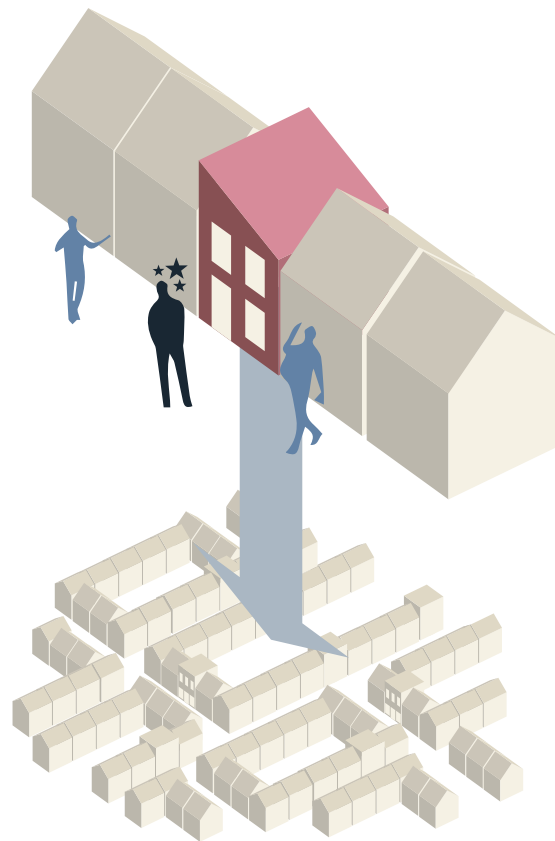


Research

Preparing for home in the neighbourhood

About the gap between mental health care & society and how the built environment can promote reintegration into society for ex-mental health patients in supportive housing.



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Key words

Supportive living, mental illness, architecture, reintegration, neighbourhood

Abstract

Mental health patients often get taken out of their social network when going into intensive care or temporary Supportive Housing (SH). However, social network has a positive effect on the recovery and quality of life of patients with mental health illness (Rössler, 2006). Although mental health care policies are changing in the Netherlands, supportive housing remains needed - albeit in smaller amounts - for a specific group. This group often is not integrated into society. Using the neighbourhood as the community inhabitants integrate into (Perry, 1929) and a systemic review by Jovanović et al. (2019) on how architecture can positively influence social interaction in psychiatric hospitals, this research tries to find design guidelines for SH which increases social integration into neighbourhoods.

Through a literature study and case studies, several themes are established. These are tested with field research at a Dutch SH facility, where six staff members are formally interviewed and around eight inhabitants were informally interviewed. Additionally, observations were done on social interactions. Finally, experts are interviewed on the topic.

The results show that the inhabitants of SH are diverse, but can be classified in two groups: 1. Heavy cases who need intensive, long-term care and 2. Short-term cases who do not have housing (Planije et al., 2017). Through the different scales, four main themes which can enhance social interaction could be established: Interaction with the neighbourhood, activating inhabitants, fitting different needs of inhabitants and finally, contact with nature.

In conclusion, architecture & the built environment and location conditions can have influence the social network of inhabitants of SH by providing opportunities for social interaction, while also enabling inhabitants to retreat.




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Chapter 1
Introduction



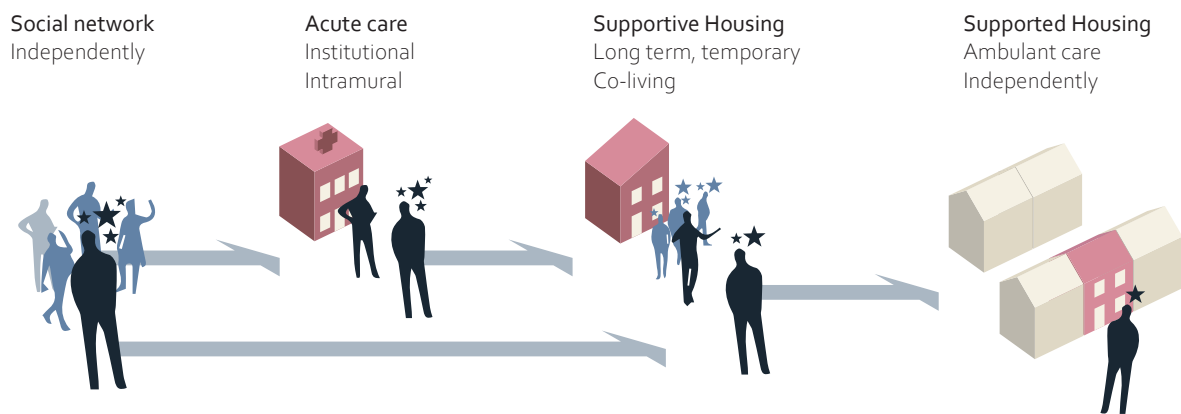


Figure 1.1. The process in mental health care, related to Supportive Housing. Patients get taken out of their social network with acute/intensive care. When they get back to ambulant care and living independently, they are often lonely, because of different daily activities at ambulant care locations compared to neighbours. Author, 2023.

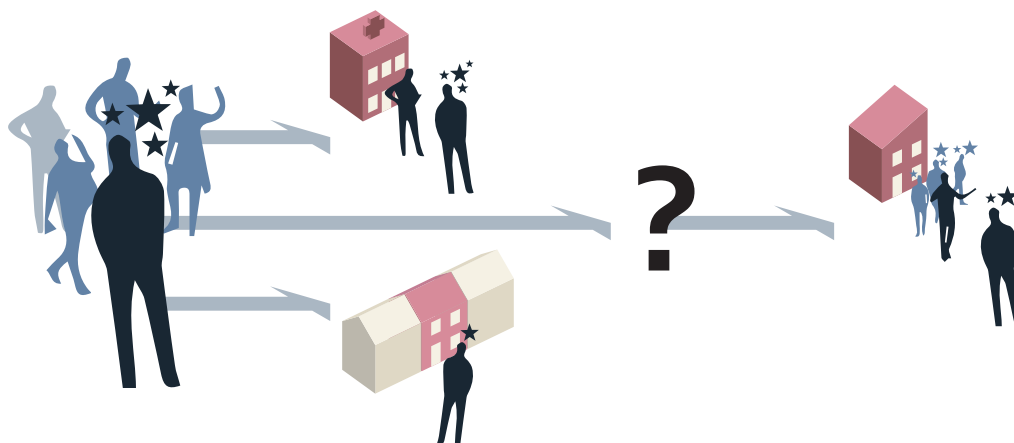


Figure 1.2. New mental health care policy focuses on intensive mental health care and ambulant care. However, if patients cannot take care of themselves, they still have to go to supportive housing, getting taken out of their social network. Author, 2023.

1.1 The Unavailability of after-care and the importance of the social network

In a recent personal situation, someone could not be taken into after care mental healthcare because there were no facilities available. Therefore, she was sent home. When looking into this, it became apparent that there are long waiting lists for mental health care in the Netherlands. Around 84.000 people are awaiting treatment at GGZ institutions and around half of them is waiting longer than 14 weeks (IGJ, 2023). For after-care in supportive and supported living waiting times were estimated to be around 35 weeks in 2019 (KPMG, 2020). This can have negative effects on patients because problems can multiply and worsen according to a GGZ spokesperson (Houwelingen & Wildenborg, 2016).

After-care facilities that focus on rehabilitation and living skills and self-sustainability of patients are often unavailable (KPMG, 2018). This kind of after-care can be divided in supportive housing and ambulant care or supported housing. For supported housing, social housing is used, but this is often not available because of the current shortage of 250.000 social housing units (Ministry BZK, 2022). However, for supportive housing, patients are moved to specific facilities, often taken out

of their social network (figure 1.1). It is known that social networks have positive relationships with the recovery and rehabilitation of (ex) mental health patients and increase their quality of life (Rössler, 2006). Most ex-patients do not integrate well when living independently again and feel lonely, because of their different daily activities compared to their neighbours (Verplanke & Duyvendak, 2010). To counter the loss of social network, new mental health care policies focus on smaller, local care, mostly ambulant care. Intensive, institutional care is only used when problems are severe as seen in figure 1.2. The balancing between these two types of care is quite difficult (McDaid & Thorncraft, 2005). If patients cannot take care of themselves, they will have to go to supportive housing. In the Netherlands, since 2015, according to the Wmo social act the provision of such mental health care is the responsibility of the municipalities, aiming at local mental health care (Rijksoverheid, n.d.).

However, some patients cannot properly take care of themselves and need temporary housing, which is lighter and for longer times of stay compared to intensive care. Moving into a different setting with less available care might be a big step and cause relapse (Pratt, 2014). Some patients do not feel like they can live

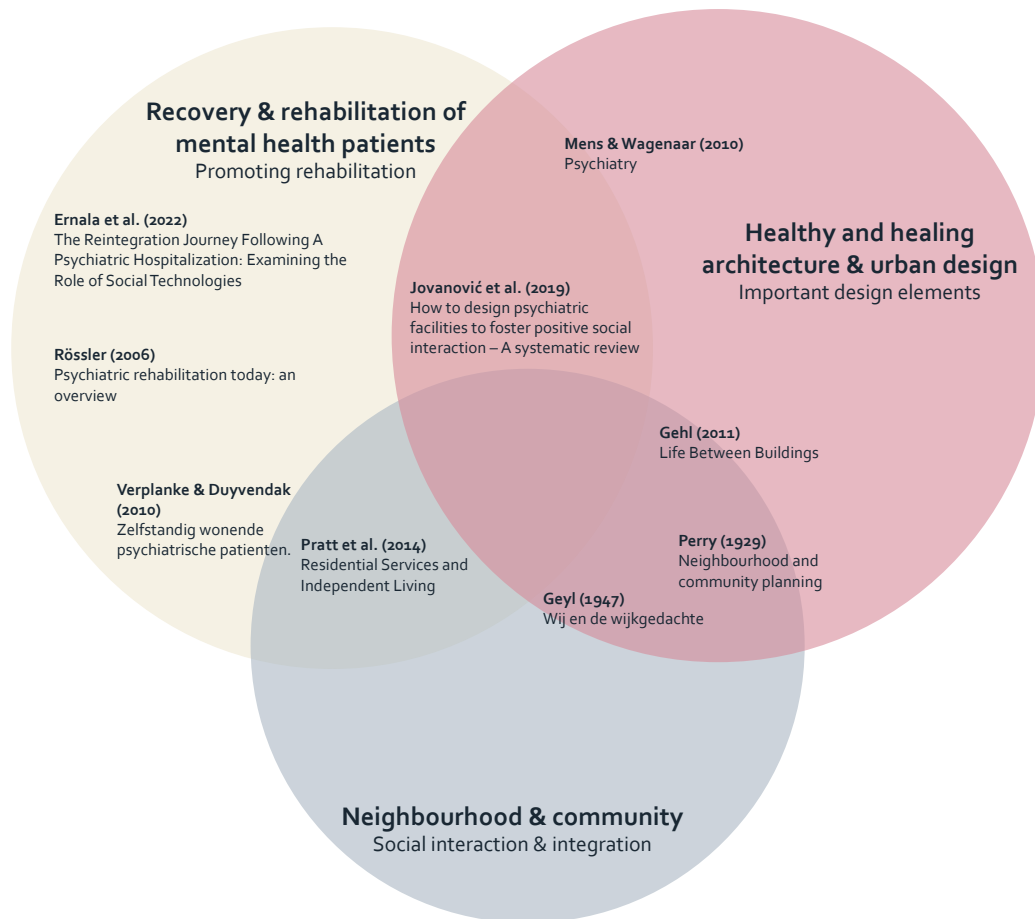


Figure 1.3. New mental health care policy focuses on intensive mental health care and ambulant care. However, if patients cannot take care of themselves, they still have to go to supportive housing, getting taken out of their social network. Author, 2023.

independently (again), being afraid of not being able to reach extra care when needed (Ernala et al., 2022). In conclusion, how can supportive housing be designed to still be the bridge between intensive, institutional care and ambulant care and yet promote the establishment of social networks for its inhabitants.

1.2 Theoretical framework: combining three important themes

Although many problems mentioned in paragraph 1.1 are related to social and political problems, the architecture of supportive housing can be designed to positively influence the social network of its inhabitants by promoting social interaction. To tackle this topic, three main themes can be established: the social network, the architecture and the rehabilitation of the user.

The latter one can be explained by the neighbourhood unit, established by Clarence Perry in 1929. He explained the neighbourhood as the community. Schools, community, and religious facilities are in walking range of residents, in the centre of neighbourhoods so no bigger roads must be crossed. Noticeably, Perry mostly bases his neighbourhood unit on the reach of

elementary schools and community functions and saw the residents as a homogeneous group. However, society also includes vulnerable individuals. Geyl (1947) added to the neighbourhood unit in the Netherlands: it should enhance the development of every human being. To establish a social network, the supportive housing should be integrated to the community or the neighbourhood. According to the OSCE (n.d.) "Integration facilitates effective participation by all members of a diverse society in economic, political, social and cultural life, and fosters a shared sense of belonging at national and local levels." Jan Gehl (2011) wrote in *Life Between Buildings* about several strategies to design the city through different scales to promote stimulation between different people and events.

In terms of architecture, a shift occurred in the 20th century. The architecture of madness is replaced by healing architecture. De-institutionalization of mental health patients into small-scale, multi-functional units was completed in the 1990s (Mens & Wagenaar, 2010, pp.286). In line with this trend, the Wmo Social Act was launched in 2015, which now makes municipalities responsible, decentralizes mental health care and increases the importance of local care. Therefore, cooperation between the municipalities and its citizens

is key in the success of this local care, increasing the importance of the neighbourhood in the rehabilitation of (ex) mental health patients (Raap et al., 2022). Jovanović et al. (2019) did a systemic review on how the design of psychiatric hospitals influences social interaction of patients. They reviewed six main topics:

1. Location of psychiatric facilities
2. Architectural typology and external image
3. Interior design interventions
4. Specific spaces within psychiatric facilities
5. Ambient features
6. The relationship between physical environment, positive and negative social interactions

Five topics are divided over three scales, which form the chapters of the research. 5. Ambient features is left out, since research on this was inconclusive on the influence on social interaction. It does however is an important topic for mental health patients, so it will be taken into account in the goal of the research.

1. **Location** | 1. Location of psychiatric facilities
2. **Building & program** | 2. Architectural typology and external image; 4. Specific spaces within psychiatric facilities; 6. The relationship between physical environment, positive and negative social interactions.
3. **Interior & dwelling** | 3. Interior design interventions

Finally, the rehabilitation process must be understood, although this is not architecture - it is as seen in the design of mental health facilities - incorporated in the design. Pratt et al. (2014) describe in their chapter *Residential Service and independent living* how different living typologies influence the rehabilitation of mental health patients.

In conclusion, the research tries to combine these three themes: Neighbourhood & community, healing architecture and recovery and rehabilitation of mental health patients and fills the gap between these three themes, as shown in figure 1.3.

1.3 Objective and research question

The aim of this research is to develop architectural guidelines that can increase the integration of inhabitants of protected living. The focus is on facilities that aim to make inhabitants self-sustainable again. This includes designing a safe living space and finding the right building typologies, with the aim on self-dependence and integration into neighbourhoods. This could increase the effectiveness of said facilities, decreasing workload on caregivers and chances on relapse of ex-patients and therefore, decrease unavailability of after-care and cross the gap between psychiatric hospitals and ambulant care. The main research question is:

How can architecture & built environment features and location conditions promote the integration into the neighbourhood of inhabitants in Supportive Housing?

And the following sub questions:


1. *What is the background of inhabitants in SH with the aim at reintegrating into society?*
2. *How are current SH/rehabilitation facilities integrated in their environment and neighbourhoods?*
3. *What are important features of neighbourhoods for inhabitants of SH?*
4. *Where do inhabitants of SH have social interaction?*
5. *How does the design of the interior and dwelling influence social interaction?*

The following definitions are used:


Architecture and built environment and location conditions | The placement of such a building/complex or space and what does it look, feel, smell, and sound like. The location conditions are relevant since the role of the neighbourhood in mental health care is one of the main themes of the research.

Promoting integration into the neighbourhood | Promoting self-sustainability of inhabitants and independence coming from mental health care. Additionally, integrating them into the neighbourhood and therefore enhance their participation back into society and feeling at home in the neighbourhood. As stated in the theoretical framework, the neighbourhood is the community and social network inhabitants will integrate into.

Supportive housing (SH) | Not to be confused with supported housing. Supportive housing (SH) is *Beschermd Wonen* in the Netherlands. This is a type of mental healthcare facility, where people stay temporarily. It focusses on relearning of social & living skills of (ex)mental health patients with a focus on self-sustainability of the clients. It is not a treating facility but focusses on the primary needs of living such as shelter, finance, mental and physical health and care,



How can architecture & built environment features and location conditions promote the integration into the neighbourhood of inhabitants in Supportive Housing?



daily activities, socializing and participation in society (Beschermd Wonen Nederland, n.d.). In 'Beschermd Thuis plus' inhabitants temporarily live in groups where support is close and can be acquired 24/7, but care is separated from living, distinguishing it from intramural care facilities (DWO, 2021).

Inhabitants of supportive housing | (Former) mental health patients that are in the process of becoming self-sustainable again, meaning they temporarily live in SH. This is a diverse group with different mental problems and can also differ per neighbourhood and changes over time. Therefore, the categorization 'zorgprofielen' of the GGZ will be used. The focus will be ZZP GGZ 1-C. These inhabitants need (limited) help with social sustainability and have the capability to (albeit with help) sustain a (collective) household (GGZ, 2019). To further restrict the research, only inhabitants with Wmo (temporary stay) and a GGZ-indication are included. It should be noted that supportive housing is designed for individuals that are already (partly) recovered. Therefore, excluding individuals with a mental illness that becomes a mental disability, they are cared for in other facilities. This is also the case for addictions and other mental health issues that require more care.

1.4 Inclusions and exclusions

To limit the research, several exclusions and inclusions are set. First of all, the research focusses on temporary supportive housing, this means that supportive housing is not the final goal for this target group. How long people stay, is explained in chapter two.

Secondly, the focus is on ex mental health patients, who's primary goal is to relearn social and living skills. Mental health care is not the primary need of these inhabitants and is separated from supportive housing. When mental health care is needed, patients go to special mental health care facilities, for example more intensive types of supportive living. When patients are self-sustainable, the goal is often supported housing, in which patients live independently and individually in regular housing but receive care at home. Supported housing is excluded from the research.

Finally, the facilities within neighbourhoods can play an important role in the connection of inhabitants of SH and the neighbourhood. However, to limit and because of the nature of the research the provision of facilities by the neighbourhoods is excluded, rather, it is looked at from the perspective of the inhabitants of SH and what facilities they need.

1.5 Methods

The methods used in this research are consisting of three types. Firstly, a literature study is used to set a base for the research, providing knowledge on the different sub questions and specific subjects. The literature mentioned in the theoretical framework forms the core of the study. This knowledge provides input for the two second methodologies: the case studies and field research.

The case studies will be used to find current strategies applied to tackle certain design questions. The case studies are chosen based on their properties within a specific topic. The case studies are not all used for every topic. This information will be set of against the result s of the field research.

During the field research, the goal is to find what the users think of certain design decisions by the architect and how they use the design currently. This will be done through observations and interviews. One of the key topics is their social interaction and their daily activities. This will mainly be qualitative research, since the goal is to interview around 10 inhabitants. Additionally, staff will be interviewed and asked what they observe on inhabitants. Finally, experts will be asked how they address certain design questions, what choices they make and how they approach such an assignment. These experts include architects, designers, and care (property) managers.

From these three methods combined, the design guidelines can be abstracted. The process is shown in figure 1.4

Problem statement

Waiting times at mental health facilities are long and create extra problems for mental health patients. A cause of this is a lack of availability in places for after-care: living in clusters or ambulant care is not available. Social networks have shown to have positive effects on mental health patients. Although policies have changed and a shift to ambulant and intensive care is occurring, to try to prevent taking people out of their existing network, there is still a patient group that is stuck in between ambulant and intensive care and cannot take care of themselves. Current mental health facilities do not support setting up a social network outside of the facility, creating a gap between those facilities and living independently. Increasing loneliness and chances for relapse.

Theoretical framework



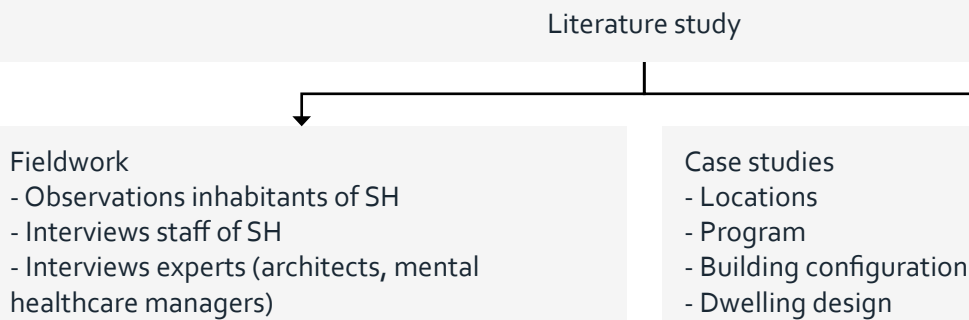
Research question

How can architecture & built environment features and location conditions promote the integration into the neighbourhood and social interaction of inhabitants in Supportive Housing?

Sub questions

1. What is the background of inhabitants in SH with the aim at reintegrating into society?
2. How are current SH/ rehabilitation facilities integrated in their environment and neighbourhoods?
3. What are important features of neighbourhoods for inhabitants of SH?
4. How can architecture promote social interaction of inhabitants of SH?
5. What are the neighbourhoods providing in self-sustainability and integration of inhabitants of SH?

Methods

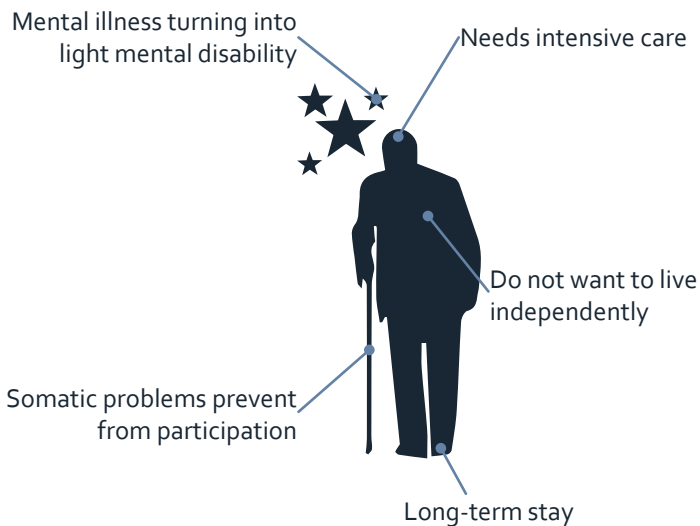


Design guidelines

- Design strategies
- Location conditions
- Architectural guidelines

Chapter 2
Who lives in supportive housing?

Inhabitants who need care



Inhabitants focussing on growth

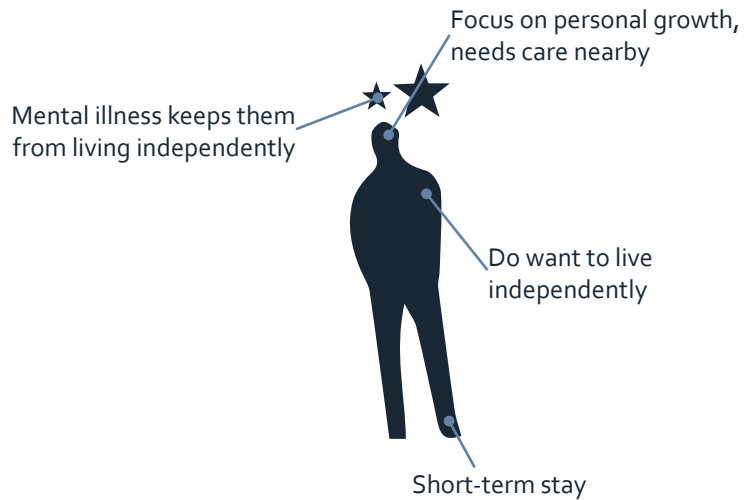


Figure 2.1. The two groups in SH and their characteristics. Author, 2024.

The demand for supportive housing or protected living is still increasing, despite efforts of policies to reduce this. However, supportive housing can take a wide range of different forms. As discussed in the definitions in paragraph x, this research focusses on short to medium-term stay of up to two years, with a focus on rehabilitation and preparing for going back into society. Despite this focus, two important issues must be admitted: (1) policy changes both recent and from the past 10 years vastly changed the target group of the buildings and (2) the target group is still very diverse and changing. It should be understood what the group consists of through literature, policies, and practice. Secondly, through the fieldwork, daily activities and patterns will be analyzed, to find common agendas.

2.1 Who lives in supportive housing?

In the Netherlands, it was estimated that 27,660 people were in supportive housing in 2021 (CBS, 2021). It is estimated to be twice as high, because the Wlz was introduced in 2021, moving individuals with mental health disabilities into different facilities, showing a decrease in the number of people in SH. SH is separated from mental healthcare, differentiating it from institutional or inpatient mental healthcare. The focus in SH is addressing functional impairment and relearning social and living skills and for people who, because of psychiatric issues, cannot temporarily take care of themselves or live independently. However, if other issues are the main issue, inhabitants are sent to specific facilities. This already excludes some target groups within patients with mental health illnesses: people with addictions, life-long mental disabilities and heavy cases are ruled out. This does, however, not exclude the fact that some care is given to inhabitants of SH in other locations. There is a grey area if patients need to be in special facilities or SH.

This is also because nursing houses and special care facilities require a Wlz indication. However, since the introduction of the Wmo in 2015, inhabitants got a Wmo indication. According to staff, applying for the proper care for this target group and moving them to the proper facilities is a long and harsh process. This causes the problem of people living in undesirable facilities, holding spots occupied from others and a misalignment between the needs of inhabitants and the purpose of the building. In the field research location, it was clarified that this is also the consequence of changes in policy and introduction of the Wmo 2015. When other institutions were closed, this group had to move somewhere which this building was chosen for. On the other hand, there are people who could profit from ambulant care, but are stuck in SH because of the unavailability of housing. In conclusion, there are two main groups in SH: 1. Heavy cases: inhabitants who need long-term intensive care and 2. People who need short-term stay who do (not yet) have housing (Planeije et al., 2017). The first group is often also older, making the case more complex and often requiring additional care. The latter group being taken out of society through inpatient or institutional care or cannot take care of themselves (ministry of Health, Welfare and Sport, n.d.). Shown in figure 2. are the characteristics.

What the ratio is between these two groups is vague, since the difference between the two is a grey area. Staff explained most inhabitants in the SH have Severe Mental Illness (SMI) with around 80 to 85% suffering from psychotic disorder. This includes but is not limited to bipolar and/or personality disorder, anxiety, and depression. Some people were previously addicted. When addiction arises again, they are sent into a rehabilitation clinic. Interestingly, when restraint is needed, inhabitants get sent to nearby institutional care. When they are "calmed down", often after around

Time	Activity	Space	Explanation
7:45	Breakfast	The creative room or apartment	This is not mandatory for all inhabitants, but some have breakfast together. The creative room also has cooking facilities, for weekly shared dining and cooking classes.
8.45	Medicine	Medicine room	Medicine is distributed from the medicine room, a re-purposed smoking space within the building
9:30-10:30	Coffee	Coffee room	An important and busy moment of the day, people come and visit to get coffee, meet up and talk.
12:00	Lunch	The restaurant or apartment	Inhabitants can choose to have lunch in the restaurant or eat lunch at home.
14:15	Medicine	Medicine room	
14:30	Coffee	Coffee room	
18:00	Dinner	Restaurant or apartment	Inhabitants have options: <ul style="list-style-type: none"> - Eat at the restaurant - Take food from the restaurant - Cook and eat at home
20:45	Medicine	Medicine room	This is the final activity of the day. From observations, the building becomes quiet after this.

Table 2.1 The (scheduled) daily activities of inhabitants of the SH during the fieldwork. It must be said that some inhabitants spend their day somewhere else, at a job, with family or other daytime activities. Author, 2023.

two weeks, they go back to their apartment in the SH (interview staff member 2, appendix A). This is what also would happen to patients if they are in ambulant care. However, it should be noted that their room should be a place where they can always fall back. It should provide enough calmness and rest to be able to provide stability to inhabitants, if

Finally, it should be considered what their recovery and rehabilitation process is. This should be taken into account when designing a SH facility. If patients receive care, where do they get it. In an interview with Marko Matic, architect of the Heavy Intensive Care Building of GG-net Warnsveld, he told us he approached the facility as representing and preparing the patient for daily life. Patients would have to go outside to go to therapy, imitating going to work.

2.2 How long do inhabitants stay in SH?

SH is designed for long term stay. However, it is meant to be temporary (ministry of Health, Welfare and Sport, n.d.). This can range from a couple of months to a couple of years. This is very individual. In GG-net location Warnsveld, inhabitants stay for an average of seven years. During the field research, it became clear not everyone's intention was to leave the SH. Most

inhabitants are comfortable and felt safe in SH and when asked, would not want to live independently again. Staff told us that most patients stay until they go into nursing homes. Only one inhabitant said to be frustrated by the time it took to be able to live independently again.

It must be considered this might be caused by availability of facilities and services as will be discussed in paragraph 2.3. For some, no apparent goals were set and focus would be maintaining daily activities. The lack of goals in the process also slows down the process of recovery (Rose & Smith, 2018). Temporality should be apparent in the process of the inhabitants, as well as in the design of the building. One of the main policies in mental health care currently is to get people out of mental health care as soon as possible, so they are no longer patient (interview van Gaalen, appendix D).

2.3 The daily life of inhabitants of SH

Having established the target group, their daily activities must be understood and their independence. Most inhabitants need lots of structure to relearn their living skills according to staff. This is provided by SH and is connected to the different spaces within the building. The daily schedule used in the SH during the fieldwork is shown in table 2.1. It should be clarified that other

activities of inhabitants can vary, during the day, but these activities are set. Some have daily activities at other locations like social work, going to a care farm or spend the day with family. However, for others “the building is their world” (interview staff member, appendix A). It should also be mentioned that during the research of a week, only around 25 of 60 inhabitants were seen. According to staff, most of the others stay in their room during the day.

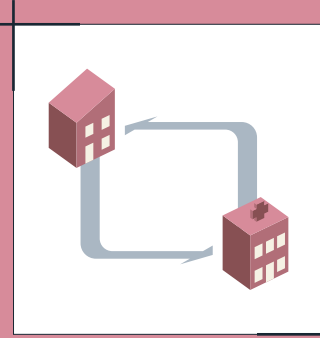
Between these set times of activities, some individuals spend their time hanging around in the central hall, not necessarily interacting, but sitting and listening to the small radio. The inhabitants need to be activated by staff to organize or take part in activities. For example, the creative/cooking room is open all day, but only really used when specific activities are happening. The coffee room is used a bit more, which might be because the function has a free nature. Inhabitants can come whenever they want, and the room is more like a shared living room. The needed activation is experienced as an exhausting, but rewarding task when successful for staff and requires lots of time and effort.

2.4 Conclusion: Designing a flexible building

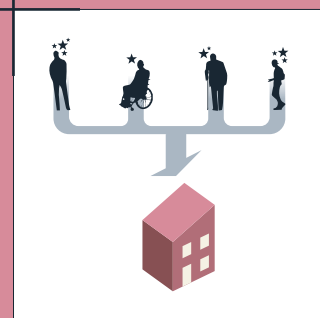
In conclusion, there is a challenge designing for a diverse target group for SH. This group is changing over time, with changing policies and mental health care strategies. Therefore, the first design guideline might be an obvious one: designing a flexible building. This is applicable on multiple scales. The building should be adjustable to changing policies. It should be able to provide more care for users, for example with somatic issues or more heavy mental illness, but the building might also be able to be converted into regular dwelling for elderly for example.

Secondly, the building should be able to handle the big variety of users of SH. The requirements for this will be further explored in chapter 4 & 5. Additionally, the dwellings themselves should also provide in this, having enough space to move around, go through doors and yet, activate the inhabitants. These issues will be discussed in more detail in chapter 5. This should also fit their care process, as this is integrated into the building.

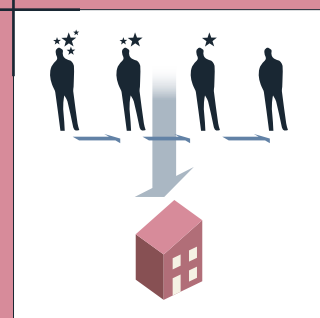
Finally, the building should (indirectly) help activating the users, although this must be carefully considered to not force users and part of this is fixed in the care process.



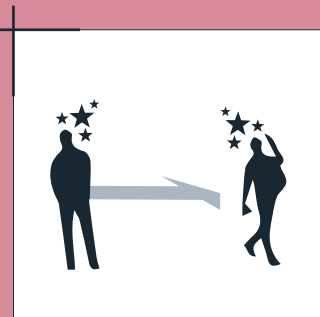
Flexible to changing policies



Fit the variety of users



Fit the recovery process



Activate users

Chapter 3

Location conditions of SH



In this chapter, the location of psychiatric SH will be discussed through the different methods: literature, case studies and fieldwork analysis. First, from the literature, requirements for a desirable location for the SH will be acquired. These will be tested with case studies and fieldwork. With the goal in mind to integrate people in SH into society and create social interaction between patients and residents, we must consider several aspects:

1. The neighbourhood or area the SH is located in.
2. Accessibility
3. The positive and negative effect of physical spaces in and around the SH.

3.1 Literature: Located within the community

In the past decades, the ideas for psychiatric architecture rapidly changed with the de-institutionalization from the architecture of madness, where psychiatric patients were placed into secluded mental health hospitals, to a small-scale healing architecture in rural areas (Mens & Wagenaar, 2010). While some psychiatric patients do benefit from or require calm environments, some benefit from a rural to urban setting (Mens & Wagenaar, 2010, pp 286). Already in the '90s, this was a controversial topic. However, findings would indicate that (chronic) mental health patients find "better support, more opportunities and new roles" in community settings (Cutler, 1985 pp 3). Cutler (1985) argues for the setting up of a social network for mental health patients in a process. The final steps are socializing the patients and establishing long-term relationships within the social networks of the patient. Creating a sense of responsibility and contribution of the patient within the social network is key to this. Becker et al. (1998) found that the optimal size of the social network size to enhance the quality of life would be 10-12 for patients with a psychotic disorder. In conclusion, Jovanović et al. (2019) found in their systemic review that there are three main advantages for less secluded locations to foster social interaction: Such a location (1) encourages more time spend within the community, (2) increases family visits and (3) reduces stigma. Therefore, an urban location promotes the integration of inhabitants in SH.

So, the question arises, what the neighbourhood should offer. As mentioned in the definitions (paragraph x), the research is limited to post-war neighbourhoods. These neighbourhoods have a clear structure, according to the neighbourhood unit, a concept by Perry (1929) (figure 3.1). The neighbourhood provides community functions in the centre, making it possible for residents to go there without crossing major roads and within walking distance. Stores are located at the corners of the neighbourhood. The size of the neighbourhood was based on the walking distance of families with children.

However, one of the critiques on the neighbourhood unit is that society is more diverse, including less abled people. For these people, going outside is a big threshold, this came also forward in interviews with inhabitants of SH (paragraph 3.3). This means the location of the SH should be within walking distance of amenities and community functions.

It should be considered that inhabitants of SH in rehabilitation do benefit from a balance between private and public. Creating a gradient within the site might be beneficial for this. Geyl (2011, pp-149) describes how people will be standing at the edge of an open area, much like how settlements used to be at the edge of the forest and open space. This creates a safe feeling, being less approachable from all sides. Instead, people know where the interaction will be. This can be seen as the reason why most SH are located at the edge of cities and neighbourhoods, creating a clearer situation for the users.

However, just placing the SH near the community and amenities is not enough to provide social interaction. Jovanović et al. (2019) mention that territories of residents and inhabitants of SH should overlap physically. To establish the long-term relationships and friendships in the community, Cutler (1985) suggests placing socialization centres in churches, civic organizations, parks, and recreational facilities. As mentioned in the Theoretical framework, Dutch urbanist Geyl (2011) provides several strategies to increase stimulation between different target groups in an urban setting, one being the mixing of events and different people on small scale. These can be used as strategies to incorporate stimulating both inhabitants of SH and residents.

Although some mental health care patients benefit from more rural or urban settings, it must be admitted that stimuli and other factors are an important topic in relationship with mental health patients. In healing architecture, green, light, and sound have important roles in the healing of patients. Green has a positive relationship with psychopathological symptoms (Tran et al., 2022) and has positive influence on stress and attention, moreover, green space close to home has the most influence (Maas et al., 2009). Daylight has a positive influence on our body's rhythm and can change our mood (Aripin, 2006). And finally, sound, which can induce stress, disturbance of sleep or daily activities and attention (RIVM, 2023). The RIVM (2023) found that road traffic is the most important cause of sound disturbances. In the shift in psychiatric architecture as mentioned above, small-scale mental health care facilities are placed in urban areas (Mens & Wagenaar, 2010). Therefore, especially green and sound are important factors to take into consideration when picking a location for SH.

In conclusion, the following guidelines must be considered when picking a location for SH:

1. Community and amenities need to be close to the SH, the threshold for mental health patients to make use of community facilities and amenities should be as low as possible.
2. Having a clear layout within the site and a location with a closed or sheltered side creates (perceived) safety and overview for the users.
3. Just placing the SH close to community and amenities is not enough to enhance social interaction between the community and inhabitants of the SH. Their territories should be overlapping with the territory of residents. This can also be done with the program within the building.
4. Environmental aspects are major factors in the recovery and mental health of inhabitants of SH. Factors are the availability of green space close to the location, availability of daylight and sound coming from surrounding areas.

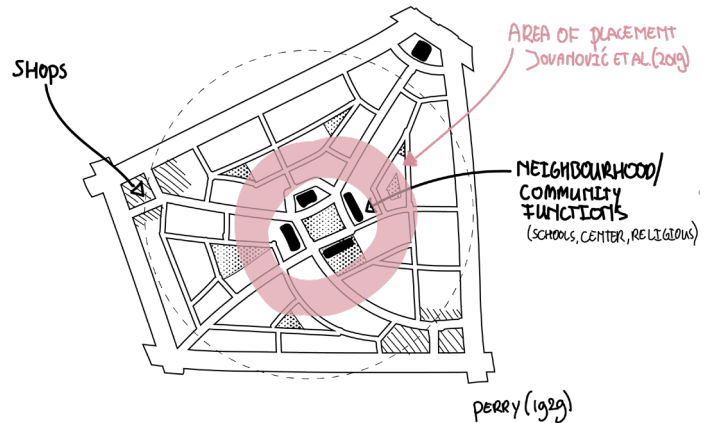


Figure 3.1 The placement of SH near community functions. Based on Jovanovic et al. (2019) and the neighbourhood unit by Perry (1929). Author, 2023.

3.2 Case study: Existing Supportive Housing location

Because of the idea about psychiatry before the healing architecture, lots of Dutch psychiatric institutions are in secluded locations, at the edge of villages or in green areas (Mens & Wagenaar, 2010). This means that a lot of SH in the Netherlands is placed at the edge of cities, mostly within their own campus. However, as mentioned in the literature study, some mental health patients benefit from more urban surroundings and a better connection to communities.

An example of a psychiatric facility placed in the urban fabric is Rehabilitation centre Bolzano, Italy, designed by MoDus architects. In figure 3.2, the location is analyzed, showing the neighbourhood centre and locations of shops in a similar way as Perry analyzed the neighbourhood unit (1929). The rehabilitation centre is placed along the main road of the neighbourhood, near the doctor, pharmacist and school. It is placed across a park in the middle of the neighbourhood. Although this contradicts Perry's thought, the absence of the need to cross big streets, all of the community amenities are nearby. Interestingly, the building also provides functions for residents in the neighbourhood, which will be discussed in chapter 4.

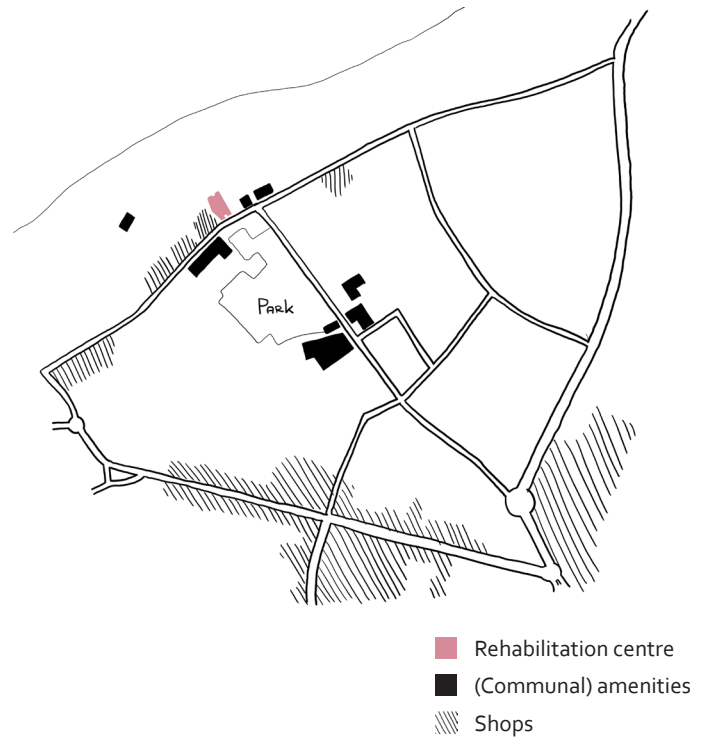


Figure 3.2 The rehabilitation centre Bolzano is placed near the community functions, along a primary road in the neighbourhood. Author, 2023.

3.3 Fieldwork: Requirements for mental health patients

During the fieldwork, it became clear that the threshold to go outside and join communal and social activities outside of the building is too high for a lot of the inhabitants. Out of the 60 inhabitants, only around half were seen during the research week, some only staying within the building. Note that none of the inhabitants prohibited from going outside. The other inhabitants stayed in their studio-apartment. Staff told us that for some there are too many stimuli outside or there is a lack of motivation, and they really have to push to get them outside. Going outside is more a necessity than leisure. The SH provided transport regularly during the day towards the supermarket and other daily activities. In line with what was found in chapter two, this also differs vastly per individual. Some did not go outside at all; others went out every day.

Most inhabitants only went outside with a specific goal in mind. This means going to the doctor, physical therapist, and other amenities. Only some really went outside for a walk, however brief, like around the building itself. The most important amenity used is the supermarket, this is one of the main reasons residents come outside. Some even find social support in the supermarket: "They know us there [in the supermarket] and even help us when we need it, I feel supported there."

Walking to the amenities, inhabitants mostly took the shortest route, independent of the view and stimuli. It must be noted that this route goes through a new, calm, and green neighbourhood, past a couple of primary schools and kindergarten (figure 3.4). Most notably, when traversing through the neighbourhood,

inhabitants tend to have recognizable points along the route, such as a certain statue or the different plants in the front gardens as shown in figure 3.5. This made their route interesting for them and having something to focus on.

Staff did note that a green space nearby was missing. Although located at the edge of a neighbourhood and in calm surroundings with visual green, the nearest park was said not to be nice to relax or sit. It was found to be too open. Activating the inhabitants proved to be difficult, so having these kind of facilities close is needed. The same goes for sports facilities, although they did find themselves lucky with a small gym room.

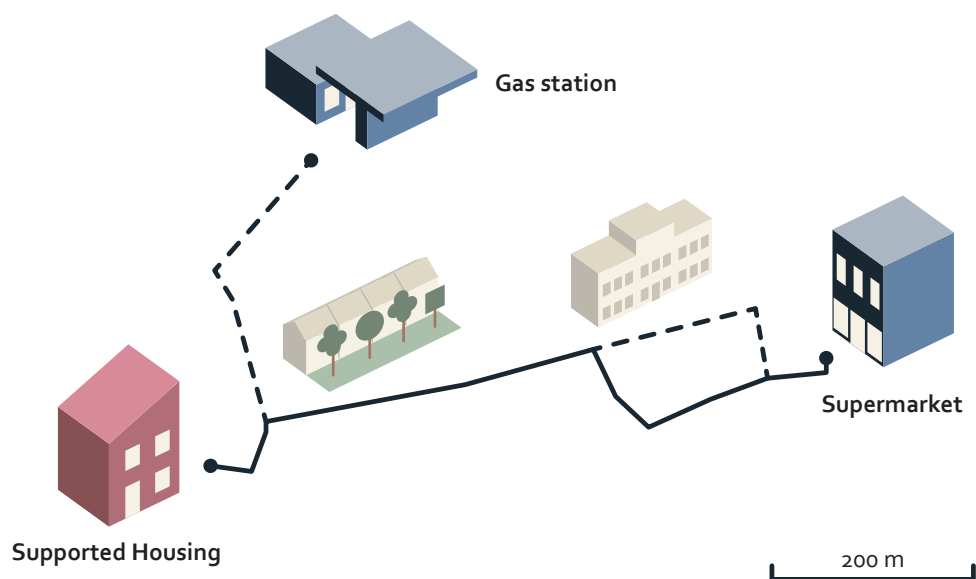


Figure 3.4. The different points along the route and the route mapped. Inhabitants of SH took the shortest possible route to their destination. The two most important destinations being the gas station for cigarettes and the supermarket.

Author, 2023.



Figure 3.5. The different front gardens are important points of interest and familiarity for the inhabitant when passing by. Although in similar planters, the different trees and accessories like knee-high statues were the most important elements.
Author, 2023.

Conversations about going out

When asked if inhabitants would go outside, most would reply: "For smoking". Furthermore, their main event, for most, is going to do grocery shopping. This was experienced by them as an activity to look forward too and often the only reason to go outside. Some go everyday, some only once a week. One woman, who also was immobile, depended on a volunteer from the next village over. Together they would walk the approximately 600 meters to and from the supermarket. "Are you sure you only need this much for a week?", the volunteer asked. Others go by the taxi, which drives multiple times a day to and from the SH to the supermarket, because it is too far to walk. "When I first came here, I did not realize this building, for a lot of the inhabitants, is their whole world." - staff member. Going outside is a large threshold for most inhabitants and most facilities are just slightly too far away.

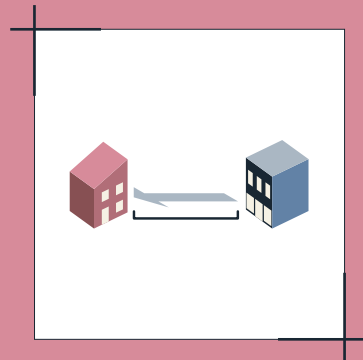
Do inhabitants want to go out more? Not necessarily. The park nearby the supermarket is experienced as open and "not really a place to sit". It appears there needs to be a purpose to go outside. "We are happy if they even go outside and get movement." said a staff member in an interview.

3.4 Conclusion: The ideal location

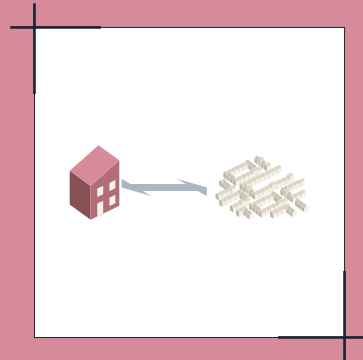
In conclusion, the ideal location to promote integration would be within a community in an included location. If this is in an urban setting, it should take the following guidelines into consideration:

1. (Communal) amenities nearby the SH, this enables the inhabitants to go to amenities and decreases the threshold to go to amenities.
2. Interaction with the neighbourhood, this means that inhabitants not only go into the neighbourhood, but the neighbourhood can come to the building and the building also serves the neighbourhood.
3. Having a clear layout within the site. This enables inhabitants to understand the building and feel safer. A "blind" side on the site could help in this.
4. Nearby green and nature. From field research, it became clear that nearby green is important to enable contact with nature. Just like amenities, if it is too far away, inhabitants do not make use of it.

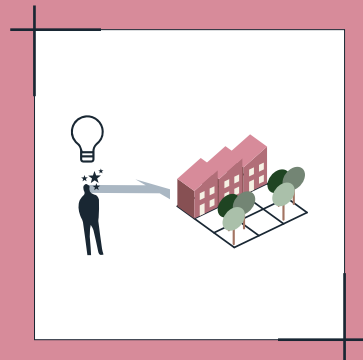
To promote social interaction, the distance to amenities, interaction with the neighbourhood are the most important design guidelines. Green is very important for the recovery and rehabilitation of the inhabitants and also provides calmness, just as a clear layout, with clear boundaries.



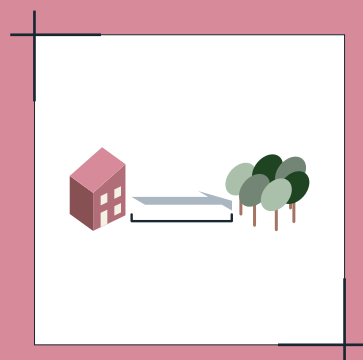
Nearby amenities



Interaction with the neighbourhood



Clear layout



Availability of green

Chapter 4
Building & program



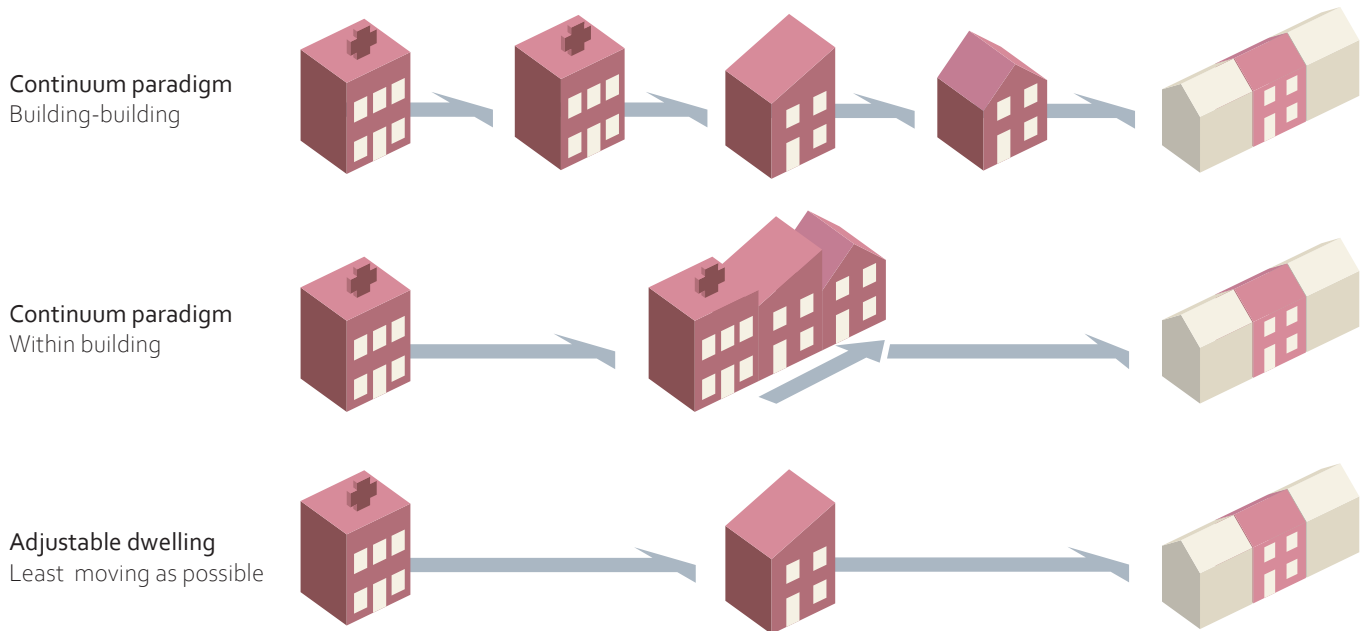


Figure 4.1. Different architectural typologies of Supportive housing. The ideal situation would be to move as little as possible. Author, 2024.

In this chapter, the building and program will be discussed. This includes the exterior, size of the building and spaces and the program.

4.1 Literature: Size, program and green

Size of the social network

As Jovanović et al. (2019) describe in their review, that psychiatric hospitals exist in a wide variety of architectural typologies. The same is the case for SH. Some are located on a psychiatric campus, others are located within an urban site. Some have multiple kinds of supportive housing, from more intense care to open housing. It is important to consider the care process in the architectural typology. In the continuum paradigm, shown in figure 4.1, patients move to different dwellings as their situation improves or regresses. So the patient moves to a dwelling fitting the expected or current need. Although this seems like a logical solution, the patient might feel like moving away from care and insecure if the patient can handle the change. This might cause a relapse of the patient (Pratt et al., 2014). Though not often, patients move from intensive care to SH on campuses like GG-net in Warnsveld (interview van Gaalen, appendix D). A more fitting solution would be to adjust the dwellings to the needs of the inhabitants, so they can stay in their social network and request more care when needed.

The size of the complex is another important aspect. Soteria projects proved to have positive effects on the rehabilitation and social interaction of patients, because of their size. They have around 10-12 inhabitants and are very homelike (Jovanović et al., 2019). This corresponds

with the average network size of patients with psychotic disorders, which is around 11.7 people. This includes family (43.1%), friends (26.5%) and neighbours and caregivers (Palumbo et al., 2015). However, a bigger complex could also provide more facilities. Therefore, clusters could also be considered. As family is very important in the social network, the building should be accessible for family and provide space for them to stay. Family and friends give a form of informal help which can tackle a wider array of problems than professionals can (Lauzier-Jobin and Houle, 2022).

Finally, these smaller groups also make detection of relapse easier, as it is harder to conform to general social rules and mask symptoms of mental illness than in larger groups (more than 25 people) (Opalić, 2007).

Stigmatization

Stigma is an important barrier for the neighbourhood to interact with inhabitants of SH. Pratt et al. (2014) also that (perceived) stigmatization prevents reintegration and decreases chances of recovery of (former) patients. However, better integrated (former) patients seem to have a better quality of life. A sense of belonging and purpose reinforces recovery, rehabilitation, and reintegration (Rössler, 2006). In the architecture of madness, poor building design might be linked to stigmatization of mental health patients. The design should respect local and cultural determinants so further stigmatization is prevented (Bil, 2016).

Spaces

Specific spaces also have an effect on the social interaction of mental health patients. Corridors form an important space where patients who are friendless

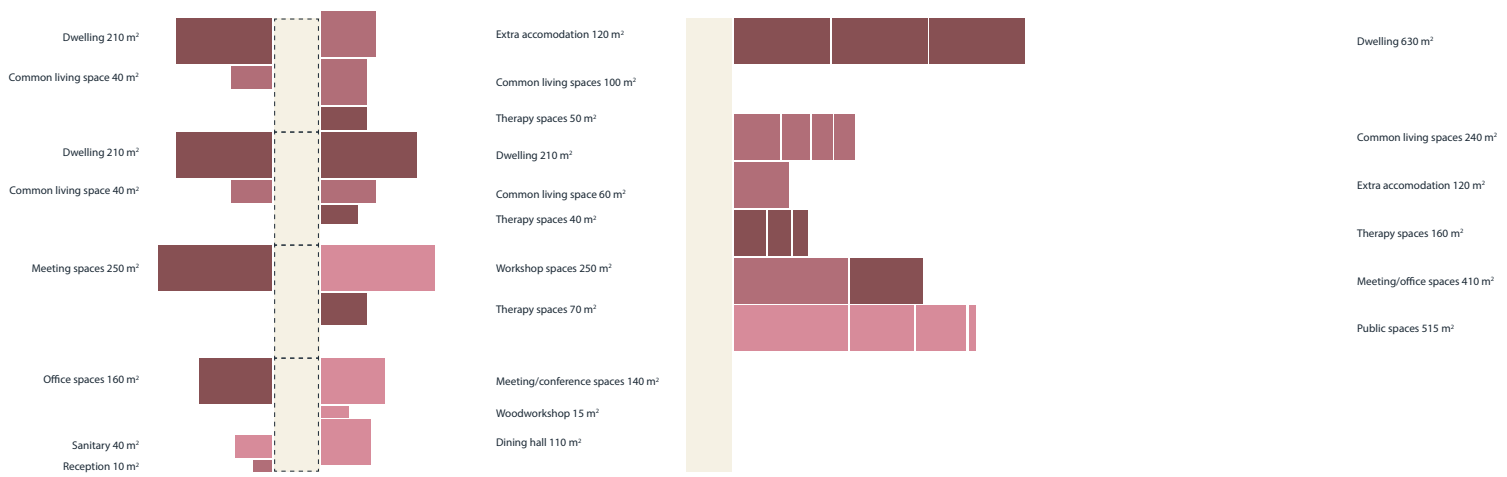


Figure 4.2 and 4.3. Figure 4.2 shows the different functions per building level and the organization, the sizes of the boxes have the correct proportion of the floor area. In figure 4.3, the different functions are organized to public use. It shows the balance between the amount of focus on dwelling and public functions. Both are analysis of the Rehabilitation Centre Bolzano by MoDus architects. (Author 2024).

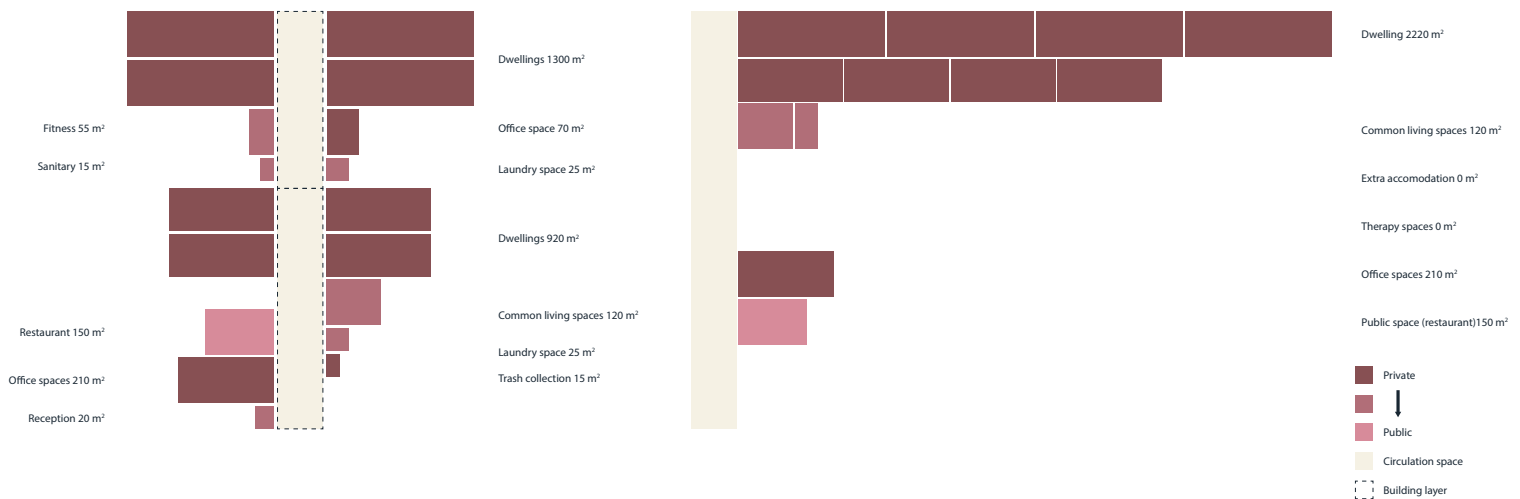


Figure 4.4 and 4.5. There is more focus on dwelling in the field research location. The balance between the different functions is very different compared to Rehabilitation Centre Bolzano. Author, 2024.

hangout. At the same time, long corridors should be avoided because they do not form spaces where interaction takes place. Rather, breaking up corridors with communal areas causes the social interaction to move to these areas (Jovanović et al., 2019). Lounges, dining spaces and lobby areas are key communal areas for social interactions, between inhabitants, friends, family and staff. When inhabitants are offered these spaces, social interactions will move to these spaces (Jovanović et al., 2019). It is important to consider the balance between private and communal spaces. It is related that more private spaces like single-bedrooms cause more social interactions, opposed to dormitory rooms (Jovanović et al., 2019).

Contact with nature

A shared, private outside space is proven to have a positive effect on social interaction. However, it needs to be easily accessible (Jovanović et al., 2019). This is enhanced when activities take place in these outside spaces, like gardening. It is important that the garden has a wide variety of features, so inhabitants can choose

where to go (Hjort et al., 2023). This also connects to the Stress Reduction Theory, set up by Ulrich in 1991, which mentions one of the factors in reducing stress being nature distraction (Hjort et al., 2023). This also applies to the view from a window (Raanaas et al., 2011).

4.2 Case studies: Rehabilitation Centre Bolzano | MoDus architects Field research location

Although the Rehabilitation Centre Bolzano is designed more for short-term stay, the building is well integrated into the neighbourhood, also in its functions. It has public rent-able spaces for meetings and get together, a wood workshop and an exercise room. The main dining hall is also publicly accessible. This all creates a “vibrant place to meet and socialize” (Scagnol & Attia, 2014). These functions, together with office spaces and therapeutic spaces are on the ground and second floor. The upper two floors contain all the dwellings, divided over three departments, each having a common area and two therapeutic/office spaces. The dwellings do



Figure 4.6. The furniture in the main hall. Special furniture with a tree creates a corner where chairs and a table form a living room. Inhabitants would sit here for a long time during the day, listening to music. Author, 2023.

not have kitchens and are equally divided in a two or single-person configuration, of each, four are within a department.

In figure 4.2, the abstracted configuration of the building is shown per building level. Figure 4.3 organizes the different functions from private to more public areas. This shows that in the rehabilitation centre in Bolzano, a lot of spaces are public, such as the above mentioned spaces. This makes sure people from the environment come into the building. If the same method is applied to the field research location as in figures 4.4 and 4.5, it shows a very different balance between living and public accessibility. This might have different reasons, but the most important consideration should be that Rehabilitation centre Bolzano does have a different function, more focused on short term stay and as the name implies, rehabilitation. The field research location was mainly designed to make inhabitants self-sustainable again with a focus on living. Giving it more private functions over public functionality. Note that Rehabilitation Centre Bolzano has dwellings for 37 people and the research location for 60 people. Additionally, in the Rehabilitation Centre Bolzano, there are no kitchens in the smaller dwellings, making common rooms more important to users for daily activities like eating. In the research location, these are less important, as rooms are bigger and have their own kitchen. It was found during field research that inhabitants found the amount of common living rooms in the building sufficient. Moreover, two out of four designed common rooms were converted to offices. Finally, in the research location, the main hallway, in the graphs considered as circulation space, was also used as a space to hang around, play pool or other activities. Therefore, the hallway also provides common living space.

But, it does reveal a lack of public functions in the research location to attract residents into the building, degrading social interaction between inhabitants and residents. In the Rehabilitation Centre Bolzano, specific functions are added to attract these residents into the building, promoting social interaction and visibility. This causes an overlap in the territories of users of the building and the residents, who now also become users of the building. This integration causes interaction between these two groups of users, walking into each other, or just seeing each other as Jan Gehl (2011) described integration.

4.3 Fieldwork: Use of spaces in practice

The research location has 60 inhabitants. This proved to be too much. As mentioned, only around 25 out of 60 inhabitants were seen during the research. Staff also mentioned it was too many people and considered splitting the building in separate departments with different severities of mental health illness, but this proved too complex. In the end, there is a lack of spots so new inhabitants get placed where there is space.

During the fieldwork, a lack of interaction with the neighbourhood also came forward. Yearly meetings were organized for inhabitants and showed that residents seeing what the SH is like, creates a form of understanding and de-stigmatizes (Interview Staff member 1, Appendix A). However, residents would not come into or near the building the rest of the year, except for one public function, the public vegetable garden. However, in practice residents often neglected the land because of other occupancies. The restaurant is open to public as well and not expensive. However it is deeply embedded into the building and not inviting to outsiders as the visitors would have to enter the property and the

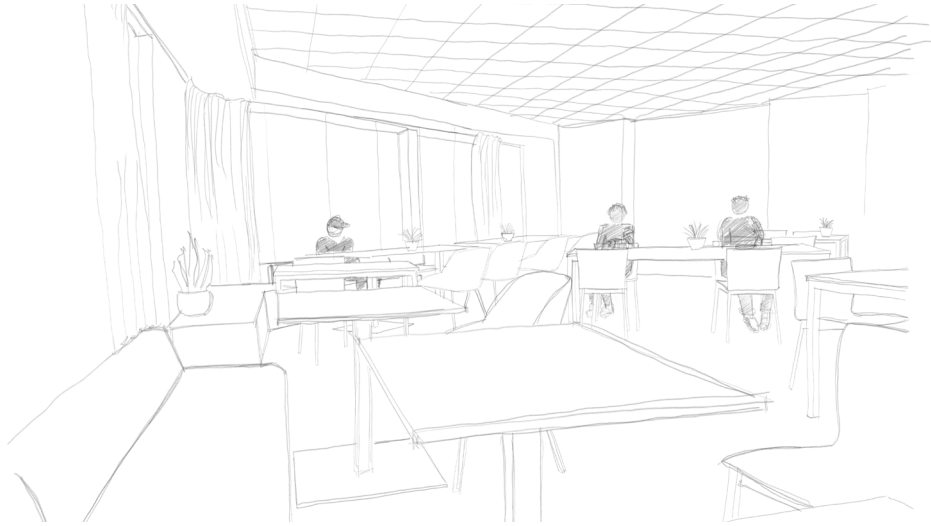


Figure 4.7. The restaurant, one at the beginning of opening for lunch. The inhabitants would sit far apart, but still talk to each other through the room. Patients would also stand next to the table to talk to others. Author, 2023.

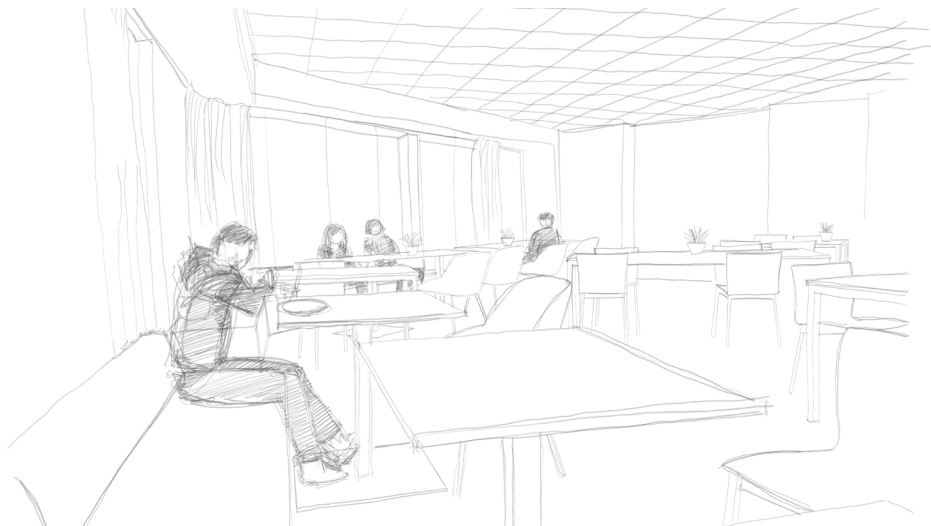


Figure 4.8. The restaurant, halfway at lunch. Notice how patients preferred seating at the edge of the room. Author, 2023.

building through the reception. It appeared only people with a connection the health care organization of the building, like ambulant care, make use of the restaurant.

At the GG-net location in Warnsveld, sports accommodations on the terrain are shared with local sports clubs. However, real interaction between inhabitants and residents was not stimulated, other than running into each other when walking on the terrain of GG-net (interview Kooij and Van Gaalen, appendix D).

The main hall (partly shown in figure 4.6) was an important space where someone would always sit or hangout during the day. Different furniture provided seating arrangements and inhabitants and staff would great each other and ask how it is going. Interestingly, music was turned on in this area. Although the area was echoing. The other long hallways proved to have little social interaction and coincides with literature

(Jovanović et al., 2019).

The restaurant, together with the coffee room and main hallway, are the most used public spaces. The restaurant provides lunch at set times and during the fieldwork, it appeared the same group of people would eat lunch every day. For dinner, the same group eats at the restaurant and a small group just gets food to eat at their own place. This creates a place for interaction, although through observation it became clear most inhabitants sit alone or in groups of two at the tables, interacting through the whole space, as shown in figure 4.7 and 4.8.

The coffee room (figure 4.9) was one of the most used spaces by the inhabitants by themselves. As discussed in chapter 2, the coffee moment is an important moment to come together and interact. The informal character of the room and activity caused inhabitants to come and go when they would like to. This was one of the busiest



Figure 4.9. The restaurant, halfway at lunch. Notice how patients preferred seating at the edge of the room. Author, 2023.

spaces in the building.

Noticeably, the spaces and places where social interaction were took place, were home-like, with furniture creating living room like spaces where family-like activities take place and leisure-resources are available. This will be further explored in chapter 5.

As for exterior spaces, only the small courtyard adjacent to the coffee room was used. It provided a small overhang, giving the patients to use the space during winter. The activity mostly done, also during summer, is smoking. However, complaints were expressed about the slippery, wooden terrace, preventing inhabitants to go into the courtyard during rainy days. During an interview with Iris Hobo (appendix C), it came forward that a big element in the design of the psychiatric building of the Radboud UMC is the outside space, where the gardens are used to stimulate recovery and are designed according to Swedish research on gardens positively influencing recovery of people with a burnout. In this garden, patients can interact with nature by a vegetable garden and other activities. Ultimately, smoking was acknowledged to be an important reason for patients to go outside, although they did not specifically cater to this.

4.4 Conclusion: Program and building guidelines

In this chapter, the most relevant topics to the building and the program are discussed. From this, seven main guidelines are taken:

1. The size of the social network and therefore the maximum size of the clusters accounting for establishing a social network outside of the cluster. Preferably, the cluster is smaller than the network size, so there is room for people from in the network for family, friends and also neighbours.

2. Accessibility and accommodation for family. Since they are a large part of the social network of inhabitants and have proven to be important in the recovery process.

3. Reduce stigmatization by providing for the neighbourhood and taking into account local and cultural determinants. This decreases the (figurative) distance between inhabitants of SH and residents.

4. Shared informal spaces. This means a lobby, living room and spaces to meet. These are the most important spaces where social interaction takes place.

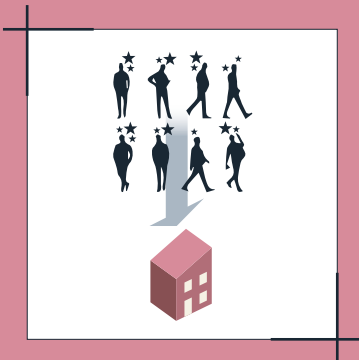
5. Avoiding long corridors, these decrease social interaction and only makes inhabitants hangout.

6. The availability of a shared, private green space with a variety of different types of garden. Both literature and field research support the importance of a shared outdoor space for meeting.

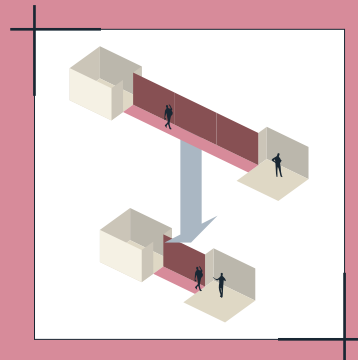
7. A connection to green throughout the complex, inside and outside. This is a topic throughout the different scales and also should be taken into account in the program and building design.

8. Daylight is important in activating the inhabitants, it determines the rhythm of the day and activates our body.

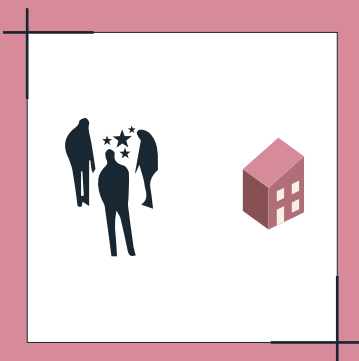
In short, the building should provide functions for both the inhabitants and the neighbourhood.



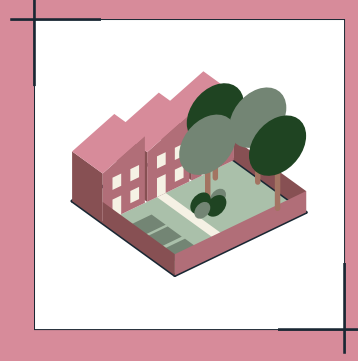
Clusters of max. 10 people



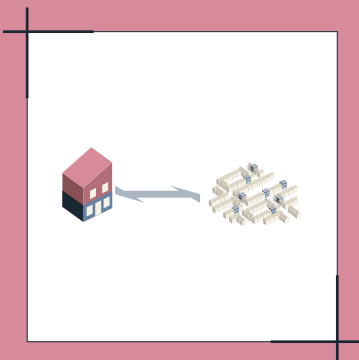
Short hallways



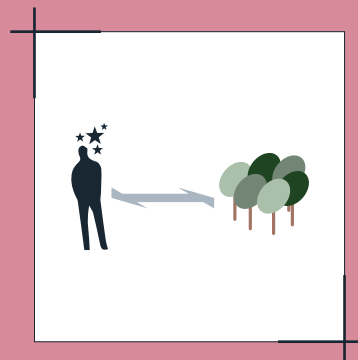
Accommodations and access for family



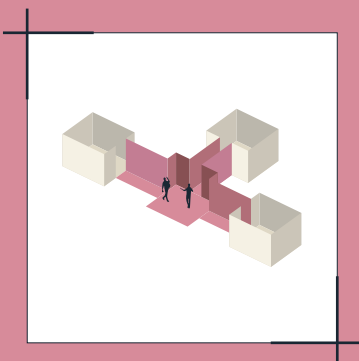
Shared private garden, with variety



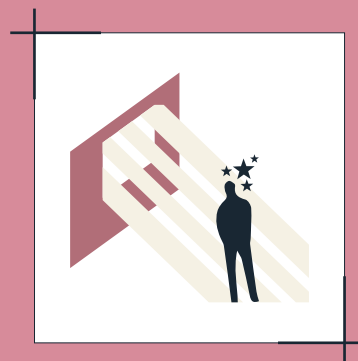
Amenities for the neighbourhood



Connection to nature



Shared, informal spaces for meeting



Access to daylight

Chapter 5
Interior & dwelling





Figure 5.1. The rooms in the psychiatric clinic of the Radboud UMC. EGM-architects, n.d..

In this chapter, the interior and dwellings will be discussed. This includes furniture atmosphere, types of dwellings and customization.

5.1 Literature:

Interior

The design of the interior of mental health care facilities can have a positive effect on social interaction within a facility. Residential-like furniture and that the availability of leisure-time resources facilitates social interactions (Jovanović et al., 2019). It was found that the configuration of furniture and designated functions in a space can be variable. When researching the psychiatric hospital Slagensen - which won numerous awards for its progressive, open design - Simonsen (2017) found that a large, open communal space on the ward with a variable layout can enhance social interaction. Staff created a living room in a spot where patients would hang out (Simonsen, 2017). This open layout was also used by those who were not necessarily looking for social interaction. He also found that visibility on the ward was important to patients.

The renewing of furniture, colour scheme does not have a significant effect on social interaction or isolation. It does however increase overall satisfaction (Jovanović et al., 2019). However, a different study by Sui et al. (2023) showed different aspects of mental health care spaces affecting outpatient mental health recovery. They identified four themes: sensory design elements, engagement, social relational aspects and affective experiences. Sensory design elements and social relational aspects are relevant to promote social interaction. Sensory design like "human-made patterns and light [...] engaged participants attention, leading to a grounding effect." - Sui et al., 2019. This shows that light activates users and engages users. This is also shown in the effect that daylight has on mental health

patients (Aripin, 2006). Social relational aspects in spaces features the ability to maintain a private distance from others. This was overwhelmingly apparent in interviews performed by Sui et al. in 2019. This also coincides with Geyl's (2011) description on where people stand in a room, which would be at the edges of the space, to provide a safe distance and a safe back, where they cannot be approached. Spaces in the SH facility should provide the ability to keep distance from others. As mentioned in previous chapters, it should also be considered that there is also a temporality in the nature of SH. This should also be considered and came forward during field research.

Finally, nature is important for the indoor environment. A study performed on 24 young-adults showed that interaction with indoor plants reduces stress, creating natural, soothed feelings (Lee et al., 2015). Furthermore, this also relates to previously mentioned studies that showed that contact with nature reduces stress (Hjort et al., 2023). Four key themes were found in relation to nature in the recovery of mental health patients: escape, being present, social contact and personal growth (Adams & Morgan, 2018). Social contact has two aspects, interaction with the group and being in the group when in nature. The latter is associated with less isolation and more willingness to engage in social interaction (Adams & Morgan, 2018). Indoor plants also "seems to enhance opportunities for reflection, feelings of meaningfulness and sense of being taken care of [...] make them more resilient to the stressors of life" - Raanaas et al., 2015.

Dwellings

It is proved that single-bedroom dwellings provide more safety and control, actually resulting in more social behaviours (Jovanović et al., 2019). Inhabitants can determine their own rhythm and habits. This might also be extended into SH by giving the inhabitants the



Figure 5.2. Furniture in the field research location. Author, 2023.

ability to cook for themselves and let them determine their own rhythm. However, this contradicts the notion that most inhabitants need structure in daily activities to increase their recovery.

Customization of the dwellings also proves to be a topic for conversation and actually increases social interaction (Jovanović et al., 2019). Looking at personal pictures and television are perceived by patients in a medium-secure psychiatric unit as decreasing loneliness and isolation (Parrot, 2010). Additionally, this also creates a sense of home and ownership. This in turn creates a sense of responsibility.

5.2 Case study:

Radboud UMC psychiatric ward | Iris Hobo, design manager

HIKZ Warnsveld | Marko matic, architect

The intramural psychiatric building of the Radboud UMC won a lot of awards for its design. During an interview with the head design manager Iris Hobo of Radboud UMC (interview Hobo, appendix C), lots of the intentions of the design became clear. The designers created a generic environment, so different target groups (within psychiatry) could make use of the building. The idea is to give patients as much independence as possible, with their rooms as a space to fall back on. Therefore, single-person bedrooms are created where patients have their own bathroom and can choose to hide stimuli, like the television. The rooms are also mainly white, to lower stimuli as seen in figure 5.1. Interestingly, the bathroom has warmer colours as this is considered a place where you are vulnerable. There are also no cameras in the rooms, but only sensors which let staff know when patients fall out of bed.

To stimulate social interaction, the designers took specific choices on where home-likeness and warmer colours would be implemented and otherwise, low-

stimuli, mainly white environments would be created. This had two main principles: 1. Warmer elements would be created where patients would meet; and 2. Places where patients are vulnerable, warmer elements would be applied. The warm environments use warm, earth-tones and soft materials like wood. The other environments have white, sterile tints. They found that patients liked it in the facility, so much, they did not want to go home. Therefore this temporality really is a factor in the design. Additionally, patients are stimulated to eat together in the shared space, additionally, the placement of a ping pong table was very popular among patients.

In the HIKZ Warnsveld, similar design choices have been made. Especially in how the balance between more low-stimuli and warmer environments are made. According to Matic (interview Matic, appendix B), the space where patients can meet their family is warm and uses soft materials like wood. Rooms are more strived to have a "hotel-like" feeling (interview Kooij, appendix D). This both has warm furniture and a low-stimuli environment. The living rooms also use warm colours. Here, each department is marked with a warm colour, inspired by the sun. This is done in a subtle way, to not be distracting.

5.3 Fieldwork:

Balancing temporality and home-likeness

Interior

During fieldwork, it became apparent that furniture, placed in living-room like configurations in the main hall and coffee room formed important hanging spots for inhabitants. As shown in paragraph 4.3, the furniture in the main hall was used often. Additionally, specially designed furniture created smaller, informal spaces in the main hall, shown in figure 5.2. The furniture also added plants in the environment as they would also function as planter. These were also used often

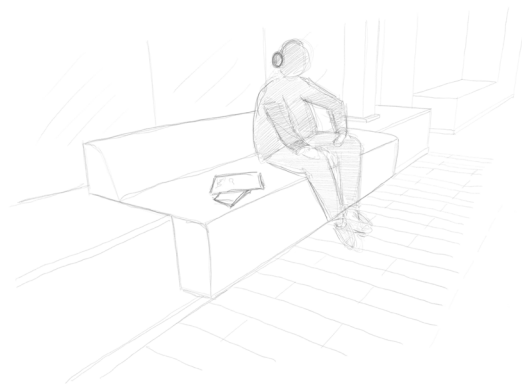


Figure 5.3. Integrated benches in the field research location. Author, 2023.



Figure 5.4. Long hallways. In total, there were six hallways, all looking similar. Coloured dots were used to differentiate them, but this was quite subtle and almost unnoticeable. Author, 2023.

to hangout on and interact with each other. Located near the edges of the space were integrated benches (figure 5.3). These were used to hangout on, but with less interaction. Some inhabitants would come here and listen to music. In terms of sensory design, the architects paid a lot attention on proper light in the main hall, creating a glass roof. However, the space was found to be noisy (paragraph 4.3).

There were almost no colours used in the building, except for an earth-tones like green and orange in the restaurant and coffee room respectively. The rest was white to provide an environment with low stimuli. Interestingly, staff and inhabitants would decorate the spaces with self-made drawings, paintings and furniture. The atmosphere of the building was found to be quite "hospital-like" with white flooring and office-like, false ceilings. One inhabitant even called it a "prison", because of the atmosphere combined with long hallways, figure 5.4.

Dwellings

The dwellings in the building were all spacious enough for people with somatic problems to use. The bathroom is spacious enough as well. All dwellings have their own kitchen, enabling inhabitants to cook by themselves and choose their own daily routine. This proved it more difficult for staff to check on patients, as fewer moments would occur where this could happen. One staff member, who worked at several psychiatric and social facilities, told us that having a shared living and dinner space actually increases the recovery and promotes social interaction. Additionally, it was said that inhabitants would want to live independently more, because this would increase their independence compared to SH.

Although all dwellings have a door into outside space, dwellings on the ground floor (figure 5.5) would open up to an open outdoor space, with only grass as border between the private space of the inhabitants and public space. On the upper floor (figure 5.6), inhabitants have their own terrace. This also was expressed by inhabitants: inhabitants living on the second floor would use their

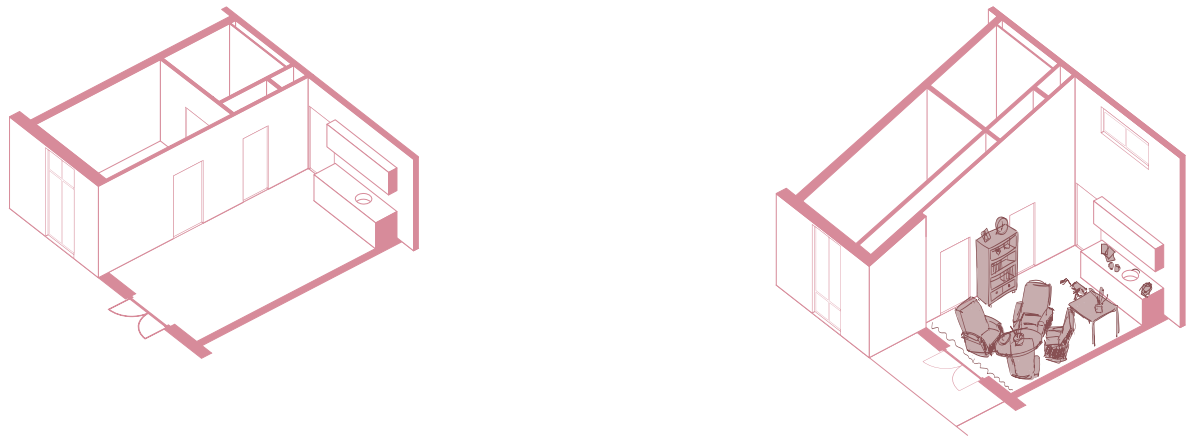


Figure 5.5 and 5.6. 3D of the different dwellings on the research location. Left the layout of dwellings on the ground floor, right on the upper floor. Note the extra window above the kitchen. Author, 2023.



Figure 5.7. The different types of dwellings and the living arrangements in the apartments in the research location. Although similar floor plans, inhabitants would decorate and bring furniture of their own. Author, 2023.

terrace more often than on the ground floor. Note how the upper floor apartments have an extra window. There are no curtains, there would always be light entering the room. This was experienced as annoying for both inhabitants and staff, as inhabitants did not have control over it and staff had difficulties cleaning the window. Additionally, most inhabitants would close their blinds, as they felt like being looked at when opened. This also caused some to not use their outside space because of the exposure to public. This was also by the design of the building, resulting in the terraces facing outside.

Although the dwelling comes with a bed and kitchen, inhabitants bring their own furniture. Most inhabitants would customize their room as well as their front door with pictures, posters and drawings. In figure 5.7, plans of some rooms are shown, to show the different living arrangements patients would make.

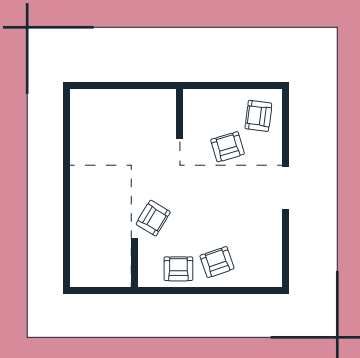
5.4 Conclusion: Interior and dwelling guidelines

The interior and dwellings should accommodate a balance between communal and private areas and can promote where social interaction takes place. For the interior the following design guides can be concluded:

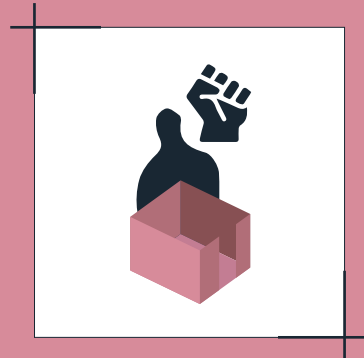
1. An open floor plan, although this is also partly building design, furniture must be able to be placed in multiple spaces, so living areas can be created where inhabitants like to hang out. This can also give them more meaning by taking decisions on the positioning of furniture. During this, social interactions can take place.
2. Availability of leisure. This creates new topics to talk about and attracts inhabitants to specific spaces.
3. Indoor green. This coincides with previously mentioned statements. Green can improve recovery by reducing stress.
4. There should be careful consideration where warm, home-like environments are created. This could be done through zoning with the following principles: 1. where inhabitants have social interactions and 2. where they are vulnerable.

The dwelling should be accommodate a space where inhabitants can fall back on. This gives them more control over when they want to interact and when they retreat.

5. This means the inhabitant should be in control of the dwelling. This also means having enough privacy.
6. Low-stimuli in the dwelling. This is because the dwelling is a place where patients can retreat. Therefore sound, light and view should carefully be considered when designing the dwellings.
7. A private outside space. During fieldwork inhabitants enjoyed their own outside space, but not when it was open to public, there should be a clear border.
8. Customization in the dwelling. This was highly requested by inhabitants in the research location. This also enhances social interaction as it provides opportunities for conversation. Additionally, it makes patients feel less lonely.



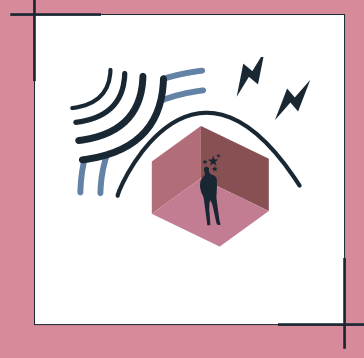
Open floor plan



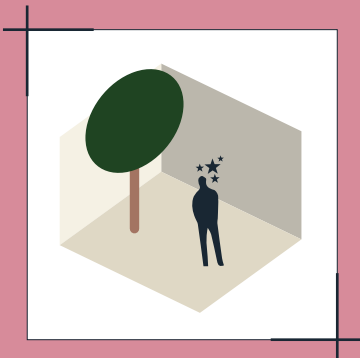
In control of dwelling



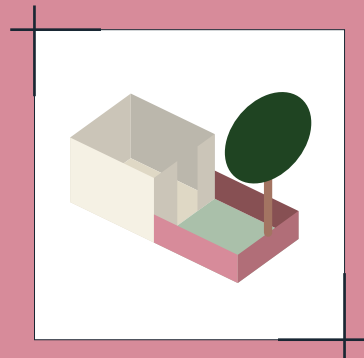
Availability of leisure



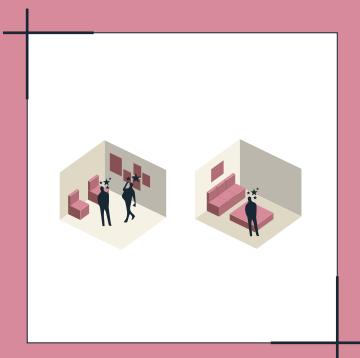
Low-stimuli in dwelling



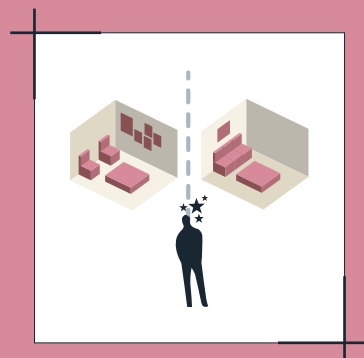
Indoor green



Private outside space



Home-like where meeting or vulnerable



Customizable dwellings

Chapter 6

Conclusion: Design Guidelines

6.1 Research questions

The objective of the research was to find design guidelines for a supportive housing facility that promotes the social integration of ex-mental health patients into the neighbourhood. Therefore, the following research question was given:

How can architecture & built environment features and location conditions promote the integration into the neighbourhood of inhabitants in Supportive Housing?

To answer this question, several sub questions were established. The first question was: *What is the background of inhabitants in SH with the aim at reintegrating into society?* As shown in chapter 2, this group is very diverse but can be put into two groups: a group with severe mental illness, requiring long periods of stay (more than 5 years) and a group which is also not self-sustainable, but has no to lighter mental illness issues compared to the first group. Around 85% of inhabitants suffer from psychosis, together with other issues. It is hard to activate inhabitants.

The second question, *How are current SH/rehabilitation facilities integrated in their environment and neighbourhoods?* is discussed in chapter 3, the location of SH is discussed and in chapter 4 the program of SH. It was found that field research location in the Netherlands has little to no facilities for their surroundings and interaction is not stimulated. Additionally, most of SH are located on specialized mental health campuses. In the case study Rehabilitation Centre Bolzano, it was shown that shared functions, like rent-able spaces and a wood workshop could be added to invite residents into the building. Creating interaction between inhabitants and residents.

The third sub question, *What are important features of neighbourhoods for inhabitants of SH?* is also discussed in chapter 3. It was found that the most important facilities are daily amenities, like the supermarket and health care professionals. It was noted that green was missing in the field research location and literature highlights the importance of a connection between mental health patients and nature.

The answer to the fourth question, *Where do inhabitants of SH have social interaction?* was found to be mainly within the SH facility during field research. Discussed in chapter 4, shared spaces and private green spaces were the most used spaces where social interaction took place. This was mostly between staff and inhabitants. It is important to note that more home-like spaces were used for interaction, although literature is inconclusive about this topic (Jovanović et al., 2019)

The final question *How does the design of the interior and dwelling influence social interaction?* can be answered in two ways. Firstly, the interior can determine where social interaction takes place through the placement of furniture and usage of different atmospheres. Secondly, the dwelling can serve as a retreat, where inhabitants have privacy and control. This actually increases social activity of inhabitants.

In conclusion, the research question can be answered by the following: Architecture & built environment features and location conditions can be designed to promote integration into the neighbourhood through taking into account local and cultural needs and create interaction of residents with the inhabitants of supportive housing. This can be done through: The choice of location, being near the needs of inhabitants and able to interact with facilities in the neighbourhood; Reducing stigmatization; The program, by adding to the local needs; Providing a connection to nature; The interior and dwelling, by providing enough private space.

6.2 Limitations and discussion

Although this research focusses on the problem of establishing a social network in supportive housing, it should also be considered that not all inhabitants of SH benefit of a social network, some need a calmer environment. Therefore, the proposed concept for SH is not a replacement, but rather an addition to existing SH facilities. Additionally, inhabitants return to independent living with possibly ambulant care. This means that if they return to a different location than the SH, they lose their established social network again. This however, is a problem related to policy making and society like the availability of housing.

It is also difficult to find data on the users of SH in the Netherlands, as policies have changed multiple times in the past decade and municipalities handle data different from each other and the future of SH is changing. This is also found in current studies about SH. Similar terms are used for different types of mental health care and therefore search results would not result in similar topics. But after all, lots of definitions in mental health care are in grey areas and often cross each other.

Additionally, limited by a time constraint, more research could be done from the perspective of the neighbourhood and how the architecture of SH could adjust to this. It should be considered that most requirements are affected by local and cultural needs, which can differ from neighbourhood to neighbourhood.

From a perspective of the staff, this could greatly improve their ability to provide care where needed, as residents or other people in the social network of inhabitants could help in the recovery process and

clusters of inhabitants would be smaller. However, how much the social network can take over when SH is designed properly for this, could be further researched.

The perspective of residents could also change when there is interaction with inhabitants of SH. This reduces stigmatization and can therefore also improve recovery of patients and create a good understanding between residents and inhabitants.

Finally, designers are not caregivers but as shown in the research can use many tools to provide the ability to get or give certain care.

6.3 reflection

Although this research is fairly limited by time constraints and the intersections with other research fields, the objective of the research was achieved by combining information. During the research, it was found that - although far less than expected - there is still stigmatization towards mental health patients, even from experts. It proved to be difficult to give people understanding of the goal of the research, although lots of studies provide evidence of a positive effect of social network on the recovery and rehabilitation of mental health patients.

Furthermore, the limitations of designers also became apparent. Lots of the found issues are not solvable by design alone: it should be a combination of design, policy, society and mental health care professionals. However, this also provides food for thought. More questions come to mind: Where do inhabitants go after supportive housing? Is there a need for other types of supportive housing since the target group is so diverse? What if we could make supportive housing even smaller and localized?

In the end, the wide variety of findings result in dilemmas which should be balanced out to design a proper SH facility. These choices are interdisciplinary and should consider the goal SH.

6.4 Design guidelines

Finally, the design guidelines will be presented. Although throughout different scales are introduced through the chapters, some conclusions are relevant to other scales as well. If the conclusions are rearranged, four main themes can be found:

1. Interaction with the neighbourhood

2. Activation of inhabitants of SH

3. Fitting the need of inhabitants of SH

4. Contact with nature

With these four guiding themes, a supportive housing facility could be designed which promotes social interaction.

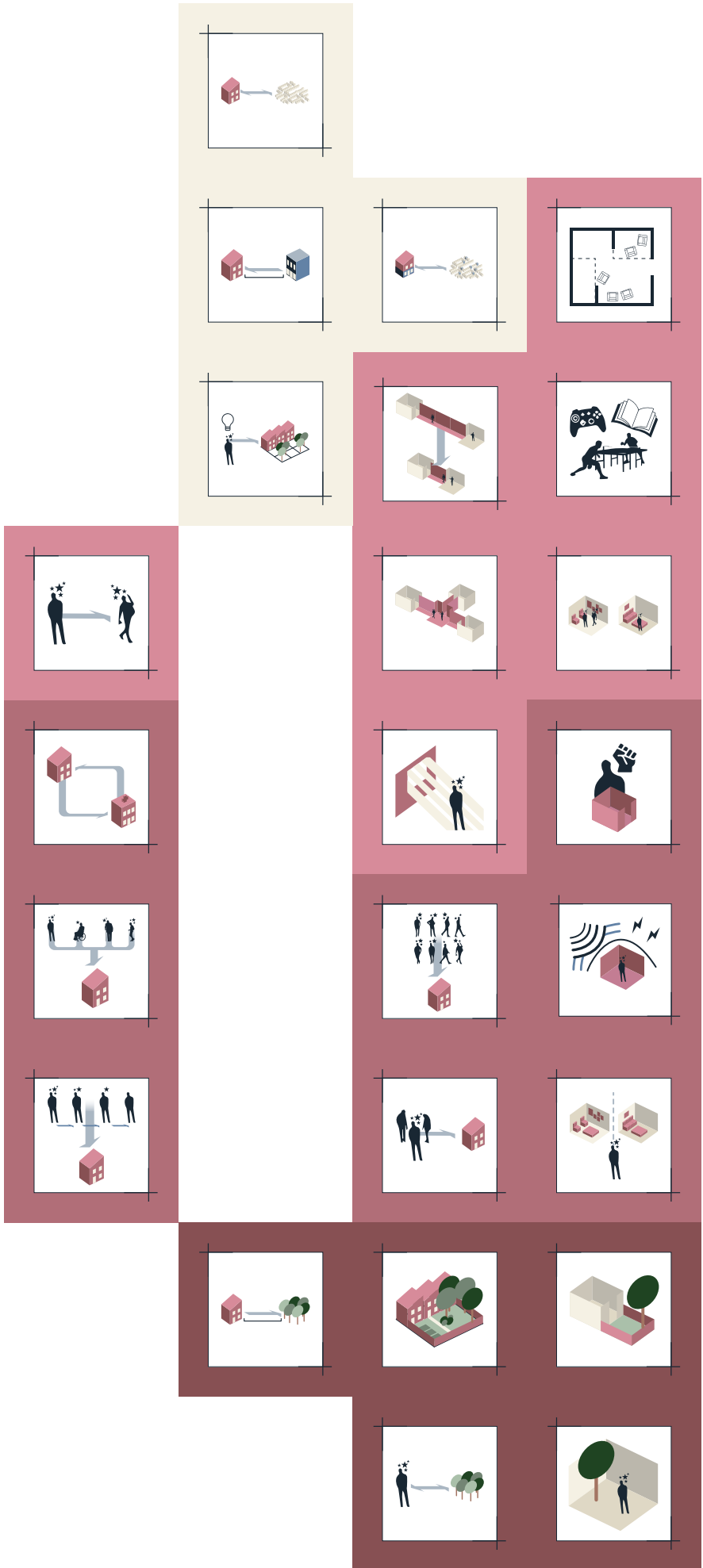
Chapter 2
Who lives in SH?

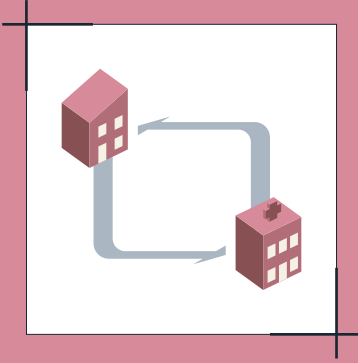
Chapter 3
Location
conditions

Chapter 4
Building &
program

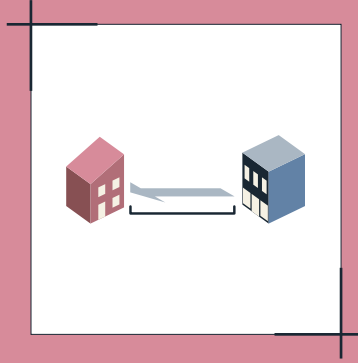
Chapter 5
Interior &
dwelling

- Contact with nature
- Fitting needs of inhabitants of SH
- Activation of inhabitants of SH
- Interaction with the neighbourhood

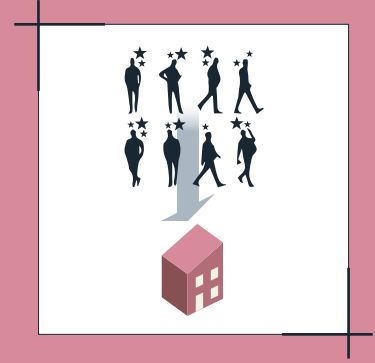




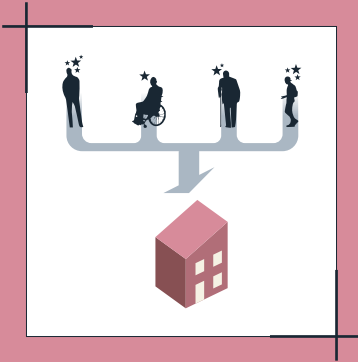
Flexible to changing policies



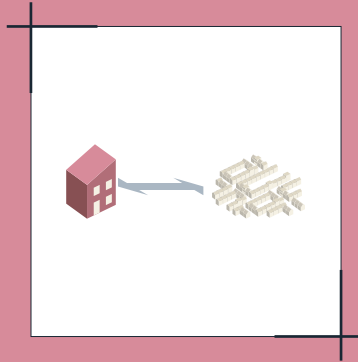
Nearby amenities



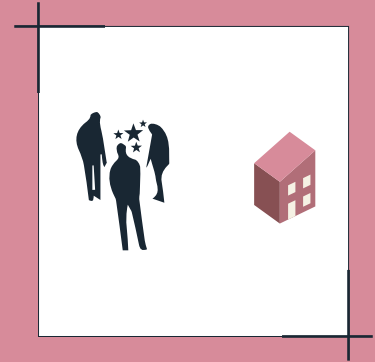
Clusters of max. 10 people



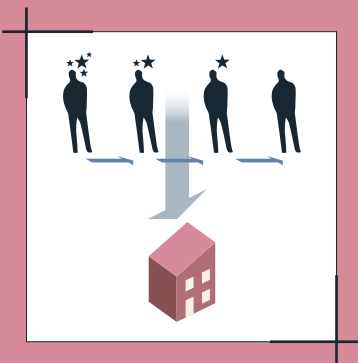
Fit the variety of users



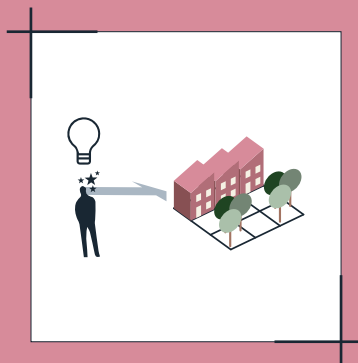
Interaction with the neighbourhood



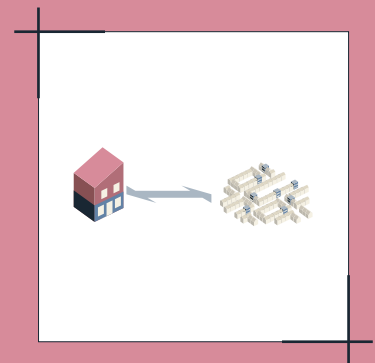
Accommodations and access for family



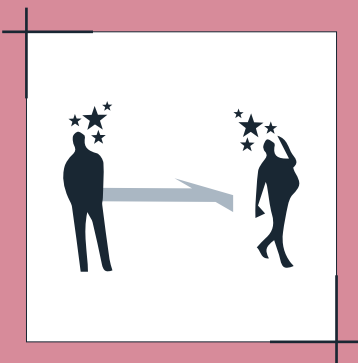
Fit the care process



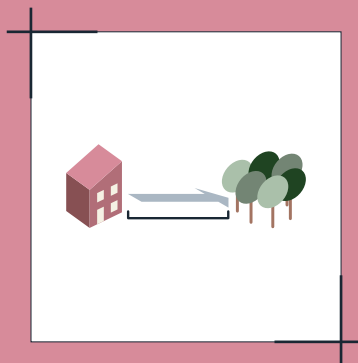
Clear layout



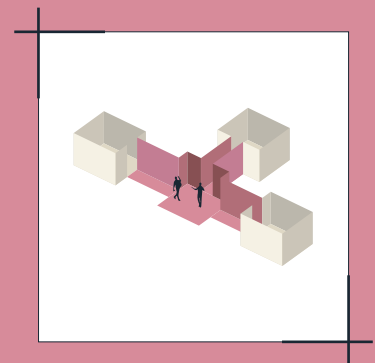
Amenities for the neighbourhood



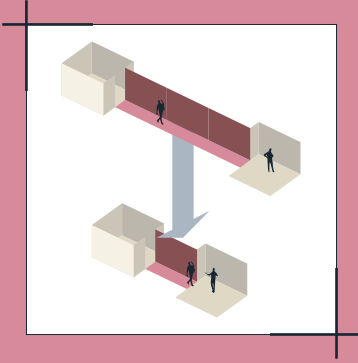
Activate users



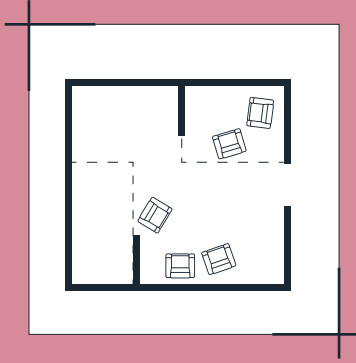
Availability of green



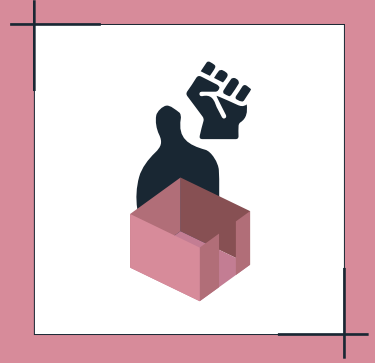
Shared, informal spaces for meeting



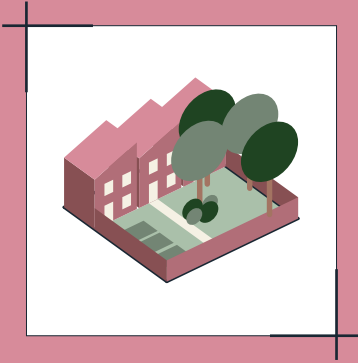
Short hallways



Open floor plan



In control of dwelling



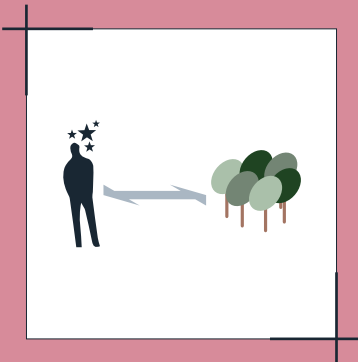
Shared private garden, with variety



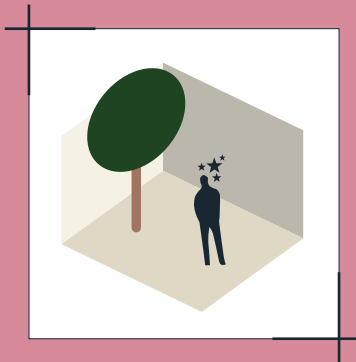
Availability of leisure



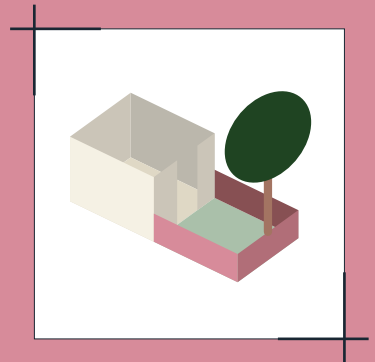
Low-stimuli in dwelling



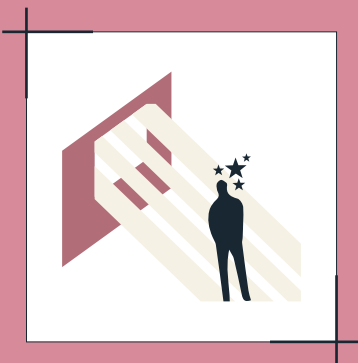
Connection to nature



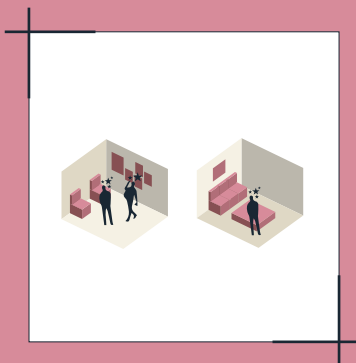
Indoor green



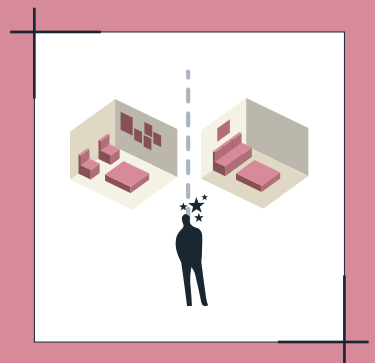
Private outside space



Access to daylight



Home-like where meeting or vulnerable



Customizable dwellings



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8. Appendix



Appendixes available at request

Appendix A | Interviews staff of the research location

Appendix B | Marko Matic, architect IAA-architects

Appendix C | Iris Hobo, design manager Radboud UMC

Appendix D | Esther van Gaalen & Iris Kooij, Director of Care & Strategic Real Estate Advisor

