



Collective housing design for the New Urban Middle- Income family in the Minervahaven of Amsterdam

in Delft, Netherlands

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Preface

Just as many large cities in Europe, Amsterdam is booming. The tendency of people moving and staying in the city causes an increasingly growing number of inhabitants in the city of Amsterdam. As a result, new questions arise from this phenomenon. How will Amsterdam cope with these increasing numbers? What is the future of the city and who will still live in the city center the upcoming years?

2 During the graduation studio of the chair of dwelling, we are challenged to think and to form our vision about what the future of larger cities and especially Amsterdam will look like. By taking a deeper research in the current situation of Amsterdam, tendencies, the housing market, the inhabitants and other global cities provides us the basis to form a critical manifest on the future of Amsterdam and together forms the fundament for our own personal design assignment and research subject.

We focus on the area situated on the peninsula of the Minervahaven in the eastern harbour of Amsterdam. This particular site is part of a large residential transformation process of the harbour. Hereby the function of the area will change from mainly labour, towards residential purposes. Currently the Minervahaven contains offices, warehouses, workshop places and factories but will be replaced by residential buildings in 2040.

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Manifesto

The Middle-Class Family needs to stay in the city center of Amsterdam. Because of an increased population, rising housing prices and lack of affordable and suitable housing these families are now forced to leave the city. I want to create affordable dwellings for these urban families in the Minervahaven of Amsterdam. Families are important for the city because they contribute to the economy and provide a stronger social relation between inhabitants. The New Urban Middle-class Families wants to live in a high dense urban environment. Particularly these types of families are important because they are bound socially and economically very strongly to the identity of urban living. Because of this, the social and economical balance of the city of Amsterdam is disturbed and going towards irreversible fragmentation on the housing market.

The victim of this process is clearly the middle-class that loses out. They are stuck between incredible high prices for the high segment and earn too much for the social housing sector. Because of this, they have no place to go. Therefore, it is important to provide them suitable dwellings so they can fill the gap again that has been caused by this phenomenon. The middle class concerns our young educated people, the families with children, but also the single- or the divorced parents.

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Among these people are mostly people working in healthcare and education that we need the most. Therefore Amsterdam cannot afford losing this group. Next to this is the growing population of tourists every year causing an enormous contrast to the presence of these middle-class inhabitants. The city is running towards an image that Venice in Italy is now experiencing: a monumental city without actual inhabitants. Will Amsterdam be the next victim of this development? We should connect the middle class together, as a strong entity, making it possible for them to conquer a place in the city again.

A combination of private high quality dwellings and a sense of collectiveness and community are the key. The building should have enough private spaces to reinforce the feeling of home, but it should also have shared facilities that creates benefits and makes living in the big city more easy and affordable. The facilities should be as great so you feel like you are part of a higher class, include everything you are dreaming of but you cannot afford on your own. The shared and the collectiveness makes you feel part of a group, strong and connected to the city of Amsterdam. The facilities should also add value to the neighborhood and make a connection, preventing it from becoming a gated community. An apartment block with variety and flexibility in the dwellings, making it suitable for different households and creating

a lively appearance. The building is the safety net in changing times. People should be able to grow when they are in need of a bigger house or when the times aren't right, you should be able to move to a smaller house, without falling endlessly to the bottom. Our lives are changing constantly and the building should be able to react to that, without it's residents being forced to leave the city.



Figure 1. Collage of the drowning of the Middle Class in Amsterdam

01. Topic & Target group investigation

Topic: Collective Living forms for Middle Class Families in the Minervahaven

Problem Statement:

Too many families are leaving the city because of the lack of affordable and suitable dwellings for them to grow and stay in the city center. Fragmentation on the Dwelling Market leads to the phenomenon that urban families are leaving the city center of Amsterdam because the rents are increasing. This is happening in such a way that the gap between social rent (low segment) and the high segment makes sure that families in the middle-class segment are shifting towards the higher segment. Because of this they are forced to search for better, suitable dwellings outside the city center. Therefore, solutions such as building more compact and with shared facilities can result in a more affordable and social resilient living environment that provides a stronger relation between neighborhood and city.

Amsterdam is becoming a more exclusive city as housing prices are rising because of the overpopulation. As a result, the middle class has a hard time staying in the city. Earning too much for social housing but too little for free sector, the gap between social housing and high income dwellings is growing, driving the middle class out of Amsterdam. Both socially and economically it is of great importance for Amsterdam to maintain this group. (Leupen & Mooij, 2008).

The importance of families to the city throughout history

Period of industrialization & migration to the city:

In times of industrialization, a lot of families moved to the city for work purposes. This led to a massive increase in population in Dutch Cities that required large scaled expansions. Solutions to build for these families resulted in terraced stacked houses as separate building blocks with private entrances to the street. Single residents usually lived with the families or in rented rooms (Karsten, 2013). During this period, public housing in the Netherlands was predominantly realised by private initiatives. Economic interests were the main focus of these projects and resulted often in many low-quality houses available at high rents. This type of residential development is indicated by the term: „*Revolutionary construction*“. The building of these houses was mainly contracted to engineers.

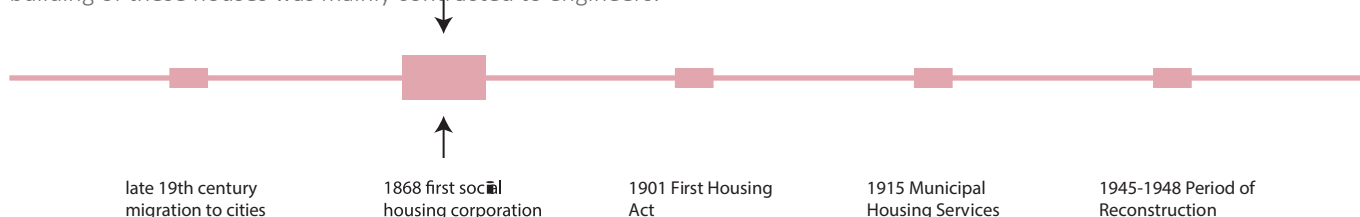
The governmental authorities designed the street plans and arranged for the building of the sewer system and drinking water facilities, after which they sold off the plots of land. In these days, architects were almost never involved in the design of public housing. (Leupen & Mooij, 2008).

First social housing cooperation

In 1868 around 500 laborours in Amsterdam establish the „*Building company for the Acquisition of Own Homes*“ as a reaction to the bad living conditions and the high rents in the cities. The association proves it success by gaining almost 1000 members in less than a couple of weeks. The initial membership is 25 cents, after which members pay 10 cent contribution per week for the acquisition of shares and this money is used to build houses. When a member has paid the contribution for 50 weeks, he has saved enough for one share. This share can be used to participate in the raffle in which a finished house can be acquired. The weekly rent for this house is 1 guilder. This rent is initiated to pay off the house by the residents in order to make the tenant owner of the house after several years. In the field of public housing, this is the first form of self-organization by labourers in the Netherlands and therefore the first Dutch Housing Corporation (Van Der Lans, 2018).



Figure 2. Amsterdam in 1901 (Beeldbank Amsterdam)



The 1901 Housing Act

In addition to citizen initiatives, the Dutch Housing Act in 1901 is established in order to counter the construction and habitation of the low-quality houses and to stimulate the building of good quality housing. This Housing Act starts being effective around 1st of August 1902 (Groen, 2014). This Act allowed the government to gain influence on the Public Housing Market. Subsequently, the municipal Building and Housing Decree was established in 1906. The Housing Corporations granted subsidies for the low income class in order to provide them suitable and good quality houses. These corporations have to build good-quality houses for people with a low income on a non-profit basis and are therefore classified as social housing. Furthermore, the 1901 Housing Act forces municipalities that enhance over 1000 inhabitants to draw up expansion plans. (Leupen & Mooij, 2008).



Figure 3. AUP Amsterdam (Beeldbank)

Municipal Housing Services

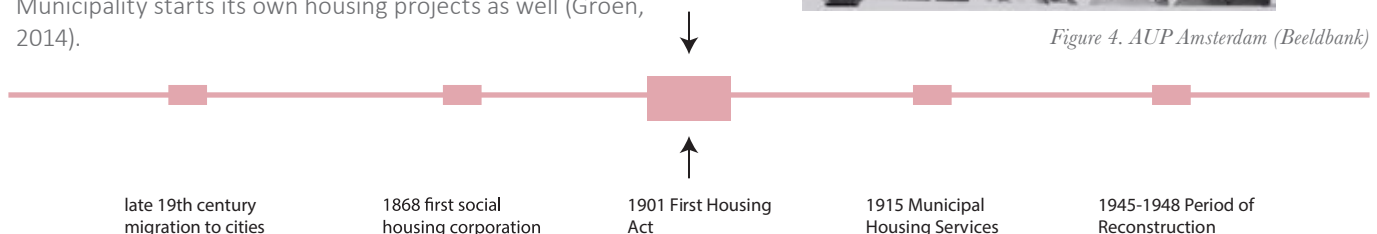
In the period post- World War I, the economic stagnation causes the building of houses to come to a standstill. There is a shortage of building materials, resulting the prices to increase and a general anxiety for developers to take financial risks. The private building production halts and housing corporations find it difficult to build houses at a cost-recovery rent that laborours were able to afford. In 1915, the municipality of Amsterdam, but also cities such as Groningen, Rotterdam, Haarlem, Utrecht, Hilversum and The Hague decided to take more active role in the construction of houses, resulting in the establishment of the Municipal Housing Servies. Several financial regulations were applied in order to stimulate housing corporations to build social housing. Next to this the Municipality starts its own housing projects as well (Groen, 2014).

The period of Reconstruction

After the WO-II between 1945-1948, the Netherlands face a large challenge of the rebuilding of new houses. Because of the lack of materials and economic loss, the building of houses comes to a standstill again and therefore the housing shortage becomes a huge problem. In an attempt to fight the housing shortage, the government again takes an active role in building new houses. In Amsterdam this is mostly visible in the realization of the General Amsterdam Expansion Plan, constructed in different phases during- and after the war. The family serves hereby as the cornerstone of the governments' policy: *„Restoring families will restore our nation‘*. Municipal house building companies and housing corporations mainly build medium-high apartment buildings with portico entrances and high flats with galleries and lifts. This is the introduction of the family apartment in the Netherlands. The communal areas like entrance halls, staircases and galleries are often constructed in a sober and functional manner. This is mainly characterized by the general image of the *„Dutch Gallery Apartment Building“* which was not attractive at all for a lot of people (Karsten, 2013). Rationalization and mass production where the focus of the building processes in order to facilitate large-scaled buildings in a very short amount of time. New materials were introduced of new construction types that were imported from England. Many large cities in Europe and the United States were already familiar with the concept of the family apartment. While around 1900 the affluent resident and his family used to live in an urban family house, examples of high-quality family apartments can already be found in Paris: La Familistere, a communal housing project for families and labourers.



Figure 4. AUP Amsterdam (Beeldbank)



Policies on urban growth

In the 1960's, the economic welfare in the Netherlands increases and to prevent large cities in the „Randstad“ to grow into one large metropolitan area, and to let the rest of the country benefit from the national welfare level, the State establishes a policy with the core objective to realise a geographical distribution of companies, cultural institutions and population of inhabitants. This policy has been established in the four National Policy Documents on Spatial Planning, published between 1959- 1972. People that need light, air and space for their wellbeing started to grow. The General Amsterdam Expansion Plan is an example of this mindset. Although these post-war areas were now seen as low quality, did not totally comply with this policy. This resulted therefore in a structural improvement policy, halting the maintenance of old city neighborhoods which were wherever possible replaced by a more suitable traffic infrastructure and new housing for existing residents. The policy furthermore identified a number of urban growth centres. These growth centres are cities or towns which had to offer space for the overspill population from a bigger city that lacked available building space. The result was that many families moved away from the post-war urban areas to the new suburban low-rise building areas, mostly at the outskirts of the city. Examples of these growth areas are: Purmerend, Nieuwegein, Zoetermeer and Almere. These areas are mostly characterised by low-rise buildings that were focussed on families with children. Since then, the majority of the population in large cities takes up the majority of the population in large cities. The family apartment, which was a common feature during the period of restoration after WO-II, proved to be a temporary solution and was no longer applied for housing large families.



Figure 5. Beeldbank Amsterdam

The development of the „Centraal Wonen“ Movement

In reaction to the living conditions in large cities and the overall political and economical circumstances after the war made sure that a new movement arose: the Centraal Wonen (Central Living) movement. This is a living form based on the, in 1971 formulated goal by the National Association of Central Living: „*The realisation of living communities, where households can achieve more contact between the residents and share communal facilities.*“ With this the association tries to accomplish a contribution to the integration and societal living demands of people. The National Association of Centraal Wonen (LVCW) was created in 1971 as an umbrella organization for the new collective housing and they stated it was “*for the emancipation of man, women and children*”, they questioned the isolation of the nuclear family structure. (Van Gameren, 2013).

This resulted in the first cohousing project in the Netherlands: the Hilversumse Meent. In the Netherlands it was originally conceived as a rental alternative whereas in Denmark it was originally a home ownership. This was more difficult as you therefore need to think more about the future users. The goal was to reach all levels of society through affordable housing. This raised a problem, because social housing in the Netherlands is based upon housing associations and funding by the government, but most of the housing associations weren't interested in participating in this new form of housing. Eventually two architects in combination with a housing association (Stichting Woningcorporaties) accepted to join this experiment. The project is designed in smaller clusters that share a kitchen and laundry facilities (Van Gameren, 2013).

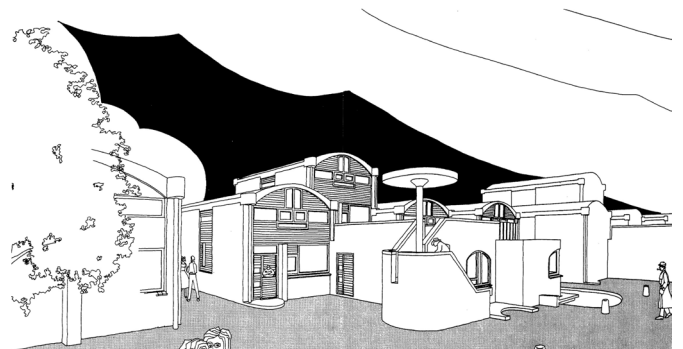
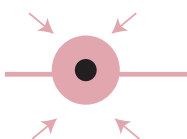


Figure 6. Hilversumse Meent



1960's Policy on Urban Growth Centres



1971 Central Living Movement Netherlands

The Compact City

The growth centre policy makes sure the population growth in larger cities drops, which results in major problems regarding the maintenance of large facilities and amenities in big cities. Shops, hospitals, museums and schools run mostly on their main target group: urban families. Therefore the Third National Policy Document on Spatial Planning was published in 1974, in which the policy on housing was adjusted and the concept of the *Compact City* was introduced. With this policy, the State stimulated the renewal of old neighborhoods in financial respects (Meyer, et al., 2014).

In 1988, with the introduction of the Fourth National Policy Document on Spatial Planning, this policy was continued by regulating and allowing town and cities to realise new housing expansions that are formed at the outskirts of the cities. In other words these locations can be formulated as the so-called: *„Vinex-Neighborhoods“*, which developed from 1992 with the introduction of the Fourth National Policy Document Extra. From that period on, the government fulfilled a much more redundant role in housing policy and development. Therefore housing corporations need to transform themselves into independent companies and are no longer subsidies by the government (Meyer, et al., 2014).

These privatisation of Housing Corporations became therefore more focussed on their earning models and started to build mainly family housing at the Vinex locations because of the high land prices in the inner city center. Also because of the fact that apartments offer a higher return, these are more suitable for single residents and expats in the urban areas. The family homes built at the Vinex locations were of high quality, with almost every house having a private garden and sufficient space and play facilities for children in the immediate vicinity. This was the main reason why these Vinex- locations were for a long time very appealing for families (Karsten, 2013)

Redevelopment former Industrial and Maritime Harbor Areas

For many years, the population in the cities decreases. The turning point comes in the 1990's, when the cities become more attractive again thanks to the redevelopment of former industrial and maritime areas. This creates an urban regeneration instead of just urban renewal. Since this period, the pull of the city only increases. These new living environments are characterised by the inclusion of existing buildings and the integration of existing structures which give the location its unique identity. Examples of projects in Amsterdam can be found in the eastern harbor district: IJburg and Borneo-Spo

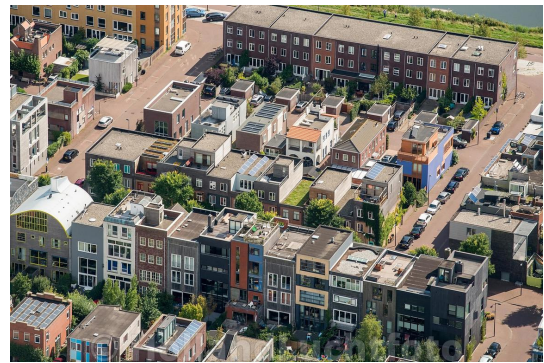


Figure 7. Amsterdam

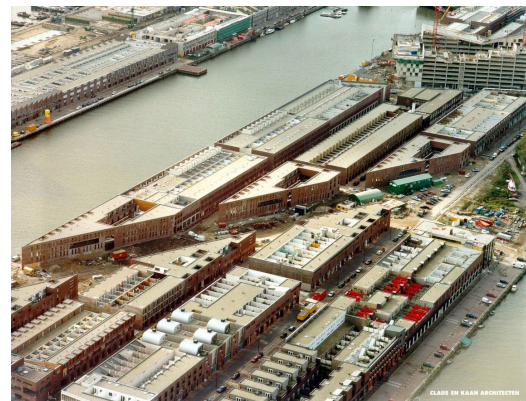


Figure 8. Borneo-Spoorenburg

renburg which have a more sub-urban character because of their low-rise family buildings. Nowadays there is a new trend coming up: the re-discovering of communal living in order to provide more affordable and compact living forms in dense urban city environments. A shift is noticeable from the low-rise single family house towards larger apartment blocks that provides different types of apartments for urban families (Karsten, 2013).

The Unaffordable City:

The city of Amsterdam is becoming nowadays more and more occupied by residents of the high-segment and becomes therefore a city for the rich. For the low- and middle income class it is getting harder and harder to find suitable housing, especially in the city center. Municipality and corporations want to change this phenomenon. New rules are set up in order to prevent dwellings to be rented out as air-bnb for example and in the Structure Vision of 2040 they are planning to realize affordable housing in the yet to be developed Harbour district.

1. CURRENT SITUATION:

Rising Number of Inhabitants, rents and Housing Prices

There are a couple of reasons why middle class families can't find a house on the current housing market. On the one hand there is a change in working situations that results in more flex-work jobs. This results in the fact that not every middle-class households is able to buy a suitable dwelling regarding their needs. On the other hand the gap between the increasing prices for housing and unavailability of social housing for middle income families make sure that they are having a hard time of finding a dwelling that suits their needs (Amsterdam, 2017).

The total population of Amsterdam increased to 854,047 inhabitants in 2018 and will keep on growing until the estimated amount of 900 000 inhabitants in 2025 and 925 000 in 2050. Together with the extreme explosion of housing prices, the average WOZ- value has risen with 27% for the past two years (Amsterdam, 2017). This way it is almost impossible for a lot of people to buy a private house in Amsterdam. Also the rent prices are increasing because of these increases in the private segment (Amsterdam, 2017).

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In 2019 rents are increasing with an average of 2,5 %. Amsterdam contains hereby the highest increase with 3,4 %. (CBS, 2019a).

Figure 1 shows the increase in the rent controlled sector and private housing sector that especially the social housing agencies and the private sector are the sectors which have the fastest growing prices.

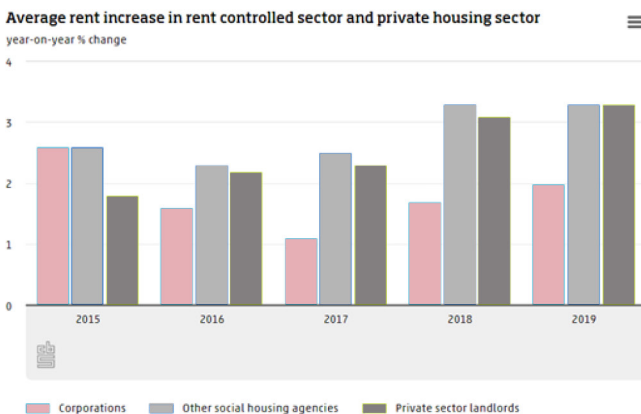


Figure 9. Increase of rental prices.

From the prediction in the dwelling need and dwelling stock it becomes clear that in 2025 the biggest shortage lies in the regulated rental sector. The existing stock numbers of 39%

are not meeting the need of 49 %. The average housing stock is 5,6 % of the total stock and for middle income groups only 10 % lives in mid-rent housing. The medium expensive purchase stock covers 11,8 % of the total housing stock. From the middle income group, only 23 % lives in a mid-priced property (Amsterdam, 2017).

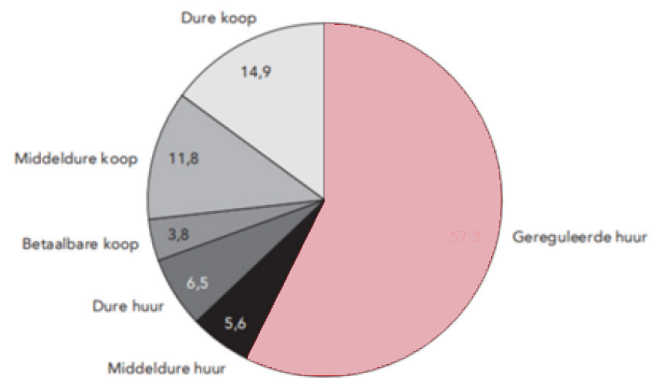


Figure 10. Housing stock deviation Amsterdam 1-01-2015 (Amsterdam, 2017)

In Amsterdam, only the rental prices of rental housing with an surface of 50-75 m2 have increased with 5,8 %. The size of the dwelling has a big influence on the rental price. Monthly prices are becoming lower after the dwellings are becoming smaller. But at the same time the group with interests in these dwellings is becoming bigger so that the rental prices per m2 in this segment are higher and therefore are increasing much faster. This results in the fact that these dwellings are shifting towards the higher segment and mid-priced rental dwellings are being declined. Therefore are middle-income groups stuck due the lack of suitable and affordable dwellings and are they falling in the price gap between social housing and the free sector rent (Amsterdam, 2017).

Conform the Woonvisie 2015 of the Municipality Amsterdam mid-priced rent ratios are lying between € 710,68 tot € 971 euros. The expensive rent segment starts from € 971 and the lower segment (regulated rent) goes up until € 710,68. The free sector rent goes up from € 710,68. The demand for the mid-rise rent between 710- 1000 euros per month in Amsterdam is extremely high. In Amsterdam the upper limit of the mid-priced rent lies around 1150 euros (Amsterdam, 2017). In this sense there is a big gap between offer and demand. Compare to the rest of the Netherlands in an average street of 20 houses, 12 of them are private, 7 are social housing and 1 is free-sector rent (Parasius, 2017).

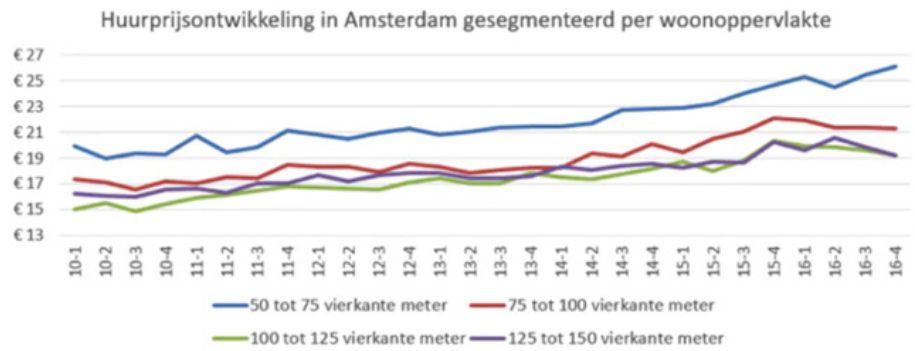


Figure 11. Rental price development in Amsterdam in m2

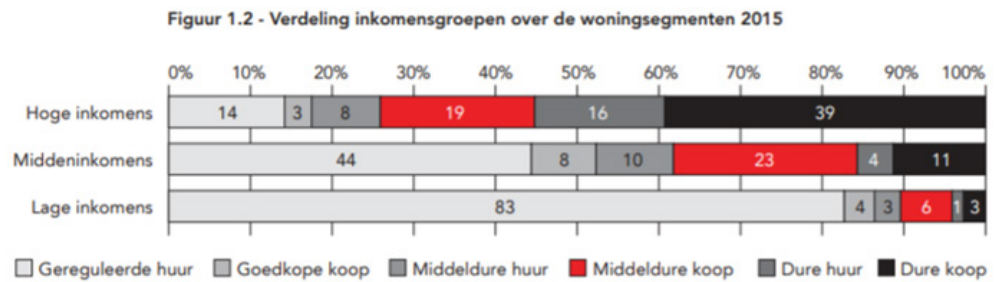


Figure 12. The deviation of income groups in segments 2015

Due to the statistics of Parasius, the demand for this sector is at this moment the biggest. Out of 43 % of the subscribers as demand there is only 25 % offer (Parasius, 2017).

Non-Suitable Housing for middle-income families

Because of this gap, a lot of people are currently not living in suitable housing for their income. Their income is or too high, or too low for the segments they are living in.

Figure 4 shows that people in the lowest rental segment are relatively living the most suitable. 83% of them is living in affordable rental housing in the lowest segment of a total of 86 % in the rental sector. The middle-income segment has 44 % living in regulated rent out of the total 54 %. 10 % of them are living in the middle- priced rent segment. It is visible that therefore middle- income and the higher income segment also sometimes live in the regulated rent segment. This is mainly caused due the fact that they earn enough to live in the lower-priced rent segment. 14 % of the middle- and higher segment are living in dwellings where they earn relatively too much for. This phenomenon is called in Dutch: "Scheef

wonen" and results in the fact that from both sides (low and higher income) they don't live in suitable dwellings for their segment (Amsterdam, 2017). Duo to the gap between income and housing segments, this gap is growing bigger and affect the low- and middle-income groups the most because they can't move so easily to the higher segment (Amsterdam, 2017).

Housing Vision Municipality of Amsterdam 2025

The Municipality of Amsterdam has ambitions to build 'enough dwellings' for the increase in population and to reduce the gap between the lower and the higher rent sector. They are aiming to build around 1500 mid-rent dwellings per year. The overall urban assumptions of the dwelling program is 40 % regulated rent, 40% middle-income (private and rent) and 20 % expensive segment (private and rent) (Amsterdam, 2017). In the Municipality Structure Vision 2040 this balance between 40-40-20 % is estimated to be more equal in 2020 compare to the current situation.

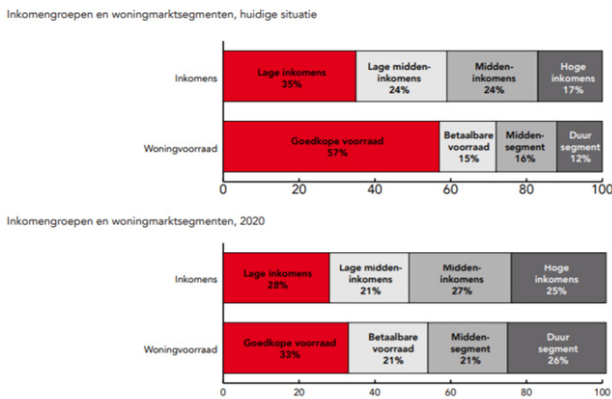


Figure 13. Income groups and Dwelling stock

Another demand for the municipality is to increase the size of private new build dwellings >70 m² in the middle and the high segment. For the middle-income segment the following rules appeared that will increase a maximum amount of flow and keeping these dwellings for the assigned target group.

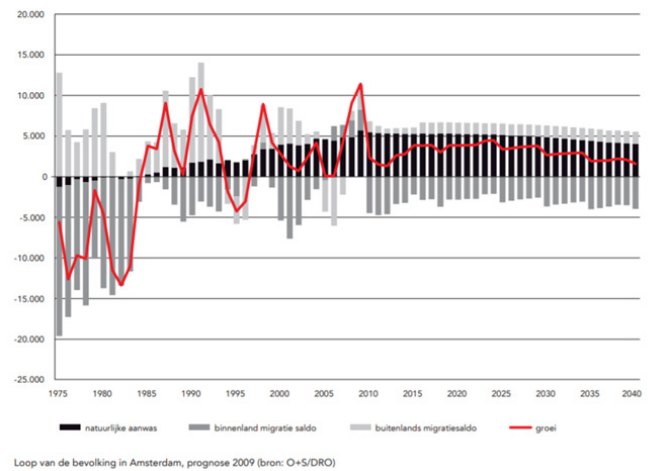
1. Regulations that middle-priced segment dwellings can be rented until at least 25 years even after mutation
2. Make sure there will be built 1500 middle segment rent dwellings every year
3. Focus on the dwelling size
4. Rent increase in inflation

From 1985 there have been an increase in dwellings of 70.000. The number of inhabitants therefore increased with almost 90 000. Due the last estimation of the Municipality of Amsterdam there will be an increase of again 90 000 inhabitants in 2040. Because of the young age structure of the population composition there are being born a lot of children in the city (Amsterdam, 2017). Traditionally a lot of families are leaving the city because in the search for larger dwellings and suburban environments, but currently there are staying more families than there are leaving. The last 15 years the amount of families increased. These families have mostly established themselves in the city center in the Eastern Harbour Parts and IJburg. Because these families want to stay in the city, it is important to provide them with dwellings that can fulfill their needs.

The Middle-Income Family Leaves Amsterdam

The middle-class segment contains a lot of different target groups. For this research I will focus on families in particular. Research shows that in Amsterdam almost 12 % of the families left Amsterdam in 2018. These were mostly the young

families with relatively high incomes. The reasons that they moved were the lack of suitable outdoor space and too small dwellings with not enough rooms (CBS, 2019b).



Loop van de bevolking in Amsterdam, prognose 2009 (bron: O+S/DRO)

Figure 14. Predicted population growth

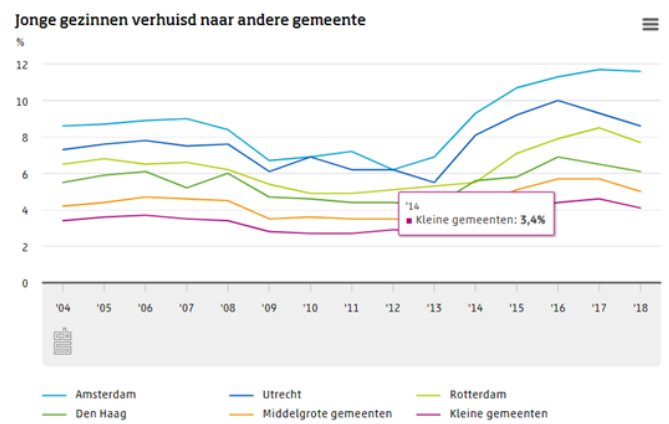


Figure 15. Young families that move to other Municipalities (CBS, 2019b)

If we look at figure 8, the prognosis diagram of AM (2017), it becomes visible that only the amount of families with a high income will rise and that the middle - and lower income families will decrease, especially the middle-income families.

In the Municipality of Amsterdam 24.4 % of all households are families with 1 or more children. In the whole of Netherlands this is 33 % (CBS, 2017). Almost 40 % of these families is leaving the city within 4 years after the birth of their first child (NOS, 2017).

This phenomenon has mostly to do with the lack of suitable and affordable dwellings, but also with another fact: the way the demands of the dwellings and living environments are changing. For middle income families this has mostly to do with

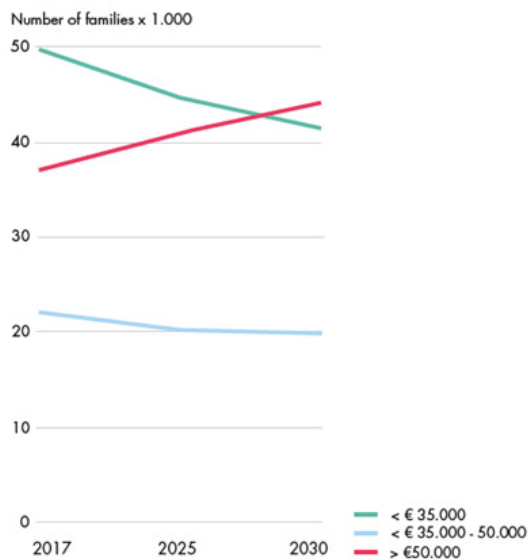


Figure 16. Prognosis amount of families in Amsterdam 2017-2030.

the moment where they decide to have children is of crucial importance for their position of these families with their environment (work, consumption, education, living and social networks) (W. Boterman, 2014). The influence of parenthood is for households different and the way the positions within the households are shifting are being determined by 'gender dispositions' and social class, rooted in what Bourdieu calls the 'Habitus'. (W. Boterman, 2014).

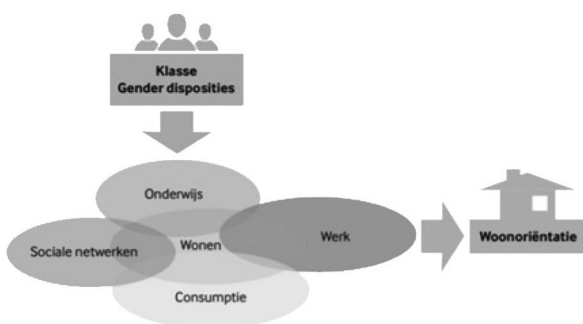


Figure 17. Conceptual framework of 'The Habitus' (W. Boterman, 2014)

Importance of keeping Middle-Class families in the city of Amsterdam

Middle class families leaving the city is an unwanted phenomenon and so sets the Municipality goals to keep this group in the city. Not only for their household composition, but especially for the middle-income class with jobs in health-care, education and the police they are important for the cities'

economy (Amsterdam, 2017). As Bell describes urban families are mostly attracted to the city because of pull factors like career and consumption (lifestyle) (W. M. Boterman, Karsten, L. Musterd, S., 2010). The spreading of the amount of families in Amsterdam compare to the Netherlands is different from where they establish themselves in the city. Figure 10 shows where families have currently spread throughout the city of Amsterdam

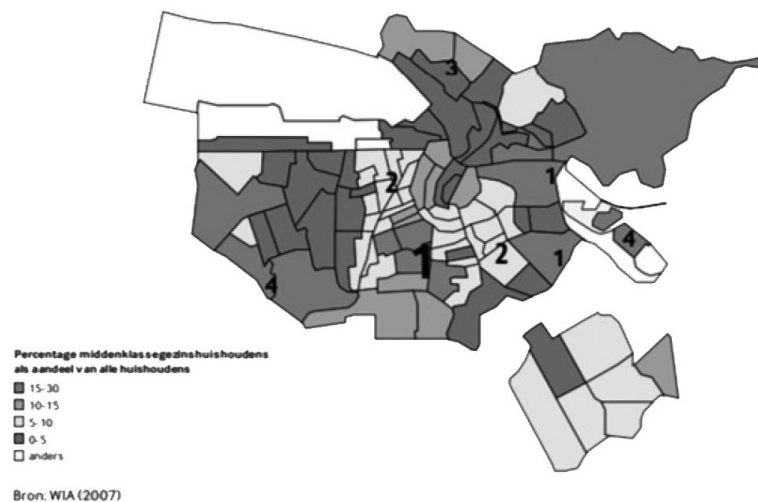


Figure 18. Middle Class families in Amsterdam

It is clear that middle class families are attracted to both the central and peripheral parts of the city. When the central neighborhoods are singled out and the development in these middle-class family neighborhoods is examined, it can be seen that they show a stronger growth than the peripheral neighborhoods. This finding supports the theory that middle-class families are increasingly oriented towards inner-city living (W. M. Boterman, Karsten, L. Musterd, S., 2010).

	1995	2007
Central neighbourhoods in top 10	10.7	18.8
Peripheral neighbourhoods in top 10	14.4	21.2
Average for top 10 middle-class family neighbourhoods	11.9	19.8
Amsterdam	3.6	7.7

Sources: WIA (1995, 2007); N (2007) = 14,019; N (1995) = 6608.

Figure 19. Middle-Class households in Amsterdam (W. M. Boterman, Karsten,

Karsten describes three important reasons why families want to stay in the city and why they are so important. The first one is the time and spatial pressure on young working families that therefore rely on reachability of their work and schools for their children. A second reason she mentions is the social relations that these young urban families have with their environment. They have built their social networks in and around the city: (college) friends, colleagues and neighbors. The third reason is the massive urbanization which results in

a changing lifestyle. Suddenly it is a trend to distinguish from others in the sense of cultural appropriation. Raising kids in a highly urban environment is therefore more interesting for this group than moving to the suburbs (van Hemert, 2017).

Families are determining the future of public facilities like schools, libraries, swimming pools, sport associations, theaters and cinemas. Also are children large connectors, they are forming bonds between parents of other families and have the opportunity to grow up in the urban city, and can therefore build up a connection with the city. They become the inhabitants of the future which are forming again pull factors for others to come to the city (Karsten, 2013).

Therefore, my research question for this report is: How can affordable housing for the middle income family in the Minervahaven of Amsterdam be realized according to their needs?

The New Urban Middle Class family

Where earlier traditional families are leaving the city towards the suburbs, modern urban families want to stay in the city or YUP's called by AM (Hoekveld, 2017). These Modern Families differ from traditional families in a sense that they have adapted to an urban lifestyle. This results in a different view on housing. In the city center there is no room for ground bound dwellings for everyone, so these families usually are mostly living in apartments. This changes their view on wishes and needs of the dwelling (Karsten, 2013). I want to divide the middle-class families in Amsterdam in two groups: the traditional middle-class family and the modern middle-class family. Their main differences are that modern middle-class families prefer location over dwelling, want to live inside the ring, prefer proximity to facilities and are living conform an urban identity (Hoekveld, 2017). Not only this deviation can be made between these two types of families, also the new modern middle-class families can be divided in composed and traditional (nuclear) families. The composed families are families consisting of single-parents (divorced) with children or families with elderly living in.

Reasons for them to stay in the city

The research of AM Measure shows that there are mainly 8 reasons for urban families to stay in the city. These reasons can be sub-divided in 3 main aspects: Economical, Social and Urban Identity (Hoekveld, 2017). Living close to work and facilities becomes more important for these middle-class families and also their sense of urban identity. Gender equality plays hereby a role in the connection's households have internally. Middle-class families usually have both parents working

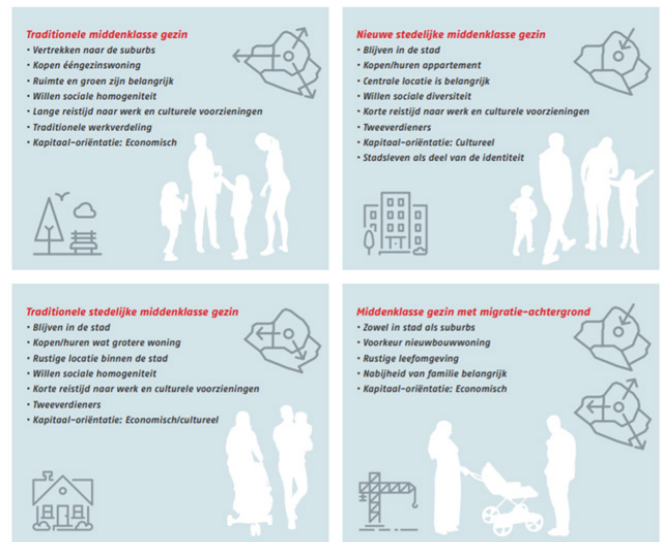


Figure 20. Deviation in different types of middle-class families (Hoekveld, 2017)

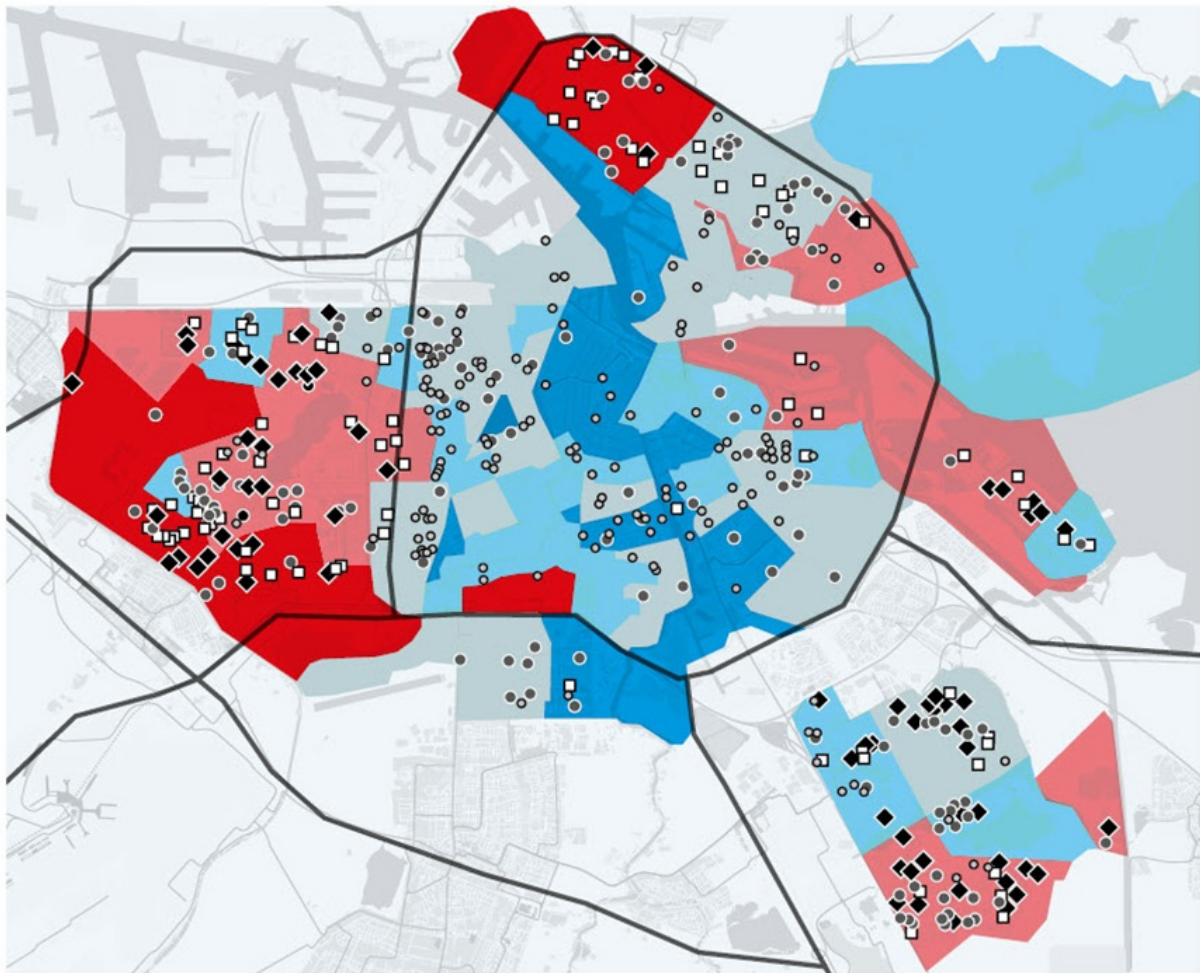
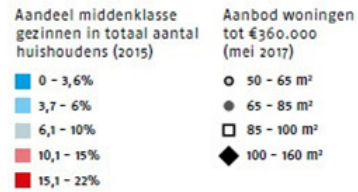
and are therefore dependent on a tight live-work balance (Karsten, 2013). Identification to the neighborhood secondly plays a role in how families are related to their environment.

1 Nabijheid van werk	Belang economische band
2 Nabijheid van familie	Belang sociale band
3 Nabijheid van sociaal netwerk	
4 Nabijheid van een divers aanbod aan voorzieningen	Belang stedelijke identiteit
5 Aanwezigheid van verschillende culturen	
6 Gewenning aan de stad	
7 De sociale omgangsvormen in de stad	
8 De voordelen die de stad aan het kind biedt	

Figure 21. 8 Reasons for modern urban middle class families to stay in the city (Hoekveld, 2017)

In beeld

Aandeel gezinnen en de beschikbare woningen
 Deze kaart maakt duidelijk waar de meeste gezinnen in Amsterdam zich bevinden. Ook toont het de ruim 500 woningen die middenklasse gezinnen kunnen kopen in de stad; hoe dicht bij het centrum, hoe kleiner deze worden.



Where do middle-class families live currently in Amsterdam

The physical spreading of middle-class families in Amsterdam is unequally divided. In some parts of the city center only 6 % of that particular part can be consisting of families whereas in the outskirts outside the Ring 60 % of the inhabitants can be consisting of families (Hoekveld, 2017). These parts are mostly consisting of Amsterdam Nieuw- West (the Western Garden Cities): Osdorp and Sloten, Gaasperdam in Zuid-Oost, IJburg and Tuindorp Oostzaan in the Northern part of Amsterdam.

Figure 22. Numbers of families with available dwelling space (Hoekveld, 2017)

Inside the Ring, the biggest concentration of families have established in the Prinses Irenebuurt, the Chassé Neighborhood in South, the Eastern Harbor District and the Helmersbuurt in the Old-Western part of the city (figure 14) (Hoekveld, 2017). This is a changeable matter because gentrification plays a large role in Amsterdam.

In order to build homes for families, it is essential to stimulate strong ties to the neighbourhood as well as to the building block. In their book: *“De Nieuwe Generatie Stadskinderen”* [the new generation of children growing up in cities], Lia Karsten and Naomie Felder state that the stronger the ties, the more likely it will be that families want to stay at the particular location. Karsten and Felder distinguish between functional, social, and symbolic ties (Karsten & Felder, 2016).

Functional Ties:

The functional ties refer to the proximity in time and space, of facilities and reachability of locations. For families it is important to live in the proximity of facilities that serve the daily care needs: shops, schools and child-friendly play areas such as public parks or protected play fields. Also cultural facilities like museums and the proximity of work places contribute to stronger functional ties. It is safe to say that, especially in the city, these facilities are sufficiently available at just short distances from the place where these families live. Regarding the building block, it is important to facilitate child-friendly play areas for young children (Karsten & Felder, 2016)..

Social ties

- 16 The social ties refer to the other people in whose vicinity one wants to live. It seems that families feel the need to live nearby other families in order to being able to share certain burdens, for example the babysitting or supervision of their children. This allows children to play with other children at just a short distance away from home and parents find it therefore easier to interact socially with other households, which thus positively contributes to the safety within the neighborhood. The network parents create therefore in the immediate vicinity, can also be very convenient when children have to be brought to and picked up from school, sports clubs, social activities etc (Karsten & Felder, 2016)..

Symbolic Ties

The symbolic ties refer to the personal identification with the location you live in. Families who want to live in the city are looking for the urban environment and like to distinguish themselves in this regard. Accordingly, they are looking for identifiability with the building itself in order to provide a safe and unique building block to which the communal indoor- and outdoor spaces can contribute. These spaces offer the residents putting a stamp on their living environment by for example organizing a joint maintenance scheme and the ability to organize children parties in communal spaces in the building. Such opportunities can create a stronger symbolic tie between residents and the built environment (Karsten & Felder, 2016)..

Outdoor Playing:

The immediate living environment is very important when you want children to grow up in a healthy way. A child-friendly outdoor space is therefore inevitable and crucial to create a safe environment for them to grow up and play. This is also strengthened by the fact that the current generation of children doesn't get sufficient exercise. Studies such as made visible in 'Jantje Beton' shows that young children spend less and less time playing outside. The percentage of children between six and twelve years old who play outside on a daily basis has decreased from 20 to 14 %. Therefore, outdoor spaces in the building should stimulate children to play outside, where they can explore and develop themselves. In order to create a safe playing environment for these children, a clear division between the traffic space and the play area is important (Karsten & Felder, 2016).

This is not an easy feat because, as shown in the study by Karsten & Felder (2016), the car has taken up the street space that used to be available to children. While, in 1950, there were 10 times as many children as cars in the streets, in 2014, there were twice as many cars as children. When designing the outdoor space, the different age groups must also be taken into account. Based on the radius of action of playing children, the 'free-range', it can be determined which outdoor space is used by the different age groups (Karsten & Felder, 2016).

The free-range for playing children indicates the distance at which children are allowed to roam around independently, without the supervision of their parents. This distance is largely determined by the child's age. Although this strongly differs per child, the study conducted by Karsten and Felder (2016) gives an indication of the free-range per age category. This data was used for my own research. There are multiple factors that influence the extent of the free-range: the availability of facilities, safety, the building density, social coherence, pedestrian and cycling infrastructure, availability of parks and open spaces, and the social environment. Stimulating a larger free-range can contribute to more physical activity. Within the age group between 0 and 4, a child predominantly plays inside and around the house, the free-range is 30 metres. This is why, on a building level, there must be a child-friendly outdoor space, for example a balcony with secure fencing. Within the age group between 6 and 8, children predominantly play inside and around the building block, the free-range is 150 metres. In order to stimulate children in this age group to play outside, the building block needs to include a child-friendly, communal outdoor space, with the focus on the age group between 6 and 8 (Karsten & Felder, 2016).

a child-friendly, communal outdoor space, with the focus on the age group between 6 and 8. To stimulate children to play outside without being supervised by their parents, the area between the entrance door of the apartment building and the front door of the own home must be child-friendly as well. This includes doors that are not too heavy, a light staircase, and a good view from the gallery onto the outdoor area where children can play. Besides that, sufficient supervision and a manageable distance between the own home and the outdoor play area is important. Research has shown that children who play outside are doing this under the supervision of their parents in more than fifty per cent of the time. The age of the children plays an important role in the extent of supervision. The supervision decreases as the children grow older, with a turning point around the age of 10.

When children are around 8 years old, the free range increases, especially when they are playing with other children. Around the age of 10, children have a large degree of autonomy. The children in the age group between 8 and 12 are, therefore not just playing within the building block, but mostly around the neighbourhood. The free-range of this age group is 500 metres. When children attend secondary school, the free-range is extended significantly. Children start to use other means of transportation and travel to school on their bikes or by the use of for example public transport. This age group has a free-range of more than 500 metres and often uses the area outside the building block. The neighborhood in this sense becomes much more important and how the building relates to this.

As mentioned before, the outdoor space within the building block mainly focuses on the age group between 6 and 8. This group needs to be supervised when they play outside. Therefore, when designing a building block with family apartments, creating the opportunity to supervise the outdoor play area is an important aspect of the design (Karsten & Felder, 2016).

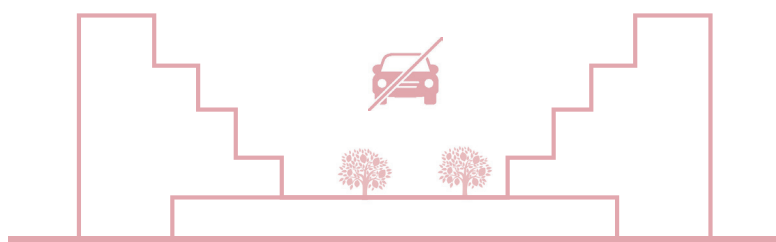


Figure 23. Design Building block (Own Illustration)

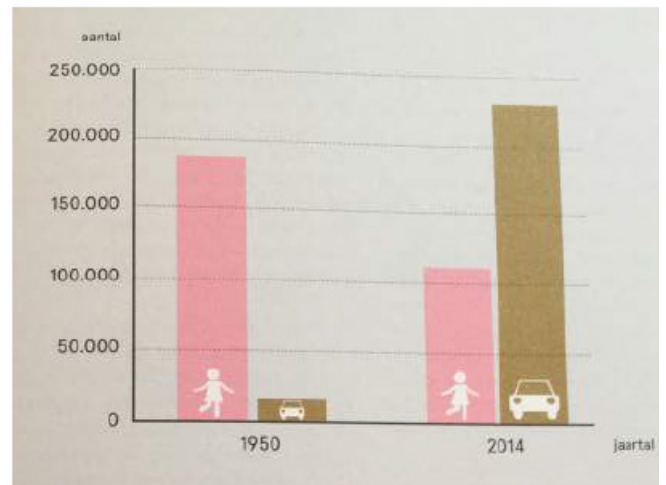


Figure 24. De nieuwe generatie stadskinderen (Karsten, 2016)

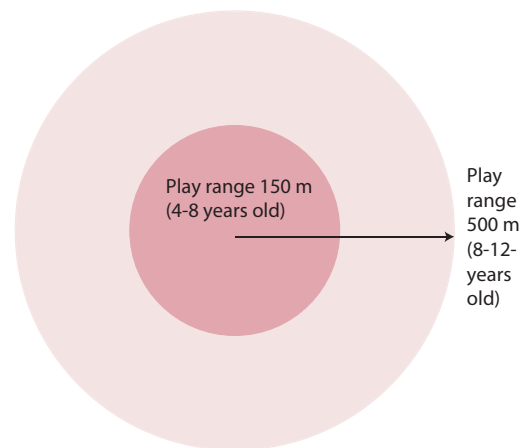


Figure 25. Free-Range play ratio for children:

Within the age group of 0-4, a child needs a strongly protective environment to play inside and around the house: the free-range is 30 metres. Within the age group of 6-8 children predominantly play inside and around the building block: the free-range is around 150 metres. The children in the age group between 8-12 are not just playing within the surroundings of the building block, but mostly around the neighborhood. The free-range of this age group is around 500 metres. (Karsten & Felder, 2016).

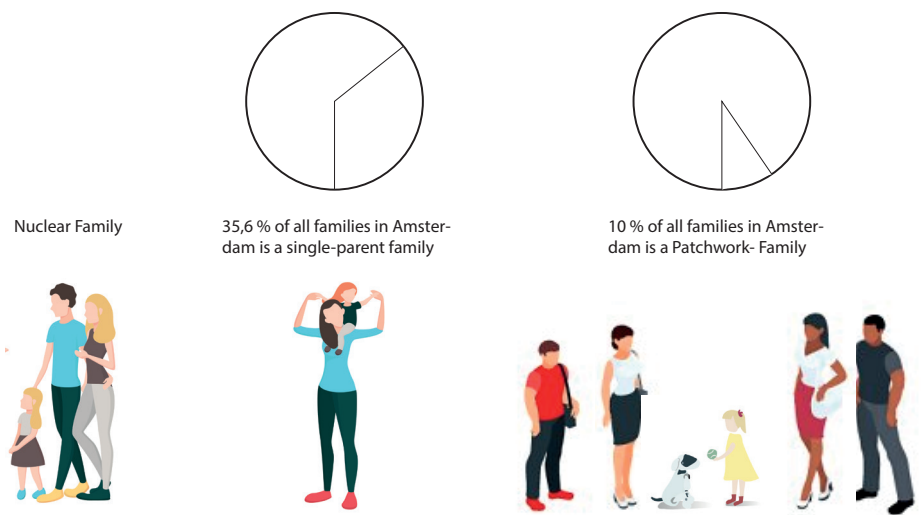


Figure 26 . Family Compounds (Own Illustration)

Target group

Family compounds

18 In order to investigate and provide a framework of design tools for urban families it is important to research for which kind of families will be designed for. To get a better understanding of the term ‘families’, I will further explain this specific target group. Nowadays there are many different types of family households next to the traditional two-parent families. In addition to the general wishes families have for their home, the different types of family households all have their particular living needs. In my study, I distinguish three different family households: the traditional two-parent families, the single-parent family, and the patchwork or stepfamily. When considering the homes, these different types of family households must specifically be taken into account.

Traditional two-parent family

The traditional two-parent family, or nuclear family, consists of a household with two parents.

The CBS statistics (2018) show that the majority of (un)married couples with children have two children. Three of four children are least common with (un)married couples with children. This is why the traditional two-parent families generally would like to have two or three bedrooms. (Un)married couples with children

Total 2022469

1 child 755001 = 37.4 %

2 children 911048 = 45.0 %

3 or more children 356420 = 17.6 %

Note: the CBS statistics do not distinguish between the traditional two-parent families and the patchwork or stepfamilies.

The single-parent family

The number of single-parent families has grown over the past years. The main cause for this is the increasing number of divorces and the increasing number of single women of around forty who get children. In 2017, 15.9% of the babies born in

Amsterdam belong to a single-parent family. This is substantially higher than the national average of 9.0%. In addition, this percentage has strongly increased compared to 2010. In 2010, 7.5% of the babies in the Netherlands were born into a single-parent family. (CBS, 2018). The result is that 35.6% of the family households in Amsterdam is single-parent family.

The CBS statistics (2018) show that the majority of single-parent families consists of a parent with 1 child. This is why the single-parent families generally would like to have two bedrooms.

Single-parent families:

Total 572419

1 child 352216 = 61.5 %

2 children 167646 = 29.3 %

3 or more children 52557 = 9.2 %

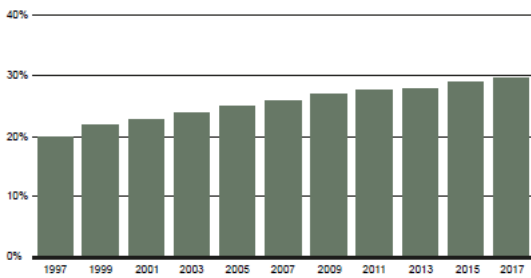


Figure 27. Young Teenagers (15) who don't live at home anymore (CBS, 2018)

The patchwork or stepfamily:

Nearly 10% of all families in the Netherlands can now be labelled as a “new family”. The group of new families can be divided into two groups: the patchwork family and the stepfamily. With the patchwork family, both parents bring children from a previous relationship. With the stepfamily, only one of the parents brings children from a previous relationship. The relationships within a patchwork or stepfamily are often complex. Children have to get used to the new family situation. and to the stepparent. And vice versa, the stepparent has to build up a bond with the partner’s children (NJL, 2014). Besides that, the children often spend part of the week within another family household. This is why these families have specific living requirements. For example, new families find it important that they can adjust their home and, because of the often large family households, they want to have more bedrooms compared to the traditional two-parent families.

Wishes and needs regarding the layout of the house

When building homes for families, it is crucial to create an urban building block whereby the focus lies on the wishes of the families. On the level of the house, families value the flexibility of the house. A large entrance hall, the annex room (a room adjacent to the living room that can be closed off), and having a separate kitchen and living room creates a larger degree of flexibility within the house. A large entrance hall, but also the annex room, can be used as a playroom for children, as a storage room, a study, an area for pets, a place for drying laundry, and for welcoming and saying goodbye to guests. The annex room can also be used as a guest room. Furthermore, having a separate kitchen and living room can be an interesting option for families; by dividing these two spaces, children can, for instance, keep on playing in the living room

while guests are entertained at the kitchen table (Keesom, 2013). Lastly, families have a great need for storage space, both inside and outside the house, for example to store a cargo bike, a stroller, etc. This needs to be taken into account.

Design questions

Together with the research of the New Collective Living Movement earlier described in the report, several conclusions in design choices can be made. The building should be mainly focussed on the New Urban Family, which consists of three types of family compounds: nuclear, single-parent and patch-work families. From the research described above, the following subquestions can be formulated:

- What are the wishes of urban families with regard to the appearance of the building block in which they live?*
- How can different types of family households be housed in one building block?*
- How can social control on the communal outdoorspace be stimulated with architectural elements?*

These sub-questions will be answered through the description of the plananalysis.

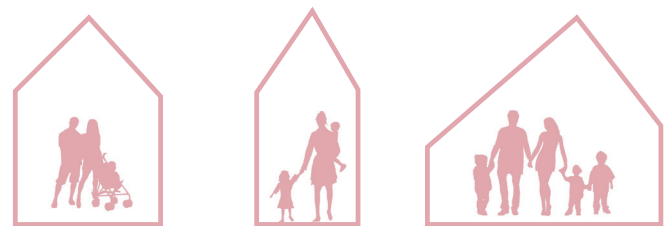


Figure 28. Different family compounds, different dwelling demands (Own Illustration)

Current Situation: the Comeback of the Woongroep?

In the recent years, increasingly innovative collective housing projects have emerged, especially in Central Europe. In a way, we are witnessing the return of the collective in architecture, resulting in innovative and surprising architectural solutions. This reinvention of collective housing forms has been triggered by two possible related developments: changing demographics and the renaissance of the city as a hub for a new collectivity (Kries, 2017). Next to this, family compounds are changing. The New Urban Family is not consisting anymore of traditional families, but also contains single-parent and patchwork families (Kries, 2017). These groups of people are searching for alternative ways to satisfy their needs of “belonging”, which was once catered by the family unit. This need is manifesting itself in an overwhelming demand for new forms of collective living in contemporary housing. Tired of being confined to “Nomadic Dwellings”, more and more people are looking for new types of housing that allow them to experience themselves as part of a community (Kries, 2017).

The city as a hub of collectivity: ideologies

- 20 Throughout the world we are experiencing a renaissance of the city and collective urban life. In the 1980's, many of our European cities were pronounced dead, housing only the poor, migrants and senior citizens. Anyone who could moved to the suburbs to realize their dream of living in their own single-family house. Large corporations therefore moved their headquarters to the periphery. However, due to a variety of reasons, this trend is now reversing. The main reason for this is that urban life is simply not happening in the suburbs. Urban life means hereby living in an environment with an immediate proximity of city functions such as retail (stores and restaurants), cultural functions such as museums and offices. This urban, inner city environment differs from the one in the suburbs, because here the distances towards these functions described before is much bigger. As young professionals, families and even senior citizens return to the city centers. This trend which brings these groups back to the city inevitably brings the side effect of gentrification. Parallel to this trend of moving back to the city there is an increased appreciation of urban collective life. Various actors are experimenting with collective forms of work and consumption, some of them even setting up urban farms. City life is being reorganized into new collective forms that are reinvigorating our cities and redefining urbanity. Combining collective living with collective work, social or leisure spaces and creating an open interface with the open fabric around them, these types of urban forms are functioning as small cities within cities (Kries, 2017).

The architecture of the New Collective:

Trends such as sharing, changing demographics and growing urbanization, have triggered a search for new housing typologies and programs in contemporary architecture. This matter is taking place on three levels:

1. At the level of the individual apartment there is an emergence of cluster apartments. A cluster apartment is one very large apartment with a living area between 250 and 400 m². It consists of a number of small studio apartments of about 20-35 m², each with a bedroom and a small kitchen and pantry, which are organized around a generously proportioned shared living area that is containing a large kitchen.
2. At the level of the apartment building, individual apartments are being supplemented by a mix of shared domestic facilities that can be collectively by all the residents. Examples from Zurich, Switzerland show that these cooperative buildings contain laundries, libraries, seminar spaces, workshops, play areas for children and a collective kitchen.
3. At the level of urban space, apartment buildings are being constructed that offer public programs explicitly to people living in the neighborhood. The celebrated Kalkbreite housing cooperative in Zurich dedicated 50 % of its program to non-residential functions, offers public facilities such as a cinema, a packaging-free supermarket, three restaurants/cafés, a number of office spaces and a public courtyard with playing areas for children (Kries, 2017)

These programs bring the city into the building and make it part of the neighborhood. Here, housing literally creates the city and therefore differ from the monofunctional housing developments of the post-war era, which were focused on the modernist ideology of separation between functions of living, working and leisure. One of the aspects from the Council for Housing, Spatial Planning and the Environment that drew their attention was the increasing interest in living with other like-minded people, in a privately managed residential domain or otherwise. This demand for smaller environments, or micro-habitats, where living, working, care and recreation are being combined, will rise in the coming years (Kries, 2017).



Figure 29. Genossenschaft Kalkbreite: Groundfloor with communal courtyard

Designing for Collective Living

Other large cities responded to the need of affordable housing by collective housing, in multiple forms. What interests me the most is that collective housing focusses on the one hand on affordability but also on a high standard of living by providing high quality communal facilities with private dwellings included. The most examples shown in this research report are focused on the middle income instead of the low income in normal social housing. It includes facilities that you dream of, but can't afford on your own. This combination of affordability vs. the high quality of living and sense of community are aspects I want to achieve with my building design for families. Therefore, the second sub question is formulated as:

Which architectural elements can be used in the design for a livable collective building for families in the center of Amsterdam?

„Collective housing combines the autonomy of private dwellings with the advantages of community living. It has private units, semi-private space and indoor and outdoor communal space.“

Collective Living is becoming more and more popular in the Netherlands. Not only does it provide reduced building and development costs, also after the building process residents experience a strong relation towards each other and provides active participation. (Tummers, 2017) Housing corporations can play a large role in providing suitable dwellings for families that want to live in the city. Especially for patchwork- and single- parent families this can be the solution that can help them building up a new life after their divorce. Especially this group often experiences a lack in suitable family housing that they can afford. A research from the BBC shows that in there are currently initiatives to provide temporary solutions for these groups but not a long term basis.

„Parentshouse“, a shared-living space that opened last August for separated parents who, for 600 euro (about \$830) per month, can cohabit with similarly situated individuals for up to one year while they search for a more permanent solution. Hereby the resident gets his of her own bed- and bathroom, but the communal spaces such as the kitchen and the living room are shared.

„As divorce rates continue to rise, especially for people in their 30s and 40s, these kinds of alternative-living arrangements will only increase, said Jan Latten, a University of Amsterdam professor and demographer at Statistics Netherlands.

<https://www.bbc.com/worklife/article/20140505-living-the-communal-life>

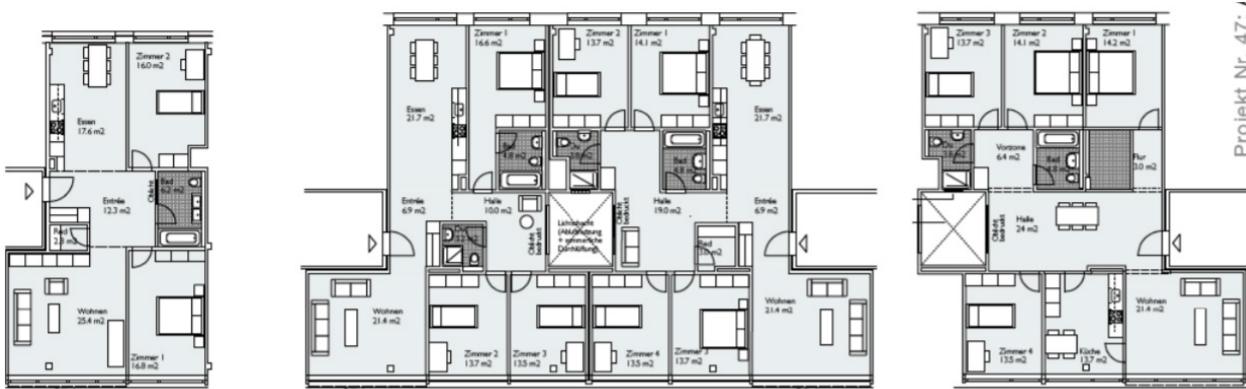


Figure 30. Genossenschaft Kalkbreite : Communal / Shared Apartments

Housing cooperation

The cause of the current supply of housing on the housing market being entirely out of tune with the housing preferences of families can be traced back to the late 1980s, when the government withdrew from the policy-making process for public housing. As mentioned before, this resulted in housing corporations and project developers building family homes outside the cities and building apartments for single residents and expats within the cities, with the sole objective to obtain a higher return per square metre. In a time in which the empowerment and willingness of people to create their own initiatives which contribute to an improvement of the own living environment, the housing cooperation can support this by building urban homes for families. In this sense a corporation will initiate this communal living building block for families and keeps tight relations in decisionmaking with the inhabitants. The term 'housing cooperation' should not be confused with the term 'housing corporation'. Contrary to the housing corporation, the housing cooperation has the cooperation between its members and the own initiative as its key focal points. Such housing cooperations, as already used in the Netherlands in 1868, are currently quite common in cities such as Berlin and Zürich.

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Thousands of homes have already been built in the city of Zürich with the help of the housing cooperation. The housing cooperation Kalkbreite is an example of this and developed the housing plan with the name "Kalkbreite". The large diversity of housing types, from residential communities for singles to residential studios, is special to the project. In addition, there is a cinema, restaurants, shops, a crèche and a medical community center in the building (Wetering, 2015).



Figure 31. *Genossenschaft Kalkbreite, Communal Playground for Children*

Benefits of Collective Housing

Affordability:

Collective housing can be more affordable compared to individual housing as facilities and resources are shared. The dwelling sizes can be smaller because of the shared facilities and therefore the houses can be more affordable (Tummers, 2017) They provide more quality in terms of social cohesion and are especially suitable for patchwork families and divorced couples with children. These families can benefit maximum from communal spaces where they can let their children play with other children and so re-build their social network.

Communal vs. Private

As Fromm (1991) describes cohousing: "Cohousing combines the autonomy of private dwellings with the advantages of community living." Effort is paid to design dwellings that are as private as possible in combination with plenty of communal facilities where people can go if they are looking for social interaction.

Social Contact: Less Loneliness

Loneliness is becoming a bigger problem in cities. In Amsterdam 1 out of 10 adults (65.000 citizens) feel very lonely and 3 out of 10 adults feel moderately lonely (200.000 citizens). According to Joris Slaets in neighborhoods we can increase the chances for people to stay in contact with others, but there has to change something as the last year, our public space has mainly been designed for privacy instead of meeting each other. Cohousing is seen as a way to reduce loneliness as it focuses on social interaction between neighbors. Social interactions within the neighborhood help to encourage the growth of social capital.

High quality facilities

Collective housing is seen as a possibility to create otherwise unaffordable or inaccessible services. It includes spaces that are not regularly found in affordable housing, such as swimming pools, guest rooms, music rooms, cafés etc. Because mainly everything is done by and for the residents themselves, spaces that are usually found only in the public or commercial realm are more affordable and made semiprivate. More Connectivity/ Responsibility for the building. The stronger the sense of community, the more influence the members will feel they have on their immediate environment. When tenants are participating in the design process, people feel prouder to live in the building and therefore also feel

more responsible to keep the building up standard.

Feeling of safety

Social interaction between neighbors provides casual unconstrained social control which contributes to a safer neighborhood. Also, when people identify with their neighborhood, they personalize their homes which contributes to the development of common symbols, a sort of territorial markers which according to Newman (1972) often deter neighborhood crime.

The Size of a Collective Living

In order to determine the size of a collective housing complex it is important to research different options.

Projects between 6 - 14 serve more as a “big” house and is a collective housing size that is not much used in the Netherlands. In more urban environments in the Netherlands, the projects are mostly around 20-50 dwellings if they are realised with the co-housing options. Examples of these types of complexes are Nautilus and Vrijburcht in Amsterdam. In my case the building will be owned by the corporation/ initiative that will rent out the apartments. The total size of the project will contain around 196 dwellings, subdivided in different clusters in order to provide the sense of community.

23

Dunbar:

Dunbar prove with his community number, that trough research and examples tested among the historical utopian communities of the C19th USA, that the optimal number of residents for communities to have a long-lasting lifetime lie between 50 and 150 people (Dunbar, 2017). Because I will design the building for n a highly urban environment, my aim is to provide a community that contain approximately between 100- 150 residents per cluster part.

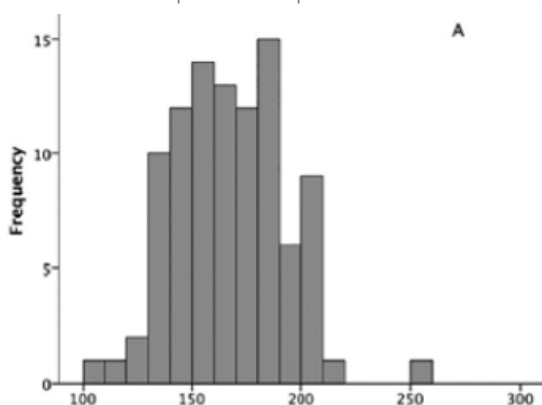


Figure 32. Optimisation of community numbers (Dunbar, 2017)

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02. Urban Master Plan

Urban Plan Design: Low-Rise high density

Borneo aan het IJ is the starting point for our urban design. By implementing the characteristic canal stripes to the Minervahaven it forms a relation with the existing urban plan of Borneo-Sporenburg that we also can find in the Amsterdam Harbour area. Designed by West8 architects the system enhances a certain freedom of the different designed family houses which are all proposed by different architects. The DNA of the project consists of a rigid grid that is interrupted by the placement of „Icons“ which each give a special character to the plan.

Therefore the plan consists of a contrast between the high-densed low-rise dwelling strips and the larger ‚iconic‘ buildings. We tried to implement the system of Borneo on the site of Minervahaven and translate it towards the specific location characteristics.

The new Urban Design has been developed within the system of the same rigid low-rise grid and the cut-outs with the icons. Our plan consist of 4 larger Icons that each can have a special character that have a contextual relation with the Minervahaven.

26

Low-rise dwelling typologies of three stories are being combined with the options of densification trough stacking on the rooftops of the low-rise apartments. Therefore a more optimum FSI can be achieved and this will be beneficial for the municipality in order to sell more apartments. The larger iconic blocks contain of 7-15 stories and are therefore seen as midrise/ highrise residential blocks. The iconic blocks are placed in such a way that they support mobility and contextual relations with the environment.

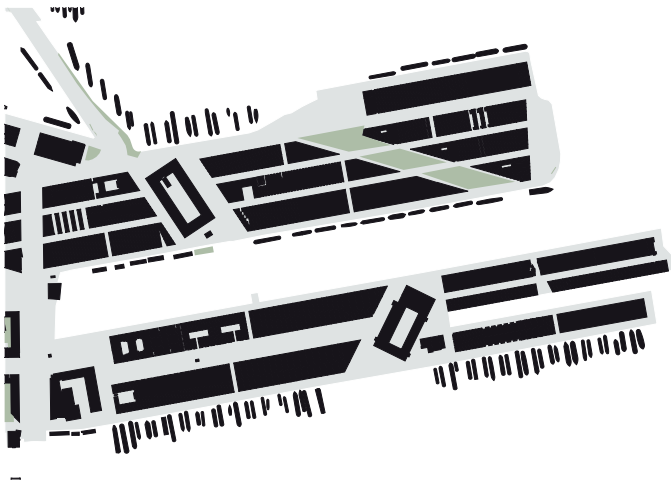


Figure 34. Masterplan Borneo Sporenburg

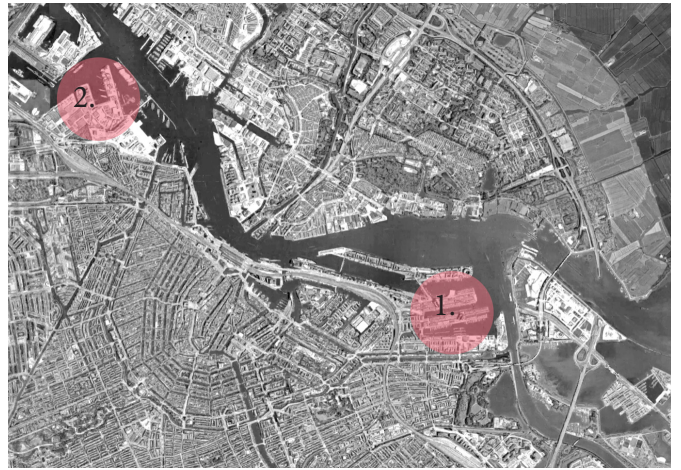


Figure 35. Situation Borneo (1) and the Minervahaven (2)

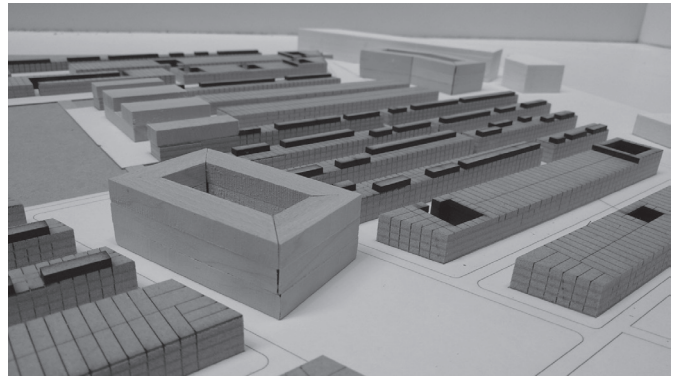


Figure 36. Urban Plan De-

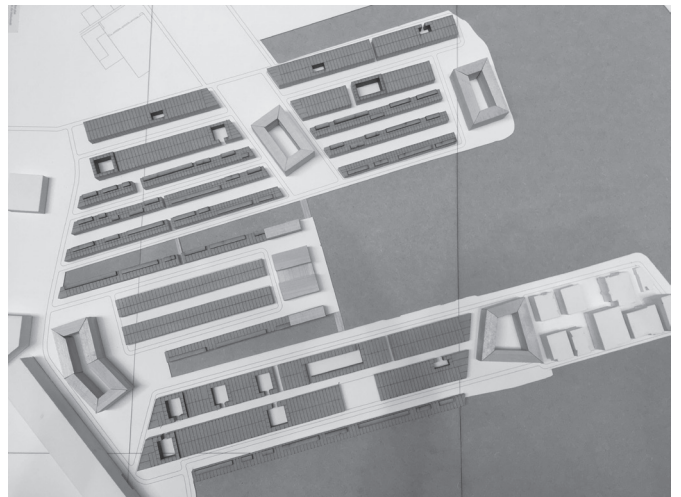


Figure 37. Urban Plan Design



Figure 38. Public Transport

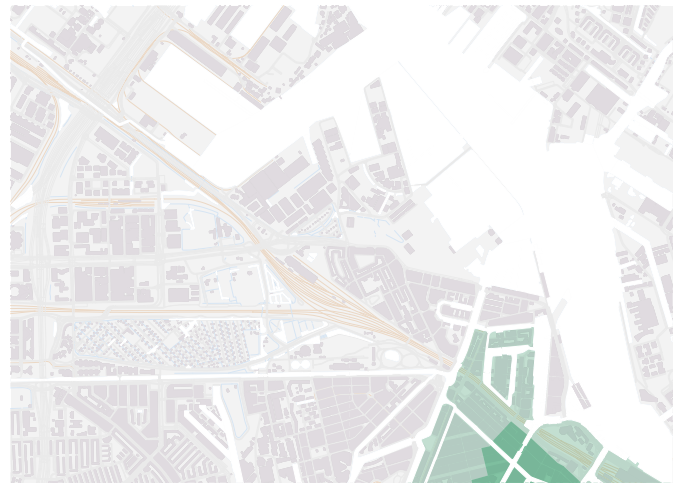


Figure 41. Unesco Heritage Zone

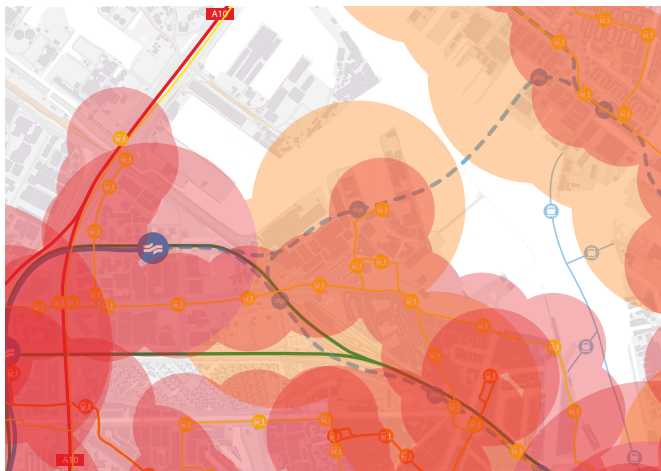


Figure 39. Public transport reachability



Figure 40. Industrial Zoning

The Minervahaven is located in the eastern part of the Amsterdam Harbour area. Figure 38 shows the public transport access of the area. It shows that the Minervahaven needs an extra metro connection (drawn in light blue dotted line) and a boat ferry station which connects the northern part of the harbor with the Minervahaven. This decision is based on the goals of the Municipality for the masterplan of the harbour district. With this blue line figure.. shows the reachability circle of the district. It shows that one metro station is convenient for the entire area.

The Minervahaven is considered as an industrial area that lies outside of the Unesco Heritage Zone (figure 41). Because the area is transformed from mainly office and industrial area towards residential, the norms for environmental issues like air pollution and sound barriers will change. Industry will slowly go away and will be replaced by high-densed dwelling typologies with an average FSI of 2.

The Masterplan is divided into three main zones where the different dwelling types are being located. In the design there was an aim to provide a broad flexibility in dwelling types in order to allow future changes (optoppings) to create more density.

The dwelling typologies are based on the concept of the reinterpretation of the traditional Dutch canal house by West8 architects. West 8 suggested new types of three-storey, ground-accessed houses deviating from the usual terraced house in being strongly oriented to the private realm by incorporating patios and roof gardens. By repeating this type in a great variety of dwelling modes and with maximum architectural variation, an animated street elevation emerges with a focus on the individual. At a larger scale, a delicately balanced relationship exists between the repetition of the individual dwellings, the roofscape and the great scale of the docks. Three immense sculptural blocks take their place as landmarks in the vast expanse of houses. The masterplan of the borneo-sporenburg formed hereby the basis for our own design.

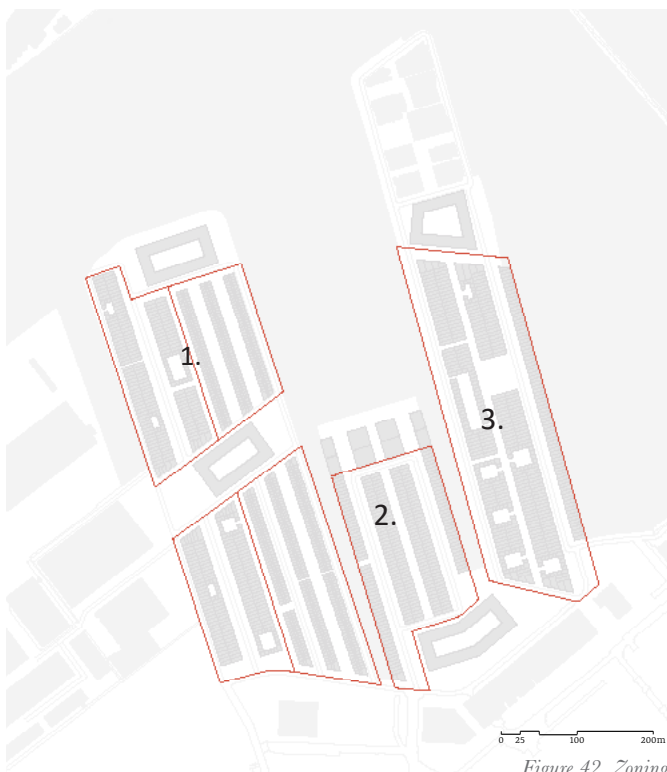
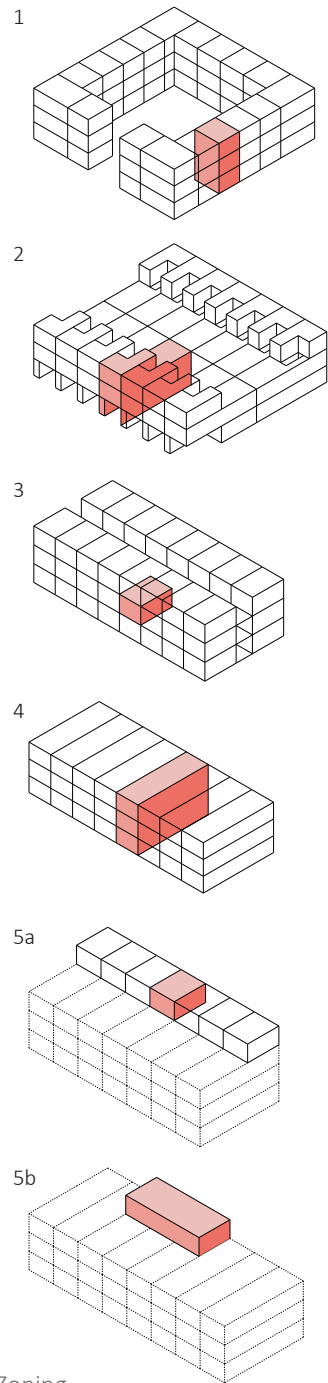


Figure 42. Zoning



- Zoning
- Zone 1: type 1+2+3
 - Zone 2: type 2+4+5a
 - Zone 3: type 1+2+5b

Figure 43. Dwelling Typologies



Figure 44. Roofscapes

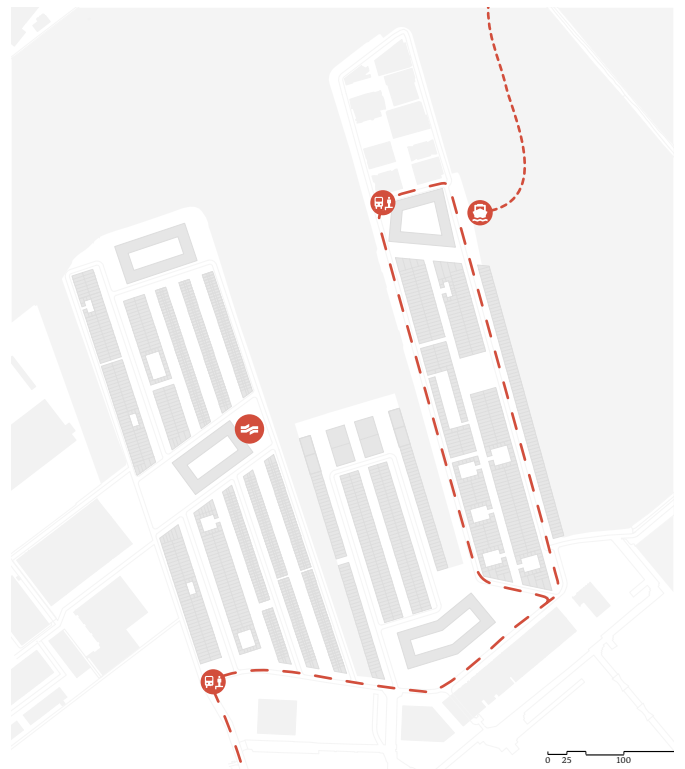


Figure 46. Public transport

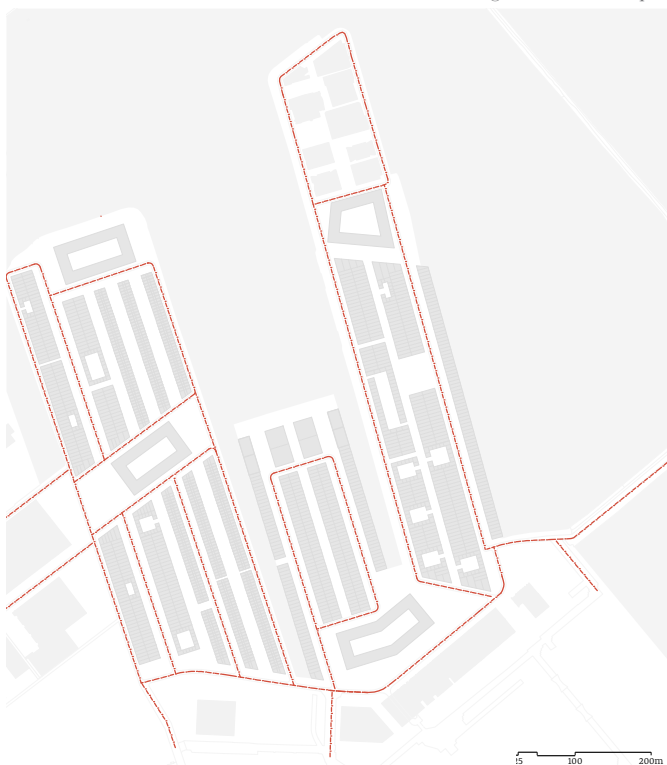


Figure 45. Transport: Roads

The canal striped apartment blocks have the traditional Amsterdam canal house character with dwellings that are deep and have a small construction width. The roofscapes that can be placed on top of these dwellings provide more density and smaller dwelling units (see figure 44.). The car roads and public transport lines are placed in such a way that the car is always secondary present but does not have priority in contrast with the public transport stations. Figure .. shows the reachability of the bus- and metro stops in the area and shows that with these placements the area is reachable enough for the inhabitants and users of the space.

The car will be lead around the peninsulas and is designed as one-way road. In the middle of the plot there will be a metro stop. This is beneficial for my building in the sense that the level of movement will be continuous and can be beneficial for the public functions that are being placed in the plinth of the building.



Figure 47. Public transport: Reachability

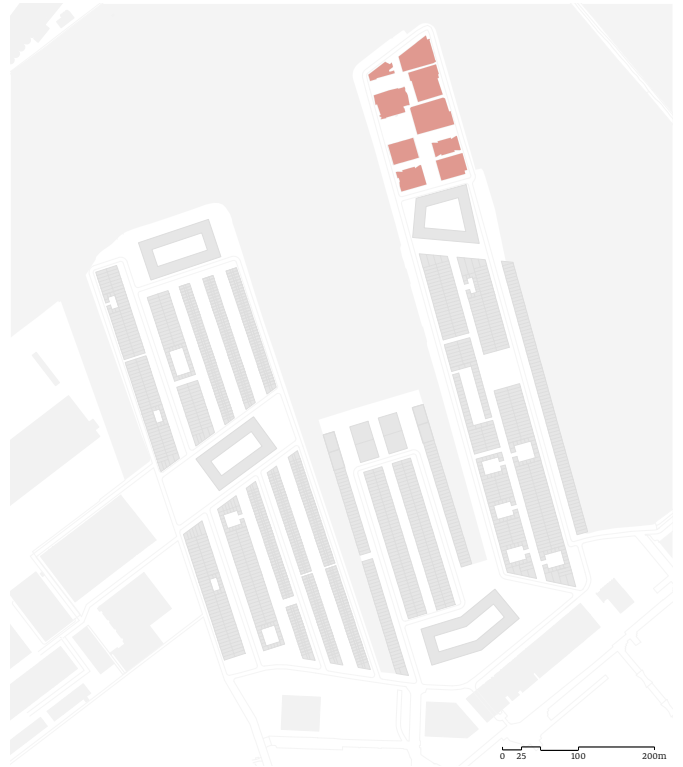


Figure 49. Existing Buildings: Offices

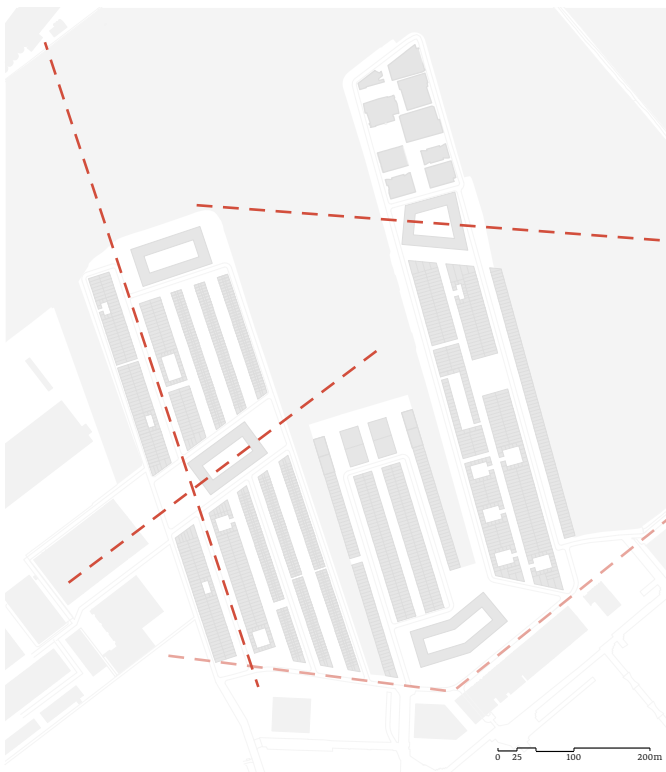


Figure 48. Axis

The design site is now mainly consisting of offices, workshop places and industries. This will change in the upcoming years into mainly residential programmes. Therefore we choose to mainly demolish all the offices, with an exception on the upper right part of the peninsula. These offices will function as well as an icon in the masterplan (See figure 49 Existing Buildings).

Public amenities will be placed as well in the Masterplan close to the larger icon buildings. Every icon building contains public functions in the plinth. The placement of the large icon buildings are based on the axis shown in figure.

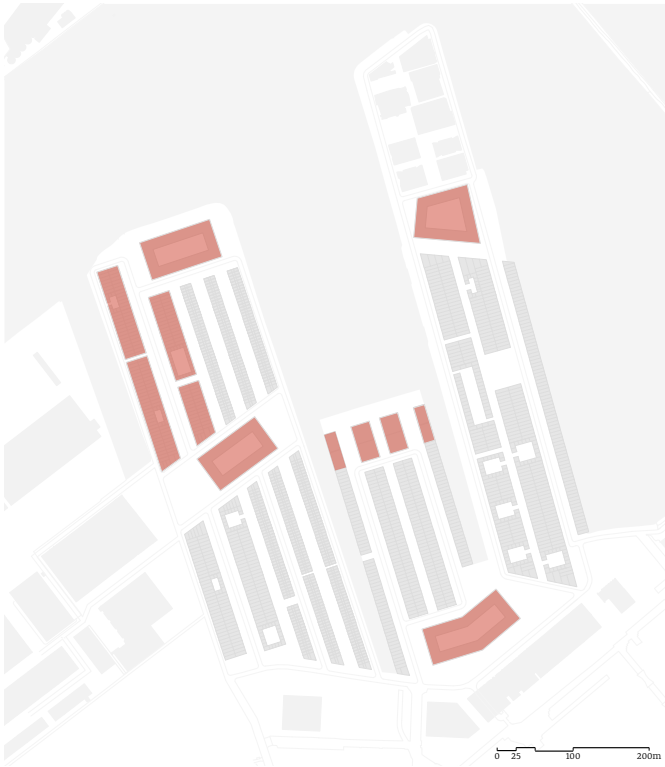


Figure 50. Public Functions

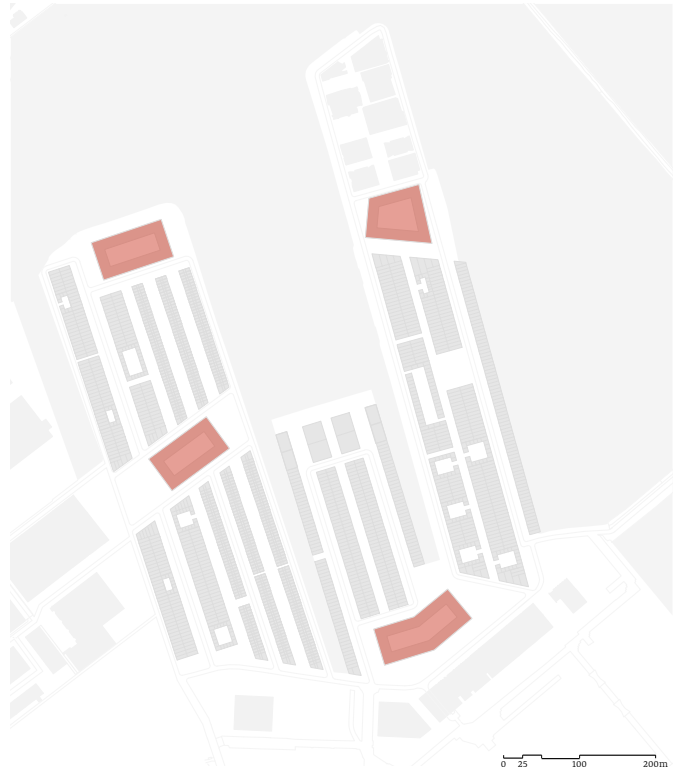


Figure 52. Icons masterplan 31

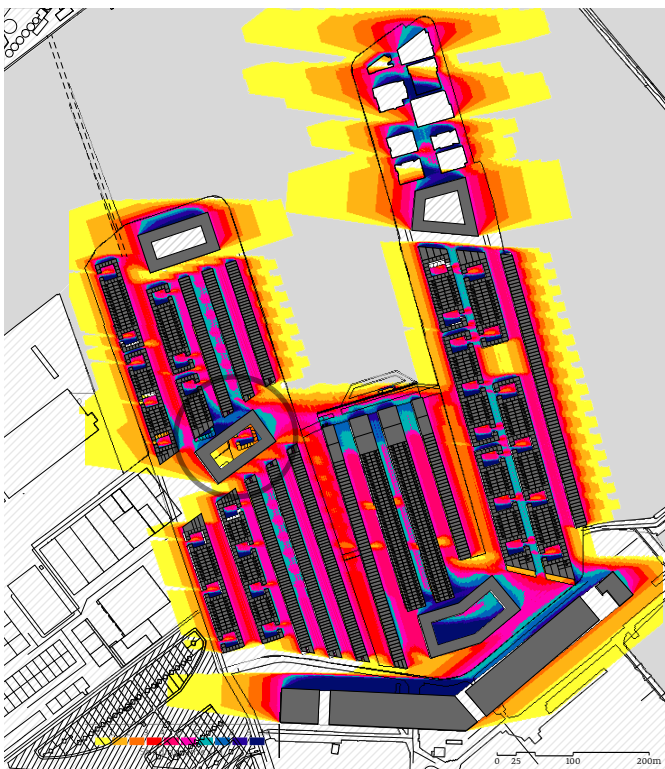


Figure 51. Sun analysis Masterplan

The sun analysis shows that there are some problem points with the higher iconic blocks on the south side of the masterplan, but that the majority of the row-houses and iconic blocks on the west- and north side of the plan show no problems with sun. The iconic block that I have chosen for my own design shows only problems on the north side of the facade.

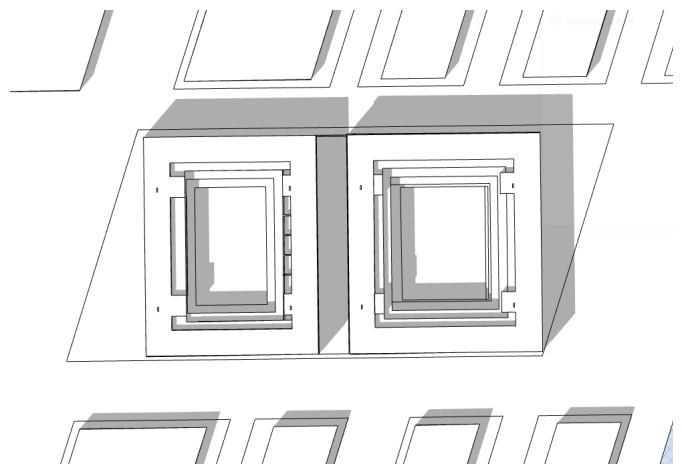


Figure 53. Sun analysis own building design 31-7-2019 12:00 PM

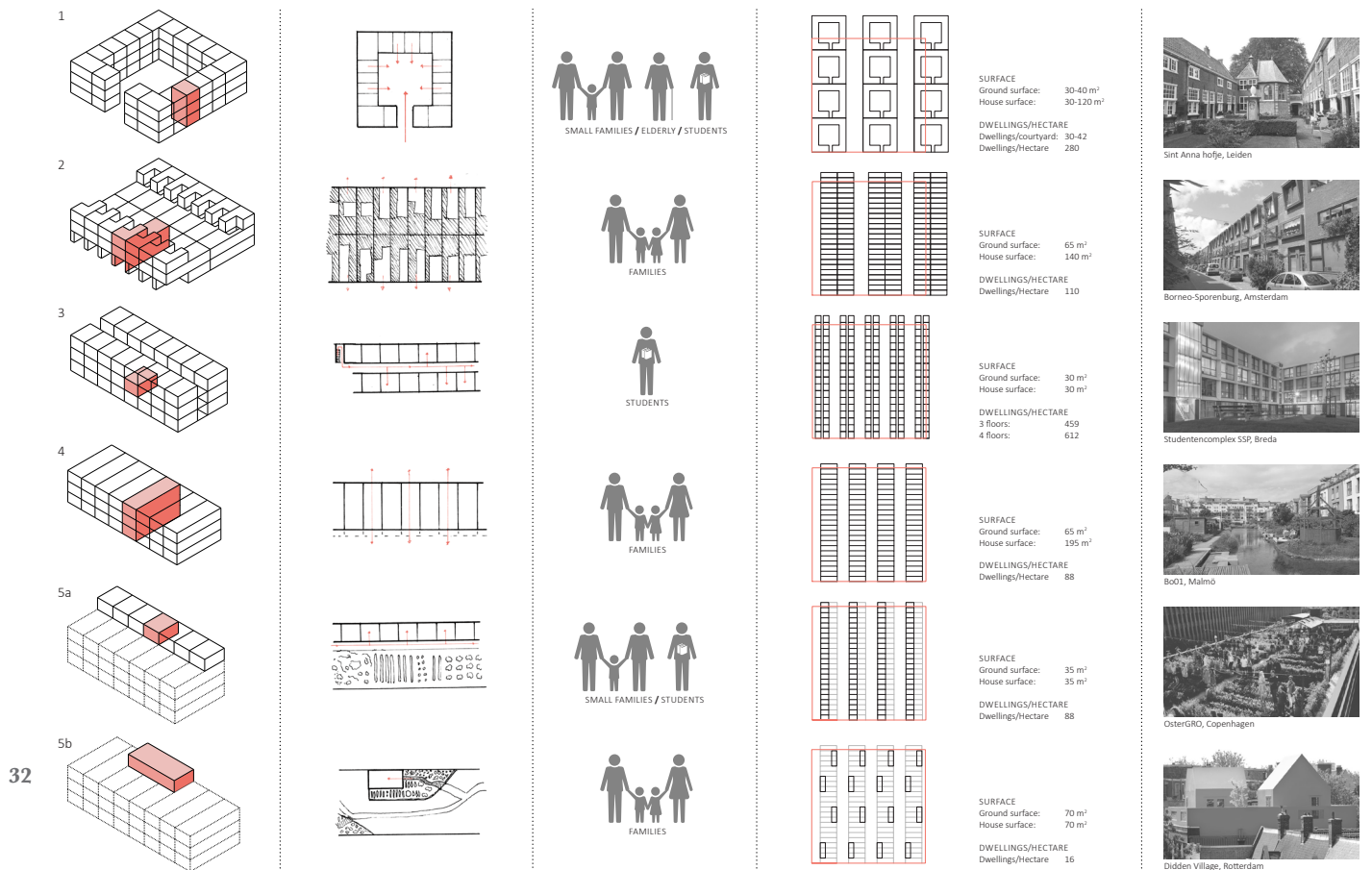


Figure 54. Dwelling typolo-

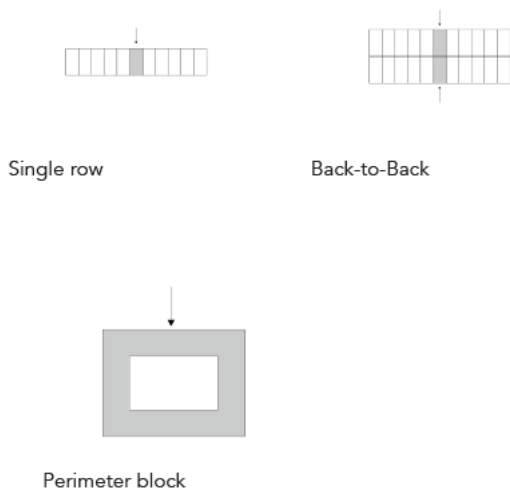
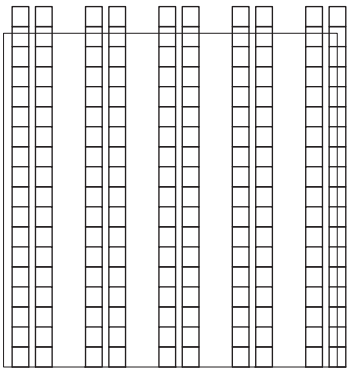


Figure 55. Main dwelling typolo-

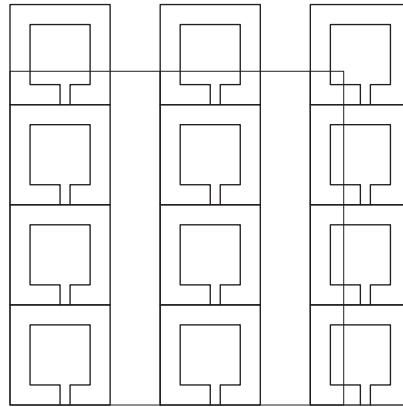
The dwelling typologies are focussed on different target groups. The courtyard typologies are mainly focussed on families and the single row-houses are mainly focussed on single residents. The larger perimeter blocks are consisting of a combination of both. The urban masterplan provides a catalog of different types and can be implemented as required for the specific chosen site.

Inspiration projects that lead to these design decisions where for example het Sint Anna Hofje in Leiden, Bo01 in Malmö and Didden Village in Rotterdam by MVRDV. The diagram dwellings per hectare shows how the different typologies lead to different densities. For example the choice for the single rowhouses will lead in the end to a higher FSI compare to the courtyard typologies.



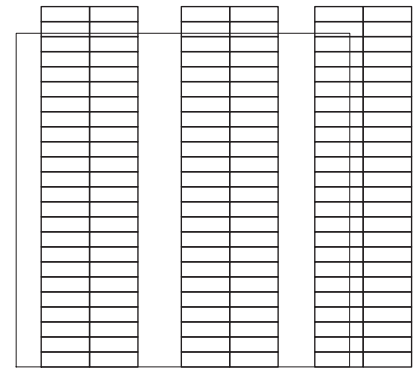
STUDIOS
 ground surface 30 m²
 dwelling surface 30 m²

dwellings/hectare
 3 floors 459
 4 floors 612



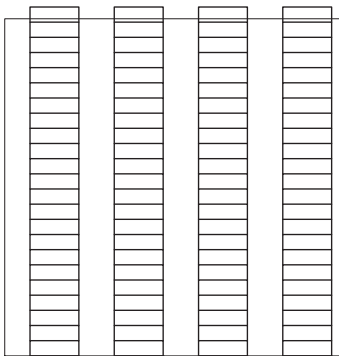
COURTYARDS
 ground surface 30-40 m²
 dwelling surface 30-120 m²
 dwellings per courtyard 30-42

dwellings/hectare 280



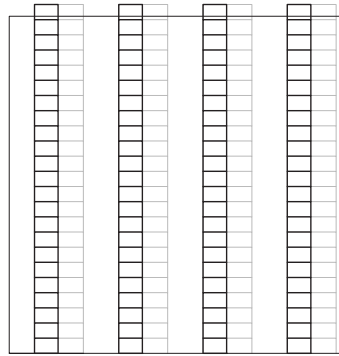
ROW HOUSES back to back
 ground surface 65 m²
 dwelling surface 140 m²

dwellings/hectare 110



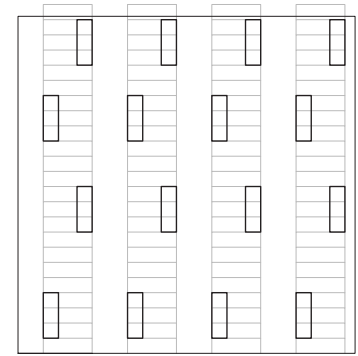
ROW HOUSES
 ground surface 65 m²
 dwelling surface 195 m²

dwellings/hectare 88



ROOFSCAPE social housing
 ground surface 35 m²
 dwelling surface 35 m²

dwellings/hectare 88



ROOFSCAPE luxury dwellings
 ground surface 70 m²
 dwelling surface 70 m²

dwellings/hectare 16

Figure 56. Dwelling typolo-



Figure 57. Urban Masterplan



Figure 58. Urban Masterplan

03. Research
Seminar & Design
Tutorial

Quick-Start and Massing



→ Dwelling Typologies
 Street as extension of garden
 → No back facade approaches



→ Organisation of spaces
 Circulation approach
 → Open groundfloor

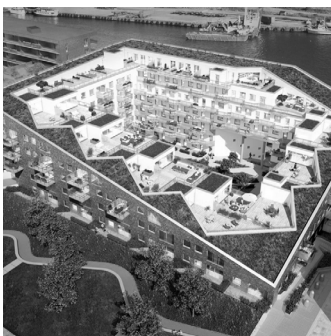


→ Elevated Street-> street in the air
 Stacked townhouses
 → Use of 1 material to create 1 typology

36



→ Streets
 Intimate Patio
 Communal spaces



→ Compact Dwelling Units
 Gallery space
 Terraced outdoor spaces

Points of Investigation

1. Diversity of collective outdoor spaces and variations of transitions
2. Approaches towards shared amenities
3. Dwelling stacking: from compact units to townhouse typology

Summary:

Create a whole scope of unit sizes to have a catalog to choose from

Figure 59. First Case Study Examples

Typology

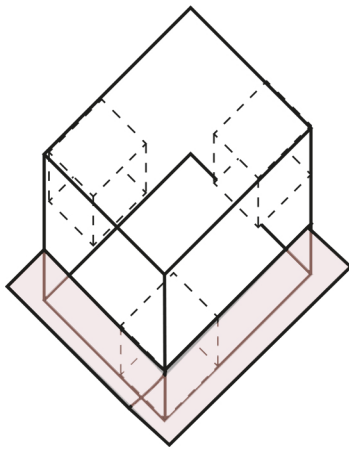


Figure 60. Massing Studies

The street in the air is the focus point of the typology transfer. In the case studies of Babel and Justus van Effen it provides a transition from public to private spaces. The street combines public and communal outdoor spaces and connects several communal spaces inside the building. Different clusters of dwelling types can create a community, which can again be combined as sub-clusters. In this way a network of different clusters provides an overview within a certain amount of dwellings. On page 35 an overview of the different steps during the typology transfer is explained. The first step was the direct positioning of the case-study shapes on the particular site. In my case I choose first the top of the harbour peninsula, but in a later stadium replaced my building site (which where both similar) towards the center of the masterplan. This because the location with a higher mobility level fits better to my building concept of designing a community building.

The second step contained the density calculation of every case study. Both the justus van effenblok and the Sorenga block contained this way around 150 dwellings, which concluded as proper sizes for the plot. Babel and the Narkomfin building contained both 25 and 54 units, which showed to be to less for the size of the plot. Therefore I continued to choose the shape of the sorenga block, combined with the adapted building shape of the Justus van Effen Complex. The last step I took was the combining of typologies. Therefore I choose my 4th case-study: the Zollhaus in Zurich which building shape suited the open building courtyard block. This way a typology with two blocks: one with a bigger courtyard and one with a smaller courtyard are placed next to eachother (see figure ..).

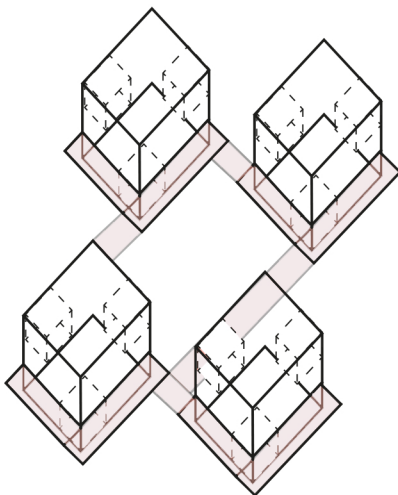
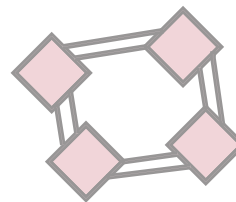
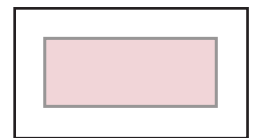


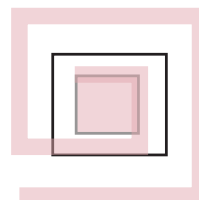
Figure 61. Massing Studies



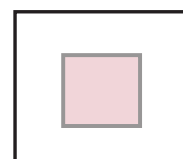
1. Justus van effen: dimensions street in the air: (2,3- 3,0 m)



2. Sorenga: dimensions courtyard: (37,5 x 21,6 m)



3. Babel: dimensions street in the air: (2,2 m)



4. Zollhaus: dimensions courtyard (19 x 17,9 m)

Figure 62. Massing Studies

1. Case Study transfer

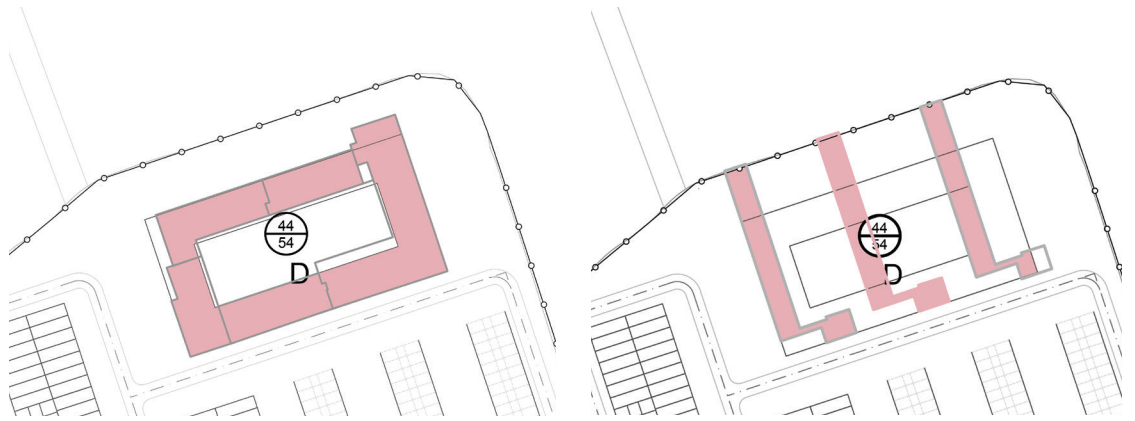


Figure 63. Massing Studies

2. Density Calculation

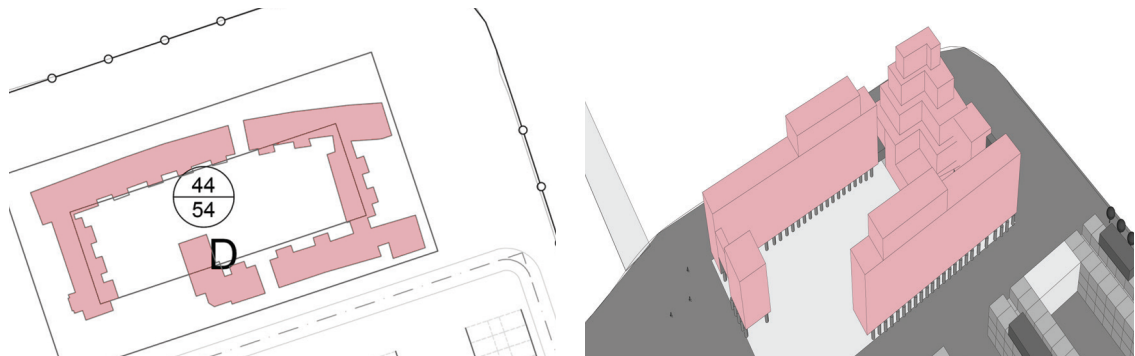


Figure 64. Massing Studies

3. Choosing direction

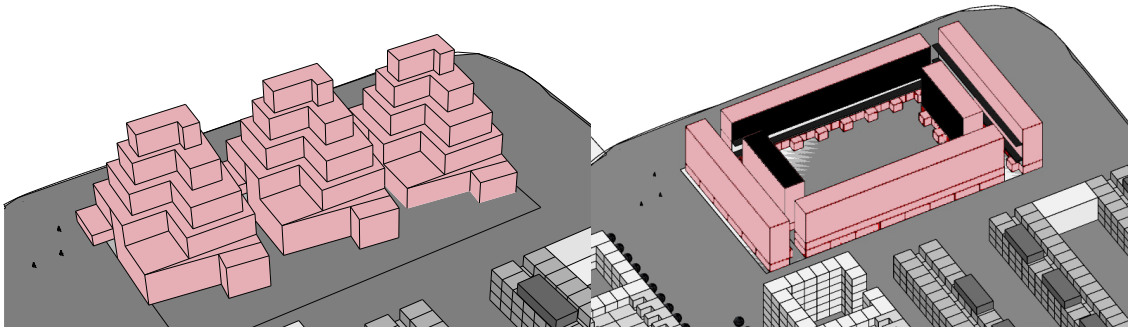


Figure 65. Massing Studies

4. Combining Typologies

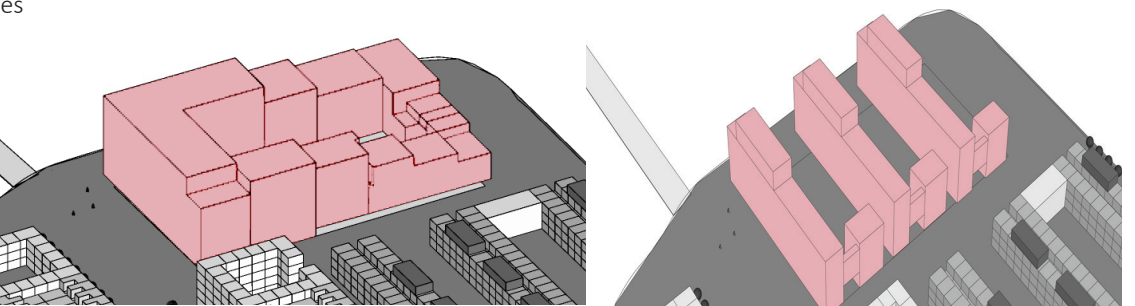


Figure 66. Massing Studies



Figure 67. Quick Start Typology Transfer



Figure 68. Quick Start Typology Transfer

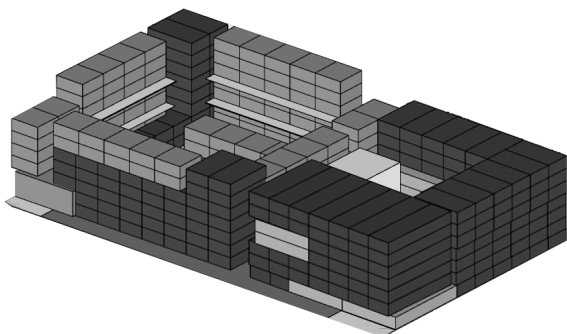


Figure 69. Quick Start Typology Transfer

Conclusion Typology transfer process

Focus points for the quick-start: implement concept of the „street in the air“, retrieved from Justus van Effenblok and Babel in Rotterdam. The main question hereby can be formulated as follows:

What defines a street in the air?

- It has to function as circulation space
- It should offer people space to personalize their outdoor space
- children should have enough safe space to play on the street in the air
- The street in the air should be visible from inside in order to gain safety for the playing children.

Sub-questions hereby can be formulated as follow:

- Should the street or pavement be continuous?
- Where does it go outside and inside ? -> the creation of thresholds/ borders & boundaries

First I calculated density options for the large building block by implementing different case studies. It seemed that the large open courtyard building and the closed building block enhanced the most options to keep up with the density expectations of around 150 dwelling units over a total dwelling surface of 11250 m² (average dwelling size 75 m²).

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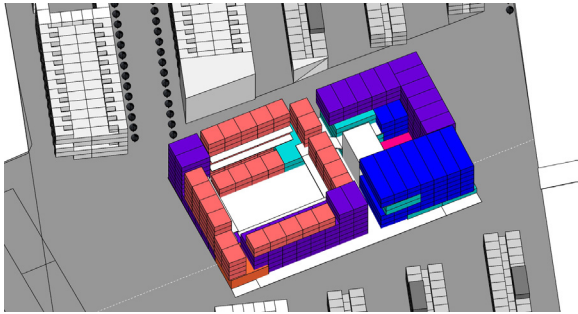
The next step I took is examining the case-studies by finding shared research aspects.

- > 1. Stacking of dwelling units
- > 2. Street in the air -> circulation space
- > 3. Communal/ shared facilities

Hereby the main topic is to examine the border between private and public spaces, outside and in the building itself. Therefore two main principles will be compared which each having their own specific qualities.

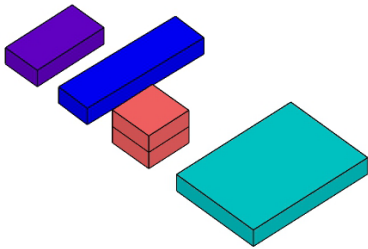
1. Closed Courtyard block with large public space
2. Closed Building block with enclosed intimate courtyard

Together these two types of courtyards are placed opposite of eachother, forming a buffer zone in between. This uplifted semi-public space, as used in the case-study Zollhaus functions as a soft border between the public and private realm. Therefore the ordering of the sequence of public- private space transitions gradually and provides an alley or pathway



- dwelling type 1:
Maisonette: 100 m²
- dwelling type 2:
Studio young couples
128 m² (adaptable)
- dwelling type 3
Community unit large family (5 rooms)
200 m²
- dwelling type 4
Compact family apartment 75 m²

Figure 70. Quick Start Typology Transfer



40

Total amount of dwellings: 186
Total built surface: 23413 m²

Figure 71. Quick Start Dwelling types

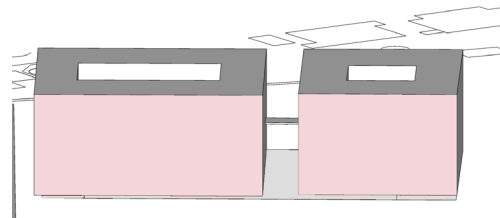


Figure 72. Quick Start Typology Transfer

that attracts the curiosity of the passer-by. These two options will be embedded on the site as a result from the prototyping method where the different dwelling units are stacked into a combined prototype. With this prototype I will continue with examining circulation space and the connection of communal - private spaces and highlighting them with textures- symbols and transparency levels to show the routing through the building. In figure.. is shown how the different dwelling types are roughly placed in the building design. These dwelling types are picked in order to form a vision of dimensions and determine the building outlines. Figure.. and .. show the basic outline of the building and how the alley functions in between.

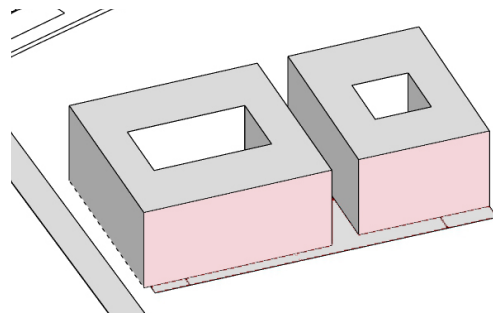


Figure 73. Quick Start Typology Transfer

Research Seminar: 5 Open Forms

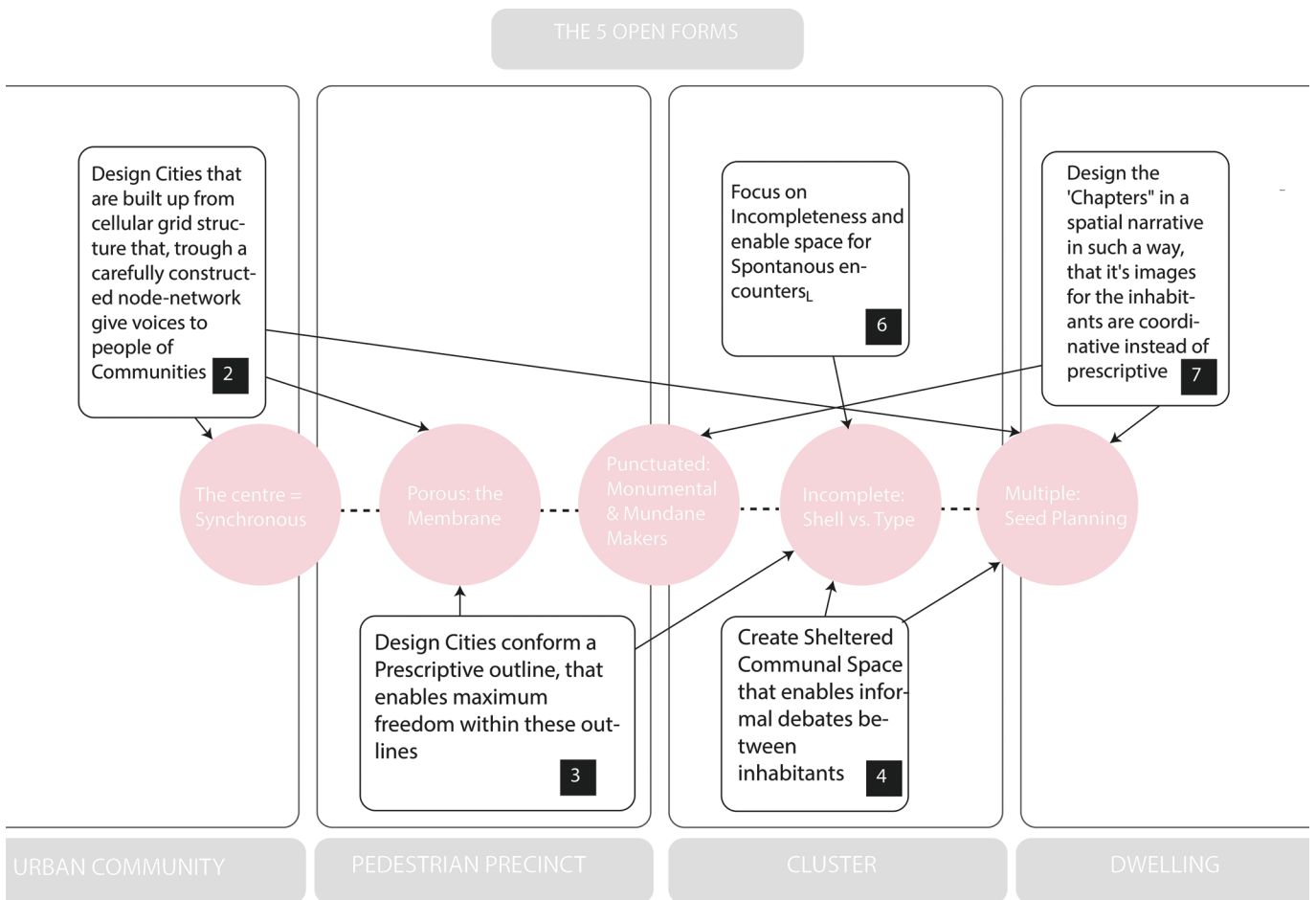


Figure 74. 5 Open Forms Richard Sennett

After the prototype transfer resulted in my building form, I tried to connect the philosophy of Sennett's five open forms with my own design. The five open forms are shown in the diagram above as the following principles: the core is synchronous, porosity: membrane, punctual, incompleteness and seed-planning.

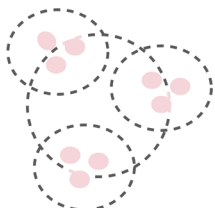
These forms can be linked to the 4 scales that Christopher Alexander and the architects of the Habitat Bill of Rights used in order to form patterns for their projects. These four scales can be determined as urban community, pedestrian precinct, cluster and dwelling.

Therefore I started with an overview of how the open forms can be implemented as patterns and form a basis for design decisions. Seed-planning in combination with porous edges make the building more open and resilient. The city, in my opinion, should be approached bottom-up, with room for flexibility and change. Seed-planning is described in the book of Sennett as designing with an unresolved narrative:

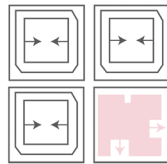
"My alternative to master planning is what I call 'Seed planning': literally taking an object or program and putting it in different places and letting it grow on its own. The idea is that the objects you seed, should be distinctive, non-exchangeable, different in form or function" (Sennett, 2018)

Design Cities that are built up from cellular grid structure that, through a carefully constructed node-network give voices to people of Communities

Design Cities conform a Prescriptive outline, that enables maximum freedom within these outlines



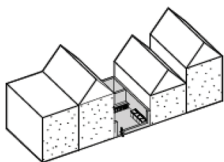
Create Sub-Clusters



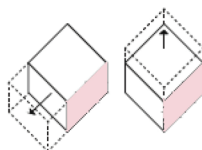
Create A-type forms

Create Sheltered Communal Space that enables informal debates between inhabitants

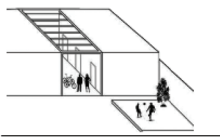
Focus on Incompleteness and enable space for Spontaneous encounters



Create Shared Facilities



Create Flexible Dwelling and Cluster Types



Create Bufferzones

Figure 75. 5 Open Forms Patterns

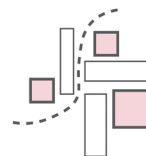
This means in other words designing with spontaneous urban planning: A plea for small-scale interventions and leaving sufficient room within cities for change, local ingenuity and entrepreneurship. An example of this can be found in Rotterdam at the Hofbogen. In this project, the old rail viaduct becomes hereby a place (retail).



Figure 70 . Hofbogen Rotterdam

Sennett (2018) asks for a more people-oriented urbanism ('human scale') with more respect for historic uses, the identity of a place and for social needs. Striving for a better balance between change and stability, between routine and discovery, between orderliness and chaos, between rupture and accretion, and between spaces and people. Creating with collaboration between different parties - a built environment with a collaging of different buildings types, people and activities can appear.

Sennett describes multiple ways of approaching the open city forms, but I want to mention three fascinating aspects that are in my opinion strongly connected with the sense of seed-planning. Two other principles: the use of porous edges and borders and boundaries (creating ambiguous edges between parts of the city and contriving incomplete forms in buildings) are inevitably connected with each other. Porous edges and different borders and boundaries in the building shape can be gained through the use of different path- and walkways. In my design I tried to achieve this by implementing different walkways through the building. This results in the main alley that connects the two residential blocks and provides a different experience for both residents and pedestrians.



Create a Maze-Wise urban structure

Figure 76. Maze typology 5 open forms

For example, by designing the overall system (including the plinth) in an open and porous way, with walkways and different functions that can be replaced, a very diversified living environment can be realized. In my case, I am designing for families that want to live in a highly dense urban environment, it will be very interesting to use this sense of a gated community in order to create a safe and pleasant community for them and at the same time leave the opportunity to engage with public life on the ground floor. Image 2 shows how the plinth is being examined in my plan considering the different mobility streams surrounding the building.

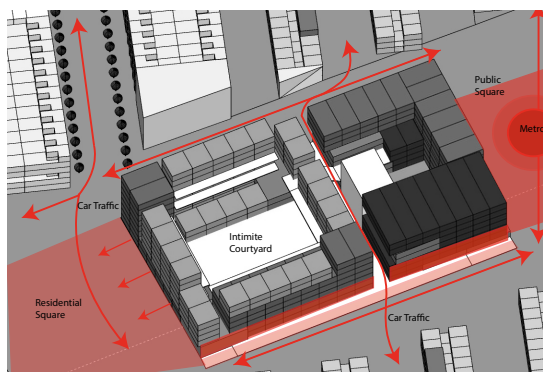


Figure 77. Mobility and public spaces design

block forms an essential transition of this circulation space between pedestrians, cyclists and car traffic. While on the left side of the block a more sheltered, public space for the inhabitants can be created and given to the 'community'.

I want to provide an environment where people, strangers and inhabitant can meet, engage and have 'spontaneous' encounters. In Building and Dwelling this comes forward in the examples of Jane Jacobs, who describes how form will emerge from how people dwell (Sennett, 2018 p. 81). Hereby she puts not a lot of emphasis on the built environment but rather on the belief that direct democracy can be built up in a cellular fashion that suits the best in the courtyard type. In this way I want to provide different clusters where families can create their own "habitat" but still engage with the public surroundings. For me a high-dense urban environment should provide different layers of publicness and a gradational sequence of public to private space.

The idea is to provide a flexible framework of dwellings that enable expansion for future changes in the family structure or in different functions (offices, workshop place etc). Two aspects are essential for my design and especially the placement in my urban scheme. The first one is mobility. My building is placed in the heart of the urban plan where different public spaces are gradually determining the building's surroundings. The Metro station on the waterfront side creates a mainly public atmosphere with a constant stream of people and a public atmosphere. The side streets provide a transition between the residential zone of stacked rowhouses and the more public mixed-use building. The plinth of the large icon

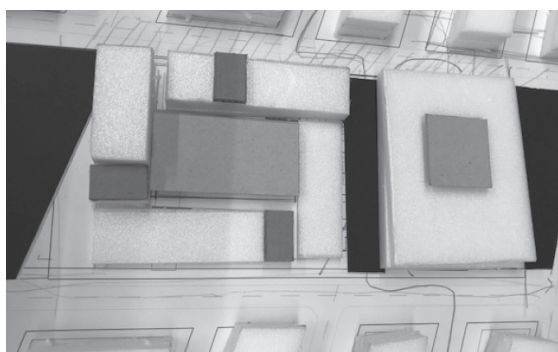


Figure 78. Building shape design

The second aspect that I want to address is the sense of ownership. This also has to do with the identity of the dwelling and the built environment. Richard Sennett describes this as: *“the more defined a place is, the more people can feel “This is my neighbourhood”, or “I belong here.* Therefore, it is important to give a sense of identity in terms of ownership (shared ownership for a plot or unit) or responsibility for the garden in the courtyard for example.

Throughout the Book of Richard Sennett, the Open City is the main topic of the story that he sets out and describes with different perspectives and points of views. From Sennett’s perspective: *“An open ville will avoid committing the sins of repetition and static form; it will create the material conditions in which people might thicken and deepen their experience of collective life”* (Sennett, 2018 p.421) The Open City Form thus forms the backbone of creating a connected, vibrant city that is resistant against future changes, or in other words: contains a resilient structure.

On urban community scale the design creates porosity in terms of diversity in streets, public spaces and typology forms in dwelling types. From the research that we have done with our case study on Shushtar-Nou, the most important aspect is also for me related with another quote from Richard Sennett’s book: *“The ethical connection between urbanist and urbanite lies in practicing a certain kind of modesty: “living one among many, engaged by a world which does not mirror oneself.”* This means that the overall urban structure contains rules or forms a strong fundament where within spontaneous events and structures can occur but is not super-imposed. Image 6 shows how public spaces on different levels can be connected.

On pedestrian precinct level I want to provide different transitions that engage the inhabitants and pedestrians with their environment by implementing space for self-expression of the dwelling space (from Habitat Bill of Rights). An interesting link I want to make hereby is the research that we have done on the Shushtar-Nou. Kamran Diba used different types of gateways and transitions in pavement to move from different public- private spaces without the use of a direct boundary. This way these non-imposed transitions provide curiosity and admiration and really invite inhabitants to move through these spaces. Figure 7 shows how different gateways and little details can be used in order to provide access from the public street towards the private dwelling unit.

On Cluster Scale Level the urban model provides specific grid rules used for creating ‘Pockets of Order’ in the design scheme. (General Grid structure vs. ‘Exceptions’ (large Icon buildings)) So trying to show the design decisions from urban scale level to cluster scale and how I perceive the cluster -> I

am now focusing on 2 different types -> the ‘Open courtyard block’ & the Closed Building Block with patio / small courtyard. Hereby the fragmenting of the public /private spaces is essential. Also the fragmenting of the different target groups plays a large role. The placement of the people is important in defining the structure. The access system and routing forms the connector and ‘red line’ throughout the sequence of space.

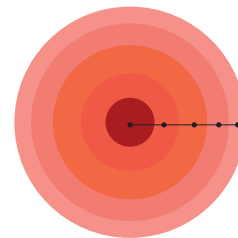


Figure 79. Sequence of Space

On Dwelling Scale level, I am providing family dwellings that are spacious enough for different types of families and allow for future changes in space and function. Shared, fixed cores for example can form the grid structure from where flexibility in between can be gained. Seed planning on dwelling scale level can for example be implemented in the type of construction and way of stacking the dwellings in order to allow flexibility over time.

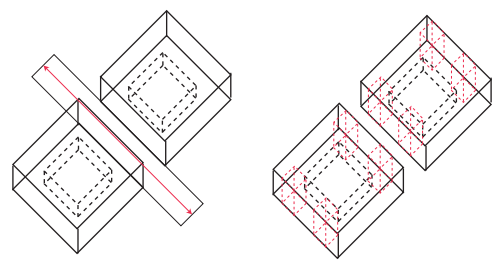


Figure 80. Different pathways and walkways

Tutorial: VR

The inspiration for this VR model is taken from the residential perspective of the child. Therefore, I placed the child as the center of attention and the whole inner courtyard playfield is built around this. In order to make the environment suitable for the child (with an average height of 1,00 meters) I tried to think about making especially the transitional spaces practical, but at the same time interesting for them.

During the process of the model making I run into several small problems, like what was the best and efficient way of placing the stairs in order to make it understandable which direction the child has to go. Therefore, I made different efforts in order to place the stairs at the right place. This process of trial and error testing in the VR environments and making adaptations in the Sketchup Model worked very well for me. As soon as I put the Goggles on, the perception of space became completely different sometimes from how I envisioned it.



Figure 81. VR sequence perspective



Figure 82. VR sequence perspective

Also the use of the asset library helped a lot. The space becomes interesting as soon as you place objects in it and it was interesting to see how objects and people work and react differently on the surrounding environment. I tried to implement different kinds of library assets and this way create a personalized “theme” for the model. For me it helped a lot for the narrative to choose a theme, a topic and then build the whole environment around this. The inspiration for the rooftop playfield I took from the project of “Park ‘n Play Rooftop Playground in Lünders, Copenhagen” by JAJA Architects in cooperation with UNO and Berliner. The idea was to create different types of playgrounds on different levels in the building, which resulted in different experiences for the child. The challenge was however, to make the route comfortable and safe, but at the same time interesting and expressive. The VR helped me a lot in trying to find the balance between actual designing of the space and playing with detail. Because the danger for me was to fall into the world of “detail” which can end up in an endless process. But especially working with Enscape can contribute to the real experience by focusing on the aspects that you want to highlight. I tried to do this by lighting out the route in detail, but further zoomed out limit the amount of detail. Sometimes the objects I used were a bit childish, but I tried to maximize the storytelling by implementing these kinds of objects (pirates) and texts.

45



Figure 83. VR sequence perspective

For the design I could definitely played more with designing the rooftop (the fences) and search for more ways of making “see-troughs” to make it even more exciting for the child. This is something I will examine further upon in my design process since I am designing for urban families which need suitable and playful outdoor spaces for their children. As a conclusion I think I will definitely use the VR for testing my model in real life situations. It is an essential aspect of designing and it surprised me how effective it actually is. The most essential aspect I think of the VR is the amount of con-

As a designer you have in order to “guide” people through the design. I led different people from the studio through my design with the Goggles on and for example Jelle took a total different route in the first place than I actually intended to design. Therefore, experimenting with the VR really helps in finding a logic order in the routing, as well as the design itself.

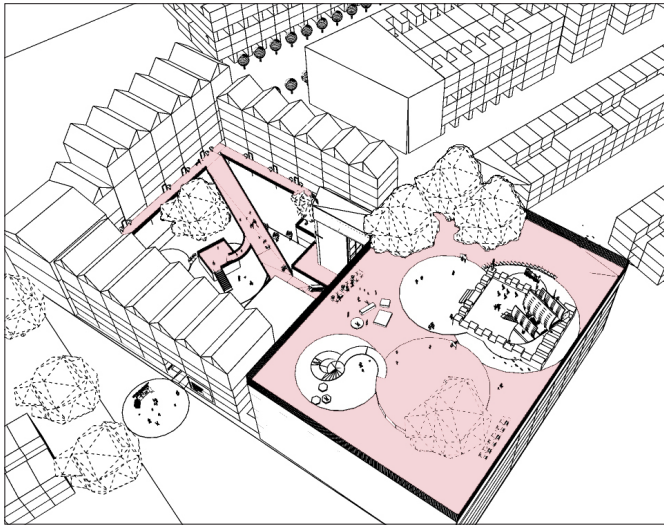


Figure 84. Quick Start Typology Transfer

The inner streetscape gives the project an extra layer that will connect the different types of public-private spaces.

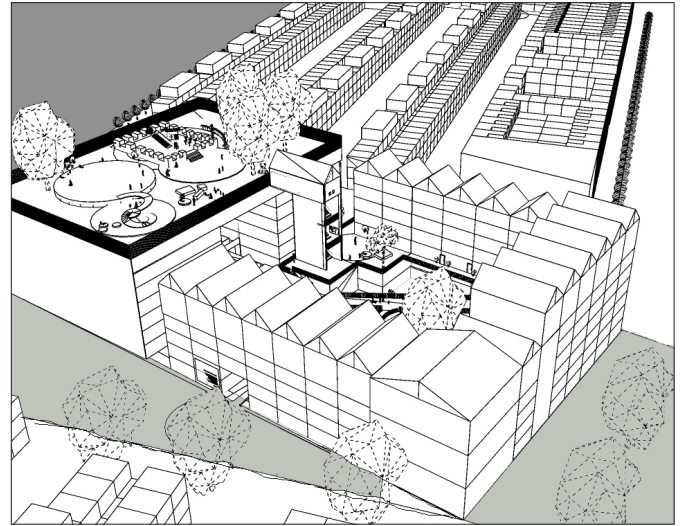


Figure 85. Quick Start Typology Transfer

Around the building, different traffic zones are forming the surrounding streets. Therefore several public zones are belonging to each side of the building

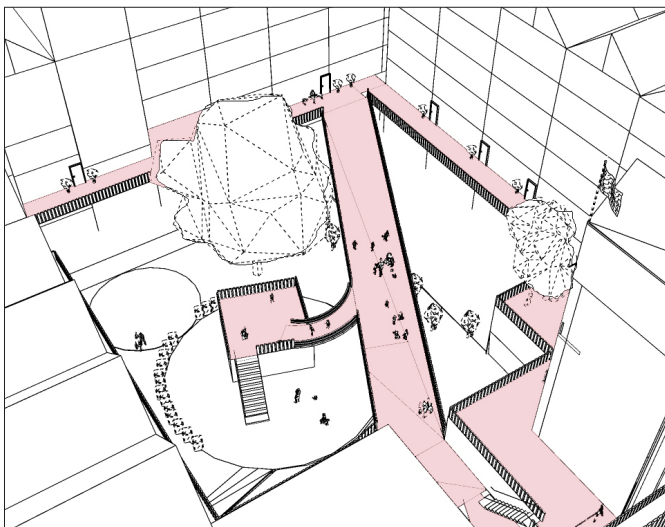


Figure 86. Quick Start Typology Transfer

Different transitions with roofscapes connect semi-public spaces and are forming a parcours for children. The broadest street is 4,2 metres width and the gallery street has a width of 3,0 metres.

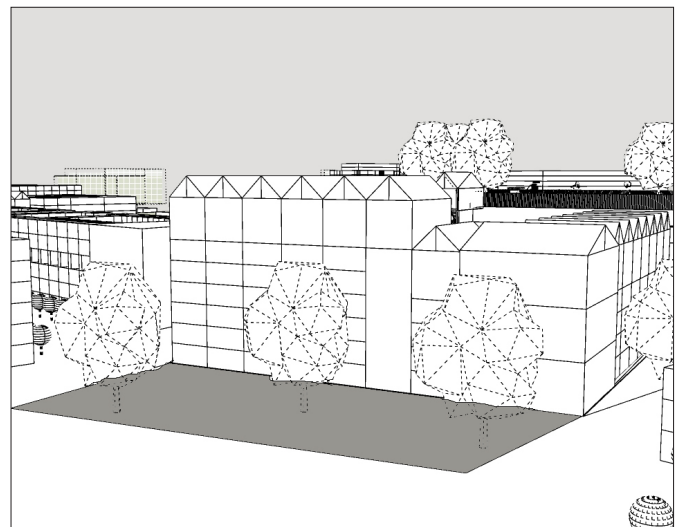


Figure 87. Quick Start Typology Transfer

On the South-West side of the building for example, a residential square is forming a place for the neighborhood community and has a more private character.

03. Plananalysis

1. Babel, Rotterdam

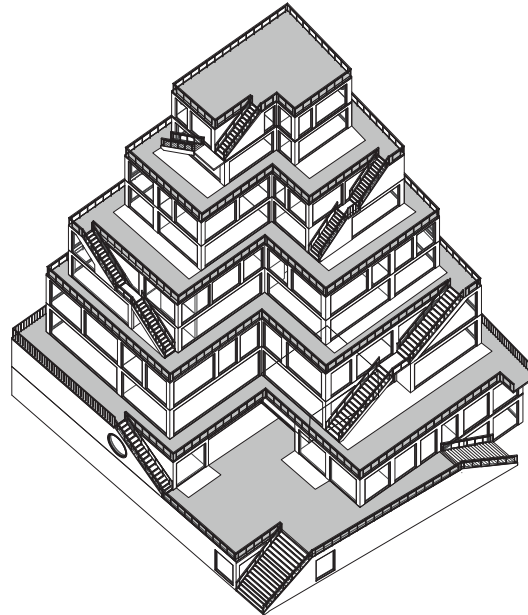


Figure 88. Babel 3D diagrams: public outdoor spaces

48

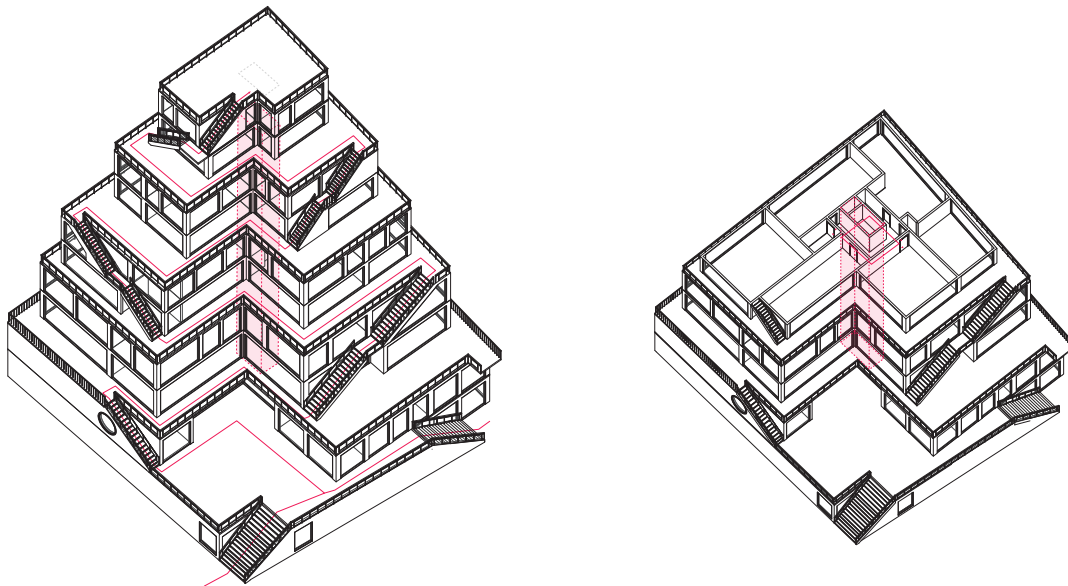


Figure 89. Babel 3D diagrams

Collective Spaces:

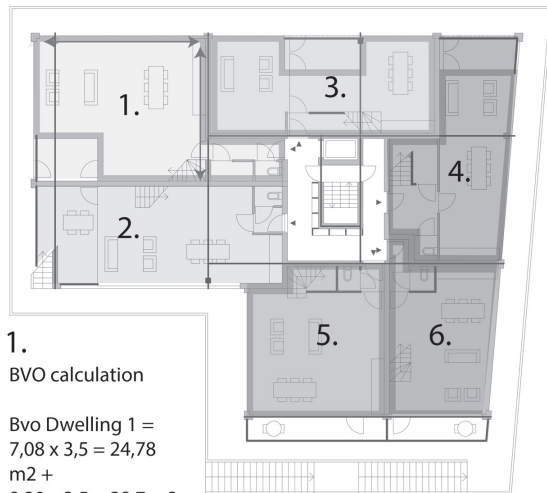
Babel is a project that is currently being build in Rotterdam, focused on the design of pleasant family homes in a dense city center. Each dwelling is a maisonette, with a small outdoor space, connected to the collective street that goes around the whole building and connects all the dwellings.

Shared pathways:

The communal spaces are the streets that surround the dwellings. On the first floor and the roof terrace there is a larger communal outdoor space with also urban farming. The large communal space on the first floor is also connected to an indoor communal room that can be used for meetings, cooking together or can be reserved if you would like to host an event or party.

Buffer Zones:

A communal street is created around the building. The living

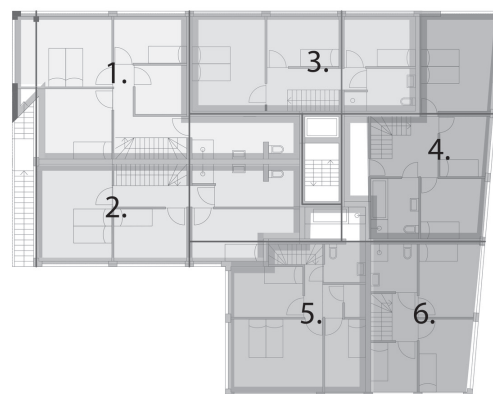


1.
BVO calculation

Bvo Dwelling 1 =
7,08 x 3,5 = 24,78
m² +
8,20 x 3,5 = 28,7 m²

total = 53,48 x 2 =
106,96 m²

Verdieping 4 1:250

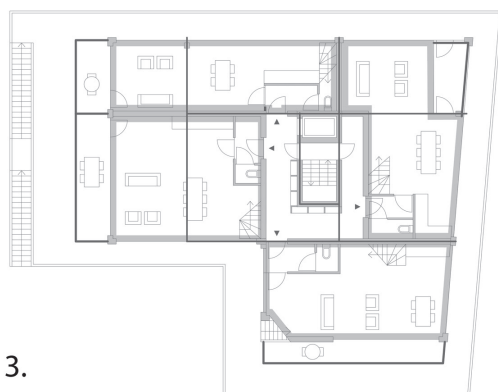


2.
BVO calculation

Bvo Dwelling 2 =
17,675 + 38,22 =
55,895

total = 55,9 x 2 =
111,8 m²

Verdieping 5 1:250

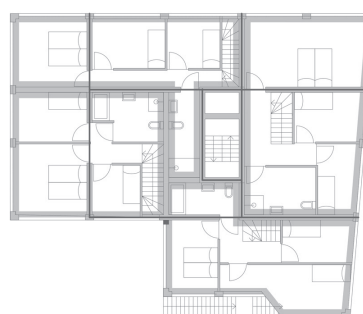


3.
BVO calculation

Bvo Dwelling 3 =
10,55 x 3,5 = 36,75
m² +
4,8 x 3,5 = 16,8 m²

total = 53,55 x 2 =
107,1 m²

Verdieping 6 1:250



4.
BVO calculation

Bvo Dwelling 4 =
4,81 x 3,5 = 16,835
m² +
10,52 x 3,5 = 36,82
m²

total = 53,66 x 2 =
107,31 m²

Verdieping 7 1:250



5.
BVO calculation

Bvo Dwelling 5 =
7,2 x 3,5 = 25,2
m² +
6,41 x 3,5 = 22,43
m²

total = 47,63 x 2 =
95,27 m²

6.
BVO calculation

Bvo Dwelling 6 =
7,1 x 3,5 = 24,85
m² +
5,1 x 3,5 = 17,85
m²

total = 42,7 x 2 =
85,4 m²

Figure 90. BVO calculation different dwelling types Babel

rooms of the dwellings are connected to this collective street and because the dwelling are maisonettes, the bedrooms are on another floor providing more privacy. The main entrances are connected to the central staircase, which makes it less necessary for people to use the collective street to reach there home.

Dwelling calculations and outdoor spaces:

Babel consists of 24 unique family maisonettes that have an average formfactor of 0,81. This means that every dwelling closer to 1,0, the more efficient the material and use of spa-

ce. Outdoor spaces are hereby calculated as well in the BVO/GBO calculations. I found out that the use of loggia's is beneficial and contributes to the transitions from the public streets towards the private dwellings. Loggia's can be used as buffer zone between private family life and communal use of space.



Figure 91. 3D perspective outdoor spaces Babel

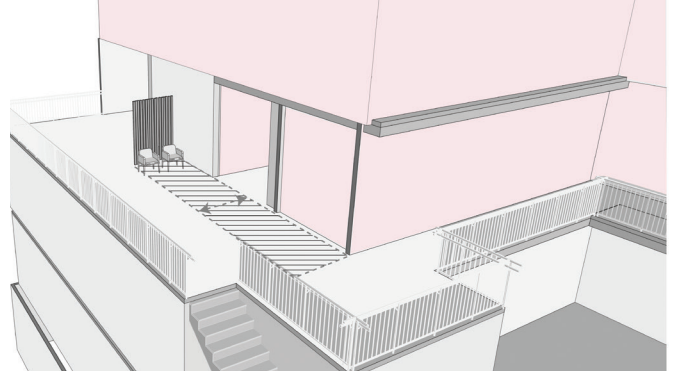
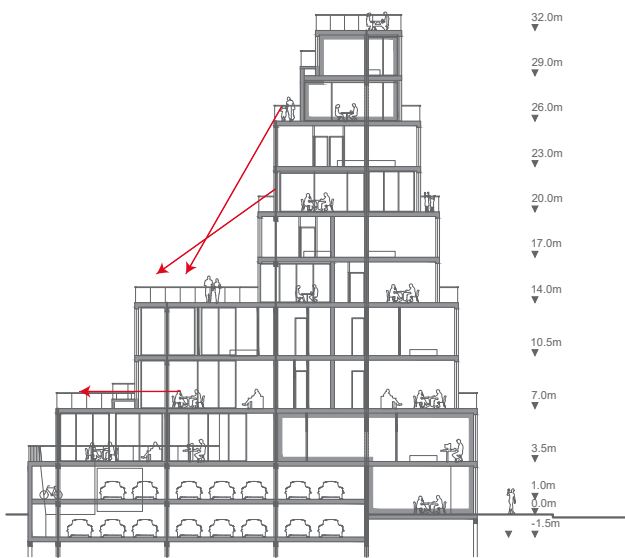
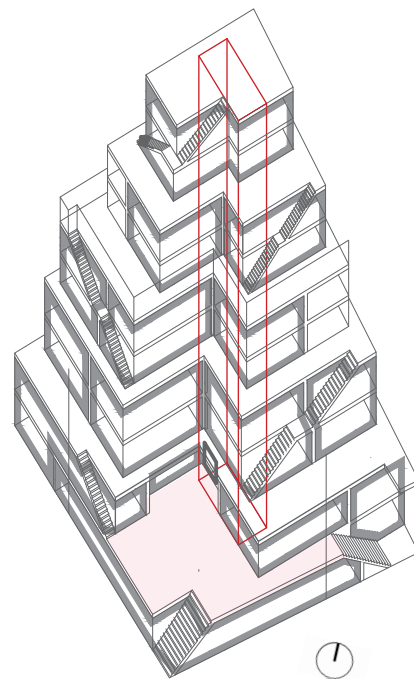


Figure 92. 3D perspective outdoor spaces Babel

50



Visual Lines from public balconies



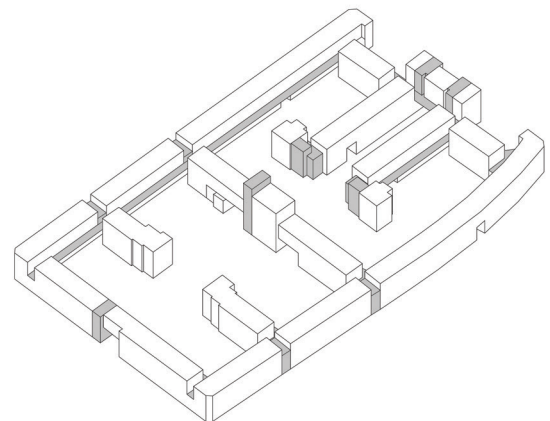
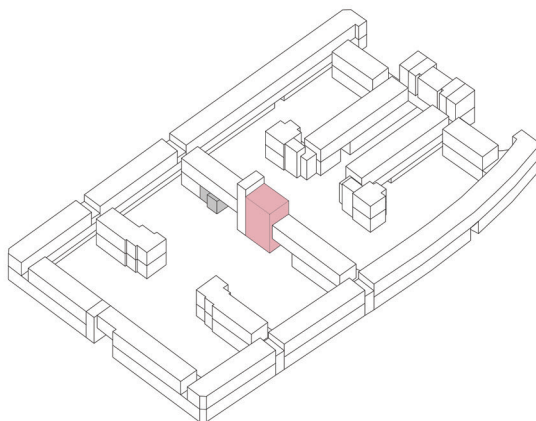
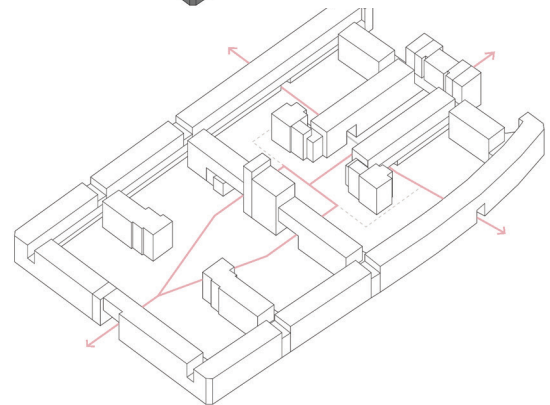
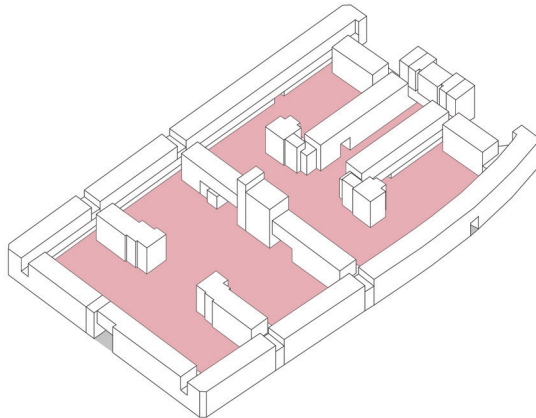
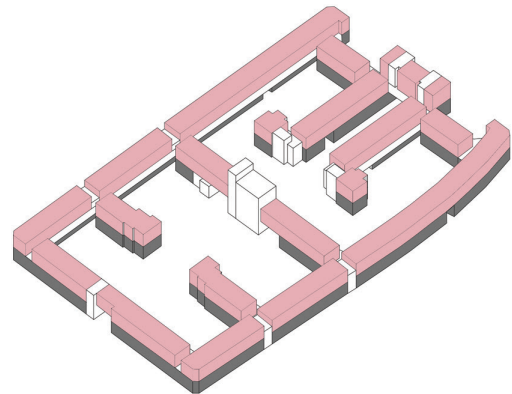
Semi- Collective platforms

Figure 93. 3D Perspective Babel with different public-private spaces

Conclusion:

In the design of Babel, the street around the building forms the most important aspect of the collective design. The street makes it possible for each dwelling to have a small private outdoor space along this path. The outdoor spaces are connected to the living room of the dwelling, enhancing more social interaction. Hence, the main entrances of the dwellings are not located on this central path but connected to the inner staircase. The question therefore remains how much the collective street will be used.

2. Justus van Effen, Rotterdam



51

The Justus van Effencomplex is located in the neighborhood Spangen, in Rotterdam. The project is originally built in 1922, but got two large renovations during the last years. The first renovation took place in 1982, which transformed the amount of dwellings from 273 apartments towards 164 maisonettes. The second renovation took place in 2010, whereas the amount of dwellings decreased to 154 maisonettes.

Figure 94. Different axonometric diagrams Justus van Effenblok collective spaces:

The collective spaces are situated within the building block in the form of grass gardens and pathways. Because of the enclosed shape of the large courtyard block there is a strong feeling of collectiveness as soon as you step through the „gate“ of the complex.

Shared pathways: The shared pathways are going through the inner courtyard of the complex and connect the different

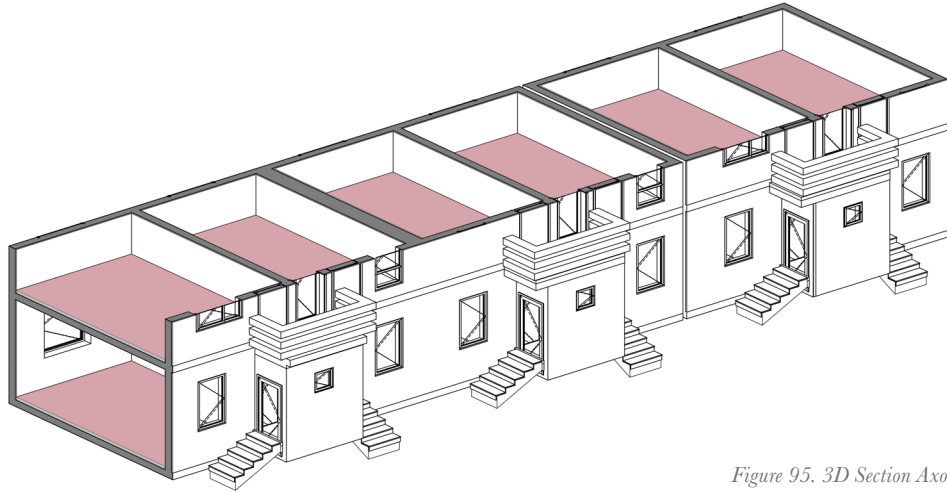


Figure 95. 3D Section Axonometry Justus van Effen

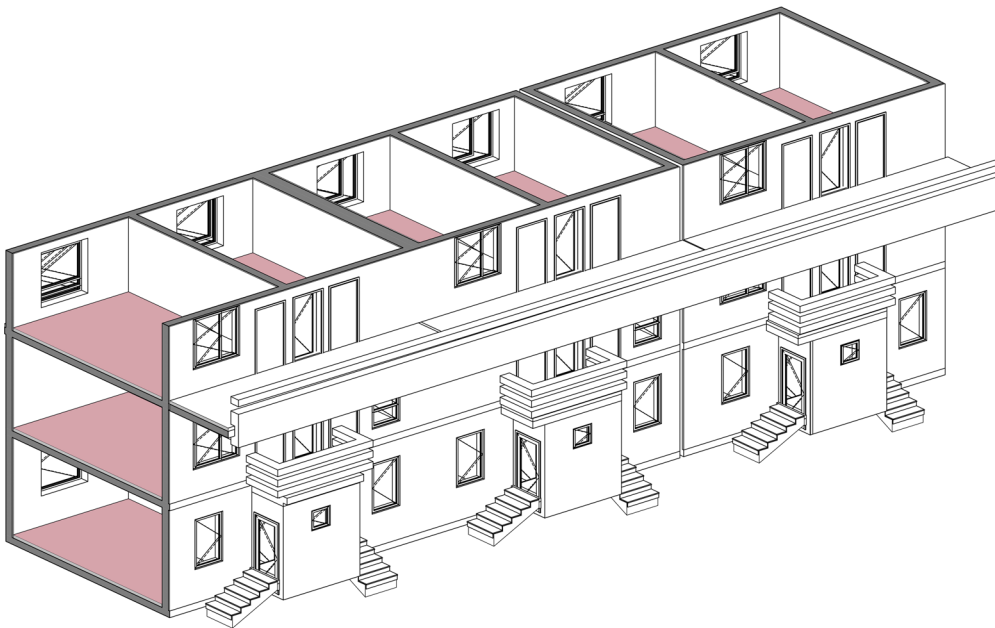


Figure 96. 3D Section Axonometry Justus van Effen

slabs on the groundfloor. The street in the air functions as a collective outdoor space where children can play and parents have control on what they are doing. The street allows people to place personal items in front of the front door in order to personalize the space, but the street is mostly not used as recreation place to sit and relax in comparison with the street in Babel. This can mainly be caused through the lack of setbacks in the facade which can give some shelter and privacy for the residents.

This 3D axonometry of the Justus van Effencomplex shows the dwelling stacking and ground floor entrances of the ground-bound dwellings. The dwellings on the ground floor are reachable through small stairs that slightly lift the main entrance. This way the stairs provides already a different experience in approaching the dwelling and divides the private stairs from the communal courtyard.

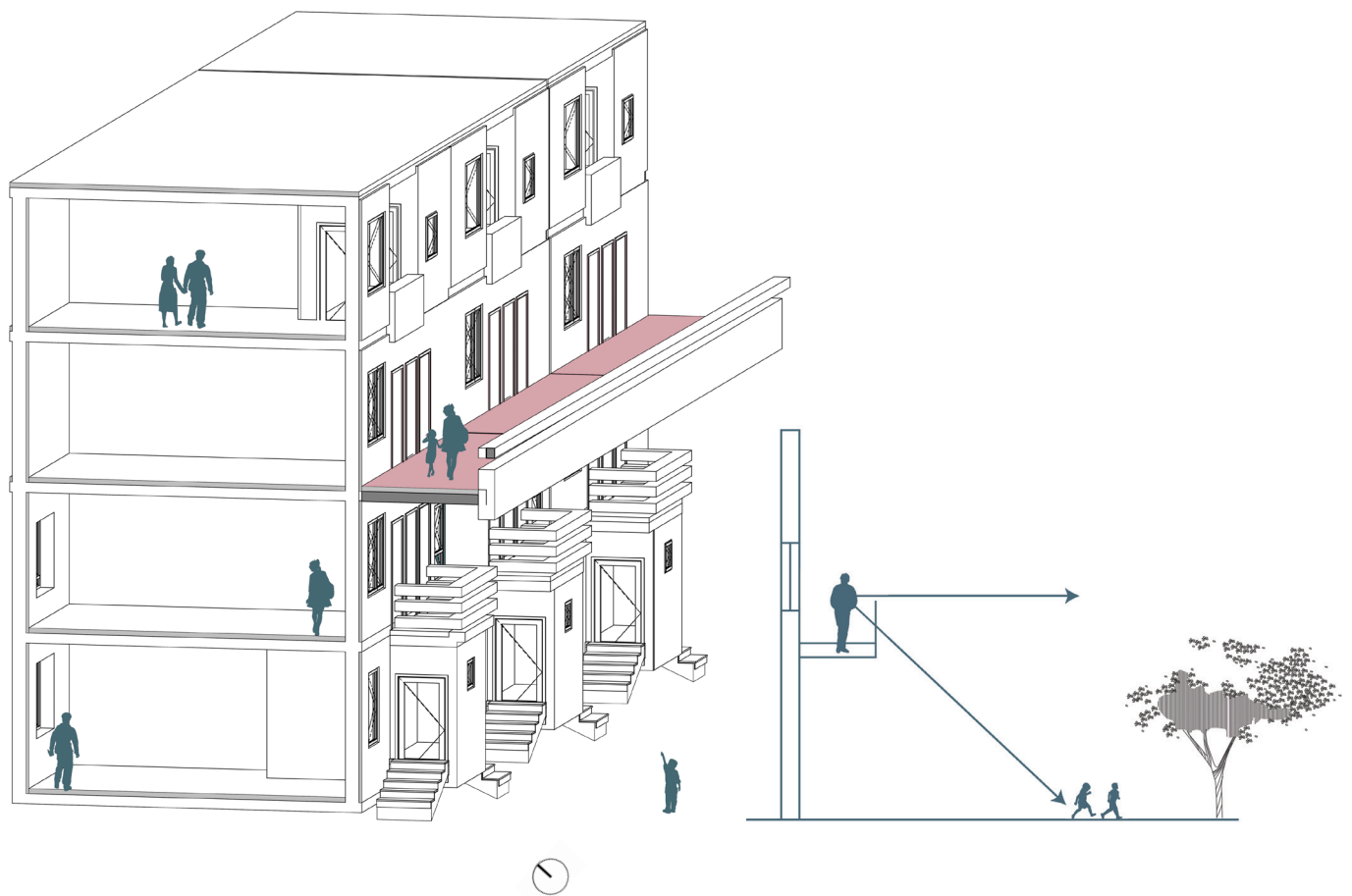


Figure 97. 3D Section and Visual lines

3d section of Justus van Effencomplex. By seeing the stacking system and the connections with the outdoor space, it becomes clear that the size of the collective street in the air is very important for the project in order to provide safe outdoor spaces for children to play. Sight-lines hereby play a large role. By maintaining visibility lines from inside and outside the building block, more control and supervision is possible for parents, which is again important for my target group: urban families.

Conclusion:

The justus van effencomplex provides suitable family maisonettes and proper outdoor space for children to play in a safe environment. However, the quality of personal outdoor spaces on the street in the air is not suitable enough in order to create a balance between collective and private outdoor spaces. There is a lack of enclosure on the upper deck that can be found on the ground floor level. Therefore my aim is to connect the ground floor and the street in the air better by providing setbacks and interesting pathways that soften the border between collective and private life.

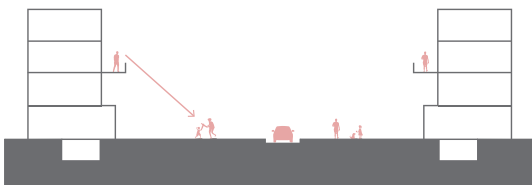
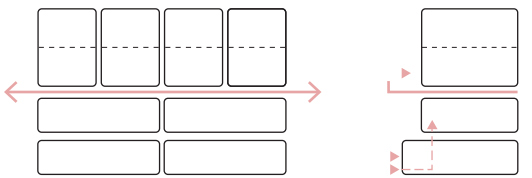


Figure 3: Section
Own illustration



BVO calculation of dwelling typologies:

Dwelling 1+ 3: $(51,393 + 18,42 = 70,35 \times 2 = 140,7 \text{ m}^2)$

Dwelling 2: $(11,37 \text{ m}^2 + 18,42 = 29,79 \times 2 = 59,58 \text{ m}^2)$

BVO entire building: 10780 m²



Figure 98. Floorplans 1:200 Justus van Effencomplex

3. Spreefeld, Berlin



Figure 99. Situation Spreefeld, Berlin

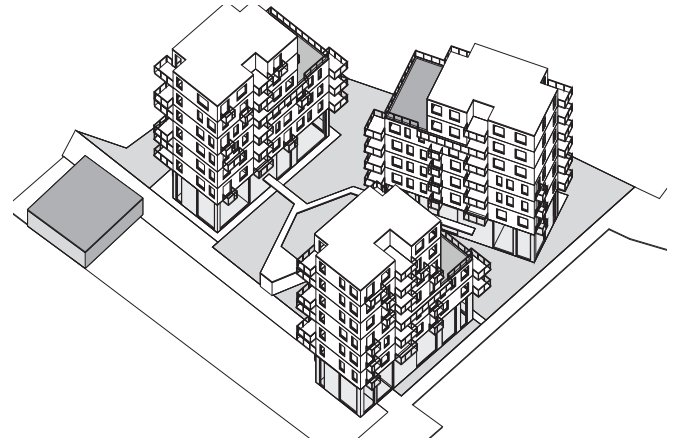
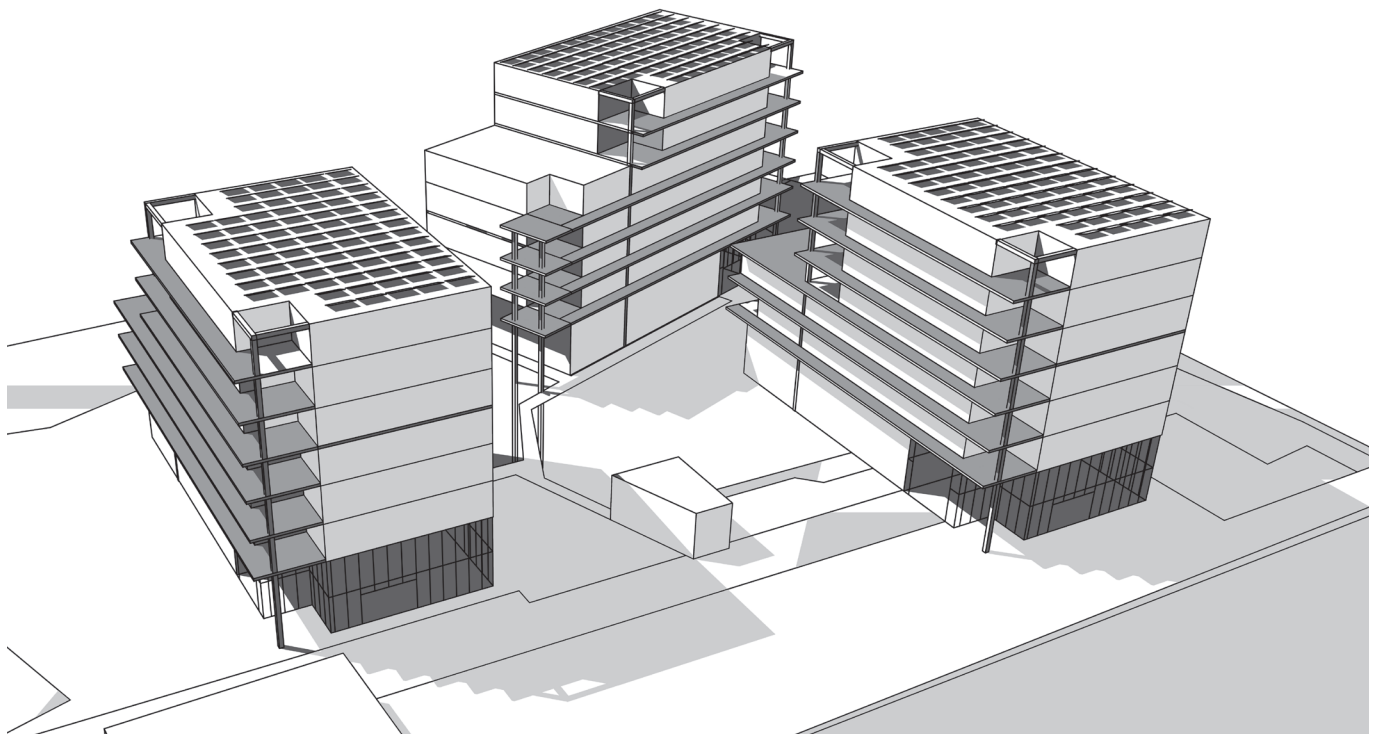


Figure 100. Spreefeld 3D perspective



years of development: 2011-2013
 location: Berlin, Germany
 client: Spreefeld Cooperative
 urban strategy design: Berlin City Council
 architects: Bar Architekten, Silvia Carpaneto, FAT Koehl Architekten
 plot size: ~0,6 Ha: 7600m²
 GFA: 7600m²
 FSI: ~1,26

surface of buildings
 surface of greenery
 surface of parking lots
 organisation:
 stakeholders
 group

Figure 101. Spreefeld 3D perspective
 ~1520m²

~4300 m²

private co-operative,
 of individuals

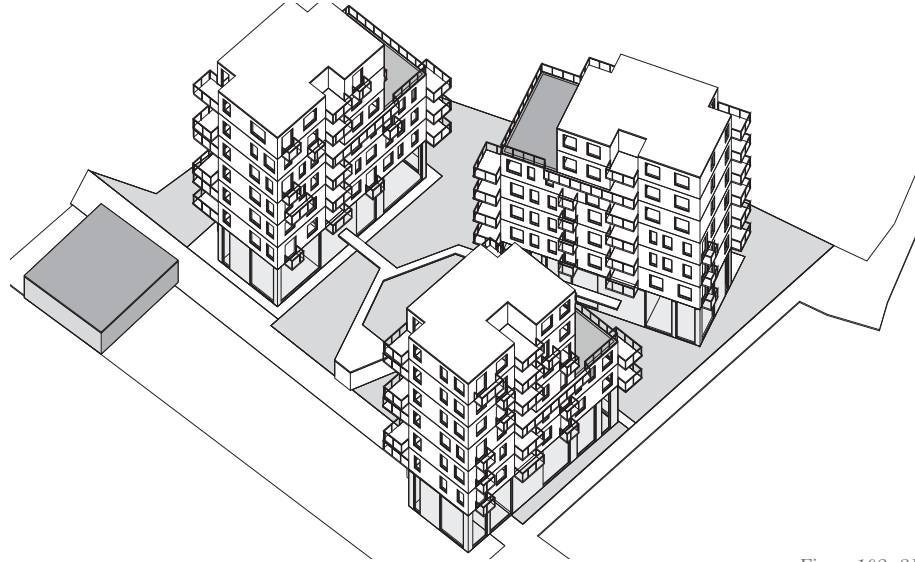


Figure 102. 3D Ground floor facilities

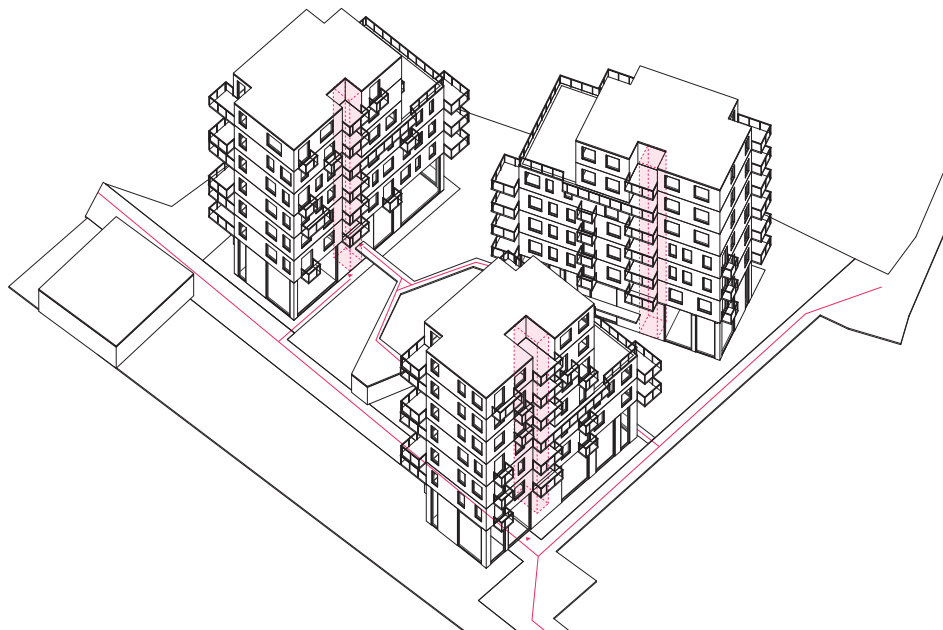


Figure 103 . Groundfloor 1:500

River Spreefeld is a project in the center of Berlin, consisting of three separate buildings which multiple dwelling types and therefore target groups. The facilities on the ground floor are designed for the residents, but also for the surrounding neighborhood.

Collective Spaces:

The collective areas of the project consist mainly of a collective garden in the center of the three buildings, roof gardens and collective facilities on the ground floor of all the three buildings

Along the water there is a collective boat house. Next to the boat house is a public beach.

Shared Pathways:

The buildings are focused on connecting the neighborhood to the project, therefore one of the routing goes through the building. For the tenants of the buildings, it is not necessary to walk past the collective garden to reach the central staircases, therefore not enhancing social interaction.

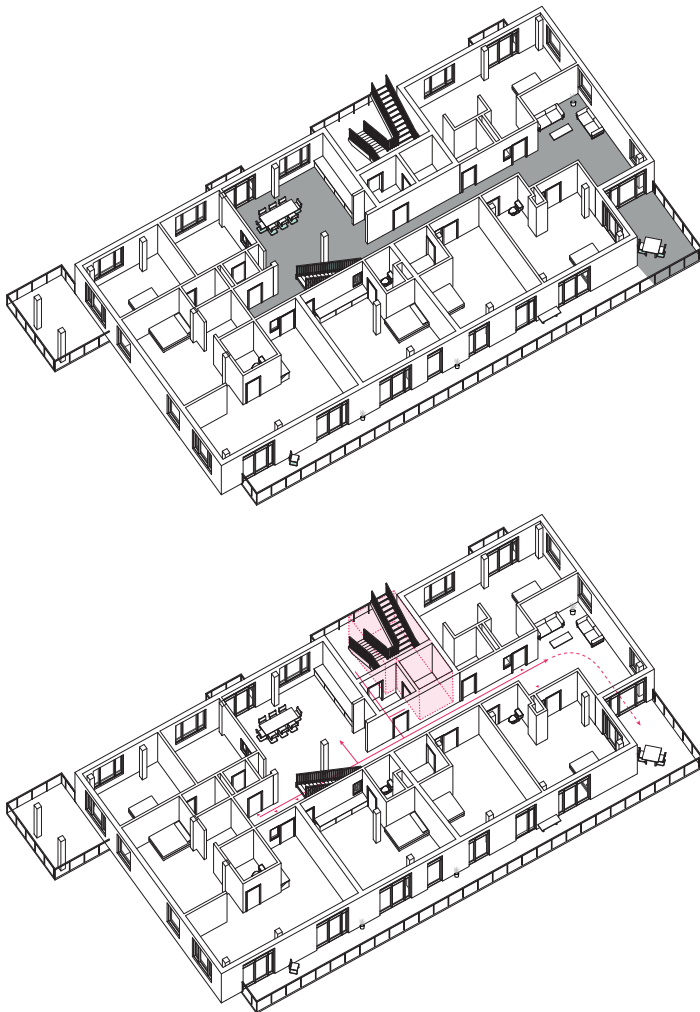


Figure 104 Axonometric drawing floorplans Spreefeld

The Groundfloor contains mainly public functions like a children space to play, a lounge area, fitness area, laundry and a salon. In total 4% (350 m2) of the buildings surface is used for these Communal Spaces.

The first floor contains commercial units which are combined where communal cooking and events can be organized. This part of the programm contain 13% (980 m2) of the total building programme.

Forschungsinitiative ZukunftBAU



Abb. 3.1.3: Grundriss der Cluster-Wohnung im 2. und 3. Obergeschoss von Haus 1, Spreefeld M 1:400

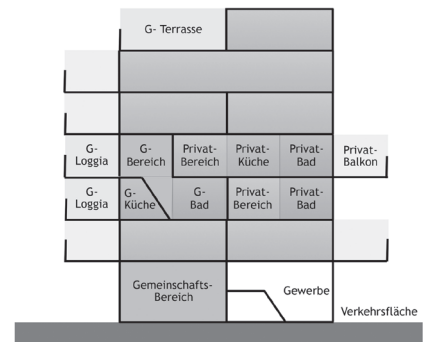


Abb. 3.1.4: Schematischer Gebäudeschnitt, Projekt Spreefeld, nicht maßstäblich

50

Endbericht Cluster-Woh

Figure 105 Floorplans Spreefeld

In each building, the middle part consists of cluster living: different apartments connected to communal facilities. There is a living area, kitchen, bathroom and a communal roof terrace, connected to the "private" terraces.

The communal kitchen and living room are connected to the entrances of the dwelling. Also the private terraces are connected to the communal terrace. Hence, there is no semi-private / buffer zone between the dwellings and the collective space. Also the "private" terraces don't have any separation from each other, resulting in less privacy.

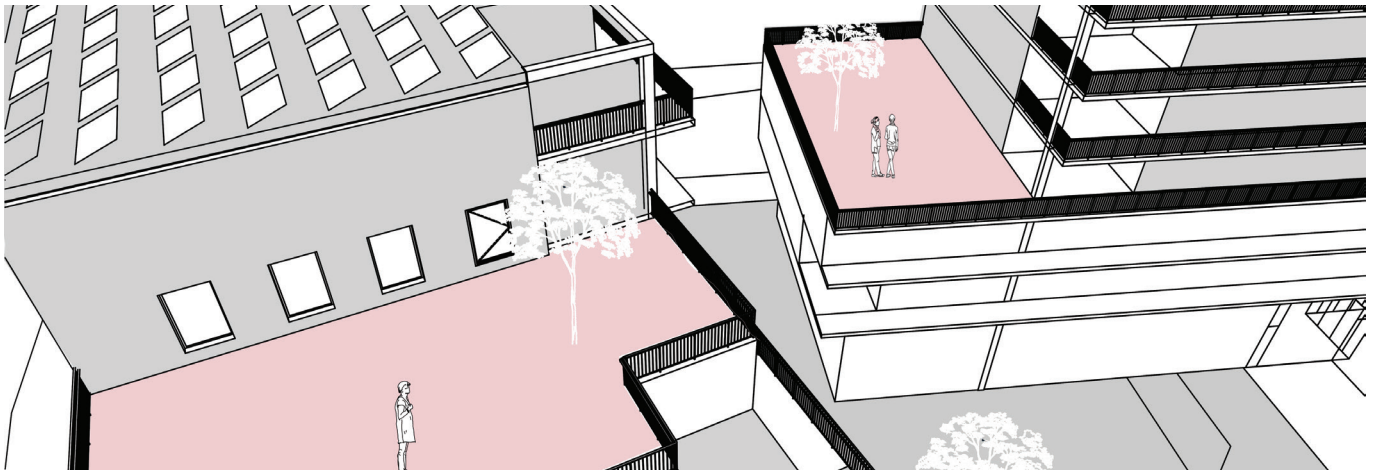
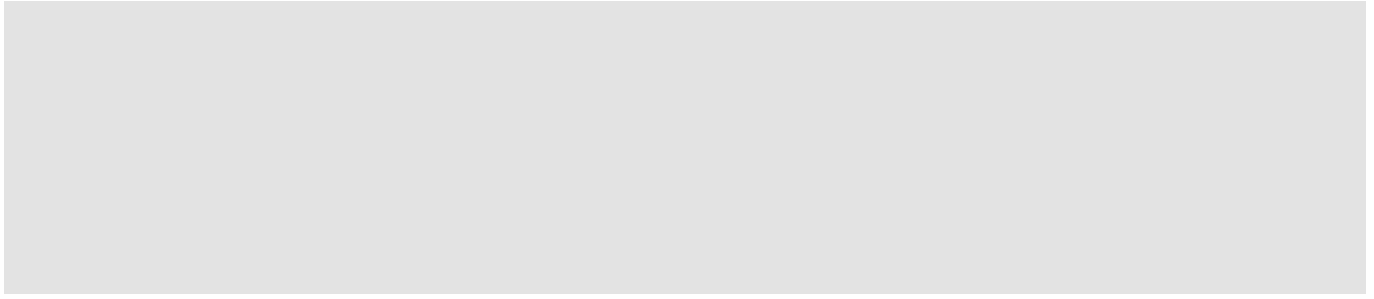


Figure 106. Spreefeld 3D perspective: roofterraces



Figure 107. Spreefeld 3D perspective: public deck

There is no transition between the private dwellings and the collective ground floor facilities. There are some tables placed on the shared pathway, but this is negligible with the amount of people living in the building. A lot of bicycles are placed in front of the building and what is remarkable is that there is no function given to the collective green, the grass is left to grow high and the green looks unused by the tenants.

Conclusion: Looking on the urban scale of the project, the buildings are not really focused on a relation with each other. The shared pathways only reaches two of the buildings, and all the

building entrances are also reachable from the back of the building, resulting in less social interaction. If we look to the cluster dwellings, the collective spaces are connected to the entrances of the dwelling and each dwelling has a window to see the collective space, hence there are no semi-private buffer zones. When looking at the eye-height drawing, it is clear that the collective garden on the ground floor is hardly used. The grass is left to grow high and therefore the garden isn't used. There is no transition between private and collective. The missing of the buffer zone could be the reason the collective green isn't really used, it is now undefined area which results in less use of the space.

4. Zollhaus, Zurich

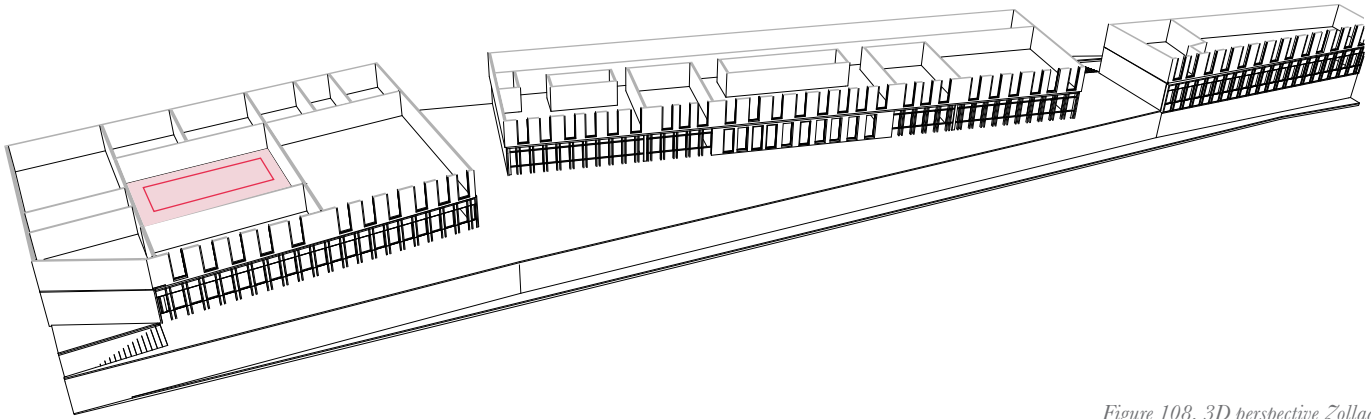
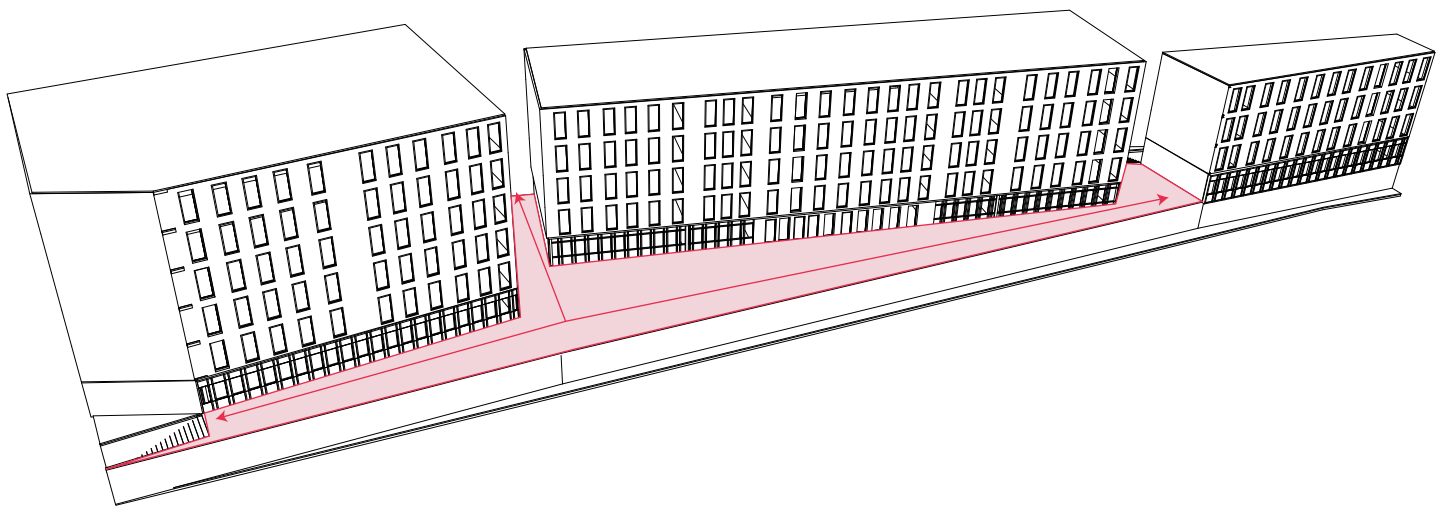


Figure 108. 3D perspective Zollhaus



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Figure 109. 3D Perspective Zollhaus

The Zollhaus complex that is built in Zurich is designed by the initiative Kalkbreite and is considered as an communal facilitated building. The division into three buildings is derived from the masterplan of the city. On the ground floor, spaces such as a restaurant, and office spaces are turned towards the city. The first floor is a terrace facing the railway tracks. On this level, one can find all the cooperative services: a kindergarten, a nursery school and a cafeteria, which is open for all the people who are living- and working in the building. Then there are four levels for housing. The aim was to offer as much housing spa-

ces as possible. Since the building at the end is too small, the architects placed offices there. They made the middle building as large as possible. It only contains housing. There are seven to eight flats per floor. The depth is sixteen metres, which allows for a long living space. There are also very large flats with ten or twelve rooms for colocation. What is interesting about this building is that the cooperative allows tenants to live in communal hallways where private space can be designed personally. This way there is a lot of freedom in organizing and making negotiations between lodgers that live and work together.



Figure 110. Groundfloor + First floor

Collective spaces:

The collective spaces are placed on the deck of the first floor. Here are also the public functions placed. Residents and people who work in the building can make use of the facilities and the communal outdoor spaces on top of the deck. In the most left collective building, the square one, there is a collective courtyard that offers suitable space inside the building complex.

Shared pathways:

The building is designed as buffer against the train tracks and therefore focusses on the collective mostly inside the building. The deck is therefore accessible on the opposite side of the train tracks.

Dwelling calculations: The concept for the dwellings are long and deep dwellings that allows for long living space.

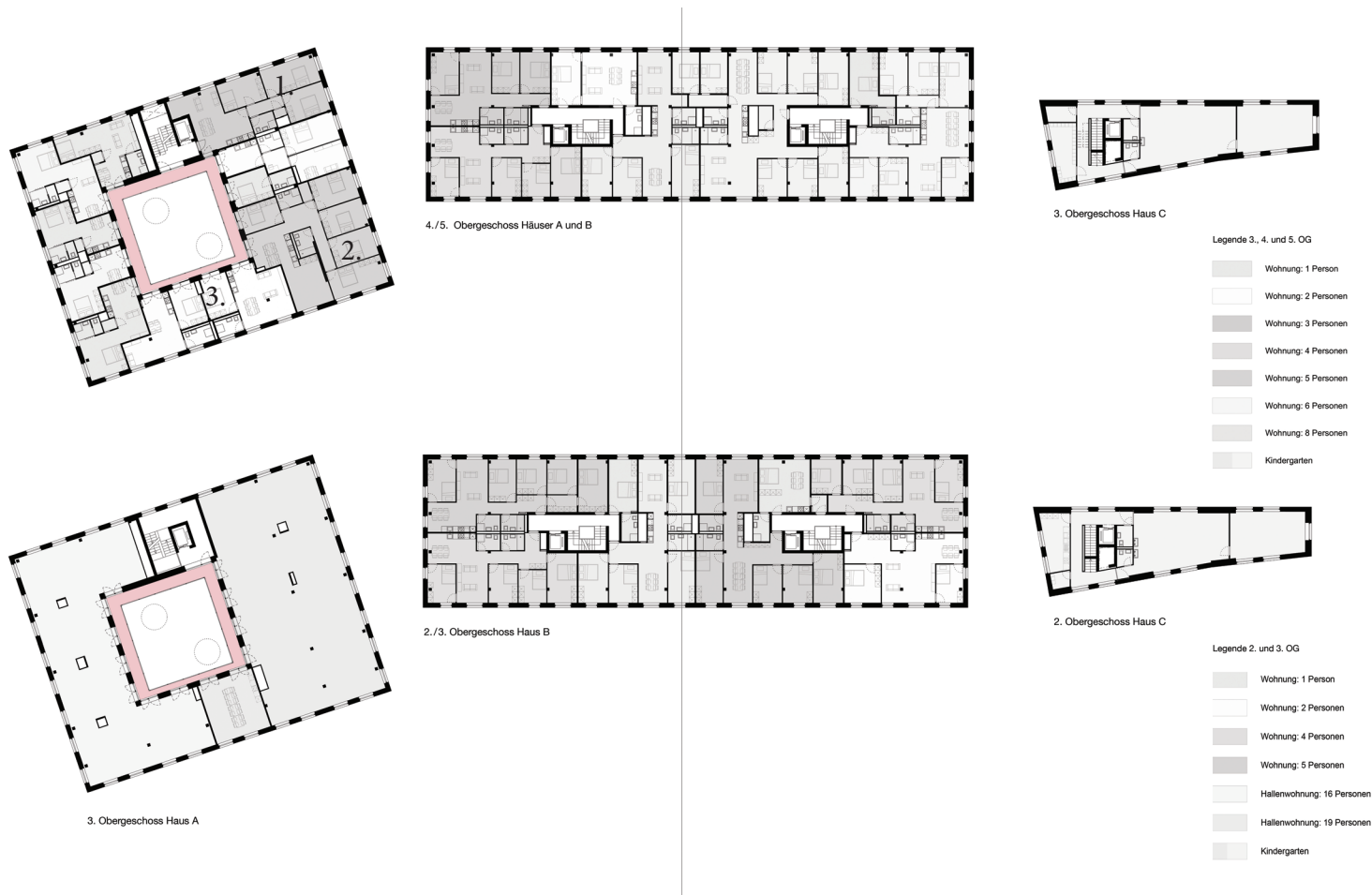


Figure 111. 3rd + 4th floorplan (principle)

Calculation dwelling type 1: Private apartments

BVO: $11,6 \times 19,8 = 229,69 \text{ m}^2$

GBO: $12,7 \times 21,1 = 267,98 \text{ m}^2$

Formfactor = $BVO/GBO = 0,86$

Calculation dwelling type 2: Shared apartments:

BVO: $14,6 \times 20,0 = 292 \text{ m}^2$

GBO: $15,8 \times 21,2 = 334,96 \text{ m}^2$

Formfactor = $BVO/GBO = 0,87$

Calculation dwelling type 3: Studio apartment

BVO: $4,8 \times 20,0 = 96 \text{ m}^2$

GBO: $5,8 \times 21,6 = 125,3 \text{ m}^2$

Formfactor = $BVO/GBO = 0,77$



Figure 112. 3D Perspective Zöllhaus

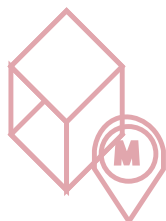


Figure 113. 3D Perspective Zöllhaus

Conclusion:

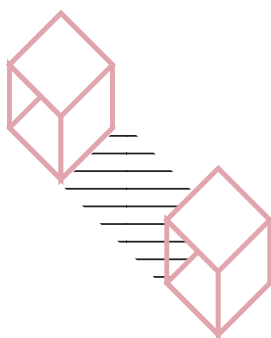
Collective spaces: the collective spaces in the Zöllhaus are mostly used on the deck, by the residents and people who work in the complex and inside in the communal courtyard, only for residents. The deck however does not provide a lot of shelter or different protections for the sun, wind and rain. Therefore it is important to provide proper private outdoor spaces (such as loggia's in the Babel project) that can function as an protective border.

Conclusions Plananalysis: Design Interventions



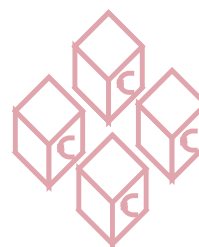
HIGH MOBILITY ACCESS

Mobility plays a major role in all of the Collective Buildings. Therefore it is important that the building is connected well with public transport



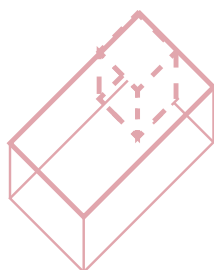
COMPENSATE SMALL DWELLINGS

Small dwellings are being compensated with a lot of green and communal gardens in and around the building



STANDARDISATION

Standardisation of dwelling types and Construction elements is used to keep the buildings affordable



FLEXIBLE DWELLINGS

Flexibility plays a large role in most of the Collective Buildings in order to change the buildings program or target groups



NEIGHBORHOOD PARTICIPATION

Residents participation in the decisionmaking process is an important key-factor for making inhabitants feel more responsible



COMMUNITY GROUPS

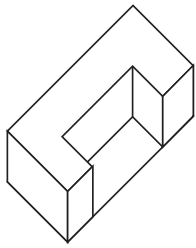
Like-Minded groups of people are gathering to create benefits and facilities aimed for this certain group

Figure 114. Design Options for Collective Buildings (Own Illustration)

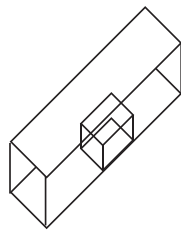
04. Design Brief & Concept

Summary of case-study principles

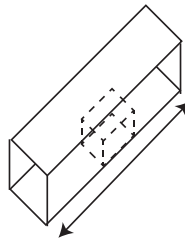
1. Collective building design: Encouraging social interaction



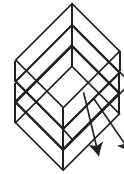
enclosure



Facilities Central



Facilities on shared pathway

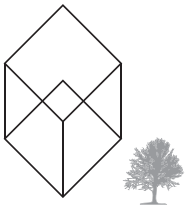


Visibility

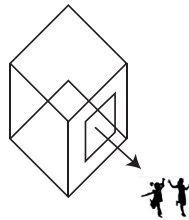


Smaller dwellings

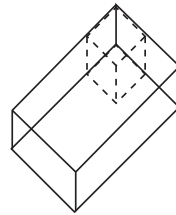
2. New urban middle income family



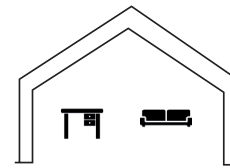
Private outdoor space



Visibility children



Flexibility



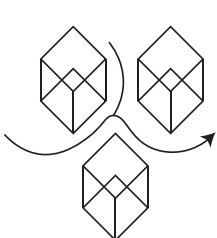
work + living



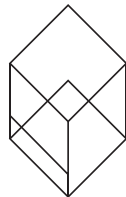
Enough space to play

65

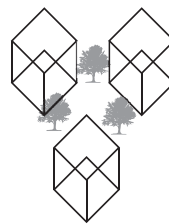
3. Public



Openness



Public amenities in plinth



Public outdoor space (green)

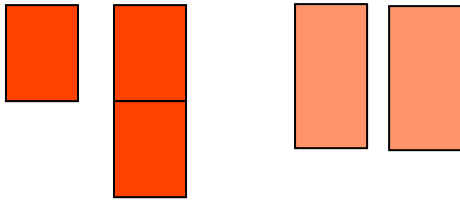
For the design brief, I divided my research conclusions and design goals in three different topics: collective, public and new urban middle income families. Collective focuses on design strategies to enhance social interaction at the communal facilities and spaces. Public focuses on the way the building and the facilities can add something for the surrounding neighborhood and new urban middle income family focuses on ways of designing pleasant homes for families in dense city centers. I summarized the most important aspect for each of the three categories.

For the residents of the complex I want to realise different facilities. There will be a shared kitchen / living room, where the residents can eat with each other, but which can also be used when someone gives a party or when there is an event. This communal room will be connected to a communal outside space, preferably with possibilities for children to play and urban farming. There will be flexible rooms, as described in River Spreefeld: option rooms, which can be used for (flex)working, or can serve as workshop. The general facilities that I will add are shared laundry and a bike and car shed with shared cars.

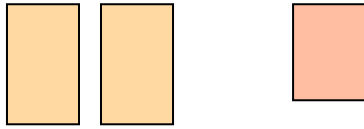
Figure 115. Patterns of research conclusions

Design Brief

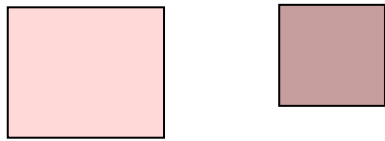
Dwelling typologies:



Type 1: Work-Living combination 86 m² Type 2: Family Maisonette 96 m²



Type 3: Family Maisonette 76 m² Type 4: Apartments: 30-65 m²

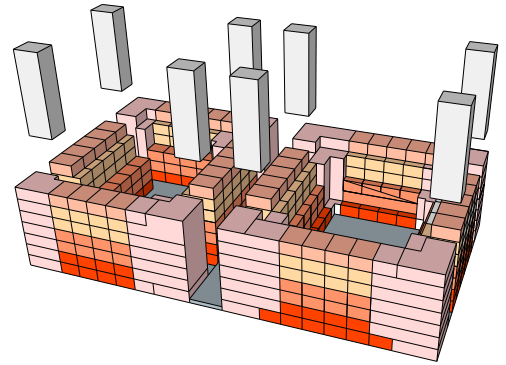


Type 5: Shared apartments 125 m²- Type 6: Corner Apartments 76 m²

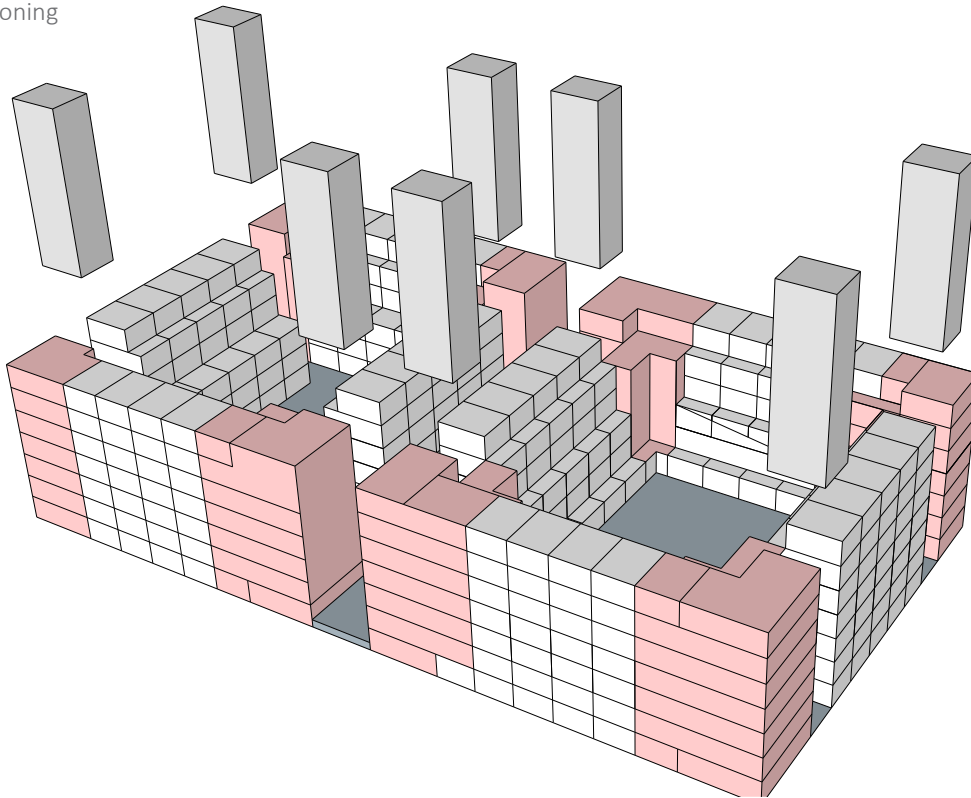
Technical information:

- 1. Public Facilities (GF) 4 x
- 2. Communal/ Shared dwellings: 48 x
- 3. Private dwellings: 148 x

Total no. of dwellings: 196
 Total no. of facilities: 4
 FSI: 2.5



Functions and zoning



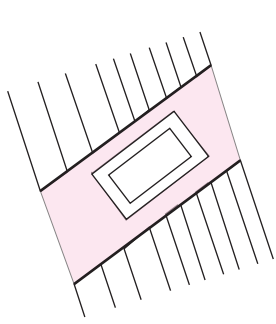
66



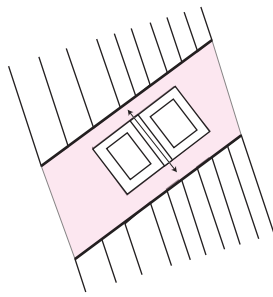
Figure 116. Dwelling stacking and circulation

The program of the building is divided in private, public and communal spaces. Private dwellings are consisting of maisonettes (white) which are placed in the middle of every row and apartments on top. Communal spaces and shared apartments will be placed on the corners. In every building are 4 circulation cores that will divide the building in zones with optimum reachability towards the dwellings and provides enough fire-safety staircases. On the groundfloor there will be space reserved for public amenities such as a cafe, a daycare for children, and a workshop room.

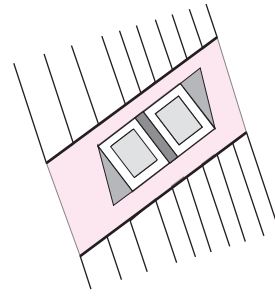
Design Principles



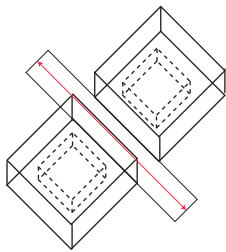
Urban Masterplan courtyard block



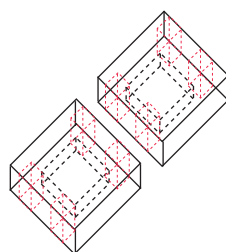
Division into two blocks



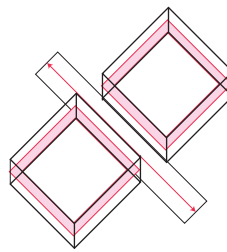
public and collective spaces



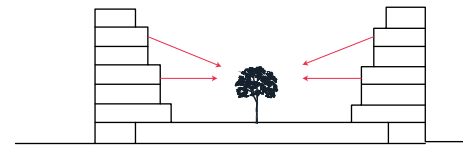
shared pathway



circulation cores



Street in the air

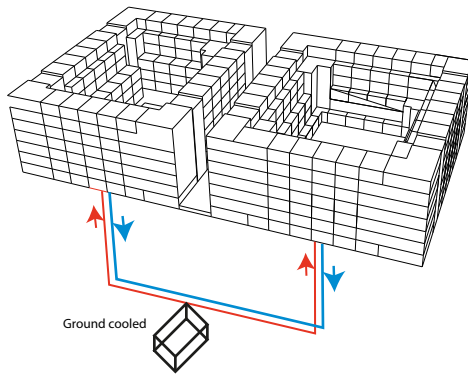


Intimate courtyard

Energy Ambitions

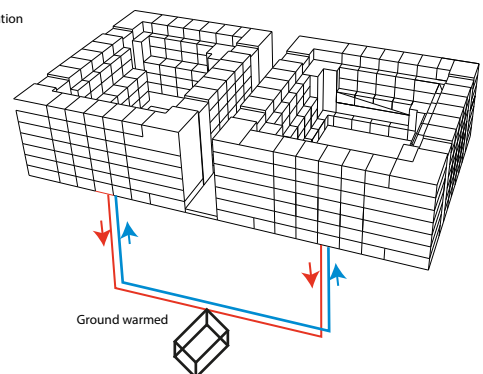
Figure 117. Diagrams design development

Winter Situation



Ground cooled

Summer Situation



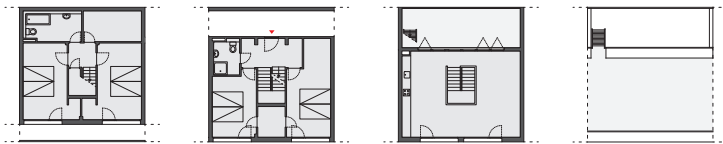
Ground warmed

Figure 118. Construction & Climate concept

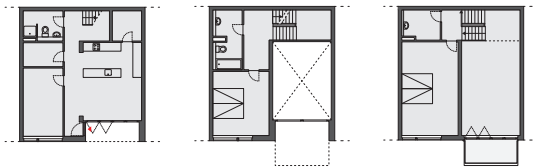
Affordability plays an important part of the design as the dwellings should be affordable for the middle income class. Sustainability will form an important focus point in order to reach the sustainability goals of Amsterdam for new construction but also as a way to save money in energy and electricity costs. Therefore I want to make use of geothermal cooling and heating and will let the collective building have it's own energy supply with the use of a heatpump. Also rainwater will be captured and used for grey-water system. The facade should be designed in such a way that it tries to gain more energy than it uses.



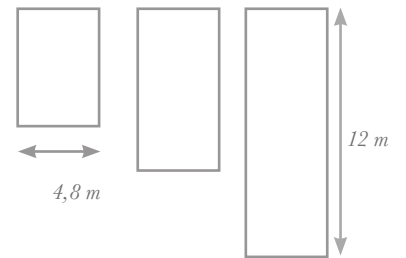
Figure 119 BIGyard Zelterstrasse, Berlin



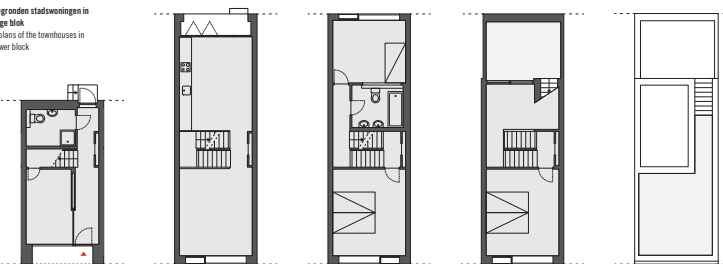
Plattegronden penthouses
in het hoge blok
Floor plans of the penthouses
in the higher block



Plattegronden tuinwoningen
in het hoge blok
Floor plans of the garden houses
in the higher block



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Plattegronden stadswoningen
in het lage blok
Floor plans of the townhouses in
the lower block



DASH

Figure 120. Example floorplan BIGyard Zelterstrasse, Berlin

As example floorplan principle for my building design, I based my grid system on the project BIG-yard on the Zelterstrasse in Berlin. This collective building project, as described in DASH, contains mainly of city apartments and maisonettes for families in urban environment. I choose the grid of the size 4,8 m wide and dwellings that have a flexibility in depth (6- 12 meters). This way I based the concept of stacking in a terraced way with dwellings that differ in depth (6-8-10-12 meters).

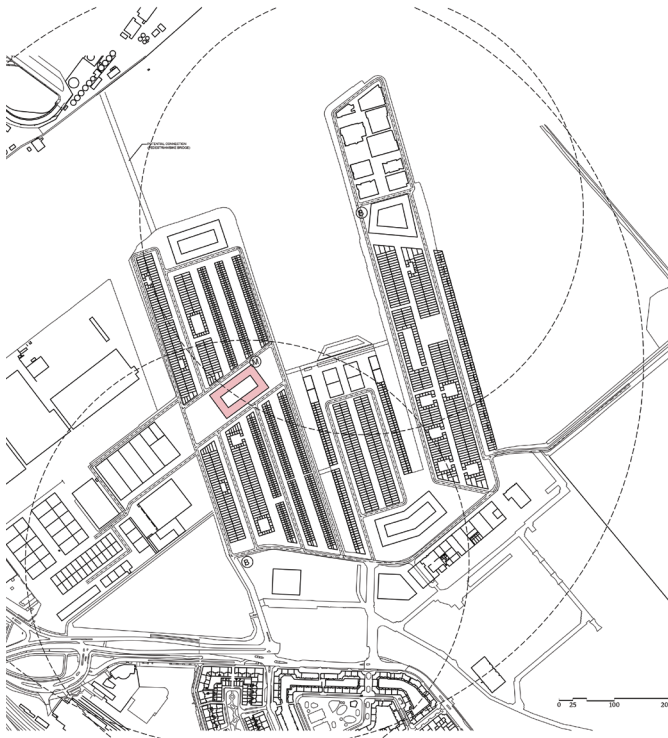


Figure 121. Position own design site in urban design

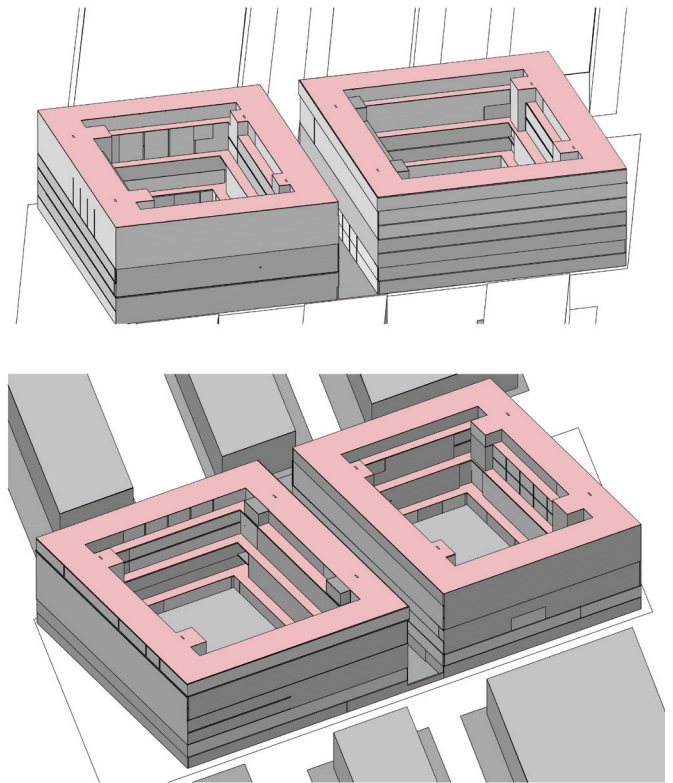


Figure 122. 3D Building design



Figure 123 Groundfloorplan 1:1000

On the groundfloor the dwellings are 6 meters deep, because they are situated with one side towards the parking garage. An entrance will be placed from the garage towards the dwelling and here will be storage spaces facilitated as well.



Figure 124 Ground Floor plan 1:1000

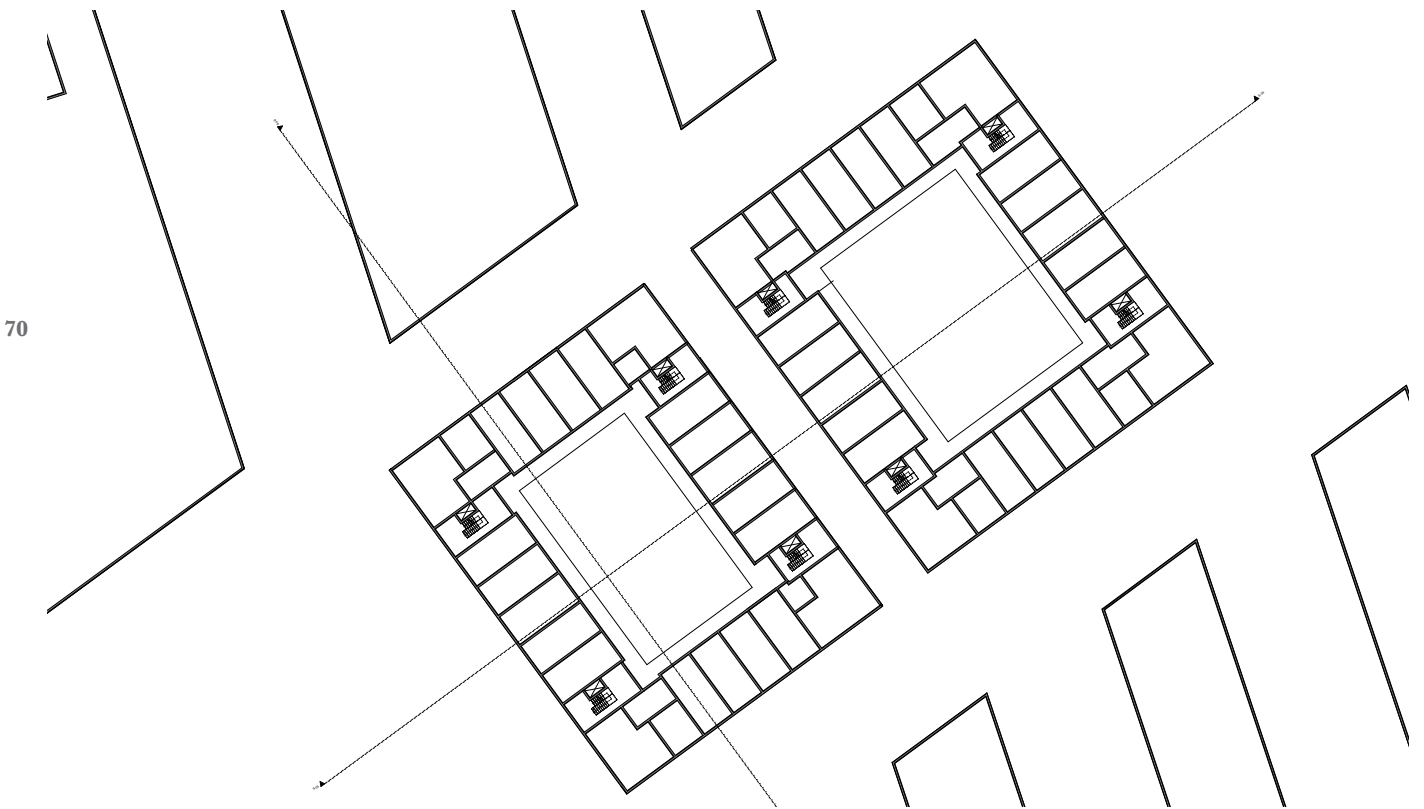


Figure 125 1st floor 1:1000

The Dwellings on the First floor have a depth of 12 meters and 4.8 meters width. These work-living maisonettes have a back-garden situated above the parking deck adjacent to the collective courtyard. This way a similar situation will be realized with the Justus van Effen Complex, where the backgarden connects to the collective courtyard in the middle.

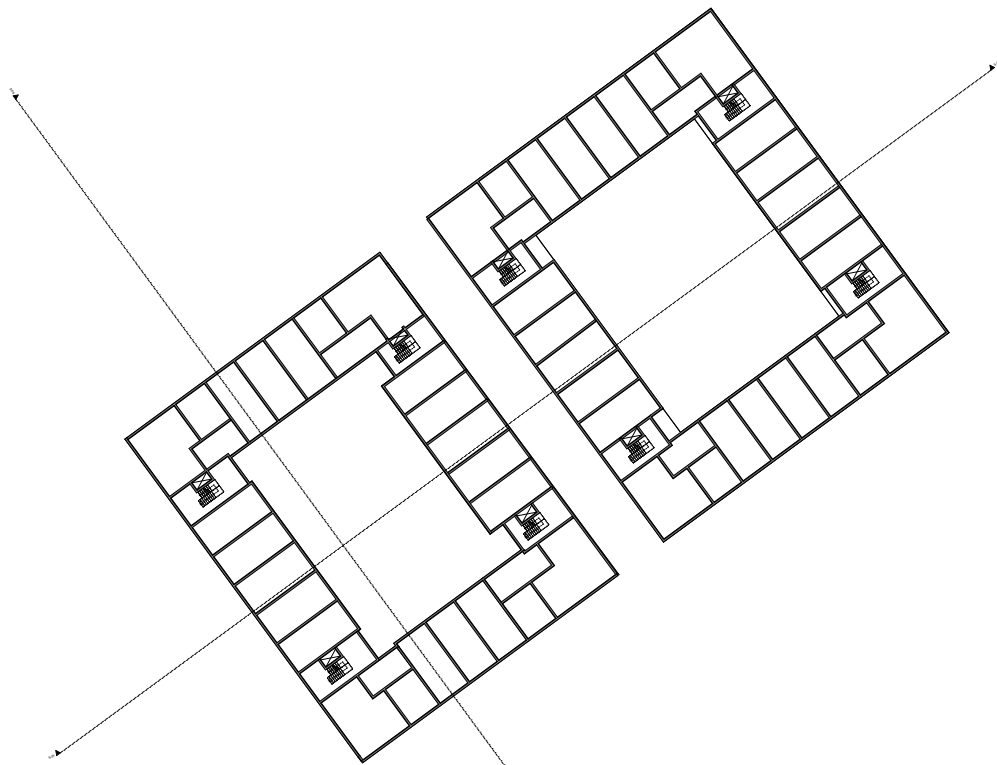


Figure 126. 3rd floor 1:1000

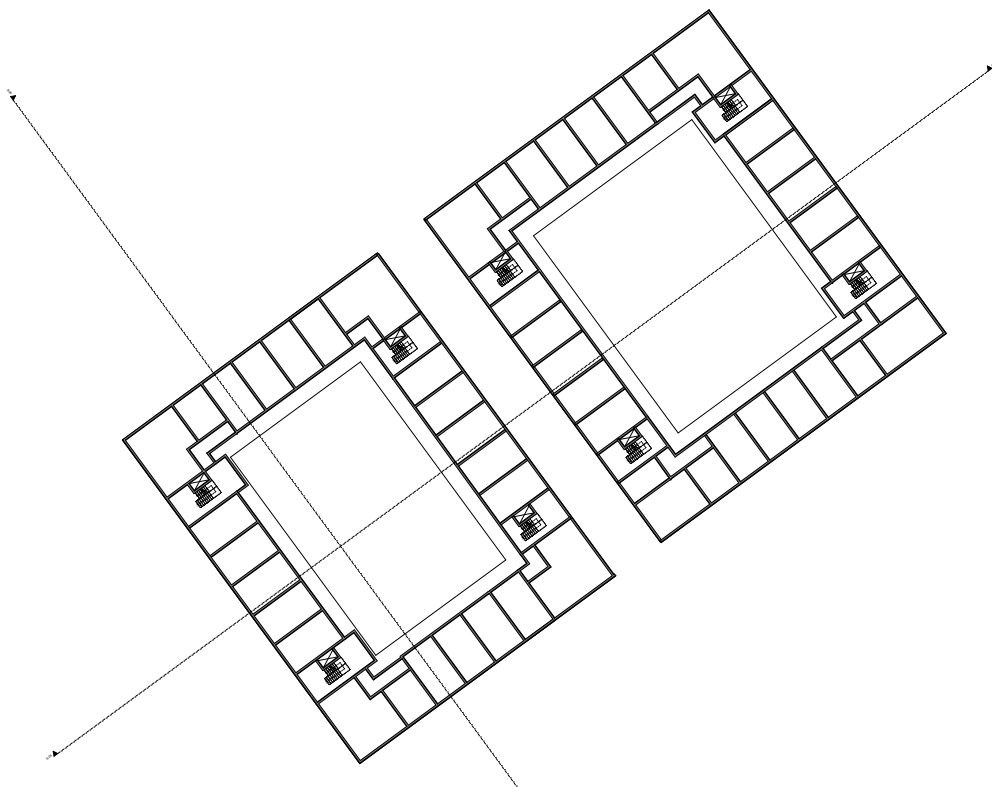


Figure 127. 4th floor 1:1000

The second and third floor are consisting of family maisonettes which have a depth of 10 meters and a width of 4.8 meters. These family maisonettes are perfect for larger families with 2 or 3 children or suitable for patchwork families which need space extra space for their other children to sleep over.

The dwellings on the fourth and fifth floor are consisting of maisonettes which have a depth of 8 meters and 4.8 meters width. They are also suitable for larger families, but can also be subdivided as apartments.

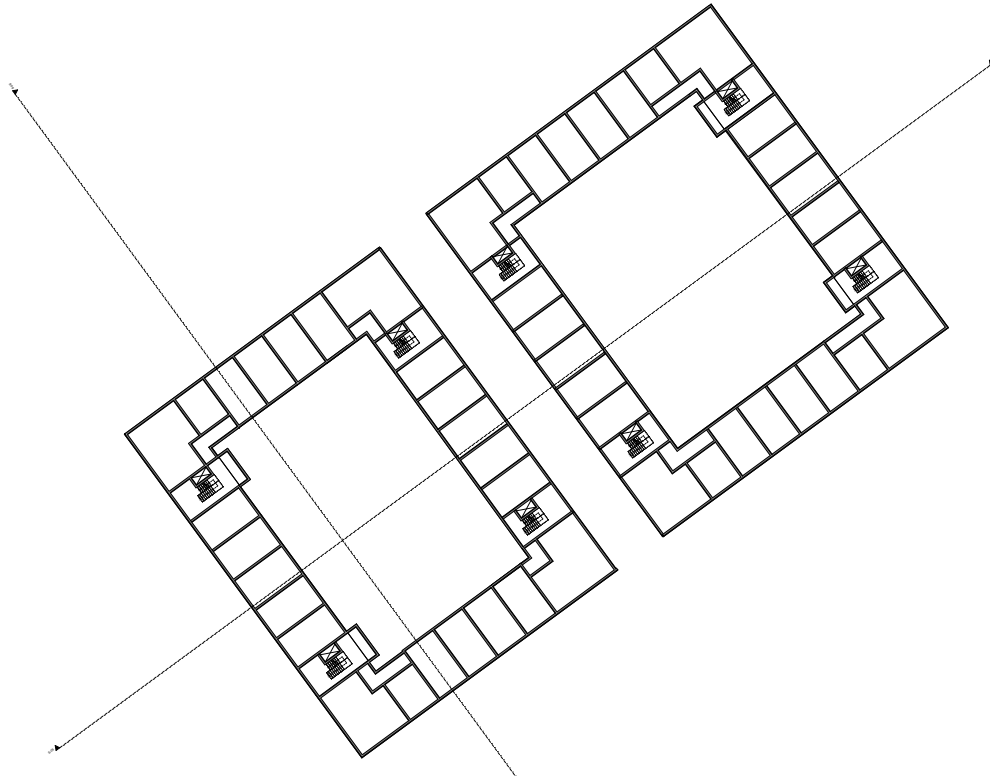


Figure 128 5th floor 1:1000

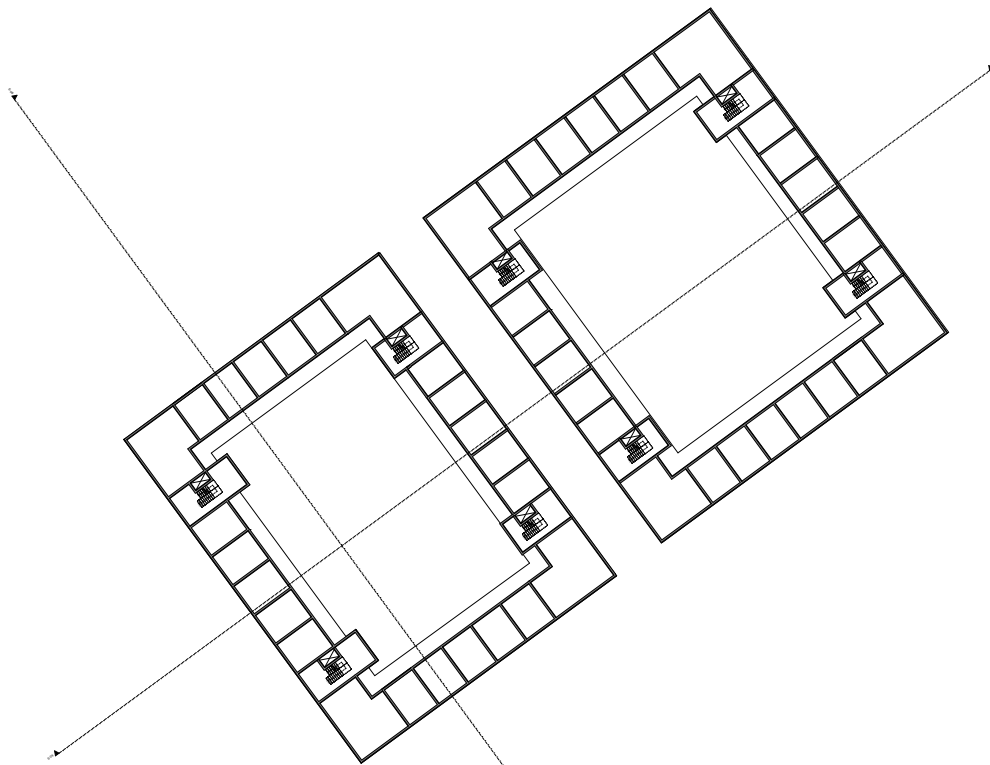


Figure 129. 6th floor 1:1000

The sixth floor is consisting of smart micro apartments that are especially suitable for single family households and can be combined together towards a larger width (e.g: 2x 4.8 m). This way the apartments can be adjusted to the family wishes and needs.

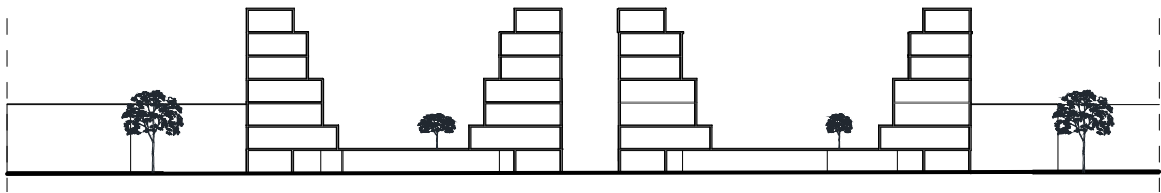


Figure 125. Urban Cross Section 1:500

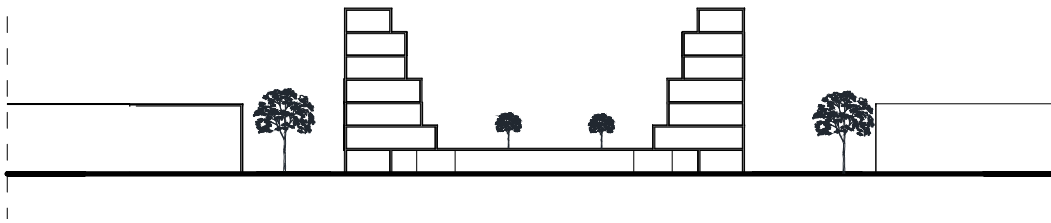


Figure 130. Urban Cross Section 1:500

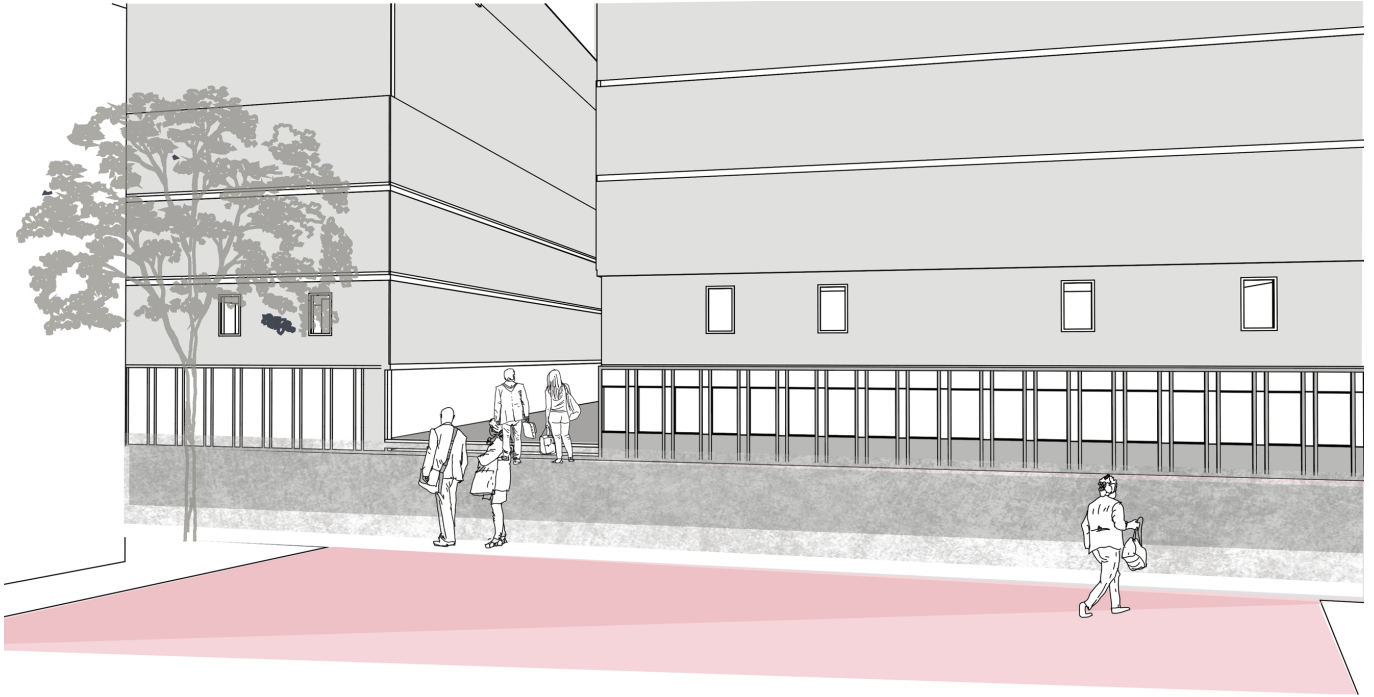


Figure 131. 3D Perspectives Building Design

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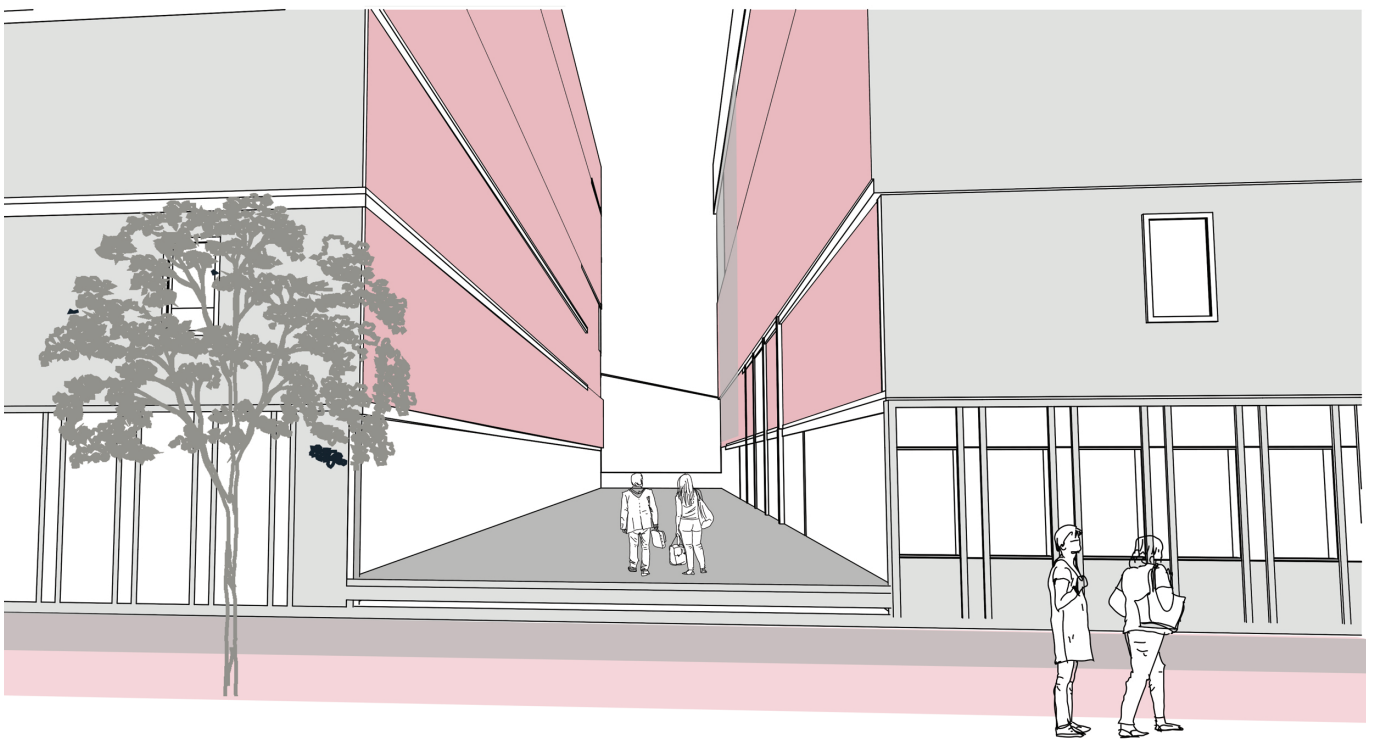


Figure 132.. 3D perspectives building design

Bibliography: Images

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Figure 3: *AUP Amsterdam* (Beeldbank)

Figure 4: *AUP Amsterdam* (Beeldbank)

Figure 5: *Figure 5*. Beeldbank Amsterdam

Figure 6: <https://www.experimentelewoningbouw.nl/portfolio/ex-73-183-hilversumse-meent-wandelmeent/>

Figure 7: <http://www.hollandluchtfoto.nl/media/452c78b7-6122-4ec0-9122-157983542f39-amsterdam-luchtfoto-ijburg>

Figure 8 <https://nl.pinterest.com/pin/572590540105575905/?lp=true>

Figure 9 *Increase of rental prices*. (CBS, 2017)

Figure 10 *Housing stock deviation Amsterdam 1-01-2015* (Amsterdam, 2017)

Figure 11 *Rental price development in Amsterdam in m2* (CBS, 2017)

Figure 12 *The deviation of income groups in segments 2015* (Amsterdam Structurevision, 2017)

Figure 13 *Income groups and Dwelling stock* (Amsterdam Structurevision, 2017)

Figure 14 *Predicted population growth* (Amsterdam, Structurevision, 2017)

Figure 15 *Figure 15. Young families that move to other Municipalities* (CBS, 2019b)

Figure 16 *Figure 16. Prognosis amount of families in Amsterdam 2017-2030*.

Figure 17 *Figure 17. Conceptual framework of 'The Habitus'* (W. Boterman, 2014)

Figure 18 *Figure 18. Middle Class families in Amsterdam*

Figure 19 *Figure 18. Middle Class families in Amsterdam*

Figure 20 *Figure 20. Deviation in different types of middle- class families* (Hoekveld, 2017)

Figure 21 *8 Reasons for modern urban middle class families to stay in the city* (Hoekveld, 2017)

Figure 22 *Numbers of families with available dwelling space* (Hoekveld, 2017)

Figure 23 *Own Illustration*

Figure 24 *De nieuwe generatie stadskinderen* : (Karsten, 2016)

Figure 25 *Free-Range play ratio for children*: (Karsten, 2016) *Own illustration*

Figure 26 *Own Illustration*

Figure 27 *Figure 27. Young Teenagers (15) who don't live at home anymore* (CBS, 2018)

Figure 28 *Own illustration*

Figure 29 *Genossenschaft Kalkbreite: Groundfloor with communal courtyard* <https://www.kalkbreite.net>

Figure 30 *Genossenschaft Kalkbreite : Communal / Shared Apartments* <https://www.kalkbreite.net>

Figure 31 *Genossenschaft Kalkbreite, Communal Playground for Children* <https://www.kalkbreite.net>

Figure 32 *Optimisation of community numbers* (Dunbar, 2017)

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Figure 59: Pictures Case-Studies

Figure 60-87: Own Illustrations

Figure 70: Hofbogen, Rotterdam: <https://www.stadsblogger.nl/culinair/4-hotspots-rotterdam/attachment/hofbogen-2/>

Chapter 3: Plananalysis

Figure : 88-114: Own Illustrations

Chapter 4: Design Brief & Conceptual Design:

Figure 115-118: Own Illustrations

Figure 119: Picture BIG-yard zelterstrasse <https://www.archdaily.com/793287/bigyard-zanderroth-architekten>

Figure 120 Zelterstrasse, DASH (Van Gameren, 2013)

Figure 120-132 Own Illustrations