

# SUITABLE SUSTAINABILITY

*A housing community designed to improve sustainability in users everyday life*



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## ABSTRACT

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Climate change is a growing issue in today's society. Environmental impact and green house gas emission from the building industry is significant and also expected to rise because of increased wealth, lifestyle changes, and urbanization worldwide. Similar to many other western countries, a large part, 40% of total energy use in Sweden, is attributed to the housing sector.

The ongoing climate crisis increases the demand for more sustainable housing solutions. 65% of the Swedish population think that there are not enough green or climate conscious alternatives on the market today, and see this as an obstacle.

Against this background this master thesis investigates the research question; "How can residential communities be designed to influence and support a sustainable lifestyle?", both in the larger community scale and in the household itself. The goal is to meet the users need with design of dwellings and surroundings that influence residents to make sustainable choices in their every day life. Also to expand the group of people in Sweden choosing to live more climate conscious and make the sustainable dwelling choice more available.

I have the opportunity of collaborating with Ekeblad Bostad, a housing developer in Gothenburg. That contact is helpful in terms of get in contact with the current residents and to understand their economic perspective. A theoretical framework based on literature studies, reference projects and direct contact with current users in form of a questionnaire and interviews are underlaying the concept and design elements that promotes a sustainable lifestyle. These design elements helped shape the proposal that is placed on a site in Ytterby, Kungälv. The final proposal consists of 104 dwellings divided in three household variations, to create diversity and attract a wider range of people.

This master thesis aims to be a contribution to the existing housing stock that present dwellings that allow a sustainable lifestyle in and around the home. The project challenge the traditional way of designing row house communities and focuses on the human perspective.

*KEY WORDS: Sustainable living, users perspective, behavioral design, nudging*



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” You cannot have a new building, ask people to do what they were doing yesterday, and expect something new. That's not how innovation works ”

- Lone Feifer, 10 March, 2016

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# INTRODUCTION





PROBLEM STATEMENT

The climate crisis demands us to change our way of living. We need to lower our ecological footprint drastically in the near future. Building industry contributes to almost a third of global CO<sub>2</sub> emissions according to Huebner and Shipworth (2016). The UN global goals are in many ways focusing on problems which the building sector can influence such as clean water, energy and sustainable cities. What we build in the future need to adapt to new sustainability goals and have a lower environmental impact.

Swedish citizens are compared to other countries well informed about the climate change. 84% of the Swedes describe themselves as climate conscious and almost everyone, 95%, think that we will be affected by the environmental change in the future. (Gullers group report, 2018) Despite this knowledge we do not take enough action.

In my view, the current solutions consist of either extreme alternatives with totally self sufficient homes on the country side, expensive high-technology housing alternatives or traditional dwellings in the city with low effort to allow a sustainable lifestyle. This perception reflects the population's where 65% think that there are not enough green or climate conscious alternatives on todays market. (Gullers group report, 2018)

This thesis aim to meet the lack of climate conscious housing alternatives for people choosing to live Eco-friendly in a row house context.

STUDENT BACKGROUND



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EDUCATION AND EXPERIENCE

BACHELOR 2014-2017	CHALMERS UNIVERSITY OF TECHNOLOGY
INTERNSHIP 2017	RSTUDIO (fall)
INTERNSHIP 2018	EKEBLAD BOSTAD (spring)
MASTER 2018-2020	CHALMERS UNIVERSITY OF TECHNOLOGY ARCHITECTURE AND URBAN DESIGN (MPARC)
Residential healthcare	Dementia village, Önnared
Sustainable architecture	Zero emission school, Hisingen
Healthcare architecture	High tech hospital, Lund
Student competition	BO2049, Miljon

**” How can residential communities in Sweden be designed to influence and support a sustainable lifestyle? ”**

.....

**” How can the planning of a single family house be developed in order to improve sustainability? ”**

## RESEARCH QUESTIONS

.....

### WHAT?

The aim of this thesis is to create a design concept of a housing community to illustrate how architecture can influence users and facilitate a more sustainable everyday life. The produced concept will be applicable on various sites but it is site specific in the proposal in order to test and develop the design.

### WHY?

The purpose of this master thesis is to investigate today's use of the neighborhood and how design can influence users to make sustainable choices in their lives. The proposal works as a complement to the current housing stock and to broaden the group of people choosing to live more climate conscious in an ecological, economical and social way.

### WHAT PARTS OF SUSTAINABILITY?

This thesis is focusing on sustainability in and around the household. The community is supposed to be designed to favor; sustainable transportation alternatives to lower residents CO<sub>2</sub> emissions, resource sharing to reduce the amount of tools and equipment owned and social sustainability in form of a neighborhood with strong community feeling.

The households will be designed to facilitate functions on a reduced amount of square meters with small private areas and larger shared parts. Also to make the household sustainable over time, adapting to the residents changed needs.

## METHOD

### HOW ?

The methods of this thesis are both Research for design, meaning that collected information is analyzed and work as a ground for the proposal, and Research by design explained as the design process strives to link theory and design. (Martin and Hanington, 2012)

### LITERATURE STUDIES

Literature studies are presented in the theory chapter, these work as a base for the design. The themes of the studies are; nudging, behavioral science, sharing and social outdoor environment.

### USER PERSPECTIVE

The research also starts in Ekeblad Bostad's existing projects and the residents needs. The chosen group of people seem to have knowledge in eco-friendly living but are at the same time limited in economical resources and time in their everyday life. Knowledge about users needs is collected both by questionnaires and interviews.

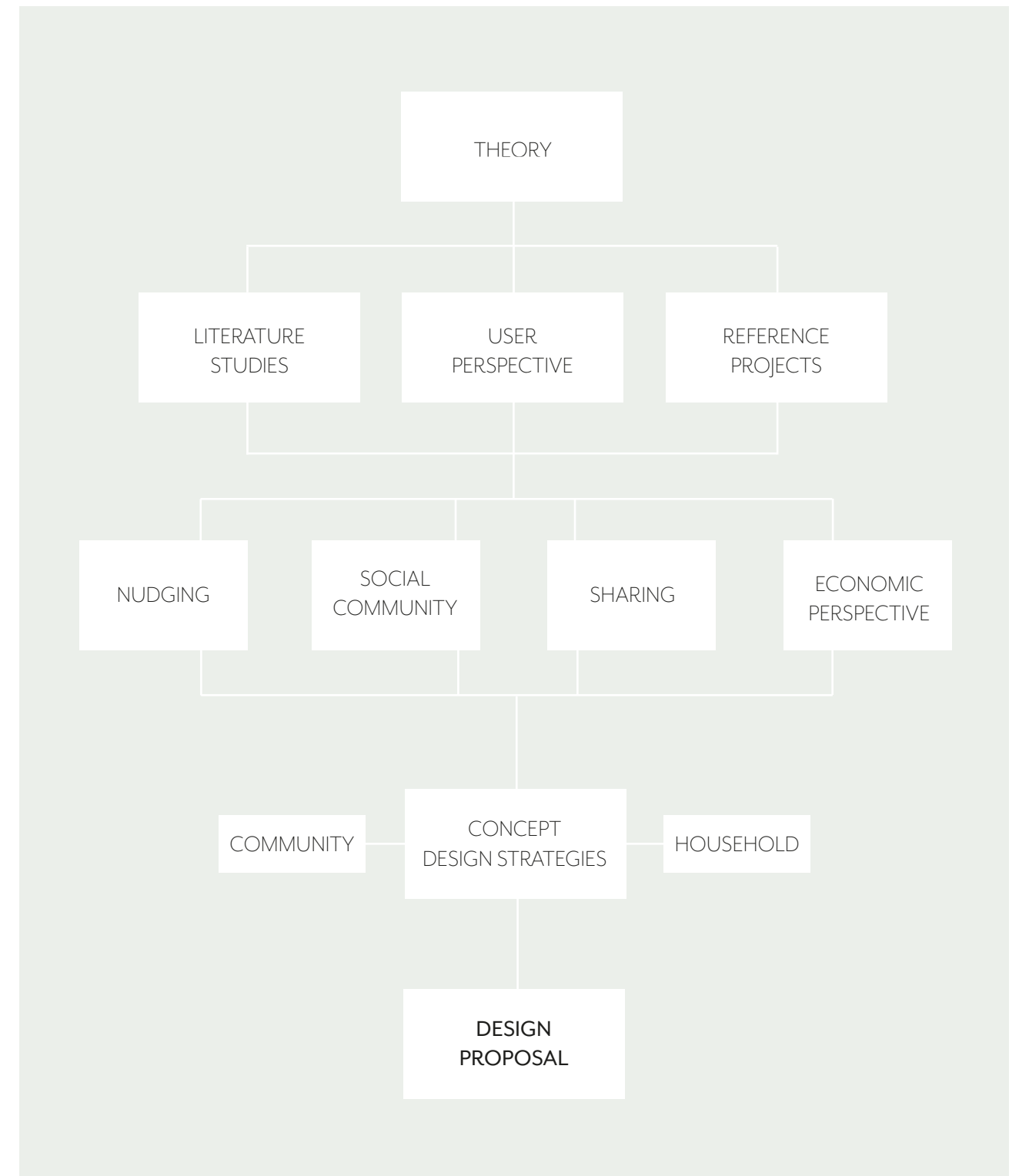
### REFERENCE PROJECTS

Relevant existing projects are compared and analyzed in relevant cases; such as project size, sustainable components and positioning on a scale from private housing to community.

### DELIMITATIONS

The main focus is on design and architecture of households and their close surrounding. The proposal will contain a larger amount of households in an out-zoomed scale, in order to understand the community. Specific parts of the site map will be investigated in the floor plan-scale of the households. This thesis only investigates building materials and technical solutions in a broader overview, not in technical detail.

## PROCESS PLAN



EKEBLAD BOSTAD

collaboration partner

Ekeblad bostad is a housing developer, founded in 2010 in Gothenburg. The company consists of project managers, architects and building engineers and have produced around 1000 dwellings all over Sweden. Ekeblad describes their values as consideration about the local context and architectural design where the human is in focus. Their main occupancy is to design, build and sell condominiums, mostly row- and semi-detached houses. The concept is to facilitate as much function as possible in a compact area with a smart square meter layout. A standardized process reaches good knowledge and keeps the cost down.

Ekeblad’s main target group consist of young adults and families with specific needs and limited resources in economy. Their business idea is to establish households with an attractive cost for this group of people. My connection to Ekeblad bostad is that I did an internship at their office and have also been working there for the last three summers.

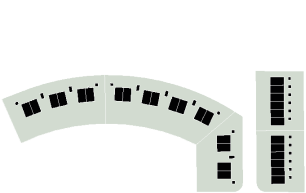
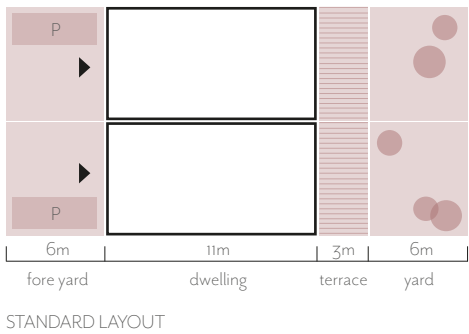
” We want to create affordable dwellings for more people, where it is easy to live in a sustainable way ”

- Ekeblad Bostad

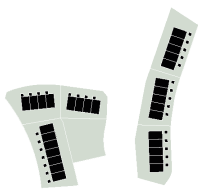


REFERENCE PROJECTS

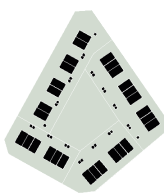
Ekeblad is running projects all over Sweden using their standard houses. Their residential areas are often designed in a way, that follows the accessible street, with sometimes a common green area for the residents to share. Below three existing projects are presented and compared. This row house design concept will be challenged and developed in this master thesis. Below you find information about three projects of Ekeblad compared in size and context.



TRÖINGE



EKEBERG

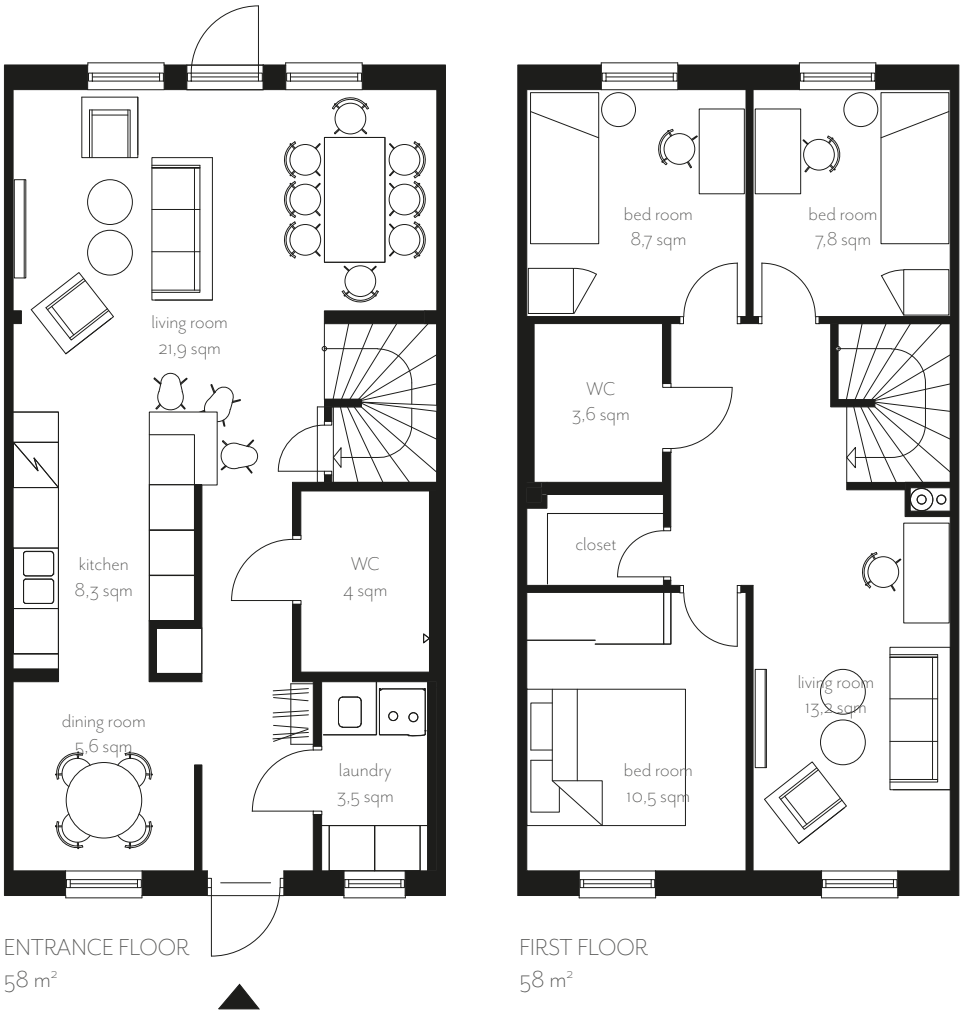


LÄKEÖRTEN

PROJECT:	TRÖINGE	EKEBERG	LÄKEÖRTEN
LOCATION:	Falkenberg	Lödöse	Jönköping
YEAR:	2018	2016	2020
DWELLING:	112,5 sqm	112,5 sqm	115 sqm
ROW HOUSES:	12	30	21
SEMI-DETACHED :	18	0	8
COMMON AREA:	none	playground	yard, playground, visitor parking
DISTANCE TO :	0.5 km to service + train	0.7 km to service	1,5 km to service (500 m school)
EXTRA:	solar PVs on roof	none	solar PVs on roof + electric bike

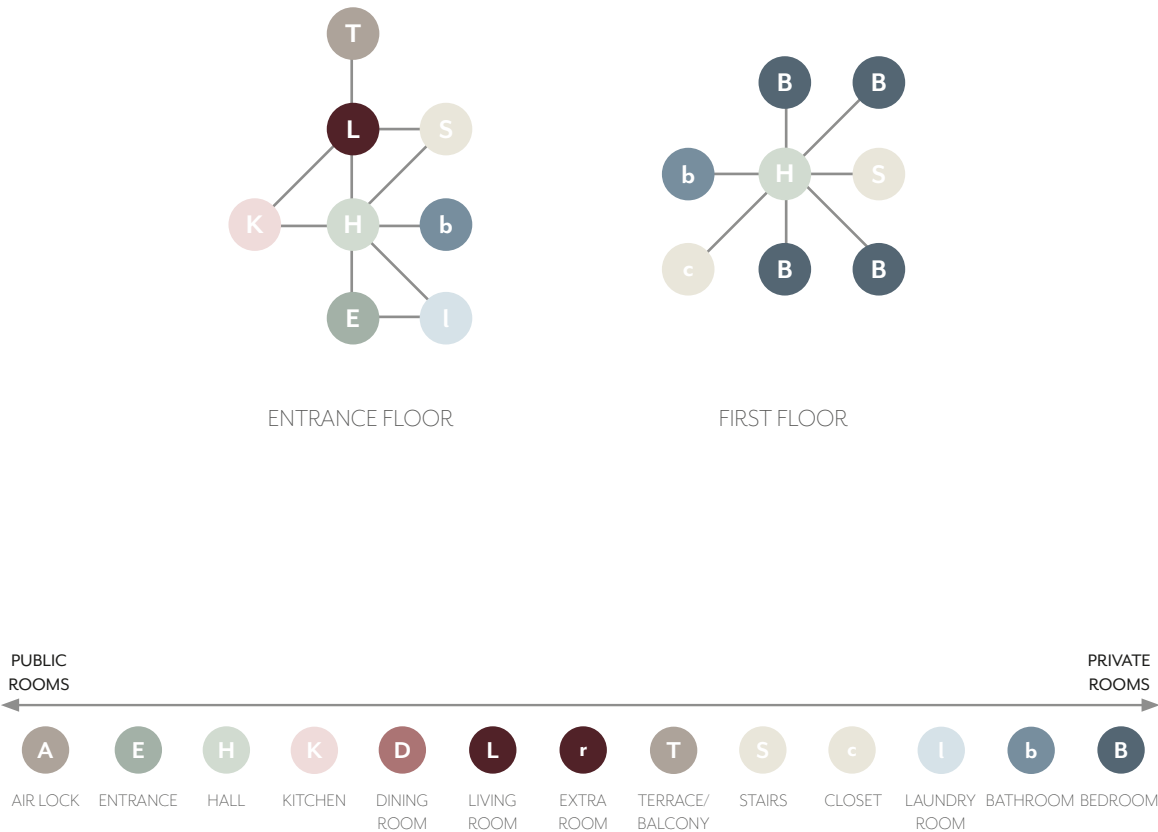
STANDARD FLOOR PLAN

row-house 115 sqm



SPACE SYNTAX

the social logic of space



To understand the life and flow within Ekeblad´s standard floor plan the connections between rooms are important. The plan is logic with more private areas on the first floor and public rooms with easy access on the entrance floor. The sequence of rooms goes from functional to more social

toward the garden. My personal perception of the plan is that it seems efficient and square meter smart but quite narrow and deep with two communication areas that take up living space.

THEORY



NUDGING

There are different ways to influence people's behavior in order to make a change in a sustainable direction, nudging is one of them. Nudging is a relatively new way to help people make choices without changing their values. (Oksana Mont, Matthias Lehner, Eva Heiskanen)

The Nobel prize winners behind the book “Nudging” explain the concept as a way to design choice architecture, to encourage small behavioral changes. (Thaler, R.H.; Sunstein, C.R, 2008)

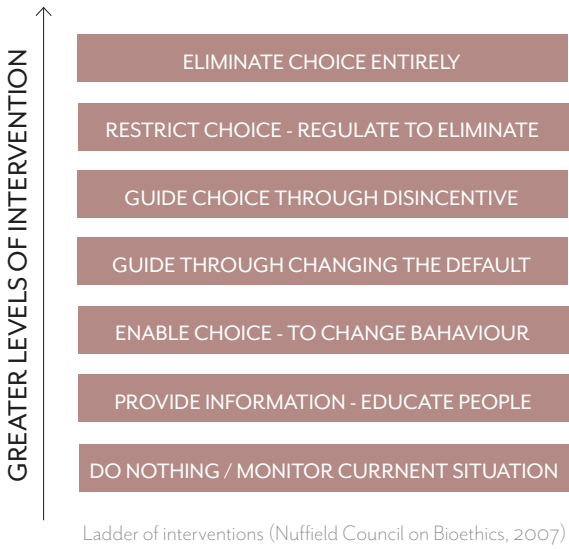
There are various ways of approaching nudging, you arrange the situation to make the easiest option be the one with most desirable outcome. It happens almost automatically, without restricting the diversity of choices, only improving the one option mentioned. Nudging can be about simplifying information and change the way it is presented. (John et al. (2013: 9)

Nudging can be done in a wide range, a few examples are; simplification of information, informing people of consequences, default rules, warnings, reminders and use of social norms. (Cass R. Sunstein). Default rules are a form of nudging, where the particular choice is automatic, for example text on both sides when printing. (Sunstein, C.R.; Reisch, L.A) Design that focuses on environment or a sustainability-oriented default behavior is also called “green default” (Sintov, N.D.; Schultz, P.W.)

Nudging is a useful strategy for inducing changes in context-specific behavior, but it is not yet a well-developed theory. It is an appropriate tool for small changes in order to design better “choice architecture” where a level of detail is required. (Oksana Mont, Matthias Lehner, Eva Heiskanen). Several research show that the physical setup plays a large role of how people act. For example recycling facilities with an attractive design, convenience for the users and clear guidance have been successful factors. (Oskamp et al. 1996; John et al. 2013).

”Nudge means carefully guiding peoples behavior in desirable direction without using either carrot or whip. Instead when nudging one arranges the choice situation in a way that makes desirable outcome the easiest or the most attractive option. ”

- Mont, Lehner, Heiskanen, 2014, p. 7



BEHAVIORAL SCIENCE

Everything we design influence the user in one way or another. As Thaler and Sunstein say, there is no such thing as “natural design”. Where rooms are located will influence the flow and how people will interact with each other in a building. (Thaler, R.H.; Sunstein, C.R.)

Today’s society increases the attention paid to the environmental impact on residential housing. (Michael, M.; Gaver, W. ) In order to make a change for the climate, households need to be designed differently in combination of people changing their lifestyle. Due to Lone Feifer the design can facilitate the possibility of making environmental-friendly choices, but design and behavior need to go hand in hand. (Lone Feifer)

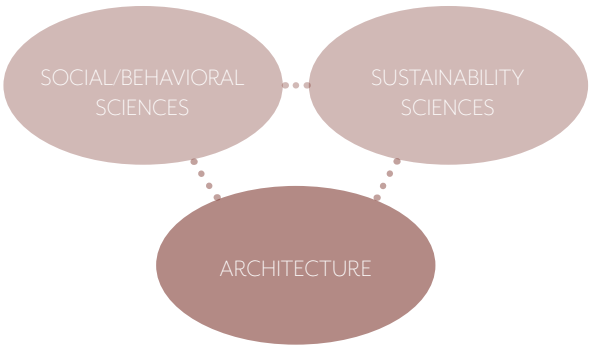
Lara Anne Hale states that there is a connection between the inception of default rules and large scale behavioral change toward sustainability. (Hale, L) By making the sustainable behavior the green default and other selections more challenging. (Sunstein, C.R.; Reisch, L.A.)

To influence human activities, it is important to gain understanding of everyday practices, what people do in their homes, living standards and the social norms. Different groups of people have different needs and living patterns to design for. (Hagbert, 2016)

Hagbert states that there is a lack of perspectives in the building sector when designing new residential environments. The architects have a rather shallow understanding of everyday activities and are adapting to a growing individualism and increased costs instead of designing for a smaller environmental footprint. (Hagbert, 2016)

” The challenges of developing existing and future sustainable residential environments depend on a broad approach to understanding home, in which social and behavioral sciences will need to play a larger role.”

(Hagbert, 2016, p. 74)



Bridging disciplinary boundaries for integrated research  
Redesigned diagram (Hagbert, 2016)

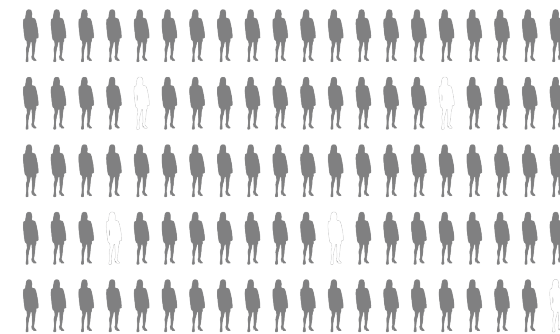


## SWEDEN TODAY

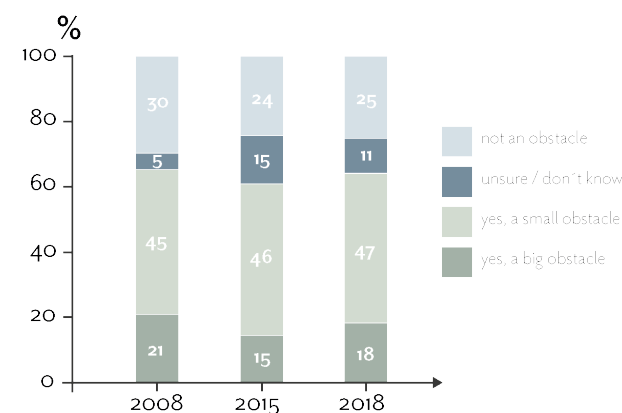
Swedish people seem to have good knowledge about the climate change. More than four out of five Nordic citizens are concerned about the environment (Gullers group rapport, 2018). Yet we have to develop radically to reach a sustainable living standard.

In order to verify the Swedish population's knowledge and attitude regarding climate issues over time, the Swedish Environmental Protection is performing a questionnaire survey. The survey included about 1000 people of different ages in 2018. (Gullers group rapport, 2018). To the right you find important results and statistics from the survey.

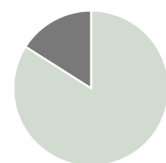
General patterns can be found in the results from the report. Some groups of people; young adults (18-29), highly educated people, students and city dwellers have a more positive attitude and believe to a greater extent that the climate change in Sweden is responsive. Obstacles to live with a lower ecological footprint seem to be partly caused by the lack of sustainable alternatives, deficient public transportation and rural areas without necessary services. (Gullers group rapport, 2018)



95 % of the population think that Sweden will be affected by climate change in the future.



65% think that there are not enough green or climate conscious alternatives, and see this as an obstacle.



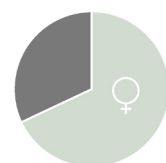
84% of the people describe themselves as climate conscious.



34% feel like they lack information about how to reduce their climate impact. (This number has decreased by 10% since 2015)



49% often or sometimes feel bad when doing things which have a negative climate impact, mostly young people and women



68% of the women think it is very important to take action to reduce climate change



44% of the men think it is very important to take action to reduce climate change

All diagrams are redesigned: (Gullers group report, 2018)

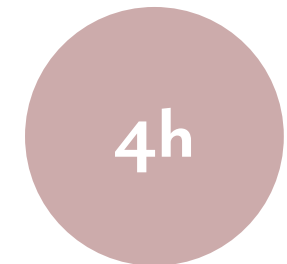
## SHARING

The community of a neighborhood has once again become an important aspect for design and people are more interested in who lives next door. (Becker et al, 2015). The community and environment will affect the overall feeling of the society. Many people consider the relation to the neighbors as the most important aspect in a residential community. (Olsson et al, 1997).

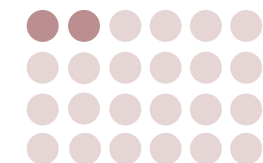
Olsson states that semi-private spaces, such as courtyards and staircases are the most important ones for creating social interaction. They allow conversation, casual meetings and interaction with other neighbours without getting them too close. How these random interactions appear affects the safety and comfort feeling in the neighborhood. (Olsson et al, 1997)

Our society has been hyper-individualistic in the recent 50 years. Those who have grown up during this time have no experience of sharing resources or equipment. (Botsman & Rogers, 2011) Our view on collaboration is now changing with climate change and our understanding of limited ecological resources deforms.

With collaborative consumption you encourage access to things rather than owning them yourself. This is a way to utilize underused resources. (Minimerismästarna, 2019). In different scales communities are now starting to share resources, companies for carpools, clothing and common tools are appearing.



A LAWN MOVER IS USED **4 HOURS** PER YEAR IN AVERAGE



A CAR IS USED ONLY **2 HOURS** PER DAY IN AVERAGE



A POWER DRILL IS USED ABOUT **25 MIN** DURING IT'S ENTIRE LIFESPAN.

All diagrams are redesigned: (Botsman & Rogers, 2011)

LIFE BETWEEN BUILDINGS

Physical environment is one of the factors that influences the outdoor activities. Jan Gehl divides activities into three categories; necessary, optional and social. Necessary are the “compulsory” ones like going to school / work and running errands. The optional activities are the things we do if time and place let us, for example taking a walk or sitting in the sun. This category is very much influenced and depending on the surrounding physical environment. The social activities depends on other people in public space, for example children playing, conversations and “passive” contact. (Jan Gehl, 2011)

The contact with other people correspond to the activities happening between buildings. Human activities attract others, “People come where people are”, therefore even low-intensity contact like cross by a neighbor is important because it often grows into a larger contact during time.

Built environment can affect inhabitant’s social situation, the more residents are outdoors, the more they meet. The way an area is designed will affect both the people using the space and what activities that will appear. An area with long distances between buildings creates poor outdoor environment with few activities, while a high density area with lower, closely placed buildings, where pedestrian traffic is prioritized, will create a larger flow of people. (Jan Gehl, 2011) Interaction between people will increase when street speed is reduced, since the visual range increases. Due to Jan Gehl slow traffic means lively cities.

In Scandinavian residential areas, small housing groups of 15-30 dwellings seem to work well encouraging social situations. A movement from private to gradually more public areas attributes to a greater feeling of security and a stronger sense of belonging, therefore the hierarchy of communal spaces is important. How buildings are placed on a street in relation to the pedestrian paths will also affect connection and interaction between people.

” If the choice is between sitting in a private backyard or in a semiprivate front yard with a view of the street, people will often choose the front of the house where there is more to see. ”

- Gehl, 2011, p. 25

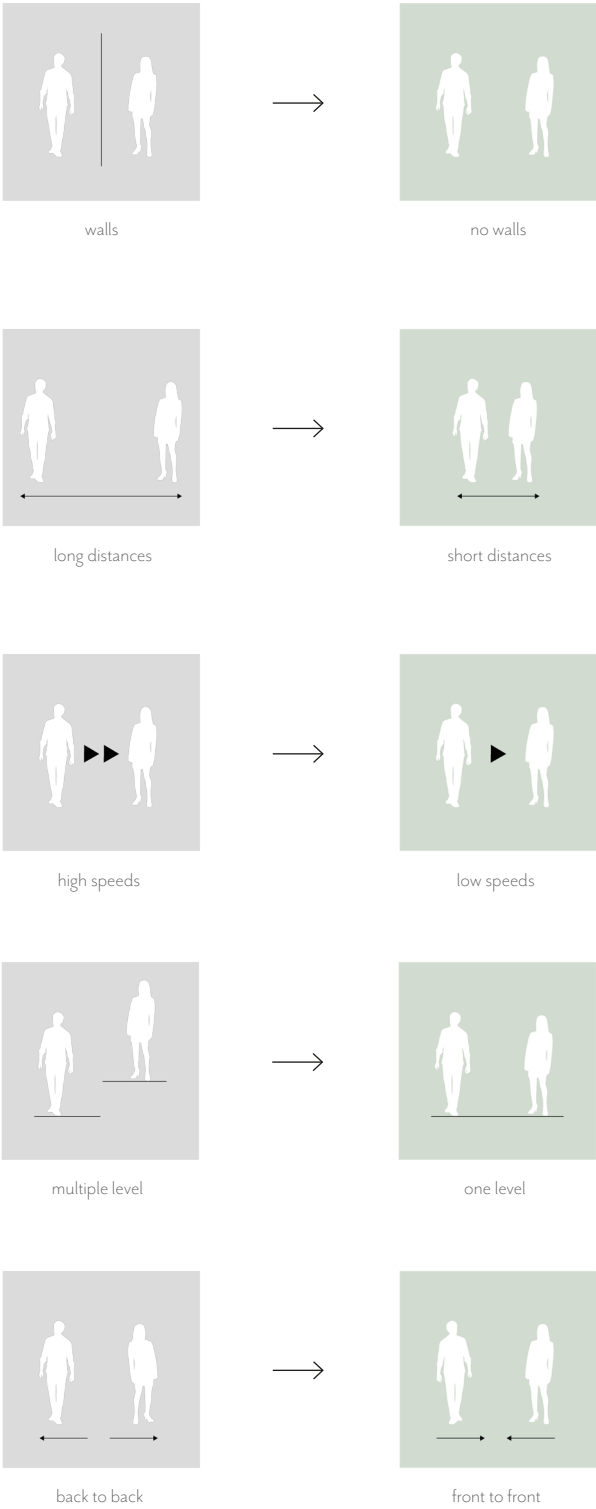
PROMOTING CONTACT

Necessarily services should be reachable within 400-500m since it is a good distance by foot. Young children seldom move more than about 50 m from their front door. The building design itself can influence contact, meetings and activities, the entrances should be placed facing each other for visibility. (Jan Gehl, 2011) Long straight pedestrian paths should be avoided, by winding and open up the road with small squares the walking distance will experience shorter.

In residential areas where cars drive right up to the front doors seem to have a substantially reduced activity amount in public and common spaces. In residential areas where the cars are parked 100-200m from the residence, streets are more crowded, also the informal meetings between neighbors are increased. (Jan Gehl, 2011)

Sight lines are important. William H. Whyte’s studies from New York City resulted in if people do not see the space, they will not use it. In order to make public areas inviting, they should be easily accessible and encourage people to move from the private to the public area. A semi public zone in between will work as a connecting link and a sight line from one zone to another can also be an invitation. (William H. Whyte)

If activities within the house can flow freely in and outdoors, the social aspect increases. This may imply, for example, that there should be doors directly from the kitchen, dining area, or living room to the outdoor areas on the public side of the house, toward the street. A semi private front yard will support further outdoor activities, it works as a transitional zone between the private dwelling and the public access street. A tested dimension of front yards are 4m, long enough to create privacy for residents and close enough to the street to permit contact with the surrounding and neighbours. (Jan Gehl, 2011)



All diagrams are redesigned: (Jan Gehl, 2011)



## REFERENCE PROJECTS



## EVALUATION METHOD

The reference projects are all analyzed and compared by an evaluation method. More reference projects are presented in the appendix in the end of the booklet.

### NUMBERS

The projects are compared in dwelling size, typology, and how many households that constitutes one block. Distance to service defined by supermarket, train station and shops, is also taken in configuration as well as distance to public transport.



### SHARED RESOURCES

The projects are compared regarding what shared resources they have access to.



### POSITIONING

Each project is placed on a gradient between private housing, with low sharing and community, where resource sharing is high.



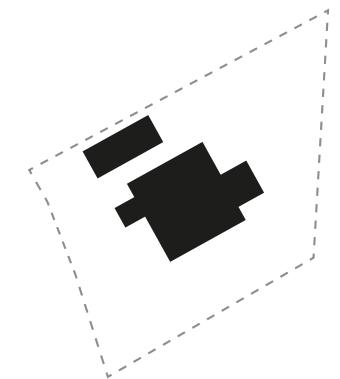
## ONE TONNE LIFE

Hässelby, Stockholm

ARCHITECT: Wingårdh arkitekter

YEAR: 2011

SIZE: 312 m<sup>2</sup>

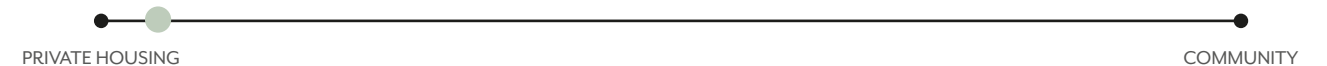


### ABOUT THE PROJECT

One tonne life is a pilot project where a family decided to lower their CO<sub>2</sub> emissions with 80% in six months (from 7,2 to 1 tonne CO<sub>2</sub>/person and year). The family wanted to upgrade their home, car and food intake to a more sustainable option. The 156 sqm villa is a prefabricated wooden house in two floors. The floor plan is flexible to be able to extend and reduce area in the future. The southern facade and roof is covered with solar PVs. Windows in the South contains a sun shading system to block off the high summer sun and let the lower winter sun in for warming up the dwelling.

### WHAT I BRING WITH ME

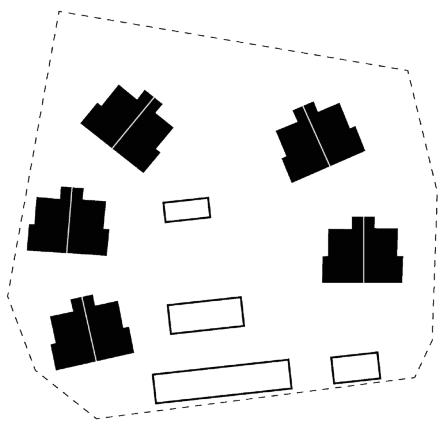
- Airlock and entrance situation
- Sun shading around windows
- Flexibility / adaptability in floor plan



BRIGHT LIVING

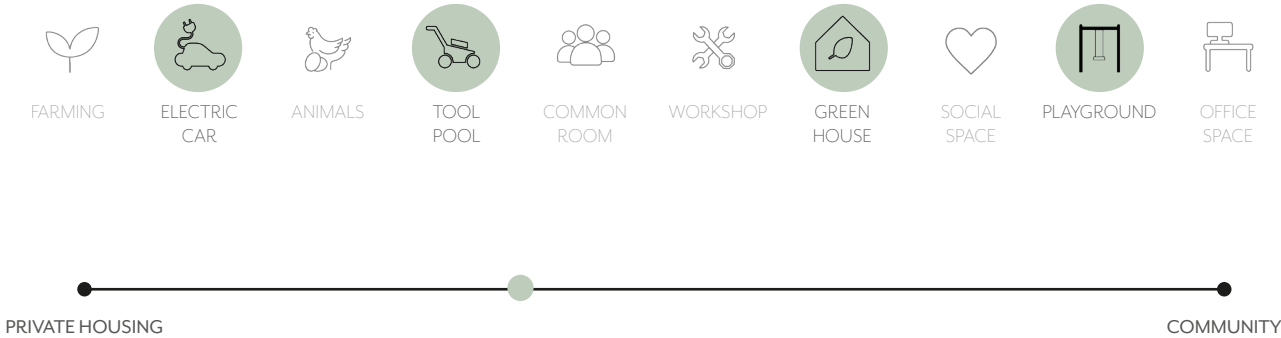
Alingsås

ARCHITECT: Kjellgren Kaminsky  
YEAR: 2015  
SIZE: 1.250 sqm



**ABOUT THE PROJECT**  
Bright living consists of ten climate-smart dwellings placed in the nature outside Alingsås. The buildings are certified with "Svanen" and are built in passive house standard. The households share a common green house in the garden and also have access to an electric car in the carpool. Solar PVs are installed on the roofs. Bright living focuses on a life cycle perspective of the buildings and long-term environmental friendly solutions.

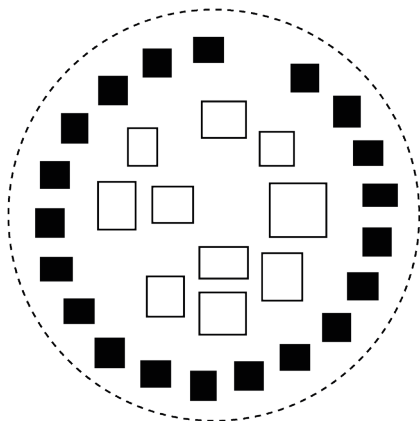
- WHAT I BRING WITH ME**
- Houses are carefully placed to fit in the nature
  - Building shape and orientation is creating private pockets
  - Community feeling with central common outdoor area



REGEN VILLAGES

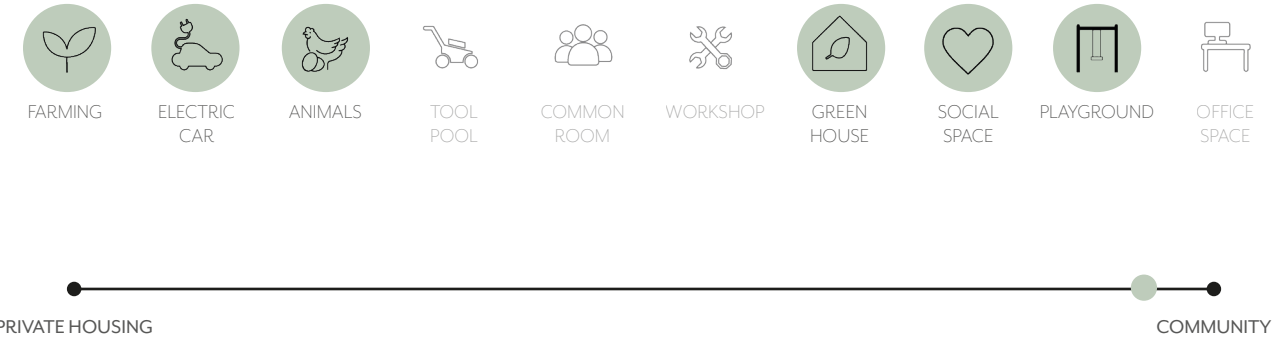
Almere, Holland

ARCHITECT: EFFEKT architects, Denmark  
YEAR: 2016  
SIZE: 15.500 sqm



**ABOUT THE PROJECT**  
ReGen village is a totally ecologic solution with high tech, self supported households. The planned community grows its own food, uses its own energy and takes care of its own waste on site, every household works as a small nutrition system. Solar energy is the biggest resource and about 50% of the human food intake is possible to grow on site by green houses and aquaponic systems. A community contains of 25 households (3000sqm) and includes eight different house typologies, they are all passive heated, have natural ventilation and collect rain water from the roof.

- WHAT I BRING WITH ME**
- Shared resources are placed in between dwellings
  - Integrated green houses
  - Clear zones for private, semi private and public space





## VOKSENHAGEN

Hovseter, Oslo

ARCHITECT: Kari Nissen Brodtkorb AS

YEAR: 2012

SIZE: 50 dwellings (7025 sqm)

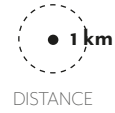
127-160m<sup>2</sup>  
HOUSEHOLD



ROW HOUSES



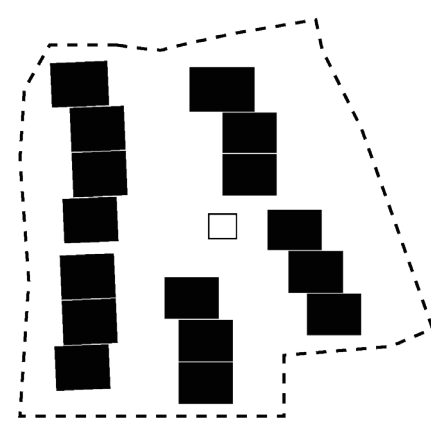
CLUSTER



DISTANCE



90 m



### ABOUT THE PROJECT

Voksenhagen is a residential area where the buildings are placed in the landscape and nature with a high exploitation which creates a great variation. The cars are parked outside the residential area, which gives a car free zone and child-friendly environment. The small road in between the volumes, can only be driven on in case of emergency. The inviting outdoor areas have sitting spaces, playgrounds and vegetation. The area consists of 50 households from 127 - 162 sqm, in 2-2,5 floors, all with private roof terraces. There are schools and preschools in the area, the closer one within 400 m. Within 700m the train station is reached which takes you to Oslo City in 10 minutes.

### WHAT I BRING WITH ME

- Social feeling with short fore yards
- Small terraces and gardens creates privacy
- Narrow walking paths between houses
- Activities placed along the street



FARMING



ELECTRIC CAR



ANIMALS



TOOL POOL



COMMON ROOM



WORKSHOP



GREEN HOUSE



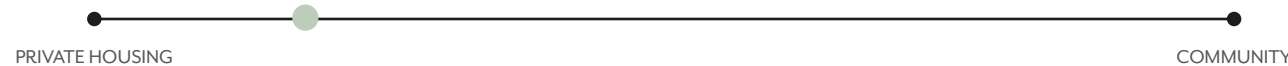
SOCIAL SPACE



PLAYGROUND



OFFICE SPACE



## ÄPPELTRÄDGÅRDEN

Västra Frölunda, Gothenburg

ARCHITECT: White

YEAR: 2011

SIZE: 75 households

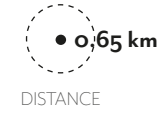
134m<sup>2</sup>  
HOUSEHOLD



ROW HOUSES



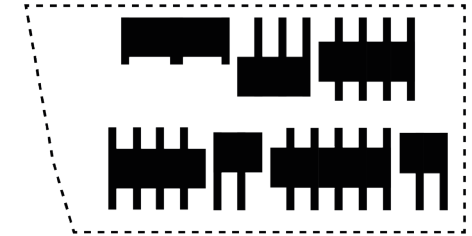
CLUSTER



DISTANCE



300m



### ABOUT THE PROJECT

Äppelträdgården is a small scale residential project placed in a context of high rise million home- program dwellings in Västra Frölunda. The area focus on smaller private yards with only 2 m fore yards and larger common green areas. The design creates private "pockets" in form of terraces and roof tops between the households and public areas. The buildings are performed in "miljöbyggnad silver" with sun shading and strategically placed windows. Social rooms such as kitchens are placed closer to the street. Private parking spot is placed in the atrium in front of the house.

### WHAT I BRING WITH ME

- High exploitation, high density
- Private pockets are created
- Building shapes to break down scale
- Distances between buildings
- Boundary between private gardens and common green area



FARMING



ELECTRIC CAR



ANIMALS



TOOL POOL



COMMON ROOM



WORKSHOP



GREEN HOUSE



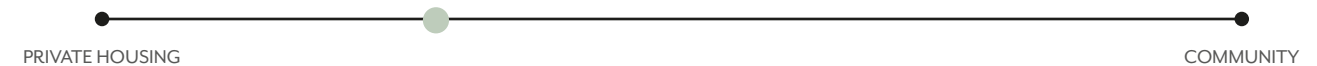
SOCIAL SPACE



PLAYGROUND

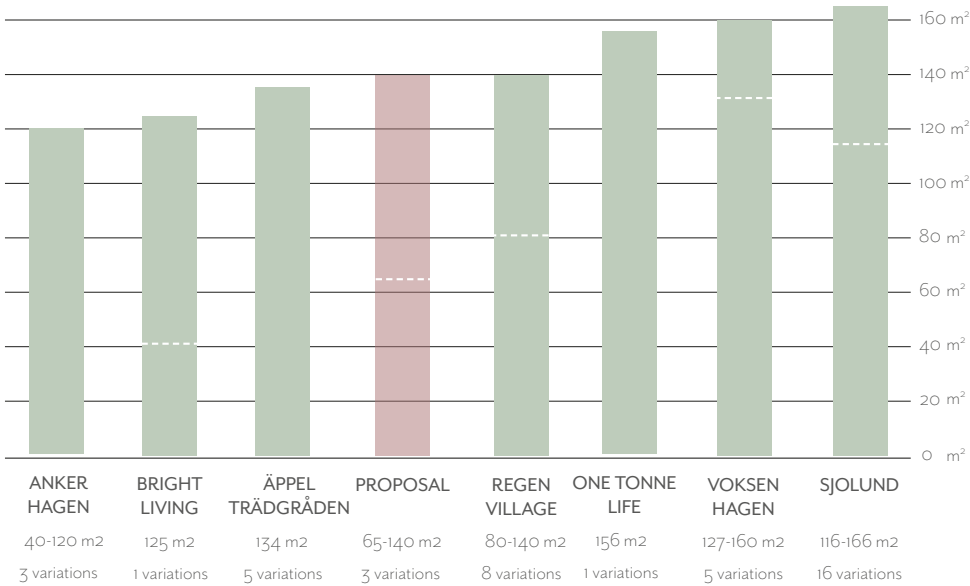


OFFICE SPACE

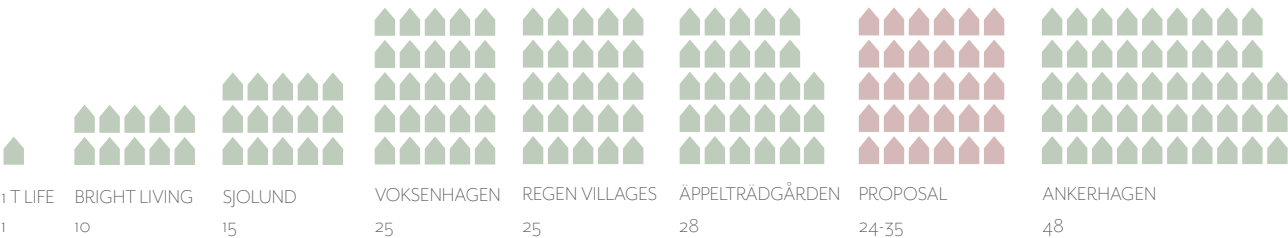


SUMMARY

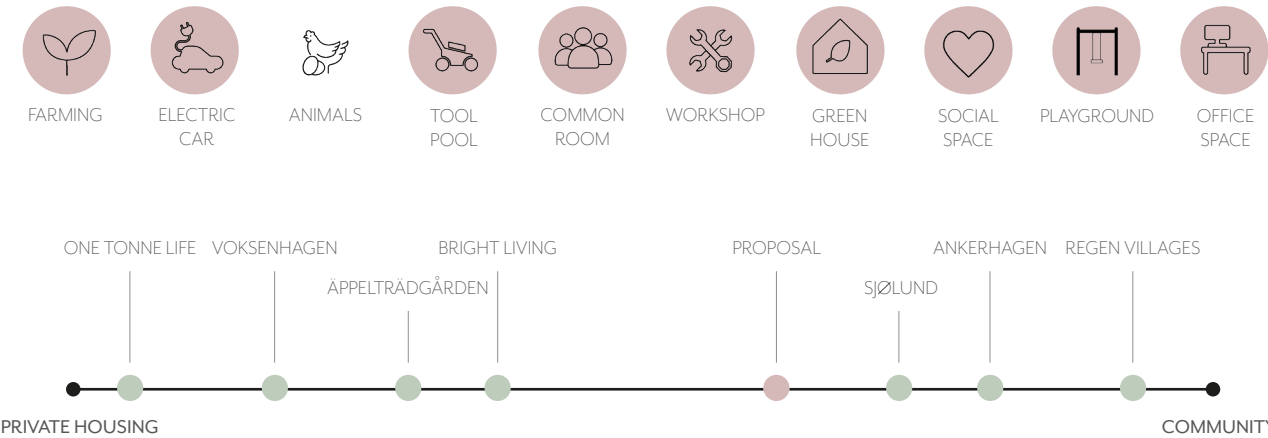
BUILDING SIZE



HOUSEHOLDS / BLOCK

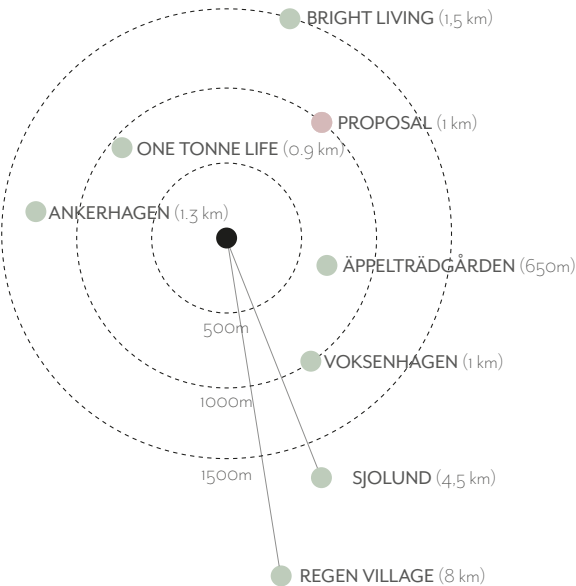


SHARED RESOURCES

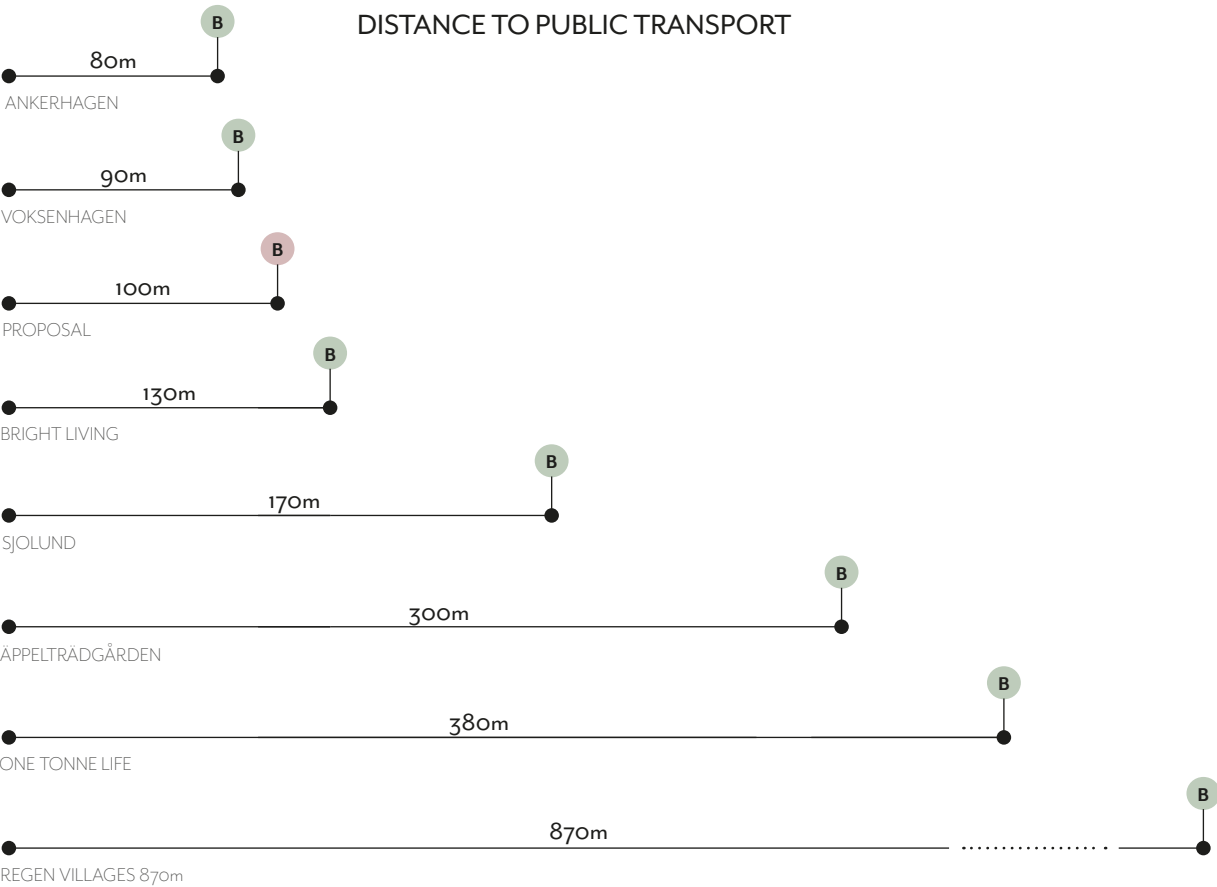


SUMMARY

DISTANCE TO CENTRE & SERVICE



DISTANCE TO PUBLIC TRANSPORT





SITE

## YTTERBY

Kungälv municipality is situated in the region of “Västra Götaland.” The county borders Gothenburg in the South and Stenungsund in the North. Kungälv municipality works with climate goals for all the new building projects, touching the areas climate impact, biodiversity and quality architecture.

The municipality plans about 350 dwellings in the new area, it is supposed to connect the west and central part of Ytterby. 2016 a detail plan was made, before this the site was undeveloped and mostly consist of forest. Today the area is under construction.



## NORDTAG

### LOCATION

The site is situated about one km from Ytterby centre, the station is reached within a 10 min walk. The train will take you to Gothenburg City in 17 minutes and to Stenungsund in 20 minutes.

### SERVICE

There are no commercial facilities in the area today. Within one km from the site there are supermarkets, pharmacy, primary healthcare, bakery and restaurants. The Sparrås school was built in 2017 together with a new kindergarten.

### SURROUNDING

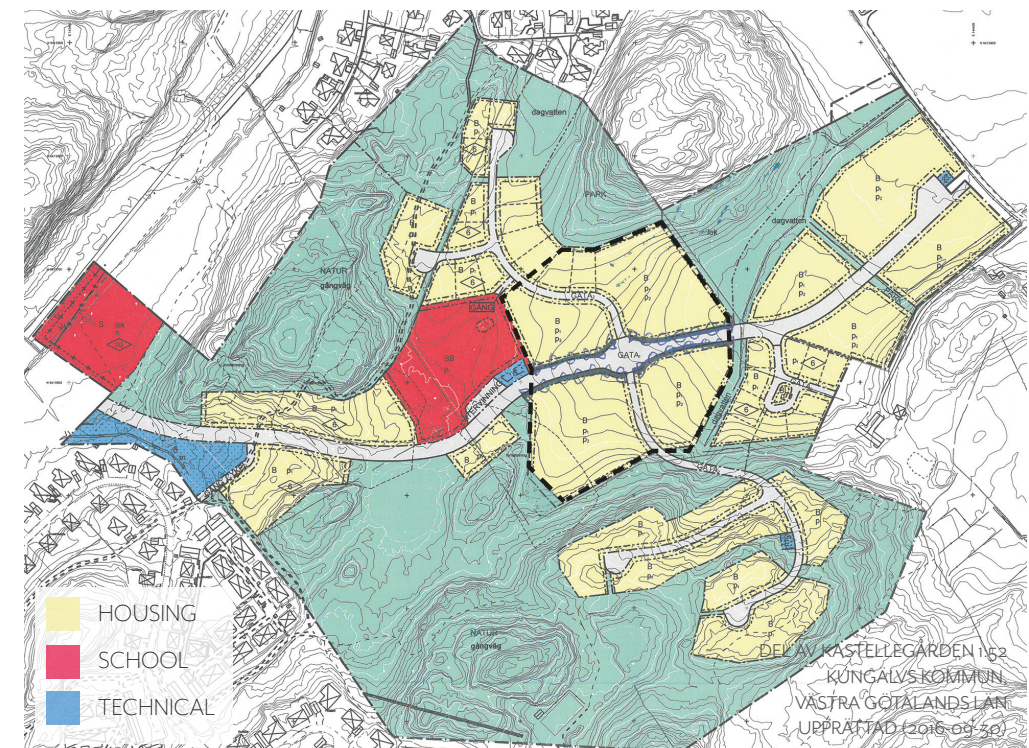
Northwest of the site is a dwelling area with wooden villas from the 00's. Southwest of the site are smaller villas, row-houses and detached houses in brick, built in the 80's. East of the site is a farm and further away you find a multifamily house area from the 70's.

### COMMUNICATION

Walking and biking are prioritized, but the current area lacks bike lanes. There are many important paths and trails for recreation in the forest area. Today there is no public transport within the site, one bus stop is planned right next to the new Sparrås school. From the site to the bus square in Ytterby city there is 1 km walk / bike path.

### PROPOSAL

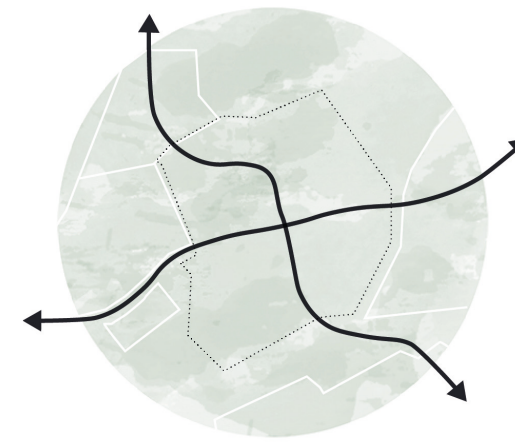
The project will be developed in the center of the new residential area, in four larger plots that relates to each other. The municipality has some design strategies they want to follow; the building layout should create flow between volumes and inviting courtyards allowing spontaneous meetings. Residential areas should include vegetation for biodiversity and take care of day water on site. The municipality promotes households that enable a lower energy consumption. (Kungälv municipality, 2017)





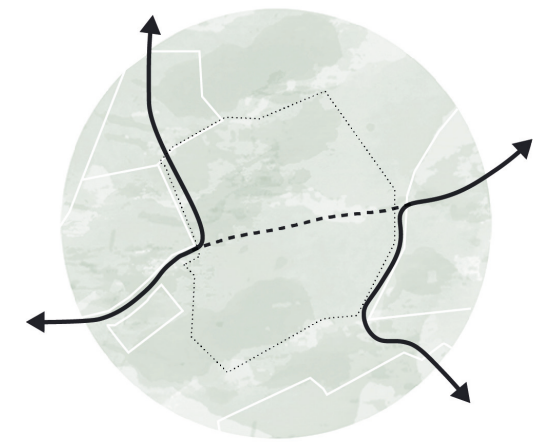


## SITE ANALYSIS



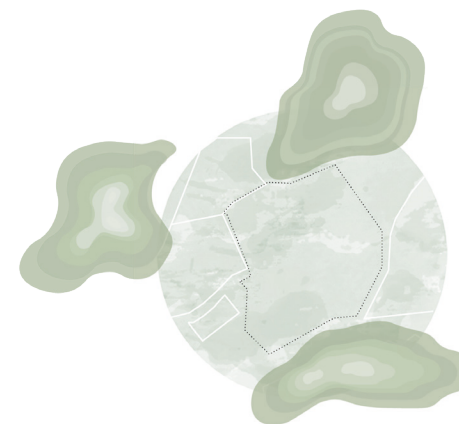
### FLOW

The current detail plan allows crossing traffic through the site to reach surrounding areas.



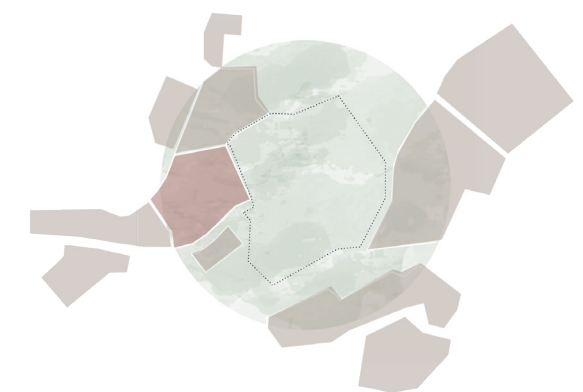
### NEW FLOW

By rearranging the streets, traffic through the site will be dramatically reduced.



### HEIGHTS

Tree bigger hills are framing the area, the site it self is very flat.



### SURROUNDING

Surrounding sites are planned for dwellings (beige) and a school (red)

PROCESS

## USER PERSPECTIVE

Our living needs change over time. Different stages of life require different needs in the households. By understanding the target group, the design of a project can be adapted to fit the specific group of people. User perspective leads to conscious choices in configuration. Age, generation, education, lifestyle, stage of life, valuations and behavior patterns are factors that affect the users. (Mosaic)

### FAMILIES

Family constellations can have great variation and also vary over time. A couple with several children will need many rooms in one phase of their life and a totally different need when the children move out in the next phase. The average household of a family consisting of two adults and three children is 115 m<sup>2</sup> (SCB, 2020).

### FAMILIES WITH SHARED CUSTODY

About 15% of Swedish households are reconstructed families, (Lindén A, 2007). The family situation looks different for example; divorced parents with children every other week or single parents with one child each living together.

### YOUTHS /STUDENTS

The housing shortage makes it hard for young adults and student to move away from home, they stay in their parents home for a longer time. Wennermark states that the involuntary stay at parents' home have never been as extensive. (Wennermark, 2017)

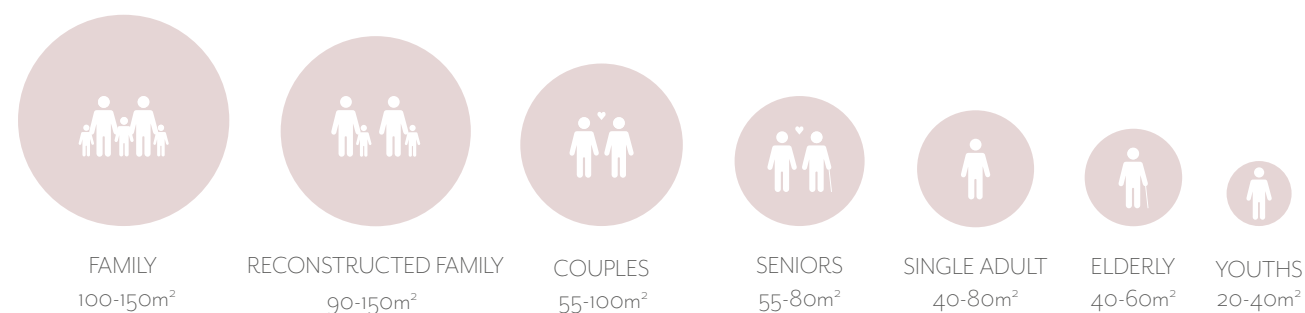
### SINGLE ADULTS

A large part (39,8%) of the household population in Sweden consists of single adults without children, most commonly living in apartments. There are not many opportunities of dwellings for single adults that want to live in a small house. The average size of a household for single adults is 70 m<sup>2</sup> (SCB, 2020).

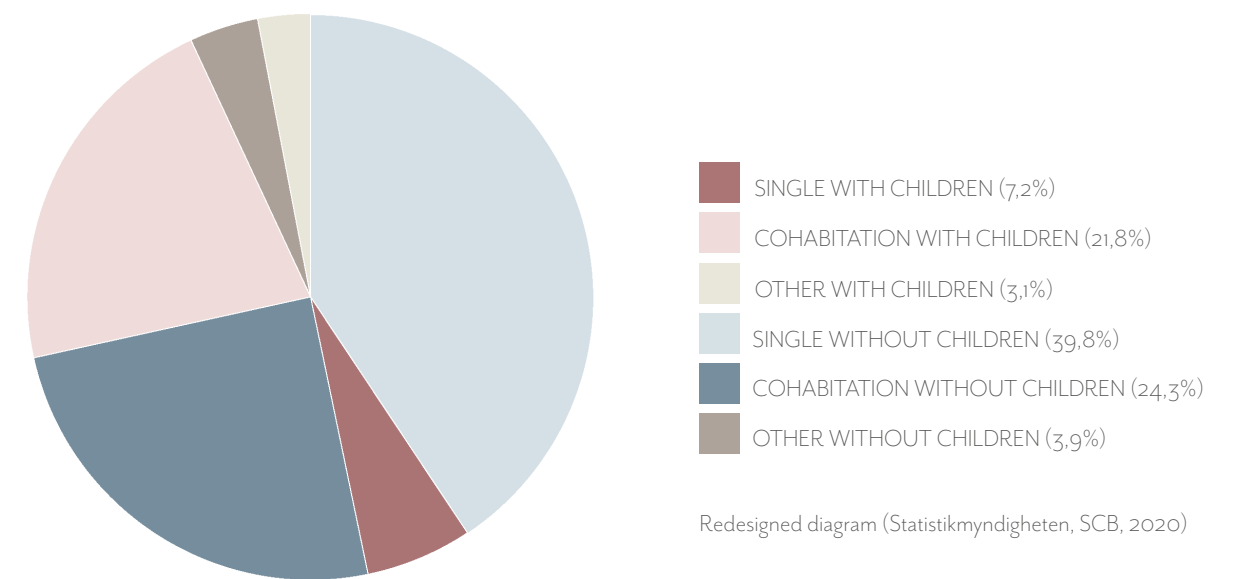
### ELDERLY

The amount of elderly people in Sweden is increasing because of a baby boom in the 1940s. The amount of 80+ year olds are expected to rise by 50% within ten years. (SCB, 2018). Elderly have a greater demand of accessibility which a part of the existing housing stock lacks.

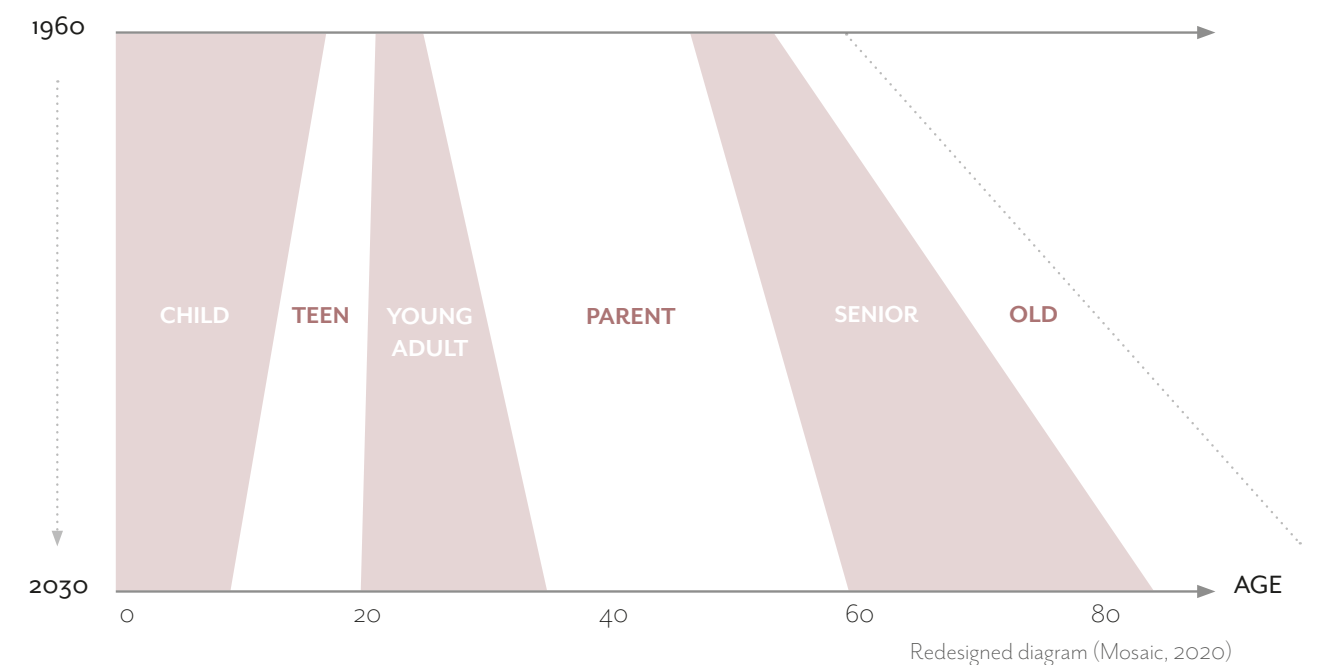
Lives also changes with the generations, which can affect the design of a community. Different generations prioritize different qualities both in the household, the street block and the neighborhood's character. A research made by James Ellsmore shows the differences across generations where millennials (89.6%) were much more willing to pay above-average prices for certified Eco-friendly products, than baby boomers (79.3%). (James Ellsmoor, 2019)



DISTRIBUTION OF SWEDISH HOUSEHOLDS



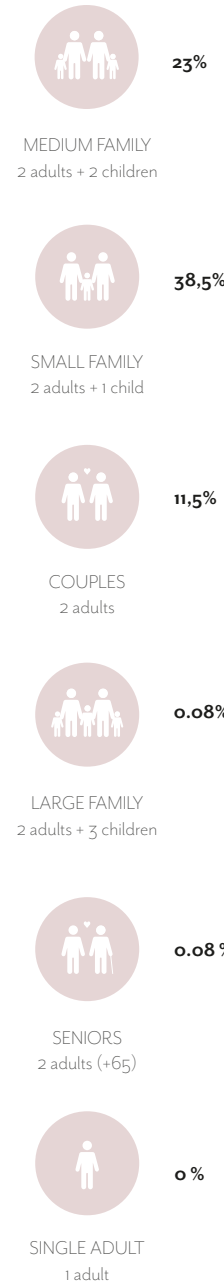
GENERATION DEVELOPMENT



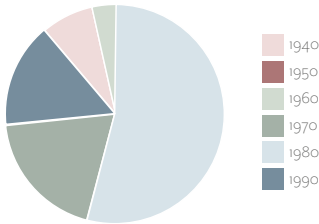
# SUMMARY QUESTIONNAIRE

In order to understand the current residents needs in Ekeblad's households, a questionnaire, with focus on lifestyle, household and sustainability, was sent out to all residents in three of Ekeblad's projects; Falkenberg, Lödöse and Jönköping. Below some results are presented.

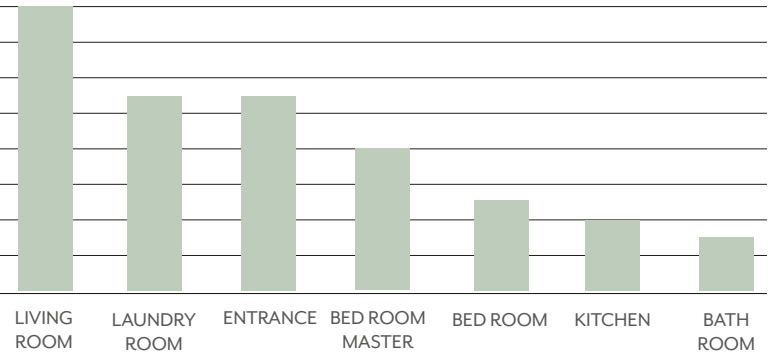
## PEOPLE IN HOUSEHOLDS



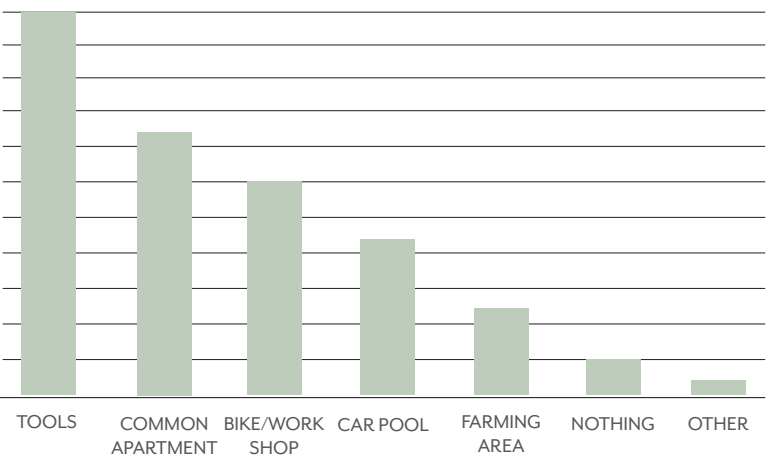
EKEBLAD RESIDENT'S BIRTH YEAR



WHAT ROOMS NEED BIGGER AREA?



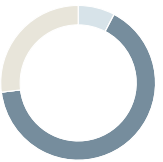
WHAT RESOURCES CAN YOU IMAGINE SHARING?



WILL SUSTAINABILITY BE AN IMPORTANT ASPECT IN YOUR NEXT CHOICE OF HOUSEHOLD?



CAN YOU IMAGINE PAYING MORE MONEY TO LIVE MORE SUSTAINABLE?

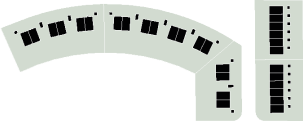


CAN YOU IMAGINE LIVING IN A SMALLER HOUSEHOLD TO LOWER YOUR ECOLOGICAL FOOTPRINT?

YES NO NO OPINION

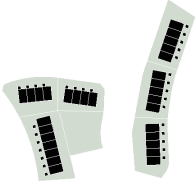
## TRÖINGE

FALKENBERG



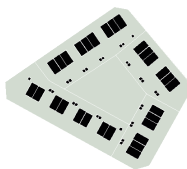
## EKEBERG

LÖDÖSE

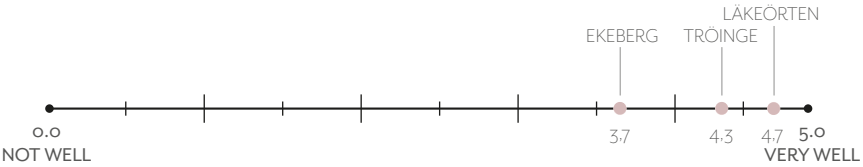


## LÄKEÖRTEN

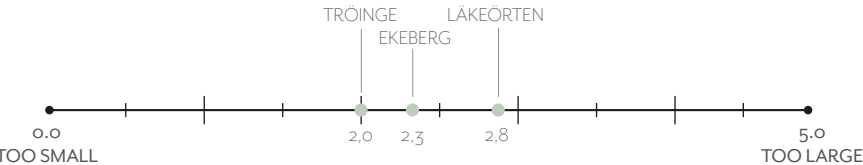
JÖNKÖPING



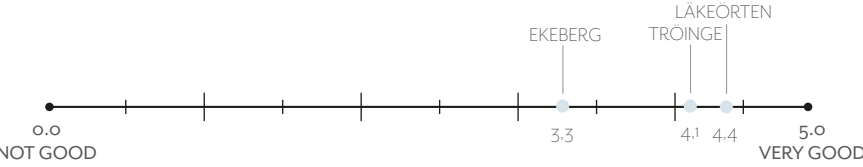
## HOW WELL DO YOU ENJOY YOUR RESIDENCE?



## HOW DO YOU EXPERIENCE THE SIZE OF YOUR GARDEN?



## HOW DO YOU EXPERIENCE THE COMMUNITY IN THE AREA?



# SUMMARY QUESTIONNAIRE

The questionnaire was sent out to 89 residents in three different projects. The answer frequency was about 30%. Selected results are presented below, the questionnaire in its whole can be find in the appendix in the end of the booklet.

# SUMMARY INTERVIEWS

Some of the residents answering the questionnaire offered to participate in a phone interview. Below you find a summary of the interviews, the interview questions can be find in the appendix in the end of the booklet.

## QUESTIONNAIRE

The questionnaire was sent out to people in Falkenberg, Jönköping and Lödöse, all of the residents moved in to their households between the years 2018-2020. 88% of the residents are full-time workers and a couple are retired. The division between females and males answering the questionnaire are quite equal, 53% women and 46% men.

50% of the households are 3 people of whom the larger part is couples with one child. 19% are living as couples and 23% are couples with two children. The most valued qualities in the residential areas are the location in the city, closeness to nature, schools, families and also the neighbors.

92% of the residents experience the dwelling size to be suitable for them and 62% say their household fits them perfectly in the current situation they are in. The reason why people forecast they need to move out within five years differs a lot. Some because of their age, changes in family constellations and some because of the location.

All the residents are using the entrance yard for car parking. The gardens are used for functions such as vegetation, social space, play, storage and farming area. 73% experience their back garden to be a good size, 19% think it is too small.

The neighbors usually meet each other on the street, in gardens and in the common green area/playground. The projects with access to a common outdoor area are using it about once a week.

50% only use a private car to get to work or daily activity. 42% also include walking or biking and 19% use public transport as well.

## MY CONCLUSION

From the questionnaire I found out the actual target group and there are by far most families living in Ekeblad’s dwellings. From this I predict a change of family situation in the future, when children moving out, there is a risk the dwellings will be less suitable for the users need and therefore they will have to move or stay in a dwelling that is too large.

The feeling of a small garden might depend on the design of the outdoor area. The residential areas with common outdoor space experience their own garden as larger.

## INTERVIEWS

The costumers I interviewed where looking for a dwelling that fit the new family constellation with newborn kids to the family, when searching for the new household. They where looking for a house with 4-5 rooms and ended up with Ekeblad’s option. Both people mentioned the well planned floor plan, the new construction and the fact that there where solar panels installed on the roof as qualities which made them go for this alternative.

The people having a common outdoor area in the community experience it as something positive with room for a playground, social areas and sitting space. They explained it as a clear boarder between private and semipublic zones in those gardens. Today they experience the garden as less private that what they expect it to be, because the hedges and trees are not fully grown yet. The person living in an area without common outdoor space feel like they would have use it and it would strengthen the community feeling between the neighbors if there was one.

Today the private cars are parked on the fore yard right in front of the dwelling. This is very practical for the residents when it comes to deliver goods from stores and with children in child seats, but the interviewed people are positive to the idea of a common parking about 100-200m from the private house. They see this as a possibility for child safety within the residential area.

The public transport differ in quality between the projects. It is clear that it is way more used when the bus stop is close by and well visible from the residential area.

They think that a more developed public transportation, with more prevalent departures could almost replace the car driving totally in their every day lives.

The view on waste separation is diverse. It is clear to see that if the design is well planned the resident is more prone to sort their waste. When the assignment have an obstacle such as too long of a distance or requires a detour we are less prone to perform it. One of the persons experienced the waste separation as very troublesome when he had to go about 5 km by car to reach the closer recycling station. While the other person had a positive feeling of it when she could sort the waste straight in her garbage cans outside the private entrance.

## MY CONCLUSION

By creating design that facilitates the sustainable every day assignment in a good way people will hopefully choose this option. If it contains an obstacle people won’t. For example to simplify recycling by placing the recycling station on a path people are often passing by or to make the delivery of goods easy and usable by bike or electric bike, straight to the kitchen to avoid the use of cars. A common car parking further away from the dwelling can work if the possibilities to bring home goods from the store and unload the car now and then is accessible, also by prioritizing bike lanes and bike parkings.



## PROCESS DEVELOPMENT

The concept of this thesis has constantly developed. Decisions made during the process, inspired by the research, have led to the final result. To the right you find a summary of the cluster development step by step.

The design process had its starting point in developing the traditional row house layout. I wanted to change the long street with repeated similar houses into something more social that increases interaction between neighbors. The "entrance cluster" came up early in the design process and has developed during the project.

A. At first the clusters were totally closed, shaped like a flower, with focus on the qualities created in the middle. The qualities I chose to continue to work on were the visible entrances and short distances between households with possibility to design good semi-private rooms.

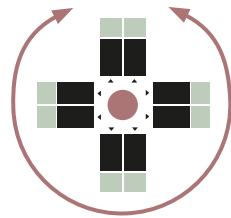
B. The disadvantages with the entrance flower were the rooms created around the shape. It was hard to find efficient use of this area and it caused trouble when combining the clusters. The benefits of the design were the privacy generated in the household gardens.

C. Early in the process the activity path that connects the clusters came up. The flower clusters turned their backs against the semi-public area, which was the opposite of the goal. The conclusion was that the cluster flower works well individually but is too closed in a larger context.

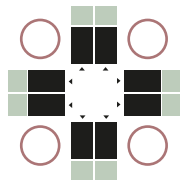
D. By making the activity path cross through the clusters the social concept of closeness to people got strengthened. The efficiency of the site is still low due to the large area one cluster needs.

E. Further on in the process I worked with "filling up the spaces" and the corner house was developed. The border between zones was not so clear and blurred together and the semi-private layer disappeared.

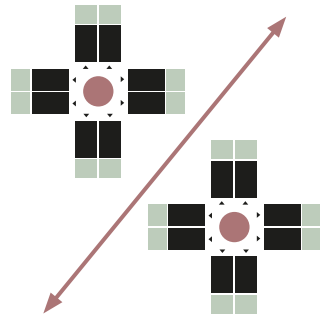
F. By tilting the squares, and pushing them apart the semi-private zones in front of the clusters were recreated. This design also helped to tighten the area and keep the short distances between households.



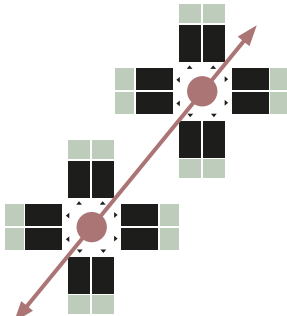
A.



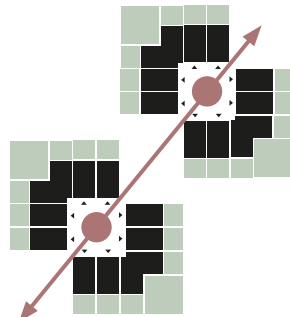
B.



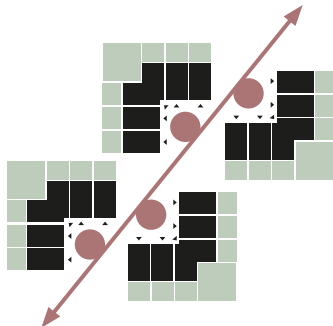
C.



D.



E.



F.

The proposal in Ytterby consists of 104 dwellings in various sizes. The area is built up of zones with a gradient of privacy. Residents will experience a public center with city like functions, semi public areas with community houses and playgrounds, semi private entrance cluster shared with the closest neighbors for a feeling of belonging before entering the private dwelling.

# PROPOSAL

## DESIGN STRATEGIES

From theory to design

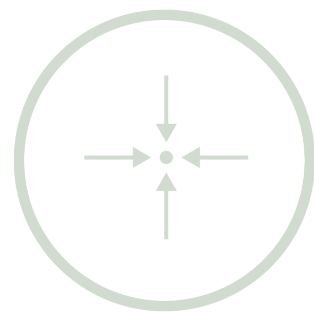
Based on theory from the literature study, reference projects and the questionnaire a few design elements were created and brought into the design process.

### VISION



#### HUMAN CENTRIC

Design shared spaces and outdoor areas that invite people to interact with each other



#### SHARING

Encourage people to live more resource efficient and make sustainable choices



#### DIVERSITY

Provide dwellings for various family constellations with different focus on sustainability

### COMMUNITY



#### FROM PRIVATE TO PUBLIC

The public feeling will gradually increase from zone to zone. Borders between them will be designed in a clear way.



#### WALKING DISTANCES

To enhance the potential of interaction walking distances between functions (500m) will be promoted.



#### STRONG MEETING POINTS

Functions will be strategically placed in a few spots to increase interaction between people.



#### COMMON CAR PARKING

Cars will be parked 100-200m from the house entrance, far away from common outdoor areas for safety.



#### OUTDOOR ACTIVITIES

Create different activities for people in all ages with diverse interests. Generate places for staying and to spend time in.



#### PEDESTRIAN AND BIKES IN FOCUS

Streets will be designed primarily for people. Separated lanes for vehicles where the traffic happens on pedestrian conditions.

### BLOCKS



#### DIVIDE RESIDENTIAL AREAS

Smaller house clusters will be designed to increase the interaction between people. About 6-10 households / cluster.



#### SIGHT LINES

Create sight lines toward public and semipublic spaces in order for people to get curious and go there.



#### CENTRAL PLAYGROUND

Each cluster will get a playground visible from the entrances and reachable within 50 m, for a safe environment for children.



#### FLOWS

Daily functions (such as recycling room and felles building) will be placed where people are passing by to make them accessible.



#### SPONTANEOUSLY MEETINGS

Small meeting points with good micro climate between buildings will be designed in semiprivate spots.



#### BIKE PARKING

Accessible and central spaces with bike parking will be placed in the area, making biking an attractive transport option.

### CLUSTERS



#### VARIOUS HOUSING TYPOLOGIES

Three different housing typologies will be necessary to facilitate a diversity of ages and family constellations.



#### SHARED RESOURCES

Resource sharing will be made both in community scale; with community house, waste room and car pool, as well as in the private household.



#### VISIBLE ENTRANCES

Entrances placed toward each other for creating an opportunity for neighbors to meet in their every day life.



#### ADAPTABLE IN FUTURE

Households should be adaptable in the future to fit people's needs when family constellations are changing.



#### PRIVATE OUTDOOR SPACE

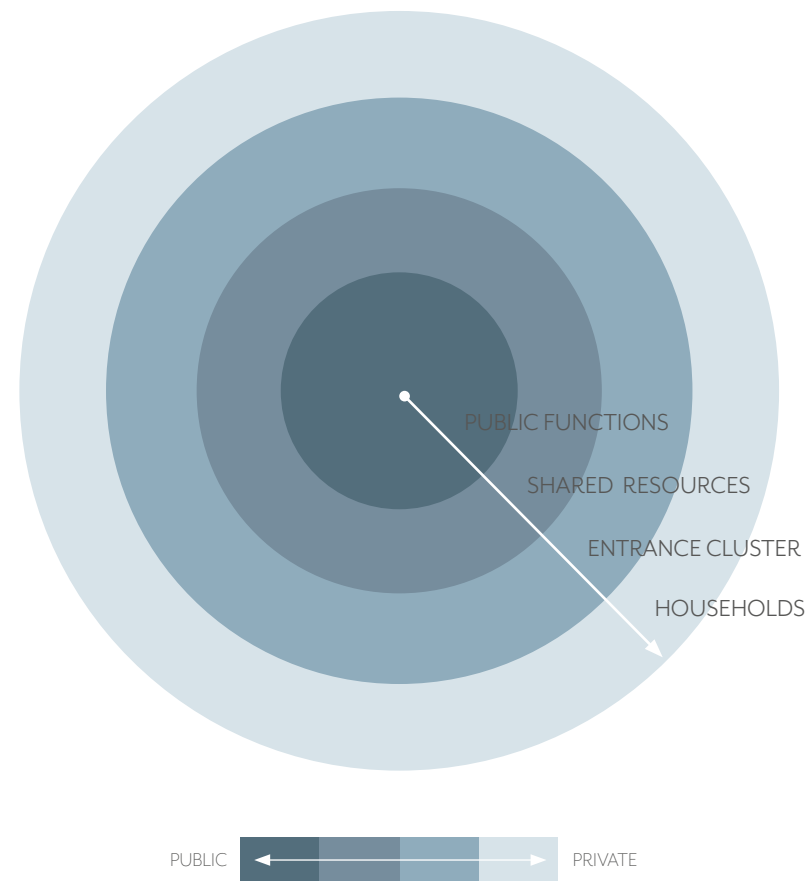
A dense house layout demands smaller usable private gardens around the household, for example a short front yard.



#### CONTACT WITH NATURE

Increase the connection between indoor and outdoor by making the outdoor life accessible and useful.

## LAYERS OF PRIVACY



Residents will experience a public center with service functions, semi private areas with community house and playground, semi private entrance cluster shared with your closest neighbors for a feeling of belonging before entering your own private household.



STRONG MEETING  
POINTS



FROM PRIVATE  
TO PUBLIC

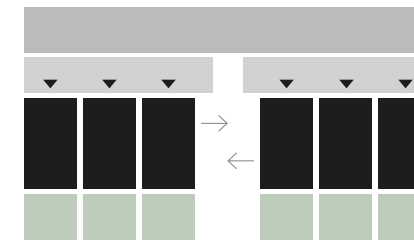


FLows



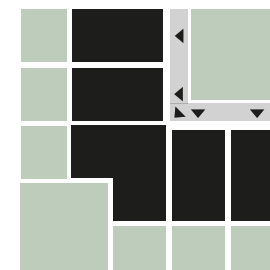
SPONTANEOUSLY  
MEETINGS

## CONCEPT



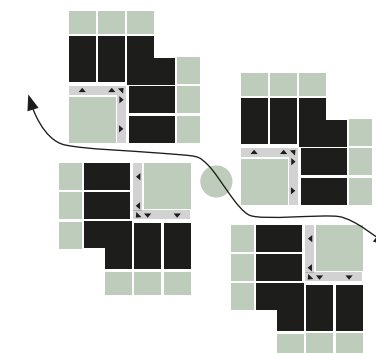
### TRADITIONAL LAYOUT

Row house areas are often design with the entrances along a wide street, a fore yard with car parking, that makes it quite unusable for other activities and a private garden in the back. This creates outlooks toward the trafficked road and a close distance to your neighbor's garden.



### ENTRANCE CLUSTER

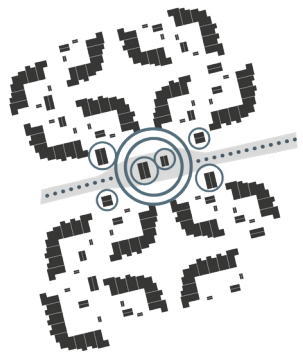
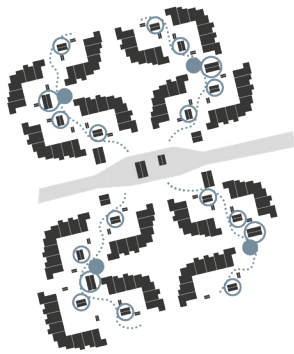
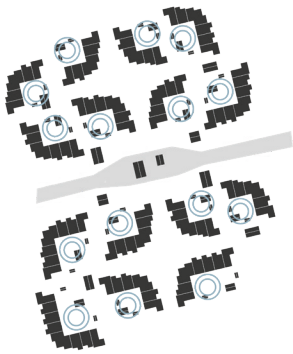
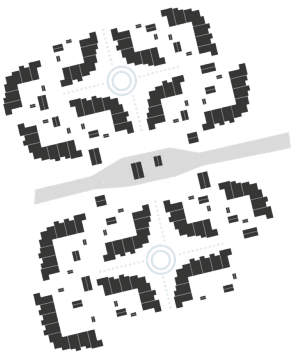





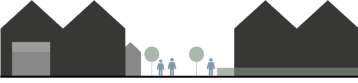


By creating smaller clusters with entrances turned to each other the possibility of interaction between neighbors increases. Each cluster contains a variation of household types to mix different groups of people. The clusters work as a semi-private zone shared by 6-10 households with a common green area in the front and private smaller gardens in the back.



### COMBINE

Smaller entrance clusters are put together creating a bigger community and shaping a semi public path with shared functions such as tool pool, green house, community house and playground. The entrance clusters are turned toward the path for a feeling of community and for good connection. Depending on the site the amount of clusters can variate.

STREET CHARACTERS

	NORDTAG SQUARE	ACTIVITY PATHS	ENTRANCE CLUSTERS	APPLE ALLEY	
POSITION					POSITION
PRIVACY	PRIVATE ← ● → PUBLIC	PRIVATE ← ● → PUBLIC	PRIVATE ← ● → PUBLIC	PRIVATE ← ● → PUBLIC	PRIVACY
USERS	 RESIDENTS FROM THE WHOLE AREA PEOPLE PASSING BY	 RESIDENTS FROM ONE BLOCK	 RESIDENTS FROM UNIT CLUSTER	 RESIDENTS FROM TWO BLOCKS	USERS
FUNCTION	<ul style="list-style-type: none"><li>- CAFÉ</li><li>- TRAVEL CENTRE</li><li>- SITTING AREA</li><li>- PARKING</li><li>- BIKE PARKING</li><li>- WORK SHOP</li><li>- WORK SPACE</li><li>- CAR POOL</li><li>- SOCIAL SPACES</li></ul>	<ul style="list-style-type: none"><li>- PLAYGROUND</li><li>- BENCHES</li><li>- TOOL POOL</li><li>- COMMUNITY HOUSE</li><li>- GREEN HOUSE</li><li>- BIKE WORKSPACE</li><li>- OUTDOOR GYM</li><li>- DELIVERY ROOM</li></ul>	<ul style="list-style-type: none"><li>- BIKE PARKING</li><li>- FARMING AREA</li><li>- FORE YARD</li><li>- BARBEQUE SPACE</li><li>- SANDBOX</li></ul>	<ul style="list-style-type: none"><li>- PATH BETWEEN AREAS</li><li>- VEGETATION</li><li>- PARK WITH FRUIT TREES</li><li>- FARMING SPACE</li></ul>	FUNCTION
SECTION					SECTION



## COMMUNITY

The site plan is designed with starting point from the previously design strategies presented. The concept can be placed on various sites, it can expand or shrink in size. A larger amount of households allow more shared resources. This thesis investigates the concept in a proposal in Kungälv.



STRONG MEETING POINTS

A central placed square facilitates daily needs within a short distance from the dwellings. This also allow people from different blocks to interact. The amount of service can develop in the future if needed, to serve a larger area. The cluster groups share a community house and larger playground, which works as a meeting point in the smaller scale.



FROM PRIVATE TO PUBLIC

The site plan is designed to create a flow of zones that differ in characters. People walk between the zones and can choose where to spend time. The zones clarify where you are and also strengthen the feeling of you own when entering your private zone. Natural material such as vegetation, pavement and grass are creating the borders between zones.



COMMON CAR PARKING

The car parking is concentrated along the bigger street. The residents walk through the zones to reach their car which creates a safe and free environment where people are in focus. Central placed on the square, with easy access, are the car pool. The paved entrance cluster paths allows traffic in special occasions or in case of emergency.



PEDESTRIANS AND BIKES IN FOCUS

The larger street has a clear division of traffic with car lanes in the middle and bike and pedestrian paths closer to the dwellings. The material is paving to create a more public feeling where traffic happens on pedestrian's conditions. Vegetation is programmed between the lanes to take up storm water, slow down traffic and work as buffer zone for noise and pollution.



OUTDOOR ACTIVITIES

Designing space for outdoor activities also creates the basis for spontaneously meetings in the area. They are preformed in different sizes and scales, from private garden, small playground to community house and outdoor gym and café. To create activities for different ages and interests hopefully increases the interaction between people.



WALKING DISTANCES

The central square situated in the middle is connected and opens up to all four activity paths. By dense layout, low scale buildings and sight lines created toward "the next zone" hopefully an invite for people to walk around in the area is introduced. All four groups of sites have the same distance to the bus stop in the middle to make it accessible and useful.









## BLOCKS

The community is divided in four blocks, consisting of similar programs with dwellings, community house, playground and shared functions. The L-shaped clusters are collaborating but at the same time work by them self.



DIVIDE RESIDENTIAL  
AREAS

The smallest group of community is the entrance cluster, the amount of households varies between 6-10 depending on the site. These are then put together to create the block structure. The L-shapes opens up toward the activity path in the middle. In this case one block consists of four entrance clusters, about 24-30 dwellings which due to the research is a good amount for community feeling.



FLOWS

In order to nudge people in a sustainable direction, the functions are placed in a strategically position where people often walk past. Bike parking is situated close to the entrances, visible for all. The waste room is placed closer to the activity path, where people are passing by walking toward the public zone.



SIGHT LINES

From the house entrance the walkway crates a sight line towards the activity path. Between the common functions placed along the path there are sight lines leading you to the next function. The visibility towards the private entrance clusters are partly blocked by complement buildings to create a sense of privacy and avoid invitation for people passing by.



SPONTANEOUSLY  
MEETINGS

By placing the dwelling entrances visible for each other and letting them open up toward the common green area people will meet in their every day life. By creating many smaller pockets for people to hang out in, residents can choose their layer of privacy. The activity path where residents from all the blocks will meet each other also increase the spontaneously meetings.



CENTRAL  
PLAYGROUND

Each block gets a playground placed central in the activity path, in close connection to the community house. The playground is visible from the entrance clusters. This is where children from the different clusters meet. Children can in a safe way walk from one playground to the next by using the apple alley - the trail with no car traffic.



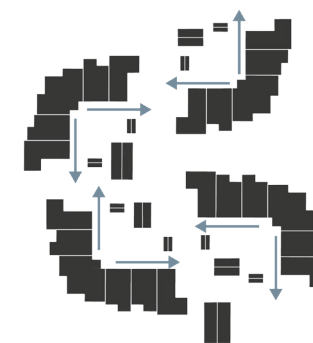
BIKE PARKING

Bike parking and lanes are designed in an accessible way. It should be easy and comfortable to choose the bike. It is possible to go by bike all the way up to your front door with both in- and outdoor parking alternatives. The front yard with straight connection to the kitchen allows a zone for unload purchased goods when using the bike as primary vehicle.



SHARED FACILITIES

Each block is built up similar and consist of shared functions along the activity path with the community house and play ground placed central. Each cluster connects to the path by one function, in this case tool pool, green house and workshop.



SIGHT LINES

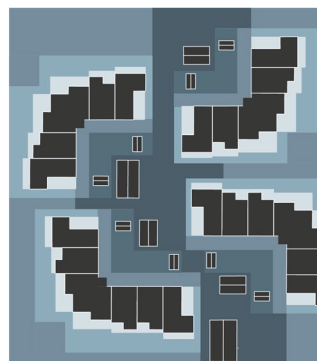
The clusters opens up toward the activity path with sight lines. The main meeting point, the community house is well visible from many directions. From the public square there is visibility toward each block, just enough to make people curious to go there.



bike room waste room shared

FUNCTIONS

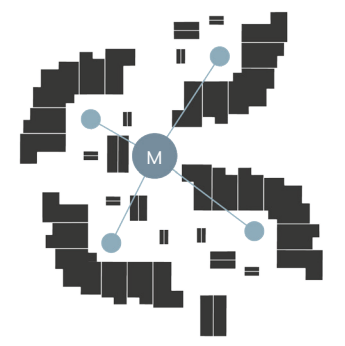
The clusters have access to waste rooms and bike parking, situated toward the activity path where people often pass by. These complement buildings and the shared functions works as creating the boarder between cluster and path.



public private

LAYERS OF PRIVACY

Residents will move between zones with different characters. From the private experience around the household to the activity path and the square where the public feeling gradually increases.



MEETING POINTS

Each cluster has a common front yard where neighbors can meet. The front yards are connected to the activity path where the larger meeting point including community house and play ground is situated.



GREEN AREA

A great part of the site is kept soft with vegetation. This helps to infiltrate and slow down the storm water before going to the grid. Private gardens connects to shared green areas, the clusters have vegetation in front of the entrances.

# ENTRANCE CLUSTER

The dwelling clusters are designed with starting point from the previously design strategies concerning the cluster scale. The layout is focusing on creating a cohesive community feeling with clear zones where private meets semiprivate.



VARIOUS HOUSE  
TYPOLOGIES

Tree different household types are designed and occurs in all entrance clusters to invite different kind of people to the area. Each house type focuses on one main sustainable approach. The corner house - sharing, the middle house - adaptability and the end house - farming. Some variables are applied on all households such as solar PV's, natural ventilation and wooden structure.



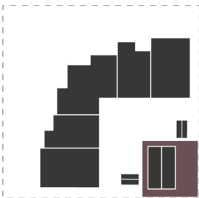
VISIBLE  
ENTRANCES

Entrances are placed visible for the rest of the cluster for promoting spontaneously meetings. The L-shape also helps with framing the common inner yard and creating a safe and semiprivate zone. The cluster yard contains shared functions such as barbecue place, waste room, bike room and playground for the youngest children - well visible from the kitchen windows.

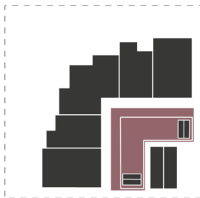


PRIVATE  
OUTDOOR SPACES

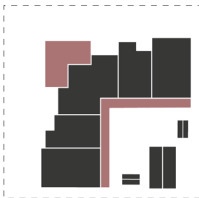
The L-shape results in a semi public inner yard with common green area, and a more private back yard for each household. With help from the irregular facade length small private pockets are created both on front - and back sides. This allows the dwellings to have quite small gardens with low hedges around connected to the shared green areas that are in focus.



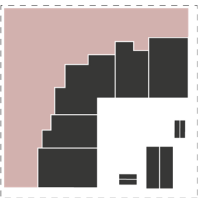
ACTIVITY PATH



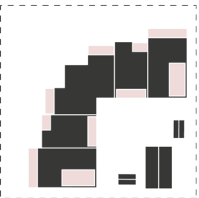
COMMON GREEN AREA



FORE YARDS



GARDENS



PRIVATE POCKETS









## MATERIAL



BLACK WOODEN PANEL

The houses are designed with a vertical wooden panel in a soft black matte color



NATURAL WOODEN PANEL

Parts of the facades are covered in a sustainable silicified wood panel



CORTEN STEEL

All sun shading elements and vegetation details are performed in rusty corten steel



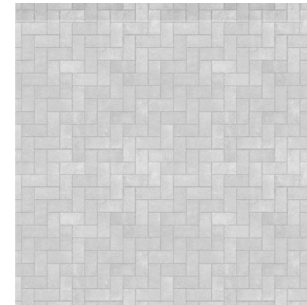
PAVEMENT PATH

The activity paths are recognized by larger natural stone pavement for a semipublic feeling



NATURE ROCKS

Along the house ground there is a buffer zone for rain water consisting of rocks



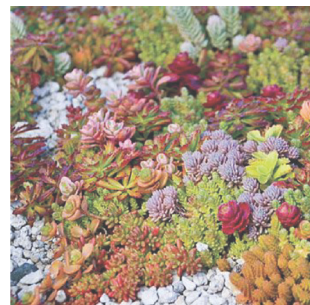
PAVEMENT CLUSTER

The cluster paths are covered with natural pavement in a smaller pattern to clear the borders between zones



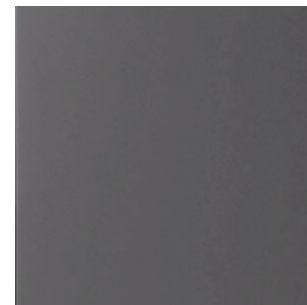
SOLAR PHOTOVOLTAICS

Integrated black solar PVs are placed on household roofs facing south and west



SEDUM ROOFS

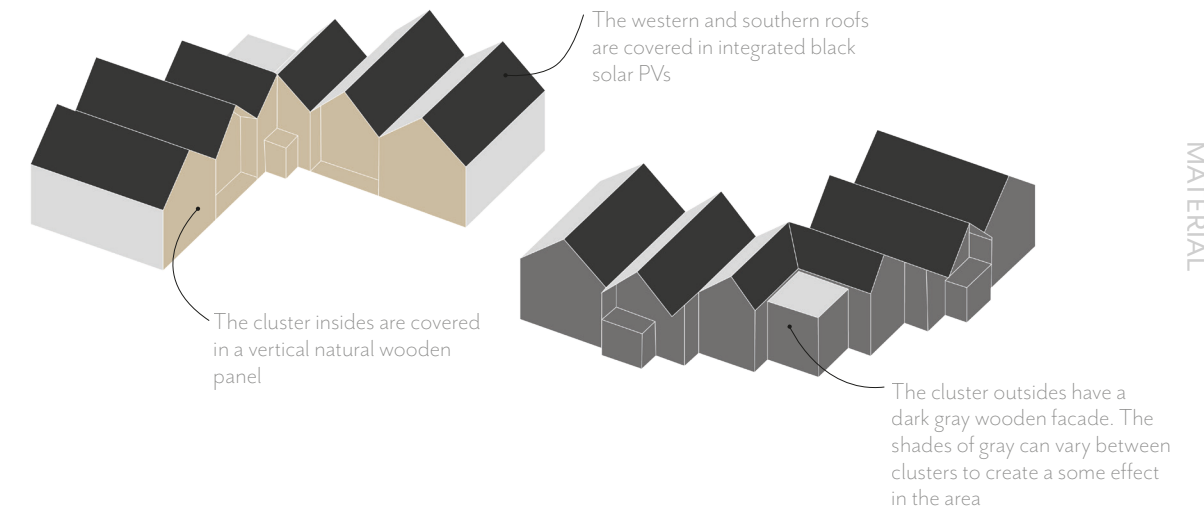
Compliment buildings have green roofs to take care of storm water and highlight the soft feeling



MATTE BLACK STEEL

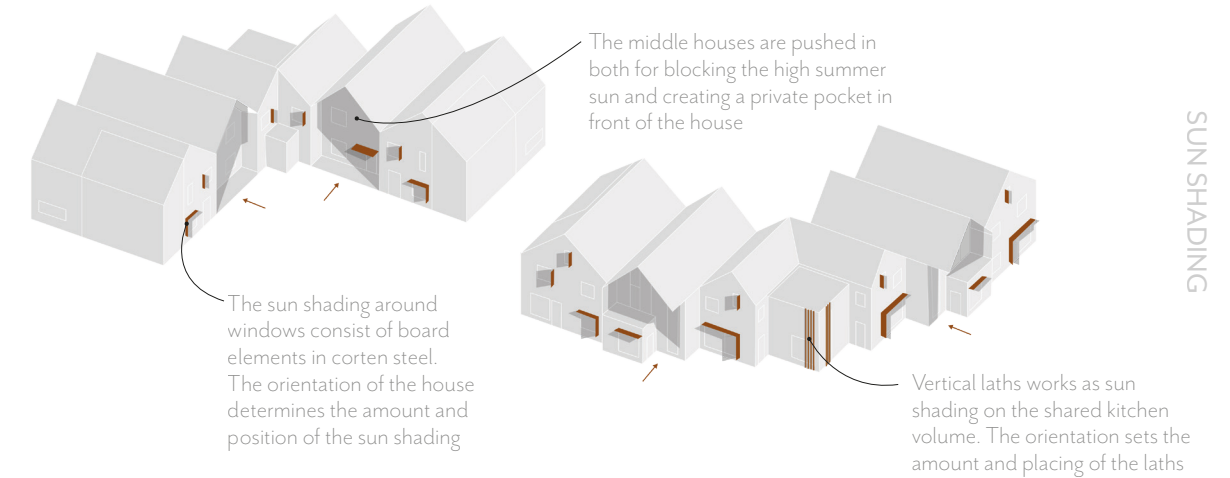
Facade details such as roofs parts, window frames and green house framework are designed in black steel

MATERIAL



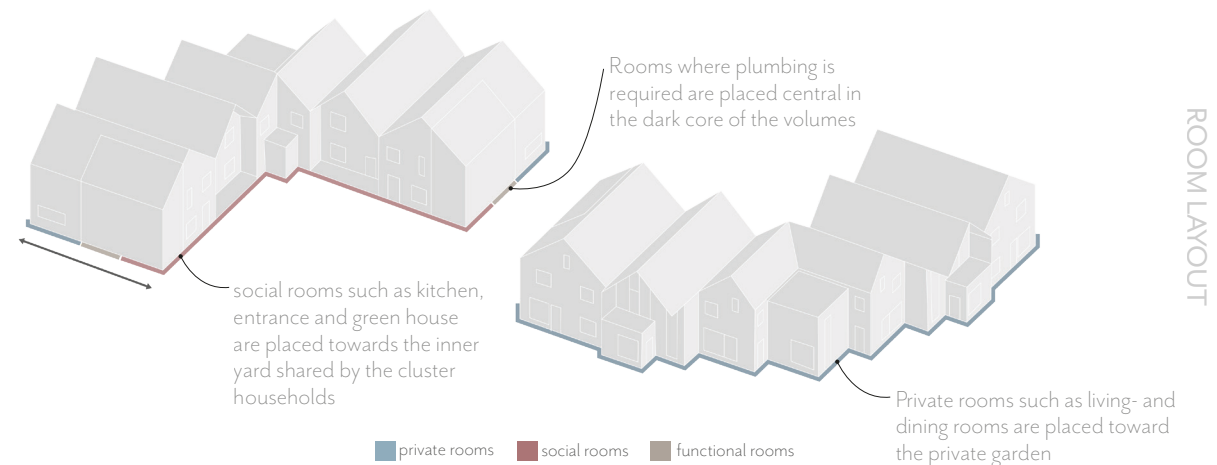
MATERIAL

SUN SHADING



SUN SHADING

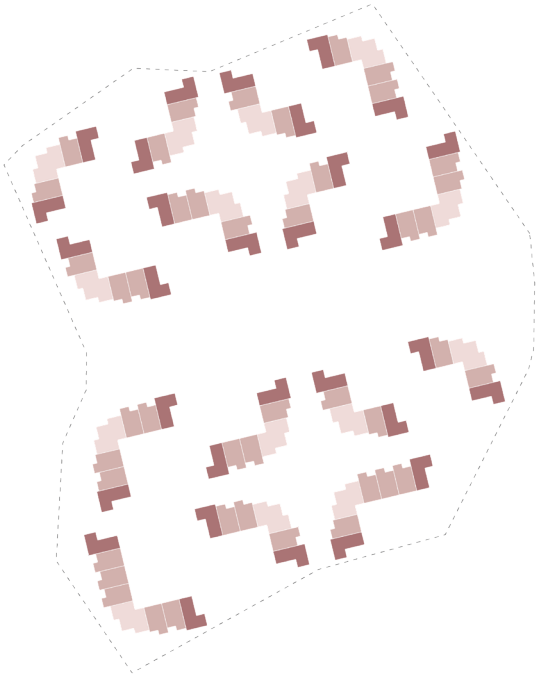
ROOM LAYOUT



ROOM LAYOUT




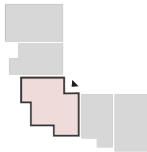
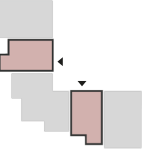
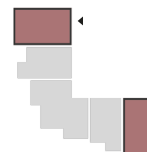









HOUSEHOLDS

To attract a wider group of people the residential area will offer different types of households. Each entrance cluster consists of a mix of dwellings. The corner-, middle-, and end-house differ in size and character. These volumes can be combined in variation to fit into the specific site. In order to investigate sustainability in floor plans each household focuses on one main theme. Shared resources, adaptability and farming.



TOTAL AREA: 33 370 m<sup>2</sup>  
RESIDENTIAL AREA: 11 540 m<sup>2</sup>  
SHARED BUILDING AREA: 1000 m<sup>2</sup>  
SERVICE BUILDING AREA: 350 m<sup>2</sup>  
SOFT GROUND AREA: 10 000 m<sup>2</sup>  
HARD GROUND AREA: 23 400 m<sup>2</sup>  
PARKINGS: 50 + 6 CARPOOL

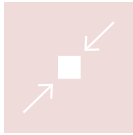
- SHARING HOUSE (30)
- ADAPTABLE HOUSE (44)
- FARMING HOUSE (30)

FOCUS	 SHARED RESOURCES	 ADAPTABLE IN FUTURE	 CONTACT WITH NATURE	FOCUS
POSITION				POSITION
TARGET GROUP	 FAMILY  COUPLES  FRIENDS	 FAMILY  COUPLES  SENIORS  SINGLE ADULT	 LARGE FAMILY  FAMILY	TARGET GROUP
SIZE	87m <sup>2</sup>	117m <sup>2</sup>	143m <sup>2</sup>	SIZE



BACK FACADE





## THE SHARING HOUSE

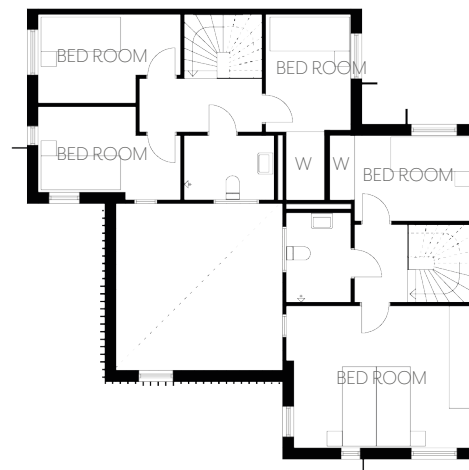
sustainability by sharing resources

The Sharing house contains the important household functions within a reduced floor area, using shared spaces. It works as a modern version of the collective accommodation with larger common rooms on ground floor and private bedrooms on floor one. If six people live here it is about 29 m<sup>2</sup> /person which is 35% lower than the Swedish average (44m<sup>2</sup>). The household has qualities such as a shared light entrance

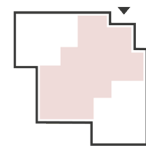
with close connection to laundry room and storage promotes contact between neighbors. The shared kitchen and dining room with double ceiling height is placed in between the two private living rooms for a close connection and possibility to choose level of privacy while dining. To facilitate a variety of residents the master bed room can be divided into smaller ones.



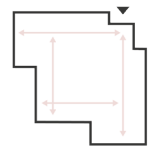
ENTRANCE FLOOR  
97 m<sup>2</sup>



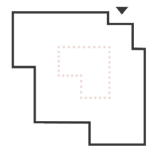
FLOOR ONE  
77 m<sup>2</sup>



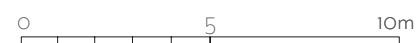
shared area



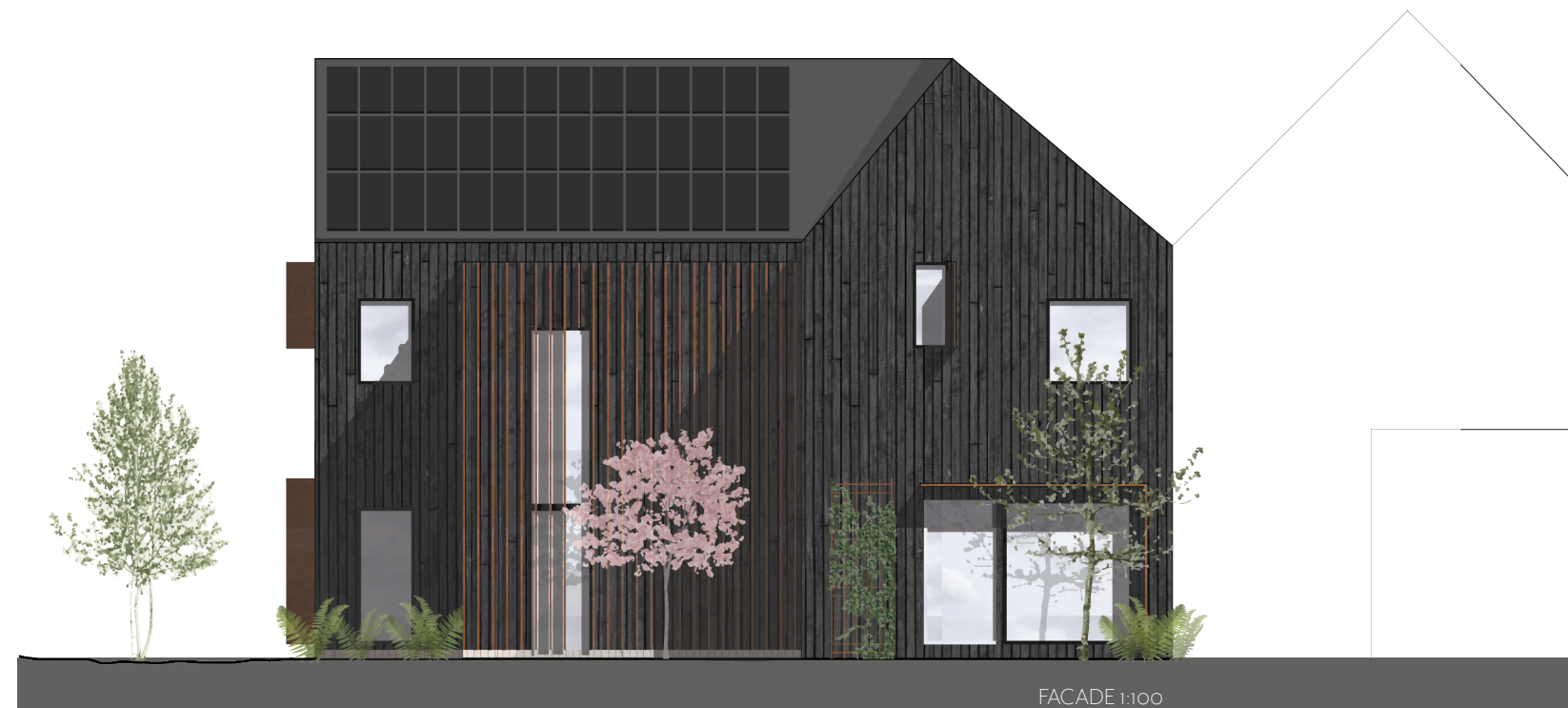
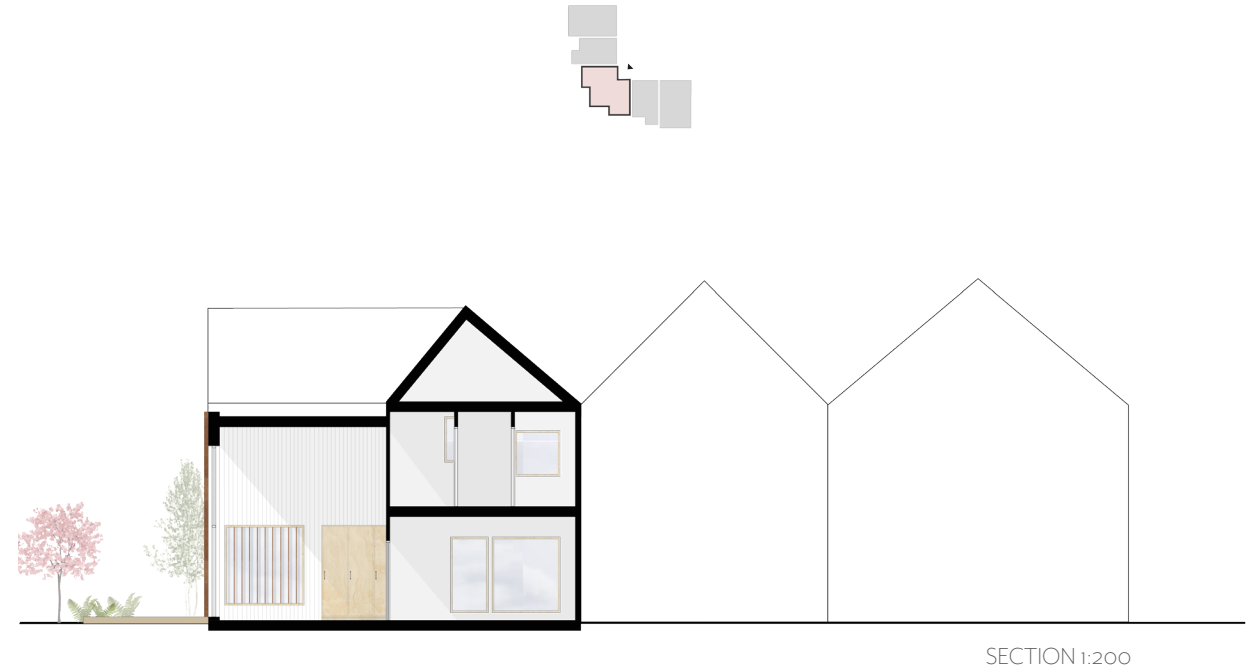
sight lines



plumbing rooms



SCALE 1:200





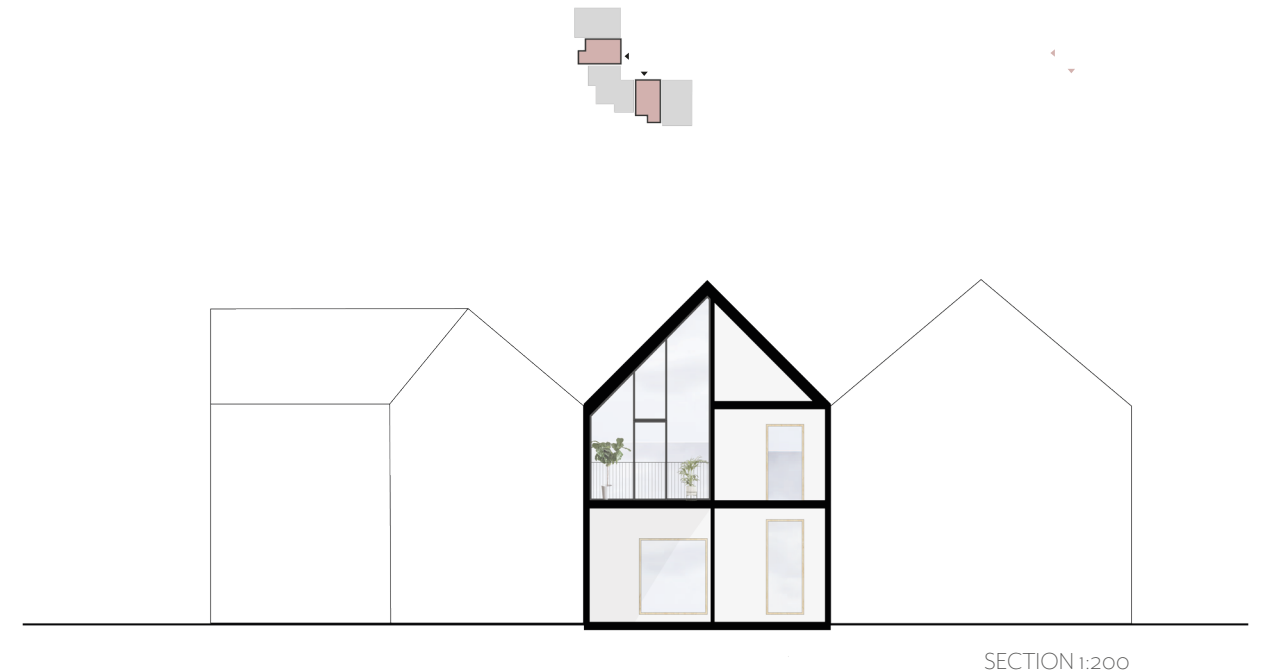
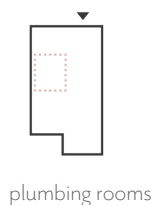
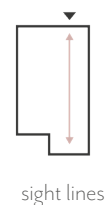
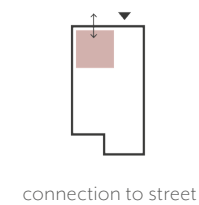


## THE ADAPTABLE HOUSE

sustainability over time

Family constellations change over time and entails other living needs. Due to the questionnaire (see result earlier in booklet) one reason of why residents plan to move in the coming years is that they will either outgrow the household when the family gets bigger or have a too large dwelling when children move out. In order to meet this need of adaptability this dwelling can partly be cut off and rent out in different

ways, to apartments or as work space. The row house is prepared with a larger entrance with a direct connection to the stairs. This part will be blocked off with doors when the household change. Level one has a terrace to create a private outdoor space for when the row house divides in two apartments. The plans are laid out similar to each other with shafts and functions in the same place.



SECTION 1:200



FACADE 1:100

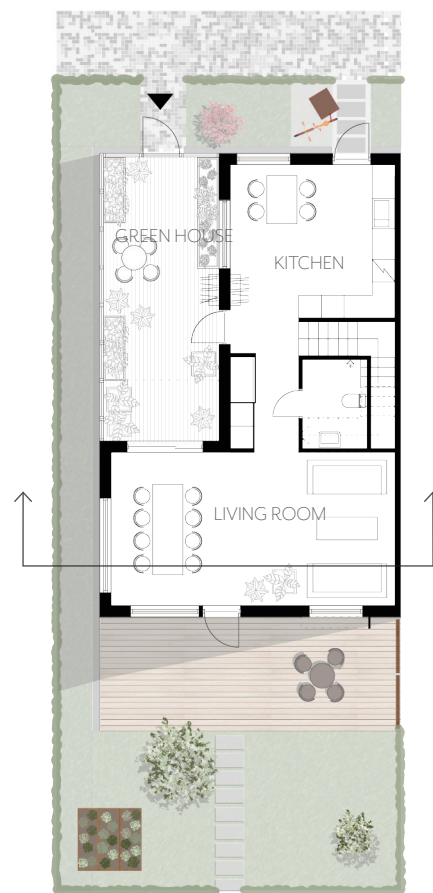


## THE FARMING HOUSE

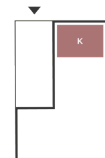
sustainability by contact with nature

Self sufficiency will be much more common and necessary in the future. The end houses are focusing on creating contact with nature and ability to grow things on site. To make the green house an important part of the dwelling it has a central position and function. The green house works as an airlock and outer hall the residents have to pass before entering the inner entrance.

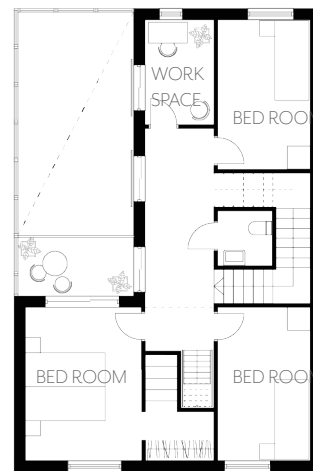
It also works for preheating the air before entering the household, and facilitates natural ventilation with air outlet in the upper part of the glazed roof. Large sliding doors are open-able to blur the line between out and indoors and extend the rooms towards the green house. The tall pitched roof is utilized for a loft with connection to the open area.



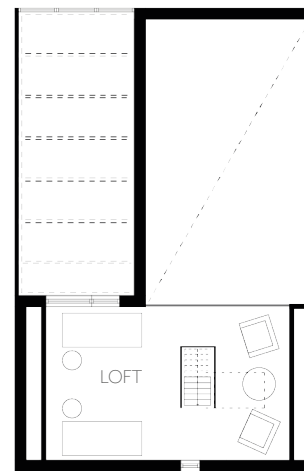
ENTRANCE FLOOR  
63 m<sup>2</sup>



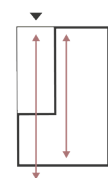
connection to street



FLOOR ONE  
63 m<sup>2</sup>



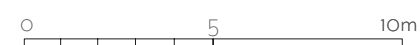
LOFT  
17 m<sup>2</sup>



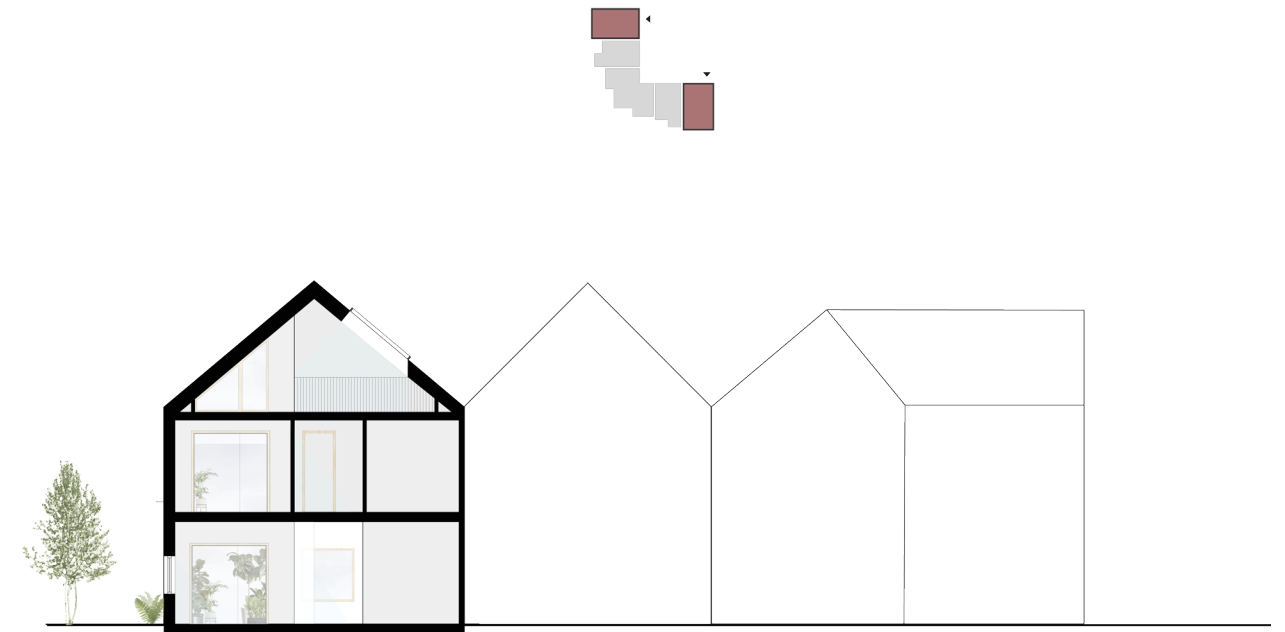
sight lines



plumbing rooms



SCALE 1:200



SECTION 1:200



FACADE 1:100





THE SHARING HOUSE - KITCHEN VIEW



THE ADAPTABLE HOUSE - LIVING ROOM VIEW



THE FARMING HOUSE - GREEN HOUSE VIEW



## CONCLUSION

Working with research by design have led to conclusions for this concept. The outcome shows that designing with human perspective, sharing resources and diversity in mind can result in architecture that better respond to the sustainable demands in both a social, economical and environmental view.

The proposal has addressed a **user perspective** to achieve usability by understanding what residents really need and what they are willing to change in their lives. The questionnaire and interviews influenced the design work for example, size of households, sharing resources and functions within reachable distances. Also that the **green choice has to be the most simple** and accessible one.

It is possible to **increase the interaction** between people by placing the households **facing conceived objects** for better connection and create a flow where all residents are nudged to walk to reach their daily needs.

One key aspect is to choose the right place for building this concept. The site needs to have **public transport** with in reach, about 1km. Preferably a bus stop central placed and visible for residents within a close reach. The detail plan have to allow **common parking**.

When learning more about collaborative consumption and sharing resources it became clear that it contains some solutions to the problem of todays housing market. It leads to possibly **lower the amount of square meters** and thereby also **energy saving**.

This thesis has shown the importance of **providing more and useful semi-private zones** to enhance the social interaction among neighbors. The **out door areas are very significant for a community**, by providing larger useful common areas the private ones can be kept smaller.

The modern way of **sharing challenge the traditional idea of the neighborhood**. By reshape the community the experience of the neighbors can also change, we can see the neighbors as valuable assets rather than other people just passing by.

**Different types of dwellings** are necessary for creating a diversity in the area. To widen the target group users different needs have to be met, in this case in form of **dwelling size and sustainable focus**.

**Different sized households**, makes it possible to **move within the residential community**, which many people prefer when their lives are built up around the specific community.

In the process I understood the importance of creating places for **spontaneously meetings** by nudging people to these places and create a **flow of people**. When people are there, activities can occur and eventually shape relations.

## DISCUSSION

This project started with an intention to bring awareness of sustainability and to challenge today's housing community. My goal was to look beyond technology and material approaches and instead search for design solutions that influence the residents to live more sustainable and what functions it takes to create such a community.

Looking at the result, I do believe that this row house area will have a stronger sense of community and neighbors will meet to a greater extent than regular row house areas being built today. That being said, this is not the only way to design for sustainability. Other choices along the way would have led to other results. One example of this is when I took the decision of working with the L-shapes to create a strong entrance cluster, the rooms around the houses was affected, another lay out concept would have given other qualities.

One can also question the positioning of the dwellings. I chose to let the including feeling and community concept stand above the building orientation. I do understand that the most economical way to layout an entrance cluster is to have the private gardens in south and west orientation. But in this case, because of the concept, I chose to focus on the importance of the common green areas and shared spaces rather than creating a perfect out door space for each household. Placing the car parking separated from the households can also be questioned. The thesis required this to give room for my vision - human centric. I chose to try this concept to the edge and took this decision early in the process as a way to limit and strengthen the concept. In reality this is an area with a lot of regulations from the municipality and also a comfort question for the residents. I believe in such a solution in the coming future, when other electric vehicles are further developed.

My intention of nudging was to make the green solution the simplest and most accessible one. For example placing the carpool in the best spots on the parking area. Make the bike parking spacious and direct people to the flow where functions are placed.

Pretty early in the process I decided to divide the sustainable focus in the different households since it is really hard to create THE sustainable floor plan. The word sustainable is wide and contains too many aspects, I decided to concentrate my focus.

I chose to not focusing too much on Ekeblad's concept specifically. To develop and create a new concept I had to let go of some realistic rules that are very learned and tangible. I chose to create new floor plans from scratch even though I am well aware of when drawing we take a lot of inspiration from what we earlier experienced. The fact that I have experience of working with row houses and communities was very helpful in my process of moving forward having the traditional layout as an reference and also the possibility to get direct contact with residents at Ekeblad bostad's houses.

I think the main concept of this proposal could work in different settings. The site and context plays a large role though. Many parameters have to get along, service in the area, distance to work and schools and bike lanes around the site. The possibility of creating shared functions depends on amount of households. The concept is in this way sensitive to its context and planning made by the municipality. With suitable sustainability I hope to contribute to the field of architecture by expanding the discussion on sustainable design and open up for changes we have to do to be able to live more sustainable. This proposal illustrates the philosophy in one way. The proposal should be seen as a comment to the housing debate. I believe that we need new typologies that focuses more on the human and sustainable solutions that could develop towards self sufficiency in the future.

HUMAN CENTRIC



SHARING



DIVERSITY





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SUITABLE SUSTAINABILITY  
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## APPENDIX

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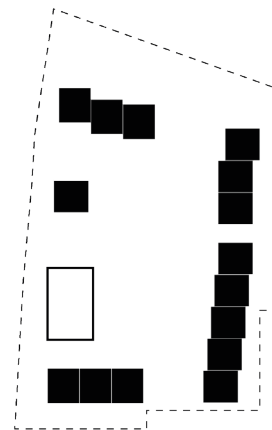
## ANKERHAGEN

Hamar, Norway

ARCHITECT: WIR architects

YEAR: 2018

SIZE: 200 households



### ABOUT THE PROJECT

Ankerhagen is planned for about 200 dwellings, situated in a central area in the village and close to nature. The project mixes urban qualities with a green environment, with different house types, outdoor areas and common facilities. The area consists of four courtyards with green and blue connections. A lot of effort is put on the biking and walking paths, in order to be easily accessible. In the middle of the area "the central square" - a local meeting point is situated. To reduce the transports for people and strengthen the social sustainability there is a common office room in placed.

### WHAT I BRING WITH ME

- A lot of sharing resources
- Houses placed around a court yard
- Roof terraces



PRIVATE HOUSING

COMMUNITY

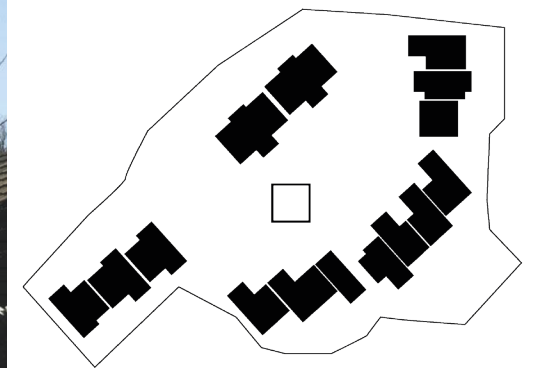
## SJØLUND

Helsingør, Denmark

ARCHITECT: Boje Lundgaard & Bente Aude

YEAR: 1976-1978

SIZE: 74 households



### ABOUT THE PROJECT

Sjølund is one of Denmark's first high exploited residential area. Their vision was to create an urban village that has grown during many years. The area consists of rooms with different character, from public, semi public and private yet keeping the excision character of the natural park. The households are closely placed, creating the street that at some places opens up to a square. In the area 16 different house variations can be found, from 116 - 166 m<sup>2</sup>.

### WHAT I BRING WITH ME

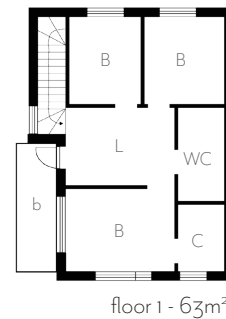
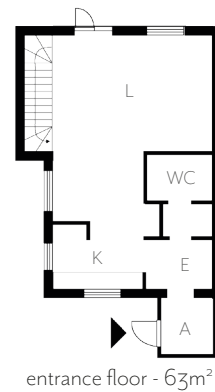
- High exploitation
- Buildings placed following landscape



PRIVATE HOUSING

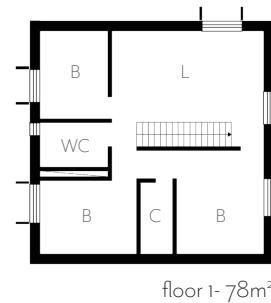
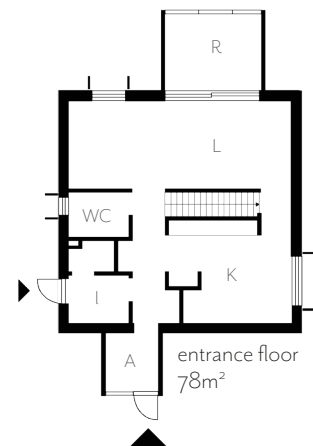
COMMUNITY

FINDINGS IN FLOOR PLANS



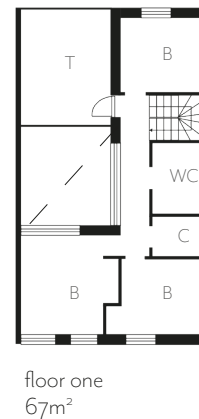
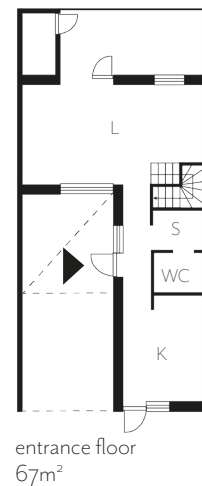
BRIGHT LIVING

Airlock in entrance, inner entrance connected to both bathroom and kitchen. When entering the first floor, a good overview of all rooms, larger and useful living room.



ONE TONNE LIFE

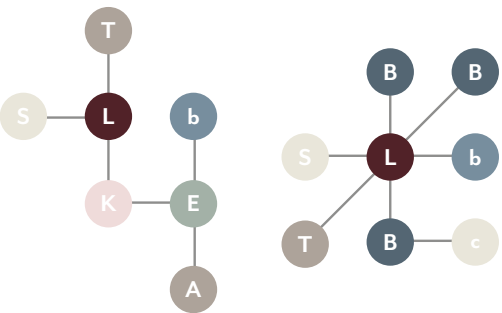
Airlock in entrance and an inner entrance connected to the storage and carport. Stairs are placed central in floor plan. Sun shading around windows.



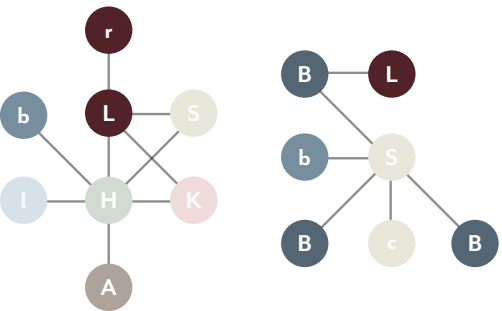
ÄPPELTRÄDGÅRDEN

Private pockets are created by atrium and terrace area. Kitchens area placed towards street for social connection. The private gardens are small but well planned. The atrium is creating light in inner parts f the household.

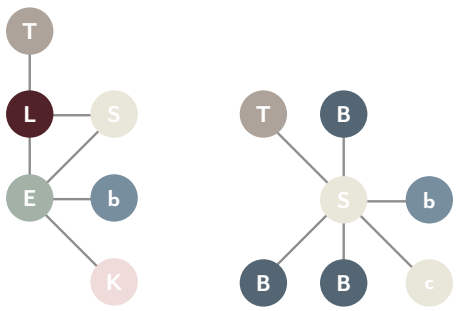
FINDINGS IN FLOOR PLANS



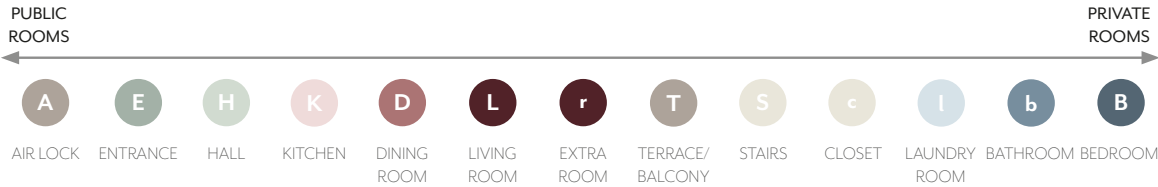
BRIGHT LIVING



ONE TONNE LIFE



ÄPPELTRÄDGÅRDEN





QUESTIONNAIRE

Questions sent out to Ekeblad ´s residents

1. VAR BOR DU?

Jönköping  
Falkenberg  
Lödöse
2. DITT FÖDELSEÅR
3. KÖN
4. SYSSELSÄTTNING

yrkesarbetar  
studerar  
pensionär  
föräldraledig  
annat
5. HUR MÅNGA BOR I BOSTADEN?
6. HUR MÅNGA AV ER ÄR UNDER 18 ÅR?
7. VILKET ÅR FLYTTADE DU IN I BOSTADEN?
8. HUR TRIVS DU DÄR DU BOR?

0-5
9. VAD ÄR DET BÄSTA MED ATT BO DÄR DU BOR?

läget  
grannar  
skola  
arbete  
naturen  
närhet till familj  
annat
10. HUR UPPLEVER DU STORLEKEN AV DIN BOSTAD?

0-5
11. HUR VÄL PASSAR BOSTADEN DINA NUVARANDE BEHOV?

0-5
12. SER DU BEHOV AV ATT FLYTTA FRÅN BOSTADEN?

nej  
ja, inom 5 år  
ja, inom 10 år
13. VAD ÄR ANLEDNINGEN TILL BEHOV AV FLYTT?
14. FINNS DET RUM I BOSTADEN SOM SKULLE BEHÖVA MER YTA?

- hall  
kök  
tvättstuga  
badrum  
sovrum (master)  
sovrum  
vardagsrum
15. FINNS DET RUM I BOSTADEN SOM KAN HA MINDRE YTA?
- hall  
kök  
tvättstuga  
badrum  
sovrum (master)  
sovrum  
vardagsrum
16. HUR VIKTIG DEL ÄR DIN TRÄDGÅRD FÖR DIN / ER BOSTAD?
- 0-5
17. HUR UPPLEVER DU STORLEKEN AV TOMTEN PÅ DIN ENTRÉSIDA?
- 0-5
18. HUR UPPLEVER DU STORLEKEN AV TOMTEN PÅ DIN TRÄDGÅRD?
- 0,5
19. VAD ANVÄNDER DU/NI ENTRÉSIDAN TILL?
- växtlighet  
odling (ätbart)  
social yta  
lek  
förvaring  
cykelparkering  
bilverkstad  
annat
20. VAD ANVÄNDER DU/NI TRÄDGÅRDEN TILL?
- växtlighet  
odling (ätbart)  
social yta  
lek  
förvaring  
cykelparkering  
bilverkstad  
annat

21. HUR UPPLEVER DU GENERELLT GEMENSKAPEN MED DINA GRANNAR?
- 0-5
22. ÖNSKAR DU EN FÖRÄNDRAD GEMENSKAP MED DINA GRANNAR?
- mer  
mindre  
ingen uppfattning
23. VAR I BOSTADSOMRÅDET MÖTER DU DINA GRANNAR?
- gemensam gård / lekplats  
i bostad  
på gatan  
i trädgård  
soprum  
parkering  
cykelparkering  
annat
24. HUR OFTA ANVÄNDER DU/NI BOSTADSFÖRENINGENS GEMENSAMMA UTOMHUSYTOR?
- sällan  
varje månad  
varje vecka  
varje dag  
finns inga gemensamma ytor
25. VILKEN / VILKA RESURSER KAN DU TÄNKA DIG DELA MED DINA GRANNAR?
- verktyg, gräsklippare  
cykelverkstad  
odlingsyta  
övernattnings-gemensamhetslokal  
bilpool  
ingenting  
annat
26. ÄGER DU / NI BIL?
- ja  
nej
27. ÄR DU / NI MED I BILPOOL?
- ja  
nej  
hade velat vara
28. HUR TAR DU DIG TILL ARBETET/DAGLIG AKTIVITET?
- gång  
cykel/elcyke

- elbil  
bil (diesel/bensin)  
buss / spårvagn  
tåg / pendeltåg  
arbetar hemma  
annat
- 29.HUR UPPLEVER DU KOLLEKTIVTRAFIKEN I DITT OMRÅDE?
- 0-5
30. HUR TYCKER DU MÖJLIGHETEN ATT SOPSORTERA ÄR I BOSTADEN?
- 0-5
31. VAD ÅTERVINNER DITT HUSHÅLL?
- glas  
plast  
matavfall  
metall  
kartong / papp  
tidningar  
elektronik  
batterier
32. SKULLE HÅLLBARHET PÅVERKA DITT VAL AV BOSTAD IDAG?
- ja  
nej  
vet ej
33. KAN DU TÄNKA DIG ATT BETALA MER FÖR ATT LEVA MER HÅLLBART?
- ja  
nej  
vet ej
34. KAN DU TÄNKA DIG ATT BO PÅ MINDRE YTA FÖR ATT SPARA RESURSER?
- ja  
nej  
vet ej
35. HUR MYCKET MINDRE?
- från nuvarande till 100kvm  
från nuvarande till 85kvm  
från nuvarande till 70kvm
36. FINNS DET NÅGOT DU VILL TILLÄGGA?

INTERVIEW

Interview questions for Ekeblad´s residents

VAL AV BOSTAD:

- 1. Vad sökte du/ni när ni letade botad?
- 2. Var för storlekar på husen letade ni efter?
- 3. Vad fick er att välja detta alternativ?

13. Var är soprummet placerat? distans? passerar du detta ofta? hur upplever du utformningen av det? Skulle detta påverka användandet?

14. Finns det något i områdets eller bostadens utformning som hindrar dig från att göra hållbara val?

15. Vilka konkreta hållbara kvalitéer skulle påverka ditt val av bostad idag? bostaden? planlösning? storlek? klimatskal? stomme? material? social hållbarhet? energikälla?

TRÄDGÅRD:

- 4. Är det något konkret du saknar i trädgården /funktion?
- 5. Hade en gemensam gård kunnat fylla denna funktion?
- 6. Om det fanns gemensamma utomhusytor med ex grillplats / lekplats hade du och din familj använt detta?
- 7. Hur upplever du privatheten i din trädgård?

16. För vad (konkret) kan du tänka dig att betala mer för att leva hållbart?

17.Finns det något du vill tillägga?

TRANSPORT:

- 8. Hur skulle du tycka att det var om bilen parkerades på en gemensam parkering ca 100-200 m från bostaden?
- 9. Skulle du kunna jobba i området om lokal fanns?
- 10. Skulle en mer utvecklad kollektivtrafik kunna ersätta bilbehovet?
- 11. Hur är vägen och distansen till närmaste kollektivtrafik? Syns den från området?

HÅLLBARHET:

- 12. På vilket sätt kan sopsorteringen i bostaden/ området förbättras?



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