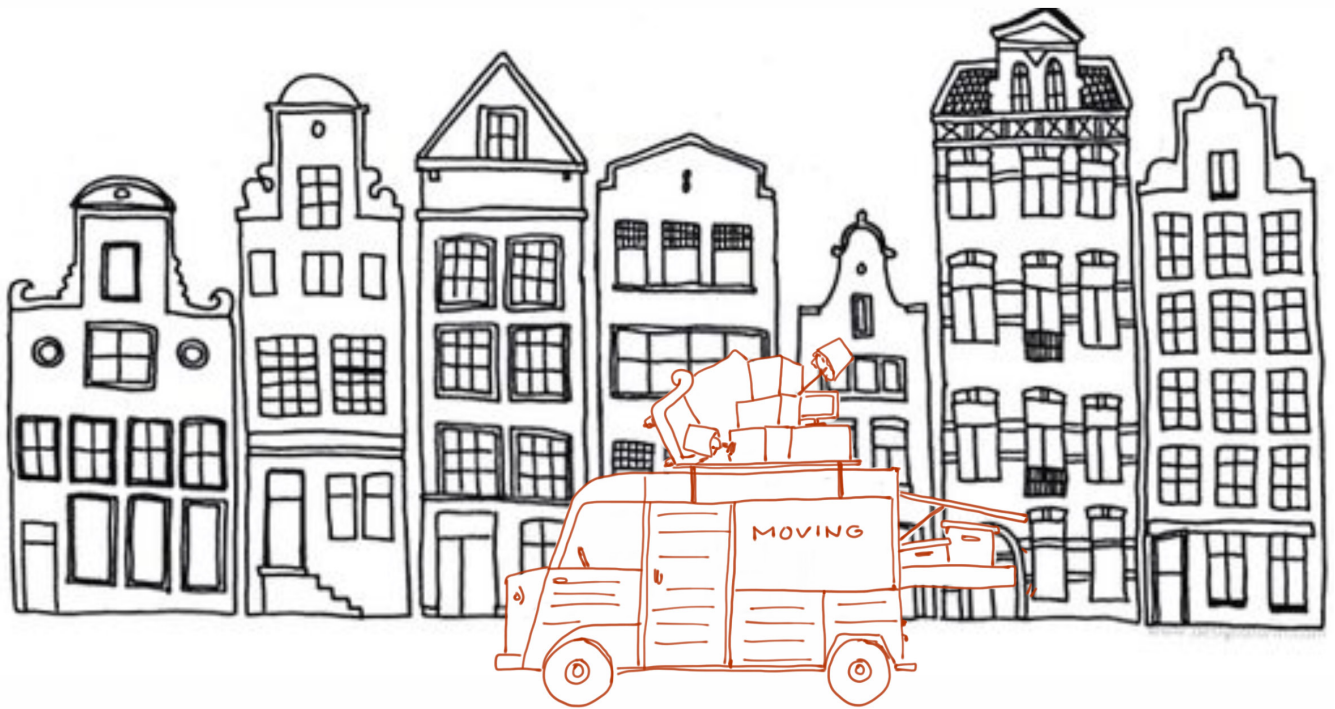


# Young Urban Families



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Research report P2

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# Preface

This research report is the start of the graduation studio of Dutch Dwelling. The graduation will conclude with a design of a dwelling complex for young families in the city centre of Amsterdam. This report shows the research about young families in the city, their needs and design solutions to create a family friendly and safe living environment in the city.

This master graduation is the final phase of my study time of the master Architecture and the Built Environment at the Technical University of Delft.

I want to thank my tutors Pierijn van der Putt and Theo Kupers for their feedback and inspirational discussions, and my fellow student Iris and Chantal for the nice collaboration in researching the case studies and sharing our findings on families in the city. And finally, thanks to my parents for proof reading my text and giving your opinions.

Enjoy reading.

Terrie van den Brink  
January 14th 2018



From: Borsboom



# Introduction

There is an increasing amount of young families that leave the big cities. Amsterdam has the highest number of all cities in the Netherlands. The main reason for leaving is the extension of the family (or plan to), which results in new requirements for the house and living environment. Most families want to stay in the city but can't find a house that meets the new requirements. They look for more space, a safe environment for children to play in and an affordable price. This is not possible in the housing market of Amsterdam.

This research report looks into the needs of young families to provide those needs in the graduation design in the centre of Amsterdam. The design site for this family complex is on the Tweede Weteringplantsoen. It is located at the Singel (water) of Amsterdam, which forms the border between the inner city and the rest of Amsterdam. The design on this location will create a perfect balance for families that want to enjoy the city life and have a safe environment for children.

To understand the current situation in Amsterdam in relation to young families, there are three different parts in the research: the target group analysis, the location

analysis and the design solutions. In chapter two the issue of the increasing amount of young families leaving Amsterdam will be further motivated in the problem statement. In the third chapter the target group will be analysed. This information will give answers about the reasons for families to leave or stay in the city and look into the needs of the young families in the city. The site of the Tweede Weteringplantsoen will be analysed in the fourth chapter. Relevant information from the target group chapter will be used as input in the analysing approach. In chapter five the design solutions will be introduced based on literature and case studies. This will result in a design solution scheme in which an overview of the possible solutions will be visible. This will be a direct input for the design of the dwelling complex for young families in Amsterdam. The research will be concluded in chapter six.



# Problem statement



# Gezinnen met jonge kinderen verlaten Amsterdam



nrc.nl

Digitale editie Webwinkel

Illustration 2.1 (Parool, 2017)

Binnenland Buitenland Economie Cultuur Sport Opinie Wetenschap Tech & Media

## Jonge gezinnen trekken weg uit de grote steden

© 9 juni 2016



Illustration 2.2 (NRC, 2016)



## Problem statement

The number of inhabitants in Amsterdam is growing with 11.000 people per year (OIS, 2017). The group of inhabitants between 17 and 27 is the biggest factor for this growth, while the group between 27 and 40 is decreasing. This is a new movement of families leaving the big cities (CBS, 2016). In Amsterdam 40% of the families that had a child in 2012 left the city within the first four years. In this time the toddler doesn't go to school yet (CBS, 2017). These families are called young families. The main reason for leaving the city is the extension of the family (or plan to), which results in new requirements for the house and living environment. The existing houses are too small and have a lack of outdoor space. The families leave the inner city to live in Vinex neighbourhoods surrounding the big cities. When asked 73% of the families rather didn't want to leave the city (Dignum, 2013). On the other hand, the municipality of Amsterdam requires their young inhabitants, because they help create diversity for the city (Drogendijk, 2014).

Many parties in the Netherlands have picked up this problem. Illustration 2.1 and 2.2 show the news reports of 2016 and 2017 of Parool and NRC, which present the results of the CBS (Dutch Bureau for Statistics). The municipality of Rotterdam has new plans and initiatives to reduce the outflow of families (de Voogt, 2018). The results for a competition for family apartments in Rotterdam are presented in the bundle 'Gezinsappartementen' (Family apartments) (Hemert, Freeling & Boumans, 2017). This book shows only

the end results, not the way to achieve this or the part solutions to meet the different needs of the young families. Urban planners and designers should learn from each other and continue the progress already made.

For this graduation project I will investigate what the reasons for young families are to move out of Amsterdam and what they would need to stay. This research will result in information and suggestions that can serve as input for a dwelling complex that can contribute to young families staying in the city. The main research question is: (1) What are the needs of young families and which design solutions can satisfy them on the neighbourhood, building and dwelling scales? To be able to distinguish the needs for families in the big cities, the reasons for leaving need to be clear. This will be answered in the sub question: (2) What are the reasons for young families to stay in or leave the city of Amsterdam? The vinex locations outside the city, offer more space and a safe playing environment for the children. To keep the young families in the city, this needs to be provided inside the centre of Amsterdam as well. To accomplish this, the sub question will be: (3) In what way can dwellings be affordable for young families and make the surrounding more safe?



Target group



From: Velonline

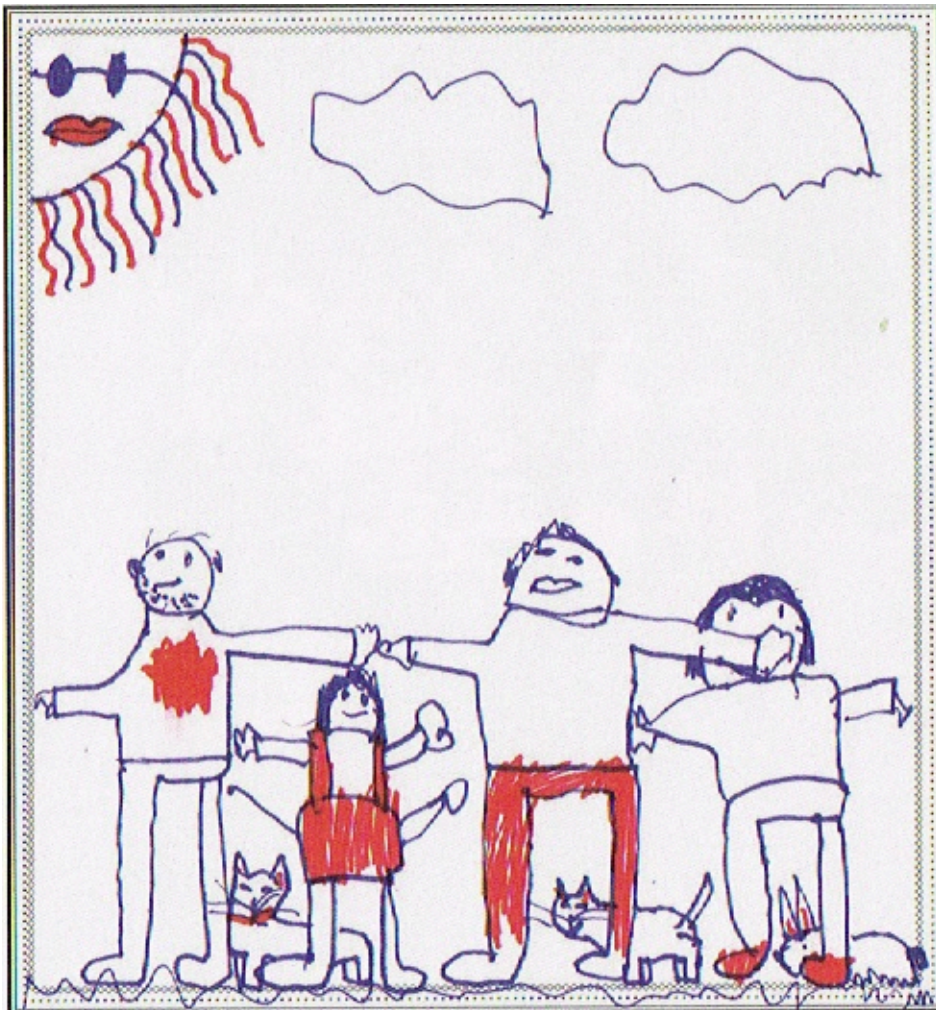


Illustration 3.1  
Dairy of Laura: this is me with my  
family. (Karsten & Felder, 2016).

## Introduction

This chapter will provide facts about the target group for the graduation project: the young families. The information will give answers about the reasons for families to leave or stay in the city and investigate the needs of the young families in the city.

First insight will be given about the moving away of young families. This not only happens in Amsterdam but also in other big cities of the Netherlands. The CBS has investigated this issue in 2016 and 2017. Their results on the amount of families moving, the background of young families in the city (migration and income) will be shown and analysed. Further the time for families to have children will be addressed by showing the current average age of the mother.

The next part will focus on the reasons for keeping young families in the city. This will be done by using the two different perspectives: the perspective of the city and the perspective of young families. This last perspective will be enhanced by the reasons to stay and the reasons to leave, using literature from other researchers on this topic.

Following the reasons for young families to stay in the city, the needs of these families will be addressed. This will be done on three different scale levels: the neighbourhood scale, the building scale and the dwelling scale. The various scales will give a complete picture about the needs of families in the city.

The last part will show some data about young families in Amsterdam and will be more focussed on the location of the graduation project, the Tweede Wateringplantsoen.

# Moving away of young families

Moving of young families from the four big cities to other municipalities

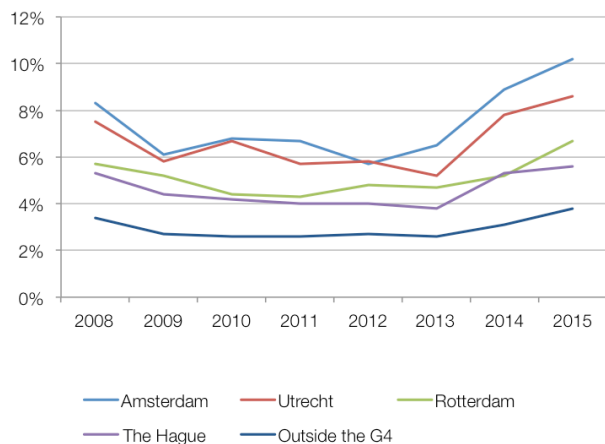


Figure 3.1  
Source: CBS, 2016

Moving of young families to other municipalities to income deciles

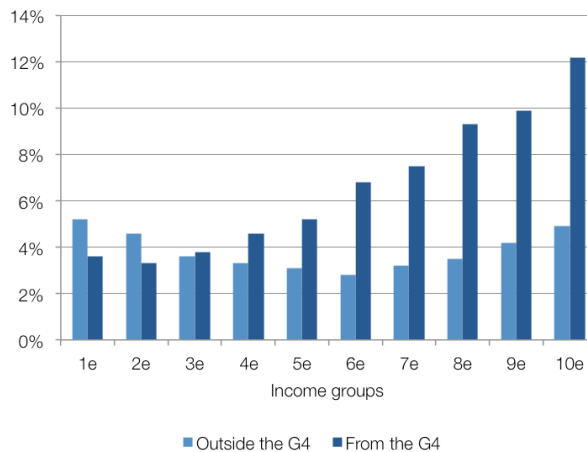


Figure 3.2  
Source: CBS, 2016

## Facts and figures CBS 2016

On the 9th of June 2016 the CBS, the Dutch Bureau for Statistics, reported the results of a new research: 'More young families leave the city'. They inform that the young families move out of the city to other municipalities surrounding the big city (figure 3.1). Besides this the amount of families still increases in the four big cities of the Netherlands, because there also live a lot of people in their twenties and thirties who have babies. In this research the CBS took a look at two parent families. The four big cities that the CBS is talking about are: Amsterdam, Utrecht, Rotterdam and The Hague. The group of families with children under four years moving to smaller municipalities has increased (is the biggest) especially in 2014 and 2015 in comparison with the five years before. Amsterdam has the biggest increase, where in 2012 almost 6% of the young families left the city in 2015 more than 10% did this.

Another result from the research was that the biggest group of these young families belong to the highest income group (figure 3.2). Of the highest income group 12% moved, while of the lowest income group only 4% moved out of the big cities.

The young families move to the surrounding municipalities. Of the more that two thousand families in Amsterdam in 2015 10% moved to Amstelveen, 9% to Haarlem and 4% to Almere. Other municipalities like Het Gooi, Zaanstad and Haarlemmermeer are also popular (CBS, 2016).



Couples that leave from one of the four big cities to an other municipality, to the year of birth of the first child

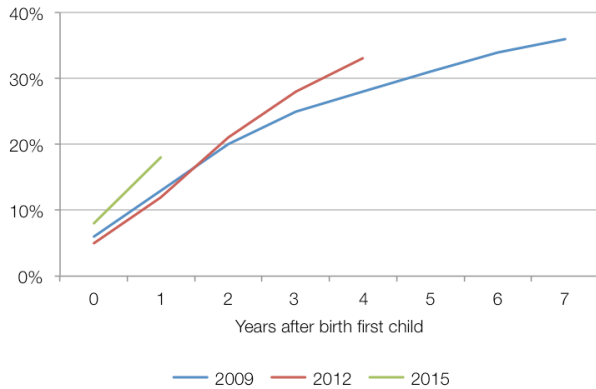


Figure 3.3  
Source: CBS, 2017

Couples that had a baby in 2012 and left before the end of 2016 to another municipality, to household income

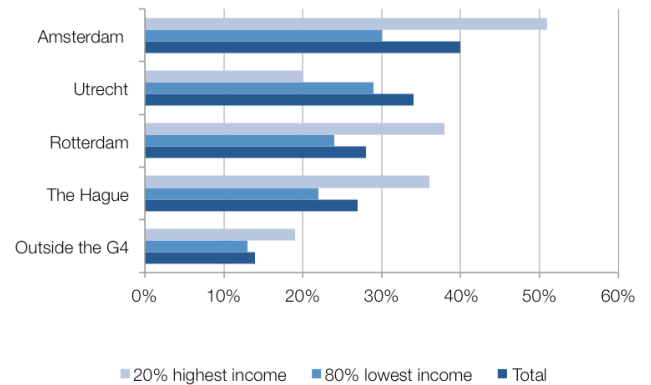


Figure 3.4  
Source: CBS, 2017

## Facts and figures CBS 2017

In 2017 another research about young families in the big cities was done. This research shows that 40% of the young families in Amsterdam moved to another municipality within the first four years after the birth of the first child. This is a higher percentage than in the other three big cities. CBS explains this as a result of the mobility of the residents of Amsterdam. The amount of couples that live in a rental apartment when they get their first child is higher than couples living in an owner-occupied house. However this is not the only reason, because young families owning a house also move out of the city more often in Amsterdam. This research shows again that the biggest group of young families that is moving in the 20% highest incomes (figure 3.4).

The families that left the big city in the first year of their first child was in 2015 higher than in the years before (figure 3.3). In 2015 this percentage was 18%, while in 2012 this was only 12%. Not only in the years after the birth of the first child families move out of the big cities. In the two years before the birth of the first child the couples leaving the big city is almost as much as the two years after. These couples planned ahead and decided to move before the birth (CBS, 2017).

Couples that have their first child in 2012 in Amsterdam and leave before the end of 2016 to another municipality, to migration background

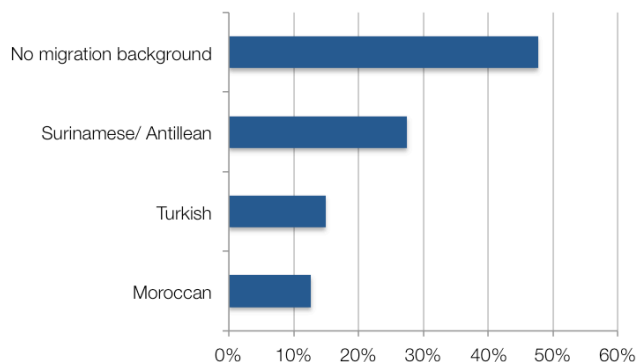


Figure 3.5  
Source: CBS, 2017

Internal migration, balance settling in and leaving from Amsterdam, to age

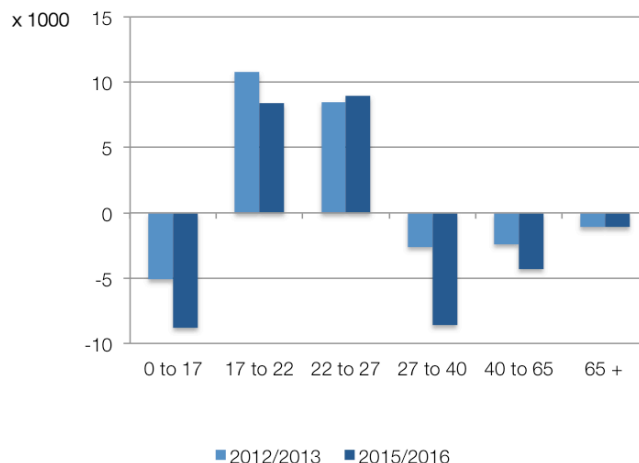


Figure 3.6  
Source: CBS, 2017

## Migration background

Another part of the research of the CBS in 2017 shows that couples with a migration background stay more often in the big city after having their first child. Of the young families without any migration background almost half of the couples that had a child in 2012 moved out of Amsterdam before the end of 2016. This was less than 30% of the young families with a Surinamese or Antillean origin. The amount of young families leaving the city of Turkish or Moroccan background was even less (15% and 13%) (figure 3.5) (CBS, 2017).

## Migration of age groups

In 2016 around four thousand (balance) people moved out of Amsterdam, this where mostly young families. The internal migration is since 2015 negative and before that it was since 2012 almost zero. In 2015 - 2016 there were around nine thousand people between the ages of 27 and 40 that left the city of Amsterdam. The same happened with children between 0 and 17 years. The age group between 17 and 22 and 22 and 27 still settles in Amsterdam. These are mainly the young singles (students) and young couples (figure 3.6) (CBS, 2017).



# Age of the mother

Children born alive with a mother of 35 years or older

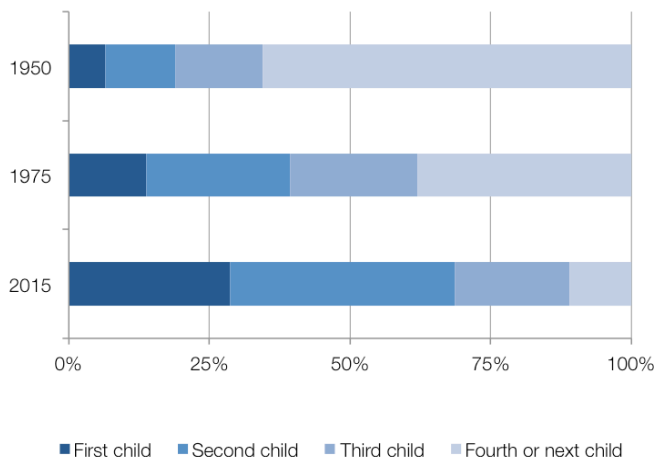


Figure 3.7  
Source: CBS, 2016

Birth to age group of the mother, 2012 - 2016, Amsterdam

Age group mother	2012	2013	2014	2015	2016
< 15 year	-	1	-	-	
15-19 year	116	81	97	49	74
20-24 year	786	698	752	613	593
25-29 year	2395	2135	2279	1965	2093
30-34 year	4320	4222	4496	4393	4425
35-39 year	2646	2909	2786	3019	2821
40-44 year	623	760	637	725	671
45+ year	38	49	16	40	27
Unknown				212	201
<b>Total</b>	<b>10924</b>	<b>10855</b>	<b>11063</b>	<b>11016</b>	<b>10905</b>

Figure 3.8  
Source: OIS Amsterdam, 2017

The CBS reports that young women got fewer children in 2015; while in ratio more 35-plus women got children. The increase is the largest in the group of woman between 35 and 40 years old, from 57 children per a thousand women in 2000 to almost 68 children per a thousand women in 2015. Also the age of women having their first child went up. In 2015 29% of the 35-plus women had their first child (figure 3.7) (CBS, 2016).

In Amsterdam this trend is also visible. From 2012 to 2016 the number of births in the age group of 35 to 39 has increased, while the number of births in both the age group of 20 – 24 and 25 – 29 has clearly decreased (figure 3.8). From 2011 to 2015 the amount of births in the age groups of 20-24 and 25-29 has decreased with 75% and 87%. In the age group of 35-39 there is a lift of 106% (OIS Amsterdam, 2017). These percentages were even higher when 2011 and 2016 are compared.

# Conclusion

Based on the results of the CBS we can see that Amsterdam is losing a lot of young families. Besides Amsterdam this also happens in other big cities in the Netherlands like Utrecht, Rotterdam and Den Haag. From the facts of the CBS and OIS there are four conclusions that show the current situation of young families in big cities. The most important one is the trend that young families leave the city and go to neighbouring municipalities in the first few years after the birth of their first child. From this group the largest part belongs to the 20% highest household income. Furthermore has the biggest part of this group no migration background. Lastly there is a trend of women having relatively late their first child, after 35 years.

The target group for the design assignment will reflect these results: young families in the middle or high segment and start their family around 35 years old.

# Keeping young families

That young families leave the big cities has been shown. The following part will show why this is a problem. Why do municipalities want to keep young families? And do young families want to stay in the big city and why?

There are two perspectives that will be addressed in the reasons for keeping the young families in Amsterdam. First there is the perspective of the city, for whom families creates diversity, jobs and safety. The other perspective is the one from the families themselves.

## City perspective

From the cities perspective, the economy and thinking about the future is the priority. Families, the children, are important for the city because they help insure the cities future (Keesom, 2016). Children help to decrease the age of the cities inhabitants; this creates diversity in the city. They are the connection between generations and provide social cohesion in the city. Drogendijk explains in 'Het Parool' what families add to Amsterdam. First of all they bring change to the city. They provide jobs for schools, day cares, sport facilities, retail and the leisure economy (TunFun, Nemo, Artis, cinema's and theatres). Next to this families make the city safer. Everyone is profiting from a safer traffic environment, with safer crossings and lower speeds in neighbourhoods. As a result of the presence of families, the municipality invests in parks and green areas. Due to better maintenance and investment the city is cleaner. Finally he says that children keep the city young and they are a pleasant sight (Drogendijk, 2017). Summarily the city and its inhabitants can't exist without families.

## Family perspective

Of all the families moving out of Amsterdam 73% wants to stay in the city (WIA, 2011). This is due because of a number of elements. First of all the atmosphere of Amsterdam is a very important point for staying in Amsterdam. The openness of its inhabitants and the typical character of the city and its inhabitants create a cultural climate, which some people rather not give up. Another point for families to remain in the city is the social connections. Living in Amsterdam brings a special lifestyle, which people want to keep. Their friends all live in the neighbourhood. The last important reason is the availability of work and other facilities. Most of the people live and work in the city. Moving out of the city would mean that they have to travel longer to and back from work. The local availability of shops, schools and day cares is motivation to stay in the city.

## Binding

Karsten and Felder explain in the book 'The new generation city children' (De nieuwe generatie stadskinderen) the city's importance for young families and why this type of family wants to stay in the city. This new type of families consists of "young parents, which both work, share the care for their children and furthermore have a busy social life" (Keesom, 2013: 12). Karsten and Felder talk about functional, social and symbolical binding to the location, from which functional binding is the most important. The more binding the families have, the more reasons for them to stay in the city (Karsten & Felder, 2016).

Functional binding has to do with time and spatial availability of facilities and spaces. The proximity of schools, fun playgrounds and other cultural facilities is very critical for families. Karsten and Felder say that the short distance to work is the most important element. In the Netherlands this is the biking distance. Nowadays both parents have a job and they combine work and care and that is only possible when work and home are close together (Karsten & Felder, 2016).

## Reasons to leave

One of the major reasons for young families to leave the city is that they don't have enough space to extend their family and they can't find a place in the city where they can. There are not enough options in the city so they start looking in neighbouring municipalities. The main reason for change is the need for more space in the form of more rooms and space outside for the children to play. Heren 5 mentions in the publication 'The family in the city' (Het gezin in de stad) five reasons for families to leave the city (Liesker, & Atteveld, 2010).

- Small dwellings
- No or limited outdoor space
- Traffic (pressure)
- Unsafe feeling
- High costs

Another point that the families in Amsterdam have to deal with is the extra presence of tourists on the streets. These tourists are not everywhere, but some places might be avoided by families because they are too busy.

The social binding is the (emotional) contact with other people. These are (study) friends and colleges that are 'our kind of people'. They want to recognize themselves in others and feel that this happens more in the city (Karsten & Felder, 2016).

The last type of binding that Karsten and Felder talk about is the symbolic binding. They explain that families want to identify themselves with the place. Couples in the city feel like real 'city people' and after they have children like a 'cool family' (Karsten & Felder, 2016).

# Conclusion

## Keeping young families

It is beneficial for the city of Amsterdam to keep the families. It is good for the diversity, economy and safety of the city. Children are the insurance for the future and provide social cohesion. Likewise have families a lot to gain from living in the city, where all the facilities and work is located. Most families want to stay in the city and don't give up their lifestyle, friends and the typical character of Amsterdam.

The families bind themselves to a place, through functional, social and symbolical aspects. The functional binding to schools, playgrounds, other facilities and work is the most important one for families. In the neighbourhood they want to recognize themselves in their friends and college. And they feel like that happens more in the city. They associate themselves with city people and other 'cool families', which is the symbolic binding to the city and its citizens.

Sadly there are also reasons for young families to leave the city. This has mainly to do with not being able to find a house that meets the requirements. In the municipalities outside the big city the prices are lower and families can find more space.

# Needs

## Needs of young families

The reasons for young families to stay in the city have a lot of similarities with the needs they have. These needs are the facilities and spaces they use and other matters that families demand in their city life. In this list of needs there are also wishes of young families. These are the so-called 'needs', which would be nice to have, but are not obligated. In choosing the space to live in, the needs are the basics and the wishes are the bonus points a space can provide.

To explain the different needs of the young families I will use three different scales of the city. These are the neighbourhood, building and dwelling scale. Next to this some design solutions will already be introduced.

## Neighbourhood scale

There are four main elements that are very important in the daily life of young families. First and most important are the education facilities like day cares and schools. Next to these facilities like supermarkets, other shops, sport facilities and spaces to play are essential. The third element is the availability of friends, both for the parents and for the children. Lastly it is very crucial to have a safe environment for children to grow up (Karsten & Felder, 2016).

## Facilities, friends and safety

On the neighbourhood scale the facilities are very important for the success of the living area for young families. The closer these elements are to home the better the neighbourhood is. For young children in the city the day care is very important. When both the parents are working this is the place where the children spend the day. Parents will always bring and pick up their children; a location near home or on the way to work would be ideal. When the children are four years old, they go to the primary school. This is another facility that every family needs in the neighbourhood. For all the children and parents in the research of Lia Karsten and Naomi Felder the school was part of the neighbourhood. It is part of the daily routine and the location for most social contacts (Karsten & Felder, 2016). Other facilities that are used daily or weekly are the supermarket, sport facilities and playgrounds or parks. Shops form the first point in the neighbourhood to which children can go individually (Karsten & Felder, 2016). The social contacts are both for the children and parents very important (the social binding). Children know most their friends from school (or day care). Often these friends live in the same neighbourhood and are the playmates for after school or weekends. In the big cities there are a lot of barriers on the way to the facilities, for example busy roads and crossings. A good organisation of the public space can help the independent roaming around of children (Liesker, & Atteveld, 2010).

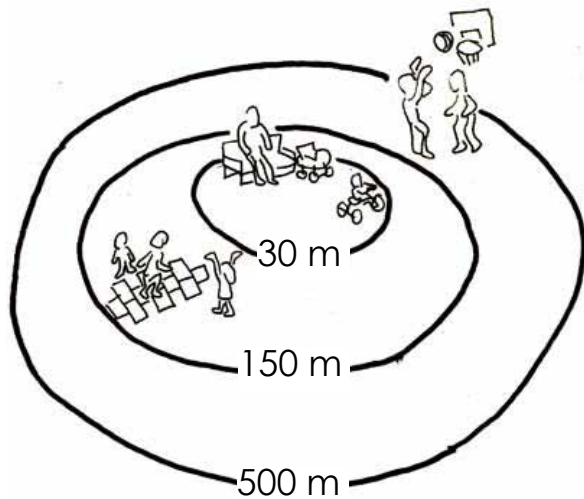


Illustration 3.2: Range of action  
(Liesker, & Atteveld, 2010)

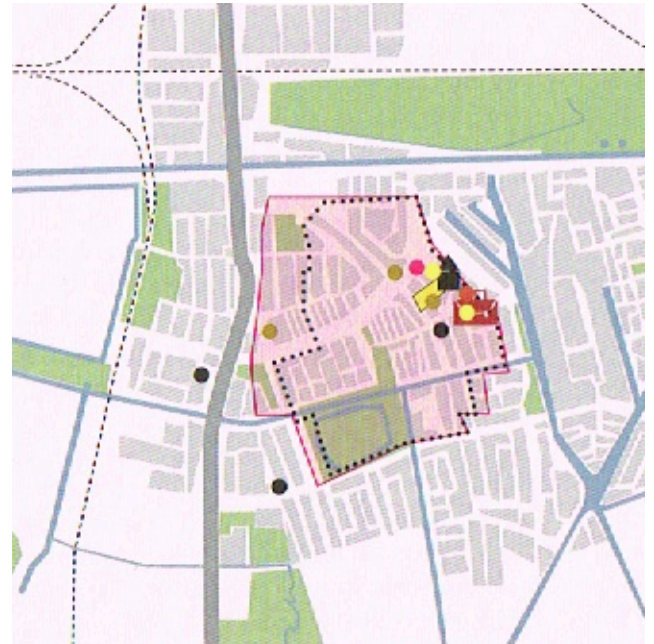


Illustration 3.3: Passport of  
Saleena (Karsten & Felder, 2016)

## Range of action

One of the wishes young parents desire is that their children can walk and play freely in the neighbourhood. In the literature this is called the 'range of action'. Heren 5 together with BNA (the department of research of the union of Dutch architects) define three ranges of action of children, that take into account the vulnerability of children and their wish to explore the world. The first range of action is 30 meter; this is for the children between the ages of 0 and 4. The next is 150 meter, for the children between the ages of 4 and 8. And the last range is 500 meter, for children between the ages of 8 and 12 (Illustration 3.2). Architects and researchers use these ranges of action often in creating spaces for families. Lia Karsten defines these three ranges of actions as follows (Keesom, 2013):

- 30 meter: to enhance the motor skills
- 150 meter: to enhance the social skills
- 500 meter: to enhance the independence of the children, where facilities from other neighbourhoods also belong in their habitat

This range of action can also help in deciding if the needed facilities are in the proximity of the potential house. For example if a child can walk to school on its own.

## Neighbourhood perception

In the book of Karsten & Felder, 'the new generation city children' they did a research on the neighbourhood perception of parents and children. What parents and children perceive as their neighbourhood can differ. In figure 3.3 the pink area is the neighbourhood of the child and the dotted area is the neighbourhood how the parents perceive it (Karsten & Felder, 2016). In all test cases the perceived neighbourhood differs from the neighbourhood distribution that is given by the municipality. In the case of the Tweede Weteringplantsoen both a part of the neighbourhood of the Weteringschans and De Oude Pijp will fall in the perceived neighbourhood of the young families. To locate the needed facilities for the young families the location analysis should look further than only the neighbourhood of the Weteringschans.

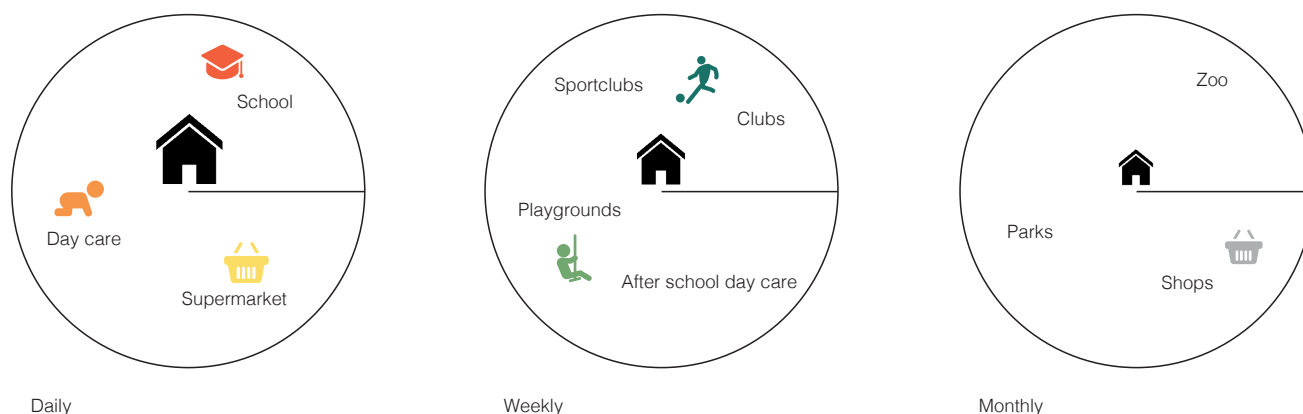


Illustration 3.4: Activity range.  
Own illustration

## Type of activities

Another way to divide the neighbourhood/city into action areas is to use daily, weekly and monthly (or yearly) activities (figure 3.4). These activities are part of the needs of the young families. This doesn't say anything about the range and space of the children to move in alone, because that depends on how well they know the area and on their parents. The parents can use these areas as a rule for the independent moving around of the children.

The daily activity area includes the facilities that are needed on a daily basis. These are the schools and supermarkets. The facilities that are used daily should be easily accessible by foot.

The after school and work activities are added to the next area, the weekly activities, which are sports clubs, other clubs, after school care and playgrounds. These should preferably be accessible by foot.

When the outdoor sport clubs are on the outside of the city, most children spend the way in the car. Lia Karsten names these children the backseat generation: children that mostly 'adult-organized children's activities' (Karsten, 2005).

The last activity area contains the monthly activities. These are bigger parks, shops and leisure activities like the zoo or a museum. In 'Parents and children con-

suming the city: geographies of family outings across class' Lia Karsten and Naomi Felder explain this third type as 'Family outings' (Karsten & Felder, 2015). For these activities the families can go by bike or public transport and perhaps by car when it is outside the city.

## Design solution

- Adding missing facilities to the design task.



## Building scale

One of the most important elements that a young family needs is space for the children to play outside. Many studies have proven that this is a very essential element of the upbringing of children, for example the research of Valentine and McKendrick (1997). But also the research that has been done by TNO about young children and obesity concludes that it is very important that children are encouraged to have more physical activity. An arrangement for this is creating a moving-friendly atmosphere and facilities and construction of the public neighbourhoods (TNO, 2005). This is for both the neighbourhood scale and the building scale very important. To be able to let children play outside, parents need to have the feeling that the environment is safe for their children to move in. In the city the large amount of traffic is a big origin for the unsafe feeling. Also social unsafety can play a role (Karsten and Felder, 2016).

The ability to see your child playing outside from the building has an effect on how often children play outside. More than half of the time children play outside under supervision, especially with young children (Karsten and Felder, 2016). Supervision can be estab-

lished on the building level from the house or gallery. When there is trust in the neighbours' parents let go in the supervision of their child easier (Karsten and Felder, 2016). A building where supervision is possible from different sides can stimulate this process. On the playground it is welcome if there are benches to sit, or even a covered place for parents to supervise (Karsten and Felder, 2016).

Besides the ability to supervise can the presence of boundaries have influence on how many times children play outside. Existing boundaries which parents and children use are element like buildings, roads, sidewalks, and fences. During the design process new types of boundaries can be implemented. Even a line on the ground could indicate a boundary for a child, when the parents set this as a rule. Different colours of lines could express different age areas. Height differences between streets and playing space can also function as a barrier for children. What has to be taken into account while creating the boundaries is that not every child and parent is the same and they won't use the same elements as boundaries.

## Design solution

- Supervision from the house (or gallery).
- Supervision from different sides (neighbours)
- Architects and designers can use existing and new elements to create a playful design with different types of boundaries.

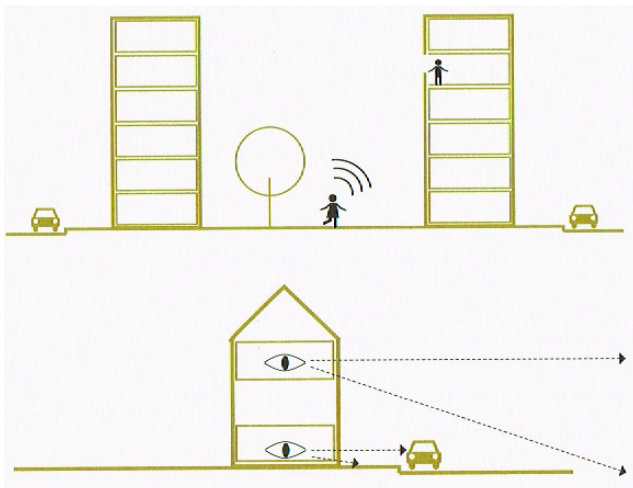


Illustration 3.5: Supervision. (Karsten and Felder, 2016)

## Dwelling scale

When couples, which are planning a family, or young families are looking for a house they have many wishes. They want the perfect house on the ground (grondgebonden) with a garden, many rooms, and enough space to grow and all that for a good price. But if they really want to stay in the city they need to adapt their wishes. An apartment can function as a good home in the city. However for families to be able to give up on some wishes on the dwelling scale, the other needs have to be satisfied. Lia Karsten explains that families are willing to give up on a house with a garden, but only if a pleasant collective courtyard is provided (Keesom, 2016). The book *Nesting in the City*, addresses six matters that are of interest for families in the dwelling (Keesom, 2016):

- Storage space
- Layout of the dwelling
- Growth of children in the dwelling
- Flexible use of space
- Connection between in and outside
- Living area

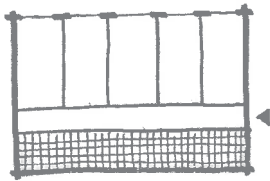
The issues and design solutions from the book will be further explained in chapter 5.

A house with a garden is of interest for young families, because the garden offers a safe and enclosed environment for even the youngest children to play outside. In an apartment this can only be done on a balcony, this is a limited space and doesn't offer many possibilities of playing. Other playing possibilities for children could be in the circulation space of the building. In the staircase or hallway additional spaces could offer playing areas for children. Also wide galleries could provide space for children.

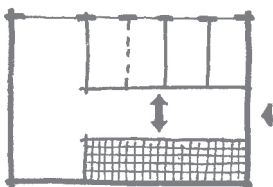
Inside the dwelling should be enough space and a sufficient amount of rooms. They provide playing space and also contribute to the privacy. Han Michel (in *Nesting in the city*) gives ten methods to create a city apartment for families. These have mostly to do with a lot of rooms and a wide hallway. Creating many small rooms will allow the possibility of many rooms and the option to combine two rooms together. A wide hallway along the small rooms with wide doors to the rooms, will allow for enough light and can be used as flexible space (illustration 3.5) (Keesom, 2016).

## Design solution

- Many rooms
- Wide hallway
- Look for safe (covered) playing space outside of the dwelling
- When the needs on the neighbourhood and building scale are met, the need for inner space becomes less important



Afbeelding 5: Alleen maar kamers



Afbeelding 6: De brede gang met kleine kamer

Illustration 3.5: Only rooms and a wide hallway with small rooms. (Keesom, 2013)

# Conclusion

## Needs on young families

The municipality of Amsterdam wants to keep families and families want to stay in the city, this should be reason enough for both parties to make sure this can happen. On one hand the city can help to create a better living environment and make sure the facilities needed for families are well maintained and safe. The young families should adjust their wish list and suffice with less space in a city apartment to let their children grow up in the city. Architects and urban planners can create the apartments with enough communal space to replace the needs of more space in the dwellings.

The building and its environment can create a new binding to the place. It requires a safe neighbourhood with enough facilities and friends for both the children and parents. The building should create a central point in the neighbourhood where other families and citizens feel welcome. A building specialised for families creates a community where the urban families identify themselves in their neighbours and have a social and symbolical binding with it. When the needs on both the neighbourhood and building scale are satisfied the families can adjust their wish for more space inside the dwelling.

# Target group

Percentage households with children in Amsterdam

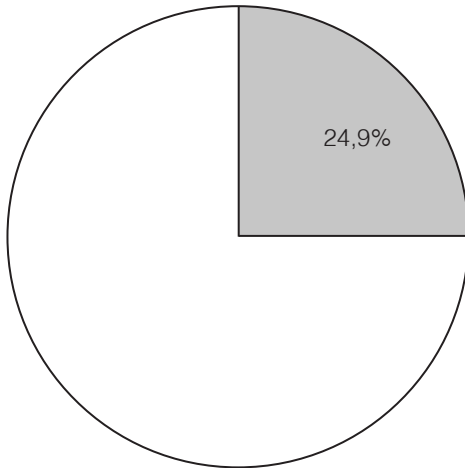


Figure 3.9  
(OIS, 2017)

Percentage households with children in the Netherlands

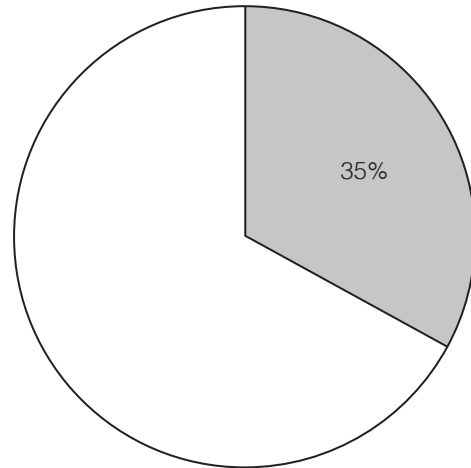


Figure 3.10  
(OIS, 2017)

## Young families

According to the results of the CBS especially young families leave the big cities. What kind of families do young families represent? With young families the CBS means families with one or more children younger than four years (CBS, 2016). In the investigation only couples are taken into account, this excludes one-parent families.

Bearing in mind that children grow up and don't stay young forever, the design task will also take into account children of higher ages. This vision to the future is also something that young families take into account, while looking for a new house. Children of different age groups need different facilities, places to play, schools and friends. For this graduation project the group of children between 0 and 12 years will be addressed. This is from the birth until the age where they go to secondary school and become more independent. The group of children from 12 to 18 will be taken into account in the design, but there will not be done any research for this group. Because of their independence they need very different provisions than younger children.

The primary target group will be young children (0 to 4 years) and their parents. Secondary will be the group of children that goes to primary school (4 to 12 years) and their parents.

## Families in Amsterdam

The amount of households with children (0 to 19 years old) in Amsterdam is 112.598 (OIS, 2017). This is 24,9% of the total amount of households (figure 3.9). This is a lot lower than the average in the Netherlands, which has 35% households with children (figure 3.10). Most of these families in Amsterdam consist out of two parents. This is 65% of the households with children; the other part is one-parent families. The average of the amount of children per family in Amsterdam is 1,5. This is 0,1% higher than the average of the Netherlands (OIS, 2017). A three-bedroom dwelling is necessary to meet the requirements for most families.

Currently the amount of children between the age of 0 and 4 years in Amsterdam is 47.386 (OIS, 2017). This is 28,5% (figure 3.11) of the total amount of children living in Amsterdam and 5,6% of the total amount of inhabitants. These children stay home or go to day care during the day. Especially with two working parents the day cares are very important to have in the neighbourhood. Like mentioned before the age of parents of the young families is getting older (after 35 year).

In the group of families there are some different classes. Karsten and Felder divide them in three categories: the 'social minimum', the 'social climbers', and the 'well-off families' (Karsten and Felder, 2016).

## Percentage young children in Amsterdam

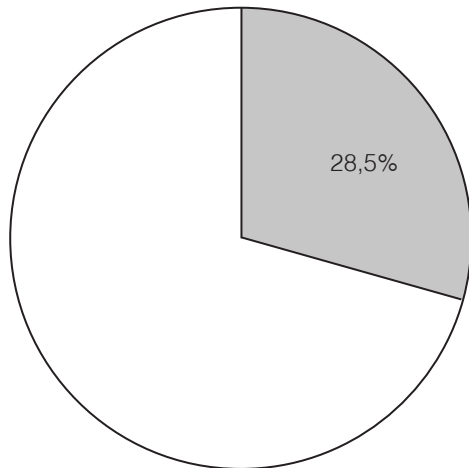


Figure 3.11  
(OIS, 2017)

The modern young families begin later with starting a family (after 35 years). The families are not starters anymore and that they have more to spent. This means that the relatively expensive Amsterdam is more feasible than in the past. But because the housing prices in Amsterdam are so high not all the families can be accommodated on the location. That is the reason for the focus on the 'social climbers' and the 'well-off families'. The dwellings will be around the 80 to 100 square meters.

## Tweede Weteringplantsoen

For the families in the surroundings of the site, both neighbourhoods Weteringschans and De Oude Pijp will be taken into account. The Weteringschans has 14,7% households with children and De Oude Pijp is comparable with 13,3%. This is far under the average of households with children in Amsterdam (24,9%) (OIS, 2017). This can be explained based on the location of the neighbourhoods being in the very centre of the city.

Target group

# Conclusion

## Target group analysis

Young families leaving the city are a problem for the municipality and for the families themselves. It is beneficial for the city of Amsterdam to keep the families. It is good for the diversity, economy and safety of the city and children are the insurance for the future and provide social cohesion. Most young families want to stay in Amsterdam. They experience a binding with the city, its facilities, friends and the citizens.

Young families require a safe neighbourhood with enough facilities and friends for both children and parents. On the building scale one of the main needs is safe space to play outside. A building specialised for families creates a community where the urban families identify themselves in their neighbours and have a social and symbolical binding with it. When the needs on both the neighbourhood and building scale are satisfied the families can adjust their wish for more space inside the dwelling.

The target group for the design assignment are young families. This group consist out of toddlers between the age of 0 and 4 years old and their parents. The group of children from 4 to 12 years old will also be taken into account, because of the future vision of the parents. The parents are couples

which both work, so they can afford the relatively expensive housing in the centre of Amsterdam.

Possible design solutions are:

- Adding the missing facilities in the neighbourhood to the design task;
- Create supervision from the dwelling, gallery and/or different sides of the building (neighbours);
- Create boundaries for children of different ages;
- Make many rooms and a wide hallway;
- Look for safe (covered) playing space outside of the dwelling;
- When the needs on the neighbourhood and building scale are met, the need for inner space becomes less important;





A detailed line-art map of a city block, showing building footprints, streets, and a central open area. The map is rendered in black outlines on a white background. The text 'Location analysis' is overlaid in the upper-middle section of the map.

# Location analysis



Illustration 4.1  
Location design site.  
Own illustration

## Amsterdam

Amsterdam is the capital of the Netherlands. The name Amsterdam is derived from the Dam that was made in the river Amstel in the 13th century. The presence of water is a mayor point in Amsterdam. In the past the canals were a way for doing trade. This is where the typical merchant houses come from. The water is also a big presence on the research location, on the 'Singel'. This creates an accessible and safe area where people can live. The city is a hot spot for tourists, but also a wanted place to life and work for the residents of the city. The vibrant life and the atmosphere of the city are a drawing point for living in the city.

## Weteringschans

The chosen design site, the Tweede Weteringplantsoen, is located at the Weteringschans and is part of the inner city of Amsterdam. There are two parks, one on the west and one on the east side of the big roundabout: The Eerste and Tweede (First and Second) Weteringplantsoen. The Tweede Weteringplantsoen is placed on the South border of the Weteringschans neighbourhood. The Singel is dividing this neighbourhood with De Oude Pijp, on the South side of the water (illustration 4.1). On this side the characteristic building of the Heineken experience is visible.

On first sight the Tweede Weteringplantsoen looks very closed, because of the high fence around the playground. It is dark because of the high trees and not well maintained. On the north side there is roadwork. On the positive side the playground seems to be working as a meeting place for the whole neighbourhood.

This location is well accessible, very close to the centre and the facilities, is shielded from the traffic by the water and a small neighbourhood on the east side, and acts like a centre point for people to meet. In 2018

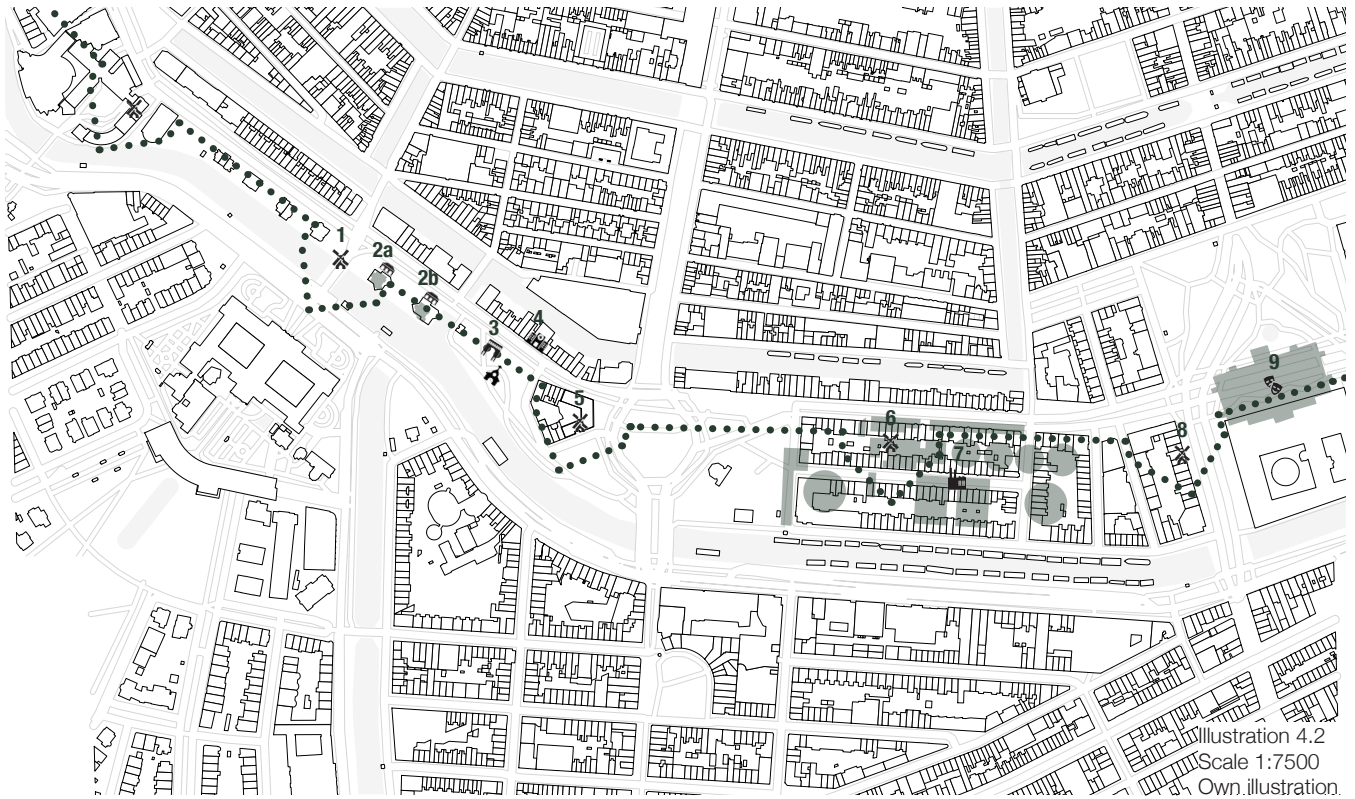
the Red Carpet (Rode Loper) will connect on the site, which will allow for a very safe and nice route further into the centre of Amsterdam.

In this chapter the location of the Tweede Weteringplantsoen will be analysed. First the history of the surrounding area with a few important historical landmarks and bastions will be described. The location lies on the outside of the old bastion along the Singel. In the 19th century a playground was realised at the Tweede Weteringplantsoen, which still exists and will be redeveloped in the near future. In the morphological analysis the patterns in the built and unbuilt environment will be analysed, as well as the building heights. Thereafter the different facilities in the vicinity of the Tweede Weteringplantsoen will be indicated. This will be done from the perspective of the young families and their needs. Starting with the education and day care facilities. Followed by the recreation facilities, with the super markets, shops and parks. After which the tourism, meeting and care, and work and office facilities will be indicated. Finally the public transport routes of trams and metro will be given. Next the facilities will be analysed, based on the types of activity, addressed in the target group analysis: the daily, weekly and monthly (yearly) activities. This will be followed by the neighbourhood from the child's perspective. In a sun analysis will both the mid-summer and mid-winter situation be shown, to indicate the amount of shadows from the surrounding buildings. The nuisance from traffic and tourism will be shown in the current noise levels from the roads and tourist routes through the city. Thereafter the safety index of the neighbourhoods of the Weteringschans and De Oude Pijp will show the safety levels of the location. Finally in the demography analysis the ethnicity, population, status and age of the inhabitants in the neighbourhood will be indicated.



# History

## Weteringschans and surroundings



Around the location of the Tweede Weteringplantsoen there were a few important historical landmarks and bastions:

1 Bastion Amstelveen:  
Molen de Spiering

Aligned with the Spiegelgracht was the bastion Amstelveen, with mill De Spring in het veld. This mill was demolished in 1874, shortly after the fortification was dug to straighten the Singel canal. Where once was the tip of the bastion, is now the main courtyard of the Rijksmuseum (Gemeente Amsterdam).

2a Villa Banda Neira &  
2b Villa Groot Banda

Both villas were built for and inhabited by Adrianus Martinus Lodewijk Hartog van Banda and his family. They were built in 1878 and demolished in 1976 to make space for two contemporary looking office buildings, nicknamed as the 'Peper en Zout' (pepper and salt) (Bakker).

3 Weteringpoort

The Weteringpoort was one of the eight city gates of Amsterdam and was built in the 17th century, during the third and fourth expansion. The Weteringpoort was together with the Raampoortbrug and Molenpoort one of the smaller gates. It was demolished in 1841 (Bakker).

4 Verbeterhuis

The building was bought in 1718 to keep people of bad behavior and insanity in secured custody. So it was a correctional institute. It was demolished in 1832 (Verdwenen Bouwwerken).

5 Bastion de Wetering:  
Molen de Wetering

On Bastion Wetering stood the flour-mill de Wetering. The mill was built in 1744 and demolished in 1873 (Gemeente Amsterdam).

6 Bastion Reguliers:  
Molen de Hoop

This bastion was named after the Reguliersgracht, which in turn was named after a monastery that stood outside the former city gate. This monastery was founded in 1395 and burned down in 1532. In 1868, Molen de Hoop had to make way for the expansion of the adjacent Dutch Gaz Company (Gemeente Amsterdam and Wijdelt's).

7 Hollandse Gaz Compagnie

Built in 1845 to compete with the monopoly of the 'Amsterdamsche Pijp-Gaz Compagnie'. It closed down in 1885, because the city council granted the monopoly to 'Imperial Continental Gas Association' (Verdwenen Bouwwerken).

8 Bastion Ouderkerk:  
Molen de Haan

Bastion Ouderkerk was lowered in 1803 but completely vanished when the Dutch Gaz Company expanded. The mill, called 'de Roode Haan', was in the way of housing and therefore demolished in 1872 (Gemeente Amsterdam).

9 Paleis voor Volksvljijt

The Paleis voor Volksvljijt was a glass exhibition building built in 1864, inspired by Crystal Palace in London. It burnt down almost completely in 1929 (Paleis voor Volksvljijt).



## Current situation



Illustration 4.4: Design site  
Own illustration

The design site is located on the crossing of the Vijzelgracht and the Weteringschans. The Weteringcircuit consists of the Eerste and Tweede Weteringplantsoen (first and second), with in the middle a big roundabout. The pictures show the two building blocks on the east side of the site and a part of the park.

Picture 1: This picture shows the park structure of the north corner of the Tweede Weteringplantsoen.  
Picture 2: This is an office of Heineken Global Procurement B.V. on the waterside.  
Picture 3: This is the façade of the living block on the northeast side. This picture shows the characteristic facades.

- 4. Pancake restaurant: De Carrousel
- 5. Day care facility and Playground
- 6. Singel
- 7. Heineken Experience



Picture 1  
(UJ Klaren, 2017).



Picture 2  
(Koning, 2017).



Picture 3  
(UJ Klaren, 2017).



# Playground

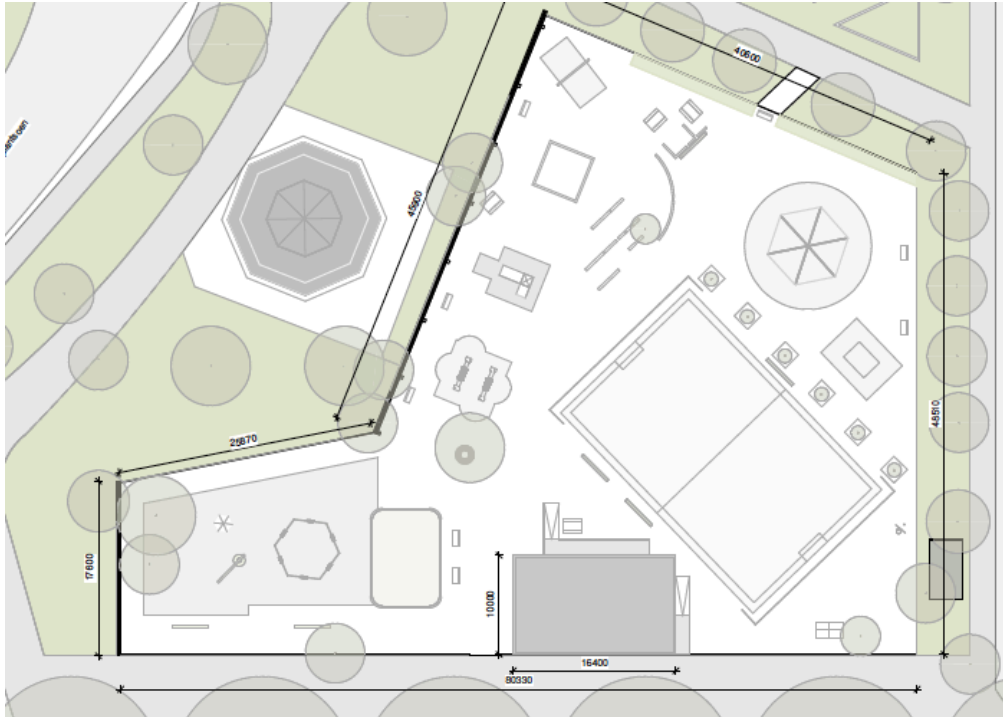


Illustration 4.5  
Current playground design  
(UJ Klaren, 2017).

## Playground: UJ Klaren

On the site momentarily the oldest playground of Amsterdam is located. This was in the 19th century a green oasis for children to play with big swings (illustration 4.6), but in the 1960 it has become more paved. This moment the playground doesn't meet the requirements for a modern playground and the division of the different play areas isn't optimal.

## New plans

The foundation of the playground, UJ Klaren, the municipality of Amsterdam, Heineken and ABN AMRO have made together with Emma architects a redecoration of the playground. The difference between the current situation and the new plan is visible in illustrations 4.5 and 4.7. In this new plan the big playfield is relocated to the side, which creates a new space in the middle. The park will be divided in three separate areas where children of different age groups can play with each other (toddlers, pre-schoolers (kindergartner), and teens), these areas are enclosed by means of a path with forms an 'endless loop'. New trees together with the already existing trees will bring more green into the playground and bring it back to the more romantic green oasis like the original one.



Illustration 4.6  
Old swings playground (UJ Klaren, 2017).

**Groenimpressie**  
UJ Klaren

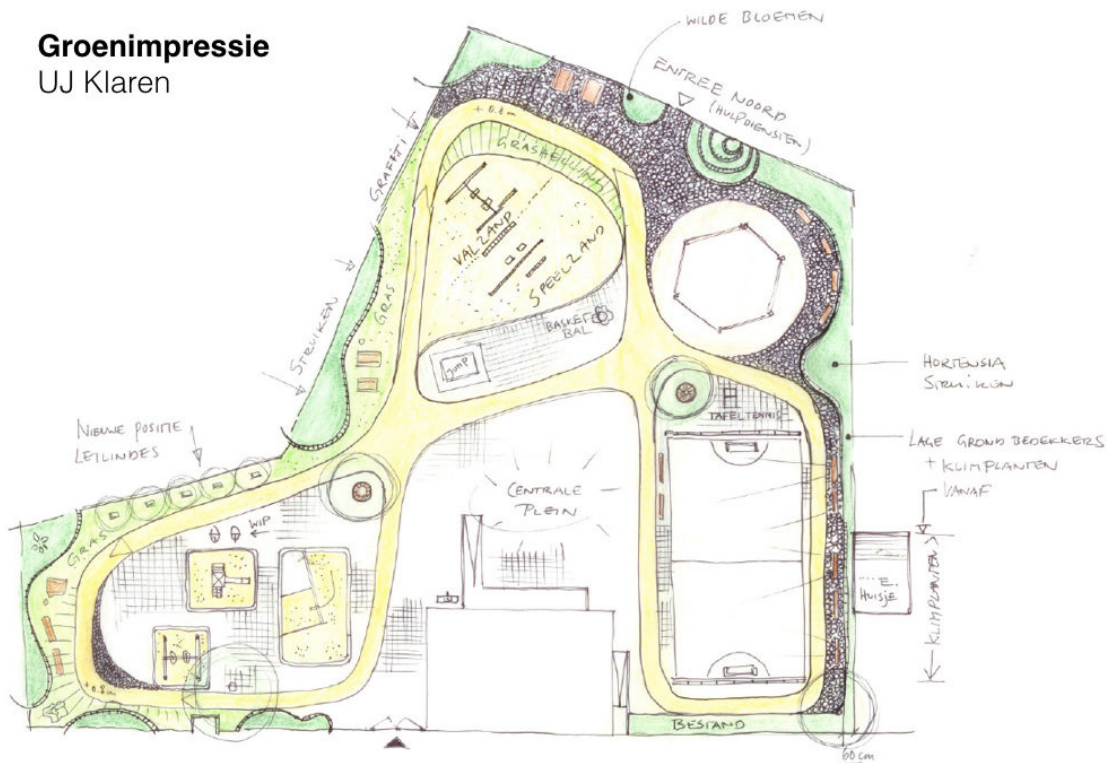


Illustration 4.7  
New playground design  
(UJ Klaren, 2017).

**Conclusion**

This playground is used by many children living in the area and has become a central point for children to come together. It functions as a binding link for the surrounding neighbourhoods (Weteringschans and De Oude Pijp). This is why it is important to maintain this connection for the children and parents of the neighbourhood and this function will be integrated in the new design of the site.

The plans for the new playground (the three areas of age groups) can be used as input for the design of the play area that will be located on the site.



Illustration 4.8  
Impressing new play-  
ground (UJ Klaren, 2017).

# Future

## Red carpet



Illustration 4.9  
Red Carpet plan (van der Pol, 2015).

The Red Carpet is a project that will combine a new metro line: the Noord-Zuidlijn (north south line), with a redecoration of the public space on ground level. This will connect the central train station of Amsterdam with the Pijp. It will form an entrance to the city specialised on slow traffic, and the red pavement will show a new zone in the city. The Red Carpet creates wide sidewalks for pedestrians and space for bicycles. There will be fewer trams and they will share the road with the cars, which leave more space for the wide sidewalks (Beemster, 2015).



Illustration 4.10  
Impressie Red Carpet  
(Gemeente Amsterdam).

The roundabout at the Weteringschans is not part of the design of the Red Carpet. The Red Carpet ends at the Vijzelgracht and will continue on the other side of the Singel. This creates the opportunity for the design of the site to form a connection between these two parts.



Illustration 4.11  
Impressie Red Carpet  
(Gemeente Amsterdam).



## Connecting parks



Illustration 4.12  
Weteringcircuit, plans for new  
organisation (Parool, 2016).

There are new plans for the Weteringcircuit. To bring the two parts Eerste Weteringplantsoen and Tweede Weteringplantsoen together is a park: Weteringpark. All the parties seem positive to create a place of rest in the increasingly crowded city. The plan will reroute the traffic of the roundabout to a strait line from the Vijzelgracht to the Ferdinand Bolstraat.

The plans are on hold until the Noord-Zuidlijn is finished. The redecoration of the traffic and parks will create the possibility to redirect tourist from the metro station to the Museumplein with a new walkpath (Kruyswijk, 2016).

The new plans will create a safer environment for the young families in the future. With more overview, a bigger park, less roads and less traffic.

# Morphology

## Relationship built and unbuilt space



### Legend

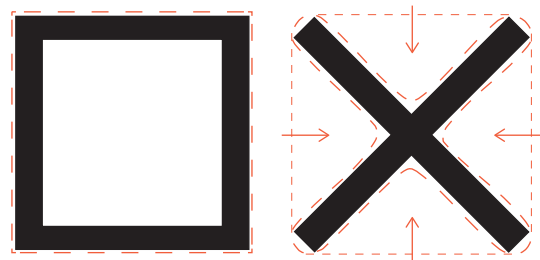
-  Built
-  Unbuilt

Illustration 4.13  
Scale 1:7500  
Own illustration

In this map (illustration 4.13) is the relationship visible of the built and unbuilt spaces surrounding the Tweede Weteringplantsoen. Here you can see how the open spaces are composed. The building blocks surrounding the Tweede Weteringplantsoen have two characteristics. First there is the typical Amsterdam building block, with a clean building line on the outside and an uneven open centre. And secondly a line housing (row housing), with on the street side the smooth building line and on the water (back side) the uneven building line. Another building type that is apparent in this illustration is the square blocks, which are mainly the houseboats on the canals.

The Tweede Weteringplantsoen is clearly visible by a white area on the map. Other empty spaces are the square above the Nederlandse Bank on the East side, the Museumplein on the West side and the canals.

What does this mean for the building design?  
To be able to keep the public space of the Tweede Weteringplantsoen the building needs to adapt to this. A closed building block will disturb this open space more than for example a cross, which creates more space on the outside of the building block. In order to maintain public space for the city, the building form will be more open or don't cover the whole site.



### Building heights

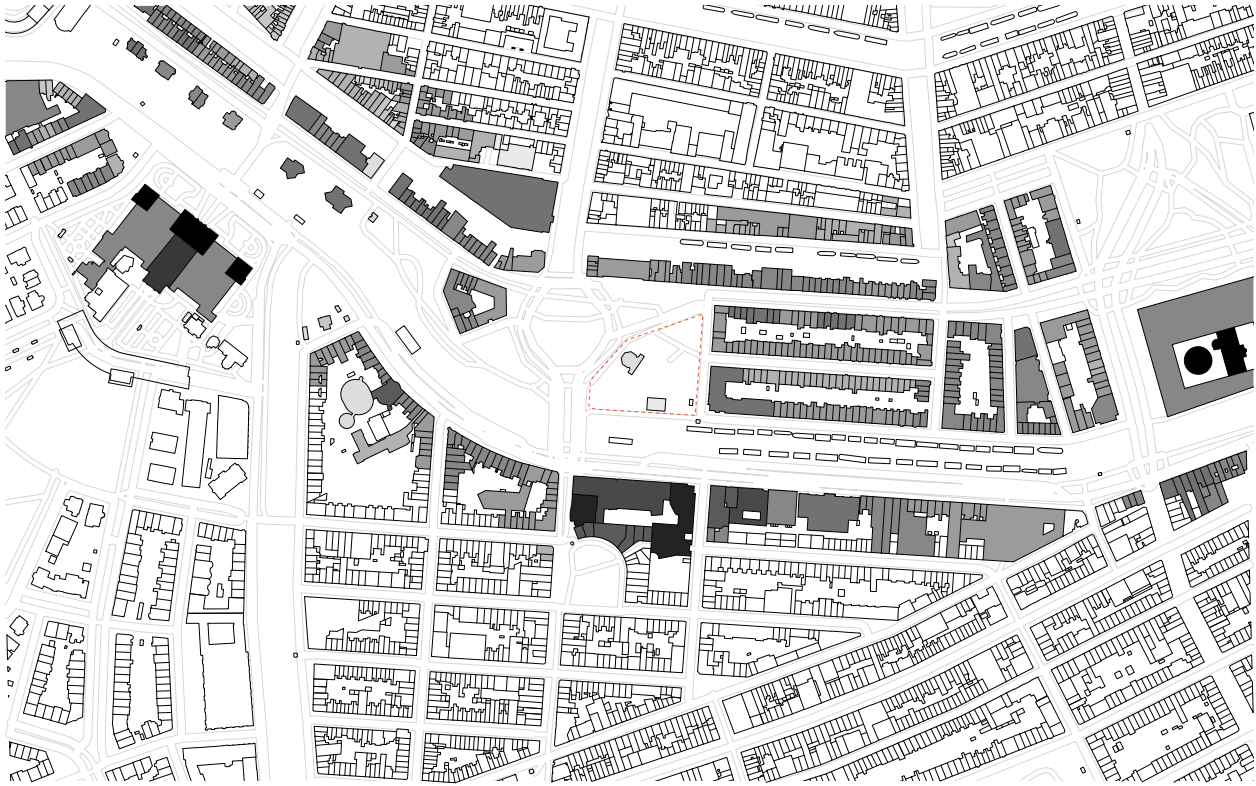














Illustration 4.14  
Scale 1:7500  
Own illustration

Legend

 3-6 meter	 15-18 meter	 27-30 meter
 6-9 meter	 18-21 meter	 30-33 meter
 9-12 meter	 21-24 meter	 33-36 meter
 12-15 meter	 24-27 meter	 >36 meter

In this map, illustration 4.14, the building heights of the complexes on the Singel are depicted. Most buildings directly surrounding the Tweede Weteringplantsoen are around 15 and 18 meters high and a part is between 21-24 meters high. The highest building is on the other side of the Singel, the complex of the Heineken Experience, which is around 30 meters high.

What does this mean for the building design?  
Most buildings around the Tweede Weteringplantsoen are 5 or 6 floors high. To create a higher density on the location these heights can be adopted.

The landmarks (highest points) in the area are from the Rijksmuseum (35 meter) on the West side, the Nederlandse Bank (75 meter) on the East side and the Heineken Experience (30 meters) on the South side of the site.

# Facilities

## Education and day care



Illustration 4.15  
Scale 1:7500  
Own illustration

### Legend

- Day-care
- Primary school
- Secondary school

To meet the requirements of the young families the location of schools and day cares is very important. The target group consists of children between the age of 0 and 4 years old. This is the age in which the toddler goes to the day care. On the site of the Tweede Weteringplantsoen a day care is located. Because of the large amount of young children replacing this day care centre on the site is strongly required.

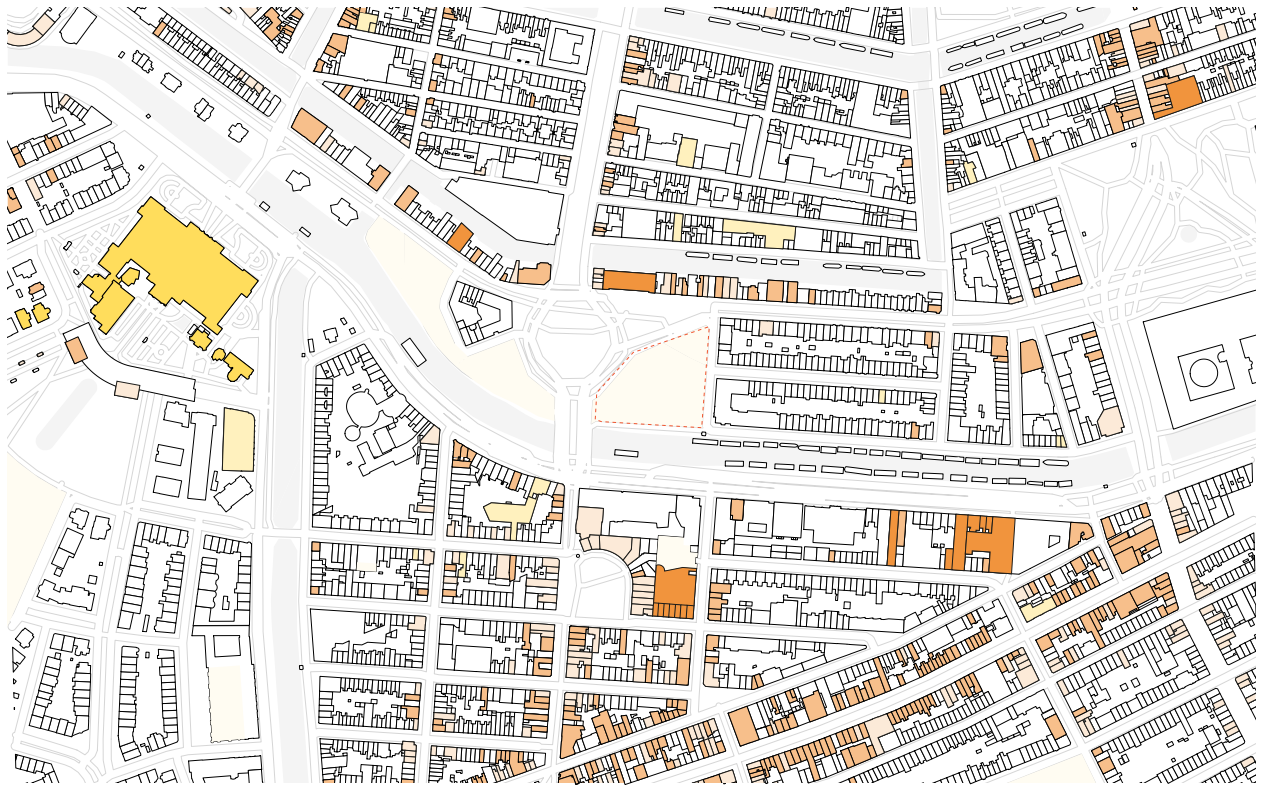
Looking towards the future of the families the next step in raising their children in the primary school. There are several primary schools in the neighbourhood. The one closest to the Tweede Weteringplantsoen is 'De kleine reus' (the small giant), a little north of the site.

The secondary school is on the border of this range. By the time the children have to go to secondary school, they will be allowed to move through the city on their own.

Design: relocate day care back on the site



## Recreation



## Legend

■ Super market	■ Museum
■ Shop	■ Sport
■ Restaurant	□ Park

Illustration 4.16  
Scale 1:7500  
Own illustration

Another facility that is very important for young families is the super market. Often children (older than 4 years) are allowed to go to the super market alone to buy something or they join the parent while shopping. The super market is a point of recognition for children in the neighbourhood. There are several big super markets close by the site, the Albert Heijn is the closest at the big roundabout of the Weteringschans.

There is no shortage of shops, restaurants, and sport places in the neighbourhood. This is due to the central location in the city centre of Amsterdam. There is a shopping street in De Oude Pijp, this is a walking street where a few times per week the market is located. The Rijksmuseum is clearly visible on the West side of the Tweede Weteringplantsoen.

Another important facility for young families are the parks. The parks in Amsterdam are located in the neighbourhoods surrounding the inner city centre. In De Oude Pijp the Sarphatipark is located. On the Tweede Weteringplantsoen the old playground UJ Klaren is situated. Young families have to travel around through the city to visit the parks. The park/ playground will be replaced back on the site, not only for the inhabitants of the new building but also for the children in the area to act as a meeting point.

Design: relocate park/ playground back on the site

Tourism

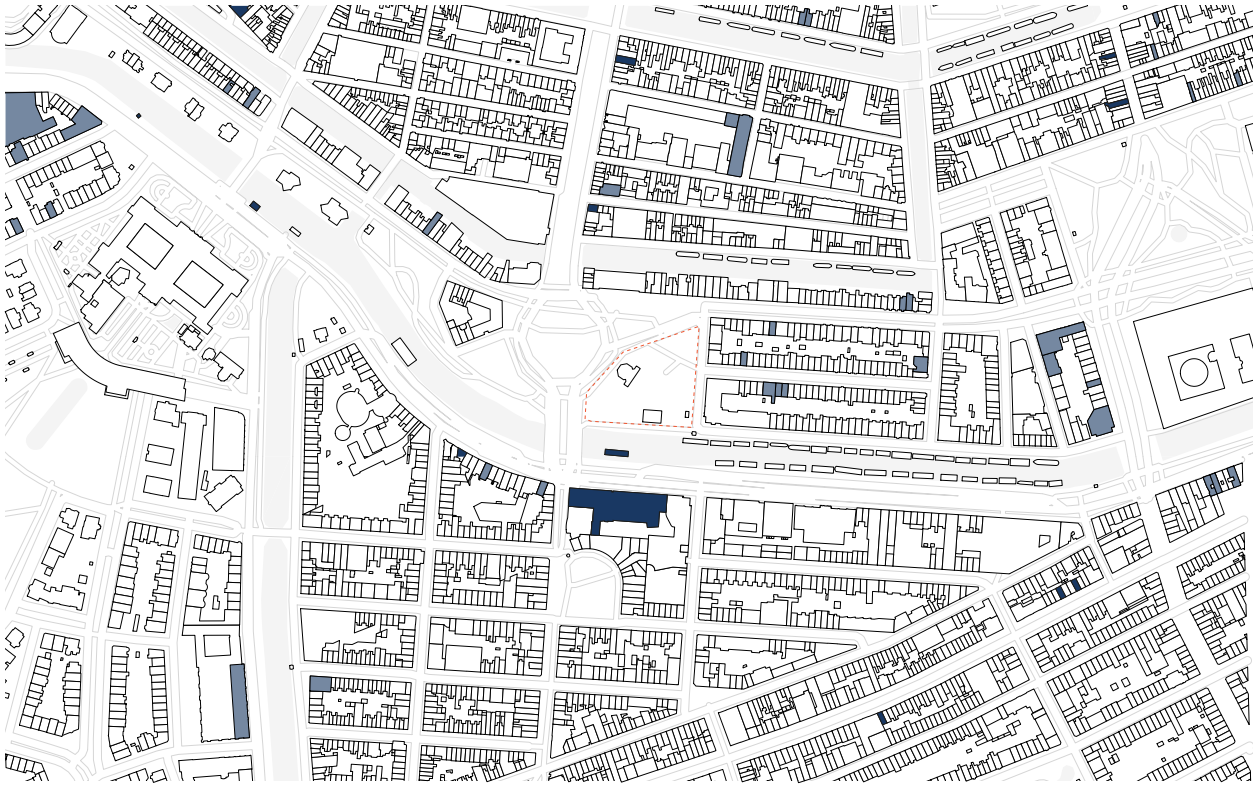


Illustration 4.17  
Scale 1:7500  
Own illustration

Legend

- Tourism
- Hotel

Tourism forms a big part of Amsterdam. As expected there are some hotels in the neighbourhood. Amsterdam is still a very loved place to go to for foreigners. But the hotels are spread out over the neighbourhood. The NRC (May 11th, 2015) did an investigation on which places tourists go to in Amsterdam. The illustration (4.18) shows that most tourist places are further in the centre and to the west side.

On the other side of the water is the Heineken Experience located. This will attract some tourist (foreign and Dutch), which pass the Tweede Weteringplantsoen. The Heineken Experience was in 2015 on the 6th place of popular attractions and museums in Amsterdam, with 2.430 visitors per day (at5, 2016).

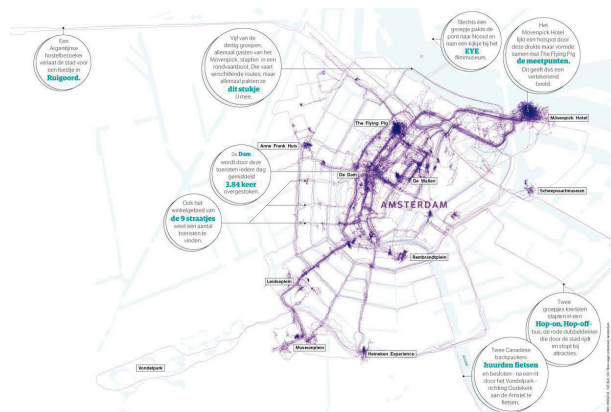


Illustration 4.18  
Tourist routes  
(NRC, 2015).

## Meeting and care



## Legend

- Meeting place
- Religion
- Care

Illustration 4.19  
Scale 1:7500  
Own illustration

There are a few places in the neighbourhood of the design site that the municipality of Amsterdam defines as meeting places. In the anonymity of the city, these places will become more important. Diversity in the types of the meeting places will offer a space for different citizens. For example in the Weteringschans a meeting place for families. A neighbourhood centre can offer direct contact between the inhabitants of the new building. This will also form the centre for children to play and interact with each other.

Design: place a neighbourhood centre on the site



## Work and office

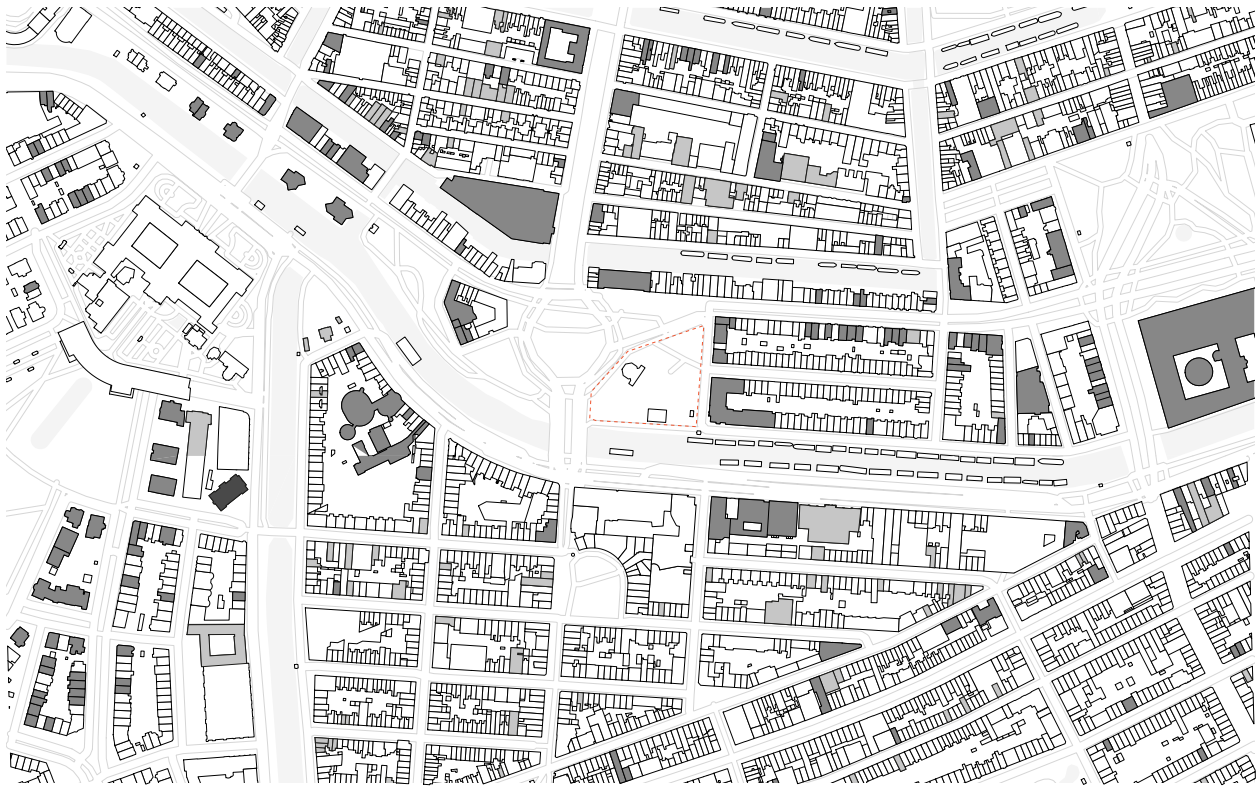


Illustration 4.20  
Scale 1:7500  
Own illustration

### Legend

- Alarmservice
- Office space
- Company

There is a lot of office space in the centre of Amsterdam. The difference between dwelling and office building is that they are generally used from 9 to 5 at weekdays, while the dwelling is used in the opposite time and in the weekends. When the office buildings are spread over the city this can mean that there always is activity on the streets, by either the businessman or the inhabitants.

## Public transport

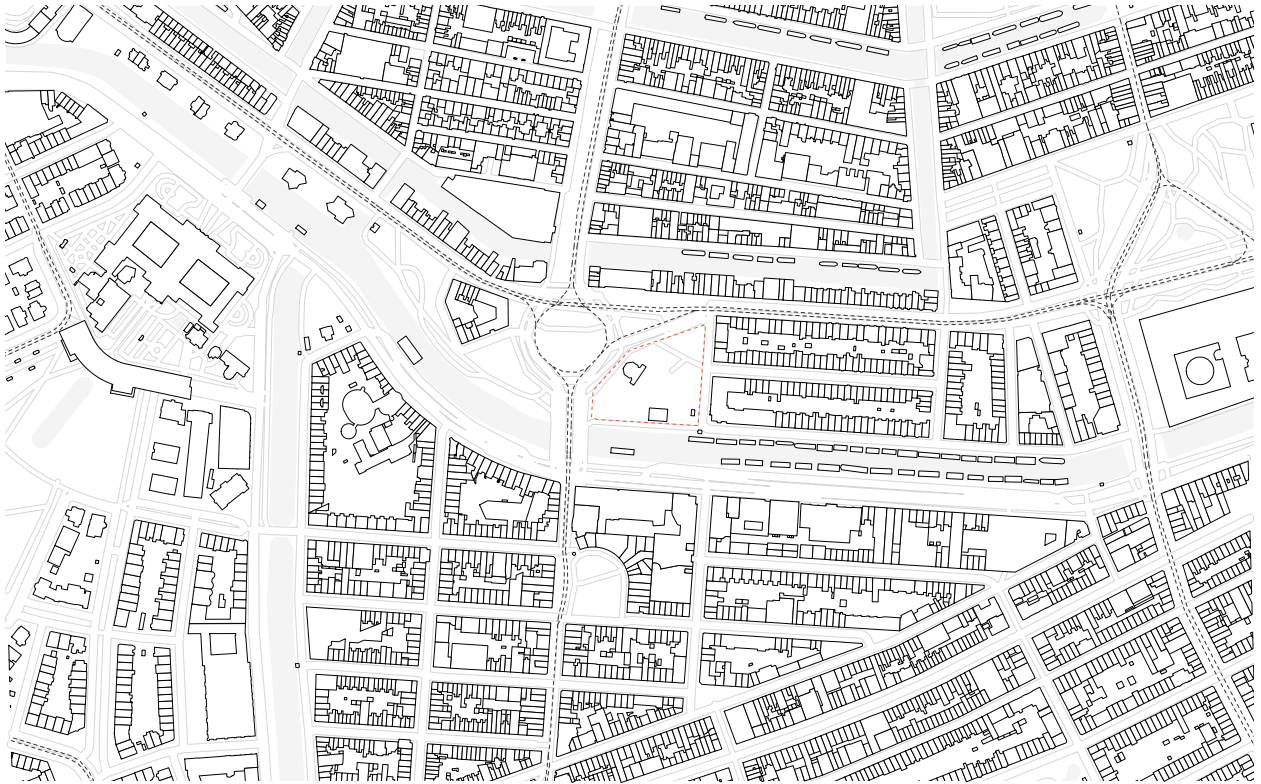


Illustration 4.21  
Scale 1:7500  
Own illustration

The public transport that is passing the Tweede Weteringplantsoen is on the north side, on the Weteringschans, and on the west side over the Weteringlaan. Tram 24 is driving from north to south and trams 7 and 10 from east to west. From the 22nd of July 2018 this timetable will be extended. From north to south there will be a metro line (metro 52) in addition to tram 24. This metro line is part of the new Red Carpet connection that will go from the train station to the south. Trams 1, 7 and 19 will drive from that moment over the Weteringschans.

The site of the Tweede Weteringplantsoen is well accessible by public transport; this will even get better in the near future.

## Accessibility by car

The accessibility by car is very well with the s100 (illustration 4.22). The s100 is a city road to which most other s-roads are connected and is well accessible from the highway. It makes a ring around the centre of Amsterdam and follows the Singel.

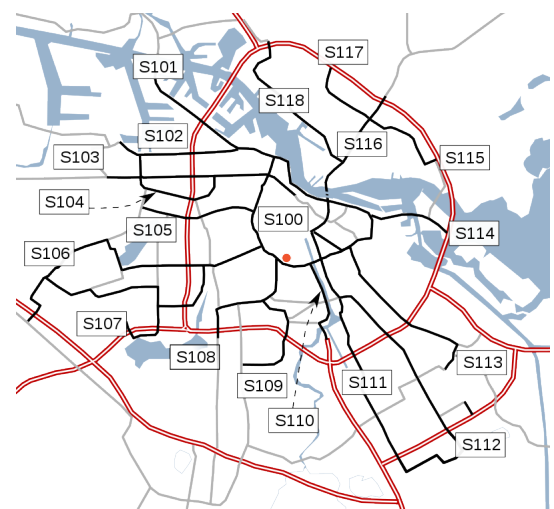


Illustration 4.22  
City roads

# Facilities based on the types of activity

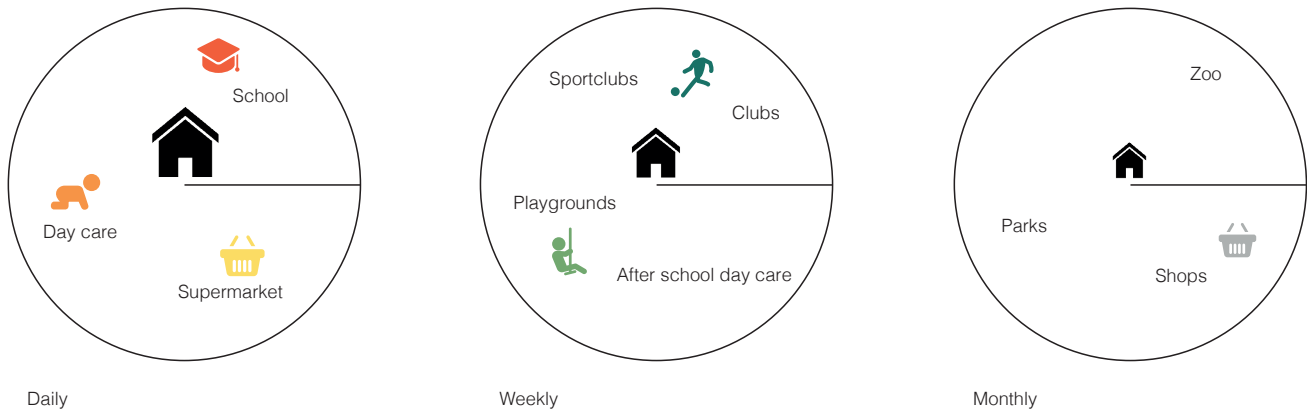


Illustration 4.23: Activity range.  
Own illustration

In the target group analysis the different types of activities for young families are introduced. The frequency of the activities shows the importance of the facilities. In illustration 4.23 the facilities are visible that belong to the different time periods/interval (daily, weekly and monthly). On the basis of this the suitability of the site can be tested, and the necessity of adding facilities to the design task.

## Daily activities

Within a scale of 250 meter there are three super markets, one school and two day cares located. The closest super market is an Albert Heijn, which is on less then 50 meters from the site. One of the day cares is located on the site. This day care needs to be relocated back in the design and expanded to accommodate the new children of the building.

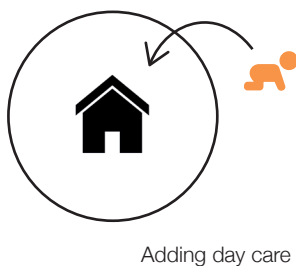


Illustration 4.24: Daily activities.  
Own illustration

### Weekly activities

The weekly activities are on the scale of several neighbourhoods. In the scale of 500 meter there are several after day cares and sport clubs, but no outdoor sport parks. This has to do with the high density of the city and the high prices in the centre of the city. Within 500 meters there is a swimming pool. This is an important facility for children, because a lot of children go to swimming lessons in the Netherlands. The most important playground is located on the site itself and plays a significant role in the neighbourhood. For this reason the playground should be relocated on the site in the design.



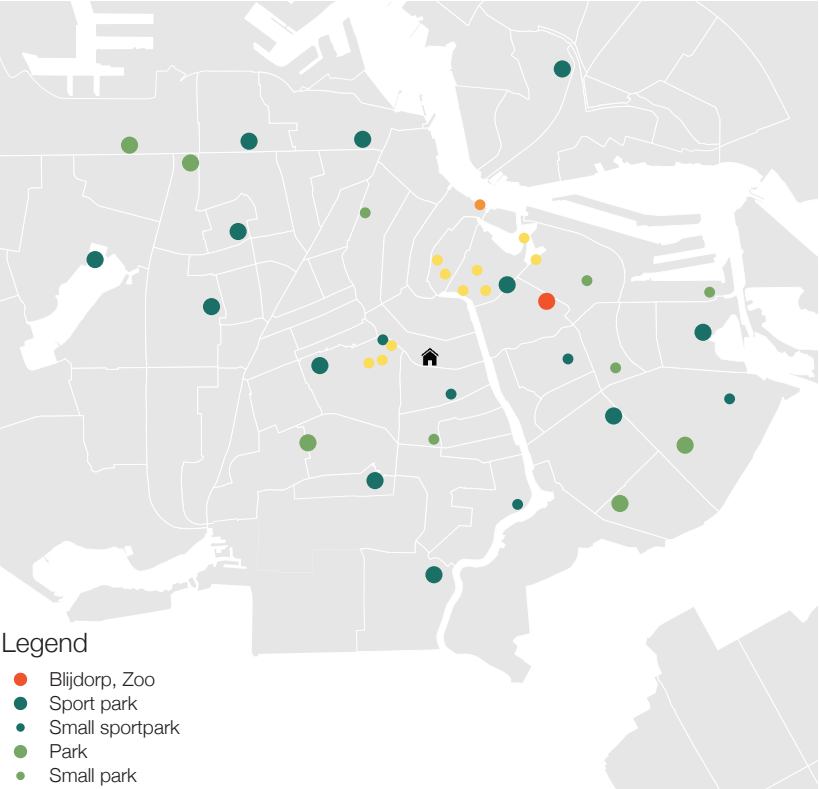
Adding a playground



Illustration 4.25: Weekly activities. Own illustration

### Monthly activities

The monthly activities are spread out over the whole city. Here you can see that the sport facilities are located more on the outside of the city centre. Also the bigger parks are further from the city centre. The leisure facilities, like museums and the zoo, are clustered in the centre of Amsterdam.



- Legend
- Blijddorp, Zoo
  - Sport park
  - Small sportpark
  - Park
  - Small park
  - Train station
  - Museum

Illustration 4.26: Monthly activities. Own illustration



# Neighbourhood from child's perspective

## Range of action



### Legend

- Sport facility
- Playground
- Supermarket
- Day care
- Primary school

Illustration 4.27: Range of action  
Tweede Weteringplantsoen.  
Scale 1:7500  
Own illustration

In the target group analysis the range of action is introduced. In this illustration the adapted range of action is visible. The adapted range of action uses the same ranges (30, 150 and 500 meter), but takes boundaries into account. Water is a major boundary in Amsterdam. The many canals form a tight grid in the city structure. To cross the water you need to go to a bridge. As a result the distance to a location becomes longer. Other boundaries can be big roads, for which you need to go to a crossing, or buildings. This will become more clear in the 'route to school' in the next part.

Because the range of young children is very limited (30 meters), they will either play at home or directly in front of the house. This is only possible when the collective or public space is designed for the young children and is safe enough. Young children will not leave the design plot of the Tweede Weteringplantsoen.

## Route to school (4 - 12 years old)

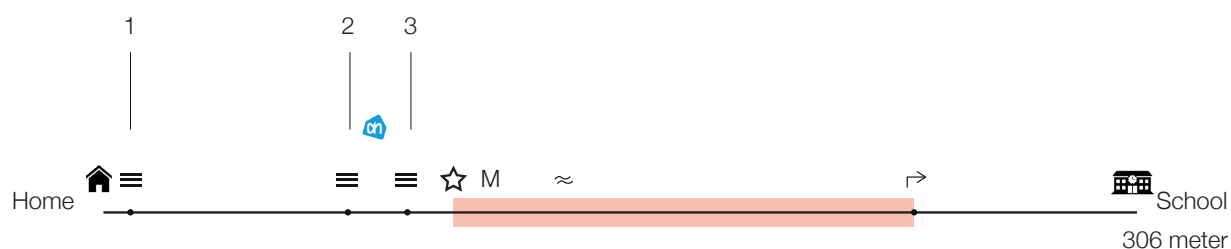


Illustration 4.28: Route to school  
Own illustration

- ≡ Pedestrian crossing, car one way street (1)
- ≡ Pedestrian crossing, tram (2)
- ≡ Traffic light pedestrian crossing, car one way street (3)
- 🛒 Albert Heijn, super market
- M Metro entrance
- ★ Red Carpet
- ≈ Bridge over water
- Nieuwe Looiersstraat
- 🏫 School

The route to school is something that is of importance for the secondary target group, children between the age of 4 and 12. This group goes to primary school. The nearest primary school is 'de Kleine Reus' (the Small Giant). To get to the school a child will have to cover a distance of 306 meters, see illustration 4.27. Safety is the most important aspect of the route to school. On the way there are some elements that form barriers in the route. Taking into account that city children are more used to the busy traffic, this still forms a dangerous element and is one of the reasons for young families to move away.

There are two parts in the route (illustration 4.28). From the site of the Tweede Weteringplantsoen there are first a couple of roads that need to be crossed and after that the Red Carpet will make a safe environment. The roads are one-way streets, and the tram track is a double line in between the two roads.

There is an Albert Heijn on the opposite side of the road; this will probably be the store for all the groceries and a landmark on the route to school. Turning right onto the Vijzelgracht there will be the entrance of the (new) metro station. In a few months the Red Carpet will be ready, this will make the route to school a bit safer from traffic. The wide sidewalk will create a safe zone walking towards the school (and back).

# Light and noise analysis

## Sun

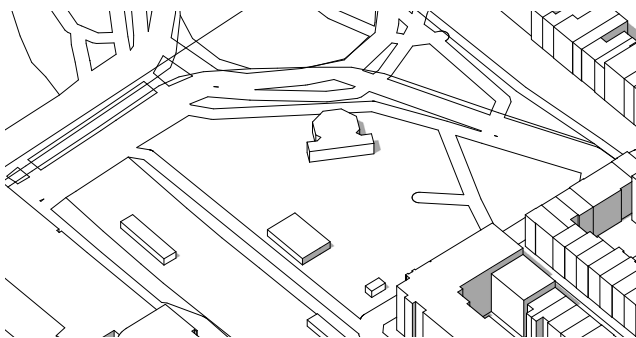
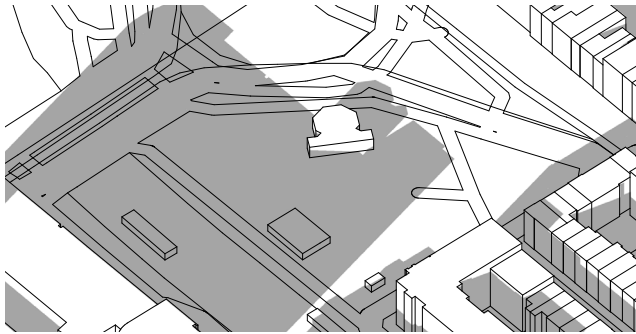
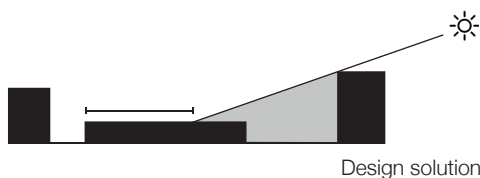
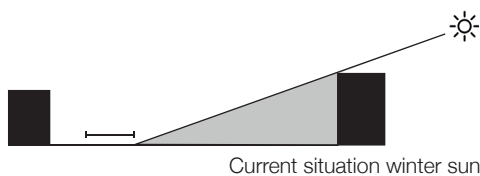


Illustration 4.29: Sun analysis  
Own illustration

This sun analysis shows the mid-winter and mid-summer situation. In the winter the Heineken Experience building casts a big shadow on the site. Going up only one story (see the pancake restaurant) the shadow disappears. A square that is lifted from the ground could provide sunlight on the darkest day of the year.

In the midsummer situation there is a lot of sunlight on the site. The buildings surrounding the site give no shadow. Trees and the water could give some cooling in the summer.



## Noise

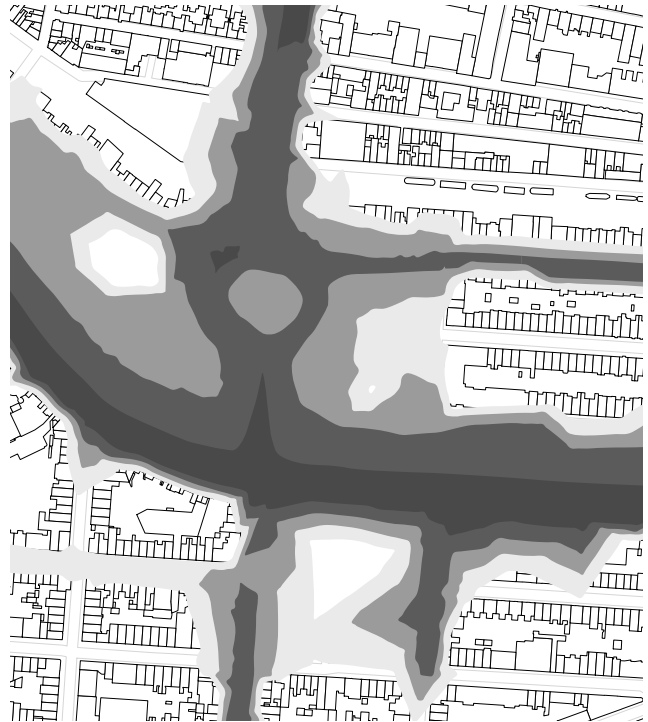
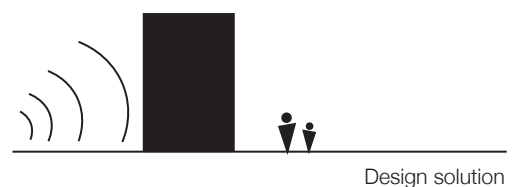
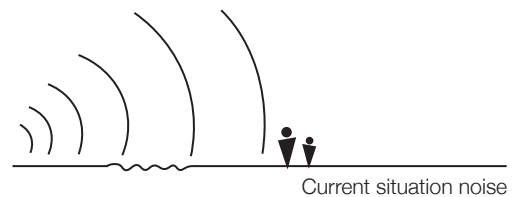


Illustration 4.30: Noise analysis  
Own illustration

### Legend



The level of noise is highest around the s100 city road. Here it can be 70 dB or more. Because of the water the noise can travel towards the site. On the site the noise level is still between 55 and 65 dB. A building could work as a shield to absorb the noise and create a more peaceful square for the young families and the neighbourhood.



# Safety

## Safety index Weteringschans and Oude Pijp

The municipality of Amsterdam has analysed every neighbourhood of the city on safety. They analysed the safety index, the criminal index, the nuisance index and the experience index. The Weteringschans is one of the worst neighbourhoods of Amsterdam (illustration 4.31). The safety index of the neighbourhood is far above the region average (figure 4.2). The explanation for the bad safety index of the neighbourhood is because it is one of four neighbourhood that are located close to the centre, where high-impact criminality takes place around the nightlife areas. The other reason is that many property crimes happen in these areas (Gemeente Amsterdam). The experience index on the other hand is much better. The location of the site at the Tweede Weteringplantsoen is located on the border of the neighbourhood. It is on the line with De Oude Pijp. The safety index of this neighbourhood is better (figure 4.3). To create a safe environment the building will need to form a shelter for young families.

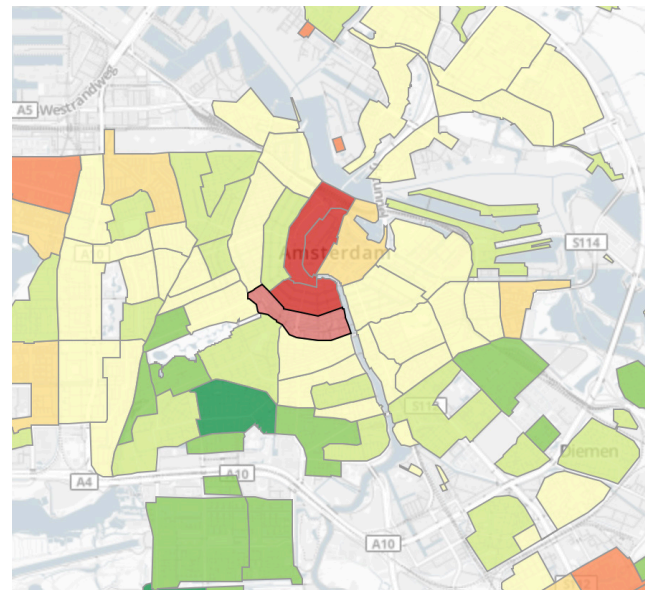


Illustration 4.31: Safety index Amsterdam (Gemeente Amsterdam)

### de Weteringschans sinds 2014

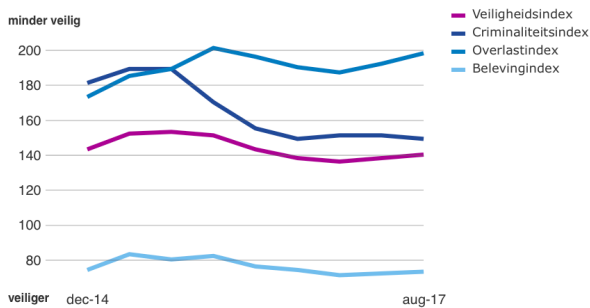


Figure 4.1  
Safety index Weteringschans since 2014 (Gemeente Amsterdam)

### de Weteringschans vergeleken met andere buurten

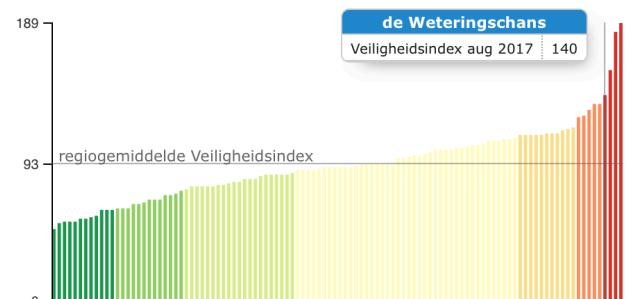


Figure 4.2  
Comparison Weteringschans with other neighbourhoods (Gemeente Amsterdam)

### Oude Pijp sinds 2014

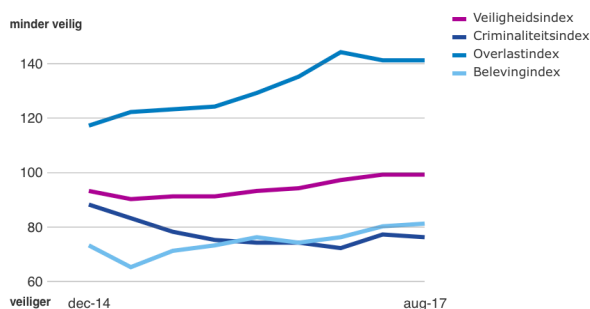


Figure 4.3  
Safety index Oude Pijp since 2014 (Gemeente Amsterdam)

### Oude Pijp vergeleken met andere buurten

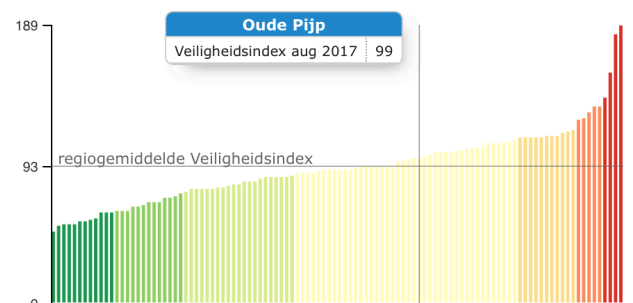


Figure 4.4  
Comparison Oude Pijp with other neighbourhoods (Gemeente Amsterdam)

# Affordability

## Prices per square meter per neighbourhood

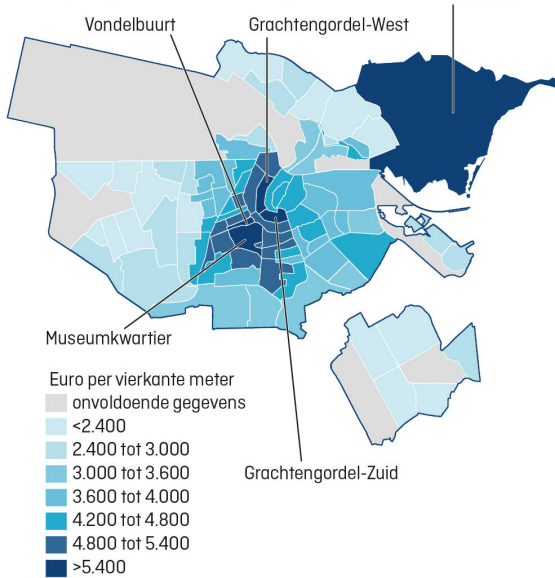


Illustration 4.32: Prices Amsterdam (Elsevier, 2016)

## Costs

The location of the Tweede Weteringplantsoen has dwelling costs of 5000-6000 euro/m<sup>2</sup> and a small part of 4500-5000 euro/m<sup>2</sup> (2015) (IOS, 2017). A house of 100m<sup>2</sup> would cost in this case € 500.000. The illustration from research of Elsevier shows a average price of 4800-5400 of the Weteringschans.

Due to the expensive location of the site in Amsterdam, will the design assignment will address the 'social climbers' and 'well-off families' (Karsten & Felder, 2016). The social minimum can't be accommodated. The dwelling space will still be very limited (80 – 100 m<sup>2</sup>) in comparison with what they can get outside of the city. Enough facilities and communal space should act as a balance for their wishes.

## Parking norm

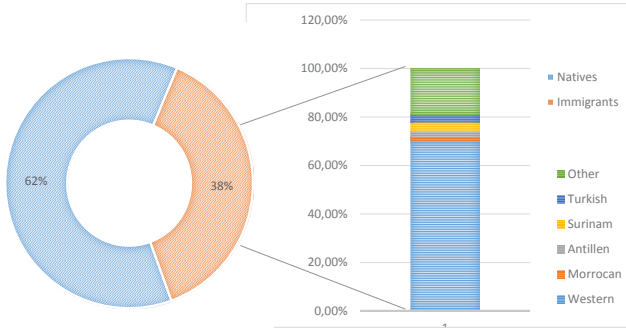
The Tweede Weteringplantsoen is part of the A-location. Most A-locations are in the centre of Amsterdam and are well accessible with the public transport. The maximum parking is one parking spot per dwelling (all dwellings types). There is no minimum parking norm.

Instead of car parking, the option for a bicycle parking with carrier cycle (Bakfiets) is very attractive for young families. This will keep the cost for the building down.

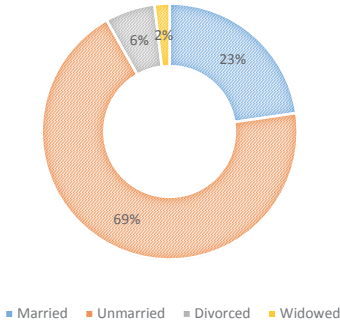


# Demography

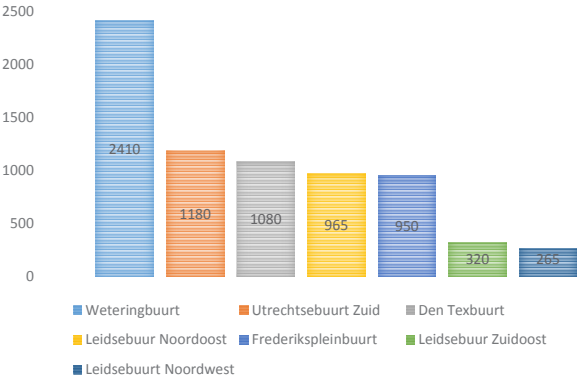
## Ethnicity



## Status



## Population



## Age

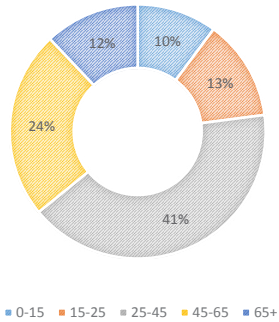
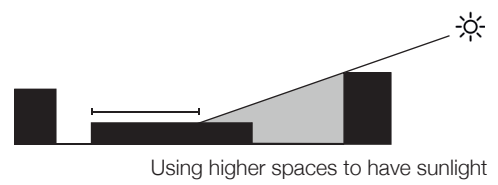
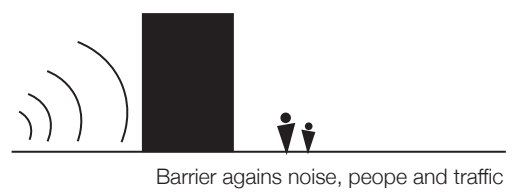
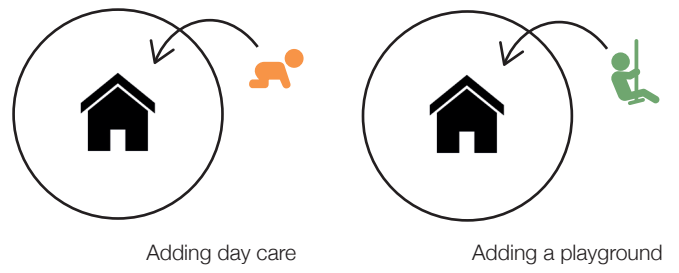
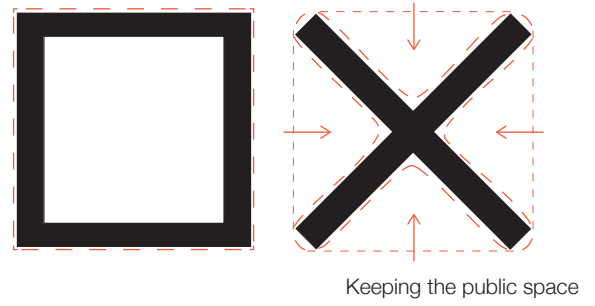


Figure 4.5: Demography (Group research: identity)

In the neighbourhood the Weteringschans live 7255 people. There are 655 families with children. That is only 14% of the total amount of households (CBS, 2017).

In the diagrams the group research is visible from that the Weteringschans has a high density in comparison with other neighbourhoods along the Singel. From the inhabitants 62% is native, and of the immigrants almost 70% is western. These are mainly the expats, which come to Amsterdam for work. Another interesting point this research shows is that only 10% of the people are children between 0 and 15 years old. The biggest age groups are 25 – 45 (41%) and 45 – 65 (24%).





# Conclusion

## Location analysis

In the location analysis some essential points of the Tweede Weteringplantsoen site are discussed. First of all the history of the site shows that the Singel was part of the defence structure of Amsterdam. Bastions formed a shelter for the city. On the site the playground UJ Klaren has been there for more than a century and creates a meeting place for families. This public character is also visible in the open and unbuilt space of the site.

The facilities are very important for the neighbourhood and are analysed in two different ways. First of all the facilities are located and grouped in the importance for young families. Secondly the facilities are analysed on the type of activity. Comparing the frequency and type of activity shows that both the day care and the playground are crucial in the area and need to be relocated on the site.

The site is well accessible and when the Red Carpet is finished this will create a nice and safe route to the centre of the city.

Furthermore there is some nuisance from tourist, because of the Heineken Experience on the opposite side of the Singel. This is also evident from the safety analysis, from the municipality of Amsterdam, which concludes that the neighbourhood has nuisance from high-impact crimes in the nightlife area.

By analysing the neighbourhood from the child's perspective the needed facilities seem to exist. There is a day care and a playground on the site, a super market on less than 50 meters from the location and the primary school is at a distance of only 306 meter. The outdoor sport faculties are

more towards the outskirts of the city and also the playgrounds and parks are outside the range of children.

The sun analysis shows that the building of the Heineken Experience creates a lot of shadow on the site and also from that side of the water comes traffic noise.

The demography of the Weteringschans shows that there are only 14% families with children in the neighbourhood.

### Design solutions

Comparing these points with the needs of young families creates a few design solutions. The first design suggestion shows how to keep the public space and open character of the site available. On the other hand the site needs a safe urban environment. An environment sheltered from the passing people (tourists), traffic and noise, by using the building itself as a barrier. The open character in the new design can be used as a space that is mainly used by other (young) families.

Another result from the location analysis shows the importance of relocating both the day care and playground on the site. Adding a neighbourhood centre will create a pulling force for other families in the area and make the site also a safe environment for all.

Finally the sun analysis shows that using squares on a higher level can bring sunlight on the site even at the shortest day of the year.



# Design solutions





## Introduction

In this chapter the design suggestions from other researchers is discussed. There are two very important books from the last view years that looked into the topic of families in the city. The architects of Heren 5 and the research department of BNA, the Bond of Dutch Architects, produced the first book in 2013. This study was supported by: four housing corporations, two project developers and the municipality of The Hague. The report 'Nesting in the city' (Nestelen in de stad) consists out of small essays from experts. The result is a set of interventions, which could help make the city more liveable for families (p8). These interventions are mainly on the building and dwelling scale.

Lia Karsten and Naomi Felder published the second book in 2016. This book 'The new generation city children' (De nieuwe generatie stadskinderen) is more focussed on the activities of children. They react on the wish of families to live in the city, which has become unreachable because of the expensive dwelling prices. Besides the fact that there need to be more family housing for the middle segment of our society, Karsten and Felder show in this report the need to change the

public space of our cities to make them more accessible for children (p7). In contrast to 'Nesting in the city' the modifications in this book are mainly on the neighbourhood scale and a bit on the building scale.

The scales of the design suggestions of these two books complement each other. Together they give an overview about the important topics for family housing in the city.

The second part of this chapter is a case study analysis in which six projects will be analysed on four topics: neighbourhood, interaction, identity and dwelling. These case studies are done in a group of three people.

The results from both the literature study, the case study and the design solutions mentioned earlier in the report (target group analysis) will form the design solutions of this research report.



# Design solutions from literature

## Nesting in the city

The book *Nestelen in de stad* by Heren 5 and BNA offers a lot of interventions for the dwelling and building scale. Sixteen different architects have proposed some suggestions for possible interventions to help young families in the city. The suggestions are well illustrated and clearly described.

The main topics that are described are the following (Keesom, 2013):

- Storage space
- Smart layout
- Taking into account the growth of children
- Flexible use of space
- Connection between in and outside
- Family friendly environment



Illustration 5.1: Playstreet (Keesom, 2013)

## Storage space

The storage space is a very important element for living for families, but most families feel that they lack enough storage space. Apartments could benefit from build-in closets, but families want to decide for themselves where to place them or what to place in them. The standard measurements that are currently used for new build dwellings for storage space (1,8m x 2,5m x 3m) could be more practical in a different configuration (Keesom, 2013). A strip can be fit the layout of the dwelling better than a block. The closets can be given very different functions, from bookcase to wardrobe or a closet where an extra bed is stored. The strip of closets can also function as inner walls (illustration 5.2) (Keesom, 2013).

### Suggestions

Make sure there is a lot of storage space for multiple types of infill.

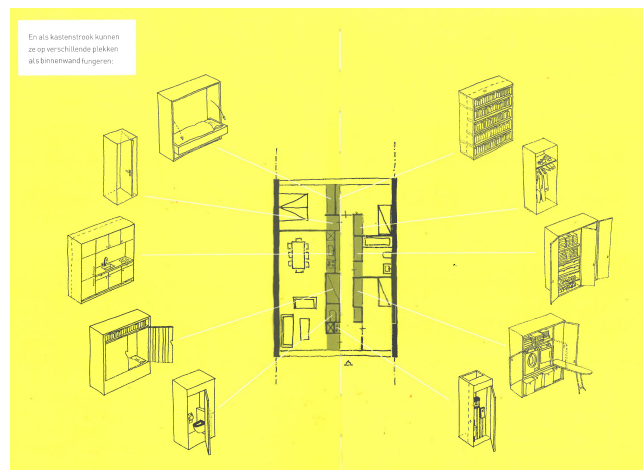


Illustration 5.2: Storage space as inner wall (Keesom, 2013)

## Smart layout

Because the families need a lot of space and the apartments in the city are small, the layout of the dwelling is very important. Double use of a room (work/studying, guests or sleep over) depending on the time of day can save looking for an extra room (illustration 5.3). With double use it is important that the privacy of the house is maintained. The hallway can also be used for multiple functions, but for this enough space needs to be reserved. Creating a wider hallway can make sure this can happen. Another intervention from Heren 5 and BNA is a separate kitchen, this allows for privacy when necessary for both the parents and the children (Keesom, 2013).

### Suggestions

Flexible use of rooms and the hallway can create the use of rooms for multiple functions. And a separate kitchen can provide privacy when needed.

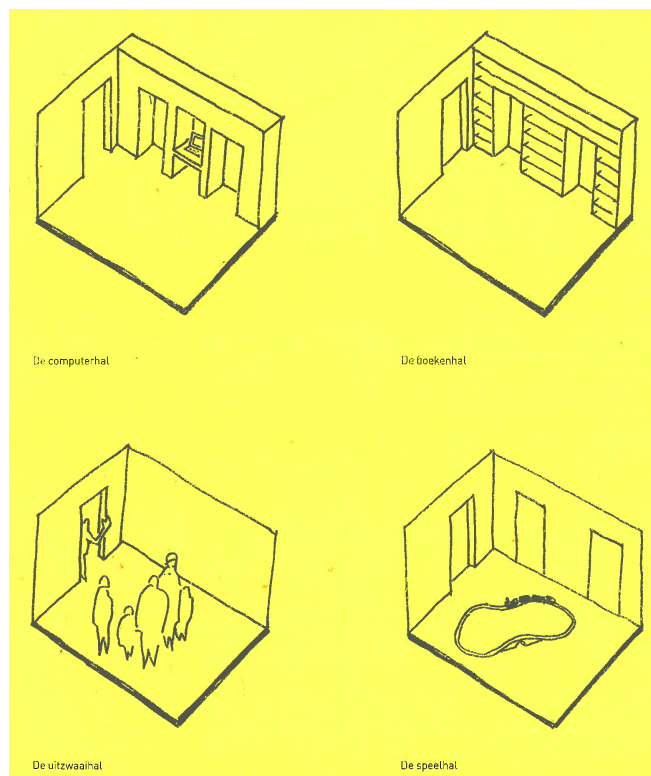


Illustration 5.3: Double use of rooms (Keesom, 2013)

## Growth

Couples looking for a house with the future of children in mind will look for the possibilities of the dwelling to grow in (illustration 5.4). Not only the prospect of more children, but also the growing up of the children can influence the suitability of the dwelling. First they need space to play in, next to make homework and after that they want a room to pull back in. Other than that there are more parents who partly work from home. The book indicates that a flexible space (kitchen table) can work when the children are not home, but a separate room (with door) would be better (Keesom, 2013).

### Suggestions

Create a lot of room in which different members of the family can pull back in, to allow for the needed privacy. And make a (flexible) room for the parents to work in.

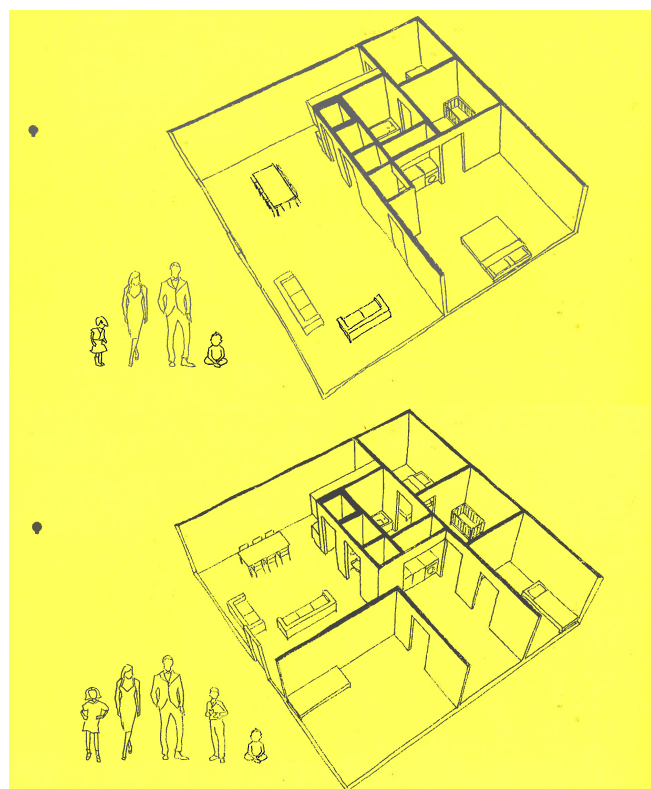


Illustration 5.4: Different layout for growth (Keesom, 2013)

## Flexible use

Some rooms in the layout of the dwellings are very rigid, like a bathroom or a kitchen. On the other hand are there the bedrooms, living rooms and hallways that are more suitable for flexible use. Illustration 5.6 shows the use of a central core of the rigid rooms. Sliding doors can be used to divide rooms when necessary but when open create a big open space. Besides this can the right dimensions of rooms and the façade make changing the house possible (Keesom, 2013). In illustration 5.5 is the flexibility of a dwelling layout visible.

### Suggestions

Some rooms are more suitable for flexible use. Sliding doors can help create more rooms and privacy when needed. The right dimensions of rooms and the façade can make future renovations and changes better feasible.

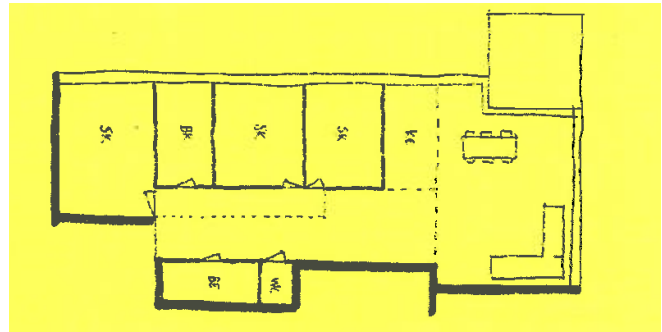


Illustration 5.5: Flexible basis layout (Keesom, 2013)

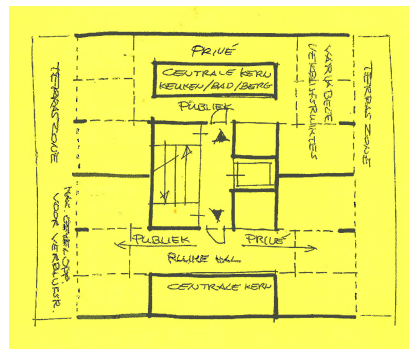


Illustration 5.6: Central core for flexible use (Keesom, 2013)

## Between in and outside

The space between the front door of the dwelling and the front door of the building is often an impersonal and anonym space. The transition is very abrupt and the space isn't attractive to play in. A backdoor and shortcut can create a better link to the ground floor for children to play outside (Keesom, 2013). When the transitions space to the public space is more gradual, this space can act as playing and meeting space (illustration 5.8). The unplanned socialising is very positively valued and creates the feeling of social safety (Karsten, 2003). In illustration 5.7 are two possibilities visible to use the common staircase as a playing area. Also a private outdoor space can have a lot of functions, contact with the neighbours, eating outside or drying the laundry (Keesom, 2013). The feeling of social safety is also established with a communal space to which the dwellings all look (illustration 5.10).

### Suggestions

Use the transition space from inside to outside as an extra place to stay in, for children to play in and to meet your neighbours. Also the use of private outdoor space can function as an extra room.

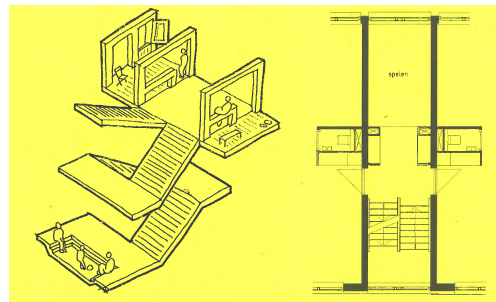


Illustration 5.7: Flexible use common staircase (Keesom, 2013)

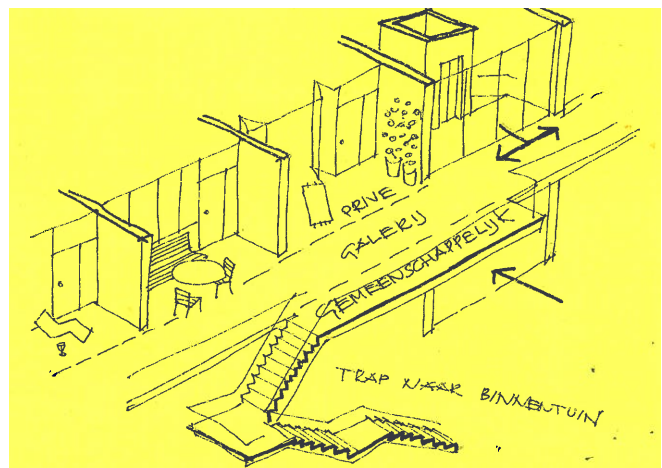


Illustration 5.8: Gradual transition and double use (Keesom, 2013)



## Familie friendly environment

This is the only topic in which the book gives suggestions on the neighbourhood scale. There is not necessarily a playground required for young children to play outside. Some small elements can be enough for children to evolve their motor skills (Keesom, 2013). Adequate schools on walking distance will make sure children have more connections with their friends in the neighbourhood. The school serves as a binding factor for the neighbourhood, to play and meet. The route to the school should be safe (Keesom, 2013). Another element for a good environment is other facilities in the close proximity of the house. When there are enough facilities and clubs it makes the neighbourhood more attractive. For all these interventions there is collaboration necessary with the municipality. Architect can during the designing process use this information to create a good environment (Keesom, 2013, p 138-145).

Suggestions:

- Neighbourhood centre (illustration 5.9)
- Street design with wide sidewalk or car free street
- Playstreet
- Playgrounds on a roof (illustration 5.11)
- Use leftover space

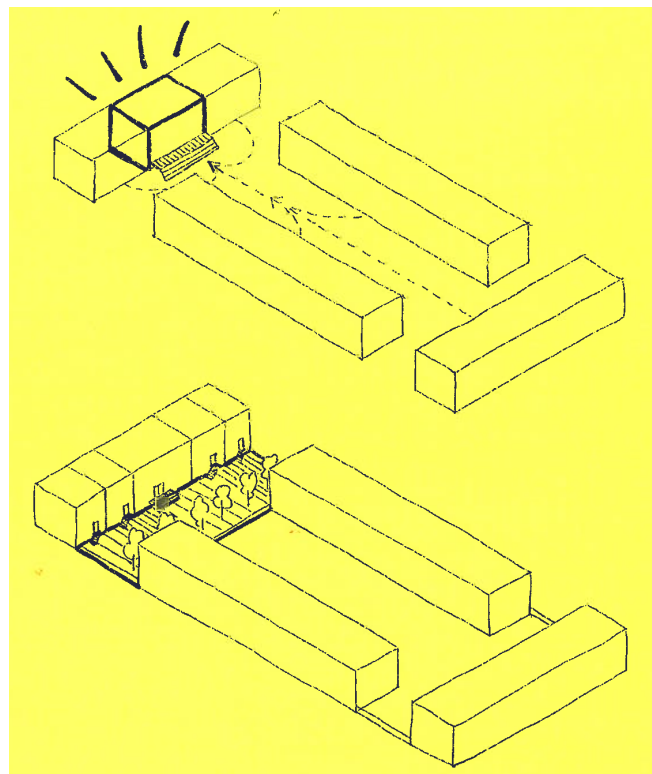


Illustration 5.9: Neighbourhood room (buurtkamer) (Keesom, 2013)

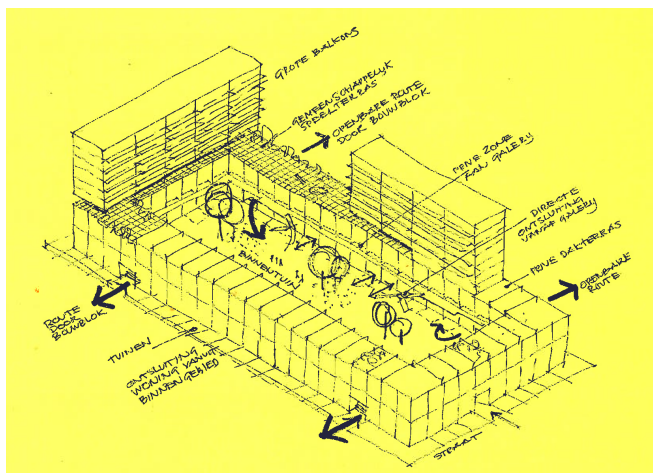


Illustration 5.10: Communal space (Keesom, 2013)

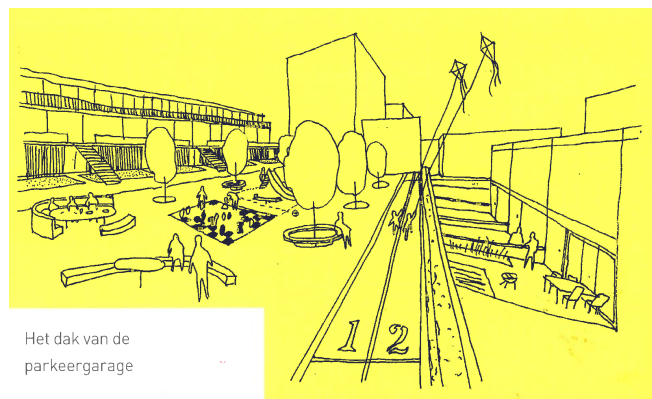


Illustration 5.11: Playing on a roof (Keesom, 2013)

## The new generation city children

This book has given inspiration for interventions in the form of 'space makers' (ruimtemakers). These space makers are the result of the interviews with families in Amsterdam and Rotterdam.

This is done in six different topics:

- Neighbourhood and school
- Playing outside
- Club and day care
- Families outings
- Children in the road
- Growing up in the city



Illustration 5.12: Impression suggestions (Karsten & Felder, 2016)

## Neighbourhood and school

The research shows that the surroundings of the dwelling are very important. The neighbourhood can be different for parents and children and is something they establish themselves, which is done by the routes through the area. There are social and physical elements that help determine the neighbourhood. The most important element is friends for children to play with. Other elements are the school and a store and parents include the park as well. The figure (figure 5.13) shows the attractive areas because of the schools and parks in the neighbourhood of Rotterdam (Karsten & Felder, 2016).

### Conclusion

The most important aspects for a neighbourhood are friends, school and a park.



Illustration 5.13: Attractive areas for families because of primary school and park. (Karsten & Felder, 2016)



## Playing outside

In the research of Karsten and Felder two locations for children playing outside are most prominent (and could be made more attractive): the street and sidewalk, and the schoolyard. Creating a separation of parking and playing on the street, both for bicycles and cars. Instead of playing around the corner, the cars should be parked around the corner. And cluster the parking. The left over spaces can be used for bicycle parking in a lowered basin, where the bicycles are partially out of sight (figure 5.14).

Other researchers also talk about the playing outside of children. Ward explains that the playing facilities are less important, because 'children will play everywhere and with everything' (Ward, 1978, p85). The street furniture can be also used as playing objects. The merging of different functions of the street and creative design of street furniture can encourage double use (Karsten & Felder, 2016).

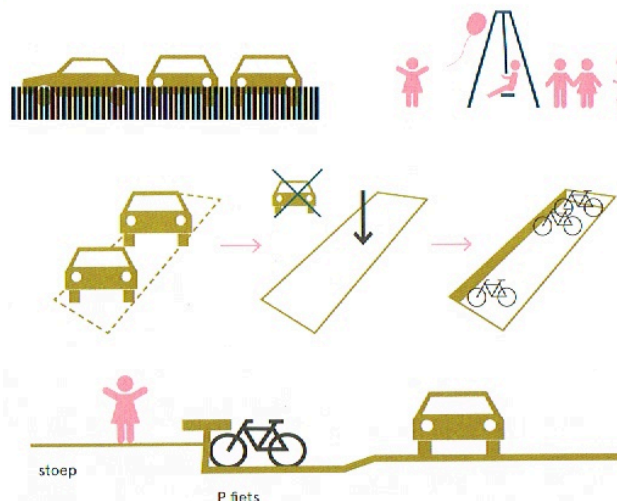


Illustration 5.14: Design suggestions (Karsten & Felder, 2016)

### Suggestion

Separating parking and playing on the street, and allow for double use of the street (multifunctional urban public space).

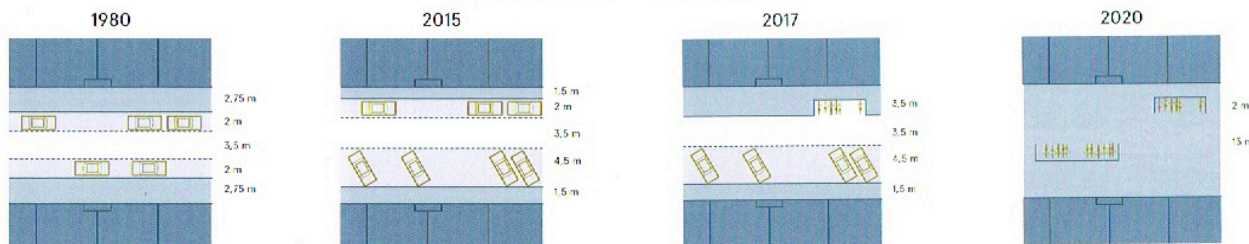


Illustration 5.15: Development of the street (Karsten & Felder, 2016)

## Club and day care

After school activities are nowadays very essential for children, because most parents both have jobs. The research of Karsten and Felder shows that most sport clubs are on the outskirts of the city. The distances to the sports clubs are too far for children to go there individually. Parents need to be available. To create more sport facilities in the city, the flat rooftops of primary schools can be used. The flat roofs can also be used for other after school activities (vegetable garden or extra rooms for music or dance lessons) (Karsten & Felder, 2016).

### Suggestion

Use flat roofs as playgrounds and for after school activities like sports.

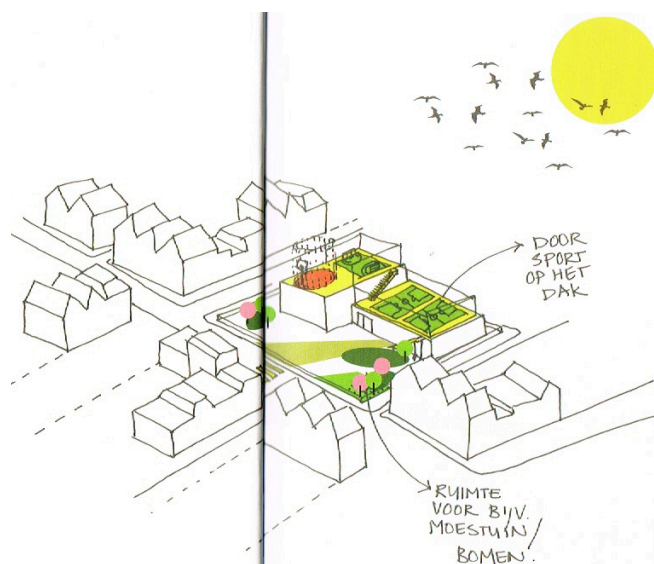


Illustration 5.16: Making space for after school activities. (Karsten & Felder, 2016)

## Family outings

The family outings are trips to places mostly outside the neighbourhood. Karsten explains these outings as the ‘various ways parents and children consume the city together and ‘spontaneously’ (Karsten, 2015, p205). In Amsterdam these trips can for example be to parks or to the Artis zoo. The place should be well accessible with the bicycle. Often is the hectic traffic an obstruction for some locations. Locations in the quiet parts (NL: *luwte*) of the city are more favourable. These shielded sites are good if more activities are possible: something to play with, sit on and look at, free, green, accessible with bicycle and the possibility to buy a drink (Karsten & Felder, 2016).

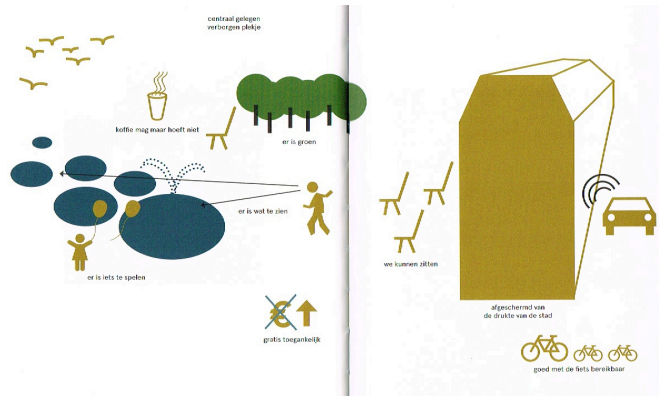


Illustration 5.17: Conditions for modern family outings. (Karsten & Felder, 2016)

### Conclusion

What families are looking for in a family outing is a multifunctional public urban space that is shielded from the hectic city life.

## Neighbourhood and school

Karsten and Felder address the monotonous appearance of the streets, with a lot of parking and space for the cars. They propose to make connecting streets with slow traffic, which create a diverse street scene and a safe environment for children. The new various streets (street types) consist out of bicycle streets with parking or playing streets without any traffic (Karsten & Felder, 2016).

### Suggestion

To create a space for children to play in as well as a safe environment for children to move in, different street scene can be created. These streets form a connecting link through the city.

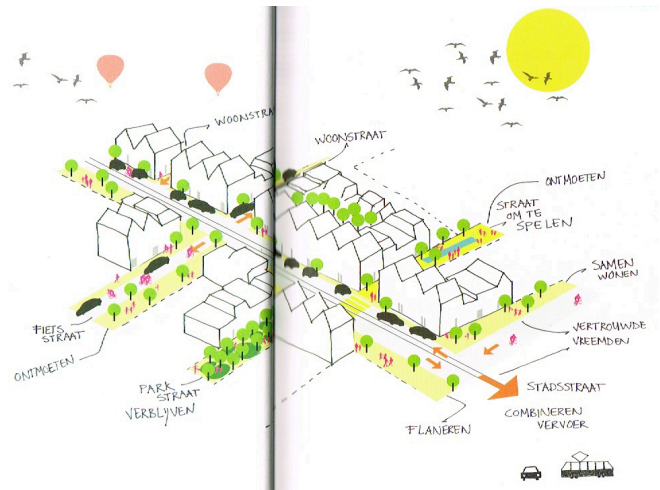


Illustration 5.18: Differentiation in street types in the scale of the neighbourhood (500 tot 1000 meter). (Karsten & Felder, 2016)

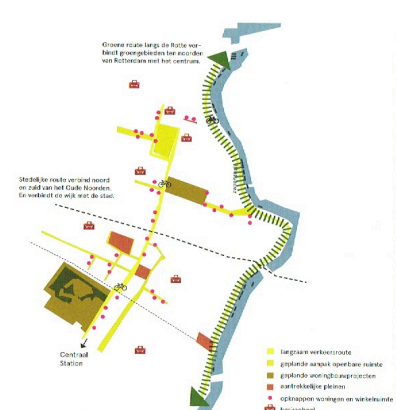


Illustration 5.19: Safe route through the city (Karsten & Felder, 2016)

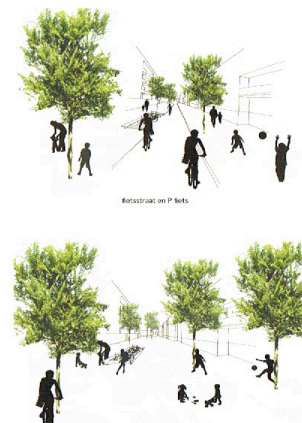


Illustration 5.20: Different street types. (Karsten & Felder, 2016)



## Growing up in the city

Children need a lot growing up in the city. Ward explains that if a city really wants to listen to the needs of the children, they should do that in the whole environment. He also says that not only the design of the environment is important but also the acceptance of the society to let children participate (Ward, 1978).

In this last chapter of Karsten and Felder the suggestions for interventions are summarised.

- Design on the basis of an analysis
- Densify
- Create parks
- Enrich the neighbourhood (illustration 5.23)
- Foot over Bicycle over car
- Schoolyard as playground for the neighbourhood
- Sport facilities closer by
- Parking around the corner (instead of playing around the corner)
- Wide sidewalks (illustration 5.25)
- Make space for bicycle parking (illustration 5.22)
- Design double use
- Connect dwelling to ground level (NL: maaiveld) (illustration 5.24)



Illustration 5.21: The schoolyard as playground for the neighbourhood, (Karsten & Felder, 2016)



Illustration 5.22: Make space for bicycle parking (Karsten & Felder, 2016)

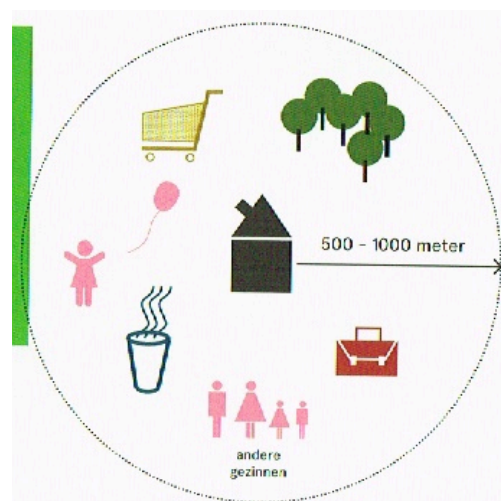


Illustration 5.23: Enrich the neighbourhood (Karsten & Felder, 2016)

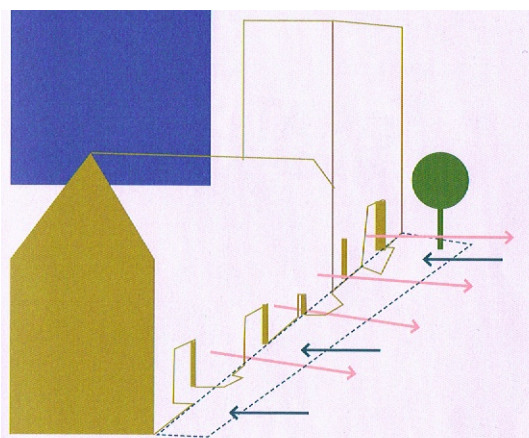


Illustration 5.24: Connecting with ground level (Karsten & Felder, 2016)

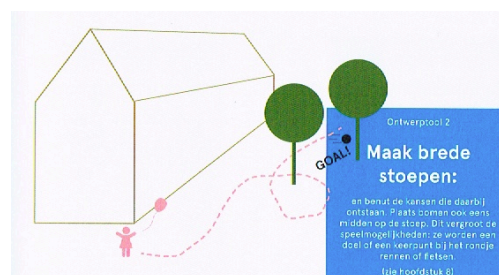


Illustration 5.25: Wide sidewalks (Karsten & Felder, 2016)



# Case studies

## Content

78	Introduction
80	Interview with Laurens Boodt
81	Case study 1: Habitat 67
90	Case study 2: 150 Dan Leckie way
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138	Conclusion



# Introduction

For the research on family housing in the city six case studies have been selected. Through these case studies we intend to find design solutions and typical/common features in family housing design.

Each of the selected projects will introduce different elements that are of interest for this target group. All of the studies combined should provide a thorough and diverse overall impression of family housing design. The tools that are extracted from this, can be used in the design of our own project.

We have divided the analysis in five main topics, which will be explained further on.

## Neighbourhood

For the neighbourhood research we have focussed on the perception of a child. For this the so called 'range of action' is employed. This reasons from the expanding range in which a child growing up will move. Though numbers differ depending on the parent (), the following numbers are applied:

- 0-4 years, 30 m
- 4-8 years, 150 m
- 8-12 years, 500 m

These ranges are based on several studies (Karsten, 2016; Keesom, 2013; Meijer and Stobbe, 2016).

Within these ranges we have indicated several facilities, based on families' needs. These are:

-  Sport facility
-  Playground
-  Supermarket
-  Creche
-  Primary school

## Interaction

The topic of interaction is interpreted as a very broad one. The importance of interaction for parents living in the city is explained by Lia Karsten (2003): "In addition, unplanned socialising in public places with neighbours, friends and colleagues and their children was very positively valued. The many informal networks contributed to a feeling of social safety (...)"

Interaction will most likely happen on places where people pass each other. Furthermore, interaction can be enhanced by making such places more pleasant. For example, a covered, warm space is more attractive to stand and chat for a minute. We have indicated multiple possible places of interaction, being:

- Horizontal and vertical circulation
- Parking and storage
- Collective spaces
- Private outdoor spaces (visual connection)

Within these places one may identify both formal and informal meeting spots (Meijer and Stobbe, 2016, p. 7). Formal meeting places are especially designed for this purpose, they can for example be found in collective courtyards. Informal meeting places could be broad stoops, car free streets and so on. They provide space for pumping into each other, but are usually not especially designed to facilitate.

To clarify this more we use icons to indicate the level of interaction. This ranges from mere visual contact, to both visual and audible contact, to passing each other and finally, the actual meeting.



## Identity

Research has shown that the possibility of recognition/identification of your own home is important to people (A Pattern Language, p. 212). Especially in flats or appartement buildings this can be rather difficult. To recognize ones own house might be more easy when the different types of housing are visible in the facade. This relates to the stacking scheme of a building. In case of stacking we are interested in the positioning of exceptions in dwelling types. This is most likely to happen on the corners and endings of each building block.

In addition, a research on wayfinding has shown that landmarks are very helpful for children to remember routes (Lingwood, 2014). This indicates that a recognisable dwelling block will help children to find their way back home.

## Dwelling

In this chapter the different dwellings will be analyzed on the following topics:

- Dwelling type
- Dwelling size and price
- Number of habitable rooms
- Outdoor space
- Storage
- Zoning

To calculate the dwelling price, €5000/m<sup>2</sup> is used. This is representable for Amsterdam city centre prices. However, depending on the chosen location it might differ slightly.

The number of habitable rooms is especially important in relation to the possible amount of bedrooms. This enables families to grow (and shrink) over time. Storage is an important topic for families as they tend to have a lot of stuff, for example a pram, many toys, bicycles and so on. Having both outdoor and indoor storage would be ideal (Nestelen in de stad, p. 35). Zoning is about the division between more private and representative rooms. This might be important because families will simultaneously have people visiting and children playing and making a mess of the house. By dividing these activities in separate zones, similar to the traditional family house with ground floor and upper floors, dwellings can function more properly. (Nestelen in de stad, p. 62).

## Radar chart

Radar charts are used as a tool for comparing the different dwelling types and buildings in a more quantifiable way.

In case of the building we divide the total area of parking, storage, collective space and circulation space by the total number of dwellings, to find an average area per dwelling. By comparing the different case study buildings to each other we hope to find a more general outcome.

On dwelling level we will compare the dwelling area, number of habitable rooms, outdoor space area and storage area. This might lead to a frame of reference for common sizes and numbers. It is however important to judge each dwelling separately to find the applicability for the more specific target groups.

# Meeting with Laurens Boodt

## De Rotterdamse Toren van Babel

December 21th 2017

The meeting with Laurens Boodt and his colleague Giel Leunissen was about his project for the Open Oproep Gezinsappartementen ('Open Call Family Apartments') (Klep, 2017), De Rotterdamse toren van Babel (the Rotterdam tower of Babel). This project won this competition and Boodt and Giel Leunissen are finishing the design for the construction of the building.

He explained that the tower of Babel and the typical Dutch (row) houses are combined to create concept where the sidewalk (stoep) is a connecting route around the building. The complex consists out of twenty-four different dwelling types. The sidewalk is spiraling to the top from two starting points and it can be used as collective space for the whole building. In the core there is an elevator and a hallway that connects the two sides of the sidewalk. A gate closes the entrance of the complex after which people can enter the sidewalk. Visitors need to ring for the residents to let them through the gate and into the building complex.

Regarding the cars and bicycles there is space on the ground floor at the back of the building. Especially for families there is a special place to store cargo bikes (bakfietsen). To make efficient parking possible they are making a car elevator, however another option for parking the cars could be in combination with the neighbour buildings (if families don't want to use the car elevator). This is appointed as a possible buffer.

The collective space of the sidewalk directly connected to the dwelling provides less privacy than the residents might want to have. Boodt explains that they changed the design of the sidewalk after the competition. In the new design a private garden (2 meter) serves as a barrier between the collective sidewalk (1,2 meter) and the dwelling. This private garden can be opened or closed with different fence options on wheels. Another way to establish the use of the collective sidewalk is by creating some playground elements and benches. Boodt describes how they added swings at the collective space, where the sidewalk meets the inner corridor. The collective space is a mean to encourage the residents to meet each other and for the children a space to play and explore. He repeatedly names this sense of community as an important factor in the design.

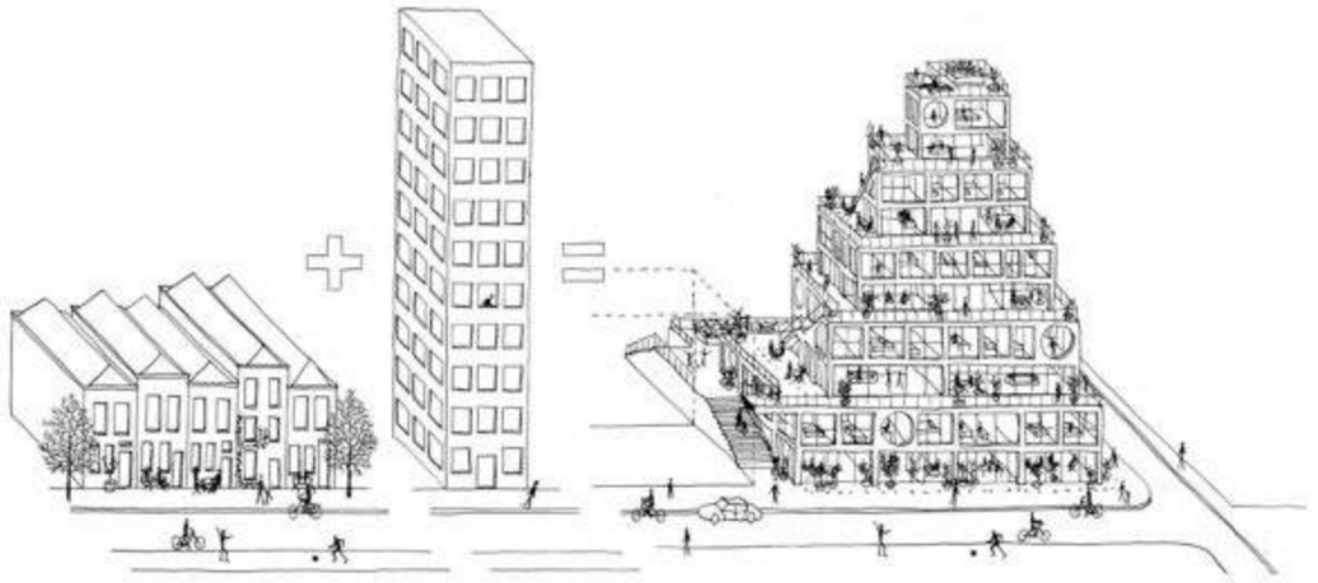
To provide for enough privacy in the dwelling, bedrooms are always located on the upper floor of each maisonette. The more representative spaces are thus always located next to the collective sidewalk.

The children, and the size of children, were also taken

into account while designing the balustrade, doors and windows. In the doors there is a window, through which the children can see their house.

On the discussion about identity of the dwelling within the building, they explained that this was less evident in the final design of the building. Mainly because the different window types were too expensive and the identity of the whole building was more important. Also the influence of the residents was named as an extra reason, because the residents will probably express their identity by placing flowerpots or play equipment for their children.

Design concept



Visualization





# HABITAT 67

Architect	Moshe Safdie
Location	Montreal, Canada
Year of completion	1967
No. of dwellings	158
Plot size	40.500 m <sup>2</sup>

Habitat 67 is an experimental urban residential complex made for the Expo in 1967. This high rise apartment building is a pioneer in the combination of two housing typologies - the urban garden residence and the modular high-rise apartment building. The building consists out of 354 concrete units, that are stacked in a pyramidal like structure.

Habitat 67



Overview illustration



Source: Archdaily.com



# HABITAT 67

Montreal



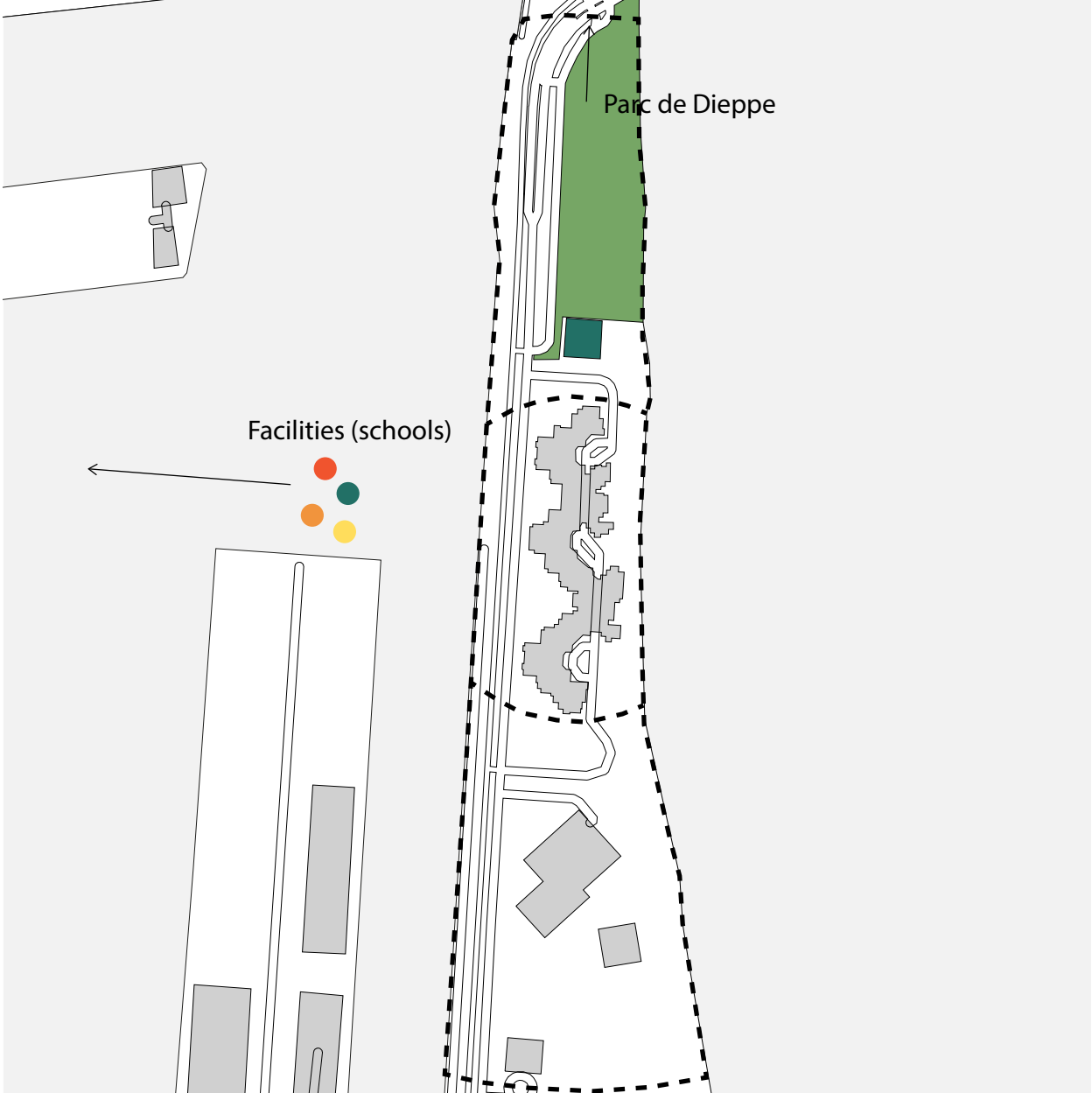
# Neighbourhood

Parc de Dieppe



1:6000 | Neighbourhood facilities

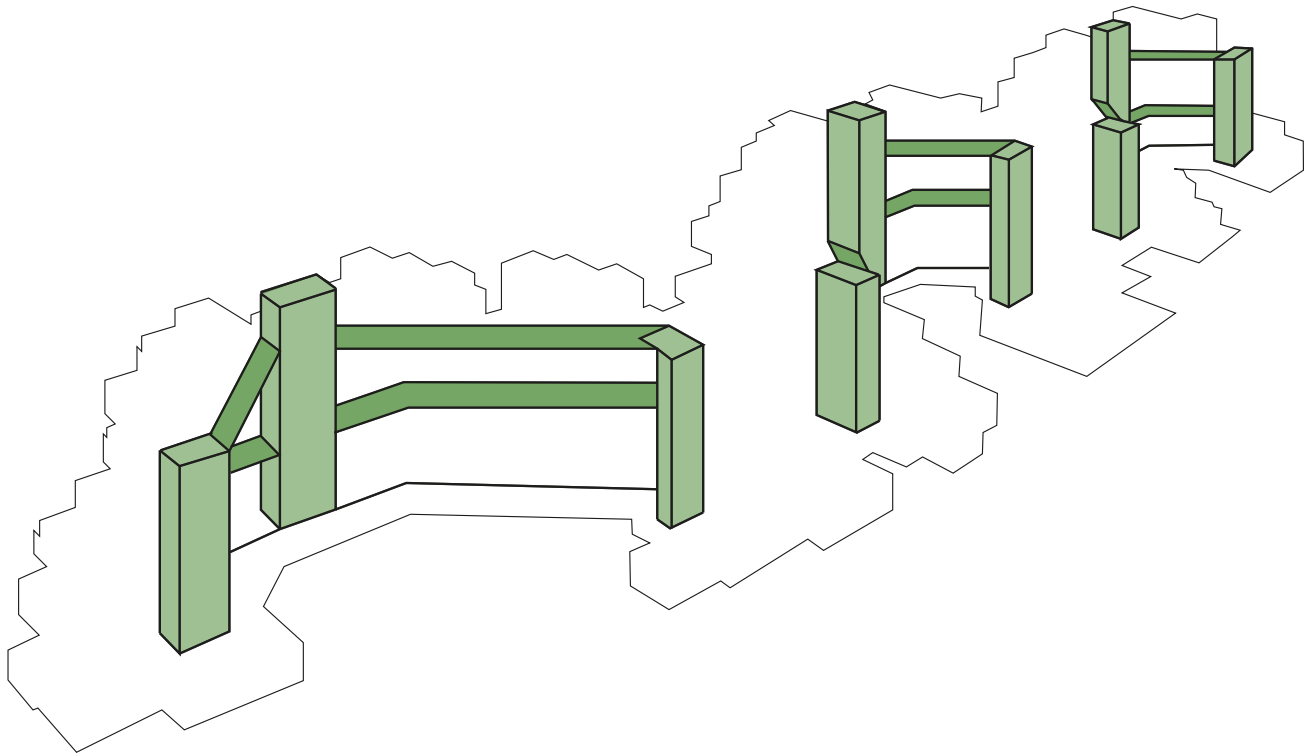
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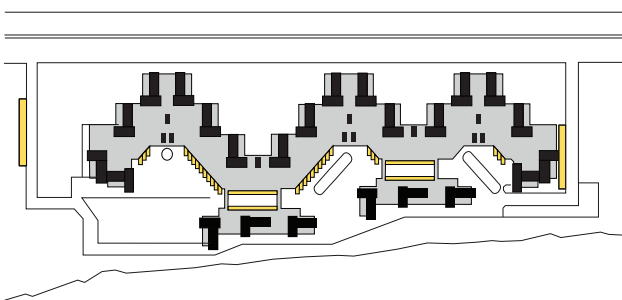
# HABITAT 67

Circulation

Interaction



## Parking and storage

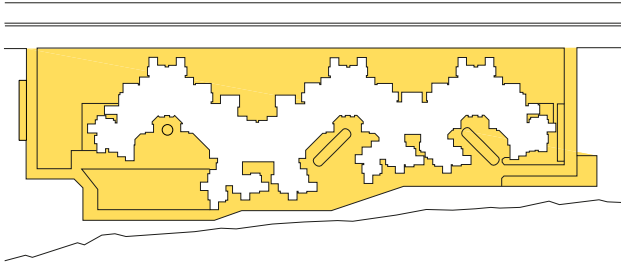


## Parking



# HABITAT 67

Collective outdoor space



Outdoor space



Source: Archdaily.com

Informal meeting space

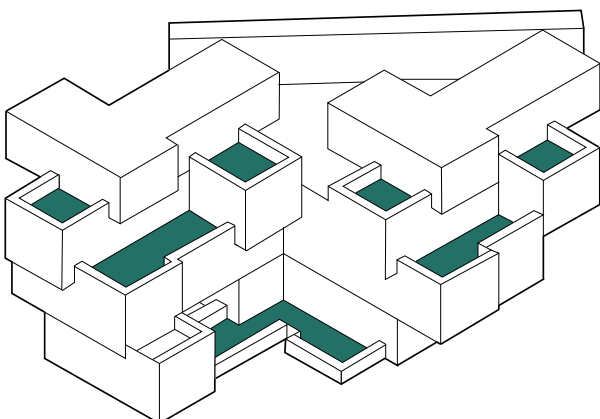
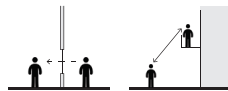


Gallery



Source: Archdaily.com

Private outdoor space



Garden terrace



Source: Lifeedited.com



# HABITAT 67

Facade



## Identity

Identification

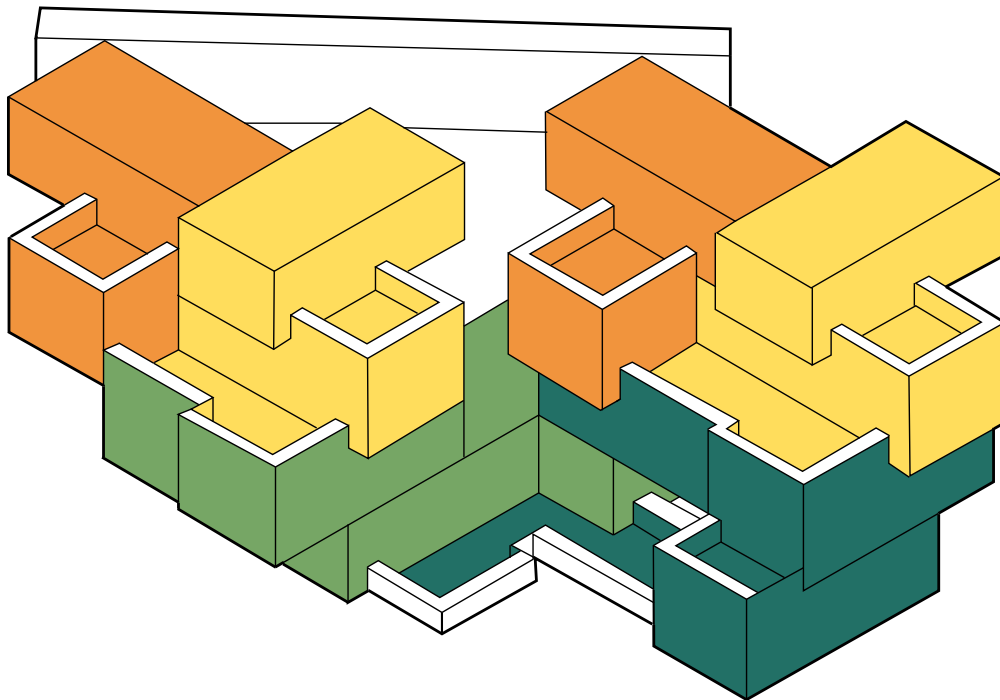
Function

Building

Dwelling

The building function can't be anything else then housing, because of the odd configuration. This configuration makes the building very unique and recognizable. The dwellings itself on the other hand are less recognizable within the stacking structure.

Stacking scheme



- Legend:
- Type A
  - Type B
  - Type C
  - Type D

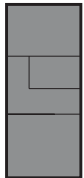
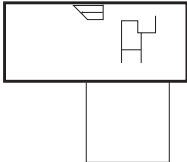
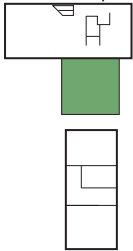
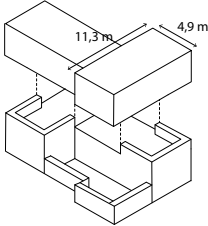
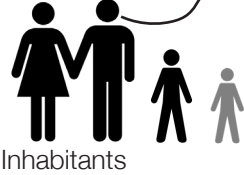
# HABITAT 67

## Information

Level:	10th and 11th floor
Dwelling type:	A
Dwelling size:	110 m <sup>2</sup>
No. of habitable rooms:	3
Storage size:	3,5 m <sup>2</sup>
Outdoor space:	18 m <sup>2</sup>

Dwelling

€550.000



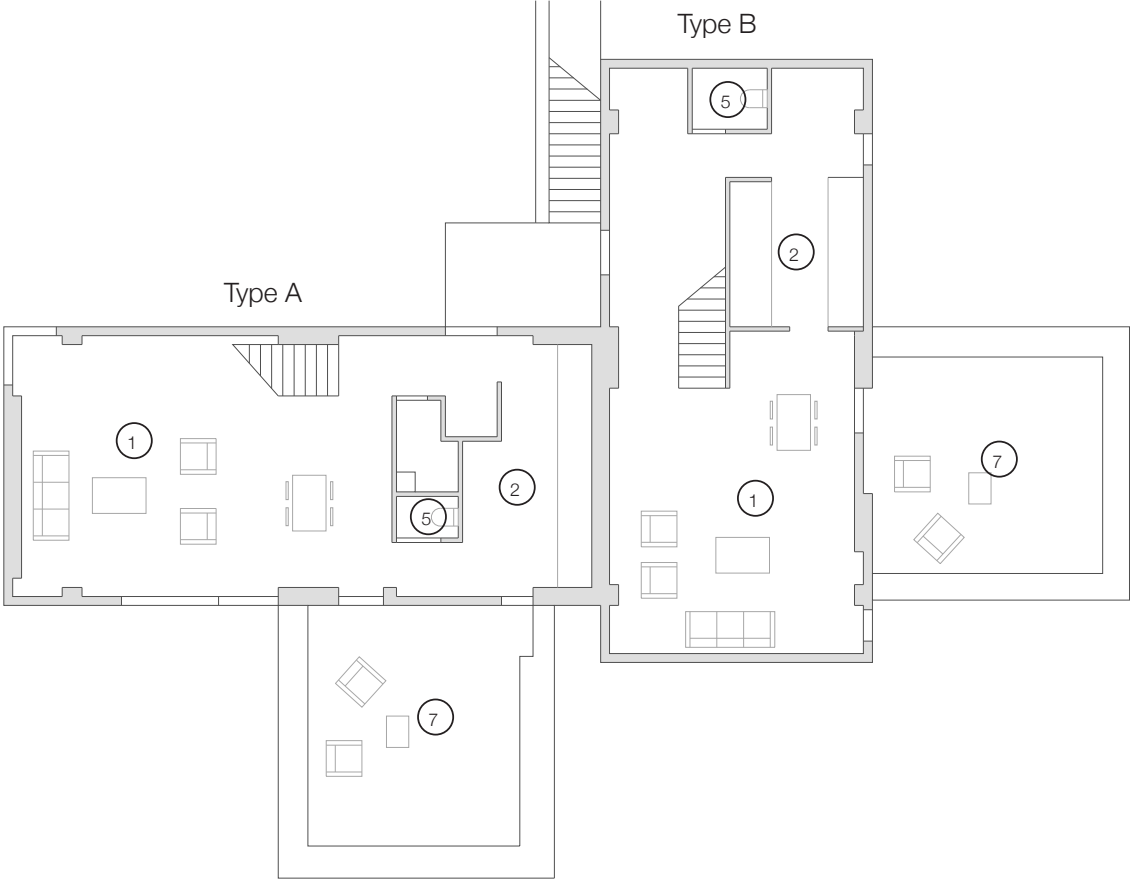
Type

Outdoor space

Zoning 1st floor

Zoning 2nd floor

Floor plan, level 1



### Legend:

- 1. Living
- 2. Kitchen
- 3. Study
- 4. Bedroom
- 5. Bathroom
- 6. Storage
- 7. Terrace





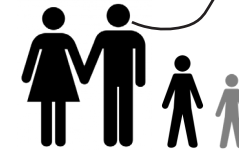
# HABITAT 67

## Information

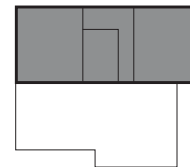
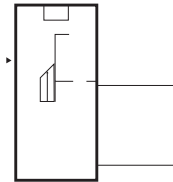
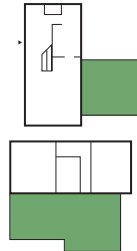
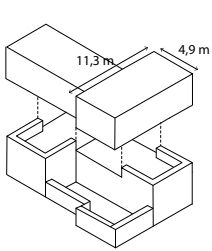
Level:	10th and 11th
Dwelling type:	B
Dwelling size:	110 m <sup>2</sup>
No. of habitable rooms:	3
Storage size:	3,5 m <sup>2</sup>
Outdoor space:	54 m <sup>2</sup>

Dwelling

€550.000



Inhabitants



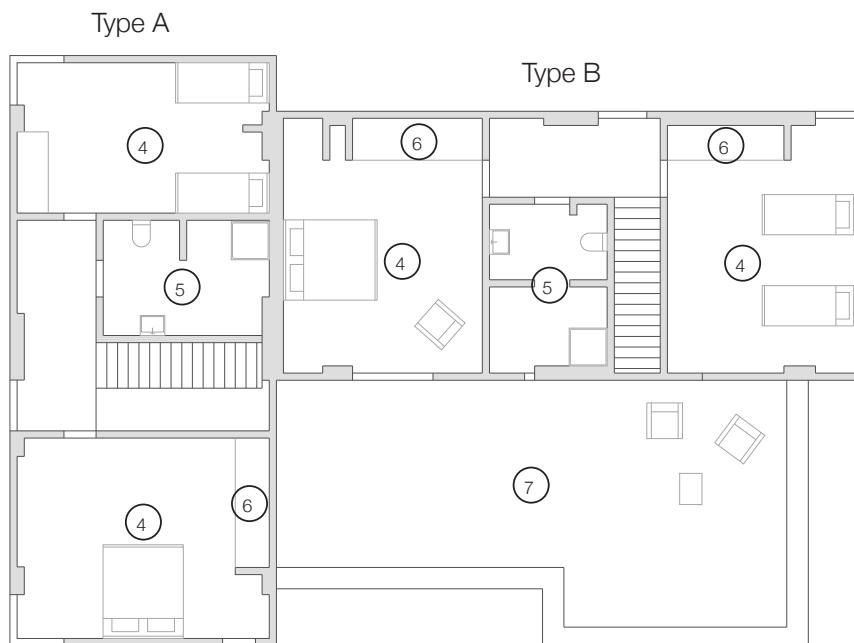
Type

Outdoor-space

Zoning 1st floor

Zoning 2nd floor

## Floor plan, level 2



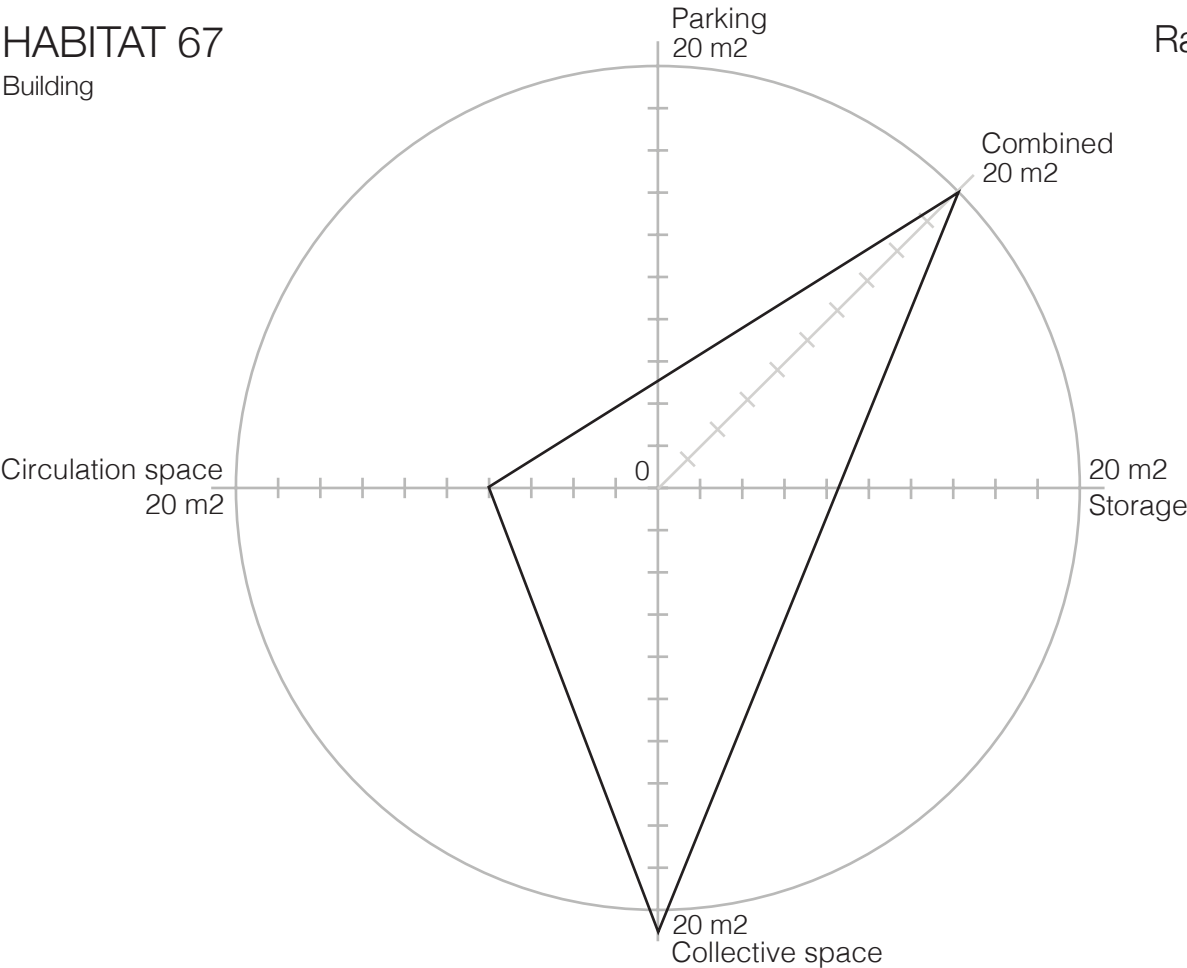
## Legend:

- 1. Living
- 2. Kitchen
- 3. Study
- 4. Bedroom
- 5. Bathroom
- 6. Storage
- 7. Terrace

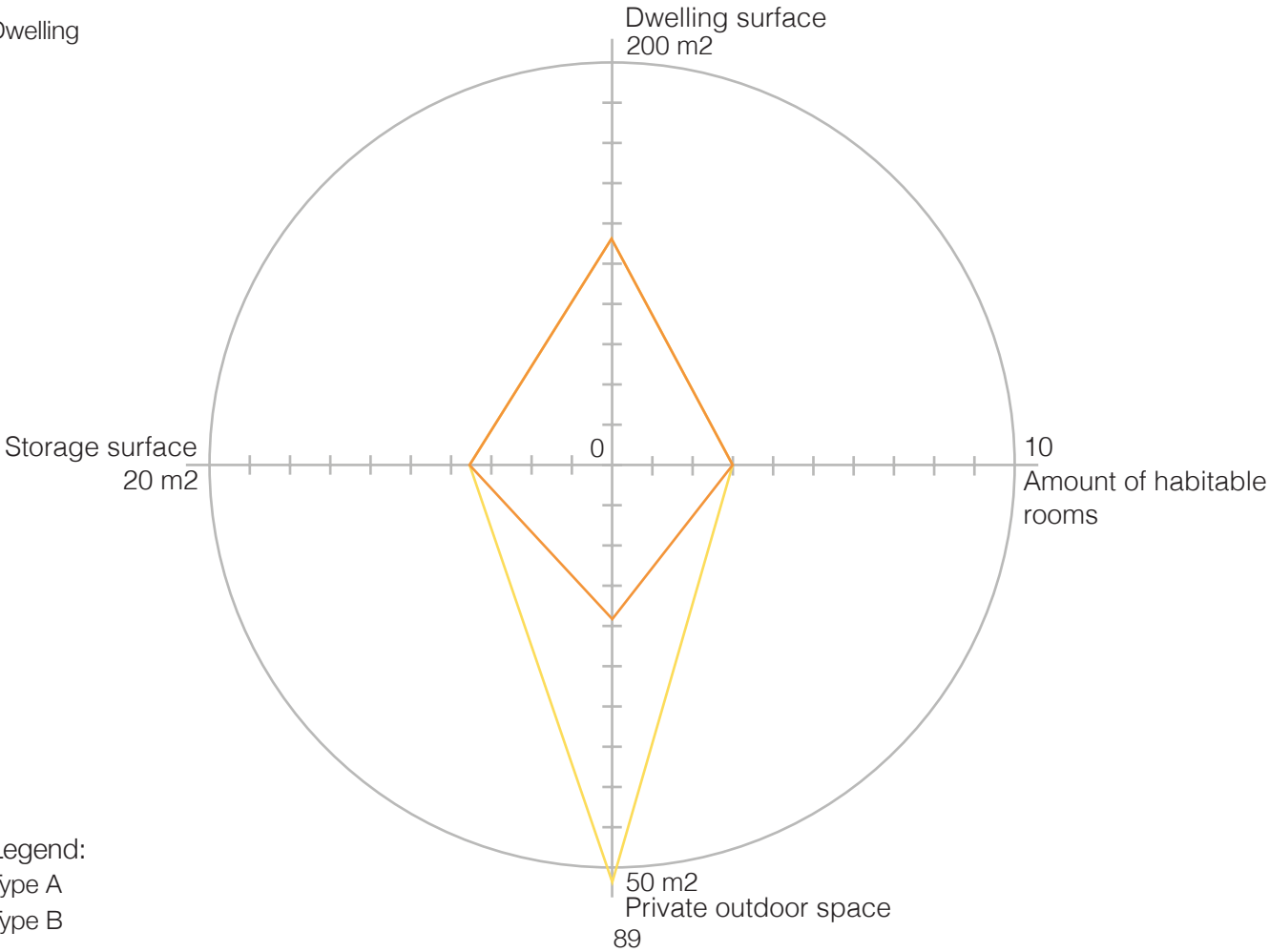
Radar chart

# HABITAT 67

Building



# Dwelling

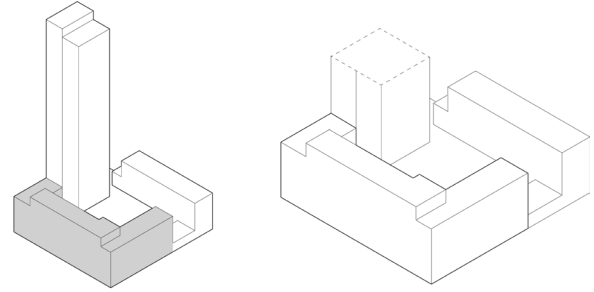


- Legend:
- Type A
  - Type B

# 150 DAN LECKIE WAY

Architect	KPMB Architects
Location	Toronto, USA
Year of completion	2012
No. of dwellings	total 427
Plot size	45.498 m <sup>2</sup>

Axo building complex



This project was developed by Context for the Toronto Community Housing corporation (TCHC) to fill a need for family-centred affordable rental housing in the downtown west. The building exists of a 41-storey tower and a 10-storey courtyard building.

Three and four bedroom units are designed around a minimal internal access corridors to maximizes play/study space within the family units.

Overview illustration



Source: KPMB



# 150 DAN LECKIE WAY

# Neighbourhood

Canoe Landing Park



Yoga in the Park



1:6000 | Neighbourhood facilities

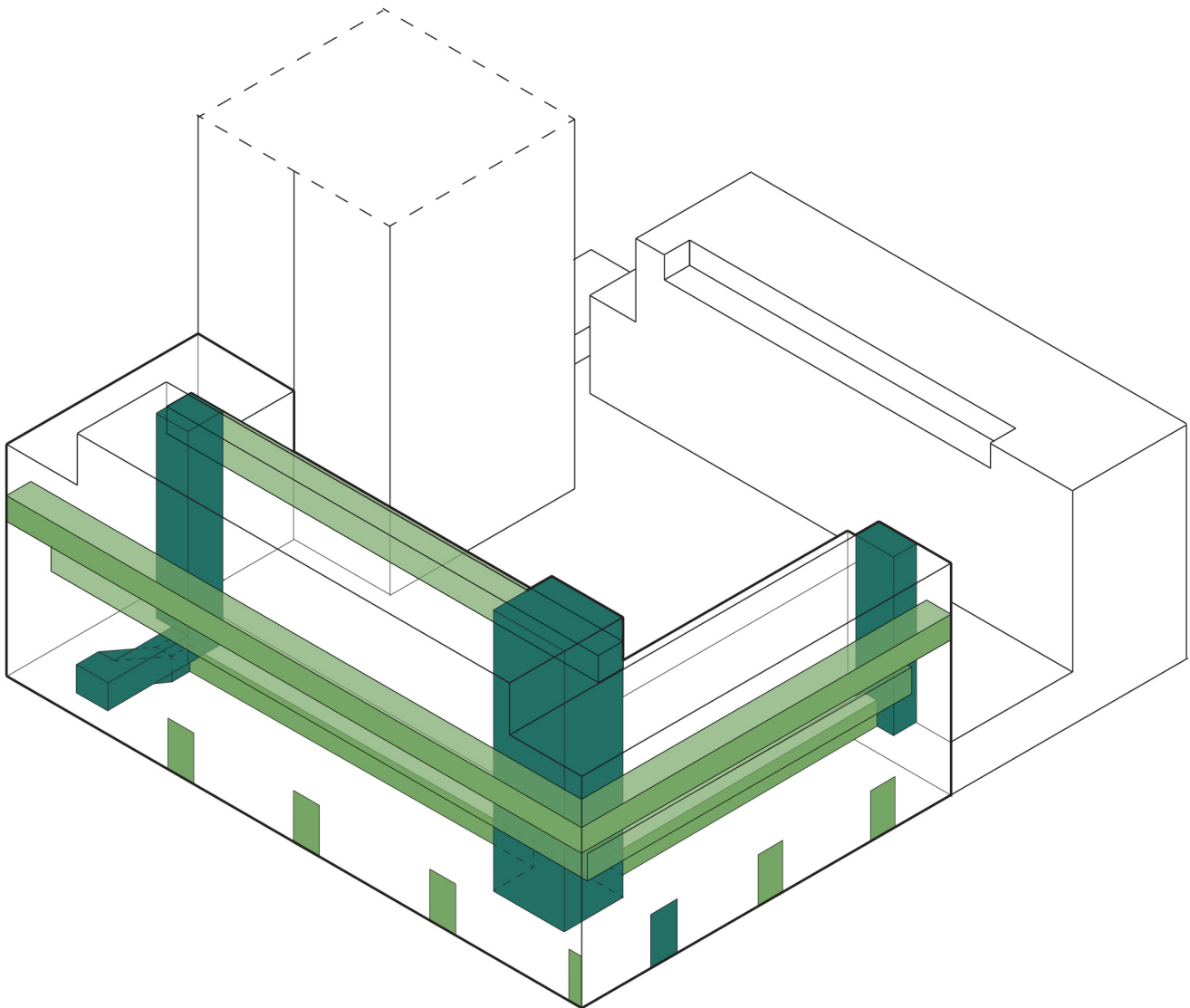
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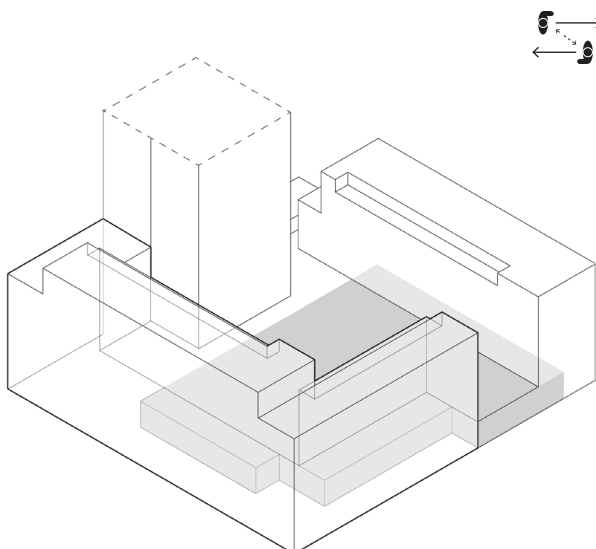
# 150 DAN LECKIE WAY

Circulation

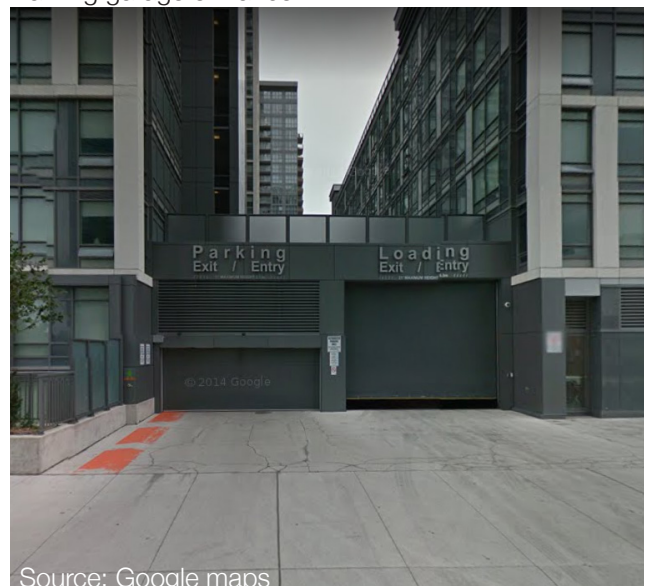
Interaction



Parking and storage



Parking garage entrance

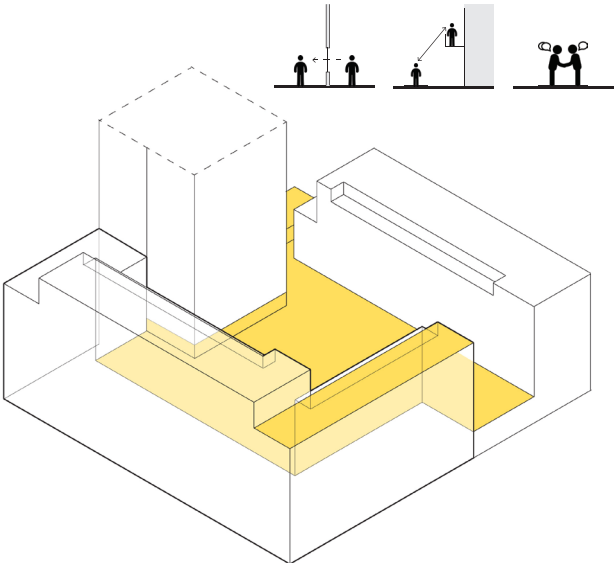


Source: Google maps



# 150 DAN LECKIE WAY

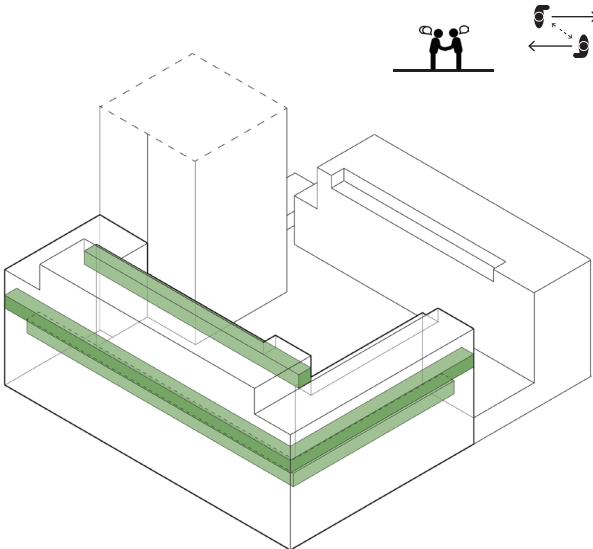
Formal meeting space



3rd level rooftop courtyard



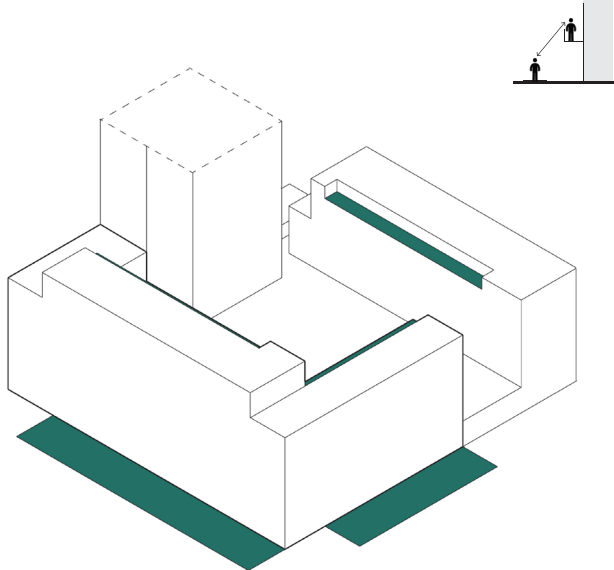
Informal meeting space



Corridor



Private outdoor space



Front garden



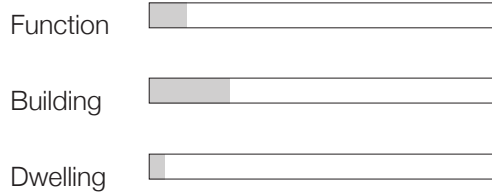
# 150 DAN LECKIE WAY

Identity

Facade

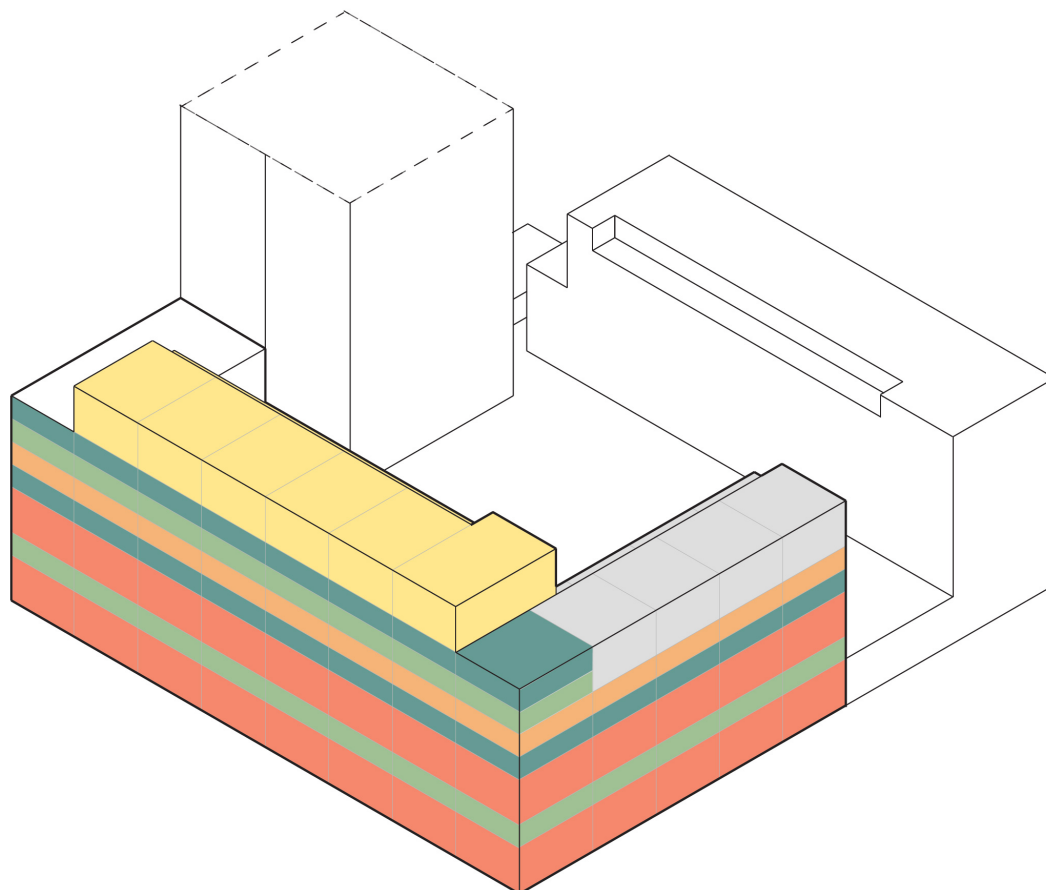


Identification



The function of the of the building is not detectible, it might as well be an office. When looking to the surroundings of the building itself doesn't really stand out. Most of the complexes are composed with courtyards combined with high-rises. Because of the monotonous facade (suitable for an office building) the separate dwelling units are not locatable.

Stacking scheme



Legend:

- Type A
- Type B
- Type C
- Type D
- Type E
- Type F

# 150 DAN LECKIE WAY

## Information

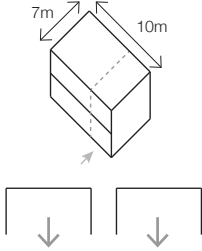
Level:	1 & 2
Dwelling type:	A - red
Dwelling size:	120m <sup>2</sup>
No. of habitable rooms:	4
Storage size:	9,5 m <sup>2</sup> ; 9 m <sup>2</sup> outside
Outdoor space:	38,5 m <sup>2</sup>

Dwelling

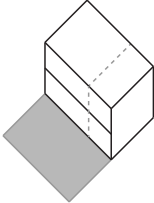
€600.000



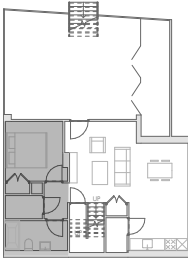
Inhabitants



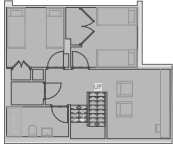
Type



Outdoor space

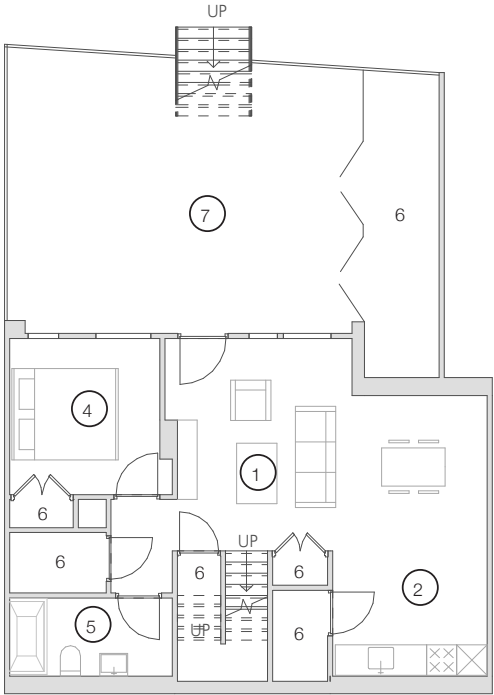


Zoning 1st floor

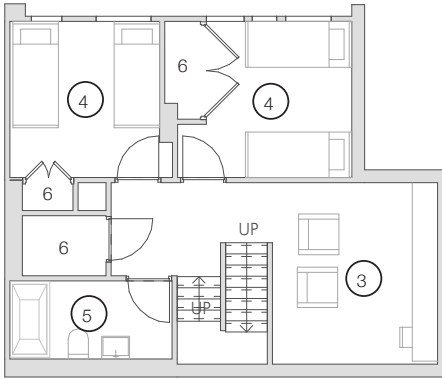


Zoning 2nd floor

## Floor plan



1th floor



2nd floor

## Legend:

- 1. Living
- 2. Kitchen
- 3. Flexible space
- 4. Bedroom
- 5. Bathroom
- 6. Storage
- 7. Terrace



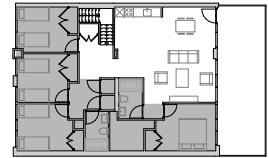
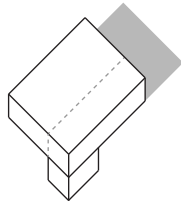
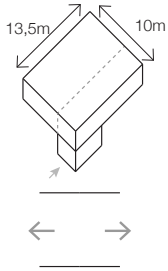
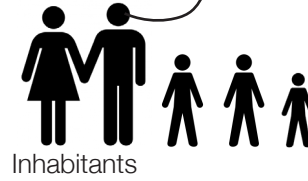
# 150 DAN LECKIE WAY

## Information

Level:	2nd & 3rd
Dwelling type:	B - light green
Dwelling size:	140m <sup>2</sup>
No. of habitable rooms:	5
Storage size:	11,5 m <sup>2</sup>
Outdoor space:	30 m <sup>2</sup>

Dwelling

€700.000



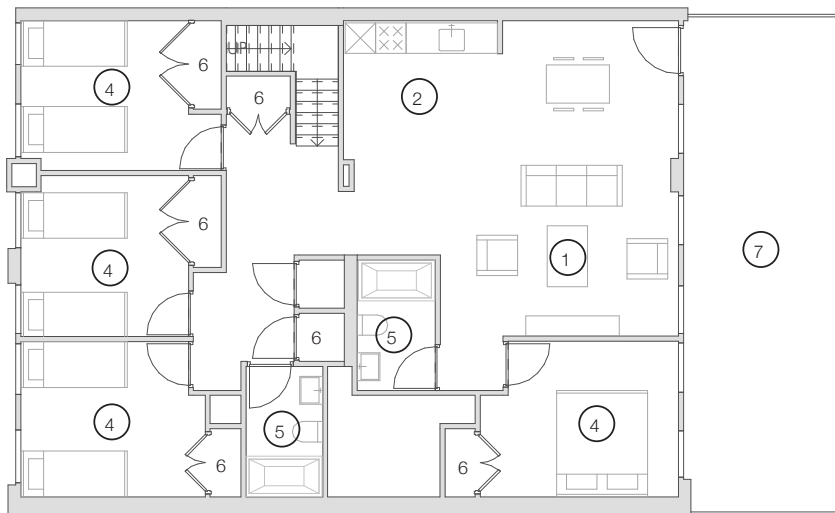
Type

Outdoor space

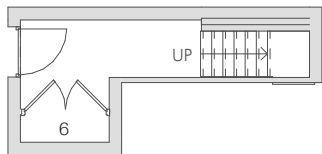
Zoning 1st floor

Zoning 2nd floor

## Floor plan



2nd floor



1th floor

## Legend:

- 1. Living
- 2. Kitchen
- 3. Flexible space
- 4. Bedroom
- 5. Bathroom
- 6. Storage
- 7. Terrace





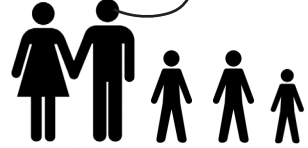
# 150 DAN LECKIE WAY

Information

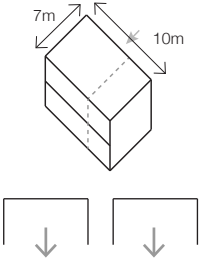
Level:	4 & 5
Dwelling type:	A2 - red
Dwelling size:	160m <sup>2</sup>
No. of habitable rooms:	4
Storage size:	18,5 m <sup>2</sup>
Outdoor space:	-

Dwelling

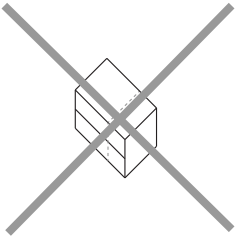
€800.000



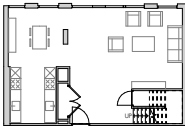
Inhabitants



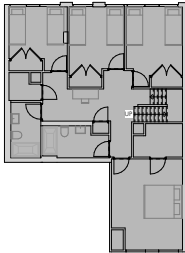
Type



Outdoor space

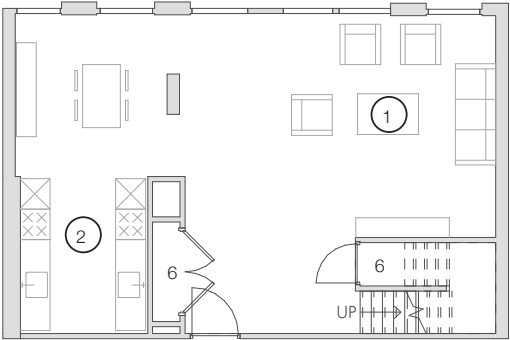


Zoning 1st floor

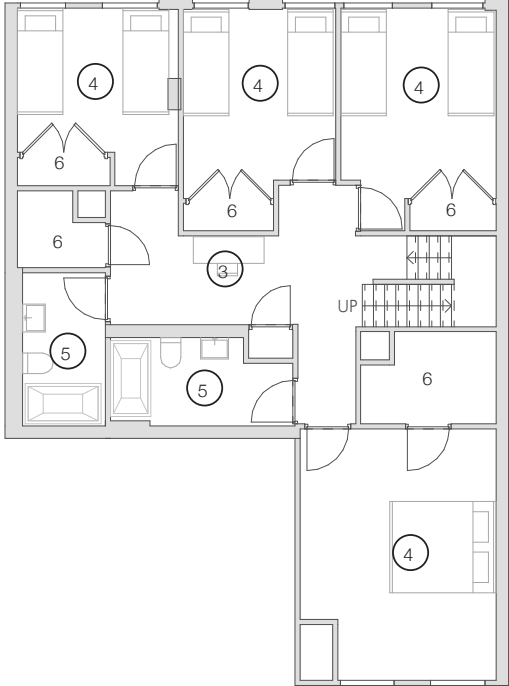


Zoning 2nd floor

Floor plan



1th floor



2nd floor

Legend:

- 1. Living
- 2. Kitchen
- 3. Flexible space
- 4. Bedroom
- 5. Bathroom
- 6. Storage
- 7. Terrace



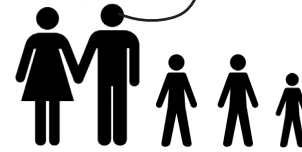
# 150 DAN LECKIE WAY

## Information

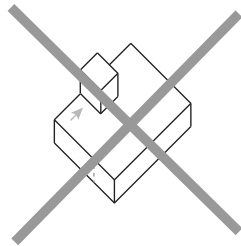
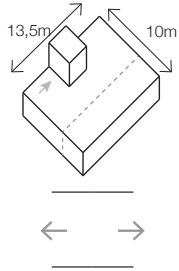
Level:	6th & 7th
Dwelling type:	C - dark green
Dwelling size:	150m <sup>2</sup>
No. of habitable rooms:	5
Storage size:	10,5 m <sup>2</sup>
Outdoor space:	-

Dwelling

€700.000

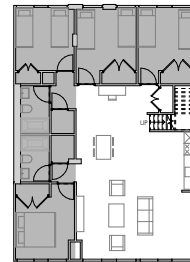


Inhabitants



Type

Outdoor space

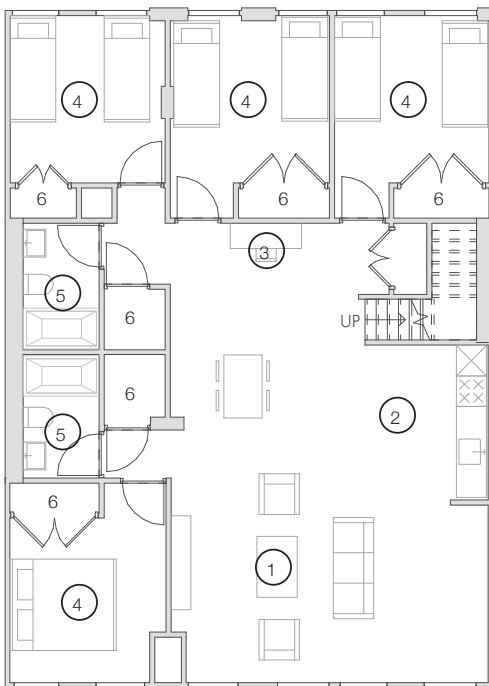


Zoning 1st floor

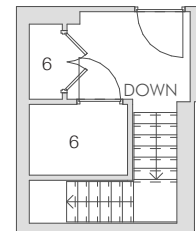


Zoning 2nd floor

## Floor plan



1th floor



2nd floor

## Legend:

- 1. Living
- 2. Kitchen
- 3. Flexible space
- 4. Bedroom
- 5. Bathroom
- 6. Storage
- 7. Terrace



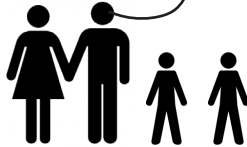
# 150 DAN LECKIE WAY

## Information

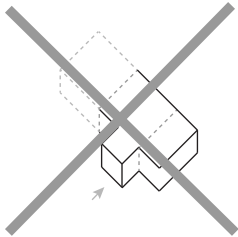
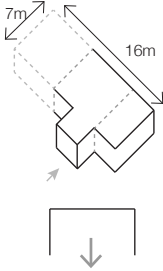
Level:	7th
Dwelling type:	D - orange
Dwelling size:	120 m <sup>2</sup>
No. of habitable rooms:	4
Storage size:	14,5 m <sup>2</sup>
Outdoor space:	-

Dwelling

€600.000



Inhabitants

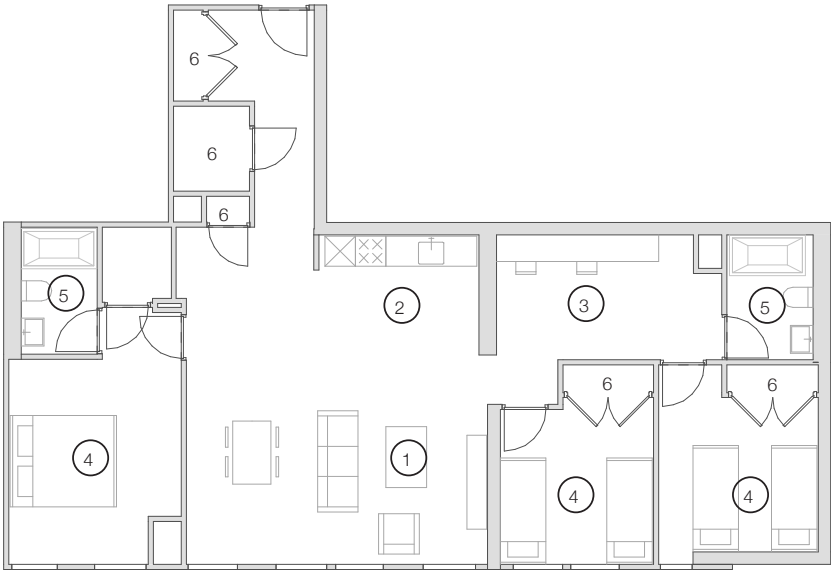


Type

Outdoor space

Zoning 1st floor

## Floor plan



1th floor

## Legend:

- 1. Living
- 2. Kitchen
- 3. Flexible space
- 4. Bedroom
- 5. Bathroom
- 6. Storage
- 7. Terrace



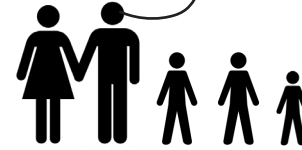
# 150 DAN LECKIE WAY

## Information

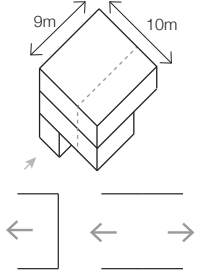
Level:	7th, 8th & 9th
Dwelling type:	E - grey
Dwelling size:	150m <sup>2</sup>
No. of habitable rooms:	5
Storage size:	10,7 m <sup>2</sup>
Outdoor space:	20 m <sup>2</sup>

Dwelling

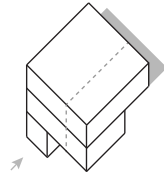
€750.000



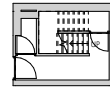
Inhabitants



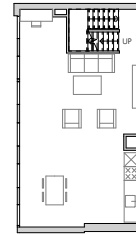
Type



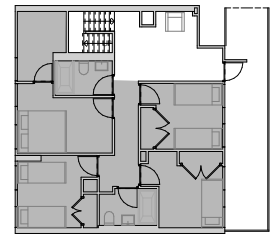
Outdoor space



1st floor

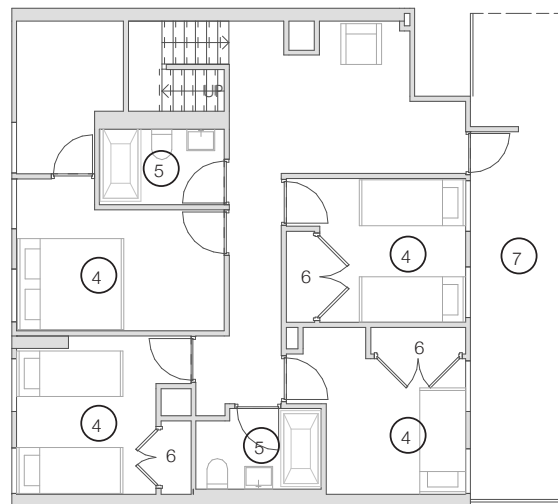


2nd floor

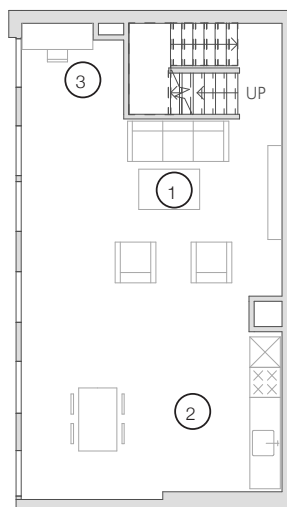


Zoning 3rd floor

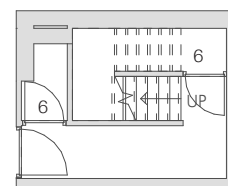
## Floor plan



3th floor



2nd floor



1th floor

## Legend:

- 1. Living
- 2. Kitchen
- 3. Flexible space
- 4. Bedroom
- 5. Bathroom
- 6. Storage
- 7. Terrace

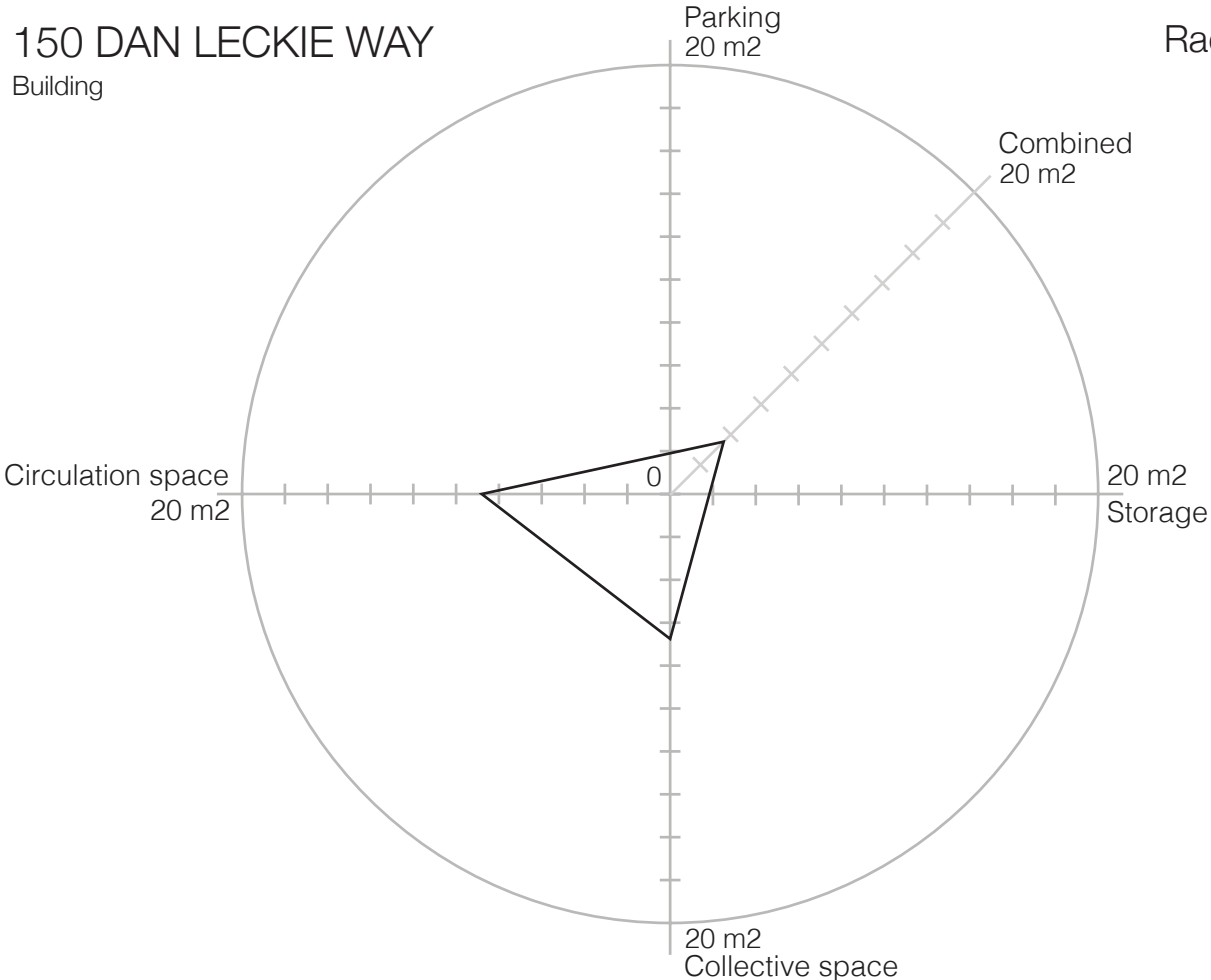




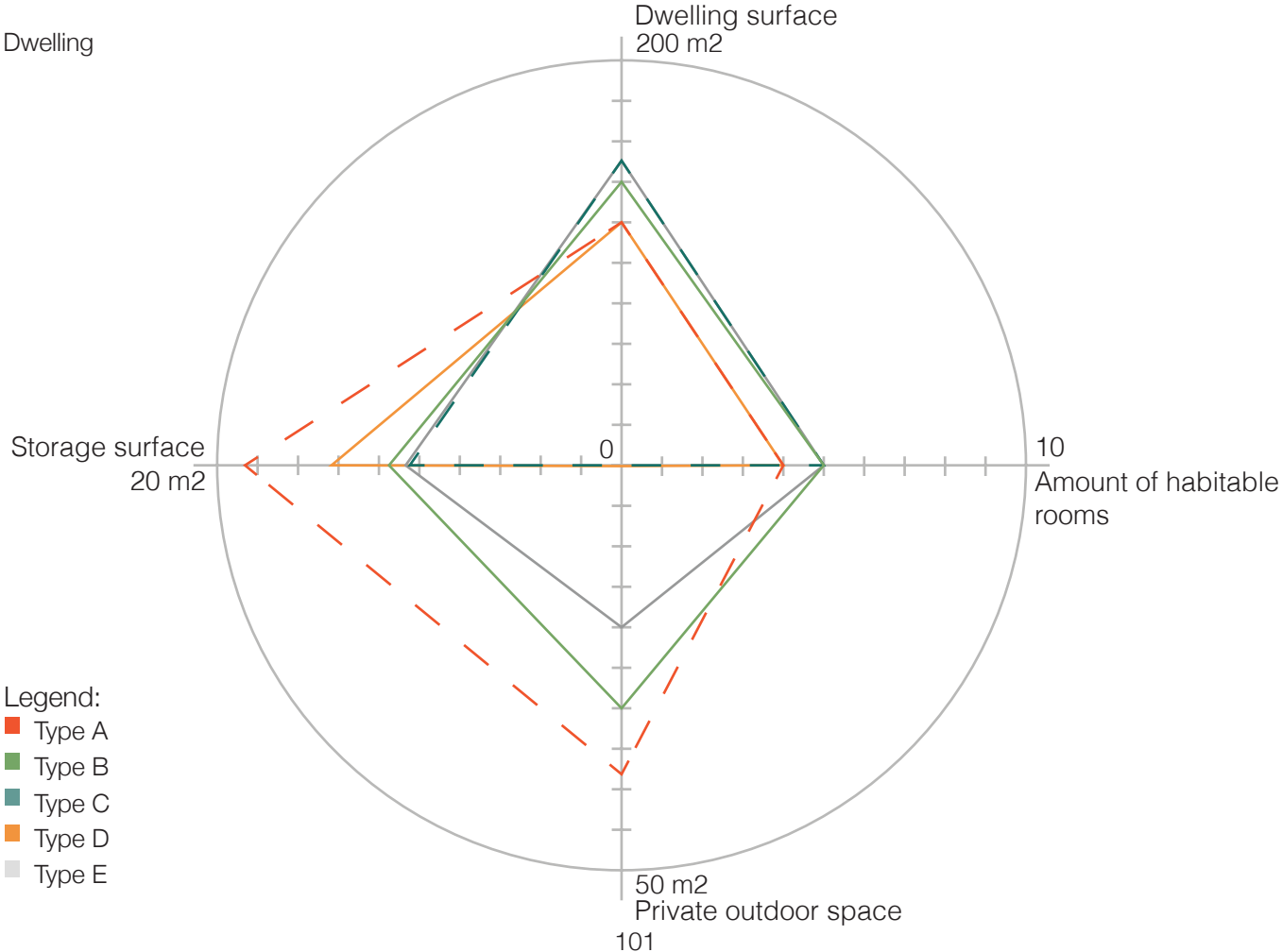
Radar chart

# 150 DAN LECKIE WAY

Building



Dwelling



- Legend:
- Type A
  - Type B
  - Type C
  - Type D
  - Type E

# KOLENKITHUIS

Architect	Heren 5
Location	Amsterdam, Netherlands
Year of completion	2017
No. of dwellings	37
Plot size	3628 m <sup>2</sup>

The Kolenkithuis is a design based on the research towards the ideal family apartment that Heren 5 has done. The design takes several findings into account, such as many rooms, spacious entrances, annexes to the living room and a good organization between private rooms and rooms where you receive family and friends. (source: heren5.eu)

Street view



Source: heren5.eu

Overview illustration



Source: heren5.eu



# KOLENKITHUIS

# Neighbourhood

Soccer field



Source: google.nl/maps

Playground



Source: google.nl/maps

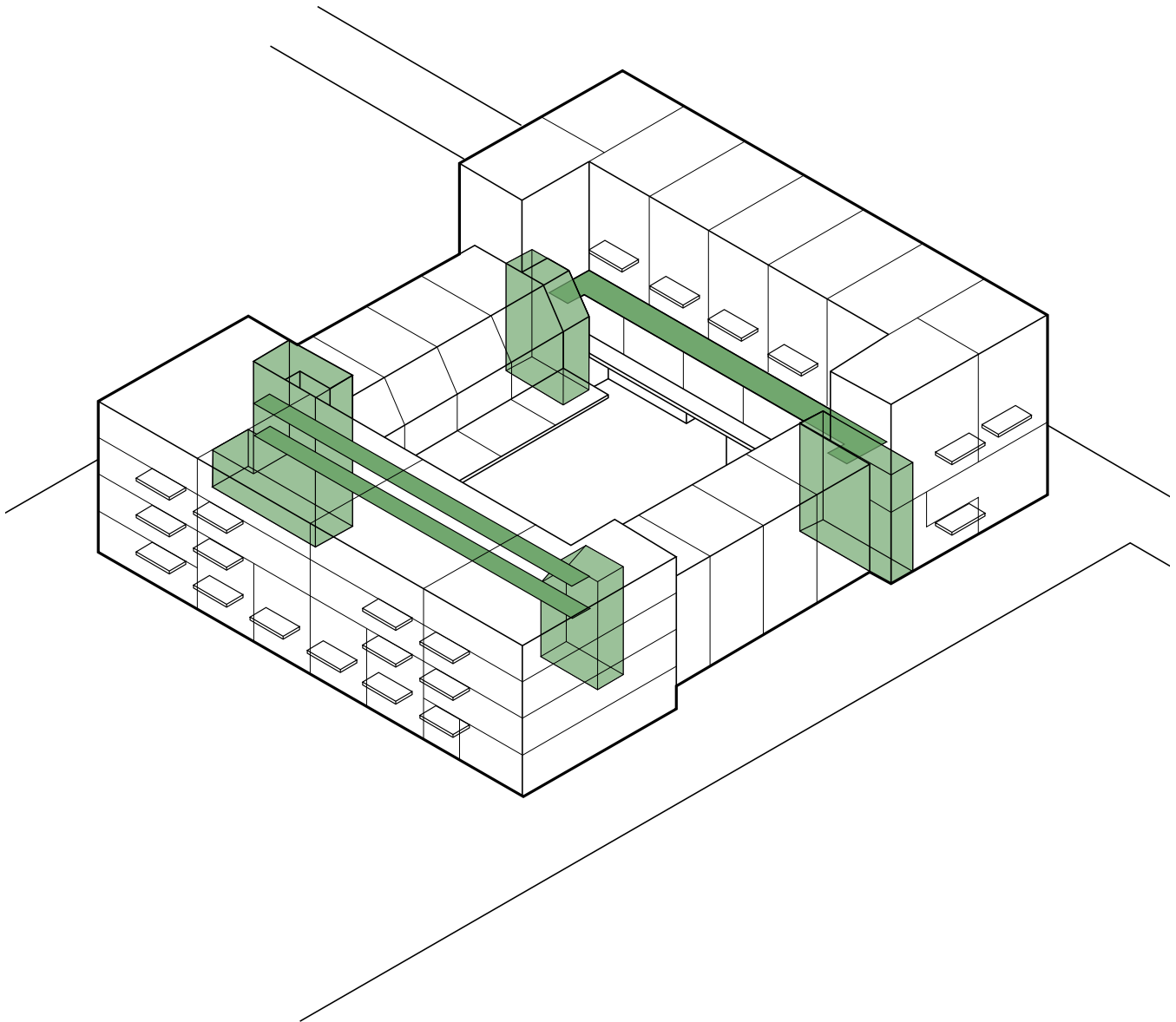
1:6000 | Neighbourhood facilities



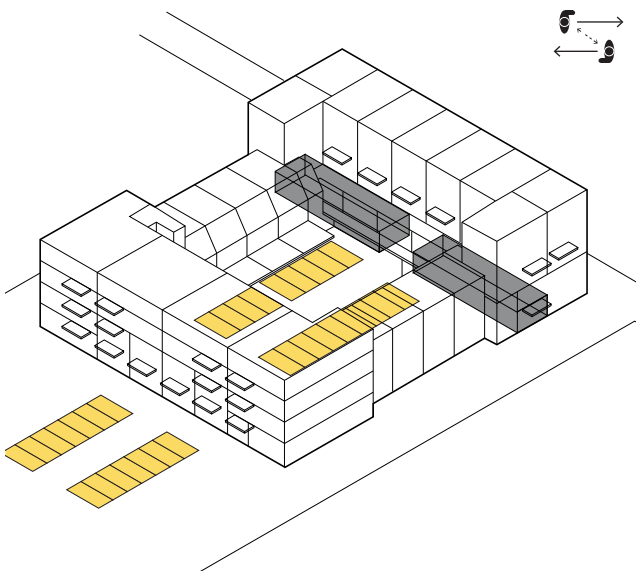
# KOLENKITHUIS

Titel illustratie

Interaction



Parking and storage



Parking in the collective courtyard

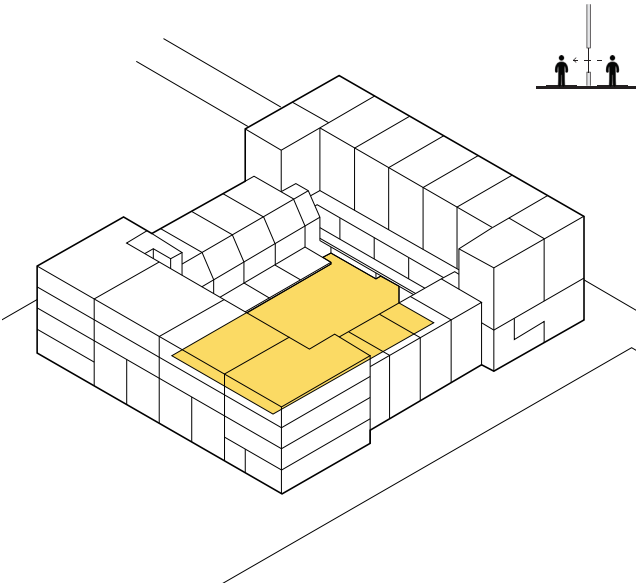




Interaction

# KOLENKITHUIS

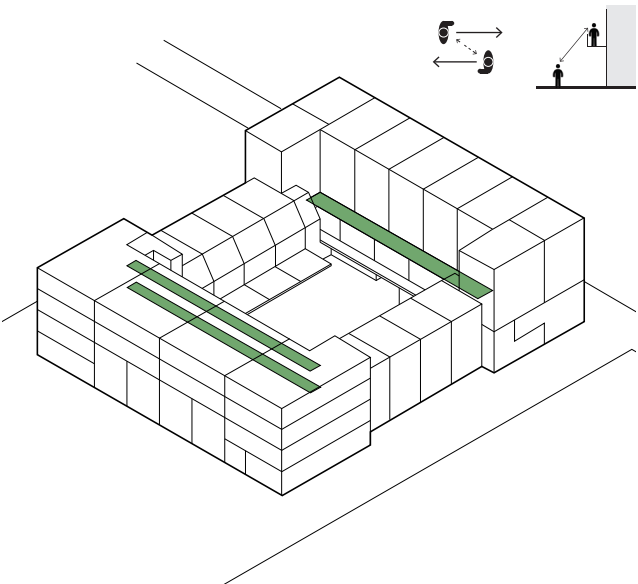
Formal meeting space



Collective courtyard



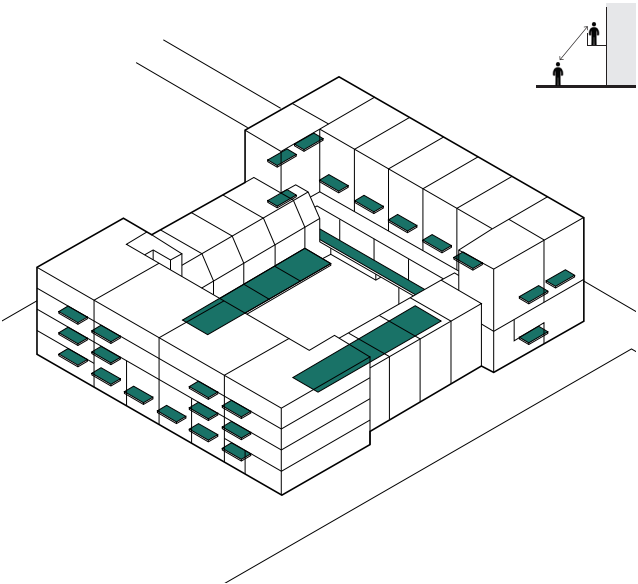
Informal meeting space



Gallery



Private outdoor space



Balconies





# KOLENKITHUIS

Facade



## Identity

### Identification

Function

Building

Dwelling

The function of the building is very visible, mainly because of the balconies and front doors on the ground floor. The identity of the building itself is less clear, as it does not distinguish itself much from its surroundings in material or color. Each separate dwelling can be distinguished because of the different patterns in the brickwork and the balconies.

Stacking scheme



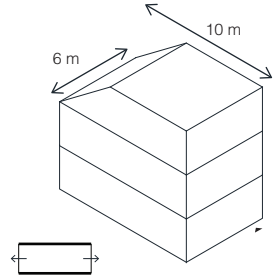
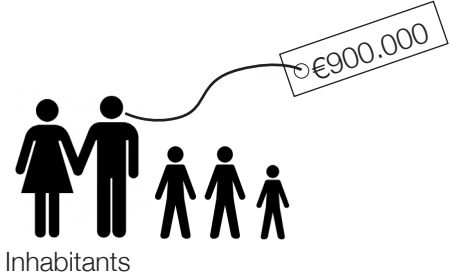
Legend:

- Type A
- Type B
- Type C
- Type D

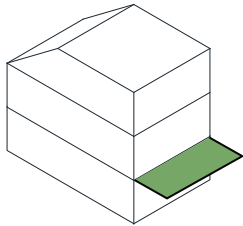
# KOLENKITHUIS

## Information

Level:	Ground Floor, 1st, 2nd floor
Dwelling type:	A
Dwelling size:	180 m <sup>2</sup>
No. of habitable rooms:	7
Storage size:	10 m <sup>2</sup>
Outdoor space:	20 m <sup>2</sup>



Type



Outdoor space



Zoning 1st floor

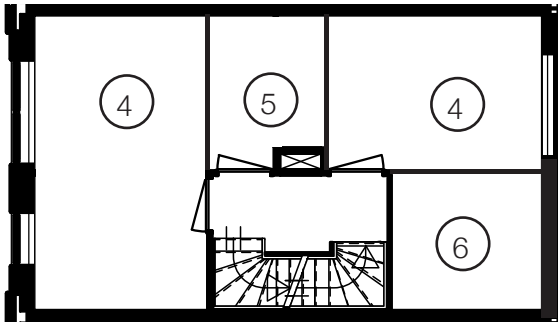


Zoning 2nd floor

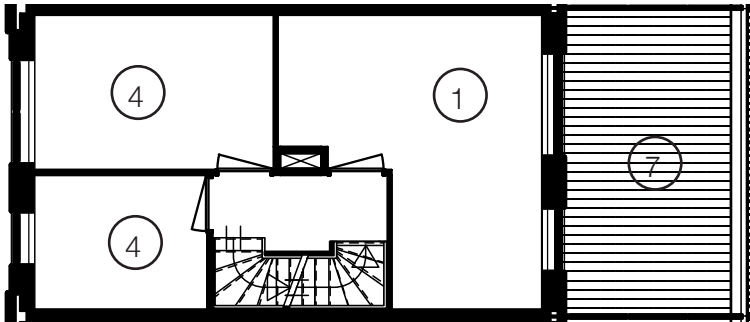


Zoning 3th floor

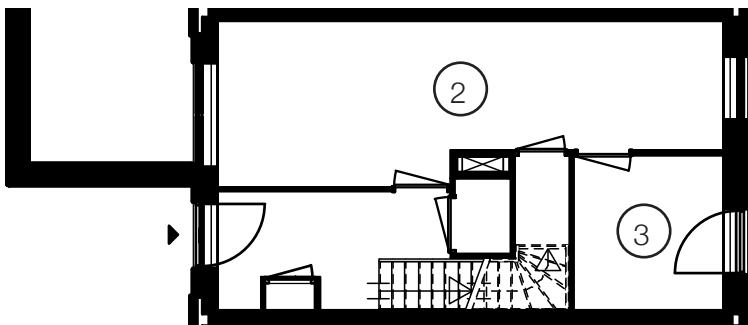
## Floor plans



Second Floor



First Floor



Ground Floor

- Legend:
- 1. Living
  - 2. Kitchen
  - 3. Flexible space
  - 4. Bedroom
  - 5. Bathroom
  - 6. Storage
  - 7. Terrace



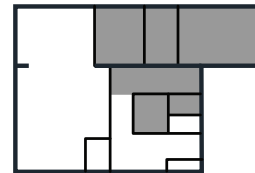
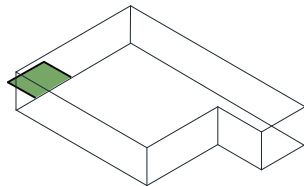
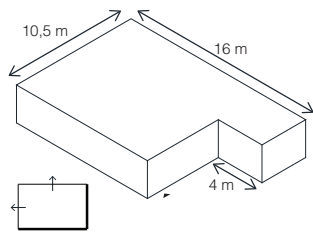
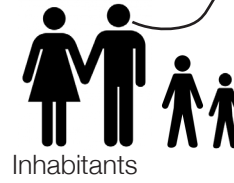
# KOLENKITHUIS

## Information

Level:	3th floor
Dwelling type:	B
Dwelling size:	142 m <sup>2</sup>
No. of habitable rooms:	4
Storage size:	4,5 m <sup>2</sup>
Outdoor space:	7 m <sup>2</sup>

Dwelling

€710.000

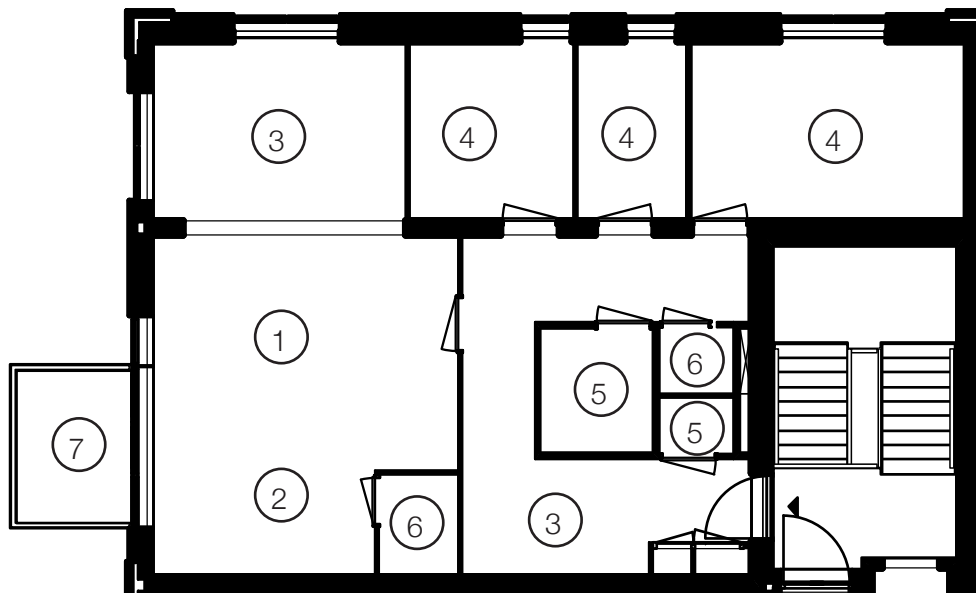


Type

Outdoor space

Zoning 3th floor

## Floor plan



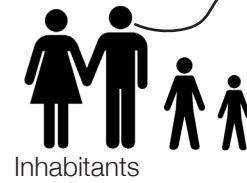
### Legend:

- 1. Living
- 2. Kitchen
- 3. Flexible space
- 4. Bedroom
- 5. Bathroom
- 6. Storage
- 7. Terrace

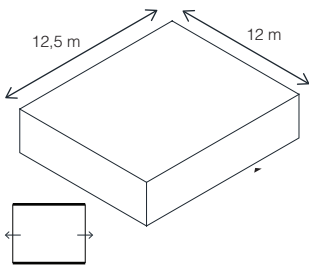
# KOLENKITHUIS

## Information

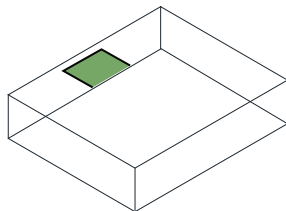
Level:	3th floor
Dwelling type:	C
Dwelling size:	150 m <sup>2</sup>
No. of habitable rooms:	4
Storage size:	7 m <sup>2</sup>
Outdoor space:	7 m <sup>2</sup>



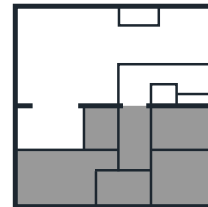
€750.000



Type

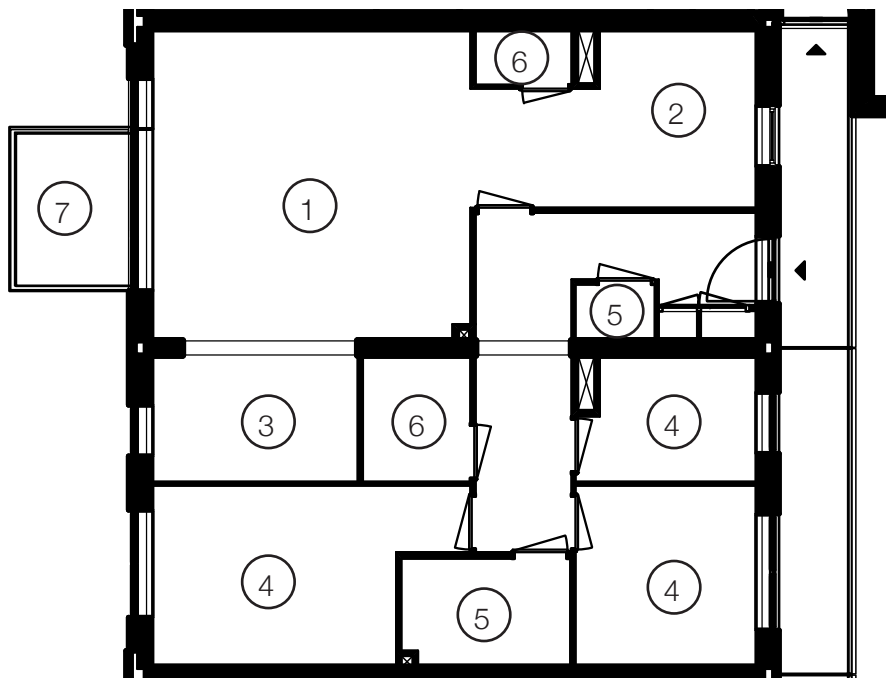


Outdoor space



Zoning 1st floor

## Floor plan



### Legend:

- 1. Living
- 2. Kitchen
- 3. Flexible space
- 4. Bedroom
- 5. Bathroom
- 6. Storage
- 7. Terrace





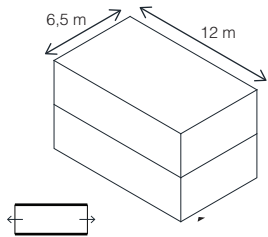
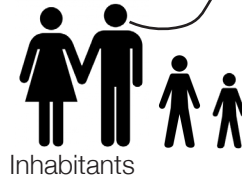
# KOLENKITHUIS

## Information

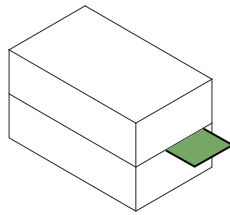
Level:	Ground Floor, 1st floor
Dwelling type:	D
Dwelling size:	156 m <sup>2</sup>
No. of habitable rooms:	6
Storage size:	3,5 m <sup>2</sup>
Outdoor space:	7 m <sup>2</sup>

Dwelling

€780.000



Type



Outdoor space

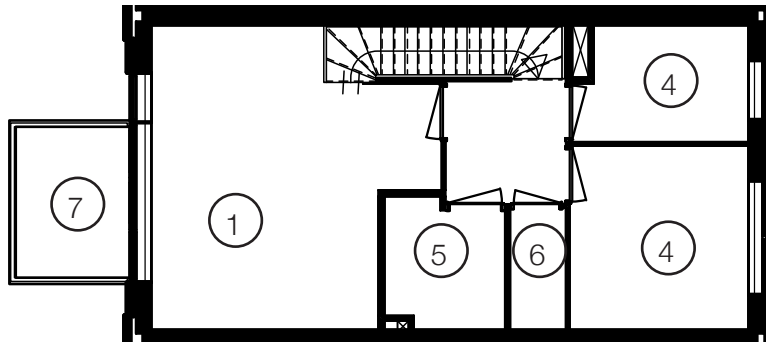


Zoning 1st floor

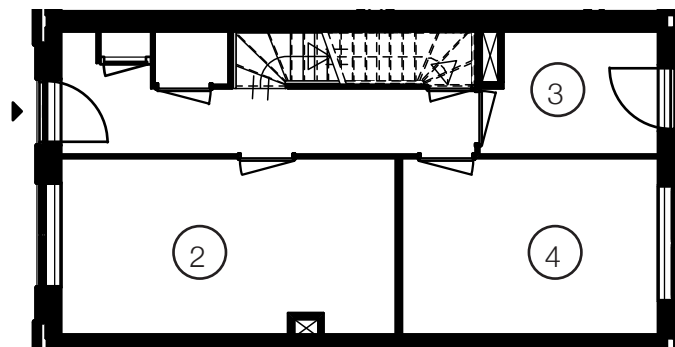


Zoning 2nd floor

## Floor plans



First Floor



Ground Floor

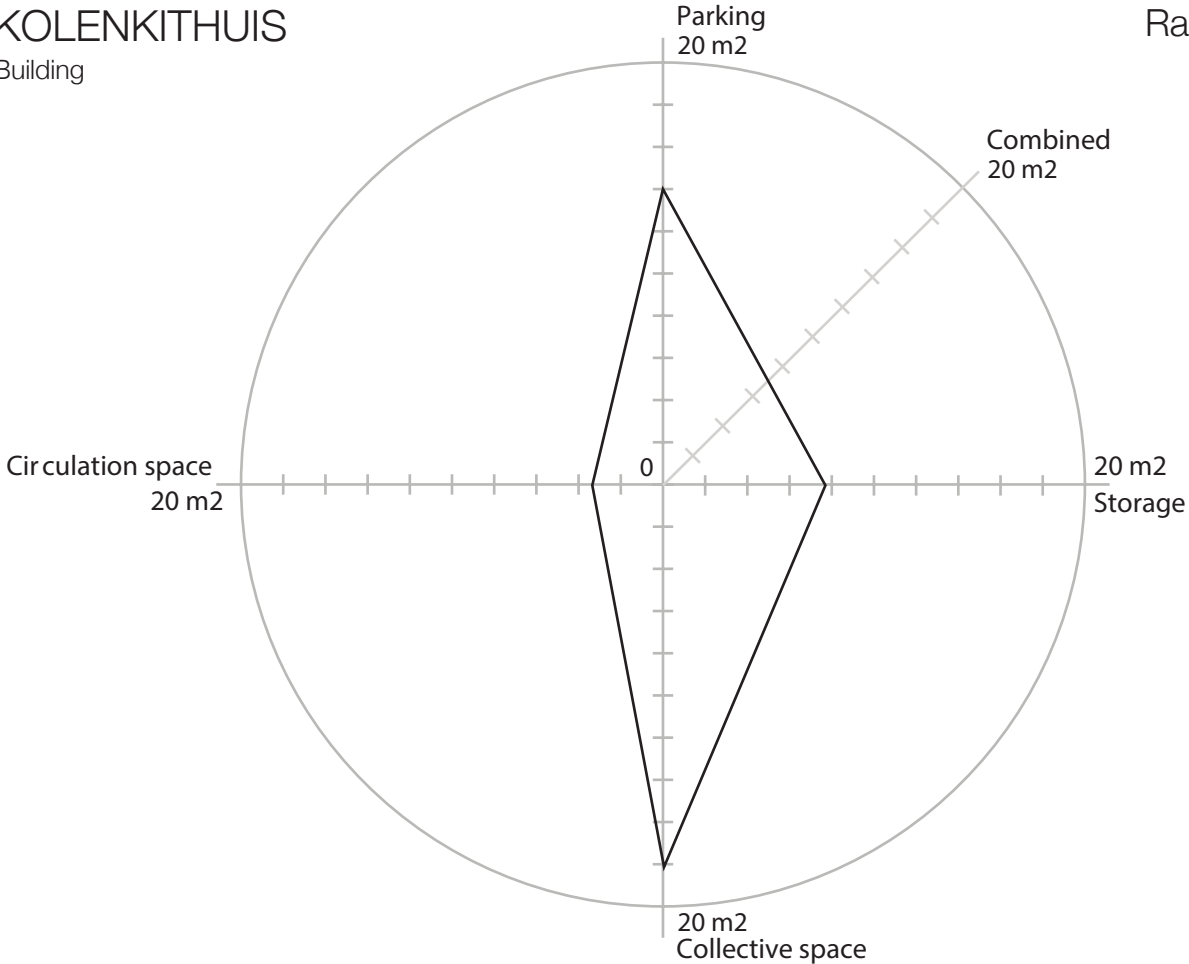
### Legend:

- 1. Living
- 2. Kitchen
- 3. Flexible space
- 4. Bedroom
- 5. Bathroom
- 6. Storage
- 7. Terrace



# KOLENKITHUIS

Building



Dwelling



- Legend:
- Type A
  - Type B
  - Type C
  - Type D

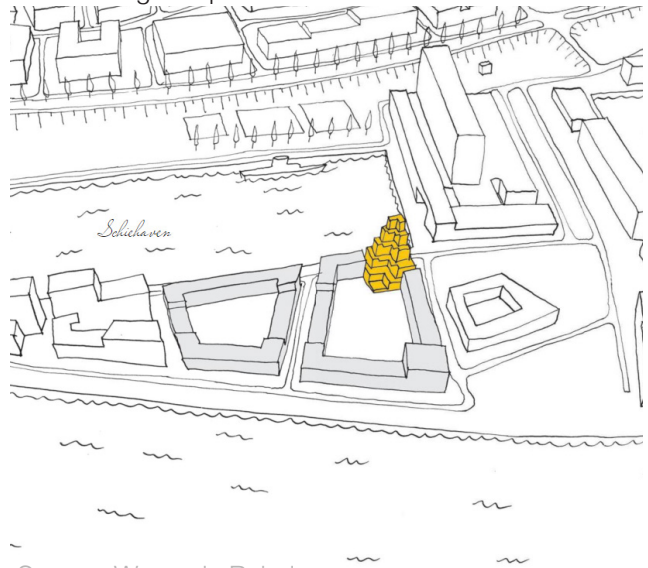
# BABEL

Architect	Laurens Boodt
Location	Rotterdam, Netherlands
Year of completion	Not Build
No. of dwellings	22
Plot size	? m <sup>2</sup>

The 'Rotterdam Tower of Babel' is design with a street that runs along tower, all the way to the top. This street contexts the several spaces and dwellings. The plan consites out of 22 family-dwellings from 70 till 160 square meters, a elevator, parking garage, community square on the first floor, indoor garden and the possibility of a roof terrace.

## Introduction

Axo building complex



Source: Wonen in Babel

## Overview illustration



Source: Laurens Boodt



# BABEL

Playground



Source: Google maps

# Neighbourhood

Sport & game



Source: Google maps

1:6000 | Neighbourhood facilities

- 
- 
- 
- 
- 



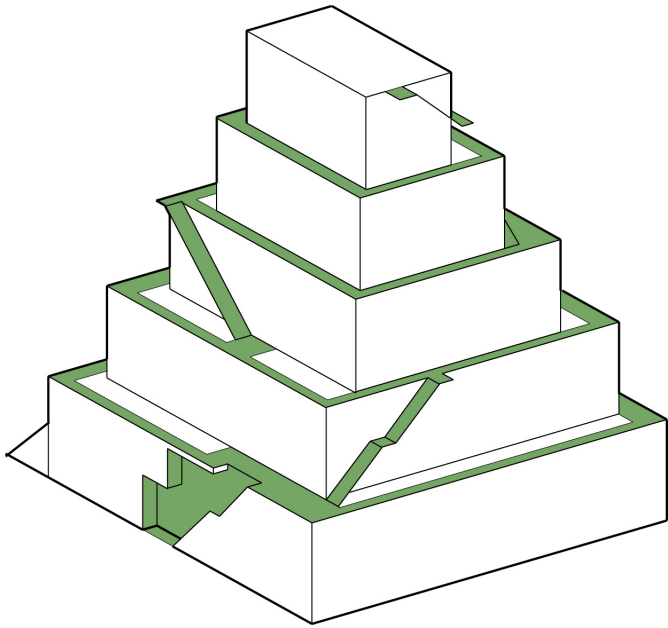
Source: Cadmapper



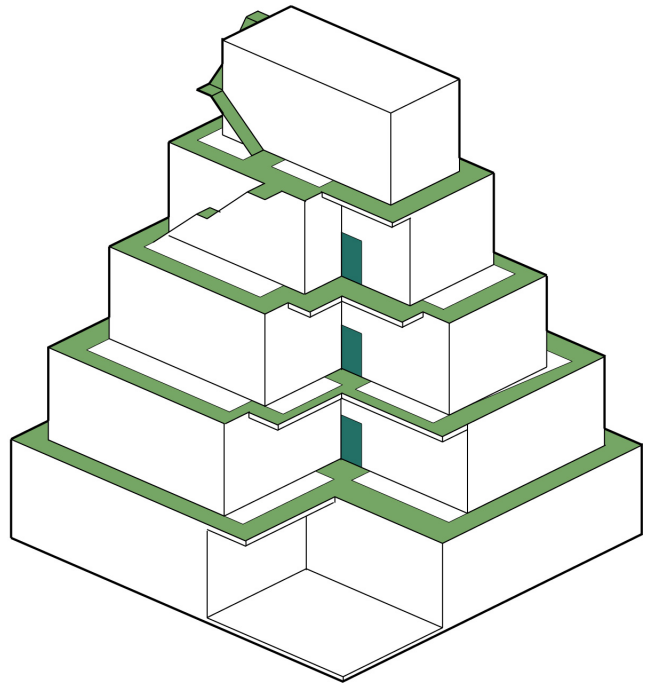
# BABEL

Circulation

Interaction

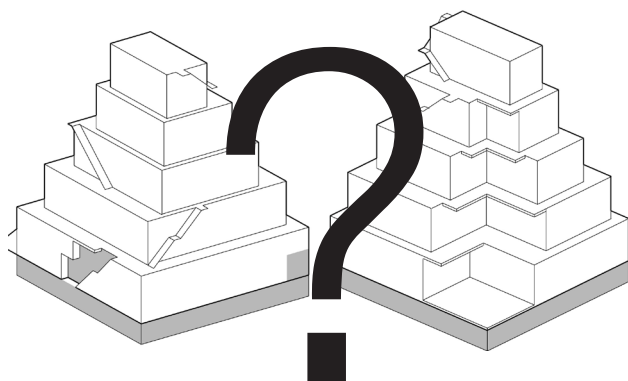


Front side



Back side

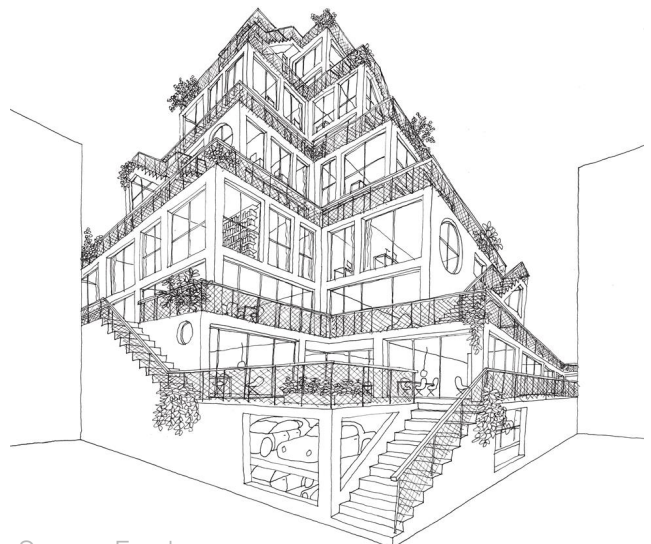
Parking and storage



Front side

Back side

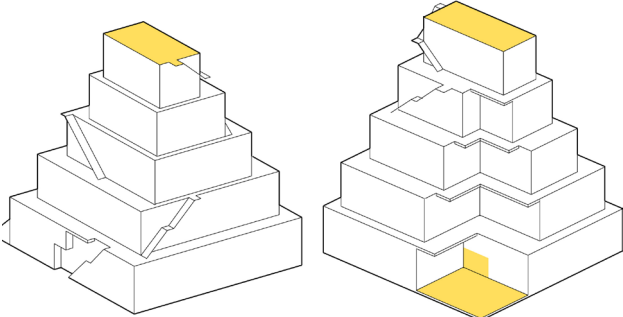
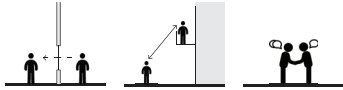
Parking garage



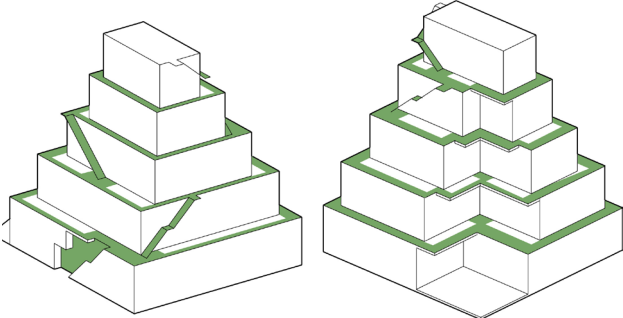
Source: Funda

# BABEL

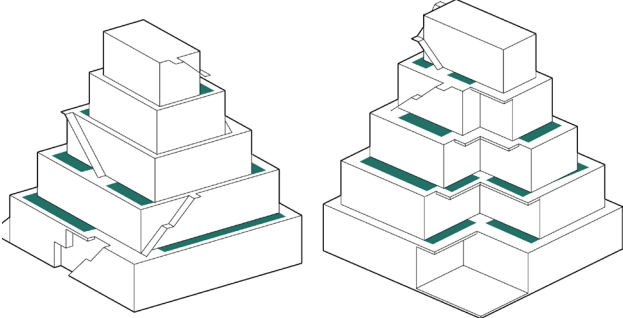
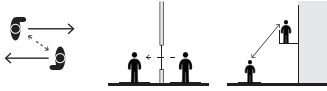
Formal meeting space



Informal meeting space



Private outdoor space

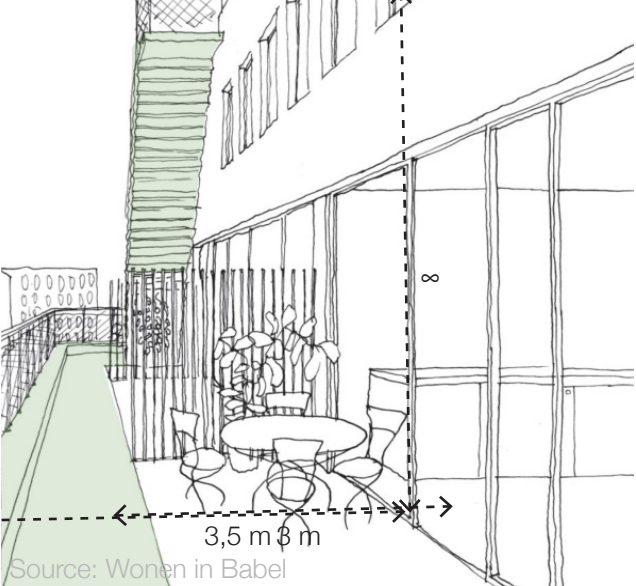


# Interaction

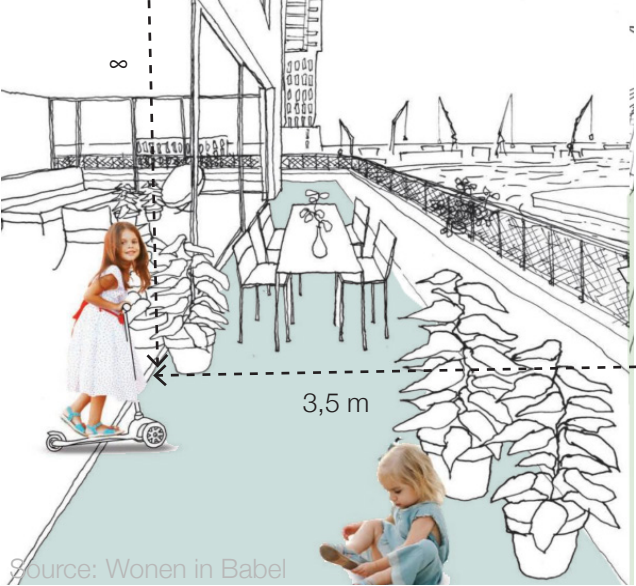
Communal Play area



Gallery (Street in the sky)



Front garden



# BABEL

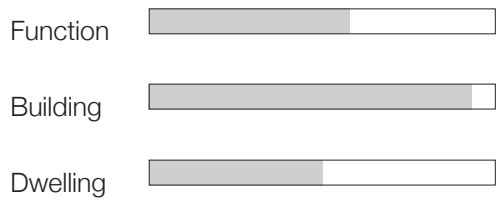
Facade



Source: Google maps

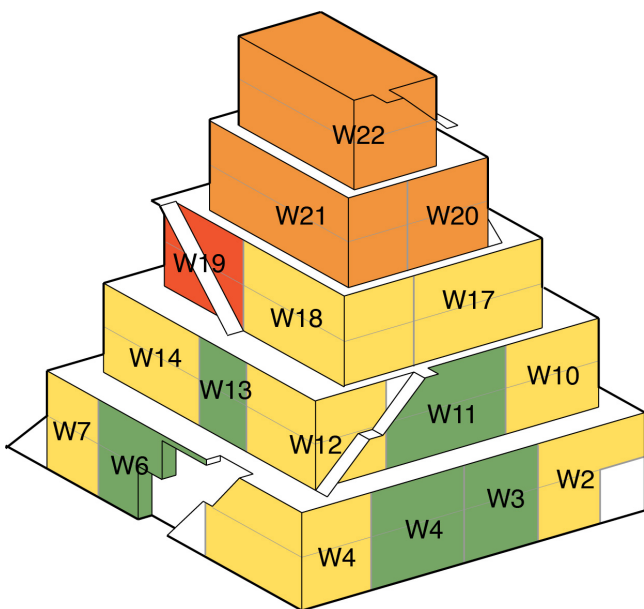
## Identity

Identification

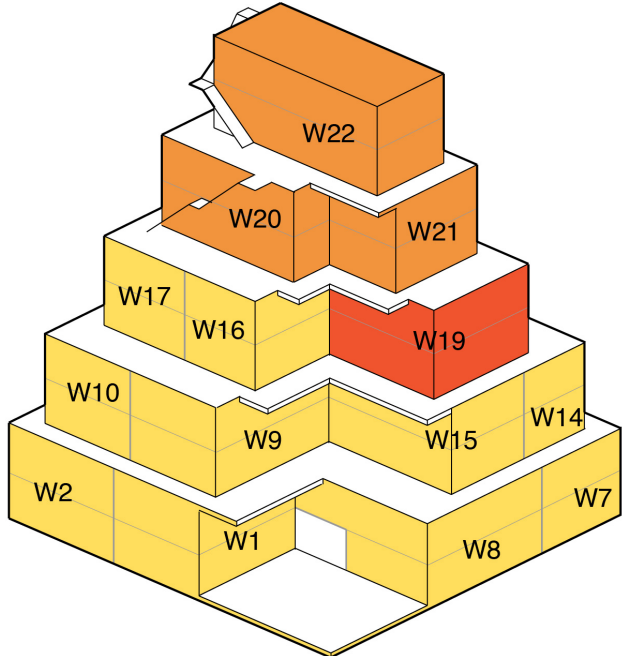


The building function could be something else then housing, but residence is the most likely function to be housed. Due to its characterizing shape and height the building would stand-out in its surrounding. Making the building easy to be found. The individual dwellings aren't distinguished, but they are to tell apart by level.

Stacking scheme



Front side



Back side

- Legend:
- Type A
  - Type B
  - Type C
  - Type D

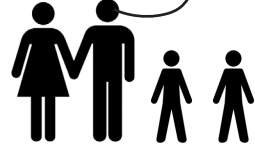
# BABEL

## Information

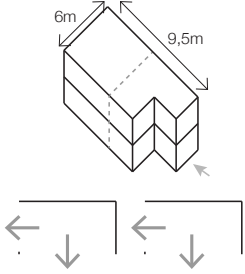
Level:	4th & 5th floor
Dwelling type:	W16 - Type A
Dwelling size:	90m <sup>2</sup>
No. of habitable rooms:	4
Storage size:	2m <sup>2</sup>
Outdoor space:	19,5m <sup>2</sup>

Dwelling

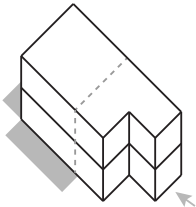
€450.000



Inhabitants



Type



Outdoor space

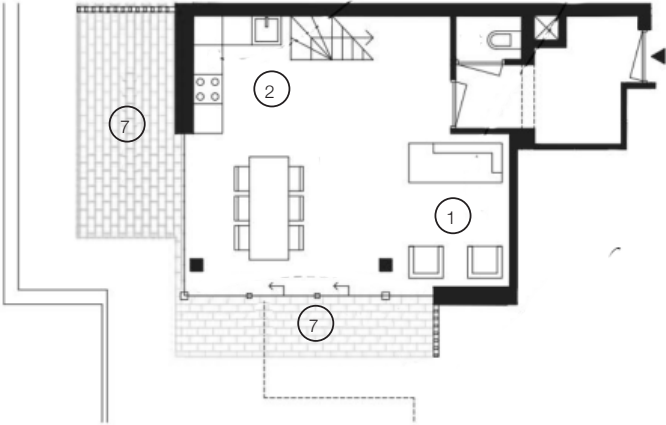


Zoning 1st floor



Zoning 2nd floor

## Floor plan



1th floor



2nd floor

## Legend:

- 1. Living
- 2. Kitchen
- 3. Flexible space
- 4. Bedroom
- 5. Bathroom
- 6. Storage
- 7. Terrace





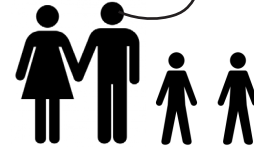
# BABEL

## Information

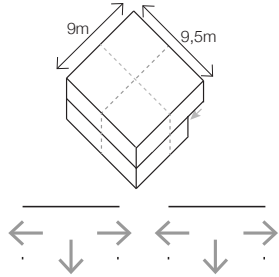
Level: 4th & 5th floor  
 Dwelling type: W19 - Type C  
 Dwelling size: 130m<sup>2</sup>  
 No. of habitable rooms: 4  
 Storage size: 5,25m<sup>2</sup>  
 Outdoor space: 21,5m<sup>2</sup>

Dwelling

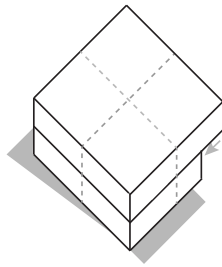
€650.000



Inhabitants



Type



Outdoor space

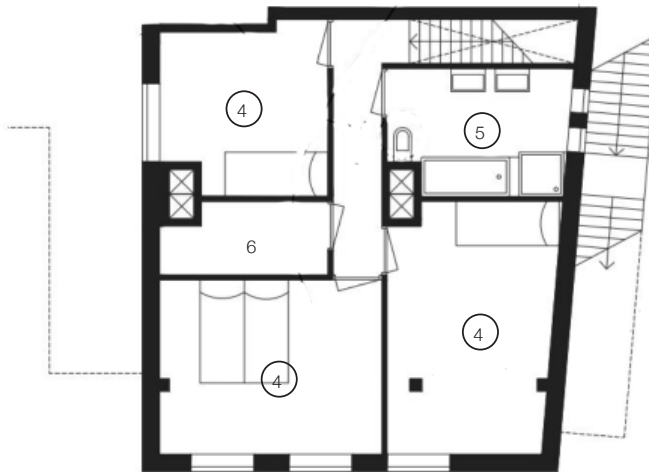


Zoning 1st floor



Zoning 2nd floor

## Floor plan



2nd floor



1th floor

### Legend:

- 1. Living
- 2. Kitchen
- 3. Flexible space
- 4. Bedroom
- 5. Bathroom
- 6. Storage
- 7. Terrace



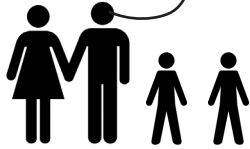
# BABEL

## Information

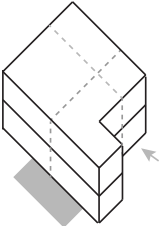
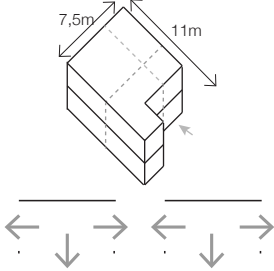
Level:	6th & 7th floor
Dwelling type:	W20 - Type B
Dwelling size:	115m <sup>2</sup>
No. of habitable rooms:	4
Storage size:	4,25m <sup>2</sup>
Outdoor space:	13m <sup>2</sup>

Dwelling

€575.000

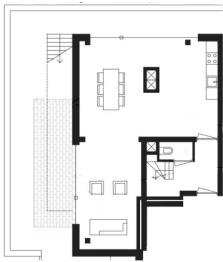


Inhabitants

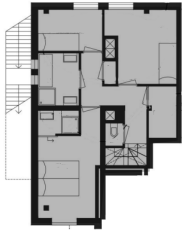


Type

Outdoor space

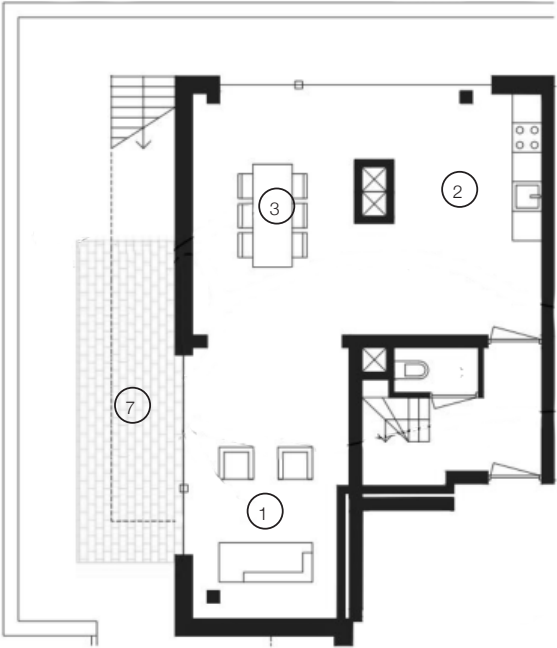


Zoning 1st floor

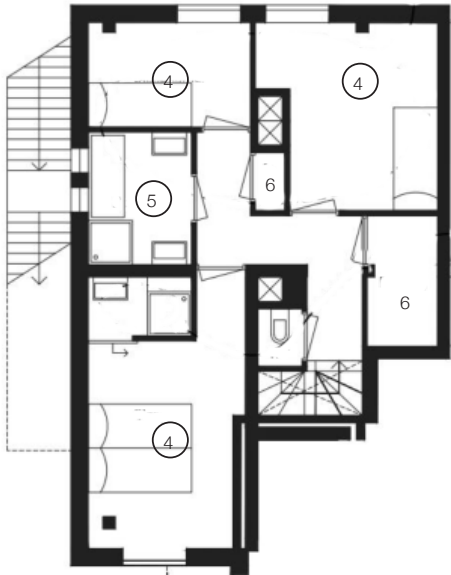


Zoning 2nd floor

## Floor plan



1th floor



2nd floor

## Legend:

- 1. Living
- 2. Kitchen
- 3. Flexible space
- 4. Bedroom
- 5. Bathroom
- 6. Storage
- 7. Terrace



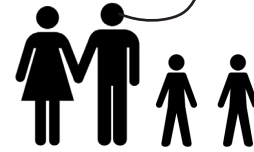
# BABEL

## Information

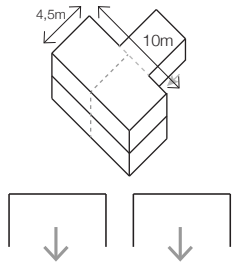
Level:	2nd & 3th floor
Dwelling type:	W11 - Type D
Dwelling size:	100m <sup>2</sup>
No. of habitable rooms:	4
Storage size:	1m <sup>2</sup>
Outdoor space:	19,5m <sup>2</sup>

Dwelling

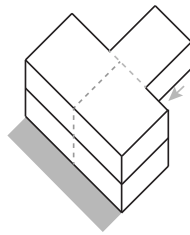
€500.000



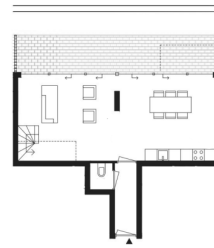
Inhabitants



Type



Outdoor space

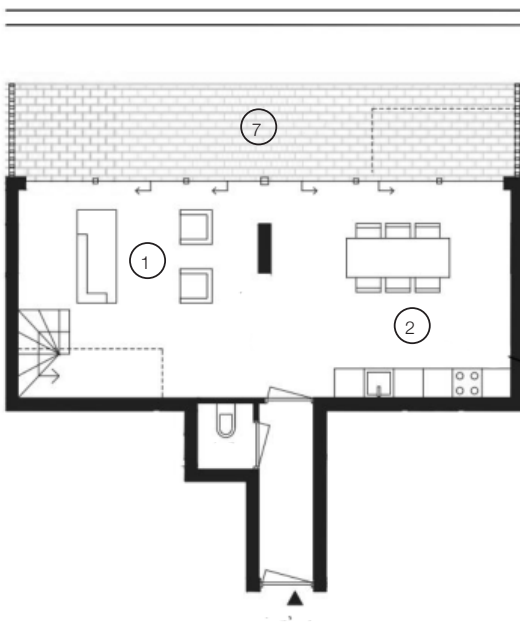


Zoning 1st floor



Zoning 2nd floor

## Floor plan



1th floor



2nd floor

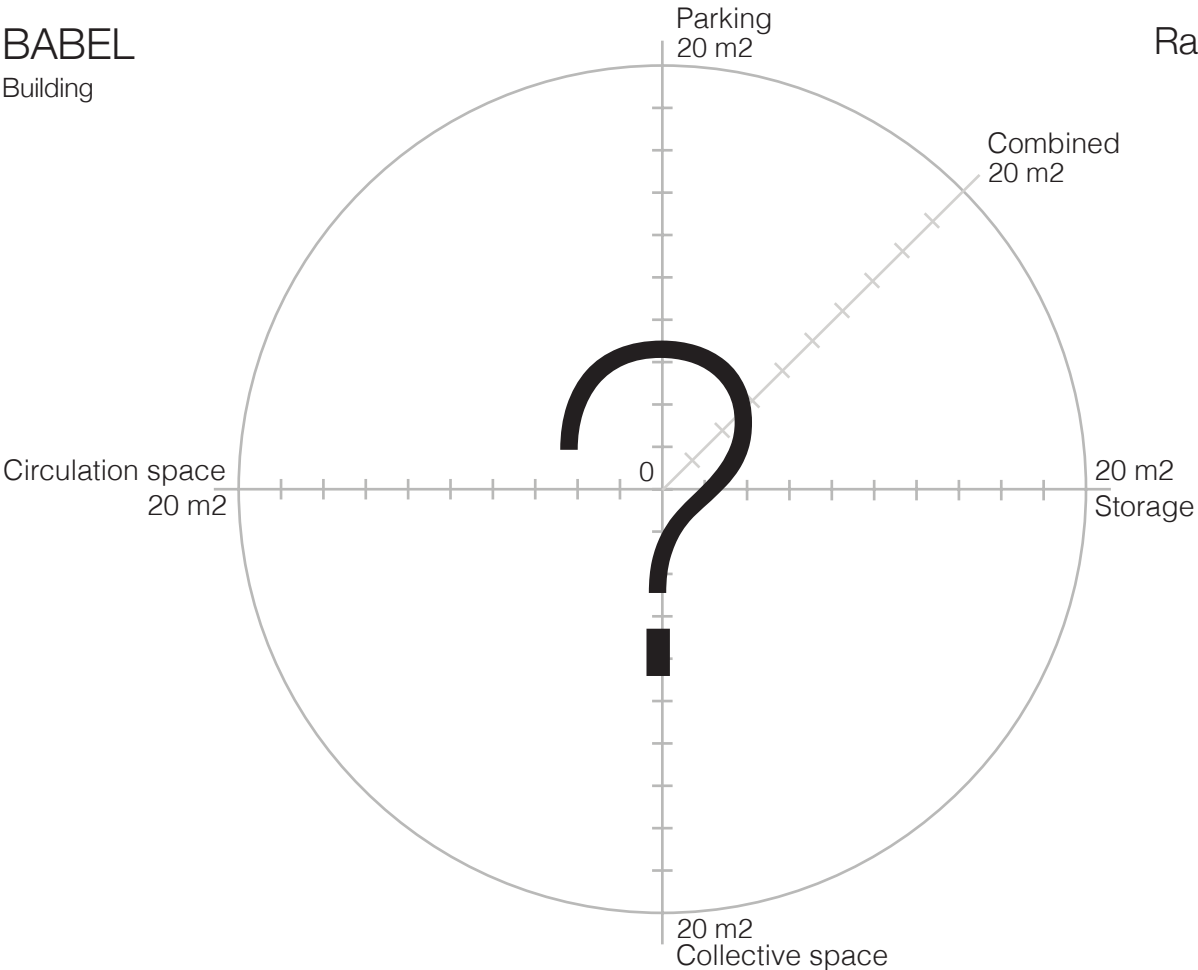
## Legend:

- 1. Living
- 2. Kitchen
- 3. Flexible space
- 4. Bedroom
- 5. Bathroom
- 6. Storage
- 7. Terrace

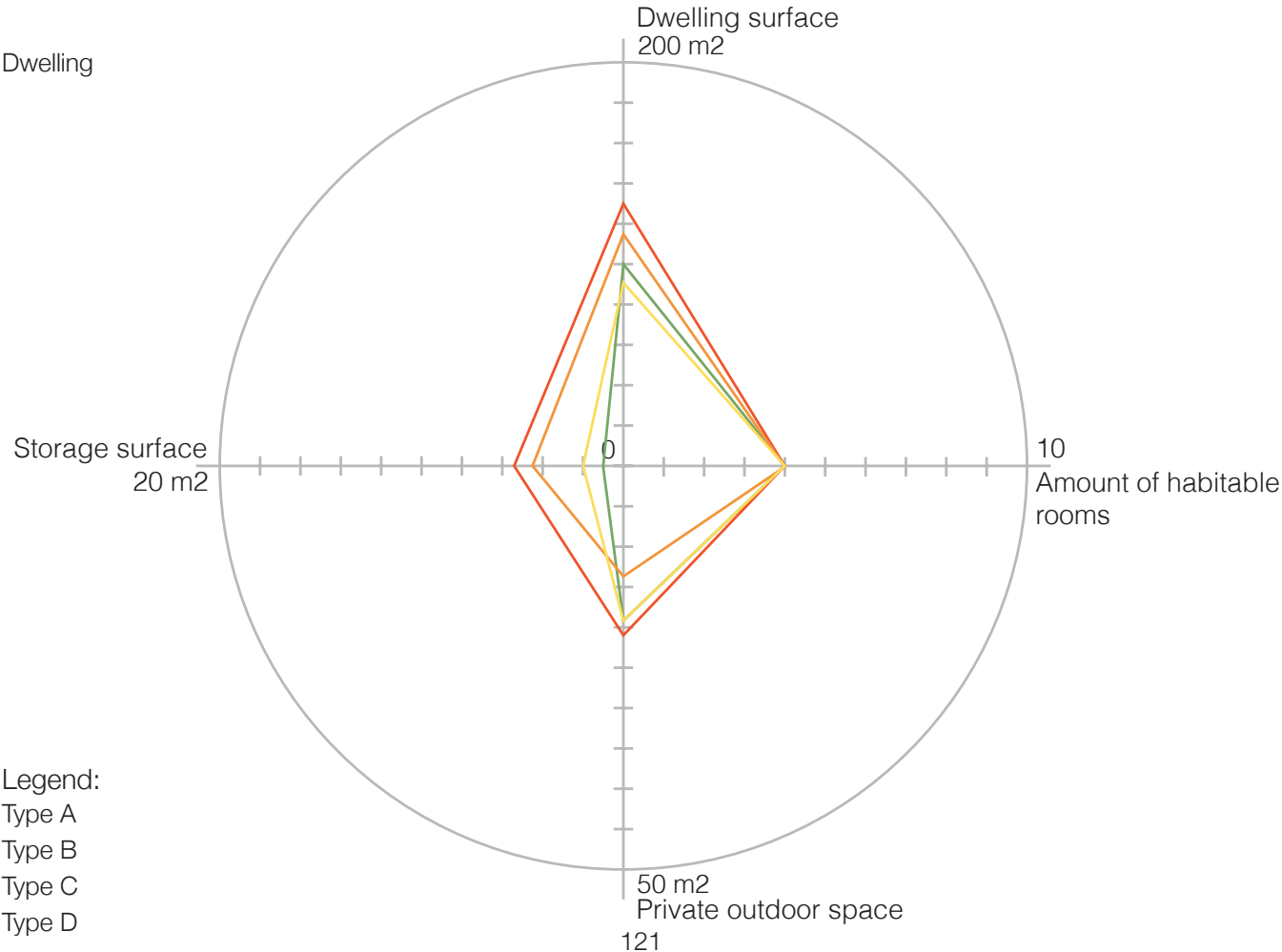


Radar chart

BABEL Building



Dwelling



- Legend:
- Type A
  - Type B
  - Type C
  - Type D



# WISSELSPOOR

Architect	HCVA
Location	Leuven, Belgium
Year of completion	-
No. of dwellings	46
Plot size	m <sup>2</sup>

Wisselspoor from Happel Cornelisse Verhoeven Architecten won 2nd prize in the competition on a plot near 'Blauwputplein'. It is especially designed for families, and thus very child friendly. A collective square is designed as a playground and the galleries are so wide that they can double serve as more private front 'gardens' as well. Within the house the large entrance hall can double serve as a room for playing and storage.

Street view



Overview illustration





# WISSELSPOOR

# Neighbourhood

Playground



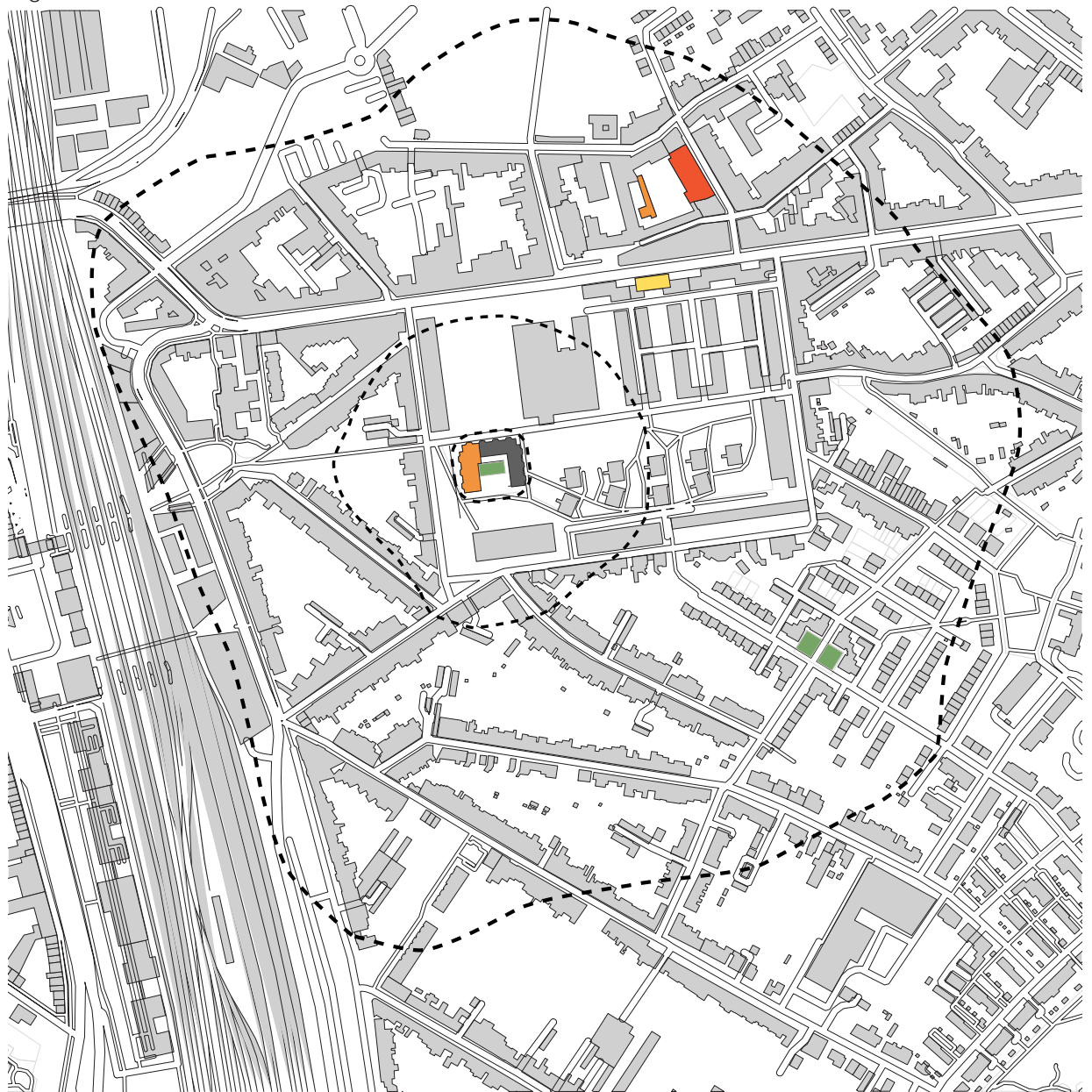
Source: google.nl/maps

Primary school



Source: google.nl/maps

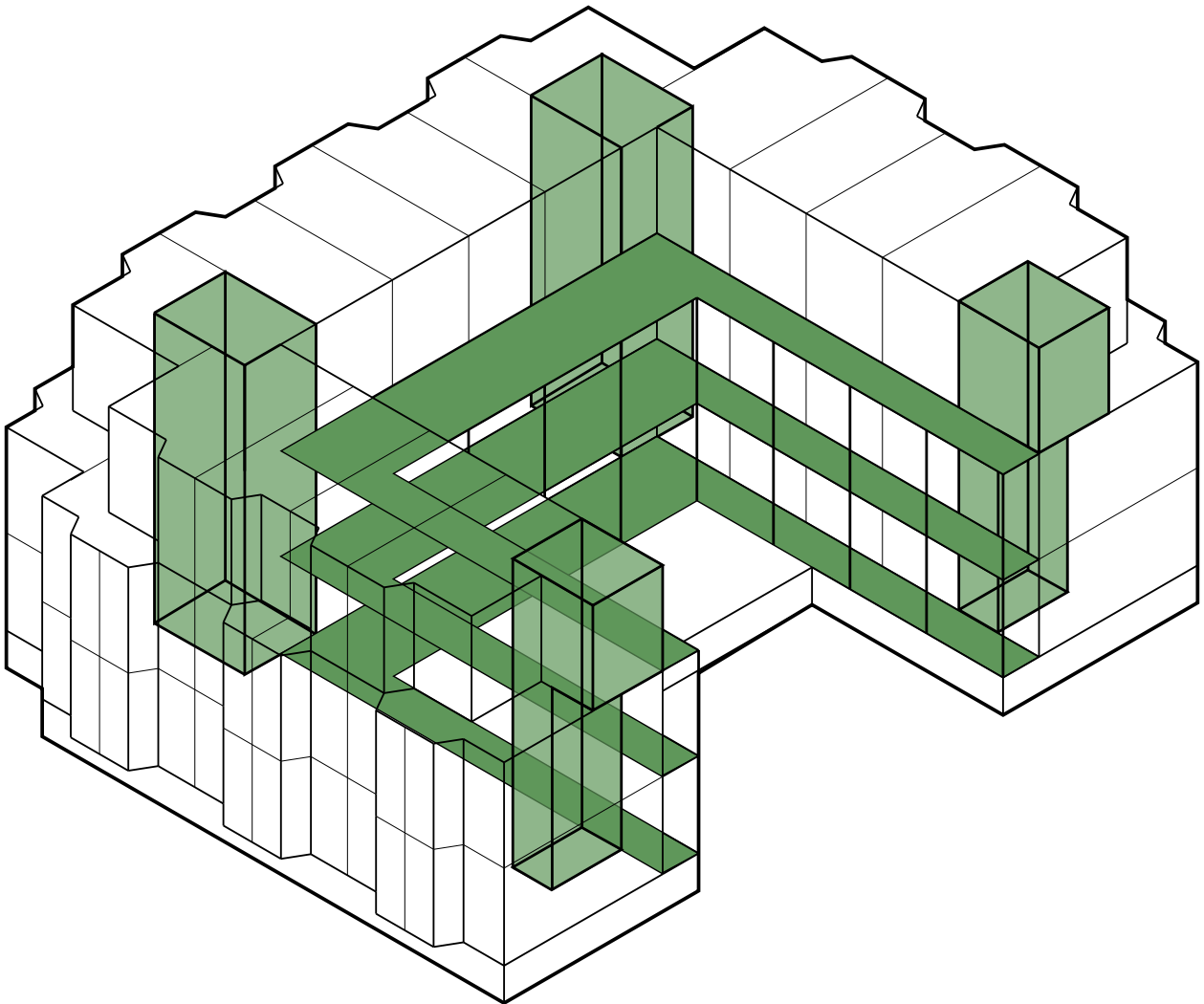
1:6000 | Neighbourhood facilities



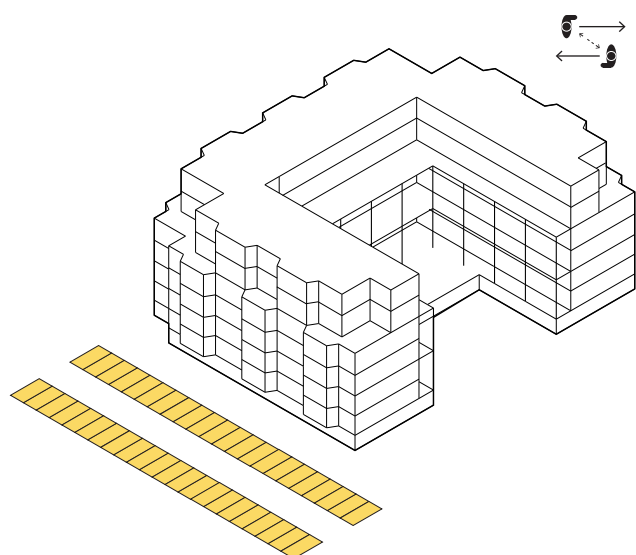
# WISSELSPOOR

Circulation

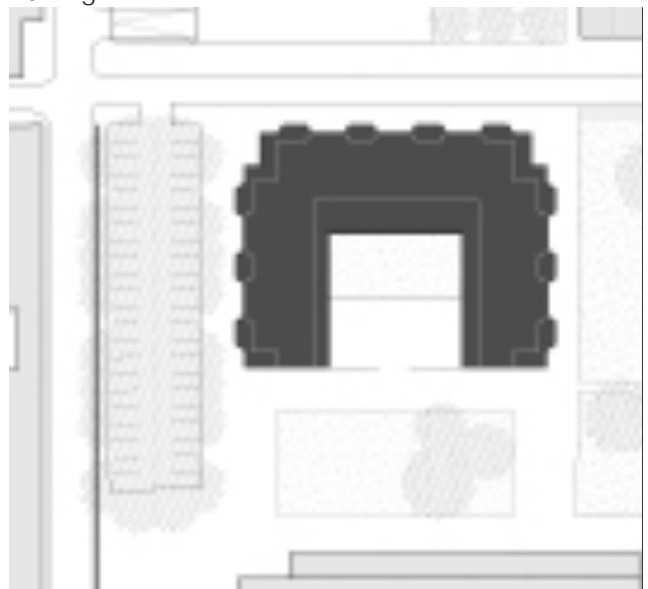
Interaction



Parking



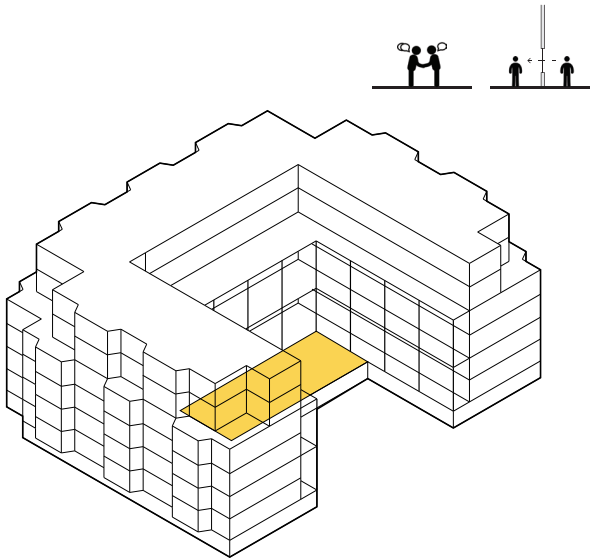
Parking



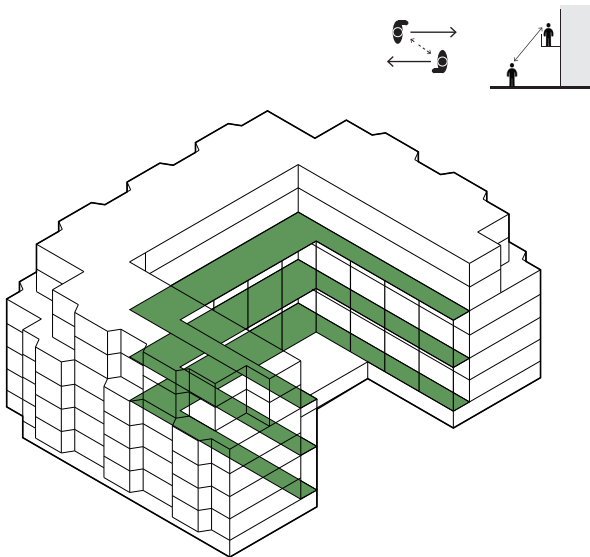


# WISSELSPOOR

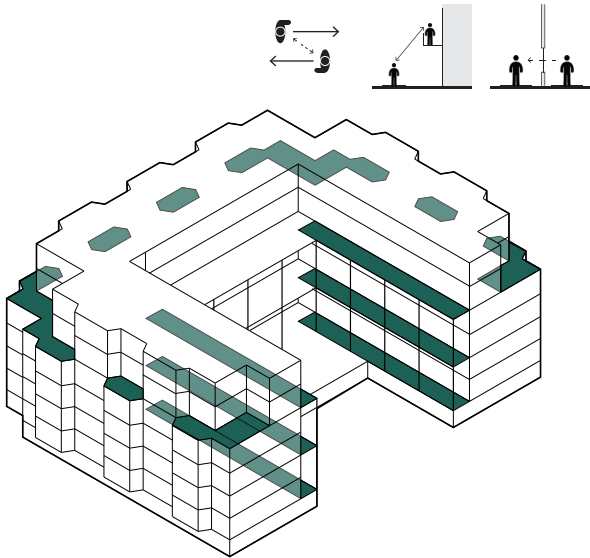
Formal meeting space



Informal meeting space



Private outdoor space



Collective courtyard/playground



Gallery doubles as semi-private front garden



Semi-private outdoor space on gallery





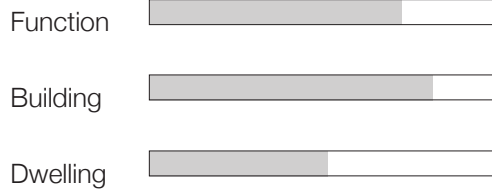
# WISSELSPOOR

## Identity

Facade

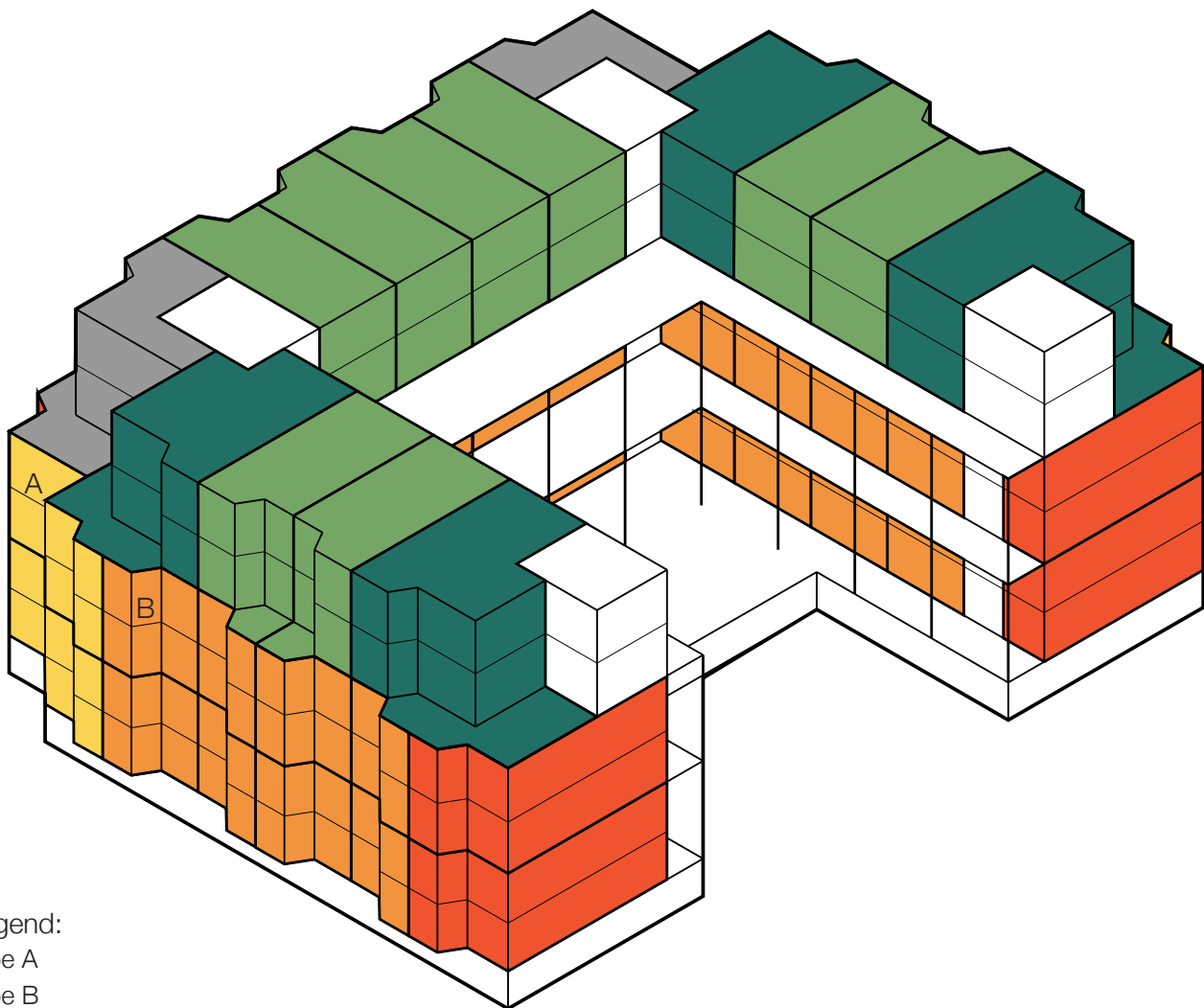


Identification



The function of the building is very clear when looking in the courtyard. Yet from the other side, because of public functions in the plinth, this is less clear. The building has a clear identity, because of the bay windows on the one side and large galleries on the other. To distinguish ones own house is more difficult, because of repetitiveness in the facade.

Stacking scheme



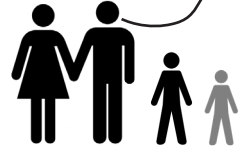
Legend:

- Type A
- Type B
- Type C
- Type D
- Type E

# WISSELSPOOR

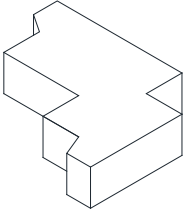
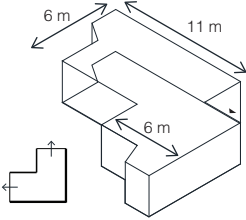
## Information

Level:	1st floor
Dwelling type:	A
Dwelling size:	90 m <sup>2</sup>
No. of habitable rooms:	4
Storage size:	4,5 m <sup>2</sup>
Outdoor space:	0 m <sup>2</sup>

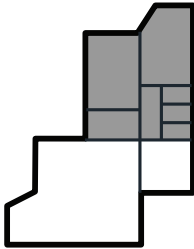


Inhabitants

€450.000



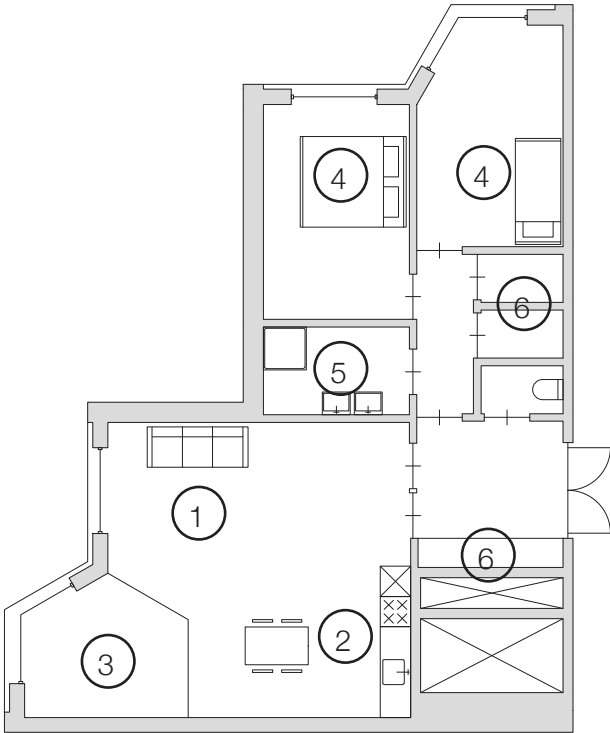
Outdoor space



Zoning 1st floor

Type

## Floor plans



### Legend:

- 1. Living
- 2. Kitchen
- 3. Flexible space
- 4. Bedroom
- 5. Bathroom
- 6. Storage
- 7. Terrace

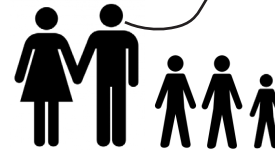


# WISSELSPOOR

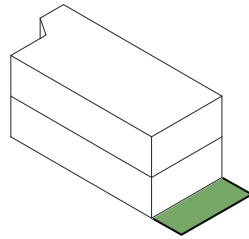
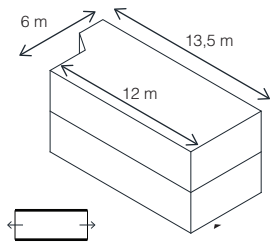
## Information

Level:	1st, 2nd floor
Dwelling type:	B
Dwelling size:	151 m <sup>2</sup>
No. of habitable rooms:	8
Storage size:	6 m <sup>2</sup>
Outdoor space:	11 m <sup>2</sup>

Dwelling  
€755.000

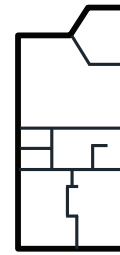


Inhabitants

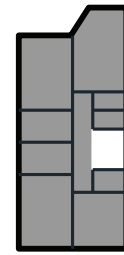


Type

Outdoor space

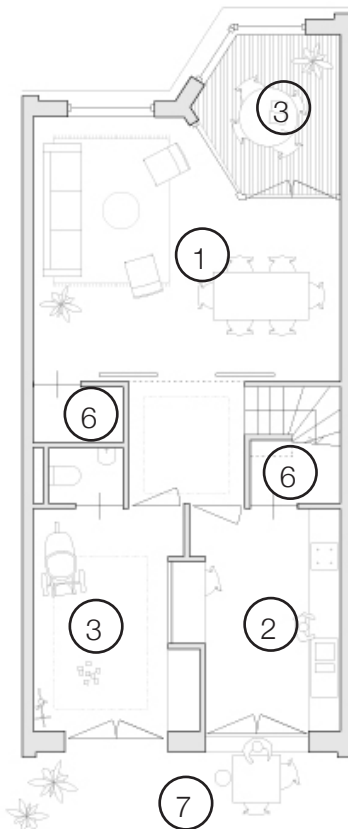


Zoning 1st floor



Zoning 2nd floor

## Floor plans



### Legend:

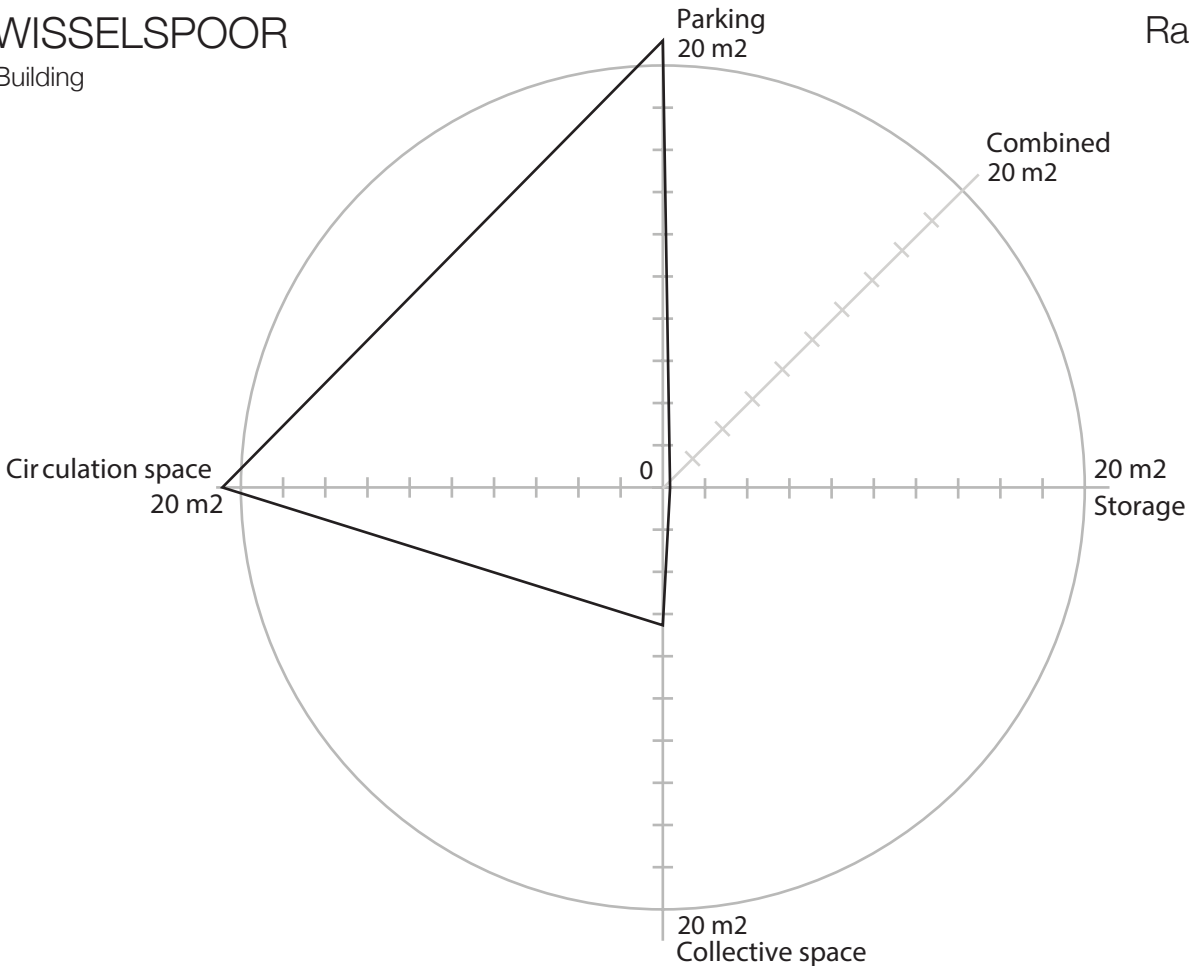
- 1. Living
- 2. Kitchen
- 3. Flexible space
- 4. Bedroom
- 5. Bathroom
- 6. Storage
- 7. Terrace



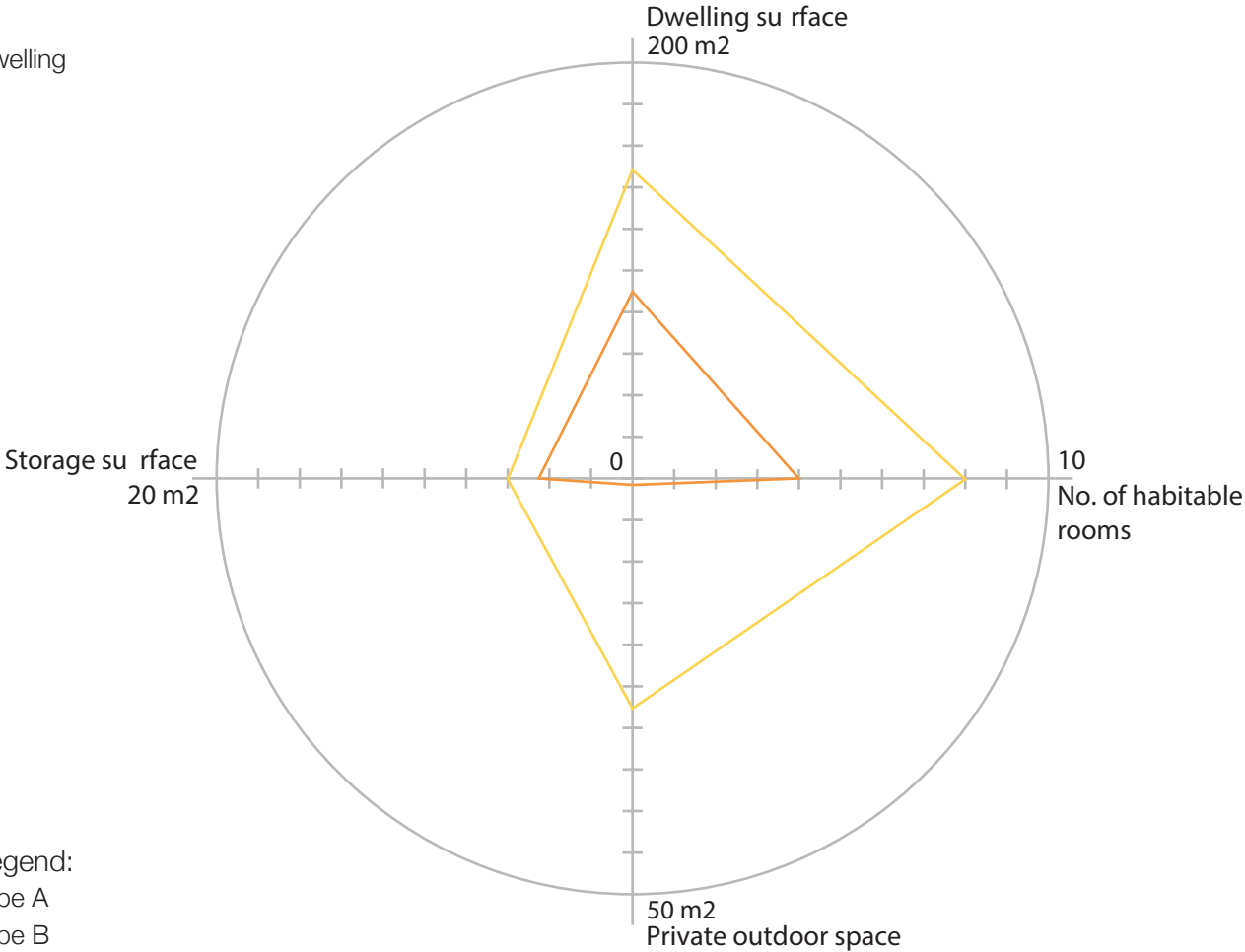
Radar chart

# WISSELSPOOR

Building



Dwelling



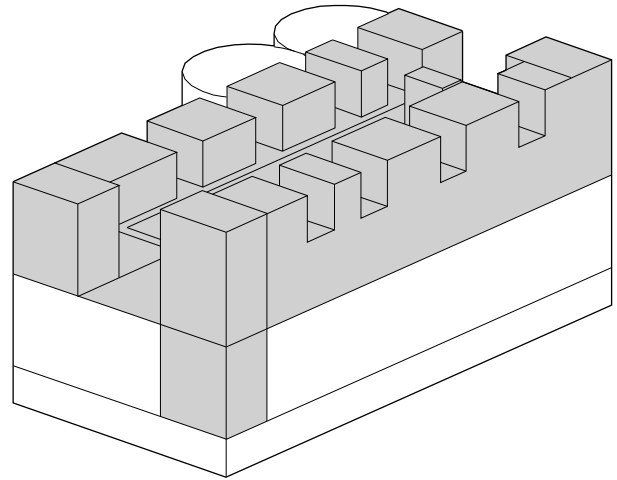
- Legend:
- Type A
  - Type B



# SHELTERED URBANITY

Architect	Roel Kusters
Location	Amsterdam, Netherlands
Year of completion	Graduation project 2017
No. of dwellings	54
Plot size	3000 m <sup>2</sup>

This graduation project has been designed for families living in the city of Amsterdam on top of an already existing parkinggarage. In consists out of apartments with adaptable configurations for changing families. There is a good access to collective outdoor space, which creates a living environment that provides space and shelter for children.



Overview illustration



Source: P5 Roel Kusters



# SHELTERED URBANITY

## Neighbourhood

Square in front of the building



Source: P5 Roel Kosters

Playground



Source: google.maps.nl

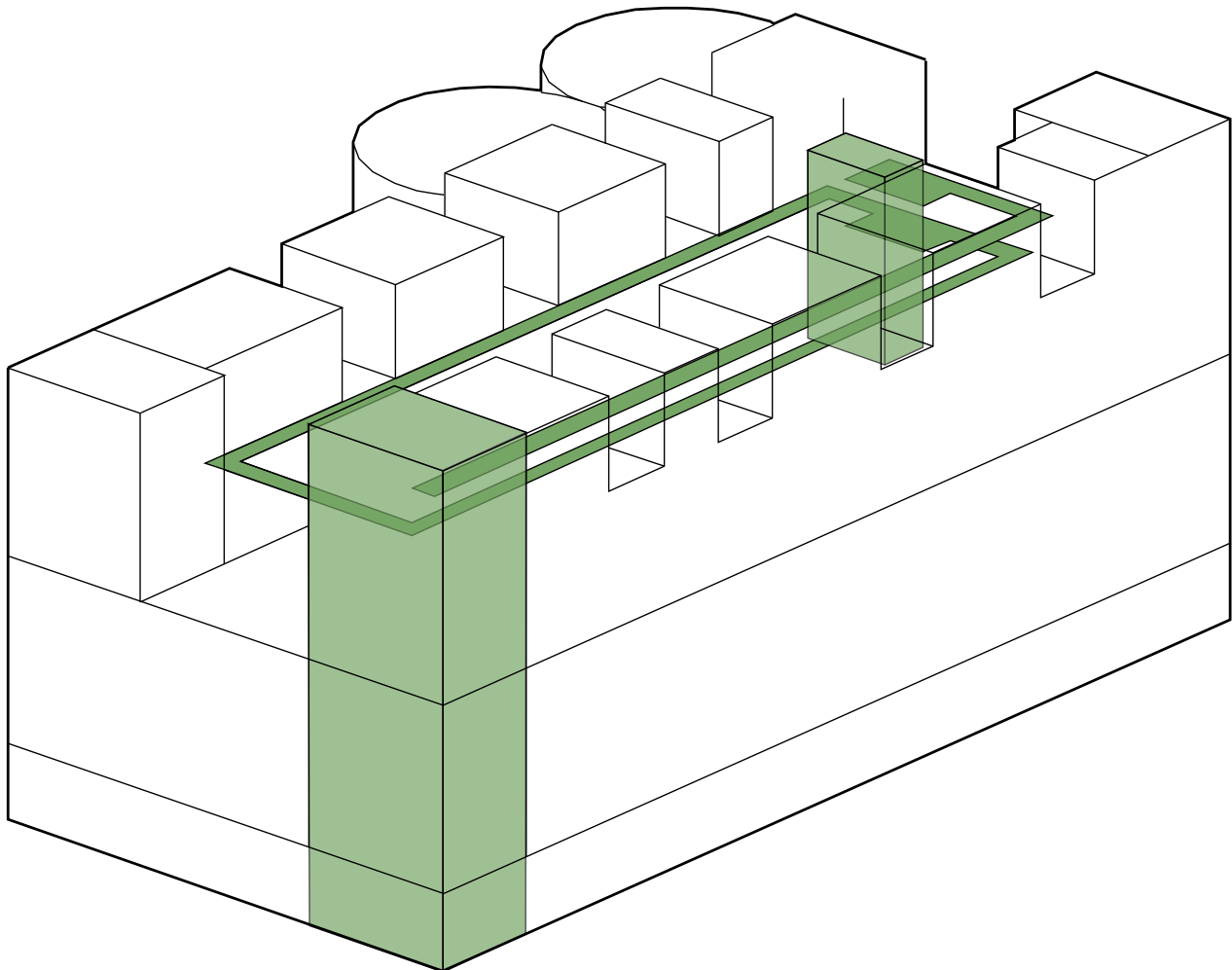
1:6000 | Neighbourhood facilities



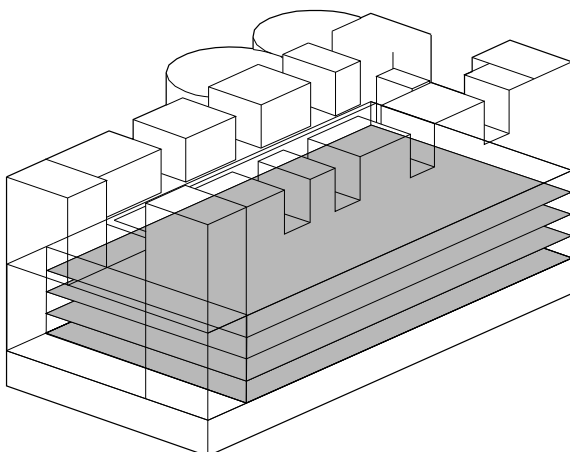
# SHELTERED URBANITY

Circulation

Interaction



Parking and storage



Parking

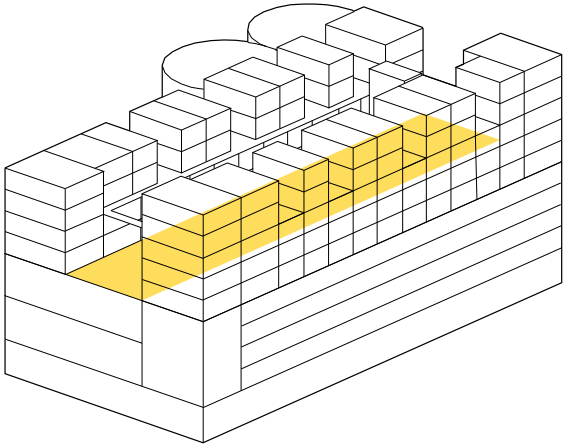
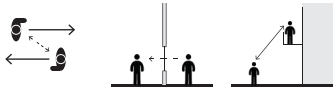


Source: amsterdamheefthet.nl

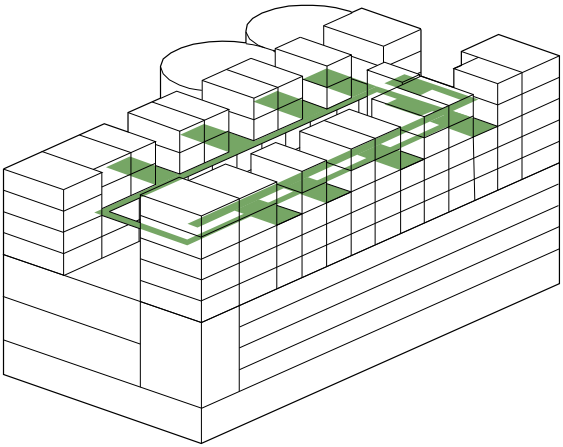
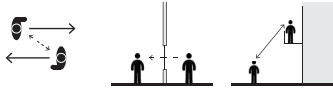


# SHELTERED URBANITY

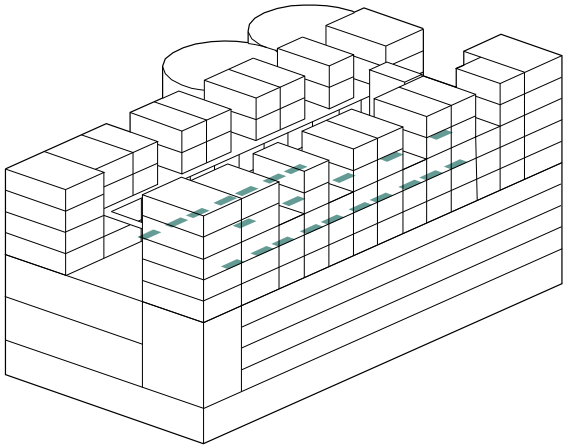
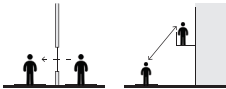
Formal meeting space



Informal meeting space

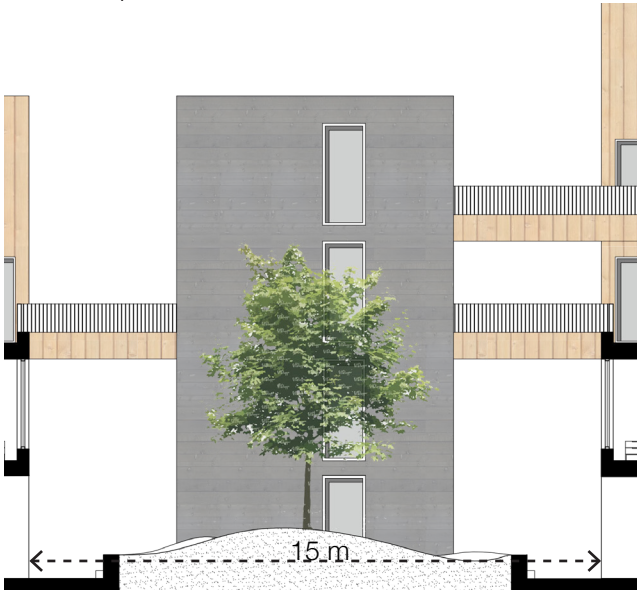


Private outdoor space



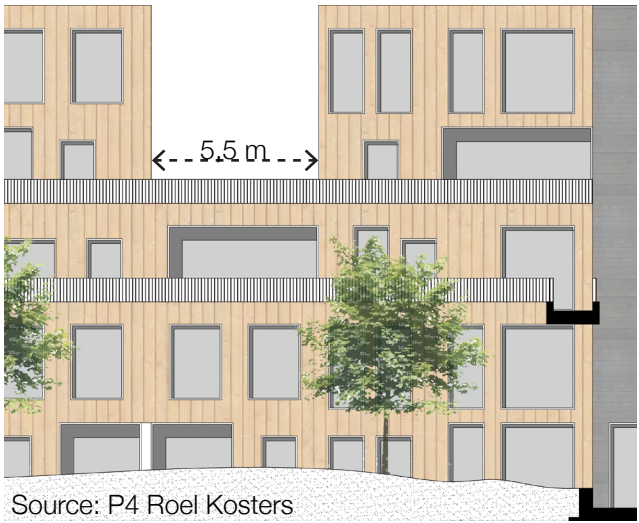
# Interaction

Outdoor space



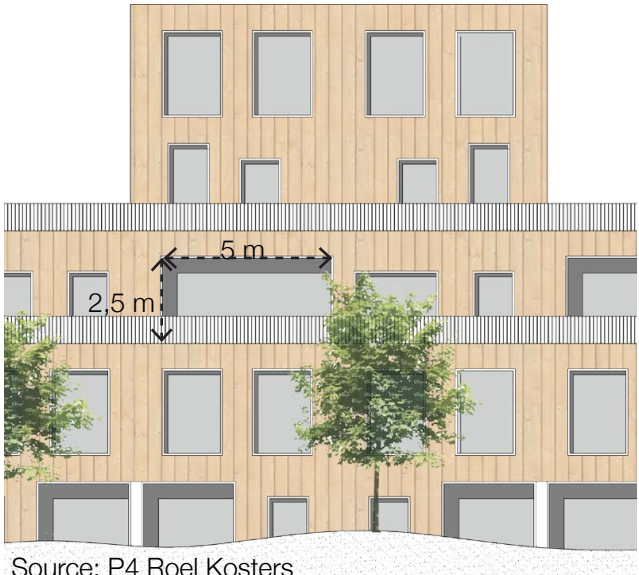
Source: P4 Roel Kusters

Gallery



Source: P4 Roel Kusters

Covered terrace



Source: P4 Roel Kusters



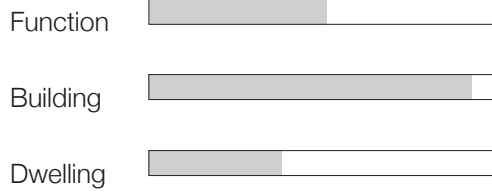
# SHELTERED URBANITY

Identity

Facade



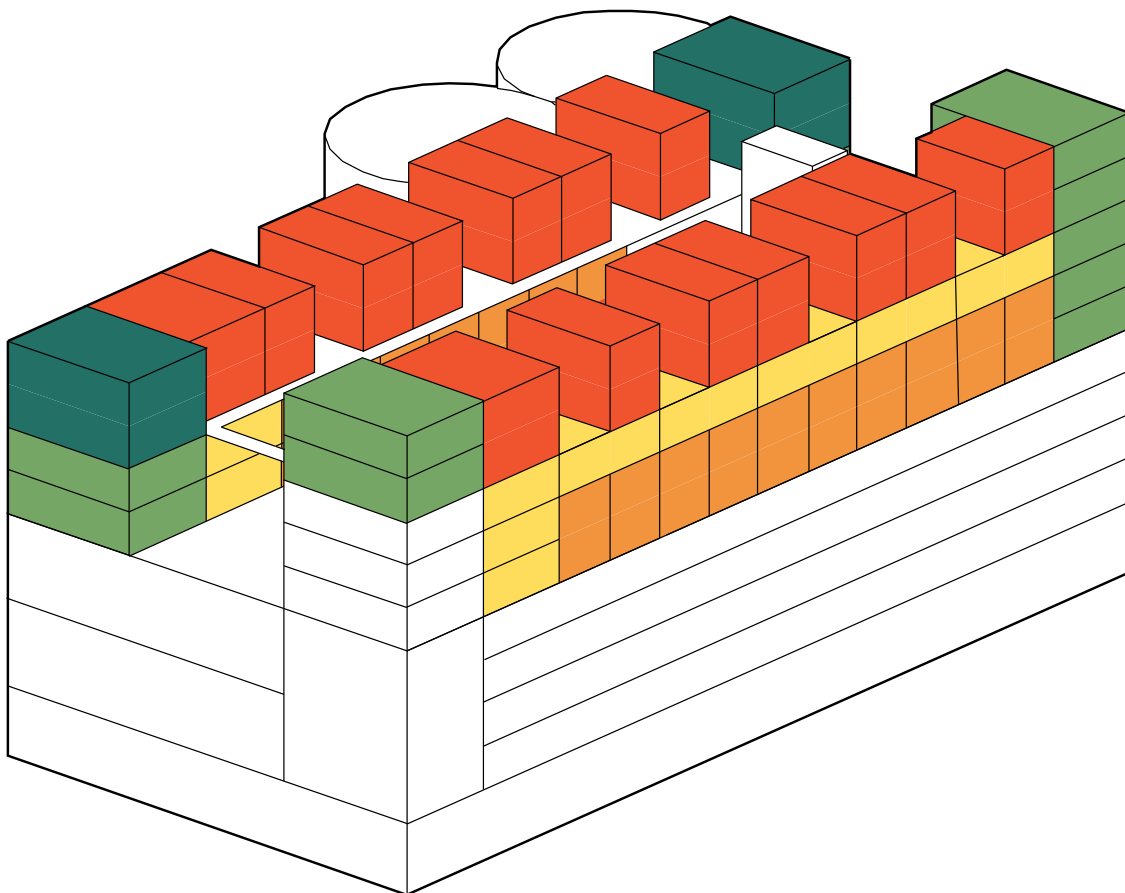
Identification



The two functions (parking and living) of the building are well divided with the materialisation and form of the building. The combination of these two functions makes the building very recognizable in the context. The different dwellings in the building are difficult to recognize from the street, but from the courtyard the individual dwellings are better evident.

Source: P4 Roel Kusters

Stacking scheme



Legend:

- Type A
- Type B
- Type C
- Type D
- Type E

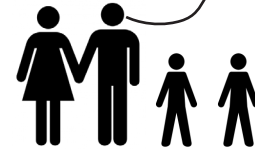
# SHELTERED URBANITY

## Information

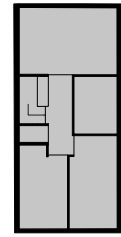
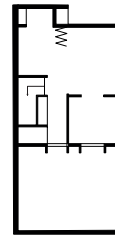
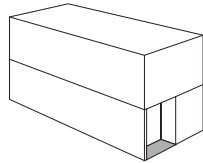
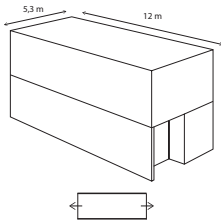
Level:	0 and +1
Dwelling type:	B
Dwelling size:	125 m <sup>2</sup>
No. of habitable rooms:	6
Storage size:	3,5 m <sup>2</sup>
Outdoor space:	2,5 m <sup>2</sup>

Dwelling

€625.000



Inhabitants



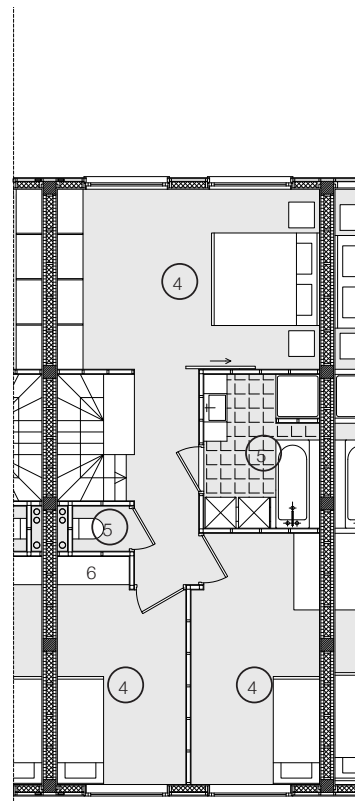
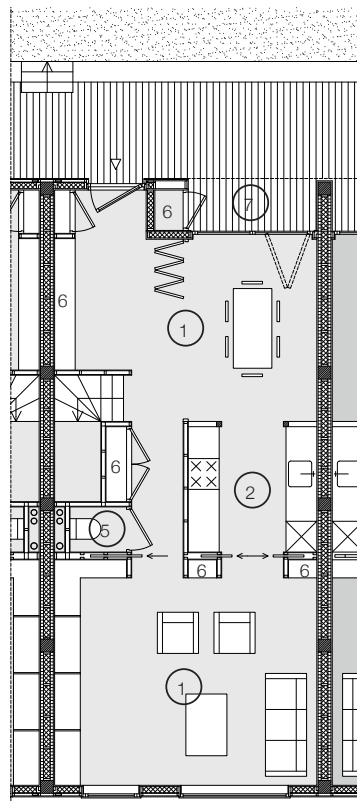
Type

Outdoor space

Zoning 1st floor

Zoning 2nd floor

## Floor plan



Source: P4 Roel Kosters

## Legend:

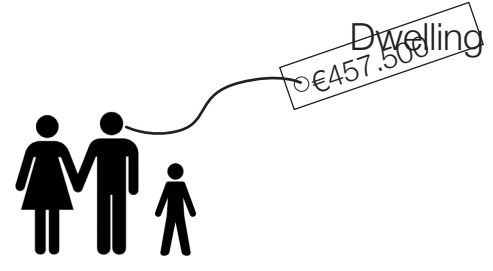
- 1. Living
- 2. Kitchen
- 3. Flexible space
- 4. Bedroom
- 5. Bathroom
- 6. Storage
- 7. Terrace



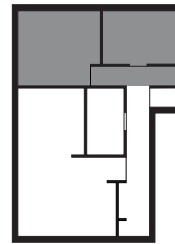
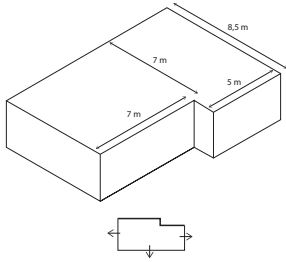
# SHELTERED URBANITY

## Information

Level:	0
Dwelling type:	D
Dwelling size:	91,5 m <sup>2</sup>
No. of habitable rooms:	3
Storage size:	2,5 m <sup>2</sup>
Outdoor space:	-



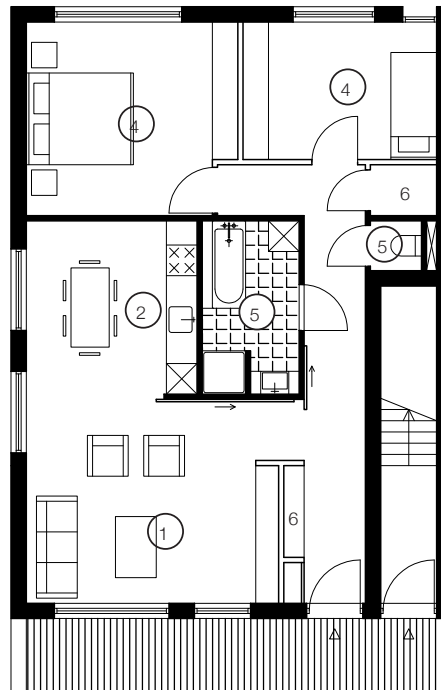
Inhabitants



Zoning 1st floor

Type

Floor plan



Source: P4 Roel Kusters

### Legend:

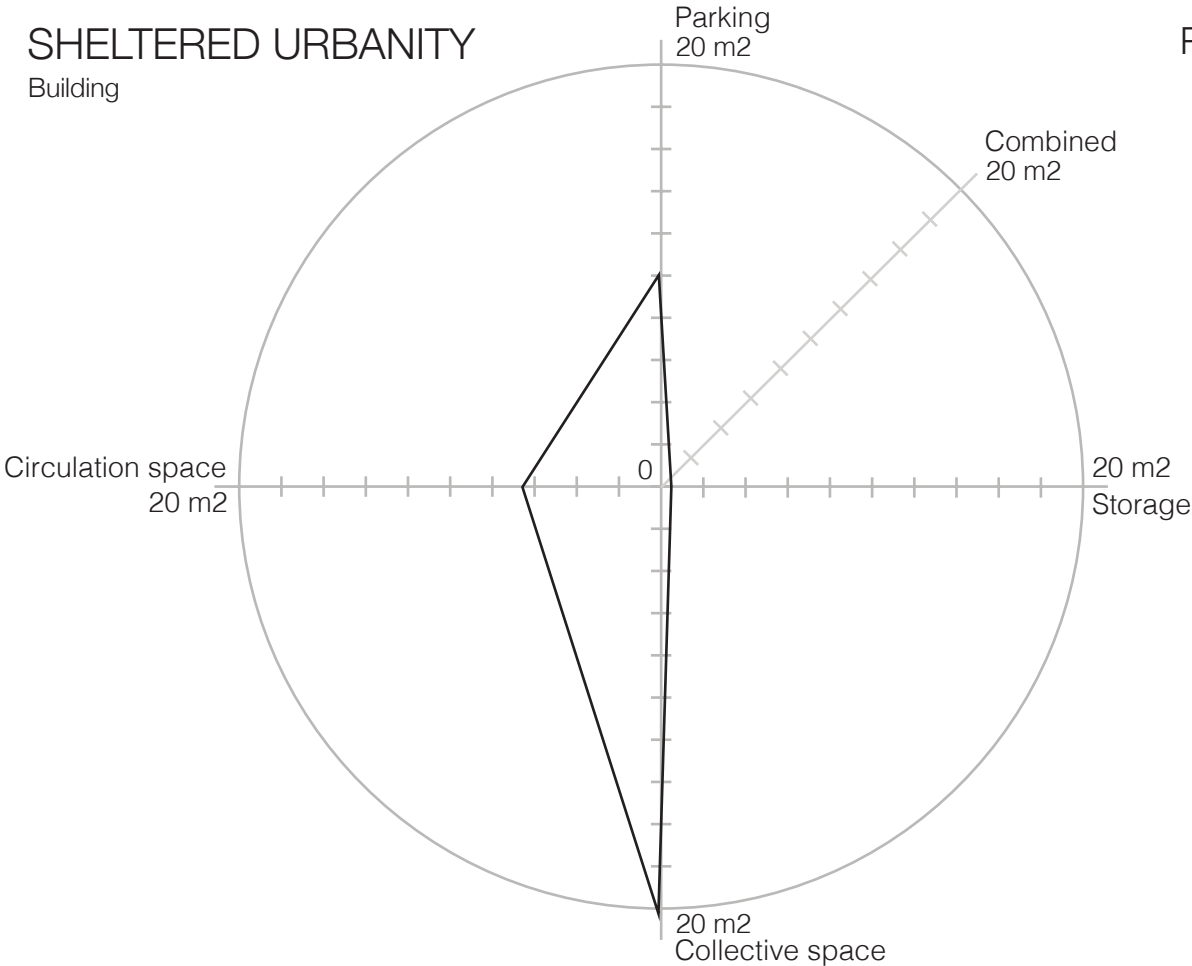
- 1. Living
- 2. Kitchen
- 3. Flexible space
- 4. Bedroom
- 5. Bathroom
- 6. Storage
- 7. Terrace



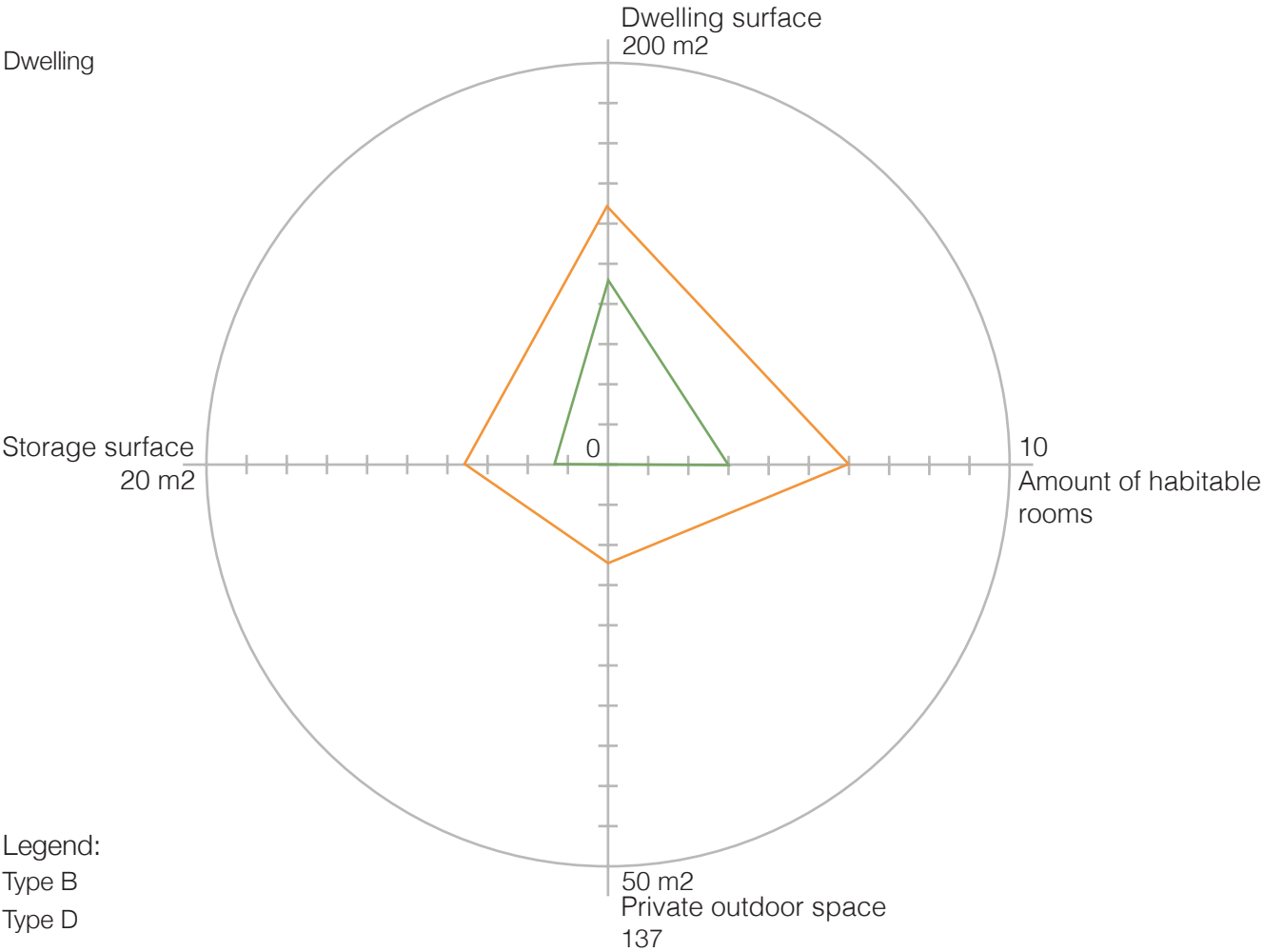
Radar chart

# SHELTERED URBANITY

Building



Dwelling



Legend:

- Type B
- Type D



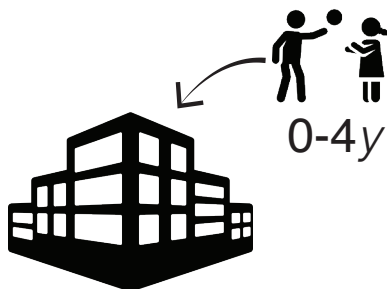
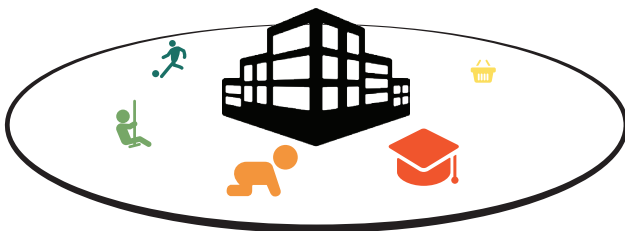
# Conclusion

For the case study analysis six cases have been analysed. There is a focus on four topics: neighbourhood, interaction, identity and dwelling. By comparing we found some features that they have in common. The repeating occurrence indicates the important for family housing. These features can be used as input for the design solutions.

## Neighbourhood

On the neighbourhood scale especially schools and daycare facilities tend to be quite near to the dwellings. This might indicate that parents search for this quality in a home. Playgrounds and sport facilities were usually located further away, but within the 500m range. Older children can make use of these facilities. Large shops on the other hand were not often situated within the 500m range.

Very often a playground for young children was located within the dwelling complex itself. This is not surprising, as the range of a 0-4 year old is around 30m.

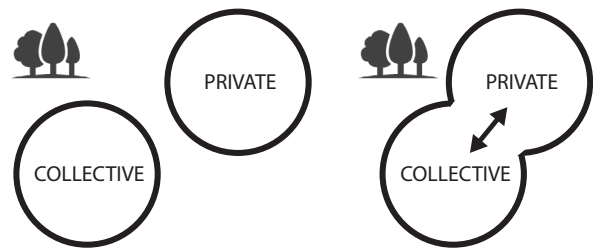
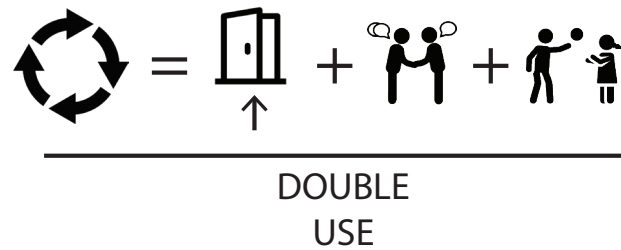


## Interaction

In most of the projects a collective place within the building is provided. The circulation spaces however also tend to have multiple functions: entrance area, place for interaction and space for children to play. In Kolenkithuis, Wisselspoor building and Dan Leckie way the galleries had a broader width than usual, respectively 1,80m and the two latter ones 3m wide. In Babel the stairway spiralling upwards provides for a continuo-

us playing area for children.

The collective and private outdoor areas in the already existing projects are usually strongly separated. In the new and unbuild projects, they flow over into each other or are somehow combined. This seems to be a new development or trend in family housing.



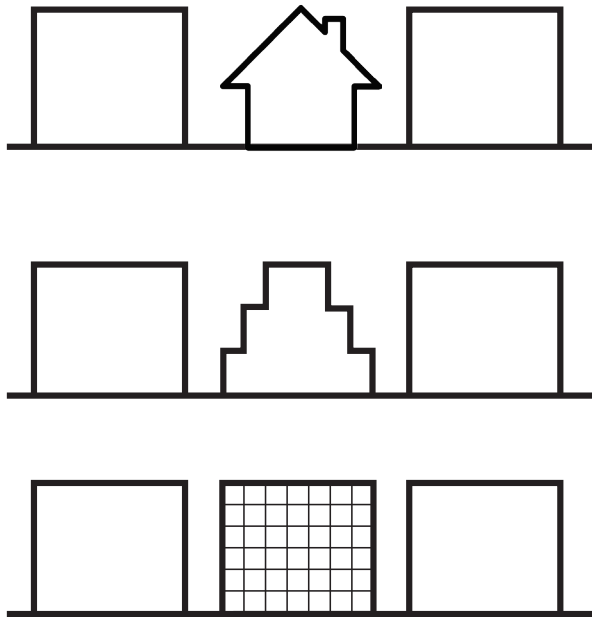
## Identity

Except for the Dan Leckie Way project, all of the buildings were easily recognizable as being a dwelling project. This was usually due to balconies, galleries and front doors.

In the case of identity of the project, as well all except for Dan Leckie way scored rather high, in the sense that they can be recognized as a separate entity in the urban context. In the introduction it is explained how this can be profitable for children's wayfinding.

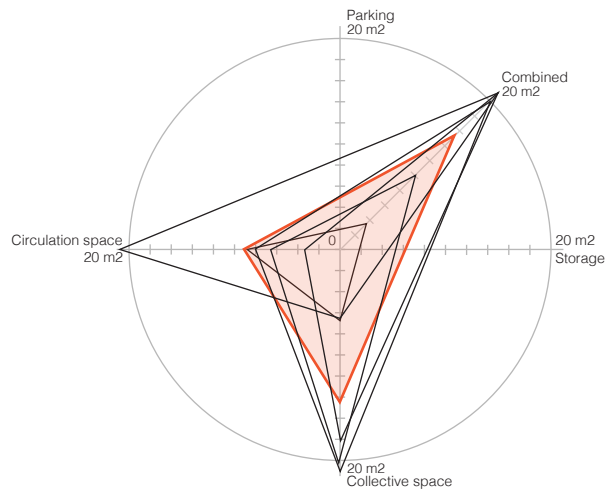
On the scale of separate houses within the building complex, identity was mostly not very present. In the Kolenkithuis they did apply this, by changing the brick pattern for each other house.

The stacking schemes generally showed exceptions on endings and corners, but this was not always visible in the facade.



### Radar chart

In these charts are all the data of the projects combined. The red line is the average line of the case studies. With support of this line the projects that are far from the average can be determined. This information has been taken into account with concluding the ideal family house and surroundings.

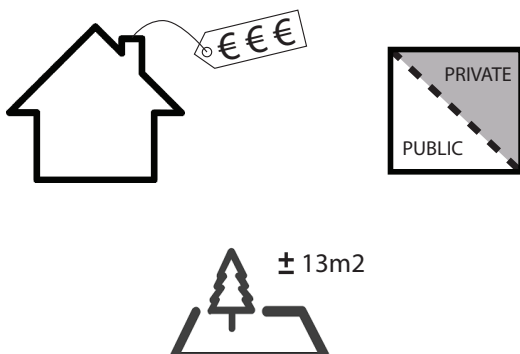
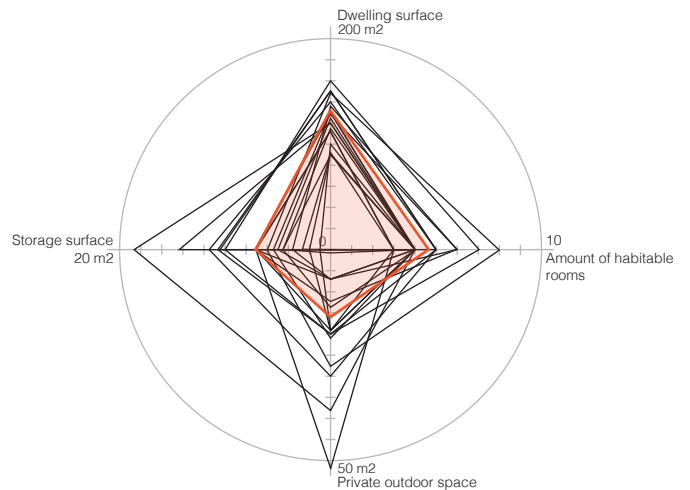


### Dwelling

Even though the dwellings differ largely, there are some commonalities. Almost all of the dwellings were too large, in the sense that it would be too expensive to build in the city centre of Amsterdam.

The dwelling usually showed a clear division in private and representative areas. This is similar to typical two level family housing.

The average size in outdoor space (not taking into account the Habitat building) is 13m<sup>2</sup>. This is rather large, as in The Housing Design Handbook it is indicated that the minimum useful outdoor space size for 2 persons is 4m<sup>2</sup>, adding 1m<sup>2</sup> for each extra person (Levitt, 2010). This would create a minimum of 5-6m<sup>2</sup> for the average dwelling we have analyzed. However, outdoor space is pinpointed very often as being important to families. Thus, it makes sense that these sizes stand out.





# Conclusion

## Design solutions scheme

After analysing both the literature and the case studies the conclusions can be bundled to get an overview of the design solutions for young families in the city. The conclusion is split in six topics: safety, facilities, playground/ interaction, supervision, space and identity. These are the topics that are mentioned in the literature or as a result of the case study analysis. More research or different case studies can add new topics to the scheme. The solutions of these topics will be given on three scale levels: the neighbourhood, the building and the dwelling. The interventions will be provided in text and sometimes with an elucidated image.

The intention of this scheme is that it is a work in progress and it is constantly changing. This is the reason that the scheme can't be finished or complete, different literature can add new things. The solutions show the result of this moment as a conclusion of the research.

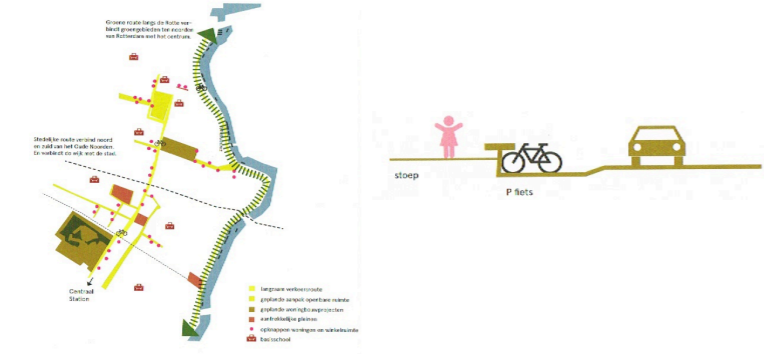
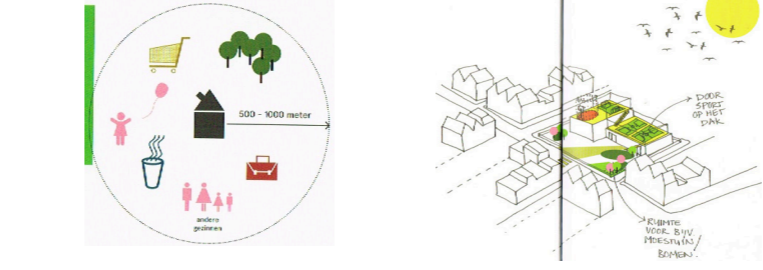


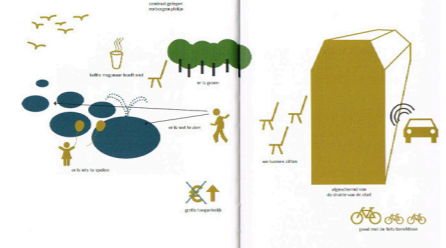

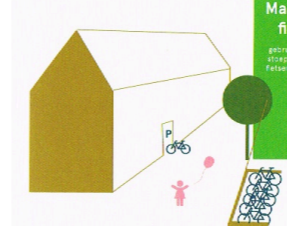
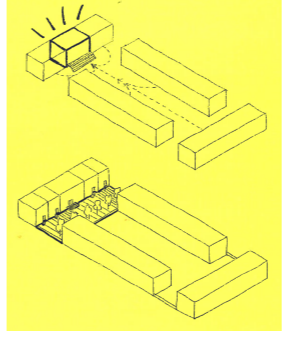


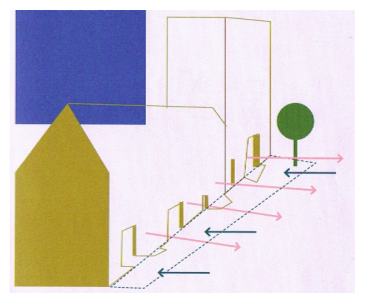
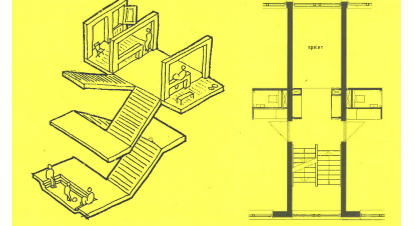
Every design is customized to the wishes and dements of its future residents. For a design a selection from the design solutions can be made. Due to the many different options the outcome will be different for every design(er). That the selection process will be different every time has numerous reasons. First of all there are variations in the exist-

ing facilities of the locations. If all demanded facilities are in the neighbourhood they won't have to add any extra facilities to the program of requirements. Another aspect is that over time new solutions can become available. The scheme is something that will always be in progress. Not only new design solutions will be usable also different research can give better solutions or other case studies will show new results. Adding and complementing new solutions is crucial for keeping the result up to date. That is why this scheme in this form is only possible in this moment. Finally there is the personal style and opinion from the designer, which shows preference for one solution over another.

Combining all the knowledge gained from the literature and case studies, create an overview of possible design solutions. By selecting some of the design solutions that fit the location and situation of the site, a design strategy can be made. This selection process is based on personal taste, which will give different results every time. The changing combination of different design solutions creates a wide range of possibilities for designing for families. New research can add solutions and the range of solutions will grow.



# Design solutions

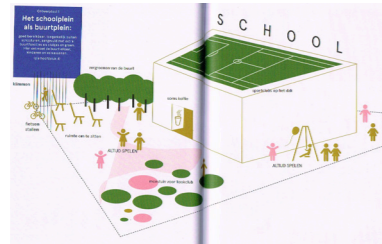
	Safety	Facilities	Playing & interaction
Neighbourhood	<p>Safe bicycle route through the city, connecting places that are important for children.<sup>1</sup>                      Provide more space for bicycles, sidewalks and room for playing.<sup>1</sup>                      Create wide sidewalks.<sup>1</sup></p> 	<p>The neighbourhood should provide enough facilities.<sup>1</sup>                      Playing and sport facilities or other after school activities can be located on flat roofs.<sup>1</sup></p>  <p>Make sure the range to the facilities is acceptable.<sup>3</sup></p> 	<p>Schoolyard can function as meeting point for children and their parents.<sup>1</sup>  <u>Different street types:</u>                      Playing street (no cars allowed between 9am and 5pm)<sup>1</sup>                      Parking street<sup>1</sup>                      Bicycle street<sup>1</sup></p> <p>Playing on flat roofs of parking or schools.<sup>2</sup></p> 
Building	<p>Create boundaries or barriers around places where children play:                      Fence                      Height difference                      Sloped planes</p> <p>Playing in the lee (luwte).<sup>1</sup></p>  <p>Provide a playground for young children in the building itself.<sup>3</sup></p> 	<p>Creating a bike parking, to clean the sidewalks (more space for playing).<sup>1</sup>                      Adding missing facilities to the building.<sup>1</sup>                      Make a neighbourhood room (buurtcentrum).<sup>2</sup></p>  	<p>Use circulation (transition space) for playing and meeting.<sup>2</sup>                      Allow for double use of the street (elements).<sup>1</sup>                      Separate parking and playing on the street.<sup>1</sup></p>  <p>Double use of circulation space.<sup>3</sup>                      Combining collective and private outdoor spaces.<sup>3</sup></p>  <p>Using leftover space (sloped) of playing area.<sup>2</sup></p>
Dwelling	-	-	<p>Connecting dwellings to the public space.<sup>1</sup>                      Using space in the staircase as playing area.<sup>2</sup></p>  

# Supervision

# Space

# Identity

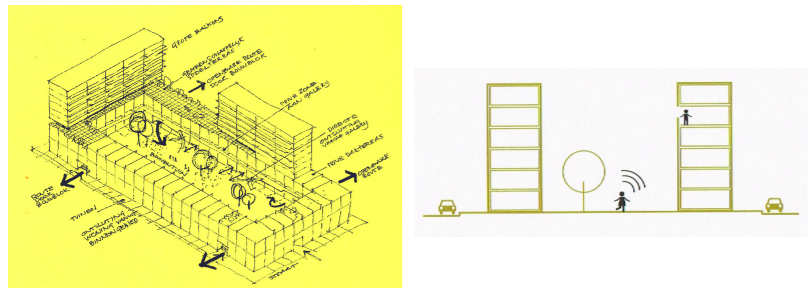
Facilities at the playground for the parents: coffee place, benches, covered place, inside place.<sup>1</sup>



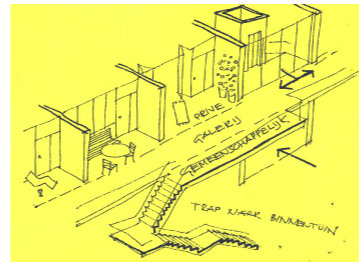
Playing and sport facilities on flat roofs.<sup>1</sup>  
 Schoolyard as meeting point for children and their parents.<sup>1</sup>

-

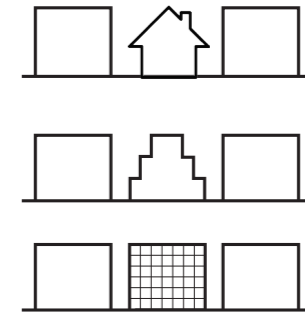
Supervision from gallery.<sup>1</sup>  
 Make an inner courtyard in the building.<sup>2</sup>



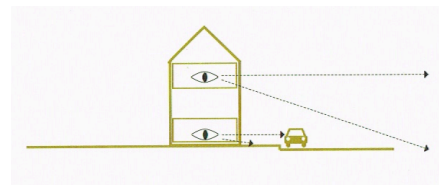
Communal gallery garden, private space at gallery.<sup>2</sup>  
 Playing and meeting place in circulation space of the building.<sup>2</sup>  
 Playing above ground level<sup>2</sup>  
 Use the transition space from inside to outside as an extra place to stay in, for children to play in and to meet the neighbours.<sup>2</sup>



Strong identity of the building helps the wayfinding for young children.<sup>3</sup>



Supervision from dwelling.<sup>1</sup>



Create a lot of storage space for multiple types of infill.<sup>2</sup>  
 A separate kitchen can provide privacy when needed.<sup>2</sup>  
 Create a lot of rooms.<sup>2</sup>  
 Sliding doors can help create more rooms and privacy when needed.<sup>2</sup>  
 Separation between private and representative rooms.<sup>2</sup>



Flexible use:  
 The right dimensions of rooms and the façade can make future renovations and changes better feasible.<sup>2</sup>  
 Make the use of rooms and hallway available for multiple functions.<sup>2</sup>  
 Wide hallway<sup>2</sup>  
 Central core.<sup>2</sup>

Create a division in between the private and representative areas.<sup>3</sup>  
 Provide enough outdoor space.<sup>3</sup>



-

1: Nestelen in de stad (Keesom, 2013)  
 2: De nieuwe generatie stadskinderen (Karsten & Felder, 2016)  
 3: Case study results

# Conclusion

To create a family friendly environment in the centre of Amsterdam, this report researched the needs of young families and created design solutions that can be used in the design project. Beside the needs, the reasons for moving out of Amsterdam or staying in the city have been analysed. A location analysis on the site of the Tweede Weteringplantsoen showed the possibilities of the site, in strengths and weaknesses. The three research questions that are answered in this report will be discussed. First the two sub questions will be discussed and then the main question about the needs and design solutions.

## Reasons to leave or stay

Question two creates an understanding how families think about raising their children in the city. What are the reasons for young families to leave or stay in the city of Amsterdam? This question has been evaluated in the target group analysis. This chapter showed that the main reason for young families to leave the city is that there is not enough space in their current house for an extension of the family. In the pursuit of a bigger house the prices in Amsterdam are so high that young families start looking in neighbouring municipalities. Other reasons are no or limited outdoor space, an unsafe feeling and the traffic pressure.

From the analysis it became clear that it is not only beneficial for the families but also for the city when young families stay in the city. It is good for the diversity, economy and safety of the city and children are the insurance for the future and provide social cohesion. From the families perspective the city offers more than the vindex neighbourhoods, because they rather don't want to give up their lifestyle, friends and the typical character of Amsterdam. Through functional, social and symbolical aspects they bind themselves to the city and associate themselves with 'city people' and other 'cool families'.

## Affordable and safe

The third question of this report was: In what way can dwellings be affordable for young families and make the surrounding more safe? It turns out that the two parts of this question have to do a lot with each other. The housing price in this part of Amsterdam is very high. Despite the higher income of the target group (middle and high segment), the square meter price is still too high. The best solution to create affordable housing is to keep the amount of square meter low. A condition for less space inside the dwelling is creating a safe outside environment for children to grow, play, explore, make friends, and everything that is part of growing up. This can be in the form of communal or public space, as long as it provides safe space for children to play.

Another condition for families to adjust their wishes and live in apartments in the city is to provide for the needs on the other scales. Both the needs on the neighbourhood and dwelling scale should be accommodated. The facilities, like schools, day cares, super markets, playgrounds, other after school activities and friends should be close.

Throughout the report many elements for creating a safe environment are addressed. This is so important that all design solutions take the safety of the environment in account. Most of these elements are on the neighbourhood or building scale. Some are more design solutions while others are more social aspect and social aims for a neighbourhood or community:

- Creating sheltering or lee (luwte)
- Using different heights for playgrounds
- Social contact (for which you need to know your neighbours and trust them)
- Availability of supervision
- Presence of boundaries

## Needs and design solutions

The main questions of this report was: what are the needs of young families and which design solutions can satisfy them on the neighbourhood, building and dwelling scales? To answer this the question is divided into two parts: first the needs of young families and second the design solutions on the different scales.

### Needs

The needs have been analysed in the target group analysis. To make the connection with the design solutions smooth, the needs for young families have been divided in the same three scale levels: the neighbourhood, building and dwelling scale.

### The neighbourhood scale

To have a complete overview of the area that young families use, not only the neighbourhood of the house appointed by the municipality should be analysed. In the case of the Tweede Weteringplantsoen, both Weteringschans and De Oude Pijp should be included in the analysis. This creates a bigger area in which young families can find the facilities for their needs.

There are four main elements that provide a good neighbourhood for young families: educational facilities, other basic facilities (supermarket, sport and playgrounds), friends and a safety.

A way of measuring whether the facilities and other needs are close enough, you could use the range of action. The different ranges show the area in which a child of a certain age should be able to explore. It would be optimal if all the needed facilities were in an area of 0-500 meter. Another approach is the activity-based range. This range can be used as a tool in the analysis part of the design to locate the daily and weekly used facilities. Missing facilities of the daily and weekly activities could be included in the design assignment.

### Building scale

Playing outside safely is very important on the scale of the building. Parents want to be able to supervise their children; the building design can provide this. The design of a playground on the building plot, adding benches, can also provide facilities to make supervision possible. Another way to create a safe feeling for the parents and children is the presence of boundaries.

### Dwelling scale

Young families are looking for the perfect house, but will have to adjust their wishes and needs a bit to be able to live in the city. It is very important that there is enough place for the children to play both inside and outside. The young children (0-4) need space inside the dwelling and within 30 meters of

their home. Communal spaces could support the young children of a lot of dwellings. Smaller rooms with flexible use can satisfy the wishes inside the dwelling in a creative way and create space to play. Primary school children (4-12) need different playgrounds; these can be further away (150-500 meter).

### Design solutions

The design solutions have been addressed throughout the report and concluded in overview in which the suggestions are ordered (page 142-143). Besides this the location analysis shows some design solution specifically for the design site.

To cover the different scales of the research question several sources are used. Nestelen in de stad (Nesting in the city) is more focussed on the dwelling and building scales, while De nieuwe generatie stadskinderen (The new generation city children) is more focussed on the neighbourhood scale. Both have also suggestions on other scales. Combining all the knowledge gained from the literature and case studies, create an overview of possible design solutions. By selecting some of the design solutions that fit the location and situation of the site, a design strategy can be made. This selection process is partly based on personal taste, which will give different results every time. The changing combination of different design solutions creates a wide range of possibilities for designing for families. New research can add solutions and the range of solutions will grow.

Next to the three scales the design solution overview is divided in six topics: safety, facilities, playground/ interaction, supervision, space and identity. The research shows that these are the most important topics for young families. With new research new topics could occur and added to the scheme.

### Design solutions of the site

The location analysis produces design solutions focussed on the site of the Tweede Weteringplantsoen. The target group analysis recommends adding the missing facilities to the site. From the neighbourhood analysis it became clear that the day care and big playground should be relocated and added to the programme of requirements. On the building scale the configuration of the building can help to keep the public space and open character of the site, which will make the site inviting to other families in the neighbourhood. Clear boundaries between the traffic and the design site can achieve a safe urban environment. This will create an environment sheltered from the passing people (tourists), traffic and noise. Finally, raised squares can allow for sun on the site, even at the shortest day of the year.



# Literature

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