MEMORY

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SANDNES DEMENS LANDSBY

ABSTRACT

Sandnes Demens Landsby (Dementia Village) will be located in the center of the coastal city Sandnes, Norway. The dementia village is a specified care center for people struggling with different stages of memory loss. The main focus is to design this specific architectural typology within a new urban context. The design of the architectural project will inform the schematic urban redevelopment plan of the post-industrial zone that surrounds it.

THESIS STATEMENT

My goal is to create a contemporary typology that is inspired by the historical and vernacular design of the naust (boat house) and sjøhus (wharf house) which has been forgotten over the last century. As the function of the dementia village is focused on helping people with individual memory loss, the urban design aims to solve the collective memory loss of a unique and local typology in the city. Sandnes Demens Landsby is located in the city center (rather than at the city's edge with nature), because dementia patients should be considered and treated as an integral part of society.

The programs and design of the dementia village will inform and interact with the wider urban proposal. The architectural project aims to re-establish the significance of this location in the city's history and the schematic urban plan aims to re-establish a strong connection between the inhabitants of Sandnes, their coastline and the fjord. The project will moreover create a fluid and continuous urban connection between Sandnes and its neighboring city Stavanger.

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BACKGROUND

The background chapter will explain what dementia is, general information and statistics about dementia in Norway, stages of dementia, and the perception of space.

WHAT IS DEMENTIA?

Dementia is not a specific disease, but is rather a general term for the impaired ability to remember, think, or make decisions that interferes with doing everyday activities. Alzheimer's disease is the most common type of dementia. Though dementia mostly affects older adults, it is not a part of normal aging.

How common is dementia?
Worldwide, around 55 million people have dementia, with over 60% living in low- and middle-income countries. As the proportion of older people in the population is increasing in nearly every country, this number is expected to rise to 78 million in 2030 and 139 million in 2050 (WHO 2021).

Symptoms
Because dementia is a general term, its symptoms can vary widely from person to person. People with dementia have problems with:

- Memory
- Attention
- Communication
- Reasoning, judgment, and problem solving
- Visual perception beyond typical age-related changes in vision

Signs that may point to dementia include:

- Getting lost in a familiar neighborhood
- Using unusual words to refer to familiar objects
- Forgetting the name of a close family member or friend
- Forgetting old memories
- Not being able to complete tasks independently

Treatment and care
There is currently no treatment available to cure dementia. Anti-dementia medicines and disease-modifying therapies developed to date have limited efficacy and are primarily labeled for Alzheimer's disease, though numerous new treatments are being investigated in various stages of clinical trials.

Much can be offered to support and improve the lives of people with dementia and their carers and families. The principal goals for dementia care are:

- Early diagnosis in order to promote early and optimal management
- Optimizing physical health, cognition, activity and well-being
- Identifying and treating accompanying physical illness
- Understanding and managing behaviour changes
- Providing information and long- term support to carers

Risk factors and prevention
Dementia does not exclusively affect older people. Young onset dementia accounts for up to 9% of cases. Studies show that people can reduce their risk of cognitive decline and dementia by being physically active, not smoking, avoiding harmful use of alcohol, controlling their weight, eating a healthy diet, and maintaining healthy blood pressure, cholesterol and blood sugar levels. Additional risk factors include depression, social isolation, low educational attainment, cognitive inactivity and air pollution (WHO 2021).

Dementia develops slowly over time and is incurable. Deterioration occurs faster as the disease progresses. Most patients with dementia die within a ten-year period after diagnosis, either from dementia or from other causes (FHI, 2019).

DEMENTIA IN NORWAY

Between 80,000 and 100,000 people are living with dementia in Norway today. This number will rise with the increasing number of elderly people (FHI, 2019).

Age
Prevalence rises sharply with age, from an estimated 1.6 per cent in the 60-64 year age group to 43 per cent among people aged over 90 years. Almost every fifth person will die with dementia (FHI, 2019).

A minority of people develop dementia before retirement. There are probably over 4000 people aged under 65 who have dementia in Norway (FHI, 2019).

Mortality
Dementia is a progressive and terminal illness, and people with dementia have a shorter life expectancy than the general population.

Estimates made in Norway based on patients assessed for dementia and cognitive symptoms in the specialist health service show that 75-year-olds with dementia live on average 5-6 years after diagnosis. Younger people diagnosed at age 65 live for an average 6-7 years. By comparison, life expectancy in the general population is about 12 years for 75-year-olds and 20 years for 65-year-olds, according to figures for 2016 (Strand, 2019).

2905 people died of dementia in Norway in 2018, most of whom were over 70-years-old. The figures include Alzheimer's disease. However, because dementia particularly affects the elderly who may have other illnesses, the figures from the Cause of Death Registry are uncertain (FHI 2019).

Future trends
If age-specific incidence does not change, the rise in life expectancy in Norway will more than double the number of people with dementia from 2015 to 2050. This is based on calculations that have estimated a doubled incidence in Western Europe during the same period (ADI, 2015).

There is little change in the proportions within different age groups that have dementia. The most likely explanation for the increased prevalence of dementia in the total population is increased life expectancy in general and more elderly people, plus that people with dementia are living longer with the disease (FHI 2019).

Consequences and challenges
Dementia is a strain and challenge for both the affected person, their relatives, the health and care services and the community. The loss of cognitive and motor functions, together with additional psychological symptoms such as anxiety, depression and delusions, often lead to a great deal of suffering for those affected by dementia.

The disease can cause great stress among relatives, especially spouses and children. The gradual loss of a loved one is a painful and often lengthy process. In addition, the burden of care itself is often heavy and tiring. There are around 300,000 close relatives of dementia patients who sufferers in Norway at any given time (FHI,2019).

Cognitive failure and dementia require widespread use of health and care services and will pose an increasing societal challenge in the years ahead. Currently, there are around 40,000 nursing homes in Norway (Gjøra, 2015). Around 80 per cent of the residents, i.e. at least 32,000, have dementia (Selbæk, 2007).

STAGES OF DEMENTIA

Health professionals often discuss dementia in "stages," which refers to how far a person's dementia or Alzheimer's disease has progressed. Defining the stage helps physicians determine best treatments and aids communication between doctors and caregivers.

Dementia is usually considered as three stages: mild (or "early"), moderate (or "middle"), and severe (or "late"). A more specific stage of dementia, however, is commonly assigned based on symptoms.

It can also be helpful to know how symptoms change over stages. Alzheimer's and similar diseases can cause dramatic swings in mood and behavior, and the activities a person is physically able to do will change as dementia progresses. This causes stress for friends and relatives, but knowing what's coming can help prepare for social, medical, and personal needs (DCC 2020).

Rather than simply using "early stage," "middle-stage," and "late-stage" dementia as descriptors, there are scales that provide a more comprehensive description.

Reisberg Scale

The most commonly used scale is the Reisberg Scale (GDS). The GDS divides into seven stages based on the amount of cognitive decline. Someone in stages 1-3 does not typically exhibit enough symptoms for a dementia diagnosis. By the time a diagnosis has been made, a dementia patient is typically in stage 4 or beyond. Stage 4 is considered "early dementia," stages 5 and 6 are considered "middle dementia," and stage 7 is considered "late dementia" (DCC 2020).

My project will provide care for dementia patients in stage 5, 6 and 7 and will be designed to give them the best possible solution. Stage 5 is considered mid-stage, stage 6 is considered a more severe mid-stage, and stage 7 is considered late stage. It is important to clarify which spesific stages of dementia the project focuses on, so that the design reflects the needs of the people that are going to be living there. Patients in each stage struggles with a variety of challenges that must be considered in the design.

The next two pages provide a comprehensive overview of the Reisberg Scale with it's 7 stages that describe the symptoms and difficulties of each stage as well as their duration.

Stage 1: **No Dementia** No Cognitive Decline	Normal function No memory loss People with no dementia are considered in Stage 1
Stage 2: **No Dementia** Very Mild Cognitive Decline	Forgets names Misplaces familiar objects Symptoms not evident to loved ones or doctors
Stage 3: **No Dementia** Mild Cognitive Decline Average Duration: 2-7 years	Increased forgetfulness Slight difficulty concentrating Decreased work performance Gets lost more frequently Difficulty finding right words Loved ones begin to notice
Stage 4: **Early-Stage** Moderate Cognitive Decline Average Duration: 2 years	Difficulty concentrating Forgets recent events Cannot travel alone to new places Difficulty completing tasks In denial about symptoms Socialization problems Physician can detect cognitive problems
Stage 5: **Mid-Stage** Moderately Severe Cognitive Decline Average Duration: 1,5 years	Major memory deficiencies Need assistance with ADLs (dressing, bathing, etc.) Forgets details like address or phone number Doesn't know time or date Doesn't know where they are

Stage 6: **Mid-Stage** Severe Cognitive Decline Average Duration: 2,5 years	Cannot carry out ADLs without help Forgets names of family members Forgets recent events Forgets major events in past Difficulty counting down from 10 Incontinence Difficulty speaking Personality and emotional changes Delusions Compulsions Anxiety
Stage 7: **Late-Stage** Very Severe Cognitive Decline Average Duration: 2,5 years	Cannot carry out ADLs without help Forgets names of family members Forgets recent events Forgets major events in past Difficulty counting down from 10 Incontinence Difficulty speaking Personality and emotional changes Delusions Compulsions Anxiety

(DCC 2020)

PERCEPTION OF SPACE

People with dementia experience changes in how they perceive things. This includes misperceptions and misidentifications, hallucinations, delusions and time-shifting.

These problems can cause the person with dementia to say or do things that do not make sense to others. This can be frustrating, confusing and upsetting for the person, and for carers, especially if the person is experiencing a different reality to yours.

By responding in a supportive way, you can keep up their confidence and help them to cope with the misunderstanding.

Misperceptions happen when the person sees one thing as something else. For example, mistaking blue floor tiles for water.

Misidentifications happen when the person has problems identifying specific objects and people. For example, mistaking their son for their husband.

Some mistakes could be caused by either, for example someone may mistake their television remote for their mobile phone because: Their visual system is damaged, and it's not clearly seen as a television remote. Or it might be clearly seen as a television remote, but misidentified as a mobile phone.

A person with dementia may also have 'visuospatial difficulties', when the brain has problems processing information about 3D objects. This can affect a person's spatial awareness or the ability to judge distances. They may have difficulties using stairs, parking a car or recognising objects.

Some misperceptions and misidentifications can lead a person with dementia to make errors in how they use an object. For example, they may try to use a bus pass as a payment card, or not use the right coins to pay for something.

If a person is experiencing misperceptions or misidentifications, they may mistake furniture or decorations for something more troubling. For example, they may understand a dark coloured doormat as a deep, black hole. This can make them feel nervous.

Familiar surroundings can be helpful to a person who is misperceiving or misidentifying. This is because they may rely more on memory and habit than on perception to move safely around their home. Try not to move furniture, or change where things are kept, as this can make it more difficult for them to relate to their space.

02

PRECEDENTS

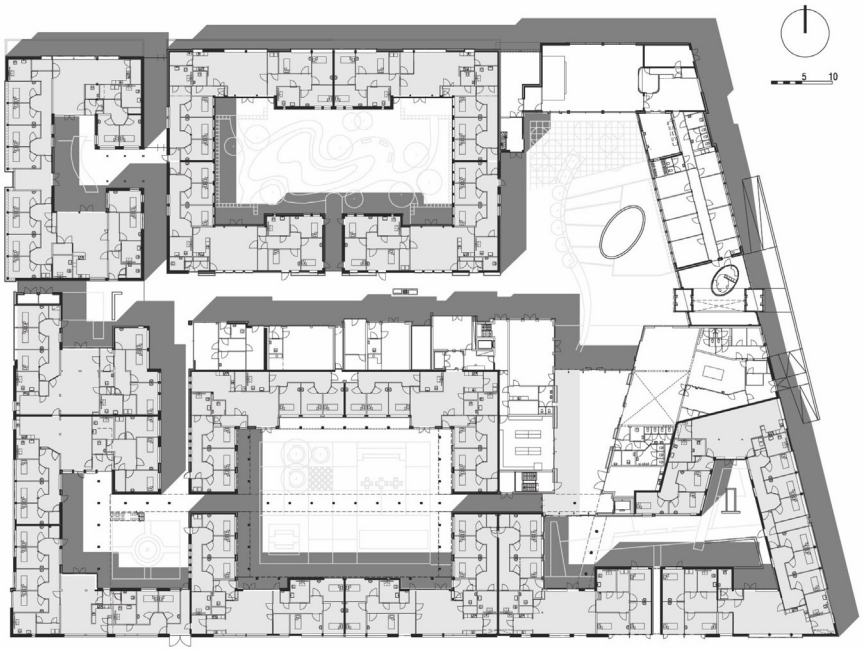
The precedents chapter presents important architectural projects as well as historical vernacular building types unique to the location of Sandnes. This chapter also include a collection of movies that deal with mental illness or dementia. Lastly it includes the book Madness and Civilization. The precedents were crucial in the development of the project and formed the framework for the design.

THE HOGEWEYK

Location: Weesp, Netherlands
Program: Dementia Care Facility
Architects: Molenaar&Bol&VanDillen Architects
Area: 15000 m²
Year: 2009

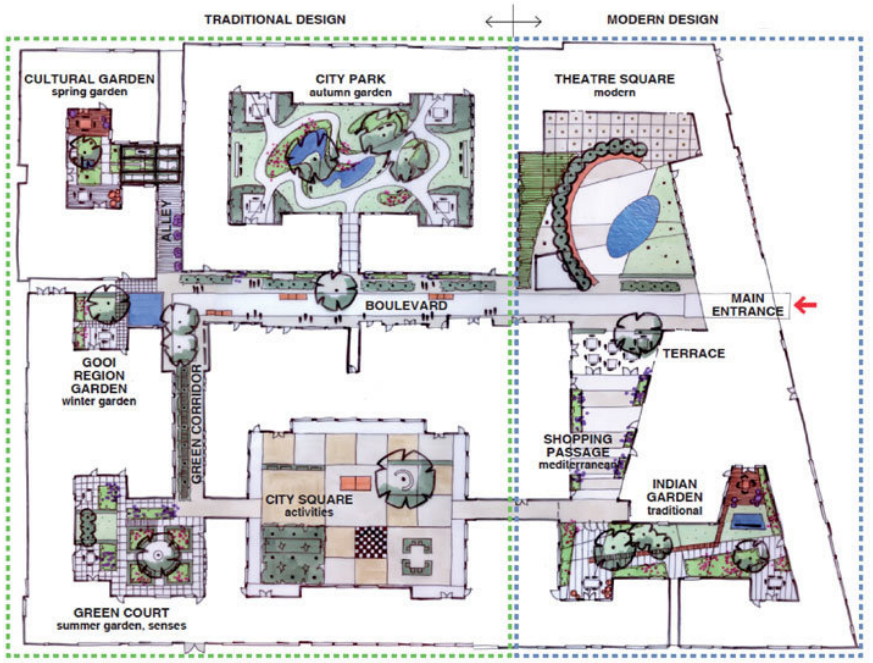
Description

The Hogeweyk is the worlds first dementia village. It opened in 2009, and is located in the town of Weesp in the Netherlands. The development of the dementia village concept started in 1993. The Hogeweyk is the outcome of an innovative and disruptive vision on living, care and wellbeing for people living with severe dementia. It means a paradigm shift in nursing home care. The traditional nursing home has been deinstitutionalized, transformed and normalized. The Hogeweyk resembles a normal neighborhood. A neighborhood that is part of the broader society in the town of Weesp. In The Hogeweyk you will find clustered houses where people live together based on similar lifestyles. They can visit the pub, restaurant, theater, the supermarket or one of the many offered clubs. The concept supports unique needs, lifestyles and personal preferences. The dementia patients can continue enjoying their lives and feel like a part of society, rather then to be relocated to an institution outside of town. The project has 169 residents spread accross 27 houses that are placed in larger clusters and offers professional care and support both day and night.



Comment

The Hogeweyk and other projects like it has been criticized for presenting a fake reality to it's dementia patients and often gets compared to the movie The Truman Show. They describe The Hogeweyk as a stage for, "the reminiscence world", in which actors help the residents live in a fictitious world. Rather then to be an integral part of society it pretends to be a part of society by offering everyday programs and activities like grocery stores, restaurants and hair dressers. These types of programs and activities create the illusion of normality since they are only accessible by the patients of the village. Most dementia villages still exist as closed bubbles an rarely offer real authentic integration with the surrounding society. The Hogeweyk still function as a closed institutions to some extent. It is organized as a block consisting of clusters of buildings with several private courtyards. Despite the claim of being a part of the broader society in the town of Weesp, it doesn't function as such in reality. The village is located next to the industrial zone of the town, approximately 1 km from the town center. The village is enclosed and inaccessible to the general public, preventing them from entering or interacting with the patients living in the village. Many Alzheimer's experts have, however, valued The Hogeweyk for being a familiar and safe environment in which people with dementia live while retaining their own identity and autonomy as much as possible. They live in a social community with real streets and squares, a real restaurant with real customers, a supermarket for groceries and a theatre that hosts real performances. The issue here is that the community in the village only consist of dementia patients and professional care takers, and is missing the most integral participant to be truly integrated into society, the general public.



Significance

The Hogeweyk is an important precedent for my project. It is the first dementia village of it's kind and present a tested case study of the concept of dementia villages. The project has certain issues that I will try to avoid, but it is the first project that offers a dementia spesific care concept and is an innovative project when compared to conventional indistutional caring homes. There are certain elements of it's design and organization of the village as a whole that I will try to avoid, but there are also certain elements that I will try to incorporate. To give the dementia patients a feeling of normality I will also incorporate public programs like a restaurant, pub, hair dresser, grocery store and more. The difference is that all of these programs should be accessible by both the dementia patients as well as the general public. I aim to design a project that is a true integral part of society, where the general public and the patients have real interaction. My project will be different than the Hogeweyk as it will be an open cluster of houses where the public pedestrian street will cross straight through the center of the village, connecting the village and it's inhabitants directly to the city center and the future urban development.

ALZHEIMER'S VILLAGE

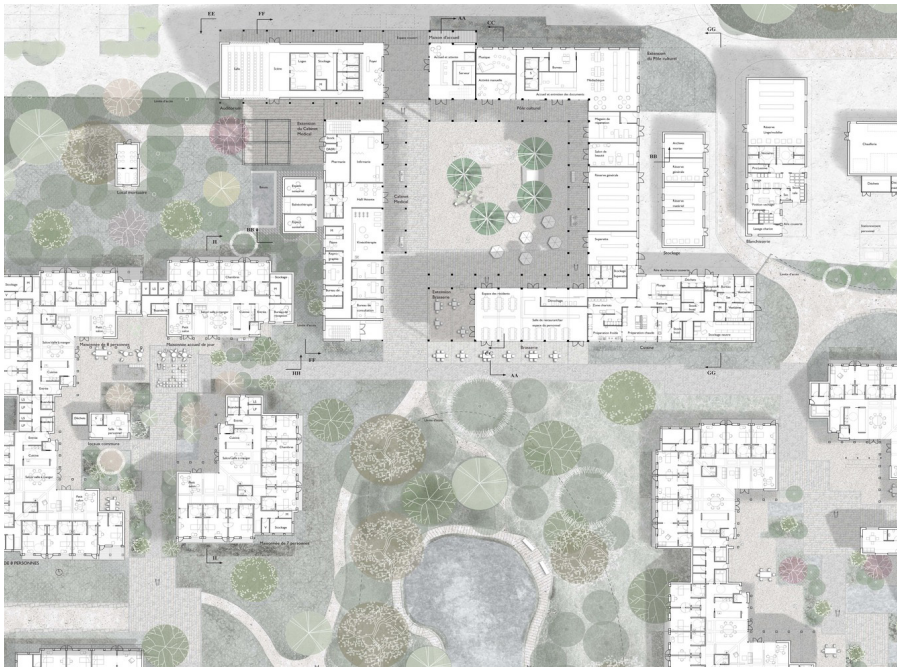
Location: Dax, France
Program: Dementia Care Facility
Architects: Champagnat & Gregoire Architects, NORD Architects
Area: 10700 m²
Year: 2020

Description

NORD Architects have designed several dementia villages, including the Alzheimer's Village in Dax, which is the first care home in France for people with dementia. NORD Architects have taken into account the individual residents, the health care staff, and the local culture and nature, so everyone, from relatives to researchers, will experience people, including those with dementia, living in an environment that prioritises dignified aging. Recognisability creates continuity and a sense of belonging. Alzheimer's Village in Dax is designed to create a safe environment, in which residents, relatives and health care professionals all get a feeling of well-being, which is also a major prerequisite for providing qualified care. Recognisable surroundings, free from alienating or obstructive elements, are essential for leading a meaningful life. The project has integrated familiar functions within the complex – a grocer's, a hairdresser's, a restaurant and a market square – reminiscent of the residents' previous lives in their neighbourhoods.

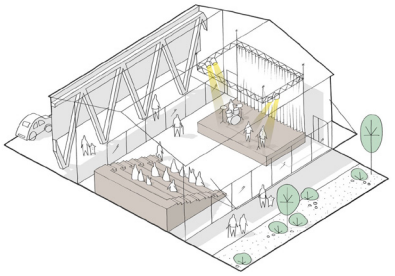
Comment

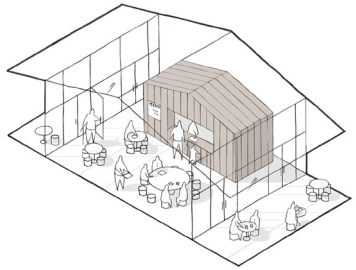
Similarly to The Hogeweyk the Alzheimer's Village functions as a closed bubble seperated from society and the general public. It is located at the edge of the town, surrounded by nature. The project provides a safe and familiar environment for its inhabitants with a variety of programs and activities, but the important integration with society is still missing. This project is still an evolution and improvement from the original dementia village concept. Rather than being a contained singular block of buildings, it is organized in four separate and spread out clusters of buildings. The project provides larger and more varied exterior spaces and presents a more spacious and open neighboorhood. The clusters of accomodation function as separate elements that are part of a larger whole. Compared to The Hogeweyk, this project also puts a lot more emphazis on recognizability and a familiar environment, not with it's programs, but also with the design and layout of the architecture. There is a bigger focus on legibility to make it more practical and easier to navigate for the inhabitants. The complex is integrated with nature, transforming the existing landscape with its characteristic ancient pine trees to a recreational space, where residents can relax or go for a walk within the area. A path runs through the landscape, drawing its own loop, so none of the residents will experience dead ends or get lost along the way.

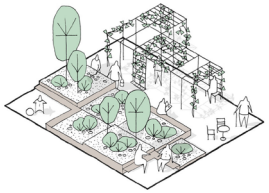


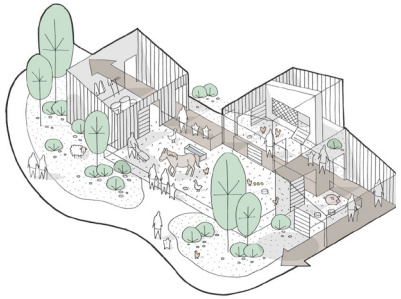
Significance

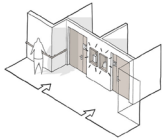
The significance of the Alzheimer's Village comes from it's unique and interactive programs that offers its patients with both physically and psychologically stimulating activities. The Alzheimer's Village is also and important precedent for my projects interior layout. It serves as an inspiration for room and apartment layouts, taking into consideration the dementia patients spesific needs in terms of spesific dimensions and organization of furniture and other interior elements. The everyday connections, across generations, institutions, and the town, are essential when it comes to integrating the dementia village into the local environment and enhancing the sense of continuity and cohesion across different life patterns. The architecture of the Alzheimer's Village caters to the needs of both communities and individuals, providing each resident with options that are reassuring and diverse. The project must not feel challenging or disturb the patients cognitive abilities. That's why the architecture also needs to have an explicitly local feel, featuring elements from the local building style. The built environment should provide a kind of cultural extension that alleviates the transition from living at home to living with a severe mental illness in a dementia village.











MADNESS AND CIVILIZATION

Form: Book
Subject: Insanity
Author: Michel Foucault
Published: 1961

Summary

Madness and Civilization: A History of Insanity in the Age of Reason is an examination by Michel Foucault of the evolution of the meaning of madness in culture, law, politics, philosophy, and medicine in Europe from the Middle Ages until the end of the 18th century. Philosopher Michel Foucault developed Madness and Civilization from his earlier works in the field of psychology, his personal psychological difficulties, and his professional experiences working in a mental hospital. He wrote the book between 1955–1959, when he worked cultural, diplomatic and educational posts in Poland and Germany (Gutting, 2013), as well as in Sweden as the director of a French cultural centre at the University of Uppsala (Macey, 2004).

In Madness and Civilization, Foucault traces the cultural evolution of the concept of insanity or madness in three phases:

The Renaissance
The Classical Age
The Modern Era

The Renaissance

In the Renaissance, art portrayed insane people as possessing wisdom or knowledge of the limits of the world, whilst literature portrayed the insane as people who reveal the distinction between what men are and what men pretend to be. Renaissance art and literature further depicted insane people as intellectually engaged with reasonable people, because their madness represented the mysterious forces of cosmic tragedy (Gutting, 2013). Yet Renaissance intellectualism began to develop an objective way of thinking about and describing reason and unreason, compared with the subjective descriptions of madness from the Middle Ages (Khalfa, 2009).

The Classical Age

At the dawn of the Age of Reason in the 17th century, the "the Great Confinement" of insane people started happening in the countries of Europe. The initial management of insane people was to segregate them to the margins of society, and then to physically separate them from society by confinement, with other anti-social people like prostitutes, vagrants and blasphemers, into new institutions, such as the General Hospital of Paris (Khalfa, 2009). The socio-economic forces that promoted the institutional confinement included the legalistic need for an extrajudicial social mechanism with the legal authority to physically separate socially undesirable people from mainstream society. The conceptual distinction between the mentally insane and the mentally sane, was a social construct produced by the practices of the extrajudicial separation of a human being from free society to institutional confinement. In turn, institutional confinement conveniently made insane people available to medical doctors that started to view madness as a natural object of study, and then as an illness to be cured (Gutting, 2013).

The Modern Era

The Modern era began at the end of the 18th century, with the creation of medical institutions for confining mentally insane people under the supervision of medical doctors. Those institutions were the product of two cultural motives: The new goal of curing the insane while they were away from poor families and the old purpose of confining socially undesirable people to protect society. Those two, distinct social purposes soon were forgotten, and the medical institution became the only place for the administration of therapeutic treatments for madness. Although more enlightened and compassionate in the clinical treatment of insane people, the modern medical institution remained as cruelly controlling as mediaeval treatments for madness (Khalfa, 2009).

In the preface to the 1961 edition of Madness and Civilization, Foucault said that:

Modern man no longer communicates with the madman . . . There is no common language, or rather, it no longer exists; the constitution of madness as mental illness, at the end of the eighteenth century, bears witness to a rupture in a dialogue, gives the separation as already enacted, and expels from the memory all those imperfect words, of no fixed syntax, spoken falteringly, in which the exchange, between madness and reason, was carried out. The language of psychiatry, which is a monologue by reason about madness, could only have come into existence in such a silence (Foucault, 2009).

Significance

Madness and Civilization is an important philosophical as well as historical precedent for my project. The book is a comprehesive historical overview of how people with mental illnesses were treated throughout the ages in Europe. It is crucial to understand how people with mental illness were treated and taken care of in the Renaissance to the Classical Age and lastly to the Modern Era in order to create a project that works against the modern tendencies to institutionalize "insane" people and seperate them from society in specialized confinement facilities. These tendencies started several hundres years ago, and it is important to understand the history, in order to prevent my project from repeating it, and to design a dementia care facility for the modern age. People with mental illness and more spesifically people struggling with dementia and Alzheimer should be considered as an integral part of society. This book explains why they have not been considered as such, and it is therefore a crucial precedent that supports the importance of my project. The dementia village will be a safe, stimulating and comfortable environment for dementia patients that interact and blend with the urban environment and the general public, without being an authoritative institution.

ONE FLEW OVER THE CUCKOO'S NEST

Form: Movie
Subject: Insanity, Power and Gender
Released: 1975

Summary

In 1963 Oregon, Randle Patrick McMurphy, a criminal who has been sentenced to a fairly short prison term, decides to have himself declared insane so he'll be transferred to a mental institution, where he expects to serve the rest of his term free of prison labor and in comparative comfort and luxury. His ward in the mental institution is run by an unyielding tyrant, Nurse Ratched, who has cowed the patients into dejected institutionalized submission. McMurphy becomes ensnared in a number of power games with Nurse Ratched for the hearts and minds of the patients. Throughout the movie, however, the question is just how sane any of the patients in the ward actually are and whether they really belong there.

Significance

The story addresses themes of conformity, gender roles, and mental illness, making for a complex and thought-provoking film. The movie protrays a mental asylum and how an institution based on authority and control is used to deal with mentally ill patients. The movie is a representation of what I am trying avoid when designing my project.

THE FATHER

Form: Movie
Subject: Dementia
Released: 2020

Summary

Having just scared off his recent caregivers, Anthony, an 80 year old man struggling with dementia, feels abandoned when his concerned daughter Anne tells him she's moving to Paris. Confused and upset, against the backdrop of a warped perspective of his constantly changing environment and mental decline, Anthony is starting to lose his grip on reality. He struggles to distinguish past and present. Faded memories and glimpses of lucidity trigger sudden mood swings, memories from the past changes people and surroundings, and even time itself become distorted. Why has his younger daughter stopped visiting? Who are the strangers that burst in on Anthony?

Significance

As the viewer you experience the story through Anthony. You get to experience the difficult distorted reality of a person struggling with memory loss. It presents the challenges a dementia patient might have to understand reality, time, people and the surrounding environment. Because of how well the movie depicts the perceived reality of someone with memory loss it is an important precedent for the design and organization of the dementia village.

THE TRUMAN SHOW

Form: Movie
Subject: Reality
Released: 1998

Summary

Since birth, a big lie defines the well organised life of the kind insurance salesman and ambitious explorer, Truman Burbank. Utterly unaware of the thousands of hidden cameras watching his every move, for nearly three decades, Truman's entire existence pivots around the will and the imagination of the manipulative television producer, Christof, a man in charge of an extreme 24/7 reality show: The Truman Show. As a result, Truman's picturesque neighbourhood with beautiful lawns and perfect neighboors is nothing but an elaborate state-of-the-art set, and the only truth he knows is what the television network and its deep financial interests dictate.

Significance

This movie is an important precedent for my project, because many existing dementia villages and care centers have been critizised for being a real version of the reality show depicted in the movie. It is an example of what I am going against and trying to avoid. My project will offer real integration and a true reality to it's patient, rather then an enclosed and constructed reality, existing to trick the patients into thinking they still live as a part of society.

SJØHUS

The sjøhus is a historical norwegian building type similar to a wharf house. Historically it was used as a storage facility for a variety of products. The sjøhus is usually 3-5 floors high with one of the walls parallell to deep water to allow ships to load and unload products and equipment directly into the building. The wall facing the ocean is in most cases equipped with one or more vindhus. The vindhus is a small protruding structure at the top of the building that houses a winch that is used to raise products from the ships to different floors. Directly underneath each vindhus is a large square opening for each floor called a bryggedør where the products from the ships are brought into the building.

Function

The main function of the sjøhus was treatment and storage of fish, as well as storage of other products like wheat and salt. Along the western coast the salt treatment process of herring was a central function. In addition to its main function as a storage facility, it was used by a variety of ocean trade craftsmen like barrel makers, sail makers and block makers. In later years many historical sjøhus has been transformed to residential use.

Construction

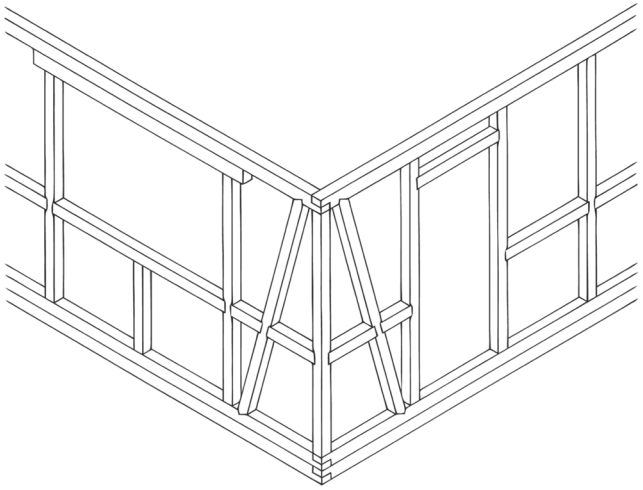
The foundation of the sjøhus can be bolverk, timber poles, stone strip foundation or in rare cases solid stone foundation. The construction of the building itself can vary widely, but the two main methods used were lafteverk or bindingsverk.

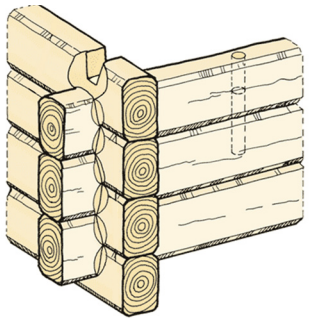
Bindingsverk

Bindingsverk replaced lafteverk as the main construction method for sjøhus at the beginning of the 18th century because it was more efficient, more versatile and required less timber material than laftverk. Bindingsverk is a light load bearing skeletal frame that was filled with insulation and covered by external and internal cladding to create a closed structure.

Lafteverk

Lafteverk is a construction method in which solid timber logs are stacked on top of each other and intersecting at the corners to create a closed load bearing structure. Lafteverk is the oldest construction method for sjøhus and was used until the 18th century. Lafteverk was material intensive and required a large amount of timber logs, specialist craftmanship and time.





NAUST

The naust is a norwegian boat house used to store small boats and fishing equipment. It is placed perpendicular to the sea with the front facade towards the water. The front facade has a large central opening where a boat can be taken in and out of the boat house. In some cases a ramp is built from the large central opening and down to the water to allow for quick and easy loading and unloading of a boat. A naust was usually built without insulation and an open construction so that fishing equipment would dry quickly. In Norway there are 4 types of traditional naust: Steinnaust, tømmernaust, grindnaust and stavnaust.

Steinnaust
A steinnaust is a boat house built with a stone foundation. They were usually built in location with low access to timber. Three of the walls were constructed in stone, while the front facade facing the water was a light timber wall with a large opening. A timber frame would be constructed on top of the stone walls to carry the roof structure.

Tømmernaust
A tømmernaust is a boat house built with solid timber logs. They were built in the innermost parts of fjords where the access to timber was good. The tømmernaust was built using the lafteverk construction method with spacing between the logs to allow for proper air circulation.

Grindnaust
Grindnaust were popular along the west coast. They required less timber to construct than the tømmernaust and used a construction method called grindverk. This boat house consists of a row of timber frames. The timber frames were created by connecting two timber columns with a spanning timber beam. The row of timber frames created the load bearing skeletal structure which was covered with vertical external timber cladding. Similarly to the other types of boat houses this type also has a large central opening on the front facade to load and unload a boat.

Stavnaust
Stavnaust were popular along the north-west coast. It is similar to the grindnaust, and has a similar load bearing skeletal frame. The difference is that the stavnaust is an open structure and doesn't have any external cladding, only a roof. This allows for better air circulation and cross ventilation and was commonly used to store timber products.

03

SITE ANALYSIS

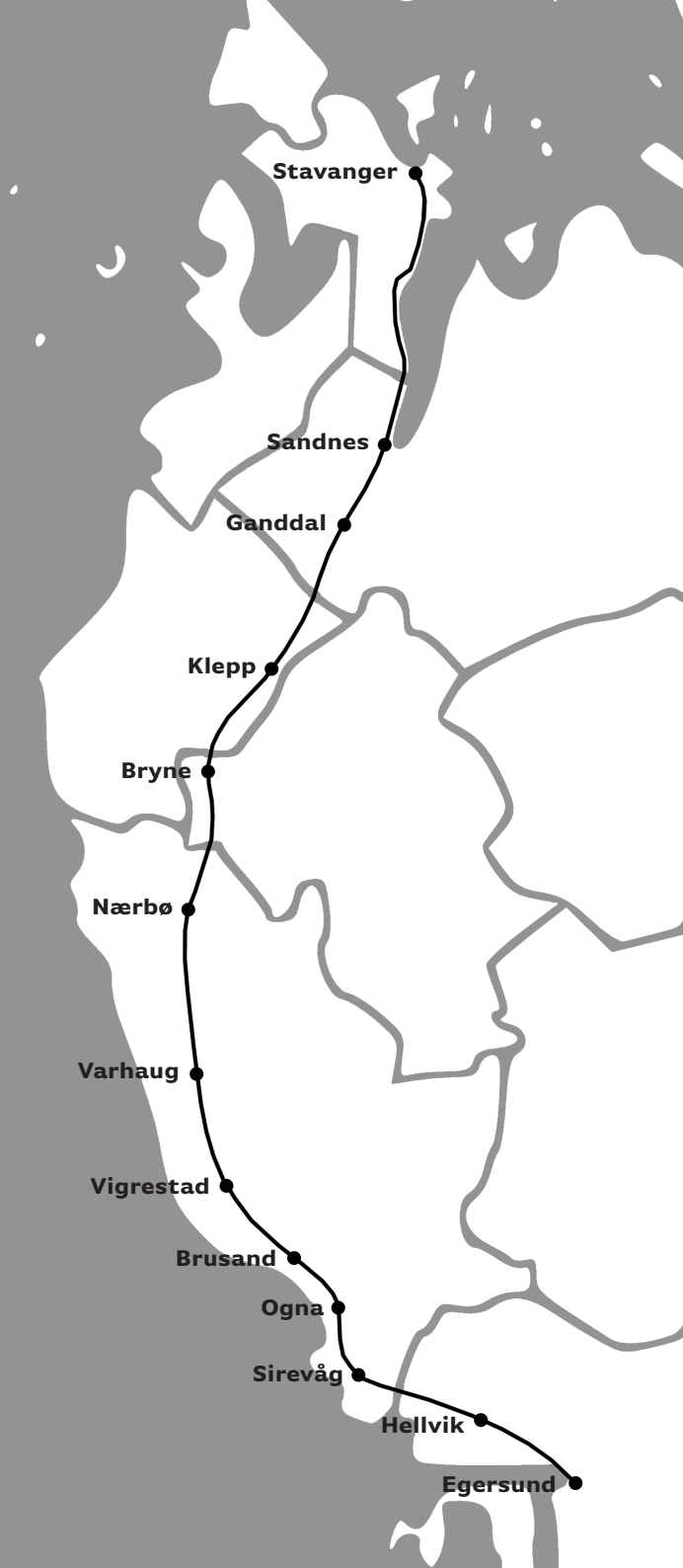
This chapter will present further background information about my spesific site, its surroundings and the historical development of the city of Sandnes.

LOCATION - NORWAY

LOCATION - SANDNES

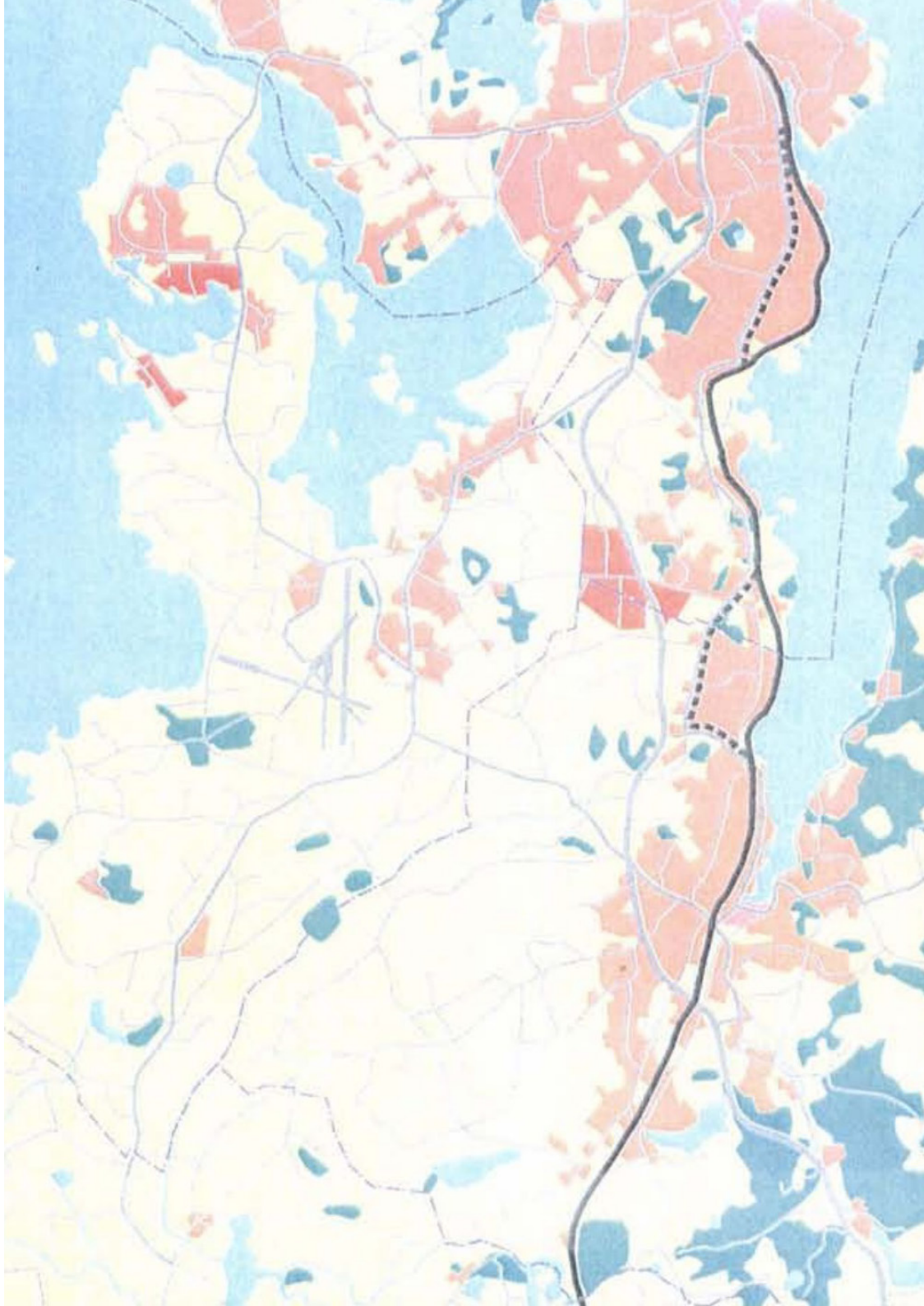
JÆRBANEN

Jærbanen is a railway connection between all the large coastal cities in the region. It was constructed in 1874-1878. The railway originally utilized steam locomotives on "smalspor" (narrow railway). In 1944 it was upgraded to "normalspor" (normal size railway). In 1956 the railway was electrified. The railway had a big impact in the way it connected the cities of Sandnes and Stavanger and helped the two neighbooring cities grow closer together over time. Today it has over 5 million passengers per year between the two cities and it is the second biggest railway connection in Norway.



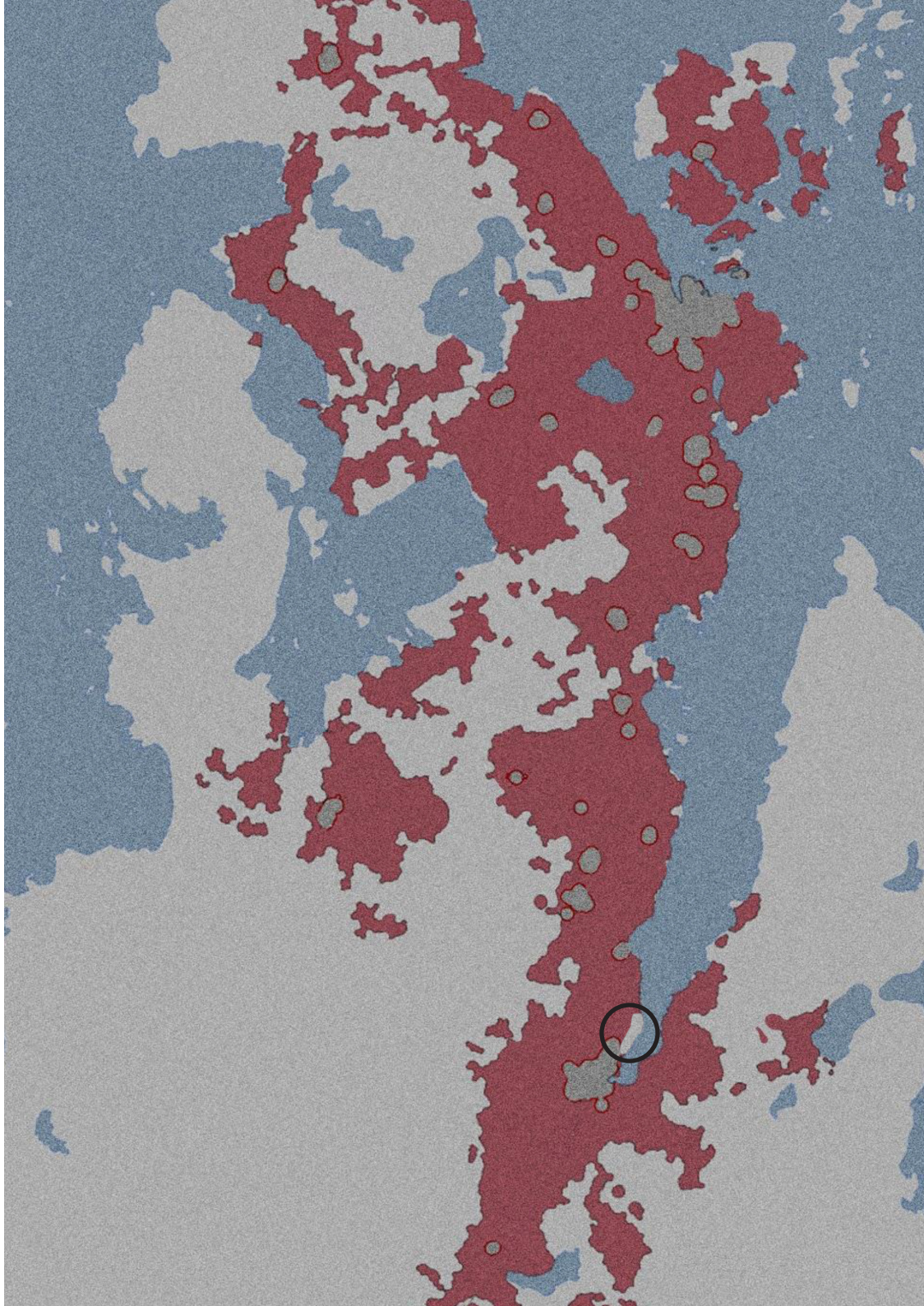
DOBBELTSPORET

Dobbeltsporet (double track) is the upgrade of Jærbanen between Sandnes and Stavanger. It helped to further connect the two cities with a round trip double track railway system. It was constructed in 2006-2009. Dobbelsporet resulted it a large increase of travelers between the two neighboring cities.



URBAN FABRIC

The urban fabric of Sandnes and Stavanger has grown closer and closer together over time. Today the urban fabric of the two cities connect and create a fluid and connected urban realm. The two cities almost function as one large city with two central city center nodes. There is one discrepency in this urban structure that can be seen on the map. It is a small area just north of the city center of Sandnes. It is a brownfield which is the remnents of the edge city or secondary industrial zone that was important during the industrial age. Today it is one of the few areas that break up the fluid urban structure and connectivity between the two cities. It has become a post industrial zone that functions as a barrier. This is another reason for choosing my spesific site. My architectural project will be the first project that will inspire and lead the redevelopment of the post industrial zone, fulfilling the missing fragment in the urban fabric and fully connecting the city center of Sandnes with Stavanger.



WIDER CONTEXT

The site for the Sandnes Demens Landsby is located at the exact spot where the city was born, at the headland called Sand-Nes. Today the project site as well as the urban site is located in the historical post-industrial zone. It is a combination of brownfield and scattered industrial buildings, storage facilities, hardware stores and some commercial buildings. The area to the west of the site is residential. The area to the south is the city center with public programs and activities. To the east is the Gandsfjord. The site is very close to the city center and has great public transportation connection. It is less than a kilometer away from the main train stop in the city and it has several bus stops along the main road passing next to the site. The site is a forgotten fragment with great potential. It will become a new residential development connecting the urban fabric of Sandnes and Stavanger and re-establish the strong connection the inhabitants once had with the ocean and the fjord.

1818

Population: 211

The oldest known map of Sandnes dates back to 1818. At the time, the shoreline extended all the way in to what is now known as Langgata, the old town of the city. During the early 19th century the inhabitants of Sandnes were mostly fishermen that took advantage of their access to the ocean. The water along the shore was very shallow, so tiny docks were built that extended out to a breakwater structure or secondary shoreline, where the water was deeper. The shallow water between the breakwater structure and the original shoreline was slowly filled with material over many decades to create the much smaller harbor that exist today. “Neset” was a cape or headland formation that symbolized the origin of the town. The name of the city is derived from this cape as well as the city’s most important resource which was sand and clay. “Sand” + “Nes” (Sand + Headland) = Sandnes. “Neset” is very important since it is the site of my project. It has been chosen as the site for my project because of its historical importance as the city’s origin and because it has been forgotten and covered by the expanding shoreline over the last two centuries. While the shoreline expanded into the ocean, the strong connection the locals had to the sea was also forgotten.

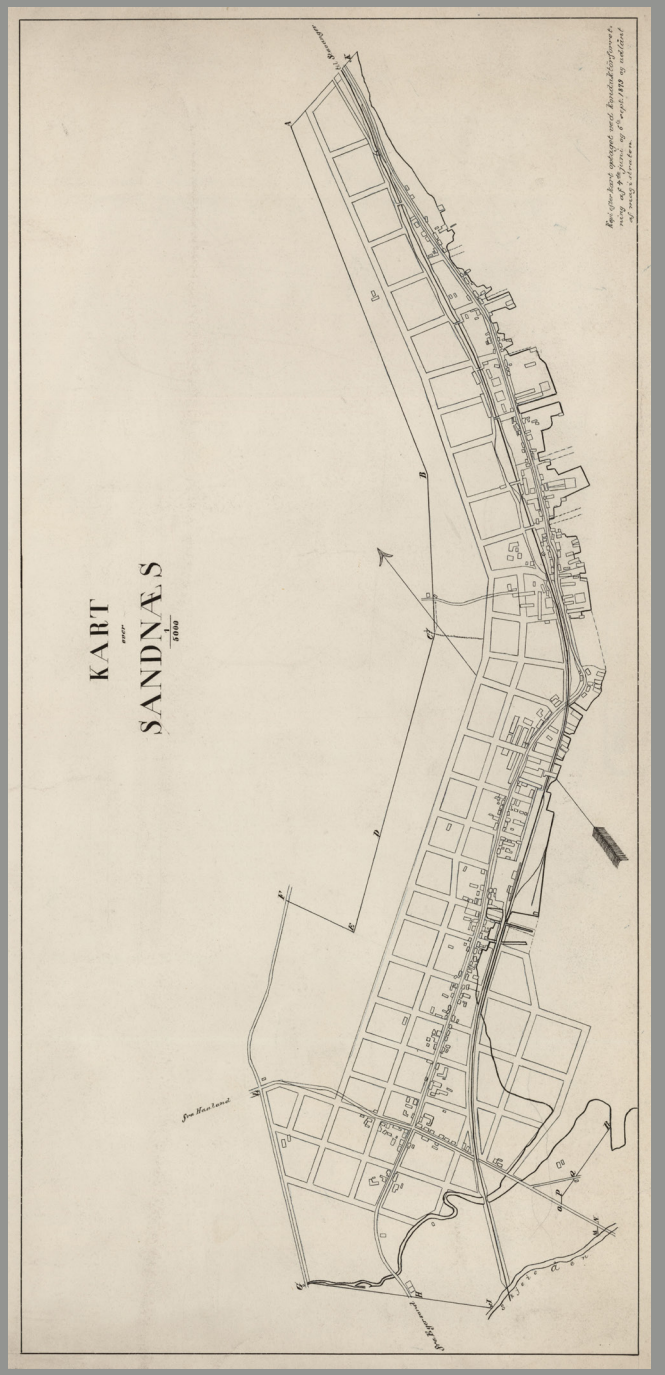
1879

Population: 1 507

The first known urban plan of the city dates back to 1879. The city started extending further along the shoreline and was already functioning as a linear city. The urban plan was based on the existing infrastructure and buildings to create a grid plan for future development and road infrastructure. The most important factors for the design of the urban plan was the existing situation, the shoreline and the railway.

1879

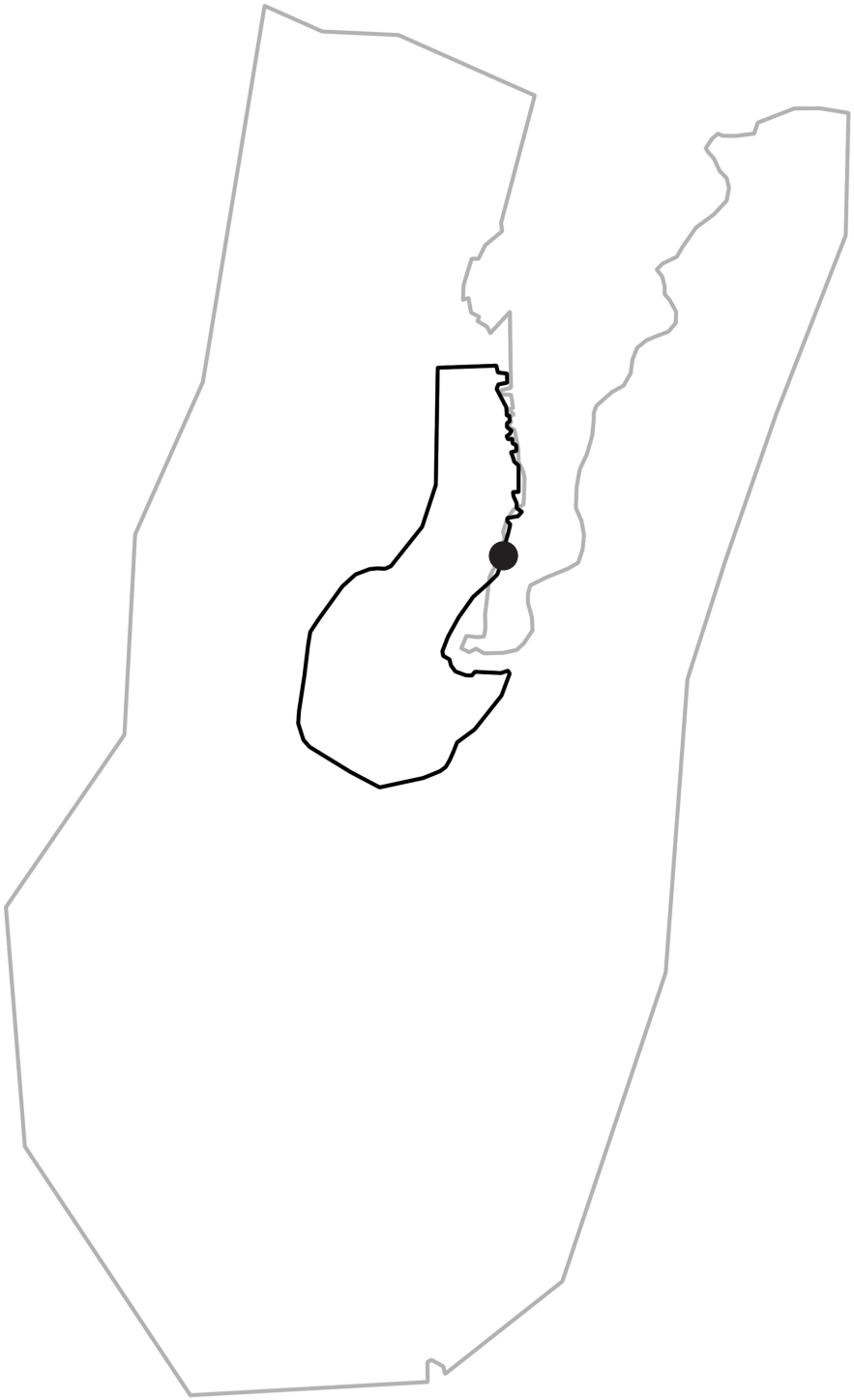
This is the first known unofficial urban plan of the city of Sandnes dating back to 1879. The plan is divided into a grid suggesting the placement of urban blocks derived from the existing urban settlement of the old town stretching linearly along the coastline. The map also suggests expansion into the fjord.

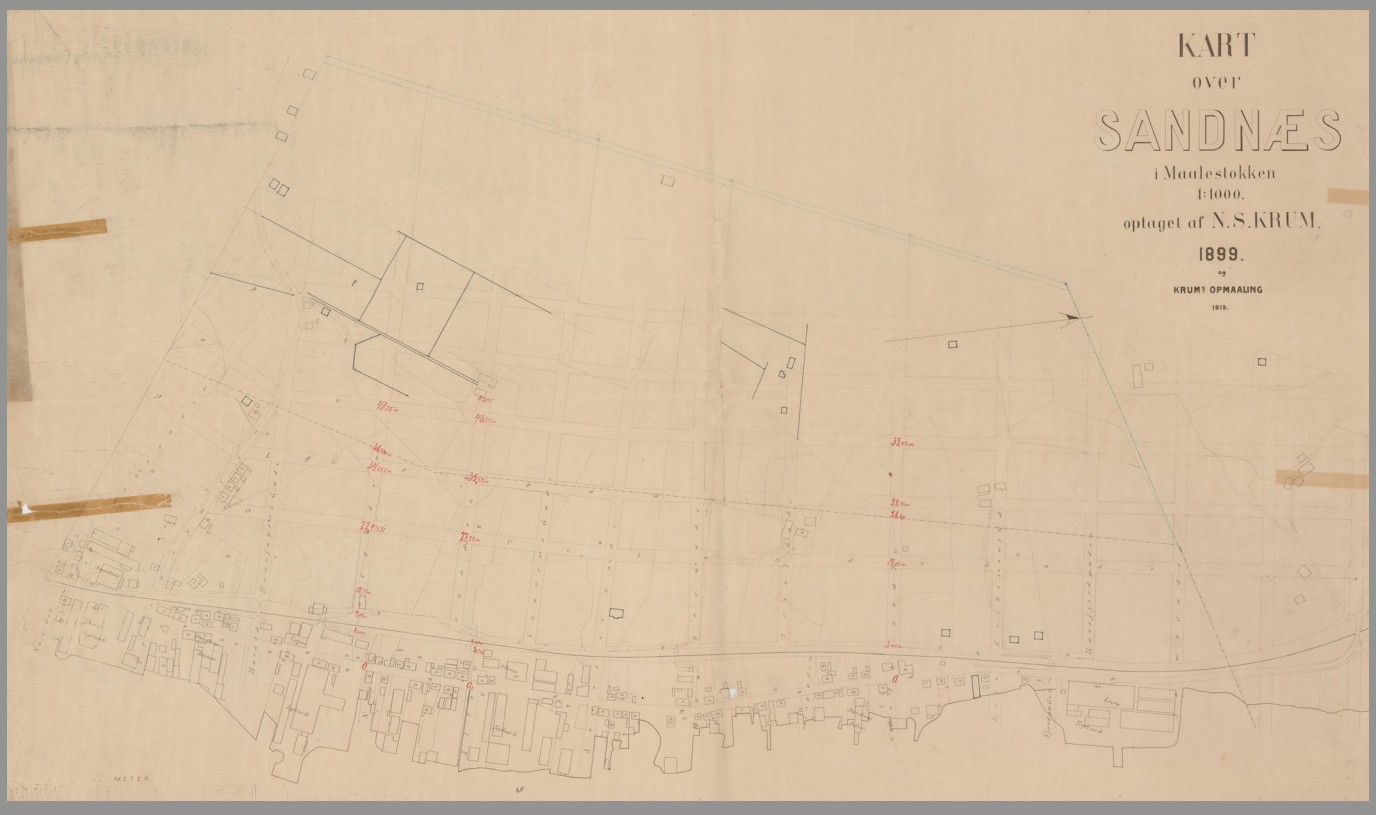


1900

Population: 2 119

The first official urban plan of the city dates back to 1900. Nicolai Solner Krum designed the new plan together with his urban design office N. S. Krum. Nicolai Solner Krum was a surveyor and cartographer. N. S. Krum became the biggest private urban planning company in Norway at the end of the 1800s. They created modern city plans for most of Norway's biggest cities like Oslo, Kristiansand, Molde, Stavanger and Drammen. The urban plan was a continuation and expansion of the grid plan from 1879. It extended further inland and further north along the coast, continuing the linear development of the city. The next page show a process map of the urban plan and the official final urban plan for the city. The maps show how N. S. Krum designed a natural continuation of the existing linear development of the city. He also continued the further expansion of the city into the fjord.




KART
over
SANDNÆS
i Maalestokken
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1899.
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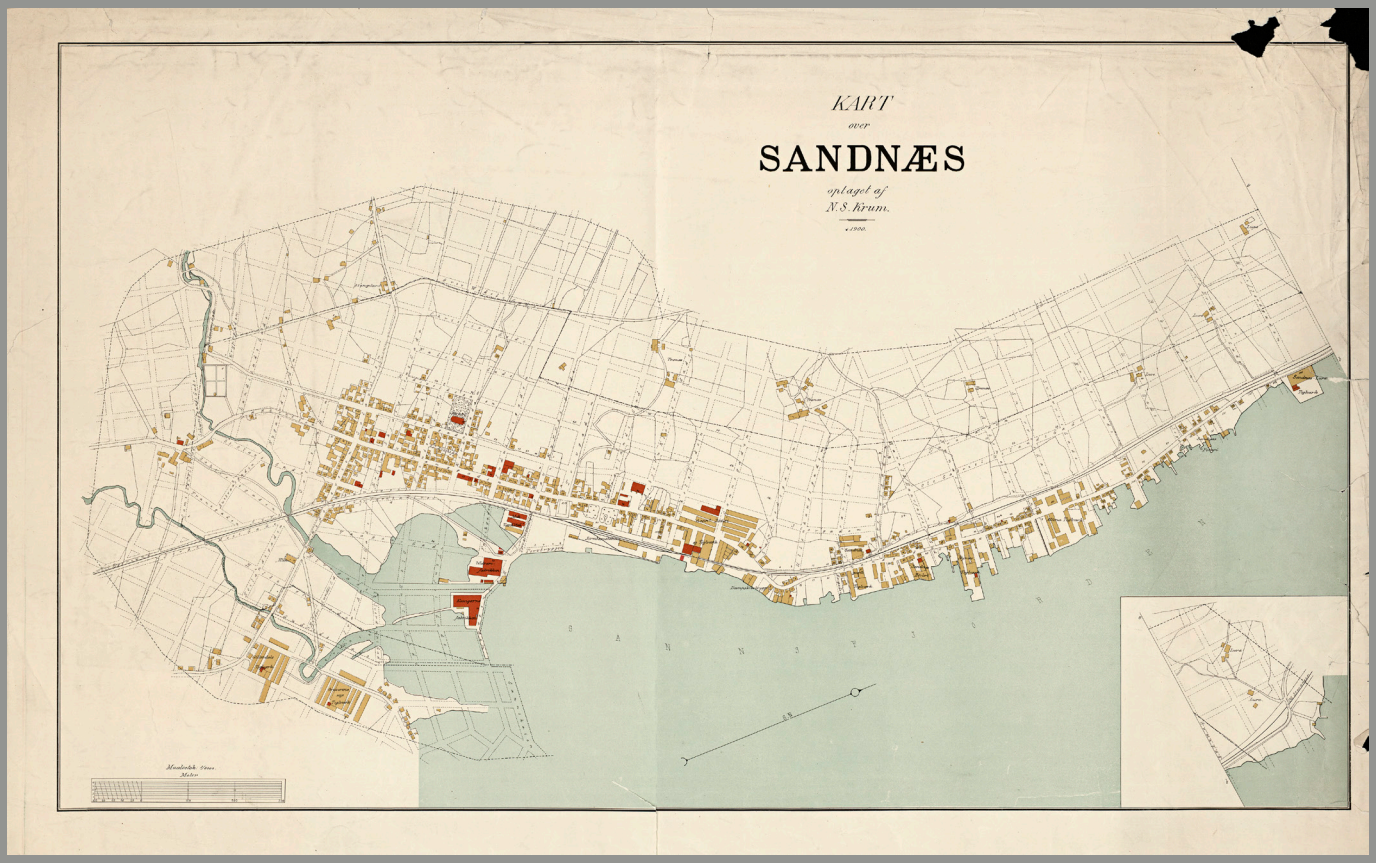

KART
over
SANDNÆS
optaget af
N.S. Krum.
1900.

1962

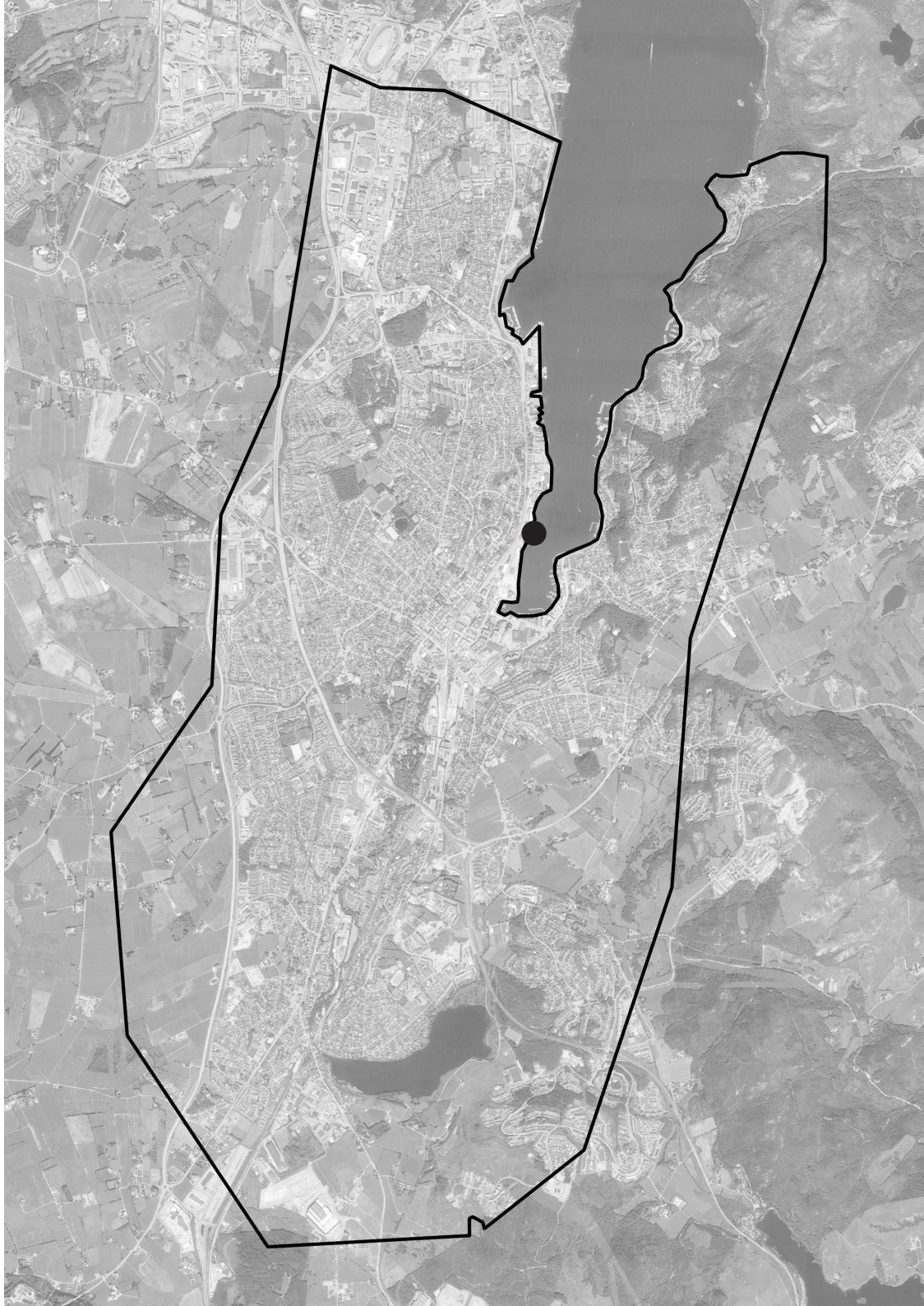
Population: 18 230

From the creation of the official urban plan in 1900, the city naturally expanded following it's principles. The urban development extended further inland and even further north. At this point in time, the city also continued its development on the other side of the fjord. The urban connection between Sandnes and its neighbooring city Stavanger started to appear. In 1962 the shoreline had almost shrunk all the way down to the situation we have today.

SANDNES TODAY

Population: 78 439
Area: 23 km2

Today Sandnes is the 8th biggest city in Norway. It is historically known for its brick, pottery and yarn production as well as being the bike capital of Norway. It is located around the innermost portion of the Gandsfjord. The urban fabric of the city is almost completely connected to Stavanger so the city is considered a part of the Sandnes/Stavanger urban area. Together with Stavanger it is known for its oil and gas industry as well as its tourism industry. The city is still considered a linear city.

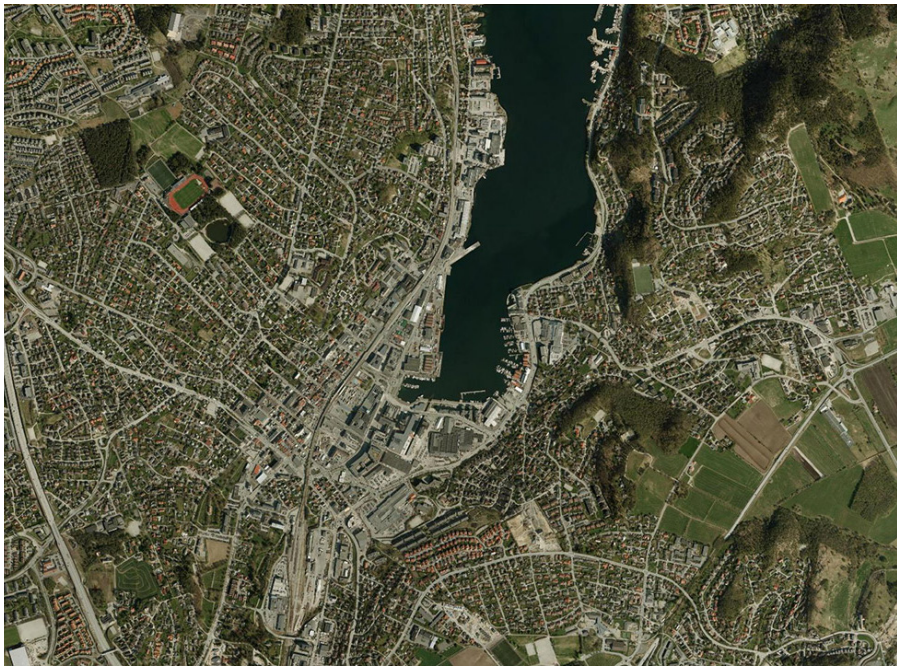


TIMELINE

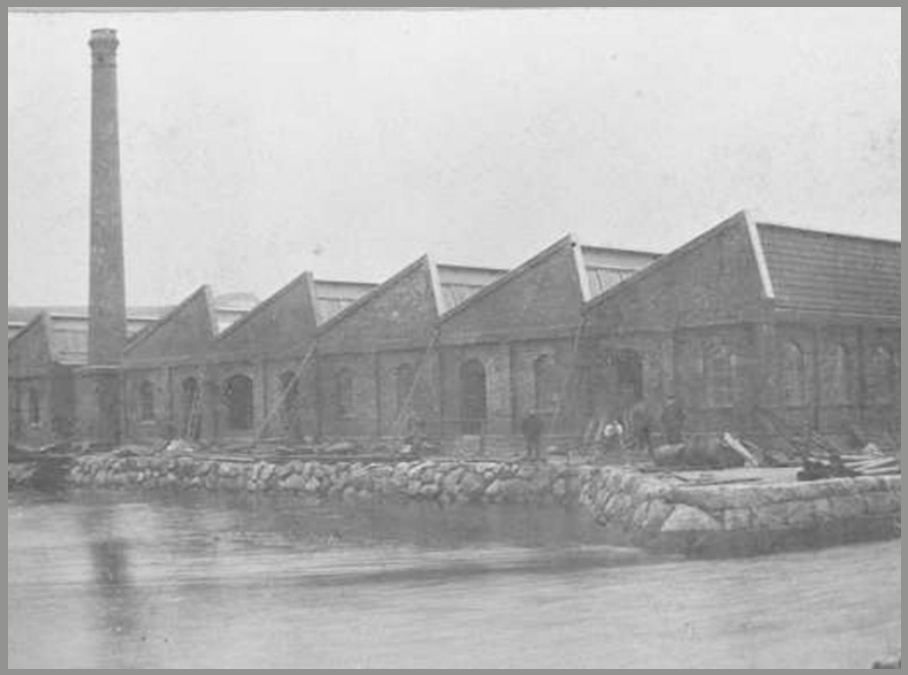
1759: First recorded population count - approximately 93 people
1790: First main road constructed through the city
1818: The oldest known map of Sandnes was created
1842: Norway's oldest pottery factory was built in Sandnes
1846: Expansion and upgrade of the main road connecting to Stavanger
1857: The first fire department was created
1860: Sandnes received "Ladested" (city) status
1865: First official population count - 1000 people
1878: Jærbanen was officially opened
1888: Sandnes Garn was founded
1906: DBS was founded
1907: First two cars drove through the city
1914: First hospital built in the municipality
1918: Sandnes got its own police force
1923: Langgata was paved
1927: Sandnes Stadium opened
1956: The railway was electrified
1969: The first oil reserves were discovered in the north sea
1983: Kvadrat opened - biggest shopping center in the region
1994: The biggest brick factory in the city went bankrupt
2000: Sandnes cultural center and library was officially opened

BEFORE AND AFTER

The next few pages will show before and after pictures that describe how the city of Sandnes developed and changed over time.




Langgaten, Sandnes



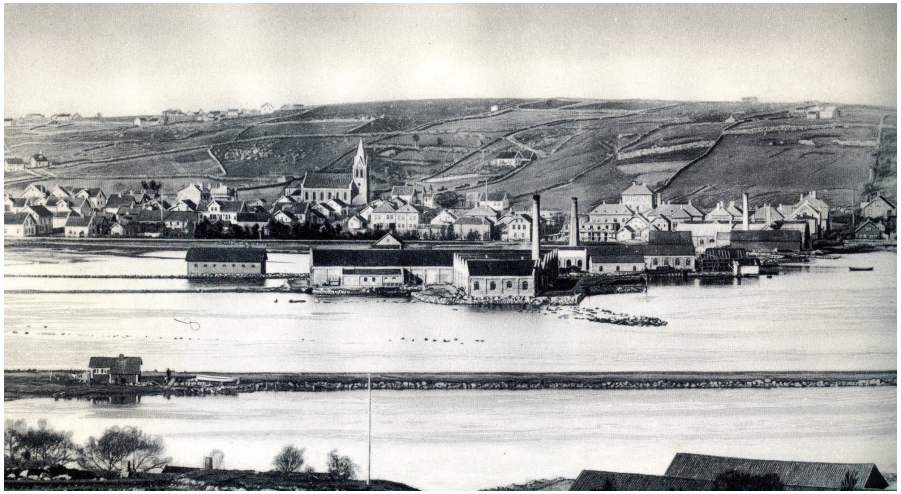

VIGESDAL
Langgada 56
Kitch'n


SANDNES KULTURHUS


GALLERI
KROGSEN


El Greko
El Greko
ANTIK
66

HISTORICAL PICTURES



SITE PICTURES

04

OBJECTIVES

The objectives form the framework for how I developed my project. They are important rules that were applied in the design process. The objectives include: User Oriented Design, Design Principles and Design for Disassembly.

USER ORIENTED DESIGN

Stage 5: mid-stage, moderately severe cognitive decline
As they progress through the seven stages of dementia, patients require more intense care and supervision. Someone with middle stage dementia often needs some caregiver assistance with regular day-to-day activities, such as dressing, eating, or bathing. At this stage, a person may no longer be able to carry out normal daily activities without support. They still know important facts about themselves, such as their name and their children's names, but they may not remember their address, where they went to high school or where they currently are.

Stage 6: mid-stage, severe cognitive decline
At this stage the patients needs support to perform basic daily activities such as dressing, eating, using the toilet, and other care. Patients with severe cognitive decline may have difficulaty regulating sleep or interacting with others.

Stage 7: late-stage, very severe cognitive decline
In late stage dementia, patients essentially can't care for themselves anymore. Generally, all verbal ability is lost, and movement become severely impaired. By the end of the seven stages of dementia, bodily functions like the ability to chew, swallow, and breathe may also become compromised (aPfM 2021).

DESIGN PRINCIPLES

Understanding the condition

It's vitally important when designing a facility to consider the residents' conditions, state of mind and the way they will use and interact with the building. Dementia is an illness affecting the memory and cognitive functionality, often resulting in misinterpretations and confusion. For example, patients might misinterpret a change in floor colour as a step. It's confusions like this that often make a patient feel disorientated and scared, so taking these impairments and perceptions into consideration when designing a space and choosing wall and floor finishes is crucial.

Make the important things stand out

One key aspect of designing for dementia is making sure that anything important to the patient is highly visible. This includes things like handrails and doors. Colour differentiation plays a key role in making these items stand out. If a white door is set against a white wall then many dementia patients will simply ignore it (CS 2015). This tactic works well in diverting patients away from inaccessible areas, such as staff offices or service spaces. However, bold and distinctive colours can then be used to highlight the items residents should notice or use, such as doorways and handrails. As well as being a physical support for patients, handrails can be considered a psychological support too, making a patient feel more secure and confident on their feet.

Reminiscence therapy

Currently one of the leading therapeutic approaches in dementia care, reminiscence therapy helps patients communicate both with other sufferers and with their carer. As dementia mainly affects short term memory, reminiscence therapy gets patients to use their long term memory and recall stories from their past. The main advantage of reminiscence therapy is that it's really person-centred, it can be very individualised and it also helps the carers to see past the disease and really get to know their patients (CS 2015). The design of the building itself can further strengthen the effect of reminiscence therapy by designing spaces with colours, layouts and programs that are familiar to the patients.

Design to last

With many residents requiring walking aids or wheelchairs, it's important that floor and wall finishes are resilient, without seeming too clinical and institutional. Impact resistant wall protection sheet and panel systems provide a cost-effective way to create a long-lasting and welcoming environment. They are easy to clean and are robust enough to cope with every day wear and tear. These products come in an array of colors and finishes to help minimise the institutional feel of a space, and in some cases feature artwork or photos, turning an image into a protective surface.

Wandering with a purpose

Dementia patients often feel the urge to wander about, and more often than not forget where they are going or how to get back. In recent years dementia units have often been designed to facilitate wandering with a purpose, providing residents with a destination or somewhere to focus on. For example, a corridor might have a communal area set up at the end of the corridor to give residents a place to walk to. Distinct colors, landmarks or unique design traits can also help patients by giving a clear indication to where different programs are located. In some cases interesting imagery has been included or a library setup at the end of a corridor, helping to entice the residents to move around independently.

DESIGN FOR DISASSEMBLY

The main focus of a construction project is aimed at the initial construction. It needs to fulfill certain current and future needs and create value to the client. The project's end of life is rarely taken into consideration.

What happens when the building is not a working solution for its current need, or when the needs of the user changes in the future? In most cases a building construction might be considered a permanent addition, but in reality it is always temporary. The timeframe of the building's life cycle might differ widely. It might serve its use for 30 years or it might remain in its initially designed state for 500 years. But eventually every single construction will be manually deconstructed for the purpose of a new construction or naturally decay over time.

"Designing for disassembly" is one of the six core principles within the "built positive" movement. It is a concept in which buildings and products are designed intentionally for material recovery, value retention, and meaningful next use.

An additional new focus has to be implemented in the initial design process. This focus will be on the end of life for the construction project. This question needs to be answered with a working solution: What will happen with the building and its construction when it eventually needs to be disassembled or demolished at some point in the future?

We currently design buildings as if they will never be taken down. Many design decisions, material choices and construction methods are based on this idea, resulting in a disassembly or demolition of the building in the future that result in material waste rather than valuable and reusable building material that can be repurposed for new use.

Today there is a big focus on solving how to demolish buildings for maximum reusability and value retention. But these solutions are trying to solve a problem or flaw that is created in the initial design process. If the initial design implements a working solution for reusability, value retention, reversibility and disassembly of the building at the end of its life, the question of how to "demolish" or disassemble the building most effectively will be solved before the building is even built.

Designing a new building with a focus on circularity and retaining value requires a shift in thinking as well as in process. There is a challenge in making a value case for the process and about ensuring that what's going to happen so far into the future will have value today.

From a design perspective, it is necessary to look at buildings as layers and to examine the building process and supply chain in reverse. If the disassembly process is solved first, it might lead the design to make it easier to solve the initial assembly. Such thinking helps with decisions on erection, labor costs, and then material recapture at the end of life.

A key component in "designing for disassembly" is documentation with data outlining the products of the building and what they're made of. It should also contain how products can be safely re-integrated into a supply chain for reuse.

The initial construction and demolition of buildings creates a lot of challenges and issues. The buildings and construction sector accounted for 36% of final energy use and 39% of energy and process-related carbon dioxide (CO2) emissions globally in 2018, 11% of which resulted from manufacturing building materials and products such as steel, cement and glass (globalABC 2019).

There is a massive loss of value when a building is demolished and all of the construction material becomes waste. Today the construction industry is unsustainable. Too many resources are used in the initial construction that are not reusable and therefore eventually becomes construction waste after only one cycle. The construction industry needs to move to a circular economy where initial construction projects can offer many cycles after its initial purpose has been fulfilled. This will not only make the construction industry more sustainable, but it can also add many benefits to the investors, the users and the environment.

05

DESIGN DEVELOPMENT

The design development will explain the concept and the organization of structures, spaces and programs. It will explain the materiality as well as the Jenga construction system.

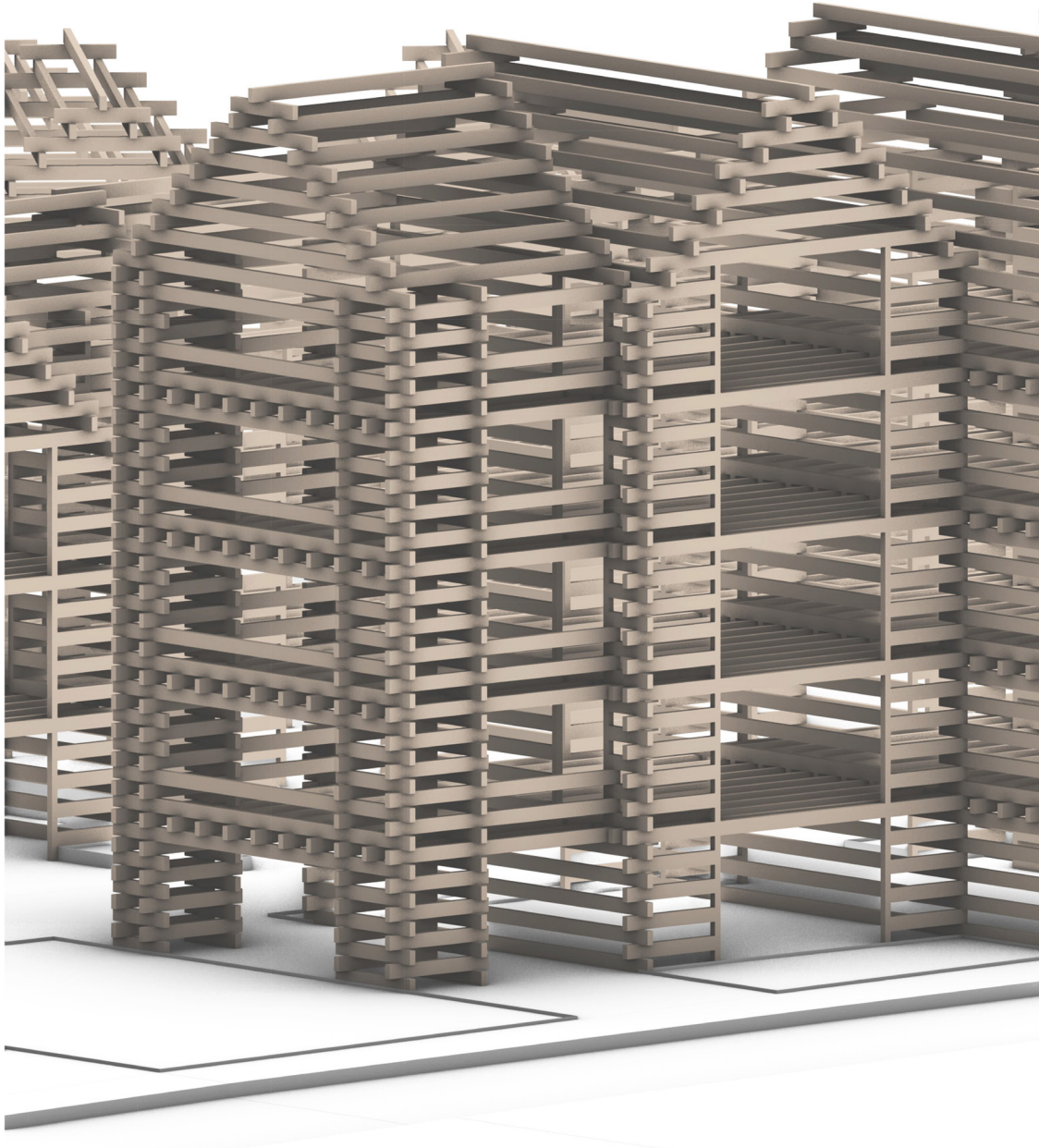
CONCEPT

MATERIALITY

The structural system of the project will use an engineering timber product known as Accoya. Since the load bearing structure or the exo-skeleton is fully exposed to the harsh environment, a specialized material fitting for this location is needed. Accoya is a wood product that is chemically enhanced to achieve a beautiful wood finish with none of the negative aspects of regular wood. By going through what is known as the acetylation process, acetic anhydride is added to the wood to chemically modify the entire profile of the wood fiber. After the process is finished the wood is extremely durable and mechanically stable. The bi product of the process is acetic acid, which is non-toxic. It warps, twists and swells less than any other wood product on the market. The entire process is also very sustainable since fast growing pine, grown in certified forests, are used as the main ingredient for the Accoya product. This means a growth cycle of around 28 years. In other words, Accoya offers better mechanical and durability qualities than hardwoods, but can be grown and produced as fast as softwoods.

JENGA CONSTRUCTION SYSTEM

The Jenga construction system is the exo-skeleton and load bearing structural system of the project. It uses Accoya timber combined to gluelam beams to create horizontal beams that stack on top of each other to form of the main structures. It functions similarly to the game of jenga, where small blocks of wood are stacked perpendicularly on top of each other to create a vertical structure. The beams are boltet together at the location of the overlap with stainless steel bolts. The construction system is inspired by the vernacular and historical building types of this area, but aims to create something contemporary and unique. The construction system forms the basis of the new direction of design that will be unique for the city of Sandnes. The system follows the principles of design for disassembly. The beams can be manufactured effectively off site and can be construction efficiently on site. It also offers versatility for changes or modifications to the structure in the future if needed.



06

DRAWINGS

This chapter presents the final state of the Sandnes Demens Landsby. It includes plans, elevations, sections and visualizations of the project.

URBAN SCHEMATIC PLAN

The urban schematic plan is located just north of the Sandnes Demens Landsby. The spesific architectural project will function as a catalyst project for this entire re-development. The urban schematic plan will follow the design principles of the architectural project through the site. 30 % of the site has been allocated for a park. The area and it's surrounding lacks public green space and this is the perfect location for it. 60% of the built up area will be recidential, 20% will be commercial and 20% will be public programs. The overall design should follow the guidelines from the Sandnes Municipal Strategy for 2019-2030. The overall layout of the urban schematic plan follow the principles of the historical urban plan created in 1900. The site is divided into a similar grid with structures scattered and intersecting to create small clusters that make up the open urban blocks.

URBAN ELEVATION

1:3000

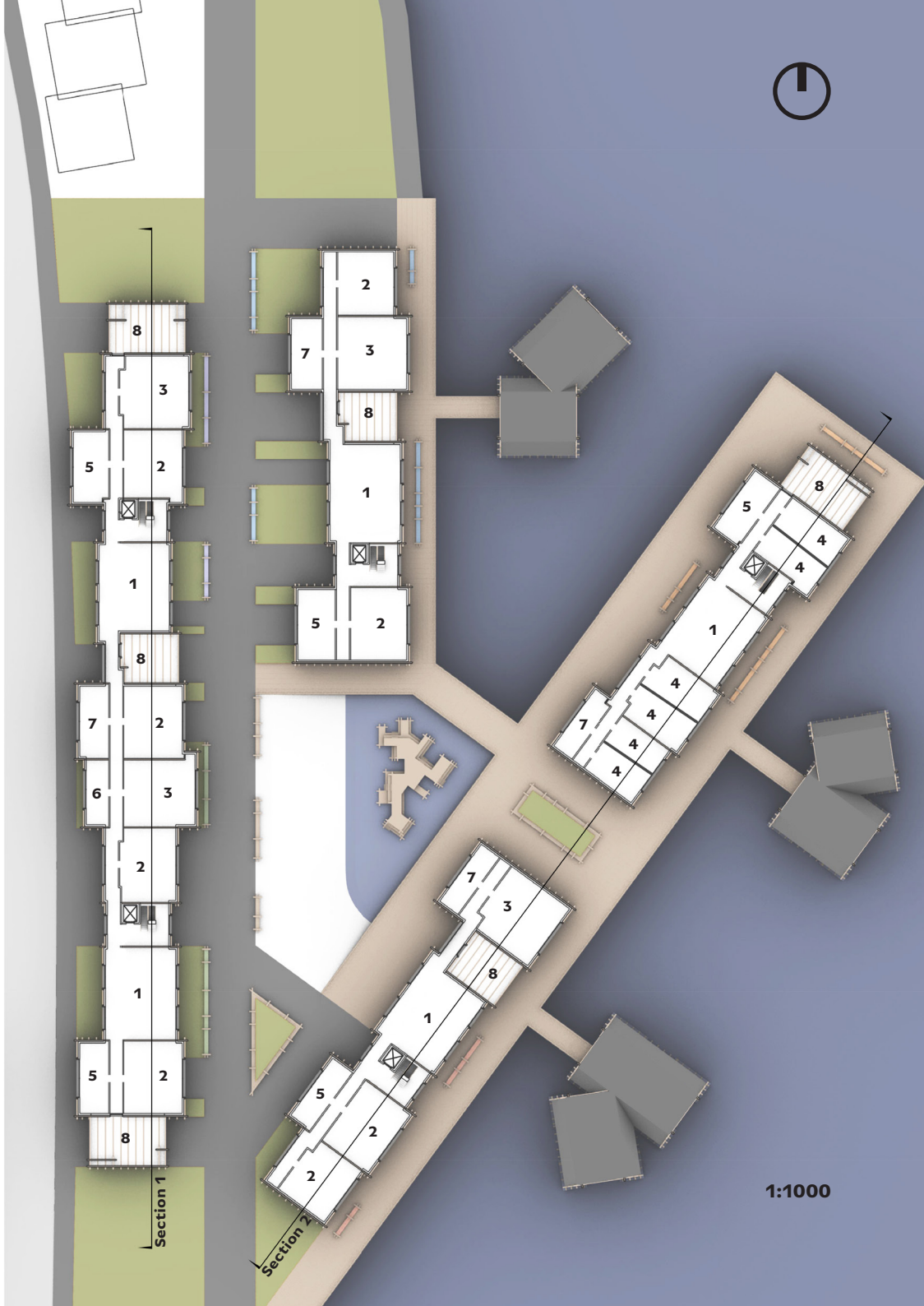
SITE PLAN

GROUND FLOOR

1. Convenience Store
2. Grocery Store
3. Hair Salon
4. Pool
5. Activity Center
6. Pub
7. Restaurant
8. Dentist
9. Cafe
10. Bookshop
11. Florist
12. Clothing Store
13. Music Center
14. Arts/Crafts Center
15. Bingo Club
16. Sandnes Demens Landsby Entrance
17. Holmen
18. Sanden

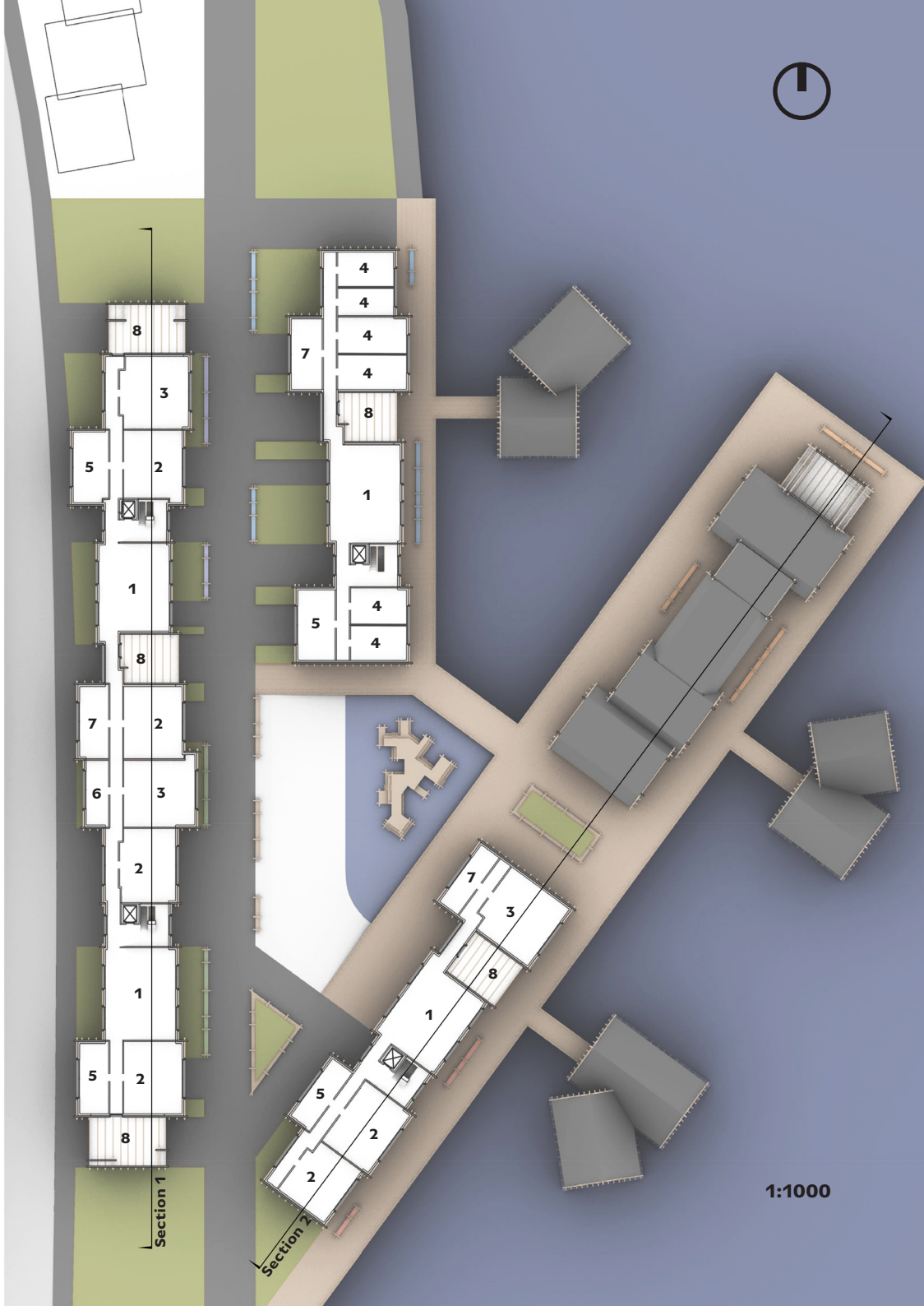
1. FLOOR

1. Common Room
2. 1 Person Apartment
3. 2 Person Apartment
4. Private Room
5. Office
6. Service Space
7. WC
8. Balkong



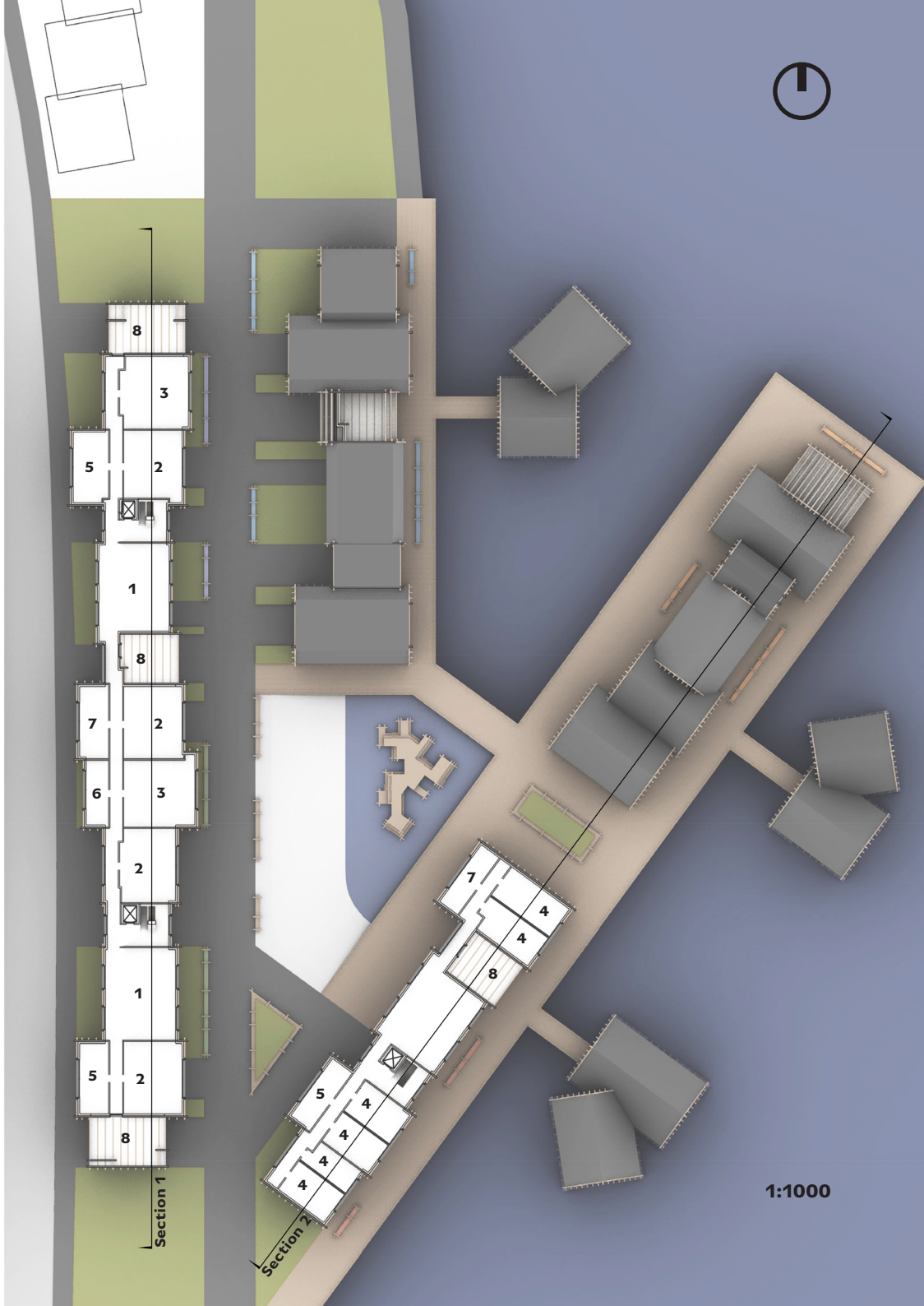
2. FLOOR

1. Common Room
2. 1 Person Apartment
3. 2 Person Apartment
4. Private Room
5. Office
6. Service Space
7. WC
8. Balkong



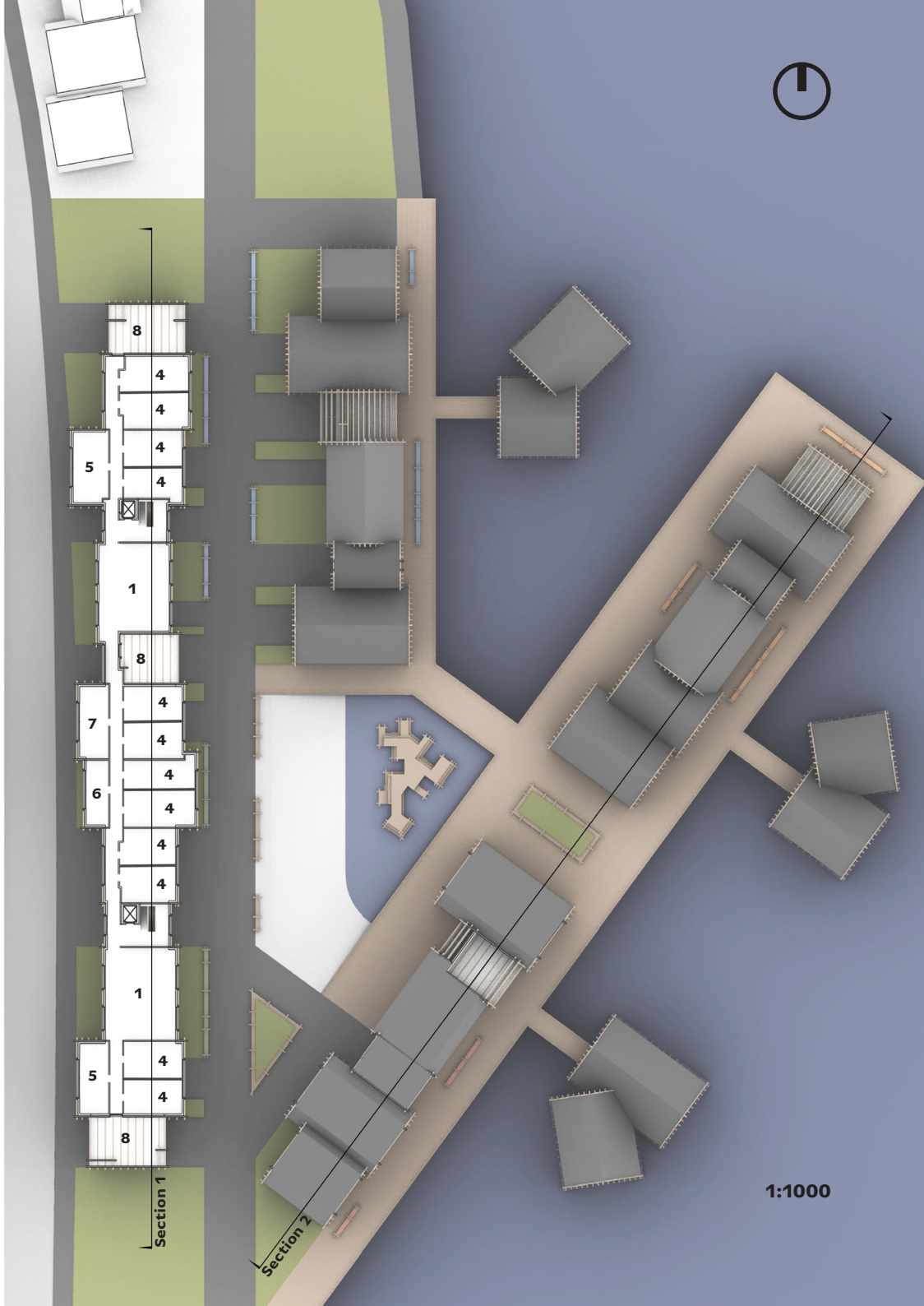
3. FLOOR

1. Common Room
2. 1 Person Apartment
3. 2 Person Apartment
4. Private Room
5. Office
6. Service Space
7. WC
8. Balkong

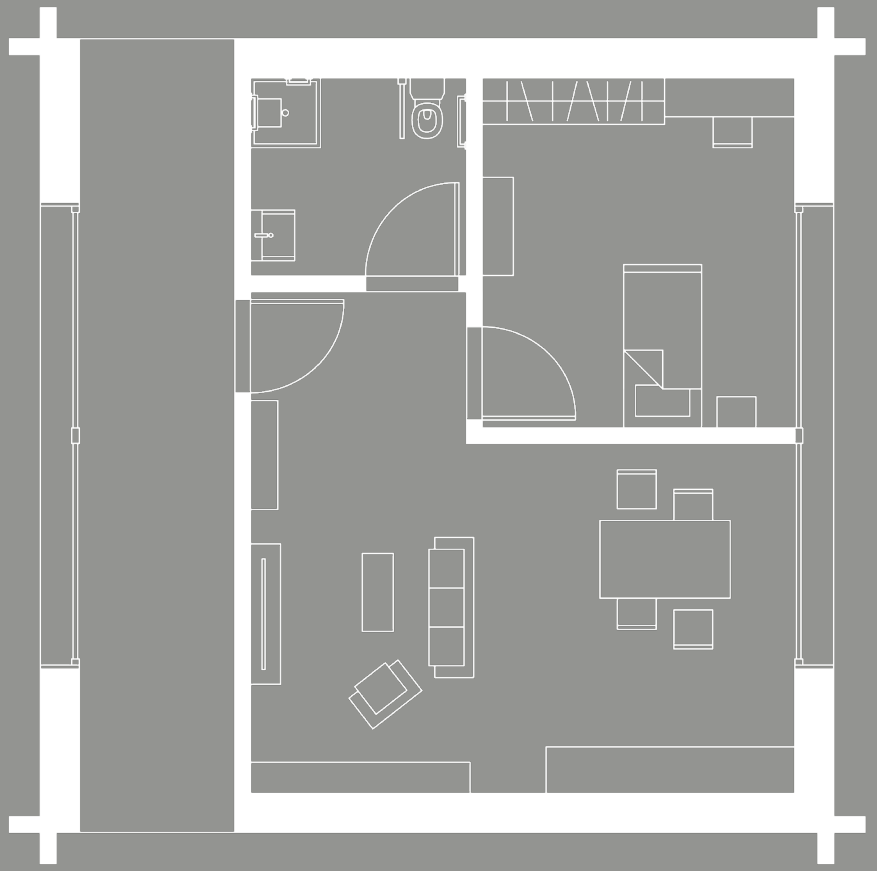


4. FLOOR

1. Common Room
2. 1 Person Apartment
3. 2 Person Apartment
4. Private Room
5. Office
6. Service Space
7. WC
8. Balkong

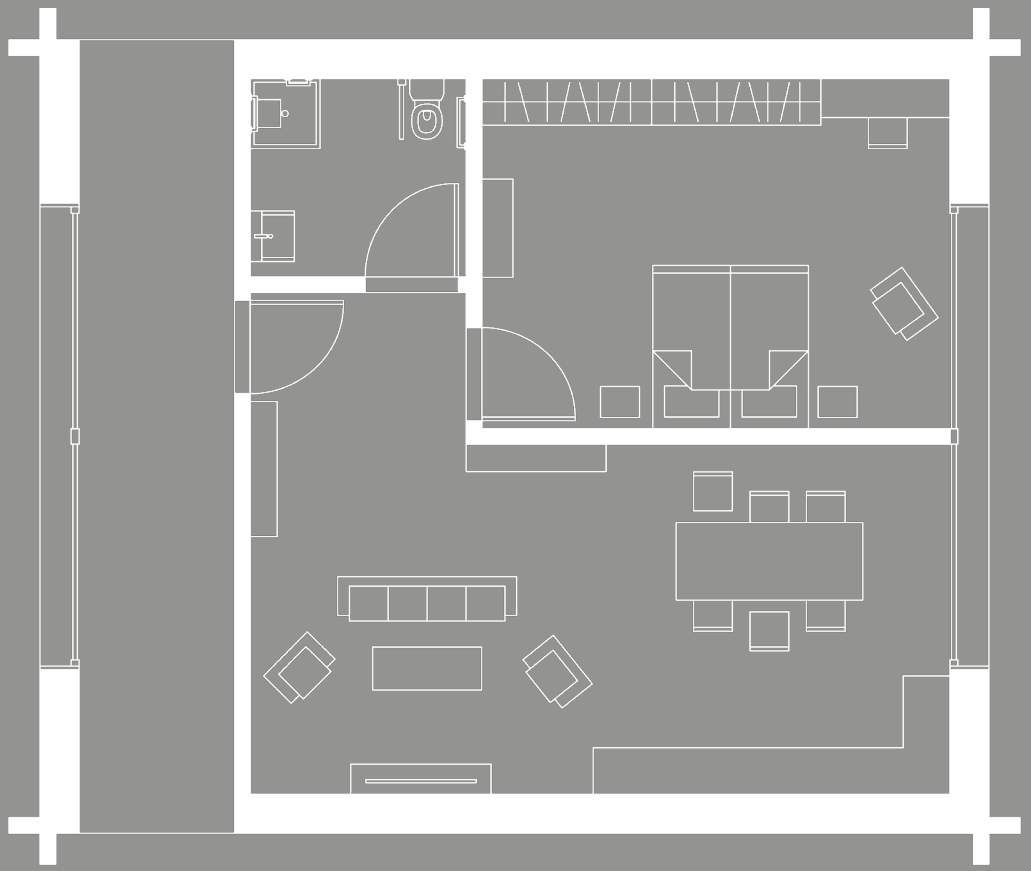


1 PERSON APARTMENT



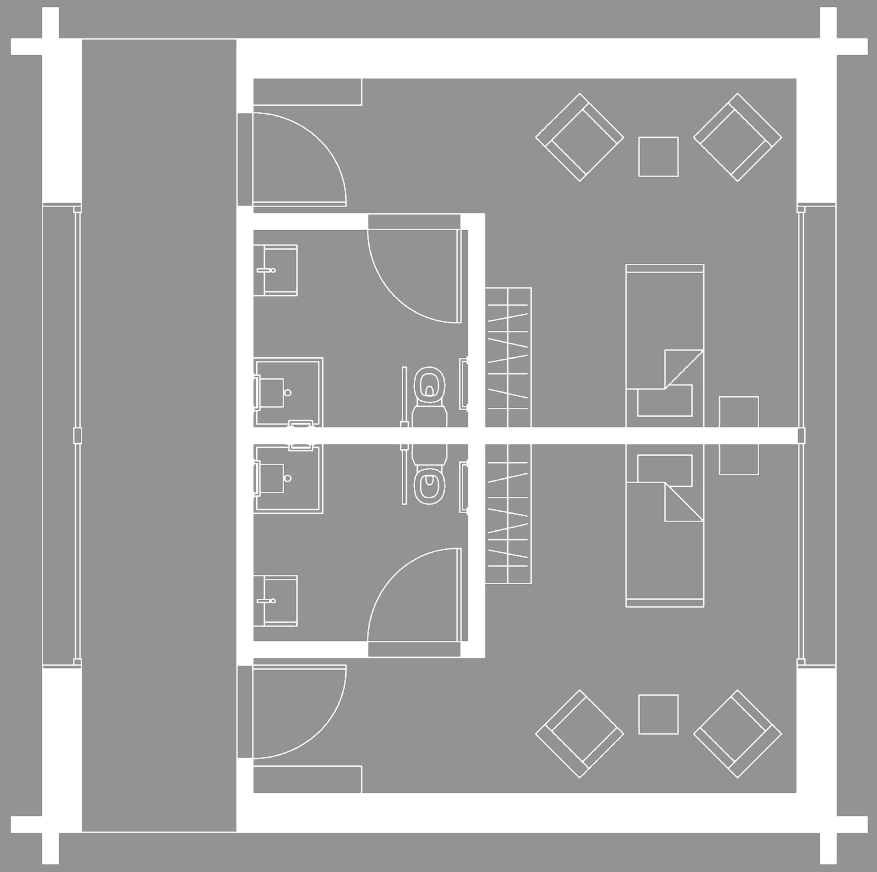
1:100

2 PERSON APARTMENT



1:100

PRIVATE ROOM



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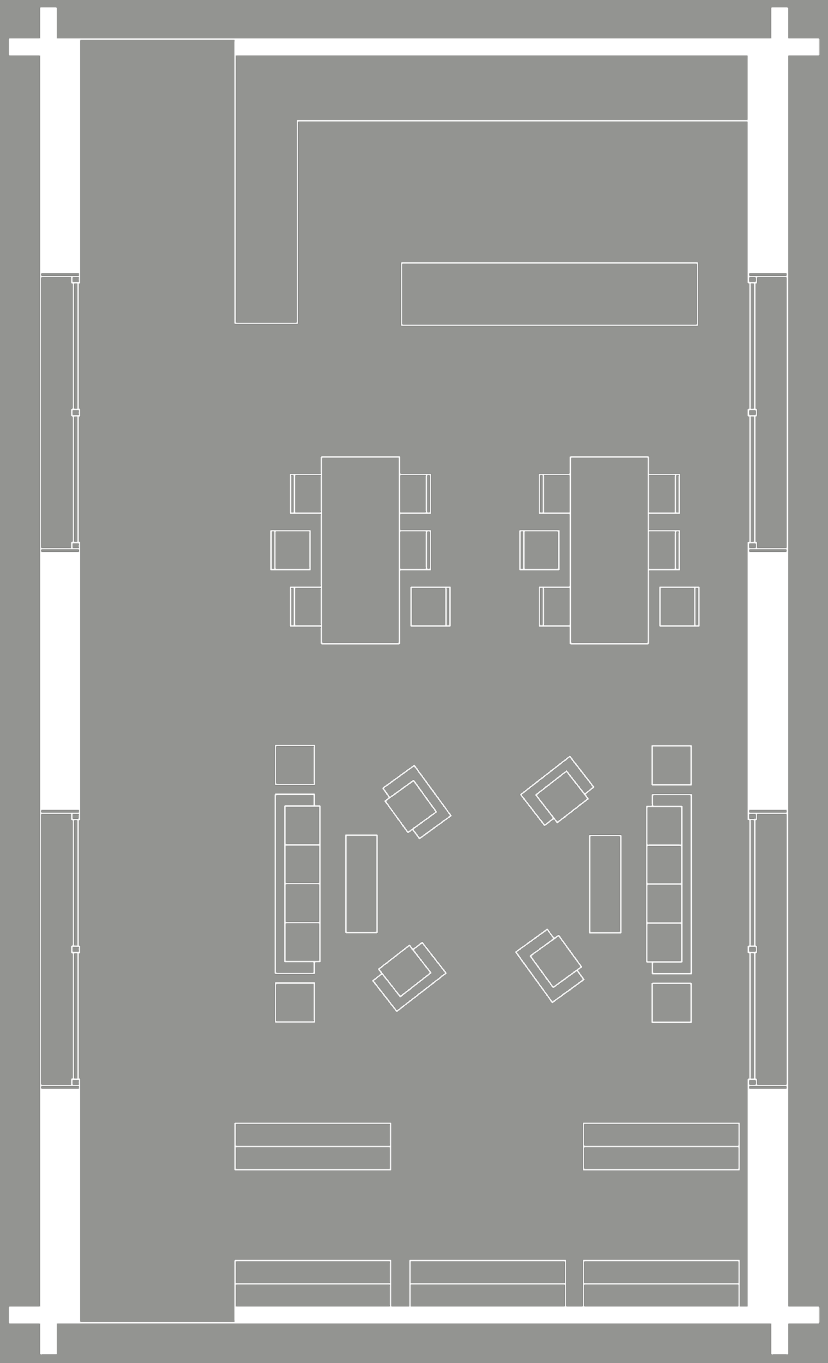
COMMON ROOM



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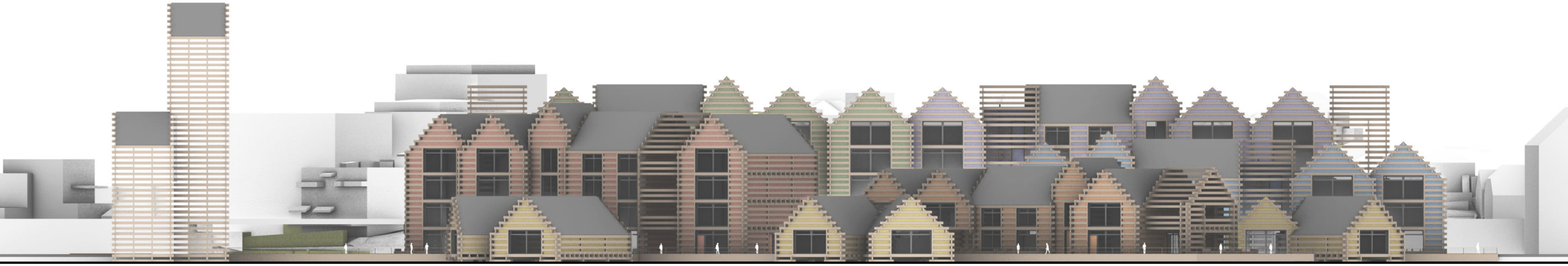
NORTH ELEVATION

1:800

EAST ELEVATION



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SOUTH ELEVATION

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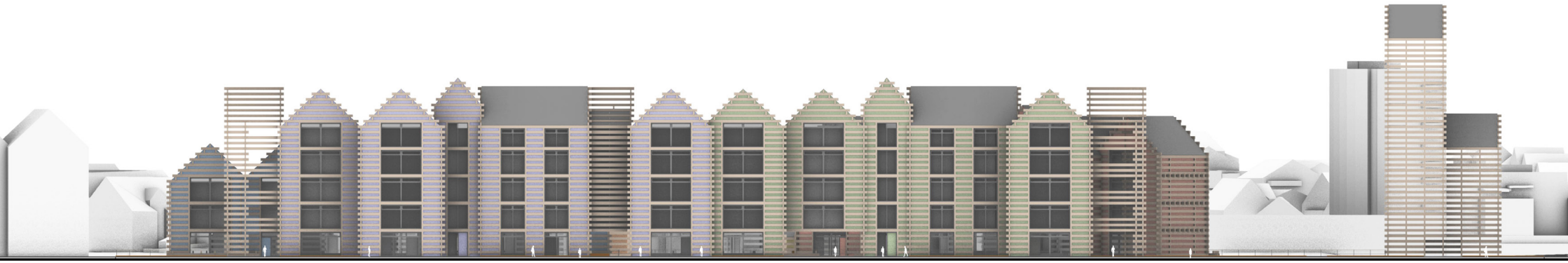
WEST ELEVATION



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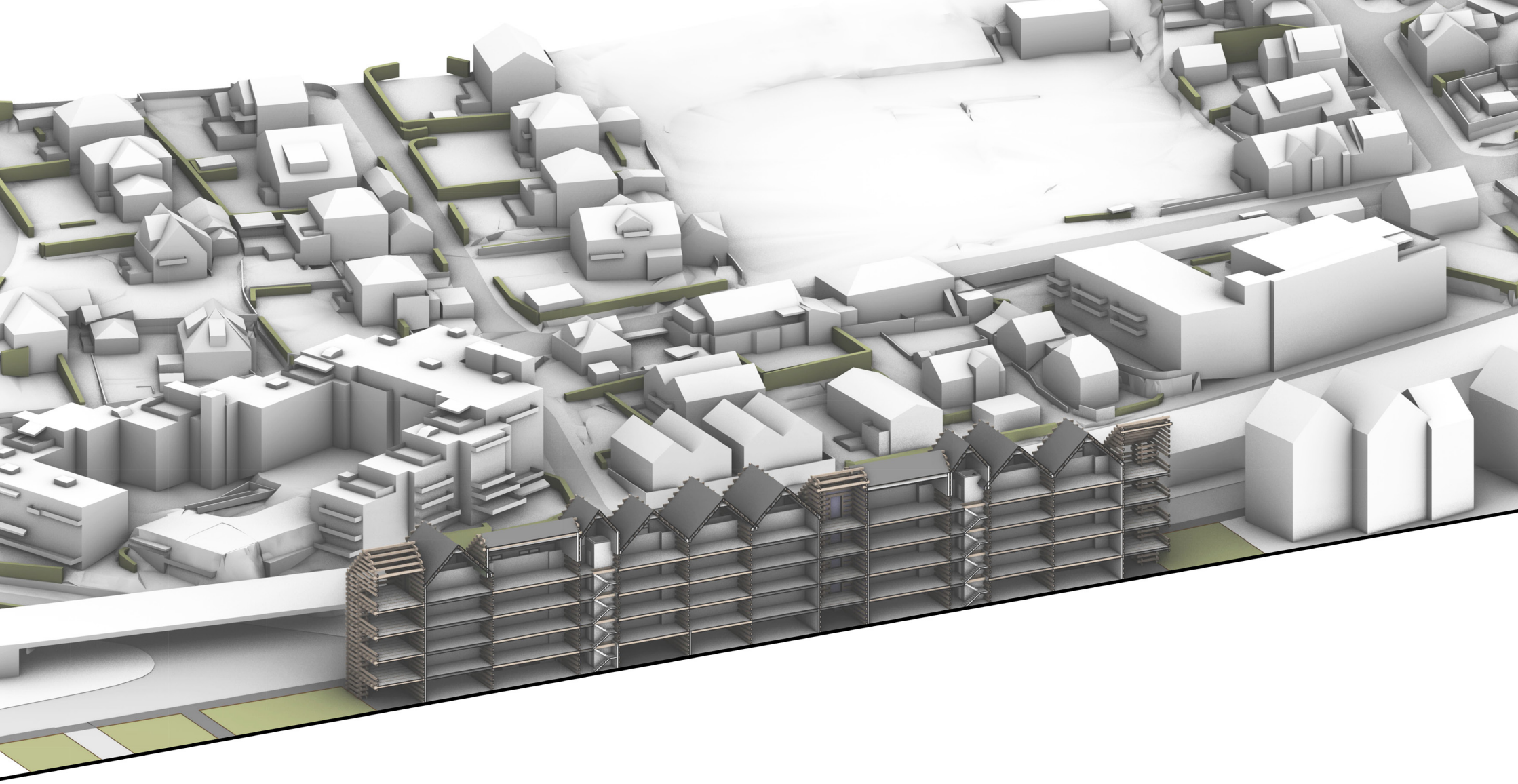

SECTION 1

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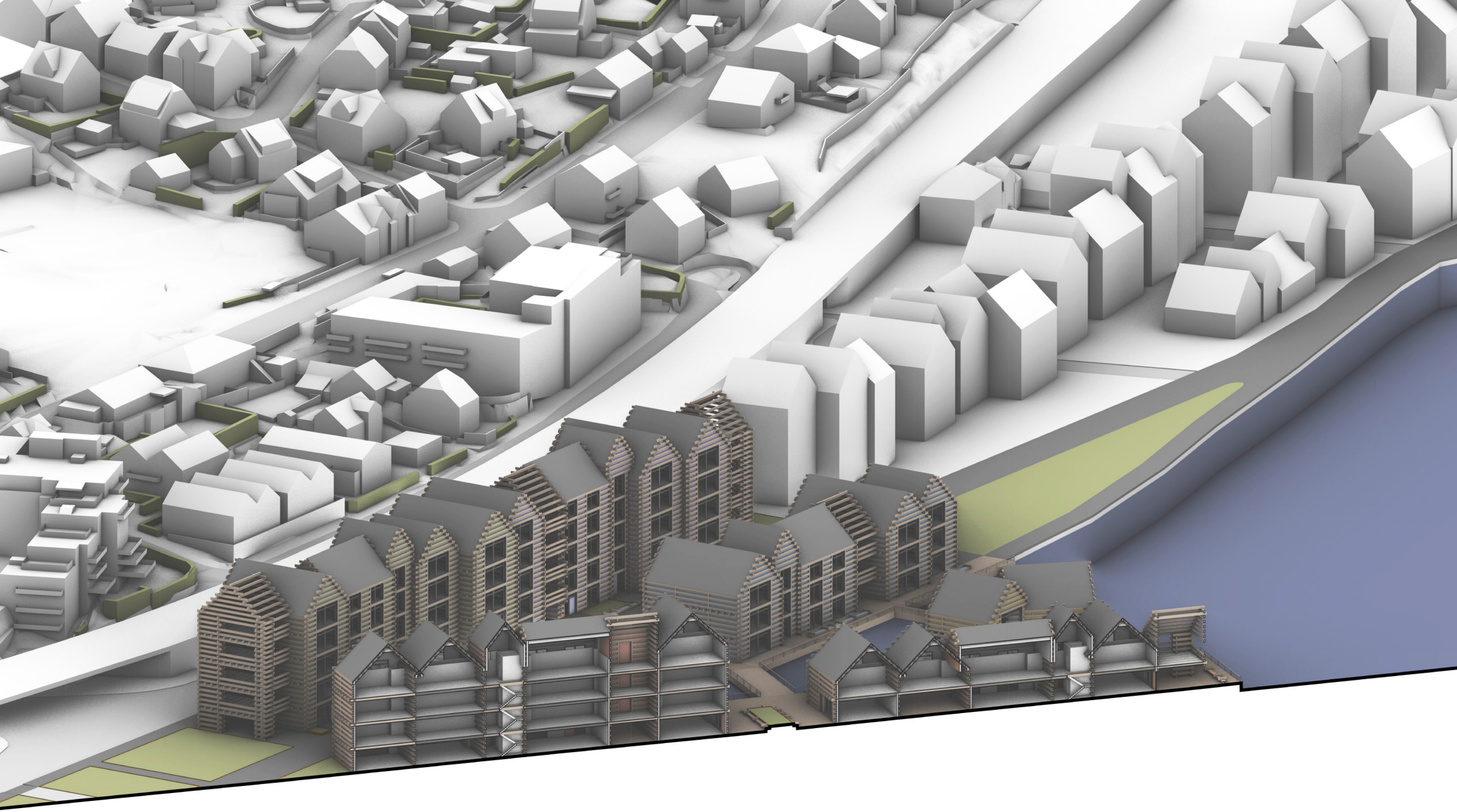

SECTION 2

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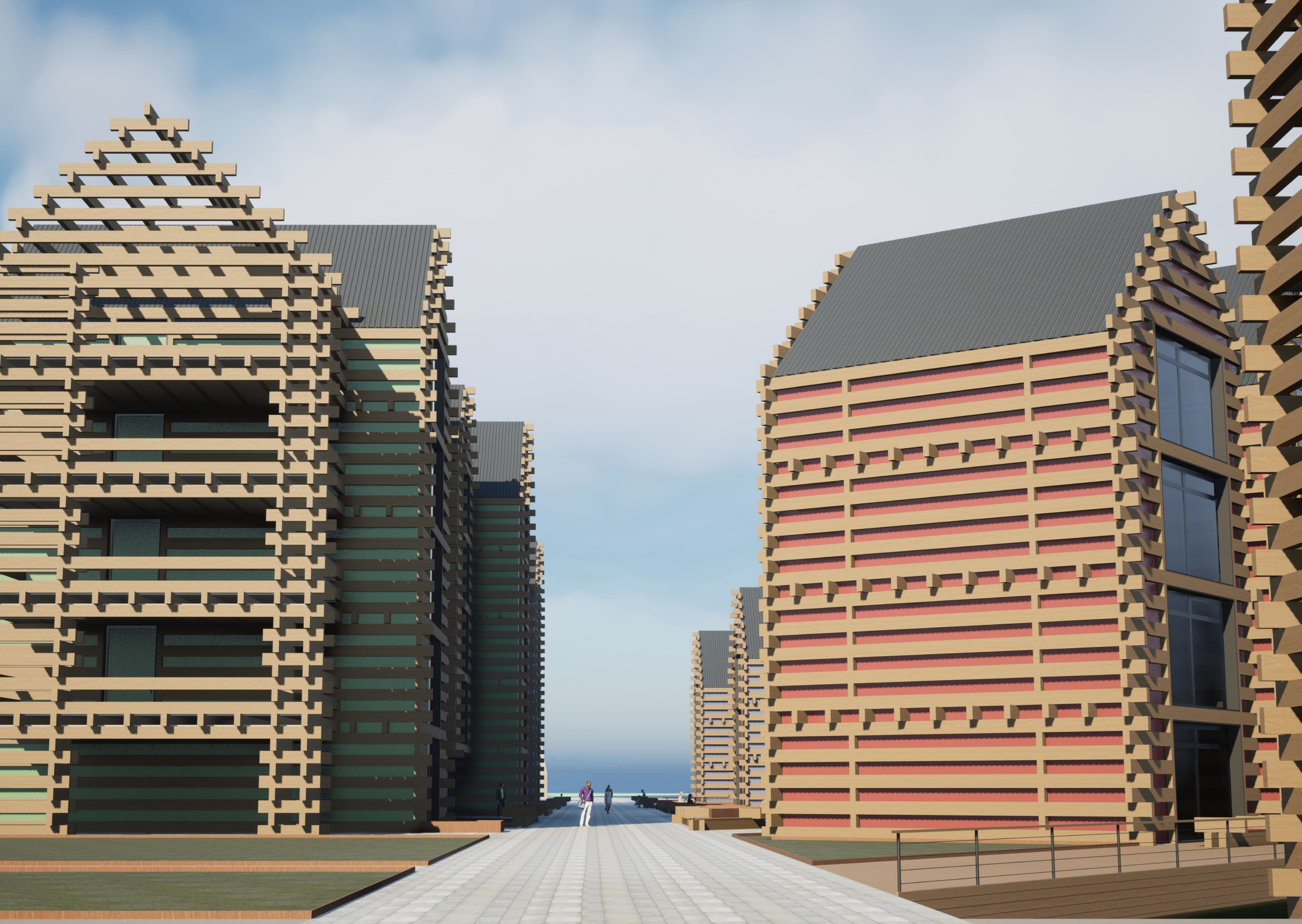

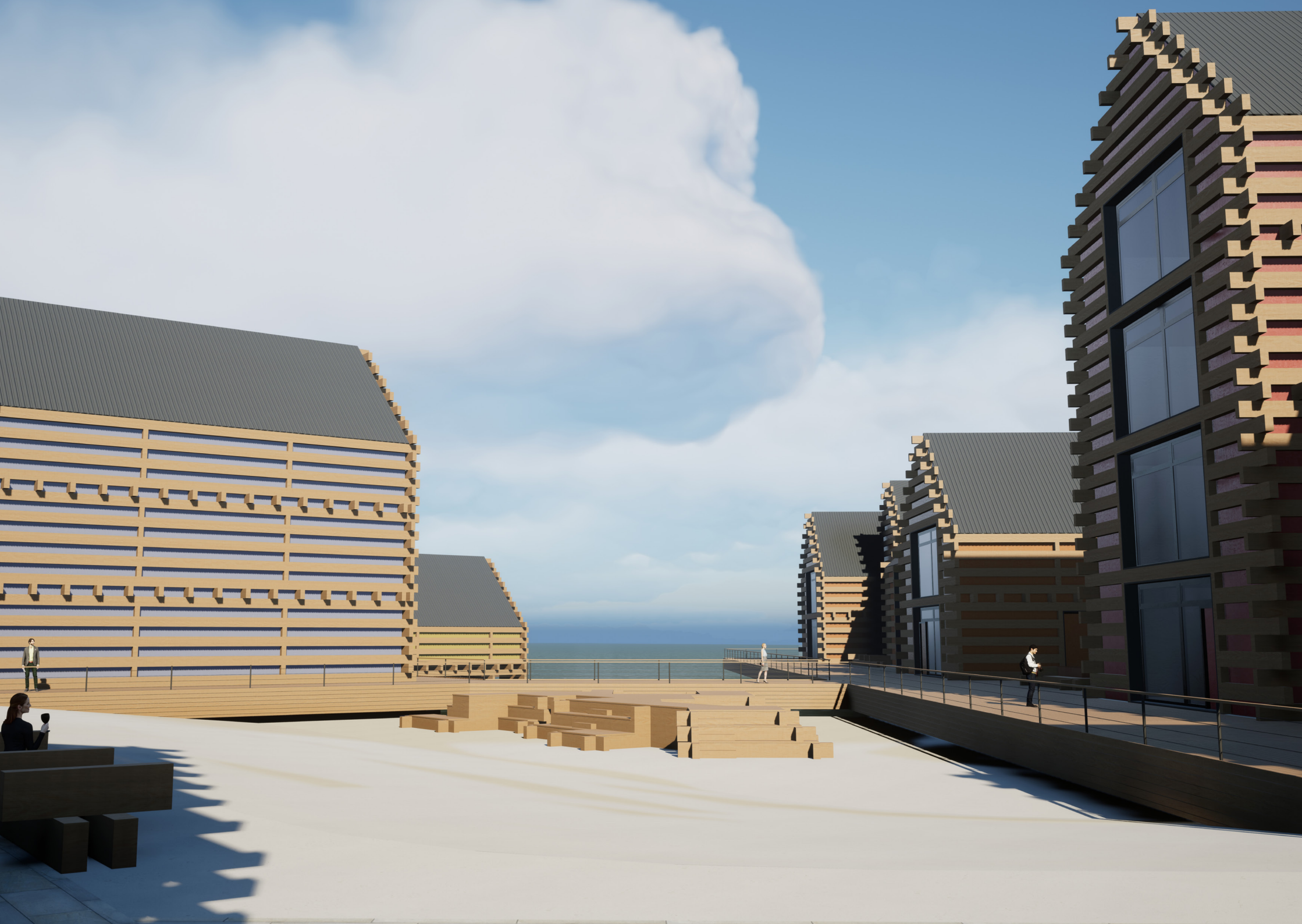

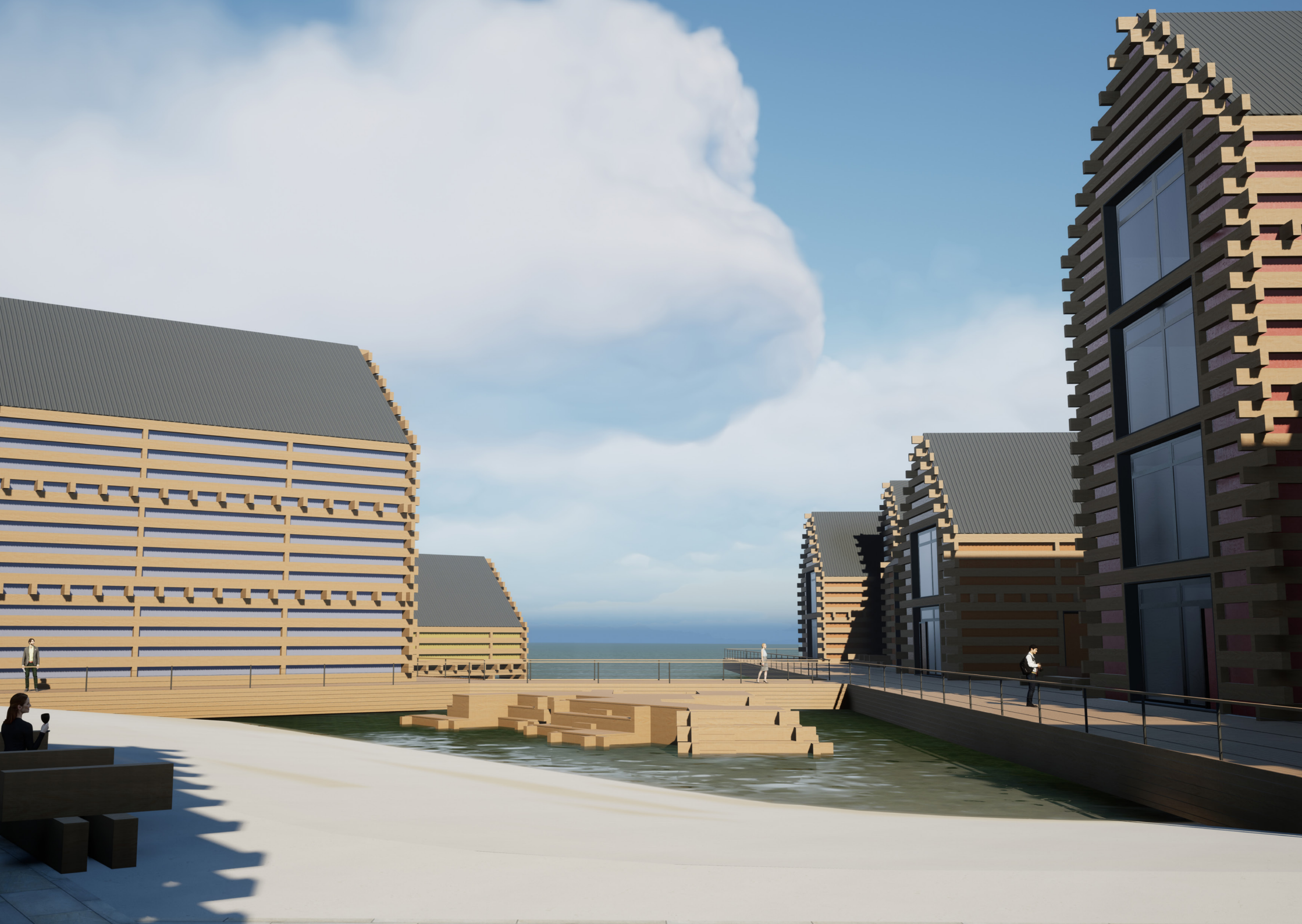

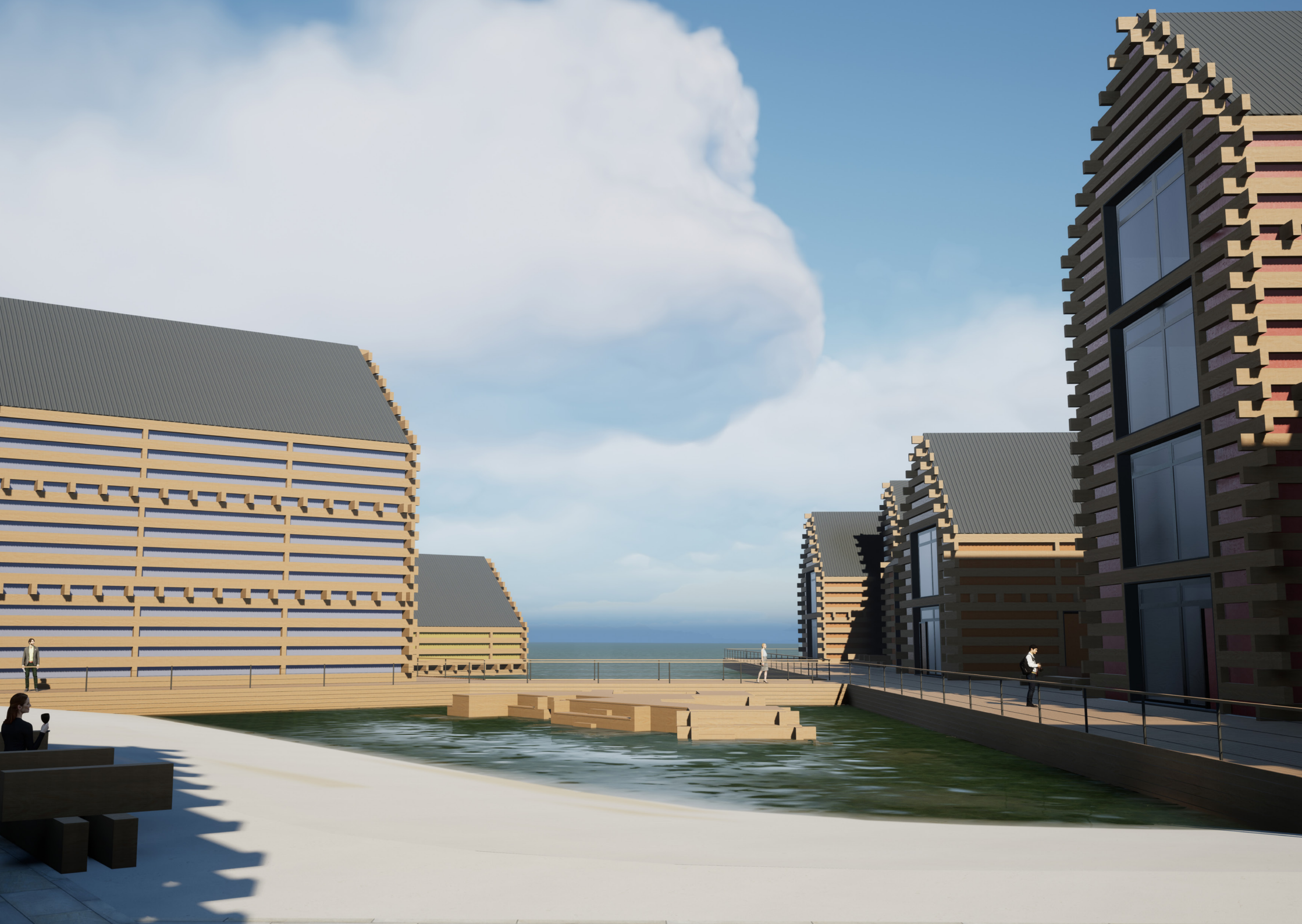

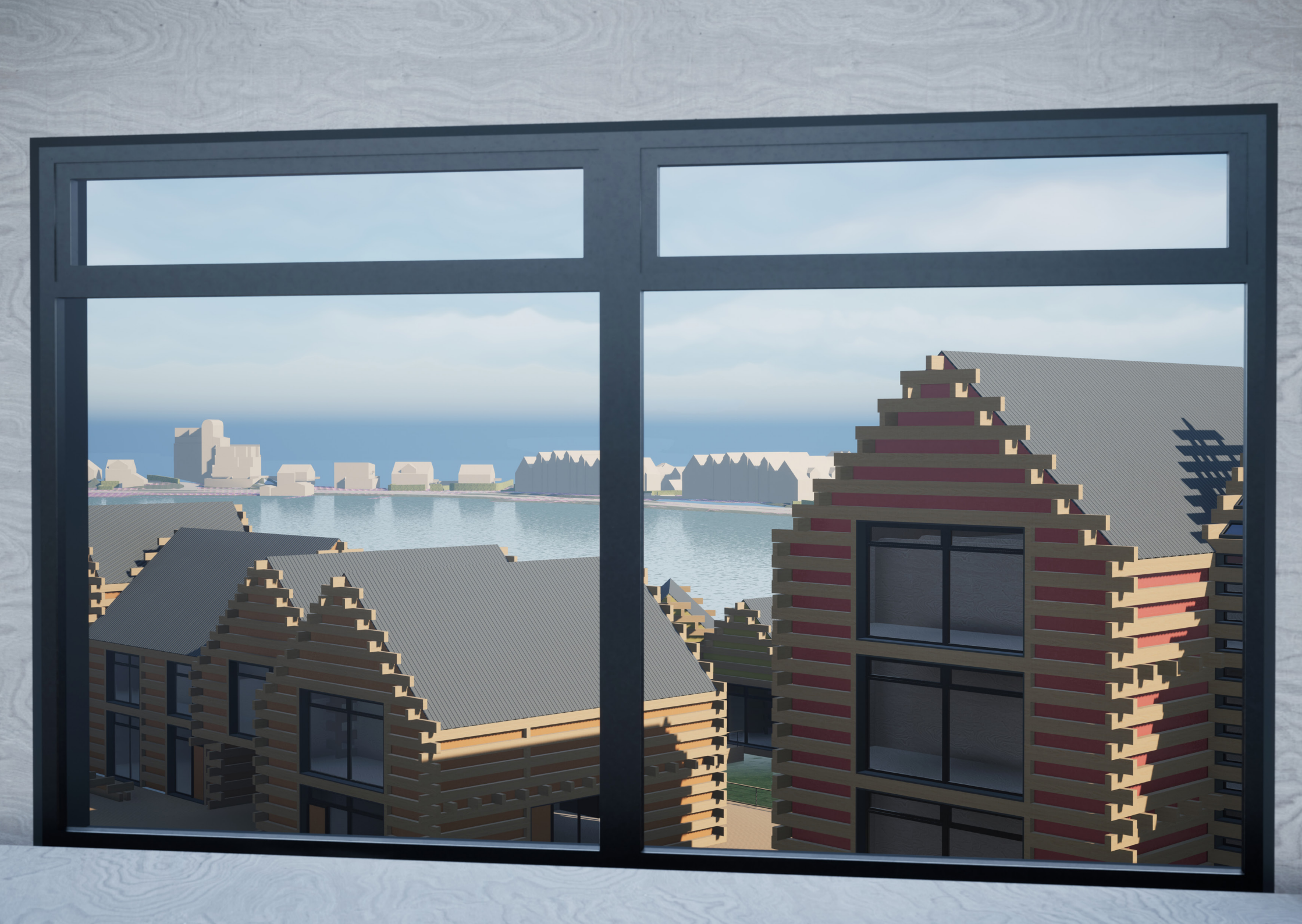

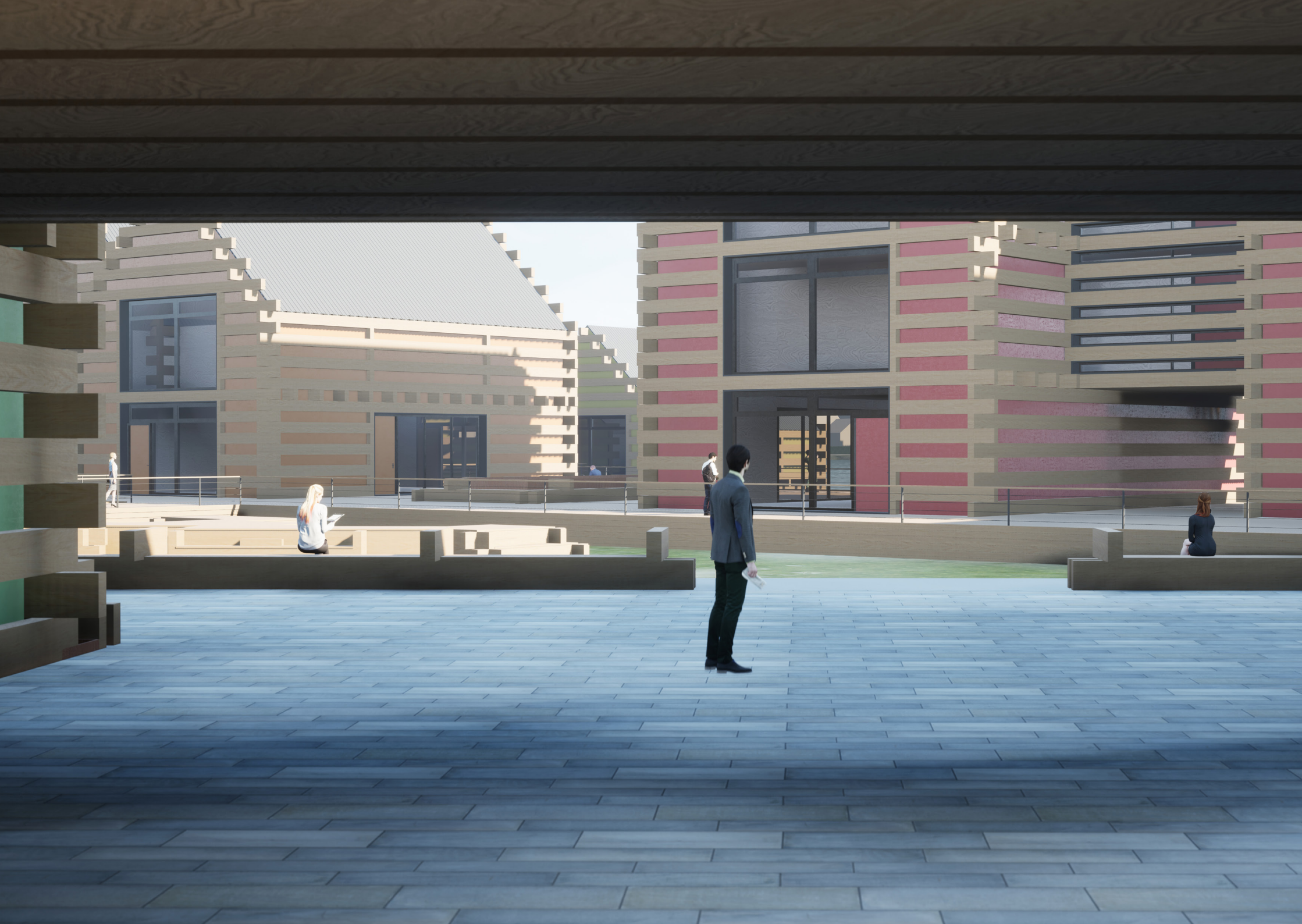

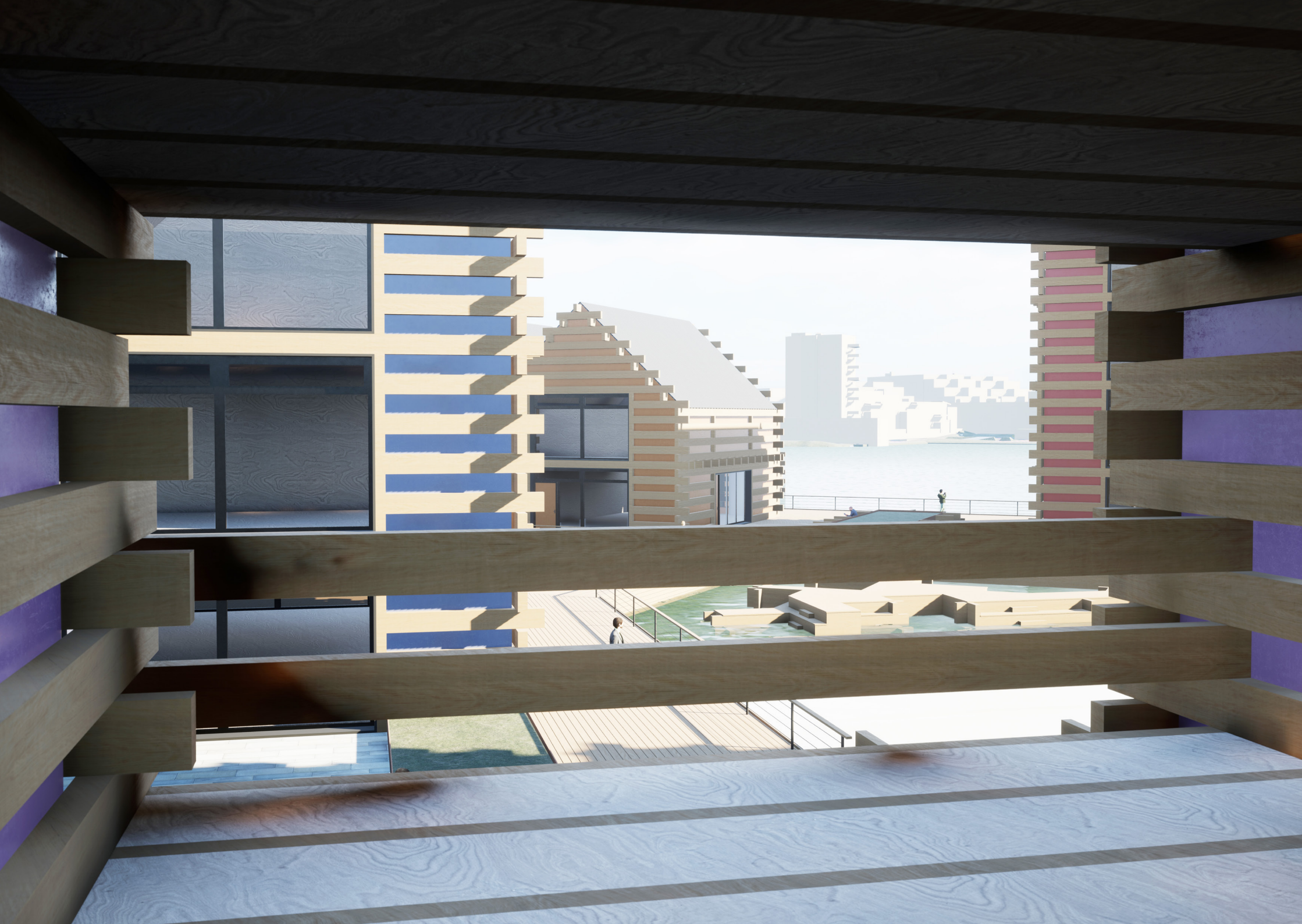

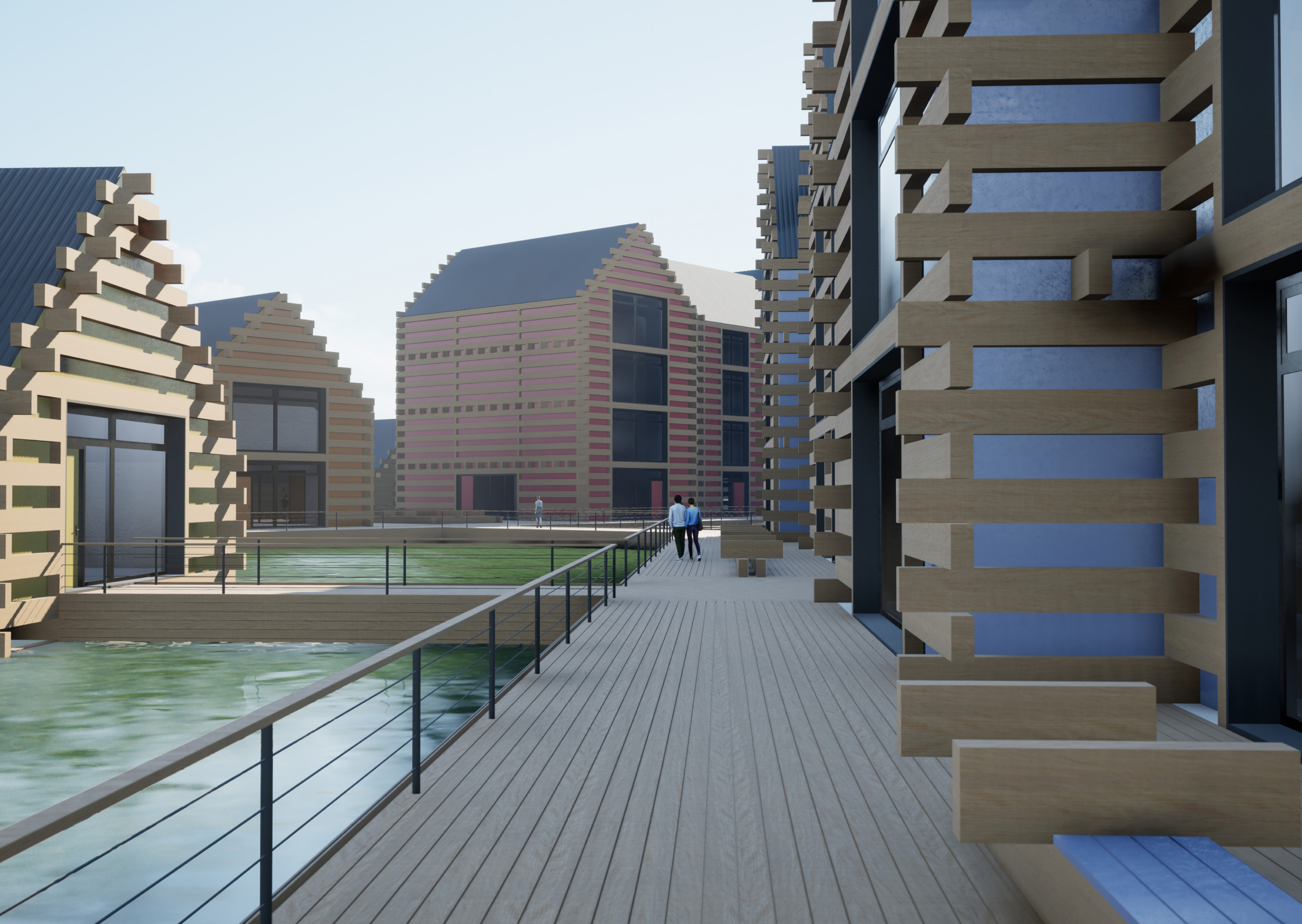

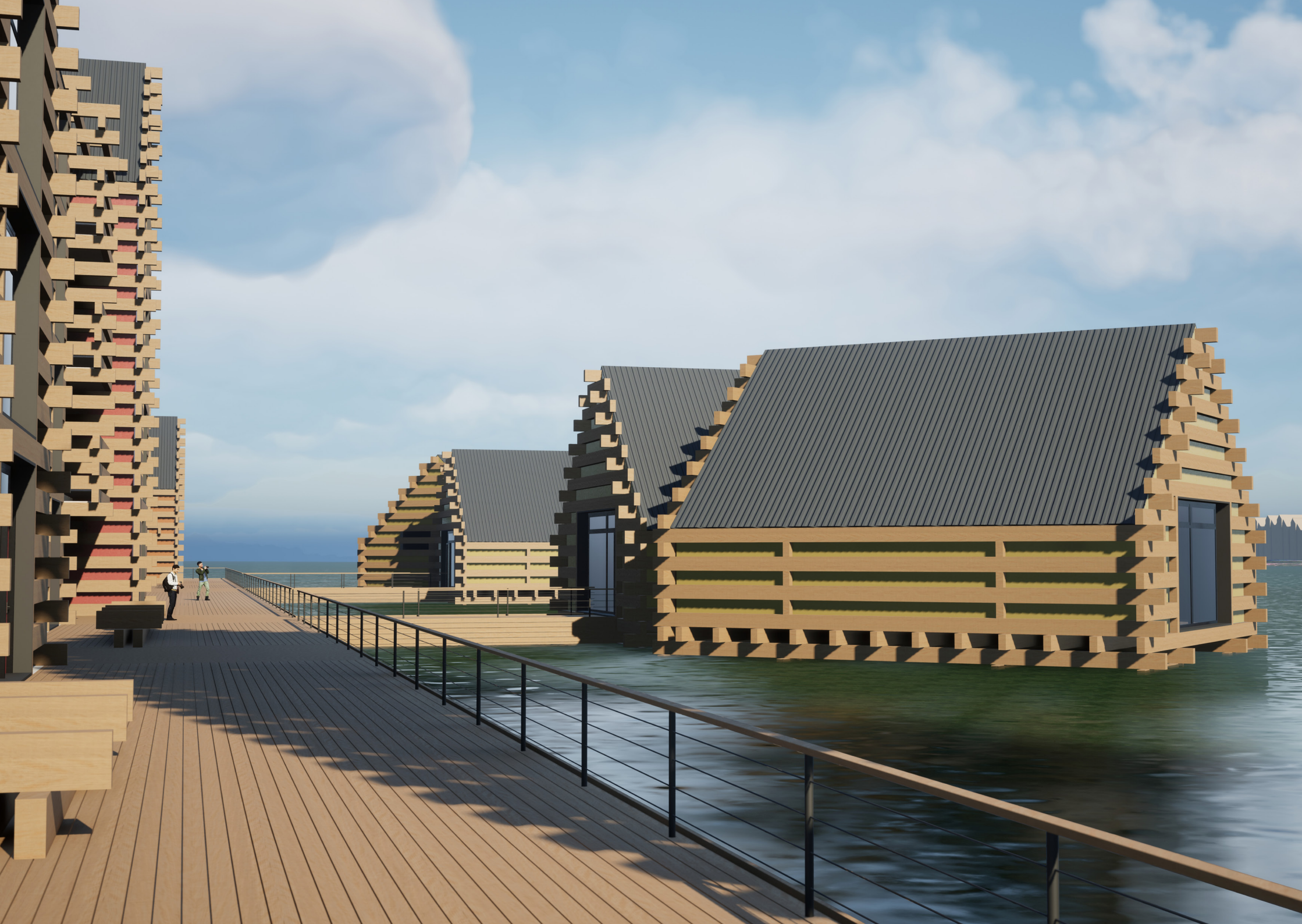

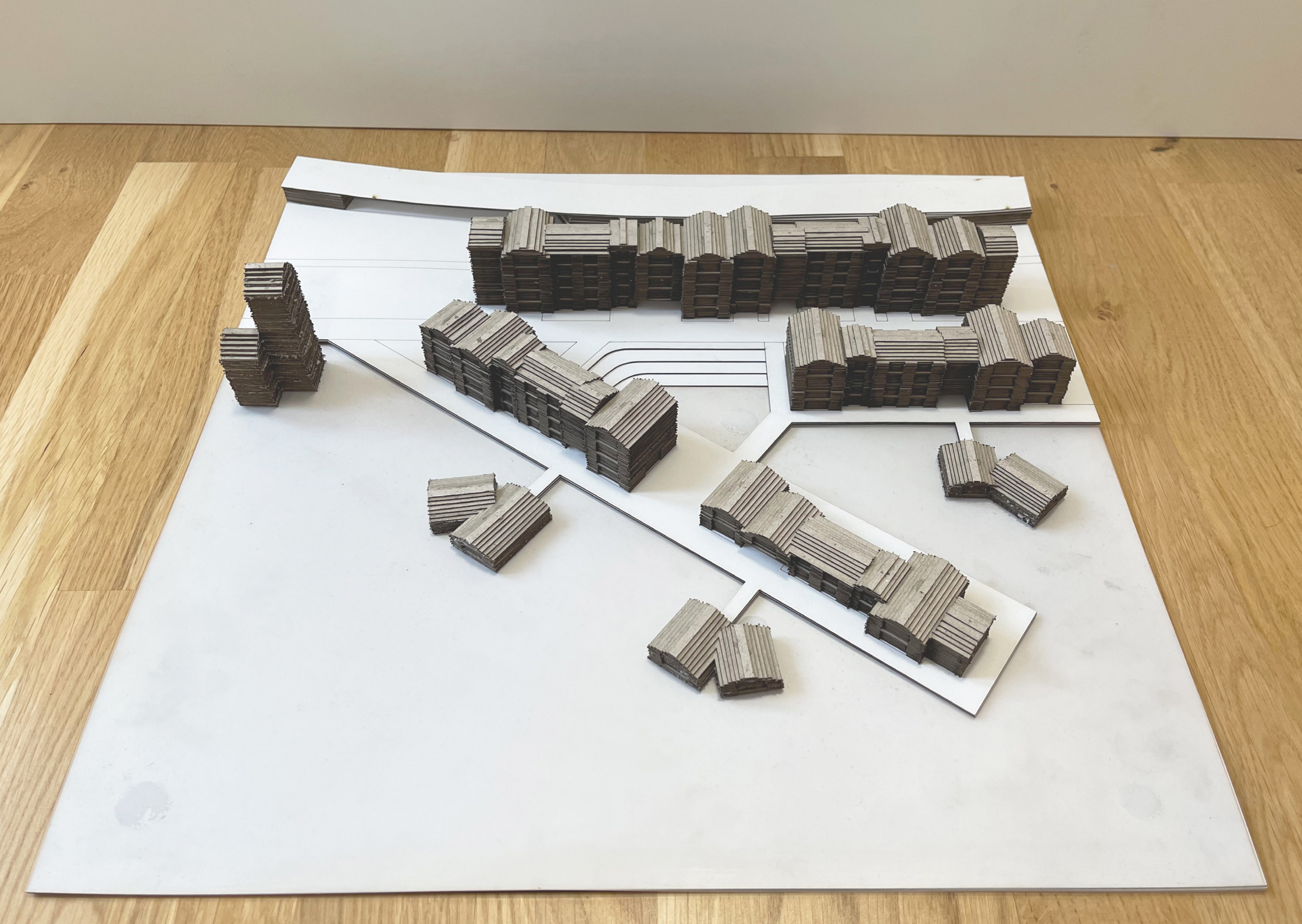

07

TECHNICAL REPORT

The last chapter includes the technical report that explains the project in further detail. The book ends with a short conclusion.

TECHNICAL REPORT

The Sandnes Demens Landsby is divided into 4 main clusters of buildings. Each cluster contain vertical circulation, a combination of 1 person apartments, 2 person apartments and private rooms as well as common rooms, balconies, offices, bathrooms and service spaces. Each floor of each cluster will accomodate 4-8 residents with 2-3 care takers each. The residents are organized vertically, meaning the more severe the dementia of the patient is, the higher up they live, giving the patients struggling the most the best unobstructed views of the fjord and the surrounding area. There are 4 additional clusters that are placed in the water. They function as additional fragments of the main clusters with important additional programs including the bingo club, arts/crafts center, music center and the parking tower, also known as the lighthouse. Between, underneath and around the clusters is the area that make up the public realm. Public seating is scattered around the ground plane. The public seating follows the same construction system as the building and present tiny fragments separated from the larger clusters. The ground floor provides a large collection of public programs and activities that are accessible for the residents of the dementia village as well as for the general public. The project will house approximately 70 residents struggling with dementia. These residents will be looked after by a staff of approximately 25 health care workers.

CONCLUSION

The Sandnes Demens Landsby will deal with the two levels of memory. It will deal with the collective memory loss by reestablishing the lost memory of the ocean, fjord and a unique and vernacular architecture for the city of Sandnes. It will secondarily deal with the individual memory loss by providing a contemporary, unique and valuable care center for patients struggling with dementia.

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