

CARE FOR WOMEN

Refurbishment of Women Clinic at Akademiska Sjukhuset in Uppsala



Before



After

Chalmers University of Technology
Architecture Master Thesis
Spring 2012
Shadi Jalali Heravi



Care for Women, Refurbishment of Women Clinic at Akademiska Sjukhuset in Uppsala

Master Thesis at Chalmers University of Technology, Architecture

Started: January 16, 2012

Presented: May 8, 2012

Author

Shadi Jalali Heravi, heravi@student.chalmers.se

Examiner

Peter Fröst, Adjunct Professor of Healthcare Design, CTH

Jury

Claes Caldenby, Professor of Architectural Theory and History of Architecture, CTH

Anna Bergström, Architect at BSK Arkitekter AB, Stockholm

ACKNOWLEDGMENTS

This dissertation would not have been possible without the guidance and the help of several individuals who in one way or another contributed and extended their valuable assistance in the preparation and completion of this study.

I would like to express my gratitude to my supervisor, **Peter Fröst** who was abundantly helpful and offered invaluable assistance, support and guidance. I owe my deepest gratitude also to **Roger S. Ulrich** who without his knowledge and assistance this study would not have been successful.

Special thanks to my tutor **Björn Gross** who I learnt a lot from during my whole master program studies and also to all my friends, especially the healthcare group for giving helpful feedback and sharing the literature and invaluable assistance.

Shadi Jalali Heravi
May 24, 2012

ABSTRACT

Today, the Women's department of University Hospital in Uppsala has spaces which are not being used properly or spaces which are being wasted by not having the proper function. In order to consider future expansions and improvement, Uppsala county council has developed a Property Development Plan of the University Hospital and a Premises Plan for year 2011. These plans represent an in-depth analysis of the local situation of the hospital community activities concerning some proposals for change.

Regarding the Premises Plan 2011, this project proposes an alternative research and design for refurbishment of Women Clinic of Akademiska Sjukhuset in Uppsala. The design will consist of total arrangement of the spaces in the existing F15 building, refurbishment of the women's delivery and surgery departments together with some major changes to mixed used spaces, patient rooms, wards and facades.

“To what extent is it possible to have a sustainable refurbishment based on patients psychological needs?”

The proposal mainly intends to reach a solution for having a sustainable refurbishment based on patients psychological needs in three different scales. Solutions for arrangement of spaces in the whole building, one floor plan (a ward) and a single patient room.

Keywords: Women Healthcare, Sustainable Refurbishment, Psychological Needs

TABLE OF CONTENTS

ABSTRACT	ii	METHODOLOGY	14	CONCLUSION	34
BACKGROUND	1	INTRODUCTION	14	LIMITATIONS	34
INTRODUCTION	1	METHOD CRITERIA	15	POTENTIALS	34
REFURBISHMENT	2	Space		REFERENCES	36
SUSTAINABILITY	3	User Needs		LITERATURE STUDIES	37
VISION	4	User Groups		APPENDIX	iv
CASE STUDIES	6	DESIGN PROPOSAL	19	RECREATIONAL CENTRE	
CURRENT SITUATION	7	LARGE SCALE	19	PROPOSED DRAWING	iv
INTRODUCTION	7	Design Theory		MATERNITY WARD	
SITE ANALYSIS	8	Design Sketch		PROPOSED DRAWING	v
EXISTING BUILDING	9	MEDIUM SCALE	26	MATERNITY WARD	
EXISTING PROGRAM	12	Design Theory		EXISTING DRAWING	vi
PROBLEMS AND POTENTIALS	13	Design Sketch- Recreational		CHILDREN'S DEPARTMENT	vii
		Design Sketch- Maternity		Existing Program	
		SMALL SCALE	31	Proposal by White Arkitekter AB	
		Design Theory			
		Design Sketch			

BACKGROUND

INTRODUCTION

Akademiska Sjukhuset, Uppsala University Hospital is a major hospital with a 300-year history mentioned as Sweden's oldest university hospital. And yet today, it is one of Sweden's biggest and a full-scale university hospital which has a very central location close to the castle, town, university departments and city gardens.

The University Hospital is a member of the global network of Health-Promoting

Hospitals, along with over 650 hospitals in 30 different countries. The hospitals in the network mainly focus on good treatment and care of the patients and try to work systematically to promote health and prevent illness in patients, employees and society in general. [Uppsala University Hospital 2009]

In Akademiska Sjukhuset, it is a characteristic to always look for new, innovative solutions. In this hospital, the best use of new technology, new scientific findings

and new ways of working are made in order to solve medical problems and to continuously improve the way to take care of patients. However, today, the Women's department of University Hospital in Uppsala faces major problems regarding space usage. It has spaces which are not being used properly or spaces which are being wasted by not having the proper function. Therefore, there is a need of redevelopment for the building in order to keep the mentioned image.

REFURBISHMENT

In most European cities there is a great number of vacant buildings, many of which are getting to the end of their useful life. Demolition is an option but refurbishment is a more environmentally friendly and sustainable option, according to the architectural value, material use, neighbourhood disruption, waste disposal, etc. However, by reason of structural limitations, even after refurbishment, old buildings can use large amounts of energy and provide poor internal conditions for occupants and generally not meet current requirements or expectations.

But what does the term “refurbishment” exactly refer to?

A construction can be classified as either new built or refurbished. New build is an easy concept to grasp, as it is a term applied to any work that is starting from scratch. Refurbishment, however, is a more difficult concept to generalize. A very broad definition of the term refurbishment is:

Work undertaken to an existing building [Riley, M., Cotgrave, A. 2004]

However, refurbishment can happen in many forms and may be applied for a variety of different reasons. There are a number of terms that are commonly used to describe the work undertaken to an existing building. To clarify the exact meaning of refurbishment these terms that are often used instead of or in conjunction with refurbishment should be studied:

A *Conversion* implies that the main use of the building will be altered, but that the main structure will not be changed. [Riley, M., Cotgrave, A. 2004]

A *Renovation* and *restoration* imply to the work that consists of renewal and repair only to avoid further degradation of the building. [Riley, M., Cotgrave, A. 2004]

A *Retrofit* essentially means fitting new and more modern systems into an existing building. The term is commonly associated with building services because a common phenomena in buildings is that the life of the building structure and fabric will be considerably longer than that

of the installed services. [Riley, M., Cotgrave, A. 2004]

From these definitions it can be seen that refurbishment can include all of these elements. Therefore, in a more specific way, refurbishment can be defined as:

“Extending the useful life of existing buildings through the adaptation of their basic forms to provide a new or updated version of the original structure” [Riley, M., Cotgrave, A. 2004]

In this project the term ‘refurbishment’ means arrangement of spaces in order to achieve the highest value possible in the most sustainable way.

SUSTAINABILITY

The decision to refurbish the existing women clinic rather than building a new one is in itself one of the 'greenest' aspects of this project. The benefits of refurbishment over a new construction are recognized under various sections including the reuse of materials, minimal construction waste and reuse of land.

When it comes to best sustainable ways of using spaces, the women clinic needs solutions which can add values to the existing building, enabling better usage of spaces and better adaptation to new health care functions.

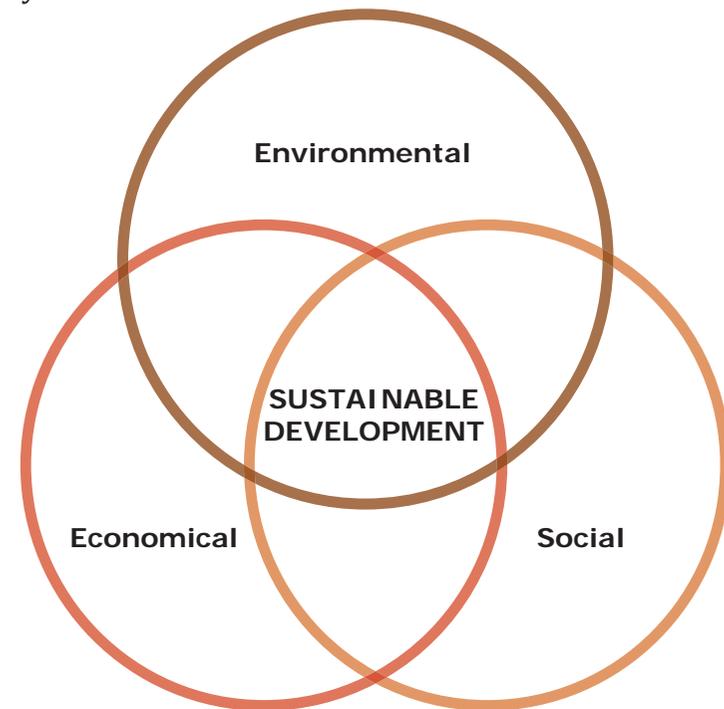
Therefore, in this project, Sustainable development is considered in three different aspects: Environmental, economical and social.

The refurbishment can be *environmentally* sustainable by reusing of land and having less construction waste than new built building constructions.

Economically wise, reuse of materials can help the refurbished building to be

more efficient by reducing the energy consumptions. The amount of energy used to refurbish can be less than building new constructions, therefore it can be considered as energy efficient and thus economically sustainable.

Sustainability from social point of view in this project refers to using design methods which can lead to reduction of patients length of stay and staff productivity.



VISION



The vision of University Hospital is to be equipped in a way to meet future demands of society on the renewal and development of care. The hospital aims for premises to gain the users trust and comfort in all aspects. To this extent, re-designed spaces shall show this is leading to a qualified and professional work space which is accessible to all and easy to navigate. [Lokalförsörjningsplan 2011]

To mention the vision of this proposal, patient empowerment and family-centered care are two most important goals which can lead to better healing environments.

‘Empowerment’ means the process of increasing the capacity of individuals or groups to make choices and to transform those choices into desired actions and outcomes. [World Bank 2011]

‘**Patient empowerment**’ is a broader term for patient control. Patient control refers more to patient’s domination over physical environment such as controlling the lighting, blinds and air-conditioning, while patient empowerment includes patient’s participation in medical decisions and access to medical records as well. [Discussion with Ulrich, R. S. 2012]

The term ‘**family-centered care**’ mostly has been discussed in the context of child health. It refers to a service which approaches to values and attitudes of children with special needs and their families. [Kovacs, P. J., Bellinb, M. H. and Fauria, D. P. 2006] Although the term can be used in a broader sense being applied to all categories of patients which are in need of their family support while experiencing a healthcare facility.

Therefore, the project aims to create an environment which makes the most opportunities for the patient to have

family's support in the happy and sad moments of their lives and can have a sense of control over all situations going through to enhance their process of healing.

Moreover, the aim of the project is to provide safety for the patients and their families by using suitable equipment and the latest technologies.

Patient safety is a discipline that emphasizes the prevention of errors, whether medical or environmental, which leads to unfavourable healthcare events.

So how can hospital design cause errors and what is the role of hospital design in patient's safety?

Hospital design refers to the physical environments such as indoor environment (noise, air quality and lighting), interior design (furniture and materials) and configuration of spaces in a hospital. Some aspects of hospital design such as air quality, lighting, patient room design and other interior design elements can directly impact safety outcomes such as

infections, patient falls and even medical errors. [Joseph, A., Rashid, M. 2007]

After discussing a safe environment for patients, to create pleasant, relaxing spaces by the help of positive distractions such as colours, light, art and views are as important as other factors in this proposal.

A **positive distraction** has been defined as "an environmental feature that elicits positive feelings and holds attention without taxing or stressing the individual, thereby blocking worrisome thoughts." The term distraction itself refers to "the direction of attention to a nontoxic event or stimulus in the immediate environment." [Pati, D. 2010]

In regards of positive distraction, having easy access to **nature** and out door areas are essential. Cognitive, affective, and moral development is impacted significantly and positively by direct contact with nature. [Discussion with Ulrich, R. S. 2012] Therefore, the project aims for improvements in connection to outdoor areas and nature.

Last but not least, in general, the aim is to provide the best environment for mothers to deliver their babies and to strengthen the care of ill or injured women and their children.

CASE STUDIES

Eastern Market Row House



The main goal of studying similar projects was to achieve the major values of adding a new part to an older building to enhance the building's psychological characteristics from the users point of view. The appearance of the building gives the first impression to the users. Therefore, after renovation it should look bright, inviting and fresh.

Eastern Market Row Houses in Washington D.C., United States, were renovated by adding light cubes to the corner of existing brick apartments. The volume has a contrast of lightness and heaviness connecting glazed panels to heavy bricks in the facade. [Minner, K. 2011]

Kinderstad

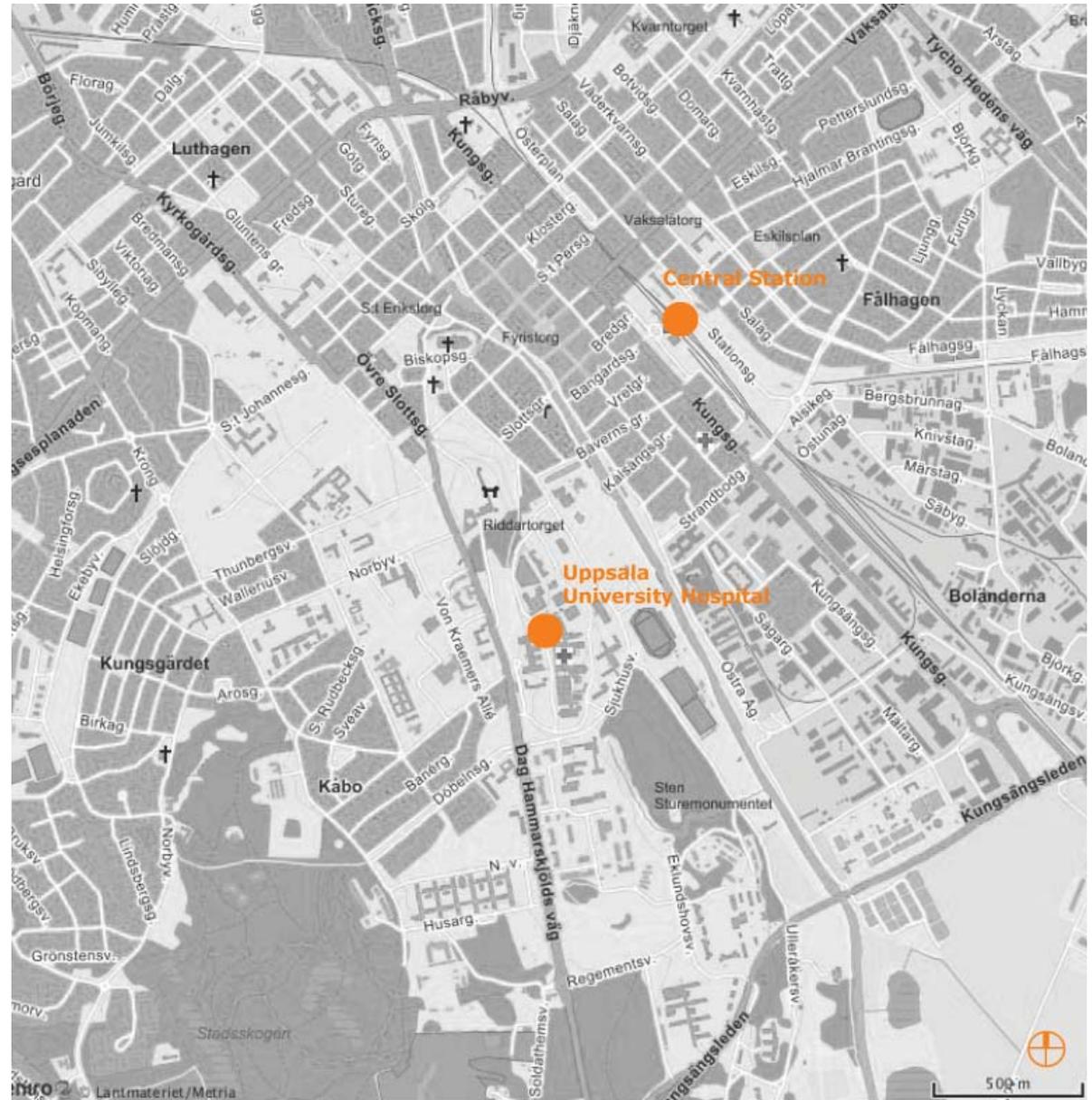


Kinderstad, a cloud on top of a brick building, is a rectangular box functioning as a recreational centre for children. It is constructed on top of a children's hospital in Amsterdam, Netherlands. [Saieh, N. 2008]

CURRENT SITUATION

INTRODUCTION

Uppsala University Hospital has a very central location. The hospital community is only 5 minutes walking distance from the Central station and city centre. It is surrounded by city gardens and university departments. Most of the hospital buildings have the nice view of Uppsala's castle as it is situated on a hill, very close to the community.



SITE ANALYSIS

The University Hospital is easily accessible by public transportation. The main access road and bus stations are located at the east side of the site.

There are numbers of parking areas with the possibility of expansion, giving the opportunity to reach the facilities in a more convenient way.

The community also includes safe walkways and bike roads in the whole area with access to surrounding gardens and parks.

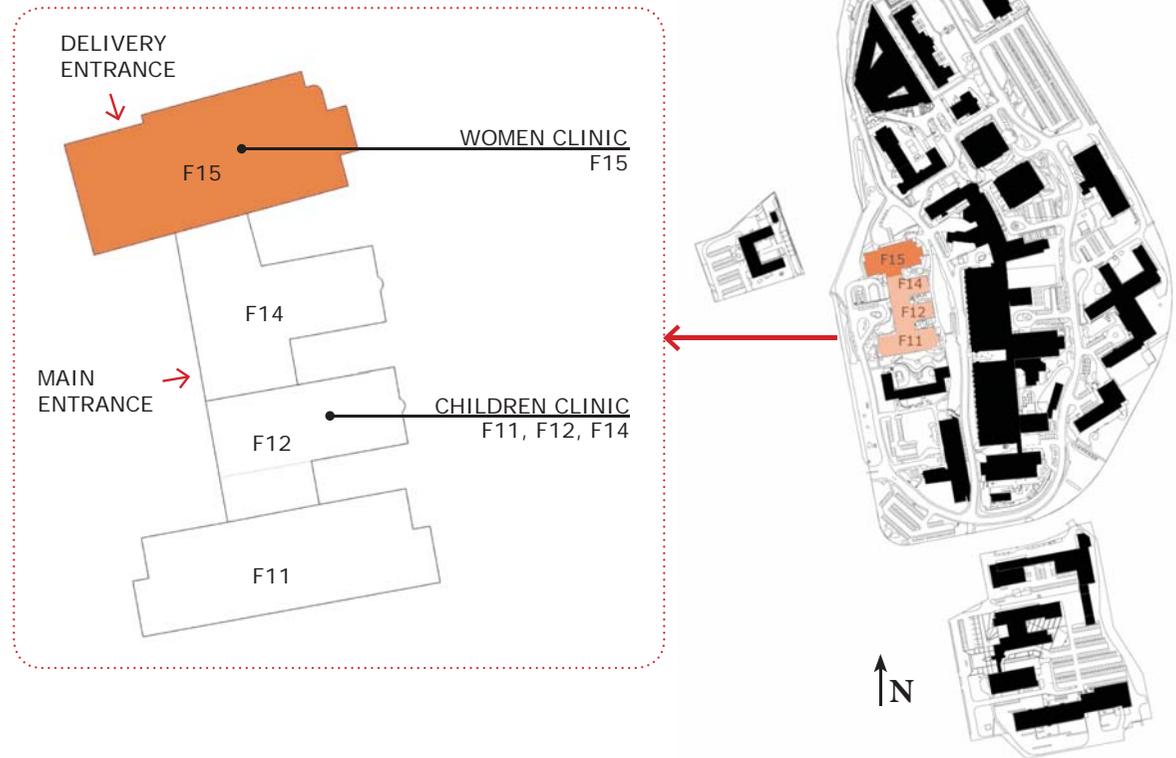


[Fastighetsutvecklingsplan 2011]

EXISTING BUILDING

The Women's Clinic is connected to the Children's department from the north side. It is one of the highest buildings in the hospital community which is situated on a steep ground. The height difference between the main entrance level and the east side street is more than 14 meters. The women's delivery emergency entrance is situated on the north side of the building and is two stories below the main entrance.

The building has been built in 1985 with a minor renovation in year 2010. White Arkitekter AB has a design proposal for the Children's department; therefore the design proposal for Women's Clinic will be in a way to connect to the proposed project by White.



North-east View



Northern Facade

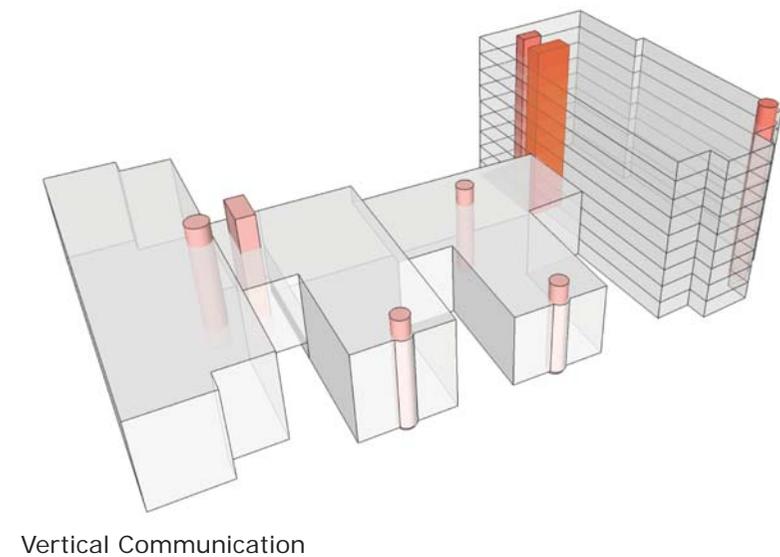
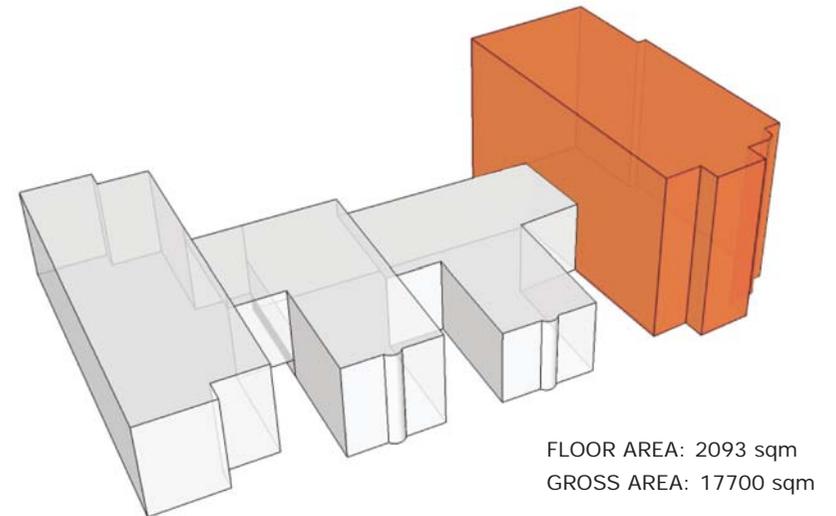
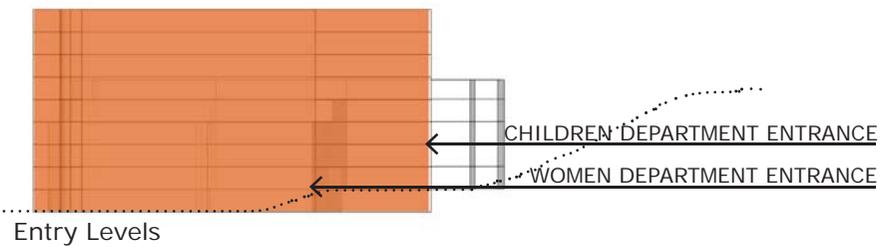
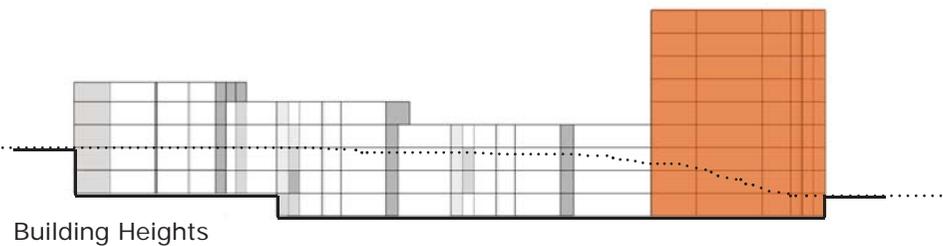


Main Entrance



Delivery Entrance

The image at the right-down shows the vertical communication in the women and child's department. Women's building has only one fire emergency stair case which means in case of emergency people have to leave the building through the exit that is 60 meters away.



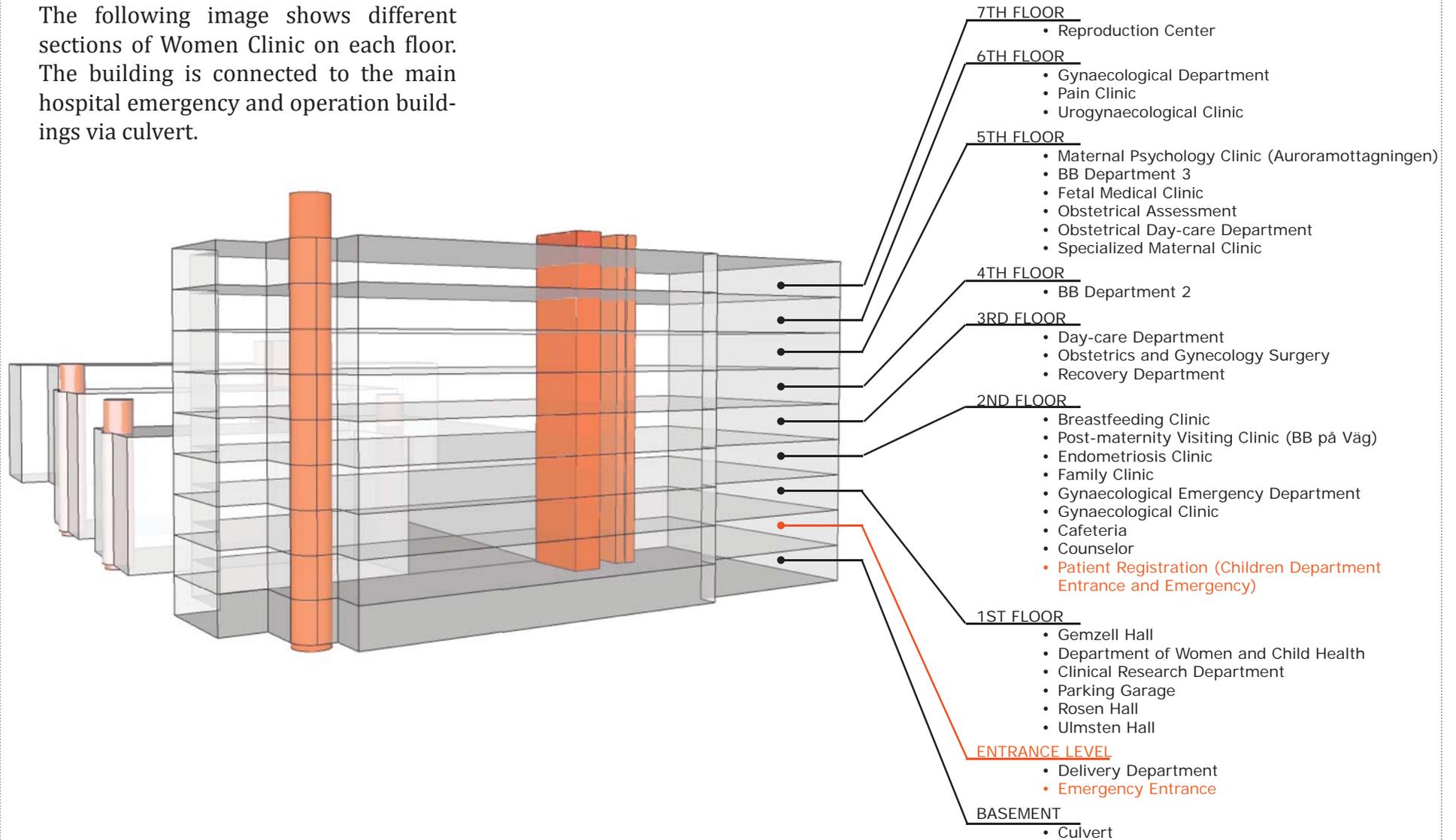
The minimum distance between exits is one-half the diagonal measurement of the building. On an open floor, this is measured as a straight line distance between exits. Where the exits are joined by an exit access corridor that is protected from fire as specified by the building code, this distance is measured along the path through the corridor. [Luxenburg, R. 2009]

In this project “d” must be at least half of “D”. Therefore there is a need of another fire exit in this building.



EXISTING PROGRAM

The following image shows different sections of Women Clinic on each floor. The building is connected to the main hospital emergency and operation buildings via culvert.



PROBLEMS AND POTENTIALS

Current project faces some problems as well as having great potentials to reach the values of a sustainable refurbishment.

PROBLEMS

Vacant spaces
Closed areas
Lack of green spaces in context
Poor connection to nature
Fire exit

POTENTIALS

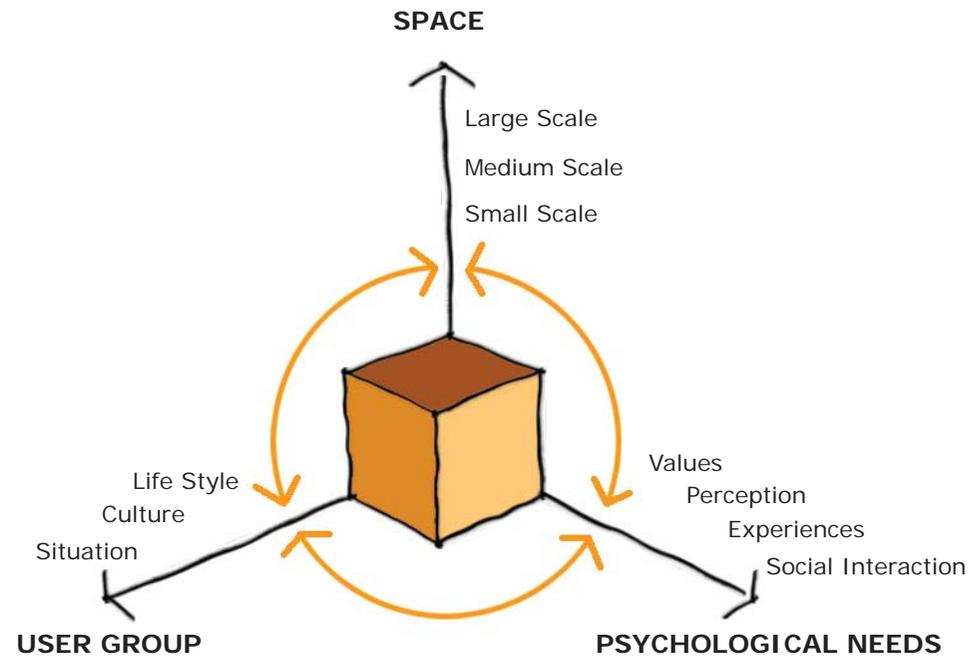
Quality of old brick facade
Wide corridors
Height of the spaces
Enough spaces for parking
Situation of the building
Good view
Good southern light

METHODOLOGY

INTRODUCTION

Today experts are studying to determine how different aspects of a facility, such as lighting, furnishing styles, the placement of sinks and bathrooms or overhead cabinets can influence patient's health. The effects are measured by looking at statistics such as the rate of blood pressure or the number of medication errors and the length of patient stays. Improving these measures causes an overall enhancement of patient's health. This method is known as Evidence-based design which proves that the physical environment can have a measurable influence on our well-being.

The Centre for Health Design, an organization that supports healthcare and design professionals to improve the quality of healthcare through evidence-based building design, have proposed the definition of EBD as "the process of basing decisions about the built environment on credible research to achieve the best possible outcomes". [The Centre for Health Design 2009]



Since every facility is built within a specific set of requirements and constraints, each needs a design which fits its demands. The goal is to intelligently adapt the evidence-based research and apply it to the project in order to achieve a suitable environment for all users.

By discussing EBD principles with Roger

S. Ulrich (2012) it was realized that EBD principles in the design process involves in different scales at different situations and stages of the user groups which effects their perception and experiences from the designed environment. Therefore, the project focuses on mutual interactions among **spaces, user groups** and their **needs**.

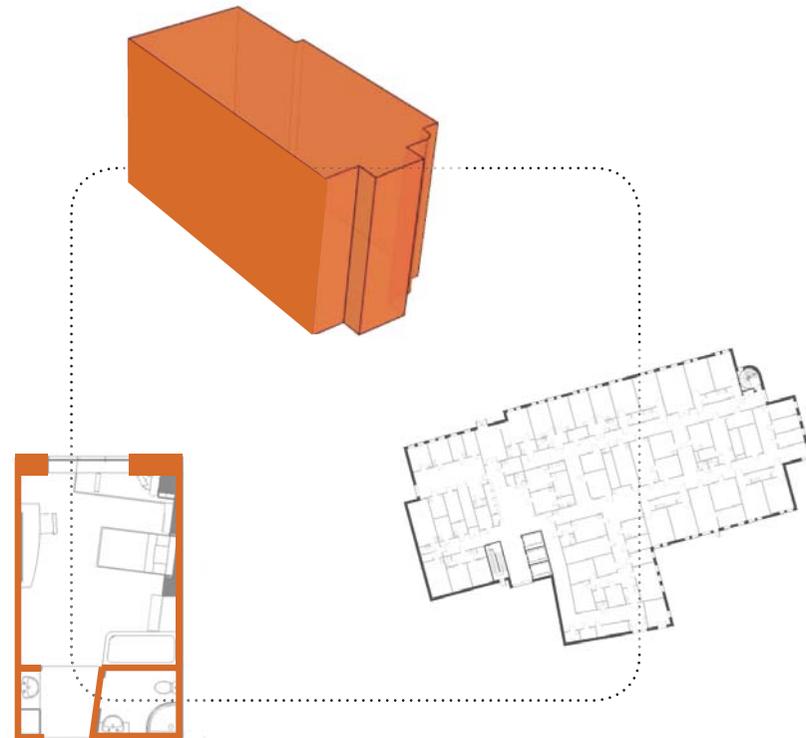
METHOD CRITERIA

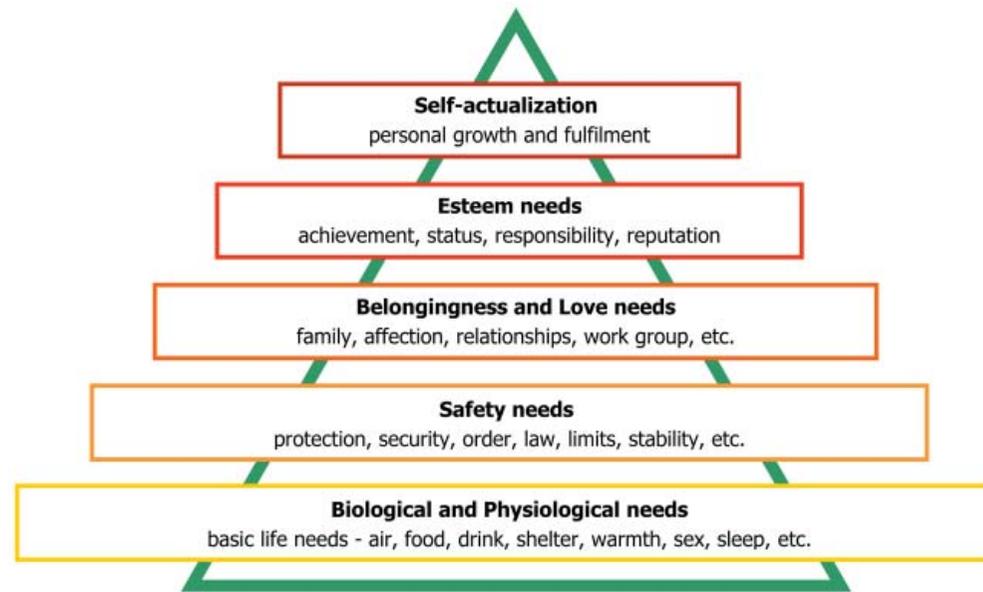
SPACE

University Hospital Women Clinic is a 9-story building which is intended to be refurbished and re-used in near future.

In architectural design it is common to jump in between different scales to fully grasp the relation between elements being designed or potentials of the project which is influential. Each level of scale has its own considerations. In another words, in this project refurbishment has different approaches in different scales. To this extent, the method has been investigated and applied to three different scales:

- Large Scale- *arrangement of spaces and floor plans in the whole existing building*
- Medium Scale- *arrangement of spaces and rooms in one single floor (maternity ward)*
- Small Scale- *arrangement of furniture and equipment in a patient room*





MASLOW'S HIERARCHY OF NEEDS

USER NEEDS

Abraham Maslow was an American professor of psychology who created Maslow's Hierarchy of Needs (1940-1950). He tried to emphasize the importance of focusing on the positive qualities in people, in order to keep them motivated to live their lives. The theory discusses both physical and psychological needs of humans.

Each of us have specific demands which the basic ones are our biological needs. Maslow's Hierarchy of Needs is often

portrayed in the shape of a pyramid, with the largest and most fundamental levels of needs at the bottom leading to secondary or higher level of needs. It states that we must satisfy each need in turn, starting with first, which deals with the obvious needs for survival. The five stages from bottom to top are:

- 1- Biological and Physiological needs- *air, food, drink, shelter, warmth, sleep, etc.*
- 2- Safety Needs- *protection, security,*

stability, etc.

3- Belongingness and Love Needs- *family, relationship, affection, etc.*

4- Esteem needs- *self esteem, achievement, mastery, independence, dominance, etc.*

5- Self-Actualization needs- *realizing personal potential, self-fulfillment, seeking personal growth, etc.*

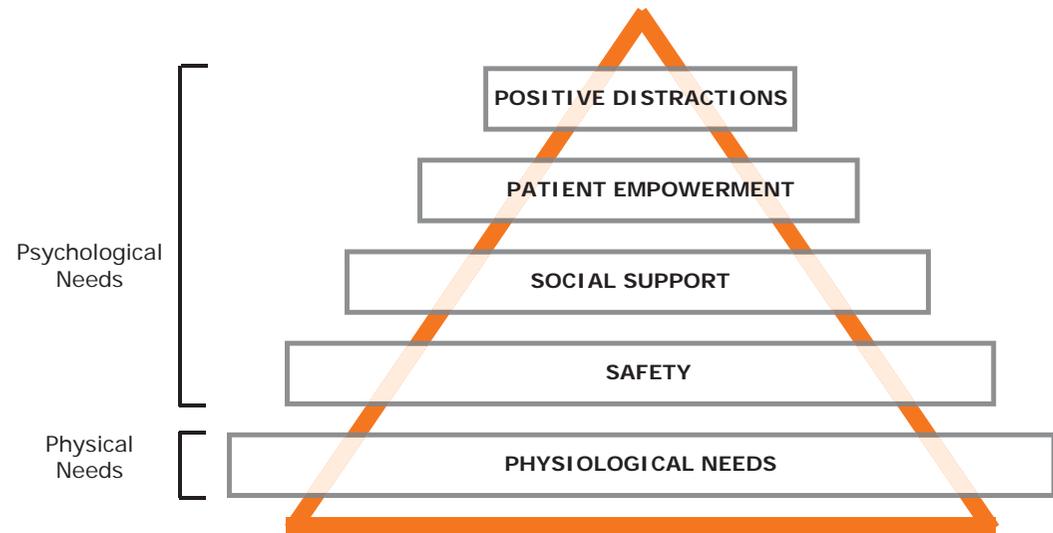
[Maslow, A. H. 1943]

Today, the first stage of human needs has been accomplished in almost all European health care facilities; therefore, the aim of this project is to focus more on the stages which imply the psychological needs of human, in order to reach a step further to what currently exists.

To make the visions of the proposal more reasonable, this theory can be interpreted in five similar stages to explain the user needs of this project following Maslow's model:

- 1- Physiological needs
- 2- Safety
- 3- Social Support and Family-Centred
- 4- Patient Empowerment
- 5- Positive Distraction

The model follows the rules of Abraham Maslow's theory. It is shown in this diagram that the first stage of patients needs are physiological needs. However, the rest of the model refers to Psychological needs of human beings in healthcare facilities. If the design is in a way to satisfy the users needs up to the top of the pyramid, the hospital community can expect royalty, trust and satisfaction of the user groups from the facilities.



INTERPRETATION OF MASLOW'S HIERARCHY OF NEEDS FOR THIS PROPOSAL

USER GROUPS

It is essential to study groups of users, their lifestyles and cultures and consider the physiological/psychological situations which they are experiencing. The main focus of this project are 'Patients' since they cover the biggest group and additionally having suitable spaces designed for them leads to a better environment for other groups of users such as staff, physicians and families as well.

A large number of patients using this facility are 'Women' who either await newborns or deal with gender specific problems.

A study done by Women's College Hospital (2010)- named A Thousand Voices for Women's Health- shows what women from diverse communities expect from hospitals, care and from services. This study is done to design a new, state-of-the-art facility in Women's College by 2015.

What **women** really want from a hospital?



"We want a place of activity where we can feel women's health happening"

"Women have made it clear. They want a holistic approach to care that focuses on prevention, that gives them the option of being treated at home, that enables them to be at the helm of their own health, and that focuses on all aspects of their lives. Women want a health-care facility that inspires health, healing and community –

and that is a hub of women's health. But mostly, women want to be treated with dignity and respect. They want to be heard, they want to belong, and they want to see themselves represented by the staff who care for them and in the images and languages that surround them." [College Hospital 2010]

DESIGN PROPOSAL

LARGE SCALE

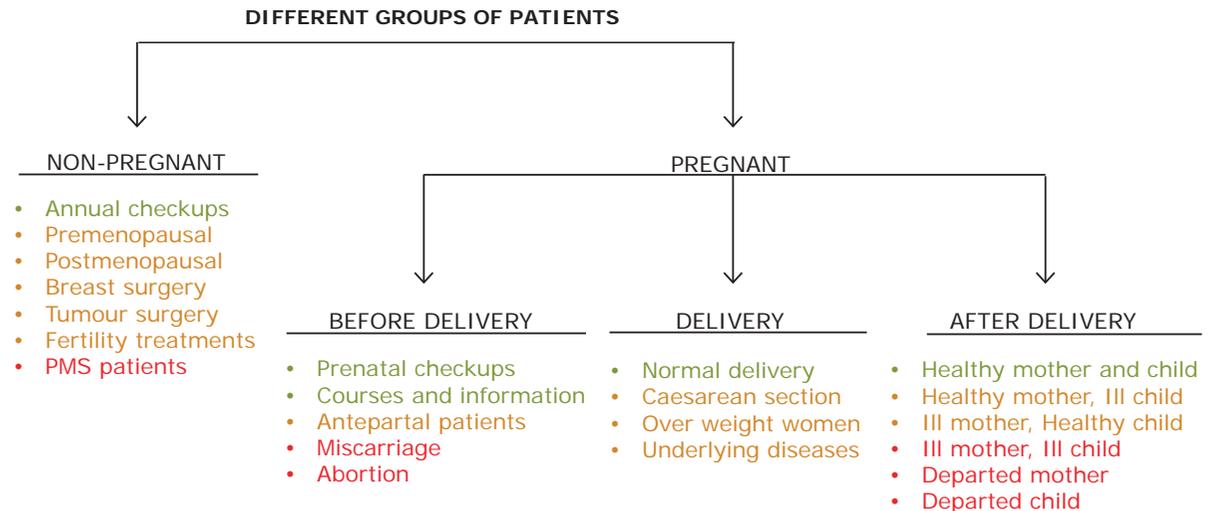
DESIGN THEORY

To be able to understand the users needs and create better hospital environments various categorizing have been made.

Considering different groups of patients which are in different situations, two main groups have been created; **non-pregnant** and **pregnant**. While pregnant patients experience three main stages themselves including **before, during and after birth giving**.

In another hand, each patient can fit into three different psychological stage, categorized as 'Happy', 'Anxious' or 'Depressed'.

Such grouping made it easier to apply the next step which is addressing existing spaces to each group. This step made it obvious that some groups are lacking specific spaces to suit their needs, such as more relaxing areas, non-medical spaces which are close to hospital facilities and connection to outdoor areas.



- Categorized as 'Happy' patients, can share spaces
- Categorized as 'Anxious', need care and should stay close to acute facilities
- Categorized as 'Depressed' patients, should be separated and carefully supervised.

PATIENTS

- Healthy mother and child
- Normal delivery
- Prenatal checkups
- Annual checkups
- Courses and information

- Healthy mother, Ill child
- Ill mother, Healthy child
- Caesarean section
- Over weight women
- Underlying diseases
- Antepartal patients
- Premenopausal
- Postmenopausal
- Breast surgery
- Tumour surgery
- Fertility treatments

- Ill mother, Ill child
- Departed mother
- Departed child
- Miscarriage
- Abortion
- PMS patients

EXISTING SPACES

- Delivery wards
- BB
- Breast-feeding centre
- Conference rooms
- Assessment clinic
- Family clinic

- Delivery wards
- BB
- Surgery department
- Maternal psychology
- Endometriosis clinic
- Family clinic

- Delivery wards
- Surgery department
- Maternal psychology
- Endometriosis clinic
- Fertility clinic
- Pain clinic
- Family clinic

ADDED SPACES

- Recreational centre
- Out-door area

- Nursery
- Recreational centre
- Meditation room
- Out-door area

- Nursery
- Recreational centre
- Meditation room
- Out-door area

DESIGN SKETCH

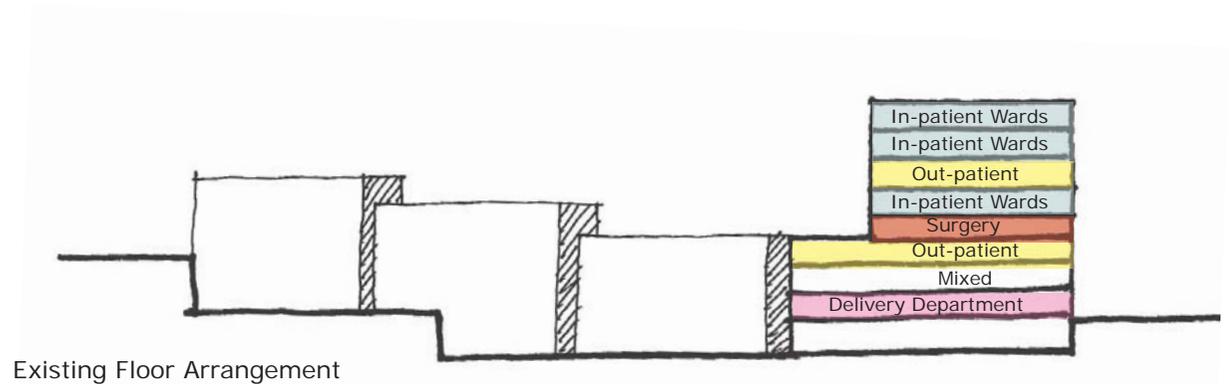
Proposed floor arrangement is based on the users needs mentioned above. In this proposal the surgery department has been moved to the level above the delivery ward to provide easy access in case of emergency.

In-patient wards have been moved to upper floors in order to have the best view and calmness.

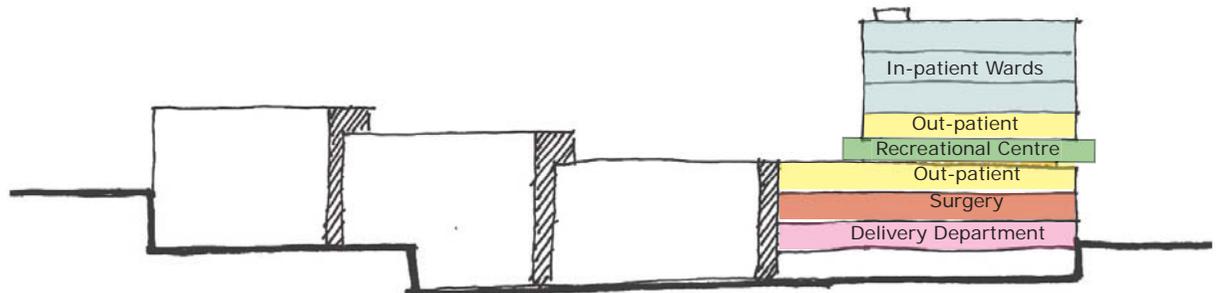
The spaces in the mixed used level are spread into floors which more matches their functionality.

Therefore, there is a possibility to create a floor having recreational facilities. The building has been divided in to two parts by the public recreational centre at the core of the building.

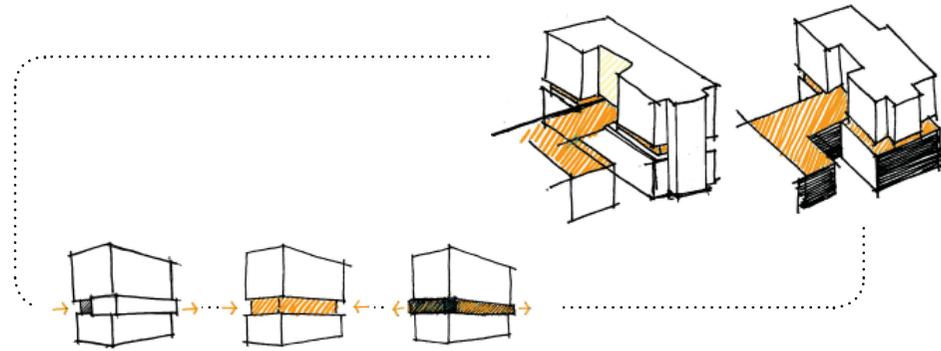
The recreational centre is connected to two out-patient facilities from above and below sharing their waiting areas by an inner stair-case vertically.



Existing Floor Arrangement



Proposed Floor Arrangement

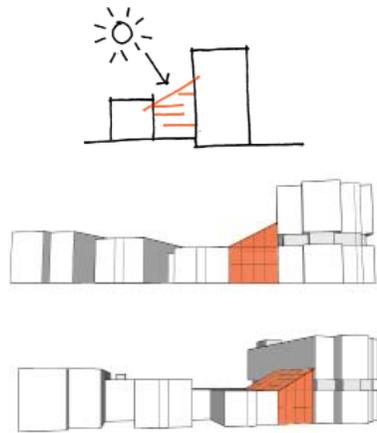


The recreational centre is the heart of the building. The functions are different from the hospital facility but essential to the users needs. It includes activities such as gym, spa, cafeteria, conference rooms and a nursery. This centre is a place which every group of patients can choose to be a part of and have a nice, relaxed time with their families, very close to the health care facilities.

The centre have access to an open area which is the children's department roof. It is the most recommended area for the patients who would like to take advantage of being in direct sunlight and enjoy the surrounding view.

The centre visually divides the building in two parts, creating emergency facilities at the lower levels and more calm spaces on higher floors, both sharing a delightful venue which is suitable for all the users.





Before

A glazed roof has been proposed for the garden situated between the Women and Children departments. This area has the possibility to get fully closed creating a greenhouse effect. Light and temperature control allows the greenhouse to turn

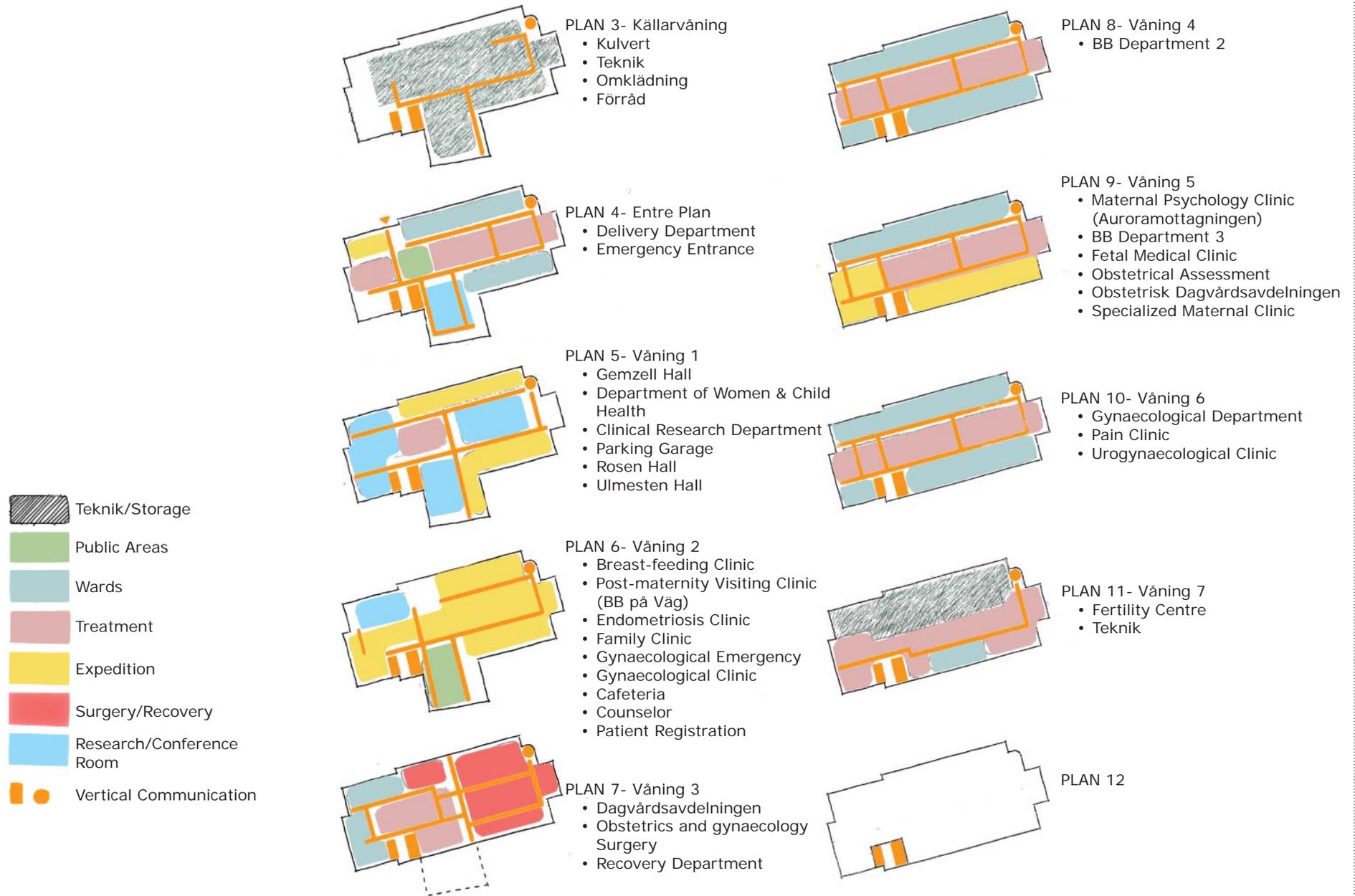


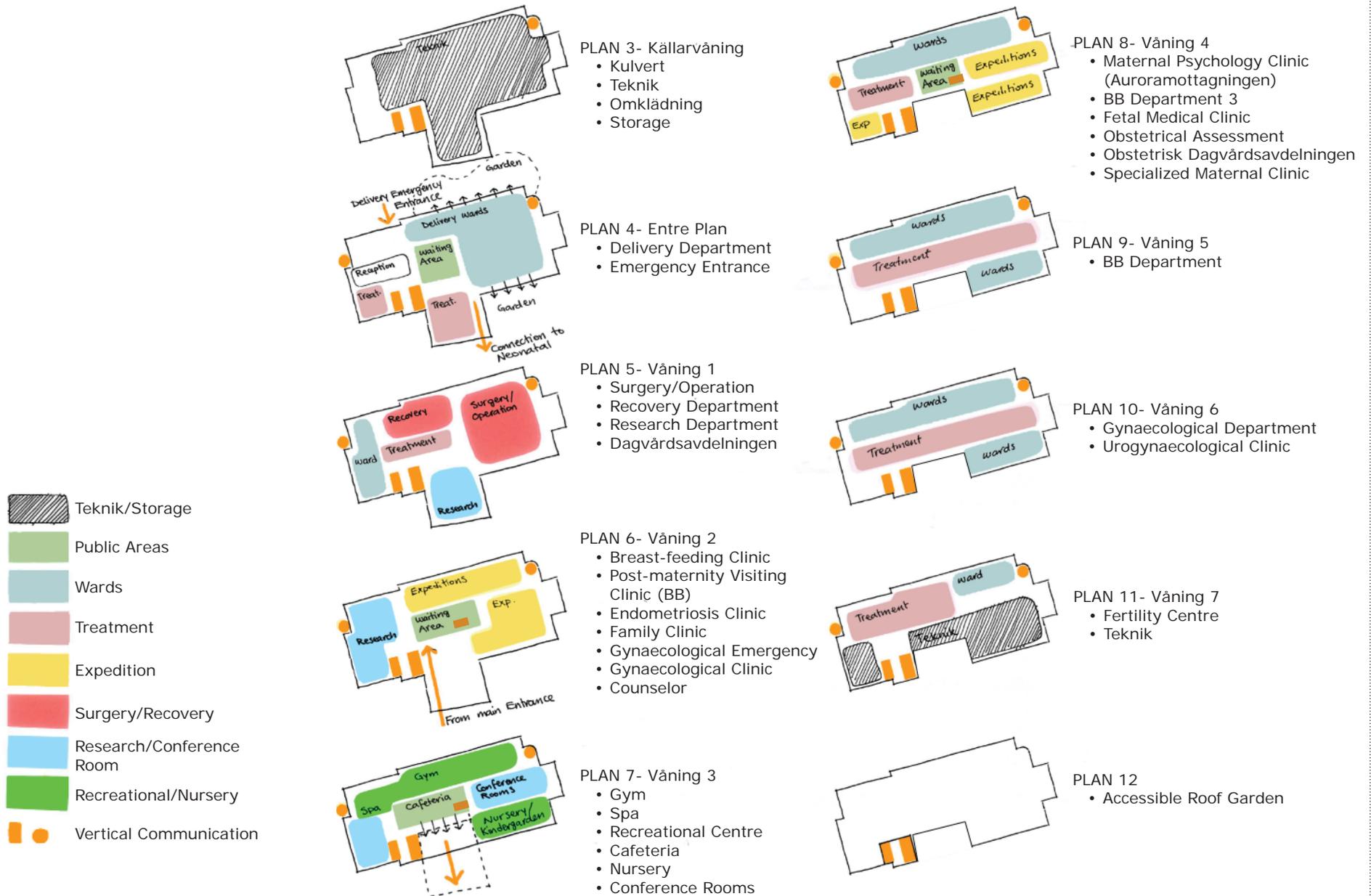
After

into a pleasant venue in winter times, avoiding the harsh weather of Uppsala. The garden is accessible for users of the maternity ward and neonatal which is situated on the other side. Therefore, mothers and their newborns can benefit

thoroughly from a safe, light, covered outdoor space.

Following diagrams show a more detailed proposal for arrangement of spaces in Women Clinic:





MEDIUM SCALE

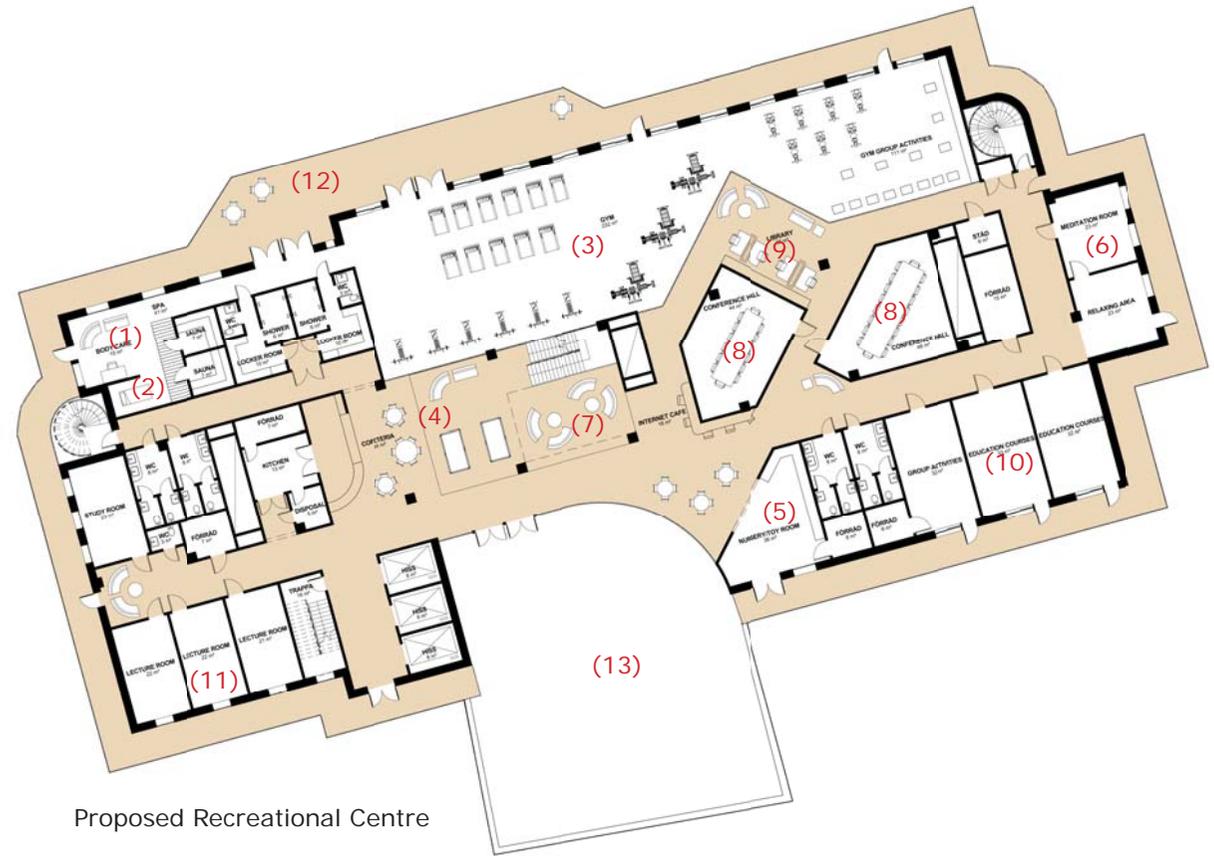
DESIGN THEORY

Getting back to users psychological needs, the maternity ward and recreational centre have been redesigned to deliver a safer area for patients by creating better connections to staff and equipment. By using the most of spaces, social communication, family support and above all the users sense of control on the environment have been enhanced from various point of views.

DESIGN SKETCH-RECREATIONAL CENTRE

This centre is a place suitable for all users having different needs. It incorporates a variety of activities for prenatal, post natal and non-pregnant patients to use during all stages of their healing process.

The gym (3) has group exercises for prenatal and postnatal clients together



Proposed Recreational Centre

(1)



Body care

(2)



Body massage

(3)



Gym

(4)



Cafeteria

(5)



Toy room

(6)



Meditation room

with spa services which includes saunas, body care (1) and body massage (2). At the core the main cafeteria (4) is connected to out-patient waiting areas on the levels above and below with an inner stair case. The sitting area (7) has a double height ceiling in order to distribute light to other floors as well as having a more open space. The centre also consist of conference rooms (8), a library area (9) for reading and sharing knowledge and some education/lecture rooms (10) for families and couples regarding their problems. A meditation/relaxing room (6) has been created at the right end of the building to avoid the noise from other spaces such as the toy room/nursery (5). This area has been created for children to play while their parents are in the healing process. Above all, the majority of spaces are connected to an outer glazed corridor balcony which is a safe walking path for prenatal and antepartal patients in need of walking to benefit from the view, light and fresh air while the sliding windows are open in the summer. (see larger scale in Appendices, page iv)

DESIGN SKETCH- MATERNITY WARD

The project proposes a better circulation by avoiding dead ends, allowing the users to have easier access to facilities



and communication areas. The ward is divided into off-stage (staff's private section) and on-stage (patient circulating area) to have better noise control and places for private conversations. This allows the staff to be at their best when on stage.

Additionally, more open area expeditions has been created primarily to make better use of spaces and lead to better presence of staff on stage. Ward stations has been designed more central to deliver faster service by staff and brings a sense of safety for patients.

Women's existing clinic has only one fire emergency stair case which means in case of emergency people have to leave the building through the exit that is 60 meters away. Therefore, a need of a second emergency exit is considered.

All the patient rooms has been designed in a way to have direct connection to a safe out-door area with sitting areas by the nature and water features. This will enhance the patients well-being and will decrease the patient's length of stay. The rooms are big enough to host a family member over night. All rooms have integrated patient treatment, minimizing internal transportation. Therefore, less treatments rooms are needed and



instead rooms for mobile equipment and delivering textiles has been created.

The number of sitting areas has been increased in the new proposal so that each group of patients and their families can choose to sit separately. The family room is connected to the yard which yields positive experiences of sunlight and fresh air.

Last but not least, not having visually blocked ends was at the top of consideration in this project. (see larger scale in Appendices, page v; see existing drawing in Appendices, page vi)

The images show the possibility of distribution of patient categories in recreational centre plan and the maternity ward.

-  Categorized as 'Happy' patients, can share spaces
-  Categorized as 'Anxious', need care and should stay close to acute facilities
-  Categorized as 'Depressed' patients, should be separated and carefully supervised.



Proposed Recreational Centre



Proposed Maternity Ward



Image up left: Walking gallery attached to recreational centre floor.

Image up right: Maternity ward sitting area close to ward stations and open expedition spaces.

Image down right: Recreational centre sitting area and cafeteria visually connected to the gym.

SMALL SCALE

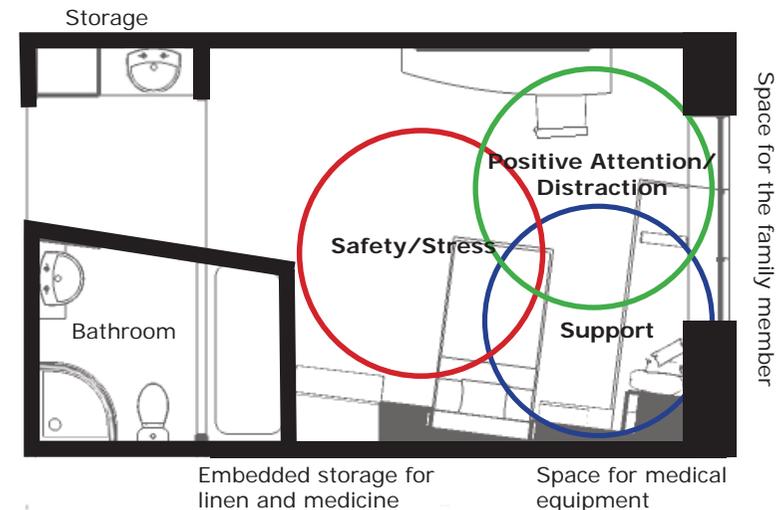
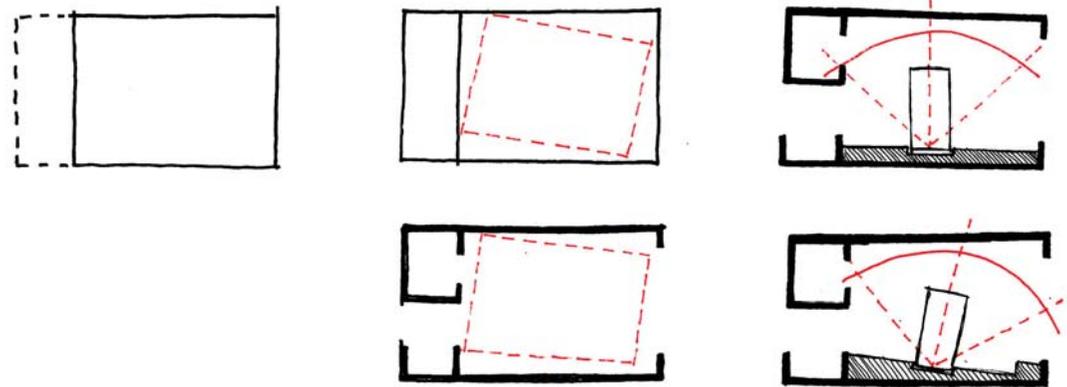
DESIGN THEORY

The patient room is the key element of a hospital. Its design and functionality has a direct influence on patients, families and hospital staff.

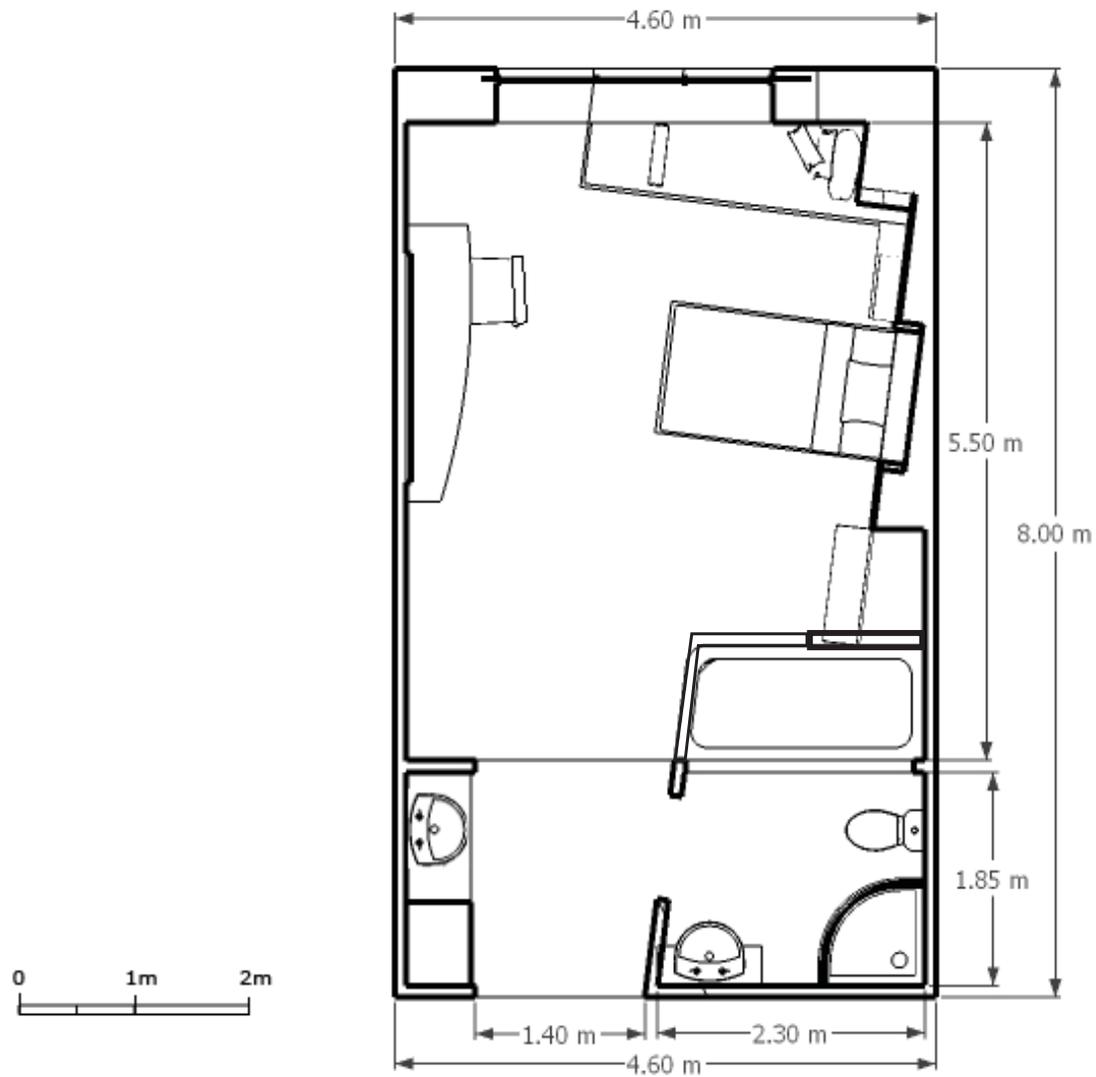
To better perceive the patient's psychological needs and feelings, the room has been divided into different zones.

As it is shown in the image, the patient has mixed senses of safety and stress from the side of the room which the care giver enters. In contrary, they experience feelings of support from where the family member sits and positive distraction from the side of the room which has visual connections to nature or the screen on the wall in front.

Regarding the studies above, the interior of the room has been designed with a 7° inclination to the exterior wall- patient's relief zone- so that the patients can engage their attention in a more positive way.



DESIGN SKETCH



Patient Room

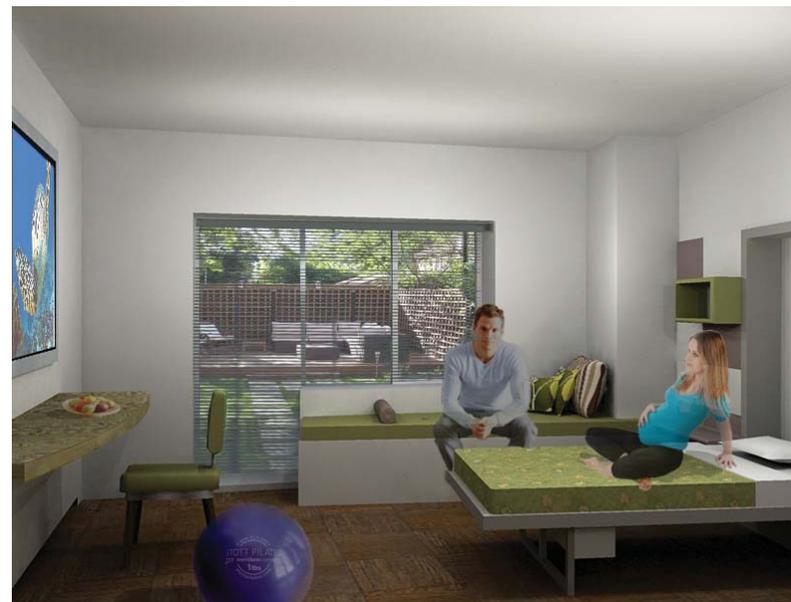


Before

Image up left: Patient room with murphy bed and foldable wall panels.

Image up right: Patient's bathroom with visual connection to the room area. The whirl pool can be used before and after delivery.

Image down right: Patient room with direct connection to a safe outdoor area.



After

CONCLUSION

The ultimate goal in this project has been to examine innovative ways of dealing with refurbishment in a way to be environmentally, economically and socially sustainable. In addition, it has been tried to study the psychological needs of the building users and regarding that design the proposal in three different scales.

The effort, however, has been to test the new ideas on a specific site- Women Clinic of Uppsala University Hospital- rather than to offer a general plan.

To conclude this mission, it is important to finalize the project with a critical discussion and evaluation of the design proposal based on potentials and limitations of implementing the method. It is also essential to explore the possibilities for further research in this field.

LIMITATIONS

The structure of the existing building caused major limitations to refurbishment of this project. The old grid structure, being difficult to adapt to new logistics, leads to weak circulation design. Load-bearing facade limits the connection to out-door areas and concrete floor slabs are limiting to open up spaces for better lighting and view. Therefore, to use the most of the facility some clinical and architectural priorities have been set. Setting priorities means choosing the best solution possible which fits into the existing limitations. Therefore, it is not always possible to gain the desirable result.

POTENTIALS

In contrary, the project has some potentials as well which makes it easier to

have an acceptable refurbishment design proposal. Connection of the building to children's department gives this opportunity to share spaces in between and have sharing venues for mothers to be close to their children. Moreover, having great surrounding nature gives the possibility to create safe out-door spaces for patients to benefit from. And last but not least, the quality of exterior materials makes the refurbishment more cost efficient.

All in all, the proposed method has the potential to be used in similar situations. Designing hospital facilities based on the users emotional feelings and their psychological needs can be beneficial to both users and hospital community by means of gaining trust and satisfaction in all aspects.



REFERENCES

College Hospital. (2010). A Thousand Voices for Women's Health, A Pioneering Study by Women's College Hospital.

Joseph, A., Rashid, M. (2007). The architecture of safety: hospital design. The Center for Health Design, Concord, California and Department of Design, University of Kansas, Lawrence, Kansas, USA. Wolters Kluwer Health. Lippincott Williams & Wilkins.

Kovacs, P. J., Bellin, M. H. and Fauria, D. P. (2006). Family-Centered Care. Journal of Social Work in End-Of-Life & Palliative Care, Volume 2, Issue 1

Luxenburg, R. (2009). Building code- Egress. Distance Between Exits.

Maslow, A. H. (1943). A Theory of Human Motivation. Originally published in Psychological Review No. 50, 2002

Maslow, A. H. (1954). Motivation and Personality.

McCullough, C. (2009). Evidence Based Design in Healthcare Facilities.

Minner, K. (2011). "Eastern Market Row House Renovation / David Jameson Architect". ArchDaily. URL: <http://www.archdaily.com/105101> (Retrieved 21 May 2012)

Pati, D. (2010). Positive Distractions. Healthcare design magazine.

Riley, M., Cotgrave, A. (2004). Construction Technology 3: The technology of Refurbishment and Maintenance. Palgrave Macmillan Publisher

Saieh, N. (2008). "Kinderstad / Sponge Architects & Rupali Gupta + IOU Architecture". ArchDaily. URL: <http://www.archdaily.com/189> (Retrieved 20 May 2012)

Ulrich, R. S., Lunden, O. and Eltinge, J. L. (1993). Effects of exposure to nature and abstract pictures on patients recovering from heart surgery.

Ulrich, R. S., Zimring, C., Quan, X. and Joseph, A. (2006). The environments impact on stress. In Marberry, S. (Ed.). Improving healthcare with better building design.

Uppsala County Council. (2011). Fastighetsutvecklingsplan Akademiska Sjukhuset.

Uppsala County Council. (2011). Lokalförsörjningsplan Akademiska Sjukhuset.

Uppsala University Hospital. (2009). Health-Promoting Hospital. URL: http://www.uas.se/templates/page___43491.aspx (Retrieved 20 May 2012)

World Bank. (2011). Empowerment. URL: <http://web.worldbank.org> (Retrieved 20 May 2012)

LITERATURE STUDIES

Gibson, J. J. (1977). The theory of affordances. In R. Shaw & J. Bransford, *Perceiving, Acting and Knowing*. Hillsdale, NJ

Hutlock, T. (2011). *Women's Healthcare by the bay*. UPMC Hamot Women's Hospital, Erie, Pennsylvania. *Healthcare Design* Vol. 11, No. 5

Magee, H., Askham, J. (2008). *Women's views about safety in maternity care*. King's Fond. England.

Malkin, Jain. (2008). *A Visual Reference for Evidence-based Design*.

Mostaedi, A. (2001). *New Health Facilities*. Architectural Design. Carles Broto & Josep M. Minguet Publishers.

Norman, D. A. (1988). *The psychology of everyday things*. New York: Basic Books.

Redshaw, M., Heikkila, K. (2010). *Delivered with care: a national survey of women's experience of maternity care 2010*. The National Perinatal Epidemiology Unit. University of Oxford.

Stark, A. *Buildings That Heal, the use of energetic criteria in the design of healing environments*.

Stockholm County Council. (2008). *New Karolinska Solna, Memorandum of information*

Ulrich, R. S. (1979). *Visual landscaped and psychological well-being*. *Landscape Research*.

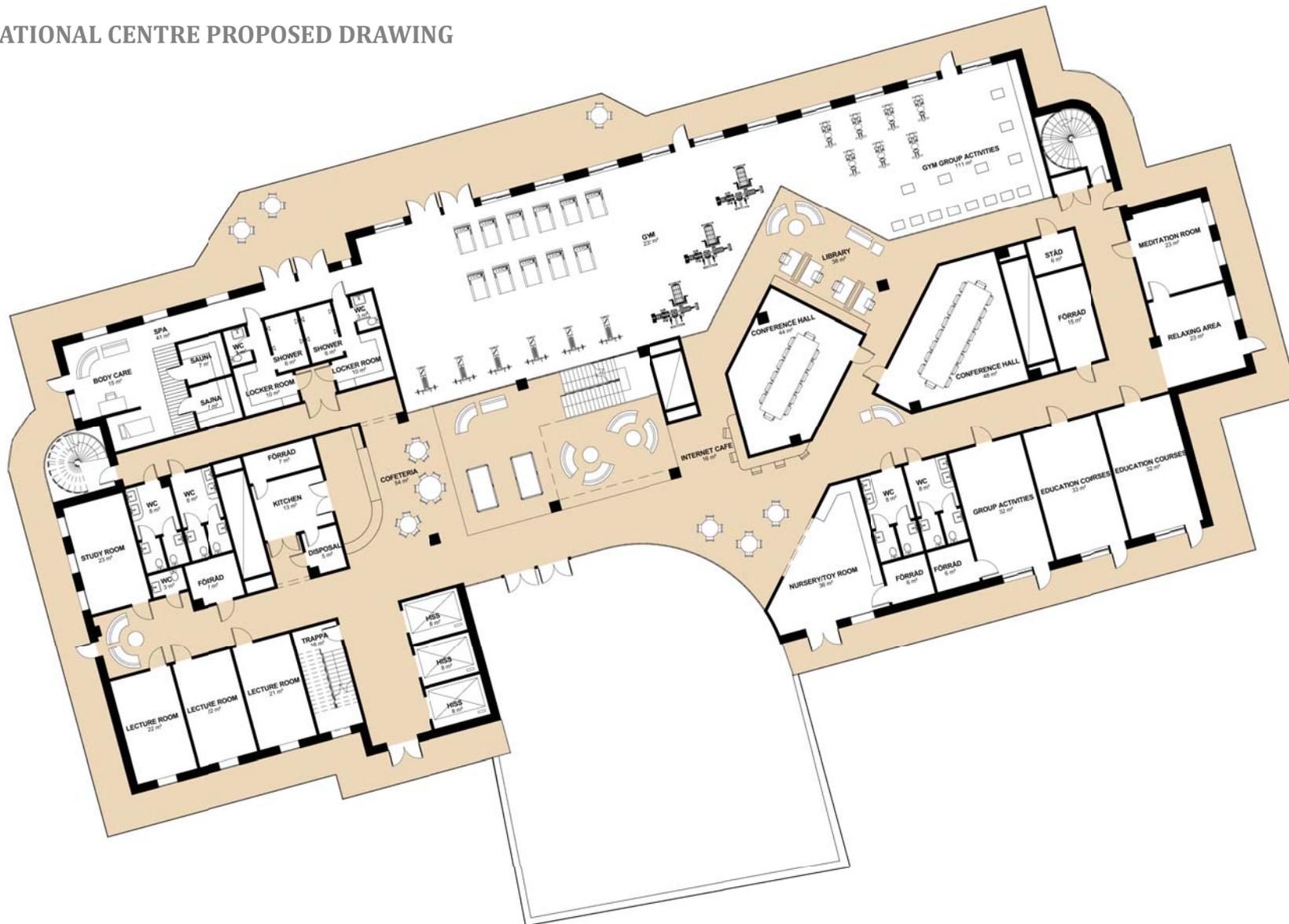
Ulrich, R. S. (1983). *Aesthetic and affective response to natural environment*. In I. Altman & J. F. Wohlwill, *Human Behavior and Environment: Advances in theory and research*, New York: Plenum Press.

Ulrich, R. S., Simons, R. F., Losito, B. D., Fiorito, E., Miles, M. A. and Zelson, M. (1991). *Stress recovery during exposure to natural and urban environments*. *Journal of Environmental Psychology*.

Verderber, S., Refuerzo, B. J. (2006). *Innovations in Hospice Architecture*. Taylor & Francis Publishers.

APPENDIX

RECREATIONAL CENTRE PROPOSED DRAWING



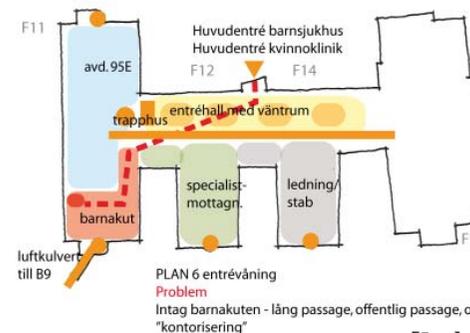
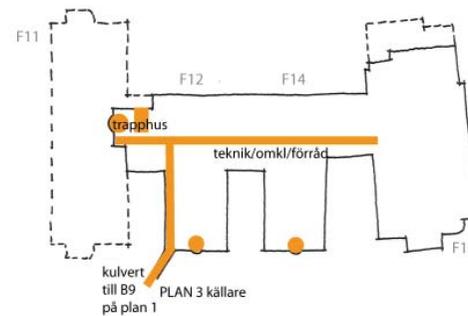
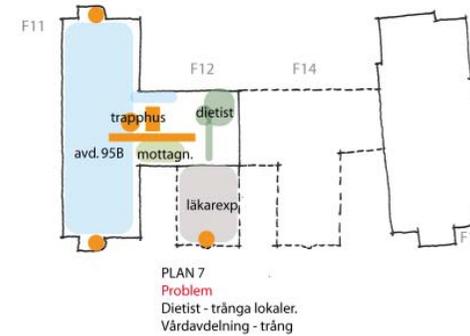
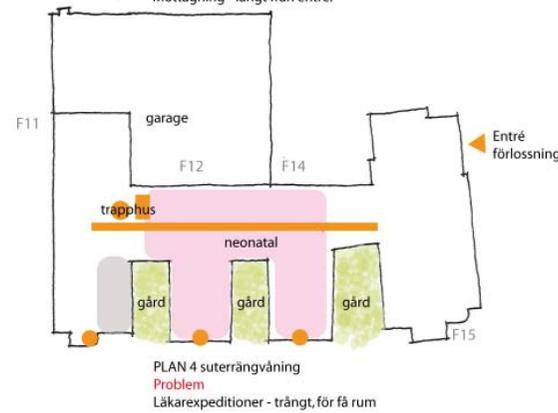
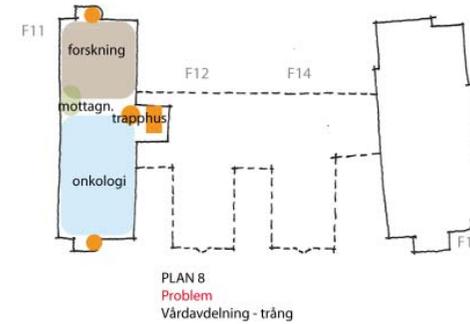
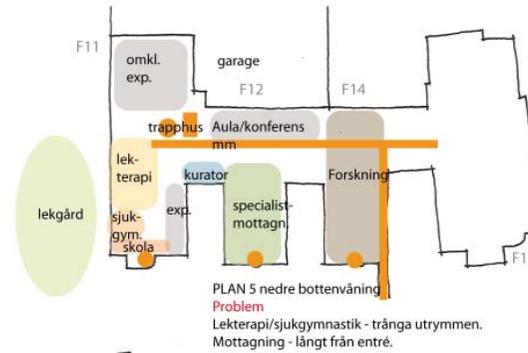
MATERNITY WARD EXISTING DRAWING



[Uppsala County Council 2012]

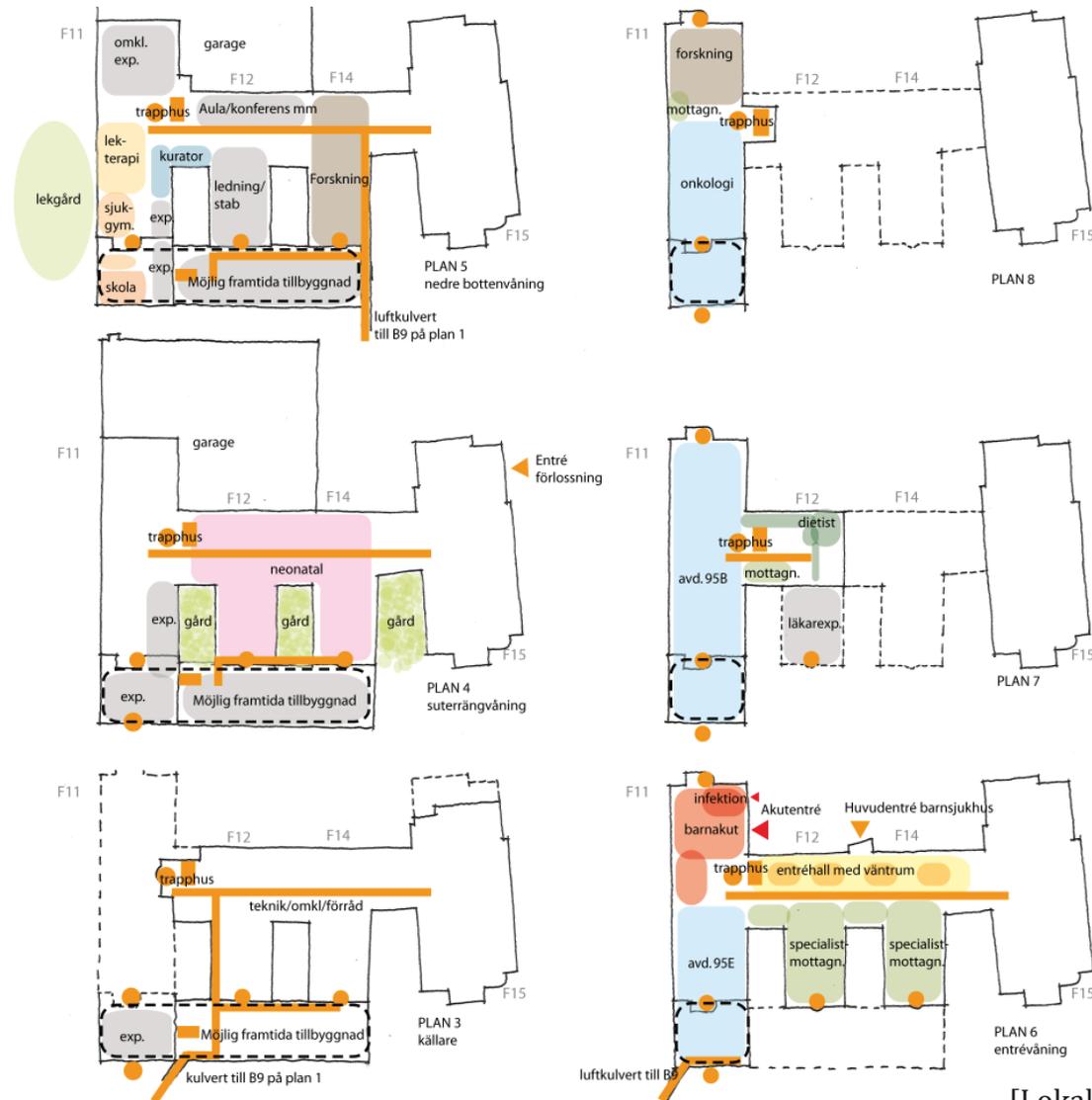
CHILDREN'S DEPARTMENT

EXISTING PROGRAM



[Lokalförsörjningsplan 2011]

PROPOSAL BY WHITE ARKITEKTER AB



[Lokalförsörjningsplan 2011]