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THE TRANSFORMATION OF A HOSPITAL AREA AND THE IMPORTANCE OF A CENTRAL URBAN SPACE

Placemaking And Future Development
–
A Case Study Of The Hospital Area Eg, Kristiansand

Figure 1: Frontpage

PREFACE

This master's thesis represents the final phase of city and regional planning and my five years of studying. The continued work on the master's thesis has been instructive, challenging, and incredibly exciting in a long and fun process. My interest in the topic grew a lot when I started at the University of Stavanger where I was introduced to a more specific focus on urban planning and design. This master's thesis marks the end of the master's degree in city and regional planning at the University of Stavanger. During the master's years, the commitment has been high, and the learning curve has been steep. Many inspiring and educational subjects with exciting theories, have given me a lot of new knowledge, new friendships, and not least, a passion for creating better, more attractive, sustainable, and viable places to live in.

The assignment was created after conversations with Smari Stav from Henning Larsen, over the New Year 2022. In collaboration with supervisor Ana Llopis Alvarez from the University of Stavanger, the assignment was defined. During the semester, feedback was also received from other teachers from UiS who supervised the assignment.

Through the assignment, I have had the opportunity to sit in the offices at Henning Larsen and Rambøll in Arendal and Kristiansand, where I also received good professional input. We would like to extend a special thank you to my supervisors, Ana Llopis Alvarez and Smari Stav, for constructive feedback and good guidance throughout the process. I would also like to thank all the students in the master room at Ivar Langens Hus at UiS who have motivated and supported each other during the master's thesis.

Kolsum
14/06/2022

ABSTRACT

This master thesis presents the transformation of the Eg hospital area in collaboration with the architecture and planning firm, Henning Larsen. By following planning methods from research and spatial analysis, the thesis will present today's area use, place identity, factors, and strategies of the Eg hospital area. The purpose of the master thesis is to present a spatial urban analysis, present the planned proposal for the transformation of Eg and propose an urban transformation of the central urban space.

This master will focus on urban qualities in the central urban space within the hospital area. The thesis will also include used methods, the types of analysis applied, and external information to give the full picture and understanding of the case area. The last section outlines the vision, strategies, proposals, and conclusion. This master's thesis has the intention of presenting accurate information about circumstances and providing a better understanding of the aspects the central urban space should emphasize in a transformation of Eg. The thesis is based on a case area located at Eg in Kristiansand. An excursion, the collection of information and data, as well as an analysis of the area have been carried out. This is used as a basis for the design proposal, where different elements are based on theory and relevant criteria for use. The elements used in Eg meet the requirements and visions of the Eg hospital area.

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01 INTRODUCTION

01 INTRODUCTION

The background for this master's thesis is the increasing focus and the need for optimal development. How to facilitate a development that meets the area's needs such as accessibility, activities, and urban problems. This includes ensuring the comprehensive development of a large area over a long period.

In collaboration with Henning Larsen, this master's thesis presents proposals and strategies for the hospital area in Kristiansand. Focusing on placemaking and the future development of Sørlandet hospital in Kristiansand. This thesis will use the planned proposal from Henning Larsen and Rambøll, and further, present a proposal for the central urban space with future-oriented solutions in Eg.

1.1 DELIMITATION

The case area is located in Kristiansand municipality in Agder county, southern Norway. Kristiansand is a city with a rich history that stretches from the sailing ship era in the 1800s until today. Kristiansand municipality is Norway's sixth largest by population and had 113,737 inhabitants as of January 1, 2022. The city of Kristiansand had 64,913 inhabitants as of January 1, 2021 and has had continuous and partly strong growth in population over the last 200 years. (Kommunefakta, n.d.) The city's buildings, harbor areas, and streets tell a rich and complex history from different eras where the sea was an important basis for urban growth. (Thorsnæs et al., 2022)

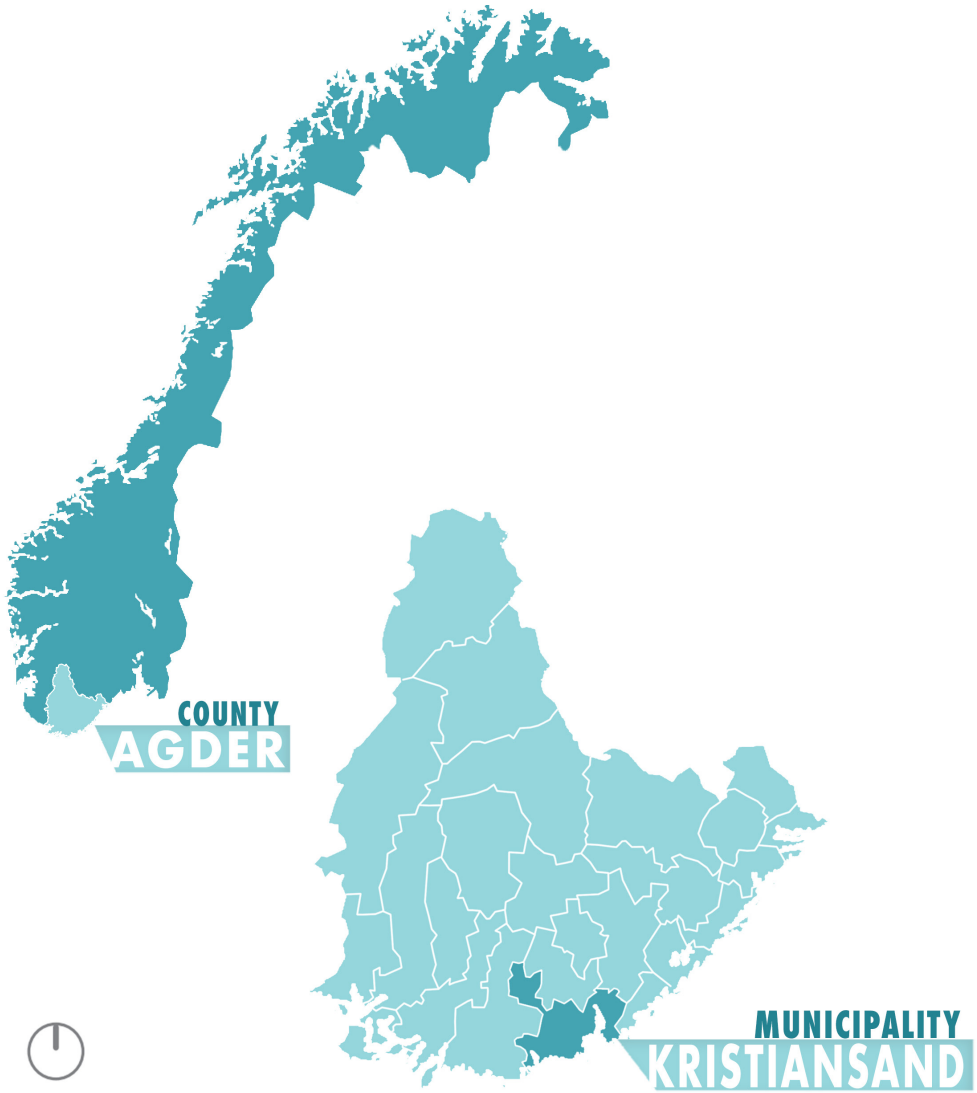


Figure 2: Showing Norway – Agder – Kristiansand, and Agder's location in Norway

Figure 3: Picture of Kristiansand, with its different city areas (made by author)

Sørlandet Hospital is located on Eg, about 2 km north of Kristiansand center – Kvadraturen, and 1.5 km north of the E 18Srlandet Hospital is on Eg, about 2 kilometers north of Kristiansand center – Kvadraturen and 1.5 kilometers north of the E 18. Today's hospital was built in the 1980s as West-Agder Central Hospital, located in the old Eg hospital, a psychiatric hospital, in the area called Eg. The hospital area is bounded by the valley, the river in the east, Bymarka in the north, and west. ("Eg sykehus," 2020)

Figure 4: Picture showing areas and buildings in Eg, taken from the excursion of the hospital area.

1.2 BACKGROUND

The award-winning architectural firm Henning Larsen has merged with Rambøll. The company is a part of the Rambøll family, 100 percent owned by Rambøll Norge AS. (Henning Larsen Architects blir nasjonal aktør., n.d.) Rambøll has already proposed an overall possibility study for the hospital area in Eg. Based on this proposal, a plan-program has been prepared, which sheds light on a holistic approach and sets the framework for future development of the area. The plan program presents that the hospital area shall have a central urban space of at least 10,000 m², established at the main entrance to the hospital. This urban space should be built with quality and good use of materials, and it should have a design that makes it look and feel like a good urban space. The plan program and the proposal from Henning Larsen and Rambøll give an overall possibility of transformation in the area, without going in-depth into the design of the central urban space in Eg.

1.3 RESEARCH QUESTION

Based on the background, will this master's thesis go further in-depth and focus on this central area at Eg. The thesis will investigate how the area can be designed into an optimal, active, and safe district, which contributes to how the area can become more attractive and how the central urban space should be. By having a holistic approach with the focus on the central urban space in Eg hospital, the research question for this master's thesis will be:

How can the hospital area at Eg be transformed and how can the new central urban space ensure important planning qualities?

The sub-questions are connected to what planning qualities are and how to supplement these in Eg Hospital area. The sub-questions are:

- **How should the central urban space be developed and designed?**
- **How to activate Eg with a central urban space, facilitating use and access?**
- **How can the central urban space contribute and provide the needs in Eg hospital area?**
- **How can planning qualities improve the central urban space?**

The purpose of this master thesis is to present a design proposal with a vision and strategies for the central urban space in Eg, Kristiansand. The proposals in this thesis will help to support what people do at street level. The overall proposal will help people access the area, while the solution proposal at street level will help people want to spend time and stay in the area. In addition to this, the thesis will present how different elements within urban planning impact the central urban space's attractiveness.

1.3 METHODOLOGY

To answer the research question, will this thesis use Eg hospital as a case area. This method allows planners and dictionary makers to advance evidence and details about a place that other methods fail to capture. As the purpose of this thesis is to investigate a specific area, and thus go in depth into a narrow field, qualitative case study was a natural method to choose. As part of the case study, several analyses were performed to find out the qualities of the hospital area Eg. The analysis is based on becoming familiar with the project area through excursions, registrations, and literature study.

Is it important to form a solid theoretical basis to answer the thesis problem related to quality in planning and transformation. A large amount of literature on these topics was therefore examined, which has been elucidated and discussed in the theory section. This literature study formed an adequate basis for taking the topics further in the analysis and strategy. As the thesis also aims to come up with a detailed proposal for the central urban space, various urban planning principles have been studied. The study of these principles provided inspiration and understanding of which measures are most relevant to propose for the area and how and why they should be used.

Several different literatures have been reviewed to obtain information about the place, as well as academic literature related to the theory. Secondary data has mainly been used, which is data sources that already exist. This includes studies and analyses done by Henning Larsen and Rambøll, but also, among other things, zoning plans, municipal plans, and regional plans have been looked at to present overall goals and expectations for the area. In addition, information was gathered through SSB population statistics, personal observation, registration, conversations with teachers, and discussions with Henning Larsen.

The thesis is divided into different chapters, consisting of an introduction, a literature review, a case study, analysis, a framework, and a proposal. The analysis includes a spatial, social, and swot analysis of the Eg hospital area. The thesis will also have a concluding and reflecting chapter at the end. By registering and analyzing the physical environment, the thesis will map the potential and needs for central urban spaces and their surroundings.

The theory part is a literature review of relevant subject matter. Presenting literature on public urban spaces, referring to city life observations and present urban planning principles for urban areas.

In the case part, the Eg hospital area in Kristiansand will be presented through an introduction, historical development, municipal urban development strategies, feasibility study, and data obtained from a possibility study by Rambøll, in addition to own registrations and site analysis.

The solutions and design proposals in the proposal part are based on the literature study, spatial analysis, and planned transformation of the Eg hospital area. This part will present and visualize opportunities, strategies, and possibilities.

The illustrations in the analysis that show opportunities and the overall approach, are based on Rambøll and Henning Larsen's proposed plans for Eg. The author has modified the illustrations for this thesis, giving a clearer picture of the current situation and how the area can be transformed. The illustrations will be marked if they are based on the proposed plans by Henning Larsen and Rambøll. The thesis has, in addition to these illustrations, made its own figures showing more information, findings, development, and proposals for Eg.

LITERATURE 02

02 LITERATURE

The literature chapter will systematically demonstrate knowledge, building on literature and theories connected to placemaking, transformation, and the development of urban spaces. The chosen concepts below and the knowledge the literature chapter presents will be applied to further study of the Eg hospital area and the transformation proposal for the central urban space.

2.1 DEFINITIONS

Place identity

The term place identity is used both for the uniqueness, distinctiveness and characteristics of places ("Identity of place") and for people's feelings of belonging to a place ("Identity with place"). (Ruud et al., 2018)

Sustainable development

"Development that meets today's needs without destroying the opportunities for future generations to have their needs met." (FN-sambandet, 2021)

Social sustainability

"Socially sustainable are about societies characterized by trust, security, belonging and access to benefits such as work, education and a good local environment." (FHI, 2020)

Walkability

"Walkability, which has previously been little noticed, has received more attention in recent years. This term describes whether an area is a good place to be for pedestrians." (Tennøy & Øksenholt, 2017)

Mobility

"Mobility is the same as movement." can be understood as being able to move (Pedersen, 2018)

Urbanity

«A concentration of urban functions and characteristics such as physical density in the buildings in addition to the public, trade, intensive land use, modernity, differentiated business, mobility in the labor market, short distances between services, diversity of services and organizations m.m. The degree of urbanity can be assessed with regard to presence and characteristics.» (Plan og bygningsetaten m. fl., 2017)

Urban space

"Urban spaces are the urban recreation areas and the community's meeting places for everyday life and parties." (Kommunal- og moderniseringsdepartementet, 2016)

Urban space network

"Urban space networks are the infrastructure of streets, squares, parks, blue-green areas and pedestrian and bicycle connections. It must be connected to people's goals in everyday life." (Kommunal- og moderniseringsdepartementet, 2016)

Attractiveness

"Attractiveness is a local characteristic that influences the flow of people to a place, either in that the place attracts business or visitors who create job growth and thereby immigration, or that the place is attractive as a place to be regardless of workplace development." (Vareide, 2013)

Placemaking

"Strengthening the connection between people and the places they share, placemaking refers to a collaborative process by which we can shape our public realm in order to maximize shared value."(*Project for Public Spaces*, 2018)

Target points

"Target points are the most important places people stay or visit in everyday life, such as housing, school, work, kindergarten, shops, public and private businesses and attractions." (Kommunal- og moderniseringsdepartementet, 2016)

Universal design

"The goal of universal design is to make society easier to orientate and move in for as many people as possible. Universal design is the design of products, environments, programs and services in such a way that they can be used by all people, to the greatest extent possible."(NTNU & NAKU, 2020)

Urban qualities

Urban qualities are involve physical, social and functional conditions with valuable properties. (Gundersen & Halbo, 2018)

Activity

Activity is being active; something that you are busy with in the form of work, relaxation, play or something you do. (Wibetoe, 2021)

Somatic

Somatic hospital is a hospital that receives patients with "physical" (somatic) diseases. The opposite is psychiatric hospitals.(Braut, 2019)

2.2 THE STREET AS A PUBLIC URBAN SPACE

There are numerous definitions of public places, which differ in certain ways in terms of ownership, access, and use. Environmentally sustainable solutions, social harmony, and possibilities that are equal for everyone are all characteristics of good urban settings. In addition, ideal urban areas must include good welfare and cultural offers, public health facilities, historical contexts, living centers, cultural monuments, good blue-green structures, architecture, coordinated area- and transportation solutions, and appealing workplaces. (Moderniseringsdepartementet, 2017) These components are broad and complex, but they individually address critical requirements for a good urban environment. Public spaces can be defined as all outdoor spaces accessible to the public, such as streets, squares, and parks, which are adapted for human activity within cities and urban areas. (Kommunal- og moderniseringsdepartementet, 2016)

In cities, streets are an integral part of the public arena. People rely on the streets for functional, social, and recreational activities such as travel, trade, play, meetings, and social interaction, as well as leisure. The thesis will go deeper into aspects of public space. Public spaces are an important aspect of every area, city, or region because they allow people to connect outside of their homes, workplaces, or other places where they live. According to recent urban studies, public places are critical for establishing, improving, and maintaining a sense of community in modern times. (Mehta, V, 2006)

"Public Space is for living, doing business, kissing and playing. It's value can't be measured with economics or mathematics; it must be felt with the soul." *— Enrique Penalosa*

(Jagannath, 2019)

Streets:

Streets often have an impact on how people use an urban area. A street can be defined in a variety of ways. Cliff Moughtin, an architect and urban planner, highlights the importance of distinguishing between streets and roads. The road is a two-dimensional stretch connecting two points, with the goal of saving time. A street is a three-dimensional expanse bounded by floors, walls, and ceilings where people congregate to spend time. (Moughtin, C, 2013)

As individuals stroll outside their homes and move from place to place, the street is also a place that brings people together. Jane Jacobs, a sociologist, is one of many who sees the street as a crucial urban place for establishing identity and belonging. She believes that a city's most critical organs are its streets and sidewalks:

> «(...) think of a city and what comes to mind? Its streets. If the city's streets look interesting, the city looks interesting "(Jacobs, J, 1961)

The street is a reflection of the community that has shaped it. The appearance of the street can better depict, register, and identify the city's historical path than any other form of urban infrastructure. It reflects social life and recollections, as well as how much of the urban lifestyle, as well as visions and future potential, is reflected. (Moudon, A. V, 1987)

City Structure:

The streets, in addition to functioning as transportation corridors, also serve as a defining feature of the city. The roadway, along with the buildings, the open landscape, culture, and ideas, contributes to the shape of the city. The street and the structure bear witness to society's history. Because of how the streets, buildings, landscape, culture, and ideas interact, they generate a variety of patterns that reflect trends and eras that have characterized the place across time.

Figure 5 depicts a typical street structure in a medieval town, where towns almost formed on their own and where streets, squares, and prominent buildings were all connected organically. 2021 (Butenschn & Kiran) The baroque construction depicts a typical 19th-century city structure, with parade avenues intersecting the old city's framework. The goal of such an urban structure was to provide the government more control, a better vision, and defense opportunities than they could have in the twisting medieval lanes (Butenschn & Kiran, 2021). The Renaissance building shows a planned city structure, which was common during the Renaissance, when cities were built to protect themselves.

Figure 8: Map of Barcelona. Shows how street planning has changed over time.

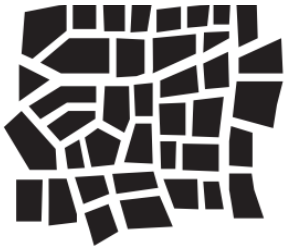


Figure 5: Show the Middle Ages structure

Figure 6: Show Baroque structure

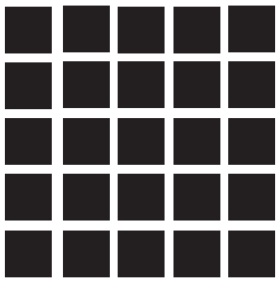


Figure 7: show the Renaissance structure

The streets today

In the 1990s, the Norwegian Public Roads Administration (Statens vegvesen) initiated the environmental street project - "miljgateprosjektet," which began an emphasis on place development based on place identity. The goal of the project was to use the physical and functional circumstances of the city or town as the foundation for the design. During this time, the phrase "the road connects places, the street is the place" was coined (Lillebye, E, 2014)

The traffic situation in the cities of the twenty-first century is defined by massive investments in roads and trains to streamline and connect smaller areas with larger places in a regionally sustainable manner. The impact of automobiles on cities has been widely debated in recent decades. Physical urban planning approaches that facilitate people and put the car in second place have become increasingly popular. (C. Björk, 2013) The goal of national policy is for "the expansion in passenger car transportation in metropolitan areas to be offset by public transportation, cycling, and walking" (Samferdselsdepartementet, 2017)

In the battle for urban spaces, it used to be about pushing cars aside in favor of commercial interests. Today, the emphasis has turned away from commercial interests and toward the human being, with the goal of building and upgrading urban places with a human-centered approach. Users should find the urban area mentally and socially engaging, and it should be able to contain the city's diversity and create spaces where the city's various cultures may meet and interact.

"What attracts people most, it would appear, is other people." - William H. Whyte, urbanist

(*William H. Whyte*, 2010)

2.2.1 ACTIVE AND SOCIAL URBAN SPACES

Meeting human needs and establishing an environment that includes and inspires good interaction are central to the planning of a social urban area (Mehta, V, 2006). This section will review relevant material for determining how a social urban area can contribute to enhanced social sustainability.

To better comprehend human wants, psychologist Abraham Maslow's "five hierarchy of needs" will be presented, which was initially published in 1943 in the publication A Theory of Human Motivation. The idea, which comprises of the five demands listed below, has been used and explored in a variety of disciplines: **(1) basic physiological needs, (2) security, (3) social needs, (4) recognition** and **(5) self-realization** (Mørch, 2021). The concept can be seen of as a hierarchy, with the claim that needs must be addressed from the bottom up. Basic physiological requirements and security are addressed as a result of this understanding, and social needs are met as a result.

Urban locations can assist meet more of Maslow's needs theory's human demands. Facilitating physical activity in the streets, for example, partially meets basic physiological needs. The next phase in the theory of need is security, which is a subjective emotion that does not always correspond to genuine **security**, and what is perceived as safe is subjective. However, there are certain broad steps that may be taken to design for actual and perceived secure urban environments. A combination of functions, appropriate lighting, upkeep, active facades, and activities throughout the day are examples of safety measures. If there are other individuals in the urban setting, you will perceive it as safer as well. Furthermore, security entails being safe from crime and traffic.(Mørch, 2021)

This master's thesis focuses on Maslow's theory of social needs. It's difficult to anticipate how people's social needs will be addressed, but it can be done. This will be discussed further here.

Community

It's crucial to feel a part of your community. An **inclusive** society that encourages involvement will foster a sense of community and belonging. (2020, FHI) To guarantee that everyone has an equal opportunity to participate in the community, the design must take into account the population's diversity and create an environment that can be used by as many people as feasible, regardless of their physical abilities or age (Burton & Mitchell, 2006). As a result, the plan must be built with a universal design and contribute to the formation of communities across generational, ethnic, and religious divides.

Trust

The term "social capital" refers to a society's **trust**. The ability of civil society to build trusted relationships amongst people - and so increase the community's ability to tackle common problems and difficulties - is termed as "social capital" (Hansen, 2022). Trust is essential for the development of social capital in society. Trust between members of society is the "glue" that holds a society together and is necessary for people's happiness. Low-intensity gathering locations are needed to build trust in society and hence increase social capital.(Hansen, 2022)

Low-intensity meeting locations are defined as informal gathering places that are characterized by spontaneity and chance, and where people of various values and interests engage. Small discussion on a public bench, courteous comments with the barista who prepares your coffee, or a meeting with someone walking a puppy you wish to pet.

The social capital of a society is strengthened by a wide range of interpersonal contacts. The polar opposite is high-intensity meeting areas where people with similar values and interests engage, such as at work or when a group of friends gets together. Low-intensity gathering locations are the most significant for fostering trust in society because they allow for encounters between people who would not normally associate with one another.(Audunson, 2005)

An urban space is a typical low-intensity meeting place. It provides the opportunity for short-term contact with others in a relaxing and undemanding way. The most important form of contact between people, which is the beginning of all contact, is sight and hearing contact. (Gehl, J & Svarre, B, 2013) Gehl describes humans as 5 km / h walking beings and explains, on the basis of this, how the basic sight and hearing contact can be conveyed or prevented through physical planning. Dissemination presupposes free vision, short distances, low speed, and the same plan and orientation towards what is to be experienced, namely other people. (Gehl, J & Svarre, B, 2013) This type of contact is therefore a prerequisite for social urban areas.

Skepticism can be reduced and trust fostered by facilitating metropolitan places where various types of individuals can meet and socialize with one another. People's social ties will foster trust and cooperation, which will lead to more participation in society and a greater ability to take collective action.

Meeting places

Meeting locations are required to address social demands. Social links encompass not only intimate friends and family, but also bonds formed between strangers (Hansen, 2022). People's desire for social connection must be sparked, and even tumultuous communities are significant since they contribute to social integration by strengthening social cohesion (FHI, 2020). This implies that both close and distant ties have social significance, emphasizing the need of meeting locations in public spaces.

Looking at other people and their activities can tell us a great deal. For both children and adults, public areas can be a source of learning, social skill development, and information interchange. Seeing others participate in a variety of activities can also be motivating.(Mehta, V, 2006).

Green areas

Green spaces and water components are vital to the city's quality of life and well-being. Blue-green structures in cities help to minimize noise, clean the air, and improve the quality of life for city dwellers. The facilitation of proximity to such spaces is critical for achieving high levels of well-being among city residents. (DAR et al., 2021)

Multifunction

Multi-functionality and mixing functions are key methods to ensure city life both during the day and at night. A shopping boulevard lined with chain stores may or may not be conducive to city life. A social street should include both supermarkets, offices, houses, and businesses, as well as evening activities like galleries, culture, and education.(Pløger, 2018) Because the city's population is diverse and ever-changing, the physical environment must allow for flexibility in use, both in terms of different user groups and different sorts of events.

2.3 URBAN SPACE QUALITIES

Figure 9: Gehl's 12 criteria on improving the quality of public urban spaces. (Edited by author)

The criteria for urban space quality have been devised based on a basic understanding of human senses and requirements, as well as many years of research into urban space in many regions of the world (Gehl, J & Svarre, B, 2013). The 12 quality criteria developed by Jan Gehl aim to improve the quality of public urban areas and the people who utilize them. Gehl's 12 quality criteria answer the following questions: What makes an urban space attractive for living and use? (Gehl, J & Svarre, B, 2013) The 12 quality criteria are divided into the three main categories: safety, comfort and enjoyment.

Safety

It will be critical, according to Gehl, to assure security first; if one is not feeling safe, it will be worthless to consider the other aspects. Security refers to being safe from harm, and it is a basic human need. Good urban areas allow everyone to move around safely and without the chance of being involved in an accident. Furthermore, ideal urban settings consider issues such as crime and transportation congestion. (Gehl, J & Svarre, B, 2013)

Comfort

The next step in the hierarchy will be to make sure that everyone is comfortable. Walking, standing, sitting, seeing, talking, hearing, and unfolding are all possibilities. All of these are fundamental, but crucial, activities that an urban space should be able to facilitate. Gehl also points out that one must take a stand on how pleasant urban environments are seen in different settings, such as day and night, and different seasons. (Gehl, J & Svarre, B, 2013)

Enjoyment

Ensuring human scale, opportunity to appreciate favorable features of the climate, artistic qualities, and positive sensory impressions are all part of the enjoyment process. Good urban spaces make the most of what's already there. (Gehl, J & Svarre, B, 2013)

2.4 IDEA MANUAL FOR DEVELOPMENT

A manual on how to improve urban space in cities and urban regions is available from Norway's ministry of local government and modernization (Kommunal- og moderniseringsdepartementet). This document lays out specific recommendations for how the municipality and other stakeholders may create effective urban places that make residents' lives easier and better. (Kommunal- og moderniseringsdepartementet, 2016) The manual highlights five criteria for achieving a good urban space network; **(1) usefulness, (2) proximity, (3) relationship/ context, (4) quality and (5) blue-green urban solutions.**

Usefulness:

- Urban spaces have different roles, some are for special purposes, others are for flexible use.
- Urban spaces should be for all age groups and be places where everyone feels at home.
- The urban spaces shall provide the inhabitants with experiences of seasonal variations by arranging for use throughout the year.
- Urban spaces must be able to be used around the clock and contribute to people's lives and good living environments.

(Kommunal- og moderniseringsdepartementet, 2016)

Proximity:

- Everyone should have access to different types of urban spaces within walking distance. It involves at least one meeting place, a square or a green urban space that is adapted for different experiences.
- The connections to the urban spaces must be attractive without barriers and traffic hazards, with an environment that makes people want to walk.

(Kommunal- og moderniseringsdepartementet, 2016)

Relationship/Context:

- The urban space network will promote mobility for pedestrians and cyclists and create better connections in cities and towns.
- The connections must have different branches from the main network to shortcuts.
- Streets should have wide sidewalks that are nice to walk along. The urban space network must be illuminated in a way to create security and well-being.
- Bicycle parking and stops should be integrated into the urban space network

(Kommunal- og moderniseringsdepartementet, 2016)

Quality:

- Local features - including cultural heritage and traces of history - will be utilized as a potential in the design of urban spaces.
- Quality in design is about finding solutions that take into account the needs of the people who live in a place.
- Quality is about good architectural design of buildings and surroundings.
- The quality of places can be raised with good operation and maintenance routines.

(Kommunal- og moderniseringsdepartementet, 2016)

Blue-green urban solutions:

- Blue-green urban spaces contribute to well-being, seasonal variations and biological diversity.
- Blue-green urban spaces are arranged for recreation, play and various activities. · Street trees are the green fabric of the urban structure that can connect urban spaces and green areas.
- Urban cultivation and bees in urban spaces strengthen the biological diversity and give the place new meeting places.
- Urban spaces must contribute to urban outdoor life in the local community.
- Urban spaces must be adapted to climate change and utilize water as a quality.

(Kommunal- og moderniseringsdepartementet, 2016)

2.5 GUIDELINES AND PRINCIPELS FOR PLANNING

Four main urban planning principles for urban living are examined in order to design and build for urban life: compact city, urban space network, green mobility, and identity.

Compact city

The compact city is defined by densely populated urban regions with a clear boundary with the surrounding area. Compact urban development aims to cut transportation costs, protect urban green spaces, and create a vibrant, diversified city through a functional mix of housing, services, and industry. The compact city aims to strike a balance between economic, social, and environmental development in order to meet the requirements of present and future generations.. (OECD, 2012)

Maria Molden, a Bergen city architect, argues that if the compact city is properly built, it will improve city life, public health, culture, integration, and social control, resulting in greater interpersonal relationships and "eyes on the street" for crime prevention.(Winther & Peterson, 2018)

Mixing functions serves a number of uses. One way to cut down on car trips is to ensure that a variety of daily activities, such as schools, workplaces, shops, and leisure activities, are all within walking distance of the home. According to research, mixed-use and dense districts/cities have a lower share of car trips. (J. Gehl and B. Svarre, 2013) Mixing and concentrating functions such as residence, work, and service will also assist to reduce the demand for transportation, resulting in lower emissions and noise, making it more appealing to stay in cities and commute on foot. People with shorter distances between them have more opportunity to interact. (Gehl, J & Svarre, B, 2013)

Another reason for blending functions is to add variety. According to Jane Jacobs (1961), blending functions attracts people with different motives to stay and creates a dynamic city life both during the day and at night. This does not imply a shopping mall with a variety of chain retailers. The street should have a diverse range of food stores, specialty stores, offices, and residences, as well as nightlife attractions such as galleries, restaurants, and culture. Several random meetings and experiences are facilitated by functional mix. (Kummel et al., 2014). "The presence of diversity and exchange between strangers and celebrities is what creates the attractive street [..]" (Pløger, 2018)

Urban space network

By building new urban spaces and increasing linkages between current and new urban spaces, the "Urban Space Network" seeks to contribute to enhanced urban life on the streets. (Moderniseringsdepartementet, 2017). The concept is a strategy for encouraging urban use and making urban centers more appealing as a gathering place for the general public: An urban space network is made up of interconnected urban places that make activity, use, and residency easier.

Urban spaces might be stopping points along the journey or gathering spots where you meet up with people you know. Good urban space networks provide a variety of meeting spaces for all members of the population, which is critical for promoting a diverse and inclusive city. A good urban space network is one in which you can move from room to room in a city or over a large area, between green parks and intimate backyards, gaining a variety of sensations and impressions.

"The network of urban areas is crucial for social spontaneous interactions, trade, air, pleasure, food cultivation, recreation, play, culture, and urban life," according to a report on the Mosaic project in Skien. (2018, Skien Kommune) The phrase demonstrates the significance of planning for commerce urban places of many types.

Cities are generally planned with a focus on larger venues and parks, but smaller gathering spots are just as vital for the city's social life. Different "nodes" in the city can help to bring an area closer together, improve accessibility for soft road users, and make travel more appealing. For everyone, an urban space network helps to a small and dynamic city center. (Gehl, J & Svarre, B, 2013)

Green mobility

The goal of green mobility is to make moving around easier, healthier, and more efficient. Green mobility planning makes it simple for everyone who travels through the city to choose green modes of transportation such as walking, cycling, or taking public transportation. (DAR et al., 2021)

The old traffic hierarchy must be turned on its head in order to achieve green mobility. Since the middle of the twentieth century, planning has prioritized automobiles over cycling and pedestrians. Pedestrian traffic is at the top of the reverse traffic hierarchy, followed by bicycles, public transportation, and then automobile traffic (Kummel et al., 2014). It's all about having a great walking experience in a city, with pleasant connections and fascinating features.(Tennøy & Øksenholt, 2017) Walking as a means of transport is becoming increasingly relevant and important.

In 2012, the Norwegian Public Roads Administration (Statens vegvesen) published the National Walking Strategy (Nasjonal gåstrategi) with two main goals: that it should be attractive for everyone to walk, and that more people should walk more. Reduced car use, and thus reduced traffic volumes and pollution, improved public health, and more attractive and vibrant communities with enhanced social contact would all result from increasing the share of pedestrians.(Statens vegvesen, 2014)

In TØI's report "Knowledge base for walking strategies", three qualities are highlighted that affect whether an area or a street is perceived as pedestrian-friendly: *infrastructure and traffic, urbanity, surroundings and experiences.* (Hagen, & Tennøy, 2019)

Infrastructure and traffic refer to whether or not there is a safe, efficient, and comfortable pedestrian infrastructure. Sidewalks that are wide enough to minimize congestion and well-designed in terms of plowing and spreading during the winter are required for traffic-safe design. (Hagen, & Tennøy, 2019)

"Sidewalks alone will not be enough to make people walk, other pedestrian characteristics must also be present" (Ewing, 1996). The sidewalk can cover more needs than just pedestrian traffic. The sidewalk also plays a significant function in the social setting, contributing to security, social control, and engagement between residents and visitors.(Ewing, 1996)

For people to prefer to walk, short distances are critical. When the distance is greater than 500 meters, the proportion of people who choose to walk declines, according to study (Hjorthol et al., 2014). The term "urbanity" refers to characteristics of the built environment such as density and the placement of functions in such a way that they are separated by short distances. A spatial and urban experience is created by buildings that are organized along the street and have open facades. Trees, gardens, and street furniture are also significant aspects for urbanity.(Hjorthol et al., 2014)

The urban environment should be dynamic, engaging, lively, pleasant, beautiful, and safe according to the surroundings and experiences. This can only be accomplished if there are both highlighted regions and positive encounters along the way. It will be easier to navigate if certain parts are highlighted. The perception of distance can be reduced by altering the environment. (J. Gehl and B. Svarre, 2013) The number of people who walk will increase if walking is made easier and more appealing. More pedestrians contribute to the perception of streets and regions as being more pleasant and alive, as well as greater social control and perceived security.

Identity

Identity is a topic that is explored across several fields and, as a result, may be viewed from a variety of angles. Identity is related to place in this theory, sometimes known as place identity.

NIBR's report "Cultural heritage and place identity" presents four categories of qualities that in different ways occur in combination with each other when studying place identity: (1) spatial qualities, (2) characteristics of inhabitants, (3) social conditions and relationships, and (4) culture and history. (Skogheim & Vestby, 2010)

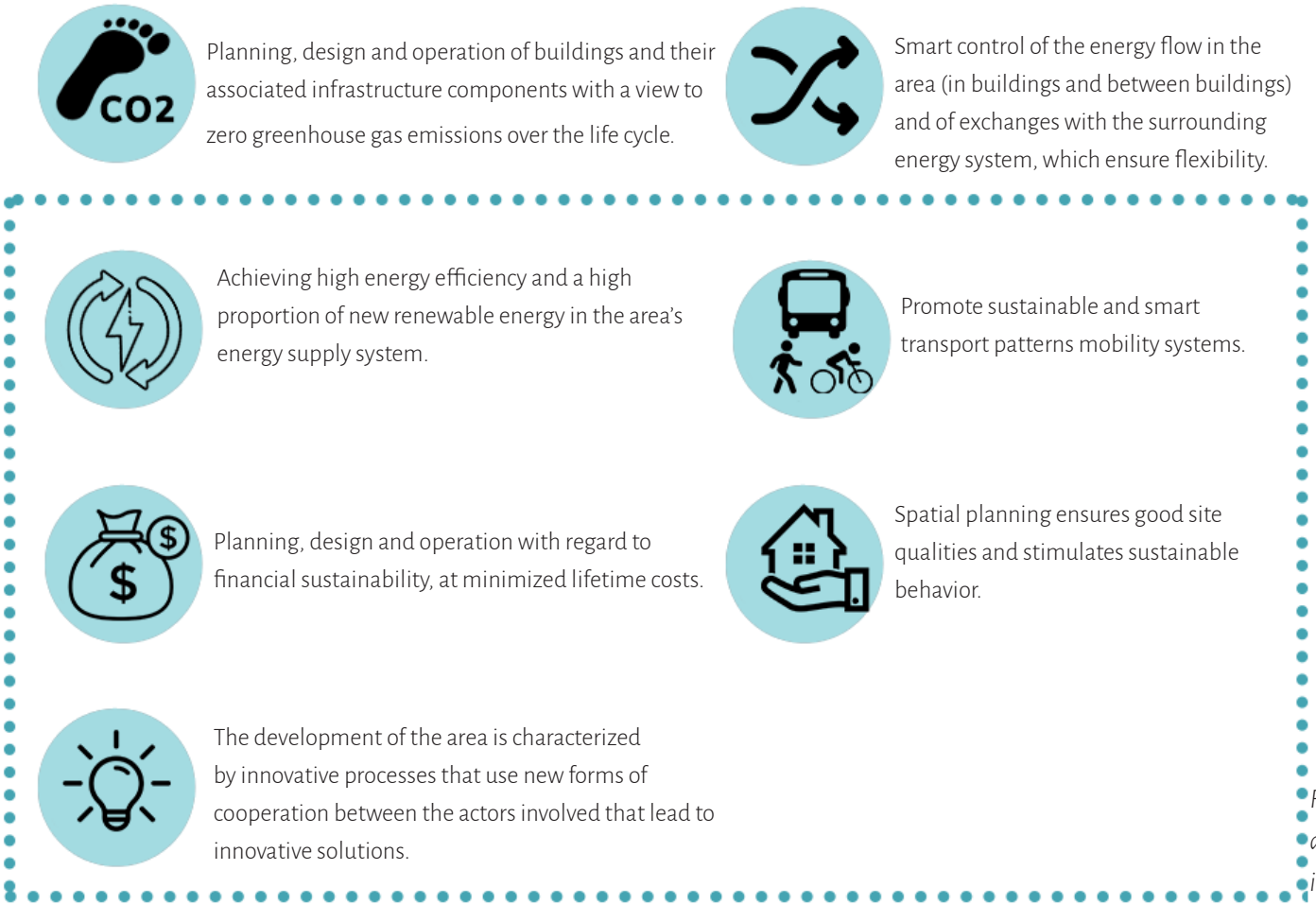
People and location are more connected when they have a sense of place identity. It helps people feel like they belong. A sense of belonging boosts happiness, which can lead to a better quality of life. All people require the ability to perceive, structure, and identify their surroundings, which is critical for their security and survival.(Skogheim & Vestby, 2010) By preserving and strengthening a place's existing identity, both through participation with residents and by capitalizing on existing characteristics, residents' sense of belonging and ownership of the place will grow, which will lead to increased participation and involvement in the local community. This will give the area a positive character, which will improve the residents' quality of life and living conditions while also attracting new residents. (Skogheim & Vestby, 2010)

People's use, behavior, and movement patterns, as well as the materiality, colors, and space of a city neighborhood, all contribute to a place's identity. A strong character location has a great socially integrative effect. As a result, spatial analyses are critical to comprehending a location.

2.6 HOW TO CREATE A SUBSTAINABLE DISTRICT

The research center for zero-emission zones has identified seven points that should be prioritized in the development of areas in order to reduce greenhouse gas emissions to zero. Three of the points deal with long-term energy solutions, such as smart buildings, renewable energy, and locally tailored solutions. Furthermore, mobility is a crucial term. (Wiik et al., 2021)

Norway's transportation sector is the major source of greenhouse gas emissions, accounting for 30% of total emissions. Road traffic accounts for more than half of all transportation emissions, making sustainable transportation solutions and green mobility a priority on the path to a zero-emission zone. Walking and cycling are the most environmentally friendly and health-promoting modes of transportation. (Wiik et al., 2021)



Site features that promote sustainable behavior are another significant key term for the ZEN zones. A district should be social, active, and relaxing, with plenty of opportunities for social interaction, a variety of recreation and activity places, a variety of housing styles that create stable living conditions and neighborhoods, and good sharing schemes.. (Wiik et al., 2021)

Figure 10: Assessment criteria for zero-emission area according to the Research Center for Zero-emission areas in smart cities (ZEN) (Edited by author)

2.7 DESIGN OF URBAN AREAS

In the idea manual by Norway's ministry of local government and modernization are there 7 important principles when designing the individual urban space. (Kommunal- og moderniseringsdepartementet, 2016)

Figure 11: show 7 important principals when designing urban space

1. Smart relationships between buildings and outdoor spaces
2. Good use of materials, good architecture and landscape architecture
3. Vegetation and rainwater - a resource in the design
4. Elements that strengthen belonging and identity
5. The local climate - the sun wall and protection from the weather
6. Place of residence and use
7. Movement - part of the urban space

(Kommunal- og moderniseringsdepartementet, 2016)

1. Smart relationships between buildings and outdoor spaces.

Both the building and the urban space must give back to each other. The ground level will be lively, with a variety of facades. The ground level will "open up" to the surrounding urban environment. The entrances are oriented toward the urban space rather than the back parking lot. (Kommunal- og moderniseringsdepartementet, 2016)

2. Good use of materials, good architecture and landscape architecture.

With good architecture in buildings and landscape architecture in the urban space, there must be quality. Aesthetic and long-lasting materials are used in structures and city floors. Water, colors, art, flowers, and trees are examples of aesthetic qualities that stimulate the senses. (Kommunal- og moderniseringsdepartementet, 2016)

3. Vegetation and rainwater - a resource in the design.

All urban places must be climate-adaptive and make use of rainwater as a resource and in a high-quality manner. Floors that drain water, rain beds, ponds, gutters, and other similar solutions are possible. Urban nature, including water and plants, will increase biological variety in urban areas. (Kommunal- og moderniseringsdepartementet, 2016)

4. Elements that strengthen belonging and identity.

Views, sight axis, terrain, proximity to water, existing plants, and cultural sites can all be used as resources in the solutions. Use aspects that can be developed to become a tourist attraction in the city. (Kommunal- og moderniseringsdepartementet, 2016)

5. The local climate - the sun wall and protection from the weather.

Take advantage of the local climate to establish different zones. Create places that invite use, utilize sun and shade and protect from weather and wind. (Kommunal- og moderniseringsdepartementet, 2016)

6. Place of residence and use.

Understand the requirements of the people, and always create systems to identify and meet those needs. Create venues that appeal to a wide range of individuals, including children, teenagers, adults, the elderly, and others with varying tastes. The furniture should be adapted to the demands of persons who will be using the room.(Kommunal- og moderniseringsdepartementet, 2016)

7. Movement - part of the urban space.

Make a networked infrastructure that incorporates and connects everything. All city floors must be connected locally and between streets and other structures, as well as pedestrian-friendly and uniformly designed.(Kommunal- og moderniseringsdepartementet, 2016)

2.8 FUNCTIONS IN HOSPITAL AREAS

According to Lalonde (1974), our health is influenced by four variables. Biological factors such as heredity and age, as well as access to health care, lifestyle, and living environment, all have a role. Urban planners may primarily improve the last one, the living environment, among these four. Everyone in Norway has access to clean water, but lifestyle problems such as obesity, as well as mental disorders and loneliness, are on the rise, particularly among young people. We can influence people's physical, social, and mental health by facilitating activity, social connection, and rest / recreation in the physical local environment.(Hancock, 1986)
Four factors that affect a person's health:

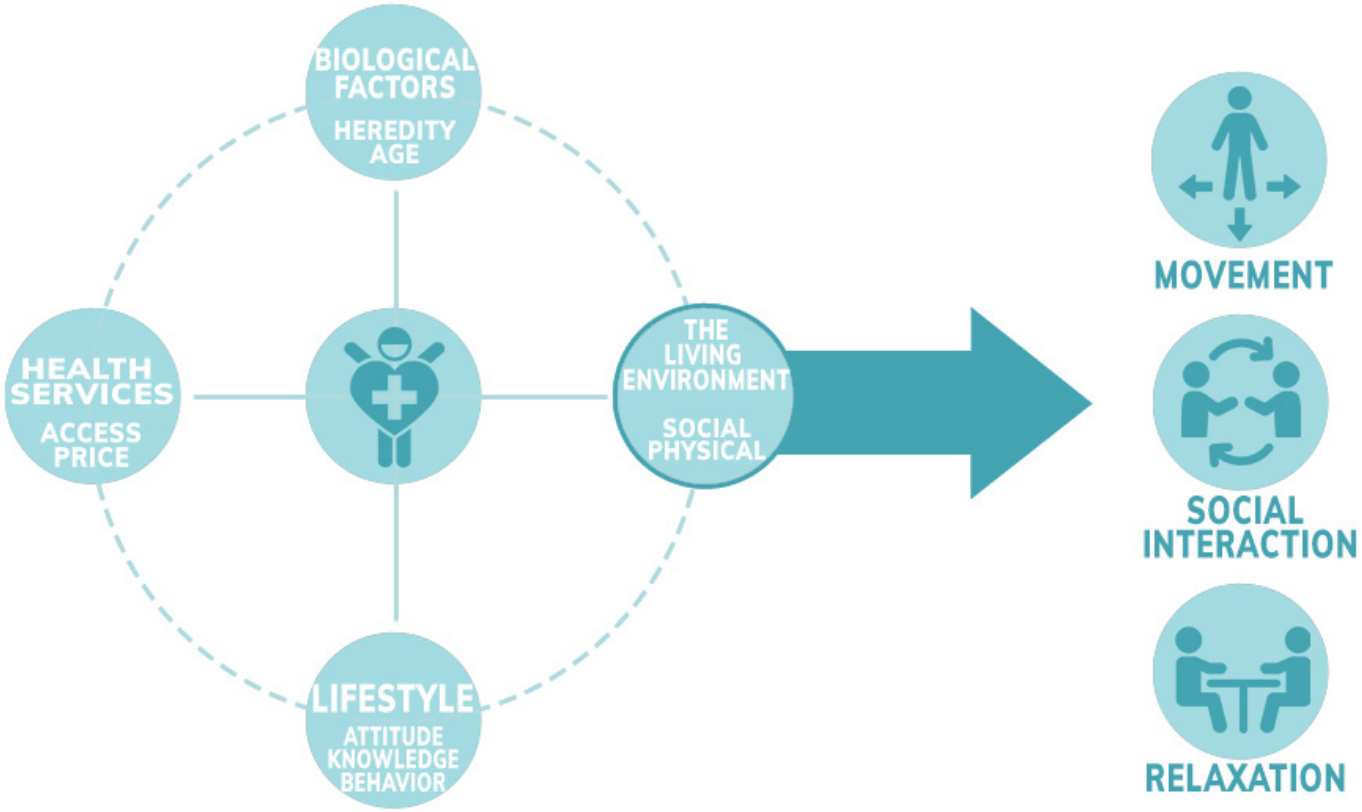


Figure 12: shows Lalonde's 4 factors affecting our health, (Edited by author)

2.9 REFRENCE PROJECTS

The thesis will examine how a new hospital area is developed, as well as which planning qualities are prioritized, in this subchapter. This example project can be utilized as a model for transforming the Eg hospital area in Kristiansand. Other key reference projects for establishing a pleasant urban space will also be presented in this chapter.

SUS2023

Stavanger's new hospital, SUS2023, is becoming the newest hospital area in Norway. The development and planning of SUS2023 it is therefore interesting to look at, as a reference project. Highlighting how the area is planned and which planning perspectives they focus on. The new hospital in Stavanger has many similarities to the plan program for the transformation of Eg Hospital Kristiansand. Stavanger Hospital is being built in several construction stages over several years, similar to the Eg hospital area.(Stavanger universitetssykehus, n.d.)

Figure 13: show the difference between current hospital area and the new hospital area in Stavanger

The hospital's main activity is today located on Våland in Stavanger with approx. 138,000 m2 gross area (BTA) available. It has been hospital operations there since 1927, with several developments over the years - especially in the 1970s and 80s. The new development will, due to the hospital's financial sustainability, take place in several construction stages. The first construction phase (BT1) will be completed in 2023 with a total of approx. 105,000 m2 BTA. Phase two will give a total of approx. 205,000 m2 for BT1 and BT2.(Helse Stavanger HF, n.d.)

The new hospital, located on Ullandhaug, is planned on the basis of an overall conceptual strategy that can be summarized as follows:

- All the hospital's functions are gathered around the central square
- The buildings are connected by a ring access on the 2nd and 3rd floor
- The urban square and the hospital are divided into two by the north / south public transport axis
- West of the public transport axis are mainly standard bed areas and light clinic functions
- To the east of the public transport axis are all emergency functions as well as all heavy treatment areas
- All public entrances are facing the square and from the entrance there is a view and access to the inner courtyards of each building.
- The west side of the hospital area is planned for public access with parking spaces and park / recreation areas.
- The east side of the hospital area is planned for emergency access by ambulance and helicopter as well as a separate area for goods reception.

(Helse Stavanger HF, n.d.)

Figure 14: show the difference between the two phases, BT1 and BT2, in Stavanger

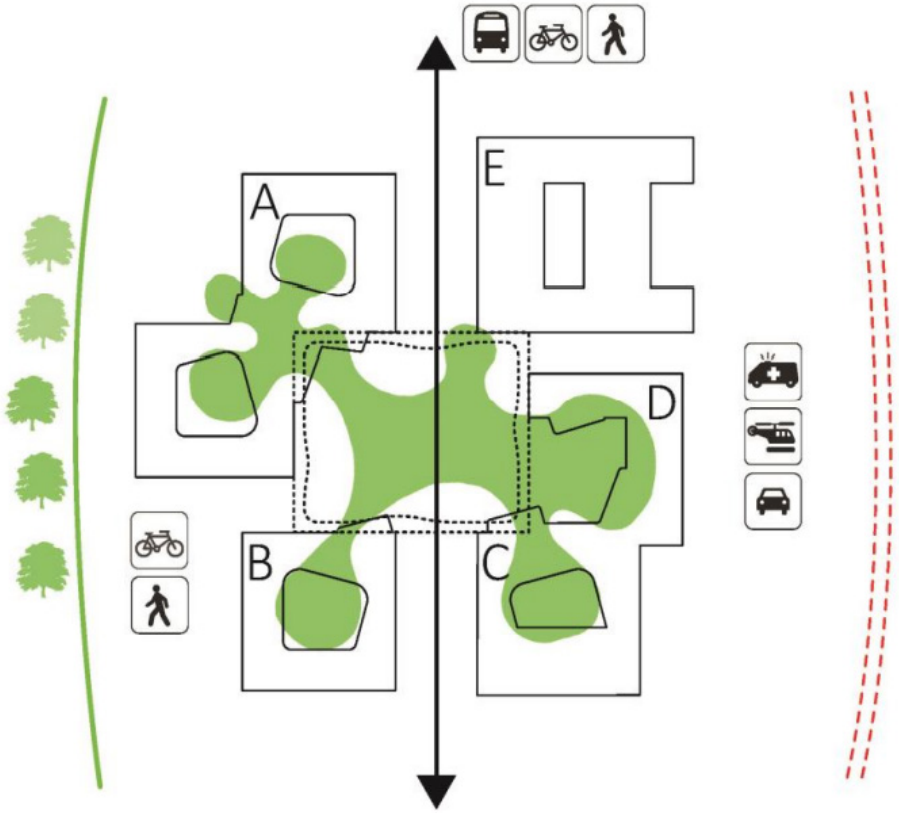


Figure 15: Shows the illustration of the main hospital concept for phase BT1

The urban space gives the patient attractive outdoor spaces within the hospital's framework at the same time as opportunities to meet nature. The courtyards will be planned so that they bring nature into the hospital buildings.

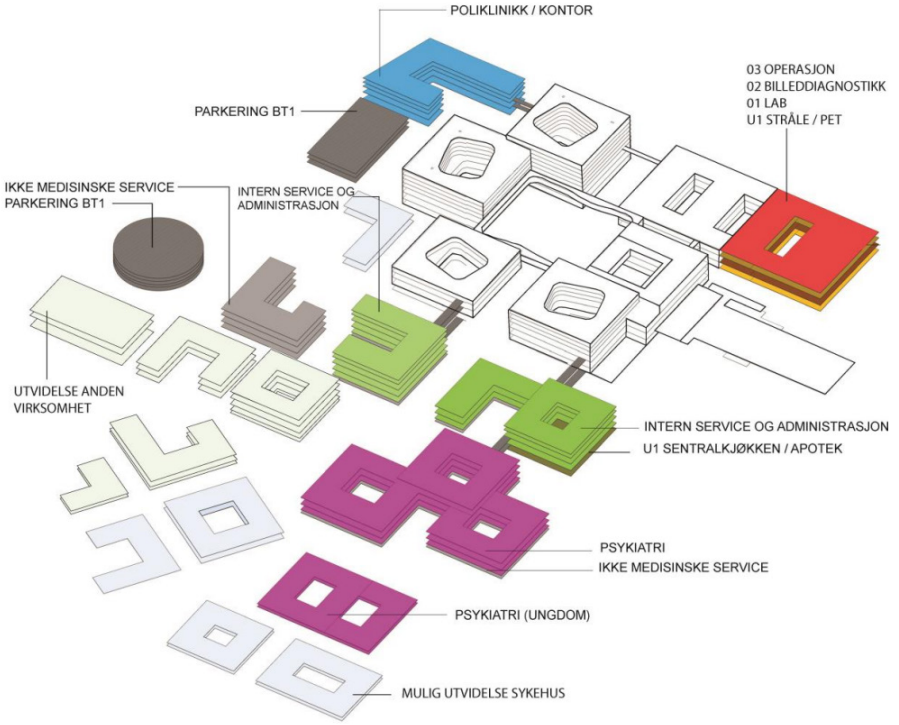


Figure 16: Present the illustration of future expansion. This provides increased capacity and expansion.

The area included in the first construction phase constitutes approximately 50% of the estimated area requirement for a total hospital. The development emphasis securing future expansions of the hospital within the available plot area.(Helse Stavanger HF, n.d.)

Figure 17: show how the area can be developed, with a park located in the west, in addition to the urban space

In order to make it possible for as many people as possible to get in touch with the natural values on the site, a park will be established on the west side of the hospital. Various places to stay are planned here, including everything from physical challenges and rehabilitation to meeting places at rainwater pools that are established in the park. (Helse Stavanger HF, n.d.)

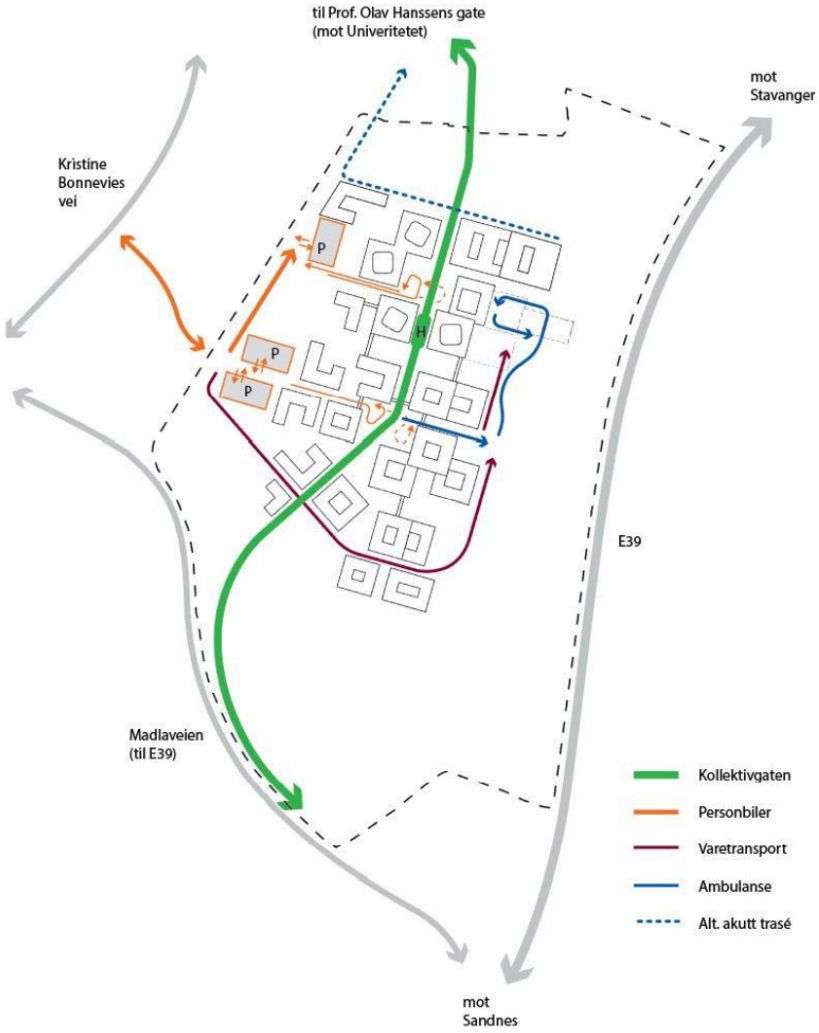


Figure 18: show the infrastructure and road network for the new hospital.

The new hospital is being built around a large unifying square, which will be one of several future square formations along the public street. With relatively large building volumes around it, the square will be experienced as intimate and well-proportioned. The bus path crosses the square and connects the hospital with the University area, the city and the region. The hospital will have its own stop for bus / public transport on the square. From the west you arrive through the park. This will be the main access road for visitors who arrive by car and park in a car park in the west. (Helse Stavanger HF, n.d.)

Public space references

There are a lot of different projects focusing on development of a urban space. In addition to the urban space theories presented earlier, is it important to look at different projects and see how they are using these theories.

THE HARBOR PROMENADE, OSLO

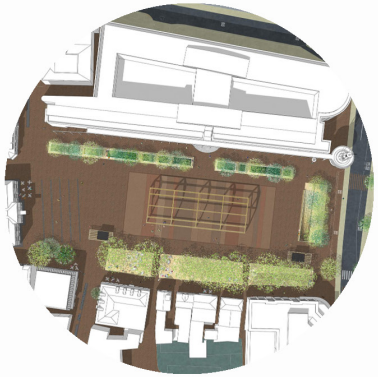
FUNENPARK, AMSTERDAM

FUNENPARK, AMSTERDAM

BOLZANO, SOUTH TYROL

ANDREAS ENSEMBLE, AMSTERDAM

ANDREAS ENSEMBLE, AMSTERDAM



PLEIN VAN DE STAD, NETHERLANDS

BOLZANO, SOUTH TYROL

GILMAN FOUNTAIN PLAZA, LA USA

BRAGERNES, DRAMMEN

OPEN RESTAURANTS PROGRAM, NY USA

UNNA, GERMANY

Figure 19: Present a collage of different project focusing on various features in urban space. (Made by author)

02 LITERATURE SUMMARY

By using Stavanger Hospital as a reference project, one can get an impression of what similar planning and development emphasizes. Planning for a hospital area is an angle many theorists do not specifically mention. The theories mentioned earlier also have a important and fundemental angles and features of what urban spaces should include. By looking at specific development projects for hospital can provide other images and priorities than a “normal” urban space. The development of a central urban space at Eg will use these theories and reference projects and implement features other projects have done, grounded in theory.

03 CASE STUDY AREA

03 CASE STUDY AREA

This part will first give a short introduction of the area connected to Eg. Further on will the hospital area on Eg be presented as the area is today and how the area can be transformed. The introduction and plans presented in this chapter will be used as a base for the proposals presented later in this thesis.

3.1 INTRODUCTION OF KRISTIANSAND

Kristiansand is the capital of Sørlandet and with its 113,737 inhabitants it is the country's sixth largest city. After the amalgamation of municipalities in 2020, the municipality also include Søgne and Songdalen municipalities. (Kommunefakta, n.d.)

Sørlandet is a tourist magnet and the idyllic location in the archipelago, as well as several attractions have made Kristiansand Norway's most popular summer town. Each year are there as many as two million travelers visit the airport and port. (Thorsnæs et al., 2022)

Kristiansand municipality has a unique role in the development of business, culture, and competence because it is the largest city in the region and one of the country's major cities. The different physical qualities are one of Kristiansand's significant assets: the long sea line that has been developed as a promenade, city beach (Bystarnda), the proximity to nature (Bymarka and Odderøya), as well as an exciting history that is reflected in buildings and in the city structure. (Thorsnæs et al., 2022)

The city is known for its diversity in terms of content. Kristiansand is a student city, a university and research city, an environmental city, a cultural city, a technology city, a summer city, a health city, a port city, and a future city. Kristiansand is a regional center because of its diversity. The fact that Kristiansand is constructing new enormous buildings for people demonstrates that the city is capable of fulfilling the large commitments that are required to further expand the region's capital.

Figure 20: Kristiansand municipality symbol

Figure 21: Shows a collage of Kristiansand, with its many features and areas. (Made by author. Pictures gathered form Google)

3.2 THE CITYS HISTORICAL DEVELOPMENT

Christian IV, who founded Kristiansand in 1641, provided the groundwork for the city's current physical shape. Kristiansand is strategically placed on the Skagerrak, and before the opening of the Kiel Canal, the area was very important militarily and geopolitically. Kristiansand has therefore served as a military base for centuries. The city layouts were based on Renaissance ideals of the time, but without the customary fortifications that surrounded such settlements.

The 54 blocks were meant to have the same size, and the roadways were supposed to be the same width and length. Minor tweaks have been made along the way, and not all components of the design have been executed, but the main pattern has been preserved from the city's beginnings. The street viewpoint and the experience of the rows of houses in relation to the city's immediate surroundings, which include the hillside, the sea, and the river. Kristiansand's urban development throughout history will quickly lead to urban expansions marked by epochs, and how areas have gradually become growth zones around Kvadraturen. (Agderkultur, n.d.)

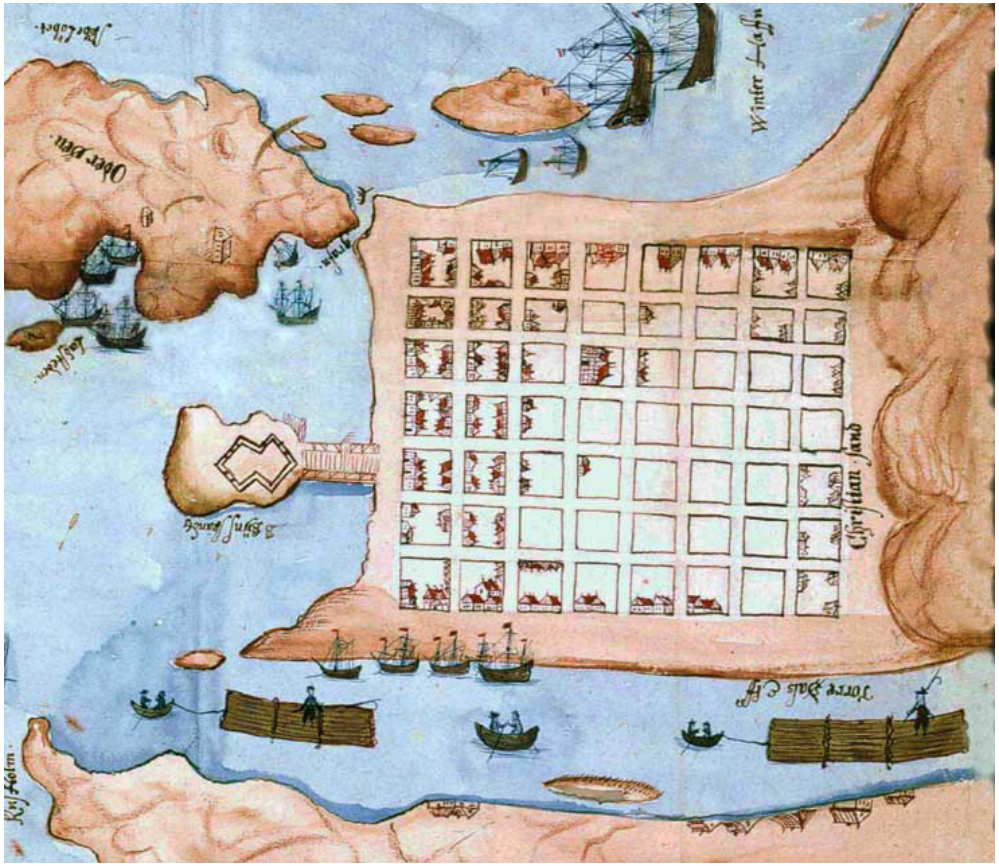


Figure 22: Show how the infrastructure and Kristiansand was developed.

1641–1700s

There was a progressive subdivision and settlement within the square regulation during the first period after the city was founded. Citizens were required to construct their homes in accordance with established building lines while also contributing to the street preparation.
Outside the 54 quarters, was it a common area. This area was gave room for activities that could not be inside Kvaderaturen and the city center due to size or danger. Among other things, there were shipyards, "industry", storage places and warehouses ect, even though the common area was initially for public use and not buildings.(Agderkultur, n.d.)

1800s

Within a couple of hundred years, various rights to activities in the common areas had been acquired. The dawning of industrialization required more space, and new businesses got a place in the common areas. At the same time, the pressure in Kvaderaturen was large with a growing urban population. The actual common area in Kvaderaturen was thus limited to the extension of the street axes to the sea. (Agderkultur, n.d.)

20th century to 1960

The city's population grew as well, and it took nearly 15 years to rebuild following the 1892 fire. Kvaderaturen was deemed fully developed at the turn of the century, with a population of about 15,000 people. Despite this, the city's population grew steadily. The need for urban development area grew and with the urban expansion of Lund in the 1920s, because of the pressure on housing in the city center. Housing development could occur within a reasonable walking distance of Kvadraturen's workplaces and the area around industry and storage. As a result, Kvadraturen became known as the city's "heart.". (Agderkultur, n.d.)

1965-1995

There was a considerable need for home development in the postwar period. As a result of the merger with surrounding towns, housing development has shifted out from the city core. The fact that businesses and institutions were also expected to relocate to the new areas reduced the burden on Kvadraturen. Following the merging of municipalities in 1965, it was decided that Kvadraturen should be reserved for the most natural center functions in order to fulfill its role as a center. Emphasizing on the function of Kvaderaturen as an important center. Kvaderaturen gradually emerged as an administration, office, recreation and commercial center, to a lesser extent as a residential center. There lived about 4300 in the center in 1997. (Agderkultur, n.d.)

1995 - 2022

Parts of Kvadraturen have been designated as conservation areas in recent years, preserving Kristiansand's historic identity, such as the renaissance city plan, which features straight streets and buildings clustered in rectangular quarters with views to the sea. (Agderkultur, n.d.)

3.3 EG HOSPITAL AREA, KRISTIANSAND

The Eg hospital area, located in Kristiansand Municipality, is part of the three main hospitals within Sørlandet Hospital HF. The oldest psychiatric hospital in the area has been located in the area since the 19th century. Today's hospital use, however, started up in Eg in 1980. In recent years, there has been an extensive planning and construction process for a new development on Eg. (Eg sykehus, 2020)

Figure 23: The picture shows how the hospital area at Eg is today

Figure 24: Showing locations in Kristiansand (Made by author)

Sørlandet Hospital, Kristiansand is situated on Eg, approximately 2 kilometers north of Kristiansand center and 1.5 kilometers north of E18. Eg is categorized as a hospital area with a building stock including emergency buildings, psychiatric buildings, administration buildings, and institutions. At the main entrance, there is a helicopter landing site and a bus stop, in addition to large areas set aside for parking. Eg has also defined as a area close to the river Otra and the forest Bymarka.

The main focus of the thesis will be the hospital area in the north, although the regulation area covers some houses in the south. The area in the south has no direct changes to the plans and proposals and is therefore not as important to focus on.

Figure 25: Present the regulation area for Eg. (Illustration based on overall plans)

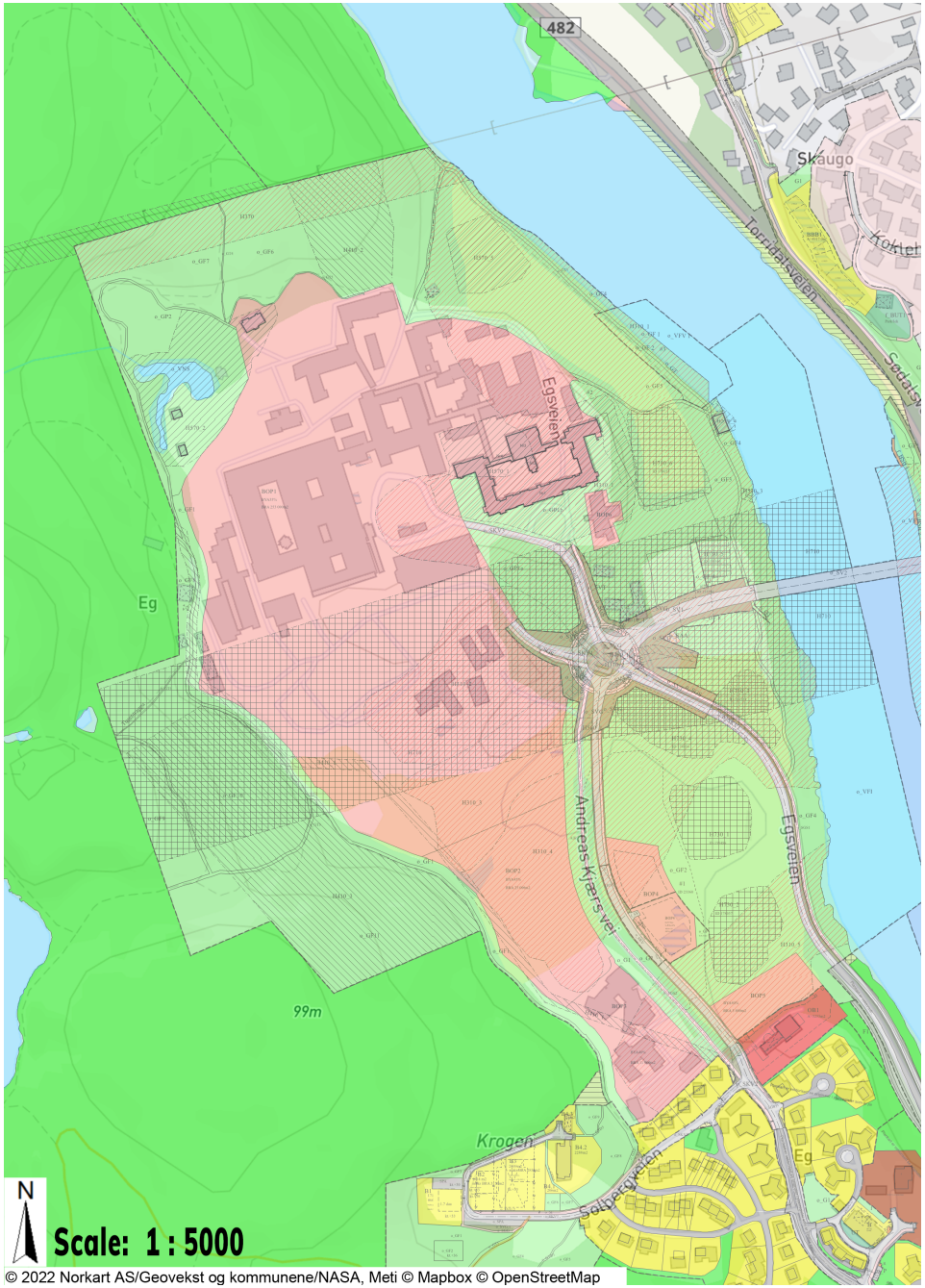


Figure 26: Zoning plan showing current regulations of EG hospital area

3.4 OVERALL PLANS AND GUIDELINES

In 2015, the City Council of Kristiansand adopted a new regulation for the hospital area, to facilitate the hospital and other health-related activities. Creating a strong competence environment associated with Sørlandet Hospital. (Plan-, bygg- og oppmålingsetaten, 2016)

"Helse Sør-Øst" has now given the go-ahead for Sørlandet Hospital HF, in collaboration with Kristiansand municipality, to start planning a new emergency building. In addition to a new emergency building, other functions for the hospital are also planned. These will include a new municipal emergency room and other functions that will have positive synergies for both the hospital area and the municipality's health and care services. (Rootwelt, 2021)

This is the start of a major urban development project, where a new district will be developed. (Rootwelt, 2021) The plans for Eg hospital area provide a room for further innovation, research, service, and competence development in the field of health and welfare. There are therefore different plans and guidelines of the area regulation, which set frameworks for roads, infrastructure, heights, utilization, and central urban space, etc.

Kristiansand region plan 2011 to 2050

The regional plan for Kristiansand is an overall area plan for the municipalities that make up the Kristiansand region. The plan is a guideline for the municipalities and is intended to facilitate sustainable development and balanced growth in the region.

The main features of the Kristiansand region plan strategy are that one must strengthen existing urban and urban centers in order to contribute to more efficient land use and plan for more people to choose environmentally friendly modes of transportation.It is important to avoid a development that leads to proliferation, car addiction, and poorer accessibility for those who do not use a car. Therefore, development must take place where it has already been developed, within the existing urban structure.(Agder fylkeskommune, n.d.)

Municipal development strategy

The municipal plan states that Kristiansand municipality shall have an urban and local development that promotes compact centers, with good qualities in urban spaces and in the inhabitants' immediate environment. It is Kristiansand's ambitious climate goals that lay the foundation for many of the guidelines for the area strategy. Kristiansand aims to become a "socially low-emission society with 80% lower greenhouse gas emissions in 2030 than in 2015"
(Kristiansand kommune, 2020)

> "Kristiansand will be strengthened as the regional capital by developing into a compact city with urban qualities that utilize the proximity to the sea as a resource. Attractive and vibrant centers with a large degree of functional mix will be developed." (Kristiansand kommune, 2020)

Development plan 2035

Sørlandets hospital has the "Development plan 2035", which lays the foundation for Sørlandet hospital HF (SSHF) to fulfill its vision of security when you need it most.

> "Development plan 2035 is about further developing SSHF's activities to ensure professional and financial sustainability and the best possible health services for the entire population in Sørlandet. At the same time, it is important that the development plan and hospital structure provide the necessary flexibility to adapt services and structure to external conditions and changing framework conditions." (Sørlandet sykehus, 2018)

The development plan 2035 defines development goals for areas that will characterize Sørlandet Hospital until 2035. Development goals are as follows:

- SSHF's buildings and technical installations take care of the company's needs
- SSHF's building has a user-friendly design
- SSHF's management and maintenance ensures reliable and efficient operation
- SSHF makes optimal use of the areas
- SSHF's buildings are secured against external threats

(Sørlandet sykehus, 2018)

The hospital's development plan 2035 describes the condition and possibilities for the current building, as well as the development of the building stock in the future. There is a need for major area expansions and upgrades in somatics in the short and medium term. (Sørlandet sykehus, 2018)

Development plan 2040

The development plan 2040 for the of Kristiansand recommends a strategic urban planning approach, which will open a new urban field between the hospital area in Eg, Campus UiA and Kvadraturen, to connect these districts. (Plan-, bygg- og oppmålingsetaten, 2016)

Figure 27: Innovation areas and clusters within industry, competence, health and culture in and near Kvadraturen

The City Council of Kristiansand adopted detailed regulations for Eg - Sødal - new bridge on 25 October 2017.

The plan description measure state that:

> "The new road will help to increase emergency preparedness and accessibility to the hospital, and at the same time provide a more attractive and accessible offer for pedestrians and cyclists, as well as contribute to a better public transport offer. New road will also improve traffic safety." (Plan-, bygg- og oppmålingsetaten, 2016)

The following goals are set for the plan:

- A more robust road network with the help of extra access to the hospital.
- Obstacle-free transport of buses and bicycles from east and north.
- All outdoor areas must be developed in accordance with the principles of universal design.

(Plan-, bygg- og oppmålingsetaten, 2016)

The zoning plan for "Egsbroa" sets the framework for the design of the new bridge, as well as access to other parts of the area via a roundabout.

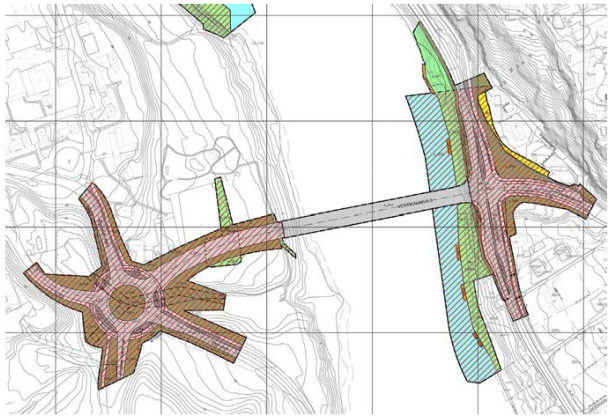


Figure 28: The zoning plan for "Egsbroa" sets the framework for the design of the bridge, as well as access to other parts of the area through a roundabout.

Area regulation for Eg hospital area

The current area regulation contains planning requirements for Eg hospital area and guidelines related to further development of the area. Eg can be divided into several detailed regulations, with certain limitations:

- Location of central urban space has been clarified
- Central urban space must be within a plan

(*Reguleringsbestemmelser for Eg Sykehusområde – Områderegulering Med KU.*, 2016)

The planning area includes field BOP1 in the area regulation for the Eg hospital area. The area is, in its entirety, the hospital's property. The area regulation allows for up to 300,000m2 of building mass, of which approximately 70,000m2 is already built. With a development rate of 3000-5000m2 on average a year, it will take 45–75 years before the new hospital area is completed.

(*Reguleringsbestemmelser for Eg Sykehusområde – Områderegulering Med KU.*, 2016)

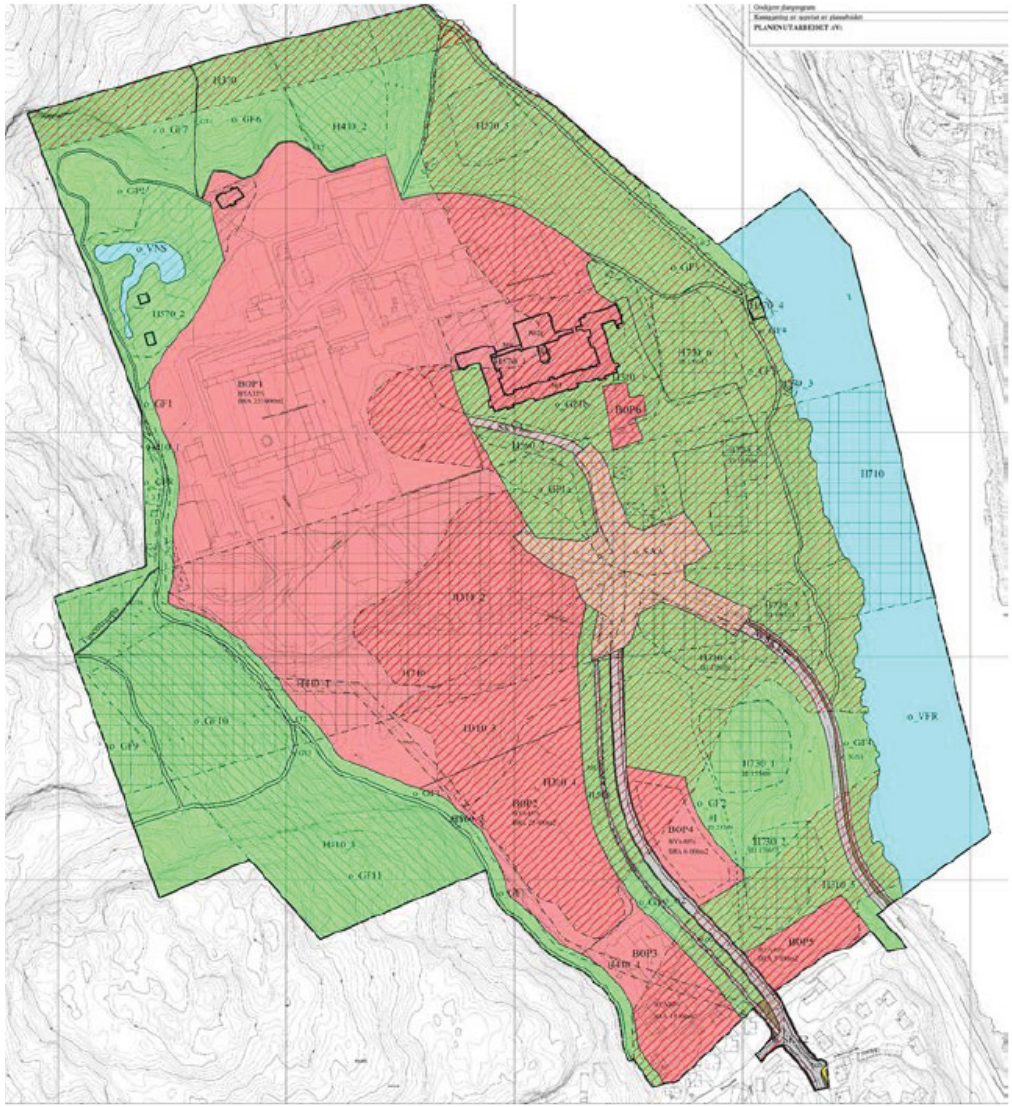


Figure 29: Area regulation for Eg hospital area

03 CASE STUDY AREA SUMMARY

The physical design of the urban space network and urban space must be seen in connection with the municipality's visions and ambitions and the site's prerequisites. These area regulations set limits and guidelines for the Eg hospital area. It also sets requirements for planning programs that shed light on holistic development and set frameworks for subsequent detailed regulations. These requirements have formed Rambøll and Henning Larsen's plans for Eg, where they have made an informative, holistic overall plan that follows the guidelines. All regional plans, municipal plans, and zoning plans have effects on the environment, society and for Eg hospital area, and must therfore be taken into account and shaping the transformation.

The holistic approach Henning Larsen has taken in the plan program must be robust and flexible enough to be able to be developed over a long period of time, at the same time as it must take care of the prerequisites described in the overall plans and guidelines. The plan for Eg is therefore based on the main building's location and direction, but at the same time allows the building to be changed or rebuilt in the future, and in the long term, possibly replaced by new buildings.

The possibility study and the propsal for Eg have been prepared within the framework set by the current area regulation for the Eg hospital area. In addition, to the plan for a new bridge over Otra, Egsbroa, that already been approved.

04 SPATIAL ANALYSIS

04 SPATIAL ANALYSIS

The main goal for this chapter is to obtain knowledge of how the area is used today and present a proposed transformation. The analysis will present factors that set different frameworks for the transformation of the central urban space at Eg. This view seeks to understand and contribute to establishing the basis needed to provide an optimal proposal for the central urban space. The analysis will present conditions for the Eg hospital area and show how plans directly transform the area, by showing how the area is today and what it can become. At the end of the spatial analysis, the strengths, opportunities, weaknesses, and threats gathered from the analysis will be presented in a SWOT.

Figure 30: Show the main spatial analysis area - Eg hospital area

Figure 31: Picture showing areas and buildings in Eg, taken from the excursion of the hospital area (made by author)

IDENTITY

The identity of Eg hospital area can be characterized by the following:

- **Closeness to nature**

The Eg hospital area is surrounded by blue-green structures. The hospital and the blue-green-structure location bring with them a sense of identity and one with which the project will seek to embrace. As can be seen through the spatial analysis, the proximity to the blue-green structure from all parts of the area is limited. However, connectivity with the blue-green structures is limited. The hospital area, with its closeness to large green areas, can attract people to take hikes and use the frisbee-golf park spread around the area.

Figure 32: Showing the blue-green structure in and around Eg Hospital area

- **Hospital functions and old Hospital buildings**

Eg Hospital area is dominated by hospital buildings and their functions, making the area a place for treatment and health. The area is characterized by soft landscaping and green elements, such as fields and trees. Eg has relatively large areas of hard materials, such as paved parking areas.

The old psychiatric hospital building from 1881 is the first big building you see when arriving. Its design makes the building stand out among the other hospital buildings and is an important attraction for Eg. In addition, is the building "Kolonien", built in 1922, one of the different buildings on Eg. Both buildings are significant in terms of history, architectural styles, and functions.
(Eg sykehus, 2020)

Figure 33: The old psychiatric hospital building.

Figure 34: "Kolonien", pictures taken from the excursion to the hospital area

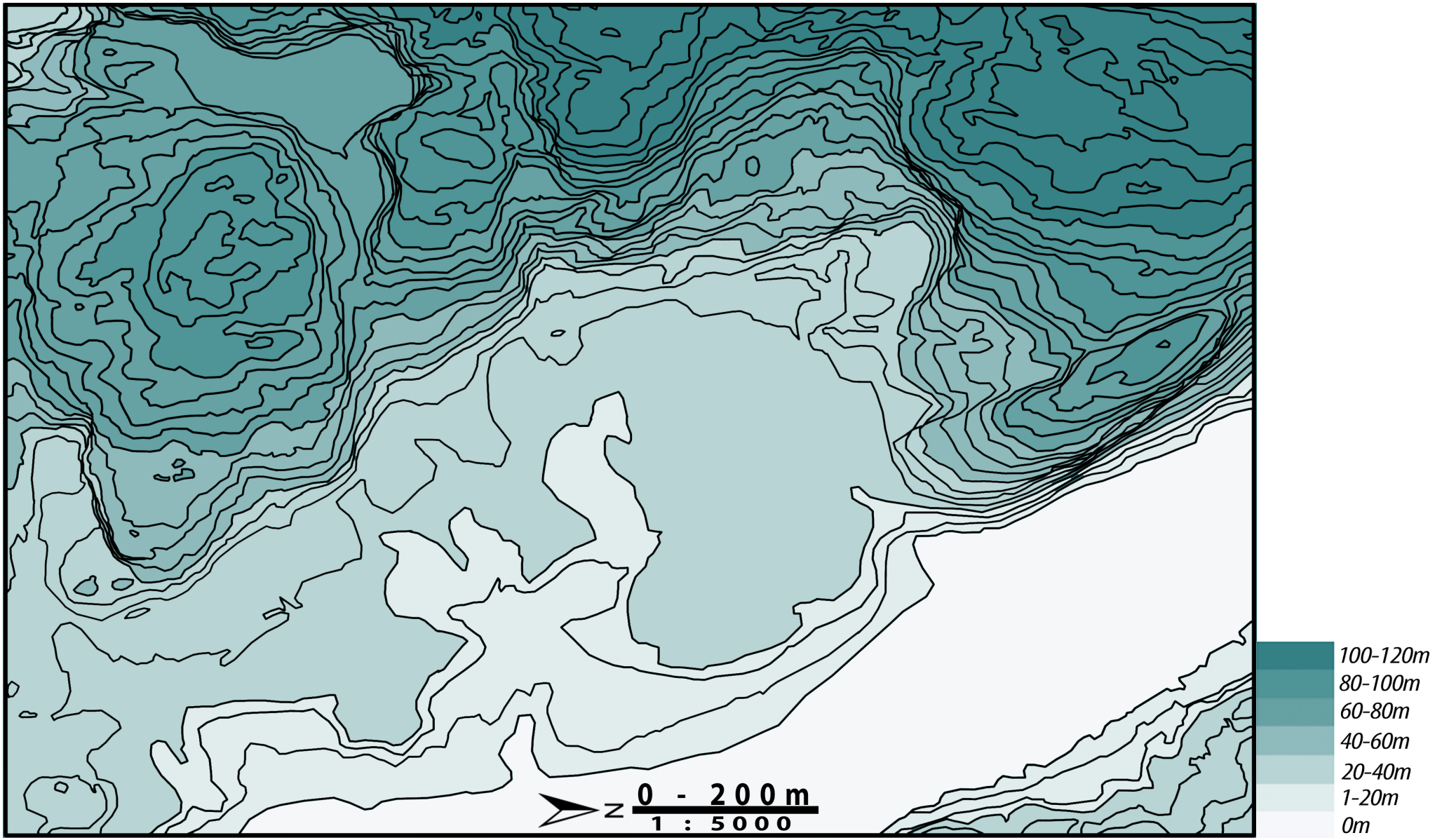


Figure 35: Show the height of the terrain in Eg hospital area

The terrain on Eg is characterized as varied hilly terrain with elements of large surfaces. The terrain moves from 120 meters above sea level, down to the Otra river at 0 meters. The hospital area itself is located in a flat and low-lying area, surrounded by steeper terrain to the north and west. Large parts of the terrain on Eg are untouched, with large forest areas and fields. The terrain provides shelter from the North-West wind, and the hospital location, with its height above the sea and river, provides safety during normal conditions.

Figure 35 shows that the terrain from the river Otra and towards the hospital rises gently. The terrain then rises steeper around the hospital, especially in the north and west. Parts of the lower terrain and proximity to Otra make buildings and areas close to the river particularly vulnerable to increased water levels. This also includes storms and heavy rainfall. Floods and high-water flows from the surrounding higher terrain can lead to unstable soil and landslides. A lot of water in the area can lead to direct consequences for the area and the buildings at Eg.

The area has characteristic wave terrain, which has led to soil protection. The waves have an important landscape form, making it a cultural heritage interest as an important cultural environment and cultural landscape.

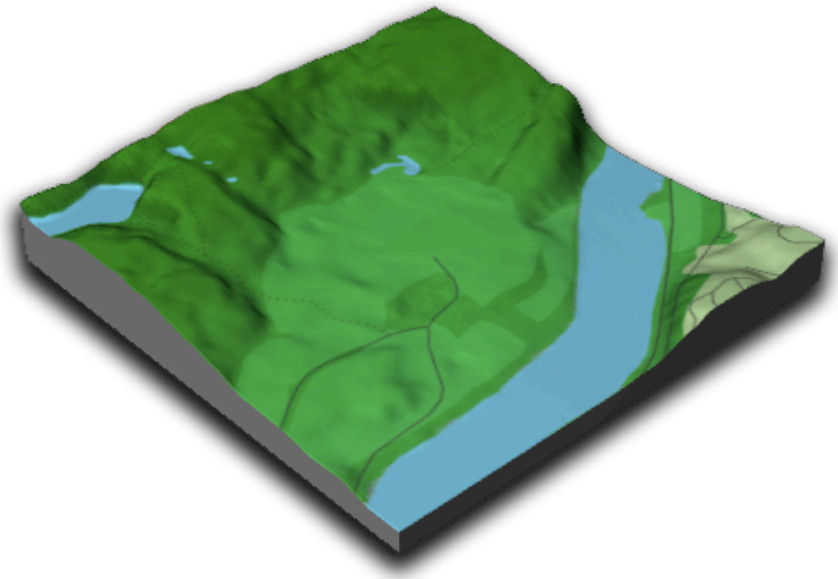


Figure 36: shows a 3D model of Eg

The terrain and landscape around Eg hospital area act as a structuring and space-creating element, but it has its weaknesses as well. The steep terrain close to smaller water sources causes a potential landslide risk in the west /north-west part of the Eg area. The area is also vulnerable to quick clay landslides and floods during heavy rainfall. Quick clay is detected in the ground, with its low and medium degree of danger. If development doesn't take precautions, the amount of quick clay in the soil can have severe consequences. Quick clay can also occur outside the proven zones. (NVE, n.d.)

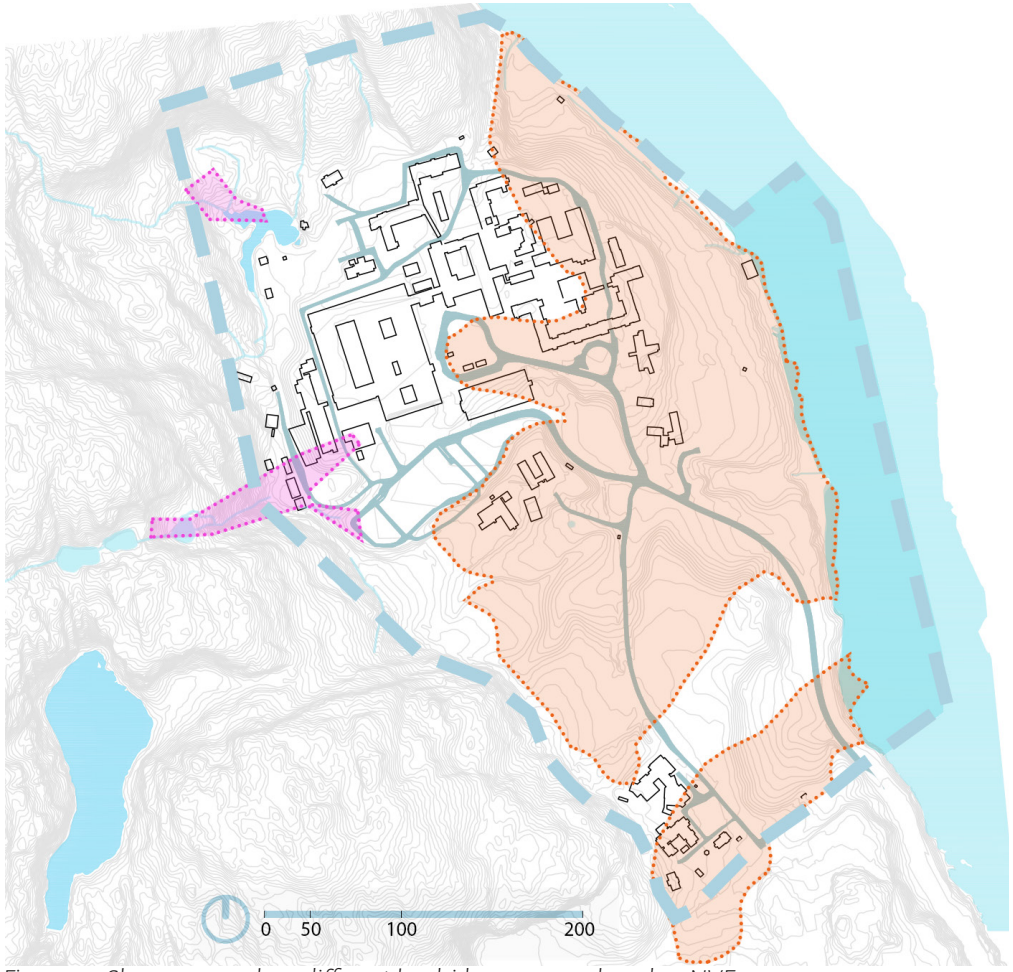


Figure 37: Shows areas where different landsides can occur, based on NVE

An increase in annual rainfall is expected, which will increase the chances of flooding. Annual precipitation is expected to increase by up to 10% by the year 2100, when the number of days with extreme rain can be expected to double. Such predations make the area woundable with its topography. The hospital area is relatively flat, but the land rises around Eg. The surface water from the higher terrain will drain down to the river, through the hospital area. The highlighted areas in figure 38 have a higher risk of floods and landslides if an increased amount of rain or periods of heavy rain flow occur. (NVE, n.d.)

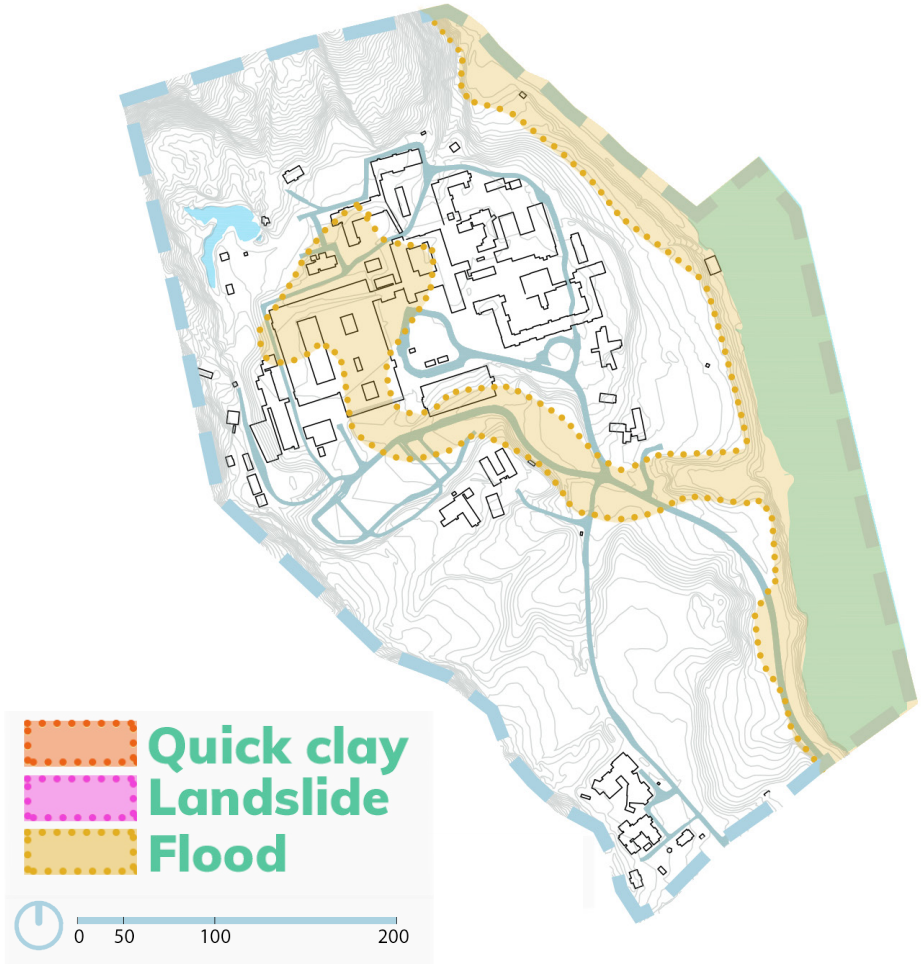


Figure 38:Shows areas that can be exposed to flood, based on NVE

LANDSCAPE CONCLUSION

The terrain has its challenges, especially during heavy rain fall, since the terrain leads the water into the hospital area. When heavy rain falls, can the center of Eg be flooded. Underlaying terrain can be problematic regarding stability and development, if this threat is not taken into account. The terrain and the way it goes down to the river will help as a natural drainage path. Since the hospital is located over 20 meters over the river, the area is safe regarding expected increased sea level.

CLIMATE

Kristiansand has a maritime climate. The climate and weather in Kristiansand are part of the city's identity and culture. It greatly affects how people use and function in the city's urban spaces and in their daily lives. Today, Kristiansand is described as a sunny Norwegian municipality, with relatively warm temperatures. The forecasts from NVE show that in the future it will be wetter.(NVE, n.d.)

Figure 39 shows that the average temperature in Norway is highest in the south, where Kristiansand is located. One of the warmest weather stations in 2020 was located in Kristiansand, which had 2,7°C temperatures above normal. (Meteorologisk institutt, 2020)

Figure 39: Showing where Kristiansand is located in Norway

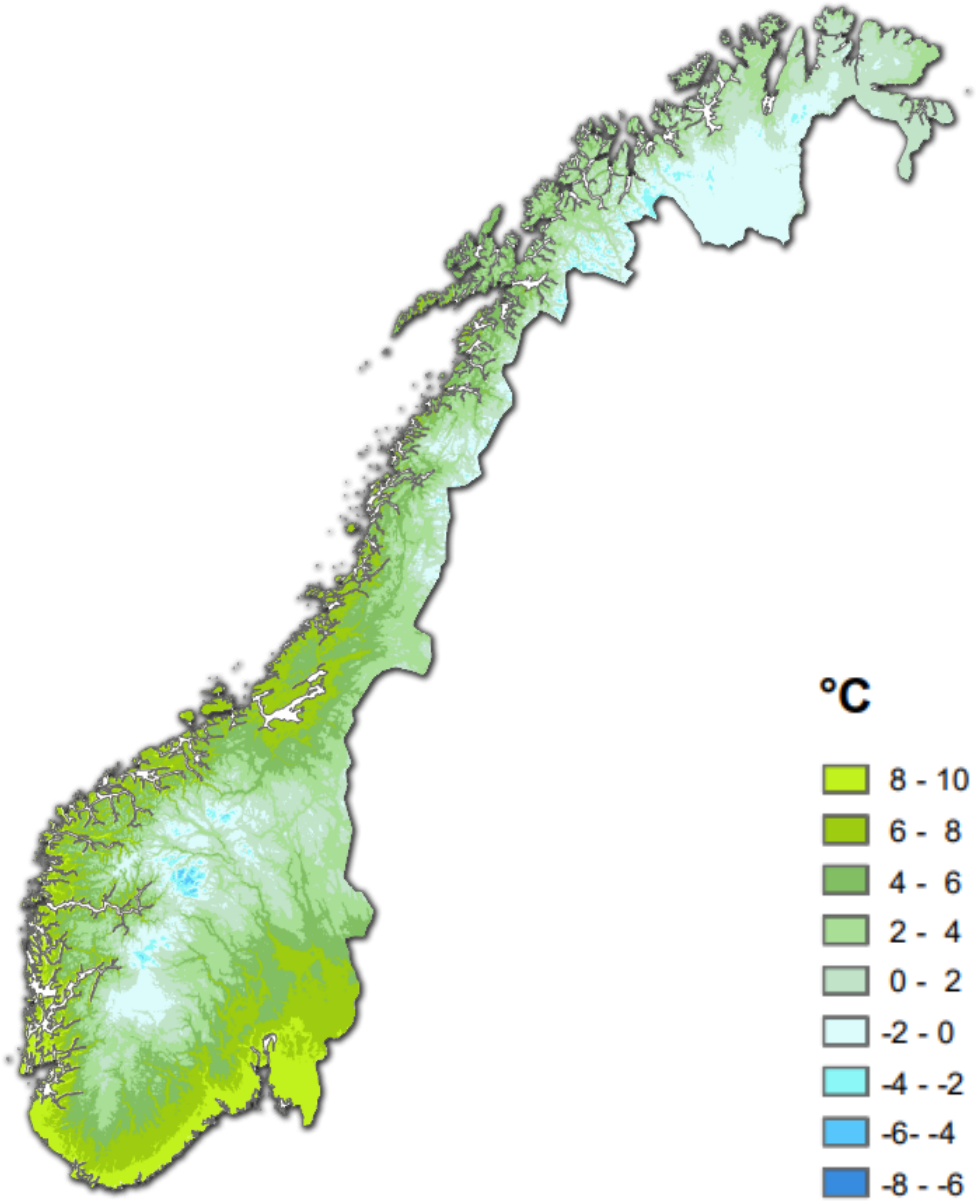


Figure 40: Shows Norway's average temperature in 2020 (Meteorologisk institutt, 2020)

The maritime climate has small daily and annual temperature differences compared to an inland climate. Today, Kristiansand has a warmer climate than most other Norwegian cities. The highest average temperature in Kristiansand is 18 ° C in July, and the lowest is 2 ° C in January. Around 2499.4 hours of sunshine are counted in Kristiansand throughout the year. On average, there are 81.99 hours of sunshine per month. Kristiansand has an annual average temperature of 10 ° and receives a minimum of 654 mm of precipitation. There are 161 days of dry weather per year with an average humidity of 80% and a UV index of 3. (*Kristiansand- Vær, klima og den beste tiden å reise*, 2022)

Snowfall is periodic and not annual. The Gulf Stream provides local heating through the surface currents. It is also the Gulf Stream that makes Kristiansand have mild winters when warming the coast. (Kristiansand, 2022)

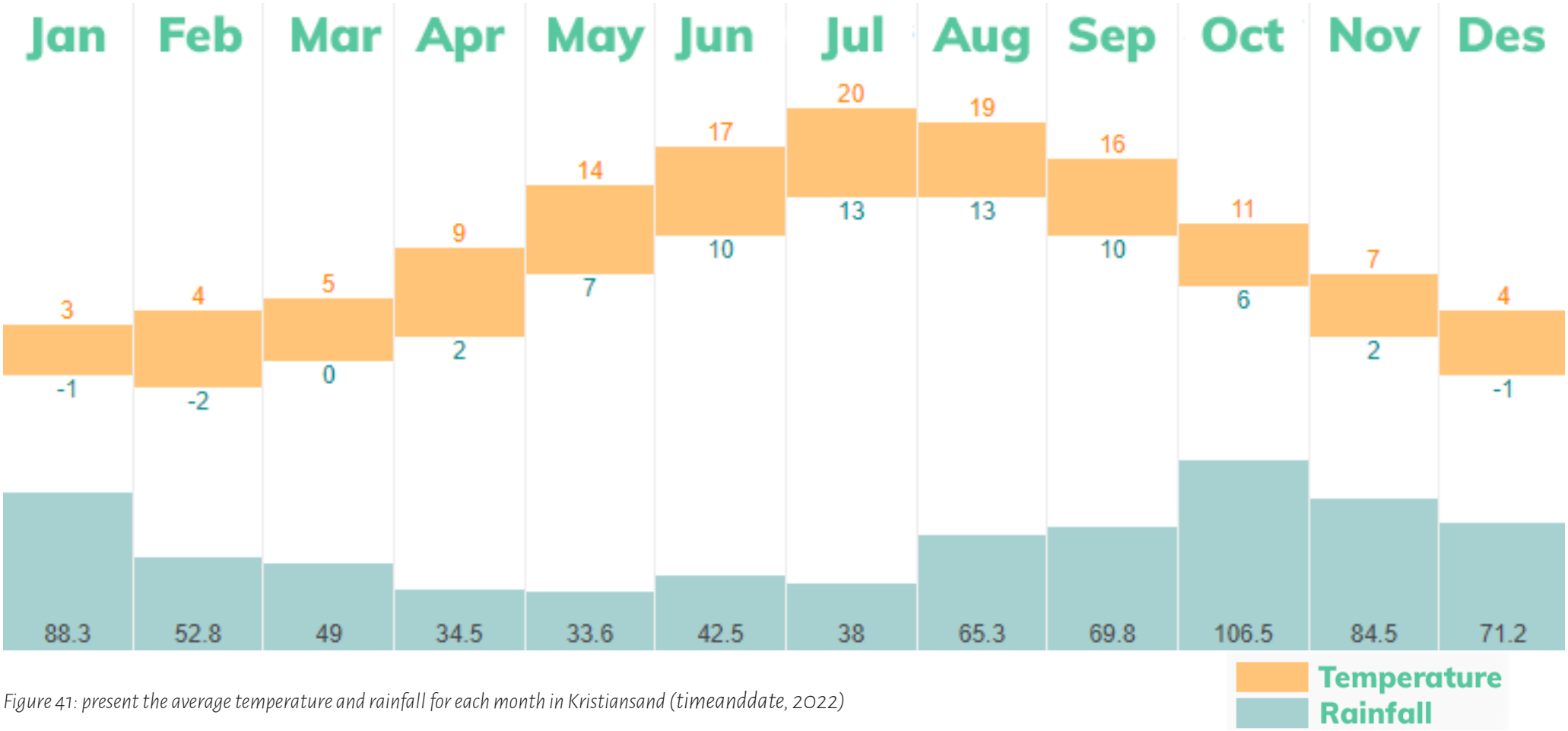


Figure 41: present the average temperature and rainfall for each month in Kristiansand (timeanddate, 2022)

Figure 41 presents the sun directions for the Eg hospital area. The sun curve to the left presents sun conditions during summer, and the sun curve to the right presents sun conditions during winter. Winds from the north-east and south-west dominate in the winter, while west and southwest winds are most frequent in the summer. (timeanddate, 2022)

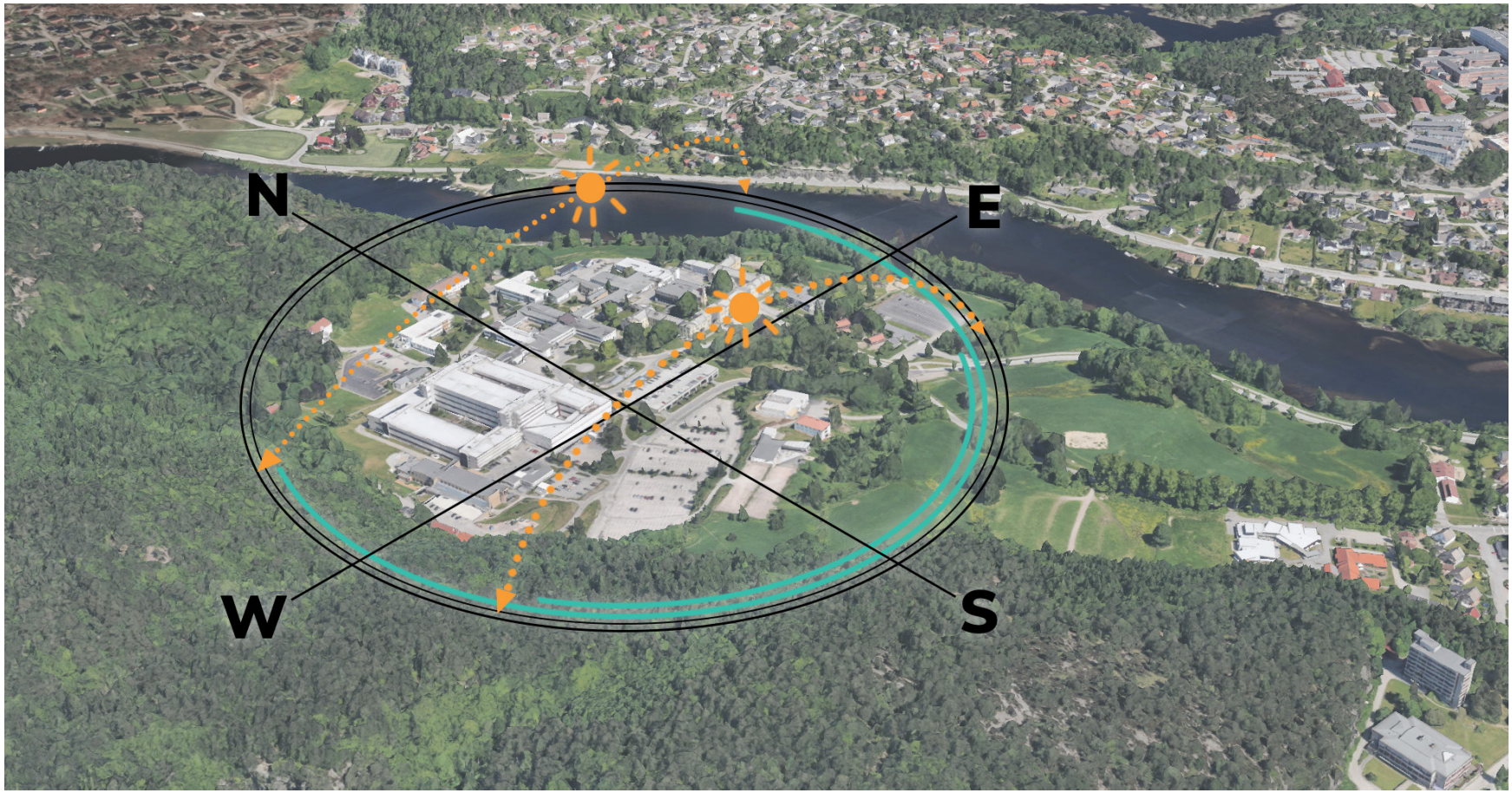


Figure 42: Shows the sun directions during summer- and wintertime for Eg hospital area, (made by author)

CLIMATE CONCLUSION

Large parts of the hospital area on Eg have fairly good sun conditions all year round. Certain parts of the existing buildings will cast shadows throughout the day over certain areas of Eg. The areas furthest from the buildings therefore have the best solar conditions throughout the year, such as the green areas and parks on Eg. The buildings can also provide some shelter from the sun during warm summer days. Even though Kristiansand is one of the warmest cities in Norway, must further development still plan for an expected increase in rainfall and have drainage solutions.

INFRASTRUCTURE

Kristiansand is described as Agder's county capital and center of gravity. There is a large thoroughfare in the municipality where the E39 (Kristiansand-Stavanger- Bergen-Trondheim) starts and the E18 (Stockholm-Oslo-Kristiansand) ends. Kristiansand has a train- and bus station in the city center and an airport 15 km away.

In 2021, E39 west of Kristiansand towards Stavanger had a year-round traffic (ÅDT) of 44,200 vehicles. E18 on the east side of Kristiansand, direction Oslo, has an ÅDT of a total of 23,200 vehicles. (*Vegkart*, 2022) Kristiansand is a transportation hub, where two of the traffic corridors meet. Connecting the east and western Norway, in addition, to the inland highway 9 that stretches through the entire inner Agder, in Setesdal to Haukeligrend towards Telemark.

In recent years, have several projects been initiated, changing the city's transport image. Among other things, the building of a new E39 as a four-lane motorway with a speed limit of 110 km / h and new built E18 sections. These road upgrades reduce time and length, providing easier access of traveling and the strengthen the connections Kristiansand has. (*E39 Kristiansand vest – Mandal øst*, n.d.)

Figure 43: Present the main infrastructure routs and cites connected to Kristiansand, (made by author)

Eg is located about 2 km north of Kristiansand center. The city center is an important part of the city's future, present, and past, and reflects the culture and identity of the city. Kristiansand has good connectivity to Denmark with its 3-hour distance by ferry. The Port of Kristiansand is one of Norway's largest ports, and it has coastal routes, ships in North Sea shipping, and car ferries to Hirtshals, Denmark. The sea as a transport route may have important significance in the future as the capacity of the road network in the cities is limited, while the sea route has plenty of space. A train station is also located in the city, providing alternative transportation to cars and buses. The train network from Kristiansand has multiple departures and good connections to other cities in South-Norway. Kristiansand Airport, Kjevik, is northeast of the city center. It has flights within Norway and to the rest of the continent. (Thorsnæs et al., 2022)

NETWORK, CONNECTIONS, AND DISTANCE

Sustainable development and transformation are connected to promoting and prioritizing walking, cycling, and public transport to reduce CO_2 emissions. By trying to understand and improve the connections to Eg can a network analysis help to enlighten and present important paths and routes.
Cars, buses, bicycles, and walking are the most commonly used means of transport to and from the hospital area.

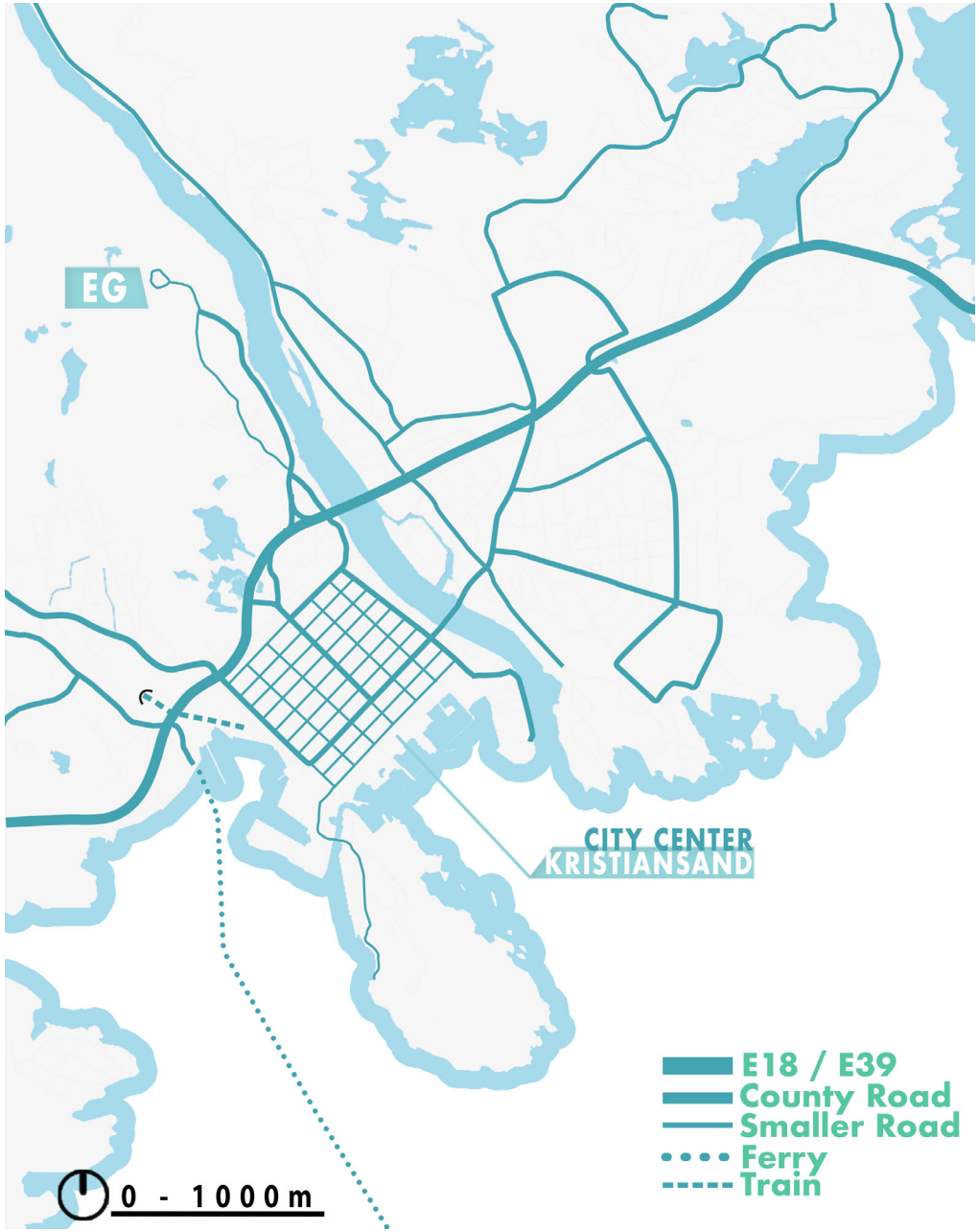


Figure 44: Present main infrastructure paths in Kristiansand (Made by author)

The heatmap presents the 'heat' of the travel routes of people walking and cycling. The heat-routes are paths people have traveled, visualizing two years of trailing data. In areas with more activity, the heat level is high. Areas with very little activity may not show any 'heat.' Routes presented with a strong and bright line are defined as a path many people travel. (Strava Global Heatmap, 2022)

Figure 45 shows that the highest use of travel routes is connected to the main roads connected to the city center, but also paths near water, such as the way up to Eg near the river Otra. Popular destinations include trails in the forest northwest of Eg.

Figure 45: Present a heatmap showing routes people walk or cycle in Kristiansand(Strava Global Heatmap, 2022)

By analyzing the connections and distances of Eg hospital area, one can help to understand the accessibility and how the area is a part of Kristiansand.

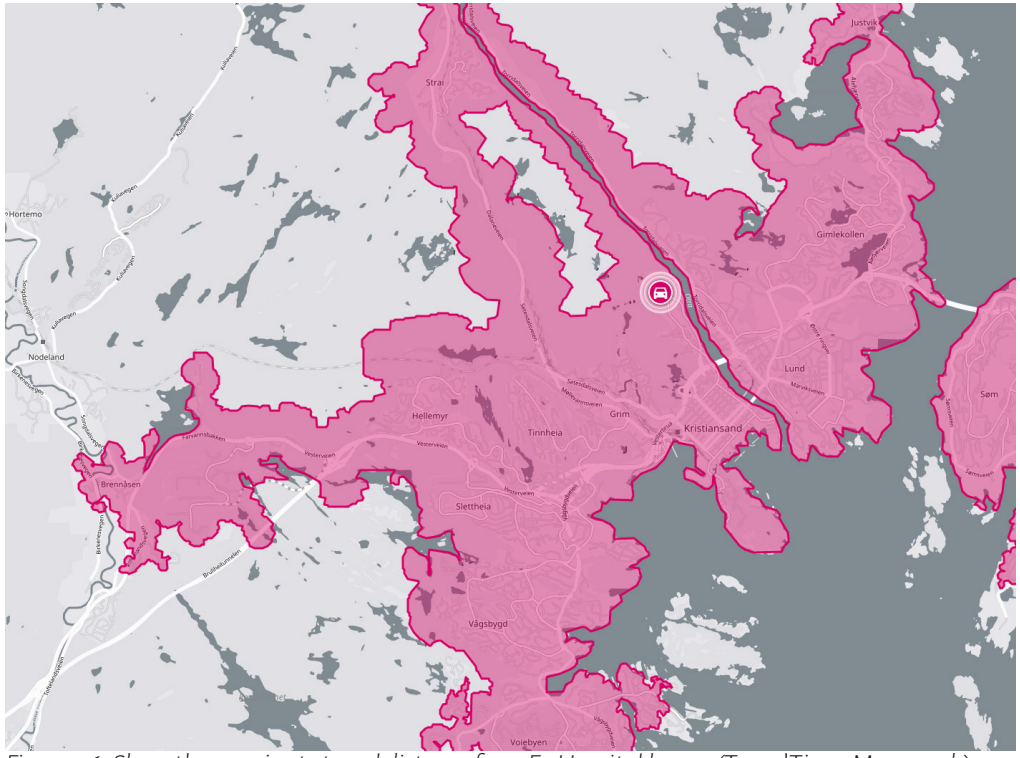


Figure 46: Show the 15-minute travel distance from Eg Hospital by car. (TravelTime Maps, *n.d.*)

Figure 46 shows a 15-minute travel time by car, with a relatively low travel time to different areas in Kristiansand. Eg has good car accessibility, with closeness to both the highway and the city center. In addition to this, the hospital area also has a lot of car parking, taking up large areas. This will be further analyzed.

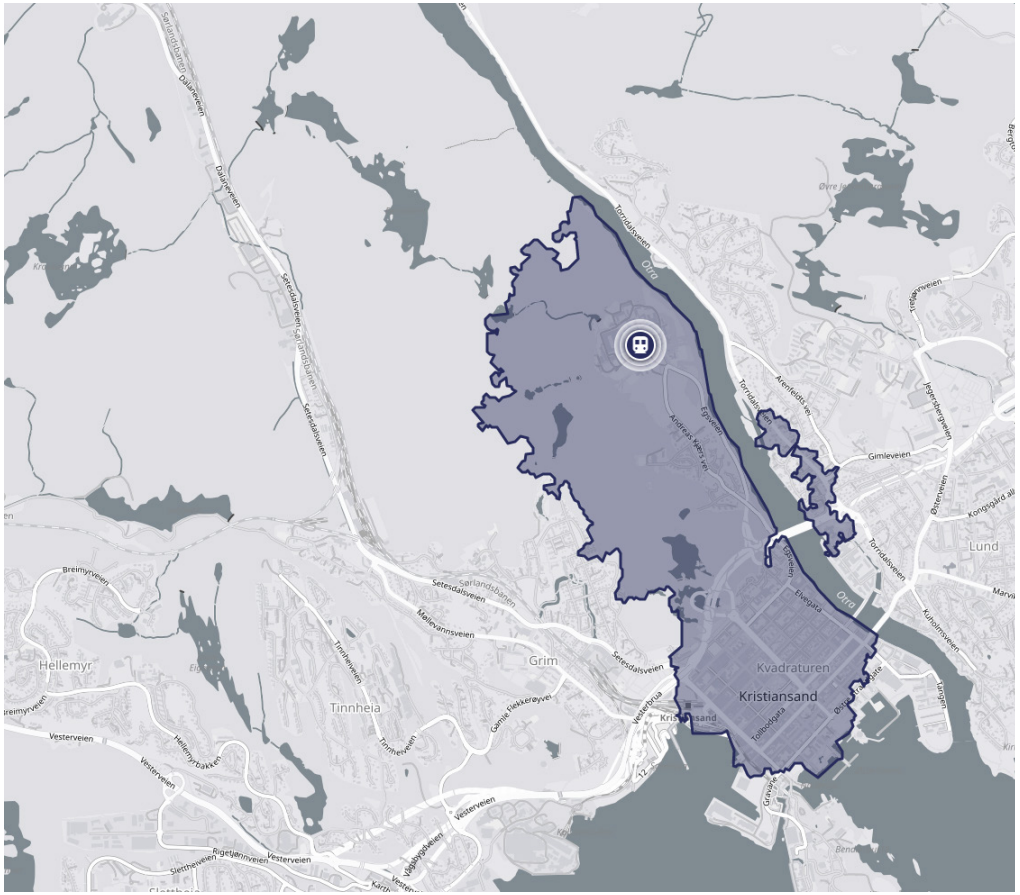


Figure 47: Show the 15-minute travel distance from Eg Hospital by bus. (TravelTime Maps, *n.d.*)

The bus from Eg departs every 10 minutes to the city center (Agder kollektivtrafikk). Figure 47 shows the area people can travel with the bus from, Eg within 15 minutes. The travel time by bus is a bit longer than by car, especially when it ends up taking longer than expected because of delays. The buses going to and from the hospital run on renewable energy. Powered by one of many bus stops with a charging option on Eg.

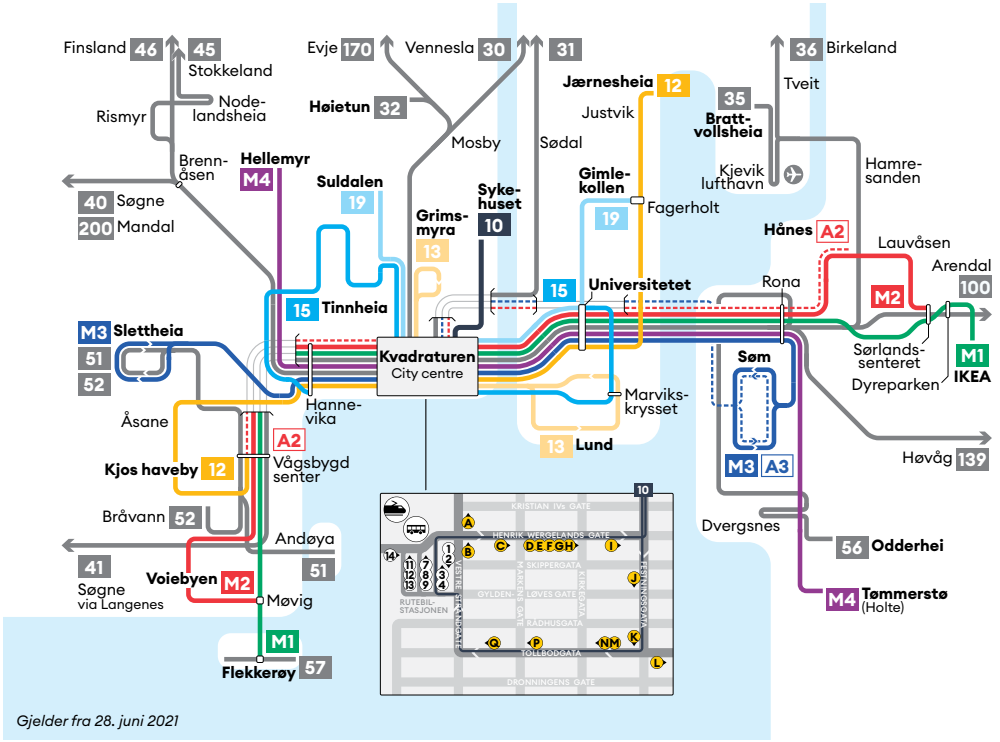


Figure 48: Shows the bus routes in Kristiansand. Buss nr 10 goes directly to Eg,(Morvik, 2022)

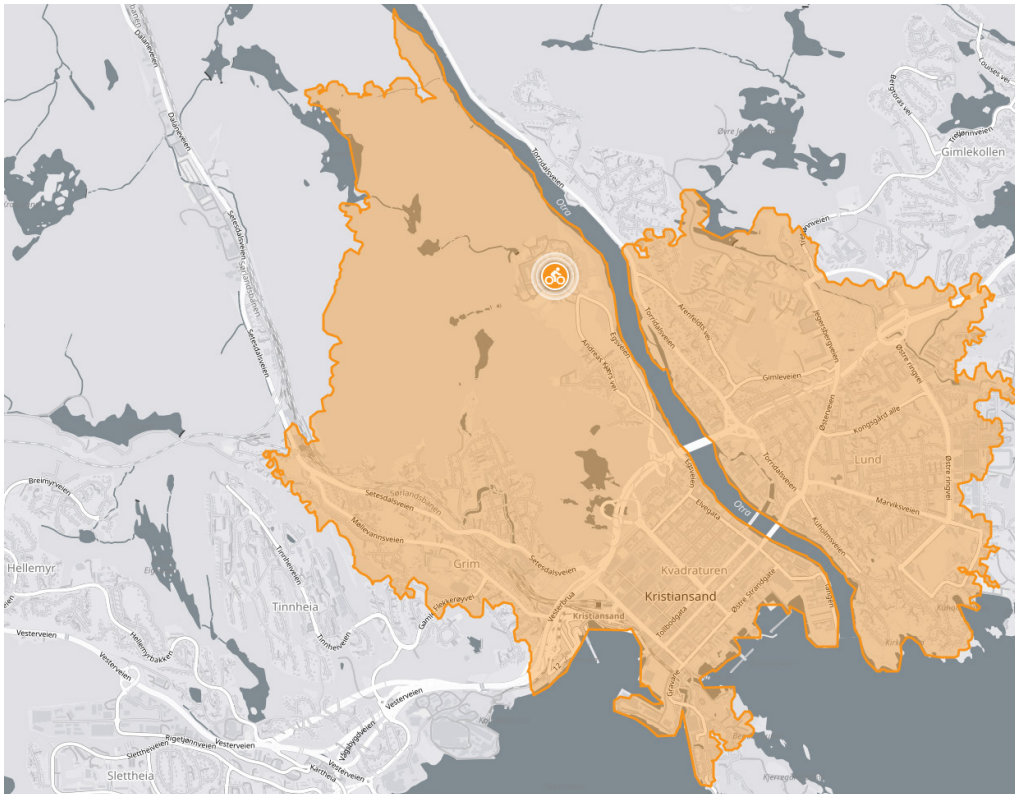


Figure 49: Show the 15-minute travel distance from Eg Hospital by bicycle. (TravelTime Maps, *n.d.*)

Eg Hospital, with its short distance to the city center and the planned connection to Uia, has great potential for increasing the proportion of cyclists at Eg. The hospital area has many residential areas within acceptable travel time by bicycle. Pedestrian and bicycle paths have been established in the city center and along the road network to Eg. More traffic and proximity to highways is a potential problem for traffic safety with intersecting movements and high speeds. Cyclists can alternate between bicycle lanes, pedestrian and bicycle paths, and cycling in mixed traffic. The area around Eg has a potential for higher bicycle share due to its planned connection to UiA and the higher number of working places the area can get. The terrain, parts of the current infrastructure, and a lack of connections limit the attractiveness of cycling today.

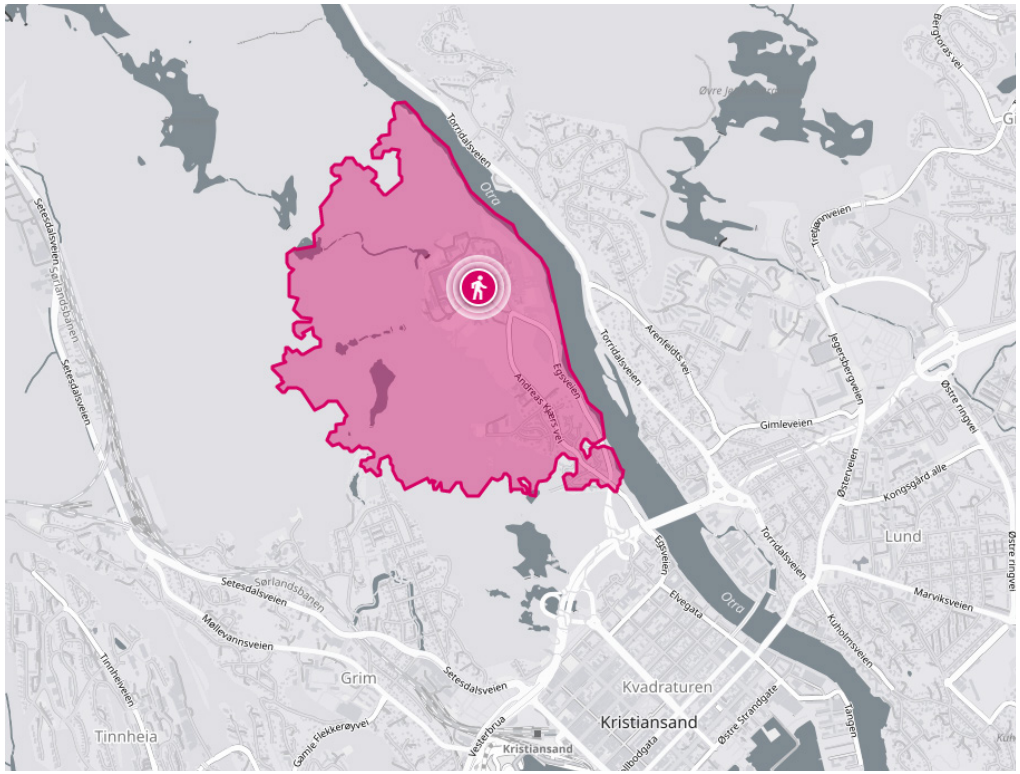


Figure 50: Show the 15-minute travel distance from Eg Hospital by walking. (TravelTime Maps, *n.d.*)

Figure 50 shows where you can walk within 15 minutes from Eg. This area is mainly forest and trails, but there are also residential areas in the south. It takes about 30 minutes to walk to Kristiansand city center. A walk to Eg from the city centre appears unattractive, especially compared to other transport alternatives. There are relatively good pedestrian crossings along the road network. The sidewalk and walking paths are mainly along one side of the car road, made for both cyclists and pedestrians.

INFRASTRUCTURE WITHIN EG HOSPITAL AREA

This chapter will contrast the existing road network that EG hospitals have today and Rambøll´s proposed road network transformation.

Existing road network:

The largest amount of traffic today goes from the road south-east and up to the main building, where the hospital's main entrance is located.
Today's central urban spaces are an important meeting place in the hospital area. One challenge today is that many of the trips to the hospital are car-based. Eg has access to roads of different widths today. Eg hospital area has smaller roads and is perceived as cluttered with poor sightlines and access. The bus, taxi, ambulance, helicopter, and private cars have the same access area in the center of Eg. The streets and urban space at the main entrance are today dominated by cars.

The local area connected to Eg has relatively good pedestrian and cycle paths, with sidewalks, separators, pedestrian-friendly crossings and roads. The main path to the hospital entrance is relative clear and has good sidewalks, but other places within Eg hospital area can be difficult to navigate to.

Figure 51: Show current road network within EG hospital area (made by author)

Proposed transformed road network:

The proposed transformation of the Eg hospital area is planned to have the main access to the hospital through a central urban space. Car traffic can come from E18 and Kristiansand city center through a new road along the avenue. The new bridge over Otra is reserved for public transport and cyclists. The main axis in a north-south direction follows the facade of the existing main building. This is a car-free pedestrian and bicycle axis that connects central urban space with the rest of the area. (Plan-, bygg- og oppmålingsetaten, 2016)

The main road network is shown with a blue line in the illustration. The internal road network, shown in dark red, secures connections for motorized traffic in other parts of the hospital area. The main road network for walking and cycling facilitates the shortest possible path for the soft road users to the area as well as internally.

Today's access will be discontinued. The main access is proposed to be laid along the current access to the hospital and further up to the central urban space with a new road connection. Central urban space will function as the area's hub, with facilities for all road user groups. (Rambøll, 2018)

The Eg bridge is an important quality in the development of Eg. The bridge paves the way for an efficient public transport and cycling route, which connects the city center, the university, and Eg hospital area together. This is an important measure to reduce the distance between Eg and the university. In addition, it is central to the sustainable development of Eg in the future. The hospital area is therefore very central, with the enormous potential to connect Eg hospital to the area over the river towards UiA. (Plan-, bygg- og oppmålingsetaten, 2016)

A new public transport and bicycle bridge over Otra, allowing the possibility of a new public transport route. Access for public transport to the hospital area will be from the roundabout through a new access road to the central urban space. Access square in central urban space will be equipped with bus stops in the immediate proximity of the hospital's main entrance.

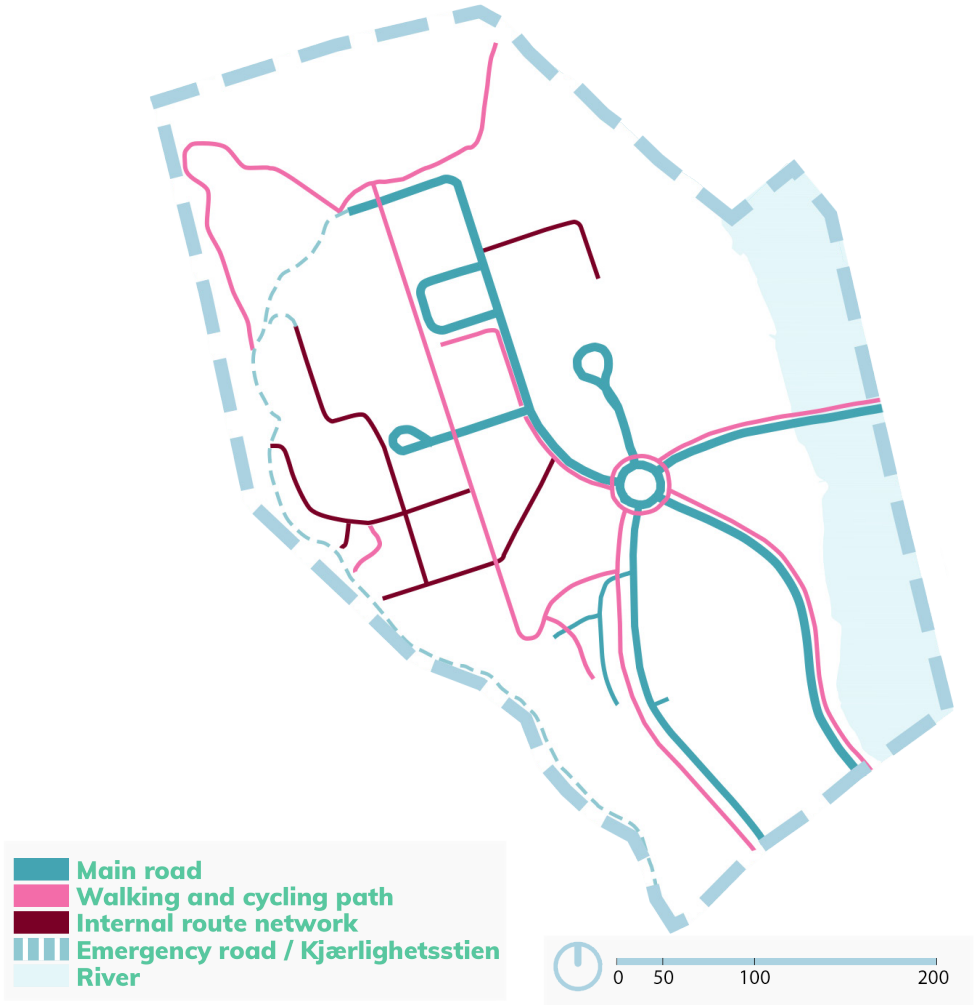


Figure 52: Show planned proposal and potential transformation of the road network within Eg. (Based on opportunity study from Rambøll).

The area has a largewtrail network within a close distance. A lot of these trails are located in “bymarka” where a lot of Kristiansand’s inhabitants use them daily. There are also different smaller trails in the hospital area. These are used as shortcuts between buildings and to bigger trails.

These trails, both in and outside the hospital area, strengthen the area and provide closeness to the blue and green structures. These trails can be very useful for both regular people and patients, where the trails can be used to stretch their legs, get fresh air, and be rehabilitative. It is therefore important to keep or supply good trail options when transforming the area.

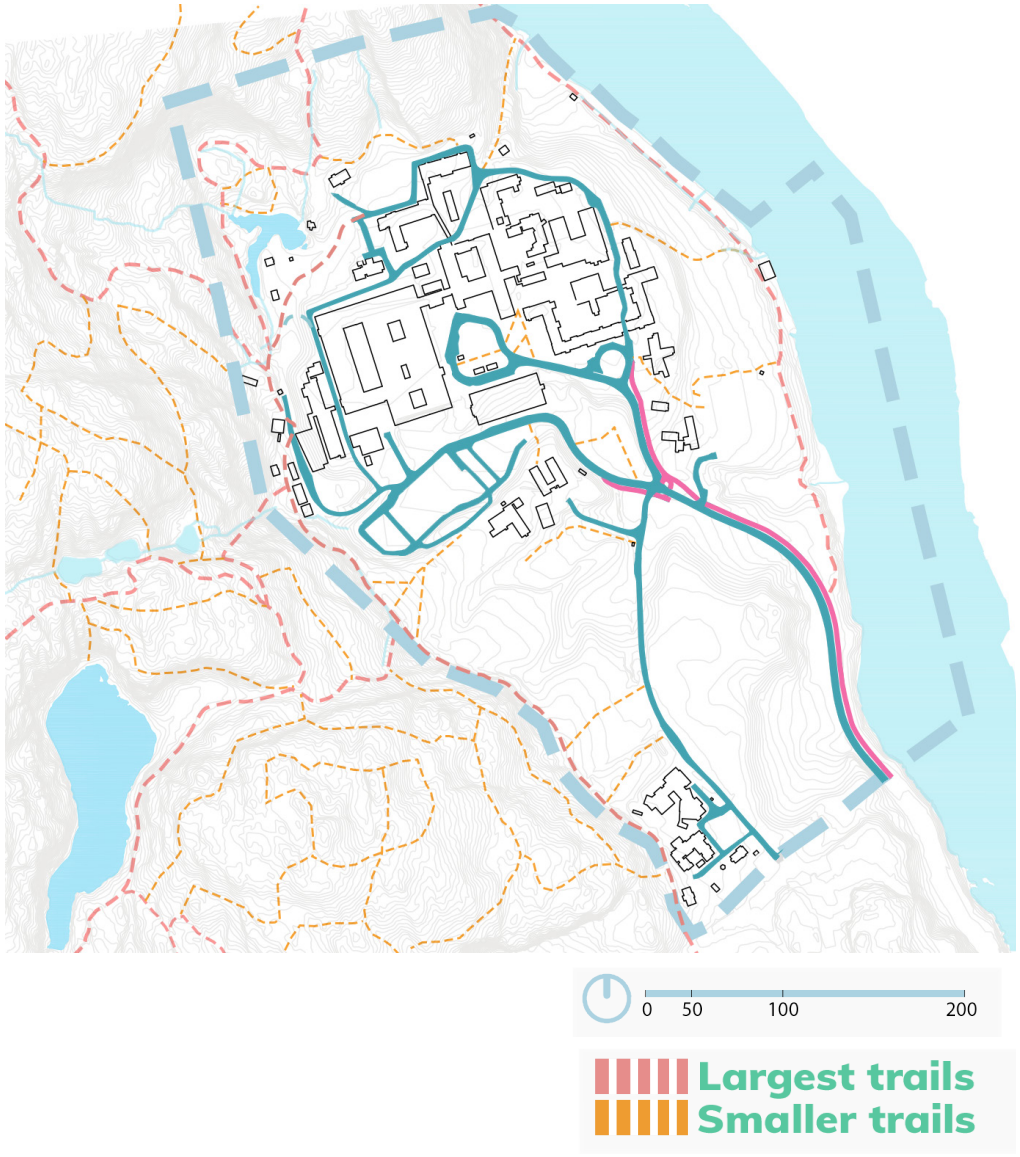


Figure 53: Show trails in near proximity to Eg

In parallel with the development of the feasibility study done by Rambøll, the new emergency room was decided to be located on the north side of the main building, as shown in the illustration. The background for the choice of site is internal hospital logistics and proximity to important functions in the main building. It is very important that the emergency department be as close to the critical hospital functions as possible, to avoid long distances after the patient arrives at the clinic by ambulance.

Access for ambulances from all directions (Kvadraturen, E18 and UiA) is through the roundabout and a new access road on the edge of central urban space to a new emergency room in the north. Access is separated from the actual hub in central urban space to minimize potential conflicts with other road users. A new emergency road provides alternative access for an ambulance if the main road is closed. In addition, it is possible to establish alternative access through a passage in the old Eg hospital. The emergency road can have at least three connection points to the hospital area's internal road system.

Helicopter landing space is proposed on the roof of the new emergency room, which is also the highest point in the proposed building structure. The feasibility study does not include technical studies in connection with the location of the helicopter landing. (Rambøll, 2018)

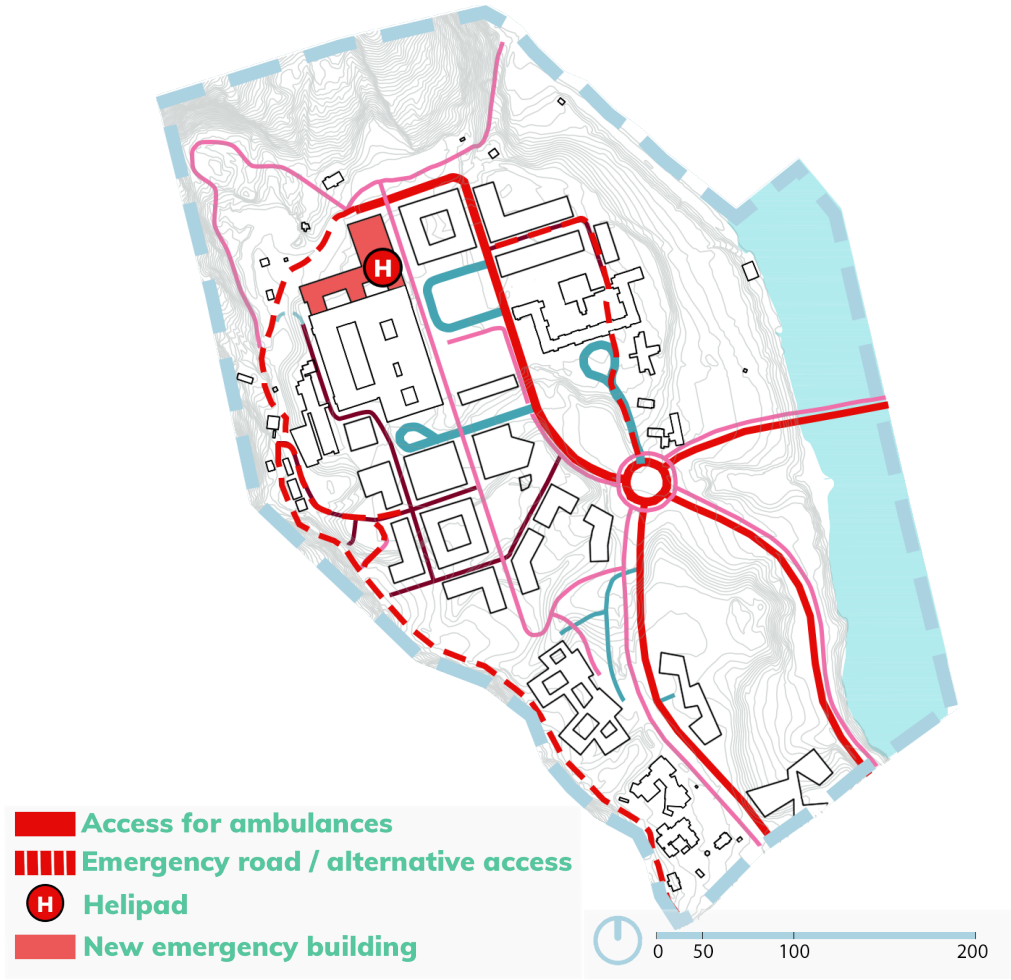


Figure 54: Show proposed emergency infrastructure within Eg hospital area. (Based on opportunity study from Rambøll) (Rambøll, 2018)

Parking

Large areas of Eg are today used for surface parking. Some of these will disappear in the proposed transformation. Surface parking is also inefficient in terms of land use, but with the development of Eg will be an increased pressure on the parking areas in the years to come. There is therefore a need to consider new solutions to provide the necessary parking.

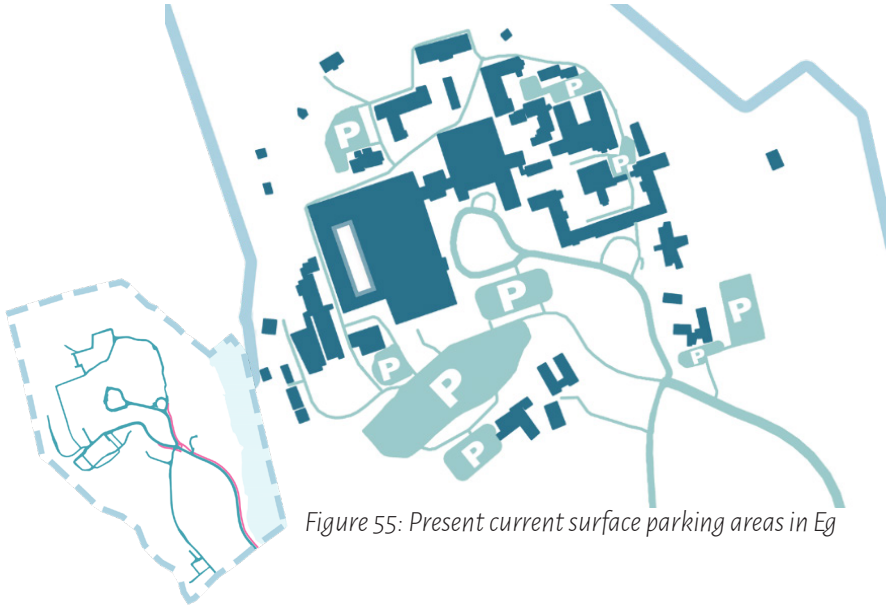


Figure 55: Present current surface parking areas in Eg

One parking option for the transformed Eg hospital area is proposed to use the current urban space on the ground floor to be extended at the same terrain level. This level is higher than the parking area south of the main building. The height difference can be used to establish parking basements with up to 1000 spaces on 1-2 floors. With its car access south-west of the planned urban space. (Rambøll, 2018)

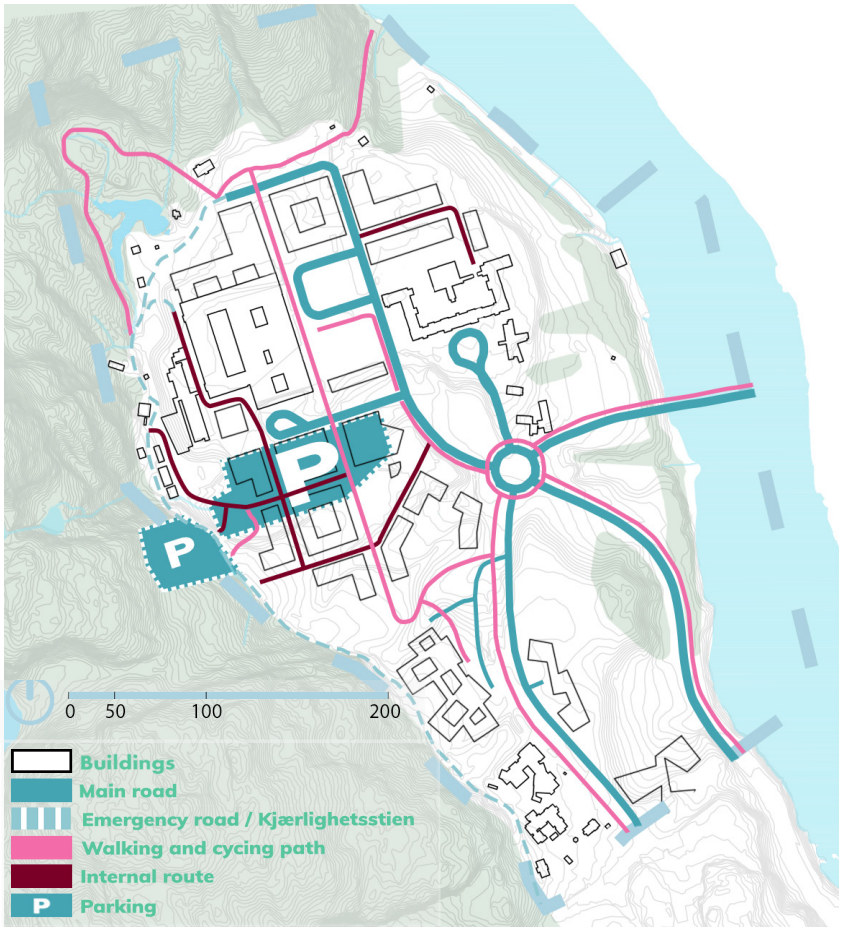


Figure 56: Show proposed parking solutions within Eg hospital area. (Based on opportunity study from Rabøll)

By establishing access to a parking hall within the terrain, it is also a possibility to build built-in parking in the west. A system of internal roads south of the current main building can be used to get to the parking hall.(Rambøll, 2018)

The last option is a parking garage centrally located, with approximately as many spaces as option 1. Parking garages will take up building space and area surface, but it is possible parking garages can be dimensioned for transformation to another function in the future. (Rambøll, 2018)

INFRASTRUCTURE CONCLUSION

To conclude the infrastructure chapter, Kristiansand is an important mobility point in the south of Norway, with its regional connections on land and ferries to Denmark. The infrastructure at Eg accommodates traffic, especially private cars. It's important for the mobility of Eg, to facilitate separation of travelers to keep people safe. Eg hospital area also has good connectivity to the trail network in Bymarka, giving diversity and natural paths. By limiting the car's presence in the streets, one can develop the street as a social arena, making it easier, more pleasant, and safer to walk. With the planned infrastructure proposals, this can create a hierarchy for the network, with pedestrians and cyclists having enough priority. So pedestrians and cyclists can have a path on their own instead of being aware of the motorists. Ambulances have clear paths and the helicopter has a better landing spot, making the area more functional. The infrastructure proposals can also strengthen the area with its good connection to UiA, giving new use of Eg, not only as an end station, but as a connecting point.

Eg, as so many cities and areas, are embraced by the car in public spaces. Due to the ever-increasing need for space for cars, the quality of public space has been under pressure, but it is in the public space where people walk, meet, are active and where city life begins. So, it's time to change the focus from cars to people and from asphalt to places that make the area more appealing.

BUILDINGS

This chapter will present the existing buildings Eg hospital has today, in contrast with Rambøll's proposed building structure transformation.

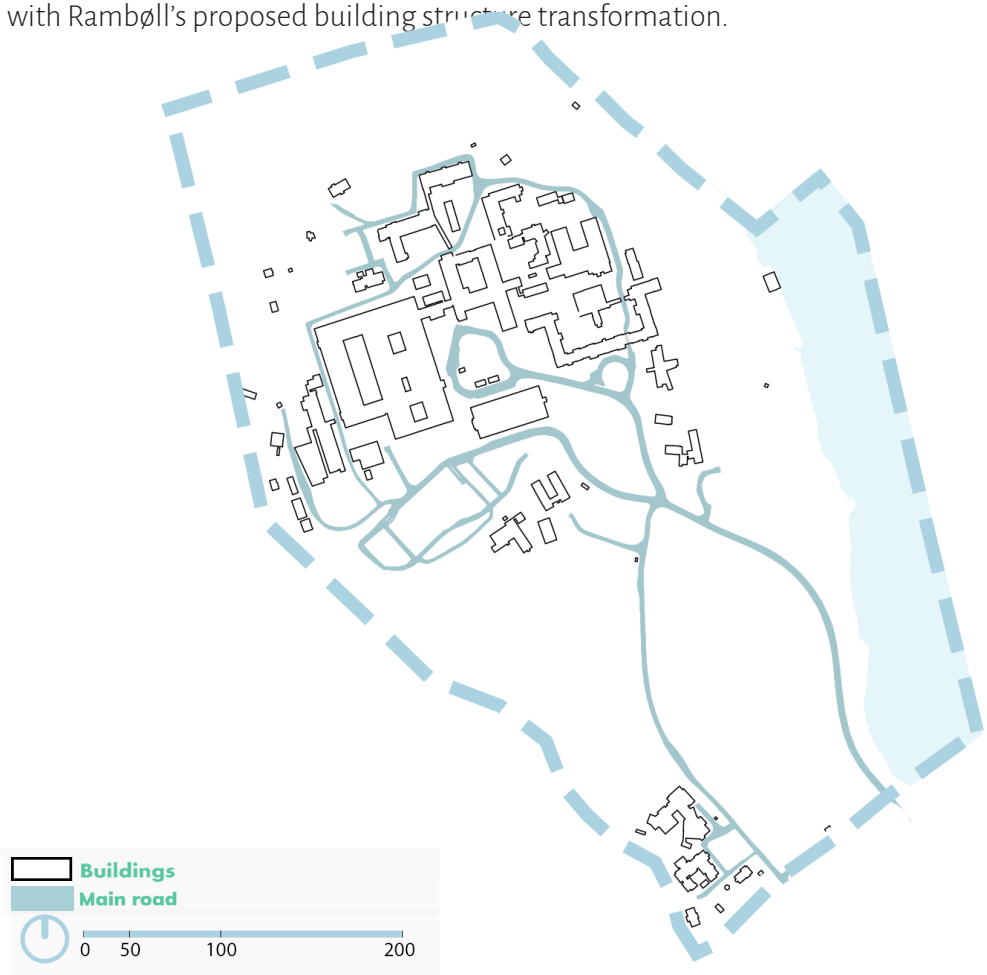


Figure 57: Show current buildings within EG hospital area (made by author)

Existing bildings:

Today, the hospital area consists of existing hospital buildings, roads, parking facilities, and a green structure.The buildings are a mixture of large building volumes and smaller scaled buildings. Today's building mass corresponds to approx. 90,400 m gross area, of which 60,000 m is expected to be used further in 2030. (Sørlandet sykehus, 2018)

Figure 58: The main building and the hospital entrance

The building stock today includes the main somatics building, emergency rooms, psychiatry, administration buildings, and institutions. Large areas are set aside for parking. At the main entrance, there is a helicopter landing site and a bus stop. There is a need for major area expansions and upgrades in the short and medium terms. A new emergency building in connection with the current main building currently seems most relevant to cover this need. Today's main building, from 1989, has a life expectancy of 60-80 years. It is therefore assumed that the building will be still in use long after 2035. The building's main construction, with large column-free areas and technical mezzanine floors, gives great freedom to rebuild. (Stav et al., 2018).

Proposed transformation:

Figure 59 shows the total potential for new infrastructure with main roads and overall building structures as well as existing technical infrastructure. The total potential for new construction in the entire area has a building structure organized into quarters. These quarters are placed around the main axis, central urban space, transverse main roads, parks, and green structures, as well as the existing main building and the old Eg hospital.

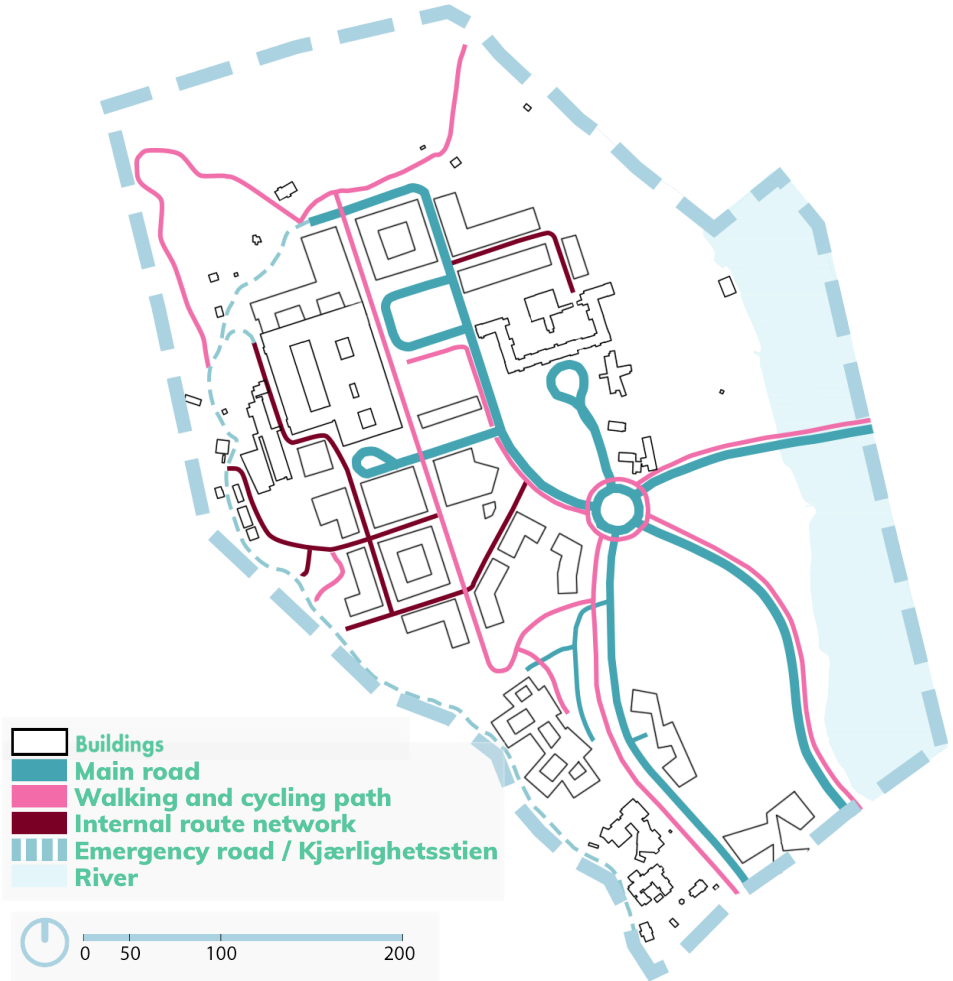


Figure 59: Show planned proposal and full potential transformation of buildings within Eg. (Based on opportunity study from Rambøll)(Rambøll, 2018)

Figure 59 shows the total potential for new infrastructure with main roads and overall building structures as well as existing technical infrastructure. The total potential for new construction in the entire area has a building structure organized into quarters. These quarters are placed around the main axis, central urban space, transverse main roads, parks, and green structures, as well as the existing main building and the old Eg hospital.

This holistic approach and transformation must be robust and flexible enough to be able to be developed over a long period of time, at the same time as it must take care of the prerequisites. The development is therefore based on the main building's location and direction, but at the same time allows the building to be changed or rebuilt in the future, and in the long term, possibly replaced by new buildings.(Stav et al., 2018)

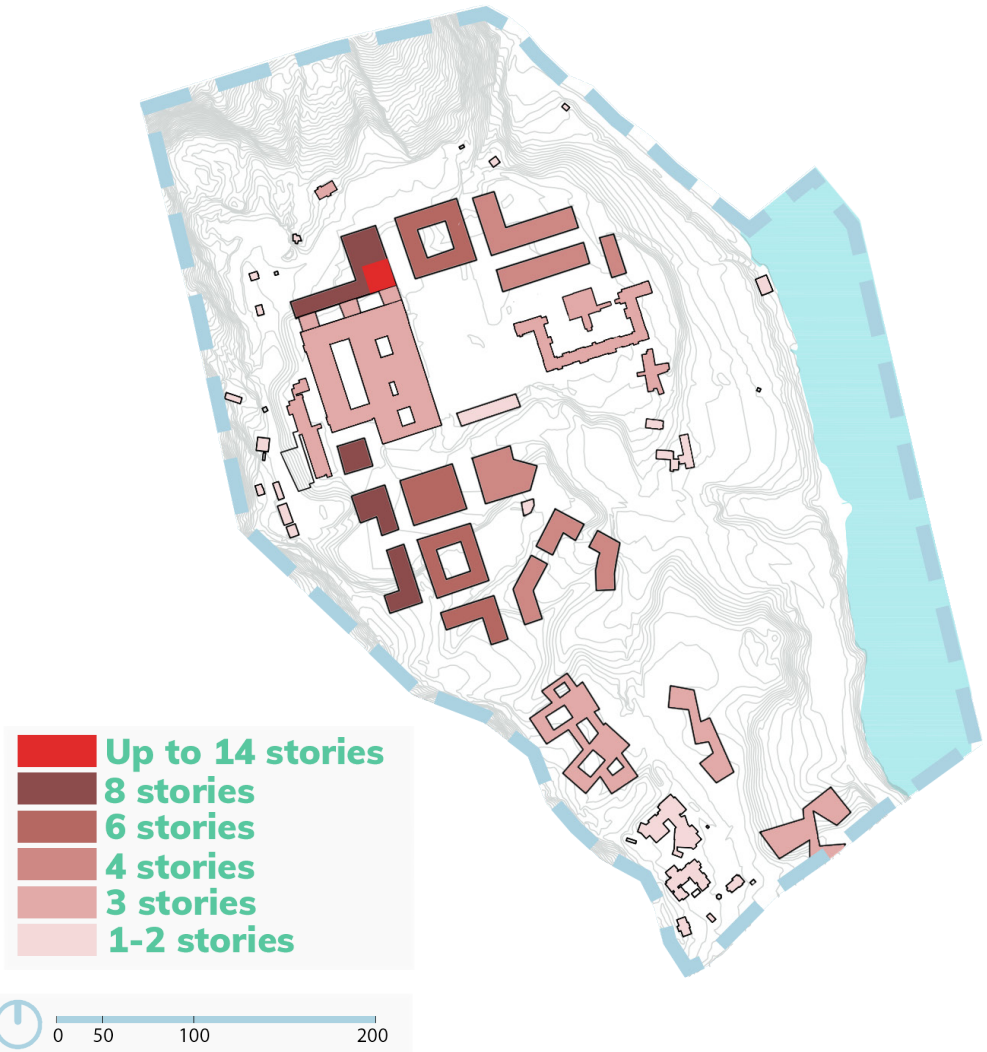


Figure 60: Show transformation proposal of building height within Eg. (Based on opportunity study from Rambøll)(Rambøll, 2018)

Today's building height is no higher than 3 stories. Varied height can provide a better sense of place with more depth. The planned transformation proposes that the new buildings will be stepped down from Bymarka towards the old Eg hospital, Otra, and towards the residential areas in the south. The floor height can vary between 3-8 floors, with the possibility of a high-rise building of 14 floors within Eg. This provides good sightlines from both buildings and Bymarka

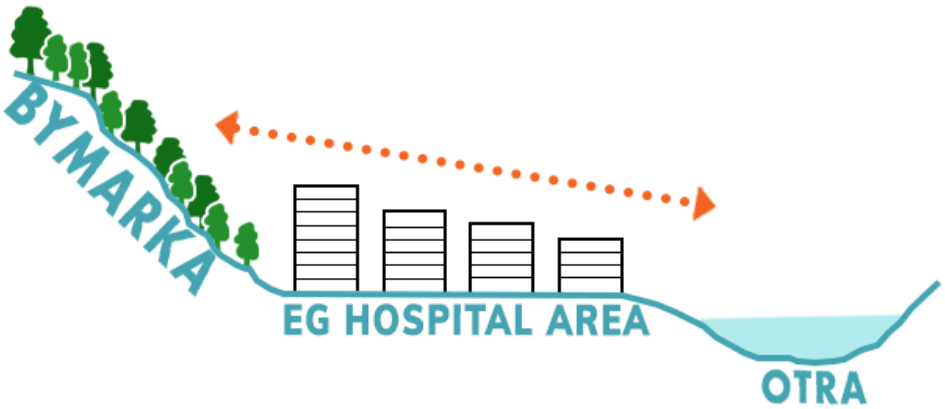


Figure 61: Building heights providing important sightlines from both buildings and Bymarka. (Based on the possibility study by Rambøll)(Stav et al., 2018)

When placing new buildings on flat terrain, existing sight lines should be considered. New buildings should not block views of the river or create shade for valuable urban spaces.

VIEWING CORRIDORS

The building structure is organized in quarters around the main axis, central urban space, transverse main roads, green structure, as well as the existing main building and old Eg hospital.

The main axis connects the hospital area and is an important connection between the hospital area in the north and the new psychiatric building in the south. The building structure in the northern part of the area is oriented according to the hospital's existing structure. The main axis, in a north-south direction, follows the existing main building's façade, connects the central urban space with the rest of the area, and acts as a structuring quality for the quarters. (Rambøll, 2018)

Infrastructure, access, internal roads and connections, central urban space, squares, and green structures further define the framework. The axis towards Bymarka, the cultural landscape, the parks and Otra are taken care of in the structure.

Based on existing buildings and green structures, it is the continuous main axis established with its side axes. These axes create a connection between hospital buildings and the river and form several connections with a green presence throughout the area. Through the axis, the natural areas such as Bymarka, the river, the central urban space, and the hospital buildings are connected. At the same time, continuous green corridors increase biological diversity by providing safe passageways for animals and insects.In the middle of the hospital area, a central urban space is established, so that all new quarters have a short way to an attractive urban space.

Green areas and open-air areas define the origin of the main axis in the north and south. The main entrance to the hospital and central urban space is proposed to be moved to the north according to the current location. The access zone will then be closer to the future emergency department. Central urban space is defined by the surrounding construction sites and must be at least 10,000m². (Rambøll, 2018)

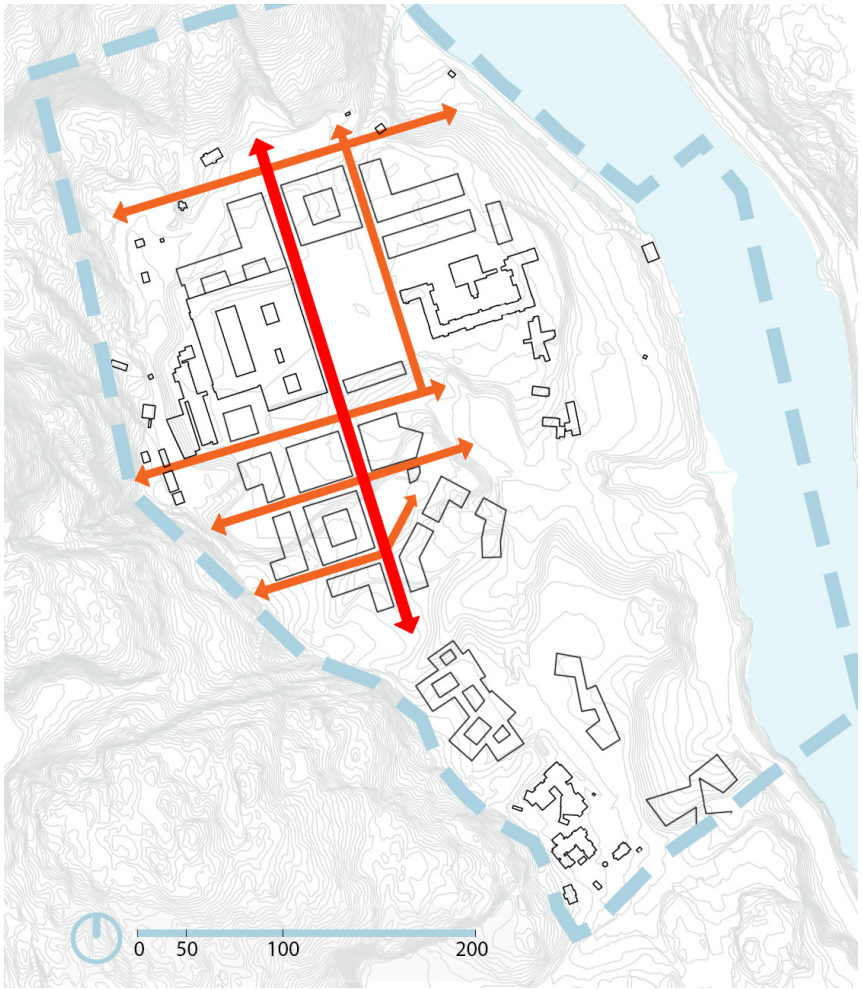


Figure 62: Sightlines and viewing corridors within Eg hospital area. (Based on the possibility study by Rambøll)(Rambøll, 2018)

ARCHITECTURE AMD PROTECTION

The main hospital building at Eg, in addition to the protected and preserved buildings, will be continued in the transformed building structure. Today's main building is assumed to be used, at least until the year 2050, but the building structure considers any change or conversion in the long term. Other buildings are assumed to be removed or rehabilitated as part of a new building stock.(Rambøll, 2018)

The Eg hospital area has a beautiful location in the transition between Bymarka and the river Otra. The topography and the dense vegetation form a marked transition towards the cultural landscape with the hospital. The cultural landscape contains traces from many periods. The ravine "Bølgane" is an important landscape element. Within Eg it is a settlement area and ironworks. This tells us about an early settlement and the old avenue gives extra value to the cultural landscape. (Stav et al., 2018) The National Heritage Board's justification for the protection of the buildings states the following: The purpose of the protection is to preserve one of the early examples of government investment in psychiatry. The protection will secure the remaining parts of the original facility from 1881 and selected examples of later construction stages. The protection shall ensure the buildings' original design, use of materials and detailing, their mutual connection and park-like outdoor area indicated on a map.(Stav et al., 2018)

The transformation and detailed regulation must consider the preservation of the buildings and the surrounding area, set aside as a consideration zone in the area regulation. The old buildings from the end of the 19th century are centrally located in the area and form a fund motif for access from the south. Several of the buildings in the hospital area are listed and constitute one of the oldest preserved hospital environments in the country and have significant health and architectural historical value.

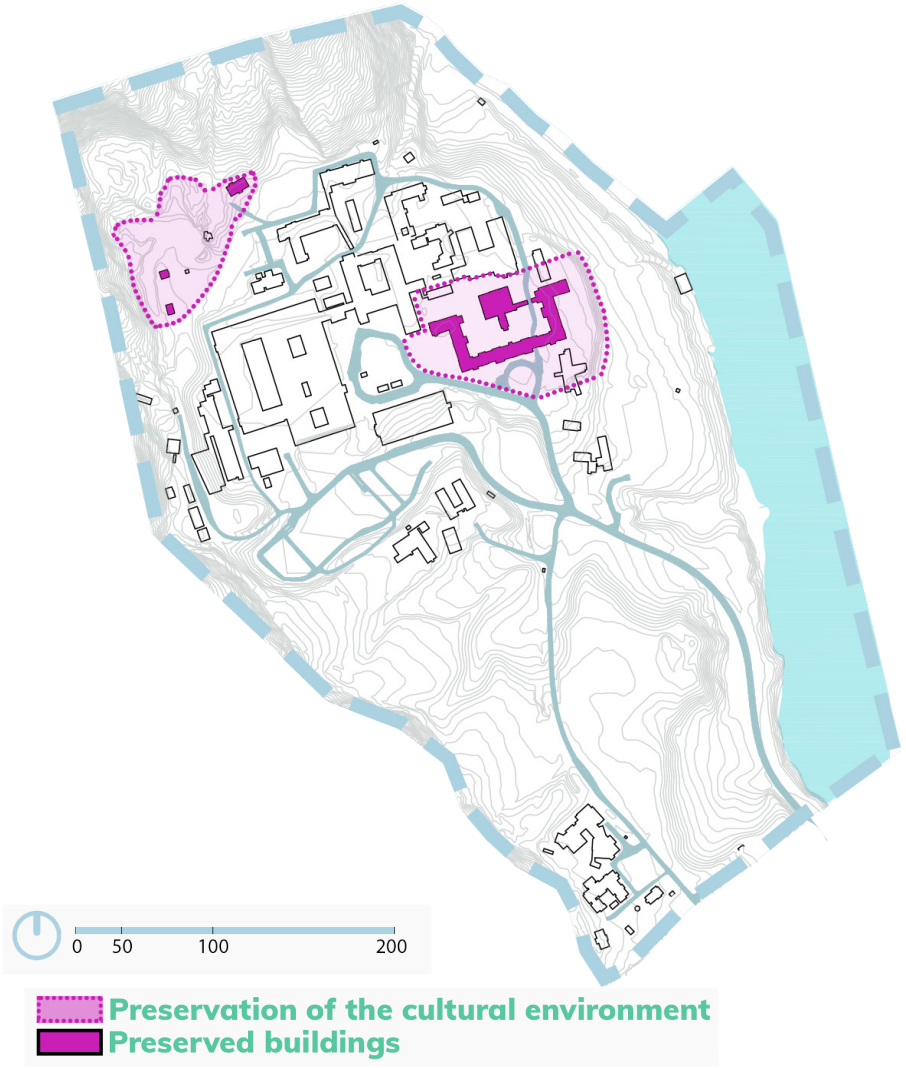


Figure 63: Protected and preserved features in Eg hospital area. (Stav et al., 2018)

In addition to the protection within the Eg Hospital area, there is also a nature conservation area of 16 738,5 daa. This conservation area is mainly Kristiansand municipality forest, but also urban areas like Eg. Nature conservation is about protecting wildlife close to Kristiansand city. It's important to know about this protection and not damage natural habitats or build things that could hurt wildlife. (Miljødirektoratet, 1937)

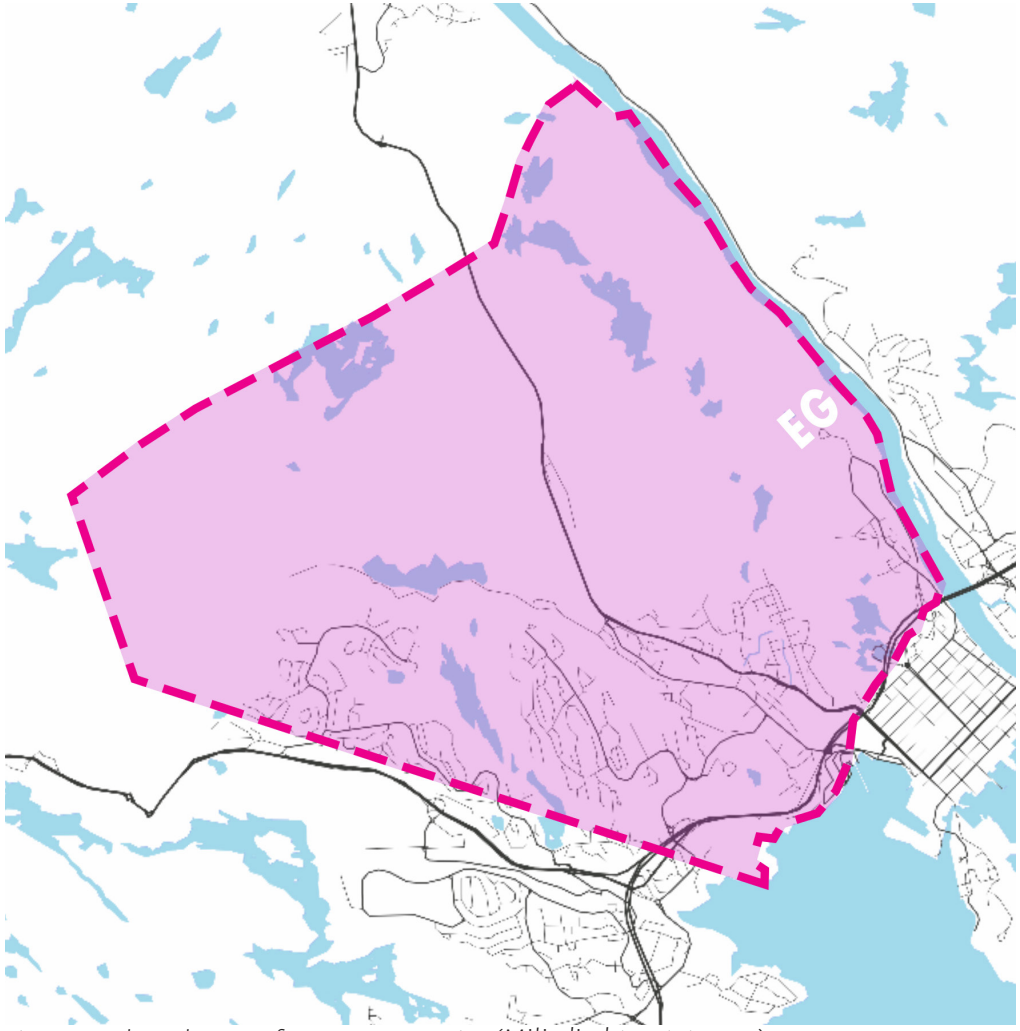


Figure 64: Show the area of nature conservation (Miljødirektoratet, 1937)

BUILDING FUNCTIONS

The distribution of functions in the transformed area is proposed as shown in figures 65 and 66, with the hospital functions primarily in the northern part. Health-related urban development is prioritized in the areas marked in blue. The plot furthest south is the easiest for Sørlandet hospital to free up for other use than hospital functions.

Figure 65: show how Eg hospital area can be transformed. The building functions will be divided between hospital functions and health-related functions.(Rambøll, 2018)

The area north of the central east-west axis is primarily intended to be reserved for hospital functions. In the south, it paves the way for health-related urban development. A new psychiatric building is under construction (the red building to the left). The building's location and overall design, as shown in figures 65 and 66, will be important to establish connections between the new building and the rest of the hospital area.

The possibility study done by Henning Larsen and Rambøll proposes that the emergency building should be located on the north side of the main building. The background for the choice of site is internal hospital logistics and proximity to important functions in the main building. It is very important that the emergency department be as close to the critical hospital functions as possible to avoid long distances after the patient arrives at the clinic by ambulance.

Figure 66: Blue = Health-related urban development, Red = Hospital functions(Rambøll, 2018)

The location of the new emergency room is based on clinical needs and proximity to the hospital's critical functions in the current main building. It is very important that the distance that patients must be transported for necessary examinations, operations, and other critical treatments after they arrive by ambulance is as short as possible. An existing emergency room is located at the northeast corner of the main building. All the critical functions for the emergency room are organized around this locality. A radical change in location will necessitate extensive internal rebuilding in the current hospital. (Rambøll, 2018)

It is recommended that all clinical functions with urgent and proximity needs, as well as visit-intensive functions, be located around the hospital's main access in a central urban space. The location of the new emergency room is based on clinical needs and proximity to the hospital's critical functions in the current main building. It is very important that the distance that patients must be transported for necessary examinations, surgeries, and other critical treatments after they arrive by ambulance, be as short as possible.

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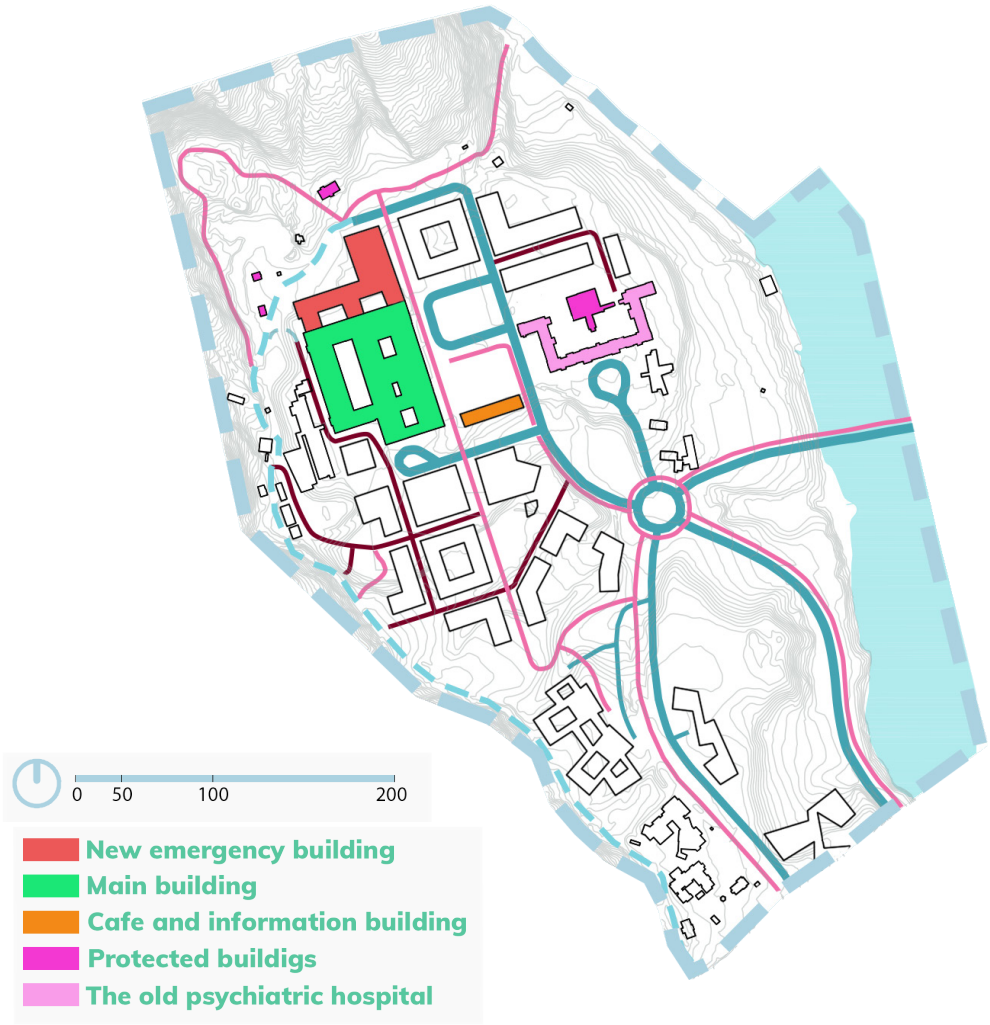


Figure 67: Shows highlighted buildings, having important functions for Eg hospital area. (Made by author)

BUILDING CONCLUSION

The building structure in Eg hospital consists of various types of architectural styles. This is due to the history of Eg with different buildings built at different times and after different building needs. Smaller buildings, which were needed, were built to meet the hospital's needs, but this has given the area poor infrastructure with no clear sightlines. This makes the hospital area seem cluttered and unorganized.

The planned proportional presents a possible development within the framework of the overall plans, in a longer perspective. This perspective shows the possible development of the holistic approach in the future with the replacement of the current main building. Car-dominated outdoor areas and large, enclosed buildings. The hospital area at Eg is currently not a place you want to stay. A hospital will make people healthy and promote good health, not only within the hospital's four walls but in the whole area.

BLUE-GREEN STRUCTURE

A blue-green structure can be defined as a network of blue and green values that exist within the natural and semi-natural areas around us. These can be values such as outdoor life, rural areas, coasts, and fresh water that together contribute to strengthening ecosystems and preserving biological diversity.

Eg has a lot of green surface areas, with parks, fields and forest surrounding the hospital area. There are many large trees that give the place character. The park north of the area are valuable fields and nice areas to stay in. Trails and paths in the forest, epically "Kjærlighetsstien" connects Bymarka and leads down to the river along Otra. Kristiansand municipality forest is called Bymarka, where bathing spots, bike paths and miles of hiking trails can be found.

Figure 68: shows an illustration of blue-green structure around Eg hospital area and city of Kristiansand. (Stamen Maps, *n.d.*)

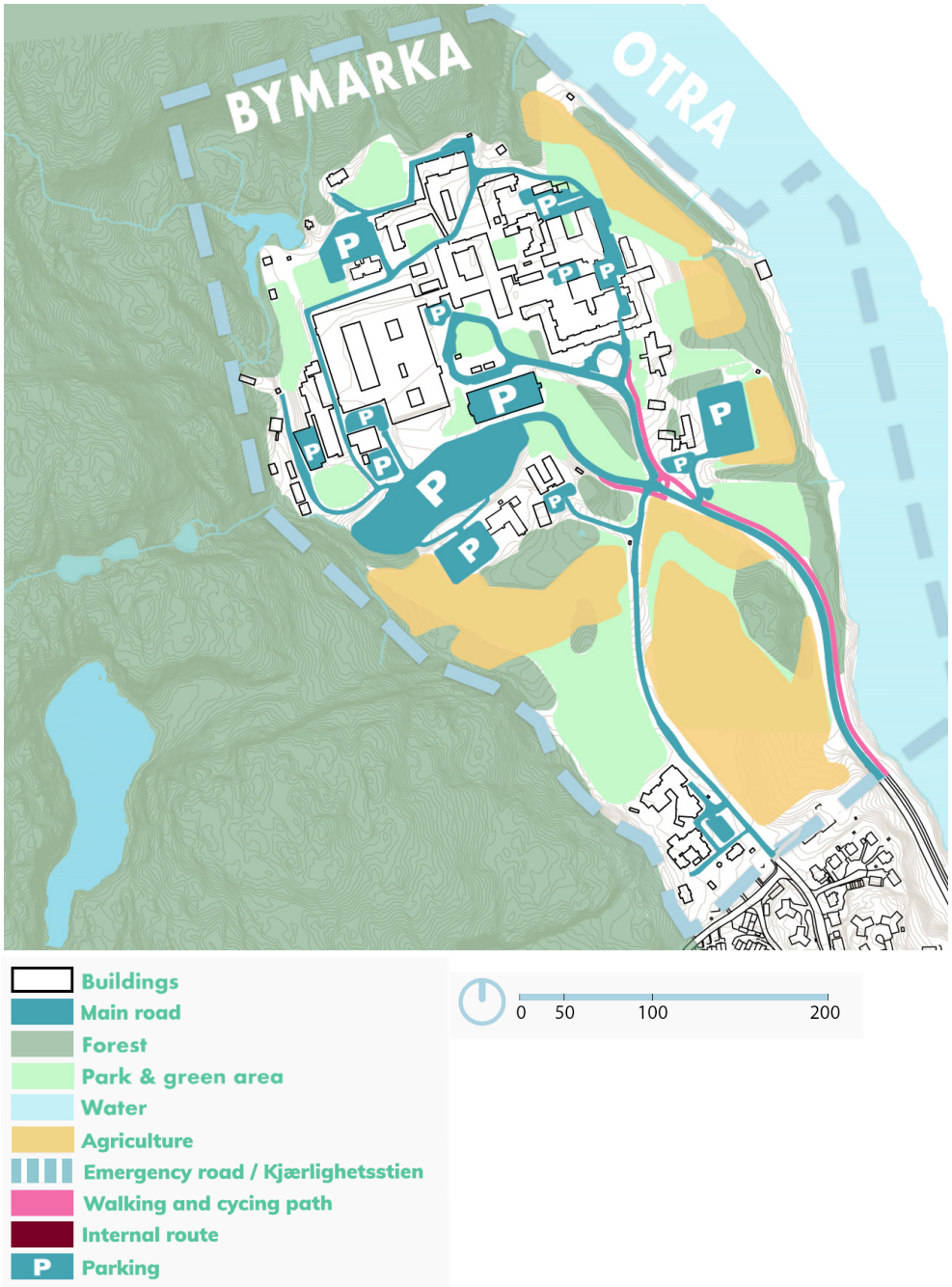


Figure 69: Illustrates current blue-green structures in Eg.(Made by author)

Existing blue-green structure:

Figure 69 shows that the Eg is an area that mainly consists of hospital buildings, parking surfaces, and blue-green structures. The area has contiguous parks or recreation areas surrounding the hospital functions. The area consists of varying green elements with a close connection to the river. This provides good conditions for biological diversity.

The case area extends down to the river, which includes valuable green structures. The river and the forest are today's natural delimitation of the hospital area. The river Otra is also perceived as a barrier that separates two important institutions: the hospital area and the University of Agder. The river fragments the hospital area, with few physical crossing opportunities. Municipal plans lay down guidelines for establishing a bridge across Otra, connecting the two areas.

The main green elements within the hospital area includes undeveloped areas or fields without trees. This gives the area an open sense to it. Within the building are there some smaller green parks and gardens. There are also some sections of trees close to the buildings. In addition to the whole Eg Hospital area surrounded by forest, Bymarka, and the river Otra, except the areas entrance in the south. The wave form an important landscape element and Kjærlighetsstien which is located in the edge zone is an important hiking trail and can be used as an emergency road in the area.

Proposed transformation:

The planned transformation proposes to preserve the southern part of the area, characterized by a large part of the current green structure, in line with the area regulation. Available construction areas are therefore smaller and not contiguous. For this reason, the buildings in the south are more scattered than in the northern area.(Rambøll, 2018)

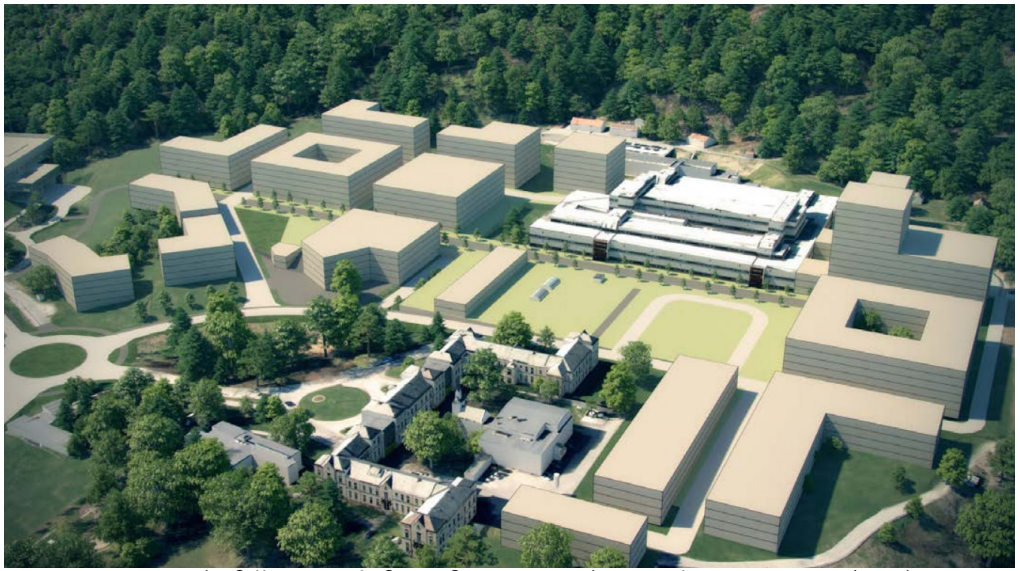


Figure 70: Present the full potential of transformation with green elements surrounding the hospital.(Rambøll, 2018)

The transformation will take care of much of the green structure. There are many large trees that give the place character. The green areas provide valuable spaces to stay in and form contact between buildings and Bymarka.

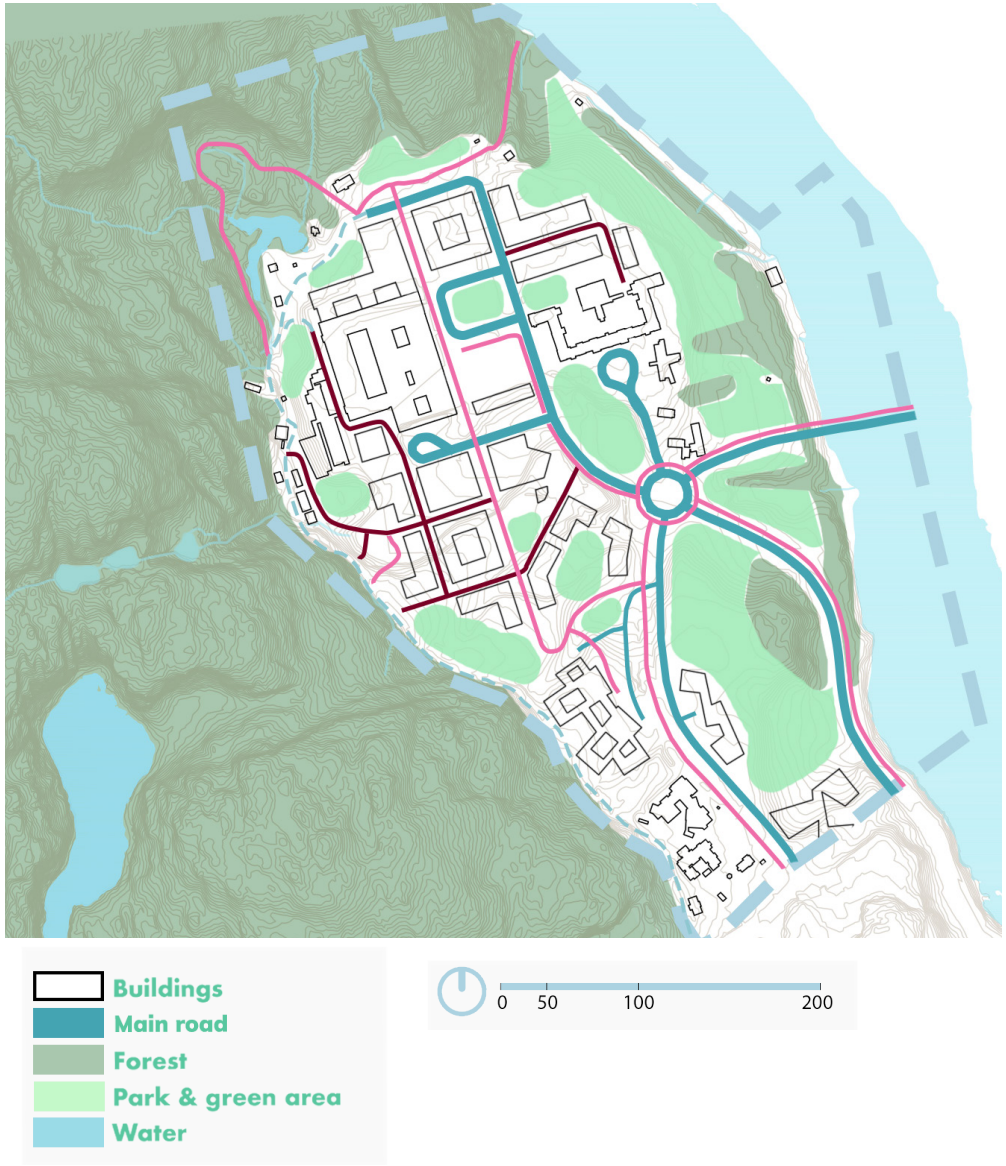


Figure 71: Illustrates the blue-green structure after a transformation of Eg hospital area. (Based on opportunity study by Rambøll)(Rambøll, 2018)

BLUE-GREEN STRUCTURE CONCLUSION

The blue-green structure is especially important in cities as it helps to better cope with climate challenges. In addition, it indicates that blue-green surroundings can have a positive effect on public health, help clean the urban air, create shade and shelter, and generally strengthen the quality of the cities (Gehl, 2010, p. 190). It is therefore important to keep essential green structures in the area to continue to give people, especially patients, the opportunity to use these areas and have easy access.
A blue-green infrastructure in Eg where trees, plants and water become an integral part of the development helps to ensure sustainability while creating innovative and beautiful meeting places that improve the quality of life for the inhabitants and the value of the local area.

DETAIL AREA AND URBAN SPACE

Figure 72 shows the final delimitation area for the design proposal. This is further referred to as the "detail area." The detailed area will transform the current central urban space, the nearby buildings and infrastructure.

Current urban space has large surfaces of asphalt combined with green elements, such as parks and trees. The area is developed for car users, with a lot of parking spots close to the main entrance. The structures in today's urban space were made for easy access for cars, taxi and buses, for people to be dropped off. There are no clear areas for different means of transport, except for the bus stop. Cars can park and stop multiple places, there is no clear areas for taxi and the overall traffics outcomes can be perceived as messy. The urban space miss identified areas for traffic and use.

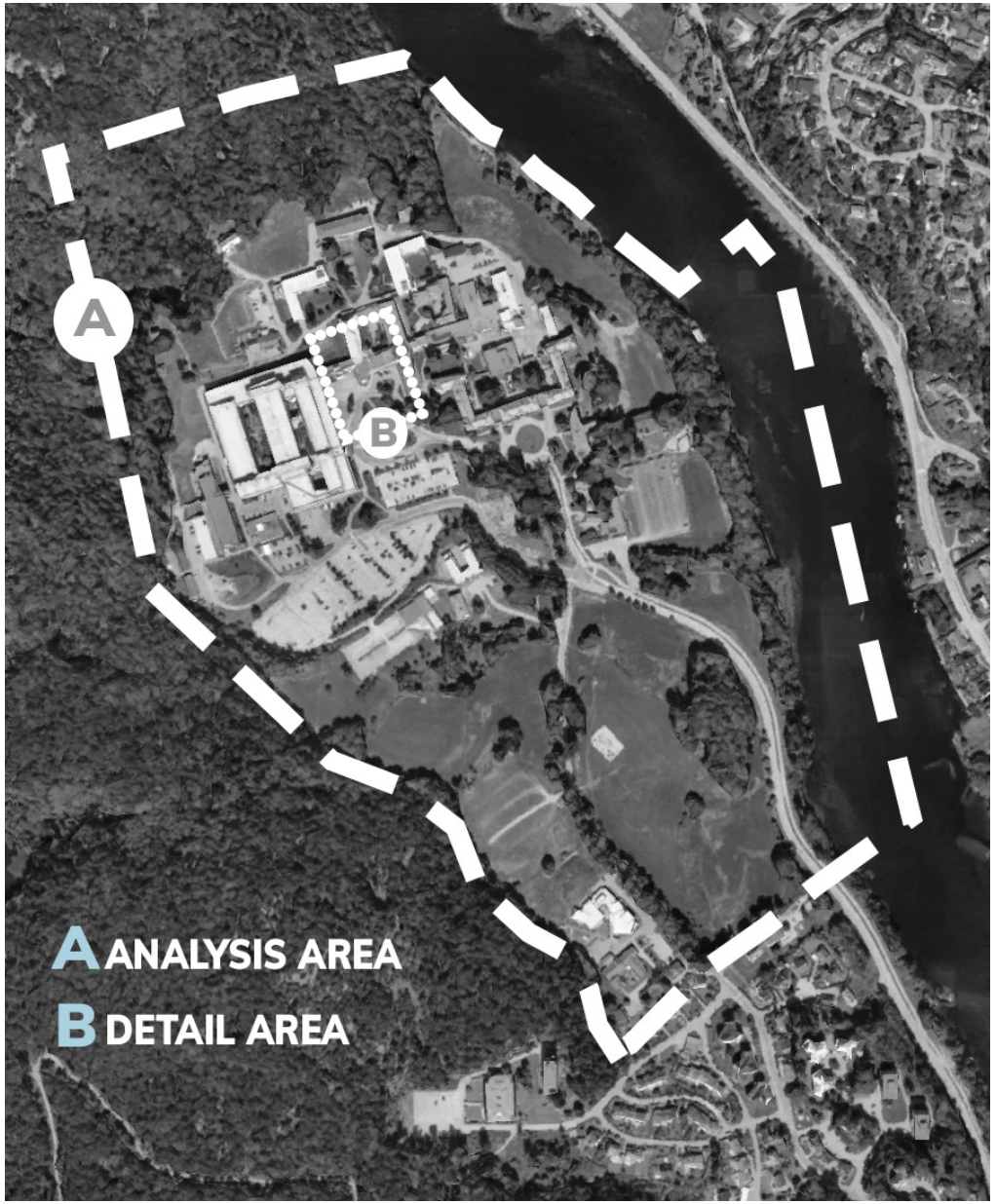


Figure 72: Detail area focusing on the central urban space (Made by author)

Today's urban space has an areal of 7720 m2. Within these 7720 square meters are bicycle parking, bus stops, car parking, a helipad, green areas, trees, and undefined user surfaces. It is surrounded on three sides by hospital buildings and a two-story high car park in the south. This urban space offers a key node and entrance point into the hospital buildings, with multiple entrance points to the different departments. Today's infrastructure, the placement of the current urban space, and the buildings around the urban space can also be a barrier to the hospital's other buildings. Making poor access routes to other hospital buildings from the urban space. This area performs relatively poorly as an urban space, with areas not being used and unidentified areas for traffic.

A central urban space is proposed to be located to the north, in close proximity to the current access zone. This supports the planned relocation of the main entrance closer to the new emergency room and provides a better opportunity for a good connection between the main building and the building for service functions for the public.

Figure 73: Show todays current central urban space. (gathered form Google earth, edited by author)

Proposed infrastructure, presented earlier in the analysis chapter, shows that both walking and cycling paths end in the central urban space. In addition to this, it is planned that the bus stop will be here. The planned main street is an important axis that extends from the end of the hospital area in the north to the access road to the area in the south.

The area is bounded by both new and existing buildings in interaction with the axes of the main road and walking and cycling paths. The buildings that revolve around the detailed area to the east are part of the city's cultural heritage protection. This, in conjunction with the fact that the main entrance to the hospital is located west of the central urban space, contributes positively to the urban space with active facades and variety. The design and facade of the buildings have not yet been decided, only the content of the buildings in terms of where the various hospital departments will be. The thesis will therefore go in depth into how this central urban space can be transformed and provide proposals for how the area can be designed.

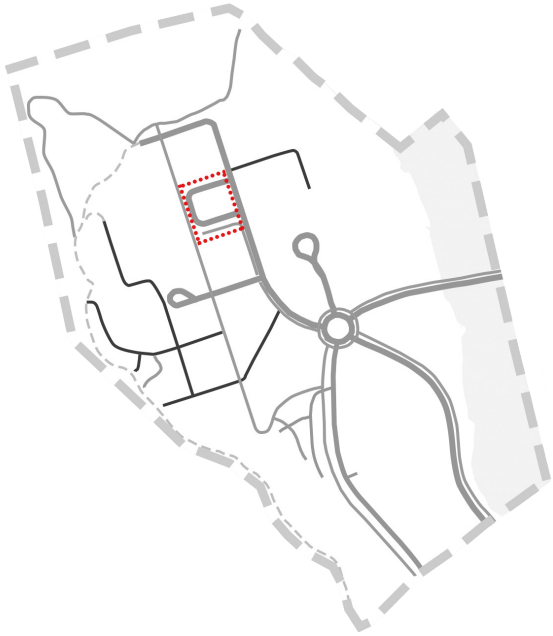


Figure 74:Showing the transformed area, highlighting the new central urban space

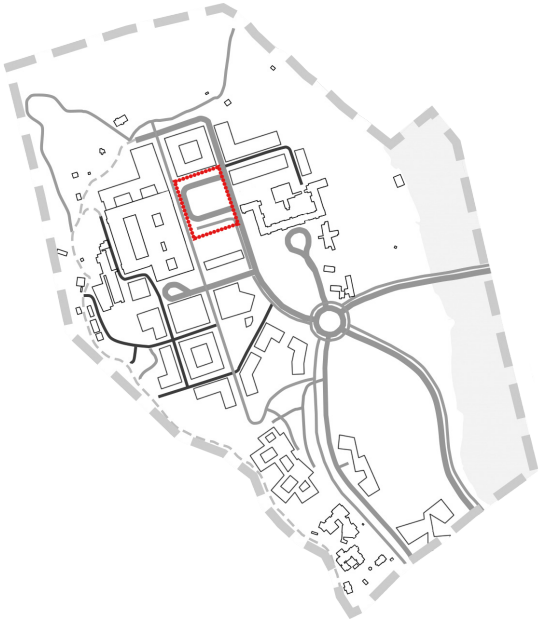


Figure 75:Showing the transformed area, highlighting the new central urban space surrounded by buildings.

A central urban space of at least 10,000 m² shall be established at the main entrance to the hospital with a stop for at least two buses, taxi stop, HC parking, bicycle parking, allergy-free planting, furnishing, and lighting. Within central urban space, it shall be provided for safe traffic for all groups of pedestrians, including people with reduced mobility.

Emphasis will be placed on high quality in the use of materials and the design of the area so that it appears attractive, functional, and a good urban space, but it will also include visit-intensive features.(Stav et al., 2018)

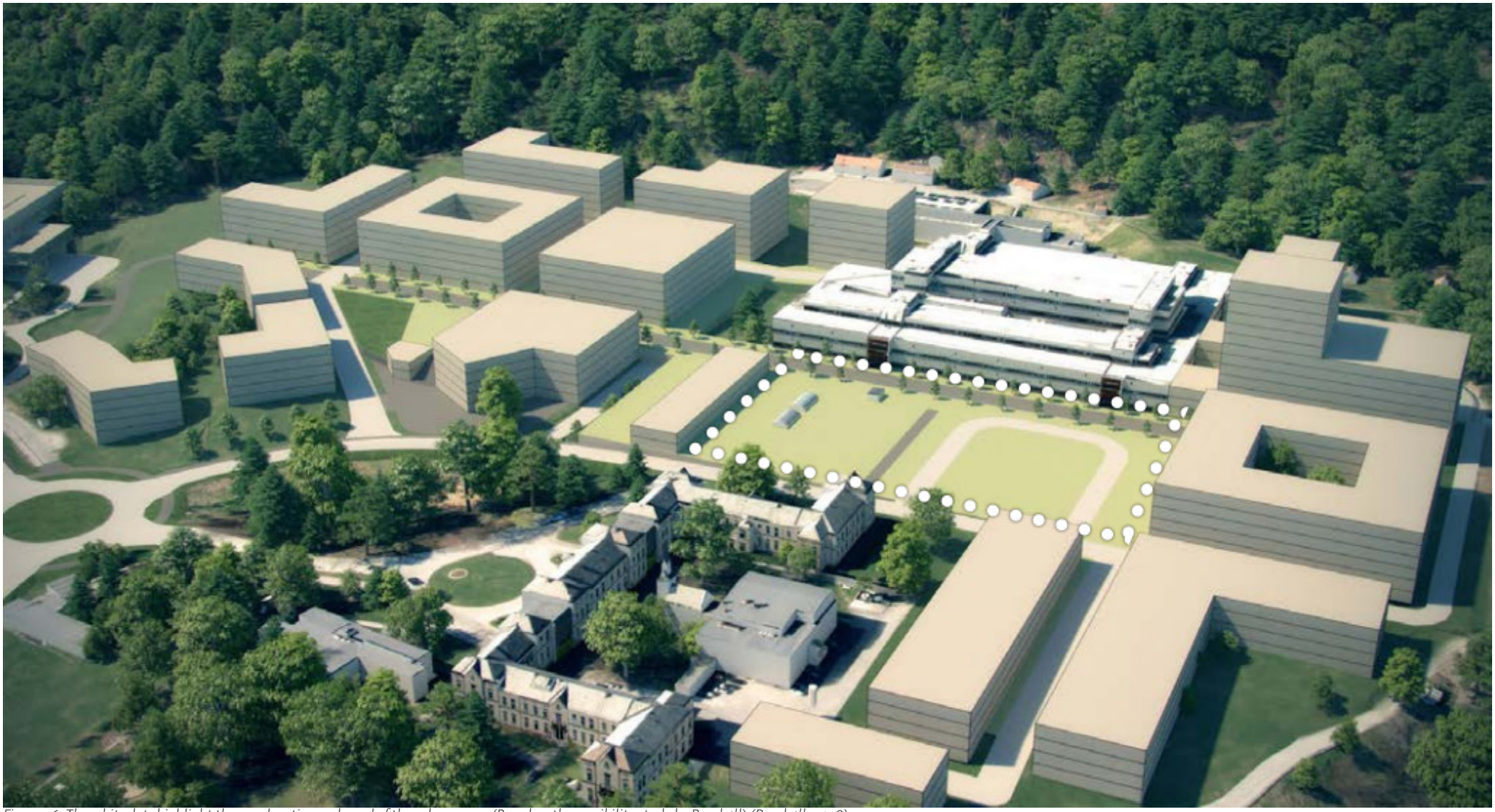


Figure 76: The white dots highlight the new location and areal of the urban space. (Based on the possibility study by Rambøll) (Rambøll, 2018)

THE SPATIAL ANALYSIS CONCLUSION

The spatial analysis has presented knowledge of how the area is used today and presented a proposed transformation of Eg hospital area. This information shows how buildings are placed to optimize utilization, the downsizing from Bymarka, possible sight axes, microclimate, and functions. These qualities are important to establish when transforming the central urban space in the quarter to become a good living and outdoor space for users while supporting the large structures. In addition to understanding how the central urban space relates to the main structure.

SOCIO-CULTURAL ANALYSIS

The purpose of the socio-cultural site analysis is to form a better picture of how Eg and Kristiansand are categorized. There is no separate data for demographics and living environment in Eg, but since Eg has a central location and is only 2 km from the city center, can figures from the municipality and the city center provide a picture of how Eg is. A socio-cultural analysis provides insight and statistics, giving an indication of how living conditions are in the areas associated with Eg is.

DEMOGRAPHY AND LIVING CONDITIONS

In 2021, more than 120,000 inhabitants were registered in Kristiansand municipality, and the density was 186 people per km2. A growth of about 6360 inhabitants is expected within year 2030. By 2050, the population is expected to increase to over 132,000 inhabitants. (*Befolkningsstatistikk På Kart Fra SSB*, n.d.)

The population is relatively spread over the different districts in Kristiansand. The number of people living in areas categorized as urban areas is 95%. The density is highest in the city center. Lund, east of the city center, is also a large residential area. The area around Eg is relatively lower than within the city center.

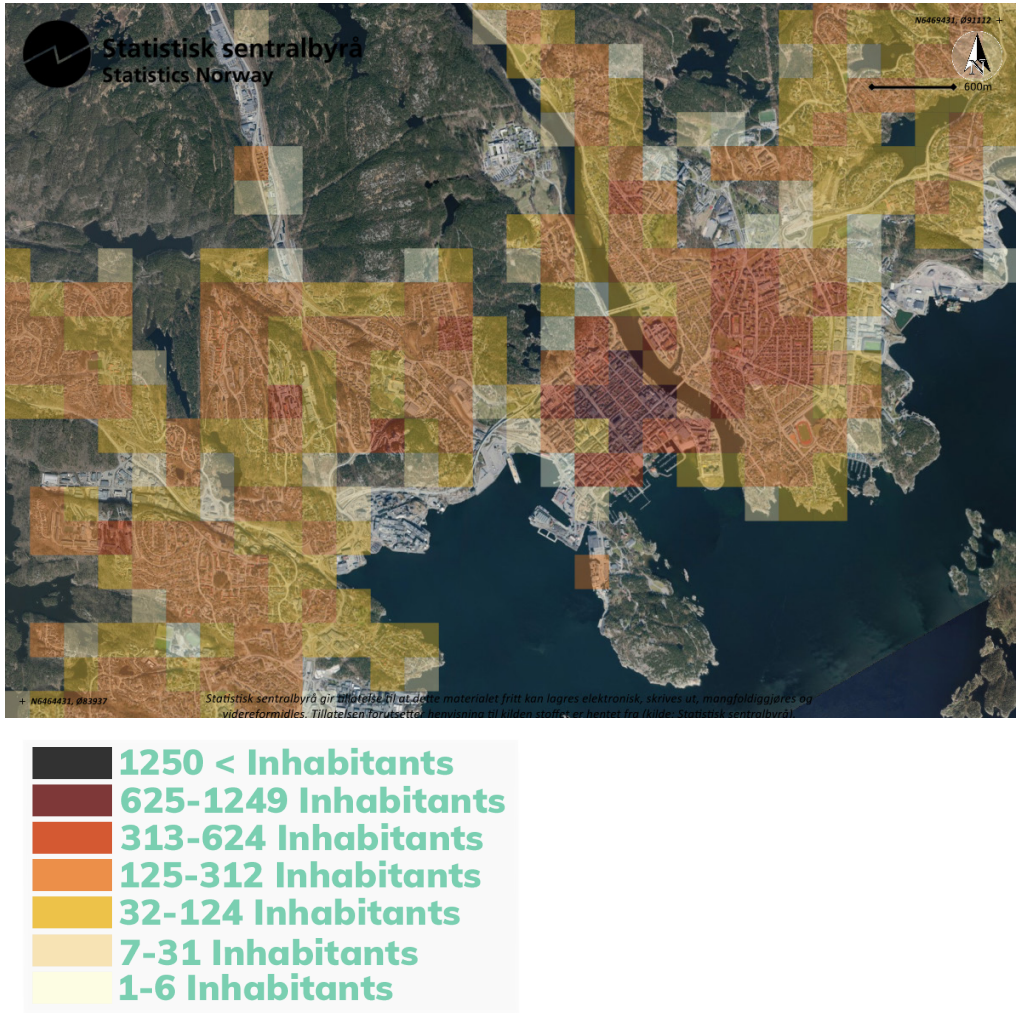


Figure 77: Population map showing where people live, gathered from SSB.

(Befolkningsstatistikk På Kart Fra SSB, *n.d.*)

AGE DISTRIBUTION

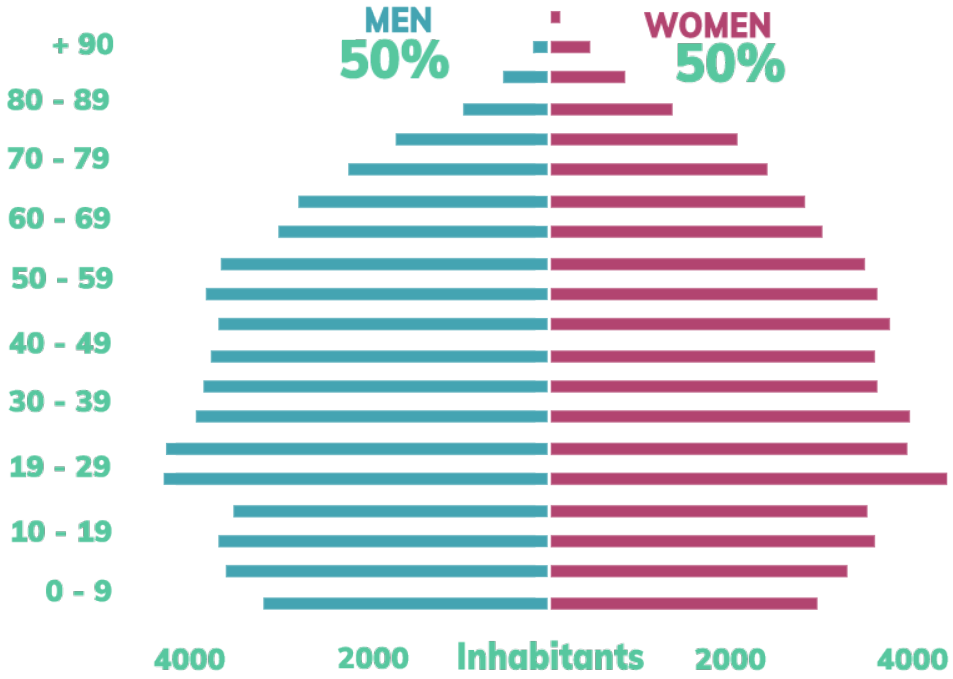


Figure 78: Show the age, male and female distribution in Kristiansand

According to figure 78, gathered from Statistics Norway (SSB), Kristiansand municipality has most young adults and adults aged 20-34. The number of older people aged 60 and older is in the minority in the municipality, as the proportion of children aged 0-19 years is relatively high. The gender distribution shows that most women aged 20-29 and most men aged 20-24 live in Kristiansand. (Befolkningsstatistikk På Kart Fra SSB, n.d.)

CASE AREA USERS

One question that needs to be asked is: who is using the site? Eg is an area that is categorized as a hospital area, with its health features. Apartments are far outside this area, but both the city center and residential areas are close to Eg hospital area. Eg is an area people use to get treatment, stay healthy, visit patients, close relations, or work. This leads to the exploitation of people and relatively high daily traffic. Because of the diversity of people using the hospital, should Eg be transformed and developed so all user groups can feel safe and not encounter barriers limiting them. This can be done by developing a central urban space with a universal design.

To emphasize what the inhabitants of Kristiansand think is important for the city, the city survey, "Bedre byer – Kristiansand" used. This survey mapped the gap between how important the citizens think certain factors are for Kristiansand's attractiveness and how they rate the city itself. Some of the gaps from the survey show that people feel Kristiansand does not deliver when it comes to safe traffic, healthcare, and elderly care. All these factors can be improved by a transformation of Eg hospital area.(Rambøll, n.d.)

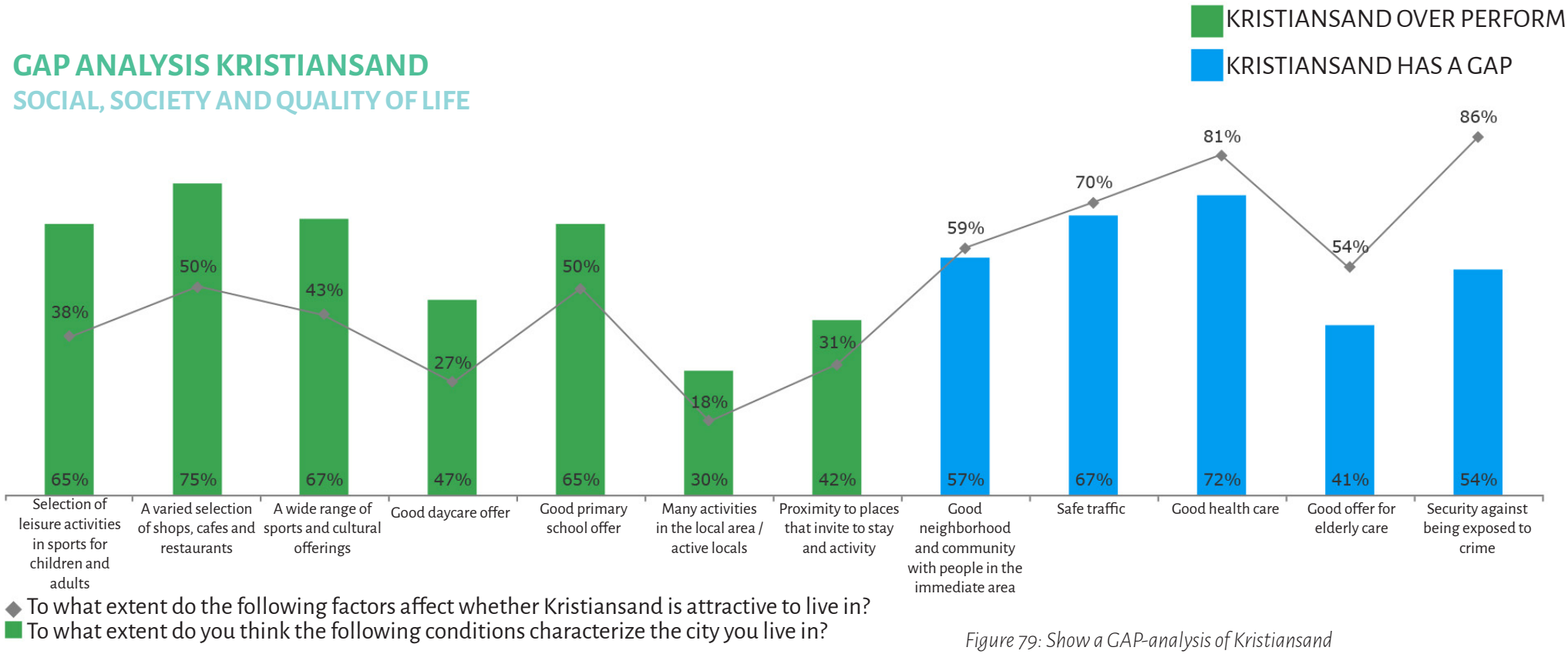


Figure 79: Show a GAP-analysis of Kristiansand

In the survey, residents were asked to rank which factors they want the city to prioritize in their further work. The figure shows which factors most residents have ranked as the top five factors they want the city to prioritize. For the inhabitants of Kristiansand, safety, public transport, access to housing and air quality are four factors that most inhabitants believe the city should prioritize further.

Findings from the survey also show that the top ten factors the citizens want Kristiansand to prioritize are good healthcare, good offers for elderly care, closeness to nature, easy access to the city center and good public transport. By transforming the hospital Area at Eg, can these factors be improved. The proposed transformation increases the hospital area, giving wider and better options than the current situation. These factors are therefore important to have in mind when transforming Eg.

TOP TEN FACTORS THE CITIZENS WANT KRISTIANSAND TO PRIORITIZE:

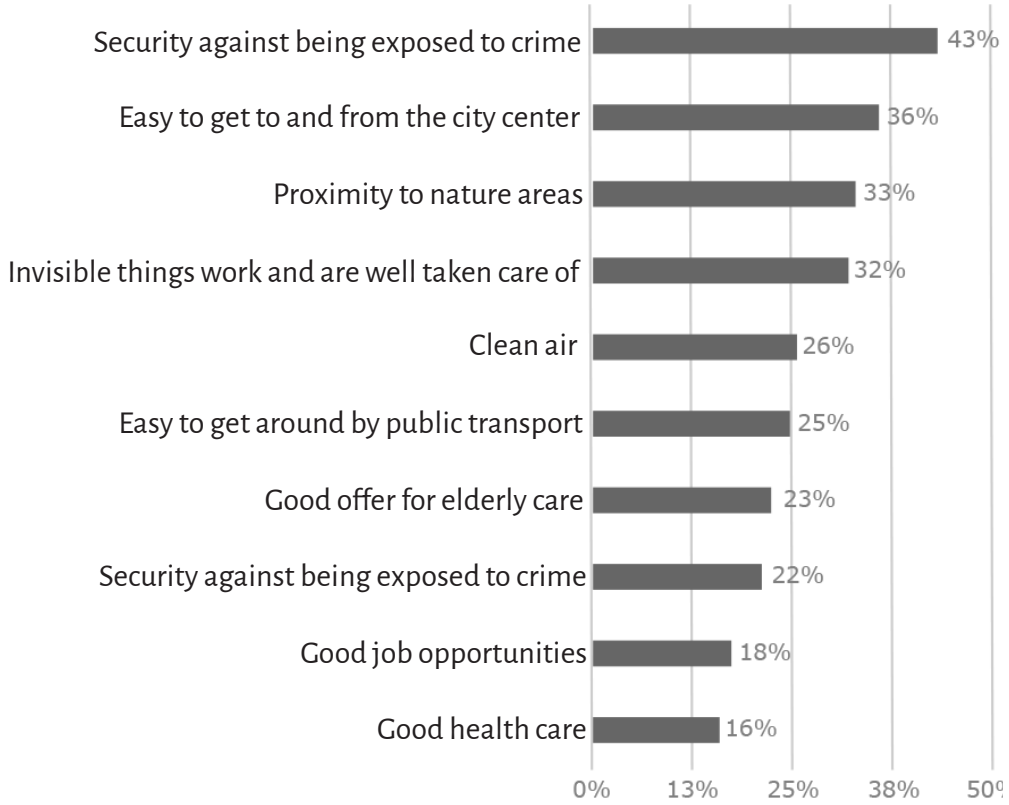


Figure 80: Show ten factors Kristiansand should prioritize

The most important thing for Norwegians is to live in a city that feels safe. As many as 97 percent point out this as the most important factor for an attractive area. Security is ranked as more important for Norwegians than access to green areas, water and nature. As many as 91 percent believe that close to nature is important for an attractive city. (Rambøll, n.d.)

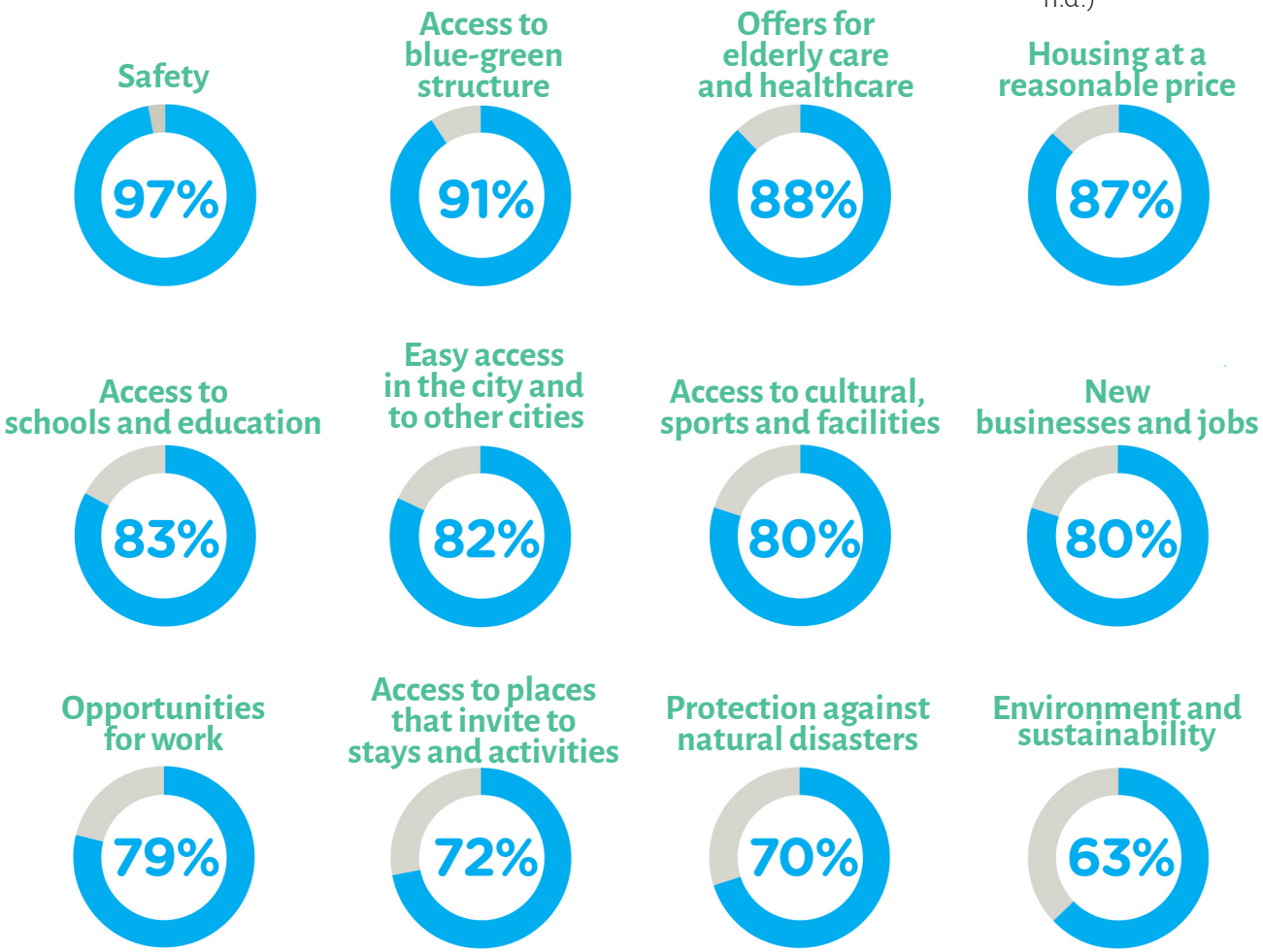


Figure 81: Show what is important for an attractive city

People feel safe in Norway city, but the cities also have invisible dangers. One of these is the air we breathe. In Rambøll's city-specific survey, look closer at seven Norwegian cities. Here it emerges that clean air is one of the factors people believe is most important for an attractive city. As many as 81 percent say that this is important, but only 54 percent believe that their city takes care of this. (Rambøll, n.d.)

The population in Norway is concerned that protection against flood is taken care of. 70 percent answer that it is important to them. At the same time, it appears that only 39 percent believe the municipalities deliver well enough in this area. (Rambøll, n.d.)

82 percent believe that it is important for an attractive city that you can easily get around the city and to other cities, while 66 percent believe that this characterizes the city they live in. (Rambøll, n.d.)

"It is clear that Norwegians want even better mobility solutions. This has great significance for our everyday lives. In addition, there are many positive synergy effects of comprehensive and targeted plans and investments ", says Kari Ovesen Haugland. (Rambøll, n.d.)

THE SOCIO-CULTURAL ANALYSIS CONCLUSION

To conclude the socio-cultural analysis, there are no inhabitants of Kristiansand residing in Eg hospital area. The inhabitants of Kristiansand have a varied population diversity, where the majority of the demographics can be characterized as young with an equal gender distribution. The key points from the survey provide an indication of what Kristiansand's inhabitants want to improve. The transformation of the hospital can help to satisfy some of the gaps.

SWOT ANALYSIS OF CURRENT HOSPITAL AREA

The SWOT analysis is an acronym for strengths, weaknesses, opportunities, and treats. This structured planning method evaluates four elements of the case area at Eg. The SWOT seeks to specify factors within the area and identifying the internal and external factors that are favorable and unfavorable, providing a quick overview of the key findings from the analysis.

STRENGTHS

- Proximity to the river and forest
- Proximity to city center and UiA
- Large development potential
- Protected buildings with its combination with new buildings
- Cultural heritage features
- Good sun conditions, green areas and stabile weather
- Available by public transport, car, bicycle and walking

WEAKNESSES

- Large surface areas set aside for parking
- Weak sightlines and connections
- Car dominated
- Traffic close to the main entrance
- Poor defined areas in the central urban space
- Urban space are not adapted for optimal use and performance
- Urban space is not clearly defined and with few uses qualities
- Eg is perceived separated from the city center
- The urban space prioritizes driving and parked cars
- The hospital buildings are introverted and not a logical part of the city quarterly structure
- The area has little variety of building features

OPPORTUNITIES

- Urban spaces and meeting places
- Active and inviting ground floors
- A greater integration of the Eg area
- Increased attractiveness
- Can free up areas when reallocating parking
- Greater prioritization of soft road users
- Short distances to the city's attractive urban spaces
- Eg as one of the city's connection point
- Functional mixture and higher density
- Strengthen the health service in Sørlandet
- Arrange for accommodation and meeting place
- Better sightlines and connections

THREATS

- Increased amount of traffic
- Vulnerable to landslides and floods during heavy rainfall
- Development can harm the nature protection

05 CHALLENGES

05 CHALLENGES

Although the area has some challenges today, it has great potential for development. Urban space's central location, on Eg is a good starting point for an area with qualities that act as a target point. In addition, it creates a unique location, to Eg between the urban land and the river, with proximity to the center and with a new bridge over Otra. This provides many opportunities for the area. New infrastructure offers the potential to reduce car traffic and create better interaction between soft and hard road users. The area has good opportunities to increase its diversity of qualities to build on, such as the green areas, the central urban space and historic buildings.

Car-dominated outdoor areas and large barrier buildings. The hospital area at Eg is currently not a place you want to stay. A hospital will make people healthy and promote good health, not only within the hospital's four walls, but in the whole area. Life outside is characterized by motoring, little activity, and an urban space that is not adapted for social interactions.

A central urban space of at least 10,000 m² shall be established at the main entrance to the hospital with a stop for at least two buses, taxi stop, HC parking, bicycle parking, allergy-free planting, furnishing, and lighting. Within central urban space, it shall be provided for safe traffic for all groups of pedestrians, including people with reduced mobility. Emphasis shall be placed on high quality in the use of materials and the design of the area so that it appears attractive, functional, and a good urban space.(Stav et al., 2018) Challenge; how should this central urban space be developed and designed?

VISION AND STRATEGY 06

Develop the Eg hospital area, a part of Kristiansand, into a transformed and re-invigorated destination focused on new urban space. The proposals will be defined by their high quality, strong universal design, and optimal use. With this, it is desired to strengthen the area's meeting place for those who use the area. Today's existing urban spaces have few qualities. This task will therefore propose a transformed and improved urban space for Eg.

The thesis presents some detailed guidelines for the hospital area at Eg, based on literature review, overall plans, analysis, framework and the proposal from Henning Larsen. These highlighted concepts have been set out relating to development within the Eg hospital area.

06 VISION AND STRATEGY

- Sustainable regeneration of the area from an economic, social and environmental perspective.
- The proposal will seek to retain the Eg identity and provide the cultural heritage of the area.
- There will be a focus on enhancing the green structure of the area through the introduction of new green spaces, trees and soft landscaping.
- Creation of new and improved connections with the city centre.
- The area will be designed around the new public space with universal design
- The central urban space will be a focal point of the area, acting as a meeting point ana a playground. A key focus will be on optimal structure and connectivity.
- Providing a hospital- landscape and area uses, with an emphasis on providing active uses at ground floor to encourage activity.
- To promote more sustainable methods of transport and reduce reliance on cars within the area.
- Development will provide a combination of different material, heights and density that respects the cultural heritage of the area.
- The design of new development will seek to mitigate climate conditions, such as wind, daylight/sunlight and increasing sea levels.

Taking this into account, the thesis introduces four main strategies; activity, access, urban design, and urban space, for transforming the Eg hospital area into a healthy, sustainable, and lively area, which include how the area is used, transport, and how to stay in Eg. All four strategies are connected to the research question:

How can the hospital area at Eg be transformed and how the new central urban space can ensure important planning qualities?

Activity

In the center of Eg, the urban space is transformed into a new, larger urban space with varied qualities. The central urban space must contain qualities that stimulate activity, social interaction, recreation, or relaxation to meet a wide range of local users' needs. Where the maintenance of green areas is emphasized, as visual access to green in everyday life has a documented health effect in itself.

Access

To ensure good accessibility and green mobility solutions, priority is given to the fastest and most direct routes through the area for walking, cycling, and taking buses. The thesis will present a transformation that will be arranged for easy division of the transport areas, whereby road users and area users do not prevent each other, as the current area does. The bus stops, taxi and occasional private cars must therefore be more structured. Since transport and good access are important factors for a hospital area, will the road infrastructure network give room for all modes of transport. The bus stop, car drop-off, and taxi are therefore added to a strategic point in the central urban space. This mobility hub will be close to the main entrance and make the urban space an attractive destination point and important for connections, as well as an area of other urban space qualities.

The thesis will facilitate green mobility solutions. One strategy is to turn the transport pyramid, and prioritize walking, cycling, and public transport over the car, and propose new solutions for transport locally in the area. The strategy for increasing the quality of the urban space is to improve the connection in the hospital area, central urban space, and Bymarka / Otra, in addition to clearing areas of use.

Urban design

The typical Kristiansand quarter structure is bounded by paved streets and sidewalks, which are adapted for universal design. The large green areas around and the parks in Eg provide space for other good meeting places and places to stay. Former carriageways will have new functions such as bicycle lanes, green lanes, and residential lanes. In this way, the street is also transformed into new meeting rooms. The type of street the quarters border on will govern how the quarter is designed. This will contribute to a natural variation in the area, and varied quality depending on where you are in the area and within the quarter. This creates a dynamic area. In the green areas outside the central urban space, it will facilitate quieter areas where people can enjoy natural surroundings and young children can safely play, where the noise level is reduced.

New urban space

The central urban space with nearby buildings will be a meeting place, destination, and identity for Eg. A place for everyone. The buildings must have variety, each with a unique structure and identity. The thesis wants to utilize and further develop the potential to create the area that will be the destination, meeting place, and identity for the transformed area. A place that combines features, content, and users and creates synergies. New urban spaces will have place qualities that stimulate sustainable behavior. The thesis will present factors that create an urban space that is social, active, and relaxed, facilitating a good area for social interaction, activity, and a variety of building types that elevate the area's sense of place.

These strategies are also connected to the sub-question:
How to activate Eg with a central urban space, facilitating use and access?

07 PRINCIPLES

In order to transform and arrange a social urban space, certain design principals are selected. These are considered essential to achieve the mentioned goal. The design principles are linked to the sub-research questions:

How should the central urban space be developed and designed?
How can planning qualities improve the central urban space?

SAFETY

- Protection against traffic
- Readability and clear
- Active facades
- Lighting

DIVERSITY

- Seating
- Cultural heritage and new development
- Multifunctional
- Activities

QUALITIES

- Integrated blue-green structures
- Maintain and strengthen the place identity
- Human scale
- Connections

The design principles will follow further in the thesis to clarify the connection between the design principles and qualities in the proposal.

07 PRINCIPLES

08 URBAN DESIGN FRAMEWORK

08 URBAN DESIGN FRAMEWORK

The urban design framework presents the urban design character and outlines the urban design approaches adopted for the Eg hospital area. The hospital area will be transformed and developed for hospital use and clear use of space. The surface car parking at Eg will be removed in order to build new buildings and a bigger urban space, combined with green qualities. The central urban space is seeking to give more life, activity, and pedestrian accessibility. The central urban space will have a flexible design and be a social meeting point. The building design will be area-effective, with large buildings in harmony with other buildings in Eg. The buildings will range in height, most of them between 3 to 8 floors, except for one higher building of approximately 14 floors. The architectural design of the hospital should keep its identity, with its mix of new and old buildings. This gives a unique sense to Eg, introducing modern forms and materials. The transformation and development will, in this thesis, be focused around the new central urban space, strengthening the existing axis with the overall goal of improving Eg`s quality and access.

New urban space

Based on the spatial analysis and the perception of the hospital area, Eg is not as attractive as it should be. The area has uncleared areas, a lot of parking spots, and roads and infrastructure dominated by cars, creating a grey atmosphere. There's a lot of green structure in close distances, but these areas can be improved by implementing qualities in harmony with the green structure. such as furniture, playgrounds, and a cafe surrounded by green structures.

The principal idea is to transform and develop a new central urban space in the center of the hospital area, inviting people to the area and providing safety and quality. The urban space will have an attractive design with urban qualities, making it enjoyable and comfortable to walk and stay. Within the central urban space, people can relax, in line with active ground floor buildings and an axis going towards Bymarka and the river Otra. The new infrastructure and road network will connect all parts of Eg, giving easier access and structure. With different routes and uses for both walking, cycling, electric scooters, buses, and cars.

Bicycles lanes and parking

The current situation in Eg is uncleared paths for both people, cyclists and cars. The area should have a good cycle path separated from other modes of transport and safer paths for walkers. For that reason, should the area have an improved cycle and walking lane next to the main road. In the central urban space, where the cycling path ends, there will be an area dedicated to bicycle parking close to the main entrance.

Bus Route

In terms of the public transport solution for Eg, will the bus route run through the hospital area, stopping and turning in the central urban space. The connection between the city centre and Eg hospital area is essential for the accessibility and connection of Eg. The transformation proposal with a new public transport and bicycle bridge over Otra, opens up the possibility of a new public transport route that connects Kvadraturen, the university area, and the Eg hospital area. Access for public transport to the hospital area will be from the roundabout through a new access road to the central urban space. The access square in the central urban space will be equipped with stops for at least two buses in the immediate vicinity of the hospital's main entrance. This proposal reduces surface parking and promotes cycling and walking paths.

Figure 82: Show the proposed new bus route, marked in green dots. (Based on opportunity study from Rambøll)(Rambøll, 2018)

The uses at Eg

The transformation of Eg will provide a mixture of both hospital functions and health-related functions. The area should also provide some retail, such as a kiosk, a café, and community use. The specific functions of the different areas within the central urban space will be discussed in more detail in the proposal chapter.

Connections

The central urban space will be accessible and attractive. Streets, urban space and cultural buildings will be connected with the rest of Eg and the city. The transformation of the hospital area seeks to improve connections between buildings, and also Kristiansand city center, by foot, bike and transport. Clear axes provide good connectivity within, Eg hospital areas, where urban space has a central role. Green qualities also strengthen the connections throughout the whole area. Where the green elements connect the urban area to Bymarka and nature.

Active first floor

Active first floors around the central urban space will make the urban space bigger and can incorporate a range of uses which will include interactions, stores, cafes, community or recreational purposes. Big glass walls on the active first floor can provide connectivity with the urban space. This can give a more dynamic, lively, and mixed-use area, with more density and compact blocks.

Climate Considerations

The Eg hospital area is generally wind-sheltered. The higher terrain around Eg, especially in the north and vest, blocks the wind. Eg should be transformed and developed such that the wind during winter and summer months is sheltered. The building structure will shelter the central urban space from weather conditions such as the wind. By using new development to create the public space in between, taller buildings will stop the incoming wind. Eg has elements that stop the wind, while the planned transformation will combat the wind from all directions. The new central urban space at Eg will be located in-between buildings and is therefore sheltered. The urban space also has good sun conditions, is sheltered from wind and has a central location, making the urban space an interesting and attractive area. The transformation of urban space should have a sufficient amount of daylight. This can be done by having different heights and roof shapes. The sun and daylight on buildings within the central urban space are important for the hospital. Sunlight is significant for public health, as well as for outdoor areas that provide shelter and sun. The transformant and its expansion of buildings will give some more shade and must therefore seek to provide necessary daylight needs.

Flood safety requires adaptations of the terrain to avoid flooding within Eg hospital area. The green structure at Eg can combat a lot of heavy rainfall. Because of the risk of flooding in the central part of Eg, should the area be flooded with paths transporting water It is important to have good drainage and surface water management to avoid impacting the quick clay in the ground.

Identity

Eg and Kristiansand's identity is linked to a summer town, historical development over time, shipping and a university city. Eg cityscape is categorized as a hospital area, with historical protected buildings among more semi-modern hospital buildings. The area also has a strong connection to the city's hilly landscape with Bymarka and Otra. Kristiansand has had urbanization and growth through the establishment of residential areas, shopping malls outside the city center, and industry. Eg should therefore be transformed with respect to the history in combination with making Eg more attractive for the areas users and city.

Cultural Heritage

The transformation of Eg has the ambition to have a design that connects architecture, outdoor areas, aesthetics and social functions. It's important for the transformation of the central urban space to be a successful area that gets its own identity, where people want to stay, with a structure combining the old and the new. The new central space, with its proximity to the old hospital building and newly developed modern buildings, provides a contrast where Eg's oldest history meets the needs of the future. The old hospital, the cultural environment, and the protected buildings play an important role in Eg's cultural heritage, local history, and its identity. These qualities must be considered and used well when transforming Eg.

Blue-green structure

Eg has close proximity to green fields, forest, and the river. The construction of blue-green qualities within the central urban space, such as fountains, trees, and green parks, creates direct contact with the natural elements. The new urban space with these qualities allows people to enjoy the urban space. The design of this central urban space will be attractive with trees, green surfaces, and urban qualities, making the area enjoyable and comfortable to walk in. Features like these will improve today's use, the area's identity, and connectivity. Infrastructure with blue-green qualities, such as plants, trees, and water, is important in urban planning, making the surroundings a safer and more enjoyable place for all. Within Eg hospital area, blue-green structures should be incorporated at strategic locations, highlighting the areas connectivity and mobility.

Materials and architectural style

The transformation of Eg hospital area with its new design can provide a mixture of different materials and a mixture of traditional and modern architecture. The materials and architectural style should represent the identity and building style representing Kristiansand, but also have implementations of modern style. Typical for Kristiansand and hospital buildings is the use of timber, brick and glazed facades. By having mixed architectural buildings with the implementation of new and old styles, one can preserve the identity of the area. These materials can be used in the design of the buildings at Eg, creating diverse facades facing the central urban space. The incorporation of modern architectural styles can add identity to Eg. A modern version of the traditional style can store a part of Eg hospital identity. This can be done by incorporate the use of traditional materials typical for Kristiansand and add a modern character to it.

Figure 83: Show a modern version of traditional style

Figure 84: Traditional building style with modern qualities.

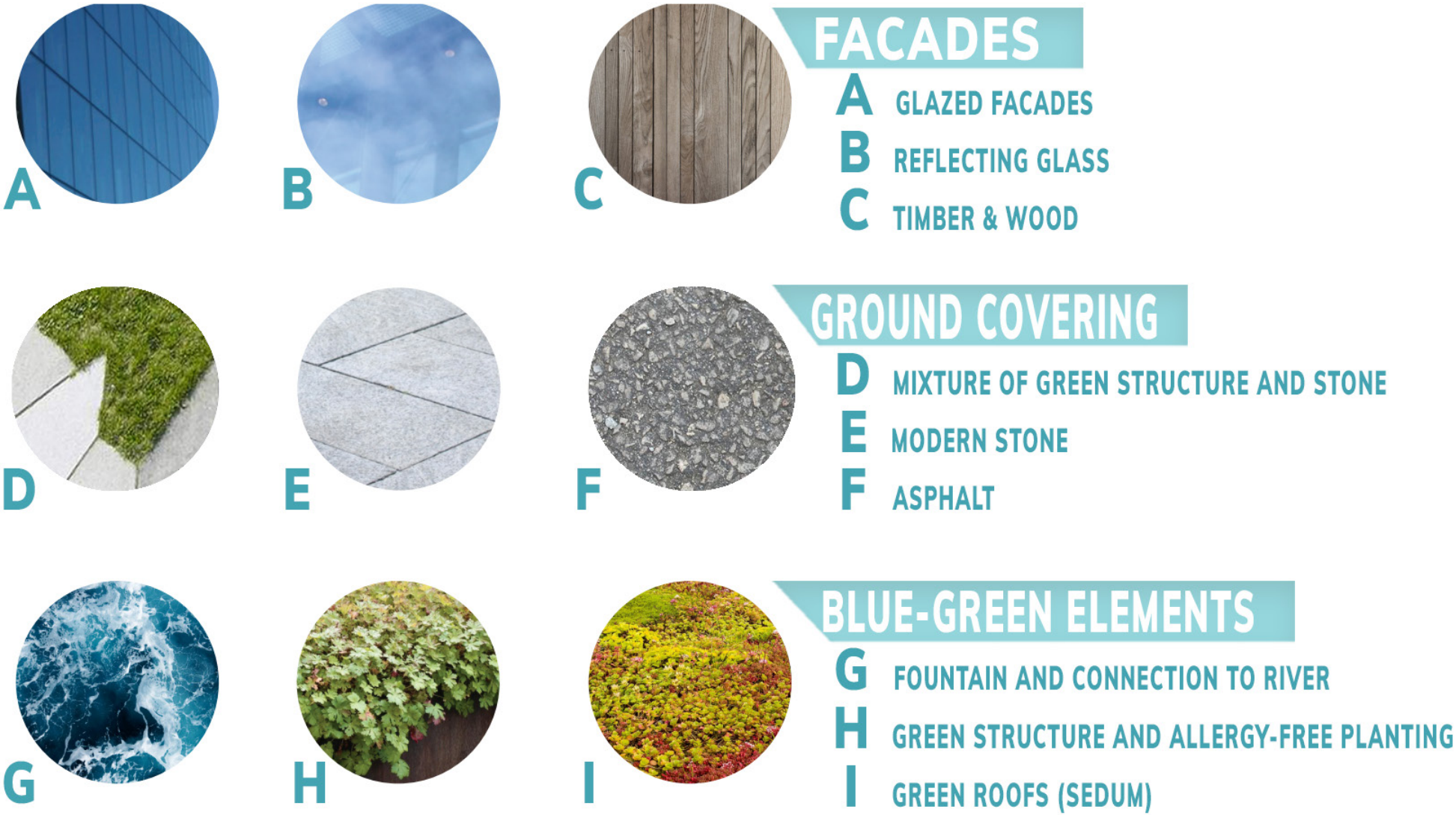


Figure 85: Showing a mixture of different materials Eg hospital area should have (Made by author)

SYNTHESIS DIAGRAM OF USES
THE CENTRAL URBAN SPACE PROPOSAL
URBAN SPACE FUNCTIONS
THE OUTCOME OF THE CENTRAL URBAN SPACE TRANSFORMATION

09 PROPOSALS

09 PROPOSALS

The thesis has as its goal to transform current urban space, a part of the Eg hospital area, into a new and reinvigorated destination focused on a collection of new developments and buildings. The proposals will be defined by high quality elements, hospital use, and stronger connectivity to both areas within Eg and the blue-green structure. The thesis will therefore go in depth into how the central urban space can be transformed. The proposal will show how the area can be designed, how the urban space can encourage people into the hospital area and provide access to the wider hospital area. The thesis will first propose the final transformation, based on the possibility study by Rambøll and Henning Larsen.

Figure 86 shows the addition of new buildings in the area as well as the transformation of Eg. This is the maximum development potential. This master's thesis is based on proposed transformation plans for Eg, made by Rambøll and Henning Larsen. Figure 86 and 87 illustrates the full potential of development, transforming Eg into a newer hospital area with increased quality and capacity. The urban space is transformed, located in the center of the area, making it more accessible. The master's thesis will also show a more detailed picture of how the change will affect the central urban space.The hospital area has various functions, not only hospital activities but also health-related urban development with good connectivity. The thesis will propose how the block structure in Eg and the surrounding areas can impact the central urban space.

Figure 86: Plan illustration for the whole Eg hospital area (based on the possibility study by Rambøll)

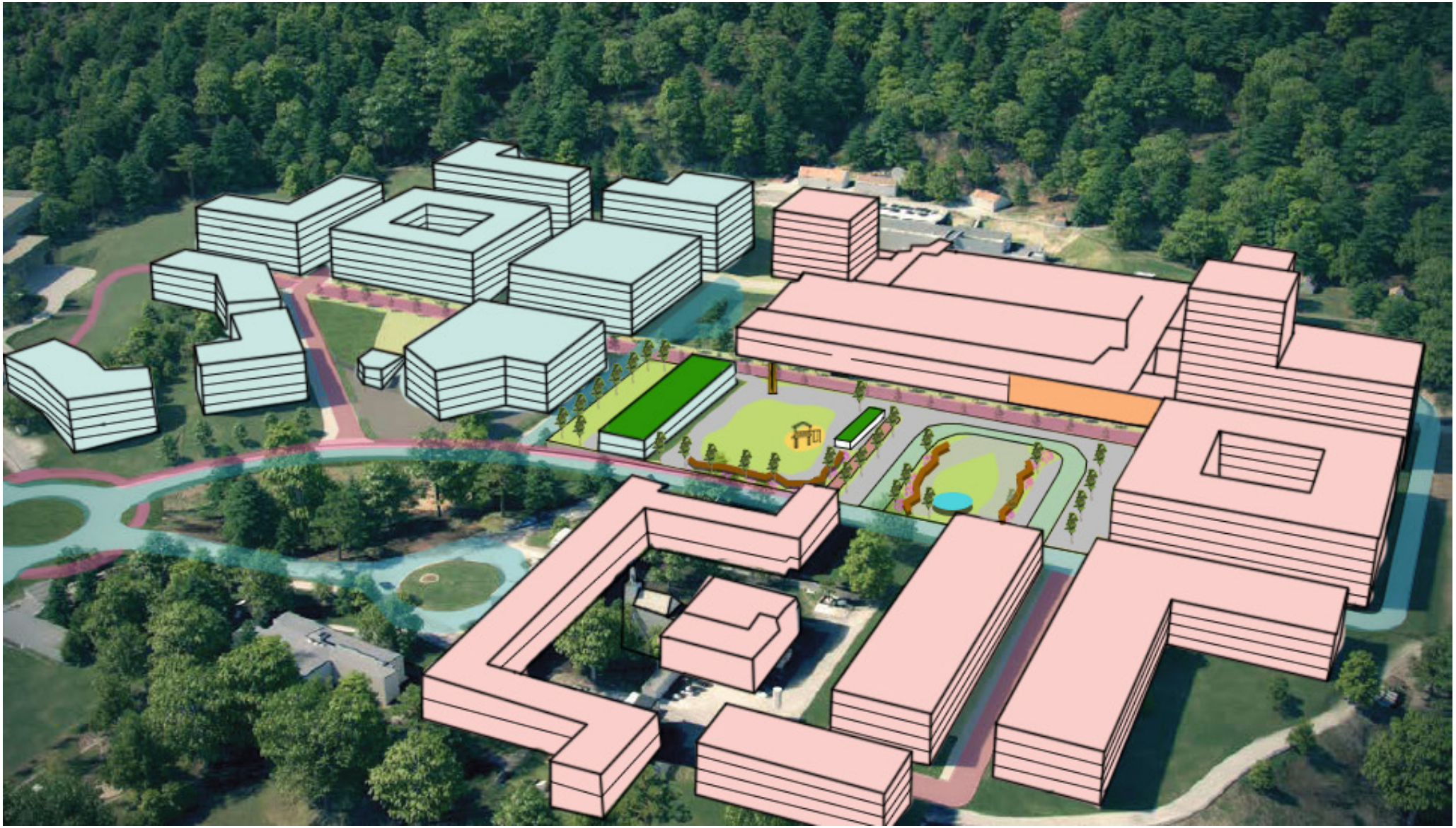
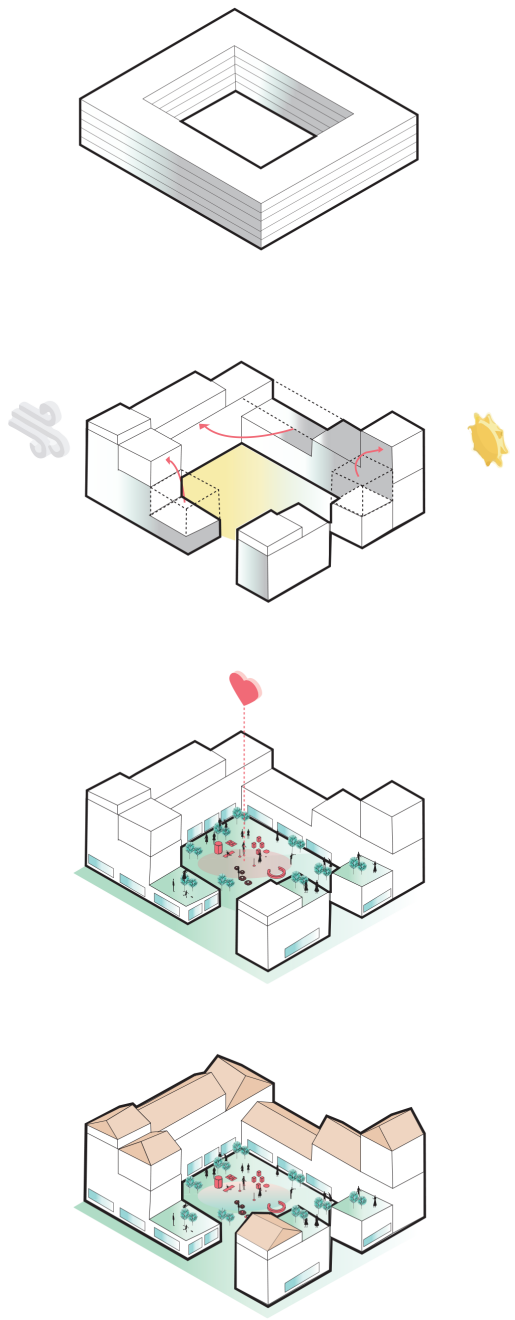


Figure 87: Show how the area can be transformed with a new central urban space



The proposed quarter block structure has its effect on the central urban space in Eg hospital area:

Quarterly structure

The planned road system, axes, and lines of sight in the area, with its traditional quarter blocks, set the starting point. The further design gradually changes in terms of aesthetics, climate, scale, urban space, facades, and identity.

Sun, wind and human scale

Based on solar and wind direction, the quarter is adjusted to both create variations in the structure and good climatic conditions. The stories vary from 3 to 8 floors.

Green urban spaces and active facades

Inside the quarter you will find the central urban space that invites to stay, activity and universal design for everyone. The active facades contribute to a livelier street level, and the green structures will help to improve the performance of the urban space.

Identity and protection

Large buildings with function-oriented content give identity to the hospital area, with elements of local variations. New buildings on Eg should be both area-efficient and reflect Kristiansand's building style. The buildings should be aesthetically pleasing, provide good drainage, and be financially profitable. Ensuring good runoff can also strengthen the life of the building and will be environmentally and financially sustainable.

Figure 88 : How the block structure in Eg impact the central urban space

Figure 89 illustrates the proposal for the location of a new central urban space in Eg. The proposal shows how the urban space can be transformed into a natural and integrated part of the hospital area. The main entrance to the hospital and central urban space is proposed to be moved to this location. The access zone will then be closer to the emergency department located to the north. The central urban space is defined by the surrounding construction sites and is at least 10,000m².

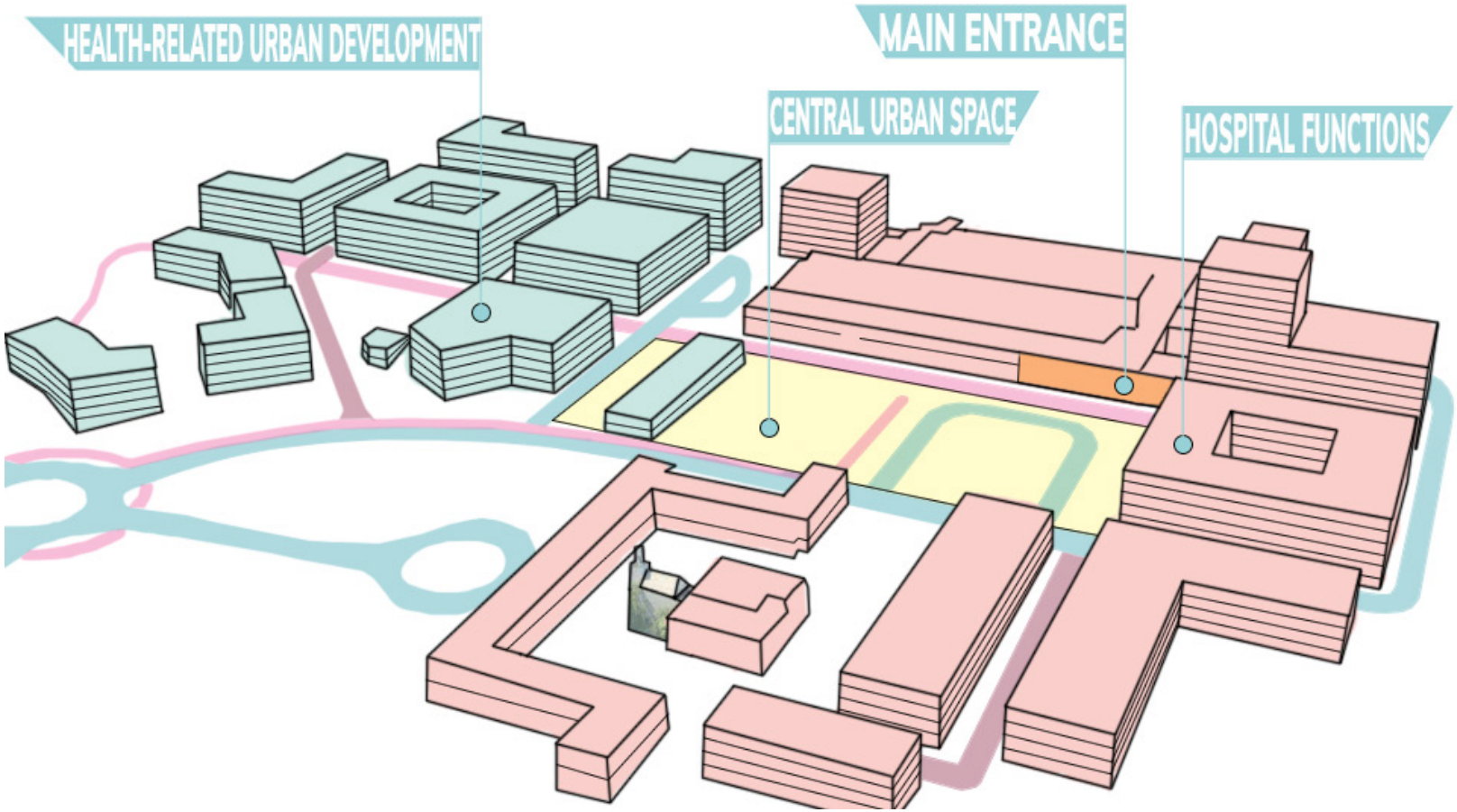


Figure 89: Building surrounding the central urban space, (based on the possibility study by Rambøll)

The location of the central urban space is proposed to be moved to the north, compared to the day access zone. This supports the planned relocation of the main entrance closer to the new emergency room and provides a better opportunity for a good connection between the main building and the building for service functions for the public (cafe). The access road in the central urban space shall be one-way and dimensioned for both car and busses. The need for a separate field for buses is proposed so the traffic flows where one field can cause a traffic jam.

The hospital at Eg is located in a green lung surrounded by Bymarka, Otra, and the cultural landscape at Eg. This will be reflected in the central urban space, which is the patients' first encounter with the hospital. Green surroundings are soothing and important for patients' well-being.

The central urban space is part of the pedestrian zone that extends from Bymarka in the north to the old avenue in the south. The central urban space will have green connections to surrounding areas that also serve as directional plantings, consisting of rows of trees, avenues, or hedges. The main entrance must be marked, and the bus and taxi are easy to find. Parts of the urban space can be screened and appear as "a room within the room" where patients and relatives can find peace and relaxation from driving and walking traffic. The choice of vegetation should be calm but still take care of the changing of the seasons in the form of flowering from early spring to late autumn. Naturally, allergy-friendly plants and not blacklisted species must be used.

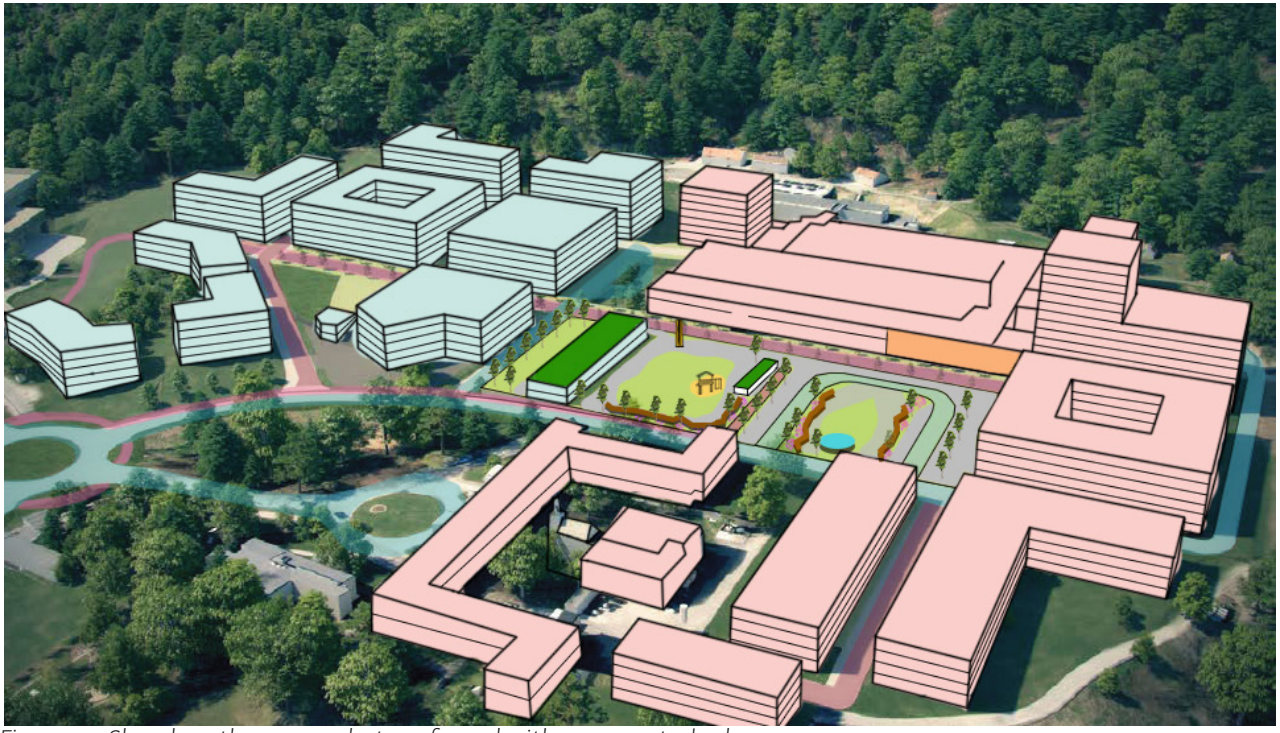


Figure 90: Show how the area can be transformed with a new central urban space

SYNTHESIS DIAGRAM OF USES

Central square

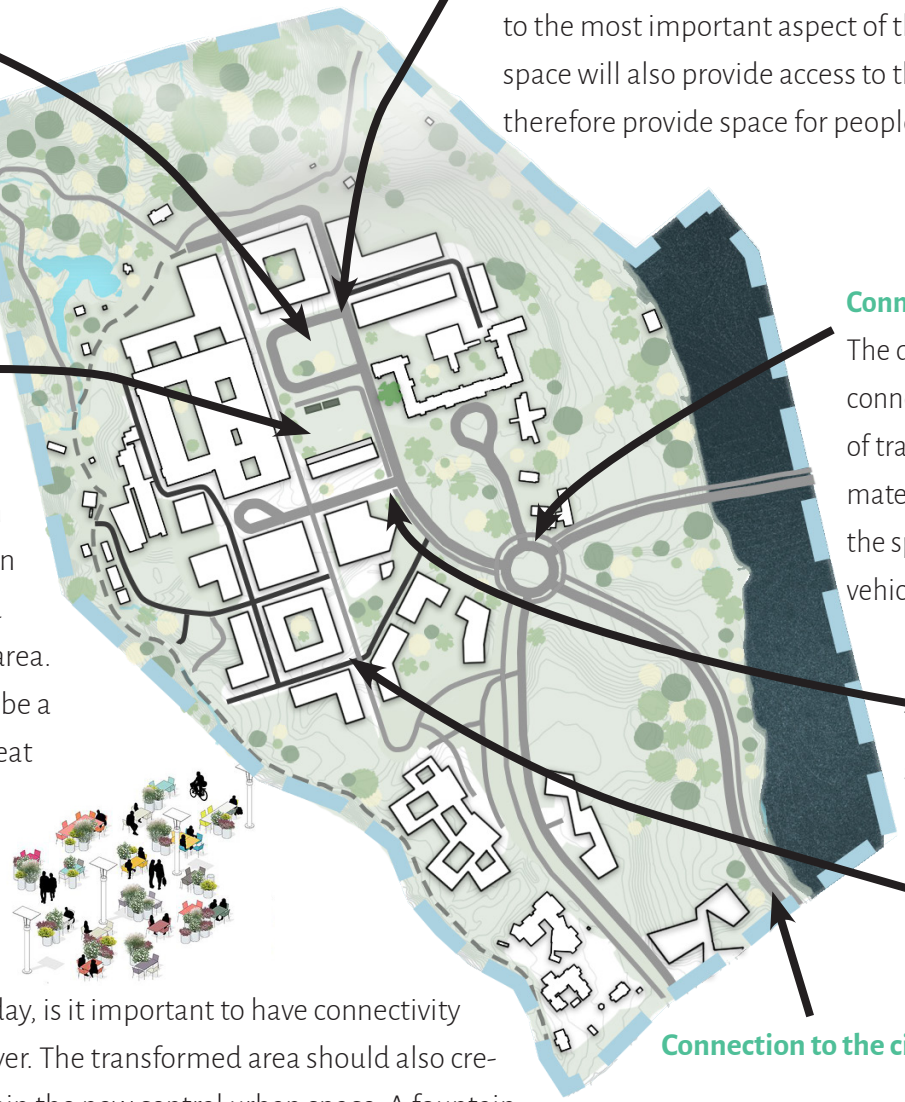
There will be a new transformed urban space. This central area will work as a new square within Eg hospital area. This square is surrounded with building creating shelter and its own atmosphere.

Active street

One important component of the proposal will be to renew and re-orientate the streets in Eg. Active and good streets provide walkway bringing people closer to the most important aspect of the Eg; the central urban space. This urban space will also provide access to the new buildings and routs. The streets must therefore provide space for people, be clear, be safe and be universal designed.

Public Space

The central urban space will be a public space within Eg, where people can sit, relax and spend time. The central urban space will use a range of materials, green structure, water qualities, public art and street furniture will be used within the area. Within this public space, there will also be a café giving people the possibility to sit, eat and drink, both inside and outside.



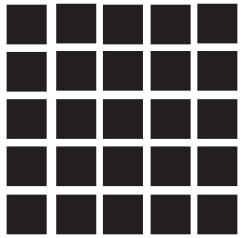
Connectivity

The design of the transformation will also improve connectivity. This includes easy access for different modes of transport and people using the area. The different materials used in the central urban space will identify the spaces. It will identify the uses for pedestrians and vehicular traffic in addition to trees signifying key routes.

Pedestrian friendly crossovers

The highlighted purple areas in the synthesis diagram, present raised pedestrian friendly crossovers.

Area structure



Axis to nature

To provide blue-green areas Eg has today, is it important to have connectivity with the surrounding forest and the river. The transformed area should also create a water element and use trees within the new central urban space. A fountain and trees can be seen as an qualities separating the roads and the public space, creating two areas with separate functions.

Connection to the city

Figure 91: Synthesis diagram of use

THE CENTRAL URBAN SPACE PROPOSAL

Figure 92 shows the proposal for the new central urban space in Eg. The illustration shows how this urban space can be transformed into a natural and integrated part of the hospital area. This square will be the central public space in Eg.

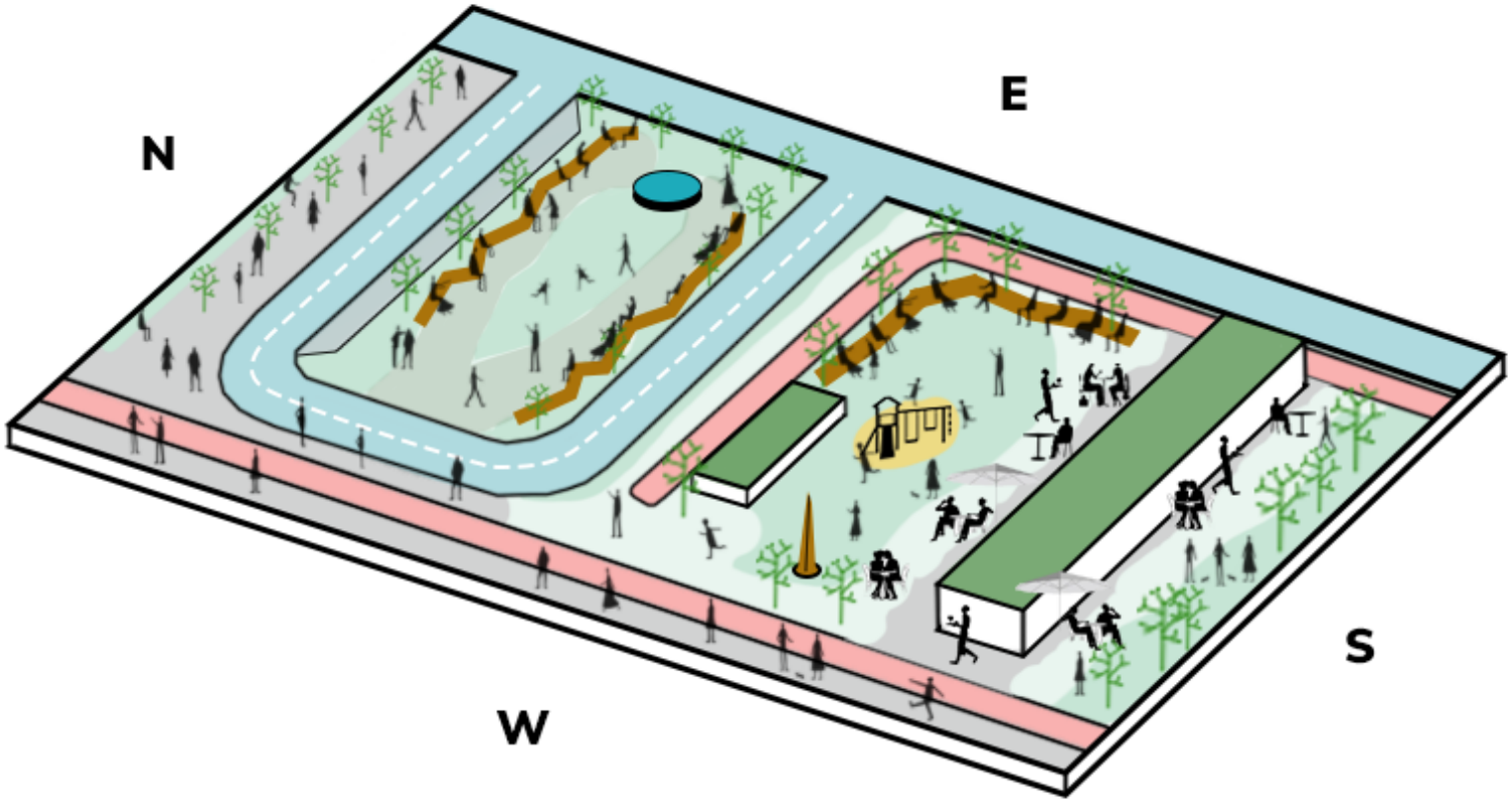


Figure 92: The transformed central urban space (Made by author)

The proposal for the central urban space will facilitate:

- A Square with facades

There are large open facades that work in conjunction with the associated square. The square has sufficient seating, lighting and planting.

- Mixed use

Mixed use of both hospital functions, café, kiosk, information or relaxation. Retail on the ground floor close to the main entrance, hospital functions around.

- Activity in focus

Urban space with a focus on activity. Open facades allow you to keep track and feel safe. Clear street structure and easy acsess providing circulation.

- Urban area with natural qualities.

The urban space will be characterized by natural qualities and surroundings, such as green lungs.

The urban space is transformed from a car-dominated area into an attractive urban space that invites stationary, lingering, and social activities. The infrastructure, with its side jumps, provides replenishment for people and makes the urban space a starting point for other buildings. The street is part of the overall urban space network and an important connection to the rest of KRS, especially with a new bridge over Otra.

The central urban space will be the meeting point for a diverse group of people. The users share the space across economic and social differences. The transformed urban space is to proactively ensure security and trust between the city's users, and that provides space for everyone, the many and the few. It must be safe to use the spaces both alone and in larger and smaller groups. That is why the thesis focuses on the physical setting, the social life, and the meeting between people to create an urban space with good qualities and where everyone can feel safe.

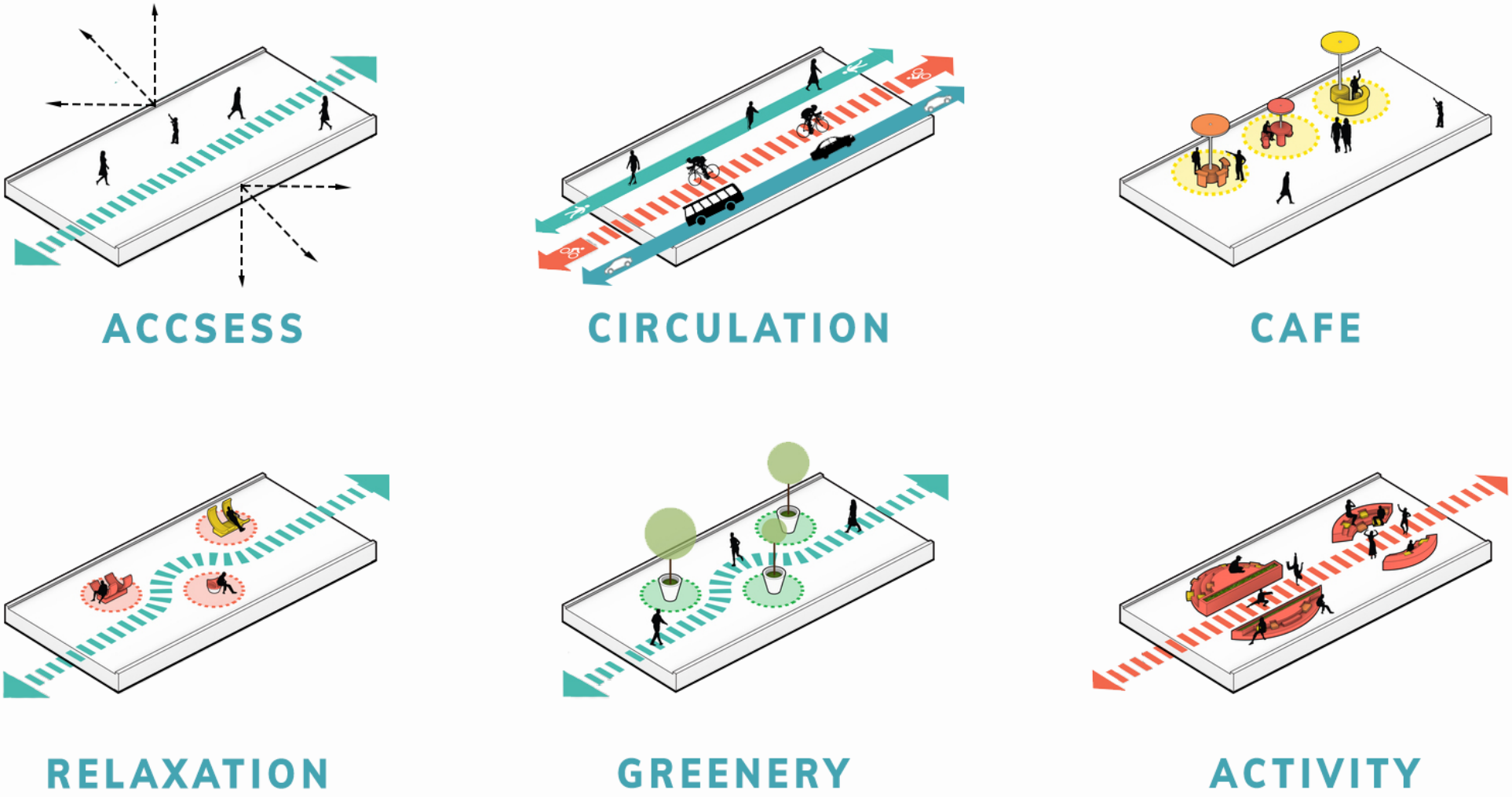


Figure 93: Show an illustration of important planning qualities the central urban space at Eg will have with this proposal (Made by author)

URBAN SPACE FUNCTIONS

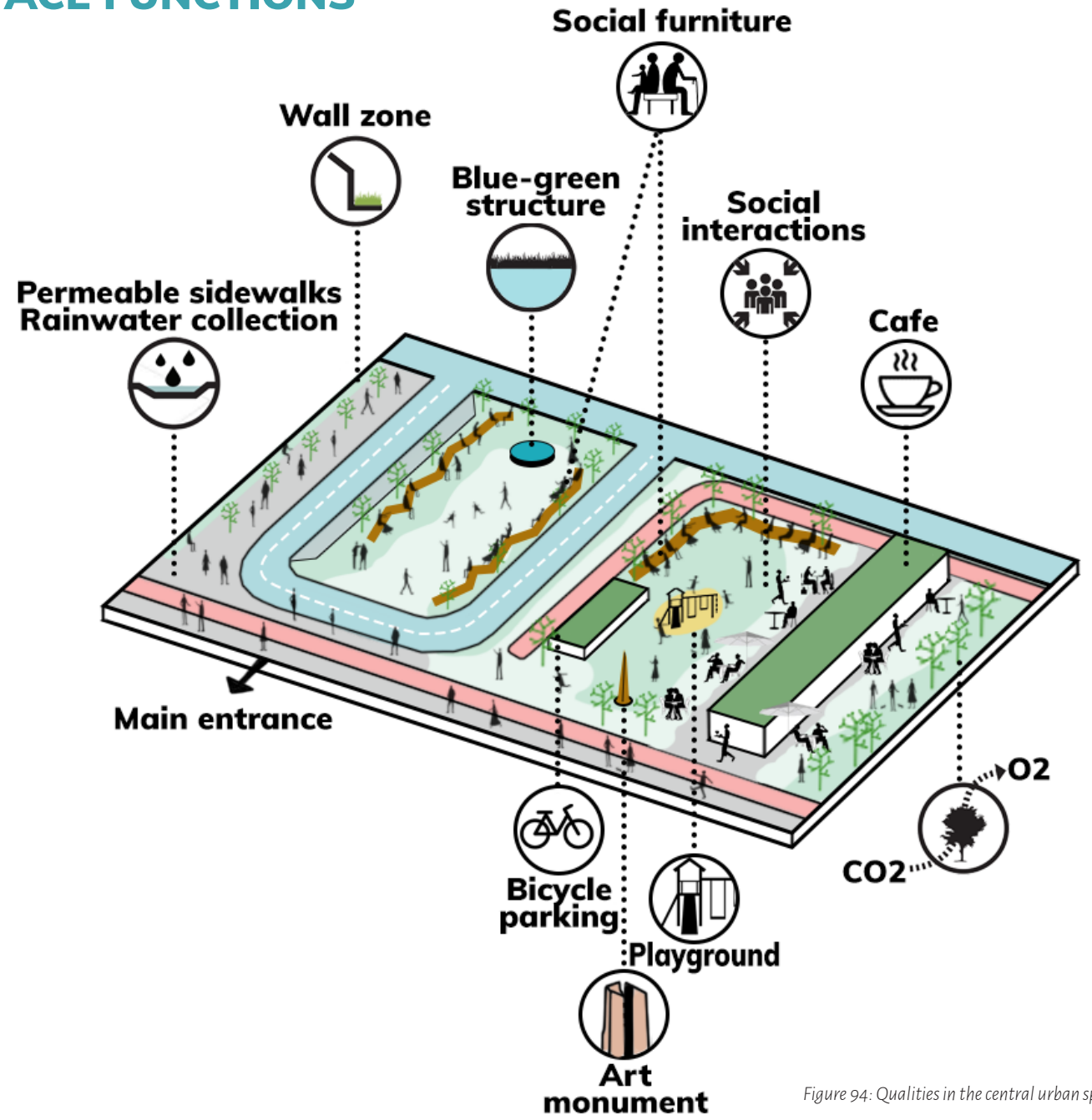


Figure 94: Qualities in the central urban space (Made by author)

Central urban space will be a hub for those who travel to and from the hospital, in harmony with hard and soft road users, public transport passengers and predestines.

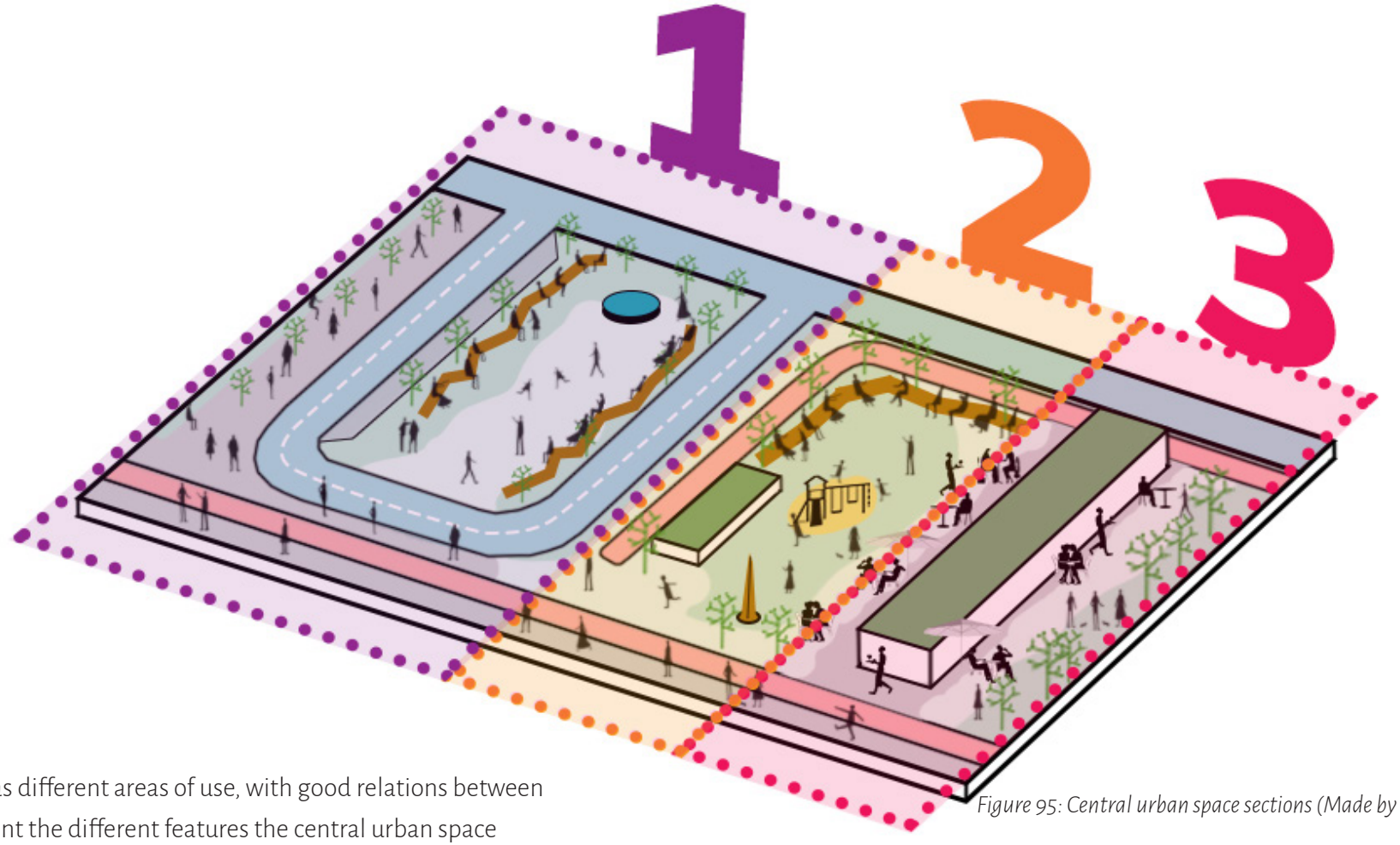


Figure 95: Central urban space sections (Made by author)

The central urban space has different areas of use, with good relations between them. The thesis will present the different features the central urban space offers and will look at these areas in isolation and as part of the overall proposal. This chapter will also look at the basic elements of urban space as a complex system. This provides the conceptual qualities of the transformation proposal. These qualities can strengthen Eg and shape the urban space by improving the surroundings.

The elements within the central urban space create different zones and make the space useful and varied. The area will invite people to stay and give the opportunity to move easily to further hospital areas. An important quality in the area is green areas that are located centrally in the urban space with elements that have a water-catching effect. By planning for high quality elements, the area should have within the central urban space, it will improve the quality of the Eg hospital area.

1
Section 1

The cross section of section 1 shows the area close to the main entrance of Eg hospital. This section lays out in detail how different principles are included. New urban space with readability and clear areas, new building with an open first floor and active facades, seating and integrated blue-green structures. This multifunctional area facilitates different uses and activities such as transportation, relaxation, and interaction.

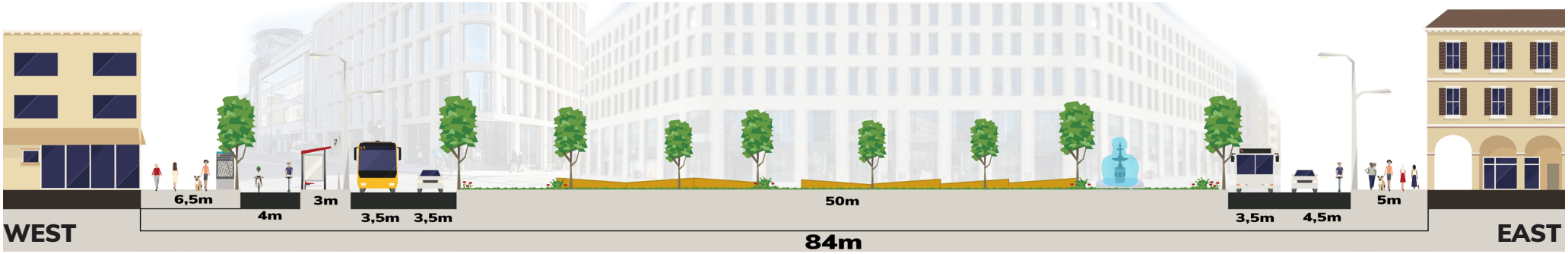


Figure 96: Cross section in section 1

Figure 97 shows qualities found in section 1. These elements will enhance the green structure of the area through the introduction of new green spaces, trees, and soft landscaping and provide active uses on the ground floor. In addition to this, will section 1 be the most important area for the new and improved connections with the city center. With electric buses and an infrastructure giving bicycles and walkers the best connections, promoting more sustainable methods of transport and reducing reliance on cars within the area.

Green structure

Green elements and biodiversity provide an improved quality of life for area users and for those who visit the Eg. Green structures also have environmental qualities, reducing pollution, absorbing CO2 and releasing oxygen gas, O2, into the air, improving the air quality. In addition to this, can green structure be a natural drainage solution. Green qualities, such as trees and flowerboxes, will be implemented between street furniture and roads, protection against traffic. The green structure shall be designed so it don't become a barrier for the universal design.

Figure 98: Green structure

Water element and public art

A fountain can provide a high quality in an urban space, implementing a water element in a urban space. The fountain can be used as street furniture, a drainage solution or as a visual aesthetic qualities.

Figure 99: Fountain

Street furniture

Furniture can create living urban spaces and can fill empty spaces. Street furniture can create a good environment for pedestrians and area users and encourage greater use of the central public space. Furniture in the central urban space give people the option to sit down, relax, meet friends or colleagues, enjoy the sun and thrive. There will also be street furniture along the facades, making a wall zone where people can sit and wait for transport or enjoy the sun.

Figure 100: Street furniture

Surface water management and flood measures

The idea of surface water management is to get rid of the water in the area. This can be done by storing water in a water-battery, such as a fountain, or using the areas natural blue structures. Managing water locally through water and green structures supports growth and biodiversity, cooling of the local climate and local infiltration. If there is an undesirable amount of precipitation, should the surface water have drainage options that lead down to the river Otra. Axis in the structure can lead water downstream, by collecting water that is not absorbed by the green areas and using the sloping terrain towards Otra. When the water meets roads or other obstacles, the water is led into pipes towards Otra. In addition to this, a permeable urban space can enable the infiltration of water. Permeable urban space is connected to green structure in urban areas, which stores water below ground, infiltrating the water into the soil.

Figure 101: Surface water management

Routes and streets

Streets with good pedestrian flow, distanced from motorized traffic, are recommended. The road network in Eg must be designed to be accessible for people, buses, and ambulances. The urban design of the central urban space with its qualities can be used to define different streets and uses. The distance between different modes of traffic separates the users and provides clear directions within the area. The most common material on roads is asphalt. An alternative to this can be the use of the same paving stones as sidewalks, which extend out to the streets. This can be useful when making an optimal universal design. In addition to making the area well connected through design.

Figure 103: Safe cyclist and pedestrian routes

Figure 102:Sidewalks and road having same material with no height deferens, providing a universal design.

Pedestrian friendly spaces are an important part of the central urban space, promoting walking and movement. Optimal sidewalks and urban areas give pedestrians and other area users access to all areas within Eg. Sidewalk and urban space should be fit for appropriate volumes of people, supplemented with street furniture and green structure. Elevated crosswalks over trafficked roads provide a safe and universally designated path for pedestrians. Raised crosswalks are a calming traffic and accessibility measure. Cyclist and pedestrian routes should have quality paths to central locations. The paths must be safe, distant and block vehicles. This can be done by having the visual environment and space as a buffer between the different modes of transport.

Bus stop

The new urban space will have 3 bus stops, so that 3 buses can be there at the same time. The bus stops must be located close to the main entrance and the entrance to the cafe / public house. The hospital is the final stop and shall charge an electric bus in the location of today's current bus stop.

Kiss and ride

The access road in the central urban space is one-way. Along it, a boarding and alighting field (Kiss & Ride) will be established for employees, patients, and visitors. The field should be placed close to the main entrance.

Taxi

A taxi stop will be established along the access road in the central urban space. This area must have safe access for passengers. The stop will be placed as close to the main entrance as possible.

Short-term parking

Short-term parking will be established within a central urban space. There must also be places adapted for the disabled (HC parking). Connections between the car park and entrances must be traffic-safe and designed on the soft road users' premises.

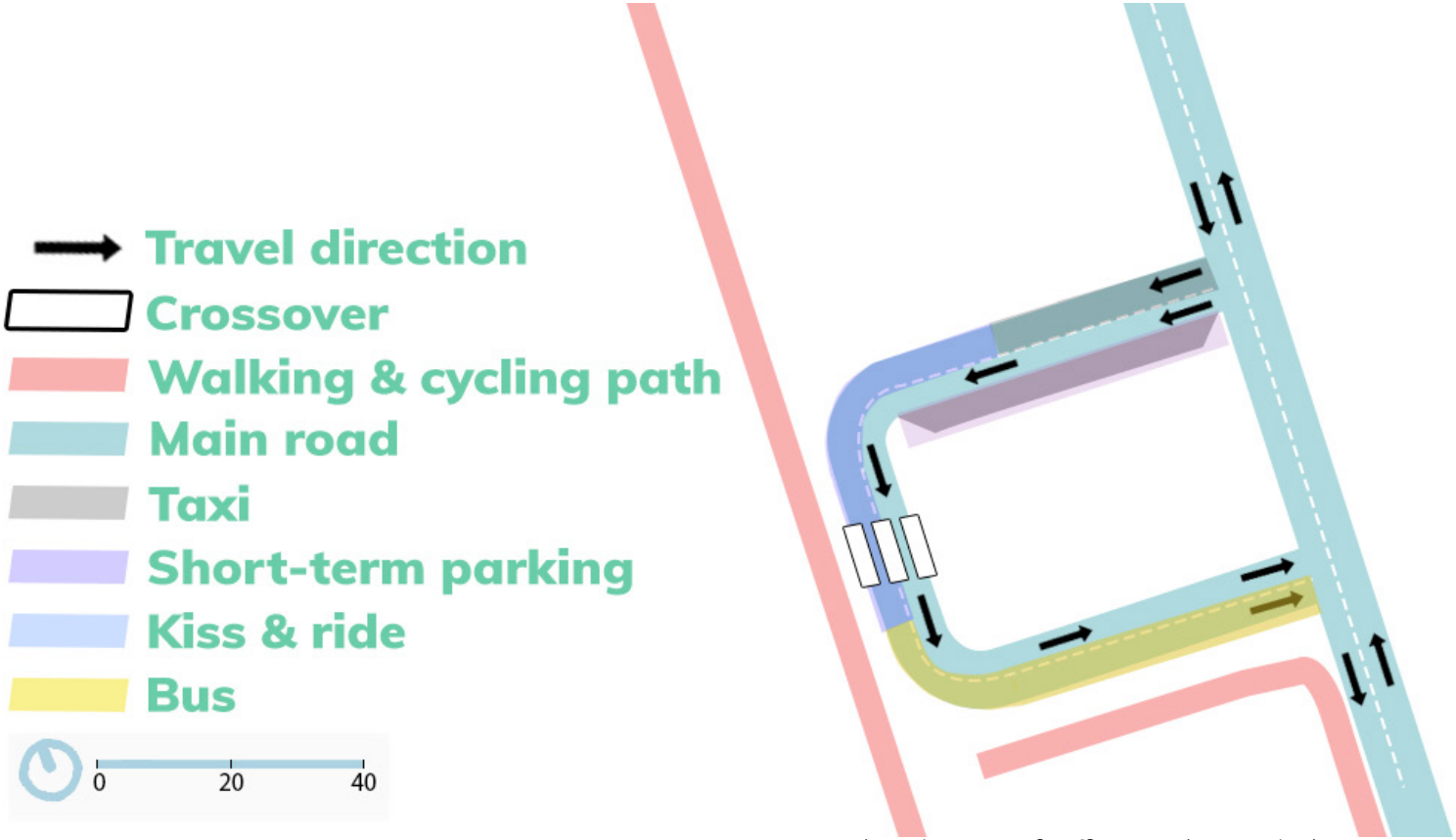


Figure 104: Show clear areas of traffic use, in the central urban space

Section 2

The proposed transformation of the urban space will add a higher use, bringing a diverse mix of residents, visitors, and workers, bringing life to the streetscapes, Eg, and the central public space.

The cross section of section 2 acts as a meeting point with bicycle parking and a playground. This area has both a social and environmental perspective. The design of this area and the height of the buildings around it will mitigate climate conditions such as wind and sunlight. People can use the social furniture to relax while having lunch or just use it to enjoy the sun. The section will retain the Eg identity and provide the cultural heritage of the area. This is done by using today's monument and having a close distance to the old hospital building in the east.

Figure 105: Show qualities within section 2

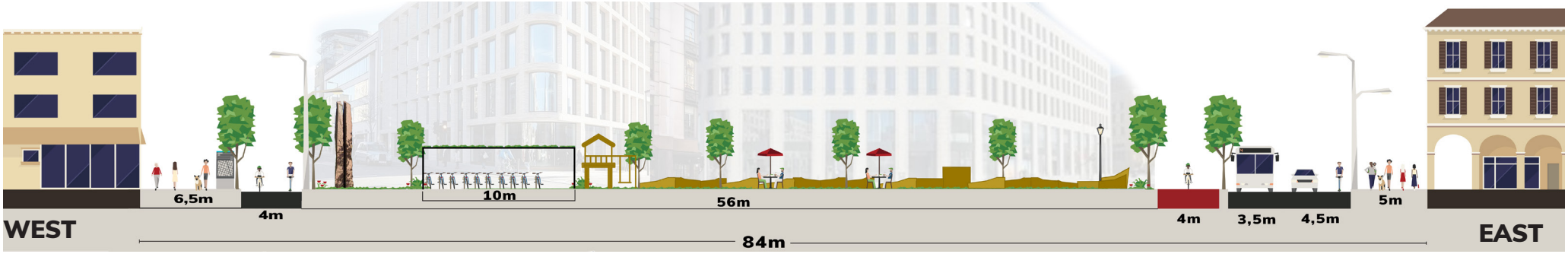


Figure 106: Cross section in section 2

Figure 105 shows qualities found in section 2. These qualities will also enhance the green structure of the area through the introduction of a new green space in harmony with urban design. Section 2 will provide a diversity of seating options and activities for all area users. This section is developed on a human scale, focusing on people's wellbeing with active uses on the ground floor to encourage activity. These qualities will improve the central urban space.

Bike parking

Bicycle parking is located in section 2 close to the main entrance and the cafe / public house. The location of bicycle parking is closely connected to cycle paths in the main axis and will be sheltered from the rain with a green roof. There will also be options for charging electric bicycles.

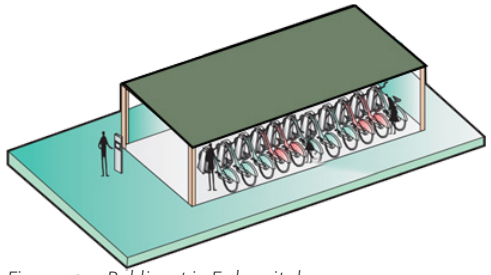


Figure 107: Public art in Eg hospital area

Public art

Public art in addition to the fountain is a visual aesthetic quality. The use of public art is already in Eg and should be maintained as a identity aspect.

Figure 108: Public art in Eg hospital area

Lighting

Lighting is important for making the area feel safer and clearer. Lighting in Eg should light up important areas people use, but also light up trees or building structures, making some areas stand out. The lighting in the urban space will be provided by outdoor lamps, in different forms and shapes. Both the typical streetlights, but also the shapes that make the outdoor environment exciting and fit in with the local environment of Eg. The lights are placed throughout, Eg hospital area and within the urban space. This creates a warm and good atmosphere for the space. Better lighting, overview, and readability help to increase perceived security.

Figure 109: Lighting

Playground

By developing a playground in a central urban space, it provides activities for the youngest. If a urban space plan for activities for the youngest, can all age groups enjoy the area. Having a playground in the area provides a diversity of uses, in harmony with people sitting, walking, relaxing or using the café.

Figure 110: Playground

Social furniture

Today's urban spaces lack seating and, in general, are uninviting to stay in. The thesis therefore proposes a social furniture that encompasses several aspects of the urban environment. As a result, the thesis offers social furniture that takes into account a variety of features of the urban environment. People are encouraged to take a breather and sit down to observe life in the heart of Eg by the furniture. In addition to flowerboxes and trees placed behind the furniture, the furniture divides the hard and soft urban spaces. The furniture also divides the hard urban space from the soft urban space.

The furniture is comfortable to use and promotes social interaction. Swings and the possibility to run on the corrugated furniture attract the area's younger visitors. The purpose is for it to encourage people to stay and rest, as well as to engage in activities and play, and to serve as a gathering place for everyone.

The seating furniture's design lends itself to a variety of applications. You can sit on top of each other or face away from each other thanks to the angled shapes. Such furniture allows persons who use the urban space or who are patients to remain outside. You can meet both new and old individuals here. Passive seeing contact is created by views of the surroundings, and the random meets and talks that occur help to the formation of a community and a sense of trust.

Figure 111: A sosial pucblic funiture in the central urban space (Kristine Bjordal & Bugge, 2019)

Section 3

This section will be an area where users can use it to relax and order something from the café. People have the option to eat and drink outside, or within the café. Predestines, workers, and visitors will be able to enjoy the outdoors features as the area is lined with greenery, street furniture, landscaping, and walkability.

Figure 112 show qualities found in section 3. These qualities with café, green gardens, green roofs, flowerboxes street furniture, and threes give a calm and relaxed area. Qualities found in section 1 and 2, in additon to the qualities in section 3 provide varied qualities for Eg hospital area and accommodate Maslow's theory of social needs, the idea manual by Norway's ministry of local government and modernization, and Gehl's 12 criteria on improving the quality of public urban spaces

Figure 112: Show qualities within section 3

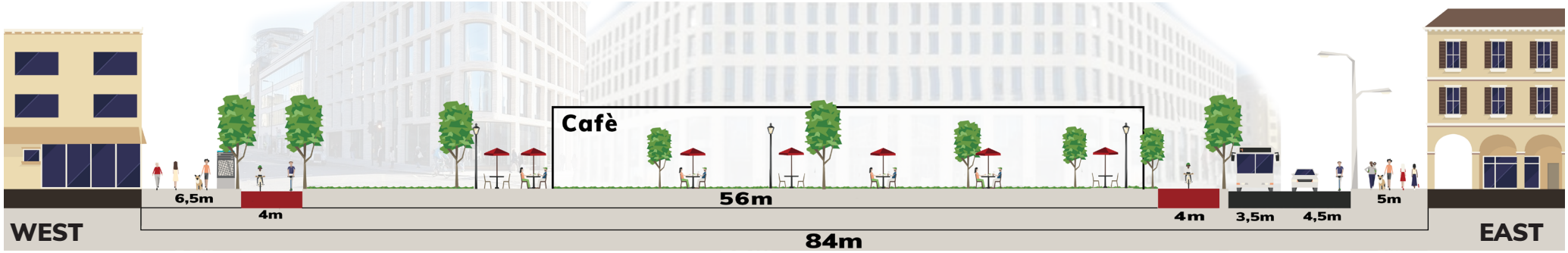


Figure 113 : Cross section in section 3

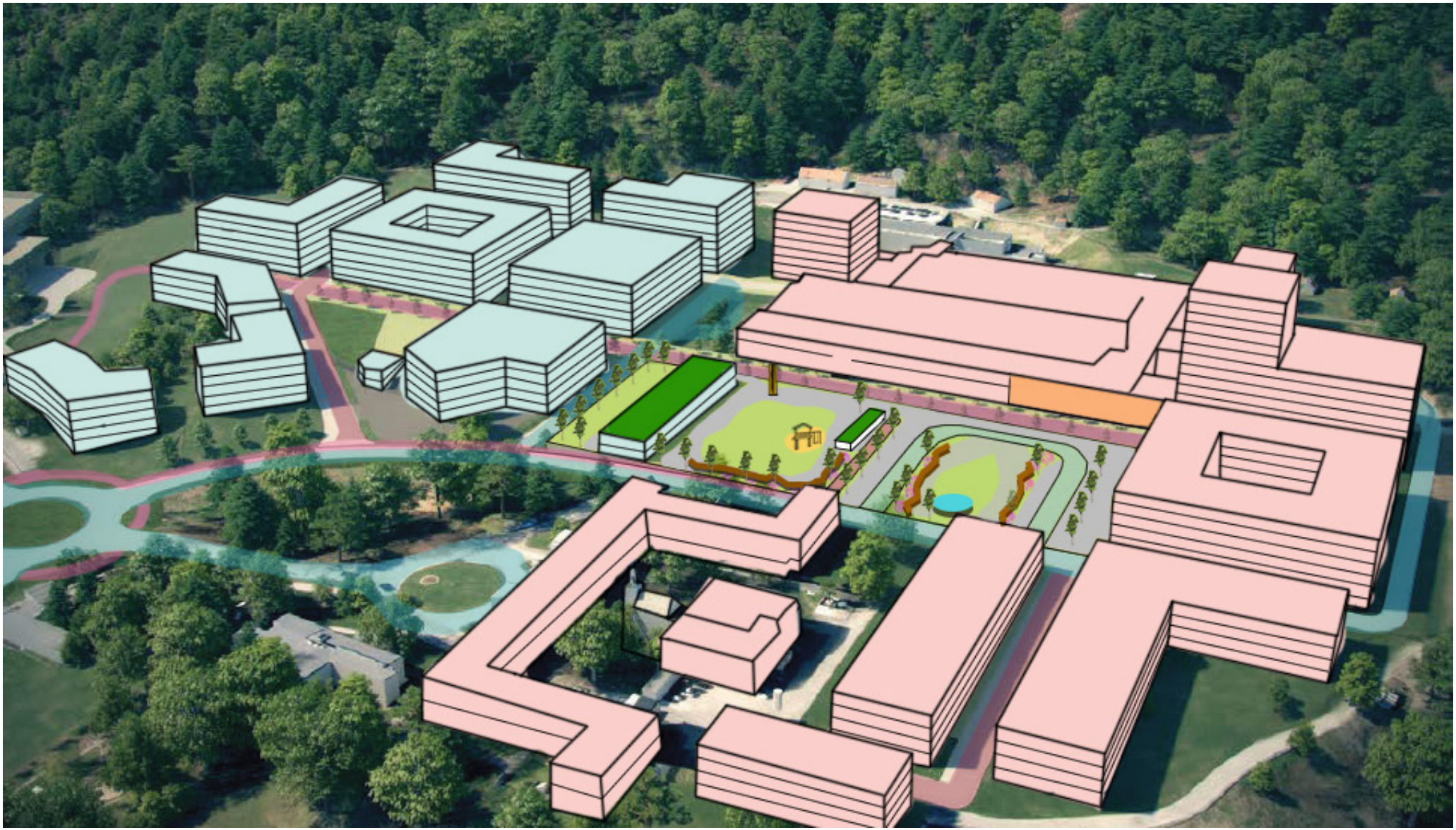


Figure 114: Show how the area can be transformed with the propsed new central urban space

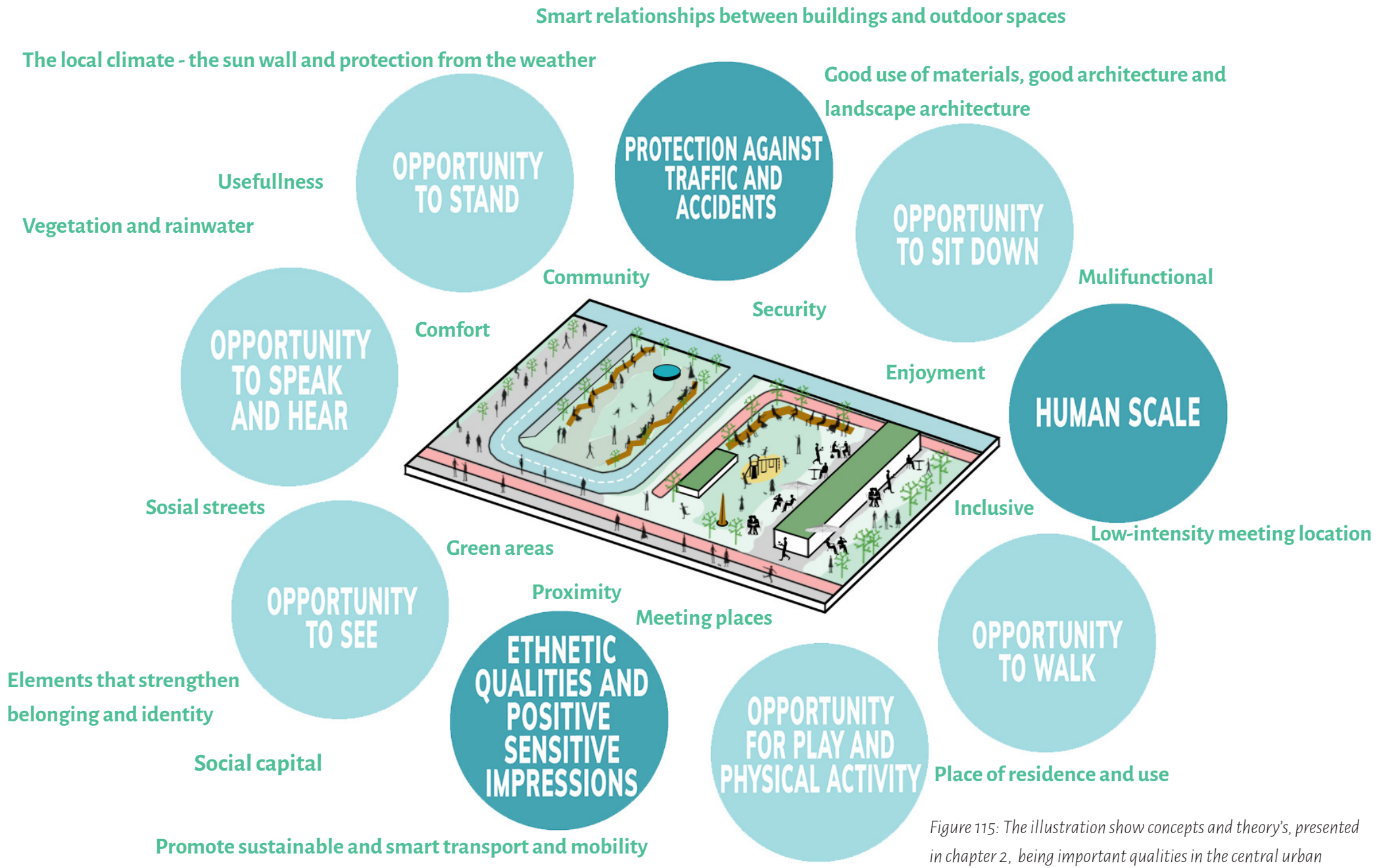


Figure 115: The illustration show concepts and theory's, presented in chapter 2, being important qualities in the central urban space. (made by author)

THE OUTCOME OF THE CENTRAL URBAN SPACE TRANSFORMATION

The outcome of the central urban space proposed transformation at Eg:

Activity

Life at EG, with this proposal, is safe, clear and attractive. Eg will then have good and varied functions, with a good connection to the city center and residential areas, creating stability in the area and a diversity of cultures, backgrounds, and age groups. Eg will have an attractive and safe urban space for all. This requires that the planning and design of the urban space invite different population groups into the community. Since Eg is a hospital area, it is the area continuously used by all user groups. Eg needs programs that address the needs and behaviors of different segments, age groups, and users to ensure inclusive urban spaces.

Access

The central urban space is an important target point. Taking account of the connection with UiA and Kristiansand city centre, the thesis sees this area as an ideal space to introduce a new public space, which links the Eg to the wider area. It will act as a gateway towards the city center, UiA and Bymarka. New sightlines and corridors between the central urban space ensure movement and mobility between the different areas at Eg.

Several streets in the area will be closed to through traffic, making it less attractive to drive in the area. The space the cars previously occupied in the streets will be used as living space, and the area will thus get a large, new network of attractive connections and new living areas. Less driving will lead to more people transporting themselves on foot, which in turn increases city life.

The streets become an arena for activity (walking) and for unplanned meetings. Reduced noise and air pollution make the street more attractive for living and recreation. This is positive for physical, social, and mental health.

Today, the main street in Eg is a car-dominated street and a barrier in the area, where cars, buses, taxis, ambulances, and helicopter fighting for space, while pedestrians and bicycles are guests. The main street in the plan proposal is transformed into a continuous and inclusive street for buses, cars, and taxis, in interaction with soft road users. Road infrastructure gives priority to buses, pedestrians, and cyclists. New routes and distance from the main road ensure good accessibility for soft road users. In addition, the pedestrian and bicycle lanes will be moved to green and sunny areas. The main road should also be a good traffic alternative, which is facilitated with a wide sidewalk for walking and staying. In this way, the main street barrier effect is reduced and the park can be better implemented as part of the area.

The master's thesis with the proposal seek to reduce car traffic, but still provide the opportunity for easy access for those who are car and transport dependent. Reducing car use and removing parking spaces can be perceived as too radical a move. Measures to get people to change habits are demanding, but necessary.

Urban design

The urban space is a supplement to Eg hospital area, an urban space with diverse uses that provides circulation and residence through the hours of the day. The wall zone by the buildings is outdoor space that can be furnished and designed, providing a richness for planting, use, and expression. The transformation of Eg arrangements for a variety of building types based on different forms of realization that contribute to the development of a local economy and ensure innovation in housing forms, common functions, and new types of qualities that contribute to giving the area a distinctive character.

The urban design of the central urban space will contribute to a safe urban space. This is proposed by planning for:

Human scale

The urban spaces and streets proposed promote human presence, resulting in natural surveillance. It improves the security in Eg, support the human presence with a blend of appealing qualities that are well-designed and easy to use.

Create good visibility and the opportunity for an overview of the urban space or the area. Blind, passive, and optically confined facades will be avoided. Ground floors that are active and will help to ensure visibility from the street. The area will be built in such a way that it will be easy to keep an eye on paths, roadways, and critical areas while also increasing traffic security. Buildings can also be designed with windows that face public places, adding extra content to the urban environment.

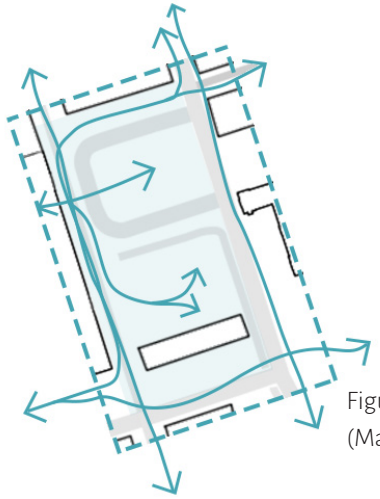


Figure 116: Illustration of connectivity in the urban space. (Made by author)

Paths and traffic axis with sightlines and openness to the sides provide good opportunities to orientate and change direction. Eg will have clearly defined routes and placement for different modes of traffic, with good lighting along roads and paths.

Psychological belonging and opportunities

The desire to use the urban space of Eg gives people a sense of belonging. This includes both people working there and people visiting. It has great significance for the sense of belonging if the urban space has defined the area's use and identity. Visually distinctive features in the form of urban design with colors, art, and differences in building styles can contribute to the users feeling a greater sense of belonging. Aim for a clear selection of different area types in relation to the public space. By implementing different areas in the urban space, can this lead to a diverse use by different people. Creating great opportunities to use the urban space for all generations and different groups of users. It is important for the hospital community and the opportunity to meet others that the public areas are designed so that different people are invited to move and stay there.

New urban space

At first floor level, there will be active glass facades where people can see in and out, in addition to a café, a kiosk and information on the first floor. The new area will transform the car park, replacing it with a new square, with the active frontages facing onto the new space. Proximity to outdoor spaces is important in a good environment and ensures space for varied uses adapted to both sexes, different ages and backgrounds with urban design. It is also important to have quiet zones as a contrast to urban spaces with high activity levels. The new urban space will work as a mobility hub, motivating people to take advantage of the streets and urban space. It is both active and social, and good for your health. The mobility hub is close to the main entrance and provides connectivity.

New mobility solutions in the area add new qualities to the quarters. As cars are pushed underground and out into the periphery, former roads get new functions such as bicycle lanes, green lanes, and residential lanes. In this way, the street is transformed into new meeting rooms and contributes to a natural variation in the area. In the green areas around Eg create quieter backyards where small children are safe to play, and the noise level is more subdued. The quarter is organized in a modular system that provides flexibility with regard to building sizes—small, large, old, and new buildings.

Figure 117: illustration of different connected qualities in the central urban space (made by author)

Figure 118: Eg hospital will have a green hospital area

10 CONCLUSION

10 CONCLUSION

The main goal of this master's thesis has been to transform the central urban space in Eg into a new attractive and vibrant urban place by means of demonstrating urban design qualities that strengthen the place's perception, identity, and use.

The choice of this thesis theme and case area fell on Eg hospital area for several reasons. Transformation of hospital areas is an important task that includes a complex development in urban planning. An important part of developing transformation areas is to integrate identity and heritage into development in a sustainable way. In addition to implementing the qualities, the area is missing to strengthen the sense of place. Eg hospital area will go through a transformation process from being a hospital area that does not have sufficient capacity and cluttered infrastructure to becoming a new future-oriented district in Kristiansand. The fact that Rambøll, Henning Larsen and the municipality describe Eg as a possible place for transformation, with a central location that can connect urban areas together and the area's potential, made the hospital area at Eg a good choice for the thesis case area.

This led the theses to the following research question:

How can the hospital area at Eg be transformed and how can the new central urban space ensure important planning qualities?

The answer to the problem is not unambiguous, and there can therefore be many different approaches to this task. Use and perception of an area is a complex phenomenon that consists of several layers. The thesis used a combination of different angles to examine the physical and social constructions to propose a solution to the thesis problem.

Based on findings and knowledge obtained from the theory and analysis, the thesis presented a vision and strategies that will be important for further transformation and development of the hospital area. The vision was to create a new central urban space that facilitates use and accessibility for people. This vision is fundamental, as an important finding was that the current area is largely perceived as cluttered, inaccessible, and poorly adapted for optimal use. At the same time, the link between hospital buildings, central urban space, and people has always been important.

With the long-term development of Eg with the strategies as a basis, can this lead to an increased use of both the hospital area and the urban space. Making Eg becoming more viable, universal and comfortable. Based on the literature study, it became clear to the thesis that one must first and foremost gather people for city life to arise. It has become important to look at urban space as part of a larger context. The thesis has therefore been focused both overall and in detail in order to be able to answer the problem.

In order to improve Eg's design and qualities, it was important to investigate how the area is and what the inhabitants of Kristiansand want for future development. The findings from the survey "Bedre byer" provided input and a basis for strengthening what people perceived as good, and improving or changing what people perceived negatively.

The sub-question; How should the central urban space be developed and designed, is answered in chapter 9. The sociocultural analysis method has provided insight and perception of the needs in Kristiansand. The SWOT show further on what Eg is lacking. The excursion has provided a broad understanding of the area on Eg, with its strength, weaknesses and strengths. This in addition to Henning Larsen and Rambøll proposal have given a large opportunity focus, on further transformation. Conversations with Henning Larsen have provided a broader understanding of the transformation project, with its depth and substance. With all this information can the proposal of the central urban space contribute and provide the needs in the Eg hospital area.

The theory collection has given the thesis an understanding of qualities one should integrate in a transformation, as well as depth in what is rooted in different planning techniques. How can planning qualities improve the central urban space is answered by both presenting theory connected to this question, and how proposed qualities improve the central urban space, presented in the last part of chapter 9 . With the planning qualities presented in the thesis and in the proposal, will the transformed Hospital area in Eg be activated with a central urban space facilitating use and access.

One of the most fundamental measures to improve Eg was to preserve the historical and cultural characteristics, activate the area, facilitate use and access. An important tool for strengthening the use of the central urban space was to make areas of use visible, safeguard green elements, and acquire new functions that allow the public to use and experience Eg. The integration of new hospital buildings into central urban space and an area of use with future-oriented functions is an example of this.

The principles the thesis presents have the purpose of facilitating urban life and use, and function as a tool for proposed design. The principles depend on each other in connection with the thesis' understanding of the area, so that it is facilitated for optimal development, use, and social life. By planning for a compact urban development with a central urban space, people and functions are gathered, where the urban space network ensures a diversity of good connections, green mobility and clear areas of use ensure that Eg is experienced as safe and attractive for soft road users, and by building on quality planning, residents will be able to experience the place as optimal.

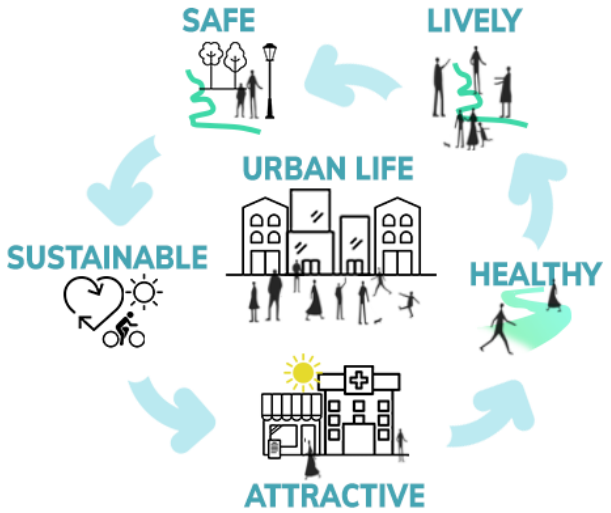


Figure 119: Show different key qualities is connected to the central urban space (Made by author)

One of the goals of the thesis was to look at how Eg can be developed with a focus on transforming the hospital area with regard to social and environmental sustainability. Social sustainability in Eg is largely about promoting diversity and the environment, stimulating contact, activity and accessibility. The presented proposal tries to create a good, multifunctional, and social urban space with the help of site development theories and findings from the analysis.

Today, the urban space is little used and has few qualities, being in close proximity to a busy road and paved areas set aside for car parking. The transformation of the area creates a proposal to restructure the area and provide better land use. The new area provides increased capacity, more jobs and businesses in an otherwise monotonous hospital area. The proposal is based on findings in the analysis, guidelines, and overall plans. Eg's function as an area for hospital activities has been taken care of with the establishment of a central urban space in the city center. The urban space is open to the public but also contains the necessary elements to run a well-functioning hospital area.

In the detailed proposal, the task wants to create a new, socially and central urban space. Transforming the urban space from an area categorized by parking areas, incoherent and little varied. Adjacent to several important destinations and hospital functions, but contributes little or no to urban life in Eg. to an area that facilitates security, diversity, and increased use. In order to be able to translate the goals for the desired transformation into physical form, the principles, strategies, and guidelines that are reflected in the proposal are presented.

Furthermore, the thesis has looked at how central urban space can transform Eg regarding environmental sustainability. This has been done by integrating and retaining the greenery in the area, in interaction with conservation, and considering future climate impacts by prioritizing surface water solutions and creating robust structures with a long service life. By having plans regarding sustainable solutions, this can form a good basis for being able to transform, Eg in the direction of a more sustainable hospital area that is viable, universal, and comfortable. The proposed inclusive central urban space contributes to social sustainability: an area that is used by different people, an area with different uses and designed for everyone. The case area goes from being undefined, fragmented, and car-prioritized to becoming an important health-related area with qualities that invite and support what people do at street level and facilitate the use of the area.

This thesis has been based on the Eg hospital area as a case area, with a main focus on the central urban space. Even if one relates to specific opportunities and challenges related to this particular place, several of the challenges in Eg may have similarities with other transformation projects in Norway and abroad. The challenges of transforming demarcated areas, to become viable districts in connection with a city are a current topic. The strategies and design principles in this thesis can therefore be linked to other transformation areas that have similar structural changes and challenges as Eg is facing.

> ***"A good city is like a good party - people stay longer than really necessary, because they are enjoying themselves."*** *- Jan Gehl*

11 REFLECTION

11 REFLECTION

Place qualities such as urban space, green structure, and place identity are described. Proposals are presented as a separate chapter. The premises for this proposal include the description in the theory chapter and the site analysis. The analysis chapter also describes proposed transformations and solutions for buildings, infrastructure, and content. Urban and place development in the Eg hospital area will have an impact on urban development, urban form, and the urban environment with a new improved area that strengthens both Eg and Kristiansand.

The transformation of Eg can be a link between existing and planned urban structures. In line with the municipal plan, area regulation and development proposals for Eg, the Eg hospital area will be transformed from the current hospital with low capacity into a health urban area, as a more integrated part of Kristiansand. Eg hospital area is clearly delimited from the rest of the urban development in Kristiansand and is well placed to establish a new urban structure of high quality.

The thesis has focused on creating a high-quality area with the features the area needs. This will build up around the hospital location and form a regional health cluster. Emphasis has also been placed on the possibility of activating urban areas with urban audience-oriented functions. The area transformation of Eg hospital area allows for an extensive process that will be developed over a long period of time. The proposals and illustrations presented in this thesis show what the Eg hospital area could look like in the future. When it comes to urban planning and transformation of the hospital area, emphasis has also been placed on finding a balance between hospital needs and the desire for the areas to appear open and inviting. Protection is ensured in the central urban space in the hospital area through the placement of functions such as bicycle parking, vegetation fields, and furnishing that separate urban spaces from busy roads. The green areas and vegetation will be reflected in the new transformed area to create a natural area that safeguards the place's identity and prioritizes people over parking spaces.

With a new and transformed health area in Kristiansand, a health cluster is established with education, research, treatment and care services and health-related business development. The hospital area on Eg will be the power center in the health cluster.

The area will contain both functions that can support the hospital and functions that give life to the street level. For the area to appear as an extended part of the urban structure in Kristiansand, with urban life at street level, it is important that it establishes audience-oriented functions in the urban space. It is therefore desirable to facilitate purposes for business, catering, and other public-oriented purposes on the 1st floor of the building. Here, special functions can also be located that can be shared by the health area and the hospital. Among other things, it is desired to be able to establish a business for a cafe, kiosk or information within Eg hospital area.

The proposal in the master's thesis proposes balances several considerations. The hospital is a large "company" with a number of functions and requires a significant building volume. The goal for development is a long-term transformation that will achieve activating the urban spaces. The hospital area must have urban functions such as multifunctional functions around the central urban space, which also opens up the possibility of creating synergy effects for the hospital establishment through the realization of a health cluster.

Through realization of the plan proposal, one can create an open and inviting urban area, at the same time as the plan provides a basis for establishing an efficient and well-functioning hospital, in good interaction with the health-related functions in the Eg hospital area.

Planned step-by-step development for Eg provides the opportunity to adapt the phase to future development to a greater extent. All plans are based on the current situation, with Rambøll and Henning Larsen's possibility study and its plan proposal as a basis. Should there be changes that affect feasibility studies or other guidelines that are submitted, this may affect the proposal this master's thesis presents. These possible changes must then be included in the further planning of new development and construction stages.

It is not possible to conclude that the proposed plan for Eg is sustainable, as there is no clear definition of what a sustainable area is, and there are therefore many different interpretations and approaches to such a task. For sustainable development, Kristiansand should focus on densifying the city center so that people can live a car-free life. The hospital area is the perfect place to start such a sustainable development.

The aim of the project was to transform the central urban space in the Eg hospital area with a focus on quality, activity, and safeguarding the green place identity, something I believe the project has achieved with the strategies and plan proposal. The proposed proposal transforms the hospital area in the direction of becoming an active, inclusive, quality-assured, and viable hospital area, which promotes the identity of the place and the population and area users can easily use it.

Figure 120: Eg hospital area (Made by author)

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FIGURE LIST