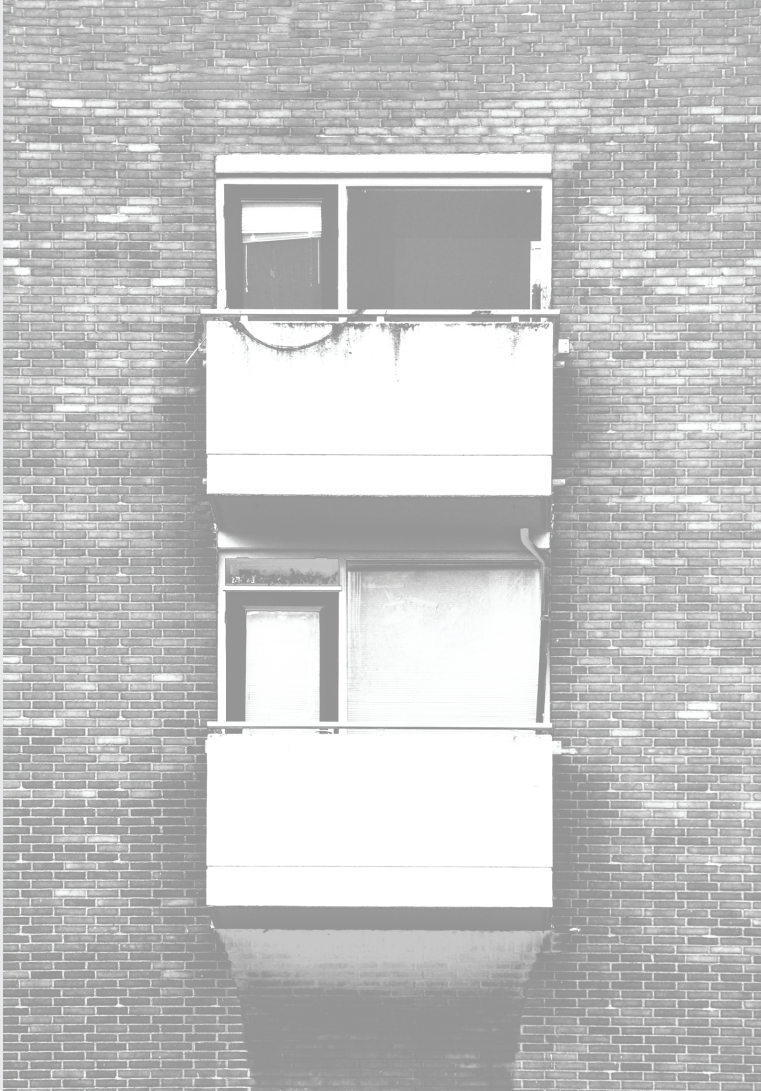


Transforming



Collectivity

Victor Loop
4658590

Advanced Housing Design:
Ecologies of Inclusion

Victor Loop

4658590

AR3AD100

Advanced Housing Design: Ecologies of Inclusion

Tutors

Robbert Guis, Stephan Verkuijlen, Alejandro

Campos Uribe

Cover image:

Shopping centre Van Baerlestraat. Photo and edit by author.



Foreword

This book contains the results of my graduation project in the studio Advanced Housing Design of the chair of Architecture and Dwelling at TU Delft. It highlights the theoretical and practical work carried out during the academic year of 2023/2024.

I would like to thank my teachers for the interesting and insightful tutoring session and helping me work on this project enthusiastically. I want to thank my group members Aaltje Smit and Amrita Sen for the fun we had working on the early stages of this project and the support towards the end. Lastly I want to thank my friends who have supported me throughout this year to keep me motivated in moments leading up to a deadline.

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Personal motivation

Over the course of my studies of architecture at the TU Delft I became more interested in the ways the built environment shapes our everyday lives. Buildings can facilitate the activities that are essential to our necessary of preferred daily routines. Later this interest shifted to the first category, and specifically housing design. A roof over our head is one of the essential needs in order to be in a secure place to develop yourself as a human.

Today for some people, even this basic need is under pressure due to a great variety of factors. For example the growing world population and commodification of houses, causing scarcity on the housing market. This is not only a matter of a quantitative lack of housing but also a lack of housing that is affordable for people with less financial means.

For my graduation project I chose a studio that actively researches

these factors, tries to understand and eventually overcome them. The Advanced Housing studio looks at the current Dutch housing crisis, through lenses of sustainability, social inclusion, affordability, gender equity and building resources. As an interrelated system these five concepts have a great influence over the living conditions of many people.

I believe the common denominator in this system, is the human perspective. By looking at the way people live, work, recreate, learn and care with each other and with the non-human environment we can start to see an interconnected web of relations. This leads to seeing our world as an ecology, or a multitude of ecologies that shape our lives.

Research

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Abstract

Key words: Dutch post-war neighborhoods, collectivity, housing cooperatives, *Wijkgedachte*, housing crisis, Westwijk

The housing crisis in the Netherlands has been a growing concern, resulting in public outcry. This crisis stems from long-term political preferences for market-regulated housing, resulting in rising prices, increased rents, long social housing waitlists, and foreign investment-driven property purchases. The dissolution of the Ministry of Housing in 2010 and subsequent decentralization of responsibilities further worsened the situation. However, the ministry's reinstatement in 2022 underscores the urgency to address this crisis.

A primary issue is the quantitative shortage of homes, with the government aiming to build 900,000 houses by 2030 to accommodate population growth and changing household structures. However, land scarcity, particularly in densely populated areas like the Randstad, complicates this goal. Thus, densifying existing urban areas emerges as a possible solution.

Post-war neighborhoods, present significant potential for densification. These areas, housing around 710,000 people, face socio-economic challenges, including the concentration of vulnerable demographics, increased perceived loneliness, feelings of unsafety, and social alienation. Addressing these issues requires strategies that combine physical redevelopment with initiatives to increase social cohesion.

This research explores the potential of housing cooperatives to both densify and enhance social cohesion in post-war neighborhoods, using Westwijk in Vlaardingen as a case study. The

investigation covers historical design principles of post-war neighborhoods, changes over time, and the principles behind housing cooperatives. Housing cooperatives, characterized by their non-speculative nature, focus on diversity, sustainability, and long-term resident care, offering a promising alternative to traditional housing models.

Switzerland, known for a large percentage of the houses being owned by housing cooperatives, provides two interesting case studies that are examined as a case study. The Kalkbreite building in Zürich, and Warmbächli in Bern. The case studies reveal several design principles that enhance both individual and communal living quality. These projects display transparency and community engagement, providing valuable insights for similar initiatives. While the design principles identified are not exclusive to cooperative housing, their integration with a democratic and active organizational structure creates a unique quality.

In conclusion, housing cooperatives present a viable solution to the housing crisis by facilitating densification and fostering collective living. The findings from this research offer a framework for incorporating cooperative housing models into post-war neighborhoods, potentially revitalizing areas like Westwijk by addressing both quantitative and qualitative housing needs. This approach not only increases housing availability but also enhances social cohesion and liveability, aligning with the broader goals of sustainable urban development.



Figure 1. Aerial photo of the Hoogkamer neighborhood in Vlaardingen Westwijk. The now demolished Ichthus church is visible in the back. Photo by Ary Groeneveld through Stadsarchief Rotterdam.



Figure 2. Demonstration against the current state of the housing market in The Netherlands on 12th of September 2021. Photo by Annemijn Groeneveld, edit by author.

I. New crisis, new solution?

I.1 Contemporary housing crisis

On the 12th of September 2021, thousands of people marched from the Amsterdam Westerpark to the Dam Square to express their discontent with their own, or others' experiences on the housing market. During the elections in The Netherlands in 2023 the state of the housing market again was a hot topic. Over the last decades, problems in this sector have steadily worsened to the point it is now commonly referred to as a housing crisis.

Different authors have described how this crisis is not a coincidence, but a result of years of political preference for a market-regulated housing stock. This has led to rising housing prices, increasing rent for many, long waiting lists for social housing and foreign investors buying up real estate solely as a tool for investment (Hochstenbach, 2022; Lengkeek & Kuenzli, 2022). The government very explicitly took a step back when the Ministry of Housing, Spatial Planning and the Environment (Ministerie van Volkshuivering, Ruimtelijke Ordening en Milieubeheer), was dissolved in 2010 and its responsibilities spread out to other ministries. Throughout the 20th century the ministry had played an important role in establishing approaches to various problems regarding the housing market. The last minister of Housing resigned in 2017 without a successor being appointed, but due to the current

problematics the function has been brought back as of 2022 to formulate a strategy to tackle the housing crisis.

1.2 Quantitative shortage

One of the major concerns that is often expressed is the quantitative shortage of houses. The increase in population in The Netherlands, by births and migration, combined with the growing numbers of one-person households, the government estimates a shortage of 900.000 homes in 2030. The number is an order of magnitude the country hasn't seen since the housing crisis after the Second World War. This shortage is increasingly worsened by the trend of decreasing numbers of inhabitants per household, causing a bigger demand for homes by the same number of people (Stuart-Fox et al., 2022). The numbers behind this trend show a great increase in living surface area with a decrease in household members, as seen in *Figure 3*. Thinking about ways of living that

	Total	Per person
Single < 35 yr	73	73
Single 35-64 yr	95	95
Single 65+ yr	107	107
Couple < 35 yr	100	49
Couple 35-64 yr	136	68
Couple 65+ yr	138	69
Couple with children	147	39
Single-parent family	107	44

Figure 3. Average housing surface area in m² per person and household type and age. Table by Stuart-Fox et al. (2022), translated by author.

can reduce the amount of space needed per person could already relieve the quantitative shortage by a lot.

Scarcity of building land

The spatial distribution of the current shortage varies greatly between provinces in The Netherlands, where the biggest shortage is estimated in the Randstad metropolitan area and to a lesser extent the provinces of Gelderland and Noord-Brabant (Ministerie van Binnenlandse Zaken en Koninkrijksrelaties, 2022). Building a great amount of homes however is not a direct solution as available land is scarce. The large-scale suburban developments of cities in the second half of the 20th century has already caused the expansion of urban fabric into green and agricultural territories. In combination with current nitrogen restrictions we need to reconsider where to allocate space for new residential developments.

1.3 Densification as a solution

If we want to hold back on building new homes on suburban green fields then where should we work on tackling the housing crisis? Instead of looking for a blank canvas to construct new buildings and neighborhoods, potential in working within existing built environments has been around since the establishment of the Woningwet in 1901. However strategy of urban renewal only gained momentum after the Second World War. *Figure 4* shows a timeline of the governmental policies in regard to the renewal of specific existing neighborhoods. How this was executed varies greatly in a more or less

centralised approach and governmental interference, a focus on redeveloping the physical environment or working on social and economical problems, and the way of intervening through demolition or transformation

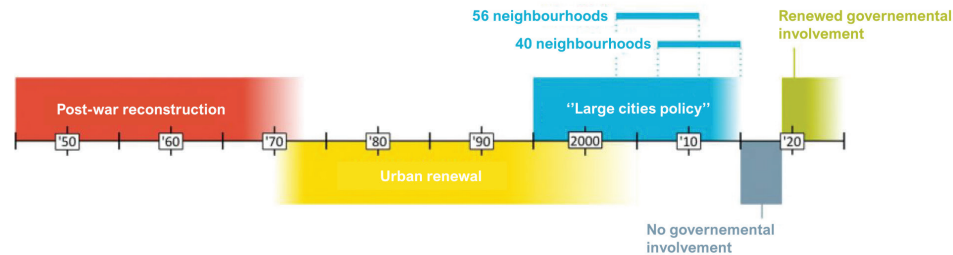


Figure 4. Timeline of neighborhood specific urban renewal policies from the post-war years until now. Timeline by Velden & Can (2022), translated by author.

(Velden & Can, 2022). Urban renewal is focussed on solving neighborhood specific issues and realising new ambitions. In the light of the current housing crisis one of the notable ambitions is realising higher density in existing neighborhoods to save investments on infrastructure and mobility for example (KAW, 2022). After a period of decentralisation there is new attention to the renewal of vulnerable neighborhoods, of which a much discussed type is the post-war neighborhood.

Potential for post-war neighborhoods

In 2016 CBS calculated that in 68 neighborhoods in 30 citycouncils, 710 thousand people lived in post-war

neighborhoods. Criteria for this label are based on the amount of houses built built between 1945 and 1965 and this percentage being similar or higher than the amount of homes from the years before 1945 or after 1965 (CBS, 2017). This means that intervening in these neighborhoods and adressing their specific problems could reach a lot of people. Several publications have investigated what the potential of post-war neighborhoods have in terms of densification (KAW, 2020; Naafs et al., 2023; Zwan & Workshop Architecten, 2017). These publications conclude that post-war neighborhoods offer possibilities to formulate an answer to the current housing crisis in terms of quantitative need for homes. The research also points at the potential to tackle social problems in these neighborhoods during the process of densification.

1.4 Challenges in post-war neighborhoods

Intervening in the specific context of the post-war neighborhood also brings social challenges with it. Research describes an series of problems; mainly the concentration of vulnerable social-economical demographics due to the outflow of people with more financial means to neighborhoods with an offer of larger and better quality of housing. An aging population, higher percentages of perceived loneliness and unsafety are also mentioned. Finally feelings of alienation between residents with different religious, ethnic or socioeconomic backgrounds worsen these problems (Arigolu et al., 2008).

The CBS describes how the residents of post-war neighborhoods often receive social financial support. Also more often than the national average people live of the “social minimum”-income of 1408 euros for a single-person household and 1995 euros for a two-person household (CBS, 2017). Problems regarding concentration of financially vulnerable groups are currently worsened due to the inability for these groups to find housing in better-off areas in the cities. All combined, the liveability in many of the post-war neighborhoods is still under pressure compared to other neighborhoods in The Netherlands.

Liveability and social cohesion

Analysis of data from the Leefbarometer by KAW shows that post-war neighbourhoods generally score lower on liveability than other neighborhoods (KAW, 2020). This is a general comparison between different areas in The Netherlands but it certainly asks for more research into the matter.

Much research has been published on the ways in which certain social and environmental factors contribute to the experience of liveability in certain neighborhoods. In the summary given by Leidelmeijer and Van Kamp different methods of conceptualising liveability are described and compared, in many of which the social realm of relations and social structures between people is highlighted (Leidelmeijer & Kamp, 2003). These themes may be

summarised as the level social cohesion in a neighborhood. In the two-yearly research conducted by the Ministry of the Interior, the Leefbarometer, social cohesion is also used as an indicator to determine the liveability in a neighborhood. Looking more specifically into the results of the Leefbarometer post-war neighborhoods also show lower scores on the indicator of social cohesion (Leidelmeijer et al., 2008).

This conclusion is radically different from the intention that many post-war neighborhoods were built with. According to the “*Wijkgedachte*” (neighborhood or community mentality), spatial strategies were to provide a pleasant, diverse and social living environments for residents of the neighborhood. Residential, commercial and leisure functions were separated and connected through open green spaces. Shared facilities such as schools, churches, sports fields and shops were to provide the decor for social life in the neighborhood to take place. The worsening liveability of the post-war neighborhoods has been partially attributed to the failure of the spatial and social principles that these neighborhoods were built on (Arigolu et al., 2008).

1.5 Collective ways of living and sharing

Summarizing the challenge described in the previous paragraphs, densification in the specific context of the post-war neighborhood can address the quantitative aspect of the national crisis as well as the context specific qualitative aspects of housing problems in post-war neighborhoods. In this research the qualitative aspect is interpreted as the lack of cohesion and social connection within the neighborhood, and the loss of the *Wijkgedachte*. To successfully densify we need to look at ways we can imagine a different kind of collectivity that is more inclusive, durable and open to the interpretation of residents.

As a potential solution to some of the named problems this research will look into the qualities of a way of living gaining popularity in light of the current housing crisis. The housing cooperative is a collectively organised way of living that is based on the concept of sharing and non-speculative real estate. The model is mostly praised because of its abilities to provide long term affordable housing that is minimally affected by developments on a local or national real estate market. However, the housing model also offers possibilities to invest in qualities that enhance buildings projects spatially and can create a pleasant living environment for a mix of residents.

1.6 Research structure

In the light of the contemporary housing crisis, we have to think of solutions that address the needs of the current society. As discussed there is potential to do so within an environment conceived in the context of a previous housing crisis, after the Second World War. In order to imagine what such a solution could look like this research will attempt to answer the following research question:

MQ: *“Do housing cooperatives provide potential to densify and reinforce collective living in the post-war neighborhood of Westwijk?”*

To understand better under what circumstances the post-war neighborhoods were designed and what the ruling design philosophy was at that time the second chapter of the research will look into the historical context of the post-war rebuilding years. A specific example of a post-war neighborhood, and the site for the design project of this graduation will be used to analyse the theory and practical outcome of the post-war neighborhoods; Westwijk in Vlaardingen, answering the following sub-questions:

SQ1: *What design principles were used in the urban design of post-war neighborhoods?*

SQ2: *How has the design of Westwijk changed over time?*

In the third chapter the potential of housing cooperatives to address some of the problems that have emerged in post-war neighborhoods since they were built will be investigated. The highlighted aspects of these problems, density and collectivity will be the focus of this analysis.

SQ3: *What are the main principles behind housing projects realised by housing cooperatives?*

In the final chapters two case studies of building projects realised by housing cooperatives will be used in order to define some design principles that define the spatial outcome of the philosophy behind a housing cooperative, answering the sub-question:

SQ4: *What design principles are used in buildings conceived by housing cooperatives?*

Finally the research will conclude with a reflection on how spatial qualities used in projects of housing cooperatives could aid in restructuring collective life and densifying the number of inhabitants in the post-war neighborhood of Westwijk, in Vlaardingen. The conclusions will play an important part in the design of this graduation project, which looks into transforming a former living and shopping centre in Westwijk.

Figure 5. (Next page) Research diagram visualising relations between topics researched and taken into account in the design project of this graduation. Diagram by author.

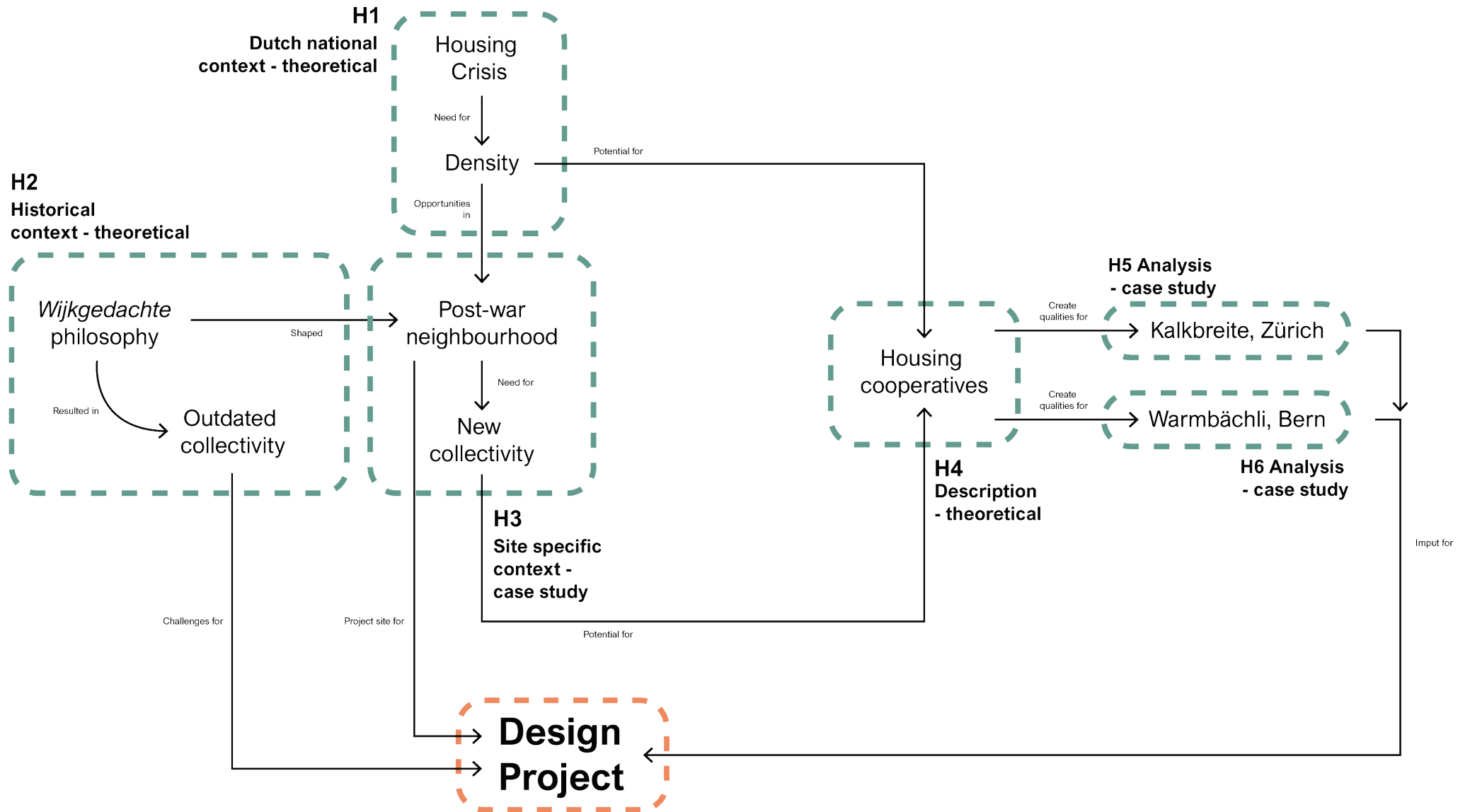




Figure 6. Fragment from “Wij en de wijkgedachte” by W. F. Geyl published in 1949.
Edit by author.

2. The *Wijkgedachte*: Manifesto for a new collectivity

In this chapter the research will look into the context of the post-war housing crisis and building stock that emerged from this. The *Wijkgedachte* and the ensuing desing princplies for post-war neighbourhoods are then investigated in relation to the post-war neighborhood of Westwijk in Vlaardingen. There will be special attention for the way density and collectivity were realised in post-war neighborhood historically and how that holds up today.

2.1 Post-war housing crisis and modern living

In the years after the Second World War there was a big demand for homes throughout Europe and The Netherlands. The destruction of the war had raged through many cities destroying large portions of the housing stock. When The Netherlands made up the inventory of the damage, out of 2.2 million houses, a quarter was damaged, of which around 80 thousand had been completely destroyed (Lans et al., 2021). Not only did the decreasd housing stock pressure the market, the great increase in population after the war worsened the shortage even further. This caused a housing shortage that was estimated consistently just below 300.000 homes, and only lowered significantly in the late 1960's when the housing production really took off (Blom et al., 2004).

There was a realisation that without a centralised approach to tackle the housing shortage, the crisis would never be managed. Beekers describes how the government established fundamental policies, bodies of governance and financial supports to stimulate the production of houses (Beekers, 2012). The centralised approach was effective in the sense that over time many new buildings could be realised. At the time many designers saw the housing crisis and the scale of the operation as an opportunity to implement beliefs of modern living into these new neighborhoods.

The desire for new developments in society fits within the frame of the modernist philosophy in the 20th century. Meier (2006), summarizes the contradiction in modernism between progress, malleability and emancipation on the one hand, and the mourning of the loss of traditional values and ways of living on the other. Modernism is characterised by the wish for centralised planning using objective scientific data to organise society, what resulted in generalisation and top-down decision making. The centralised approach also made it so that traditional beliefs on family life, division of labour between genders and religion could be manifested in all layers of society.

Modernist beliefs also influenced the way designers were thinking about urbanism and architecture. They made sense of people's lives and reciprocal relations by quantifying aspects of daily life. Having a clear

understanding of numbers on population density, demand for facilities, travel distances or working hours could help to build the most efficient society that still provided the same living qualities people were used to. One of the urban philosophies that follows this way of thinking is that of the Garden Cities, as described by Ebenezer Howard at the end of the 19th century. It was an urbanist model based on decentralised cities that provided a more healthy living environment than what was common after the industrialisation of cities. It based heavily on dividing urban life into increasingly smaller divisions to create more tangible living environments for people. Eventually these ideas spread across the globe and were also picked up by Dutch sociologists and designers. Tailored to the Dutch context, the Garden City philosophy was reinterpreted as the Wijkgedachte.

2.2 The Wijkgedachte as a foundation for post-war neighborhoods

In 1949 the Dutch sociologist W. F. Geyl published his manifesto "Wij en de Wijkgedachte", following the principles of the Garden City movement. It called for a reorganisation of society and a built environment that was fitted to each scale level (Geyl, 1949). The proposed organisational levels were based on the mobility of the individual and the reach of influence of different facilities.

The scale of organisation from small to large scale took the family as the starting point and zoomed out to

buurt, wijk (two administrative divisions in Dutch urban planning) and city district. **Figure 7** shows the different levels of scale and the proposed facilities for that scale. Thinking of the built environment in this way was to encourage a more tangible connection for people with their direct environment. This was part of the strategy to get people more involved in the authority over their surroundings by appointing them a sense of responsibility over it. Following will be a brief summary of some aspects of the Wijkgedachte on multiple scale levels as described by Doevendans & Stolzenburg (1988).

Family:

The family is the first step in scale where the individual becomes part of a bigger social structure. Spatially the family house is the domain of this scale level. The house is where kids spend most of their time after birth and where the upbringing begins. It is a mostly private sphere to withdraw from social life.

Buurt:

The scale level of the buurt is a division based on areas with a similarity in terms of built environment or socio-economic characteristics. In the organisation of the Wijkgedachte it is the level of scale where people refer to their environment on a personal level, eg. “my street”, “my building”. The buurt is where spontaneous meetings between friends, neighbours or relatives living close-by can happen. It is the scale at which daily life takes place in an unorganised way as the foundation of the larger scale.

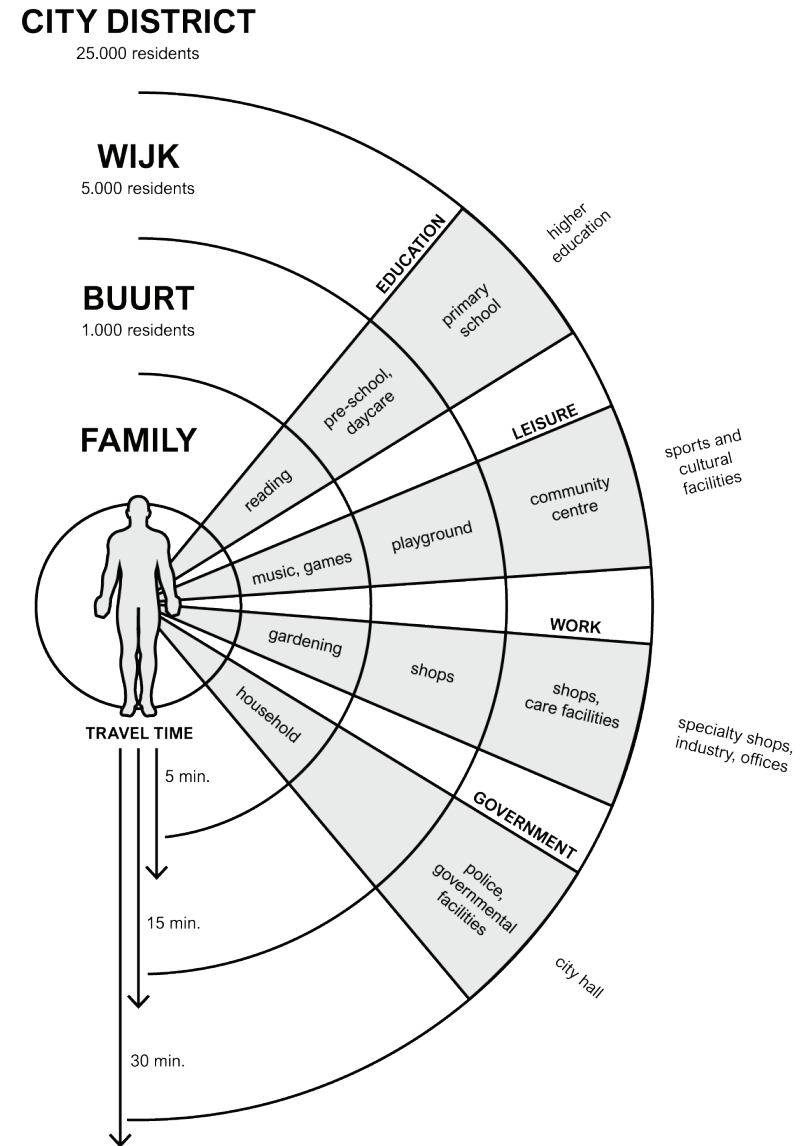


Figure 7. Levels of scale and facilities according to the Wijkgedachte. Drawn by author, adapted from Geyl (1946).

Wijk:

The wijk is defined as the range of what an individual understands as a whole and feels personally connected to. On the scale of the city the wijk is a clear concept for residents to orientate themselves. In terms of size this scale level is deemed appropriate for the limit of a person's social circle. Big enough to have a vibrant social life but small enough to keep a sense of overview.

City district:

The city district is mostly an organisational level of scale. The inhabitants maybe feel less attached to the whole of this region but the facilities that it provides are important in their daily lives. It's the level of scale for high schools and practical higher education and big parks.

City:

The city functions as the whole that ties together the underlying levels of scale. It's the largest level of scale most people feel a connection with on a daily basis, unlike the province or country that they live in for example.

These divisions of scale make it apparent how almost in a mathematical way social life was organised and facilitated. The imaginative scenarios of how people spend their lives in their neighborhood were based a lot on generalisations and stereotypes. The understanding of a family, the essential building block of society, was predominantly that of a nuclear family consisting of a man a woman and some kids. From this idea of the

nuclear family comes an explicit and sexist division of roles between the different members in the household. The husband with a job outside the neighborhood as a primary source of income, the wife designated to take care of the children and the household within the neighborhood. This confined the housewife to a life within the neighborhood with most of the social life happening there.

2.3 Spatial elaboration of the Wijkgedachte

The Wijkgedachte was a very influential philosophy for urban design of post-war neighborhoods in The Netherlands. The ideas proposed in theory were quite radical and never were realised to their full extent. However many of the ideas drove designers to experiment with new designs and strategies.

Stamps as building blocks

Combined with the need to build many new homes in a short amount of time, the division of scales resulted in a very typical design strategy for post-war neighborhoods; the stamp (Blom et al., 2004). A group buildings often of varying sizes and heights was placed in a specific composition usually centered around a green space. This composition could then be copied multiple times, and when combined formed a unity of a larger scale. The composition in itself was carefully designed but being repeated created monotonous looking neighborhoods.

Because of the variation of buildings types, from row houses to apartment blocks, there was a certain diversity in the different types of households and the homes they could live in (Coops et al., 2015). Dwellings had various numbers of bedrooms for families with a different amount of children. Special residences for certain demographics like the elderly were placed around neighborhoods to provide a home and also a centralised location for healthcare facilities.

Public green spaces

To alleviate the urban citizens from the industrialisation and pollution of the city, the new neighborhoods had to become green utopias with large, open green structures. These structures helped residents orient themselves within the neighborhood and provided a space for children to play and adults to recreate. With condensed buildings or building blocks placed around in a green environment, the feeling of a green village or green city was created.

Facilities as nurturing institutions

Facilities played an important role in the model-society that was imagined in the *Wijkgedachte*. They facilitated activities in people's lives and created opportunities for communities to grow. They also served as guarding institutes of moral values that were considered as the norm. In schools children learned everything they needed to become well-functioning members of society and churches, of the different branches of Christianity, played an important role in religious upbringing and social life.

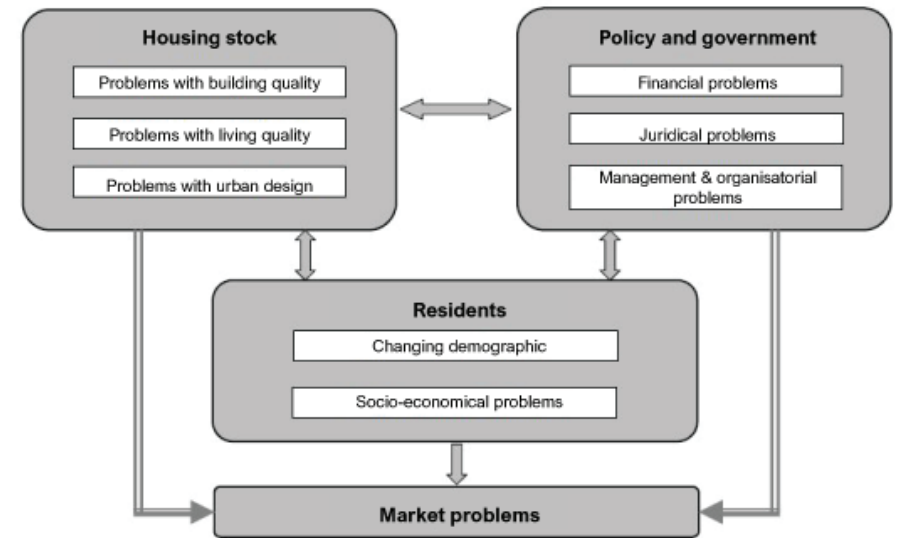


Figure 8. Categories of problems in early post-war neighborhoods and their relation. Diagram by Arigolu et al. (2008), translated by author.

2.4 Emerging problems

Seventy years after the large-scale production of new neighborhoods started after the war a lot has changed. Arigolu et al. (2008) describes the changing circumstances in society that led to a set of problems that arised not only in post-war neighborhoods in The Netherlands but also in other cities in west an northern Europe. The economic growth after the Second World War allowed people to move out of the post-war neighborhoods to places with bigger homes. Housing prices became relatively cheaper causing the neighborhoods to start attracting household

with lesser financial means. Changing demographics also caused more conflicts between residents and the decrease of social cohesion. Many early post-war homes were built quickly and cheaply causing their condition to deteriorate fast. The abundance of public space and green structures demanded a lot of maintenance for which there weren't always sufficient funds.

Wijkgedachte in practice

In order to reflect on the way this philosophy emerged into the post-war neighborhoods a clear example, Westwijk in Vlaardingen, will be examined in more detail. Due to the available historical publications on the design of the neighborhood it is an appropriate case study to reflect on the design intention and contemporary outcome of a neighborhood designed from the Wijkgedachte principles.



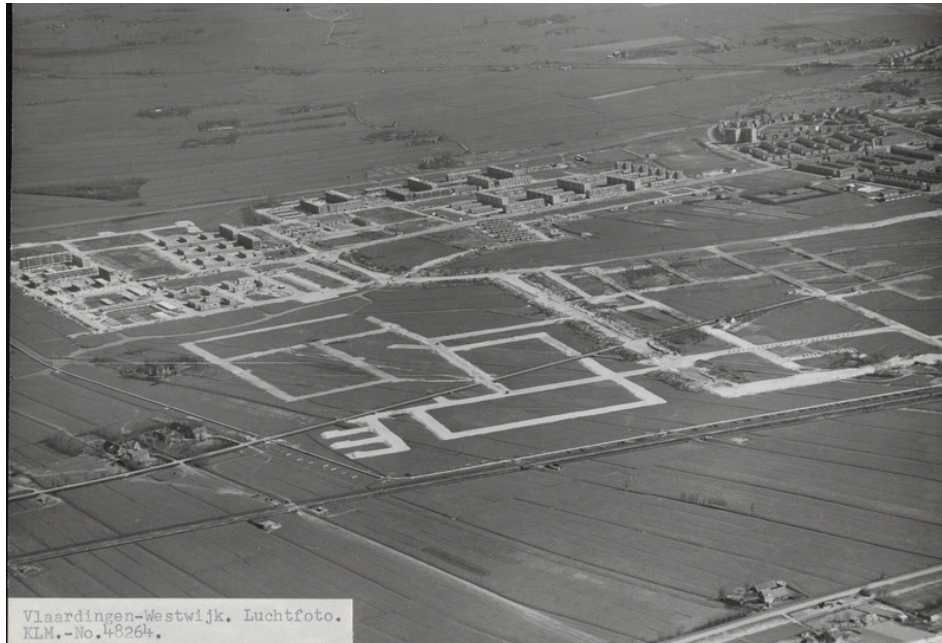
Figure 9. Vlaardingen from above, with Westwijk marked. East lies the historic centre of Vlaardingen and the urban sprawl of Rotterdam. Photo by *Gemeente Rotterdam*, edit by author.

3. Westwijk, Vlaardingen

In the west of the urban region of Rotterdam lies the city of Vlaardingen. With around 75.000 inhabitants it's a small sized city on the south side of the Randstad metropolitan area in The Netherlands. The area has a long history as traces of inhabitation have been found around Vlaarding dating back as far as 3500 B.C. The area was cultured during the Middle Ages and made appropriate for agriculture and farming of animals. The neighborhood Westwijk is located just west of the historical city centre



Figure 10. Layers of history in Westwijk, Vlaardingen. Collage by Aaltje Smit, Amrita Sen and author.



of Vlaardingen. The majority of the buildings in the neighborhood originate from the post-war years in The Netherlands, organised according to the ruling urban planning principles at the time.

In 1947 Vlaardingen counted around 42.000 inhabitants, this number was projected to grow to around 140.000 towards the 1970's (Bruijn, 1956). This set the challenge of realisation a great number of homes for all the potential new residents. Architects Willem van Tijen and Wim Wissing were appointed to oversee the project in 1951 and proposed a design with around 5000 dwellings on 160 hectares of land. The leading architects appointed workgroups of architects that developed ideas for the different districts of Westwijk. In 1956 works started on preparing the building site.

In aerial photos from that time it is visible how a new urban landscape was created right on top of the existing farmlands of Midden-Delfland. The land was heightened with a layer of sand and the construction of new dwellings and the necessary infrastructure started on top of it. The new neighborhood emerged from a tabula rasa and was to become an utopian green living environment for the new residents, the first of which moved in already in 1957.

3.1 Westwijk then

Figure 11. (Top left) Aerial photograph of Westwijk under construction. Photo by Aerophoto Schiphol through HNI Research Centre.



Figure 12. (Bottom left) Aerial photograph of Westwijk after completion. Photo by Aerocarto KLM through HNI Research Centre.

For the case study analysis a comparison will be made between the state of neighborhood when it was just completed and the state of it in current days. **Figure 13** shows a plan of the neighborhood in 1975 when the urban structure was just finished, without some of the big alterations that came after. The most important aspects in regards to the *Wijkgedachte* will be used as a lense to make the analyses.

Scale and structure

That the design of the neighborhood was influenced by the *Wijkgedachte* is visible in the way the apartments, building blocks and streets are organised. The first division after that of the *Wijk* itself are the four different quadrants of the *buurten*: Lage Weide, Wetering, Hoogkamer and Zuidbuurt. In the middle of the quadrants a park accomodates leisure activities and houses buildings with public functions such as schools, churches and shops.

From this large green space in the middle of Westwijk, four greenstructures branch off into the quadrants, splitting them up in two different areas. These green “arms” form a connection between the landscape surrounding Westwijk and the park at the heart of the neighborhood. They are outlined with roads accessible by car, but can be navigated comfortably by pedestrians on the inside. On either sides of the green arms building stamps are located with smaller green spaces surrounding them. In this way green spaces form a hierarchy from the smaller scale of the stamps to that of the neighborhood.

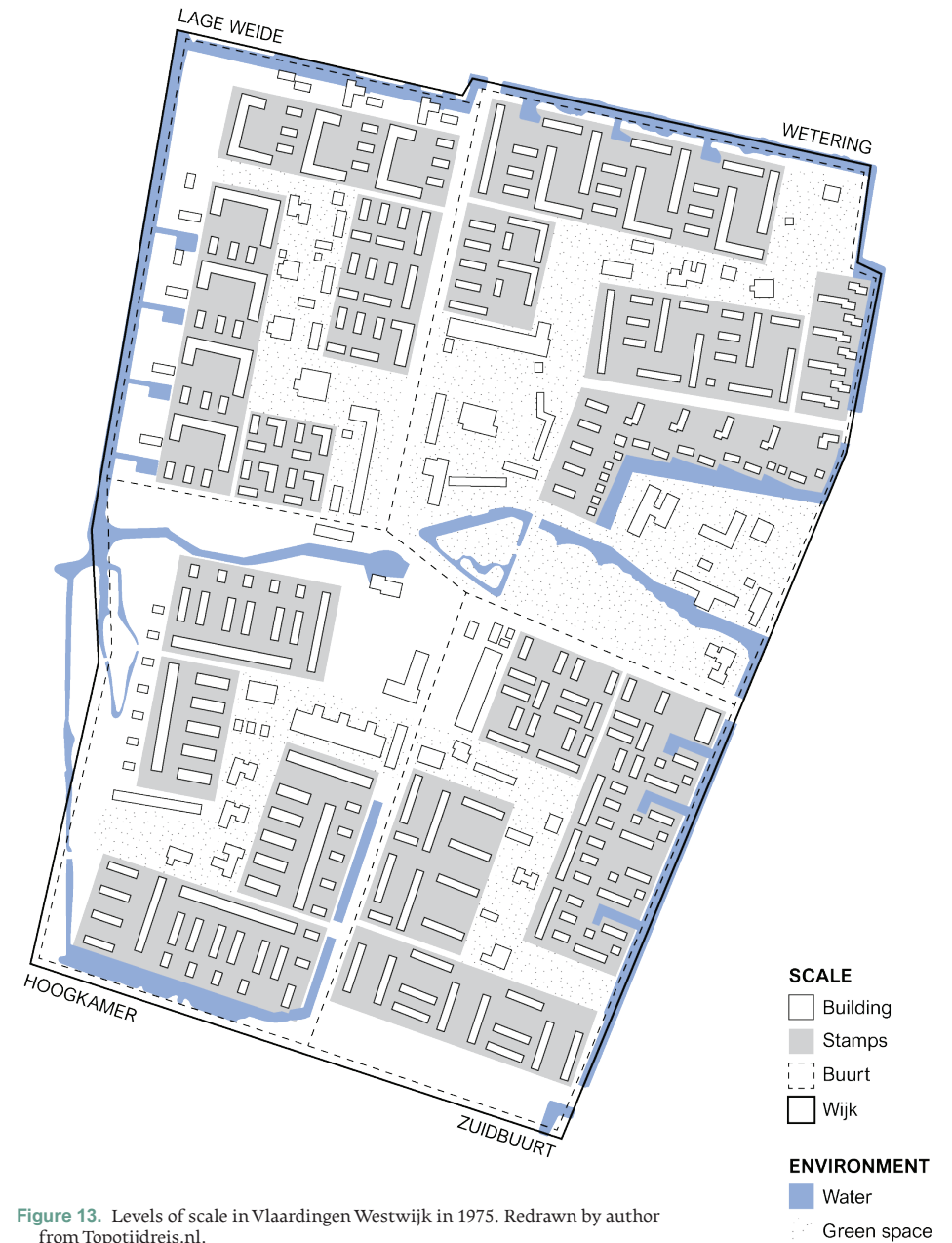


Figure 13. Levels of scale in Vlaardingen Westwijk in 1975. Redrawn by author from Topotijdreis.nl.



Figure 14. (Left) Public facilities and residential clutter in Westwijk in 1960, 2010 and 2020. Maps by Aaltje Smit.

Figure 15. (Top right) The green arm in Hoogkamer, Westwijk. Photo by Ary Groeneveld through Stadsarchief Rotterdam.

Figure 16. (Middle and bottom right) New residential developments in the green arm in Hoogkamer, Westwijk. Captured from Google Maps.

Facilities

The green arms running through the neighborhood not only functioned as green spaces, but also housed several public facilities. Schools, churches and sports facilities were all located in these zones, making them easily accessible from the surrounding residential zones. This structure set a distinction between a more public area in the green arm and the more private areas where people lived.

3.2 Westwijk now

When walking through Westwijk today many features of the original state of the neighborhood are still visible. However many things have also changed since the 1960's and urban renewal has also been happening there. In line with other post-war neighborhoods in The Netherlands, spatial and socio-economic problems have emerged in Westwijk. Some of these will now be discussed in relation to the design and changes in the design of the neighborhood.

Structure obscured

Zooming in on one of the green arms, in the Hoogkamer *buurt* seen in [Figure 14](#), an important development is visible. Where the green arms used to be a park like landscape with occasional buildings placed inside of it, it has become more densely developed over time. The old facilities have all disappeared and made way for some new

ones but mostly for residential developments. This seems like a logical thing to do since urban renewal strategies required more different types of homes to be built in post-war neighborhoods. The green arms were an easy place to build up due to their open and green characters. However in this way the original structure of the neighborhood and the division between residential and collective areas becomes less clear. Often post-war neighborhoods can be already hard to navigate because of the repetition of building blocks, and without the clear structures this can become even harder. Research also shows that residents of post-war neighborhood value the green spaces in their environment as one of the most important qualities (Arigolu et al., 2008). Cluttering these areas with new buildings can have a negative impact on the quality of the green spaces and therefore the appreciation of them by residents.

Facilities disappearing

Not only spatially is the redevelopment of the zone for facilities a step back, also in terms of their function and the services they provide. At the time of construction of the neighborhood much of the social life of people living in Westwijk could take place in the facilities in the green zones. Families visited church, kids went to school and could play in the park there. Although these kind of facilities may be less important in social life today, they haven't been replaced with other facilities but have been removed completely.

A meeting with the head volunteer at the only remaining

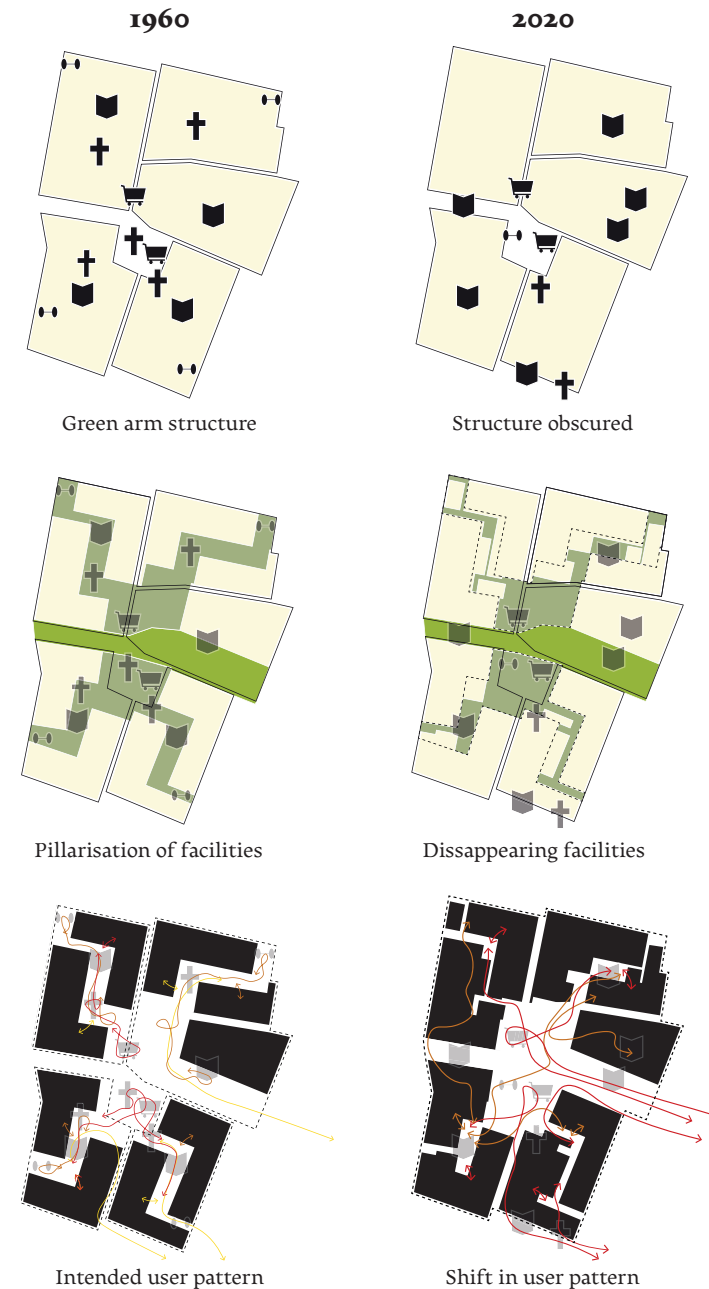


Figure 17. Notable developments in Westwijk over time. Diagrams by Aaltje Smit, Amrita Sen and author.

community centre in Westwijk made it clear that there was still a need among residents for free resources and community events. Events such as community dinners for women only, the repair cafe and walk-in moments for help with finances and governmental documents are greatly appreciated by Westwijk residents.

Changing lifestyle patterns

Initially the neighborhood with the specific structure and facilities was tailored to family life and what was deemed necessary for a good civilian life. But society changed a lot since then. Due to increased mobility, depillarisation, changes in family compositions and influx of residents with different backgrounds, the spatial design of the neighborhood doesn't cater to all the different needs anymore. Where there was some form of social control back in the days by all the activities going on throughout the neighborhood, the centralisation or loss of facilities, and people working more outside the borders of Westwijk, has made big parts of the neighborhood mostly dormant during the daytime. This leaves the streets feeling empty which can lead to a feeling of unsafety.



Figure 18. The repair cafe is an easy accessible resource for neighborhood residents to handle their appliances in a more sustainable way. Image by Repair cafe Vlaardingen.



Figure 20. General liveability score is lower in Westwijk. Map by Leefbarometer.

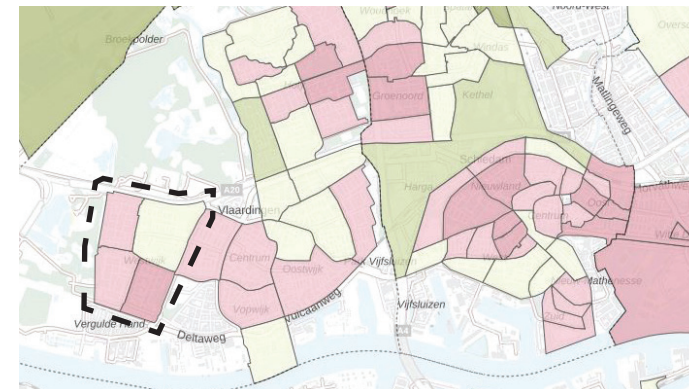


Figure 19. Social cohesion score is lower in some parts of Westwijk. Map by Leefbarometer.

Changing Households

Another important shift is that of household compositions. A trend going on currently is the growing amount of single person households as discussed in chapter 1 of this research. This pressures the demand for new homes but in a neighborhood with so many dwellings designed for families this also makes occupancy of homes inefficient. According to data by CBS the amount of single-

person households in Westwijk is almost 5% higher than the average of The Netherlands. However the housing stock that was built during the post-war reconstruction era doesn't reflect this statistic. This suggests that the density in the neighborhood in terms of the amount of people living there was higher before. This decrease in density also makes for less activity in the neighborhood and a lower amount of people to be serviced by the facilities present in Westwijk.

Community and liveability

The problems discussed in this chapter can contribute to people valuing their living environment of lesser quality. Linking these phenomena directly is hard but we can speculate that the problems that have emerged since the 1960's are part of the reason that Westwijk receives lower scores on liveability and specifically social cohesion within the neighborhood.

3.3 The future of Westwijk

The current demand for houses due to the housing crisis and The Netherlands and the pressure on green landscapes in the Randstad region point towards existing urban areas for densification. Post-war neighborhoods could provide an outcome due to their spacious nature, connections to the inner cities and existing infrastructures. As the analysis of Westwijk shows however, simply building more, more expensive and similar types of housing does not provide new qualities for the neighborhood and in

case of the green arms even reduces the quality of the public space. If we are to build in these neighborhood careful consideration is needed for the integration of the buildings in the existing neighborhood's fabric.

This could be achieved by building or redeveloping in line with the original spatial structure of the neighborhood in mind. Navigability and distinction between more or less publicly accessible parts of the neighborhoods play a key role in this. Not only should developments raise living quality for their residents but also for the surrounding areas. The trade-off for taking up currently free space or space of existing facilities should be giving back to the current residents of the neighborhood. This could be executed as upgrading public green spaces to a higher quality and maintaining them or providing services accessible for all residents. Diversity in housing types is needed to attract new demographics and allow current inhabitants to move within the neighborhood when their old home doesn't suit their needs anymore. All that while keeping in mind that times will change again, and setting up social and physical structures in stone (or concrete) can make it difficult to reappropriate these spaces if necessary later on.

4. The housing cooperation: An affordable and collective model

4.1 Collectivity through common resources

The concept of collective living is one that has existed for a long time and in many places. Over time humans have organised themselves in collectives around common resources such as agricultural land, water for irrigation, preservation of forests, etc. The process of commoning, as defined by Bollier & Helfrich (2015) is one of joint action, creating things together, and cooperating to meet shared goals. This way of sharing and managing resources collectively has proven to be very durable over time, and flexible to adapt to changing contexts. The same way people organised themselves to manage common natural resources, the system also works for created resources. We can look at housing and the availability of a place to live as a common resource.

Housing cooperations

In recent times there has been more attention for alternative ways of living to combat the increasing costs of living and decreasing options in finding a suitable dwelling. Between the market and the government a different type of party is raising interest; housing cooperations. Different authors have written about the opportunities these organisations have to create long-lasting affordable housing and communities (Brysch, 2023; Czischke et al., 2023; Gruis, 2019; LaFond et al., 2017; Lengkeek & Kuenzli, 2022). This applies both in



Figure 21. Genossenschaft Warmbächli general meeting in 2017. Photo by Genossenschaft Warmbächli, edit by author.

terms of the financial and political conditions from which these project come to by as well as the spatial and social qualities of their delivered buildings. Some important aspects of housing cooperations will be briefly discussed.

Non-speculative

One of the main characteristics of housing cooperatives is that they are non-profit organisations. The core value of these organisations is that they try to provide affordable living spaces without taking a margin solely for making a profit. Members of a collective can buy into a project and pay rent but can never have full ownership over their dwelling. This prevents speculation with houses and reduces the influence market valuations have on housing prices. Expenses for maintenance, building costs, ground purchase or lease, communal facilities and some savings are taken into account with the rent. By cutting out parties that make profit off peoples living spaces rent can become significantly cheaper than in commercial projects.

Specific and flexible

Another important characteristic of housing cooperatives is that there is a possibility for them to be tailored to address specific social or spatial problems. They can be as diverse and creative as the people contributing to them. In terms of social problems it means housing a certain demographic of residents with a special demand such as care, safety and connection with others. Facilities that contribute to meeting these demands can be organised collectively to improve efficiency and reduce

costs. Mixing residents with or without special needs can improve social connections and mutual understanding between people. Described by LaFond et al. (2017) are projects in central Europe that showcase the possibilities of mixed-resident developments. The Refugio project in Berlin is an example where temporary residents that come from all over the world have the possibility to become part of the community and making contacts to eventually become independent.

In terms of the spatial it means that sometimes housing cooperatives are established based on a shared passion between a group of people to develop or redevelop a specific site. Where a party with a goal for profit might judge such a project as fruitless, a housing cooperative sometimes is able to find or create qualities that still provide pleasant living environments for people. An example of this is the Wallisblok in Rotterdam. An existing city block was renovated as part of the transformation of the neighborhood, and the future residents all became client in the renovation process. This provided a better business case for the project and also more freedom for personalisation of the dwellings (Hulshof Architecten, 2012).

Another example is the Vlaardinger Meent by Stad in de Maak. In an existing street 65 dwellings are in temporary management by the foundation. Made possible when housing foundation Samenwerking handed over the dwellings, that were listed for demolition, to the

organisation. The project houses a mixture of original inhabitants of the street and new inhabitants. Besides residential units, communal facilities have been established in uninhabitable homes such as a workshop, kitchen and laundry room.

Democratic and active

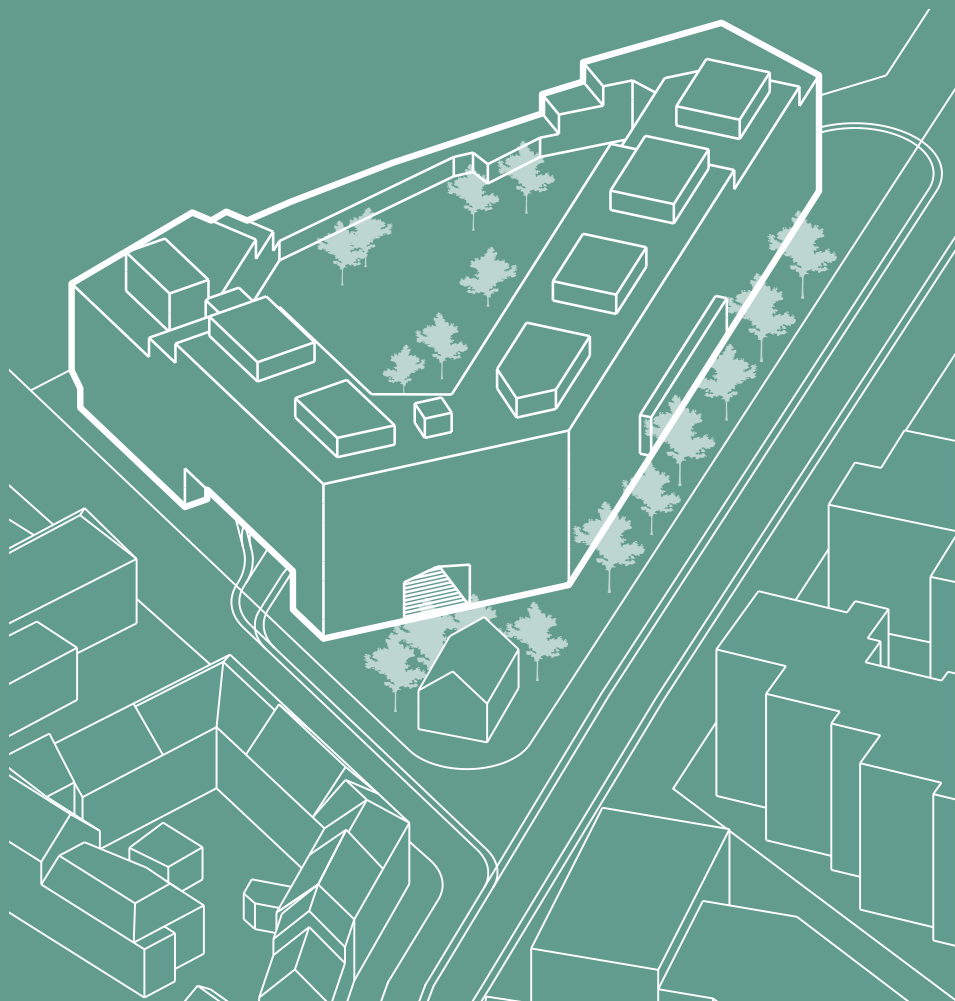
Lengkeek & Kuenzli (2022) describe the process of starting and maintaining a cooperation as a constant discussion and negotiation. Because the common goods are shared by all residents, cooperation have to be a democratic organisation. Before, during or after a building by a cooperative is built there are many decisions that have to be taken. This ensures that there is always a dialogue between the members of the cooperation that at the same time also binds them together.

4.2 Housing cooperations in practice

To determine how these potential qualities of housing cooperations and their buildings are realised the research will look into two case studies: Kalkbreite genossenschaft in Zürich and Warmbächli in Bern. Both located in Switzerland the case studies were selected based on the quality of living that is realised through collective living, and their location in an urban environment. Made possible by the abundance of self-published information and writings on the projects, the research takes a deep dive in the creation of the two projects and the resulting qualities of social and spatial collectivity.



Figure 22. The Rotterdam Wallisblok before (top) and after (bottom) renovations. Photos by Hulshof Architecten.



Name Kalkbreite
Location Zürich, Switzerland
Architect Müller Sigrist Architekten
Client Genossenschaft Kalkbreite,
 Stadt Zürich
Year 2014
Residents ~250
Dwellings 97



[Diagonal hatching] Residential
 [Dotted pattern] Commercial /
 Services
 [Solid color] Communal

5. Kalkbreite, Zürich

5.1 Project introduction

Kalkbreite is the first project of the Kalkbreite Genossenschaft that was founded in 2007 as a collective to redevelop the Kalkbreite site in Zürich, Switzerland. The project is located on the edge of the 3rd and 4th city district of Zürich covering a tram depot actively operated by Verkehrsbetriebe Zürich. The project is the result of an collaborative process between members of the collective and an architectural competition that selected the design by Müller Sigrist Architekten out of 54 submissions. The project features a combination of residential,



Figure 23. The elevated courtyard of the complex featuring a garden and a playground for children. Photo by Martin Stollenwerk.

communal and commercial spaces. On the lower floors a restaurant, cinema, offices and other services are available for both residents and inhabitants of the surrounding neighborhood. Moving up, the building becomes more oriented towards its inhabitants and providing spaces for social interactions like the open courtyard with playground, the main entrance, and communal facilities. The higher floors contain a variety of residential units organised in different configurations.

Organisation structure:

The Kalkbreite collective is lead and organised fully by its own members, which counted over 1900 in 2018. Becoming a member is possible regardless of whether you rent an apartment in a building operated by the collective. Several organisational bodies are elected by the general members to lead operations. Through participatory events members can also have influence in decision-making after the management and commissions have been elected. For more complex decisions residents can join special workgroups to execute more thorough research before voting. The building provides space for resident or non-resident initiatives that are driven based on a voluntary basis.

5.2 Spatial qualities (building)

Throughout the Kalkbreite complex there is a clear separation between residential, communal and commercial functions. The latter are located on the ground

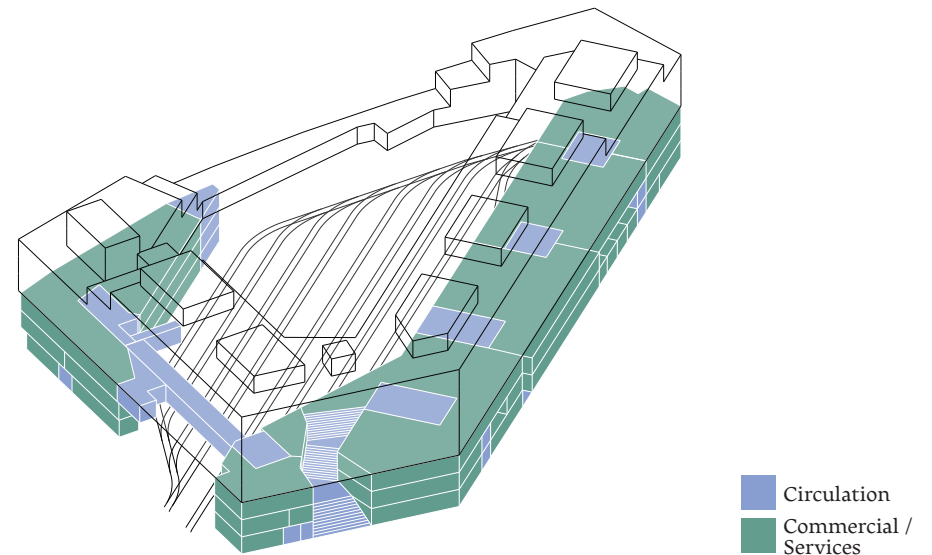


Figure 24. (Top) The buildings' north facade showing most of the commercial functions and service facing the main road. Photo by Martin Stollenwerk.

Figure 25. (Bottom) Commercial spaces and services are located on the lower floors, facing the street with the backside to the tram depot. Diagram by author.

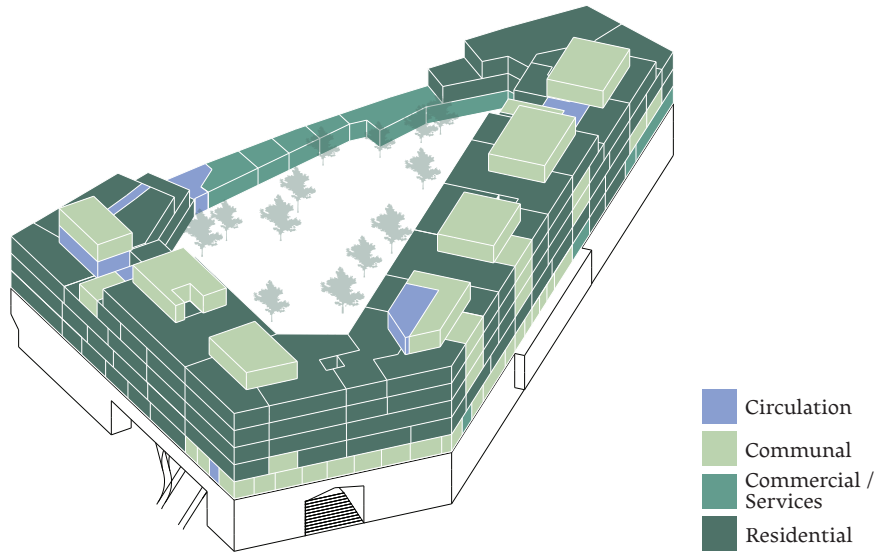


Figure 26. (Top) The highest layers contain most residential units and communal facilities for residents. Diagram by author.

Figure 27. (Bottom) The interior of a communal space featuring a kitchen, a balcony to the courtyard and a double height space connecting to the multi-functional space. Photo by Martin Stollenwerk.

floor next to the main street that passes the building so that they are accessible for visitors. There are several restaurants, offices for creative businesses, healthcare facilities, a cinema and a public daycare. From the ground floor some of the commercial spaces also provide access to stairwells leading up to the residential floors. Because of the location over the tram depot, the central courtyard is raised two floors above street level, and set of stairs allows the courtyard to be entered from street level. The building is wrapped around this courtyard shielding it from the outside world and providing residents with a more private green space. The daycare is located next to this courtyard and allows kids to play outside in a protected area. Communal facilities are scattered across multiple level and connected through an interior street that provides the main circulation on the residential floors. These facilities include a laundry room, library, cafeteria, workshop and heated and unheated spaces for flexible use. Use of the flexible spaces is decided by residents in the municipal council of Kalkbreite. The ratio of surface area for residential, communal and commercial functions is respectively 59, 5 and 36 percent.

Circulation

An important spatial feature of the Kalkbreite building is the interior street that runs through the building, connecting multiple floors and residential clusters. The space is not only provides the main internal circulation in the building but also hosts some of the communal facilities. In some places the circulation space has become

the communal space where residents of neighbouring houses can meet each other or engage in activities together.

5.3 Spatial qualities (dwelling)

An important aspect of the way collectivity is organised within the building is the layout of the residential units and their orientation towards shared circulation spaces and communal facilities. The different residential units are divided in a great variety of housing types that organise collectivity in different ways.

Shared apartments:

The first type to be distinguished is a shared living concept where multiple bedrooms are organised around a central living room and kitchen, with one or more shared bathrooms. Seen in [Figure 28 and 29](#), the amount of bedrooms in this type can vary from two to nine units. The inhabitants share a common front door that leads directly to a hallway or stairwell. Interesting in the layout is how the amount of traditional hallways is minimised. This way there is always a clear distinction between what is public (the living room and kitchen) and what is private (the individual bedrooms). The sizes of the private spaces range from 12 to 19 m². In total the amount of space per person including the shared space is around 30 m², differing between the several dwelling types.

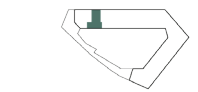
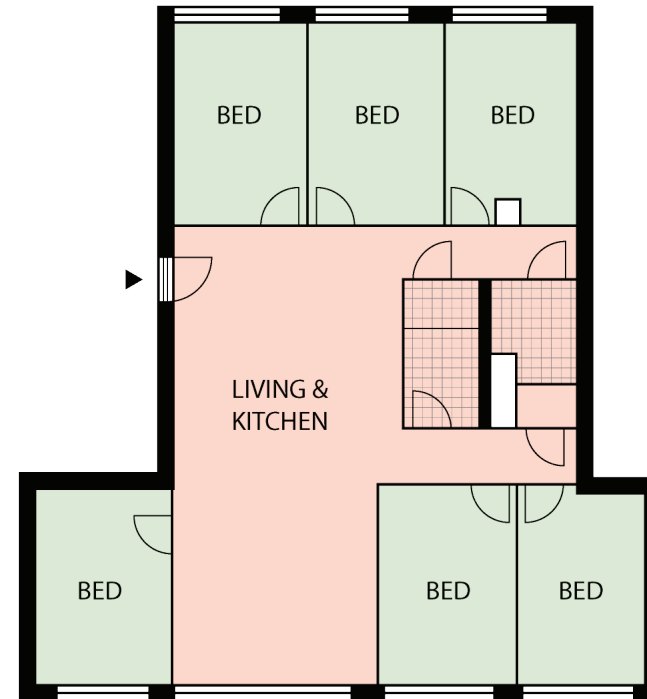


Figure 28. 7.5-Zimmer apartment. Shared housing type in Kalkbreite, 1:200. Drawing by author.

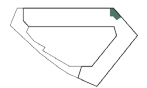
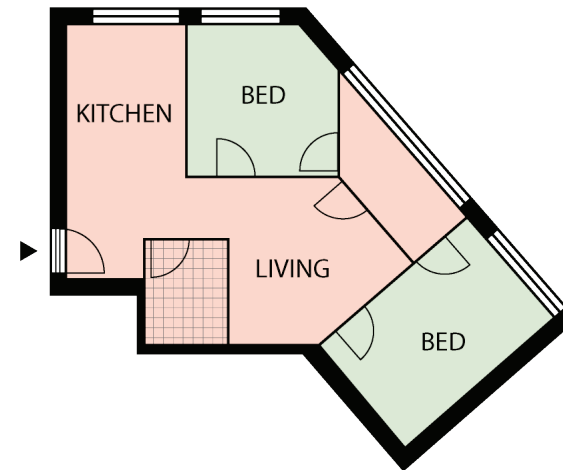


Figure 29. 3.5-Zimmer apartment. Shared housing type in Kalkbreite, 1:200. Drawing by author.

Wohncluster:

The *Wohncluster* consists of individual studio type apartments that are grouped around a hallway. The dwellings have a separate front door and a private bathroom and kitchen. A sense of collectivity is ensured through the layout of the units on both sides of the interior street running through the complex. Besides that there is a common room that's accessible for the residents of the cluster. The amount of individual dwellings in the multiple clusters in the building range from nine to eleven. Around the central hallway there are some shared facilities or "boxes" for residents outside the cluster. The function of these boxes is decided during the general council of the Kalkbreite collective, as workspaces or hobby rooms for example.

Grosshaushalt:

Another way of organising collectivity is the so-called "Grosshaushalt". It is a number of shared living units with multiple residents combined with extra shared facilities. The 21 apartments of this big household are oriented around one of complex's internal stairwells. The dwelling units have an internal collective space where the living room, kitchen and bathrooms are located. The layout within the dwellings as well as the separation between the units is adjustable for changes in use in the future. This collective within the collective shares a large common room with a professional kitchen where dinners can be organised for the residents of the big household, and external members of the collective.

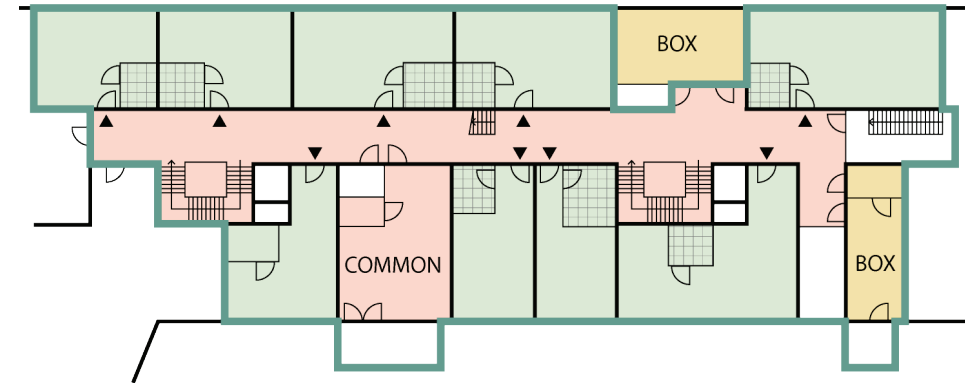
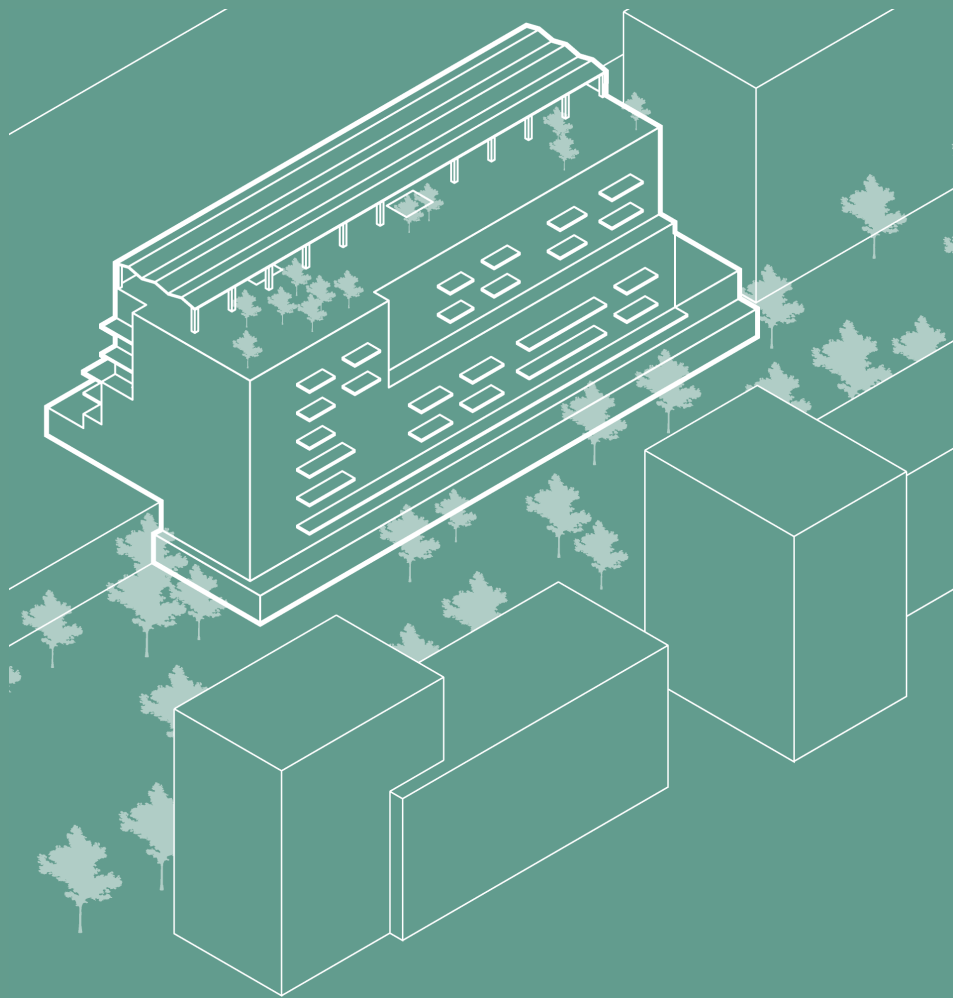


Figure 30. Wohncluster
Collective hallway
in Kalkbreite, 1:200.
Drawing by author.



Figure 31. Grosshaushalt
apartments in
Kalkbreite, 1:200.
Drawing by author.



Name Warmbächli
Location Bern, Switzerland
Architect BHSF Architekten
Client Wohnbaugenossenschaft Warmbächli
Year 2021
Residents ~190
Dwellings 60



[Hatched] Residential
 [Dotted] Commercial / Services
 [Solid] Communal

6. Warmbächli, Bern

6.1 Project introduction

On the former site of a waste incinerator in the western part of Bern, Switzerland, a new neighbourhood is being realised in collaboration with 5 housing collectives. In total around 330 new homes will be built on the terrain, all through non-profit developers. In 2015 a consortium of housing collectives was established to make a bid for the development of the site. Each developer works on a specific “living concept” centered around an urban courtyard with additional functions for residents of the complex and the surrounding neighborhoods.

One of the developers is the Wohnbaugenossenschaft Warmbächli (WBG Warmbächli), that has existed since

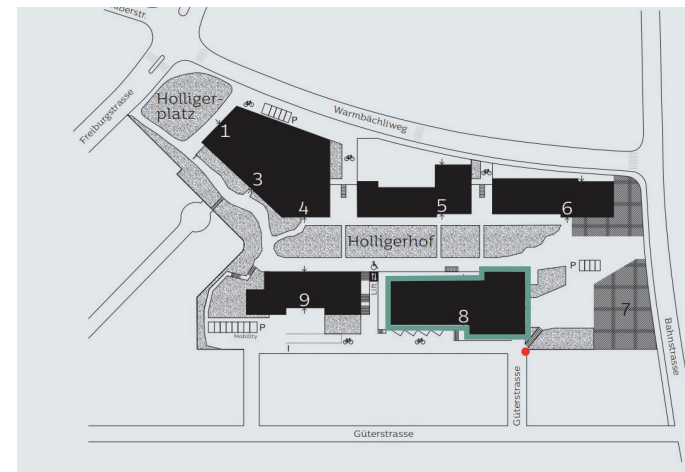


Figure 32. The different buildings of the Holliger redevelopment, Warmbächli in building 8. Image by Infrastrukturgenossenschaft Holliger.

2012 but became a legal party in 2013, then having around 50 members and now grown to over 200. Within the consortium the collective has worked on transforming an old factory warehouse into a mixed-use residential building. The large open space between the concrete column structure provides suitable accommodation for the new commercial and communal functions on the lower floors and basement. On the higher floors the characteristics of the existing building were turned into qualities to benefit the residents and create a unique living environment. Throughout the process resident and user participation was ensured in workshops with members of the genossenschaft and the architects of the project, BHSF Architekten.



Figure 33.
Structural re-use of the existing factory building. Image by BHSF Architekten.

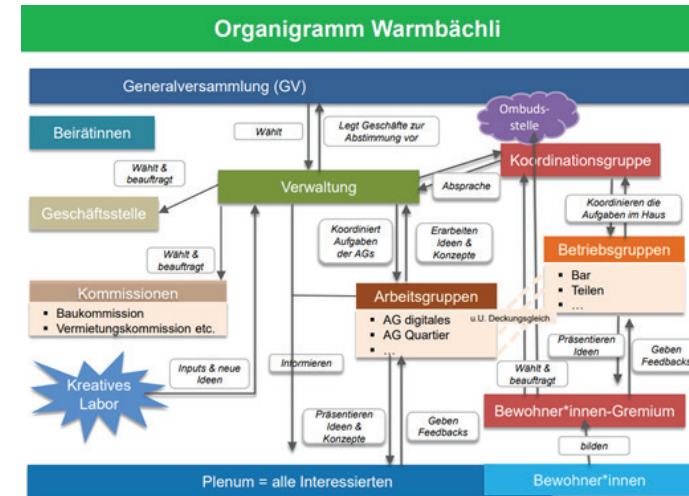


Figure 34.
Organigramm of the organisational structure of the collective. Diagram by Genossenschaft Warmbächli.

Organisation structure

Mentioned by LaFond et al. (2017) as some of the qualities of housing cooperatives, complexity, process-orientation and flexibility can be seen in the organisational structure of the Warmbächli genossenschaft. As seen in [Figure 34](#), the organisation consist of many different organs that have specific objectives and authorities. This diversity in possibilities for members of the collective and residents to have an input in the operation of the collective makes for a bottom-up and democratic structure. A special commission was established researching methods and structures to help with discussing the future of the collective and the future of living together in the building.

6.2 Spatial qualities (building)

Because the building is located on a sloped site it can be accessed from multiple levels. The higher level entrance provides access to the mixed-use ground floor, as shown in **Figure 35**, and the higher residential levels. The lower level entrance forms the main connection to the bigger redevelopment site. Because the nature of this connection is more public and intended for use by non-residents too, the lower levels of the building feature several commercial spaces that can be rented out as offices or for businesses. Also some larger communal facilities such as parking and storage can be found there. The roof of the building features a rooftop terrace accessible for residents. In this way the building not only provides qualities to the residents living there but also actively contributes to the quality of the redevelopment of the city and even that of the larger urban area.

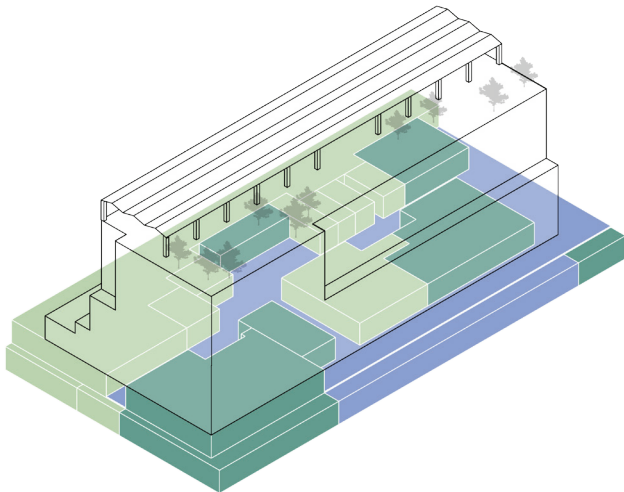
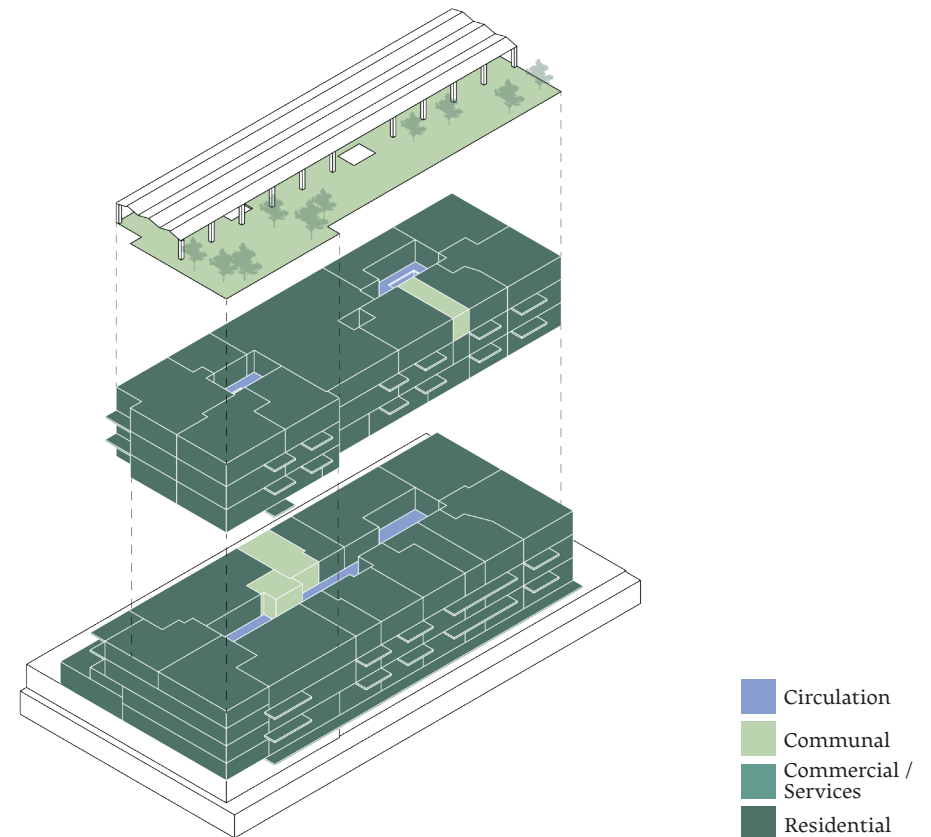


Figure 35. (Left page)
The lower levels of the building feature most of the commercial spaces and the larger-scale communal facilities. Diagram by author.

Figure 36. (Right page)
The dwellings are located on the higher levels and accessible through two stairwells. Diagram by author.

Circulation

The main vertical circulation through the building is provided by two stairwells that are connected by a hallway on the lower levels, and a two-sided co-housing apartment on the higher levels. The large open spaces are covered by a glass roof so light penetrates all the way to the ground floor. Besides circulation and light, these stairwells also feature the access to communal functions such as a laundry, drying room and the several *Jokerzimmern*.



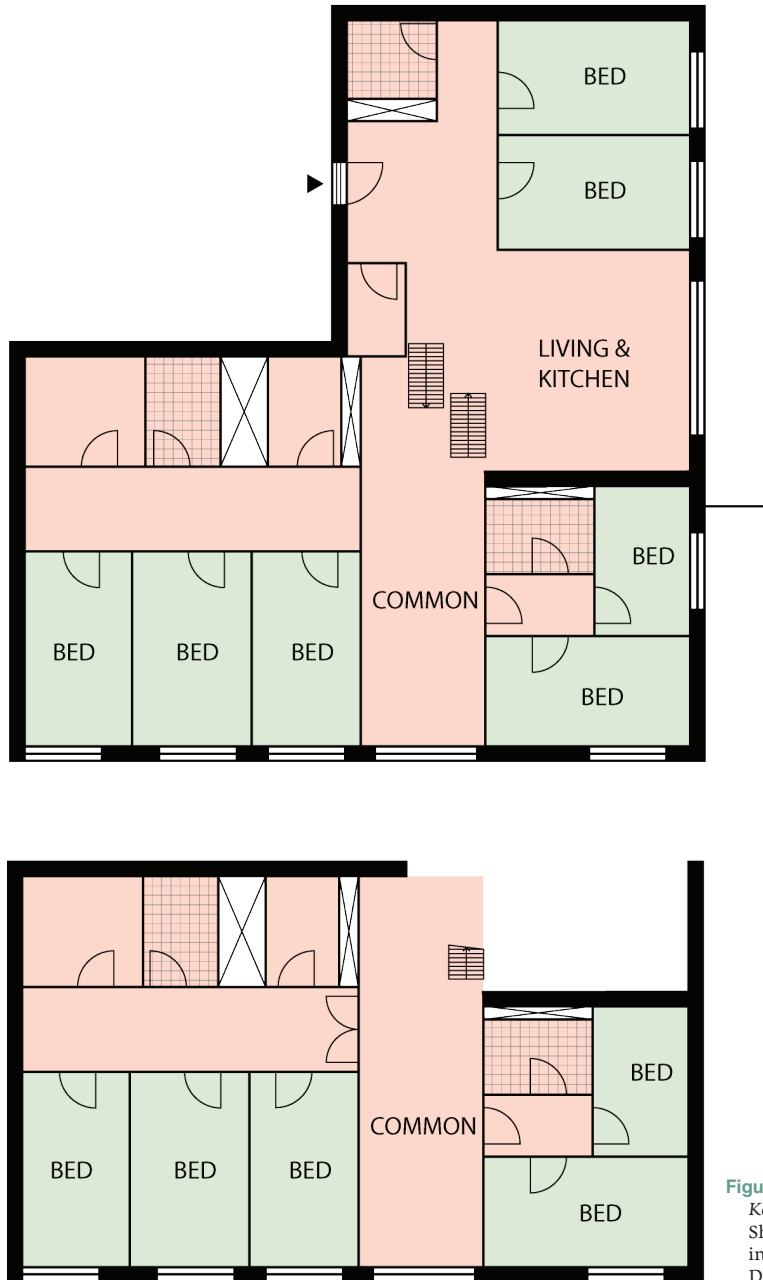


Figure 37. Kind-und-Kegel apartment. Shared housing type in Warmbächli, 1:200. Drawing by author

6.3 Spatial qualities (dwelling)

One of the main objectives of the collective after its establishment was the creation of alternative housing models. After completion of the project this resulted in a great variety of housing types ranging from 1.5-room to 15.5 room apartments. Some more experimental types are also included like the Grandhotel which features extra care facilities, or the Selbstbauwohnung where a group of residents are in charge of building the private spaces themselves.

Kind-und-Kegel

Within the Warmbächli complex there are several large-scale shared housing types. One of them is the Kind-Und-Kegel type, a 12 bedroom mixed-resident apartment. The different bedrooms vary in size from 10 m² to 16 m². In total the apartment spans 419 m², and due to the relatively small bedroom sizes the different common spaces such as the kitchen and the living room become more of a focus point. The shared spaces are divided over a ground level and a split-level story making it possible for residents to separate from the main living space when desired. On the upper level there are two bedrooms that have a separate bathroom, creating a smaller living unit within the apartment.

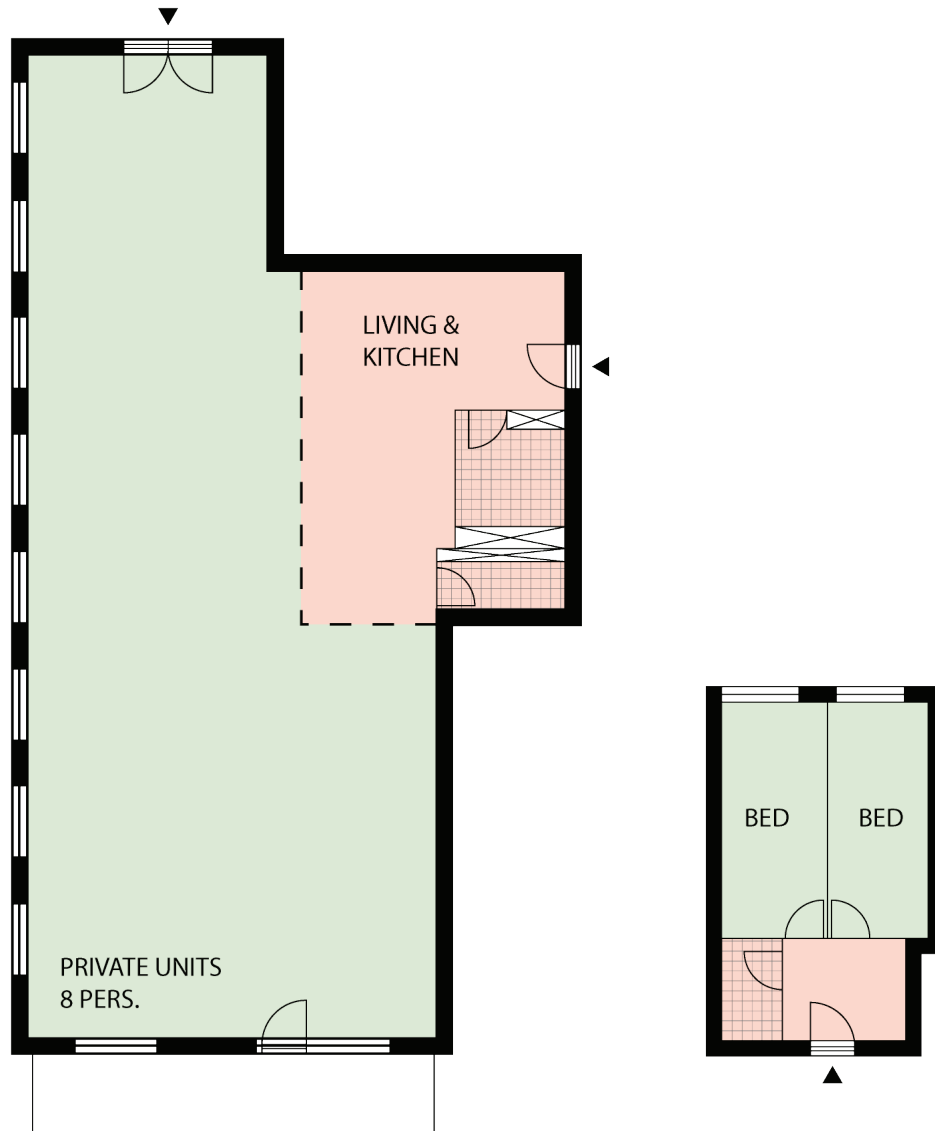


Figure 38. (Left) *Selbstausbau* DIY apartment in Warmbächli, 1:200. Drawing by author.

Figure 39. (Right) *Jokerzimmer* Independent guest room in Warmbächli, 1:200. Drawing by author.

Selbstausbau:

Divided by different floor heights of 4,6 and 3,2 meter the *Selbstausbau* apartment was delivered only with two bedrooms and an indication of the area where the kitchen could be. This provides a group of 8 residents to finish the apartment by building individual units in the layout they desire. In **Figure 40** the end result shows that residents filled in the space in a creative way with individual bedrooms scattered across the large open space between the columns of the existing building.

Jokerzimmer:

next to the internal staircases, the “*Jokerzimmer*” can be found on multiple floors. This is a space with a spare bed- and bathroom that can be used by residents in different ways. When parents move into the Warmbächli building with a child that will almost move out, they can use this room as a spare bedroom. When it’s not in use by residents it can become a private or rented-out guestroom.



Figure 40. Interior photograph of the finished *Selbstausbau* apartment. Photo by Jürgen Beck.

7. Collective living? Yes!

This research has attempted to take a widespread phenomenon, that of the housing crisis that's happening in many places, and place that within the specific physical context of the post-war neighborhood. In that bringing together generic problems of the housing crisis and site specific problems of post-war neighborhoods. To look for possible relief for these problems an alternative housing model was described, that of the housing cooperation. In this way trying to answer the main research question of this graduation project:

“Do housing cooperatives provide potential to densify and reinforce collective living in the post-war neighborhood of Westwijk?”

In the first chapter of this research the urgency of the need to build more homes in The Netherlands is explained, which is not only a matter of quality but also of quantity. Research by several authors point in the direction of post-war neighborhoods as a place with opportunities to add new homes and also improve living quality within the neighborhoods.

To understand what specific spatial problems are in post-war neighborhoods, the second chapter looked into the founding design principles behind these suburbs. The Wijkgedachte as the manifesto for the Dutch garden city



Figure 41. Design meeting of the future Warmbächli residents. Photo by BHSF Architecten, edit by author.

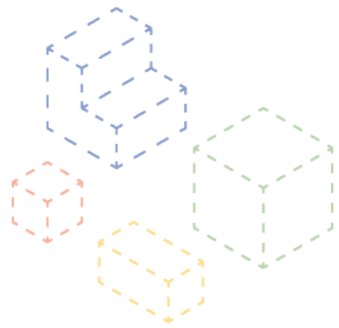
movement, was very influential in the appearance of the neighborhoods in the 1960's and still today. However, some of the design principles have proven not to be able to adapt well to changing external conditions within society. These changes were studied using the neighborhood of Westwijk in Vlaardingen as a case study. The guiding green structures separating the different buurten have been obscured over time, and facilities there have disappeared. Changes in lifestyle patterns and lower occupation rates of dwellings have caused the neighbourhood to feel dormant and empty most of the time.

The challenges communities in post-war neighborhoods are currently facing ask for strategies with a different approach to collectivity. Alternative housing models like housing cooperations could help rebuild communities and provide affordable living spaces for current and new residents. Although having been around for some time, this housing model is regaining attention around the world. The non-speculative nature of cooperations in combination with many resources for communities within the cooperation as well as surrounding residents makes these projects highly valued. Unlike many commercially developed projects cooperations often prioritise diversity, sustainability and care for residents, securing the qualities of the projects for a long time.

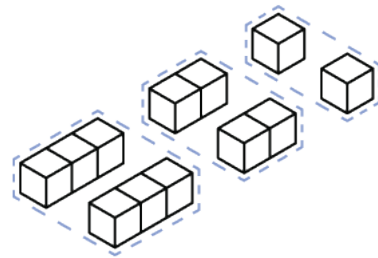
Design principles



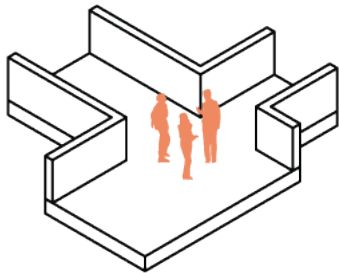
Figure 42. Community dinner at the Vlaardingen commons project by Stad in de Maak. Photo by Vlaardingen commons.



Variation in housing types



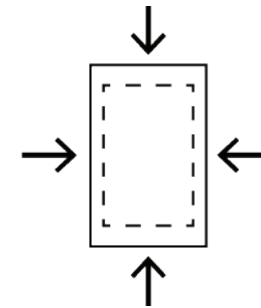
Variation in clusters



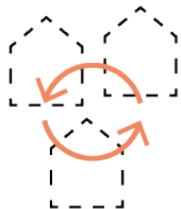
Circulation with social function



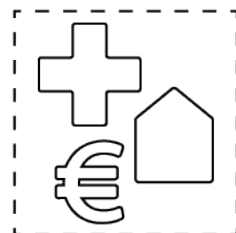
Internal collectivity



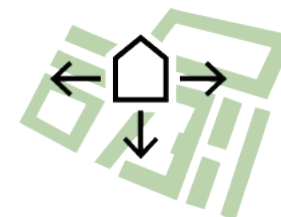
Compact layouts



External collectivity



Mix of functions



Qualities for surrounding neighborhood

The case studies highlight some of these aspects and showcase the design principles that contribute to the quality of individual and communal life. What stood out during the research is the amount of publicly available information and transparency of the organisation of the cooperatives. Financial reports, permit documents, building drawings and internal meeting documents can all be found on the websites or blogs of the communities. This shows a willingness to educate others about this

Figure 43. Some design principles found in cooperative housing projects. Diagrams by author.

alternative housing model, and provides important guidance for like-minded people.

An important note is that the design principles found in the projects are not specific to buildings developed by housing cooperatives. However, the combination of multiple of these spatial principles and the democratic and active organisation structure creates a quality that is not always found in projects that feature just some of these principles.

In conclusion it becomes clear that housing cooperatives could be a realistic solution for some problems found in post-war neighborhoods. Not only because of the high quality of living these projects offer but also by the organisational structure and facilities available for residents and non-residents. Core values of housing cooperatives such as affordability, diversity and democracy are explicitly visible within the communities. All coming together in the beauty of collective living.

Bibliography

Arigolu, R., van Dijken, K., & Koffijberg, J. (2008). Bloei en

verval van vroeg-naoorlogse wijken. Nicis Institute.

Beekers, W. P. (2012). Het bewoonbare land: Geschiedenis van

de volkshuisvestingsbeweging in Nederland. Boom.

Blom, A., Jansen, B., & Van der Heiden, M. (2004). De Typologie

van de Vroeg-Naoorlogse Woonwijken (Wederopbouwarchitectuur). Rijksdienst voor het Cultureel Erfgoed.

Bollier, D., & Helfrich, S. (Eds.). (2015). Patterns of commo-

ning. CSG - Commons Strategies Group.

Brysch, S. (2023). Towards a new Existenzminimum. Defining

principles for the co-design of affordable collaborative housing. BK Books.

CBS. (2017, November 18). Veel naoorlogse stadswijken

sociaaleconomisch zwak. <https://www.cbs.nl/nl-nl/nieuws/2017/46/veel-naoorlogse-stadswijken-sociaaleconomisch-zwak>

Coops, A., Enserink, M., Ekamper, T., Marissing, E. van, Mee-

re, F. de, & Zanten, M. van. (2015). Licht, lucht en ruimte 2.0; De impact van de herstructurering in wederopbouw-wijken Holtenbroek en Deppenbroek. Het Oversticht.

Czischke, D., Peute, M., & Brysch, S. (2023). Together: Ruimte voor collectief wonen. nai010.

Doevendans, K., & Stolzenburg, R. (1988). De wijkgedachte in Nederland: Gemeenschapsstreven in een stedenbouwkundige context. Technische Universiteit Eindhoven, Faculteit Bouwkunde.

Genossenschaft Kalkbreite. (2018, March 28). Kalkbreite. <https://www.kalkbreite.net/kalkbreite/>

Geyl, W. F. (1946). De opbloei van de wijkgedachte; Een sociale eenheid, die en levende gemeenschap kan zijn. *Bouw.*, 1, 365–371.

Geyl, W. F. (1949). *Wij en de Wijkgedachte*. Uitgave V. en S.

Gruis, V. (2019). Reflections on the European Social Housing Model and Opportunities for Collaborative Housing from a Dutch Perspective. *Research in Urbanism Series*, 27-38 Pages. <https://doi.org/10.7480/RIUS.5.3985>

Hochstenbach, C. (2022). *Uitgewoond: Waarom het hoog tijd is voor een nieuwe woonpolitiek*. Das Mag Uitgevers.

Hulshof Architecten. (2012, February 17). Wallisblok. <https://www.hulshof-architecten.nl/portfolio/wallisblok>

KAW. (2020). Ruimte zat in de stad. KAW Research and Deve-

lopment.

KAW. (2022). Mobiliteitsvernieuwing en slimme, duurzame verstedelijking. KAW Research and Development.

LaFond, M., Tsvetkova, L., Aguayo-Krauthausen, R., & id22: Institut für Kreative Nachhaltigkeit (Eds.). (2017). CoHousing Inclusive: Selbstorganisiertes, gemeinschaftliches Wohnen für alle = self-organized, community-led housing for all. Jovis Verlag GmbH.

Lans, J. van der, Pflug, M., Appelman, S., Beekers, W., & Cüsters, J. (2021). Canon volkshuisvesting (4e druk). Vereniging Canon Sociaal Werk.

Leidelmeijer, K., & Kamp, I. van. (2003). Kwaliteit van de Leefomgeving en Leefbaarheid; Naar een begrippenkader en conceptuele inkadering (630950002). RIVM.

Leidelmeijer, K., Marlet, G., Iersel, J. van, Woerkens, C. van, & Reijden, H. van der. (2008). De Leefbarometer: Leefbaarheid in Nederlandse wijken en buurten gemeten en vergeleken (95640). RIGO Research en Advies BV.

Lengkeek, A., & Kuenzli, P. (2022). Operatie wooncoöperatie: Uit de wooncrisis door gemeenschappelijk bezit (S. Franke, Ed.). trancity*valiz.

Meier, S. (2006). Tussen leefstijl en wijkgedachte: Moderne en postmoderne denkbeelden over wonen en de herstructureren van naoorlogse wijken (F. Martin, Ed.). Stichting De Driehoek.

Ministerie van Binnenlandse Zaken en Koninkrijksrelaties.

(2022). Programma Woningbouw. Volkshuisvesting en Ruimtelijke Ordening.

Müller Sigrist Architekten. (n.d.). Wohn- und Gewerbesiedlung Kalkbreite, Zürich. Retrieved 6 February 2024, from <https://www.muellersigrist.ch/arbeiten/bauten/wohn-und-gewerbesiedlung-kalkbreite-zuerich/>

Naafs, S., Eijken, M., Oolbekkink, R., Poliste, M., & Bovens, M. (Eds.). (2023). Panorama Lokaal. College van Rijksadviseurs.

Stuart-Fox, M., Kleinepier, T., Ligthart, D., & Blijie, B. (2022). Wonen langs de meetlat. ABF Research.

Velden, J. van der, & Can, E. (2022). 75 jaar stedelijke vernieuwing en wijkaanpak. Platform31.

Zwan, I. van der & Workshop Architecten. (2017). De bevrijding van de naoorlogse woonwijk. College van Rijksadviseurs.

Design

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5. Cooperation	-



Figure 44. Vision on the future of living in Midden-Delfland. Collage by Redesigning Deltas, edit by author

I. *Coöperatie Delfland*

The potential of housing cooperatives to deal with certain problems of the current housing crisis in The Netherlands is discussed in the previous research as well as their potential for context-specific problems of post-war neighborhoods. However, in order to really see the qualities of these organisations in full-color, the findings of the research are projected on a real life example in Westwijk in Vlaardingen. It's a hypothetical scenario based on the findings of the theoretical framework, case studies and other inspiring projects that surfaced during the research. Imagination plays a significant role here as there is no definitive way to determine how a housing cooperative would land in this context and go about a design process. The interest of the design project is not in showing "the" outcome of a building project by a housing corporation, but rather "a" possible outcome where specific problems as found in the research are addressed. In this way the design project tries to imagine a new future for Westwijk that deals with housing differently than any current, and already developed future plans for the neighborhood. The structure of the design project by the fictional housing cooperative will be loosely based on the process of a housing cooperative's foundation until the outcome of a potential design.

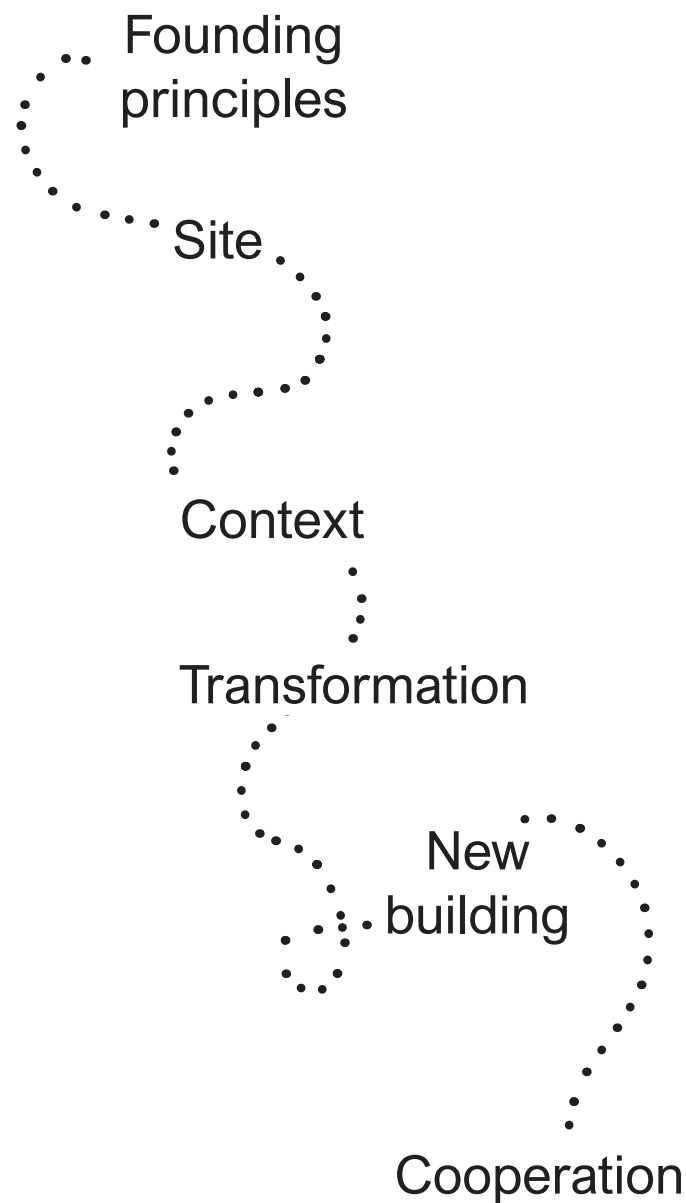


Figure 45. Structure of the design project in this booklet.

Throughout this part of the report there will be similarities with the previous research. This is a result of the back-and-forth process of writing the research and designing. However some aspects of the design process have been left out of the research report due to the lack of significance in the research. That does not mean that these aspects did not have any influence on the design outcome, hence they will be included in this part of the graduation report. Throughout this text there will be references to parts of the research report **highlighted in green**.

Founding principles

In **Chapter 4** of the research report, some of the founding principles of housing cooperations are described. There are some general principles like creating long-term affordable housing and communities based on sharing common resources. Some of these are specific to a certain physical or social context by the wish to realize housing in a specific location or for a specific type of resident. In the case of Coöperatie Delfland, the founding principles involve the wish to increase density in the urban edge around the Midden-Delfland landscape in The Netherlands and the general desire to realize affordable and inclusive housing.

I.1 National Productive Park Midden-Delfland

The first founding principle is the research project of the Redesigning Deltas group published in 2022. A collection of five strategies was established to deal with changing living conditions in densely populated river delta regions. Specifically, the Dutch delta was analyzed and conceptual designs were made for five different sites within The Netherlands. One of the sites is the green landscape between the cities of Rotterdam and The Hague called Midden-Delfland. This landscape faces not only pressure from the growing cities around it but also from the changing climate in terms of water management. A design team consisting of ZUS, Flux, and Sweco addressed these problems in a hypothetical future landscape design for the area (Koreman et al., 2022).



Figure 46. Case studies for Redesigning Deltas in The Netherlands (1. Seaside Rotterdam, 2. Zeeland, 3. Midden-Delfland, 4. Waal river, 5. Limburg)
Map by author



Figure 47. The current landscape of Midden-Delfland with polders, waterways and small villages. Photos as part of group work

History of Midden-Delfland

The landscape in the area we call Midden-Delfland today is the result of a long standing relationship of humans with the natural landscape of The Netherlands. Near Vlaardingen, remains of human inhabitation have been found dating back as far as 3500 BC. However, the conditions in which inhabitation was possible are now radically different than they were at that time. When we look at the landscape in its current condition one could describe it as “typically Dutch” with widespread grasslands grazed by cows, divided by parallel canals and ditches. This look is the result of centuries of human involvement and cultivation of the land. Humans have slowly taken control over the landscape to optimise its use for agricultural purposes.

This was not always the case. Before the large scale landscaping operations in the area, natural forces were the dominant influences. Humans lived together in small, nomadic communities being guided by the availability of resources in the landscape. Humans took up residence in areas with a higher elevation to keep dry feet in times of flooding. However in times of high global sea levels this also lead the area to become too wet and be left uninhabited for long periods of time.

In the Roman Era the first permanent settlement started to appear around Midden-Delfland as military and commercial centers. With the use of these hubs the land within Midden-Delfland slowly started to be cultivated

by farmers. This trend continued throughout the Middle Ages when the cultivation of the landscape took on a more systematical form. With the establishment of the Waterboard or Hoogheemraadschap in 1289, the management of water in the area became institutional. Taxes were collected in order to fund collective efforts to create new land and protect it and its inhabitants from the water. At first this was done with wind-powered windmills and a system of waterways. Later the mills were replaced by steam-powered and eventually electric pumps.

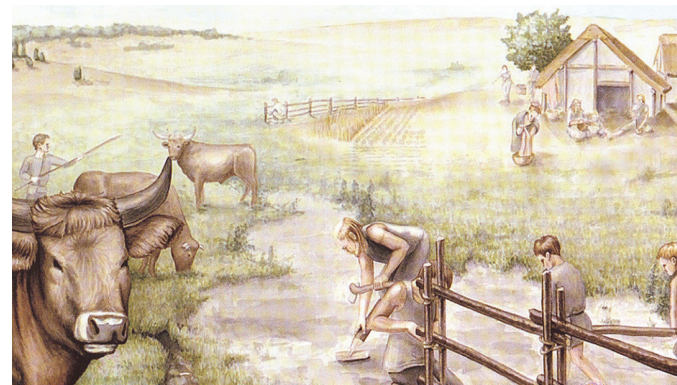


Figure 48. (Top)
Illustration of life
in the Schipluiden-
Harnaspolder in the
stone age. Drawing
by M. Oberendorff.
Figure 49. (Bottom)
Gemaal Dorppolder
in Schipluiden,
built in 1876. Photo by
Hoogheemraadschap
Delfland

A productive landscape

National Productive Park indicates, Midden-Delfland is to become a productive hub serving the surrounding areas in multiple ways. Most importantly, the lower parts of the landscape become water buffers to take on water in periods with heavy rainfall and high water levels in the rivers and sea. Secondly, new forms of agriculture are introduced to move away from exhausting the landscape to circular production methods. Finally, the area has to maintain the cultural and recreational function it has today.

The future functions of the landscape is dictated by the terrain height of the land and therefore the potentially higher and more unexpected water levels in the future. The main structure in the landscape is provided by a *boezem*-system of waterways. This is a hierarchical system of canals that can be used to transfer water to different areas or *polders*. In combination with the water structure, the soil type is an essential factor in determining the future use of the land. The peat soils can be used as natural sponges for storing water, while areas with a higher elevation of sand and clay can be used for forests for wood production.

An important aspect in the realisation of the design, is the densification of the urban borders around Midden-Delfland. Because of a growing population and changing needs in housing there is still a lot of pressure on green spaces in The Netherlands to build new homes. In the

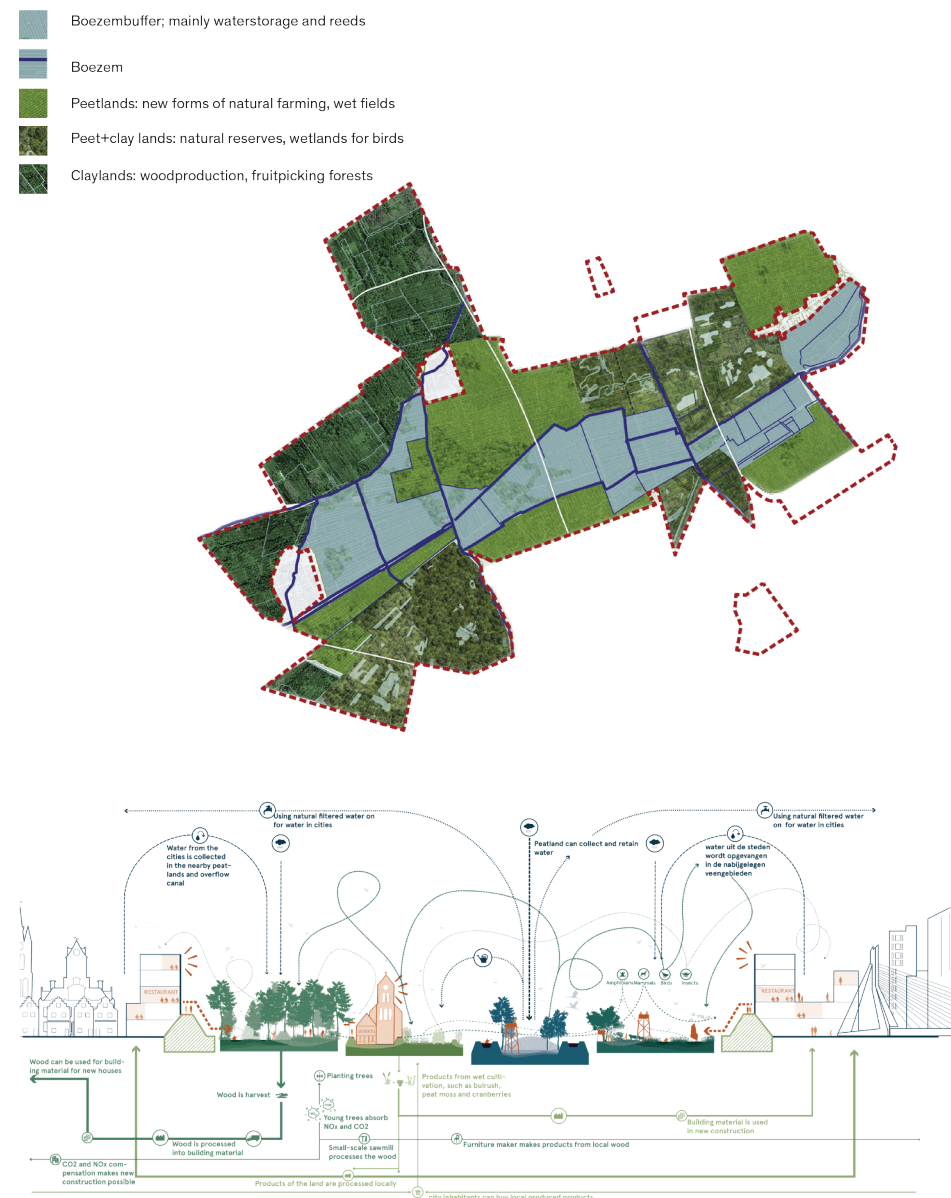


Figure 50. Landscape design for a future Midden-Delfland by ZUS. Drawings by Redesigning Deltas, edit by author



Figure 51. Urban borders as designated areas for densification around Midden-Delfland. Drawings by Redesigning Deltas, edit by author

design the border between green landscape and the cities is the assigned place for densification as it has the potential to create healthy and pleasant living environments for future inhabitants.

A social landscape

In the context of the graduation studio theme “Ecologies of Inclusion”, the concept of a productive term is interpreted in a broader sense. Productivity can also be applied to the social processes that are carried out in people’s daily lives. Factors such as care, education, safety, community and identity play an important role in the functioning of inhabited areas. These themes coincide with some of the qualities that housing cooperatives have in terms of their ability to build or strengthen communities and share facilities or services related to care and education. On top of that, the security of being able to live long-term in an affordable home can allow residents to feel more free, financially or socially.

1.2 Housing crisis

The second founding principle is the housing crisis that The Netherlands is currently facing. **Chapter 1** of the research in this project describes the quantitative and qualitative aspects of this crisis. The disfunctioning of the housing market and the lack of a suitable housing stock between the social and private rent sector causes the desire to grow for people to take this matter into their own hands.

The desire for a sustainable density in the urban areas neighbouring Midden-Delfland combined with the history of collective organisation of communities around natural resources and water management makes the location suitable and interesting to start thinking about different ways of collective living through a housing cooperative.

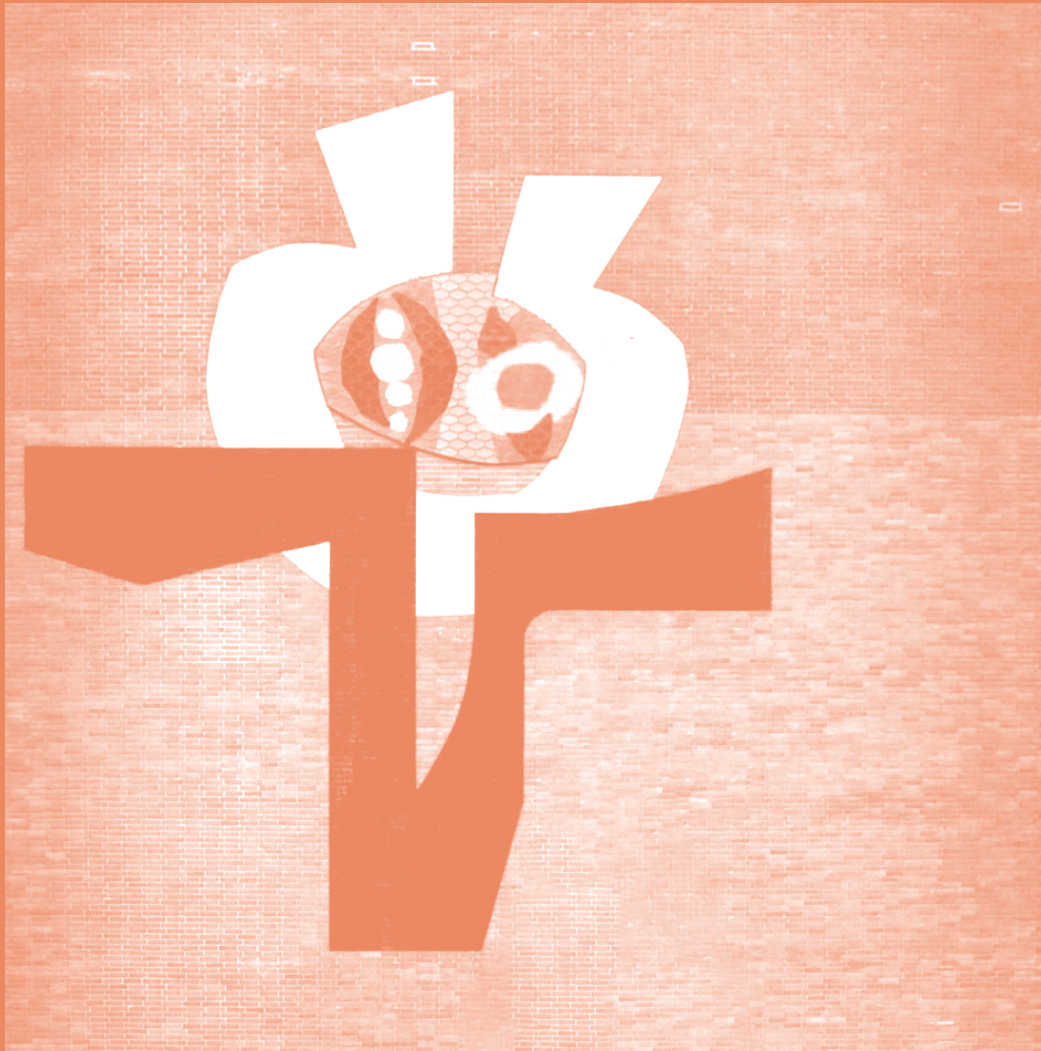


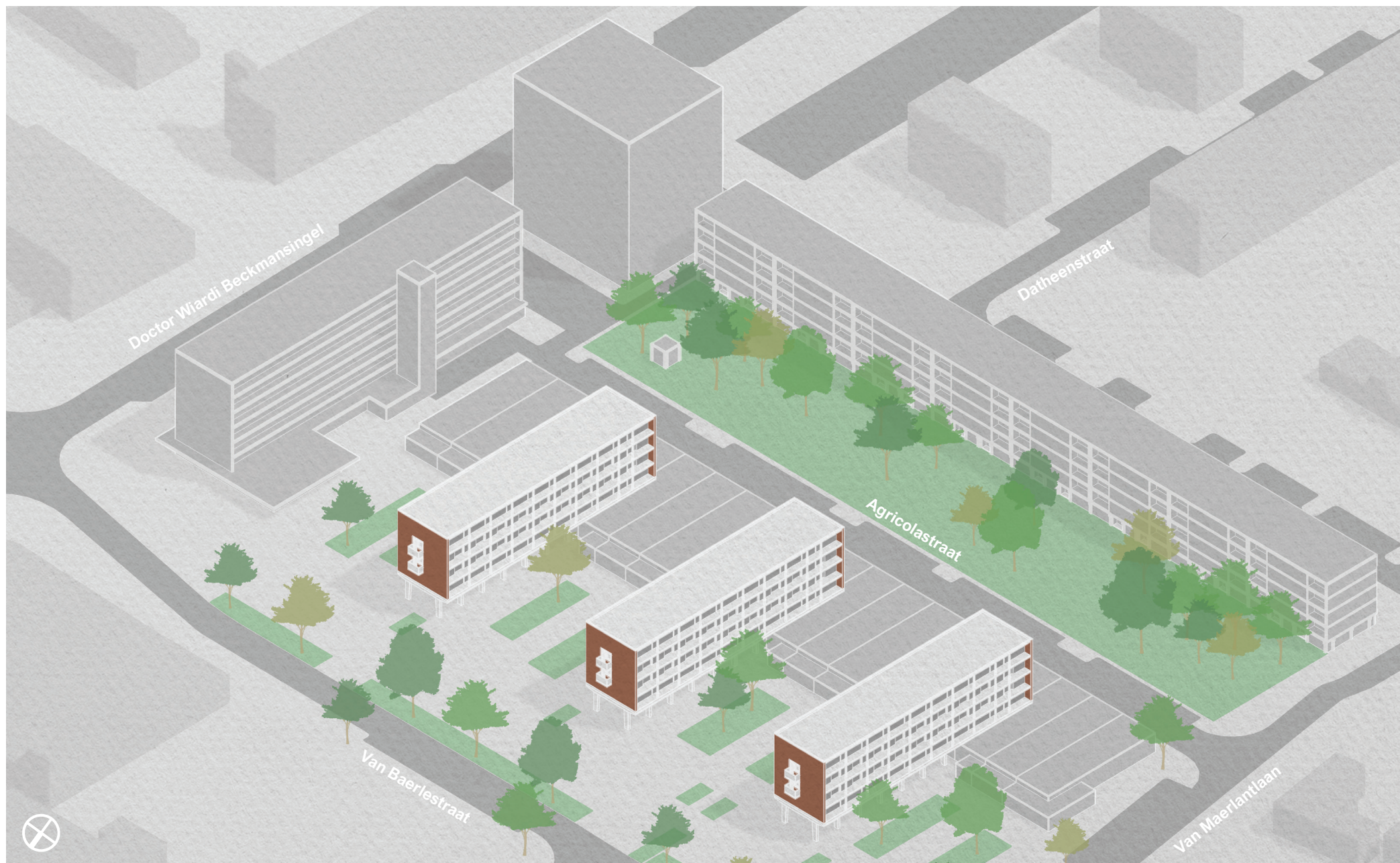
Figure 52. *Groeï*, by Leen Droppert, painted on the northern facade of block A of the Van Baerlestraat shopping centre. Photo and edit by author

2. Shopping centre Van Baerlestraat

One of the main challenges for housing cooperatives can be finding suitable and affordable land to build on. Usually, the business case for a housing cooperative to become reality does not work out when the land has to be purchased at a market-value price. That causes housing cooperatives to be dependent on governments opening up plots of land at a reduced price and specifically for housing cooperatives to build on. In this design project, a plot of land was selected that becomes the building site in the hypothetical development of a building for Coöperatie Delfland. The plot is on a piece of land made available by the municipality of Vlaardingen, a city council on the south border of Midden-Delfland. The site is the location of a commercial and residential center built in 1963, designed by architects J. M. Heikens and J. Nuyt.

One of the desires of the housing cooperative is to work with existing structures. Reusing or adapting existing structures to varying degrees can greatly reduce the material footprint of a building project. The cooperative also has as one of its goals to collectively take care of what is already there, repair it if necessary, and enhance it where there are opportunities. This can increase the environmental quality not only for the residents of the new building but also for the neighbors living around the plot. To investigate the possibilities of working with the existing shopping centre, a study is done on the current

Figure 53. (next page)
Diagram of a the Van Baerlestraat shopping centre with the surrounding buildings, streets and green spaces



state of the building as well as the available archival material in the municipal archives of Vlaardingen.

2.1 Complex layout

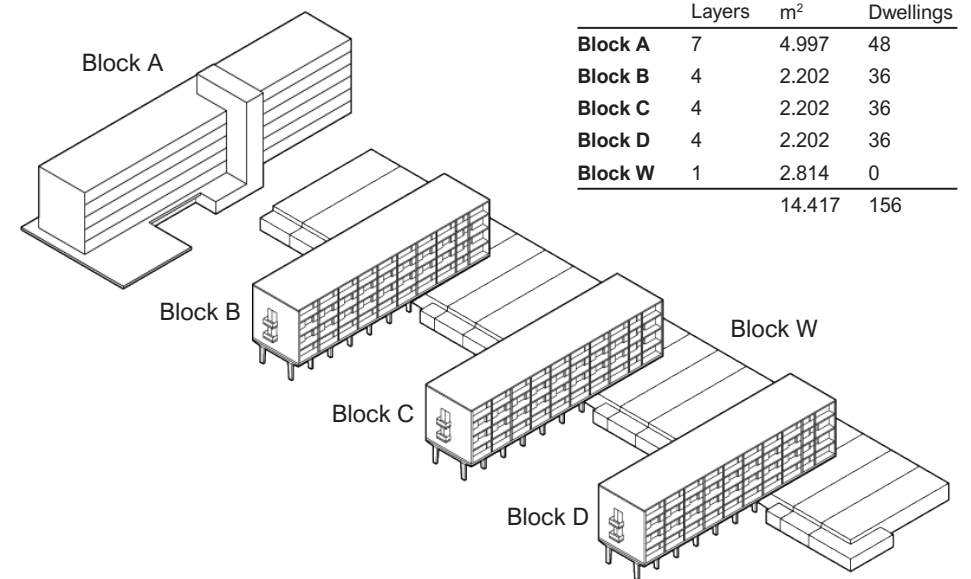
The building complex consists of five different blocks specified in the original building plans, clearly distinguishable in the final result of the complex. The composition of the blocks is very typical for the post-war modernist style of building, with rectangular blocks as volumes stacked orthogonally on top of each other or lifted from the ground level with columns. The block provides space for different functions or a mix of them.

Block A

The eastern edge of the complex is defined by a building block of seven stories tall, in the original drawings called block A. The ground floor consists of storage units for the residents and a commercial space facing the main streets. The six upper levels originally contained eight 3-bedroom apartments per level adding up to a total of 48 residential units. The units can be reached from galleries running along the backside of the block connected with a central set of stairs and an elevator. The commercial space on the ground floor is currently occupied by a physiotherapist.

Block B, C & D

Behind block A, three nearly identical volumes become visible. The four residential levels of these blocks are raised one floor from the ground level by columns. The



repetition of the blocks and the dimensions of the columns give the composition an impressive and firm appearance. The higher levels contain a total of 18 residential units, divided into maisonette-type apartments accessible from the second and third floor. The apartments have internal stairs connecting the so-called “living” floor, with a living room and kitchen, and the “sleeping” floor, with three bedrooms and a bathroom. On the levels where the gallery doesn’t serve as circulation space, it becomes a private balcony for the apartments looking out over the public square below. The blocks can be accessed through a collective entrance nested in Block W, containing doorbells, letterboxes, and storage units.

Figure 54. The division in blocks of the Van Baerlestraat centre and their respective surface areas. Diagram by author.

Block W

Block W is the connecting piece between blocks B, C, and D, running from the most western part of the complex until block A. The single-story block originally contained 17 commercial spaces that over time have been joined together into larger spaces. There is a very defined front side of the block with glass storefronts and entrances oriented towards the public squares and parking lot. The back, on the south side of the block, is designed to be a logistic street to supply the stores. Due to the lack of activity on the south side, the logistical corridor becomes a very unattractive place for residents and visitors of the building complex, even though it has the advantage of being located on the sunny side as well as a strip of public green.

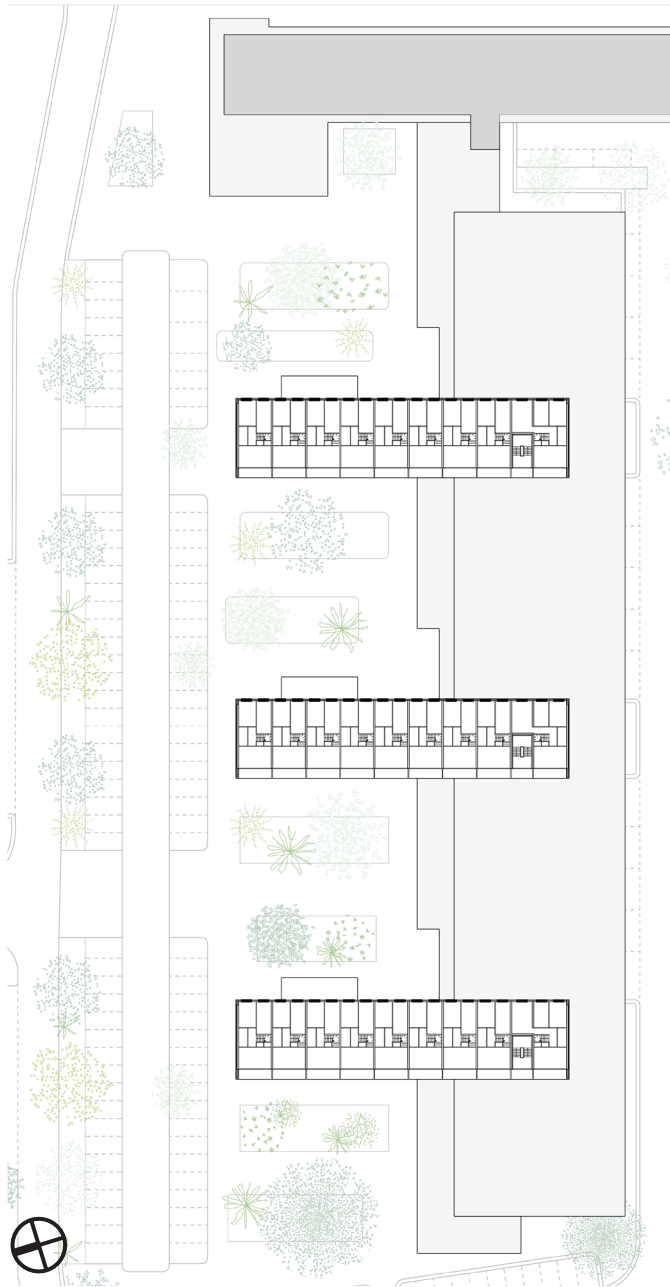
Public space

The building complex is located in the middle of an urban island surrounded by car-accessible roads. Parking spaces are provided by a big parking lot on the north side of the urban island as well as smaller strips on all sides of the block. The elevated parts of the complex and the single-story shopping strip create a series of small courtyards that are enclosed on three sides and open to the north. These squares feature some planters with shrubs and trees and some spots for parking bicycles. What stands out is that there are not many places where people can gather or rest for a while.

On the south side of the urban island there is a strip of green that in itself is quite attractive with large trees

Figure 55. (Right page)
Ground floor of the
complex in original
condition, 1:1000.
Drawing by author.





and a well-maintained grass field. However fitting with characteristics of post-war neighborhoods, as described in chapter 3, this strip doesn't serve any other function an aesthetic one. The building located across from the shopping centre is a typical post-war apartment building with a closed plinth, causing a lack of connection between the public green and the residents.

Figure 56. (Right) First floor of the complex in original condition, 1:1000. Drawing by author.

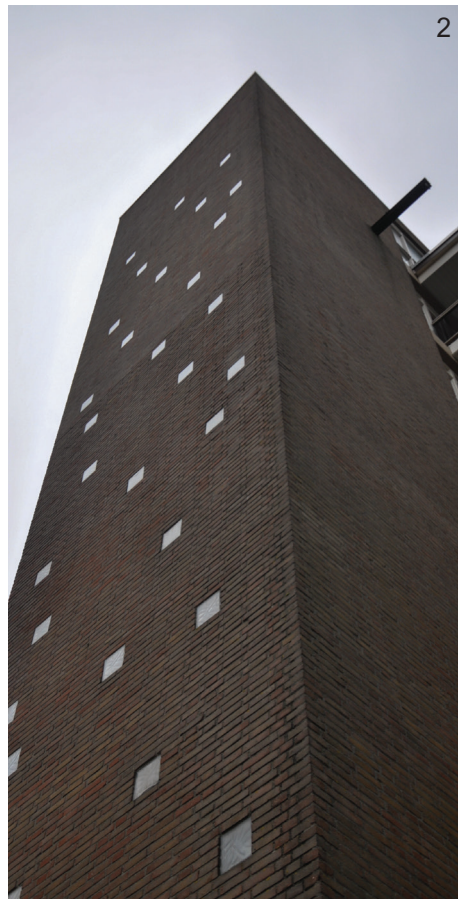
2.2 Site photos

The following photo series is the result of a site visit by the author on December 5th, 2023. Grouped by the different blocks of the complex the current state of the building and the surrounding public space is explored.

Block A



1



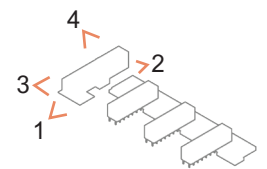
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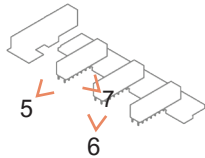


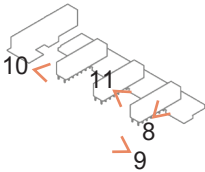
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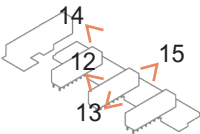


4



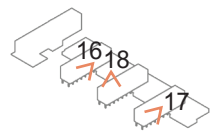


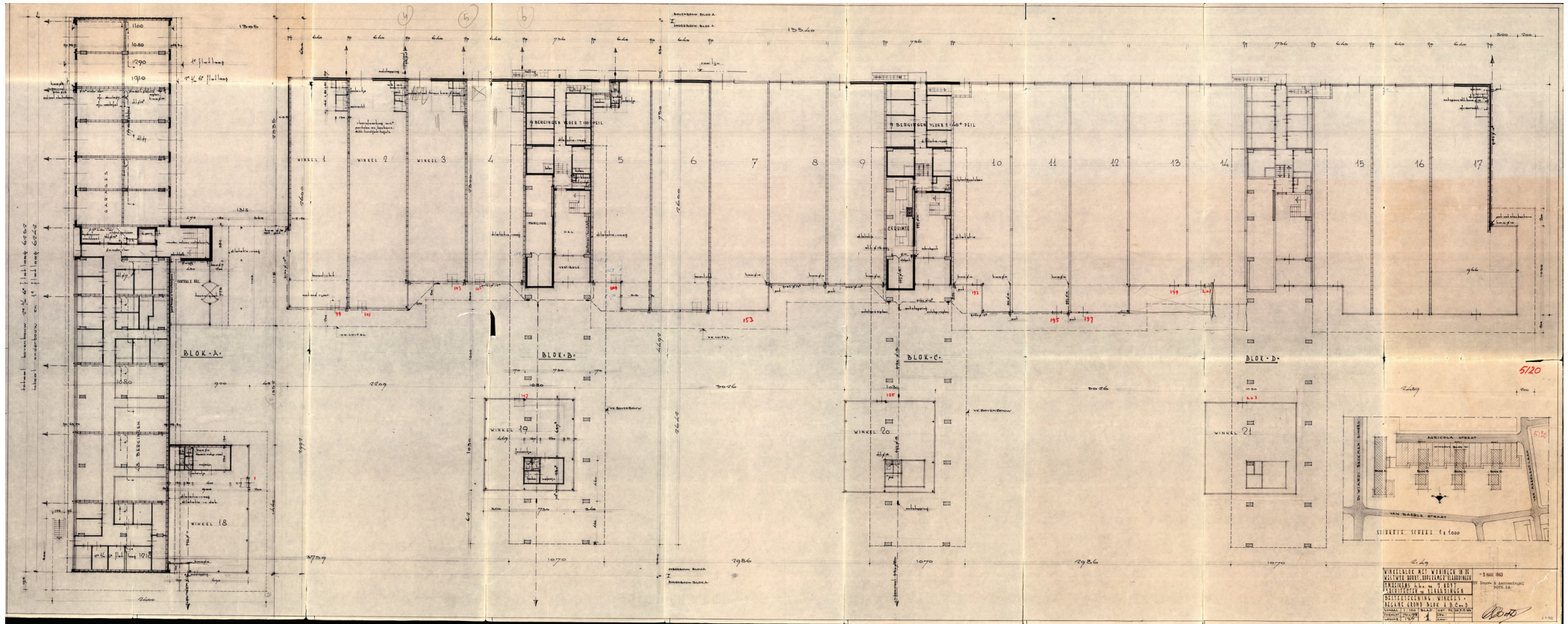






Through the photo series the interesting appearance of the complex becomes visible. The theme of orthogonality can not only be seen in the placement of the building volumes but also in the expression of their facades that have a strict rhythm, with slight variations on different sides. The consistency of this expression allows the separate elements of the complex to be read as a whole. The strongest connection here is between block B, C, D, and W. Not only because of their proximity, but also because of the subtle overlap in building volumes and scale.





units are very limited in height. The heights for the dwellings in the Van Baerlestraat complex are executed according to function. Floors with living spaces such as a kitchen, living room and dining room have a height of 2550mm, including finishes. Floors with just bedrooms are dimensioned to have a height of 2350mm, including finishes.

Climate design

The original ground floor plan shows that at the time the complex was constructed there used to be a collective coal-powered heating system. This indicates that there was space for pipes to run from this central space throughout the rest of the complex.

Figure 59. Original ground floor plan of the shopping centre. Accessed through Gemeente Vlaardingen.

2.4 Hoogkamer

The complex is located in the neighborhood of Hoogkamer in Westwijk. In [chapter 3](#) of the research project the neighborhood, its origins and changes over time have been described. When taking a look at Hoogkamer the same trend shows as throughout the rest of Westwijk. The main green structures, or green arms, are slowly being built up with projects that don't seem to address their specific context. [Figure 60](#) shows how this has been the case for Hoogkamer between the 1970's and now.

2.5 Urban vision

In order to provide guidance to new developments in the neighborhood a vision was created for Hoogkamer, seen in [Figure 61](#). The most important aspect of this vision is that redevelopments should only happen in the former green arm. However these developments could be significantly more dense than the recently built dwellings. By densifying in a sustainable and green manner the green structure can become recognisable again and provide a way for residents and visitors to orient themselves in the neighborhood.

New green corridors with vegetation and water are woven into the neighborhood to create a connection for humans and non-humans with the surrounding landscape of Midden-Delfland. Increasing the quantity of surface water in the neighborhood also helps in cooling down the direct environment and absorbing rainfall during peaks in precipitation.

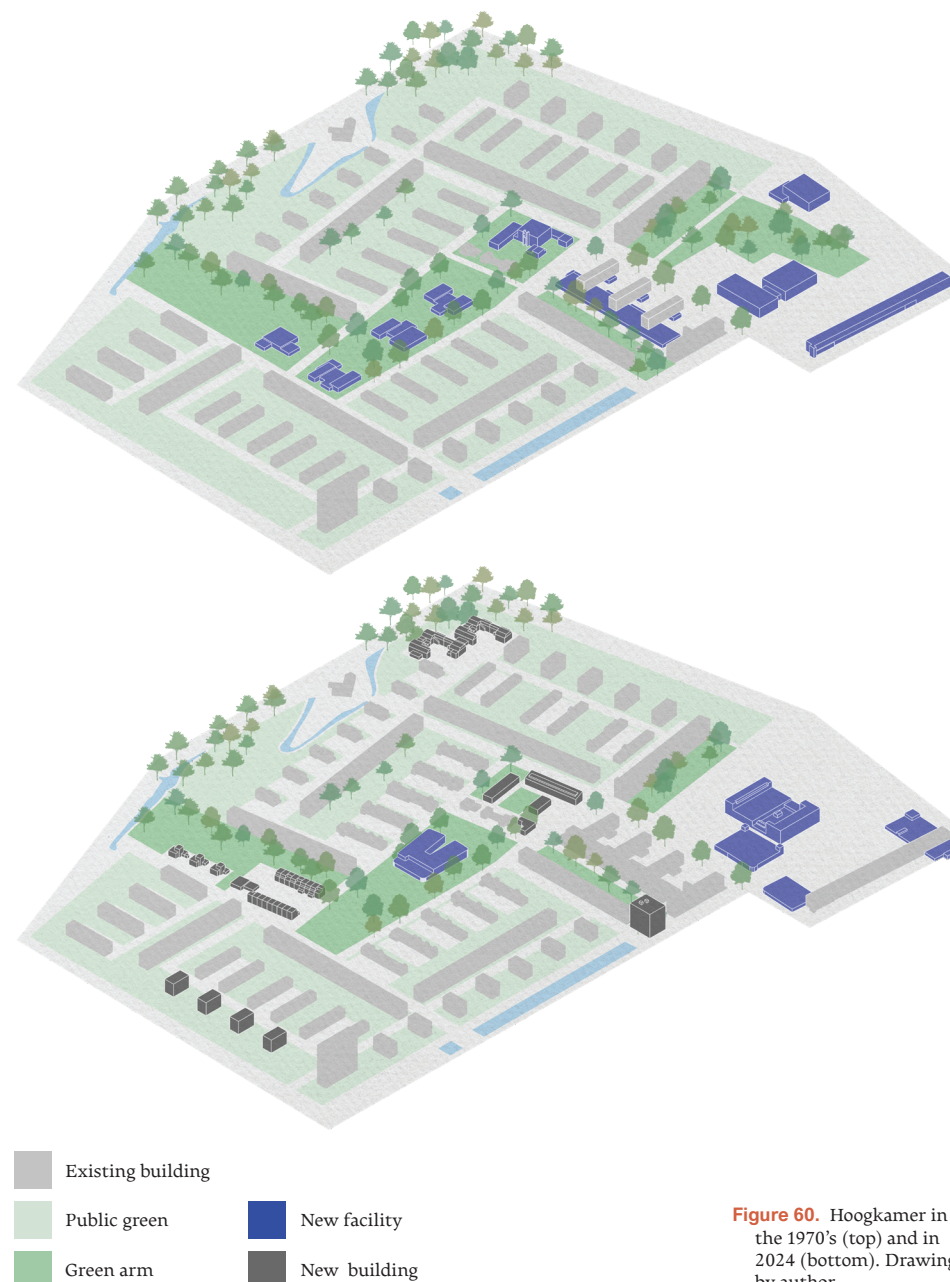


Figure 60. Hoogkamer in the 1970's (top) and in 2024 (bottom). Drawing by author.

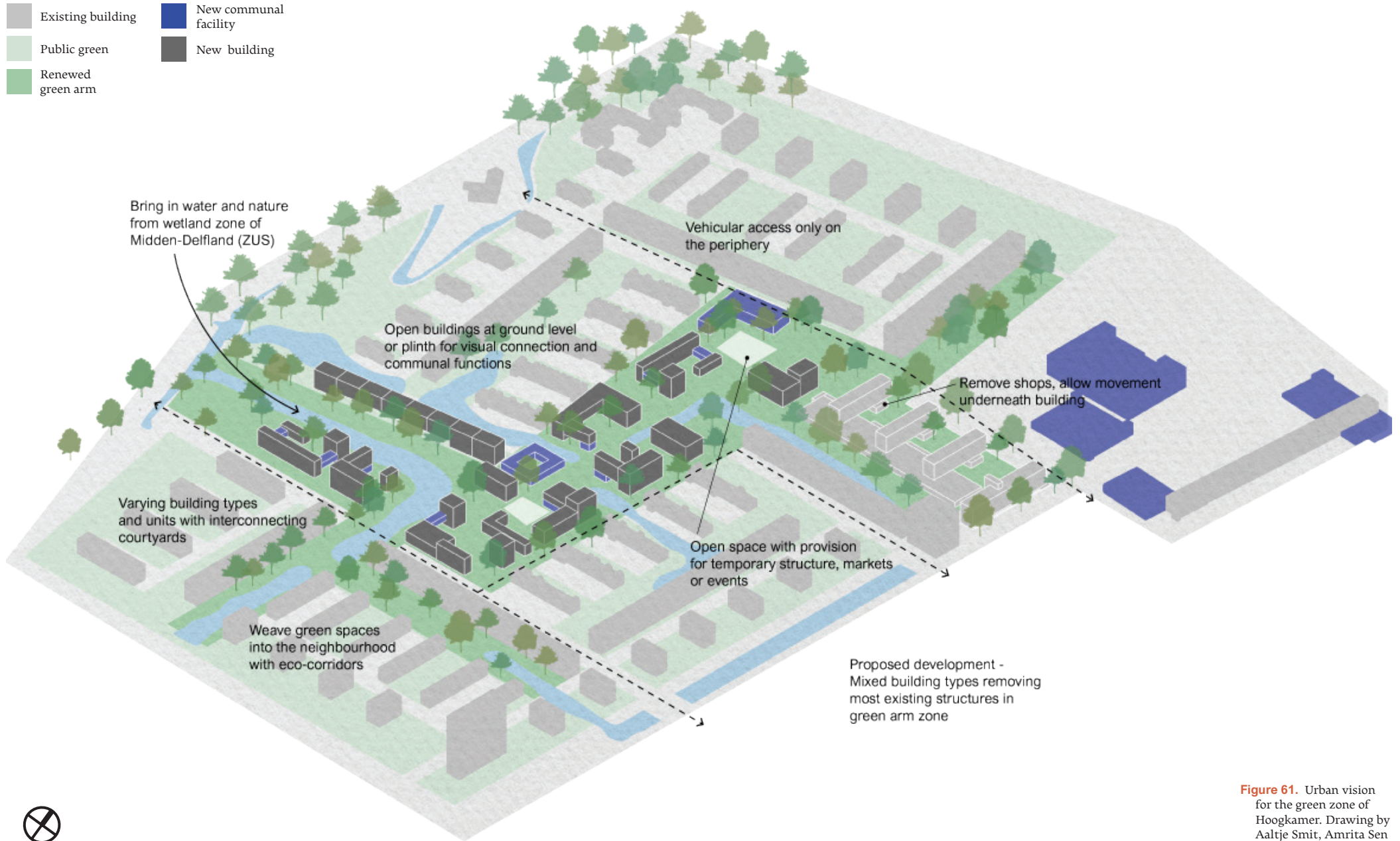


Figure 61. Urban vision for the green zone of Hoogkamer. Drawing by Aaltje Smit, Amrita Sen and author.

In this vision, The Van Baerlestraat center becomes the connecting piece between the busy commercial central district of Westwijk and the quieter residential area of Hoogkamer. The quality of the public space is improved by redefining the open areas around the building, providing them with more specific functional uses.

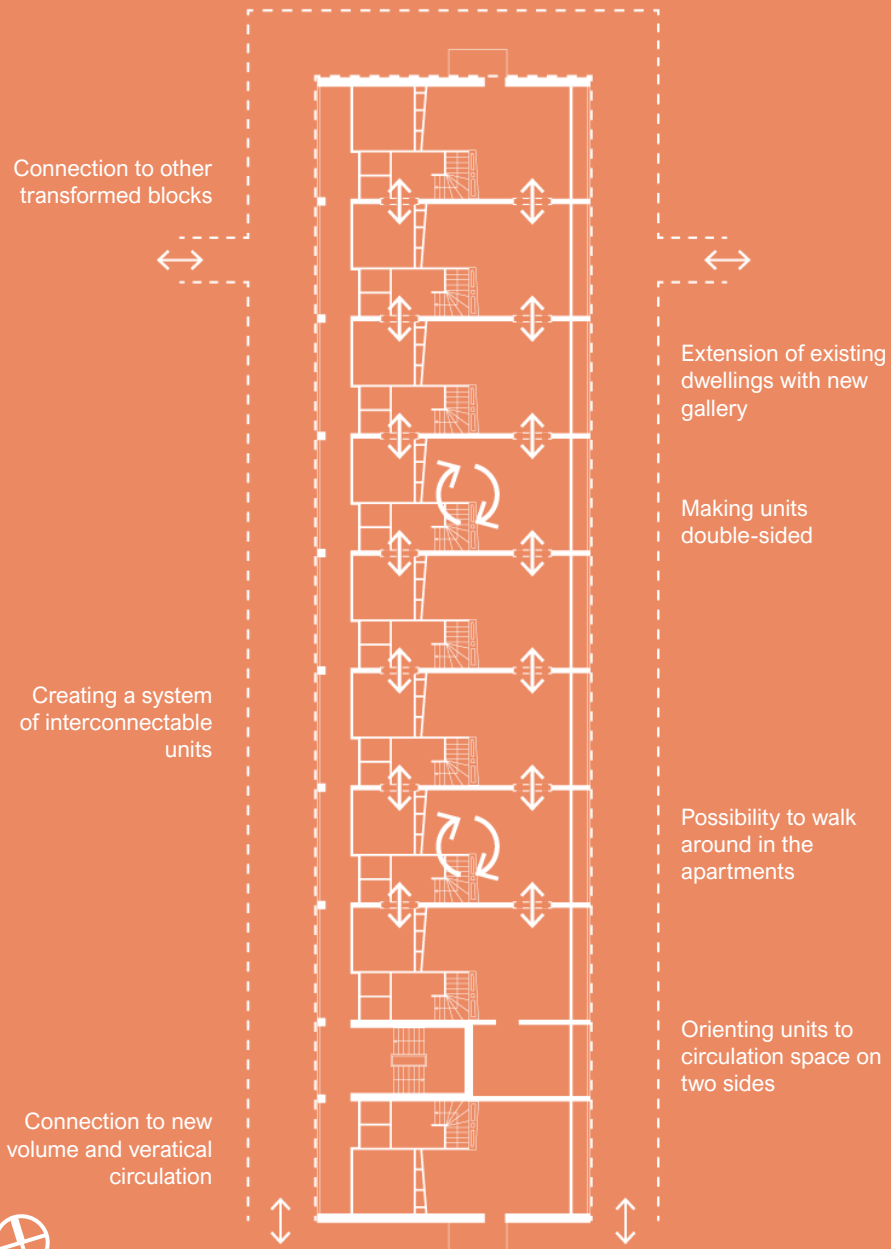
Project scope

Due to the scale of the Van Baerlestraat complex, it is necessary to limit the scope of the project. After the research into the existing structure, working with building block B, C, D, and W, provides good potential to transform the building complex and its direct surroundings. Block W has a main structure that is of less quality and strength and therefore provides little opportunity for densification. For this block demolition and rebuilding could be a possibility. The connected blocks B, C, and D, have a solid concrete structure and therefore provide opportunities for extensive renovation of the dwellings.

The outcome of the design project for the transformed shopping centre will be described in three chapters. The first one is focussed on the intervention of transforming existing blocks B, C, and D.



Figure 62. Project scope of building block B, C, D, and W. Image by author.



3. Transformation

The first aspect of the new design for the Van Baerlestraat center is the transformation of block B, C, and D. Inspired by the system and regularity of the post-war concrete structure a method is explored to transform the structure with a new system. With an eye out for future changes in the wishes of the residents of the cooperative, there has to be some degree of flexibility incorporated in the design. This is done by breaking through the existing concrete load-bearing walls in specific places that allow the units to be connected in different configurations, and be recombined in the future.

Another important theme is the circulation and accessibility of the dwellings. The current galleries on the buildings provide an outdoor space for residents, but doesn't facilitate appropriation by residents. In many projects by housing cooperatives, circulation space is also a space where residents meet and can express themselves through placement of personal items. By adding a new gallery wrapped all around the building block, the gallery changes from a one-way corridor, into a connection between different parts of the building. Because of the generous width, it is possible for residents to claim the space in front of their house by putting up some plants, or an outdoor seating area.

The low ceiling height of the current apartments does not provide a lot quality to the dwellings. During the

Figure 63. (Left page)
Concept diagram
for transforming
the existing homes.
Diagram by author.

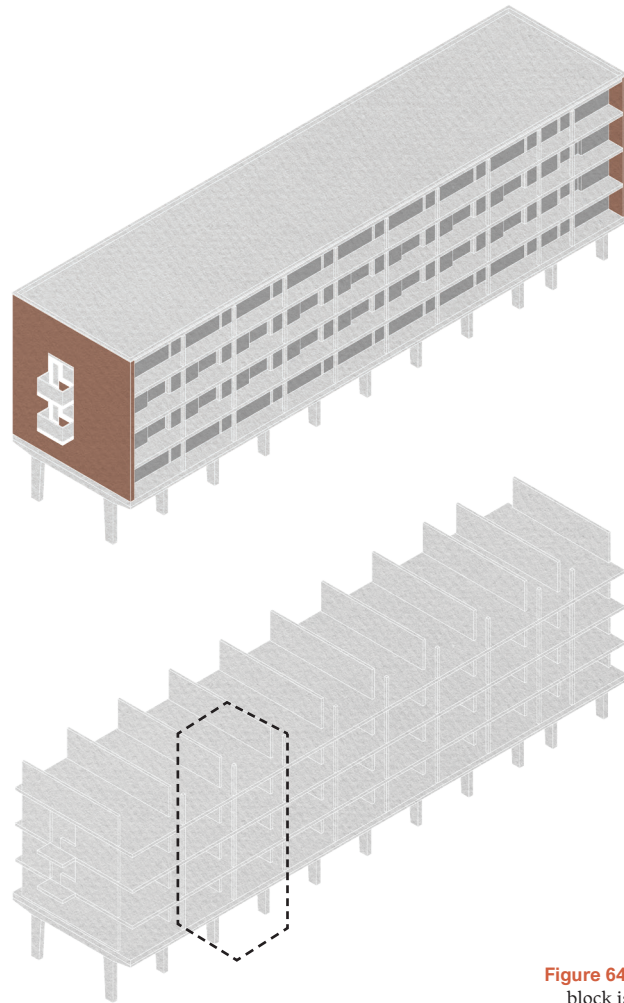
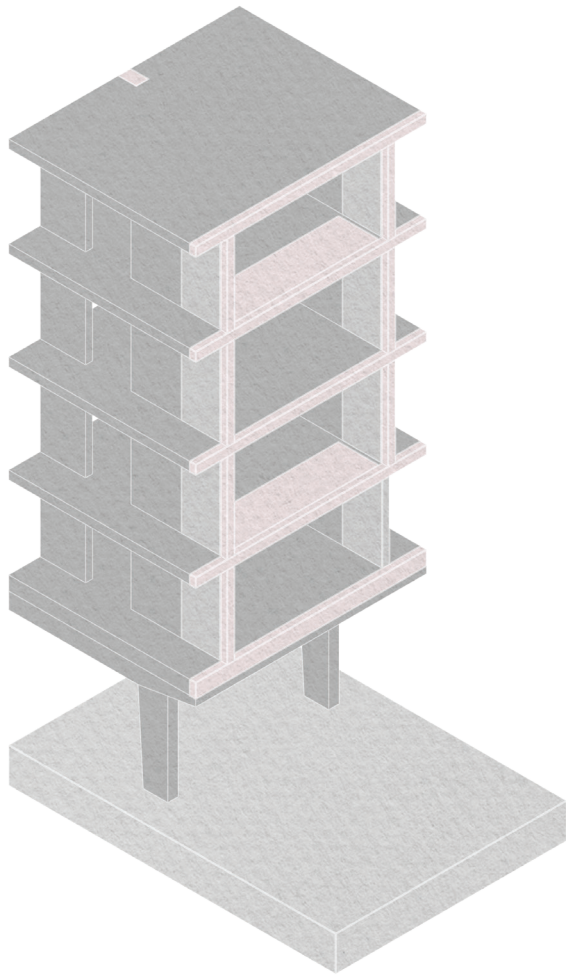


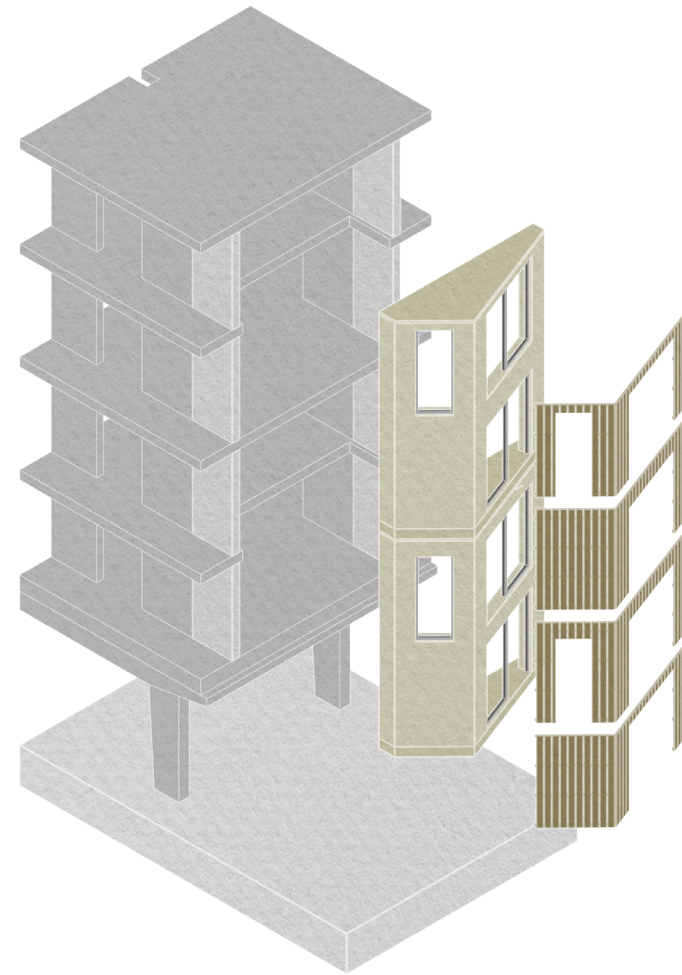
Figure 64. The existing block is stripped to the main concrete structure. Marked is the exemplary part of the transformation demonstrated in the following axo series
Drawing by author.

design process different options were explored, but not many were compatible with the desire to reuse the existing structure. Renovating the existing building to live up to modern day building code requirements was not possible. This is why the decision was made to deliver the new apartments with a lower ceiling height than allowed by the modern building code. In order to negotiate with the decreased quality of the new apartments caused by the height, the design gives different qualities to the homes. In order to stimulate the experience of the new spaces, the housing units are designed in a way that residents can walk around in their home either on a vertical or horizontal plane.



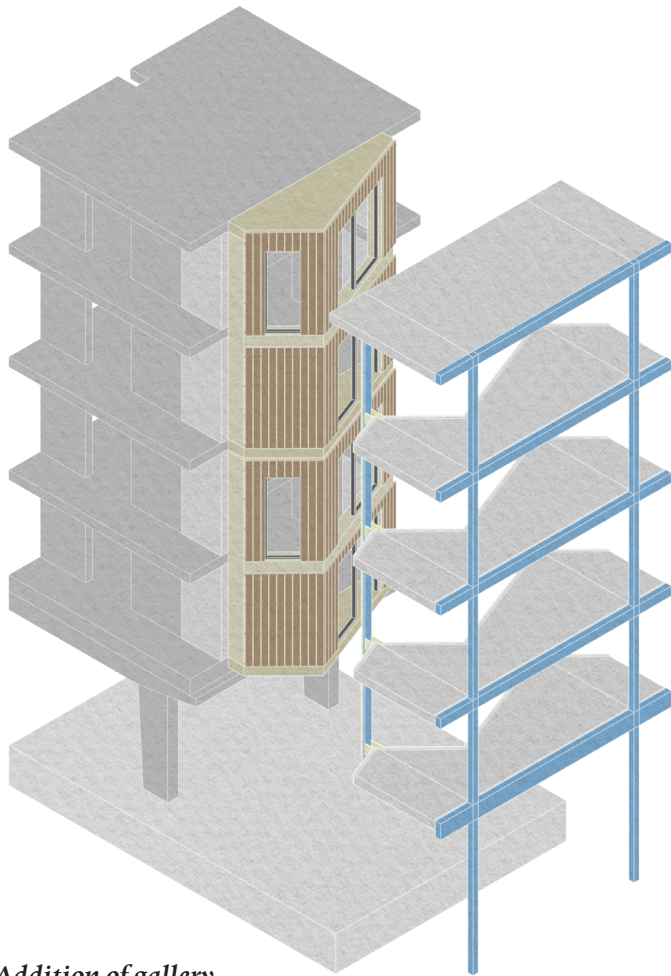
Adapting structure

Parts of the concrete structure are removed in order to create connection points for the newly added structure.



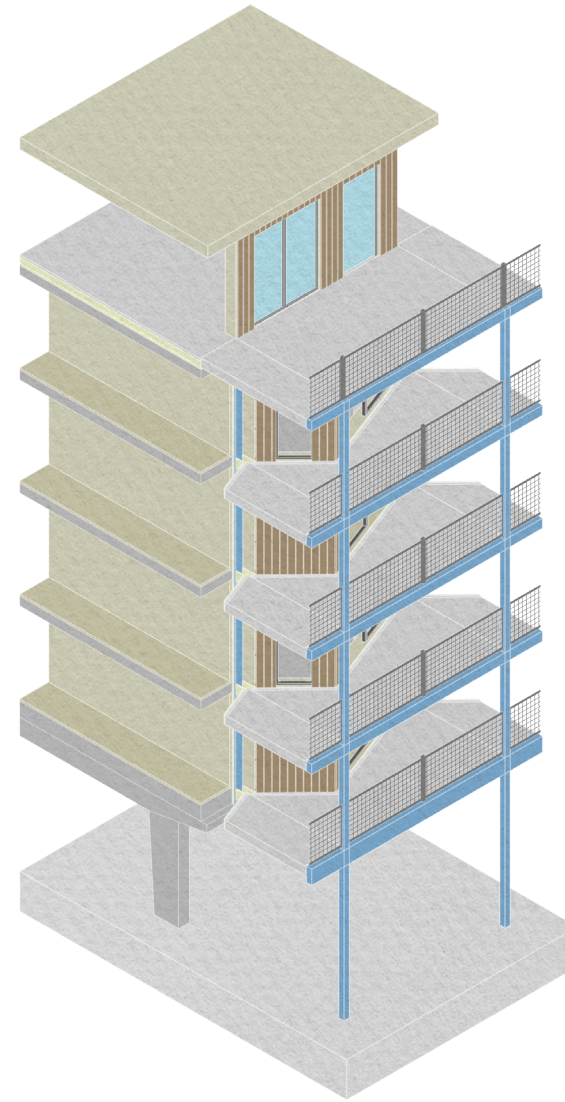
Addition of prefab timber elements

A prefabricated structure of CLT-panel floors and wooden sandwich panels is attached to the concrete



Addition of gallery

An independent steel and precast concrete structure is then placed in front of the facade. When repeated this becomes a new gallery that serves as the access to the renovated dwellings.



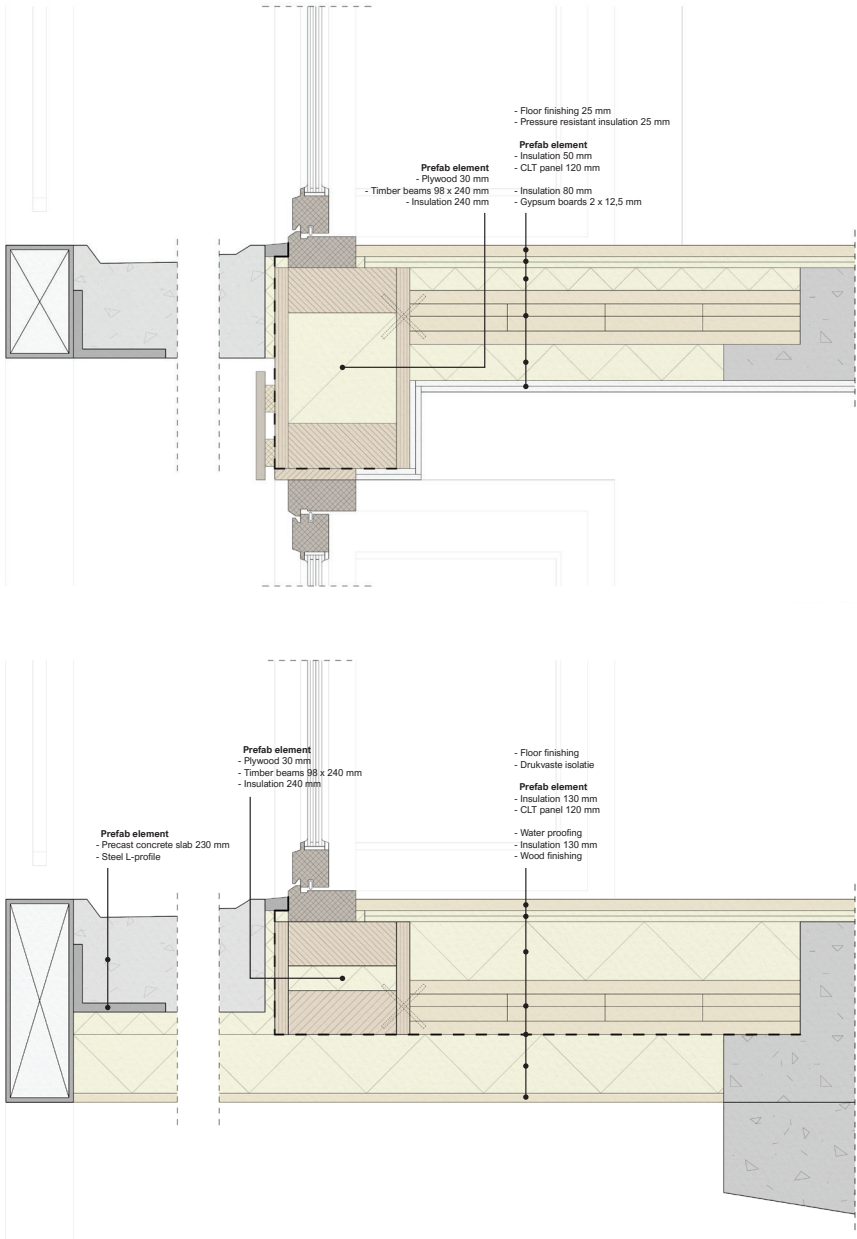
Refinishing and top-up

The transformation is completed by refinishing the walls and floor and adding a light-weight timber top-up floor on the roof of the building.



Figure 65. View from the new gallery across the courtyard to the building block on the other side. Image by author.

Figure 66. (Right page) Detailing of the connection between the prebricated element and the existing concrete structure. Drawing by author.



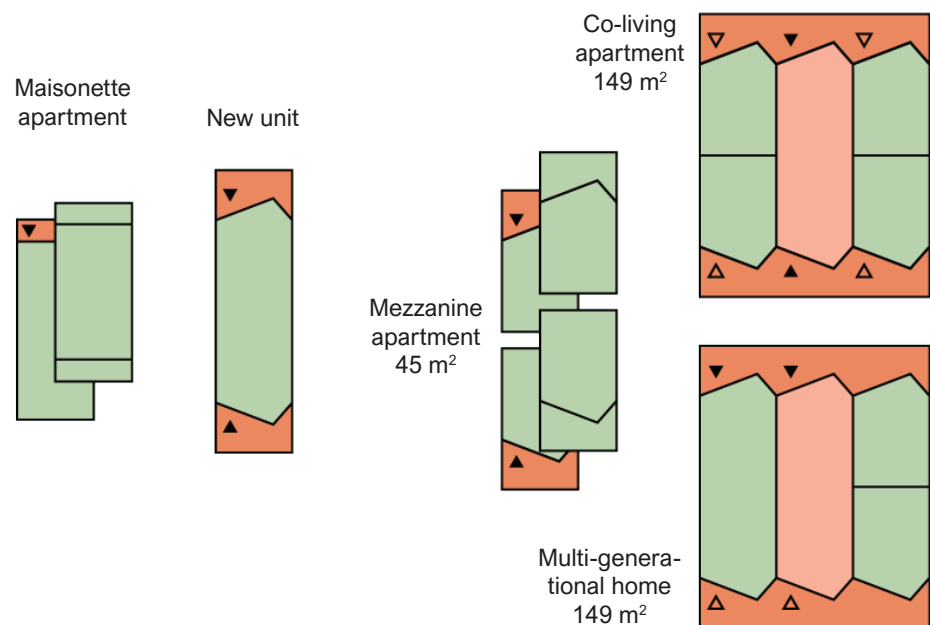


Figure 67. Original and new housing types. Diagram by author.



Figure 68. (Bottom left page) Interior view of the mezzanine apartment. Image by author)

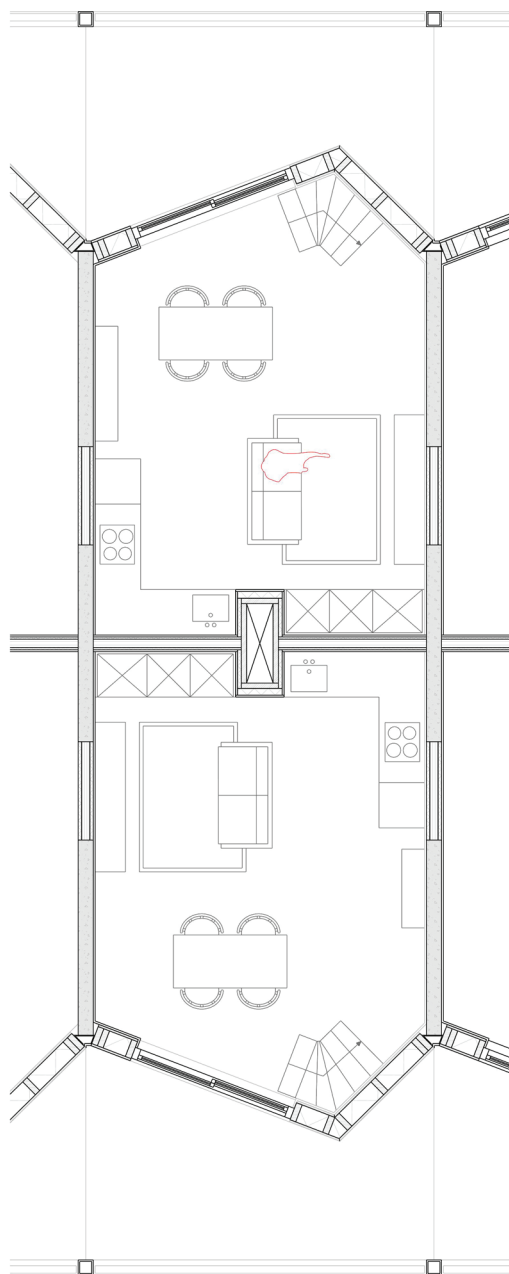


Figure 69. Mezzanine apartment ground floor, 1:100. Drawing by author

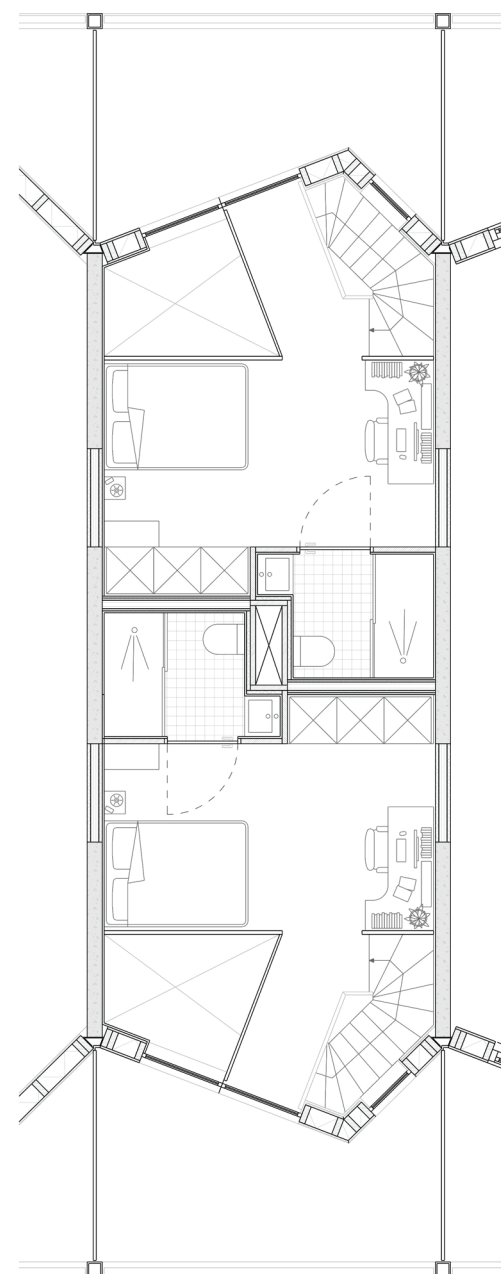


Figure 70. Mezzanine apartment first floor, 1:100. Drawing by author



Figure 71. Co-living apartment, not to scale. Drawing by author.



Figure 72. Dinner party in a co-living apartment. Image by author.

Figure 73. (Next page) Floorplan of the new first floor. Drawing by author.

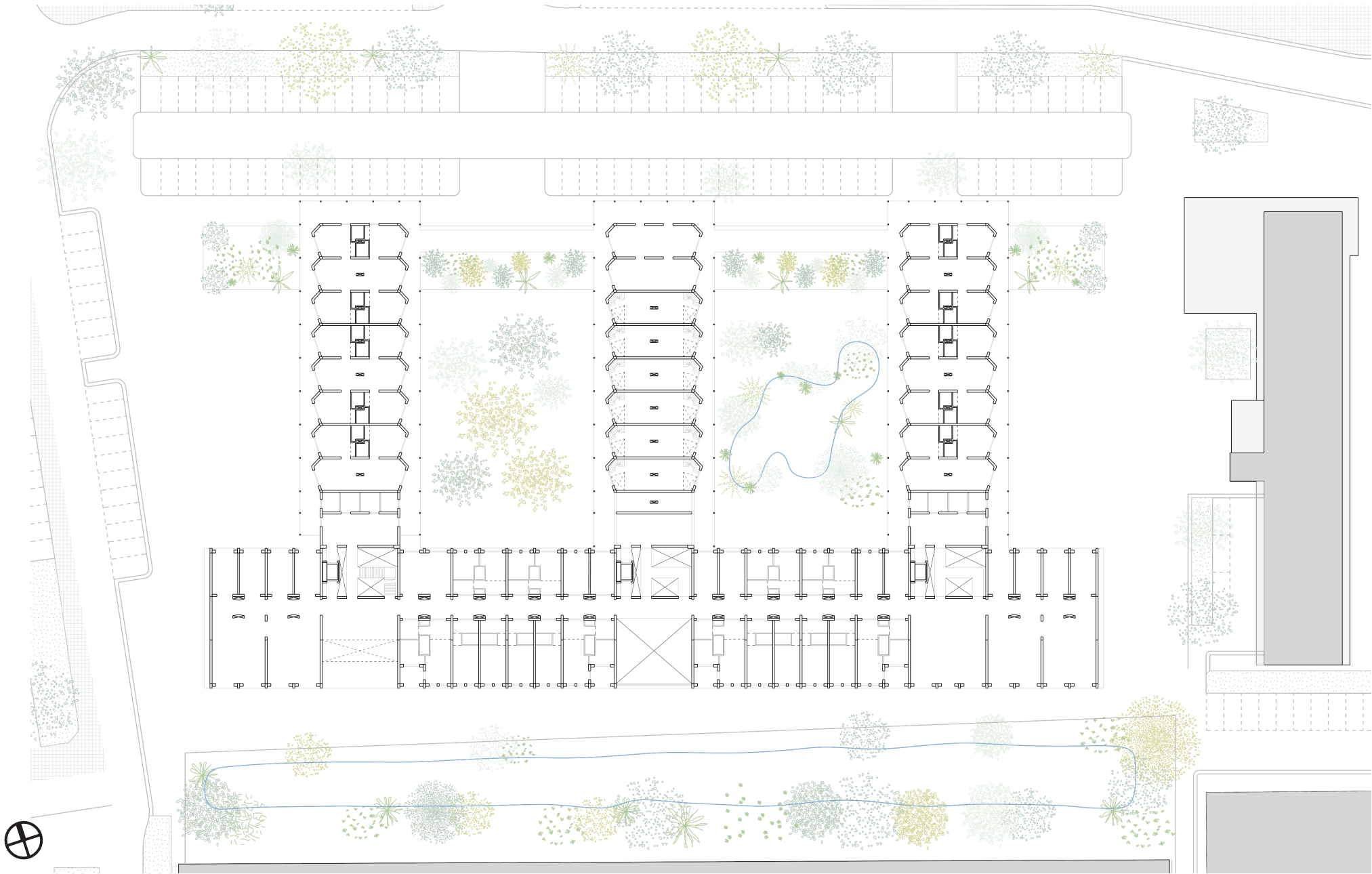




Figure 74. Construction work on top of the former factory on the Warmbächli site in Bern. Photo by Daniel Kauffman.

4. New building

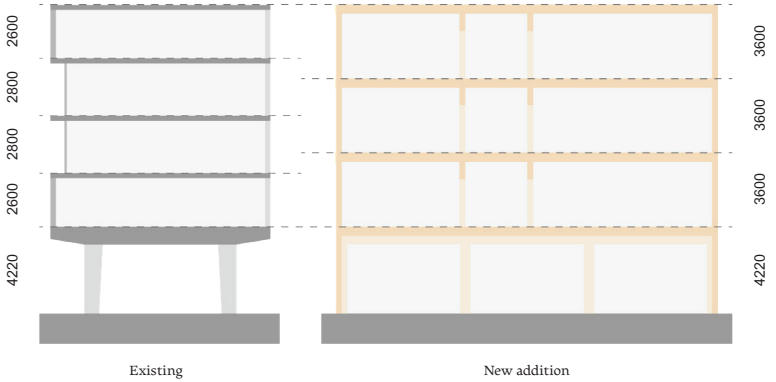
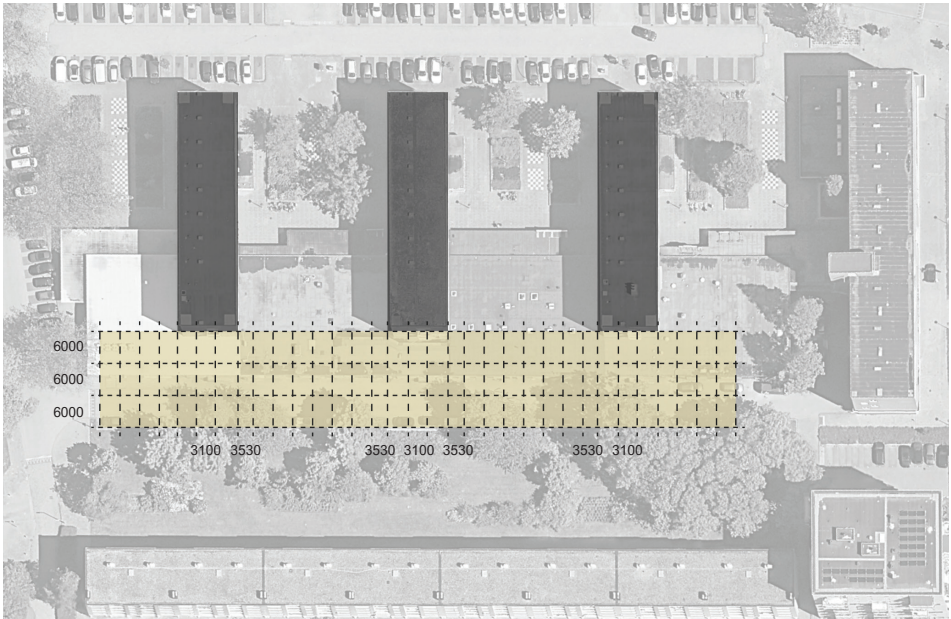


Figure 75. Horizontal and vertical alignment of the new structure. Drawings by author.

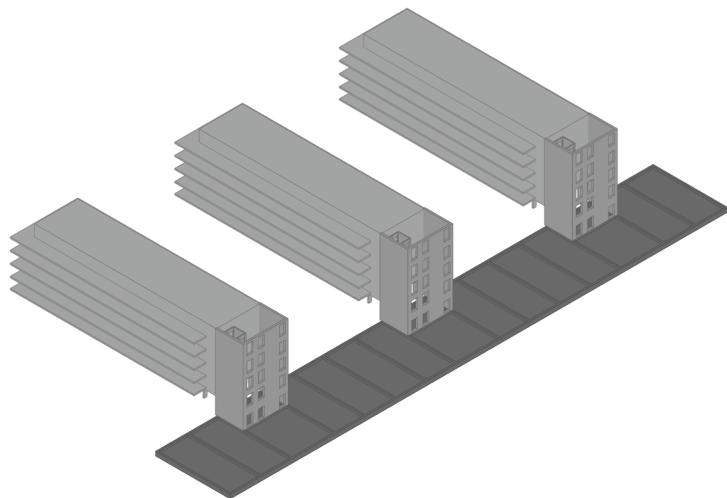


Figure 76. (Top)
Concrete cores and
foundation. Image by
author.

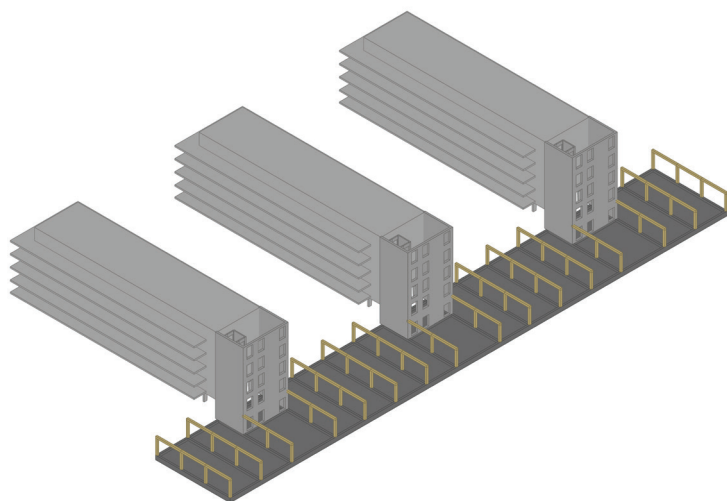


Figure 77. (Bottom)
Ground floor
structure of timber
columns and beams.
Image by author.

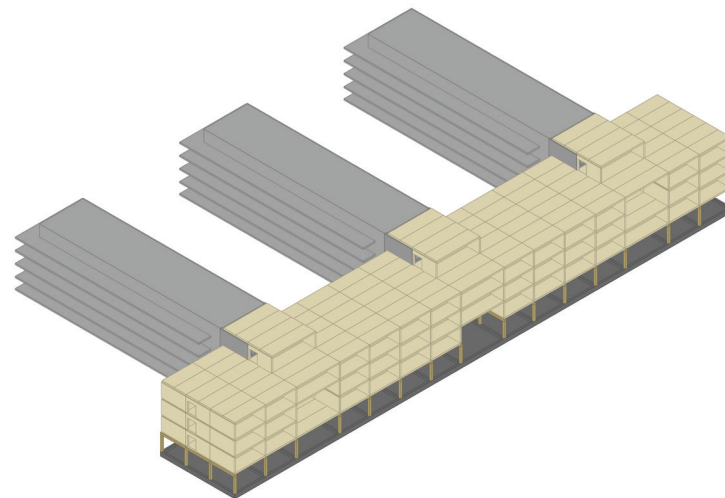


Figure 78. (Top) Higher
levels of CLT walls
and floors. Image by
author.

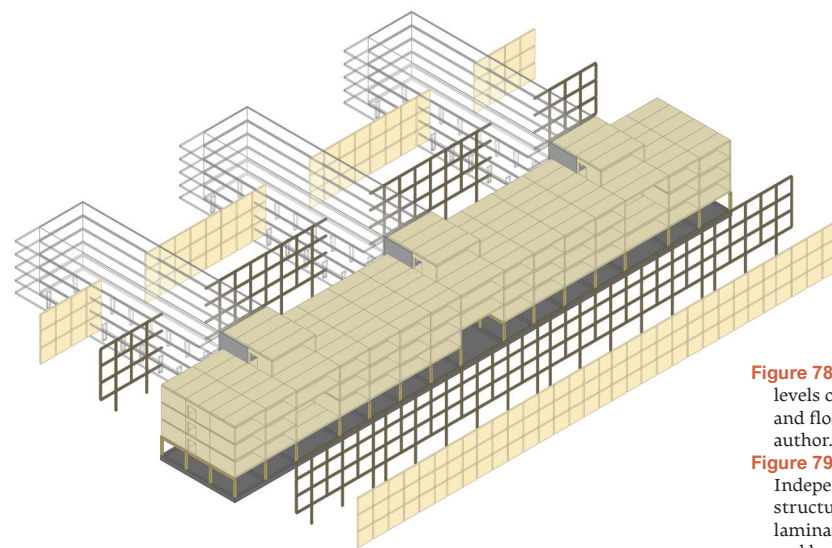


Figure 79. (Bottom)
Independent facade
structure of glue-
laminated columns
and beams with
removable sandwich
panels. Image by
author.

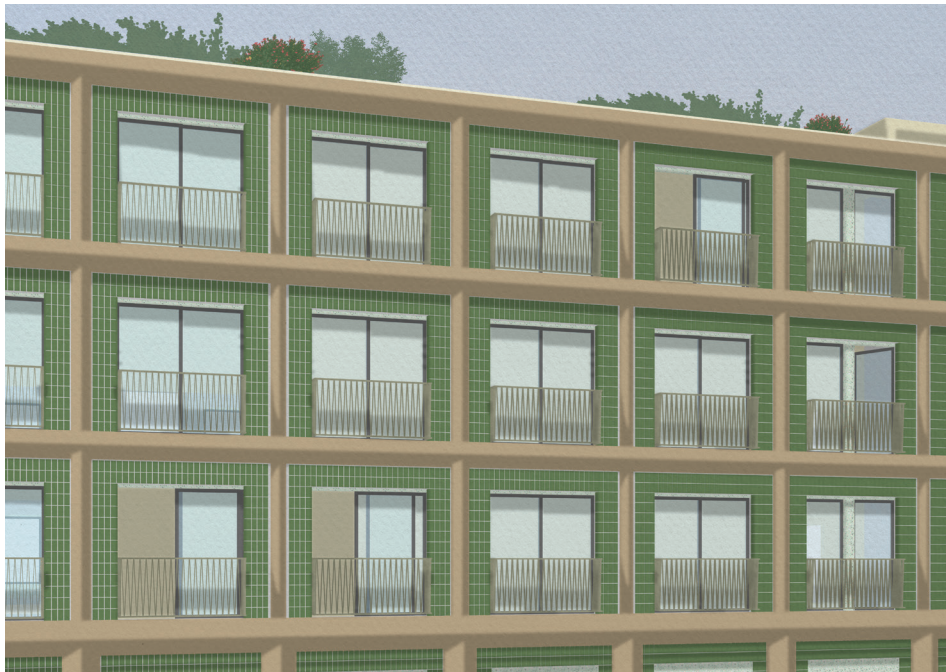


Figure 80. View on the south facade of the new building. Image by author.

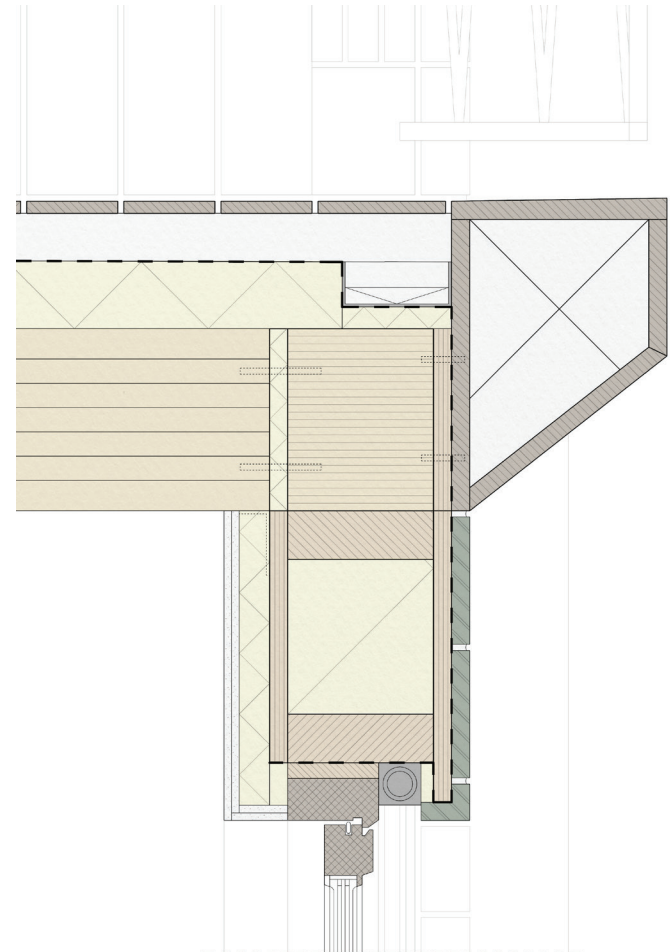


Figure 81. Detail of the connection between the new facade and the CLT main structure. Drawing by author.

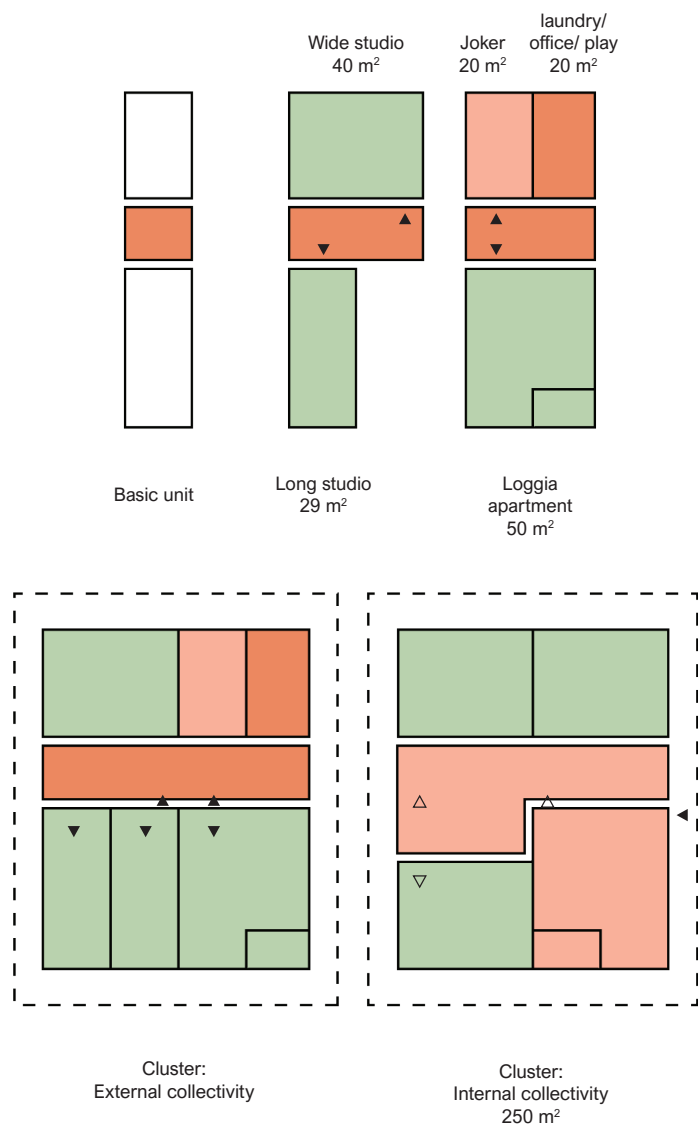


Figure 82. New housing types. Diagram by author.

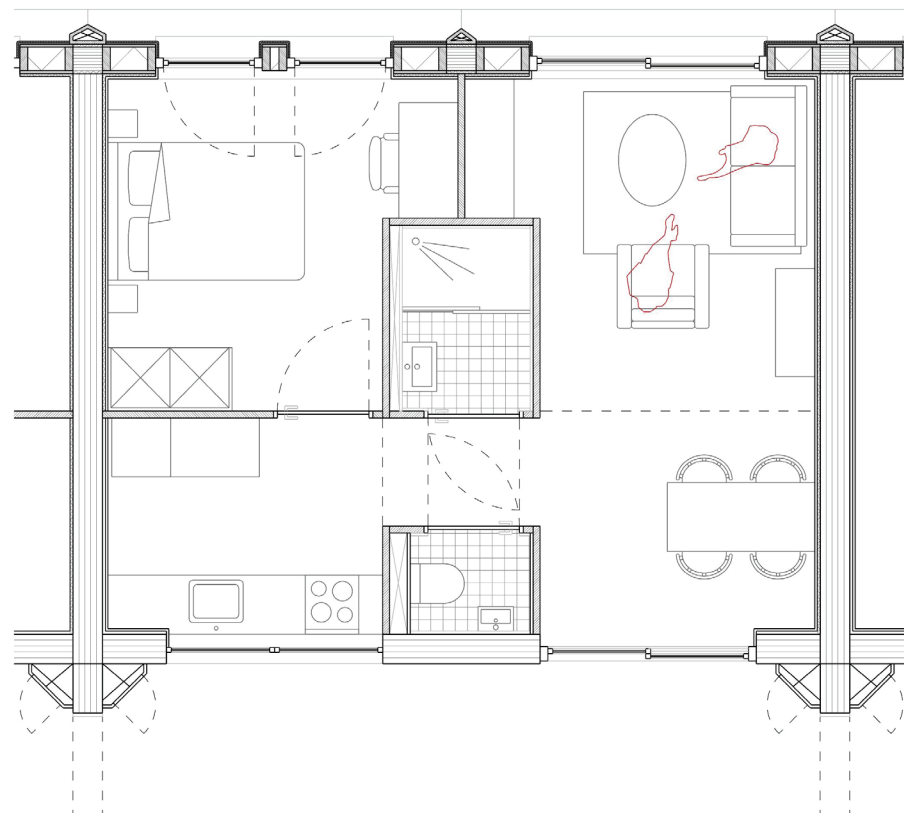


Figure 83. Wide studio apartment, 1:100. Drawing by author.

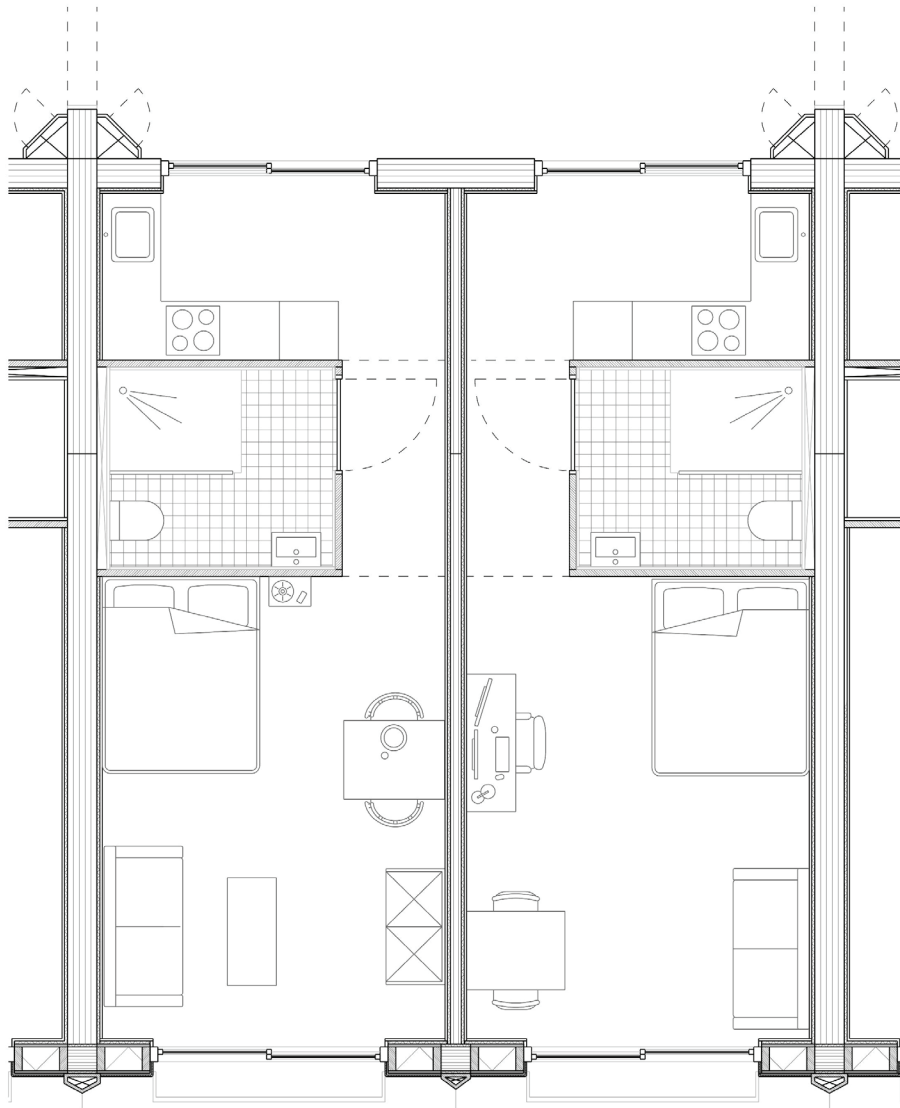


Figure 84. Long studio, 1:100. Drawing by author.



Figure 85. View from the kitchen of the wide studio type on the communal corridor and opposite neighbour's kitchen. Image by author.

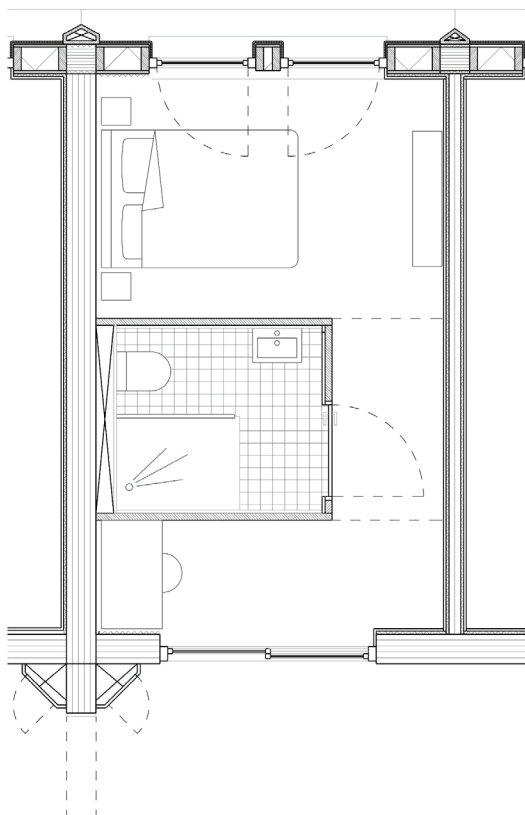


Figure 86. Joker room,
1:100. Drawing by
author.

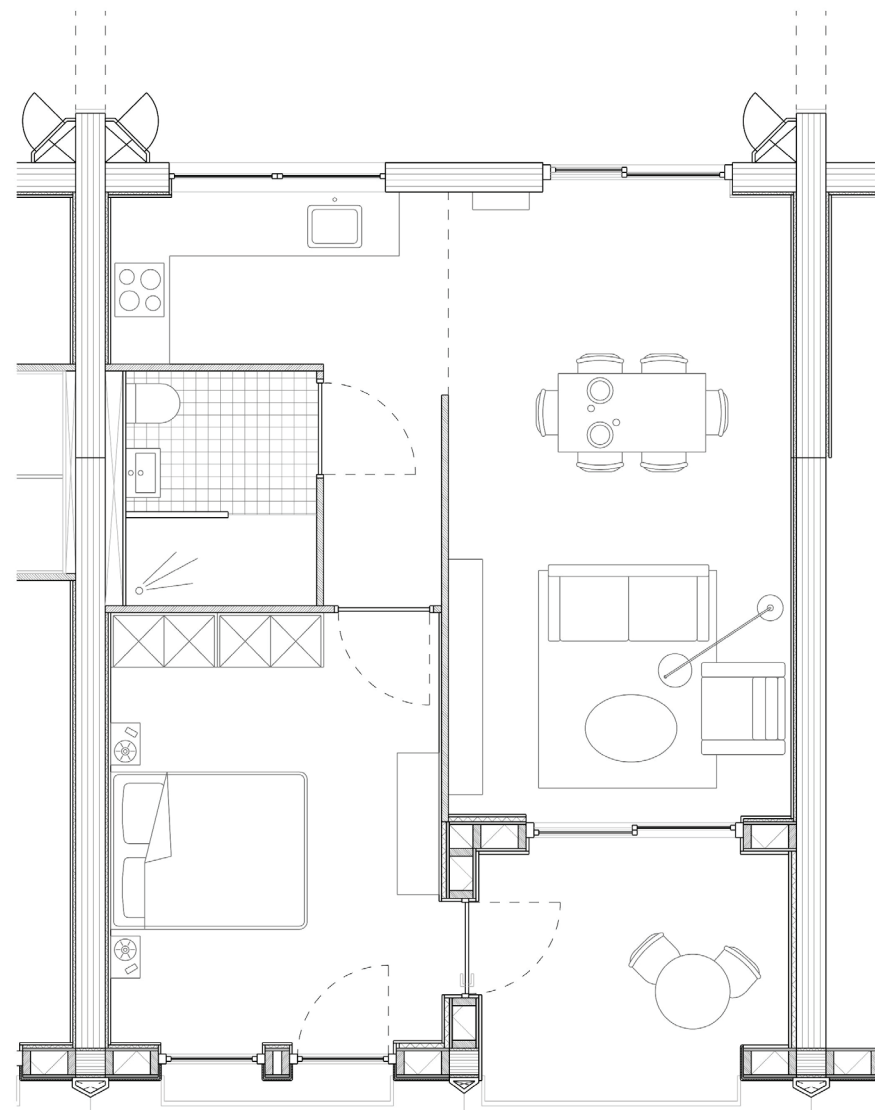


Figure 87. Loggia
apartment, 1:100.
Drawing by author.

5. Cooperation



Figure 88. Community dinner at the Vlaardingen commons project by Stad in de Maak. Photo by Vlaardingen commons.

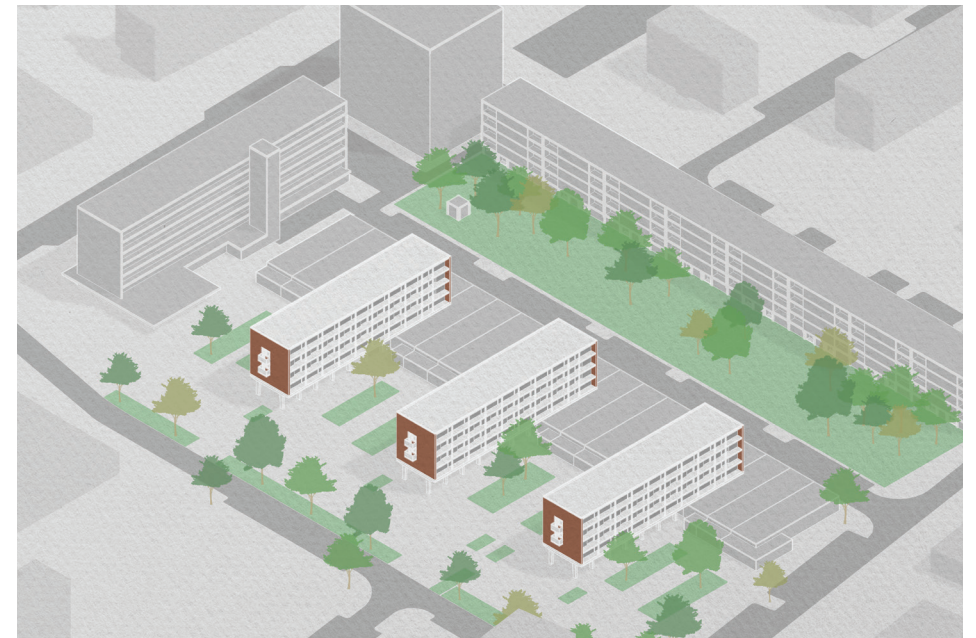
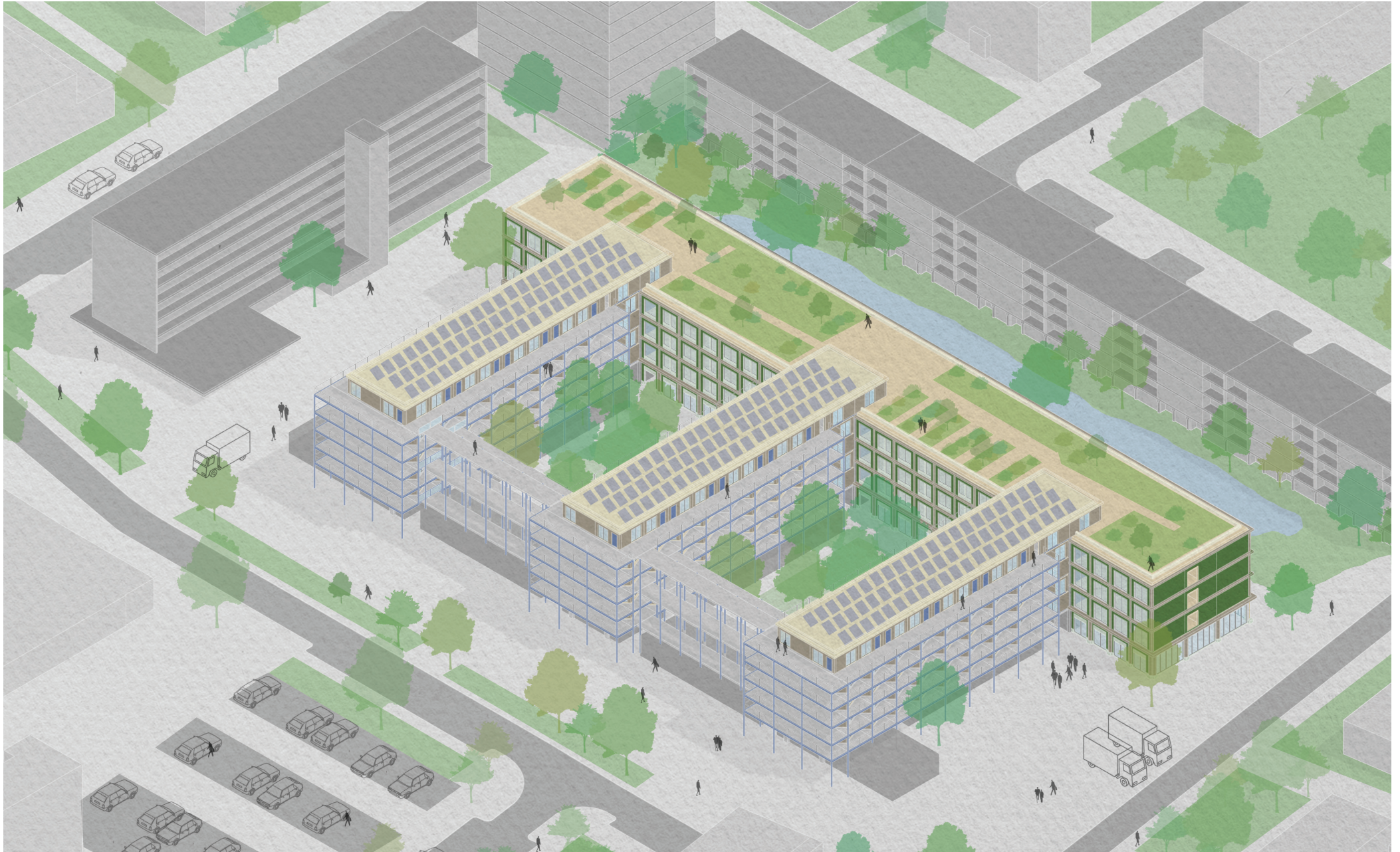


Figure 89. (Above) Existing situation of the Van Baerlestraat shopping centre. Image by author.

Figure 90. (Next page) Final design proposal of the transformation of the Van Baerlestraat shopping centre. Image by author.



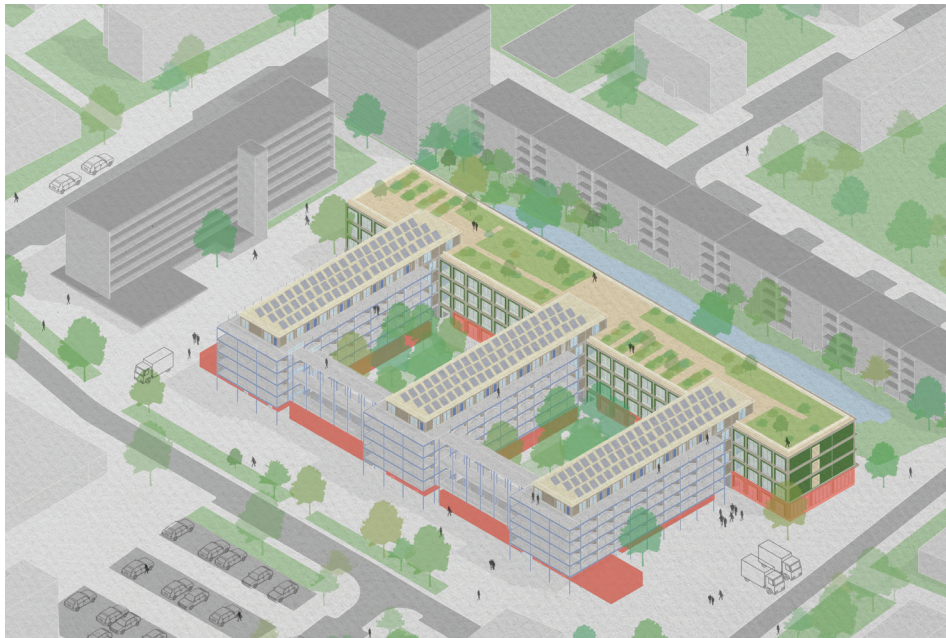


Figure 91. Additional commercial and communal spaces activate the ground floor and generate income for the cooperative. Image by author.

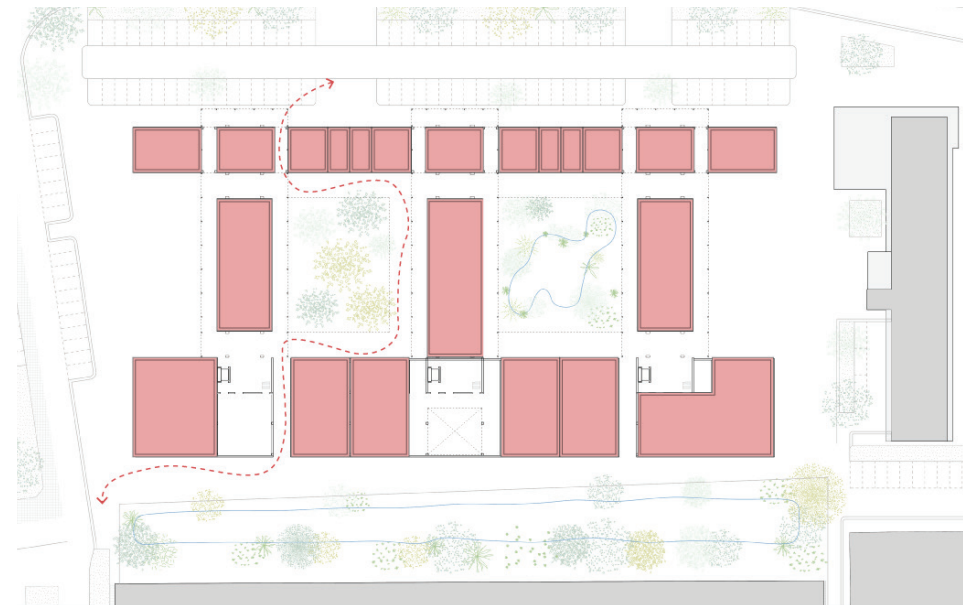


Figure 92. Large rentable spaces are facing towards the green zone on the south side of the building. Closer to the parking spaces a series of small offices can be rented by small business owners.



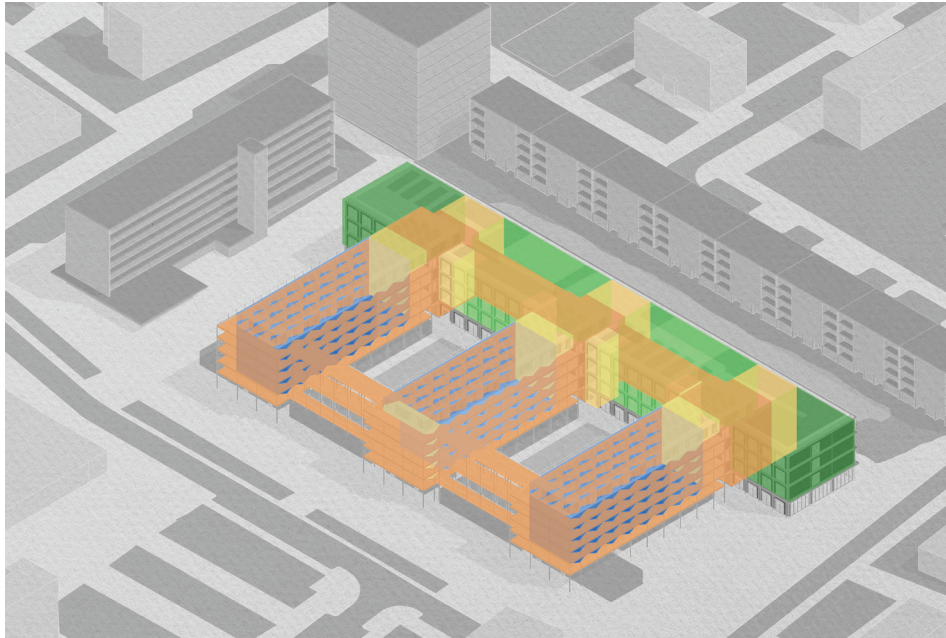


Figure 93. Central circulation system allows residents to walk around the whole building with all dwelling oriented towards this space. For the transformed block the gallery is also an outdoor space.

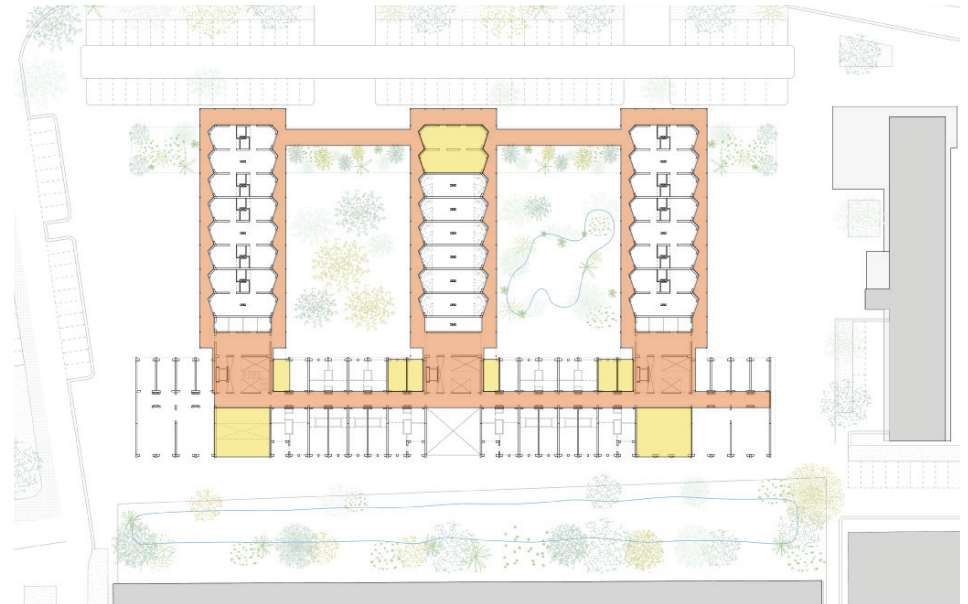


Figure 94. Communal functions are located in central locations next to vertical circulation points.



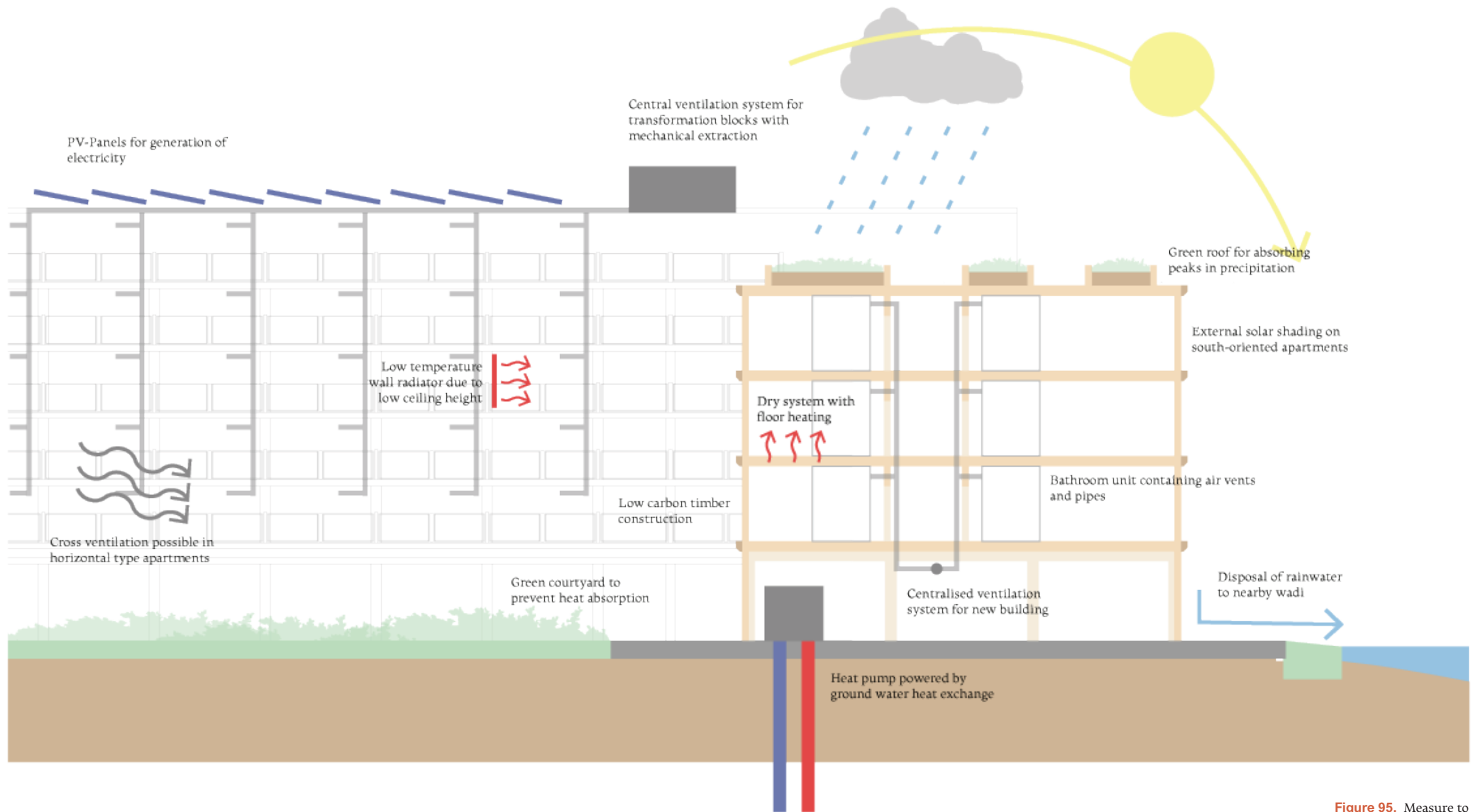


Figure 95. Measure to ensure a comfortable indoor climate and an energy-efficient building. Diagram by author.

Process & reflection

Project introduction

In September the graduation studio Advanced Housing started with a field trip to the green landscape of Midden-Delfland. Cycling through the peat fields the scale and beauty of this area, which I had only seen travelling by train between Delft and Rotterdam, became apparent. The field trip was concluded with a visit to the office of ZUS (Zones Urbaines Sensibles). We learned about one of the visions they had developed as part of the TU Delft research project Redesigning Deltas.

During a lecture by the research group itself, the project was introduced to us. The research is focused on looking forward to different future scenarios of Delta regions and imagining what new ecosystems there could look like and how humans fit (or don't fit) in that story. This future scenario is the main focus for the studio's theme "How to live with water?". Working towards P1 we worked in groups investigating certain aspects of Midden-Delfland: accessibility, time (history and future), program, morphology and a study model of the region. The results of this research were combined in a booklet functioning as a reference for future research and the design project.

I worked together with Aaltje Smit and Amrita Sen on an extensive timeline covering the history of the landscape starting from prehistoric times and ending



Figure 96. *The border between Tanthof, Delft and Midden-Delfland during the studio excursion in September 2023. Photo by author*

in possible futures. We learned how the organisation of collective water management, and the establishment of the Hoogheemraadschap Delfland in this region, was one of the oldest in The Netherlands and has played an important role in the creation of the landscape we see and is maintained today.

Having started with learning about the specific current and future site conditions of the landscape of Midden Delfland we were handed different lenses to start our research: social inclusion, gender equity, affordability, sustainability thinking and resources. We formed groups based on our interests which happened to be gender equity in my case. Through an interactive series of seminars, we got up to speed on important concepts, authors and architectural projects regarding the subjects.

What interested me personally was learning about critical theory and seeing how this relates to architecture. We reflected on how architecture operates within a system of social and cultural structures, and who it does or does not benefit. Throughout the graduation process, I tried to keep reminding myself of this to reflect on what implications certain decisions have on people and the environment. During the seminar series, I also learned about the concept of housing cooperatives. In a seminar, Anne Kockelkorn talked about how housing cooperations in Switzerland bring people together to be in charge of their living environment.

Site choice

Towards P1 the research to Midden-Delfland and the studio's themes lead us in the direction of the urban borders around the landscape. In the different existing border conditions, we could research the influence of architectural and urban design on social life. After a brief analysis of city councils bordering Midden-Delfland, we arrived at the neighborhood of Westwijk in Vlaardingen. The neighborhood seemed to be in the process of regeneration of the very intact post-war urban design. However, the way this was done, by demolition and building new homes, and with little regard for the original spatial structure, did not make sense to us.

A structuralist approach

After we decided our final project site at P1, we did some extra research into the history of Westwijk. Working on this made me want to go deeper into why the neighborhood was designed like this and why it is not functioning optimally today. For my design project, I wanted to address the problems that had grown over time and shaped the experience of the neighborhood. A very important aspect of that was trying to not repeat the way a certain belief was imprinted on the built environment in Westwijk, that proved not to be very adaptable to changing times. I became interested in flexibility and democratic structures for people to make decisions about their living environment. For this I read Herman Hertzbergers book on structuralism and 'A right to difference' on the projects of French architect Jean Renaudie.

While developing my research I felt a bit overwhelmed by the theory and history of structuralism that was out there. I had some trouble formulating what specifically I wanted to research of this, in order to use it as input for my design project.

Housing cooperation

From the seminar series, I remembered hearing and reading about housing cooperations and how they come in many different shapes and sizes. On the one hand very specific to the group of people that establishes the cooperation, but also as flexible and diverse as that same group. In this housing model I saw the flexibility and democracy that interested me in the structuralist approach to architecture. However it was less abstract and seemed even closer to people's daily lives and decision-making. Because the housing cooperation is more a model than an architectural style, I decided to look into some examples of buildings built through cooperative models to learn what makes these buildings so pleasant to live in for the members of the collective.

We had also started designing at this point and I chose an existing residential and commercial shopping centre as the basis for my project. Transforming an existing building that was built together with the larger neighborhood during the post-war years seemed like an interesting take on transforming the imprinted structures in Westwijk into something that's appropriate for now and flexible for the future. Inspiration came from the analyses of the

cooperative case studies in the research and the many others that I read about. During this fase of researching and designing I followed my interests quite instinctively which was a little chaotic. In the end this also caused my research to be less structured than it probably could have been. However it did work well for feeling inspired throughout the project by trying to implement all the fascinating things that I found out into the project.

Design process

While working on the project I learned a lot about myself as a designer. The design project that I outlined for myself was quite large and trying to design the building as a whole would be a challenge. I was very focused on the idea of trying to develop a system, or at least have a systematic approach to the design, that once I was happy with could be replicated across the whole complex. This proved more complicated then I thought since a system, when applied to a whole building, has to be flexible to different external conditions. In this pace I was going at, I wouldn't be able to design all the complex parts that I had imagined in the early stage of designing, and that frustrated me a little bit. Focusing more on the exemplary parts of the system that I imagine for the building transformation and new build structure, the concept can still be made clear.

Because of the site choice that was outside of the Midden-Delfland region, and all the information that came from the research into post-war neighborhoods and

Westwijk, the studio theme on how to live with water became a bit obscured in my project. The road we decided to take with the research group lead us to many interesting places however. Even though the link with the theme of the studio is not so explicit, I think the design project still touches upon some contradictions that we as architects are facing. We need a lot more houses, but what about all the green spaces that we are sacrificing for this? There are many people in need of a home but what about the long-term when we might not need so many anymore? We want to work sustainably and not tear down everything to build something new, but what if that old building is not up to current standards?

Overall I am very content with the choice for the studio of Advanced Housing which allowed me to follow my interests and help me find out what I prioritise as a designer.