

The background of the entire page is a detailed aerial map of the Krokåsbygd area in Sweden. The map is rendered in a light red color. Overlaid on this map is a complex network of white lines that trace the outlines of buildings, streets, and other urban features, creating a high-contrast, technical drawing effect. The overall aesthetic is clean and architectural.

Re:designing the hinterlands

Master Thesis Project in Sustainable Urban Design

2019

David Larsson

Kroksbäck

Re:designing the hinterlands

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Master Thesis Degree Project in Sustainable Urban Design

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PREFACE

This master thesis is a project about finding new local connections, where the original thought has been to connect a central node towards something distant. This thesis is about how to shift a current structure built during one paradigm into something that could serve the city and its inhabitants of today, living under shifting times and an uncertain future. This thesis is about using and refining whats already at place, but not fully visible today.

The site chosen for the topic Re:designing the hinterland is Kroksbäck in Malmö, a housing district built during the 60:s building boom in Sweden, what is today referred to as "the million dwellings program". The district is very much a child of its time and this could be seen on many places around the area. From the traffic separation to the orthogonal grid.

Although one site is chosen for this thesis the problems that comes through the thesis can be seen in many places in Sweden. Highways portraying as the great regional connectors dividing neighbouring areas critically amplifying the current socioeconomical differences. How can these differences and islands within the city be bridged?

INTRODUCTION

AREA

Kroksbäck is named after a farm situated on the same location. The current buildings are placed on what previously where unbuilt agricultural land.

Kroksbäck was planned in 1965 and the urban plan was made by head of city planning Gabriel Winge. The plan stated multifamily houses in 2, 3 and 8 stories. In-between the Kroksbäcksparken and Kroksbäck there is a submerged road named Hyllievångsvägen connecting too two other cul-de-sac roads leading in to Kroksbäck and in its extension down to the submerged garages under the house's courtyards. Above the submerged roads there are bridges crossing intended for pedestrians and bikers. This separation is a product of the well-known SCAFT planning. The area of Kroksbäck is one of the few areas in south Malmö where such a thorough implementation of the SCAFT principles can be seen. In-between the house it was planned to place kindergarten and commercial facility's, other communal functions where planned to be placed along the park.

Kroksbäck was built partly by MKB and partly by HSB (MKB=Malmö's kommunala bostadsbolag / HSB = Hyresgästernas sparkasse- och byggnadsförening). MKB's houses were drawn by Axel Carlsson respektive Thorsten Roos and Bror Thornberg in 1965. HSB did the houses in the north part of the site and used their own architecture firm "HSB Arkitektkontor Malmö" (Riksantikvareämbetet).



SITUATION TODAY

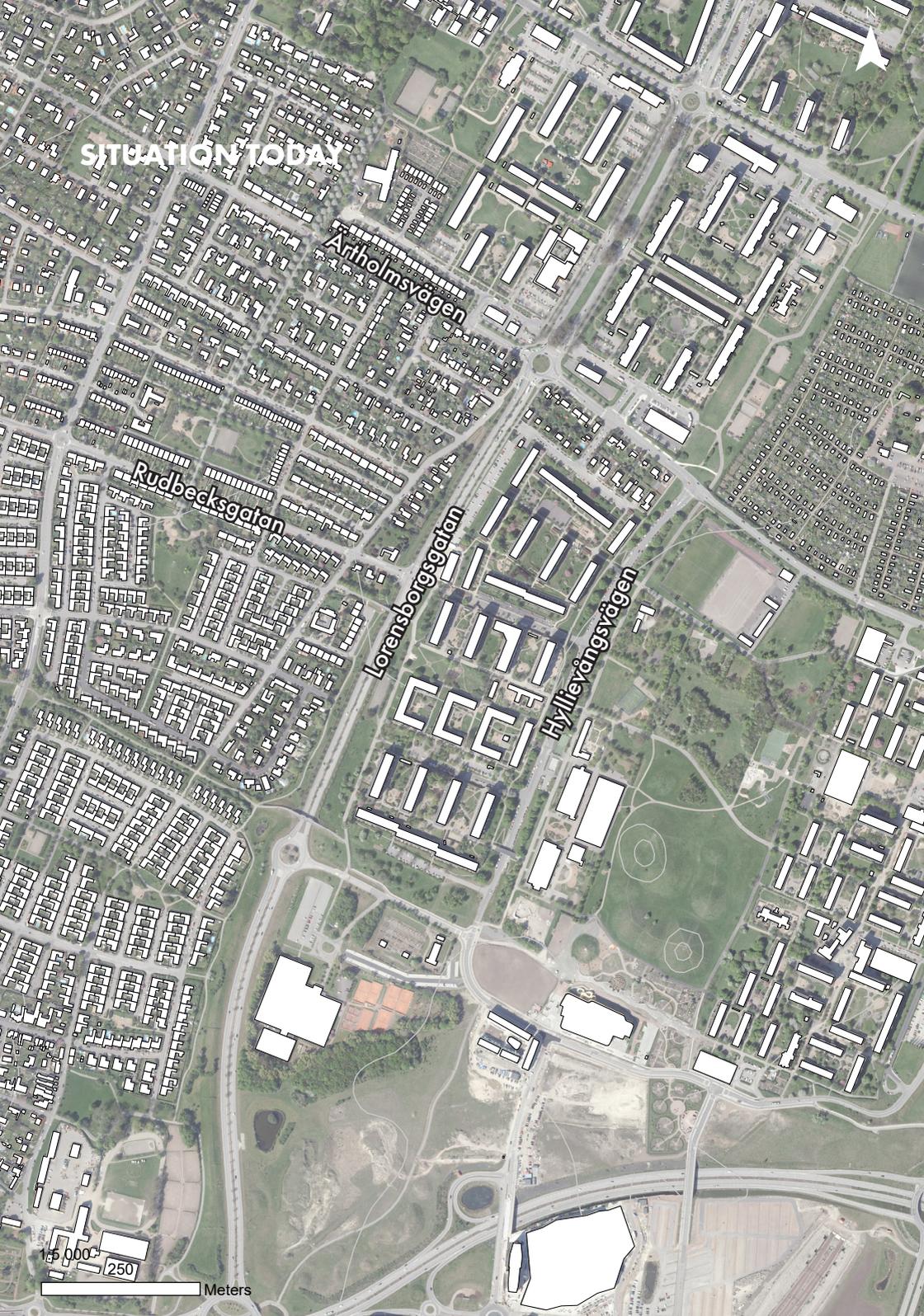
Arholmsvägen

Rudbecksgatan

Lorensborgsgatan

Hyllievångsvägen

0 250 Meters

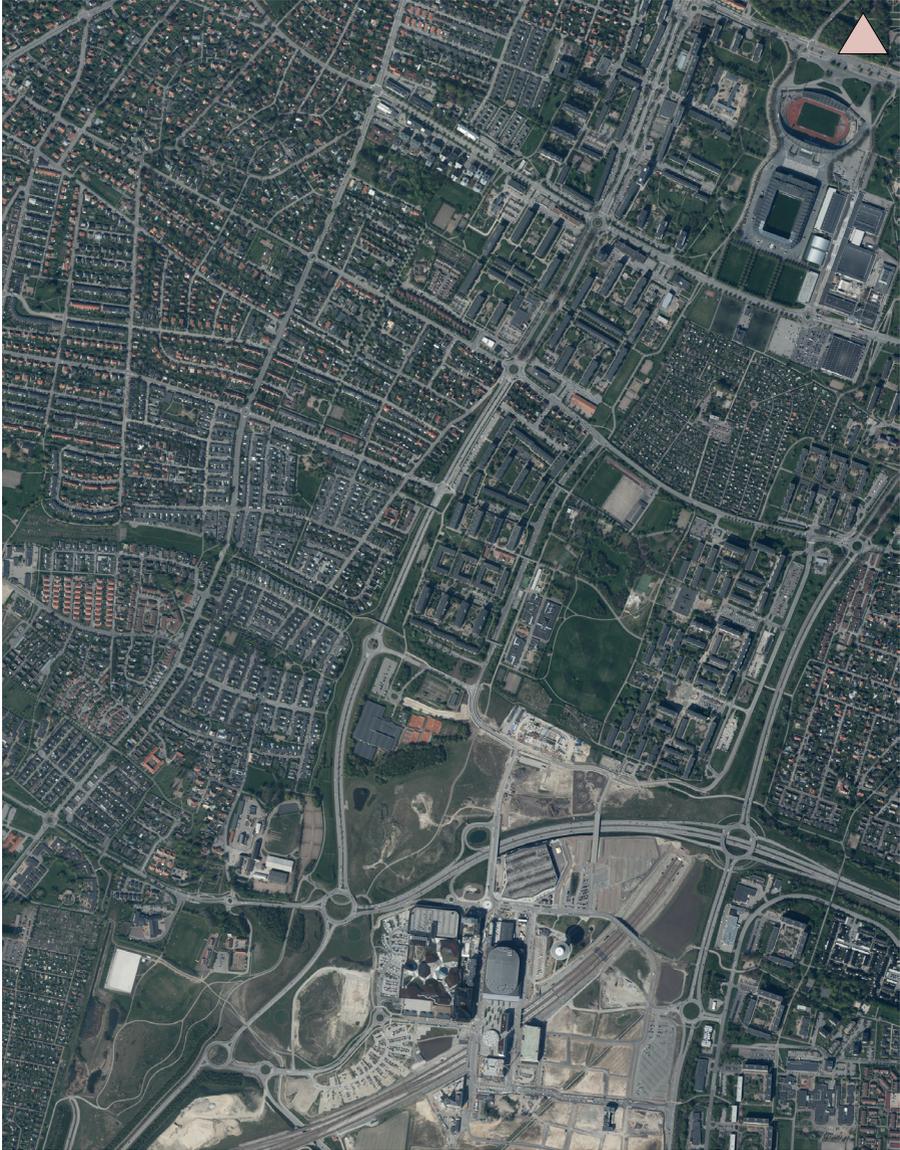


HISTORY AND ORIGINS



Then

Originally the place for the site was farmland in the very outskirts of Malmö. Kroksbäck got its name from a former farm situated on the site. For reference Malmö stadium can be seen in the top right corner.



Now

Today it's clear that Kroksbäck's position within Malmö has shifted, from the boarder of Malmö when built, towards an integrated part within the city-weave. South of the site the newly developed district of Hyllie can be seen, together with the railroad towards Copenhagen.

THE MILLION DWELINGS PROGRAM

Originally it wasn't named the million program, the name was given later on. From the beginning the Swedish government launched a plan to build 100 000 new dwellings per year during a 10 year period. Although in hindsight this initiative got known as the million dwellings program.

Kroksbäck is a part of the Swedish national initiative to build a million new housing units during the years 1965-1975, what today is known as the million programs. In retrospect these houses built during that era is (and has been) heavily debated. But to better understand where they come from and why they are constituted the way they are as brief historical expose is much needed.

The Swedish housing policy started to take form with the two final reports from the (bostadssociala utredningen) roughly translated "social housing investigation". The two final reports came in 1945 and 1947 and started to steer the way for the Swedish housing policies and in what way Sweden should tackle its domestic housing problem. The responsibility for providing housing was handed over to the municipalities. The institutes in charge for regional planning was strengthen and public housing companies was formed. The shift in sheer number of units developed per year wasn't that great annually, although increasing. But the political will and continuity was the shift and what in retrospect be known as the housing achievement of the "record years". Although the million-program era often is referred to as a time frame in between 1965-1975 the start of the "million program era" is diffuse with no apparent start. Although the end came more abrupt with a sinking demand of the housing stock in the mid-70s, declining immigration and higher emigration as well as large post-war youth population growing up. Left alot of apartments empty, something that hasn't been foreseen in budgets to keep up with the empty stock. Instead the building of single-family households grew (Hall 1999, 25-29).





SPATIAL CONSTITUTION (SCAFT)

Kroksbäck similar to many other million program areas with multifamily units built in Sweden is planned according to the SCAFT principles. The SCAFT principles being an acronym for (Stadsbyggnad, Chalmers tekniska högskola). SCAFT is traffic principles for planning stated by Chalmers university in collaboration with the traffic ministry and the ministry for planning, these were principles that would heavily influence the European post-war planning.

The intentions stated in the report (Principles for urban planning with respect to road safety: the SCAFT guidelines 1968) were primarily to achieve a more secure traffic environment and to minimize the accidents caused by traffic. The approach to achieve the goals were highly contemporary with a heavily technocratic approach. By separation of different traffic-means and hierarchy division of different types of roads a safer and more coherent traffic situation would be obtained.

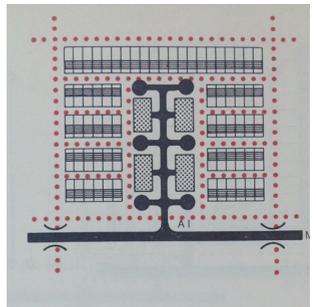
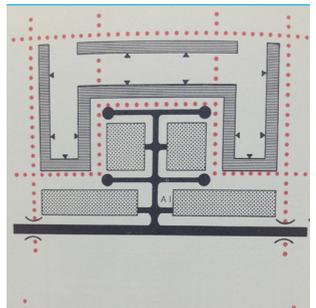
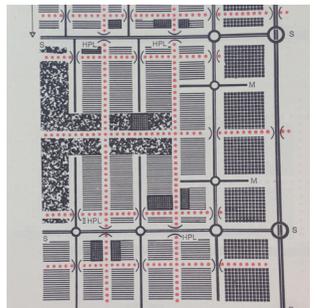
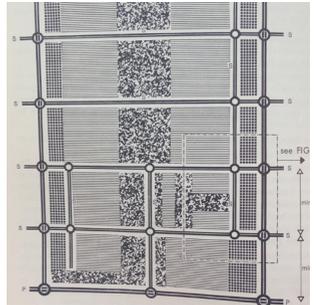
Kroksbäck was one of the first areas within the million programs being built in Sweden. Kroksbäck can therefore little blatantly be called too be the "Ground-zero" of the million program. The unique thing for Kroksbäck in a Malmö perspective is how the district is thoroughly planned towards the car (Riksanstikvarieämbetet). As mentioned in the introduction of SCAFT planning Kroksbäck is an extraordinarily product of its time. Walking in and around the area one could sense the 60-70ths automobile optimism. As easy as it is to criticise the form, we ought to remember the incentives that brought it to reality. When the SCAFT planning was proposed, post-war Europe was still reorganizing, Sweden being left out from the war took of a start of the record years. People started to get better economy and the state started to lift Sweden from appalling living standards to one of Europe's most modern.

The SCAFT principles takes the stand from a traffic safety point of view. The idea was to minimize hazards. That was believed to otherwise massively increase in the same rate as the more common car ownership of the 50 and 60. To achieve this traffic separation of different type of vehicles and pedestrians was prioritized. These separations were often done in the form of pedestrian bridges, where bikes and pedestrians could safely cross the roads. The principle of SCAFT was also manifested in an internal organisation in hierarchy of roads. These different roads were National and regional roads (25 m), district distributors (10m), local distributors (5m) and service roads (3m), all of them also with a prescribed minimum width.

The national road were roads primarily for inter-regional traffic, and national roads were for in between cities. District distributor was meant as a road forming a link between a district and a regional distributor and distributing traffic within the area. The local distributor was meant to distribute traffic within an environmental area. Service roads a road with speed limit of 50 km/h giving approach to property, car park etc (Statens vägverk, 1968)

Reading the guidelines everything is thought of and a norm is given for practically everything. This system might be highly efficient in a traffic planning point of view. Although they don't acknowledge the local circumstances, why we today have a lot of housing areas all looking the same although situated in different places. The guidelines also came with extensive schematics and diagrams showing how the guidelines was going to be implemented. Although the problem with this was that the schematics went from being schematics in to actual plans. On the right side some examples can be seen from

the guidelines and how these examples were presented.



PLANING DOCUMENTS

In 2013 Malmö's planning department got the task to develop a program for the future development of Holma and Kroksbäck. During the process a citizen dialog was held with different stakeholders and ...

The planning document is mainly focusing on the development of Pildamsvägen in the adjoining area of Holma, and how to redevelop this road to become more integrated in the city and how to bridge the existing gap between Holma and Grönadal. A situation very similar to the situation within the site of Kroksbäck and Lorensborgsgatan.

The planning program is designated towards both Holma and Kroksbäck although the part of Holma is further developed whilst the part on Kroksbäck is more sparsely and visionary in its approach. Although there is handy pointers for the future development and the vision of Malmö city towards the situation around Holma and Kroksbäck.

The document in itself has 5 different strategies to be guiding the document. These are 1 the already existing residential areas. Which are supposed to be the residents safe "livingrooms". 2. The park of Kroksbäck's kullar which is supposed to be a node of attraction for the whole city of Malmö. 3. The park's edges that's going to be an eventful and safe space enhancing attractiveness for both the park and the surrounding residential areas. 4 the out-facing edge, the edges are proposed to tie the area closer within the city weave and signal a new Holma and Kroksbäck. 5 new paths that leads the way through the area and is used as a gathering function for the inhabitants.

Within these strategies there are recommendations made for the future development of Holma and Kroksbäck. Underneath is a list of some of the recommendations that has been used as guidelines within this project.

1

In the case for the safe "livingrooms" the calm character of the yards are going to be kept and in the same time as a contrast to the lively paths through the area. There is also proposed to stronger clarify the differences between private and public, and to do so by using new entrance spaces and privatized transition zones such as gardens in front of the houses. Self governance in the case of the inhabitants yards is going to have a greater influence within the area. There is also proposed that it's going to be place for the tenants to grow inside of the courtyards. Recommendations are also made to keep the regularity and orthogonal character of the areas as well as the surrounding greenery, both stated as important factors.

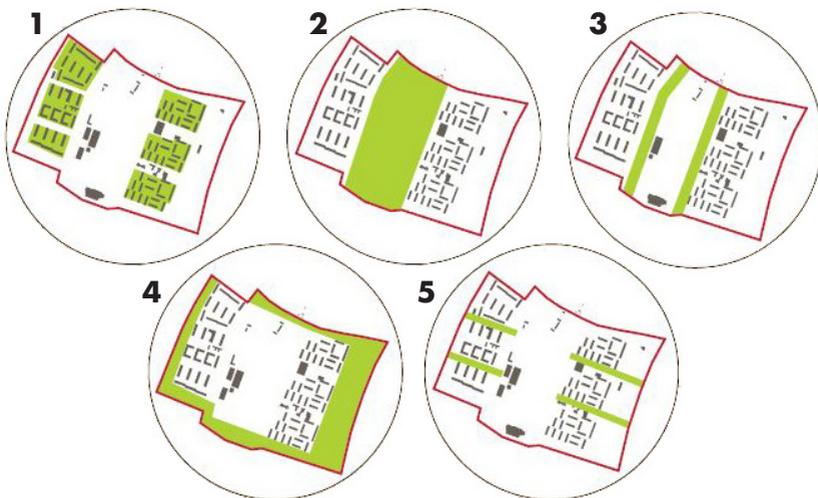
2

The park is one of the bigger parks in central Malmö and a part of the park axis of "Pildamstråket". The thought is to develop the park according to the program for Kroksbäcksparken (2008). Towards the western part of the park the idea is to develop a green bike and pedestrian boulevard, from Malmö central towards the center of Hyllie and onwards to Bunkeflostrand. This path is meant to display both the park as well as the residential areas for people passing by. Parts of the park are thought to have open storm water management in open ditches with open fields with a meadow character. The sportfields of Kroksbäck IP is meant to be kept and developed.

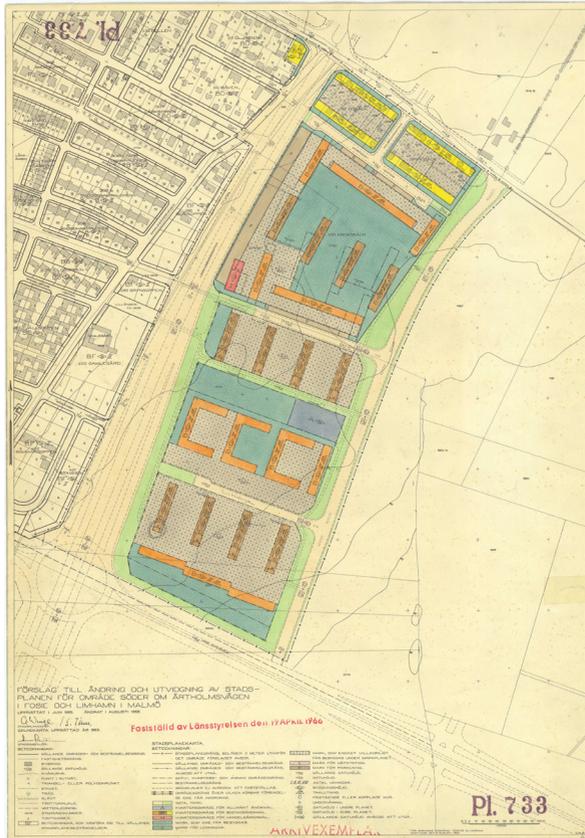
3
The edges are thought to be fronted by the new residential areas to create a safe and lively edge zone to the park. People walking along the edge of the park is going to experience a safe walk with relation towards the open residential development, windows, entrances and private zones etc as well as experience the vast views over the park and the parks lush character.

4
The edges towards the surrounding streets is going to be filled with closer, denser and more interesting buildings and public spaces. A denser concentration of entrances is going to put "eyes on the street" together with new plantations that is going to contribute to a nicer and more safe street scape. Public functions in the ground floor of the buildings along all of the edges facing the streets but in particular in the crossroads. Entrances towards Kroksbäck is going to be enhanced with spectacular and inviting buildings clearly showing the entrance towards the site.

5
The connections through the areas is thought to be given different and unique qualities making it easier to navigate through the area. They are thought to gather the life in the city and contribute to the sites identity. The new and existing streets are going to be connected towards Lorensborgsgatan. Activities and functions that activates and connect people are prioritized along the paths. The ground floor is going to be designed to contribute to social control and have entrances and windows towards the street. (Malmö stad, 2013 s. 14-25)



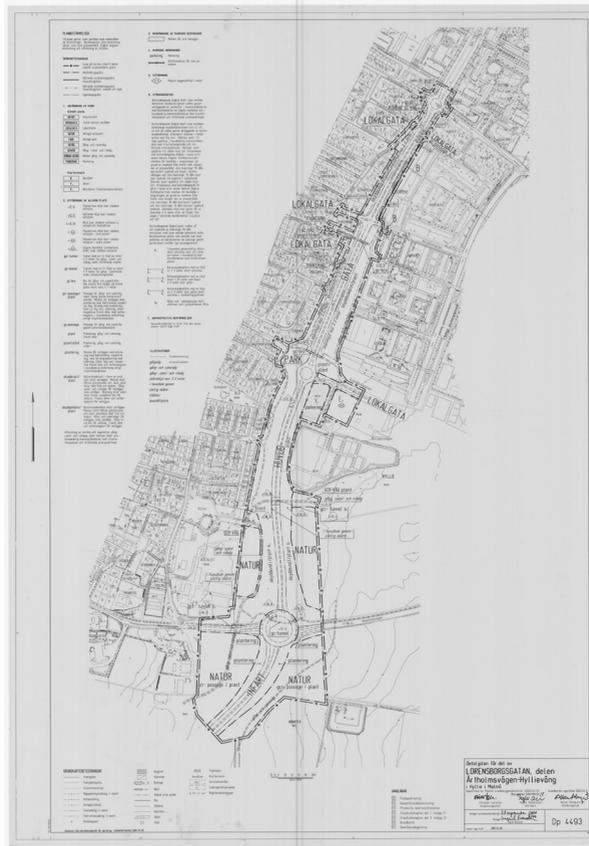
Detailed development plan 1966



The original detailed development as shown here above has been very much fully executed as planned. The plan from 1966 is almost exactly what's there today. The sign of the era is obvious the orthogonal layout the tall slab houses. Not much has been changed within the site from the original plan. The larger communal spaces within the modernistic planning could in this case be further utilized towards densifying the area with more residential, commerce and community buildings. Although these spaces come with some challenges that must be taken in account. The spaces are usually situated in smaller slopes and valleys.

The intention of the plan was to prepare for higher residential building within 3 to 8 floors. In the middle of the plan there was space designated for common purposes. Within the north part there is a smaller area saved for already existing detached housing.

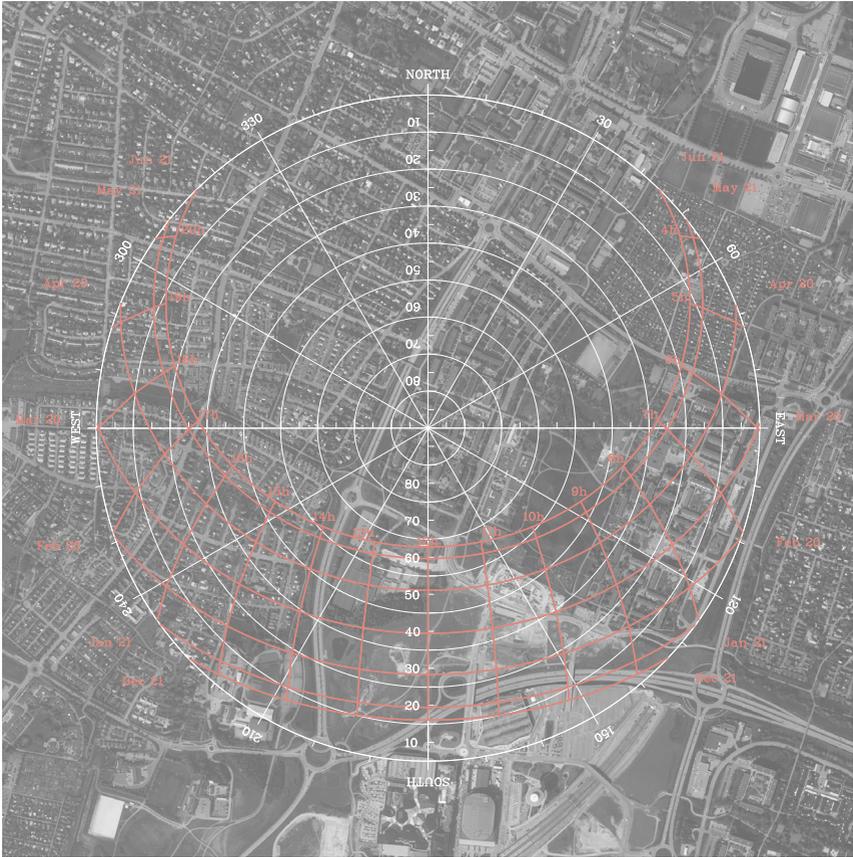
Detailed development plan 2000



The detailed development plan for Lorensborgsgatan came out in 2000. The intent with the plan was to enhance the existing connection from the highway and the Öresundbridge towards the western part of Malmö central. From Ärtholmsvägen towards the outer ring road and Vintrie traffic-node. Because of the build of the Öresund bridge this plan was important to implement due to increased traffic from and towards Copenhagen. Therefore, also widening the street from two to four lanes in its whole extent. In the program the focus is mainly on the "traffic solution" side, where its thought to use different landscape features to give user of the highway a sequence of different places. And the noise protection slopes could be used as eco-paths and landscape features.

ANALYSIS

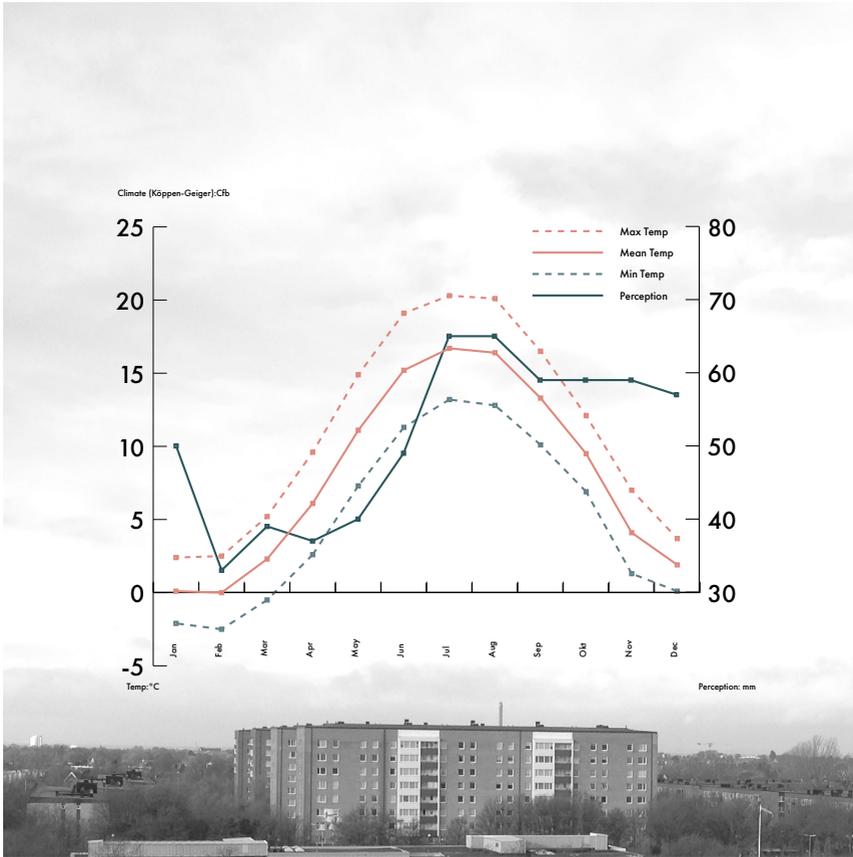
SUNPATH



Source: <http://solardat.uoregon.edu/SunChartProgram.html>

The solar path for the site is typical for the Nordic latitude its located in. In the summer time there is a lot of sun hours during the day combined with a high solar angel during mid-day. On the other hand, there is the complete opposite during the winter, late autumn and spring. Whereas the hours of sunlight are very few and when the sun is up during mid-day the sun hits almost from the side in an angel of roughly 11 degrees. These two extremes need to be taken in account when the design is being formed. A balanced decision where both the need for shadow and cooling the microclimate likewise as the need for maximation of sun exposure is implemented in the design. Both being equally important, it's a delicate task to try to make these two aspects to co-exist. A well executed design could enhance the sites thermal comfort continuously throughout the year.

PERCEPTION



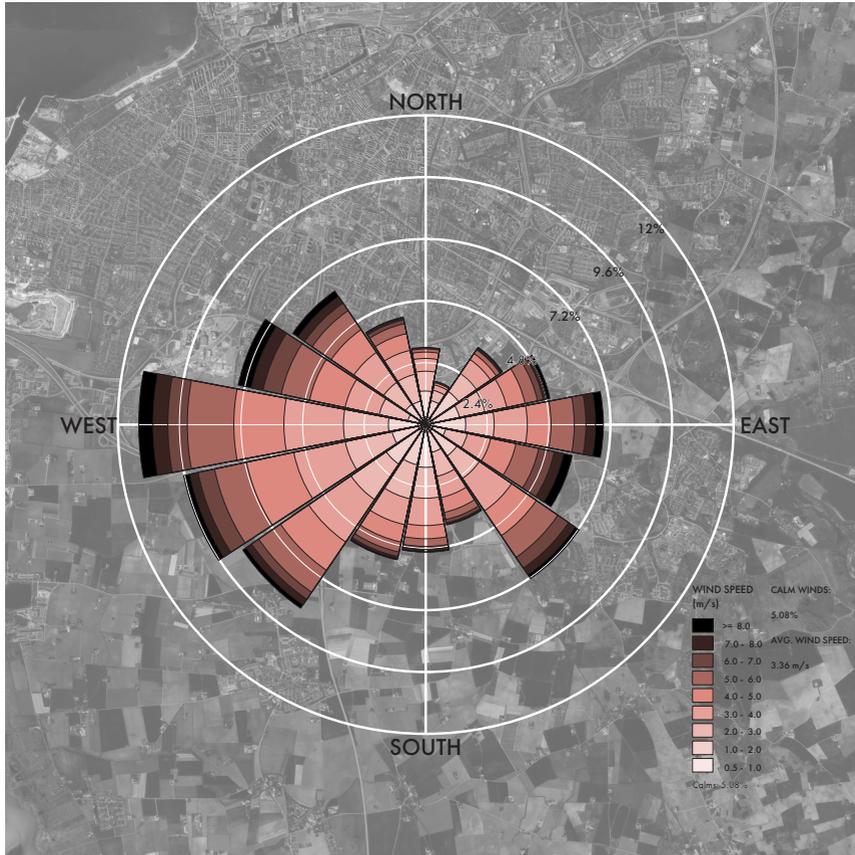
Source: Climate-Data.org

The graph is showing temperature and perception. Temperature is read on the left-hand side where the minimum, maximum and medium temperature can be seen. The perception is read on the right-hand side in millimetres.

As shown on the graph the colder months is naturally in December, January and February. The summer months of June, July, august and September being the hottest but is also the months with the highest perception during the year.

Taking in account for the temperature and perception together, the design could be enhanced . While taking a holistic approach to all of the factors within microclimate great synergies for the final proposal can be made.

WINDROSE



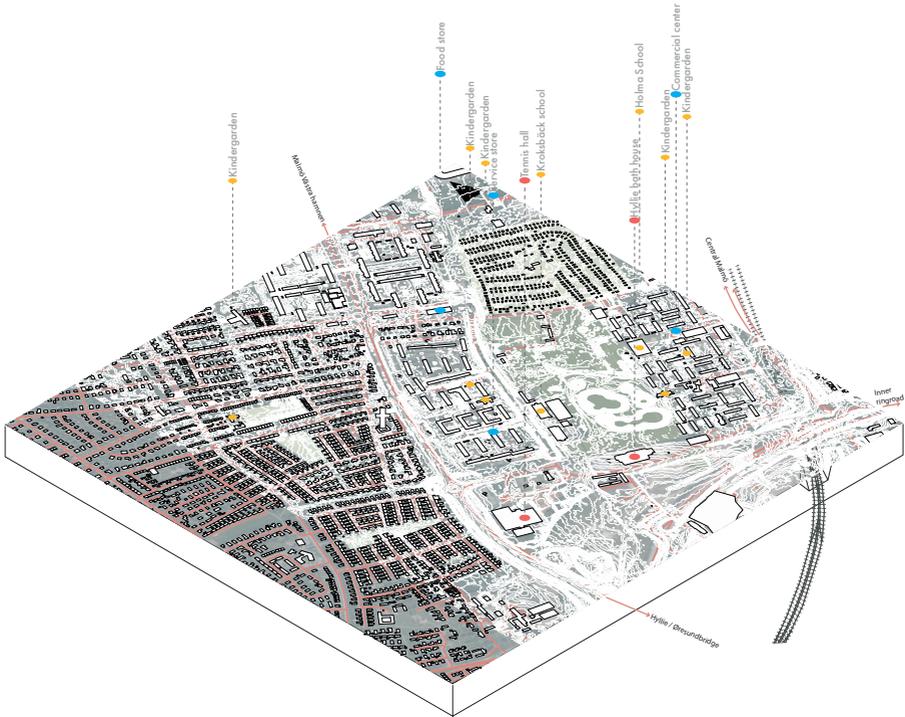
Malmö Jägersö, Windrose, 1996-2014

As for Scania in general and Malmö the wind is a big factor in urban planning. Scania is largely on agricultural field where the wind can accelerate freely. Malmö is located right by the sea of Öresund and on the eastern side bordering agricultural land. Wind has always been taken in account for here which could be seen in traditional timber frame houses in the area. Where they are situated in a square to make a sheltered space in between the house.

It shows that most of the wind in this area comes from west and south-west which is natural because of the prevailing wind coming from Öresund in towards the city.

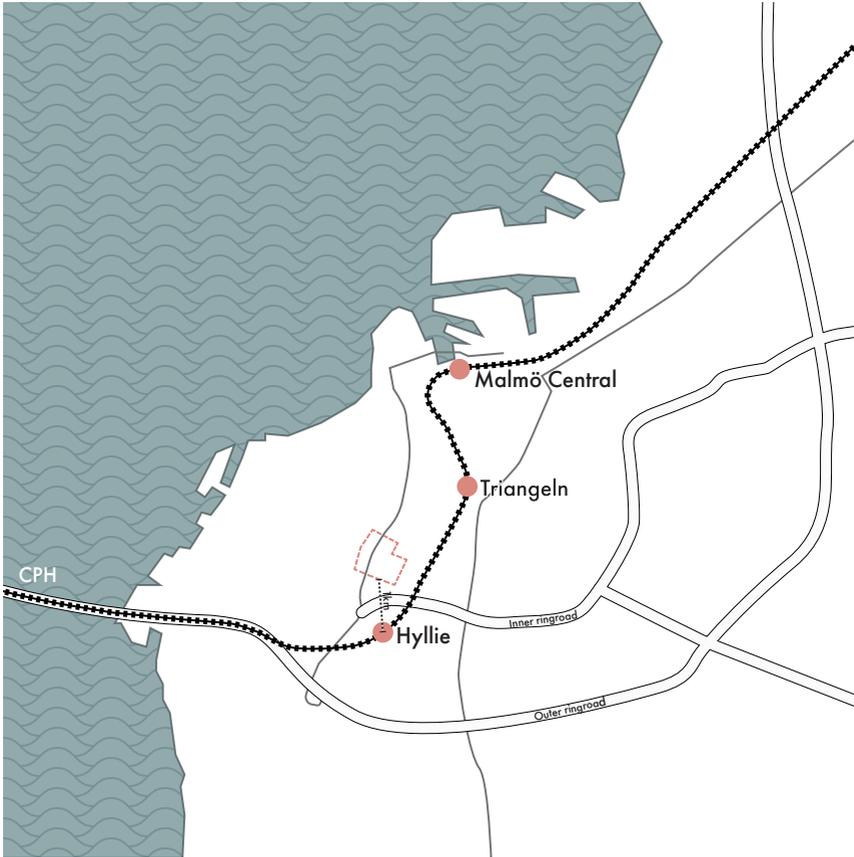
The graph also shows the distribution and strengths of the wind, the graph is showing that there is an intermediate wind speed during most of the winds.

FUNCTIONS



The site in general is rather monofunctional, the majority of places are planned as housing areas. There is a smaller convenience store in the middle of the housing blocks into one of the apartments basements. There is a smaller centre in the bordering area of Holma whereas a cluster of smaller commercial establishment can be found. Just north of the site where Hyllievångsvägen end there is a medium sized food store. Within the site there is several smaller kindergartens located in the bottom floor of residential buildings. There is also one solitary kindergarten placed in the middle of Kroksbäck. South of the site there is several establishments for recreational purposes, there is one indoor tennis court place, as well as the newly established bathhouse Hylliebadet which was built in 2015, partly to connect the new district of Hyllie with Holma and Kroksbäck. On the west side of Lorensborgsgatan there is a church Hyllie kyrka which is a protestant church belonging to the Swedish church. East of Kroksbäck is the big park named Kroksbäcksparken, a gathering of hills that's been made of the excavation masses being left over when building Kroksbäck and Holma.

CONTEXT



The site here located on the schematic map is located in close proximity to central Malmö. When built it was located on the southern border of the city. Today when the Öresund bridge and the outer ring road has been built together with Hylliestation, Kroksbäck is more integrated in the city weave. The site is approximately 1 kilometre away from Hylliestation which makes for a strategic placement in Malmö as well as the Öresund-region. From Hyllie station there is easy access towards Copenhagen, Triangeln station, Malmö central.

Kroksbäck has in a historic perspective, travelled from a periphery placement in the southern outskirts of the city towards a more central placement in a regional context. Nevertheless, this isn't mirrored in the physical appearance of the city. As an inhabitant of Malmö, you could surely drive by Kroksbäck without recognising it or reflect over what's on the other side of the noise protecting walls on Lorensborgsgatan. There is no "exclamation" mark to the area that could be used as an invitation to people that has no apparent reason to visit Kroksbäck but are on their way passing.

MOVMENT



On the map above the assigned movement patterns of the site can be seen. The red stands for streets and roads predominantly used by cars, the thicker the line the bigger the road. The green is showing pedestrian and bike paths. The black dashed arches indicate a separated crossing. In the areas there are most bike and pedestrian bridges that cross above car roads.

The paths for the bikes are fairly unobstructed thanks to the bridges although some rather unnecessary bends and obstructions in there geometry makes them harder for an outsider to read and in its extension harder to navigate through the area.

As shown Krocksböck is adjacent to Lorensborgsgatan and with Hyllievångsvägen as a feeding road towards the sac streets that leads into the area. For cars there are few and very predetermined routes.

SIZE



The chosen site is roughly 63 hectares big including both suburban villa quarters, a larger city highway, multifamily housing blocks, school and the recreational park of Kroksbäcks hills. Underneath the site boundary is shown compared to some Swedish city centres. Although a very different typological order in the comparison, the idea is to better grasp the sites extent with a few familiar examples.



Umeå



Stockholm

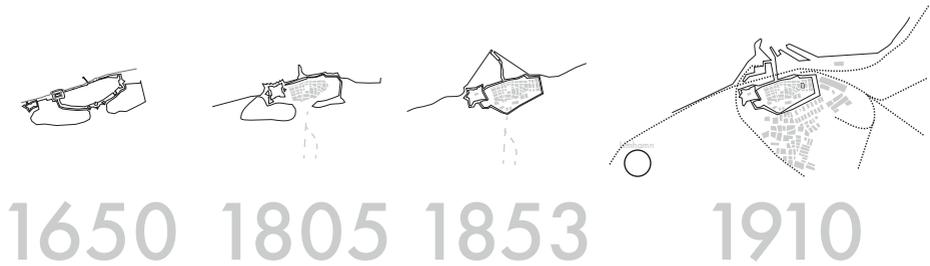


Malmö



Göteborg

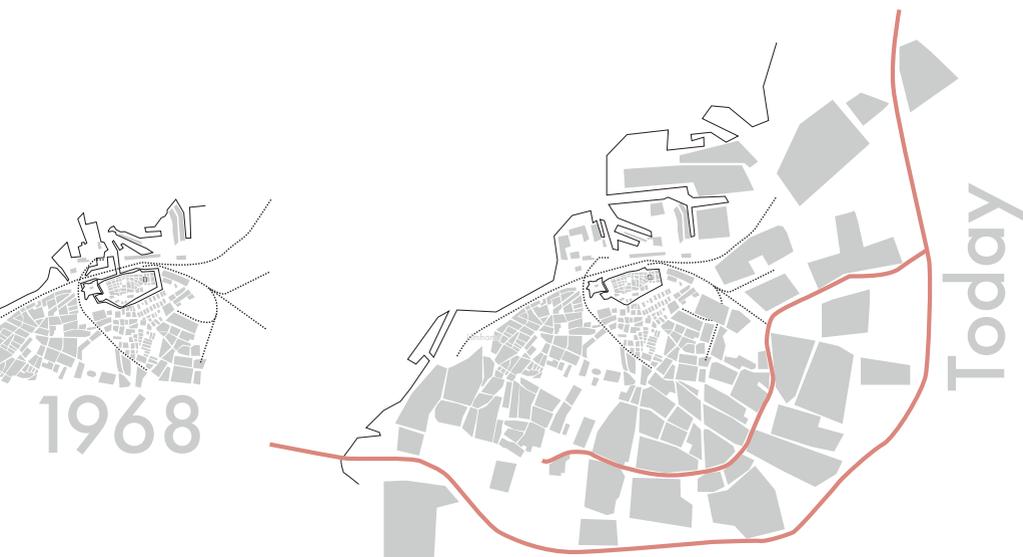
MALMÖ HISTORICAL GROWTH



Above is a schematic picture of the city's growth. Malmö is naturally limited by the sea towards north north-west, although some land reclaiming has been going on historically mainly in the harbours north and west of the city. Today those harbours have and is being planned to being developed as new districts for housing and commerce in Malmö. Towards south and east the city has and still is surrounded by agricultural land. Agricultural land that has partly been taken into possession for housing, commerce, industry etc.

A gradual growth on the agricultural fields can be seen on the map above. Malmö's contextual situation being in the very core of agricultural food production of Sweden. Nowhere in the whole country is the soil as fertile as it is here. Therefore, it is of most vital importance to address the problematics in, growing the city on to the agricultural fields.

Seen on the last picture both the inner ring road and the outer ring road is shown in red. For a long time, the inner ring road was the main highway of Malmö, although the city grew outside



of the inner ring road. The outer ring road was built and added a new layer to the growth rings of Malmö. Together with the ring road, the Öresund bridge was built in 1999. This would be seen as a connection to Europe, not only for Scania but for the whole of Sweden. This connection drastically shifted Malmö's Regional position and in extension also Kroksbäcks.

AGRICULTURE



Source: Länstyrelsen Skåne, 2015

Peak food has arise on the global research radar as a cluster of very problematic issues facing everybody on earth. With a estimated global population of 9,8 billion at the year of 2050. Food supplies is estimated to have a 60% higher demand if one take in account for climate change, urbanization soil degradation. On top of that also take in consideration water shortage, pollution and worsening inequality.

The problem also lays in the fact that humanity has always refined food production often chosen the species of crops producing the highest yield which has lead to a large homogenisation in the agricultural sector. Although the correlation between high yield and higher demand is good, it also comes with a price. The homogenisation has made the agricultural sector vulnerable to diseases etc. Globally 12 different crops stands for 75% of the human calorie intake. With a more uncertain future this is a serious threat to humanity (Hincks, Time, 2018).

The local government of Scania has addressed the problematics of building on agricultural land in their report Markhushållning i planeringen Jordbruksmarken i Skåne translated to householding with land in planning, the agricultural land of Scania county. Scania is making up for 16 % of the agricultural land of Sweden, thanks to the quality of the soil Scania is producing 40% of Sweden's total yield when it comes to grains and potatoes.

Globally 14% of agricultural land has been very or moderately degraded. A big part of degradation is due to wind and water erosion. Agricultural land takes thousands of years to be reclaimed, from a human perspective agricultural lands is not an renewable resource. The agricultural land per capita is decreasing on a global level. The Swedish ministry of agriculture states that although due to strong recommendations in the legislation, stating that the agricultural land is of national interest. Is being set aside for strategical developments due to municipalities land ownership and in favour for short sighted development for private investor (Länsstyrelsen, 2015 s:11-14).

The global situation for food production is changing and only changing for the worst in the future. Different dynamic factors come together and creates a situation that's hard to oversee. The food production in the coming 50 years needs to be doubled, being up to 600 quadrillion calories per day. A number that could be equivalent of feeding 14 billion people with the nutrition levels of today.

The current and possible worsening scarcity of water is of course a highly critical factor for the future food production. Melting ice caps and overconsumption of lakes causing draught and lowering the ground water. Diminishing land resources also happening all over the world as said above. As well as peak oil some researchers also point towards peak nutrients caused by monocultural growing diminishing the nutrients in the soil.

Keeping up the modern farms also requires gas and oil. Peak oil is going to have a big impact on the whole chain of food production from production to transportation (Cribb, 2011, s24-30). All these factors together with recurring droughts and more extreme climate is going to seriously challenge all levels of our society. Research and coming up with new ways to more sustainable grow and harvest food is of course a key question for the present and future. In the meantime it's also of high importance to acknowledge the value of productive agricultural land. This both as an aspect for humanity to sustain and hopefully prosper. But also, in its extension as a matter of national security, for a country to be able to sustain it's population.

HOUSING UNITS

The housing built in Kroksbäck during the million dwelling program as in many other places rather homogenic. The big part of the apartment in Kroksbäck is 4 bedroom apartments with one kitchen. (Riksantikvarieämbetet). The problem that this is posing is the lack of flexibility within the residential area. There is going to be an area of predominantly families. The question though is where a child that's moving from home for the first time, an elderly parent, or a divorced spouse for that matter is going to move, if they want to stay within the area. The homogenic situation with the housing unit is therefor also directly influencing the demographic of the site. It could be beneficial to diversify the housing stock in Kroksbäck and in that case also open up Kroksbäck to its full potential. Allowing more people to move here and also more people to actually stay. This could therefore help to build a more varied structure of different dwellings in both sizes and form of tenure.

SPACE SYNTAX ANALYSIS

SPACE SYNTAX AS RESEARCH TOOL

Space Syntax is a research field created by the English architect researcher Bill Hillier. Hillier theories was created in a time in history when the modernism was ending and the rising post modernism. Hillier and his colleges questioned the current paradigm in architecture, that denies the social dimension and consequences of the built environment. At the same time, they were critical against the modernistic approach of standardized measurement and normativity. Instead they wanted to further develop how social interactions is affected by the built environment, and how these relationships could be measured. The book space is the machine by Hiller in 1996, is the book that gathered the research and put focus on space syntax as a research field (Ekelund & Koch, 2012 s. 14-17).

The Space syntax analysis is focused on describing capture and measure one or multiple spatial social logic, underneath her is a few methods used in the toolbox of space syntax listed and briefly described. These methods are a few chosen tools from the space syntax toolbox, chosen to best describe and analyse the current, and future development of the site. Conclusions and qualified assumption's will be drawn from the analysis to further build on the design for Kroksbäck.

Topological system is a way to describe the special configuration of for example a building. The floor plan could be translated to a topological graph whereas the different rooms/ spaces could be categorised into different levels. The graph is made like a tree similar to Darwin's graph of the evolution. A point marking a space and lines from that point towards other marking the connection. In these type of topological study's spatial relationships between rooms and how they interact could be easily envisioned. The focus with a topological study is not to describe the different rooms size, instead show their relationship between each other and how they interact together as a whole. The topological system is often presented in a graph, these graphs are referred to as the configuration. With a graph like that the depth of a building or a block could be described, the further in a room is in the configuration the deeper. The graph makes it easy to visually show the differences and similarities between different buildings/city's/blocks etc (Ekelund & Koch, 2012 s. 20-22).

Axial or axial lines is an important part of the space syntax toolbox and will be the most used in this report. An axial line is simplification of a space and used to analyse spaces in relationship to other spaces within a system. Simplified the axial line could be described as a sightline, if a road bends or big height differences is experienced the axial line is meant to be divided into smaller segments. In this case the axial lines resemble roads and pathways.

The axial lines itself has no value but seen in a system relating to other lines the axial map can be valuated and analyses. The two most common values to analyse are connectivity and integration, and the analyses would most commonly be seen as an axial map coloured in a gradient from blue-to red whereas the red is the most connected or integrated within the relationship to the other axial lines. The integration-value is determined by how many times the line is crossed by other lines in relation to the whole (Ekelund & Koch, 2012 s. 24).

Connectivity is the most fundamental measurement of these space syntax measurements. The definition of connectivity is a summary of how many connections there is to and from a specific space axial line (Ekelund & Koch, 2012 s. 27).

Integration is also one of the more used measurements within space syntax. Integration is describing how long way there is from one space to another in a topological perspective. Every axial line integration value describes the line in a relation to the whole. Integration value is measured as a topological mean value to the other spaces. In its basic measurement the integration is calculated global from the specific space towards the whole (Ekelund & Koch, 2012 s. 27-28).

In the analysis of the site I have chosen to use an axial map analysis to investigate integration within and around the chosen design site. The method is chosen to investigate the possible effect of opening roads within the site. And too see how these interventions could affect the sites mobility and its surroundings.

The streets chosen to be investigated is central streets within the site. Although they are at the moment closed off towards the main connecting highway. The layout for Kroksbäck has been designed as previously said with a strong influence of the SCAFT planning. This design has therefore contributed to the two dead end roads of Sörbäcksgatan and Norrbäcksgatan. To extend these roads was an early main idea for the proposal. And therefore, these roads were chosen to be investigated in the axial analysis. The decision to open up the roads had to be further investigated and the decision had to be tried before.

Of course, there are limitations to space syntax, the space syntax methods is a mathematical tool that could never fully describe the nuances of the city. Space syntax although is a great tool to visualising relations between different entities and from the result using it as a design tool. On these analysis certain assumptions about social life could be drawn.

Underneath here a couple of axial maps has been made to see the current state of the site's infrastructure. But also, to test out the impact of extending the return roads in between the area and connect them towards Lorensborgsgatan.

The picture on the right is the existing situation around Kroksbäck. The main car roads have been mapped in a 2 km circle from Kroksbäck. The first image is estimating the integration in the current situation. The long line going north to south in the colour red is Lorensborgsgatan. The idea of the analysis is that the more red a line is the more integrated it is globally toward the whole axial map. The more blue the less integrated.



The second image is showing the same axial map as the first. With the difference that Norrbäcksgatan has been extended and connecting towards Lorensborgsgatan. The overall difference isn't big but the integration in Rudebecksgatan is heightened. The road is connecting towards Lorensborgsgatan on the opposite side of Norrbäcksgatan.



In the third image both Norrbäcksgatan and Sörbäcksgatan are connected towards Lorensorgsgatan. Doing these changes, the changes in integration becomes more apparent both for Rudbecksgatan but also internally within Kroksbäck.



The conclusion with this small analysis is that it could be beneficial for not only Kroksbäck but also the surrounding areas to connect these two roads together with the proposed public bike path at Mellanbäcksgången. The social life of Kroksbäck could be enhanced as well as using the possibilities from the busy road of Lorensborgsgatan.

SECTIONS CURRENT

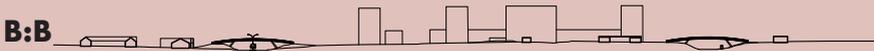




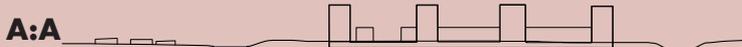
Section E:E showing the section through Hyllievångsvägen into the school of Kroksbäck.



Section D:D showing the bridge above Lorensborgsgatan on the south side of the site.



Section B:B is showing the Kroksbäck church, Lorensborgsgatan through to Hyllievångsvägen.



A:A is a similar sections as B:B but further north showing the excavated roads on either side of the site.



Section F:F cutting from south-west to north-east through the existing residential area.



Section C:C showing the changing scale in buildings and landscape from west to east.

PREMISES

KEY PREMISES

1. Densification

First key premises for this thesis is densification. Malmö is Sweden's third largest city with a steady growing population. From 2010 the population has been going from 298 963 until 2018 when the population was 339 313. The need for new dwellings and services is ever growing. Although Malmö is limited in its growth by the ocean in the west and wasn't agricultural fields in the east. Malmö has been growing outwards on the agricultural field, something that I firmly believe want bee possible or even considered in the future. Densification within the city has been going on for a while such as grey and brownfield recycling. My case though is that this could be considered the low hanging fruit and that the densification 10 years from now need to take place in more intricate places such as the proposed site for this thesis. More factors need to be taken in account but the return for this project could greatly benefit the city and its future development. This is why I have chosen to investigate this site in my thesis

2. Peak Food

Within a globalizing world and climate changes the food production is more affected than any other sector. The globalization has previously worked as fail safe for the global food production. Though the rapid change in climate i contributing to a more unstable food market, making the possibilities for crisis in the production in several of the main food producers around the world in the same time, therefore making the food market more vulnerable than ever before.

This poses a threat to people around the world, both individuals as well as governments. Kipping and value ones existing food production resources is hand going to be more and more important. The case for this thesis is therefore that in retrospect cities has been growing out on agricultural field because this has been the easiest accessible and easy to exploit. In the future and even today this is going to be harder and harder to argue for the development of dwellings on agricultural fields. A way of building that has rendered fully productive land irreversible to non-productive land.

3. Definition Private / Public

Modernistic areas like Kroksbäck all complied to a similar form. They are rational and rather orthogonal to their layout. The problematics in moving through these areas are usually the feeling of lack of ownership. Moving through is hard because the definition between public and private places are blurred and never well defined. Something that doesn't invite for the outsider to stay and enjoy places and also hinders the resident from taking ownership of the space.

Clarifying these spaces and give a hierarchy to the places could be beneficial to both people living in the area, as well for people visiting and moving through.

4. Historical layering

The historical layering is important in two different aspects. The historical layering in a spatial sense is important. It's important to keep and respect what's already there. Although the modernistic planning being criticised I believe it's important for the historical reading of the site to be sensible in the new design towards the original.

In the social aspect of historical layering I think there is a lot to do to enhance Kroksbäck. The homogeneous apartment sizes pose a problem if people want to move out of different reasons within the site. Therefore, I believe it's important to diversify the types and sizes of apartments that is being developed in an area like this. Contributing to the possibility of a historical social layering in Kroksbäck, offering the opportunity to build on the social narrative of the place.

5. Changed transportation sector

The transportation sector is changing and so is the foreseeable future for the oil driven society. In the same time the densification of cities around the world is increasing the world of private car ownership must change. The change would lay in the uneconomical nature of the private car ownership for the city dweller. Not only the fact of the cost for the private person on a monetary level and in the same time being presented with competitive options. But also, for the cost for the public. Both in terms of pollution and noise but also in the case for the spaces the car takes up. Often these private cars take up space free of charge. Spaces that could be repurposed if the vehicle fleet was modernised and worked in a different way in densely populated regions as Malmö.

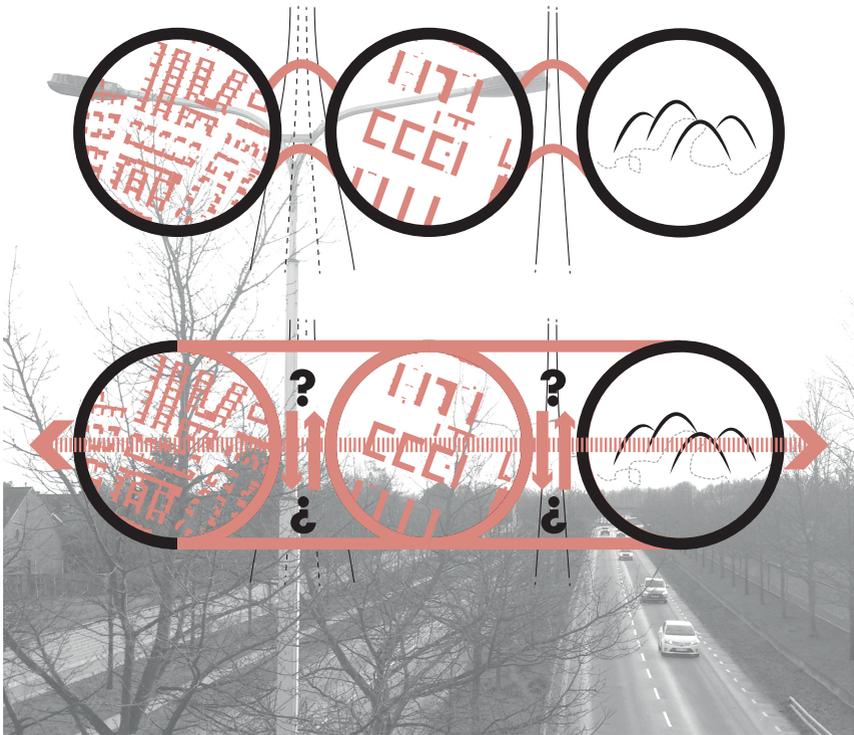
Conclusion

These 5 different premises are chosen to influence this thesis. Starting with the most important at number 1 and going down. Of course there is a myriad of other subjects also influencing the site which can also be touched on in the project.

Some of the premises are more straightforward and therefore more in depth answered in how to tackle them such as the historical layering and the definition between public and private. And some of the premises are more comment and presenting a more visionary approach towards the design task, as for example the change in transportation sector.

These 5 premises I although chosen to try to give the broadest and most pressing picture of the issues a place like this is facing.

RESEARCH QUESTIONS



The general problematics within the site stems from the SCAFT planning and the traffic planning that has continuously been applied ever since the 60:s until today. The most pressing issue is how to reuse the leftover spaces inside and around Kroksböck. Both undefined spaces and roads within but also the bigger bordering roads, as Lorensborgsgatan that has been dividing the site. And in the same time contributing very little towards Kroksböck. How to change this road from divider in to a connector that could benefit both the site and the local

On both sides of the road there is two very different areas Djupadal on the west side and Kroksböck on the east side. How to re design Lorensborgsgatan as a new front for Kroksböck but also reconnecting the figural Islands that the different areas poses as today. And what is Lorensborgsgatan going to be tomorrow and how is it going to be used and why this is a issue that is relevant is going to be the questions I want to try apply an answer to.

SEGREGATION

The segregation is an integral aspect to take in consideration whilst planning in Malmö. According to the Malmö report life estimated length can differ up to 5 years between areas in the city. The segregation within the city is apparent and seems to be growing. To tackle the segregation within the city is a multi-faceted problem whereas the urban planning and design is on a minor part of the solutions at hand. Although the form of the area from the 50s could be seen as an enhancer of the segregation at the moment. Kroksbäck formed as a separated island fenced off by the trafficked roads is being more excluded than necessary.

By trying to enhance the public paths within the area and also connecting towards other parts of Malmö there could be positive synergies when Kroksbäck is felt to be more a part of the city. It is also important to use the public path and to place public places and destinations within close proximity of these paths. Such as the park of Kroksbäck the new public plaza or the school of Kroksbäck. In this way the area could be servicing inhabitants of Malmö living in different areas of the city. And in this way making areas like Kroksbäck a part of the city as a more important part of the public conscious. Also making it more feasible to start new business in the area. The new building is also a part of the strategy by offering a wider mix of housing units it's possible to stay in the area although one's life situation is changing. Building confidence and the feeling of being proud of one's living space.

RISK & NOISE

The close proximity to Lorensborgsgatan is posing many challenges for the site. One of them is the exposure of risk. Heavy transportation and traffic could potentially be dangerous to the new development. Planning for this should be taken in consideration the whole process from planning to building and engineering.

In terms of planning it's important to make sure that the residential functions are the least exposed. Therefore, placing offices and commerce in the most exposed places in the building facing Lorensborgsgatan. Residential apartment is supposed to have facades towards both ways, so that bedrooms could face the "secure" side of the building. Also, outdoor areas are supposed to be placed on this side of the buildings. The form of the building could also help to frame the outdoor area or in some cases the commercial functions could protrude out and also sheltering the apartments above, giving these a slight setback from the street.

As well as risk the new development needs to assess the dimension of noise. Lorensborgsgatan is a fairly big road at the moment. Redevelop it towards more of a city street will hopefully decrease the speed and in its turn lower the noise. In terms of building for the approach is similar to the approach of risk. Sheltering and shielding the residential and outdoor areas is key to develop apartments and living spaces that are dense but still liveable from a noise perspective. And of course, there is also a matter of engineering and choosing suitable facade and windows facing Lorensborgsgatan that could help lowering the effects of noise inside the apartments.

In the terms of noise, the street level noise is of great importance for the feeling of the streetscape. Here could one work with other noises to suppress the noise of traffic. Trying lower faces of reflections from the traffic noises whilst in the same time enhancing natural sounds such as birds and water features the negative noise could be masked and the street level noise could be far more pleasant.

In some cases of the proposal there's smaller buildings facing the street. In these cases they are meant to be built together with each other with larger glass screens. These could at the same time be a place to put balconies but they also offer a noise protected side of the buildings even though they are not slab-type buildings.

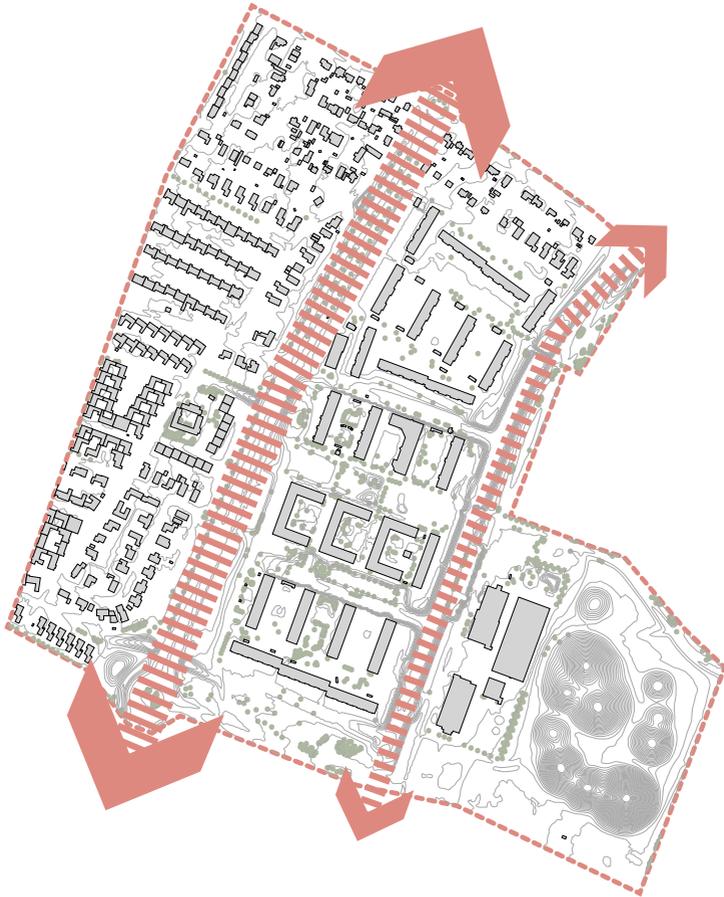
DESIGN PRINCIPLES



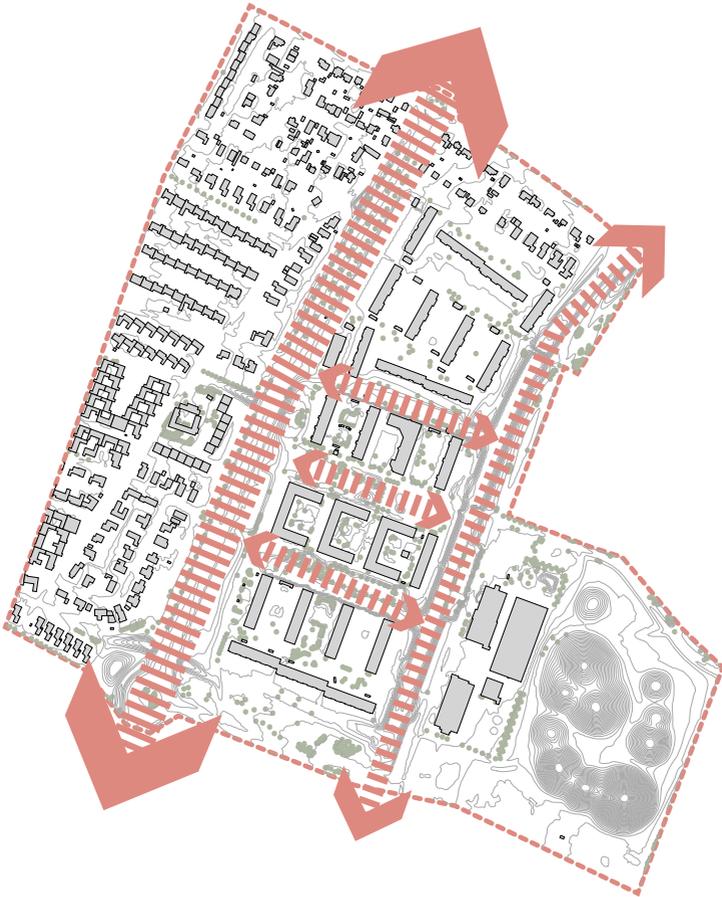
The existing site as it is today 2019. Djupadal on the western side divide by the 4 lane street of Lorensborgsgatan. Connected with two bridges towards the modernistic dwellings of Krokstbäck. An orthogonal layout with residential buildings in 3 - 8 floors. On the east side of Krokstbäck runs the street of Hyllievångsvägen dug down as a canyon allowing for the bike and pedestrian bridges crossing the streets. On the other side of Hyllievångsvägen is 4 larger buildings housing the school of Krokstbäck, bordering to the school is the bigger park of Krokstbäck with an accumulation of hills. These hills were formed from the filling masses when Krokstbäck and Holma was built. Both roads and underground parking houses underneath the new buildings contributed to the masses.



The main design principle in this proposal is to use and enhance the existing bike and pedestrian path. From north to south connecting Malmö central towards Hyllie station. And from east to west connecting Holma, Kulladal to Djupadal. And where these axis intersect each other, they meet in front of the new entrance square in front of Krokksbäck school. In the middle of Krokksbäck previously undefined green park/lawn is redesigned into the main public place for Krokksbäck. The place is marked on the map with a dashed line.



Rethinking the main roads within the area is also a main question within the thesis. Repurposing Lorensborgsgatan to a more city like street rather than a monofunctional highway. Inviting offices, commerce and housing. Actually showing the entrance of Malmö for people approaching the city from south/west. Also reshaping Hyllievångsvägen to a residential area showing where Kroksbäck starts and giving the street a whole new character.



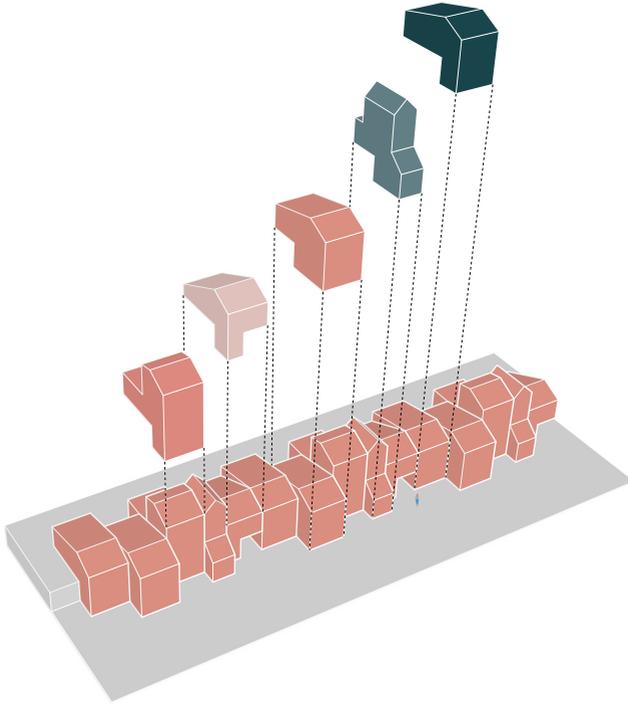
The third step is to open up three paths in between Lorensborgsgatan and Hyllievångsvägen. According to the space syntax connectivity analysis a design decision that could theoretically be beneficial not only for Kroksbäck but also the surrounding city weave. This is made to further connect Kroksbäck with its surroundings and also uses the qualities the connectivity towards the rest of Malmö. The new connections will also make internal parts of Kroksbäck way more accessible and thoroughly change their appearance and character.



Importantly to also take in consideration is too bring an hierarchy into the definition between public and private spaces. Originally the definition between the two has been vague in the modernistic planning. The design is aiming to clarify the hierarchy and actually present Krokstbäck with a new public plaza working as the areas living room and main social connector. Also the secondary roads of Norrbäcksgatana and Sörbäcksgatan is given a more intimate character and field working as public streets but also giving the feel of more ownership of the place to the residents living on that street. Using the houses on these streets to close of the courtyards of the existing building creating a more private feeling inside these than previously.

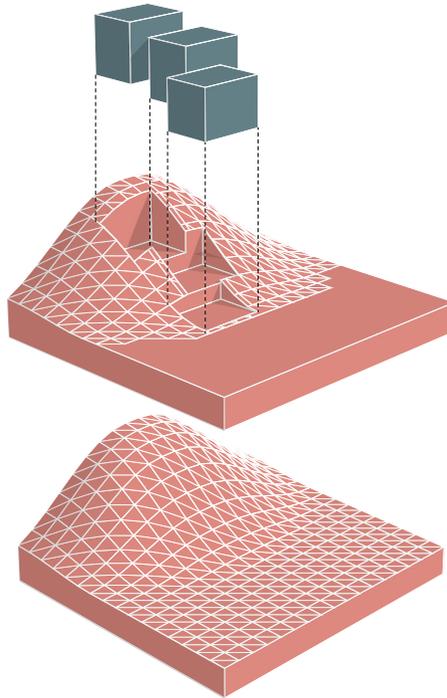
TYPOLOGIES

Ledge house



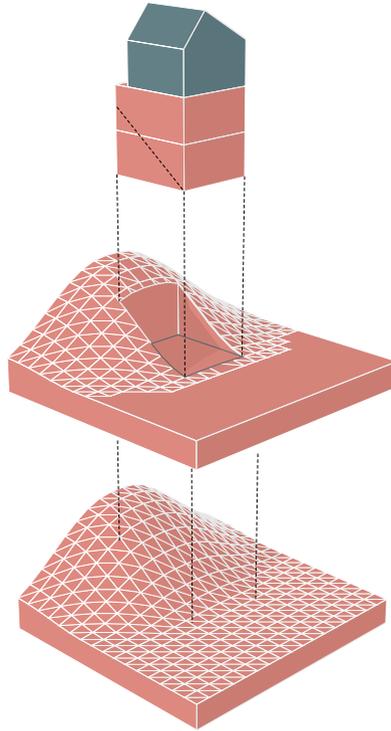
Using the ledges between the existing houses to place a house that could in different forms connect towards the street and create a boarder towards the courtyard, making the courtyard more private. The form of the units could vary, for example having a wider ground floor for commercial or services or a smaller ground floor just to be used as a residential entrance.

Social-generator



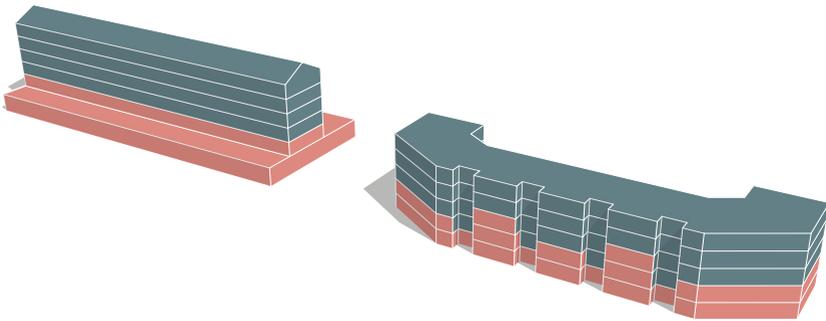
Built to be used by the residents in the area, the social generator is a terraced house in three layers. With three different components offering different lighting situations suitable for different activities. The three different units have each a unique roof with different daylight windows making the units suitable for different activities.

Townhouse



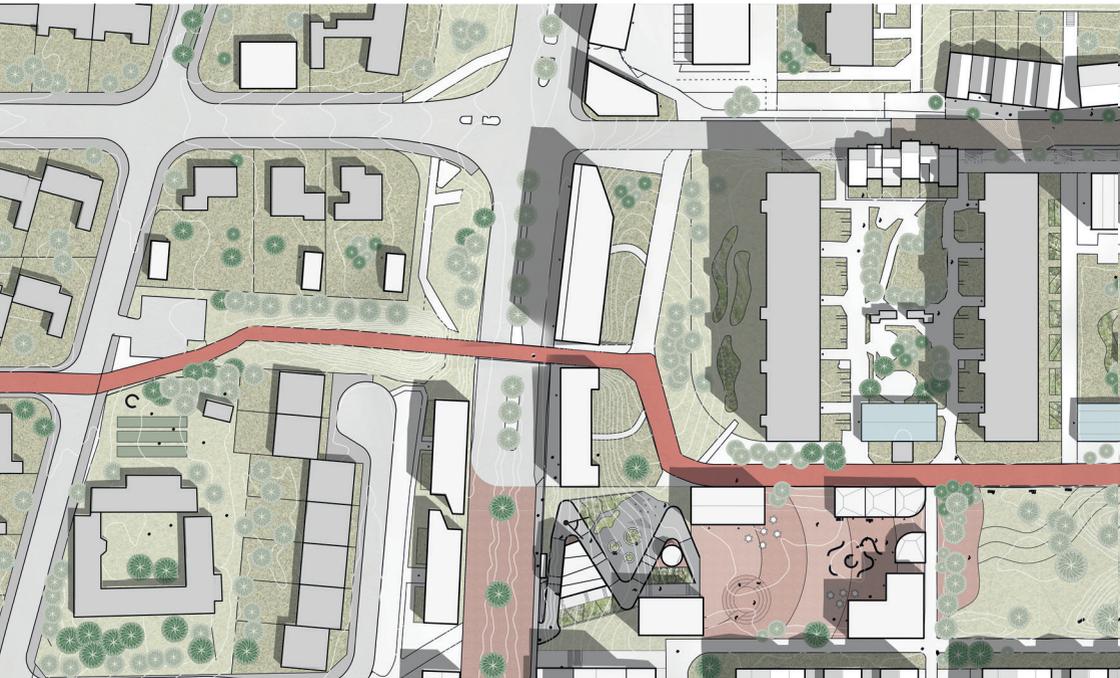
Using the slopes off Hyllievångsvägen to dig the building into. Creating one two floor housing unit connecting towards the street. And one apartment on to connecting towards the big park. In this way there is a lower type of building not presented in Kroksbäck today but in the same time forming connections towards both sides, and not leaving a forgotten backside in the design.

Mixed use residential/commercial

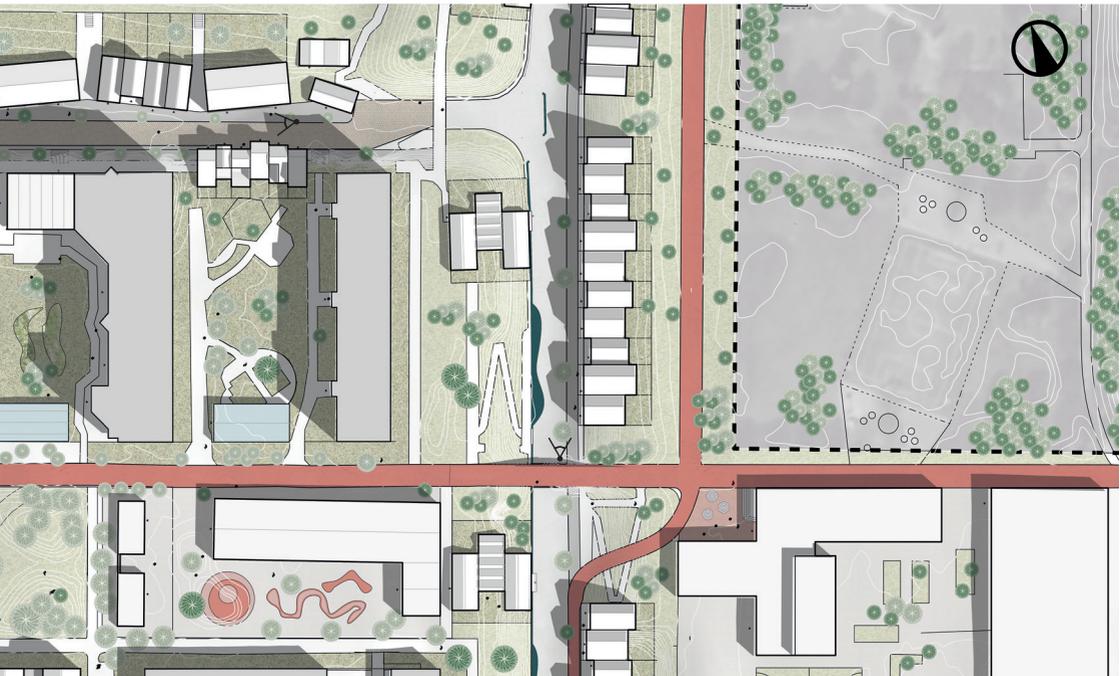


Slab buildings marking the side of Lorensborgsgatan. Different forms to counter risks and noise. Bottom floor is commercial and offices with a mix to residential the further up in the building. Using different forms to protect the residential functions protected from noise and risk posed by the traffic at Lorensborgsgatan. The protruded commercial ground floor to the left and the enclosed backside to the right, ensuring better noise protection.

PROPOSAL



The zoom in plan above shows the main path through Kroksbäck in east-west direction. The path is thought as a pedestrian/bike path showing the sequences of spaces and the public focal points placed along the path. From the smaller park in front of the church offering a lush, serene space for contemplation and recreation. Towards the bridge which looks out over Lorensborgsgatan and the public transportation node for the local bus. From the bus stop there's a series of ramps and stairs whit integrated office and commerce buildings and smaller playground whit plantings, leading up towards Kroksbäck main square. Lined whit offices and residential buildings there is also some smaller buildings accommodating pop- up shops and workshop space for the inhabitants. Beyond the main public plaza there is an existing green area. This area is thought to be used as a flexible space shared between the public in the evening and used as part of the kindergartens yard during daytime. Further on is the new kindergarten built in two floors to accommodate a growing population and to centralize the kindergarten function within the area. Then the bridge is crossing Hyllivångsvägen with its new form, on the left side there are these social



generators that could be used by the tenants or other spontaneous businesses ventures. On the right side there is 2 to 3 stories town house whit two apartments in each the bottom two floor connecting towards the street whilst the top floor as a single apartment connecting towards the east side and the main park. The school of Krokstäck is proposed to be renewed and together whit the school there's a new entrance place, thought to be and inviting and relaxed place too both the school but also Krokstäck as a whole. The main framework of the bike path is existing but is thought to be enhanced in this proposal and therefore work as an anchor. Anchoring the design itself but also organizing the public spaces along the north-south and east-west axis.

The smaller street in the top of the map is the new streets that's been opened towards Lorensborgsgatan. The streets are thought to have a semiprivate character whereas the inhabitants in the new housing will use the streetscape as part of their residential- zone.



Masterplan

Showing the overall layout of the area. The red showing the main public path connecting the area via bike path form north/south and east/west intersecting right in front of the school of Kroksbäck. In the middle of the site there is a kindergarten connecting towards the main public plaza and down towards Lorensborgsgatan with a ramp.



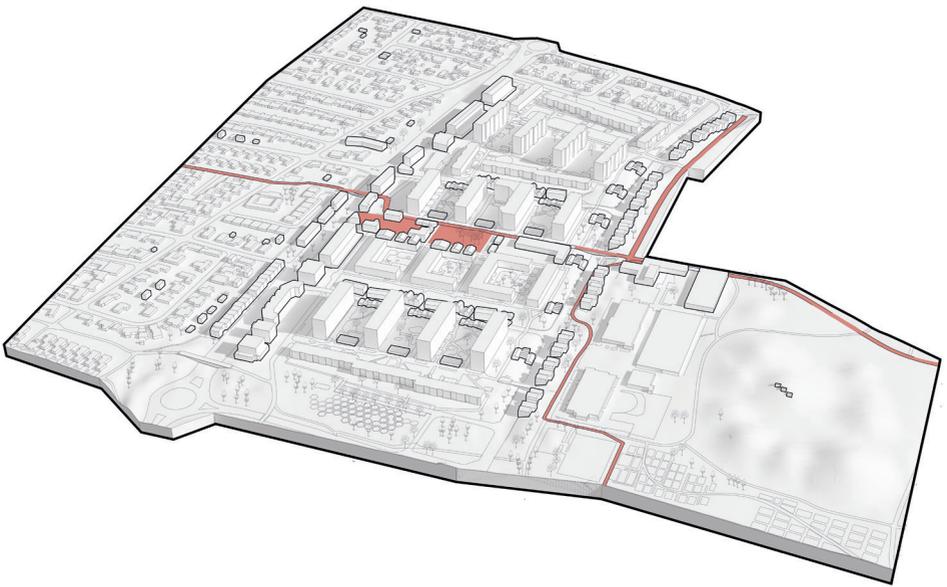
Perspective showing the ramp and playground facing up towards the main public place.



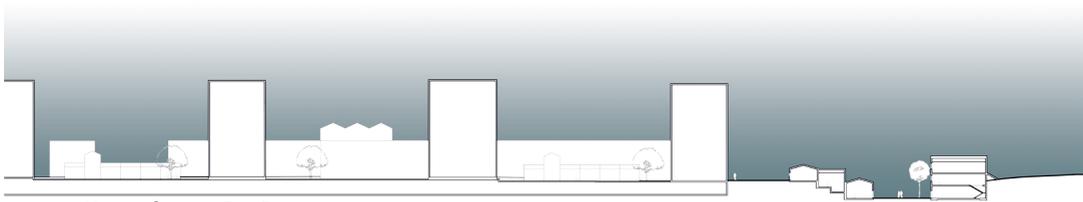
Perspective of Hyllievångsvägen showing the new townhouse typologies facing the new community buildings.



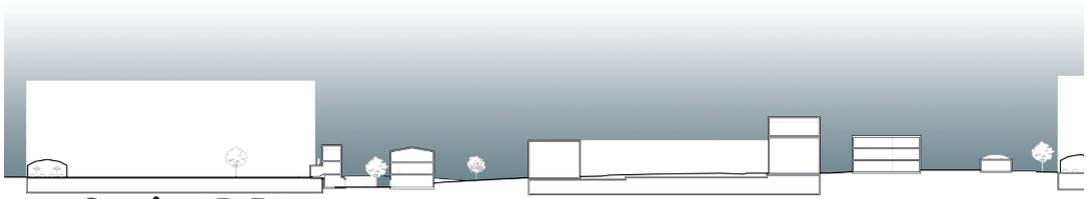
Perspective of the new proposed buildings along Norrbäcksvägen with the old buildings in the background.



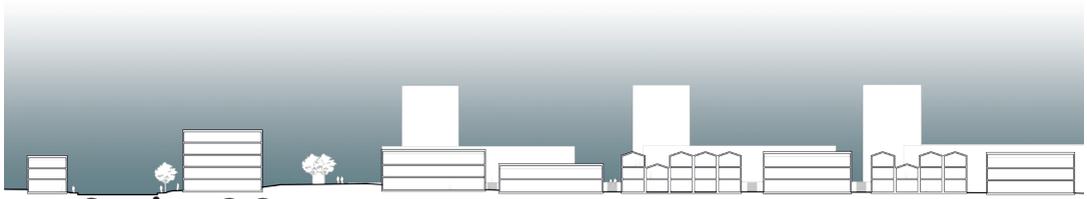
Birdseye perspective showing the relationship between new and old buildings. The new buildings being presented with a thicker line weight.



Section A:A



Section B:B



Section C:C



Norrbäcksgatan



Hyllievångsvägen

REFERENCES

Sources:

Cribb, J., 2011. The Coming Famine - The Global Food Crisis and What We Can: Do To Avoid It. California University Press, California.

Ekelund, B., Koch, D., 2012. Space syntax: ett analysverktyg för planering och utvärdering av arkitektur och byggd miljö. Arkus, Stockholm.

Elgåker, H., Kaaman, J., Länsstyrelsen i Skåne län, 2015. Markhushållning i planeringen: jordbruksmarken i Skåne. Länsstyrelsen Skåne, Malmö.

Hall, T., Schweden (Eds.), 1999. Rekordåren - en epok i svenskt bostadsbyggande, 1. uppl. ed. Karskrona.

Hillier, B., 1996. Space is the machine: a configurational theory of architecture. Cambridge University Press, Cambridge ; New York, NY, USA.

Malmö stad, 2016a. PLANPROGRAM FÖR HOLMA OCH KROKSBACK I HYLLE I MALMÖ.

Malmö stad, 2016b. SUSTAINABLE URBAN MOBILITY PLAN.

Statens planverk, n.d. Riktlinjer för stadsplanering med hänsyn till trafiksäkerhet: Scaft 68 . (1968). Stockholm:

Stigendal, M., Östergren, P.-O., Kommissionen för ett socialt hållbart malmö, 2013. Malmös väg mot en hållbar framtid: hälsa, välfärd och rättvisa. Kommissionen för ett socialt hållbart Malmö, Malmö.

Webb sources:

<https://sv.climate-data.org/europa/sverige/skane-laen/malmo-382/#climate-graph>

www.bebyggelseregistret.raa.se/bbr2/miljo/visaHelaBeskrivningen.raa?miljoid=21200000000266

<http://solardat.uoregon.edu/SunChartProgram.html>

Cartographical sources:

Lantmäteriet (Ortophotos, GIS-material, Historical maps)

Malmö stad (Dwg:s)

Plans:

Översiktsplan, Malmö stad, 2018

Förslag till och ändring och utvidgning av stadsplan för området söder om Ärtholmsvägen i Fosie och Limhamn i Malmö, 1966, Plan 733.

Detaljplan för del av Lorensborgsgatan, 2001, Detaljplan 4493.



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