Community house, residential group, commune, co living, cohousing, collaborative housing, cooperative living, intentional community, collective housing, common interest community, intentional community, community-led housing. These are just a few terms used for the large variety of communal ways of living, that I encountered during my research. The differences and similarities between these various ways of communal living, whereby space and facilities are shared, can be found in the different levels of commonality and amount of private space (Vestbro, 2010 & Camp, 2017).

In my research report I describe the concept of cohousing, in which future residents are strongly involved in the design and building process. On second thoughts, it is not within the scope of this research to actually design a building with a group of future residents.

Actually, a more appropriate term in this research report and for the building design would be co living. Peter Camp (2017, p. 111) describes this way of communal living as follows: “in co living each resident has his own ‘unit’ with a bedroom and living room, but also a kitchen and a bathroom. In addition, there are a number of facilities at project level, such as a residents’ café, a workshop space, guest rooms, a relaxation room, a garden... There is rarely a dining room or kitchen for the entire community.”

Co living is not about designing and building together with all residents, unlike cohousing. However, it is still about living together and being involved with fellow residents and immediate environment. The building design should stimulate social interaction and commonality. It will be about good neighbourliness on a voluntary basis, so no obligated activities, such as daily meals and cooking for all residents.

In order to meet the variety of residents and with that the different housing needs, the building should have a diverse range of housing types, that can be adapted to changing needs in the future. The houses are relatively small, to keep it affordable. The building will be developed and rented by a housing association.

Initially, the target group consisted of one and two person households, working in the professions healthcare, police and aviation. They often have to deal with irregular working hours. On further consideration, this target group may be too specific. By making a small adjustment, the target group can be made more general and matches the current demand even better.

Each city needs key workers; people who are essential for society, such as teachers, caregivers and police. A well-known problem is that these
people can hardly find an affordable home in the city of Amsterdam, close to their work. To deal with this specific housing shortage and demand for employees in the professions mentioned earlier, the municipality of Amsterdam considers to make dwellings available (Vastgoed actueel & Couzy, 2018).

These key workers, consisting of one and two person households, will be the future residents of this co living building. Their lifestyles will be taken into account during the design process. For example, extra attention to safety, visibility and access, due to the irregular working hours of a number of residents. A common workspace/table can be considered.

**Literature**


Research Report P2

Winde Schipper
4287312

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TU Delft, Architecture
Dutch Housing Graduation Studio MSc 3
Between Standard and Ideals- Havenstad Amsterdam

Tutors: Theo Kupers, Pierijn van der Putt & Ferry Adema
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Introduction

“What is happening now, happened also back then: space was sought everywhere.” (van Bockxmeer, 2019, p.3). More than 500 years later, history repeats itself in Amsterdam. Due to the rapid population growth in the 16th century, house prices rose and the city became overcrowded.

Today this space is sought northwest of the city centre of Amsterdam, including the former port areas; Haven-Stad. The intention is to build 40,000 to 70,000 houses at this location. But how will these houses look like and how will people live the next fifty years? During my graduation in the direction of Architecture, Dutch Housing at the TU Delft, I try to find an answer to these questions. Perhaps cohousing is one of the answers to the housing challenges of the future.

This research report contains different types of research, that range from written analyses to analytical drawings. Altogether it forms the preparation of the design process.

First, idealistic ideas and visions on the city of tomorrow is expressed in the form of a manifesto. Thereafter the topic and assignment are investigated further. In this part the relevance of cohousing in Amsterdam, the historical context and the chosen target group are explained.

The next section shows the urban developments at the harbour of Scheveningen. This urban precedent was analysed by means of analytical drawings. The gained knowledge was valuable in designing an urban plan for the Minervahaven, part of Haven-Stad. Both aspects are the result of group work.

Thereafter, the chosen site in the Minervahaven will be elaborated further. In analytical drawings, photographs and perspectives is shown what the circumstances are in this particular place.

This is followed by a plan analysis, in which four specific buildings are analysed, that serve as a potential example for the building that has to be designed in this graduation studio.

With the information from the previous sections a plan of requirements and a conceptual design proposal is made.

All these various kinds of research together, provides insight in historical context, references, location, relevance, ideals and the target group. This insight and knowledge helps to underpin design decisions and to design a suitable building for the Minervahaven. This research is the beginning of the design process.
MANIFESTO
RESEARCH REPORT DUTCH HOUSING
Manifesto

The city as a patchwork of self-built communities

Who ever set foot in a typical Dutch neighbourhood, will have noticed that repetition and standardisation are the rule; copy, paste, copy, paste, etcetera. Houses and streets are so similar, that one wonders how people find their own house again. When passing all these identical front doors, it is difficult to imagine how diverse the residents and households are behind these doors. Everyone is pushed into the standard mould of the large project developers and has to adjust his lifestyle in order to fit in.

Do you want to live in this standardised one-size-fits-all houses? Should we simply accept that a wealth of lifestyles is pressed into a standard mould? It must be the house that adapts, and not the other way around. We will need the freedom and responsibility to build our own homes and adapt them to our own lifestyles. We will no longer line the pockets of large project developers. We will create our own homes, together! In a society of diversity and individuality, living and building together with like-minded people is the future.

In the future city we shall take over control and take good care of our houses and surrounding environment. The time and effort involved in building a home together evokes a feeling of ownership. Nowadays, especially in social housing, people do not see their home as property. They simply got it and do not bother to keep it neat. A feeling of ownership however, ensures that overdue maintenance and decay will be a problem of the past.

In the future city we have a strong bond with other residents in the building. We take care of each other. We have fun. We save costs. We share utensils. We have common spaces. We share services. We feel understood. We feel included. We feel safe. We feel at home. But above all, we have our own custom-made house within a small community.

In the future city we shall build in groups on small plots. The group is free to build whatever they want and what fits their lifestyles. By building in groups, a cacophony of houses is prevented. Residents have to design their community together in order to form a coherent whole, but each individual unit can be adapted to personal wishes and needs. In this way we can live in a customised home, without the city becoming a mess of individual and outstanding homes. The future city must be seen as a patchwork of self-built communities, in which the wishes of the individuals are fulfilled, but where the appearance of the city does not become chaotic and confusing.

In the future city we shall live in custom-made dwellings, reconnected to our fellow man. We take control over our immediate environment and feel part of society. We have discovered an improved way of living, one which values the diversity of society. We will build our own homes, together!
Independently together

*Cohousing with matching lifestyles in the Minervahaven*

The Dutch are on the eve of a huge housing challenge; their aim is to build a million houses by 2030. This may sound like an impossible task, however, they have done this before. For example the reconstruction just after the Second World War and the Vinex (Fourth Note on Spatial Planning) neighbourhoods at the end of the 20th century. A large part of the Dutch housing stock is the result of ideas within a certain context; many houses were built in a specific Zeitgeist. Typically, most of these houses were built for families with many children, they were the norm.

Meanwhile, society has changed fundamentally: the amount of single households is increasing, the population is aging, the composition of households is changing and society became multicultural. A lot has changed, but according to Floris Alkemade, Chief Government Architect in the Netherlands, the housing construction is lagging behind (Camp, 2016). Dutch houses, built for the standard family and characterised by repetition and standardisation, are not up to date anymore. Hence, the focus should be on quality instead of quantity (Jongeneel, 2018), houses should fit the diverse lifestyles of households these days.

Therefore, there is a growing demand to influence the design of one’s own home and living environment (DASH, 2013). In addition to that, according to the VROM (2009), there is an increasing desire - which is expected to rise continuously -, to share the immediate living environment with like-minded people, for example people with similar lifestyles, life patterns and matching wishes. In this way different population groups do not live with each other, but live side by side in relatively small self-designed clusters of houses.

Cohousing addresses both wishes: relatively small groups of like-minded people design and build together their own houses and immediate living environment. Interesting about this type of housing is the social aspect, which includes sharing everyday life and facilities. In doing so, these people will have their own custom-made home, within a familiar social network, where they can count on.

Nowadays Amsterdam also has to deal with huge housing shortages, the housing prices are soaring and many people do not have the opportunity to live in the city. According to minister Blok it is especially a problem that people who work in Amsterdam, for example people working in health care, police or similar professions, who also have nightshifts, cannot live in the city anymore (ATS, 2017).

Therefore, by 2040 the former harbour regions will be transformed in an attractive, high-quality residential, working and living environment; Haven-Stad (Gemeente Amsterdam, 2017). Approximately 40.000 to 70.000 houses will be built there. The Minervahaven is part of these former harbour regions and is also the
location for my graduation project; a cohousing project with like-minded people.

A cohousing project in the Minervahaven can be a future home for people working in professions such as healthcare, police and aviation. These people work at irregular times, during the nights and in the weekends. Equality in this group can be found in recognition of problems concerning working hours and sleep, but also in social interaction at times when most other people sleep or work. They share a similar lifestyle and need to live in the city. Hereby, the question is: How can cohousing be a solution for the current societal housing problems and in particular for people who have to deal with irregular working hours?

To answer this question, this study examines what cohousing exactly is and why it is relevant in the current Dutch society. This has been put in a broader context by explaining the historical background. Then is addressed what the wishes and needs of the target group can be and how that might be used in the project, at the Minervahaven.

**Cohousing**

Large development companies dominated the housing industry for many years, they determined how and where to live. But times are changing, the built environment and way of building is not always suitable anymore for the diversity of inhabitants. This is due to changing lifestyles, ageing population, increasing single households and growing cities. In response to these changes, cohousing initiatives increased and obtained new interest (Krokfors, 2012) (Bresson & Denèfle, 2015).

But what is cohousing exactly? Sometimes the term cohousing causes confusion, because of the variety of existing community housing typologies, such as collective housing, intentional community housing, self-build housing, cohousing and so on (Brouwer, et al., 2014). These housing typologies distinguish themselves by their design brief, their shared values and intentions of the group that takes initiative.

In cohousing people live together in a communal neighbourhood or building, without violating privacy of its inhabitants (Bamford, 2005). Each household has its own private house or apartment, including a bathroom and kitchen, in other words; a full-fledged dwelling. Additionally, there are shared facilities and common spaces, such as a kitchen, garden, workspace, childcare and gym. As Bamford (2005, p. 44) says: “…living together on one’s own” (image 1). In most cohousing projects common spaces and facilities are shared by twenty to thirty-five families. Beside these shared spaces, the actual core of cohousing is social interaction, which can be subdivided into three pillars (Krokfors, 2012).

The first pillar is building together, which is about cooperation and decision making. Residents have to invest in the project together in order to realise it. This has advantages in economic and practical terms, as well as in social terms. Indeed, working together during the design process and construction, increases cohesion within the residents group (Glass, 2009). The second pillar is sharing everyday life, which means that residents plan activities together, for instance cooking and dining together one or more times a week. The last pillar is serving a

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**Take away:**

A small, but full-fledged dwelling, with on top of that shared facilities. (Kitchen, garden, workspace, childcare, gym).

---

**Take away:**

Sharing everyday life in cohousing, dinner/cooking.
common ideal, which involves sharing a specific lifestyle or ideology (Krokfors, 2012). In other words, cohousing is about living in a custom-made home, in a small community, with like-minded people who share facilities and everyday life.

**Cohousing as a response to changing needs**

Having a shared ideology and living together is not a new concept. The idea of living in communities goes back many centuries in history. Christian communities already existed before the beginning of the era. Also in the following centuries, people lived together in communities for practical, ideological and religious reasons. For instance the monasteries in medieval times, where monastic inhabitants lived together in a small self-sufficient community (image 2).

More recent history can be found in Denmark, Sweden and the Netherlands. The community housing projects as known nowadays, originated in the 19th and 20th century. These communities were mostly based on socialistic ideas and their intention was to improve social relationships and solidarity. In Sweden the underlying idea was slightly different; here the approach was more feministic (Williams, 2005). They argued that dwellings that included a collective kitchen and childcare, gave women the opportunity to earn money outdoors independently, instead of housekeeping (Welling, 2003). An additional advantage of collective facilities was cost saving; shared facilities, such as a laundry or guestroom, were no longer needed in the private homes.

From the eighties onwards, more and more cohousing initiatives were launched. However, the design and planning process did not always run smoothly. "Many never got past the planning stage, discouraged by roadblocks that seemed to appear at every turn" (McCamant & Durrett, 1989, p. 141). Nevertheless, cohousing endures, but requires a lot of patience and perseverance from the initiators.

Halfway through the sixties, a discussion arose about the current living conditions in the Netherlands. Especially the scale of new neighbourhoods and related individualism was criticised. Furthermore, the role of woman within the family and the relationship between parents and their children was criticised. To actually achieve change, people gathered in order to fulfil their needs; in 1968 the 'Stichting Nieuwe Woonvormen' (Foundation of New Housing Forms) was founded, around the same time, 'Man Vrouw Maatschappij' (Man Woman Society), a new emancipation movement, also emerged (Kesler, 1991). Common childcare and the formation of living communes were seen as possible solutions to improve women's independence.

Although most initiatives came from citizens, the government actively responded to the changing needs. They stimulated experimental building projects by providing extra subsidies. In addition, citizens became more involved in the development of new building projects (Kesler, 1991).

The trigger for the first Centraal Wonen (Dutch term for cohousing) project was an advertisement in the newspaper of Lies van den Donk. In 1969 she wrote: "Who designs a housing project with a central kitchen and dining room, central laundry, nursery, study room, shared..."
Births per 1000 inhabitants

Year

Hongerwinter

Liberation
guest rooms and above or around it small homes for each family, with a living room, bedrooms, a small kitchen and a bathroom?” (Kesler, 1991, p. 7). She raised this question because of her personal need and wish to combine the care for her family and simultaneously work outdoors. She reasoned that she could not be the only one who had struggles to combine work and family. Therefore she searched for like-minded people, who wanted to start a housing project together.

Her idea had great impact, interested people gathered to develop these ideas and Centraal Wonen was born. Due to the large amount of interested people, initiative groups were formed in several cities. In 1971, the ‘Landelijke Vereniging Centraal Wonen’ (National Association Central Housing), LVCW, was founded. This organisation supported and guided the processes of new Centraal Wonen projects.

The first Dutch Centraal Wonen project was realised in Hilversum in 1977; de Wandelmeent. This modular housing ensemble was designed by Leo de Jonge. An important aim of this project was to obtain a varied group of residents; like in society. The Wandelmeent consists of fifty varied rental houses which are divided into ten clusters, each with its own shared facilities, such as a kitchen, garden and storage. In addition, there are also facilities that are shared by all clusters, namely a meeting room, hobby room, sauna and guest room (DASH, 2013). The advantage of this approach was the intimate shared facilities within a cluster. On the other hand, more perseverance was needed to organize activities with all clusters together, such as shared dining.

Whereas the majority of the Wandelmeent’s residents saw their neighbourhood as a kind of extended family and were positive about the idea of cohousing (Kesler, 1991, p. 50), it became clear that this way of living was not for everyone. Because it concerned rental housing, people sometimes saw it as a temporary living solution and not as a long term project. As a result they did not invest and participate in the social aspects of Centraal Wonen. Besides, in case of a conflict, it was relatively easy to leave the rental house (Fromm, 2012, p. 52). Consequently, those who stayed behind had to start again building a social bond with a new family.

A Dutch housing tradition

Over the past decades, society fundamentally changed, but the housing stock stayed behind. Standardisation and repetition dominate the image of the Dutch neighbourhoods (image 3). These serial-built neighbourhoods were a response to the major housing shortage and growing population after the Second World War; they were built in the spirit of that time.

The housing shortage after the Second World War was urgent, therefore it was officially named ‘public enemy number one’ in 1948 (Dogger & Veltman, 2011). Entire families had to live in a single tight room or attic, in the home of family or acquaintances. This situation continued until well into the sixties.

The war clearly left its marks. Due to construction stagnation, which lasted for five years, no houses were built. Moreover, thousands of homes were destroyed or badly damaged by the bombing raids.
On top of that, the houses that remained were very outdated and were commonly known as ‘krotwoningen’ (slum dwellings) (image 5). In short, there was an acute housing shortage, that could not be solved immediately. Especially because the Dutch government gave priority to the reconstruction of companies, economy and infrastructure, instead of building houses (Dogger & Veltman, 2011).

The population was growing rapidly after the war. At that time, young couples married faster and more often, which resulted in a remarkable number of new born children between 1946 and 1955; a baby boom (van der Bie & Latten, 2012) (image 6). In addition, many Indonesian Dutch repatriated during the same period. This did not benefit the housing shortages.

At the beginning of the sixties, the tide turned. Partly due to standardisation in construction (image 7), the housing production increased considerably. About 100,000 homes were built each year; an unprecedented number. At high speed new, repetitive houses were built at the edges of cities. Although much was built, also a lot of houses were demolished. Many outdated, dilapidated and small houses were declared uninhabitable and were demolished. As a result, the housing shortage did not decrease, the shortage of 260,000 houses in 1945 was still the same in 1956. Even after the completion of the one millionth house in 1962, there was still a shortage of approximately 280,000 houses (Blom, Stegmeijer, Buchner, Baarveld, & Pekaar, 2017). The consequence of this large-scale demolition, was a slow-growing housing stock and housing shortages remained until the seventies.

Many new houses were built as a part of the so-called expansion districts of the Dutch cities. Here the typical Dutch houses were built -rijtjeshuizen, duplexwoningen, galerijflats and portiekflats (image 3)- amidst the greenery, under the motto: light, air and space. In these neighbourhoods the individual houses were subordinate to the public space, important was the greenery that flowed continuously between the buildings (Blom, Stegmeijer, Buchner, Baarveld, & Pekaar, 2017).

In addition, the Dutch family was seen as the cornerstone of a neighbourhood community (image 8). Sixty percent of the built houses were therefore family dwellings. The layout of the floor plan was tailored for the families. In order to resolve the housing shortage quickly, this kind of post-war neighbourhoods were built systematically and in series.

**Society is changing**

Once, the Dutch family with children was the standard. In the present time this family is no longer the norm. However, old standards and aged solutions are still being used for housing construction and design. Now households are changing, they become smaller and more varied (VROM-raad, 2009) (image 9).

The number of single households is growing. Between 1947 and 2017, the number of singles grew from 5 to 22 percent of the Dutch adult population. It is expected that by 2047 almost a quarter of the population will be single (CBS, 2018a) (image 10). The cause of this, is a shift in norms and values compared to the period just after the Second World War. Important changes are visible in prosperity, woman's
Alleenstaanden
Alleenstaande ouders

Lid paar zonder kinderen
Lid paar met kinderen
Alleenstaande
Alleenstaande ouder
Totaal

Sterk eenzaam
Enigszins eenzaam
Niet eenzaam
independence and the welfare state system which will be slowly replaced by a participation society. Gradually, people were increasingly able to determine their own course of life.

Until the sixties is was the norm to marry young, live together and have children; that was expected in society. This norm changed; marriage, living together, relationships and children are less and less strongly connected. Today, young adults remain single longer and focus on a career, travelling, or social life. Marriage and children are often postponed. In addition, divorces are becoming increasingly accepted in society, which is one of the causes of the growing number of single households.

Because of the baby boom after the Second World War, now the Dutch have to deal with an enormous ageing population. Many of these elderly are single and suffer from an shrinking social network (Camp, 2016). According to the CBS (2018a) 7 percent of the population experienced a strong sense of loneliness, 30 percent felt somewhat lonely (image 11). Missing a partner is one of the main causes of loneliness.

Also the municipality of Amsterdam is aware of the incensement of single-households. They are discussing the realisation of new living concepts such as friend houses and small studios with shared facilities for all residents (Groen Links, D66, PVDA, SP, 2018).

In addition to this, family structures are also changing; there are more and more single-parent families, blended families and two-person households. The family consisting of father, mother and children is no longer the standard (image 12). Moreover the role of women has shifted too.

Not only the composition of households is altering. As a result of migration, society changed from a homogeneous society to a multicultural society (Camp, 2016). This creates major differences in lifestyle, norms, values, style, taste and symbolism (VROM-raad, 2009). Also, more people, among all social groups, are sensitive to the spatial quality and appearance of their house and living environment.

Furthermore, the role of women has changed significantly. Women used to run the household and care for the children, while their husband went to work. This changed during the sixties and seventies. Individual development and equality for woman became the new ideal (Blom J., 1993). The traditional division of roles between man and woman is altering, and therefore their lifestyles too.

Because of the changing and diverse lifestyles, one has become aware of the fact that houses, once built for typical Dutch families, are no longer up-to-date. In practice, for example in project space-S in Eindhoven, it appears that there is a great demand for various housing types, more than housing corporations ever thought of (Pakhuis de Zwijger, 2018). In the current construction sector there is too little attention for these changing lifestyles and demands (VROM-raad, 2009). In addition, the government withdraws and assumes that citizens can help themselves.

By building a house yourself, people can decide for themselves how their house will function and look like. Their houses will be tailor-made and match the lifestyle of its residents. In this way people do not
have to adapt their lifestyles to the standard mould, that is prescribed by big project developers.

**Living together**

In these days there is a growing need to live together with like-minded people (VROM-raad, 2009). Hereby, common grounds can be found for example in matching wishes, ambitions, life stage, daily activities, hobbies, philosophy of life, religion and culture. This has not always been the case. Until the nineties an important goal in cohousing was a mixed group of residents, like a reflection of society. This was also applied in the Wandelmeent in Hilversum. But times change and Dick van Gameren says “… society has become so diverse that it is neither feasible nor desirable to expect a project to reflect society as a whole. This is why projects that focus on a cohesive group of residents are relevant. While the idea of the broad social make-up propagated by some older projects may well be obsolete.” (DASH, 2013, p. 15).

As mentioned before, living together is not something new. But where does this renewed interest in collectiveness come from? According to Peter Camp (2016) this is related to the increased individualisation and fragmentation of society, resulting in a growing need for commitment, social contacts and security; people want to have a sense of belonging (Camp, 2016). The Dutch Ministry of Housing, Spatial Planning and the Environment (VROM-raad, 2009), states that changes in composition of neighbourhoods and increased social networks, may be the reason for this renewed need for collectiveness.

Nowadays social contacts can be maintained over large distances, thanks to good transport, social media and other communication tools. Many people’s social life takes place outside their direct living environment (image 13). Some even neglect their entire social network in the neighbourhood (VROM-raad, 2009). For example, some have no idea who their neighbours are.

People are looking for a certain familiarity in the immediate living environment. A familiar environment and feeling home, are strongly related to the identification with the neighbourhood and its residents, which increases when people have similar lifestyles (VROM-raad, 2009). Like Peter Camp (2016) says: “People search for a living situation in which they can be themselves, with a close (neighbour) network of other people surrounding them”.

Kim Otten is one of the residents of de Warren, a self-build project in Amsterdam. The project was not only about building affordable houses and save costs by building together, but mainly about getting in touch with other. She thinks more people would benefit from a shared way of living. “In a city that is increasingly individualistic, many people feel the need to care and share for and with each other” (van Bockxmeer, 2018).

By building together, in small groups, personal needs and wishes can be realised in a custom made house, simultaneously a new social network with like-minded people, close to home, is in the making. An additional benefit is the cost saving by building together.
Options for floorplans with exchanged rooms.
Irregularity as a connector

In the current 24-hour economy, it is important to be operative day and night. Consequence is that 967,000 people in the Netherlands work at irregular times (CBS, 2018b), at night and during the weekends, in shifts. This shift work is very common in the following professions: health care, police, hospitality, fire service, surveillance, transport, industry, services and construction.

Working in shifts means that there is a fixed work schedule each month, but working hours are variable. During a 24-hour period, two or more shifts can occur, whereby teams will take turns. In this way services can continue day and night, every day. Because of rotating shifts, each week is different. For example, it is possible that employees work a few days in the morning shift, have a few days off and work the next few days in the night or evening shift. In addition, because work continues during the weekend, it is possible that their days off are on Wednesday and Thursday. So, the schedule is fixed and known beforehand, but it is hard to find any regularity in it.

Working in shifts can have damaging effects to the physical and mental health (Ministerie van Sociale Zaken en Werkgelegenheid, 2018). The biological clock is often disrupted, so that sleeping disorders and lack of sleep are a common complaint. People who work in shifts have to deal with a kind of chronic jet lag. The body is continuously adjusting to the changeable schedule. Besides, these employees are more likely to suffer from stomach-intestine complaints and have a greater risk of getting cardiovascular diseases, obesity and diabetes. Also frequently heard complaints are loss of concentration, headaches and general malaise.

The intended target group are people that have to deal with these irregular work schedules, in particular the professions health care, police and aviation (image 14). The design location, Minervahaven, is not far from the city centre, Schiphol airport and the harbour, so there is plenty of work in these sectors nearby. To narrow down the target group even more, I have chosen for single and two-person households. However, this entails the risk that two-person households cannot expand easily without moving, considering the intention to build small dwellings. For instance, the birth of a child has major consequences for the spatial needs of a household. McCamant and Durret say about this: “People’s lives are rarely static, and neither should their housing be” (1989, p. 189). The question arises: how to make a building future-proof, so families can stay longer in their homes?

To accommodate changing lifestyles in the future, dwellings should be adaptable. For example provide the possibility to merge two dwelling units, or a room that can be exchanged between two dwelling units (image 15) (McCamant & Durret, 1989).

One might wonder why this group of people -that have to deal with irregular working hours and shift work- should live in a cohousing project. This decision is related to the negative social consequences of shift work. Often this group has time off, when others are at work.
and the other way around. Due to this, it takes more effort to meet friends and family, join a club or go out in the evenings. Because of the unequal daily routines, in leisure and work, they are on their own when it comes to leisure activities. The result is that they often feel alienated in relation to society and feel isolated from family and friends (Eurofound, 2012). Besides, they sometimes encounter incomprehension. Marije Janssen is nurse and says the following: “People never fully understand what it’s like to have a night shift if they do not have to deal with it themselves.” (Argos, 2018). Such a work schedule does not only affect the (social) life of the employee himself, but also the lives of partners, friends, family and acquaintances.

Living together in a cohousing project, could be a possible solution for these people. In this case, everyone has to deal with irregular working hours and the social and physical consequences. There will be a mutual understanding for each other’s needs and lifestyle. For instance, in such an environment one can meet each other, also at less common times. There is always someone who also worked the night shift and has time off during the day and vice versa. Also partners that have regular working hours, can benefit from the company of others. For instance, when their own partner has an evening shift and they do not want to have dinner on their own. Cohousing can offer this target group a social network close to their home, that can be combined with an irregular working schedule.

The residents wish

Since there is not a group of shift workers that is interested in cohousing in real life, that I know of, this group must be simulated somehow. This is done on the basis of qualitative and quantitative research. At first, an in-depth interview with Renate and Henk (Appendix 1), who want to build a cohousing project, provides insight into the motives to start such a project. It also gives information about the general wishes and expectations in cohousing. In addition, a questionnaire about irregular working hours, answered by people working in healthcare and aviation, gives an indication how their days look like and whether their house can help to solve some of their problems related to shift work. I am aware of the fact that the number of interviewees and respondents is not representative for the entire target group, however due to the limited scope of this project, the assumption is made that the sample group is a reflection of the target group. In addition, literature research and own interpretation will be important in forming a final plan of requirements.

One of the most heard complaints among shift workers is sleep deprivation and all its consequences. It is difficult to sleep during daytime, especially if there are other people in the house. Consequently, more than a fifth of the nurses uses for example sleeping pills to be able to sleep (Focus, 2018). But why is it so difficult to sleep during the day? This has to do with the melatonin content in the blood. Melatonin is a hormone that the body produces under the influence of light and darkness. When it is dark, melatonin is released in the body and gives a sign that it is time to sleep. The light, and especially blue light, gives the body a signal to wake up. This knowledge is used for
example in special glasses that can be used by shift workers. They can put on their blue glasses when they need an energy boost. Or they can use the orange glasses, that filter the blue light, when they want to sleep soon (Focus, 2018). This knowledge might be useful in a building as well, for example by using coloured glass in specific rooms.

The outcome of the questionnaire (Appendix 2) confirms previous findings; it is not easy to deal with irregular working hours. Among respondents a disturbed biorhythm causes for example, fatigue and irritability. Someone mentioned that after a few nightshifts, it takes a week to sleep normal again.

Because of the changing, unpredictable schedules and working when others are free, it is difficult to plan social activities. Respondents mention that they often have to cancel appointments and that it is difficult to plan ahead.

Most important outcome of the questionnaire is concerning noise and light. To get enough sleep, most respondents sleep during daytime, in one go or bit by bit. Hereby darkness and silence are crucial to sleep well. Shutters and silent housemates are appreciated.

An in-depth interview about cohousing gave insight in the motives to start such a project and what general wishes are. For example, Henk and Renate, who have plans to start a cohousing project in the near future. Although their plans are not concrete yet, they do have ideals and ideas concerning cohousing. It is important to note that they are not part of the target group. The goal of this interview was to understand and discuss cohousing in general.

A major reason for them to start such a project, is the fear of moving too late. They are reaching the age of retirement, their children are grown up and have left home. They want a senior proof house and the possibility to build a new social life, before getting too old. Cohousing offers them the possibility to share practical aspects, such as health care, but provides also a social safety net, concerning the coming loneliness.

Privacy and independency are recurring subjects during the interview. They mention that there should be a balance between sharing things -washing machine, car, dinner-, involvement and privacy. Renate says: “I have a need for me-time”. She likes to cook and have dinner together, but that should not be an obligation.

Hence, their need for a full-fledged private house, with on top of that the possibility to share services, spaces and activities. This concerns spaces like a guestroom, laundry and living room. They imagine this living room as a kind of hotel lobby or Starbucks at home. It will be a place with newspapers, coffee, casual chats and perhaps even a house dog. Lastly, another important wish is a garden, which they would like to share with other residents. However, a small private terrace close to the house is desired.

**Cohousing in Minervahaven**

The chosen plot in the Minervahaven consists of two building volumes of 35 by 30 meters, that are 4 and 5 stories high, located along the quay.
of the inner harbour. There is room for approximately 35 dwellings or apartments per building. This is based on the guideline of 20 to 35 dwellings per cohousing project. In the case of fewer dwellings, there will be a lack of critical mass. In the case of more dwellings the sense of a small scale and personal environment will disappear (Camp, 2016). According to Ruiu (2014) is the optimal amount of residents between ten and forty adults, in order to develop good social dynamics. Each building block will have its own residents and common facilities. The advantage of this is that resident groups are relatively small, so there is more intimate contact and decisions can be made more easily.

But why is this way of living, living and building together in small communities, an interesting subject especially for Amsterdam? Anneleen Lagae (personal communication, November 30, 2018) of the Amsterdam municipality (Program Manager Housing, Result Responsible Unit Land and Development) explains: Amsterdam has to deal with housing shortages, therefore people are forced to live smaller and closer together. So there is a need for smaller houses, but also a need for good quality. In the past, too many anonymous and impersonal 'small boxes' have been built by large developers. This is not what the municipality wants anymore. By means of adding shared facilities in the building, the quality of small houses will be improved, while they still consume little square meters. The idea of cohousing responds to this. In addition, she mentions that small-scale buildings offer higher urban quality than large-scale projects.

**Conclusion**

In this study I searched for an answer to the question: *How can cohousing be a solution for the current societal housing problems and in particular for people who have to deal with irregular working hours?*

Once again the Netherlands has to deal with a huge housing shortage. Thousands of new houses need to be built. This must be done in an appropriate way. The varied composition of the population and diversity of households should be the guiding principles, instead of repetition and standardisation of houses. Nowadays people have a growing need to influence the design of their own home. This does not mean that everyone must build their own individual home. Namely, there is also a wish to share the immediate living environment with like-minded people. In cohousing both wishes are expressed simultaneously; building your own house and environment, together with others.

Although the social aspect in cohousing is the most important, cohousing offers also financial benefits. This is due to the shared facilities and building costs. Because of these shared facilities, less square meters are required per house, without a decrease in quality. This is in line with the ideas of the Amsterdam municipality.

For people with irregular work schedules it is sometimes hard to invest in a social network. Cohousing with like-minded can revive their social network, also at less common times. An informal social network, close to home, makes it easier to interact.
Additionally, regarding the target group, a quiet and dark bedroom is the key to sleep well during daytime and function properly. Furthermore, the results of the interview show that a clear distinction between privacy and common life is desired.

Building your own home meets the needs at that particular moment, but what happens when the resident’s lifestyle changes, or when they move? Will the house still be usable and appropriate? How can it be built future proof? A few ideas are given in this research, but these questions should be investigated further in the design research.

By writing this research, I understand the relevance and (historical) context of cohousing. Besides, a good impression of the target group is gained. Small stars in the margin of this research, indicate an important ‘take away’ for the design. All this information is the starting point of the design process. The brief is to design a cohousing project in the Minervahaven in Amsterdam, in specific for people who have irregular work schedules. A variation of small, future-proof dwellings is important, that fits the needs and lifestyles of people working in shifts at the same time. In addition, collective spaces that activate social daily life and the threshold between public and private domains, should be designed carefully. Therefore, the design question is as follows: How can a cohousing building facilitate common spaces that activate social life of people working in shifts, in combination with small, future-proof dwellings? To answer this question, design research is needed. This will be done, for example, by exploring references and experimenting with scale models and sketches.
Introduction Norfolk terrein

The former area of shipping and ferry company Norfolkline in Scheveningen, will be transformed into a new work and residential environment. On behalf of the Norfolkline company in 1973 a new port was constructed and an old channel was muted. After forty years the company decided to leave the place, which offered opportunities for something new. The location near the beach, the lively harbour and close to Den Haag, makes it an interesting place to live and work. The Norfolk terrain contained only a few buildings, two buildings have been demolished, but the ‘sluiswachtershuisje’ is remained (lock keeper’s house).

Urbis designed the urban plan which contains approximately 700 new houses and facilities such as restaurants, shops, hotels and a museum. The area is about 60,000 square metres, which means there are circa 117 dwellings per hectare. The plan consists of rather large building blocks, but because of its architecture the facade will look varied, with different identities. White continuous bands on the facades connect the building blocks to each other and make sure the design will be coherent. There will be a variety of housing options, including social housing, free sector rent housing and owner-occupied housing.

The plan is divided in two large pieces, each with a different developer. The upper part “de Zuid” is developed by MRP development and VORM ontwikkeling, the architectural design is made by LEVS architects. The lower part of the plan is developed by Arcade and is called “New Norfolk”. Architecture firm KAW is responsible for the design.
Primary goals Norfolk terrein

The lively, industrious character of the port is emphasized by its mixed program. Besides housing there will be shops, restaurants, a sport area, cafes, hotels and a museum. The character of these buildings will be robust and industrial, with materials such as bricks, concrete and steel. This robust character is also reflected in the large subdivisions in the façade. In order to connect this building block with the port and sea the colours that will be used are light beach shades. There is also a strong connection to the water by the use of large stairs towards the water, at the same time this area will become a place to be; “placemaking”.

The buildings along the Duinlaan will have a luxurious appearance. The apartments are of high quality and have a proper, sunny outdoor space, which are overlooking the dunes. Representative architecture and accentuated entries fit the luxurious ambiance.

In between the large building blocks, in the sun and out of the wind, they have designed a small village near the port. The building blocks are lower and horizontally divided in order to arise the idea of separated and individual houses. To accentuate that idea even more, doors are at the street side and there is a transition zone between public and private space.

To emphasize the enclosed character, the neighbourhood is greener than in the port itself, the area is car-free and there are playgrounds for children. In terms of materialisation; a link has been made towards the port, the same materials will come back, but in a more sophisticated way.

In order to make a clear transition zone from the city Den Haag towards the port and beach of Scheveningen, the designers made use of a strong axis; the Duinlaan. The building blocks along the Duinlaan gradient of colour; from dark red and brown bricks of the city to light yellow and grey materials of the beach. Also the layering of the facades expires; towards the harbour the division of the facades will be more coarse. Besides this connection, there must be a connection towards the other side of the port. This will be done quite literally; by using a cable car over water.
**Three atmospheres**

As can be seen in the axonometric drawing of Norfolk, the plan consists of three main elements and some public functions; the Duinlaan, the small village and the harbour. Each element has its own atmosphere and appearance. These four elements are connected to each other by the use of certain materials and colours, which are related to the harbour and beach.

An abstracted version shows the three main parts of the plan; two closed building blocks, a hook shaped building and some scattered smaller blocks.
Water and green

As shown in the drawing there are four harbours; Buitenhaven, Voorhaven, Eerste Haven and Tweede Haven. The Eerste Haven is all about fishing, here are the shipping companies and fish auction situated. The Tweede Haven is suited for recreation and leisure activities, here are the restaurants and the sailing harbour located. The Voorhaven will become part of the new Norfolk neighbourhood, which consists of houses, shops, restaurants, hotel and a museum.

The Norfolk terrain is close to the beach of Scheveningen and borders the dunes. As shown in the illustration there is little green in the harbour, but landward there are a few trees and greenery. The plants and trees (conifers, rosehip and marram grass) are resistant to the strong wind, sand and salt.
Figure ground

The Norfolk terrain forms a transition between the fine-meshed neighbourhood in the west and the coarser building masses of the port in the east. The structure (streets and building lines) of the adjacent neighbourhood continues in the Norfolk terrain.
Streetpattern and parking

As shown in the image, a large part of the Norfolk terrain is for pedestrians only. Roads (50km/h and 30km/h) run along the edges of the terrain. The entries of the parking garages are at the boundaries as well. Cars are not allowed in the pedestrian area, small posts prevent drivers to drive on, but destination traffic and loading and unloading is allowed.

At the Duinlaan a new tram line will be constructed, so there will be a good connection between Den Haag, Norfolk and the beach. There are also plans for a cable car connection between the two port heads.

Underneath the residential buildings half-deepened garages have been realized, with entrances located at the edges of the neighbourhood. Near the beach there is a bicycle storage, so people can easily get access to the beach. Parking in the public space is limited.
Facilities

The Norfolk terrain consists of three different parts and several public buildings; live and work at the harbour, live at the Duinlaan and live out of the wind and in the sun (village). Each part has its own appearance. For instance, the Duinlaan has a refined and luxurious appearance, the harbour has a coarse and industrial look and the village consists of separated houses and is more diverse in architecture. The public buildings, called specialties, are scattered around the site. These specialties are for example hotels, a museum, a sport place, a boat shed, offices and the former sluiswachtershuis.

The Norfolk terrain is developed by two developers; Arcade wonen and de Zuid.

Therefore the plan is divided into two areas, namely de Zuid in yellow shades and New Norfolk in blue shades. De Zuid consists of luxurious apartments, small-scale living and large residential blocks. New Norfolk consists of social housing, private housing and single family housing.

The building blocks on the west and north side (Duinlaan and harbour) are 4 to 6 levels. The buildings inside this “hook” are lower, they are 2,5 to 4 levels. A few of the public buildings are sticking out compared to the surroundings, they are 25 to 90 metres high.
**Wind direction and sightlines**

On average, the wind comes from the southwest most often. The designers have taken this into account during the design process. The black building blocks in the illustration act as a windbreak for the houses behind it. To make sure the balconies on the west side of these buildings are pleasant to stay on, the balustrades are made of glass. Because of this the residents of this building can be out of the wind too.

Each part of the plan has a certain view. For instance the Duinlaan which is orientated towards the dunes and sun; the harbour which overlooks the harbour, boats and other activities. In some places there is a direct sightline towards the sea, which are marked in the illustration. Finally the Duinlaan forms an important axis in the plan, this is the main road towards the beach and neighbourhood.
Architecture façades

Duinlaan | The architecture of the Duinlaan building block is refined and has a luxurious appearance. Due to materialization and architecture it seems like there are more buildings than there actually are. White bands are used in order to connect the buildings visually.

Village | The architecture is diverse and horizontally oriented. Each house has its own look. Each resident can choose their own preferences, for instance materials, height and shape.

Harbour | The architecture in the harbour will be coarse in form and industrial in materialisation. Façade parts are bigger and less ordered compared to the Duinlaan and
Sections

Duinlaan | In the section (a) of the Duinlaan is shown how the transition zone is designed between private and public space; a raised outdoor space gives the residents some extra privacy. The residents have a view over the dunes and have a sunny balcony.

Village | This section (b) shows the intimate character of the village, houses are lower, streets are smaller and there is more vegetation. The transition between private and public is made by the use of planters and small benches.

Harbour | In this section (c) is shown how the building blocks are oriented towards the harbour. Platforms, stairs and pontoons offer place for leisure and social interaction.
“YOUR OWN NEIGHBOURHOOD, ON AND BY THE WATER”

MINERVAHAVEN, AMSTERDAM
Context Minervahaven

The Minervahaven is an old harbour basin in the port of Amsterdam, the Netherlands. It was dug around 1880. It is located close to the ring-road A10 (orange line) and the central station of Amsterdam (pink dot).

Circumstances 1975
Minervahaven is an old wood harbour. Historic elements are the Danzigerbocht and the quay.

Figure ground current situation
Build: 95.130 m²
Unbuild: 199.564 m²
Build area: 32%

Ownership
Most land is in possession of the Amsterdam municipality, except for the orange areas. Those are private property.
**Building age**
Buildings are built in various times. Some are brand new and not even finished yet, but there are also old neglected sheds.

**Parking**
Cars can park in the parking garage (dotted yellow line), parking lot (yellow line) and along the roads (red line).

**Traffic**
The red line indicates the main access road. On the piers, the roads are situated along the waterside. There is also a busstop.
Building opportunities Minervahaven

The existing buildings valued on the basis of building age, architectural quality and function. Below an overview of the buildings that will remain in our urban design proposal for the Minervahaven.

Important to note is that this is a subjective selection.
Opportunities Minervahaven

In this map is shown what we find valuable aspects in the current Minervahaven. We think it is important that these elements somehow return in the new urban design.

The aspects are: Houtveenkaal (1), greenery (2), views over the water (3), inner harbour (4), the quay (5), Danzigerbocht (6) and Theatre Amsterdam (7). The back of the Theatre needs extra attention (!).
**Functions**

In the new urban design for Minervahaven, existing buildings had to be taken into account. Most of these existing buildings are not residential. To make a transition from these ‘work’ areas to the residential areas, a mixed work/residential area is introduced.

In addition, the green structure will be intensified on the piers, de Danzigerbocht and on the water in the inner harbour.

**Scheme masterplan**

The new neighbourhood of Minervahaven is surrounded by tall buildings (13 to 23 floors), like an embrace. These buildings overlook the water.

In the middle of the inner harbour is room for recreation, relaxation and fun: a park on the water. The buildings around this inner port are lower (5 to 7 floors) and focussed on the water.

The motorway is moved to the middle of the piers. This made it possible to transform the quay in a walking route along the water, for pedestrians only.

The green has been intensified in various places: the roads on the piers, the park on the water and the Danzigerbocht.

The Danzigerbocht will be revived by adding green, a pedestrian zone, shops and cafés.
Masterplan Minervahaven

The buildings are coarse and large, they refer to the old harbour. Except for the buildings in the residential area, near the theatre, these buildings have a more fine-meshed structure.

Residential area: 68%
Work area: 32%
Ca. 3282 dwellings (111 dwellings per hectare)
References

Important references for the urban design are: Hafencity in Hamburg, Norfolk in Scheveningen, Müllerpier in Rotterdam. The building sizes and shapes are used as an example.

Below are these cities shown in the same scale and layout.
Sections masterplan Minervahaven

The retail area is shown in the first section. These houses have a ground floor access (grondgebonden woningen). The canal on the left is the Danzigerbocht (1), with along it a pedestrian zone. At the back of the theatre is room for sports and art (2).

The eastern pier is shown in the second section. On the left a park on the water of the inner harbour (3). On the right tall buildings that cantilever over the water (4).
**Chosen site**
The two building blocks are approximately 35 by 30 meters and have a height of 15 meters. There is room for circa 35 dwellings per building block.

The site is situated at the inner harbour on the eastern pier of the Minervahaven. The void in between the two building blocks will also be part of the building design.

**Traffic**
Cars can park in the parking garage halfway the pier. Along the water is a pedestrian area.

**Noise**
The site is located in the port and industrial area of Amsterdam. This causes noise pollution. However, the industry will probably move in the future.
**Sunpath**
The sunpath in winter (22 December) and summer (22 June) is shown in the illustration below.

**Shadows**
In the illustrations is shown how the shadows are like in summer and winter, at 9.00, 13.00 and 17.00.

**Wind direction**
Wind comes most often from the Southwest.
Views and sightlines
The buildings have a view of the water and park (on the water). There is also a sightline from the East to the West side of the pier, so from the void in between the buildings there is a view to both waterfronts.

Atmosphere
The atmosphere in the Minervahaven is shown in the pictures. What I found interesting were the industrial and port elements. The large water surface gave the location a spacious feeling.
Perspectives
Three perspectives of the chosen plot in the Minervahaven.

View from the water on the Eastern pier.

Bird’s eye view on the inner harbour and park on the water.

View from the Eastern pier on the inner harbour and void between the two building blocks.
PLAN ANALYSIS
RESEARCH REPORT DUTCH HOUSING
**Topic** | Design tools that encourage residents to come together and activate social life in a building.

**Relevance** | This research gives insight in the design tools that have been used to design a building that activates social life and encourages people to come together. These design tools and principles, found by analysing four case studies, can be useful in designing a cohousing project in the Minervahaven.

**Research question** | Which design tools have been used to activate social life in these four case studies?

**Hypothesis** | A building that encourages residents to meet, is provided with various types of collective space, that functions as a transition zone between the private and public domain.

**Method** | Four aspects and four case studies have been analysed in this plan analysis. The four aspects are: the access system, the private and public domain, collective space and dwelling features. The four case studies are: Tietgen Kollegiet (Copenhagen), Vrijburcht (Amsterdam), Miss Sargfabrik (Vienna) and Songpa Micro Housing (Seoul).

In order to analyse the design tools used in these case studies, various drawing techniques are applied. Each aspect is analysed and drawn in a particular way. But by analysing each case study in the same way, it is possible to compare them per aspect and see what their similarities are.

**Results** | A brief overview of the four chosen projects is shown below. Thereafter, the plan analysis results are presented on the following eight pages.
The dwellings are accessed via a gallery on the inside of the building block. The gallery is 1,5 to 2,6 meter wide and adjoins the kitchens of the dwellings.

The dwellings and shared facilities are accessed via a hallway that is 2,3 to 2,8 meter wide.
The dwellings are accessed via a hallway that is 1.7 to 2.3m wide.

The majority of the dwellings are accessed via a gallery that is 5.2m wide. Some dwellings are accessed via small entrance halls (portieken). The kitchen often adjoins the gallery.
The gallery is used to access the dwellings, simultaneously it functions as outdoor space for residents. In this transition zone - the zone in between private and collective space - they can place their plants and outdoor furniture.

Each cluster of 12 dwellings shares a kitchen, living room, terrace and storage room, which are located on the inside of the building block. In addition, some dwellings have their own private outdoor space.
The hallway functions as collective space for everyone. In addition, most dwellings have access to an outdoor space that is shared with one or two other dwellings.

The collective gallery gives access to the shared functions: guest room, theatre, daycare and greenhouse. This wide gallery (5.2m) is also used as a semi-private outdoor space for residents.
Collective functions are clustered and for residents only. In addition, there is a collective garden.

Public functions, including the courtyard, are situated on the ground floor. In addition each cluster of dwellings has its own shared functions.
The building offers collective facilities for residents such as work spaces, greenhouse and guestroom. Public functions are for example the restaurant, theatre, daycare and sailing school. The inner courtyard is a collective outdoor space for residents.
The average size of the dwellings is 56m². Varying ceiling heights, split-levels and kinked walls give these dwellings a spacious feeling.

Dwelling units have a built-in closet wall, which can be adjusted to the residents wish.
These small dwelling units have built-in and fold-out furniture, in order to safe
space. Narrow openings just below the ceiling, make the apartment light and
spacious.

Light enters the dwelling from two sides. Dwellings have their own private outdoor space.
Conclusion | In this plan analysis is searched for design tools that encourage residents to come together and activate the social life in a building. This is done by analysing four aspects:

Access system | Various access systems are applied in the case studies; a gallery, hallway and small entrance halls (portieken). They have in common that galleries and hallways are relatively broad, between 1,5 and 5,2 meter, considering the minimum width of 1,2 meter.

Private and public domain | In all case studies the dwelling is private domain, some also have a small private outdoor space. All buildings are provided with collective space (inside and/or outside). In two cases the gallery is used as a transition zone between the private and collective domain. In this in-between zone residents can place their furniture and plants.

Collective functions | A wide variety of collective functions has been applied in these case studies, but they all have a collective outdoor space. Some of these functions are for residents only, but there are also functions that are open to the public. In the Tietgen Kollegiet, Songpa Micro Housing and Vrijburcht these public functions are located on the ground floor.

Dwelling features | Except for Vrijburcht, all case studies are relatively small. Dwellings are between 12,7 and 56 square meters. To give them a spacious feeling, split-levels, light, built-in furniture and high ceilings are applied.

Discussion | This plan analysis has shown which tools can be used to design a building that encourages social interaction. Four case studies have been analysed. By analysing more projects of this type, new tools and ways of applying can be discovered.
In addition, it would be an enrichment to visit these case study projects and see for yourself how the building is used by its residents. In this way, a more complete and realistic image of life and use in the building can be obtained.
Analysing these case studies on the basis of four aspects provides a clear direction and goal; they are analysed in a systematic and selective way. The consequence is that these case studies are not analysed as a whole.
BRIEF OF PROJECT
RESEARCH REPORT DUTCH HOUSING
**Brief of project**

**Private dwellings:**
Amount of dwellings: 76 (33+43) dwellings, divided over two building blocks.
Types of dwellings and m²:
- Studio 45m² | 2 rooms
- Maisonette 54 - 74 m² | mezzanine | 3-4 rooms
- Apartments 60 m² | 3-4 rooms
Requirements dwellings:
- Quiet and dark place to sleep
- Full-fledged, but relatively small and simple
- Kitchen, dining and living combined
- Adaptable when families expand
- Spacious feeling, height of rooms.
- Private outdoor space (in the larger dwellings)

**Collective functions:**
Functions:
- Bicycle parking outside (2 per household)
- Storage space (5 m² per dwelling: 380m²)
- Car access (ambulance, fire department)
- Garden and terrace, with a view over the water and sun
- Galleries as transition zone private and common space.
- Living room + kitchen (40m²)
- Guest room (15m²)
- Home theatre (40m²)
- Laundry (15m²)
Character:
- Easily accessible
- Sightlines to dwellings, circulation and site
- Open and light appearance
- Easy to maintain
- 24/7 open for use

**Public functions:**
Functions:
- Café / Restaurant (100m²)
- Library (100m²)
- Square with terrace and green
Character:
- Inviting entrance of public functions
- Square has an enclosed feeling
- View towards the water
- Green
- Atmosphere of old harbour, reflected in materials

**Extra:**
Energy efficiency:
- Self sufficient in energy (nul-op-de-meter)
- Collect and purify water (re-use)
- Use of Dutch materials

Affordability:
- Affordable for 1-2x average income
Concept Design

Sun & Wind direction

Dwelling types
A: 44,7 m²
B: 53,7 m²
C: 55 m²
D: 44,7 m²
E: 44,7 m²
Corner types: (A, B, C, D, E + 18,5 m²)

Architecture
Saw-tooth roof is a link to the old harbour and industry of the Minervahaven. The two buildings are connected visually by the (raised) public square in the middle and the collonade.

Public & Common functions
Library (public)
Restaurant / Café (public)
Living room / Kitchen (common)
Home theatre (common)
Storage (common)
Laundry (common)

Access system
Galleries + stairs
Central staircase + lift
Main entrance for residents at the street side, but there is an extra entrance at the public square.

Streetside
Waterfront
Common inner garden
Public square

Diagrams
PUBLIC SQUARE
BRICK
DARK WOOD
INDUSTRIAL
"ENCLOSED" SQUARE

INNER GARDEN
LICHT
GLASS ROOF
airy galleries
GREENHOUSE
In the middle are bathrooms and toilets located. Measurements:
1.80 x 2 m
0.9 x 1.6 m
1. living room / kitchen
2. inner garden
3. entrance
4. lift / stairs
5. laundry
6. storage
7. private garden
8. café / restaurant (public)
9. terrace (public)
10. square (public)
11. library (public)
12. gallery
13. home theatre

High ceilings provide space for storage or place to sleep.
1. living room / kitchen
2. inner garden
3. entrance
4. lift / stairs
5. laundry
6. storage
7. private garden
8. café / restaurant (public)
9. terrace (public)
10. square (public)
11. library (public)
12. gallery
13. home theatre
14. guest room

Mezzanine can be expanded in various ways for extra space.

Corner types are bigger. There is the possibility to make an extra room.

Mezzanine can be expanded in various ways for extra space.
1. living room /kitchen
2. inner garden
3. entrance
4. lift / stairs
5. laundry
6. storage
7. private garden
8. café / restaurant (public)
9. terrace (public)
10. square (public)
11. library (public)
12. gallery
13. home theatre

A loggia offers the possibility to expand the dwelling in the future.

The mezzanine can be expanded for extra space.

Because of the saw-tooth roof, there is extra height/space in this dwelling type. This space can be used for storage or as an extra bedroom.
Graduation Plan

Architecture, Dutch Housing.
Between Standard and Ideals | Haven-Stad Amsterdam

Argumentation of choice of the studio | What I found interesting about this studio is the topicality of the subject. In Amsterdam thousands of dwellings need to be build. It is fascinating how to design these dwellings for the current society, that is so diverse.
A roof over one’s head is one of the most important necessities of life. Most people do have a home and also ‘experience in housing’. One’s own housing experience can be useful in designing a dwelling, but it is also about the search for lifestyles and wishes of others. Their wishes and needs can be completely different than one’s own. Important questions hereby are: how to design a house in which people feel at home now and in the future?

GRADUATION PROJECT

Title | Independently together
Cohousing with matching lifestyles in the Minervahaven, Amsterdam.

Posed problem | Society has changed fundamentally: the amount of single households is increasing, the population is aging, the composition of households is changing and society became multicultural. A lot has changed, but the housing construction is lagging behind. Dutch houses, built for the standard family and characterised by repetition and standardisation, are not up to date anymore.
Therefore, there is a growing demand to influence the design of one’s own home and living environment. In addition to that there is an increasing desire to share the immediate living environment with like-minded people. In this way different population groups do not live with each other, but live side by side in relatively small self-designed clusters of houses.
Besides, there is a lack of (affordable) dwellings in Amsterdam, this applies for example for people in the professions of aviation, police and healthcare. They work in the city, during day- and night-time, but do not have to opportunity to live there as well.

Research question | How can cohousing be one of the solutions for the current societal housing problems and in particular for people who have to deal with irregular working hours?

Design assignment | Design a cohousing building that facilitates common spaces, that activates social life of people working at irregular times, in combination with small, future-proof dwellings.
The building should meet the following requirements:

**Target group** | The common spaces and small private dwellings must fit their lifestyles.
**Location** | The building must be embedded in the environment of the Minervahaven.
**Cohousing** | The building must contain small private homes, with common spaces that add quality and encourage social life.
**Future-proof** | The dwellings must be adaptable, so each household can personalise it and adjust it when a lifestyle or household changes.

**PROCESS**

**Method Description** | In this research various methods and techniques of research are used. Precedents are analysed by using schematic drawings in order to find tools to design with. The location is explored and analysed by means of literature research, a site visit, photographs, a presentation of the municipality, analytical drawings and perspectives.

Insight has been gained into the target group by listening podcast about night work, literature research, an in-depth interview and questionnaire. Praxeology, the study of human action, was hereby an important angle.

According to Elise van Dooren (2014) five generic elements are always present in the design process: experimenting, guiding theme, domains, frame of reference and visual language. These elements do not have a specific sequence and are interwoven with each other, but they can offer guidance during the design process.

**References** | See page 89.

**REFLECTION**

**Relation between graduation project and studio** | The relation between my topic and the Dutch housing studio, between standard and ideals, can be found at several aspects.

Cohousing is an example of a residential building type in which people can have a small customised house, that is still affordable because of their size. Quality can be found in the shared facilities within the building, such as a living room, kitchen, garden and work space. Due to this, less square meters are needed in the building and at the same time social interaction is stimulated.

These customised dwellings should fit the target group, but should also be appropriate for residents in the future. This means that dwellings should be adaptable and future-proof; between standard and ideals.
Cohousing responds to the current demand of the Dutch society: there is a growing need to share the living environment with like-minded people and to have influence on the design of one’s own house. In addition, it is hard to find a house in Amsterdam, especially for people of the modal group (healthcare, police, aviation). The housing stock in the city seems to be reserved for the rich. Cohousing in the Minervahaven offers affordable houses for people that work in the city.

**Relevance in larger framework** | Cities will continue to grow and densify in the future. Dutch society is changing, households and lifestyles will become even more diverse. New forms of living are needed in the future city to respond to this changing city. Cohousing, small houses with shared facilities that add quality, is one of the possible solutions.
References


Van Bockxmeer, J. (2019, Januari 3). Ook in de 16e eeuw was Amsterdam overvol. Het Financieele Dagblad, p. 3 & 10.


**Appendix 1**

Interview cohousing with Renate and Henk. November 27, 2018. The interview is recorded and is available on request.

w.schipper@student.tudelft.nl

**Appendix 2**

Questionnaire irregular working hours. November, 2018. The questionnaire and results are available on request.

w.schipper@student.tudelft.nl
References images


References


