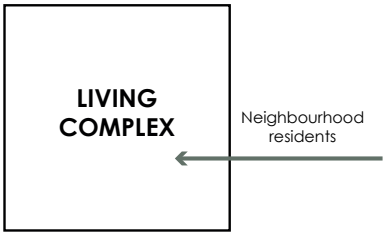
## 3.4 Conclusion

This chapter aimed to answer the following question: *How has elderly housing developed through the history and what can we learn from it?*

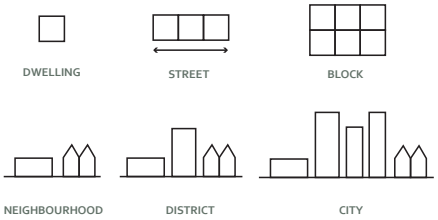
After creating a timeline with the main developments in the history of elderly housing, there can be concluded that the government played a very important role in these developments. First the elderly where not really thought of and seen as the poor in society. From the moment that the government started to subsidize elderly housing, mass production of retirement homes started. This lead to isolation of elderly, outisde the city, in hospital like buildings. In the seventies critique in this isolation caused a turning point. The focus was now on integration, interaction and participation, with the needs of the elderly in mind, which lead to the designing of elderly homes within the city. In the eighties the government started to make cuts in the budget for elderly housing and care. And recently the government made even more cuts in the budget for elderly care, which means that they have to live longer at home. From this there can be concluded that elderly housing went from 'integrated' in the city (in bad circumstances), to clustered and isolated outside the city, to clustered inside the city, with a focus on the connection with the neigbourhood. Now we not only need to focus on the connection of complex residents with the neighbourhood, but on the integration of elderly in the neighbourhood itself, because they need to live longer independent at home. These conclusions in the developments of elderly housing in history are summarized in a timeline on the next page.

As mentioned before, we see that from the seventies on there was a focus on the connection of elderly complex residents with the neighbourhood. Even though they were clustered in a building complex at that time, we can still learn from the new design insights that were created during that time. By conducting case studies of De Drie Hoven and De Zonnetrap, several design elements could be found that where at their time used to stimulate integration and interaction, and could nowadays still be of use in designs focussed on the integration of elderly.

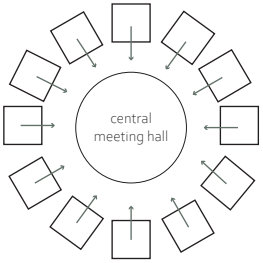
It is important to not only connect the residents of the complex with each other, but also the complex residents with the neighbourhood residents. This can be done by providing for neigbourhood functions within the building. Furthermore, by providing different scales of interaction different places of encounter can be created and form a gradient in socially active places. Providing buffer zones between private, semi-private, semi-public and public spaces also contributes to this. The dwellings should be organized around one central point, which brings residents from the whole complex together. Vertical connections by use of for example bridges can stimulate encounter too. Creating a flexible floorplan stimulates freedom of choice for the resident. Lastly, by use of colours and shapes elderly residents can orientate themselves better. All these elements can be found on the right.



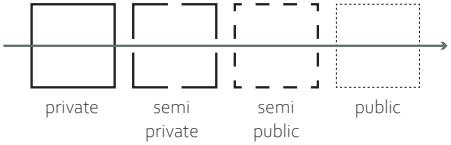

LET NEIGHBOURHOOD RESIDENTS
COME INTO THE COMPLEX



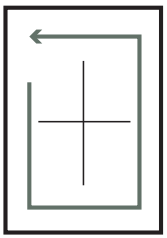

DESIGN WITH DIFFERENT SCALES OF
INTERACTION



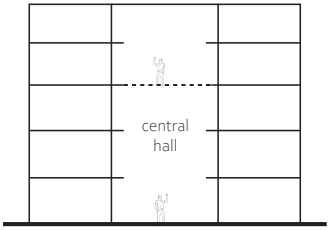

ORGANIZE DWELLINGS AROUND
A CENTRAL MEETING HALL



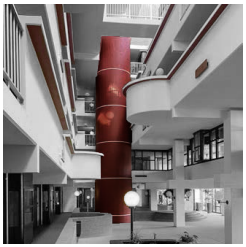

PROVIDE BUFFER ZONES FOR A TRANSITION
FROM PRIVAT TO PUBLIC



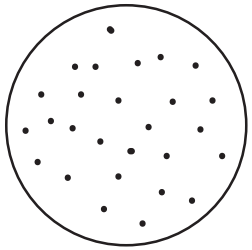
FLEXIBLE FLOORPLAN
FREEDOM OF CHOICE



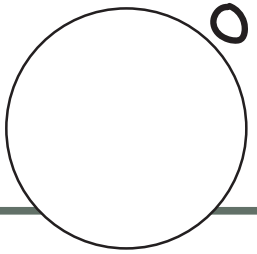

BRIDGES FOR
VERTICAL CONNECTION



COLOURS AND SHAPES
FOR ORIENTATION



'Integrated'
(dependent)



Clustered
outside the city

GOVERNMENT SUPPORT



















Elderly = poverty
Hofjes for the more
wealthy

First retirement homes and
homes specific for elderly
Still only for the wealthy

Government wants
social security
Noodwet Drees: elderly
homes accessible for all
Beginning welfare-state

Several housing forms
for elderly where
developed

Built as h

20/30

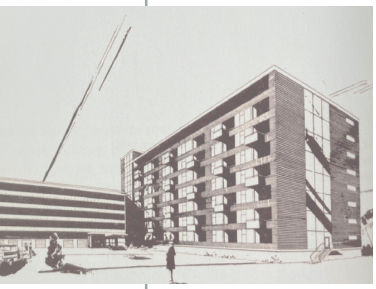
40

50

13th CENTURY

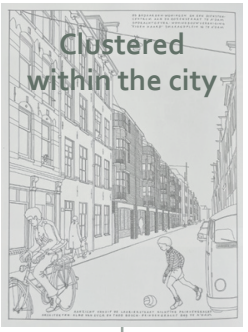
20th CENTURY

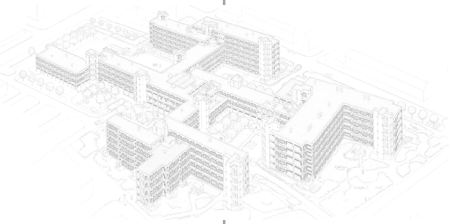


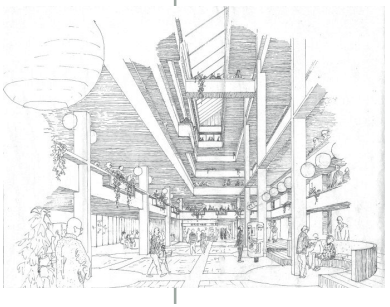




Golden years for eldelry homes
hospital like skyscrapers outside the city
Isolation for elderly

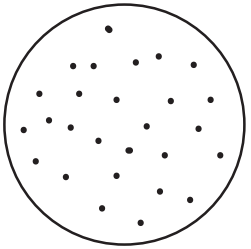




Focus on integration, interaction, participation
Designs based on needs of elderly

Budget cuts: seperation of
housing and care
Housing for the market,
care nearby



Integrated
(independent)

More budget cuts
Less care available
Elderly need to live longer
independent at home

60

70

80

now



# 4

# NEEDS AND WISHES ELDERLY

# 4 NEEDS AND WISHES ELDERLY

The previous chapter described in detail how housing for the elderly has developed over the years. As mentioned earlier, the current focus within housing for the elderly is on living "independently at home" for longer, and the extramuralization of care has been initiated. Only the elderly with a care indication of 5 and higher are admitted to nursing homes, all other elderly are expected to live independently at home, with the help of informal caregivers or possibly home care. But what do the elderly need to live independently? What makes a living environment and a home suitable for the elderly? These are questions that will be focused on in this chapter.

## 4.1 Limitations

To know what the elderly need, it is first important to know what challenges the elderly generally face. Although the older people living independently at home generally do not yet have, or have a light care indication, most of them will eventually have to deal with various limitations (Gude, 2006). Each of these limitations will, in its own way, cause problems in the home or living. The following groups of limitations that can occur at an advanced age can be distinguished (figure 65):

- Physical limitations
- Psychomotor limitations
- Sensory limitations
- Cognitive limitations

These different groups of limitations will be briefly explained underneath.

Physical limitations

People will face physical limitations (figure 66) during aging which might have an effect on the way of living. Especially the reduced muscle strength, increasing brittleness of bones, reduced flexibility and endurance cause problems in living. Household tasks such as cooking and cleaning are made more difficult, but also the ability to perform independent physical care and the degree of mobility are reduced. Due to the reduced mobility, climbing stairs is often one of the first major bottlenecks for the elderly in the home and entering it (Gude, 2006).



**Figure 66**: Physical limitations (SOS, 2020)

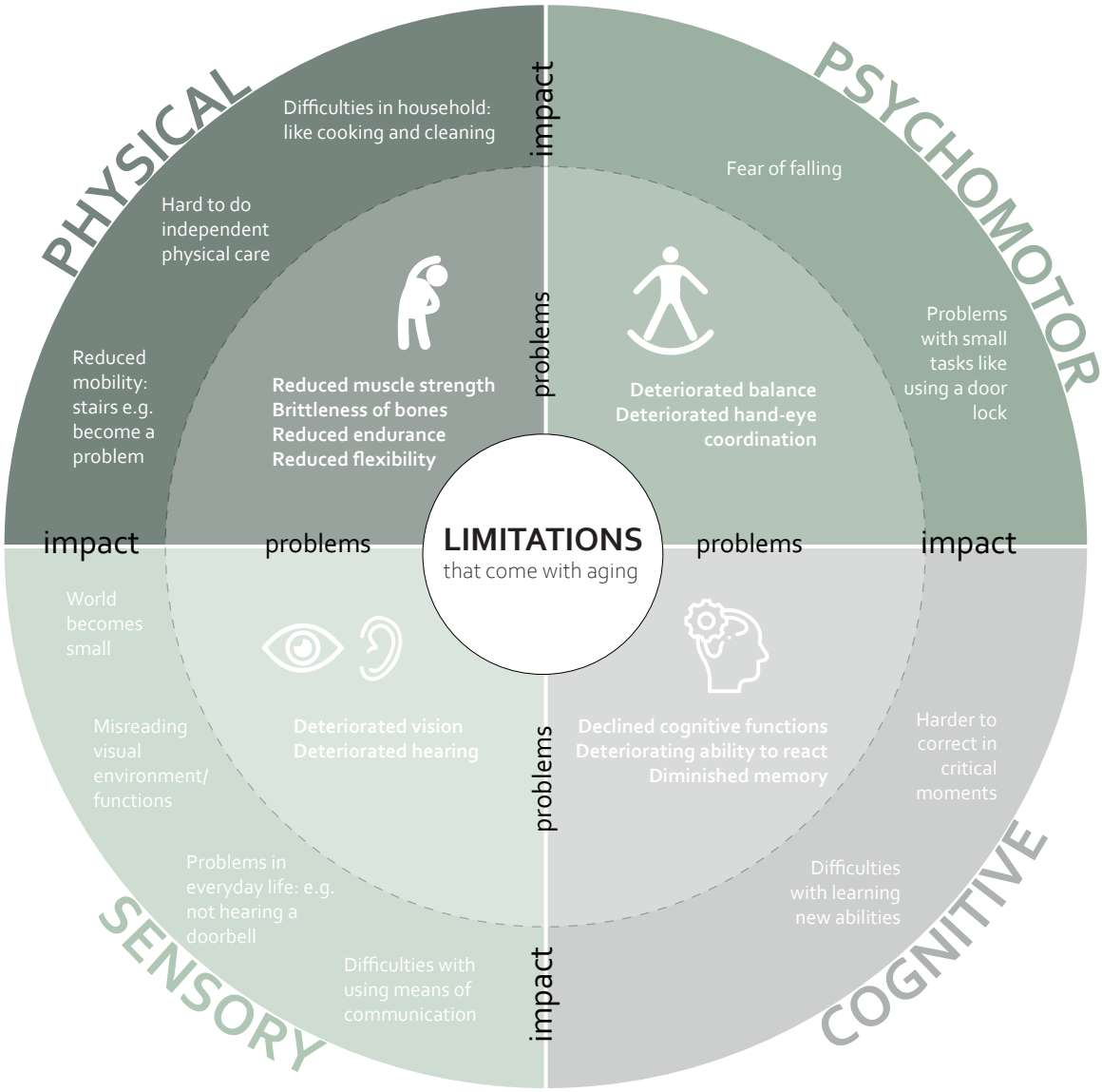



**Figure 65**: Limitations that come with aging, with the experienced problems and their impact (made by author)

Psychomotor

The deterioration of the psychomotor system also causes limitations in the self-reliance of the elderly. For example, due to the deteriorated balance (along with the greater chance of breaking bones), the fear of falling arises (figure 67). In addition, problems arise with operating products and, for example, using the lock due to the deterioration in hand-eye coordination and hand grip. However, reaction time and movement time can also cause major problems in critical situations along with the physical limitations (Gude, 2006)



**Figure 67**: Psychomotor problems cause falling (HPT, 2022)

Sensory

With the deterioration of sensory aspects like vision and hearing (figure 68), the world of an elderly person becomes quite smaller. It becomes harder for elderly people to visualize differences which increases the chance of misreading functions and not understanding the visual environment they live in. Deteriorated hearing will lead to problems in the everyday life like for example not being able to hear the doorbell ringing. The use of means of communication that maintains the social environment of these people also becomes increasingly difficult when sight and hearing deteriorates (Gude,



**Figure 68**: Hearing deteriorates (NIH, 2021)

Cognitive

Cognitive functions also appear to decline with age. As a result, the ability to react deteriorates, which makes correcting in critical moments difficult. Learning new abilities will be more difficult because the degree of imprinting is lagging behind, and memory is also diminished (Gude, 2006)

Within these groups of disabilities, a distinction can be made in the severity of the disability: no disability, mild disability, moderate disability, and severe disability. In figure 69 it can be seen how the severity of the limitations increases with age. For example, 95% of all people over 55 can manage completely without assistance, but 60% of those over 85 have a limitation in performing general daily living activities. All these forms of impairment entail certain consequences. The dangers associated with them must be minimized as much as possible (Gude, 2006). The design of the home and living environment can contribute to this. According to Mol (2020), an optimal residential environment for the elderly should contribute to the six dimensions of positive health. In following paragraph this aspect of 'positive health' will be explained.

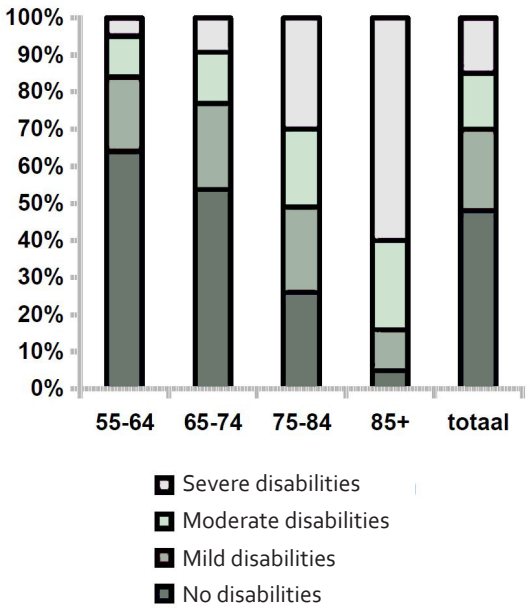



**Figure 69**: Severity of disabilities (Gude, 2006)

## 4.2 Positive health

In 2011, Huber et al. introduced the term positive health (figure 70). The concept emphasizes that health is more than just "a state of complete physical, psychological and social well-being and not just the absence of disease or infirmity" (WHO definition in 1948). Huber et al. (2011) formulated health as follows; "Health is the ability to adapt and take charge of oneself in the face of life's social, physical and emotional challenges. In the concept of positive health, functioning, resilience and self-direction are central. It is not a static state, but a dynamic ability." Positive health consists of six domains:
- Body functions
- Mental well-being
- Meaning (spiritual and existential dimension)
- Quality of life
- Participation (social participation)
- Daily functioning

Although the wishes, needs and possibilities of the elderly are diverse, a number of general characteristics of the residential environment can be distinguished that contribute positively to the (positive) health of the elderly and their ability to live independently at home for a longer time. These characteristics are further explained in this chapter. Just as in the research of Mol (2020) a distinction is made between the residential environment of elderly people at two scales: the neighbourhood and the dwelling. Within these two scales a distinction is always made between physical elements, functional elements, and social elements. By approaching the research based on these three elements an extensive overview of what elderly need to live longer independent at home can be created.

## 4.3 Neighbourhood

In this paragraph will follow an overview of the physical, functional and social aspects on the neighbourhood scale, that will help elderly people to live independent at home longer.

### 4.3.1 Physical

Accessibility

Because, as mentioned earlier, the mobility of the elderly often deteriorates, it is of great importance that the environment is well accessible. On the neighbourhood scale this involves integral accessibility to both facilities and infrastructure.

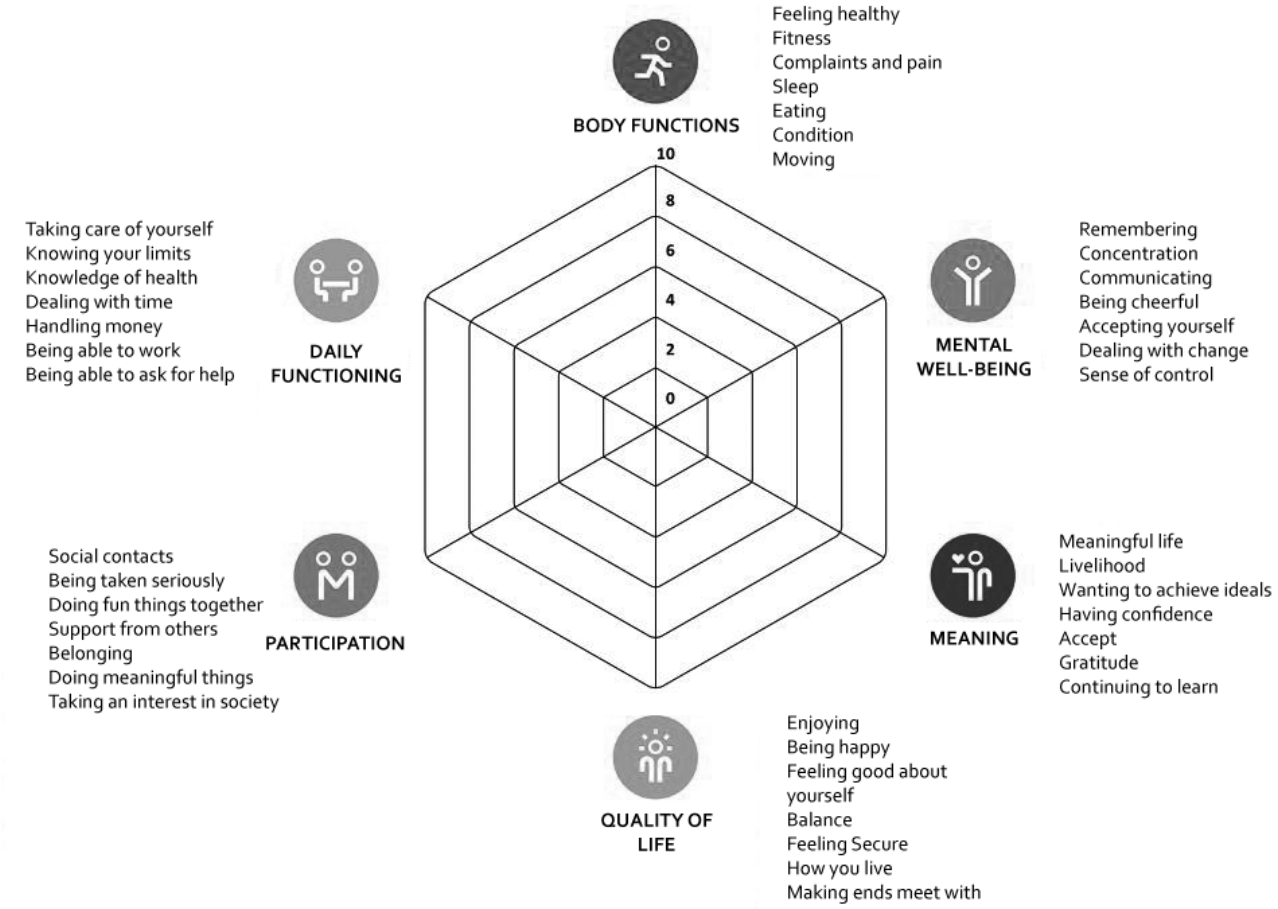



**Figure 70**: Six domains of positive health
(Huber (2011), translated by author)

Everyone should be able to enter buildings independently. Also people with sensory and/or physical limitations and users of a rollator, wheelchair or mobility scooter (Joosten, 2013). According to the Public Buildings Accessibility Act, there are certain requirements that a building must meet in order for it to be accessible to everyone. For example, a passageway must have a minimum width of 90cm. However, preferably, passageways are 120cm wide (figure 71). In that way, people can guide, pass and/or cross wheelchair users. In addition, a building should not have thresholds and steps that limit accessibility (figure 72). Furthermore, there should be elevators or ramps in addition to stairs (figure 73, 74). Finally, automatic doors at entrances promote accessibility (figure 75) (Leijen, 2017).

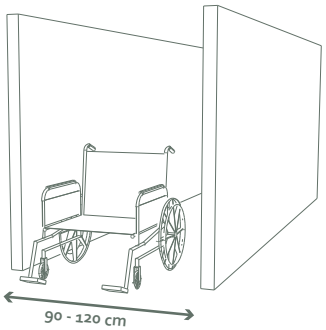



**Figure 71**: Width wheelchair (made by author)

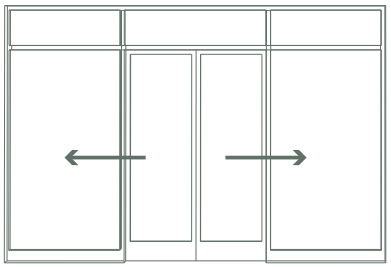


**Figure 75**: Automatic doors (made by author)

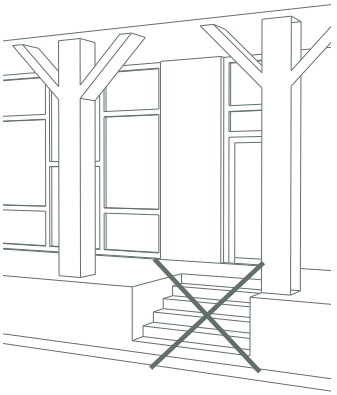


**Figure 72**: No steps or thresholds (made by author)



**Figure 73**: Provide for ramps (made by author)

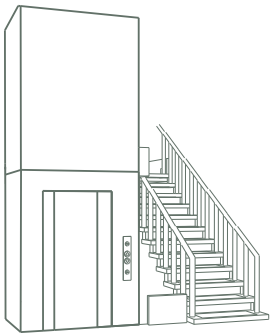


**Figure 74**: Provide for elevators (made by author)

Infrastructure also plays an important role in accessibility for elderly (Penninx, 2007). An important part of the neighbourhood infrastructure are the roads and paths over which the elderly move. These must be well connected so a clear, recognizable road structure exists (figure 76). Furthermore elderly people find it important that the infrastructural network is safe to move across. They want to be able to get to stores, bus stops, and a service center without any barriers along the way (figure 77). A slippery surface, high curbs, holes and loose tiles are real culprits. The roads need to be passable so that they can avoid tripping over obstacles and have to exert little effort on ramps and stairs. Crosswalks should be as safe as possible to cross. Slowing down traffic could help achieve this (figure 78) (Mol, 2020).

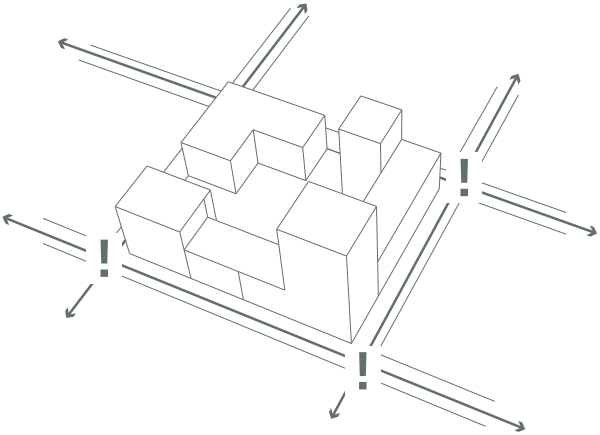


**Figure 76**: Clear, recognizable road structures (made by author)

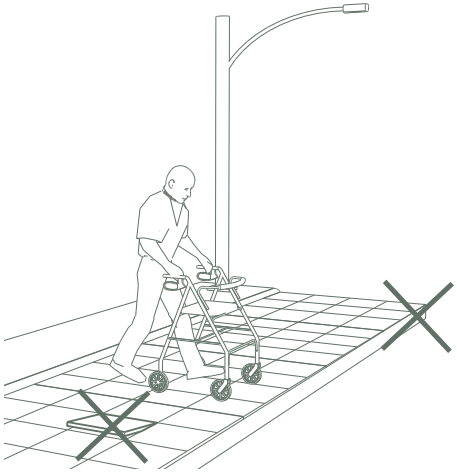


**Figure 77**: No barriers like high curbs or loose tiles (made by author)

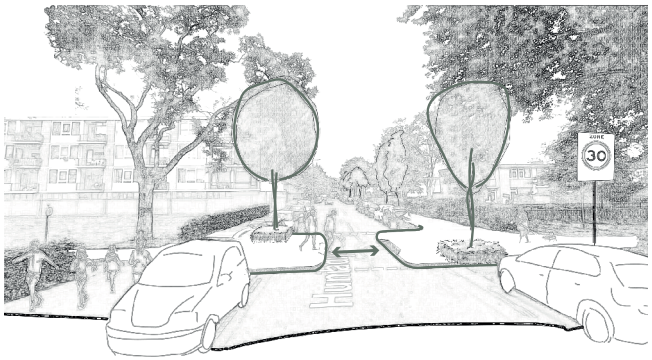



**Figure 78**: Slow down traffic (made by author)

If the environment adapts to the pace of the elderly by taking into account their reduced mobility, the threshold for going outside will be lowered. This increases the subjective safety, mobility, self-reliance, participation, sense of purpose and thus health of older people (Cerin et al., 2017).

Activity friendly environment

A well accessible environment also stimulates physical activity among elderly. It is very important that they are stimulated to do physical activities. This promotes the independence, participation and sense of purpose of the elderly and an activity-friendly environment contributes to the health of the elderly in several ways (Mol, 2020; Kerr et al., 2012). As mentioned before aging goes together with physical limitations, and one of the most efficient ways to reduce physical decline is physical exercise (Cvecka et al., 2015). Many environmental factors are now known to encourage physical activity among the elderly. Much of them are related to the environment and facilities being accessible, or in other words walkable. If the built environment is walkable, it is very likely to increase the physical activity of elderly, since walking is the main outdoor activity for this target group. The walkability of an environment is related to different elements: land use mix and street connectivity (Chau & Jamei, 2021). A functional mix consisting out of residential, commercial and communal uses stimulates people to go outside on varying times of the day (figure 79). Street connectivity has to do with the pattern of the streets, which should contain a clear structure, and the length of streets, which should not be too long. Benches along walking routes where elderly people can take a rest shortens the routes and stimulate elderly to be physical active (figure 80) (Doornbos & Rauws, 2018).

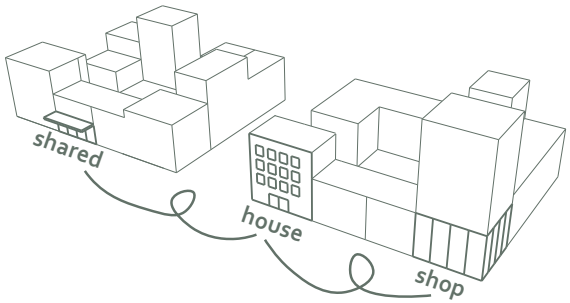



**Figure 79**: Function mix (made by author)

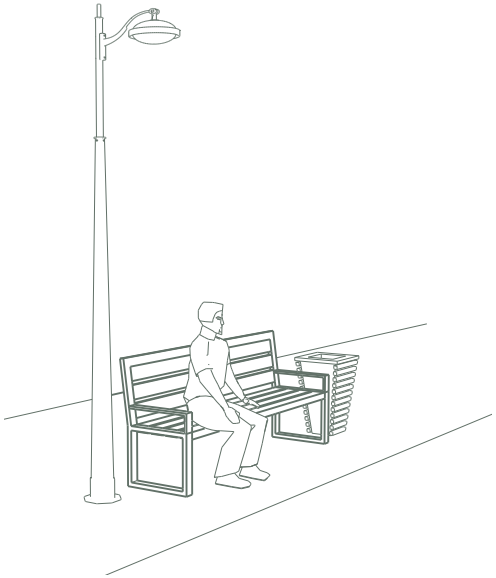


**Figure 80**: Benches along the way (made by author)

Another very important factor that encourages physical activity in the form of walking is the presence of green space (Gong et al., 2014). Due to climate change and with it an increase in the number of warm days and heat waves, so called heat islands are created in cities. On hot days, cities are much warmer than their surroundings (Klok, et al., 2010). The elderly are more vulnerable to extreme heat. The creation of shaded rest areas for the elderly through the presence of greenery and water are important so that the elderly will go outside more and in a safer way, and be encouraged to exercise (figure 81) (Mol, 2020).

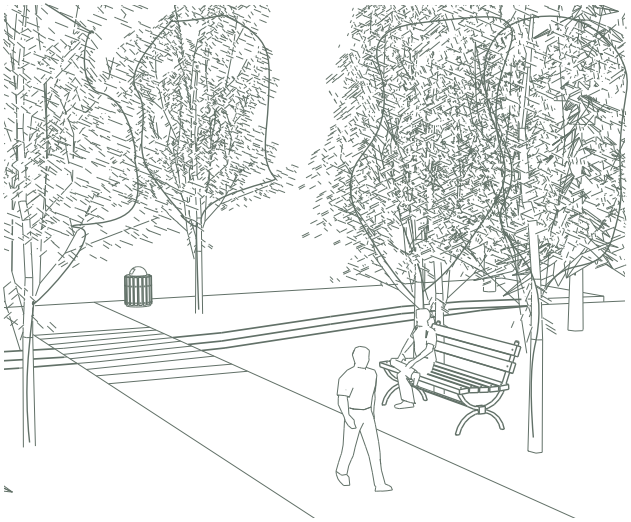


**Figure 81**: Greenery, water and shaded rest areas (made by author)

Recognition and orientation

Because aging comes with cognitive limitations, recognizability and orientation in the built environment are important aspects. They contribute to the sense of security and thus to the self-reliance and health of the elderly (Van Gemerden & Staats, 2006).

Recognizability and orientation in the built environment can be enhanced by paying attention to diversity in architecture (figure 82) and by good signage (Cammelbeeck et al., 2014). By adding diversity to the (built) environment, attention is drawn to the (built) environment rather than to an infinite point on the horizon. This makes the distance to be traveled seem shorter. Street corners are important for orientation. According to Cammelbeeck et al. (2014), every second street corner should stand out because of a special feature of a building or in the public space (figure 83). Recognizable routes can be marked by using different objects and materials as signage.

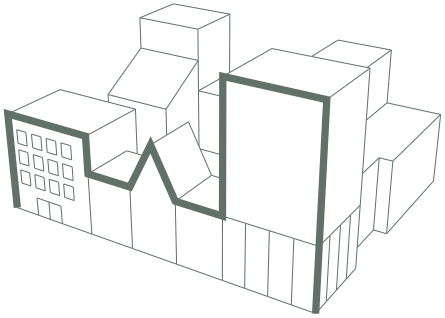


**Figure 82**: Diversity in architecture (made by author)

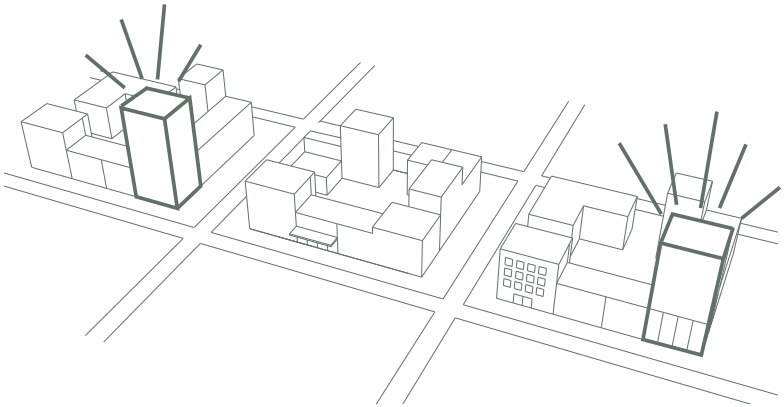


**Figure 83**: Every second street corner should stand out (made by author)

### 4.3.2 Functional

Amenities

A suitable residential area for elderly is one where the primary amenities are within walking distance; which means within 500 meters of the home (figure 84) (Daalhuizen et al., 2019). Primary amenities are defined as a doctor, pharmacy, supermarket and public transport stop (Timmermans et al., 2016). When it comes to facilities, the keywords presence, reachability, accessibility and permeability are important. If facilities are located in the neighbourhood (present), it is not only important for the elderly to be able to get there easily (reachable), but also that they can get in (accessible) and that they can move around easily (passable). Sufficient elevators, support rails and non-slip floors contribute to this (Penninx & Royers, 2007).

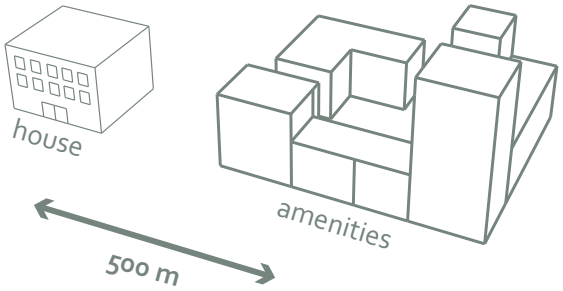



**Figure 84**: Amenities within 500m (made by author)

The presence of accessible facilities reduce the feelings of loneliness and depression, which are common feelings that come with aging. Especially when an elderly person lives alone without a partner. If the public amenities are designed well, elderly are more likely to spend time outside. Chau & Jamei (2021) describe that the presence of third places, which are different than the first place (home) and the second place (work or school), increase social interaction and provide opportunities for elderly to prevent social isolation. An example of popular third places are cafes, parks, shopping malls, libraries, markets and community centres.

Public transport

In addition to the accessibility of facilities, accessible (public) transport services are also of great importance. Buses and streetcars that should be easy to get on and off. Desirable for many elderly people are buses with a low entry and exit which connect to the sidewalk level (figure 85). But in addition, it is also important that there are sufficient parking facilities for personal means of transport such as a walker, mobility scooter or electric wheelchair (figure 86). In the absence of public transport or if the elderly do not have such means of transport, additional transport by volunteers or cab companies is important, so that the elderly can participate in social intercourse (figure 87) (Penninx & Royers, 2007).

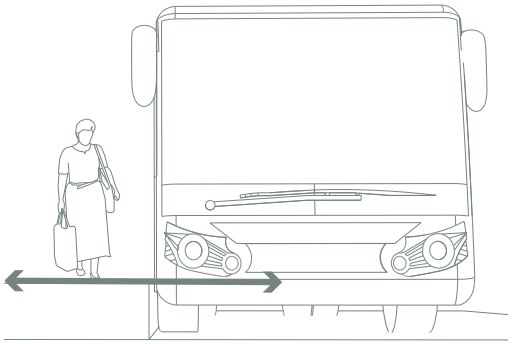


**Figure 85**: Bus exit connects with sidewalk level (made by author)

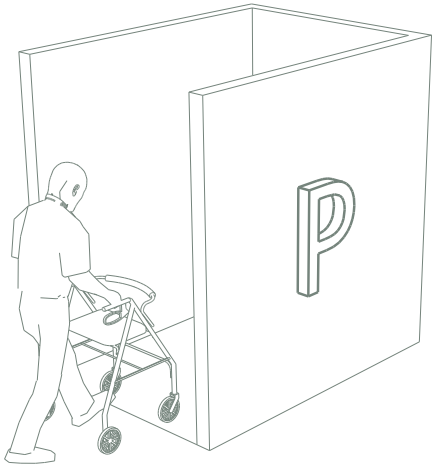


**Figure 86**: Parking for personal means (made by author)

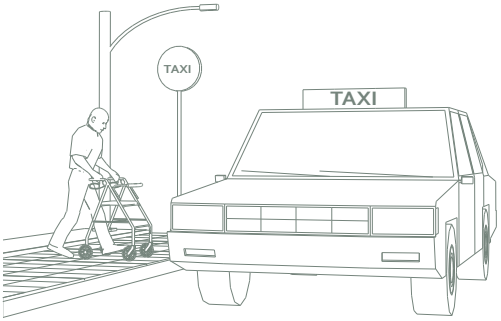



**Figure 87**: Cab transport (made by author)

Information point

Another functional element that is considered important for an neighbourhood suitable for elderly is a central information point where elderly people and informal care takers can get information, advice and support about care, housing and welfare options, how to qualify for them and how to finance the different options (figure 88) (De Booys et al., 2018). Many older people are not aware of the availability of the different types of care and support and whether they are eligible for them (De Klerk et al., 2019). For example Farent, a Dutch social work company, started an information point to stimulate an elderly-friendly environment. At the information point there is every opportunity to ask questions related to aging. This could be, for example, a phone number of the informal care support, but also information about a meeting activity and support in applying for a parking ticket. In addition, the information point is intended for residents who just want to have a cup of coffee and a chat (Farent, 2021).

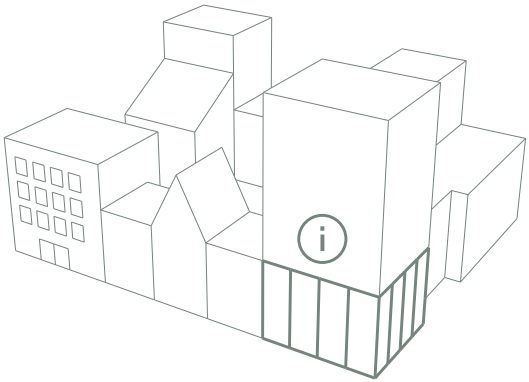


**Figure 88**: Central information point (made by author)

### 4.3.3 Social

Contact rich environment

Several studies show that social connectedness and social participation are important for the health and personal well-being of older people (Gezondheidsraad, 2009). Social connections with others are an important source of meaning and form the foundation for resilience

and self-direction (Machielse, 2016). It also combats feelings of loneliness and depression, which are feelings that are quite often experienced by elderly, as described before. The social quality of the living environment is therefore of great importance. As people age and are less able to maintain remote contacts, the immediate living environment becomes even more important (Vermeij, 2016).

Providing a contact-rich environment in which people encounter each other easily helps to increase social connectivity. This contact can be divided in two different ways of encounter: 'unplanned encounters' and the 'planned encounters' (Alkema, 2019). Blokland (2008) mentions in her research different social needs encounters can provide. First of all she mentions 'intertwining', which focusses on long-lasting social relationships. The second things she mentions is 'weaving', which is more about passing each other by without really taking time to interact. According to her not only the long-lasting relationships, but also these small encounters do a lot with the mental health of people. Just seeing others in the public environment lessens the feeling of loneliness.

Encounters and thereby the sense of community can be facilitated in many ways. Francis et al (2012) found in their research that the sense of community was enhanced when people lived close to public spaces like neighbourhood parks and schools (figure 89). The presence of benches or other seating areas in the public space give a increased chance of encounter. These seating areas are preferably located at places where there is a something to see and talk about, such as a busy intersection, a crosswalk or at a facility (figure 90) (Mol, 2020). Furthermore, gardening in the front yard or a balcony has been shown to increase contact with neighbours (figure 91) (Maas et al., 2009), such as shared (vegetable) gardens (figure 92) (Blokland, 2009).

The organization of joint activities also contribute to social interaction among neighbourhood residents (figure 93) It increases the network of older people, keeps them active and thus contributes to participation (RVZ, 2015). These can for example be informal activities in the form of clubs, groups and activities organized for and by local residents from a community centre.

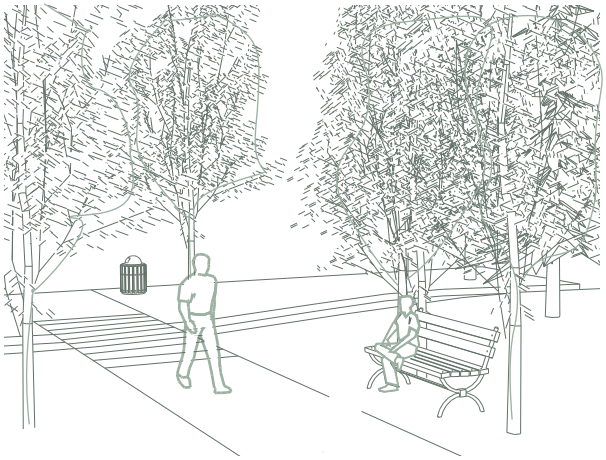


**Figure 89**: Park nearby (made by author)

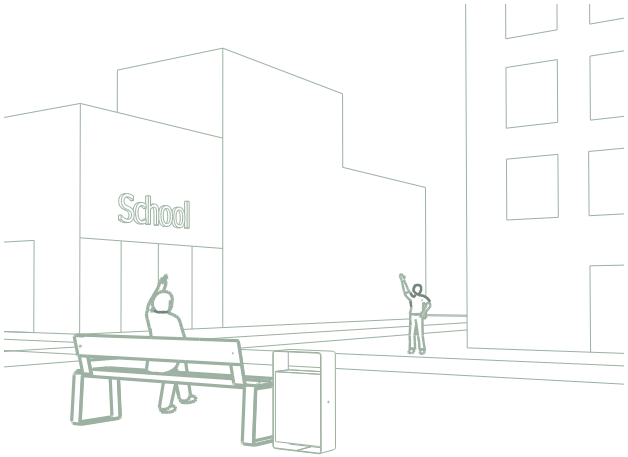



**Figure 90**: Seating areas at places with something to see (made by author)



**Figure 91**: Gardening on balcony (made by author)

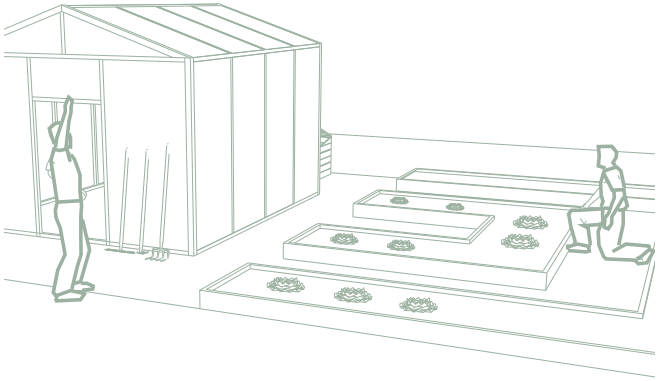


**Figure 92**: Vegetable garden (made by author)

In terms of social interaction in the neighbourhood it is important that it remains a choice to make contact (figure 94). In the design of a contact-rich living environment there must therefore also be the possibility of avoiding contact. Ninety percent of those surveyed in Medical Delta's residential wishes survey, indicated that they felt it was important to have control and responsibility over finding and maintaining social contacts (Medical Delta, 2013).



**Figure 93**: Joint activities (made by author)

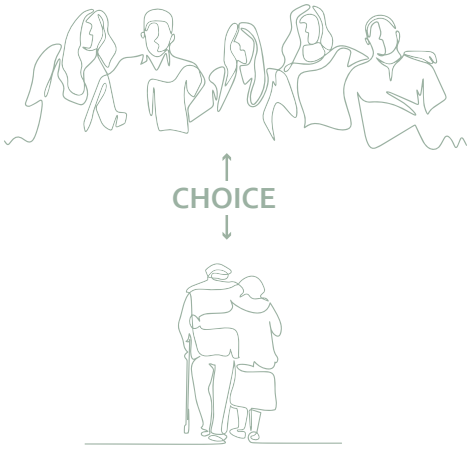



**Figure 94**: It should remain a choice to make contact (made by author)

Intergenerational

Another social aspect that is desirable for an elderly proof neighbourhood is an intergenerational neighbourhood. The research of Penninx & Royers (2007) shows that most older people have a negative view of living in an environment with (only) other seniors. According to the study by Dienst Analyse en Onderzoek (2022), elderly prefer a neighbourhood with a mix of single-person households, families and elderly (figure 95). Research by Joosten (2013) shows that intergenerational exchange counteracts isolation of the elderly.

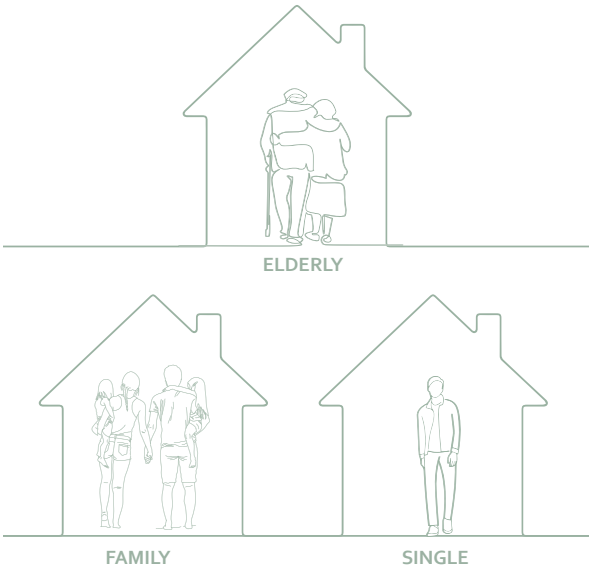



**Figure 95**: Mix of households (made by author)

Strong intergenerational ties are not only good for the elderly, but also for the younger generations because they can be of significance to - and can learn from - the elderly. Elderly can and often want to make a social contribution with their knowledge, experience and talents in all kinds of areas. Strong communities are characterized by strong ties between generations (Mol, 2020). Stimulating intergenerational encounters is therefore of great importance for the sense of community, social inclusiveness, meaning and participation and thus the health and quality of life of older people. Social contact between different generations can be promoted by the residential environment in various ways. Some examples are intergenerational living, communal intergenerational gardens and the organization of activities for young and old. This means that the environment that elderly live in, also needs to be attractive to other target groups (Annink, 2018).

Reciprocity

Another aspect that helps elderly to live independent at home for longer is neighbourly help. Preferably in such a way that they not only receive help from others, but also in such a way that the elderly themselves can make a positive contribution to their living environment, thus reciprocity (figure 96). The wealth of knowledge and life experience that older people have accumulated over the course of their lives could have immeasurable added value in their own living environment. The mere fact that elderly people spend a relatively large amount of time in their immediate living environment means that they can fulfill an important social function there (Penninx & Royers, 2007).

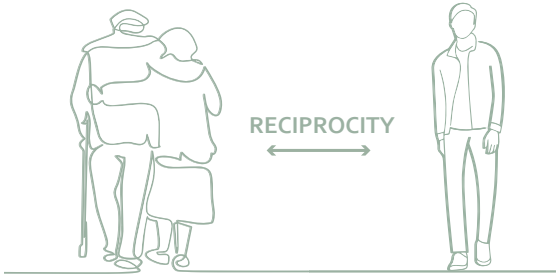



**Figure 96**: Reciprocity (made by author)

## 4.4 Dwelling

In this paragraph will follow an overview of the physical, functional and social aspects aspects on the dwelling scale that will help elderly people to live independent at home longer.

### 4.4.1 Physical

Accessibility and safety

First of all it is important that the dwelling that elderly live in is well accessible for them. Therefore elderly need a life-capable home, setting the following broad requirements (Rouwendal (2018):

- The residents must be able to move around easily in their house, without having to climb stairs or high thresholds (figure 97, 98)
- The basic living functions like living room, kitchen, bedroom and bathroom are located on the same level (figure 99)
- The resident must be able to move around the house easily with a walker or wheelchair. This also applies to the use of shower and toilet. This leads to minimum dimensions in the dwelling. Doors and routes should be at least ninety centimetres wide, and the rotation circle of a wheelchair contains one and a half meters (figure 100)

A well accessible dwelling reduces the chance of fall incidents and therefore improves the feeling of safety for elderly, which is important for them to live independent at home longer (Mol, 2020).

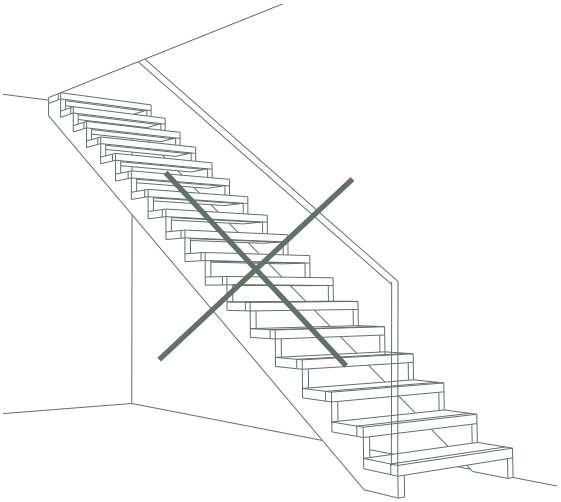


**Figure 97**: No stairs in the dwelling (made by author)

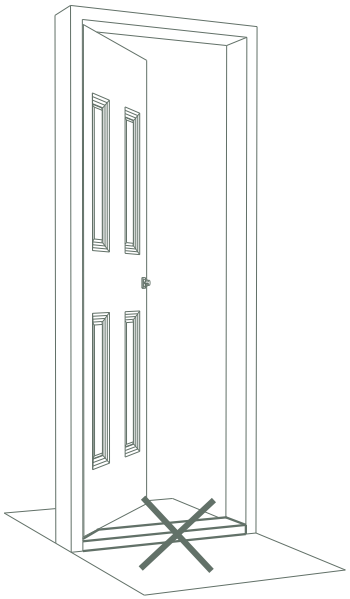


**Figure 98**: No thresholds (made by author)

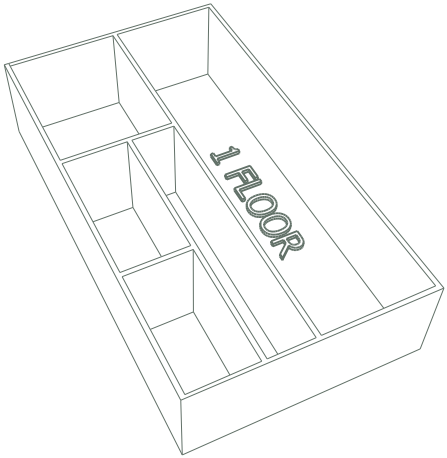



**Figure 99**: One floor (made by author)

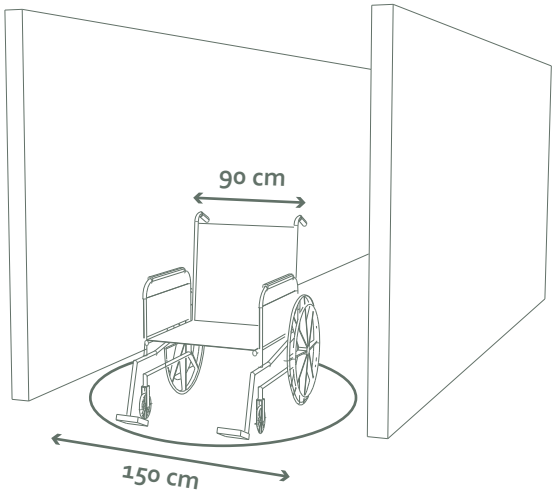



**Figure 100**: Dimensions wheelchair (made by author)

Activity friendly

As mentioned earlier physical activity is important for the health of elderly. Exercise directly affects the rate in which people age physically and cognitively (De Greef, 2009). Walking the stairs, an easily accessible and everyday activity, has positive effects on muscle mass, strength and functional capacity (Regnersgaard et al, 2021). Even though not every elderly person would be able to walk the stairs, it is desirable that they are stimulated to use the stairs as long as possible. To improve the chance elderly will make use of stairs, it is important to have solid banisters on both sides of the stairs (figure 101) (Kan, 2019).

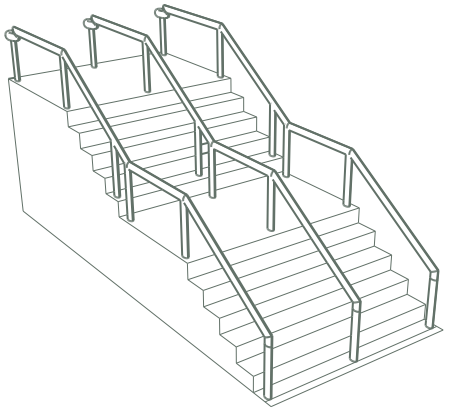


**Figure 101**: Bannisters on both sides (made by author)

Recognition and orientation

In terms of recognition and orientation it is important for the elderly that the residential building and their dwelling has a clear layout so they can easily find their way (figure 102) (Joosten, 2013). The use of colours can also contribute to this recognition and orientation (Parke & Friesen, 2015). As described at the beginning

of this chapter, aging comes with sensory limitations. This can lead to decreased sensitivity of spatial contrast (Lu et al., 2019). Research of (Wood-Nartker et al., 2019) shows that elderly people need more time to recognize objects, and that the response speed for yellow, orange and red colours is way faster than for gray and blue colours (figure 103). Besides that, it important to use contrasting colours to distinguish furnishings in the spatial environment and to distinguish walls and floors (figure 104). This will contribute to the daily functioning of the elderly. Clear hues, and high levels of saturation and lightness is desired.

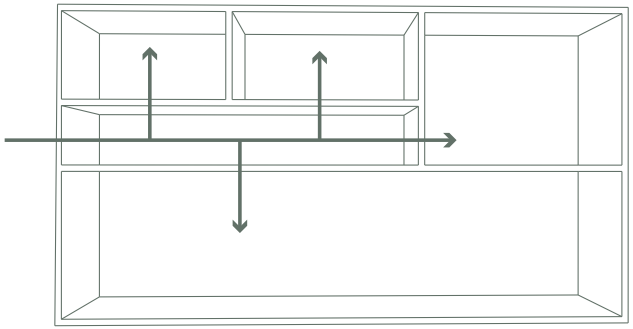


**Figure 102:** Clear layout floor plan (made by author)

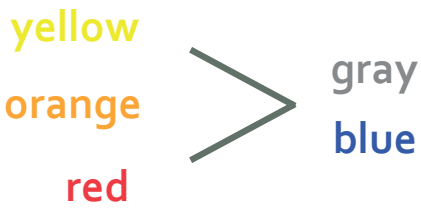



**Figure 103**: Use of colours (made by author)

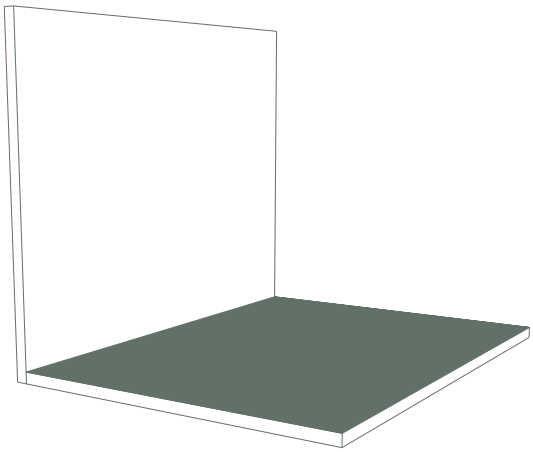


**Figure 104**: Contrast (made by author)

The front door can contribute to the recognizability of "home" and symbolizes the separation between the public and the private domain (figure 105) (Annink, 2018). Symbols on doors and lighting can also contribute a recognizability and orientation in and around the house.

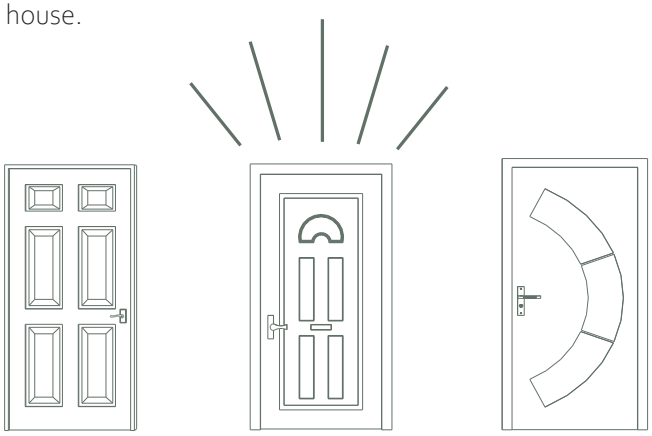


**Figure 105**: Recognizable front door (made by author)

Comfort

Of course elderly want to feel comfortable in their home. There are several aspects that contribute to the comfort elderly experience in their home. A well accessible home, as described before in this paragraph, is already increasing the feeling of comfort (Mol, 2020). But other aspects are important as well. For example being able to perform activities in the home such engaging in hobbies contributes to the feeling of home (figure 106.) (Penninx & Royers, 2007). Comfort also goes together with feeling relaxed; the living room, the balcony and the garden are the places in the house where the elderly often relax. In the living room the chair is often the place of relaxation (figure 107). The garden or balcony, views outside, preferably of greenery, and plants in the home also contribute to relaxation (figure 108). The balcony is preferably adjacent to the living room (Annink, 2018).



**Figure 107**: Chair in living room (made by author)

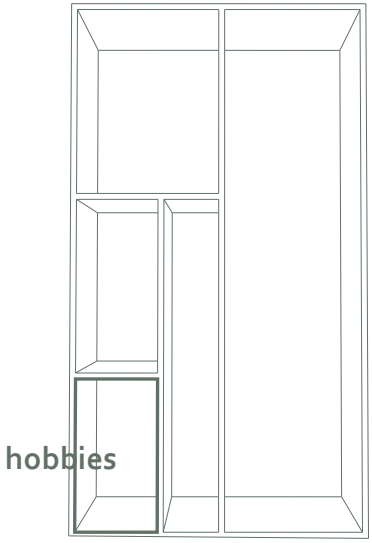



**Figure 106**: Room for hobbies (made by author)

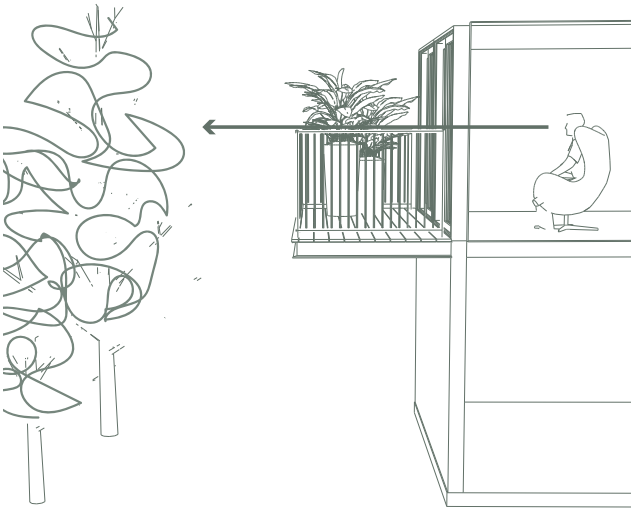


**Figure 108**: Balcony and view on green (made by author)

Building physics also plays an important role in the comfort elderly experience in the home. An unhealthy indoor environment can lead to complaints such as allergies, airborne diseases, headaches and more. Especially for the vulnerable target group of the elderly, a healthy indoor climate is of great importance. Elderly are more sensitive to higher and lower temperatures. They will be less able to adapt, both physiologically and behaviourally. Therefore, it is desired for the elderly to maintain a narrower, constant, temperature range, with a preference for passive solutions, because the likelihood of dysfunctional active solutions is greater and the effects are more far-reaching in the elderly (figure 109) (Van der Linden et al., 2012). A constant temperature also decreases draft and draught. As a result, there will be less dust circulation which is desirable for elderly (Vloer&Verwarming, 2019). Good ventilation to improve the air quality and keep polluted air outside is of great importance as well (figure 110). Lastly, the research by Lu et al. (2019) suggests a number of links between (daytime) light and the health of older people (figure 111). Receiving daylight during the day has a positive effect on sleep quality.

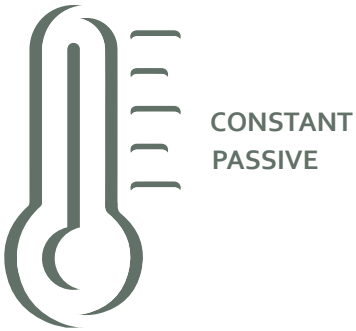



**Figure 109**: Constant heat (made by author)




**Figure 110**: Good ventilation (made by author)

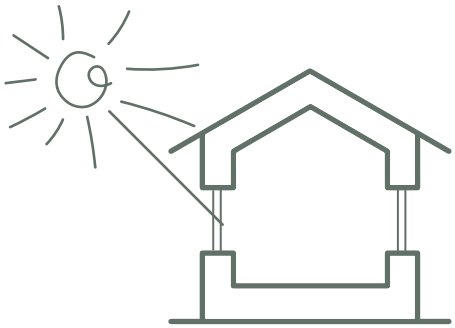


**Figure 111**: Daylight (made by author)

Maintenance

Lastly it is desired for elderly people that the home is relatively maintenance free. They do not want to worry about the leaves in the gutter, sweeping the chimney, painting the window frames and maintaining the central heating boiler (Penninx & Royers, 2007) Part of reducing the amount of maintenance is making the house not be too big (figure 112), but spacious enough to receive care or use a wheelchair. This should take into account the

location of rooms in relation to each other, walking and sight lines, minimum surface areas of rooms, dimensions of doors and turning circles. A private outdoor space is desirable, provided it is maintenance-free (Aanhanen, 2014).

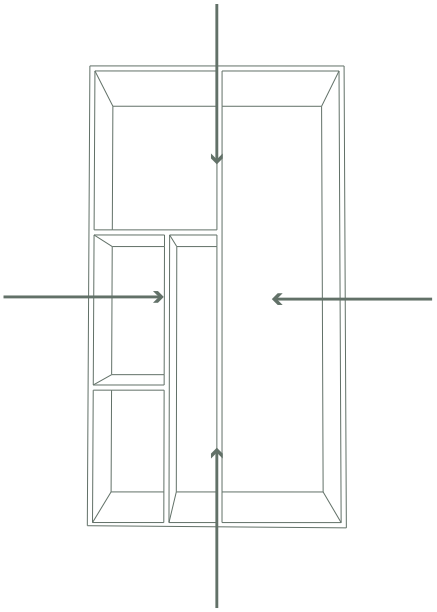


**Figure 112**: Dwelling not too big (made by author)

## 4.4.2 Functional

Amenities

As mentioned earlier, it is important for the elderly that there are facilities within 500 meter walking distance of the home (figure 113). Also, elderly people feel safer if there is an institution nearby from which care can be provided (Rouwendal, 2018).

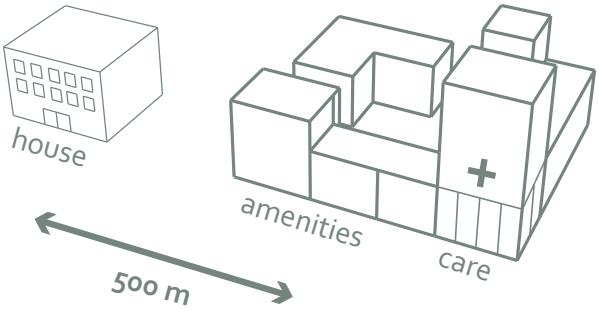



**Figure 113**: Amenities within 500m (made by author)

Assistance at home

It is important for the elderly that the home offers space for home services, such as a domestic help or home care. In addition to this professional help, technology can help overcome limitations. This can include physical aids but also electronics (Gude, 2006). For example the use of domotics, also called 'smart home system', has proven to be helpful when it comes to letting elderly live independent at home as long as possible. The use of smart home domitica systems promote safety, self-reliance and well being of elderly (figure 114) (Van der Gugten, 2017).



**Figure 114**: Domotica (made by author)

### 4.4.3 Social

Connectivity

Because of the decreasing action radius and being more tied to the house, the possibility to make contact with others from a safe environment is of great value to independent home living elderly. By placing a chair by the window, the elderly person can look outside and make contact with passers-by (for example, waving to passing school children) (figure 115) (Mol, 2020). Elderly people enjoy the view of liveliness and activity. Joining the public life behind your window will do a lot with the overall feeling of being part of daily life. Elderly will feel less lonely by just seeing other people (Alkema, 2019).

Also the garden, the balcony and the gallery can be a safe outdoor space from where contact can easily be made with local residents. The separation between the garden and the public space (a hedge or a fence) provides a sense of security, which stimulates social contact (figure 116) (Annink, 2018). Furthermore, semi-public spaces, also called threshold zones, contribute to social cohesion by creating environments in which elderly people feel safe and are invited to have social contact. For example, a bench on the gallery (figure 117) and a common stairwell (figure 118) create the opportunity for social contact with neighbours (Mol, 2020).



**Figure 115**: View on passengers by
(made by author)

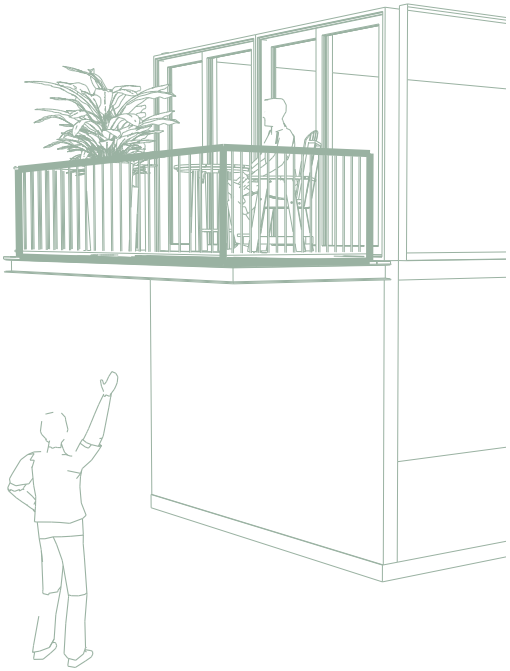


**Figure 116**: Balcony fence sense of security
(made by author)

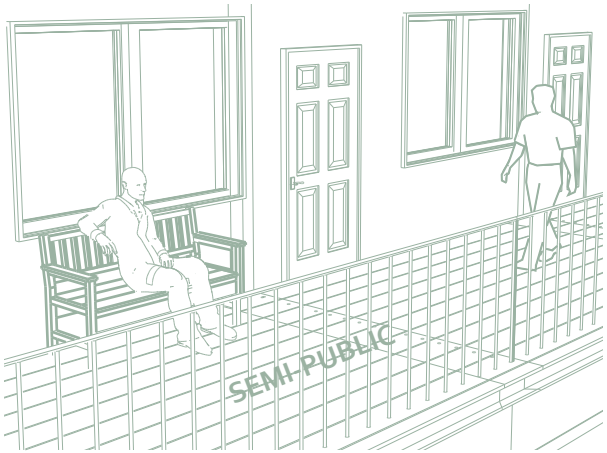



**Figure 117**: Bench on gallery (made by author)

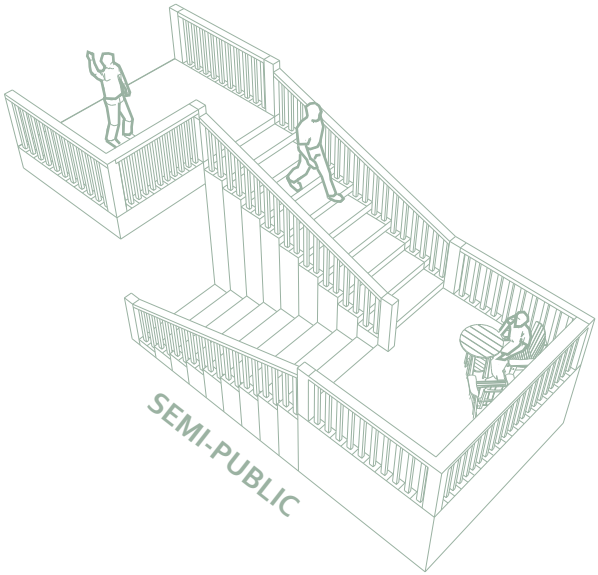



**Figure 118**: Common stairwell (made by author)

Annink's (2018) research mentions the importance of the kitchen table (figure 119) and a spare room (figure 120). The presence of a kitchen table makes it possible to have conversations. The presence of a spare room makes it possible to spend longer time with friends and family who live at a distance.

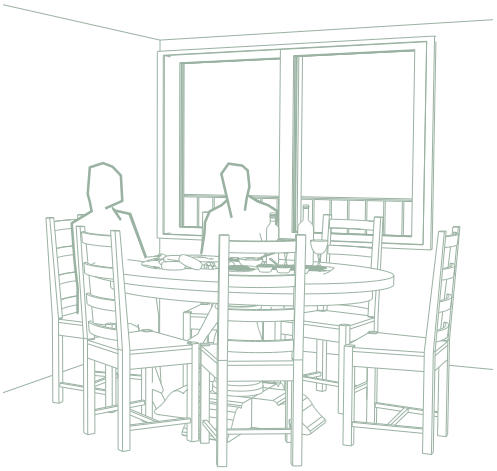


**Figure 119**: Kitchen table (made by author)

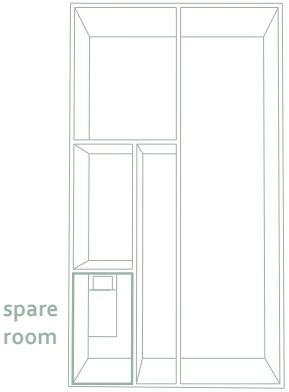



**Figure 120**: Spare room (made by author)

The presence of shared spaces in residential areas, also stimulates connectedness with neighbours (figure 121). By coming together and undertaking activities together, sociability and pleasure are experienced that contribute to enjoyment (Annink, 2018).




**Figure 121**: Shared spaces (made by author)

## 4.5 Elderly in Groot-IJsselmonde

As described before, this research will be used for the design of a densification project in Groot-IJsselmonde. Even though literature already gave many insights in the needs and wishes of elderly, it is important to hear the opinions of elderly that are already living in Groot-IJselmonde as well. Therefore semi-structured interviews were conducted with fellow students from this graduation studio. The questions we asked can be found in appendix 1. The main conclusions of these interviews that were useful for this specific research will be described in this paragraph.

### 4.5.1 Semi-structured interviews

Arie – 80 years old

"I've lived here for a very long time. I like the quiet, green environment. I used to live here with my whole family, but my children all already moved out. I still live in the same family home with my wife. It's nice that we still have the space when the children and grandchildren come over. When it comes to contact with neighbours, I really only know my immediate neighbours, nothing more."

Alice – 79 years old

"I have lived in Groot-IJsselmonde for 13 years now. I experience it as a very nice, and quiet neighbourhood. I especially like the presence of greenery. I live by myself, but the house is quite small when my grandchildren come over. If I could choose another house to live in it would be a house without stairs and with a spacious living room where I can have guests over."

Ben & Sylvia – 62 & 61 years old

"We have been living in this apartment for over a year now. We moved out because our old house was getting too big for the two of us. Our children have their own places and are starting to have children by themselves. The apartment is quite new and fulfils the requirements that we had. The spatial layout is open with sufficiently large rooms. My woman loves to cook and with the open kitchen, she can still have conversations while she is cooking. It is also very nice to have a second bedroom which can be used for our (grand) children. I am also very pleased with the smaller room which I can use as an study/working room. We are also very happy with de balcony we have. We can add some greenery if we want, but it doesn't need a lot of maintenance compared with a garden.

The environment is pleasant because of the greenery, the space, and tranquillity. Contact with the neighbours is superficial. Maybe because there is not

really a space in the building which gives us the opportunity to meet the local residents. I think knowing your neighbours would give the place a bit more liveliness. Furthermore, we are very pleased that it is a very child-friendly neighbourhood. That is great for when our grand-children come visit us."

Dila – 62 years old

"I have been living in Groot IJsselmonde for a long time. I have a spacious house because I lived here with my children. Meanwhile they have left home so now I live alone. For now I like it but when I get older it will be too big. There is also a staircase, which will cause problems in the long run. I like the neighbourhood with lots of greenery. It is generally quiet but there are some young people in the parks who cause trouble."

Sally – 60 years old

"I haven't lived in Groot IJsselmonde for very long but so far I find it a nice, quiet neighbourhood. It is also ideal that there is a shopping centre nearby where I can just walk to. I live in a flat with lots of other elderly people. I like my home very much. It's not too big and it's all on one level. I just miss some contact with the neighbours. Everyone is very much on their own. There is also not really a place to meet in the flat, I would be open to that."

Gerda – 81 years old

I already live in Groot-IJsselmonde for 52 years. The house is fantastic. I have four spacious rooms. But the neighbourhood is deteriorating terribly. Because the flats are being bought up by outsiders and therefore, for example, students and young people come to live there, there is sometimes some nuisance.

It is also a very multicultural neighbourhood so you notice the differences between cultures. I have good contact with my immediate neighbours, but otherwise everyone is very self-centered. There is really nothing to do. I sometimes go to the library or the community centre in the centre of IJsselmonde, but that's it. It would be really nice for me to live collectively. Now I'm also dependent on my husband because I'm in a wheelchair, but he's getting older too and I don't know how much longer he can take care of me. If I would live with others we could look after each other and I could also make myself useful by having a chat with someone. Also, I don't really need to live as big as I do now, two rooms are enough for me."

Henk & Dora – 85 & 83 years old

"We have lived in this neighbourhood for 58 years but we have seen it deteriorate in crime. More activities for the youth would be nice because there is not much to do for them so there is a lot of commotion on the street, especially in the evening. At 6 p.m. the door closes for me because then I don't dare to go out anymore. We used to have a lot of contact with the neighbours, but not really anymore. There are so many different kinds of people living here now, and everyone is very self-centered."

The conversations make clear that most elderly like the neighbourhood because of the greenery and the quietness. However, some mention that especially in the evenings it is not that quiet anymore due to younger people that are hanging around outside. They do not feel a connection with these younger people and they do therefore not feel safe. There should be more activities for this target group, so they will leave the streets. Some mention that there could also be more activities for themselves, maybe even shared once as some interviewees mention they would like to have more contact with their neighbours. When it comes to the dwelling, several interviewees mention that they still live in a family home where they used to live with their children, who already left the house. They do not neccessariliy need that big amount of space, even though they do find it important to have the room for visits from for example grand children. Two participants mention that they like the fact that there are also activities to do for children, so their grand children can have a fun time when they are over.

### 4.5.2 Graphic novel

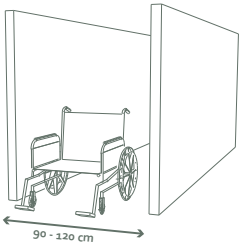
As a group we also made the stories of two elderly interviewees into a graphic novel (appendix 2). By using this way of sensory mapping, we could get a grip on how these people moved trough the neighbourhood and what their opinions about the neighbourhood were. The first story is about Gerard, an older Dutch man who lived in Groot-IJsselmonde for already a very long time. The second story is about Asha, a migrant woman. It became clear that both liked the neighbourhood overall. But it also became very clear that there is a separation between the mixed target groups in Groot-IJsselmonde. Gerard avoids the younger people that for example caused nuisance, and he feels uncomfortable with the fact that he does not now who his neighbours are anymore, due to the changing population and their backgrounds. Many curtains in the neighbourhood are closed, especially at the large flats in the neighbourhood, which leads to a lack of interaction. Asha on the other hand has the feeling she has good contact with her neighbours, especially in her building block. Apparently no connection has developed between long-time residents in the neighbourhood and the 'newcomers'.

## 4.6 Conclusion

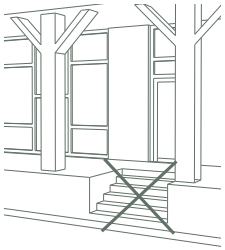
This chapter aimed to answer the question: *What do elderly with a light need of care need on the scale of dwelling and the scale of the neighbourhood, to live longer independent at home?* There can be concluded that several physical, functional and social aspects are important for elderly to live longer independent at home. Physical aspects like accessibility, activity and recognition are important because they are often connected to limitations that come with aging. When this is taken into account in the built environment, older people can move around the neighbourhood and home independently for longer, which is not only beneficial for their health, but also increases the change on encounters because the elderly will move around more. On the functional aspect it is important to make it as easy as possible for elderly to use key facilities. This could be done by providing for amenities close by, but also ensuring that there is the ability to easily access facilities further away, through well organized transportation possibilities. Also the presence of an information point where elderly can ask their questions about care or housing is important. Social aspects like providing a contact rich, and multi-generational living environment are important to create a socially sustainable environment. These social aspects are perhaps most important, because a social sustainable environment might in its turn help to reduce discomfort in other aspects. If elderly people feel socially secure in their environment it will be beneficial for both their physical and mental health. In designing for elderly there should thus mainly be a focus on the social aspects like stimulating contact and encounters. There can be concluded that some aspects of the built environment will be beneficial for elderly on several levels. For example the presence of green with benches to rest provide comfort, stimulate movement but also increase the chance on encounters. While designing these elements that provide benefits on several levels should have the biggest focus. From the interviews in Groot-IJsselmonde can be concluded that a green environment is experienced as pleasant, and the social interaction in the neighbourhood could be increased. This should have a focus since this also is most important for elderly to live longer indpendent at home. On the next pages overviews of all the needs and wishes can be found.

# NEIGHBOURHOOD - PHYSICAL

## ACCESSIBILITY




WHEELCHAIR



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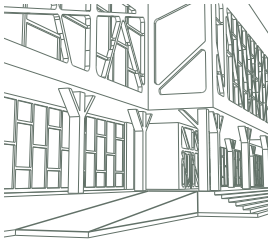
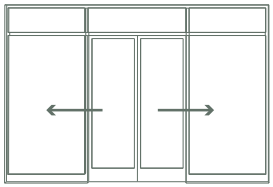
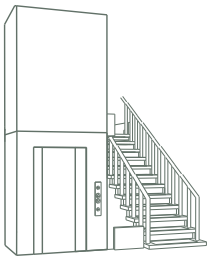


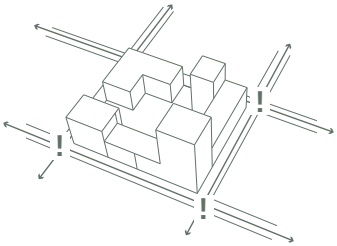
RAMPS



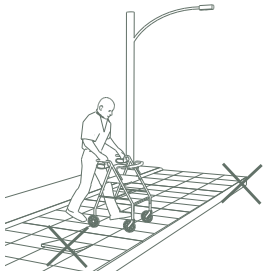
AUTOMATIC DOORS



ELEVATORS



CLEAR ROAD STRUCTURE



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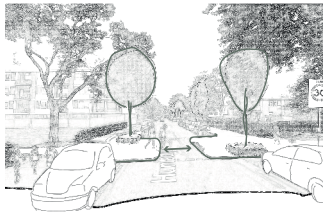
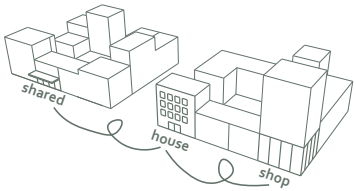
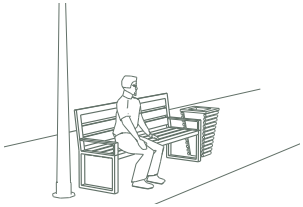


SLOW DOWN TRAFFIC

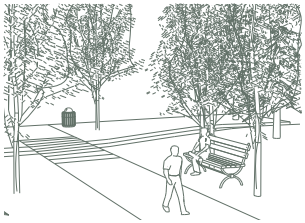
## ACTIVITY




FUNCTION MIX

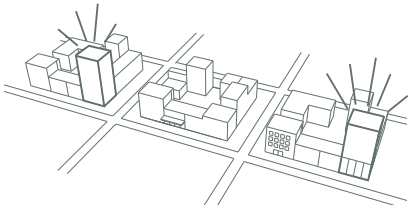


BENCHES

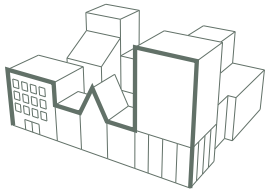


PARK

## RECOGNITION



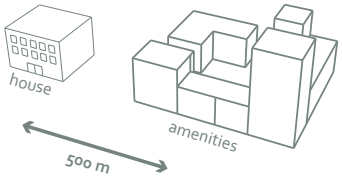
STREET CORNERS



DIVERSITY IN ARCHITECTURE

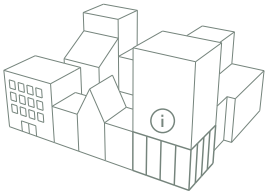
# NEIGHBOURHOOD - FUNCTIONAL

## AMENITIES



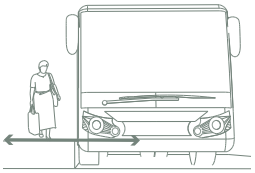

AMENITIES CLOSE BY

## INFORMATION

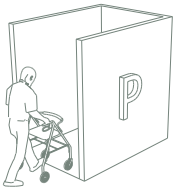


INFORMATION POINT

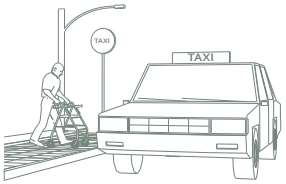
## TRANSPORT



ACCESSIBLE BUS



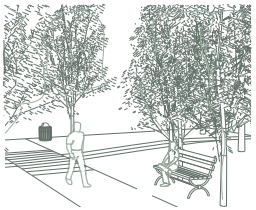

PARKING PERSONAL TRANSPORT



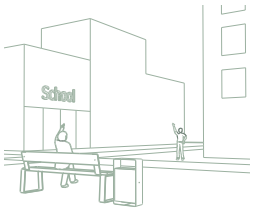

TAXI PLACE

# NEIGHBOURHOOD - SOCIAL

## CONTACT RICH



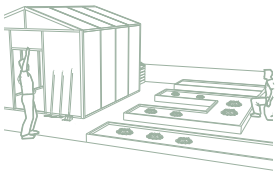
PARK




BENCH ACTIVE PLACE



BALCONY



VEGETABLE GARDENS

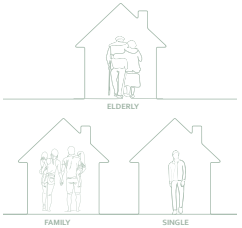


SHARED ACTIVITIES



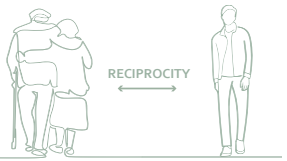

CHOICE

## INTERGENERATIONAL



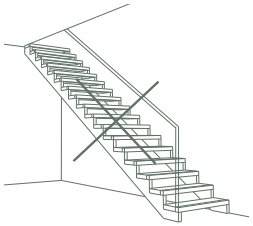

HOUSEHOLD MIX

## RECIPROCITY



# DWELLING - PHYSICAL

## ACCESSIBILITY



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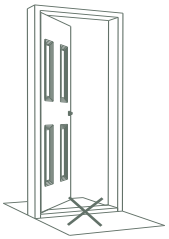

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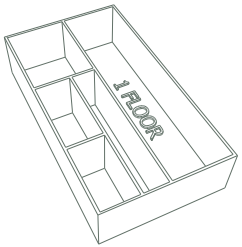
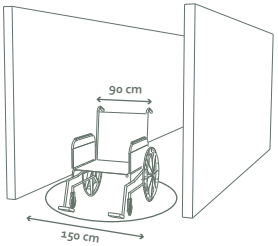
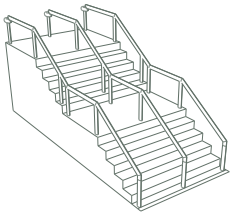



ONE FLOOR



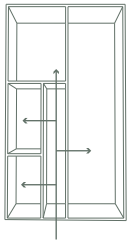

WHEELCHAIR

## ACTIVITY



BANNISTERS BOTH SIDES

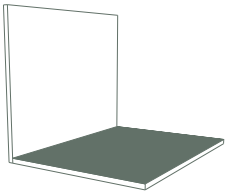
## RECOGNITION



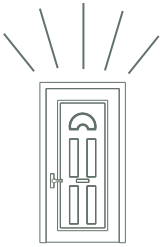
CLEAR LAYOUT




COLOURS

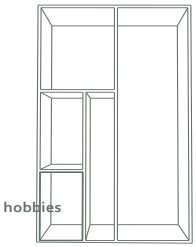


CONTRAST



FRONT DOOR

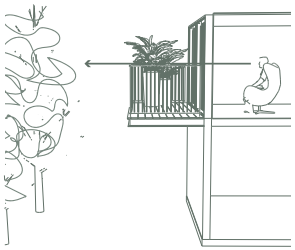
## COMFORT




HOBBY ROOM



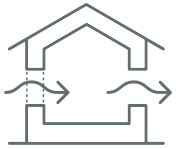
CHAIR WITH VIEW



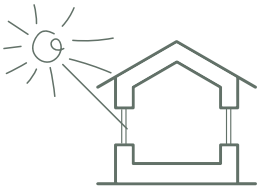
BALCONY / GREEN VIEW




CONSTANT HEAT

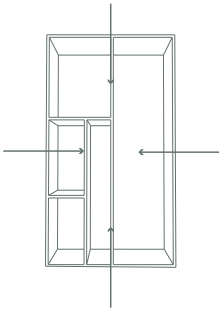



GOOD VENTILATION



DAYLIGHT

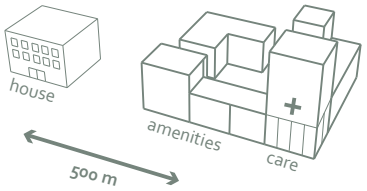
## MAINTENANCE



NOT TOO BIG

# DWELLING - FUNCTIONAL

## AMENITIES




AMENITIES CLOSE BY

## HOME ASSISTANCE



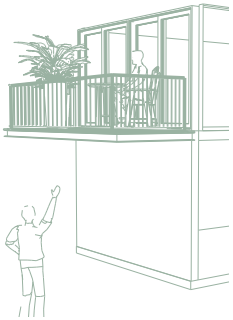
DOMOTICA

# DWELLING - SOCIAL

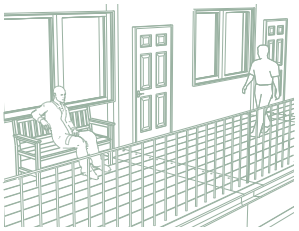
## CONNECTIVITY



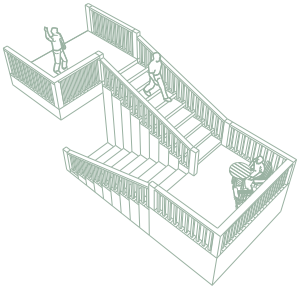
VIEW ON LIVELINESS



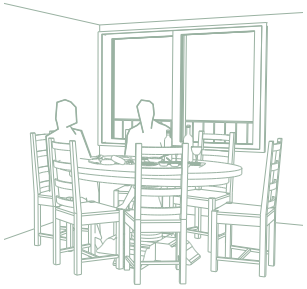
CERTAIN AMOUNT OF PRIVACY - BALCONY



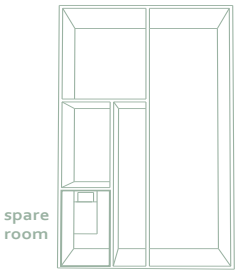
TRANSITION ZONE GALLERY SPACE



SEMI-PUBLIC STAIRWELL



KITCHEN TABLE




SPARE ROOM




SHARED SPACES



# 5

# INCENTIVES INFORMAL CARE

# 5 INCENTIVES INFORMAL CARE

The previous chapter provided insight into the housing desires and needs of the elderly. This chapter focuses on the aspect of informal care. As explained earlier, due to the transformations within long-term care, informal care is becoming increasingly important. Nowadays, informal care is mostly provided by family members. However, family members increasingly live further away, and many informal caregivers become overburdened. It is therefore important that the immediate environment of the elderly, thus neighbours, also contribute to the provision of informal care. This chapter will focus on the questions what kind of care neighbours could provide, but also what could stimulate neighbours to provide this informal care.

## 5.1 Types of help provided

Klerk et al (2015) describes that informal care can be provided in different areas. In the area of support, household, or care. Within these areas there are different forms of support. It may be emotional support, transportation, accompaniment during visits to the doctor, administrative help or coordinating and arranging care for the person in need. Household assistance may include cleaning, cooking, doing groceries or maintenance. Support with personal care usually consists of help with, for example, showering and going to the toilet. The nature of the help provided depends, among other things, on the mutual social relationship. For example, help with personal care or nursing is mainly given to close relatives (partner or child). Figure 122 shows the relationship between the extent to which different forms of informal care are given. Company and emotional support is the most provided kind of informal care.

Informal carers can also stimulate self-management among those in need of care. Instead of doing something for the person in need of care, the informal carer can encourage the person in need of care to look for solutions himself (Van Bergen, 2011). Self-management' implies that the care recipient remains in control, and thus has more control over his or her life. The expectation is that self-management will reduce the use of care and therefore save costs (Kooiker & Hoeymans, 2014). When self-management leads to less use of care, it can also have a relieving effect on the degree to which the informal carer feels burdened. This could make it easier to provide informal care in the first place (Geldtmeijer, 2016). Other things that could increase the chance on providing informal care to neighbours will be described in the following paragraph.

## 5.2 Incentives provision informal care

So, there are various ways in which informal care can be provided. Now it is important to know what could motivate people, ore more specifically neighbours, to provide informal care.

Unfortunately, the provision of informal care by neighbours is under pressure due to increasing individualism and decreasing intergenerational solidarity (Broese van Groenou & De Boer, 2016). Neighbourly help has been affected by changing economic and social factors. Different housing and

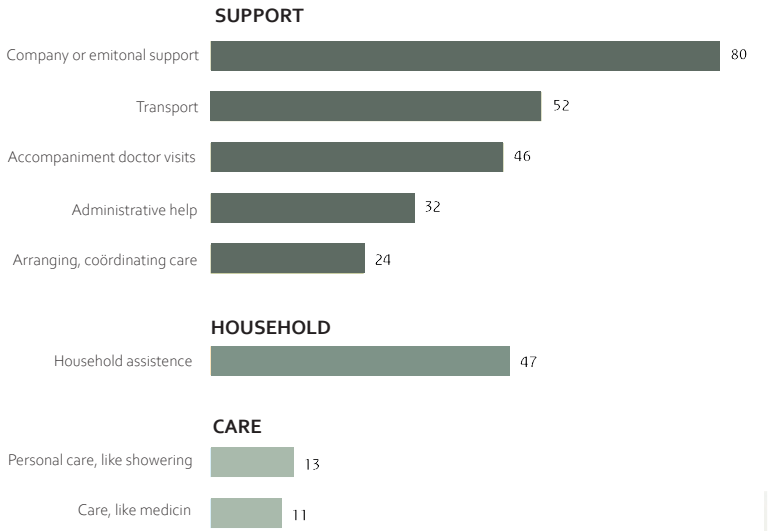



**Figure 122**: Types of help provided (Klerk et. al., 2015)

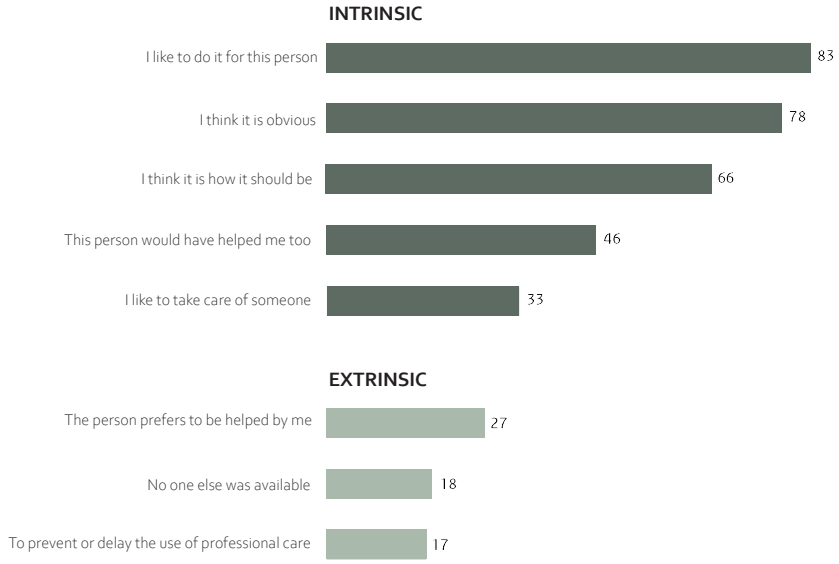



**Figure 123**: Motivations to provide help (Klerk et. al., 2015)

employment patterns, social networks that are not limited by geographical proximity, and the widespread availability of private transportation, have all altered the foundations on which closely-knit, mutually supportive neighbourhoods were built in the past (Nocon, 2000). So change is needed. Neighbours are simply needed as caregivers, and the individualistic society that the Netherlands suffers from today should be transformed into a participation society. But how could neighbours be stimulated to help each other out?

### 5.2.1 Intrinsic motivation

Research by Verbeek-Oudijk (2019) shows that people in the Netherlands are more likely to provide informal care if they feel they are needed and if they feel it is a duty. Thus, intrinsic motivations (figure 124) seem to prompt people to provide informal care more often than extrinsic motivations..



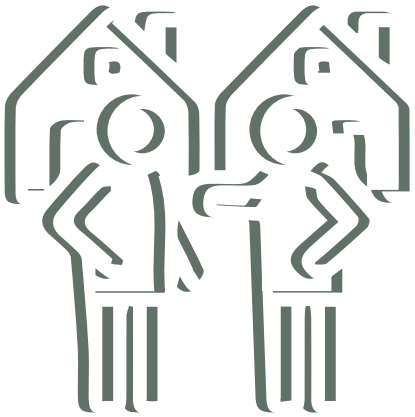
INTRINSIC MOTIVATION

**Figure 124**: Intrinsic motivation (made by author)

This also becomes clear in figure 123, which shows the reasons why people provided informal care. Intrinsic motivations are: 'I like to do it for this person', 'I think it is obvious', 'I think it is how it should be', 'this person would have helped me too' and 'I like to take care of someone'. Appealing to intrinsic motivations to contribute to society or to strengthen feelings of need will therefore probably promote an increase in informal care provision.

### 5.2.2 Knowing and liking your neighbour

Intrinsic motiviation might increase once people get to know their neighbour. According to Broese van Groenau & De Boer (2016), the most important determinant of providing help is knowing someone who needs help and signal the help that is needed. This was also found in the research of Klerk et al (2017). They asked people what made them help, or let them not help neighbours, and



GET TO KNOW AND LIKE YOUR NEIGHBOURS

**Figure 125**: Knowing and liking your neighbours (made by author)

it became clear that people are more likely to provide neighbourly help once they know their neighbours and like them (figure 125). Responses of people in their research where for example (figure 126):

- "I want to have a click with the person"
- "It depends on how good friends we are. Are these people there for me if I would need help?"
- If there is a good relationship with neighbours, you automatically reciprocate."
- "Are they nice or are they difficult about everything?"
- "I don't like all the neighbours."




**Figure 126**: Responses neighbours (made by author)

First of all these answers confirm the importance of 'liking your neighbour' when it comes to the provision of help. Nocon (2000) also describes that initially help is largely provided to people helpers like and with whom they are already on friendly terms. This initial help, that often involves little commitment, could then develop in to greater commitment over time. Over time people may find it hard to withdraw once the need of help becomes bigger, because they feel that they committed and have the duty to help. Gremmen (2016), mentions that the longer you live in a neighbourhood, thus the more you get to know and like your neighbours, the higher the chance of providing neighbours help.

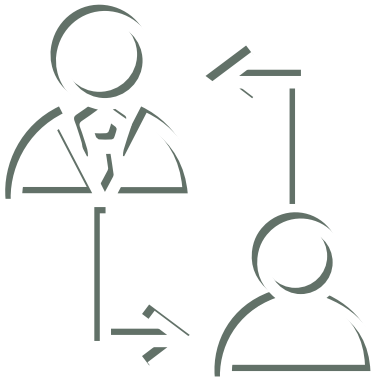
The second aspect that becomes clear in the answers of Klerk et al (2017) research, is the aspect of reciprocity: wanting to receive help back if you provide neighbours with help. This aspect of reciprocity will be explained in following paragraph.

### 5.2.3 Reciprocity

Norms of reciprocity (figure 127) and norms of solidarity are seen as driving forces to provide informal care. Reciprocal solidarity refers to the wish to keep a balanced exchange of support in the relationship. According to this line of reasoning, informal care is provided because the care recipient has invested considerably in the relationship in the past and 'deserves' a return on those investments (Broese van Groenou & De Boer, 2016)

Research of Bredewold et al (2020) shows that the balance of reciprocity has a connection to the bond you have with someone. How weaker this emotional bond, how more the relationship is a balance present in reciprocity. In for example a parent-child relationship, where the emotional bond is often close, there is no

balance in reciprocity. Parents will often serve their children without expecting anything in return. But in a neighbour relationship, where the emotional bond is less present, reciprocity is very important (figure..).



RECIPROCITY

**Figure 127**: Reciprocity (made by author)

Over time the balance in reciprocity can shift. Nocon (2020) for example explored why people provided informal care based on experiences of participants. Some participants mentioned that they felt like having benefits from the relation with a neighbour they provide help for too, which leaded to a more friendship like relation. This more friendship like relation is also beneficial for the care recipient and their self-esteem. If you are friends, you are not there because you feel obliged, but because you want to be involved with them as a person.

Reciprocity and solidarity are examples of a feeling of community, thus social cohesion (Broese van Groenou & De Boer, 2016) Reciprocity goes together with trust, and trust is argued to be an integral component of social cohesion. Putnam (1993) argued that the more reciprocity and trust there is in a community, 'the more civic that community may be'. In following paragraph the term 'social cohesion' will be explained further.

### 5.2.4 Social cohesion

The term social cohesion (figure 128) usually refers to "the collective connections in society" or "the mutual relationships between neighbours". A strong sense of community is identified as a fundamental necessity for social cohesion. A concept that is also often used in this context is social capital. Social capital is about obtaining support through informal relationships such as from neighbours (Cramm et al., 2013). In short, social cohesion in a neighbourhood might increase the chance of neighbours helping each other.



SOCIAL COHESION

**Figure 128**: Social cohesion (made by author)

# "EVERYDAY ATTENTIVENESS"

**"People signal whether another person needs a helping hand, then offer it or at least make sure that someone else offers it"**

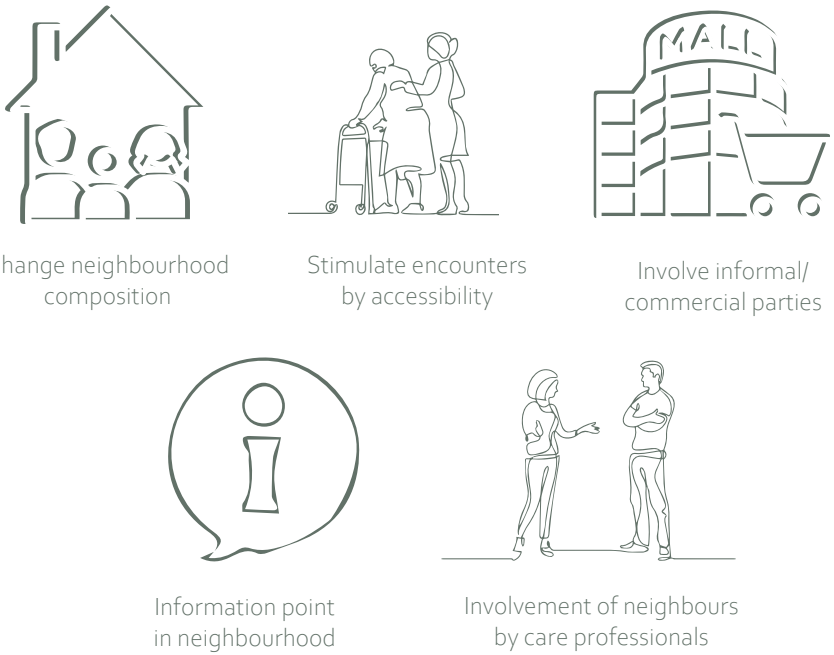



**Figure 129**: What stimulates "everyday attentiveness" (made by author)

According to RVZ (2015), social cohesion in a neighbourhood is mainly determined by (unplanned) encounters (short contacts) in the public space, more so than the networks people have in the neighbourhood. Short, superficial encounters between neighbourhood members can contribute to the quality of life and the sense of belonging, because repeated contacts can give people confidence about their surroundings (Bredewold, 2014). When this familiarity is present, the willingness to support each other appears greater than when the trust is not present (Van Gemerden & Staats, 2006).

Kremer et al. (2019) introduced the concept of "everyday attentiveness" as a form of social cohesion. "Everyday attentiveness means that; "People signal whether another person needs a helping hand, then offer it or at least make sure that someone else offers it." This is exactly what is needed when it comes to the informal care provision by neighbours. According to Kremer et al. (2019), attentiveness in the neighbourhood can be stimulated in various ways by for example (figure 129):

- Changing the composition of the population in a neighbourhood
- Making the public and built environment accessible to all and stimulating encounters
- Involving informal and commercial parties such as the supermarket and the thrift shop with an informal supporting role in the consultation of professional care and welfare parties in the neighbourhood
- The creation of an accessible hotline/information point in the neighbourhood where attentive people can make a report if they are worried about a local resident or want to offer help
- Involvement of neighbours by care professionals

In addation Kremer (2019), comes up with three characteristics that an a 'attentive' place should have:

- Physical low threshold where contact is possible
- Inviting to everyone, regardless of age or background
- Staff who make contact

Another thing that could contribute to the social cohesion in a neighbourhood, and therefore a bigger chance of neighbours helping each other, is the organization of shared activities.

## 5.3 Experiences informal care

To complement findings from literature there were some semi-structured interviews done with both people that could be care recipients and people that could provide neighbours with help, to see what their experiences where with neighbourly help/informal care giving. In appendix 3 the questions that were mainly asked can be found, however, most conversations were going their own direction on the way. This paragraph will describe summaries of these conversations.

### 5.3.1 Care recipients

Betty - 67 years old

"I live with my husband in an apartment complex where many elderly people live. We have good contact with our neighbours, which is very nice. If there is something wrong, we help each other as elderly people among each other.

But I also have home care because I've had surgery on my hip and knee several times, so that's nice. Or otherwise my husband helps before I ask others. I've never actually asked a young person for help, that threshold is a bit too high. I wouldn't really know if people in the neighbourhood would be willing to help either."

Jan & Tiny - 85 & 83 years old

"We have lived in the same gallery flat for many years. We used to have a store, we still live above it. So we are quite attached to where we live and we would like to stay here as long as possible. Because we are getting older, it would be nice to have some help from others, such as a neighbour who does some groceries every now and then. There's a couple on the gallery who could help us, but I'm not the kind of person who immediately asks them for help. I'd rather do it myself then. Of course it would be nice if help was offered without having to ask, but that's not the case in our neighbourhood because everyone is very self-centered."

Ibrahim – 65 years old

"I've lived in the neighbourhood where I live now for 20 years. I'm already 60 plus so I don't know how long I can stay here, because I'm getting older of course. I live in a mixed neighbourhood with young and old people. There are quite a few elderly people living here who could use some help I think. I would like to help myself but I'm getting older and walking is becoming more and more difficult so that's not really possible. And the young people in the neighbourhood: it is difficult to ask them. The threshold is too high. I actually don't think they would help either. They can help but they don't offer it themselves."

What stands out in these conversations is that everyone mentions that help sometimes would be nice/ is needed. Betty knows her neighbours well, so she could ask them for help. But younger people, who she does not know, she does not think they would offer help. Jan & Tiny say their neighbours are very self-centered and they do not really know them. Help is therefore not offered. They know one couple at the gallery, but Tiny does not want to ask for help herself. Ibrahim would like to help himself but he is getting older too. And he thinks younger people are not really likely to help. But it is also hard to ask the 'help' question to younger people because the threshold is too high. So in short: help by neighbours would be appreciated, but due to the lack of interaction between neighbours help is often not offered. At least not spontaniously.

### 5.3.2 Care givers

Ahmed - 14 years old

"Actually, I have never really helped any of my neighbours. I would like to, but they have to ask for it. Out of myself, I do not offer help very quickly."

Peter – 53 years old

"I do help my neighbours sometimes. I think the motivation for me to do that, is because I feel a sense of responsibility towards others. I think we should all take an eye on each other as human beings. But I am most likely to provide help when the help question is asked. Or of course when I would see someone struggle with something I would offer it myself. But I think knowing/ seeing that someone could need help is very important. I think the amount of help that is offered would increase once we know/see each other as neighbours even more. Mabey a 'Neighbourhood App' would help."

Sarah – 18 years old

"At the moment I'm not really providing neighbours with help. I would not even know who my neighbours are to be honest. I would be quite willing to help if I know/see someone that needs help. But because I don't know my neighbours this is not really happening. Maybe part of that is also that I know that I will only

live temporarily where I live now. So I do not really feel the need to invest in contact with neighbours actively."

Tom – 27 years old

"Of course I would be willing to help neighbours. I believe in 'community', helping each other out and looking after each other as humans. I used to live in the city centre, in an apartment complex. There I did not see my neighbours that often, so I did not really help them on a regular basis. Even though one time, when I saw my neighbour moving in the entrance, I offered him my help, and ended up helping him as well. But besides that people in the city were a little more self-centered. Now I just moved to a semi-detached house in a very friendly street. I directly see a difference in contact with neighbours. I think because everyone has their own front yard, parking space and therefore are more outside around the house, you will encounter each other more. That leads to better contact and therefore also in an increasement in the help that is offered to each other. I think that it is very important to see/ know each other and feel a bond when it comes to offering help. I think encountering each other regularly helps with that. And the way of living plays a role in that as well."

Janny – 51 years old

"I do help my neighbours. I think the motivation to do that has to do with intrinsic motivations. I'm a Christian and I think that also helps in wanting to keep an eye on my neighbours. Knowing that there are people living in my street that might not have the most of social contacts makes me want to organize something for them. So I for example organize coffee mornings in my house sometimes. That is also a way to find out about my neighbours lives and their needs. This knowing each other

helps in providing each other help. I do think it is important to know someone needs help. So the person needs to ask it, or I need to see that someone is in need of help. I think the housing form plays a role in the amount of 'knowing your neighbour' as well. I fore example experience a difference between where I used to live: a street with 12 addresses, which made it very clear who your direct neighbours where, and were I live now: a very long street with around 250 addresses. That makes it less clear to me who I see as my neighbours and who for example to invite for a coffee morning."

What stands out in the conversations with (possible) care-givers, is that actually everyone is willing to provide help or already offers help. For many the motivation is an intrinsic motivation. 'I feel responsible', 'I believe in community', 'I am Christian'. All interviewees emphasize the importance of knowing or seeing your neighbour. If they see or know that help is needed, they will provide it. The form of housing plays an important role in this seeing and knowing your neighbour. Houses in a 'clear' street and with a front garden makes people see each other more often and therefore connect more. Some interviewees mentioned that they are willing to provide help, but are not really doing it because they do not know their neighbours and are not asked to do it. The time that you will stay in a neighbourhood is a factor that plays a role in wanting to invest in getting to know your neighbours.

## 5.4 Conclusion

This chapter was aimed to give an answer on the following question: *What informal care can be provided by neighbours and what could stimulate neighbours to provide informal care?* There can be concluded that neighbours can help with several tasks in support, household and care. Where the physical care will probably be provided more by close relatives, neighbours could play a role in helping in household tasks like cleaning and doing groceries. Also help with administrative tasks could be provided by neighbours. But the most important task would be just keeping elderly company and giving them emotional support.

Knowing and seeing your neighbour is very important for the willingness to provide informal care to your neighbour. Once people know their neighbour and see the help he or she needs, they are willing to provide it. Now a relation based on reciprocity can start, with benefits for both the care recipient and care giver. All this has to do with social cohesion. If social cohesion is stimulated in a neighbourhood, this could lead to "everyday attentiveness", which increases the chance of neighbours helping each other out. The design of the built environment could also affect this. If the built environment is designed in such a way that it stimulates neighbours seeing and encountering each other, the provision of help by neighbours would increase.



# 6

# CASE STUDIES

# 6 CASE STUDIES

Previous chapters described the needs and wishes of elderly and what would stimulate neighbours to provide informal care. In both cases, social interaction is a very important aspect. Social interaction is beneficial for the health and well-being of elderly, but it also increases the chance of neighbours providing a helping hand. But what design elements can be used to let the built environment play a role in the increasement of this social interaction and therefore social cohesion? That will be researched in this chapter by doing several case studies. The case studies have been chosen based on the fact that they are designed with the stimulation of social interaction, between different generations, in mind.



**Vindmøllebakken - Helen & Hard**
Stavanger (Norway), 2019
Source: ArchDaily, 2021

## 6.1 Vindmøllebakken - Helen&Hard

Vindmøllebakken is a shared living complex with a mix of ages and targetgroups, located in Stavanger Norway and designed by Helen & Hard architects. They described the design of the project as follows: "The design model is a response to the standard way homes are built, which often does not respond to the current societal needs. Today's residents might be modern families with "my, your and our kids", a generation of elderly who are healthy and want to live at home longer, people who live alone and suffer from loneliness, or people who simply wish to live more sustainably. By sharing resources, whether it is time, space, or assets, the result is a more sustainable way of living: environmentally, but also socially, economically, and architecturally." (Helen & Hard, Archello, 2019) Together with the residents the architects came up with the design of Vindmøllebakken according to the "Gaining by Sharing" (Helen & Hard, 2019) model. All choices are based on the increasement of sharing and caring for each other.

The project consists of 40 apartments that are situated around 500m2 of shared space. It consists out of two parts. One middle block with most dwellings and the shared facilities, and dwellings that are situated next to streets around this block (figure 130). This provides a choice for dwellings closer to the shared activities, or more private along the streets (figure 131). This choice between public and private also is provided by the routes towards the entrances. There are entrances on the street side that lead directly towards the stairways and dwellings. But there is also a more public route going through the shared outside space, into the central hall. Even though this route is more public, the shared outside space of the complex still has a feeling of security due to the dwellings around it (figure 131). Next to functions shared with the residents, there is also a neighbourhood café present in the building block.




**Figure 130**: Two parts, middle block (1) and streets (2) (made by author, based on ArchDaily (2021))




**Figure 131**: Choice public - private route and intimate courtyard (made by author, based on ArchDaily (2021))

The central hall is the heart of the building, where most interaction takes place. When entering the building in the central hall, you will directly see the amphitheatre (figure 132, 133). These are stairs, but designed with seating areas as well. This makes it a place to sit and interact. Most shared facilities are located on the ground floor. To accommodate everyones wishes when it comes to shared activities and the space that is needed for that, the residents created several 'interest groups'. These different interest groups lead to shared spaces with different functions. For example a shared kitchen (figure 134), shared living room, sport rooms, a guest room, laundry room and a courtyard (figure 135). The shared spaces really form the central heart of the complex and are designed very high and open, with a lot of use of glass. This clearly provides a distinction between shared, open spaces and more private, closed spaces (figure 136). To emphasize a warm atmosphere, there was used a lot of wooden materials (figure 137).

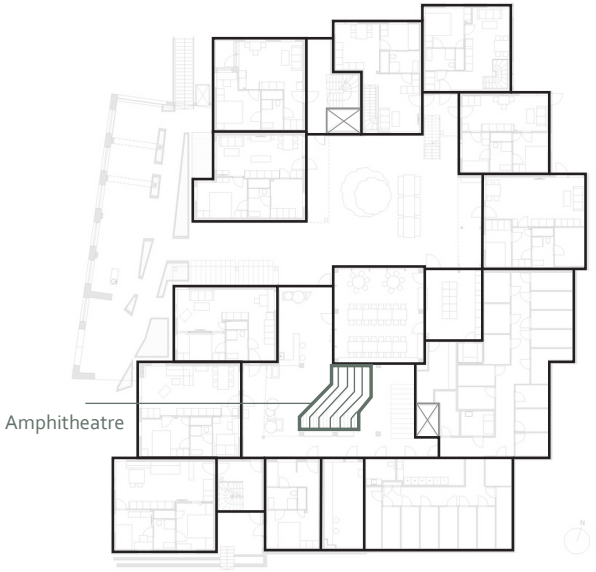



**Figure 132**: Amphitheatre on floorplan (made by author, based on ArchDaily, 2021)



**Figure 133**: Picture amphitheatre (ArchDaily, 2021)



**Figure 134**: Shared kitchen (ArchDaily, 2021)

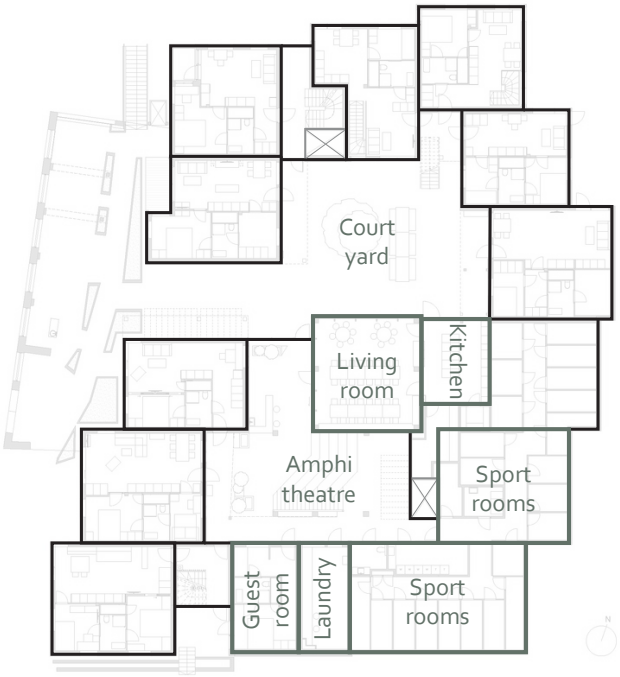



**Figure 135**: Shared functions on ground floor (made by author, based on ArchDaily, 2021)



**Figure 136**: Difference open public spaces and closed private spaces (ArchDaily, 2021)



**Figure 137**: Use of wood for warmth and intimacy (ArchDaily, 2021)

The amfitheater stairs lead to the first floor of the building complex. Here you can find dwellings along galleries that have a view on the central hall, which stimulates vertical interaction (figure 138, 139). You can clearly see how the dwellings are situated around the central heart, both in plan as in section (figure 140, 141) Some parts of the galleries are closed off. The galleries in these closed areas are designed a little broader, which makes it more into a 'front porch' where seats can be placed. This creates a connection with the dwellings that are in the same closed off area (figure 142). The galleries in general function as a buffer zone between the private dwellings and the public central hall, which stimulates interaction (figure 143). The first floor also contains shared spaces like a living room and a study place where residents can meet. Because of the double height shared spaces on the ground floor, there could be added a window with a view into the shared kitchen. In this way all shared rooms are visibly connected vertically, and residents can see each other (figure 144).

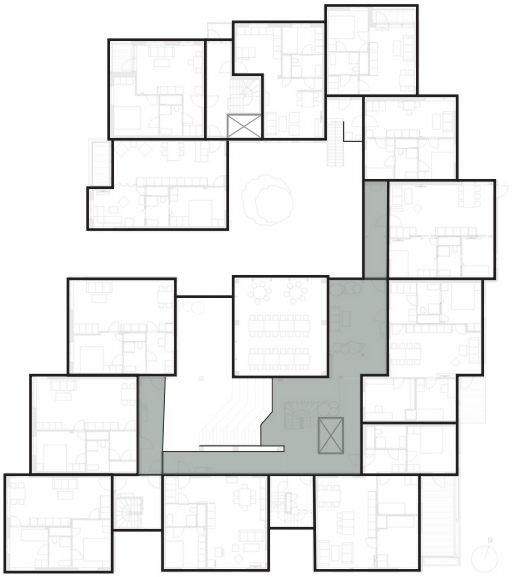


**Figure 138**: Galleries around central hall (made by author, based on ArchDaily, 2021)



**Figure 139**: Vertical connections gallery (ArchDaily, 2021)

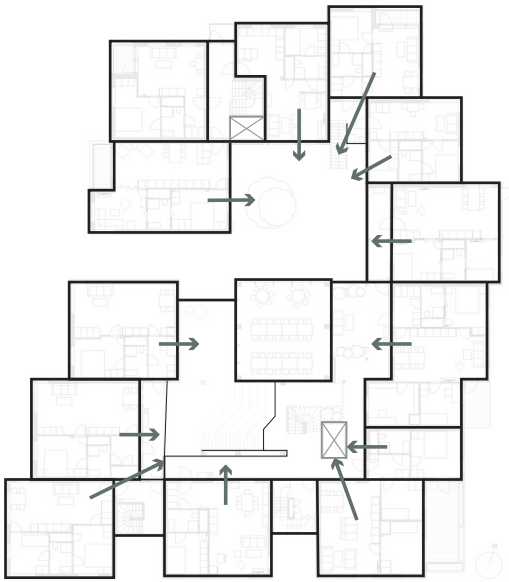


**Figure 140**: Dwellings situated around central heart (made by author, based on ArchDaily, 2021)

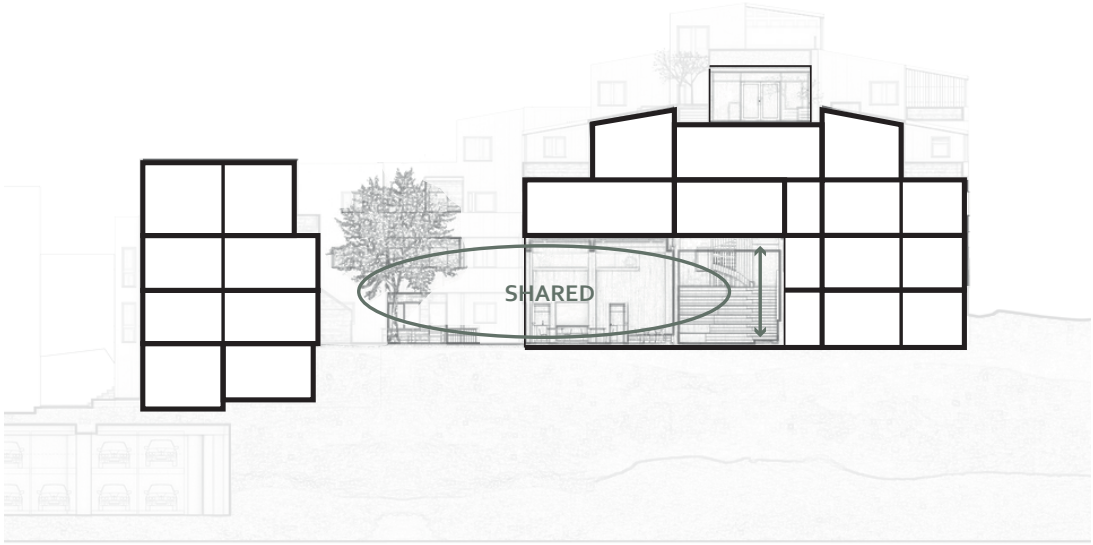



**Figure 141**: Dwellings situated around central heart
(made by author, based on ArchDaily, 2021)

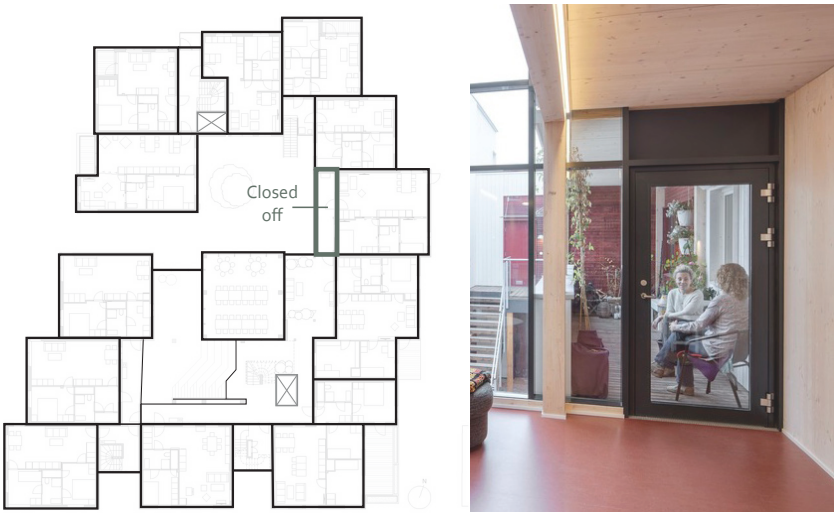



**Figure 142**: Closed off areas gallery, interaction with neighbours
(made by author, based on ArchDaily, 2021)

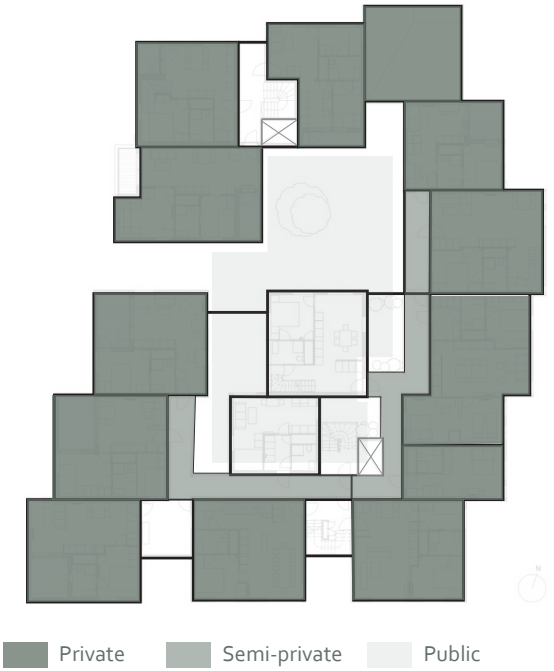



**Figure 143**: Galleries as a semi private buffer zone (made by author, based on ArchDaily, 2021)



**Figure 144**: Shared living room with view into shared kitchen (ArchDaily, 2021)

Even though most shared spaces are located on the ground- and first floor, the top floor contains a green house with shared roof terrace (figure 145, 146). From here residents have a view on the surroundings and can enjoy the sun. The fact that the highest floor also contains a shared space stimulates movement, and thereby interaction, throughout the whole complex.

The dwelling complex knows different dwelling typologies, suited for the different target groups in the complex. There is a studio, a standard apartment, a family apartment and a apartment with roof terrace (figure 147) By combining the studio and the standard apartment you will get the family apartment (figure 148). In this way the dwelling typologies are in a way adaptable to a changing household composition. The floorplans of the dwellings itself also have a flexible character. By placing the kitchen block in the middle, residents have a choice where to create for example their living and eating room (figure 149). Even though there are different dwelling sizes, they all have a modest surface area. By designing the dwellings not too big, it will be more likely that residents make use of the shared facilities, which increases the amount of interaction.The dwellings are stacked in a somewhat stepped way. This creates the opportunity to provide the dwellings with their own private balconies and increasing access to natural daylight and ventilation (figure 150).

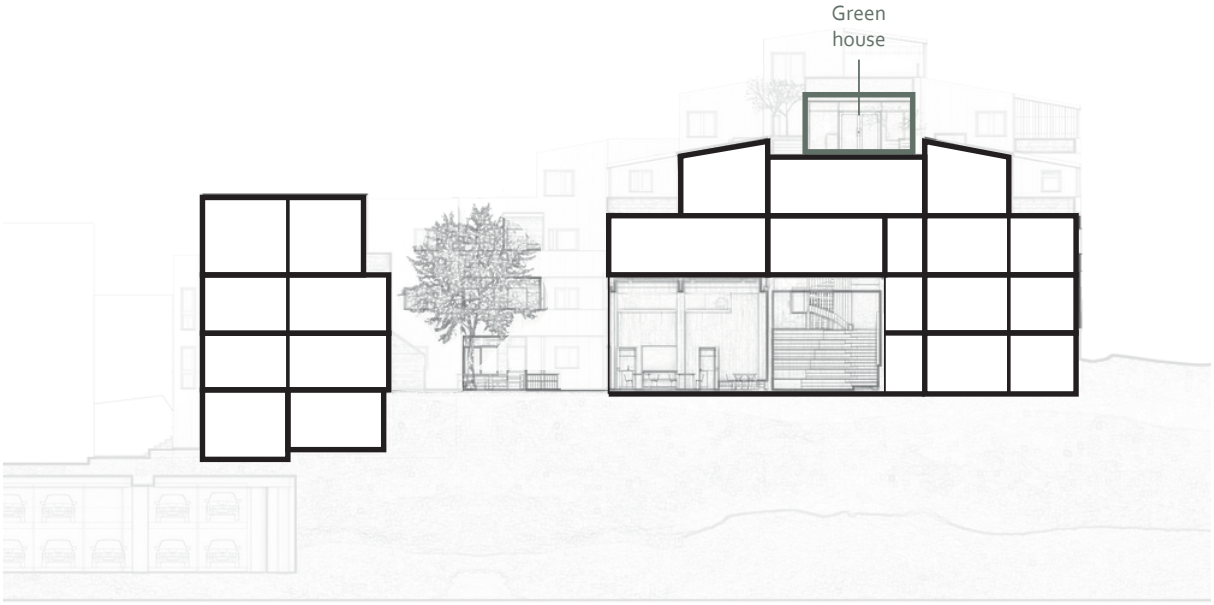



**Figure 145**: Green house on top floor
(made by author, based on ArchDaily, 2021)



**Figure 146**: Meeting in green house (ArchDaily, 2021)




**Figure 147**: Dwelling typologies
(made by author, based on ArchDaily, 2021)

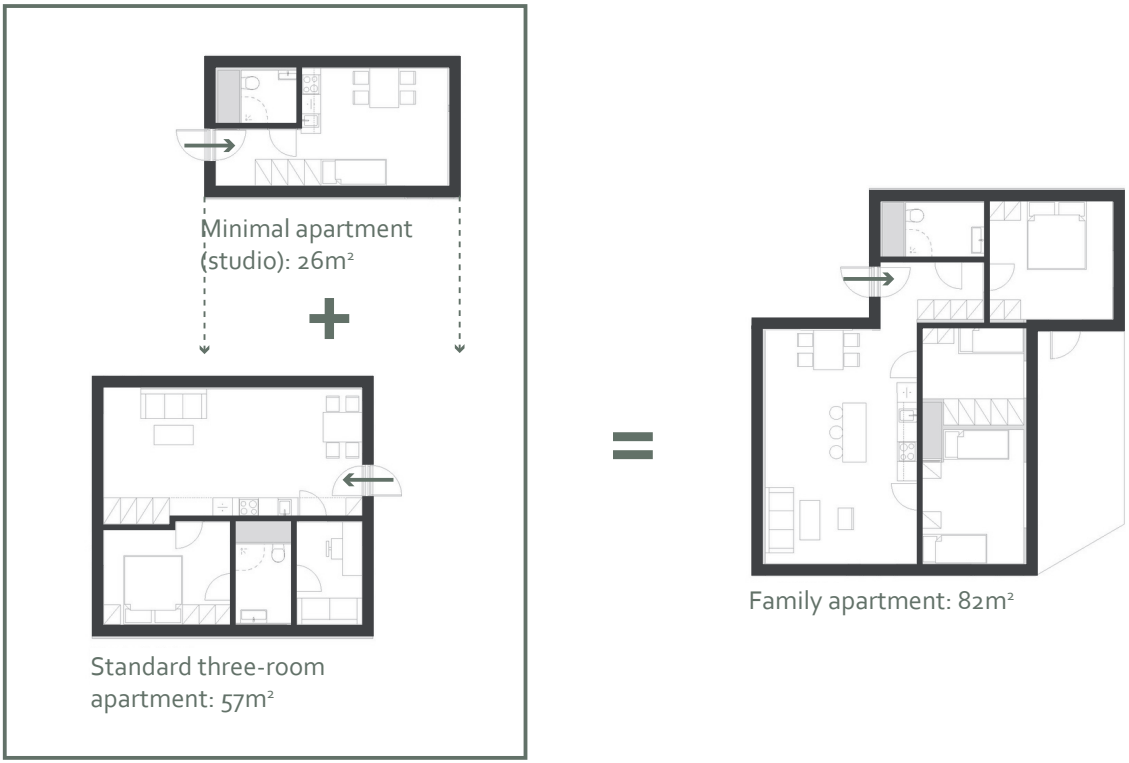



**Figure 148**: Combining typologies, adaptable
(made by author, based on ArchDaily, 2021)




**Figure 149**: By placing kitchen in middle, freedom of choice
(made by author, ArchDaily, 2021)



Figure 150 (ArchDaily, 2021)

**Stepped roof landscape Vindmøllebakken**



**ZWEI+PLUS - Trans_City**
Vienna (Austria), 2018
Source: ArchDaily, 2020

## 6.2 Zwei+plus - Trans_City

Zwei+plus is an innovative new concept for Intergenerational Living in Wien, Austria. It is designed by Trans_City Architects and they explain their project as follows: "It is subsidized social housing whose units are let in pairs to two cooperating, intergenerational households. These tandem households can be family or just plain friends, but they must move in concurrently and commit themselves to mutual cooperation and support. In a time where independent living is treasured yet social support networks are needed, Zwei+plus provides tandem households with the chance to live together in the same estate: the paired yet spatially separate units are close enough for interaction and assistance, yet far enough apart, that privacy is preserved." (Trans_City, Archello, 2018) The concept as described is summarized in figure 151.

In the design of the project there has been a focus on the integration of the different generations by the stimulation of interaction. The design consists out of four L-shaped buildings surrounded by a green area. Throughout the green area several routes are possible, connected to the existing road structure in the neighbourhood by passageways, and leading to the entrances of the ground floor functions (figure 152). The green area connects several collective functions, mainly placed in the plinth, highlighted by an offset in the façade and a chance of material (figure 153). To stimulate interaction with not only the residents of the complex but also surrounding neighbours, there are several functions for the neighbourhood present at the ground floor, such as a neighbourhood community room, but also a kindergarten. The shared facilities in




**Figure 151**: Concept of Zwei+Plus (ArchDaily, 2020)

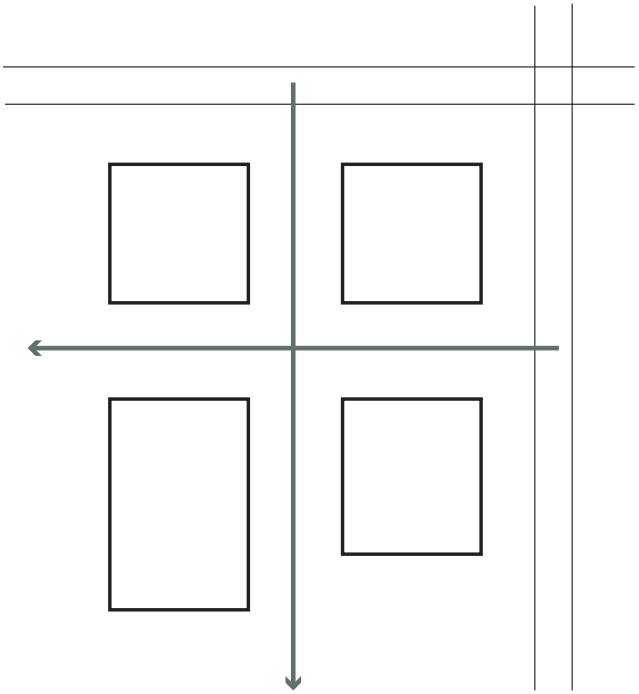


**Figure 152**: Routes groundfloor connect to neighbourhood (made by author, based on ArchDaily, 2020)

the project have a focus on the provision of activities for several age groups. The beforementioned kindergarten is part of this, but furthermore an 'assisted living' group and a meditation garden. Also the more practical shared functions are placed on the ground floor and thought of the lifestyles of different households. There is a bicycle storage, but also a guest room if residents want to have guests over for the night, and next to the collective laundry room they placed a playroom for kids, so residents can do their laundry while keeping an eye on the kids (figure 154). In this way the project accommodates the wishes of all target groups. The design of the green area itself also shows this, by having several functions like a public courtyard facing the neighbourhood



**Figure 153**: Highlighted public plinth by offset and other material use (ArchDaily, 2020)




**Figure 154**: Functions ground floor (made by author, based on ArchDaily, 2020)

side, residential courtyards, a toddlers playground, a children's playground, community vegetable gardens, and private gardens. The placement of each function has a connection with the amount of privacy. The public courtyard is facing the neighbourhood side, the residential courtyards feel more intimate by the surrounding buildings, and the playgrounds for children are at the back of the complex (figure 155).

Once the buildings are entered the stairways towards the dwellings function as socially active spaces. They are spaciously designed, connected to open galleries that function as a place to interact (figure 156). The dwellings that are connected to these galleries have an offset in the façade, which creates a little 'front porch' (figure 157). This all provides for a transition from private (dwelling) to semi-private (front-porch), to semi-public (shared functions for residents), to public (collective neighbourhood functions), which provides for several spaces and levels of interaction (figure 158). On the highest floor there can be found sky-gardens with a collective use (figure 159).

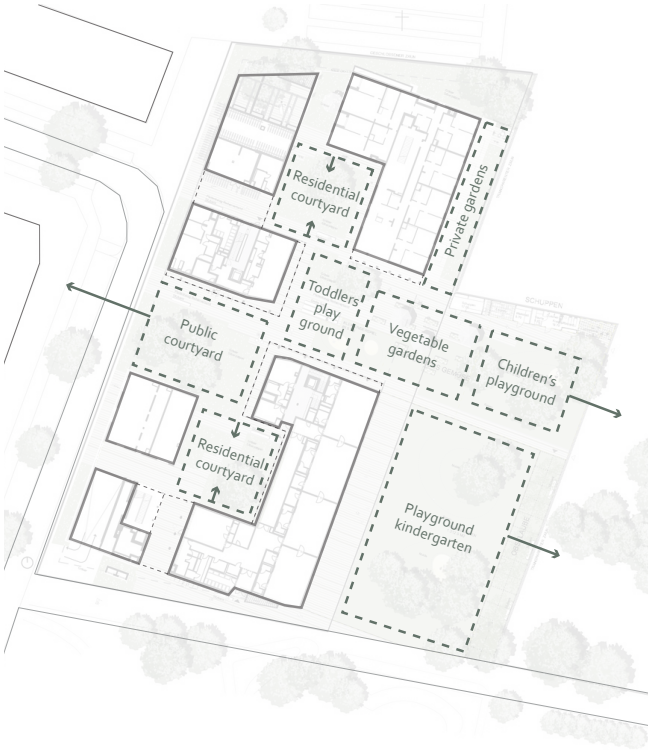



**Figure 155**: Functions green area
(made by author, based on ArchDaily, 2020)

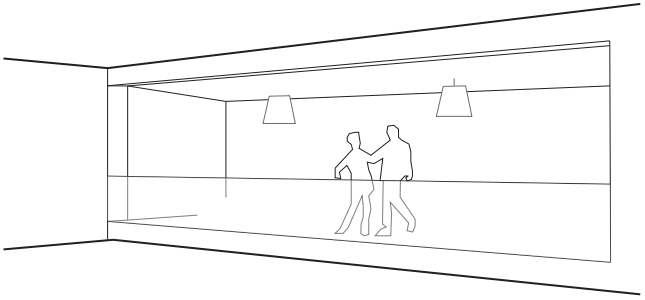


**Figure 156**: Spacious, open galleries to interact
(made by author, based on ArchDaily, 2020)

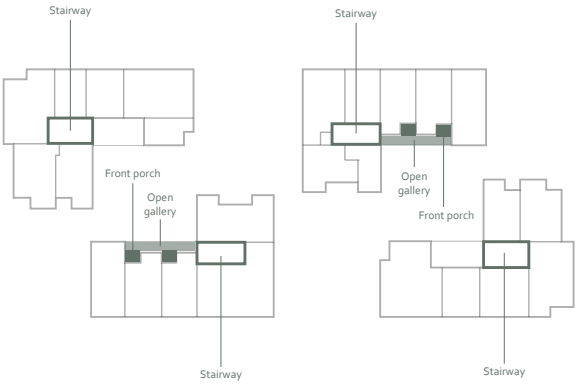



**Figure 157**: Stairways, galleries and front porches
(made by author)

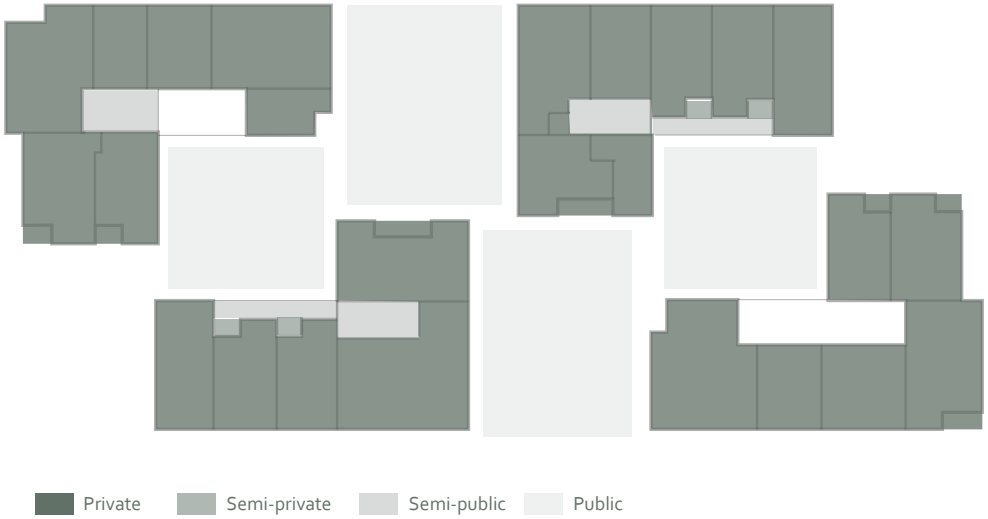



**Figure 158**: Transition private to public with buffer zones
(made by author)

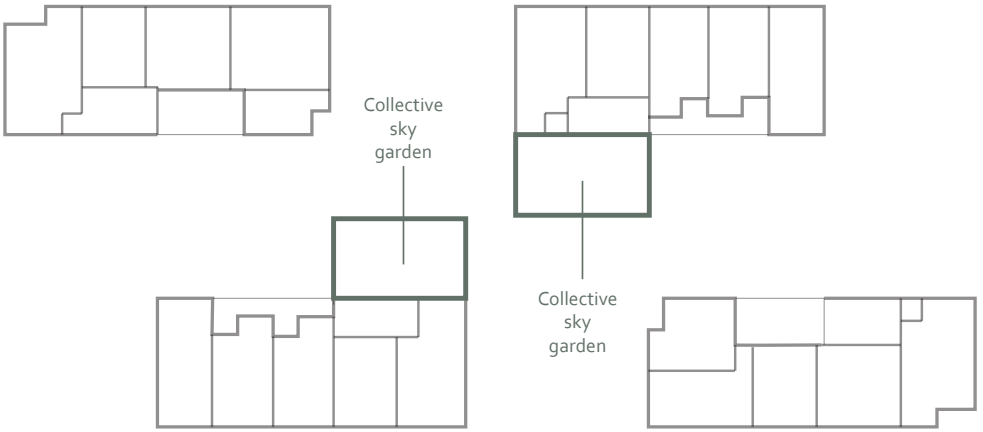



**Figure 159**: Sky gardens on top floor
(made by author)

The complex has several dwelling typologies, based on the different households and their way of living. First of all there are the 'assisted living' typologies, meant for elderly. Both the smaller one (44m2) and the bigger one (56m2) are equipped with wheelchair accessible bathrooms and separate bedrooms (figure 160). The regular dwelling typologies are from small to big: a one-person studio (32m2), two-room apartments for singles or couples (55m2 and 64 m2), and 3- or 4 room family apartments (70m2 and 88m2) (figure 161). The last typology is the so called 'kangaroo-living'. This typology consists out of two apartments (62m2 and 35m2) that are connected to each other by a door. This apartment can house a couple or family that wants to live together with an elderly relative, but still independent from each other (figure 162). All dwellings have balconies or loggias with a view on the green surroundings. The wooden slats on the balconies provide a sense of warmth and intimacy, next to a feeling of privacy (figure 163).

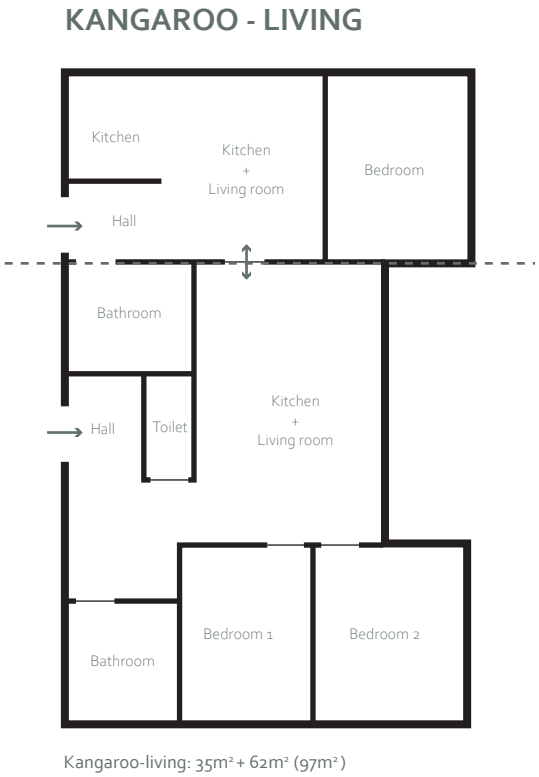



**Figure 162**: Kangaroo-living (made by author)

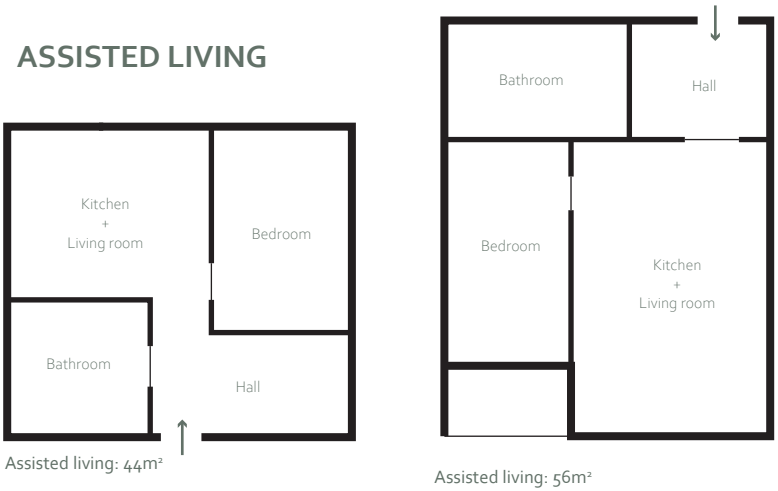
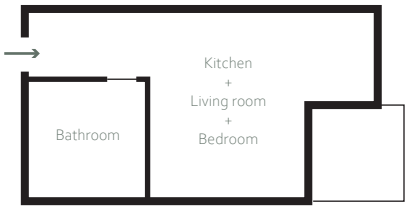



**Figure 160**: Assisted living typologies (made by author)

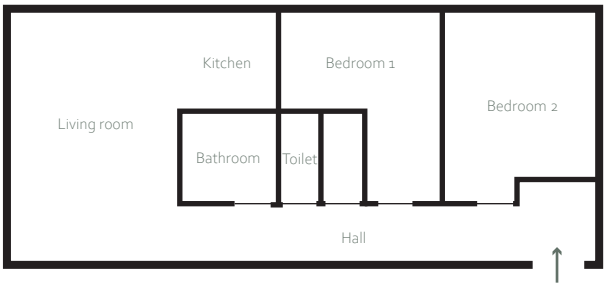


**Figure 163**: Wooden slats at balcony for warmth, intimacy and privacy (ArchDaily, 2020)

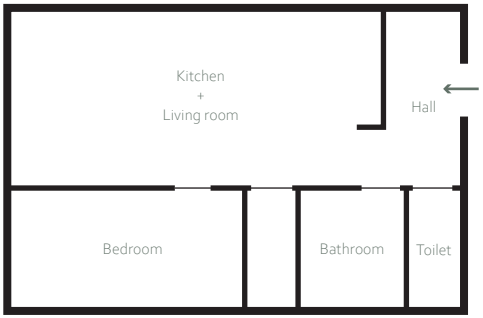
## REGULAR




Regular: studio 32m²



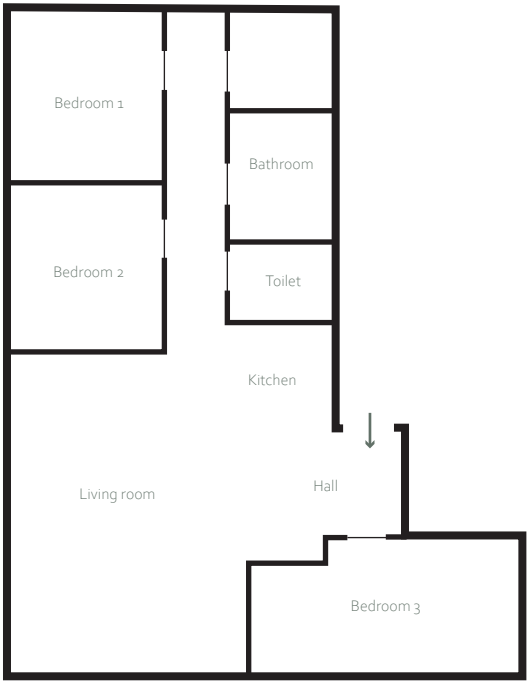

Regular: Family three-room apartment 70m²




Regular: two-room apartment 55m²




Regular: two-room apartment 64m²




Regular: Family four-room apartment 88m²

**Figure 161**: Regular dwelling typologies (made by author)

Figure 164 gives an overview of the Zwei+plus project, showing all the different collective functions based on the different target- and age groups.

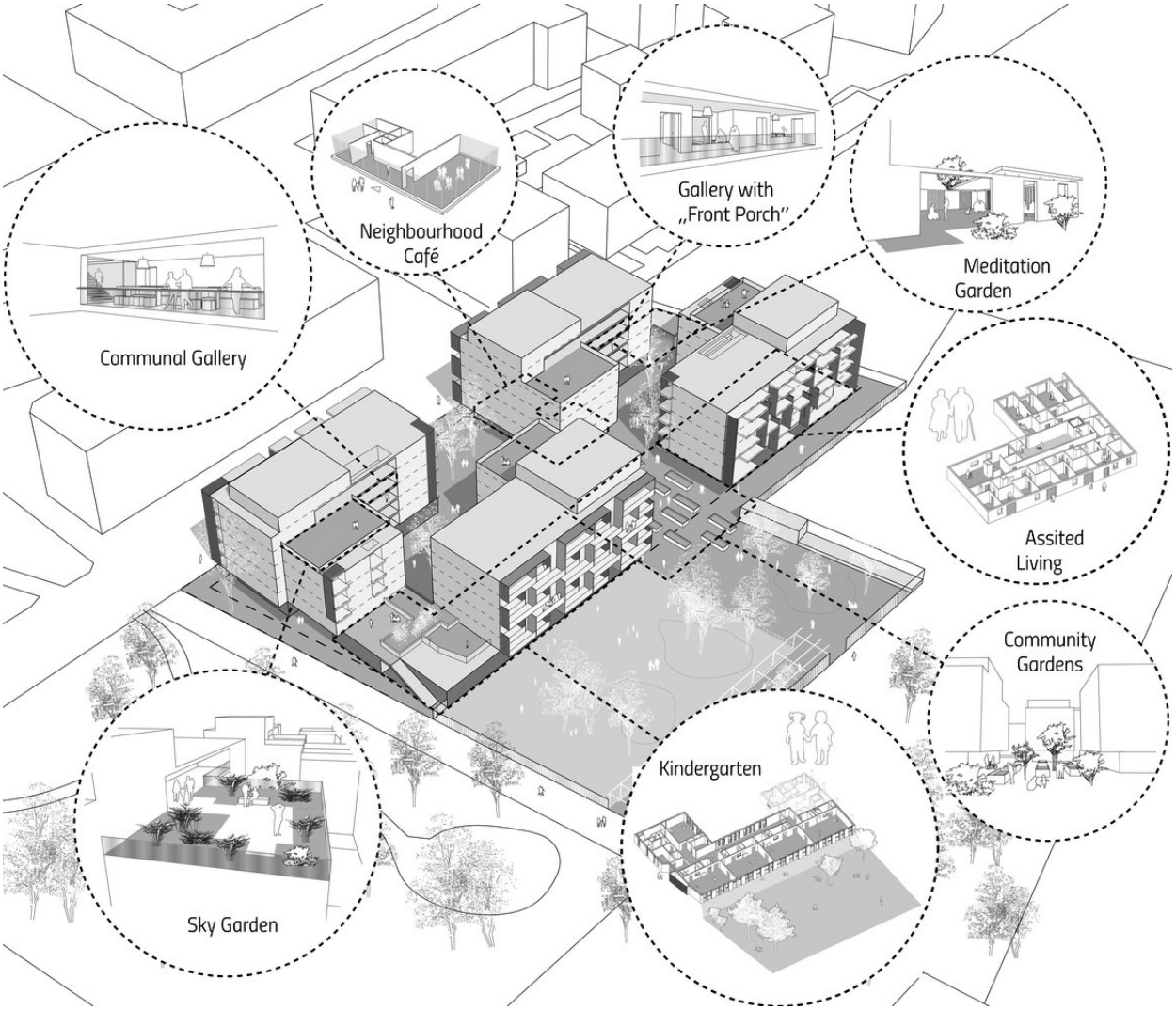



**Figure 163**: Overview Zwei+Plus (ArchDaily, 2020)

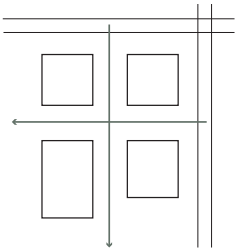
## 6.3 Conclusion

This chapter aimed to answer the question: *How can design stimulate social cohesion and therefore stimulate informal care?* By doing case studies of projects that where designed with the stimulation of social interaction and cohesion between several generations in mind, several design elements that stimulate social integration could be found. When these elements would be used in a design, social cohesion is stimulated.

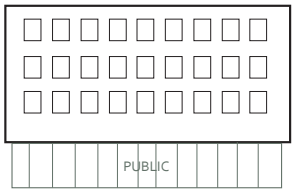
First of all the connection to the surrounding is important. In this way not only interaction between residents of the complex is provided, but also between the residents of the complex and the neighbourhood. Routing, but also placing public neighbourhood functions in the plinth will stimulate this connection. Furthermore the organization of dwellings and shared spaces is found to be important. Dwellings should be organized around a shared place. However, the shared place should still have a feeling of security, so residents feel more comfortable to use them. A balance between public and private is therefore important. Providing for a transistion between private, semi-private, semi-public and public plays an important role in the stimulation of encountering each other. A semi-private area in front of the dwelling and a staircase focussed on interaction are examples of this. The facades of a building are able to articulate what is public and what is private, and ensure that people have visibility into the activities taking place in shared spaces. The use of wood is associated with warmth and intimacy. The dwellings should be designed for a mix of households, and the design of shared spaces should also keep in mind this mix and therefore different interests. By placing shared spaces throughout a complex, movement is stimulated and increases the chance of encounter. By designing the dwelling not too big, it is more likely that people will use shared spaces. All these design elements can be found on the right.



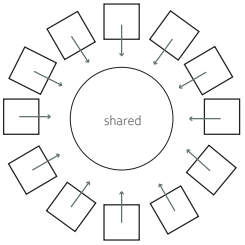

**DIFFERENT DWELLING TYPOLOGIES FOR A MIX OF HOUSEHOLDS**



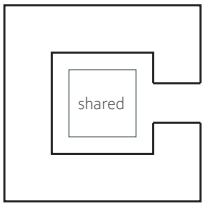
CONNECT ROUTES TO NEIGHBOURHOOD



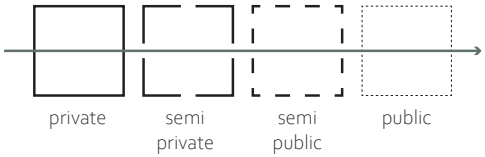

PLACE PUBLIC NEIGHBOURHOOD FUNCTIONS IN PLINTH



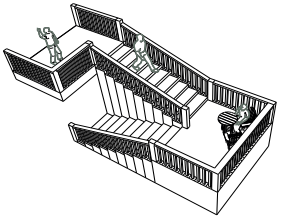

ARRANGE DWELLINGS AROUND SHARED SPACE



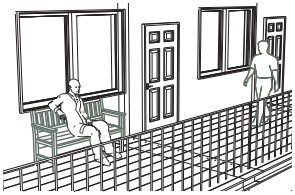

CREATE A SENSE OF SECURITY



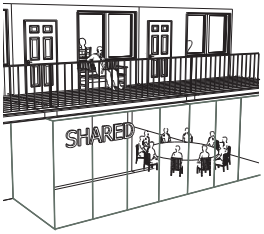

PROVIDE BUFFER ZONES FOR TRANSITION



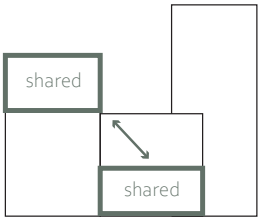
USE STAIRS AS PLACE TO INTERACT



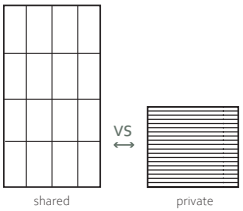
CREATE SEMI-PRIVATE ZONE ALONG GALLERY



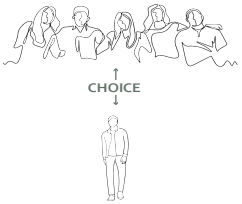

CREATE SHARED SPACES (FOR DIFFERENT INTERESTS)



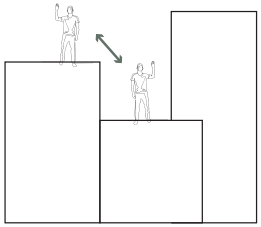

SPREAD SHARED SPACES THROUGH BUILDING (MOVEMENT)



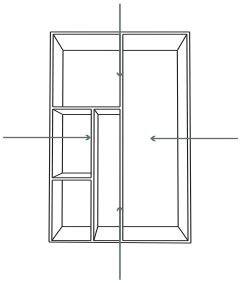

CLEAR SEPERATION PUBLIC - PRIVATE



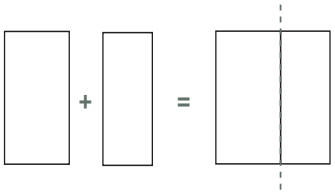

CREATE POSSIBILITY TO CHOOSE INTERACTION



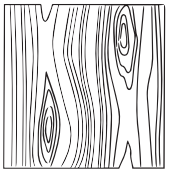
CREATE VERTICAL SIGHT LINES/INTERACTION



SMALL DWELLING (MORE LIKELY USE OF SHARED)




ADAPTABLE HOUSING (FOR CHANGING POPULATION)



WOOD = WARMTH



# 7

# CONCLUSION

# 7.1 Conclusion

This research aims to give an answer on the following main question:

***"What design strategy can be used to design independent livings for elderly with a light need of care, integrated into an existing neighbourhood, in such a way that it stimulates neighbours to provide informal care?"***

In order to eventually answer this main question, several sub-questions were studied.

The first sub-question that was studied was: *How has elderly housing developed through the history and what can we learn from it?* In short, elderly housing went from 'integrated' in the city (in bad circumstances), to clustered and isolated outside the city, to clustered and integrated inside the city. Now we need to look at the integration of elderly in the neighbourhood itself, because they need to live longer independent at home. After doing case studies of De Drie Hoven and De Zonnetrap, there could be found several aspects that were applied in that time that could still be of use today now we need to focus on the integration of elderly again. It is important to not only connect the residents of the complex with each other, but also the complex residents and the neighbourhood residents. Furthermore, by providing different scales of interaction different places of encounter can be created and form a gradient in socially active places. Providing buffer zones between private, semi-private, semi-public and public spaces also contributes to this. The dwellings should be organized around one central point, which brings residents from the whole complex together. Vertical connections by use of for example bridges can stimulate encounter too. Creating a flexible floorplan stimulates freedom of choice for the resident. Lastly, by use of colours and shapes elderly residents can orientate themselves better.

The second sub-question of this research read: *What do elderly with a light need of care need on the scale of dwelling and the scale of the neighbourhood, to live longer independent at home?* There can be concluded that

there are many aspects both on the neighbourhood and the dwelling scale that are needed or wished for by elderly, in order to let them live longer independent at home. These aspects could be divided into physical, functional and social aspects on both scales. By analyzing these three aspects an extensive overview of the needs and wishes could be created. Physical aspects like accessibility, activity and recognition are important because they are often connected to limitations that come with aging. When this is taken into account in the built environment, older people can move around the neighbourhood and home independently for longer, which is not only beneficial for their health, but also increases the change on encounters because the elderly will move around more. On the functional aspect it is important to make it as easy as possible for elderly to use key facilities. This could be done by providing for amenities close by, but also ensuring that there is the ability to easily access facilities further away, through well organized transportation possibilities. Also the presence of an information point where elderly can ask their questions about care or housing is important. Social aspects like providing a contact rich, and multi-generational living environment are important to create a socially sustainable environment. These social aspects are perhaps most important, because a social sustainable environment might in its turn help to reduce discomfort in other aspects. If elderly people feel socially secure in their environment it will be beneficial for both their physical and mental health. In designing for elderly there should thus mainly be a focus on the social aspects like stimulating contact and encounters. There can be concluded that some aspects of the built environment will be beneficial for elderly on several levels. For example the presence of green with benches to rest provide comfort, stimulate movement but also increase the chance on encounters. While designing these elements that provide benefits on several levels should have the biggest focus. From the interviews in Groot-IJsselmonde can be concluded that a green environment is experienced as pleasant, and the social interaction in the neighbourhood could be increased. This should have a focus since this also is most important for elderly to live longer indpendent at home.

The third sub-question of this research was the following: *What informal care can be provided by neighbours and what could stimulate neighbours to provide informal care?* There can be concluded that neighbours can help with several tasks in support, household and care. Where the physical care will probably be provided more by close relatives, neighbours could play a role in helping in household tasks like cleaning and doing groceries. Also help with administrative tasks could be provided by neighbours. But the most important task would be just keeping elderly company and giving them emotinal support. Knowing and seeing your neighbour is very important for the willingness to provide informal care to your neighbour. Once people know their neighbour and see the help he or she needs, they are willing to provide it. Now a relation based on reciprocity can start, with benefits for both the care recipient and care giver. All this has to do with social cohesion. If social cohesion is stimulated in a neighbourhood, this could lead to "everyday attentiveness", which increases the chance of neighbours helping each other out. The design of the built environment could also affect this. If the built environment is designed in such a way that it stimulates neighbours seeing and encountering each other, the provision of help by neighbours would increase.

The final sub-question that was answered in this research read: *How can design stimulate social cohesion and therefore stimulate informal care?* By doing case studies of projects that where designed with the stimulation of social interaction and cohesion between several generations in mind, several design elements that stimulate social integration could be found. When these

elements would be used in a design, social integration is stimulated. First of all the connection to the surrounding is important. In this way not only interaction between residents of the complex is provided, but also between the residents of the complex and the neighbourhood. Routing, but also placing public neighbourhood functions in the plinth will stimulate this connection. Furthermore the organization of dwellings and shared spaces is found to be important. Dwellings should be organized around a shared place. However, the shared place should still have a feeling of security, so residents feel more comfortable to use them. A balance between public and private is therefore important. Providing for a transistion between private, semi-private, semi-public and public plays an important role in the stimulation of encountering each other. A semi-private area in front of the dwelling and a staircase focussed on interaction are examples of this. The facades of a building are able to articulate what is public and what is private, and ensure that people have visibility into the activities taking place in shared spaces. The use of wood is associated with warmth and intimacy. The dwellings should be designed for a mix of households, and the design of shared spaces should also keep in mind this mix and therefore different interests. By placing shared spaces throughout a complex, movement is stimulated and increases the chance of encounter. By designing the dwelling not too big, it is more likely that people will use shared spaces.

The outcomes of all the sub-questions lead to a design strategy that could be used to design independent livings for elderly with a light need of care, integrated into an existing neighbourhood, in such a way that it stimulates neighbours to provide informal care. This design strategy arrives from the following main principles:

- Integrate elderly within an multi-generational existing neighbourhood
- Stimulate independence by creating an environment that is physical accessible, functional and social sustainable
- Create possibilities for interaction and (un)planned encounters
- Provide for a warm and green environment that enhances the feeling of security and well-being

This research originally arrived from the problem of the housing shortage the Netherlands is currently dealing with. The design strategy that emerged from this research could be used in densification projects to tackle this housing shortage and at the same time reinvigorate existing neighbourhoods. Therefore the insights gained from this research will be the input for the densification design project that is part of this graduation project as well.



# 8

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# 9

# APPENDICES

# Appendix 1 - Questions semi-structured interviews residents Groot-IJsselmonde

Interviewed person name: .....
Location: .....
Date: .....-.....-.....

Person

1. How old are you?
2. For how long have you been living here?
3. What household are you living in? (Single, family, elderly, etc)

Neighbourhood

1. Do you enjoy living in this neigbourhood? What do you like about it, or not?
2. How would you describe the neighbourhood? (Kids/elderly/etc)
3. Do you have contact with your neighbours? Does it feel like you are part of the neighbourhood?
4. Are you making use of facilities in the neighbourhood?
5. Do you participate in activities in the neighbourhood?
6. Are there things you would like to improve in your neighbourhood?

House

1. Do you live in a purchased, rental or social housing property?
2. How do you like the home you are living in? (Square meters, layout, relation with outside)
3. Are there things you would like to improve in your home?

New ways of living

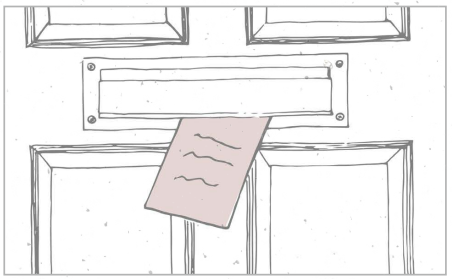
1. Would you be okay with sharing facilities with neighbours? (collective living, helping each other)
2. Would you like to do shared activities together with other target groups?

# Gerard




GERARD LIVES IN A SIDE ALONG THE HUNIADIJK IN A STREET CALLED AVERDRIJK AND IS A LONG-TIME RESIDENT OF IJSSELMONDE.
HE RAISED HIS FAMILY HERE BUT NOW THAT HIS KIDS ARE LIVING ON THEIR OWN AND HE GOT DIVORCED HE HAS BEEN LIVING ALONE HERE FOR THE PAST FIFTEEN YEARS. A LOT OF HIS FRIENDS AND NEIGHBOURS HAVE MOVED AWAY AND YOUNGER FAMILIES MOVED IN.

G01



WHEN GERARD LEAVES HIS HOUSE THIS MORNING HE FINDS A NOTE IN HIS FRONT DOOR;

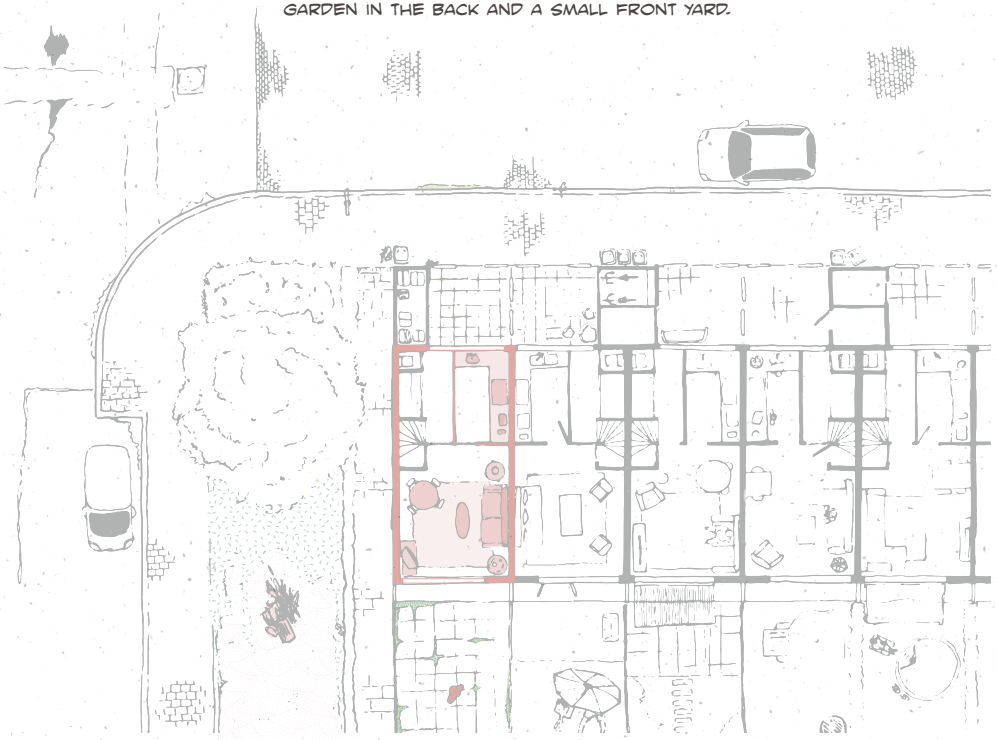
"DEAR NEIGHBOURS WE ARE HAVING A BARBECUE IN OUR GARDEN TONIGHT FEEL FREE TO JOIN!"

HE DOESN'T CARE MUCH FOR THE NEW NEIGHBOURS BUT AS LONG A THEY DON'T MAKE TO MUCH NOISE HE DOESN'T MIND.

G02

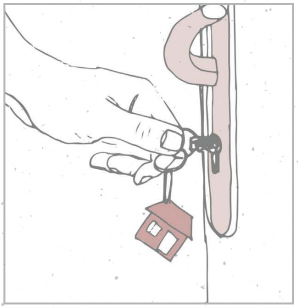
4

HIS HOUSE IS THE LAST IN A ROW OF FOURTEEN HOUSES WHO HAVE A GARDEN IN THE BACK AND A SMALL FRONT YARD.



G03

5

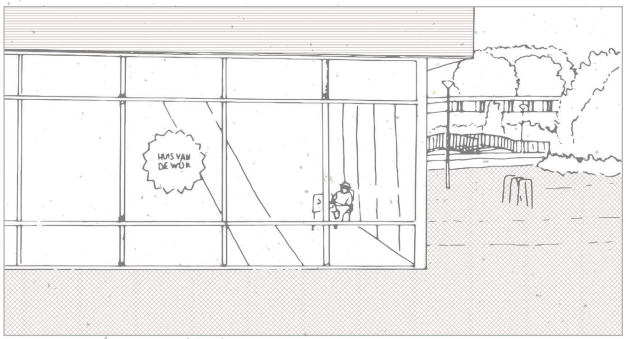


EVERY MORNING AT 08:00 GERARD WALKS FROM AVERDIJK TO KERSTENDIJK WHERE "HET HUIS VAN DE WIJK" IS LOCATED. GERARD IS THE CARETAKER FOR THIS COMMUNITY CENTRE AND SO HE HAS TO BE THERE FIRST EVERY MORNING. AFTER OPENING ALL THE DOORS, TURNING ON THE LIGHTS AND MAKING SOME COFFEE. GERARD SITS IN HIS CORNER AND GETS TO WORK ON ONE OF HIS PUZZLES.

AROUND 11:00 MOST OF THE COMMUNITY WORKERS HAVE ARRIVED AND THE COMMUNITY CENTER IS FILLED WITH RESIDENTS FROM ALL OVER IJSSELMONDE DOING ACTIVITIES SUCH AS KNITTING OR JUST GETTING TOGETHER FOR COFFEE. GERARD THEN GOES HOME TO MAKE SOME LUNCH.

HE AVOIDS THE YOUTH THAT HANGS AROUND IN FRONT OF THE COMMUNITY CENTRE. "THEY ARE ALWAYS SO NOISY WITH THEIR MUSIC" HE SAYS AS HE MAKES A BIG CIRCLE AROUND THEM.

G04




G05

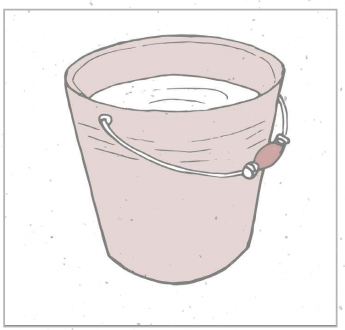



G06


HELLO WOUTER, WHAT HAVE YOU BEEN UP TO? STILL NO WATER?
GERARD! GOOD TO SEE YOU! I HAVE BEEN CALLING BACK AND FORTH WITH VESTIA TO FIX MY PLUMBING. SO FAR NO LUCK.

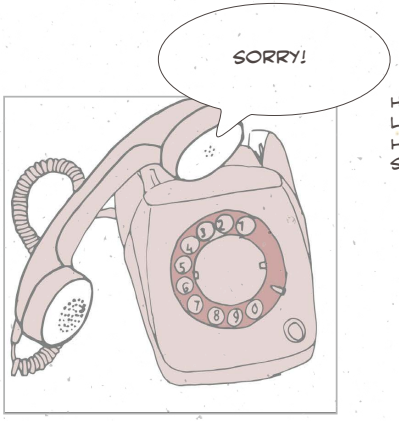
**G07**

7



ON THE WAY HOME GERARD RUNS INTO WOUTER WHO IS ALSO A LONG-TIME RESIDENT OF HORDIJKERVERLD. WOUTER COMPLAINS ABOUT VESTIA, THE SOCIAL HOUSING COMPANY BECAUSE HE CAN'T GET RUNNING WATER FOR A WEEK NOW DUE TO SEWER MAINTENANCE AND NOW HAS TO BRING BUCKETS OF WATER TO THE HOUSE TO FLUSH THE TOILET AND TO WASH WHICH IS HURTING HIS BACK.

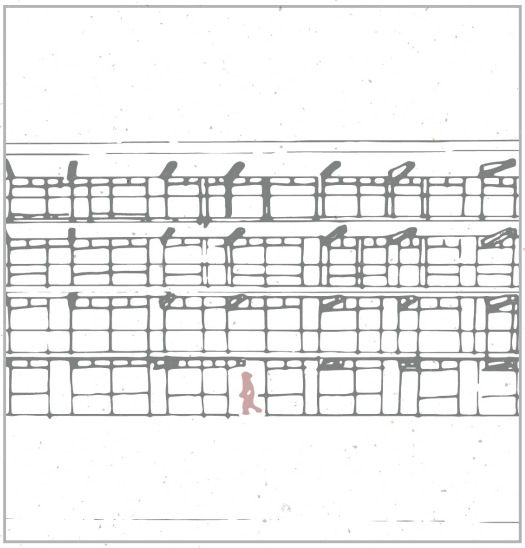
G08




HE TRIED CALLING VESTIA SEVERAL TIMES ABOUT HOW LONG THE MAINTENANCE WORK WAS GOING TO LAST AND HE WOULD HAVE RUNNING WATER AGAIN BUT THEY CAN'T SAY FOR SURE WHEN IT WILL BE FIXED.

G09

AFTER CHATTING WITH WOUTER GERARD TAKES A DIFFERENT ROUTE HOME BECAUSE HE WANTS TO GET SOME GROCERIES. HE PASSES THE GALLERY FLATS ALONG HUNIADIJK.

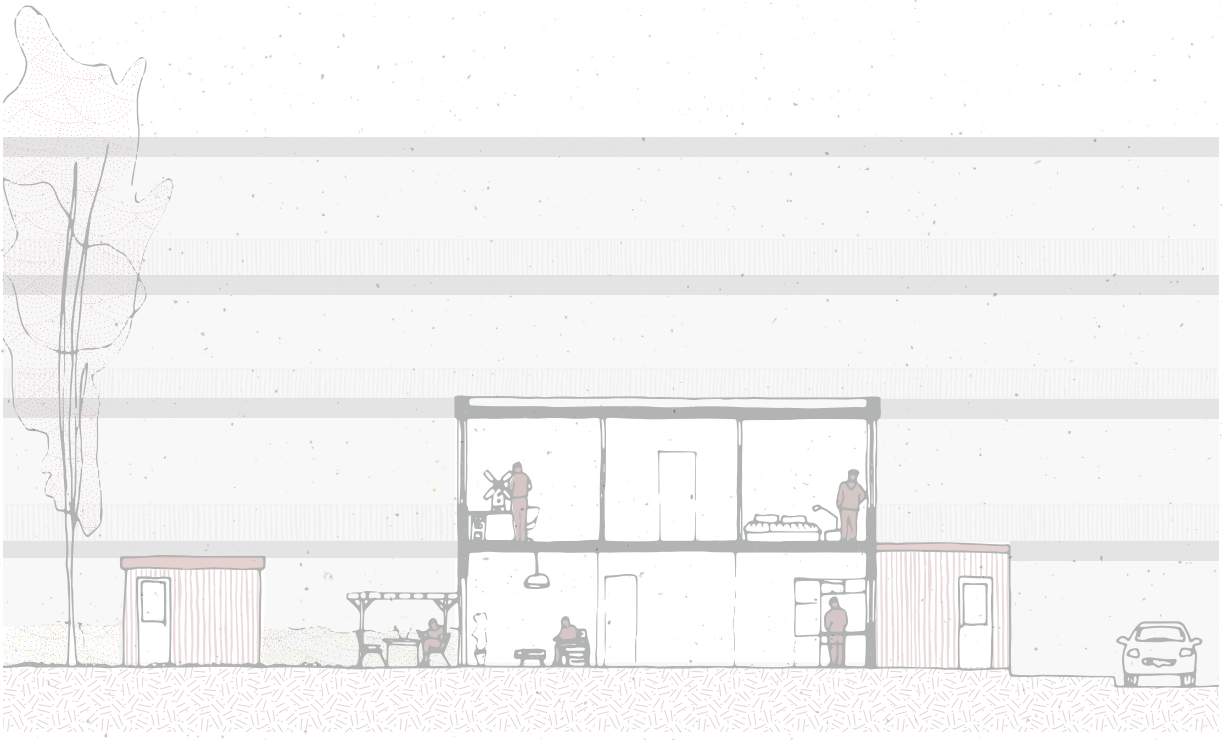


G10

G11




ALL THE CLOSED CURTAINS IN THESE LARGE FLATS MAKE HIM FEEL UNCOMFORTABLE WALKING ALONG THEM. HE USED TO KNOW PEOPLE LIVING HERE BUT THEY ALL MOVED AWAY.



**G12**

10

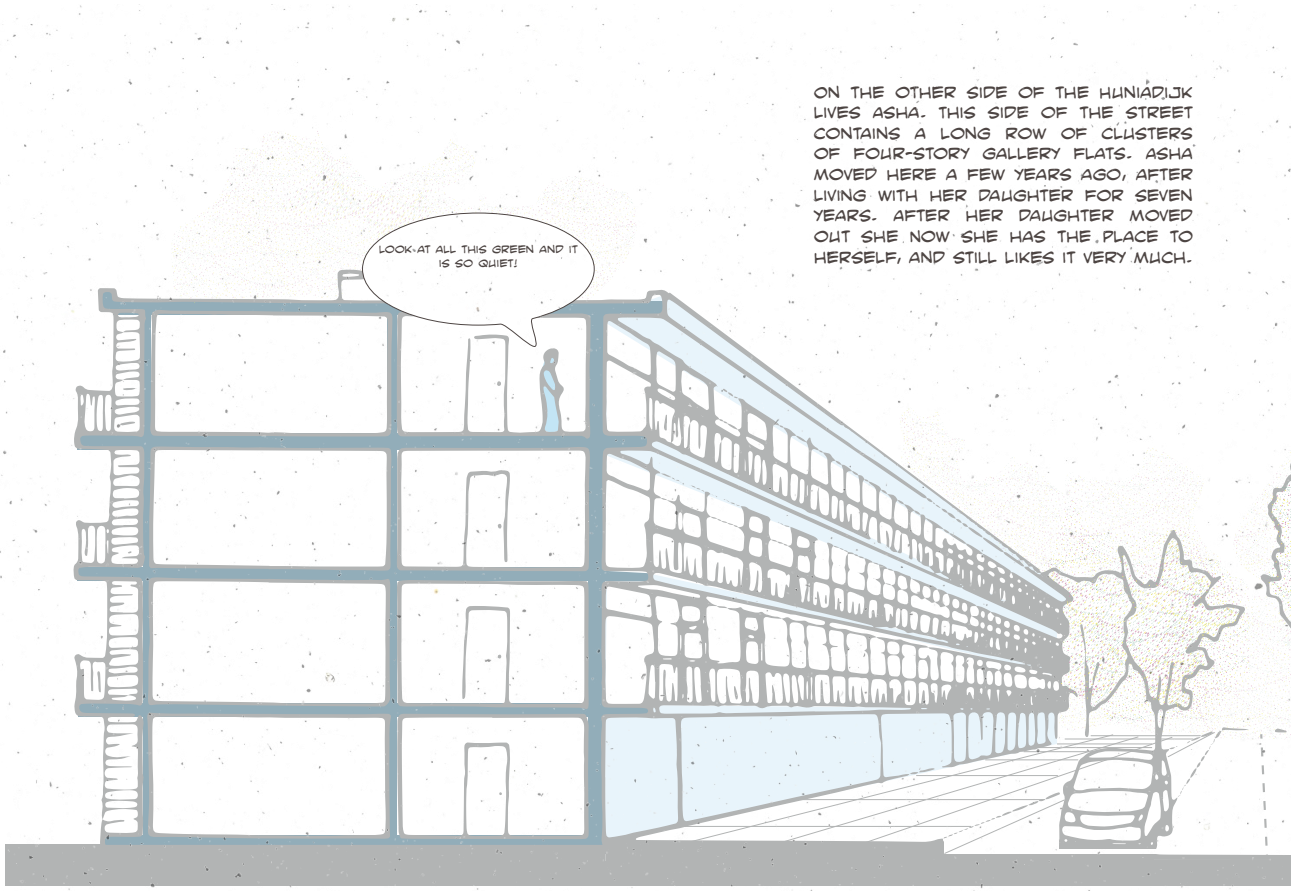


G13

ARRIVING HOME GERARD MAKES SOME LUNCH AND SITS IN HIS GARDEN TO EAT. HE LOVES THAT HE HAS A SPARE ROOM FOR HIS WINDMILL MODELS WHICH HE SELLS TO FRIENDS.

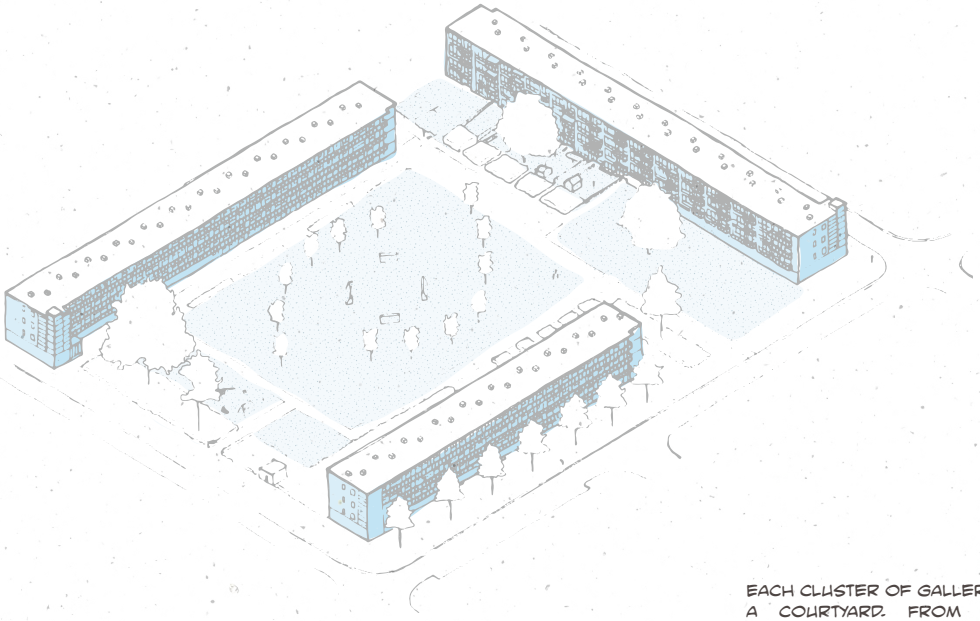
HE SPENDS MOST OF HIS TIME AT THE COMMUNITY CENTER BUT IS ALWAYS GLAD TO ARRIVE BACK HOME AS IT HAS BEEN HIS HOME FOR SO LONG NOW.

SITTING IN THE GARDEN HE IS DISTURBED BY THE NOISE OF THE NEIGHBOURS BARBECUE. HE DOESN'T FEEL COMFORTABLE GOING OVER AND SO HE JUST SITS IN HIS GARDEN TRYING TO ENJOY HIS LUNCH WITH THEIR MUSIC IN THE BACKGROUND.


ON THE OTHER SIDE OF THE HUNIADIJK LIVES ASHA. THIS SIDE OF THE STREET CONTAINS A LONG ROW OF CLUSTERS OF FOUR-STORY GALLERY FLATS. ASHA MOVED HERE A FEW YEARS AGO, AFTER LIVING WITH HER DAUGHTER FOR SEVEN YEARS. AFTER HER DAUGHTER MOVED OUT SHE NOW SHE HAS THE PLACE TO HERSELF, AND STILL LIKES IT VERY MUCH.
LOOK AT ALL THIS GREEN AND IT IS SO QUIET!

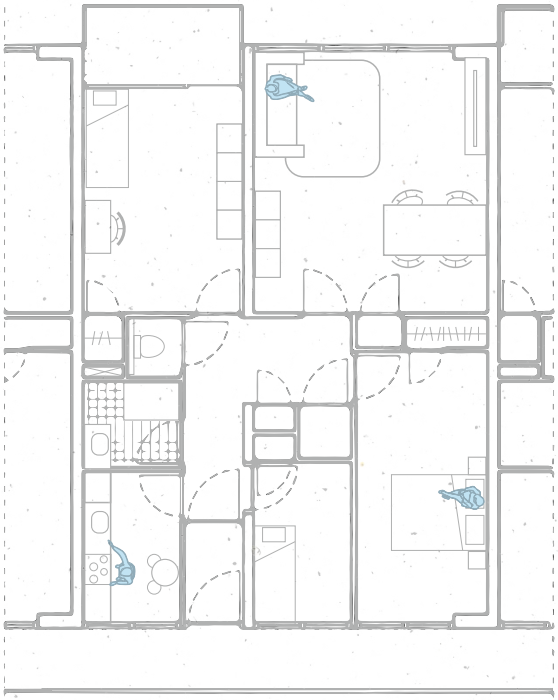

IT SURE HAS CHANGED A LOT HERE. I CAN'T GET ANY PEACE AND QUIET AROUND HERE ANYMORE

# Asha



A01

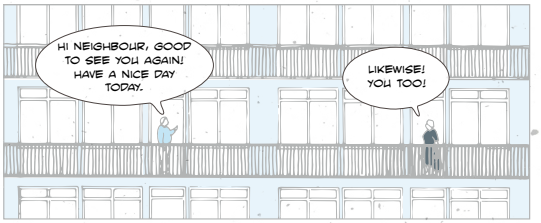
EACH CLUSTER OF GALLERY FLATS FORMS A COURTYARD. FROM HER BALCONY, ASHA HAS A VIEW OF THE LARGE GREEN COURTYARD, WHERE SHE OCCASIONALLY SEES CHILDREN PLAYING AND YOUTH HANGING AROUND. SHE LIKES THE GREEN, PEACEFUL ENVIRONMENT SHE LIVES IN AND THAT IT IS SO QUIET.



A03

ASHA LIVES IN A SPACIOUS APARTMENT ALL TO HERSELF. SHE HAS TWO BEDROOMS, A BATHROOM, LIVING ROOM AND A KITCHEN. SHE LIKES HER FLAT SO MUCH THAT SHE ENJOYS THE TIME SHE SPENDS INDOORS. SHE ONLY GOES OUT FOR SHOPPING, OR TO VISIT HER DAUGHTER.

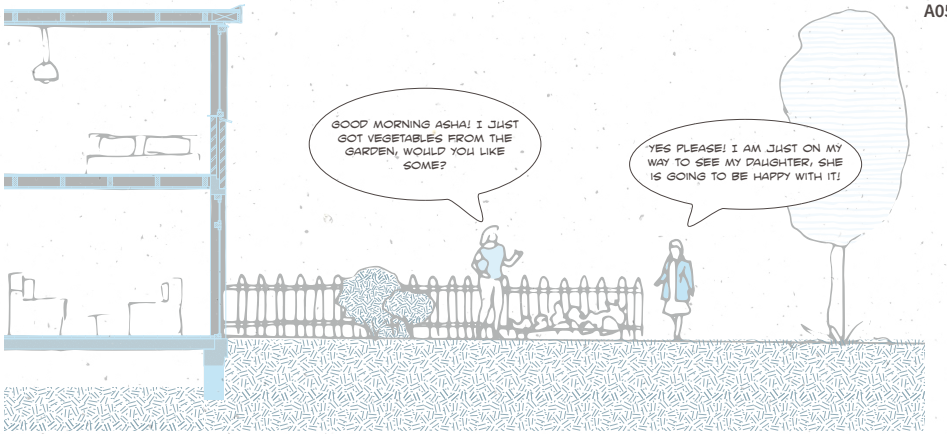
A02




WHEN SHE STEPS OUTSIDE, TO HER GALLERY SHE ENCOUNTERS HER NEIGHBOURS. SHE FINDS HER NEIGHBOURS VERY FRIENDLY. ON THE GALLERY AND ON THE STREET, SHE IS OFTEN GREETED BY PEOPLE FROM HER BUILDING.

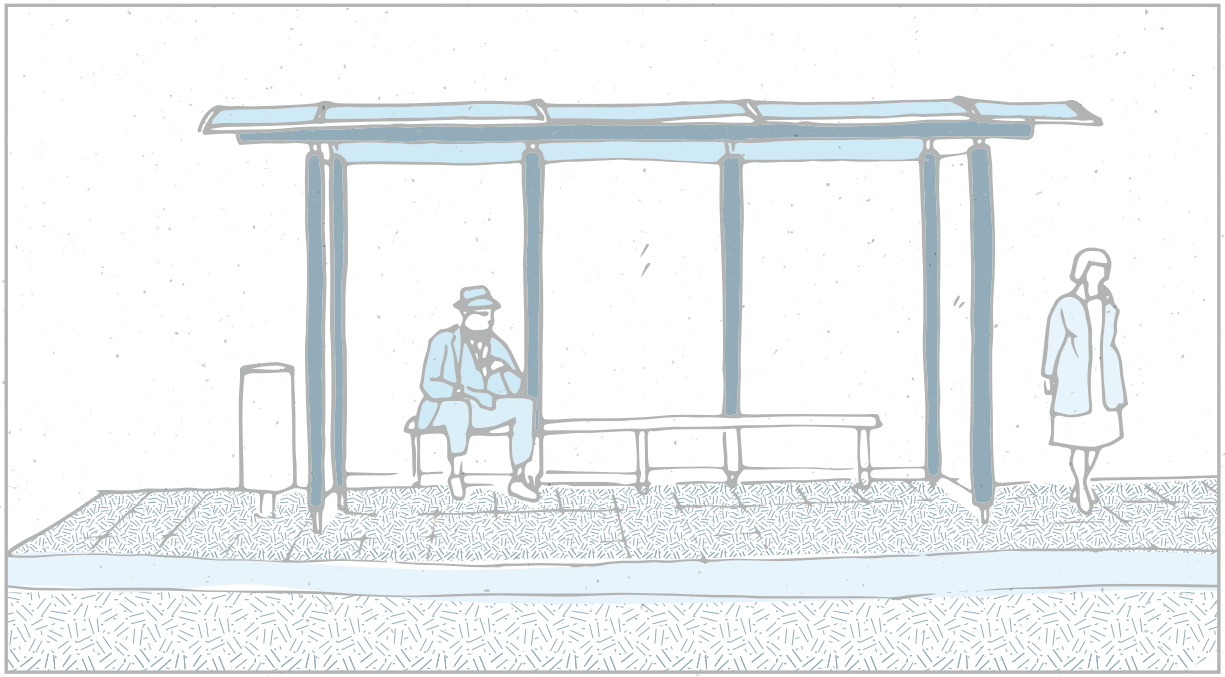
WHEN ASHA IS NOT AT HOME SHE OFTEN WALKS THROUGH THE PARK TO THE SUPERMARKET OR THE TRAM STOP. SOMETIMES SHE WALKS PAST DILA'S HOUSE, A FRIEND SHE KNOWS FROM THE LOCAL COMMUNITY CENTER. DILA IS JUST BUSY WITH HER VEGETABLE GARDEN. DILA LIVES WITH HER MOTHER ON LEPPEDIJK, CLOSE TO THE PARK. THROUGH HANDING OUT THE VEGETABLES FROM HER GARDEN DILA KNOWS A LOT OF HER NEIGHBOURS ASHA ALSO GETS A FILLED BASKET FULL OF VEGETABLES. THAT'S VERY NICE, NOW SHE CAN THEN TAKE THEM TO HER DAUGHTER WHO LIVES IN CHARLOIS.

A04



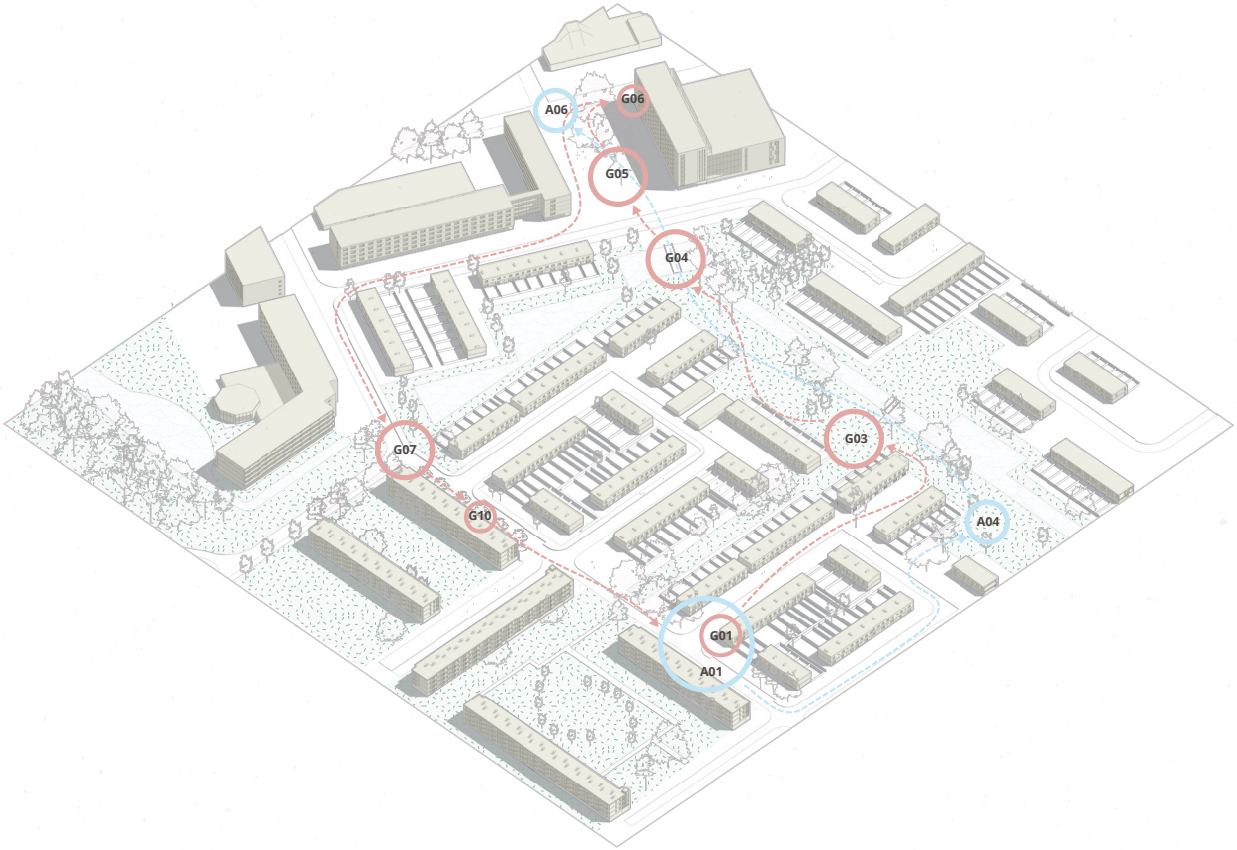



A05



**A06**

ASHA IS EXTREMELY HAPPY THAT HORDIJKERVELD IS SO EASILY ACCESSIBLE BY PUBLIC TRANSPORT. HER HERNIA CAUSED PROBLEMS WITH WALKING OR BIKING LONG DISTANCES. HER DAUGHTER LIVES A FEW TRAM STOPS AWAY, SO THE TRAM WILL GET HER THERE IN NO TIME! ALL IN ALL, SHE REALLY LIKES HER HOME AND THE NEIGHBOURHOOD SHE LIVES IN. SHE CAN'T THINK OF ANYTHING SHE MISSES AT THE MOMENT.


A06
G06
G05
G04
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G10
A04
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A01

# Appendix 3 - Questions semi-structured interviews informal care

'Care' recipients

I am a student at TU Delft, and I am doing research on the experiences of "care recipients" and receiving neighbourly help. Could I ask you some questions?

1. Do you have social contacts in the neighbourhood?
2. Do you have people in the neighbourhood who could help you with "informal care"?
3. Do you think you could live independently longer if your neighbours offered occasional help?
4. Are you willing to be helped by neighbours? Why yes/no?
5. Do you think there is a reason why neighbours do/do not offer help now?
6. Would you yourself be willing to help neighbours where you can?

Neighbourly 'care givers'

I'm a student at TU Delft, and I'm doing research on whether neighbours are willing to provide informal care for the elderly so that they can continue to live independently at home for longer. Could I ask you some questions about that?

1. Do you know your neighbours/do you have contact with your neighbours? Why yes/no?
2. Do you have elderly people living nearby?
3. Do you ever help your neighbours? Why yes/no?
4. Would you be willing to help an (elderly) neighbour from time to time?
5. What kinds of things would you be willing to help with?
6. Is there a reason why you currently do/do not help?
7. Is there anything that might encourage providing informal care to neighbours?

# 10

# SITE ANALYSIS

As mentioned before he results of the research that has been conducted in this graduation project will be used for a densification design project in Groot-IJsselmonde. In this chapter an explanation of the design location will be given. Groot-IJsselmonde as a whole has been analysed as a group by the graduation students of this studio. The most important aspects of this analysis will be shown in this chapter. But also individual in depth analyses on the specific design location will be shown.

## 10.1 Groot-IJsselmonde

As the site for the densification design in the Advanced Housing Design studio Groot-IJsselmonde has been chosen. After WWII Rotterdam was dealing with a serious housing shortage. Therefore several neighbourhoods where in that time developed in the south of Rotterdam. Groot-IJsselmonde is one of those neighbourhoods, and could therefore be called a 'post-war neighbourhood'.

Groot-IJsselmonde was designed by Peter van Drimmelen. Van Drimmelen was, like many of his contemporaries, inspired by theoretical concepts developed mostly in the US and the UK around the start of the twentieth century that searched for solutions for the dense, unhealthy and unhygienic workers' living conditions in rapidly industrialised cities and regions. At the core of these concepts was not only health, but also community and socialisation. The structural organisation of Groot-IJsselmonde is based on the concept of the 'Gelede Stad'. This is a concept of W.F. Geyl from Rotterdam municipal office Gemeentelijke Werken, based on the neighbourhood unit ('wijkgedachte') as developed by Clarence Perry and the Garden City concept of Ebenezer Howard. The 'wijkgedachte' is a model of social order in the city, ranging from the house, the neighbourhood, the district to the city. The basic idea of this neighbourhood theory is decentralisation of the city. According to this theory, people's lives can be hierarchically divided around different social groups at different scales. A neighbourhood unit with a neighbourhood centre should consist of 20,000 people, made up of neighbourhoods, each with its own community centre. Groot-IJsselmonde can therefore also be subdivided into several neighbourhoods, each with its own little centre, around a central neighbourhood centre.




**The concept of the 'wijkgedachte'**




**The 'wijkgedachte' visible in Groot-IJsselmonde, with six neighbourhoods around a centre**



**Groot-IJsselmonde highligthed in green on the map of Rotterdam**

**Aerial photo of Groot-IJsselmonde**

The neighbourhoods of Groot-IJsselmonde where seperately built, mostly in the 1960's, but the built of the first neighbourhood started in the 1940's. All neigbourhoods where developed around a historical dyke structure that was there already before the WWII.



**Sportdorp**
**1918//1942**



**Kreekhuizen**
**1958**



**Hordijkerveld**
**1960**



**Groenenhagen**
**1962**



**Tuinenhoven**
**1962**



**Center**
**1963**

**Chronological development neigbourhoods Groot-IJsselmonde**

An important characteristic that distinguished Groot-IJsselmonde from other expansion neighbourhoods is the fact that green spaces functioned as one of the main structuring aspects of Groot-IJsselmonde. The neighbourhood has one main park: 'Park de Twee Heuvels', and the borders between the other smaller neighbourhoods often consist out of green zones. Furthermore, Groot-IJsselmonde is for the biggest part designed by the use of clusters, which often contain green spaces inbetween. The fact that the neighbourhood has so much green space is experienced as very pleasant according to the residents of Groot-IJsselmonde we spoke to during our site visit. However, most of the time the green areas do not have a function and are undefined. This results in the presence of large, unused and neglected green spots troughout the neighbourhoods.



**Green main areas in Groot-IJsselmonde**









**Unused green areas in Groot-IJsselmonde**

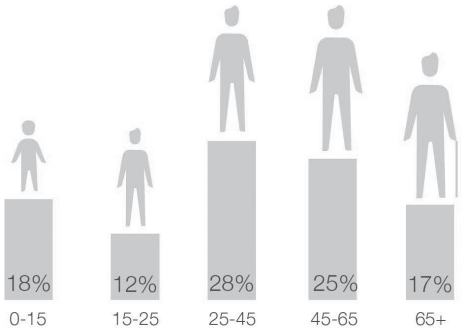
In terms of demographics Groot-IJsselmonde has a lot of elderly and younger families but a very small student population. Due to the lack of students the single-person households are mostly elderly living on their own. Many elderly moved to Groot-IJsselmonde when it was just built, and still live there now. Often in family homes that they started to live in with their family, but where they live on themselves now.

IJsselmonde has a 50/50 composition of Dutch and immigrants. Over the years many migrants started to live in Groot-IJsselmonde. The non-western immigrants have a wide range of nationalities with the Suriname populations being the most represented. The diversity of cultures in Groot-IJsselmonde is not very beneficial for the social cohesion in the neighbourhood. This also became clear doing interviews on site:

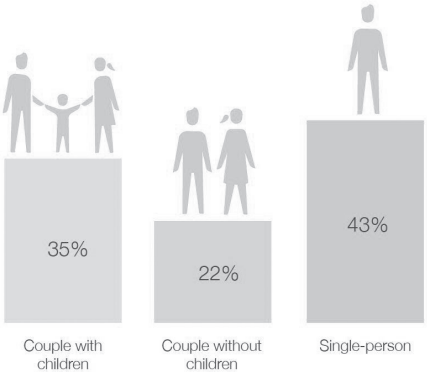
*"In the flat where I live I do notice the difference between people. First it was an apartment for the elderly and I heard that everything was fine then, but now a mix of all ages and cultures live there and sometimes it's a bit messier."*

*"I don't really feel that the neighbourhood is social. Many people are self-centered. In the flat where I live there is no meeting place or anything like that, I would be open to that."*

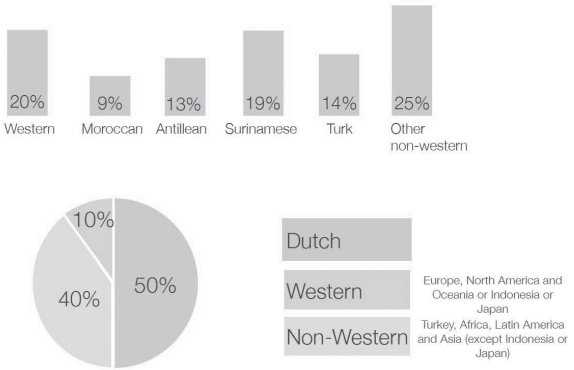
*"It is also a very multicultural neighbourhood so you notice the differences between cultures. I have good contact with my immediate neighbours, but otherwise everyone is very self-centered."*




**Age composition Groot-IJsselmonde**




**Family composition Groot-IJsselmonde**




**Nationalities Groot-IJsselmonde**

## 10.2 Hordijkerveld

The specific design location of this project is within Hordijkerveld, one of the 'neighbourhoods' of Groot-IJsselmonde. Because the urban design is based on the 'gelede stad' theory, as explained before, Hordijkerveld has a little neighbourhood centre with a few amenities, highlighted on the map on the right.



**Position of Hordijkerveld within Groot-IJsselmonde**
**Hordijkerveld 'centre' highlighted**



**Stamp structure Hordijkerveld**
**Old dyke as a border**

The historical dyke structure functions as a border of Hordijkerveld on the one side. The neighbourhood has been designed in a stamp like structure, which you often see in post war neighbourhoods. The main stamp structures are highlighted with different colors on the map on the left.




**Building typologies Hordijkerveld**



Porch apartments



Rowhouses



Rowhouses



Gallery apartments



Dyke houses

The main building typologies present in Hordijkerveld are apartment blocks and rowhouses. On the one side the apartment blocks are porch apartments, and on the other site the apartment blocks are galery flats. In between the apartment blocks are large green spaces, mostly undefined as explained before.




**Building heights in Hordijkerveld**

The arrangement of the several building typologies also becomes visible in the building heights in Hordijkerveld. The apartment blocks are 4 and 5-floor high buildings and the rowhouses are 2-floor buildings. The mid-rise apartment blocks are placed on the sides, with the low-rise rowhouses in the middle. The building heights form a stepped transistion towards the park in the middle of Hordijkerveld. This park leads to the neighbourhood centre with amenities, which is also highlighted by highter buildings. The other green areas in Hordijkerveld mainly consist out of the empty grasslands in between the appartment blocks. The composition of Hordijkerveld in section can be found on the next page.



**Green areas in Hordijkerveld**



Dyke | Green border | Courtyard with 4-floor gallery flats | Main road | Rowhouses | Street | Rowhouses











Park

Rowhouses with street

Rowhouses

Main road

Courtyard with 5-floor porch apartments











**Place of section previous page**

From the map that shows the pedestrian roads in Hordijkerveld it becomes clear that these roads lead from the several building clusters towards the park in the middle. This is the main pedestrian axis towards the amenity centre in Hordijkerveld, where pedestrians in the neighbourhood come together. The other roads also form axes that emphasize the movement towards the centre of Hordijkerveld, and from there towards the main road that leads to the centre of Groot-IJsselmonde. However, the main roads that cross Hordijkerveld function as barriers for the pedestrian routes and therefore the apartment blocks on the sides are not very well connected.

The reason why Hordijkerveld is chosen for this densification project is because of the following aspects:



**Pedestrian roads Hordijkerveld**



**Urban organization Hordijkerveld**

Currently many elderly are living in Hordijkerveld, often in rowhouses that are not suitable for living independent at home for a long time, due to for example the presence of stairs. However, according to interviews taken on site (that can be found in the research) elderly do really like the neighbourhood with its presence of green and the amenities that are already closeby. The fact that the hospital is next to Hordijkerveld also makes this a suitable place for elderly that might need more care when they age. Therefore dwelling alternatives within the neighbourhood are desired. Furthermore, the presence of the large, empty courtyards in between the apartment blocks offer room for densification. This densification can also help with the reinvigoration of the site, which is needed. The social cohesion in Hordijkerveld is at some points lacking, so the densification could be a tool to strenthen the social cohesion as well.




**Presence of amenities**



**Elderly in rowhouses (not suitable, but they like the neighbourhood)**



**Room for densification**

**"THEY DON'T TALK WITH EACH OTHER, BUT ABOUT EACH OTHER"**

Community centre co-worker

**Room for (social) reinvigoration**

## 10.3 Design location

As the specific design location for this densification project the 4 floor high gallery apartment blocks on the east side of Hordijkerveld are chosen. As mentioned before the large, empty courtyards offer room for densification and reinvigoration.

On the right an overview of the design location is displayed.




**View points pictures**



**Design location highlighted**


1

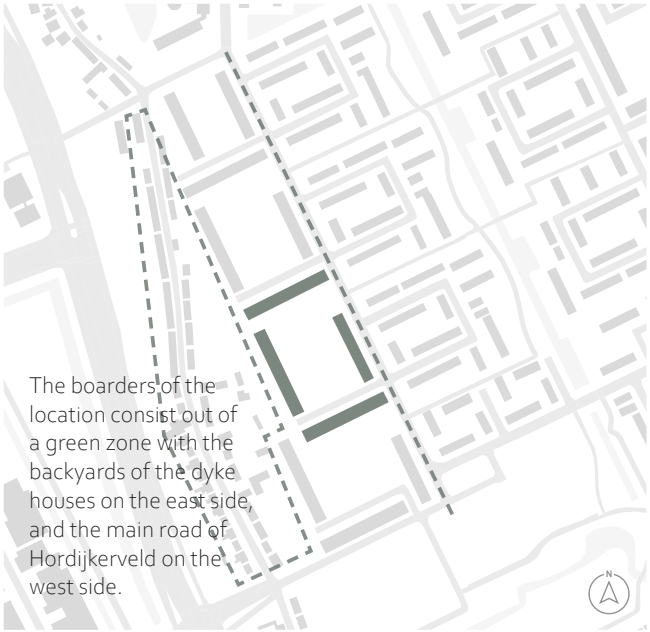

2


3


4


5


6



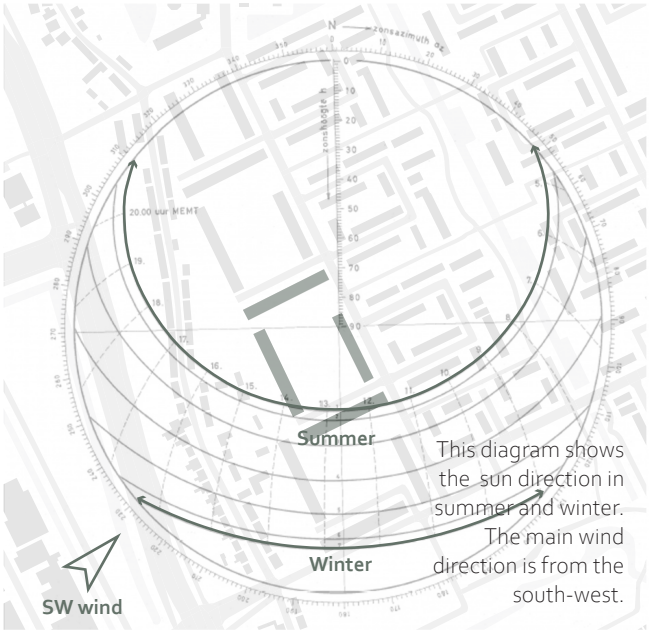

**Boarders**




**Barriers**



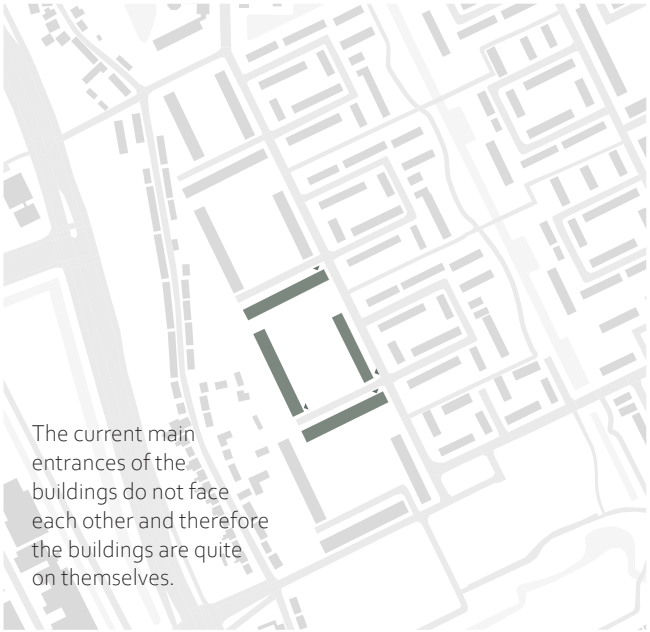

**Roads**



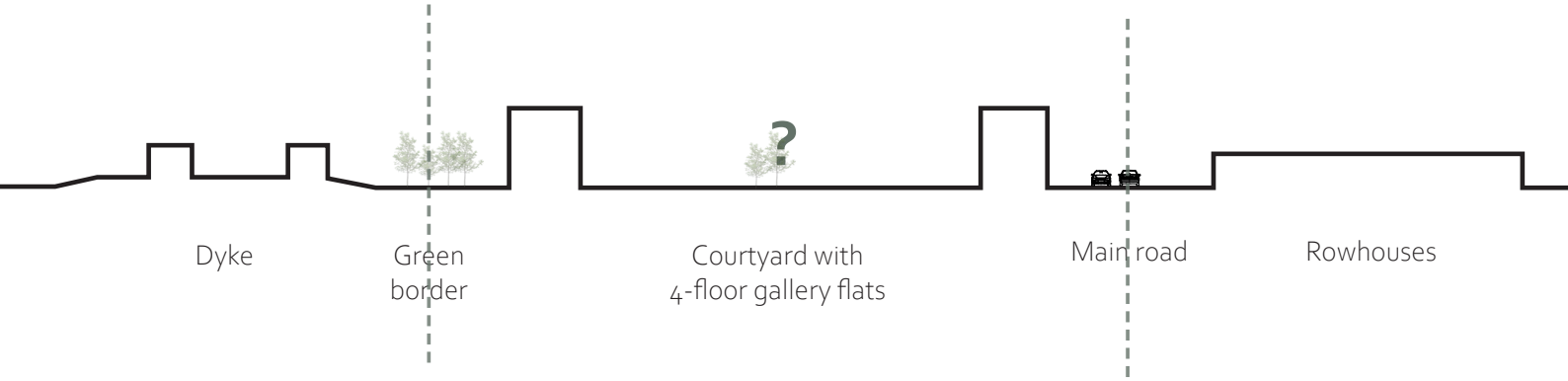

**Sun & wind**




**Recognisability**




**Entrances**



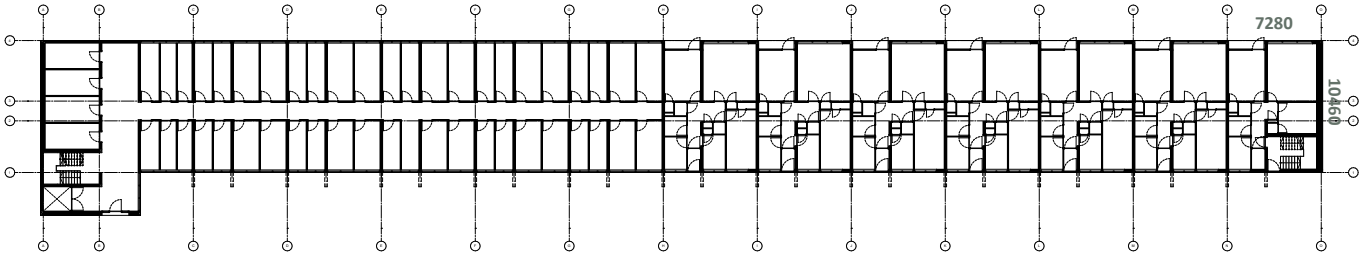

In section you see how the main road forms a boarder between the gallery flats and the rowhouses. Furthermore, the distance between the apartment block is so large that there exsists a undefined, often unused space.

The building blocks with gallery flats consist out of two types of buildings. On the whole plot type 1 counts 49 dwellings, and type 2 counts 38 dwellings. All buildings together provide for an amount of 533 dwellings. On the next pages the two building types are further explained.




**Building types on site**

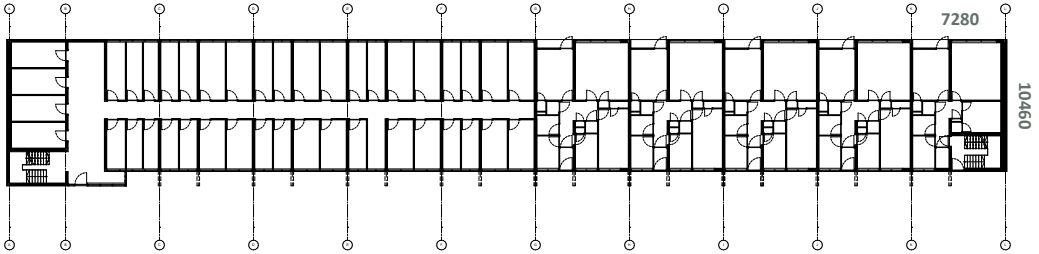
## Ground floor type 1







## Ground floor type 2

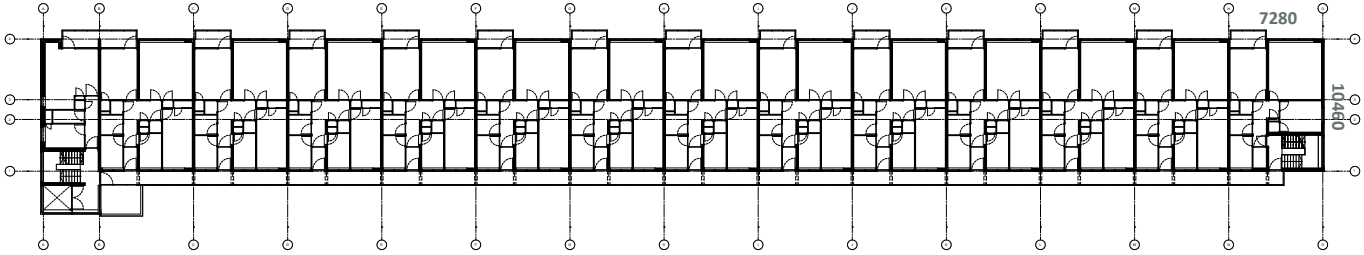






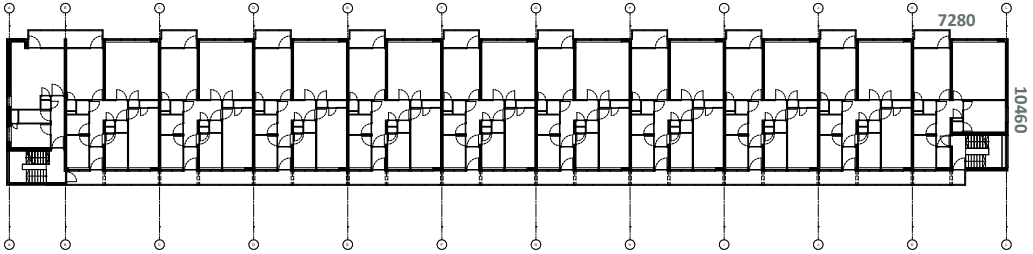
The two building types are quite similar. The only difference is that type one has three more dwelling units per floor by its longer lenght. On the ground floors of the current buildings mostly storages are placed, which does not improve the connection between the building and the surrounding. Even though the dwelling sizes are fine (around 75m$^2$), the dwellings feel small due to all the different rooms that are arranged in the floor plan.

## First - second - third floor type 1




2 5 10 20

## First - second - third floor type 2

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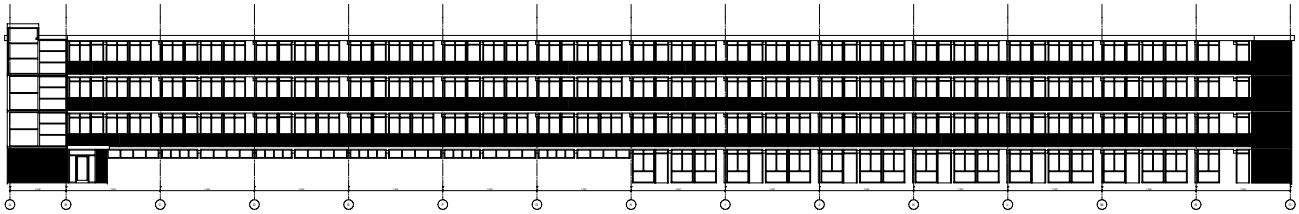
The floor plans of the first, second and third floor are similar to each other. The storages of the ground floor made place for more dwelling units. All dwellings are accessible by a small gallery on the one side, and have little balconies on the other side.

## Facade elevation gallery side



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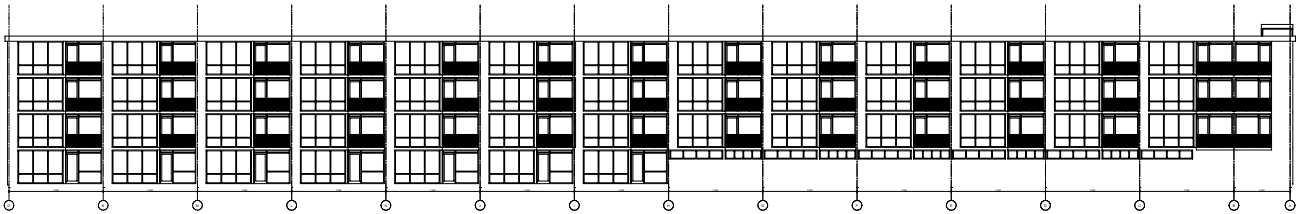
## Facade elevation balcony side



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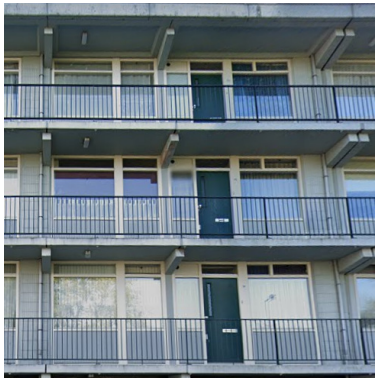




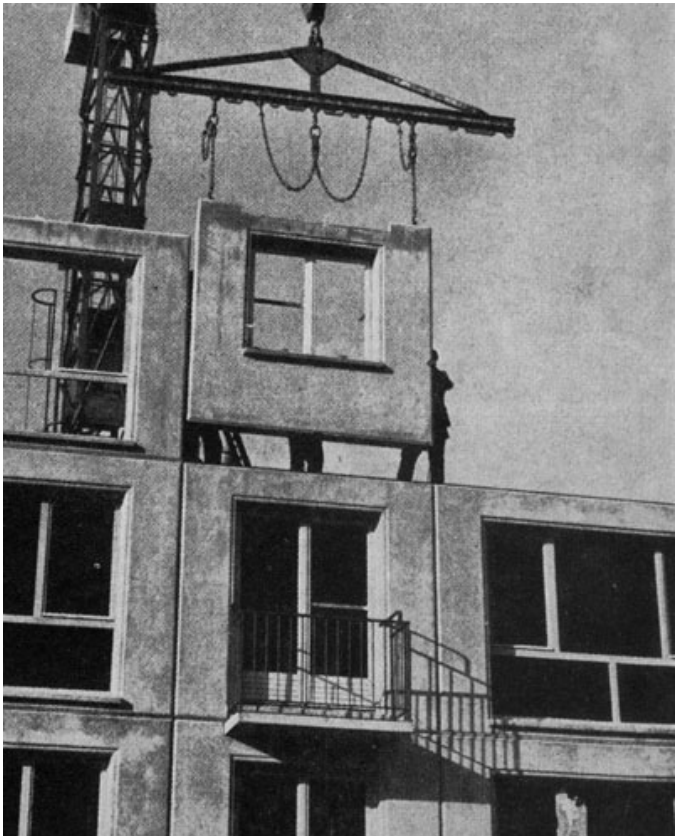
The facade elevations show how the buildings have a very monotonous rhytm in the facade. The biggest part of the facade consists out of window frames that repeat themselves. The rest is covered with a modest facade cladding. The facades are characterized by the concrete elements of the gallery construction.

The other buildings in the area, for example the rowhouses, also have this montonous, modest appearance. This is typical for post-war neighbourhoods, since many dwellings where built using standard building methods. Also the use of concrete was very typical for that time. Therefore the characteristics of the buildings on site could be seen as historical valuable in a way.

The gallery flats of the design location where built using a standardized building method as well: the Dura Coignet system. This method consisted of the placement of prefab concrete floors, walls and facade elements. This also lead to the modest appearance of the buildings. The Dura Coignet system was mainly used in Rotterdam, and only for a short amount of time. It is really typical for the reconstruction era. The fact that this building method is so typical for that time adds to the historical value of the buildings.



Source: https://nl.wikipedia.org/wiki/Dura-Coignet_bouwsysteem



Source: https://experimentelewoningbouw.nl/coevering/

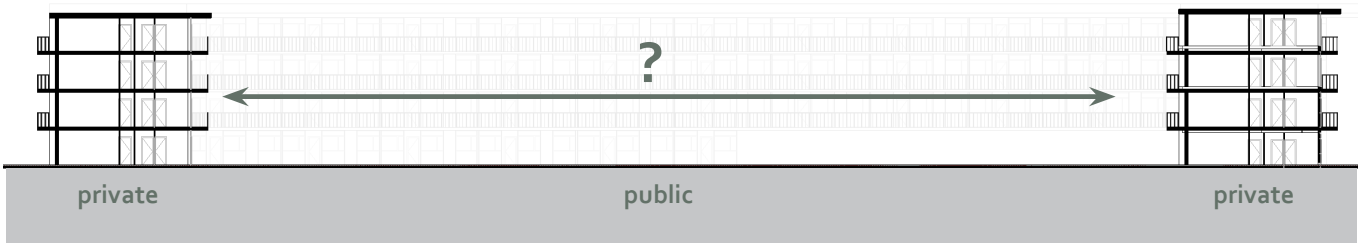


Source: https://nl.wikipedia.org/wiki/Dura-Coignet_bouwsysteem



Source: https://nl.wikipedia.org/wiki/Dura-Coignet_bouwsysteem

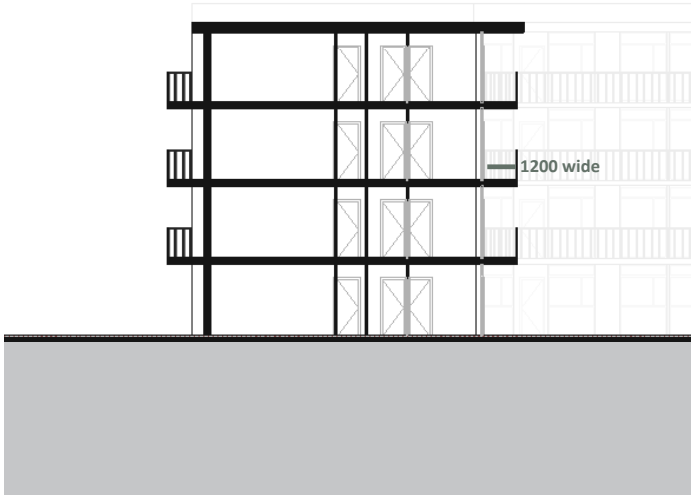
## Courtyard section







## Building section

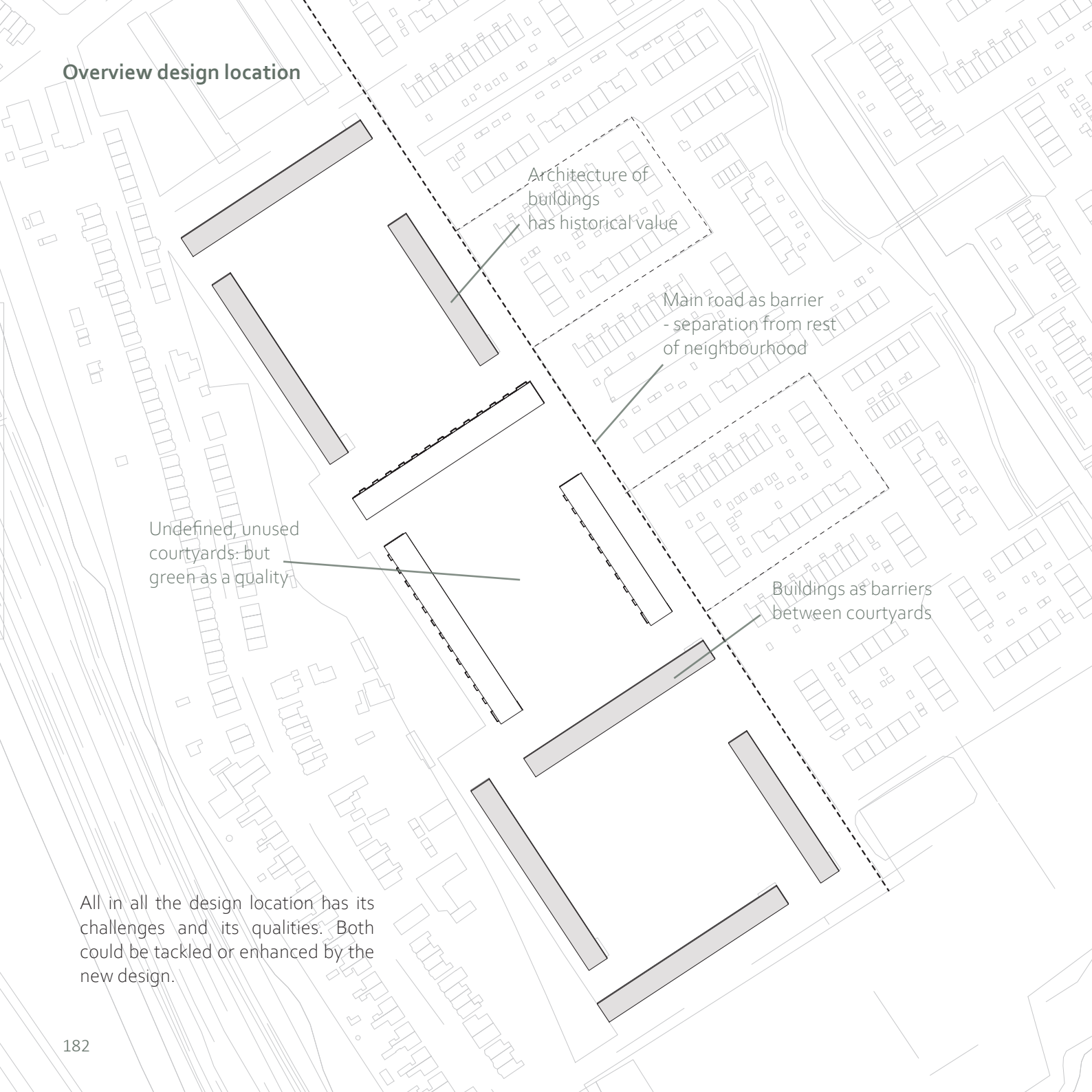






As mentioned before in section the big distance between the apartment blocks on site becomes really clear. This distance leads to a disbalance between the private dwellings and the public courtyard, and therefore not improves the amount of interaction. Futhermore, the galleries with a width of 1,20m only function for accessibility, and do not offer a place to really meet or interact.

## Overview design location

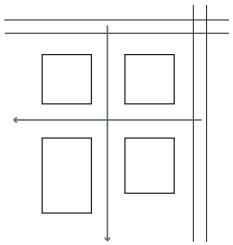



All in all the design location has its challenges and its qualities. Both could be tackled or enhanced by the new design.



# 11 DESIGN

This chapter will give an overview of the densification design of this graduation project. The design strategy that followed out of the graduation research is used as a base. Illustrations from the research will be used in this chapter to show the relation between the research and the design decisions that have been made.



CONNECT ROUTES TO NEIGHBOURHOOD

## MASTER PLAN



**Existing situation**



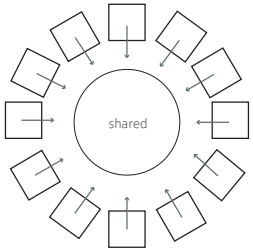
**Step 1:** make buildings permeable by cuts



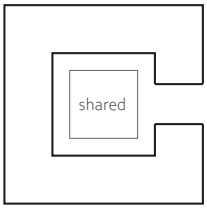
**Step 2:** create courtyards by adding buildings



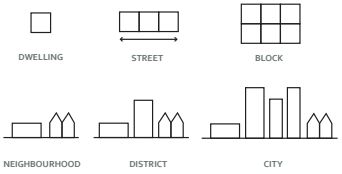
**Step 3:** create 'cluster parks' by diagonal shapes



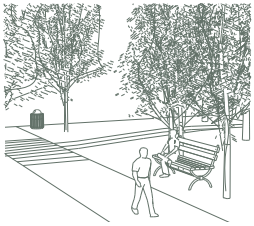

**ARRANGE DWELLINGS AROUND SHARED SPACE**




**CREATE A SENSE OF SECURITY**



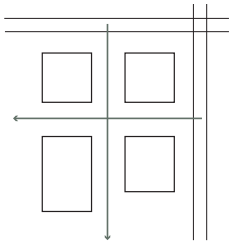

**DESIGN WITH DIFFERENT SCALES OF INTERACTION**



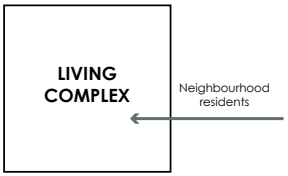
**PARK**



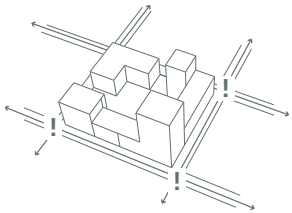
**Step 4:** emphasize pedestrian routes towards park and connection with neighbourhood



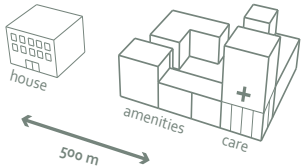
CONNECT ROUTES TO NEIGHBOURHOOD




LET NEIGHBOURHOOD RESIDENTS COME INTO THE COMPLEX



CLEAR ROAD STRUCTURE



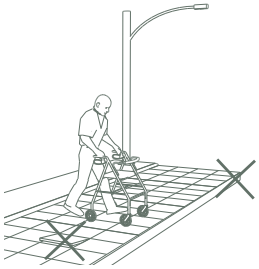

AMENITIES CLOSE BY



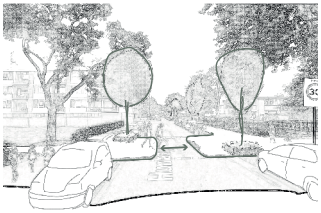
Dyke | Green border | Courtyard with 4-floor gallery flats | Main road | Rowhouses | Street | Rowhouses



**Step 5:** separate walking and transport routes

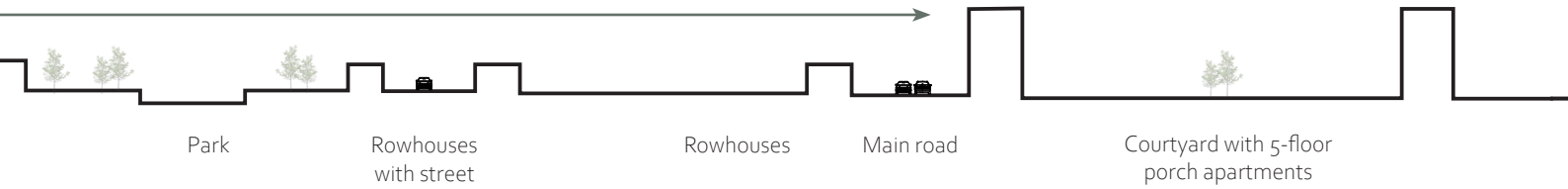


**NO OBSTACLES**

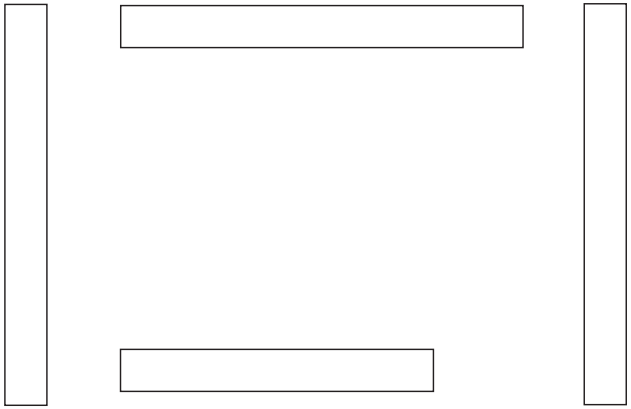


**SLOW DOWN TRAFFIC**

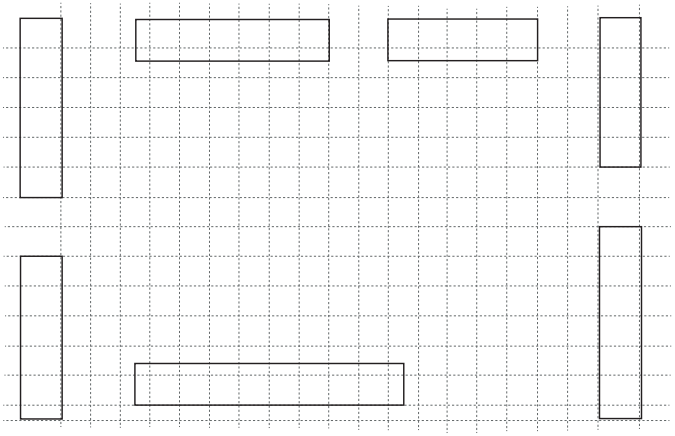
The masterplan in section shows how the added building volumes create smaller courtyards. To densify the area even more, the existing apartment blocks will be topped up. This also increases the sense of security in the courtyards. However, the topping up will be just one floor high, to make sure the buildings still fit in the heights of the surroundings.



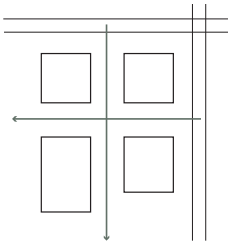
# DESIGN CONCEPT



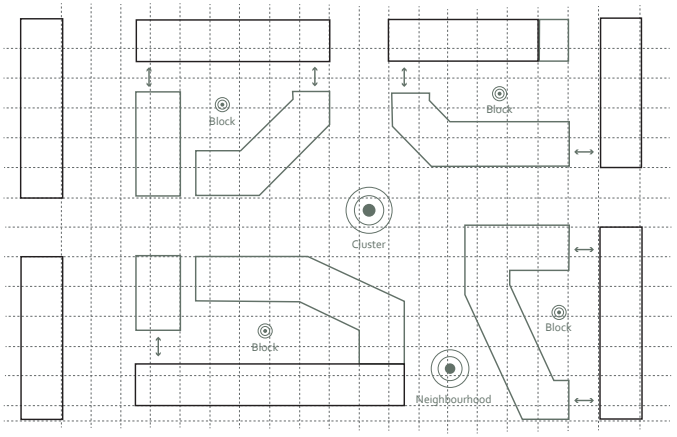
**Existing buildings**



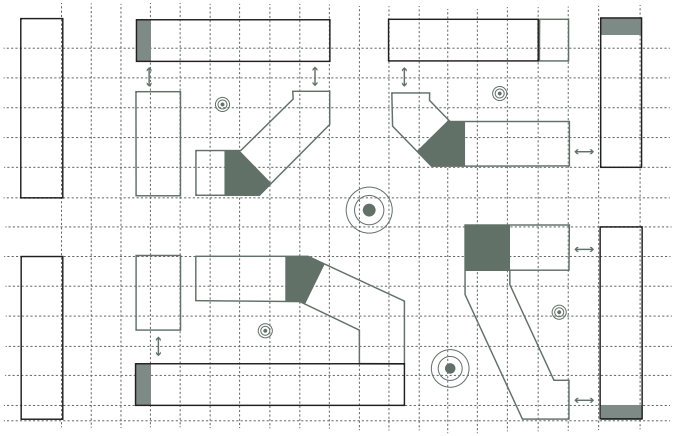
**Step 1:** Make buildings permeable by cuts - following existing grid.



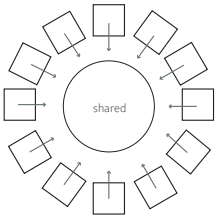
**CONNECT ROUTES TO NEIGHBOURHOOD**



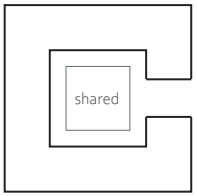

**Step 2:** Add building volumes to create shared courtyards on different scales: the block, the cluster and the neighbourhood. Follow the existing grids to make it coherent, and seperate additions from existing to distinguish old and new.



**Step 3:** Provide for interactive entrances around central courtyard. Use existing staircases for more private entrance.



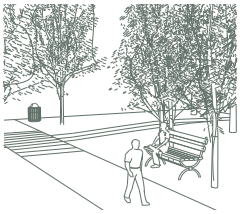

**ARRANGE DWELLINGS AROUND SHARED SPACE**



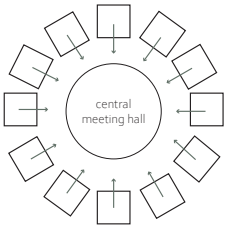

**CREATE A SENSE OF SECURITY**



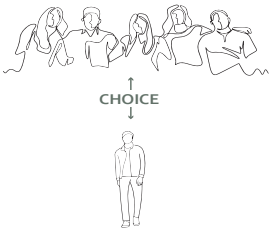

**DESIGN WITH DIFFERENT SCALES OF INTERACTION**



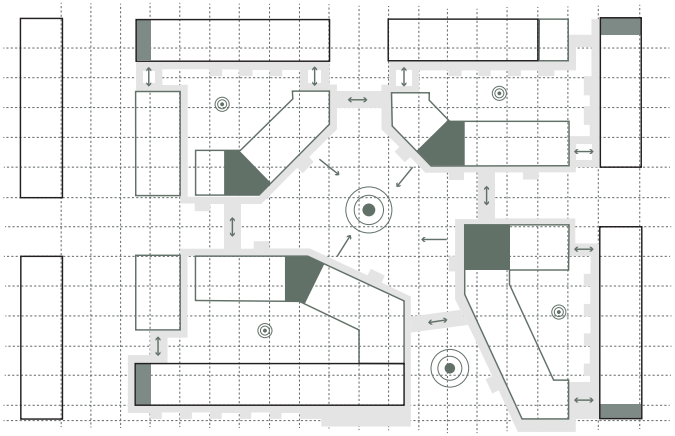
**PARK**



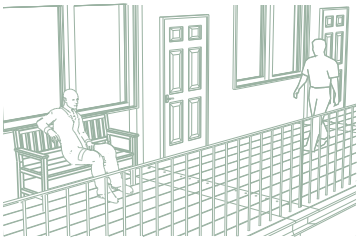

**ORGANIZE DWELLINGS AROUND A CENTRAL MEETING HALL**



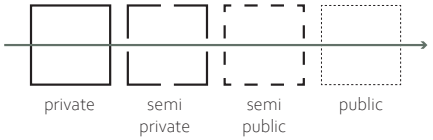

**CREATE POSSIBILITY TO CHOOSE INTERACTION**



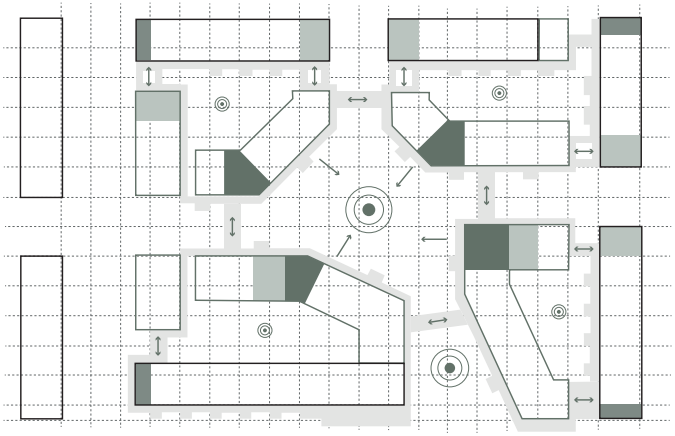
**Step 4:** Extend and add galleries as semi-public interactive spaces. Connect blocks by galleries to increase the change on encounters.



TRANSITION ZONE
GALLERY SPACE



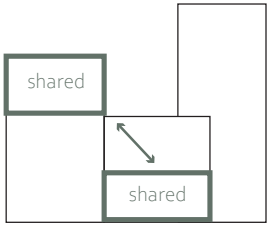

**PROVIDE BUFFER ZONES FOR TRANSITION**



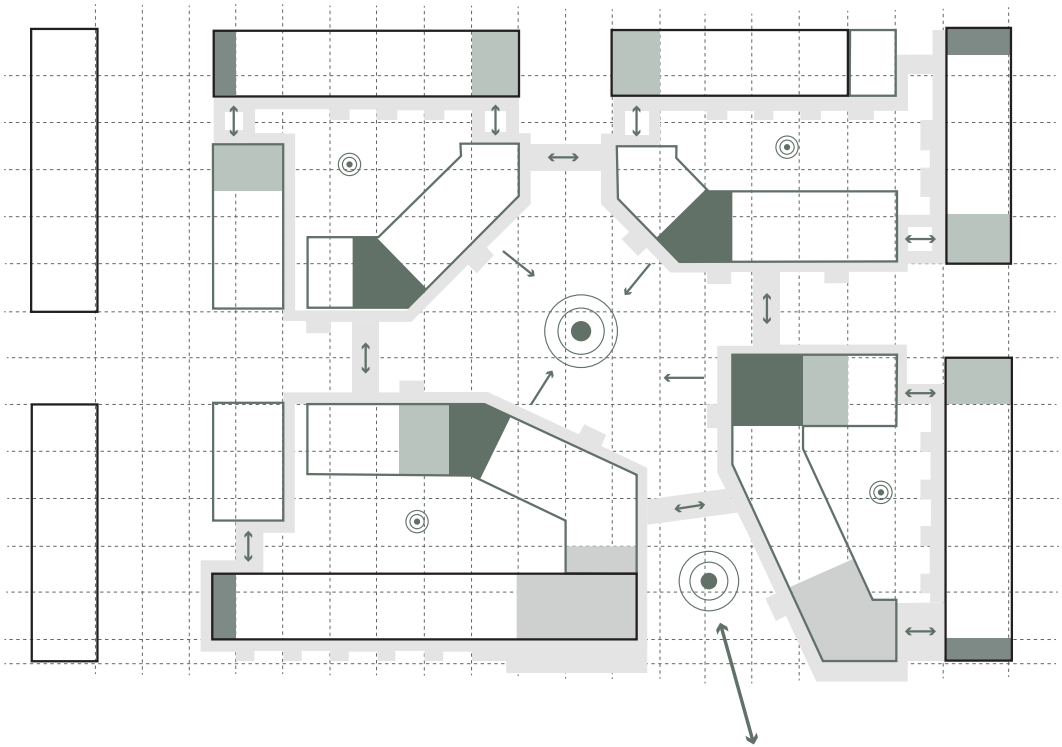
**Step 5:** Provide for shared spaces throughout the buildings Stimulate meeting and movement.




SHARED SPACES



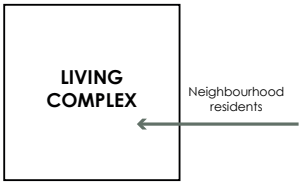

**SPREAD SHARED SPACES THROUGH BUILDING (MOVEMENT)**



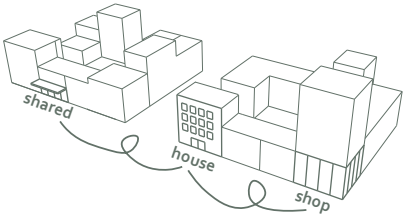
**Step 6:** Add neighbourhood functions in plinth
Increase connection with neighbourhood.



PLACE PUBLIC NEIGHBOURHOOD FUNCTIONS IN PLINTH




LET NEIGHBOURHOOD RESIDENTS COME INTO THE COMPLEX



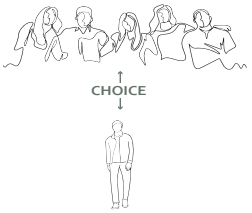

FUNCTION MIX

# FLOOR PLANS

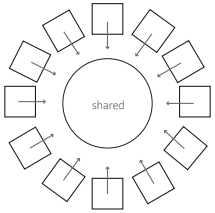



## Ground floor

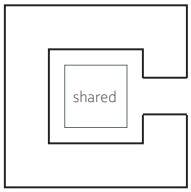
2 5 10 20



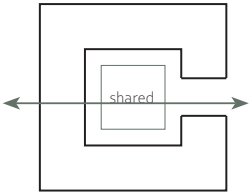

CREATE POSSIBILITY
TO CHOOSE INTERACTION



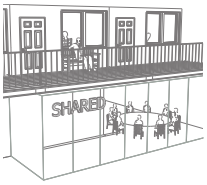

ARRANGE DWELLINGS
AROUND SHARED SPACE



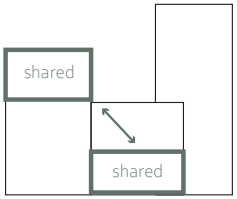

CREATE A SENSE
OF SECURITY



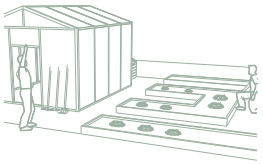

ROUTES THROUGH
SHARED SPACE




CREATE SHARED SPACES
(FOR DIFFERENT INTERESTS)




SPREAD SHARED SPACES THROUGH
BUILDING (MOVEMENT)



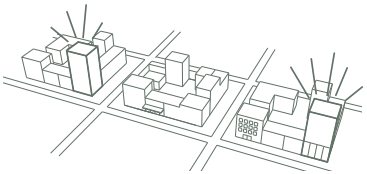
VEGETABLE GARDENS



BENCHES



PLACE PUBLIC NEIGHBOURHOOD
FUNCTIONS IN PLINTH



RECOGNIZABLE STREET
CORNERS

Pedestrian

Transport

The ground floor plan shows how pedestrian routes lead through the central courtyard to the entrances of the building blocks. On the sides, more private entrances are realized in the existing stair cases. The transport routes are placed separately on the edges of the cluster. The more private courtyards that function as a shared garden for the building blocks create a sense of security and enhance the community feeling. The pedestrian routes form a connection between the several courtyards. By providing the courtyards with different functions and activities for several target groups, movement between buildings blocks and encounters are stimulated. The placement of benches along the pedestrian routes stimulate movement as well. On the ground floor, among other shared spaces, shared bicycle storages are placed. From these storages a route through the courtyard towards the entrance is created. This stimulates encounter. Along the main street neighbourhood functions are placed for different target groups. By placing these functions in the corners recognition from the street side is increased.



Entering the neighbourhood square from the street





1) Entering the central courtyard from the neighbourhood square



2) Entering the central courtyard from the opposite side

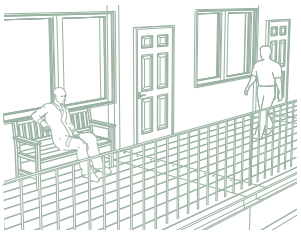



3) View into the more private shared courtyard

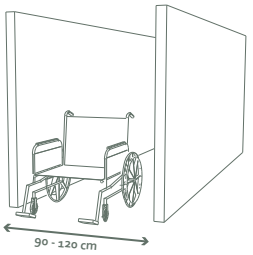



## First floor

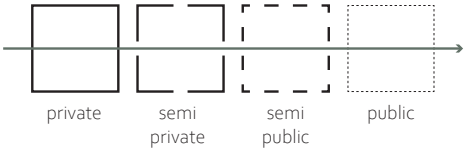
2 5 10 20



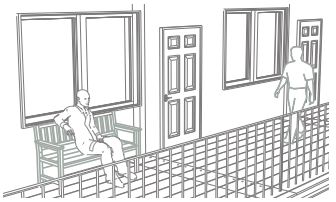
TRANSITION ZONE
GALLERY SPACE



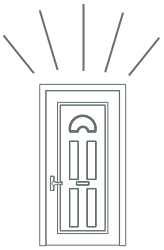

WHEELCHAIR



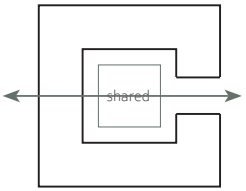

PROVIDE BUFFER ZONES
FOR TRANSITION



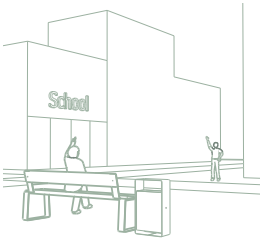
CREATE SEMI-PRIVATE ZONE
ALONG GALLERY



RECOGNIZABLE
FRONT DOOR




ROUTES THROUGH
SHARED SPACE




BENCH ACTIVE PLACE

This floor plan shows how the galleries are connected to the existing galeries. They function as a semi-public interactive space and are wide enough for wheelchairs to pass. The dwellings contain little front porches that provide for a semi-private transition zone. This also helps with the recognition of the front door by the possibility to personalize it. On the other, more public side of the galleries shared balconies are added which could be used to place for example benches and have a view on the activities in the central courtyard. The galleries are sometimes placed on inside of the courtyard. This creates a 'route' through the shared space and stimulates interaction.



The galleries of the existing buildings are extended with balconies. In this way these dwellings also have a balcony that looks into the shared garden.

## First floor zoomed in

2 5 10 20



View from the balcony into the more private shared courtyard




## Second floor

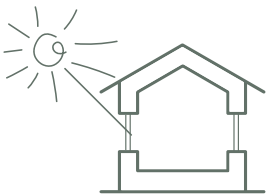
2 5 10 20



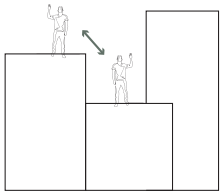
## Second floor zoomed in

2 5 10 20

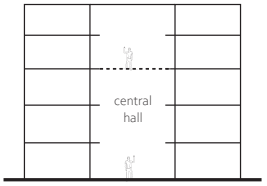
The floor plan of the second floor shows how the galleries are shifted towards the outside on this floor. This stimulates vertical interaction and daylight access. On the second floor bridges are created to connect the galleries of the different building blocks. This stimulates movement and therefore encounter.



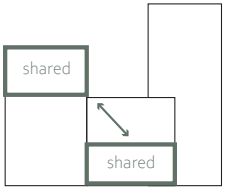
DAYLIGHT



CREATE VERTICAL
SIGHT LINES/INTERACTION




BRIDGES FOR
VERTICAL CONNECTION




SPREAD SHARED SPACES THROUGH
BUILDING (MOVEMENT)



Interactive gallery with front porch and vertical sight lines




## Third floor

2 5 10 20

On the third floor several roof gardens can be found, often placed next to other shared spaces. Each floor contains storage spaces, so they are easily accessible by elderly.


Shared roof garden




## Fourth floor (optop)

The floor plan of the fourth floor shows how the existing buildings contain an optop. Also some roof gardens can be found in between.



## Roof

2 5 10 20

# DWELLING TYPOLOGIES

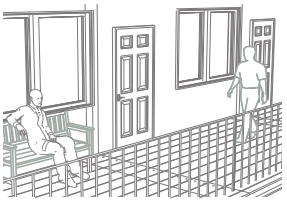
Several dwelling typologies for different household types where designed to create a multi-generational living environment (the floor plans can be found on the next page). The dwellings are designed with a modest size, so residents are more likely to make use of the shared facilities. All dwellings are designed wheelchair accesible and have a clear layout. The living area is connected both to the gallery and balcony side and therefore offers views on both sides. this could be on green, or on liveliness on the galleries. The kitchens are placed in the middle to make it possible for the residents to choose where to place their living or dining room. Facade setbacks create semi-private front porches and a feeling of privacy on the balcony. However, the balcony also sticks out so there is a better view and connection with the courtyard. This also offers the possibility to see other residents on their balconies and stimulate interaction.



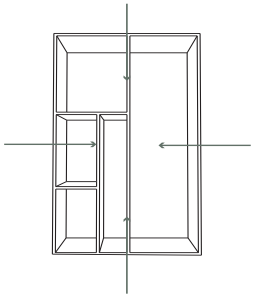

The floor plans of the existing dwellings are re-arranged into more spacious floorplans. One bedroom could still be removed to create a larger living area. The galleries are widened and balconies are added. The balconies on the backside are enlarged.



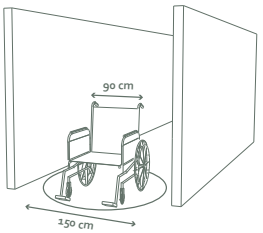
DWELLING TYPOLOGIES FOR A MIX OF HOUSEHOLDS



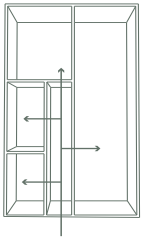
CREATE SEMI-PRIVATE ZONE ALONG GALLERY



SMALL DWELLING (MORE LIKELY USE OF SHARED)



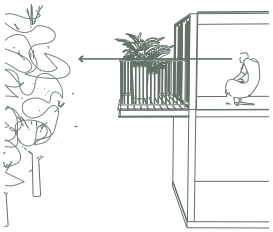

WHEELCHAIR



CLEAR LAYOUT



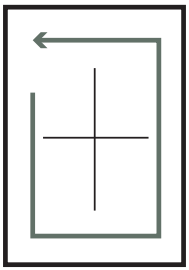
CHAIR WITH VIEW



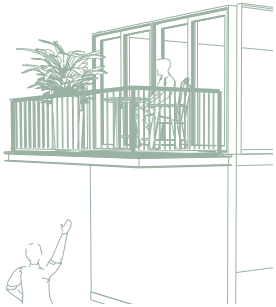
BALCONY / GARDEN/ GREEN VIEW



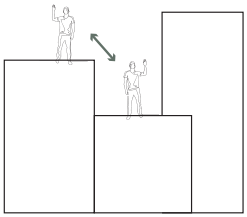
VIEW ON LIVELINESS



**FLEXIBLE FLOORPLAN**
**FREEDOM OF CHOICE**

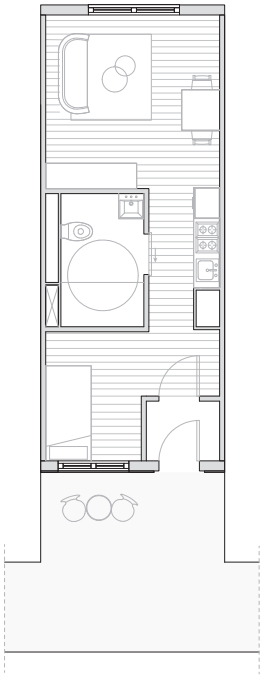


**CERTAIN AMOUNT OF PRIVACY - BALCONY**



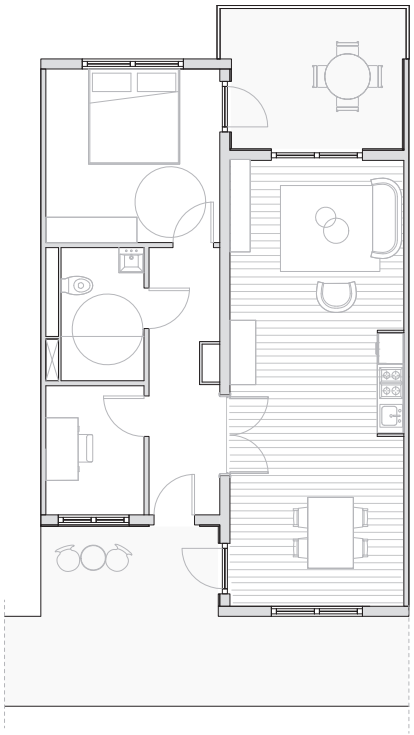
**CREATE VERTICAL SIGHT LINES/INTERACTION**

2 5



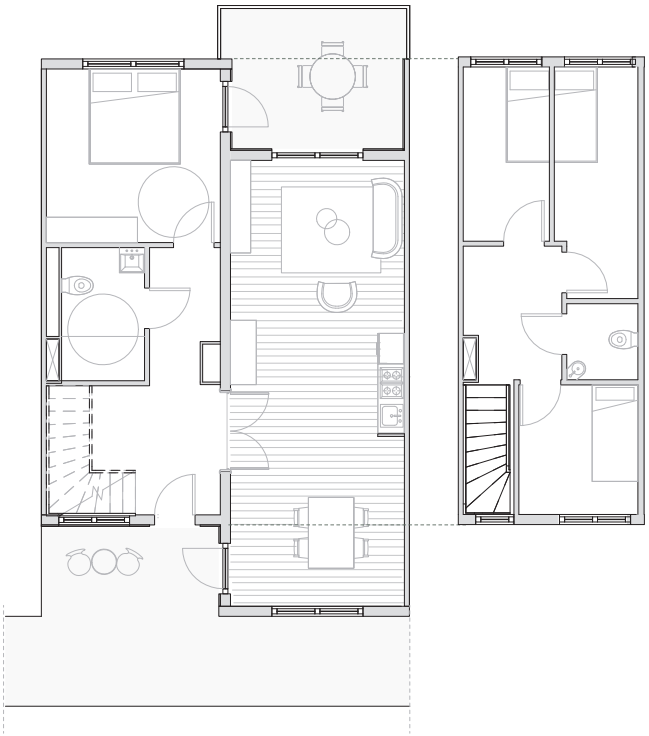
**Single person studio**
(30m²)

Single elderly / student / guest



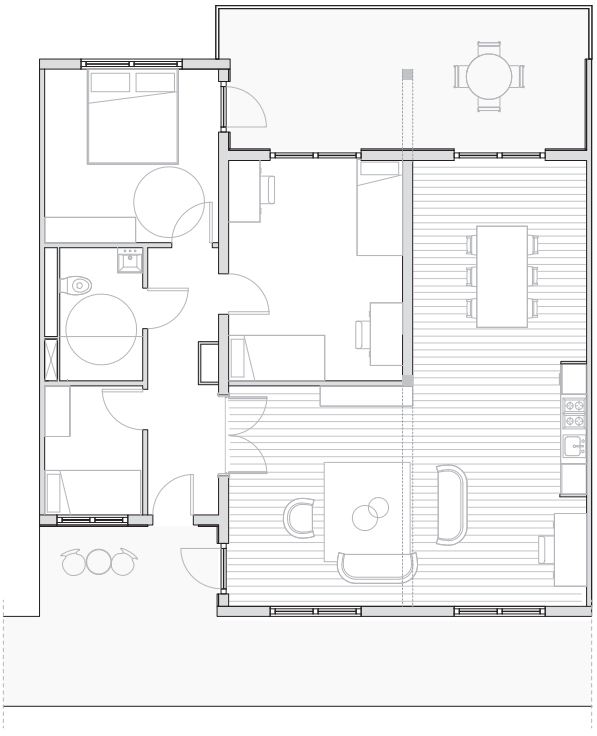
**3 room apartment**
(60m²)

(Elderly) couple



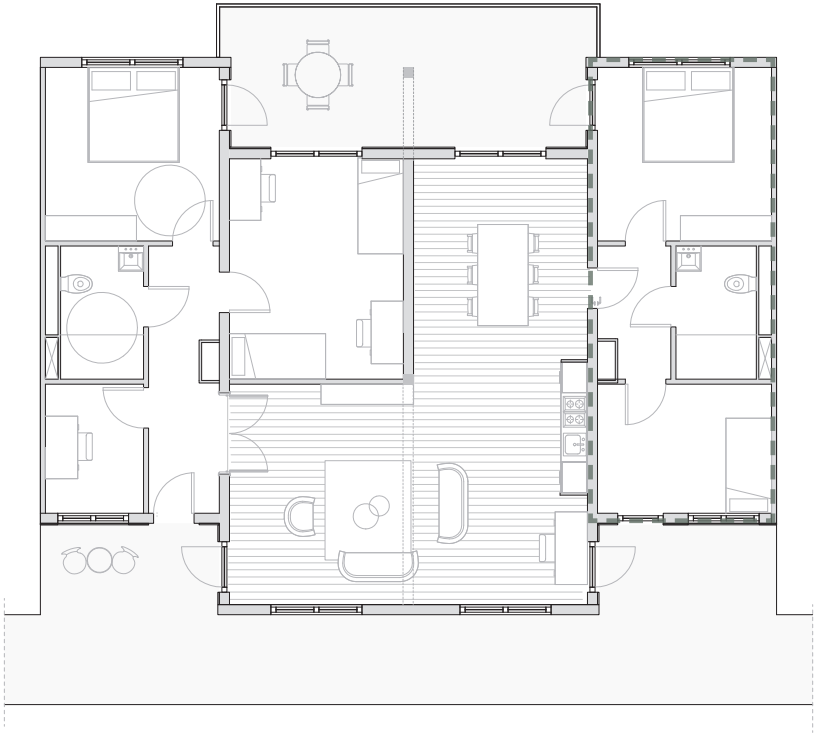
**Maisonette**
(90m²)

Family



**4 room apartment**
(90m²)

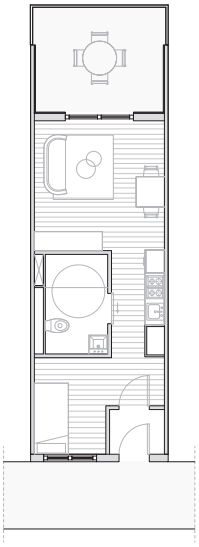
Family / (Elderly) couple



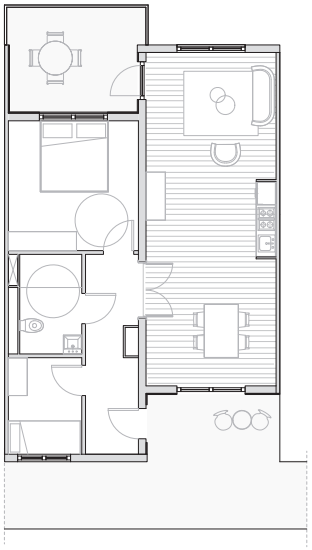
**Family apartment**
(option for kangaroo-living)
(90m²)

Family / shared

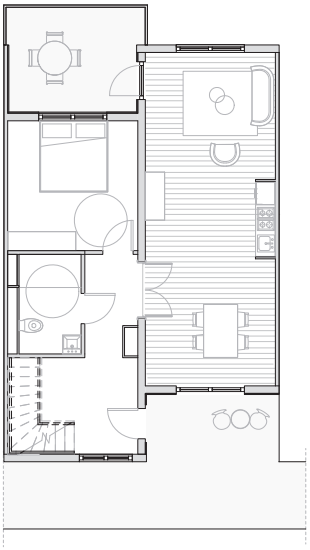

View on liveliness - interaction



Single person studio



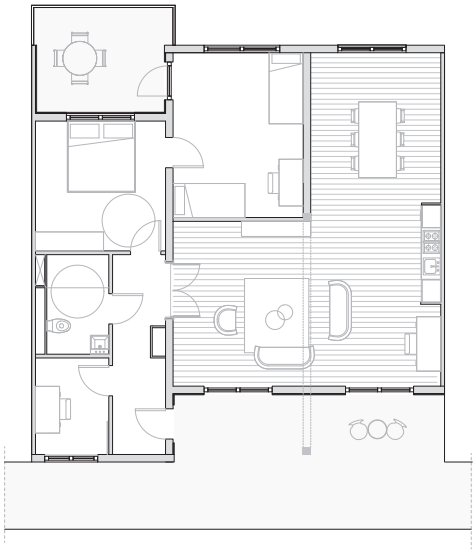
3-room apartment



Maisonette

All typologies also have a 'mirrored' version. In this way differentation can be created by stacking the 'modules'. This also makes it possible to optimize daylight access.

2 5



4-room apartment

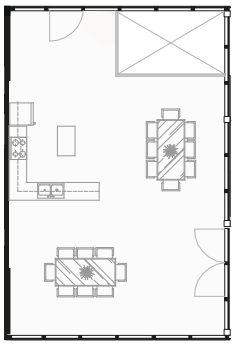


Family apartment

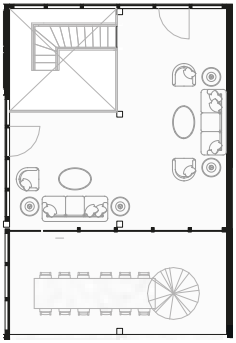


View on green courtyard from balcony

# SHARED ROOMS (1:250)



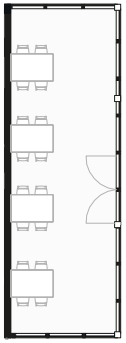
Kitchens



Living rooms



Kids play rooms

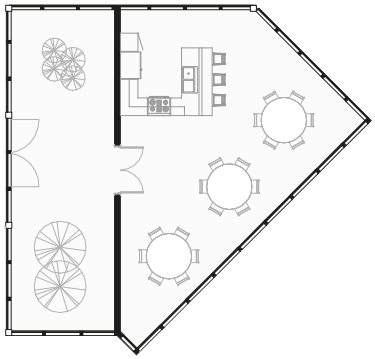


Office / study rooms

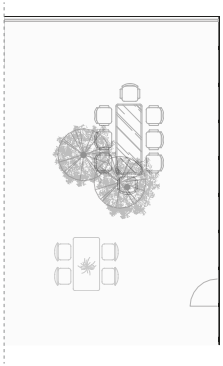
Different kinds of shared spaces for different interests can be found in the buildings. These areas function as a place to meet and interact.



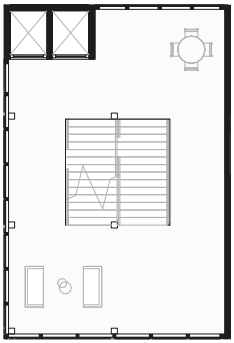
Shared kitchen



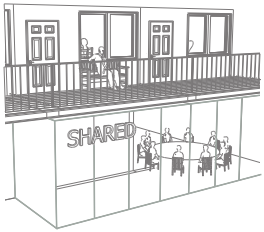
Green houses



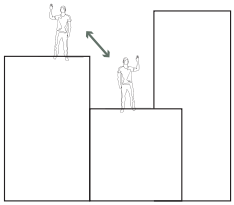
Roof gardens



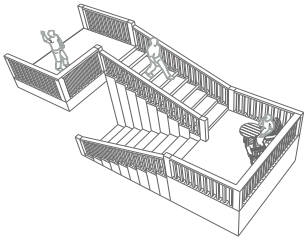
Stair case lounges




CREATE SHARED SPACES
(FOR DIFFERENT INTERESTS)



CREATE VERTICAL
SIGHT LINES/INTERACTION

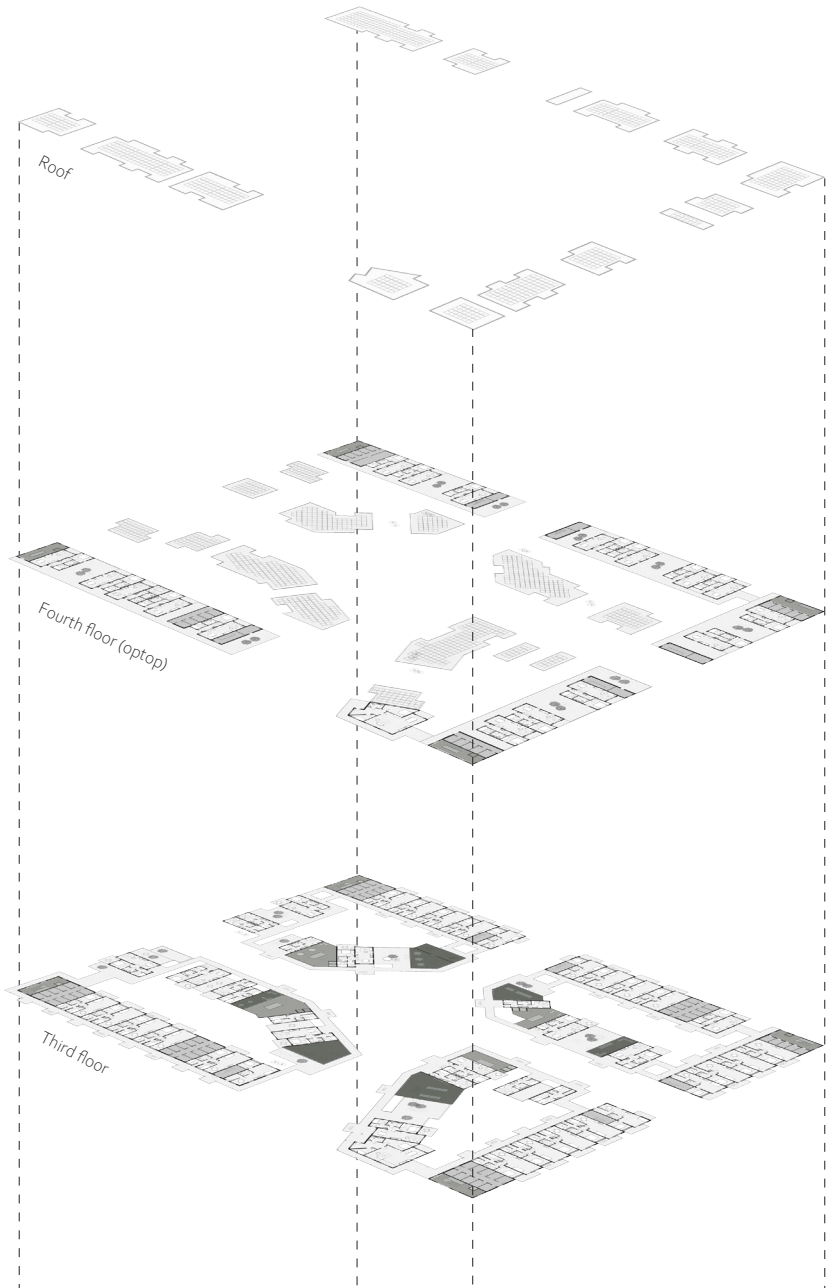


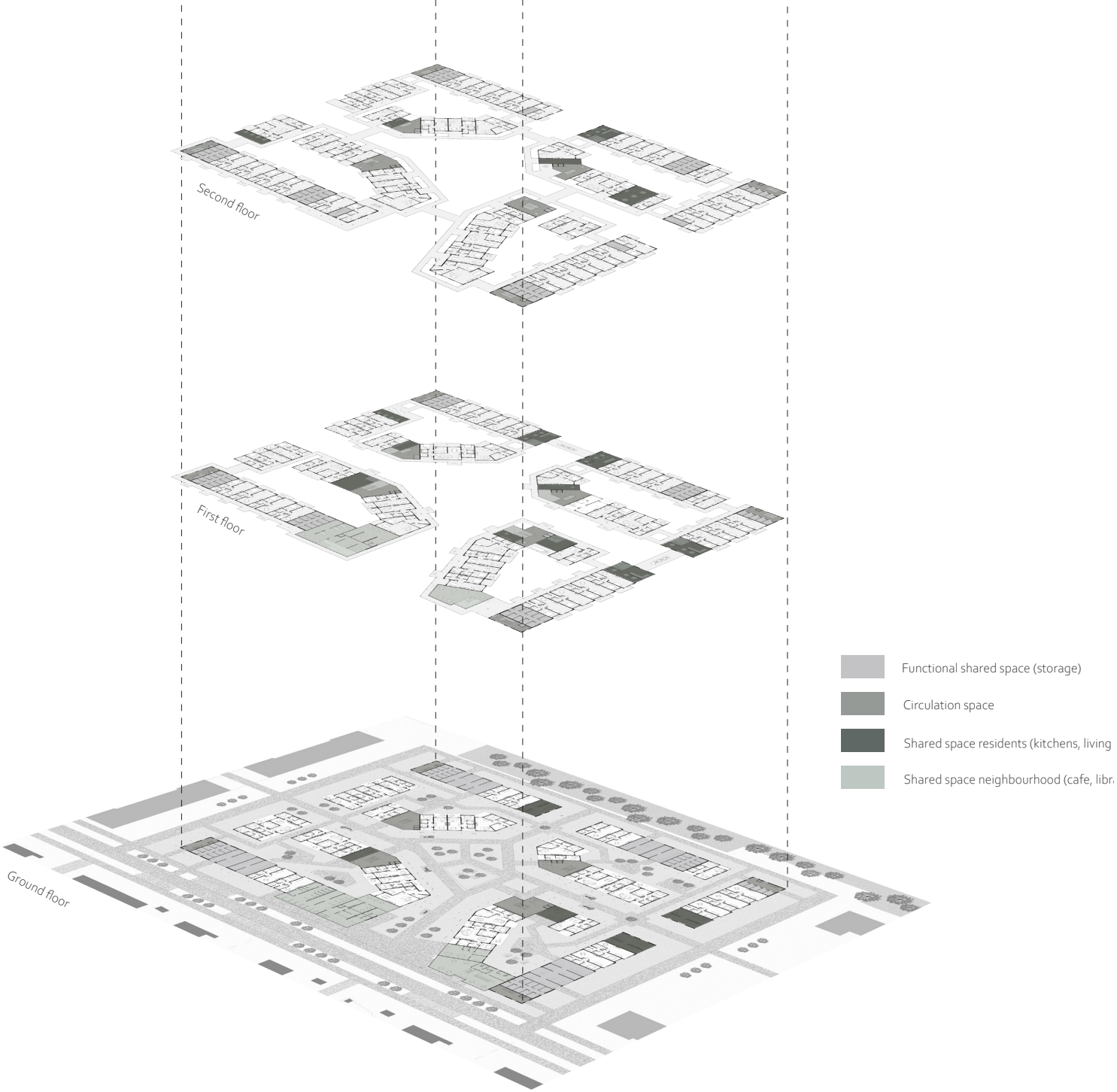
USE STAIRS AS PLACE
TO INTERACT

The staircases are designed as socially active spaces. At some places they contain lounges. Furthermore, shared spaces are often placed next to the staircase to create vertical sightlines.



# AXONOMETRIC FUNCTION OVERVIEW




Second floor
First floor
Ground floor
Functional shared space (storage)
Circulation space
Shared space residents (kitchens, living
Shared space neighbourhood (cafe, libr

# FACADES

With the choice of facade materials there has been focussed on circularity, and the materials being maintenance 'free'.

To increase the quality of the existing dwellings the current facade elements will be removed and replaced by new, well insulated ones. As mentioned before, the existing buildings and their appearance have in some way historical value. Therefore the new facade refers back to the existing by using the same window grid, concrete and modest facade cladding. However, the facade cladding will now be a modern, bio-based material: Kerloc.

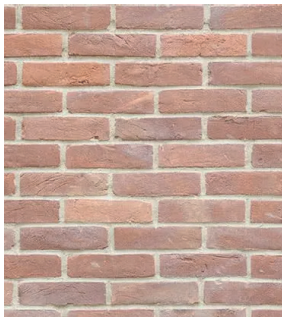
To give the new additions a warm and inviting appearance the choice has been made to use natural facade materials like wood and brick. Demountable, circular A-brick ceremic strips are applied, combined with impregnated douglas wood. To make the cluster a coherent whole, on each building block the same materials are used. However, to increase the recognizability different colors are applied. Bright colors are used for the front doors and to highlight the shared spaces.

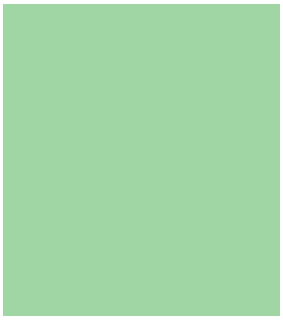
The facades of the added volumes will form a contrast with the facades of the existing buildings, so the buildings stay 'readable'.

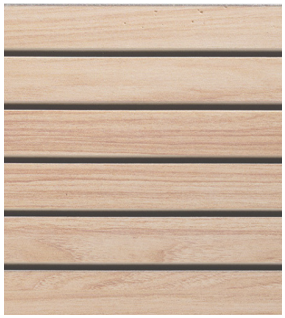


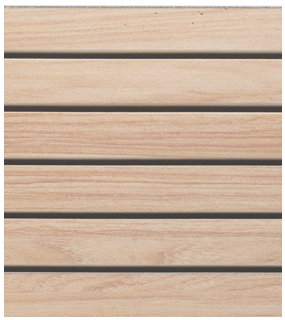


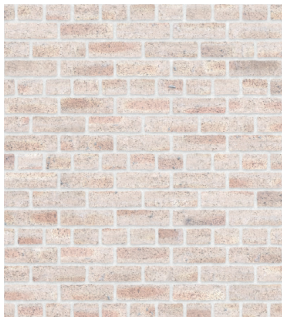
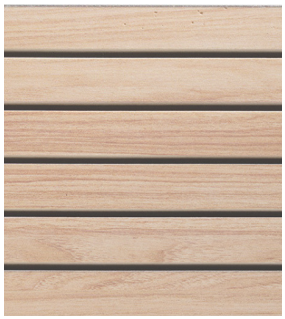
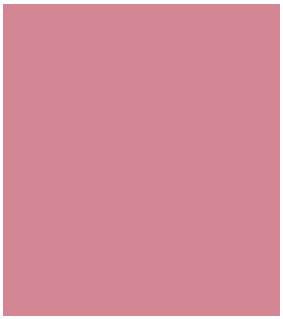
**Existing buildings**



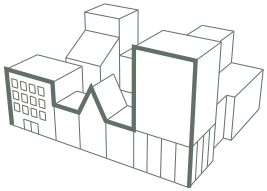




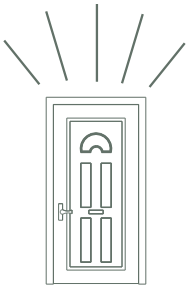



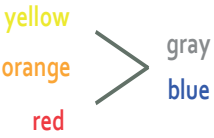
New additions



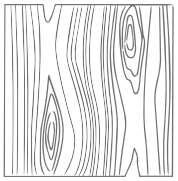
DIVERSITY IN ARCHITECTURE



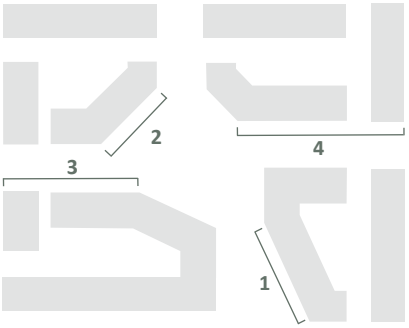
RECOGNIZABLE FRONT DOOR




COLOURS



WOOD = WARMTH

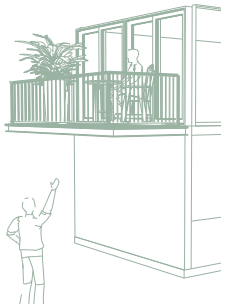



These facade elevations show the different colors of the materials that are applied. To break through the horizontal lines of the galleries, vertical wooden slats are applied that also function as 'vertical gardens'. This increases the green character of the place and offers a feeling of privacy on the front porches. The variation in more closed wooden balustrades and more open balustrades with glass panels also contributes to this. The shared spaces are designed very open, so a clear distinction between public and private places exists.

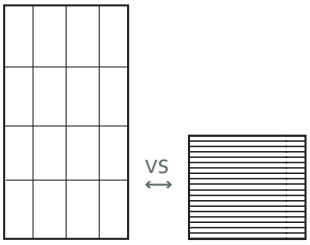


**Elevation 1:** Red block

2 5 10 20



CERTAIN AMOUNT OF PRIVACY




CLEAR SEPERATION PUBLIC - PRIVATE



**Elevation 2:** Yellow block



**Elevation 3:** Green block



**Elevation 4:** Orange block



**Elevation 5:** Galery side existing building

2 5 10 20



**Elevation 6:** Balcony side existing building - with bridge connection




These facade elevations show how the optop form a contrast with the Kerloc facade of the existing buildings. The open facades of the shared spaces also become clear again. The (more private) entrances are highlighted by the use of wooden facade cladding. To enhance the green character of the place vertical green is added as well. The corners with shared spaces are connected by a bridge. In this way the corners of the buildings really become places of interaction and form a 'welcoming gate'.





**Elevation 7:** Balcony side additions - looking into the street

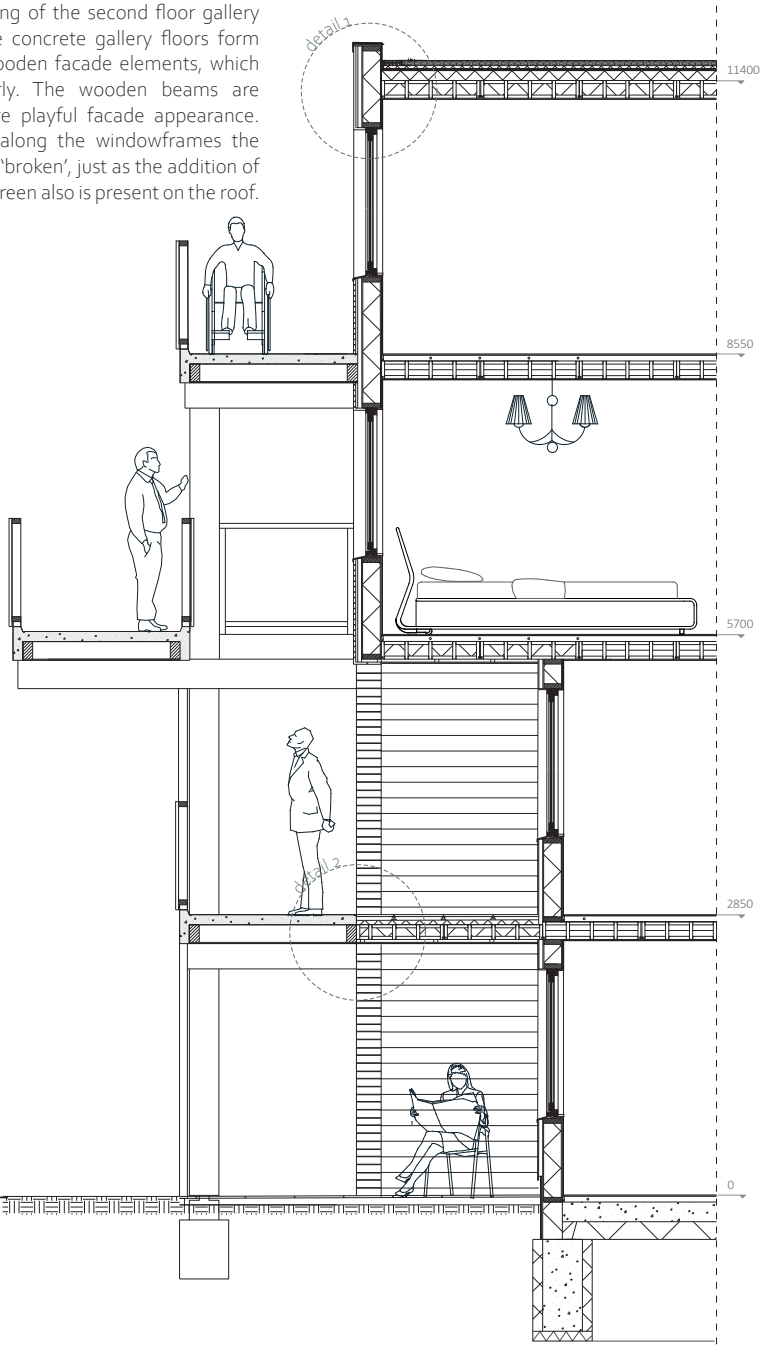
2 5 10 20



# FACADE FRAGMENTS (1:60)

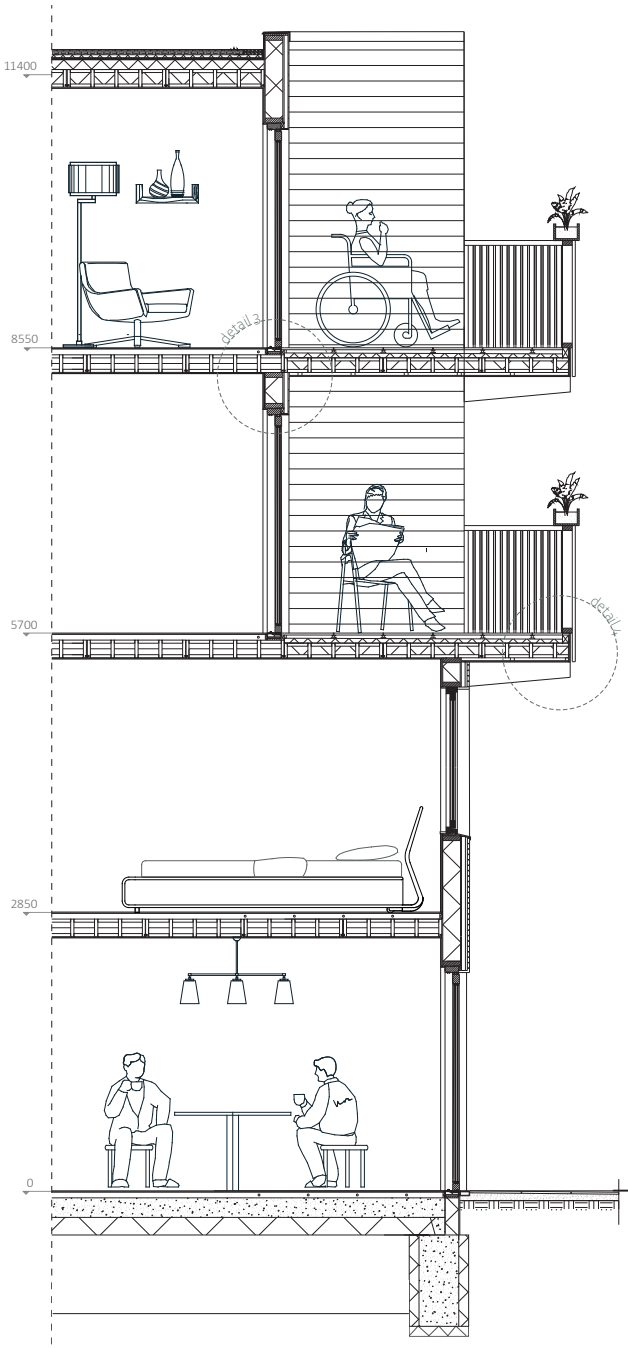
This facade fragment shows how the galleries function as interactive places. By the shifthing of the second floor gallery daylight access is provided. The concrete gallery floors form a contrast with the brick and wooden facade elements, which increases orientation for elderly. The wooden beams are seperated which creates a more playful facade appearance. By applying vertical brickwork along the windowframes the horizontal lines in the facade are 'broken', just as the addition of vertical wooden slats for green. Green also is present on the roof.

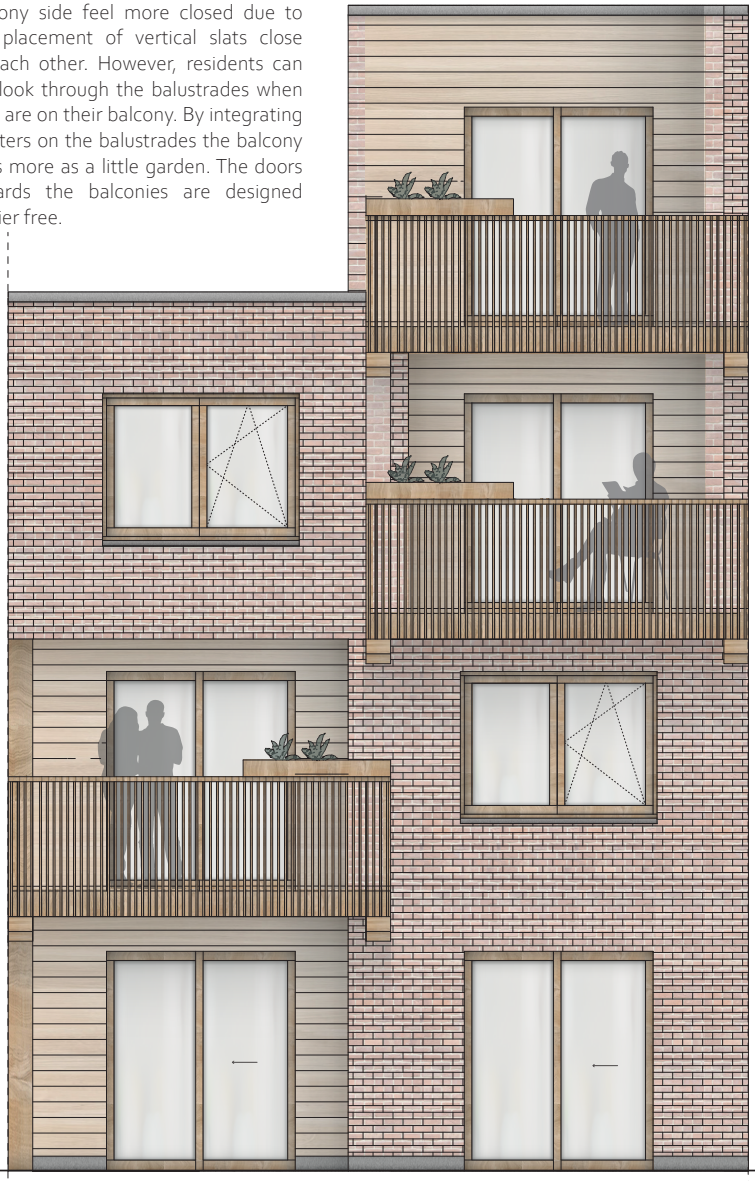




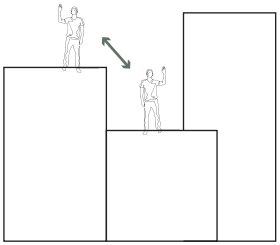

Gallery side addition

This facade fragment shows how the balustrades on the more private balcony side feel more closed due to the placement of vertical slats close to each other. However, residents can still look through the balustrades when they are on their balcony. By integrating planters on the balustrades the balcony feels more as a little garden. The doors towards the balconies are designed barrier free.

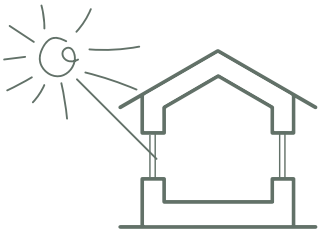


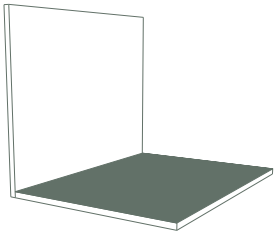
## Balcony side addition



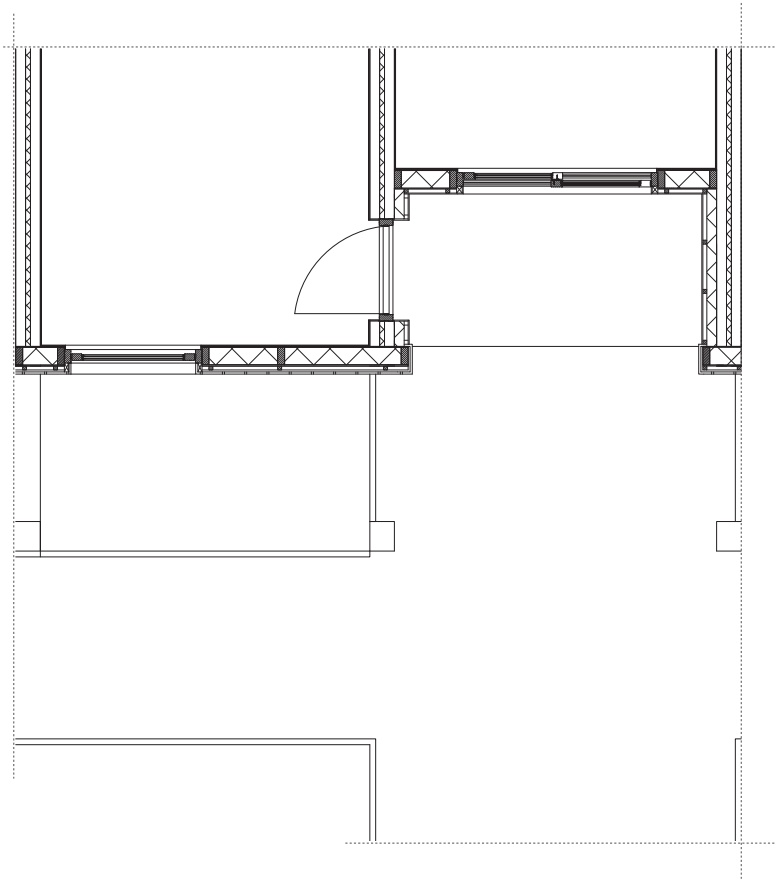
CREATE VERTICAL
SIGHT LINES/INTERACTION



DAYLIGHT

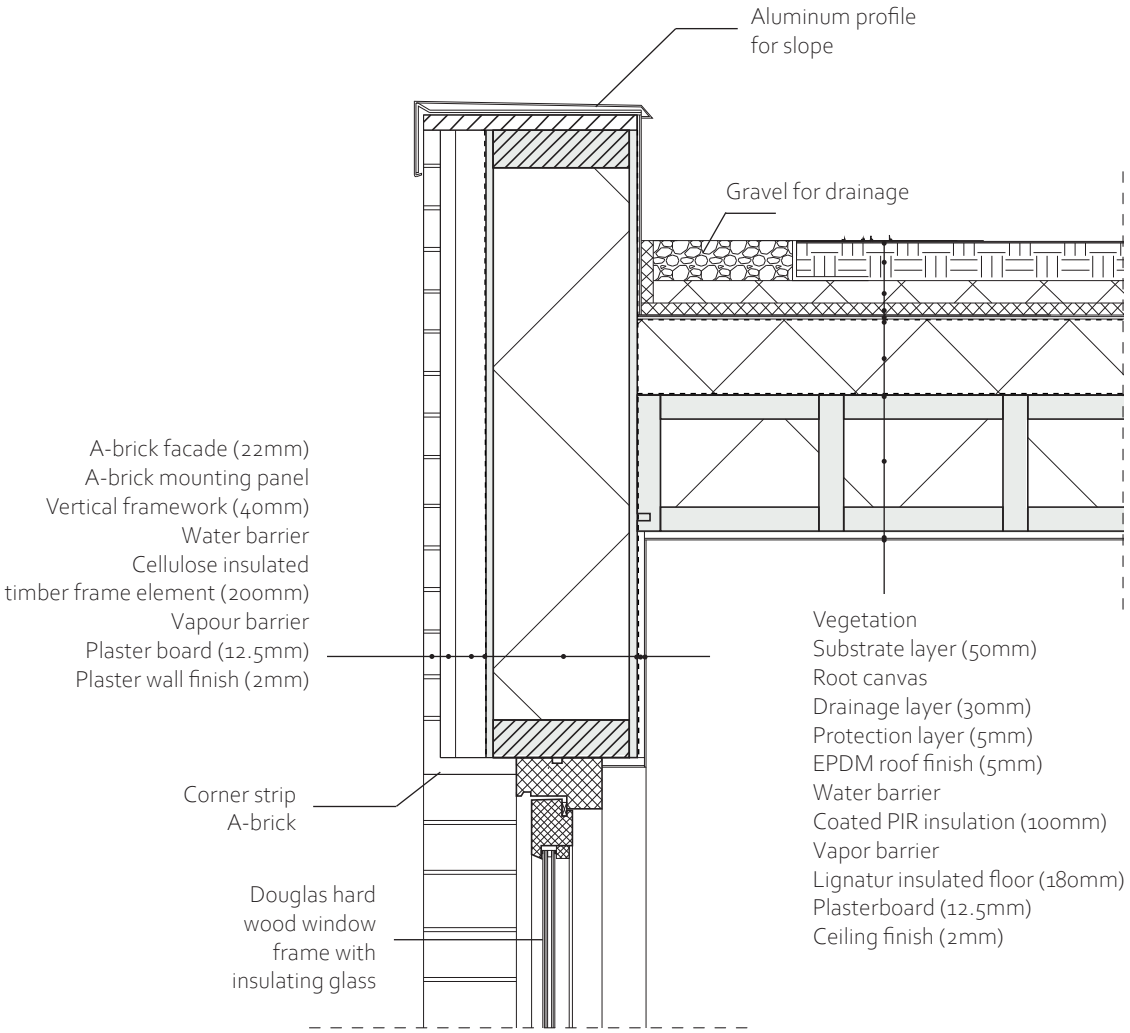


CONTRAST



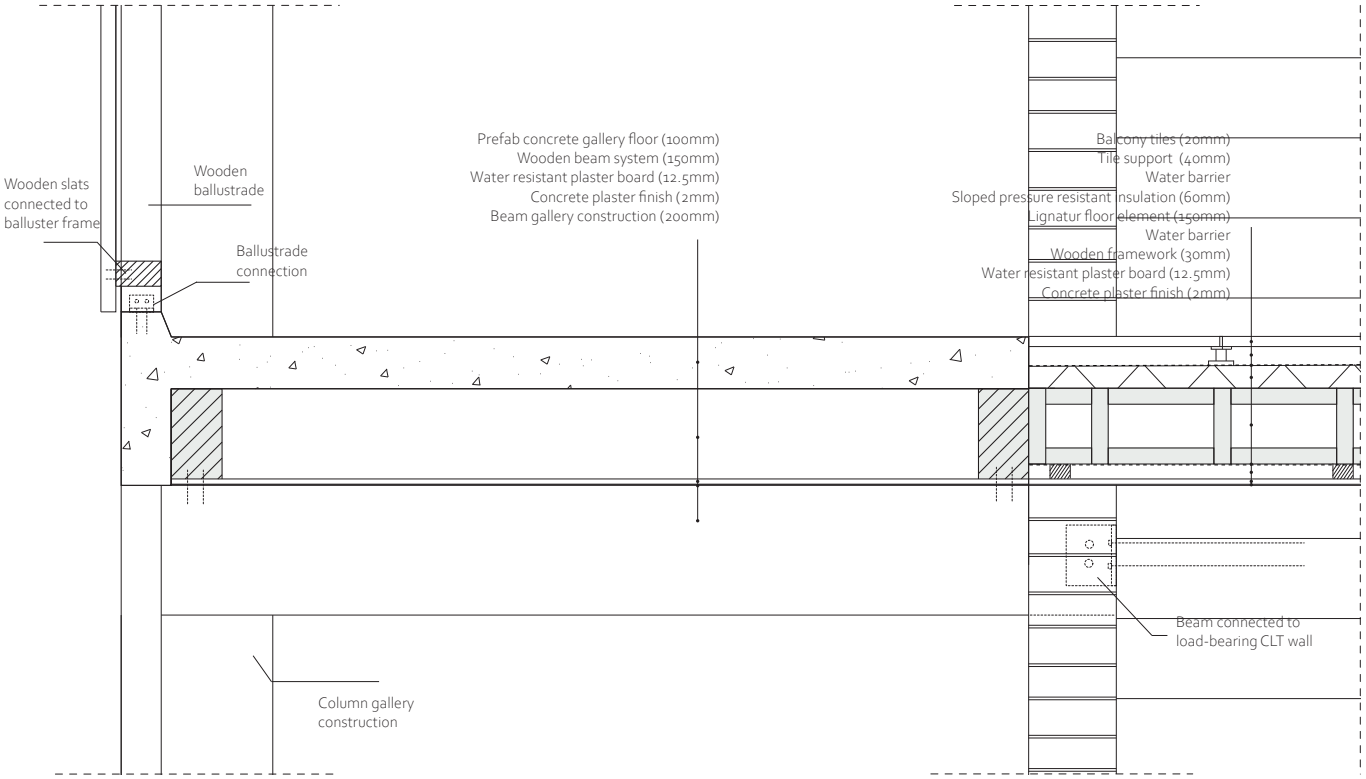
**Horizontal section gallery** (1:60)

## **Detail 1** (1:10)
### Green roof



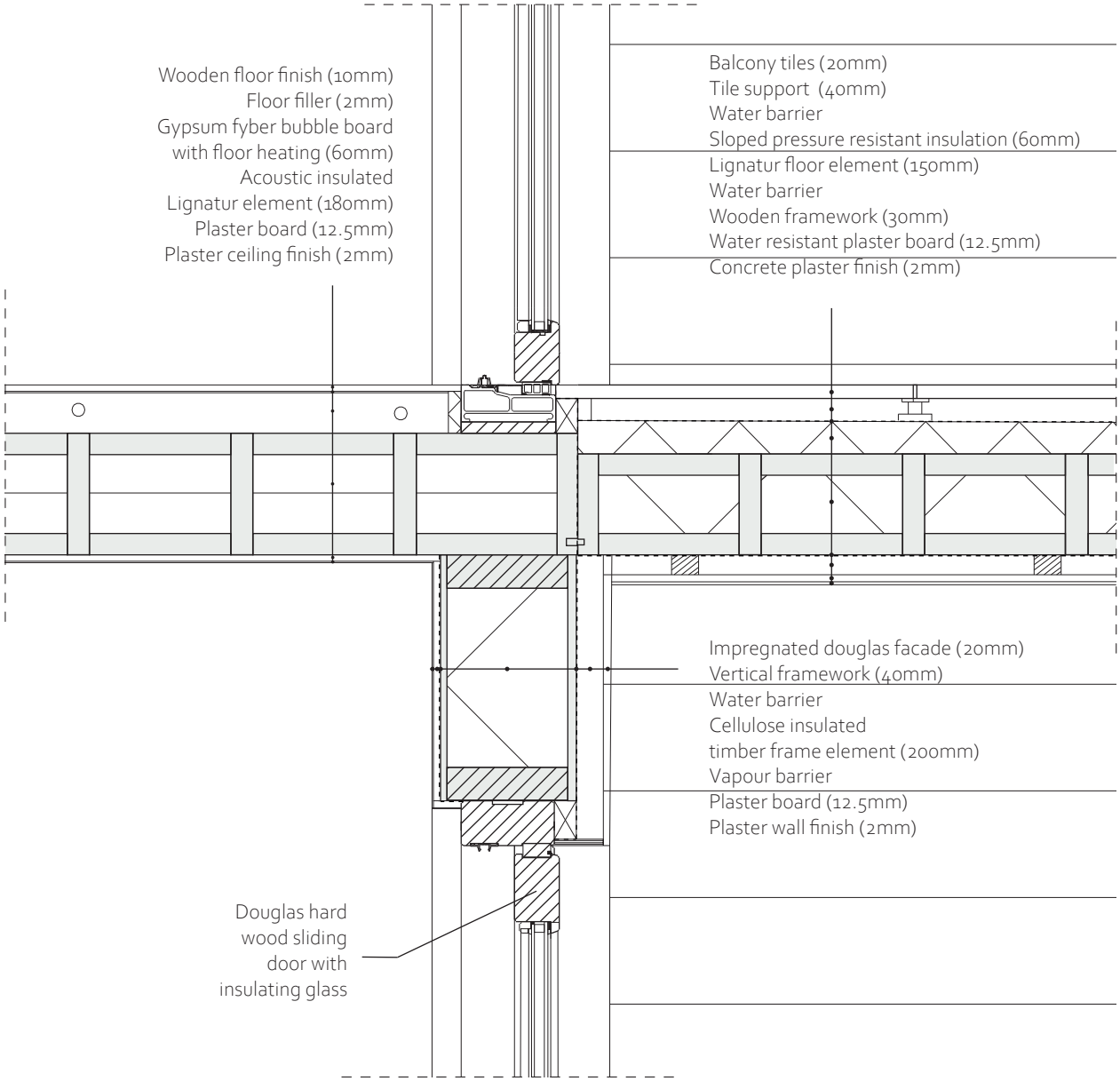
## **Detail 2** (1:15)

### Gallery floor with balustrade



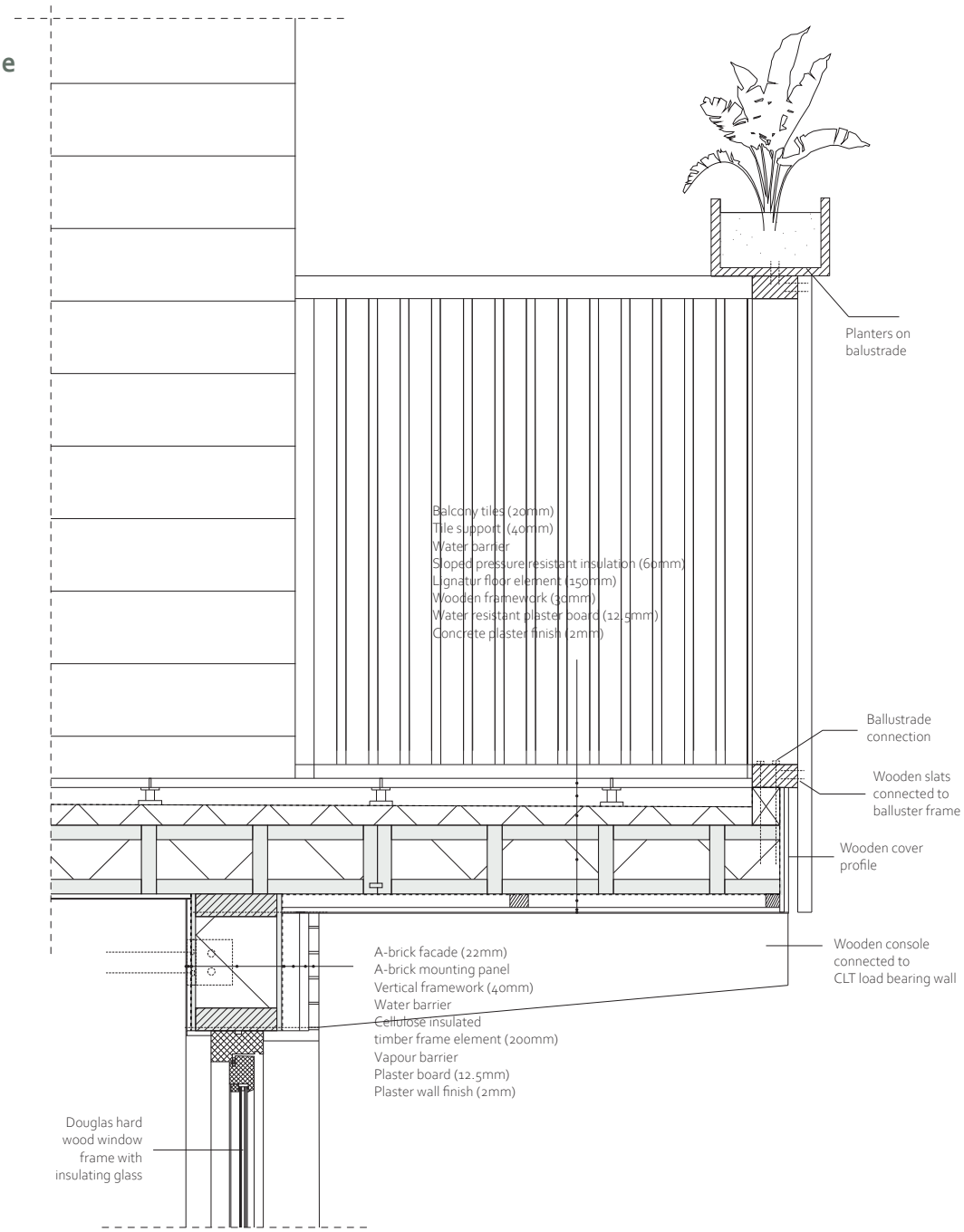
## **Detail 3** (1:10)

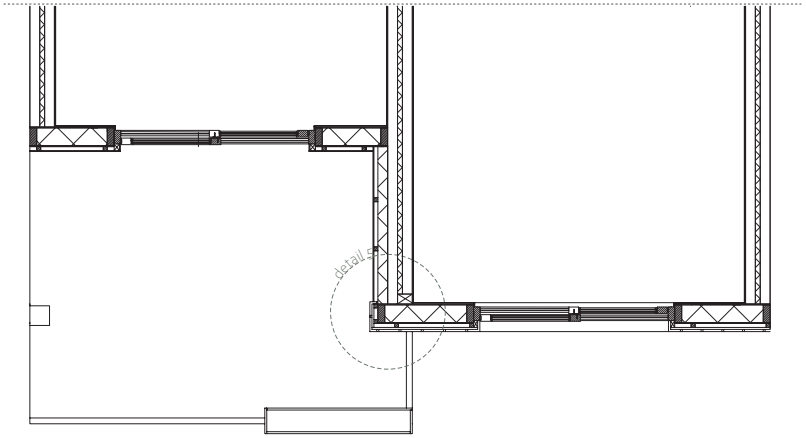
### Barrier free entrance to balcony



## Detail 4 (1:10)

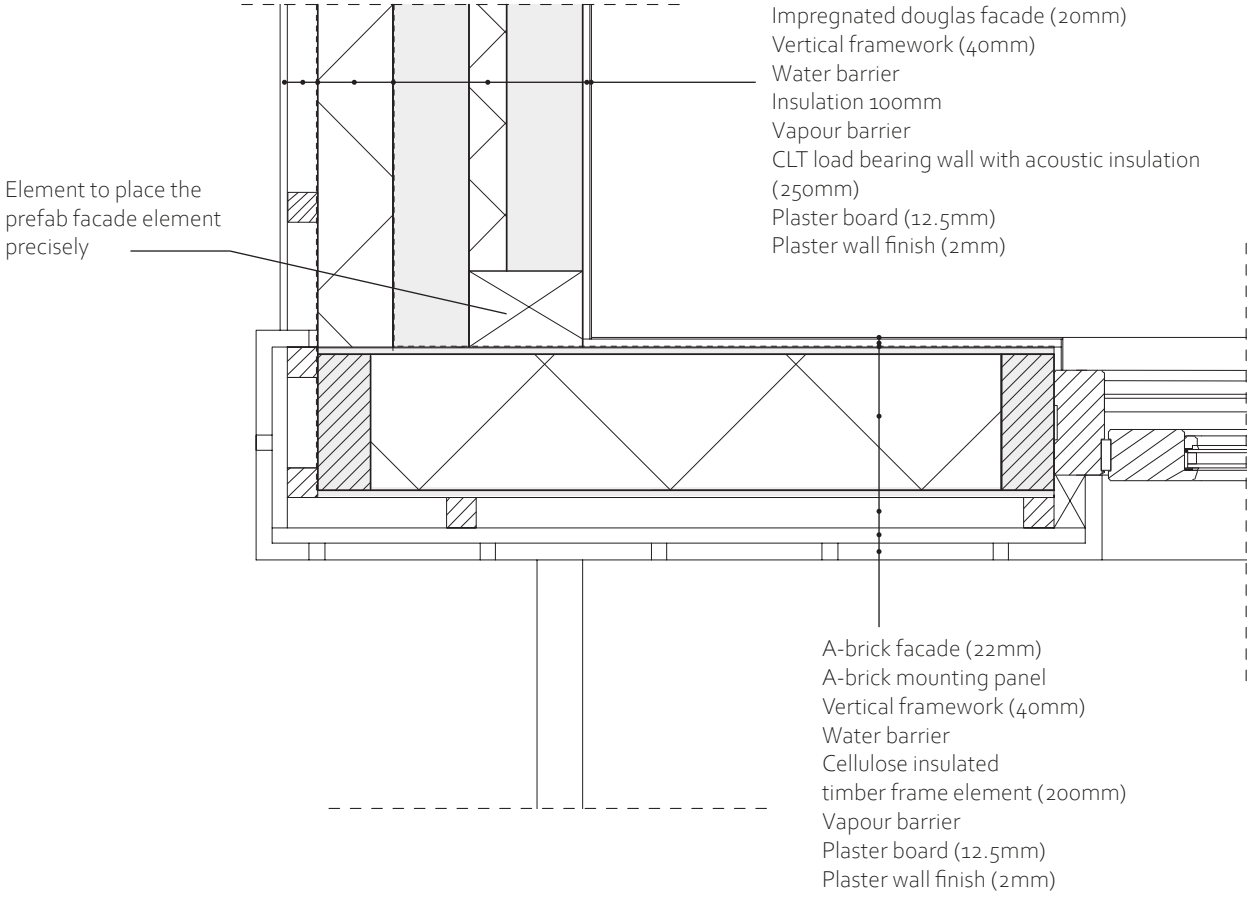
### Balcony with balustrade






**Horizontal section balcony** (1:60)

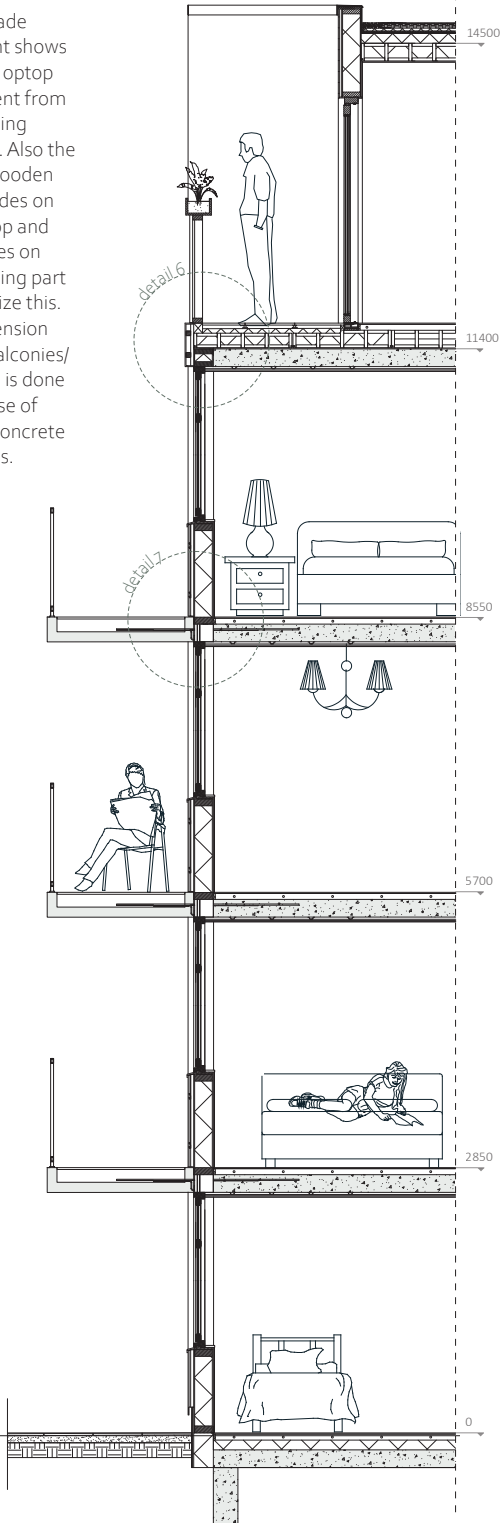
## **Detail 5** (1:10)
### **A-brick / wood connection**

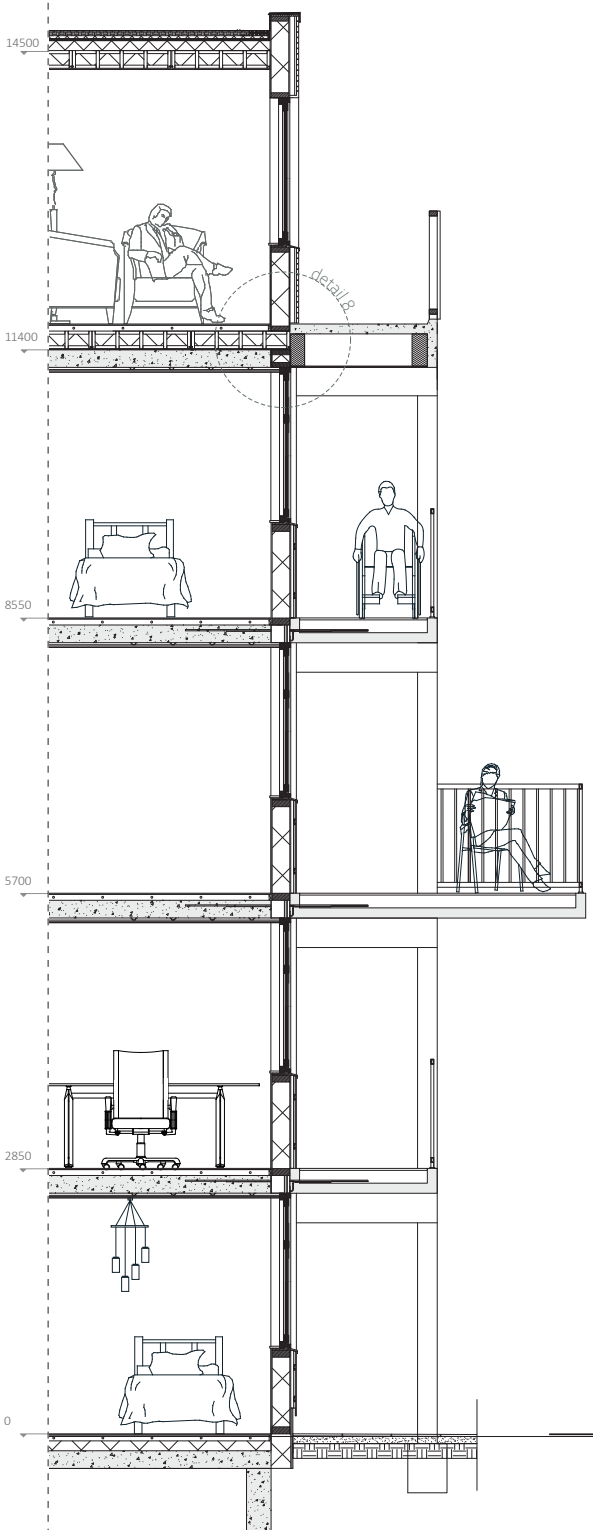




**Balcony side existing** (1:60)

This facade fragment shows how the optop is different from the existing building. Also the use of wooden balustrades on the optop and steel ones on the existing part emphasize this. The extension of the balconies/ galleries is done by the use of prefab concrete elements.

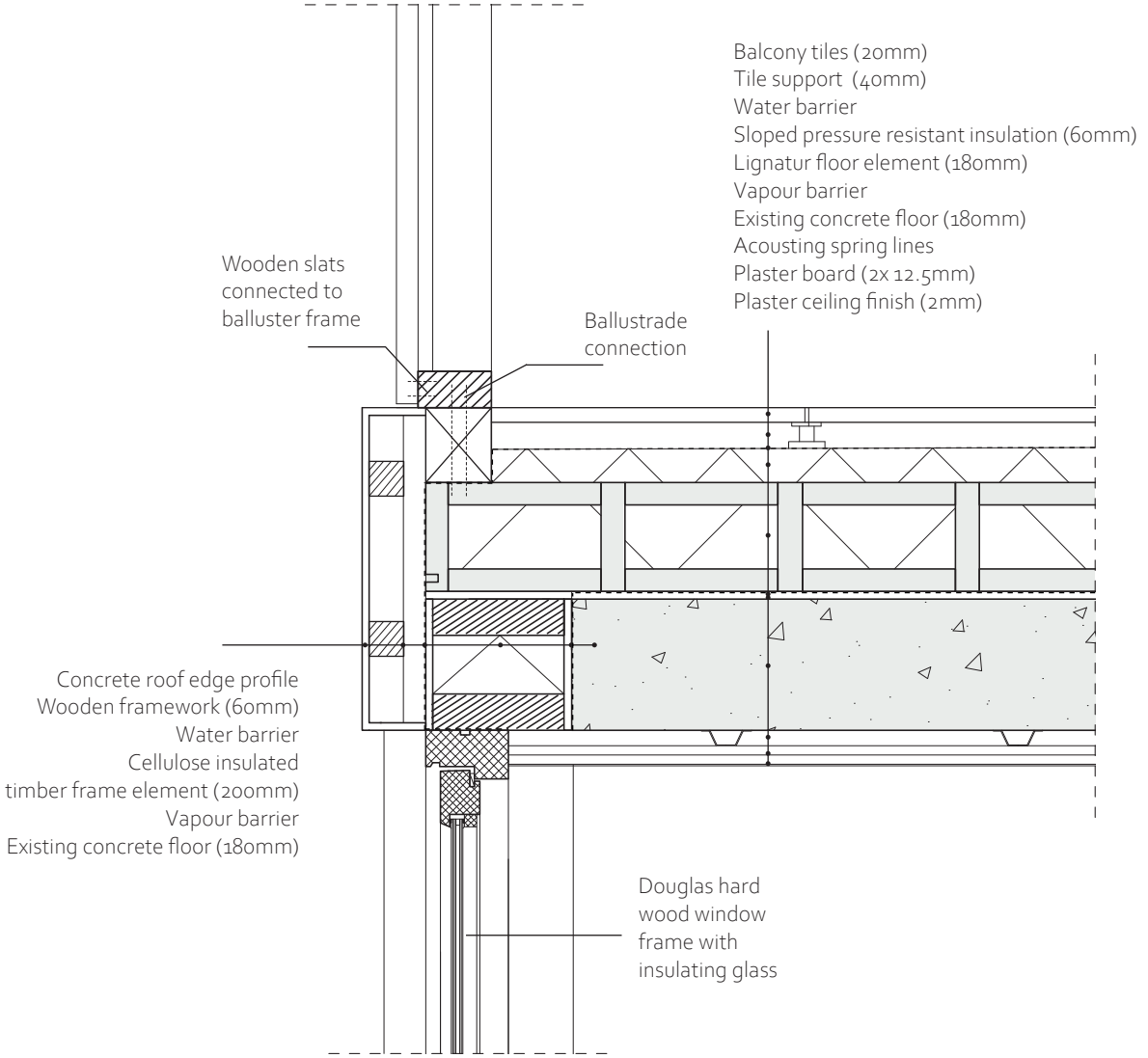




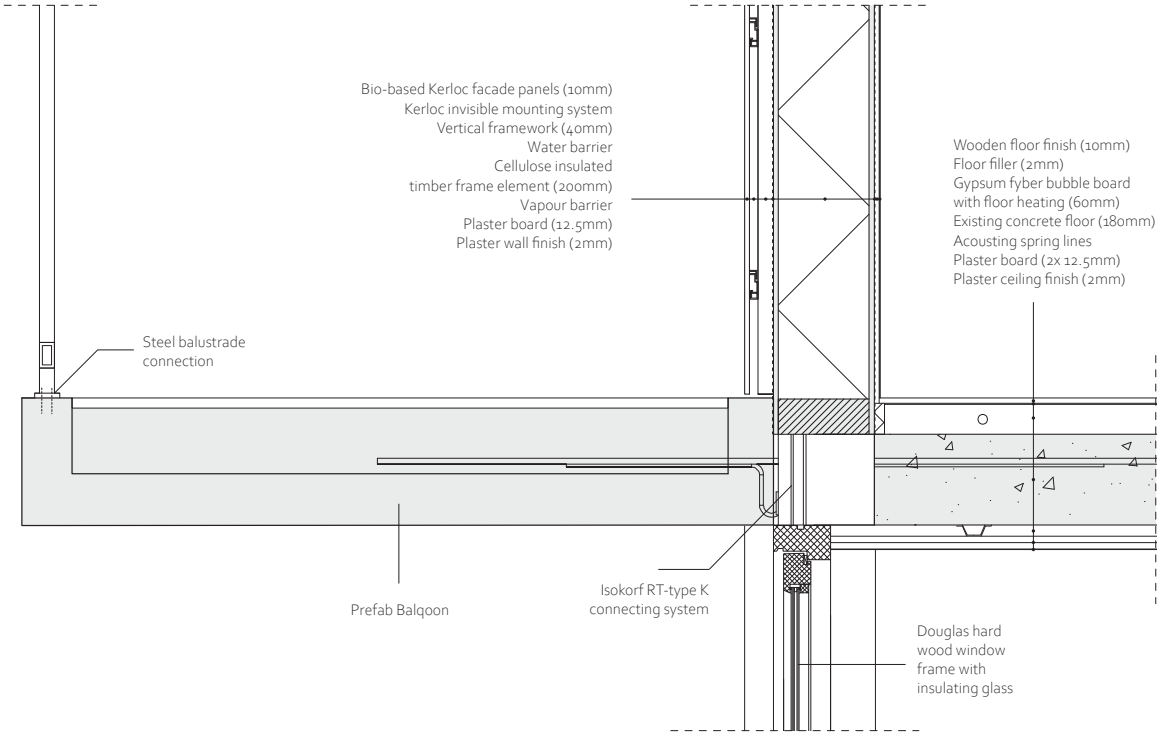



**Gallery side existing** (1:60)

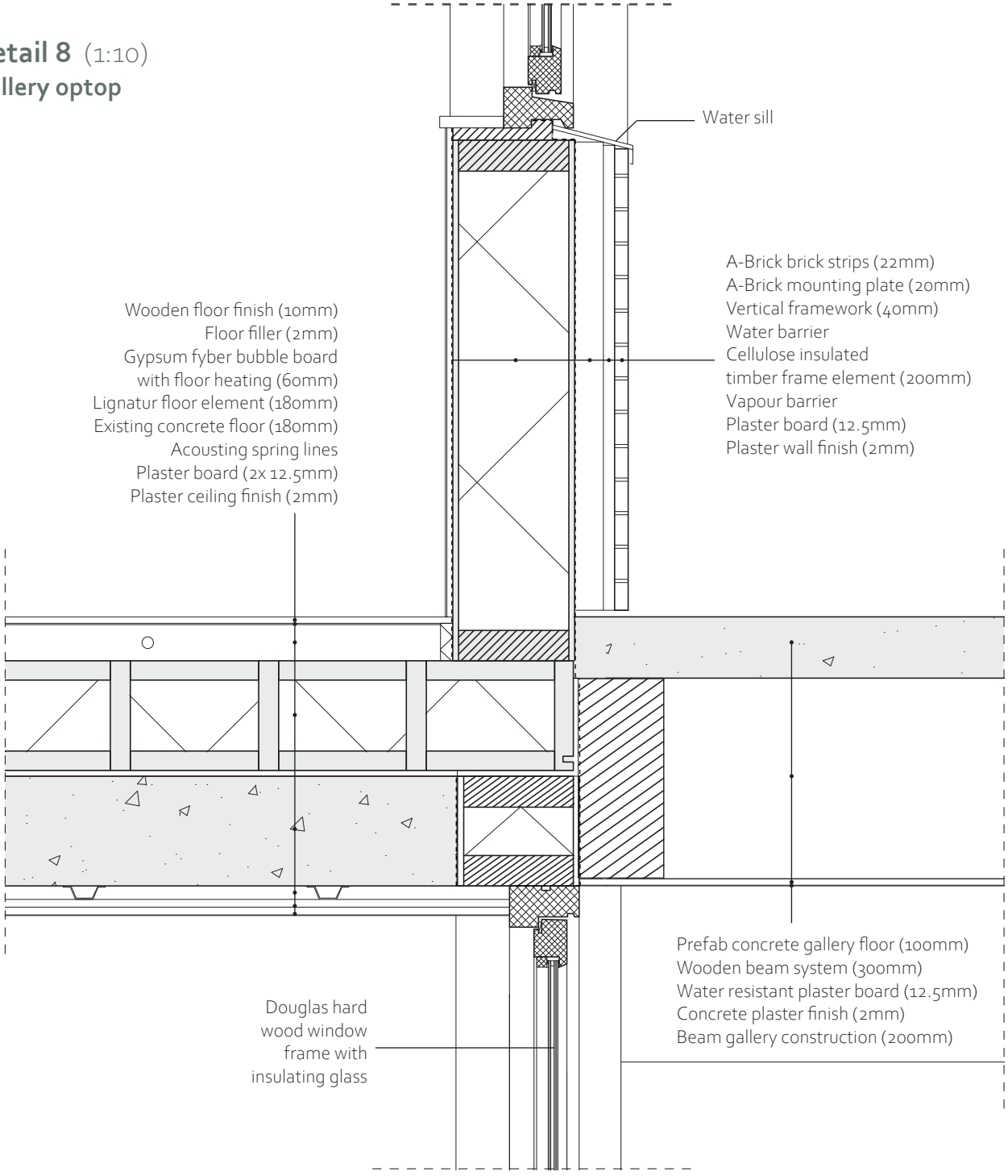
## Detail 6 (1:10)
### Optop



## **Detail 7** (1:15)
## **Prefab balcony**



## Detail 8 (1:10)
### Gallery optop



# CONSTRUCTION PRINCIPLE

The construction of the buildings mainly consist out of prefab elements. This choice was made to shorten the construction time. This is beneficial when you are densifying an existing neighbourhood.

For the load-bearing walls CLT was chosen as a material. They can be made prefab and have good acoustic and fire-safety quailities.

The floors consist out of LIgnatur floor elements. They are prefab floor elements that already contain acoustic and/or thermal insulation. Large span widths are possible which reduces the floor construction height. The Lignatur floor elements do not need a finish, so for example in the shared areas the material can remain unfinished and add a warm wooden look.

The facades consist out of timber frame facade elements. They are light weighted and could be made prefab by WEBO.

The wooden gallery construction adds to the warm appearance of the buildings and is circular.

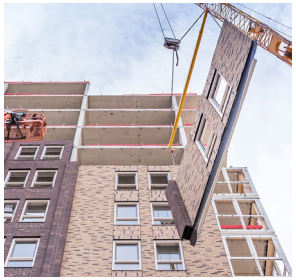
The prefab concrete gallery floors also add to the natural look of the buildings, and form a contrast with the wooden elements. Contrasting surfaces is beneficial for the orientation of elderly.



CLT



Lignatur



Prefab facade

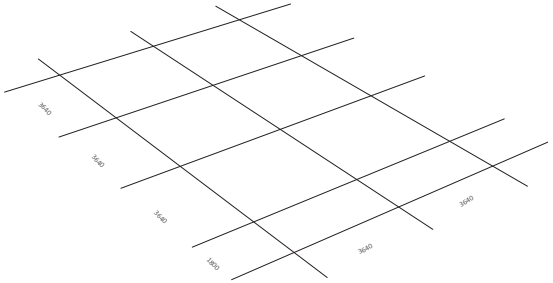


Wooden beams

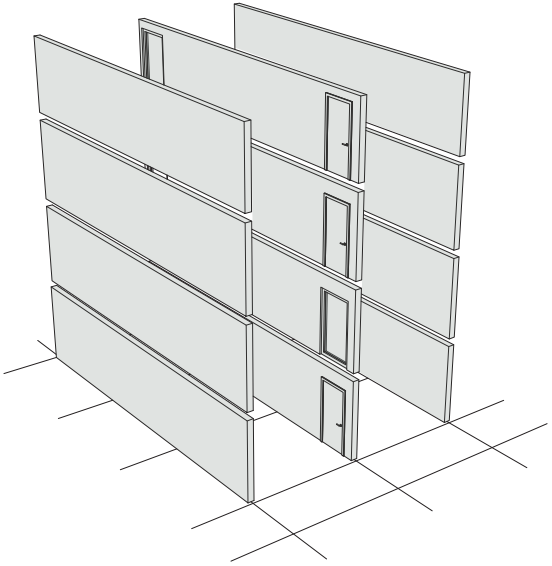


Concrete

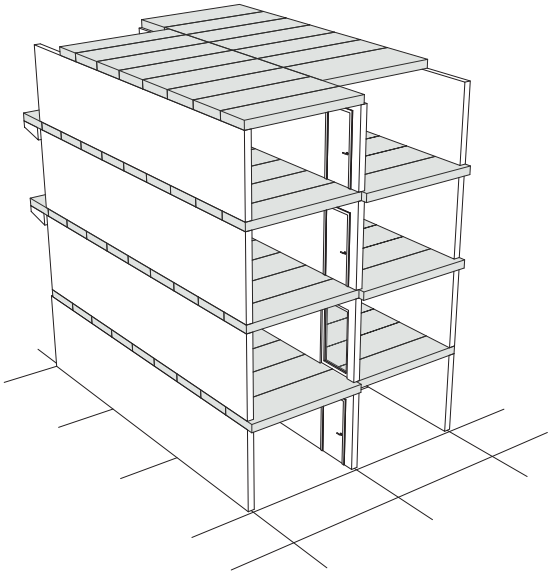
# CONSTRUCTION PRINCIPLE



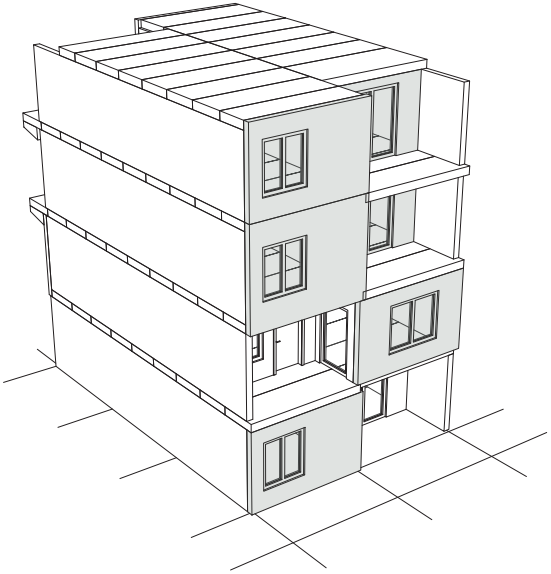

Construction grid



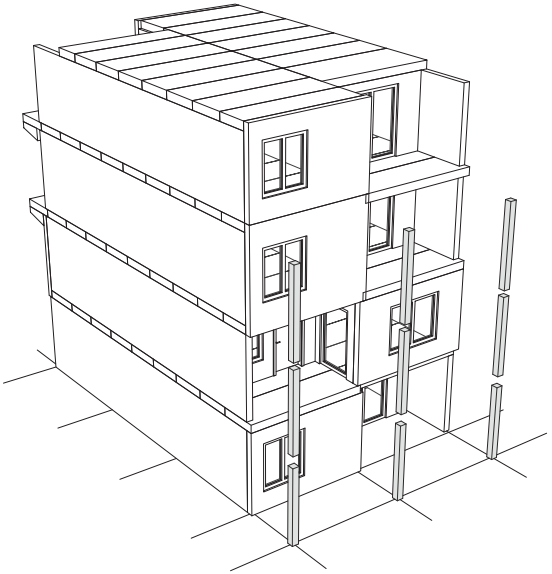
CLT load bearing walls



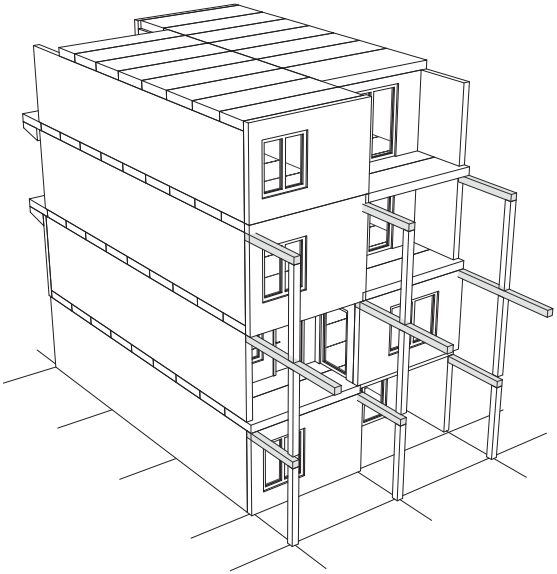
Lignatur floor elements



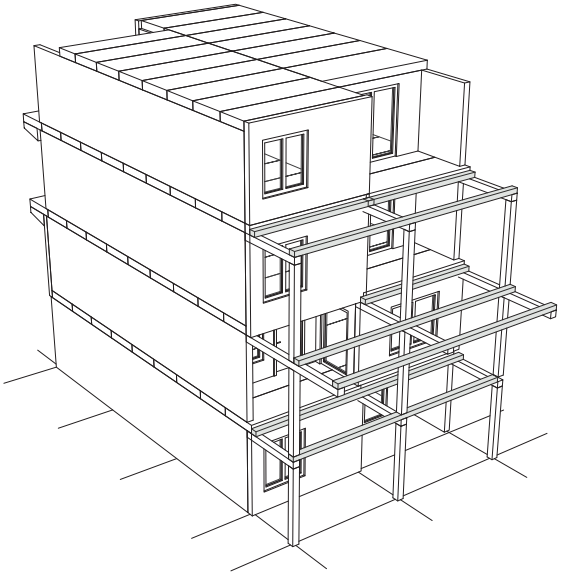
Timber frame facade elements



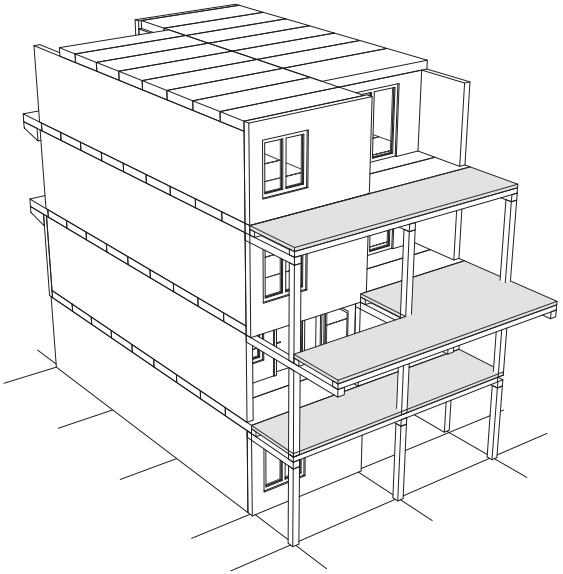
Wooden column structure



Wooden beam structure

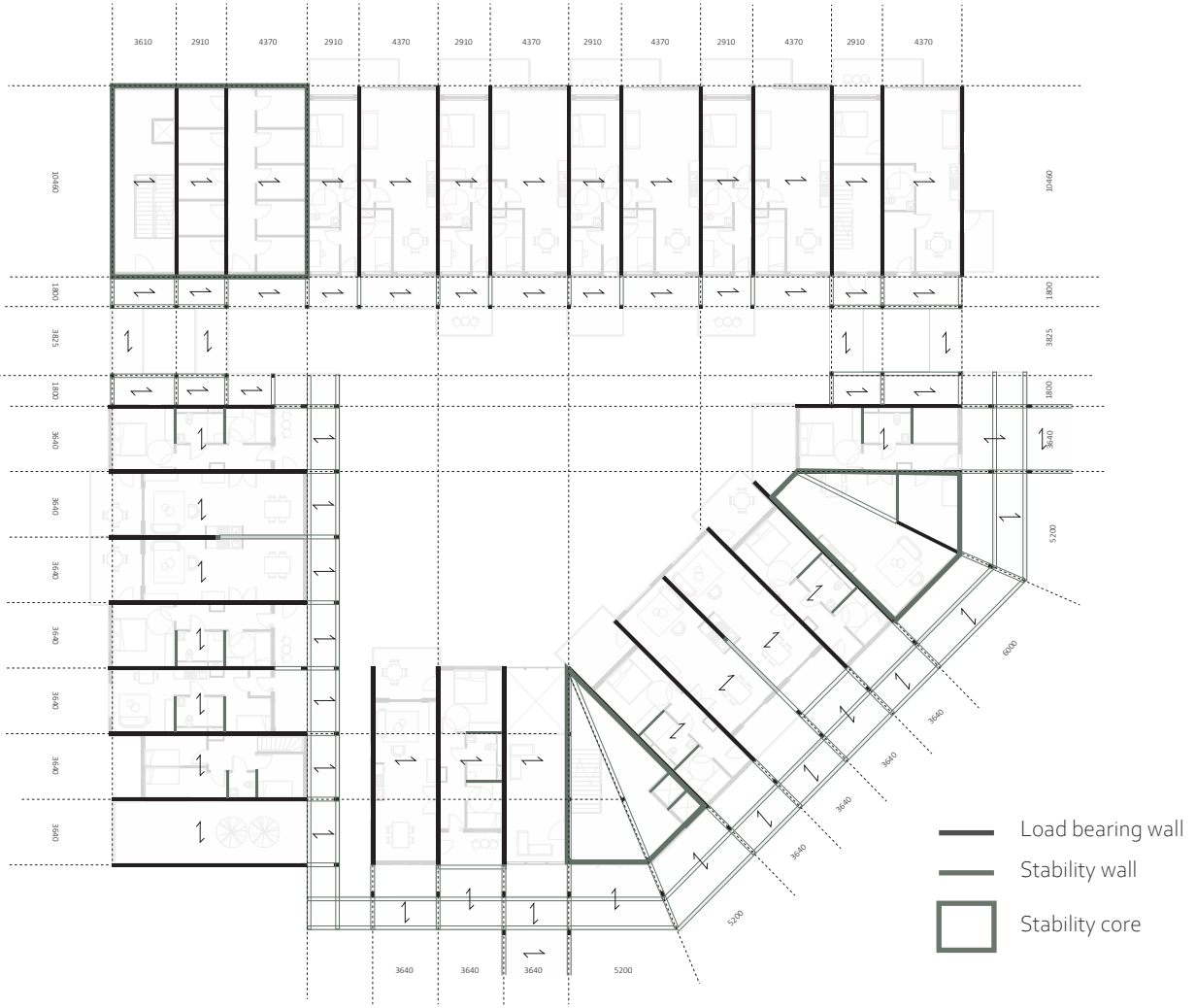


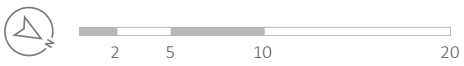
Secondary beam structure



Concrete gallery floor elements

# CONSTRUCTION PLAN



# ADAPTABILITY



**Family apartment**
(option for kangaroo-living)
(90m²)



**4 room apartment** (90m²) **+** **Studio** (30m²)



**3 room apartment** (60m²) **+ 3 room apartment** (60m²)

Even though the main construction consists out of load-bearing CLT walls, at some points exceptions can be found. The dwellings are designed in such a way that when placed next to each other in a specific way, different typologies can be created over time. Therefore at some points a column-and beam construction is added, to make removal of walls easier. In this way the dwelling stock can adapt to future changes.

# SECTION



1) Shared 'private' courtyard



2) Roof garden



3) Vertical interaction shared spaces

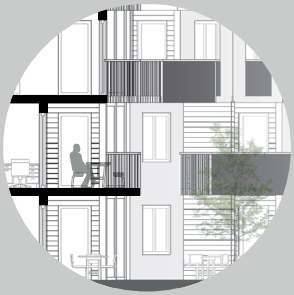


4) Vertical interaction galleries






6) Front porch and views on gallery



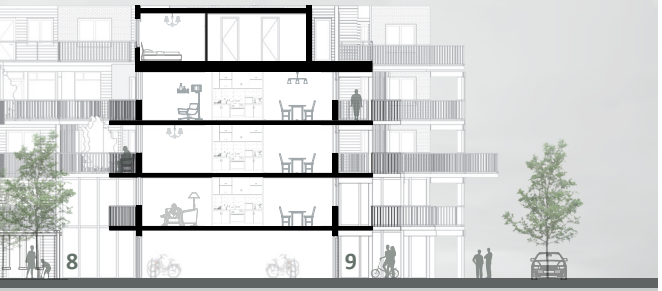
7) Balcony on more intimate side

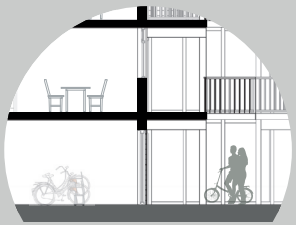


8) Different activities in courtyards



5) 'Street' and bridge



9) Shared bicycle storage

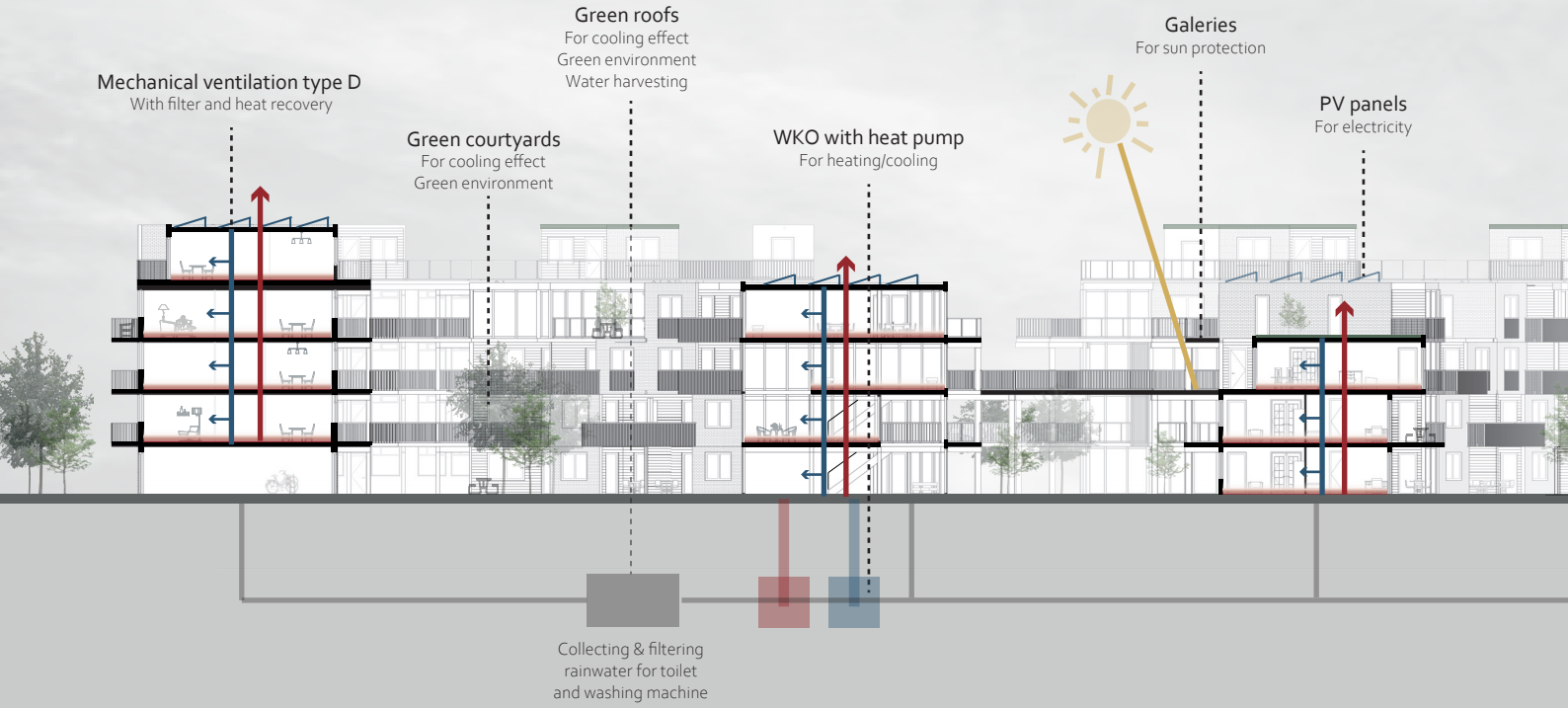
This section shows a good overview of all the functions and kind of places that are created in the design on different scales. Both intimate courtyards, and interactive galeries along 'streets'.

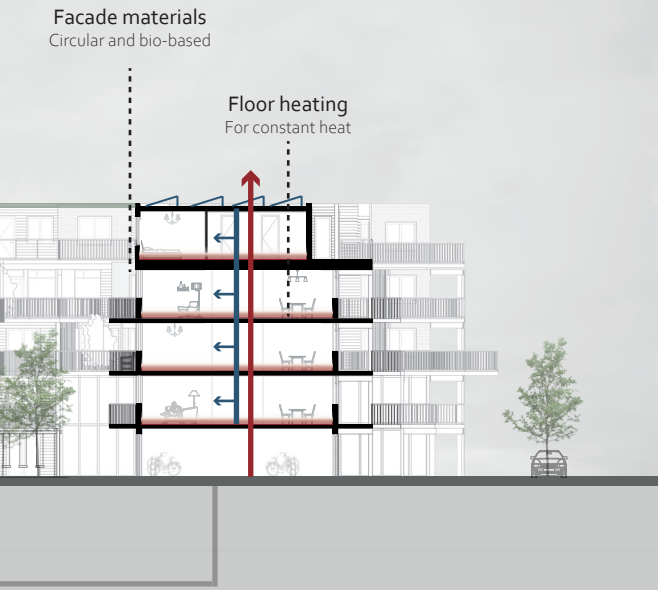


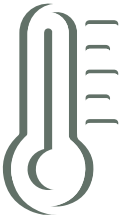
View into street with galleries and bridge connection



# CLIMATE CONCEPT






CONSTANT HEAT



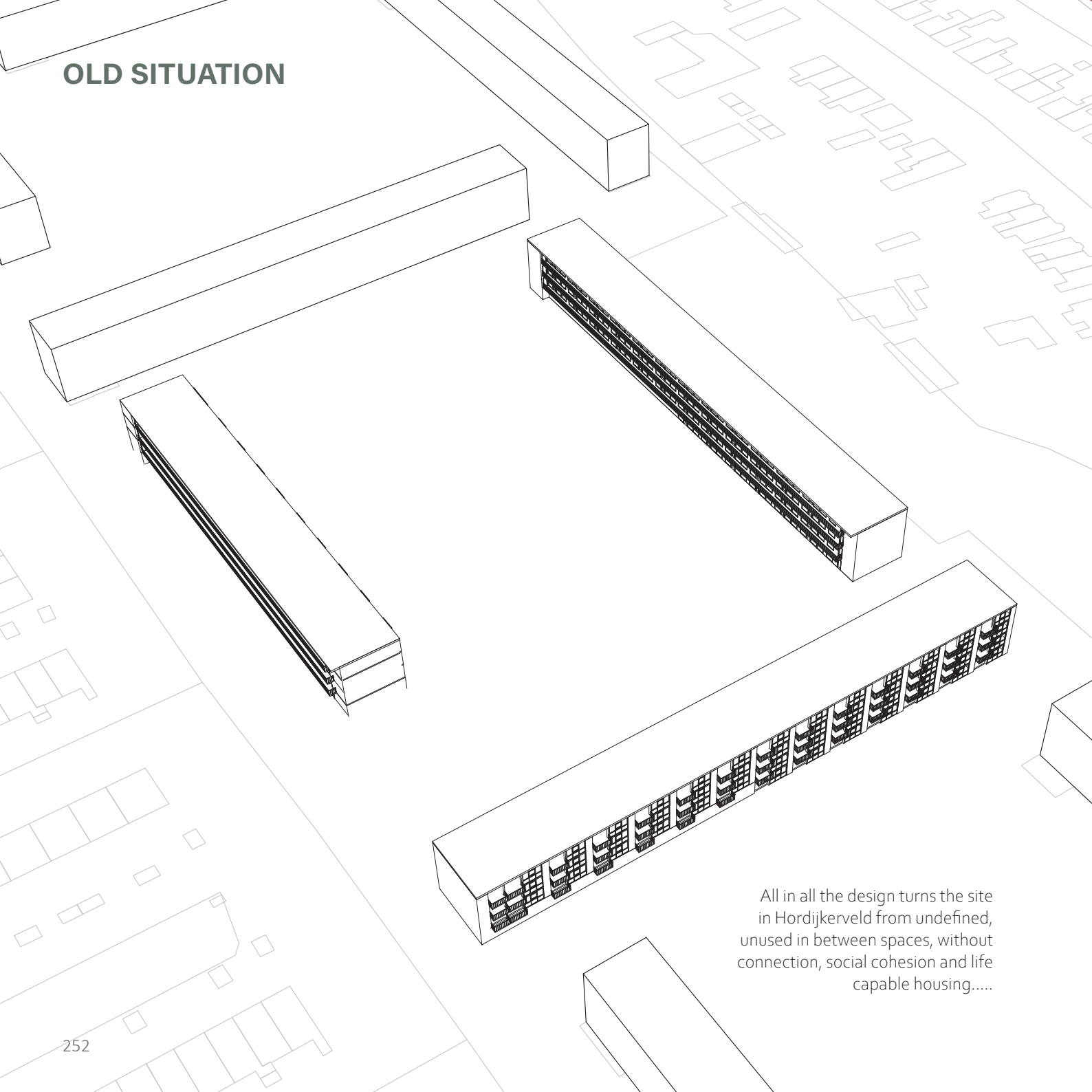

GOOD VENTILATION

The design not only offers a social sustainable solution, but is also sustainable in other ways.

To provide elderly with clean, filtered air, mechanical ventilation type D is applied. Elderly are often cold and therefore hesitant to open windows themselves, so mechanical ventilation is preferred.

For heating floor heating is chosen. Elderly need constant heat. Both for their temperature, but also because this leads to less dust circulation which is beneficial for their health.

# OLD SITUATION



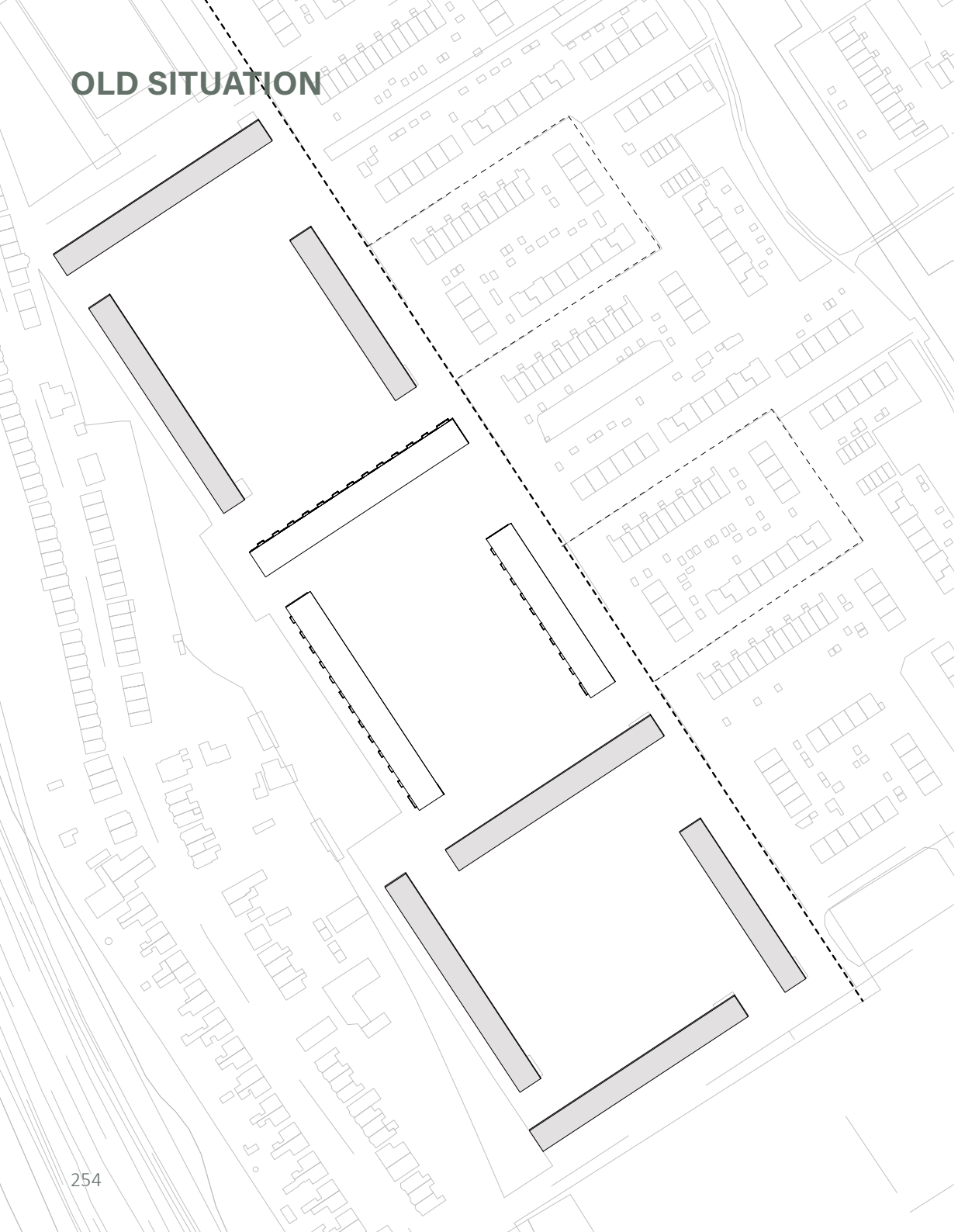
All in all the design turns the site in Hordijkerveld from undefined, unused in between spaces, without connection, social cohesion and life capable housing.....

# NEW SITUATION

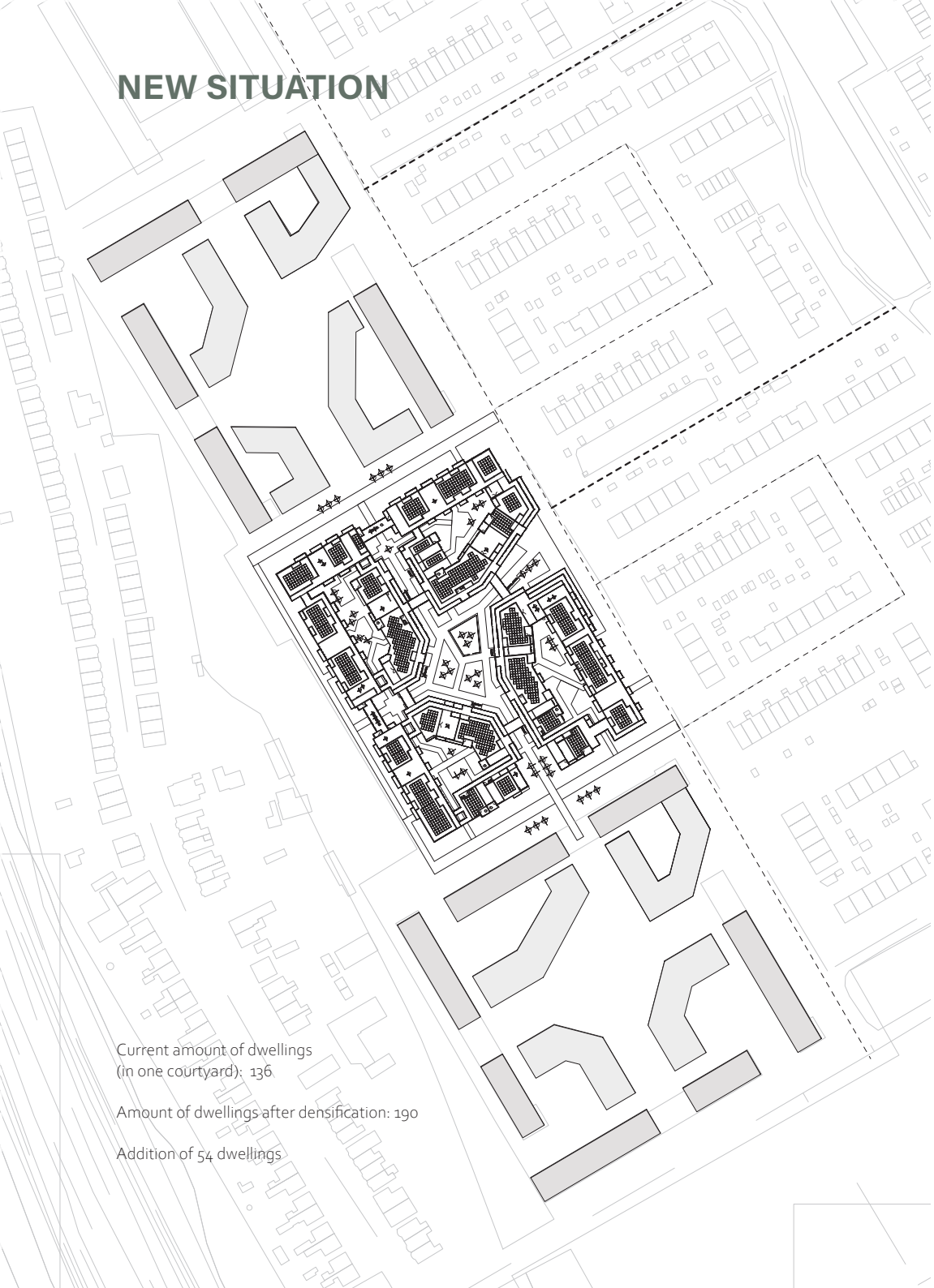


To a (socially) sustainable neighbourhood, focused on social cohesion, encounters, looking out and taking care for each other, with in all design choices taking the independence of elderly into account.

# OLD SITUATION



# NEW SITUATION



Current amount of dwellings
(in one courtyard): 136

Amount of dwellings after densification: 190

Addition of 54 dwellings

With this densification design not only dwellings, but also quality of living is added.



Old situation courtyard



New situation courtyard



Old situation neighbourhood entrance



New situation neighbourhood entrance



Old situation courtyard

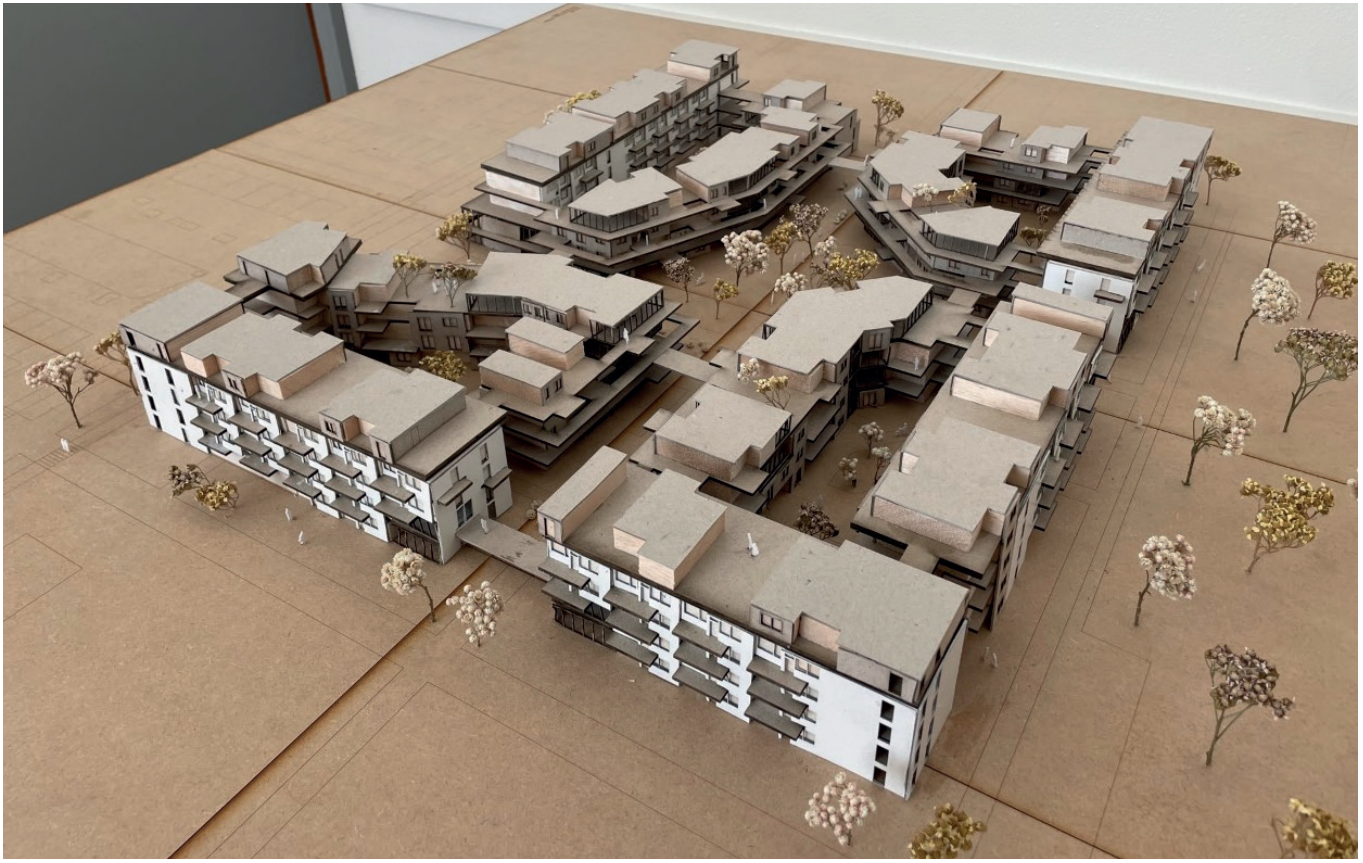


New situation courtyard

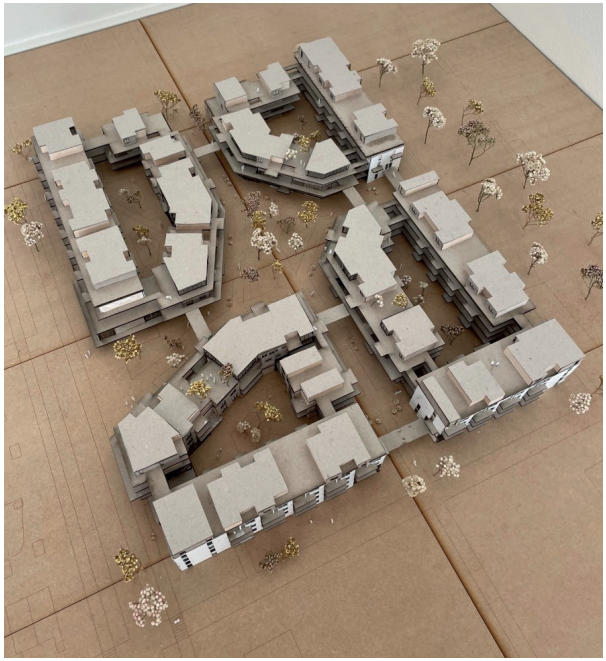
# MODEL











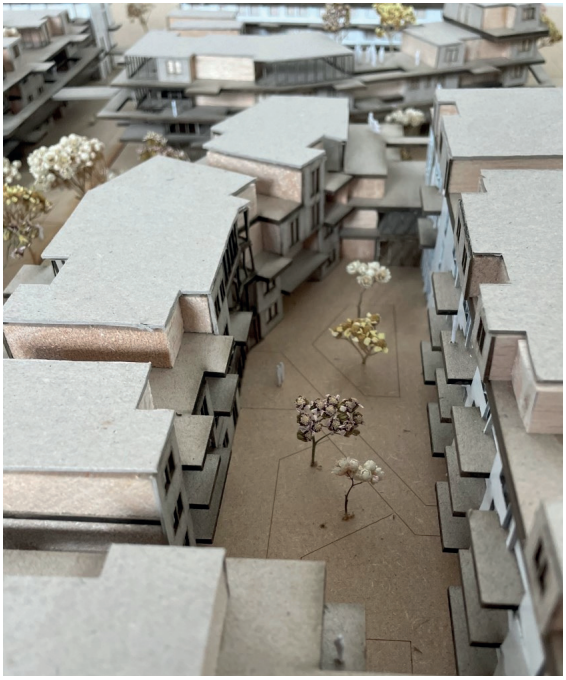












# 12

# REFLECTION

# 12 REFLECTION

In this chapter I will reflect on the work I did during my Advanced Housing Design graduation studio, part of the Architecture track of the Msc Architecture, Urbanism & Building Sciences at the TU Delft. Both the approaches in the research and design process will be reflected on, using the following questions as a base:

- What is the relation between the graduation project topic, the master track (Architecture), and the master programme (MSc Architecture, Urbanism and Building Sciences)?
- How did the research influence the design and how did the design influence the research?
- How do you assess your way of working (your approach, your used methods, used methodology)?
- How do you assess the academic and societal value, scope and implication of your graduation project, including ethical aspects and transferability?

**What is the relation between the graduation project topic, the master track (Architecture), and the master programme (MSc Architecture, Urbanism and Building Sciences)?**

This graduation project is part of the MSc Architecture, Urbanism and Building Sciences at Delft University of Technology. This Msc programme has a focus on the exploration of innovative ways to create sustainable solutions in the built environment. More specifically this graduation project is part of the Architecture Track within this Msc programme. This track has the goal to encourage students to develop creative and innovative building projects that use design as a means to deal with the technical, social and spatial challenges encountered in the built environment. These social and spatial challenges in the built environment were central in the Advanced Housing Design Studio, where this graduation project is part of. This studio namely focussed on finding solutions for the housing shortage the Netherlands is currently dealing with, by using densification strategies. Next to that, densification strategies and housing design might help to (re)invigorate existing neighbourhoods, and create sustainable, social, diverse neighbourhoods. Within this challenge, students were allowed to find their own specific subject for their graduation project, which is also something the Architecture Track aims at. In this track students are given the opportunity to create projects in the specialty of their own choice and interests.

In my case the choice of the Advanced Housing Design studio already was in line with my own interests. The fact that the housing shortage is such a socially relevant problem has made me choose this studio. I want to use the knowledge I gained in recent years during my Architecture studies at Delft University of Technology to help find solutions to these current problems. What is the best way to build additional housing, with the interests of the residents at the core? This interest of the residents is an very important aspect to me. Housing is a fundamental right; everyone has the right to have

a home. The fact that I can influence as an architect how people live and how the built environment can affect people's well-being is something I find incredibly beautiful. Within architecture, this aspect of (social) well-being has always been a fascination of mine. This fascination has also ensured that I was triggered by the specific problem within this housing crisis of a shortage of suitable housing for the elderly, a vulnerable group in society. The combination of a growing aging population in the Netherlands, and transformations in long term care, lead to the fact that elderly people need to live longer independent at home, with less possibilities to receive professional care. However, currently homes elderly live in are often not suitable for living independent at home, so alternatives are needed. Furthermore, due to the transformation in long term care elderly become more reliant on informal care, which could be a task neighbours could provide more. That is why my research was focussing on the question: ""What design strategy can be used to design independent livings for elderly with a light need of care, integrated into an existing neighbourhood, in such a way that it stimulates neighbours to provide informal care?" By answering this question I wanted to find a solution on the societal problem of both the housing shortage, and the 'informal care shortage', hoping to in the end be able to design a sustainable neighbourhood suitable for elderly to live independently, with a focus on social cohesion and caring for each other. I believe that the built environment can play a large role in the solutions for these societal problems.

**How did the research influence the design and how did the design influence the research?**

The first subquestion of my research was: 'How has elderly housing developed through the history and what can we learn from it?' This provided insight into how elderly housing and the position of the elderly in society has developed over the years. From this I was able to learn what has not worked in the past, but also what has been done in the past that we can learn from again today. I was able to use these findings of what does and does not work in my design.

The second sub-question was: 'What do elderly with a light need of care need on the scale of dwelling and the scale of the neighbourhood, to live longer independently at home?' This lead to a whole list of elements that are important to the elderly on the scale of the neighbourhood and the scale of the dwelling, at the physical, functional and social level. All of these elements formed part of the input for my design as 'conditions' that should be present in my design.

The third sub-question was about: What informal care can be provided by neighbours and what could stimulate neighbours to provide informal care? This question provided insight into what would stimulate neighbours to provide informal care. Very important for this turned out to be social cohesion and knowing/seeing your neighbours. This prompted an investigation of how design can contribute to strengthening social cohesion and looking out for one another, with the final sub-question: How can design stimulate social integration and therefore stimulate informal care? By analyzing existing projects designed with social cohesion and looking out for each other in mind, I was able to make a link between theory and practice. From this, design elements emerged that I in turn was able to translate into my design in my own way.

All in all, answering all the sub-questions, and thus the main question, contributed to a list of elements, both 'dry ingredients' and design elements that formed a design strategy that I in turn was able to use as a basis for my design. I was able to apply the knowledge gained

during my research into my design, but to translate it in my own way.

While designing, I sometimes found that in some areas my research did not yet answer specifically enough the question of what, for example, older people need in the home. As a result, designing helped to make my research more complete and specific. For example, in my research things like 'a passage should be wide enough for a wheelchair' would come up, and while designing I would think: how wide is that? I could then incorporate the answers to those kinds of more specific questions into my research. Thus the research laid the foundation for my design choices, but the designing helped make my research more complete, illustrated in figure 1 on the next page.

**How do you assess your way of working (your approach, your used methods, used methodology)?**

I tried to make use of different methods in order to be able to give the most versatile answer to the main question and also link the research directly to my design location. I found it interesting to delve into the history of senior housing, and I think the method of making it a timeline helped to get a good idea of developments in history. By further analyzing certain projects from history that we might learn from today through case studies, I was able to spatialize certain aspects, which made it easier to use them as input for my design.

For the question of needs and wishes of the elderly, I mainly did literature research because this is a topic that has been researched quite a bit in recent years. This literature review helped to divide needs and wishes into certain scales and categories, namely: the scale of the neighbourhood and of the dwelling, containing a breakdown into physical, functional and social aspects. By sticking to these scales and categories, I was able to create a comprehensive and, in my opinion, complete overview of the needs and wishes of the elderly with a light need of care at different scales. By visualizing the wishes that came from literature research, they formed an even better basis for my design, because that made them more design elements instead of 'dry ingredients'. To supplement the literature research, I wanted to do interviews in Groot-IJsselmonde, the design location, to see if the needs and wishes that came from the literature research corresponded to the needs and wishes of older people in Groot-IJsselmonde, and if there would be any additions. As an interview method I used semi-structured interviews, by going out into the streets of Groot-IJsselmonde and talking to people and asking them about their experiences. With hindsight, I might have approached doing these interviews differently. When you talk to people on the street it is difficult to ask extensive questions and really go into the subject in depth. Some aspects did emerge that were useful for my research, and mainly confirmed the findings from the literature, but I might have gotten more out of the interviews if I had spent more time with the interviewees by actually visiting them, for example.

To answer the question of what might encourage neighbours to provide informal care, I first did a literature review which gave me insights I could build on. The literature review revealed that knowing/seeing/feeling connected to your neighbours, and thus social cohesion, is a very important aspect when it comes to helping neighbours. From the literature review emerged as a form of social cohesion 'everyday attentiveness', in which "people signal whether another person needs a helping hand, then offer it or at least make sure that someone else offers it.", and this included aspects that could enhance this 'everyday attentiveness'. This already gave useful insights for my design. To get a better understanding of what motivates people to offer

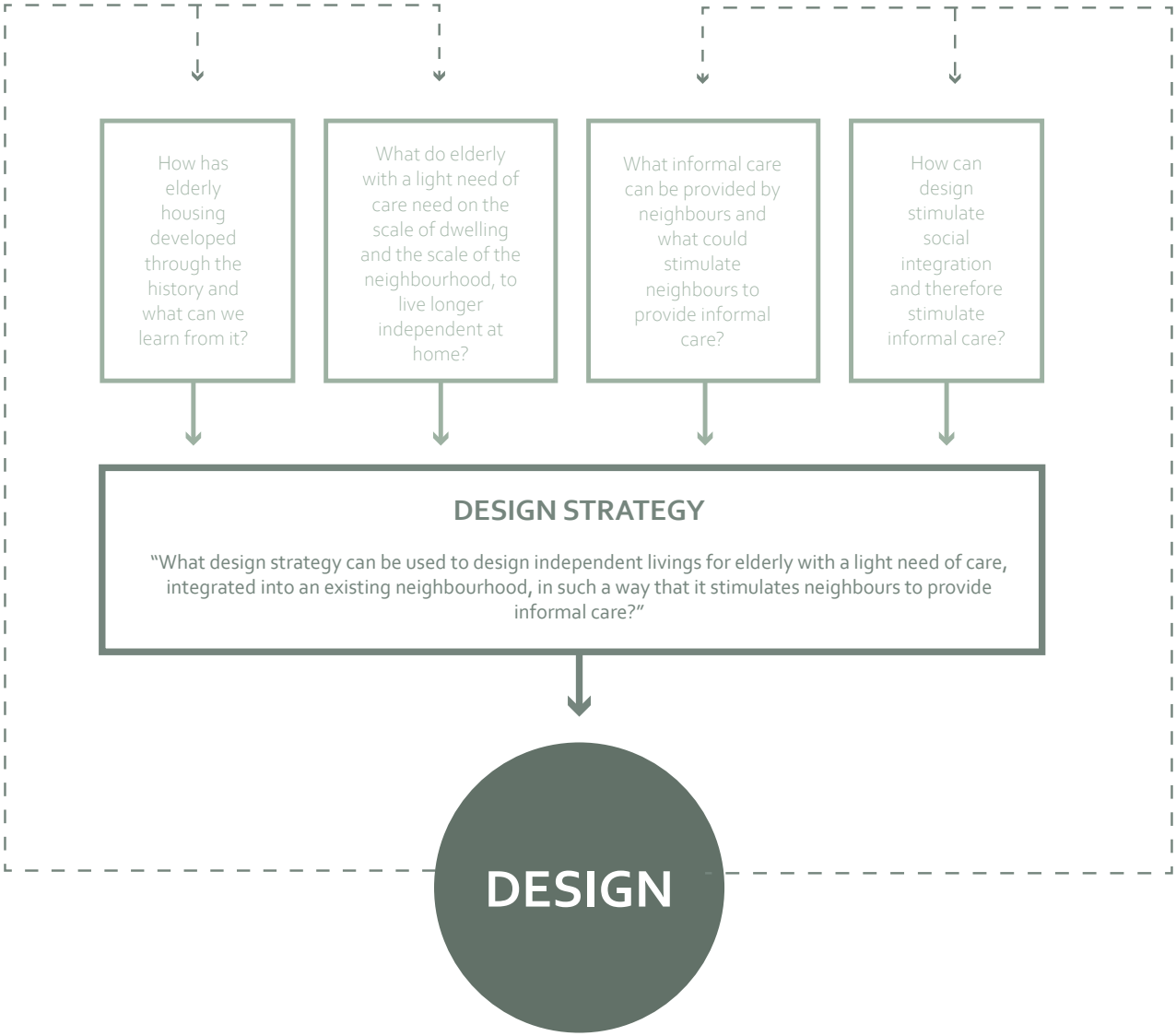



**Figure 1**: Relation research and design (made by author)

help to their neighbours I wanted to do semi-structured interviews again to see if this was in line with the findings from literature and if there would be additions. For this too, I went to Groot-IJsselmonde, but soon encountered the problem that the target group I wanted to interview was very reluctant to talk to me. For too long I held on to the idea that the interviews had to be conducted in Groot-IJsselmonde, because that is my design location. But in retrospect, I should have let go of that earlier and interviewed people more generally about what might stimulate them to help. In the end, I did do this, and it did confirm the findings from literature review, but if I had done this earlier I might have gained more new insights. As a final method, I used doing case studies. By analyzing projects designed with the idea of social cohesion and looking out for fellow residents, I was able to translate the aspect of social cohesion into spatial design elements. These design elements ended up being very important in developing a design strategy that I was able to apply back into my design. Although the case studies have been very useful to me, perhaps I should have also done a case study closer to home. Both of the case studies I did were located abroad, which prevented me from visiting them and really seeing how these buildings were used. If I had also done a case study of a project in the Netherlands, I could have done more field research and seen how residents used the building. Then I could have discovered even better whether applied design elements with the idea of enhancing social cohesion actually increase social cohesion and residents actually look out for each other and lend a helping hand.

All in all, despite the fact that I might have done some things differently in hindsight, I think the different methods did lead to a complete research which formed a good basis for my design.

When it comes to my design process, I had quite a few different moments where I felt like I was stuck. I think that initially it was because I focused on the research for quite a long time, thinking that I necessarily needed this input to start working on the design. In retrospect, I found out that during designing I came back to parts that I could add to my research, so I should not have seen it as two separate parts that followed each other, but two parts that could reinforce each other simultaneously. The same principle actually applied to the different scales and aspects of my design. I wanted to try too much to first complete one element, for example the configuration of the residential buildings on a more urban scale, and then move on to the next element, for example the housing itself. This sometimes made me feel that I finally had a solution for one scale, which then turned out not to work in combination with the other scale. This then felt like a setback that made me feel stuck. If I had focused more on developing my design simultaneously at all the different scales from the beginning, perhaps an interaction and cohesion between the different design scales would have occurred sooner, making it feel more like a gradual process. Despite these moments when I thought I was getting stuck, thankfully I always managed to pick up the thread which ultimately allowed me to create what I feel is a cohesive design.

**How do you assess the academic and societal value, scope and implication of your graduation project, including ethical aspects and transferability?**

I think my graduation project answers a relevant issue that is going on within the design world today. The transformations in long term care require a different solution in housing the elderly. The findings from my research form a design strategy that can be used as a basis in designing suitable housing for the elderly integrated into an existing neighbourhood. In doing so, my project hopes to contribute to the change from an

individualistic society to a 'participation society' and looking out for each other. This has been an important item on the government agenda in recent years. Insights into how the built environment can contribute to this, which my project offers, can serve as inspiration for other projects.

However, I am aware that it is difficult to find "the" solution to housing the elderly. Whereas in my research I have tried to keep the necessities for the elderly to live independently at home for longer as general as possible, and I myself do believe that these necessities apply to a large part of the target group of elderly people with a light form of care, the target group of elderly people obviously remains very diverse. I therefore think it is always important to engage in dialogue with residents at the project location itself, to see if the results of this research also apply to that specific location and neighbourhood.

Besides, this research focuses on the engagement of neighbours in providing informal care. While I believe that the built environment can really play a role in stimulating social cohesion and looking out for each other, which is also evident from my project, in practice you remain, of course, dependent on the will of people. It is not a given that when applying the elements that came out of this research people will actually help each other. This will also vary by location and neighbourhood. Also when it comes to the target group of "neighbours as caregivers," I think it is important to engage in conversation at the specific location. Firstly to make people aware that their help is needed, secondly to ask what specifically would help those residents to 'provide care'.

Lastly, this graduation project focused on densification within an existing residential neighbourhood. First, to create additional housing to combat the housing shortage, second, in this particular case, to revitalize Groot-IJsselmonde and strengthen social cohesion. With this type of project, it is very important to keep the interests of the people already living there in mind. It is important that the current residents also see how the existing situation is improved by densification and the introduction of new residents. A densification project can be so well designed and fantastic for new residents, if the old residents do not agree with it, it probably will not have the desired effect.

All in all, I think my project contains many aspects that can be applied in other similar projects, or at least translated in a different way, and in this way my project can provide a basis and inspiration for other projects. However, some design choices are specific to my design location: Groot-IJsselmonde, and they are not directly applicable to other locations. So it is important to make a distinction between location-specific elements, and more general elements, and always talk to residents to verify whether aspects from my graduation project are also applicable to that specific design location.

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