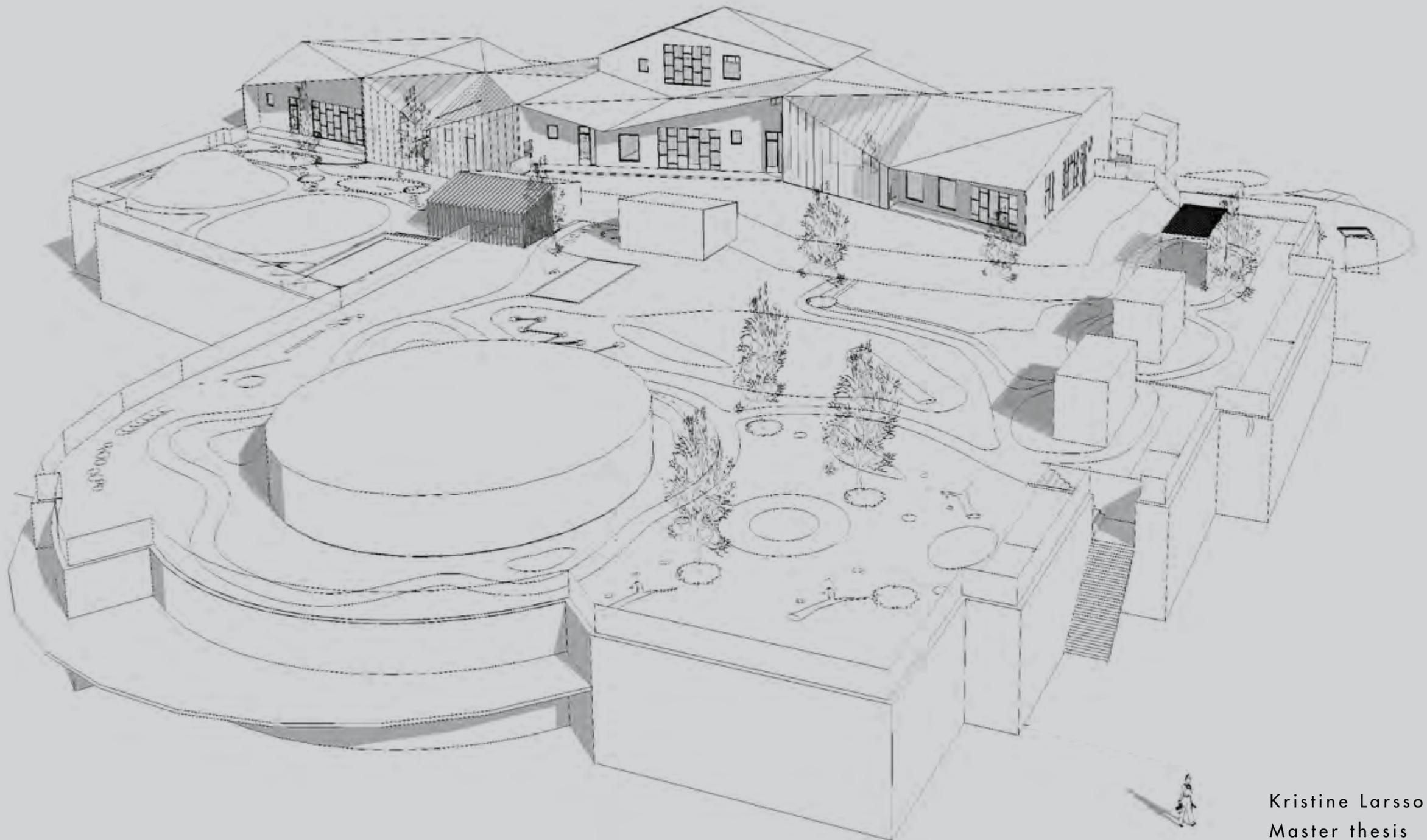


ROOFTOP PRESCHOOL

A Preschool in an Urban Context on Top of the Cinema Bergakungen



Kristine Larsson
Master thesis

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Master thesis
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Abstract

With denser settlements, especially in the larger cities, it is a great challenge to allocate and maintain sufficient space for children- and young people's needs. More and more families with small children are also choosing to live in the inner city rather than as before moving to a villa in the suburbs. The need for childcare in the city increases. But in the parts of the city where the need is great there is barely any buildable land left.

This leads to an increase in the phenomenon of "rooftop preschools" which is seen as a possible solution to accommodate childcare in the city. Rooftop preschools can be regarded as a way to utilize surfaces that are not being used. But they also have their particular challenges in the outdoor environment and the availability of green "natural" environments. And as in all kindergarten projects there is a risk of compromising children's needs if it's not clearly defined what constitutes a good environment.

My result is a proposal for a building on top of the existing cinema Bergakungen in the central part of Göteborg. A site on a very large park-like green roof next to an Action park and the green area of Burgårdsparken.

The design work means to overcome some of the challenges that comes with placing a preschool on top of another building:

- Contact with greenery
- Transformation, addition on top of another building

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INTRODUCTION

Theoretical background

PURPOSE

There are special circumstances and challenges that follow with a rooftop preschool. Some of them might be possible to overcome and others might not. The rooftop preschools might be a solution or a compromise for the lack of space in the city, and it's important not to compromise too much with children's needs.

Contact with greenery

Many studies show a significant impact on children and their development in green areas, nature, unprogrammed surfaces and outdoor stay in a stimulating environment. (Boldemann C, 2005). But if you do not have direct access to natural areas, how can we bring similar qualities onto a rooftop schoolyard? Which qualities are important? And how to give easy access to complementing environments in the surroundings?

From the inside of the building it is important with views of greenery, which has a relaxing effect, and it's often advocated direct contact between inside and outside, to make it as easy as possible to move the educational activities outside (Malmö stad, 2011). How to strengthen the contact between inside and outside? And make it as easy as possible to get out?

Also the communications to the surroundings are important, so that you don't feel isolated and up in the air because you are on a roof. The roof location in itself works as a barrier.

Transformation, addition on top of another building

My design investigation in this project has to do with an aesthetic exploration of how to add a volume that has a character of its own and still respect the character of the underlying building. How to visualize that there is something happening up on the roof, but still not interfere too much with the entrance of Bergakungen. How to adapt to the underlying construction and

Area needs

A lack of buildable area on the ground is the background and reason for why you would put a preschool on a roof in the first case. And I think it's an important parameter to investigate and not to compromise in any given situation.

To investigate the need of square meters is relevant since in many cases preschools that are being built today in the urban environment get less space (källa xxx).

Boverket recommends a free space in schoolyards of about 40 sqm / children (in preschool) and what is built is sometimes as little as 7.5 sqm / children. There are economic interests and densification ideals that drive development towards smaller schoolyards and a more crowded indoor environment, and it can be difficult for planners and architects to decide and argue for what is too crowded.

METHOD

In my research for this project I've found and defined certain qualities / requirements that I've used as parameters for my design. Defining these parameters has been part of my pre-study for this project, and a part of what I wanted to learn in theory (to know what is reasonable).

Pre-study / parameters

- An area requirement of 35 m² per child outdoors (on this specific site, not as a general recommendation) (see pre-study on pp 8)
- An area of 7,5 m² per child available indoors (see pre-study on pp 9)
- Easy access to a more wild type of nature (park or forest) to complement the rooftop courtyard. (see pre-study on pp 10)
- Start from the city of Gothenburg's framework for preschool / school buildings (Göteborgs stads ramprogram för förskolor och skolor, pp 17)
- Start from the program that Wallenstam (the developer) has for this project (possibly make minor deviations, modifications)
- Take into account the municipality's requirements (traffic solutions, etc.)
- Look at the pre-study that architect Gajd has done (I mainly used the information of traffic and investigation of suitable access point).

I have been in contact with the city planning office of Gothenburg and through them found out more about the plans for the preschool on top of Bergakungen. The project, which is a real ongoing parallel project, is in the phase of pilot study / dialogue and a new zoning plan is on commitment.

I've used the information I've got from the different parties as a starting point, but at the same time I've had my own focus and exploration in this project.

What I am going to do

- Site-visits in 1-2 preschools
- Look at existing research in literature
- Produce sketches and models and evaluate them

My work will result in a design project, a rooftop preschool. Where I will use research by design in order to find out which way is the best way (in my point of view) to overcome the challenges of placing a preschool on top of Bergakungen.

QUESTIONS

How to overcome some of the challenges of placing a preschool on top of another building?

How to create a qualitative contact with greenery?

How to work with the transformation of an existing building when adding a volume?

BACKGROUND

Housing shortages and society's demands of efficient land use means that competition for land increases. With denser settlements, especially in the larger cities, it is a great challenge to allocate and maintain sufficient space for children- and young people's needs. (Göteborgs stad, 2009)

More and more families with small children are also choosing to live in the inner city rather than as before moving to a villa in the suburbs. The need for childcare in the city increases. But in the parts of town where the need is great there is barely any buildable land left (källa xxx).

The Swedish Planning and Building Act (PBL) requires that there is sufficient free space suitable for play and outdoor access in homes, recreation centers, schools and kindergartens. But the law defines neither a precise size or suitability. This requires increased knowledge of what characterizes a good outdoor environment already in the early stages of planning, but also in the design, construction and management of the already built (Boverket / Movium (2015) pp.10).

Knowledge and awareness of children's perspectives and needs in the built environment is to me as an architect, a subject I'd like to immerse myself in. School environment is of great importance to both the individual and the society from a social perspective. And in the case of kindergartens, it is tragic that a building considered so important, gets so low priority in the planning of new residential areas and often manifests itself in temporary barracks buildings.

A master thesis designing a preschool contains several parts that interest me both in construction, interior rooms and outdoor environment. It is also something that I am familiar with by having a child in daycare and thereby the topic feels engaging for me personally.

Program

I wanted to fulfill the recommendations from the city of Gothenburg
(Göteborgs stads ramprogram för förskole-/ skolbyggnader)
and see if they could be combined with the guidelines from Miljöbalken.

10 m² LOA per child* dimensioning the whole building

(Göteborgs stads ramprogram för förskole-/ skolbyggnader)

*The LOA included staff rooms, offices, classrooms, department, lunch rooms, special rooms, libraries, toilets, kitchen, storage, sport and communication areas.

Not included in the LOA are technique rooms, nor the surface for sports.

7,5 m² LOA per child* dedicated for children to use

(guidelines from Miljöbalken)

*Staffroom, kitchen, storage, toilets and nursing areas are excluded.

The contractor is Wallenstam who want's to build a municipal preschool of 8 departments

Divided into:

4 departments 1-3 year-olds (~ 60 kids)

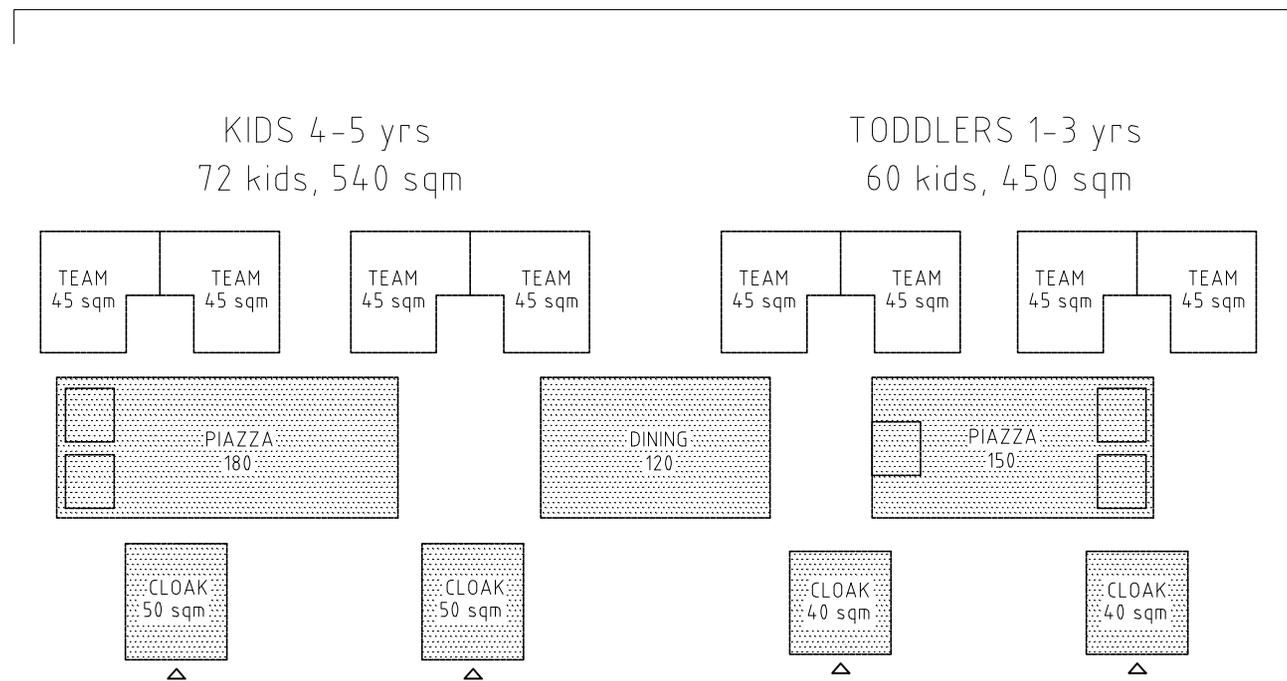
4 departments 4-5 year-olds (~ 72 kids)

The zoning plan (which is not approved) permits:

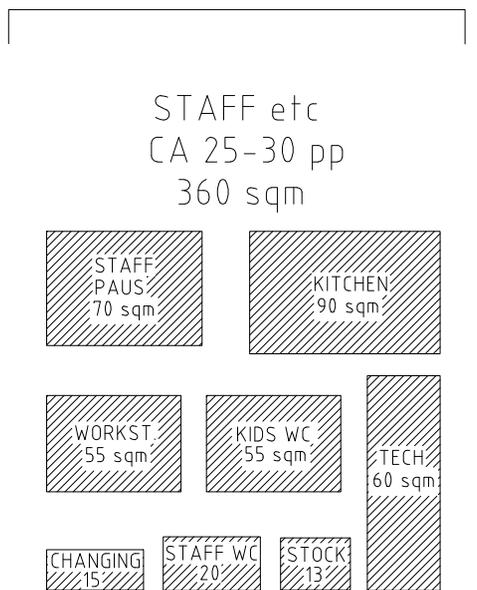
1500 m² BTA max + complementary buildings (~1350 m² LOA)

1 floor high building (with minor exceptions)

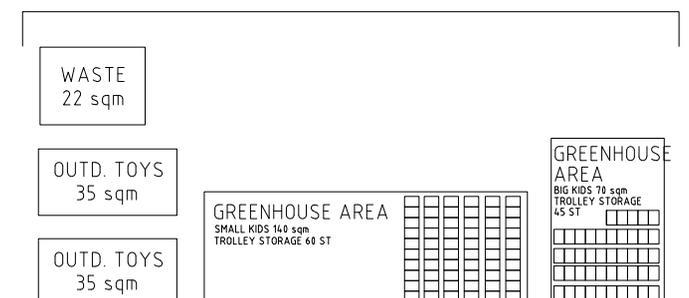
75% CHILD LOA
= 990 sqm LOA available for children



25% "NON-CHILD" LOA
= 360 sqm LOA for storage, kitchen, toilets, staff etc



COMPLEMENT BUILDINGS
NON-LOA 212 sqm



Area requirements

There is an ongoing debate about legislating minimum areas for the outdoor environment in preschools. Representatives from Boverket argue that only a measurement of size is not enough to insure a good outdoor environment, and that minimum numbers often turn to standards that is applied rashly (Lärarnas tidning, 2015). Various professional landscapers in Stockholm has gather and formed a group called "landskapsupproret", protesting against poor and crowded outdoor environments for children and pushing the issue of legislating minimum areas. (Brunge E, Arkitekten (2015) pp 12).

FREE SPACE OF THE SCHOOL YARD

The size of the school yard is listed in many cases as one of the most important qualities in children's outdoor environment. (källa: XX)

But there is no regulations by law for the size of a schoolyard. It is according to Skolverket and the Agency for School Improvement fully possible to start a school without a schoolyard at all. In PBL (Swedish building regulations) is written rather vague that a "sufficiently large area" of a plot of land should be utilized for playing and being outdoors when building new schools and kindergartens.

(PBL, 8 kap. 9§ andra stycket och 10-11§§)

Boverket has recently published a guide "Gör plats för barn och unga!" where they want to give general advice on how to apply the law. It describes many important qualities and provides guidance for the design of outdoor environments (Boverket, 2015) However, I do not think it is sufficiently clear in the importance of surface requirements in a more precise number of square meters. And personally, I believe in legislating a minimum area.

In an article by architect Rickard Nygren he states that "only a surface area alone is not enough to describe qualities. But that something is difficult to measure, should not be an argument for not "and that the point of a surface requirement is that it in a clear way, can give more emphasis to values that otherwise easy stand back. (Arkitekten, 2015)

The city of Lund has published a detailed pdf about surfaces and design of schoolyards called "Ut och lek!". A good summary statement says:

"Outdoor environments with less than 20-30 square meters per child gives monotonous and poor yards with high risks of it feeling crowded leading to conflicts and increased maintenance costs. Outdoor environments with open spaces between 30-40 sqm per child gives the opportunity to a more diverse yard but they are dependent on complementing spaces close by to create a balanced environments for play and learning. Outdoor environments with 40-60 square meters per child provides the opportunity to develop rich versatile environments at schools with reasonable maintenance costs."

Lunds kommun (2008), pp.7

Research shows that the total size of the yard should preferably exceed 3000 m². In a smaller yard, regardless of number of children, there will be more difficult to develop play and social interaction in a way that meets the children's needs

(Martensson, Boldemann, 2009).



30 sqm of free space per child has Malmö city defined as a breaking point when less area is difficult in maintaining the quality of green space and increased wear on both green surfaces and playground equipment. This is often compensated with a larger proportion of hard surfaces, leading to further poverty in the outdoor environment.

Lekvärdesfaktor för förskolegårdar i Malmö, 2011

Other recommendations

- 45 sqm per child in grades 0-5 according to Lund municipality's local plan for the school in 2005
- 45 sqm per pupil according to the government guidelines that existed until 1991 (when the authority Skolöverstyrelsen closed down)
- 45 sqm of free space per child in units located without direct proximity to park or sports surfaces according to the report "Ut och lek!" (Lunds kommun, 2008)
- 40 sqm per child in preschool, of free space excluding building and parking according to Socialstyrelsen 1987
- 35 sqm of free space per child, may be acceptable as area within the school yard if one can use adjacent surfaces and in that way unburden the schoolyard (Ut och lek!)
- 35 sqm of free space per child, is set as a goal for the preschool children's outdoor environment by Gothenburg city framework.
- 30 sqm of free space per child has Malmö city defined as a breaking point when less area is difficult in maintaining the quality of green space and increased wear on both green surfaces and playground equipment. This is often compensated with a larger proportion of hard surfaces, leading to further poverty in the outdoor environment.
- 15 sqm per student was identified as the minimum requirements for Vårfruskolans schoolyard in Lund by a judgment in Malmö in 1992 by Yrkesinspektionen.

With these recommendations in mind, I think 35 sqm per child, as requirements for free space, is reasonable in this project. The area of the rooftop yard is compensated by the proximity to Burgårdsparken where there are additional park land / natural areas that can be reached without having to cross traffic or walk too far. In that matter the preschool is particularly well situated for such a central location.



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AREA INDOORS

Neither in the indoor environment, are there any legislated regulations on how many square meters there should be per child. Today it is every principal - the municipality or the owner - who is responsible for that the surface is sufficient (Magdalena Karlsson on Skolverket, which is the authority responsible for the indoor surface at the nursery). Miljöförvaltningen is responsible for the oversight of preschools, schools and recreation centers and will ensure that the regulations are followed according to miljöbalken.

A survey by P4 Stockholm show that most of the county's 26 municipalities do not have regulations for the number of sqm per child. Some have recommendations, such as Sundbyberg and Stockholm. (Sjöqvist Harland 2015)

- 10 m² per child indoors* (LOA) according to Gothenburg municipality
*The LOA included staff rooms, offices, classrooms, department, lunch rooms, special rooms, libraries, toilets, dining, catering, storage, sport and communication areas (corridors etc.). Not included in the LOA are technique rooms, nor the surface for sports.
- 7,5 m² per child where children staying, recommends miljöförvaltningen and city planning office in Stockholm. *Storeroom, kitchen, staff rooms, toilets and nursing areas are excluded (Stockholms stad, 2007)
- 7,5 m² per child according to the guidelines in miljöbalken, and only spaces that children have access to is included.
- 7,5 m² of play area per person was recommended by Socialstyrelsen before. Recommendation has now been removed. The activities can be adapted to the surface, with more time spent outdoors, and smaller groups if the surface is small.
- 8-10 m² per person is recommended by Arbetsmiljöverket in office environment per person (as reference)

The framework from Göteborg municipality counts surfaces differently than the other recommendations. For example, you lose in play area for the kids when choosing to cook food locally, which of course is a great quality – to be able to serve food cooked in house. What is the surface per child if you exclude kitchen, storage room, staff etc from the 10 sqm? Will it reach up to 7.5 square meters per child as Miljöbalken recommends?

My starting point is to follow the recommendations of 7,5 sqm per child accessible for children (Miljöbalken), and see if I can fit in all other functions on remaining 2,5 sqm so that the total will be 10 sqm per child LOA dimensioning the building (framework of Gothenburg municipality).

MY CALCULATIONS

The building rights on the plot is 1500 BTA main building. If I estimate away 10% to external walls, etc it remains about 1350 sqm LOA.

1350 sqm should accommodate 135 children (according to the framework of Gothenburg municipality).

135 children x 7,5 sqm = 1013 sqm play area (since I want to follow the guidelines of Miljöbalken).

337 sqm LOA remains to kitchen, storage room, staff rooms, toilets and baby changing ... does that work?

A green and qualitative outdoor environment

I've found this area of research to be very extensive and hard for me to summarize. The two most detailed and hands-on guides / tools on how to design a good quality outdoor environment that I found comes from:

Lekvärdesfaktor (play value factor) by Malmö city planning office

En handbok i utformning av förskolors utemiljöer, trädgårdar att lära och leka i. (A manual of how to design a preschool outdoor environment, gardens to learn and play in) by Sara Chronval. A student master thesis from SLU Ultuna, 2010

I recommend reading them as a whole to get an understanding of why these factors / qualities are of importance. From them and supplemented by other sources I've compiled some focus areas that is of special interest when the courtyard is on top of a roof (but also valid on ground).

VEGETATION

Areas with natural vegetation or planted varied vegetation that you can play in represent at least one third of the preschool yard.

- Existing or landscaped forest. The forest should: feel wild, messy and offer a closed spatiality.
- Give children the opportunity to stop and discover loose materials, such as sticks, ants, beetles, pine cones, rocks and more. A richness of materials, textures, colours, shapes, stuff to explore.
- Promote biodiversity. Scrubby bushes and dead wood is saved, bird feeders are set up etc.

UNDERSTANDING OF THE ENVIRONMENT

- The yard is changing with the seasons and there are different things for kids to do there in the different seasons.
- There are loose materials for the children to use and opportunity for construction play (needs to be supplemented on a rooftop yard).
- When it rains rainwater is collected for play.
- Possibilities for growing crops and having a compost, visualizing the cycle.
- A natural / wild environment where the children can follow the seasons.

Marked ones are the ones hard to cater on a rooftop schoolyard, and might need to be supplemented by a nearby park / forest

ZONING OF THE YARD

A preschool yard should be made of three zones, a safe, a discursive and a wild.

Safe Zone

The area closest to the house should be a place of safety, peace and quiet. The zone should contain

- Tables and seating, possible to sit under a roof
- Calmer activities such as a sandpit
- Play houses or farms

Discursive zone

Provides space for movement in many different directions, and several tools that promote a movement filled game. The equipment can for example promote

- Climbing and balance of various kinds. Barriers play.
- Loops for trolleys, bikes etc.
- Swings and slides
- Focus points which gives kids something to run against and gather around. Could be playground equipment, a large rock or similar.
- Hills and terrain can create conditions for broad-game.

Wild Zone

Should be located outside the discursive zone and will represent at least one third of preschool yard.

- Dense vegetation provides the opportunity for children to experience the feeling of being alone.
- Playable vegetation with shrubs and trees
- Varied topography reinforces the wild nature.



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A GOOD CLIMATE

- Protected outdoor environment from wind, sounds etc. Outdoor areas on roofs are often more exposed to wind and sun.
- Gathering places with rain, sun and wind protection.
- Vegetation that serve as shelter for wind exposed positions.
- Lighting during the winter months.
- A functioning storm water runoff.
- Sound absorbing material, if necessary. On this site noise from the ventilation plant that has its air intake on the roof needs fixing. The noise from the traffic on Skånegatan have the measurements been an ok level.
- A safe and unclimable fence that you partly or completely could see through.

SPATIALITIES AND ROOMS IN THE OUTDOORS

The outdoor environment should be made up of different spaces. Some of the "rooms" can be used as educational and thematic rooms for example cultivation, barbeque.

- Variation in size and experience.
- Some rooms will be places for relaxation and little hide away from the rest.
- Bigger open rooms for high-speed activities such as running and discursive play.
- Have clear identities and be partially separated from each other by small walls, fences, bushes, etc.
- Have walkways or trails of varying scale and with varying ground surfaces between them.
- Contain narrow passages
- Most of these passages and rooms will be available for children with impaired mobility.

SUN AND SHADE

- The yard has a variation of shade and sunny spaces.
- Play in the shade of trees is mostly recommended
- Daylight filtered through leaves, half light
- How to provide shade when there is a lack of trees?

TOPOGRAPHY

- At least half of the courtyard has varied topography with small hills, pits and steeps.
- A steep hill to challenge children and encourage them to work together to come up
- A north faced hill generating snow sledding slopes and ice slides in winter.
- Having alternative ways up for children with impaired mobility.
- Contain logs or rocks that dramatizes the children running up and give it direction
- A variation of mainly soft surfaces such as grass, artificial turf, rubber asphalt and more.

ACCESSIBILITY

- Wheelchair users can get out to large parts of the yard, to areas of all zones. The ground material allows for movement to most of the playground.
- A plurality of the playground equipment is possible to use on their own.
- Color scheme with contrasts increases orientation for children and adults with visual impairments.
- The rooftop courtyard and preschool is possible to reach (an elevator is needed)
- Building should lie directly adjacent to the outdoor environment (Nord B, 2014).

Sustainability



My own picture

A NEED FOR A PRESCHOOL

To whatsoever invest in a preschool, which is a partly welfare financed business available for people of all income groups, could be seen as an investment in social sustainability in itself. There is a need for a preschool in this part of town, and hard to find appropriate locations for it, and in my opinion (and the city planning office) this is a good location for a preschool with the closeness to the park. To put resources into the environment of children where they spend so much time and develop must be a good investment for the society.

If the city of Gothenburg does not provide sufficient childcare, it leads to exclusion of families with children in the district, with consequences of families forced to move out. Which would probably mean increased commuting and car dependency.

CREATING A PUBLIC SPACE

The preschool could contribute to making the Activity park into a more public space, and define its identity. Right now Bergakungen has no front towards the park, and it feels very much as a backside. The architecture of the preschool has a placemaking function. The preschool will also contribute to more people finding out about the skate-park and contribute to making the area safer. It will contribute to spontaneous meetings between kids, older skaters, parents and other people using the park.

The activity park / skate park has needs of facilities for a public toilet and maybe a kiosk etc. And the new preschool building could hold these functions.

KEEPING THE COURTYARD PARTLY ACCESSIBLE FOR THE PUBLIC

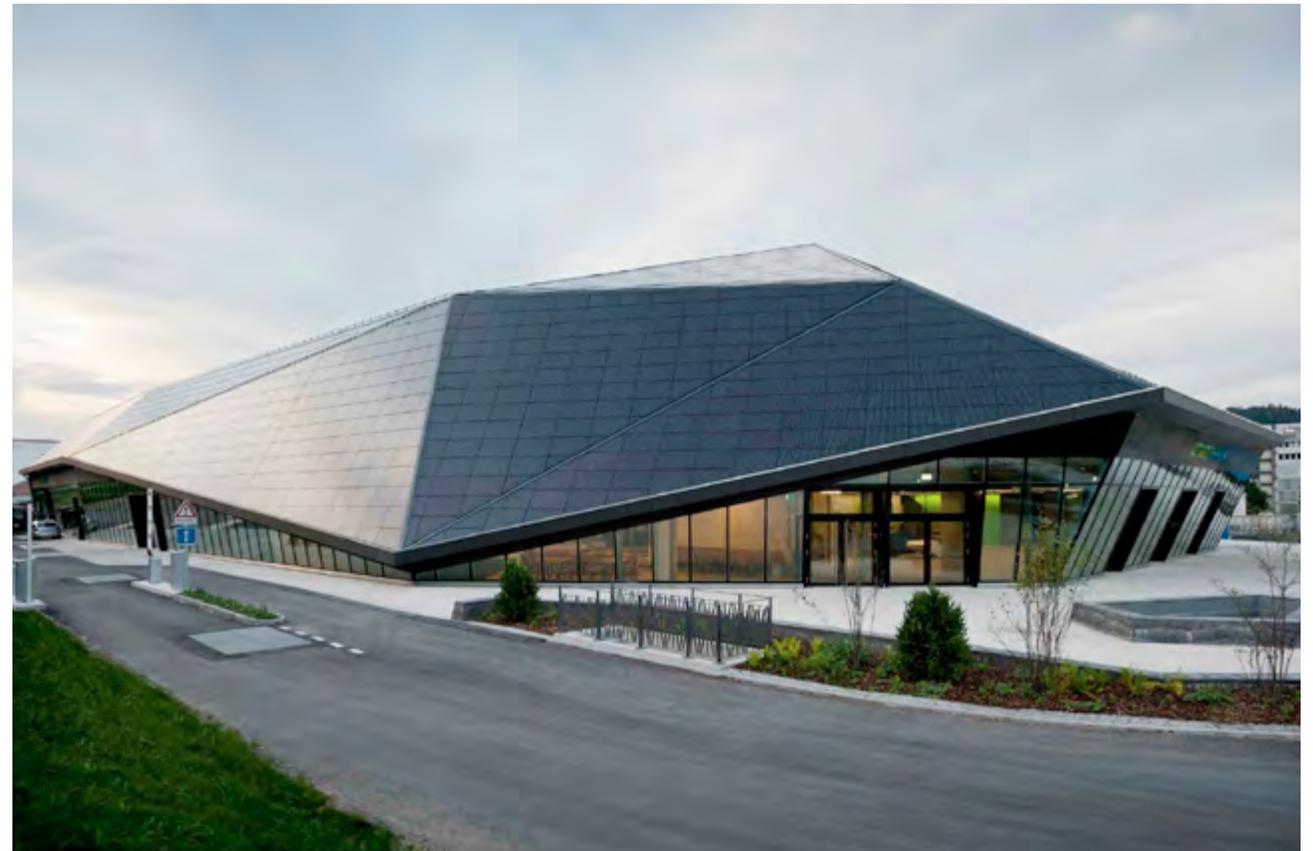
To preserve green areas and parks in the city is of vital importance for the inhabitants in general. The rooftop garden of Bergakungen is today available for everyone and is for example used by several kindergartens nearby. An idea would be to keep the new preschool yard open for everyone to use. But it might be some conflict in that, both from increased wear, safety issues for the staff, vandalism and people leaving inappropriate material (such as beer cans and needles) in the children environment.

My idea is to have the courtyard open when the preschool is closed, meaning that the yard can be used as playground for local residents. It could be a destination point for eg. families where someone skateboarding while a smaller child can play on the roof garden. Facilities like a kiosk could also have an eye on the rooftop yard.

It's important with the accessibility and the signal value of stairs leading to the courtyard entrances.



From Emporia rooftop park shopping mall in Hyllie, Malmö, landscape by Landskapsgruppen



Umwelt arena, Rene Schmid Architekten © Michael Egloff

TRANSPORTATION BY FOOT / BIKE / TRAM

The central location gives good conditions for leaving and retrieving by foot, by bike or by public transport. To create good and safe paths for walking and biking and parking of bikes, prams, trolleys etc is of importance.

Easy logistics by foot / bike / tram will mean less car dependency and less emissions of greenhouse gasses and other exhaust fumes.

BIODIVERSITY

Adding more species of plants, bushes and small trees will contribute to increased biodiversity of the site. Special focus would preferably be on adding plant beneficial for pollinators such as bees, bumblebees and butterflies.

To grow food on the courtyard, both as an educational aim and as small scale production. To make the cycle visible has an educational value.

ENERGY EFFICIENCY

- The building is well insulated.
- Pre-heated air from the greenhouses could be used for ventilation.
- Mechanical ventilation with heat recovery
- Solarcells provide electricity

SOLARCELLS

Building integrated photo voltaics (BIPV) covering the entire roof.

Surplus electricity that the solar panels produce can be used for the cinema (since they have the same property owner).

The BIPV replace other roofing material witch means a saving in both material used and costs (compared with adding "normal" photovoltaics on top of roofing material). To invest in building integrated photo voltaics from the beginning is a good investment for a property manager over time (källa xxx).

It will also mean a lightweight material which is suitable in this case (otherwise I might consider having a green roof).

WOOD CONSTRUCTION

- A natural material that emits no toxins or doubtfull substances
- Wood could be considered carbon neutral and could be produced nationally (less transport).
- To use a homogenic wooden wall element permits a possibility to disassembly the construction in the future and re-use the wood as fuel or wood pulp etc.
- A light weight material (important due to how much weight the underlying construction can handle)

CONTEXT

The preschool building

The preschool environment

The architecture should support children's opportunities to make choices and control their activities in the environment, and that play is given space to last as long as the children want.

Linder (2016)

THE ROOM AS THE THIRD EDUCATOR

Today it's customary to talk about the environment in preschool as the "third educator", besides the teachers and the other children. Swedish preschools has since the 70's had a strong focus on children's social relationships of friendship, interaction and communication. With the social focus, you might say that issues concerning the environment and materials fell behind, and it was not prioritized in the educational world and has had low status as objects of research in social science. (Linder, 2016)

Architecture and the physical environment are important for our development. Materials and rooms invite to action, and depending on how the environment is organized will also imply a variety of learning and discovery to be made possible. Because children and groups are constantly changing also the educational environment constantly needs to be renewed and developed together with the children (Linder, 2016). As Ann Atkins and Hillevi Lenz Taguchis (2005) put it, "Children do as the room is telling them to do" and exemplifies how difficult it is to resist to kick a ball in the middle of a room.

Children are not in a special way, they are, in different ways in relation to the opportunities and standards of how different environments and things are

Nordin-Hultman (2004)

The preschool should provide children with a safe environment that simultaneously challenges and encourages play and activity. It should inspire children to explore the world around us

Skolverket (2011)

The architecture should support children's opportunities to make choices and control their activities in the environment, and that play is given space to last as long as the children want. The physical environment need to be designed so that it provides both physical activity, rest, reflection and recovery.

Preschool rooms

MY RESERCH ABOUT ROOMS

In a study made by Botkyrka kommun (Linder 2016) with the aim to improve the preschool environment it has been concluded that the following room concepts is important for implementing the curriculum (läroplanen)

- Atelier environment
- Building and construction environment
- Environment for privacy, read, listen and tell
- Scientific, technical and laboratory environment
- Interaction and role play
- Digital environment

This could of course be accomplished in many types of room configurations. In the litterature and interviews that I have studied I've found it to be a consensus of what type of rooms most educators wants. Here I will give you an overview of them and which activities that could take place.



Shop environment from preschool Växthuset in Värnamo (a station for work with mathematics).



Mobile furniture that create room and could be used in play (furniture from Small design, Denmark)



From Swedish F-5 school Vittra Telefonplan, Stockholm

Piazza

- Serves as a meeting place between departments.
- Open relationship to adjoining rooms. Glassed walls.
- Flexible, movable furniture. Create room-in-rooms.
- A place to set up different creative stations and changing activities to move freely in-between. To let the child be able to choose in-between different activities.
- Atelier environment as a function within the piazza.
- Library: storing and sharing things in-between departments, books but could also be toys etc.
- Movement room. Possible to make room for fysical activities such as yoga / gymnastics. This could also take place in gymnastics hall in nearby school.
- Meals could take place at the piazza.
- In many examples younger children and the 4-5 year olds were separated, but here it seems to be shared opinions of what's best. In some cases the ambition was to have a meeting place for everyone, but after a while when that didn't function so well the space had been split up (lindner 2016 p.73). This is of course also linked to the size of the preschool, when the preschool is very big it is just not practical with a single meeting space because the space would be too big.



Preschool Kita unterm regenschirm, projekt BAUKIND



Kindergarten in Kristiansand, Norway. Interior Grethe Sivertsen

Department (hemvist)

Contain smaller calm resting zones, and a possibility to withdraw. Smaller rooms, more cozy.. Convertable to classroom for F-5 school.



Hanazono Kindergarten in Japan, by Youji No Shiro

Kitchen

Centrally placed to tickle and stimulate appetite and visual understanding of where the food is cooked. Possible to use the kitchen in educational activities.



Crèche, Kindergarten and Childcare Centre in Vienna

Entrance

- A welcoming atmosphere
- A place for meetings between staff – parents – kids.
- Exhibition space for information and presentation of what's going on, pinboard / digital pinboard etc
- In connection with drying room, sink, toilets / nursing
- Outside entrance canopies / porches and windbreakers.



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Toilets / nursing room

- Sink in childrens height for several kids to wash hands.
- Changing table with sink in height for staff.
- One toilets per 10 kids minimum (smaller kids doesn't really need that many but is built for flexibility).

Meals

Preferably breakfast and snacks close to the department, but lunch in common dining room. Main reason for that is for the staff not having to clean away and cancel whatever the kids are doing at the moment. Possible to combine snack / breakfast with crafts room. That would mean a fridge, small freezer, dishwasher and sink in this room. Sink in children's height so that they could wash brushes and clean their hands.

My intention is to serve smaller meals at the piazza and lunch in secluded dining room.

Staff room

No need for kitchen and dining, staff eat with the kids.

Sofas and resting space for everyone (typically people lay down and check their phones, a great need for just resting since the work is so socially demanding).

Staff desktop space

A workstation away from the kids for planning, correspondence, documentation etc

Framework for preschool and school buildings

FROM THE CITY OF GOTHENBURG

Göteborgs stad (2014)

The starting point of my project is to follow the recommendation from the City of Gothenburg, but I'm also going to relate critical to it and compare with recommendations from other municipalities / research. For example when it comes to the area recommendations I base my minimum area on several reports to see if it coincides with what the City of Gothenburg recommends.

Bigger units / school houses

- It recommends that you build larger units (school houses) and that more teachers provides greater opportunities for access to expertise. This has to do with both cost effectiveness in building (cheaper to build one large school instead of several small) but also in the organization and pedagogics that you nowadays often prefer to organize in larger teams or to be able to collaborate in-between departments.
- It's recommended to kindergartens with five departments or more to be equipped with a preparation kitchen.

Area recommendations

- 10 sqm per child indoors (LOA = lokalarea)*
- *The LOA included staff rooms, offices, classrooms, department, lunch rooms, special rooms, libraries, toilets, dining, catering, storage, sport and communication areas (corridors etc.). Not included in the LOA are technique rooms, nor the surface for sports.
- 35 sqm per child outdoors

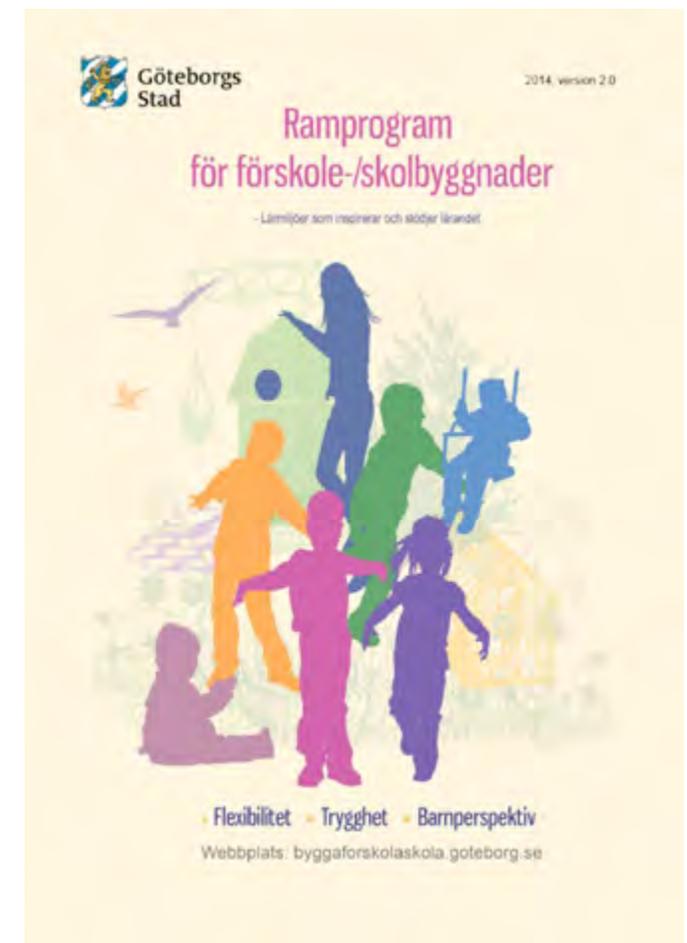
Flexibility

- Support different learning styles, different kinds of teaching methods and approaches. Be able to change along with changes in society.
- Convertable from a kindergarden in to an F-3 school, or vice versa.
- Variations in the physical environment, a variation of rooms from small scale space for reflection and relaxation to large common rooms.

Furnish for flexibility

Furniture that supports flexibility for both sitting and standing, creating spaces for different situations and needs.

- Removable walls to create small rooms in the room.
- Removable storage
- Height adjustable work surfaces provides different ages the opportunity to use the same workspaces.
- Easily movable furniture
- Seating, gallery to create levels



From Gothenburg city: a guide with recommendations and requirement when uilding a preschool in the municipality. From: byggaforskola.goteborg.se



Organization scheme that shows the relationship between the Piazza (=Arbetsstorg) and the departments. This is valid for both schools and preschools.

From pedagogics to room sequence

In several texts, and in meeting with educators I've come across an indoor space called "meeting square" "mötestorg" "arbetstorg". What you refer to is a common space shared inbetween departments. I choose to call this space "piazza" since it's a word that is understandable in several languages.

The Piazza is becoming a very common request for new preschools (and schools). It is seen as a meeting place, a place of research, invention and exploring.

The piazza sometimes have a special staff competence attached to it, an atelierista, responsible for planning and organizing the activities in the piazza. The Atelierista has special expertise working with children's learning on the basis of creativity and creation through image and exploratory approach.

The concept of the atelierista comes originally from the Reggio Emilia pedagogy, but is nowadays becoming a more wide spread competence into the municipal schools.

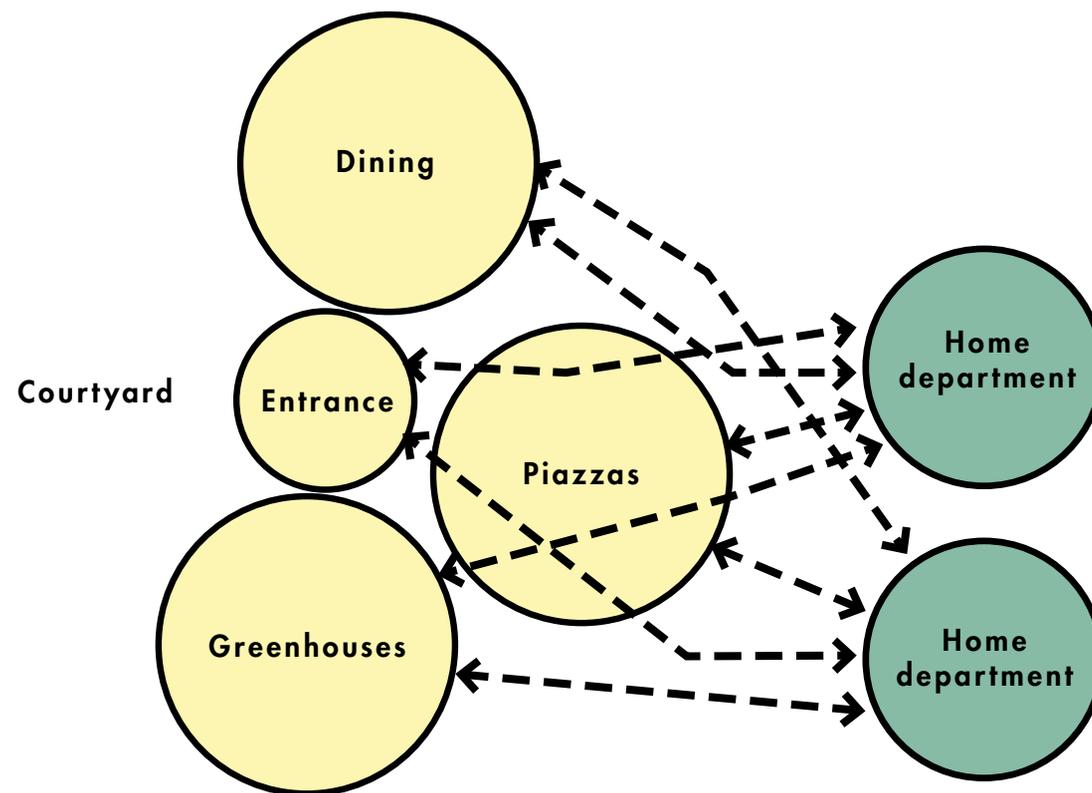


Diagram showing the relationship between shared space and department space

A way of providing space for different needs, both familiar/safe/resting \leftrightarrow exploring/activity

A way of letting the child explore it's surrounding and choose what activities it want to take part in more freely (because you believe that the child learn better that way).

A way of getting access to a larger spectrum of rooms, more variery when you have alot of shared space between departments (easier to accomplish on a larger preschool).

A way of having a smaller group that you spend most time with, but also have possibilities to get to know other kids from other departments.

A way of using human resources efficient. In the afternoon when kids start to go home departments could merge and staff resources is free. When staff in the department is sick, a well known face – the atelierista, could substitute the original staff.

A way of promoting co-operation and meetings between departments on the common surfaces.

Shared indoor space

Atelierista (a preschool of this size will probably have an Atelierista responsible for creative content on the piazza)

Chef / kitchen staff

Bigger group

Department

Educators

Smaller group

*+ the combination of smaller private team space
and a large common piazza*

*+ A general structure of the building itself,
a more customized interior*

+ the outdoor feeling of the piazza

+the light

*+feels very simple and raw and cheap,
but still with quality*

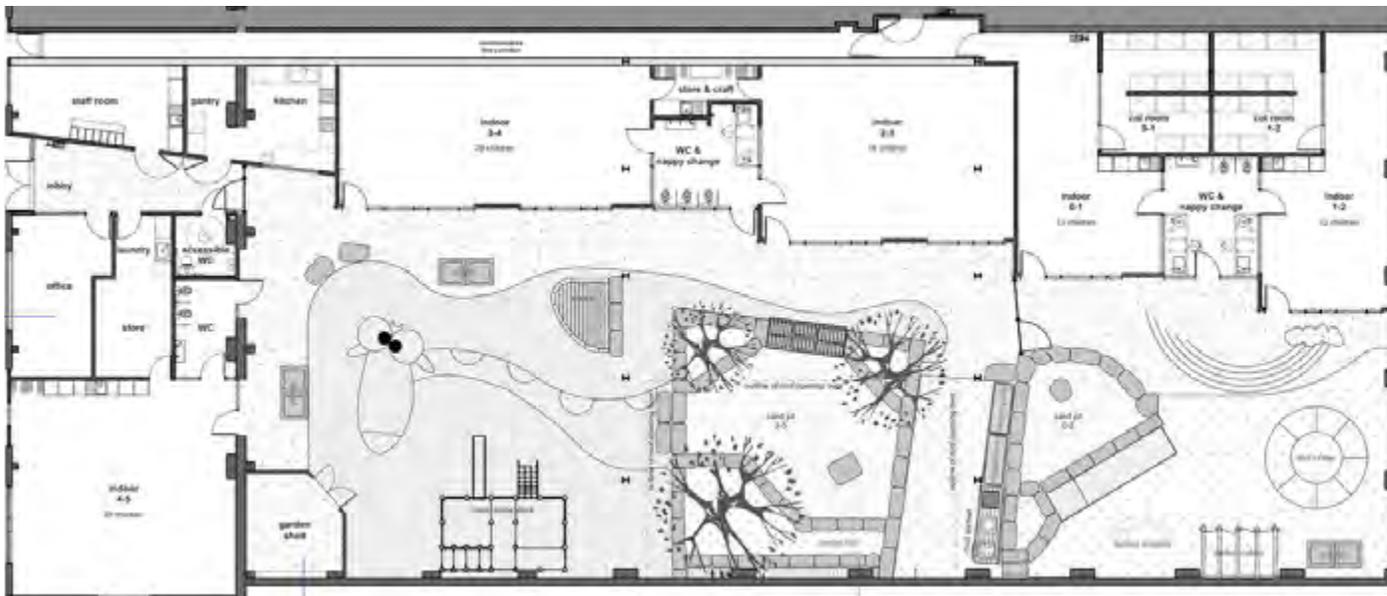
- the piazza is maybe not so flexible

– contact with the outside?

Camperdown childcare

CO-AP
Sydney, Australia
2014
Warehouse transformation

indoor - outdoor dissolution
indoor greenery



Biggest daycare center in København.

An interesting example of the politics today when it comes to building preschools in urban areas...

Super dense, large size, taken care of in the architecture but an impossible task to accommodate so many children from the beginning.

+ how they work with scale and light

+ variation of rooms

+ the semi-outdoor spaces accessible from each floor and each department is adding qualities

– accomodates 180 kids on a site that used to house 30 kids... :(

– poor outdoor environment

– too crowded

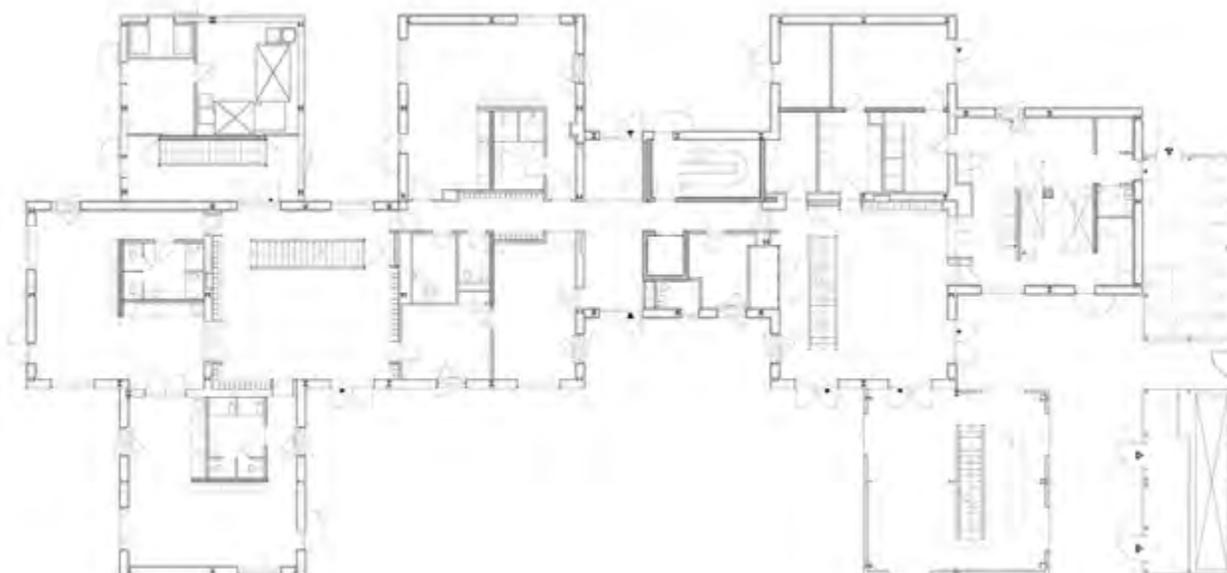
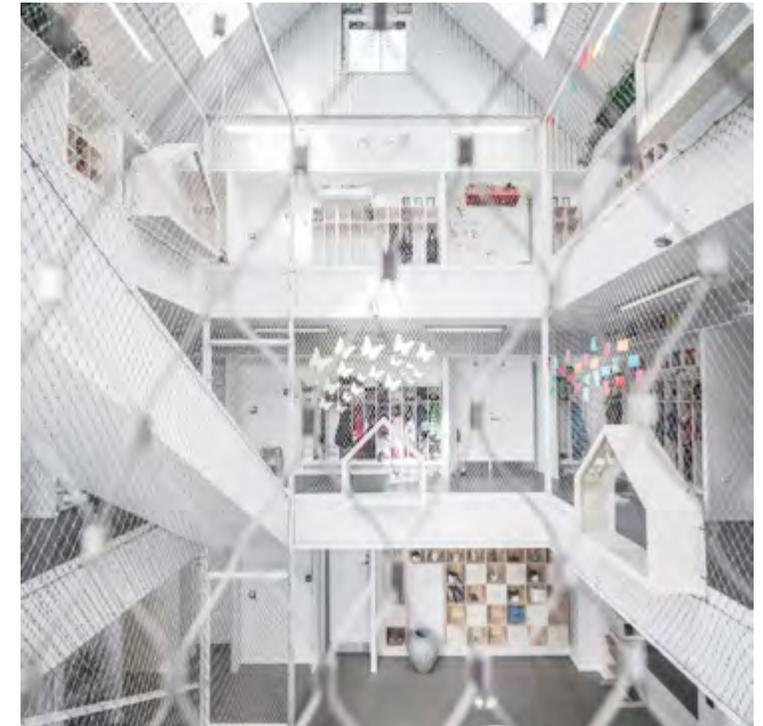
– the combination of black steel and the meshy facade makes it feel very cold and harsh

Smørblomsten kindergarden

COBE

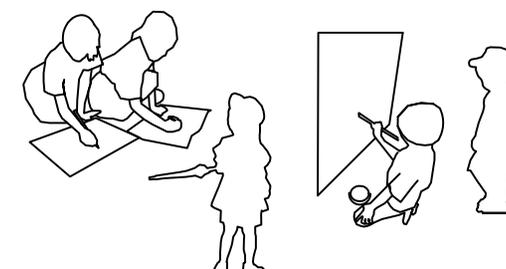
Copenhagen, Denmark

2016



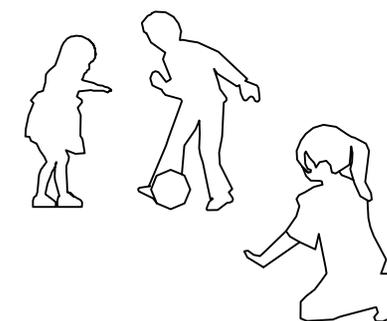
A day at the preschool

A fictional scedule of activities at the preschool based on the "schedule" of three other preschools in Gothenburg that I have had the knowledge of (Förskolan Marklandsgatan 41, Förskolan St. Jörgen, Förskolan Kalabalik) and adapted the rooms in my program. I've used this as a tool for finding out how rooms are used and when, important connections between rooms and general placement of rooms according to light conditions.



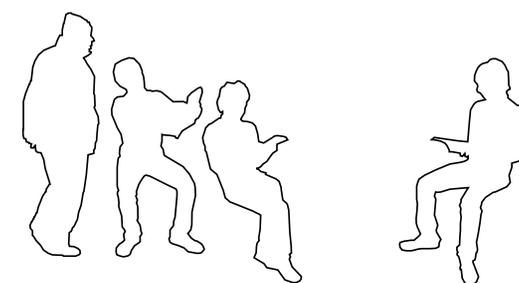
10.30 SMALL GROUPS / OUTDOORS

Small groups doing various educational activities indoors, in the greenhouse, out on the yard or in the park, depending on weather and curriculum.



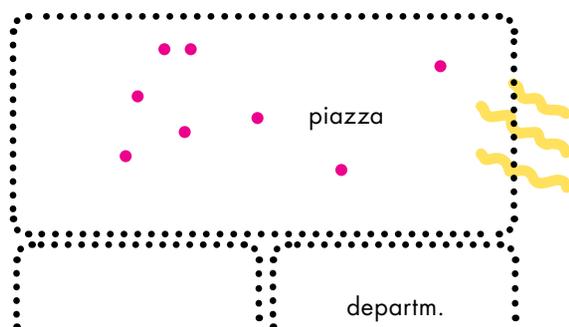
14.00 OUTDOOR PLAY

As the children wake up, we get dressed and go out.



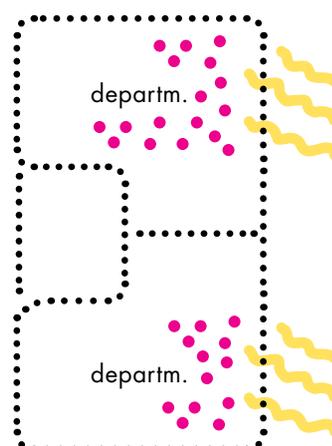
18.00 PARENT MEETING

Parents and teachers gathered in the staff room on the second floor.



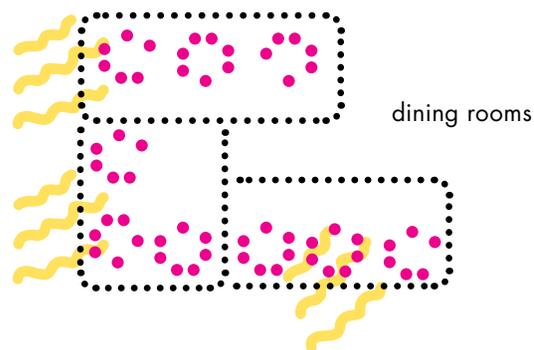
07-08.30 BREAKFAST AT PIAZZA

The children arrives one by one and get breakfast as they come. Breakfast is served on the piazza that is shared between four departments.



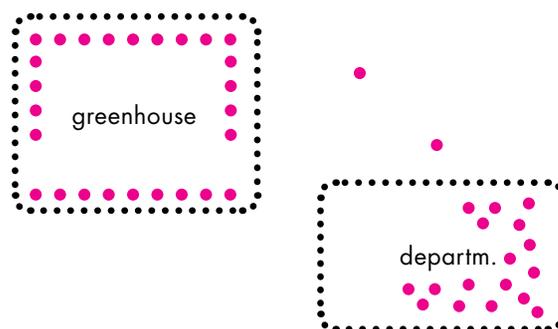
09.30 MORNING ASSEMBLY

Now the group of children gathers and have morning assembly at the department. It gets morning sun from the east.



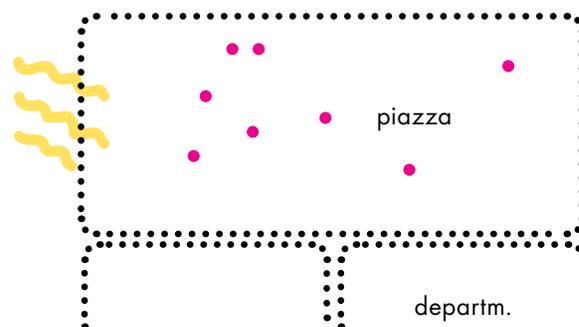
11.30-12.30 LUNCH

Troop to the dining room where we eat in groups with a teacher at each table. The toddlers eat first (about 60 pp) and then the older children (about 72 pp). The dining room is part of the piazza and divided in smaller spatial units for a calmer and less noisy environment. It can later be used for other activities.



12.30 REST

After lunch all children rests. Toddlers sleep in the greenhouse in their strollers. The big kids rest and read in the department nest. The children who get restless /wake up is directed to the piazza not to disturb the others.



16.00 GOING HOME SOON...

As more and more children go home remaining children are gathered at the piazza. Children from several departments merge and explore freely.



15.00 SNACKS

Snacks are served where we were staying for the moment, either outdoors (under roof), or on the piazza.

Study visit

Pictures from Fenestra S:t Jörgen preschool in Gothenburg. A preschool of similar size (10 departments) that I visited with my daughter as test pilot. My study visit here was about the pedagogics in relationship to rooms and how such a large scale preschool could work (not so much about the architecture in itself).

My daughter enjoyed the "water room" most of all. One advantage of this larger preschool is the availability of various kinds of special rooms.



CONTEXT

The site

Heden & "evenemangsstråket"

A CENTRAL PART
OF GOTHENBURG



DENSIFICATION – BUILDING IN THE CITY CENTER

To densify the city and build more housing in the city center is a stated strategy from the Gothenburg planning office. New buildings should strengthen the existing urban structure and create a city that encourages stay for all.

An aim is to create a mixed use environment for living and working to reduce the need for transport (Göteborgs stad, 2009).

Evenemangsstråket today, attracts visitors from all over the region but sometimes lack living environments for residents and is very large scale in planning.

A NEED FOR CHILDCARE IN AREA

If a nursery is not built, it leads to the exclusion of families with children in the district, with consequences of families forced to move out.

The site provides good conditions for a preschool with the closeness to Burgårdsparken and the site has a good size for quite a large preschool (which is preferred and needed).

PRIORITIZING TRANSPORT ON FOOT, BY BIKE AND PUBLIC TRANSPORT

The central location gives good conditions for leaving and retrieving by bike / tram / on foot. Building here means using existing infrastructure and reduced car dependency = less exhaust fumes.

Starting points

—

Quite an exceptional site for being a rooftop yard...
Very large site > 6000 sqm
Very landscpy with some hilly topography and alot of green grass
Situatied in /next to Burgårdsparken with alot of green qualities



BACKSIDE BEGGING FOR DESIGN

Bergakungen has a very "undecided" backside towards the activity park. I want the new building to dominate this side, and create a new front towards the activity park.



NORTH ENTRANCE PATH

Existing north-east facing slope could be used as entrance



THE EXISTING STAIR

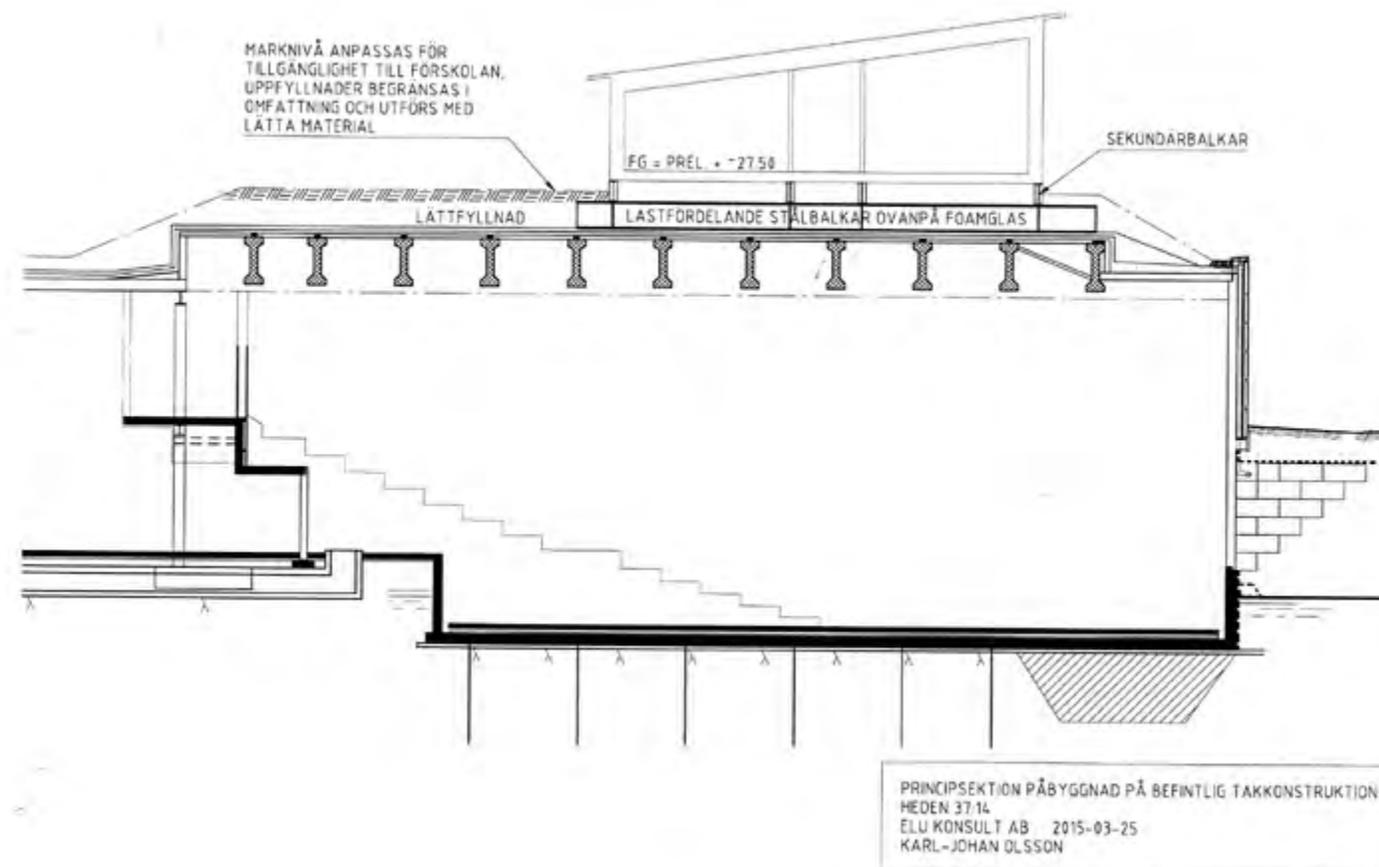
Not very visible that you could go up on the roof

GET CLOSER TO THE TREES

Nice views of trees in eye-height.

Construction premisses

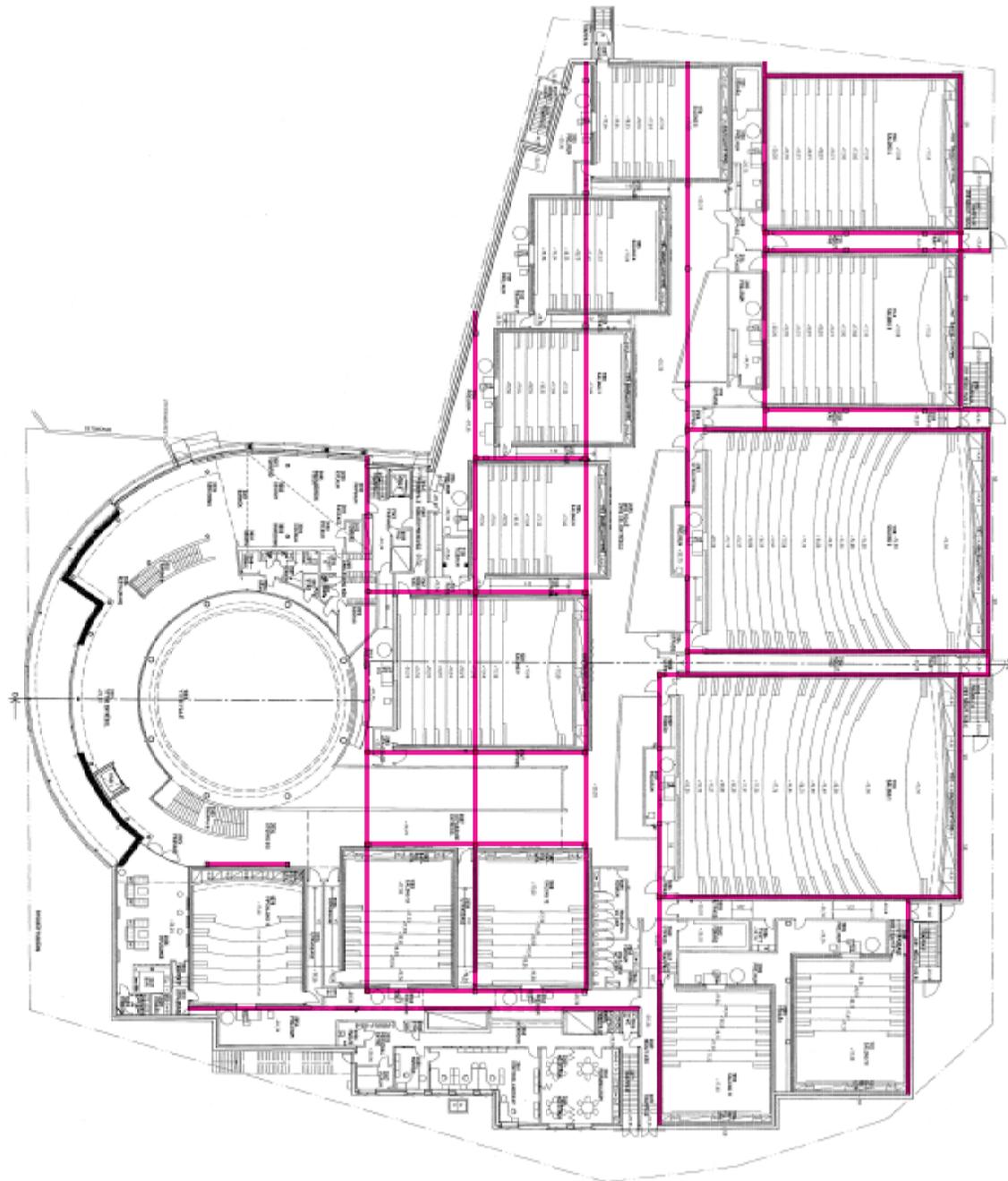
The loadbearing structure of the cinema has quite long spans between supporting pillars, especially the saloons in the south. The new building needs to adapt to these wide spans. Which will mean quite unusual measurements for a single storey preschool building. At the same time it felth doable early on to align to these divisions of volume.



Construction example from the pre-study made by Gajd architects and Elukonsult. This way of doing it is to use steel beams hidden underneath the building that distribute the loads. I've chosen not to use this approach because I don't like the idea of hiding the construction, I want to use the construction as a visible and characteristics element. I also want to use wood as much as possible, and I doubt that wood is suitable to use in this way (cause of moist and thicker dimensions of the beams).

LOADBEARING STRUCTURE OF THE CINEMA

Pillars in loadcarrying lines in-between the saloons permits a building on the east side.



NEW CONSTRUCTION ON TOP

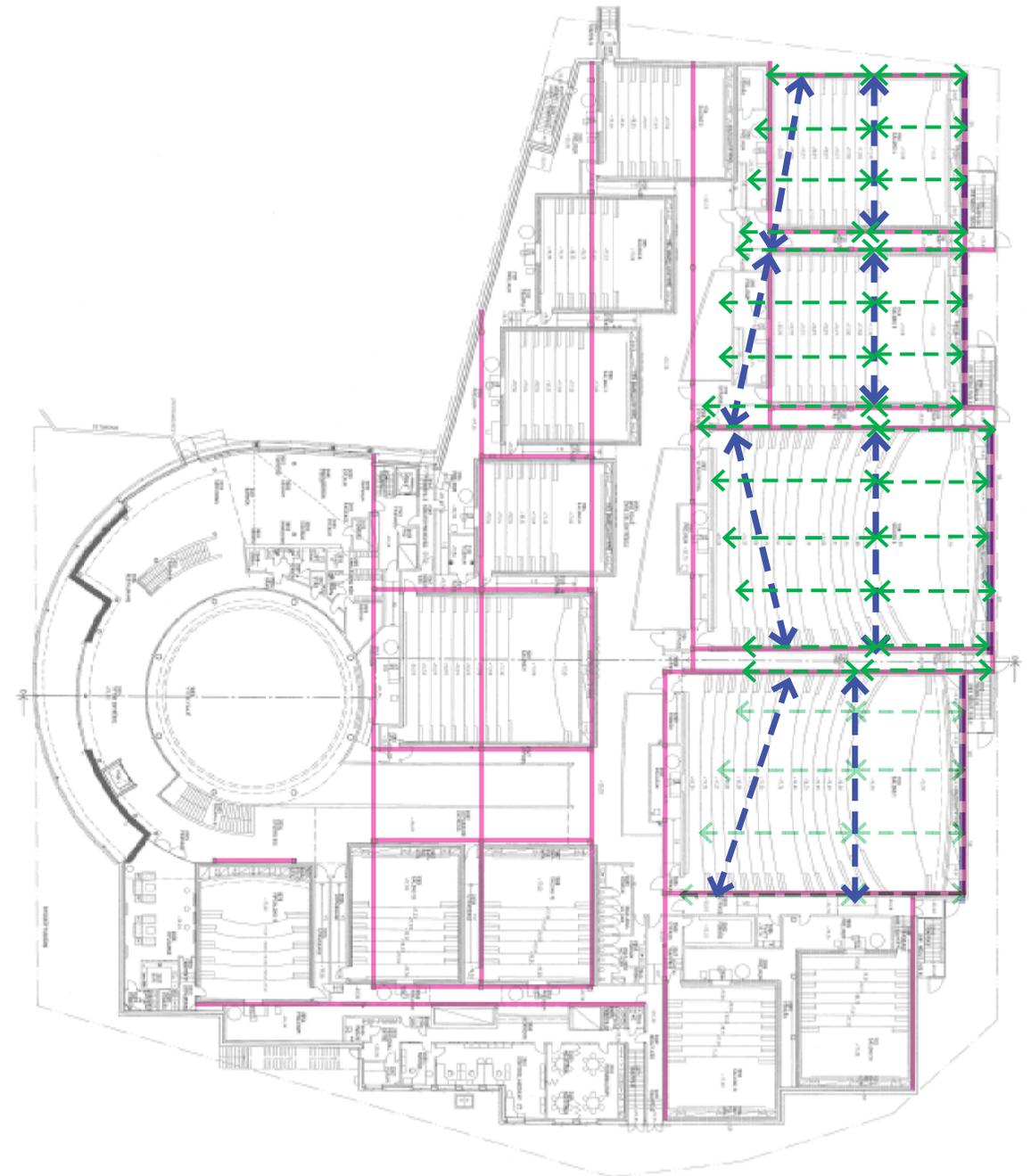
My building will connect to the load carrying lines of the cinema, which means I will use a quite large glue lam frameworks in load-carrying walls that will span across the width of the cinema saloons.



glue lam framework walls



glue lam beams in the roof



SWAT

Strenghts

- Large unique site
- Closeness to the park and a green surrounding
- Sunny
- Possibility to build a large scale preschool which is advocated by the city of Gothenburg (Göteborgsstad, 2014)
- Nice views towards the park with big trees in eye-level with the rooftop level.

Weaknesses

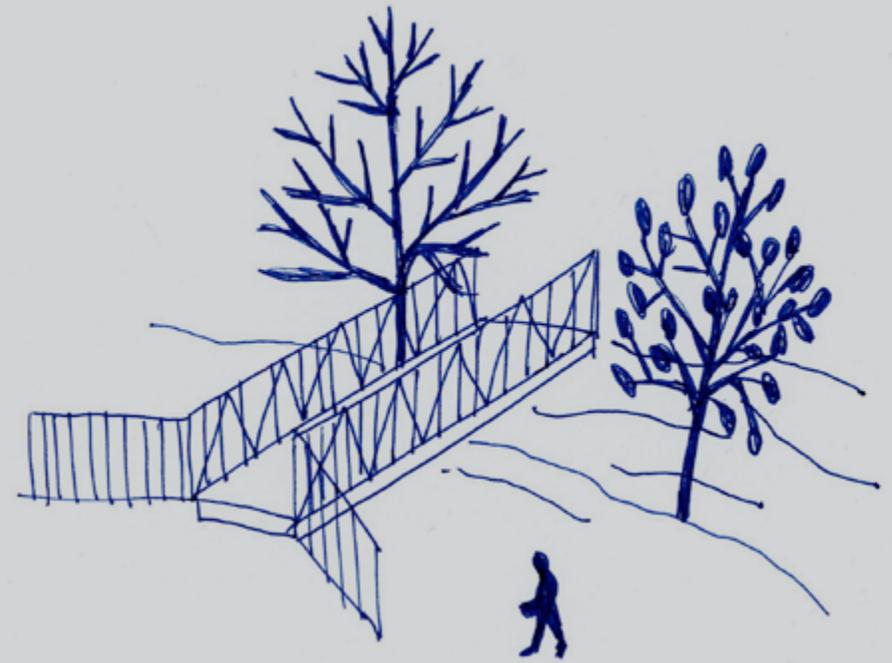
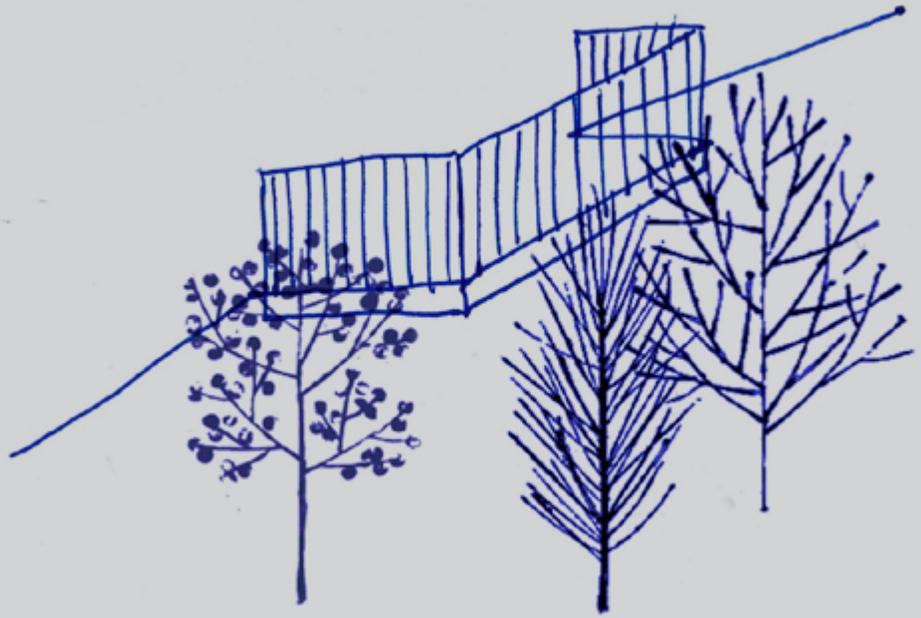
- No direct contact with the ground
- The construction of the cinema might restrict where to place the building body. How the underlying construction can handle the weight of the preschool?
- More expensive to build on top of a roof than on the ground? And harder to maintain.
- The yard will be constructed on top of a roof, makes it hard to grow large trees and bushes.
- How to give shadow to the yard?

Opportunities

- Could there be any synergic effects between the cinema and a kindergarden?
- The back of the cinema is really designed as a backside and feels "budget". The preschool can make it more attractive and vitalize the front towards the activity park.
- There is some problem with drug addicts hanging out in the park by night (according to city planning office).
- A very private location since the difference in level makes the rooftop a bit inaccessible

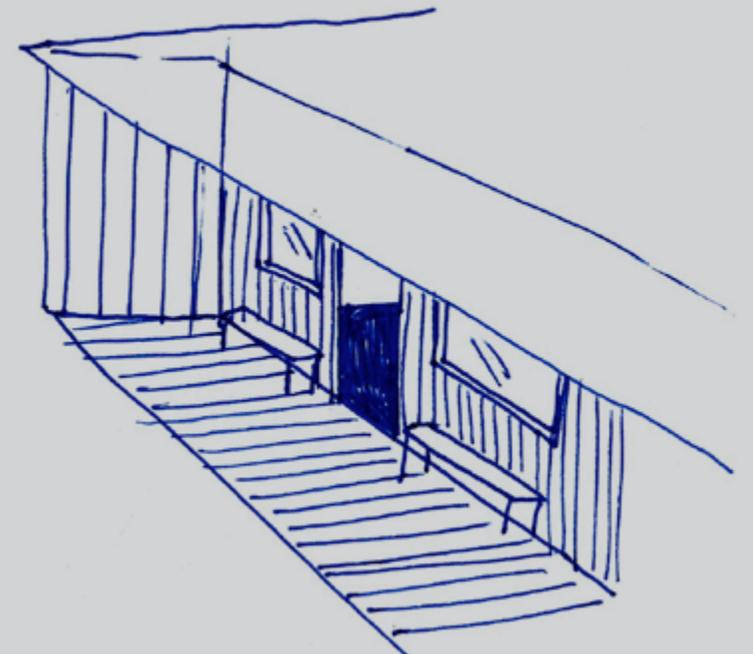
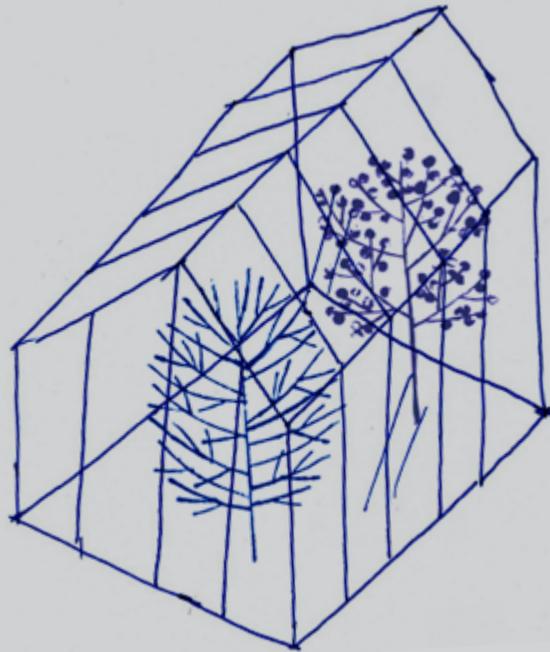
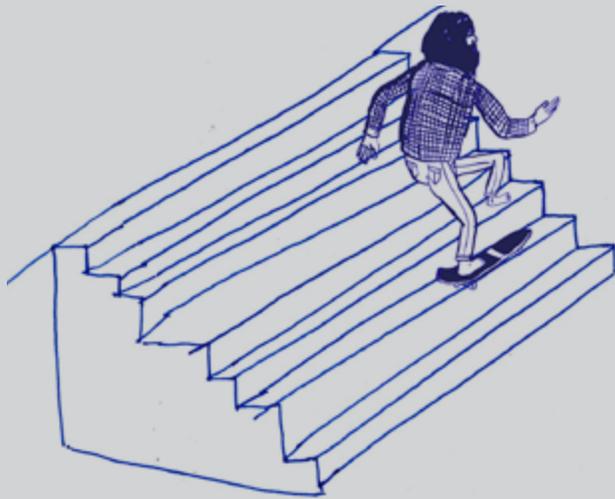
Treats

- Harder to evacuate? Problems with accessibility.
- The park will be a very important complement with it's more natural environment, but at the same time the park will not be dedicated to the kindergarden.
- Fall hazard
- Drug addicts hanging out in the park by night (according to city planning office) can leave unapropriate material.



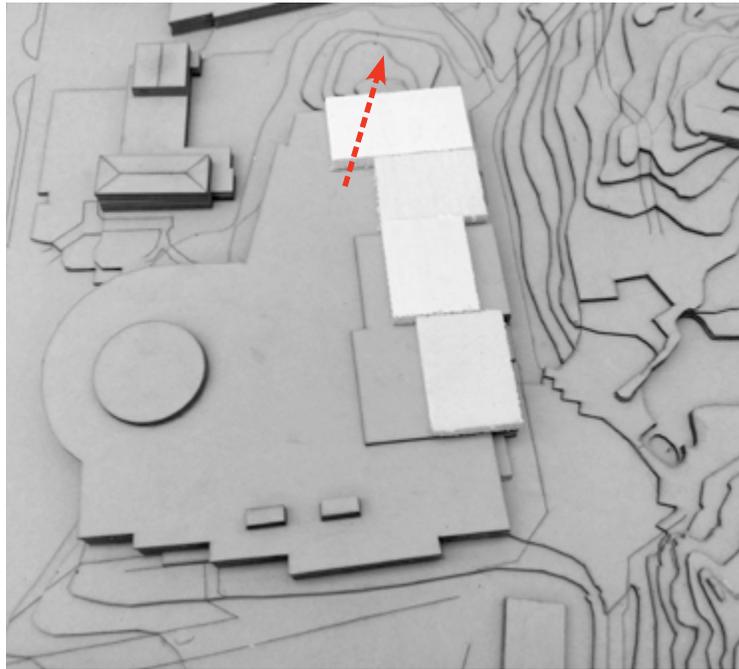
PROPOSAL

My design & investigations

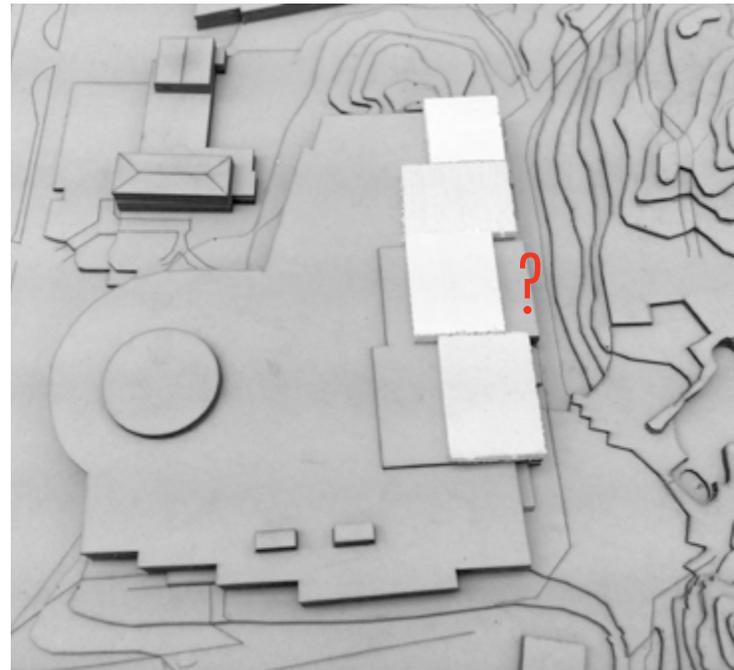


Placement & massing

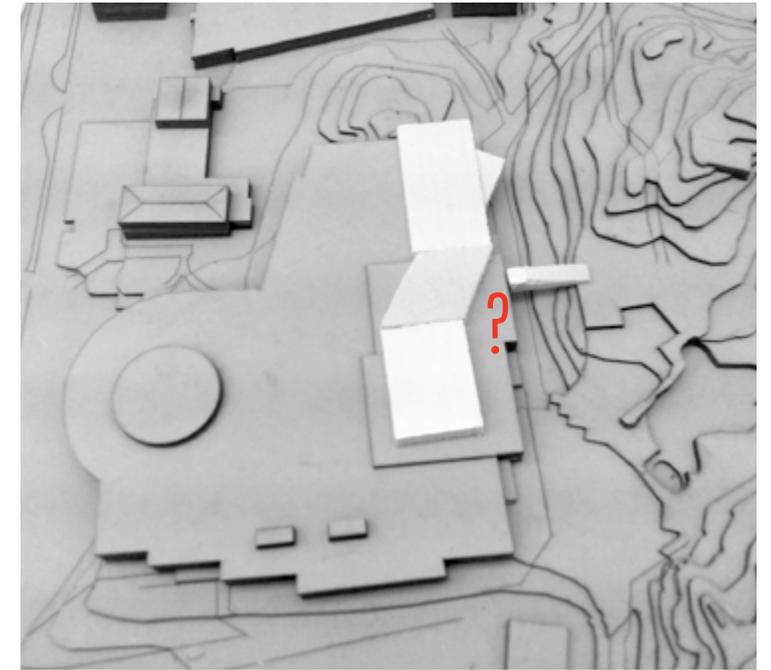
—
Sketches of volumes exploring qualities in the outdoor environment and proportions of volumes. Trying out volumes that has a reasonable size in relation to departments, thickness of building etc...



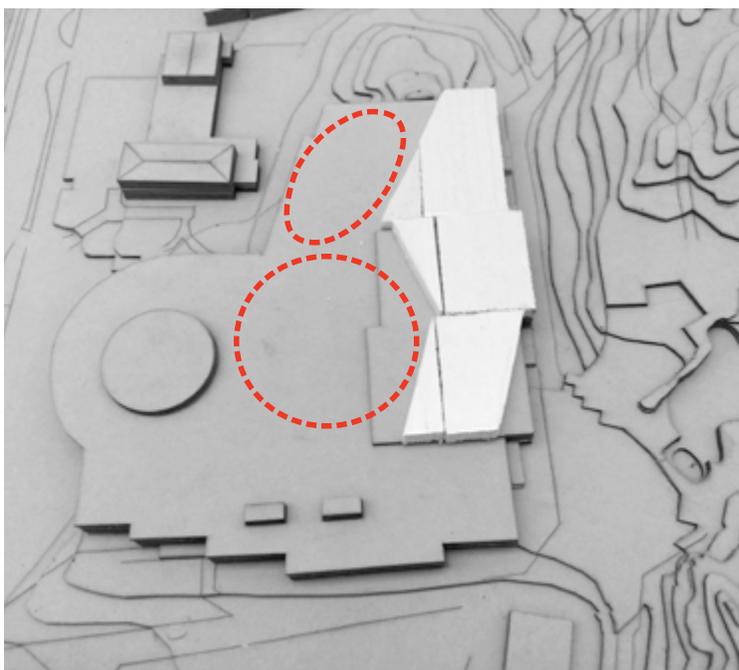
Blocking the north entrance



Not so much quality in an isolated courtyard space next to the park, can't see the point in leaving a strip of land here?



Trying some sort of shape..



Defining two courtyard spatialities: one smaller yard for the little ones and a bigger one for the bigger kids.



Creating spatialities on the courtyard but still aligns to the east edge of the building.



Triangular roof will take the triangular shape to the park-side also.

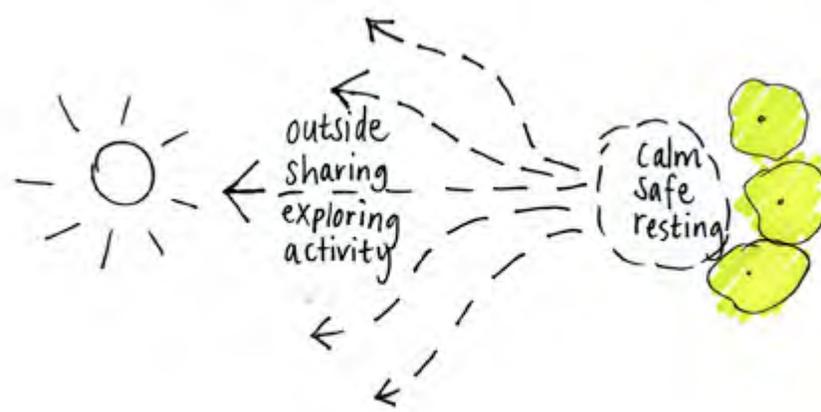
Building concepts



Contact with greenery

(visualization of focus)

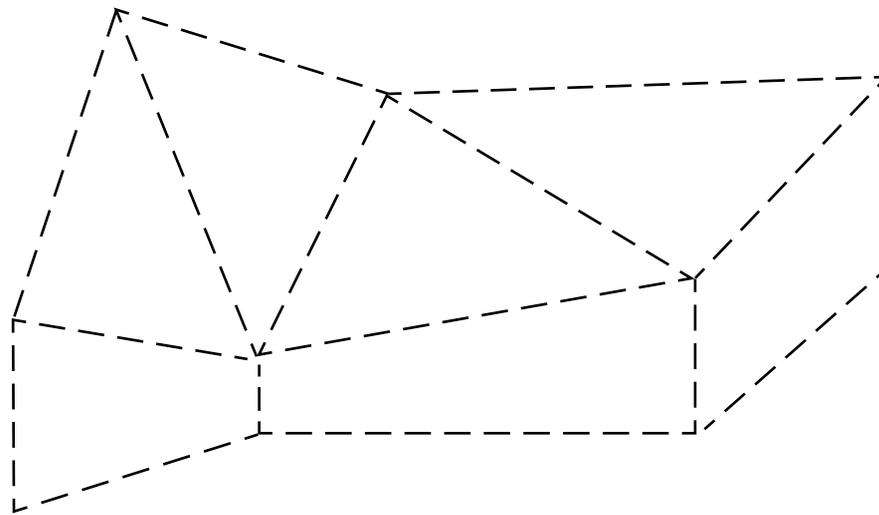
Providing green views,
adding greenery to the courtyard
and connections to the green surroundings



From calm, safe to exploring

(organisational concept)

Getting access to a larger spectrum of rooms
From smaller group to a larger context



Triangular rectangular

(shape concept)

A way of unifying a more orthogonal side with a triangular shaped into a whole coherent form.

A way of intergrating greenhouse space into the building body (in same roof structure)

Organisation & departments

SMALLER KIDS IN THE NORTH

With their own yard.

KITCHEN NEXT TO THE MAIN ENTRANCE

· Easy logistics for deliveries.

STAFF AREA ON LEVEL TWO

· In the middle of the building, short distance from all departments
· Get a paus / distance from work in the child group

PIAZZAS INBETWEEN DEPARTMENTS

In contact with both the courtyard and the park-side.
Breaks up and opens up the interior volume.

GREENHOUSES TOWARDS THE COURTYARD

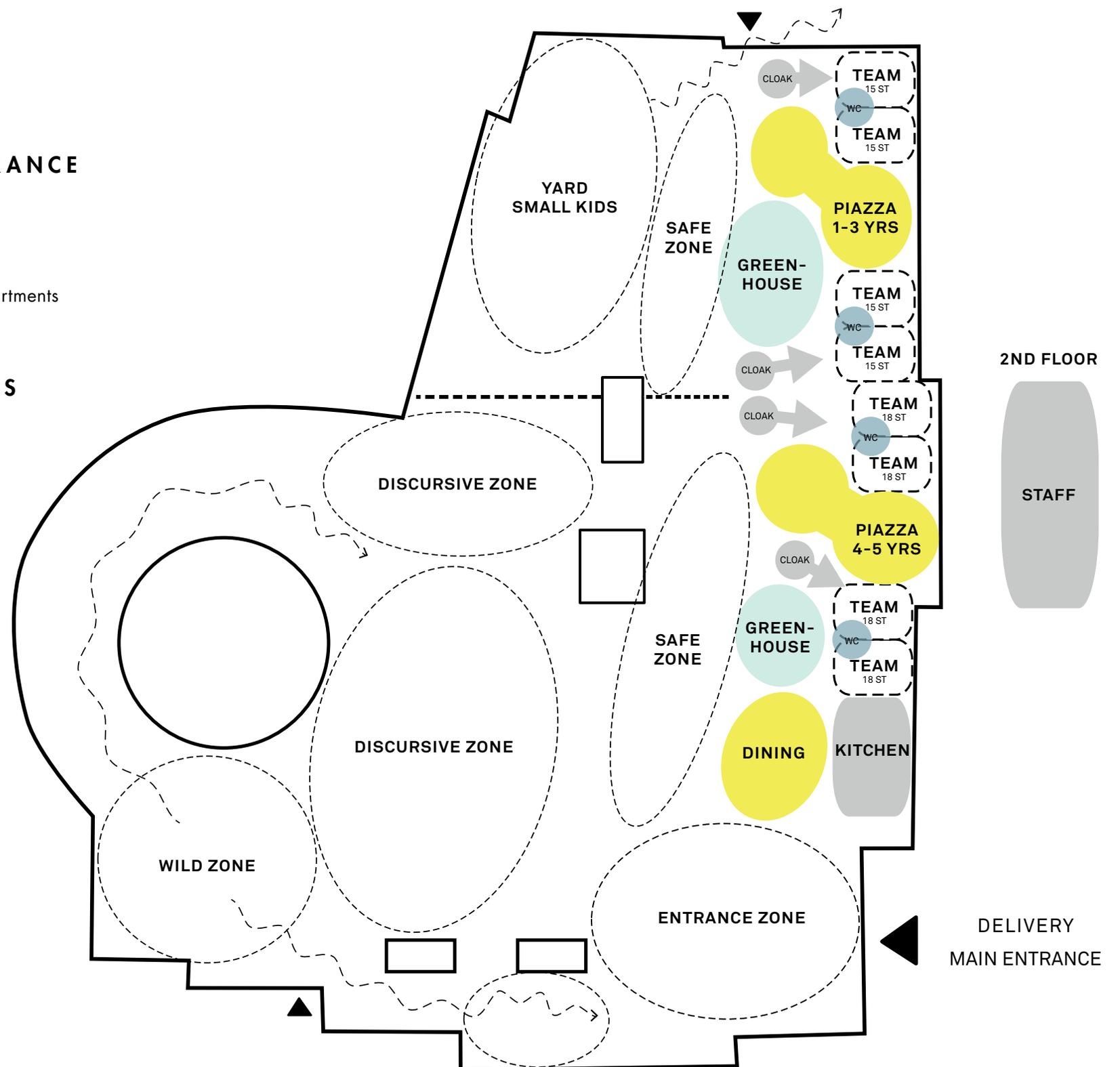
· What you see when you enter the building
· Where you park your trolley, easy to access from courtyard.
· Adds green qualities to the courtyard side.

OUTDOOR ZONES & ROOMS

The zoning is found in several sources of literature and seems to be an established concept in landscaping

Malmö stad (2011) & Chronval, Sara (2010)

- **Safe zone** close to the entrances
- **Discursive zone** with playstations for movement and good overview by the staff in the middle
- **Wild zone** with shrubs and trees, loose material such as trunks and branches. A more secret character with hide-aways.
- The wild zone is also complemented by areas in the park.



Movements

COURTYARD ENTRANCES

Main entrance square

- Public stair in connection with the Action park
- Two elevators for accessibility
- Facilities for the Action park (wc, kiosk)

North entrance

- Probably alot of families with smaller kids will use this entrance
- Walkway up to the roof since the ground is in level with the courtyard.

Exhisting entrance

- Stair is kept as it is, as an extra possibility of entering the courtyard.
- An elevator here would need to be buried to cope with a landing of 4% slope from Skånegatan which makes it uneconomical (Gajd architects, 2015).

OUTDOOR COMMUNICATIONS

A walkway is kept across the courtyard making it possible for the public to cross from the north entrance to the existing entrance.

Otherwise, it is easiest to move along the building where a little wider paved surface is built.

BUILDING ENTRANCES

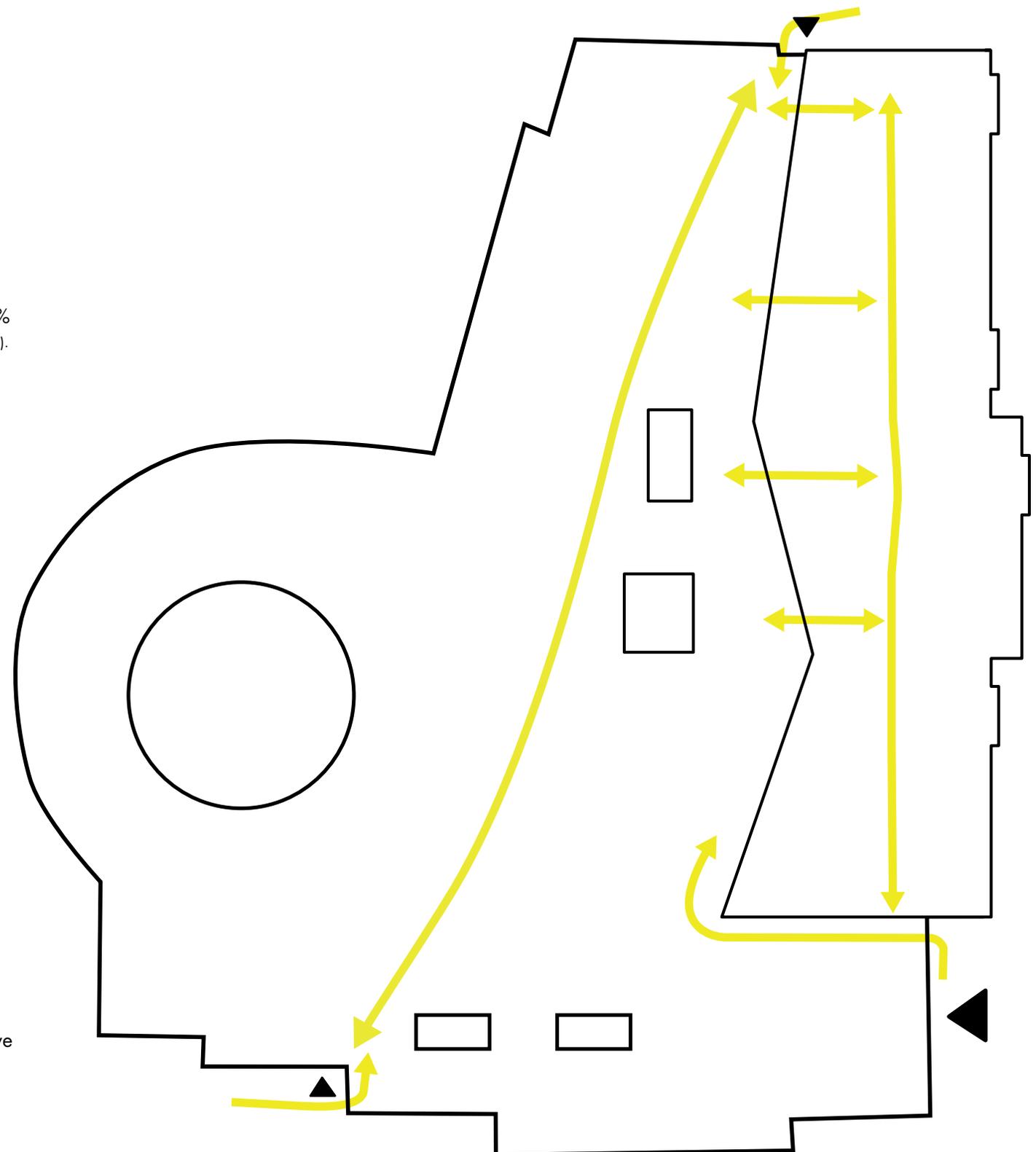
Since the preschool is very large I've chosen to have several entrances instead of one main entrance to the building. That strengthens the contact within a smaller unit and the leaving-retrieving dressing-undressing will happen closer to your home department.

Entrances to each department

- Greenhouses for trolley storage nearby to drop off trolley/pram.
- Secluded space separated by a door, that could hold a lower temperature and works as a windbreak.
- In contact with piazza or greenhouse for views and contact between staff and parents visiting.

INDOOR COMMUNICATION

It's a quite large building and especially very long I've prioritized to have a straight and quick communication axis through the building, connecting the various departments to the kitchen, staff room and other common areas. The communication axis is partly a corridor and partly goes through the piazzas, which I think will activate the walk and create interaction in-between departments.

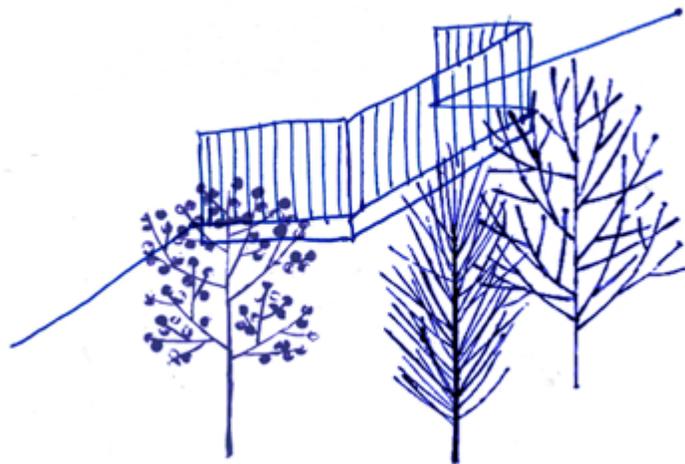


Indoors – outdoors connections



EAVES / FRONT PORCH

- Creates a soft transition between indoor and outdoors
- Protects against the sun
- Provides sheltered outdoor space for play, furnish for meals etc



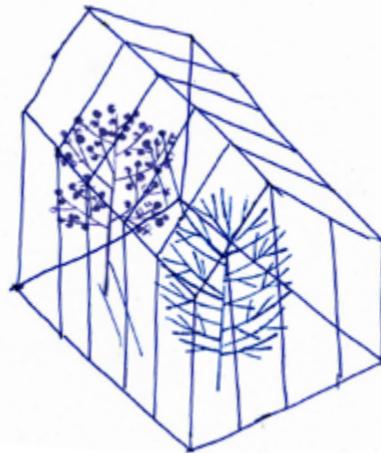
BALCONY

- A way of getting out quickly without having to put on a lot of clothes and walk the stairs.
- A way of getting closer and get better view of what is happening down there...
- An open balcony door gives the room an airy feeling
- A good place to ventilate and get fresh air



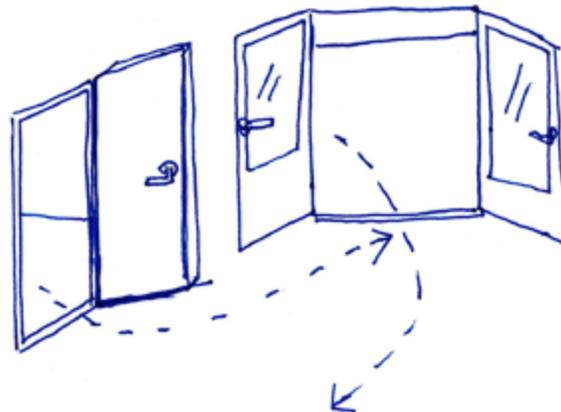
BRIDGE

The site levels with the height of the hill on east side, a possibility is to create a bridge to the forest hill for easy access to wild nature.



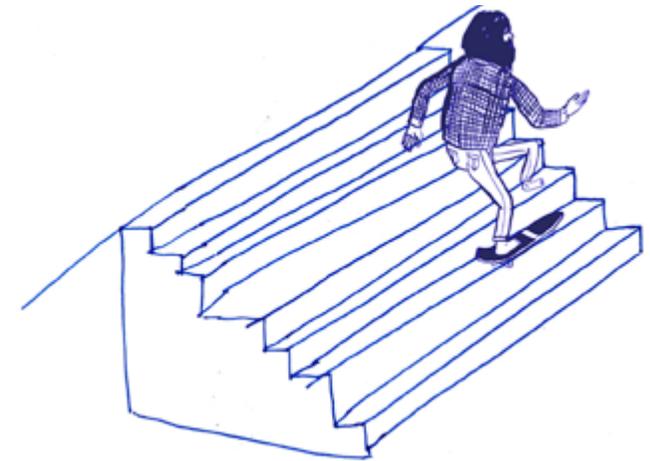
GREENHOUSE SPACE

- Something that you see when you enter the building, gives character
- Where you park your trolley, easy to access from courtyard
- Adds green qualities to the courtyard side
- A more sheltered semi-outdoor environment
- To provide light



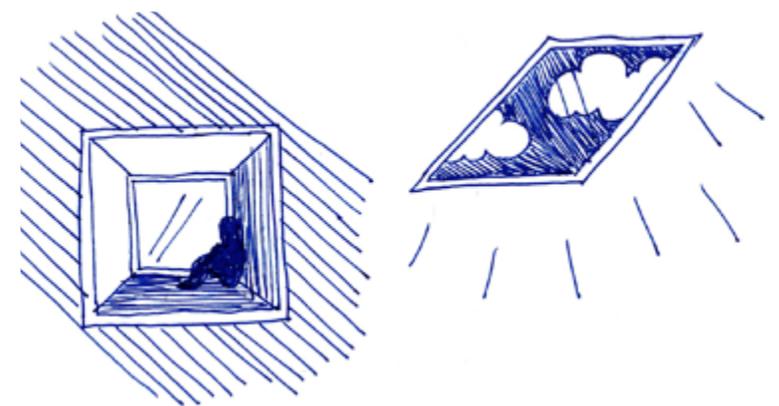
DOORS

- Both from main entrance as well as direct access from other rooms makes it easy to move activities outside.



STAIRS / ELEVATOR

- A broad public platform stair towards the entrance square gives the courtyard a more public feeling. The stair could offer seating and views of the skate-park.
- Several stairs and upturns counter barrier effects of being one floor up and gives easy access.
- Elevators is needed for deliveries and taking trolleys up to the courtyard and for accessibility.



WINDOWS

- At childrens height. Attracts to go out.
- Sightlines
- Sky windows (gives a lot of light)
- Large windows for overview makes it easier for staff
- Could contain niches for sitting

CONNECTIONS ON BOTH SIDES

Park-side

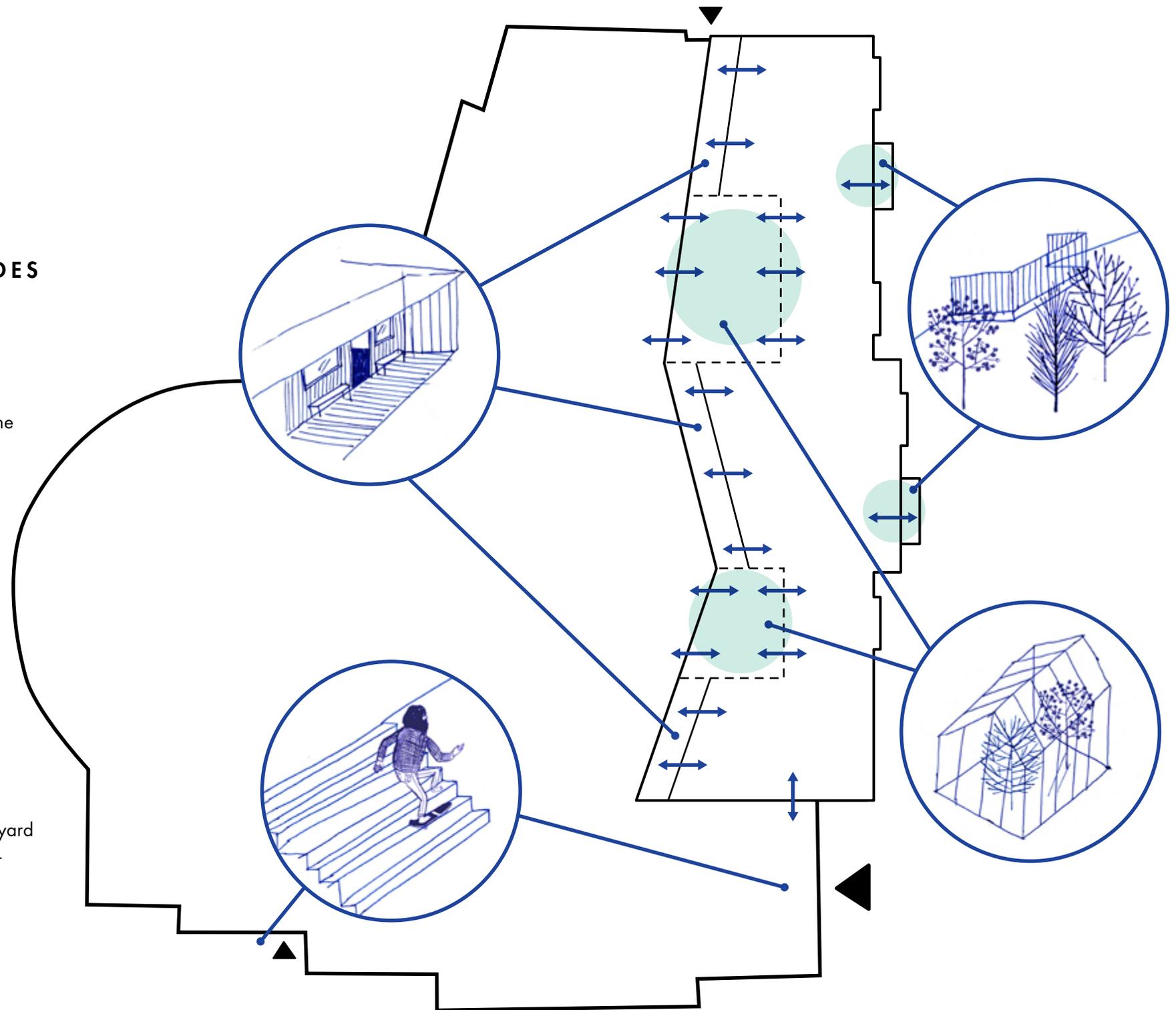
- Views towards the existing greenery
- Balconys for quick and easy outdoor access
- Cantilevered bay windows gets you closer to the tree crowns
- The placement of the volume – to align with the east facade of Bergakungen, makes it clear that there is something going on up on the roof. The facade gets activated.

Courtyard-side

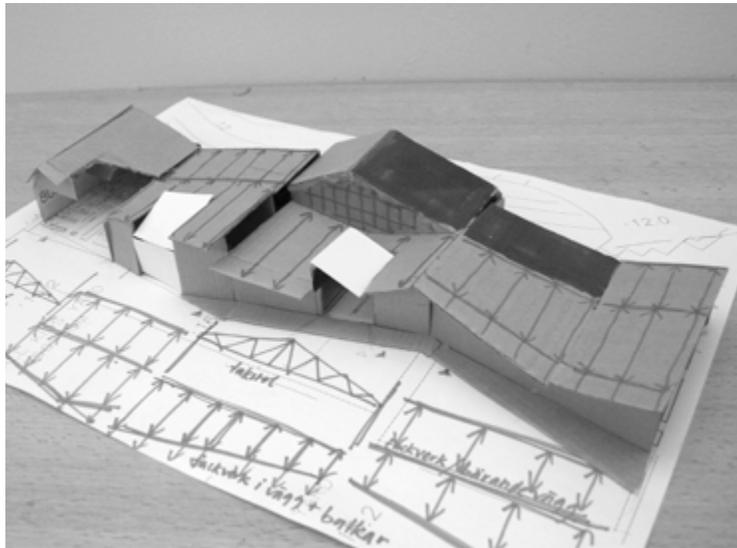
- Several entrances / exits, to make the logistics work
- Adding greenery through the greenhouses
- Several doors from different rooms, to make it easy to move educational activities outside
- Large glass partitions for overview of the courtyard
- The front porches provides a protected outdoor space and a soft transition from inside to outside.

CONNECTIONS TO THE SURROUNDINGS

- Stairs and elevators to overcome the height difference
- Keeping the north walking path accessible
- Allowing the public to use the courtyard on evenings and weekends
- Facilities for the Skate-park towards the entrance square

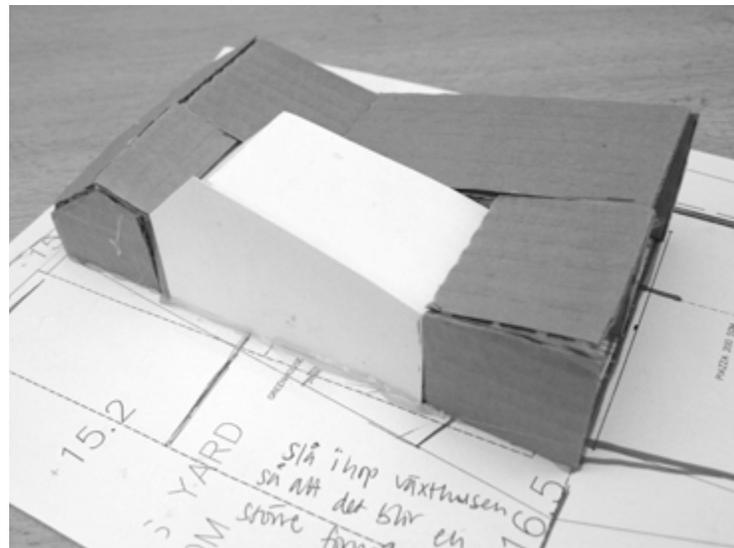


Sketches



Underlying construction set the division of the shape

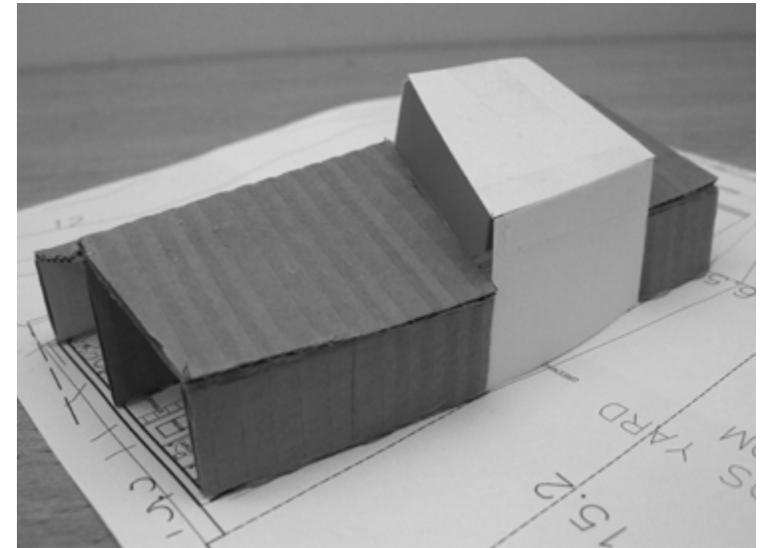
The large span of the cinema saloons has given the division of volume. It felt like it would be an advantage to follow the partitions of the underlying construction, and it also felt possible early on.



The roof is important

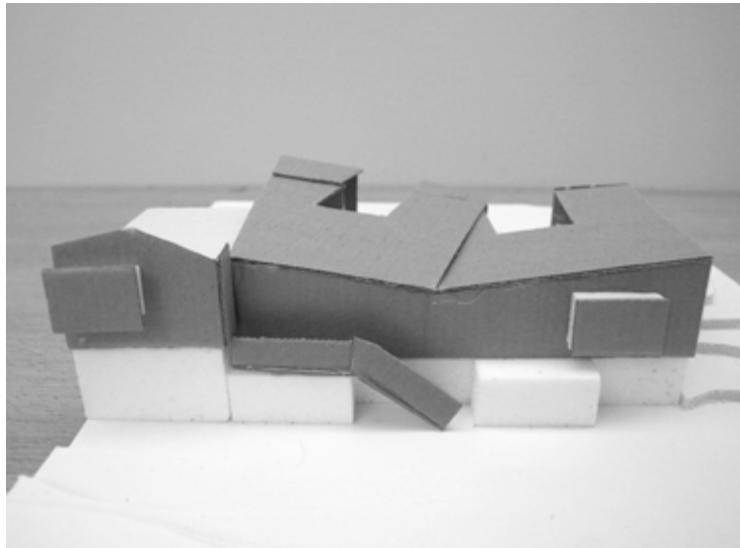
The roof can set the tone to a single storey building and create character.

In this case it's a quite large volume, so the roof was a possible way of accentuate smaller units within, a suitable approach to keep down the scale.



How to incorporate the greenhouse roofs?

I also wanted to incorporate glass roofs (the greenhouses) into the building body which needs a certain angle not to get problems with water runoff, dirt or become very expensive. So finding a way of incorporating them and creating a shape that is still not too fragmented was something that I have been trying to do.



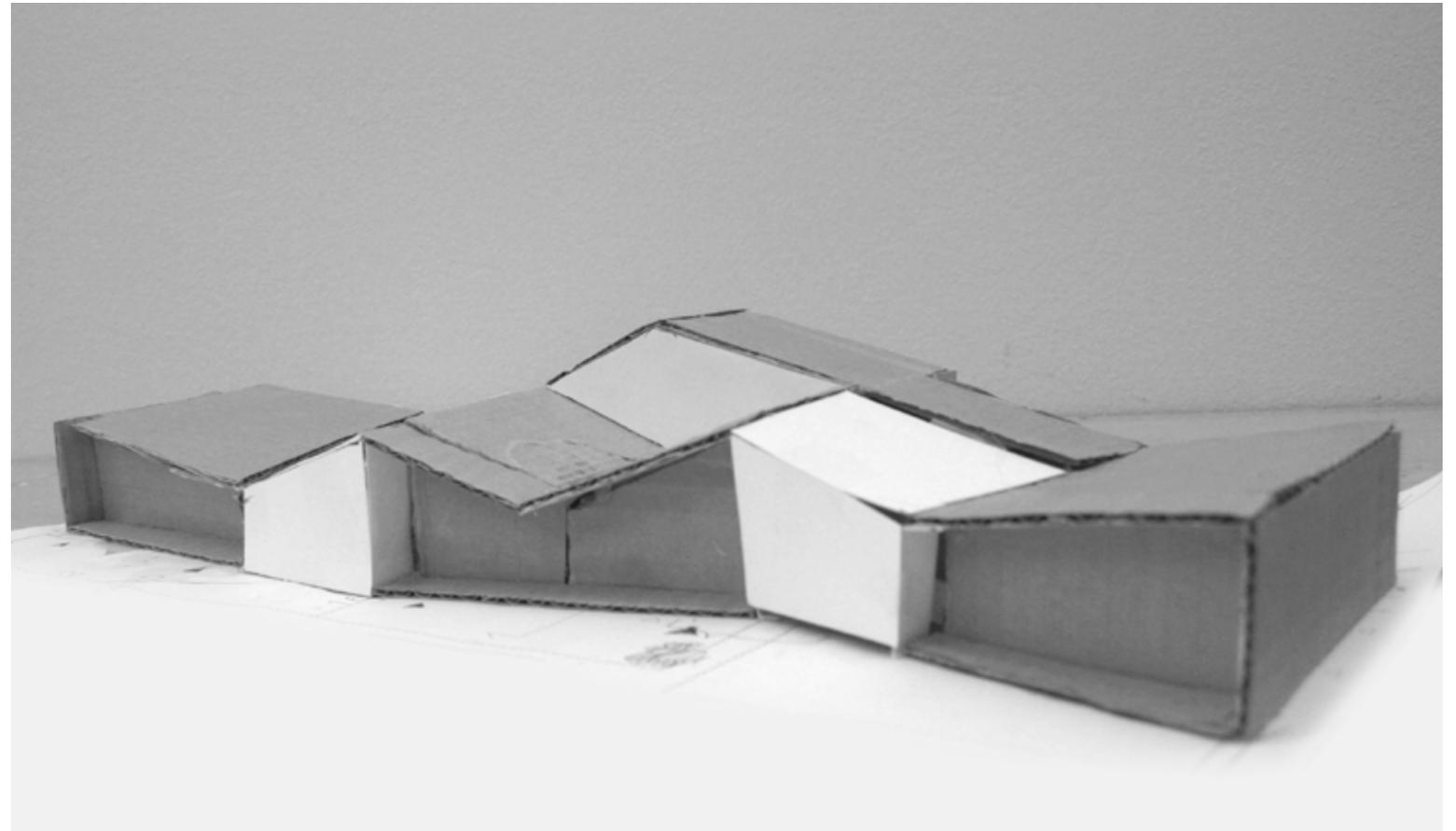
The risk of disappearing

A single storey building on top of a roof almosts disappears seen from the ground.

The property owner don't want the preschool to interfere with the entrance of Bergakungen. So from Skånegatan it has a very low key, and is barely visible.

At the same time I wanted the building to make an impact seen from the skate-park. Why not?!

A visible building body shows that there is something up there and a possibility to go up on the roof.



Divisions vs a whole

A balance between dividing volume and creating a whole coherent shape.

The greenhouses divides the volume of the "front porches" into tree outdoor rooms.

In this model I felth that I was getting closer to some sort of way of handeling the shape and volume of the building.

The Greenhouse space



WATER PLAY



**STROLLER STORAGE
/ SLEEPING IN STROLLER**

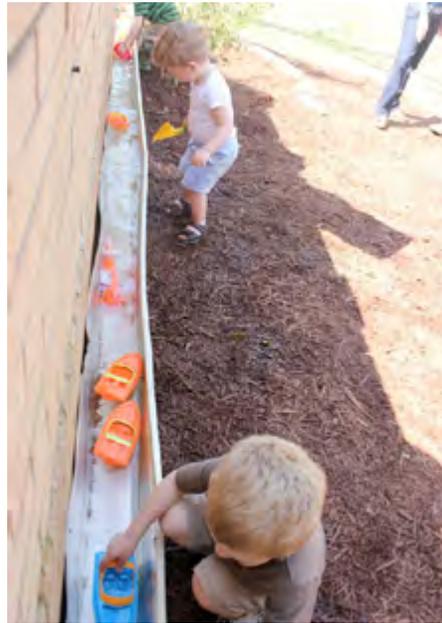


**PERGOLA /
CLIMBERS**

For sun protection, adding greenery that doesn't take up alot of space



SMALL TREES



WATER BASIN / SINK

Both for playing and for washing hands



PLAY NET

Uses the high above strollers?

USAGE OF GREENHOUSE SPACE

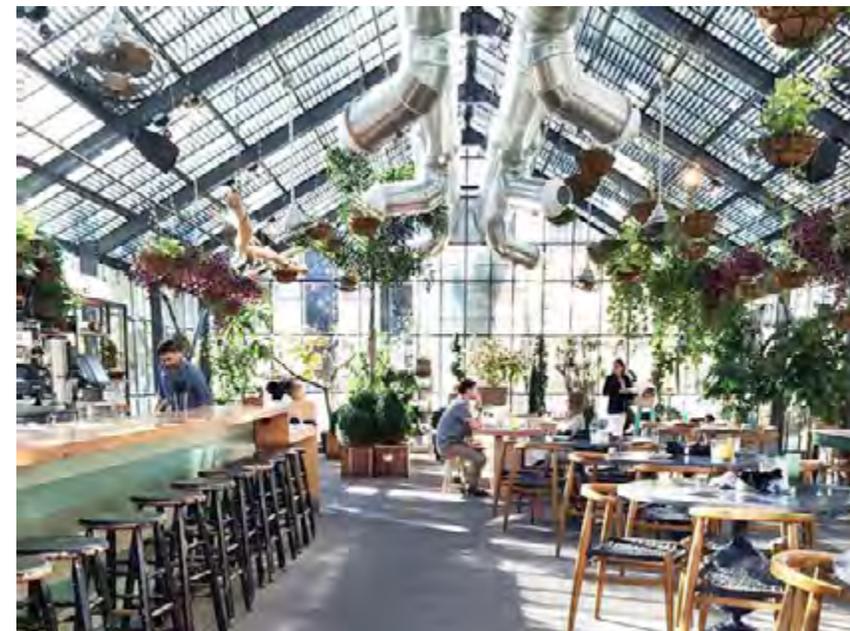
Instead of building low quality complement buildings for storage you could incorporate that space into the main building body through a greenhouse and get more quality out of the space.

- Sleeping in stroller / stroller storage
- A possibility for extra "outdoor" stay, a source of daylight and fresh air without having to put on outhwear. When the weather is harsh and you wouldn't stay out for long this might be an additional zone.
- An addition to the piazza. An open relationship to the piazza and other rooms adding qualities to them (light, greenery)
- A more dirty zone for playing with clay, water play, paint, wood work shop etc.
- Cultivation (small scale)
- Cheap extra square meters



TABLES

Multi purpose for eating snack, playing with clay, building stuff

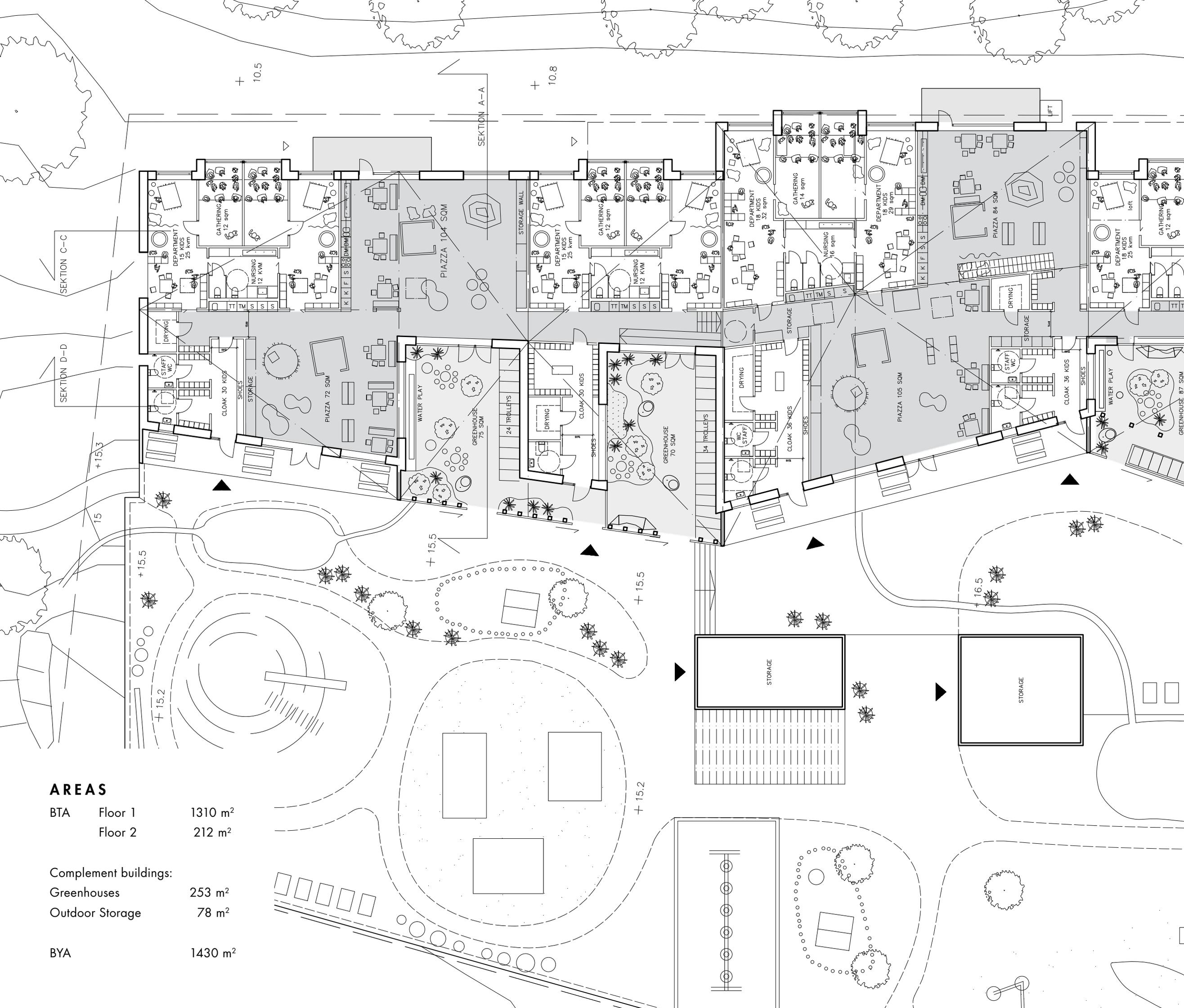


A feeling of the space...



The greenhouse has no added flooring, the ground is filled up with lightweight arable material such as pumice (today the whole roof is covered with "lättvikts fyllnad" (don't know exactly what that means) but the roof of Bergakungen is already prepared for having a plant bed on top). Walking paths inside the greenhouse is made by adding stone paths that will give a smoother surface.

Relationship greenhouse and insulated space
Section 1:50



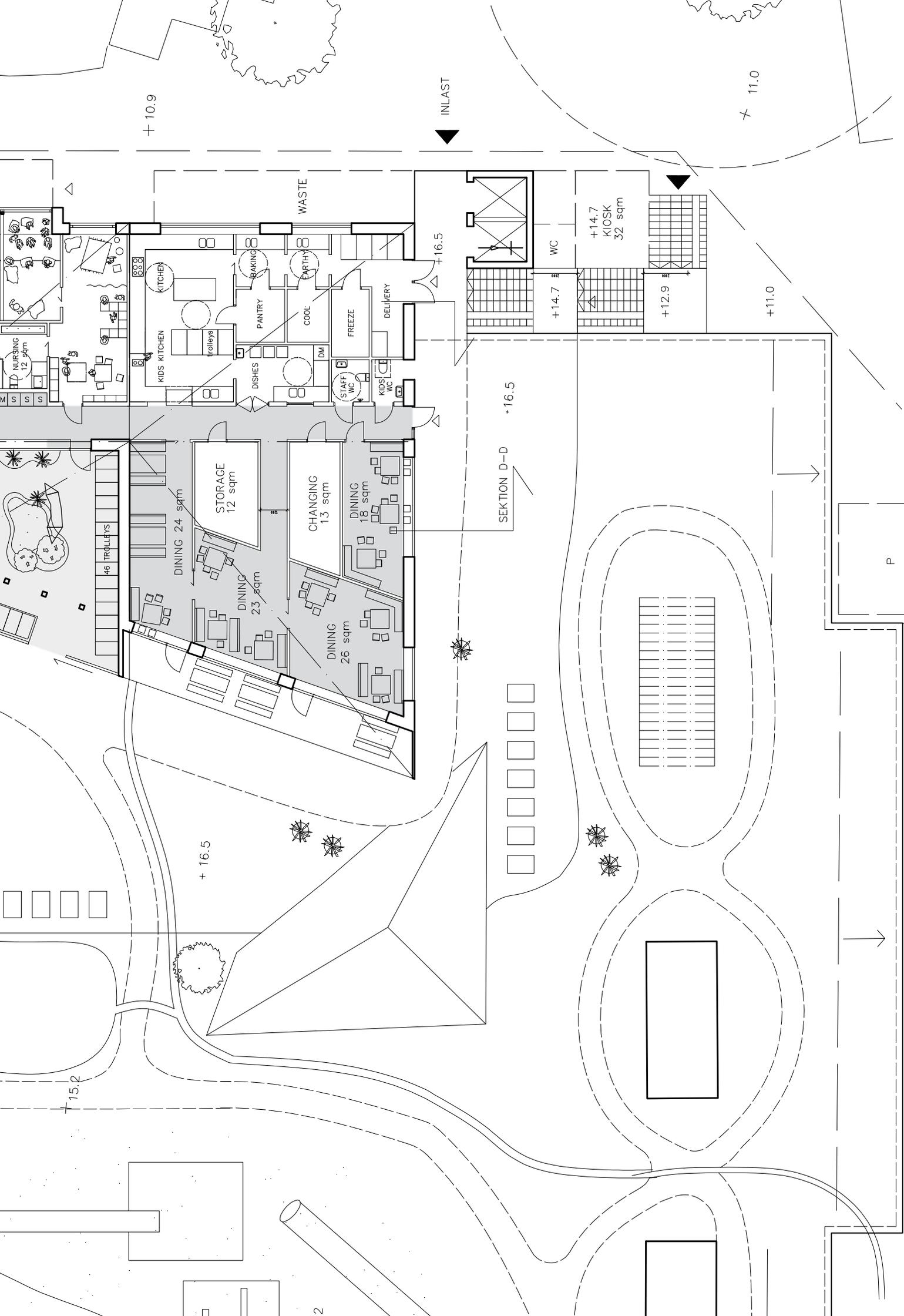
AREAS

BTA Floor 1 1310 m²
 Floor 2 212 m²

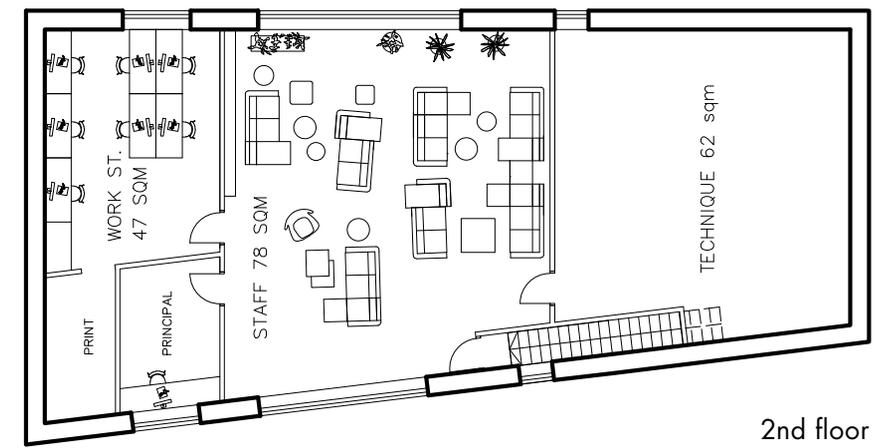
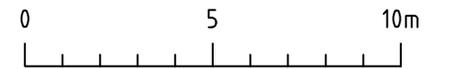
Complement buildings:

Greenhouses 253 m²
 Outdoor Storage 78 m²

BYA 1430 m²



Plans 1:200



2nd floor

Plan & organisation

Home departments towards the woods

- A calmer and more peaceful side with views of the tree crowns
- The only department exclusive space, all other space is shared.

Balconys towards the park-side

- Quick and easy outdoor access
- Strengthen the contact with the park and the trees
- Possible exit for reaching the park

Piazzas

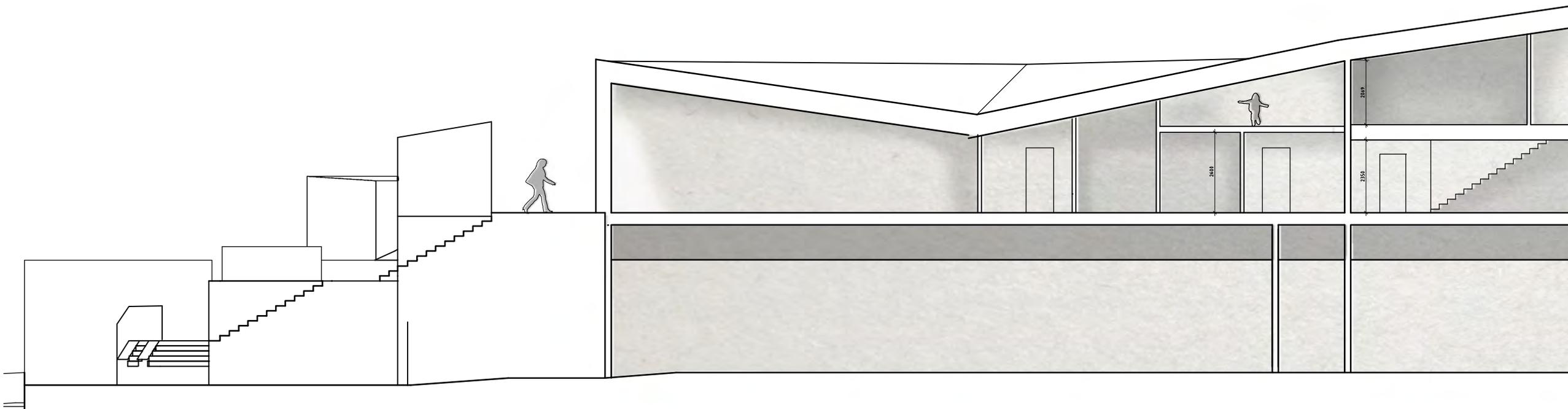
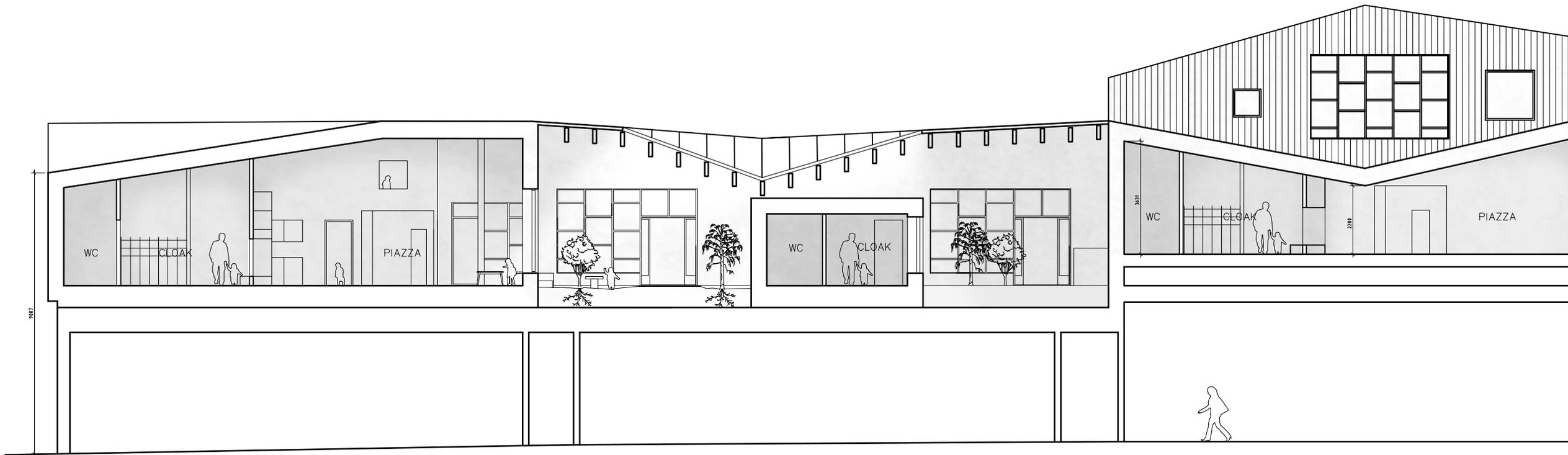
- Larger flexible spaces in contact with both park-side and courtyard.
- Furnished to create "room in rooms", boxes, room dividers etc.

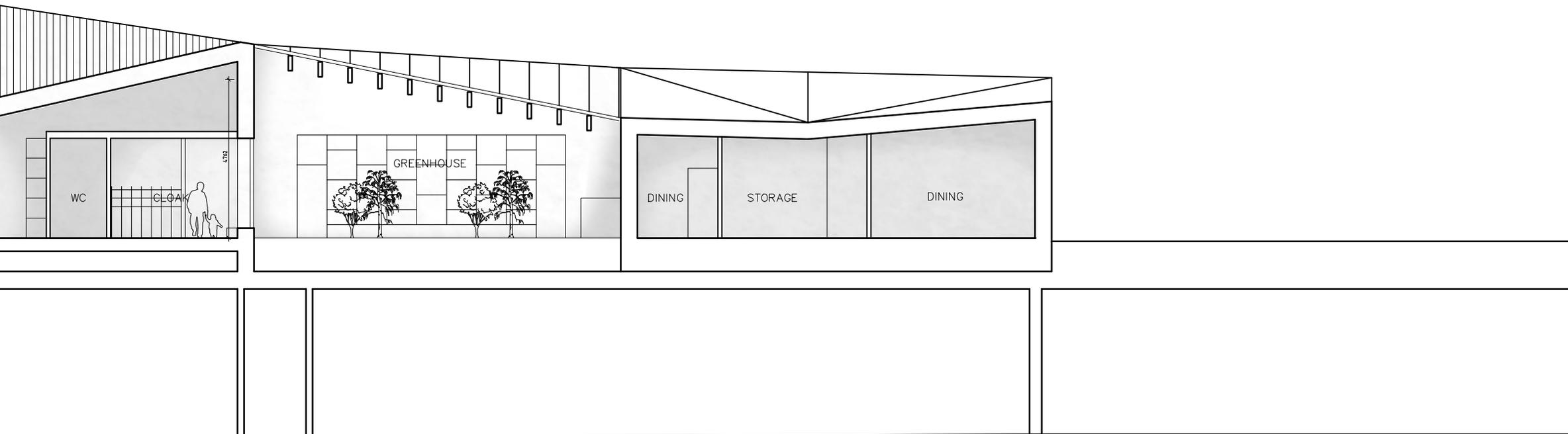
Cloakrooms

- Entrances from the courtyard.
- Shared in between two departments (you save space from sharing but you don't want to share with too many...)

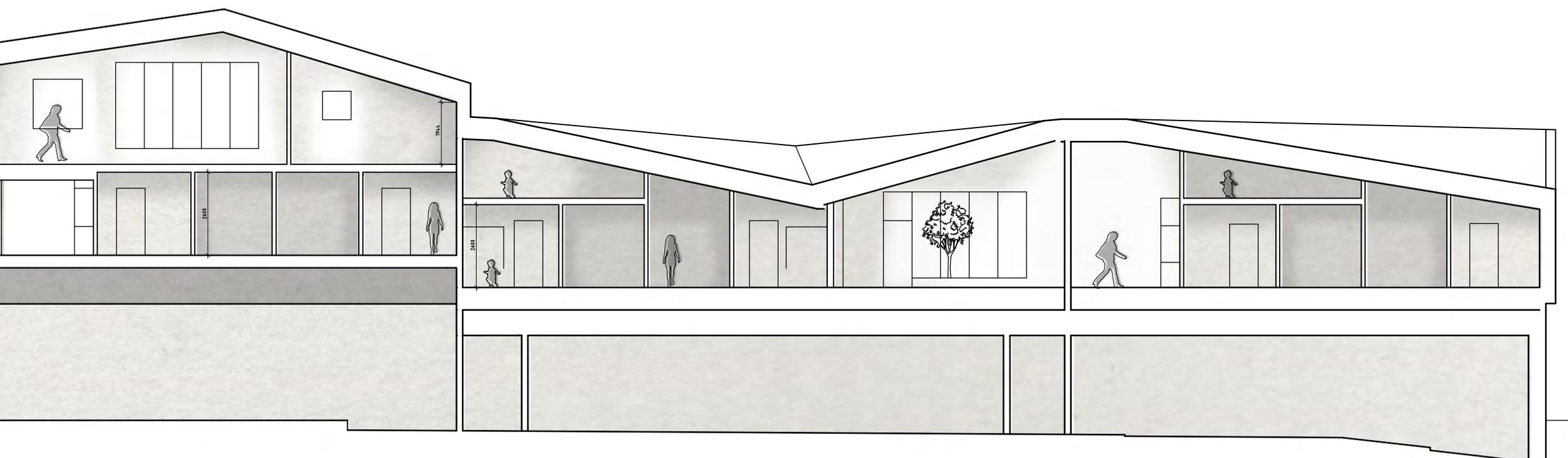
Dining area

- Next to the kitchen
- A dedicated dining area, served by the kitchen staff (the educators does not have to clean and prepare for lunch)
- Can be used for other things when no one is eating.
- Divided in several rooms for a calmer and less noisy environment.





Sektion D-D 1:150 (towards the yard)



Sektion C-C 1:150 (towards the park)

Construction & materials

GLUE LAM FRAME WORK AND MASSIVE WOOD WALLS

- Loadbearing walls in gluelam frame work
- Gluelam beams in the roof
- Massive wood walls
- Exposed wood construction with a bit technical appearance
- The beams could go from warm interior to colder unheated spaces without creating severe thermal bridges (?)
- Outer shell in wood panel / glass / solarcells (roof)

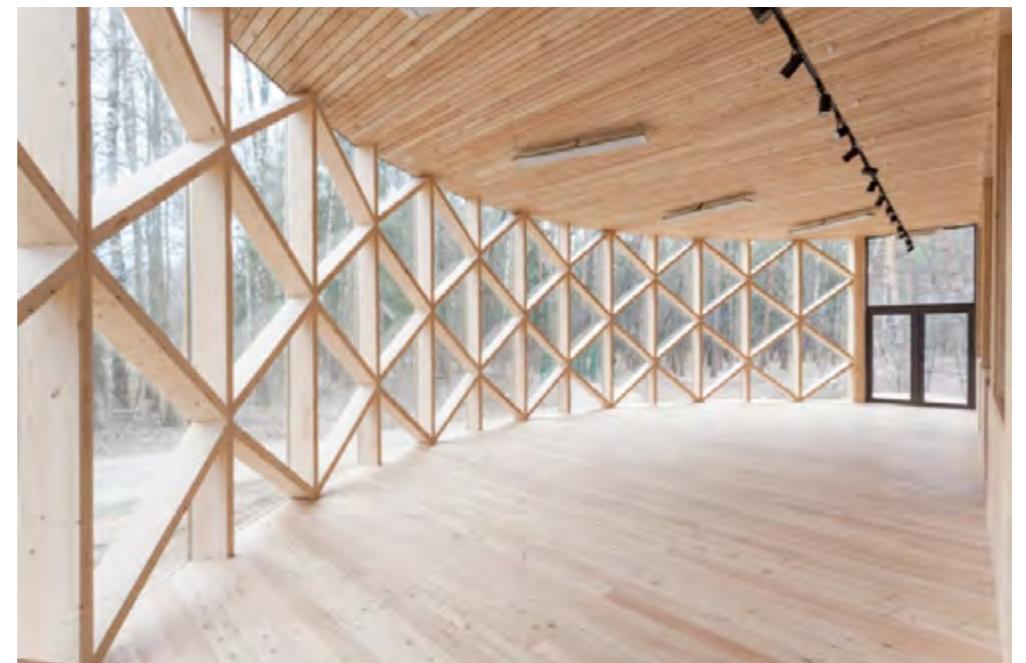
WOOD

To use wood as a material in this project is very suitable out of several reasons

- A light weight material (important due to how much weight the underlying construction can handle)
- A natural material that emits no toxins or doubtfull sustances
- Could be considered carbon neutral and often produced nationally (less transport).



Wooden home by Yoshichika Takagi



Alpbau, Razuvaev AV, Rusetsky OV, Kargaly PS. The park "Meshchersky" Photographer Pavel Stolyarov.

Interior concepts



Šmartno Timeshare Kindergarten / Arhitektura Jure Kotnik



Moderna museet



Kfar Shemaryahu Kindergarten / Sarit Shani Hay



Little Hall, Prestwood Infant School in Buckinghamshire



Råå daycare centre, Dorthe Mandrup architects

A smorgasbord

A variation of rooms

Flexible space where you could set up different play/learning "stations", to let the child explore and choose between

Wooden interior

Nice kontrast between all the colourfull stuff that kids have and the warm natural wood character.

Storage walls

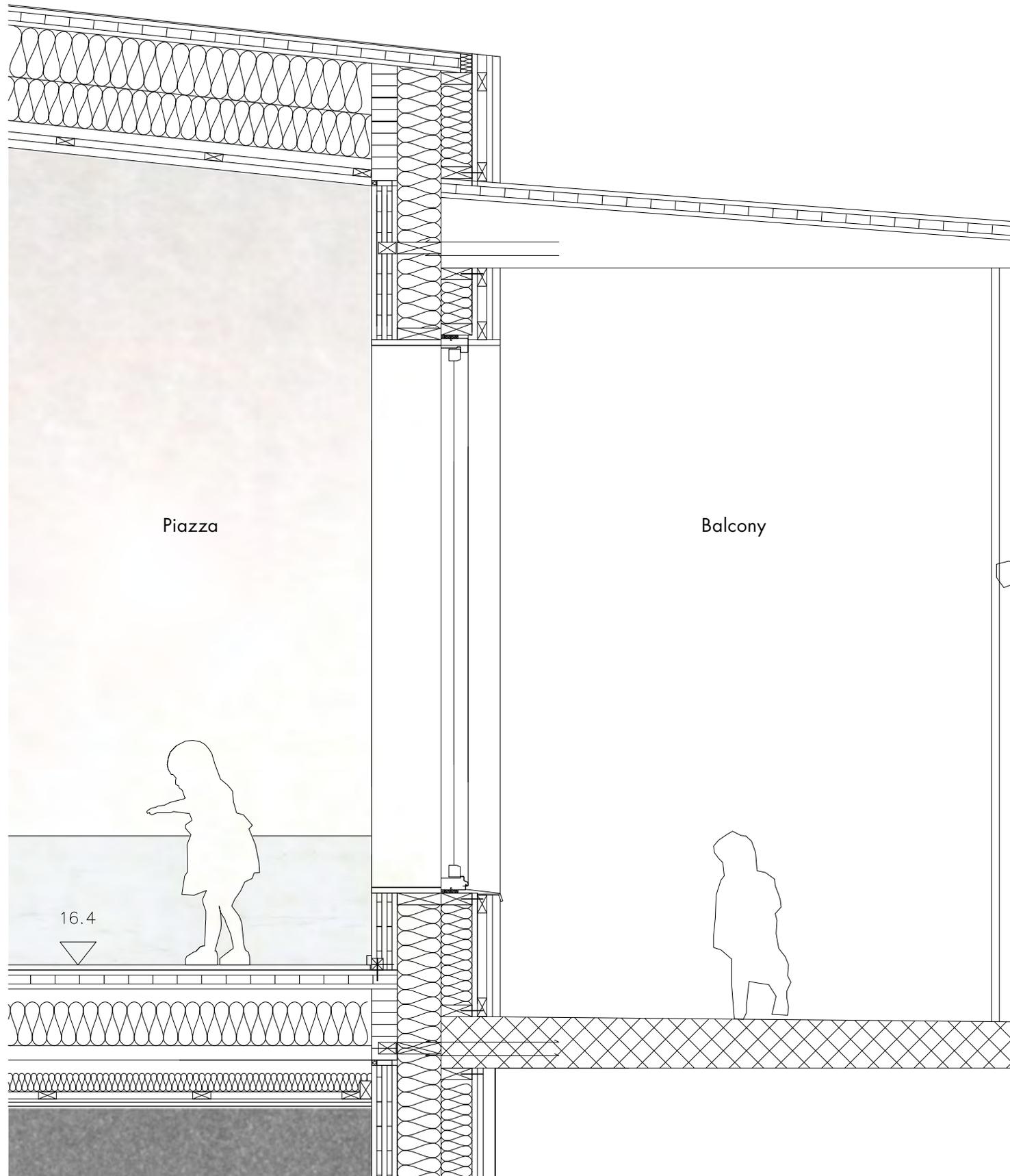
Playfull site-built storage walls arranged so that the kids could see and reach the stuff within them.

0 0,5 1m
SKALA 1:20

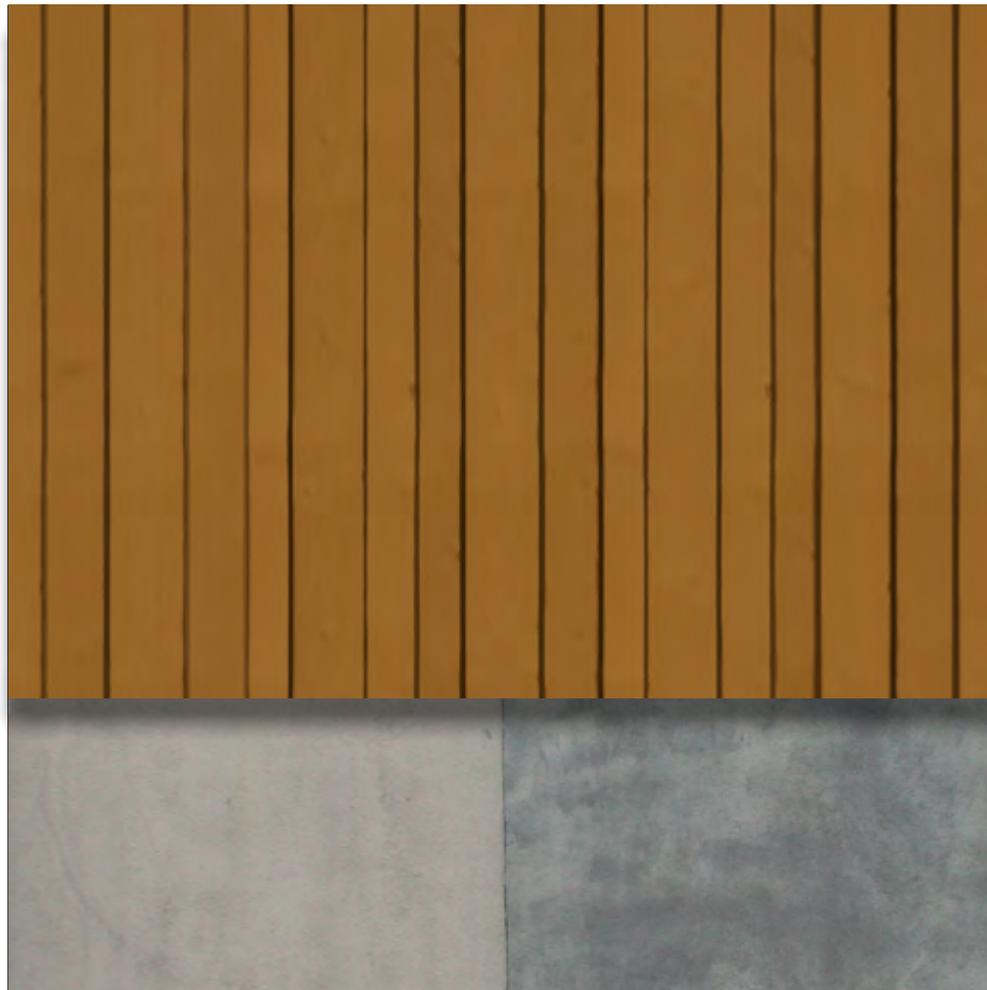


No floor in the greenhouse.
Cultivation bed filled with
lightweight arable material
such as pumice.

Indoors – outdoor connections



Facade and exterior

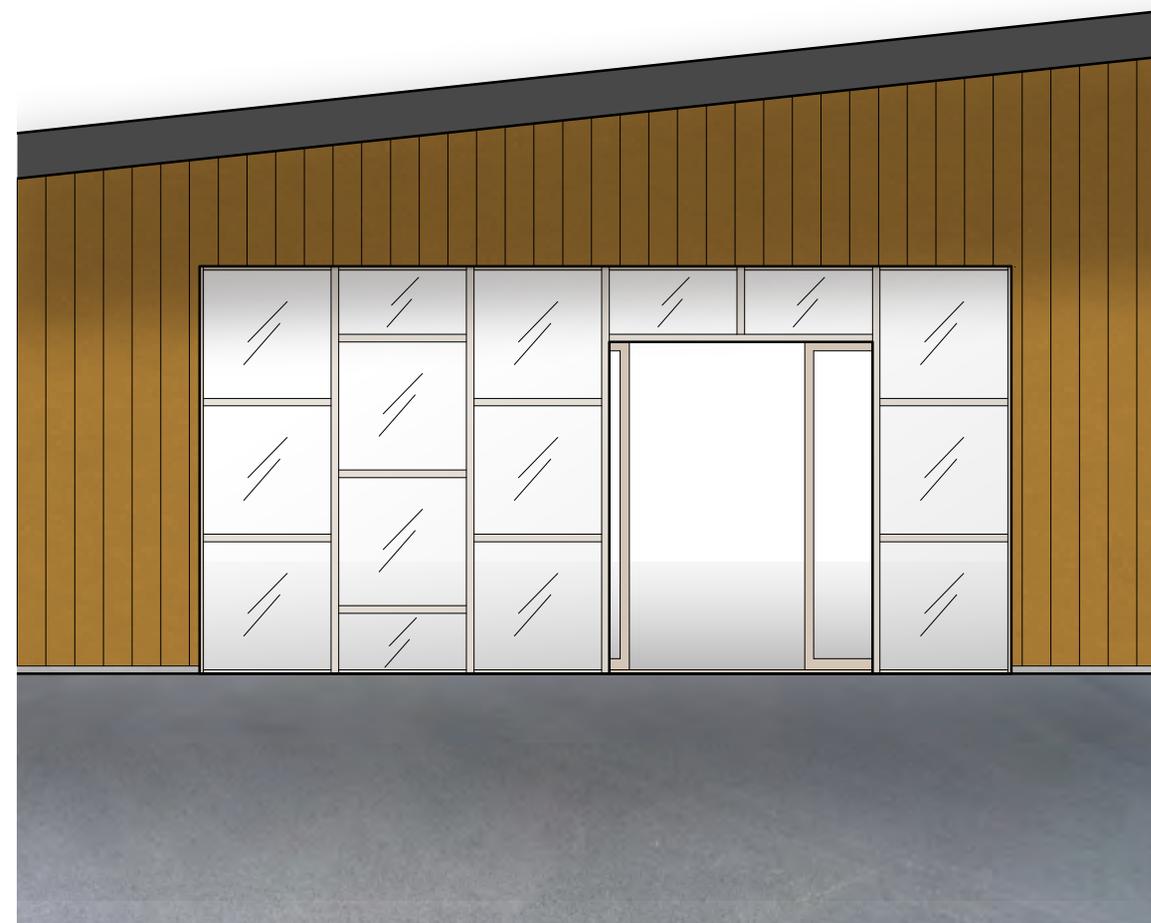


Wooden panel painted with ocher-brown earth paint (slamfärg)

The colour adds character and contrast against the grey base of Bergakungen, but also towards the green environment.

A natural pigment, mat, breathable and simple to maintain.

The solarpanels of the roof has a quite high-tech apperance, while the pained wooden panel is more low-tec and old fashioned in it's expression.



Glass partitions held by a wooden gluelam structure

- Isolated glass on gluelam structure
- Protected and shaded by cantilevered eaves
- Grid structure 900x900 mm

· 900

· 1800 (largest window size)

· 2200

· 2700

· 3600

· 4500



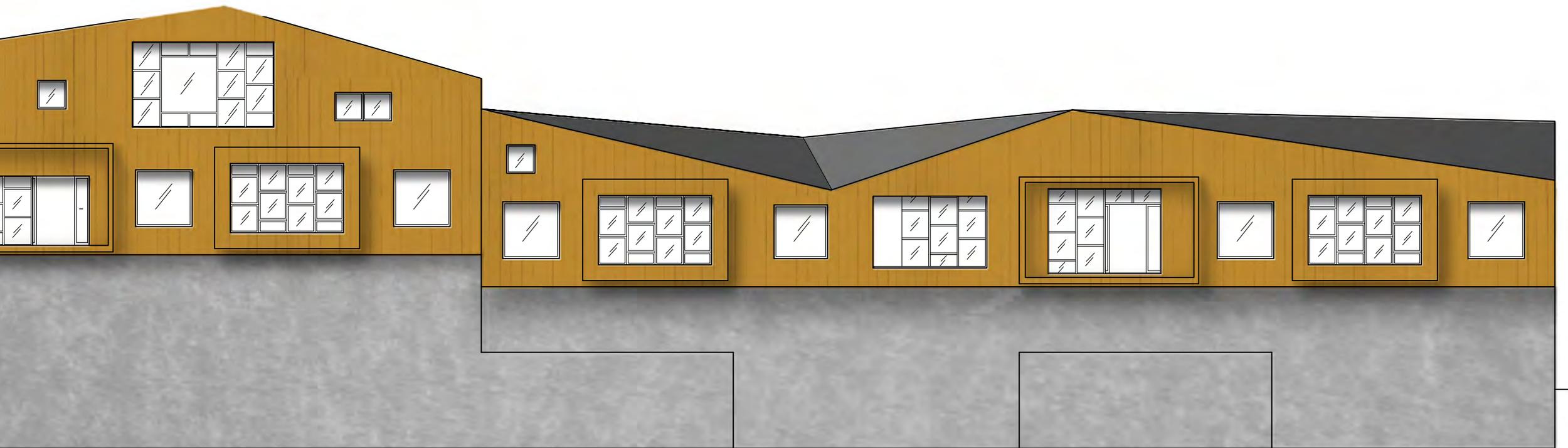


East facade 1:150



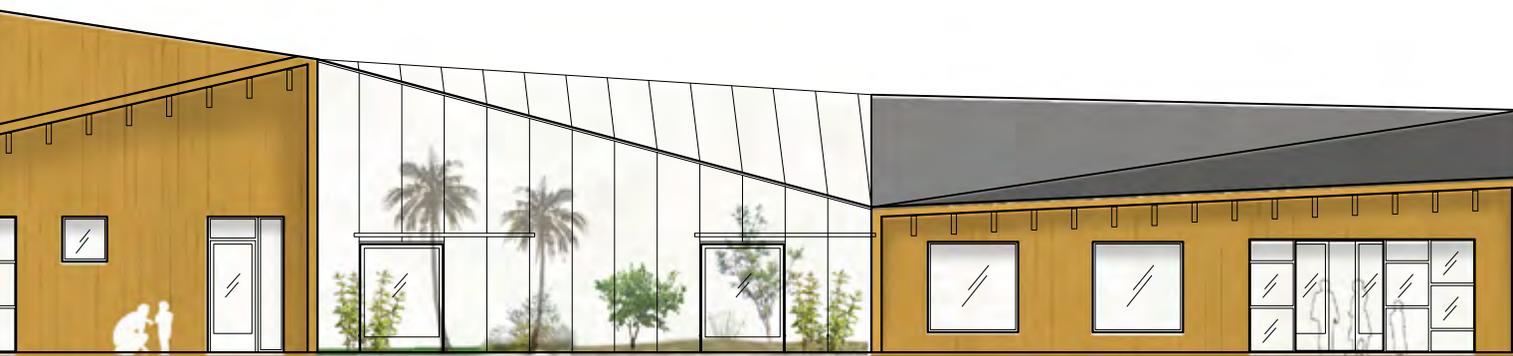
Towards the courtyard

- Open relationship towards courtyard, to get a lot of light and oversight
- Protected and shaded by cantilevered eaves
- The greenhouse facade follows the same grid structure but has a simpler uninsulated glass.

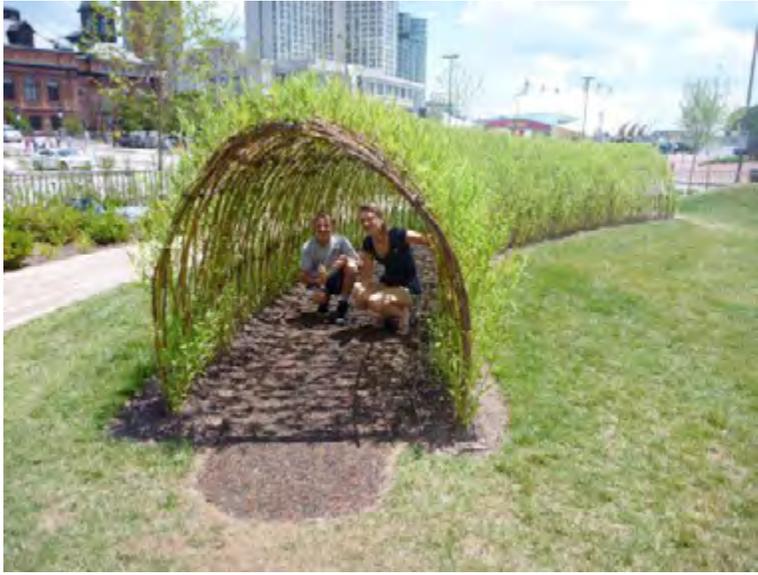


Towards the park

- Solid wood wall with pierced by larger windows
- The boxy character frames the view of the trees (seen from the inside)
- All window frames are divided by the same grid structure
- Balconys and bay windows towards the trees



West facade 1:150



The existing grass landscape can be completed with little more species of plants like meadow flowers.



From Emporia rooftop park shopping mall in Hyllie, Malmö, landscape by landskapsgruppen



Open storm water management as an element that enriches the preschool yard



From Ekostaden, Augustenborg in Malmö.



Reaching for the trees

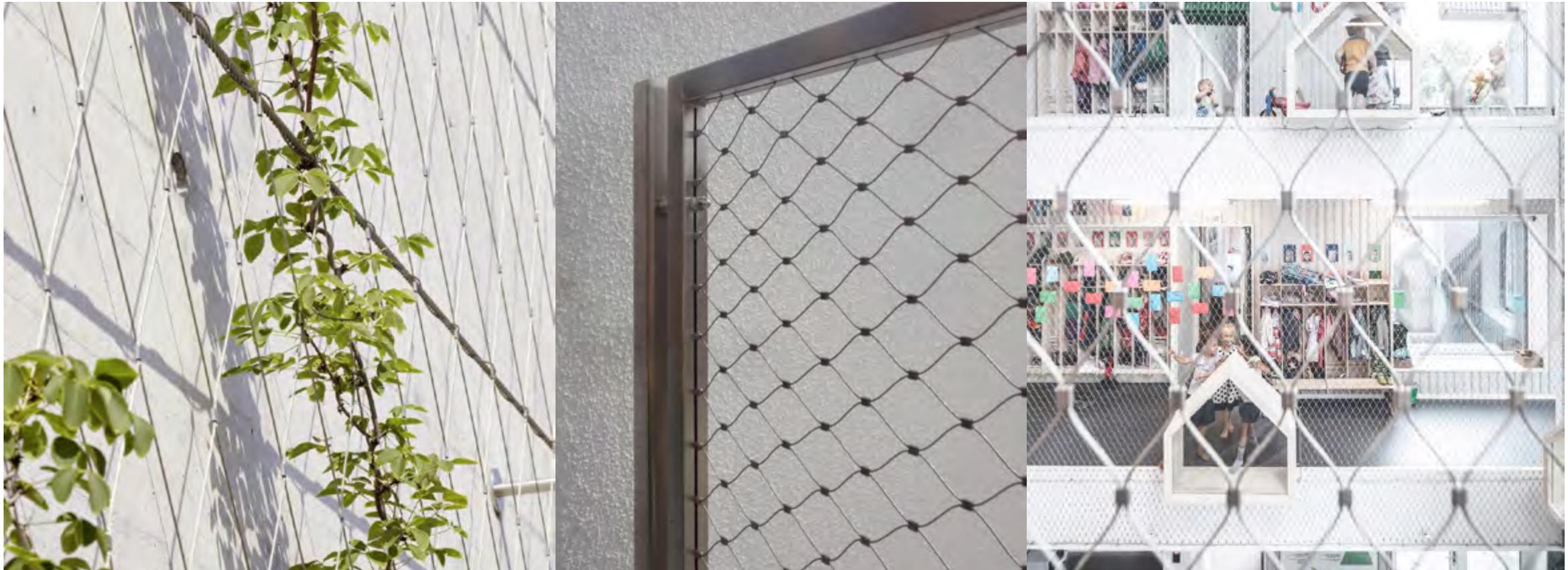


**A new front
towards the park**
—



Railing study

- Unclimable
- See through
- Protects from wind
- For plants to grow on
- Openable parts / gates
- Material can be used on other parts of building



“Webnet” stainless steelwire from Jakob rope systems.

Jakob.net

Here used on Smörblomsten by COBE

Steel wire web that could be used both as railing and as wind/shadow protection (when you let plants grow on it). Versatile and unexpensive material.

EPILOUGE

Summary

Conclusions

HOW TO OVERCOME THE CHALLENGES OF PLACING A PRESCHOOL ON TOP OF AN EXISTING BUILDING?

HOW TO CREATE A QUALITATIVE CONTACT WITH GREENERY?

Interior connections

The existing nature and trees of Burgårdsparken lies in direct contact with my building so too utilize the existing greenery and create outlooks towards the park was one of my starting points. Adding balconys and bay windows that reach out towards the trees and using the park-side to create a peacefull relaxing direction in my plan and organization of space.

Towards the courtyard I've added greenhouse space as an extra source of greenery and a sort of protected outdoor stay. The greenhouse could cater greenery all year round and provide space for more outdoor types of activities such as playing with water, dirt, earth and sleeping in stroller. The idea is to instead of building low quality complement buildings for storage you could incorporate that space into the main building body through a greenhouse and get more quality out of the space.

Outdoor environment

The outdoor environment has not been my main focus area in my design, but in my prestudy it's been an area of research where I've learned alot, and I feel that my learnings has been an important part of my decision making process.

Outdoor environment on roofs should be supplemented with access to green space in the preschools immediate surroundings (Nord B, 2014). On this site the closeness to Burgårdsparken is providing the preschool very good conditions to meet the lack of forest and vegetation to play in on the actual rooftop yard.

Several of the qualities described as important in the outdoor environment (see prestudy on pp 8) are found "for free" in more natural areas like a forest or a park while on a rooftop courtyard they need to be replaced / constructed. It might not be reasonable economically to invest all that is actually needed. That is a general problem for rooftop preschools, but in this particular case I think that it is reasonable to think that you provide some greenery as in small trees, bushes and climbing plants on various constructions, and the rest could be found nearby in the park. The rooftop park also have alot of green qualities already.

When a municipality is building a municipal preschool (which is not the case here) you could consider that the buildable land in a city is very expensive, so what you save on utilizing land from a roof could maybe be invested in the outdoor environment?

To work with the communications to the surroundings as in stairs, elevators and to keep the existing entrance path in the north accessible is important in trying to overcome the barrier of the height difference and create easy communications. This is something that I have not had the time to go into detail about, but is very important out of several reasons such as evacuation, accessibility and for access to the green areas in the park.

A LACK OF AREA?

In this case the area of the rooftop yard is very large and the site could accommodate both a large preschool of eight departments and enough outdoor space. So the area in square meters is not a problem at all.

When it comes to the indoor area I wanted to follow the guidelines from Miljöbalken of a minimum area of 7,5 m² dedicated for children to use, and at the same time see if I could use 10 m² LOA per child dimensioning the whole building from the guidelines by the city of Gothenburg (Göteborgs stad, 2014).

The guidelines from the city of Gothenburg is a bit vague in what they mean with the 10 m² per child. I interpret the recommendations as a tool for dimensioning the total area of the building (in relation to the number of children), not as a minimum surface available for each child. Problems will arise in smaller preschools with for example it's own kitchen. When all other surfaces such as kitchen, staff surfaces, storage etc is subtracted from the 10 m², the actual surfaces for children to use will be below the recommended minimum area of 7,5 m². I think that it could be possible to fulfill both in larger projects, but in my opinion it's more important to push the importance of a minimum area available for each child instead of giving recommendations that could be misused as a maximum area of what should be reasonable in dimensioning the building.

The areas in my project:

- 37 sqm per child outdoors and of a total area of 4920 m² rooftop yard.
- 7,5 sqm per child indoors (available for children to use) and a total area of 9,83 sqm LOA* per child (dividing total LOA with number of children)

*Calculating the LOA according to the framework of the city of Gothenburg. Greenhouses and technique is not included in LOA.

HOW TO WORK WITH TRANSFORMATION OF AN EXHISTING BUILDING WHEN ADDING A VOLUME?

Construction limitations and complications

When building on top of another building you need to adapt to and follow the underlying construction. I've chosen lightweight materials, in this case wood, to minimize the loadbearing weight of the added volume. Materials and equipment that are placed on the roof should be of better quality than that used on land. Maintenance and replacement is more complicated (Nord B, 2014).

Aesthetic design decisions

When adding a volume on top of another building you will always have to do an aesthetic balance between the old and the new. And I find it hard to formulate any general lessons or rules about how to do that. I've worked very intuitive, and I haven't got any theory behind my way of doing it.

In my case the building body of Bergakungen has a defined front with the cinema entrance and a backside that is shaped very much as a neutral, what I find, "undesigned" backside. I saw that as a possibility to make something happen, to make a new front towards the park and visualize that you could go up on the roof. I have used the grey neutral building body of Bergakungen as a foundation for my building, dominating it seen from the park but keeping a low profile seen from the entrance of Bergakungen. I feel that this is respectful enough towards the building body of Bergakungen. There is room for something more fun and expressive towards the park!

My main aesthetic challenge in this project has been the roof of the added volume. My approach has been to break down the scale of the large volume by accentuate smaller units within, through the roof. The incorporation of the greenhouse roofs within the overall roof structure has made the roof a bit complicated. I think the roof does the job of setting a tone and gives a strong character to the building.



MY WORK

In my research I've become more and more skeptical about building rooftop preschools, especially when it comes to creating a green and nature-like outdoor environment. But at the same time it might be "the best solution" in several situations nowadays, when you have no other buildable space. The underlying problem lies in the planning process and in the economic conditions for building and granting land for preschools. Rooftop preschools is only a symptom of that.

The preschools on ground many times have an equally poor outdoor environment even if the conditions there really are better.

What I think should be legislated

- 30-35 sqm minimum outdoor area (depending of the distance to complementing forest/park)
- 7,5 sqm minimum area available for children indoors
- A maximum distance to a complementing natural environment when building rooftop preschools

Parklek

Something that I think that the municipality could consider for this area and in this project is having a so called *Parklek* here with manned staff. You already have the skate-park in need for facilities and to have some employed staff here will strengthen the security and the possibilities for a successful double use of the preschool yard as playground.

Another way of doing a "greenhouse preschool"

Integrating greenhouse space into a preschool could be done in many ways. One approach could be to replace a larger amount of fully insulated LOA with greenhouse space instead. The cost of a smaller amount of fully insulated space will correspond to a larger amount of greenhouse space, and maybe you will find that larger uninsulated area to give more quality? That has to do with the profile of the preschool as well. To put even more resources into greenhouse space might work well for a preschool with an outdoor profile such as "Ur och skur" and with cultivation as a part of the educational profile.

In an urban environment there is often a limitation in the maximum amount of BTA (gross area) that you can build on a site. In the calculations of BTA the greenhouse space will count to the same ratio of BTA. So the amount of area (for children to use) is already predetermined by the zoning plan, and you will not gain more area by switching from fully insulated LOA to greenhouse space.

So in this case, when the maximum amount of buildable space is predetermined, it felt like a loss in quality to replace fully insulated LOA with greenhouse space. My argumentation is instead based on that it is the area of the complementary buildings that gets converted to greenhouse space, and hopefully the city planning office will accept that argument in a building permit, and not count the greenhouse area as BTA.

Also since my research involved a lot of readings about area needs and the importance of sufficient amount of area in square meters available for children to use, it very much affected my willingness to sacrifice insulated LOA.

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Pictures

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