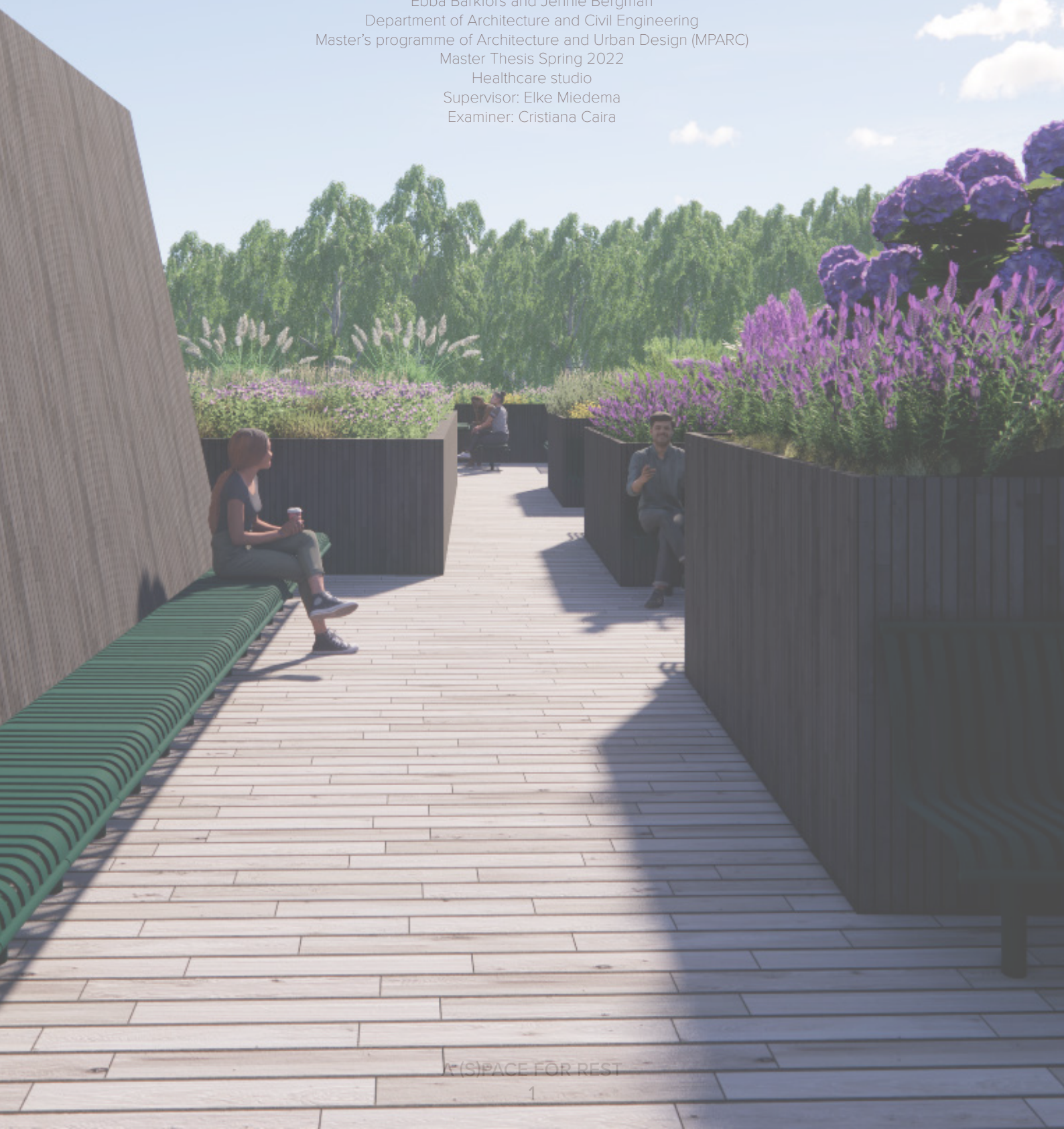


A (S)PACE FOR REST

HOW ARCHITECTURE CAN SUPPORT RECOVERY AND
REDUCE STRESS FOR HOSPITAL STAFF

Ebba Barkfors and Jennie Bergman
Department of Architecture and Civil Engineering
Master's programme of Architecture and Urban Design (MPARC)
Master Thesis Spring 2022
Healthcare studio
Supervisor: Elke Miedema
Examiner: Cristiana Caira



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ABSTRACT

Work-related stress is one of the most common causes of illness reported by workers. The Swedish Work Environment Authority's forecasts show that stress-related illness is expected to increase in the future. The solution to the problem of work-related stress is complex and requires multidisciplinary measures. Recovery is a key factor for us to feel good and be able to perform. The institute of stress medicine in Gothenburg has conducted a study to assess how the pandemic has affected the work environment. One of the conclusions from the study is that it is vital to ensure that there is a possibility of recovery during working hours. The most vulnerable workers are those in the healthcare and health sectors. During times of high workload such as the pandemic, studies show that many healthcare workers perceive their work environment as deteriorating. In general, healthcare staff currently have no guaranteed specific space at their workplace to be able to have an effective recovery during working hours.

The physical environment has a great impact on our ability to recover mentally. Studies show that access to greenery in the workplace has a positive effect on stress and that the right type of focus and degree of complexity in a space can also reduce stress.

The purpose of the thesis has been to explore the need for and design of a facility for healthcare workers that can support recovery and prevent work related stress.

The aim has been to create an architecture where the design can support mental recovery by working with senses and atmospheres.

The methods include literature studies within restorative environments, biophilic design, salutogenic design and interviews with relevant informers such as healthcare workers and people working within the field of occupational health.

The investigation resulted in a design proposal consisting of partly acupuncture interventions and mainly a building, with a restorative layout that supports healthcare workers mental health both in a preventive and rehabilitating manner. It is located within Sahlgrenska University Hospital in Gothenburg.



Keywords:
Healthcare, biophilic design, restorative environments, salutogenic design, occupational health

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1. INTRODUCTION

This chapter explains the aim, purpose, delimitations and the methods. It also presents the research question.

PROBLEM STATEMENT

A healthy workplace has a balance between what is required and the resources available for the work. High demands do not have to be harmful, but they need to be balanced with resources. Having higher requirements than resources for the work leads to a high workload and stress among those who are to perform the work (Arbetsmiljöverket). Work-related stress is one of the most common causes of illness reported by workers, according to Eurofond statistics. The most vulnerable workers are within the healthcare and health sectors (Eurofond, 2013). Studies show that during times of high workload such as the pandemic, many healthcare workers perceive their work environment as deteriorating. The institute of stress medicine in Gothenburg has conducted a study to assess how the pandemic has affected the work environment by comparing with how it was before. In addition, it was investigated which factors can be linked to a deteriorating work environment (Jonsdottir et al. 2021). One of the conclusions from the study is that it is vital to ensure that there is a possibility of recovery during working hours.

There is knowledge about how to design buildings that support well being. We would like to implement that in the design of a building with the purpose to support stress recovery and prevention.

AIM

The aim is to investigate a design proposal that provides space that can support recovery for healthcare workers. The aim is also to investigate what atmospheres and which qualities that form values that consciously or sub-consciously affects us in reducing stress. The aim is also to highlight the societal problem that healthcare staff suffer from stress, and how architecture can be a part of the solution in working proactively by creating a place for recovery and rest.

RESEARCH QUESTION

How can architecture support recovery from stress in hospital environments for workers?

DELIMITATION

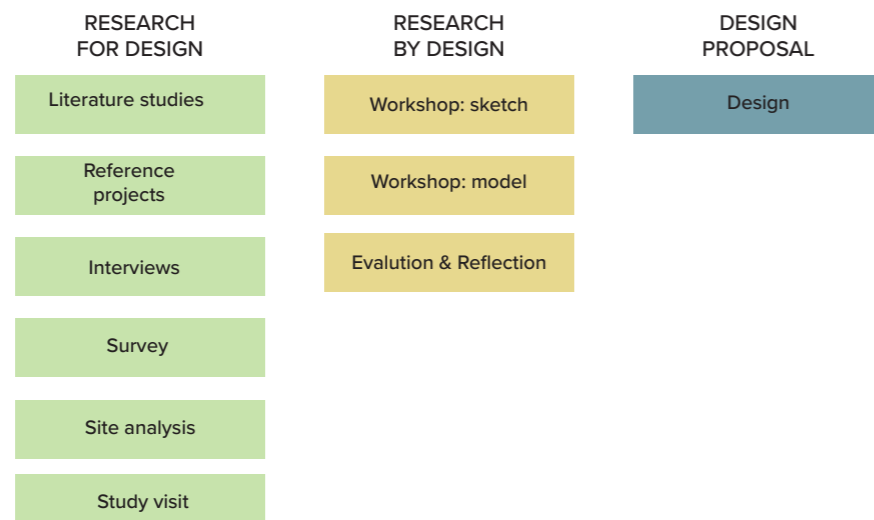
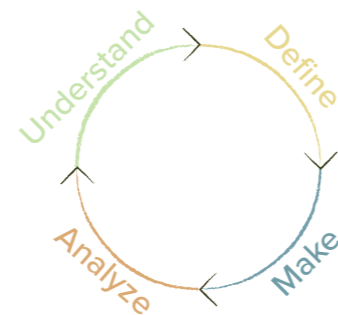
In this master's thesis, it has been important for us to maintain an exploratory and experience-based approach in our design. Therefore, the economic aspect has not been allowed to be a limiting factor. Stress-related illness at work is a global problem, but in our project we have chosen to adopt a Swedish perspective and more specifically have chosen to start from the context of the Västra Götaland region. Through this thesis it is assumed that this kind of stress recovery center could be started in collaboration with the Västra Götalandsregionen. We will not investigate whether that is a real possibility.

METHOD

This thesis is based upon Research For Design and Research By Design, focusing on the relation between stress, nature and the built environment. The work included literature studies, reference projects, site analysis and interviews (n=5) and a survey (n=40) with researchers, hospital staff and people connected to our reference projects were conducted. Site visits were conducted for the purpose of experiencing the spatial qualities which our literature studies described.

Sketching and modeling workshops were used as a method of concretize and develop the information found in the research. This iterative phase was used to develop a design proposal consisting of acupuncture inventions and essentially a building proposal.

The process has been iterative, where we through reflection and revision have focused on bringing forward values in the physical environment rather than one specific solution as an answer to recovery for healthcare workers.



WE AS ARCHITECTS

Sarah Williams Goldhagen writes in her book *Welcome to your world* (2020) that the built environment affects us all the time and shapes our lives and the choices we make. She believes that architecture affects our mood and our emotions and our body awareness.

In environmental psychology which studies the effect of the physical environment on human values, there are studies showing how certain environments are more effective than others for mental recovery (Ulrich 1991, 1993). In order to create environments that promote health, it is important to understand an individual's basic needs (Heerwagen et al. 1995). It is also important to work multidisciplinary to create the best living environments (idem).

In recent decades, the idea of creating healing environments has grown stronger, with particular emphasis on the importance of daylight, views, contact with nature and art (Grinde and Patil, 2009). In our work we build upon biophilic design (p. 22) and salutogenic design (p. 20) which are concepts used in architecture to support the design of health-promoting architecture such as hospital environments.

Hospital environments must be designed in the best possible way for patients to receive good care. What is sometimes forgotten is that these environments are also the workplace for many people's mentally and physically demanding jobs. In our workplace, we need to be able to perform and the physical environment needs to support this in the best way.

Together with Jennie's experience of working as a physiotherapist in a hospital and our knowledge in healthcare architecture, we have a good pre-understanding of how hospital staff are affected by the physical environment.

2. BACKGROUND

This chapter explains the theoretical background of atmosphere, stress, health, occupational health, restorative environments, salutogenic design and biophilic design. It ends with a summary of relevant topics that we bring forward and are defined by three design ambitions for the project.

ATMOSPHERE

BODY AND MIND

Architecture is about spaciousness and the experience we feel by being in the present. Maurice Merleau-Ponty (2006) writes in his book about phenomenology that our consciousness is created through the experiences we have through our bodies and how one can through one's body feel consciousness in the present.

Robinson and Pallasmaa (2015) write about how our lives take place within our limitations and how our world begins with us getting to know the world and spaciousness through our body's experiences. Their works show that through the physical space, conditions are also created for our possibilities or limitations. All our experiences create a register of how we then read our environment. They argue that already when we see a photo of a building or approach one, a feeling is created of how the environment will shape our interaction with it. Its exterior qualities can trigger emotions in us. For example, if a massive building is supported by a thin foundation, we experience the building as unstable and the risk of the building falling, which triggers our bodily experience of falling and the emotions that belong (Robinson & Pallasmaa, 2015).

A large part of our experience of the world and our environments is based on the ability to move in the environment and to feel material with our body. For instance the opportunity to feel the stone floor with our feet or pull your hand along a rough wooden facade. Although the majority of these experiences are made unconsciously, we constantly create new impressions through different types of movement. Friction between these different types of movement is experienced through our body and the rhythms create the contours of our experience. Our own experience and unique registers will create different conditions for how we can interact with the building and therefore the building can be experienced in different ways. By being aware that we all have our own unique register of experiences, each building provides an environment that we can visit, both physically and mentally, in which we can project our own needs and desires to create a sense of meaning and value. (Robinson & Pallasmaa, 2015)

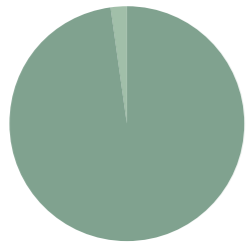


CONTEXT HEALTHCARE

Many hospitals work to promote the health of their staff. Sahlgrenska University Hospital in Gothenburg is one of the large hospitals that has a vision of being a health promotional hospital. This is done by actively disseminating knowledge, highlighting good examples and motivating for a healthier lifestyle.

At the same time, an unsustainable work situation is reported with a high number of stress-related sick leave for healthcare professionals throughout Europe.

98% of the medical staff experience emotions connected to developing burnout syndrome



In April 2021, a survey was conducted in Europe where Sweden was one of the participating countries. The results showed that 98% of the medical staff experience emotions connected to developing burnout syndrome (HIMSS, 2021).

In general, when evaluating workplace design, it has been assumed that productivity is a marker for good employee health (World green building council, 2014). But since the effect of a poor work environment can take time to show, it is important to prioritize the physical work environment regardless of productivity. (Forooraghi. et al., 2020)

Even before we saw the effects of the covid-19 pandemic, 45% of the medical staff considered leaving their healthcare profession and of those 64% name poor work environment and low salary as the main reasons (Vårdförbundet, 2019). In the aftermath of the covid-19 pandemic, an unsustainable work environment for healthcare professionals is reported almost daily. It is a situation that has existed for a long time, but which has now come to the surface due to the increased pressure on the medical staff during the pandemic.

We believe that it is important to create greater attractiveness to work at the large hospitals in Sweden. The difficulty of recruiting and retaining staff causes problems such as long waiting times and people not receiving care on time. The work of creating an attractive workplace is complex, but creating a qualitative physical work environment can be part of providing a better recovery for staff.

“(...) there is an acute shortage of 200 specialist nurses in the region. We were already at minus when we entered the pandemic and the loss has doubled because many have quit for various reasons.”

(Göteborgsposten, 2022)

“The staff’s work situation has been described as chaotic, with congestion, understaffing and far too little time for recovery.”

(Göteborgsposten, 2022)



STRESS

STRESS

All people experience stress from time to time. Stress is a natural reaction that helps us focus and concentrate. The term stress is used interdisciplinary and research in the field ranges from how our cells are affected to effects of societal level (Almén, 2017).

The concept of stress can be divided into at least two meanings:

- Stressors which are situations or stimuli that causes us stress.
- Stress responses which are stress reactions or stress behaviours.



ACUTE STRESS

Acute stress occurs when we try to control, avoid or handle a challenging or threatening situation. In most cases, this type of stress is intense and short-lived. If we feel uncertain about our ability to cope with the situation, this can lead to anxiety. This type of stress response can be linked to the fight and flight response. The sympathetic nervous system is triggering this response and is the part of our autonomous nervous system that speed up our body functions. Our blood pressure, respiration rate and pulse increase. The parasympathetic nervous system does the opposite and prioritizes the body's resources and functions so that we can recover and rebuild the body's resources by lowering heart rate and blood pressure, increasing the activity of the intestine and digestion and other things that counteract the effects of the sympathetic nervous system. When the sympathetic nervous system is active in short periods and counteracted by the parasympathetic system, we have functional stress defence. If, on the other hand, the sympathetic system is triggered continuously without the recovery our health is in danger. (Almén, 2017)

LONG-TERM STRESS

Long-term stress can also be described as chronic stress. It arises if we do not think we can master the situation we are in or if the situations are repeated over and over. Long-term stress response is usually less intense but more long-lasting. The behaviour is usually passive, avoidant, anxious and depressed. Symptoms associated with prolonged stress are often fatigue, exhaustion, difficulty sleeping and memory and concentration impairment. This is due to a dysregulation of the stress hormone, cortisol. Cortisol can provide energy to the body help us deal with stress in the short term but can lead to health problems and illness if over- or underproduced. The two stress reactions interact and overlap. An exhaustion process usually consists of acute stress that over time develops into chronic stress. (Almén, 2017)

WHAT HELPS

We can deal with stress if we make sure to recover properly. In today's society this is often easier said than done.

Sleep plays a key role in our ability to recover. However, the quality of sleep is an important factor in the process of restoration. To unwind before going to bed at night is of great importance for sleep quality. If we are targeted with too much stress this too might be difficult and challenging. (1177 Vårdguiden, 2022)

In general, the research field related to stress is much more extensive than the one of recovery. However, there are empirical research that shows support of factors that contribute to recovery. The Swedish public health authority (2021) concludes in a literature study that physical activity has both health promoting and disease preventing effects. The study reports that people who are physically active have a higher ability to tolerate stress, which is linked to a higher normalization of cortisol levels and good sleep quality but also better coping strategies. Relaxation training and mindfulness can support our ability to cope with and reduce stress (Åsberg et al, 2006). Different relaxation and breathing techniques can help a person to become more aware of how their body and mind are affected by stress and how to reduce muscle tensions and regulate unfavourable breathing patterns (Idem). Relaxation training can also have positive effects on work performance (Pahlavanzadeh, S., Asgari, Z., & Alimohammadi, N. (2016). There are additional factors that are associated to recovery such as taking regular breaks, nature, silence, massage, and contrasting environments (Almén 2017).

HEALTH

WHAT IS HEALTH

Definition of health according to World Health Organization (2022):

"Health is a state of complete physical, mental and social wellbeing and not merely the absence of disease of infirmity."

This definition has characterized the view of health as a holistic concept since the middle of the 20th century. In a global perspective, health according to WHO may seem impossible for many to achieve. The critic towards this definition has perhaps mainly been that it is too utopian. WHO has since developed the original definition and health is described as something more than a state. Health is a resource in daily life and helps an individual achieve other goals. In other words, health has a more instrumental value. Experiencing health is highly valued when people are asked what they value most in life. Good health, no matter what we mean by it, can be seen as a prerequisite for energy and joy of life. (Hansson 2004)

WHAT IS HEALTH PROMOTION

In addition to what health is, we also need to investigate how we bring about a change in the direction of improved health or maintained health. This is where the concept of health promotion comes into play. WHO (2022) means that health promotion can be described as the process of enabling people to increase control over, and to improve, their health.

Health promotion can not be translated into specific activities but must be put in a context based on given conditions and formulated based on these. The measures can be directed towards an individual to strengthen and develop their personal resources. The health-promoting measures can also be indirect by positively affecting the conditions of the surrounding environment for human health. (Hansson, 2014)

OCCUPATIONAL HEALTH

WHAT IS OCCUPATIONAL HEALTH

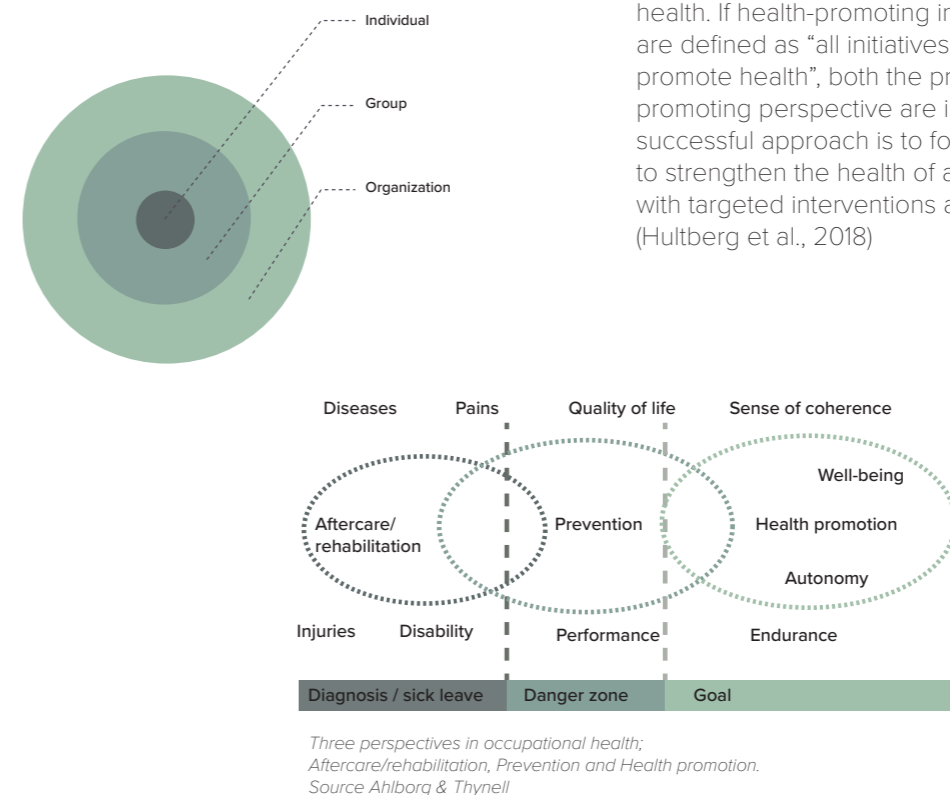
WHO (2022) defines occupational health as "an area of work in public health to promote and maintain the highest degree of physical, mental and social well-being of workers in all occupations".

Having a job to go to is in itself for many people an important health factor. It creates meaning, structures time, gives status and identity. In addition, a job may encourage activity and creativity (Hultberg et al., 2018). The workload should be reasonable and match the individual's competence and other personal conditions (Hansson, 2004). Unfortunately, there are both jobs and work environments that do have negative effects on our health. According to a survey, made by the Swedish Work Environment Authority (Arbetsmiljöverket, 2020), close to every third person employed have had problems as a result of their work during the last 12-month period. This corresponds to just over 1.6 million people out of the 5 million employed in Sweden. The survey also shows that the most common work-related problems are stress and mental strain. People employed in health care and education are most affected. There is no easy solution in creating a healthy workplace. Several factors affect health, both at work and in private life. It is therefore important to have a holistic approach and a systems thinking in health-promoting efforts in a workplace that combines the perspective of the individual, the group and the organization.

"Characteristic of health-promoting workplaces is that the workplace, as a starting point, wants to offer good working conditions, a good working climate and provide conditions for personal and professional development."
Institute of Stress Medicine

There are three perspectives in creating a healthy work environment: prevention, health promotion and rehabilitation. The systematic work is often focused on preventing accidents and occupational diseases based on identified risk factors. This focus needs to be supplemented with a health-promoting perspective to answer the question of what is further needed to have a workplace where employees can thrive, develop and achieve their professional goals. In addition, there is the rehabilitative focus to be able to take care of those who have become ill or injured. (Hultberg et al., 2018)

The perspectives of prevention and health promotion complement each other but have different theoretical starting points. The preventive and rehabilitative work is based on the theory of pathogenesis. The pathogenic approach is about identifying risk factors and finding strategies to reduce the risk of developing illness or other health problems. Health promotion is based on the salutogenic theory and is based on a holistic approach, where one looks for many interacting factors that can contribute to increased health. If health-promoting initiatives in the workplace are defined as "all initiatives in the workplace that promote health", both the preventive and the health-promoting perspective are included. The most successful approach is to focus on broad strategies to strengthen the health of all employees, combined with targeted interventions against specific risk groups. (Hultberg et al., 2018)





A (S)PACE FOR REST

RESTORATIVE ENVIRONMENTS

THE ATTENTION RESTORATION THEORY

The theory by Rachel and Stephen Kaplan (1989) emphasizes the cognitive resource of consciously directing one's attention. The starting point in attention restoration theory is that we as humans can direct our attention through either directed attention or fascination. Directed attention is used to focus and to sort the important stimuli from the unimportant. This requires effort and through intensive and long-term use, the person's ability to direct attention will decrease or slow down. According to the theory, we can recover a reduced ability to consciously direct attention when we experience fascination, which happens without effort and with unlimited capacity. According to Kaplan and Kaplan a restorative environment is an environment that attracts soft fascination and simultaneously limits the need for directed attention. Nature provides an ideal scene for this process.

There are four qualities that are essential in the environment according to this theory:

Being away: to get mental and possibly also geographical distance to the work you usually do.

Extent: the feeling that a physical or conceptual environment can offer further exploration but at the same time is coherent and comprehensible.

Fascination: something that arises in the exchange between person and the environment. It arises due to objects, events or by exploring a physical or conceptual environment.

Compatibility: There is compatibility when there is a good agreement between what a person wants to do, can do, and must do in the given environment.

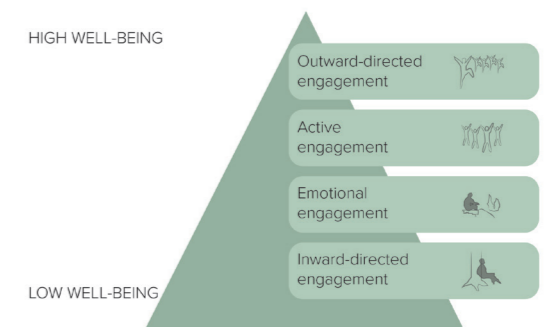
THE PSYCHO-EVOLUTIONARY THEORY

Roger Ulrich (1991) is focusing on emotional and physiological reaction patterns on certain visual stimuli that have developed through evolution. This theory defines stress as a reaction that is triggered in situations that are perceived as challenging or a threat to well-being. Like stress response, recovery from stress is believed to be a possible emotional response to the scene you have in front of you. The restorative response is believed to be rapidly activated when you become aware of certain patterns in the environment. The scenes that elicit a restorative response have qualities such as moderate depth, moderate complexity and a point of focus. Similar to Kaplan's theory, Ulrich also states that views of nature are ideal for restoration in such a way that vegetation and water can quickly provoke positive emotional responses. (Ulrich, 1991)

THE SUPPORTIVE ENVIRONMENT THEORY

We know that natural environments have the potential to benefit health and wellbeing, but it is not evident how we translate this to design. The triangle of supportive environments is a model that provides a link between the theories of restorative environments and practical design. It describes our needs in the outdoor environment in relation to different states of wellbeing. When it comes to stress-related illness, it seems that individuals at the bottom of the triangle experience low well-being and high sensitivity to the environment. They can only cope with an inward commitment and need environments where they can be alone. The second level of the triangle involves individuals who deal with emotional engagement. These people still want to be alone, but want visual contact with other people, at a distance. At the third level, individuals actively engage in social and active environments and can participate in group activities. At the fourth level, individuals show an outward commitment. They have regained high executive functions and are able to handle very social and / or active environments without much effort. (Bengtsson & Grahn, 2014)

TRIANGLE OF SUPPORTING ENVIRONMENTS



(Bengtsson & Grahn, 2014)

A (S)PACE FOR REST

SALUTOGENIC DESIGN

The salutogenic theory was introduced by Aron Antonovsky, a professor of medical sociology, as a complement to pathogenesis, and is a theory focusing on a health promoting model. In the model of health, the aim is to achieve a more robust health with health promotion and recovery. In a long-term context the salutogenic interventions can act proactive, before illness occurs. For instance, by offering an environment that is designed to promote recovery and health. (Mittelmark et al., 2022)

Aron Antovosky's salutogenic theory could explain how the design can act health promoting without understanding the user's well-being and condition. Salutogenic design represents an approach that includes the whole spectrum of wellness and illness without determining the pre-conditions, to create better design. Through the improved architecture, based on salutogenic interventions, an environment is offered that makes it possible for people to help themselves to a better life. (Mittelmark et al., 2022)

SENSE OF COHERENCE

Sense of coherence describes our coping capacity to deal with our everyday life stressors. The salutogenic theory means that all people, no matter how they feel, can increase their well-being. And it explains our well-being by our general resistance resources (GRR) and our general resistance deficits (GRD). The GRR is our resources in how we cope and the GRD are the difficult circumstances we need to cope with. With a high GRR we experience a high sense of coherence and a robust well-being and our resistance to illness is maximized or enables a full recovery. With a low GRR we experience a low resistance to cope with the effects of difficulties and this can lead to death. (Mittelmark et al., 2022)

The general resistance resources are based on comprehensibility, manageability and meaningfulness.

ARCHITECTURE AND COMPREHENSIBILITY

Comprehensibility represents an environment that is well structured and predictable.

- Readability
- Simplicity
- Predictability

ARCHITECTURE AND MANAGEABILITY

Manageability represent how one's resources can meet the requirements

- Functionality, "fit for purpose"-design
- Barrier-free accessibility and design to enable action
- Person-centered design
- The design of positive affordance
- Forgiving design

ARCHITECTURE AND MEANINGFULNESS

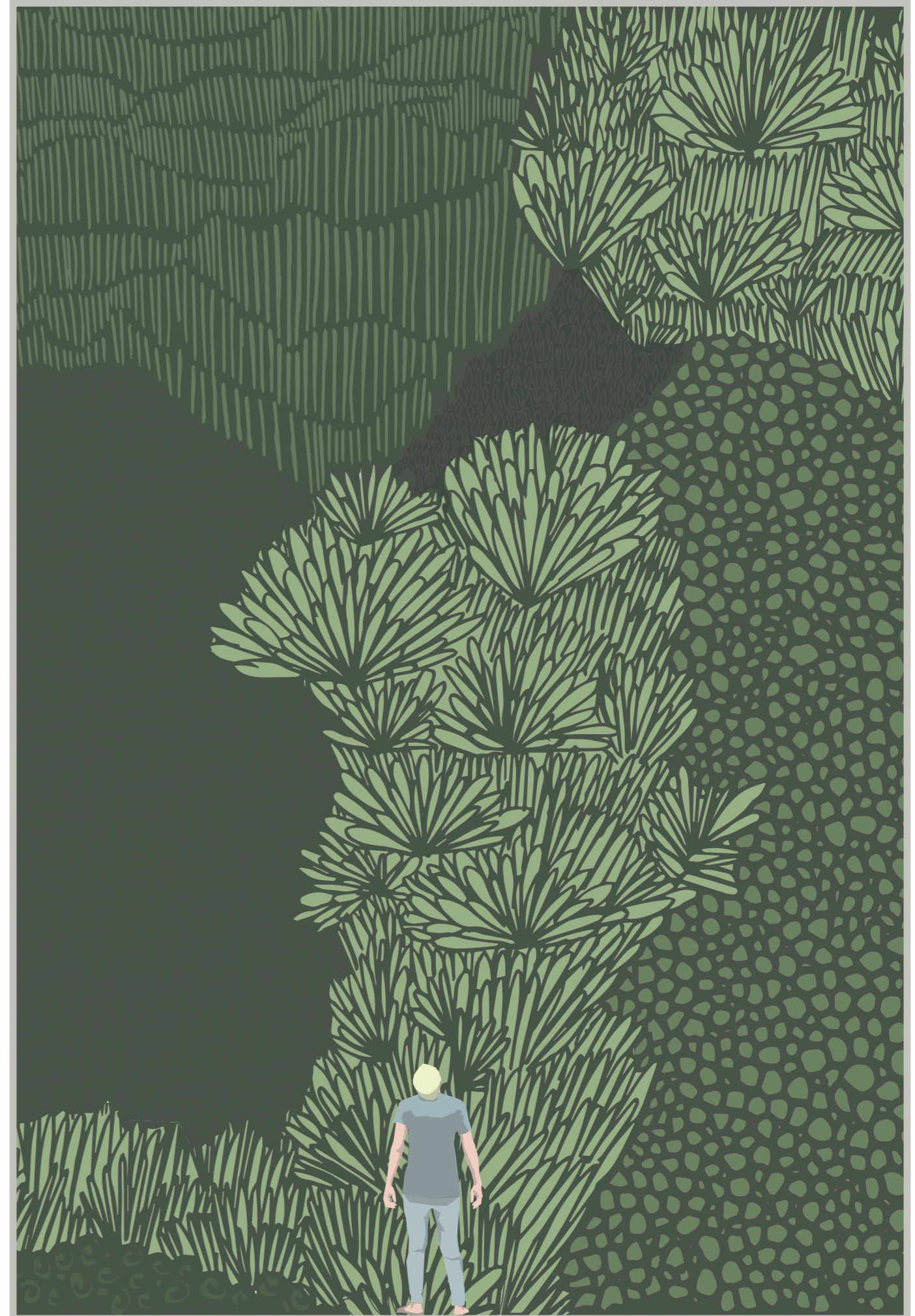
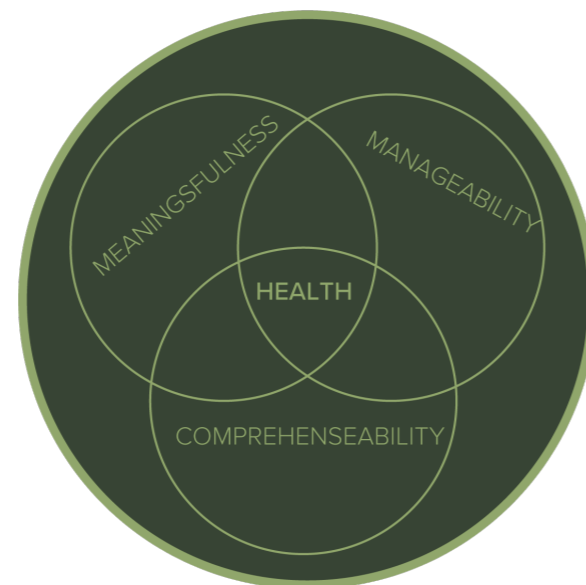
Meaningfulness stands for the importance that the requirements are worth the effort and are challenging.

- Design for the greater good
- Setting the stage for positive narratives
- Embodying meaningful symbolic expressions
- Providing for meaningful engagement
- Design for positive choices

(Mittelmark et al., 2022)

PART OF A HEALTH PROMOTIVE DESIGN

The salutogenic idea explains our ability to cope with stress through sense of coherence. In a long-term context the salutogenic design can act proactive, before illness occurs, by offering an environment that is designed to promote recovery and health.



BIOPHILIC DESIGN

The book "mind in architecture" mentions how the built environment can require a high energy consumption or offer a place for restoration. Pallasmaa (2015) believes that certain environments can work with both approaches, but that architects can choose to tackle a problem from one of them. In a larger context, according to biophilic advocates, this means that a balance is needed between the environment that requires energy and the one that provides energy. (Robinson & Pallasmaa, 2015)

WHAT IS BIOPHILIC DESIGN

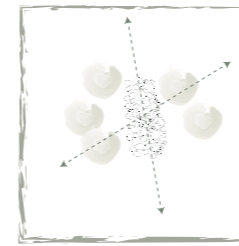
Biophilic design is a response to our need as humans to connect with nature. Biophilic design defines 14 different patterns that architecture can implement in the design to create health promoting environments. These patterns are a result of the research done on how the environment can improve people's health and well-being by reconnecting them with nature. By reconnecting people to nature, built environments can provide an opportunity for mental restoration leading to a muscular relaxation and lowering of our blood pressure and stress hormones. (Terrapin Bright Green, 2014)

"Biophilia is humankind's innate biological connection with nature. It helps explain why crackling fires and crashing waves captivate us; why a garden view can enhance our creativity; why shadows and heights instill fascination and fear; and why animal companionship and strolling through a park have restorative, healing effects."

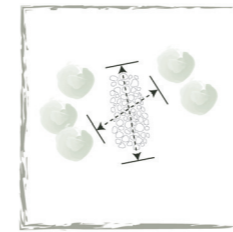
(Terrapin Bright Green, 2014. page 4)

PART OF A HEALTH PROMOTIVE DESIGN

Since hospital staff suffer from both short and long-term stress, which leads to higher blood pressure and increased stress hormone levels, biophilic design could help counter these symptoms. By using the biophilic design as a part of a health promotive design, its effects can allow our bodies to recover before the system of our bodily resources collapses.



1. Visual Connection with Nature
A view to elements of nature, living systems and natural processes.



2. Non-Visual Connection with Nature
Auditory, haptic, olfactory, or gustatory stimuli that engender a deliberate and positive reference to nature, living systems or natural processes.



3. Non-Rhythmic Sensory Stimuli
Stochastic and ephemeral connections with nature that may be analyzed statistically but may not be predicted precisely.



4. Thermal & Airflow Variability
Subtle changes in air temperature, relative humidity, airflow across the skin, and surface temperatures that mimic natural environments.



5. Presence of Water
A condition that enhances the experience of a place through seeing, hearing or touching water.



6. Dynamic & Diffuse Light
Leverages varying intensities of light and shadow that change over time to create conditions that occur in nature.



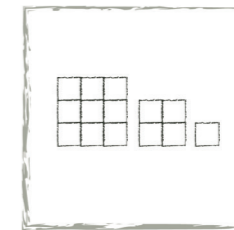
7. Connection with Natural Systems
Awareness of natural processes, especially seasonal and temporal changes characteristic of a healthy ecosystem.



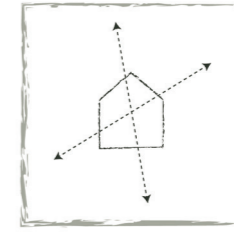
8. Biomimetic Forms & Patterns
Symbolic references to contoured, patterned, textured or numerical arrangements that persist in nature.



9. Material Connection with Nature
Materials and elements from nature that, through minimal processing, reflect the local ecology or geology and create a distinct sense of place



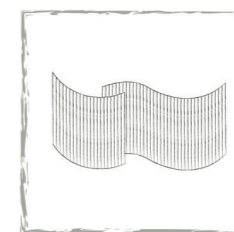
10. Complexity & Order
Rich sensory information that adheres to a spatial hierarchy similar to those encountered in nature.



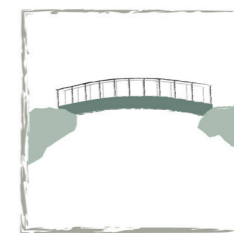
11. Prospect
An unimpeded view over a distance, for surveillance and planning.



12. Refuge
A place for withdrawal from environmental conditions or the main flow of activity, in which the individual is protected from behind and overhead.



13. Mystery
The promise of more information, achieved through partially obscured views or other sensory devices that entice the individual to travel deeper into the environment



14. Risk/Peril
An identifiable threat coupled with a reliable safeguard.

SUMMARY - BACKGROUND

SUMMARY OF LITERATURE

A good workplace is based on the salutogenic idea and offers health promotion, prevention and rehabilitation. The physical environment can be designed to improve restoration, improve our cognitive functions, reduce stress levels and improve our well being.

Through the improved architecture, based on salutogenic interventions, an environment is offered that makes it possible for people to help themselves to a better life.

To integrate elements of nature in the physical environment is very beneficial for human health.

WHAT WE WILL BRING WITH US

OCCUPATIONAL HEALTH

Prevention,
Health promotion
and Rehabilitation

RESTORATIVE ENVIRONMENTS

Being away to
get mental and
geographical
distance to your
workplace

A physical
environment
that support
different
levels of social
engagement

THE SALUTOGENIC DESIGN

Barrier-free
accessibility
and design to
enable action

Person-
centered
design

Providing for
meaningful
engagement

Design for
positive choices

BIOPHILIC DESIGN



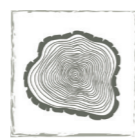
Visual
Connection
with Nature



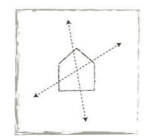
Non-visual
Connection
with Nature



Dynamic and
Diffuse Light



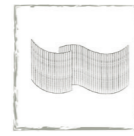
Material
connection with
nature



Prospect



Refuge



Mystery



Biomorphic
forms and
patterns

3. STUDY VISITS

This chapter presents existing projects with relevant ideas and concepts to bring forward.

FRISKHUSET - PROGRAM INSPIRATION

WHAT FRISKHUSET IS

Located in Uppsala, on the premises of Uppsala Akademiska sjukhus, Friskhuset is a wellness facility whose services are available for every employee in Uppsala region. Greta Hogstad, the manager of Friskhuset, explains in our interview that the three areas they cover are: health promotion, prevention and rehabilitation.

Friskhuset was founded in 1993 on the initiative of Akademiska sjukhuset and initially offered physiotherapy and exercise training. In the beginning, it was only for the hospital staff due to physical problems that the staff had experienced at work. Today there are 2000 active members and it is possible to use the health contribution to finance the fee of 1400 SEK.

They offer a range of functions, all of which support wellness in both body and mind. Greta Hogstad emphasizes that they do not have treatment here in terms of psychologists or doctors, but they offer stress management, mindfulness, conversational support and physical training.

Friskhuset is staffed with physiotherapists, ergonomists, personal trainers, masseurs, coaches and group activity leaders. The business is open between 05.30-22.30 with staffing between 07.15-19.00.

The premises that houses Friskhuset are about 1000 square meters. The program includes conversation rooms, treatment rooms, staff room, changing rooms with showers and saunas, gyms, group training rooms, group rooms, reception, storage, cloakroom and toilets.



“It is great to be able to link the ambition with health promotion to actual health functions in close proximity to the hospital. This contributes to a good work environment. ” Greta Hogstad, manager at Friskhuset

GRÖNA REHAB - CONCEPT INSPIRATION

WHAT GRÖNA REHAB IS

Gröna Rehab is a place located close to Botaniska trädgården in Gothenburg for people who suffer from stress-related illness and mild depression. In order to participate in the activities provided you need to be an employee in the Västra Götaland region.

In order to be a part of the rehabilitation program provided by Gröna Rehab, one needs to be referred to the HR-coordinator by one's manager. After that a report is filled in and registered, which then needs to be approved by the Swedish Social Insurance Agency and the employee's doctor.

The activities are work-oriented and based on research providing knowledge of how to recover and reduce stress by using elements of nature. This knowledge about nature's effects are combined with established methods within occupational therapy, psychotherapy and physiotherapy. (Västra götlandsregionen, 2022)

Every year 35-45 people participate in the program, explains Hanna Berko, who is the rehabilitation gardener, in our interview. There are 7 people in each group and the program can either be on part time in 16 weeks or full time in 28 weeks. They spend as much time as possible outdoors all year around.

THE GARDEN

The garden season opens up in March/April and closes in October. The 800 square meter garden's main purpose is to provide a safe space, where staff and the participants can build a relationship, but also about the place itself. The place should provide a readability in where Gröna Rehab ends and begins. It should also include a social space for everyone to gather and a possibility to be alone if you want that. The readability also affects the layout of the garden, which is seen in how the open garden is divided into smaller zones or rooms. The research about nature emphasizes the importance of having views over the garden but also creating a refuge by having a safe personal space where you feel protected.

The garden also supports a variety of options based on changing needs if you are in the beginning or end of the rehabilitation program. The options are seen in the variety of impressions and the different levels of exposure. By working with a 170 centimeter high hedge the participants can see and be seen if they stand up, but be unseen if they work on their knees. By working with the senses like a bamboo that rattles in the wind and having a calmer green vegetation rather than lots of color, this creates a calmer foundation. Other elements that have a calming effect in the garden are the sound of the closeby stream and the heat and sound from the fireplace.



"I believe in good seating places, where you have support in the back and high ceilings with an overview. To feel: here I want to sit for a while, I do not feel exposed and have the opportunity to be myself." Hanna Berko, Rehabilitation gardener

STUDY TRIP - SKYSPACE

SKYSPACE, JAMES TURELL, 2011

During sunrise and sunset, a play of light takes place that projects color onto the white walls that frames the sky. (Kulturhuset Ytterjärna, 2022)

The building is round and has a wooden facade. The interior is a round white room with a dark polished stone floor that reflects light. At the far end of the wall runs a heated concrete bench with a sloping backrest. In the middle of the ceiling there is a round window where the sky is visible and the walls allow the sound from the outside to find its way in.

PURPOSE

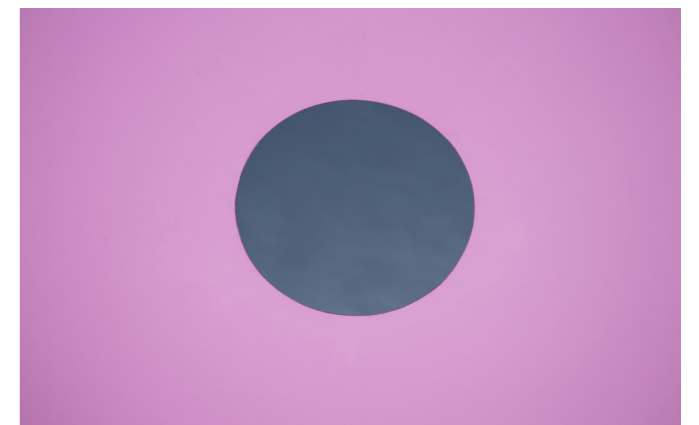
The purpose of the study visit was to experience sensory presence through a clear spatiality and to understand how to strengthen natural elements by working with our senses.

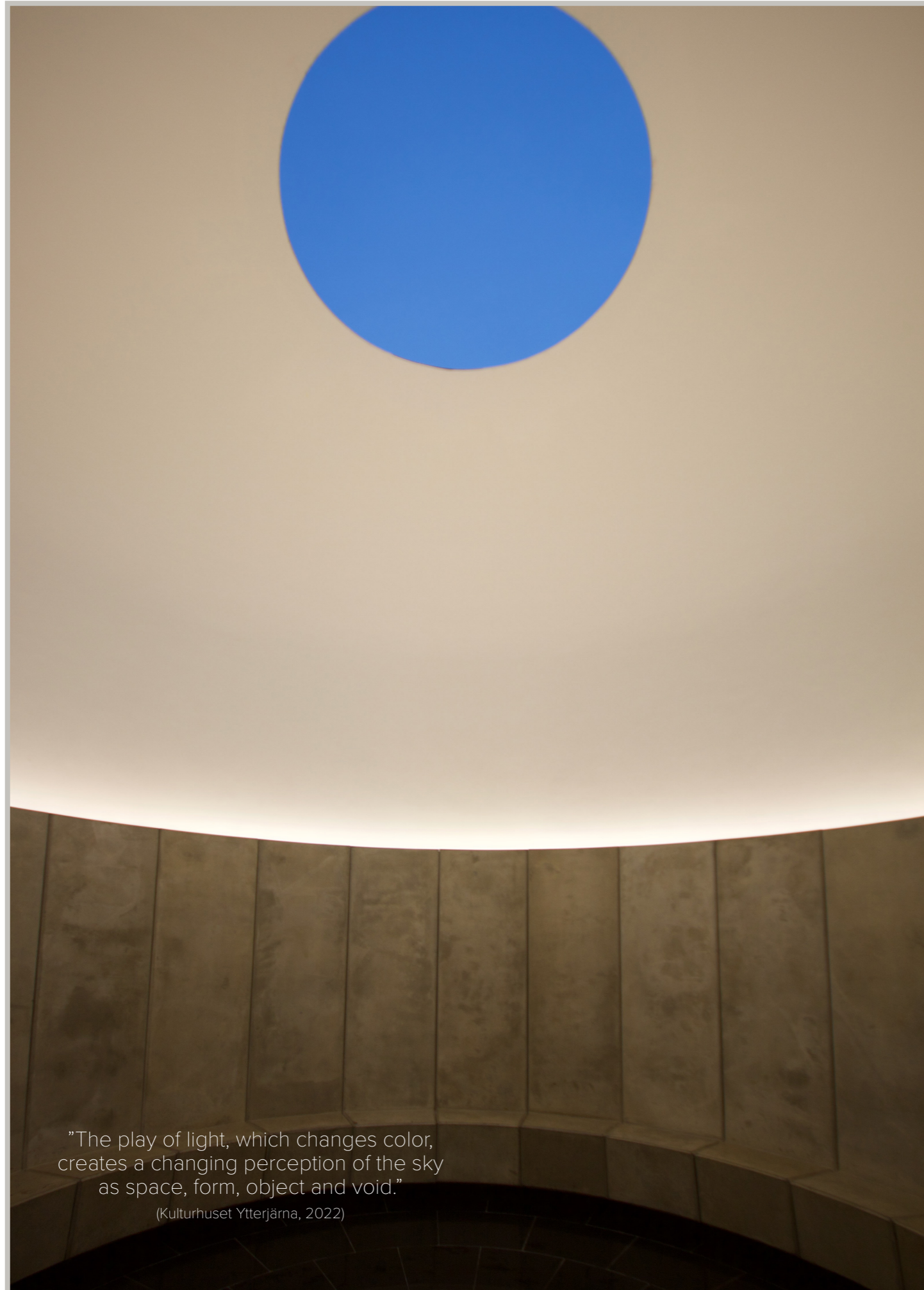
FINDINGS

The first impression was from afar. How the low-key wooden building interacted with the surrounding nature. When we entered the building, we experienced a clear focus because the building's sole purpose is to create an experience through presence. There was a fascination, a clear focus, with a single window in the ceiling. The feeling of presence was further enhanced by the sense of touch, as the concrete benches were heated. The heat together with the sloping backrest, made the body relaxed..

The Skyspace felt as a shelter, protected and warm, but still hearing the outdoor sounds made us feel in control but relaxed.

It was a fascinating experience to see and feel that with small means, in this case through contrasting light on the walls, one can create a unique experience of all the color changes of the sunrise of the sky.





A (S)PACE FOR REST
30



A (S)PACE FOR REST
31

STUDY TRIP - YTTERJÄRNA

YTTERJÄRNA

Ytterjärna is a town located south of Södertälje. It is a society founded from the anthroposophical movement. Its architecture works with natural materials, sounds and colors and advocates an organic design language that aims to support the functions.

PURPOSE

The purpose of the study visit was to experience an architecture that has such a clear concept, in this case anthroposophy, that permeates expression and spatiality.

We wanted to investigate and experience rooms that had a sense of calm in them and analyze which elements that contributed to create that feeling.

FINDINGS

The indoor atmosphere was characterized by warm tones, natural materials and low sound level. There was colored concrete and a lot of textures. The organic shape was recurring and the ceiling was clad in colored sound-absorbing material, which made the space feel more intimate. It was a forgiving environment where additions that did not fall within the same design expression blended in instead of contrasting and coming into focus.

There was an overview but still a sense of space in the rooms and an intimacy. Which was reinforced by working with different form expressions, material choices and colors.



A (S)PACE FOR REST

STUDY TRIP - YASURAGI

YASURAGI SPA, STOCKHOLM

Yasuragi Spa offers an environment based on the Japanese bathing tradition to support a present moment awareness.

"Yasuragi" stands for the deep exhalation you make when you completely relax and exhale. The environment should be calm and have few impressions, so all guests wear the same yukata, a Japanese bathrobe, slippers and swimwear. The idea is to integrate nature and to create a place that supports relaxation and makes us recover.

PURPOSE

The purpose of the study visit was to experience a space that was designed to slow down and to analyze concepts, materials and elements that support recovery that we can use in our project.

FINDINGS

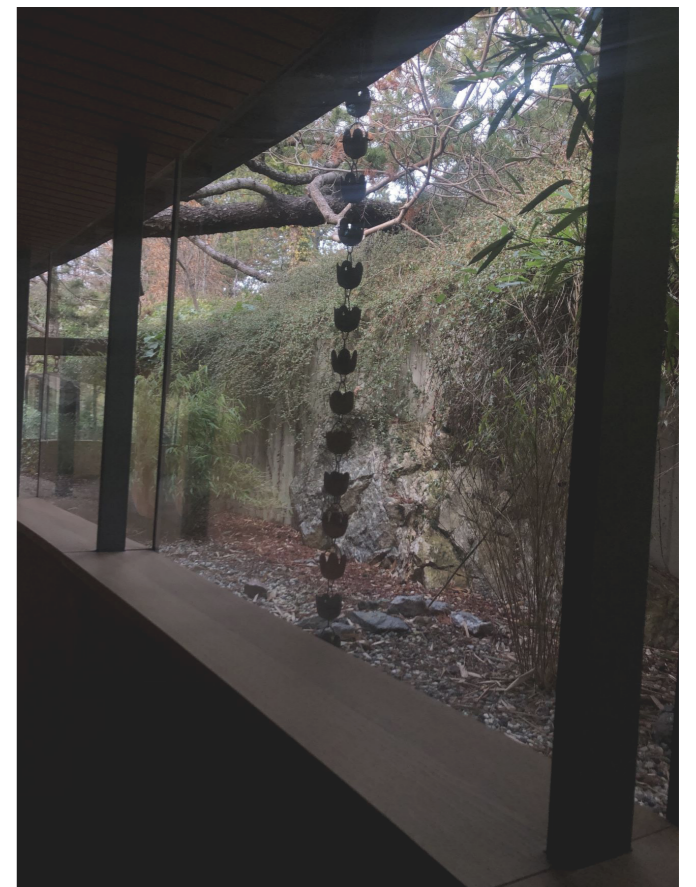
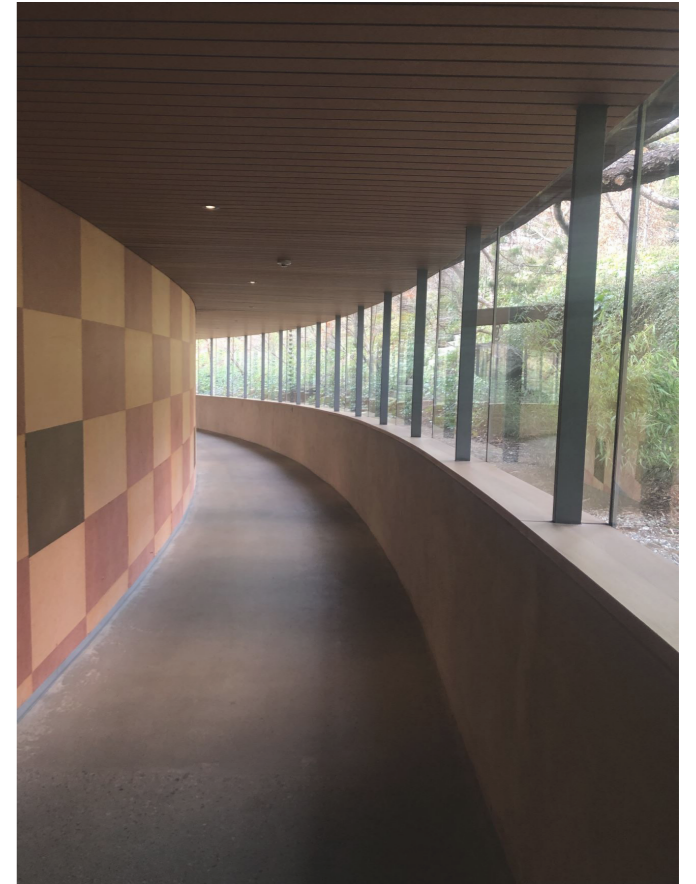
The curved corridor led us to the spa area. One side was covered with a wall paper of warm earthy tones. On the other side there were windows overlooking an elevated nature, which created a feeling of being one floor down. A different experience of nature, seen from below, created a feeling of calm.

In the spa department, the ritual is included as a clear concept and puts the visitors in a certain type of sensory presence and a clarity in how the rooms were to be used.

Heat as an element had a calming effect. The atmosphere was calm and had a cohesive material palette. The light was dim and since everyone was wearing slippers, the footsteps were barely audible.

The outdoor environment was present, in the form of sight lines.

An easy way to create a gradient between private and public is to work with walls that have different permeability. This is a recurring design strategy all through the building.



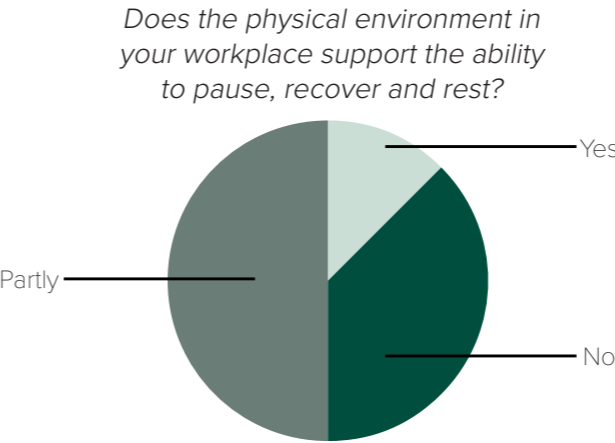
A (S)PACE FOR REST

4. USER PERSPECTIVE

This chapter contains a summary of the questionnaire survey and the interviews in which healthcare workers contributed answers. The chapter concludes with fictional personas that are based on scenarios and experiences that hospital workers have shared.

SUMMARY – SURVEY AND INTERVIEWS WITH HEALTHCARE WORKERS

A survey was conducted with healthcare workers from four different units at Sahlgrenska university hospital that resulted in 40 participants. The majority of the respondents are working at Östra sjukhuset.



50% of the respondents think that the physical environments to some extent support restoration. 37.5% of the respondents in our survey confirmed that the current physical environment of the workplace does not support restoration at all. 12.5% of the respondents think that the current physical environment supports restoration.

The main qualities that were most wished for was seclusion, fresh air and quiet spaces.

The main functions that were most wished for was a gym, outdoor spaces with seating areas, terrace with garden, massage and room for relaxation.

Other qualities and functions that were wished for in a separate building was a sauna, locker room with showers and lunch room.

Other functions that would contribute to an improved workplace was a broader range of food and safe bike storage.

In the interview with Emil Hammarlind who is an emergency nurse at Sahlgrenska and Maja Drakenberg who is a medical doctor at Östra, both confirmed the need to change the environment during breaks for more efficient restoration. It was also highlighted that the noise and sounds from the ongoing work activities would trigger stress during breaks and that a need for a less demanding environment was longed for.

INTERVIEW WITH HUMAN RESOURCES

In the interview with the HR strategists at Sahlgrenska University Hospital Carina Falck and Camilla Nilsson, they described a number of qualities that could contribute to a better physical work environment:

- To be able to have private and separate conversations
- To ensure areas for recovery that are restful and calm with daylight where you can choose to sit together or alone
- Have an environment that is cozy and has a calm atmosphere that contrasts with the usual hospital environment
- Have a more integrated and present occupational health care in the hospital area
- Be able to go away and change the environment for team meetings and ATP

PERSONAS



Elsa
Age: 55 year
Like: Yoga, going for walks, reading books.
Needs: Seclusion and distance from work during breaks.
Wishes: A quiet and peaceful place to have breaks, yoga classes, a gym

Elsa works as a senior specialist in radiology. Worked as a medical doctor for 25 years. Has quite good coping strategies nowadays. From experience she know what to do to maintain a good health. For her that means having lunch and breaks by herself or with just a few colleagues. To be physically active regularly. Leaving the unit where she works when she has shorter breaks. She also makes sure to plan time for reflection when she experience challenging patient related situations



Anna
Age: 28 year
Like: Spending time with friends, yoga and travel.
Needs: Time to reflect together with colleagues in a quiet and secluded environment.
Wishes: Secluded and quiet places for breaks, pauses and documentation. These rooms should be designed to contrast to the clinical rooms.

Anna was registered as a medical doctor 6 months ago and has started her residency recently. She works in a medical emergency department. She experiences stress quite often. It can be due to a high workload but mostly due to feelings of inadequacy there as new to the job and not having a sense of control. She tries to leave the unit where she works during breaks when it is possible. She finds it stressful to stay in the staff room in the working unit since you still hear all the activities going on outside. She tries to find strategies for herself to reduce stress like breathing exercises. She would like to have more outdoor spaces to go to and leave the hospital building during lunch when it is possible. She would also like to be able to change the environment when writing patient journals.



Anders
Age: 35 year
Like: Going for coffee with friends, gym, running and going for walks in the woods or by the sea.
Needs: Seclusion and silence during breaks and pauses. Better to access food and snacks.
Wishes: A room in or in close connection to the unit where you can be alone with few impressions to recharge. A greater variety of food closer to the unit.

Anders has worked as a medical nurse for 6 year. At the moment he only works night shifts in the emergency unit. He feels that the work pace can vary a lot. They do not have any scheduled breaks so the breaks are taken when it is possible. He feels stressed when there is an intense shift and they are having challenges seeing all patients and at the same time very limited hospital beds. He feels that he lacks secluded quiet spaces in or close to the unit for micro-breaks.



Maria
Age: 38 year
Like: Spending time with her children. Going for walks in parks or in wild nature.
Needs: A context where there are low demands on social engagement. To find a balance between work and rest in an environment that can provide a framework that supports to the rehabilitating process.
Wishes: Regain a capacity to work and still have energy for her private life.

Maria works as an assistant nurse in the maternity ward. At the moment she is on sick leave and diagnosed with fatigue syndrome. She feels that she has a long way to come back to a work capacity but has drawn a rehabilitation plan with occupational healthcare. She hopes to be admitted to the green rehabilitation program that the region provides since she feels that being in nature and cultivation are aspects that bring well-being and energy to her.



Magda representing the team
Age: 48 year
Like: As a manager, it is stimulating and rewarding when you can foresee each individual the tools and tasks for them to thrive.
Needs: The resources and time to engage with the staff and the possibility to have team building activities.
Wishes: An environment that better support the administrative tasks and systematic development work. It would be ideal to be in a non-clinical environment for staff meetings and workshops.

Magda works as hospital operation manager. One of her responsibilities is a systematic occupational environment work and work for a health promotive way of working. She feels that it would be very beneficial to be able to have APT in another location than the hospital building since it would make the staff less stressed if they do not have all the clinical activities going on outside the room. It would also be beneficial to have educational days in another location since that brings more focus. She also wants to encourage her staff to do more things together. It would be great if there was a place where they could do group activities together like yoga, book circle or have lunch/dinner.

	Green surroundings	Outdoor stay	Physical training	Body mind awareness	Lunch	Coffee break	Massage	Education	Meetings	Reflection	Health consultations	Rehabilitation
Elsa	●	●	●	●	●	●	●			●		
Anders	●	●	●	●		●	●			●		
Anna	●	●	●	●	●	●	●	●		●		
Maria	●			●	●	●	●	●		●	●	●
Magda and the team	●	●		●	●	●		●	●	●		

5. SITE AND CONTEXT

This chapter contains an analysis of Östra Sjukhuset in Gothenburg and our site and it ends with strategies for the site.

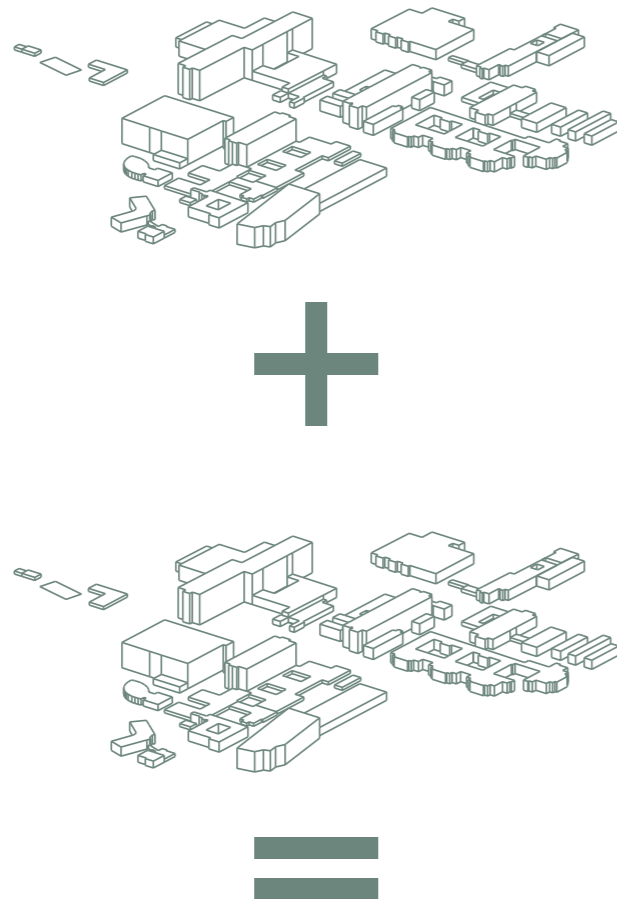


DENSIFICATION – ÖSTRA SJUKHUSET

Östra sjukhuset is one of the hospital areas that will undergo a densification. The plan for the hospital is for its area to have doubled in 2035 compared to today. This expansion corresponds to approximately 60,000 square meters. (Västfastigheter, 2022)

Densification of the area could lead to new opportunities but also problems that need to be taken into account. An important issue to take into account is to provide green areas to be able to take care of stormwater, but also ensure a qualitative environment for humans and animals.

The expansion will mean more care places and high-tech care. It also means that Östra sjukhuset will be a larger workplace that will attract competent and committed staff. We therefore see that it is of great importance to offer an attractive workplace, which in our opinion means offering a sustainable physical work environment where elements that promote health and well-being are clearly present.



2035 Östra sjukhuset will have doubled its size.

A SUSTAINABLE HOSPITAL AREA

In 2014, a pilot project was done by Västfastigheter together with support from the Government Offices through the Delegation for Sustainable Cities. Since Östra Hospital is facing a major development, the purpose was to create a pilot study that will support sustainable physical planning.

The pilot project resulted in four different aspects within sustainability: social sustainability and human rights, health-promoting healthcare, ecological sustainability and economic sustainability. The project formulated concrete proposals on how to achieve these sustainability aspects. Some proposals that are relevant to our project and that we have chosen to work actively with are:

More trees

Today there is a shortage of trees in the hospital area. Trees create a better condition for shade in a warmer climate, better air quality and biodiversity.

Convert parking spaces to green spaces

Today, there are many scattered parking spaces, which should be concentrated in a few places. A greener outdoor environment provides increased quality for patients and staff.

Recycle materials

Reusing materials is both cheaper than newly produced and an environmental benefit. Reuse should be a criterion in the selection and procurement of building materials.

Green rehab

A well-functioning method for stress-related illnesses is green rehabilitation.

Green view

The architecture of the hospitals must be designed so that the view of the surrounding nature is maintained.

Attractive workplace

In dialogue with staff, it is investigated how Östra Hospital can become a more attractive workplace. From a long-term perspective, this leads to an economically sustainable hospital by people choosing to work here and generating returns in the form of care.

Create oases

In the fierce competition for staff, good staff care is important. Therefore, sustainable employees are a must. In a demanding working day, there should be places to get peace and energy in the form of coffee places indoors and patios that alleviate the stress.

Facilitate cycling

Create better conditions for cycling to and within the hospital area, as increased cycling is good for the environment.

Make the outdoor environment accessible

Position the outdoor environment so that it is easy to reach from common areas.

Design the houses with green roofs

Green roofs should be used for the purpose of managing stormwater, evening out temperature differences over time and reducing noise for indoor and outdoor environments.



ANALYSIS OF HOSPITAL AREA



FINDINGS



During our visits to the hospital area, we saw many examples of how hospital staff found temporary solutions to the need to sit outdoors.



One environment that we found most unpleasant and least stimulating to move in was the underground corridor. Lack of daylight and design contributed to the monotonous and claustrophobic experience.



A large part of the outdoor environment in the hospital area consists of scattered ground parking spaces.



Adjacent to the hospital area are green zones that create green views that could be strengthened to benefit more people.

THE SITE

SITE CRITERIAS

The site was selected based on a number of criteria:

- Located in a hospital area
- Located away from the most intense activity and traffic
- Have green surroundings
- Improve a hardened surface

SITE CONDITIONS

The site is located in the southern part on the premises of Östra sjukhuset in Gothenburg. Today the site is used for parking and the plot is flat and borders to a park forest area to the south.

Neighboring buildings are the Ronald McDonald house located west to the site and the Children and youth psychiatry building located in the north.

There are several recreational areas such as Härlanda tjärn, Skatås and Delsjön close by in the southern direction that connect to our site.

The site is located in the outskirts of the hospital area.

SWOT

STRENGTHS

- Peripheral location in Östra Hospital
- Accessible by walking, bike, public transport and car
- Surrounding nature to the south (biophilic experience)
- Protected nature in the south
- In close connection to the recreational walking paths of Östra Hospital
- "Empty" plot
- Distance to heavy traffic

WEAKNESSES

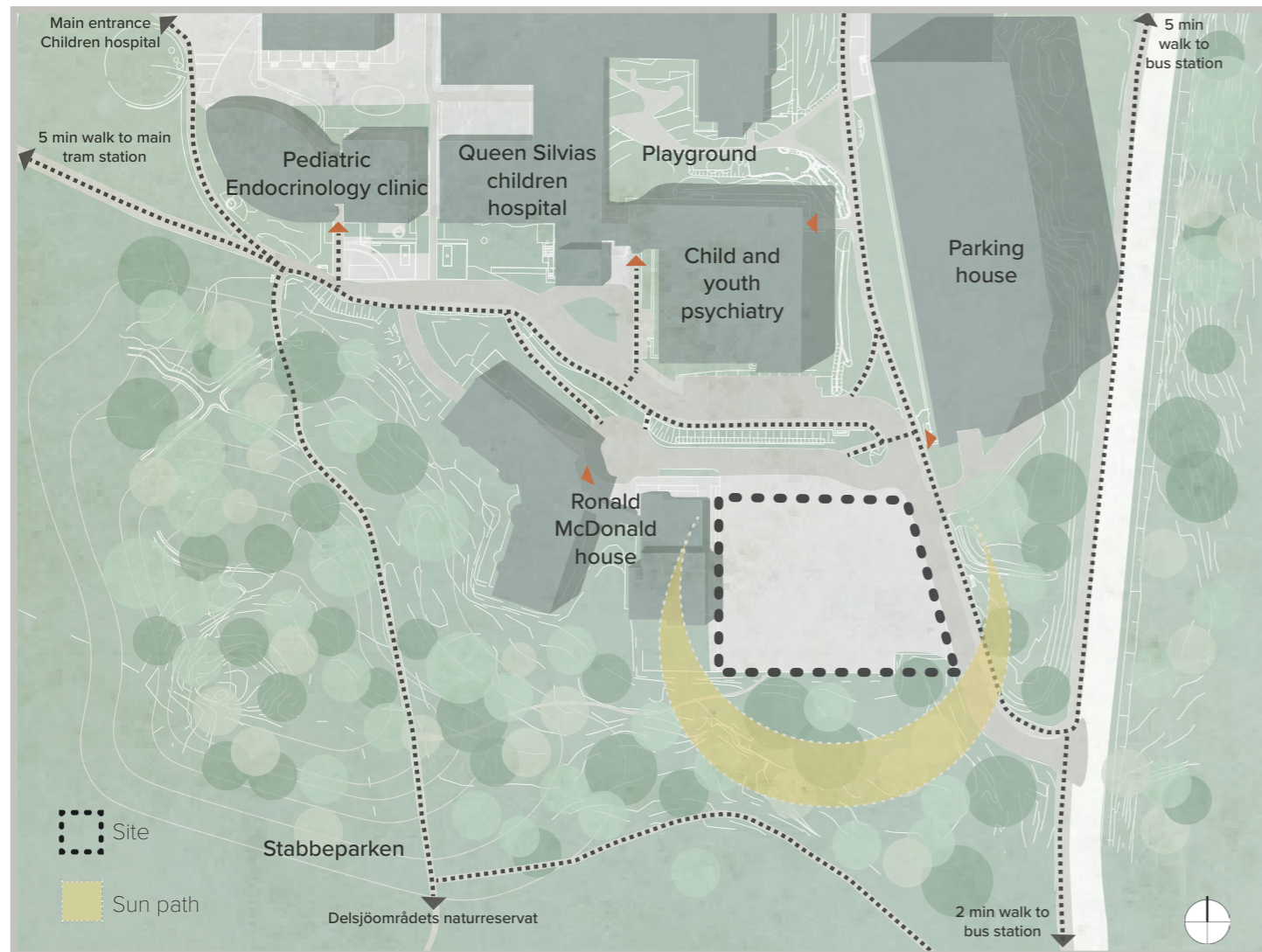
- Close to car entrance of the hospital area and parking garage which might create noisy environment at certain hours of the day
- Hard surfaces
- Far from main tram station of the hospital

OPPORTUNITIES

- Possible to connect to the green walk towards Stabbeparken
- Hard surfaces have potential for re-greening
- A large variety of expressions on surrounding architecture makes a unique expression on site feasible
- Make the site more populated more hours of the day in, which can increase the sense of safety since Östra hospital struggle with problems with drug sales
- Enhancing the biophilic experience of the site will also affect the surrounding buildings in a positive way (BUP & Ronald McDonald House)

THREATS

- Rainwater runoff from hills might gather on the site
- Development on the site might result in a unwanted densification from neighbouring Ronald McDonald building

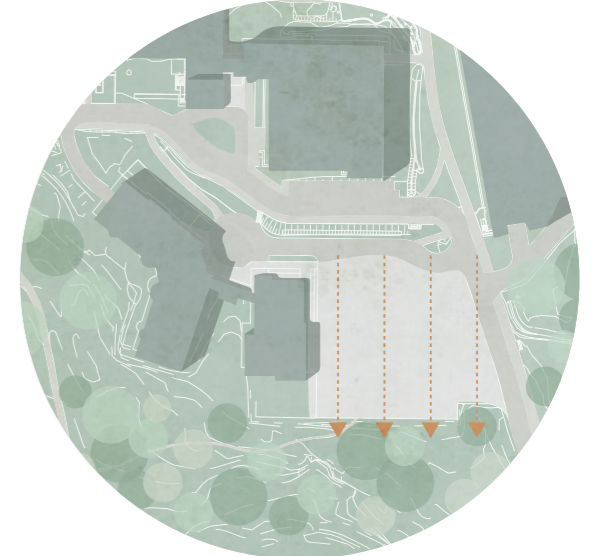


6. SITE, DESIGN AND PROGRAM STRATEGIES

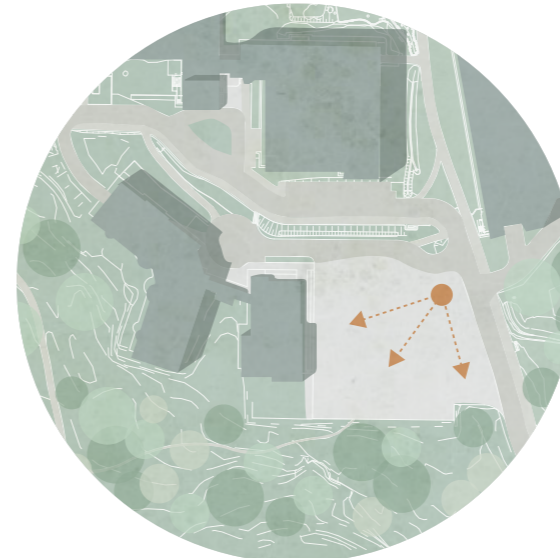
SITE STRATEGIES

AIM

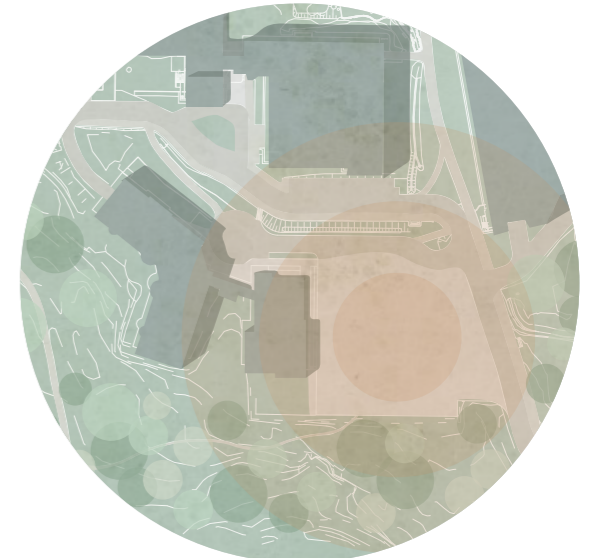
The aim of the site is to create a solid foundation that supports the restorative elements that will be added.



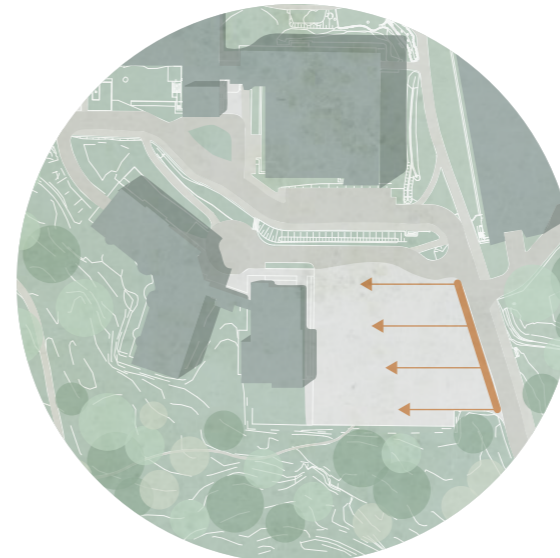
Create a clear, accessible connection to the greenery



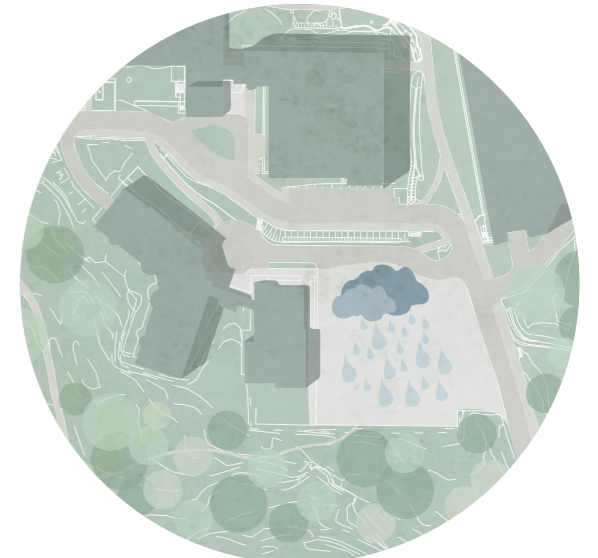
Create a private green oasis by opening up to the forest



Improve outdoor environment for surrounding buildings

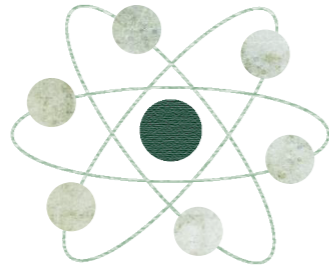


Turn away from the road to reduce noise



Improve storm water management through improved ground surface

DESIGN AMBITIONS



The Salutogenic workplace

Design new spaces that support the staff in all aspects of occupational health: health promotion, prevention and rehabilitation.



An environment that supports restoration

Create patterns in the environment that activates a restorative response.



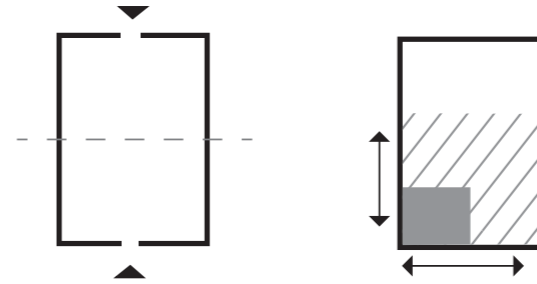
A biophilic experience

Create a building that implements 5 chosen biophilic patterns that reduce stress, improve cognitive performance and well-being.

DESIGN STRATEGIES



The Salutogenic workplace

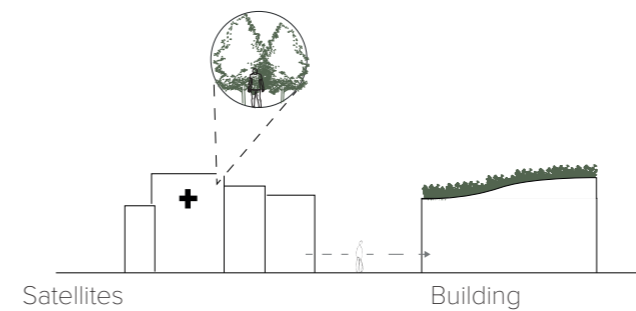


A HOLISTIC PROGRAM

To offer a program that supports recovery for both healthy and sick people, the building is designed so that it meets the individual's conditions for participation. Through two entrances that separate the flows and strengthen the zoning of public and private, a flexibility in the rooms for a higher occupancy and that the zone for rehabilitation should be able to grow and shrink depending on the current needs of patients and the season.



An environment that supports restoration

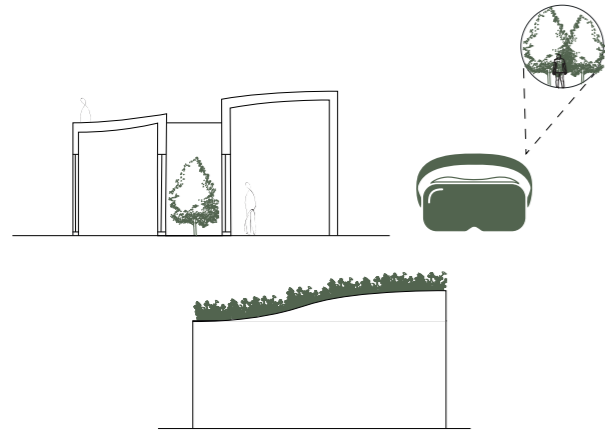


GOING AWAY

To be able to initiate a restorative process, it is important to change the environment. This can be achieved with both a geographical distance or a mental distance. For a more long-term effect, it is important to create distance geographically, to which a separate building responds. For a short-term effect, restorative spaces are implemented near the units. To further emphasize the change of scenery, the spaces for recovery need to be designed in clear contrast to the work environment. By working with volumes and silhouettes that have a more organic shape and implementing greenery for a soft character this contrasts to a more rational and hard surfaced hospital environment.



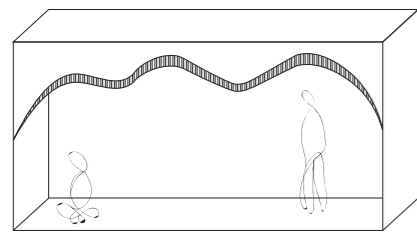
A biophilic experience

**VISUAL CONNECTION WITH NATURE**

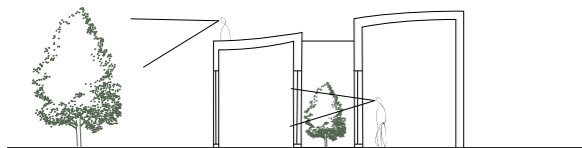
To create a biophilic experience through visual connection with nature, our strategy is to implement green atriums, roof garden, green alcoves and virtual nature.

**NON-VISUAL CONNECTION WITH NATURE**

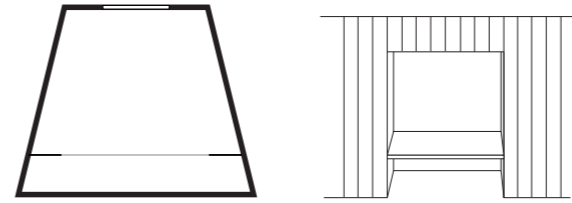
In places where nature is not present visually, sounds from nature are added.

**BIOMORPHIC FORMS AND PATTERNS**

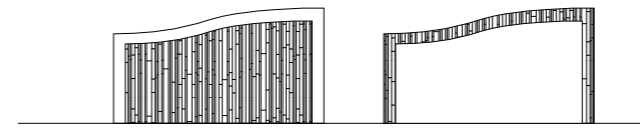
To create environments that are reminiscent of nature's patterns, textures and contours, a curved ceiling is added.

**PROSPECT**

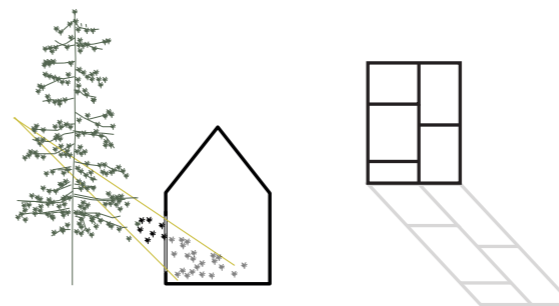
To create spaces that feel open and orientable, it is important to have environments that have a good visual overview. This contributes to a sense of security and control. By working with the atrium, an overview is created inside the building. By lifting up some of the greenery on the roof, the staff get a good overview of the surroundings while preserving a sense of privacy and integrity.

**REFUGE**

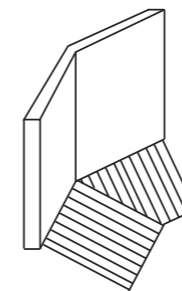
In order to create an environment that feels safe, healing and that offers a sense of retreat and withdrawal from work, the environment should support different needs for social participation. By working with niches and nooks, the individual can choose which degree of commitment they have the capacity for.

**MATERIAL CONNECTION WITH NATURE**

By working with exposed natural materials, a stress-reducing effect is achieved. This is implemented by using wood for both exterior and interior surfaces.

**DYNAMIC AND DIFFUSE LIGHT**

By creating environments that support a dynamic and diffuse light condition, feelings of calm are formed. By working with the natural light, the environment changes in harmony with nature and the seasons. By working with windows that have a low parapet height, the light is allowed to enter further into the building. Divided little windows along with nearby greenery contribute to a vibrant play of shadows.

**MYSTERY**

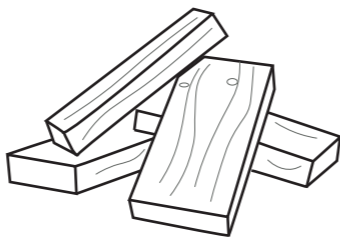
Mystery creates a balance between overview and exploration. Broken angles and corridors create a feeling of wanting to go deeper into the environment to explore what is perceived but not visible. To create a variation in the flow and rhythm of the building's communication, the walls are angled.

RE-USE

In addition to the 7 design strategies we have chosen to implement a sustainable strategy to meet the challenges of the future. To reduce the climate impact that newly produced buildings have, one method is to recycle building materials.

WOOD CUT OFFS

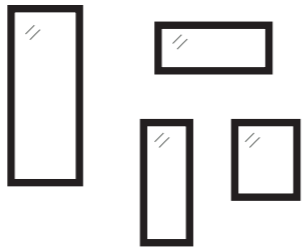
Facade materials and patio floors consist of cut offs of wood with minor flaws. This wood would in many cases be discarded but is a highly usable material. The variation in dimensions of the cutoff wood could provide a quality when designing facade elements. The result is a facade with a varying relief that reminds of the bark of a tree. This expression gives deeper qualities of shadow play.



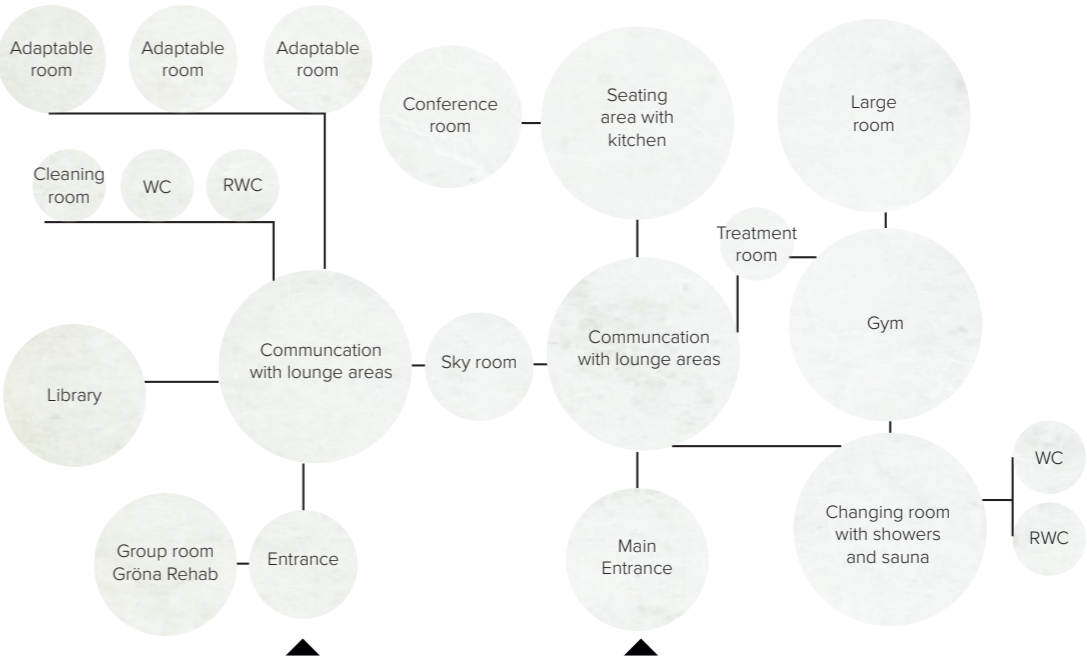
UPCYCLED WINDOW GLASS

The divided lite windows consist of both upcycled and newly produced window panes in order to ensure today's requirements for energy consumption while resulting in a reduced CO2 emission.

The variation in the sizes of the window sections in the building is intended to be adapted to the range of glass sections that can be reused. By dividing the openings into smaller glass sections, the shadow play that is sought in the design is also strengthened.



PROGRAM - FLOW



SPACE	AREA, m²
BASEMENT	
Bicycle storage with loading and service station	295
GROUND FLOOR	
Adaptable room x 3	36
Conference room	25
Group room Gröna Rehab	35
Library	35
Seating area with kitchen	90
Gym	185
Large room	120
Changing room with showers and sauna	100
Treatment room	9
Cleaning room	3.5
RWC x 3	9
WC x 3	8
Entrance x 2	28
Sky room	20
Technical room	42
Communication with lounge areas	235
Ground floor Total	
980.5	
TOP FLOOR	
Roof terrace	380

7. DESIGN PROPOSAL

This chapter presents the design proposal. Our design proposal consists partly of an acupuncture intervention that we call satellites and mainly a building proposal.

7.1 SATELLITES

In response to how hospital staff can have micro breaks during the working day, acupuncture strategies are implemented near the units.

SATELLITES

- Virtual nature
- Green alcoves
- Biophilic underground corridor
- Food trucks



Our four different acupuncture interventions are implemented in the units or in close connection. This is also a solution for changing the environment and to create a possibility of going away to a contrasting scene in a short distance.



VIRTUAL NATURE

For staff who have work-intensive shifts and do not have the opportunity to leave their department, virtual reality stations are implemented. Research shows that virtual nature has significant effects on reducing stress and can therefore act as a substitute for a real nature experience during micro-breaks.



"Working during night shifts means not having any scheduled breaks, so it is a necessity to have a space where I can have an efficient break and recharge in close connection to the unit. I really enjoy using the virtual nature function since it makes it possible for me to shut out the ongoing buzz from the work environment and also change scenery for a moment."
- Anders



BIOPHILIC UNDERGROUND CORRIDOR

In our proposal, we have identified the underground corridors as the most urgent places to apply a biophilic layer. It is important that the communication paths are designed so that the experience is as positive as possible for both staff and patients because it is such a large part of a hospital area. To create a safer and more stimulating experience for both hospital staff and patients in transits between the buildings, an inner ceiling is added with a circadian lighting and nature sounds are a part of the sound environment.



"I walk a lot in the underground corridors between different hospital buildings, so I really appreciate that the corridors have nice lighting, green walls and that they do not feel monotonous. The walks are a nice break between work tasks." - Elsa



GREEN ALCOVES

In our survey, it was found that a large majority of the respondents need accessible outdoor environments with seating. In our proposal, this need is met by alcoves for small groups so that the staff can have a secluded break area outdoors.



FOOD TRUCKS

Our survey showed that one of the factors that contributes to an attractive workplace is that there is a greater variety of food supply. In the development of Östra Sjukhuset, there is a vision of developing a square in the hospital area, which would be an optimal location for a new food hub. In our proposal, this is represented by food trucks that vary over the week and can serve as a nearby place to buy lunch or sit down on the seats in the square.



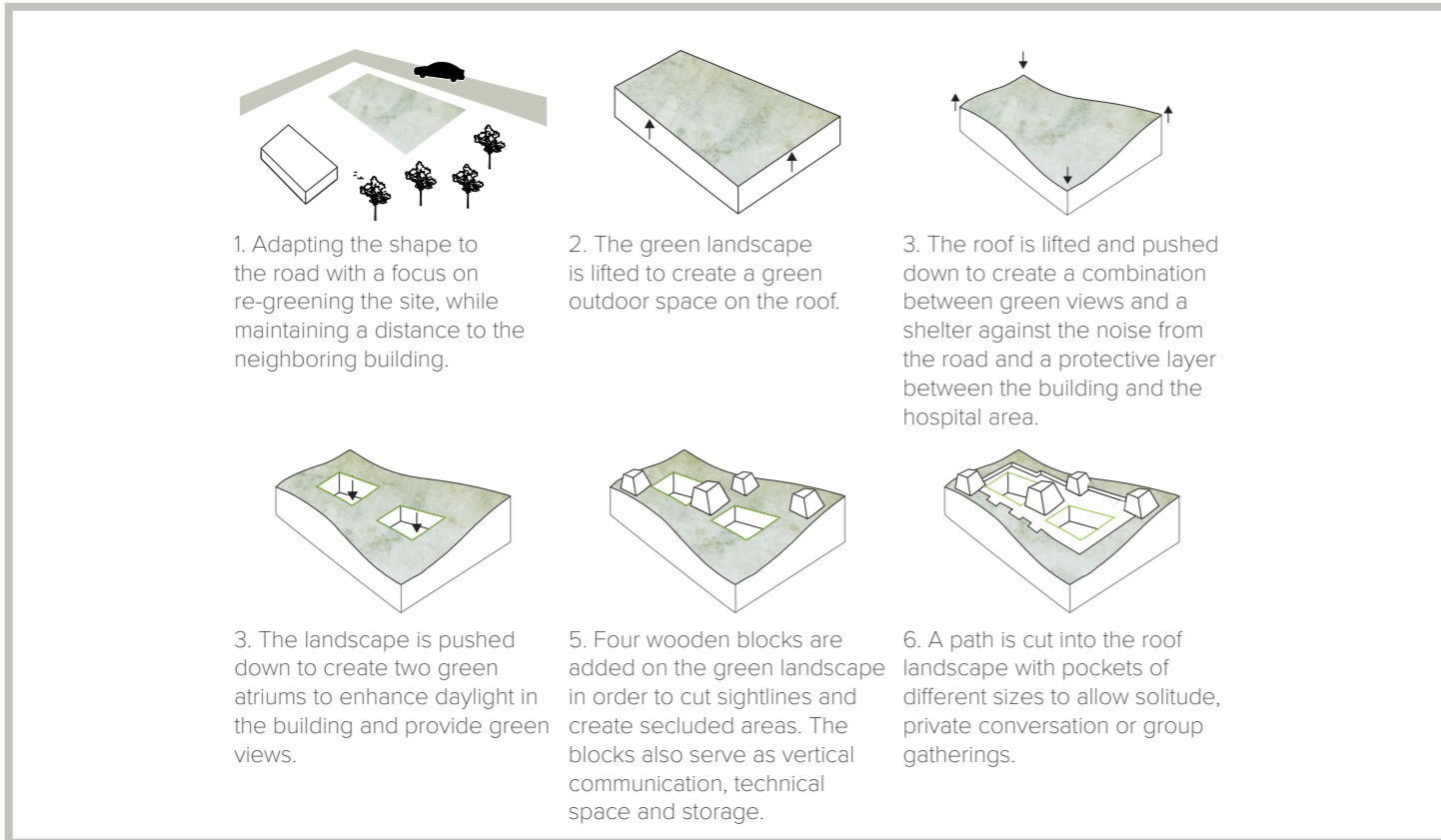
"I have very intense working shifts, so I need efficient breaks to recharge. I really appreciate getting fresh air and during the warmer part of the year I enjoy my lunch in the green alcoves outside the unit. Since I do not have the time to go to any restaurant it is really convenient to have the variety of the food trucks nearby where I can pick up food when I have time. " - Anna

7.2 BUILDING

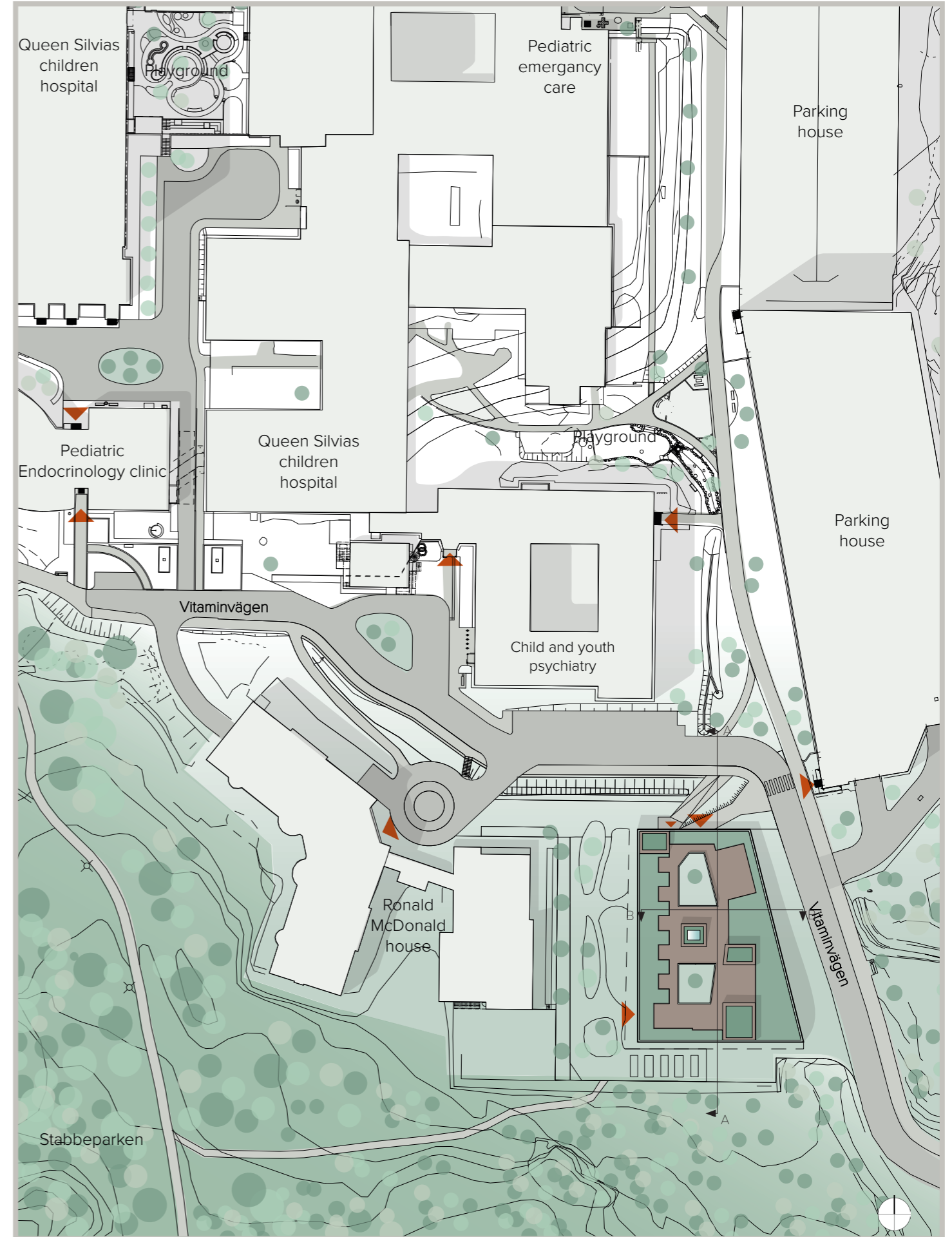
VIEW OVER ENTRANCE



SHAPE DEVELOPMENT



SITE PLAN 1:1000

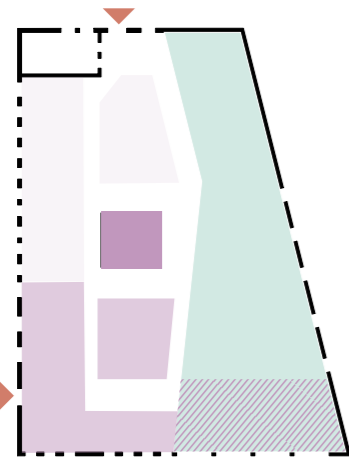


ENTRANCE FLOOR



ENTRANCE FLOOR ZONING

The layout of the building has been developed with the salutogenic theory in mind. The zoning allows for activities with different types of social engagement.



Social zone

Private zone

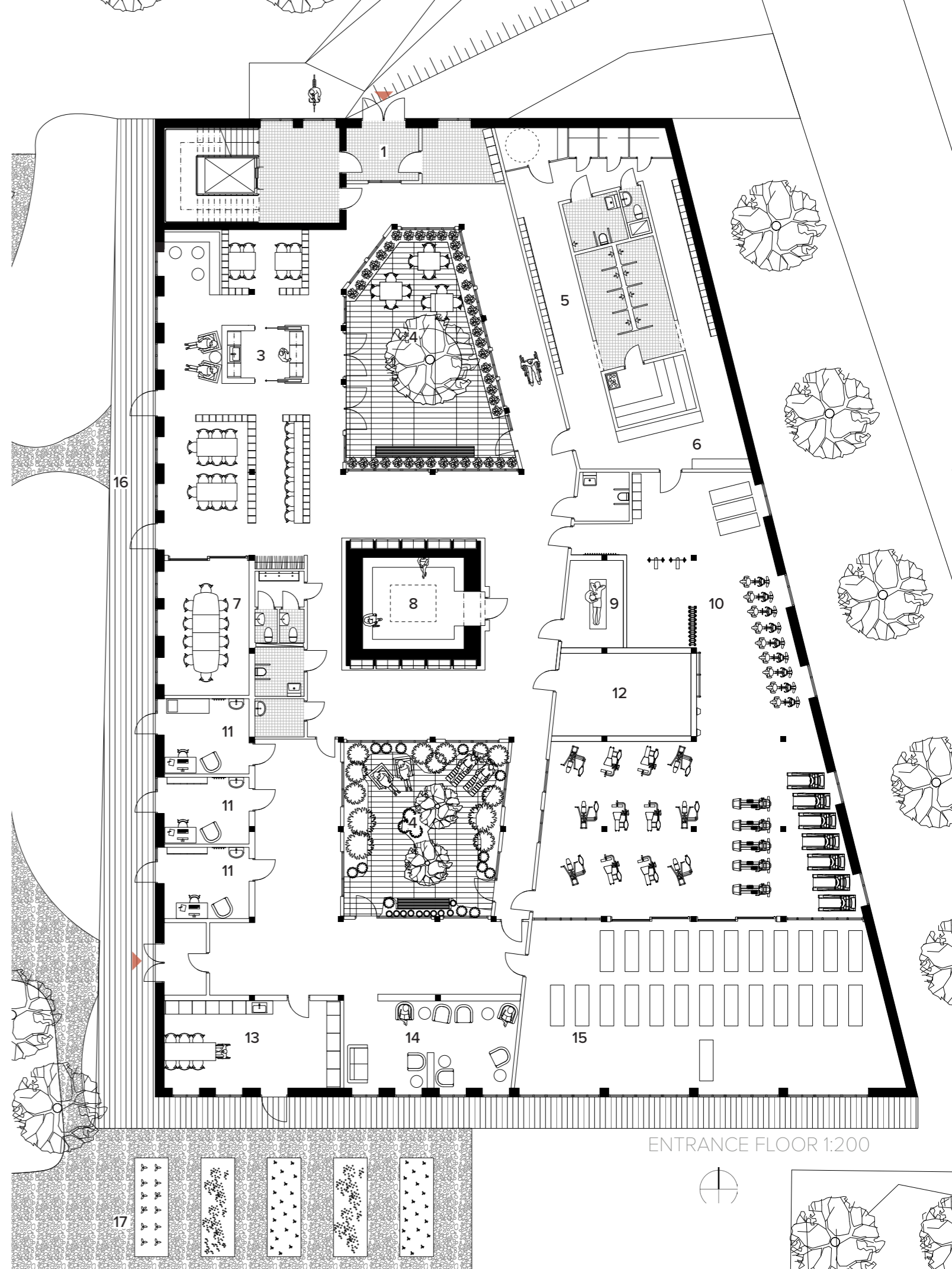
Quiet zone

Zone for physical activity

1. Entrance
2. Private changing booths
3. Seating area with kitchenette
4. Atrium
5. Changing room
6. Touch up space
7. Conference room
8. Sky Room
9. Treatment room
10. Gym
11. Adaptable room
12. Technical room
13. Group room Gröna Rehab
14. Library
15. Large room
16. Outdoor seating area
17. Cultivation garden

A (S)PACE FOR REST

62



A (S)PACE FOR REST

63

PROGRAM EXPLANATION

ENTRANCE FLOOR

The building can be divided into a social zone and a more private zone. These are reinforced by the fact that all communication is located around the two atriums in the middle of the building. The zones are further enhanced by the two atriums interacting with the zone in which they are located. In addition, they create qualities in the building by adding daylight and a visual connection between the stories.

The main entrance to the north invites to the social part of the building. There is a seating area with a kitchenette, which allows both social gatherings and more secluded conversations. Views of greenery are present towards the garden and atrium. The meeting room is adjacent to the seating area to be used during planning days and team activities.

The changing room with shower and sauna is close to the main entrance to provide effective accessibility for those who have been physically active before and after work both indoors and outdoors.

The gym offers zones with different functions where you have the opportunity to choose the degree of exposure. In close proximity is also a massage room.

The large room in the south can be used for relaxation and physical group activities. In addition this room can be used for stress managing courses and courses in CPR for staff. Its large windows are directed towards nature. The room can be used for more private functions or the gym. The flexibility is allowed through its double entrances and its location as a link between the social and the private zone.

Adjacent to the southwest entrance are functions that belong to the private zone. Here is a room that is Gröna Rehab's residence with direct access to the cultivation garden outside. In this part, there are rooms that can be used for booked visits to a physiotherapist, therapeutic talks or administrative work that needs to take place in peace and quiet.

In the heart of the building is the sky room which belongs to the quiet zone. This is a place of contemplation and rest with a focus on the sky. There is total silence inside. The depth of the running bench allows lying and sitting rest.

ROOF GARDEN

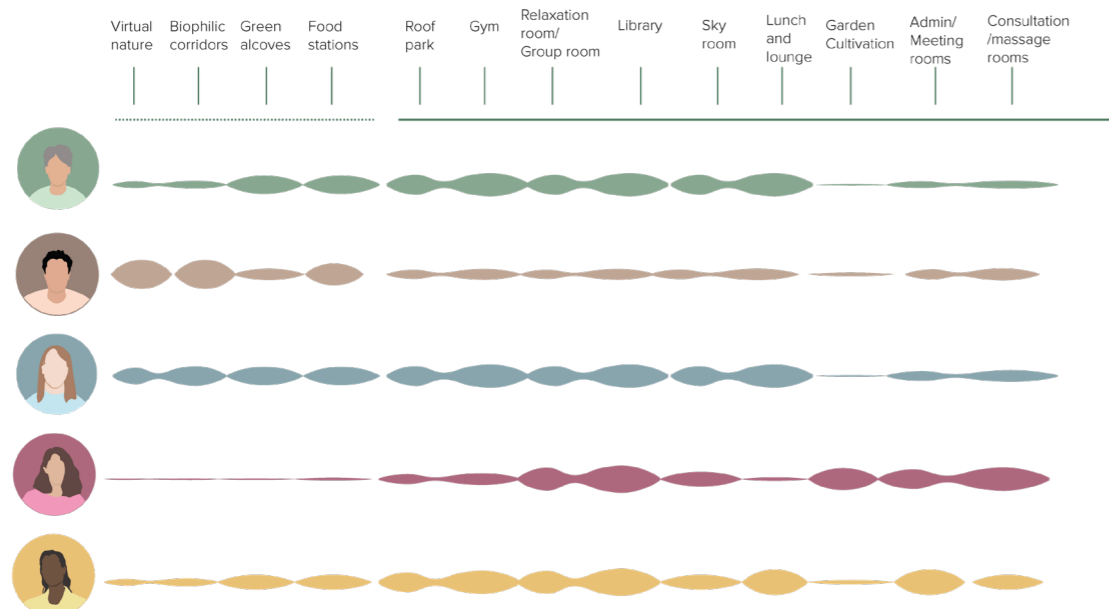
The main entrance to the north is adjacent to vertical communication to the roof garden. There are places and niches of different sizes to allow both social gatherings, private conversations and solitude. The green landscape contributes to a biophilic experience and provides a protected place for staff to more easily disconnect from work.

BICYCLE GARAGE

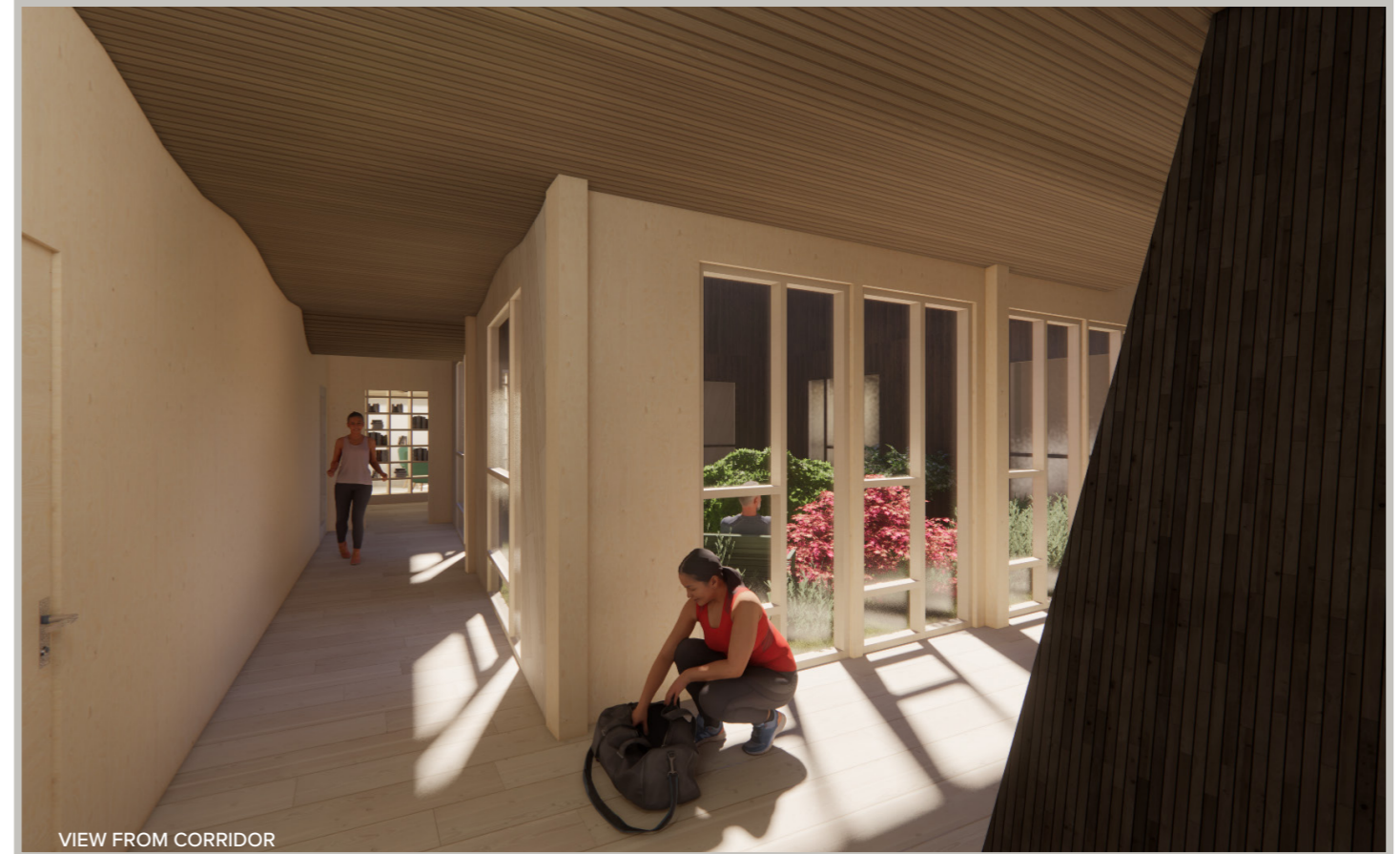
In the basement there is a generous bicycle garage for different types of bicycles. Here you can charge electric bicycles, perform light maintenance and store bicycle helmets and batteries.

OCCUPANCY

Chart over how the personas would use the different functions in the program.



A (S)PACE FOR REST



VIEW FROM CORRIDOR



VIEW FROM GYM

A (S)PACE FOR REST

VIEW FROM LARGE ROOM

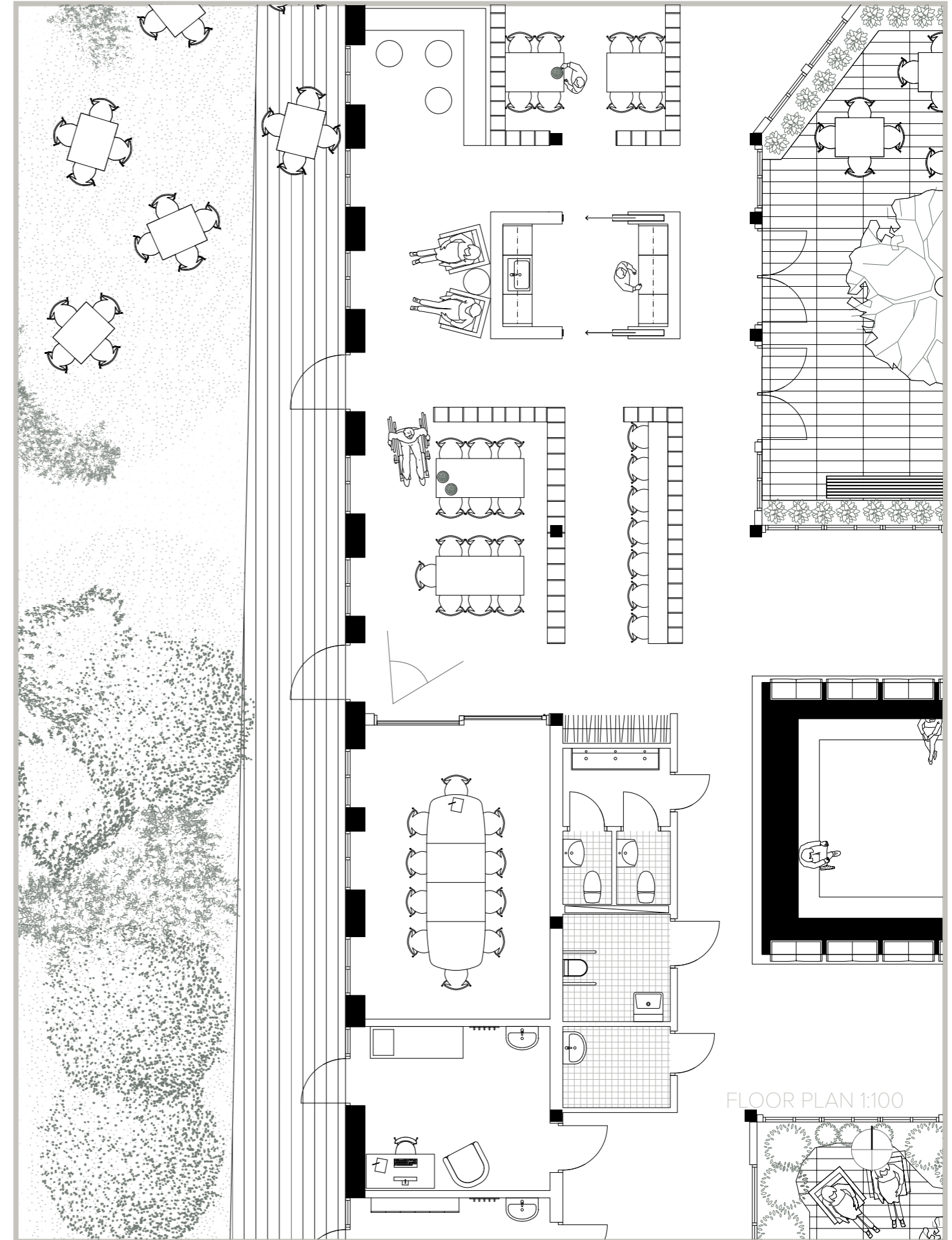


SEATING AREA

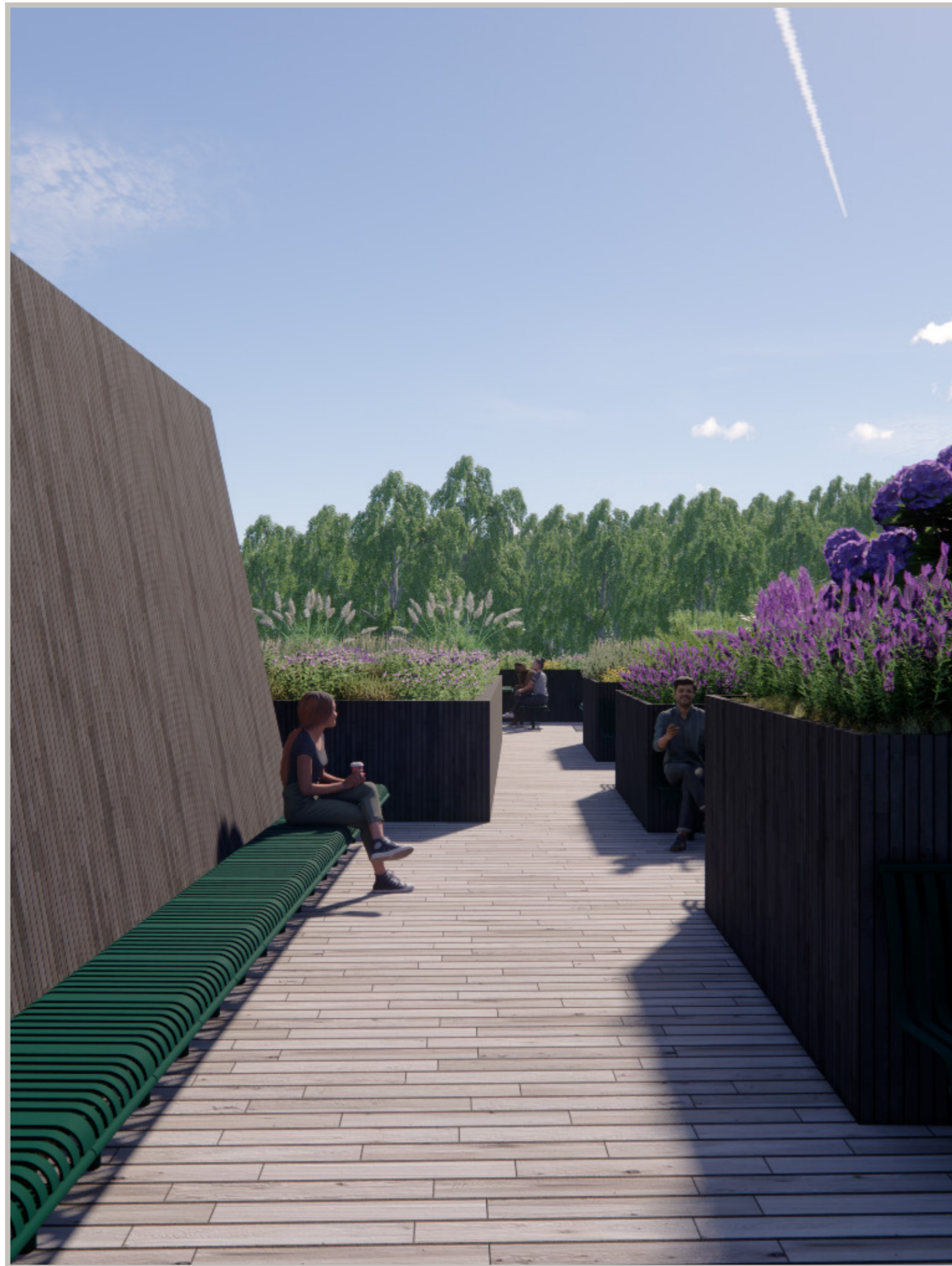


"My job responsibility includes strengthening the group, so I appreciate a more informal place where we can be when we have ATP and planning days. This building really offers a clear environmental change to our workplace, which contributes to a more relaxed climate in the group and invites to more open conversations. For my own part, I appreciate being able to sit in a private room with a view as I need to work undisturbed with administration." - Magda

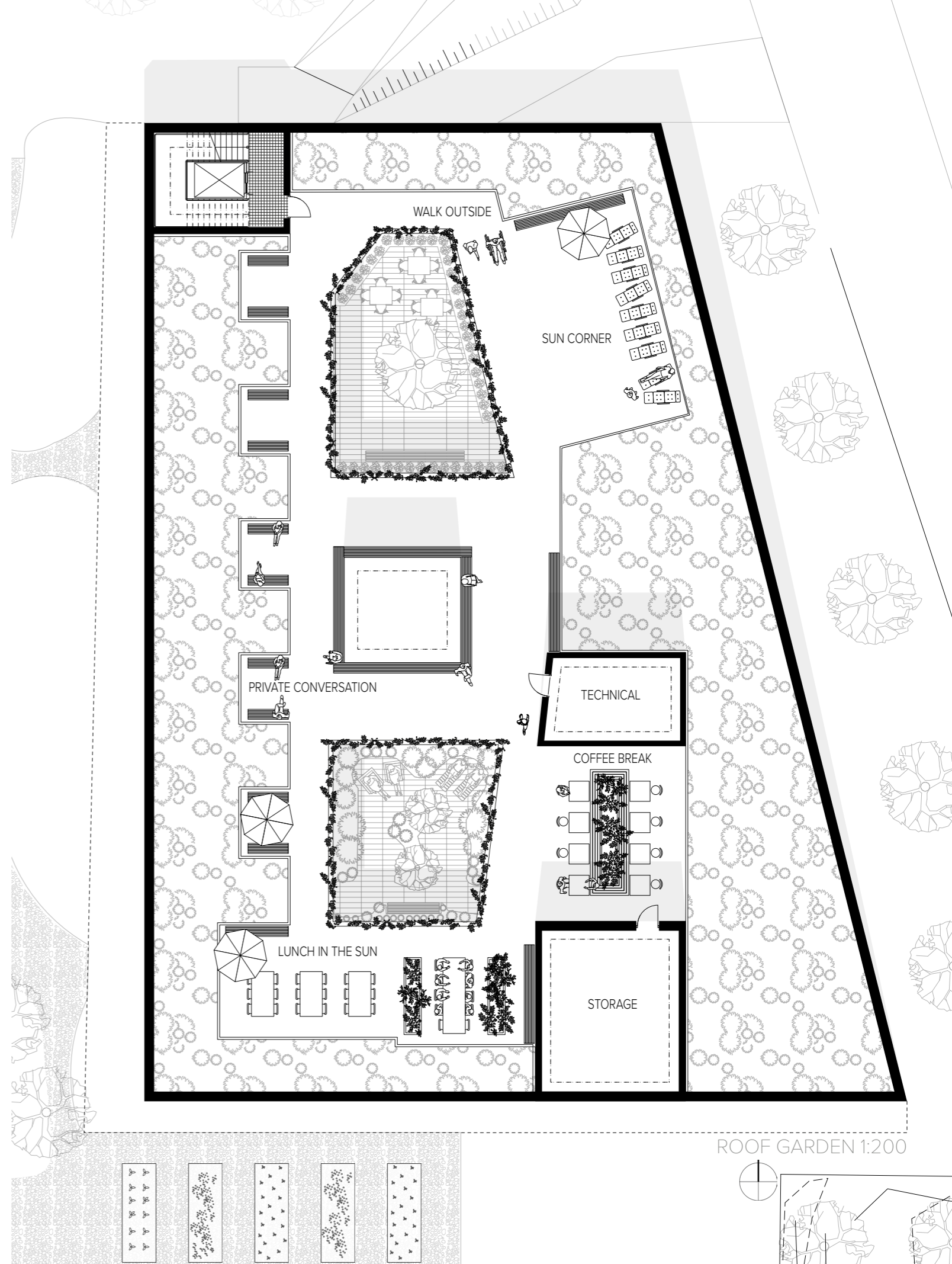
SEATING AREA 1:100



ROOF GARDEN

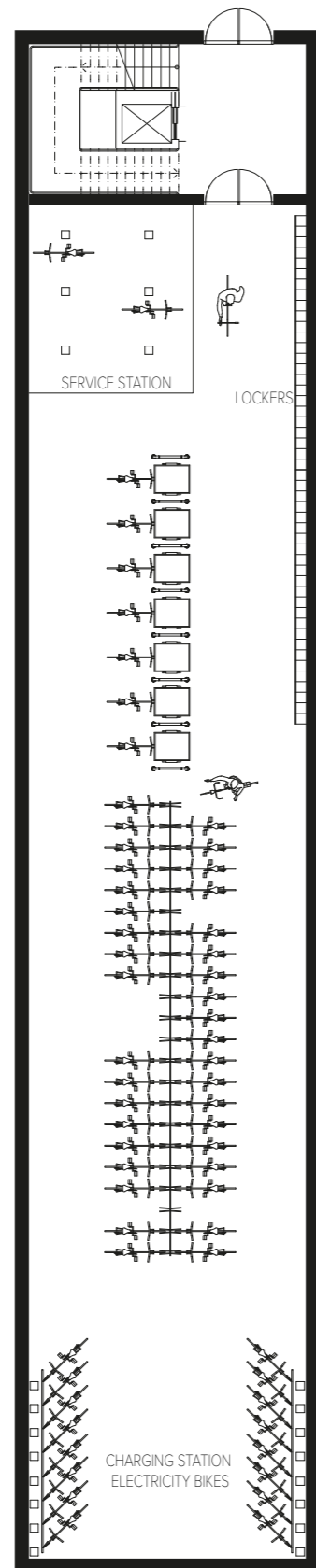


A (S)PACE FOR REST
70



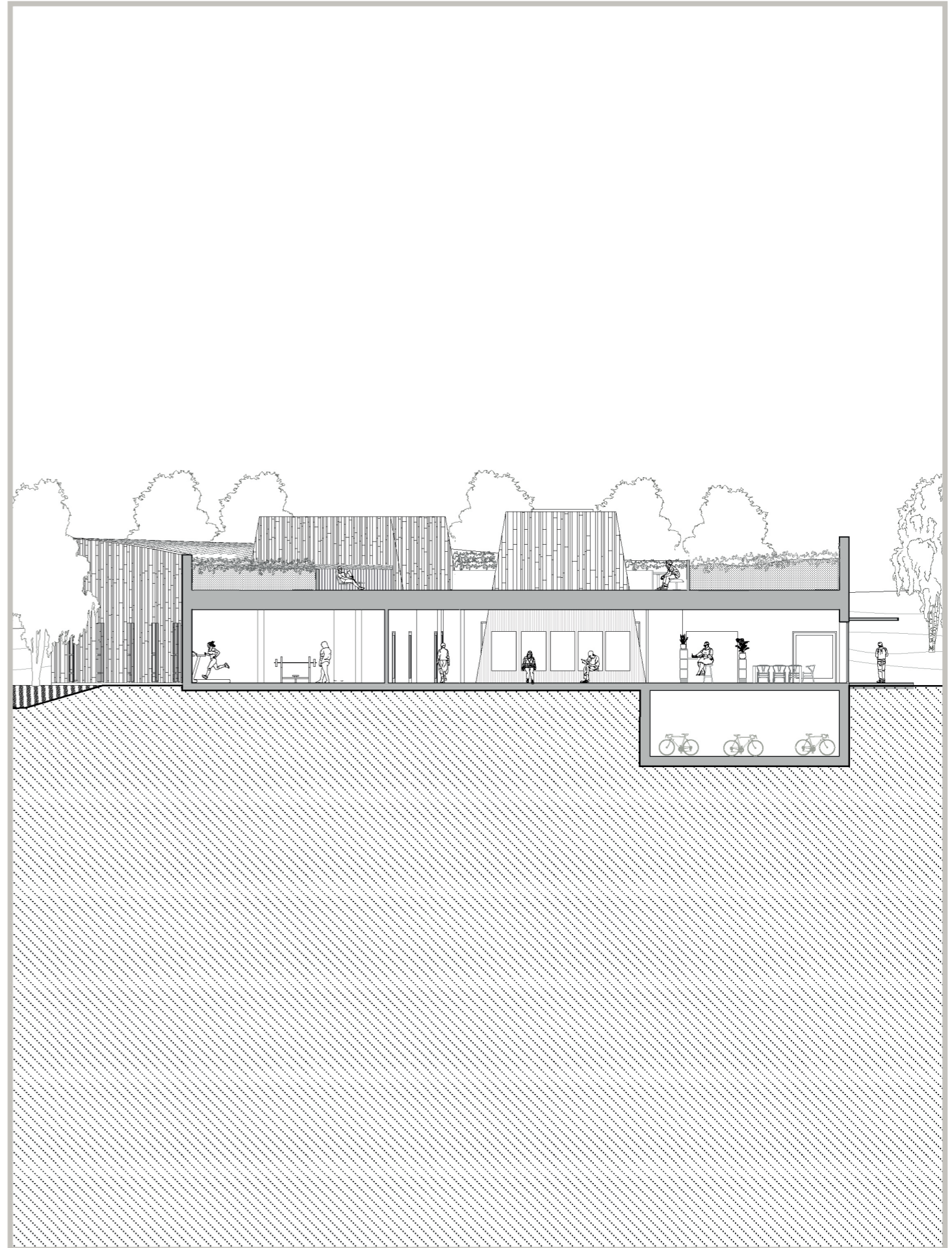
A (S)PACE FOR REST
71

BICYCLE GARAGE 1:200



A (S)PACE FOR REST
72

SECTION B-B 1:200



A (S)PACE FOR REST
73

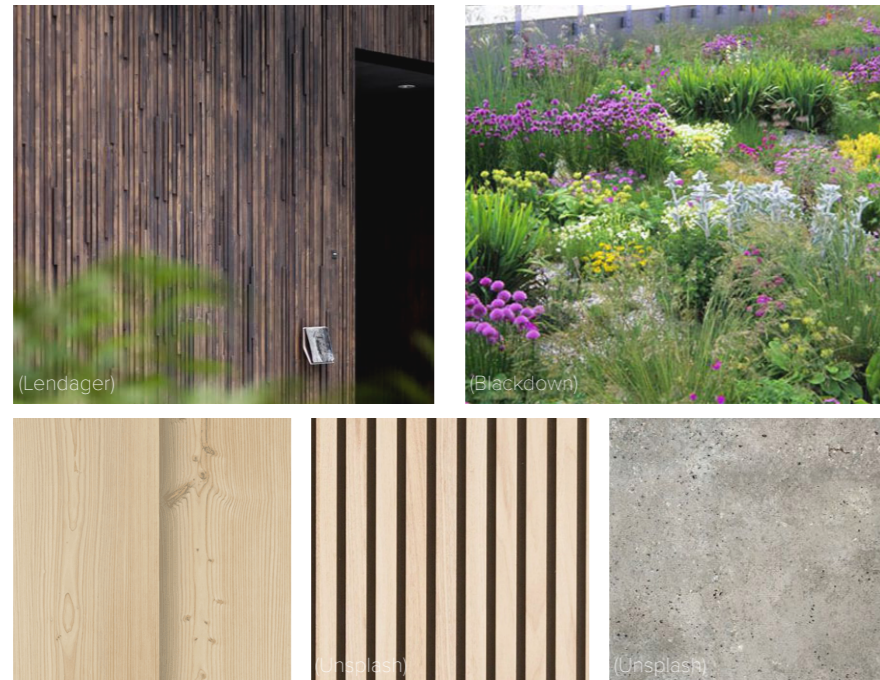
SECTION A-A 1:200



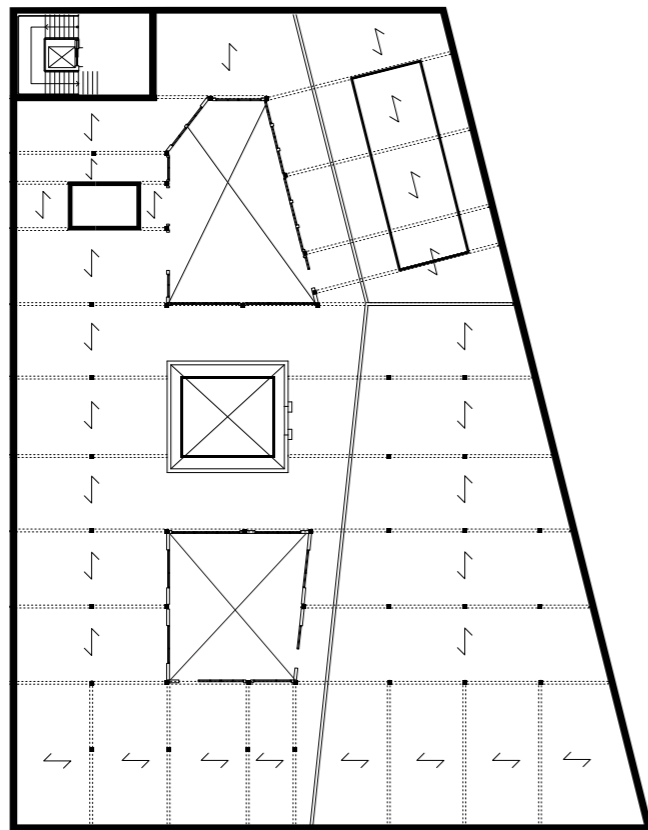
A (S)PACE FOR REST
74

A (S)PACE FOR REST
75

MATERIALITY

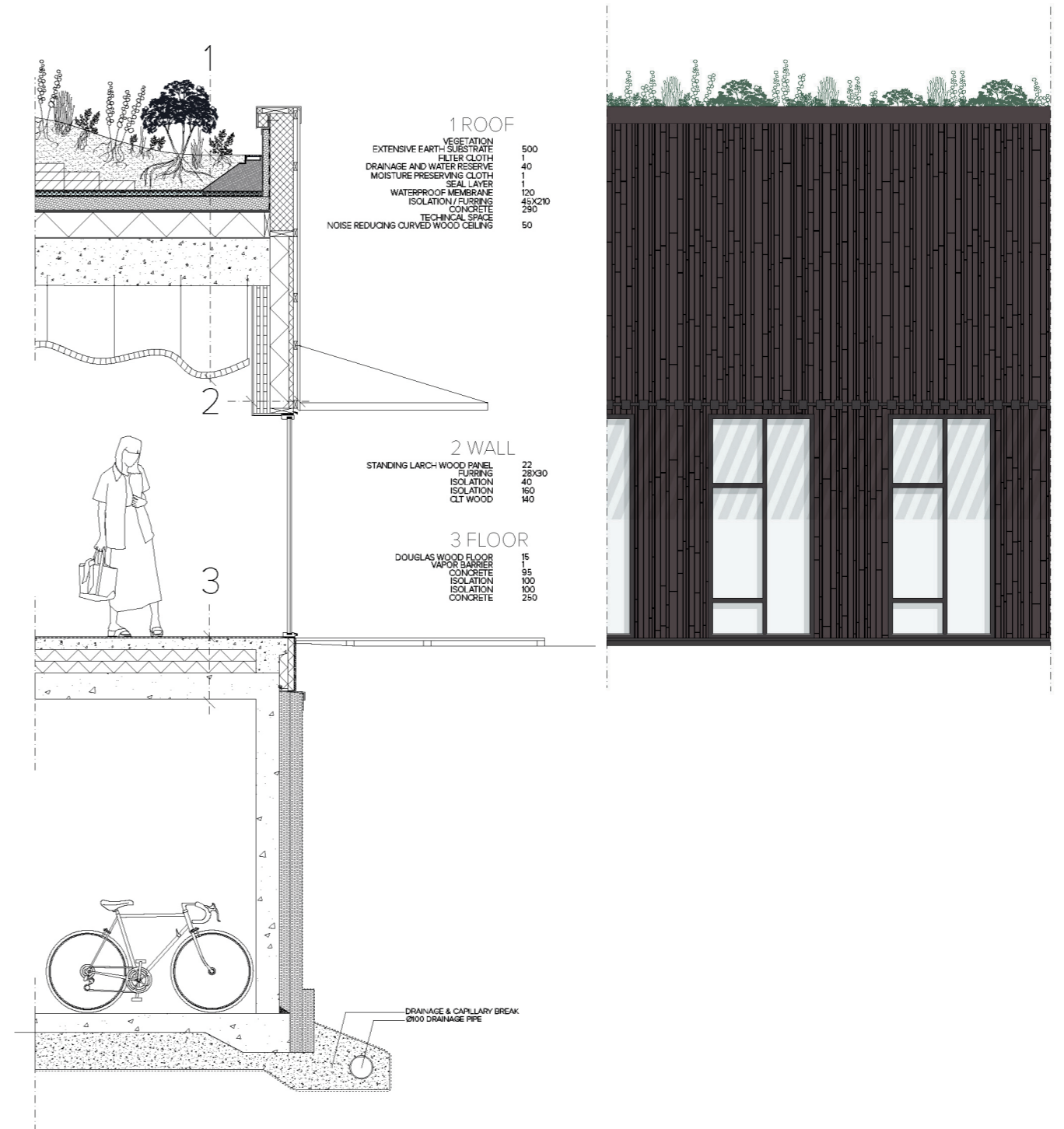


STRUCTURE 1:400



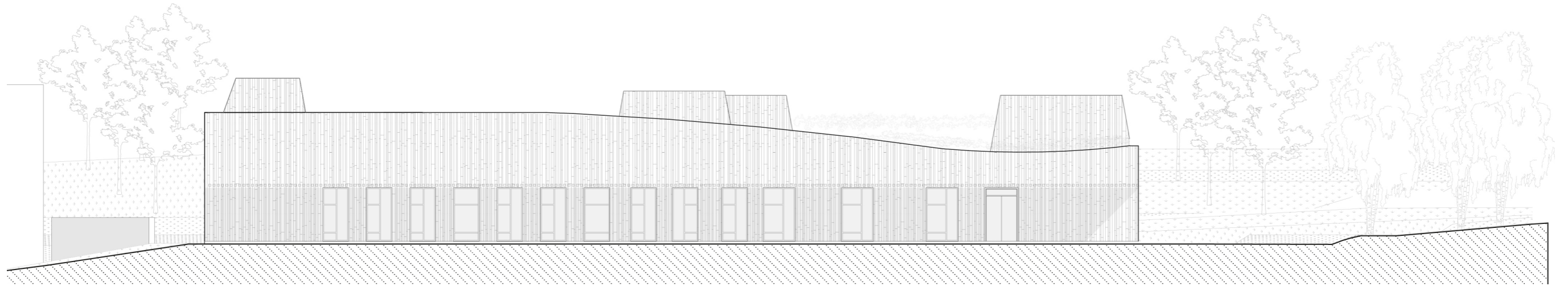
A (S)PACE FOR REST
76

DETAIL SECTION 1:50

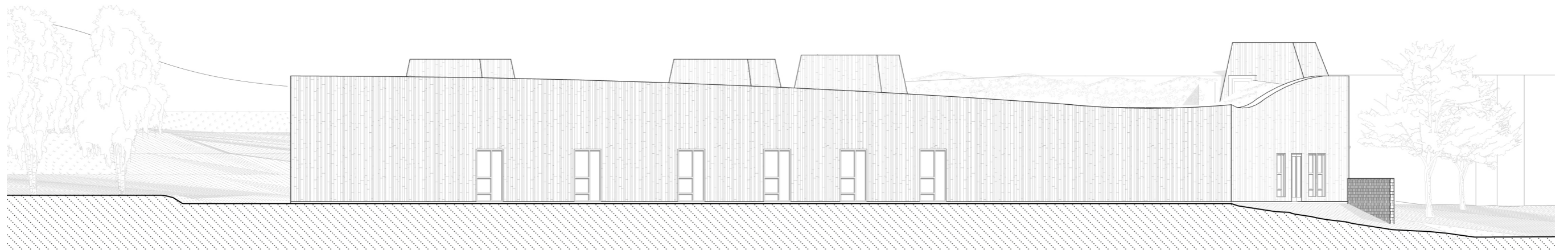


A (S)PACE FOR REST
77

ELEVATIONS 1:200

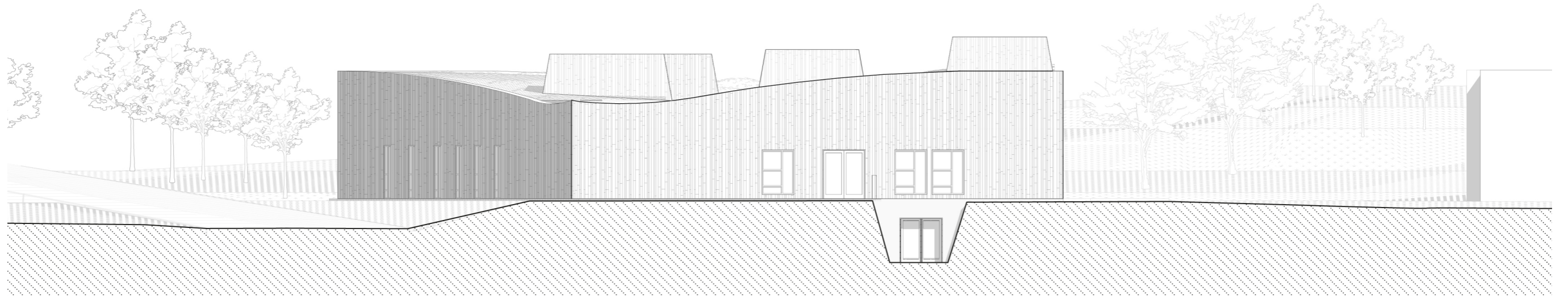


WEST ELEVATION

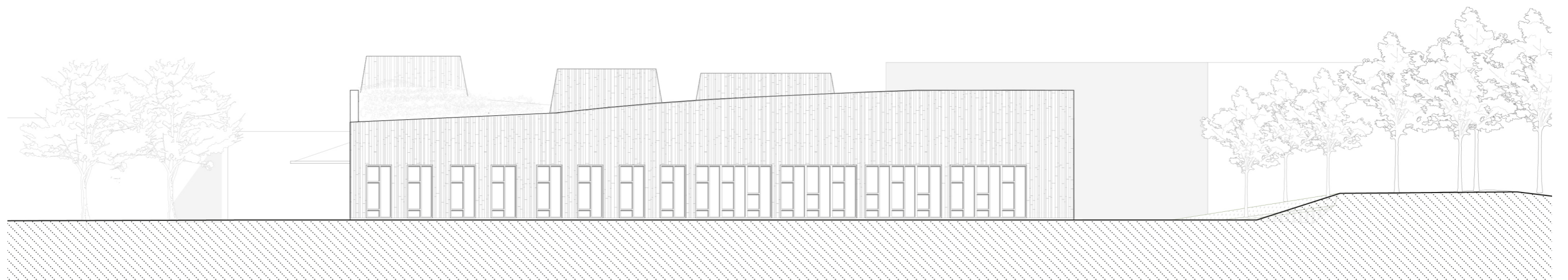


EAST ELEVATION

ELEVATIONS 1:200



NORTH ELEVATION



SOUTH ELEVATION

THE OUTDOOR ENVIRONMENT



In addition to the roof garden, there is a rehabilitation garden with cultivation opportunities and space to sit secluded and protected. The rehabilitation garden adjoins the forest area in the south, which in turn connects to the large park and recreation area in east Gothenburg, which encourages nature walks.

To make the outdoor environment more accessible, there are several openings to the terrace to the west and south.



"I am in rehabilitation due to fatigue syndrome and coming to this place is helping me in my healing process. I enjoy cultivation since it gives me a focus and feels rewarding to follow the growing process. It is also nice to have support in my progress by the staff and meet the other patients. We all feel that it helps to gather around different tasks of cultivation on our own terms. Being in a green environment with nature close by is really positive for anyone but in my situation it is the type of environment that I can function and make progress right now." - Maria

8. REFLECTION

REFLECTION

In our master’s thesis, we have investigated how architecture can support recovery for hospital staff. The aim was to formulate a design proposal that shows how this type of function can be shaped with the support of theories of restorative environments, salutogenic design and biophilic design. In addition to this, our proposal has also been characterized by the wishes and needs formulated in the answers to our survey and in interviews with hospital staff. The proposal has also been influenced by our own experiences of how architecture and atmosphere affect our well-being. The experience we have with us from the healthcare studio courses together with Jennie’s experience of working as a physiotherapist in hospitals, has been a good basis to stand on during the work.

In the dialogue with the staff, our pre knowledge has helped us to understand the staff’s situation and their need for recovery in order to be able to translate this into physical space.

We have used a large base of methods in our process. In addition to literature studies, it has been necessary to interview people who work both clinically in healthcare but also people who work with human resources, rehabilitation and wellness. This is to get a more multifaceted view of both needs and wishes regarding how recovery functions in a hospital area should be designed and its content. Our focus as future architects has mainly been about how we can translate all acquired knowledge into spatial and atmospheric qualities that are functional. We have therefore made study trips to places that we have been inspired by in order to be able to analyze what contributes to its qualities and special atmosphere. In order to work as a cohesive team and find a consensus on how we view architectural approaches and spatial qualities, we have worked with joint sketch exercises and workshops. This has given us a base and a language to build on, which has facilitated our communication and cooperation.

A challenge that we have experienced is to translate all the knowledge we have acquired into design. Therefore, it has been important to have an iterative design process and constantly evaluate the design choices against the ambition. Our goal has been to develop design strategies that are applicable to both the design of a building and acupuncture interventions. Therefore, our proposals can be seen as one possible interpretation of the qualities defined by the design strategies.

It has been important for us to develop a proposal that feels empathetic in relation to the healthcare staff and to make their voice heard. It has been a challenge to refine design concepts but at the same time meet all the changing needs that the staff have of the building.

In a further development of the project, several aspects could be further developed. We would like to further investigate the technical details in the construction and how building materials are to be recycled in order to describe the ecological and economic sustainability aspects in more detail.

We are aware that this type of physical supplement would entail a large cost in the short term. While it is important to prioritize patient safety and high-tech care in the expansion of hospitals, the needs of staff must not be forgotten. The fact that such a large proportion of people working in healthcare suffer from stress-related illness, sick leave and that the staffing issue is difficult to solve are factors that already cost society enormous sums of money.

Another purpose of our master thesis has been to shed light on the societal problem that healthcare staff suffer from stress and that the inadequate work environment has made it difficult to both retain and recruit staff. Through our proposal, we want to show that it is important to work towards creating an attractive workplace where both the staff’s needs are made visible and where the physical environment is attractive with restorative qualities.

Conclusion

To return to our research question: how can architecture support recovery from stress in hospital environments? It is a complex matter, but one of our main findings and conclusions is that these spaces need to contrast with the working scene. And it needs to permeate several parts of the hospital area in order to favor the different needs and conditions of the staff.

We want to end our thesis with the hope that the issue of the physical environment for hospital workers will be a given part of the design of future care facilities.

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Images

All images belong to the authors if not stated otherwise.

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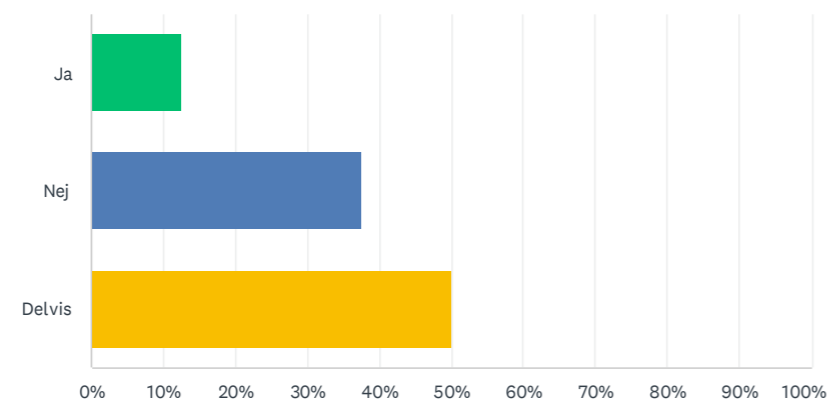
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APPENDIX

F1 Stödjer den fysiska miljön på din arbetsplats möjligheten att pausa, få återhämtning och vila?

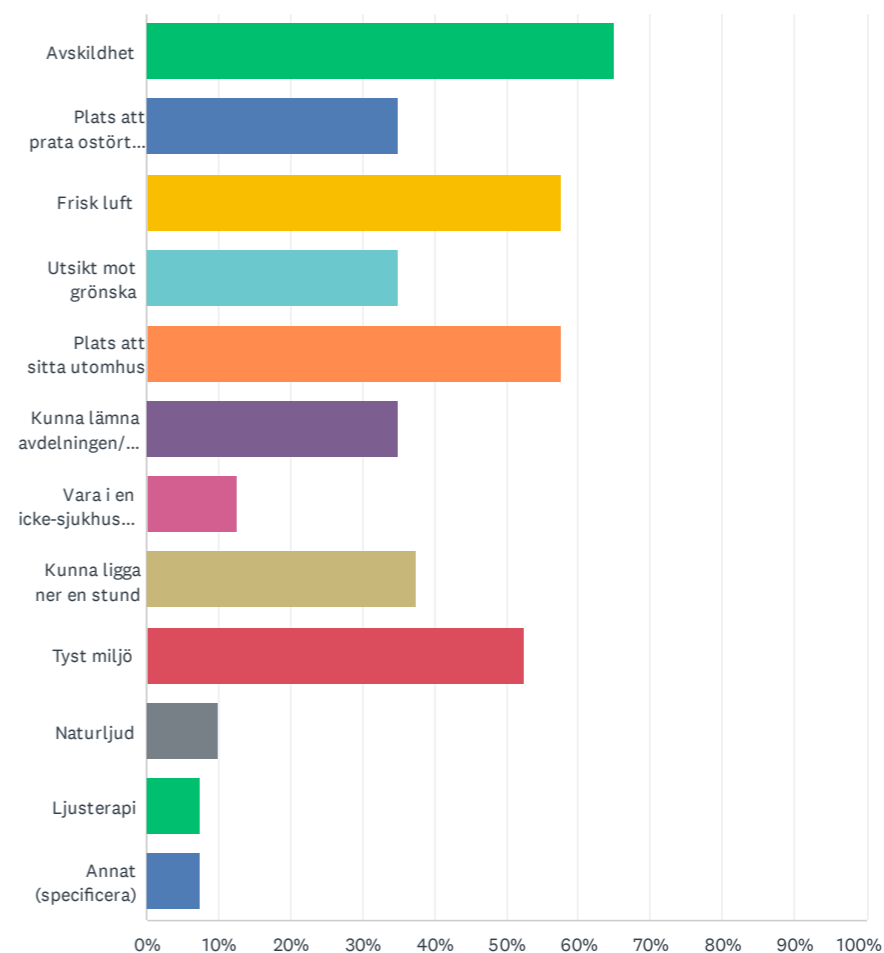
Svarade: 40 Hoppade över: 0



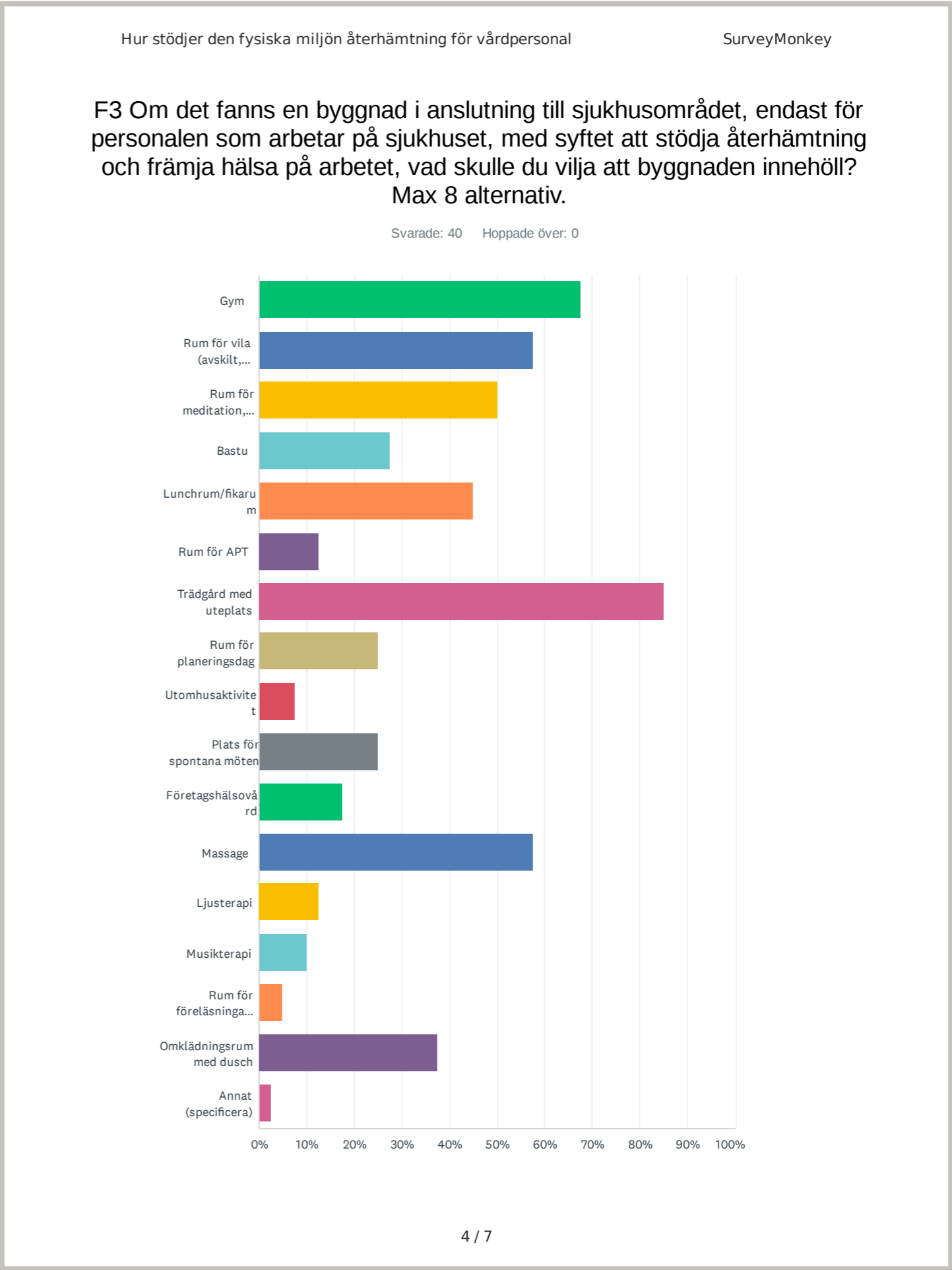
SVARSVAL	SVAR	
Ja	12.50%	5
Nej	37.50%	15
Delvis	50.00%	20
TOTALT		40

F2 Vad skulle underlätta i den fysiska miljön för dig att få mikropauser? Max 6 alternativ.

Svarade: 40 Hoppade över: 0



Hur stödjer den fysiska miljön återhämtning för vårdpersonal		SurveyMonkey	
SVARSVAL	SVAR		
Avskildhet	65.00%	26	
Plats att prata ostört med kollegor	35.00%	14	
Frisk luft	57.50%	23	
Utsikt mot grönska	35.00%	14	
Plats att sitta utomhus	57.50%	23	
Kunna lämna avdelningen/mottagningen	35.00%	14	
Vara i en icke-sjukhuslik miljö	12.50%	5	
Kunna ligga ner en stund	37.50%	15	
Tyst miljö	52.50%	21	
Naturljud	10.00%	4	
Ljusterapi	7.50%	3	
Annat (specificera)	7.50%	3	
Totalt antal svarade: 40			
#	ANNAT (SPECIFICERA)	DATE	
1	vilorum	2/10/2022 1:01 PM	
2	Massagestol!	2/7/2022 3:15 PM	
3	Ta mig tid att göra det, det mesta finns tillgängligt	2/7/2022 2:50 PM	



Hur stödjer den fysiska miljön återhämtning för vårdpersonal

SurveyMonkey

SVARSVAL	SVAR
Gym	67.50% 27
Rum för vila (avskilt, privat)	57.50% 23
Rum för meditation, yoga och avslappningsträning	50.00% 20
Bastu	27.50% 11
Lunchrum/fikarum	45.00% 18
Rum för APT	12.50% 5
Trädgård med uteplats	85.00% 34
Rum för planeringsdag	25.00% 10
Utomhusaktivitet	7.50% 3
Plats för spontana möten	25.00% 10
Företagshälsovård	17.50% 7
Massage	57.50% 23
Ljusterapi	12.50% 5
Musikterapi	10.00% 4
Rum för föreläsningar kopplat till hälsa	5.00% 2
Omlädningsrum med dusch	37.50% 15
Annat (specificera)	2.50% 1
Totalt antal svarade: 40	

#	ANNAT (SPECIFICERA)	DATE
1	Pool	2/9/2022 6:06 PM

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A (S)PACE FOR REST

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Hur stödjer den fysiska miljön återhämtning för vårdpersonal

SurveyMonkey

F4 Finns det några andra funktioner/service som skulle kunna finnas i byggnaden som skulle kunna öka arbetsplatsens attraktivitet/kvalitet?

Svarade: 39

Hoppade över: 1

Function/Service	Percentage	Count
Större matutbud i form av t.ex. restauranger/food trucks	69.23%	27
Säker cykelförvaring/laddning av elcykel	30.77%	12
Matvarubutik	28.21%	11
Plats för utförande av lagsport	2.56%	1
Möjlighet till körsång/spela instrument	7.69%	3
Fler avskilda utomhusmiljöer med sittplatser	74.36%	29
Kreativ verkstad för skapande aktiviteter	17.95%	7
Annat (specificera)	7.69%	3

SVARSVAL	SVAR
Större matutbud i form av t.ex. restauranger/food trucks	69.23% 27
Säker cykelförvaring/laddning av elcykel	30.77% 12
Matvarubutik	28.21% 11
Plats för utförande av lagsport	2.56% 1
Möjlighet till körsång/spela instrument	7.69% 3
Fler avskilda utomhusmiljöer med sittplatser	74.36% 29
Kreativ verkstad för skapande aktiviteter	17.95% 7
Annat (specificera)	7.69% 3
Totalt antal svarade: 39	

#	ANNAT (SPECIFICERA)	DATE
1	Bassäng för vattengympa	2/22/2022 9:21 PM
2	Dagis	2/20/2022 11:50 AM
3	Enskilda rum för planering/utecklingsarbete	2/19/2022 7:39 AM

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A (S)PACE FOR REST

93

F5 I den bästa av världar, hur skulle den fysiska miljön på ditt arbete hjälpa dig att hantera stressen/få återhämtning?

Svarade: 21 Hoppade över: 19

#	SVAR	DATE
1	Efter en arbetsdag går jag helst hem. Under dagen finns det inte mycket tid över för att ta sig en bit från avdelningen för rekreation, men det skulle förstås vara lyxigt med gym och bra träningslokaler inkl "ledarledda pass" invid arbetet såväl fysiskt nära som anslutning till "normala" arbetstid.	3/7/2022 8:48 AM
2	Mycket. Särskilt om man kunde träna på gym eller annan träning.	2/22/2022 9:21 PM
3	Tillgång till lugna rum (typ som haga-spa), så man hade kunnat vila på lunchen med lite rofylld sång i bakgrunden	2/19/2022 5:01 PM
4	Bättre sömn, mindre irritabilitet, tid för återhämtning och vila för hjärnan (många beslut inom akutsjukvården).	2/19/2022 7:39 AM
5	-Plats för återhämtning i ett enskilt ljust rum med stora fönster mot grönska och möjlighet att sitta ner utomhus den varma tiden på året. Tystnad och avskildhet är något jag saknar i min återhämtningspaus på lunchen eller innan en jour. Tillgång till en sådan plats skulle stärka min arbetsdag i helhet. I ett lunchrum är det nästan lika hög aktivitetsnivå som på avdelningen plus de man jobbar med, äter man med och samtalar med. Jag söker mig oftast bort och sitter lika gärna kvar framför datorn och gör klart uppgifter i lugn och ro. Att kunna gå undan till en plats som jag beskrev, hade varit helt ljuvligt!	2/18/2022 11:14 AM
6	Tyst vilo rum, massage	2/18/2022 10:48 AM
7	Ett fika rum med soffa och fåtölj nära till akuten inte under akuten	2/18/2022 10:44 AM
8	Genom att inte bidra till att stressa/pressa arbetssituationen mer. Möjlighet till att kunna utföra viktiga arbetsuppgifter där fokus behövs	2/18/2022 10:41 AM
9	Lägre ljudvolym	2/18/2022 10:40 AM
10	Tyst miljö och mer flexibelt pausande	2/14/2022 2:28 PM
11	Eget rum	2/11/2022 2:21 PM
12	Att det finns ett vilorum för återhämtning och även ett tyst fika/lunchrum	2/10/2022 1:01 PM
13	Finare lokaler som är hela.	2/8/2022 9:59 AM
14	bestämda inlagda pauser där det är möjligt att vara ute och få luft	2/8/2022 8:45 AM
15	Möjligheten att få komma ut dagtid och promenera, ta frisk luft osv.	2/8/2022 8:15 AM
16	mer natur/träd nära fönster	2/8/2022 7:26 AM
17	Möjliggöra lugn och reflektion, så jag lämnar jobbet mindre uppvarvad	2/7/2022 5:53 PM
18	Nära tillgång till (gratis)gym	2/7/2022 3:15 PM
19	Kanske svårt att få till, men hade gärna fått möjlighet att träna på ex lunch eller direkt efter jobb. Tror i övrigt det (åtminstone för mig) skulle vara svårt att hinna gå ifrån till separat byggnad för att varva ner under arbetsdagen, även om det skulle vara väldigt härligt.	2/6/2022 1:18 PM
20	Om det hade varit självklart att man någon gång per vecka får gå iväg under arbetstid för att ha friskvårdstimme	2/5/2022 4:18 PM
21	Små korta mikropauser mellan allt arbete. Hinna reflektera mer kring det man gör.	2/5/2022 3:22 PM