



INTERLINKED

Planning and design of shared space and use in early stages

*Exploring the interlinkage of preschool, elderly care, student housing
and public use in Frihamnen, Gothenburg*

Katrin Vikner Sjöblom

Master's thesis at
Department of Architecture and Civil Engineering
Department of Technology Management and Economics
Chalmers University of Technology
Gothenburg, Sweden 2017

Examiners: Anders Svensson, Pernilla Gluch
Tutors: Anders Svensson, Nina Ryd



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Master of Science and Architecture in the Master's Programs
Architecture and Urban Design, MPARC
Design and Construction Project Management, MPDCF

Department of Architecture and Civil Engineering
Division of Building Design
Department of Technology Management and Economics
Division of Service Management and Logistics
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preface

This double thesis and research study has been performed and completed during the autumn of 2016 and the spring of 2017, as a final part of the Master's Programs *Design and Construction Project Management* at the department of *Technology Management and Economics* as well as *Architecture and Urban Design* at the department of *Architecture and Civil Engineering* at Chalmers University of Technology, Gothenburg.

I would like to extend gratitude and thankfulness to my examiner and supervisor Anders Svensson (Professor of the Practice at Chalmers University of Technology), my supervisor Nina Ryd (Professor and Architect MArch/MSA at Chalmers University of Technology) as well as my examiner Pernilla Gluch (Professor at Chalmers University of Technology). Anders and Nina have both been supportive as tutors, provided valuable insights and guidance throughout the process as well as contributed with great engagement, encouragement, knowledge and ideas. In connection, I would like to thank interviewees, participants and project groups within *Göteborgs Stad*.

Special appreciation and gratefulness to Peter Christensson (Senior Lecturer of Technology at Chalmers University of Technology) for support, inspiration, sensitivity and encouragement throughout my entire studies.

Foremost, a heartfelt thanks to my ever so loving and supporting family.

student background

Katrin Vikner Sjöblom

Bachelor studies

BSc Architecture and Engineering
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Master studies

MArch Architecture and Urban Design
MSc Design and Construction Project Management
Chalmers University of Technology

Compilation of courses

Architectural heritage and urban transformation
Future visions for healthcare, housing and work 1
Future visions for healthcare, housing and work 2
Leadership and Communication
Design Management
Project Management
Sustainable Development and the Design Professions
Managing Organizations in the Construction Industry
Construction Contract Relationships
Construction Governance

Internships

LINK arkitektur, Stockholm (feb 2015 - oct 2015)
Semrén+Månsson, Gothenburg (nov 2016 - feb 2016)



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'We shape our buildings, and afterwards
our buildings shape us' (W Churchill)

abstract

An ongoing global societal movement and challenging major question within the municipal operations in Gothenburg is how to co-use and share spaces to establish value creation and economic feasibility. Gothenburg is undergoing a densification process through the urban development *Vision Älvsåden*, which results in need to balance the degree of exploitation with creation of qualitative environments. It provides opportunities to reconsider concepts and use along with exploring potential interlinkage through *shared space and use*. Planning and design are consequently presented with increased complexity, demands and uncertainty how to manage and organize processes. It emphasizes the importance of early stages, architectural programming, communication, collaboration and interdisciplinary approaches to align objectives, facilitate the process as well as ensure value and benefits in end results.

The purpose of the thesis is to investigate and review planning and design of *shared space and use* in early stages to

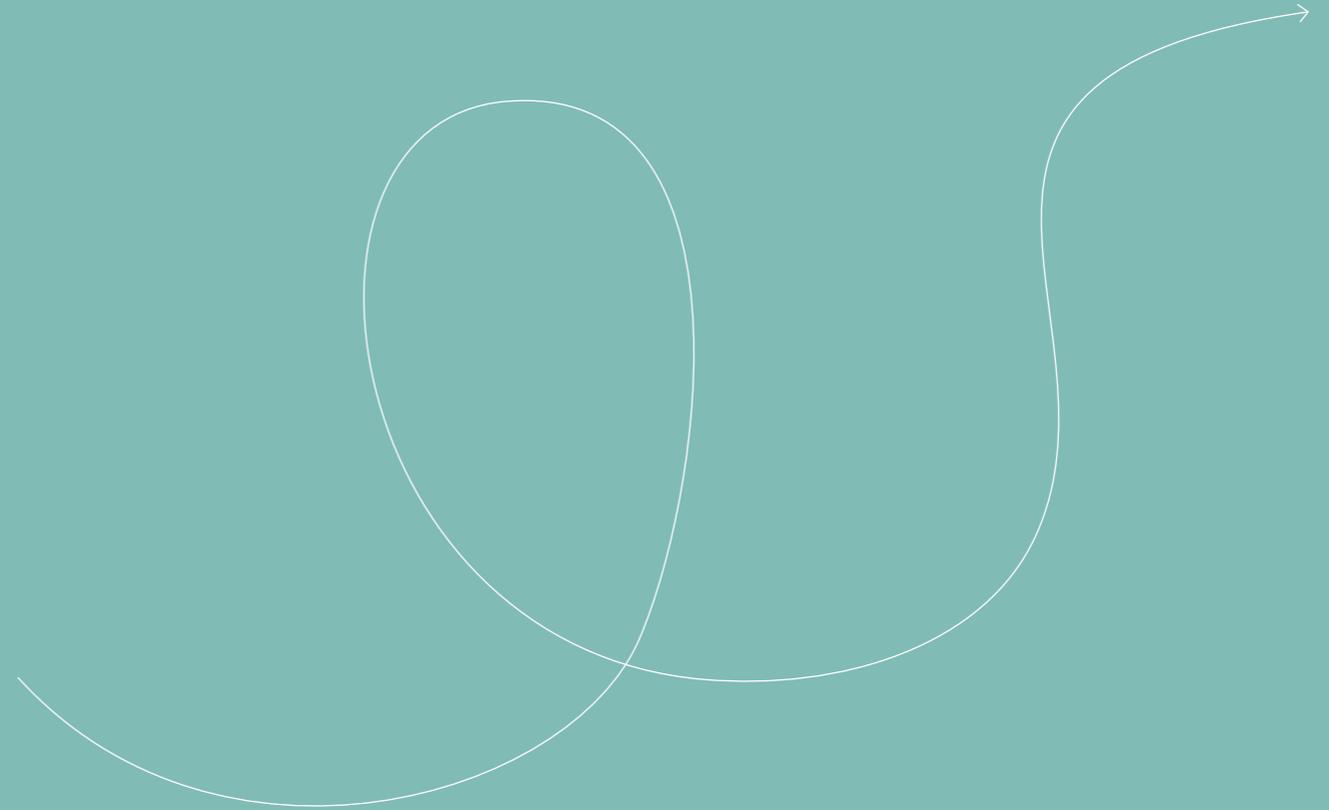
provide a better understanding and gain further knowledge regarding sharing and utilization of space as well as management and communication of design. It furthermore has the purpose to explore synergies, use and interlinkage of preschool, elderly care, student housing and public use in Frihamnen, Gothenburg. The thesis aims to develop planning and design strategies for *shared space and use* as well as a design proposal with concepts and perspectives on usability and value creation.

The thesis is an empiric qualitative study with an inductive research approach that interlinks project management and architecture to achieve synergies. It is based on literature review, case studies and interviews as well as analysis, synthesis and design. The result compiles and highlights potentials and perspectives on planning and design of *shared space and use*. Lastly, it discusses suggestions for improvement and development along with further studies within the area.

key words: activity based, architectural program, baugemeinschaft, brief, communication, co-use, front-end management, joint use, mixed-use, multipurpose, multi-use, pre-design, usability, value creation, added value

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introduction

thesis outline

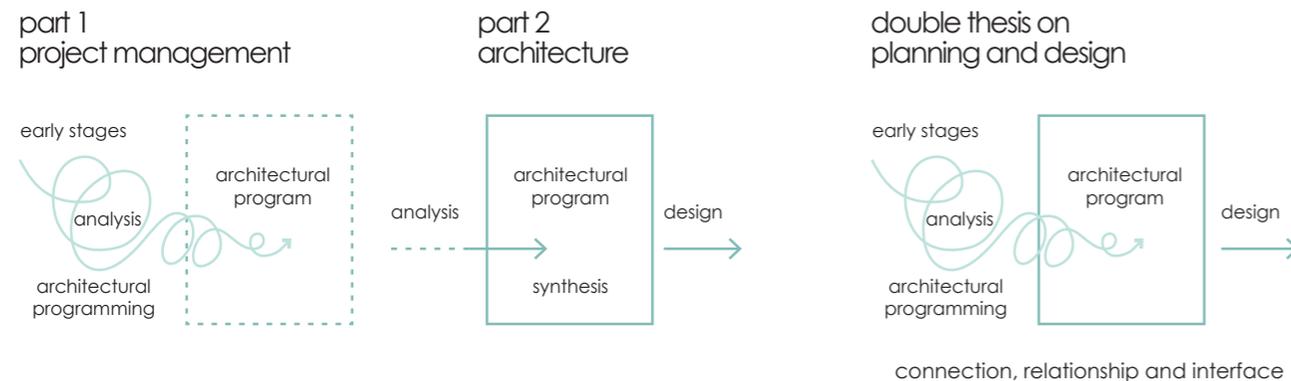
format and reading instructions

This booklet composes one of two parts in a double thesis within architecture and project management. It contains the architectural part, which constitutes an application and exemplification of empirical findings through analysis, synthesis and design. The booklet presents a design proposal for the connected architectural case, where outlined planning and design strategies for *shared space and use* in early stages are implemented.

For more comprehensive information on introduction, background, theoretical framework and research overview as well as the project management part, please refer to the report.

The booklet complements the project management part, consisting of a report with research in relation to planning and design of *shared space and use* in early stages. The report constitutes the main documentation and comprises the majority of the thesis content and results. It presents introduction, background, theoretical framework and research overview, which constitutes a common base for the two parts, as well as empirical findings and written results. The two documents are interlinked and based on the same process; consequently, there are some information overlaps.

interlinking project management and architecture



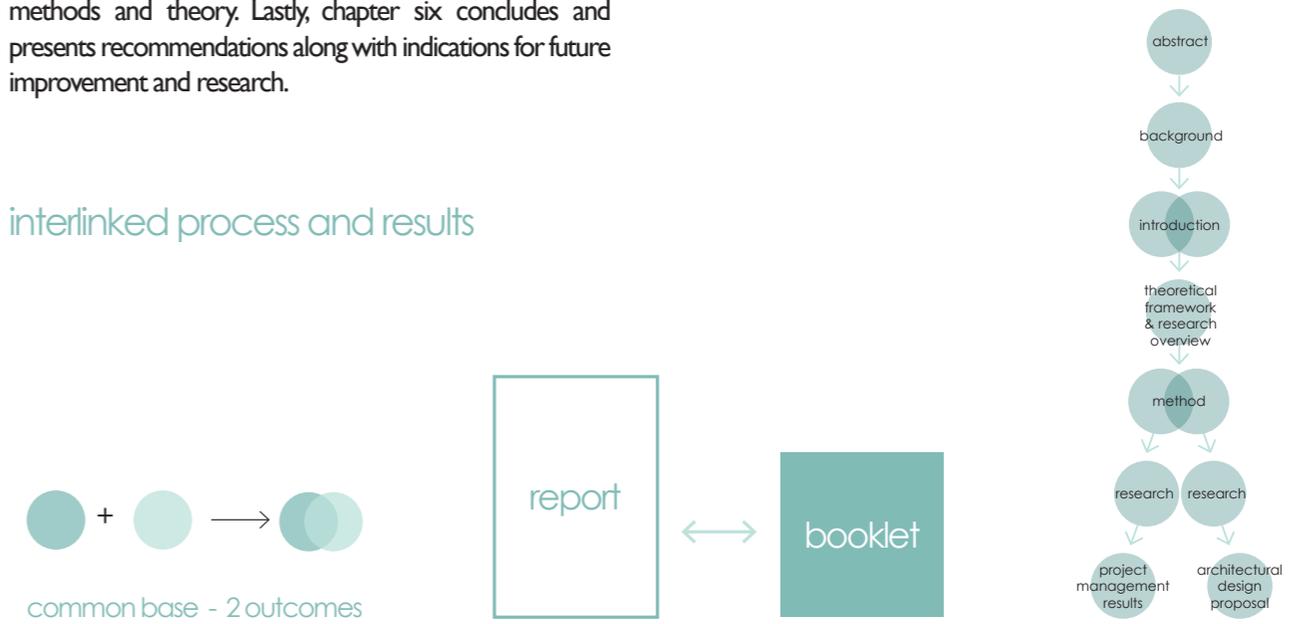
report structure

The report consists of six chapters, where the first chapter provides an introduction and outline of the thesis. Chapter two gives a frame of reference according to literature and an overview of previous research within the area, whereas chapter three describes the method and research approach. Furthermore, chapter four is structured according to the process and presents the results and findings from the empirical research on case-studies, architectural programs and interviews. It forms a base for the following discussion in chapter five where results are analyzed by triangulating methods and theory. Lastly, chapter six concludes and presents recommendations along with indications for future improvement and research.

booklet structure

The booklet consists of six chapters, where the first chapter provides an introduction to the thesis framework, process and method. Chapter two describes the connected architectural case and context, whereas chapter three contains analysis. Furthermore, chapter four presents concept and program, which forms a base for the design proposal in chapter five. Lastly, chapter six discusses and reflects on results.

interlinked process and results



management connection

purpose and aim

Investigate and review planning and design of *shared space and use* in early stages to provide a better understanding and gain further knowledge regarding sharing and utilization of space as well as management and communication of design.

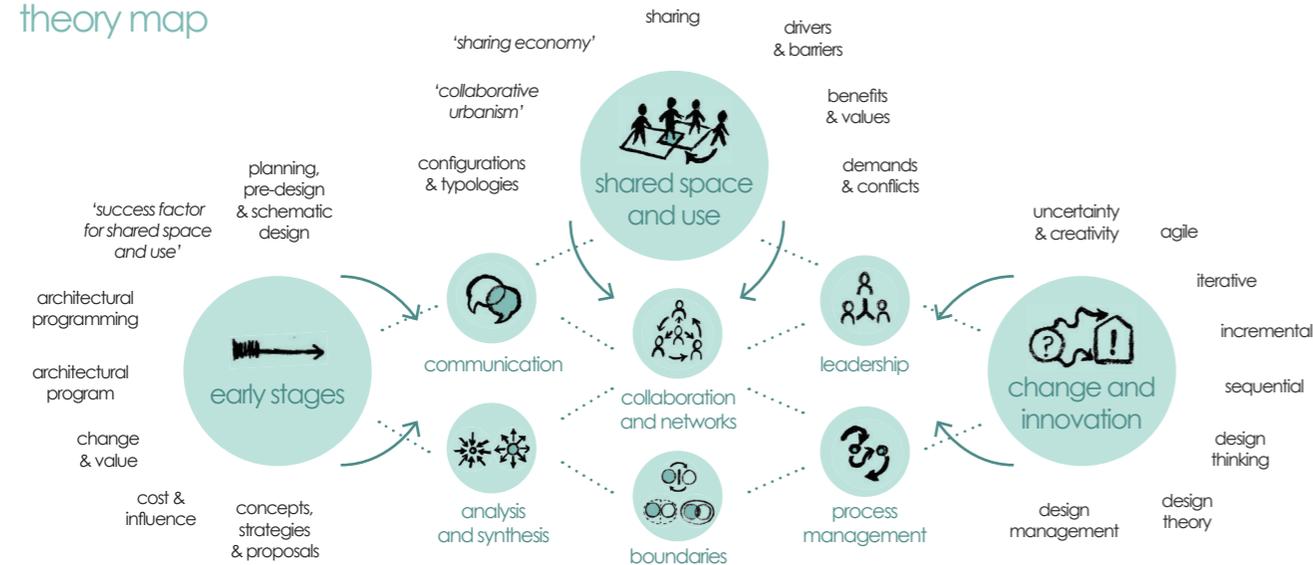
Support the connected architectural case and contribute to research on *shared space and use* as a concept within built environment.

Develop and contribute with planning and design strategies for *shared space and use* as well as a design proposal for the connected architectural case.

research questions

- RQ1 How can the concept of *shared space and use* within built environment be understood and described?
- RQ2 How are projects with *shared space and use* planned and designed in early stages?
- RQ3 What can be suggested to develop and improve planning and design of *shared space and use* in early stages?

theory map

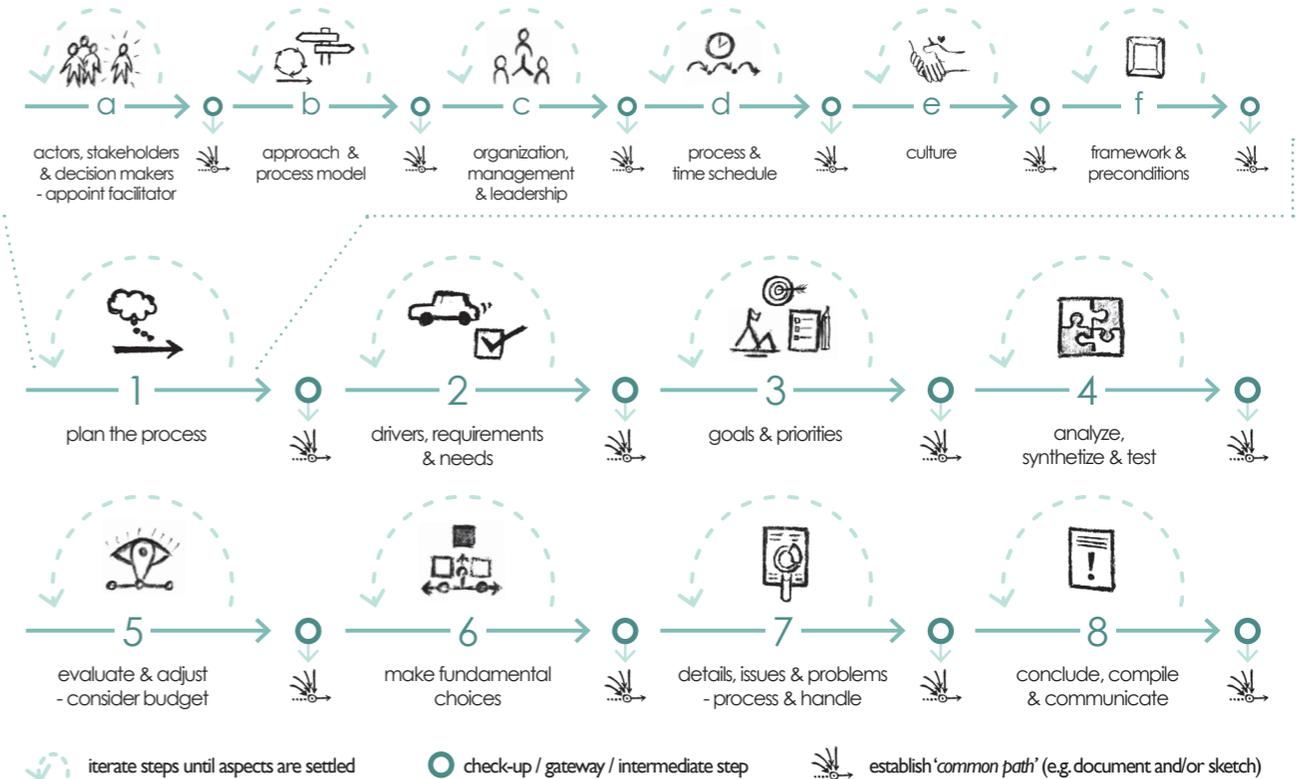
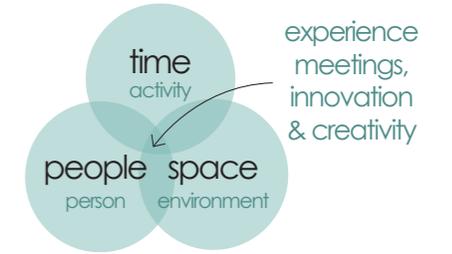


For information on the theoretical framework and research overview of the thesis, please refer to the report.

interlinked process - planning and design strategies for shared space and use in early stages

The management part concludes in planning and design strategies for *shared space and use* in early stages, which are applied in the design proposal. It comprises a combined description of process and methods, configured as a process based chronological guide, handbook and checklist. Strategies are organized according to theories and models with advice for application as well as recommendations of important aspects and issues to involve, consider and handle.

For more information about strategies, please refer to the report.



background

local connection and enquiry

An ongoing global societal movement and challenging major question within the municipal operations in Gothenburg is how to co-use and share spaces to establish value creation and economic feasibility (Brinkø et al., 2015; Botsman and Rogers, 2010; PWC, 2015; S. Ekberg, Göteborgs Stad, 2016; UN-habitat, 2016). Gothenburg is undergoing a substantial transformation and densification process through the urban development *Vision Älvsåden*, which results in need to balance the degree of exploitation with creation of qualitative environments (Göteborgs Stad, 2012; S. Santa, Göteborgs Stad, 2016). At the same time, it provides scope and opportunities to establish additional values in reconsidering concepts, use and exploring potential interlinkage through *shared space and use*. Frihamnen constitutes a district within *Vision Älvsåden* with specific focus on being a test arena for new ideas wherein the interlinkage of preschool, elderly care, student housing and public use has been discussed (S. Santa, Göteborgs Stad, 2016). There is however uncertainty how

the operations and activities could be configured, which has formed the inspirational background and foundation in developing the thesis and design proposal.

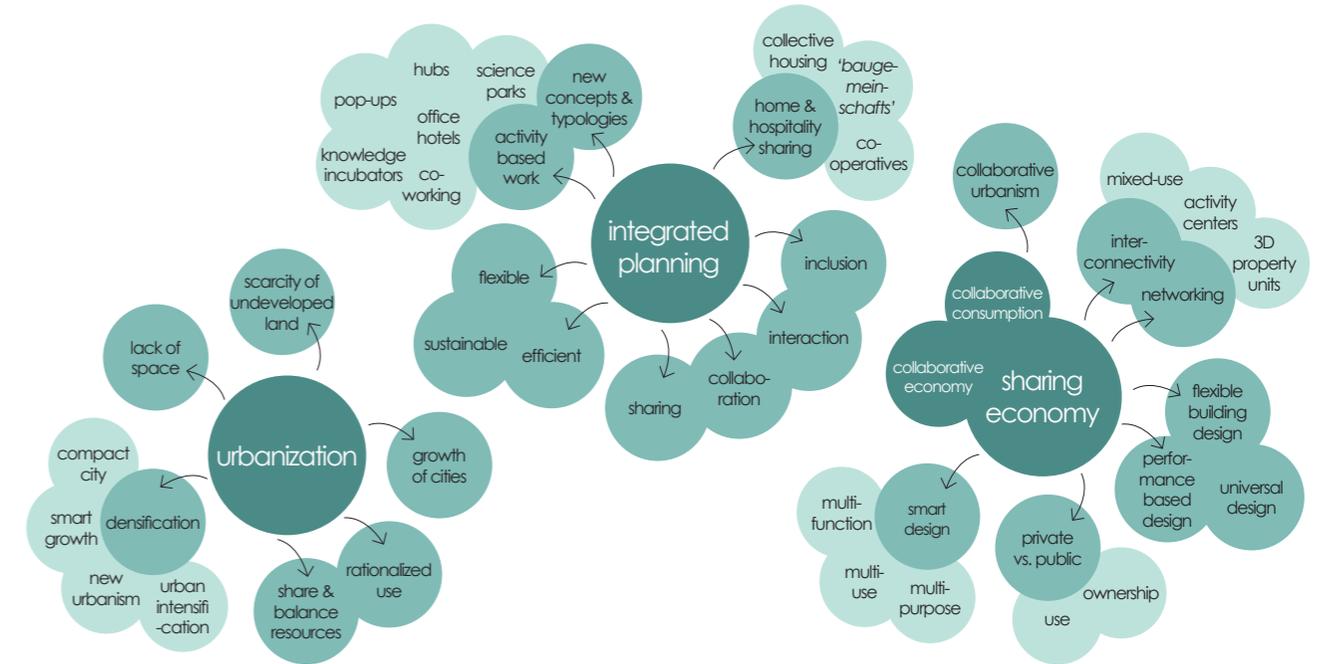
In connection, planning and design are presented with increased complexity, demands and uncertainty how to manage and organize processes as well as design for future demands and sustainability (Sveriges Arkitekter, 2016; United Nations, 2014; S. Santa, Göteborgs Stad, 2016). It emphasizes the importance of early stages, architectural programming, communication, collaboration and interdisciplinary approaches to align objectives, facilitate the process as well as ensure value and benefits in end results (Bogers, et al., 2008; Faatz, 2009). *Shared space and use* constitutes an emerging type of development and research area (Brinkø et al., 2015), which highlights and provides scope to investigate the topic with focus on early stages in planning and design.

For a more comprehensive background, please refer to the report.

interlinked society

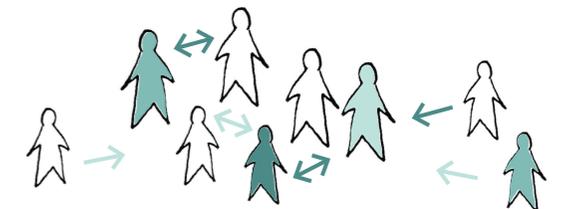


connection to societal movements



INDIVIDUAL / INDIVIDUALITY ('I/me')
separated / divided

'more together than separately'



DIVIDUAL / DIVIDUALITY ('we/us')
together / mixed / sharing / interaction / networking

purpose and aim / design questions

purpose and aim

The purpose of the design proposal is to apply and exemplify the proposed planning and design strategies for *shared space and use* as well as explore synergies, use and interlinkage in the connected architectural case in Frihamnen, Gothenburg, featuring preschool, elderly care, student housing and public use. It opens up discussion on societal movements and development with future visions in relation to sustainability, change and resilience, efficient and versatile use, how to 'live, work, play' as well as promote meetings, interaction and exchange.

The aim of the design proposal is to develop strategies and concepts of *shared space and use* as well as highlight potentials and provide perspectives on usability and value creation for the connected architectural case.

intentions for application and use

The thesis is intended to be of use and applicable for both researchers and practitioners in planning, design, discussion and evaluation to facilitate future development of *shared space and use*. It may inspire actors working in municipal, urban and sustainable planning as well as other projects in general or in relation to the topic. It furthermore provides a contribution to the societal discourse regarding movements and challenges with an enquiry on future visions, concepts and utilization in planning and design of space through sharing.

design questions

In relation to the purpose and aim, the connected architectural case as well as the enquiry by *Göteborgs Stad* 'how to co-use and share spaces to establish value creation and economic feasibility?' the following design questions (DQ) have been developed and addressed:

design question 1 (DQ1)

What activities and functions can be interlinked for preschool, elderly care, student housing and public use through *shared space and use*?

design question 2 (DQ2)

What values and qualities can be created for children, elderly, students and the general public through *shared space and use*?

delimitations

In line with the empirical research, the design proposal is limited to the early stages 'preparation and architectural program' and 'concept design' as defined by *RIBA Plan of Work 2013* (RIBA, 2016); hence other process stages will not be elaborated on. The focus on early stages is motivated and considered to be of greater use with regards to the connected architectural case and the ongoing urban planning process of *Vision Älvstaden* and Frihamnen district, which currently is in early stages of planning. The thesis furthermore connects to ongoing work by the municipal project group *Samnyttjande av samhällservicens inom- och utomhusmiljöer* within *Göteborgs Stad* (Göteborgs Stad, 2016a) with the request to focus on strategies and ideas of physical environments. The design proposal hence focuses on analysis and program, which is limited to encompass design strategies and concepts, activities and functions, spatial typologies and configurations, correlations and qualitative values. Focus is not on maintenance, organizational structures, social constructions, law, economy and technical details.

The scale of the design proposal is limited to shared spaces within the building. Functional synergies and correlations within the block and neighborhood context are however considered. Exterior environments are not in focus of the thesis, since a strategy has been developed in the detail plan for Frihamnen, phase I (Göteborgs Stad, 2015a). The preschool is furthermore limited to municipal organization and the elderly care to senior apartments with social service, sometimes also referred to as social safety housing, independent living and retirement communities. In connection, the analysis of functions and area estimation for operations and activities is limited to the context of Gothenburg. It is based on recommendations and information on agreed guidelines and strategic programs as provided by *Göteborgs Stad* and local actors.



Early stages according to RIBA Plan of Work 2013 (RIBA, 2016)

'baugemeinschaft for activities and operations'



shared space and use



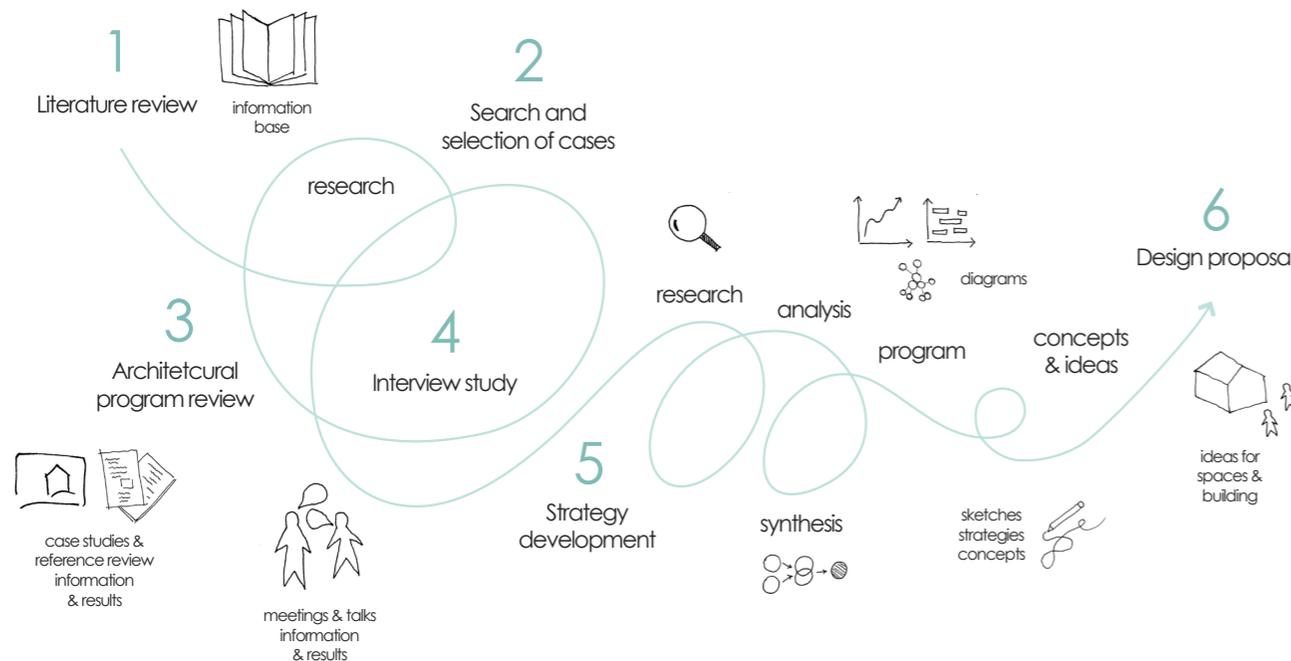
spaces within the building

method and process

approach and research process

The thesis interlinks project management and architecture to achieve synergies with the method and approach to connect literature, research and practice as well as conclude in a design proposal. The process was structured into six steps with the research strategy to gradually improve and develop findings in relation to each other: Literature studies were applied as a method to compile previous research within the area. In connection, case studies and architectural

programs were reviewed and complemented by interviews, which was followed by development of strategies for planning and design of *shared space and use*. The result of the empirical research was applied to the connected architectural case through the development of a design proposal to exemplify the findings and consequently provide an in-depth perspective and specific empirical enquiry on the topic.



method

A design proposal was created based on the previously conducted qualitative and inductive research involving literature review, case studies, architectural program review and interviews. The findings were applied on the connected architectural case to complement the research, exemplify the proposed strategies as well as provide further suggestions to develop planning and design of *shared space and use*. The architectural case in Frihamnen was selected based on an enquiry from the project group *Samnyttjande av samhällservicens inom- och utomhusmiljöer* with ongoing research in relation to the thesis topic. It was furthermore adopted as *shared space and use* comprises a current issue within *Göteborgs Stad* and *Vision Älvstaden*.

The approach used for the design proposal was an exploratory investigation applying the methods analysis, synthesis and design (Lawson, 2006). The knowledge base from the previous research was complemented with additional research, literature and inspirational reference studies through a semi-structured exploratory review

in relation to the specific architectural case and context. Information and data was furthermore collected through e-mail and telephone correspondence, meetings, talks and interviews with target groups, stakeholders, actors and operations. The design proposal was developed based on available and established information from *Vision Älvstaden* on Frihamnen as from November 2016. Contact were made with various professionals within *Göteborgs Stad* and the connected project group to identify background, situation and issues for the architectural case. In connection, recommendations and information were collected from local actors and *Göteborgs Stad* on agreed guidelines and strategic programs for operations. Analyses were made of site, context, history, characterization, identity and target groups along with mapping of synergies and differences in activities, functions, values, needs and demands. Diagrams, illustrations and sketches were used to analyze and synthesize information, investigate scenarios, compare and evaluate alternatives as well as develop strategies and concepts for design.



case
& context

vision älvestaden

context and development

Gothenburg is undergoing a substantial transformation process through the urban development *Vision Älvestaden*, wherein central parts of the city and along Göta Älv river will be developed and densified by year 2020 and onwards through five phases. The strategy of *Vision Älvestaden* was accepted by Gothenburg City Council in October 2012. It is intended to function as guidelines for development of the area, with need to balance the degree of exploitation with creation of qualitative environments.

vision and goal

'The vision aims to contribute to sustainable development in Gothenburg and Western parts of Sweden. The goal is to create an attractive and sustainable city from a social, ecological and economic perspective.'

key concepts

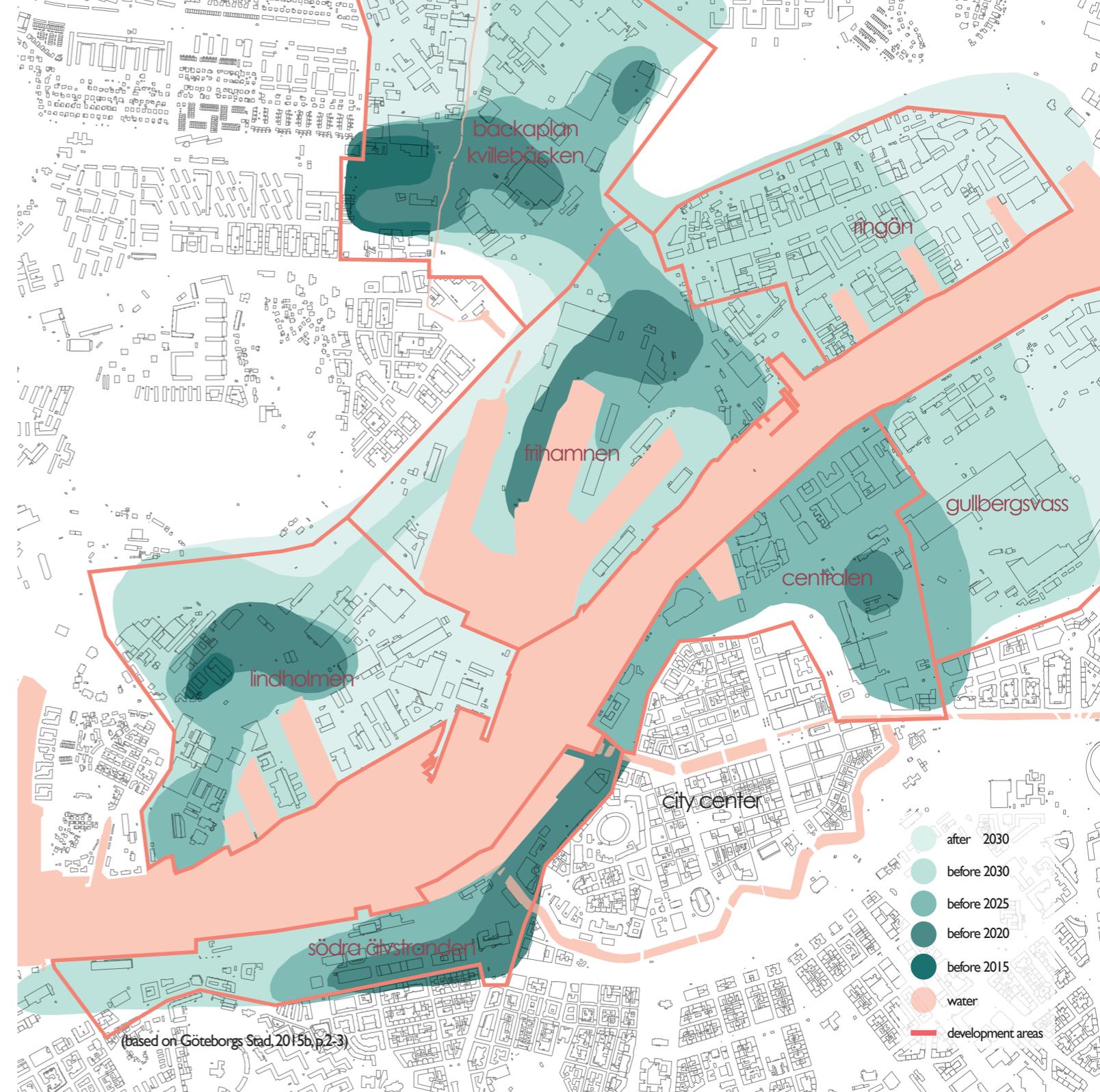
strategic central location	connect & build together the city center expanded x2	test arena for innovation & new solutions
from industry to knowledge information, communication & network society	identity with water in the center green - dense - water characteristic heritage	modern mixed inner city sustainable lifestyle focus on openness & public spaces

phase 1 - river city 2021

The first development phase of the strategy is referred to as 'River City 2021', which is planned to be established until the 400 year jubilee of Gothenburg city. Phase I includes development of Frihamnen and Ringön comprising the jubilee park and residential development around the central basin and Norra Frihamnspiren. The new bridge over Göta Älv river is furthermore planned to be finalized around 2020 together with the development of a new bike and foot bridge connecting Frihamnen and the city center.

strategies

- 'heal the city'
- 'meet the water'
- 'strengthen the core'



(based on Göteborgs Stad, 2015b, p.2-3)

(Göteborgs Stad, 2015a, 2012; Opendipart, 2016)

frihamnen

the site in the city context

Frihamnen is located on Hisingen island with close proximity to the center of Gothenburg, only separated with 200 meters by the Göta Älv port inlet. The water and Lundbyleden highway form surrounding borders to the district, which is about the same size as the city center (within the moat). Frihamnen has throughout history and recent time functioned as an industrial harbor area, consisting of the three piers Södra Frihamnspiren ("Bananpiren"), Norra Frihamnspiren and Kvillepiren. It constitutes the most central harbor area in Gothenburg and the Göta Älv inlet.

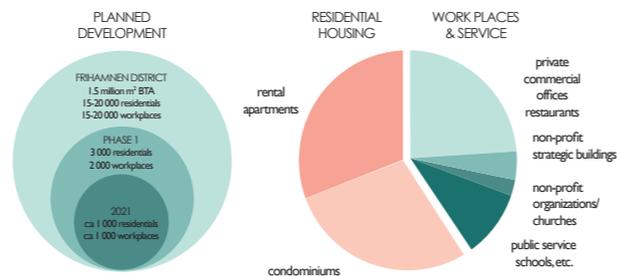
There is currently low and foremost industrial activity in the area, since the harbor was closed and moved around year 2000. Frihamnen is mostly closed off, however efforts are made to change perceptions and make use of the area. Södra Frihamnspiren is to some extent used for events, gatherings, concerts and entertainment. A sauna has furthermore been constructed on Kvillepiren. Some harbor activity still exist together with other types of use (e.g. motor sports, military expos, NATO ship visits, the coastal guard, cruise ships, fishing vessels, Stena Rail Ferry, bus lineup, culture boats carpentry, boat operations, smaller companies and driving practice).



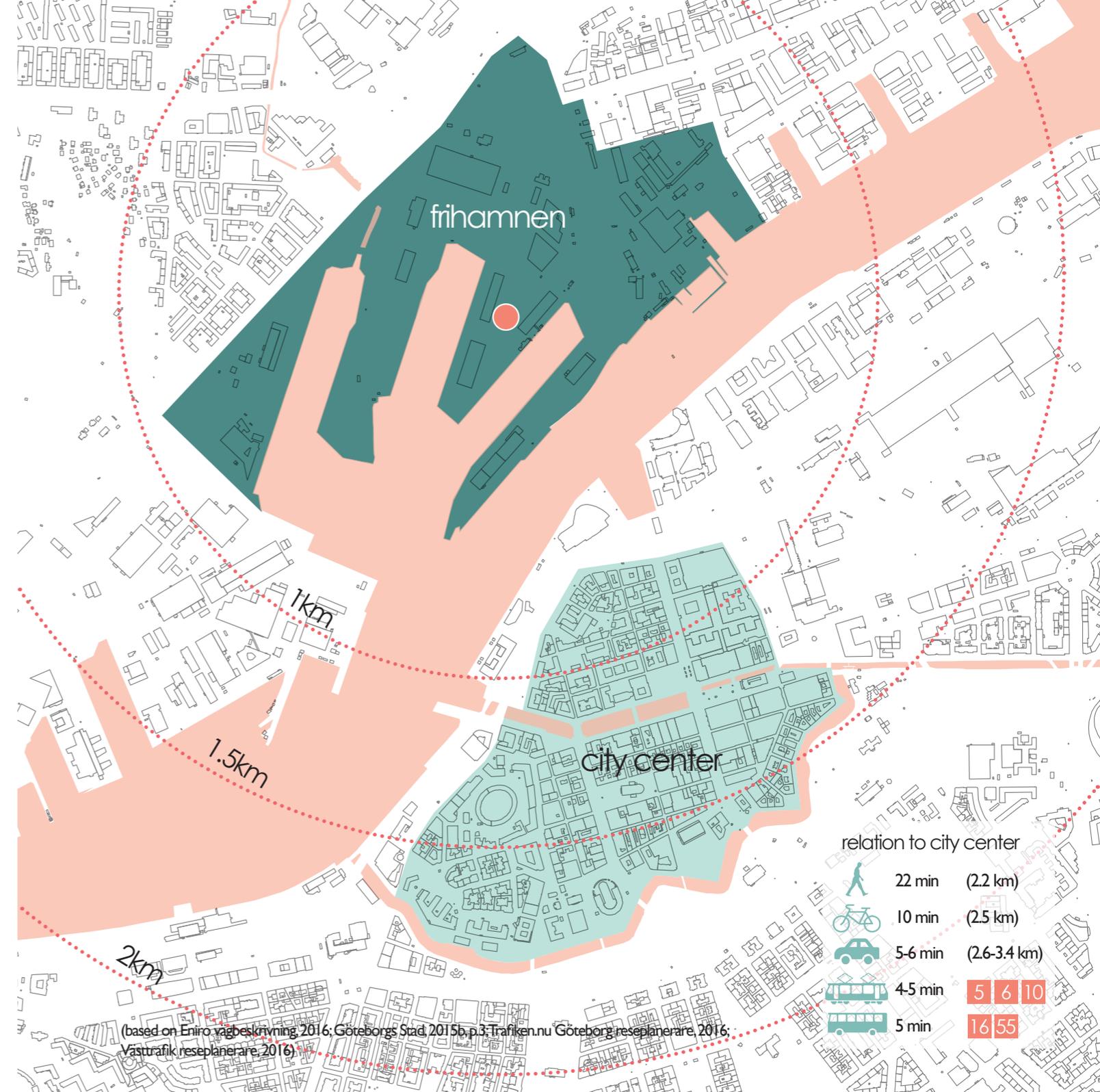
key figures

3 000 workplaces
 3 700 residential housing (socially mixed)
 1 500 children (0.5 / household, 1-15 age)
 500 children in preschools (1-5 age)

service, parks,
 public transport,
 communications
 & infrastructure



(Göteborgs Stad, 2016d, 2015a, 2015c, 2014a, 2012)



shared space and use

a dense city with mixed functions

In the development of Frihamnen, efforts are made to maximize preconditions in order to accommodate the needs and functions of the district within the available land and still maintain quality of life. In response, it becomes necessary to change the functional separation and increase the rate of utilization. *Shared space and use* is introduced as a strategy to lessen the degree of exploitation and establish a dense diverse city with mixed functions and users. It decreases the need to build specific or separate premises as spaces can be designated to more than one operation or function and hence be used more efficiently over time. It furthermore has the potential to support innovation, individuality and the smaller scale as well as to make public service and societal institutions visible and accessible in the district. *Shared space and use* enables a variety of activities with flexibility to accommodate both current and future needs. It relates to all aspects of sustainable development (economic, environmental and social) through social aspects, resource efficiency as well as versatility in use.

key concepts

- open, dynamic & diverse
- mixed, sustainable, inclusive & accessible
- variety of actors & activities
life & movement
- co-locate common functions centrally
to enable sharing
- public functions
open ground floors
- flexibility & adaptability over time

why share?

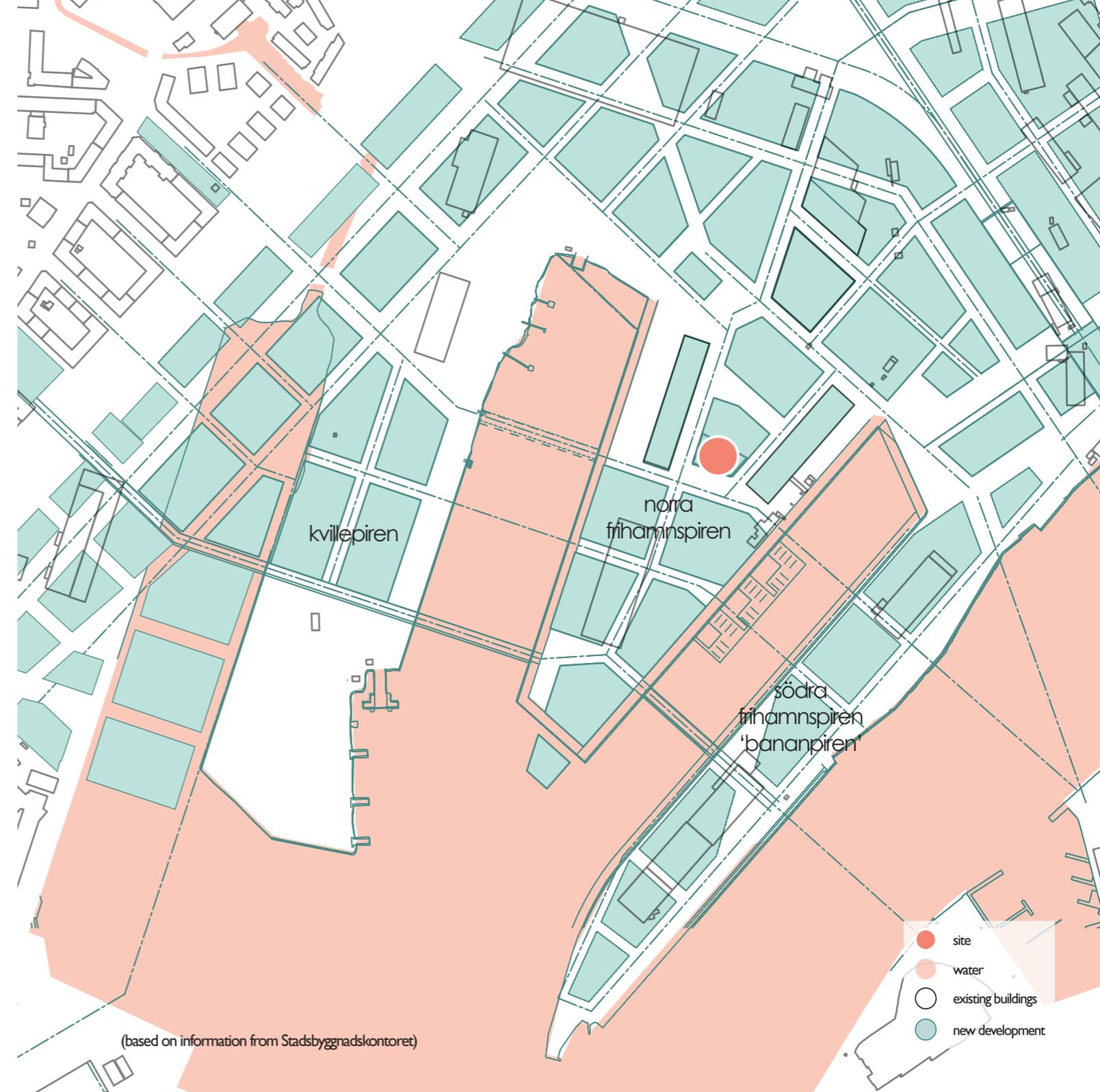
The overall purpose to *share space and use* in Frihamnen is to economize land resources, spaces, premises and personnel as well as achieve social benefits and positive effects. The aim is furthermore to promote cooperation, create proximity and openness as well as bring people together (needs, ages, cultures, etc.) by creating a context of community and networking. Planning, construction and working methods are however challenged as *shared space and use* requires coordination of structures and introduces demands on design.

connection to municipal project

The thesis connects to ongoing work by the project group *Samnyttjande av samhällservicens inom- och utomhusmiljöer* within Göteborgs Stad, which has identified early stages as an important success factor for *shared space and use*. Exploration of a specific case and typology has been requested, which will be introduced in the following.



(Göteborgs Stad, 2016a, 2015a)



(based on information from Stadsbyggnadskontoret)

case

interlinking preschool, elderly care, student housing and public use

There is a major need of municipal operations in Gothenburg as the city expands, however lack of space and premises in the dense urban context. There are potential organizational and resource efficiency gains in interlinking and co-locating functions through *shared space and use*. A typology of interest that has been discussed is the interlinkage of preschool, elderly care and student housing, which furthermore has the potential to connect with public use to integrate diverse target groups within all stages in life.

stated drivers to share space and use

- break social barriers and segregation (understanding and insight)
- promote meetings and relations (between groups and ages)
- encourage inclusion, participation and activation
- encourage initiatives through meeting places
- reduce isolation, institutionalization and stigmatization
- improve security and safety (through increased use)
- reduce damages and abuse (through increased use)
- build trust
- economic effects
- share and co-finance expenses (e.g. premises, maintenance, resources, personnel facilities)
- support smaller operations (provide access to larger spaces without having to finance total expenses of premises)
- efficient use of space (reduce operational spaces with greater extent of co-usage in activities and work methods)
- resource efficiency (e.g. personnel, technical)
- proximity and access to service and resources
- improved quality
- flexibility and adaptation over time

preschool 

key figures & needs

10 m²/ child indoors (LOA, incl. common spaces)
 140 m²/ department
 35 m²/ child outdoors (goal for Gothenburg)
 1 department : 18 children, 3-4 teachers

strategy in frihamnen

20m²/ minimum + 15m²/ compensation,
 proximity principle according to age
 8 departments in two levels (1 700 BTA)
 144 children (age 1-5)

proximity to parks and open areas,
 public transport, sport center

sharing of green/park areas, outdoor spaces,
 functions and programs within the block

elderly care 

target group senior apartments with social service (elderly age 70+)

key figures & needs

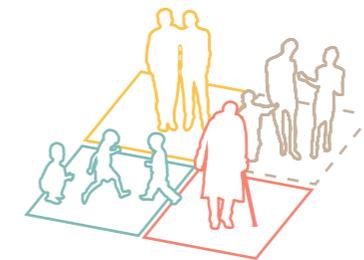
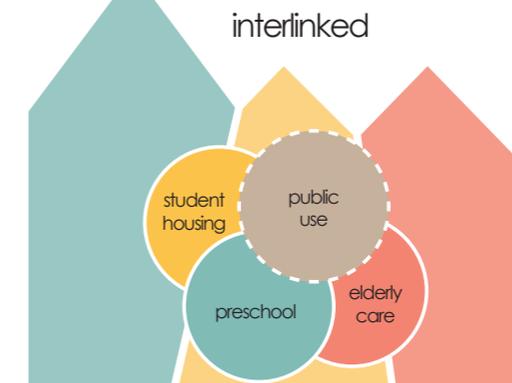
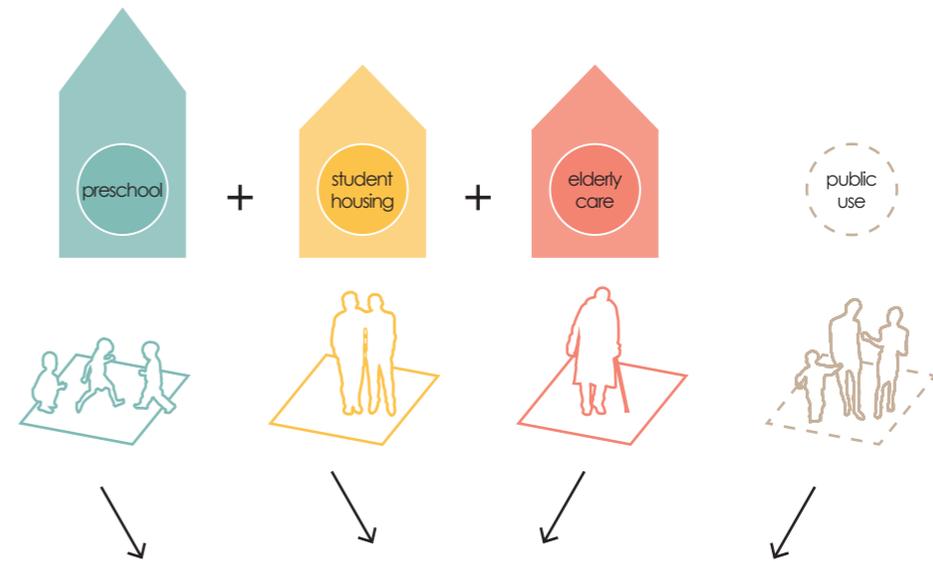
minimum 15 apartments, 1-3 room and kitchen,
 organized with connection to common spaces
 2 m² common spaces / private apartment
 for socializing activities and common meals
 staff available daily for activities, service and safety

accessibility, balcony or terrace, storage space
 for walker/wheelchair

proximity to public transport, service and
 green areas

student housing 

1-3 room and kitchen with WC
 accessibility



shared space and use

target groups

preschool / children



Preschools constitute a favorable operation in terms of *shared space and use*, since they commonly have a strategic central location in neighborhoods, comprise space demanding activities and there is an increased need of development. Spaces are however often not used to full capacity and rather empty at most times (e.g. afternoons, evenings, weekends, holidays and during summertime), hence there is potential to increase the rate of utilization through sharing. In connection, preschools in general strive for a sense of safety and to connect with the surrounding community, in accordance with the 'Community School' movement (*'the school in the community center'* and *'the open school'*) (Halmstads Kommun, 2016). In sharing space and use with other operations and activities there is opportunity to change the perception and relationship to knowledge, learning and preschools as institutions (Malmö Stad, 2015). There is furthermore potential to create meeting places and incorporate cultural activities to expand the concept of educational environments through diversity and inclusion of all societal groups and ages (Halmstads Kommun, 2016)

Preschool children are commonly divided into two age groups, 1-2 and 3-5, however with interaction in between. It is important to strengthen and reflect individual identities, needs and abilities through pedagogical strategies and physical environments. It is furthermore crucial with activation, participation and encounters through meetings as well as to encourage independence through empowerment, which can be supported in a mixed community through sharing.

elderly care / elderly



In society, elderly people live longer, have higher demands and are rapidly increasing in numbers, which results in need to build special housing for elderly care. Retirement homes are however space demanding, hence there are gains and benefits from developing *shared space and use* (Göteborgs Stad, 2016a). Senior apartments with social service may function as an 'in between' type of living for elderly. It can be considered as a proactive way of living to prevent illness and injuries with possibility for assistance or service with e.g. cleaning, personal hygiene, laundry, groceries and outdoor activation. There is not staff 24/7 or nurses providing care, instead a host is present at times for safety and to coordinate activities (Göteborgs Stad, 2016c). It constitutes a goal to promote physical activity among elderly, where *shared space and use* has potentials and gains to offer regarding supply, accessibility and motivation (Göteborgs Stad, 2016a). Outdoor access and connection with nature should furthermore be enabled since it provides both activation and a sense of calm and relaxation.

In older age, it is important to have a sense of belonging, meaning and importance to counteract loneliness, however often challenging to make new acquaintances and socialize. *Shared space and use* may facilitate interaction by providing a context of meeting places, social safety and networking with mixed groups and ages. It is furthermore important for elderly to maintain a sense of independence through activation in a safe manner, which is possible to support through a free choice between privacy and social participation.

student housing / students



There is a current shortage of student housing (SFS, 2016), which results in students disregarding demands in order to find a place to live. A central location with public connections, bike accessibility, local service as well as proximity to green and recreation areas is however of importance. Apartments are often compact and have to accommodate many functions. In response, a wider range of apartment sizes and standards is requested as well as access to other spaces for variation in environment. About 1/3 prefer to study at home, others combine it with university and public spaces. It is of high priority to cook, but few want to share kitchen. Shared spaces can be study rooms, sauna, guest apartments, common terraces as well as activity and hobby rooms (e.g. painting, bike shop, gym, movies, games, sports, music and parties) (Studentbostadsföretagen, 2012). There is potential to develop *shared space and use* to live on less space and accommodate the need of housing, however at the same time provide quality in common areas and access to other spaces and resources. It is furthermore highly requested to reduce rent (Studentbostadsföretagen, 2012), which could be achieved through possibility to work extra in operations.

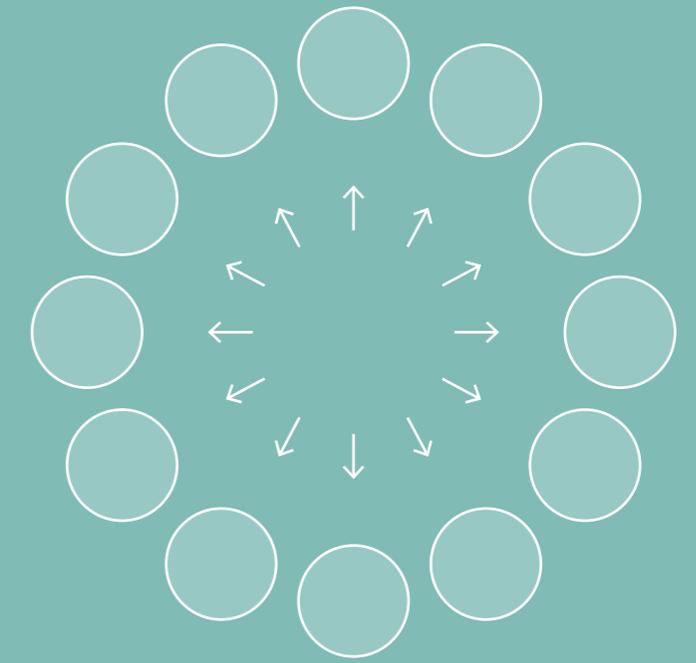
Students often move to their first individual home; hence safety, security, independence and identity is of importance. It could however also imply a sense of loneliness (Uppsala Universitet, 2010), where *shared space and use* could provide a social context with friendship and 'family' connection. It could furthermore support networking, contacts and relations for knowledge exchange or employment.

public use / general public



In sharing of space and use there is potential to integrate public use as a flexible complement or to increase the rate of utilization at times when core operations are less or non-active. It provides possibilities for leisure, recreation, activities and movement in the area. It may furthermore promote interaction, socializing and contribute to creation of a vibrant atmosphere with a mix of activities and spontaneous open meeting places where actors benefit from each other. In connection, there is potential for private actors and commercial service (e.g. hairdresser, pharmacy, podiatry, health, rehabilitation and shops). Restaurants, cafés and culture may easily be integrated with other operations as a strategy to bring together diverse groups as well as to share and use premises in different ways. Spaces can furthermore be rented for meetings, small and big events by various actors or the general public when not occupied (Göteborgs Stad, 2016a). Staff premises has potential to be shared along with time and resource savings regarding personnel.

There is major potential in target groups as children, elderly and students constantly are relevant and increasing in society with demands and needs. Interlinkage through *shared space and use* may create a living environment that encourages various interests and people to meet at different times, which has potential to generate socio-economic benefits and gains (Göteborgs Stad, 2016a). There is potential to share meeting places and daily activities in between target groups and other actors, which may facilitate development of community, collaboration, security, assistance and mentorship.



analysis

context

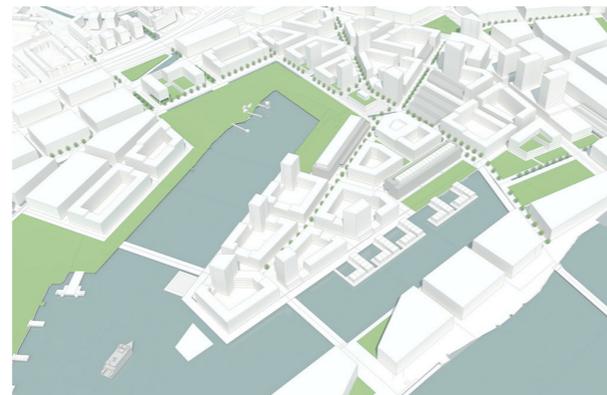
location and development

The Frihamnen area is currently characterized by functional separation with diverse urban patterns and contrasts (large vs. small, dense vs. open) due to its historical origin from industrial development. The district is surrounded by water and large infrastructural barriers with urban leftovers (road, boatway, tramway, railway), where Lundbyleden and Hamnbanan are most prominent. In response, the area is not used by pedestrians as there are no current attraction points and most paths are surrounding and not crossing the area. In close proximity to the west, the district is framed by the residential areas Kvillebäcken and Brämregården with housing, social life, service and Gothenburg's mosque. Lindholmen to the south holds workplaces, high schools and universities as well as residential housing popular among families with children. To the north Backaplan (Hjalmar Brantingplatsen) is located, which constitutes an important commercial shopping, service and public

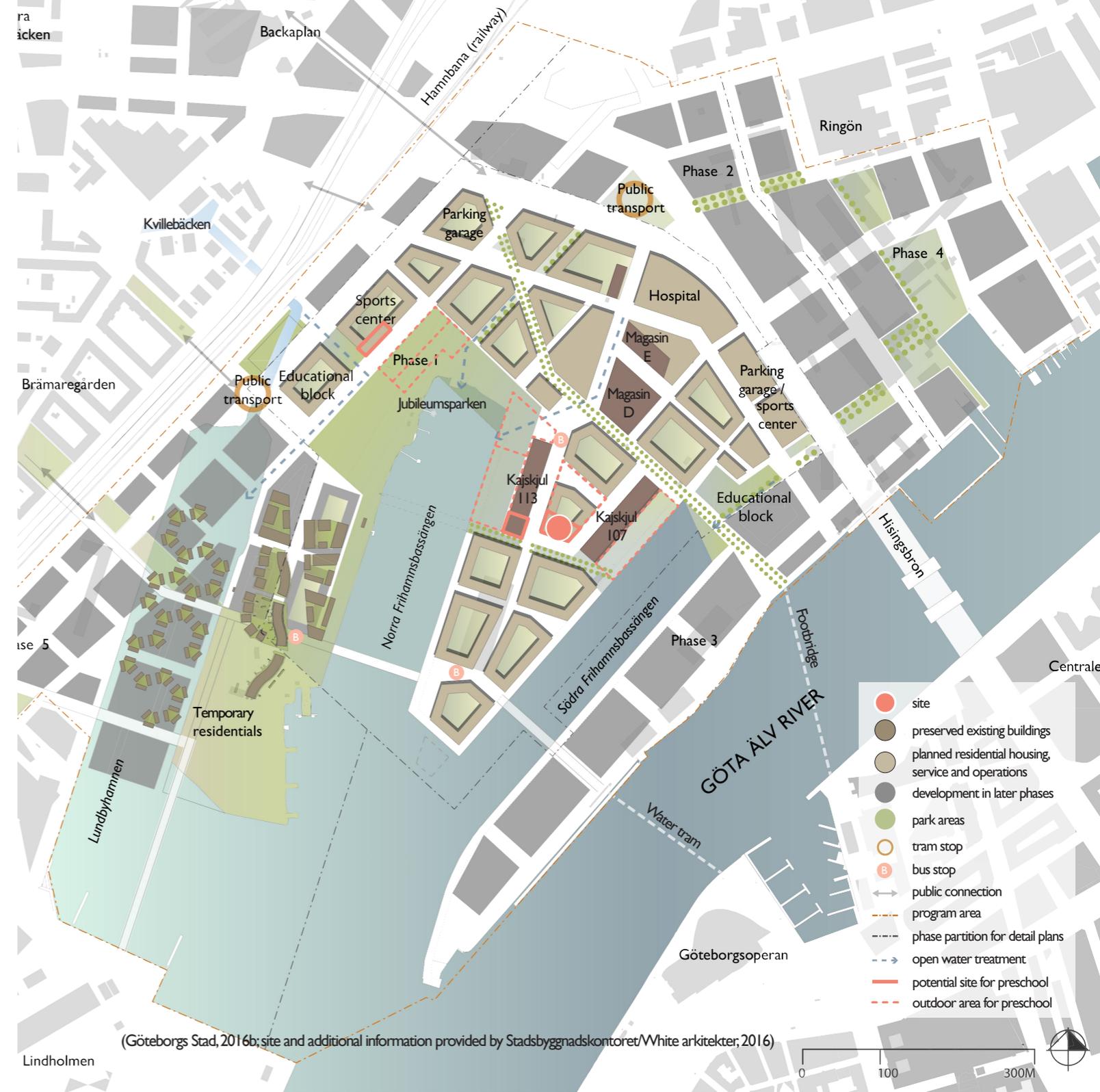


transport node. Across Göta Älv river, the city center, central station and Nordstaden are located with housing, workplaces and shopping areas. Several landmarks surround and are within close proximity of the district (e.g. svthuset, Göteborgsoperan, Läppstiftet, Pagoden, Gasklockan, Bockkranen, Ramberget). Almost all public transport between the city center and Hisingen passes by Frihamnen and Götaälvbron. Despite of the industrial character, the area both holds and has good connections to nature and green-blue structures with special species and birds (e.g. Ramberget, Kvillehamnspiren and Kvillebäcken outlet in Lundbybassängen). The harbor basins furthermore function as a 'blue park' with accessibility to water and activities.

The new proposal for Frihamnen district connects, densifies and complements the area.



(Göteborgs Stad, 2015a, 2014a; Stadsbyggnadskontoret/White arkitekter, 2016)

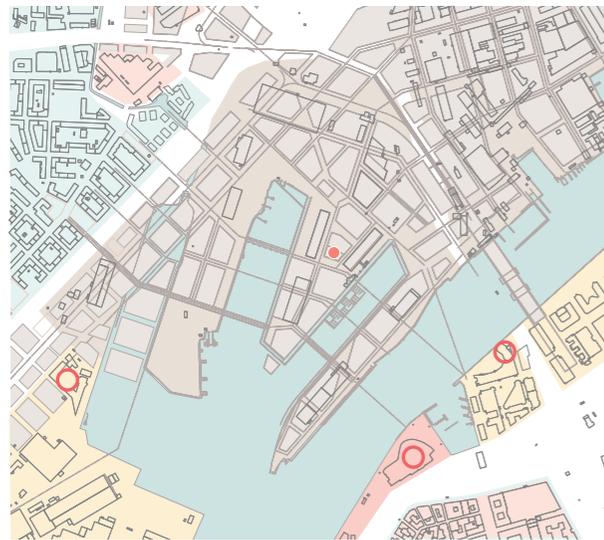


(Göteborgs Stad, 2016b; site and additional information provided by Stadsbyggnadskontoret/White arkitekter, 2016)

district analysis

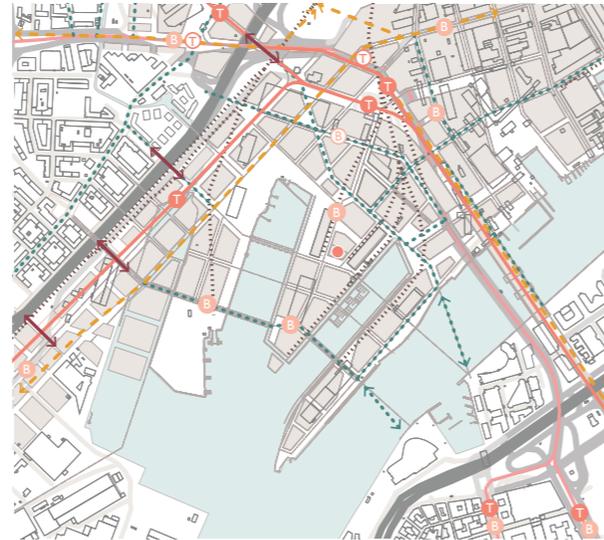
existing - functional separation

connect & densify

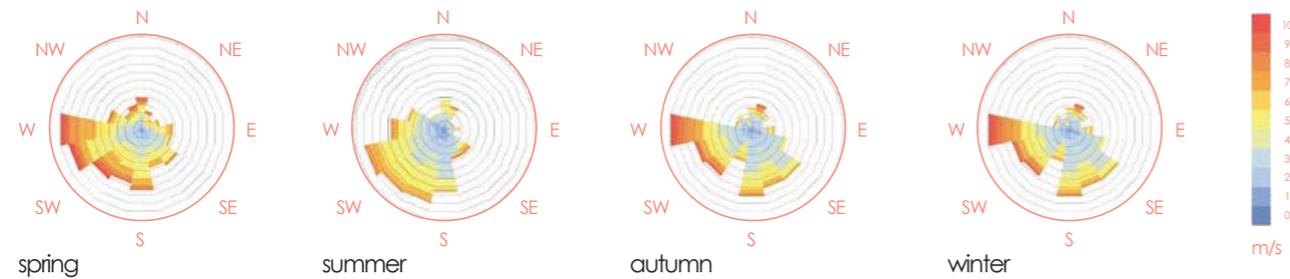


planned - public connections

cross flow

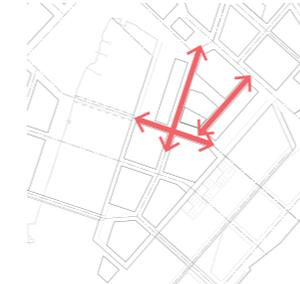


wind diagram

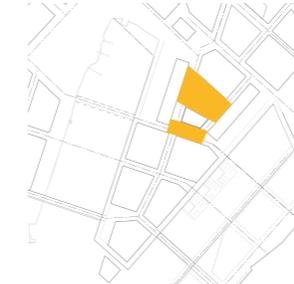


selection and analysis of site

central location with surrounding qualities



axiality of surrounding streets



spatiality in squares & street formations



surrounded by water



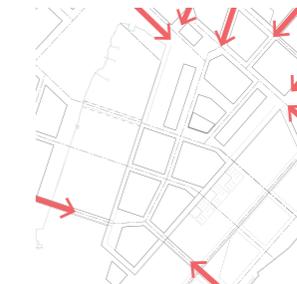
proximity to green & blue paths



embedded by heritage



logistics & entrances

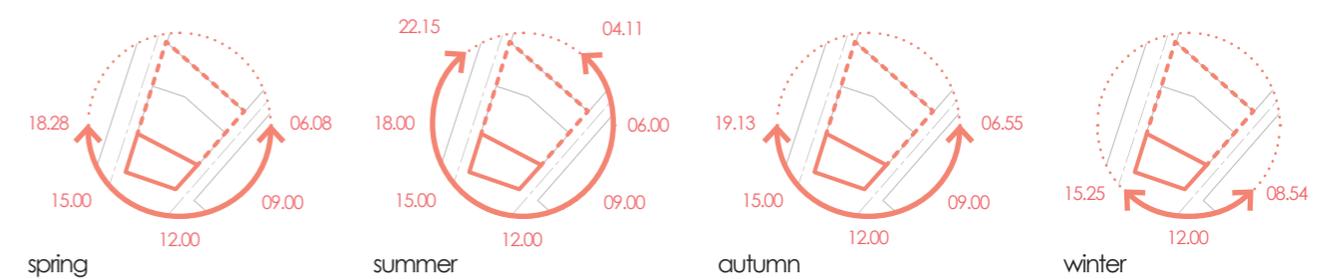


connecting paths & bridges



various outdoor areas for preschool

sun diagram



(based on data and information from Din startsida, 2017; Göteborgs Stad, 2015a; SMHI, 2017; Stadsbyggnadskontoret/White arkitekter, 2016)

(Göteborgs Stad, 2015a; based on information from Stadsbyggnadskontoret/White arkitekter, 2016)

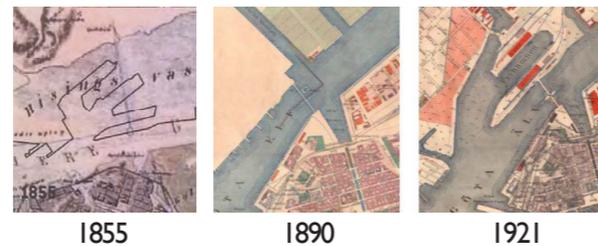
characterization

historical context

Gothenburg is foremost identified as Sweden's harbor city, which also was the purpose of the establishment. The harbors hence have a significant symbolic importance in terms of history and identity. The city development has been characterized by industry, trade, port, shipping and shipyard activities with exports such as timber and iron. Frihamnen furthermore handled import of European and exotic goods through the East India Company and operated the Swedish American Line. In the 1930's it was the largest harbor of the Nordic countries and in late 1950's the largest in Sweden for import and export. Kvillebäcken flows into Frihamnen and has historically formed the border between Norway and Sweden, which still constitutes the border between the counties Västra Götaland and Bohuslän.

history of surrounding districts

The development of Frihamnen is in comparison with the surrounding context and establishments relatively new. Kvillestaden and Brämaregården with residential housing for workers was developed around the 1850's and have strong historic connection to Frihamnen. The districts were planned by Lilienberg and features curved streets with Gothenburg's traditional housing for workers (*landshövdingehus*) in a small scale, constructed by wood, plaster and brick.



development timeline



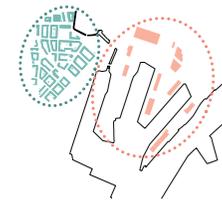
frihamnen historical development

Frihamnen has been of major importance in the development of Gothenburg and its harbors. The area has been developing since the 1850's from originally being non-exploited marshlands and holds traces from harbor and industry. In the 1890's an international competition was commissioned to develop a central harbor with the proposal to establish an artificial island in Tingstads- and Lundbyvassen. Frihamnen was opened on August 31st 1922 and then featured the two piers Norra and Södra Frihamnspiren (1135 m dock, 9 m water depth), a railway with double tracks, 23 cranes, two goods sheds, an administration building and a warehouse. Hisingen developed rapidly during the years 1932-1942 due to the establishment of Frihamnen, which was built for cargo handling of ships and boats prior to the

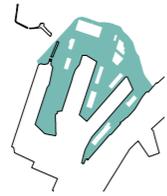
development of container shipment. It was constructed as a protected zone with borders where goods were stored prior to entering the country. Kvillepiren was developed as an expansion area, however never fully used, hence it features some natural traces from the original marshlands. Frihamnen was used for harbor activity until around year 2000, when the operations were moved to Skandiahammen by the Göta Älv river outlet and Älvsborgsbron abutment, since Frihamnen was too shallow. The area is of significant historical value in terms of industrial heritage. Parts are included in the city preservation plan (Norra and parts of Södra Frihamnspiren) for protection of cultural and historic values and environments.



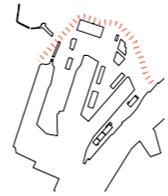
urban patterns and characteristics



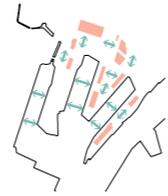
industrial landscape
embedded by
residential housing



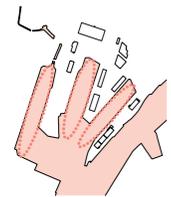
urban leftovers
large flat, open unutilized
areas & surfaces



inaccessible & closed
infrastructural barriers
borders & security



separated & divided
disconnected
units & functions



spatiality of the water
'älvrummet'
harbor basins



characteristic shape
of the piers
intimate vs. open
gaps & temporality



floating volumes
detached, freestanding
& far between
large & elongated
linear & horizontal



functionalistic &
continuous
developed along
prominent paths
old roads, bridges & railway

identity



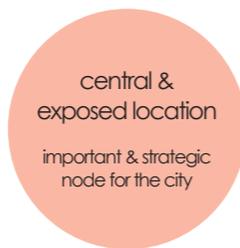
harbor
& water
boats, docks, bridges,
cranes & reflections

'water as link for
continuity & identity'



sky, view
& sightlines
long, continuous &
spacious panorama,
heights, landmarks
& silhouettes

'visual connection'
'open to the city'



central &
exposed location
important & strategic
node for the city

'connecting link
between Hisingen
& the city center'



changed over time
several time layers
dynamic mix of old & new,
different original use

'historic connection'
represents the city's
development over 150 years

architectural characteristics

origin buildings from 1936 - not significantly changed
warehouses, harbor sheds and storage
buildings with berth names, administration
building and customs house

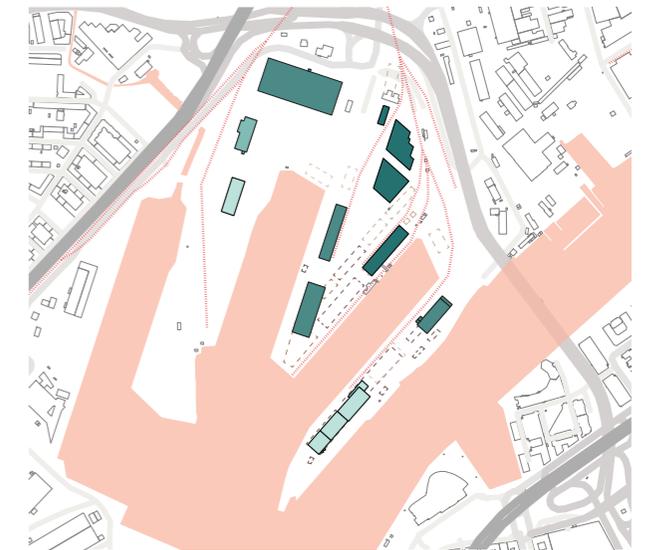
style industrial functionalism - function in focus for
design and placement
neoclassical style - rational, simplistic and
austere with materials and details in focus

volumes cohesive low scale and heights < 4 stories

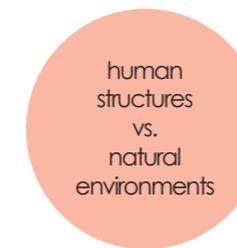
elements flat gable roofs
skylights, large and high windows, window strips
loading balconies

**identity
elements** loading and cargo spaces
harbor crane tracks, railway and polls
exposed technical features

materials asphalt, corrugated sheet metal, plaster, plastic,
brick, concrete, light colors with red accents



1982 - 2013
1975 - 1982
1959 - 1975
1935 - 1959
demolished from 1975
demolished from 1935 - 1959
demolished from 1930
demolished from 1922
water
railway



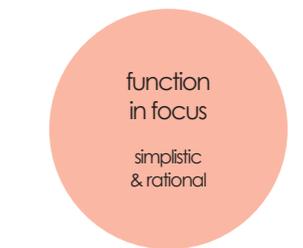
human
structures
vs.
natural
environments



mix &
contrasts
variation
& diversity



movement &
flexibility
logistics, storage
& transports



function
in focus
simplistic
& rational

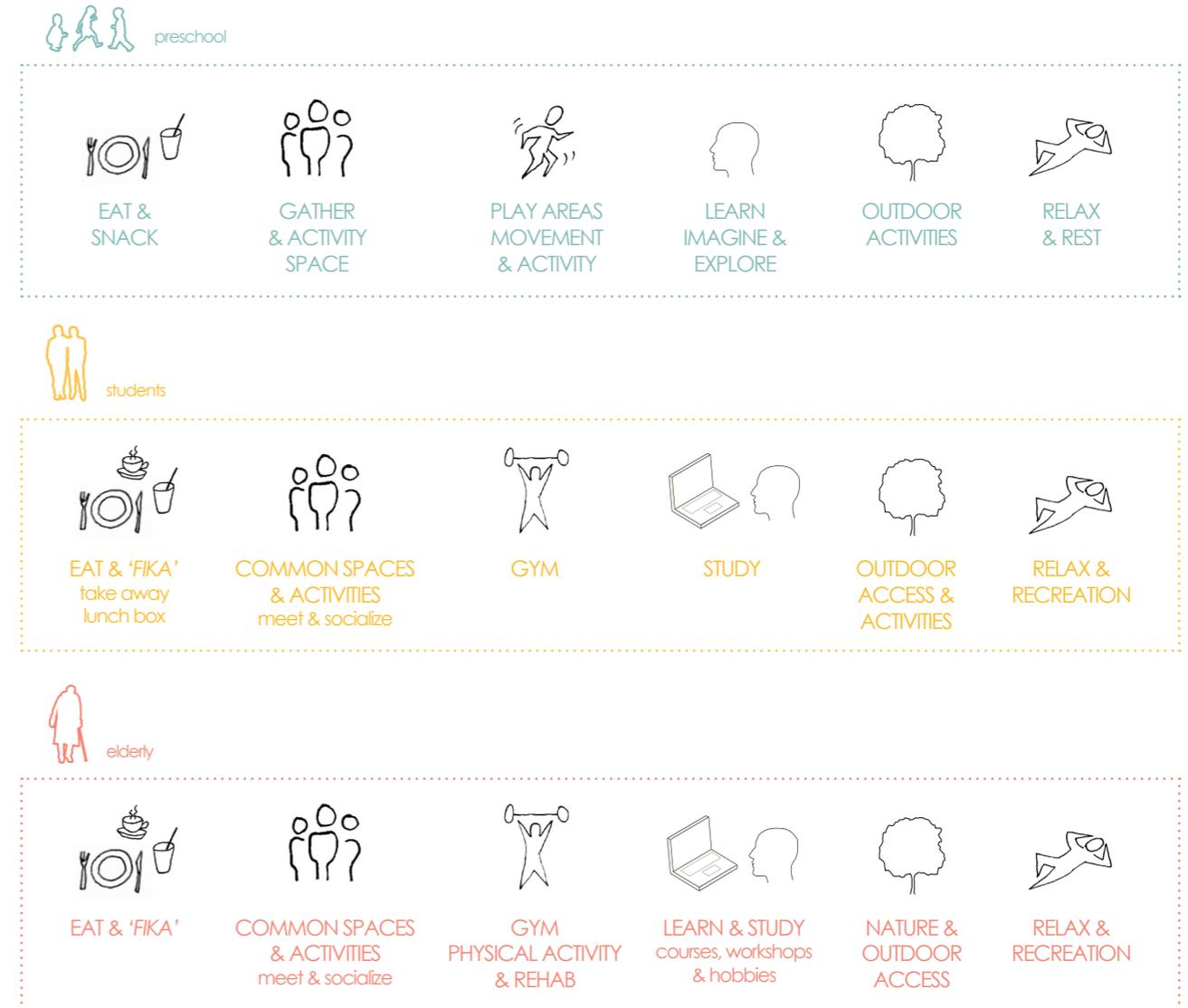
actors and stakeholders



● target groups

demands and needs

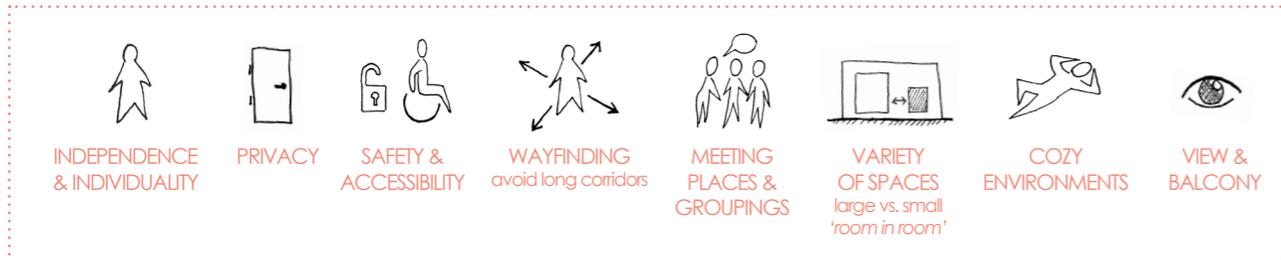
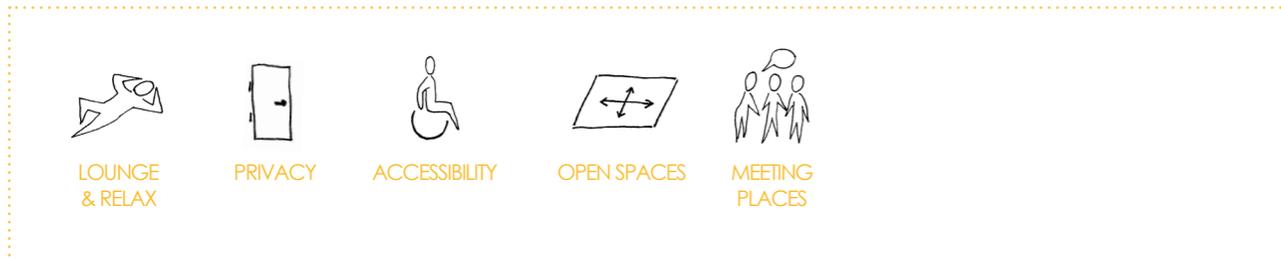
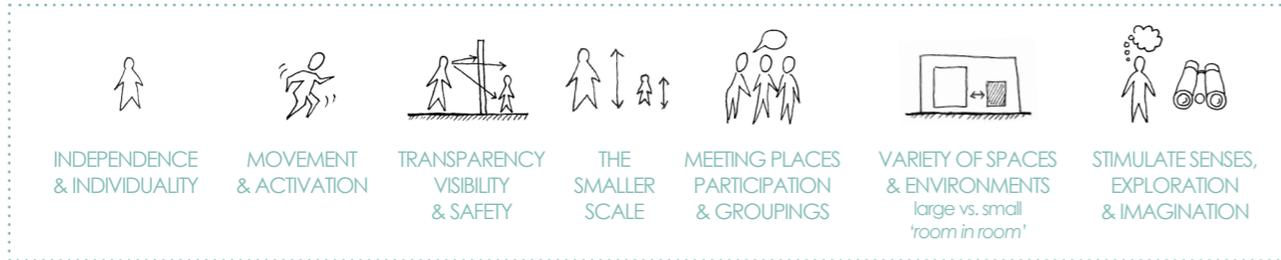
function & activity synergies
similarities - potential to share space,
meet & have common activities



based on analysis, interviews and talks with users and professionals

spatial qualities

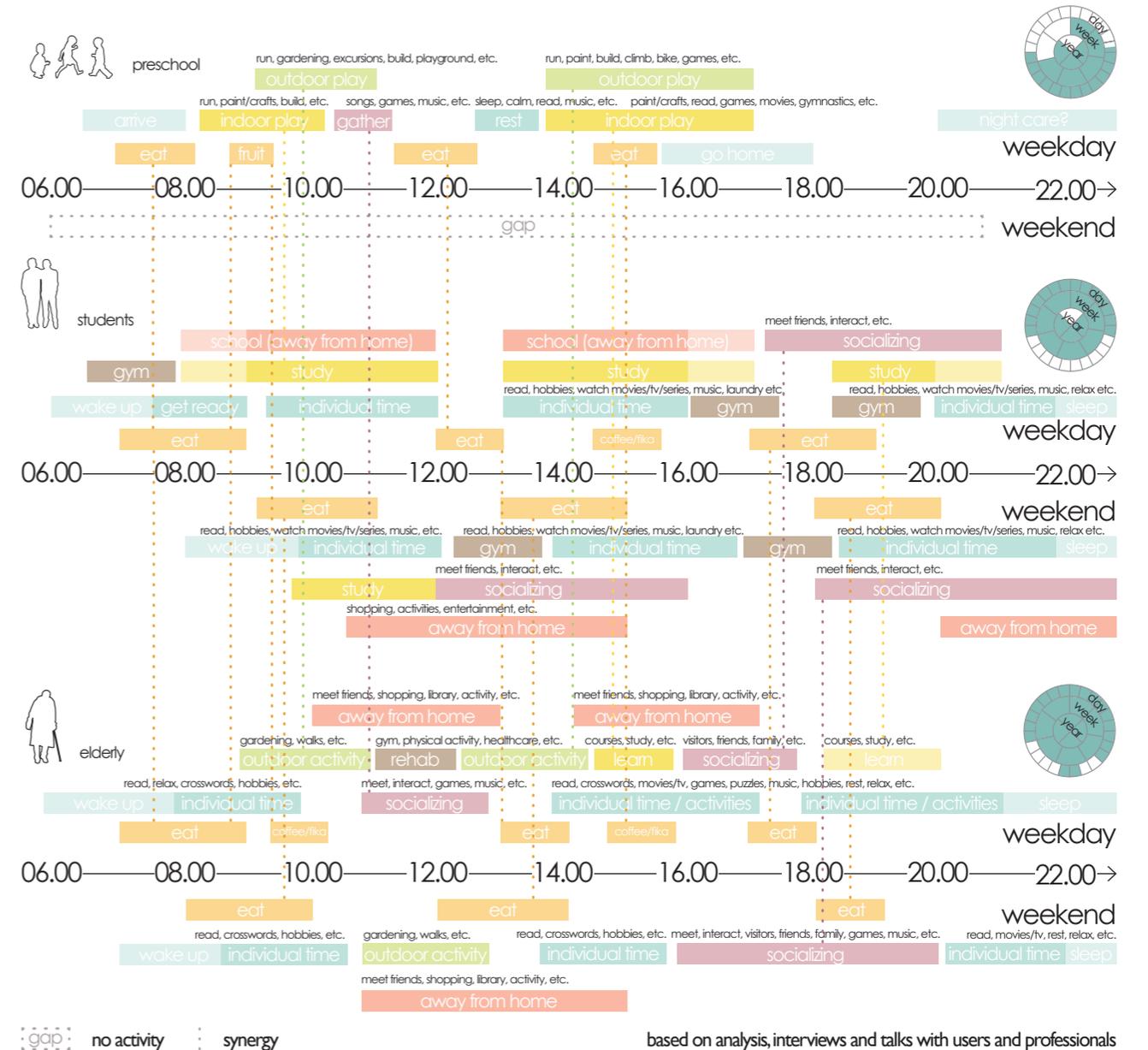
differences & synergies
analysis of qualitative values



based on analysis, interviews and talks with users and professionals

functions and activities

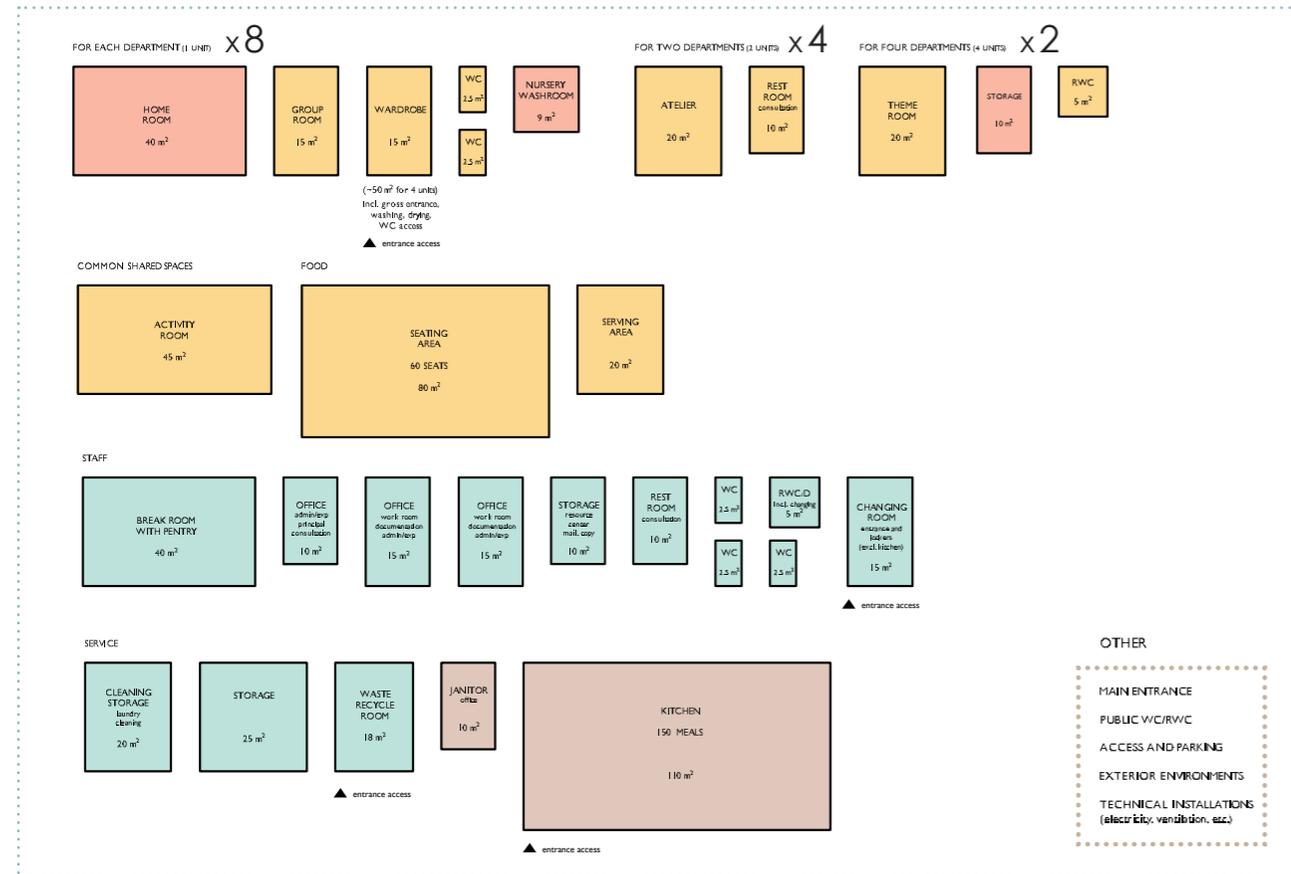
activity synergy mapping
examples of use over time - daily routines
potential to share & meet



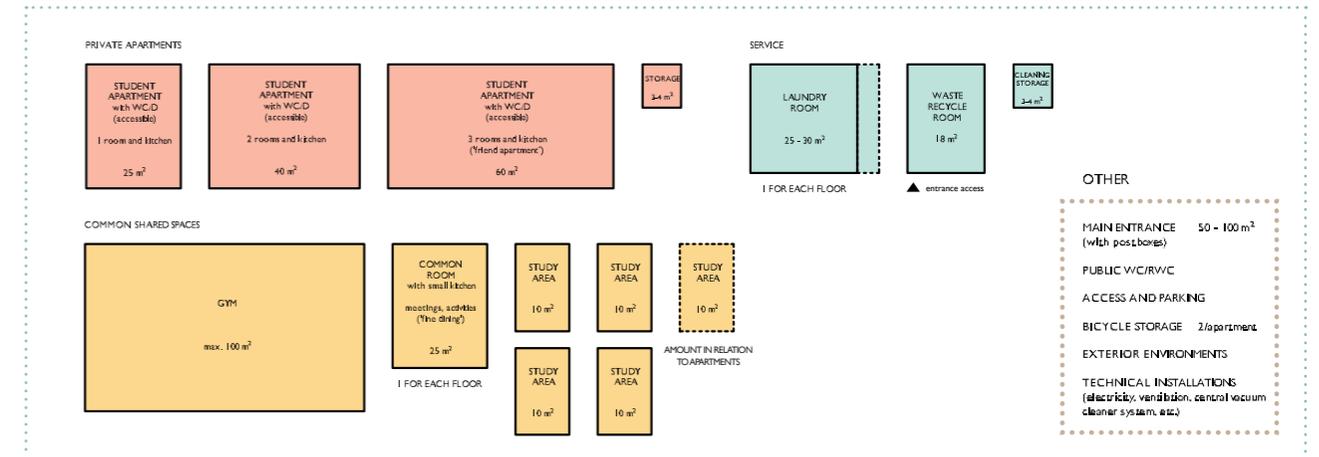
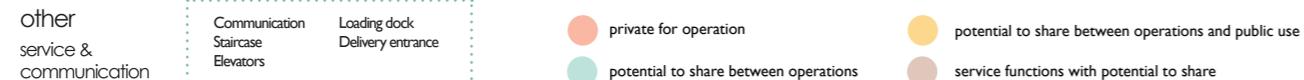
based on analysis, interviews and talks with users and professionals

functions and spaces

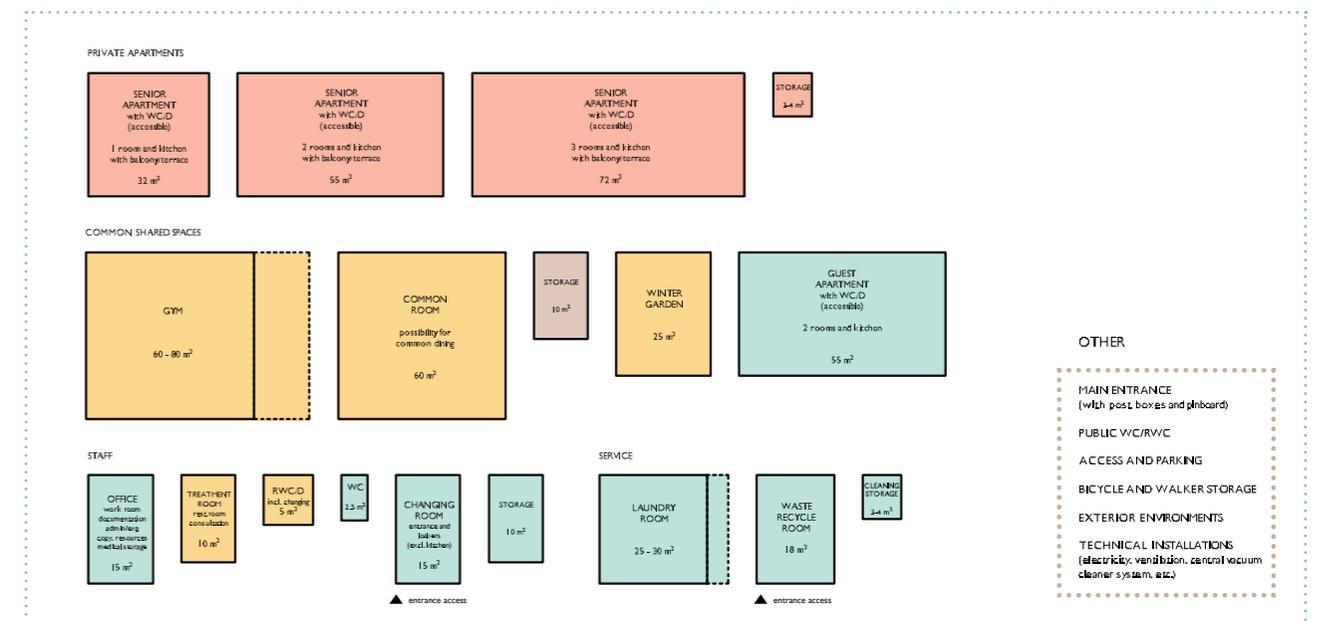
synergies & sharing potential
analysis of strategic programs



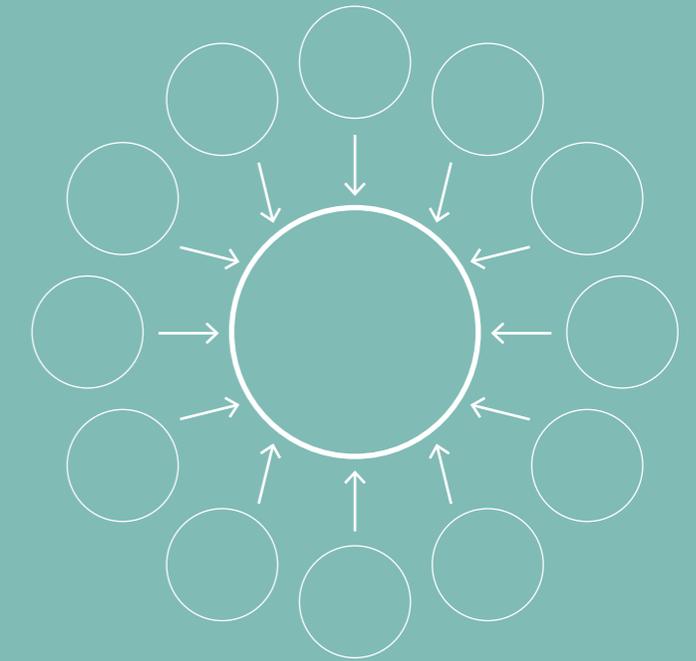
based on standards, data and information from Göteborgs Stad, Ramprogrammet (Göteborgs Stad, 2014b) and comparison of reference projects



based on standards, data and information from SGS Studentbostäder



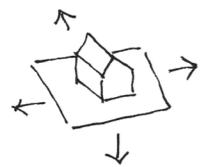
based on general information from Göteborgs Stad (Göteborgs Stad, 2016c) and comparison of reference projects



concept
& program

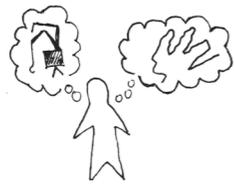
design strategies

goals



connect to surrounding context & neighborhood

break barriers
open up
impact social patterns & flow



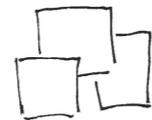
connect to identity, heritage & development

relate to qualities
emphasize & complement
inspire use & development



connect people

create community
promote networking
meetings & interaction
exchange & sharing



connect spaces & activities functions & use

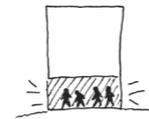
create a mix
break current separation & disconnection

1 + 1 = 3

connect to achieve synergy effects

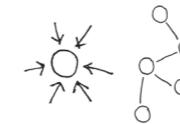
mutual benefits
'more together'

criteria and design strategies (spatial impact & qualities)



public ground floors

visible & accessible
interaction with surroundings



central core & networks of spaces

connectivity
meeting places & activity nodes



in between space

make use of communication space
flow & movement



interlinked spaces

layered & overlapping
sequence of connected spaces



zoning of spaces

private units vs.
flexible public, shared & common spaces

strategies (impact)



meeting places

social exchange
in environments



neighborhood center

central node & attraction point



positive friction

cross-flow & movement



24/7 use & activity

safety & interaction



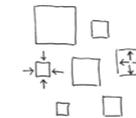
co-creation

creativity & collaboration



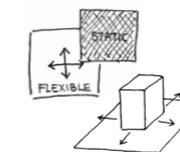
public & flexible program

various use, flexibility & adaptability



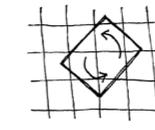
variety of spaces

contrast & dynamic spectra of spaces
small vs. large
open vs. closed



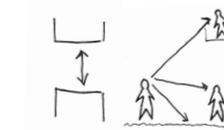
flexibility vs. static service

flexible & adaptable
multifunctionality
'function in focus'



break the grid

dynamic spaces
angles & interplay



connect between levels

second dimension & visual connection
overview & wayfinding
playfulness & experience

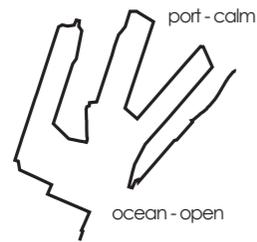


bridges & balconies

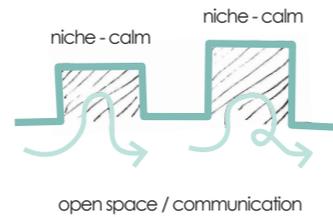
relate to heritage & existing character

design concept

inspiration and main ideas



function movement & flow

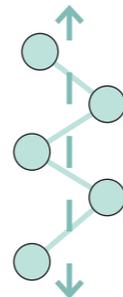


flexible niches & gaps

characteristic shape of piers
'flexible ports'



break horizontal character
link with verticality

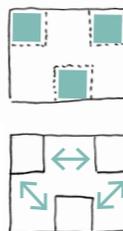


vertical street
'network'
meeting tree

'living building'



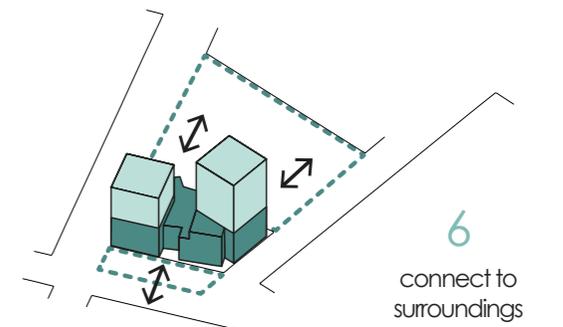
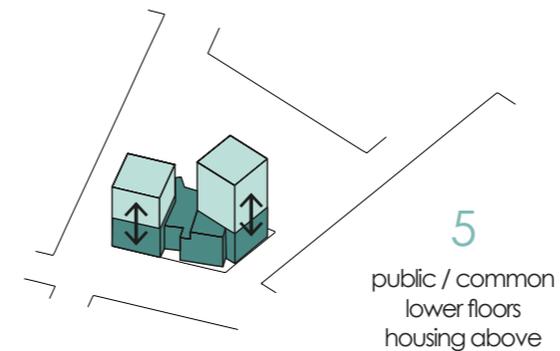
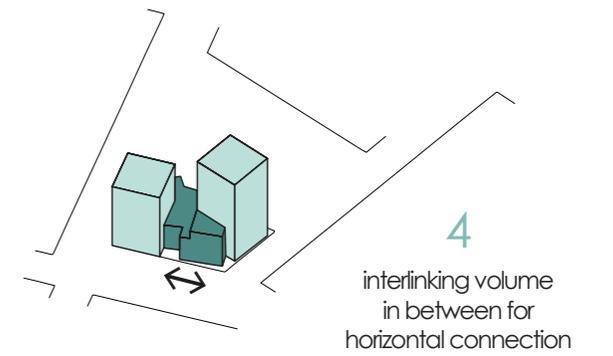
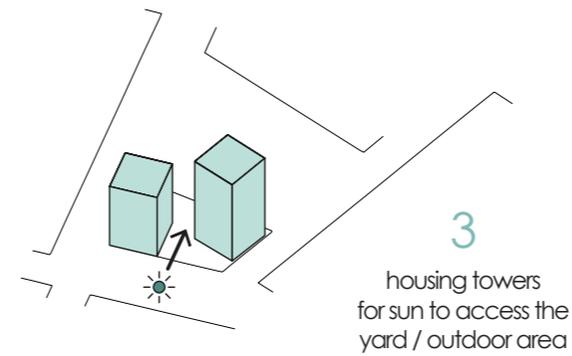
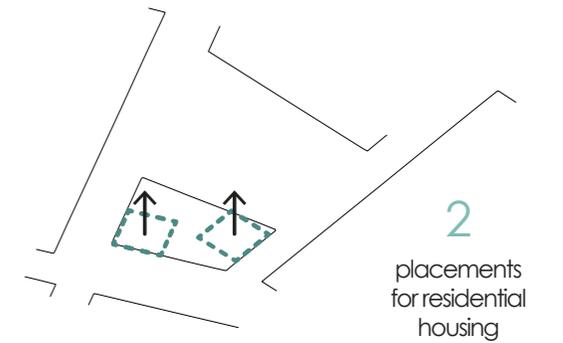
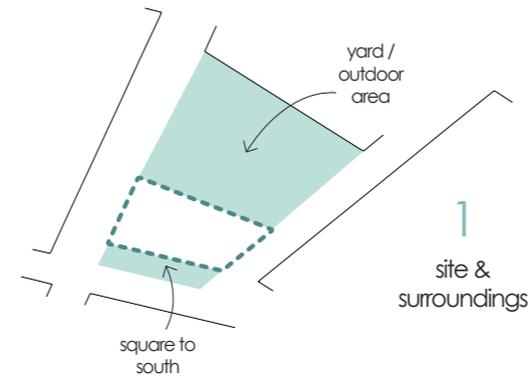
units & zoning



divided but connected

'nests' & communities

volume concept



program and operations

spatial figures
table - m², no & groupings

PUBLIC USE 753 m²

Ground floor	3 Air locks (2x9/10)	28 m ²
	Study lounge	20 m ²
	3 Seating areas (36.5/57/62)	155 m ²
	Multi space / Lounge / Seating / Comm.	365 m ²
	Restaurant serving area	24 m ²
2 Dishes and pentry (3/4)	7 m ²	
	5 WC + 1 RWC	28 m ²
First floor	6 Group / Activity Rooms (2x11/2x12/14/15)	75 m ²
	Study lounge w.pentry / Comm.	41 m ²
	1 WC	2 m ²
Third floor	1 WC + 1 RWC	8 m ²

COMMERCIAL & RENTABLE SPACE 220.5 m²

Ground floor	4 Rentable shops (23.5/27.5/38/39)	128 m ²
Third floor	1 Rentable common room (large)	59 m ²
Fourth floor	1 Rentable common room (medium)	33.5 m ²

GYM & REHABILITATION 201 m²

Third floor	Gym / Fitness / Rehabilitation area	139 m ²
2 Changing rooms (2x23)	46 m ²	
	2 Showers + 2WC + 1 RWC	16 m ²

TERRACES, GREEN ROOFS & PLAYSAPES 821 m²

Third floor	Roof terrace playscape	391.5 m ²
Fourth floor	Roof terrace gardening	98 m ²
Ninth floor	Roof terrace recreational w.view	331.5 m ²

STAFF, ADMIN. & SERVICE FUNCTIONS 638.5 m²

Ground floor	Info/reception	7 m ²
	1 Printer/storage	5.5 m ²
	1 Back office / administration	8 m ²
	Restaurant kitchen (prep/stor/deliv.)	131.5 m ²
	Café serving area	9 m ²
	Café kitchen (prep/dishwasher)	7.5 m ²
	Scullery	17.5 m ²
	2 WC	4 m ²
	Storage (1.5/2x2/2.5/3/5)	16 m ²
	Staff service corridor / entrance (4.5/7/24)	35.5 m ²
First floor	1 Kitchen office	11 m ²
	1 Janitor office	11 m ²
	Laundry/cleaning storage (3.5/23)	26.5 m ²
	1 WC + 1 RWC	7.5 m ²
	Storage/Tech. install/IT (1/3x1.5/3/13/21.5)	43 m ²
Second floor	4 Offices (10/2x14/15)	53 m ²
	1 Treatment room	10 m ²
	1 Staff break room	47.5 m ²
	1 Staff rest room	11.5 m ²
	2 Staff changing rooms (12)	24 m ²
	3 WC + 1 RWC	12 m ²
	2 Staff showers	4.5 m ²
	Storage / Resources (1/1.5/2/3/10/13)	30.5 m ²
	Comm.space / Lounge/Wait (19.5/32)	51.5 m ²
	Third floor	Gym reception
Storage (6.5/12)		18.5 m ²

CENTRAL COMMUNICATION 895.5 m²

Ground floor - Eleventh floor	Communication space (elev, stairs & corr. - 65/2x83/131.5/93/11x40)	895.5 m ²
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GROSS FLOOR AREA	BTA	8 522 m ²
BUILDING AREA (FOOTPRINT)	BYA	1 152 m ²
NON-RESIDENTIAL FLOOR AREA	LOA	3 348 m ²
RESIDENTIAL FLOOR AREA	BOA	3 122 m ²

RESIDENTIAL HOUSING 3 481 m²

Third floor	1 Guest apartment 2 ROK	59 m ²
	2 Laundry room (25/25.5)	50.5 m ²
	Residential storage (76.5/74.5) 18/17 storage units (35x2.5)	151 m ² 87.5 m ²
Fourth floor - Eleventh floor	1 Laundry room	25.5 m ²
	Residential storage 14 storage units (7x2/7x2.5)	52.5 m ² 31.5 m ²
3 Common rooms (small) (26.5)	79.5 m ²	
	18 Student apartment 1 ROK (26.5)	477 m ²
25 Elderly / Student apartm. 1.5/2 ROK (40)	1 000 m ²	
17 Elderly / Student apartm. 2/3 ROK (59)	1 003 m ²	
4 Elderly apartment 3 ROK (71.5)	287 m ²	
4 Elderly apartment 3 ROK (74)	296 m ²	

TOTAL 68 apartments, 49-50 storage units

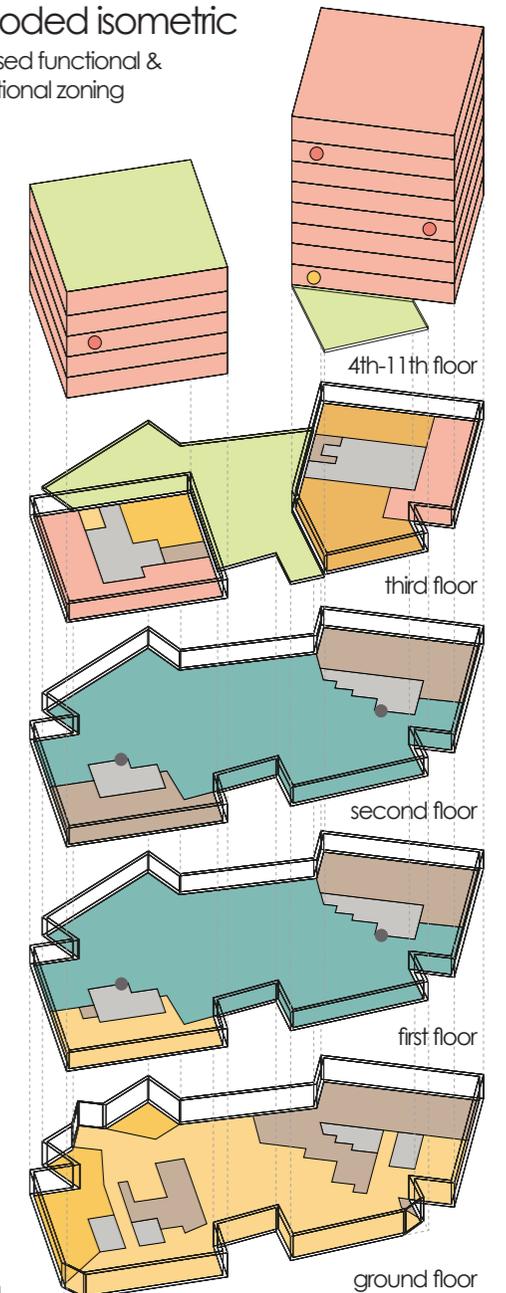
PRESCHOOL 1 383 m²

First floor & Second floor	8 Home rooms (40)	320 m ²
	8 Group rooms (15)	120 m ²
4 Ateliers (20)	80 m ²	
	2 Theme rooms (20)	40 m ²
4 Rest rooms (10)	40 m ²	
	4 Wardrobes (31.5)	126 m ²
8 Nursery/Washrooms (9)	72 m ²	
	16 WC + 2 RWC	49 m ²
Storage (4x4/2x3.5/2x8/4x3/2x1)	53 m ²	
	Activity room / Multi space	108 m ²
Communication space (165/210)	375 m ²	

divided equally between floors

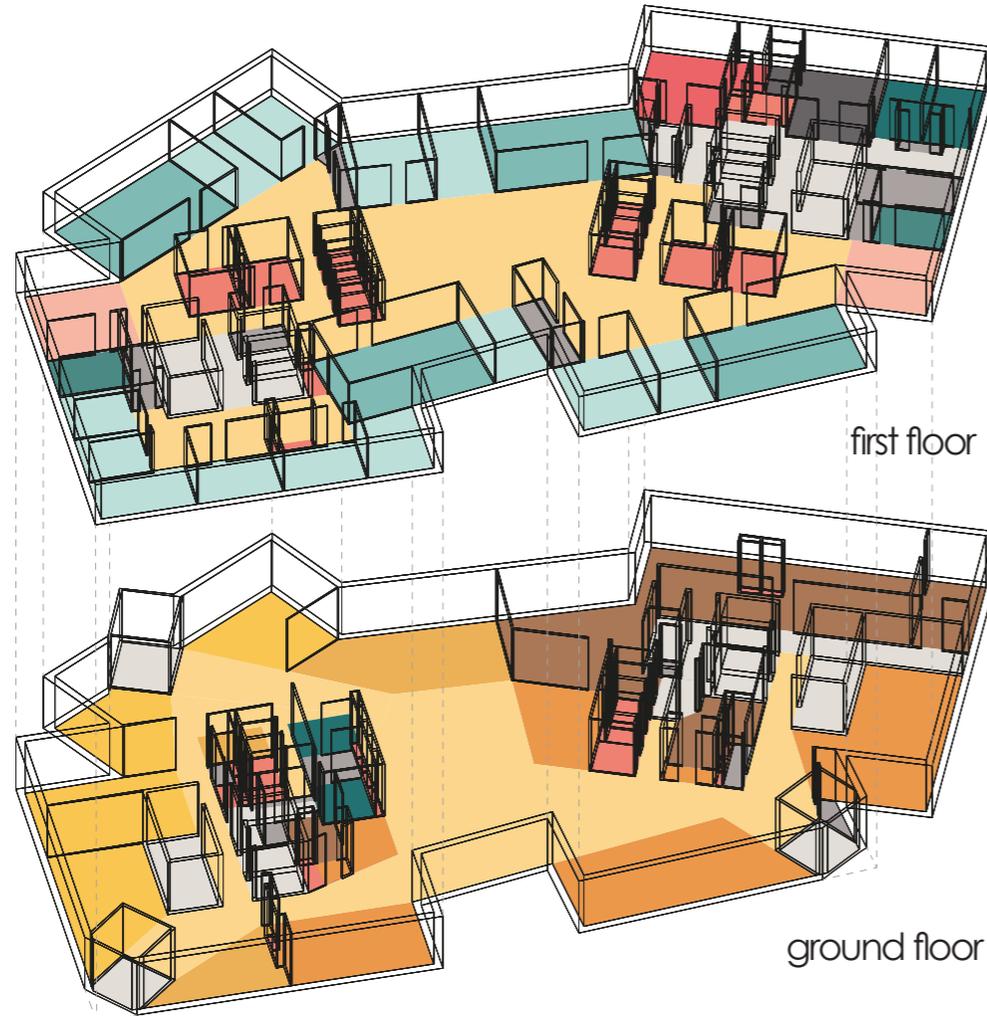
- public use
- preschool
- commercial & rentable space
- residential housing
- gym & rehabilitation
- terraces, green roofs & playscapes
- staff, administration & service functions
- central communication (elevators, stairs & corridors)
- public rentable common room
- private residential common room
- flexible zone - public access at times

exploded isometric
proposed functional & operational zoning



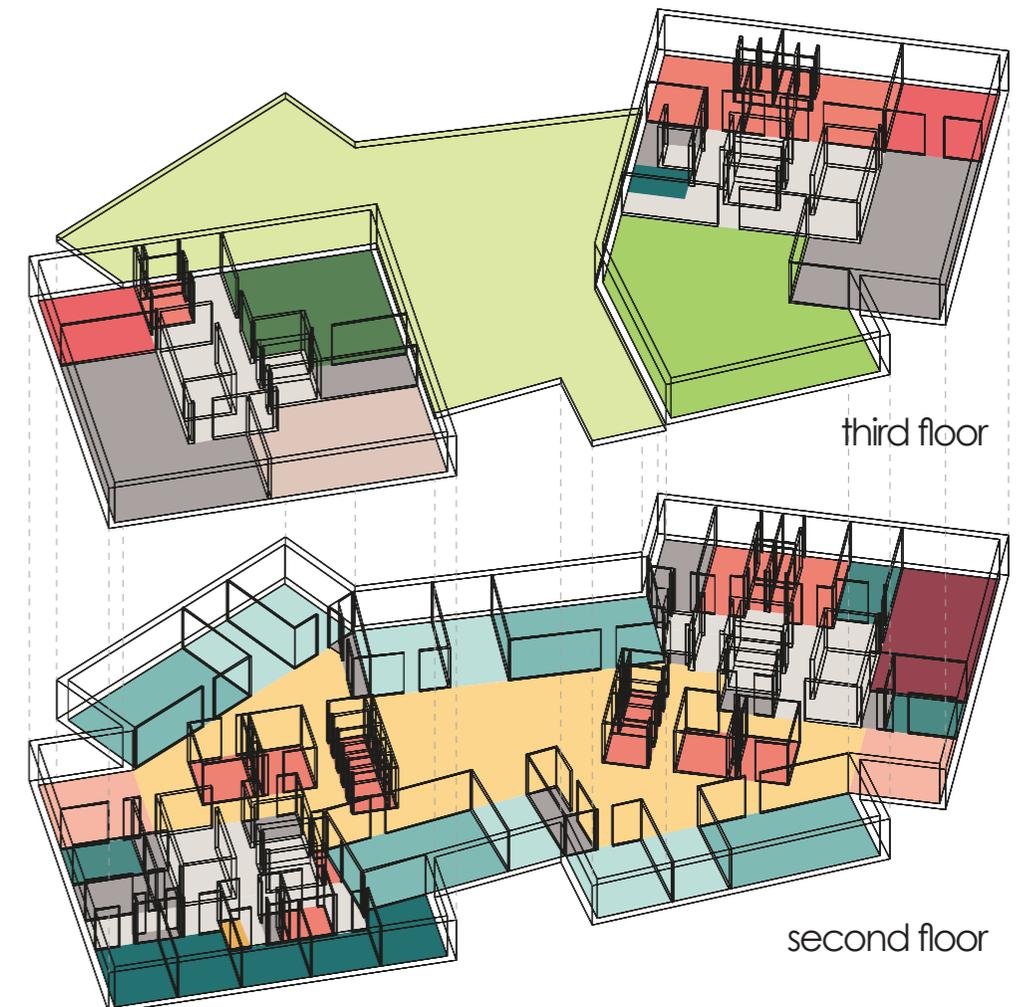
function diagram

Illustrates the spatial disposition, distribution and organization of spaces according to function types and use to highlight e.g. logistics, building systems, synergies and similarities within as well as between operational zones.



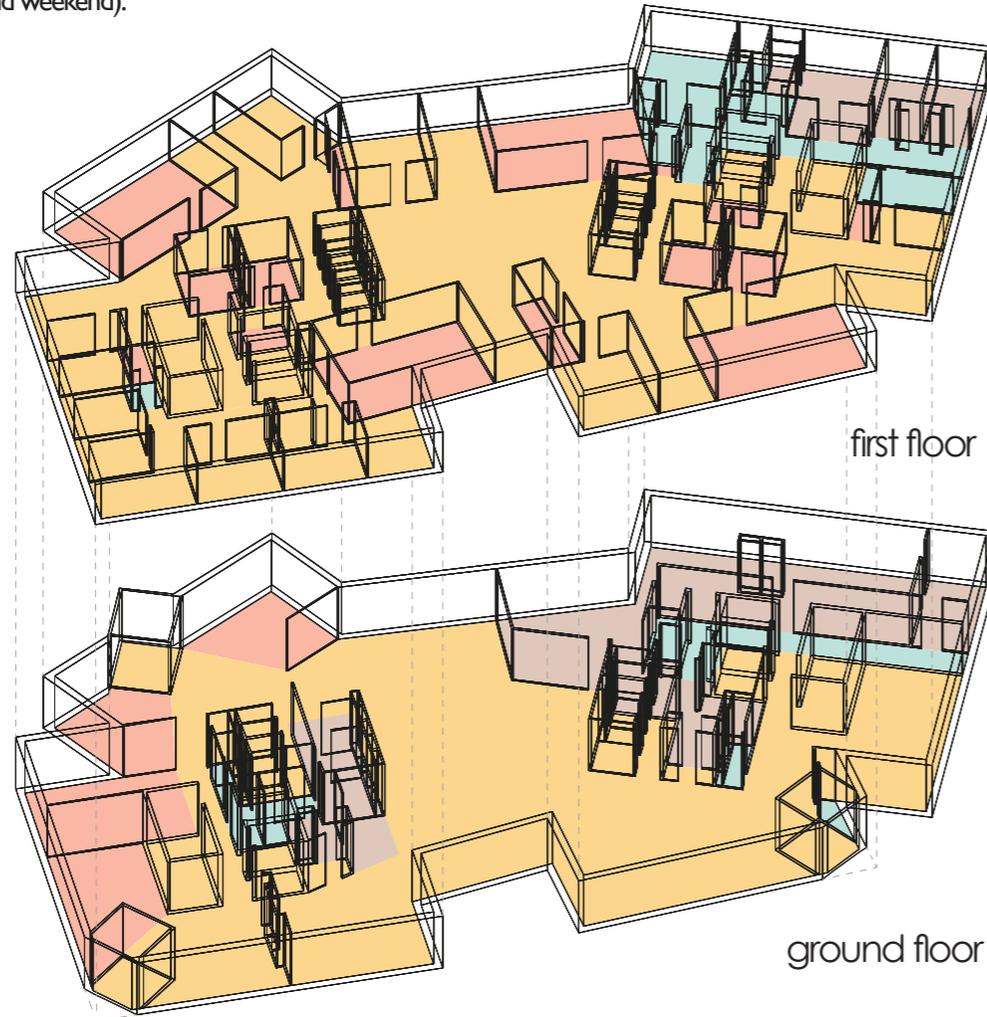
- flexible activity & multi space
- rentable commercial space
- lounge
- café/restaurant serving & seating
- group & activity room
- preschool home room
- rest room
- office & administration
- preschool wardrobe
- WC, RVC & changing room
- laundry room
- staff relax & break room
- roof terrace & playscape
- gym & rehabilitation
- rentable common room
- rentable guest apartment
- café/restaurant kitchen
- communication space
- storage
- technical installations

exploded isometric
proposed functions



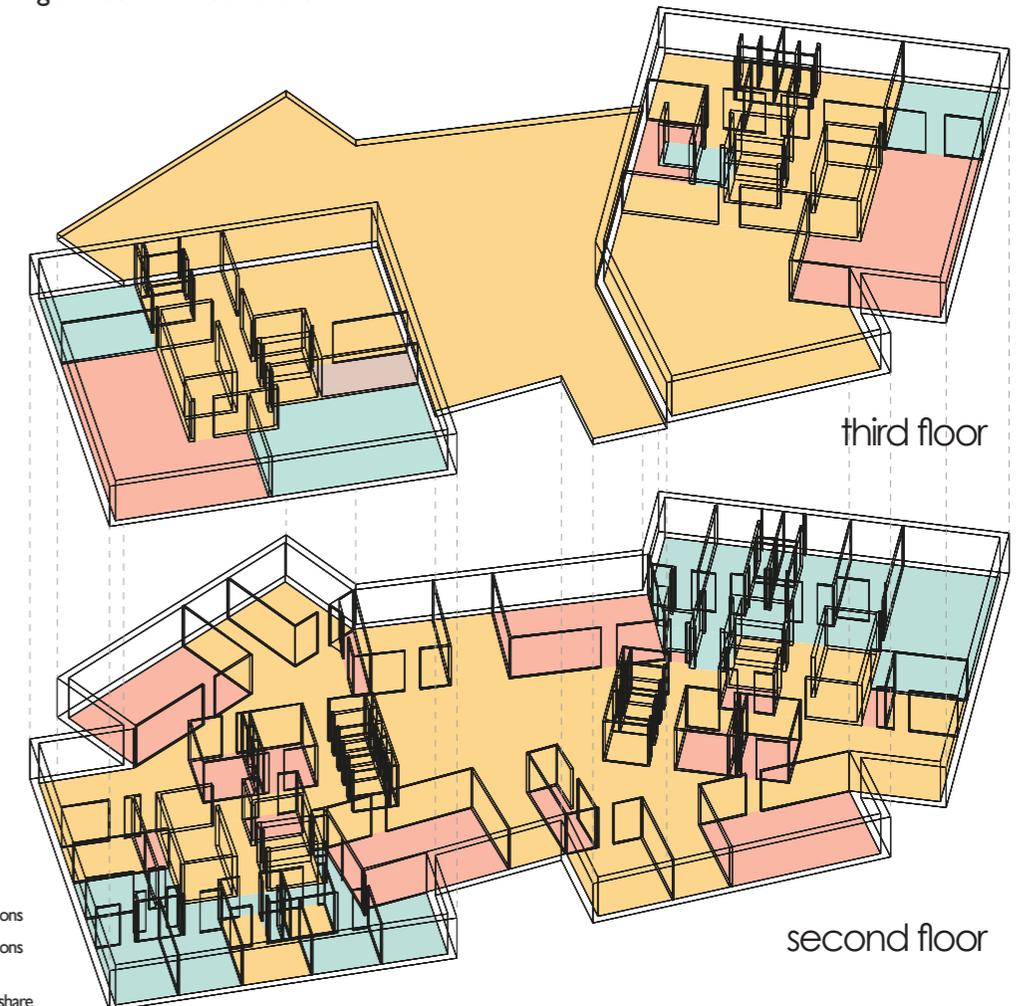
shared space diagram

Illustrates types and zones of shared spaces between target groups (private/public/staff). Zones may however change and differ depending on scenarios of time and use (e.g. between day and evening, weekday and weekend).

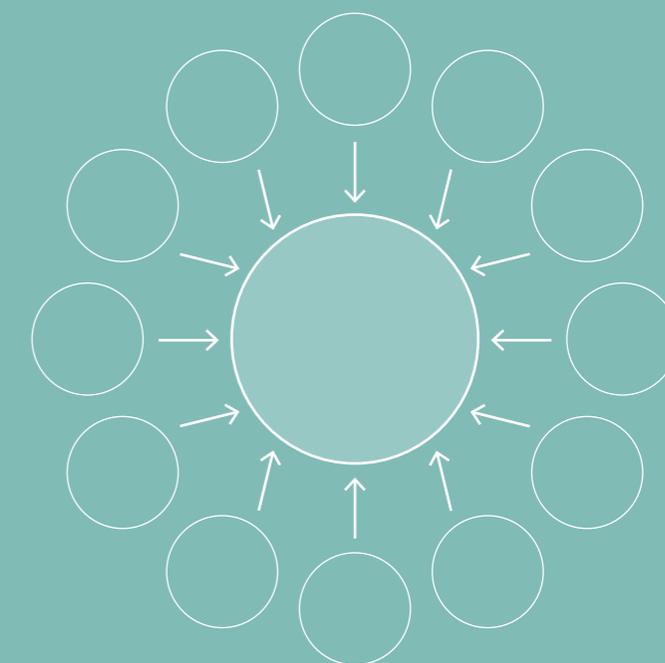


Shared spaces could be used at the same time together with other actors or when the core operation not is in use. Storage spaces and home rooms in the preschool could potentially be shared depending on needs and restrictions.

exploded isometric
types & zones of sharing



- private for operation
- potential to share between operations
- potential to share between operations & public use
- service functions with potential to share



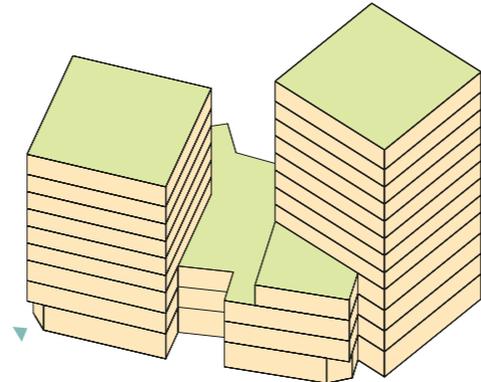
design

site plan

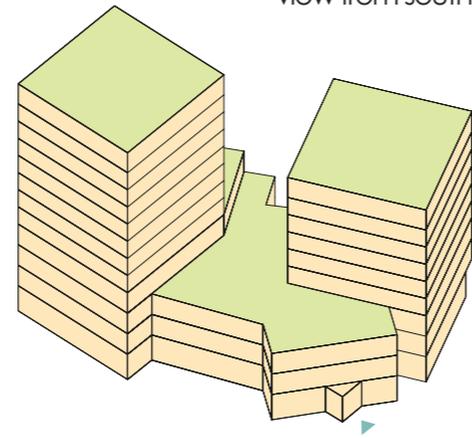
interlinkage with surroundings

The design proposal features a compact building volume with effective typologies and connected spaces, which utilizes almost the entire allocated plot. Basements are not planned due to flooding risks. Paving frame the volume and the building placement aligns with streets to east and west to announce presence, connect with surroundings and interact with heritage. Towards south a terrace and seating area with greenery is planned, which continues into the neighboring east block. The terraces offer meeting places and activity areas with sun qualities, establish square-like environments and connect over blocks by being able to 'spill out' in to streets. To the north, the building flows into a green yard, planned as an outdoor recreation, play and activity area for target groups and preschool children with complementary areas in close surrounding proximity.

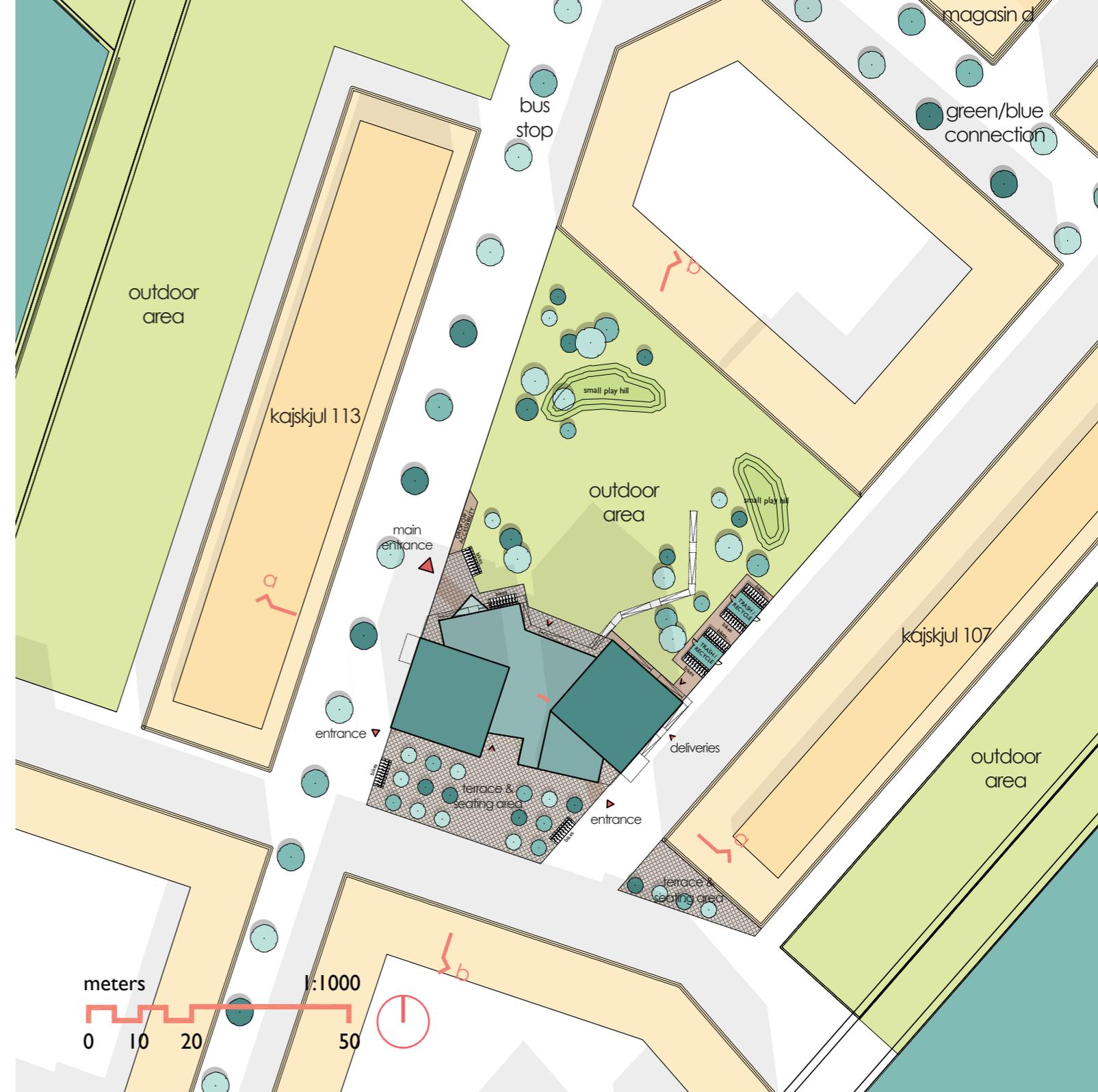
The building can be accessed through three entrance points, which connect to surroundings, achieve cross flow and create a public, open and inviting ground floor. Entrances are located and directed towards public connections (Backaplan, Gothenburg city center and Frihamnen district). The main entrance faces the yard and planned bus stop, where a drop of area is located to facilitate accessibility. Service, logistics and deliveries access from the east side and street, where staff spaces and functions are allocated. Trash, recycle rooms and bicycle storage are planned in separate building volumes to partially protect and enclose the yard. Ramps are proposed as sketches to enable connection to surroundings and facilitate access between levels and the preschool.



building volume
view from south



building volume
view from north



ground floor

interlinked spaces with interaction

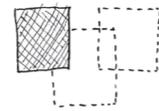
The open ground floor interlinks the building with the surrounding neighborhood and city. It is planned as a mixed-use community center with various meeting places, entrances and cross flow. Commercial and rentable spaces (e.g. for service, pop-up stores, market place or small shops) are located close to the main entrance and one sub-entrance facing towards the planned bus stop with viable flow. An info and reception desk is located nearby to enable service, administration and security with good overview.

Café and restaurant areas with connected kitchens and preparation are arranged centrally at the building core to enable take-away, accessibility, meetings and interaction between user groups (preschool children could e.g. have meals at times). A pantry is planned to allow heating of brought food or lunch boxes with connections to public and study spaces. Seating areas, lounges, multi spaces and open common areas are designed as flexible niches or integrated and overlapping with communication space to enable free seating, sharing, various use, multi-function and activities with different settings (e.g. lectures, performances, movie nights and exhibitions). They are arranged towards facades to interact with outdoor areas and seating. The open and flexible organization provides qualities in sightlines, movement and spatiality, however there are several opportunities to make partitions and zoning to allow variable spectra of spaces.

Vertical connections to preschool, study lounge, group and activity rooms announce the presence of functions

and operations in other floors to facilitate wayfinding. Two central communication systems and WC/RWC are located at the core of the housing blocks with adjacent post boxes. Staff spaces are primarily arranged centrally and to the east to facilitate easy access of logistics and deliveries. A service elevator and staff stair are planned to enable efficient connection to other floors and staff facilities.

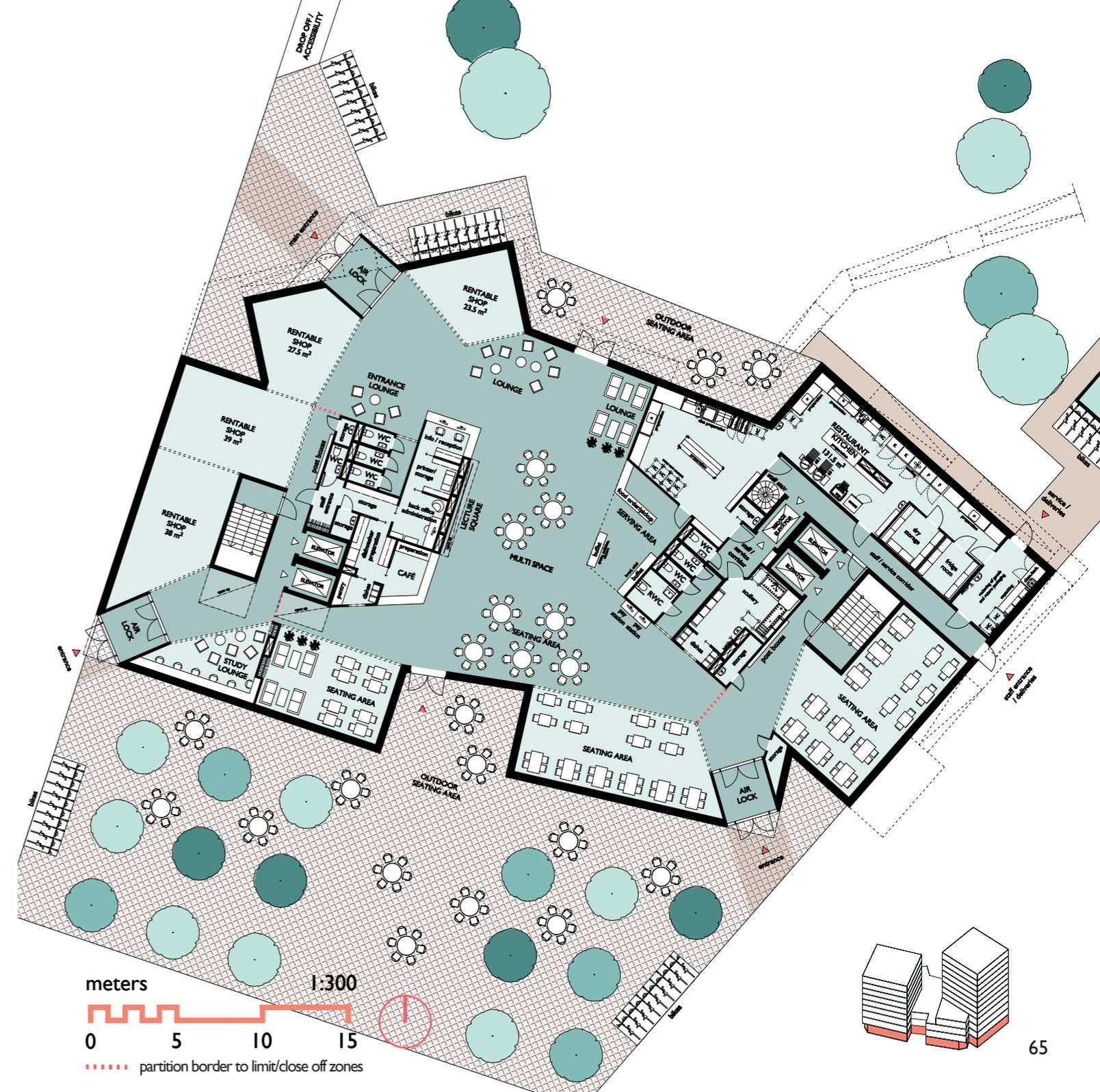
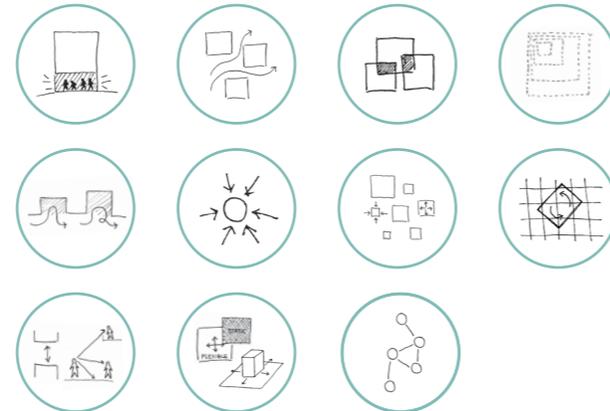
sketch idea



zones in surfaces & flooring

open & flexible boundaries & partitions (e.g. for niches in the ground floor, first floor and preschool facilities)

featured design strategies & concepts



second floor

interlinked preschool and staff

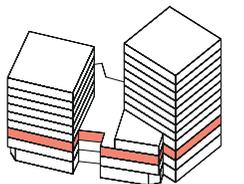
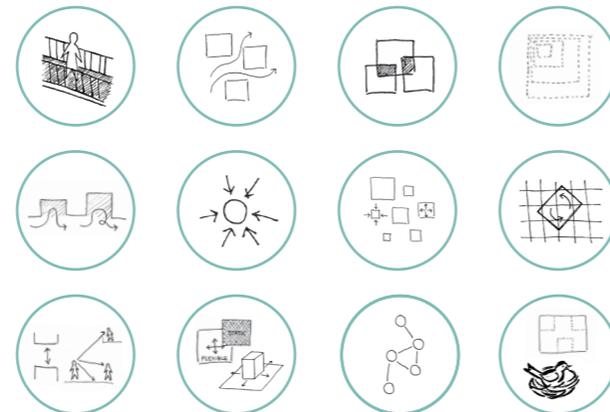
The second floor features preschool and staff facilities. In the west tower block four offices for preschool and elderly care are co-located along with storage, resource center (mail, copy, etc.) and WC/RWC to enable sharing and collaboration among operations. There is furthermore close proximity to groups and activity rooms on the first floor. A treatment room with a connected consultation corner, lounges and waiting niches are planned in communication spaces, which can be shared among all target groups. The west block is designed with staff break room, cleaning, storage, rest room, changing rooms, WC and showers. The service elevator and staff stair connect to staff facilities in other levels.

The arrangement of the preschool is the same as for the first floor (see previous spread for descriptions). The central area connects to the multi-space and activity room on the first floor through double ceiling height. Communication to home rooms, ateliers, theme and group rooms is designed as balconies with a connecting bridge in between sides. Skylights from a roof terrace situated above allow light to flow into the central core, provide spatial experience and interaction with surroundings. Balconies for strollers and outdoor rest are presented as sketches to facilitate outdoor access with connections to wardrobes and entrances. Locations are mirrored compared to the first floor for sun, variation and a dynamic expression.

In the case of changes in operations or needs, flexibility applies. The central stair in the open multi-space could be

closed off to enable other use on the first or second floor of the preschool (e.g. the scenario of only 1-4 preschool units in need at times during night, weekends, summer or holidays). Half of the preschool could hence be rented for other activities and operations. There is furthermore possibility to delimit or close off either preschool unit towards other units and the central space. It could be changed temporary or permanent to enable other types of use (e.g. offices or workplaces). WCs/RWCs could be split in between, wardrobes could be made into closed rooms by adding of walls and home rooms could potentially be divided into several rooms. Connections could also be made to other zones.

featured design strategies & concepts



third floor

interlinked 'second ground floor'

The third floor features public, shared, service and residential functions planned as a 'second ground floor'.

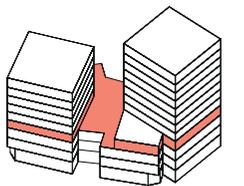
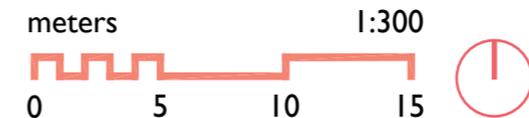
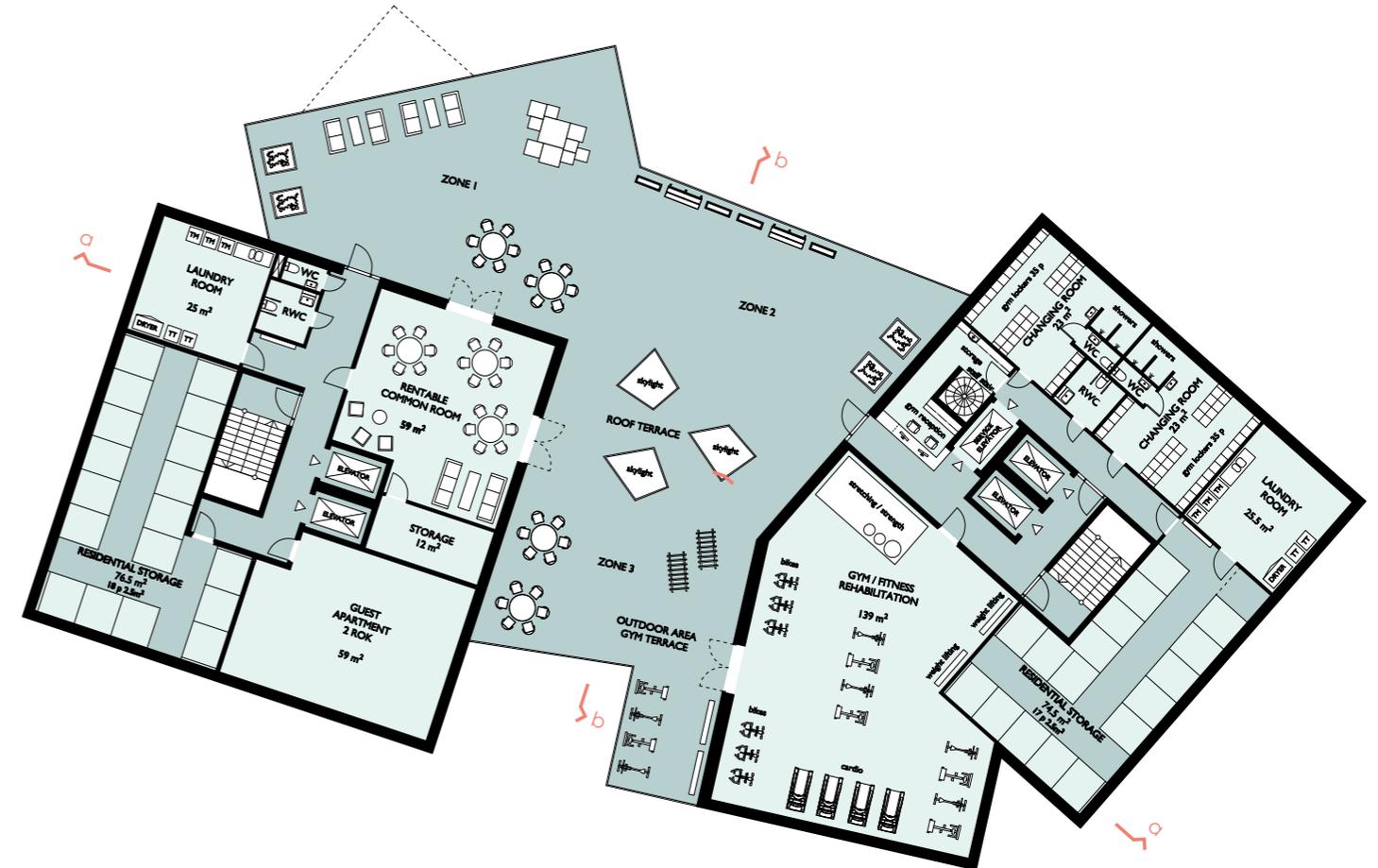
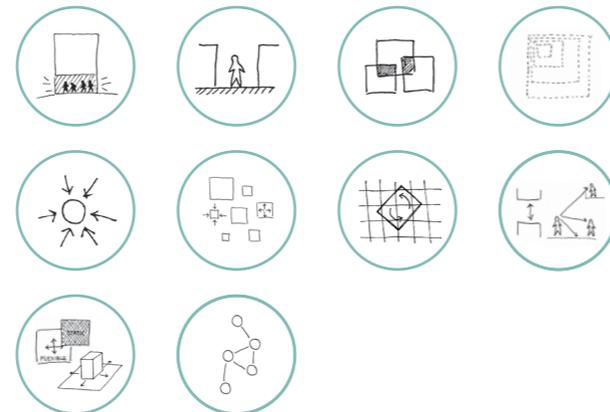
A roof terrace is planned with various zones to enable activity, relaxation and recreation, where various flows cross and target groups can meet and interact. It could furthermore be used as an additional outdoor area and playscape for preschool children. Skylights connects to the preschool situated on the floor below to provide visual connection. Window structures could be used as seating or activity areas.

In the west tower block, residential storage and laundry are located along with a rentable guest apartment and common room with connected storage. The guest apartment can be shared and rented between target groups. The common room can be used for gatherings and various activities with possible interaction and interlinkage to outdoor areas on the roof terrace. Public WC/RWC are planned adjacent as service to the common room and terrace.

The east tower block contains residential storage and laundry as well as a public gym with connected changing rooms, WC/RWC, showers, storage, cleaning and a reception desk. The gym is planned as an open flexible area with view. It enables fitness, physical activity and rehabilitation for all target groups with possibility to 'spill out' into outdoor areas on the roof terrace. The service elevator and staff stair connect to the floor to enable deliveries, logistics and connectivity with other staff facilities.

Residential storage is allocated on the floor as it holds public functions and as there is no basement in the building. Storage spaces are rentable for economic feasibility and viability as well as to reduce material ownership and encourage sharing. Spaces can also be rented by staff or the general public if not occupied by residents. Storage is otherwise planned within apartments.

featured design strategies & concepts



fourth floor

interlinked public and residents

The fourth floor features public, shared and service functions as well as residential housing with apartments in various sizes.

In the east tower, residential apartments, storage and laundry are located along with a common room. The common room can be used or rented for gatherings and various activities among all target groups. Common rooms are designed and distributed between building floors according to a proximity principle (see next spread for descriptions). Residential storage is allocated close to public functions as there is no basement in the building. Storage spaces are rentable for residents, staff and the general public to ensure economic feasibility and viability. Storage is furthermore planned within apartments.

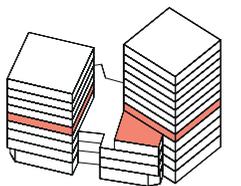
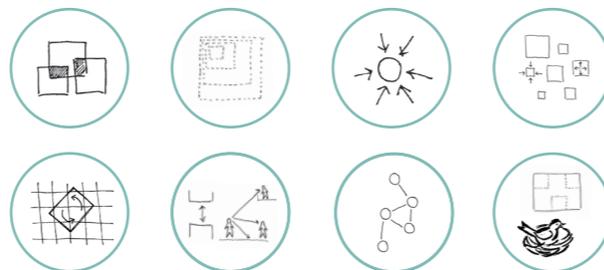
A roof terrace is situated above the gym (located on the third floor) and connects to the common room. It faces towards south and can be used for common and collaborative activities to encourage meetings and interaction between target groups. Preschool children can e.g. use the terrace for gardening and elderly can be invited to participate or help take care of plants and greenery during weekends, vacations and holidays when children and teachers are absent. Elderly, students and the general public can also make use of the roof terrace as relaxation and recreation space.

The west tower block is planned with residential housing type B (see next spread for descriptions).

additional terraces

An additional terrace is planned on the roof of the west tower block. It features recreational spaces (e.g. winter garden, pergola and garden of senses) with view over Gothenburg city. The roof of the east tower block could also be made into a terrace if needed or desired.

featured design strategies & concepts



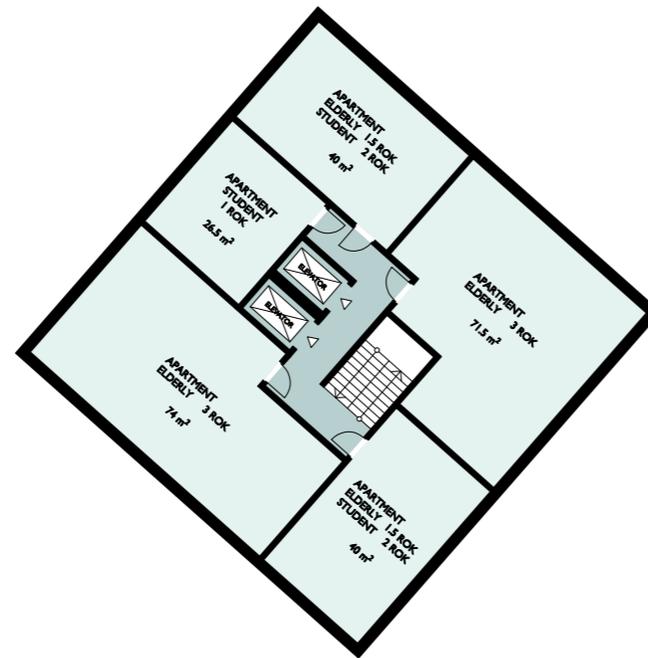
apartment typologies

4th-11th floor

flexible configurations

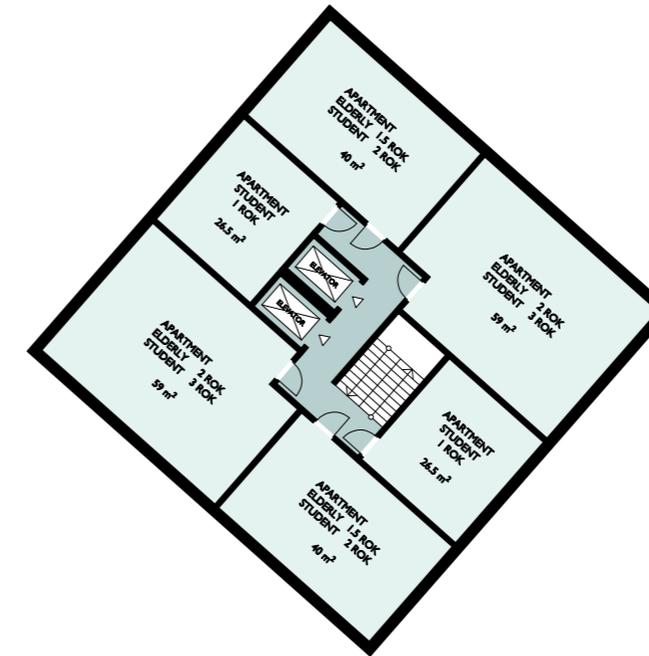
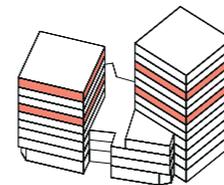
Residential apartments are located between the fourth and eleventh floor in the building. The west tower block is eight floors high and the east tower block eleven floors. Three residential housing types (A, B and C) and five apartment typologies are proposed - 68 apartments in total. Apartments are presented as outlined spaces, in accordance with the thesis focus and delimitations. Typologies are general to enable use by both elderly and students as well as to allow flexibility if needs and demands change over time. The ratio between student and elderly residents may hence differ.

Residential housing type C features a common room, which is planned as a flexible typology based on the 1 ROK student apartment size (26.5m²). It could hence be changed temporary or permanent into an apartment if needs, demands or rates of sharing and utilization change over time (connections and fittings for bathroom and kitchen can be prepared). Common rooms are distributed according to a proximity principle to not be farther than one floor away (up or down). There are three common rooms in total, which are mirrored between sides and distributed between levels in the tower blocks to provide various qualities and a dynamic network. Common rooms are primarily intended to be used by residents however can be rented by the general public at other times when not in use.



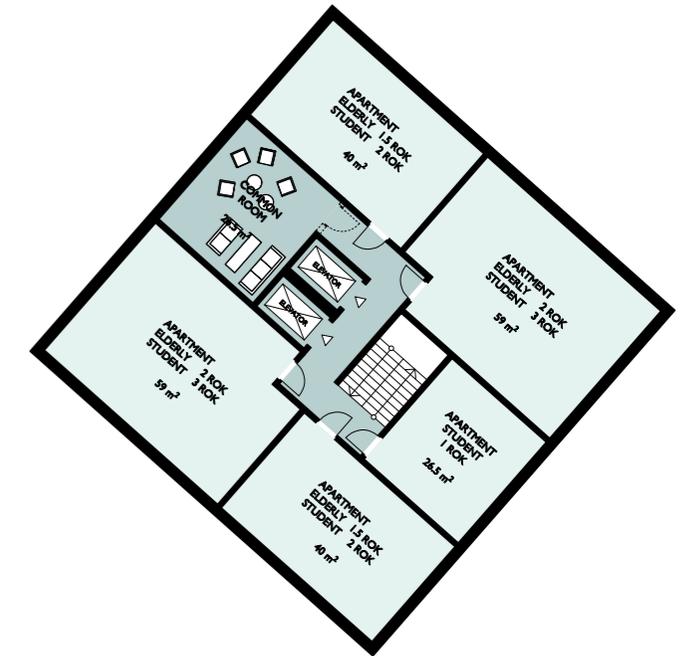
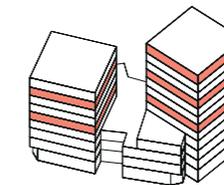
residential housing type a

4 floors
west tower block - 5th & 8th floor
east tower block - 6th & 9th floor



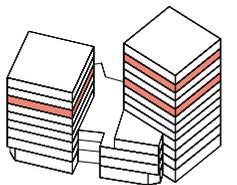
residential housing type b

5 floors
west tower block - 4th & 7th floor
east tower block - 5th, 8th & 11th floor



residential housing type c

3 floors
west tower block - 6th floor
east tower block - 7th & 10th floor



apartment typologies

- student apartment 1 ROK (26,5 m²)
- elderly/student apartment 1.5/2 ROK (40 m²)
- elderly/student apartment 2/3 ROK (59 m²)
- elderly apartment 3 ROK (71.5 m²)
- elderly apartment 3 ROK (74 m²)

featured design strategies & concepts



common room proximity principle

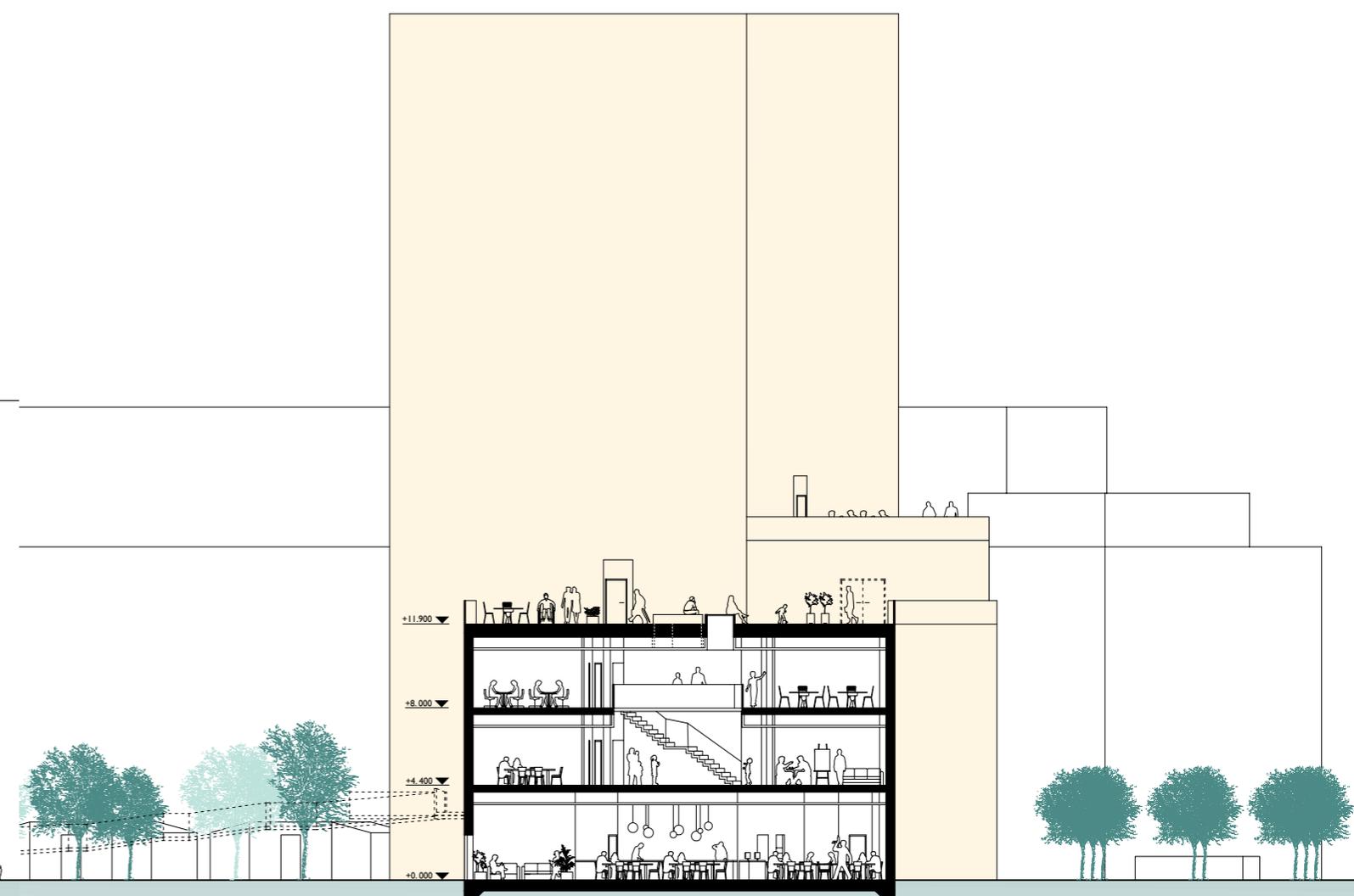
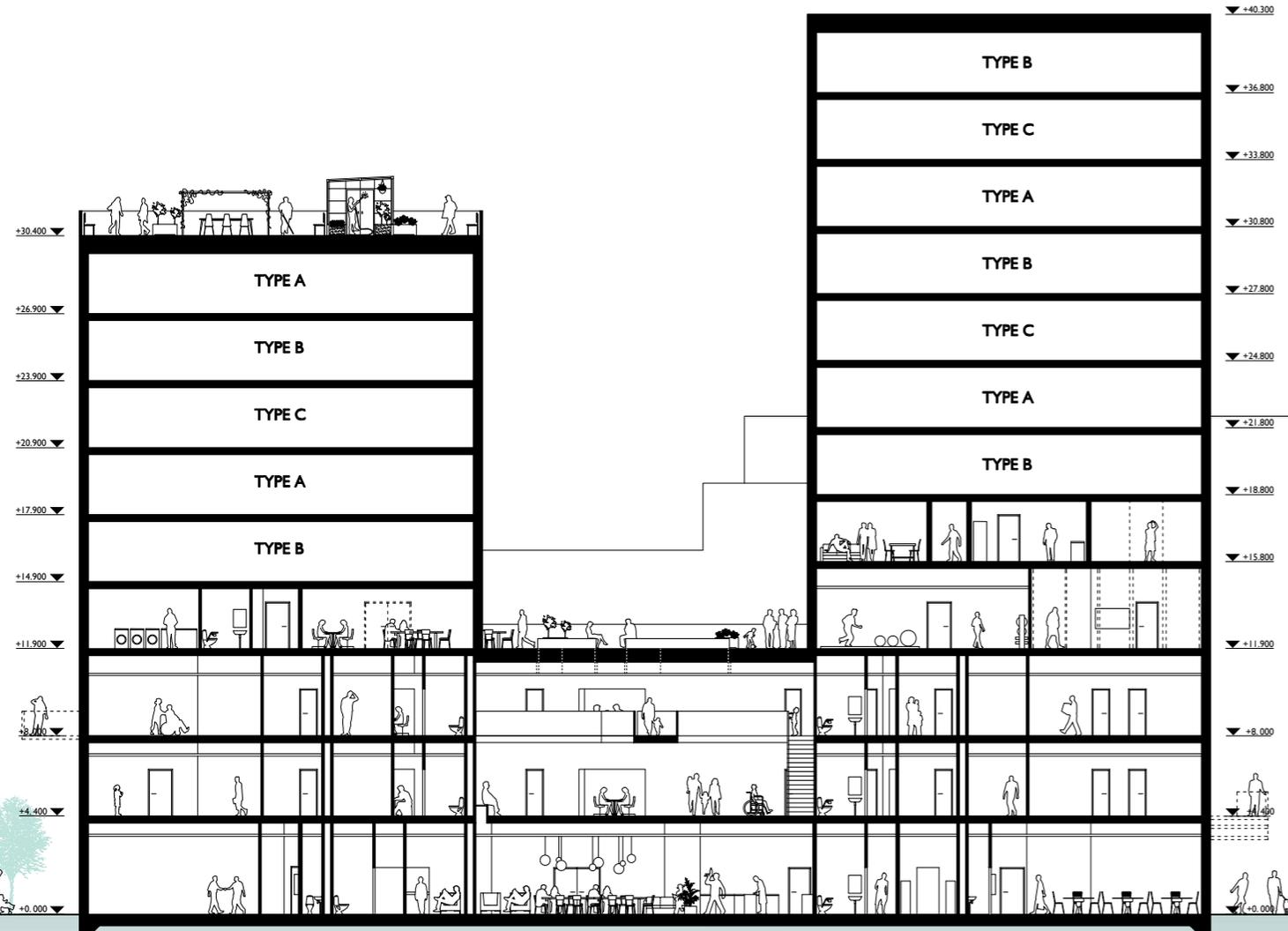


max. one floor away - up or down

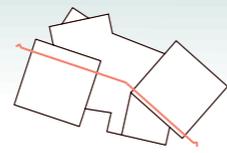
meters 1:300



sections

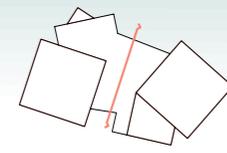


meters 1:300



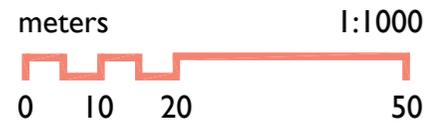
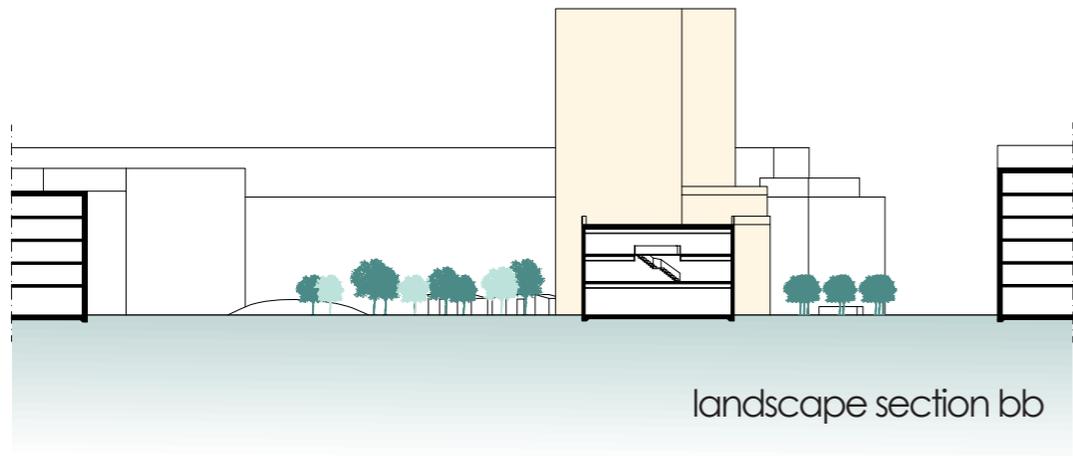
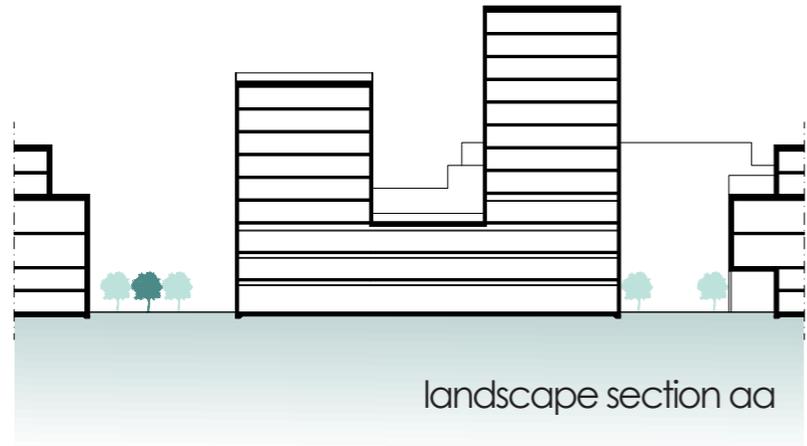
section aa

meters 1:300



section bb

landscape sections



Proposed building heights both interact and contrast with surrounding buildings.

materiality

contrasts - *hard vs. soft*



wood - sustainability vision
connect past & future



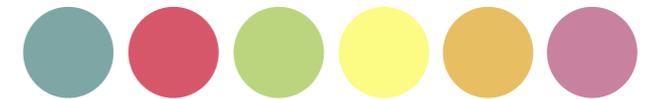
steel - industry
identity & heritage



glass - water
context



sedum - nature
context - existing/
planned parks



color accents/coding
playfulness & wayfinding

Materials are presented as a conceptual proposal where ideas are connected to inspiration and based on analysis of context and characterization.

(a as architecture, Haseqawa, 2015; Designworld, Hemberg, 2014; Free Photo Textures, 2009; Pinterest, 2016; Roof Top Sedums, 2016; TextureX.com, 2013)

discussion

Design questions have been considered as guiding principles for the thesis in development of the design proposal. They are addressed and presented through research, analysis, synthesis and design, where the design proposal provides an example how the case typology could be configured. The proposal itself along with drawings, illustrations and describing text throughout the booklet are considered to answer and be in line with design questions. The thesis is in this chapter concluded with a holistic discussion and reflection to complement the proposal. Design questions are addressed through reasoning based on gained knowledge and descriptive scenarios. Exemplifications are however not definite as flexibility applies and each individual case depends on aspects such as process, organization and demands with need for specific analysis and design.

design question 1 (DQ1)

What activities and functions can be interlinked for preschool, elderly care, student housing and public use through shared space and use?

Shared space and use can be considered to encompass the aspects time, space and people where interlinkage of functions and activities combines spatial and organizational principles. Spatial components and arrangements can enable flexibility and adaptability for various use, however organizational aspects are also needed to coordinate actors, scheduling and use over time as well as to establish rules, responsibilities and demarcations.

Functional synergies and similarities in activities between operations for preschool, elderly care, student housing and public use have been uncovered through research and analysis. Examples of interlinkage are basic needs and daily activities as displayed in diagrams, illustrations, comparisons and the design proposal (see e.g. p. 30-31, 43, 45-47, 56-59). Strategic meeting spots are e.g. entrances and communication space as well as shared/common spaces, activity nodes or where activities and functions overlap. Clear and logical configurations can be established through zoning and groupings of spaces and facilities into operations and degrees of private/public/staff. In response, connections, correlations, access and communication space becomes important to solve efficiently. Activities could be held and functions could be used at the same time, in parallel or

after one another depending on needs and demands. It can be enabled through flexible zones, partitions and booking systems administered by the info/reception desk and the janitor, which could expand their professional roles to become more 'host'-like.

Some space savings are made in the design proposal; however, the main approach and objective has not been to maximize reduction of space. It has rather been to maximize use, enable flexibility and dual-use as each operation is in need of their facilities and spaces in accordance with strategic programs. Some spaces are furthermore in use at the same time, which implies that spaces cannot be reduced. The design proposal enables spaces to be shared and used more, which results in more efficient use and higher rate of utilization over time.

Space savings through interlinkage can be obtained for the gym as only one combined space is needed opposed to two separate facilities according to strategic programs. Through sharing the gym can be used more over time and at different times by various user groups. The proposal furthermore features space savings in WC/RWC and less storage space for apartments to encourage sharing. Common rooms are fewer; however complemented with larger common and public spaces on the ground floor; which is commercially viable. Some area savings result from co-location of staff facilities such as offices/administration, changing rooms, break rooms, rest room and WC/RWC compared to if operations

were separated. In connection, the janitor office and info/reception desk enables space and personnel optimization. There are also savings in access, communication, service and technical systems such as entrance space, stairs, elevators, corridors, technical installations and waste/recycle rooms compared to if there were several buildings.

On the public ground floor, café and restaurant areas with connected kitchens are shared among all target groups. It results in space savings compared to if operations would be located in separate buildings. Seating areas, lounges, multi spaces and open common areas are flexible to enable various use and activities with different settings, e.g. for lectures, courses, workshops, conferences, events, performances, entertainment, movie nights, community groups, cultural activities, sports, games and exhibitions. The ground floor and connections in higher levels function as interactive spaces between user groups and the general public by interlinking the building, neighborhood and surrounding city.

There are strong synergies and correlations between meeting/group rooms and educational facilities. Activities involving studies, learning, exploring and creating could hence be performed together or at different times. Elderly, students and the general public could rent or make use of preschool premises beyond operational hours (during daytime, evenings, weekends, holidays and vacations), e.g. for study circles or self-studies in group rooms, common or cultural activities, movie nights, exhibitions, community groups

or other activities. Group and activity rooms outside of preschool operational zones are intended to accommodate use by students during daytime. Spaces could furthermore be used or rented by staff, residents and the general public for various purposes and common activities to gather and interact, e.g. events, conferences and meetings. Use by elderly in need of study space or preschool and kitchen staff having planning meetings and conferences could be enabled. There could also be the scenario of working from home and being in need of a group room for a day or a workplace/office nearby being in need of extra space. In connection, common rooms and the guest apartment are rentable and possible to share.

Staff areas for elderly care, preschool and kitchen are co-located to enable flexibility, sharing of spaces and facilitate organizational aspects. The placement and configuration of the treatment room enables *shared space and use* among elderly, children and students, e.g. for care, massage, rehabilitation, physiotherapy and foot treatments/pedicure.

The gym, terraces as well as outdoor activity and green areas function as shared spaces between target group where potential to meet, socialize, relax and have various common physical activities is provided, e.g. movement, games, play activities, sports, fitness and rehabilitation. It could integrate both young and old, however also enable use by the general public and surrounding neighborhood.

Eat, 'fika' and snack time have been mapped as activities of daily routines with synergies among preschool children, elderly and students, where the general public use also could interact. According to time mapping there are possibilities to interlink activities in different functions in the proposed design. Elderly could e.g. be invited to eat with preschool children inside the preschool. Conversely, preschool children could be served meals in the various seating areas of the ground floor to meet and eat together with students, elderly, guests and the general public. In the pentrys of the ground floor and first floor there are possibilities for students or guests to heat brought food or lunch boxes to enable common eating and seating. The café and restaurant kitchens could furthermore offer picnic baskets for outdoor areas such as the yard, terraces or field trips where children, elderly and students could meet and interact. On terraces and the yard barbeques could also be arranged together. Common rooms could be planned to enable booking for common celebrations, holidays, join-ups or birthdays. Families and the general public could be invited to take part in various functions and activities to socialize.

design question 2 (DQ2)

What values and qualities can be created for children, elderly, students and the general public through shared space and use?

Values from *shared space and use* for the featured case typology and design proposal are connected to stated drivers (see e.g. p. 26, 28, 30-31; see management report for general/other drivers) and relates to the question 'why share?'.

Shared space and use enables actors and operations to establish, achieve and gain 'more together than separately'. Investment and development may furthermore not be affordable individually. Co-location can provide proximity, access and connection to more or other spaces and resources. Spaces can be larger, improved or designed with higher quality through sharing, co-financing and increased capacity. In connection, more or improved services can be afforded (e.g. better quality in food) or are viable for stakeholders as investment and development, since more people gather on the same spot with increased cross-flow. Conversely, space savings and optimization can be made where allowed by synergies, scheduling, demands and needs, which may provide economical savings. *Shared space and use*, interlinkage and increased rates of utilization may in turn result in attraction, image, trademark, branding, more profit as well as higher market, property and square meter value. When not used by core operations, spaces can be rented to bring economic profit. There is furthermore potential to

subsidize or reduce rent levels for operations and tenants with the effect of less expenses or ability to use budgets on other aspects and values. *Shared space and use* connects to all aspects of sustainability (economic, environmental and social), reduces material ownership through more efficient use of resources and contributes to values for individuals and organizations. In consideration of ongoing and future development of societal values and lifestyles, there are potential gains from investment in *shared space and use*.

The conducted research and analysis indicate synergies and similarities between children, elderly, students and the general public where interlinkage through co-location has potential to provide mutual benefits and values to operations and user groups. *Shared space and use* promotes meetings, networking and common activities through a social environment, which in turn may encourage creativity, innovation and learning. Actors and users can benefit from each other with synergy effects in community, common areas, collaboration and by doing things together. The spatial configuration of the design proposal encourages and provides opportunities for interaction, inclusion and integration between generations and target groups with mix, meetings and socializing opposed to segregation and stigmatization. It counteracts and addresses segregation through sharing and mixed-use in terms of living, operations, service and public use, however may also impact aspects such as culture, opinions and debate. Safety and security in environments may furthermore be improved through openness with increased

utilization rates, movement, cross-flow and 24/7-activity as well as networking and establishment of communication, relationships, acquaintances and friendship.

Shared space and use could provide values for elderly by encouraging and motivating increased activation and physical activity. It may in turn generate health benefits and improved quality of life with major effects, values and gains in the long-term perspective (an important goal of many municipalities - both social and economic). It could create a sense of belonging, independence and importance as well as build trust, security and tolerance among all target groups. Elderly and students could exchange knowledge and advice or provide each other with support, contact, a sense of 'family', security and social interaction to counteract loneliness. There are furthermore values for elderly and children from interaction through common activities such as gardening, reading, learning, studies, music/performances, art and crafts, outdoor activities and walks. In connection, café and restaurant functions are synergy activities and meeting places for all target groups where interaction could occur and values emerge from. Children may find support and friendship in elderly and conversely minds of elderly may be stimulated and triggered by seeing children. Students and elderly may act as role models for children and all target groups are encouraged to practice and develop social skills in an interactive diverse environment as long as safety is maintained. Students or elderly could also function as extra help or have internships in operations if needed.

There are organizational benefits to *share space and use* between preschool and elderly care as well as for service functions, since it enables and facilitates collaboration and cooperation with improvement and efficiency gains in e.g. time, resources, personnel and maintenance. In connection, if the preschool is in use during night with night care there are also synergy and coordination potential to involve safety for elderly. The design proposal furthermore enables possibility to mix private and municipal actors, which could provide values or be beneficial regarding demand, competition or collaborative aspects.

The concept and solution to *share space and use* as well as the featured case typology may not only be advantageous and relevant for large and urban cities, but also beneficial for smaller cities and municipalities. There is reason to explore new configurations and solutions in society and built environment to develop and establish mixed lively cities.

reflection

double thesis

I am proud of my thesis accomplishments, managing to carry out and follow through interlinkage of two professional fields and educational programs. It has enabled me to showcase skills and highlight strengths in various areas. The two parts have informed, inspired and supported each other with knowledge (theory, research and empirical studies vs. architectural case, analysis, sketching and design proposal). In connection, performing a thesis during an entire academic year has allowed the work and process to mature in parallel over time and to switch flexibly in between fields.

process / lessons learned

The thesis work and process has brought insight that *shared space and use* constitutes a complex topic, which has proved to involve and interlink many diverse aspects and potentials. The thesis scope has hence changed and grown over time. It has truly been challenging and developing with a lot of knowledge gained from studies and taking part of experiences, opinions and views from practice. *Shared space and use* as a topic has been very interesting to explore with high relevance and actuality. The importance of analysis, synergies and drivers became very apparent as well as to balance and compare objectives through leadership and collaboration to overcome boundaries.

design

It has been interesting to explore synergies and meeting places through design as well as to challenge and test the idea to not locate the preschool on the ground floor. Moreover, to handle zoning and interaction between private/public/staff, work with non-static rooms and not divide, partition or make demarcations into separate or specific functions. It proved to be influential and important to handle communication, zones, flows and potential governing or space demanding operations early on, opposed to spaces and operations with greater flexibility and adaptation.

challenges

Shared space and use is to large extent dependent on actors, scenarios and organizational structures, which can vary and be very different. The analysis and development of the design proposal would hence have been facilitated by having contact and dialogue with actual users and stakeholders. It has been challenging to work on the design proposal through fictive actors, since analytical possibilities are limited and rather based on reasoning, assumptions and estimates. It furthermore implied that not all proposed planning and design strategies from the management part of the thesis could be applied. Strategies and research have however been taken into consideration and to a large extent supported analysis and development of the design proposal.

further exploration

It would have been interesting to establish dialogue and collaborate with actual users and stakeholders to carry out additional analysis in-depth as well as to study operations that have developed or worked with *shared space and use* over time. It has been intriguing to investigate communication and representation primarily through images as format throughout the process, which has provided new knowledge, skills and techniques. It would be interesting to explore even more in future projects. Aspects of interest to develop in the design, although not within the scope and delimitations of the thesis, are sketches and investigations of window placements, facades and materials. In extension, other case typologies and synergies could be explored to contribute to research and the societal discourse with different perspectives on *shared space and use*, networking and mixed/multi-use development (e.g. cultural facilities, community centers, small scale commerce or service, offices, co-workplaces, hubs or entrepreneurial incubators).

contribution / future research

The design proposal comprises an exemplification and enquiry on the topic. It does not claim to be definite or final as the design could be developed further and other solutions also are possible. The thesis however contributes to ongoing discussions with possibilities in terms of sharing, integration, interlinkage and future visions how to live, work and play. It furthermore provides perspectives on quality of life in dense urban city settings as well as future organization of cities and communities. A certain case of *shared space and use* is explored with hopes to provide knowledge, inspire and be of use to others to build upon ideas or develop other sharing typologies. It furthermore hopes to inform the ongoing development of *Vision Älvstaden* and *Frihamnen*.

I look forward with excitement and interest to follow the development of *shared space and use* in the time to come.



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Planning and design of shared space and use in early stages

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and public use in Frihamnen, Gothenburg*

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