

Healthy housing

A Residential Project for Students

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CHALMERS

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Master Thesis

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1. Abstract

Social isolation is a well-known health problem among our elderly population. An American study [Holt-Lunstad, J., B. Smith, T., Layton, J.B., 2010] stated that the lack of social relationships has comparable negative effects on the health as smoking. However, social isolation is not only a health issue in the ageing population, due to a report made by the Swedish Board of Student Finance [CSN, 2018] 20% of students state that they always or often experience loneliness and 15% state that they avoid social situations.

I find the severe health concerns connected to social isolation to be an under discussed topic and therefore I want to explore what can be done in our built environment to prevent health issues linked to social isolation.

As our homes are the place where we spend most of our time, I find it to be the most fitted environment to work with social isolation. Housing shortage in urban areas is a major problem, not at least for students. Therefore, I want to explore how we can build health promoting housing solutions in an urban context for students.

This thesis will investigate how we can use architecture to build homes that makes us experience well-being by creating stress reducing environments and create possibilities for social meetings. This thesis will investigate the following questions: How can one create housing solutions to benefit well-being and reduce social isolation? I want to investigate this by studying literature, studying references projects, include the users by making a survey for students and use the design process to analyse and test my findings through design.

This project will result in a student housing project. The building both need to serve the basic functions needed in a home but also to add extra qualities for the inhabitants giving them space and possibilities for social interactions. The goal is to provide housing in an urban area that are health promoting and promote social interactions.

2. Introduction



2. Introduction

2.1 Reserch Question

How can one create housing solutions to benefit well-being and reduce social isolation?

2.2 Purpose

This thesis aims to research how student housing can be improved both when it comes to comfort, social aspects and health promotion. The thesis project focuses on how to create social interaction and health promoting quality's in an urban environment.

2.3 Background

There is a housing shortage in urban areas in Sweden today, the overall strategy to solve the housing crises has been to build cheaper housing. To lower the cost per housing unit the demands on qualities of housing have also been lowered.

In 2014 Boverket [The Swedish National Board of Housing, Building and Planning] proposed to change the housing area on small housing from 32-55 square meters to 21-35 square meters and for students an apartment can be as small as 16 square meters. Besides the required living area, daylight demands were lowered to only require one window and for common space indirect light is enough, meaning no window are required. All functions can overlap except for the sanitation space. [Crush, 2016, pp. 30-46]

The new lowered standard in housing are making it possible to build very small apartments for student and youth and because of the housing shortage students are forced to accept the overcrowded apartments that are available. The lack of living space and it's quality both effect the health, both physically and social. Very small apartments often have static interior, giving the tenants no possibility to influence and adapt their own home environment which can affect how the tenants feel about their home. The lack of flexibility can also affect the social life of the inhabitants, making it hard to have friends and family over for visits. [Crush, 2016, pp. 30-46]

With this project I want to challenge the current standard of building student housing and rethink how student housing should be built and how to improve the overall quality that are provided for students. The quality of student housing is essential for the well-being of students since it's a home they live in many years. Therefore we need to rethink the levels of overcrowding, bad daylight conditions and poor comfort that we as a society accept for one of the least economically strong groups in Sweden.

2.4 Method

The research methods in this thesis is a combination between studying literature, references and researching by sketching and drawing both by hand and using digital tools.

To get a deeper understand about the current student housing situation, I made a student survey questioning how the participants housing situation looks today and how they experience it.

The concept and design of this thesis is influenced both on experiences from the target groups and from already existing research and literature.

2.5 Delimitations

This thesis will focus on health promotion and how housing can be designed to reduce the social isolation and to benefit interaction between the residents and thereby improve the overall well-being of the residents. The main focus of this thesis will there by be on the atmosphere and the relations between the housing units within the project.

The overall planning and infrastructure of the area of Backaplan which are transforming from a commercial area to a residential area will not be focal point of this project and only briefly processed in this thesis.

Economic aspects will not be taken into account either in this thesis.

2.6 Reading instructions

This thesis is divided into eight chapters, abstract, *introduction*, *site & context*, *user*, *reference projects*, *concept & program*, *proposal and conclusion*.

The first chapter is an short overview of the main topics explored in this thesis.

Chapter 2-5 are a description of the context and background of the project, describing the theme, health promoting theory's, qualities of the site, a description of the target groups and a selection of reference projects. These four chapters are to be seen as research on which I base my design on.

Chapter 6-7, *concept & program and proposal*, are showing how I implement the knowledge that I got from the four first chapters and how those theories are transferred to design.

The last chapter *conclusion* consists of my reflection of the process, the design strategies and the outcomes of this thesis.

2.7 Theory

2.7.1. Social isolation and health effects

Relations and how we socialize have been a change during the history. In the western world our modern way of life has greatly effected our relationships. Today a lot of people live alone in urban areas and it's not uncommon to live far away from family and friends. We have changed our social patterns, but we are still naturally social beings, therefore loneliness is a growing health risk [Holt-Lunstad, Smith, Layton, 2010].

In a meta-analytic study from 2010 [Holt-Lunstad, Smith, Layton, 2010] the authors compared the results from 148 different studies to explore the effects on mortality linked to perceived social isolation. The study shows a clear connection to health risks linked to loneliness, the effects where comparable to smoking and alcohol consumption and the health effects even exceeds the risks from obesity and lack of physical activity.

In addition to physical negative effects loneliness can also lead to mental health issues, such as depression, poorer self-rated health, reduced cognitive functioning [K.J. Smith, C. Victor, 2019] and high level of stress hormones regardless of self-reported experience of stress [Campagne, 2019].

2.7.2. Desired solitude or social isolation?

To be alone may not necessarily mean that you experience loneliness, therefore I make a distinguish between being physically alone and to feel lonely in this text. Regardless of the quantities of your social encounters you can still experience loneliness or perceived social isolation [PSI]. In the same way people can experience

to be alone as solitude or perceived desired social distance [PDSO] [Campagne, 2019]. PSI and PDSO have different effects on health, it's to experience loneliness, not to physically be alone that have negative effects on our health.

2.7.3. Creating spaces for social meetings

To be able to prevent the social isolation within housing is to create spaces that encourage spontaneous social meetings and creates a sense of neighbourhood where one feel connected to your neighbours. The most important spaces for spontaneous meetings within housing is the semi-private spaces, the barrier between the public city and the private home. By creating soft barriers between private and public space the inhabitants are able to shape and participate in social meetings. [M. Bednarz, G. Schneider-Skalska, 2019]

The semi-private zones importance for the social environment within a neighbourhood are a result of how we behave in a neighbourhoods. In Sweden, inviting a neighbour in to your private space are very rare even though you have a know the person for a long time and regularly talk to them [S. Olsson, G. Cruse Sondén, M. Ohlander, 1997, pp. 124]. Swedish people seem to keep our neighbours at some distance, despite the distancing our relations with our neighbours are an important factor for well-being and to feel secure in our neighbourhood [S. Olsson, G. Cruse Sondén, M. Ohlander, 1997, pp. 125]. Therefore it's important to create environments that supports how we form relations and interact in a neighbourhood setting.

As earlier mentioned, semi-private spaces are

where we usually interact with our neighbours, spaces like stairs, the yard and laundry rooms are usually meeting points [S. Olsson, G. Cruse Sondén, M. Ohlander, 1997, pp. 124]. For these semi-private spaces to work as social hubs it's important that the dimensions are large enough for people to be able to stop and talk to a neighbour without blocking the space for others. For example if a stair is so narrow that two people can't stand beside each other and a third person can pass by, chances are much lower for spontaneous conversations to occur [S. Olsson, G. Cruse Sondén, M. Ohlander, 1997, pp. 124].

The presence of greenery within a neighbourhood also effects how semi-private space are used, open areas without greenery tend to be perceived as dead space but with the occurrence of plants and trees the space tend to be more used. [M. Bednarz, G. Schneider-Skalska, 2019]

2.7.4. Discussion

Social isolation can affect our health in many different ways, both physical and mental. What's important to remember is that there is correlation between social isolation and a lot of different health concerns that does not mean that there's a direct causality between a specific health problem and loneliness. Architecture can never be the full solution to health concerns linked to loneliness, but we can build environments that promote well-being and supports social environments. My view is that housing settings should make space for spontaneous social interactions to happen, to strengthens relations between neighbours to create a sense of community, which is important to feel safe and to thrive at home. Creating spontaneous meeting points can also be complimented by adding activities that could also

give neighbours a natural reason to socialize.

2.7.5 Nature as a health promotion element

The view of nature can decrease pain and stress in patients during their hospital stay, by creating a positive distraction.

However, even outside of healthcare environments there are strong evidence that visual contact with nature can lead to a reduction in stress and anxiety [R. S. Ulrich, C. Zimring, X. Zhu, J. DuBose, H. B. Seo, Y. S. Choi, X. Quan, A. Joseph, 2008]. The positive distraction also increases positive emotions, calmness and pleasantness [R. S. Ulrich, 2008].

2.7.6 Natures effect on loneliness

As social isolation increases stress levels in a person, stress has a co-casual role in loneliness. Thereby stress reduction can reduce the symptoms of loneliness, alleviating the negative impact loneliness has on mental health. [D. M. Campagne, 2019]

2.7.7 discussion

The stress reducing effect nature and how it effects well-being makes nature an important part of creating environments that not only stimulate social interaction but also provides some of the negative experience that we have connected to loneliness. Nature elements also effects how well used outside spaces are and with that as an background I believe greenery is essential for social meetings to occur, which is a base in building for social sustainability.

3. Site & Context



3. Site and Context



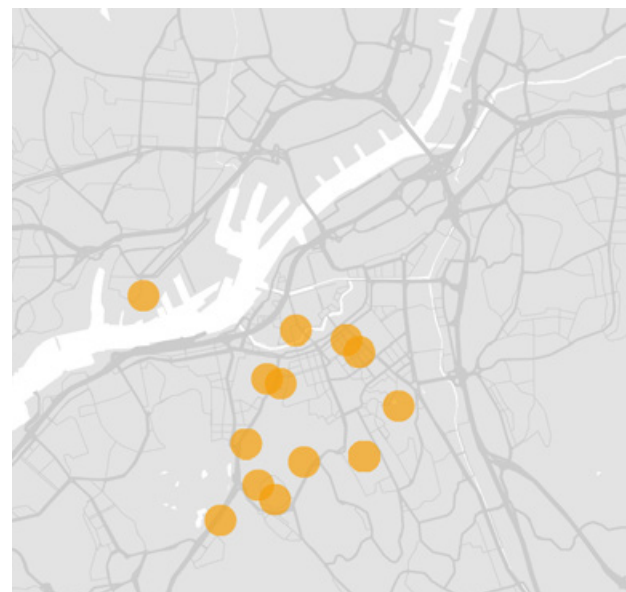
Gothenburg is located on the west coast of Sweden. With almost 600000 inhabitants in the conurbation Gothenburg is the second largest city in Sweden.



Backaplan is currently a commercial area located on the island Hisingen. The area have a central location only 2 km from the city centre of Gothenburg. Backaplan are connected to the central parts of Gothenburg by Götaälvbron, one of the main bridges connecting Hisingen to the mainland.

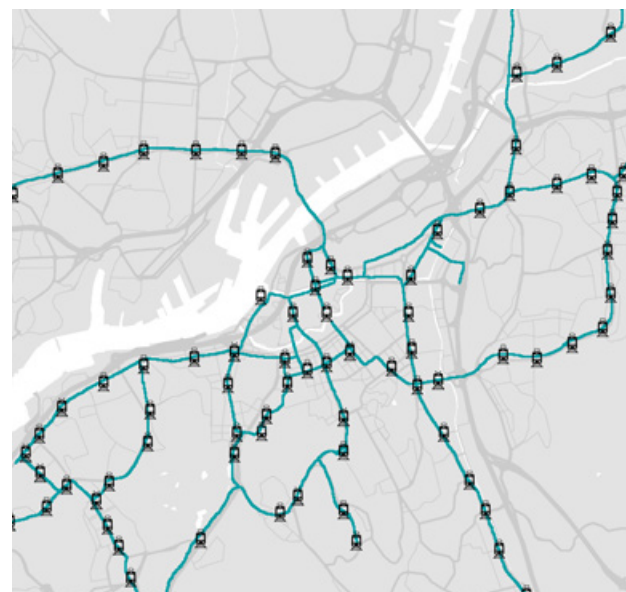
University locations

To find a relevant site for this thesis I looked at the central parts of Gothenburg, as one of the challenges for this project is to create health promoting housing in an urban environment. To have a close connection is also important for the target group, students, since I want to promote health promoting choices, by having proximity to the university locations inhabitants can also walk or use their bicycles to be able to move around in the city as an alternative to public transportations or cars.



Public transportations, tram

To make the project inclusive and accessible to all students it's important to give the inhabitants a possibility to have good transportation choices even if you are not able to walk or bicycle around the city. By choosing a site with connection to public transport all the inhabitants have the possibility to freely move around in the city.



3.1 Site Background

Backaplan is a commercial area in Gothenburg, located in connection to Ringön, Bråmarögården and Kvillebäcken. Backaplan is a fairly central location and is connected to the city centre by Götaälvbron. Even though the area is close to the city centre the area is mostly built for visitors who travel by car, shops are spread

out in the area and parking lots are covering most of the areas in-between the buildings.

However, the area is not hard to visit if you travel with public transport, since Backaplan is connected to a hub for public transportation, Hjalmar Brantingsplatsen, making the site accessible with both buses and trams.



Current layout of Backaplan

3.2 New vision for the area

The city centre of Gothenburg is growing and Backaplan will together with Lindholmen, Frihamnen and Ringön create an extension of the city centre over the river. This means that the vision is that Backaplan will change in character in the future. However, the city of Gothenburg wants to preserve the identity of Backaplan as a hub for service and commercial functions.

For Backaplan this means that the area is evolving from a commercial area mostly catering to visitor in cars to a dense urban area with

service and other functions intertwined. The area will contain housing, commercial areas, offices, etc., this will result in a mixed-use urban district.

3.3 Why is this site suited for this project?

This thesis aims to produce housing that benefit health in urban environments, Backaplan which is going to be a new high-density area in the heart of Gothenburg is well suited for this project. The area is located close to the city centre with good public transportation options



Planned layout of Backaplan

to both the city centre as well as university locations, giving a wide variety of choices for people to move around freely in Gothenburg. The city of Gothenburg has an ambition for Backaplan to be a mix function area, combining housing with public functions, this project will both add public function as well as housing to create a vibrant city life.

This project will also add another dimension to the area, by building for student the area will also consist of a mixed socioeconomic population.

3.4 Public transportation

The site can be reached by multiple different public transportation options, bus, tram, railway and metro bus will be available within walking distance from the site. Hjalmar Brantingsplatsen, which today are a important node for public transportation will also in the future be an important node, connecting rail-bound traffic with buses.



Public transport

3.5 Development of the area

The development of the area has been divided into four stages, beginning with stage 0; the rebuilding of the roads in the north of the area. The site chosen for this project is under stage 2, which means that constructions start is preliminary set to 2023.



Stages of planed reconstruction of Backaplan



Kvillebäcksparken, green area adjacent to the site



Current buildings on site

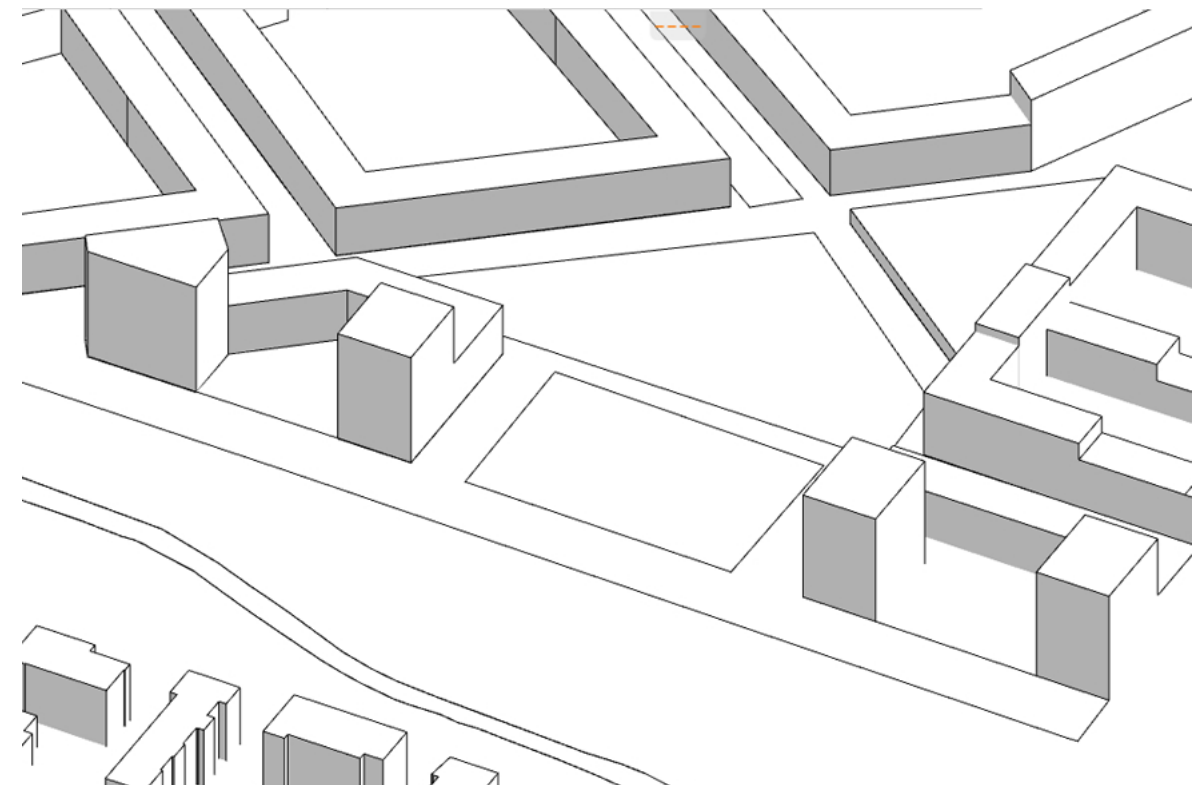
3.6 SWOT Analysis

Strengths

- Strong connection to green areas
- Good public transportation
- Central location in Gothenburg
- The site is open on two sides, providing lots of daylight to the site.

Weaknesses

- Narrow between plots, could result in problems with daylight
- Highly trafficked road planed in direct connection to the site



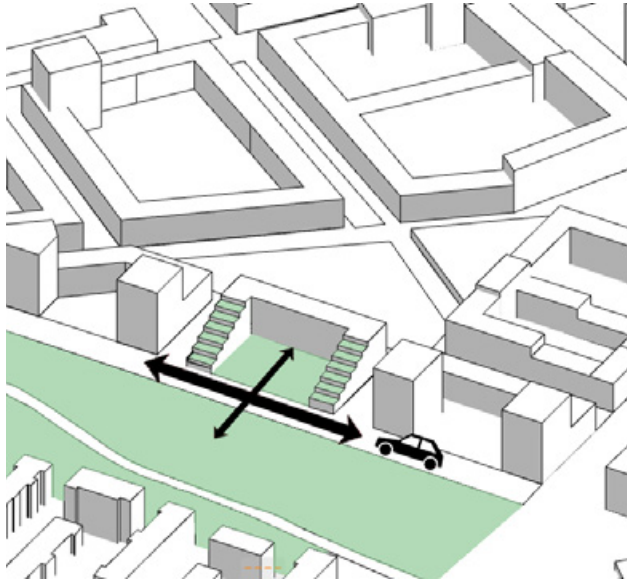
Opportunities

- New area, no current design aesthetics to consider
- There are no zoning plan yet, which allow you to test what volume is appropriate for the site

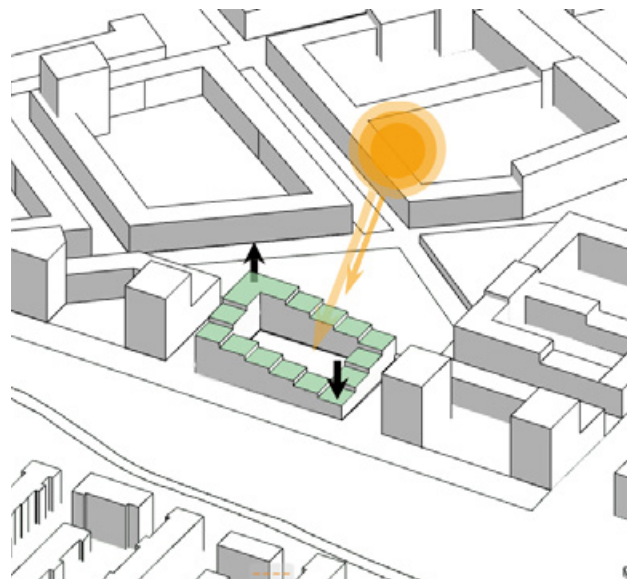
Threats

- Since existing buildings will be torn down it will be hard to relate to the context
- Traffic noise
- Hard to maintain the identity of the area

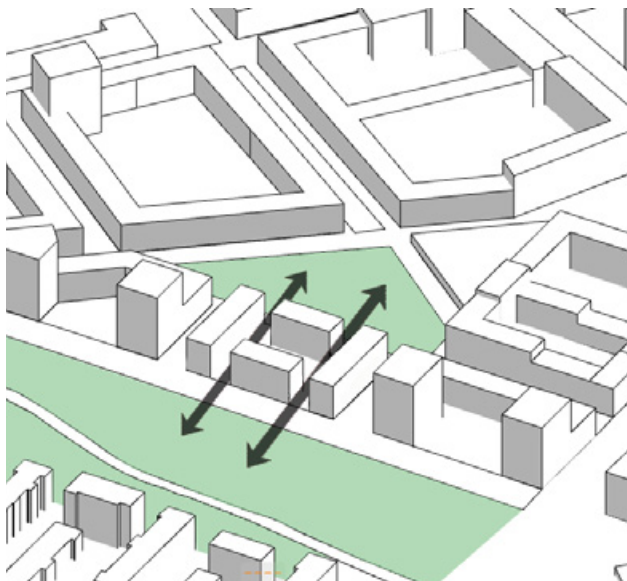
3.7 Volume study



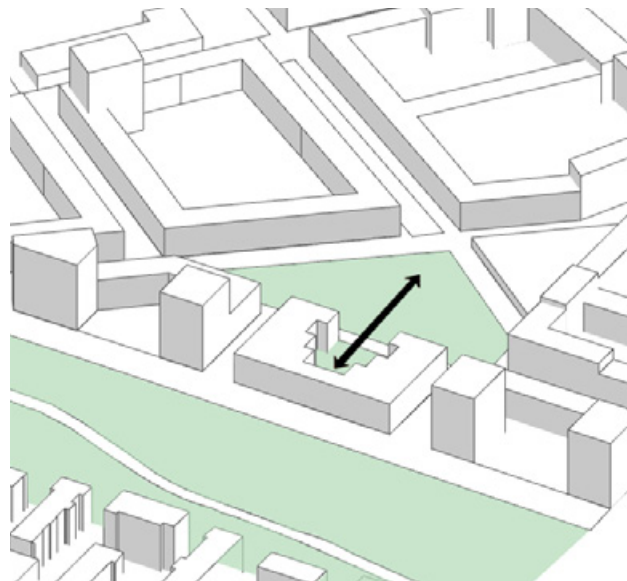
Opening up the volume towards the park, providing a strong connection, allowing a lot of noise in from the road.



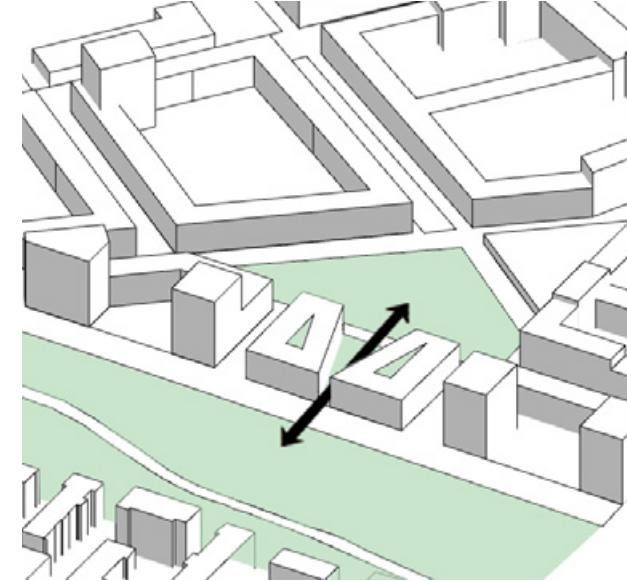
Working with different levels to allow more sunlight to get in from south. The volume also provides terraces.



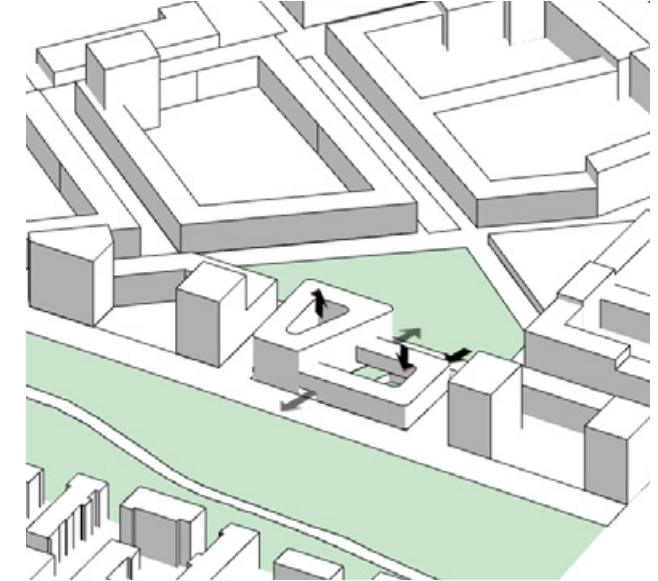
Opening up parts of the volume to allow some connections between the green areas. Provides a semiprivate courtyard.



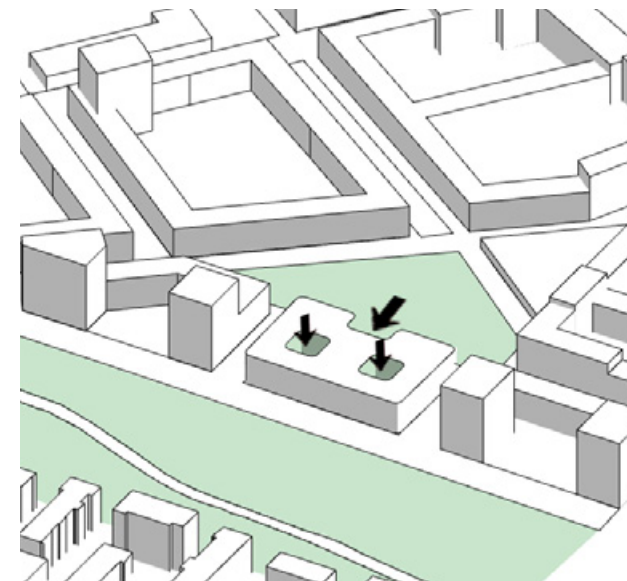
The shape creates a strong connection to the park on one side and functions as a barrier toward the noisy road.



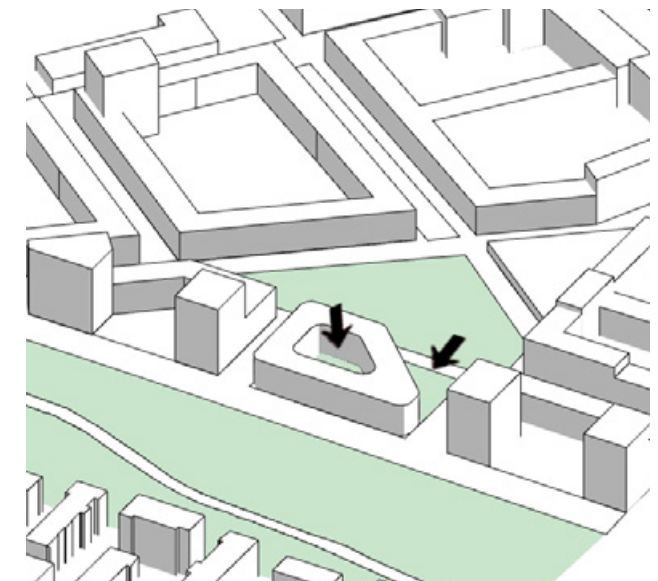
Creating a direction through the site, connection the two green areas visually. With one smaller opening and one larger the building body creates different impressions from the different sides of the plot, where the more open one results in more of a public space.



Carving off a corner of the volume to create an extension of the park and making a path connecting the two surrounding parks. Pushing down the volume and pushing up the north side to maximize the need for daylight.



Carving into the building volume and creating smaller more intimate outside spaces.



Carving off a corner of the volume to create an extension of the park and create a courtyard resulting in different types of outside spaces.

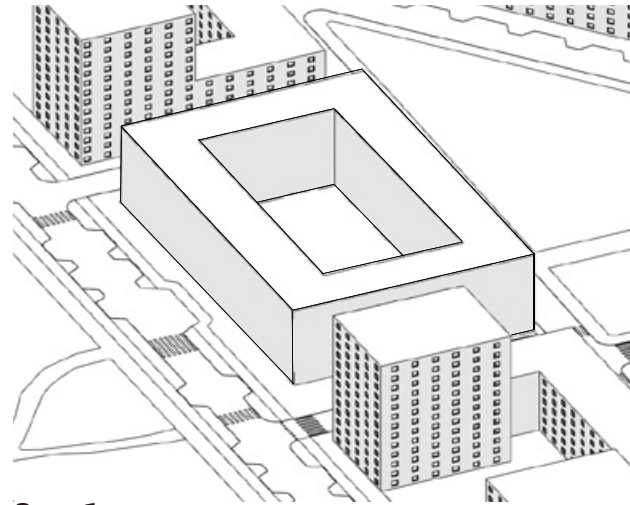
3.7 Volume explained

By testing different volumes on the site in the volume study I got to test and develop what qualities the building volume needs to have in order to deal with the conditions on the site.

Qualities that I discovered through the volume study that I wanted to keep was:

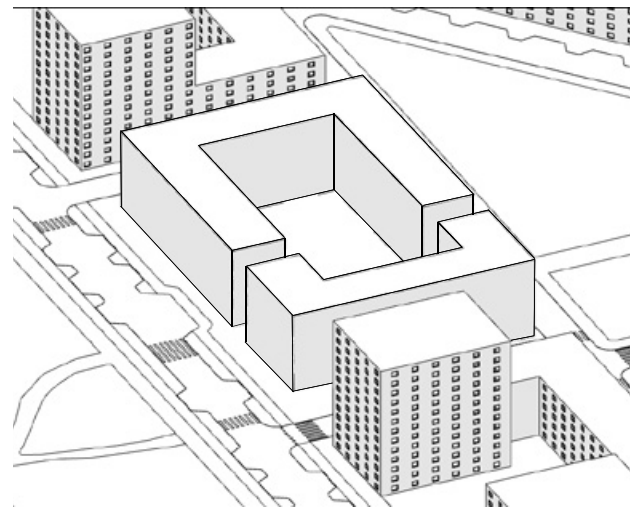
- Protection from the main road to reduce the noise levels as much as possible.
- Letting in as much sun as possible to the courtyard, since the site is quite small with high adjacent buildings.
- Connection between the two adjacent parks.
- To create different outside spaces with different qualities.

The final volume were designed with these quality's in mind and the following pictures are a description of how I have worked to incorporate the quality's step-by-step.



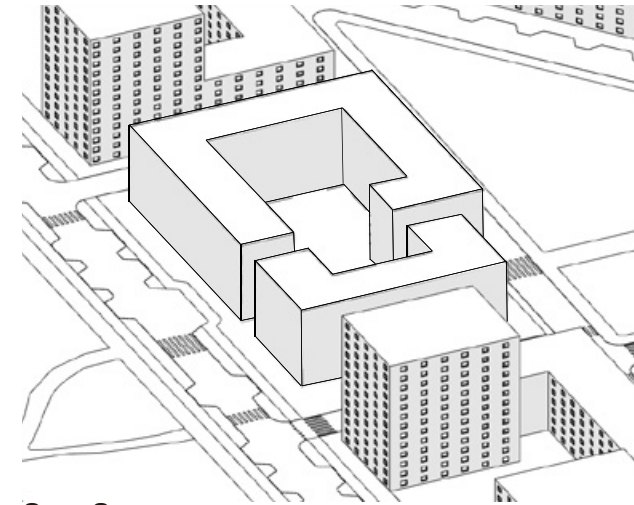
Step 1

To reduce the noise from Kvillebäcksvägen, the main road in the area of Backaplan I started with a closed volume, shielding of the noise and creating a calm courtyard.



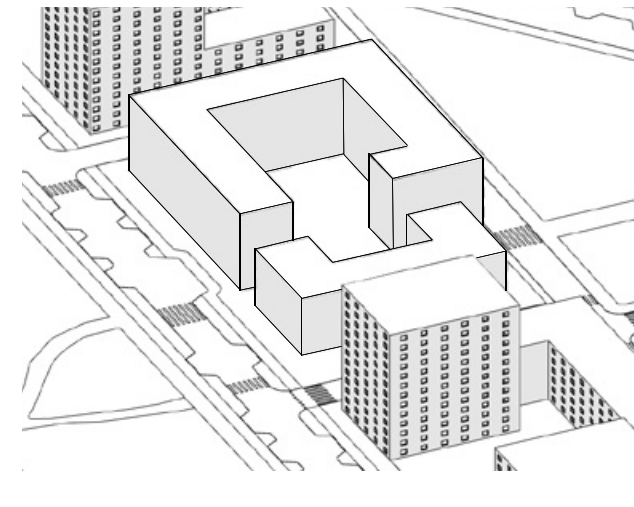
Step 2

To connect the two adjacent parks and the volume are slitted into two. This creates a path between the green areas and also connects the promenade in Kvilleparken to the planned culture house on the opposite side of the building.



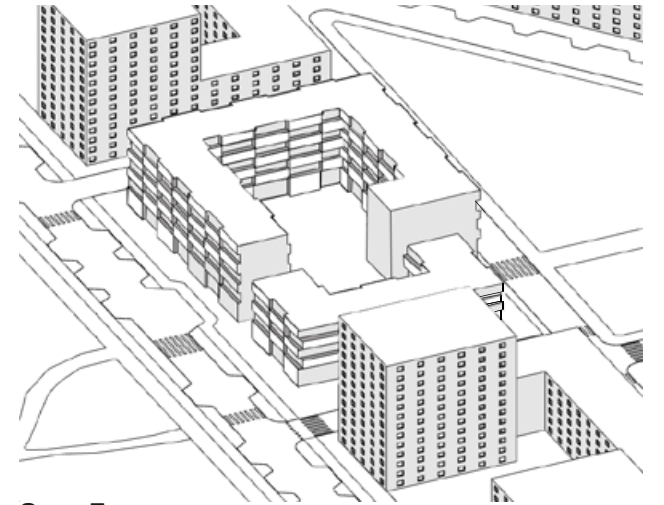
Step 3

The smaller building volume are indented toward the calm side of the building to create a more inviting entrance to the building for the pedestrians. The indenting of the building body also creates a outside space with strong connection to the park.



Step 4

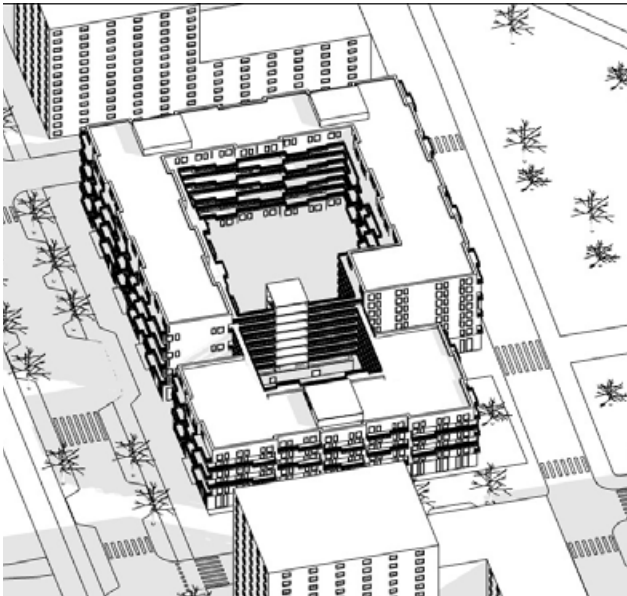
The volume toward the south are pushed down to allow more sunlight in to the courtyard. The roof of the south facing volume are also utilized as a roof terrace.



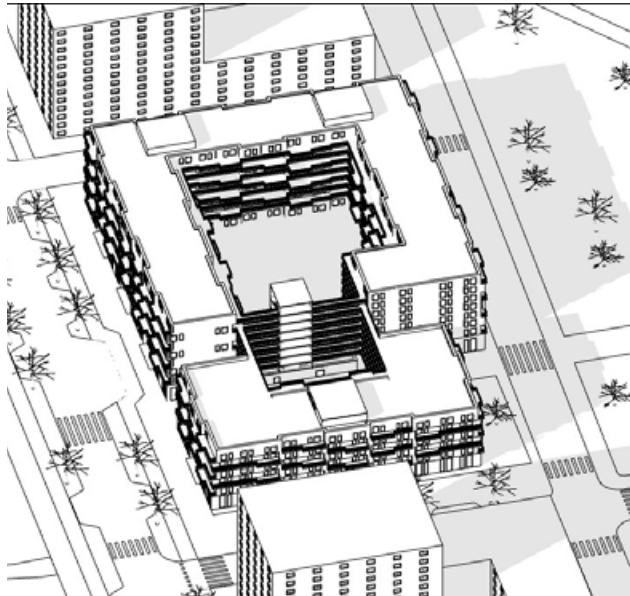
Step 5

Offsetting the facade to create balconies and making the facade come alive. The pockets created by offsetting the facade also offers wind protection on the balconies.

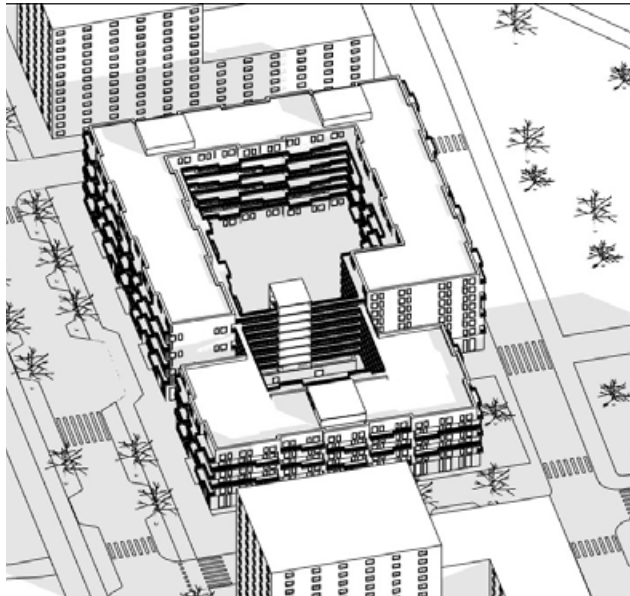
3.8 Sun Study



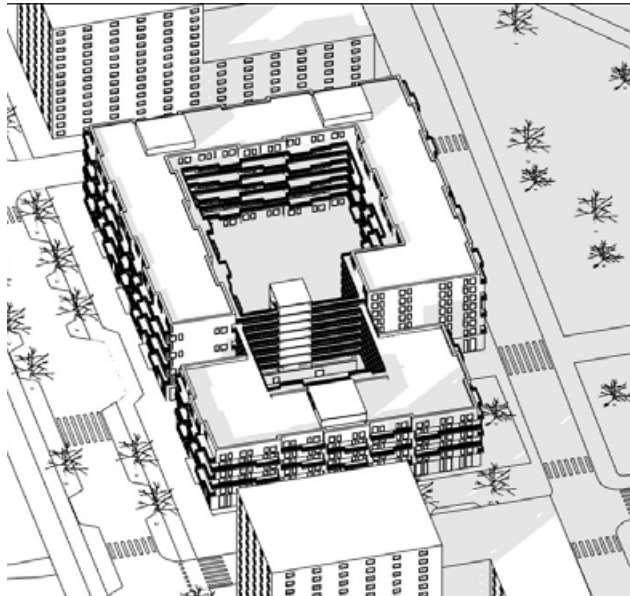
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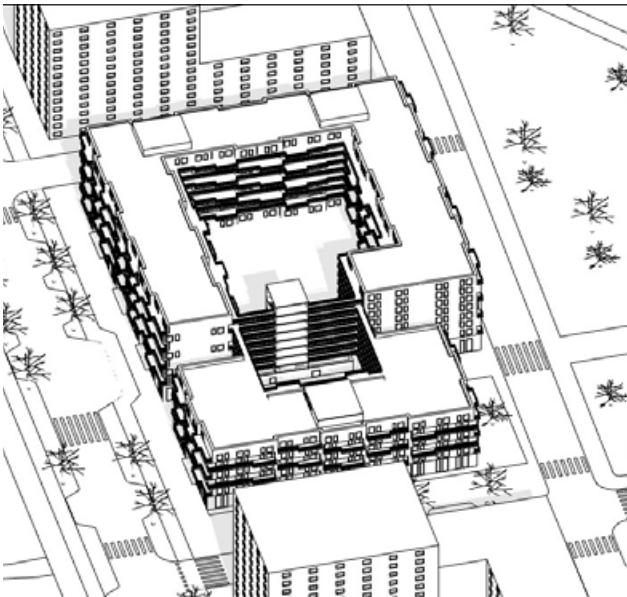
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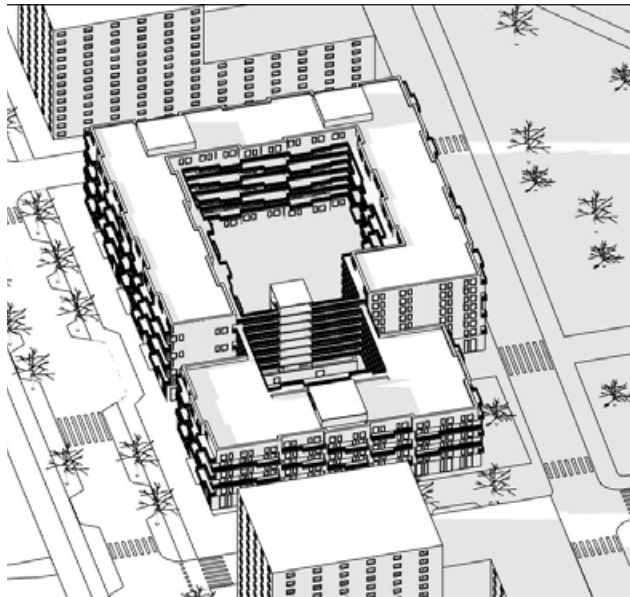
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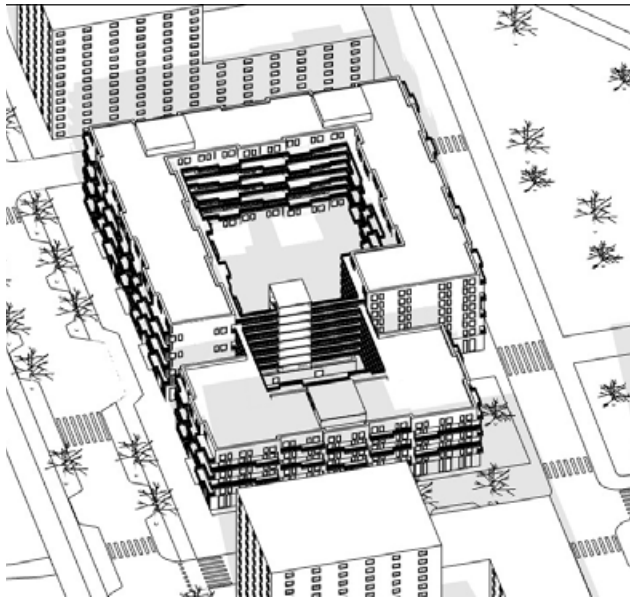
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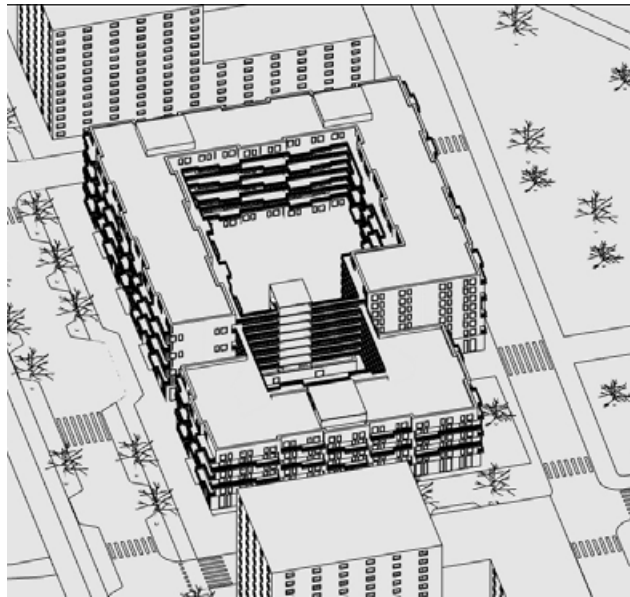
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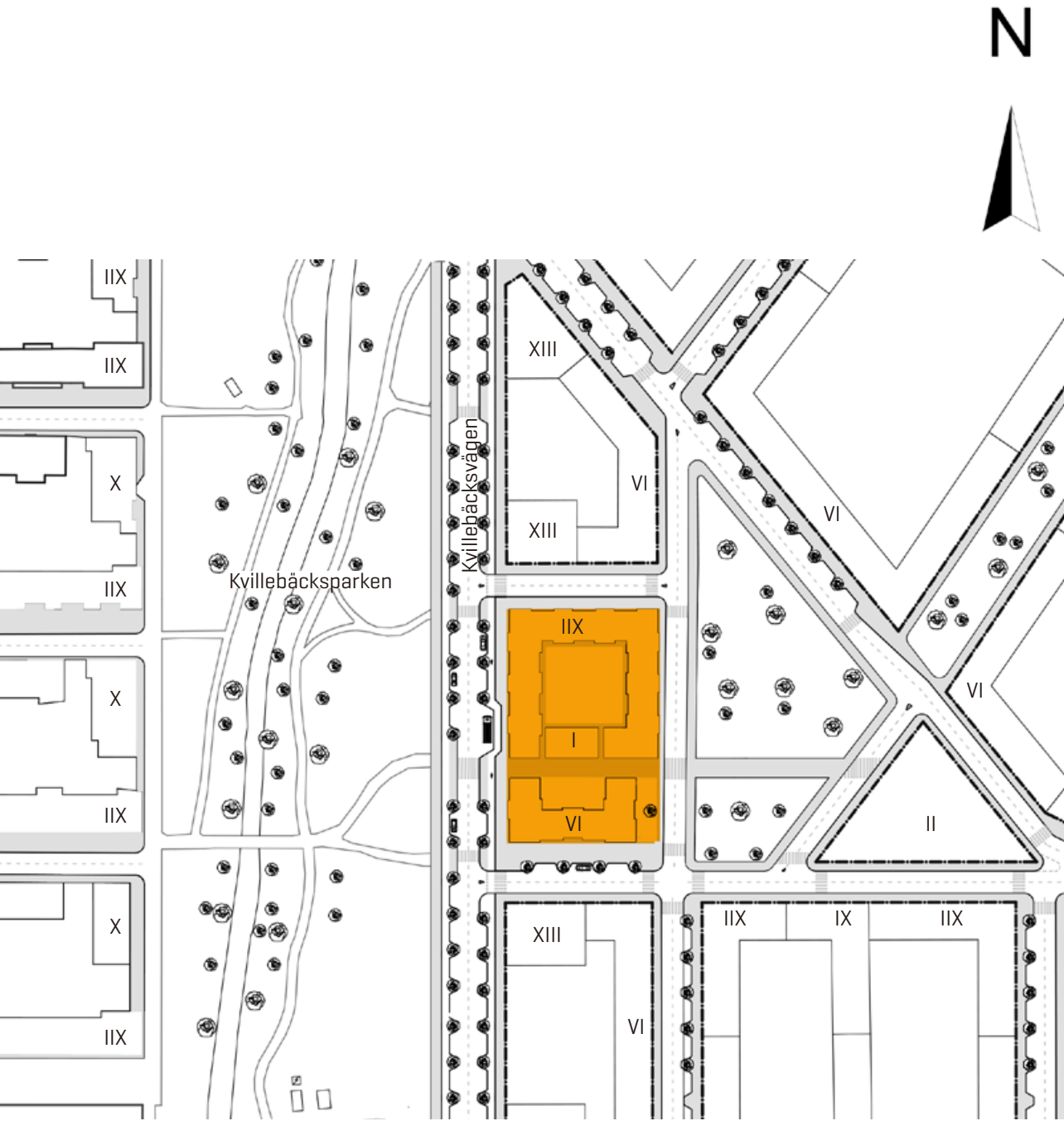


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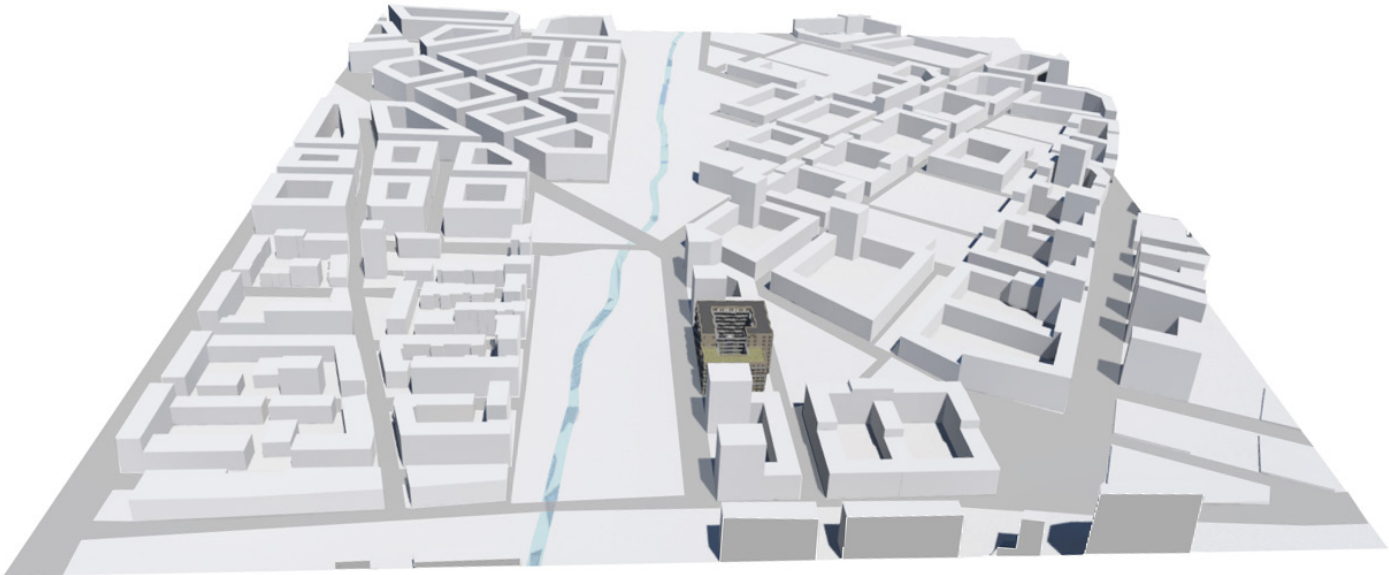
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3.9 Situation Plan



Scale 1:2000

3.10 Volume on site

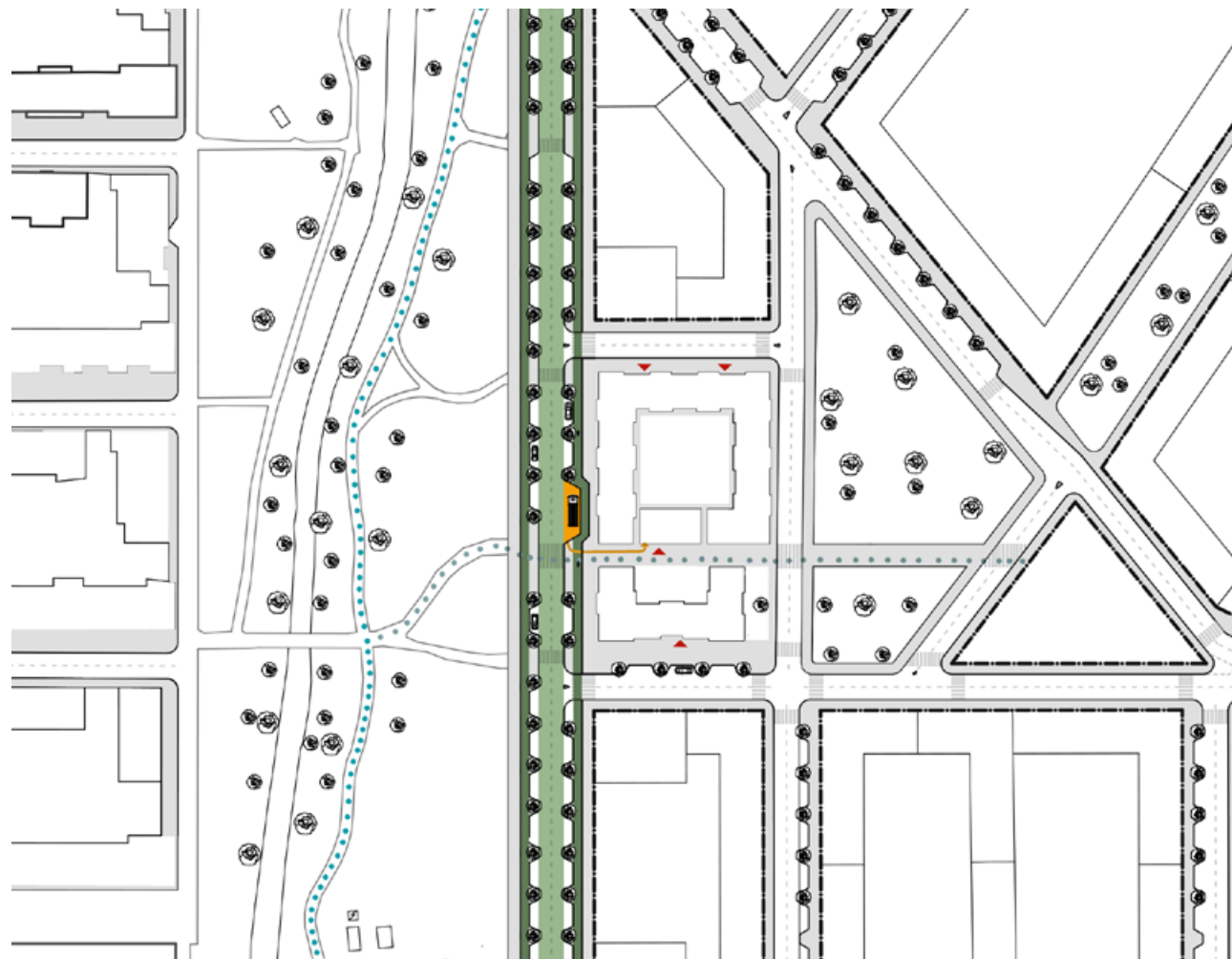


Building in relation to surrounding building volumes

3.11 External flows

The main flow of traffic are located along the main road Kvillebäcksvägen, both when it comes to motor traffic and bicycle traffic. When it comes to pedestrians, the park Kvillebäcksparken provides the main promenade through the area. The main promenade are connected to the housing area on the eastern side of the main road by a path through the site.

- walking lane connecting to culture house
- Main walking lane
- Recycling management
- Main road
- Bicycle lane



Scale 1:2000

4. User



4. User

4.1 Project target group

The projects main target group are students, but this group includes a wide range of people, mostly young adults between approximately 19-35.

However, this project aims to include students in different life situations, ranging from families with children to young adults who recently moved from their childhood home.

Except from the inhabitants of the project there is also secondary users, such as family, friends and people living or visiting the area.

4.2 Why students?

Housing standards for small housing units in Sweden have been lower over time and not at least when it comes to student housing [Crush, 2016, pp. 30-46]. The lower standard for housing in combination with the economically limited situation makes it hard for students to find housing at all, but even more challenging to find qualitative housing.

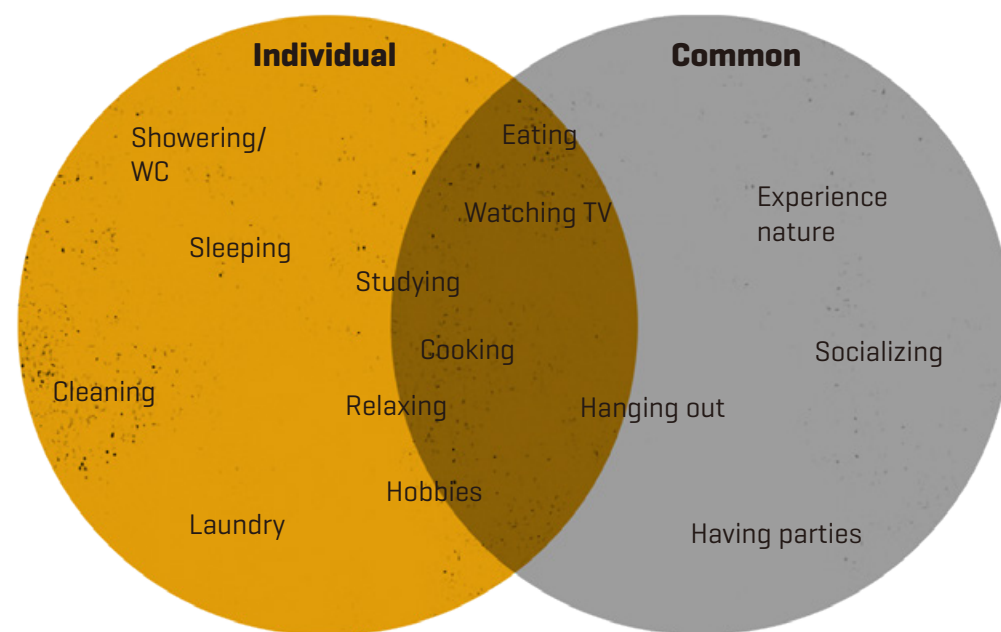
Besides the general shortage of housing for students there are also a very homogeneous housing stock when it comes to student housing. Single room or very small one-room apartments are generally what's available for students today. There are students in all ages that live in different family constellations, which require the housing stock to reflect that.

4.3 Reader of this thesis

The thesis mainly turns to people who are working or studying within the field of architecture. But the thesis is also intended to be understood by family and friends with little to basic knowledge in the field of architecture.

4.4 Use

The project is used all hours of the day but in different ways. The project should be able to provide individual, calm spaces as well as common spaces at all times.



4.5 Student Survey

To get a better idea about how students live and how they experience their housing situation I made a survey asking about their current situation and how they feel about sharing spaces in their home environment. 24 students participated in the survey, the participants of this study are students from Chalmers university, Umeå university and Stockholm university. The participants are mainly family, friends and former co-students and because of that the participants are likely to be in the end of their education. Therefore I will take into consideration that the average student might be a bit younger, live alone to a larger extent and have a bit smaller housing units in general.

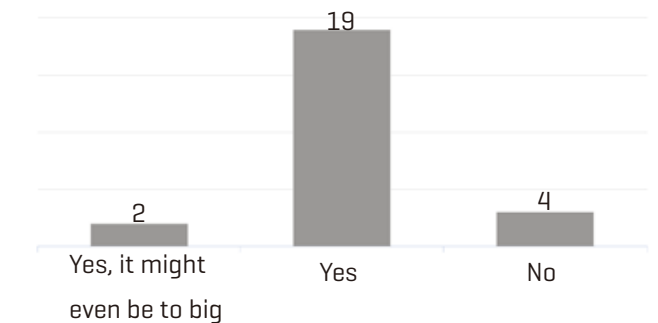
The housing situation

50% of the students that took part in the survey are living with a partner and 33% are living alone. 62,5% of the participants live on 20 square meters or less per person and 37% lived on 20 square meters or more. Most thereby live in very small housing units, despite that 83% experience that they live on a large enough or even a bit to big area and only 12,5% reported

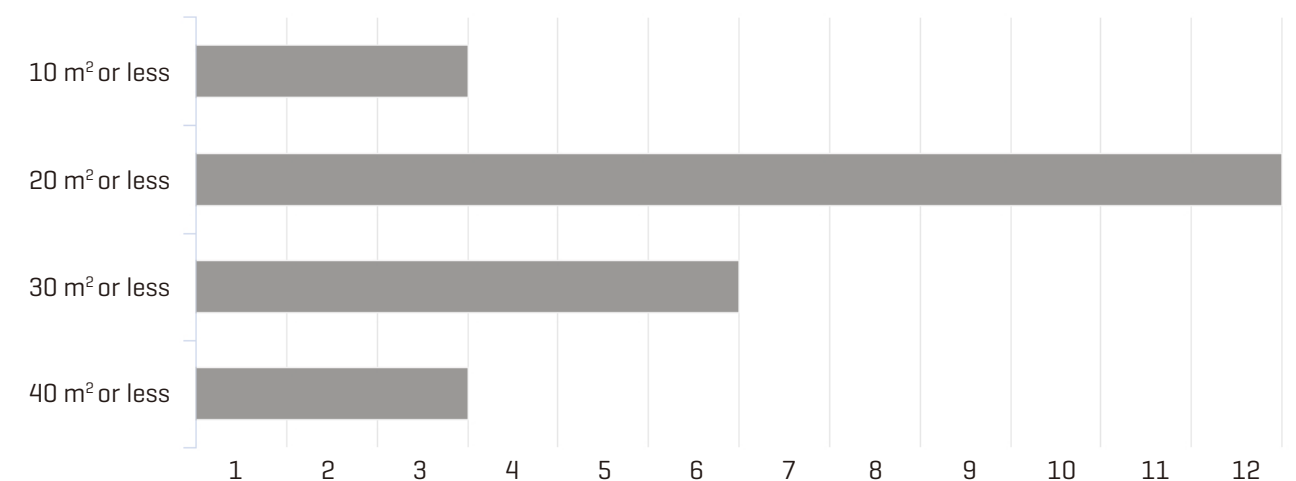
that they experience that they live on a to small area.

The space itself doesn't seem to be the biggest problem for most, rather it's the lack of spaces and functions that the participants wish they could have. Outside spaces, shared and bookable rooms for events, workshops and bicycle storage are example of spaces the participants wish they had in their current living situation.

Do you perceive the size of your student housing to be large enough for your needs?



How much space do you currently live on per person in your household?



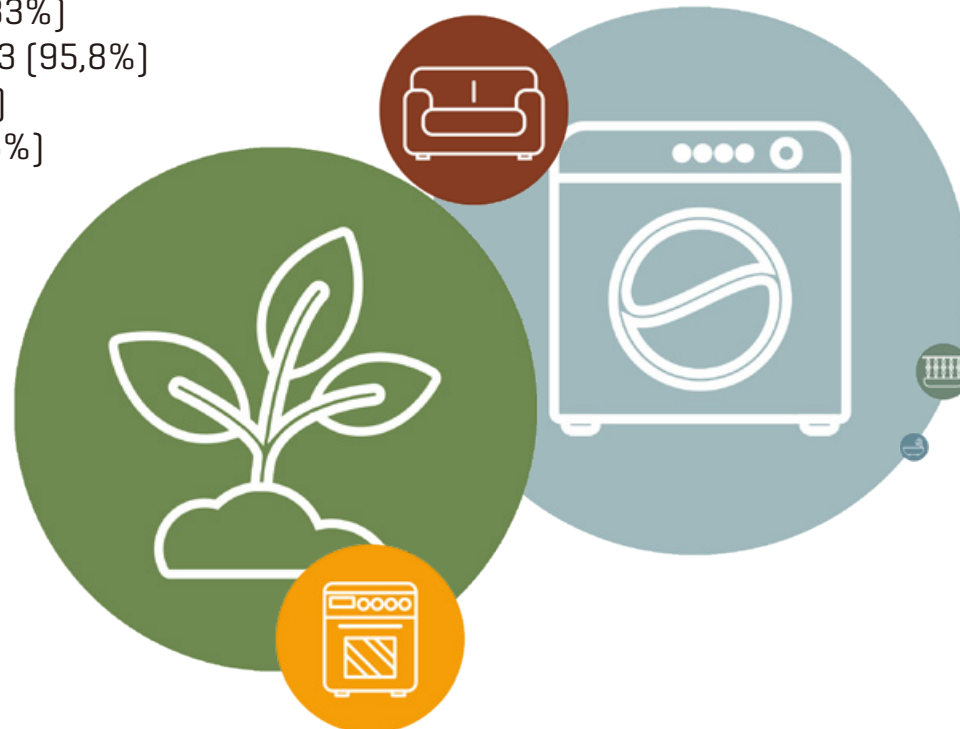
Do you have some shared spaces/ functions with others in your building?

- Kitchen 8 [33%]
- Bathroom 3 [12,5%]
- Living room 7 [29%]
- Laundry room 17 [70,8%]
- Bedroom 0 [0%]
- Garden 8 [33%]



What spaces/functions do you think are successful to share?

- Kitchen 8 [33%]
- Bathroom 1 [4%]
- Living room 8 [33%]
- Laundry room 23 [95,8%]
- Bedroom 0 [0%]
- Garden 22 [91,6%]
- Balcony 2 [8%]

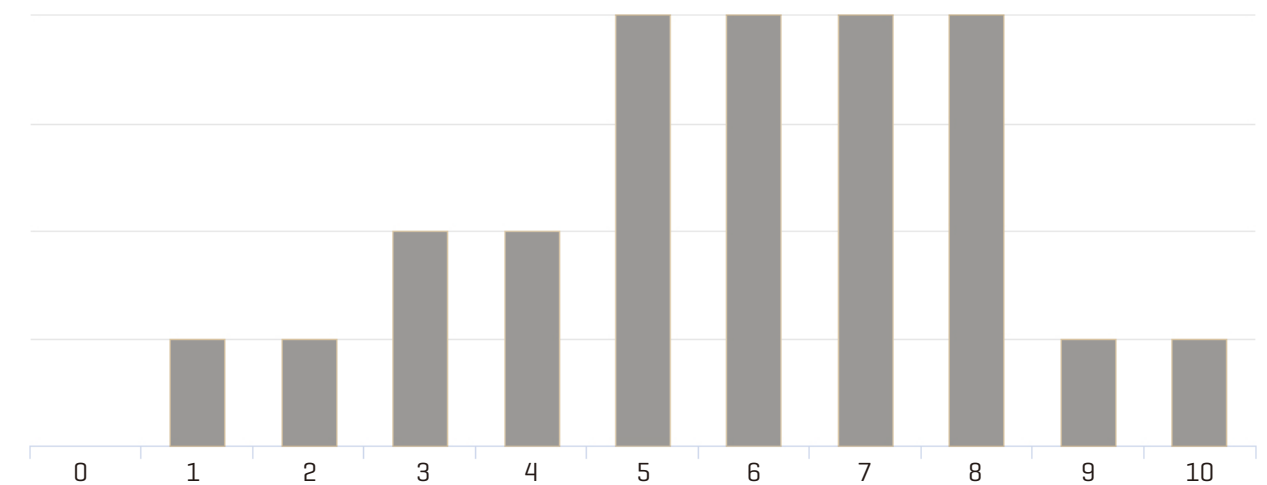


What spaces/functions don't you want to share with others?

- Kitchen 14 [58%]
- Bathroom 18 [75%]
- Living room 6 [25%]
- Laundry room 1 [4%]
- Bedroom 20 [83%]
- Garden 1 [4%]
- Balcony 2 [8%]



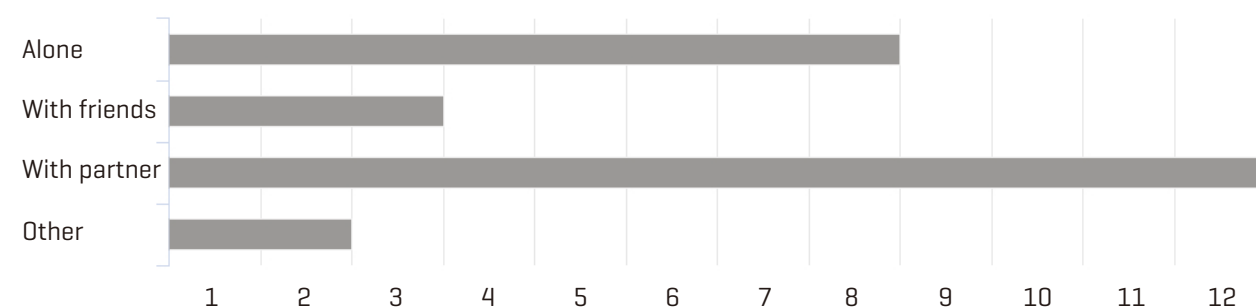
On a scale 0-10, how willing are you to share some space with your neighbours?



Are there a function/space you wish your student housing had?

- Gathering spaces
- Skate ramp
- A balcony would be nice.
- Living room and balcony
- A big room to have parties in. An extra room to rent occasionally for parents and family when they are visiting.
- A room for events, a guest room for visitors and a sauna that are possible to book when you want/need it.
- Bigger room for birthdays, cooking or studying together
- Pool, big terrace, nice garden/outdoor space and space for BBQ
- The corridor neighbours are not very social, perhaps because our shared living room is not very inviting. If we had a large tv for movie nights or any type of board- or party games, we would get to know each other more. Also, the living room is very excluded from the corridor so unless you go there you don't know if people are there, it should be more accessible.
- A garden with possibilities to grow your own crops and a rentable room for events
- Urban garden/kitchen garden.
- A nice separated and bookable room for parties or events
- Hobby room

Who are you living with?



- More enclosed garden (private feeling), closer to laundry, common roof terraces, workshop with shared tools, sauna and hot tub
- A shared workshop and bicycle storage
- Garden

Discussion

Most of the participants seems to be content with a smaller size private space, but the majority seems to miss some common areas. As I see it the quality of space seems more important than having a large housing. Many of the people asked for social areas, both outside and inside.

When it comes to what spaces are fit for sharing there where several different opinions. Overall more social spaces and activity focused spaces seem to be the most appreciated to share.

However, kitchen seem to be appreciated to share by many, but most thought that the kitchen is an unsuccessful space to share with others. One way to solve that could be to have a small private kitchen and a small common kitchen.

From this study I also got the impression that common spaces need to have a quite strong connection to the private parts for it to work as a social space, the inhabitants should be able to see if common spaces are used by others to be inviting.

Activities also seem to be a big factor to promote social environments.

4.6 Residents of the project



Marcus 19, engineer student

Right after the upper secondary school Marcus moved from a smaller town to Gothenburg to start studying. It has always been Marcus dream to study to an engineer so the decision to study on the university was not hard to make.

However, it's the first time he has ever lived by himself and Gothenburg is a new city, so he is a bit worried about finding new friends and handling life on his own.



Maria 24, computer science and Lena 25, Architecture student

Maria and Lena have been friends for a long time, they grew up in Stockholm and have known each other since elementary school.

When they first moved to Gothenburg they lived by themselves but they soon realized that they didn't want to live alone anymore and since they hang out all the time anyways they figured by sharing an apartment they can have more room for social events.



Andreas 39, medicine student and family

Andreas used to work over 15 years with advertising but when he turned 35, he realized he wanted to do something different with his career, so he decided to start studying to be able to work with his dream job, as a doctor.

The decision to re-educate himself wasn't easy, when you already have a family to support and a decent salary its hard to get used to living on student loans for several years.

However, Andreas decided to take the leap of faith and follow his dream but the rent in the family's old apartment is very expensive and they could really benefit from a smaller, more affordable apartment.

Andreas family are dreaming of an affordable apartment that are adapted to suite a family of three and they would also like to live quite close to the city since they no longer can afford a car after Andreas have started studying.



Anna 29, psychology student and Jonas, 28 psychology student

Anna and Jonas meet during their bachelor's education in psychology, now they want to move together during their master. They have both struggled to find student housing during their first

years of studying in Gothenburg so they have subleased apartments and been lodgers before. But now they want to find a lager apartment so they can live together.

Annas dream is to have a garden and be able to grow her own crops and Jonas would really want to have space for guests since he moved all the way from the northern parts of Sweden and would really want his family to be able to visit them here in Gothenburg.

5. Reference projects



5. Reference projects

5.1 Grønneviksøren Student Apartments, 3RW Architects, Bergen

Grønneviksøren is a large scale student housing project, it consist of 727 housing units divided in 17 different building bods.

The different houses are connected to each other by 3m wide external galleries, solving both the circulation and acting as a semi-private zones.

- + Working with semi-private zones that promote social meetings
- + A lot of green spaces and a focus on pedestrians

- Very large and open courtyard, making the yard less inviting



Fig. 2



Fig. 1

5. Reference projects

5.2 Student Housing Diagonal Besos, MDBA Architects / POLO Architects, San Adrián del Besós

The student housing units in this project are built around a courtyard on level -1, around the courtyard there are a number of different functions such as a gym, multi-purpose rooms and multimedia rooms. With its common spaces the project aims to work as a social hub.

- + External galleries as circulation, creating a gradient between private and public space.
- + Common spaces to add qualities for the residents.
- + Different types of housing units.
- Quite small gardens



Fig. 3



Fig. 4

5. Reference projects

5.3 Affordable Housing, Andreas-Martin Löf Architects, Stockholm

Affordable housing is addressing the housing shortage in Stockholm with low cost and pre-fabricated building elements. The project has semi-external galleries facing the outer facade. The ground floor hosts larger family apartments and common spaces for events and flexible use.

- + Very efficient housing units
- + Common spaces

- The transition between private and public is quite harsh
- Repetitive housing units that enhance the corridor feel.

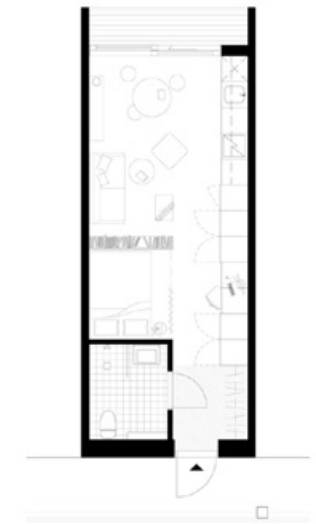


Fig. 5



Fig. 6

6. Concept & Program



6.1 Concept

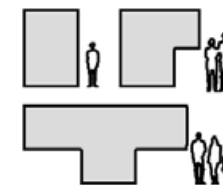
The concept for this project is to create student housing that supports how students live and want to live. The project consists of different housing units that to fit a wide range of students, regardless if you want to live alone, with friends, with a partner or in a family constellation.

This project also aims to work with health promotion both targeting social and physical issues to create a housing environment that effect the residents well-being. Targeting social aspects by forming common spaces to encourage social interaction and prevent undesired loneliness among its residents. Common spaces will also have an important role to create attractive circulation and thereby influence the residents to choose stairs instead of elevator and encourage more outside activities.

Varied unit sizes

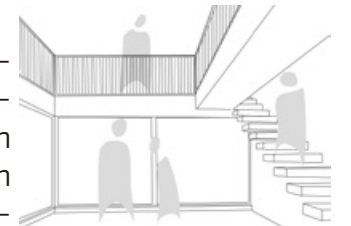
Student differ in ages, life situation and how they live, this should be reflected also in the housing stock.

This project will offer different housing units to be able to fit different people.



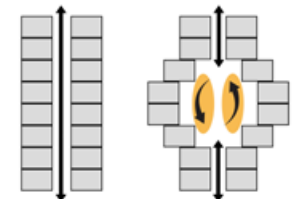
Semi-private zones

Encourage spontaneous social interactions between neighbours through semi-private spaces like stairs. Access balconies connected to green spaces is one way to make the zone between private and public an natural meeting place.



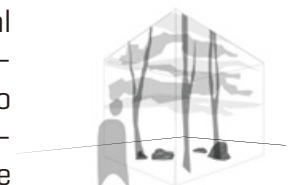
Circulation

Instead of connecting private zones with corridors this project aims to create meaning and space for the inhabitants to use for activities and social gatherings.



Greenary

Having both visual connection and common green spaces to encourage the inhabitants to be outside more.



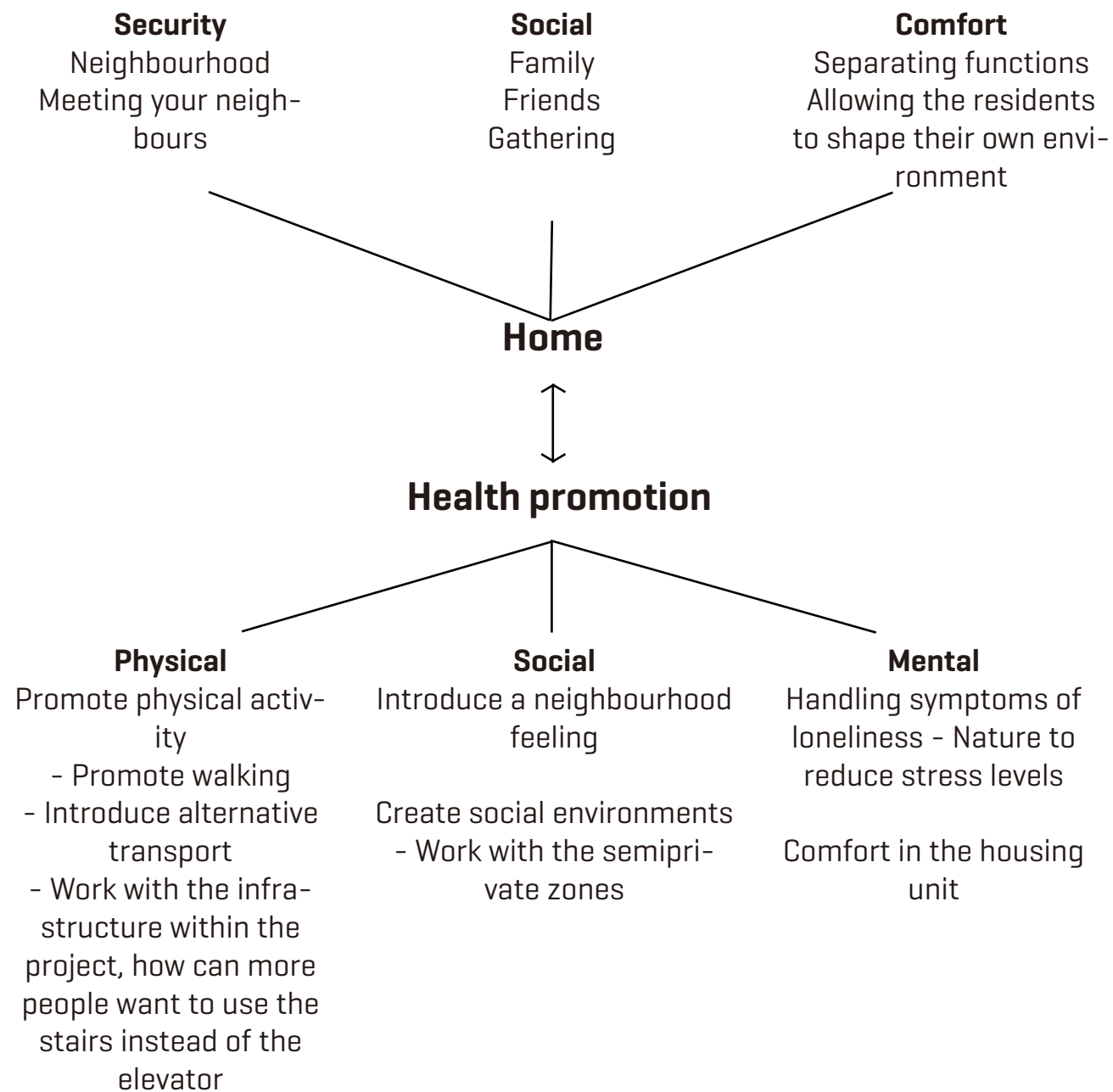
Include the user

To listen to the user, and what they want their housing to be.



By taking into account what the user needs when shaping their housing environment there are more likely that they will enjoy it and create a stronger scene of home.

6.1 Concept



6.2 Program

Program

1 room apartment	70 units	1764 m ²
2 room apartment	70 units	2142 m ²
3 room apartment	49 units	2822 m ²
Co-living	147 units	3148 m ²
Common space		1247 m ²
Circulation		576 m ²

Total

336 units 11 699 m²

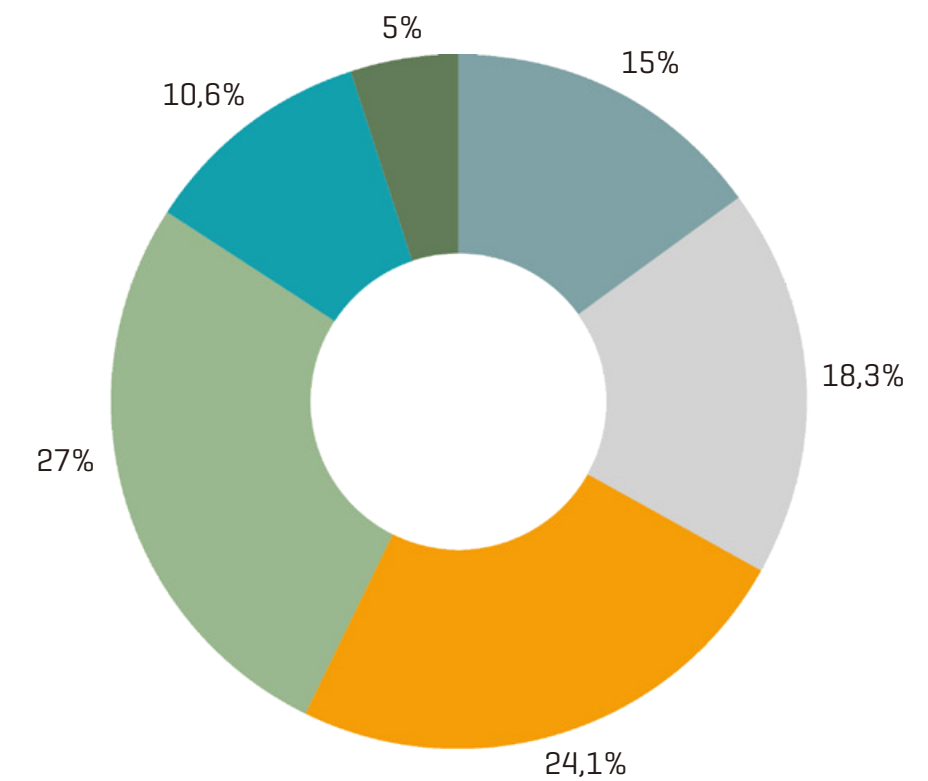
Functions

Private spaces and functions

- Bedroom/place for a bed
- Kitchen
- Living room
- Bath room

Common spaces and functions

- Bicycle parking and workshop
- Guest apartment
- Green spaces
- Space for events and social meetings
- Laundry



7. Proposal



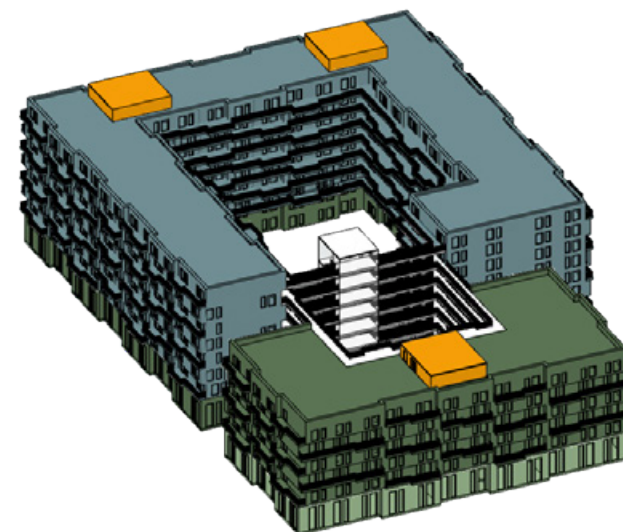
7.1 Ground Floor



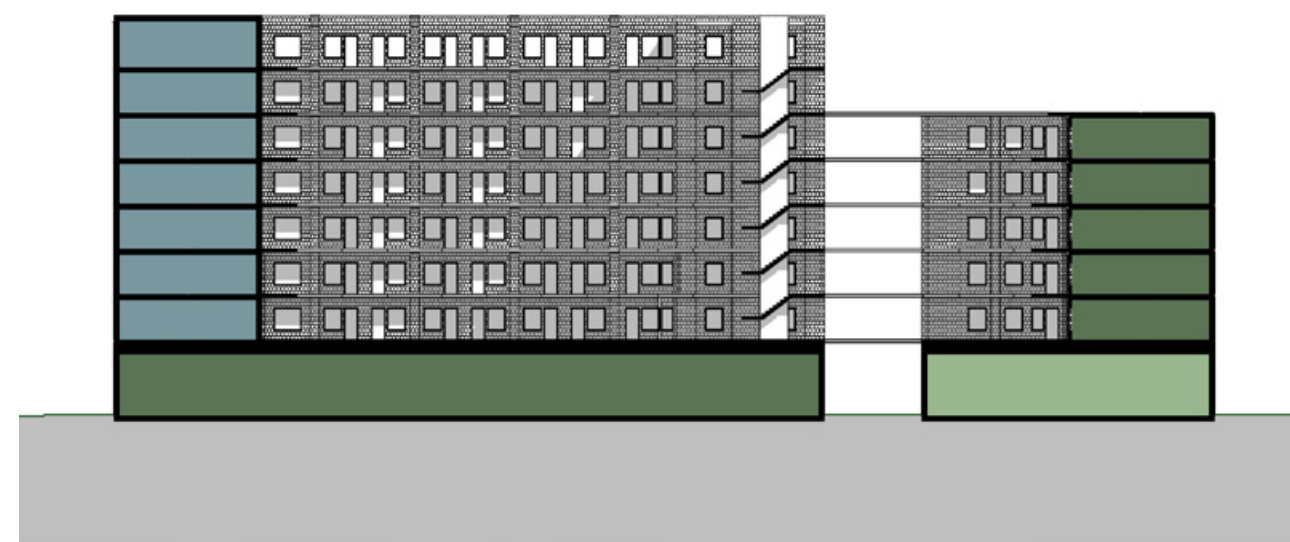
Scale 1:1000

7.2 Volume partitioning

- Individual apartments
- technical spaces
- Co-living
- Common

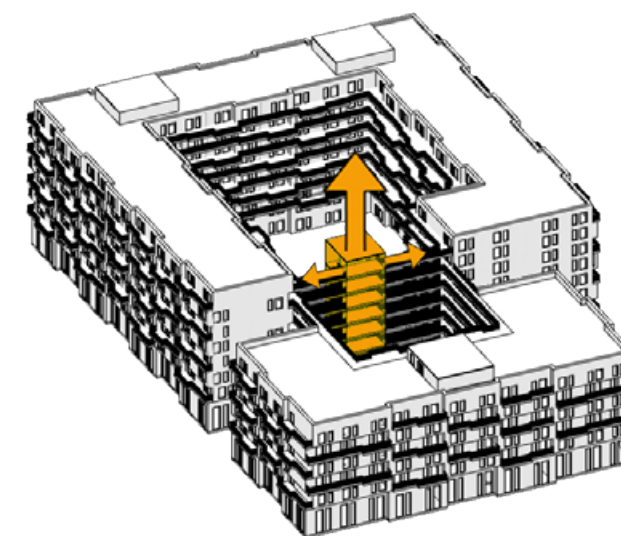


Zoning



Section 1:500

7.3 Diagram circulation

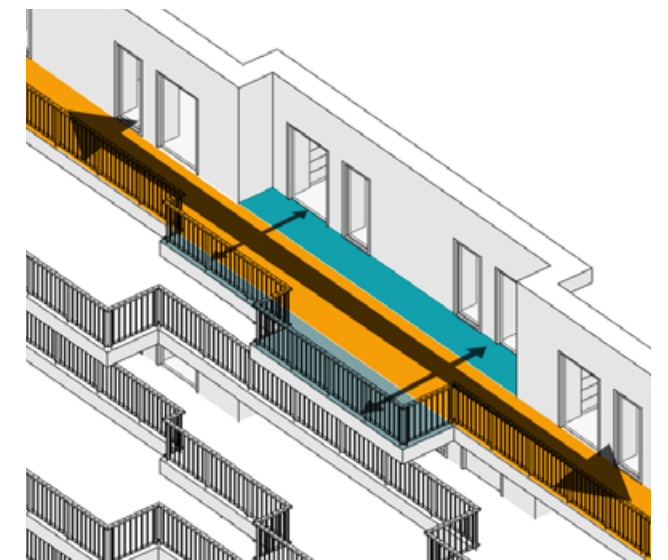


Vertical circulation, main entrance

The two building volumes are connected by external access balconies. The external balcony's are accessed through elevators and stairs in the main entrance located between the buildings in connection to the walking path the runs through the building.

The circulation is placed externally to promote physical activity as well as visual connection to the greenery in the courtyard which works as an positive distraction and can promote positive feelings and well-being [R. S. Ulrich, 2008].

Although the external circulation can have health benefits it promotes positive emotions the external circulation also have positive social effects. As social interaction between neighbours rarely occurs within the pri-

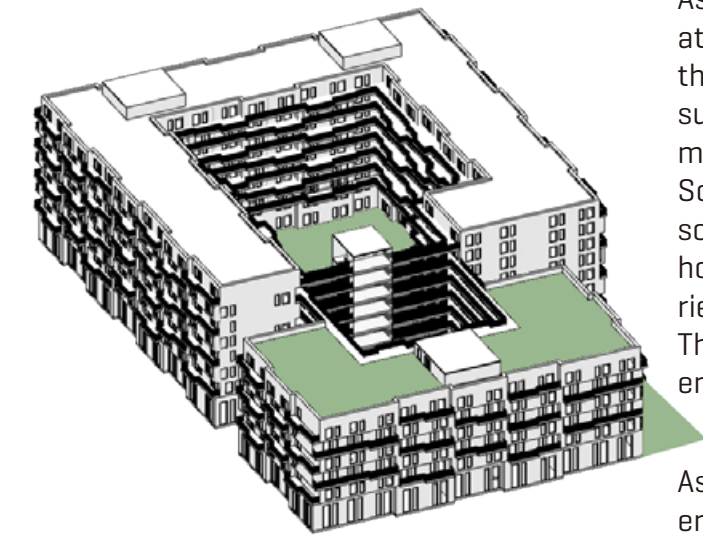


Circulation and connection to green spaces

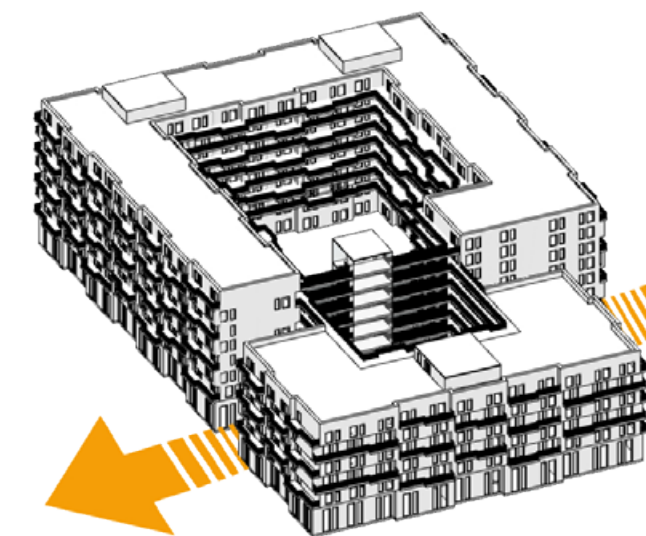
vate sphere and more commonly occurs in semi-private zones the circulation is an important place for social interaction [S. Olsson, G. Cruse Sonden, M. Ohlander, 1997, pp. 124]. By creating an external corridor in direct connection to the balconies the barrier between the private and common are blurred and this stimulates spontaneous meetings between neighbours.

The balconies close contact to the circulation is also a way to invite neighbours. As the neighbours will pass by, it can be a way to showcase your hobby's and interests. If a person is interested in gardening the neighbours will notice it and it can be a way for neighbours to start conversations.

7.4 Diagram greenery



Greenery



Path between green areas

As Social isolation have a lot of different negative health effects, both mental and physical there is a need to design spaces not only by supporting social meetings but also environments that are health beneficial in other ways. Social isolation and stress are correlated, social isolation causes productions of stress hormones as well as stress enhance the experience of loneliness [D. M. Campagne, 2019]. Therefore, this project is aiming to create environments that are stress relieving.

As there are strong evidence that the presence of nature can lead to reduction of stress, the connection to nature elements are important for this project[R. S. Ulrich, 2008]. On an urban site like the one used in this project the connection to nature are a big challenge. The design of this project is influenced to strengthen the connection to nature by creating a path through the building, giving visual as well as physical connection between the nature elements adjacent to the site. To make the presence of nature elements even more substantial the project have been designed to provide outside spaces with different characteristics within the project. There is a protected courtyard, roof terrace, balcony's and a open green area facing the park on the east of the building.

7.5 Exterior perspective



7.6 Plans

Ground floor

The ground floor mainly contain co-living units and common functions like bicycle storage, recycling room, health centre and common spaces for events and gatherings.

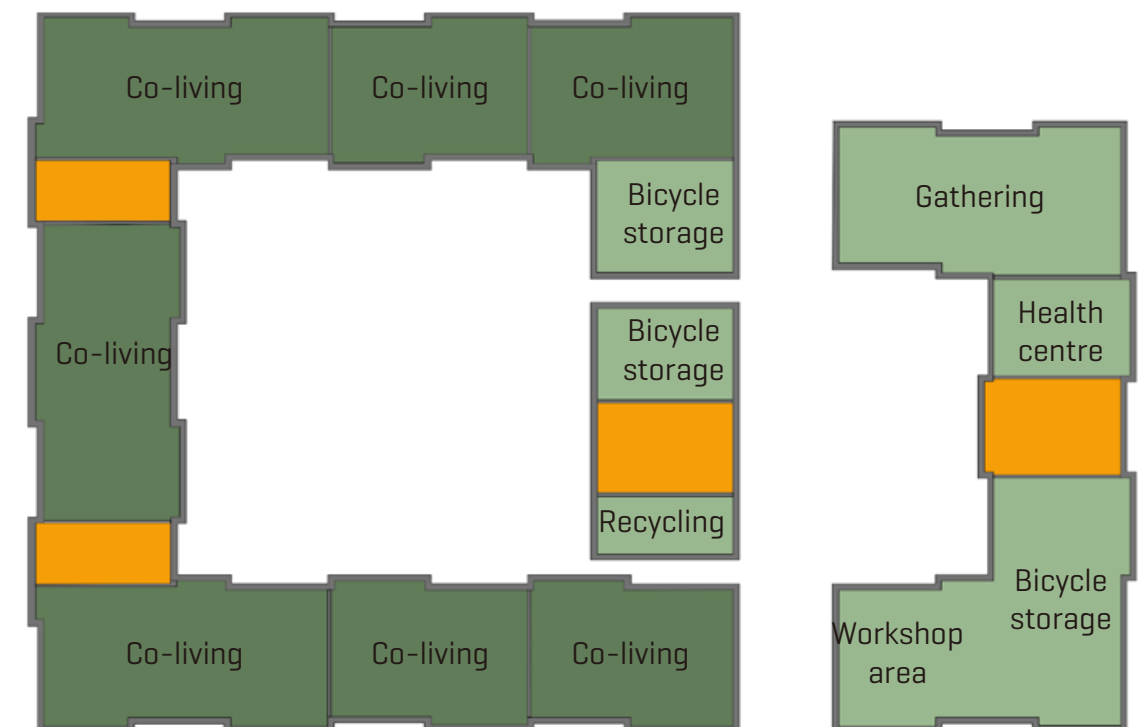
The ground floor have a ceiling hight of six meters which is utilized in the co-living units to incorporate a bedroom loft that allows the residents maximal privacy.

To create plenty of space for bicycle parking within the project is a strategy to promote health beneficial an environmentally friendly transport option. Participants from the student survey also suggest that workshop space for bicycle repair are something they wish they had, which implies that there is a will among students to travel by bicycles.



Scale 1:500

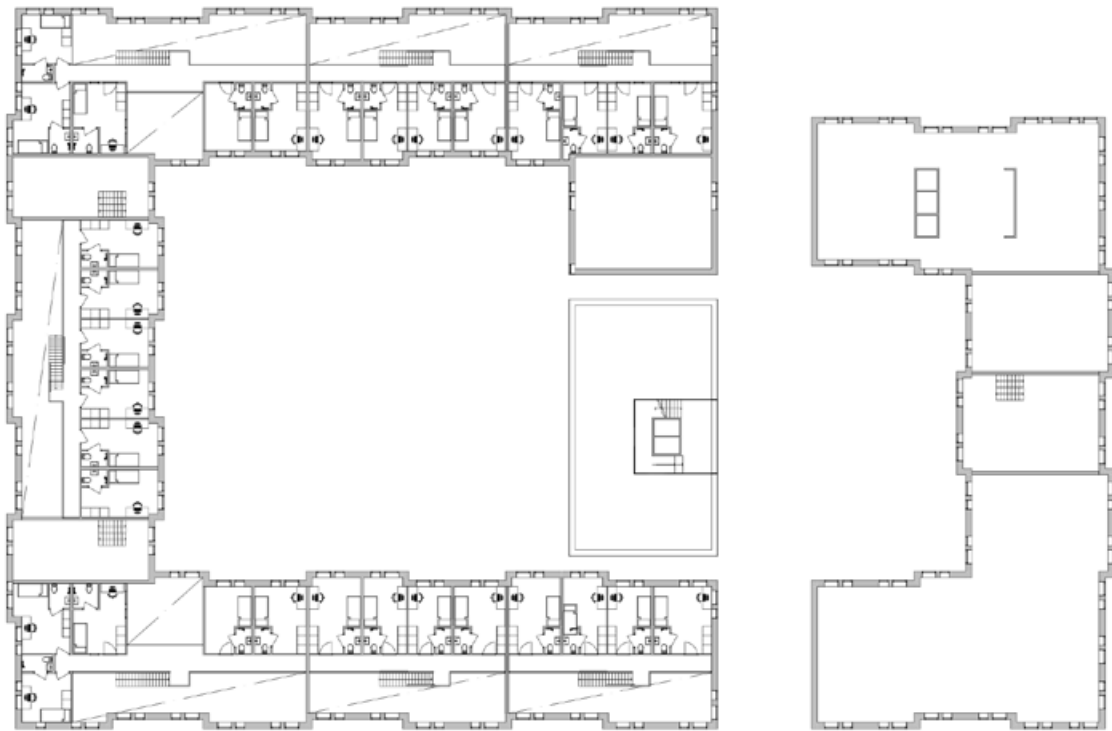
- Circulation
- Co-living
- Common



Scale 1:500

Ground floor loft

The second level of the ground floor are used for bedrooms for the co-living units. The elevated bedrooms provide privacy for the residents.



Scale 1:500

- Circulation
- Co-living
- Common



Scale 1:500

Type plan

The type plan provides different typology's of housing units ranging form co-living units, to individual apartments in different sizes, There are also common spaces containing laundry rooms, guest rooms and a common kitchens to allow the smaller apartments to have guests over.



Scale 1:500

- Circulation
- Co-living
- Common
- One-room apartment
- Two-room apartment
- Three-room apartment



Scale 1:500

Floor 6

The roof of the volume facing the south is utilized as a roof terrace, providing a different green space for the residents. Because of the sites urban condition with high surrounding buildings providing sun to the courtyard during all of the years months is a challenge, by adding an elevated green space the outdoor season is extended.

The small building volume on the roof terrace contain a sauna for the residents and also hosts space for ventilation arrangements.



Scale 1:500

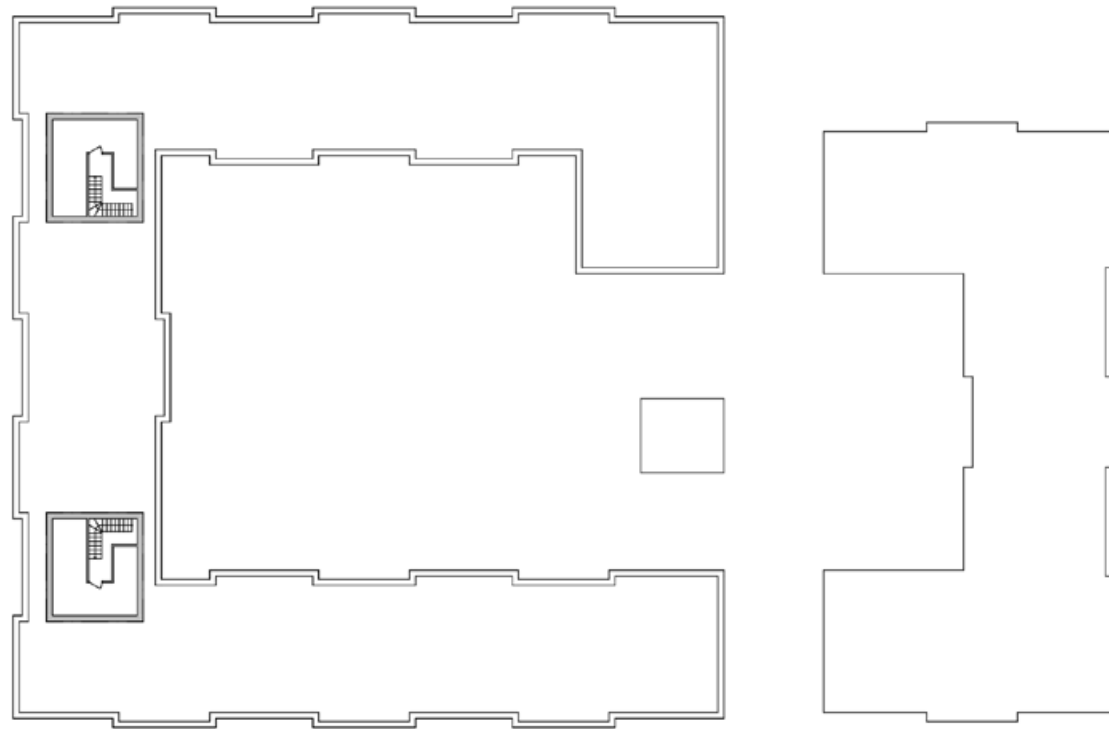
- Circulation
- Co-living
- Common
- One-room apartment
- Two-room apartment
- Three-room apartment
- Technology room



Scale 1:500

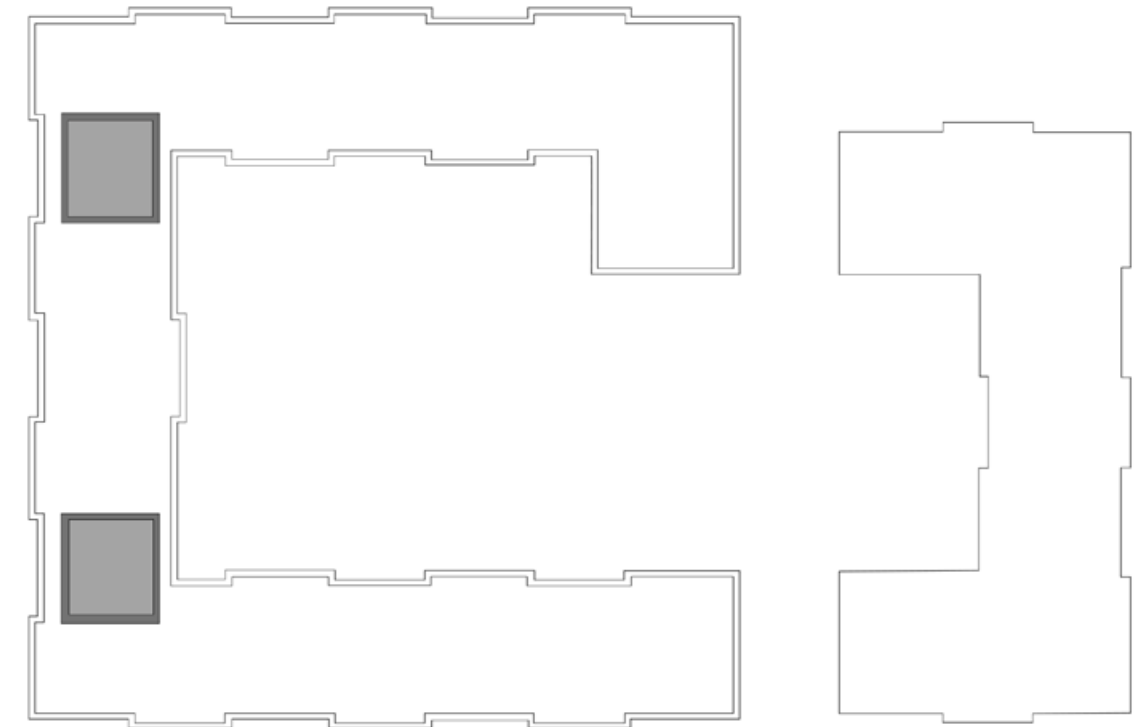
Floor 9

As in the south facing volume the north facing volumes also provide space on the roof to use for ventilation arrangements.



Scale 1:500

■ Technology room



Scale 1:500

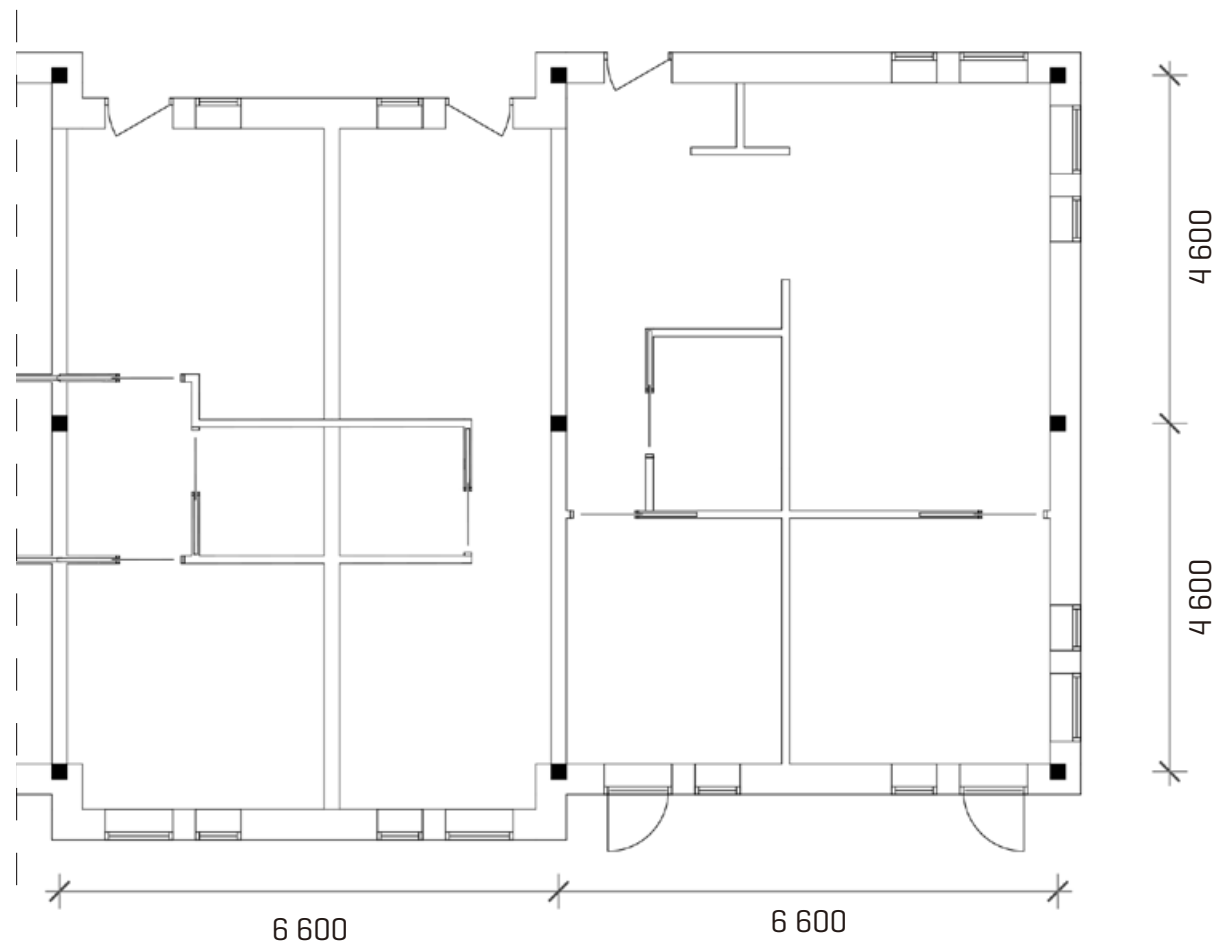


7.7 Section



7.8 Construction grid

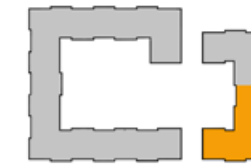
The construction grid in the project is based on the apartment modules which resulted in a grid that 6 600 x 4 600. The width of each module is 6 600 and the depth is 9200. To be able to use a wooden construction a support column was needed, this resulted in the 6 600 x 4 600 mm construction grid.



Scale 1:100

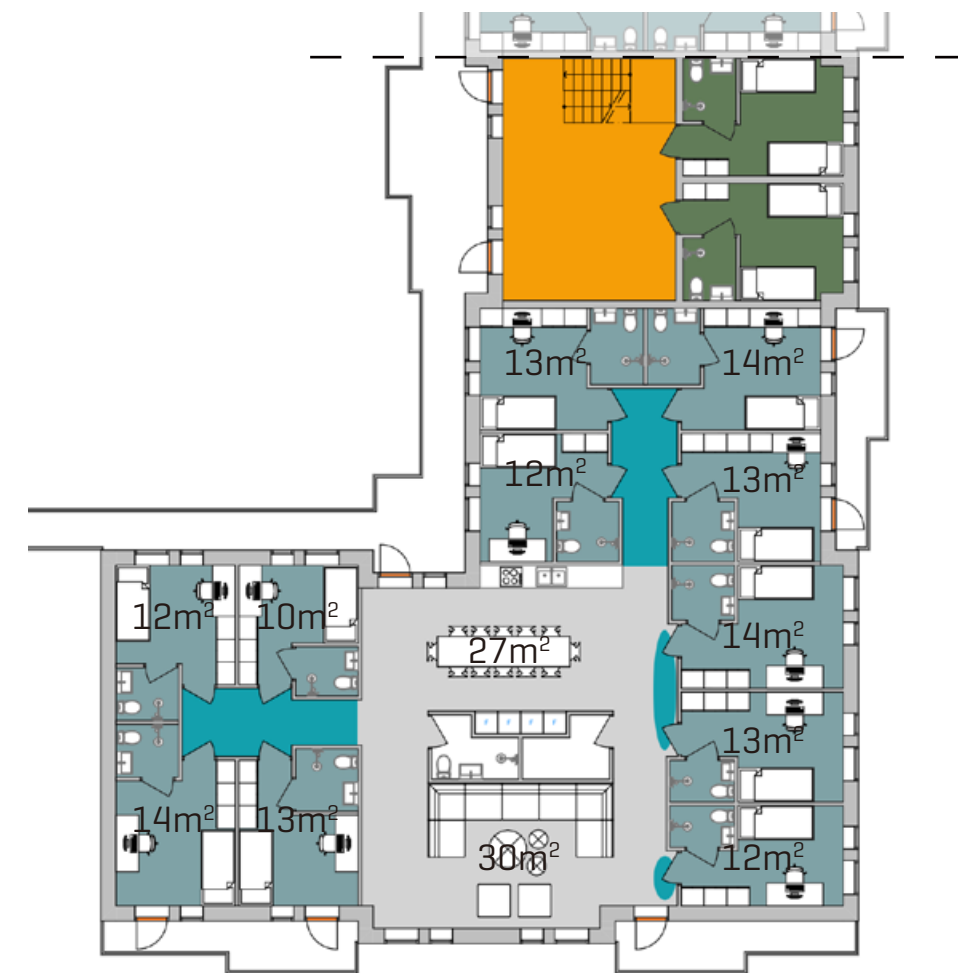
7.9 Co-living

- Private
- Semi-private
- Common
- Circulation
- Visitor bedroom



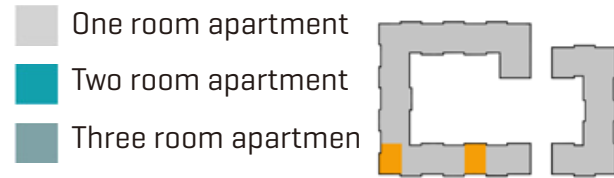
The co-living units in the south facing building are distributed in one floor. The common space are placed in the centre of the housing unit and the private rooms are placed around the common spaces in clusters that creates semi-private zones and a soft transition

between the common spaces and the private spaces. By placing the rooms in clusters the housing units also avoids to have a corridor typology. Outside of the co-living unit, in connection to the stairs there are also bedrooms for visitors. The possibility to have visitors over is important to be able to keep in touch with family and friends from other cities which is one reason that many people in urban areas experience loneliness today [Holt-Lunstad, Smith, Layton, 2010]. Having the possibility to have guests over was also a requested function from the student survey.



Plan 1:200

7.10 Apartment units



There are three different types of apartment units in the project, a one-room apartment, a two-room apartment and a three-room apartment. These units are designed to fit students who live by themselves, in couples, in a family with one child and friends who want to live together. To be able to make the apartments

affordable but also encourage the residents to use the common spaces in the building, the social spaces of the units are quite limited.

The units are designed to fit the construction grid of 6 600, as shown in the image, with either one three-room apartment or two apartments (one one-room apartment and one two-room apartment) within the facade grid.



Scale 1:100



Section perspective

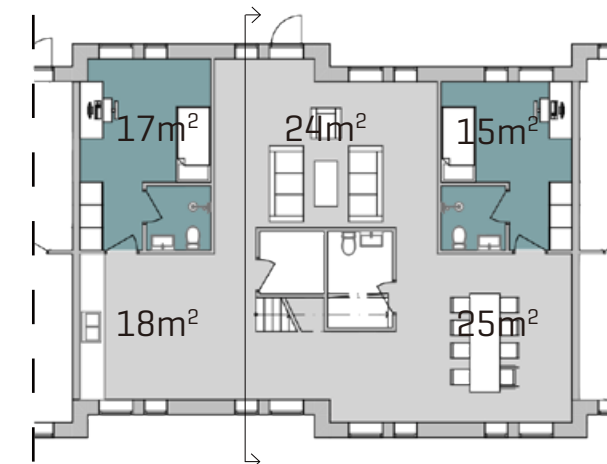
7.11 Co-living ground floor

- Private
- Semi-private
- Common

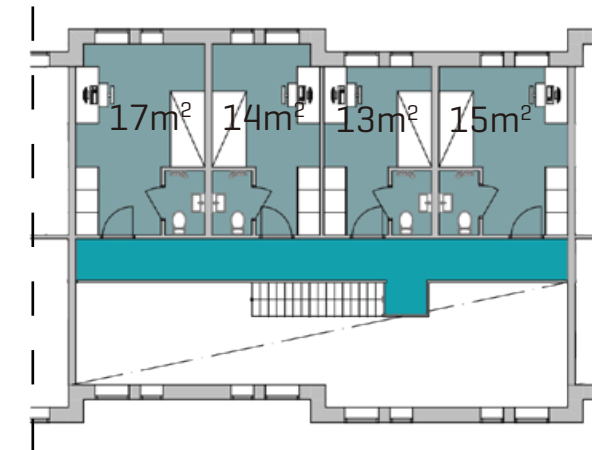
The co-living apartments that are located on the ground floor are a two floor housing solution. Against the external facade common spaces are placed with double ceiling height. The private bedrooms are located against the courtyard to give the residents as much privacy and noise protection as possible.

The majority of the bedrooms are located on the second level, but to offer accessible bedrooms in the co-living units there are also bedrooms on the entry level.

The double height solution creates both privacy for the bedrooms but also a communication between the floors through the double ceiling height. The connection between the floors are creating a soft barrier between the private and the common spheres, which is an important factor to create spaces that supports social interaction. [M. Bednarz, G. Schneider-Skalska, 2019]



Co-living plan ground floor, scale 1:200



Co-living plan loft, scale 1:200



7.12 Facade

There are two different facade materials, the ground floor is in red bricks and the other floors are in wood shingle. To use a stone or brick in the ground floor are common for the region of Gothenburg, commonly called landshövdingehus. The brick facade is also one of the most frequently used materials in Backaplan today, thereby it's a way to keep some of the areas identity.

The wood facade is a new addition to the area, to add warmth and a new identity to the area that's transforming from a commercial area to a housing area.



Fig. 8



Fig. 7

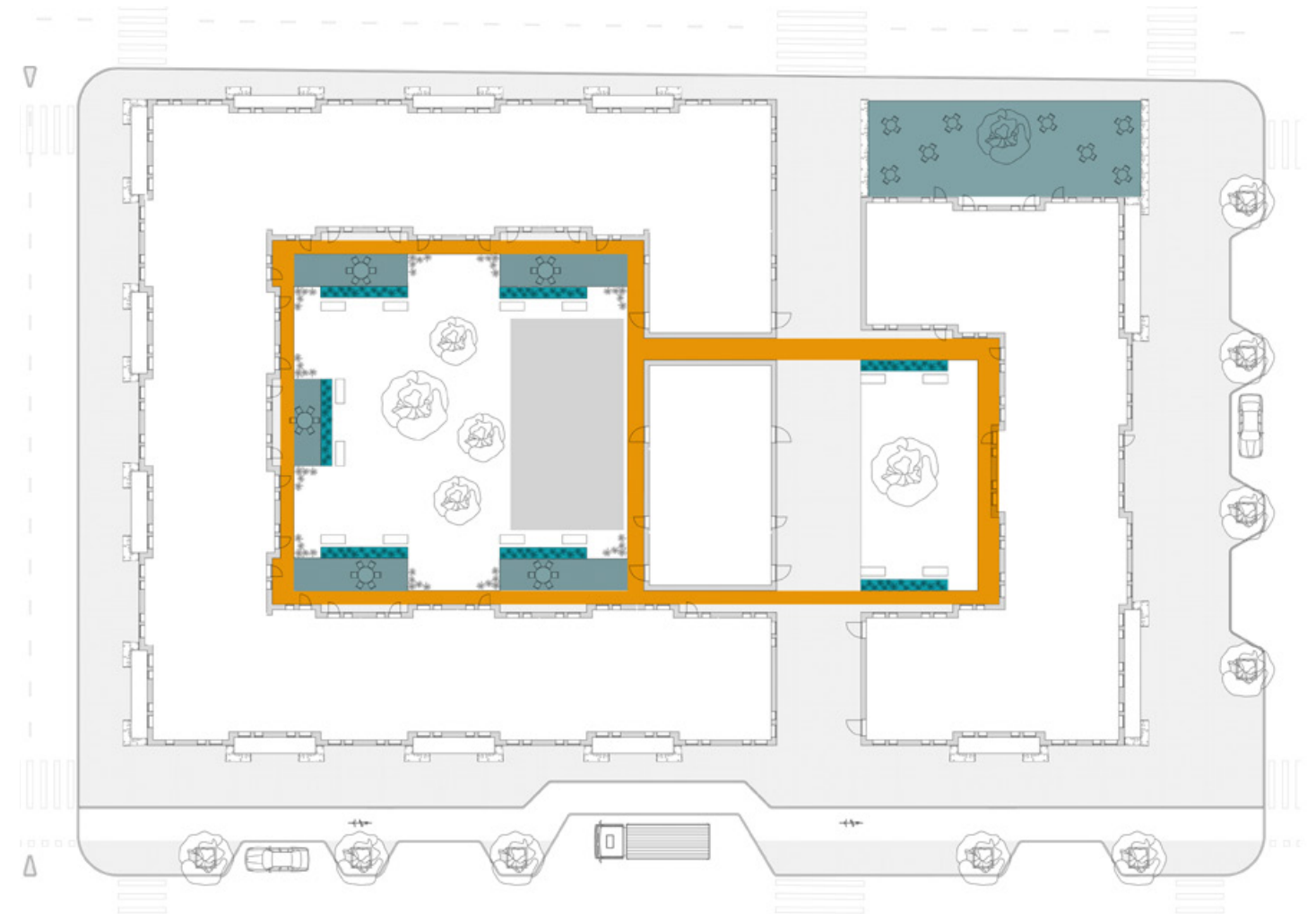
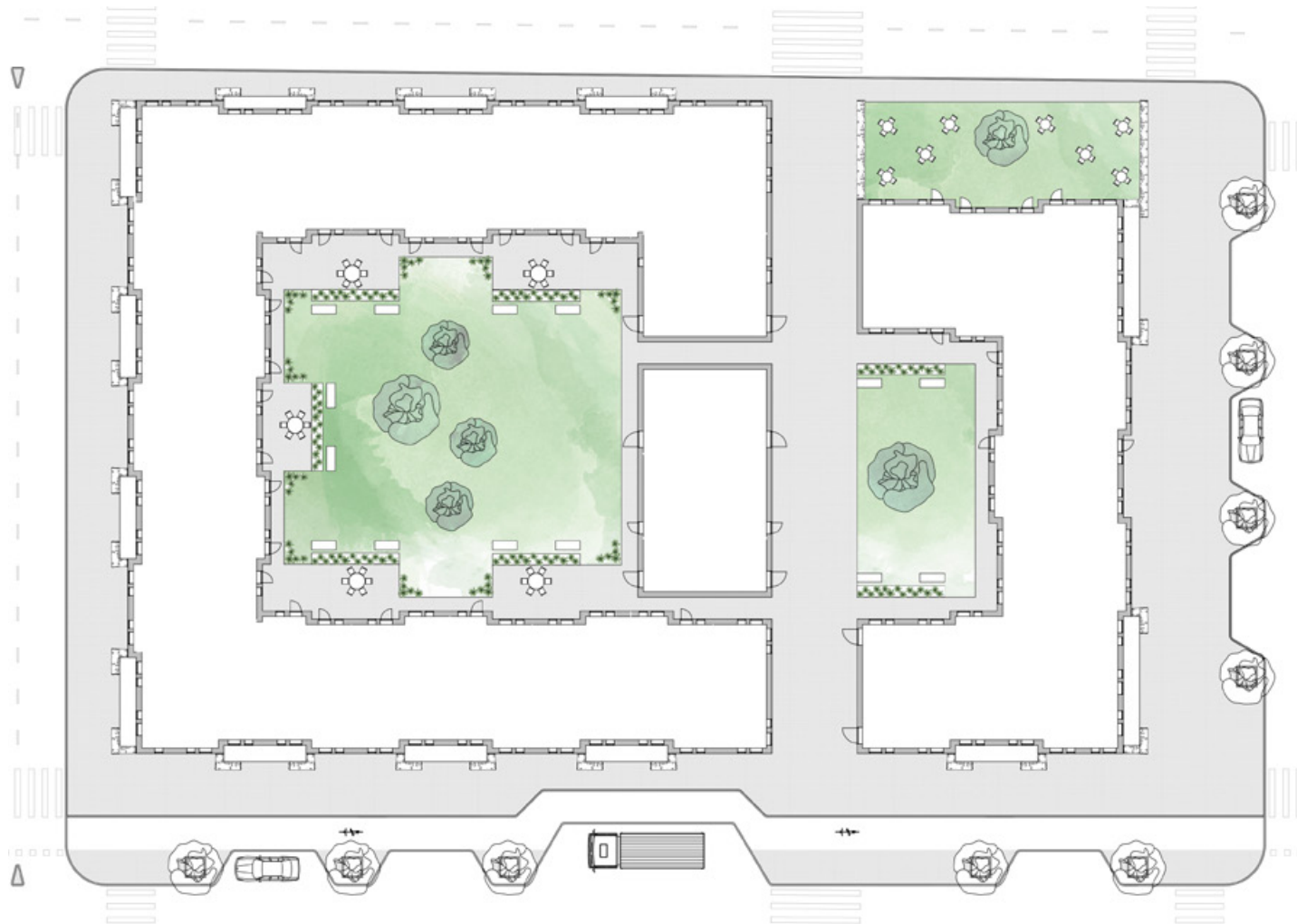


Facade 1:300

7.13 Courtyard

The courtyard is designed to provide the apartments with a view of greenery and incorporate functions that students that participated in the survey desired. Kitchen gardens and spaces to barbecue was functions that were requested in the survey.

- Seating/dinning area
- Kitchen garden
- Open garden space for activity's
- Circulation



8. Conclusion



8. Conclusion

8.1 How can one create housing solutions to benefit well-being and reduce social isolation?

This thesis started off by this question and my intention with the project was to investigate the role of the built environment and to highlight a big health issue in society today, social isolation.

To work with health promotion within architecture on in general can be done in multiple ways, for example to include greenery and to promote physical activity.

However, when it comes to social isolation there are no clear answers to how to solve the problem through the built environment. It is not possible to build to guarantee social interaction between the residents in a housing project. My focus has therefore been to enable social interactions in different ways, for example by creating a range of different outside spaces, guest apartments and focus on expanding the spaces where spontaneous social interaction normally occurs like circulation spaces. I also have taken into consideration the experiences that student has on their current housing situation and adding values that students consider important. I believe that to consider and incorporate the users in projects adds values and enhance the sense of well-being for the users.

The question on how to reduce social isolation and benefit well-being can have many answers. To completely extinguish social isolation through design is not possible. However, as an architect you can design a socially sustainable environments that enables social interactions, which can lead to that residents experiences well-being. In conclusion the built environment does effect how we interact, but a

design can never force interaction happen.

8.2 Reflection on method

It has been an iterative process throughout this project, studies of literature and surveys made to get know my target group better and gradually incorporated new ideas and influences into my design.

Starting off the project I didn't expect the survey to be as helpful to my thesis as it have been, I feel like I got a lot of my inspiration from in and it also made my project focus more on how the we experience housing rather than focus only on evidence based design. But studying both medical and architectural literature I also realized how under discussed human behaviour and psychology is within the field of architecture. I believe that we as architects need to be more aware of how different environments effects us. According to me, there is a knowledge gap among architects when it comes to what actually makes a meeting point a successful or unsuccessful.

8.3 Why is student housing a relevant subject to discuss?

The housing situation is constantly relevant subject since there are a big shortage of housing in Sweden today and in larger cities the housing shortage is an even a bigger problem. Students are one of the groups that are extra vulnerable in the housing market since their weak economic situation. According to Swedish Board of Student Finance [CSN, 2018] a lot of students also suffers from loneliness.

From own experience, talking to student and studying the student housing stock in Gothenburg and also other big university cities I got the impression that the housing stock for stu-

dent is a very homogeneous one, containing of mostly single-rooms in student hall and very small one-room apartments. As I interviewed students through my survey it was clear to me that these apartments does not support the way students live and want to live. I believe academic education becomes more and more important in society and therefore students study longer and are also starting there education later in life. But even if the demographics of students looks different today, student apartments are still very small and only supports single-households.

I believe that the range of typologies of student apartments need to be broader in order to fit different students and their needs when it comes to housing. As an example, a 19-year-old student probably have very different needs than what a 35-year-old student when it comes to housing.

8.4 What have my master thesis added to the discussion?

I think that this thesis can add a few ideas to the general discussion when it comes to student housing. To start with, to stop seeing student as one uniformed target group instead see student as a wide variety of people with different needs, as they really are. I also hope that taking in the user into the design process will be something that this thesis can inspire to and hopefully it will occur more often. Getting to know the target group have helped me a lot in this project and I think that my project shows that getting to know the user a bit better is easier than you think and it can add qualities and well-being among inhabitants.

I also think this project can make mental health issues more visible and the need to incorporate a health perspective in not only healthcare facilities, but also every day environments like housing.

I also hope that this thesis also will spark an discussion about what housing is and what it can be. My view is that housing need to be more than the bare necessities, social qualities and the scene of neighbourhood is important to transform housing to a home.

8.5 Future research on the topic

I think social isolation and loneliness as an health factor is still a very under discussed topic. There are limited scientific texts on the health effects of social isolation and even less information on how we as architects should work to create socially sustainable environments to prevent these problems. I hope that future research will focus on the social aspects of health promotion and also in relation to housing and other everyday environments.

On a larger scale, I think that research on how our modern way of living in urban areas effect our health and social environment. Architects and urban planers need to question what our environment provide for us and how it effects our health. As I see it, the urban environment today are not mainly designed to be beneficial to our health but rather other values as infrastructure are considered first. As our cities are constantly growing how we design urban areas will become even more important. It would be interesting to see research focusing on how cities are planned to promote health and to be socially sustainable.

I realized during this thesis that building for

health promotion within housing probably needs more effort than a individual project. How streets, volumes of adjacent buildings and surrounding green areas have a big influence on whether a housing project is successful or not, therefore I think studying health promoting design on an urban scale is an important research question for the future.

9. References



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Picture & images

Fig 1.

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