An Urban Shore

DESIGN PROPOSAL FOR THE EDGE OF A NEW WATERFRONT IN STAVANGER & A STUDY ON THE PHYSICALITY OF POSTINDUSTRIAL WATERFRONT-EDGES

"With changes in the nature of the port, there exist opportunities to create an alternative environment that allows for reconciliation with existing urban areas and a radical reshaping of the waterfront. Part of this reshaping is a matter of programmatic invention and economic incentives, while part is matter of poetic imagination and the creation of a new urban architectural context."

Marshall (2001)

"...the attention paid to the design of the furnishings for the waterfront can take on a special significance which goes beyond the aesthetic aspect and aims to rediscover or introduce emblematic values referring to the presence of the water and its determining use in this zone"

Bruttomesso (2001)

Formalities

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ABSTRACT

The physicality and spatial features of a waterfronts edge is the subject matter of this Thesis. As plans for the redevelopment of the waterfront of Stavanger in Norway begin to take shape, this thesis aims to understand the role of the edge of these sites in their regeneration.

This report in composed by two main parts; the design and the analysis. In a preliminary stage an historical perspective that seeks to showcase the importance of the presence of water in the urban environment, followed by an insight of the transformation of posindustrial waterfronts.

The report then seeks to showcase the thought processes that led up to the design proposal of the edge of Stavanger, setting a difference between the efforts of waterfront development and design of an edge of a waterfront.

The different shapes, functions and recreational use of a number of waterfronts are examined, analysed and interpreted in way as to find common characteristics and on this basis to devise a structural understanding of "the grammar" of the edge.

CONTENTS PART I

CONTENTS PART II

PART I
DESIGN

I

INTRODUCTION

Historical Perspective

Settlements by the coast led to the emergence of a series of port towns and cities, where trade and access to water were the driving forces for growth and prosperity. The late 19th and the 20th century saw the rise of industrial harbors and the rapid development of the shipping Industry. The process of globalization and industrialization of the cities shaped the history of waterfronts, and as the intense growth of industrial harbors progressed so did the expansion of the dockland areas along the waterfronts.

These heavy industrialized sites required the installation of vast railway terminals needed to transport incoming goods and merchandise, and huge warehouses built for storage of everything that flowed into these areas.

This process resulted in a detachment of the "edge" from the rest of the city, with these areas being taken away from the specter of the urban public life while still having a great deal of influence in the morphology of urban, social and political fabric, and as these areas became the domain of the heavily industrialized society, their surroundings were in most cases, composed of low income neighborhoods, inhabited by the workers of the docklands and their families. As the industrialization of water fronts increased further, other kinds of industries beyond shipping and port activities appropriated the waterfronts, from textiles, to breweries, to metal and even energy production that relied heavily on water resources and it led to construction of enormous facilities that would brand these cities landscape forever.

However during the second half of the 20th century and as it approached its end, many port cities experienced a dramatic change, due to maritime transport, as most industries by the water relocated to the hinterland, leaving many historic ports abandoned and desolate.

Postindustrial Waterfronts

This began "*in the years after the second World War, when the emergence of the container shipping industry accelerated the abandonment of old ports all over the world. The old ports were too crowded, and their piers had too little dockside land area for the flow of containers; as a result, in port city after port city, deep-sea shipping has moved out of the city center, abandoning the historic old port area where the city began, and where*

the city's image was created for the rest of the world."
Martin L. Millspaugh (Marshall, 2001, p 76)

The above mentioned development forced many cities to react with programs of waterfront regeneration, realizing that the conclusion of the "Industrial period" could not be made with the mere management of the damages that resulted from that era, but with a sustainable, self-monitoring and continuous solution that allows for the reigniting of waterfronts in the urban and social contexts.

The urban economies began making a transition to a post-industrial period leaving behind a landscape of desolated and abandoned waterfronts. In this change from industrial to service economy these postindustrial cities were now turning to "*processing and services rather than manufacturing, intellectual capacity rather than muscle power and dispersed office environments rather than concentrated factories*"
(Marshall, 2001, p 8)

New Potentials and Economic Discourse

At the turn of the century the concept of experience economy became very pronounced, and the new role of waterfronts in port cities was seen within this context, namely an area with predominantly cultural and commercial functions, the symbol of this movement being most famously associated with the opera house in Sydney and the Guggenheim Museum in Bilbao.

All parties involved: architects, city planners, politicians and businessman alike saw the potential in these new waterfronts. Being that their location was often at close vicinity to urban centers, that provide waterfronts with great access to residential, commercial and business areas, as well as with public transportation and other facilities common to the urban fabric.

Furthermore, many of these waterfronts were already heavily urbanized with buildings that were easily converted into other uses, and they also carried an element of nostalgia and cultural heritage of the city itself. In addition they brought the water closer to the city.

"East River From the Shelton" (1926). Georgia O'Keeffe's poetic and yet disturbing painting of an industrialised waterfront in New York
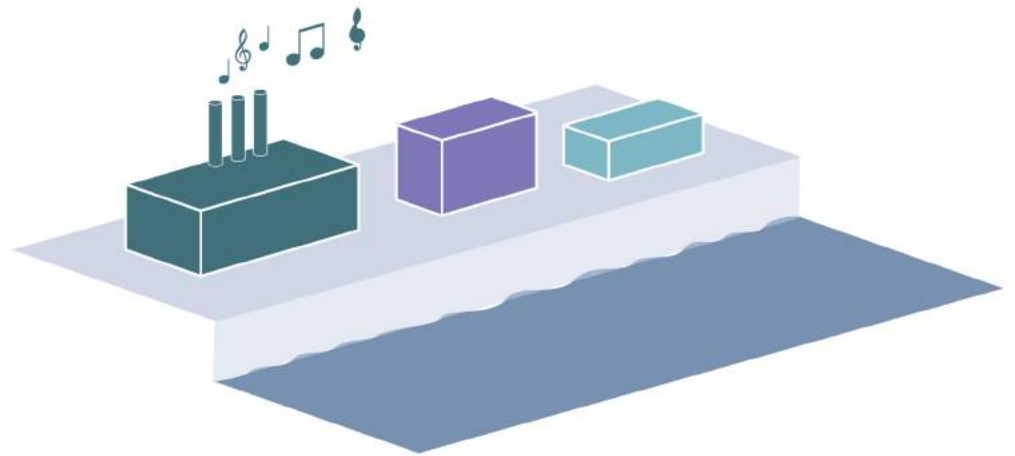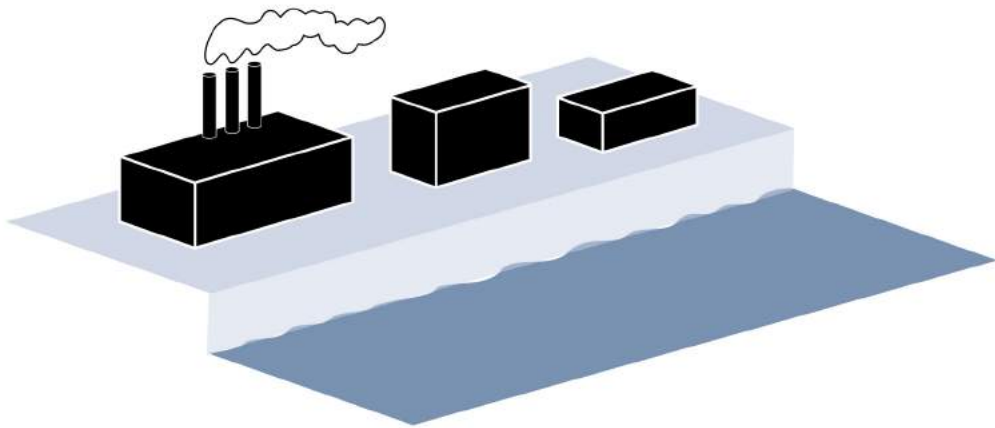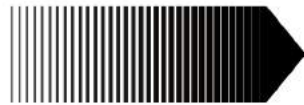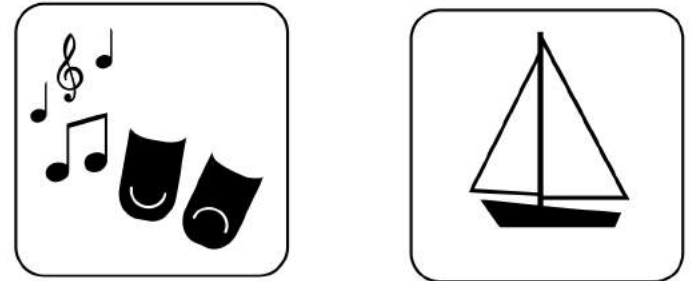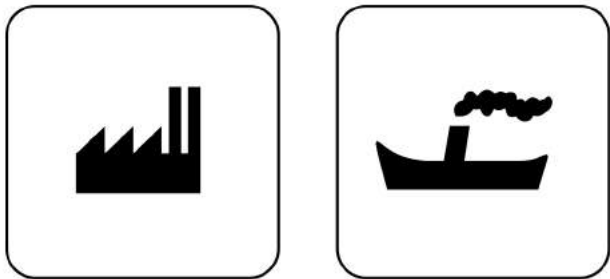
Rinio Bruttomesso

This chapter presents a set of ideas by Rinio Bruttomesso on how a waterfront development can be understood in terms of approach to planning and what policies should be considered in doing so. Despite the fact that this thesis focuses its attention on the physicality of the edge of a waterfront, the analytical tools that his concepts offer are useful in so far as one deals with an overall perception of how former industrial waterfronts can be managed.

According to Bruttomesso "*relaunching the waterfront is one of the most significant chapters in .[.]..[urban] policies, as this urban zone, in direct contact with the water, has the same objectives as the old and abandoned industrial areas redesigned by the city; namely, the same three guidelines: "recomposition", "regeneration" and "recovery"."*"
(Marshall, 2001, p 40)

- The concept of "recomposition" relates to the effort of rendering the waterfront a cohesive totality where the different parts are communicative both physically and functionally. Since the industrial waterfronts created such a detachment from the city centres and isolated zones along the waterfront due to several independent industries operating side by side, the aim should be to reunite these parts while giving them an entirely different character that as a whole creates a new and attractive image for the waterfront.

- The "regeneration" operations refer to the strategic planning of re-examining and revitalizing buildings and urban areas devoid of any use by the coming of the post-industrial area. Regardless of the kind of purpose the areas previously were assigned, they are to be upgraded and given conspicuous use and significance through such concepts as "urban play", so they collectively are part of an overall strategy that promotes the revitalization of the area, its ultimate reconnection of the urban centres and the creation of a new identity for the city.

- Finally the "Recovery" process deals with the restoration of individual buildings and soon to be urban spaces (public or private) and addresses the importance of recognizing the historical relevance that some of these structures may have (or not) when intervening by restoring or assigning new uses to them. Some of these areas do hold important historical examples of industrial archaeology that planners must be aware of whether their intent is to apply changes to exterior appearance or interior distribution of space.

Conclusions and strategies

As new strategies were applied and studies were performed on these sites over the years it has become clear that one of the main goals of the waterfront revitalization is the enhancement of urban quality. The areas are now the stage where the waterfront and city centres become the main characters in a play where they must complement each other in order to create a cohesive "story". Bruttomesso

concludes and points out some of the main and common elements that have been and should be implemented in projects and strategies to create successful waterfront redevelopments:

- One common feature is "*openning up the waterfront to the public*" to make it accessible and give back an area that was cut way from the city at the height of the industrial era, to bring the people in and merge the site with the urban fabric of its surroundings is an absolute prerequisite for all waterfront regeneration operations.

- The development of "*the accessibility to the waterfront*" is another important step where pedestrian access and public transportation are key players in the process, it is important to minimize as much as possible the damages caused by the heavy industrial machine access or anything that opposes a safe, convenient and attractive circulation.

- This leads us to the next step which is "*the limitation of vehicle traffic*", like previously indicated, pedestrians are now the main focus of the area, so privately owned vehicles circulation should be heavily regulated and studied, which might beg the need to rethink traffic routes on a larger city scale and if necessary to create new parking areas to avoid unexpected consequences. Waterborne transport upgrade is also a common practice in these areas, it relieves cities from some of its pressures created by heavy traffic, and it creates new entry points to the city and promotes other views to the

cities landscapes which could be important if planners intend to improve the city's image.

- The highlights of "*the environmental and urban features*" of the waterfront" have a distinctiveness that refers to the unusual nature of the urban area by the water. Water is a key factor and so are the embankments that can shape the relationship between water and people, providing them with viewpoints of the urban landscape, they can enjoy. Designing furnishings for the waterfront means not only to work with aesthetics but to rediscover the presence of water by rendering it "emblematic value" and giving it "special significance".

- "*Enhancing the quality of the water*" has consistently been a concern in waterfront redevelopments. Since bringing people as close to the water as possible, is almost what this is all about, the quality of the waterfronts biggest asset must be guaranteed, especially when this resource has been subjected to industrial pressures for so many years, promoting ecological solutions is if nothing else, a way to promote the site and to regain the citizens trust. Most importantly the water opens the possibility for multiple uses, even recreational.

Conclusion

The overall underlying philosophy seems to be that the waterfront has such power that "*many cities have entrusted the waterfront development with a serious task: to relaunch the city through the redevelopment of one area.*" Bruttomesso (Marshall, 2001, p.47)

For the most part it seems that to bring the people onto the waterfronts edge, planners have to give it back to them, and while privately own areas might be a necessity for these areas, the more commercial and cultural activities will have much attractive drive than the latter. Being able to bring people onto the "edge of the city" is one of the biggest "selling points" and with it comes the image of the new waterfronts. The main features listed above are all meant to be used in a way that will promote an interesting space by the water, where multiplicity and coherence would provide the waterfront with an evocative atmosphere, different viewpoints in and out of the city and be able to support several kinds of public activities pleasant to the ones who frequent these spaces.

A Note on Jan Gehl

Designing waterfronts or parts of them, making them urban and public entails an overall understanding of the current situation in regard to life in the city. This understanding can be briefly summarized by an extract from an interview with Gehl Architects during a workshop held in 2007 regarding visions for Aalborgs waterfront.

"*Life in cities has changed dramatically over the last 100 years. The cities are not as dense as earlier and people have more m2 per person today. 100 years ago many activities taking place in the public spaces were necessary. People were forced to walk, work and live in the streets in the same way as we see in developing countries today.*
However, today he activities that take place in many western European cities are optional. Active and passive recreation has swapped places with the necessary activities of former times. People sit in cafes and restaurants, participating in minor or major social and cultural events, go jogging, climbing or roller skating through the streets.
The difference in terms of the urban environment is that the activities in the historical cities did not require a great deal of detailing or quality in the public realm. Today, however, life in cities is very much dependent on the quality provided in the public spaces."
Harboursacpe (Hans Kiib, 2007, p 115)

This is by no means a revelation, rather a trivial observation, but it serves as a useful reminder of the challenges of the current situation, and the tasks at hand when dealing with urban issues, that now cover all parts of the city. In the context of a waterfront it's not sufficient to provide a clear view of the sea or a river, it is as important to create a framework around such activity.

Recreational Use of Water

The presence of water can be and is often of great significance to the experience of a place, as an aesthetic phenomenon and as a recreational element in an urban environment. It can engage our senses and create a space for bodily interaction with the surroundings.

The most conspicuous example and not necessarily one that by definition has all the above mentioned characteristics, but one that is interesting due to its popularity, is the idea of fountains. They are an integral part of a great majority of public domains in parks and squares, where they are so common that we hardly notice them as being something distinct from their surroundings. Outside the urban context the fountains often serve as luxurious attributes in the architectural language of classical countryside villas or palaces, where one also finds small streams and ponds.

This fascination with water and our ability to control it have a long history that goes all the way back to the Roman Empire and other ancient civilizations, and it manifests itself not only as fountains or streams or as a basic human need, but also in the way it can change things.

When we take showers, dive into the sea or a swimming pool, get wet under the rain or watch the street wash over outside the window, we bear witness to how this liquid transforms the state of things, our state of mind or the state of nature. Water and its effect on the physical urban surroundings, during heavy rains, stormy weather and minor floods, have in this sense a close similarity to the way dreams affect us when we sleep; we are slightly shaken, temporarily in the realm of a disorderly flow of things. Its dynamic features serve as a contrast to the human made structures that rely on solid materials and therefore become in this sense rigid. When kids for instance, and some adults alike, see puddles most feel automatically drawn to jump in them, just to watch the water splash to all sides and make a mess. The same goes for some fountains. Water in this regard is a playful element that acts as a momentary change.

Piazza Navona

An interesting example of this is from the 17th century Rome when the square Piazza Navona began hosting a rather unusual event every summer. "*In 1645, a year after the fountain [the fountain of four rivers] was completed. [The Pope] Innocent began a practice of regularly flooding the Piazza Navona during August to counter the summer heat*" David Clark (Water and Art)

"*Two fountains and a central watering pool for horses were built, as a result of the new aqueduct, which enhanced the city's water supply. A new activity also became possible: the flooding of the square every Saturday and Sunday of August to celebrate summer. The flat and concave configuration of its bottom was appropriate for this purpose. People from all parts of Rome used to come to contemplate the scene. Gentlemen in carriages or horses paraded across the water, while pedestrians crowded the dry perimeter.*"

Piazza Navona, Harvard Square, Piccadilly Circus: a study about morphology and use (1985)

Fun Aspects of Flooding

The kind of enjoyment or recreational fun described above, still on some occasions takes place today, in places such as Venice. When the water is merely knee high and the flooding has no disastrous consequences, people seem to find it amusing.

The occasional flooding of San Marco in Venice for instance causes some visitors to give in to the impulses of a playful nature and indulge in a messy endeavor of walking through, floating on the surface or jumping around in the water. During this kind of floods people are both scared and intrigued by the sudden presence of water, that breaks the conventional order of infrastructure and public space, creating new possibilities for an unorthodox recreation, the static urban fabric becomes more dynamic. Any solid, however dynamic in shape is static

in nature, water on the other hand, if controlled properly, has the ability to be both calm and aesthetically pleasing and at then transform to become an active element with a surface that spouts and ripples. In regard to the waterfronts, this aspect of water is somewhat neglected, and has only recently garnered much attention, albeit for other reasons, and the main one being that of global warming which is changing the climate, that is changing the sea levels, threatening to submerge the substantial parts of ours cities coastal areas.

This, together with the increasing number of deindustrialized harbors undergoing a process of revitalization, very close to the city center creates great opportunity for new forms of waterfronts to take shape.

A photograph of a painting from 1652 showing the spectacle at Piazza Navona during the organised flooding.

People during a flood in Venice, San Marco square.

Access to Water

William Whyte writes in The social Life of small urban spaces(1980) that "*water is another fine element, and designers are doing rather well with it. New plazas and parks provide water in all sorts of forms: waterfalls, waterwalls, rapids, sluiceways, tranquil pools, water tunnels, meandering brooks, fountains of all kinds. In only one major respect is something lacking: access.*"
Urban Design Reader (2007, 362-363)
The same can be said of waterfronts, except that they, so far, don't come in all sorts of forms, but they do pose the problem of access. "[I]*n many places water is only to look at*" notes Whyte, and again considering waterfronts, one can easily make a similar conclusion, although this is changing, the great majority of waterfronts have this exact characteristic, an element to be viewed upon. Due to lack of access to the water there are no in between activities, you either look at water or on rare occasions swim in it, and it is exactly this circumstance at the waterfronts that robs people of the multifaceted relationship with water that most people have.

Venice

2

THE
POINT OF
DEPARTURE

The Current Situation

The coastal space at the edge of a city, along the waterfront, where the quay meets the water is what this thesis sets to explore and design. It seems that an overwhelming majority of waterfront developments or regeneration efforts of postindustrial harbours don't put much emphasis on the spatial features of the edge itself, or have it play a crucial role in the development of a waterfront. Instead waterfronts are concieved of as platforms for new built mass, that determines the outline of the edge.

This paper will attempt to realize a reverse process where the waterfront will serve as a driving force for the physical planning of the waterfront. The ambition is to create a unique spatial reality between the the city and the water, by changing, reshaping or redesigning the edge of the waterfront.

- **Design Aspect**

What are the design potentials of the coastal space at the very edge of a city and its urban fabric, is the question that this thesis sets to explore. Putting an emphasis on experience and recreation, wee seek to rethink and reshape the physicality of the meeting point between city and water, thus rendering the waterfront a new experiential spase in its own right.

- **Technical Aspect**

Is it possible to design the quays of the future so as to accomodate or fulfill recreational needs by the water and at the same time prepare our city coasts for future sea level rises.

Urban Design
City

Analysis
Use

the hermeneutic circle

Characteristics
of waterfront
edges

The Goal

Design Proposal
for the edge of a
Waterfront

Casestudies:
Typologies

Method

The "Gram-
mar" of The
Edge

Aesthetics
Recreation

Specific
Site

Landscape
Architecture
Nature
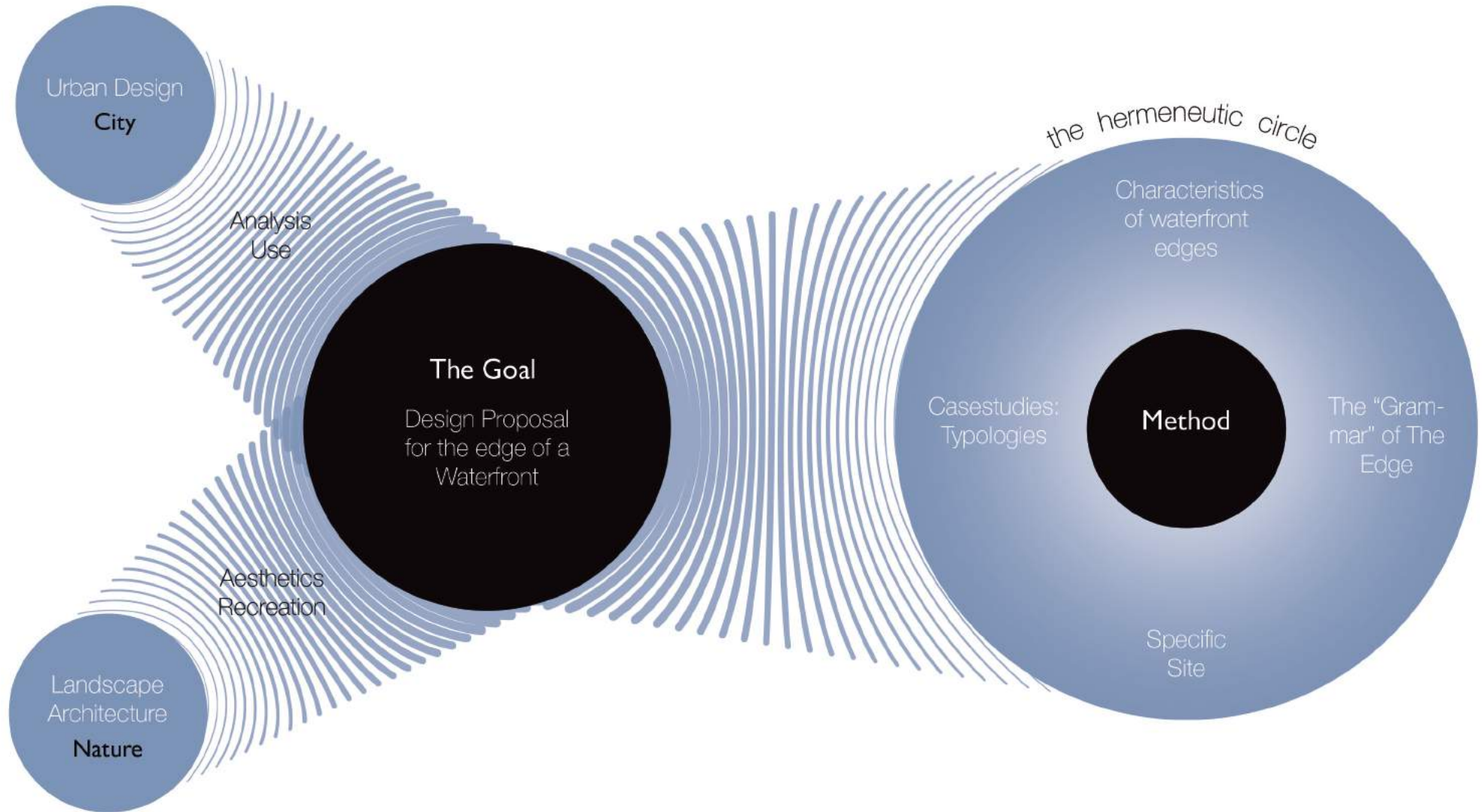
Vision

The overall vision for this project – in terms of design - is to reinterpret and reinvent the edge of the waterfront as a vital element in development of waterfronts. In this pursuit the goal is to bring two fields together, that already have many inherently mutual dependent elements: namely urban design and landscape architecture.

The project in question presents a design proposal that is the visual materialization of this goal. The part of the waterfront that is here referred to as the "edge" has different names, the quay, the wharve, the pier, and finally "embankment" as Bruttomesso describes and acknowledges the importance of in the following quote:

"*Appropriate work on the embankments thus becomes of great relevance as it does for the routes along the watersides, the piers, the wharves; special viewpoints must be chosen for enjoyment of the urban landscape and even modest elements salvaged to testify to the past: in this sense the attention paid to the design of the furnishings for the waterfront can take on a special significance which goes beyond the aesthetic aspect and aims to rediscover or introduce emblematic values referring to the presence of the water and its determining use in this zone*"

Bruttomesso (Marshall, 2001, p. 46)

That which defines the "edge" is essentially the presence of water, and the presence of water, its proximity ,accessibility and quality determines the recreational value of the edge.

Method

The method of achieving this is through the process of the hermeneutic circle, which in this case means (diagram) that the physicality of the waterfronts edge is studied by looking into general characteristics of different waterfronts, laying out the "grammar of the edge" to coin a phrase, then analyzing each specific case - four in total - and their individual peculiarities, to finally return to the point of departure which is to establish some typological features or "rules" to perfect the "grammar of the edge". All this to have a system that can serve as a basis for designing the waterfront and its edge.
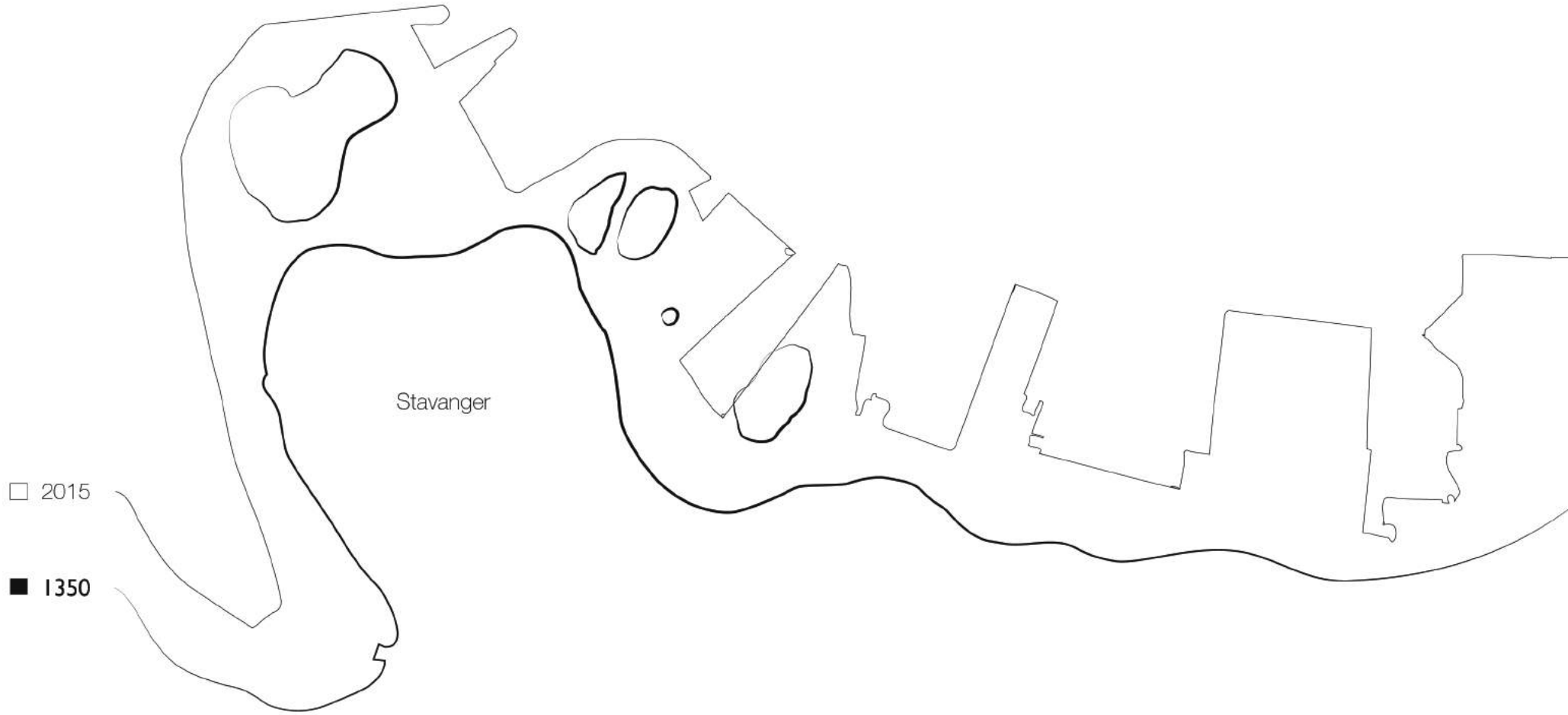
The Project and The process

The following pages present a design proposal for the edge of a certain part of the harbor In Stavanger that is bond to undergo a transformation, as part of an overall plan to strengthen the city center. The proceeding chapters in "Part 2" describe this process with mappings, case studies and attempts at configuring an analytical framework with the coinage "the grammar of the edge".

Stavanger

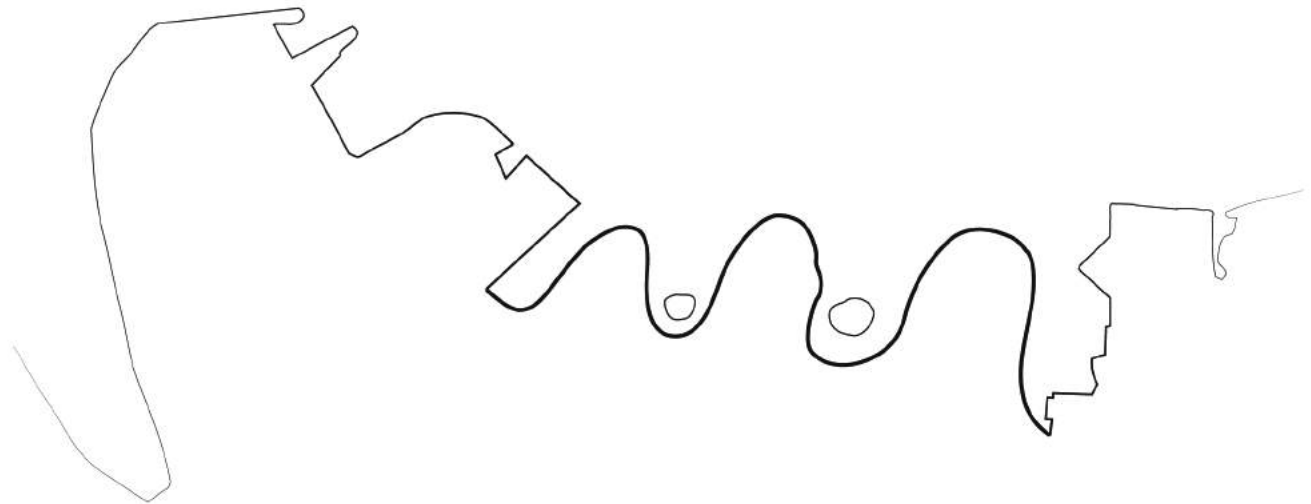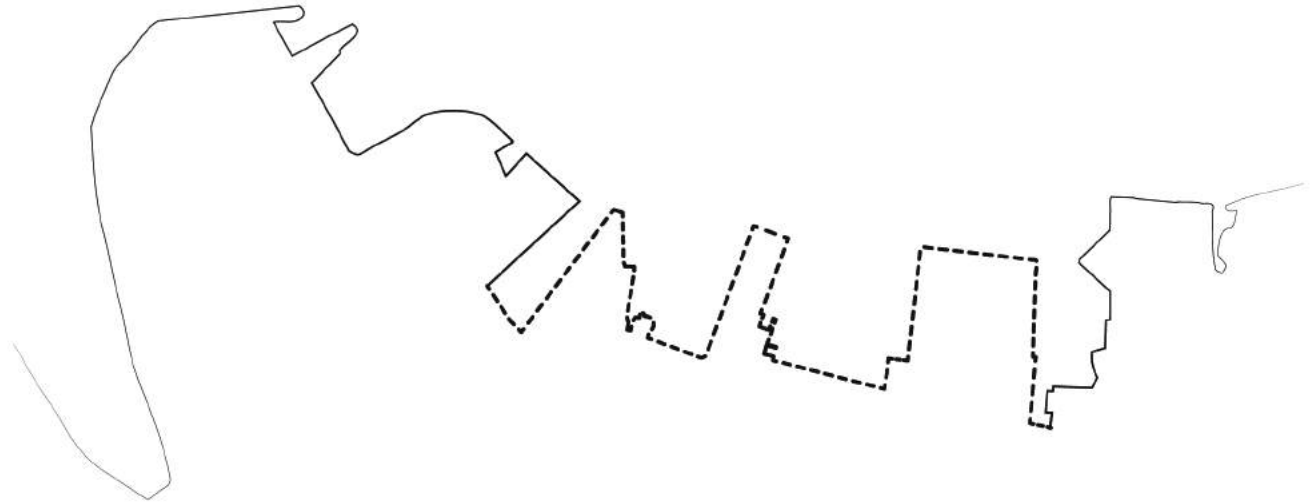The harbor in the city of Stavanger is chosen for this project due to two factors. The former regards the location of the waterfront, the rocky landscape and its close proximity to the historic center. The latter has to do with the planned but yet undeveloped transition of its current use from terminal for transport of cargo to a future use as an urban space for mainly cultural and commercial use. The demarcated "eastern harbour" of Stavangers urban coastal line is part of an overall plan for the development of the city center as outlined in the document "kommunedelplan for Stavanger centrum".

1

2

3

Edge

The Project Area

1 Parking

2 Ferry Terminal

3 Storage

1:2500

Stavanger

□ 2015

■ 1350

Back to **Nature** An Urban **Shore**

3

DESIGNING THE EDGE OF STAVANGER
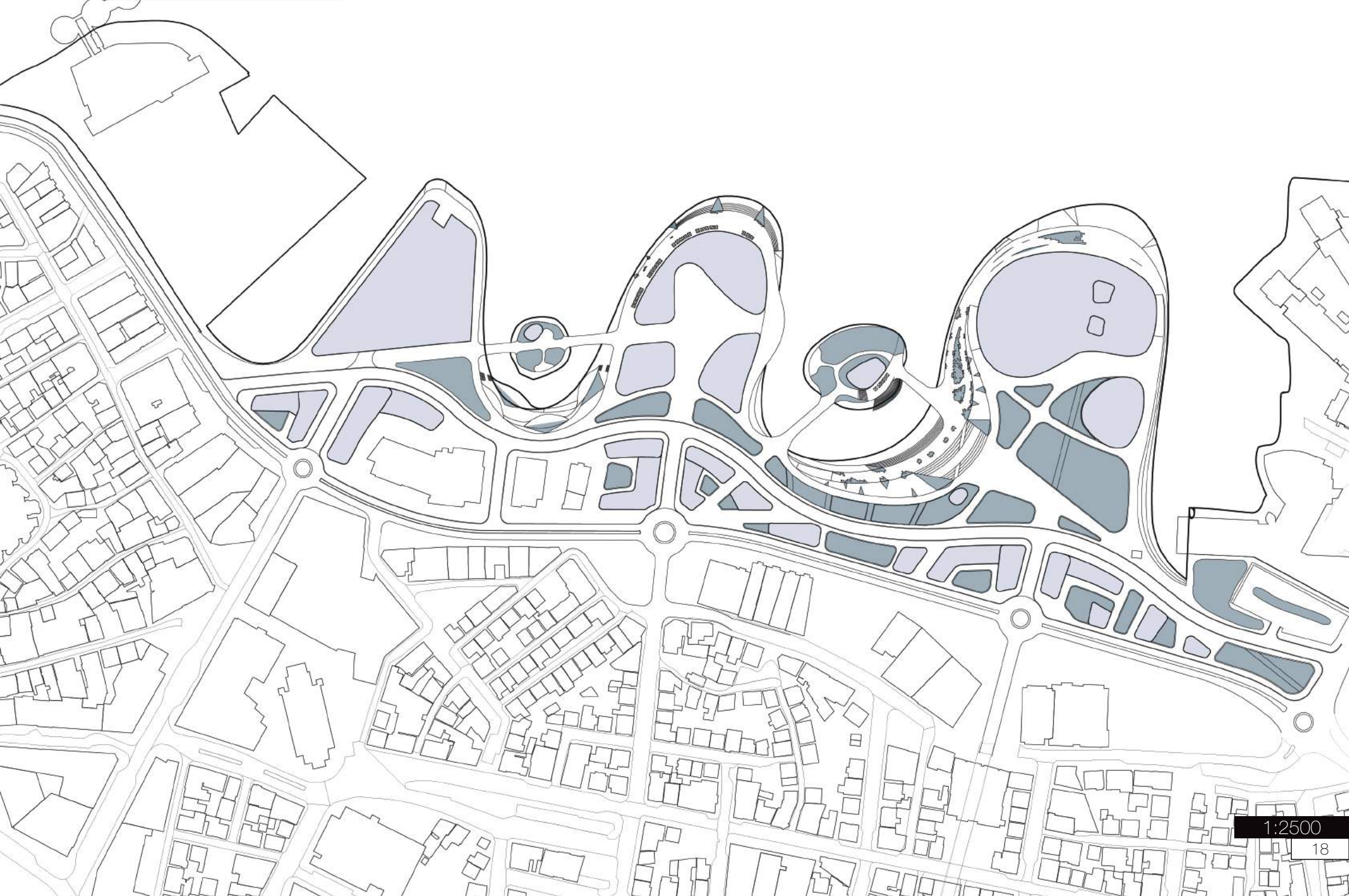
THE NEW
EDGE

The Creation Of An Urban shore

1:1000

1:500

1:500

1:200

1:200

PART II
ANALYSIS

4
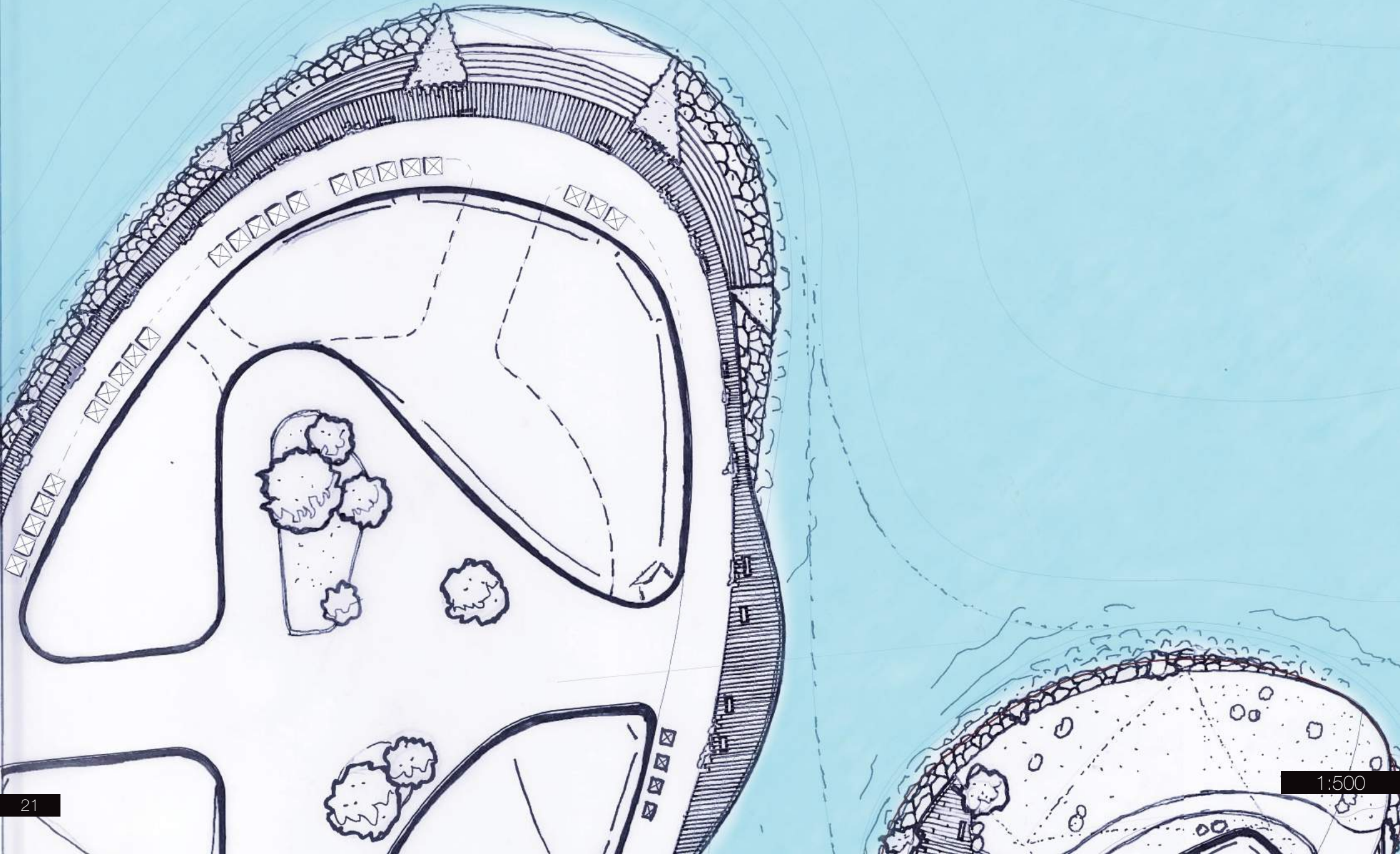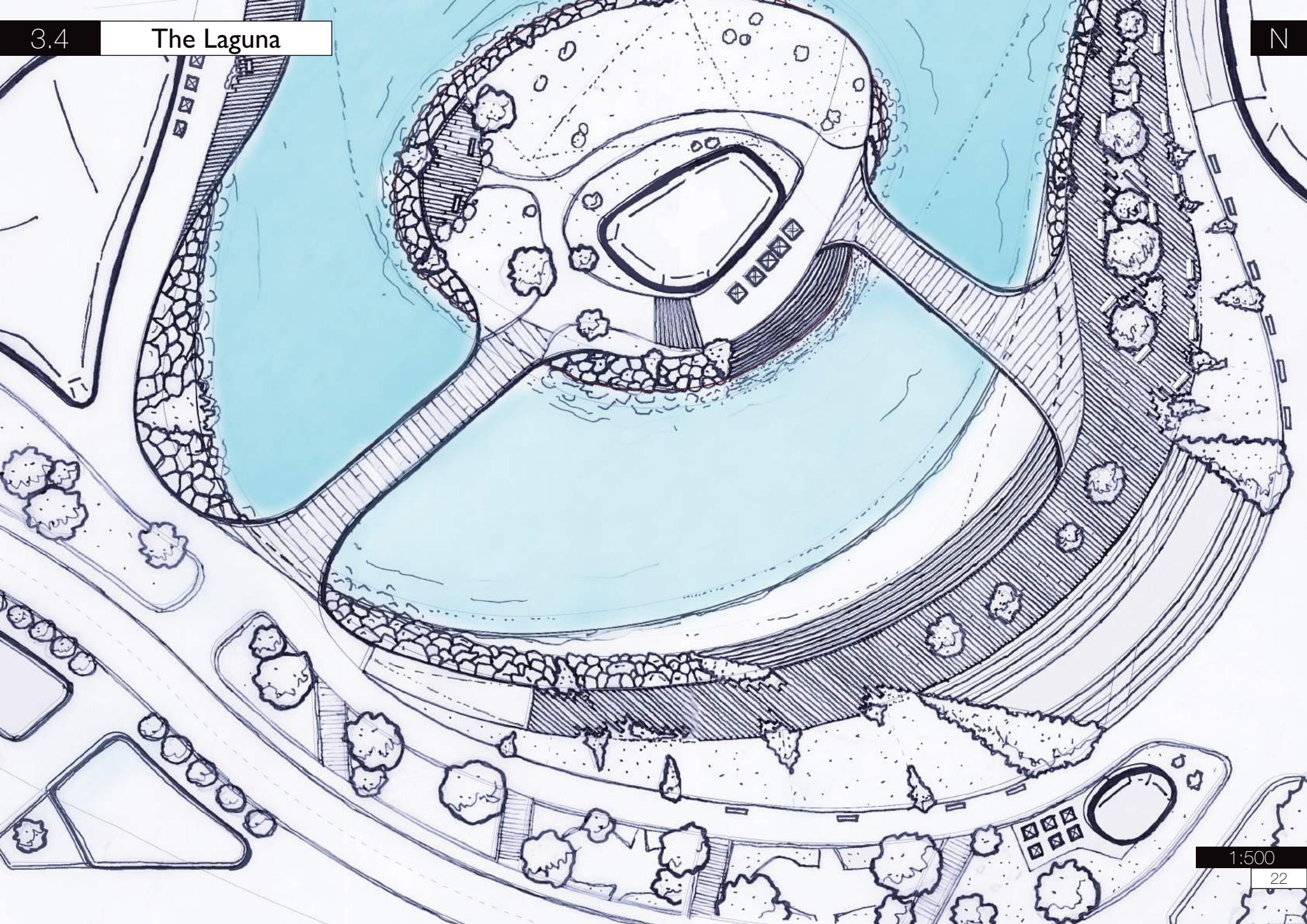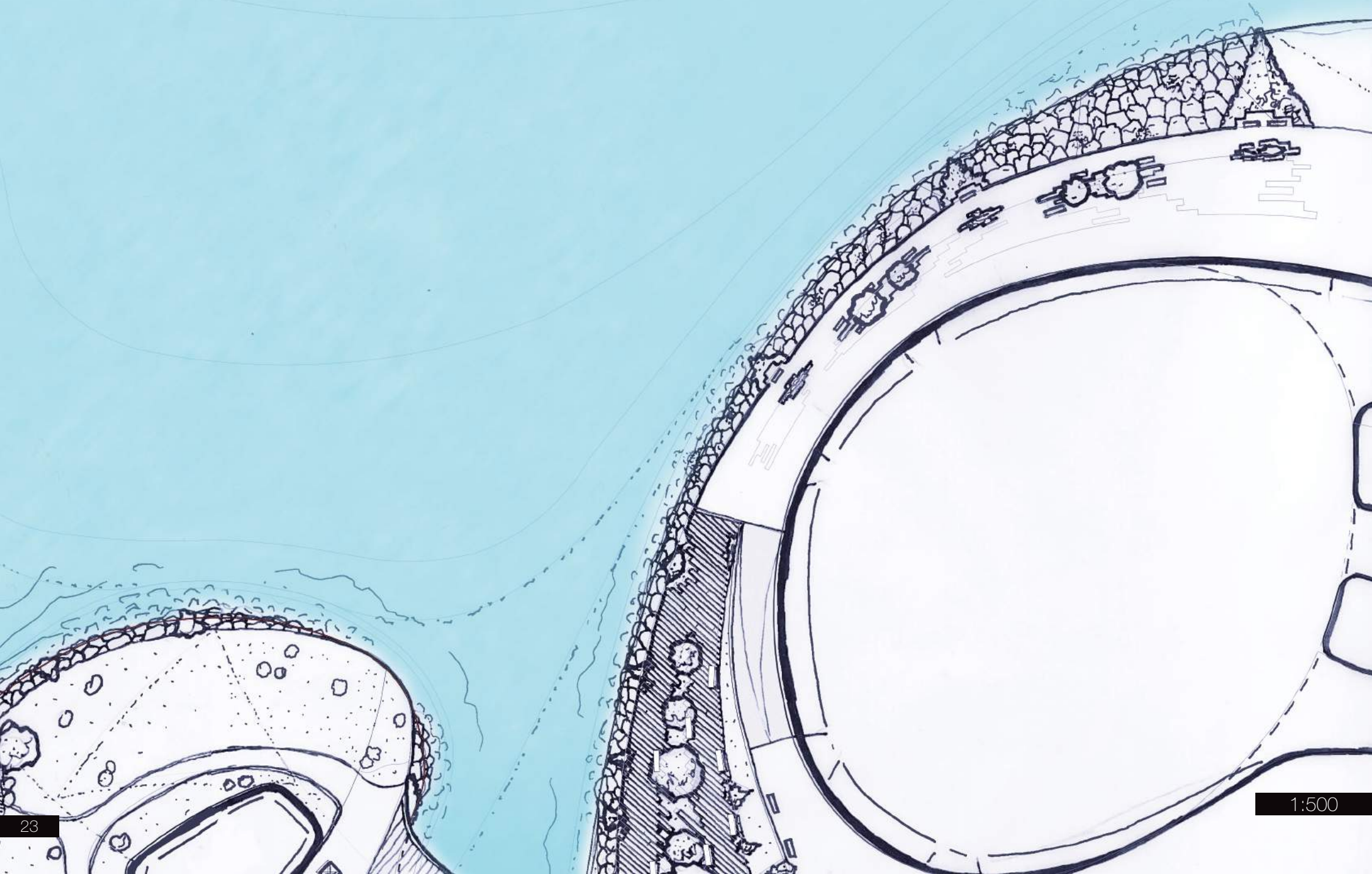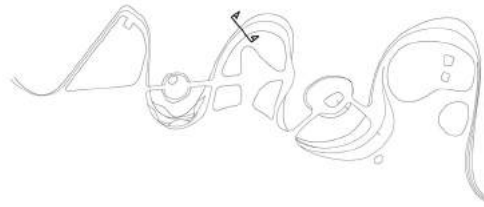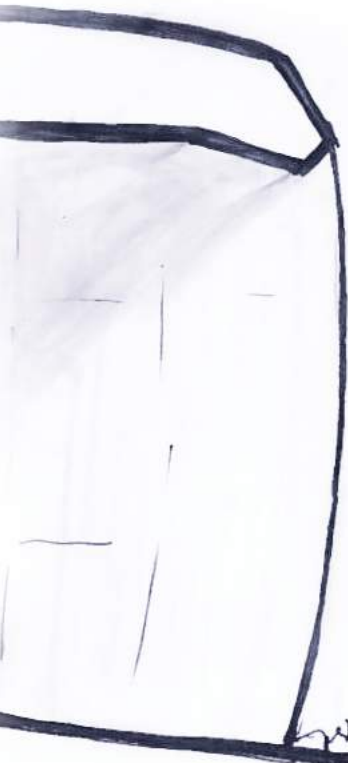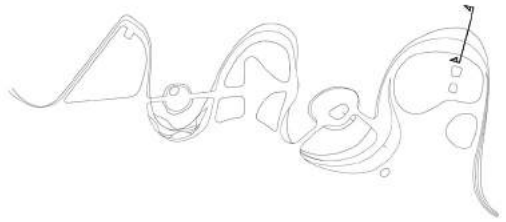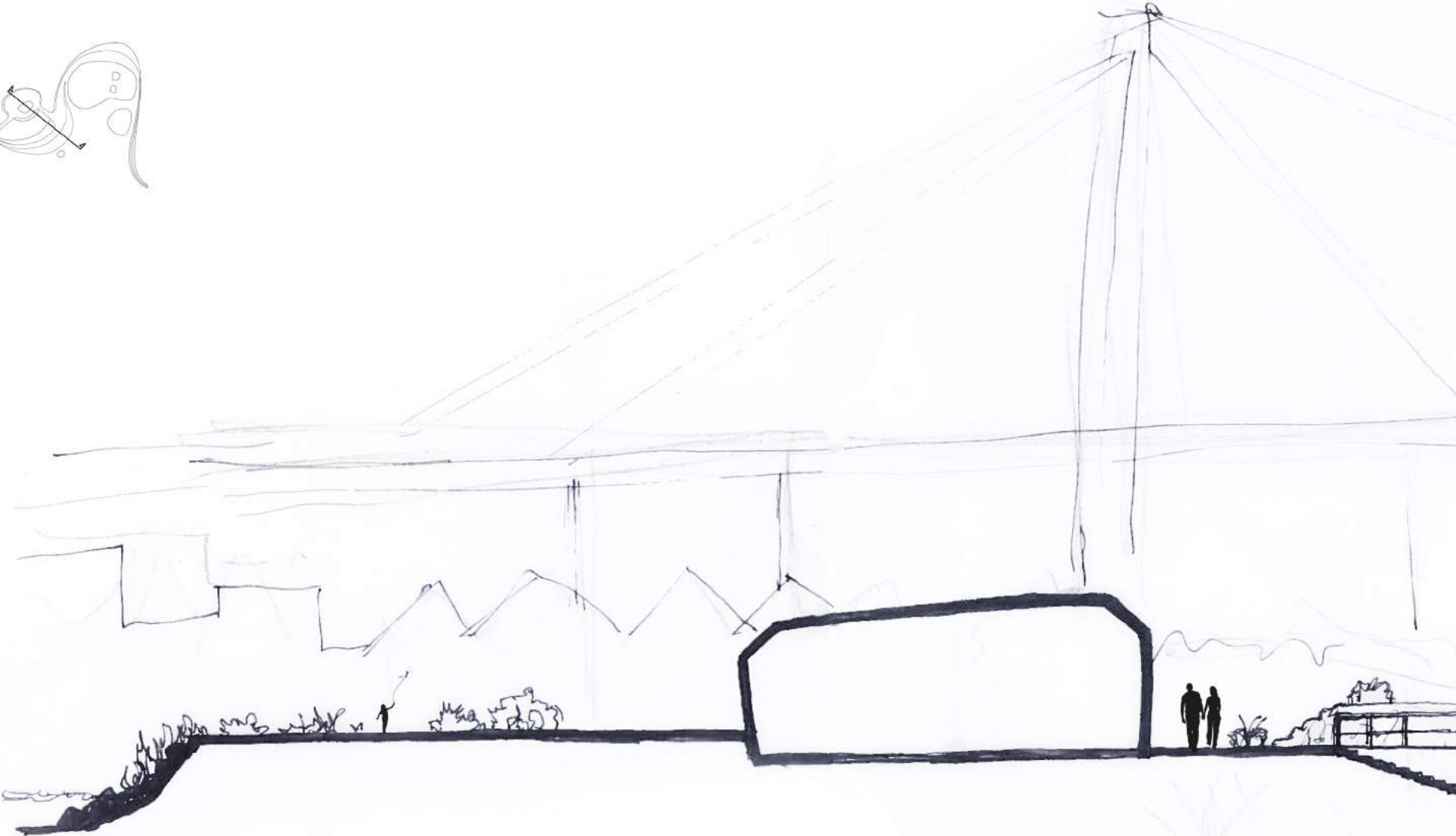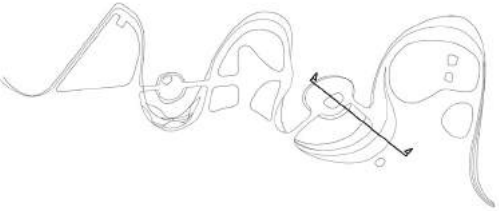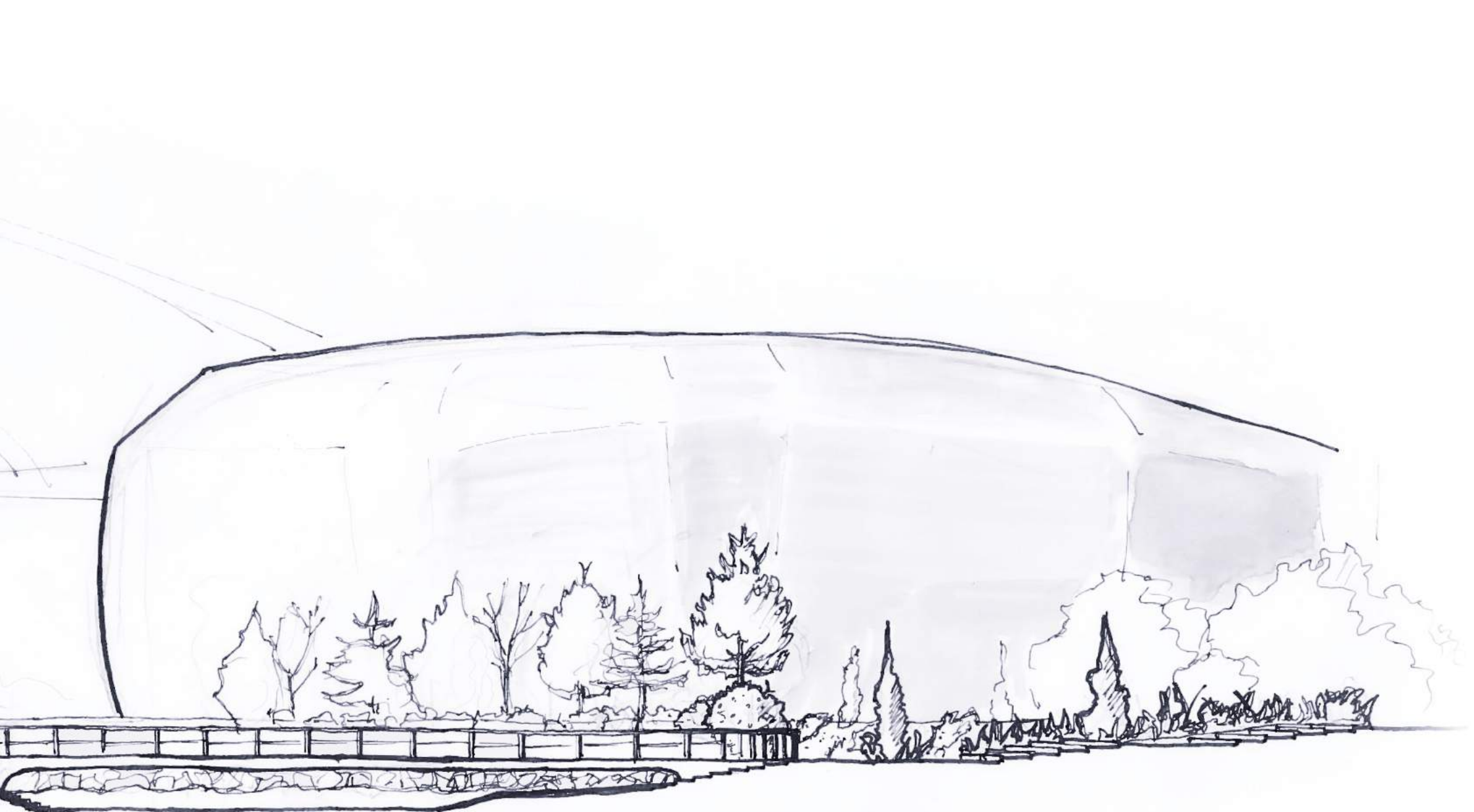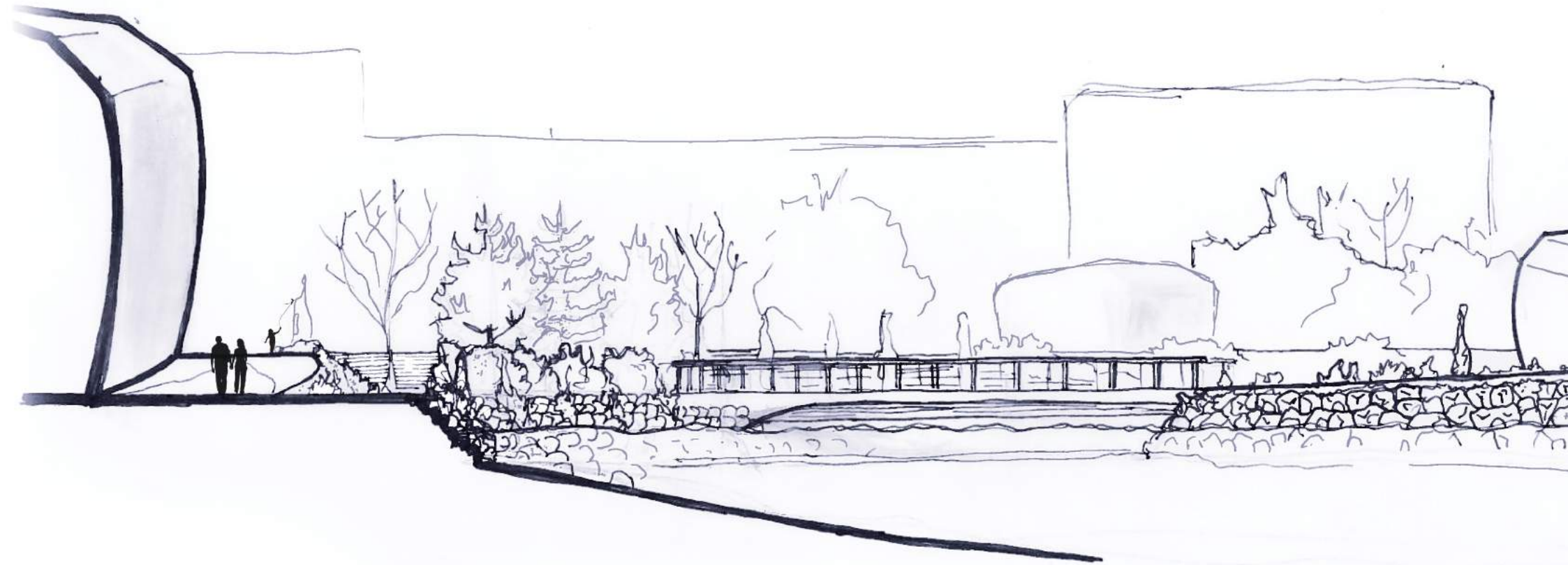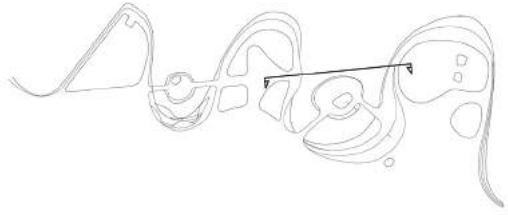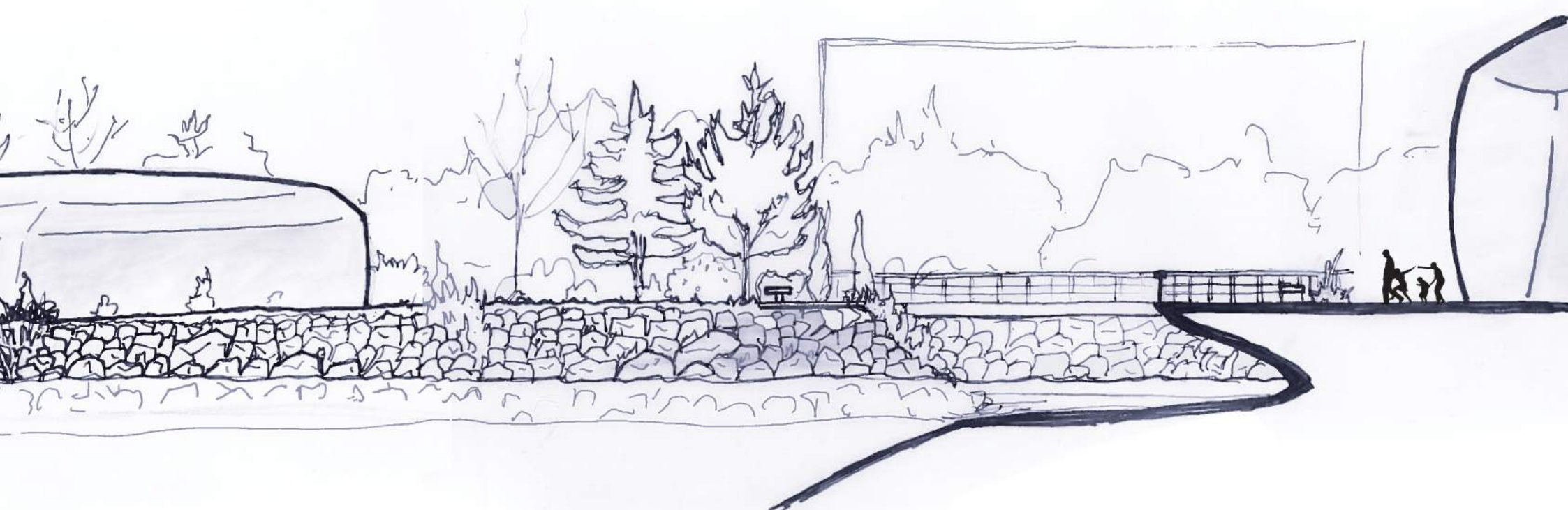
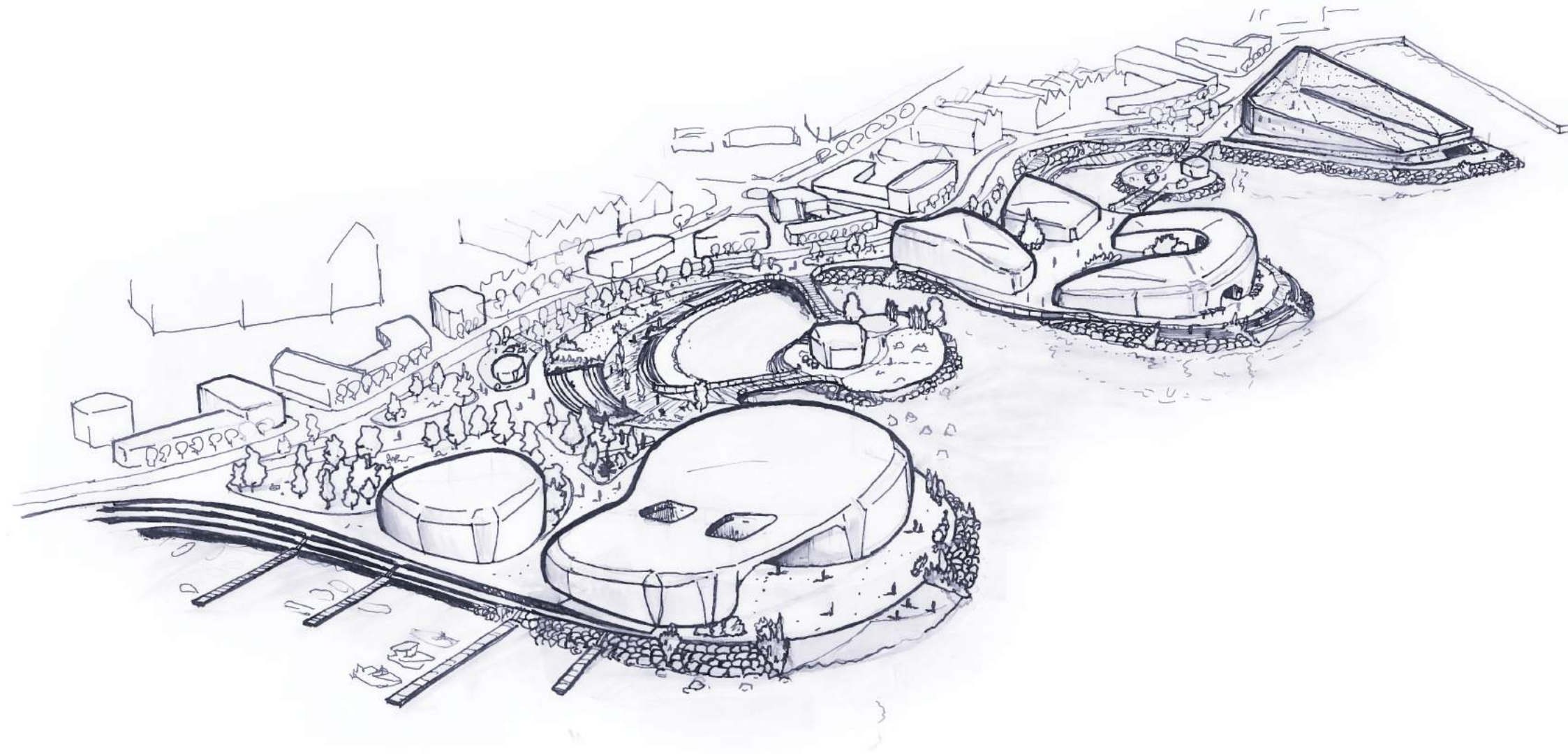## EDGE TYPOLOGIES
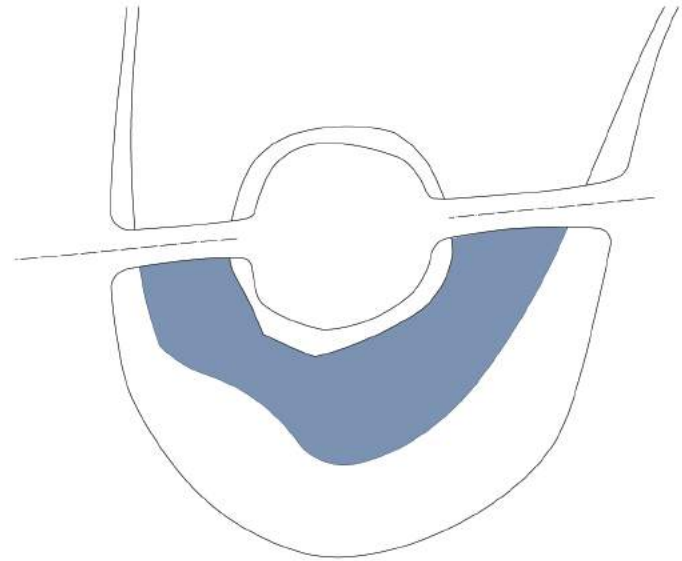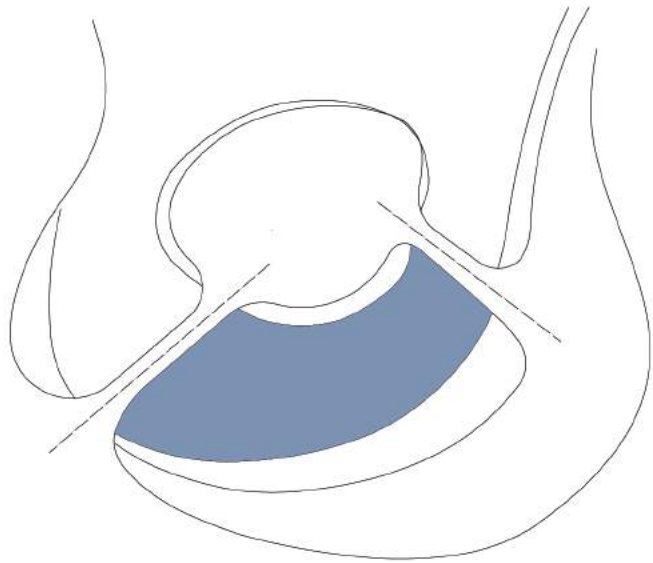
The Aim

This chapter presents the preliminary stage of the entire analytical work on the edge of the waterfronts. The purpose here is to address and shed light on the physicality of the edge by illustrating and interpreting the overall typologies that seem to be recurring throughout different waterfronts. Typology is to be understood as the "type" of spatiality and proximity to the water that is characteristic at the edge of the waterfront.

The diagrams are meant to help understand visually what type of experience the edges offer it's visitors and what perception of space comes from different proximities to the water.

The series of typologies – 6 in total – shown here represent waterfronts from different parts of the world.
A great number of these waterfronts is described in most of the literature on waterfronts (bibliography), however the approach is to study not their historicity and regeneration efforts but their physical materialization, through photos and other digital media to get a general impression and establish "typologies".

Terminology and Objectivity

This effort is obviously in its method a challenge in regard to objectivity and the results don't include all the different variations that does exist, however it is fair to say that these sectional diagrams do represent an overwhelming majority of waterfront edges.

On a closing note, the philosophy of interpretation here is partially influenced by Jan Ghel, in regard to the "human scale" of things, but the descriptions themselves have a Kevin Lynchian approach, ultimately the terminological language is developed independent of these theorists.

The terminology springs from a general question of how the presence of water is perceived according to accessibility, proximity, and what kind of activities does that afford?

The "Edge" is divided into two components, a promenade and water.
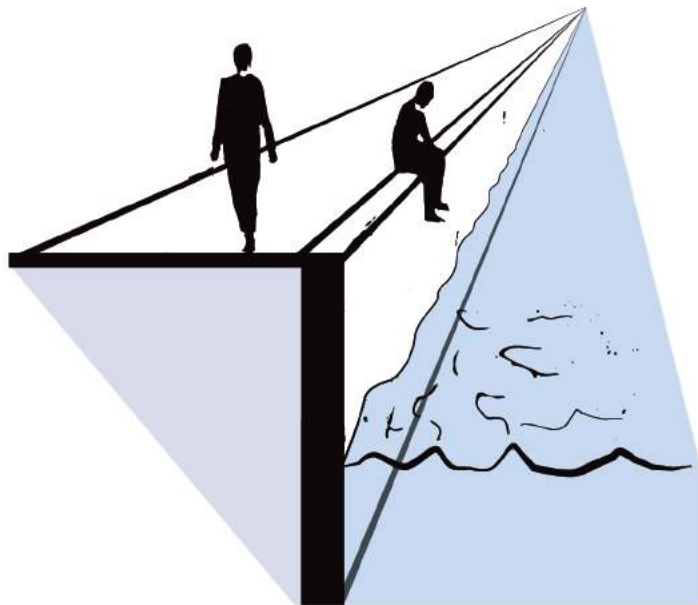
1. Promenade

The promenade acts as a platform,
where one can look out to the water.
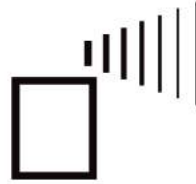
1. Water

Due to lack of proximity and tangibility of water here, the water becomes a distant object to be admired or simply observed, it serves mainly as an aesthetic element, symbolized here as an enclosed circle.
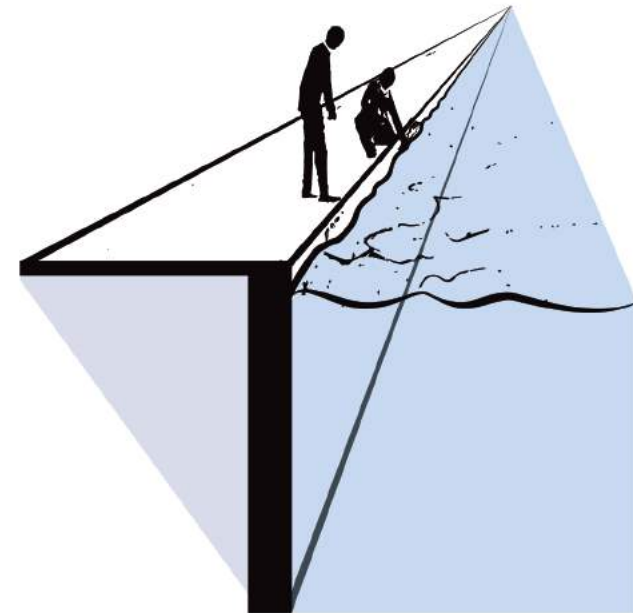
2. Promenade

The presence of water renders the promenade a place of vicissitude between land and water, making the boundary less clear.

2. Water

The presence of water here is both conspicuous and tangible, it allows for interaction and can feel dangerous, a balance between aesthetics and natural powers.
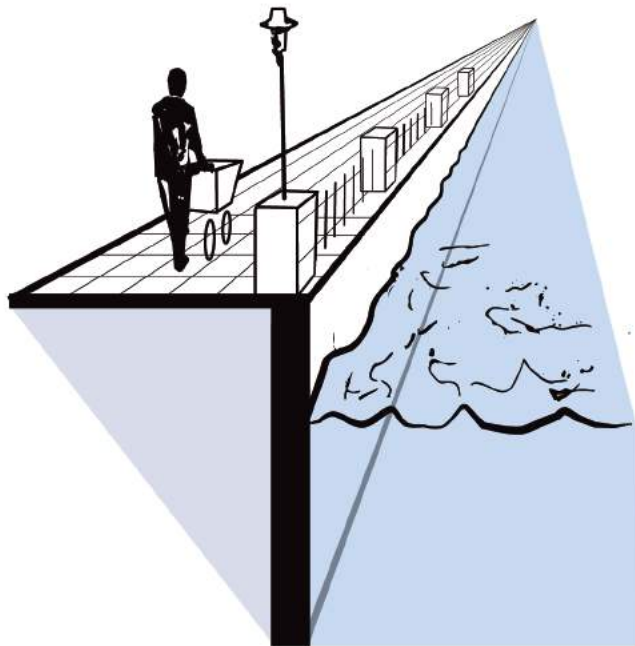
3. Promenade

The railing both emphasizes move
ment alongside the waterfront and
affords passive recreation facing
the water.

3. Water

The water here is an element of nature contained, the railing other than being
a safety measure also frames the sea/river and provides a recreational use.The
tangibility of water in this case is at its lowest.

4. Promenade

Here it acts as a wooden terrace, providing
the visitors with a homey feeling and urging recreation, and despite the distance
the rocks are more of an extension than a barrier.

4. Water

The rocky embankment creates the atmosphere of a natural environment, where
water displays its dynamic presence by either splashing onto the rocky surface
or by virtue of simply flowing in and out. There is still a fair amunt of distance,
hence the semi-enclosed legend.
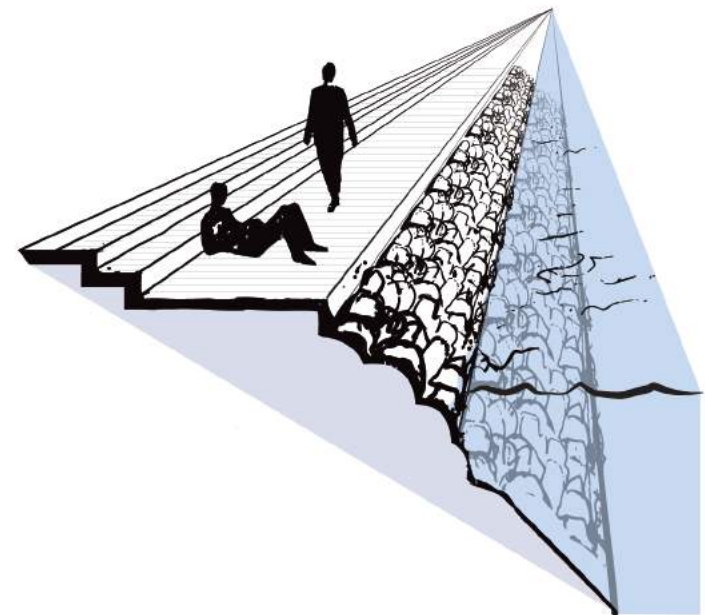
3. Promenade

This extension of the promenade is an integration of land and water, emphasizing the accessibility of water as part of the urban environment.

3. Water

The steps made for seating and leading straight into the water, making it easily accessible, and providing the visitors with the joy of having the playful nature of water at their feet.
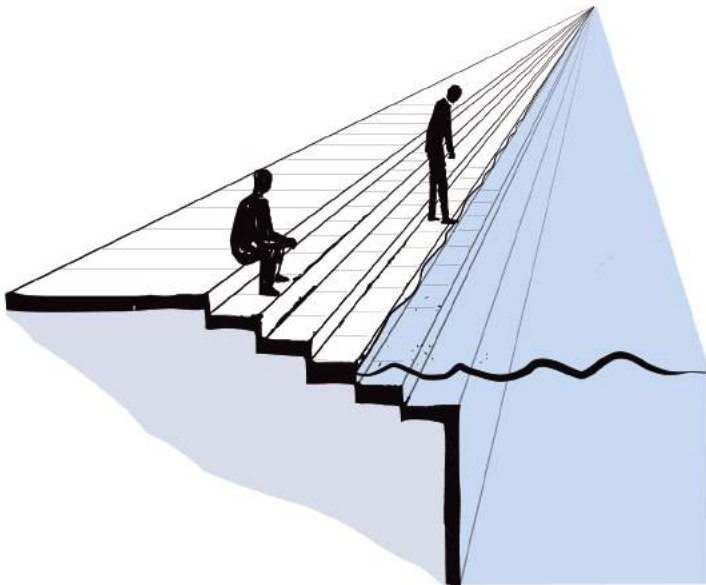
4. Promenade

This example which is most eloquently done as part of the Oslo Opera House, has an inclination that makes it comfortable to walk on and draws people to the water.

4. Water

This type of presence of water can transform the entire edge into a place where water becomes the centerpiece of the waterfront. One knows from simple observation and according to Jan Gehl that the human eye sees more of the ground than the sky. In this case the water takes much of one's vision.

5

ANALYSIS OF WATERFRONTS
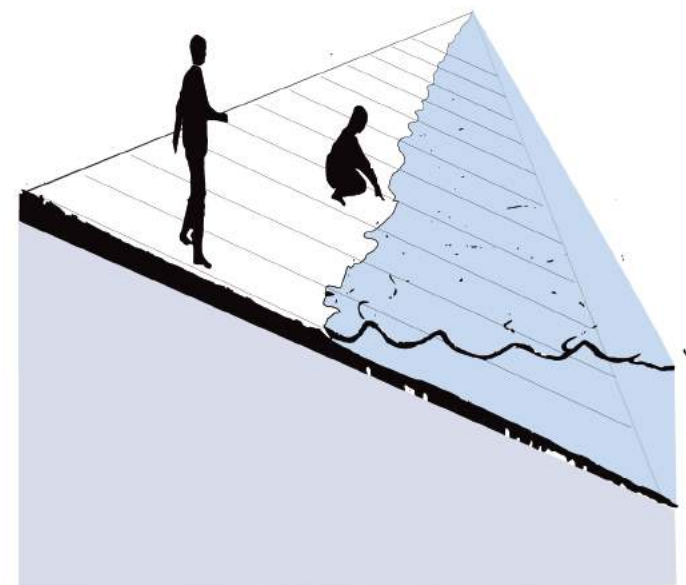
The four waterfronts presented here for an in-depth analysis of the edge are consciously chosen at random, although there is are at least two important factors that they have in common. The former being that these waterfronts have been visited by at least one of us, and the latter that they either have been previously industrial areas or that they were situated at a very close proximity to an industrial area.

Furthermore the waterfronts fall into two different categories in regard to climate and cultural context: Malmø and Aalborg are Nordic examples of waterfront developments that have relatively recently been developed, whereas Barcelona and Lisbon are South European waterfronts that are older and have a different scope.

The following pages in this chapter are an examination of what constitutes the waterfronts edge. What are the elements or components that make up the entire composition of a waterfront and its physical characteristics? I what way is water present by the waterfront? These questions serve as the point of departure for the analytical work here.

- **Aalborg**

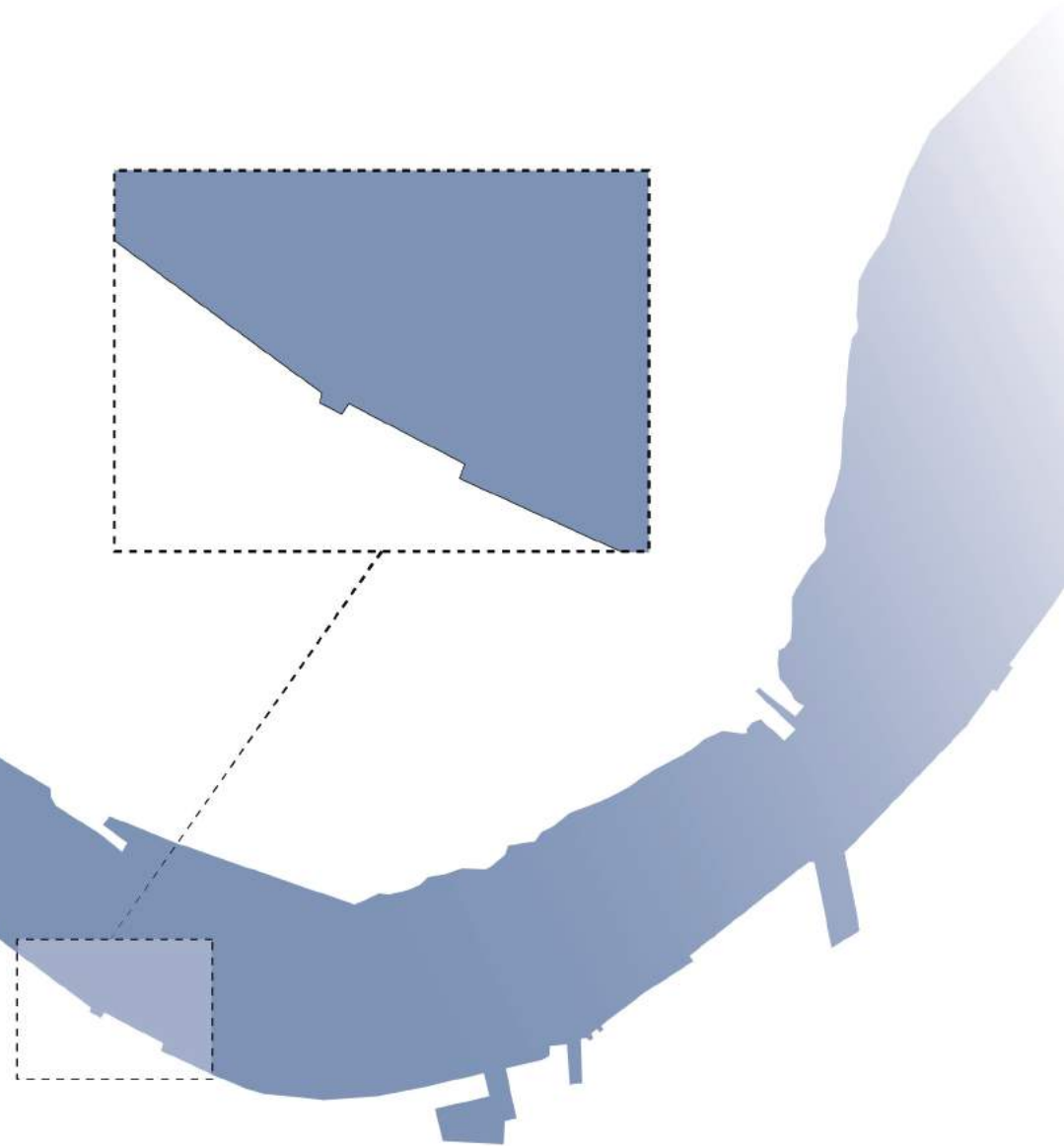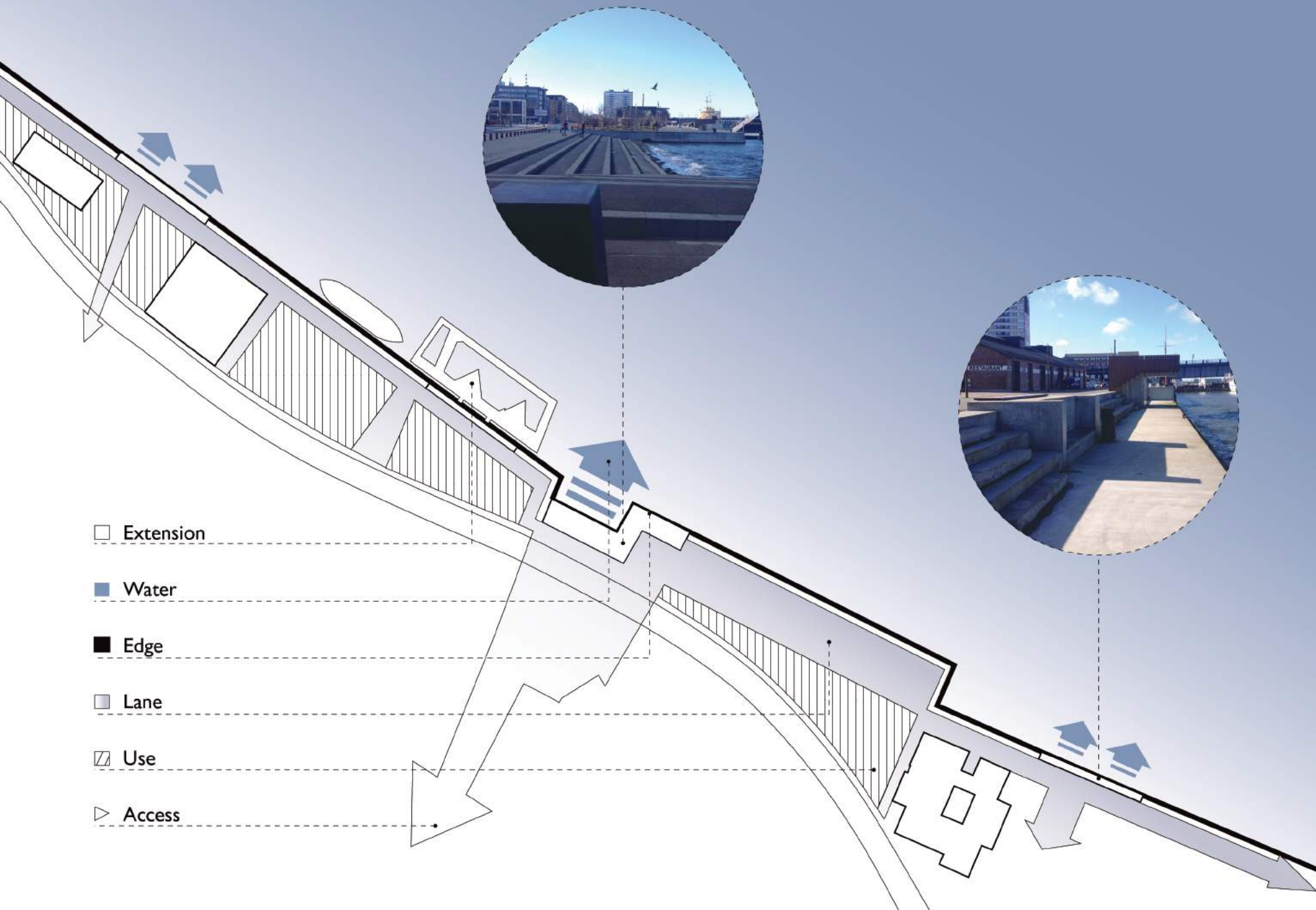- **Lisbon**

- **Malmø**

- **Barcelona**

Aalborg's promenade ("lane " according to our terminology) has several access points to the waterfront from the city and mapping these access points reveals an interesting logic that is not exactly a secret but makes it more conspicuous and clear.

What is clear is that the main street (shown as the big arrow on the diagram) in the city acts as any river course coming from the highlands and flowing into the sea, and before this happens it enters the zone of the so called "estuary" where the fresh water mixes with the salt water. This place, the "estuary" is the edge as perceived in this paper. The "estuaries" are the main edge points, where one comes close to the water. In architectural terms this means that the visitors are provided with a special platform, stairs/steps that allow for a close proximity to the water. Along the edge of Aalborg, and in immediate continuation of the access points follow the carefully arranged pockets of space in concrete, sheltering from the wind and descending the visitors to a lower hegiht.

The main street ends in a gradual decline in steps toward the water (the big blue arrow eastward) indicating a rationale that links infrastructure/access to water with the proximity and special experience or affording an interaction with and by the water.
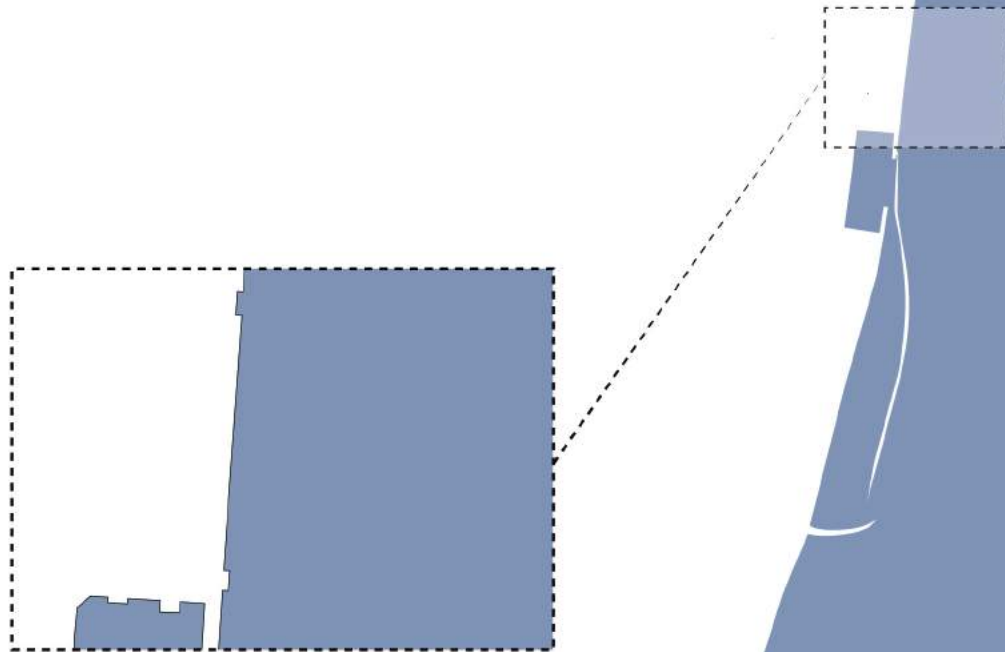
1:2500

☐ Extension

■ Water

■ Edge

☐ Lane

▨ Use

▷ Access

1:2500

40

This part of Lisbon's waterfront is situated in a much frequented area, due to the commercial and cultural services that it has, and the recreational environment that it provides its visitors. The sloping edge alongside the entire stretch has a very close vicinity to the water's edge, which is very sensitive to the low and high tides extending the buffer of the edge to the sea.

A railing marks a clear demarcation of water from end to end, giving the edge a more restrained character, which is enhanced by the fact that the vegetation and other parts of the recreational zone are elevated, further secluding the edge from the commercial and cultural activities on the inner side (facing the city) of the waterfront. However the edge does have some significant characteristics that allow for a similar analytical interpretation in terms of access points and proximity to the water.

As shown on the diagram to the left the only time the water opens up to the waterfront is when it is in continuation of the main access, road, springing from the flank of the enormous egg-shaped sports and venue centre.

1:2500

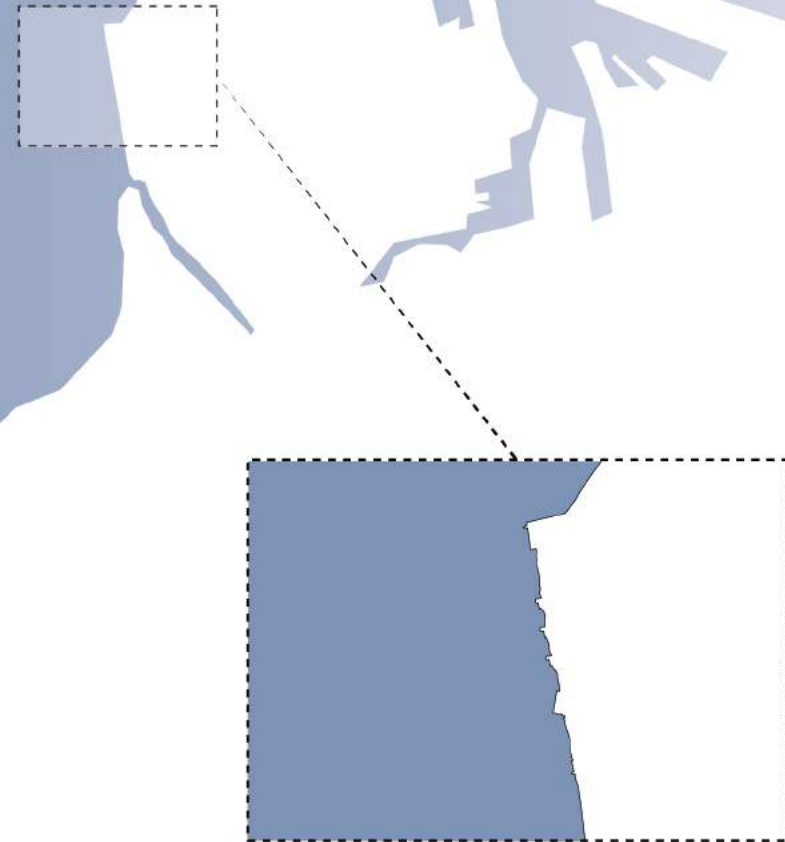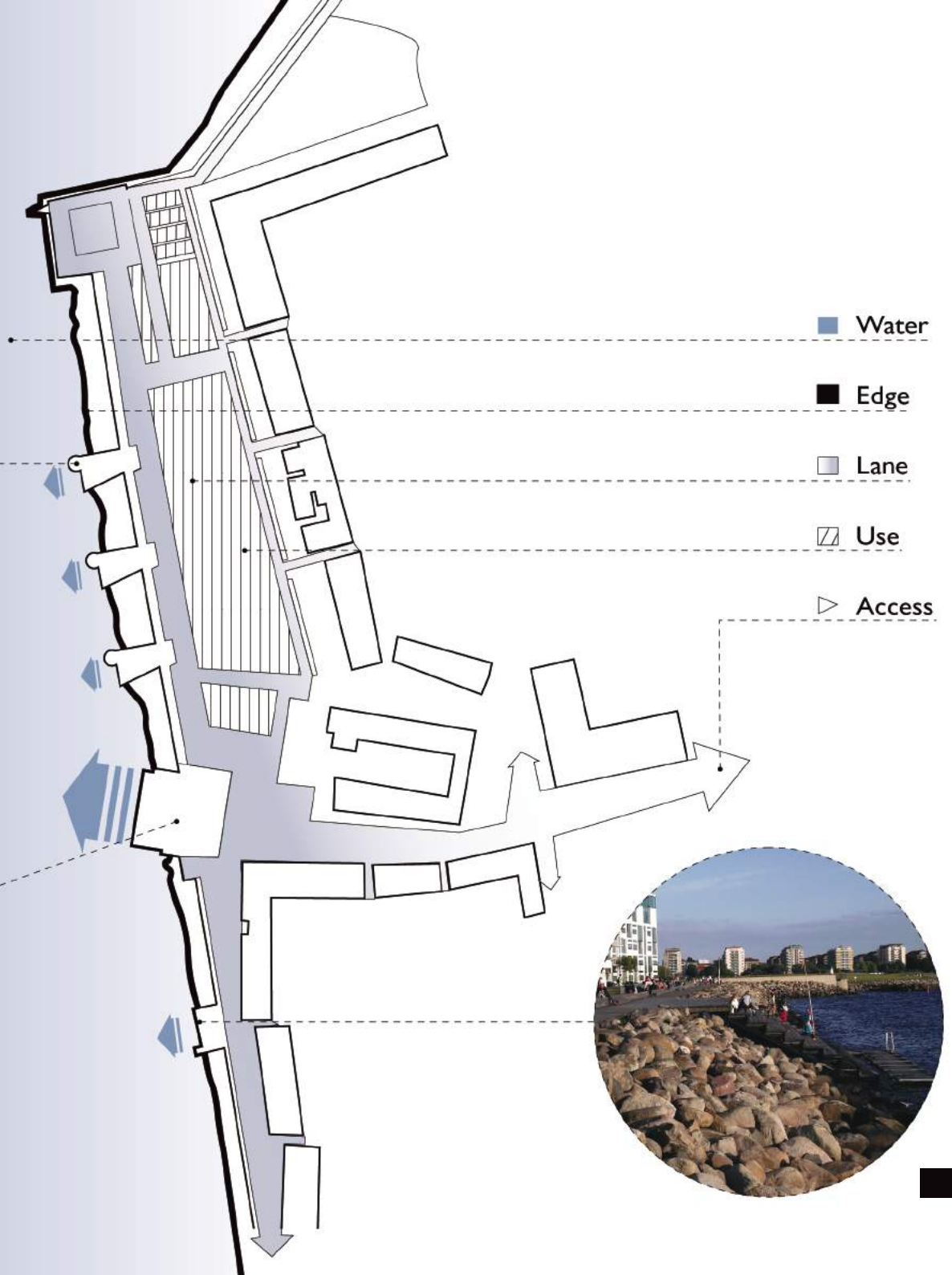- Water
- Edge
- Lane
- Use
- ▷ Access
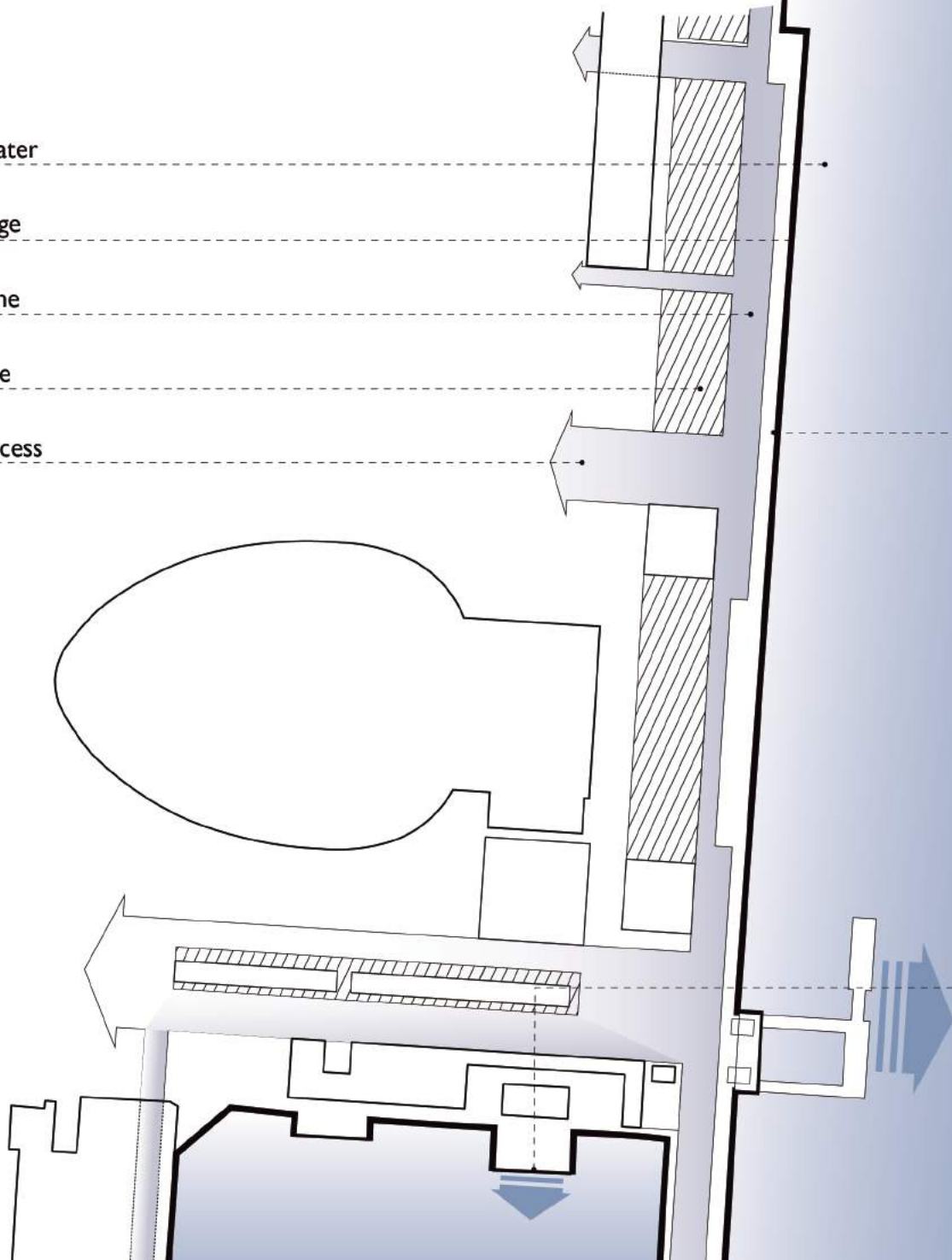
The coastal line in this residential area in Malmø is an example of a contemporary design of the edge for public recreation. It is an extensive stretch of a rock filled embankment, where one finds a combination of wooden and concrete steps leading down to the water. The foot of these constructions gets flooded in winter time.
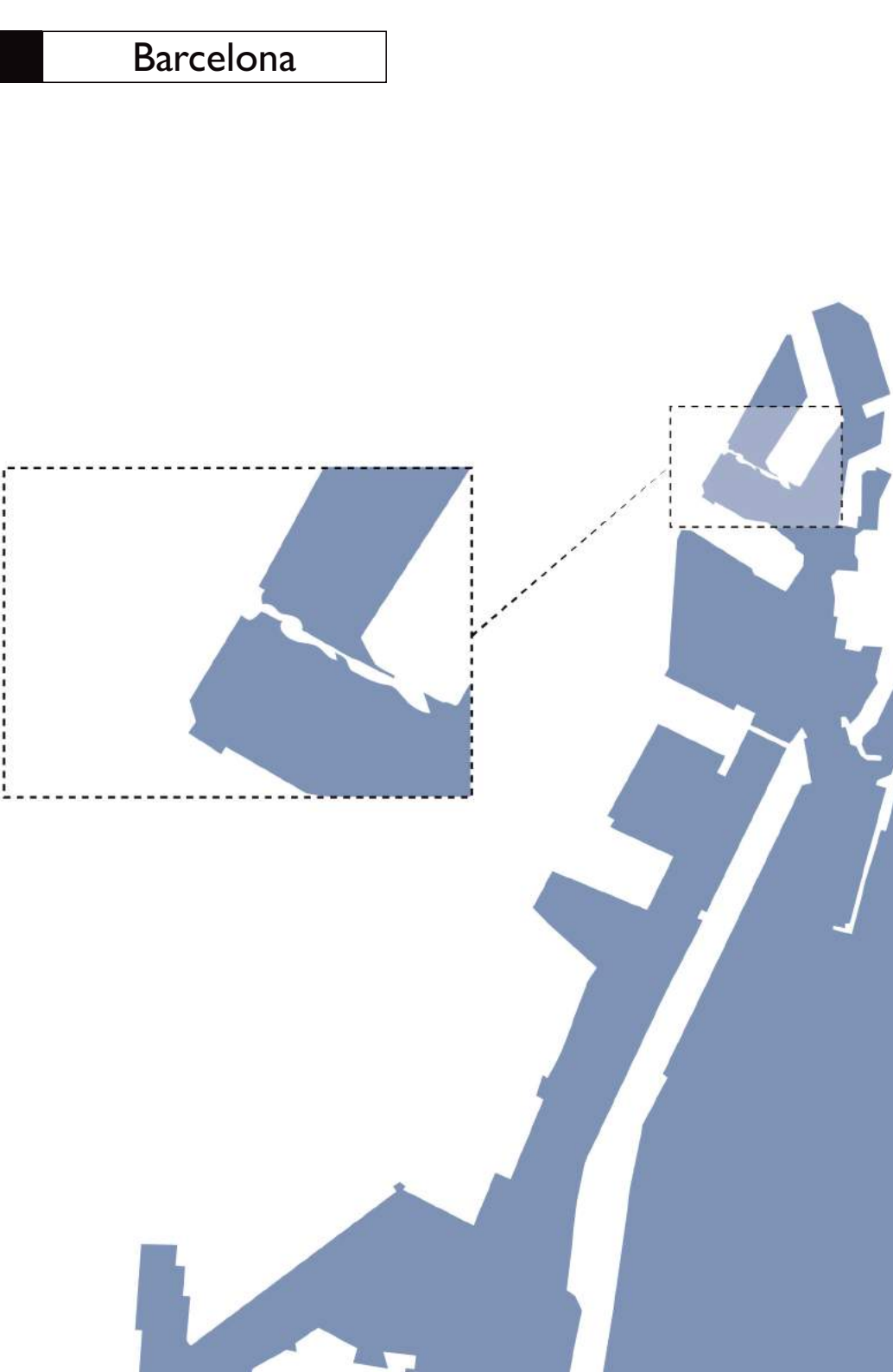
The promenade ("lane") along this coast is interfered by a perpendicular center axis, leading up to the very edge of the waterfront, ending in a depressed and rectangular platform with steps all around – it is bare, with no railings - where water splashes over and leaves the concrete wet, creating an atmosphere of a rough and natural environment. This platform is another example of how a main road or a path leading to the edge of a waterfront ends in a kind of urban "estuary" as the mouth of a river. At the tip of this coastal line there is yet another "estuary", the logic again seems to be end of a significant connection which in this comes along the northern axis.

The network of these recreational elements along the coast has such magnitude that it ultimately renders it some independency from infrastructural connections, so for instance the stairs in the very bottom of the diagram (small blue arrow) don't have a significant connection to a larger public space area, they are on the contrary very close to the residential buildings, and yet despite this don't seem out of place.

1:2500

Water

Edge

Lane

Use

▷ Access

1:2500

This part of Barcelona's waterfront is situated in a rather intricate marina, that has different characteristics in terms of use, but the overall logic in regard to the edge that is at work here has interesting similarities to all the former mentioned waterfronts. The most significant element is that of the famous "La Rambla" (shown as the big arrow pointing westward) that here acts as the main axis leading to the waterfront, and once pedestrians have crossed the infrastructural obstacles, they will find themselves on a large square (use) that acts as an "estuary" and offers a close proximity to the water with staircases leading down to it. On its left bank this axis from the "La Rambla" continues across the water in the form of a bridge. At the other end of the bridge there is a massive building with different commercial use, that also opens up to the coast. The presence of the building (use)gives extra incentive to cross the bridge, and for the ones willing the trip is rewarded with seating terraces alongside the bridge, with partition walls of transparent material to shelter the visitors from the wind.

Another element that is worthy of mentioning is the way the infrastructural situation has been dealt with. The crossings from La rambla to the roundabout and further down the square are beautifully organized so that the walk down to the water is met with no too many traffic-caused difficulties on the way

1:2500

☐ Extension

▪ Water

■ Edge

☐ Lane

▨ Use

▷ Access

1:2500

6

THE GRAMMAR OF THE WATERFRONT

Intro

Through a close observation of several waterfronts around the world and the analysis of the four specific waterfronts in the preceding chapter it is possible to highlight a few elements that seem to be recurrent among all of them.
By doing so, a DESIGN TOOL for the interpretation and intervention of the waterfront and ultimately the edge is developed.

A potential system with several self-interacting components along the edge on each of the waterfronts is recognized. This system is meant to be understood as a flexible guideline that a designer can use to make sense of an existing edge or by which to express definitive intentions for a proposal of a new one.

The Coinage of "The Grammar"

The term "the grammar of the waterfront" is coined here to describe the logic or the system that the edge is part of, thus it is not insignificant to understand what precedes it and what follows, respectively before and after the edge. It is especially important since the boundary line between the edge and the other components can be unclear and sometimes these other components constitute the edge itself.
It should be noted that the definition of the waterfront is "land on the edge of a body of water"
(*http://dictionary.reference.com/browse/waterfront)*

The 6 Components

In this context the waterfront is now interpreted as a system made up of 6 different sections:

- The Extension
- The Lane

- The Water
- The Use

- The Edge
- The Access

1. The Extension

Includes islands, bridges, floating platforms or any built accessible areas beyond the "edge";

2. The Water

Describes the uses, if any at all, that take place in front of the "edge", to the recreation purposes for example, like swimming, fishing, rowing, sailing, etc.; to the docking areas and marinas;
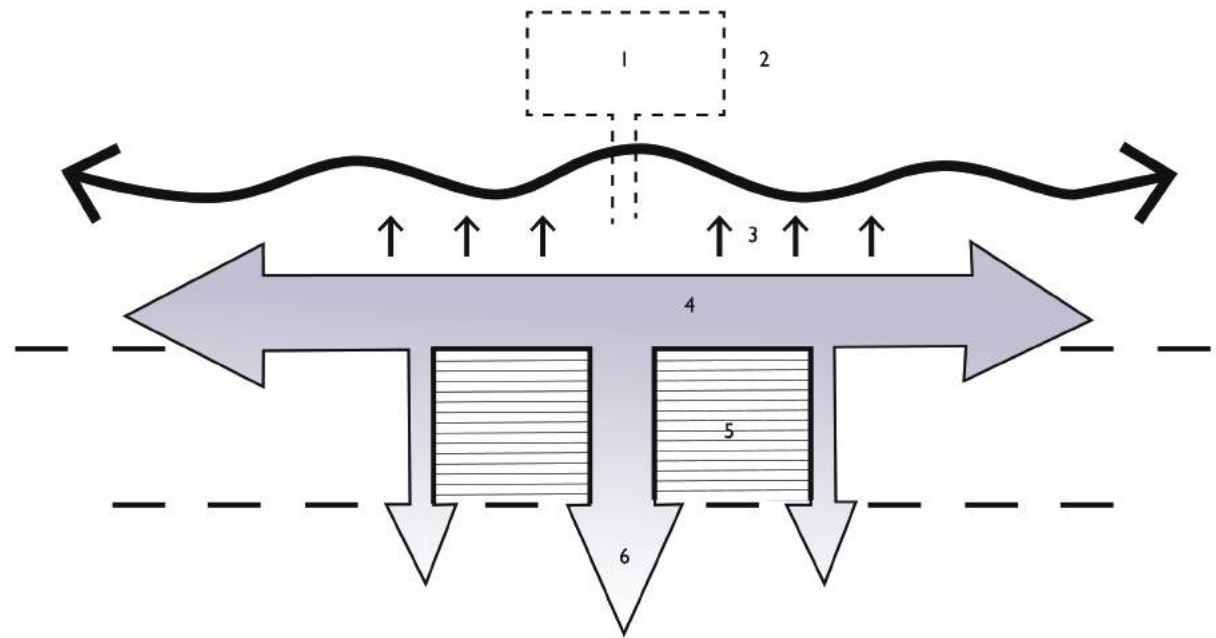
3. The Edge

The meeting point between the water and the land, the character of that encounter determines the level of intimacy that is expected between the pedestrian and the water and in essence the focal point of this thesis;

4. The Lane

A broad term for the path/circulation along the "edge", that also varies in character and grows in complexity according to its use;

5. The Use

Refers to the type of activities that faces the edge of the waterfront, spanning from residential, to commercial, cultural, business, recreational green or any oth-

er kind of occupation that helps to identify the intended character for the area;

6. The Access:

Addresses not only the points of arrival to the edge but also how far that very edge communicates into the urban fabric of a specific site. These meetings are not only useful to plan an effective circulation in and out of the "edge" but also provide a powerful insight on the hierarchy of spaces along the edge.

Definition & Context

It should be noted that the focus of this tool is the "edge" of waterfronts, within the previously mentioned definition "the land on the edge of a body of water" which basically means that this system ("the grammar") of watefront components doesn't particularly concern itself with the parts of the waterfront that aren't in immediate visual contact with water.

However in the vernacular and in most waterfront development projects the term "waterfront" takes on a broader meaning, and one could make an argument that the edge can and has a degree of influence on the design of waterfronts in a broad sense, since these components are meant to inform one another. every context has a context of its own.
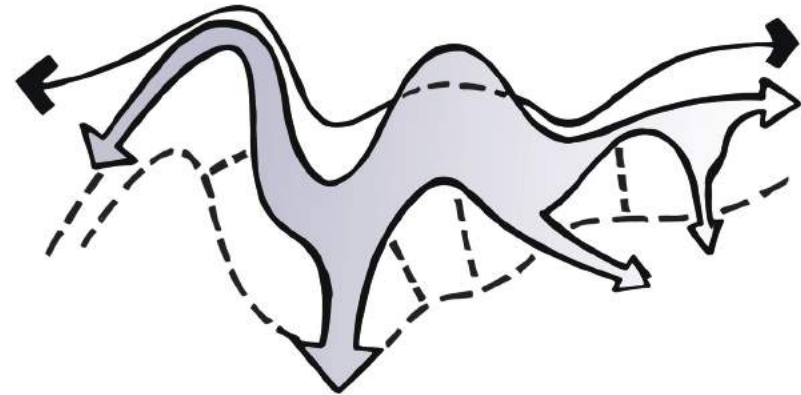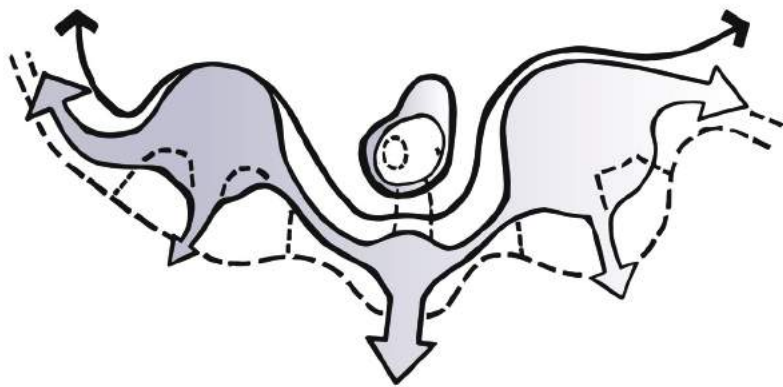

Intention and Exceptions

The goal is not to have a "Fordist" approach to the mass production of "edge designs", such tool would be a contradiction of what design is supposed to be, and surely, if a small pun is permitted, it would be unlikely to produce any "edgy" designs at all. It is because the complexity of some existent or proposed waterfronts can make it hard to identify the sections that comprise "the grammar" of a given waterfront, for that reason some interpretive skills are still required even when making use of this tool. For example, if one was to look to the famous canals in Venice and argue that these locations have no "edge", no circulation "lane", that it is only the "uses" that front the water and therefore the "system" does not apply, in this case the counter argument would be made that

the "edge" and the "use" exist in the same time and space as a totally private "edge", and in this case the circulation "lane" takes place in the water where the traditional gondolas sail. This means that this potential system of "the grammar of the waterfront" is not a rigid sequential tool, as design takes place these components can be stretched, bended, overlapped, squeezed, suppressed and challenged without any limitations to the creative process.

The "grammar of the edge" as a tool provides the designer with a palette and an empty canvas, with a violin and an empty musical notation, with hammer and a rough stone, on which the designer can paint, compose and sculpt along the edge of waterfronts with clear concepts and intentions. But to do so, he must understand the meaning of each colour, each note and each stroke, meaning the parts of the "system".
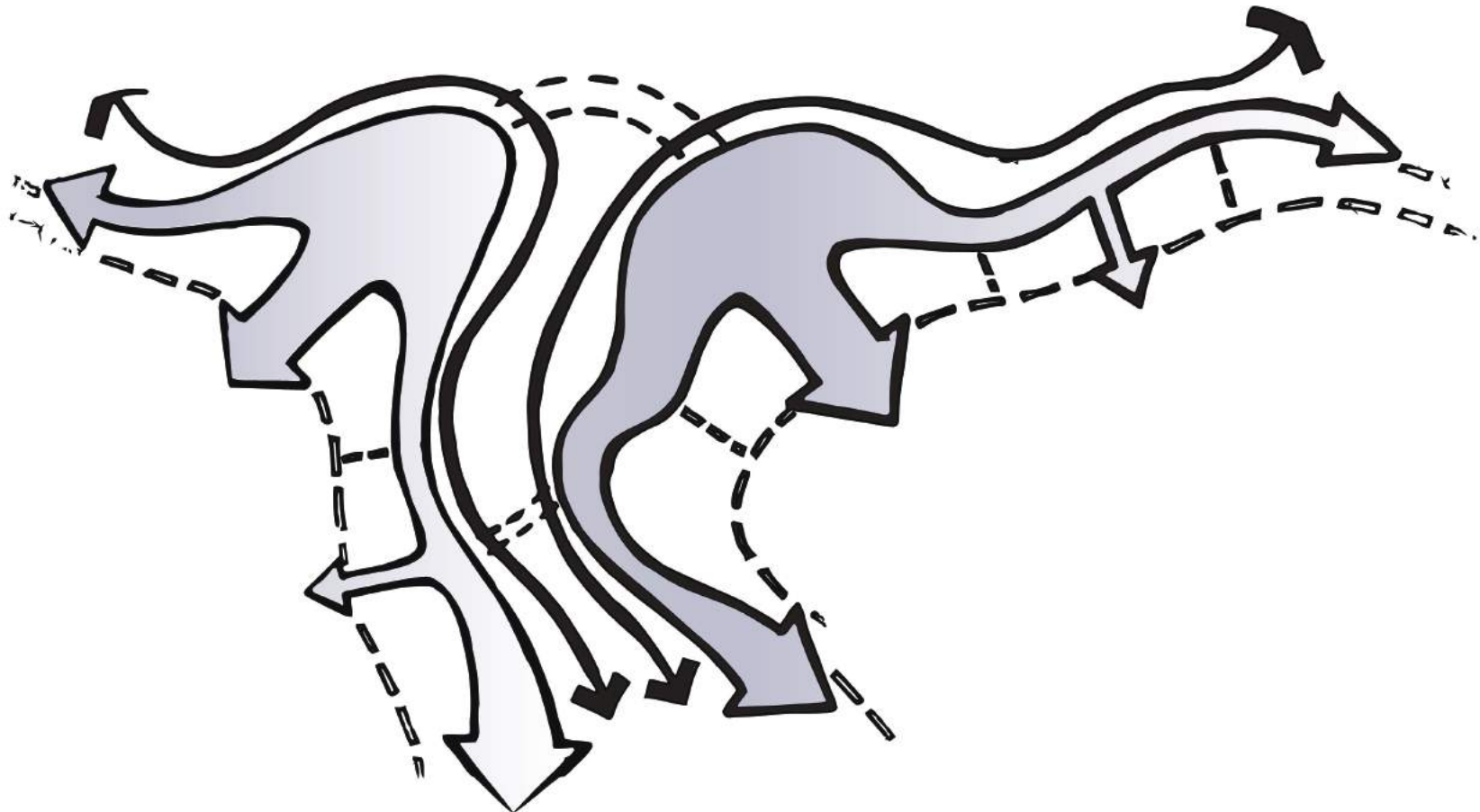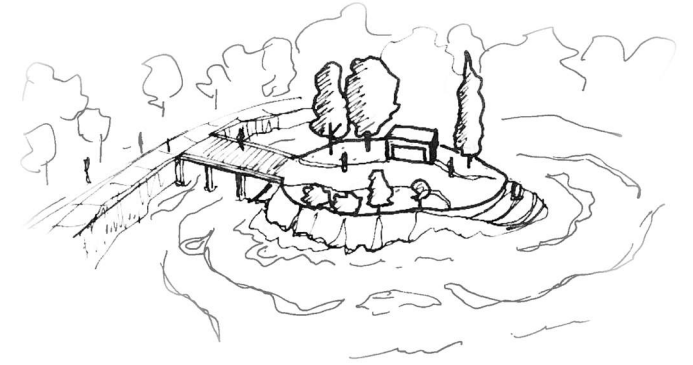
Function

There is something about the stepping over the edge/ line in several contexts in life and it is no different in waterfronts, as islands, bridges and floating platforms allow pedestrians to "walk on water", to go over the edge and escape their surroundings into an outside area.

The "extension" is the part of a waterfront that has a similar character to that of an addition or annexe in housing architecture, it can be anything that provides any use above water and over the edge, like a big dock boat converted into a restaurant like in Aalborg or a bridge construction with recreational purposes in Barcelona.

These little getaways provide the ones who use them not only with a new place to go but also a new perspective of where they used to be and to be able to look back at the waterfront from the other side of the spectrum. These extensions can encapsulate the pedestrian in an intimate sphere or be an open platform.

Designing Extensions

The nature of these elements in terms of design should be thought out meticulously on the basis of their use and context. An accessible island with green areas, restau-

rants with outdoor seating arrangements or squares tend to be associated with very different contexts than marinas for example, the first relates more easily with more public areas while the later with private surroundings. Granted that exceptions are bound to happen but the goal here is to express intent in a given proposal and to understand that these "components" communicate with each other. If the intention is to provide interesting public spaces over the edge, the use

If the intention is to provide interesting public spaces over the edge, the uses on these spaces will mostly vary between squares, green areas,

of these spaces will mostly vary between squares, green areas, commercial or cultural, amd one should be aware that these elements create very defining moments along the edges of waterfronts and tend in a lot of cases to change the hierarchy of spaces of waterfronts. For that reason the designer has to consider the context of this space, does its access come from another area that also has a public character or not, how important is this space in the landscape of the waterfront and from what distance can it be seen.

Extensions as Islands, Platforms and Marinas

An island with green areas and a restaurant is likely to be accessed from a very public promenade and the pedestrians can be led up to it by a wide street that allows for it to be seen from great distance, while a small floating platform with a

kiosk and some seats won't need as much attention, just a small bridge next to a walking lane could suffice. This does not mean that public "extensions" can only happen in a semi-public or public waterfront, they can also work as an extension in a semi-private waterfront with for instance residential use, creating a shelter for social environments. Again, it is all a matter of recognizing the purpose of the space.

Marinas on the other hand, are for the most part very private as they're usually meant for private boat-owners, and tend to be only used by them. This happens even if the surroundings of a given marina happen to be more public, which means that in a design context these combinations have to be thought out properly in order to avoid unnecessary frictions, between the elitist environment inside a marina and whatever happens outside of it.
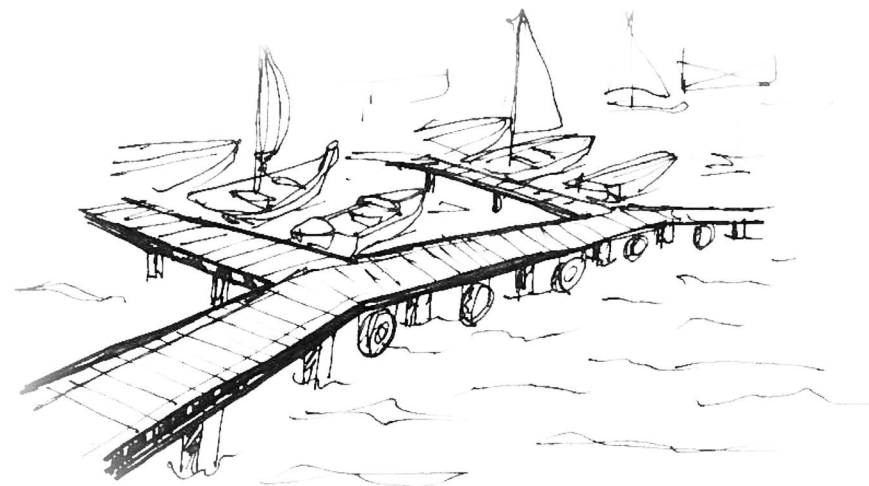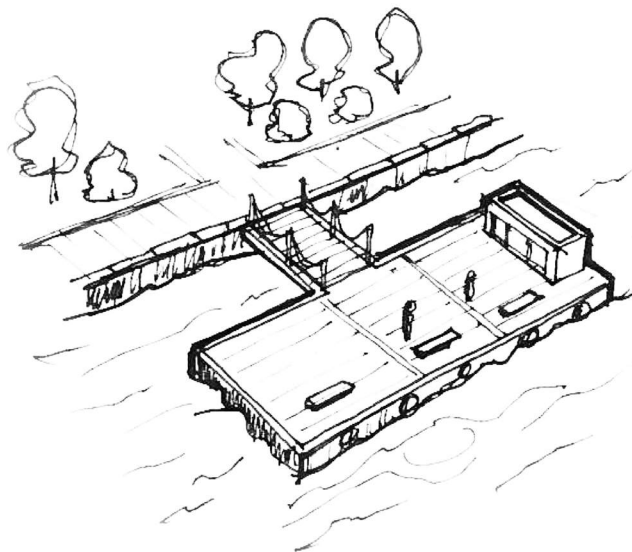
Activities

Water is the ever-present part of the edge. Its proximity and the activities that can take place in it, by it, or at it can essentially define the character of the waterfront. Some of these activities are swimming, sailing, fishing, diving and others of a recreational nature.

For these activities to be possible some preconditions and safety precautions are necessary regarding tides, currents, waves or just safe clean water. In some cases extreme low tides can allow pedestrians to explore the bottom of the river/ocean/canal on foot, providing new experiences over the edge.

Public vs Private

Each of these activities fall somewhere between the spectrum of public or private, and this is determined by the design of the waterfront and its edge. If the space is designed for a residential area, then in most cases recreational water activities might garner undesired attention from non-locals, generating noise either by loud people or small children due to its public accessibility.

However in the case of a fenced residential resort where access is limited and privacy or exclusivity is guaranteed, then a solution like this can be taken into consideration.
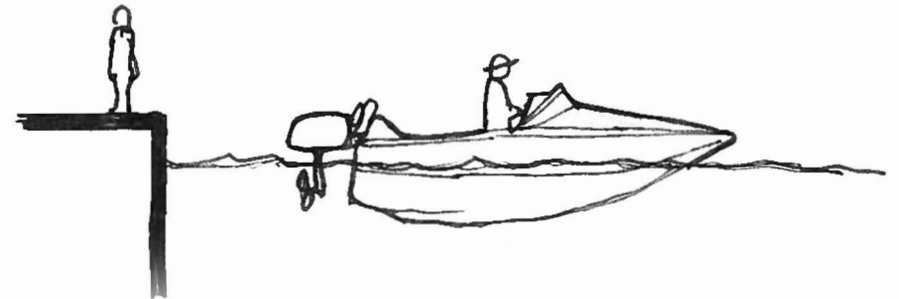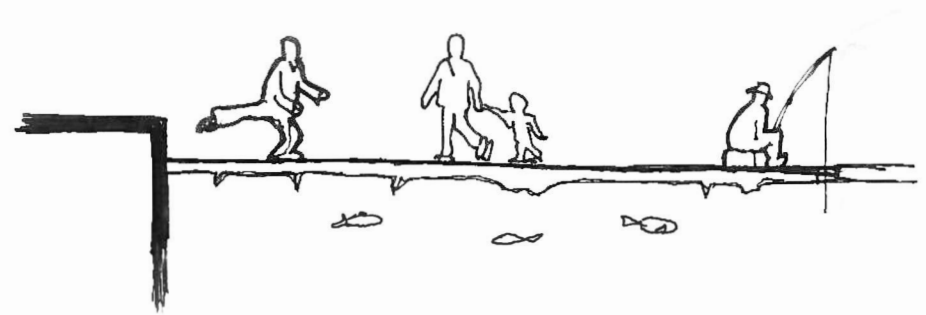
Climate

Most people have some sort of desire to touch or be in water, a desire that is also affected by cultural and climatic conditions. Harbor baths in Aalborg and Copenhagen serve as a good example of this, since harbours like these don't exist in a South European context, where sandy beaches and hot weather make such a concept redundant. A Hot climate can exclude some activities and allow for others. A cold climate can provide conditions for such activities as ice skating.

Safety

Activities in the water require special attention when it comes to safety, especially in situations where the dangers are not easily perceived, and that goes for swimmers, fishermen and even boats. There have been several cases of fishermen losing their lives near the coast of Barreiro in Portugal, getting lost due to extreme fog while walking in the river during low tide and not being able to see to make it back in time before the tide comes back. Fatal situations can come about when currents, waves, sudden changes in depth and visibility aren't considered properly.
(http://www.noticiasaominuto.com/pais/324433/um-morto-e-dois-desapareci-dos-no-rio-tejo)

A Place of Two Realms

The meeting point between land and water in an urban context such as a waterfront is a place that encapsulates a distinctively different atmosphere from the rest of the city by virtue of its physical environment, city on one side, and a typically vast surface of water on the other.

The edge of the waterfront can help shape this atmosphere of transitional zone, a vicissitude of realms between nature and city. Walking along the waterfront one can switch between the two realms: on one side the busy city life with the city dwellers going about their everyday hassles, and on the other hand the homogenous vast space of water and wind that can instil a meditative mood in any visitor at the edge.

Surroundings

Much like the previous addressed components, this "meeting" is also subjected to the character of its environment. The edge is defined through the presence of water, which in its turn is understood in terms of proximity and boundaries.

Once this is established one can turn to factors like intimacy, privacy, culture, sociability, safety, pace of movement and much more. In this regard, design can take on a huge role on how to lead pedestrians into or away from the water along de edge of a particular waterfront
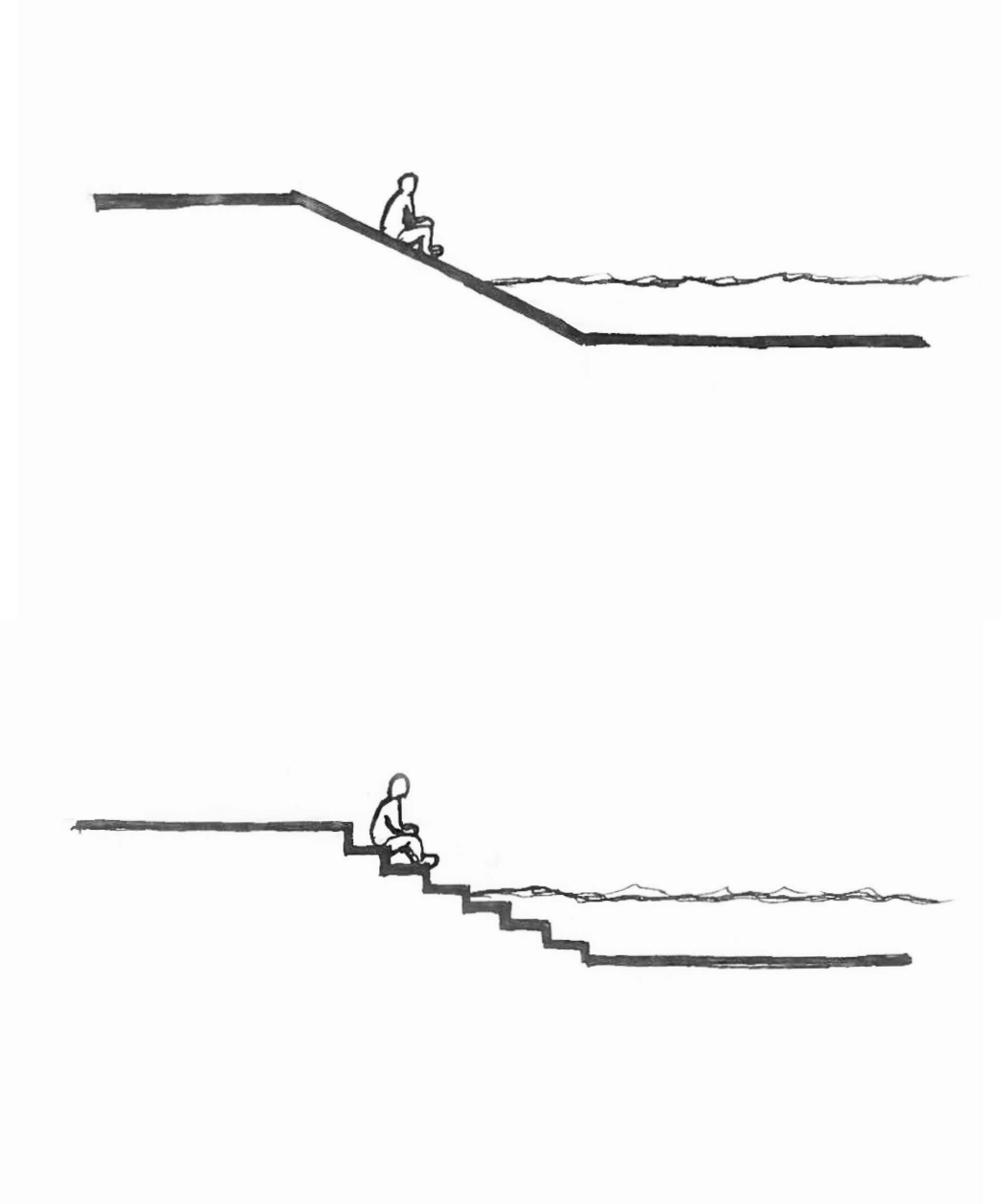
Subtleties of the Edge

The edge as the "meeting point between the land and the water" is a place where this meeting is to some degree also perceived by each individual differently, thus the level of intimacy with the water varies.

An individual standing on a platform 2 meters above the water has a different level of intimacy with the water than someone who is sitting half a meter from the water and feeling droplets hitting his skin. The context of these two scenarios determines the experience of the presence of water.

Design Aspects

Creating an area along the edge with public space where the pedestrians are expected to stop, sit and enjoy being at close proximity with the water requires a particular physical arrangement of space.

Such a spatiality it seems can benefit from having characteristics such as smooth steps, slopes or ramps into the water and accesses to low platforms. A set of these elements along the edge creates changes in the hierarchy of space that can be significant to the character of the waterfront.
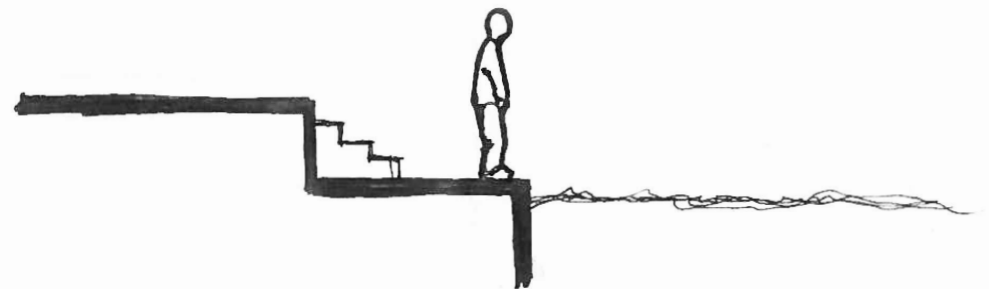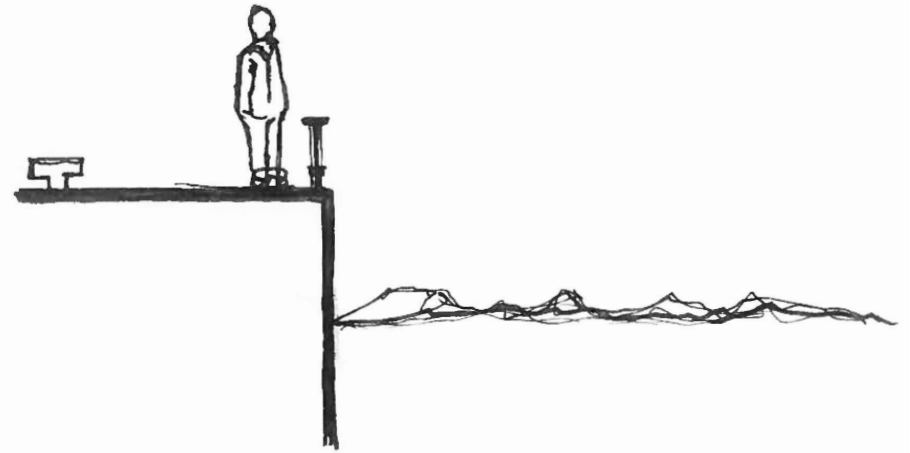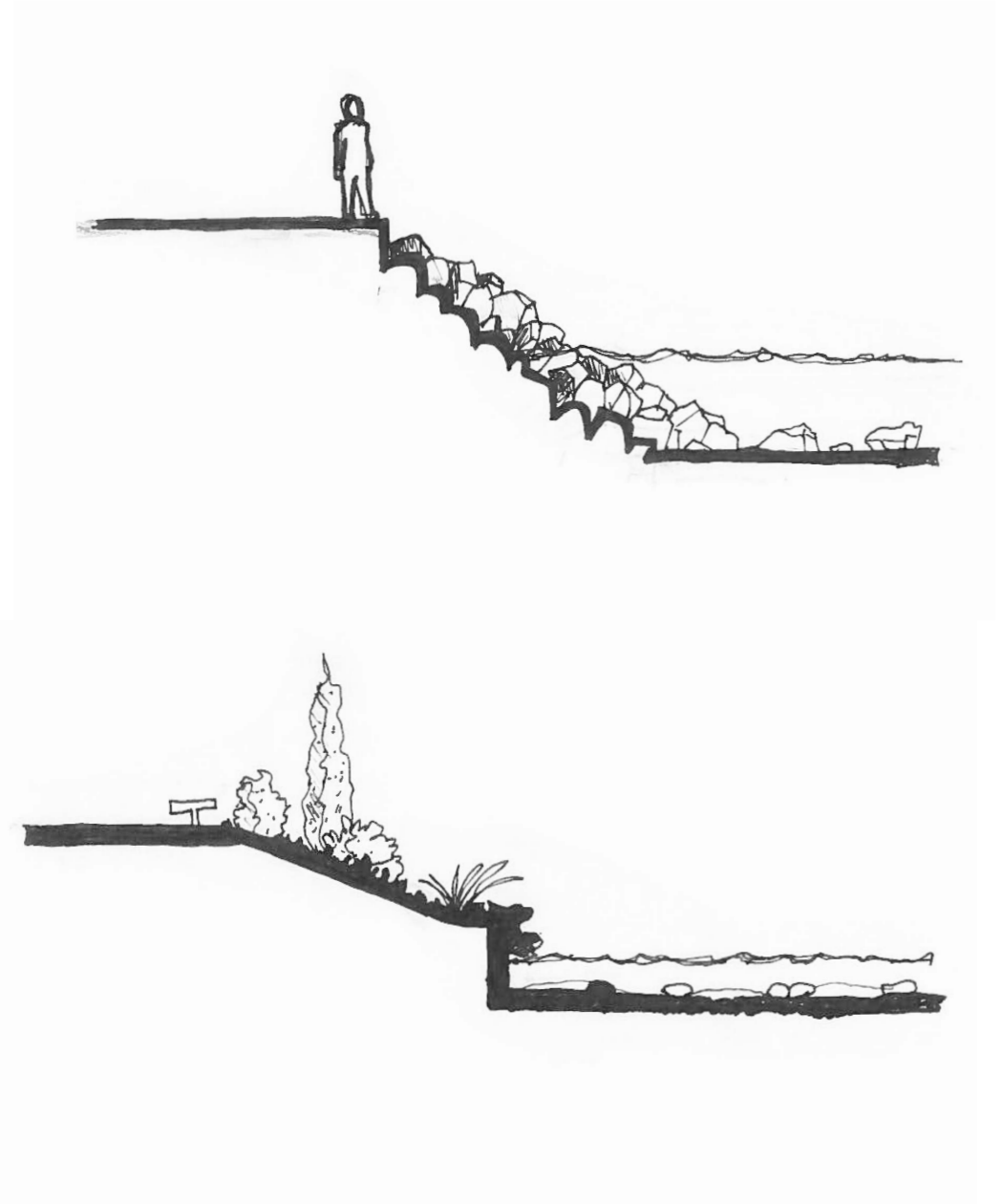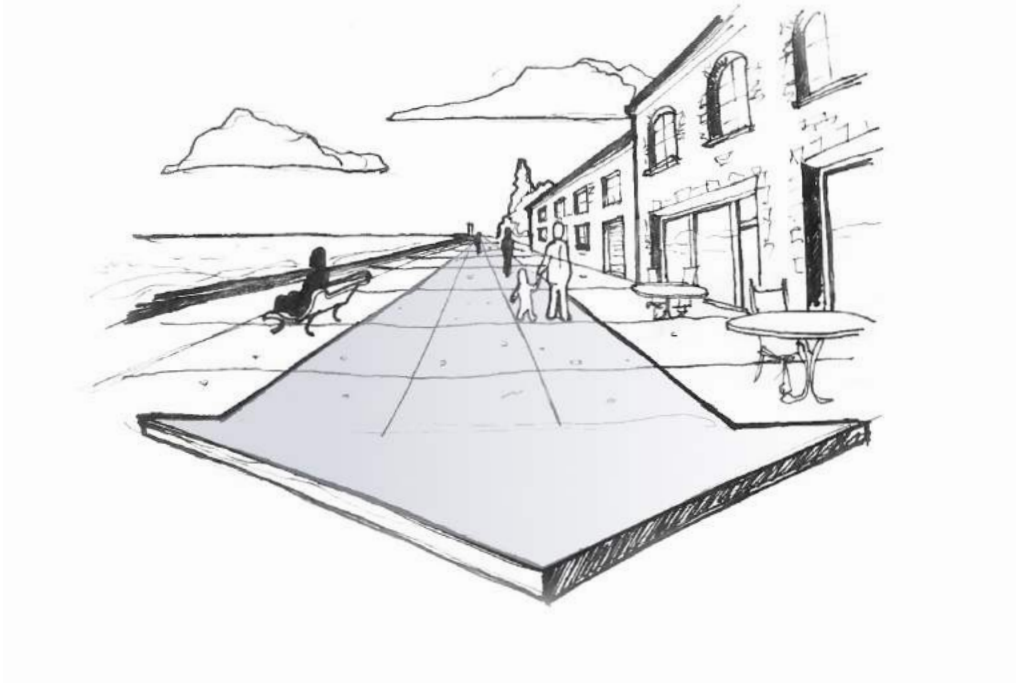
Proximity and Distance

The edge is not necessarily where one is very close to the water it is rather a cohesive space that can allow for smooth transition from being at close proximity and at a fair amount of distance to the water. Distance between people and water is obviously an important consideration.

Beyond the obvious safety concerns, there's also the public and privacy contrasts that are to be considered, so for instance a big slope to the water meant for sitting makes very little sense in a very isolated area or in a residential area with a very private character, the access to the water may still happen in these places but that would be less significant.

Weather Conditions

The Meteorological factor as much as the functions of public and private defines the shape of the edge. If a place requires a fast pace walking area, and the edge has high frequency of high waves and winds hitting its surface, making the area uncomfortable or unsafe, then high platforms with railings, steep slopes, rocky edges or green edges with heavy vegetation can serve this purpose. In Barcelona along the curvy bridge the pedestrians are sheltered from strong winds with transparent partition walls.
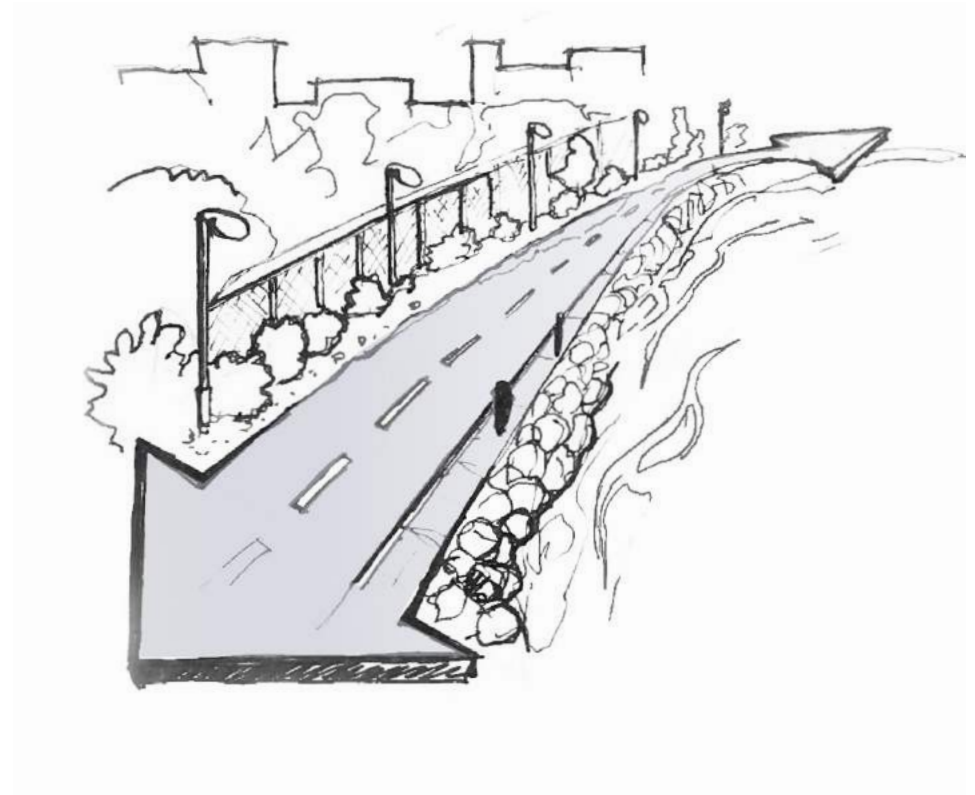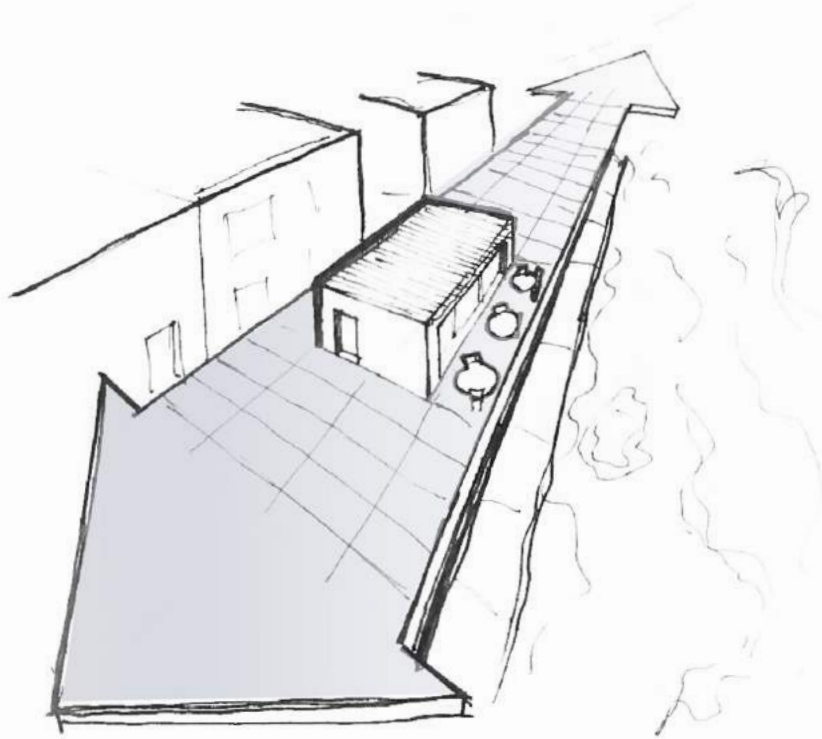
The Lane morphs along the edge depending on the nature of neighbouring spaces, and as it does, it transforms into promenades, walking paths, public squares, commercial/cultural fronts and recreational areas.

As a component of the system "the lane" sets the tone of the flow created by the users of the edge of waterfronts. It provides the direction, the speed, the rhythm and the connection between the edge and what fronts it.
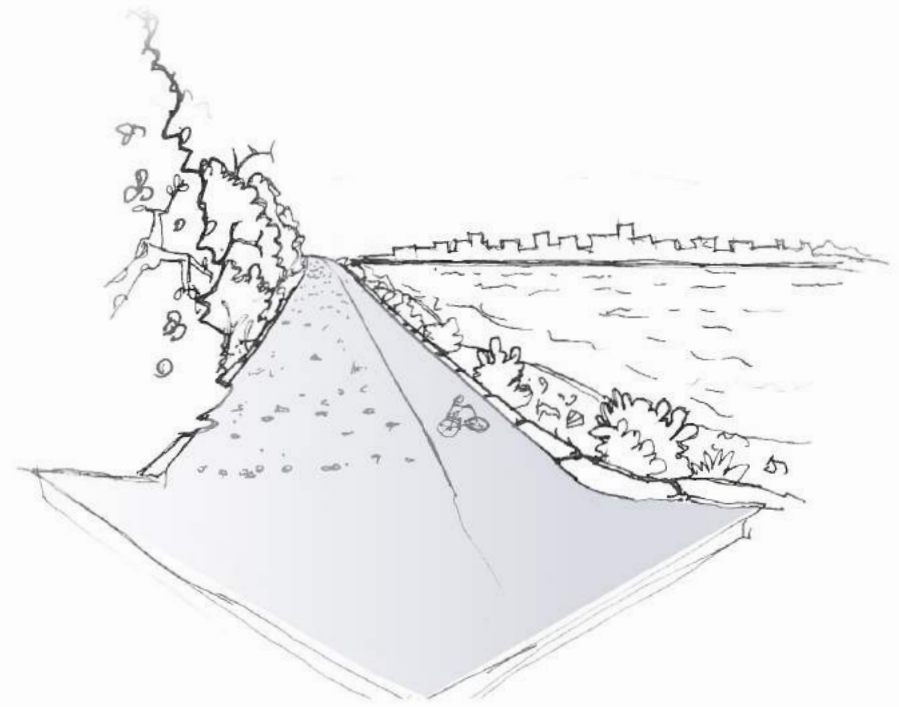
Lane vs Promenade

The idea behind the "lane" relates to the flow or circulation that fronts the edge along the waterfront, however the function of a "lane" is not limited to walking paths and promenades only, on the contarary it has a multitude of functions at once, which is why choice fell on a broader term "lane". "The lane" goes beyond the circulation aspect as it is more of a connection between the "Edge" and the buildings and activities that front it.

Again the dichotomy between private and public play a crucial role in the design of these spaces, not to mention the hierarchy of spaces with similar character, but what happens in the transition between them is just as important. While some spaces are meant be have some sort of ability to slow down the pace of pedestrians or even encourage them stop and sit down, others mean to increase their pace, in which case a narrower path with less functions along these particular stretches of the lane can mitigate such a situation. It is for instance often seen in jogging and cycling tracks or secluded areas along the edge.

The lane can also tie the "knots" created by the arrival and departure points such as avenues, streets and squares or make the transition from one type of use of space to another. A promenade is meant to be a vibrant public area with unique views and other properties like walking/bike lanes, seating spaces, slow traffic roads, sidewalk cafes and kiosks. These elements are very characteristic in predominately commercial or cultural areas.

On the other side of the spectrum, a section on a residential area that is intended to be much more quiet and private could be as simple as having only a sidewalk, a road and parking spaces.
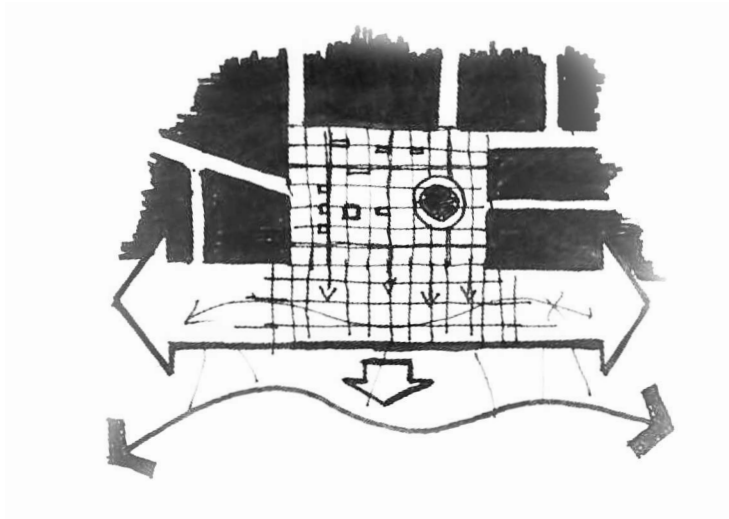
Definition

"The use" describes the first identifiable activity that fronts the edge and limits or defines the public space around it. More specifically it is the kind of programming that faces the water, overlooking the edge. It can be commercial, cultural, business or residential, the "uses" are not limited to buildings as they also include recreational green areas, public squares, parking and privately own gardens. Buildings with commercial use facing the "lane" intersect or affect each other, since commercial fronts need accessible areas and can even have sidewalk cafes that take some of the space of the "lane".
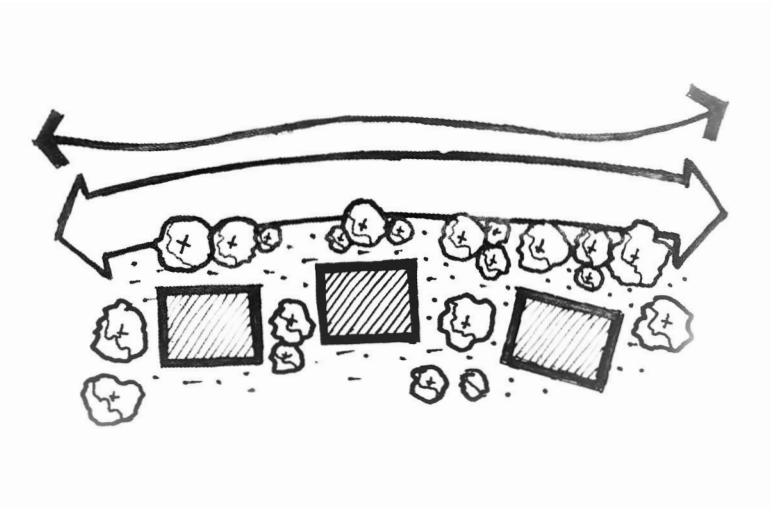

Utzon center, Aalborg 2015, the view from one of the auditoriums facing the the canal, the promenade or the "lane" dissaperas from view completely. The edge in this case becomes a visual experience.
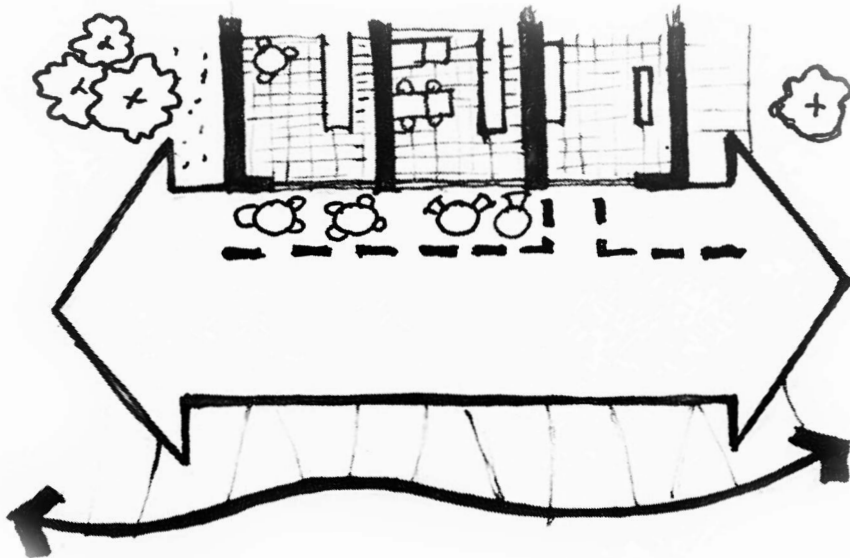

One could argue that the water is metaphorically an interior of the building even though in this case the Utzon center doesn't have much influence on the "lane". Another important characteristic to consider in regard to the "use" is the buildings and their facade and the impact they have on the skyline, since these buildings do not only shape spaces but they can also brand them. This means that it is important to remember that while the edge of waterfronts might be a great place to gaze upon the horizon, there could also be someone looking back at us and this is where the architecture of buildings plays a crucial role on the edge of waterfronts. A landmark in the waterfront or a public square cleverly positioned can provide clues and insights of the character of spaces from a distance as

areas, outdoor sports areas and public squares are bound to interact more directly with the other components of the "grammar". If one considers an outdoor playground, a "use", in a particular stretch of the waterfront, it can easily be

much as up close. When "uses" are meant to be more private and discrete like residential waterfronts they tend to be secluded and it is not uncommon that the influence of the other component by means of creating physical or visual barriers like fences and high vegetation in less crowded areas. Recreational green
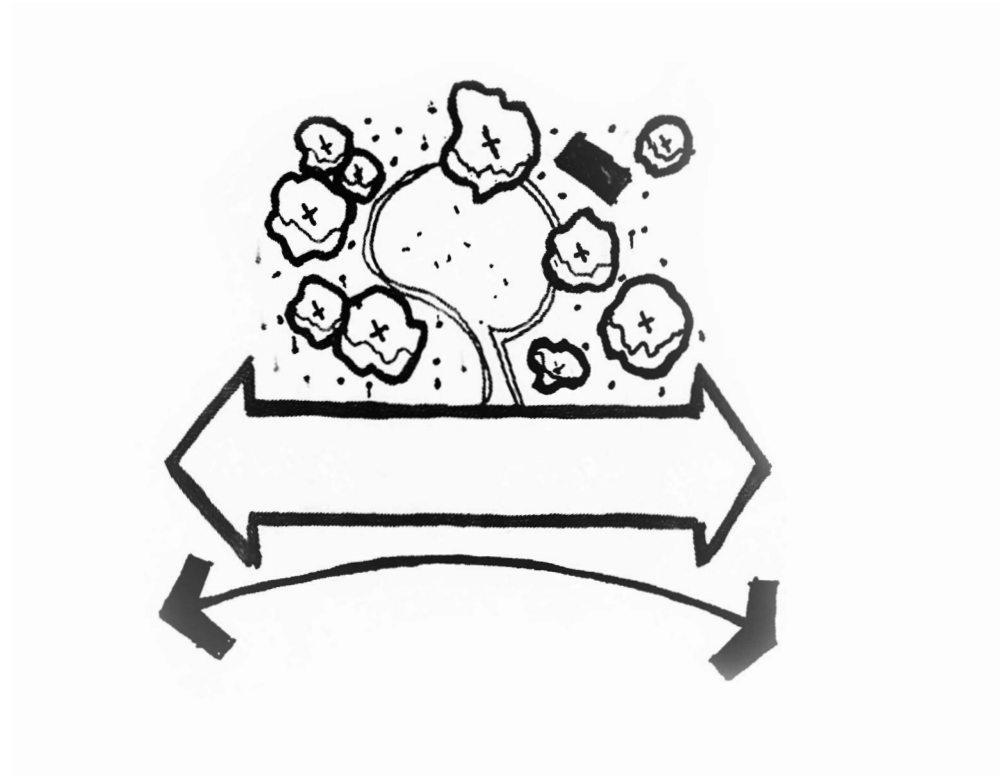

understood how the activity in this place can overlap with the other parts of the system, for example, a couple sitting or standing at the edge of the waterfront enjoying the view while keeping an eye on their child playing in the playground. This is a case of exchange of influences from all the elements of the "grammar of the waterfronts".

The "access" is the component of "grammar of the waterfronts" mechanism. It's most important aspect is the visual integration it creates between the waterfront and the rest of the city. This means that the access to the waterfront is the arrival and departure points between the edge and the city for most pedestrians. The study cases clearly illustrate that the accesses to these waterfronts were structured in a hierarchal manner in the way that big avenues for instance were gateways to significant parts of the waterfront, like public squares, landmarks and slopes/stairs to the water.

There seems to be an inherent rationale in having waterfronts open up to the city through central infrastructural connections.
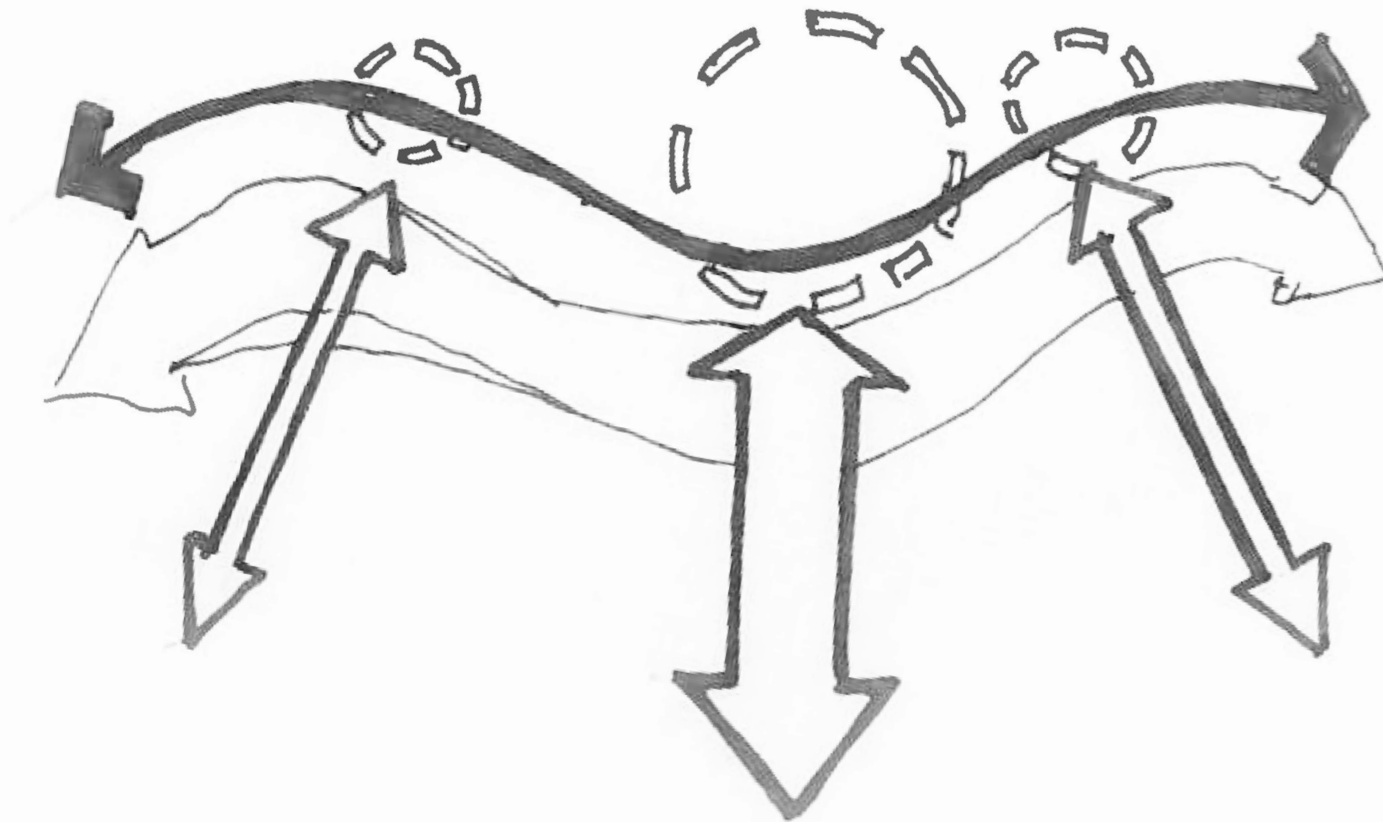
"Nor do I hear in my imagination the parts successively, I hear them all at once. What a delight this is! All this inventing, this producing, takes place in a pleasing, lively dream." – Wolfgang Amadeus Mozart

Designing the edge of waterfronts resorting to this "grammar of the waterfronts" as a tool can arguably be compared to composing a symphony, the symphony of the edge of cities, and long as the designer understands its "instruments" he will able to create his own melody.

Crucial Factors

It is quite clear that the role of the public/private character along with the implications of hierarchy of spaces is an important one in this process. When presented with a challenge to intervene on an existing or new waterfront, determining a conceptual and sequential structure of the waterfront by planning out stretches of edge, the character and importance of each one of them, along with the character of the spaces between them and how they are accessed can help compose a melodic structure of an edge.

In an attempt for instance to create an important commercial and vibrant public space that is meant to brand the waterfront and bring people closer to the water, one can consider a wide promenade with no car traffic, with sidewalk cafes, a public square, seating arrangements, a stair case to the water and an imposing building with architectural significance. In the process of "conducting" this stretch of symphony one should also take into account the viewpoints that the pedestrians get to enjoy in and out of this area. In the case of a very private residential area, a physical and visual barrier between a private garden and a narrow lane and less inviting edge could be an appropriate solution.
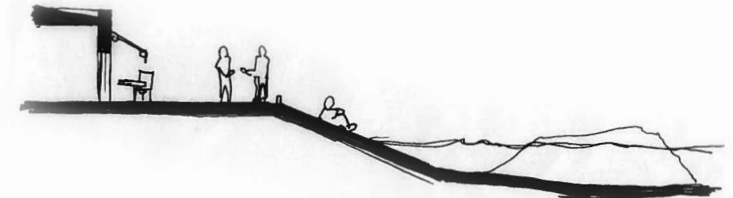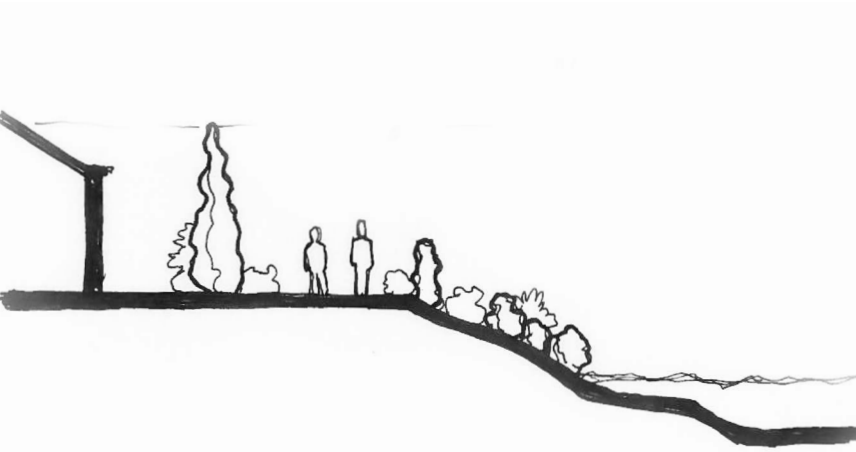
Viewpoints

Another important aspect is the concept of viewpoints, the leading up to or the gateways to important moments, which is the fact of being seen from a distance. It is crucial to the design of an area that it in its key areas is visually and physically accessible. These areas serve as visuals attractions to the waterfront, thus showcasing them the best way possible can be paramount for the success of a given waterfront.

In between all the components of this "grammar" of waterfronts there is always
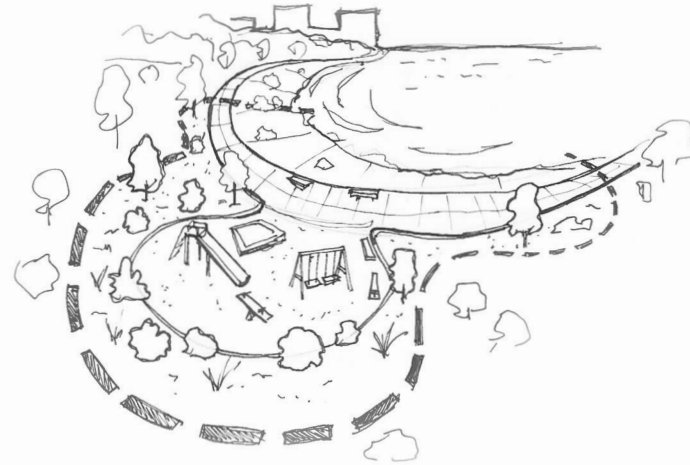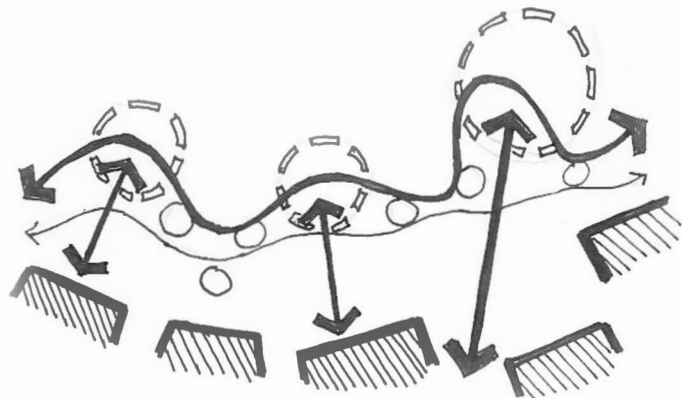
some sort of bufferzone, and again as in music it acts as an interlude that affects the experience of each component.
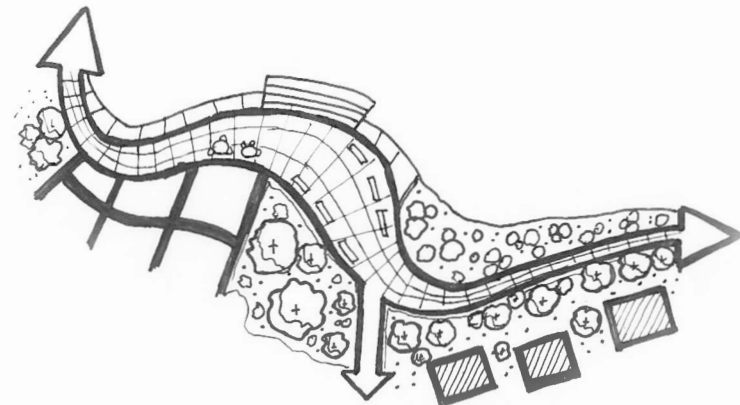
Stavanger municipality covers a large area and has a population of 130000 inhabitants, however the city and its center is relatively small and has the character of a town. The historic part of the city by the waterfront comprises a set of law and usually wooden houses that renders it picturesque scenery facing the water.

Stavanger has enjoyed much prosperity due to a tremendous boom in the of-shore oil industry that it is now widely known for.

The small town character combined with the presence of a huge bridge crossing over the peninsula from a neighboring island and the widely pristine landscape of rocks and trees, renders the totality of it all a rather surreal atmosphere.

In short the key words are: small town, big business, wild nature, intricate infrastructure, huge cruise ships that occasionally drop off tourists and a lot of private boats. The life in the city center during holidays is vibrant and has a great variety of interesting neighborhoods with cafes and shops.

The city is growing and the municipality is in the process of developing ideas for how to regulate this growth in population and what goals to set for this future devel-

A suburban oasis of wooden dwellings underneath the bridge approximately across from Stavanger city center.

Vågen: The picturesque and historic waterfront

The eastern harbor with of a predominantly industrial character

opment.

The main and underlying objective of the planning efforts is to tie in the different parts of the city together in order to avoid sprawl and strengthen the core by creating better links. The waterfront at the "østre havn" the eastern harbor is in the area of such potential link. It now serves mainly as terminal for deposit of goods and transport of vehicles and passengers alike. This function will however be outfaced as the completion of two massive underground tunnels is underway and approaching its end.

The waterfront isn't in a strict sense an industrial area but has all the characteristics, from long piers with stacked goods, ingoing and outgoing traffic, no recreation, insufficient access, a desolate landscape. This together with the future plan of transition from "industrial use" to cultural use is where the intention of the thesis and its concern with the edge of waterfronts comes in.

The area of interest and the site that this thesis develops a design proposal for is introduced in the chapter "Part 1 Design". The following pages present an overall analysis of the site that serve as the basis for the final design, and the conclusive part from the previous chapter on the grammar of the edge is implemented as design parameters.


Part of the eastern harbor in question: Old wooden houses on the left site that once bordered the coastal line have slightly protruding roof tops attesting to this past. The median strip is an extension of the promenade that despite its close proximity to the city center is desolate, even during holidays when the rest of the city center is crowded.

Stavanger's pristine nature offering simple recreational activities a unique scenic framing.
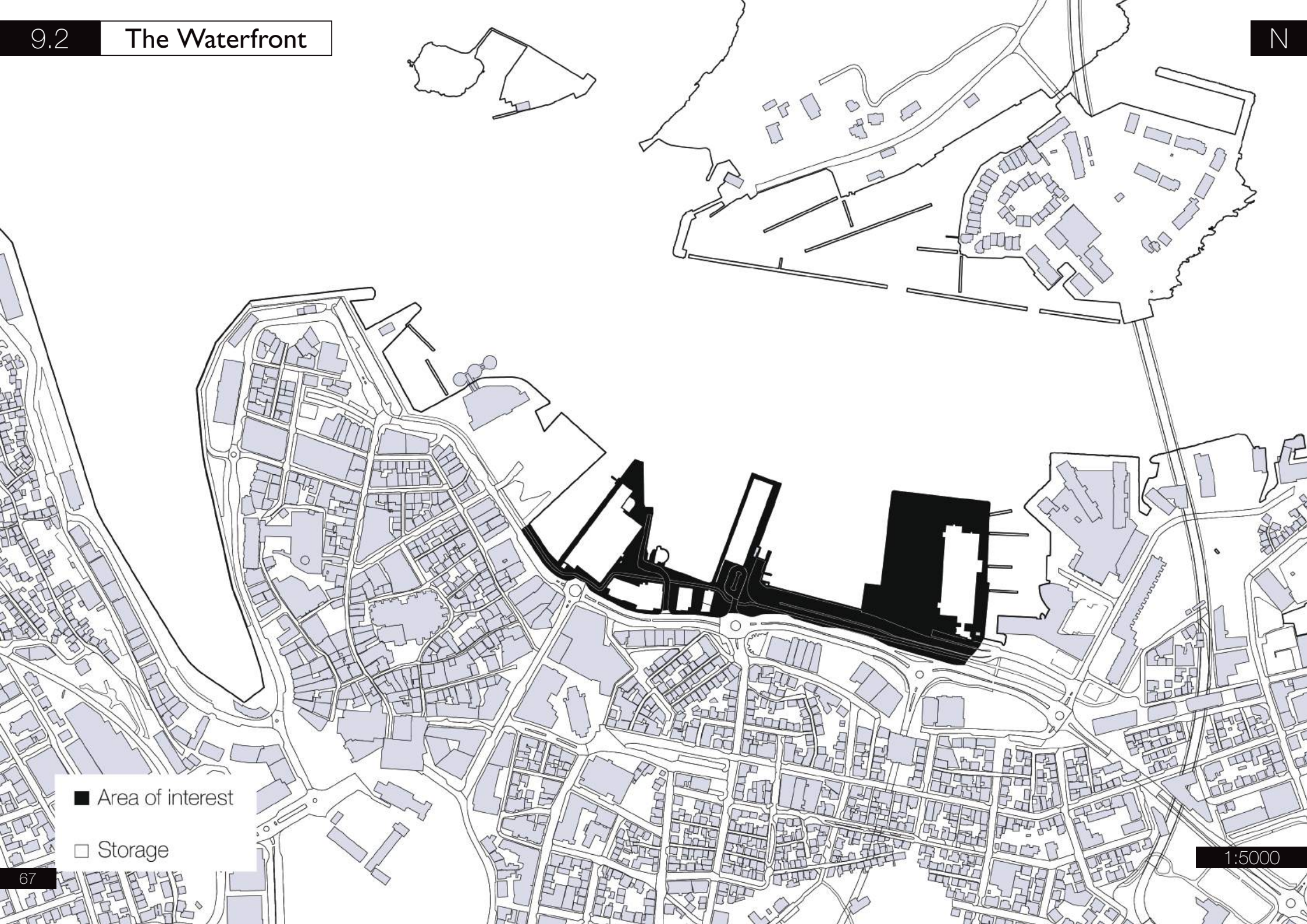
Area of interest

Storage

1:5000

Jørenholmen

Fiskepiren

Bekhuskaien

1

2

3

■ Edge

▨ The Project Area

▢ 1 Parking

▢ 2 Ferry Terminal

▢ 3 Storage

1:2500

The access-points between the city and the harbor is signif-icant to the physical planning of the waterfront and its future connection to the rest of the city. This factor of access as stressed in the "grammar of the edge" is one of the design parameters for the design proposal.

1:2500

1
2

2
5

2
6

The dashed line covers the streets of Pedersgata and Østervåg, that run respectively parallel to the waterfront from left to right toward the city center. The will provide visibility and accessibility from the city center and in return create great potential in reviving the life of Pedersgata, which at the moment has a rundown feel with fatigued facades, few running shops, and city life as such.

Since the harbor is undeveloped for urban "Use", this term as explained in the "grammar of the edge" must here relate to the greater context, which in this case refers to distribution of an active urban environment in the center of Stavanger. The flow of pedestrians in the center toward the "industrial harbor" occurs from west to east as the great majority of visitors arrive from east by car into the city. This orientation of the pedestrian from west to east is another design parameter for the design proposal

■ Degree of Urban
Environment

The Main Points

The point of departure for this paper in regard to the programming of the waterfront relies to a great extent on some of the ideas that have been put forward by the municipality of Stavanger in their draft proposal for the development of the city center. This plan for development is a result of different workshops, consultations and other contributions that have influenced the draft for the development of Stavanger City.

The main focus of this thesis is design, thus the overall planning of the city and how the harbor fits into that context is stressed here only in very general terms. In the appendix the most essential parts of the municipality plan are shown, and this as mentioned serves as the point of departure for the overall context for the design of the edge of the waterfront.

However the ideas for the programming aren't adopted and followed blindly, in fact most of them are obvious and aren't radical in any way so as to generate critique and change of course. The most significant and influential idea is to create a cultural anchor point in the form of a theater house on the "Bekhuskaien", which is the wide pier of the three in the area of interest(10.3).

The second in importance is the parking lot, this area will remain its function. The last but not least is the very sketchy proposal for a new docking area for the cruise-ships.
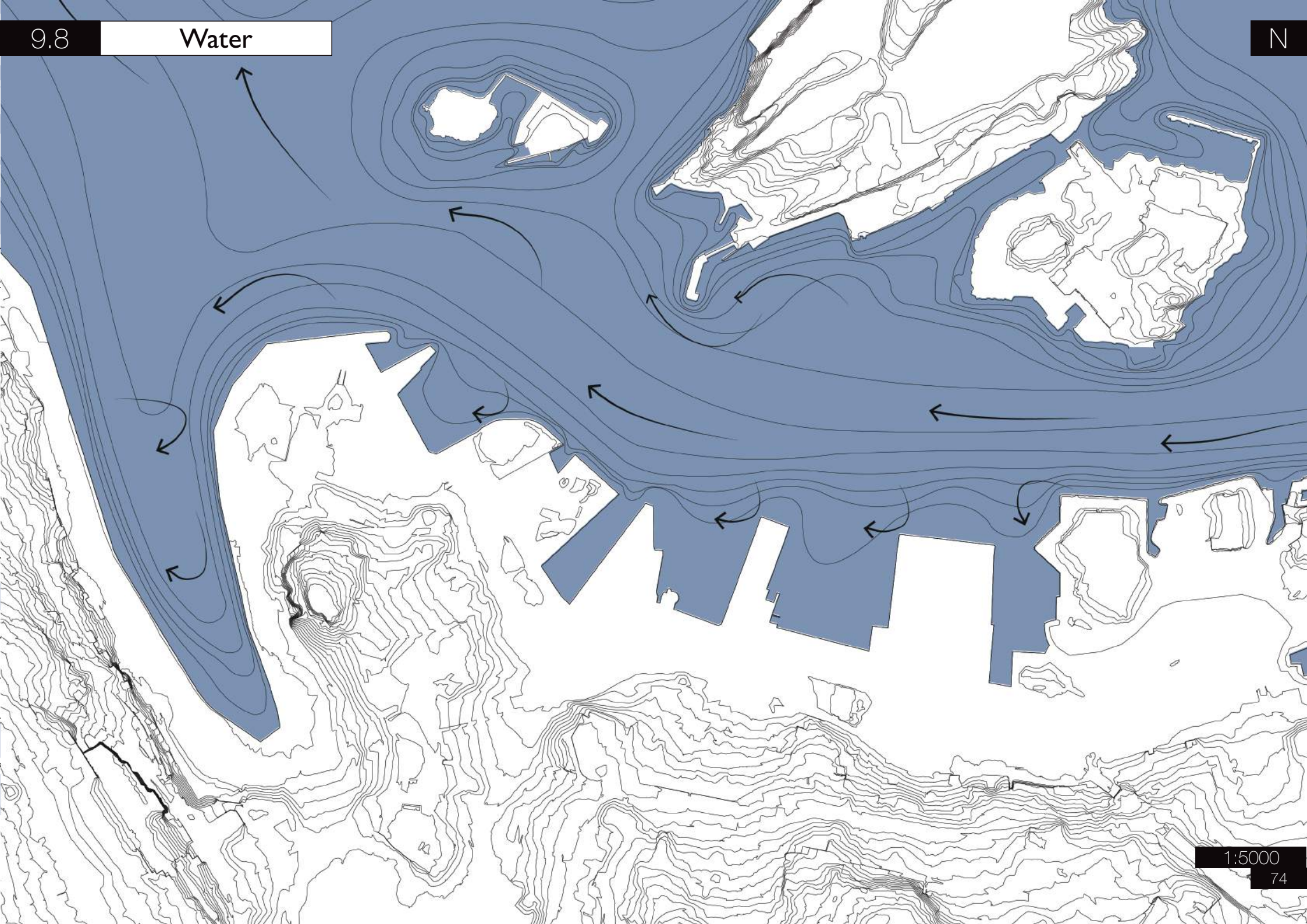
- ■ Cultural & Educational
- ▨ Proposed infill for new terminal
- ■ Parking & Business
- ■ Commercial & Recreation
- □ Housing & Recreation

10

COMPOSING THE EDGE OF STAVANGER

On the basis of the preceding discussions, several analyses and typological studies the present chapter works as a conclusive element and sums up some of the main points by composing the edge of Stavanger. This composition comprises following elements:

- The contour for the proposed edge of a planned waterfront in Stavanger stems from an intention to use "the presence of water" (Bruttomesso) as a design-parameter in creating an "emblematic value" for this zone in the city. In regard to the implementation and as point of reference in conceptual terms serves the medieval coastal line of Stavanger as shown in the conceptual diagram in the design

chapter.

- Furthermore, the wavy lines of the contours of the coast serve a technical purpose, thus the tips of the three organic piers are oriented toward the direction of the current, coming from the east, so as to gather momentum in the Laguna's and thereby provide the visitors with water of recreational value.

- The third principle is that of access and visibility of the new waterfront through a set of key entrance points from the city and the waterfront. In this respect the planned infill area for the cruise ship terminal will serve as an extra anchor point in showcasing its qualities to tourists.
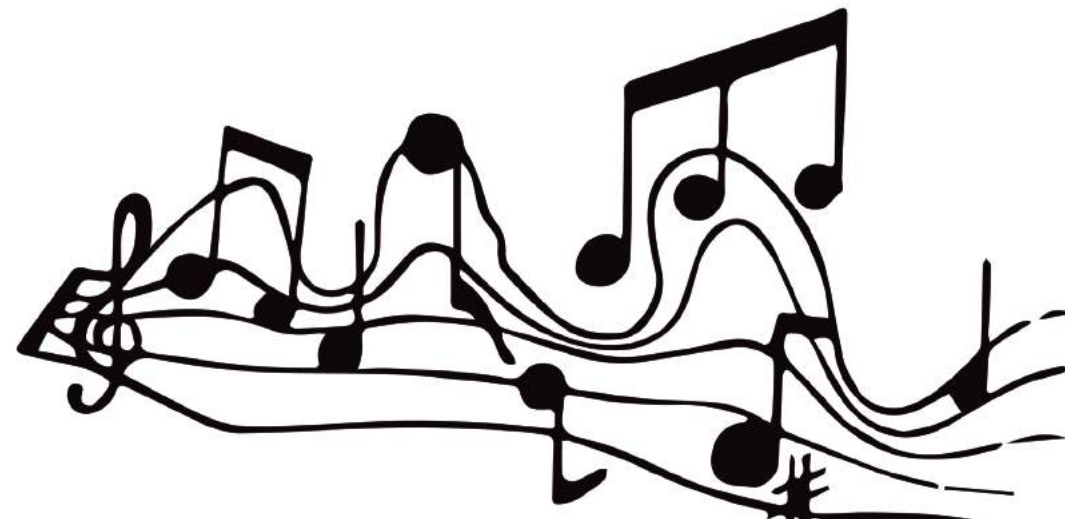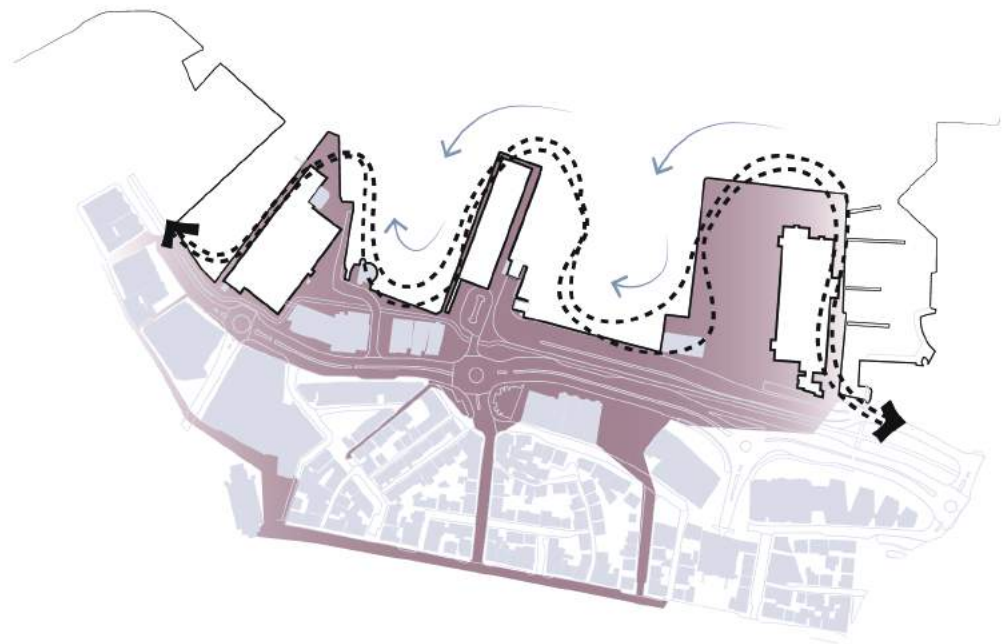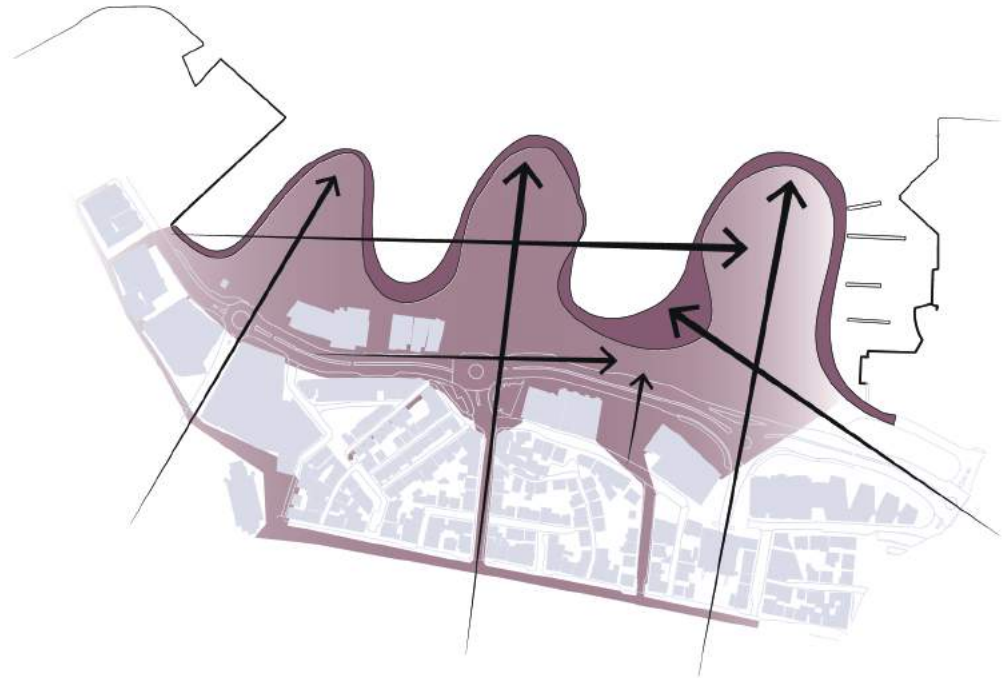
1.

The Current Harbor
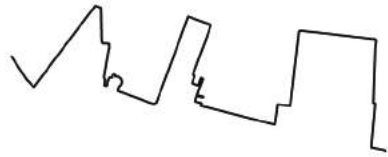
2.

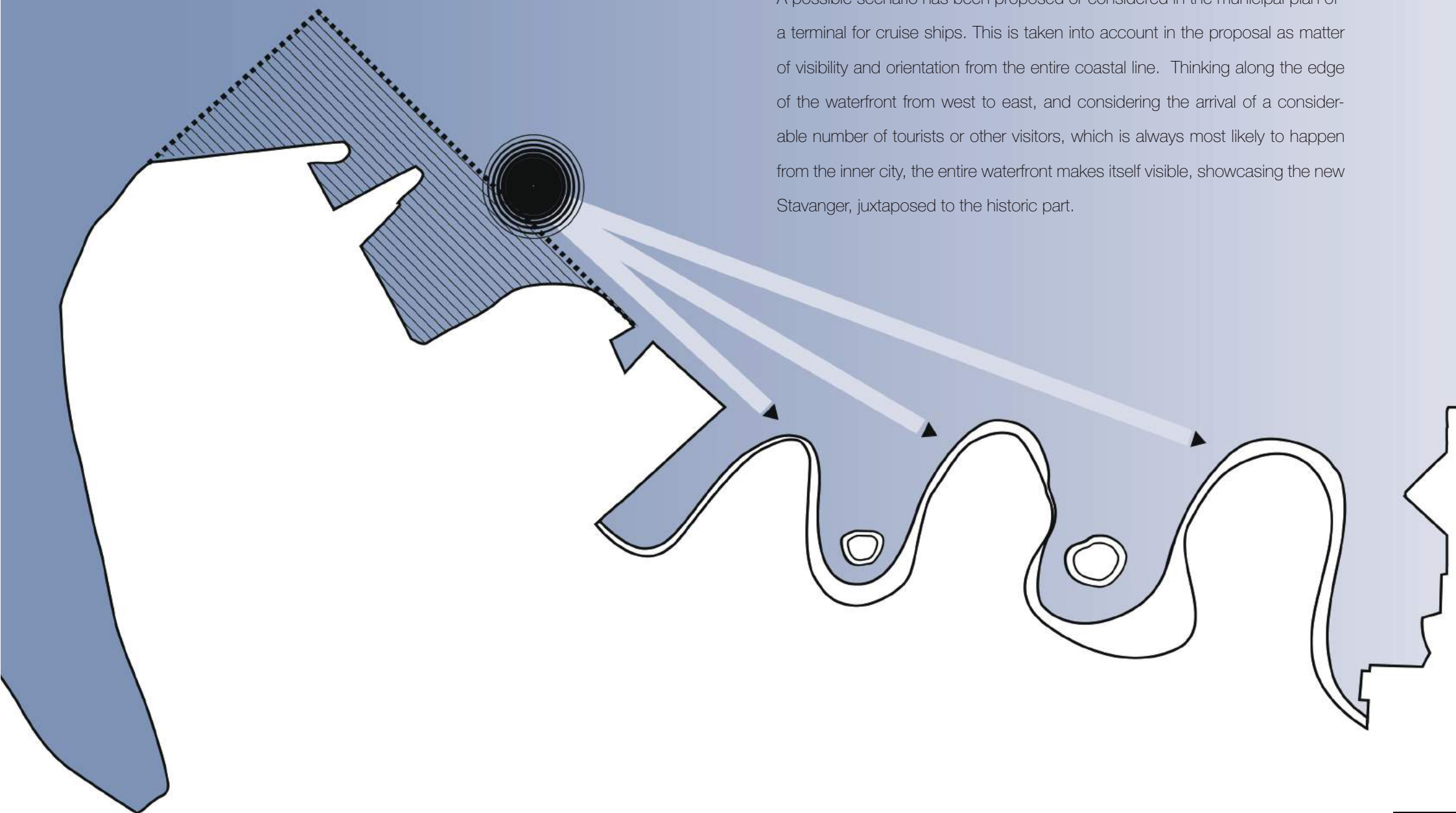### Introducing The New Edge

**3.**

Access points &
Visual corridors

4.

Islands & Lagunas:
Utilizing the Tidal
Energy

A possible scenario has been proposed or considered in the municipal plan of a terminal for cruise ships. This is taken into account in the proposal as matter of visibility and orientation from the entire coastal line. Thinking along the edge of the waterfront from west to east, and considering the arrival of a considerable number of tourists or other visitors, which is always most likely to happen from the inner city, the entire waterfront makes itself visible, showcasing the new Stavanger, juxtaposed to the historic part.
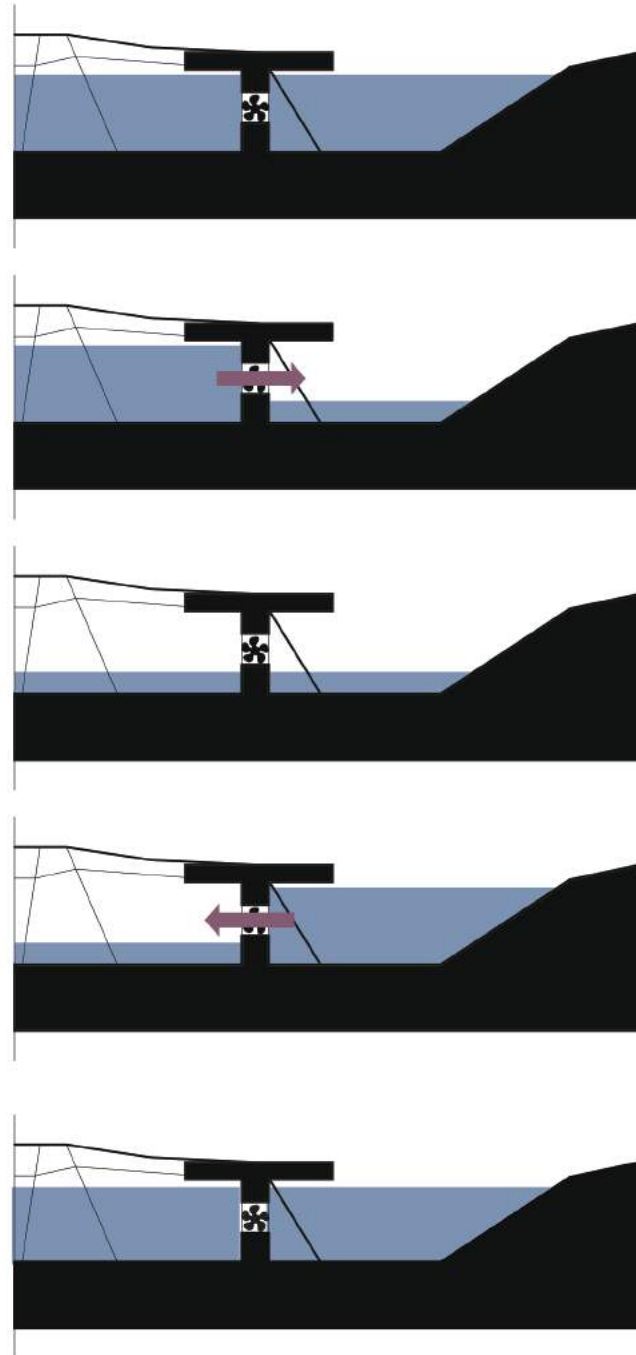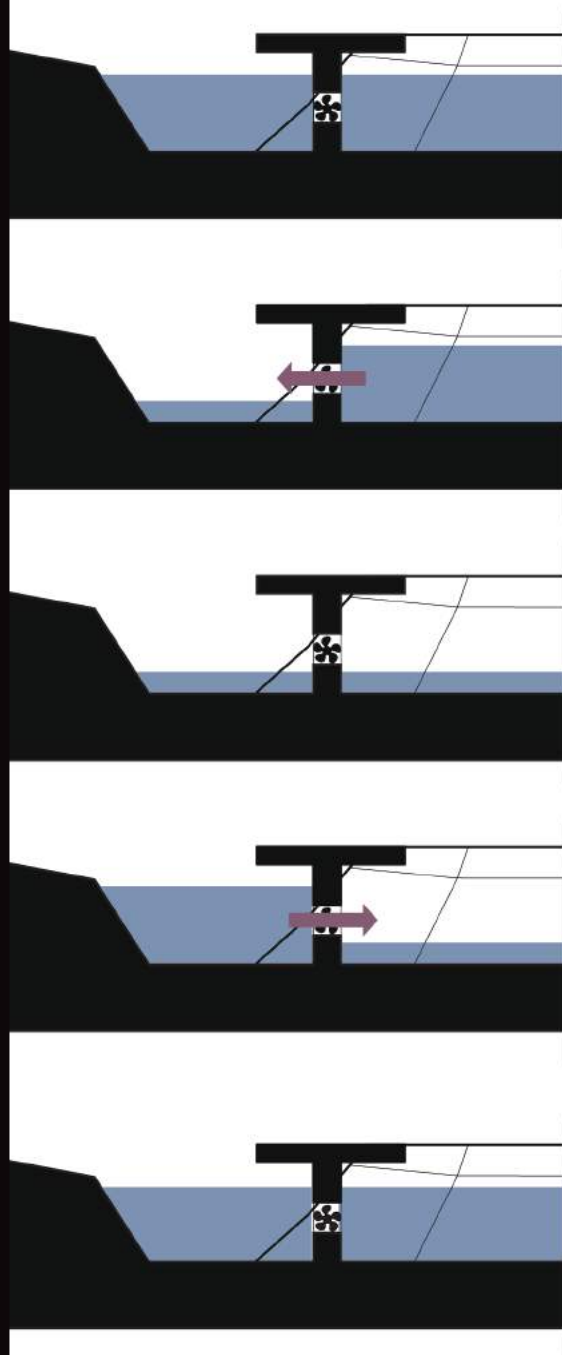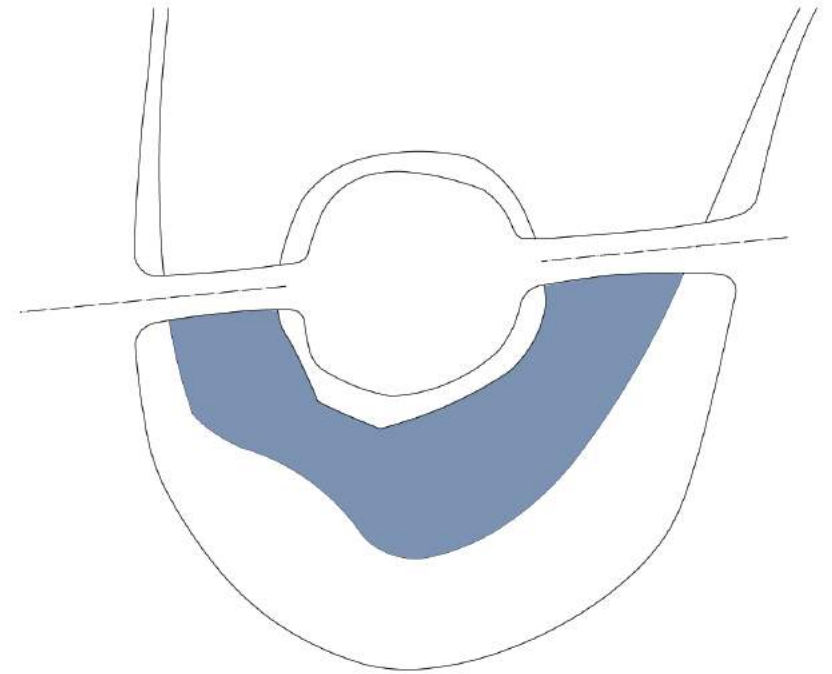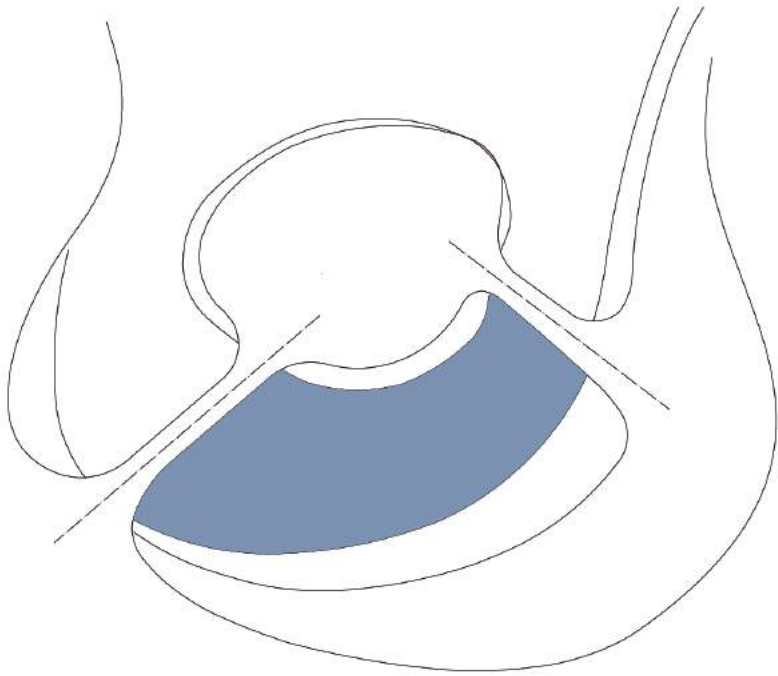
11
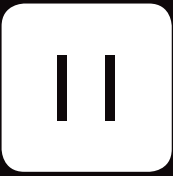
Generating Power

Starting point - High tide, marina is filled with water.
As the tide ebbs the water in the laguna is released
through the valves to generate power.

During low tide no power can be harvested.

Valves are closed during the rising of the tide only to be
later opened and generate power as in the opposite direction.

TIDAL SIMULATION

SIMULATION PARAMETERS: T

Start date: 15 July, 03:32:00
End date: 16 July, 03:32:00
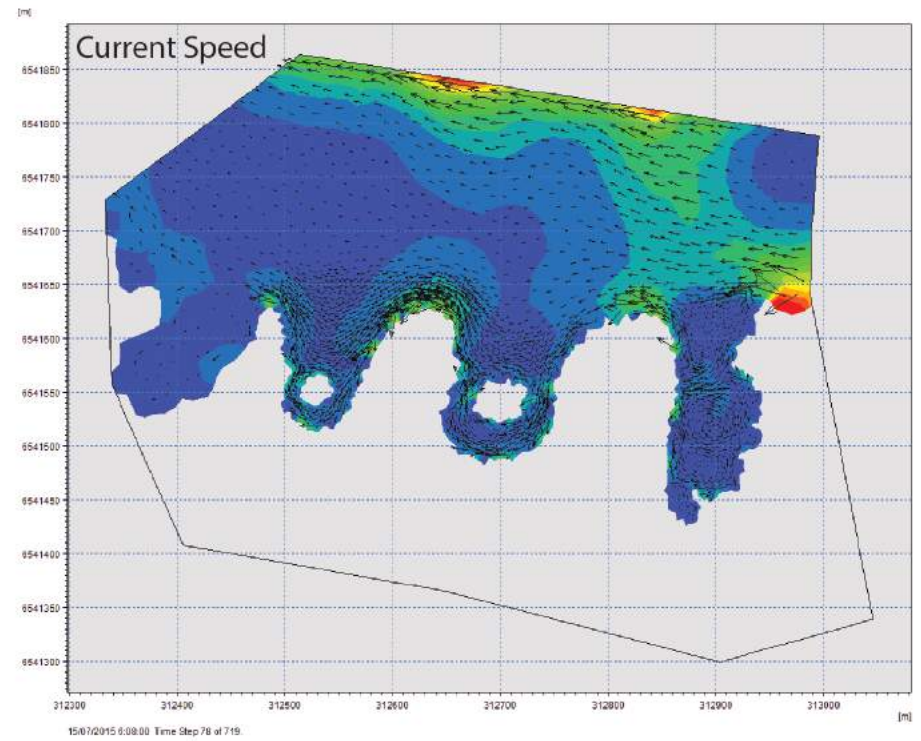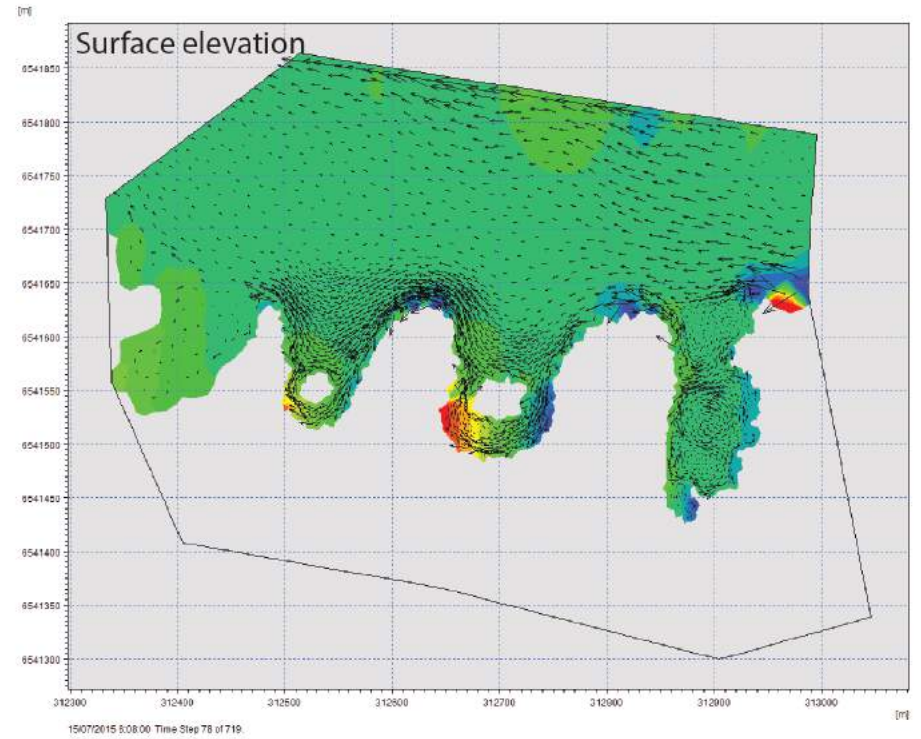
WIND FORCING:

Speed: 8m/s

Direction: East to West

TIDAL FLUCTUATION:

TIME	ELEVATION (cm)
03:32:00	35
09:41:00	82
15:51:00	36
22:04:00	09

Surface elevation

Surface elevation (High/low tide)

Current Speed
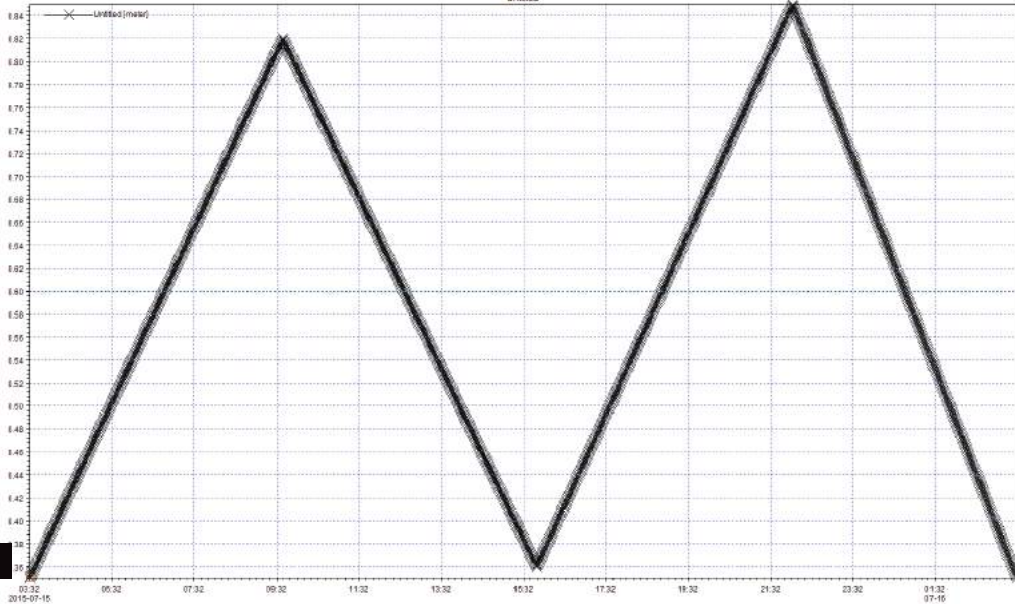
TIDAL SIMULATION
LAGUNA
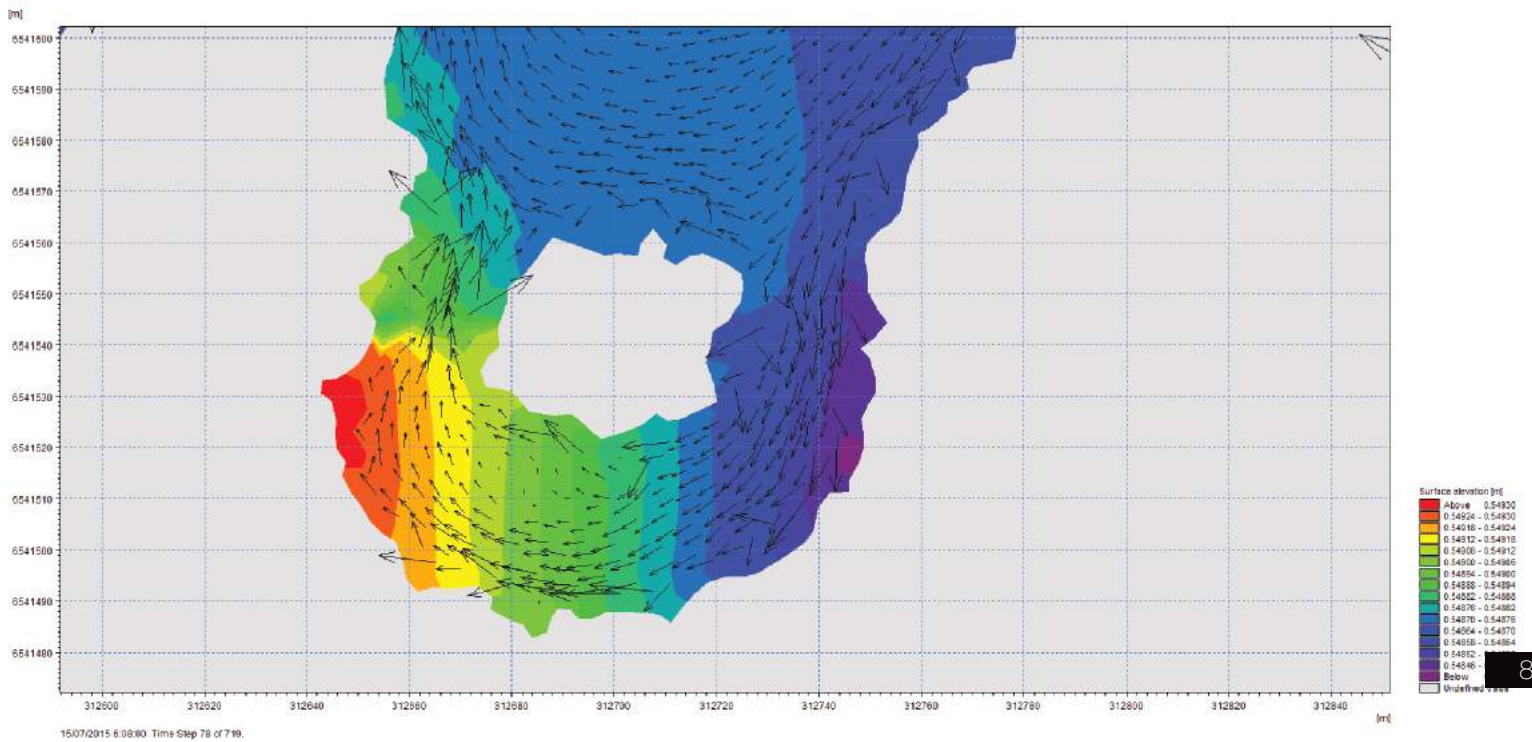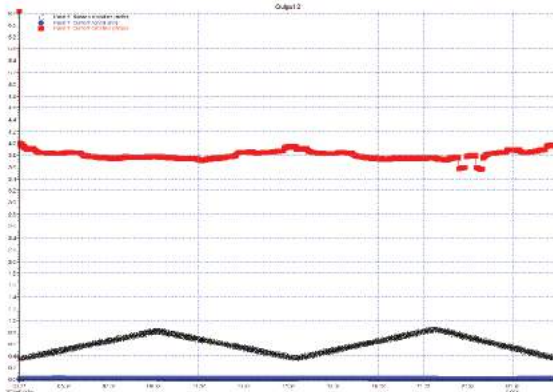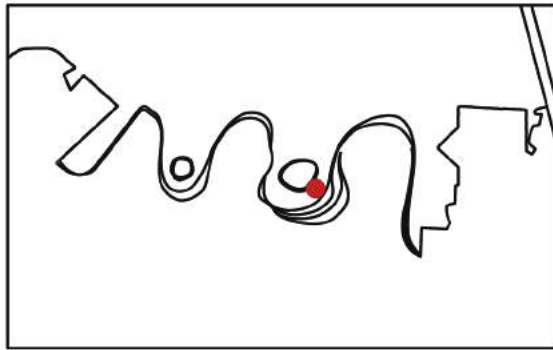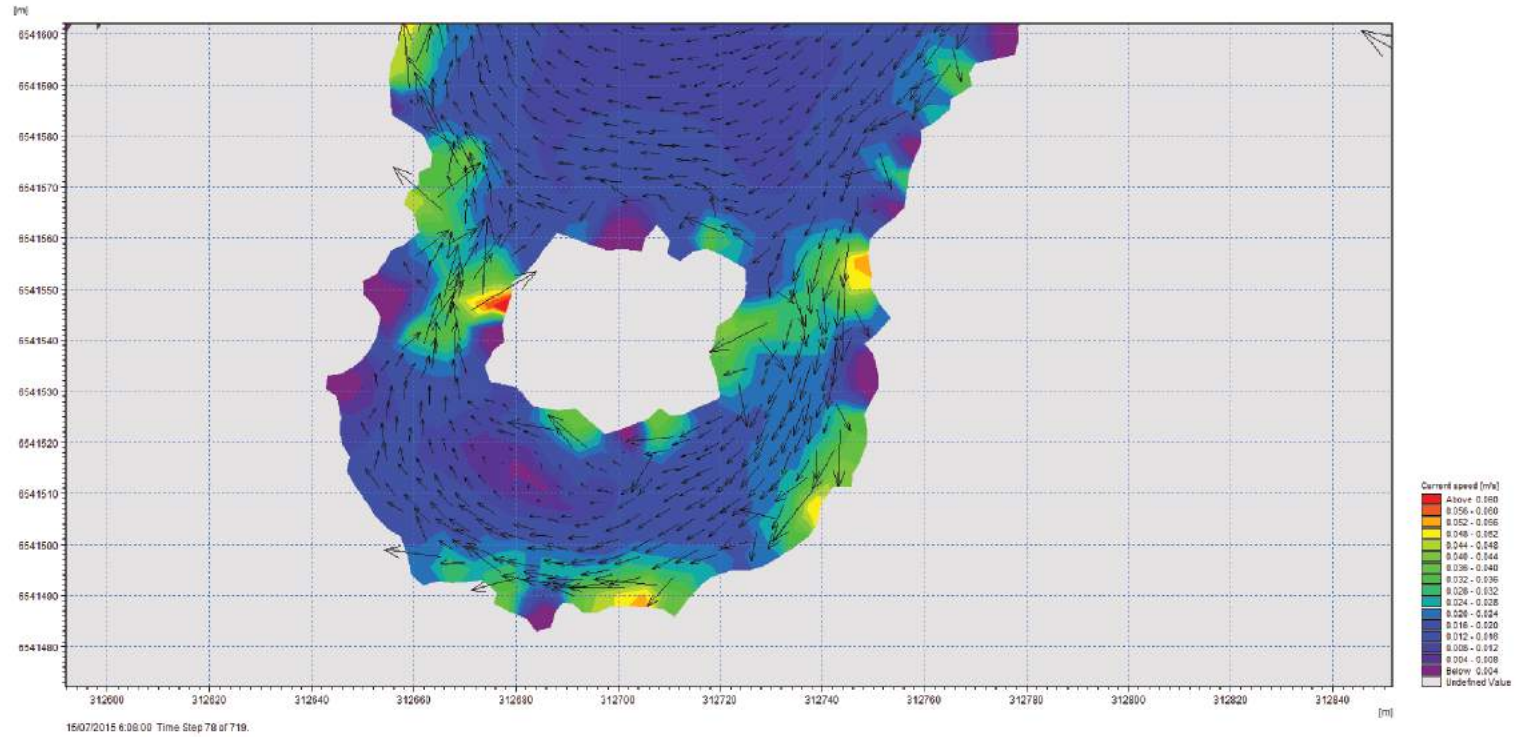
12
CONCLUSION

Reflection

The tools for the design of the edge have come about as a result of inductive analysis of developed waterfronts, which means that the understanding of the edge relates to already developed waterfronts, thus the task of analyzing an undeveloped area is to reverse the process in order to define the components that comprise the "grammar" of the edge when it finally develops. In addition a programming for a the edge must be developed and serve as guideline for the physical design of the edge

APPENDIX

Literature
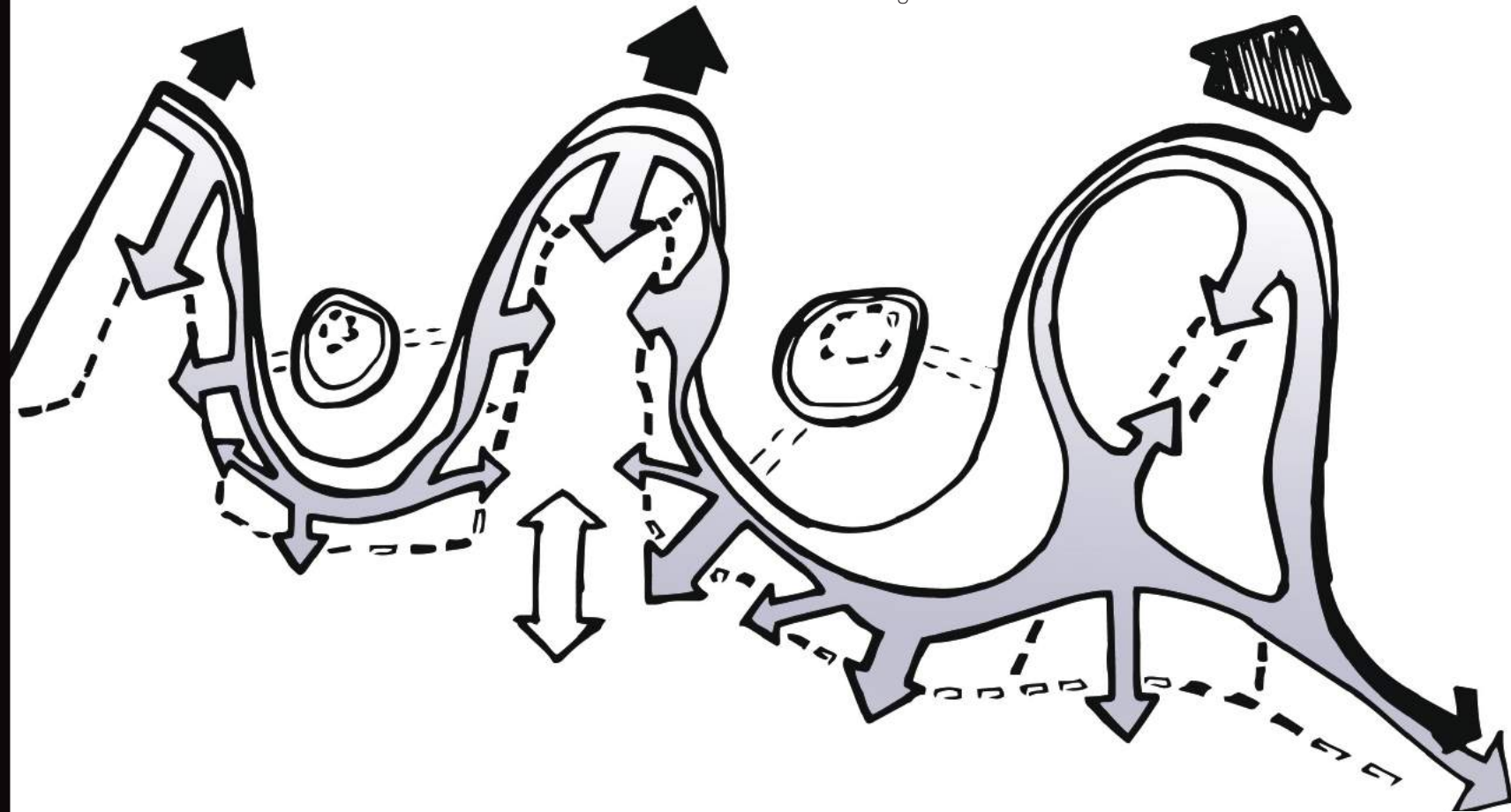
Waterfronts in Post-Industrial Cities,

Richard Marshall (2001) Spoon Press. London

Beyond The Edge, New Yorks New Waterfront

Raymond W. Gastil (2002) Princeton Architectural Press

The Urban Design Reader

Michael Larice and Elizabeth Macdonald (2007) Routledge

Assesing Urban Design, Historical Ambience on the Waterfront,

Richard W. Berman (2006), Lexington Books

City as Landscape, a Post-Postmodern View of Design and Planning

(1996) Tom Turner, Chapman and Hall

The New Waterfront; A worldwide Urban Success Story,

Ann Breen and Dick Rigby (1996)

Waterfronts: Cities Reclaim Their Edge

(1994) Ann Breen and Dick Rigby, McGraw-Hill, Inc.

River.Space.Design: Planning Strategies, Methods and Projects for Urban Rivers

(2012) Martin Prominski, Antje Stokman, Susanne Zeller

Harbourscape, 2007, Hans Kiib, Aalborg University Press.

Designing the edge, an inquiry into the psychospatial nature of meaning in the architecture of the urban waterfront:

Doctoral Thesis, Konstatinos Ioannidis (2011), Royal Institute of Technology KTH, Stockholm, Sweden

Waterfront Development.

Davidson, M. (2009) In: Thrift, N. and Kitchen, R. (eds) International Encyclopedia of Human Geography (Elsevier, Oxford)

Kartverket

STAVANGER

Nivåskisse med de viktigste vannstandsnivåene og observerte ekstremverdier

200	
194	Høyvann med 1000 års gjentaksintervall
190	Høyvann med 500 års gjentaksintervall
184	Høyvann med 200 års gjentaksintervall
184	Høyeste observerte vannstand (8.12.1994)
180	Høyvann med 100 års gjentaksintervall
176	Høyvann med 50 års gjentaksintervall
169	Høyvann med 20 års gjentaksintervall
164	Høyvann med 10 års gjentaksintervall
159	Høyvann med 5 års gjentaksintervall
150	
147	Høyvann med 1 års gjentaksintervall
111	Høyeste astronomiske tidevann (HAT)
100	
88	Middel spring høyvann (MHWS)
81	Middel høyvann (MHW)
74	Middel nipp høyvann (MHWN)
68	Normalnull 1954 (NN1954)
65	Middelvann (MSL)
56	Middel nipp lavvann (MLWN)
50	
49	Middel lavvann (MLW)
42	Middel spring lavvann (MLWS)
20	Laveste astronomiske tidevann (LAT)
5	Lavvann med 1 års gjentaksintervall
0	Sjøkartnull (CD)

● Arkitektur og severdigheter langs Blå Promenade per 2008

1 Bjergsted musikkpark med Stavanger Konserthus, Stavanger kulturskole og Universitetet i Stavanger/ Kunstfaglig avdeling
2 Nytt konserthus, byggestart 2008, v/Medplan AS ark.
3 Utenriksterminal v/sivilark. MNAL Louis Kloster, 1999
4 Admiral Horve, skulptur v/Per Ung, 1997
5 Gamle Stavanger, boligområde fra siste halvdel av 1700-tallet og 1800-tallet.
6 Stavanger Hermetikkmuseum
7 Galleri "Sult" m/utekafé
8 Gamle tollboden v/arkitekt C. H. Grosch, 1840
9 Stavanger Sjøfartsmuseum
10 Rosenkildetorget og Rosenkildehuset m/Nærings- forenigen i Stavangerregionen
11 Fiskeutsalg v/Lund og Kårstein, ark. MNAL DA,1997
12 "Sjøfartsmonumentet" v/Arnold Haukeland, 1968
13 Stavanger Torg og "Tusenårssted", byens største uterom
14 Skulptur av Alexander Kielland, v/M. Vigestrand, 1928
15 Stavanger Domkirke med bispekapellet og bispe- gården (Kongsgård skole), 1125 - 1178
16 Gamle sjøhus, "Solsiden" uterestauranter
17 Skagen, "lysløypa" m/barer, restauranter og kafeer
18 Sølvberget Stavanger kulturhus, v/Lund & Slaatto ark. AS, 1987
19 Fred Hansen-huset, fredet bygg fra 1720/1850, kafé og uteservering
20 Valbergtårnet v/arkitekt C. H. Grosch,1852
21 Skagen Brygge Hotell v/Lund & Slaatto ark. AS,1988
22 Tollboden v/arkitekt Schack Bull, 1905 og "Hall Toll", restaurant og møteplass
23 "Transit Art Space", galleri
24 Stavanger Næringsforenings skulptur v/Hugo Frank Wathne, 1998
25 "De Røde Sjøhus", puber, møteplass
26 Holmen boliger v/arkitekt Stein Halvorsen, 2007
27 Øvre Holmegate, opplevelsesgate i nye farger v/Craig Flannigan, 2005
28 Norsk Oljemuseum (med restaurant) v/Lunde og Løvseth arkitekter MNAL, 1999
29 "Together", skulptur v/Gunn Harbitz, 2001
30 Minnesm. "Oljearbeideren" v/Hugo F. Wathne, 2002
31 Admiral Cruys, skulptur v/Per Ung, 1997
32 MagasinBlaa - kafeer og butikker v/Asplan Viak AS, 2002
33 Pumpestasjon v/sivilark. MNAL AS Nils L. Jacobsen og Helge Schjelderup, 1990
34 Stavanger Aftenblad (med informasjonssentral), 2008
35 Kulturkirken St. Petri v/Fritz von der Lippe 1866, rehab. v/Helge Schjelderup sivilarkitekt AS, 2007
36 ABC-kvartalet, boligområde fra 1800-tallet
37 "Fiskaren", skulptur v/Kåre Orud, 1958
38 Hurtigbåtterminal v/Brandsberg-Dahls arkitektkontor, 2000. (Riksveisamband bl.a. til Bergen og Lysefjorden med Preikestolen.)
39 Kontorbygg v/HRTB AS arkitekter MNAL, 1994
40 Bøkkersmauet, boligområde fra ca 1860
41 Verven 2, ombygging v/Brandsberg-Dahls arkitekt- kontor AS, 2004
42 Badedammen parkområde m/bademulighet
43 Bybrua v/professor Arne Selberg, og sivilingeniør Johannes Holt, åpnet i 1977
44 Natvigs Minde, møte- og selskapslokaler
45 "Broken Column", serie med 23 skulpturer mellom Byfjorden og Rogaland Kunstmuseum v/Anthony Gormley, 2003

Foto Birtmap

● Bruk av kailinjer per 2008

1 Passasjerferjer til utlandet/cruiseskip
2 Småbåthavn/gjestehavn
3 Turistbåter til Ryfylke, Preikestolen mm.
4 Veteran- og restaurantbåter – "Blå turisme"
5 Taubåter
6 Småbåthavn/gjestehavn
7 Fiskebåter/politi- og brannbåter
8 Ferjer til byøyene
9 Hurtigbåter til Ryfylke, Haugesund og Bergen
10 Bilferjer til Ryfylke
11 Container- og stykkgodsfartøy
12 Småbåthavn, gjestehavn og veteranbåter

Når mørket senker seg blir Blå Promenade markert ved nedfelte blå lys langs Strandkaien, Skagenkaien og Skansekaien. I Sand- vigå og i Østre havn (der promenaden ikke går langs kaikan- tene) er promenaden opplyst ved lave pullerter.

Gjennom sommerhalvåret finner flere festivaler sted i Vågen- området. Da settes det opp hvite telt langs Blå Promenade og spesiell lyssetting skaper ytterligere atmosfære.