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DIPLOMARBEIT

NYHAVNA TRONDHEIM - A NEW URBAN WATERFRONT

**ausgeführt zum Zwecke der Erlangung des akademischen Grades
eines Diplom-Ingenieurs / Diplom-Ingenieurin
unter der Leitung von**

Univ.-Prof. Dipl.Ing.Dr.techn. Helmut Schramm

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Fakultät für Architektur und Raumplanung

von

Florian Xander, Bsc

0726951

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Florian Xander

Kurzfassung

Nyhavna, ein riesiges Hafengebiet über künstlich aufgeschüttetem Untergrund, nördlich des alten Stadtkerns von Trondheim, wurde Jahrzehnte von örtlichen Politikern und Stadtentwicklern vernachlässigt. Nun wurde unter Leitung der Stadt Trondheim ein Masterplan entwickelt, der als Grundlage für die zukünftige Transformation des Areals dienen soll.

Ein Teilgebiet des Nyhavna Hafengebietes – Strandveikaia – soll als Entwicklungsmotor für das umliegende Hafengebiet dienen. Vielschichtige Architektur entlang des Wassers inklusive Strukturen aus dem zweiten Weltkrieg charakterisieren das Gebiet und bieten ein großes Potential für ein breites Spektrum an Kultur, Innovation und Freizeitangebot. Dieses Teilgebiet ist Gegenstand des Ideenwettbewerbs European 13 in Trondheim, Norwegen.

Die Diplomarbeit richtet sich im wesentlichen nach den Vorgaben der European-Ausschreibung. Die Stadt Trondheim sucht nach Ideen für Strandveikaia. Hierbei soll die Aufgabe nicht sein, einen neuen Masterplan für das Gebiet zu entwickeln, sondern den Bestehenden auf seine Anbindung und Integrität mit den umliegenden Stadtgebieten zu überprüfen. Das Hauptaugenmerk liegt darin, die Vision eines neuen lokalen Stadtzentrums für das gesamte Hafengebiet zu vermitteln. Dabei soll das Gebiet lebendig, jedoch nicht profitmaximiert ausformuliert sein und kann als Testfeld für neue Arten urbanen und generationenübergreifenden Wohnens und Lebens betrachtet werden. Die kulturellen Akteure vor Ort sowie die Lage am Wasser bieten ein riesiges Potential und werden in das um sich greifende Planungsgebiet Strandveikaia eingebunden. Auf rund 3,5 Hektar Kernfläche zeigt das bearbeitete Gebiet die Vielschichtigkeit eines modernen, sich wandelnden Stadtteils.

Eine detaillierte Analyse resultiert in einem Leitfaden mit verschiedenen Parametern und in einem Konzept für das zu transformierende Areal. Das Ergebnis ist ein Entwurf, der versucht, die zuvor erarbeiteten Eckpunkte anzuwenden.

Stichwörter:

Städtebau, Mischnutzung, Wohnbau, Öffentlicher Raum, Erbe, Bauen am Wasser;

Abstract

Trondheim Nyhavna, a gigantic harbour area built on a landfill, north of “Mitbyen” the city’s urban core, has been ignored by local politicians and developers for decades. Now, finally a master plan has been presented by the municipality, drawing up the map of change and serving as basis for future transformations.

Part of Nyhavna harour area – Strandveikaia – is set as an engine for the development of the surrounding neighbourhood. Multilayered architecture along the waterfront including World War II structure characterize the site and also provide a tremendous resource for a wide range of actors in culture, innovation and leisure time facilities. This site is object of the idea competition European 13 in Trondheim, Norway.

The idea to choose a design as a final thesis at university was to emphasize the intention of working in the implementable field of architecture. Competitions are a common way of acquiring projects nowadays. European competition offers an appropriate scope to deal with a design task. Furthermore Trondheim and the country on Norway itself has fascinated me for years.

In general this thesis complies with the regulations of the European tender. Trondheim is looking for ideas for Strandveikaia. At this the task is not to develop a new masterplan but to reexamine the existing one for its integrity and connection to the surrounding urban region. The focus is on communicating a vision for a new local city centre. The area can be seen as a game board where new ways of urban living and generation-spanning housing are implemented. Together with cultural actors on site the position to the adjacent waterfront offer a tremendous potential for the neighbourhood’s valorization. Around 3,5 hectare core area will illustrate the diversity of a modern transforming part of this city.

A detailed analysis results in guidelines and a concept for the site to be transformed. The result is a design case that tries to implement all the prior elaborated parameter.

Keywords:

urban planning, mixed use, housing, public space, heritage, waterfront;

Acknowledgement

I would like to thank all those who greatly supported me during my studies and especially within the process of finalizing my thesis. Without you this would not have been possible.

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Furthermore I want to express my very special thank you to my parents who supported me by all available means. Thank you for your most valued advice and ongoing encouragement towards reaching my goals.

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01

Introduction

- 1.1. Introduction
- 1.2. Overview
- 1.3. Motivation
- 1.4. Research question

1 Introduction

1.1. Introduction

This thesis addresses the subject “Nyhavna Trondheim – A new urban waterfront” and was created within the Dual Degree cooperation between the College of Architecture and Urban Planning at the Tongji University of Shanghai and The Institute of Architecture and Design, Department Architecture and Housing at the Technical University of Vienna. This work shows how an idea can reactivate a fallow site and transform a former industrial port into an urban living space. Within the thesis topics such as urban planning, mixed use, housing, public space, heritage and last but not least adaptability will play an important role.

It's a time of rapid urbanization that calls for adaptations on many levels in Europe's cities. Densification, smarter use of resources and fast transformation on urban culture. Current tendencies from “welfare state” to more “self organisation” are affecting the understanding of the cities collective. How will the relation between public and private change? Who is in charge of public domain as soon as the state withdraws?

Borders between public and private are disappearing – sharing is a big issue when it comes to the appearance of a modern city. How could sharing be a way to develop cheaper and lighter solutions to build an ecological and sustainable city?

European, an international competition initiative for European young architects is picking up these tendencies and offers sites in collaboration with municipalities in 49 different cities all over Europe.

Trondheim, the 4th biggest city in Norway proposes a site in Nyhavna, a gigantic harbour area built on a landfill, an artificial landscape of warehouses, World War II heritage, toxic waste, boats, beer and independent culture. The local politicians and developers have been waiting to develop it for decades as it sits next to “Midtbyen” the city's urban core. But lacking alternative harbor areas and long term leases have kept the area “off limit”. Last year a master plan has been presented by the municipality. The area is pinpointed as the first step in the greater harbour development.

To get a better overview there is an analysis starting from the country itself and then going into detail. After studying the city I continue focussing on the site's neighbouring areas. The cultural actors already existing on site together with heritage buildings from World War II require a more precise observation. On one week field study in Trondheim, digitalisation of the existing buildings on site and literature research I gathered a lot of information to put into scope.

1.2. Overview

The result finally shows guidelines and a concept in which way I think this site can be developed in combination with the European inputs.

By taking into consideration the prior research and analysis I want to show an approach to how this site along Trondheim's harbour basin could be refurbished and reactivated with functions that suit the location and especially the people inhabiting it. The Final chapter of the main body of this thesis is showing a design suggestion for this site at Nyhavna.

1.3. Motivation

The reason why I chose this topic as a master thesis has three main aspects:

Firstly the idea to choose a design as a final thesis at university is to emphasize the intention of working in the implementable field of architecture. Competitions are a common way of acquiring projects nowadays. Furthermore the repetitive practice of designing (within the frame of competitions) is an ability that should be acquired during studies. By choosing a site from the European competition I bring focus on urban design. During the Dual Degree Program at Tongji University Shanghai and the required working experience in Shanghai this also had priority.

Secondly I have a fascination for northern countries especially Norway. It's one of the richest countries in the world and in many ways its society is very progressive when it comes to equal rights or ecological awareness. It's impressive how Nature and weather have an impact on society and public life. Climatic conditions change perception even from Austria to Norway.

Thirdly I have a fascination for the relation between men and water. In China as well as in Norway water plays a tremendous role when it comes to configuration of living environment. During my study exchange in China I visited several water-towns where I tried to understand the meaning and the relation between buildings, links and water which define public and private spaces for human beings. It's a crucial reason why I choose this thesis theme as Nyhavna lies at the waterfront of Trondheim's harbour basin.

1.4. Research questions

How can new and existing buildings function as engines for development?

What shared functions can be imagined and what type of community activities can happen here?

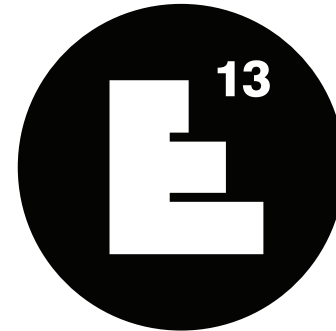
How can the physical design of housing help support sustainable living, a mixed population and social interaction?



02

Background

- 2.1. European
- 2.2. European 13 - The Adaptable City
- 2.3. European 13 - The Sites



2.1. European

What is European?

European is Europe's biggest initiative for innovative housing- and urban planning competitions for urbanism and architecture. The open competitions which are held every second year for young international architects and urban planners under 40 years pick up actual topics. EUROPLAN is cooperating with selected city's and developers which provide sites to develop projects with a focus on housing.¹

Structure

The Initiative was founded 1989 and carried by 19 European states. It is organized by the union "European Europe" located in Paris, which is the umbrella organisation of a network of national European organisations. At the moment former mayor of Lausanne, Yvette Jaggi is its head. National organisations are formed by representatives of public administration, cities and communities as well as developers and architects. Altogether the network of experts in the different fields work out topics and arrange juries that are composed of specialists in the fields of architecture and urbanism.

Idea

The aim is to find innovative experimental approaches for sites that are suggested by "European cities". Furthermore the idea is to reinforce the dialog on Architecture and urban planning on a local and international level by supporting young talented architects from announcement to realisation of their ideas.

The competition serves a dual purpose: it offers cities and developers new and innovative solutions to local urban planning and development, and provides an opportunity for young architects to get commissions by presenting new ideas. European can be seen as a steppingstone into the highly competitive architecture industry. Former award winning competitors are well known offices such as Riegler Riewe (Graz, Austria), MVRDV (Netherlands), NL Architects (Netherlands) or Njiric & Njiric (Croatia).²

European Norway

European Norway is a non-profit foundation organising the European competition in Norway. European Norway was founded in 2003 by Cornelius Brekke. The European Norway Board consists of Bergen School of Architecture, Oslo School of Architecture, Norwegian University of Science, Norwegian University of Life Sciences, Norwegian Center for Design and Architecture and National Association of Norwegian Architects. The Norwegian Secretariat is managed by Transborder Studio. European Norway is financed by its clients and partners, and the Norwegian ministry of Culture.³

Fig. 1 Logo European Europe

2.2. European 13 – The Adaptable City 2

Main theme of 2015's European still remains „Adaptable City 2” as it has been the year before. Keywords such as “self-organisation”, “new ways of sharing” and “process participation” expand the previous topic of changing cities. Flexibility and diversity of participating actors in context of fundamentally changing urban culture and constitution are very important as well as social cohesion within a city's society in the light of limited resources and energy transition. It's about questioning the previous and envisioning the prospective european cities.⁴ The following three key subjects structure European 13.

WELFARE STATE VERSUS SELF-ORGANIZATION

Current tendencies from “welfare state” to more “self organisation” are affecting the understanding of the cities collective. How will the relation between public and private change? Who is in charge of public domain as soon as the state withdraws? How will this affect the practice of an architect?

SEGREGATION VS SHARING

Sharing is an issue in the design and regeneration of an adaptable city: sharing of spaces, expertise, values, imaginary; not just an idealistic point of view but also a repositio-ning for a performative economy and society of another type.

Sharing at the urban scale can stimulate the “empowerment” of coexistences between different cultures: preserving the collective while inventing a more appropriate organization of the society.

How could sharing be a way to develop cheaper and lighter solutions to build an ecological and sustainable city? How could it be a way to co-regenerate the inhabited environments?

The figures for sharing are an antidote against a strong tendency to individualism and against excessive division and artificiality. They are strong project tracks and a “capacity to do”. Could sharing help support change and foster “productive frictions” in respect of the other in other forms of activation of citizenship?

OBJECT VERSUS PROJECT

With communication tools and social networks in the rising, our culture grows less object-based; and this phenomena affects architecture and urban planning. Many young architects are emerging through the implementation of projects presenting less physical objects, yet where the scope of the projects is as important as the objects involved. The objects can already partly exist and the project is about managing the existing, dealing with social constructions, developing a context and raising the question of “urban planning with less or without growth”.⁵



Fig.2 Map of Europe showing locations of the European sites;

2.3. Europan 13 – The sites

Europan 13 is offering four categories of sites with specific issues:

Integration of vacancy into urban fabric

How can interventions activate vacant spaces and make them relevant in an urban structure and how can those spaces offer new functions? Ecological or social upheaval often lead to twists in urban structures. Empty areas waiting for new users, military bases need new functions and green areas lying idle. If areas are too big often a natural development is illusory. In that case new concept for the reactivation of urban spaces is necessary.

Utilize new ideas on urban space

Urban space has its own rhythm. Local and trans-regional interests collide. How can new program, a cultural change and new ways of mobility be useful? What kind of impulses can be passed on to neighbouring areas?

Deficiency into positive dynamic

Urban sites often cope with problematic circumstances such as economic downgrade, polluted areas and remote locations. How can these sites be activated by a new interpretation of the status quo? How a positive dynamic can be generated? Scenarios of a new cooperation that can be exercised with urban planning methods are in demand.

Transform barriers to links

Rivers, Streets, Railways etc. often form unbridgeable barriers. New interpretations to reduce or even remove them are expected. How barriers can be transformed? Is it possible to create Links between different directions by rethinking those barriers?⁶

As mentioned earlier in the Introduction my choice for a Norwegian site wasn't necessarily given by Europan. It was rather a great opportunity to do a design in Norway within the scope of a competitive task with realistic framework conditions. Out of the 49 sites, the site in Trondheim particularly the area in Nyhavna's former industry harbour area with World War II buildings, cultural actors and the task of developing an urban plan that can operate as initiator for the greater harbour area convinced me.

An introduction and detailed analysis of the site will be covered in the following chapters.



03

Methodology

Methodology

To familiarize with the task and the site itself, I visited Trondheim in April 2015. As mentioned in the introduction, my interest in the country led to several visits of different areas in Norway from Oslo in the south to Lofoten in the far north. This was the first time to visit Trondheim.

During a one week field study in the city with a focus on the study site and the surrounding areas I could gain more information about the specific scenario. As a result of my stay I also found out a lot about behaviour pattern of local people and how they deal with the geographic position and the resulting weather conditions that require a way higher ruggedness and adaptability than in central Europe for instance. By analyzing the neighbouring areas on a human scale I could get an insight on the urban fabric, the structure and on how locals deal with public and private. Furthermore analyzing of traffic, the existing buildings on site and the linking points between the site and the surroundings played an important role in finding a design approach.

I could collect more information through literature research at the library of the School of Architecture and Design in Oslo and in discussion with local students. In Vienna I could access relevant literature at the Technical University of Vienna and the Vienna Centre of Architecture (AZW) that helped to complete this thesis. Further access to literature was limited by the internet. Detailed information according the masterplan I could get at the webpage of Trondheim municipality. In fact European Norway offered most of the information including pictures and the masterplan.

Out of it in connection with my site visit I could also elaborate digitalized plans of the existing buildings from World War II on the spot that will be included in the design case in a subsequent chapter of this thesis. Further detailed informations according the masterplan I could get at the webpage of Trondheim municipality as mentioned before.

In earlier years I visited several waterfront developments both in Europe and in China with similar background and functions as the site in Trondheim.

The output of my research background you will find in the next chapter named Analysis. I will zoom in from big to small scale information to show my research status quo. Based on my analysis the resulting guidelines and key parameters form the basis for the final result – the design case in which I give a solution for the task and the concomitant research questions.



04

Analysis

- 4.1. Norway
- 4.2. Trondheim

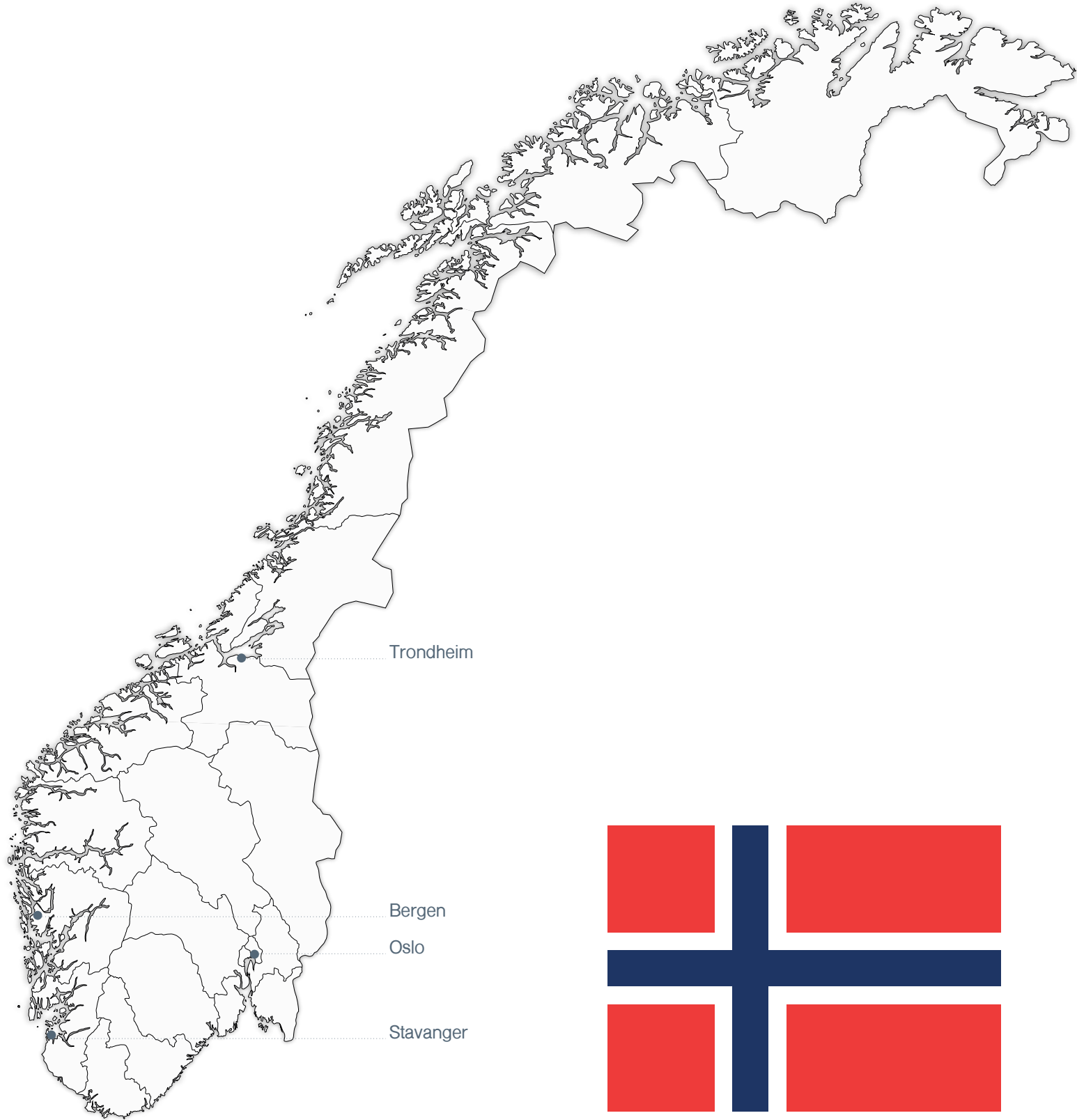


Fig.3: Map of Norway

Fig.4: Flag of Norway

4.1. Norway

Demography

With a population of 5 236 826 (Aug. 2016) citizens Norway is a constitutional monarchy whose territory comprises the western portion of the Scandinavian Peninsula plus several antarctic and sub-antarctic islands. Until 1814, the Kingdom included the Faroe Islands (since 1035), Greenland (1261), and Iceland (1262). It also included Shetland and Orkney until 1468.⁷

Geography

Its total area of 385,252 square kilometres share a long eastern border with Sweden (1,619 km). To the south on the other side of Skagerrak Strait Denmark is located and to the north-east Norway is bordered by Russia (196 km) and Finland (727 km). Norway's canyoned coastline faces the North Atlantic Ocean to the north-west and the Barents Sea to the north-east. This characteristic landscape is dominated by fjords that have its origin in the ice age.⁸

Climate

It is often believed Norway to be a cold and wet country. But compared to Greenland and Siberia which are located at the same latitude it has a much friendlier climate thanks to the warm and steady Atlantic Ocean. The mean temperature during winter is above freezing all along the coast from Vest-Agder to the Lofoten.

According to the expanse, from south to North Cape there is a span of 13 degrees of latitude. Furthermore the variations in received solar energy is enormous with northern parts of Norway having midnight sun during summer but no sunshine during winter.⁹

Politics

Norway is a member of the European Economic Area, the United Nations, NATO, the World Trading Organisation and the OECD.

Economy

Extensive resources of natural gas, minerals, lumber, seafood (tendentially shrinking), fresh water and of course petroleum accounts for the the country's gross domestic product (GDP).¹⁰ Outside the Middle East, Norway produces the most oil and natural gas.¹¹ According to the World Bank and IMF lists Norway ranks forth in per capita income in the world.¹²

Moreover Norway has topped the Legatum Prosperity Index¹³ as well as the Human Development Index for seven years in a row (2015).¹⁴ Furthermore "The Economist" names Norway the most democratic country in the world.¹⁵



Fig.5: Map of Norway showing the 19 Counties;
Fig.6: Silhouette of Norwegian County Sør-Trøndelag;

4.2. Trondheim

Trondheim is the administrative center of the County Sør-Trøndelag – a region bordered by Nord-Trøndelag, Møre og Romsdal, Oppland and Hedmark as well as Schweden. In 2014 more than two third of the county's population (306.200)¹⁶ lived in Trondheim itself.¹⁷

With around 190.000 inhabitants Trondheim is Norway's 4th largest city behind Oslo Bergen and Stavanger.¹⁸ It was founded in 997 as Nidaros located at the outfall of river Nidelva into the Trondheim Fjord.

Nidaros Cathedral is one of the main reasons for Trondheim's important role in Norwegian history. The Cathedral was established in 1152 (and they are still working on it). It is the most significant gothic cathedral in Norway and was northern Europe's most important Christian pilgrimage destination during the Middle Ages. The kings from 10th century and onwards have been crowned and received their blessing here.

The buildings of medieval Trondheim were mostly small, low timber houses, and are all too often ravaged the town. After a major fire in 1681, the royal city planner Cicignon designed a new plan in the Baroque style with wide boulevards to prevent more fires. This plan is still the footprint of the central city centre.

But you also find narrow alleys and narrow streets, many originating in the Middle Ages, and many special timber buildings, some built as far back as the 1700s.

Industrialization in the 1800s led to new growth. A number of factories and workshops sprung up. An engineer called Dahl made his comprehensive plan for the city's harbour areas in the 1870s. Large fillings were made into the sea, and the waterfront of the city changed completely. The fillings also made room for the railway both to the south and some years later to the north. In 1910 the university was founded in Trondheim.

Now, over 100 years later, the Norwegian University of Science and Technology and the other colleges have more than 30 000 students and Trondheim hosts one of the most important educational and scientific clusters in Norway.

The population of Trondheim has increased in the last 50 years, equivalent to 1.5 %, a year, almost doubling in size. This has led to a demand for more housing and service facilities. The strategy of Trondheim municipality is now to increase the density within the existing urban structures. The city centre, the urban core, which is a concentrated low-rise grid structure, is peninsulashaped within a huge meander of the River Nidelva that almost touches the fjord at the neck of the peninsula.

The conservational interests inside the urban core have led to more pressure for development of the nearby areas and led to urban development of earlier industrial sites such as Nedre Elvehavn and Brattøra.

Trondheim is a growing city which in the future must be able to provide infrastructure and amenities such as residential areas, office space, cultural facilities, schools, kinder gardens, health and welfare centres, sports and recreational facilities, bicycle paths, streets, open spaces, parks etc. These are fundamental needs for available space which should be properly incorporated in the ongoing urban development process.

Trondheim is a city which is influenced by the inevitable global changes with regard to both economics, population growth and environmental issues. It is difficult to predict what factors will influence the development of Trondheim.

However some assumptions have been formulated for the work on the long term plans for the city as far ahead as 2050:

- By 2050 the population will reach approximately 250 000 inhabitants.¹⁹

- City growth wont lead to grow in vehicular traffic. Extensive development of bicycle trails and a focus on urban mass transit are an ongoing topic even on national level at the moment. Norway will spend almost 1 billion Euro on urban bike tracks in 9 of its largest cities.²⁰

- The institutions of higher learning will be concentrated in an urban campus.

- "Midtbyen" – the city center will enjoy priority as the historic town center which will be harmonised with the other adjacent central areas.

- The port of Trondheim will be extended to be a regional port but with the handling of goods diverted to the town of Orkanger 40 km from Trondheim. Newly vacated areas at the traditional port of Nyhavna have been earmarked for urban development.

Some short term goals have been expressed as main political objectives by the city's community:

- By 2020 Trondheim will be an internationally acknowledged centre for technology and higher learning.

- By 2020 Trondheim will be a sustainable city which offers an environmentally friendly living.

- By 2020 Trondheim will be a multifaceted and including city.²¹



Fig.7: Wooden Warehouses in Trondheim along river Nidelva;



04

Analysis

- 4.3. Study area
- 4.4. Urban context
- 4.5. City integrated port operation
- 4.6. WW II heritage
- 4.7. Port integrated cultural scene
- 4.8. New projects
- 4.9. Masterplan

4.3. Study area

In Trondheim Nyhavna, which means directly translated “new port”, can be seen as one of the most promising areas for future urban development. The reasons for this are the closeness to the city center Midtbyen as well as the mass transit system that connects it with the rest of the city. Therefore a project aim was to find out and strengthen urban development, promote the sustainability in Trondheims Nyhavna through this project.

Nyhavna itself lies in the north east of Trondheim’s city center. From the main city square in Mitbyen to the area the distance is approximately 1,5 km. The district is limited to the north by Ladehammen, a cliff that rises up from the fjord, to the west by the river Nidelva and the Trondheimfjord and to the south by the railway tracks. The districts that surround Nyhavna are Lademoen, Nedre Elvehavn and Brattøra.

A masterplan to ensure overarching along with long term strategies for a transformation of Nyhavna from an industrial port to an urban area whilst still keeping in mind the factor and value of a port, was introduced by the municipality of Trondheim for this particular area.

Therefore, the plan by the municipality promoted recreation facilities and historical sites incooperated into a modern and urban structure, with residential, commercial, service and cultural institutions. Needed is a reassessment of land use with focus on urban development as well as future shipping and port capacity. On the Transittkaia, certain areas have been set aside in order to plan a future harbour for project cargo there.

The Nyhavna plan is a concept that aims connect public spaces with the surrounding water and nature of the city as the immediacy to the water is one of the main assets of Nyhavna. The public parks and open spaces in this area therefore demand high quality. Recreation is a corner stone within the concept of Nyhavna allowed by offering a variety of recreational activities. Use of the waterfront is made through combining it with parks and open spaces that have the possibility of creating a continuous green zone.

Based on the existing pattern of properties in the area is a grid zone that is planned to evolve into a dense urban area in future.

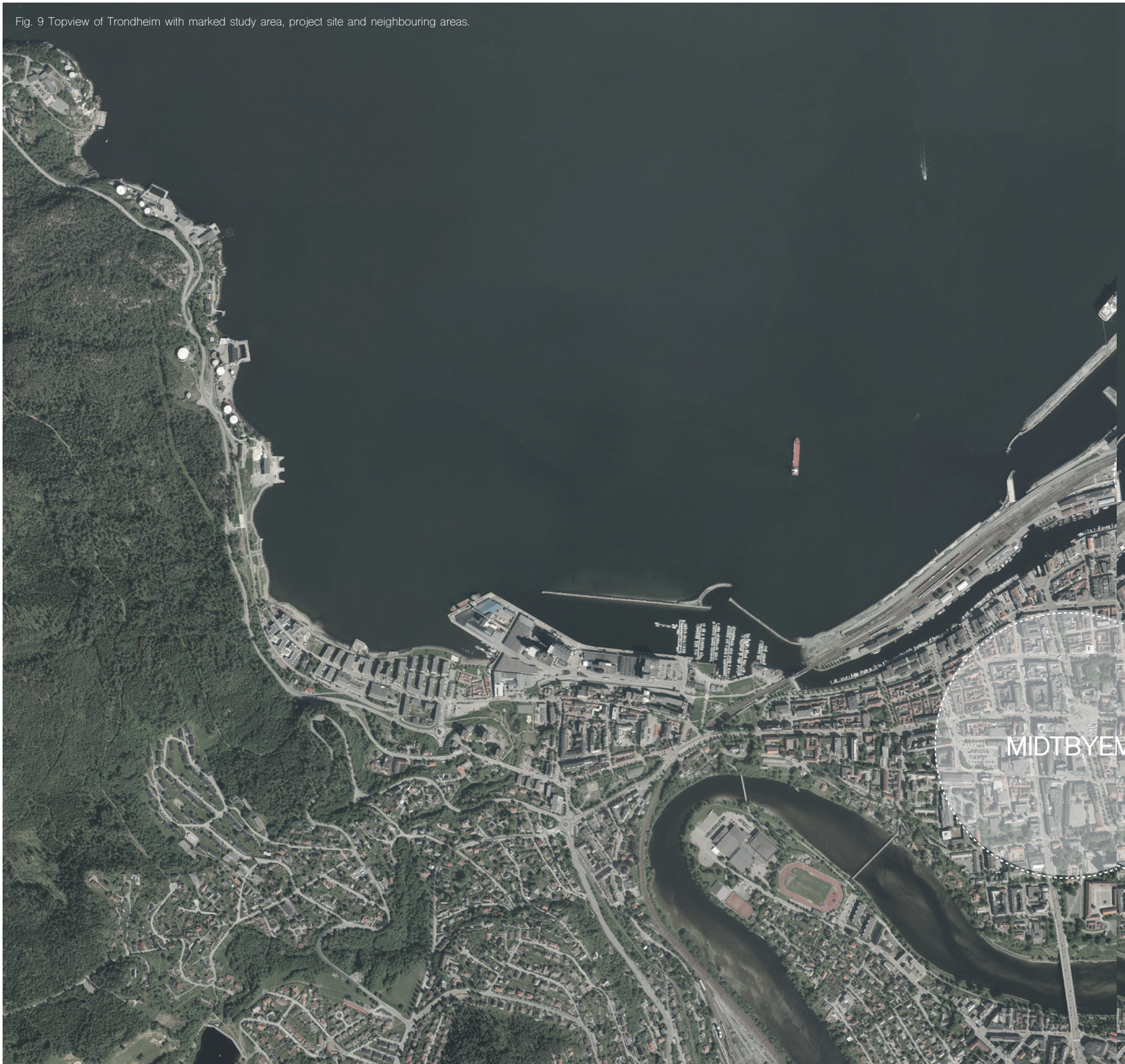
The plan includes development of 5–7 floors residential facilities but the buildings along the railroad and Strandveien shall not be taller than the bunker Dora I whereas the buildings near Lademoen railroad station and on the Transittkaia pier may be taller. The buildings must vary in architectural expression, height and volume within each city block.

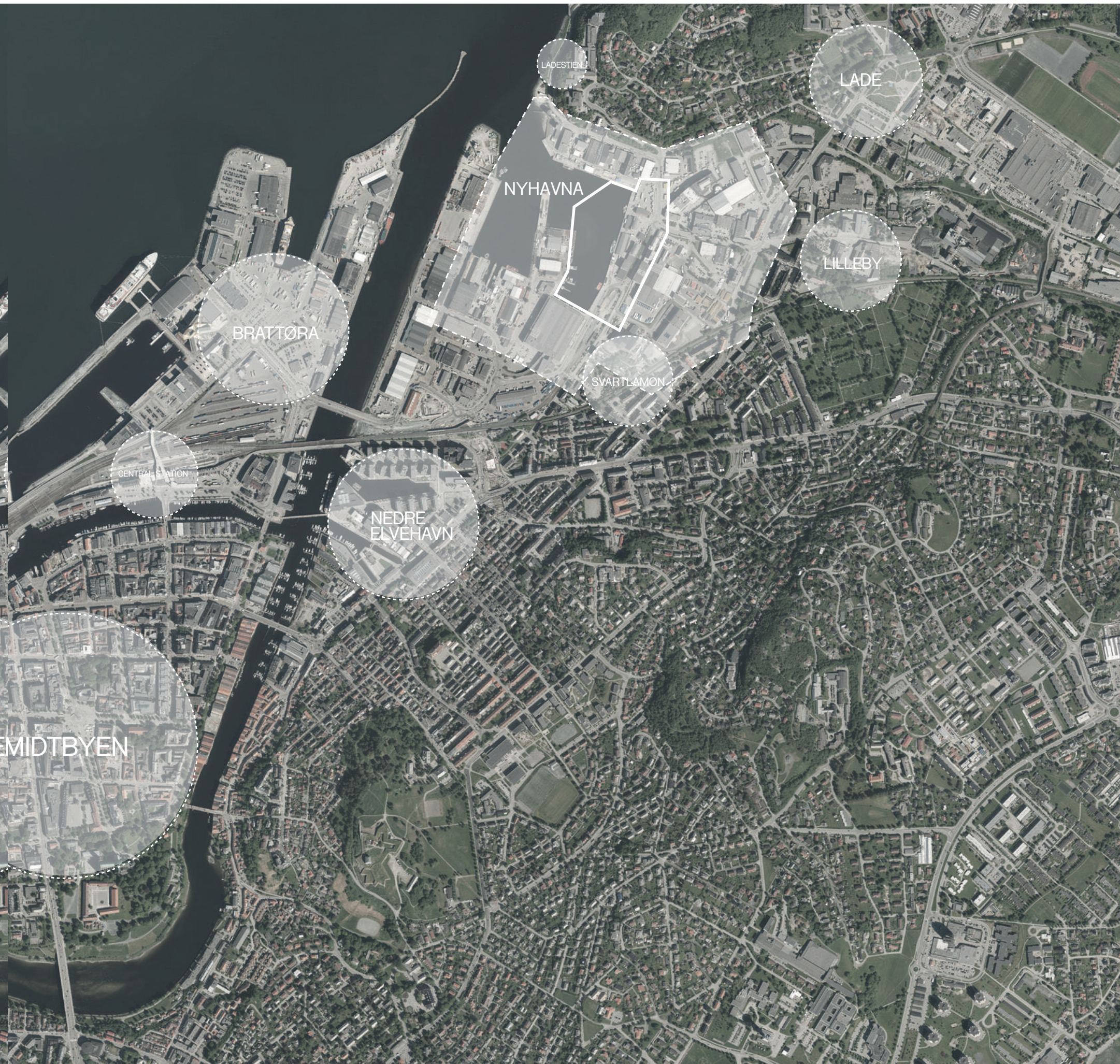
A cultural environment of national interest is the German submarine base with docks and buildings from World War II. Most of the buildings are intact and well preserved. Essential is therefore that these buildings are maintained in its original form in order to contribute to establishing the future character of the area.^{22,23}



Fig.8 Birdview of Nyhavna harbour area;

Fig. 9 Topview of Trondheim with marked study area, project site and neighbouring areas.





LADESTIEN

LADE

NYHAVNA

LILLEBY

BRATTØRA

SVARTLAMON

CENTRAL STATION

NEDRE ELVEHAVN

MIDTBYEN

4.4. Urban context

The European 13 site and the greater surrounding “Nyhavna” will form a missing connection of Mitbyen – the historical city centre – an further development to the northeast. Situated between old and new areas of the city Nyhavna will play an important role as new urban residential zone. The following passages will give a short overview of the relevant districts surrounding Nyhavna.

The historic centre Mitbyen

Midtbyen is the city centre of Trondheim. Midtbyen is most commonly associated with Trondheim by people in general, and is the heart of the city. Bordered by the river Nidelva and the fjord this is where the origins of the city were to be found as early as 997 AD. There are currently a total of 4000 residences and 17,000 jobs in Midtbyen. At the moment Trondheim municipality has particular focus on revitalization of Midtbyen as the city centre as competition from shopping centers in the city periphery became bigger the last decade.



Fig. 10 Birdview of Mitbyen, the medieval center of Trondheim;

Brattøra – Trondheim’s traffic hub

Brattøra is the area for transportation terminals for ships and railroad. Here the central station is location and the Coastal Express, Hurtigruta together with other cruise ships stop. Since the late 1990s, on the artificial land there has been an urban renewal program. Parts of the port and the central station were converted to office buildings. Moreover a public bath called “Pirbadet” and a conference hotel with office complexes were developed.

The number of visiting tourists per day varies from 100 to 4000 depending on size and number of ships arriving at the port. Brattøra is the main infrastructural hub in Trondheim with 18000 commuters per day passing through Trondheim Central Station.²⁴



Fig.11 Brattøra – Clarion Hotel and Conference Centre by Spacegroup Architects;

Nedre Elvehavn – entertainment district

In late 90's the site of a mechanical company was transformed step by step into a shopping and entertainment area with adjacent high-end housing and office space. Around 1200 residences and 3000 jobs are located here. Nedre Elvehavn has the highest concentration of restaurants and bars in the city.²⁵



Fig. 12 Nedre Elvehavn: Former industrial area with high concentration of gastronomy;

Svartlamon – the alternative district

The district of Svartlamon lies in between the railway and Dora bunker. It's called Trondheims alternative and anarchistic district. After years of political struggle finally in 2001 the municipality decided to develop Svartlamon as an experimental site. Within the testing ground for urban ecology and self organisation most of the houses were built at the end of 19th century. Most of the people living in around 150 housing units in the area of Svartlamon are students or creative young people. It even has a Kindergarden in a former car dealership. Alternative shops and cafes strengthen the areas identity but the most renowned development is Norway's tallest wooden building located at Strandveien.²⁶



Fig. 13 Svartlamoen: Social housing project by Brendeland & Kristoffersen;

Lilleby

Today Lilleby is still dominated by industrial buildings of which many remain clearly visible. It has an average employment of a total 900 persons meanwhile the number of residents in this area is quite low. Existing plans for the area suggest to convert the areas housing the abandoned industries into urban residential areas. Apartment blocks with 4 to 5 floors and around 1800 new residents are designated to form this new district.

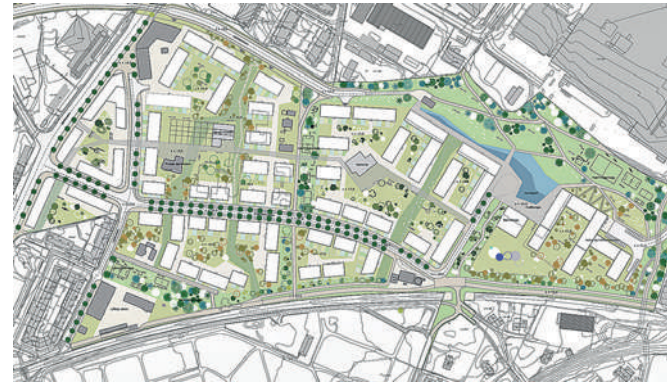


Fig.14 Lilleby: Plan for new residential area in Lilleby;

Lade /Leangen (Falkenberg/Louiselyst)

Lade is situated northeast of the city center on the peninsula next to Trondheimfjord. Including adjacent areas today it is an attractive residential area. Around 3600 dwellings are located close to the fjord and recreational areas. Residents furthermore can profit from the proximity to dominating shopping centres and big box retail. and the associated use of cars. A plan for Lade and Leangen which is further to the east includes an increased amount of 2000 – 3000 housing units, plus further commercial and industrial development.²⁷



Fig.15 Lade: New residential area;

Ladestien

Ladestien is a 14 km long walking track alongside the Trondheimfjord. It follows the fjordcoast along the Lade peninsula. It's a recreational area that's used by a greater part of Trondheim's population. Along Ladestien several beaches are located, with birch, rowan, pine, spruce, birch and alder forming the vegetation in the latter.²⁸



Fig.16 Ladestien: Recreational track along the fjord;



Fig.17 Birdview showing important landmarks in Trondheim;

4.5. A city integrated port operation

Because port operations will stay an integral part in Nyhavna in the future the area will serve as a testing ground for coexistence of urban life, production and industry.

There are several harbour districts in the city of Trondheim and the harbour company is at present owned by 11 municipalities around the Trondheim fjord. It presents harbour authority as well as ownership to substantial land area in the region. In accordance with the city- and harbour plan of 1912 most of the harbour areas in Trondheim have been developed on the former riverbanks of the river Nidelva by the harbour and the railway companies around the 20th century.

At the moment Nyhavna is shaped primarily by industrial- and bulk-activities. Ingoing industrial cargo such as cement, steel and salt and outgoing industrial cargo such as polluted materials and products for recycling are main factors for that assumption. Furthermore, the area also deals with project cargo through housing materials or pre-fabricated modules. The annual turnover at facilities in Nyhavna Trondheim is about 400.000 tons of goods- this being stable numbers for years. A big part of the area is disposed by the industrial companies on long term lease agreements. Some of the companies lease building from the harbor company, but many of the companies lease land and have built their own buildings. Today approximately 1/3 of the area is disposed by industrial companies that have sea based transport as a substantial transportation form.

In order to develop the area within reasonable time suitable commercial agreements need to be reached such as relocating companies to other parts of the harbour area. The plan involves to relocate some of the activities outside Trondheim's municipal borders.

What needs to be taken into account is that most of the companies and products have their key-market in Trondheim therefore have to be relocated within the boundaries of the municipality. An adequate alternative is a scarce resource. All this will influence the timeframe and general development within the area.

Recently the harbour company worked on a plan for long-term land disposal in Trondheim also including other areas of the harbour company. This plan suggests most of the Nyhavna harbour district to be relocated. On a long term basis various activities for example the project cargo have to be handled in Nyhavna.

Pir II and Ila pir (further to the southwest) could host several companies that need to be relocated. As stated earlier harbour activities will have a profound effect on further development and planning of Nyhavna because of being a consistent future factor. By locating new housing and public areas in the inner parts of Nyhavna interests could be balanced and conflicts minimized.²⁹

The illustration to the right shows the timetable for leasing contracts and possible relocation.



Fig.18 A development of the Nyhavna area within a reasonable timetable depends on relocation of activities and companies to other areas along the fjord.





Fig.19 View at Rignes National Beer Center with existing buildings from WWII on site;

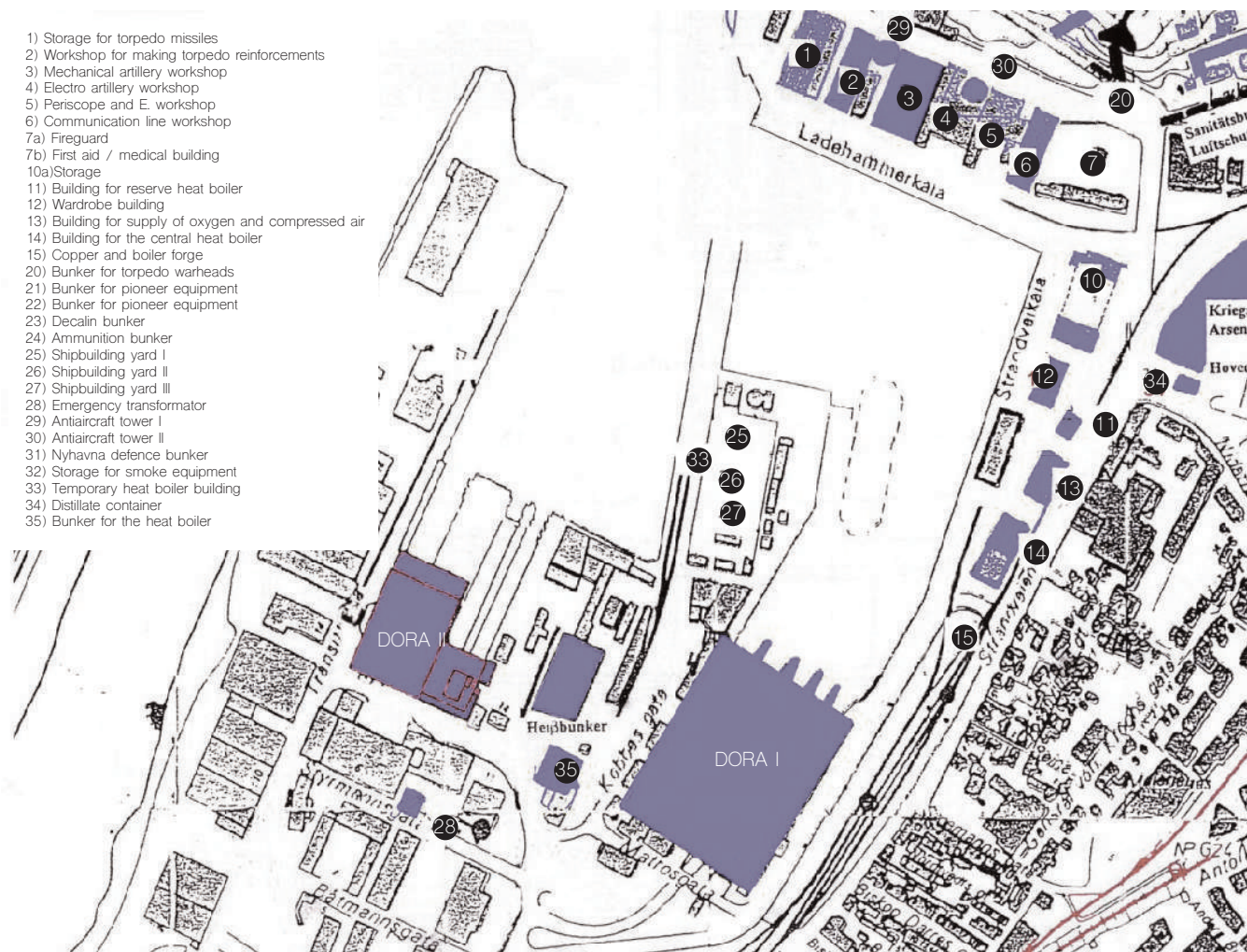


Fig. 20 Kriegsmarinewerft Drontheim: The coloured buildings illustrate the main functions of the “Kriegsmarinewerft Drontheim”. The majority was preserved until today.

4.6. WWII history

Norway was attacked and occupied by the German forces in April of 1940. One of the main reasons was the «Kriegsmarines» urgent need to establish naval bases and obtain access to shipyard capacity for repairing submarines during the ongoing battle in the Atlantic. Trondheim was looked upon as a strategic and important naval port, ideal for future operations. The «Marinewerft Drontheim» was established at Nyhavna in the early stages of the Norwegian occupation.

The area around Strandveien was surrounded by small-scale wooden houses up until the late 1930's, and similar buildings are still present in Svartlamon, the neighbouring housing area. The houses were originally located on the waterfront but the local harbour authorities in Trondheim saw the potential of the area and gradually started to fill in the bay with masses to facilitate for an expansion of the harbour activities.

The landfill that started in the years prior to the war was expanded rapidly to make room for the submarine bunkers Dora I and Dora II soon after the occupation. To complete the enormous constructions of Dora I alone, with a footprint of 16.000m² and 3,7m thick reinforced concrete walls, was a monstrous task. Large quantities of building material had to be transported to Nyhavna and at the most, the project demanded a workforce of 7000 men in an area where only 2000 were available at any time.

“Organisation Todt” was responsible for the constructions, which were finished before the full effect of the war on the eastern front. The labour was mainly done by Germans and Norwegians.

During the construction, “Organisation Todt” met massive challenges stabilizing the ground at the building site. In spite of this, Dora I was ready for use by the summer of 1943.

Marinewerft Drontheim required additional supplies to sustain the submarine activity. Therefore service buildings were built along the entire edge of the basin; workshop buildings of all types, heating plants, and bunkers to protect the working personnel in case of an airstrike. The buildings alongside the basin were connected with electricity- and communication cables in a 1m wide and 1m deep culvert below ground were running along the entire basin.

North of Strandveikaia was the administrative building established in the Vinmonopolet's new built office building. A military lazaretto and torpedo stock was established, well protected, within the mountain of Ladehammeren. The buildings at Strandveikaia was built for various purposes. The programs were split into individual buildings due to minimizing the risk when attacked.

Five German buildings are located in Strandveikaia today. Except for the “Fyringssentralen” (Nr 14), which stands out due to its distinct height and expression. All of the buildings in Strandveikaia are characterized by a modest architectural expression in brick and concrete. However, the elevated gables give the buildings a unique character.^{30,31,32}

4.7. A port integrated cultural scene

Nyhavna is not only a highly industrialized area but also home to cultural actors. The area is a hotspot for music studios, designers, painters, sculptors, photographers and gallery. Low-cost rents and redundant vacancy make this possible. During the last years more and more so called artists are settled here. But also the number of facilities for leisure activities have been increased.

In the table below and on the right-hand side there is an outline of facilities and actors that have gentrified the area.

Atelier Dora (visual art and exhibitions) Terese Myran (visual artist)	1	RAKE Arbeidsfellesskap (creative co-working space)	8
Cirka teater (Theatre production of children theatre) Tae Kwon Do (fitness centre for martial arts) TIL Photo (photo studio) Bjørn Jensen (music studio and rehearsal facilities) Havnelageret (dance studio)	2	RAMP (café and concert venue) "Gratisbutikken" (a free second-hand shop) Verkstedhallen (concert venue)	9
Håkon Gebhardt (music studio)	3	Ivar Matlaus (book café)	10
Kulturbunker Dora (various cultural activities)	4	Lademoen meeting house	11
Nautilus studio (music studio and rehearsal facilities) Tong Ir (fitness centre for martial arts) Marius Bergesen (music studio and rehearsal facilities) Erlend Leirdal (wood sculptor)	5	Gregus ateliers & exhibitions	12
Teaterdesign (production of theatre costumes) Klostergruppen (group of visual artists) Sirens wail records (music studio and rehearsal facilities) Diesel Dahl entertainment (impresario, music studio and rehearsal facilities)	6	Babel Gallery	13
Jørgen Fastner (collector) Jørgen Kjøllesrud (music studio and rehearsal facilities) NN (sculptor)	7	Gekko climbing hall	14
		Lademoen ateliers & exhibitions	15
		UFFA autonomous youth house	16
		Svartlamoen artistic and cultural kindergarden	17
		Aktiv Kindergarden	18
		Megaphone Art installation	19
		Ute, climbing hall	20



Fig.21 Cultural actors at Hyhavn: Around 20 recreational and cultural institutions are located in the Nyhavn area. Industrial buildings and buildings considered as cultural heritage serve as accommodation.

4.8. New projects

Change is already happening at Nyhavna. New projects that are about to be completed suggest an exciting advancement of this district of Trondheim.

Ringnes – National Beer Center

Right next to the European project site the Ringnes Brewery is located. Right opposite of Strandveien the building dating back to the 19th century has some parts with historic value. The characteristic facade and clocktower will be a dominant part of the sites surroundings.

The company is moving out soft drink production and is currently reorganizing. The future focus will be on beer brewing and its communication by creating a center for beer culture including restaurant, museum, and opportunity for individual craft beer brewing. Inspired by the renovation of Carnegie Brewery Stockholm, in april 2016 the new beer centre opened up. In addition with the development at the European site Ringnes will reopen the walled up entrance facing Strandveikaia to create synergy between brewery and new development opposite the street.^{34,35}



Fig.22 Ringnes Brewery;

Renere Havn

Sample of sediments and living organism from Trondheim harbour in 2010 showed high levels of contamination. Indeed, a survey also showed that the pollution in fish and mussels is decreasing. This could be reached by stopping the sources on land. Nevertheless the seabed is still the biggest source of pollutants.

“Renere Havn” is a project to decontaminate the harbour in Trondheim. The Nyhavna area has just been finished in summer 2016 by dredging the deep seabed in front of Dora bunker and stabilizing and solidifying dredged contaminated sediments as landfill at Kullkranpiren.

^{34,36}



Fig.23 Illustration from Renere Havn webpage;



04

Analysis

4.9. The Site

4.10. Buildings on site

4.9. The site

European brings the north eastern part of Nyhavna into focus. The area between Strandveikaia and the basin is designated to form a local centre for the future dwellers of Nyhavna and the other transformation areas like Lade and Lilleby to the east.

Some of the subareas are to be transformed within few years meanwhile others will continue as harbour for many years ahead.

A recently finished masterplan from the municipality sets some guidelines for the development of the entire area.

The municipal masterplan suggests three new landfills. The maximum extent of the landfill along Strandveikaia is regulated as shown on the map on page 54, but might be adjusted accordingly to reassure good transitions between land and sea.

Enough pedestrian streets and bike lanes for a good internal connection for Nyhavna. Thus a pedestrian bridge to Kullkranpiren – the pier opposite of the basin – can be part of further future development and a key feature when working with Nyhavna in a larger context.

Generous new public green structures and recreational areas are designated to provide enough green space and ensure a good public connection to the water. Furthermore the idea of a cohesive green structure to tie Nyhavna together and

link it to the surroundings is meant to be evident. Bigger parks should be as indicated in the municipal plan.

The masterplan also suggests a mix of programs with a predominance of housing at the site. Furthermore commerce, culture, office and public programs are the functions expected at Strandveien.

The main road to Lade is also a main route for public transport. Within its capacity, the road will transport 6 000 cars on average each day. Hence becoming a significant barrier through the new neighbourhood. It needs to be handled with care to ensure good connection between both sides of the street. An illustration of public transport and road connection can be found on page 55.

Five existing heritage buildings from WWII are located on the site. It will be a task to integrate them into the design. Reactivation of the existing development with cultural actors will play an important role for the identity of the site. On the right side you can see a top view of Nyhavna with the framed site at Strandveikaia. Within the next pages there is a deepening description of the 5 buildings to be integrated into the design.³⁷

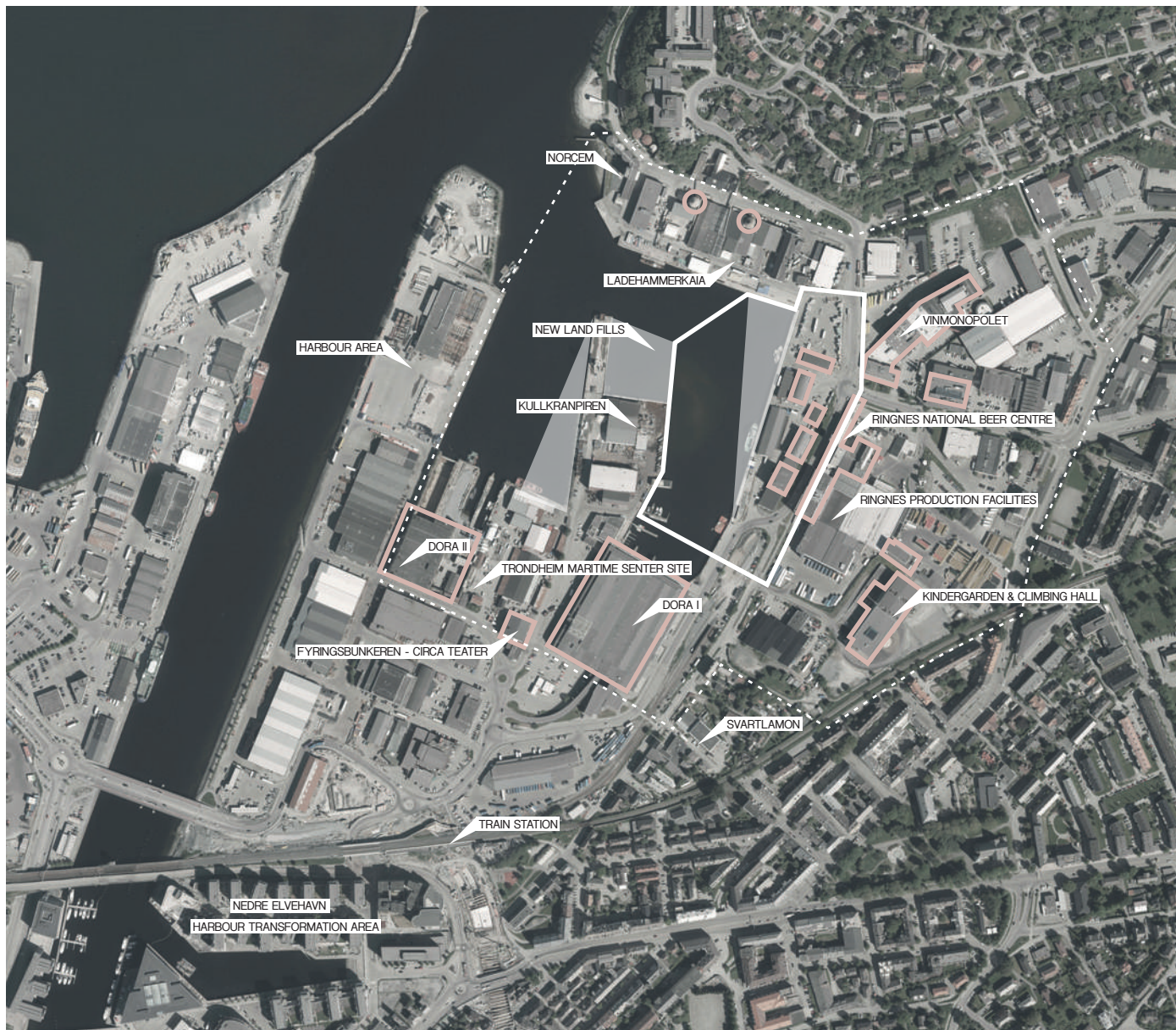


Fig.24 Top view of the project site with buildings to be kept;

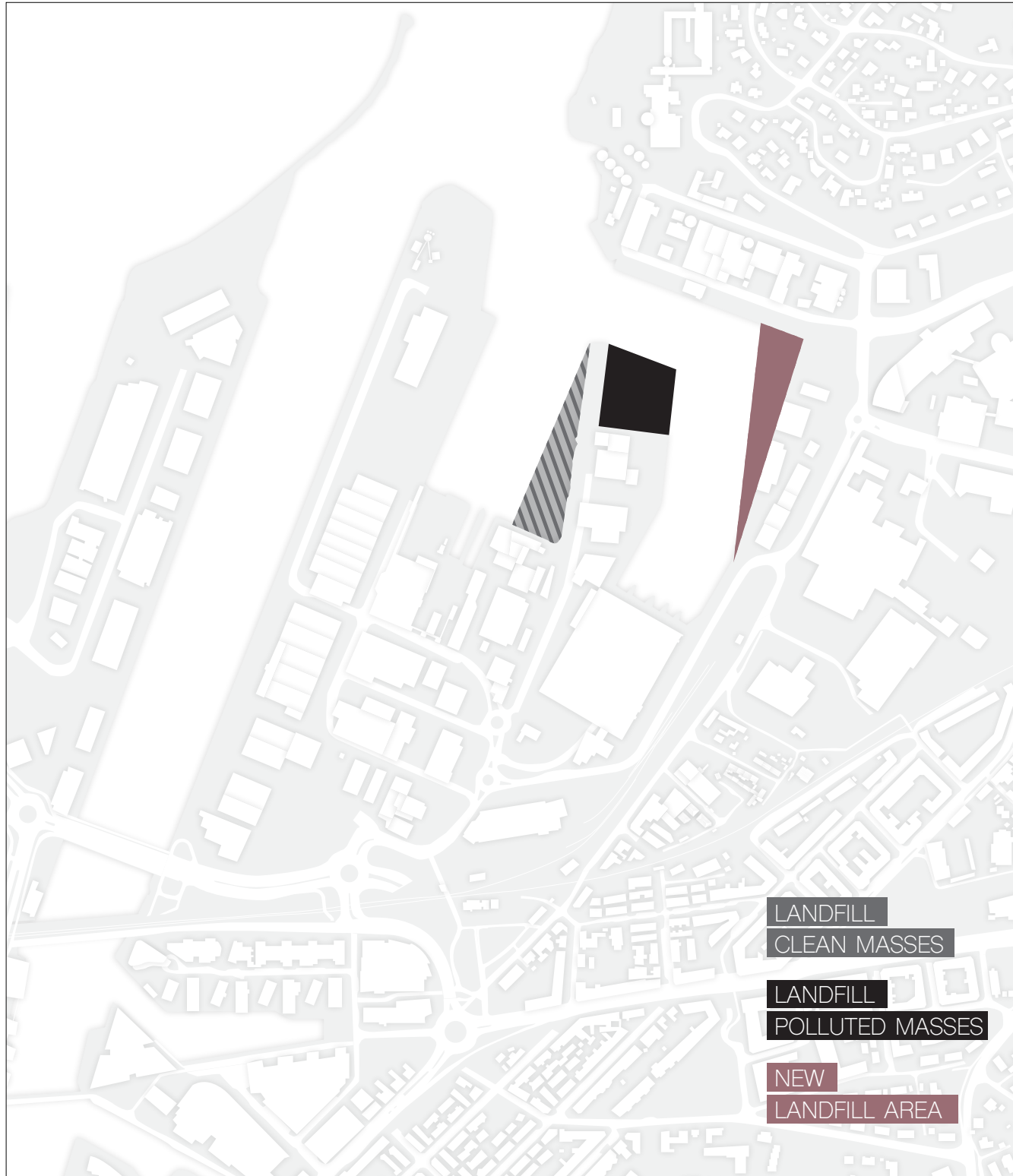


Fig.25: Landfills

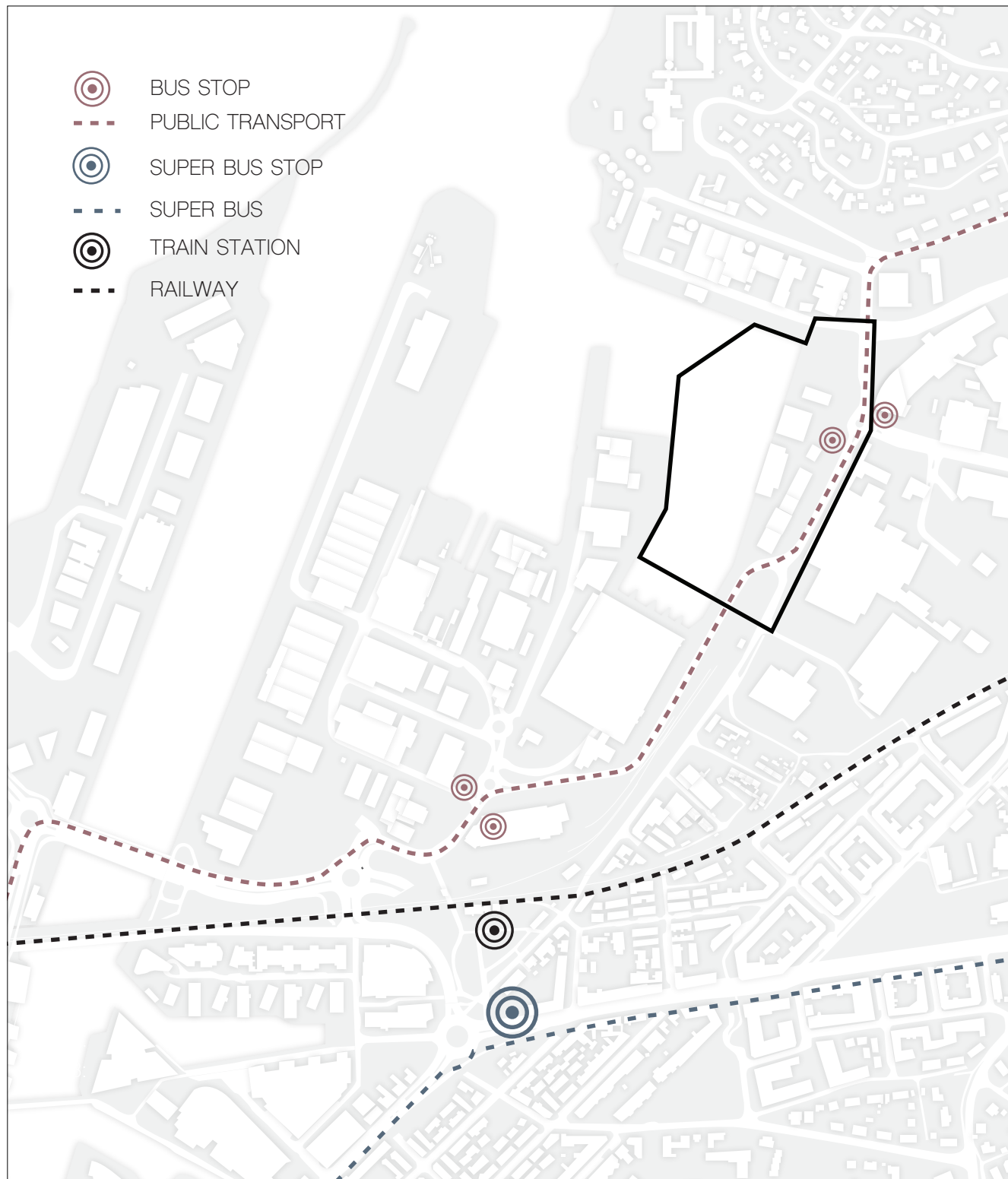


Fig.26: Public transport

4.10. Buildings on site



Fig.27 Project site at Nyhavna east with existing buildings on site;

Strandveien 96a

Strandveien 96a is the first of five WWII remnants to be kept at the site. Its facade is constituted of masonry with plasterwork painted in a grey colour. The eastern façade facing Strandveien and Ringnes brewery is covered with metal boards. The loadbearing structure consists of visible columns in the facade as well as interior structures around the staircase.

The facade slightly has been modified since it was built during WWII. The changes include a circular escape staircase on the west facade, re-walling of openings and addition of new gates each floor facing west. Strandveien 96a has 4 floors as well as a basement and measures around 24m x 21 m in size. During WWII it served as a building for a central heat boiler.

Nowadays the usage is a completely different one. The building houses several music studios and rehearsal facilities as well as room for one or two martial art institutions located in the upper floors. Nevertheless the whole building shows a pretty improvised character that will come round at the following existing buildings.

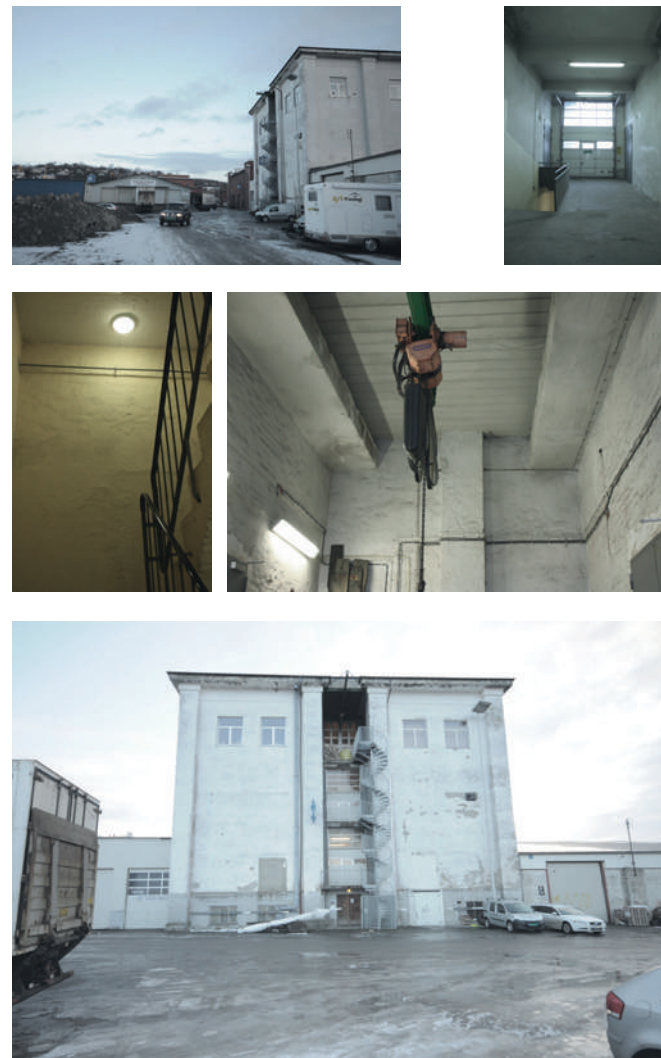


Fig.28-32 Strandveien 96a exterior and interior impressions;

Strandveien 98a



Fig.33 Strandveien 98a exterior impressions;

Strandveien 98a is the next building in line. It has a footprint of 35 m x 17 m. The building has 2 floors, a basement and a partial mezzanine. The facade and some interior walls configure the loadbearing structure. The building, formerly used as a supply building for oxygen and compressed air, today is warehouse on the ground floor. Office space and spaces for different cultural actors such as visual artists, music studios and theatre costume designers are located on the first floor. The changes on the facade are mainly a fire escape to the north and re-walling of old openings to the west. The facade is coated in plasterwork painted red.

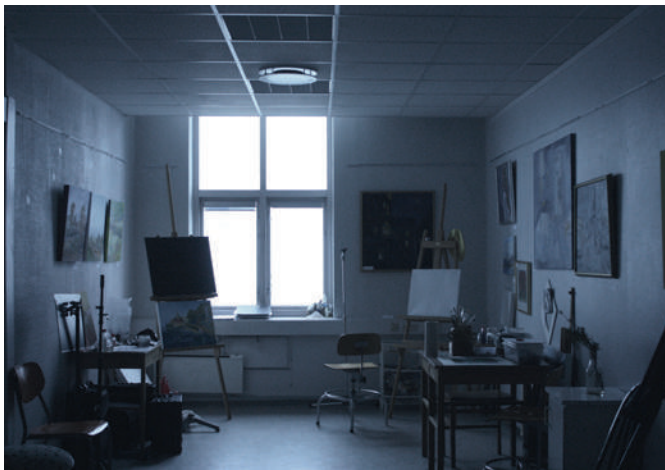
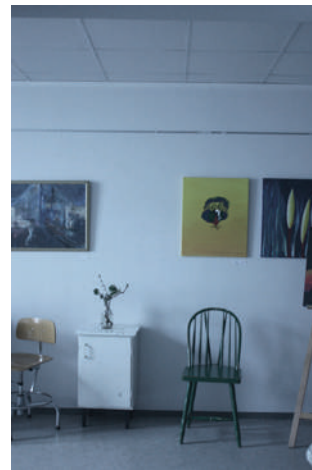


Fig.34-36 Strandveien 98a interior impressions



Strandveien 98b

Strandveien 98b has also experienced some adaptations since its completion during WWII. Originally built for the purpose of a reserve heat boiler building, the 16,5 m x 11,85 m object shows a homogeneous outward also covered with red plasterwork. The loadbearing structures consists of the facade itself and two interior columns. It has two floors and a basement. Nowadays it is used as a warehouse and on the upper floor there is an office for a small building company. An escape staircase on the southern facade is the only way to get up there.



Fig.37-39 Strandveien 98b exterior and interior impressions;

Strandveien 100

The exterior appearance with the red plasterwork facade is quite similar to that of Strandveien 98a. Strandveien 100 was built during WWII for the purpose of a wardrobe building. Later on it was used as storage for defence material hence many of its original openings have been re-walled. Also the size of the structure (34m x 16m) is almost the same as Strandveien 98a. In addition to the loadbearing facade it has some loadbearing interior walls and on its third floor the roof is held by steel columns. Nowadays it is used by collectors and sculptors as atelier and exhibition space but also music studios and rehearsal facilities are located here.



Fig.40-42 Strandveien 100 exterior impressions;

Strandveien 102

The hermetic character of Strandveien 102 has slightly changed since WWII on the basis of several openings added to the enclosure with a fire escape to the east and singular openings on each facade. The building is about 9 meters high and measures 32m x 12,5m. Again the loadbearing parts are the exterior walls and 8 interior columns. Then and now it serves as storage. Several companies use it simultaneously.³⁸



Fig.43 Strandveien 102 exterior impressions;



Fig.44 Strandveien 102 interior impressions;





05

Guidelines

5 Guidelines

A vision for Strandveikaia

First of all the main task is to develop a vision for Strandveikaia. A new local centre for the larger Nyhavna development will be the first step to re-activate the area for the future. New ways of living and urban activity can be applied on this testing ground. Thus the development in Strandveikaia will define the standard for the larger Nyhavna area. By identifying qualities within the existing resources on site, creating strategies for reuse and proposals for new content of architecture is another key task.

Connections

Competitors are not asked to make a new master plan for the study area but to look at overall connections in the area and how the Strandveikaia is connected to the surroundings. This includes connecting Strandveikaia to the overall concepts for green and grey infrastructure.

Functions

As mentioned earlier, the master plan indicates a mix of culture, commerce and housing. How can a local center look like in the future? To what extent can it be an arena not only for local residents, but also guests of different types? What features are needed and how can new and existing buildings function as engines for development? What shared functions can be imagined and what type of community activities can happen here?

Kindergarden

European asks to figure out how a kindergarten can contribute to the communal infrastructure in the area. The size should be appropriate to house a number of around 70 children including indoor and outdoor space (around 25m² per child).

New ways of living

As Strandveikaia will be home to the first urban residents of Nyhavna. They represent a type of urban pioneers in the area. What will it mean to live here? How can the physical design of housing help support sustainable living, a mixed population and social interaction? Competitors are asked to design housing in the Strandveikaia area that allow for all age groups and a variety of ways of living.

Active reuse and retelling of the history

Competitors are asked to show new ways of activating the WW2 buildings. Its a tremendous resource to communicate the history as well as open up for new use. It can be seen as a landscape to build on, build in and next to it meanwhile remaining affordable space for cultural actors and the communities residents on site.

Cultural actors at Strandveikaia

The main key asset when developing Strandveikaia is the cultural actors. When developing the site it is important to show the value and identity the cultural actors can give to the site as well as to the whole surroundings.

This guidelines sum up the key parameters resulting from studying the European competition brief and the analyse by myself. In the following chapter I will give you an understanding of the conceptual idea for the design at Strandveien.

Public space

European competitors are asked to develop a solution for a new public space in Strandveikaia. By including the water and land it is important to think about usage during summer and winter. The quayside should be treated with extra attention as the relation to the water will be a crucial aspect when activating the site. An array of activities can be located here.

The internal flow of the area is important as well as its connection to neighbouring sites. Thus a new pedestrian bridge to Kullkranpiren and the relationship to the National Beer Centre should be accentuated.

A vision for Strandveikaia can be summed up in two levels: Firstly an overall idea for the site and a solution of how it works in the Nyhavna plan is required. Secondly the site at Strandveikaia is meant to include the four important dimensions: New program, housing, heritage and public space.³⁹

06

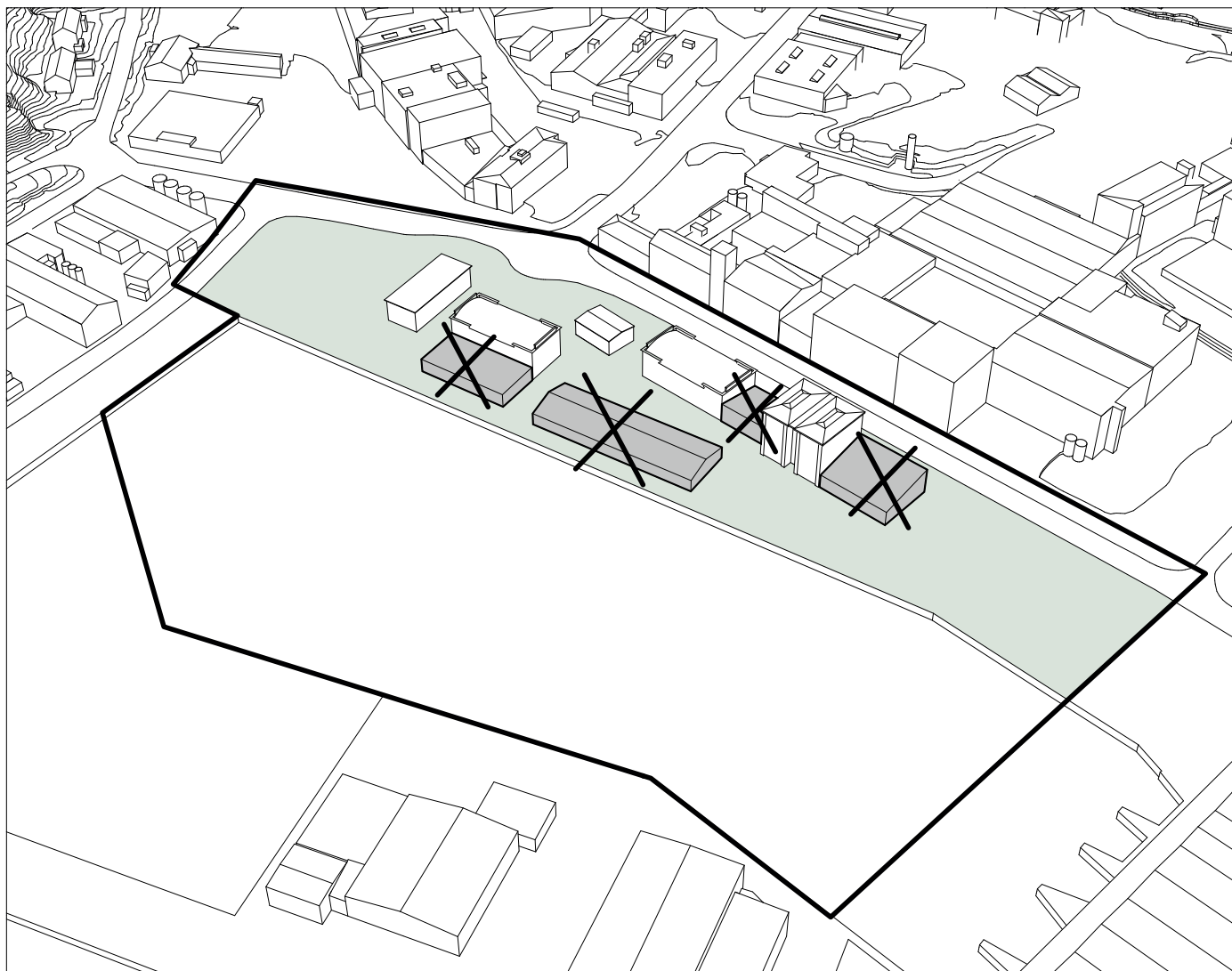
Concept

The site

The area along Strandveien with an area of about 33.500m² is to be newly activated. A showcase project should be developed along the waterside, which shows how living, working, culture, commerce, and public space function next to each other. To the south border, the so-called DORA Bunker of Culture, the submarine bunker to the area, is already working as a hub for culture and office space. In the north, there are still salt and cement storage halls and just behind the slopes is the small-scale settlement structure with predominantly single and multi-family houses. Directly bordering the site to the east - effectively right across the street "Strandveien", a new Modern Craft Beer Center is being built in the former Ringnes brewery, which specializes in the communication of brewing itself.

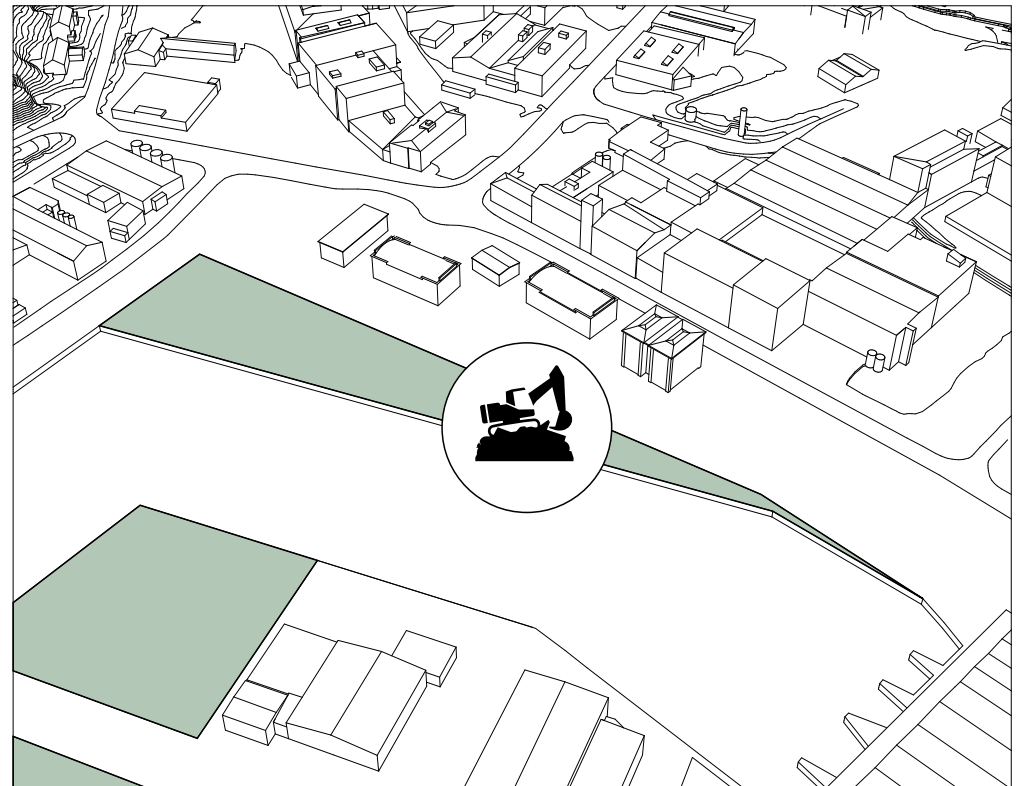
The five massive buildings built during the Nazi occupation during the control of the "Kriegsmarinewerft Drondheim" still remain on the site. From the north to the south, these are former: Storage, Wardrobe building, Building for reserve heat boiler, Building for the supply of oxygen and compressed air and building for the central heat boiler.

These buildings house a collector, several sculptors, music studios, and rehearsal facilities, theater design, costume design, visual artists as well as fitness and martial arts facilities. The warehouse and logistic buildings between these are to be cleared away.



Landfill

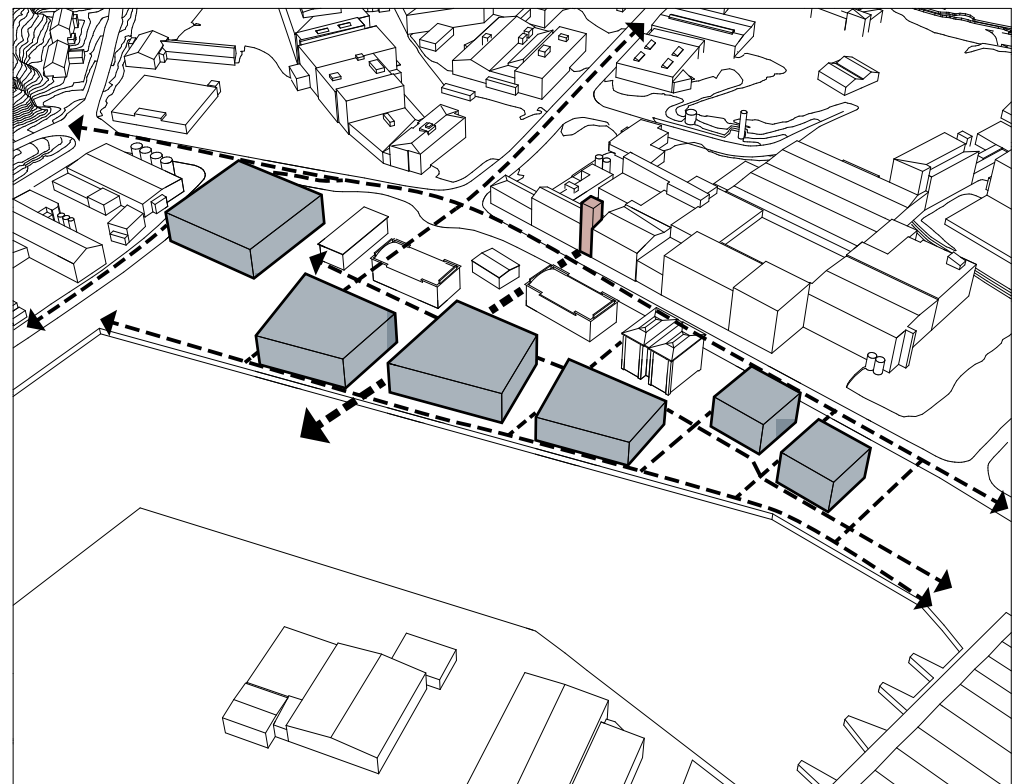
The site is extended by landfill suggested by the municipals masterplan. In this way, an area of around 33.500 m² can be generated. Meanwhile, the landfill on the opposite pier “Kulkranpiren” is estimated to be already finished in 2016. The maximum extent of the landfill along Strandveikaia will be adjusted according to the functions and connections between land and sea.



Zoning

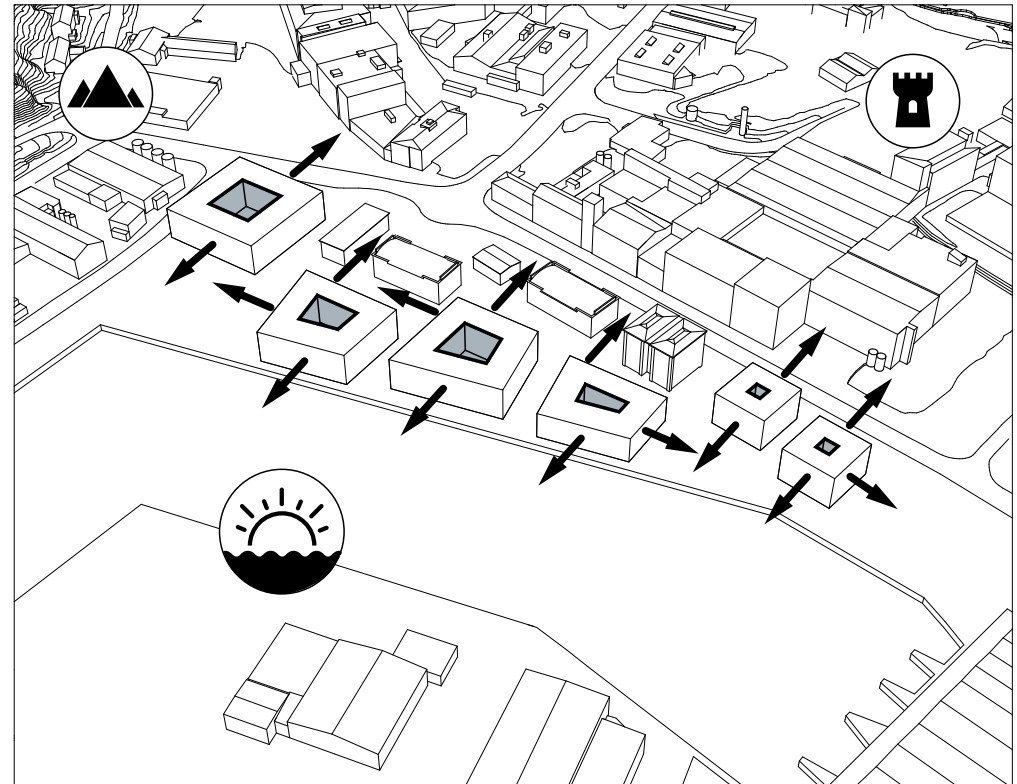
The roads and paths of the neighborhood are included in order to ensure a movement through the site with the environment. The existing buildings already indicate certain transverse axes and through-pass rasters. An important axis on the site is the connection of the main entrance of the Ringnes Brewery to the water. Traveling from south to north is important in three levels. Along the road, Strandveien is the traffic level for cars and bicycles, which is interrupted by many crosswalks to achieve slower traffic. Between existing and future buildings, an intermediate zone is created which will be connected and held together as a “backbone”, as the main place, for the two building substances and functions. The third level passes through the area as a promenade along the water’s edge.

Through this division of the area with the help of the axes, different volumes are created which, with their contours, refer to each other, to the ground as well as to the water’s edge. Six of these subdivide the building site into various interspaces and paths. The large-scale volumes provide adequate dimensions along the water’s edge to generate such a port with corresponding density and usefulness.



Orientation

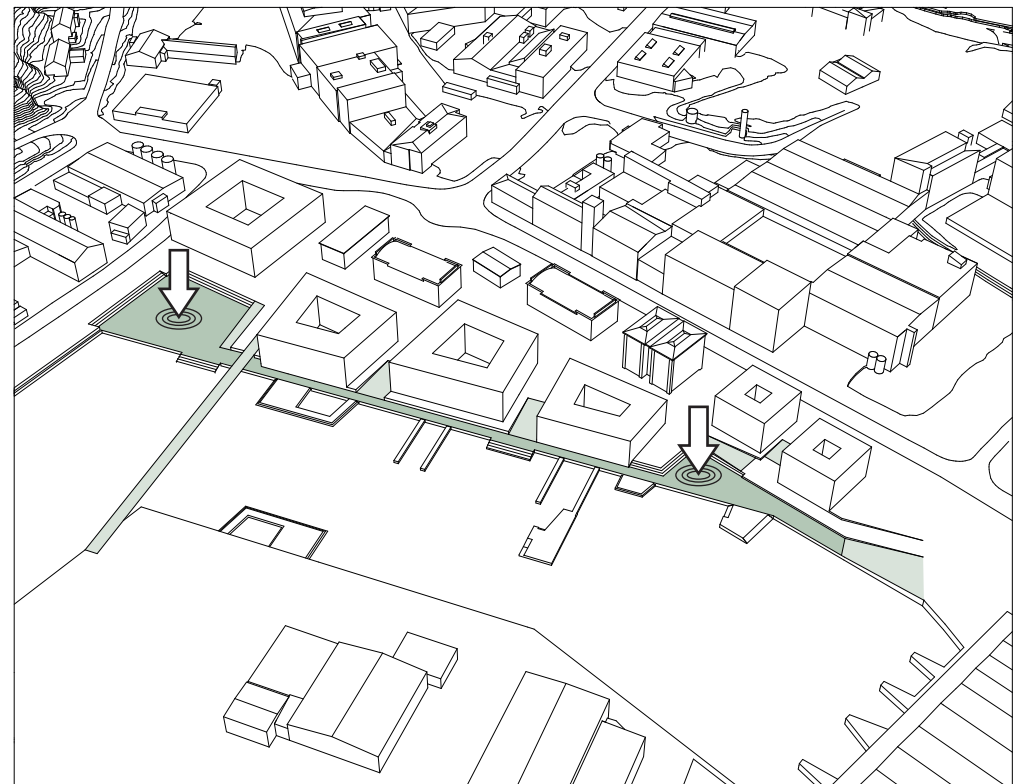
In the next step, the cubatures are approximated to the human scale. A new layer of zoning is created by cutting out the inner courtyards. Private is oriented inwards, outlooks and public areas to the outside. Due to the geographic situation, the orientation towards the outside, the relation to nature and sky, plays a predominant role. Compared to middle European conditions, the sun is very low, the weather is a bit rough and the weather with darkness during several months of the year forces the people to a different approach with nature. Although not all apartments have a view of the water, the views on the hilly landscape around Trondheim and the marked points offer an equally diverse and multifaceted potential.



Waterfront

Along the water's edge, a lower level is inserted. The promenade runs over the entire area. Again and again, there are ramps and stairs which lead both between the buildings down from the buildings to the water. This creates a diverse landscape, which is also expanded with bridges and rafts on the water. Here, a large part of the public life takes place. Here, boats can lay, guests can jump into the water, fish, sunbathe, read - everything is allowed.

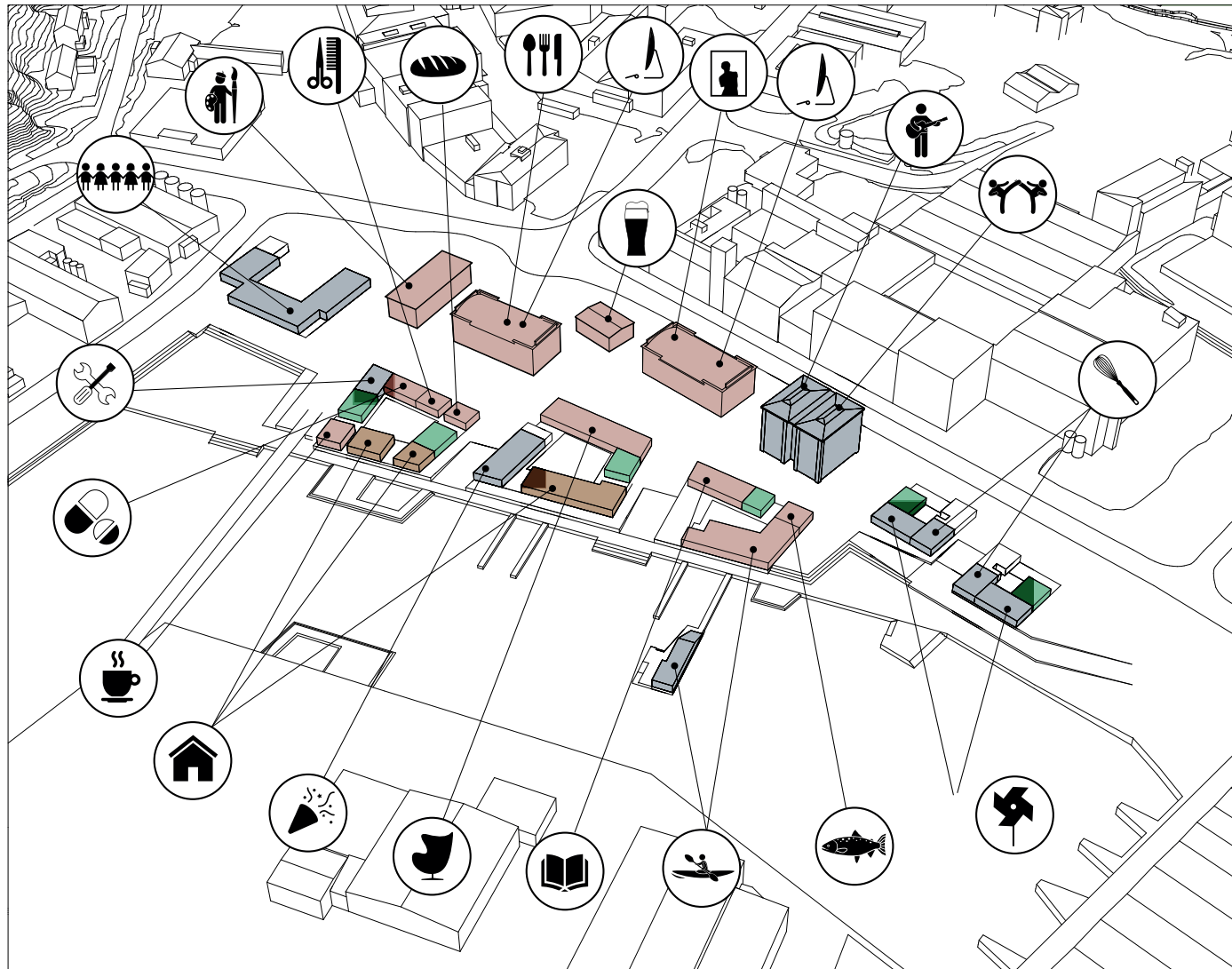
To serve leisure activities, strolling and swimming there are also public and commercial functions at the building corners so that the promenade can profit from this facilities.



Functions

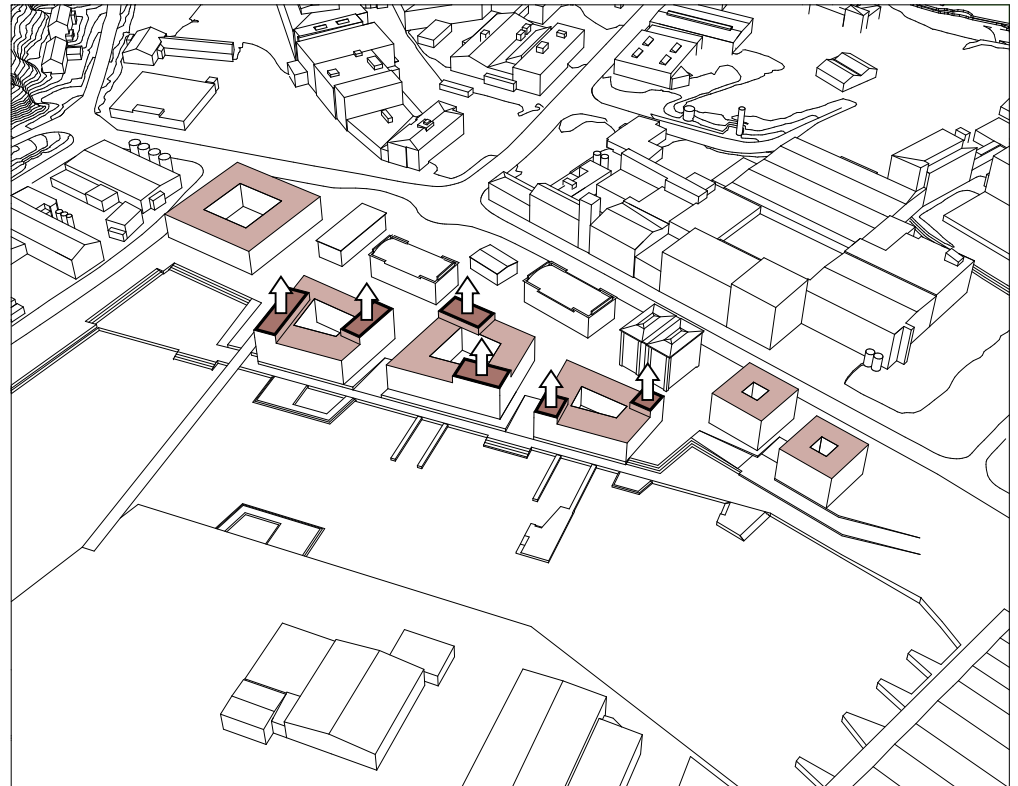
Each of the residential buildings receives the usual general facilities such as house technology and rubbish and so on, and at least one closed bicycle storage room. Along the main axis, the “spine” of the site the commercial uses of the area are settled. Two of the buildings on the water have apartments on the ground floor and can reach the promenade by stairs. In each of the new buildings a certain space has been designed for community use. This include community kitchens, party rooms, yoga room, children’s play areas, a bicycle workshop as well as a kindergarden on the ground floor of the office building.

The existing tower serves the inhabitants of the quarter as a place for music and movement with rehearsal facilities, music and dancing studios as well as rooms for different types of martial arts. The other existing buildings along Strandveien will house public facilities on the ground level such as exhibition space, and gastronomy. The upper floors of this buildings get a more private character with creative office space and ateliers. This ensemble will be the main stage of interaction between guests, cultural actors and residents on site.



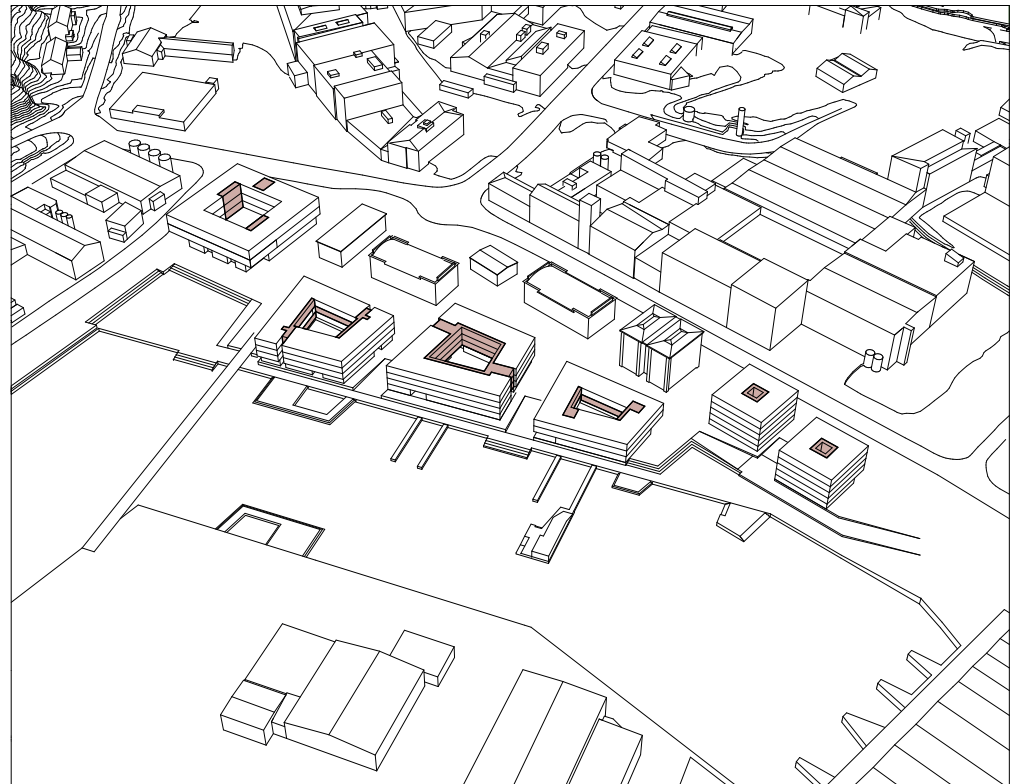
Roof Topography

The height of the new buildings naturally depends on the existing buildings, but also on surrounding structures. Here, the bunker, as well as the quite high volumes of the brewery, form important points of orientation opposite the road. While the two point-buildings near the bunkers with four upper floors represent a high point that transitions into the existing adjacent building, the three buildings at the edge of the water vary in height and formulation of the attic story, resulting in an interesting play of the heights together with the existing buildings behind it. The highest points of the attic apartments accentuate public space and form an identity-creating appearance for the area. Adjacent to the north is a service building which has an appropriate dimension with two higher office and fitness floors.



Circulation

The internal development of the existing buildings is essentially taken over for the new use and transformation. The two point constructions receive an internal closure with a generous light void, which let the light from the roof window down to the ground floor. Around the void, the stairs screw up, each twisted 90° degrees. The office building in the north has a large free-standing staircase, which is located in the middle of the eastern side. In addition, the escape staircases serve as shortcuts between the floors as well as accesses to the two underground car parking levels. The access to buildings 3 to 5 takes place outdoors. Arcades, partially offset to each other, serve the residential units. The open space also serves as an external surface for the apartments, generous widths with partial recesses ensure occupancy long as the weather permits.

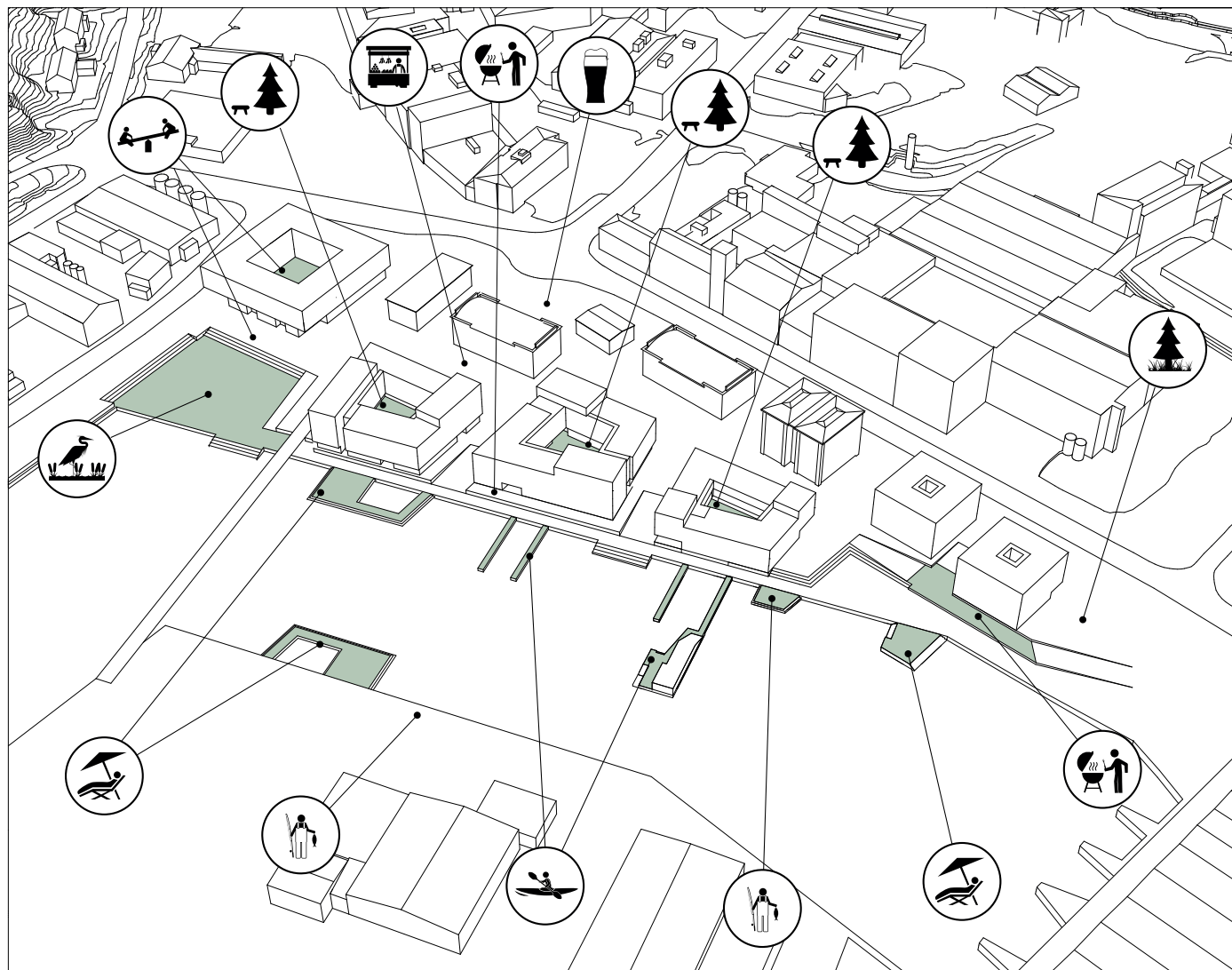


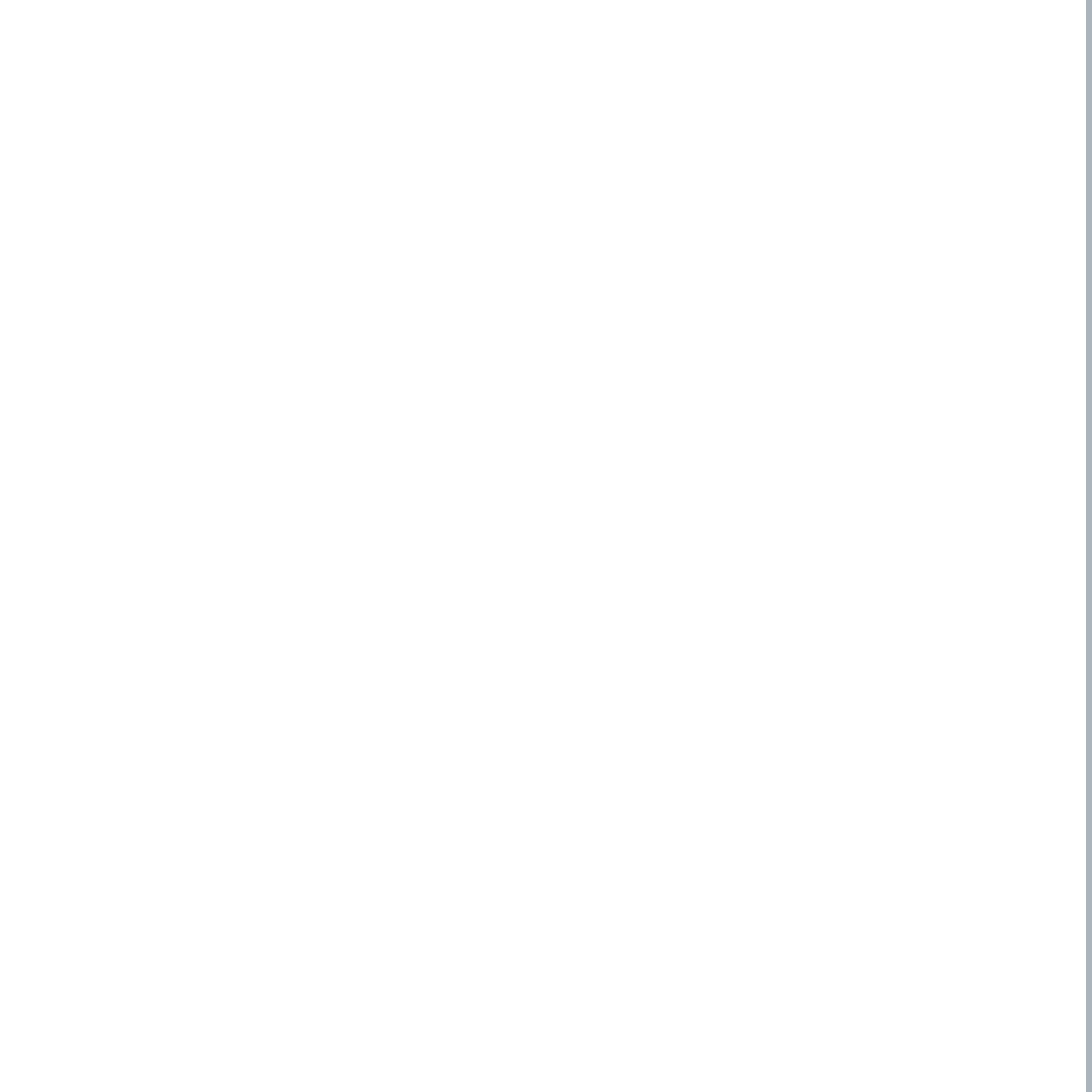
Public Space Zoning

A small green-zone along the road “Strandveien” forms a natural buffer to the area. The road is accompanied by a bicycle-lane/walkway. The central spine offers places and residential zones which are allocated to the respective commercial and commercial use of the existing buildings as well as the new buildings. The inner courtyards and generously covered ground floor zones of the new buildings offer semi-public areas which are basically withheld from the inhabitants. Due to the large portals and the steps that go down from the courtyards directly to the waterfront, there is a day-to-day public transit through which additional interaction between residents and visitors should arise.

An exception is the office building in the north, which is located on the ground floor of the day-care center. In the inner courtyard, the children find a protected outdoor area. A passage through this building is not easily achievable.

On the level of the promenade along the edge of the water, recesses, extensions onto the water in the form of bridges or stepped rafts alternate. In addition, the level difference between the main area and the inner courts is loosened by wide ramps and stairs. Along the water, possibility is given for many activities.





07

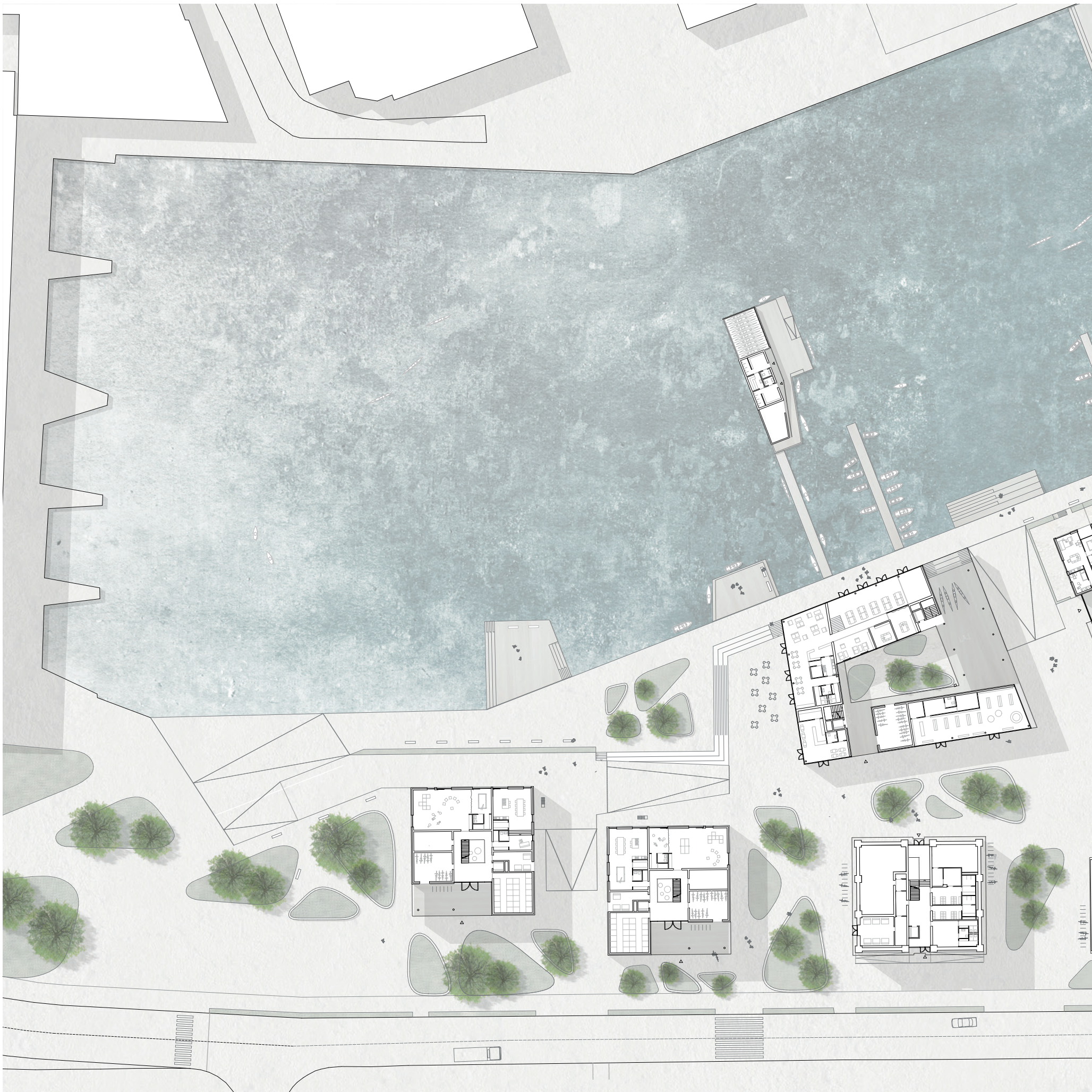
Design

Figure Ground Plan
Master Plan
Elevations



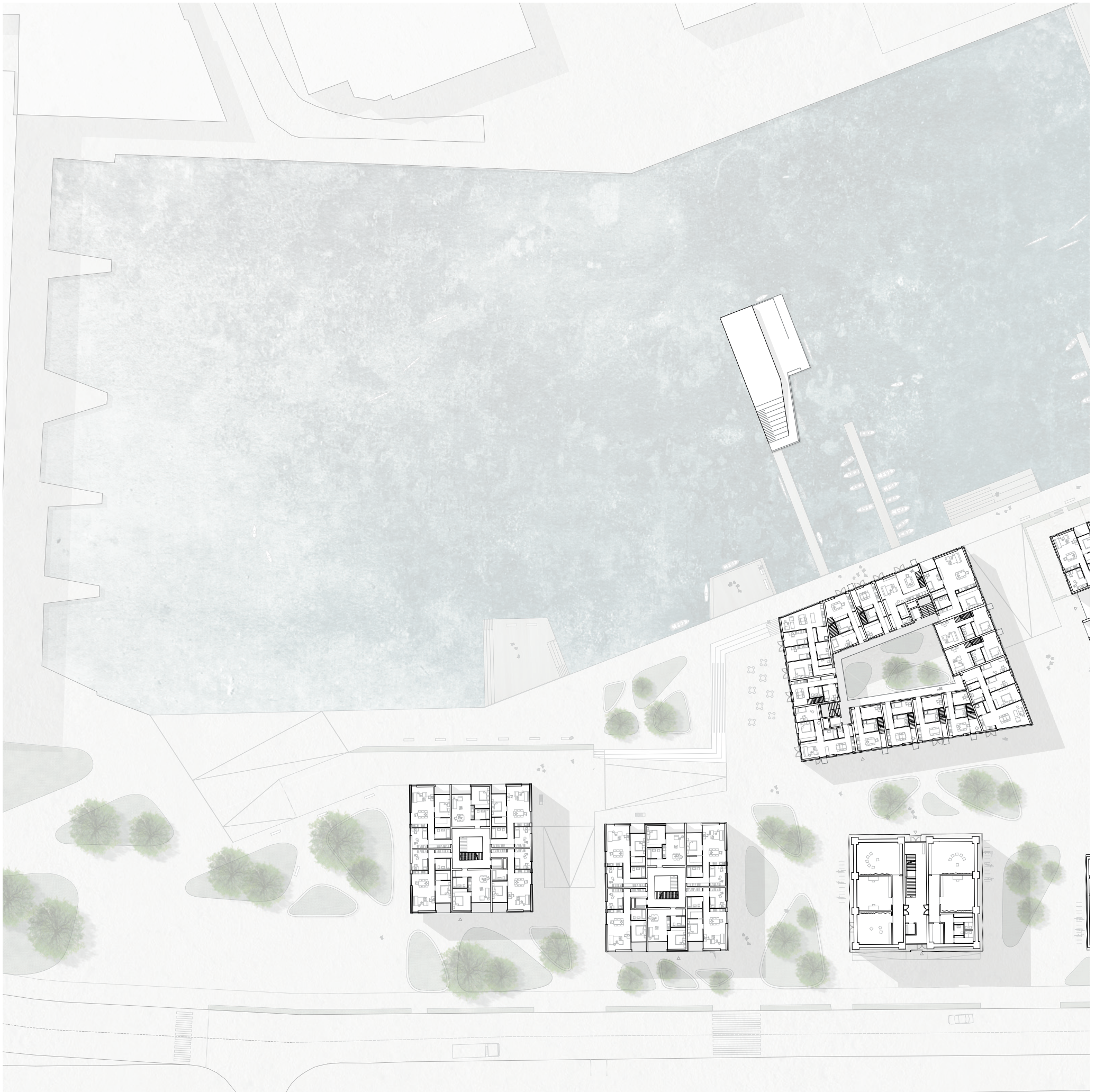
Figure Ground Plan
1:7500





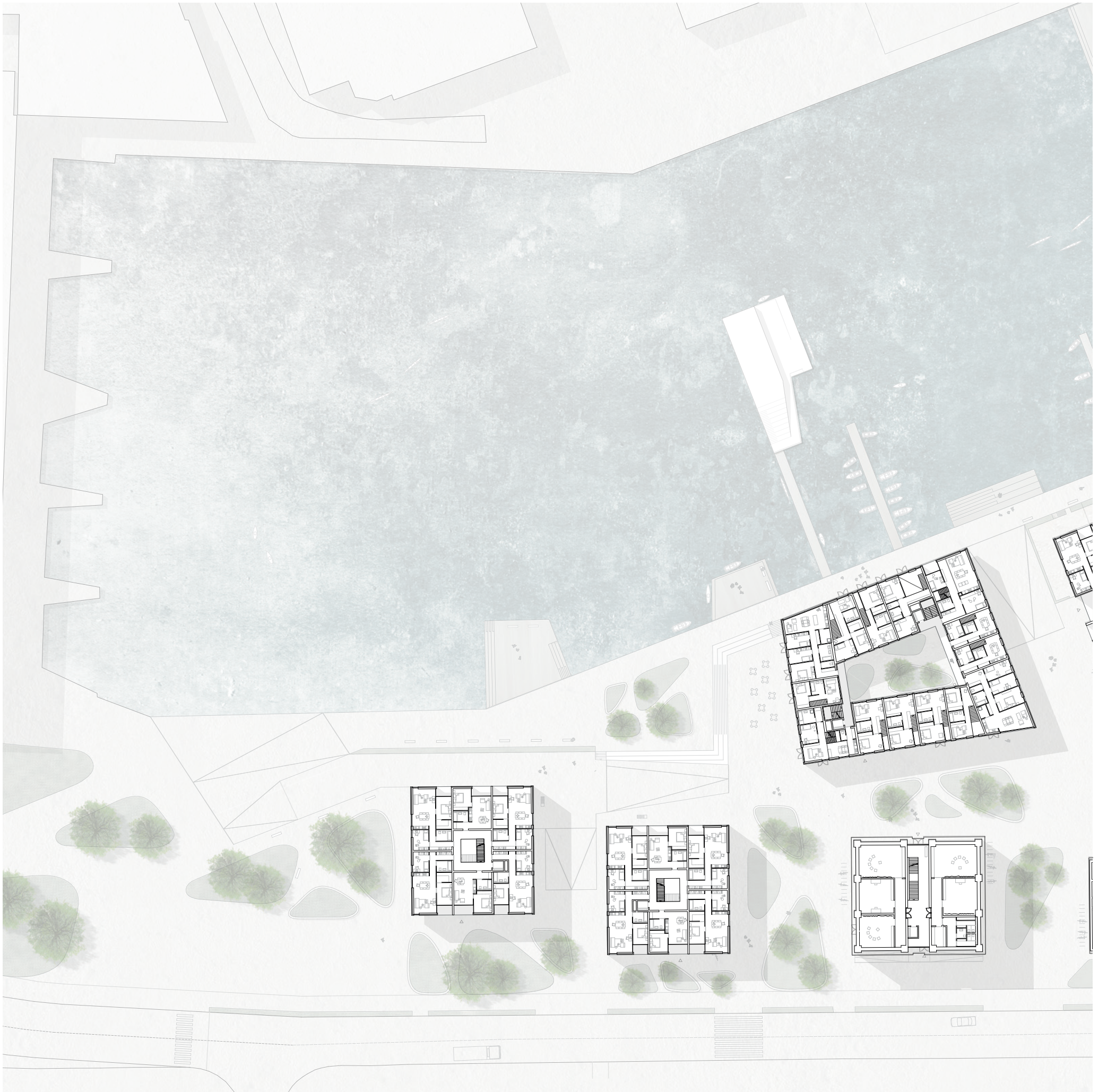


Ground Floor
Master Plan
1:750



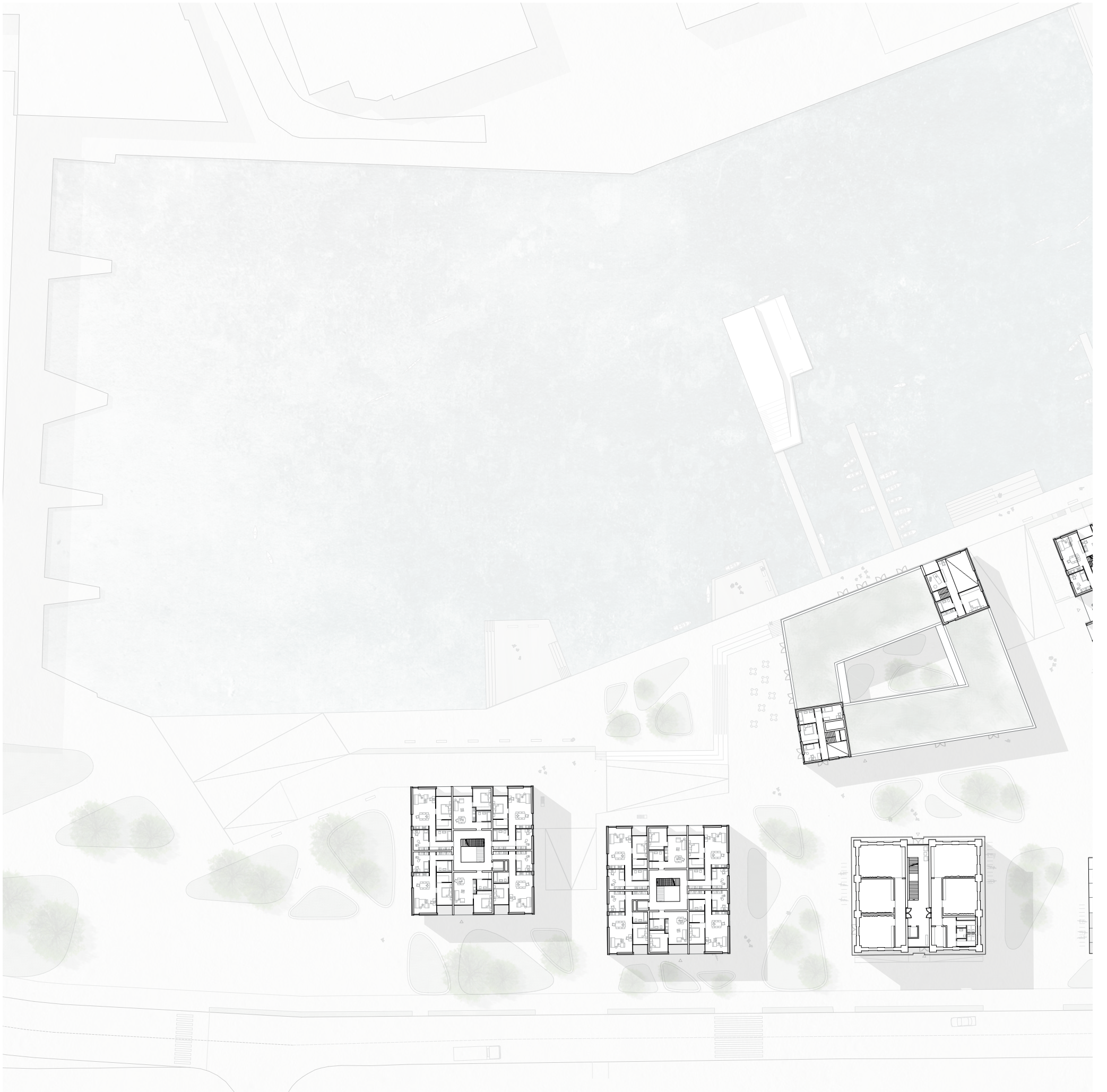


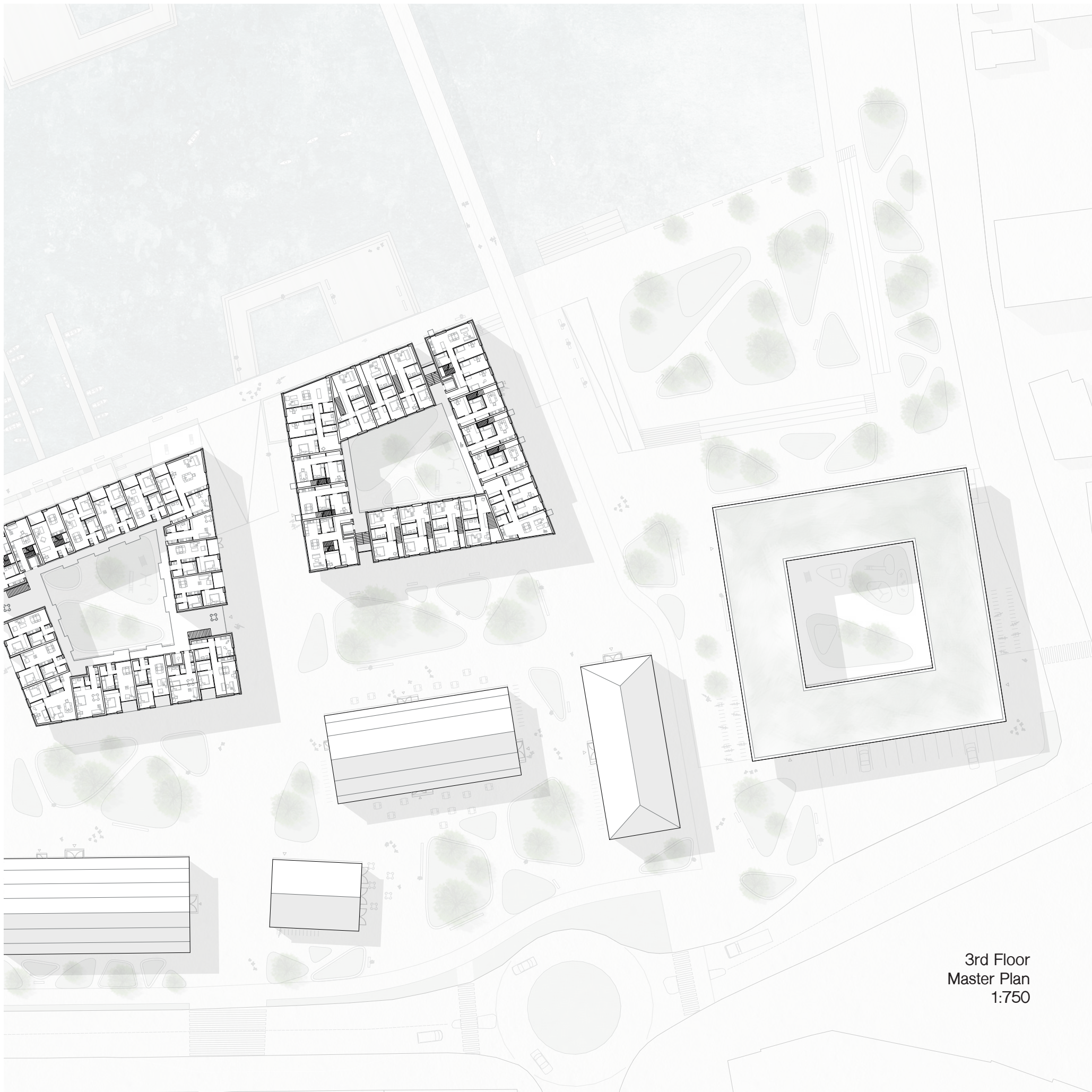
1st Floor
Master Plan
1:750



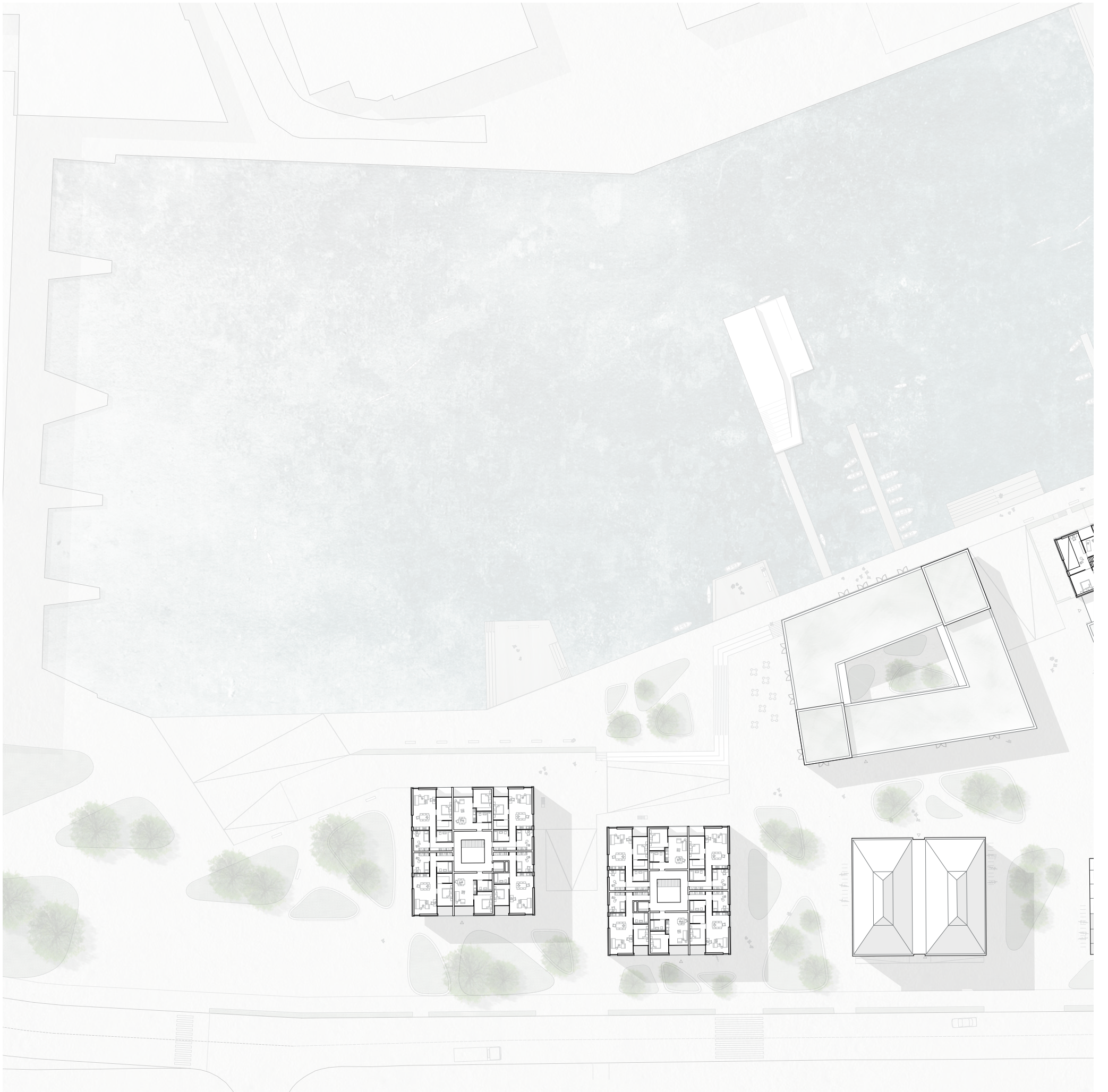


2nd Floor
Master Plan
1:750



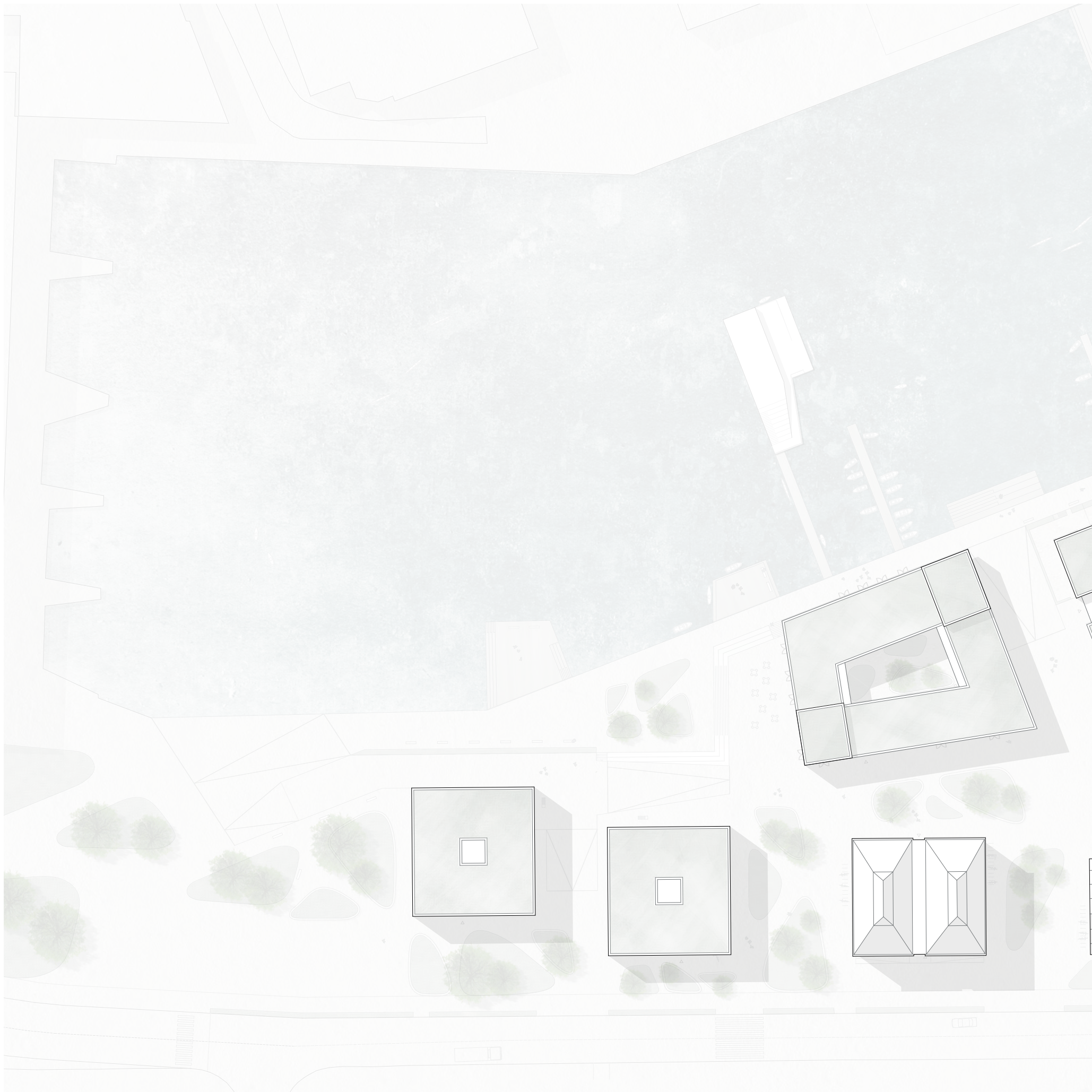


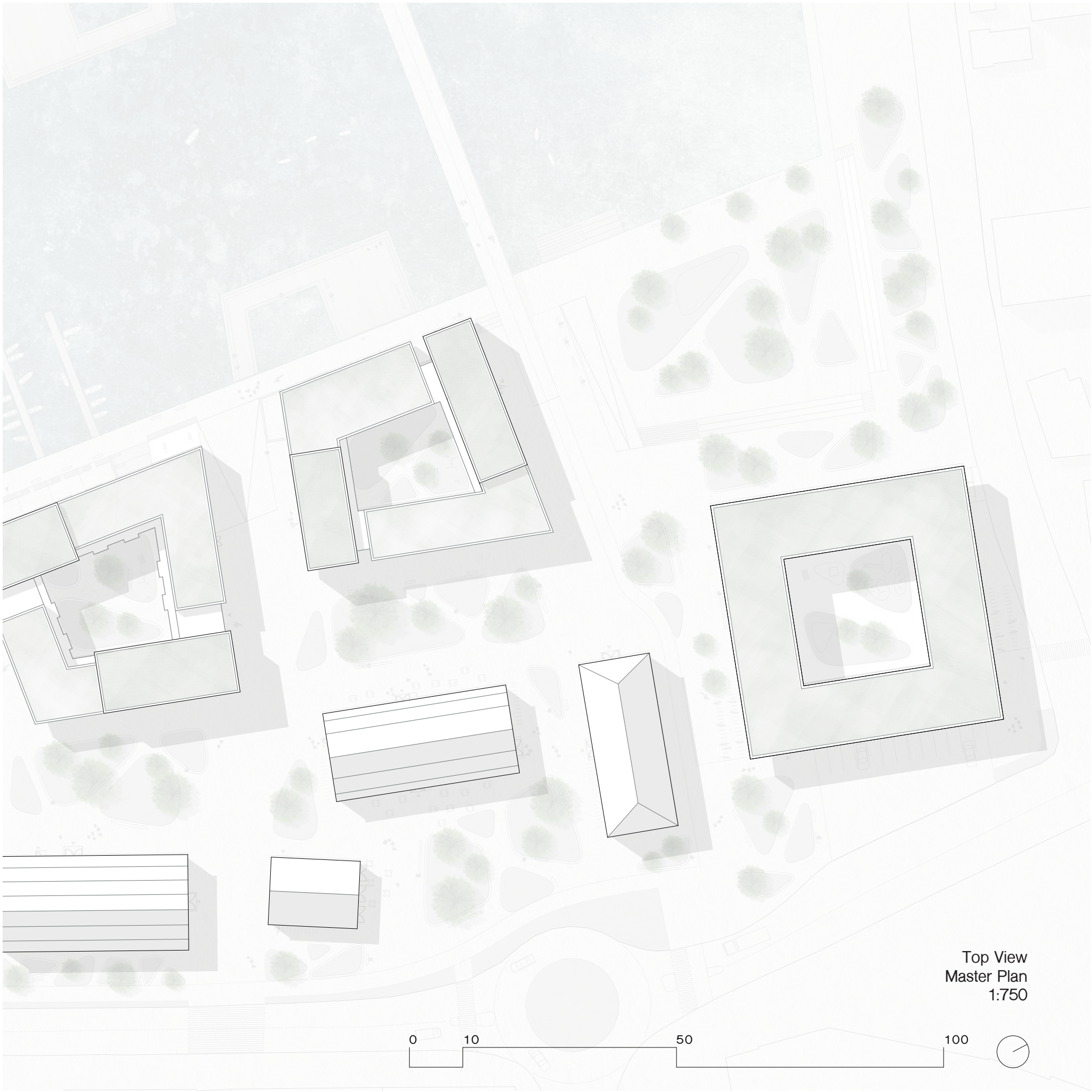
3rd Floor
Master Plan
1:750



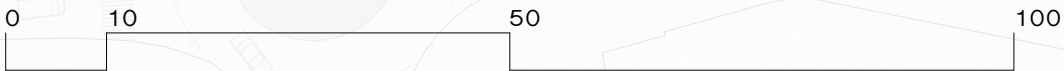


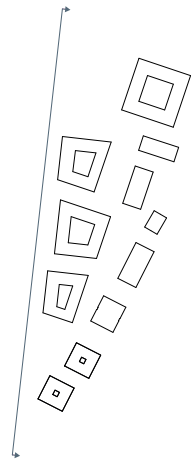
4th Floor
Master Plan
1:750





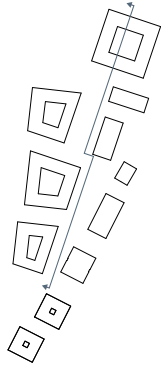
Top View
Master Plan
1:750



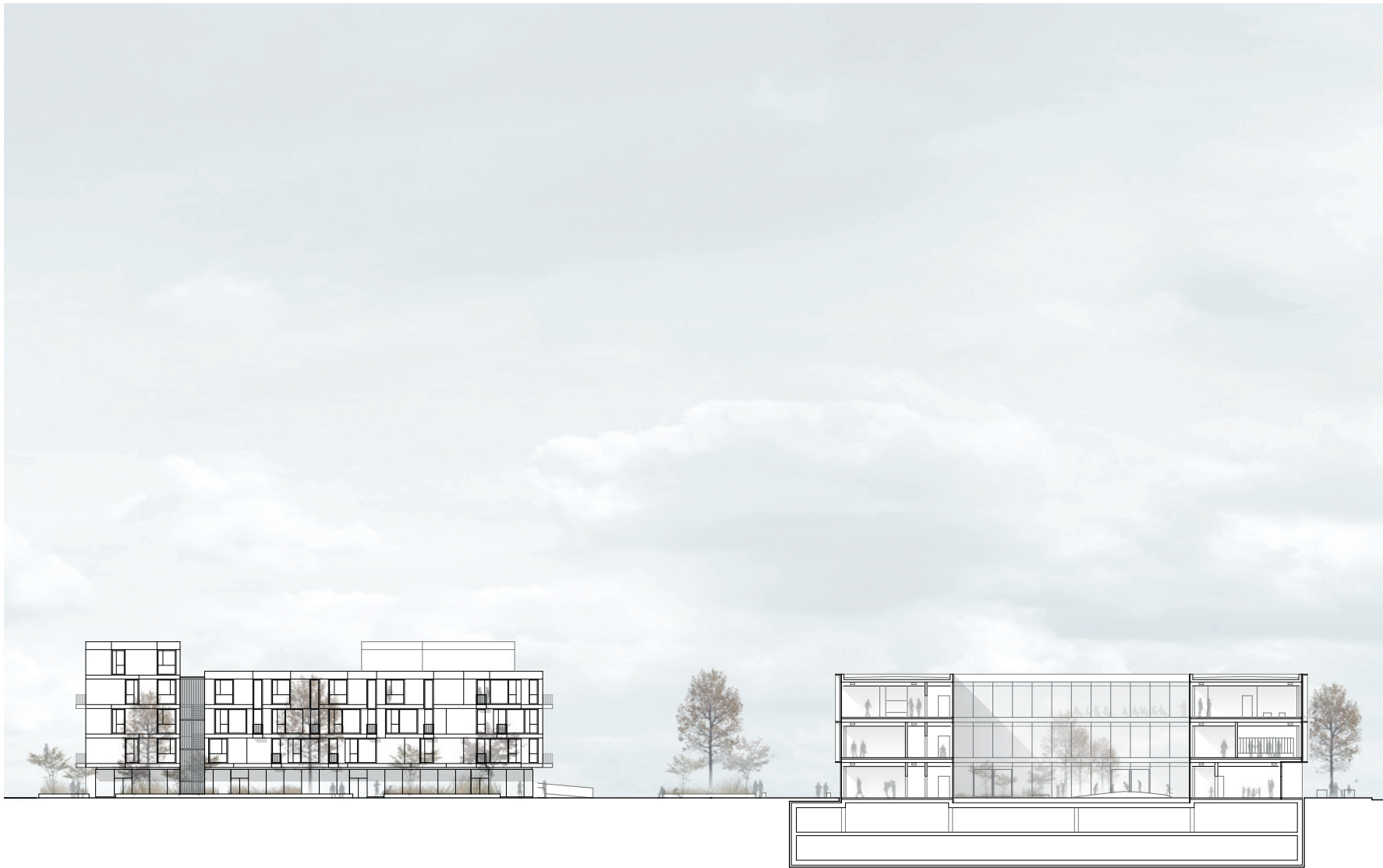


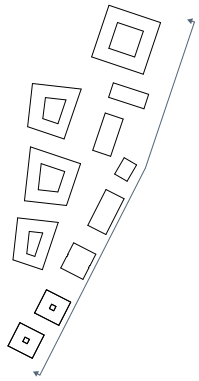
West Elevation
1:600





East Elevation I
1:600





East Elevation II
1:600





07

Design

Building 1 & 2

Building 3

Building 4

Building 5

Building 6

Strandveien 96a & 98a

Strandveien 98b & 100 & 102



Fig.47 Main square between existing building Strandveien 98a and building 4;

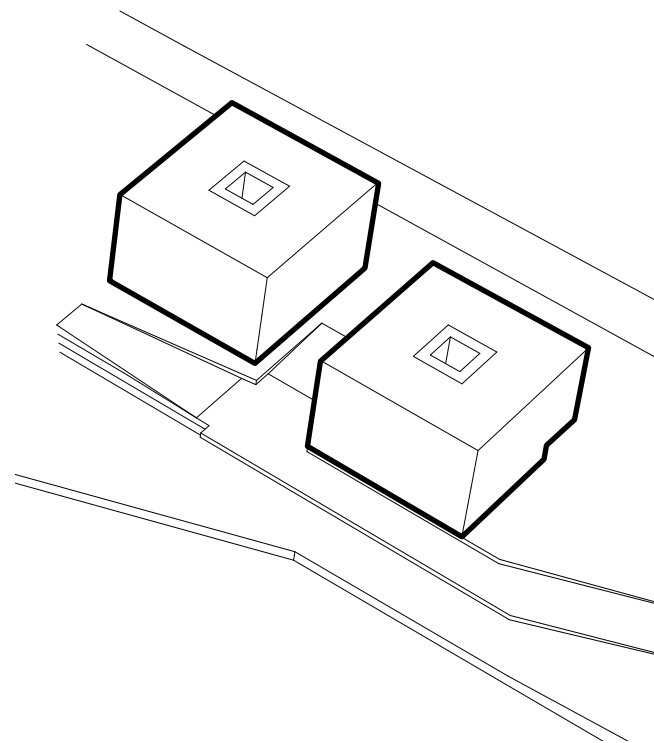


Building 1 & 2

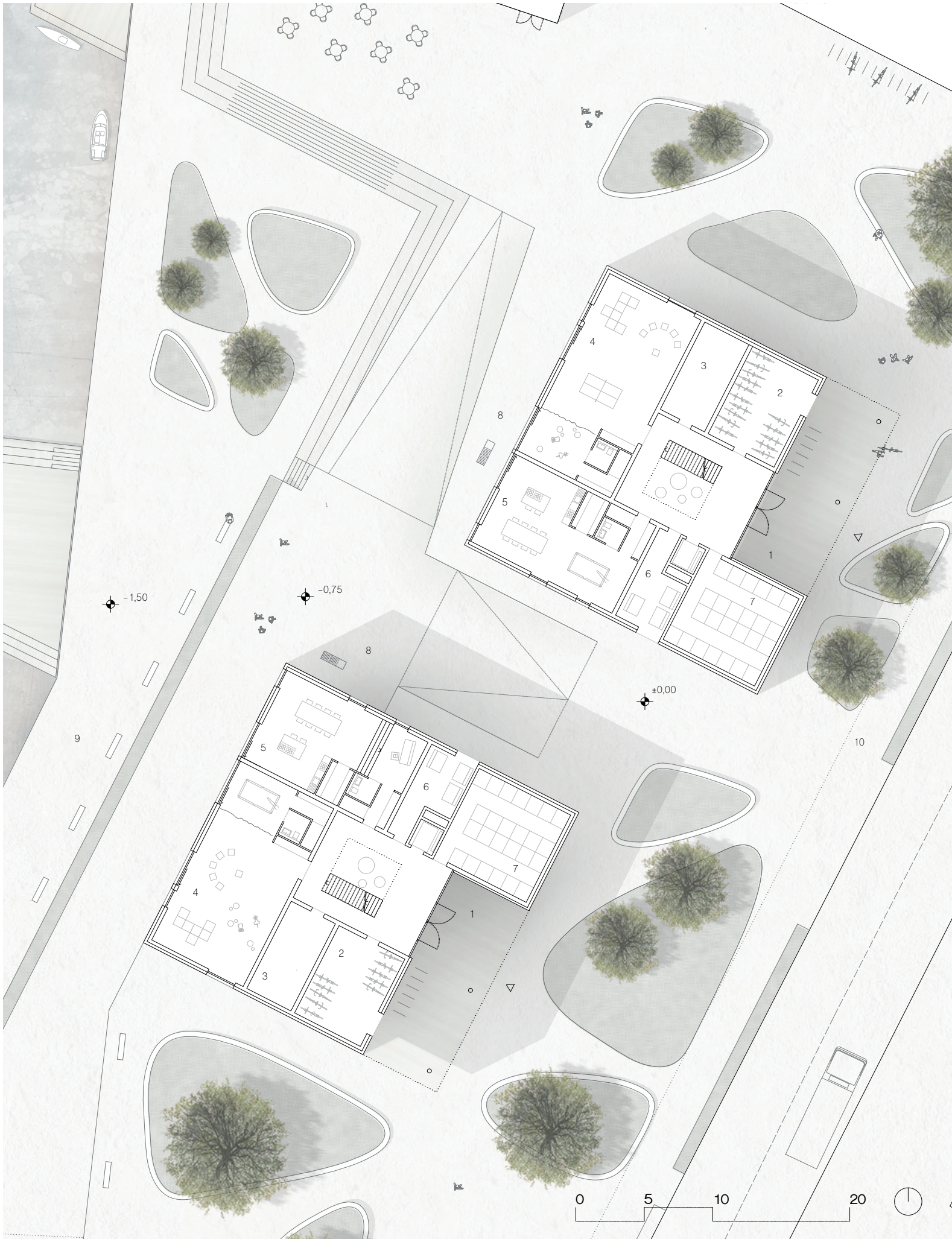
Slightly staggered at the southern corner of the site this two buildings take account of the ensemble of buildings that form the existing development at Strandveien. The artificial extension of land towards the sea enables a terraced zone oriented to the west that makes it possible to use the outdoor area situated in front of the multi purpose rooms on the ground floor.

Each of the five-storey buildings is housing 24 flats. Six units per floor surround a generous staircase. The vertical circulation is illuminated by an attic window that is meant to bring scattered light from roof to ground. Three-room flats are situated at each corner of the buildings. In between smaller two-room flats face east and west. Both the types of flats have got a loggia of at least 5 m². Generous room-high glazing enable light to reach deep into the rooms. This characteristic continues at the next 3 residential buildings.

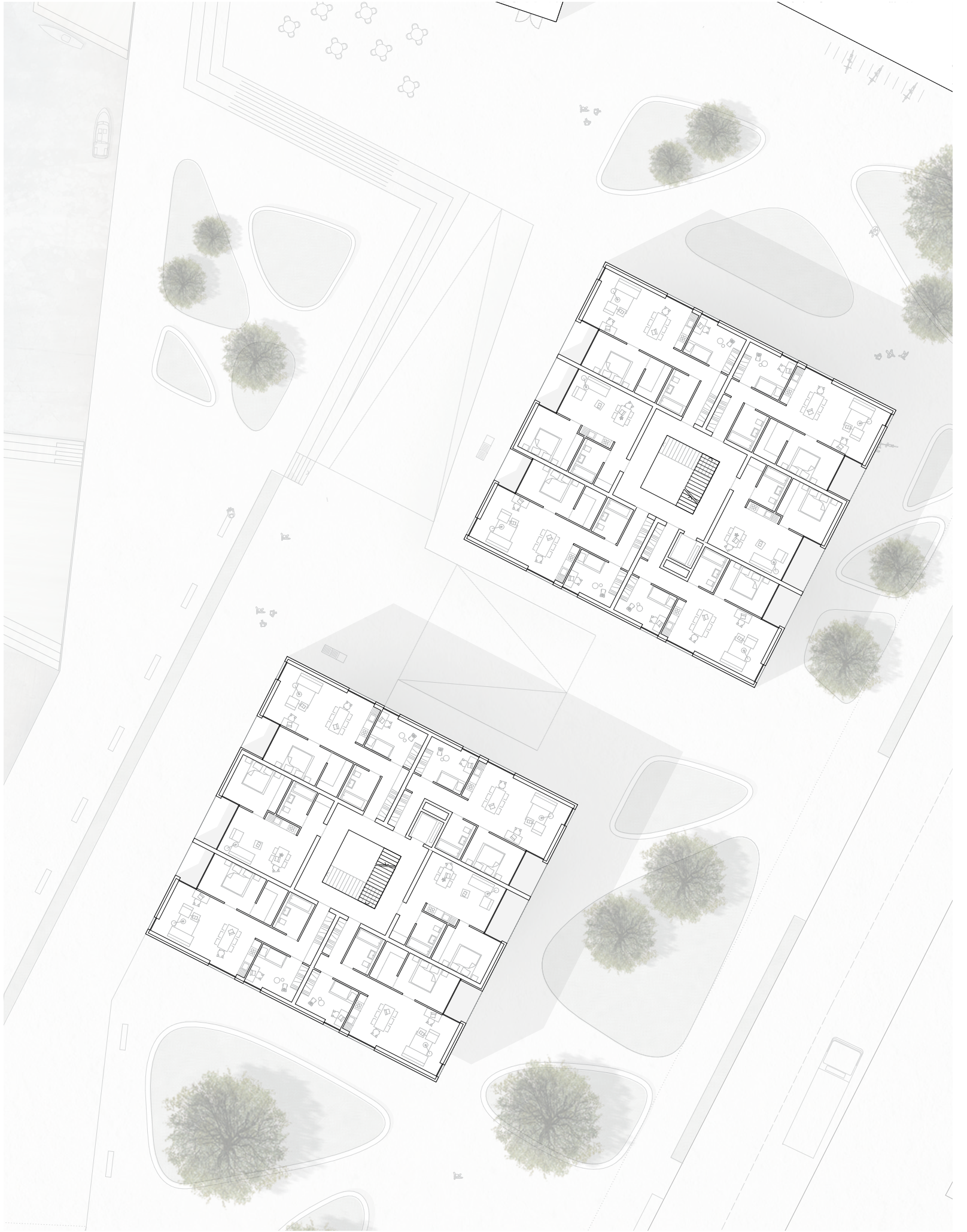
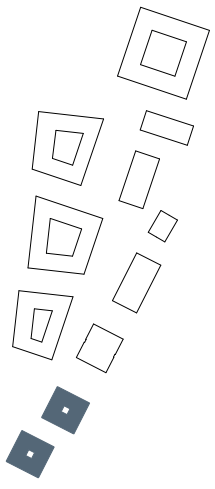
Storeys: 5
Apartments: 2 x 24



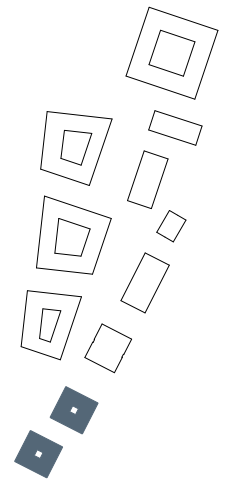
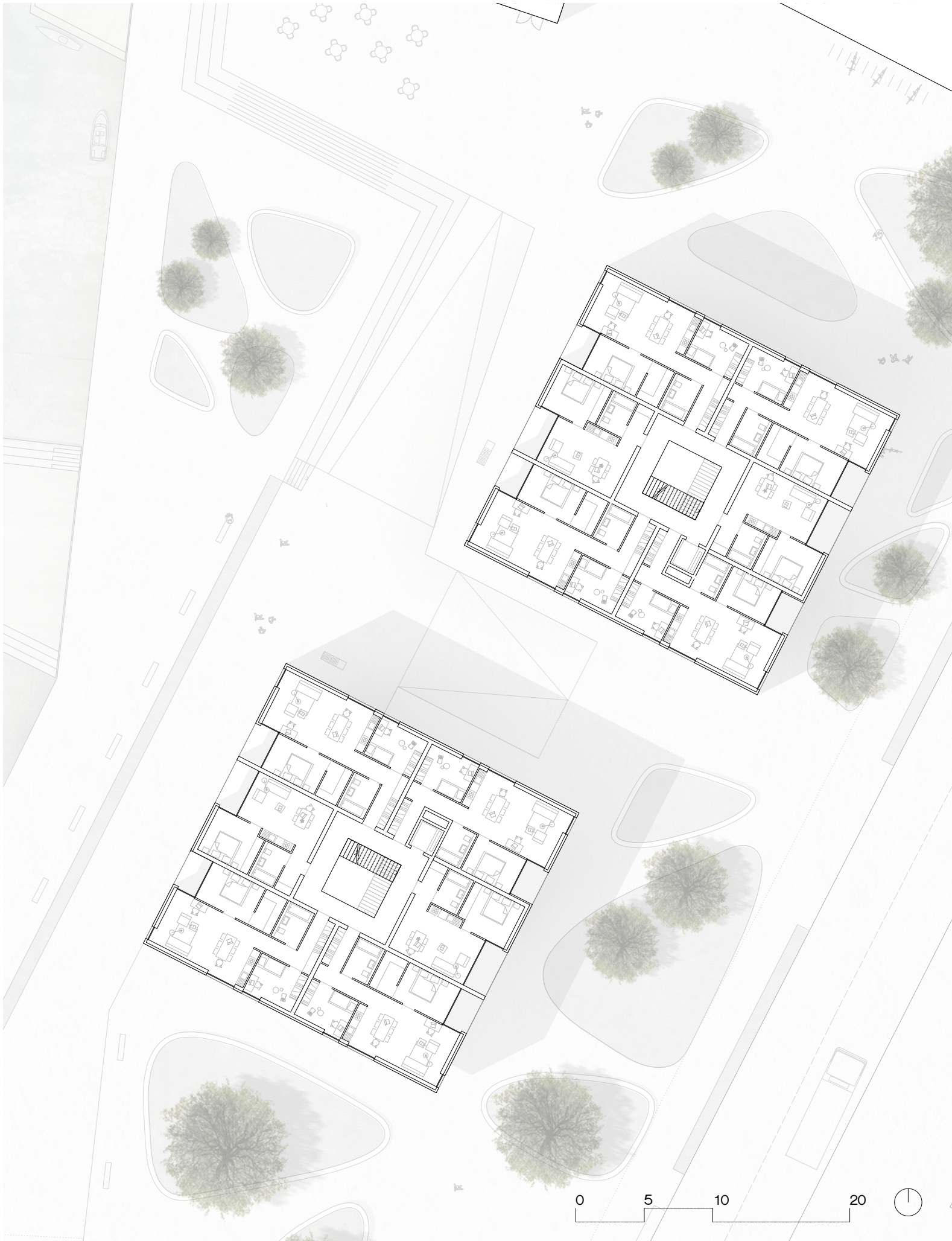
Sheltered Entrance	1
Bicycle Room	2
House Technology	3
Multi Purpose Room	4
Community Kitchen	5
Rubbish	6
Compartments	7
Outdoor Barbecue Grill	8
Promenade	9
Bicycle Lane	10



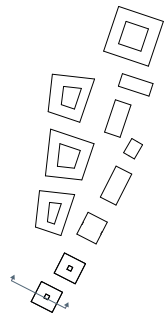
Ground floor
 Building 1 & 2
 1:333



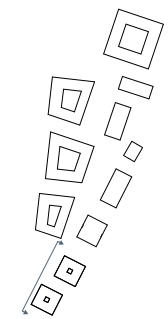
1st Floor & 3rd Floor
Building 1 & 2
1:333



2nd Floor & 4th Floor
Building 1 & 2
1:333



Section
Building 1
1:333



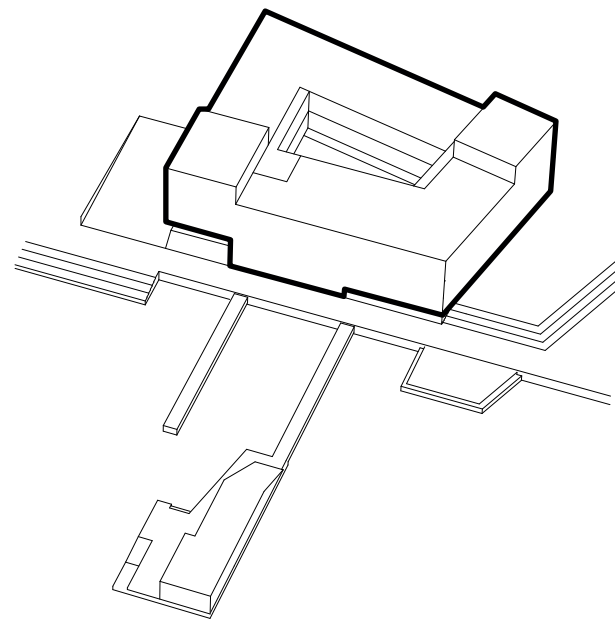
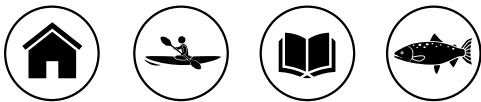
West Elevation
Building 1 & 2
1:333



Building 3

The first of three residential buildings along the waterfront promenade partially opens to the public by a large covered platform in the north and another entrance at the southeast corner of the building. The courtyard serves as a shortcut through the site as well as semi-private area of interaction between the commercial users on the ground floor and the residents of the two upper floors. Part of the boat club is situated at the same level as the promenade. Through repeated arrangement of ramps, stairs and commercial and public functions along the waterfront this subarea becomes a vibrant and multifaceted part of the design. Two staircases enable vertical circulation. The apartments are accessible by arcades. Eight types of flats offer a mix for different user groups. Two large duplex apartments reach the attic floor on diagonal corners. In comparison to building 1 and 2 the exterior is dominated by small balconies attached to the facade.

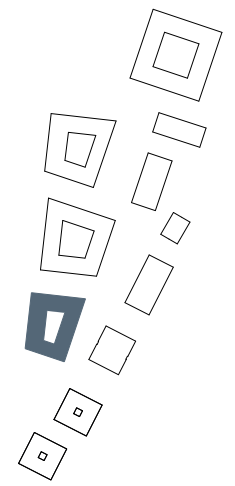
Storeys: 3 + partially Attic Floor
Apartments: 18

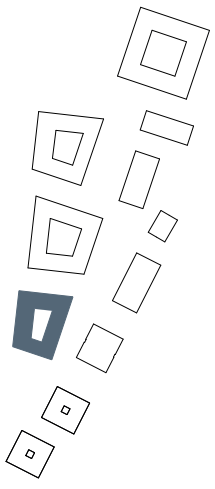


Seafood Market	1
Boat Club Restaurant	2
Foyer	3
Training Room	4
Conference Room	5
Bicycle Room	6
Bookstore	7
Sheltered Outdoor Platform	8
Sundeck	9
Terrace	10

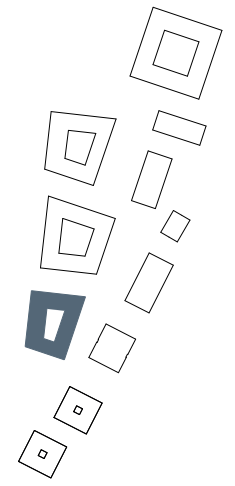


Ground Floor
Building 3
1:333

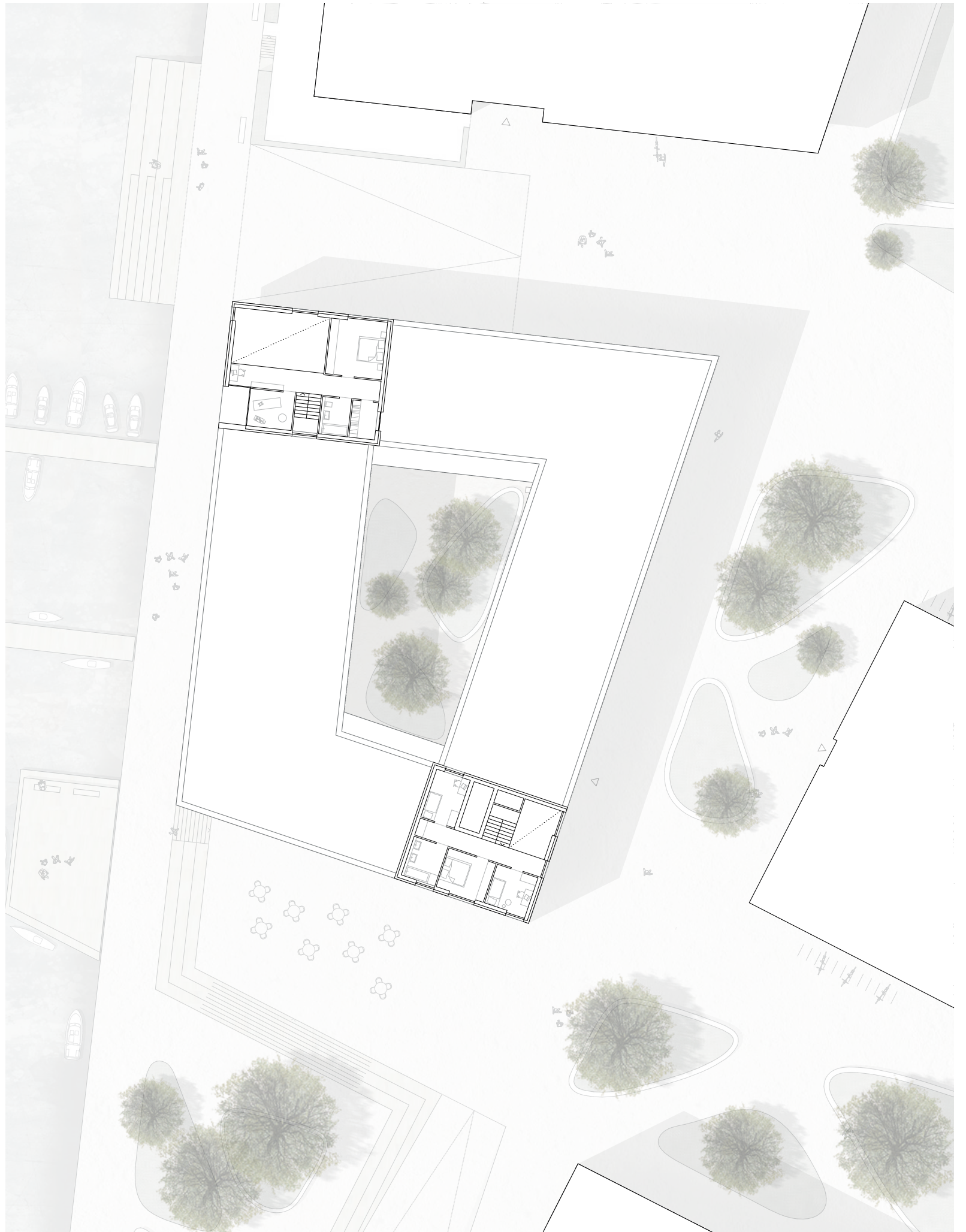
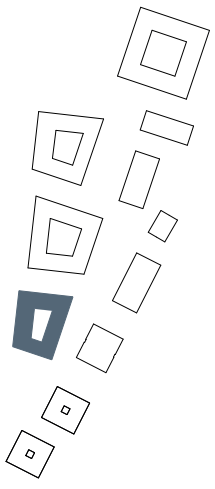




1st Floor
Building 3
1:333



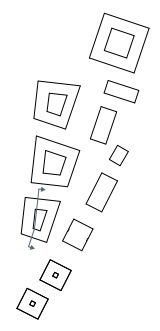
2nd Floor
Building 3
1:333



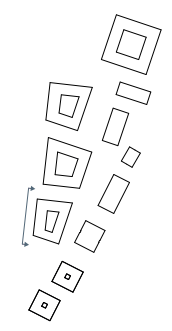
3rd Floor
Building 3
1:333



Section
Building 3
1:333



West Elevation
Building 3
1:333

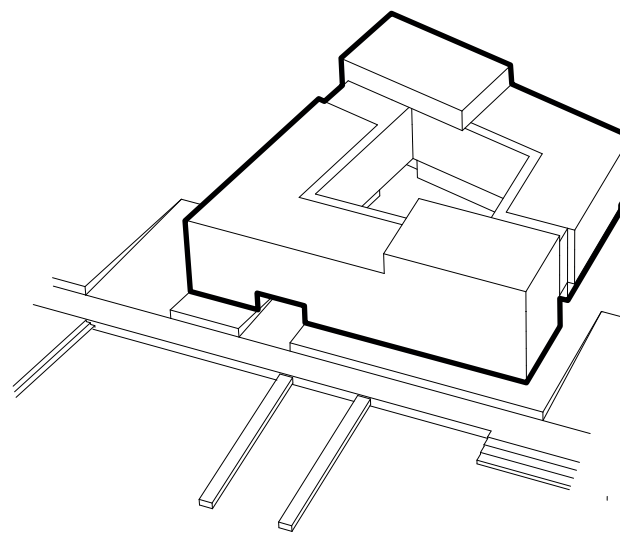


Building 4

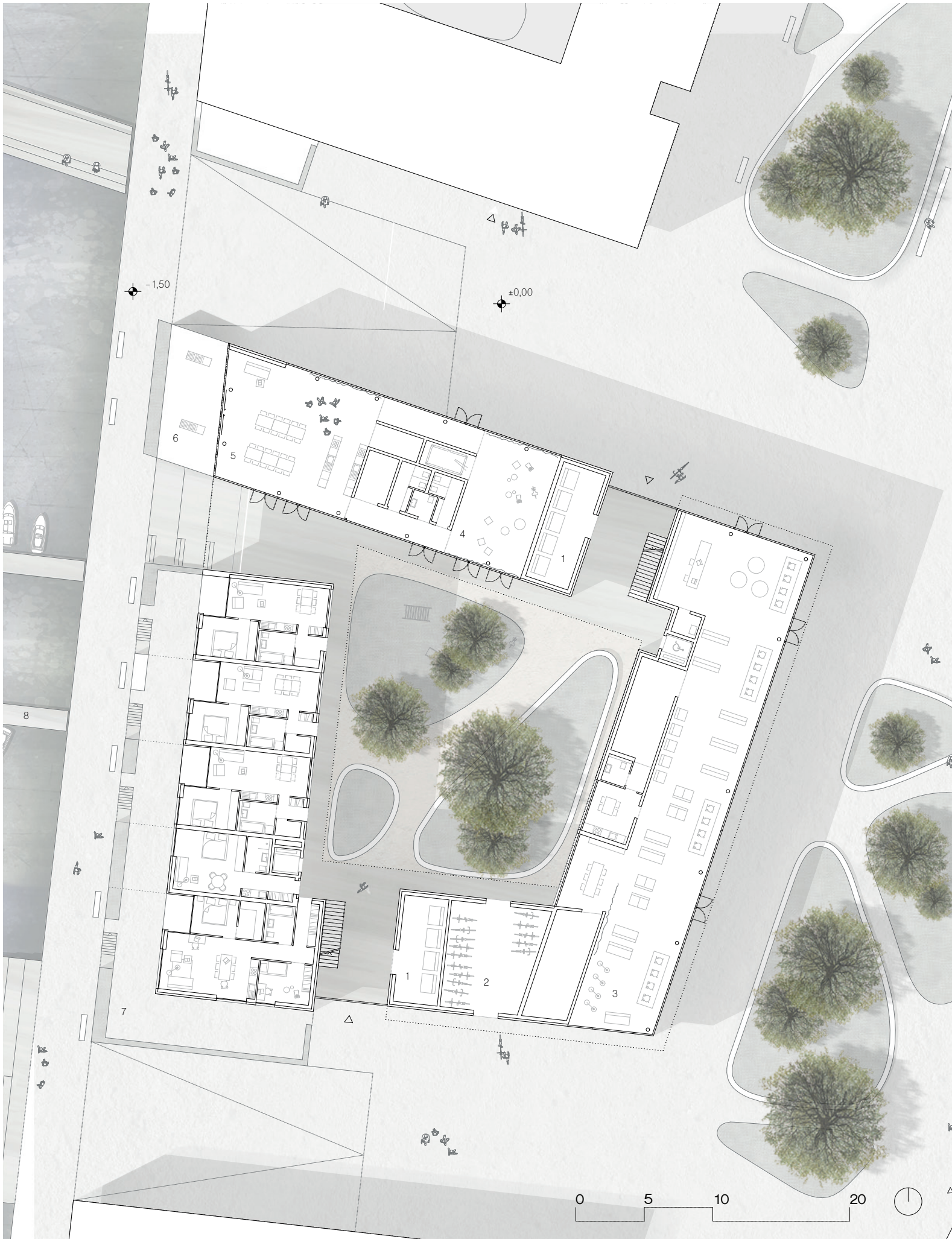
The next building along the promenade houses ground floor flats on its platform with private outdoor decks facing the water meanwhile commercial functions dominate the parts towards the intermediate zone on the main square. The courtyard and as a result the apartments can be entered both from promenade and main plane. Building 4 is characterized by circulating arcades.

Dominated by single and couple apartments this building has a lower variety of flat typologies in comparison to the neighbouring ones. Only at the corners apartments of around 90 to 100 squaremeter and duplex apartments on the third floor offer home for other user groups. Each of the smaller flats has a notch in front of their living room along the arcade. The idea is to get another exterior space for communication and interaction in addition to the loggia each apartment has.

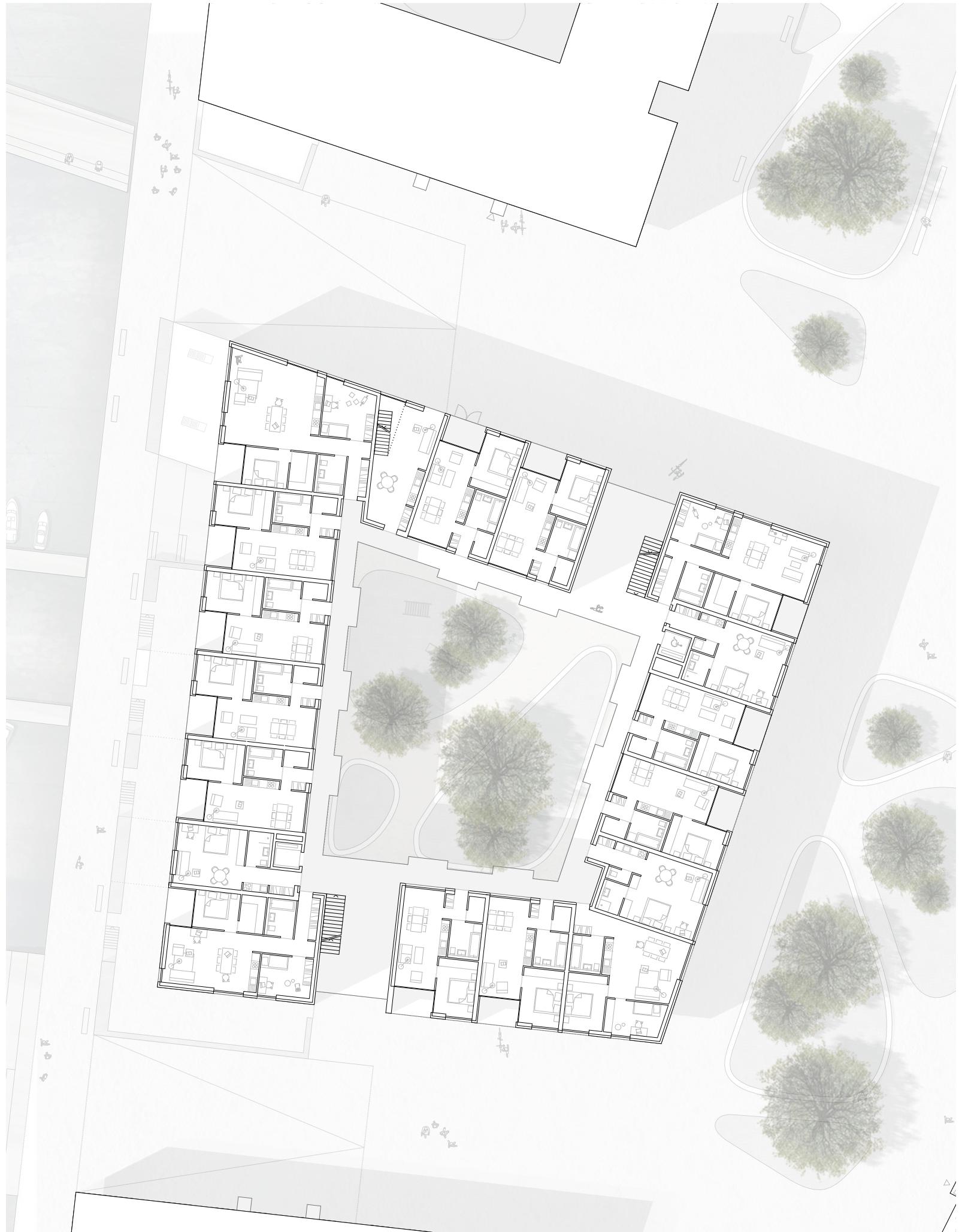
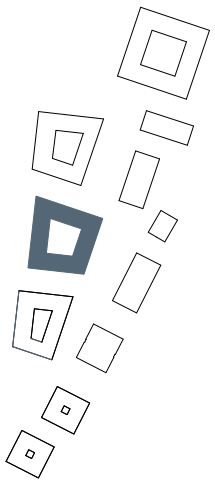
Storeys: 4 + partially Attic Floor
Apartments: 58



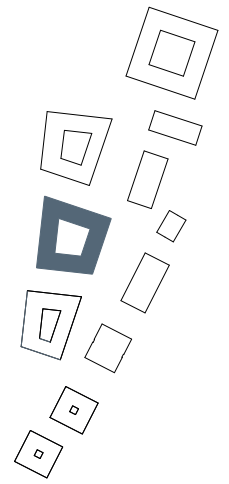
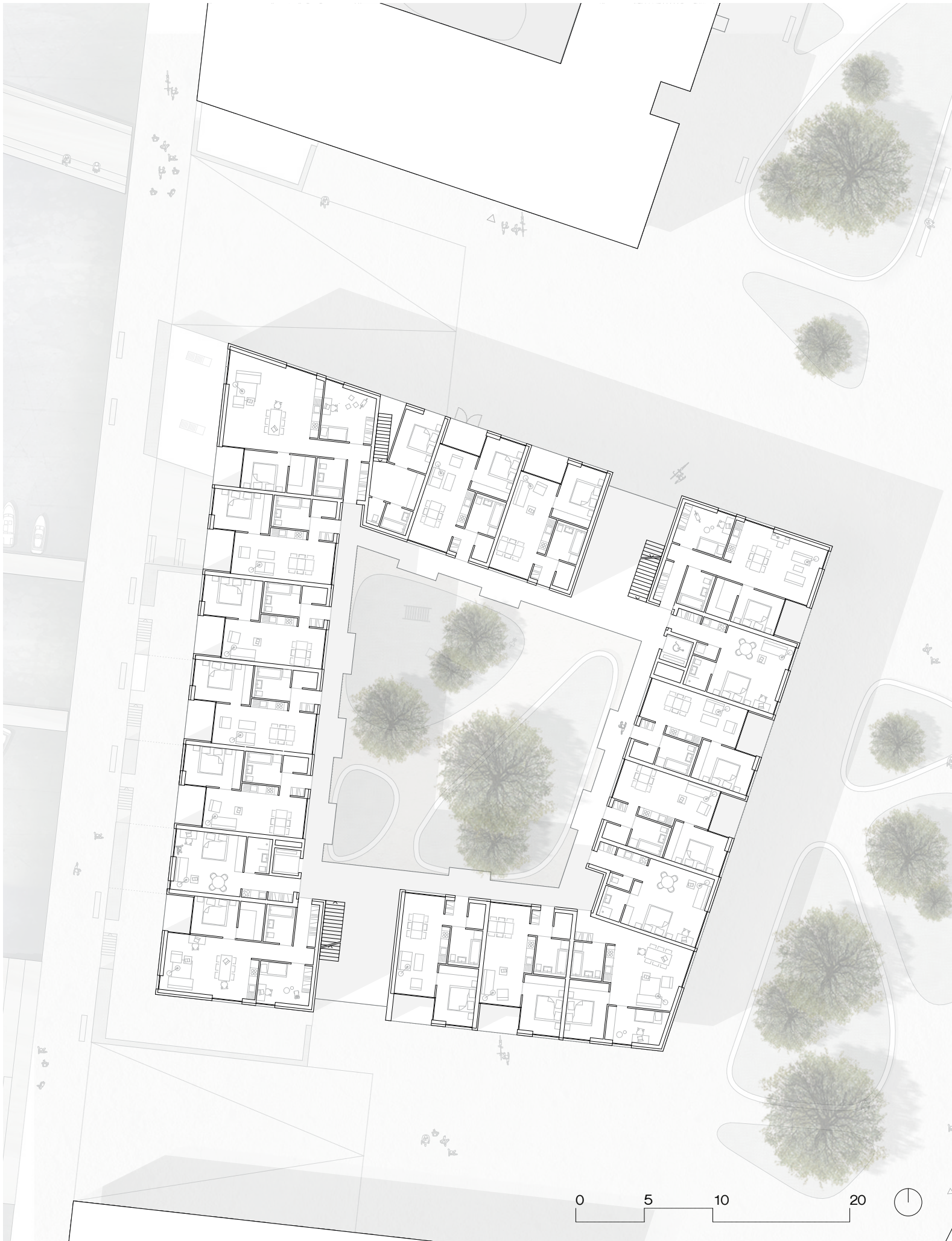
Rubbish	1
Bicycle Room	2
Furniture Store	3
Multi Purpose Room	4
Party Room	5
Outdoor Barbecue Grill Deck	6
Private Outdoor Decks	7
Landing Stage	8



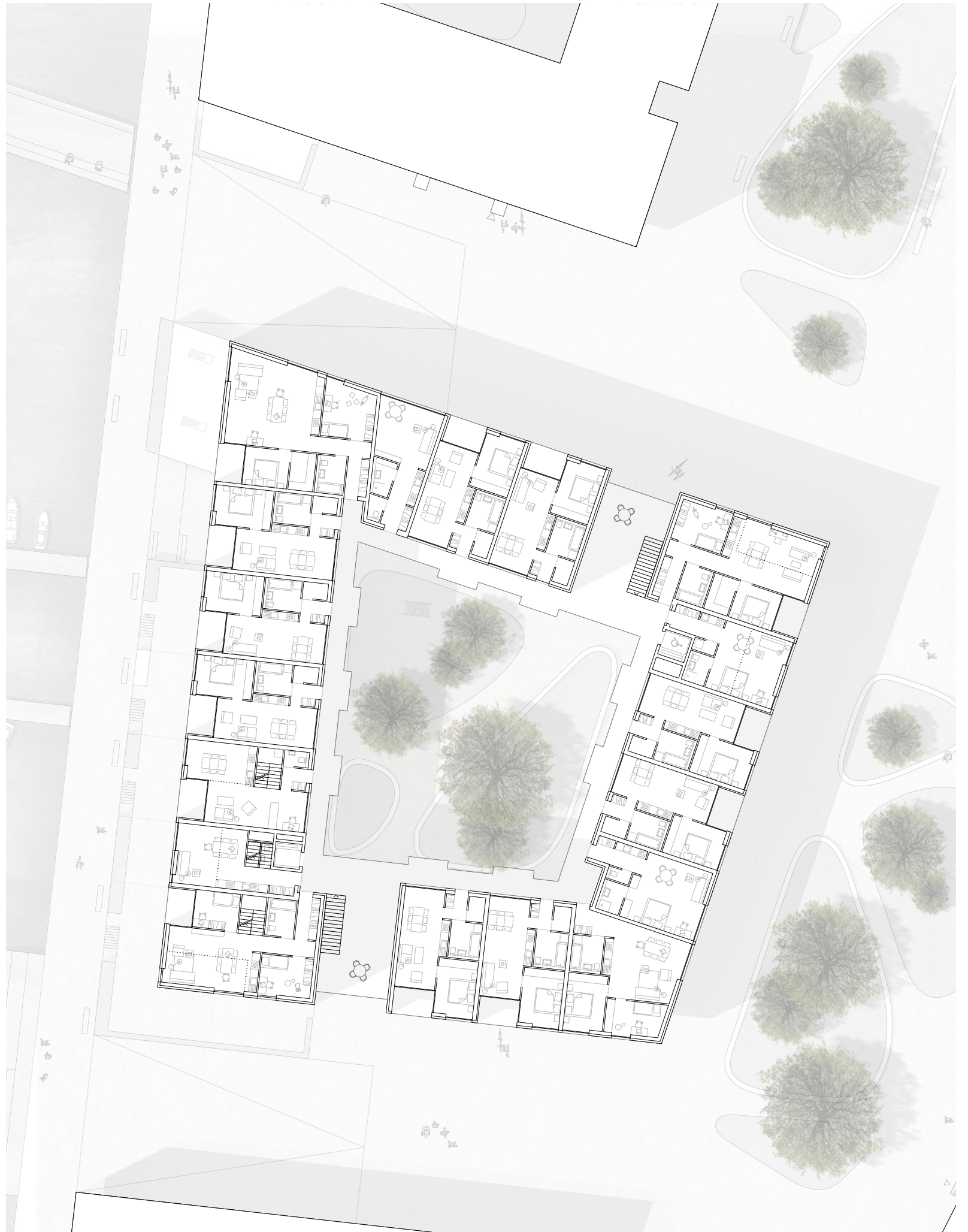
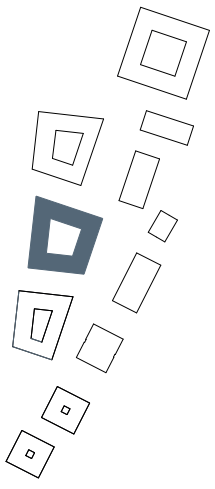
Ground Floor
Building 4
1:333



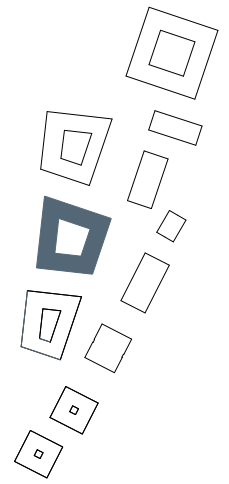
1st Floor
Building 4
1:333



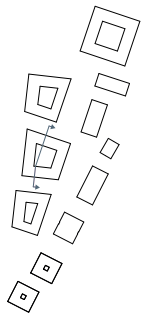
2nd Floor
Building 4
1:333



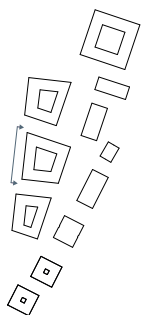
3rd Floor
Building 4
1:333



4th Floor
Building 4
1:333



Section
Building 4
1:333



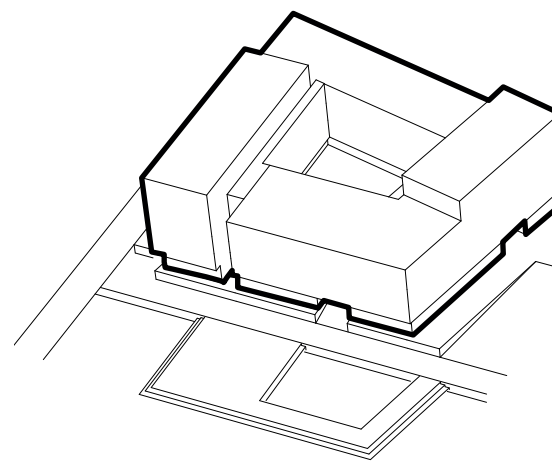
West Elevation
Building 4
1:333



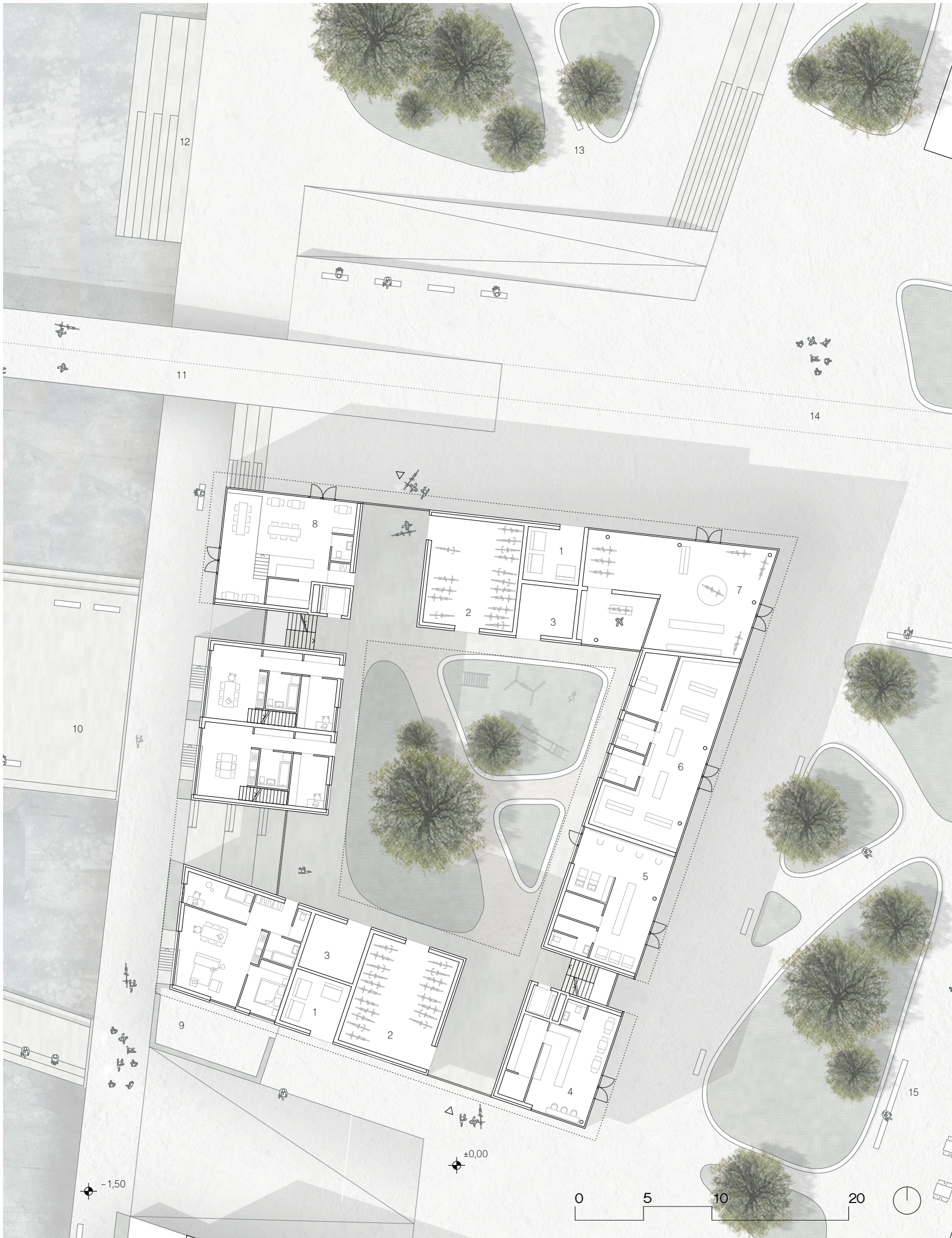
Building 5

The last residential building along the promenade with a number of 35 apartments and a variety of around 12 different flat types completes the ensemble of new buildings along the water. Again the semi-public courtyard can be accessed by two main entrances and steps from seaside. Arcades alternate every second floor with plugged-through parts of predominant duplex apartments. The section on one of the following pages shows this illustratively. Again small balconies spike the exterior facade. As mentioned in the description of building 1 and 2 the generous room-high glazing continues to be a characteristic feature among the new housing development. Furthermore the facades are structured by precast concrete parts as in all the new buildings along the quayside at the site.

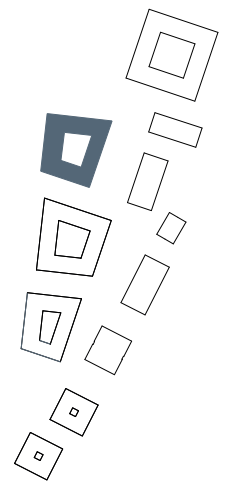
Storeys: 4 + partially Attic Floor
Apartments: 35

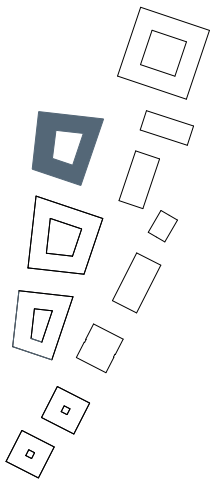


Rubbish	1
Bicycle Room	2
House Technology	3
Bakery	4
Hairdresser	5
Pharmacy	6
Bicycle Workshop	7
Cafe	8
Private Outdoor Decks	9
Floating Pool	10
Pedestrian Bridge to Kullkranpiren	11
Seating Steps	12
Tundra Landscape	13
Bicycle Lane	14
Main Square	15

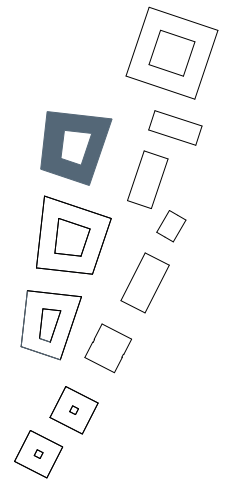
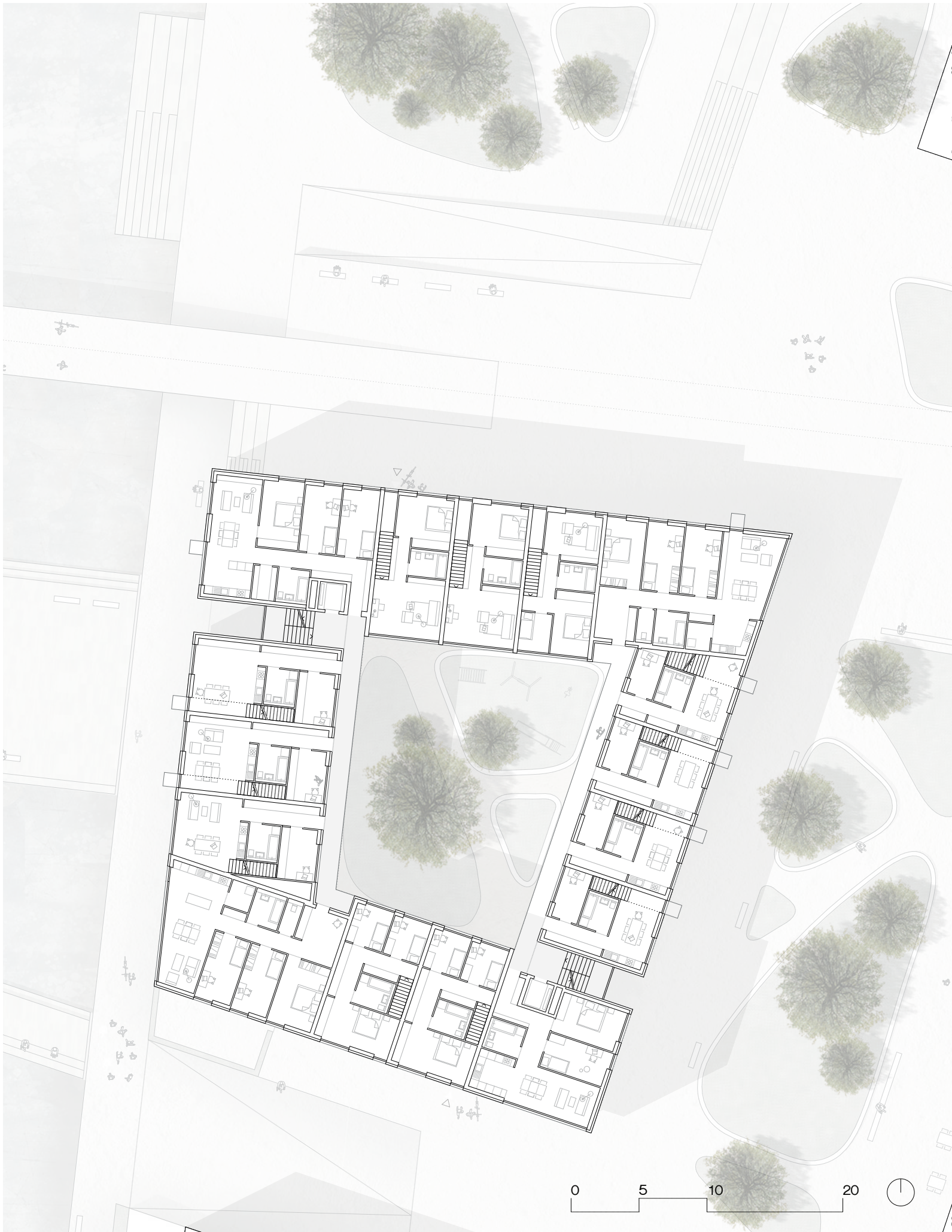


Ground Floor
 Building 5
 1:333

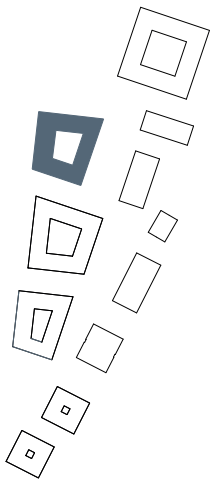




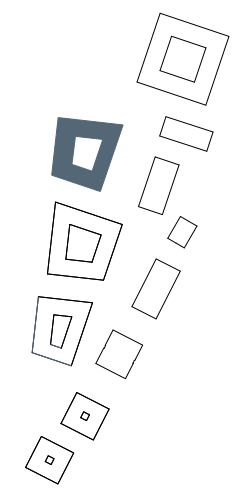
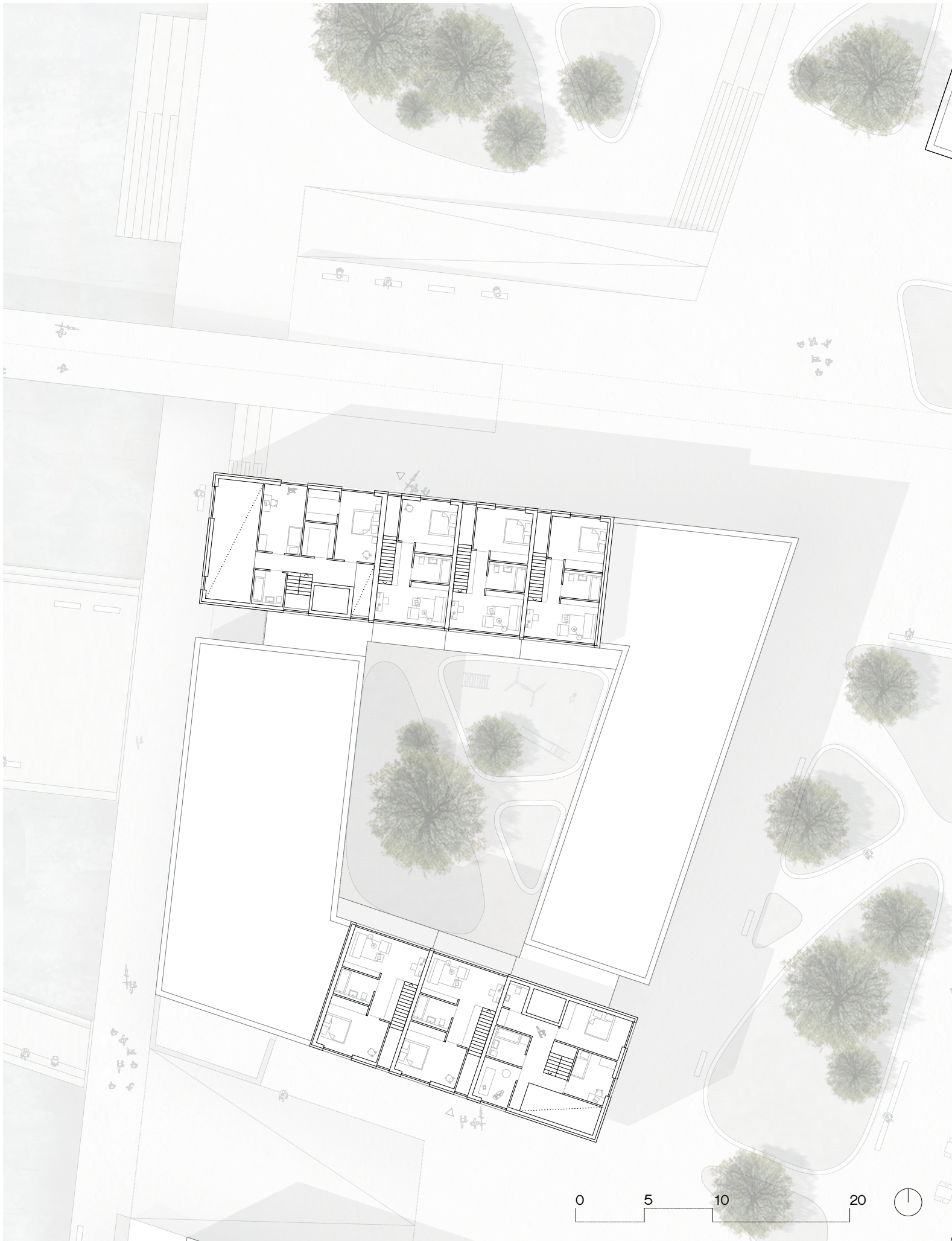
1st Floor
Building 5
1:333



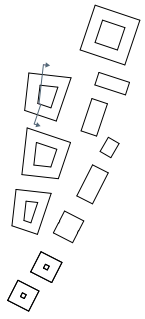
2nd Floor
Building 5
1:333



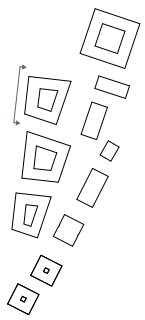
3rd Floor
Building 5
1:333



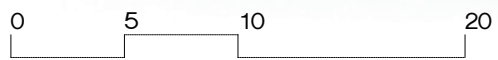
4th Floor
Building 5
1:333



Section
Building 5
1:333



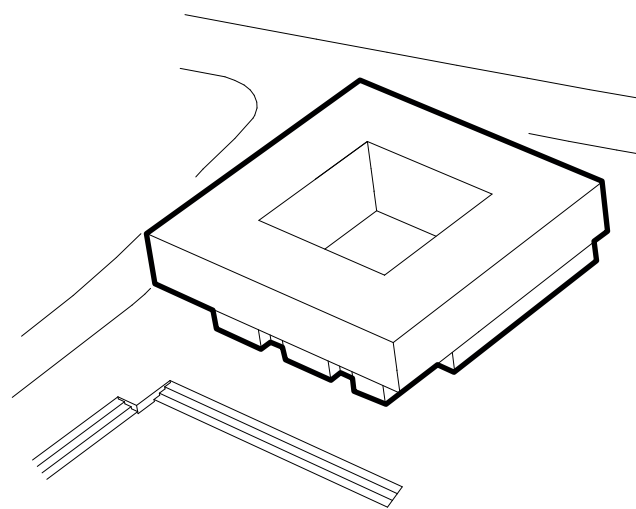
West Elevation
Building 5
1:333



Building 6

In the northern corner a building with square footprint and a measure of 48 meters each side constitutes the completion of the new development at Strandveien. As the building is slightly rotated, a parking area at strandveien forms the accessibility for motorists. Furthermore a two-storey underground carpark is available and offers room for around 250 cars. Three sheltered entrances at each corner - apart from the garage driveway - enable a weatherproof access. The entrance closest to the sea ushers into a kindergarden with an area of around 800 m² for around 70 children and a protected outdoor area at the courtyard of the building. The other two entrances closer to Strandveien will bring you to a fitness center which occupies half of the first floor. The rest of first floor and the whole second floor accommodates co working space and offices with a very flexible open layout. Vertical lamellae partially displaced from first to second floor structure the facade and create an appearance that suggests the function of the building.

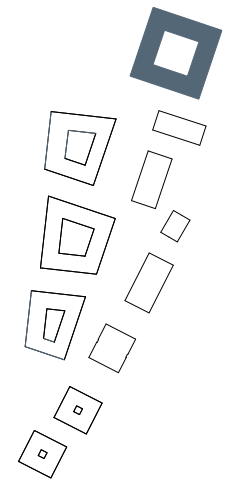
Storeys: 3

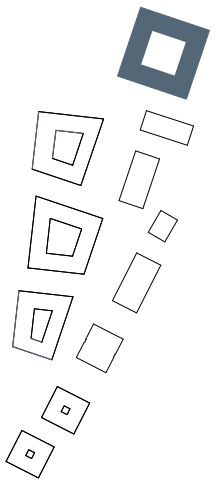


Sheltered Entrance	1
Wardrobe	2
Conference Room	3
Kitchen	4
Relaxation Room	5
Playroom	6
Reception	7
Grocery Store	8
House Technology	9
Courtyard Playground	10
Bicycle Lane	11
Seating Steps	12
Car Park Driveway	13

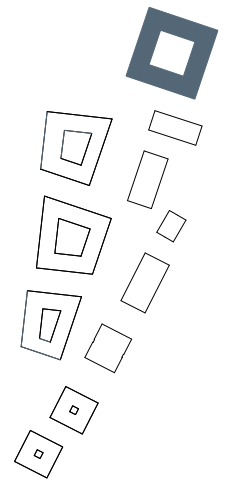


Ground Floor
Building 6
1:333

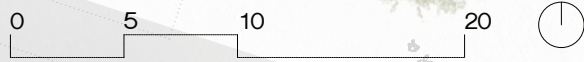


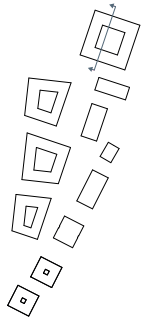


1st Floor
Building 6
1:333

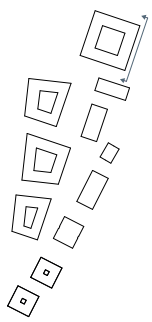
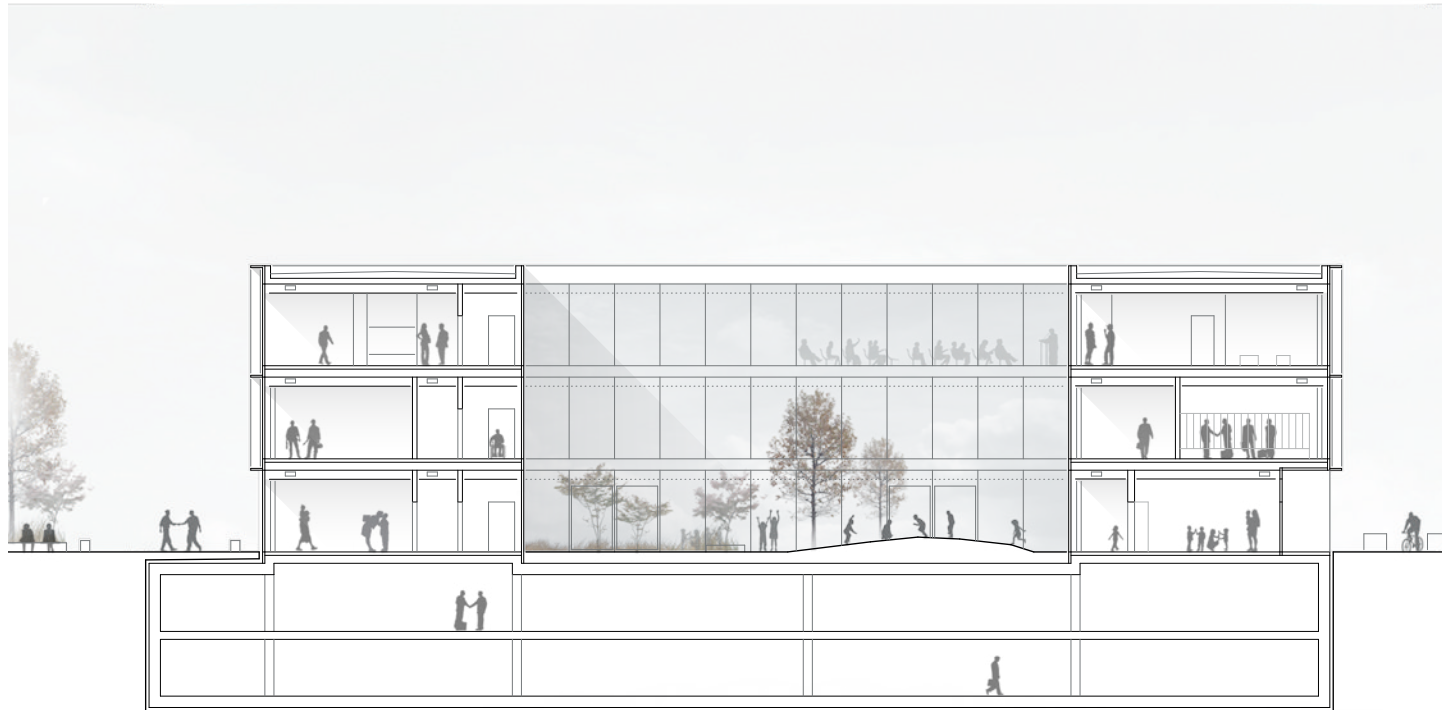


2nd Floor
Building 6
1:333





Section
Building 6
1:333



East Elevation
Building 6
1:333

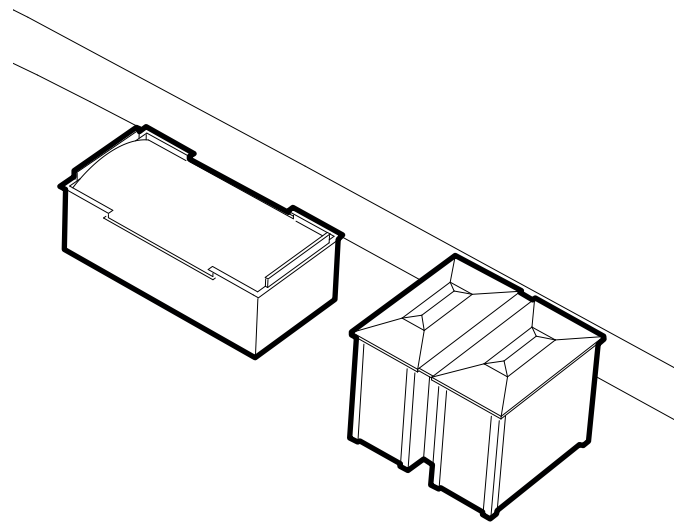
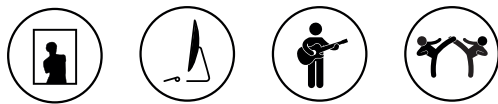


Strandveien 96a & 98a

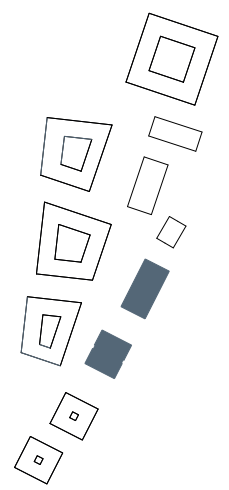
Heritage buildings from World War II that have been neglected for year get a new makeover. The former building for supply of oxygen and compressed air and the building for central heat boiler get renovated. By removing all the improvised add-ons and unnecessary conversions the buildings original exterior appearance is restored.

Strandveien 96a becomes a “Tower” for music, dance and body control that is open to the community at the site. Strandveien 98a receives a facade-makeover and blocked up windows are restored. The position of the doorways stay the same – only protecting roofs are added above every existing entrance.

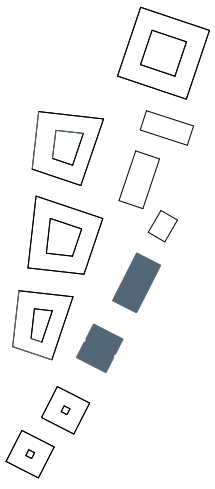
By removing mezzanine floors that were installed lately for the purpose of storage the ground floor becomes an open high space where exhibition room of different type provide a showcase for the cultural actors also located at the site. The position for the stairways to the upper level stay the same. Under the renovated barrel roof creative office rooms and co-working units can be rented.



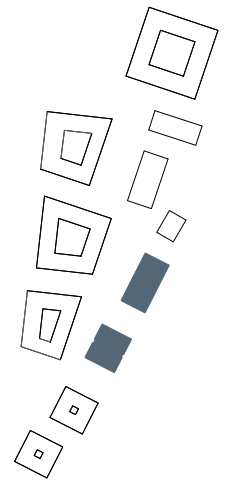
Changing Room	1
House Technology	2
Rubbish	3
Boxing	4
Entrance Creative Office	5
Exhibition Hall	6
Bicycle Lane	7



Ground Floor
Strandveien 96a & 98a
1:333



1st Floor
Strandveien 96a & 98a
1:333



2nd Floor
Strandveien 96a & 98a
1:333

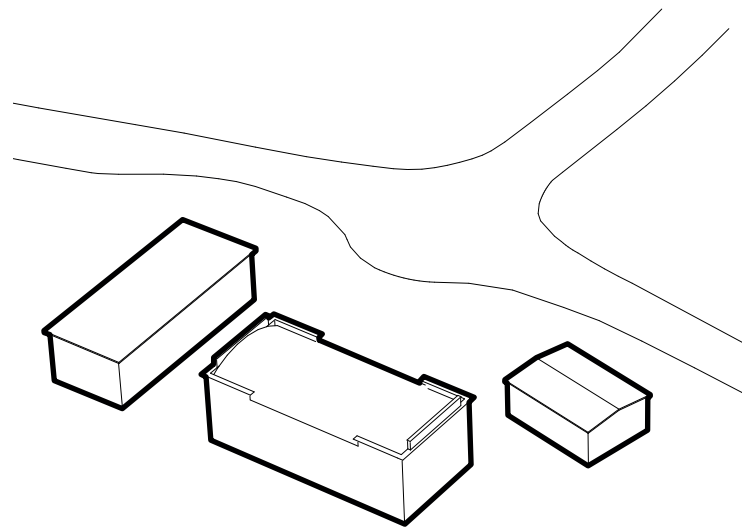


Strandveien 98b & 100 & 102

The three remnant buildings that form the existing development will also get a new makeover. Strandveien 98b will house a pub on 2 floors right next to the Rignes brewery. The emergency stairway gets removed, the gates get replaced by glazing. Apart from renovating the facade the appearance stays the same. To reach the first floor a spiral staircase is installed near one of the bearing center columns.

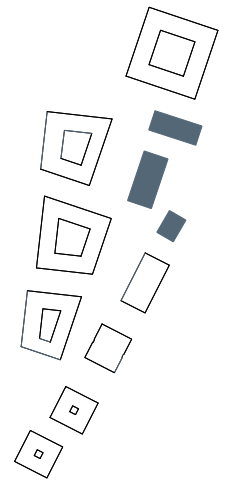
Strandveien 100 with a very similar appearance to that of 98a will house a generous foodhall hence the partially existing first floor will be removed. Loadbearing steel columns will reach from ground floor to the barrel roof. The east and west facade will get additional entrances to enable a better connection to the main square and the pub garden. The second floor consists of creative office spaces with a separate entrance and circulation on the buildings south side.

Strandveien 102's hermetical appearance will change significantly. Atelier rooms on the first and second floor will get generous windows facing north and south. On the ground floor a public exhibition space will have further glazing and two entrances. The whole ensemble apart from the "Tower" Strandveien 96a will retain the characteristic red plasterwork facade. Entrances will get a dark steel canopy.

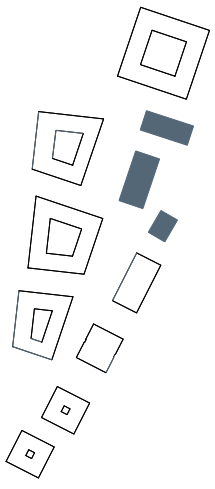


Pub	1
Entrance Creative Office	2
Foodhall	3
Pub Garden	4
Entrance Exhibition	5
Entrance Ateliers	6
Bicycle Lane	7

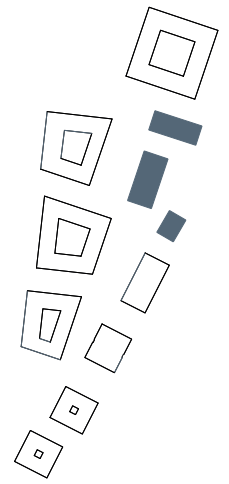




Ground Floor
 Strandveien 98b & 100
 1:333



1st Floor
Strandveien 98b & 100
1:333



2nd Floor
Strandveien 98b & 100
1:333



Section
Strandveien Existing Buildings
1:333



West Elevation
Strandveien Existing Buildings
1:333

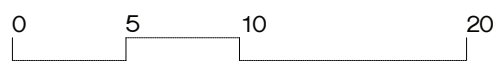
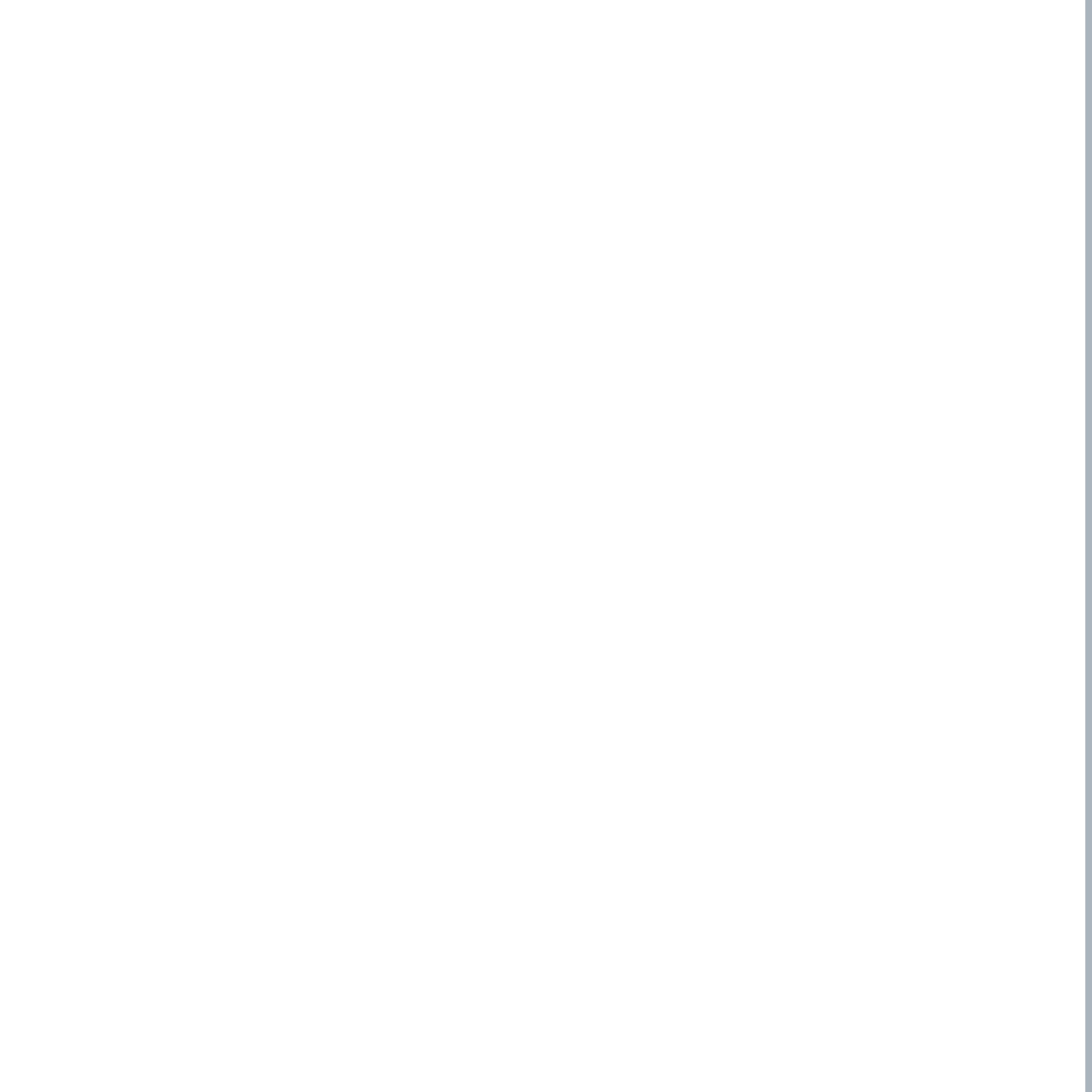




Fig.48 Main square between existing building Strandveien 100 and building 5;



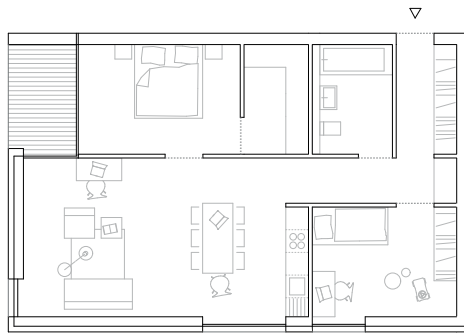


08

Typologies

- 8.1. Apartment Types
- 8.2. Duplex Apartment Types
- 8.3. Floor Space Table

8.1. Apartment Types



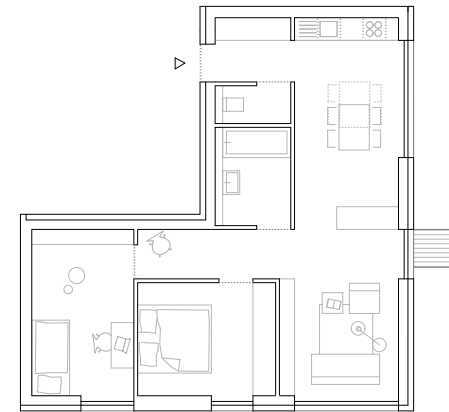
Type 1

Living Area: 76m²
 Outdoor Area: 5m²
 Location: Building 1,2,4
 Amount: 36



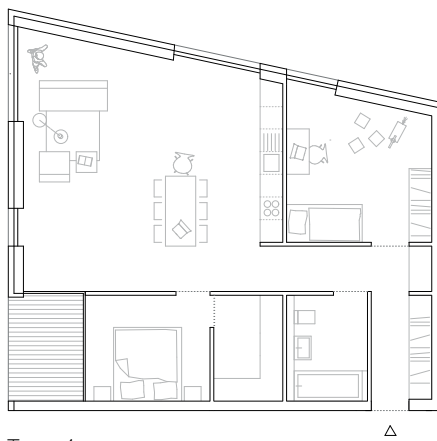
Type 2

Living Area: 46m²
 Outdoor Area: 6,50m²
 Location: Building 1,2
 Amount: 8



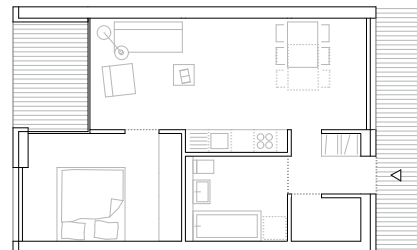
Type 3

Living Area: 68m²
 Outdoor Area: 1m²
 Location: Building 3
 Amount: 1



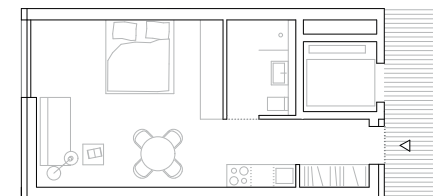
Type 4

Living Area: 87m²
 Outdoor Area: 5m²
 Location: Building 4
 Amount: 3



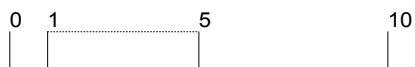
Type 5

Living Area: 45m²
 Outdoor Area: 5m²
 Location: Building 4
 Amount: 8



Type 6

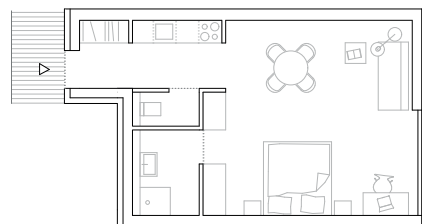
Living Area: 33m²
 Location: Building 4
 Amount: 4





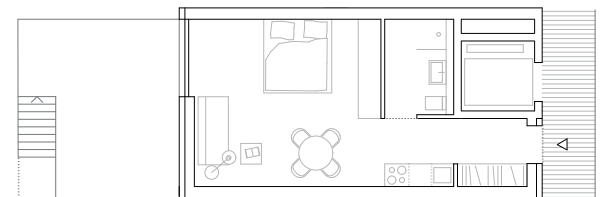
Type 7

Living Area: 45m²
 Outdoor Area: 25m²
 Location: Building 4
 Amount: 3



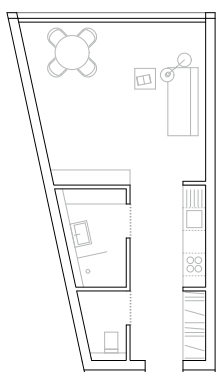
Type 8

Living Area: 39m²
 Location: Building 4
 Amount: 3



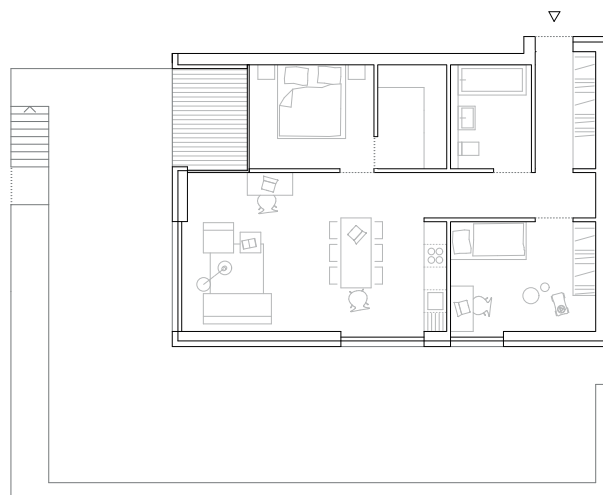
Type 9

Living Area: 33m²
 Outdoor Area: 16m²
 Location: Building 4
 Amount: 1



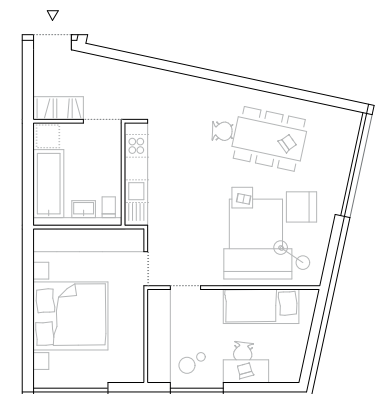
Type 10

Living Area: 34m²
 Location: Building 4
 Amount: 1



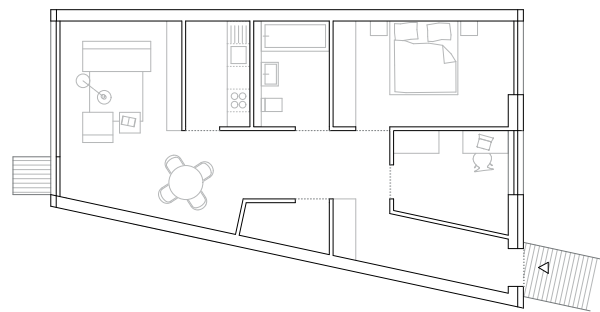
Type 11

Living Area: 70m²
 Outdoor Area: 76m²
 Location: Building 4
 Amount: 1



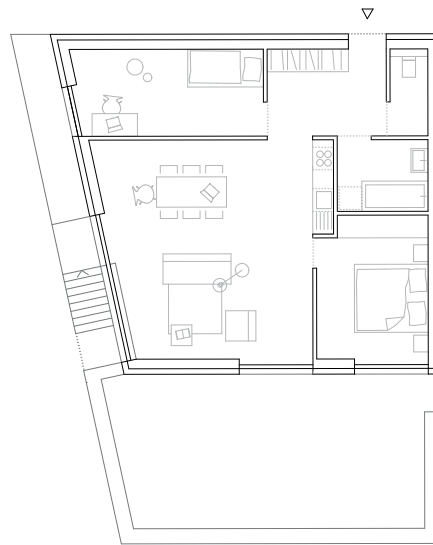
Type 12

Living Area: 62m²
 Location: Building 4
 Amount: 3



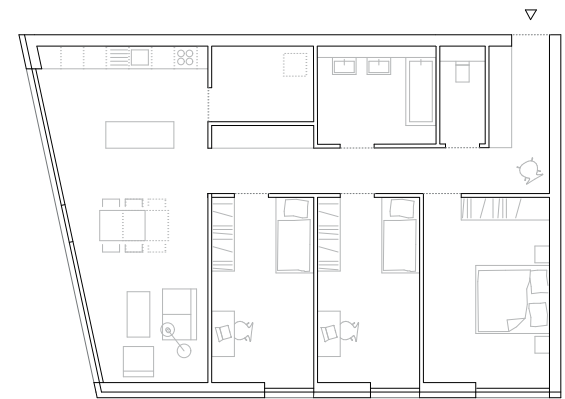
Type 13

Living Area: 67m²
 Outdoor Area: 1m²
 Location: Building 5
 Amount: 1



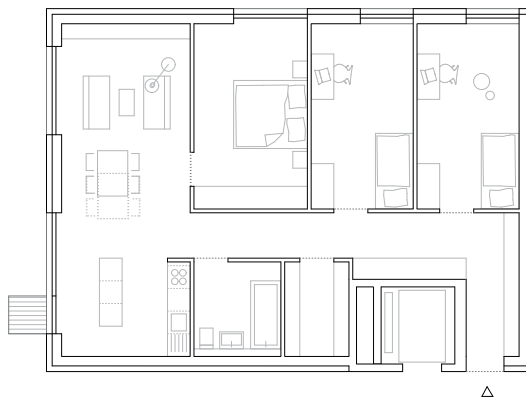
Type 14

Living Area: 69m²
 Outdoor Area: 33m²
 Location: Building 5
 Amount: 1



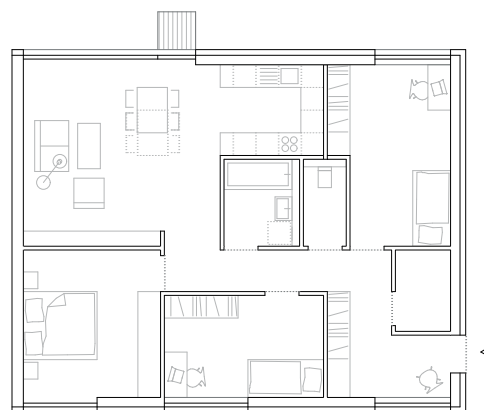
Type 15

Living Area: 110m²
 Location: Building 3,5
 Amount: 10



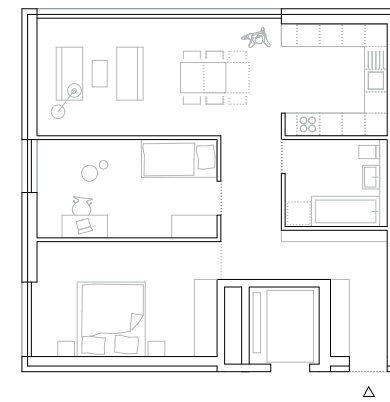
Type 16

Living Area: 95m²
 Outdoor Area: 1m²
 Location: Building 5
 Amount: 2



Type 17

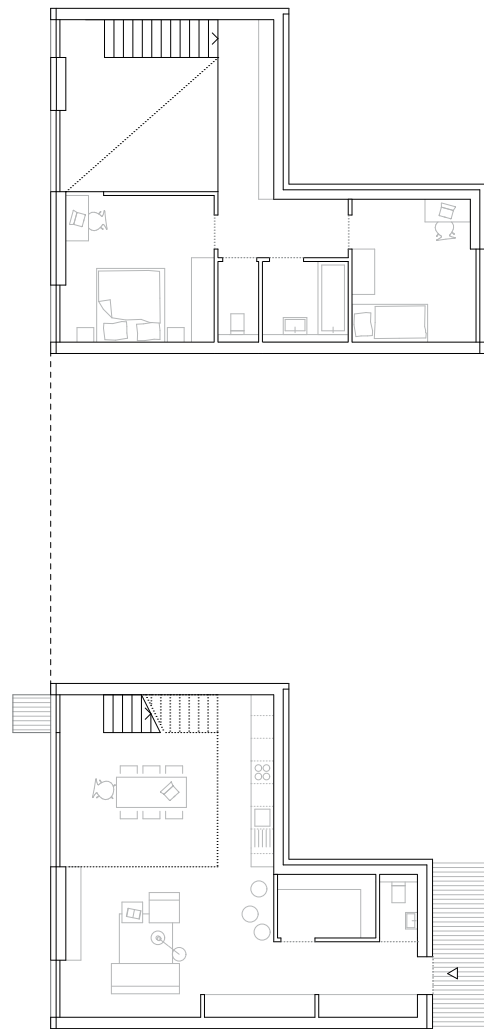
Living Area: 97m²
 Outdoor Area: 1m²
 Location: Building 5
 Amount: 2



Type 18

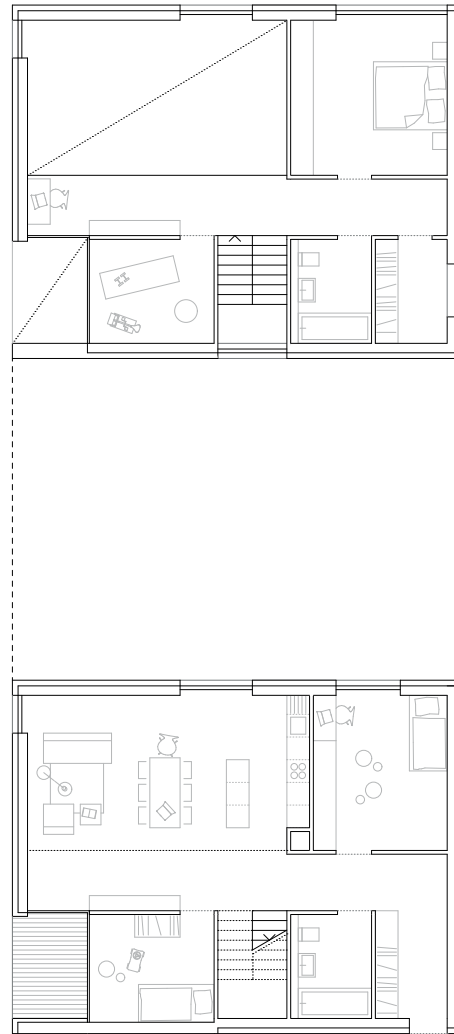
Living Area: 80m²
 Location: Building 5
 Amount: 2

8.2. Duplex Apartment Types



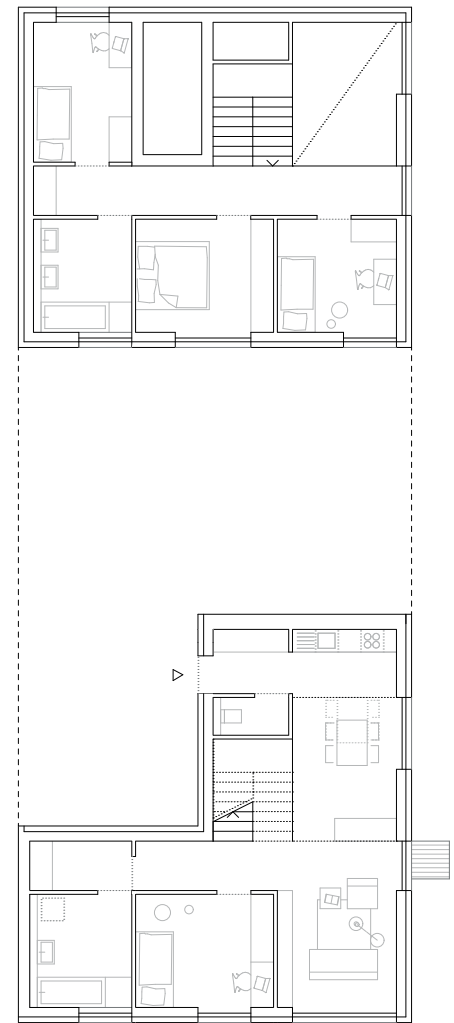
Type 19

Living Area: 106m²
 Outdoor Area: 1m²
 Location: Building 3
 Amount: 1



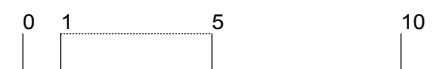
Type 20

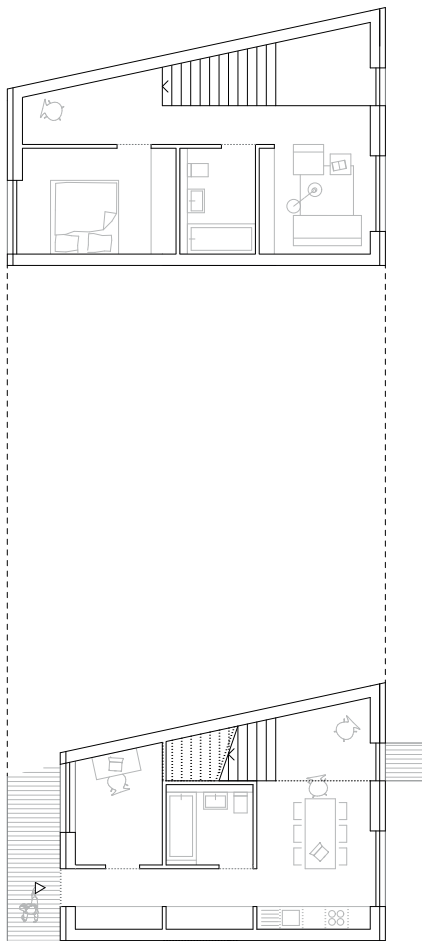
Living Area: 136m²
 Outdoor Area: 5m²
 Location: Building 3
 Amount: 1



Type 21

Living Area: 113m²
 Outdoor Area: 1m²
 Location: Building 3
 Amount: 1





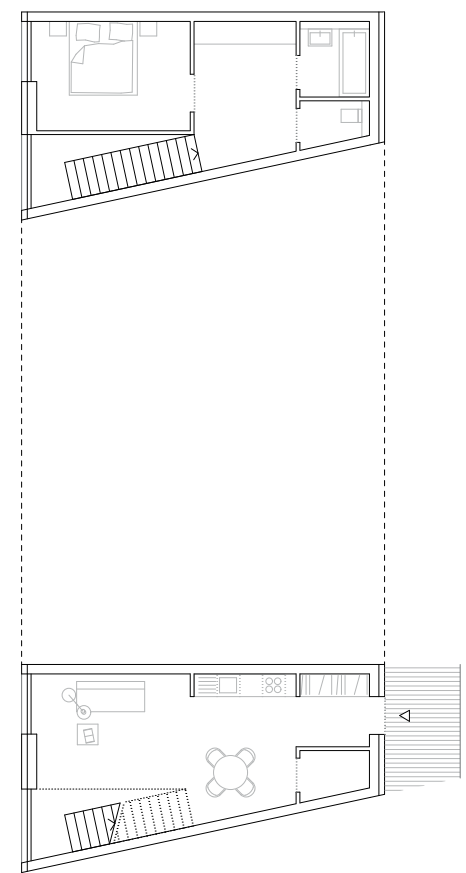
Type 22

Living Area: 85m²
 Outdoor Area: 1m²
 Location: Building 3,5
 Amount: 4



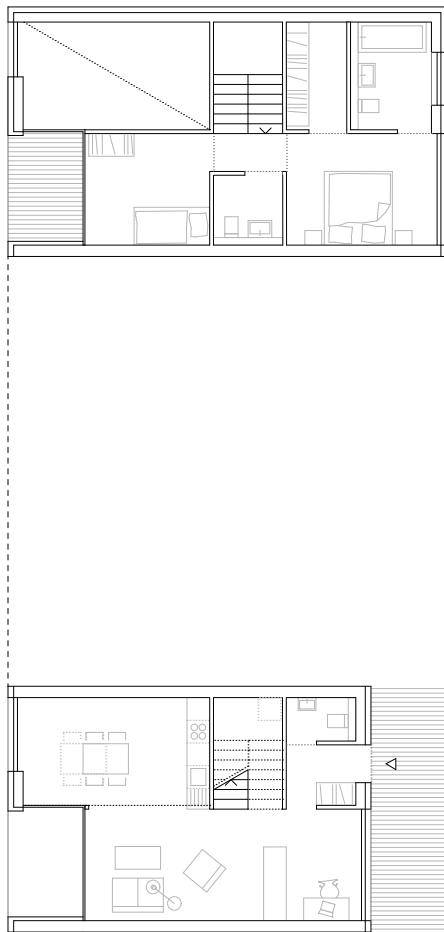
Type 23

Living Area: 56m²
 Location: Building 4
 Amount: 1



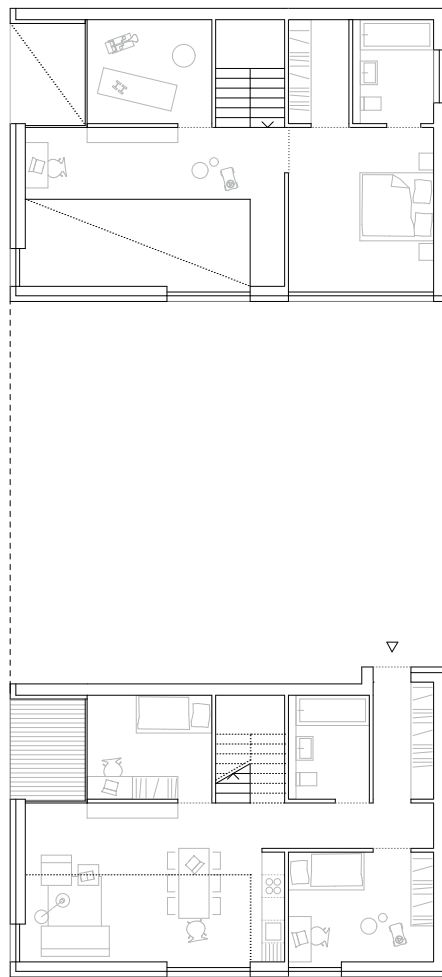
Type 24

Living Area: 59m²
 Location: Building 4
 Amount: 1



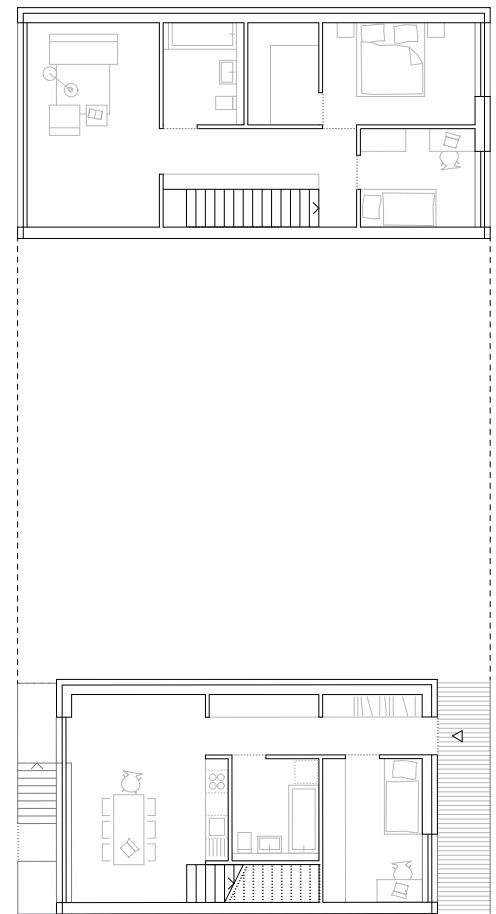
Type 25

Living Area: 85m²
 Outdoor Area: 5m²
 Location: Building 4
 Amount: 2



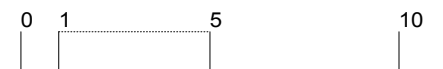
Type 26

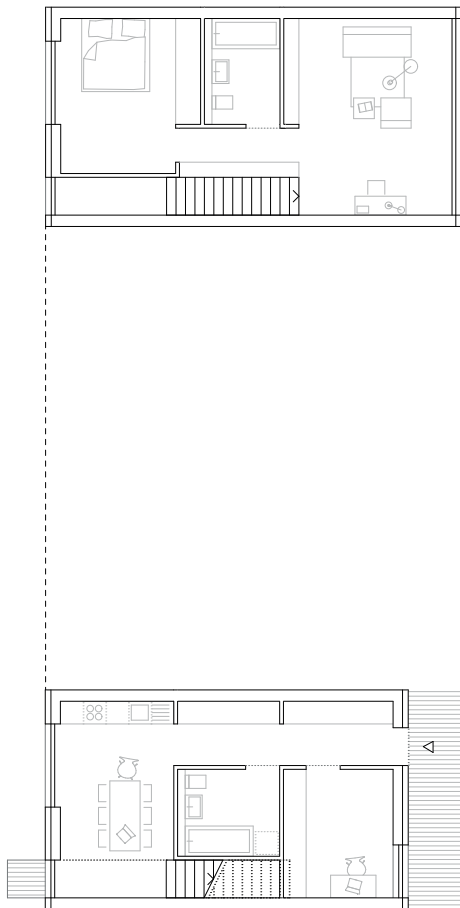
Living Area: 108m²
 Outdoor Area: 5m²
 Location: Building 4
 Amount: 2



Type 27

Living Area: 104m²
 Outdoor Area: 3m²
 Location: Building 3,5
 Amount: 4





Type 28

Living Area: 93m²
 Outdoor Area: 1m²
 Location: Building 5
 Amount: 3



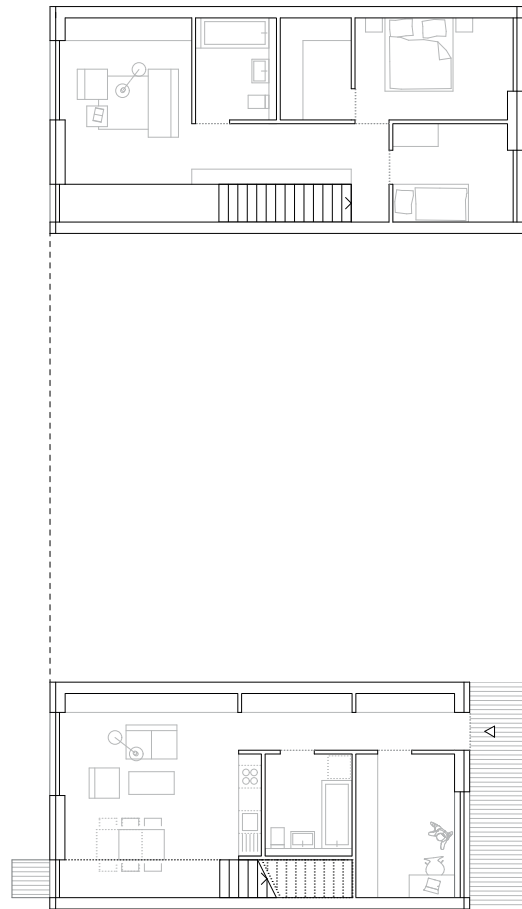
Type 29

Living Area: 93m²
 Outdoor Area: 1m²
 Location: Building 3,5
 Amount: 5



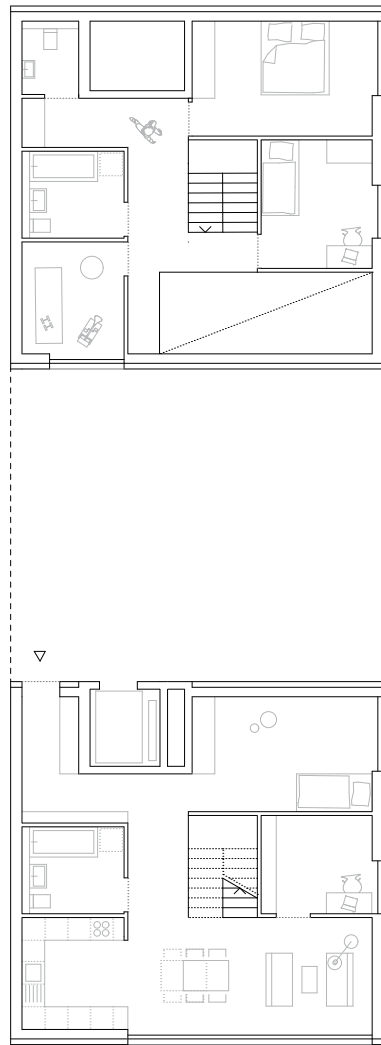
Type 30

Living Area: 71m²
 Outdoor Area: 1m²
 Location: Building 3,5
 Amount: 7



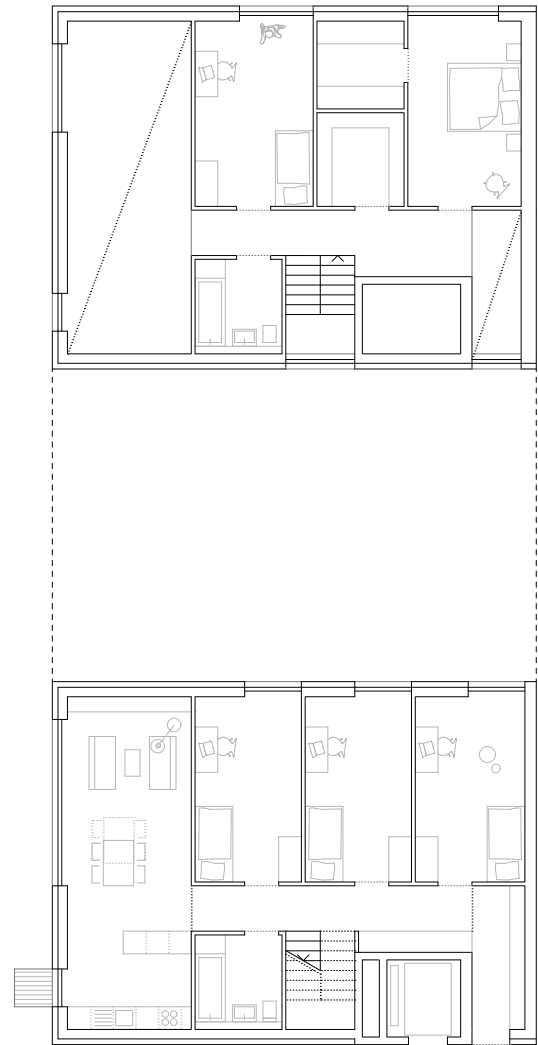
Type 31

Living Area: 95m²
 Outdoor Area: 1m²
 Location: Building 5
 Amount: 6



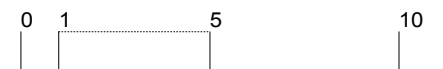
Type 31

Living Area: 127m²
 Location: Building 5
 Amount: 1



Type 33

Living Area: 143m²
 Outdoor Area: 1m²
 Location: Building 5
 Amount: 1



8.3. Floor Space Table

Office :	4240 m2
Commerce:	4000 m2
Kindergarden:	820 m2
Exhibition:	960 m2
Community Space:	3460 m2
Total:	12 580 m2

Housing:	Building 1:	2440 m2
	Building 2:	2440 m2
	Building 3:	2450 m2
	Building 4:	4160 m2
	Building 5:	4430 m2
Housing total:		15 920 m2

Housing:	56%
Other use:	44%

Gross floor area:	28 500 m2
Plot area:	31 500 m2
Floor-space index:	0,9

Total amount of apartments:	159
Possible number of residents:	440



09

References

9.1. List of Figures

9.2. Literature

9.1. List of Figures

Fig. 1:

Logo, Europan (ed.), The Adaptable City 2 - European 13 Theme, Paris 2015, coverpage, modified by author;

Fig. 2:

https://commons.wikimedia.org/wiki/File:Blank_map_of_Europe.svg, modified by author;

Fig. 3:

https://commons.wikimedia.org/wiki/File:Blank_map_of_Europe.svg, modified by author;

Fig. 4:

http://yugioh.wikia.com/wiki/File:Flag_of_Norway.svg

Fig. 5:

https://commons.wikimedia.org/wiki/File:Blank_map_of_Europe.svg, modified by author;

Fig. 6:

by author;

Fig. 7:

<http://en.trondelag.com/dining-along-the-river-nidelven-in-trondheim/>, modified by author;

Fig. 8:

Image provided by Europan Norway, modified by author;

Fig. 9:

Image provided by Europan Norway, modified by author;

Fig. 10:

Image provided by Europan Norway (ed.), Adaptable City 2 - Competition Brief Trondheim, Oslo 2015, p.12; Photo: Jan Olav Jenssen; modified by author;

Fig. 11:

<http://www.formakers.eu/project-1010-space-group-clarion-hotel-congress-trondheim>; Photo: Space Group; modified by author;

Fig. 12:

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Fig. 13:

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Fig. 14:

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Fig. 16:

https://commons.wikimedia.org/wiki/File:Trondheim_-_Ladestien_04.jpg

Fig. 17:

Image provided by Europan Norway, modified by author;

Fig. 18:

Plan provided by Europan Norway, edited by author;

Fig. 19:

Image provide by Europan Norway, edited by author;

Fig. 20:
Illustration provided by European Norway; European Norway (ed.), Adaptable City 2 – Competition Brief Trondheim, Oslo 2015, page 19; edited by author;

Fig. 21:
Plan provided by European Norway, edited by author;

Fig.22:
<http://www.carlsberggroup.com/media/news/Pages/RingnesandBrooklynBrewerylaunchesnewandrebuiltEC-DahlsBreweryinNorway.aspx>; modified by author;

Fig.23:
<http://renerehavn.no/>; modified by author;

Fig.24:
Image provided by European Norway;European Norway (ed.), Adaptable City 2 – Competition Brief Trondheim, Oslo 2015, page 17; modified by author;

Fig.25:
Plan provided by European Norway, modified by author;

Fig.26:
Plan provided by European Norway, modified by author;

Fig. 27:
Photo provided by European Norway, modified by author;

Fig.28–31: by author;

Fig. 32: Image provided by European Norway, modified by author;

Fig. 33–36:
Image provided by European Norway, modified by author;

Fig. 37–49:
Images provided by European Norway, modified by author;

Fig. 40–42:
Images provided by European Norway, modified by author;

Fig. 43:
Image provided by European Norway, modified by author;

Fig. 44:
by author;

Fig. 45:
by author;

All other Illustrations, plans etc. by author;

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7 cf. <https://www.ssb.no/en/befolkning/statistikker/folkemengde>

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11 cf. <http://www.takepart.com/article/2015/11/02/this-is-most-prosperous-nation-in-world-hint-not-us>

12 cf. http://www.upi.com/Top_News/World-News/2013/03/15/Norway-top-country-in-human-well-being/UPI-38211363358148/

13 cf. <http://uk.reuters.com/article/norway-economy-forecasts-idUKL0674675920070906>

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- 14 cf. <https://www.cia.gov/library/publications/the-world-factbook/rankorder/2241rank.html>
- 15 cf. <https://de.wikipedia.org/wiki/Norwegen>
- 16 cf. <http://www.ssb.no/en/befolkning/statistikker/folkendrkv/kvartal/2014-08-20?fane=tabell&sort=nummer&tabell=192948>
- 17 cf. <https://de.wikipedia.org/wiki/S%C3%B8r-Tr%C3%B8ndelag>
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- 20 cf. http://www.citylab.com/cityfixer/2016/03/norway-bike-highways-billion-dollars/472059/?utm_source=SFFB
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- 22 cf. European Norway (ed.), The Adaptable City 2 – Competition Brief Trondheim, Oslo 2015, p. 8-9;
- 23 cf. <http://www.trondheim.kommune.no/nyhavna/>
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- 31 cf. European Norway (ed.), Adaptable City 2 – Competition Brief Trondheim, Oslo 2015, p. 18-19;
- 32 cf. https://de.wikipedia.org/wiki/U-Boot-Bunker_Dora
- 33 cf. European Norway (ed.), Adaptable City 2 – Competition Brief Trondheim, Oslo 2015, p. 16;
- 34 cf. European Norway (ed.), Adaptable City 2 – Competition Brief Trondheim, Oslo 2015, p. 20-21;
- 35 cf. <http://www.carlsberggroup.com/media/news/Pages/RingnesandBrooklynBrewerylaunchesnewandrebuiltECDahlsBreweryinNorway.aspx>
- 36 cf. <http://renerehavn.no/hva-skal-gjores/tiltakssteder>
- 37 cf. European Norway (ed.), Adaptable City 2 – Competition Brief Trondheim, Oslo 2015, p. 17, p. 22;
- 38 cf. European Norway (ed.), Adaptable City 2 – Competition Brief Trondheim, Oslo 2015, p. 24-26;
- 39 cf. European Norway (ed.), Adaptable City 2 – Competition Brief Trondheim, Oslo 2015, p. 27;

