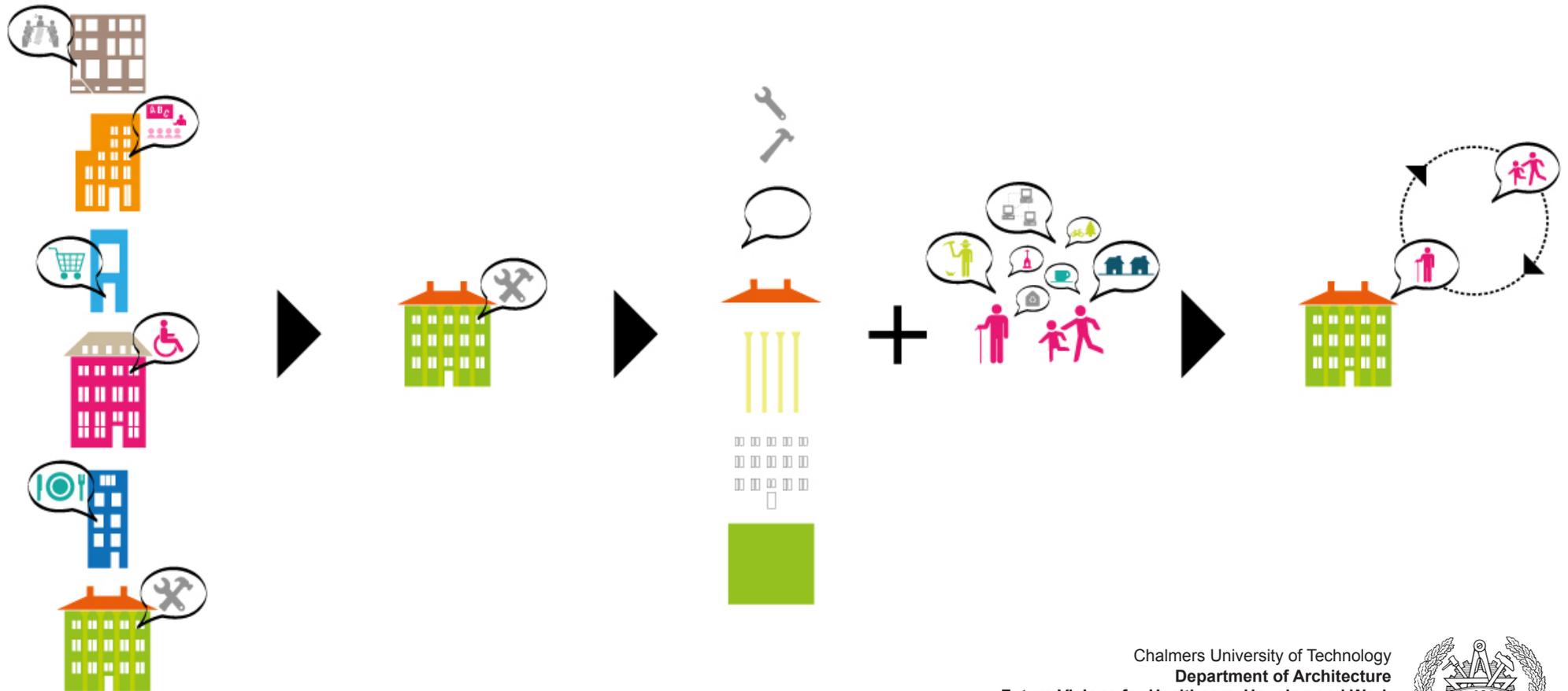


ADAPTABILITY POTENTIAL IN EXISTING BUILDINGS FOR ELDERLY HOUSING: THE CASE OF GRÅBERGETS SJUKHEM



ABSTRACT

The main topic of this master thesis is handling of the delicate question where our elderly will live in the future, combined with the personal interest of the author in flexibility and adaptability of the existing buildings. Today, we are faced with some of the fundamental changes in our ways of thinking about the future. Housing is one of the fields where most changes will occur and in which we need to be as innovative as possible. Approach of “research through design” is believed to be the best way to handle a complex topic such as this. Possibilities that materialize in flexible architecture have to be put on test.

By use of the design theory, history and research cases, this thesis approaches the idea of more adaptable architecture as a great possibility for the future housing of senior citizens. Main set of requirements derives from the questionnaire done by the ScandInfo Marketing Research about the interest for safe-haven in Gothenburg. Material gathered there is implemented in a real life project of senior housing in Gothenburg. Other requirements are gathered in as a set of limitations and/or general design remarks. The “real-life study” was supported and helped by the City of Gothenburg’s local office and Senior Gothenburg – an organization for elderly.

Guideline questions for the
ADAPTABILITY POTENTIAL IN
EXISTING BUILDINGS FOR ELDERLY HOUSING:
THE CASE OF GRÅBERGETS SJUKHEM

1. Where does the potential for the future of flexible housing lies?
2. Could a set of tips and ideas for adaptability in housing exist?
3. How to raise the quality and number of safe-haven buildings in the existing housing market by the use of ideas derived from adaptability potential in existing buildings?
4. In what degree does showing of the design and making decisions, process helps expanding the knowledge about architecture? Is this thesis something that could inspire further discussions on the topic?

Purpose of the entire work is satisfied when the answers to these questions are found.

KEYWORDS

In-between housing, safe-haven housing, elderly, flexibility, adaptability, variety, Gothenburg, Sweden

THIS THESIS WOULD BE INCOMPLETE WITHOUT YOU ALL.

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FRAMEWORK

One of the steps of writing this thesis was setting the framework for the entire study. From the basic idea of what the thesis should be about, to the more detailed delimitations for the proposal we can divide everything into 2 parts.

METHODS regarding the research part of the thesis.

1.1. LITERATURE

Books, magazines, newspaper articles, Internet articles and other forms of literature that have been used in this work have all been limited to the subject of residential objects and/or flexibility and adaptability in objects. They served to explain the topic and definitions used in this thesis, illustrate housing experiments that helped forming what we today consider positive examples in flexible housing and similar. Written reports and statistics regarding the position of elderly in Gothenburg and Sweden were very helpful for understanding the position on the subject of elderly housing. Questionnaire about the interest in safe-haven housing commissioned by the City of Gothenburg was one of the most influential reports since it gave insight to the thoughts of future users. Building manuals and handbooks were used in two manners. First is the usual “guideline” way of usage and the second one is getting familiarized with Swedish standards. Understanding the qualities considered important for a Swedish architects was important for the overall quality of the proposal.

1.2. REFERENCES

After the literature, research cases are the second most important method used for creating the thesis framework and deeper understanding of the subject. Divided in four groups, they influenced the proposal when it comes to design questions. Main focus was again on the more or less flexible housing projects, this time in any category (elderly, for all ages, students...). All the projects that were looked further at are listed in the appendix of the thesis. For the sake of better understanding, one project from each group was presented with a little more detail and explanation.

1.3. TUTORING

Inga Malmqvist, the tutor from Chalmers University and my examiner who helped with a never-ending knowledge and ideas about the subject.

Marianne Hermansson from the “Senior Göteborg” organization who helped to get in touch with the people from the City’s office and with the project selection between the six buildings that were offered to work with.

LIMITATIONS regarding the proposal, from the very general to specific design issues.

2.1 Starting point is located in the personal preference of the author. Main focus of the thesis lies within the field of residential architecture, more narrowed to one type of the in-between housing in Sweden – safe-haven housing.

2.2 The building itself and the definition of what this type of in-between housing should consist from set the first frame. Another of the earlier phase limitations was choosing of a particular building to work with. Set of questions was raised in order to conclude which object is the most suitable to continue working with.

2.3 Next point regards the main focus of the thesis, adaptability of the existing housing, so the limitation was set for working with the floor plan, excluding the change of building construction as much as possible. Simplified explanation is that the vertical water and canalization lines should stay as intact as possible, as well as bearing elements and the facade.

2.4 Final limitation was the time-frame and the questions of how much work can be done in a single person investigation. It resulted with the focus on existing residential part of the building, excluding the office and administration area.

These types of design and process guidelines are a practical solution when a task is not clearly set or there are too many open-ended combinations.

POINTS OF VIEW: THE CITY AND ITS ELDERLY

When you ask a person about how they think people live in their old age, answers you get are often limited. That is not the case in Sweden, where housing for elderly has a long history and is regarded very important. But the development of housing options for senior citizens has just begun, and it will inevitably increase as the number of consumers increases as well.

A growing population of older people in our civilization demands attention from the architects and city planners. A city like Gothenburg has 14.8 percent of people above age of 65 living in the city and only 77 objects that address their needs.¹

The municipal representatives and organizations working for elderly people's rights have set a goal – this urgent need for appropriate space for the ageing society has to be met. In order to achieve this, new models of housing are emerging. What is preserved is the combination of high autonomy in living with aspects of availability, assistance, services, and security combined with the social life. A systematic overview and detailed assessment of advantages and disadvantages, requirements, general conditions and costs has to be conducted so that the spectrum of possibilities for living in old age can be presented to a broader audience.

Although a growing field of research and interest, there has been no big consequence in quantitative terms when it comes to safe-haven housing in Sweden and more specifically Gothenburg. As a city, it is facing a rapid increase

of inhabitants such as elderly - a target group with specific requirements. Impact of decisions made today should encompass the elderly of future and therefore planning is of out most importance. City, with its municipal sections and organizations for elderly people have to work together on our common future's development.

One of the results of such work was a decision to procure 300-400 flats belonging to safe-haven housing in the period of 2010-2012. The Administrative Office of the City of Gothenburg and a wide range of officials contributed with comments and suggestions on this matter. Three types of today's special housing for older citizen groups are: safe-haven housing (trygghetsboende), senior housing (seniorboende) and community accommodation (gemenskapsboende). The increase in these types of housing will be done by construction of brand new objects or refurbishment of the existing structures. Since 2009 there is a group organized by the City, working with the process of development and implementation of the action plan proposed for this matter. Their goal is to work with this question in a transparent manner that will create solid grounds for the continuation of building such objects.

¹ Source: NBSW, 2010, 2011c; Statistics Sweden, 2010

INFORMATION ABOUT THE ELDERLY

“A nation’s greatness is measured by how it treats its weakest members.”¹

I have heard this quote expressed in many different speeches, from many very different men. But the truth behind it remains the same. We show who we are by the way we treat others, especially those who we can hurt the easiest.

Systems of short and long-term care for elderly are different from country to country and sometimes not even comparable. In Northern Europe, there is a strike of similarities between the ways government treats elderly people. In Sweden caring for the needs of elderly has been a part of public interest starting as early as 1900. During the 1965-1975 and the Million program² a mark for architects how to approach building and planning of housing for elderly in the future was set.

Today, we are aware of the phenomenon of ageing society and the fact that world’s population over 65 is increasing in great numbers. The challenge is how to create best opportunities for the younger people without taking anything away from the elder ones. The number of elderly people in Gothenburg is increasing and there are needs for more diverse housing market, where it is easier for people to choose the way they wish to reside. There is a goal set for 2010-2012 that around 300 to 400 safe-haven residences will be

planned in this period and built in this period. There are three ways that this can be achieved.

1. Planning for the new buildings
2. Renovation and rethinking of the existing buildings that today have a different function
3. Improvement of the existing buildings

The number of pensioners in the group of 65+ people will rise from the 74 000 in 2009 to the 92 000 in the year 2025. Today, 93% of people from the 65-years above age group live in the ordinary housing, of that approximately 2/3 in the apartment buildings and 1/3 in the houses. With age, that sort of living brings problems not only to the elderly individual, but also to his or hers family and neighbours.

A new generation of elderly is emerging. They have higher incomes and education than before, which affects a lot how they perceive the needs they will have and where they wish to live. A development of home care and home health care increases opportunities for older people to remain in their homes or homelike residences for longer time. Many people are emotionally related to the apartments they occupy and they wish to stay there as long as possible, even with a more frail health.

Seeking out new places to live is one of those big decisions that are triggered by a major change in lifestyle such as moving out of children, retirement, friends leaving and so on. Therefore, when people finally make this decision it is important to ensure that the new housing corresponds to a certain set of expectations and rules. Elderly people are interested in living in the environment that promotes health, is physically

accessible, conveys a sense of security and enjoyment and is near to the various kinds of services.

Today, elderly citizens of Sweden can choose between three types of different, so called “in-between” housing. In the ordinary housing market, this type of residing represents a collective term for different types of accommodation that allow elderly people to live in a secure and comfortable situation. By the communal definition, these are safe-haven housing (trygghetsboende), senior housing (seniorboende) and communal accommodation (gemenskapsboende).

SENIOR HOUSING (seniorboende)

Senior housing is an ordinary type of residences with a purpose to increase the mingling opportunities with the family and friends for the ones living in it. Most often, people residing in this type of housing have the age of 55 and above. Building’s design is not strictly defined, common spaces in- and outside of the house are a requirement and the level of accessibility moves from normal to high (depending on the age of the house and its renovation).

COMMUNAL ACCOMMODATION (gemenskapsboende)

This type of housing offers an alternative for people of all ages, in most of the cases above the age of 55. Main advantage (and disadvantage) of this housing is the level of privacy residents can achieve. As with the case of senior housing, these buildings should be easily accessible, varying from normal to high level of standard.

¹ Mahatma Gandhi

² The Million Programme (Miljonprogrammet in Swedish) is a housing programme proposed by the government in 1965, following the reform of pension’s system in 1959. Plan was to build a million new houses during the period of 10 years (1965-1975) in order to provide home for everyone. The project/programme had many flaws and is still a topic of heated discussions among Swedish architects.

source: <http://sv.wikipedia.org/wiki/Miljonprogrammet>

SAFE-HAVEN RESIDENCES³

“Safe-haven residence is not the official translation of the Swedish denomination “trygghetsboende”. According to the Ministry of Health and Social Affairs (MSHA) the official translated should be sheltered housing (MHSA, 2007a). But since this term also is used to designate housing for dependent seniors with a complex set of personal needs (multi- diagnoses, dementia), this term seems to be inappropriate. To this housing, older people move in order to experience a sense of safety, security and social companionship. In some cases, they know each other from before, but in most cases not. Still, the main characteristic of the residents is that they have little or none age-related frailties.”⁴

Today’s acceptable translation of the denomination is “senior housing for assisted living”. However, we will continue to use the term of “safe-haven” throughout the thesis since it mimics in the best way what this type of housing significances.

This type of housing is intended for persons older than 70 years. It may be a part of larger residential areas or of an apartment block. The accessibility and barrier free design by the SS91 42 21:2006 allows tenants easy movement throughout the object. This type of housing is provided with a common room for socializing and

activities, places for residents to eat together and meeting place outdoors to promote the neighbourly communication. In addition to the common areas, each resident has his or her own home (2 or 3 rooms and a kitchen). There is a daily staff support day for the everyday tasks and safety reasons.⁵

The goal of safe-haven residences is to offer a security people over a certain age might need and seek in their daily undertakings. It also puts significance on the public and common areas that must be accessible and safe for everyone to use. The staff mentioned as existing in this housing is not of a health-care kind.

3 Information given in this part of the thesis comes from the Strategier och ramverk för mellanboendeformer för äldre i Göteborgs stad, written in May 2010 by Senior Göteborg under the Göteborgs stad, stadskansliet, enheten för Välfärd och utbildning

4 Andersson Jonas E, 2011, pg 168, endnotes 8

5 To get a complete picture of the rules that apply to government investment 2009-2012 refer to the Ordinance SFS 2007:159 and the mandatory provisions and general advice BFS 2007:8 / BFS 2009:22.

Göteborg Senior

THE QUESTIONNAIRE¹

There is a strong incentive to improve the living conditions of elderly. It is important to include not only the city operatives and builder companies, but as well, the representatives of elderly groups and allow them to have a statement regarding any new proposals. People wish for higher freedom of choice when it comes to their homes and better input from the government and local communities and easier access to the knowledge of options and alternatives.

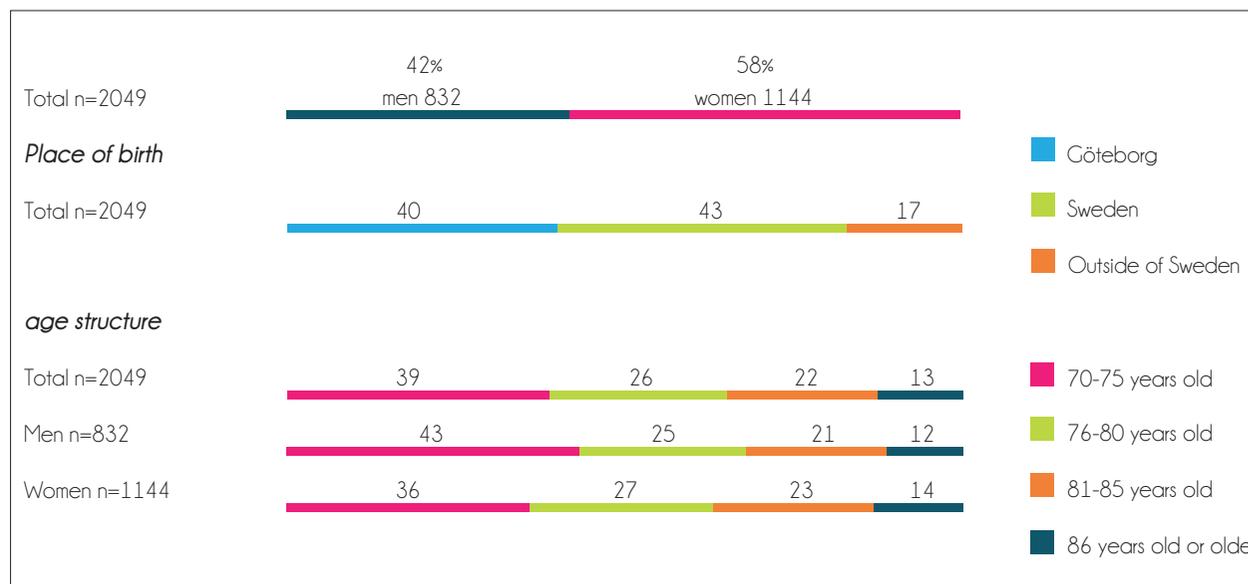
In understanding of the building's users, we are one step closer to achieving the flexibility of a building. Since it was impossible to collect valuable data in the time-frame of this thesis, information was gathered from other sources. The "Senior Göteborg" organization for elderly people shared with me a questionnaire regarding the interest in safe-haven housing. It had much needed information about how future tenants feel about this type of buildings.

People of age 70-90, living in the Gothenburg's municipality, participated in this research about future tendencies in elderly housing. Final number of people involved in the questionnaire is 2049 with a frequency of 69% answered questions. Questions were divided in 4 sections, in total with 46 questions and an open-ended section at the end where they you could write any comment they might have.

Sections answer to the:

- 1: living today: inquiries about how they live at the moment and their thoughts about the current housing
- 2: living tomorrow: the vision about their future housing
- 3: safe-haven housing: questions regarding the specific type of housing
- 4: background questions: household inquiries, general lifestyle questions etc.

Throughout the thesis, information gained from the questionnaire was used in different ways. From the starting point, when the choice between the six buildings offered by the City of Gothenburg office was made, to the last, design related dilemmas.

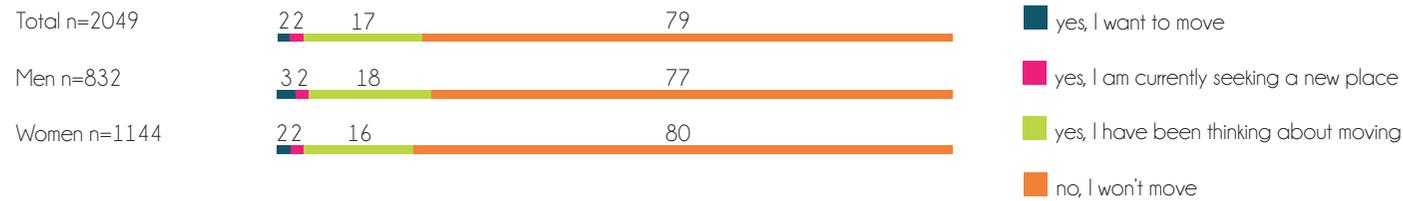


¹ Questionnaire's source: "Intresse trygghetsboende Göteborgs Stad", David de Courcy, ScandInfo Marketing Research nr: 15151, december 2011

Time spent in the current housing



Decision to move



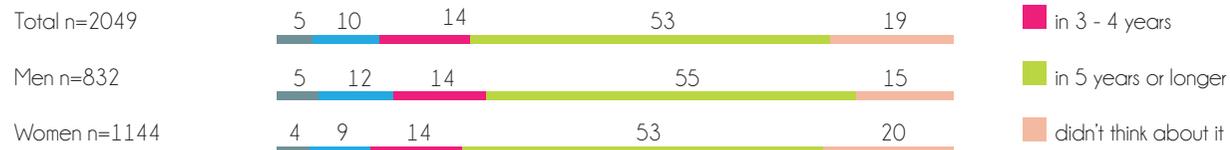
How interested are you in safe-haven housing



When do you wish to move to safehaven

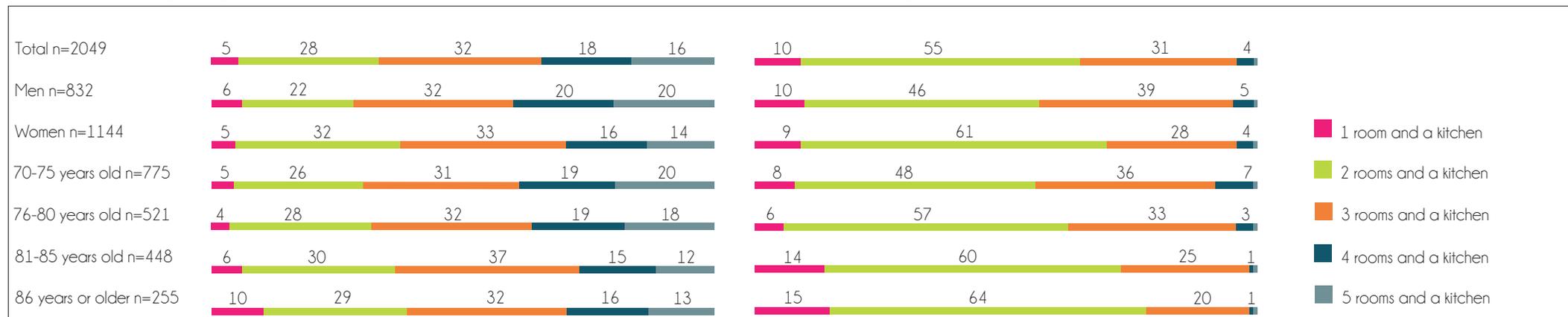


When will the moving be possible



Size of the housing today

Size of the housing in the future

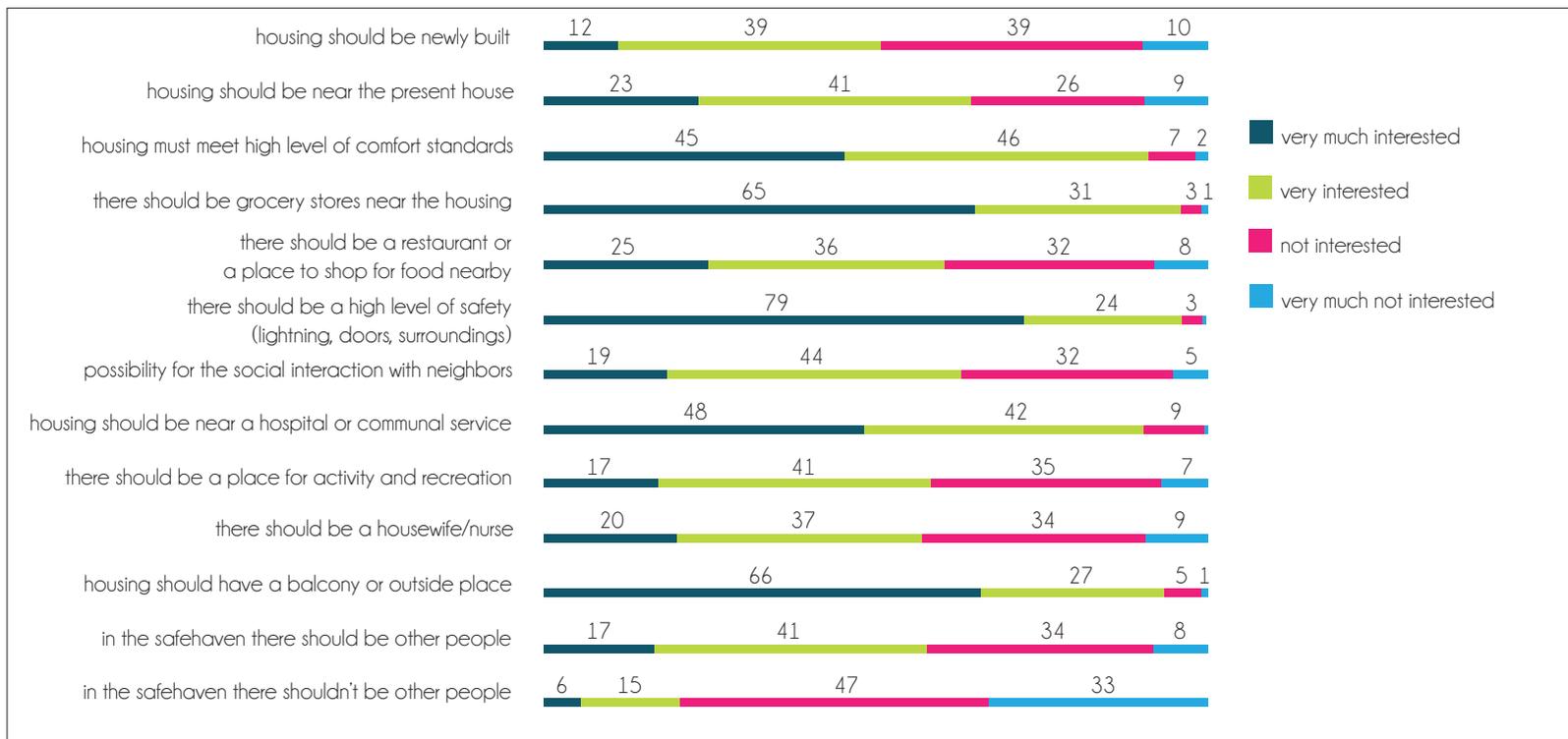


Type of the housing today

Type of the housing in the future



Important to know



Questionnaire's source:
 "Intresse trygghetsboende Göteborgs Stad"
 David de Courcy, ScandInfo Marketing Research
 nr: 15151
 december 2011

FLEXIBILITY IN HOUSING

Part of the research process was to get familiar with the topic of flexibility and adaptability through books. One of the most influential readings I had was the “Flexible Housing” by Schneider and Till (2007).

In this book there is a chapter about history of flexibility in housing. It is of outmost value to understand how the housing evolved through ages and where it could lead. The book also provided valuable ideas for the “hard” design directives and a look through entire history of flexible objects, as mentioned later on in the research cases chapter.

As written in the introduction chapter of “Episodes in Flexible Housing” it probably is impossible to write a history about flexible housing. What Schneider and Till did was tracing the notions of design from vernacular architecture till today, trying to create not a linear route but a picture that explains where those notions came from. Especially in this chapter, they speak how vernacular architecture can teach us and give insights in the ways buildings can be flexible. The goal of learning from the architectural history and already built projects is something that this thesis is aiming for as well.

Under three titles “Modernity and The Minimal Dwelling”, “The Industrialization of Housing” and “Participation and User Choice”, the book argues the factors that brought to surface flexible housing during the twentieth century.

FIRST EPISODE: MODERNITY AND THE MINIMAL DWELLING

The first episode set in 1920s, followed the First World War and the facing of great demand for urban housing, mostly for the working classes. As in each time of a transition, housing qualities and models had to be re-established. One of the answers was the introduction of flexible housing that would meet new economic, space-reduced standards. The goal was creating the minimum sized apartments that are as tolerable and as cheap as possible¹. We can also argue that flexible housing evolved from continual outward forces that pushed and structured what we have in front of us today.

Flexible housing notion brought standardization to Germany and more experimental focus in Netherlands. Dutch architects turned towards something that we today find one of the most basic ideas about flexibility - creating a “changeability of use, not only during the course of one day but also for the specific conditions of each member of a family and potential changes during their lifetime”². It was one of the first times to think of a frame structure with no load bearing walls so that the dwelling can be adapted to the changes of family life.

Another important part of this design by Van den Broek and Heinrich Leppla was the social aspect. An analysis about family’s daily cycles, apartment extensions when the number of children changes and other showed how changeable these structures really are. It brought to the attention that flexibility might not only rely on the construction

of the building, but also on how floor plans are developed and arranged.

In 1920s flexibility was closely linked to modernism. There was a strong belief in the liberation that these flexible plans will bring both to the architects and clients, giving them a feeling of individuality that maybe lacked in the more traditional housing forms. It was also the time of alleviation of housing standards for poor and underprivileged, given the fact that this type of architecture cherished individualism and possibilities of different forms. Everybody was eager to participate in the new rapid ways world was changing, and architecture was one of the means to paint that social atmosphere.

“Minimum dwelling” - a new term that rose during 1920s meant that all the basic requirements for healthy living would be achieved, no matter the size of the dwelling. This way of seeing flexibility had two routes. First one addressed the rooms and their indeterminate usage. Architects took upon themselves only to advise what specific function a room can have, but left it to the user to occupy completely and set the function. Second way was in complete opposing from the first giving the architect complete control over the apartments and combining new technologies with their ideas.

Series of designs based on day/night scenarios emerged, letting architects use foldable furniture and sliding walls to create the flexibility of smaller spaces. Functions were superimposed, creating a bedroom during the night and a living space during the day, letting some architects such as Le Corbusier to argue that “the purchaser is only paying for 46m² of space but through the clearness of the design is actually getting 71m² of effective space”³.

1 Flexible Housing, Till & Schneider, 2005, pg. 16, Episodes In

2 Flexible Housing, Till & Schneider, 2005, pg. 16, Episodes In

3 Flexible Housing, Till & Schneider, 2005, pg. 19,

This sort of over-determining of spaces done by architects and mass use of the mechanisms that control the room functions could not lead to satisfactory solutions when it comes to the flexibility in mass-housing. Most of the times it was done with having only one client's need in mind and ignoring the fact that every individual uses the space in a different way. It could be argued that daily cycles used to create this sort of flexibility in housing should be highly personalized and used in a different manner, since each client has its own routines.

One of the most successful attempts in showcasing the possibilities of flexible housing was a project by Mies van der Rohe at Weißenhofsiedlung in Stuttgart. His design for the construction and building's framework allowed 29 architects and designers to finish the interior arrangements of the apartments as well as furnishing them. Simplicity of this project, where the whole building is held by the perimeter walls and columns within, allowed other designers to play with the accommodating different lifestyles and also different functions given that the building was a city's children's hospital at some point after the end of World War II.

To conclude with in 1920s and 1930s flexibility made its way into the everyday architecture by supporting two opposite approaches. One was the tendency of minimal dwelling designed in the form of open-ended floor plans with indeterminate room functions. Another one was the experiment of technical and mechanical equipment that supported very determinate modules and housing plans. It could be also said that talking about flexibility and really approaching the architectural and design issues with flexibility in mind was a

problem then as it is now. Starting from 1930s both of these tendencies continued developing by the use of industrial solutions in building techniques.

SECOND EPISODE: THE INDUSTRIALIZATION OF HOUSING

The second episode in the book and flexible housing focuses more on the techniques and industrial approach to the topic. If the period when flexibility was introduced in 1920s focused on a social and cultural aspect, these next 30 years were mainly about economic and technical issues.

The first episode brought some views of standardization to the architects, but with the expanding of technical capacity and faced with the housing crisis mass production and industrial prefabrication started to develop massively.

Le Corbusier was one of the most fervent advocates of massive production for housing stating that it is not only the cheaper solution but it also brings the high level of flexibility to it. Modularity and standardization let architects in the period of 1930s to 1960s to create a framework of clarity and order in their designs. It was not just a question of technical means anymore; it was about a deeper motivation and creative and intellectual challenge of design. Architects of that time believed that through standardization and prefabrication they will be able to offer more to the future user, thus not creating inflexibility with their standards, but providing them with more solutions to choose from. Repetition in manufacture and the way choice components were picked and combined, in Walter Gropius's opinion gave the possibility of nourishing personal taste of clients the way they wanted it. From this we can also see a tendency of Gropius to see "the house as a set of

components rather than a complete product"⁴.

In this we may see first roots of user choice in the initial design of homes. People were allowed to pick from the manufacture line what they thought was the best representation of their personal style and create a home of their own. Those separate furnishing elements (and even constructive) could alter on be replaced or added with the minimum of costs and work around them.

This principle of components that could be arranged in infinite number of ways referred to the flexibility notion of 1920s. In the planning stage, it meant that the architect can use both of the paths set in earlier episode, either by defining the rooms completely or living them as an open choice. It also advocated the industrialization of the house building industry, where mass production of homes didn't mean the loss of personality and individualism. In a way it was supposed to prove the argument of more flexible and adaptable housing. Standard elements responded to different demands and economic means of a customer, showing both the efficiency of factory production and construction (time and quality wise) and the variation level it can produce.

On-site assembly and factory prefabrication were topics of competitions such as "Das Wachsende Haus" (The Growing House) and others. It was a combination of social and technical solutions that showed the interest of many architects in terms of fast building, adaptable housing and diverse design. The end of Second World War also pushed towards faster production of large-scale housing. In an edition of North American Journal "Architectural Forum" called "The New House 194x" a potential of customization through prefabrication was shown in

some schemes. These new types of prefabricated homes dealt a lot with spaces and its qualities, paying attention not just to the initial design and immediate desires, but also to the changing needs in the future. However, this type of flexibility was not exemplified in built structures, given that the both design and long term flexibility were hard to achieve.

Some of the critiques of this age mention that, though full of great ideas, architects of twentieth century moderns just kept it on that level - on off experiments and unbuilt schemes. What they did build was a large number of non-architectural projects in, for example United States, where industrial companies contributed to 12% of total housing stock.

Emphasis was on using industrialized methods of production to provide large variety of singular components that clients can choose from and keep it in budget for different economy levels. Although in short-term this gave a feeling of flexibility to the housing projects, in long-term there was no adaptability of space. Once built in, the individual components were not to be taken apart likely and therefore what Walter Gropius proposed in long-term flexibility was not applicable. The house, once set, was not made from separate components that can be broken down, it was instead a singular mass that could not be easily changed or shaped.

“The standard house types are regularly re-engineered by the product development team in response to feedback from the sales and marketing team, and customers”¹

The short-term wishes of the market and clients became an obstacle for the long-term flexibility, since the product is seen as more important than the absolute value it may hold. Thus we come to the third episode, where clients together with the architect try to solve the issue

of having a house that revolves around their personality at the time and all the possibilities of the future.

THRID EPISODE: PARTICIPATION AND USER CHOICE

In 1961 a Dutch architect John Habraken published a book called “Supports: an alternative to mass housing”. It will, over the years, become one of the most important texts covering the topic of flexible housing. The book made a strong emphasis on the separation of construction elements in housing, arguing that “support” or base of a building should be clearly distinguished from the “infill” or interior of a residential design construction. The originality of this comes not with the technicality of a solution, but with the hope the author felt towards this principle. He felt that being able to design their own habitats, people/users will be empowered by the architecture and more flexible with the use of given space.

Idea of the separated construction elements brought not only a technical answer to the infill and support systems, but made it possible for users to participate in the design process. Separation came not only within structure and infill elements, like Habraken suggested, but also in the services spaces of the housing block. This made it possible for tenants to choose a layout that fits them best before moving in and allowed easy adaptation for a family’s changing needs.

One of the first projects that allowed users to customize their flats before moving in was Wohnanlage Genter Strasse, a project in 1970s by Otto Steidle and Partners. They used a structural system called “Elementa” that was constructed from reinforced concrete columns and beam system with ceiling panels² In addition to the possibility of defining their own space inside the apartment, there were “excess spaces” in terms

of indoor and outdoor areas that could be claimed overtime if a family was growing bigger and needed more space.

Another project with a similar thought is Überbauung Hellmutstrasse designed by ADP Architektur und Planung. Reduction or enlargement of housing units is possible as in the previous example, having a slight difference in the construction since this building has interior load-bearing partition walls instead of columns support. Still, future adaptations are possible in this case as well, giving high level of freedom to the user in participating in the design process and customizing their own living space. In standard mass production, user is considered a consumer, not as a creative individual. While modernism reduced the voice of a user, giving a more universal and standardized vision of housing types and schemes, this new movement that included not only architects but also sociologists, thought that a right of choice in these matters is of utmost importance. In a way, this returned the flexibility topic back to its roots in social questions and real needs of users, but with a different light shed on to it.

While in the first episode, analyses were made in order to understand clients and thus exclude them from the design process, this time it was other way around. By better knowledge of a user architects were able to empower clientele to express their own creativity and characters, creating unique and original spaces.

This of course couldn’t happen without a certain control over the process, usually by giving brochures and documents about the level of participation that was expected and accepted from the client. Two French architects Luc and Xavier Arsene-Henry were among the leaders in this field, creating a large number of buildings that pioneered user choice oriented design. Technical possibilities that came with the industrialization and developed further on during the decades helped architects to create buildings that are able to support this manner of designing. Housing

¹ Flexible Housing, Till & Schneider, 2005, pg. 26, Episodes In

² Flexible Housing, Schneider and Till, 2007, pg. 85

became a democratic notion, where there is no “good” or “bad” layout, given that it fits the owner and relates to his or hers day-to-day necessities. Many believe that adaptation over time in form of addition, replacement or deduction is possible with the use of standardized components and by allowing users to pick prefabricated elements that will customize their homes. A difference between “hard” and “soft” use has to be determined by architects. Allowing components of construction that are changeable leaves architects with less work, opposite to the prefabricated elements where architect has to determine all the possibilities of design.

SUMMARY

As divided in the book by Schneider and Till (2007), different approaches to flexible housing design were mentioned under three episodes. According to the social, economic and technical influences in the 20th century we were able to distinguish three sets of influences on design related to flexibility.

In the first episode of flexible housing history, new housing models were found based on rethinking of minimal space standards. It was the time of open-ended floor plans and mechanics in the services of architecture. Within some branches of today's approach towards flexibility in housing we can trace the same approaches. In the case of this thesis work, goal is not to create a hi-tech environment that cannot be easily appreciated by the elder tenants. Still, this tendency of robotic approach exists and it is a very interesting field for research.

During the second episode, architects pioneered neutral skeleton system for mass production of housing. It was more about standardized construction models and fast production than anything else. This relation towards the construction preserved itself till today. However, the limitation set for the thesis allows us to skip any question regarding the constructive elements and focus more on the plan level changes.

Final episode, at the moment, introduces customer as not only consumer but also as a designer, giving a big room for user participation in the design process. By the use of information from the Questionnaire I hope to achieve user participation on some level. Any sort of user input is a valuable one regarding the design and realistic needs of tenants.

When it comes to the total of literature readings, the book “Flexible Housing” by Schneider and Till (2007), summarized here left most impact on me. Literature that helped create a picture of positive design influences in elderly architecture

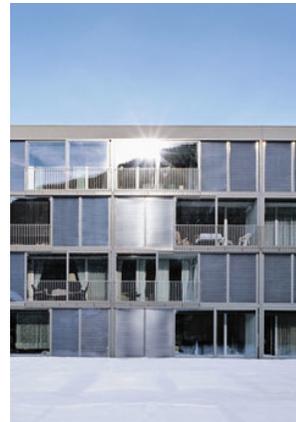
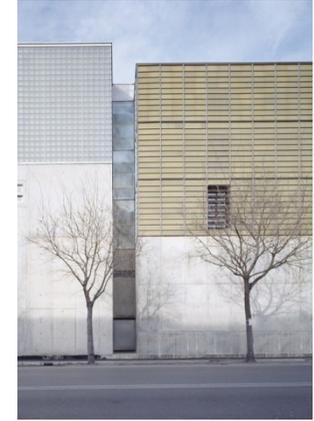
was “Design for Assisted Living” by Victor Reginer, new tendencies when dealing with this type of housing are explained in the “New Approaches to Housing for the Second Half of Life” by Andreas Huber and similar.

THE RESEARCH CASES

While building a database of tools and methods, research of realized buildings and architecture competitions played an important role. From the buildings mentioned chronologically in the “Flexible Housing” by Schneider and Till (2007) to the personal preferences of the thesis’ author, they all helped with development of the final proposal.

Case studies treated in this chapter come from different sources and for different reasons. As stated in the delimitation paragraph, buildings that are to be used in this research are always of a residential type. Another focus point is that the projects are chosen because of their innovation or achievements in the floor plan and not for their construction proposals. Scope is wide, covering from elderly housing projects, all ages housing, and experimental types of apartments to the student housing and competition projects. The study does not make any conclusions or tends to explain the evolution of these objects. Its main purpose is to show to the reader what were the buildings interesting for the maker of the thesis and probably triggered different design approaches in the latter stage of the work.

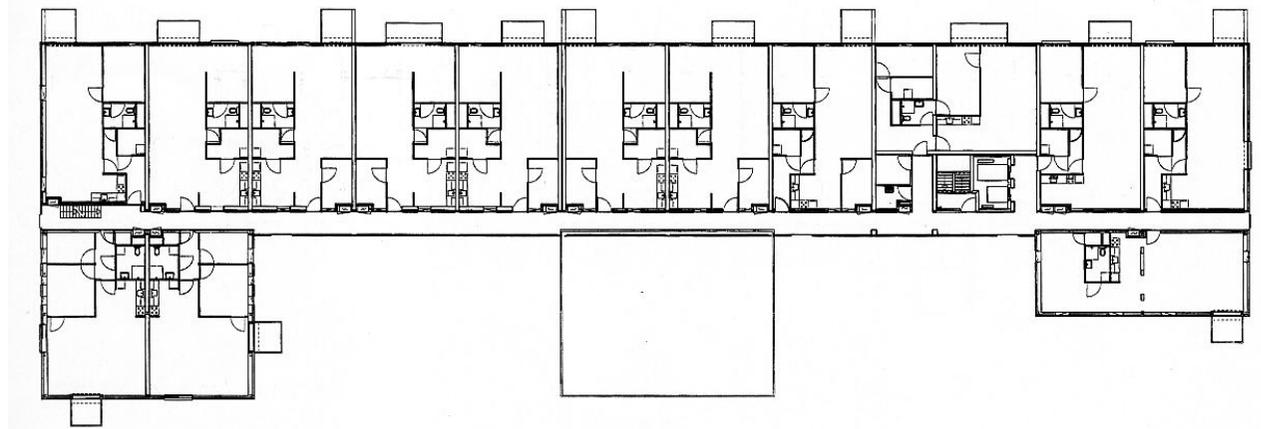
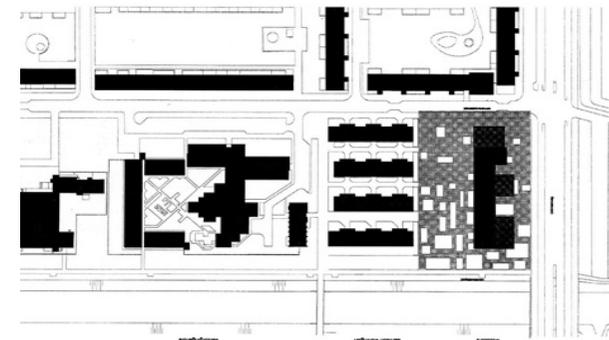
For the sake of easier presentation, all the research cases can be grouped in projects about flexibility, elderly housing and housing competitions. Each is presented here by one project and a short explanation why the author believes this project group is important.



ELDERLY HOUSING

One of the first elderly housing projects introduced to the students at Bachelor studies level on my studies in Belgrade, Serbia. Its architecture clearly shows that residential objects can be as much of an “architectural attraction” as any other. The building is a large complex of 100 units for elderly people, and a part of the process of intensifying a 60’s neighbourhood. Not only that it became an attraction averagely 2-3 architectural tourists visit almost 10 years later, but it was also a social housing project with the lowest building-costs in Amsterdam.

“To still provide adequate sunlight into the surrounding buildings only 87 of the 100 units could be realized within the slab. Where could the remaining 13 dwellings be positioned? If they were put elsewhere on the site, the open space would be further reduced. A deeper slab with narrower units did not seem possible. The North- South orientation of the block meant that the generator had to be a 7.20-meter module. By cantilevering the remaining 13 units from the north façade, they are literally suspended in the air. An economic layout for the main slab could lead to savings of 7 to 8% of the cost, enough to compensate for the 50% more expensive hanging units. The Spartan gallery flat becomes acceptable. Each gallery is given a different perspective. By changing window positions, balcony sizes and varying balcony materials, the different flats acquire their own character. With the party walls constructed 8 cm thicker than structurally necessary (for sound insulation) it became possible to use this extra thickness for the connection of the cantilever trusses without having to increase the weight of the load-bearing walls.”



information taken from:
<http://www.mrvd.nl/#/projects/015wozoco>

COMPETITIONS

While thinking about the new tendencies in housing for elderly, it became clear how similar conditions of their living are to those of students. It was the reason why looking through some of the competitions seemed useful. Once could argue that the projects presented at different types of competitions would never function in reality the way they are. However, the important role of competitions comes from the level of innovation they are exhibiting. Competitors are less afraid of the restrictions architects meet in the every day work. Their ideas might be unrefined but still they add so much to the discussion table.

Competitions are also good examples of a country's tendencies in architecture. As for the case of elderly housing, there has been a number of competitions lately where new architects approach the subject with more enthusiasm and an idea of creating great architecture, not just a functional residence for elderly people.



DESIGN DIRECTIVES

Before the project itself further analysis of the Swedish standards was in order. One more reason for the research of the design directives was the question of flexibility and adaptability itself. If in the start we set a goal for the design and make it available for more than one object (common for a number of similar buildings, in this case of residential character), doesn't that prove the idea of adaptable buildings as well? If we can find common features of a high level design acceptable in numerous objects, it should mean that the thread between those objects leads to adaptability in them.

Following paragraphs are closely related to the design directives in Sweden. Information is gathered from a handbook "BYGG IKAPP", a typical manual of construction sort, that varies from the country it is issued in. Certain chapters covering the problems of design for people impaired in one way or another were translated from Swedish and combined with some personal notes.

By merging the practical tips of more soft related directives from "BYGG IKAPP" with the tools gained after reading about flexibility in buildings and reference studies, this chapter gives an insight to the planning process. Again, all of this information is gathered up to help the visualization and design ideas that respond to the wishes voiced by the users in the Questionnaire.

The most general directive comes from the requirements stated in the handbook and by the City of Gothenburg office. Refurbished buildings in the elderly housing market, same as the newly built ones, have to satisfy the high level standard of accessibility SS 91 42 41. Of course, in reality, one must understand that sometimes demanding the same changes and levels is impossible and requirements must be decided upon the specifics of the building and its actual quality.

SOFT DESIGN DIRECTIVES

Disabilities can be both physical and mental, sometimes from the beginning of our life, sometimes just in the later age. Consequences are that one begins to depend on the environment more than usually, and high standard in design becomes an important demand. Given that the residents of safe haven buildings are older than 70 years, some general requirements become more specific and important when designing. Design directives that relate to issues of accessibility and disability can be regarded as soft, since they are not closely connected to the construction of the building.

SIGHT

Elderly people most often have some sort of visual impairing. It doesn't have to be blindness, but our eyesight usually goes worse with age.

When dealing with deep buildings, common areas located in central areas become an issue. These spaces have a small or no amount of natural light that restricts the potential for their use. By following some simple guidelines, we can achieve raised quality in these rooms,

- Logical and easy to follow floor plan that one can easily remember and orienteering in.
- Light-signage on the floor or wall (in the intervals of 10-30cm) that people can follow.
- Good lighting/external light and no strong mixing of different types of light (or sudden change)
- Tactile information that is placed on accessible places.
- Possibility to move stuff so that they are not in the way.
- Place special attention to the immovable and movable furniture.

MOBILITY

Most of the questions about accessibility in a building come from those who have difficulties to move. It is not about just problems of movement, but also, how much space is needed to feel comfortable in a room. Safe-haven housing by demand of the program has high level of accessibility and comfort, and such dimensions are used to insure that all rooms are accessible regarding today's standards. But, as always, details are important: heavy doors, high windows, and differences in floor material or high doorills...

Other set of information comes from SS 91 42 41 that is used to compare the different levels of accessibility in Swedish standard. Since the building of Gråberget is initially an elderly housing, there is already a high level of accessibility with the existence of 2 centrally located elevators that accompany main staircase. On a smaller scale we can improve the environment by doing following:

- Electrical buttons for door opening or automatic door opening.
- Flat floor without any breaks, hard materials to move on.
- Free space for legs and knees under the tables, kitchen desks and other surfaces.
- Sitting furniture and toilets that is easy to stand up from.
- Possibility to sit after a long section of walking space (corridors, walkways, passage...)
- Holders at the staircase, ramps and sometimes inside the building (with long corridors)

HEARING

Spaces with much noise or bad acoustic can be challenging for people with hearing issues. It is not unusual that background noises or high sounds can make a person confused and hard to understand what others are saying to them. Many people that with hearing issues need to read from other person's lips or use sign language. Therefore, not only the sound but also the lightning of space is important for them.

When thinking of renovation and reconstruction one should pay attention to the following

- Good isolation in walls, floor, ceiling, windows and doors, to dampen the sounds from the surroundings.
- Thinking of how to reduce the amount of sounds produced by moving of furnishing or people in common areas.
- Positioning the light on a height level that makes lip-reading possible. The amount of light that shines upon one's face should be optimal as well.
- Level of noise that electrical, ventilation or other systems might produce is low.
- Alarm or fire alarm should have light-signals and/or vibrations that man could feel and understand if he or she cannot hear the sound.
- Floor plan according to which sound from common areas can be less of the problem for residents.

COGNITIVE PERFORMANCE

It is not unusual for an elderly person to forget their way. Even though safe haven housing is primarily for those who are in good physical and mental shape, many people have problems with orientation.

Showing the potential for adaptability in a building means that most of the floor plan can be used in its original state. Manipulation of the existing composition of hallways and open/ enclosed areas to fit the new proposal has to be put high on the importance scale. Short passages, visual stimulation, simplicity in the routes created, clear signage, use of colours and form to explain the function, visibility of the area are all part of a good design.

BREATHING

According to the findings from Swedish Health organization, when realizing a project for elderly people, it is of extreme importance to:

- Have good ventilation.
- Not too high level of humidity.
- Special attention on the construction system that shouldn't help creation of mould or humidity issues.
- Easy to clean rooms with possibility of a central vacuum cleaner.
- Possibility to change the materials that could provoke allergic reaction for some people.

DESIGN DIRECTIVES

HARD DESIGN DIRECTIVES

A set of construction methods for achieving the flexibility in residential objects would be considered a hard design directive. Guided by the pre-set limitations, diagrams provided here focus on the plan flexibility. A short explanation of each drawing is presented: how it should function, what is the general goal when using it and how it could help the design process.

FUNCTIONALLY NEUTRAL ROOMS

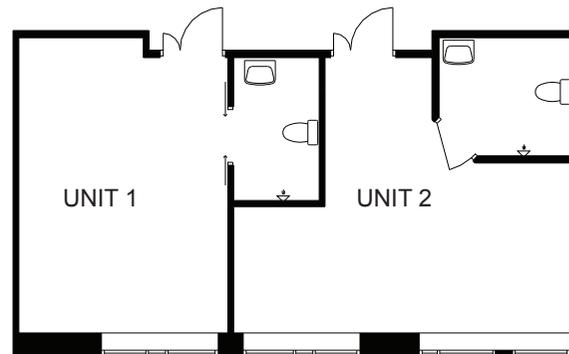
“As a guide, the minimum sizes of a functionally neutral room directly can be derived from various furniture layouts. Ideally it should be 3.6m wide by 4.0m deep, in order to accommodate a range of furniture layouts from bedrooms to living rooms, but this can be reduced to 3.2m wide by 3.8m”¹

In the case of dealing with an existing layout, room size relates on more than just architect’s vision of it. It is possible that, while rearranging the current apartments layout, newly created rooms are bigger than the standard dimensions for a certain type of an apartment. By the use of functionally neutral rooms, those newly constructed chambers are not an issue even if larger in size. This type of rooms is especially appreciated in the case of safe-haven housing where the high level of accessibility is required and thus a higher total area of the room.

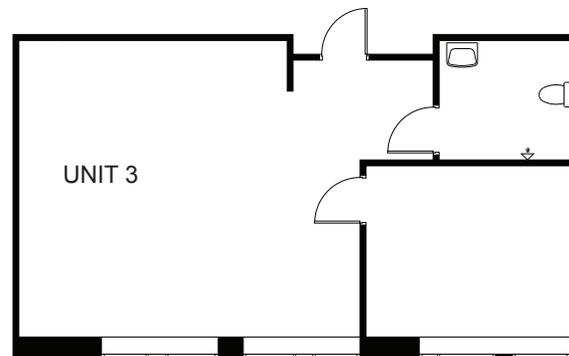
JOINING

“The potential to join units together is a long-term strategy, but one which offers greatly increased flexibility, particularly in the social sector where the ability to change the size of units provides a variety of rental opportunities.”²

When working with the existing floor plan, this directive is as much of joining as it is of dividing the space. Existing smaller apartments could be joined into a bigger, more luxurious flat with possibilities for different layouts. With the 3 or 4 room apartments it can be possible to construct layouts for two units of 1 or 2 rooms.



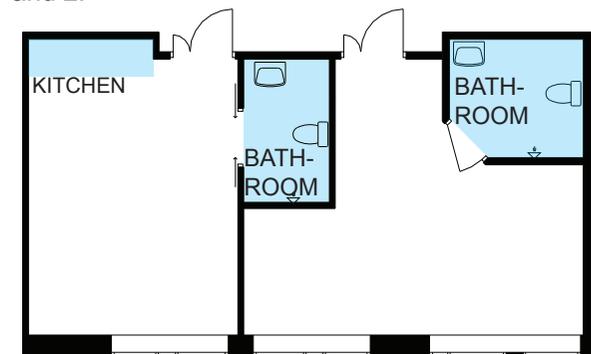
By removing the bathroom in unit 1 and the wall with the unit 2, we create an 2-room apartment with a possibility of further division of space into a 3-room flat.



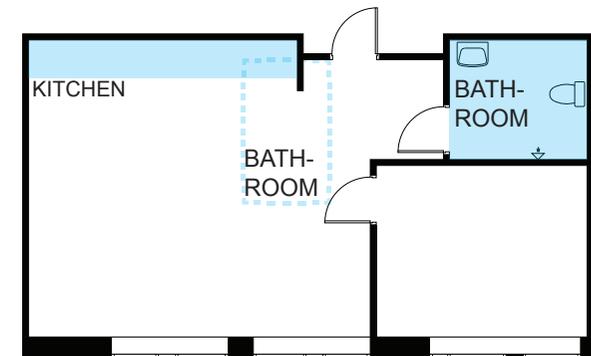
SERVICE CORE

“The position of the service core is critical in determining flexibility of a unit, since it often defines the most permanent elements in plan, the kitchen and bathroom”.³

Since the work in this thesis is based on an existing building, the question of service core position played an important role in the rearrangement of rooms. As stated in the limitations, the idea is to never move service cores if it is possible. On the sketch under, we can see how the position of kitchen and bathroom stays intact, even after the joining of the separate units 1 and 2.



In the newly created apartment, we have taken away one of the bathrooms, but remained with the position of other two service cores, just changing their original size according to the new floor plan.



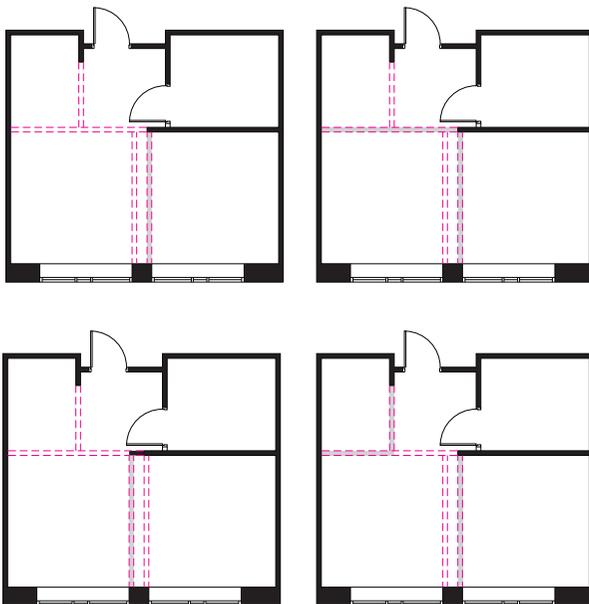
1, 2, 3, 4, 5 Flexible Housing, Till & Schneider, 2005

MOVABLE AND SLIDING WALLS

“Even small sections of folding or sliding partitions can greatly increase the options as to the way that a room or a combination of rooms might be used. A good approach to the design of sliding walls is to ensure that the basic layout of the housing first works without the inclusion of sliding walls, and then to add them in. This ensures that the sliding walls add something to the spatial quality and usage of the dwelling.”⁴

In the apartments for elderly, as we have in this thesis, possibility to divide existing rooms adds value for the apartment. Different circumstances and reasons can lead to need for more or less enclosed space and/or rooms. By altering the placement of certain walls we can achieve adaptable apartment layout without big structural differences.

On the drawings under we see options for closing the space into different number of rooms.

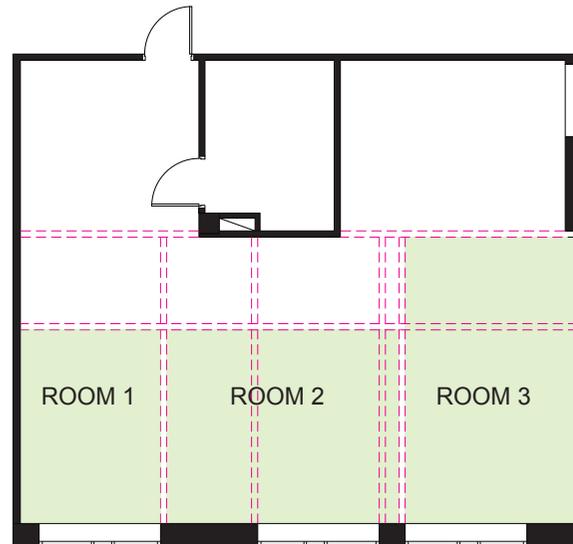


DIVISIBLE ROOM

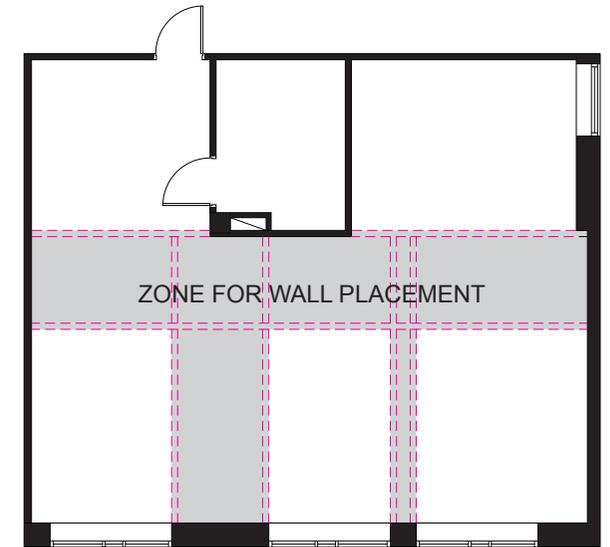
“For rooms to be divisible, the number and location of windows is crucial. At a basic level, the more windows, the more potential for subdivision or relocation of partitions. A single wide window in a wide room prevents future division, whereas two narrower ones will make it possible”.⁵

In the limitations for the thesis, position of openings in the facade is marked as work on the existing construction and therefore avoided when possible. It means that newly built apartments already have constraints in planning for the room size and position. Combined with the previous directives, bigger “neutral” rooms can be divided with movable walls if the allocation of windows allows it.

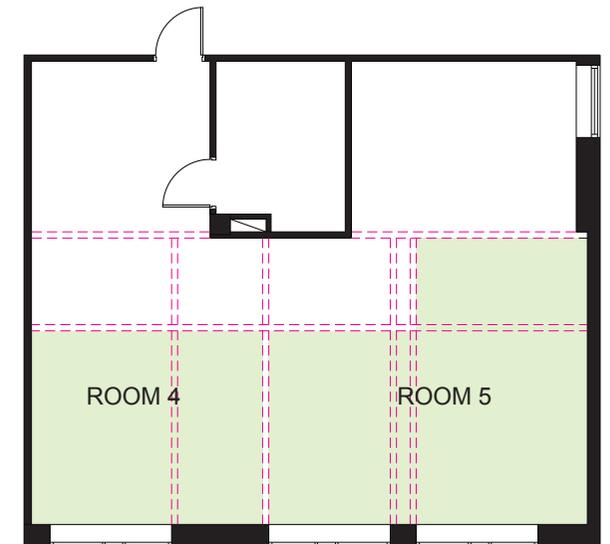
In the first option, we have 3 rooms of different sizes. For example they can be Room1-guest room, Room2-living room, Room3-kitchen with dining area. On the next drawing we can see



Option with three rooms of different sizes and characters. Some of them can be enclosed with movable walls.

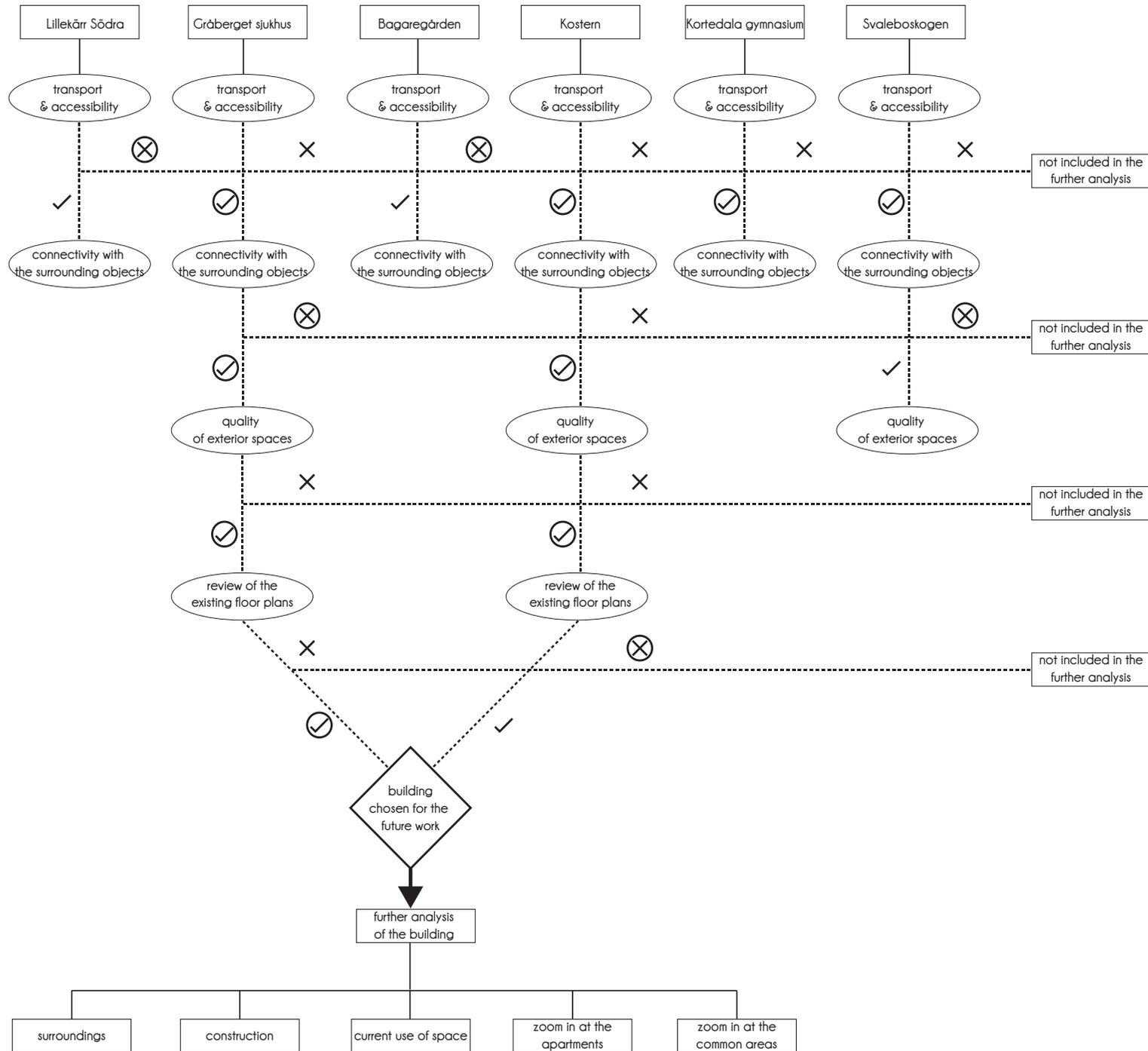


Room 4 as a larger bedroom, and larger Room 5 in function of kitchen, dining and living area. There are more possibilities of room division in a similar way, as long as the minimum dimensions are met.



Option with two rooms of different sizes and characters. Room 5 is a combination of Room 2 and 3.

Mind map for an easier selection of the building thesis work will focus on



LEGEND

- input
- a question that needs answering
- ◇ final choice or a decision made
- sequence of input
- linear sequence of input
- ⋯ selective sequence of input
- ✓ affirmative
- ⊗ negative

THE PROJECT CHOICE

The ways where and how we live change over the course of life, as well as do the housing forms. As a species, we are one of the most adaptable creatures, changing our habitats almost all the time and adapting to the new environments. But over the time, that strong capability to work with whatever is given to us fades away. One gets used to the home and its surroundings and becomes unwilling to change even those the slightest.

After the reading of questionnaire commissioned by the City of Gothenburg that inquires about interest of elderly in the safe-haven housing, it was easy to see a certain pattern. Even though many seemed interested in the possibility of living in this type of housing, their previous life conditions set the overall feeling towards the question. According to the answers they gave, it is easy to see that the present and future housing wishes are related.

This chapter of the thesis handles making the choice of which building is to be further researched. It is an overview of which conditions could be important in order to work with potential for change in a building, without really looking inside the building itself. There is a set of pre-requirements that needs to be met. If a building is to live and change during the time, it needs support from the infrastructure and local environment. In a good urban situation, it is easier to change the program of one object without disrupting the entire system.

The goal is to show some of the criteria looked upon while searching for the one building that is to be tested for its adaptability and flexibility. There are 6 objects in total, located in different areas of Gothenburg, some more central some nearly on the outskirts. Out of them, one is not of the residential character and it has been

chosen to represent “industrial” objects. These are usually mere boxes with the construction that allows easy manipulation of interior spaces, given that the supporting construction is made of columns and beams. Other five objects are of residential character and at the moment serve for the elderly housing. Some are under renovation or reconstruction at this moment. Almost every one of them will in the future give a certain part of the area footage to a preschool.

There are 3 simple criteria chosen for this first set of inquires. They relate to immediate surroundings, but also the connectivity on local and city level. Subjective feeling of the thesis' author has not been excluded at this point, since pure measuring of the criteria cannot produce the overall picture accurately. When dealing with the surroundings these were the questions:

1. How connected is the building with the urban hubs? How many connections to the city centres and their closeness... Is the building easily accessible or does it take extra effort to reach it?
2. What are the activities located near the building? Does it have access to any cultural, religious, educational, recreational objects?
3. How does the location itself look like? Is it a peaceful lot located in a green zone or a busy city center? Does it have a view, place to rest or is it just another building in the row?

Answers to these questions helped making a decision about the building that will be further analyzed.

COMMUNICATION

First criterion is to see how the building's position relates to the terrain and further on the city connectivity. Transportation was chosen as the most important criteria on the grounds of it allowing the tenants of the building to change their location easily. Even if the building's position on a map is not ideal, it is easy to transport oneself to premises that are more desirable. Another reason for making it the most important criterion is its possibility to attract future investors and help the development of the entire area.

Under the topic of connections and communication of the object with the surroundings, closeness of the transport stations was taken in as well. Two circles were drawn, marking the 500m and 1km radius from the building. Inside those circles, black dots represent the tram/bus stops that have direct connection to one of the urban hubs. In this research Järmtorget, Brunnsparken and Korsvägen were chosen as the most important stops in the city. Direct connection to these provides the object with indirect links with the entire city. In the ideal situation, stops would be located in a distance range of 100-200m, far enough from the building so that the tenants aren't disturbed by the noise.

A question of where the building is located from the bus/tram stop in terrain sense has been raised, but given that there is always at least one express bus line going to the main entrance of the buildings, it has been abandoned.

Two buildings were eliminated on the grounds of not having a good link with the city centers. One building was eliminated for being positioned directly on the main square and above the public transport stops. A cross-reference of the number of direct lines and the closeness of the transportation stops determined which buildings will be kept for further observation.



- Lillekärr
Lillekärr Södra 51
one stop: 473 m

Korsvägen: 1 direct lines
Brunnsparken: 1 direct lines
Järntorget: 0 direct lines
- Bagaregården
Landerigatan 17
closest stop: 659 m
furthest stop 1,1 km

Korsvägen: 2 direct lines
Brunnsparken: 5 direct lines
Järntorget: 4 direct lines
- Gräbergets sjukhem
Stortoppsgatan 2-8
closest stop: 56 m
furthest stop 1,0 km

Korsvägen: 0 direct lines
Brunnsparken: 3 direct lines
Järntorget: 2 direct lines
- Kostern
Masthugstorget 5
closest stop: 546 m

Korsvägen: 1 direct lines
Brunnsparken: 9 direct lines
Järntorget: 3 direct lines
- Svaleboskogen
Svaleboskogen 7
closest stop: 546 m
furthest stop: 1,5 km

Korsvägen: 1 direct lines
Brunnsparken: 3 direct lines
Järntorget: 2 direct lines
- Kortedala Gymnasium
Kortedala torg
closest stop: 50 m

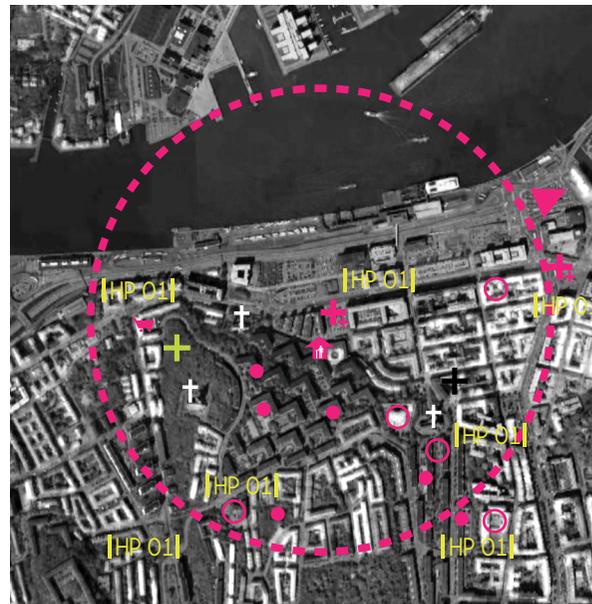
Korsvägen: 1 direct lines
Brunnsparken: 2 direct lines
Järntorget: 2 direct lines

ACTIVITY

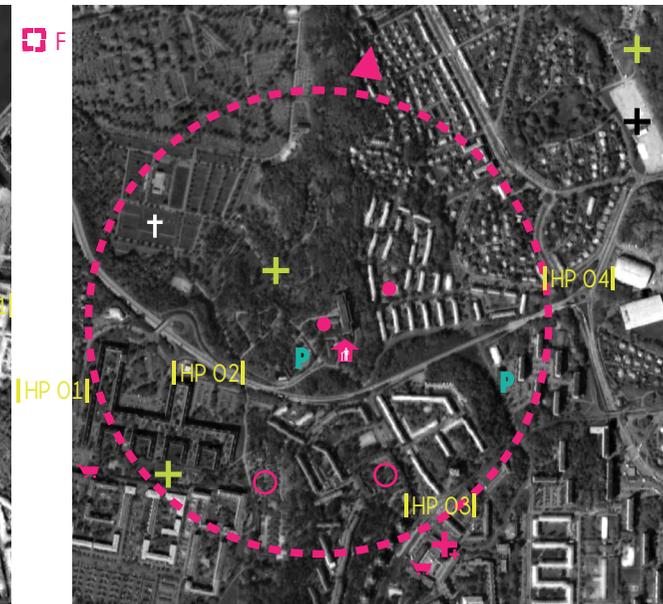
Another important part of building is the transformation capability of its surroundings. Better and more diverse programs at a location mean that changing the type of use for a building is easier. Areas that are already developed when it comes to programs allow faster urban changes and regeneration of city districts. In this project, it also means less travelling distance for tenants who still like to lead an active life full of social interactions. It would provide a sense of involvement to the normal city life for elderly people.

The thesis looks upon the norm such as how close the big grocery shops are or whether there is enough green areas in the surroundings. Other types of buildings such as cultural or health objects were usually not located in the close proximity of the selected buildings. Depending on the location, nearness of such objects was taken into account still, as some buildings were positioned in the areas closer to social activities.

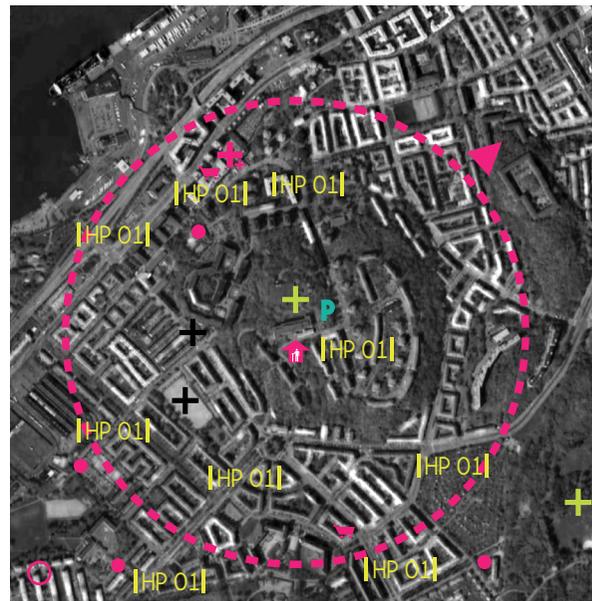
Again, by reviewing the comments and wishes made by elderly people in the questionnaire, we can see a certain pattern. The lack of cultural or other event- based object can be bridged by the fast links to the center where those types of activities can be found. What is left is proximity of groceries, green areas, friends and family whom might wish to visit and nice paths for walking and exercise.



Kostern



Svaleboskogen



Gräbergets sjukhem

- | | | | |
|---------|----------------------------|---|---------------------|
| [HP 00] | public transportation stop | + | public square |
| 🏠 | building we are looking at | 🛒 | supermarket |
| + | church | + | GYM / athletic hall |
| + | green areas | P | parking |
| ○ | school | ● | preschool |
| ▶ | central area of Göteborg | | |

Position of all the buildings in a local context

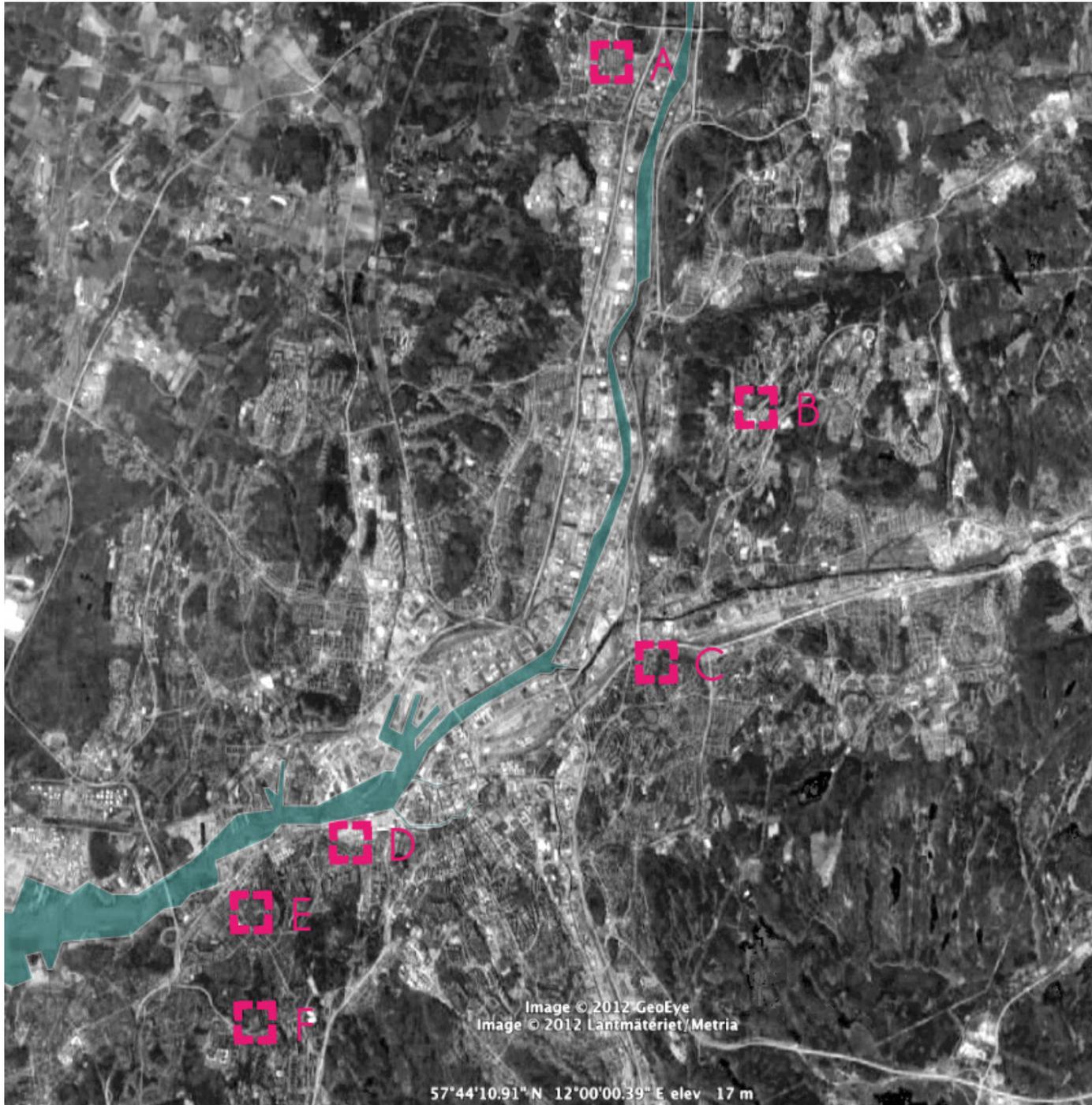


Image © 2012 GeoEye
Image © 2012 Lantmäteriet/Metria

57°44'10.91" N 12°00'00.39" E elev 17 m

Position of all the buildings in the city context

QUALITY

Fast preview into the remaining buildings and their floor plan organization, combined with the vistas was the final criterion. That is however, not entirely true, since the office of City of Gothenburg gave these buildings because of the potential their construction and floor plan has. In a way, the quality of outer and inner spaces becomes the most vital measure of building's potential.

It has been the topic of discussion what elderly people wish for in their retirement ages. Somewhat expected, elderly people enjoy themselves in living close to industrial hubs, city squares and any other urban gathering point that thrives with life. If we think that a person of 70 years will be confined in his or hers apartment in about 10 years period of time, it is easy to see how they would like to still be a part of life experiences even from the window of their room. Not losing the possibility of participation in everyday activities means a lot to them. And this opportunity of passive partaking means that a building situated close to urban hubs offers better view and integration for its tenants. On the other hand, we should not forget that elderly people require rest and peaceful nights, which brings us back to the question of noise. Ideally, a building is situated so that the view offers variation of activities happening in the streets or squares. But the immediate surroundings offer peace and comfort, probably in some sort of gardens or green spaces.

SVALEBOSKOGEN:

Located near the Axel Dahlströms Square, this building raises among the greens between Cemetery forest and Slottskogen Park. Although most of the necessary program can be found at the Square, main issue with this building is how secluded it feels and out of touch with the rest of objects. There is no direct connection with other objects, mostly of residential character. Site on which the building is built upon overlooks the area on the Eastern slope and gently connects to the main street on the Western one.



KOSTERN:

Out of 6 buildings chosen for this step, Kostern is the most well positioned one. Its closeness to one of the city centers, great position of tram and bus stops, program found in the area and other aspects make it almost a perfect building. However, in order to fully investigate the potentials of change that exist in a building and that might be developed further, this thesis focuses on less than perfect option. It would be easy to see how all these exterior advantages affect the quality of spaces inside the building.



GRÅBERGETS SJUKHEM:

Building is situated on top of the hill that overlooks residential area on the location and further on a beautiful vista over the city and the bridge. Building itself is easily approached even with the slight differences in the ground levels. There is a bus stop with an express bus line just in front of the main entrance and there are at least 3 more stops in the area of 500 meters distance. Although not in the intermediate closeness, area has some objects of cultural and local significance. It is also relatively close to the City Park (Slottskogen) and some other green areas that could become recreation spots.



SUMMARY

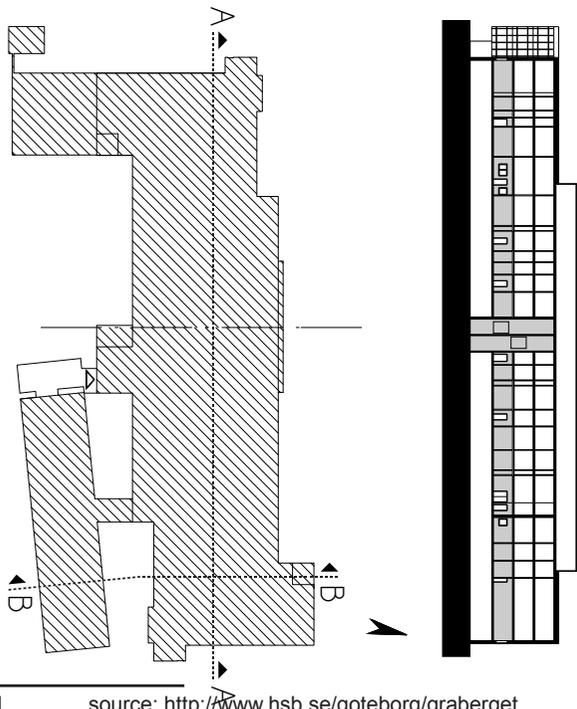
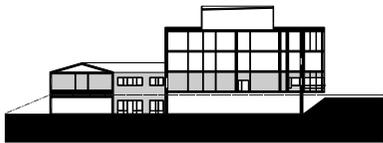
Final choice, after the short analysis of the buildings provided by the City Office, was the building of Gråbergets sjukhem. According to the diagram, we can follow the process of making the decision and how different steps worked.

The building has been chosen as a representative for adaptability and potential of change for several reasons. Due to its location, size and floor plans, it will be interesting to see how this building can be upgraded for the safe-haven apartments from the program it hosts today. There are issues about this choice, mainly because of its land position – high slope from the Mariaplan Square to the building's entrance. This matter can be argued in many different ways and approved or disapproved of. In the case of this thesis, author believes that positive relation this building has with its surroundings can surpass the accessibility question. It is also believed that the upgrade of this building's status would positively reflect on the entire area thus putting other qualities above the land level issue.

THE CASE OF GRAÅBERGET SJUKHEM

Gråbergets sjukhem, today's senior housing building is located at Stortoppsgatan 2-8 in Majorna. It was built in 1952 and renovated in 1980s.¹

Sections of the building with proposed new layout floor marked

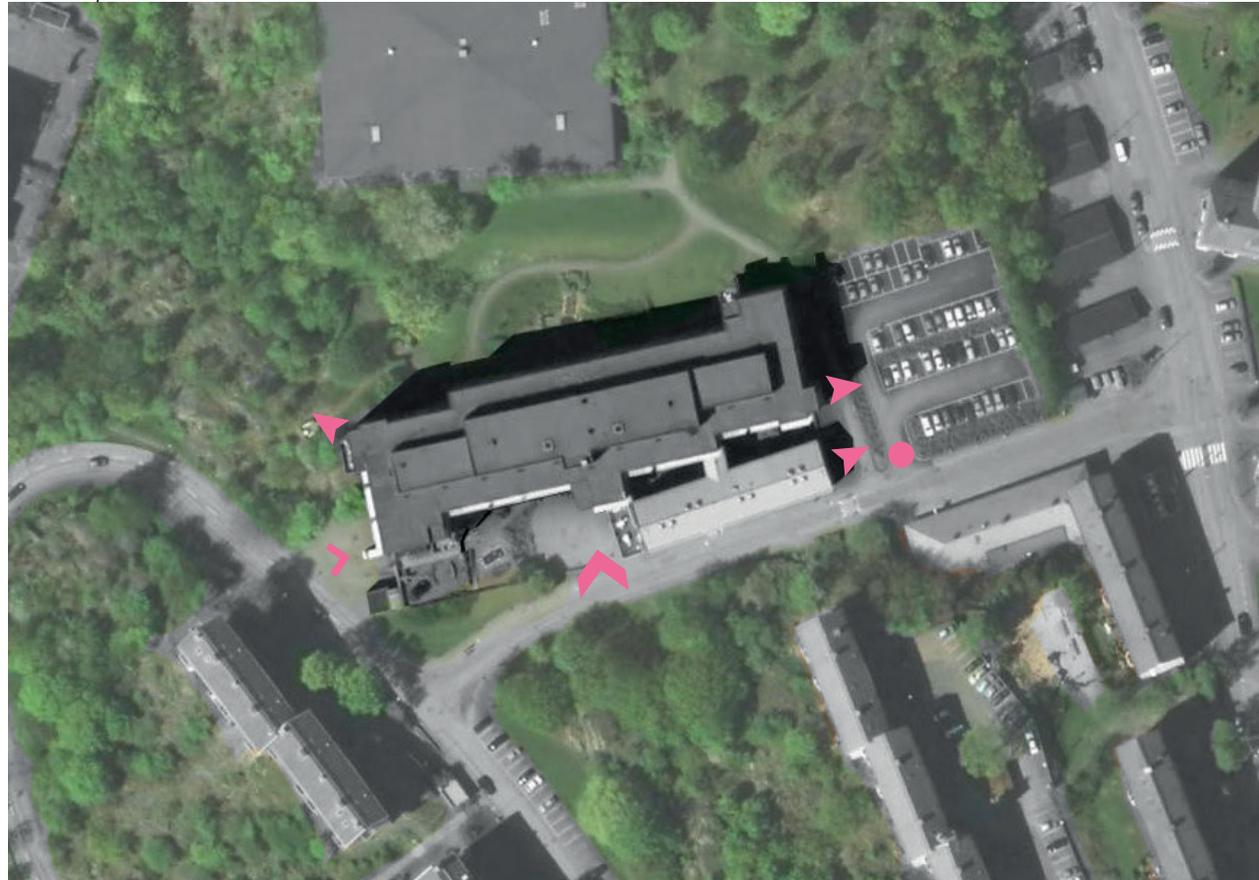


SITEPLAN:

Located above the Mariaplan - one of the areas transportation nodes, this building has great potential just looking at it from outside. There are several stops in the immediate area that link this building not only to the main city hubs but also with the other important places such as Slottskogen Park or Saltholmen harbor.

Program in the area corresponds well with the idea of having 70-year-old people in the vicinity or students between 20-30 years of age. The building consists of 56 newly renovated apartments for elderly, with 30 extra apartments for different types of residence rights (like short-term accommodation).

Situation plan with marked entrances



1 source: <http://www.hsb.se/goteborg/graberget>



Pictures of the Gråberget sjukhem taken August 2012

On the pictures number 1 it is possible to see the view from the terrace located on the west side of the building. Located on the top of the hill, building offers amazing view 360° around. Pictures 2, 3 and 4 show intermediate surroundings behind the building, where exists a number of benches, fountain and grilling places. Parking and the way to it is shown on pictures 5, 6.

Entire building gravitates towards the main centre in the picture number 7. Feeling of importance is strengthening by the addition of enclosed terrace that belongs to the added building with short-term accommodation

apartments. White terraces as the main element of the facade draw attention to the building's corners and break the monotony of window rows. The additional building stands out in material (wooden panel facade instead of the bricks) but also allows possibility of creating inner gardens between the buildings as seen on the pictures 9, 10 and 11. Its relation towards the main street is shown on the picture number 12. Last row, with pictures marked 13 to 17, we can see the building from different angles and how its facade places in the surroundings.

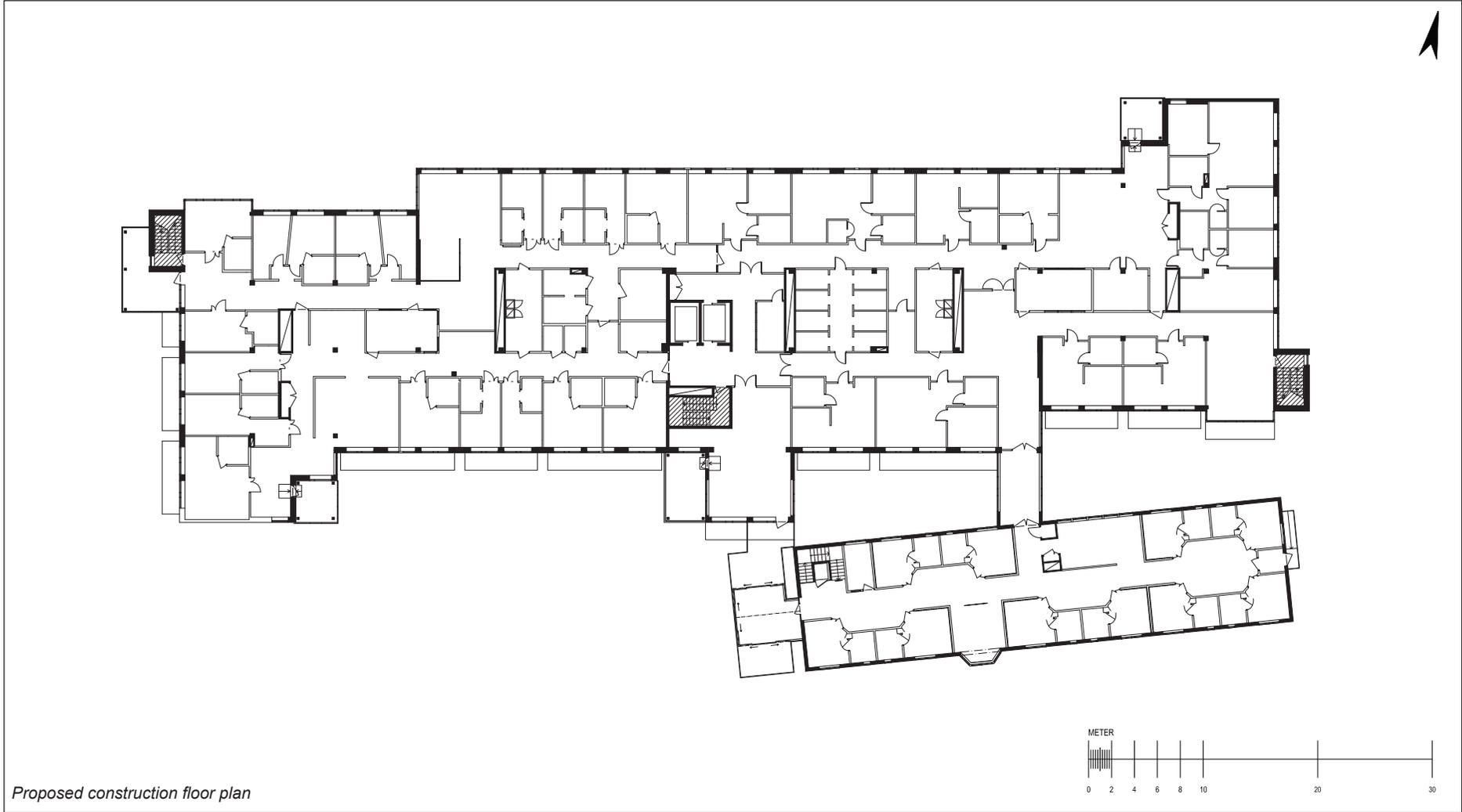
CONSTRUCTION



The building consists of two parts: the main building that is symmetric on both X and Y axis and an additional building angularly positioned towards the main one. As stated in the limitations, this thesis handles just the proposal for the main building. According to the other limitation, working with the construction will be limited to the smallest amount of changes.

Building has a bearing facade and bearing columns located in a square grid of approximately 8.4 meters. There are exceptions to this rule when the axes from western and eastern wing meet in the middle. Situated in the middle of the building is the main vertical communication. It consists of two elevators and the main staircase.

As we can see on the drawings, there is no difference in the construction scheme of existing building and the proposed solution for Gråbergets sjukhem. Facade, pillars, shafts and other construction elements are all preserved in their original state.



Proposed construction floor plan

GENERAL FLOOR PLAN

Gråbergets sjukhem today has a clear division of inner space. West side of the building belongs to the administration and medical service offices. East part holds apartments for elderly and their common area. Main vertical communication connects both these areas in the common middle from where two parallel hallways, connected in places, spread to the both ends of the building. There we find another set of staircase that serves as fire exit.

Either a vertical or horizontal axes can easily mirror entire building. Because of that, zones are evenly distributed in both sides of the building allowing future changes. Technical rooms are positioned in the middle section of the building, right between the 2 main corridors and without outside light.

Social wandering is a term coined by David Hoglund (Hoglund and Ledewitz, 1999) that describes movement through a more purposeful sequence of spaces that can be designed to increase the quality of that experience” 1 The newly proposed areas, especially in the common area is based on different ways of movement.

First, we can think of determined moving - in a linear or circular path. These types of moving are characterized by a clear path that a person takes from a point A to B. Advantage in the existing layout is the option of changing everyday routine path without losing the time to walk the distance.

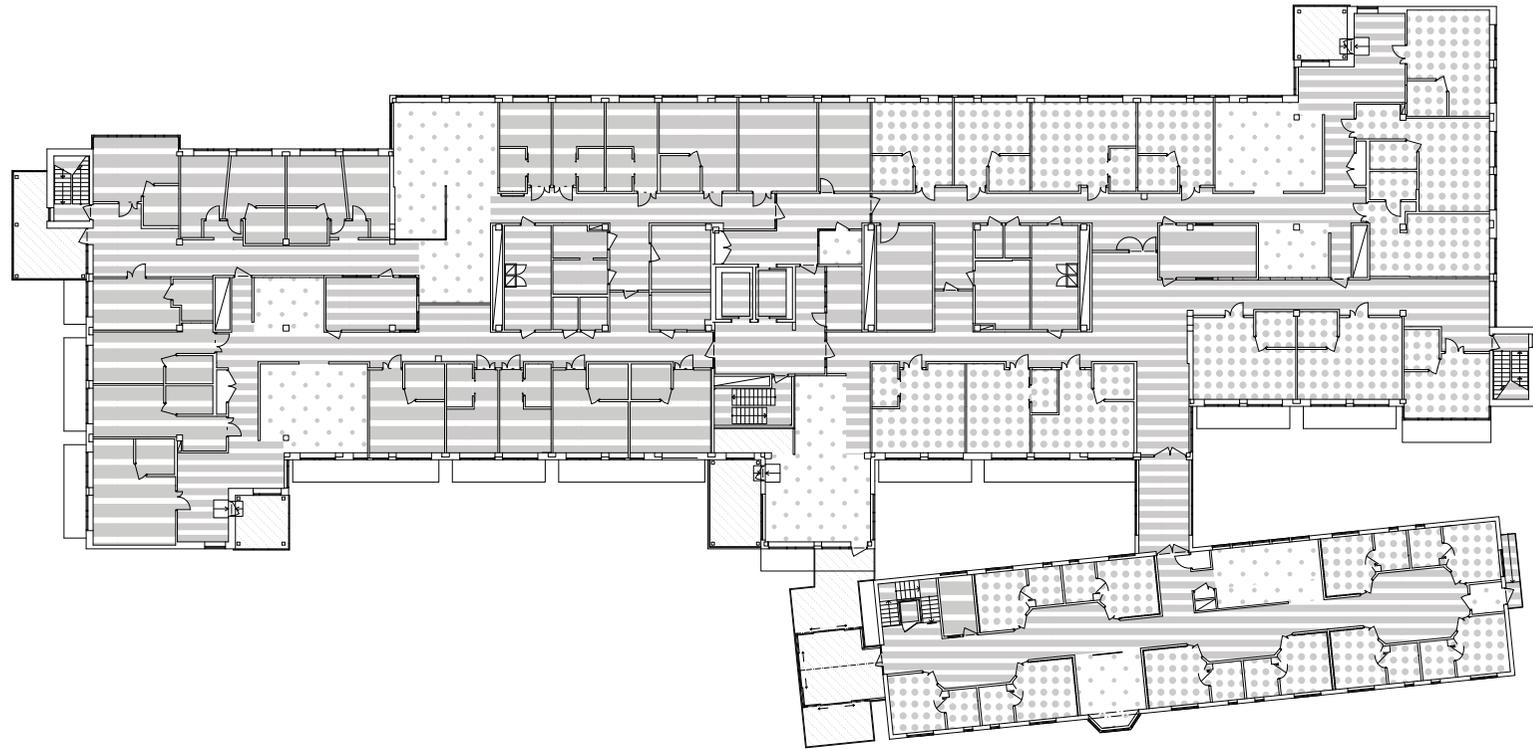
Another type is a looped pathway that allows social wandering quoted at the beginning. In a building like this, it is possible to have a nice walk without actually going outside. Different spaces located around the pathway should provide enough interest for the people who cannot leave building's premises for one reason or another.

Existing floor plan layout with numbered rooms



- | | | |
|--------------------|------------------------------------|-----------------------|
| 1 - main entrance | 10 - pantry | 19 - meeting room |
| 2 - smoking room | 11 - terrace | 20 - landscape office |
| 3 - office | 12 - wc/shower | |
| 4 - corridor | 13 - room 1 person | |
| 5 - laundry room | 14 - room 1-2 persons | |
| 6 - storage room | 15 - room 2 persons | |
| 7 - dining area | 16 - short term stay for 1 patient | |
| 8 - living area | 17 - RWC | |
| 9 - common kitchen | 18 - technical room | |

Existing areas marked on the floor plan layout



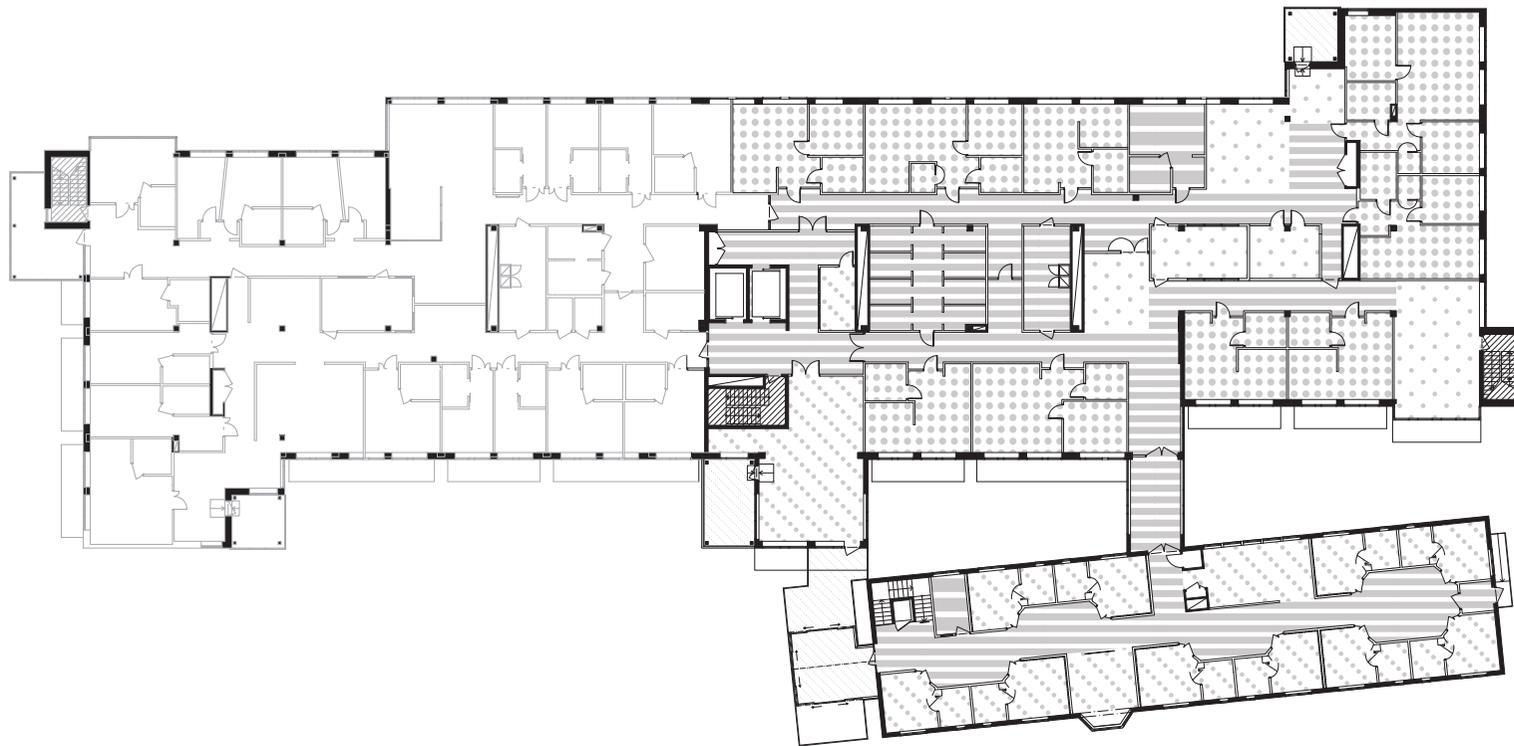
LEGEND

- public area / indoor space
- public area / outdoor space

- support systems / human support
- support systems / technical support

- private area / residence
- private area / common rooms

Proposed areas marked on the new floor plan layout



LEGEND

- public area / indoor space
- public area / outdoor space

- support systems / human support
- support systems / technical support

- private area / residence
- private area / common rooms

CATALOGUE OF THE EXISTING ROOMS AND SPACES

In the zoom in of the entry zone and vertical communication hub we immediately see how enclosed this area is. Main vertical communication is located in the centre of the building as seen in the previous drawings.

Two elevators located in this room are accessible by Swedish standards (dimensions of elevator marked 2 are 1900 x 2900 cm, dimensions of the elevator 3 are 1900 x 3100 cm). Total width of the staircase is 2.5 m - one run's width of 1.1 m. Opening towards the stairs is the smallest one in the zone of 1.0 m width, but still in a higher standard.

As seen on the analysis drawing, passageways satisfy both the normal and high standard of accessibility. Main flaw in the design of entry zone lies not in the dimensioning, but the aspect of welcoming space. Feeling of enclosure in a room with glass partitions, without a view, is something to be rethought in future designs.

In the conditions for a safe-haven residence it is also stated that there should be a common space accessible to all the residents in the proximity of the apartments, for example common dining rooms. Today, there are three different open common areas available in the building. Two of them fulfil the high standard requirements of accessibility, while the third one located in the residential side of the building has somewhat lower accessibility in the kitchen, where an island-counter is positioned in a wrong way.

Additional remarks are noted directly on the room drawing, if any.

As mentioned before, entire building is basically a simple case of mirrored rooms positioned differently in the system. Most of the offices remind or are the exact replicas of the rooms for elderly.

In most cases, bathrooms have high standard of the accessibility planning, which is not always the case with residential rooms. But other than that, no bigger difference can be found. In the limitations of this thesis, it is stated that the office space is not being a part of the analysis here, mainly because there is nothing to inspect.

First limitation says that the project will concern residential object, where office and medical space does not belong. However, since the reconstruction of the building into safe-haven means transformation of these rooms into apartments, they have been looked at a little bit more in detail.

In a description of a safe-haven residence stands that at least 15 apartments of a size between 1 to 3 rooms will be gathered up or evenly distributed within the other types of apartments.

What we see today at Gråbergets Sjukhus are rooms that could hardly transform into a 1-room apartment in most of the cases. We can also notice that some of the bigger rooms have two beds placed in them, a trend that has been changing recently in favour of a single-bed rooms.

Most of the rooms have bathrooms that don't fulfil the high standard with raised accessibility, that we need for this type of housing (SS 91 42 21:2006 shows that the smallest bathroom should be of 2200 x 2200 cm). Every apartment has

circles representing normal standard (inner circle of 1.3 m radius) and high standard (outer circle of 1.5 m radius) for accessibility.



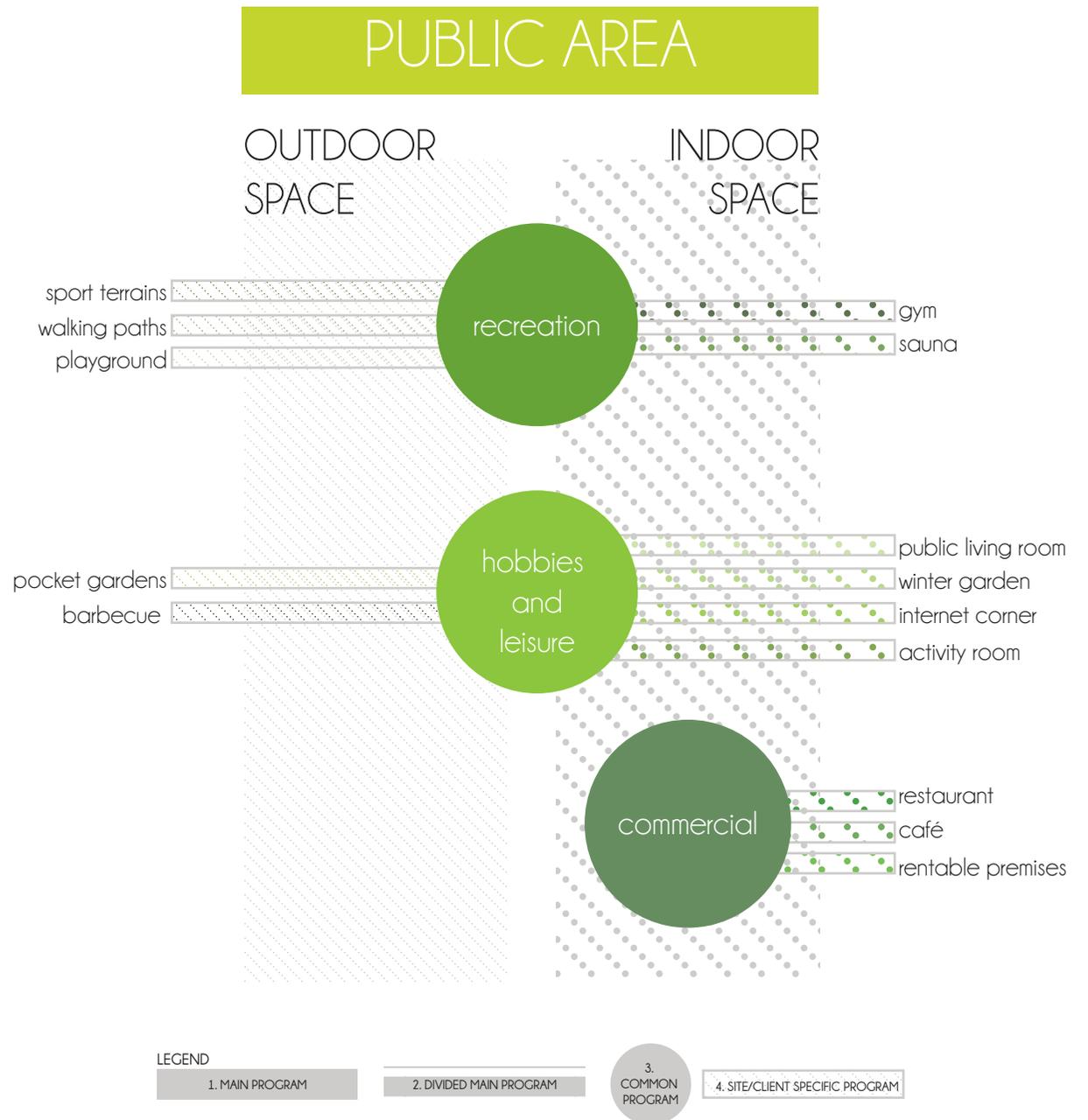


PROGRAM

When creating a program that could fit the needs of users today and tomorrow, of a same building, main question was its division. By creating four different layers of programming, the next one always more detailed than the previous, it is easier to program a building on many different scales.

Starting point is a main program – public, support and private areas. Each of them represents a certain aspect of life lead in an object. Public sector relates to the activities and rooms where we need to interact with different people when we are not in the comfort of our own apartments. It can be any sort of space available unrelated to the person being a tenant of the building or not. It is a complete opposite of the private sector where the user chooses the activities, relations and privacy level. In both public and private area we see rooms with the same labels. But, unlike in the private ones, rooms under public can be rented out, transformed or closed more easily. Support system is all the spaces we usually don't pay attention to as a user. A good support is an invisible one. Nonetheless, if we compare the total area of these three sectors, we can see how the support one in reality takes most of the space.

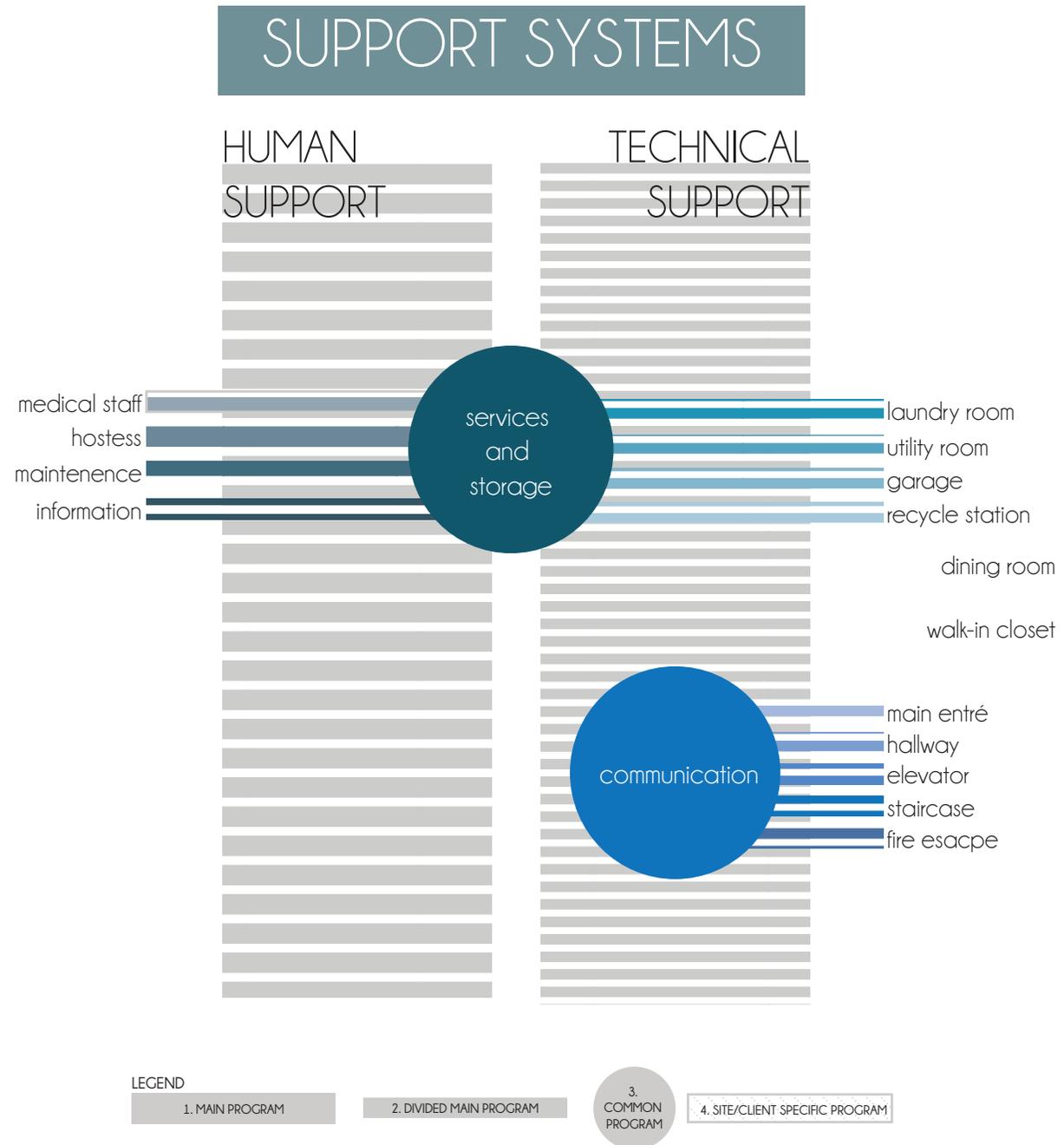
Next division is between the opposites of a same sector. It is what happens when we separate main program into its most different activities. Public spaces become indoor and outdoor, support is divided between human and technical, and private area has its apartments and common rooms available to everybody.



PROGRAM

Still, these opposites have a common program that connects them and is the reason why they belong in the same main program category. Sometimes this common program relates to both opposites, sometimes it belongs to just one. For example, in the public sector: recreation, hobbies and leisure can all be activities for outdoor and indoor spaces, while the commercial contents must be enclosed in building's area. It is a similar case with the connectivity support system, where it has to belong to the insides of the building.

Finally, we have a site/specific program that can be anything according to the wishes of contractor, architect or a third person. It is the program where reading the Questionnaire helped formed a picture of what is needed in a safe-haven residence. Not all of the proposed rooms have to be in a same layout proposal. When working with the final look of the entire floor, it is taken into consideration how some rooms and areas can change according to these program diagrams and host another client specific program.



PRIVATE AREA

RESIDENCE

COMMON ROOMS

bedroom
bathroom
study room
living room

work
and
leisure

livingroom
library
music room
games and TV-room
internet corner

dining room
kitchen
walk-in closet
utility room

service
and
storage

kitchen
dining room

hallway
entré

communication

LEGEND

1. MAIN PROGRAM

2. DIVIDED MAIN PROGRAM

3.
COMMON
PROGRAM

4. SITE/CLIENT SPECIFIC PROGRAM

UNIT A

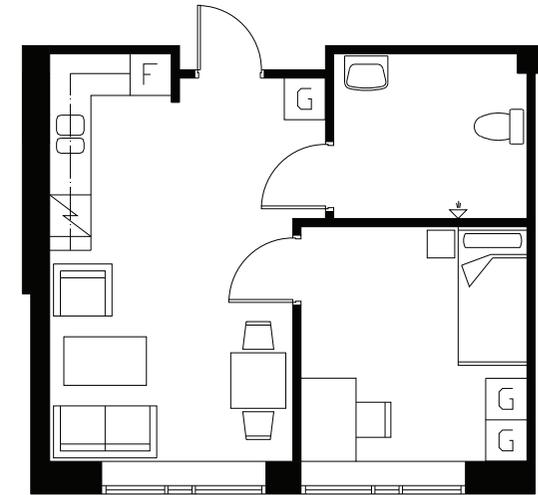
The most basic unit created in this proposal. It is a room and a kitchen apartment of 30sqm. In the plan we can find it repeated four times. Compared to the other two types of newly proposed apartments, this one is the most similar to the original rooms of Gråbergets sjukhus.

The final proposal regarding this unit puts the quality of living space above the rational division of it. As we can see on the other two rejected layouts, this apartment gives enough space for reaching different solutions. None of the rejected layouts is wrong, in the author's opinion, but they do not provide all the qualities aimed for.

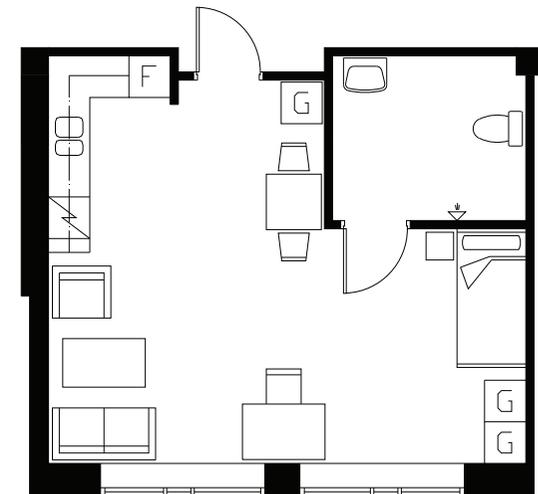
As a rule, this apartment is a starting point of all the other apartments developed in this proposal. It offers comfort, view, space to move around and a compact plan. Position of the kitchen is different from the original since the overall placement of these apartments in the building allows use of plumbing and canalization coming outside of the apartment. Bathroom is remodelled to fit the standard necessary for a safe-haven residence.



Phase 3 - final proposal

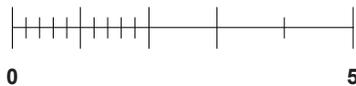


Phase 2

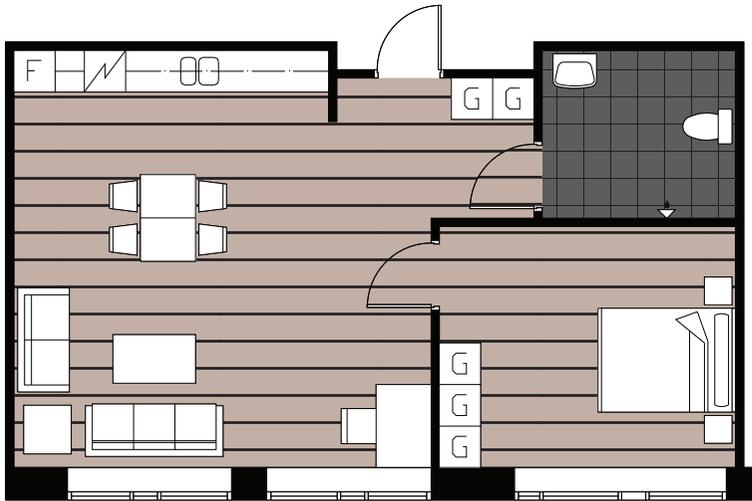


Phase 1

SKALA: meters

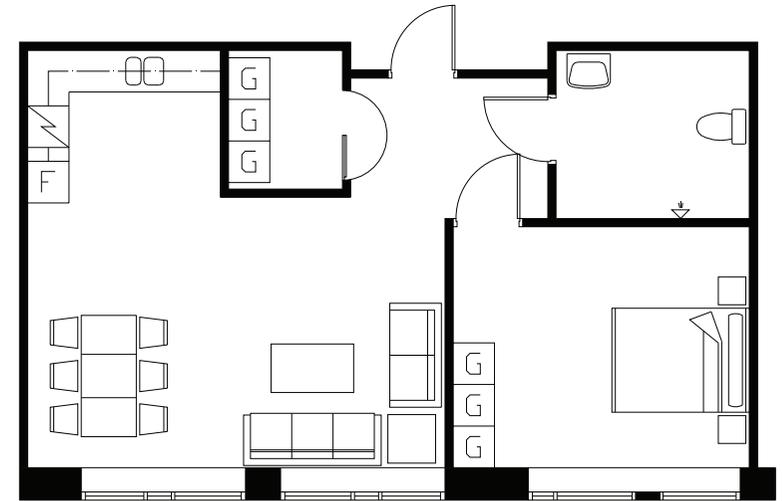
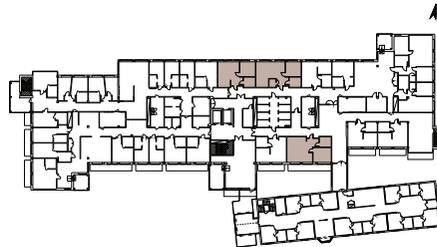
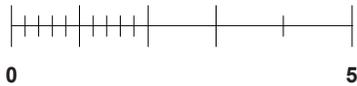


UNIT B

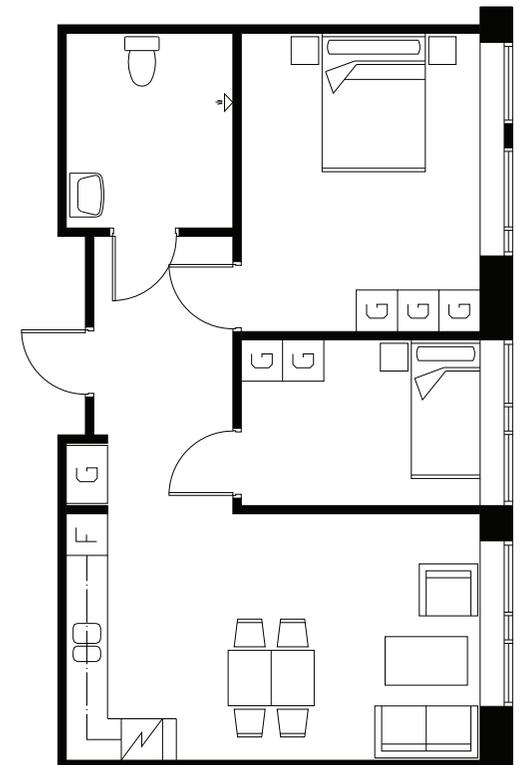


Phase 3 - final proposal

SKALA: meters



Phase 2



Phase 1

This type of a two room and a kitchen apartment is repeated 3 times in the final proposal of the floor plan. It is a 60sqm unit with a possibility of an additional room.

The chosen solution has the most open layout, with one sleeping room and a big kitchen with living and dinning area. This proposal in particular was chosen as the final one, since it would allow new owners to easily create new rooms, if needed. Circulation is concentrated near the entrance and the rest of the apartment is available for furnishing. In the rejected plans we can see how this apartment would look like with an

extra storage space or a smaller sleeping/study room maybe.

When compared to the original layout, as always, bathroom is remodelled into the high level of accessibility. Position of the kitchen area is kept as close as possible and the façade is intact.

Flexibility in placing this apartment type throughout the floor plan lies in its generous day zone area. By resizing the kitchen and living room space, we can create a smaller unit with the same layout and fit it into the plan. Compared to the first apartment type we can comment that it is the more expanded version of it.

UNIT C+D

Unlike the previous two apartments, this one was always dealt with as one unit, and not looked upon singularly and combined afterwards. Reason for doing so was a more complicated position of kitchen and bathroom. Proposed apartments are two rooms and a kitchen of 60sqm and a three rooms and a kitchen of 90sqm with a possibility for additional room.

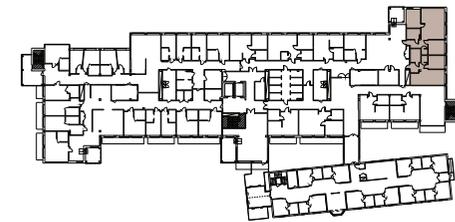
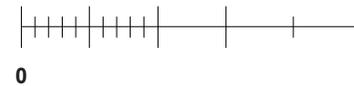
As before, several proposals were made, each offering a different quality. Goal for the biggest apartment was to create almost a separate unit at the entrance – with a room and nearby bathroom. When we think about the future, at least one person living in the apartment will need some sort of more acute medical help. With the proposed layout, that man or woman will have more privacy and be less of a burden for the other tenant. Size of the apartment and position of the doors and windows, allows creation of an additional room where the living area is located today. Possibility to divide space into smaller rooms by the user's preference is one of the ways potential of change in the future can be achieved.

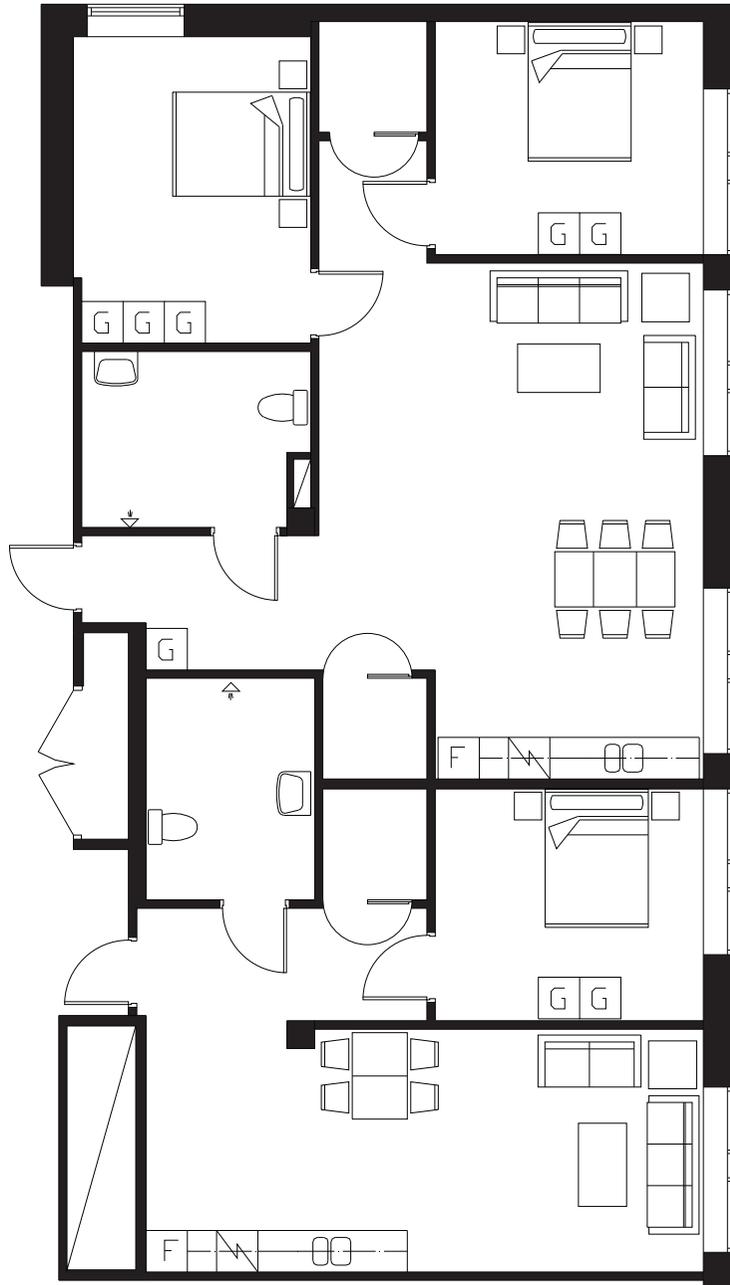
Second, smaller apartment is a variation of the singular unit we have as the apartment type 1, more developed accordingly to the layout we started from. Unlike the proposals in type 1 and type 2 apartments, this layout has a storage room without which it wouldn't function as well. Considering the position of the second apartment, there were not so many different possibilities in arranging the rooms, with the main difference in the way hallway is formed.



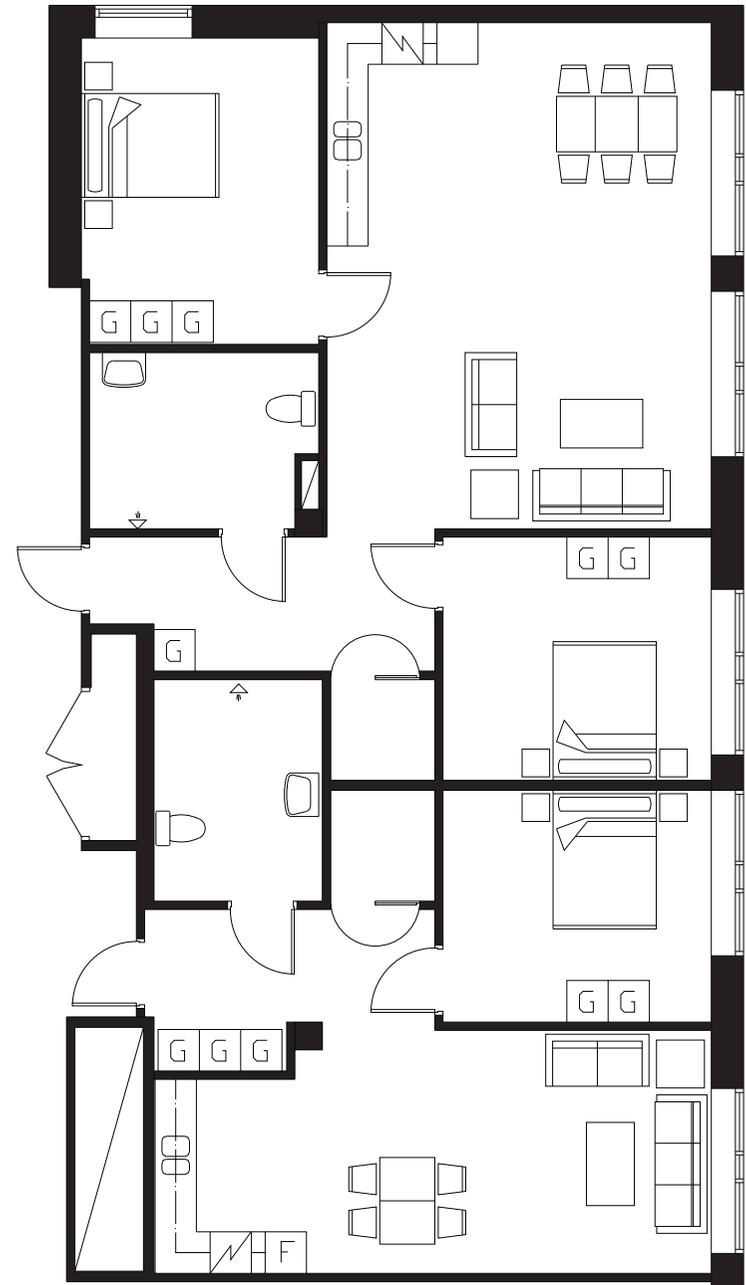
Phase 3 - final proposal

SKALA: meters





Phase 2



Phase 1

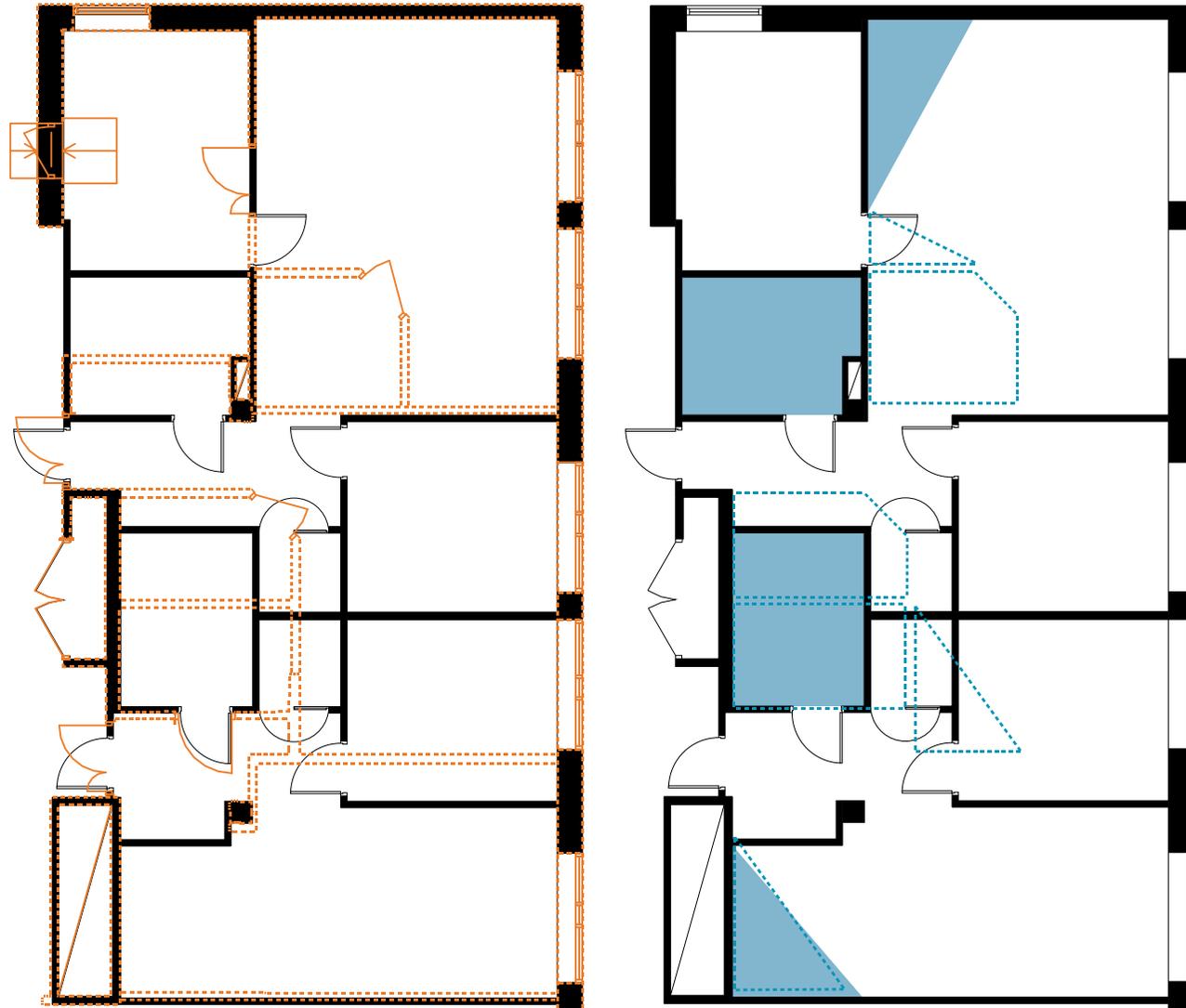
COMPARISON ANALYSIS

When analysing the potential of adaptability of old apartments, it was essential to prove that with the minimum of construction changes we are able to create new units.

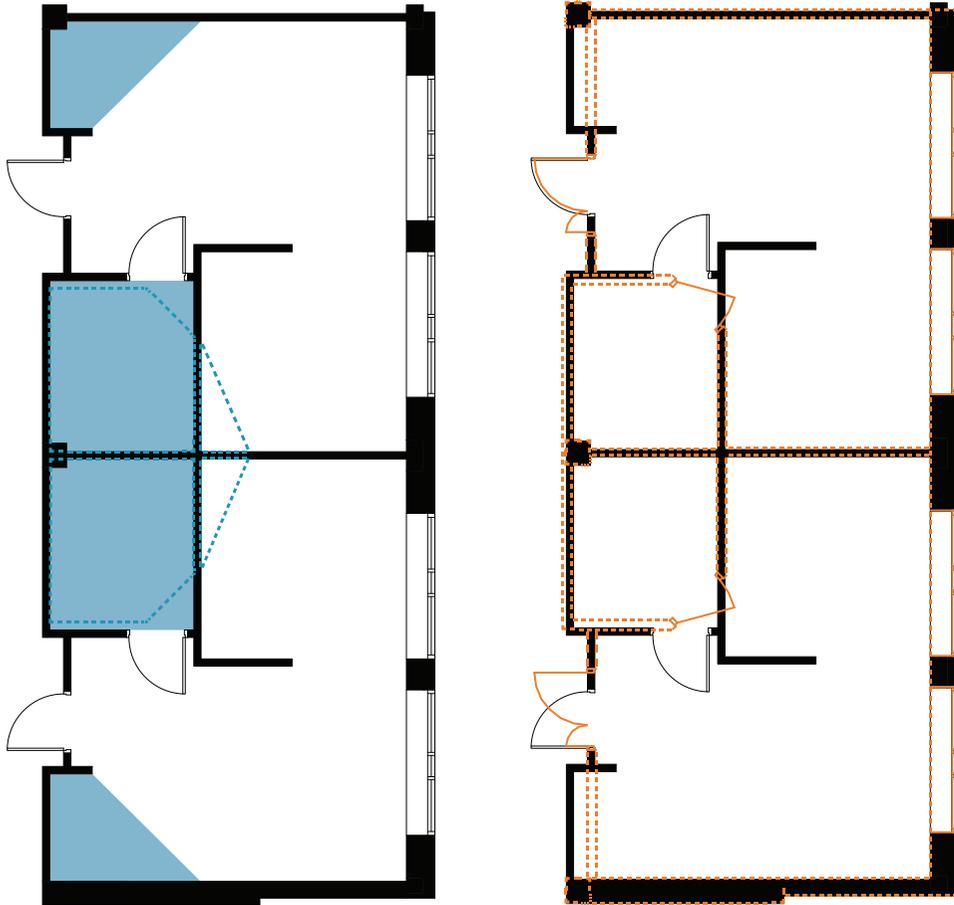
By comparing the new and old position of service cores and wall placement we can easily see how flexible a unit was.

In order to get a more clear picture, units were combined together. We can see that while bathrooms are kept at their original position, kitchens are mostly moved towards the “outer” walls of the apartment. Reason behind it is simple: when positioning these apartments in a row, two units can share the same service core mirrored along the “outer” wall.

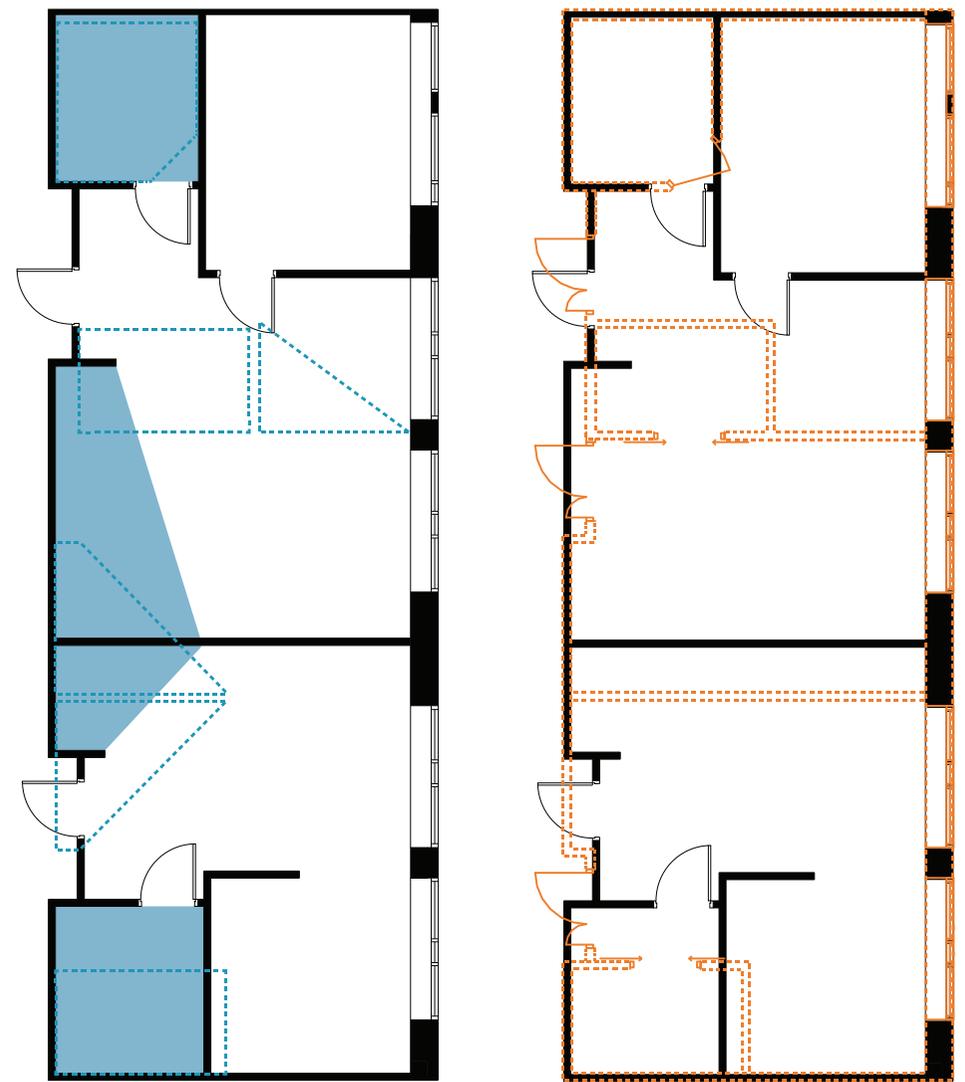
To summarize, no matter how we choose to organize the inner walls, by placing the service cores at right positions, we are gaining the much needed adaptability of the floor plan in the future.



UNIT C+D_Left drawing: position of the service core (kitchen, bathroom) before in dotted blue lines and after in full blue
Right drawing: position of the walls before in orange dotted line and after in black



UNIT A+A_Left drawing: position of the service core (kitchen, bathroom) before in dotted blue lines and after in full blue
 Right drawing: position of the walls before in orange dotted line and after in black



UNIT A+B_Left drawing: position of the service core (kitchen, bathroom) before in dotted blue lines and after in full blue
 Right drawing: position of the walls before in orange dotted line and after in black

FINAL PROPOSAL

Final proposal for the building's floor layout was a result of several attempts to create an environment with high level of space quality.

From the start, guideline was a creation of space with the minimal construction impact on the existing building. Apartments were dealt with separately, in the constraints of the positions of the previous ones. Their development was not connected in any way with the development of the interior common areas meant for the tenants and/or external visitors.

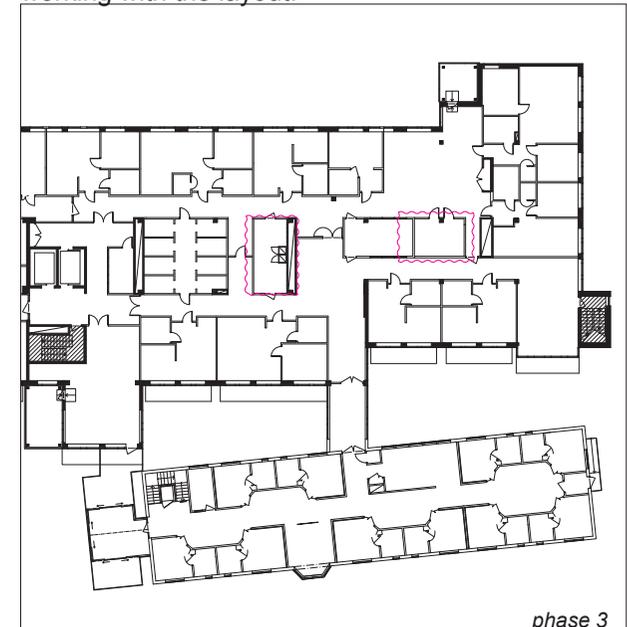
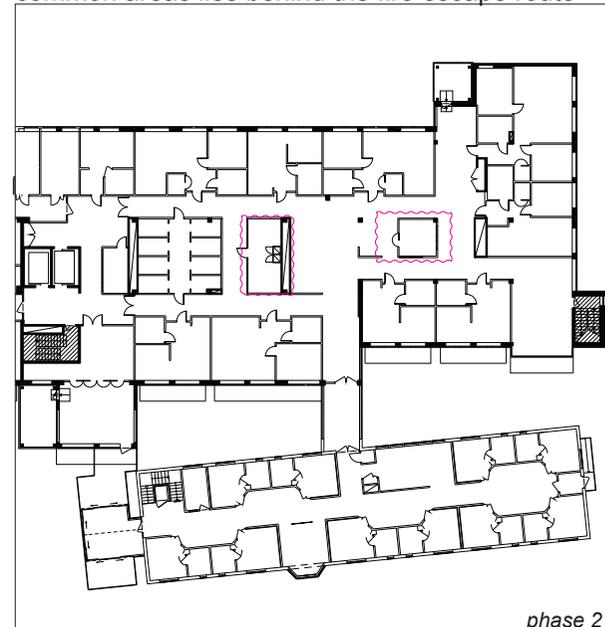
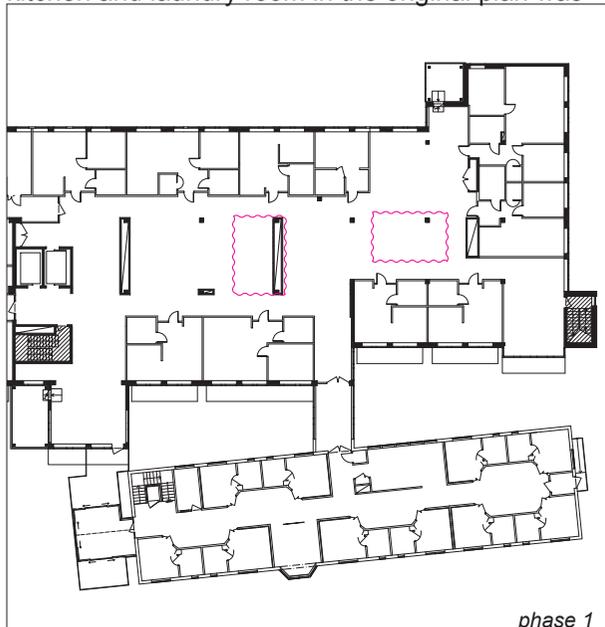
Phase one was taking the entire existing common space away and leaving just the apartment boundaries and construction elements such as columns and shafts. By doing this, we created a blank board to work on. Distribution of the program created and divided into public, support and private areas followed the set limitations. Position of the kitchen and laundry room in the original plan was

marked and set for keeping as its change would affect the construction of the floor plan.

Phase two created one proposal for the floor plan where private apartments get priority over the common areas. As mentioned, common kitchen and laundry room are kept in the same position, and around them are positioned living, dining and multifunctional areas. Flaw in this way of space division is the lack of natural light and ventilation. However, it allows space for bigger, more open areas to develop the way tenants see fit. It also breaks down the existing corridors and creates a more open path for walking.

Phase three and the final proposal is an in-between step of phase 1 and 2. It returns to the original placement of laundry room, and the doors that divide northern and southern corridor. Reason for the return to the original layout of corridors and common areas lies behind the fire escape route

that existed in the original building. By creating a more open floor plan, like in the phase 2, there is a need for a new calibration of fire risk and protection against it. By keeping the locks in their places and inner rooms, we can keep escape flows the way they are. Another reason for going back to the original plan is the quality of common areas. In the final layout dining and living rooms are positioned at the corners of the building, with a view and natural light and ventilation. A game room near the vertical communication core is kept as a part of all new proposals. In the deepest parts of the building, support program like storages and laundry are kept. And in the area closer to the open common spaces filled with light we find a shared kitchen and a multifunctional room. Total number of proposed apartments is nine in every phase, which was one of the more general concerns when working with the layout.



Proposed floor plan layout with numbered rooms



- | | |
|--------------------------|---|
| 1 - main entrance | 10 - internet corner |
| 2 - smoking room | 11 - terrace |
| 3 - multifunctional room | 12 - 1 room and kitchen apartment (40m ²) |
| 4 - corridor | 13 - 2 room and kitchen apartment (60m ²) |
| 5 - laundry room | 14 - 3 room and kitchen apartment (90m ²) |
| 6 - storage area | 15 - hostess' apartment (30m ²) |
| 7 - dining area | 16 - short term residence |
| 8 - living area | |
| 9 - common kitchen | |

CONCLUSION

In the abstract 4 questions were set as the overall guidelines. By finding a reply to them, we actually find a purpose of the work conducted in this thesis.

As with any other open-ended scenario, responses are variable and it is possible that another person's answers would be completely different. But even in that case, at least one question would be satisfied: the fourth one asking for further discussions. Actually, the answer to the fourth question lies in the entire thesis and beyond, in every mention of it, discussion, evaluation and so on.

Similar situation is with the question number three. As one of the main "driving" forces of the thesis, it could be assumed that entire work done in this booklet reflects on that point. Questions one and two are dealt with while researching the topic of flexibility and adaptability, and afterwards within the proposal itself. Solution achieved for the building is just one of the many. Some of the ideas are still shown, to strengthen the proposal and idea process, even if not chosen for the final solution. As stated in the framework chapter: limitations work was conducted under the minimum construction oriented changes. Final proposals have qualities author deems more important over others.

By realization of the floor manipulation on the plan/program level, we are able to see that the idea of potential for change in existing buildings is more than plausible. Further work in this field could influence the way we think about reuse of existing buildings. It could also mean a lot in terms of urban city planning and gentrification.

PERSONAL MOTIVATION

The first time I got intrigued by the subject of buildings changing throughout the time was after reading a book by Bill Bryson "AT HOME: A Short History of Private Life". It was about the author's house and a history of not only the building, but also of all of the domestic artifacts we usually take for granted. As an architect, what I was interested the most was how the house changed, rooms appeared and dissolved, spaces were used in so many different ways depending on the users. The topic of this thesis work is derived from a couple of different interests I have developed during my 5 years of studying Architecture in Serbia and Sweden. My main goal is to work with a realistic project that still allows a lot of freedom to develop new ideas and different approaches. Potential for change of use in a building became an obvious reason for a master thesis topic because:

1. Since my Bachelor studies I have found residential objects a challenge design-wise, but also as those that hold the biggest potential for the future
2. Sustainability as a question becomes more and more important in the contemporary architecture and in every other aspect of our lives. After the course we had in the first year of Master studies at Chalmers, I have decided to try and focus more on sustainable aspects and also try to understand what I believe is sustainable and the contribution I can make in that field. Reuse of the existing buildings for me seems like one of the ways to work around this subject which also plays an important role in my master thesis work.
3. Our cities are growing daily, producing new markets for housing. During my studies I have been involved in a lot of urbanism projects, often wondering how it is that we can impact the built

environment, creating momentum that will develop the city from within, engaging the people living in it to react to architecture and their surroundings more often.

4. Another reason for approaching the question of how buildings change through time is that I find this a romantic way to look at objects. There is something behind knowledge that a simple change of wall color can make a difference. Imagine then how it feels to transform an entire object, simply but understanding how its space functions.

5. Finally, as a new student in Sweden, I was in the position of searching for a flat and understanding the urgent need for finding more apartments for the growing population of students in Gothenburg. It is the similar case with the housing for elderly people, giving the fact that our civilization is getting older. I will try to work with the necessities of both of these target groups, searching for a solution that will prove useful in the long term, but also in the shorter time frame that is imposed by market needs.

Now, at the end of my thesis, I can say that those reasons for choosing it were the ones that kept me going. Having a topic I feel strongly interested in made work so much more interesting and relaxing. In these last rows, I want to share a couple of practical advices I wish to remember in any of my future works. Look upon it as a friendly letter to any other student reading these rows. We were all in the situation you are now. Practical tips for the future are:

VISUALIZATION. Decide early on how you want your work to look visually. We as architects are very strict upon ourselves when it comes to the design. You don't want to be in the same situation

as I was when there is no more time to change the drawings, but you aren't really satisfied with the overall look.

LIMITATIONS. Make a list of limitations and have it in front of you all the time. Be prepared it will change during the time, but try that the change concerns adding new limitations, not manipulating the old ones. This is a great way of keeping your work where you want it and also an answer to your every dilemma: don't know if you should try to change the existing façade? Check your limitations and you will know the answer.

DEADLINES. Follow your progress. I wouldn't recommend setting up deadlines (albeit the obvious ones like meeting the examiner/s or having a critique). The feeling of missing a deadline is one of the worst I had in my professional life even if you missed it for a valid reason. Instead, I suggest keeping a diary/blog/vlog and writing down only the parts you are really done with. Also, it makes a nice memory to have afterwards, in my opinion.

PERSONAL GRATIFICATION. As mentioned before, I really find all the architecture (art/design oriented) students very harsh towards themselves. Yes, maybe it is not exactly the way you imagined it will look like. But it is a big step in your life and you should be proud. If really unhappy, you can always continue working on it and polishing the final product (maybe for the portfolio?). For the moment, learn to embrace your victories and be happy with them.

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