



BRIDGING NETWORKS

A STEP FURTHER TO UNITE THE RIVERFRONTS IN GOTHENBURG



Erika Fransson | Chalmers School of Architecture | Spring 2017



Tutor: Henrik Markhede | Examiner: Meta Berghauser Pont

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CHALMERS
UNIVERSITY OF TECHNOLOGY

ARCHITECTURE & URBAN DESIGN
Chalmers School of Architecture

Master's Thesis Title: *Bridging Networks - A step further to unite the riverfronts in Gothenburg*

Thesis Period: 16th of January 2017 to the 16th of June 2017

Submission date: 30th of August 2017

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ABSTRACT

The river is splitting the city of Gothenburg in two and the before very strong cultural identity that was related to the water, has now vanished. Even though the city has been recognised to contain both mental and physical barriers, the river is the largest one to overcome. Here, the southern and northern riverbanks either consist of vast empty spaces or housing units generating very little to the public realm. However, the city's vision *RiverCity Gothenburg*, is constituting to reclaim the water and its long-lost identity. The document addresses concepts of safe meeting places in a well-connected, denser and greener city; in, by and around the water.

The purpose of this thesis is to contribute to this vision, but also to further explore and develop its connotations. This thesis is written from the viewpoint that mental factors, such as social sustainability issues, are interlinked to physical attributes such as the built environment. Therefore, the development of Gothenburg should be explored from a more holistic perspective, where different networks and the linking in-between them should be acknowledge. This thesis intention is to nest its way through the understanding of urban planning in Gothenburg, putting it into a theoretical and methodological context, where different networks can be acknowledge and fully explored.

The aim is to create a linking strategy adding further value to already existing structures in the urban landscape, both in the built and in the social fabric. Through a final design proposal, a clear relationship between research and design has been made, exploring and strengthening the cultural identity of Gothenburg as a river city.

Different methods of spatial analysis will allow the design to be further anchored in theory and conceptualised data, displaying possible social networks and movement that further implies different formations of architectural programs.

The outcome reflects upon how we understand and form social frameworks in relation to the physical environment, also addressing the understanding of how to link the different networks together. The design has resulted in a linking strategy with an architectural program; along, over, and beyond the water. The river has now united the city.

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Erika Fransson has spent her architectural education both abroad and in Sweden. She began her bachelor studies in Switzerland at *Accademia di Architettura, Mendrisio*. Later, she would continue her academic journey completing her first master degree from *London Metropolitan University* in The United Kingdom. Currently, she is doing her final year on her second master degree in *Architecture and Urban Design* at Chalmers, writing the very master thesis you are holding in your hand.

Bridging Networks is about understanding the glocal scale, where the city is a system consisting of various parts and scales, inflicting each other all at the same time. The point of view of the author is that architecture relates physically and mentally to human activity. The author therefore states that architecture has the potential to promote and generate positive human activities, where the most beneficial social outcome should be centralized when designing the future of our cities. Using the city of Gothenburg and its unlocked potential of the river, the work has resulted in a linking strategy looking into the possibility of using the water to create meetings between people in the public realm. The water has also been recognized as a key feature in rebranding Gothenburg into a river city, recreating the city's long-lost identity with the river and its waters.

“My previous education have been mostly situated in the small scale projects where a lot of attention have been brought to the single building. By challenging this previous experience, the built environment has become interpreted as a networks that further generates the different coherencies in the city. The view upon architecture as the single masterpiece does no longer exist as this project explores how we can understand the built environments as a network system, coexisting and promoting other types of networks.”

The author has developed a thesis with a strong pulling power both anchored in social liability and architectural design. It is thought provoking in the political realm of urbanism and set an example on how architects and similar professions could, or maybe should, approach the glocal scale in rebranding and designing the future city of Gothenburg.

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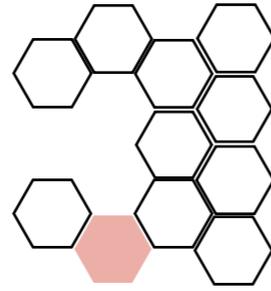
READING INSTRUCTIONS

The thesis could be read cover to cover, but has also been structured into chapters that also could be read independently. Each chapter is presenting its own area of interest further consisting of different headings and under headings. Within each chapter there will be reflections parts that are in straight relationship with the previous text. Here, the aim is to highlight the different conclusions made by the author. A summary is presented in the end of each chapter in order to state the full conclusion that can be made from the concerning chapter. The discussion and result in pink. The references are in a shade of grey.

The hexagon scheme on your right hand side demonstrates the complete thesis and its structure. This is in order for the reader to understand more easily where the different parts in the thesis they are, how they relate, further making it easier to find certain areas of interest. Each hexagon represents a heading within the chapters, where each chapter has been given a colour. Dark blue for the introduction, lighter blue for the context and light blue for the theoretical part. The red colour represents the final design result together with the discussion and result in pink. References have been given a beige colour.

Throughout the booklet writing in the margins have been used in order to underline and conclude parts of the text.

Cursive text has further been used in order to reference and explain the pictures. Pictures that have other authors have been clearly stated in the reference list at the end of this thesis.



TO UNDERLINE AND
CONCLUDE



*The river Göta Älv in
Gothenburg.*



DICTIONARY

CO-PRESENCE

People existing at the same place not necessarily interacting with each other

GLOCAL

When we understand the scales of local and global in a joint perception

MIXED USE CITY

Have been freely translated from the Swedish word *blandstad*

NEIGHBOURHOOD PLANNING

Have been freely translated from the Swedish word *grannskapsplanering*

RIVERCITY GOTHENBURG:

A document created by the city, in Swedish known as *Vision Älvstaden*

SPACE SYNTAX

A theory and methodology used to uncover the relationship between the built and social fabric, also referred to as a type of network analysis

SYNERGY ANALYSIS

Analysis when we overlap scales between the to- and the through- movement

THE CITY BLOCK

Have been freely translated from the Swedish word *kvartersstaden*

THROUGH THE CITY ANALYSIS

Measuring movement through the city and the likeness of choosing certain routes depending on different attributes within the complete network. Also known as betweenness analysis.

TO THE CITY ANALYSIS

Measuring movement to the city as a destination by the level of how integrated different streets are within the complete network. Also known as integration analysis.

INTRODUCTION

A short summary of the complete project will be presented in order to achieve accurate expectations before reading the report. A short background of the project will be presented in order to make the reader able to understand the projects historical origins. The purpose of the project and what method that have been used will be further clarified. Furthermore, the thesis will be put into an academic context in order to increase the understanding of its placement in the bigger picture. The issues dealt with will be specified, as well as how the subject have been methodological and theoretically approached. The result and conclusion will also be stated for.



BACKGROUND

Since the founding in 1621, the different water features has been recognized as essential parts of the townscape in Gothenburg. Here, the natural waterways and canals became meeting points and recreational places for the population in the city. In the industrial era the riverbanks along Göta Älv was known to hold some of the major industries in the country where the harbor came to play an essential role in being the main provider for the city's economic growth. Many of its inhabitants would work and live close to the different industries related to the river, further allowing the city to create a resilient identification with the harbor and the canals.

Gothenburg became known for being a proud working-class city. Since then, it seems that an unintentional planning process of disconnecting the people from the water has taken place. The city filled their canals making room for new modes of transportation, sprawled its inhabitants, fragmented the city through different traffic developments, downsized and moved its industry leaving vast big empty spaces behind. The city lost a big part of its social purpose and identity that it once had, an effect that still remains in the contemporary city.

Yet, the vast empty postindustrial land has also presented Gothenburg with the enormous potential to grow and condense within the very heart of the city. It has created an opportunity to reconnect, rebuild and create new cultural values along the water. By creating a vision RiverCity Gothenburg, the city aims to rebuild the lost cultural values related to the river allowing it to become a more essential part of the city and its inhabitants once again. However, the vision have caused a public debate and concern for the future development of the city. Concrete and precise plans based in precise research has still not been brought to the table, making the suggestions appear to be undefined and non-elaborate. This matter have further generated a feeling of mistrust towards the city as an institution. How the future development of the city by the river should be executed still remains unclear.

PURPOSE

The city of Gothenburg has identified the river as a key feature in the development of new districts, where the city aims to approach the water and make it a more natural part of everyday life in Gothenburg. The river has been identified to contain an unlocked potential that can create a vibrant and attractive city, also bringing back the lost relationship between the water and the city. However, the

NATURAL WATERWAYS
AND CANALS BECAME
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THE CONTEMPORARY CITY
OFFERS THE POTENTIAL TO
GROW WITHIN THE HEART
OF THE CITY

THE RIVER IS A KEY
FEATURE FOR FUTURE
DEVELOPMENT

TO FORGE THE NEW AND
EXISTING CITY TOGETHER

ESTABLISH IMPORTANT
NETWORKS AND THEIR
LINKS

THE RIVER WILL UNITE THE
CITY

connotations and challenges stipulated in the document RiverCity Gothenburg needs to be fully researched, challenged and further developed in order to create a link between cause and action. The purpose of this thesis have therefore been to explore the full potential of the interplay between the existing and new networks in vicinity to the river. The existing networks have been used as a starting point for generating new parts in the networks, forging the new and existing city together.

The purpose of the thesis is to become an experiment not only concerned on how to develop the future of the riverbanks but also to develop the purpose of today's industrial driven river. The goal has been to create a project standing out from the masses, where academic projects have the opportunity to explore matters no matter at what costs.

AIM

The overall aim of this thesis is to see how we strategically and systematically can overcome the mental and physical barrier of the river in order to create vibrant public spaces connected to water. It further aims to establish important networks and their links in order to generate further knowledge about how the river should support, host and generate good public common grounds.

The architectural program will belong to a bigger context aiding in creating a linking strategy that adds further value to already existing structures in the urban fabric, both in the physical and in the mental context. The architectural program will further explore the atmospheric parts of living in a mixed use city by the water, investigating how to create vibrant public realms in contrast to the residential calmer areas. Here, the city is in harmony with nature and the water, still allowing for the vital boat traffic to pass through.

The thesis wants to contribute to the ongoing debate in how we shall form the future city of Gothenburg and will become an experiment resulting in a design proposal. The aim is to create a city along, over and beyond the water that could generate a good public realm. Thus, creating a city with a sensation of belonging, this way the city will become united over the river rather than divided by it.

FRAMING THE QUESTION

The city has acknowledged the many different types of barriers that are all contributing to a feeling of separation, fragmentation and alienation between its citizens and the city. This thesis approaches the question of separation by looking into the biggest barrier of them all, the river. The river is the main contributor to dividing the city in two, creating physical and mental distance between the citizens of the two sides. Therefore, one can argue the importance of diminishing the gap in between, bringing the two sides closer to each other. More specifically identify the different networks at stake that can be reinforced and aid in decreasing the alienation between the northern and southern riverbank. The river is the largest barrier out of many, yet it contains a great potential for bringing back the long lost identity of the city and unify its citizens.

HOW DO WE SYSTEMATICALLY BRIDGE THE GREATEST BARRIER IN THE CITY OF GOTHENBURG?

METHOD

The overall method will consist of various spatial analysis both based in theory and methodology. The aim is to form a design result well argued for, taking into account the different existing points of views on the matter of urban planning, but also more specifically urban planning in Gothenburg. This thesis becomes an experiment in its own approach, with the aim to address the issue as systematically as possible.

The connotations and challenges stated in the RiverCity Gothenburg vision will be used as the departure point for this thesis. Other public documents from the city will be presented and argued for in the light of the RiverCity Gothenburg vision. Also, other authors and experts will be making their voices heard concerning the river and its future development. The issues that are stated for will be taken into account, and further developed and argued for, if it is considered relevant. Other important influences such as urban thinkers and planners will also be critically addressed and presented depending on its relevance for this thesis. This will put the design proposal into a contemporary context where parallels can be drawn between urban planning in general, but also between the specific developments of Gothenburg. Furthermore, the selection of site has been made in order to make the

VARIOUS SPATIAL
ANALYSIS WILL
CONTRIBUTE TO THE
METHOD OF INVESTIGATION

proposal more approachable and concrete. Also in order to test how far possible mental aspects reaches beyond its geographical limitations.

By using space syntax, the design will become anchored in conceptualized concrete data and theory. The computer program have a potential to measure and display possible networks of movement, further implying that different spaces with different social character could be formed and taken place within the city network. The city can be read at its current state but the program will also allow us to form new patterns of movement, further measuring them against the existing ones in order to generate a positive change. Here, space is defined and characterized by the two principal movements the through the city and to the city. The aim is to create a picture of a city where space is both a destination, but also an experience of passing through a set of spaces. The spatial analysis generated from space syntax is known to be networked based. This is allowing us to further understand the city not by its individual spaces, but the relationship between them on various scales. Therefore, a synergy analysis will be executed studying the effects of how the local and global networks support and generates different intensity in different areas.

The different spatial analysis based in spaces syntax will allow the architectural approach to become more profound, both in its physical and mental approach. By further implementing the mapping of functions, these will become a tool in order to strengthen the implemented paths of movement. This will also further aid in creating an architectural program, where the mixed use city is in focus. The architectural program will not only demonstrate the generalised and ideal situation at a certain point in time, but also the scenario on how the flux of people can differ in spaces causing co-presence qualities to differ.

DELIMITATION

This thesis is foremost concerned with the movement of pedestrians due to the fact that the tool of space syntax is not capable of measuring other types of transportation. The network model will therefore only take into account the pedestrian's point of view. However, the formation of the new street network will be approaching the matter theoretically, stating that a mixed transportation use will produce streets that mentally appears safer.

The architectural program is mainly focused on the city at eye-level, where the understanding of heights and their restrictions only have been assumed and generalised. The horizontal world that is demonstrated in the different maps has been created according to the vision of a mixed use city, further focusing on how the physical environment interplays with the different mental aspects in the city. The program will aim to represent a complete picture of the city, where both the residential parts and recreational activities takes place at different levels of intensity.

The site of implementation is the southern river bank between the existing bridges that reaches over Göta Älv in Gothenburg. The site is today an empty post-industrial area well suited for an assumed expansion of the city. Here, the effects that can reach beyond its geographical borders will be investigated. The scale moves between a local neighbourhood scale and a global city scale, referred to as the glocal scale.

The RiverCity Gothenburg vision states several suggestions in achieving the dream. Here, challenges are identified in order to be turned into opportunities for the future development. These challenges are broad and nor do the document further express how they actually could be turned into opportunities. Even though the vision identifies segregation, climate change and changed economy as the major issues to tackle, this thesis will aim to give a complete theoretical background as possible but with limited principles on how to tackle them. Even though principles may be added, they still will demonstrate how cause will be turned into action. This thesis will never claim to have solved the issue of segregation, changed economy or fully addressed climate change in Gothenburg, but maybe it will show one out of many methods on how it could be possibly addressed.

The first stage of the cable railway was addressed in the different spatial analysis, however the structure generated very little in aiding connecting the two sides. Furthermore, the structure is creating a distance between the citizens and the water not promoting interaction with the river as was the purpose and aim of this thesis. Therefore, it has not been further addressed.

THE CITY AT EYE-LEVEL

THE GLOCAL SCALE

A COMPLETE THEORETICAL
BACKGROUND IS THE
FOUNDATION OF THE
PRINCIPLES

A LINKING STRATEGY

THE RIVER WILL UNITE THE
CITY

RESULT

The result is a design proposal based on theory in combination with methodology. It has systematically explored the forging between the river, the new district and the existing city. The goal have been to form a linking strategy in order to allow the water becoming a central part in hosting, supporting and generating different social processes that are necessary in order to create a vibrant Gothenburg. The linking strategy is a physical structure that relates to a mental network, further enabling movement of different resources and people. It has demonstrated the physical and mental impacts that are necessary in order to create and achieve a unified city, both through its development approach but also during the process of rebranding and recreation. The city will no longer be split in two, but the river itself will become an instrument to unite the city. The reinvention of the geographically limited southern riverbank has allowed for an opportunity to mend the gap unifying the citizens, over the river but also further beyond. The physical structure has bridged the barrier of vast and alienated spaces and turned into an attractive new mixed used district with various intensities.

The project have enabled the understanding of how different networks and their implementations work through various scales. Architecture has not only been limited to the formation of a single building, but rather the setting of continued landscape of the built environment of the city. The process has allowed us to gain a bigger understanding of the different existing networks that overlap each other and how we can add to them successfully. It has demonstrated how the flux of people change places, adding further context when it comes to designing for future developments. The micro is in relationship with the macro, generating different types of spaces within the pattern of intensity. Here, several neighbourhoods have been developed, different in character yet they all approach and invites the water as a natural part of everyday life in Gothenburg.



CONTEXT

The project will be placed in two different contexts, the context of time and the context of theory. The context of time will present the water and how it created an identity both for Gothenburg but also for its citizens. The unintentional planning away of its features created an identity loss that have tried to be recreated in the contemporary city. The contemporary vision RiverCity Gothenburg will be clarified and broken down into connotations where challenges and opportunities will be presented. Furthermore, the context of theory will present the academic and theoretical approach generating further depth and insight to the challenges and issues facing the RiverCity Gothenburg vision.



CONTEXT IN THE PERSPECTIVE OF TIME

GOTHENBURG- A HISTORY OF PLANNING BARRIERS

WHERE IT ALL BEGAN

The inlet of Göta Älv has since the founding of Gothenburg in 1621, been important for both trade and business. The harbour was a centre for shipping, where relationships were fostered as exchange between cultures and knowledge took place. (alvstaden.goteborg.se) Since the founding of the city, the riverbanks have been housing many different types of activities and people; sailors, merchants, trading companies, service companies, shipping enterprises and shipyards. Today's offices and housing units have also become part of the historical context. (Jacobsson, S. 2013)

Between the 17th century and until the 19th century, the harbour would remain approximately the same size, exporting mostly wood and iron. During this time period, the surrounding environment of the riverbanks would be made of a rural character. The land was characterized by its meadows, marshes and its close connection to the water. The characteristic mountain cliffs were important features in the city, as they still remain in the contemporary city landscape. (Jacobsson, S. 2013)

THE INDUSTRIAL ERA

In the latter half of the 19th century, Gothenburg would experience its first rapid population growth. This was mostly due to people from the surrounding areas seeking their way into the city and the opportunities the city could offer. The Landshövdinghus and Stenstaden in Vasastan and Lorensberg were all part of the expansions that were taking place, both of them still remaining important features in the city of Gothenburg today. The city block was still the preferred way of planning a city. (Jacobsson, S. 2013)

At this point in history, Gothenburg was still highly dependent on the river, as well as on the many canals inside the city. The water ways would create modes of transportation for both people and resources. The bridges over the canals became natural meeting points and recreational places, which further became a large part of the city's identity. (Asplind, B., Pettersson, P. 2013) However, as the railroad would expand in the 19th century, it created opportunities for businesses to not only depend on the river as a way of transportation. The businesses would relocate

THE INLET OF GÖTA
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TENDENCIES OF A SPREAD
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OCCUR

THE FRAGMENTED STREET
STRUCTURE IS STILL
AFFECTING US TODAY

themselves, and so would their working inhabitants of the city. As the tram would be introduced as a mode of transportation, tendencies of a spread out city amplified. The existing streets would be reinforced by the tramlines, but would also become a tool in creating new streets as the city expanded. In the beginning of the 20th century, the city lost a large part of its character when most of the canals were filled in order to make way for the increasing traffic in the city centre. Furthermore, the image of the city by the river drastically changed as the every day dependency on the river gradually decreased. (Asplind, B., Pettersson, P. 2013) The wooden houses in the rural landscape would be replaced by larger industrial areas, where the shipping companies required their representative stone dwellings and where the function of the shipyards would claim their space. As the export would increase, so would the industrial marine character at the riverbanks. (Jacobsson, S. 2013)

THE ENTRY OF MODERNISM

In the beginning of the 20th century Gothenburg would continue to expand heavily, spreading out evenly towards the outskirts of the city. The tram became an important tool in order to enable the different living areas on the outskirts and to connect them to the city centre. (Legeby, A., et al. 2015:3) Even though the city had grown greatly in just a short period of time, the distances were still feasible for both pedestrian and cyclists. In the beginning of the 20th century, Gothenburg was still characterized by being a mixed city and was still perceived as a complete city network. (Asplind, B., Pettersson, P. 2013)

The strategy of urban planning, before characterized by the city block, was now being replaced by the new idea of neighbourhood planning. The different parts of the city would turn into distinct units, operational from both social and architectural aspects as well as functional. All the different resources would now be located in the centre of every unit. The urban planning of the time resulted in big industries and living areas being placed far apart further contributing to people's need of transport. The car would greatly come to influence the planning of the city, where the idea was to keep traffic and residential areas kept apart. This resulted in a fragmented street structure affecting us to this very day. Old historic routes would be cut through and streets would be separated depending on function, creating a major barrier for cyclists and pedestrians in the city. (Asplind, B., Pettersson, P. 2013)

THE LINKING CITY

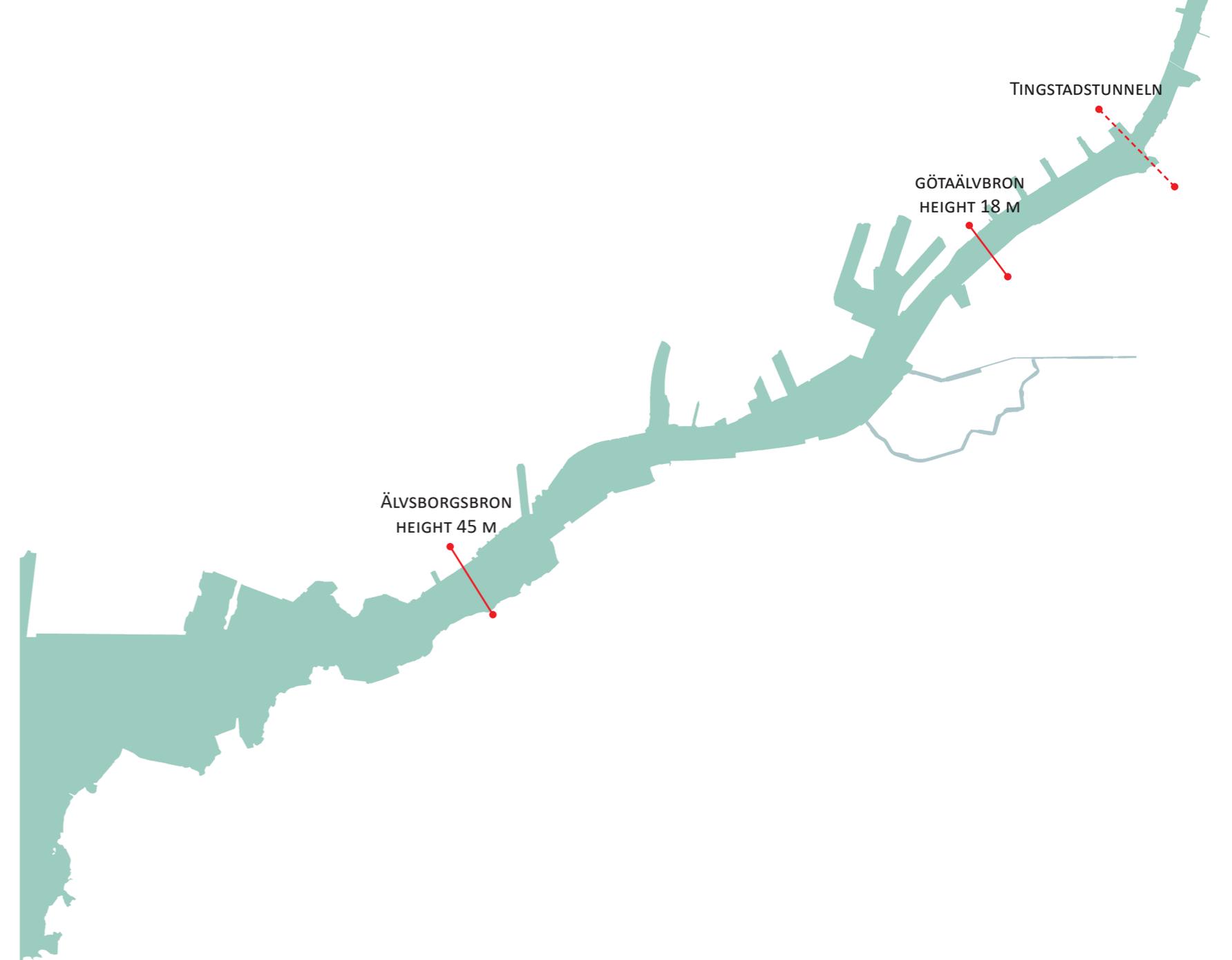
The first physical connection between the sides was already constructed back in 1874. Even though ferries had been the mode of transportation for a long time between the two sides of the river, Hisingsbron became an important rigid enforcement between the banks. It would later be tarred down, replaced by a new bridge in 1939, today known as Göta Älvsborgs Bron. In the middle of the 20th century, the harbour and its industries flourished and there was a need for another physical connection over the river. The discussion generated in a decision to build both Älvsborgsbron and Tingstadstunneln, further facilitating people to move between the two sides of the river. (Asplind, B., Pettersson, P. 2013)

Later on in the 1970's, the harbours downsizing caused an identity crisis for Gothenburg. The city that used to have a strong relationship to the working class industries, most of them related to the river, disappeared as the industries would to. Even though the city have tried to rebrand itself as a knowledge and event city, the identity crises that rose during the downsizing still remains today. Most of the industries are long gone, yet the identity of the working class hero still lingers on in the mind of the city population. (Asplind, B., Pettersson, P. 2013) One of these examples of a lost emotional tie from Gothenburg's harbours palmy days is the banana boat. Even though the harbour have been exporting and importing many different goods, it was the banana boat that through the years would become a symbol for the harbour and the trade with other countries. Many citizens created memories of the banana boat, how it arrived and anchored by the banana pier becoming a part of the city image. In 2013, the last banana boat with bananas arrived at the harbour, ending an era. (goteborgshamn.se)

The shipyards liquidation happened successively from the end of 1970, leaving several large buildings and hundreds of square meters of empty space behind. At the northern side these would become new objects for the housing market in the 1980's. However, some of the industries remain more resilient than ever. The establishment of Stena Line in the 1960's have definitely left its impact on the harbour environment, still taking up a large space of the southern harbour area. (Jacobsson, S. 2013)

THE FIRST BRIDGE WAS
CONSTRUCTED IN 1874

THE SHIPPING INDUSTRY
WAS ONCE PART OF THE
CITY IMAGE



The links over and under the river.

THE CONTEMPORARY CITY OF GOTHENBURG

Even though car traffic during the 20th century has left a great impact on the development of the cities, it has today become its own enemy. What before was perceived as qualities, has had a larger negative impact on when it comes to losing other important values. Issues of accessibility, polluted air, noise levels and other barriers created by the car, are today resulting in cities trying to redistribute the importance and dependence on the car. This has led to alternative transportation modes, such as biking, becoming a more valuable mean of transport as it reduces the dependence on the car and its negative effects. (Legeby, A., et al. 2015:3) Furthermore, other effects such as the reformation of municipality operations, change in the composition of the population, change of administrative boundaries and cutting of resources have also effected the physical nature of the city. Today's urban pattern plays by a different set of rules, yet the physical form remains the same. (Legeby, A. 2013)

Today's Gothenburg has been shaped from these different turn of events, where both physical and mental effect remains. As the city spread out and became fragmented, it is today not easy to grasp the connection between the historic and cultural valuable places. When it comes to the river, the strong identity Gothenburg ones had with it and its water, is now hard to reach both mentally and physically. (Asplind, B., Pettersson, P. 2013) Therefore, the river has been identified as one of the key features in the development of the future city. The mark left by history and its water landscape, are some of the characteristics in the cityscape that remains important to keep. While in many cases the access to the river is limited, this has not affected the city's inhabitant's need for access to the water. (alvstaden.goteborg.se)

THE RIVER IS A KEY FEATURE
IN THE DEVELOPMENT OF THE
FUTURE CITY



A collage of time

THE OLD CITY

At this point in time, the city's every days activities was still centered around the river. The water had an important recreational character as well as the creation of livelihood.



The city center in 1815



Image 1. Lejonbron Gustav Adolfs Torg 1820

THE MODERN CITY

The river have been exploited for industrial reasons and some of the canals have been filled. The water still remain in creating identity as Gothenburg takes pride in being a working class city.



The city center in 1921



Image 2. Masthuggskajen 1912

THE CONTEMPORARY CITY

Gothenburg is looking for its lost identity with the water. As vast and empty spaces are all of the remains of an industrial era, new ideas and concept starts to form as the city is being densified around the water.



The city center in 2017



Masthuggskajen 2017

A VISION OF PLANNING WATER

RIVERCITY GOTHENBURG

“The identity of the city is to a large extent defined by the river, the history of the city within the moat, the industrial legacy and the cultural diversity. These are strengths that future development of the city should rely on.”

(Rivercity Gothenburg, vision. 2012)

The project RiverCity Gothenburg are one of the largest development projects in the Nordic countries where the size of the city has been calculated to double. The project aims to expand along both riversides housing 25 000 new apartments and creating 45 000 new work opportunities. The vision is part of a bigger strategy for the region as a whole, where investing in infrastructure will reassure the region to grow and to continue developing. (alvstaden.goteborg.se)

It is a vision about a denser, greener and a more socially sustainable city where the relationship to the water is strong. Culture and business can be developed alongside each other, creating an international attraction force. Gothenburg will be open inwards to its citizens, but also outwards to the world. A place where both the unknown and the known can meet. (RiverCity Gothenburg, Vision. 2012) The years of urban planning unintentionally sprawling people, not only away from the city centre but also away from the water, seems to have come to an end.

ONE VISION, THREE STRATEGIES

Overall, the RiverCity Gothenburg vision aims to contribute to a sustainable development in the city, but also in the west of Sweden. Furthermore, the vision state to create an attractive, sustainable city from an economic, social and environmental point of view. In order to do so, three strategies have been formulated in order to realise the vision. (RiverCity Gothenburg, Vision. 2012)

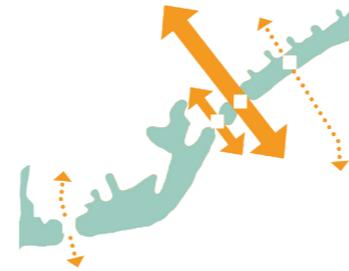


Image 3. Connecting the city

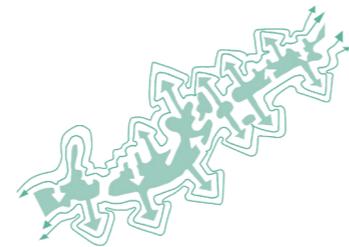


Image 4. Embracing the water

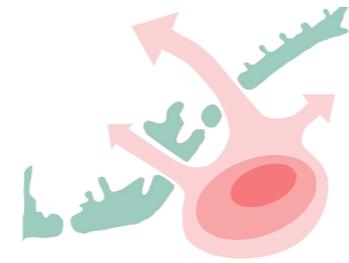


Image 5. Reinforcing the center

CONNECT THE CITY

“We will create a mixed city with pedestrian and cycle friendly streets & paths and neighbourhoods with lots of vibrant meeting places. At the same time, we will offer the people of the city the opportunity to be involved in the development of RiverCity Gothenburg.”

Build to promote mixed housing

Provide space for meetings and play

Create a city at eye level

Create strategic links across the river

Eliminate barriers

Use what already exists as a starting point

More people will have an opportunity to influence

Start with temporary measures

EMBRACE THE WATER

“We will create a living, attractive riverside space and deal with the effects of climate change. We will make it easy to live a sustainable lifestyle.”

Develop shipping in the harmony with the city

Create meeting places along the water

Add more greenery

Develop smart system

Make green technology visible

Facilitate sustainable lifestyles

Use the strategies attack, retreat and defence as a starting point

Develop innovative solutions

Allow the rain to enrich the urban space

REINFORCE THE CENTER

“We will reinforce the regional centre to strengthen Gothenburg and West Sweden as a whole. The design of RiverCity Gothenburg will stimulate development towards a more diversified and robust regional economy.”

Capitalize on existing strengths

Use culture as a driving force

Large and small meet

The region will meet at its centre

The inner city will grow across the river

More people will walk, bicycle and use public transport

Create international reputation

Build a compact city

Reinforce diversity

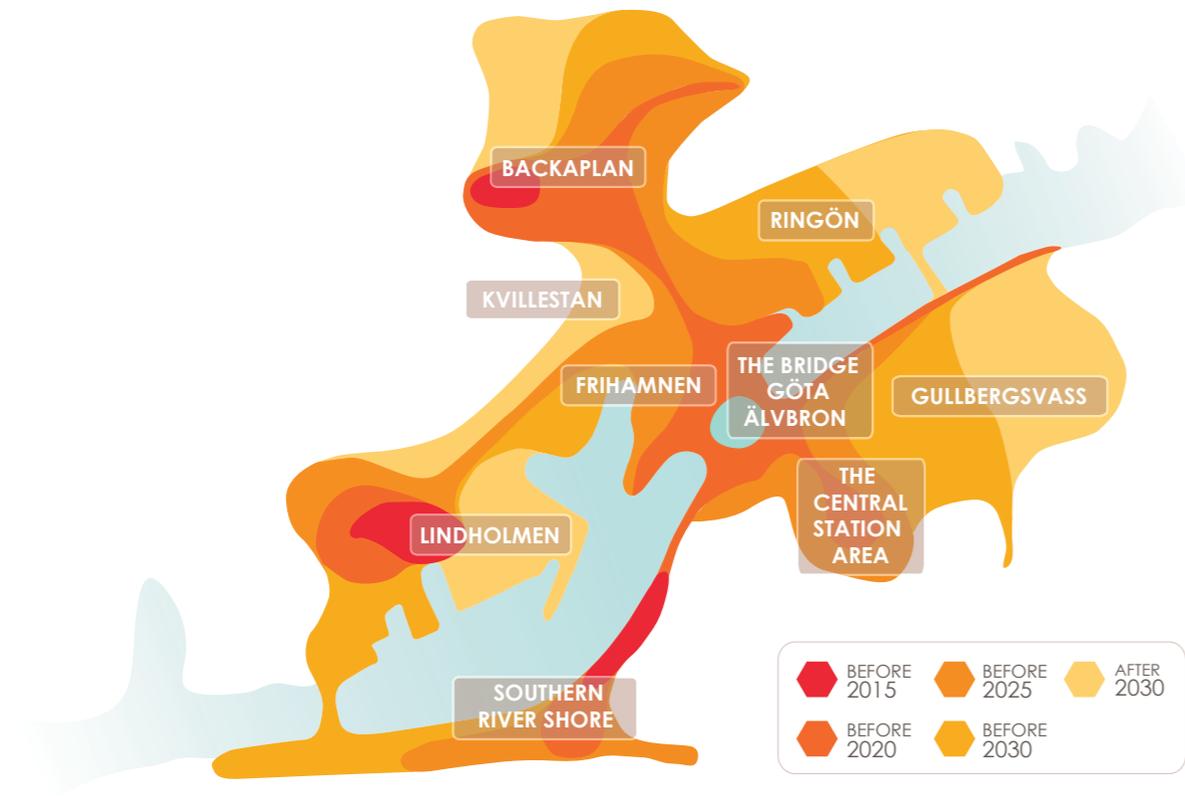


Image 6. Development plan for RiverCity Gothenburg vision

IDENTIFIED CHALLENGES IN THE RIVERCITY

In the city we find the people, but here we also find many of the challenges to unsustainable ways of living. If we could change the behaviour of people by building better cities, this could also lead to a more sustainable future. (scapescape.se) The RiverCity Gothenburg vision sees the potential to release driving forces where the city will turn their challenges into opportunities. In the document three main challenges have been stipulated in order to create guidance and awareness. Changes in global economy, the socio-economic differences together with climate change, can become assets in order to contribute to a more integrated approach when developing Gothenburg. The vision is aiming to provide guidance on how the city can develop sustainably, reinforcing Gothenburg but also the west of Sweden. (RiverCity Gothenburg, Vision. 2012) The following three challenges have been issued and identified in the document RiverCity Gothenburg (2012).

A CASE OF A SOCIAL EXCLUSION

The continued globalization has increased segregation in the city. Gothenburg is today a socioeconomically excluding city. Gothenburg has today has issues of economic and social deprivation that has become clustered in specific parts. (RiverCity Gothenburg, Vision. 2012) This issue have further been recognised in an article written by T. Pelaseyede in 2011. She argues that, depending on where you live will determine your income, sick leave and for how many years you are expected to live. The statistics demonstrates that different areas are coloured by economic and social deprivation where people with different income, education and origins, live in different areas that further is causing people to distance themselves from society. (Pelaseyed, T. 2011) The statistics tells us about a segregated and clustered city, a fact recognised by the city but also by media. However, whether it is the single cause of globalisation still remains to be determined.

A CASE OF A CLIMATE CHANGE

The city center of Gothenburg is densely built, often nearby features of water. Periods of high water have during the latter half of the 20th century doubled. Therefore, the future built environment needs to be directly concerned with dealing with its effects. The document claims that in order to create an infrastructure and a robust urban environment, the aim is not only to reduce the effects but also resist the natural forces. (RiverCity Gothenburg, Vision. 2012) Local extreme flows of

DEPRIVATION HAS BECOME
CLUSTERED INTO SPECIFIC
PARTS IN GOTHENBURG

water happens on a daily basis in Sweden. The city have recognised the issue and have put a lot of effort in order to do different types on risk analysis, understanding what areas that are at risk. The potential for integrating water with a high level of exploitation in small spaces, need to be addressed in order to not increases the risk of expensive damages on buildings and infrastructure during unexpected event such as downpour. Therefore, how to handle this is essential as the city expands in the very heart of Gothenburg. (Persson, J. et al. 2015)

A CASE OF CHANGED ECONOMY

Gothenburg is to a large degree depending on exports, further implying its dependence on what happens beyond our borders of our country. Therefore, it is important to explore and understand what it is that could stimulate further development of complimentary sectors, such as the role of urban planning. (RiverCity Gothenburg, Vision. 2012) Urban construction research shows time and time again that the design of our urban environment is important for the functioning of the city, both for social and economic values. Urban construction is a kind of spatial capital that enables economic and social capital to grow. (Sisjö, B. 2017) The document RiverCity Gothenburg however remains unclear and vague on how urban planning could be addressed in terms of economic in combination with social gain. It can easily be interpreted to economic gain solemnly and not acknowledge the social values that needs to come along with it.



Image 7. Facing challenges and their opportunities

PLANNING WITH WATER
NOT AGAINST IT

TODAY THE CITY DEPEND
ON WHAT HAPPENS BEYOND
ITS BORDERS

TO PAINT A PICTURE
OF THE CONTEMPORARY
DISCUSSION

POPULATION BOOM IN
GOTHENBURG IS PREDICTED

HOW DO WE AID THE
EXISTING CITY IN
QUESTIONS LIKE SOCIAL
EXCLUSION BY BUILDING
NEW DISTRICTS?

THE CONTEMPORARY PUBLIC DEBATE

The ongoing public debate have been most easily followed and overviewed in different newspaper and articles, but has also been mentioned in several reports and essays. Here, the debaters and authors from different backgrounds have expressed their various opinions in the matter of developing the city around the water. It aims to paint a picture of a contemporary faceted discussion where some of the main concerns will be brought into the light.

It is estimated that until the year of 2025 the city will grow with 6500 inhabitant per year, where the entire region is estimated to have 611 000 citizens in total. (Svensson, P. 2014) Gothenburg is therefore facing a major urban construction challenge where ambitious housing goals, metropolitan requirements, sustainable transport system, space for people and business are all part of a goal in generating a city of quality. (Sisjö, B. et al. 2017) In order to accommodate all these future citizens the need to build large quantities fast, is increasing. Frihamnen, one of the first areas to be developed under the RiverCity Gothenburg vision, will set an example on how to plans will be turned into action in creating an environment based on the vision. Here in the mixed use city, offices and businesses will be mixed with the life of the city's population. By allowing for both rented facilities together with condominium, Frihamnen have the potential to set the very example of how to create a fusion between people from different backgrounds. (Lönn Lundbäck, A., Svensson, B. 2016)

Frihamnen does not alone solve the issues of segregation nor does it aid existing districts in their increasing residential needs, states Lönn Lundbäck and Svensson. Even though the proposal of adding mixed housing could be a way to create social inclusion, it is not the complete remedy. Instead, we need to focus on building in all the parts of the city before segregation creates a completely divided city, concludes Lönn Lundbäck and Svensson (2016). Even the publication *Delad Stad* highlights the issue of RiverCity Gothenburg and that it is implying a greater impact beyond its geographical borders then possible. The vision is arguing for enriching and contribute to the many parts of the entire region, yet its geographical areas are limited and so its effects. To what extent the new development of RiverCity Gothenburg will change the living condition for people living on the outskirts of the city, needs to be further clarified. (Legeby, A., et al. 2015:4)

Furthermore, recently proposed solutions for public transport in and through Frihamnen has also further added to the risks the area to become an isolated island, enforcing segregation rather than counteracting it. (Fogelgren, A., et al. 2016) Even though the vision recognises social exclusion as one of their challenges, it seems that the document itself is not well defined enough proceeding with questions such as formation of public transport as a generator for social inclusion. In order to prevent blunt mistakes in such an essential development, one could have wished for the document to address the issues more precisely and concretely. Moreover, according to the debaters the city has neither acknowledge the understanding of how to reinforce the existing built environments with the new. It seems that the offer of a tabula rasa is more appealing in a society of consumers and therefore achieves a stronger selling point in the process of rebranding of the city. However, this can also result in newly planned areas are at risk of becoming victims of hyped confetti architecture, turning the vision into empty words.

The idea of a city based on overlapping mixed uses such as Frihamnen, argues for spaces to become lively and populated. It mediates for a culture that has adjusted for the flexible businesses rather than the rigid structures of industry. Here, the city is always easy accessible. The mixed use city is a revolution and a reaction towards decades of zoning. Schools, work, culture and everyday life are all gathered at street level, stimulating both passers-by and locals. (Detaljplan för Blandstadsbebyggelse i Frihamnen, etapp 1. 2015) However, Mattson et al. underlines the importance of not turning the mixed city into a design of retro architecture where form and its relationship to function, still is not thought through. The way the mixed city have been portrayed by the city office so far, merely copy pasting old structures generating the closed districts recognisable from zoning, it not the path we should go down, according to the authors. The emphasis should rather be put upon providing good living conditions for everyone at a sustainable high building standard. (Mattsson, I., et al. 2015)

Jacobsson continues the discourse by stating that the future visions of Gothenburg are ambitious, but the likeliness that they will completely break away from the orthodox building tradition is little. Even though the visions have their starting point in an image of a mixed city, the developers do not seem to have reached

THE RISK OF HYPED
CONFETTI ARCHITECTURE

BREAKING AWAY FROM OLD
BUILDING TRADITION IS
NOT LIKELY

NEW BUILDING IN CO-
EXISTANCE WITH THE OLD

THE WAR FOR MOVEMENT
AND ACCESABILITY

the full comprehension on how such a process should be executed successfully. Jacobsson argues that the function controls the design, both in the large and small scale. Therefore, the new architectural expressions in a building will be determined depending on what function it will contain. The understanding upon city planning have the same point of view, a process allowing the risk of zoning to increase even on the large scale. Even though zoning is a timeworn way of planning a city, we can conclude that, out of old habit, it is still a present threat towards the existing built environment. Jacobsson therefore proposes that a thought through integration of the new buildings together with the old ones are from several points of view, the best sustainable way to dealing with the ex-pansion of Gothenburg. (Jacobsson, S. 2013) In doing so, the process of integration could mediate and create credibility in turn gaining the peoples support, something essential when claiming to build for the citizens of a city. The disbelief and fears generated from previous examples of urban renewal has proven to end in results not always to the better. Integration as a process between overlapping old with the new, both in terms of the built environment and the social processes occurring, could create a bridge between people and their city.

In an article written in Göteborgs Posten the February 2017, Mark Issit makes several valid statement upon how the city planning have caused the city to look the way is does with its many barriers prohibiting the pedestrian world of the city. Yet, the city seem to be stuck in the same habits that Jacobsson warned for in one of the previous paragraphs.

Mark Isitt bring up the example of the construction of the old harbour Frihamnen in 1922 and how it turned Hisingen to another “planet in a galaxy far, far, away”. He claims, that it further demonstrated how ignorant town planning and decision making can demolish mental and physical relationships between areas, in this case Hisingen and the city centre. By introducing barriers such as basins, the walk to Kvilleorget would become one similar to the one Jesus did before he was crucified, states Isitt. (Isitt, M. 2017)

The war for movement and accessibility was continued when Göta Älvbron was built. Issit refers to the bridge as an Eiffel tower that has been lied down, where not

only its scale but also its placement and height just became “*wrong*”. The bridge, all though with paths for both cyclists and pedestrians, would barely be used due to its mental barrier creating effects. Instead, suggests Isitt, the city should have focused upon developing a seamless extension of the street grid that already existed, such as streets on water. (Isitt, M. 2017)

Mark Issit continues his discourse where he states that the newly proposed Hisingsbron seems to be the emergency solution no one really wants. He claims that it is a bridge at a height not built for traffic nor for moving people, it is something in between not generating a solution for anyone. One single opening will still create traffic jams all the way from Brunnsparken to Backaplan. The pedestrian and the cyclist have to travel on several hundred meter long ramps, reaching the brow at a height of 13 m. The visual visionary renders demonstrating the glory of the new bridge, do not touch upon the subject of a harsh western wind or 154 rain day per year or the no man’s land created by 6 traffic lanes, he continues. Instead it paint a picture of a sunny afternoon where one lonely tram is waiting for the bridge to open. Seductive, yet in its light is seems like the very first low bridge built in 1874 was a far more modern solution, Issit concludes. (Isitt, M. 2017) To conclude and especially in the light of the final article, one could ask oneself if the city have learned anything from its previous mistakes.



Articles discussing the issue of RiverCity Gothenburg

THE LOW BRIDGE FROM 1874 SEEMS FAR MORE MODERN THEN PROPOSAL OF TODAY

THE RIVERCITY VISION NEEDS MORE RESEARCH AND CONCRETE PROPOSALS BASED UPON IT

NON-CONCRETE PROPOSALS ARE HINDERING THE DISCUSSION

REFLECTION

The vision of Frihamnen and the RiverCity Gothenburg confirms that the city is currently in a process of rebranding itself. However, the road to reaching the goals stated within the RiverCity Gothenburg vision seems to require more precis plans of actions. Something searched for and wanted from many of the debaters in the previous texts. The vision have received critique being too vague further causing the different proposals becoming flat. This is due to the fact that they do not seem to be backed up by any research.

An area soon to be developed and built, such as Frihamnen, should by now have demonstrated more thoroughly concrete solutions and strategies. Relevant issue on how to actually create a mixed use city with the impacts of decreasing social exclusion in a limited area, still have no concrete answer or even part of a solution. If we continue to study Frihamnen area as an example of one of the districts being developed within the vision of a RiverCity, it talks very little on how it generates further positive impact on the rest of the city. The area itself claims to be innovative and socially including, but how it generates effects to the outskirts of town need to be further clarified, whether it does or doesn’t. As further confirmed by Lönn Lundbäck and Svensson (2016), Frihamnen does not alone solve the issues of segregation.

Loose connotations and assumptions on how challenges could be turned into opportunities is not generating credibility between citizens and the city, it is rather doing the opposite as it fires on the debate. The strategies for creating opportunities is still missing, decreasing further credibility towards the city. To recognise the challenges is important, but it is within the concrete proposal on how they could be turned into opportunities, we can more accurately discuss the matter. The vision RiverCity Gothenburg have indeed created a public debate, mostly concerning on how to execute a sustainable coherent result; economically, architecturally and socially. The lacking of concrete proposal is hindering the discussion to become more concrete and accurate. This is something that would generate beneficial effect for both the citizens and the city.

The ambition of the city trying to grasp the opportunity of recreating a long lost water identity is worth recognition. Yet, the potential in rebranding and upgrading

is not only based upon creating common good, of course there is a deceiving beneficial economic side to it to. Deceiving due to the fact that the processes of gentrification and social exclusion can more easily occur, maybe even be justified when there is an economic appeal. The sense of belonging and the creation of trust within a city and its population is a hard thing to measure, and maybe therefore it doesn't count as much as the economic gains.

The future expansion of Gothenburg has also become a war where the city planning is confronting the traditions of traffic planning. Gothenburg, a city that has highly relied upon its industry, where traffic planning has been essential in order to make the economy resilient, is now facing a turn of events. The pure act of rebranding the city as a river city is plainly not enough. Therefore, as the mental structures changes city as a river city is plainly not enough. Therefore, as the mental structures changes in our society, so does the need for adaptation of the physical ones too. Gothenburg is a city looking for a way the redeem itself, creating reliability by regaining an identity for its citizens. Yet it might take a bigger gestures then what was presumed from the beginning.

The methods of developing a city is at present time a more open process then it used to be, where anyone have the opportunity to make their voice heard. Together with a democratic process, but also concrete and conceptualized templates, they can form the very foundation how to create the future of Gothenburg. There is still a glimmer of hope that RiverCity Gothenburg can become the mixed city by the water that was always envisioned.

TRAFFIC PLANNING AS A
TRADITION OF PLANNING
VERSUS THE CONTEMPORARY
CITY PLANNING



Image 8. Collage made for the Frihamnen area

CONTEXT IN THE PERSPECTIVE OF THEORY

EXPLORING THE ISSUE OF SOCIAL SUSTAINABILITY

Industries and politics have been shaken to the very ground due to geopolitical changes in combination with globalisation. It also seems that the threats of the post war period have been replaced by other, sometimes diffuse, social risks. These social issues have come to be discussed and seen as threats towards society. (Ek, R. et al. 2014) Segregation has been studied and understood when differences are revealed between poor and rich, between ethnic groups or between old and young. Segregation means separation and is described as a relational phenomenon. (Legeby, A. 2010) Furthermore, it is important to note that the different risk factors of segregation are not equally distributed and can differ depending on sex, education, social class and living area. (Ek, R. et al. 2014) This further contributes to the problem of social sustainability being complex and multifaceted. The subject of segregation can be studied from many different perspectives but this thesis has divided the issue into three different yet related perspectives, presented in the next paragraphs. It has aimed to put the issue into a contemporary context making it more narrow and comprehensible for the purpose of the thesis. It aims to paint a relevant picture where some parts will be further discussed and give guidance in the coming design proposal.

SOCIO-ECONOMIC PERSPECTIVE

The social and economic character of the city has changed since the introduction of the welfare society in Sweden. Where there used to be a reliability towards large institutions and where people depended on the communal society, has today come down to the very decision making of each single individual. Cities such as Gothenburg, that are characterized by unevenly distributed socio-economic development and increasing segregation, experience difficulties in credibility and feelings of safety in the network of society. Feeling safe touches upon many of the aspects concerning the basics of human life. The feeling of reliability in close relationships or in public environments gives conditions for other relationships, participation, movement patterns and the interpretations upon the close by environments. The reliability in a society is therefore the very foundation to a full citizenship and essential in order to promote meetings between people. By creating safe meeting places, through architecture and through understanding of the social capital in different businesses, it will in turn generate social control. (Ek, R. et al. 2014) The economic and social factors are the common approach in order

SEGREGATION MEANS
SEPERATION



FEELING SAFE IN THE CITY
IS ESSENTIAL



SEGREGATION IS USUALLY
UNDERSTOOD ON THE TERMS
OF HOUSING STOCK

THE PUBLIC SPACES CAN
ALSO SEPERATE PEOPLE

to understand and describe social segregation. The social perspective on urban planning is important in order to maintain the welfare in a society. (Vaughan, L. 2007)

SOCIO-ARCHITECTURAL PERSPECTIVE

Our cities consist of buildings, linked in space where complex systems and human interactions take place, social sustainability issues are evidently related to the built environment. (Vaughan, L. 2007) This is making the segregation issue a concern also for the architectural field, including urban design and town planning. (Legeby, A. 2010)

It is common that segregation is rarely understood on the terms of public space and level of resources, but rather through housing stock. In Sweden deprived areas are often related to the modern suburbs from the 1960's and 1970's, such as the million homes programme. It is important to underline that even though their physical character might look the same, their social outcomes are not. This issue might conceal other areas of interest, such as public space, that are just as important for the segregation issue. We need to gain further knowledge on how cities are built in order to generate accessibility between people, common resources and similar important features in the public realm of the city. Together with this, we also need to understand how the built environment and its physical attributes are segregating in themselves. (Legeby, A. 2010) The city contains different places that have different characteristics, favouring different types of use. As it turns out, the places that we use daily are most the dependent ones receiving special status for people's opportunities in society. (Legeby, A. 2010)

In the city, social networks will generate in unexpected directions, depending on mix and intensity in the public configuration and location. How the city then is represented visually in different neighbourhoods, have the potential to increase the feeling of belonging. (L. Vaughan 2007) The social and cultural attributes in a city is enforced when people are invited to walk, bike and stay in the city space. The more people that move around, the safer a place tends to be. (Gehl, J. 2010) The social interactions that are generated from the physical environment is both valid for people who belongs to an area, just as much for someone who is just passing

through. (Ek, R. et al. 2014) A spatial layout and its attributes can therefore both reflect and embody social patterns, as much as it can also create patterns of co-presence. Space has the potential to be as much generative, as much as conservative. In the set of the city, how and where does the spatial segregation become a social problem? When space and society no longer interacts on the familiar terms of spatialized culture. (Vaughan, L. 2007) Adding to the discussion, from the perspective of pedestrians, the perception that a street is safer or not, is influenced whether the traffic is mixed and organised. In most areas, the network that form the through movement includes streets that have a mix of cars, bicycle and pedestrians. However, in residential areas, studies have shown that some of the most important links are designed according to traffic separation. (Legeby, A. 2010)

ARCHITECTURAL-ECONOMIC PERSPECTIVE

Cities today are going through the process where the overall aim is to create a medial picture of the city, making its architecture as attractive can be. The cities are competing on a global scale of who can draw the highly educated, the riches tourists and the greatest investors. (Ek, R. et al. 2014) The last 30 years of industrial and urban transformation, combined with a neo-liberal urban era, economic and social policies, have resulted in increased economic disparities between population groups. As the built environment has become trademarks for the city where more and more resources are distributed to marketing, this have reinforced the ongoing gentrification in most of the bigger cities. (Ek, R. 2014) The process of upgrading has further reinforced the picture of the city being built only for a heterogeneous ethical and economic marginalized population. (Castells, M. 1989) It also seems like the building industry and its financial aspects have a complete different focus then what the public see as an attractive and well-functioning city environment. (Jacobsson, S. 2013)

Together with the process of gentrification, resources that are perceived as unevenly distributed generates even more negative social tendencies. Experiencing unequal living conditions can in turn reinforce feelings of alienations towards the city. In order to reach for a social and economically sustainable future, accessibility of resources therefore needs to be addressed. If we would design with the awareness of opportunities in the available resources, we can create an understanding of

SPACE IS GENERATIVE AND CONSERVATIVE



GENTRIFICATION OR A PROCESS OF UPGRADING?

UNEVENLY DISTRIBUTED RESOURCES CONTRIBUTES TO SEPERATION

PRESERVATION HAVE A STRONG SOCIAL FUNCTION

HOW TO REINFORCE THE SENSATION OF BELONGING



different living conditions, beneficial and disadvantageous. The built environment could therefore work as a tool to provide different conditions for different people and businesses. (Vaughan, L. 2007) Existing buildings and their facilities can become lucrative environments for new companies as the rent probably is lower. The older built environment is therefore involved in an important process creating a greater diversity in a more allowing environment for all the people of a community. We can see that preservation have strong social function that additionally can overcome other rigid structure in society. Issues with gentrification is working against the historical red thread in a city as areas are turned into fitting market profiles. (Jacobsson, S. 2013)

REFLECTION

The city of Gothenburg seem to have become a brittle society where the built environment, social fabric and economic factors are all contributing to separation and fragmentation. It is a contemporary city shaped around the single individual, where institutions are not providing a safety net to the same extent as before. For some it might be a liberation, for others a way to feel alienation creating further distance between citizens and the city. The city have recognised the issue of social exclusion as one of the main challenges to work with and they would like the issue of globalisation to become an opportunity and resource. As mentioned in the previous text, segregation has often been viewed from the perspective of where you live, but recently other research also suggest that we need to look upon our public spaces where the meeting between people occur. As stated by R. Ek (2104) in one of the previous paragraphs, *“the feeling of reliability in close relationships or in public environments gives conditions for other relationships, participation, movement patterns and the interpretations upon the close by environments.”* Therefore, we need to gain further knowledge about how the public spaces in the cities are built in order to generate accessibility and meeting between people. Furthermore, how they in turn can strengthen the access of different functions and resources in the public realm of the city could possibly reinforce the sensation of belonging.

It is also suggested in the text by L. Vaughan that the visual aspect are an important part in increasing the sensation of belonging. Such an approach goes hand in hand with the idea of keeping old structures, where the history and social patterns of a

place can be kept and forged together with the new. Moreover, the visions have also identified the importance of starting something new from the old. This suggests that the southern riverbank and its established business should be woven together with the new urban fabric. The process of upgrading implies that the city is being built for a heterogeneous population but in order to increase integration, different types of people and business should be taken into consideration during the process of forging two networks together. For instance, the social capital could be far more valuable than the economic profit in a company, and this should be addressed in a plan of execution in the process of renewal for each and every site. The existing built environment is involved in a process of creating a greater diversity in a more allowing environment for all the people in the community. Here, it plays the role of a strong social function that additionally can overcome other rigid structures in society and create social control.

THE SOCIAL AND ECONOMIC
CAPITAL IN THE BUILT
ENVIRONMENT



EXPLORING THE ISSUE OF CLIMATE CHANGE

The city have recognized the future challenges of climate change, where the level of water and temperature will rise. (Detaljplan för Blandstadsbebyggelse i Frihamnen, etapp 1, 2015) The city have developed a digital tool, a down pour model that can simulate the different scenarios during high water levels. This is in order to aid the municipality to strategically plan and lessen the consequences of flooding. The model will become the very foundation for future political decisions in order to assure a sustainable development of the future city. Here, the unperceived water accumulations become an issue when values go forsaken. It means that it does not necessary have to consider to be a problem if it is not affecting functions such as transport, people's health or property damage. (Skyfallmodellering för Göteborg, 2015) Climate changes is affecting all of us and know no geographical boundaries. The increased rainfall and the likeliness of future flooding and thereby also landslides, will come to affect us to a great extent. The economic costs will rise due to the damage on infrastructure, the built environment but also the damage on farmland will contribute. Important functions in society such as electricity and drinking water can be knocked out. It is not question of preventing climate change, but rather to adjust to it coming effects. (lansstyrelsen.se)

In Gothenburg we find several important infrastructures where the situation of flooding may not only affect the city, but also the region as a whole. The construction of new neighborhoods and districts around different water features need to be tackle the issue of high water levels early on in the planning process. This is in order to create a sustainable development of the built environment. The city have therefore initiated a process of identifying several possible protection hydro models that could handle the issues of rising water levels in the river. The goal is to protect the built environment and important functions in the city where the different hydro models have been shaped in order to comprehend up to 3 m rising of the water. The riverbanks on both the northern and southern side are constructed in different times and with different methods, causing them to be in different states of quality today. The riverbanks have been broadly assessed where the different parts of the banks have been recommended different models, but no further detail on to what extent the banks need reinforcing has been stated. However, the general recommendation for constructing new areas is to build new banks forming a complete solution, maybe in a form of a promenade. Here,

the social value of the river is recognized as a potential meeting place for all the population. (Hydromodell Göteborg, 2014)

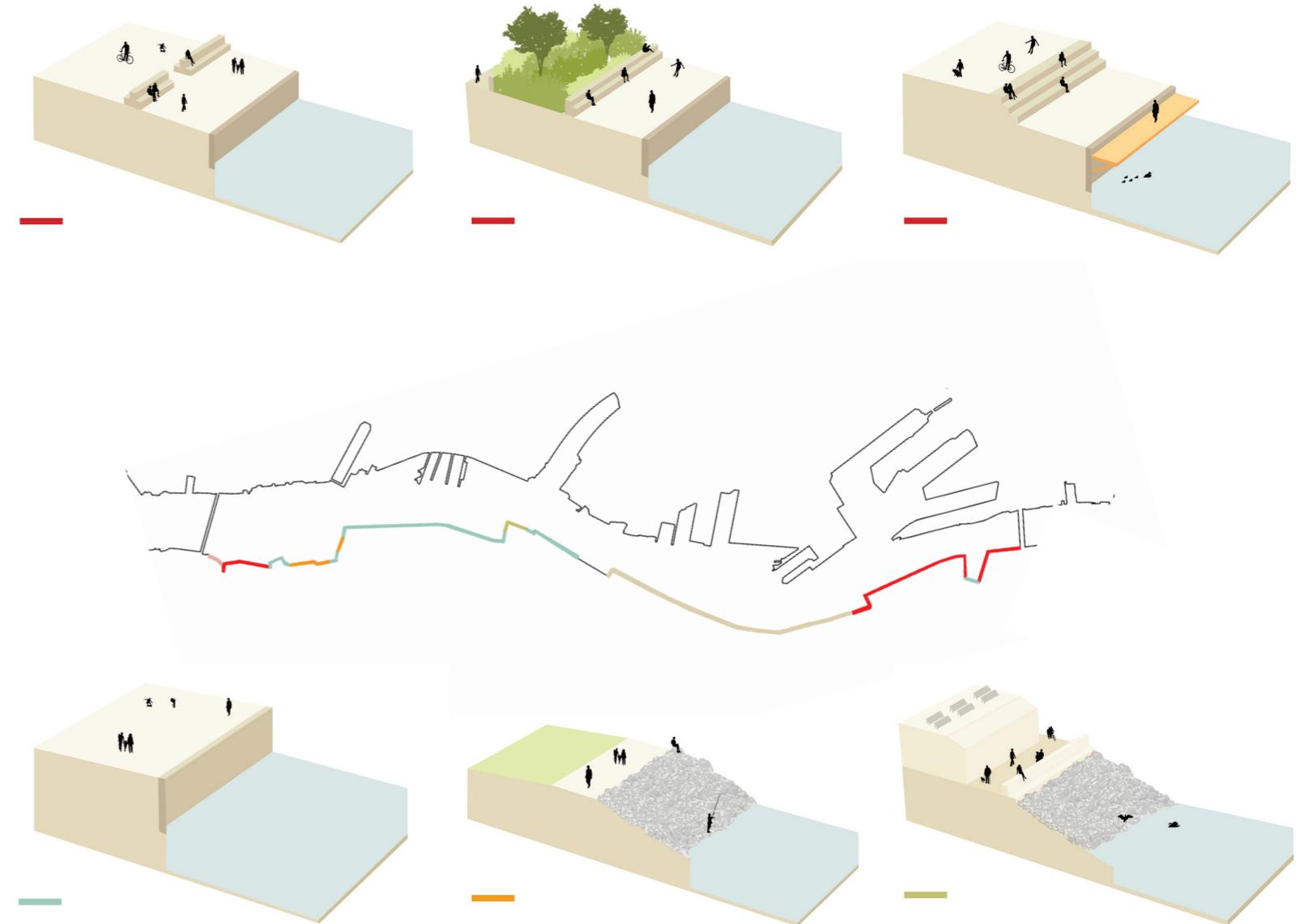
REFLECTION

The analysis have been made and smaller hydro models have been semi theoretically developed in order to address the issue. The document is a first step toward understanding the riverbanks and their different needs of intervention. It is still suggesting that major industrial functions remain in the area, causing a limited access to the water yet within the document the river has be recognised as an important tool in developing the social capital.

The document reveals a relevant pre study to what interventions need to be done and where. However, the history of Gothenburg and it recreational spaces was not only related to river but to all of the different water features. Therefore, offering spaces that can address the water in a protected manner is essential in order to let the vision reach its full potential. By inviting the water in the built environment, it could not only become an identity concept but also aid in flooding and handling water within the densely built environment. The river and the water needs to become more be further assessed in becoming more integrated within the built environment, where the different weather conditions should be addressed.

- SUPPORT PLACED ON QUAY AND FURTHER IN
- SUPPORT PLACED ON THE EDGE OF THE QUAY
- A MOUND ALONGSIDE SLOPE
- WALL ALONGSIDE SLOPE
- AREA ALLOWED TO BE FLOODED
- IN NEED FOR A COMPLETE SOLUTION

HYDROMODELLS ANALYSIS



OFFERING SPACES THAT
ALSO CAN PROTECT FROM
THE HARSH ELEMENTS

Image 9. Analysis based on Hydromodell Göteborg 2014

EXPLORING THE ISSUE OF CHANGED ECONOMY

As cities are going through a processes of restoration or renewal it is not without a difficulty that highly attractive territories are becoming objects for expansion of the city. This “upgrading” process has become unpolitical were emphasis is put on the economic values and gains, rather than contributing to already existing structures and their implied cultural and social values. (Thörn, H. 2013) In an article from 2015 E. Andersson argues that the revival in different parts of Gothenburg have in turn increased property values, pushing lower-income families and business away. The issue known as gentrification and has indeed become a reality as Gothenburg is going under the process of renewal. (Andersson, E. 2015) It seems that the role of urban planning and architecture is at risk of becoming an economic tool, further generating a larger distance between citizens but also between the citizens and the city.

Gothenburg has also become a destination for tourists and visitors, creating thousands of job opportunities, important incomes and good conditions for a sustainable future development. The city have become more attractive as a destination and have kept the increasing trend for many years now. It is foremost the international visitors that have increased in numbers, portraying the city as one of the many international hub. (goteborgco.se) In an interview from 2016, Camilla Nyman at that point the CEO at Göteborg & co, identified several reasons why Gothenburg had increased its pulling power during the years. She claimed that the city have a large possibility to host events, making them competitive on a global market. Gothenburg also has an appealing concept of vicinity, where it easy to travel, both within the city and to the airport. It is a city where combinations between the region, the city, the archipelago, music and food has been made in order to attract visitors, she claims. (Kindstrand, D., 2016)

REFLECTION

The rebranding of the city as an event and knowledge city seem to have succeed as more and more people want to visit Gothenburg. The intentions of creating a market yet depending on global factors, such as the economical drive of the export in the harbour, seems as a risky business. The city need to make sure that their native businesses and networks can still survive in limited international market. Architecture becomes an important tool in inviting locals and non-locals to the

A PROCESS OF UPGRADING
AND ECONOMIC GAIN

GOTHENBURG IS AN
ATTRACTIVE DESTINATION

GOTHENBURG HAS A
SUCCESSFULL CONCEPT OF
VICINITY

WE NEED TO KEEP
LOCAL ANCHORING AND
HISTORICAL CONTEXT

story of the city, where both the old and new is represented. The gentrification process is one of the contributors for prohibiting local anchoring and a historical context. The existing built environment could provide a resource of understanding place, both for visitors and locals. The attraction of a city does not necessarily mean the brand new, but the exiting mix of old and new. Furthermore, architecture can offer a flexibility when it comes to redesigning properties due to fluctuation on the market. Buildings that was for formed for one purpose, but in the future will serve another, can be designed with this in mind. It is a city that responds to both local and non-local market where offices can be turned into housing and housing can be turned into educational purposes.

Gothenburg is still perceived as unit easy to travel in and to. By using the process of densification within the city, it should still remain attractive in the sense of its minimal distances.

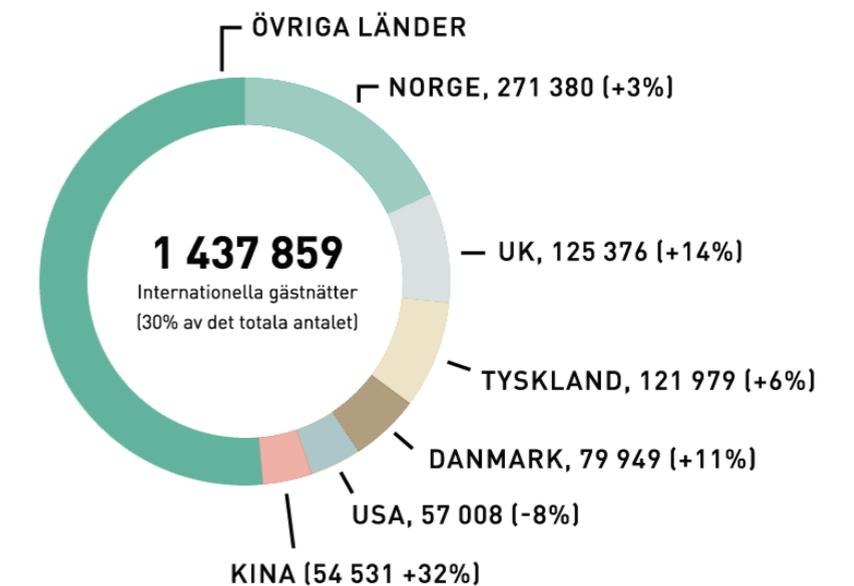


Image 10. International guest nights in Gothenburg 2016

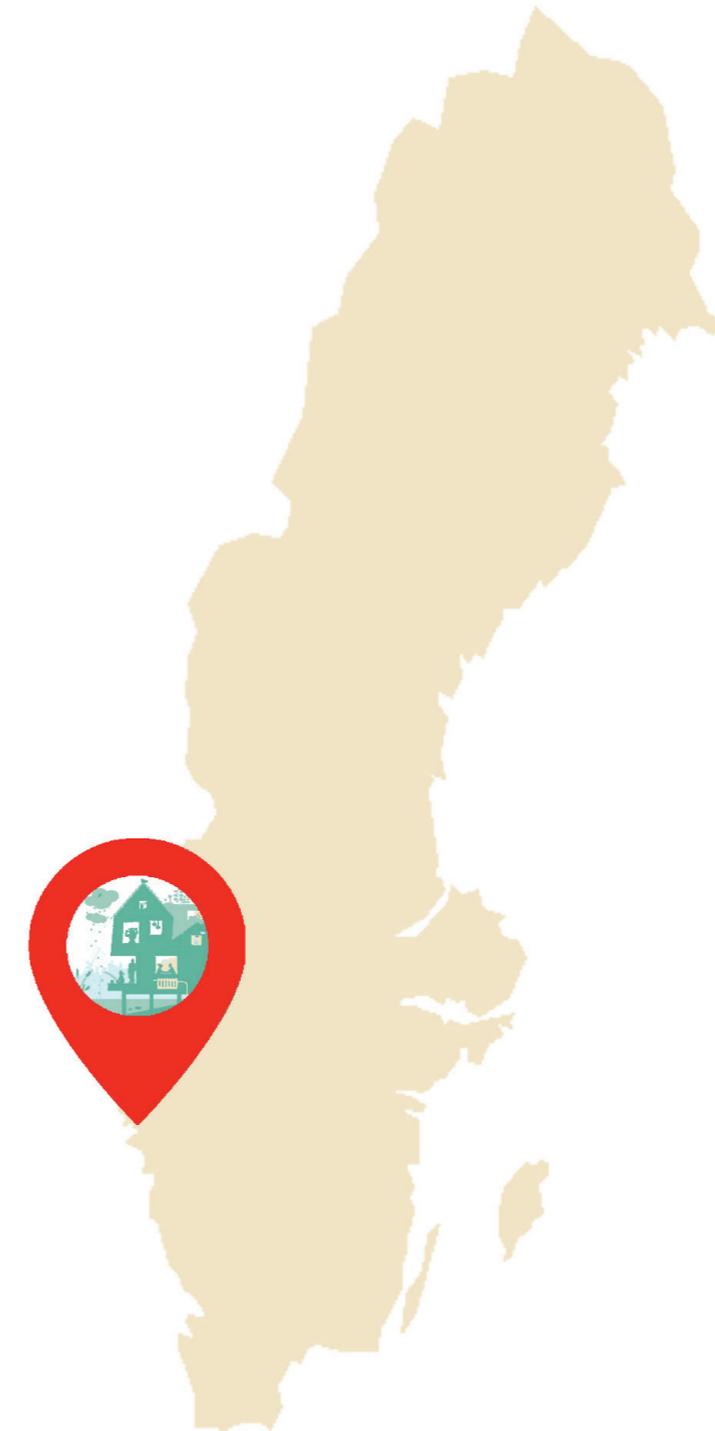
SUMMARY

To summarize the reasoning in the theoretical part, we understand that Gothenburg is currently in a fragile state of development. A lot of critical voices have been heard and the city seem to be at risk of repeating old planning mistakes all over again. The vision is at risk of becoming empty words and promises. This is due to the fact that the vision have not been paired up with precis causes of actions based in different types of spatial analysis or research. However, the ambition of the city trying to grasp the opportunity of recreating a long lost water identity is worth recognition to some extent.

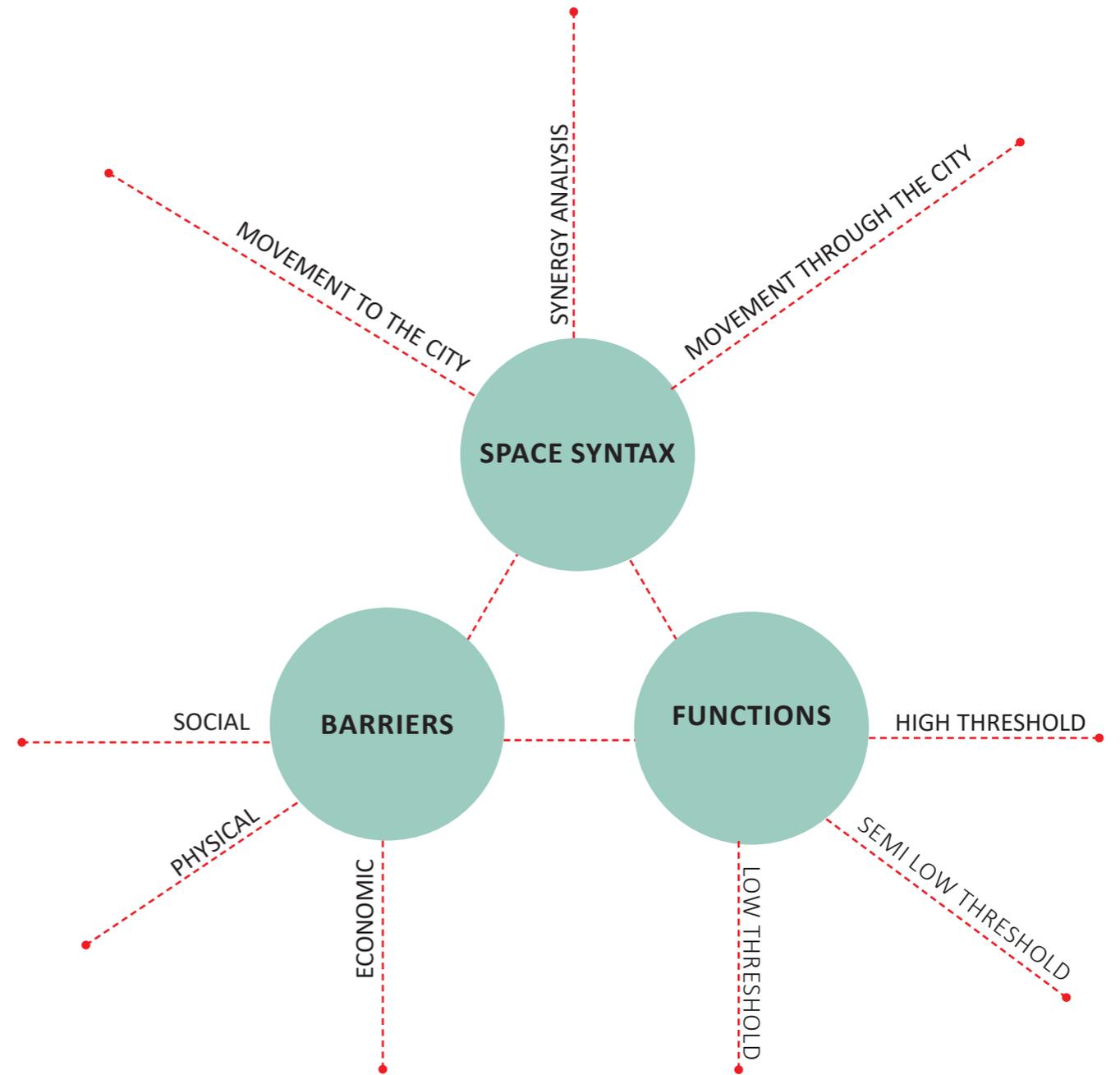
Many of the previous author recognises the importance of understanding social capital and how it relates to other networks of functions and buildings. Different networks that form the city needs to carefully examined and understood in terms of how a new districts fits within them. The built environment, social fabric and economic factors are all contributing to the complete view of Gothenburg. The river has be recognised as an important tool in developing the social capital yet that connotation can be pushed further. It is suggested that if we would design with the awareness of opportunities in the available resources, we could create an understanding of different living conditions, both beneficial and disadvantageous. In this case, different functions imply different social capital further generating the possibility of social control. Future development could be created on the basis of using the existing built environment, which further implies exiting complex networks of economic and social character, as a starting point when creating the new.

THE CITY IS IN A FRAGILE
STATE OF DEVELOPMENT

THE BUILT ENVIRONEMNT,
SOCIAL FABRIC AND
ECONOMIC FACTORS COULD
ALL CONTRIBUTE IN
DEVELOPMENT



THE LINKING METHOD



APPROACHING THE BRIDGING OF BARRIERS

BRIDGING BARRIERS

The suggested RiverCity Gothenburg vision seems to struggle in uniting the citizens under its umbrella, taking cautious steps towards the ambitious goals. Although many different suggestions has been made on how to develop the future of the river city, this thesis will have the starting point from the river. Göta Älv is in one way an economical force for the country Sweden and the biggest port in Scandinavia. Yet, it is also the largest physical, social and possibly the largest economic barrier in the city of Gothenburg. It splits the city into two parts, alienating citizens from each other not using its full potential to provide work opportunities for its population.

Göta Älv is a barrier splitting the city of Gothenburg into two, yet it also the main provider of shipping export in the country. This is the same complexity we see in the issue of segregation, climate change and changed economy where the coin often is two faced. The complexity of the different issue is contributing to making the innovation of the riverbanks an extremely difficult subject to approach.

When using the perspective of barriers on site it will enable us to understand a problem and its context whenever it arises, rather than all of the issues simultaneously. This gives the project a flexibility and resilience towards issues of segregation, climate change and the changed economy where people experiencing their city in different ways. Barriers are inevitable and as soon as we start to build and shape our environment, we need to create awareness of what the different barriers are and on how they creates effects socially, economically and physically. The theoretical part about the challenges in RiverCity Gothenburg will in combination with the different barriers found on site, aim to explain the global situation.

In this thesis, a barrier is defined and understood in the way they all tend to inhibit human processes. On an economic, social and physical level they segregate, alienate or hinder people to a full extent perceive and live in a certain territory. Physical barriers can be both natural topology as well as artificial buildings and infrastructure. They can be comprehended differently by different people, a mountain is one man's viewpoint, and another ones to climb. As stated before, in Gothenburg the river facilitates the transport of goods yet hinders social meeting between the two banks. Social barriers can be hard to define and detect, it can be

THE RIVER IS THE LARGEST
BARRIER IN GOTHENBURG

BARRIERS TEND TO DIVIDE
DIFFERENT GROUPS OF
PEOPLE

fears, prejudices or language. The social connotation will often tend to label the physical environment, such as the city of Gothenburg being segregated. Economic barriers is concerning pricing, lack of work opportunities and education.

All these barriers exists in different scales of society, creating different territories within the city. Barriers tend to divide people into different groups within the urban space, such as pedestrians and cyclists. People can belong to a set of barriers where the feeling of belonging will be reinforced by the rest of group experiencing the same barrier, whether they want it or not. A barrier becomes evident when it obstructs different types of flows, such as flows of people or goods. They in turn can give ripple effects interfering with other factors such a prejudices or medial pictures. A social barrier such as fear can have its expression in physical form, such as the berlin wall, gated communities or border controls.



A BARRIER IS UNDERSTOOD
IN THE WAY IT INHIBITS
HUMAN PROCESSES.

BRIDGING OF BARRIERS AT THE SITE LINKING CHALLENGES AND OPPORTUNITIES

THE PHYSICAL NETWORK

How a transport network is configured is an important aspect that further will determine to what extent area will become integrated with its surroundings. The car is facilitating people to move, especially in an area with distinct topography or other physical attributes making it hard to reach. Furthermore, it has also turned out that the car can contribute to the sensation of safety for pedestrians as more people tend to move in an area. This does not necessarily imply that the car should be prioritized when planning, the streets should still be designed on the terms of the pedestrians. (Schulz, S. 2004) However, today the legacy from a car-oriented traffic planning is still present in Gothenburg. Two of the major contributors in separating people from the water are the two highways Lundbyleden on the northern side and Götaleden/Oscarsleden on the southern side of the river. (Asplind, B., Pettersson, P. 2013) The two highways are both part of a post-industrial network of barriers. Here, vast spaces, industrial buildings, different industrial attributes, private spaces, fences, heavy traffic, and topography are all contributing the physical barrier between the citizens and the river.

The site is today part of a periphery extremely hard to reach due to its many physical barriers. The speed on the highway on Götaleden/Oscarsleden goes up to a 90km/h, further strengthening the barrier as it the road is hard to cross. The noise from the road is very present at site, making it further unfriendly and perceived as unsafe. Future intervention could maybe discuss on turning the road into a tunnel that further would release ground for exploitation above. The roads above ground would become adjusted according to create a safe environment for pedestrian moving from the existing city into the site. Upstream the site is flat and have the potential to become directly linked with the existing city. Further downstream, the topography becomes more significant. Together with the highway, the physical barrier becomes hard to overcome making it more difficult to link the existing city with the new.

The Stena Line ferries promotes heavy traffic such as larger trucks and cars. The vast parking spaces in connection with the terminals, that sometimes remain empty, is a contributing factor in creating the periphery where the landscape is

SITE ANALYSIS

THE LEGACY OF A CAR
ORIENTED PLANNING OF THE
CITY

A PERIPHERY IS HARD TO
REACH



unfriendly. It is harsh and flat where very little vegetation or natural features can be found. The ferries themselves are big, blocking the view and access to the water as they anchor alongside the banks. However, the economical driving forces provided by the ferries is an important economical contributor in the area. They also provide a direct link to the continent where Gothenburg becomes open to the world. Here, the heavy traffic could be redistributed to the outer harbour allowing the ferries to become for passengers only, further decreasing the size of the boats. The ferries themselves are big, blocking the view and access to the water as they anchor alongside the banks. The ferries themselves could relocate to a better place where they become part of the city rather than a part of a network of barriers.

THE PHYSICAL ENVIRONMENT

Today the site consists of industrial remains in form of buildings where they host both large and small scale business. The buildings are often blocking the view towards the river, further restricting the physical and mental access to the water. Even though the southern riverbank has a possibility to address and meet the river, the water is neither often seen nor felt in this area. The buildings are of different architectural character consisting of different expressions and materials. The overall post-industrial marine character is contributing to feeling of alienation where the buildings have a semi high threshold in terms of accessibility. The area would need further interventions where the functions should become of a more mixed character. The existing buildings and their established businesses should be kept to a large extent as possible, where maybe smaller interventions on the facades could contribute to a more accessible public space.

THE PHYSICAL AND MENTAL DISTANCE

The distance between the sides is different as we move alongside the river. However, the other side is perceived as hard to reach both physically but also visually. The life of the city and its people cannot be reached, creating further alienation between the sides. It has also been further determined in a traffic analysis made in Gothenburg from 2009 that on the basis of the accessibility of pedestrians and cyclists, capacity and valuation of travel time, it is not justifiable to replace a bridge with a ferry regardless of type, cost efficiency, or time efficiency. (Trafikanalys för gång- och cykeltrafiken vid Göta älvbrons ersättning, 2009) This further implies that the ferry that connects the sides today, have very little impact on bridging the two sides together creating a coherent city.

THE FERRIES ARE BLOCKING
THE ACCESS TO THE WATER

INDUSTRIAL REMAINS THAT
WITHHOLDS A VIBRANT
NETWORK OF FUNCTIONS

THE PHYSICAL LINK WILL
ALWAYS OUTSOURCE A
FERRY

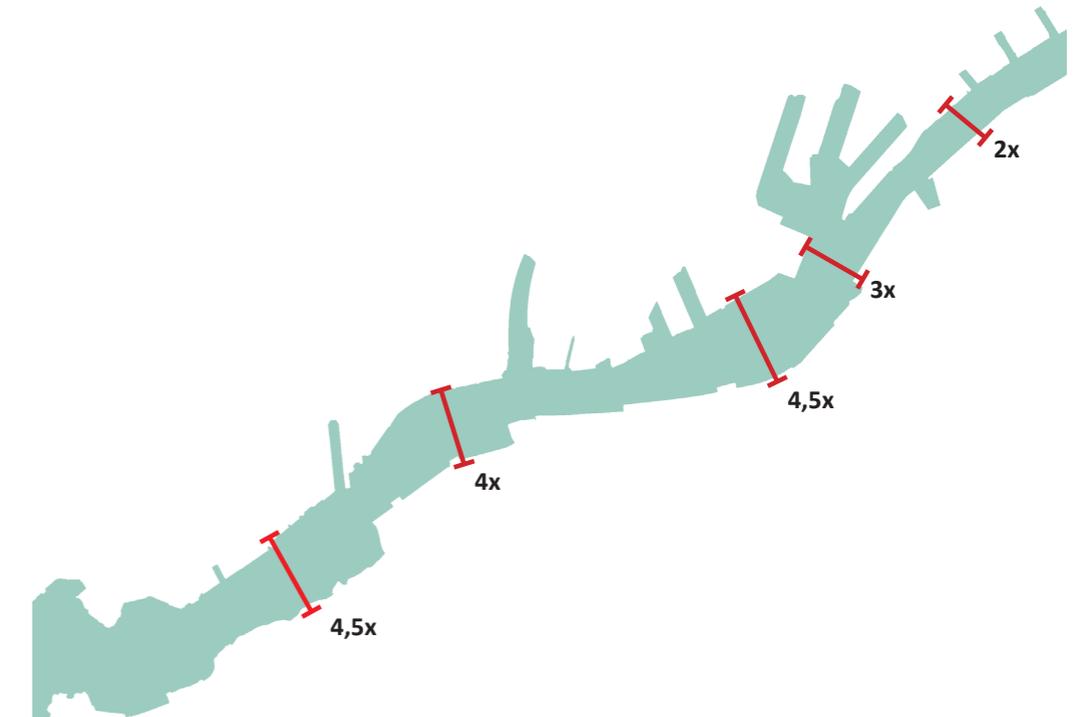
DISTANCE PROPOSAL

DECREASING THE DISTANCE

*“A city is like a good party. (...) Much of it is bound to our senses, horizontal view is very much present. **The eye can't command more than a 100m, where you can see people and movements.**”*

GEHL, J. IN *URBANIZED* (2011)

X = 100 M



THE BRIDGES

The river today can be identified as barrier that is prohibiting cyclist and pedestrians to move between the sides efficiently. The two bridges that exists are stretching themselves several meter over ground, the heavy traffic and weather conditions may further expose the pedestrians and cyclist of unhealthy conditions. The system is fragile due to its few links connecting the sides, making the frustration enormous when the bridge opening is causing traffic jam all the way down to Brunnsparken. The system needs to become more flexible where the boat traffic becomes perceived an asset in term of economical driving force and as a link to the continent. By allowing for more links to cross the water, the pedestrians and cyclist will experience to have a choice of what route to pick when crossing to the other side.

According to research made by the Traffic Planning Office, a low bridge with a sail free height of 6.5 meter with have to be opened 6-11 minutes each time a boat needs to pass. Each bridge opening would occur between 10- 35 times per day depending on season, still allowing for smaller boats to pass through consistently. (Gångbro och cykelbro över Göta Älv, 2006) By creating several links a choice could be made whether you want to wait for the boat to pass or not. Watching a boat pass could even become an event where you don't mind waiting as you see the different ships from different countries roll in. The system need to be flexible for both for pedestrians, boats and other traffic forms generating the sensation flexibility and accessibility.

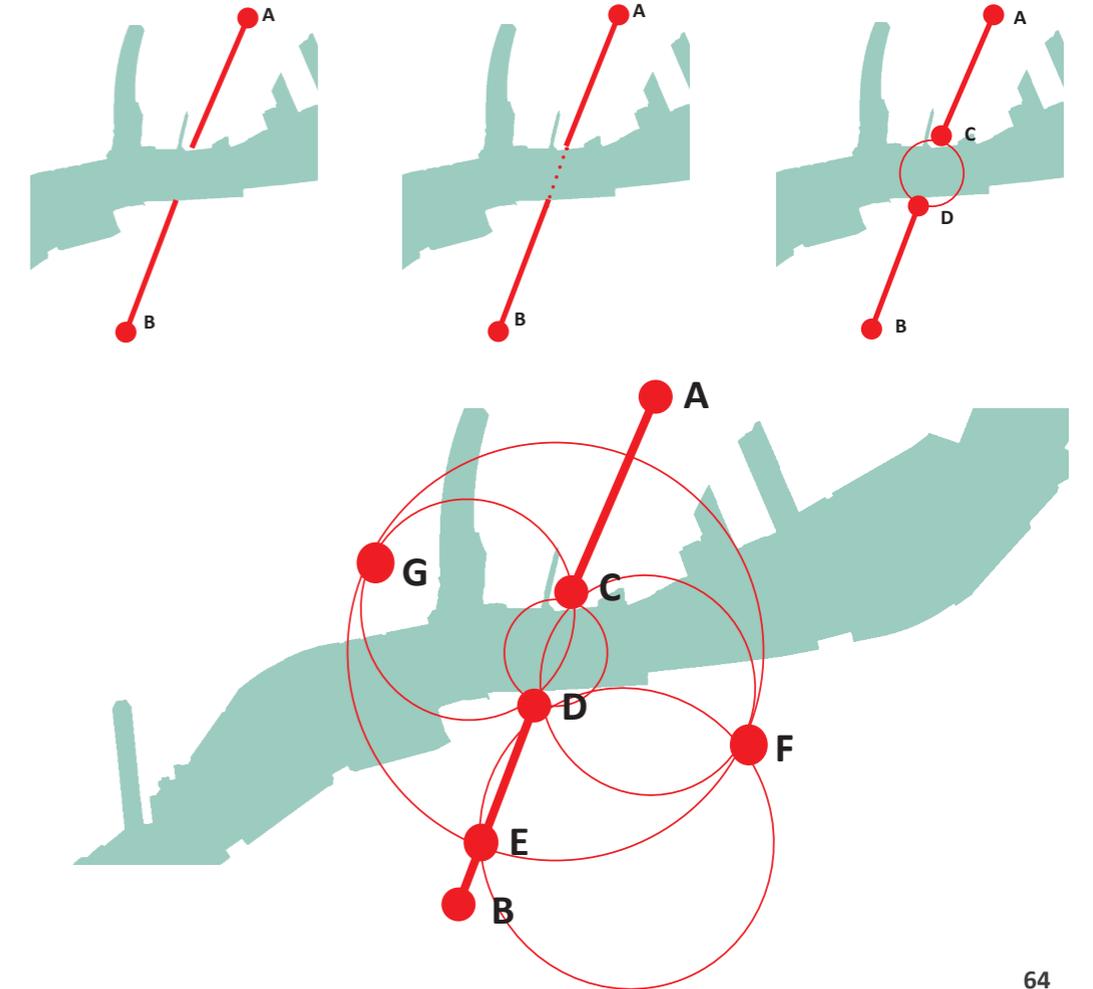
A SINGLE BRIDGE FORMS AN EXPOSED SYSTEM

THE PHYSICAL NETWORK SHOULD PROVIDE MORE FLEXIBILITY

NETWORK PROPOSAL

CREATING FLEXIBILITY

In order to not make the physical network fragile for bridge openings, a lot of different links need to be formed in order to increase the flexibility in the system. This will further generate nodes, further implying architectural interventions. Moving between A to B will become easier in a more flexible system.



THE SOCIAL NETWORK

The generating of meeting between people and the consideration of accessibility is a key issue. Identifying the existing networks in terms of social, economic and built environments needs to be addressed in order to create a new network forged with the old. This will further generate a sensation of diversity where the city as an institution considers and aids different types of people and business to prosper and grow in the area. On the basis of identification of barriers, they could be bridged by using both physical and mental actions, however they always need to be clarified. The visual aspect are important both for aesthetics reasons but also in terms of being able to overview an area, creating social network of safety. It should be easy to move and travel to and through the area where people from all over the city could contribute in creating a city by the river.

Today, the social meetings between people is almost none existing at the site. People rush through the area on bikes or order a taxi as soon as they arrive with the ferry at the terminals. A bit further downstream in the area known as Röda Sten, the old industrial building are now housing artist, cafes, museums and hotels. Even on a cold January morning, people were out biking and running. Some were taking a photo while enjoying a hot cup of coffee from one of the restaurants. The potential is the same for the rest of the southern riverbanks, the economic established forces could all aid in creating a vibrant district along the water. Its national and international character should be kept but also become further developed and strengthen. The site could become the very hub of where Gothenburg is open to the world and where locals can meet non locals. The water has a strong potential in developing its already strong recreational character, attracting people from different background all over the city. The water can aid people in meeting on familiar terms, both in the city and by the river.

CLIMATE BARRIERS ON SITE

Climate change is barrier with both physical, social and economic unpredictable result when occurring. This is a threat taken seriously by the city, where several studies and research have been made. Yet, the idea of working with the issue as an opportunity have not yet been fully explored.

PEOPLE FROM ALL OVER THE CITY COULD CONTRIBUTE TO CREATING A CITY BY THE RIVER

THE WATER COULD AID IN CREATING MEETINGS BETWEEN PEOPLE



Early January morning Röda Sten, 2016

The area today is flat and many of the banks are in need for different interventions where restauration work on different scales needs to be done. (Hydromodell Göteborg, 2014) The area contain a lot of infrastructure that can be severely damaged during increasing water levels. The area is also flat where the substrate is hard, further implying that accumulation of water will occur fast and to a great extent. The many properties in the area are at risk of flooding, further causing its economic forces to decrease during damage.

Large part of the riverbanks are today in need of restauration with the need of different protective structures in order to protect increasing water levels. Therefore, the border along the riverbanks will change its character. By adding landfills the process could create a complete solution for the entire central parts of the river. The landfills could be concerned with the levels of water in the river, accumulation of water on land but also becoming part in a process of maintaining the water clean. The suggested hydro models could be understood as parts creating a complete solution, where different interventions would create a safer system towards unexpected turn of events of climate change. The complete solution could be further be developed into different principles where the aim should be to protect marine wildlife and the wellness of people in the city.

ECONOMIC BARRIERS ON SITE

The site today is consisting of several established large and small scale business in the area. They withhold the potential to reinforce the new coming network with both social, physical and economic beneficial resources. The business and its architecture could aid in keeping and giving direction to the marine character that will be developed. With different economical attractors on different scales, the site can become a district for both locals and non-locals.

In order to allow the established businesses to stay in the area, an economical safety net could be provided where the rent could be increased in percentage each year depending on the economic growth that the upgrading will provide. This would create a responsibility for the city towards the local business, further aiding in the process of mixing the area with both existing and new businesses. Here, both the existing, the new, the small scale and large scale establishments will form a forged economical network. New smaller businesses could further be provided

THE AREA CONTAIN ALOT
OF INFRASTRUCTURE THAT
IS AT RISK DURING
FLOODING

THE DISTRICTS WITHOLDS
THE POTENTIAL TO
ATTRACT NON-LOCALS



"Risk of flooding in severe weather"

smaller facilities within the district where the process of pop up could be applied as a way to test the market for new businesses in the area. At turn of events, maybe a shift from a global market to a local, this would further provide a flexibility also allowing more diversity of businesses in the area. This will contribute to the area of becoming more diverse not only in terms of economic factors but also in terms of the social factors that runs along with a diverse market.

This thesis acknowledge the possible economical tools that could be provided in order to increase economic diversity within the development of the district. How these will be exactly developed and formed will not be the concern of this thesis. However, the reasoning based on a diverse economic network will aim to further explore the architectural and social outcomes in a mixed use city.

A DIVERSE MARKET FOR A DIVERSE SOCIETY



In the periphery Inbetween barriers

APPROACHING SPACE SYNTAX

IMPLEMENTATION OF SPACE SYNTAX LINKING OF MOVEMENT

The space syntax tool have allowed the project to become anchored in conceptualized data where the city is understood as network of components. Here, both theory and method creates the very foundations to investigating movement in the city. Furthermore, also suggestion patterns of social gatherings of people, further reinforced by the different functions presented.

MAPPING A NETWORK: THE THEORY BEHIND THE SPACE SYNTAX TOOL

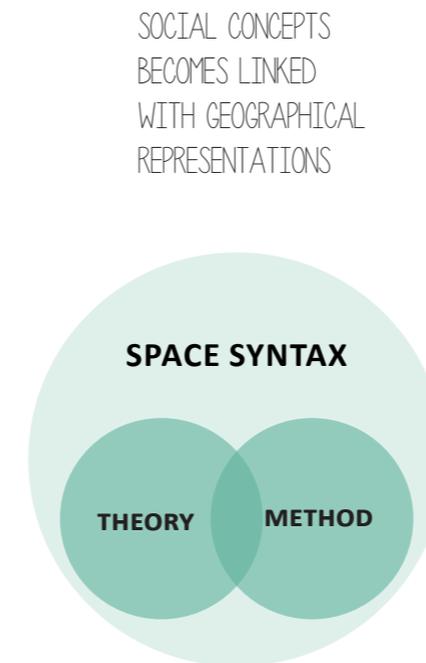
Network analyses are about capturing and describing the relationship between components in a system, rather than the components themselves. When we see the varying concentrations of people arising in different places, it is easy to understand the significance of an analysis that on broad terms can explain its occurrence. The concentrations do not occur by themselves but are largely given by the location of each individual place in the entire system. Configurational or system-theoretical understanding of the city, such as space syntax, allows us to build knowledge to support the way in which urban space is developed. It can create basic conditions for social processes, regardless of whether they are intense or more tranquil. The network analysis can also aid in the process of create a balance these two in different scales. (Legeby, A., et al. 2015:3)

Space syntax is concerned with space in the city. Here, the city and the space is the essential aspect of every activity humans are involved with. Observations, interactions and movements are all related to spatial geometry. It is a complex system allowing for all of its components to exist simultaneously as spaces continues to interrelate. (Vaughan, L. 2007) In order to describe the city more easily, it can be broken down into two parts. It is on one hand a large collection of buildings that are linked within space, in this space human activity occur linked by its interactions. We can call them the physical and the social city. The problem arises when we further try to define these two, is it two separate things or is one influencing the other? (Vaughan, L. 2007). A. Legeby presents in her report *“Urban segregation and urban form”* the definition from Lefebvre in order to answer the question. He suggests that the city is like a gin and tonic, where the relationship between society and space is not determined by one quantity giving

IDENTIFYING THE LINK
BETWEEN COMPONENTS

SPATIAL GEOMETRY

THE CITY IS LIKE A GIN
AND TONIC



the other. Society and space is rather intimately related and mutually dependent. (Legeby, A. 2010) What space syntax aimed to do when formed in the 1970's was to address this question in both a theoretical approach as well as a methodological. By describing and analysing different sorts of spatial configuration in the cityscape, it could further generate the discovery of influences of social factors. The spatial patterns were meant to explore consequences of how social life could, and did take place. (Vaughan, L. 2007) Space syntax has since then further developed a purposeful and elaborate theory of the relationship between the city's space and its social phenomena. The theory can be linked to many urban thinkers such as Jan Gehl or Jane Jacobs where the theoretical background is still concerning how the physical environment creates the conditions and possibilities for people depending on its physical form. (Legeby, A., et al. 2015:3) In space syntax the social concepts becomes linked with geographical representations and therefore they will be founded and related in the model of the built environment. (A. Legeby, 2010) A spatial layout can both embody a social pattern as much as generate social activity, space is both generative and conservative. (Vaughan, L. 2007)

MAPPING A NETWORK: THE SPACE SYNTAX TOOL METHODOLOGY

Space syntax has evolved into a set of tools linked to a set of theories, creating a model that becomes an interpretation of different socio-spatial phenomena. The model measures a configuration of space, meaning that it can read simultaneously the existing relations among the parts that makes up the whole. The networks can become visible by colouring up the model, further implying different sets of social patterns occurring. (Vaughan, L. 2007)

By using a map consisting of lines, where the pedestrian paths are all represented by one line, it becomes possible to measure the city in different ways. (Vaughan, L. 2007) The spatial system and its spaces is represented by axial lines where the map results in the fewest and the longest lines covering the whole urban system. Here, we can understand if spaces are highly accessible or not, depending on its relationship to all the other axial lines in the system. The size and scale can be limited within the program, where the analysis can be further defined by a global or local character. (Legeby, A. 2013) The tool space syntax is able to measure two

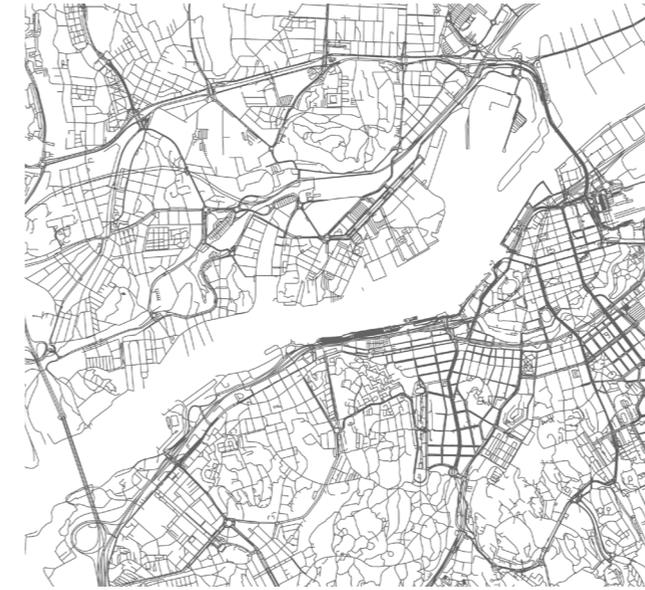
principal human movements, the to and the through. For every trip we make we select a destination further implying a set of spaces we need to move through in order to reach our selected destination. This journey will be further inflicted by geometrical and topological aspects. Rather than picking the way we travel by pure metric distances, we take into consideration the compositions of geometry, angles and how different alignments connect. (Vaughan, L. 2007) Movement strengthens a city as people are invited to move and stay in the cityscape. This is where social and cultural opportunities lie and the feeling of safety and social control can be created. (Gehl, J. 2010).

By using the axial map, we can perform an analysis known as integration or to-the city movement analysis. It is a method that can be used in order to describe the relationship between centrality in a city and its periphery. Distance is measured in so-called axial steps, where the number of turns between the lines in the system can be assessed and valued. By applying a radius equivalent to steps of 2, 6, 10, 16, 30 the axial turns are analysed within the whole system. The values are normalized allowing for a comparison between different scales, the local being few turns and the global being more turns. The analysis may also be used in comparison between different cities. (Legeby, A. 2013) The to-movement will allow us to understand at what scale the riverbanks become a destination point. By both looking into local and global scales, we can determine at what range people will use the site.

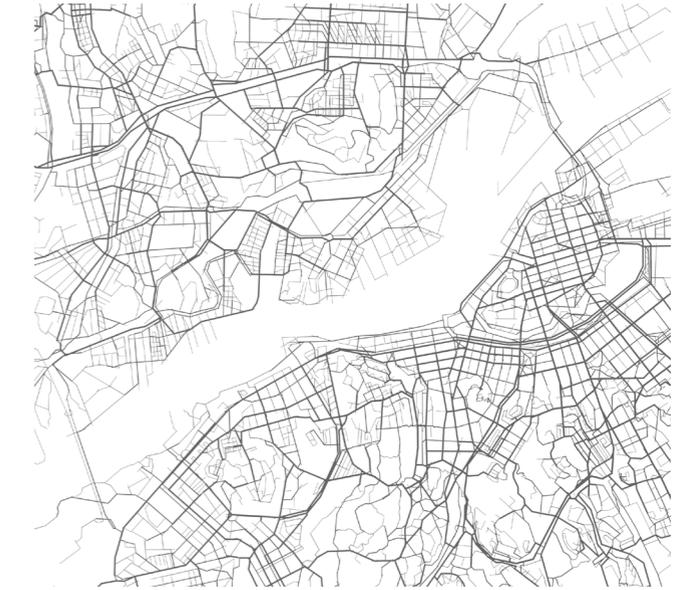
The axial line map has been further adjusted into a segment map, where the intersections become links between each line. (Vaughan, L. 2007) This thesis has used the segment map in order to do analysis known as betweenness or through the city movement analysis. This is another way of measuring centrality, where each pair of segment lines can recognise distance minimizing paths within the city, further generating the likelihood of streets being used when moving through the city. It identifies routes that are most likely to attract movement. (Legeby, A. 2013) Also here, the analysis will be given different radii but in meters allowing the analysis to range from local to global. The analysis may also be used in comparison between different cities. The through-movement will allow us to understand how important the links will become in order to shape a city that uses the river as a daily part of a bigger network in the city. It will also give us the potential main routes



TO THE CITY AND THROUGH
THE CITY



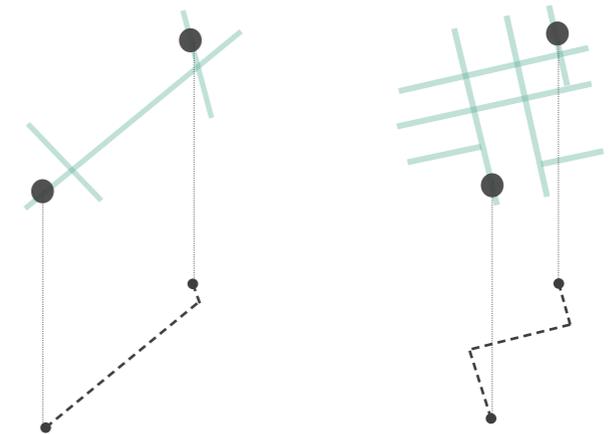
ROAD NETWORK



AXIAL MAP



THEMATIC MAP



STREETS GENERATING DIFFERENT
MOVEMENT PATTERNS

that people are likely to travel where the aim is to create circular system forming the bigger city network. It will also provide with contrary tranquil spaces, painting the city as a versatile system with areas that are both formed from movement but also formed around places where you can stay in the cityscape.

The two principal movement indicates centrality but in different ways. The integration analysis reflects upon closeness of space to its context while the betweenness reflects upon space as routes between locations. (Legeby, A. 2013) Both of the analysis have been used in this thesis in order to approach the idea urban alienation in Gothenburg but also how to successfully link the existing network with the new. It has foremost focused upon the role of the large scale built environment. It has assisted in the argumentation for creating a linking strategy over the river and beyond, creating a generative system of movement, where the analyses has become an essential part in order to lay down the foundations of creating a future prosperous social sustainable city. Here, space is not only for a lucky few but is accessible to everyone.

EXECUTION AND AXIAL APPROACH

The space syntax tool becomes an essential part in order to measure the existing movement pattern in the city, but it will also create understanding in how to develop the new city's waterfront in a successful way. One of the main goal is to activate the riverbanks allowing people to become more connected with the water, whether moving through or to the river. Furthermore, the space syntax tool will allow us to further explore its glocal effects as we move through the scales. The scope is to understand distribution of space, rather than distribution in space, around the riverbanks.

In order to achieve a good integrated result as possible, certain principles have been used in order to draw the new axial map. Here the main goal have been to create a circular movement of a glocal character where as much as possible of the activated lines should occur at the riverbanks.

HOW TO LINK THE EXISTING
SYSTEM WITH THE NEW

TO CREATE CIRCULATION
AROUND THE RIVERBANKS

5 AXIAL PRINCIPLES

1 EXTENSION
OF GLOCALLY
STRONG
STREETS

Looking at different scales and comparing the two principle movement analysis, identification of glocally strong existing streets have been further extended and connected over the river.

2 PRIORITY
TO PUBLIC
TRANSPORT

Where two lines have been equally strong the one closest to public transport have been prioritised for extension in the new formation of the network.

3 STRAIGHTER
RIVERBANKS

The two river banks have been "cleaned" up with straighter lines implying that new infills could allow the banks to become perceived as a complete routs, therefore also becoming perceived as more accessible. This runs in line with the studies of Hydromodell Göteborg (2015) arguing for a reinforcing of the riverbanks due to poor conditions.

4 NEW
STRUCTURES
MENDING
EXISTING GAPS

Where the road has turned away from the riverbanks, suggesting a link further inland, a line have been drawn implying a new type of physical construction between the two edges.

5 ADDING OF
PLANS

Frihamnen area have been added according to planalternativ 2, the strongest axial map promoting accessibility in the city. together with the interventions of this thesis it has allowed for a more complete future vision of how the riverbanks could be used.

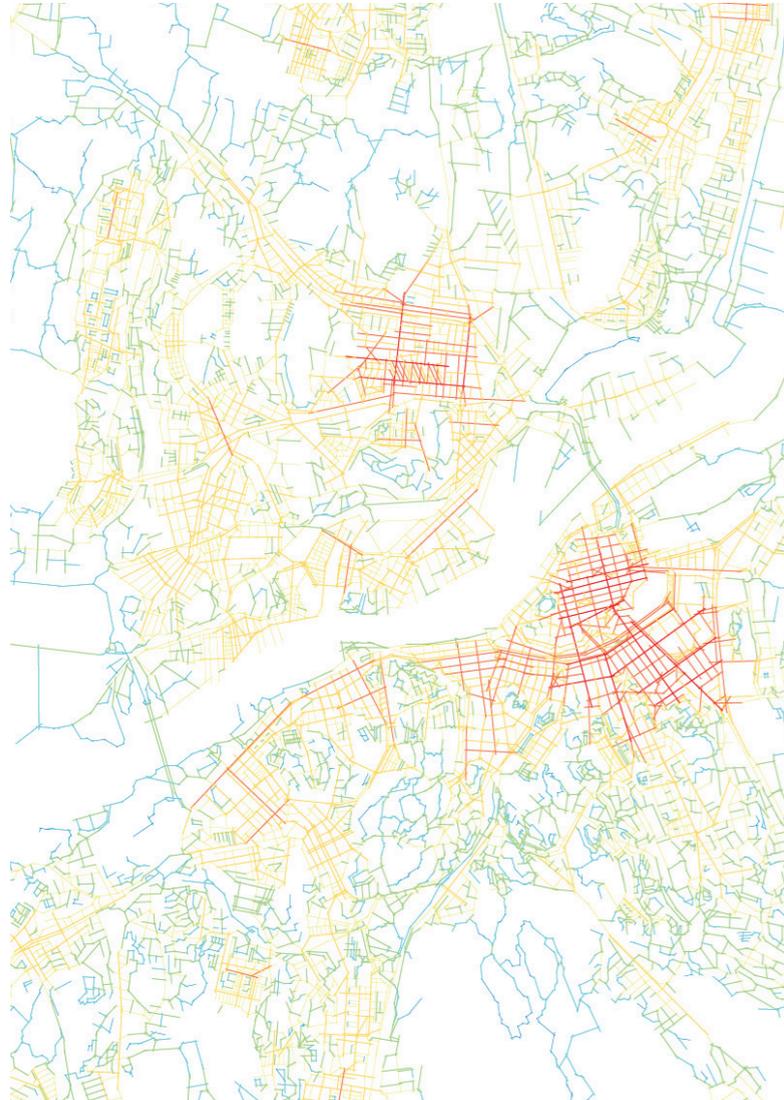
EXECUTION AND THEMATIC MAPPING

The analysis has been further portrayed in three different thematic set of maps. The first two ones portray the city today and the city tomorrow, these are classical space syntax analysis mapping potential for to and through movement in the city. The third map is a comparison map where the today and tomorrow have been overlapped in order to more easily discover positive or negative change within the movement patterns. It is important to understand that new lines will always generate positive change due to their nonexistence in the map of today, therefore all three of the maps have been used in order to paint a more substantial picture of the new network. The dark blue lines in the comparison map shows decreased movement within the streets, further allowing us to understand that when positive change occur at one place further also implies that negative change will occur at another. The three maps will together all point out important issues during the formation of a new potential movement pattern where some of them will be further dealt with within this thesis. Overall, the issue on how to lower the impact of negative change will not be dealt with within this thesis, but the thesis will rather be concerned about the positive change that do occur along the riverbanks and how they can be further reinforced with mapping of functions and forging the existing with the new.

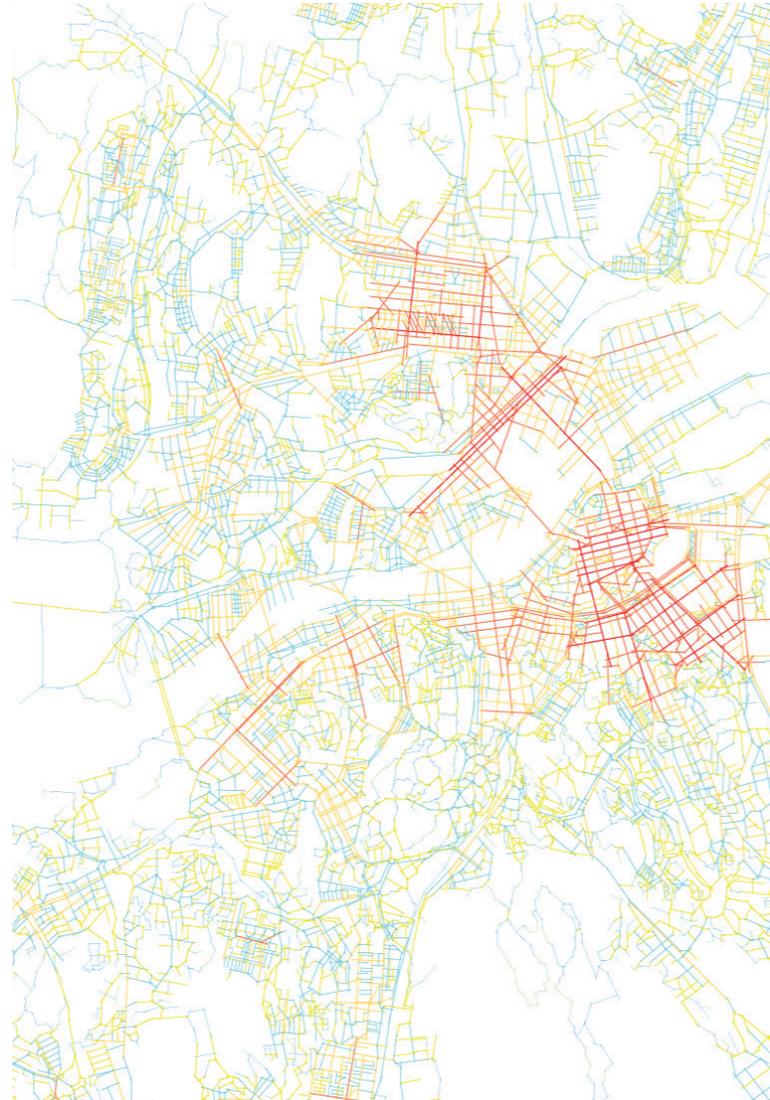
TO THE CITY ANALYSIS

4 STEPS

TODAY



TOMORROW

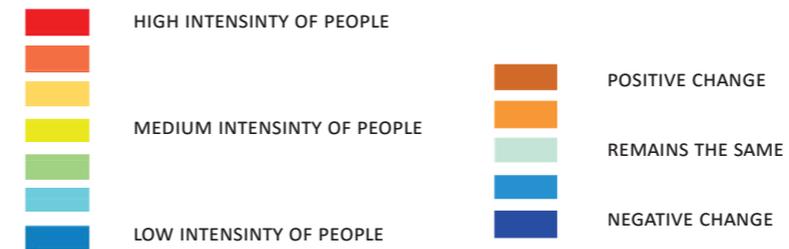


COMPARISON MAP

4 STEPS

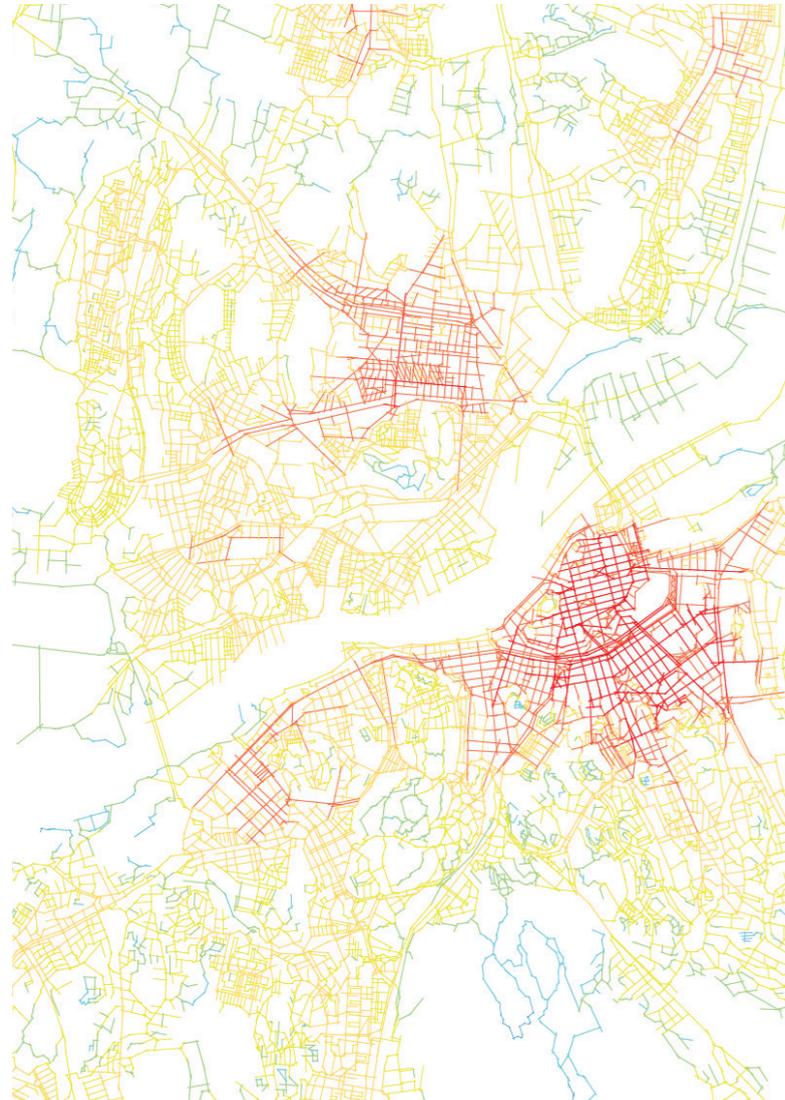
The measure of 4 steps is a local scale. In the tomorrow map we see that the city center already shows a potential to be formed around the water. The links are redistributing attention to the two centers and connects them together.

The tomorrow map further demonstrates that some of the links will become important destinations by the sea for both sides. The comparison maps tells us that the links do however also decrease the existing networks in the vicinity of the riverbanks and in the centers.



TO THE CITY ANALYSIS
10 STEPS

TODAY



TOMORROW



COMPARISON MAP
10 STEPS

The measure of 10 steps is a larger local scale, where the city center now shows a complete tendency to become connected over the water as seen in the tomorrow map.

Here, the links have become important destination for both sides but mainly for the southern side further reinforcing the existing network that runs along the inland.

The negative occurrence in the comparison map has now demonstrated a pattern of decreasing movement mostly concerning the two existing centers of today's two sides. The formation of a larger center on the northern side has occurred.



TO THE CITY ANALYSIS
14 STEPS

TODAY



TOMORROW



COMPARISON MAP
14 STEPS

The measure of 14 steps is a large local scale, where the city center and the riverbanks demonstrates a complete tendency to become connected over the water creating a river city, as seen in the tomorrow map.

The links have forged the two sides together where the vicinity and beyond have created the global meaning of a city by the river.

The most positive change has happened on the north side of the river, providing the today housing rich area with the potential of connecting to the mixed use southern side.



THROUGH THE CITY ANALYSIS
1000 METER RANGE

TODAY



TOMORROW



COMPARISON MAP
1000 METER RANGE

The measure of 1000 m can be considered small measure of vicinity, often considered to be walkable. The tomorrow map demonstrates that the links becomes essential in activating potential movement on both sides.

The links have forged the two sides together creating a flexible network based on choice of route. The links connects well to both existing networks further reinforcing them.

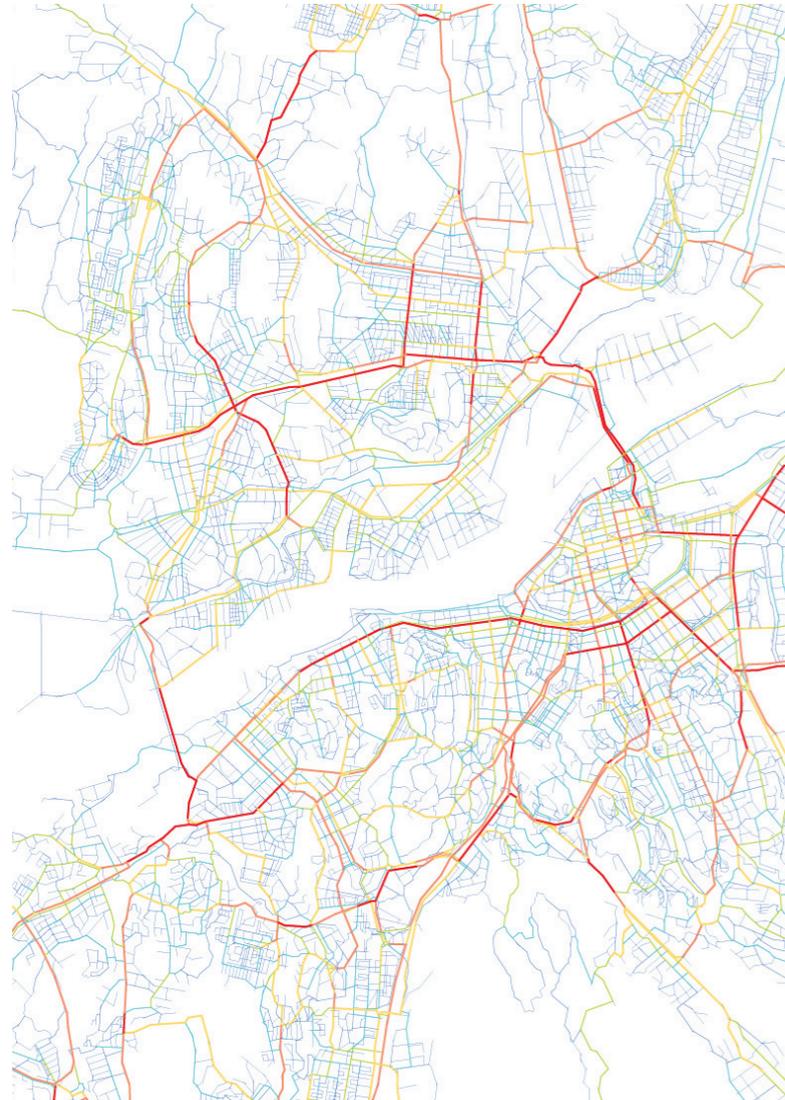
The comparison map shows a positive change that has happened over, but also along the riverbanks. The decreasing streets are spread out.



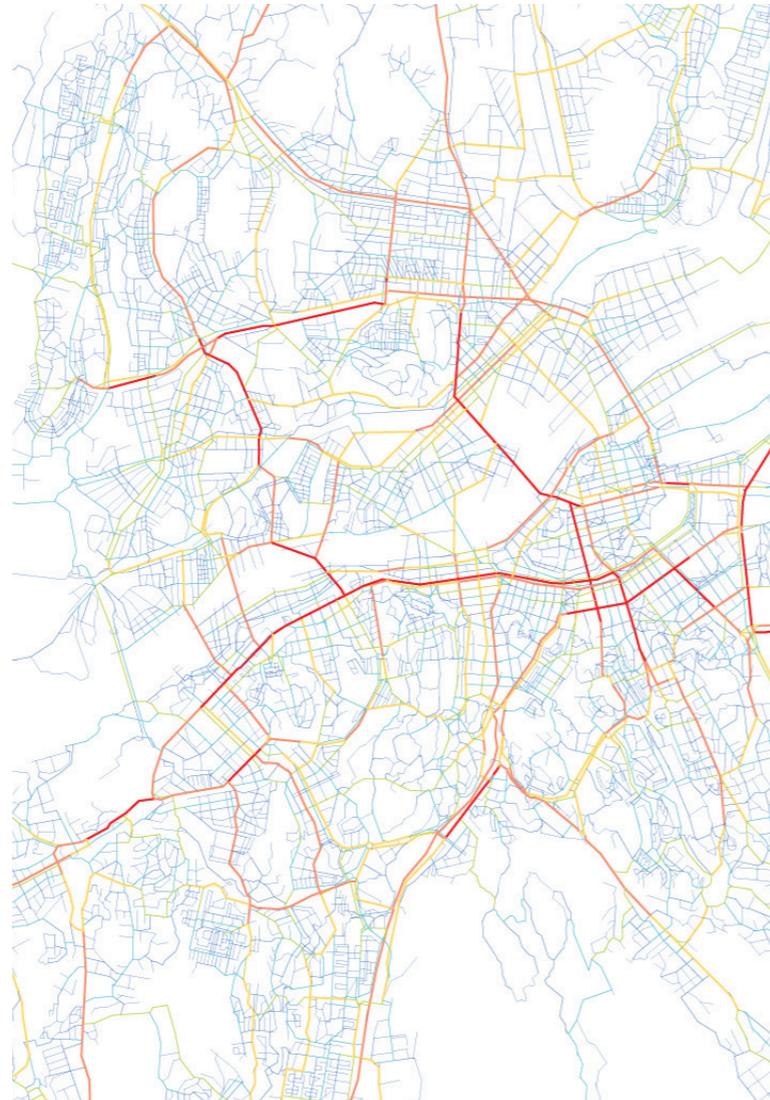
THROUGH THE CITY ANALYSIS

5000 METER RANGE

TODAY



TOMORROW



COMPARISON MAP

5000 METER RANGE

The measure of 5000 m can be considered large local scale. At this point, we would often use public transportation, bike or car. The links are still essential in activating potential movement on both sides as seen in the tomorrow map.

The high bridges are no longer used to the same extent, as the links became essential in order to transport people between the sides.

The comparison map shows a remaining positive change along the southern riverbank. The links still remain important in order to allow people to travel between the sides. The decreased streets are creating a coherent pattern.



5 AXIAL CONCLUSIONS

1 A NEW CITY CENTER AROUND THE WATER

The to the city analysis demonstrates glocal potential in creating a city centre around the water. The concept is further strengthen by the through the city analysis, further suggesting that the area would be supported by people passing through. The centre itself have the possibility to truly market itself as a river city as water becomes an important concept in people everyday life when traveling between the sides.

2 A PLACE TO VISIT

Already on a local scale the riverbanks and their links become important places to go in the city. They are areas that on a larger scale reinforces the existing networks of to-movement. The glocal scale paints a picture of how the river city acts on many different levels, where the water becomes part of generating high intensity spaces but also calm areas in the urban realm.

3 A PLACE TO PASS THROUGH

The through analysis demonstrates the important links established glocally in order to connect the two sides. Furthermore, it has also implied that the usage of the existing links will decrease, at least on a local scale. This further implies that the riverbanks and the links will become important in order to move around in the vicinity of the different areas further facilitating movement between the sides on a daily basis. The links provide a circular and more flexible movement around the river.

4 NEGATIVE CHANGE WILL OCCUR

Independent of scale, negative change will occur. Further analysis could be executed in order to understand how to lessen the negative impact on the rest of the city. However, this will not be the aim of this thesis but the analysis is rather there to paint a picture of the complicated mechanism where the city is understood as a network. Here, the positive changes that do occur is reinforcing the theory of that several links between the sides are necessary in order to generate movement and flexibility between the sides.

5 LOW INTENSITY TOGETHER WITH HIGH INTENSITY

The different glocal analysis gives details on how areas will create diversity depending on movement and flow. With different levels of movement intensity, different types of neighbourhoods will be generated. This will be further assessed by doing a synergy analysis where the small local to the city analysis will be understood together with a global though city analysis.

IMPLEMENTATION OF SYNERGY ANALYSIS LINKING THE GLOCAL SCALE

By exploring what it means to exist in the city this part aims to paint a more theoretical approach to the matter. By further using its theory in creating a method where scales can be overlapped, the will form the basis for reading the district at different levels of intensity.

EXPLORING CO-PRESENCE

Space syntax research shows that a strong resource, such as public transport or a shopping mall, are not the only reason to why the density of people tend to be more than in other places. (Legeby, A., et al. 2015:3) Rather, patterns of concentrations of people are further defined through systematic movement. (Hillier, B. 1996). This type of arising concentrations of people is also referred to as co-presence.

Co-presence can also be defined as “*being in the city*” where we observe many types of different activities. Public space is the arena of encounters where we see others, but are also seen by others. Being co-present in parks, streets or even public institutions such as a library does not necessarily imply focused interaction. (Legeby, A. 2013) Co-presence generates co-awareness among individuals, both for those who live and pass through an area. Encounters, gatherings, avoidance, interactions and dwellings are all patterns of social configurations formed by amounts of people. They both depend on the pattern of co-presence as much as the patter of co-absence. (Hillier, B. 1996).

The impression from the city and the experiences allows people to open up rather than turning people inwards. The contemporary city have the ability to turn people outwards which in turn gives the experience of otherness in a society. The diversity that is created becomes essential in the urban landscape. (Sennett, R. 1992) This awareness of differences have the power to form unwritten rules in society. We negotiate norms, behaviour and identities as we move and exist in public space. In the long run this further inflicts society at large. (Zukin, S. 1995). The formations of a space can contribute as much as it can inhibit flows and movement from one place to another. The flux of people further creates the very basic conditions for social phenomena, such as the degree of safety. (Borén, T., Koch, D. 2009)

SYSTEMATIC MOVEMENT
DEFINES THE DENSITY OF
PEOPLE

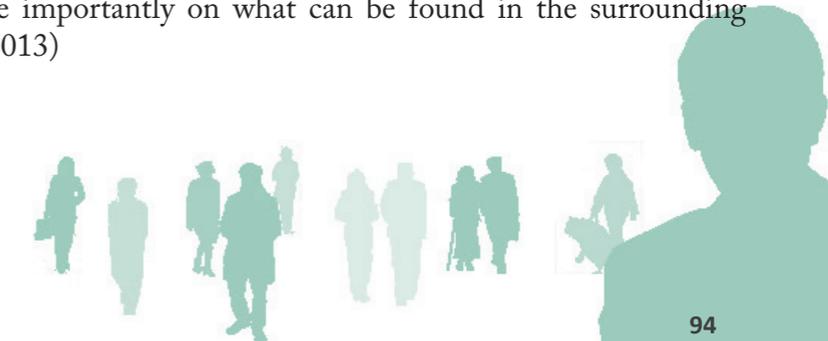
FAMILIAR STRANGERS

In society many of the different types of social networks overlap and exists simultaneously. Familiar strangers are part of our everyday and create social ties, it does not require that all of our social patterns are made out of primary relations in order to exist in the social fabric of society. (Jacobs, J. 1961). Most people belong to a multiple set of solidarities where these relations are distributed all over the city. That is also the reason why we can't only restrict ourselves to talk about residential segregation as life is itself is not only restricted to our homes. In order to counteract segregation the public realm need to be address, since this is where people can participate and understand different societal processes. (Legeby, A. 2013)

CO-PRESENCE IS PARTLY
DEPENDENT ON SIZE AND
THE SHAPE OF PUBLIC
SPACE

Specific configurational properties have a great impact on the pattern of co-presence. Being co-present are partly dependent on size as well as the shape of a public space. It is experienced differently depending on flux of people and what can be perceived in the local area from different points. Space therefore also depends on sightlines where short-sighted view reduce the possibility of seeing people at a greater distance. However, overly long distances decreases the likability of perceiving people far away as co-present. Uneven distributions of spatial centrality, limited spatial reach and segregation of public space are all reinforcing the issues of segregation. Spatiality in combination with strong actors form the patterns of co-presence. However, these strong actors such as train stations and shopping centres also have a tendency to override the configurational influence. Access to different urban resources and its distribution becomes a possible link to the discussion on unequal living conditions and the experience of alienation in a city. Furthermore, neighbourhoods are not only dependent on the immediate local environment, but more importantly on what can be found in the surrounding context. (Legeby., A. 2013)

STRONG ACTORS OVERRIDE
THE CONFIGURAL
INFLUENCES



EXPLORING GLOCAL OVERLAPS GENERATING LEVELS OF CO-PRESENCE

Analysis of overlapping scales may be done in many ways and in space syntax this has been known as integration interface or synergy. In the report of Ann Legeby *Patterns of co-presence* she described her analysis between local and global correlations. This theory related to whether urban layouts had the ability to structure co-presence among people. By superimposing different scale analysis, different kinds of centralities would reveal themselves. (Legeby, A. 2013)

“(...)spaces that are highly integrated at a local level will attract local movement flows, spaces that are highly integrated at a global level will attract global flows (more long distant flows) and spaces that are highly integrated on both the local and the global levels simultaneously will facilitate both local and global movement flows, thus generating favourable conditions for creating a so-called integration interface.”

(Legeby, A. 2013)

In order to perform her investigations of spatial overlapping, Legeby used a local measurement that was compared with a global measurement. The analyses were made of integration values as well as segmental angular analyses of angular integration and betweenness. An area was selected with a 500 m radius that would describe the immediate context and its synergy. Where both of the analysis showed high values in the global scale, suggested that a foreground network was established. The other analysis showing one or none high value can be said to form a background network, meaning being poorly supported by spatial properties. These analysis was confirmed through empirical research made by Legeby, revealing a low flux of non-locals in these places. This further implied a larger effort from non-locals to visit and lower density in terms of accessible population. Legeby continues to argue that this also inflicted upon the nearby resources where the inhabitants from these areas experienced the access to these becoming restricted. Even though, esthetical speaking, several neighbourhoods can appear to be the same it does not mean it performs the same way since it can be embedded differently in the context of the city. (Legeby, A. 2013)

TO STRUCTURE CO-PRESENCE

LOCAL MEASURES
OVERLAPPED BY GLOBAL
MEASURES

The type of urban form revealing low values further encourage quietness on behalf of circulation, separating activities and urban layouts and does not facilitate inter-accessibility. From the perspective of social segregation, people are not encouraged to share their public space. The issue of access to space becomes of great concern. In the report the empirical research demonstrated that neighbourhoods where dependent on the combinations of global and local conditions, further enabling meetings between locals and non-locals. (Legeby, A. 2013)

“This harbours the potential to achieve social processes that can bridge social differences and social groups. Furthermore, this is argued to create a form of social robustness that is significant to how neighbourhoods can develop over time, both internally but also in relation to the city as a whole.”

(Legeby, A. 2013)

However, research also suggests that poor areas forming sub-cultures when located as pockets in thriving areas, necessarily doesn't have to be a bad thing. The notion of segregation being bad and integration being good is a simplistic view. Many minorities choose to live in localized clusters, yet at the same time being able to maintain a variety social ties outside the immediate neighbourhood. (Vaugahn, L. 2005) According to Hillier, good urban space has segregated lines, but they are close to integrated lines, creating a mix within an area (Hillier, B., 1996).

SEGREGATED LINES SHOULD
BE CLOSE TO INTEGRATED
LINES IN ORDER TO CREATE
A MIX

EXECUTION

To a certain extent being in the city may be seen as the least demanding form of social interaction, yet it becomes one of the important tool for generating meeting between people. When we overlap the to- and through-movement analysis at different scales, we can understand the more complete picture of the city and the development of the new district. As stated by Ann Legeby, co-presence between locals and non-locals is generated when at least one of the global scales show high values in the two analysis. In order to decrease alienation this is something that needs to be taken into consideration. However, the execution of the synergy analysis have not occurred in space syntax but rather been an exercise in produced

material from the program. The global betweenness analysis will be overlapped the local integration maps, demonstrating different global qualities in the new district. This will lay the foundation for shaping the neighbourhoods and to what extent they can generate levels of intensity. Furthermore, the synergy analysis has potential to aid in the process of determining the formation of the bridges where the local or global structures have been identified to be supported by different transportation modes. It has been used in addressing where the different attractors can be placed in order to strengthen an area's social outcomes.

The different areas will be further assessed in the concept of vicinity and walkability to different services and functions. The diagram to the right demonstrates how nearby functions need to be placed in order to be understood on the terms of vicinity. We can further broaden the perspective by combining it with statistics from *Resevaneundersökning 2014 (2015)*. The document indicates that the average distance for pedestrians is today estimated to be 2 km whereas the average distance for biking is 5 km. The most common reason for travelling is for work, where 30% of all travels within Gothenburg are estimated to be for work related issues. Reasons of private matters such as social activities also reaches 30% meanwhile private purchases as a third runner up is estimated to a 15%. More than half of the travels are executed by car where public transportation and travelling on foot is almost equally divided. (*Resevaneundersökning 2014, 2015*)

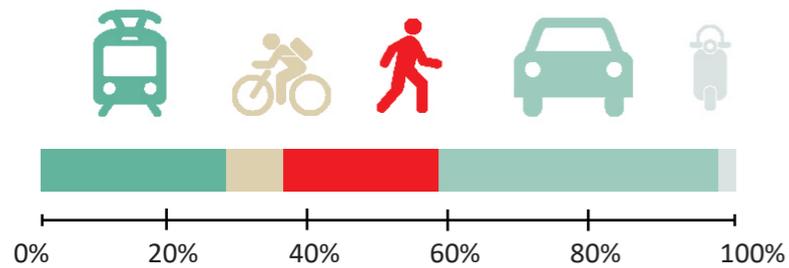


Image 11. Vehicle distribution for residents in Gothenburg per reason to travel in 2014

SHAPING THE NEIGHBOURHOODS

- PUBLIC TRANSPORTATION
- BIKE
- ON FOOT
- CAR
- OTHER

ACCESSIBILITY STANDARDS

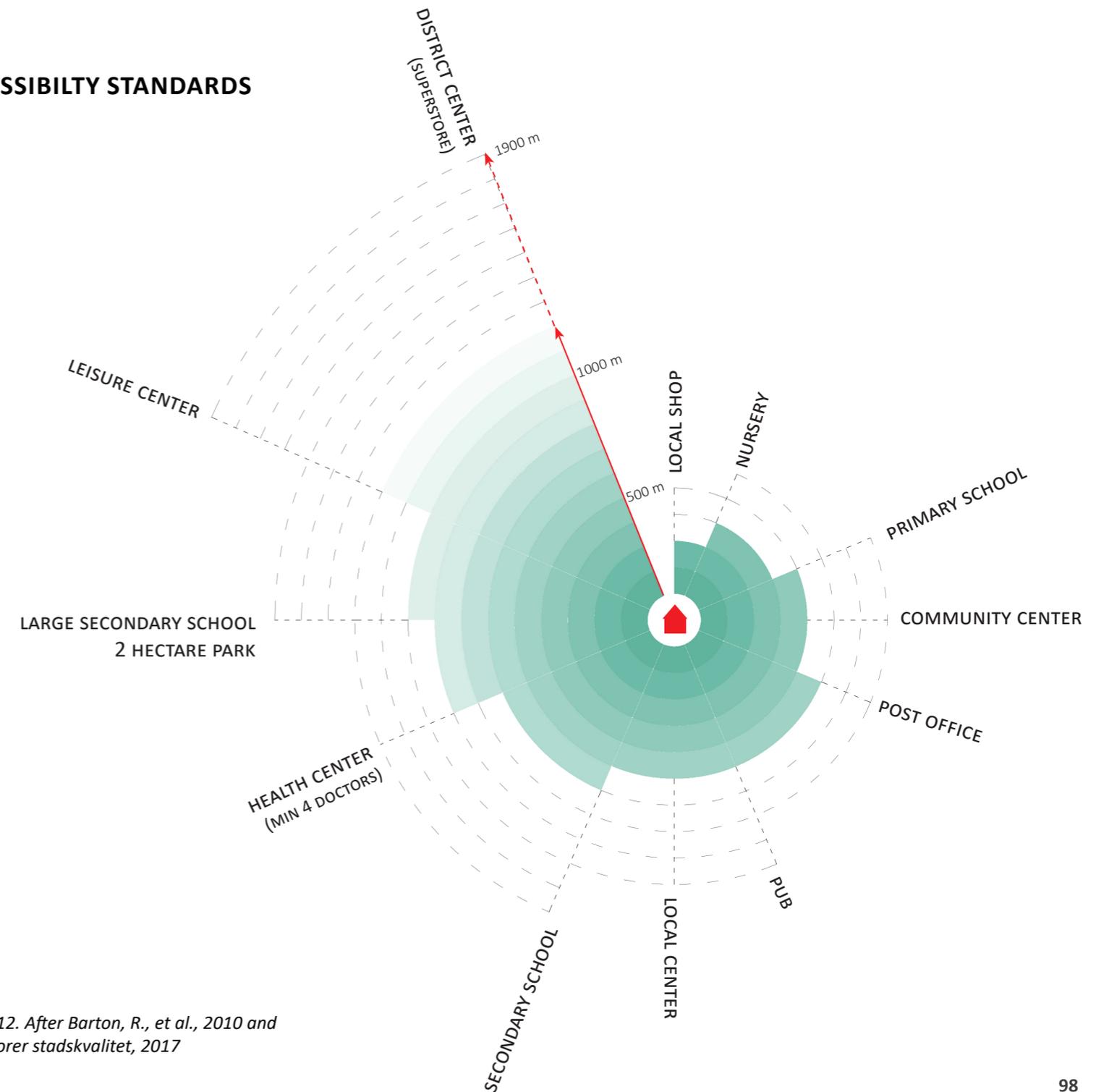


Image 12. After Barton, R., et al., 2010 and Indikatorer stadskvalitet, 2017

SYNERGY ANALYSIS AND THE OVERLAP OF THE GLOCAL SCALE

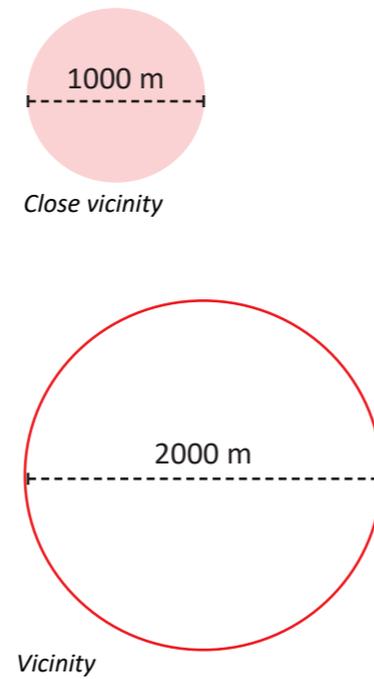
By overlapping a global through the city analysis and a local to the city analysis, we will further gain knowledge how local areas still remains connected to the glocal structure further making sure that the area doesn't become segregated.

The area have been further assessed based on the diagram accessibility for key services where it has portrayed different key service that should be found within a distance of 2000 m in order to further enhance the concept of vicinity. This is further coherent with the statistics in Resevaneundersökning 2014 (2015) that an average journey on foot in Gothenburg is 2 km. This thesis have interpreted two connotations from the diagram and the document, where 1 km has been noted as the *close vicinity*, meanwhile the 2 km average distance is recognized as plainly *vicinity*. The close vicinity concept represents the distance we perceive as advantageous when doing everyday tasks such as shopping for food or travelling to work. The 2 km is still perceived as vicinity but becomes more feasible in terms of doing activities on a weekly basis, such as going to the gym or doing a large amount of shopping. This have been in order to establish further guidance on how the different new districts will behave in terms of size, placement and in relationship to its surrounding.

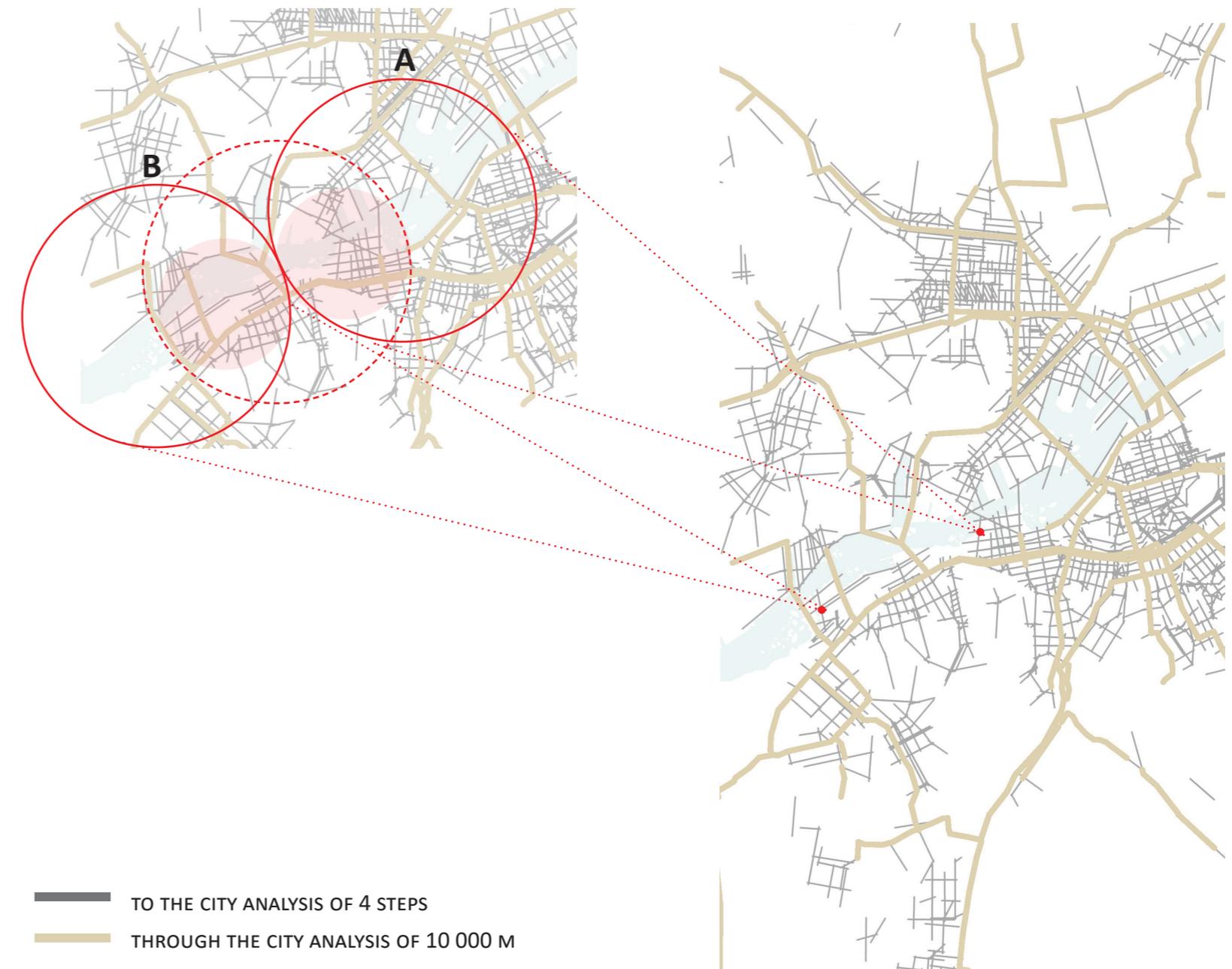
The analysis suggests the formation of two districts, A and B. They are both perceived as a unit but are also part of two different district processes. District A have a close connection to the city where it becomes part of the new development of the center around the water. Meanwhile, district B is developed in close connection to A and its surrounding along the riverbanks. Both of the districts can be used in order to provide mixed uses, further reinforcing the existing networks on both sides.

The contrast between the thin grey lines and the white areas suggest different level of intensity. The white areas will become calmer meanwhile the grey lines will support higher intensity activities. District A and B will be further assed in the light of the diagram accessibility for key services, where the close vicinity arear will create functions upon its basis. This will be further investigated in the mapping of functions, where a general structure will be laid out beforehand.

The thicker and larger grey lines suggests the main movement patterns, which further could be the basis for formation of mixed traffic streets. It creates the

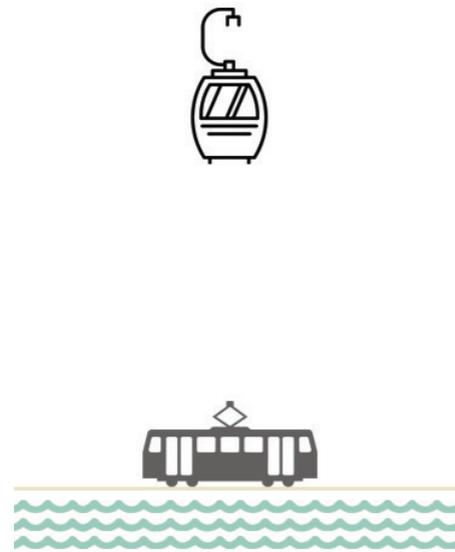


SYNERGY ANALYSIS



foundations for a new tramline independent from the already overloaded existing tram network. Here, all of the trams don't only have one bridge to cross, further generating queues, but could create a more flexible network.

District A's lack of a vein needs to be addressed. Within the system it becomes an important part of forming the accessible inner city. This is where the placement of the new cable railway will be issued, further facilitating people in moving between the sides. However, the cable railway distances people from the water yet it presents the people with a spectacular view over the future river city. The cable railway will pose as an attractor for visitors and could help in marketing the city, yet it does not aid in perceiving the city as accessible and flexible when you need to change mode of transportation. The analysis tells us that a placement of public transportation needs to be done due to its importance of tying together the city center. Further public attractors with low threshold of participation could be placed in this area in order to strengthen the new vein that is not naturally supported by the system itself.



The close relationship to water

SYNERGY ANALYSIS



- PROPOSED CABLE RAILWAY
- — — — ADDED LINK AT GROUND LEVEL
- LOWER INTENSITY AREAS

APPROACHING FUNCTIONS

IMPLEMENTATION OF FUNCTIONS - LINKING OF SOCIAL THRESHOLDS

The mapping of functions have allowed the site to be assessed in term of reading social and physical thresholds generated from the different functions. Further, it has also explored the link between space and movement is the process occurring between distribution of resources and the built environment.

EXPLORING FUNCTIONS IN THE NETWORK OF MOVEMENT

Activities and land uses that will benefit from heavy movement will migrate to rich movement patterns, meanwhile others will prefer to benefit from locations with poorer types of movement. The presences of movement will therefore set up a multiplier effect generating networks of linked centres at different scales. Micro economic factors tend to be invariant across culture which gives the global structure of the city, perceived as a complete system. The residential space process seeks to structure the relationship between residents and the exterior world, forming restrains to free movement. This process further enable and gives local differences within cities. (L.Vaughan, 2007) Moreover, walking becomes an essential process in the life of the city. The scope for cities should always be to invite people to spend time in public space, meaning being co-present. This runs very much in line with the basic fundamentals in the theory of space syntax. (Legeby, A. 2010)

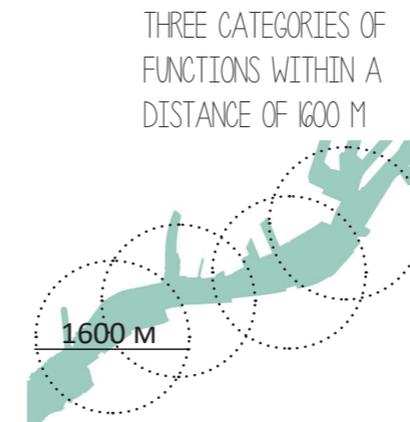
“A micro-economic process generates the global similarities between cities, and the cultural process the local differences.”

(Vaughan, L. 2007)

EXECUTION

On the basis of how movement patterns can reinforce different functions, the design has also been analysed through the understanding its surrounding network of functions where the aim has been to complement the existing city structure. The new districts are not only implemented into the city, but are also in this way forged together with it, furthermore generating possibilities for the city as a whole. Furthermore, the linking strategy is not only a physical form, or predicted movement of people, but it also tries to responds to the functions and resources available along the paths.

MOVEMENT PATTERNS
WILL FURTHER GENERATE
FUNCTION PATTERNS



EACH FUNCTION
ACKNOWLEDGES A SOCIAL
BEHAVIOUR

The existing functions has been mapped in the distance of a 1600 m, a measure that in this thesis have been consider to be the smallest to estimate the area in terms of vicinity and walkability. The area has the starting point form the middle of the river and have been mapped and divided into three categories. This have been done in order to more detect social patterns in combination with the built environment. Different functions implies different social attributes and threshold. An open public space is more easily accessible then an institution where some sort of “membership” might be required. A shop is almost dependent on the sporadic behaviour and has a low threshold, meanwhile a hospital is relying on people booking appointments insinuating a high threshold of participation. A hospital in a public area can work as a prohibitor of co-presence, if not using the ground level for public use.

Function are divided into three categories of red, green and grey functions. The red are depending on a social sporadic character where the threshold of participation is low. Here shops, cafes, bakeries, restaurants, bars and smaller food stores have been included. The green functions are of a more planned social character where healthcare, education, institutions, offices, services, larger food stores, gym, hotel, theatre and museums are included. The grey function makes out of the residential background that has been determined to be of a static social character being the highest threshold of participation.

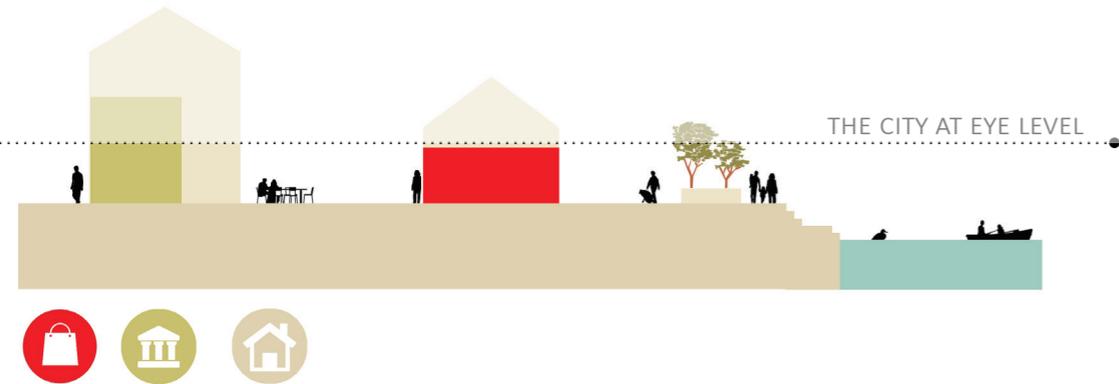


FORGING TOGETHER OLD
AND NEW NETWORKS

The different functions within the categories

The mapping have been done focusing on the horizontal eye level city, where heights have been generalised and assumed. This thesis argues that the functions relying on a low threshold needs to form a red thread through the city. In this case, they will aid in creating a continuity in the city but also becoming an important tool in the processes of diversity. Functions with a semi high threshold can reinforce dubious public spaces becoming attractors depending on its individual threshold, furthermore becoming a tool for accessibility to a space and the sensation of belonging to a city. The residential component with a high threshold of participation have been mainly placed the low intensity lines, suggesting that a selected few will use these paths on a daily basis. Yet, the residential component have the possibility to create a diverse urban life, where many different types of people can come together and live in the same area. The function analysis have taken this fact into consideration, in combination with the indicators stated further ahead, allowing it to become the very backdrop of the new district where living can both happen in low and high intensity spaces.

All of the functions have been placed according to a space syntax analysis determining through the city on a range of 2000 m. This scale is a larger local scale giving us a clue on how people from within the area, but also from the outside, could move to and through. The mapping have further taken into consideration the low intensity areas generated from the synergy analysis.

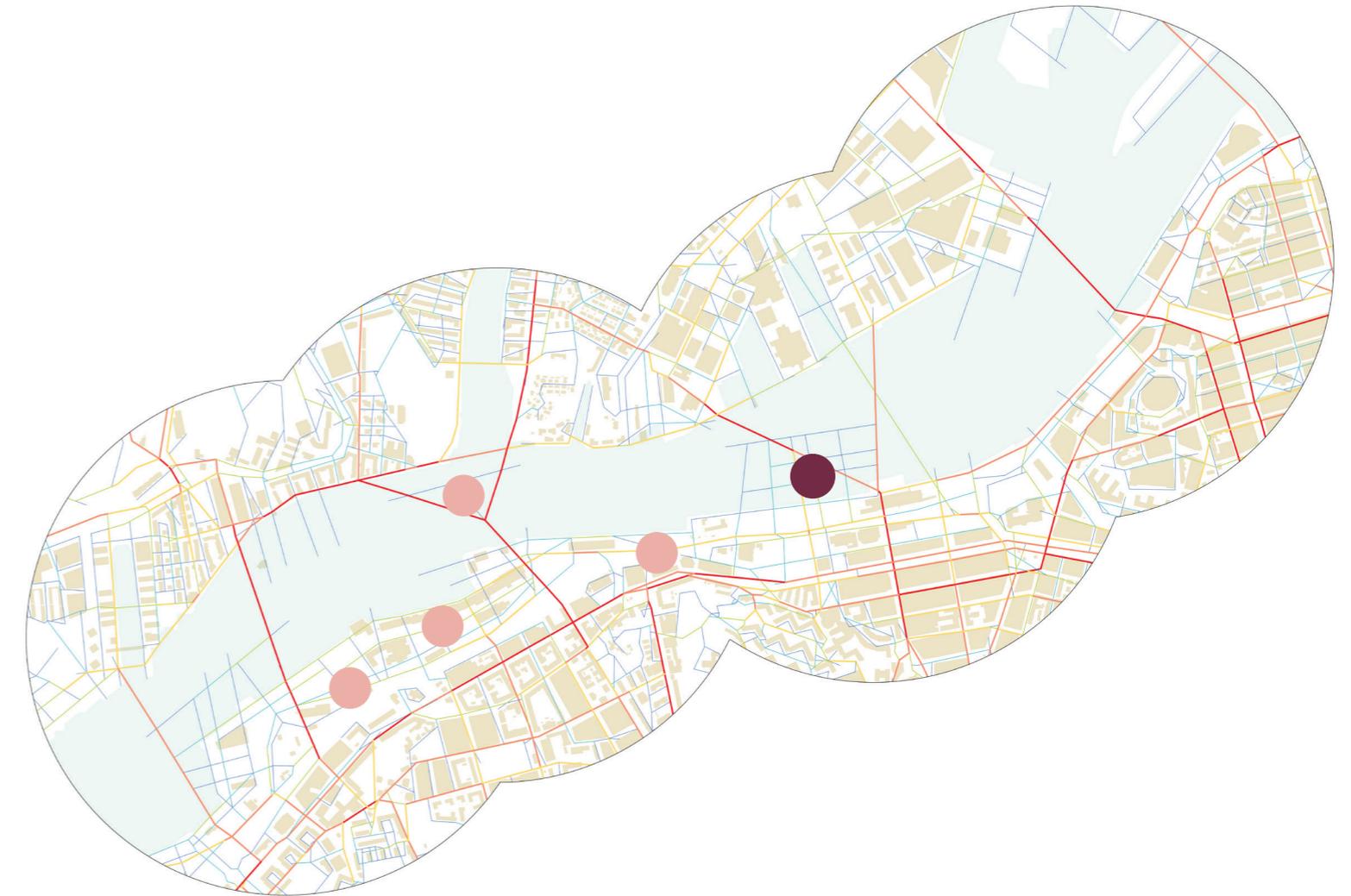


Section with the different functions

HEIGHTS HAVE BEEN
GENERALISED AND ASSUMED

FORMATION OF HIGH AND
LOW INTENSITY SPACES

HIGH VS. LOW INTENSITY



- HIGH INTENSITY AREA
- LOWER INTENSITY AREAS

The new street formation from 2000 meters through the city analysis overlapping the existing built environment



RED FUNCTIONS ALONG RED LINES

*New and existing red functions overlapped with through analysis at 2000 meters, where the ground level make out 30-70% * of function localities.*



SPORADIC SOCIAL CHARACTER WITH A LOW THRESHOLD FOR PARTICIPATION

shops, restaurants, bars, cafes, bakeries, smaller food stores



■ EXISTING
■ NEW

* Recommended value from Indikatorer för statskvalitet, 2017.



GREEN FUNCTIONS ALONG YELLOW, GREEN AND BLUE LINES

New and existing green functions overlapped with through analysis at 2000 meters where the ground level make out 30-50% of functions localities.



PLANNED SOCIAL CHARACTER WITH A SEMI LOW THRESHOLD FOR PARTICIPATION

healthcare, education, institutions, offices, services, larger food stores, gym, hotell, teater, museums



EXISTING
NEW



GREY FUNCTIONS ALONG BLUE LINES

New and existing residential



STATIC SOCIAL CHARACTER WITH A
HIGH THRESHOLD FOR PARTICIPATION
residential



EXISTING
NEW

ALL FUNCTIONS



The three different categories of functions follows the patterns of high intensity and low intensity further discovered in the synergy maps. District A have aimed to create a continuity of the red category with sporadic social character in order to promote people to move around the water and the inner city. To the southern side, district A offers a complementary pattern meanwhile the northern side get closer access to the mixed use city. The district have also implemented the green functions, here they can form attractors in order to reinforce the concept of a vibrant city around the river.

District B have further developed areas with less intensity where the space mostly offers residential and green function. The functions within the green category could be mixed, taking benefits from a calmer atmosphere and neighbourhood. The red category creates important links between the existing and the new, connecting the two riverbanks.



 SPORADIC SOCIAL CHARACTER WITH A LOW THRESHOLD FOR PARTICIPATION

 PLANNED CHARACTER WITH A SEMI LOW THRESHOLD FOR PARTICIPATION

 STATIC SOCIAL CHARACTER WITH A HIGH THRESHOLD OF PARTICIPATION

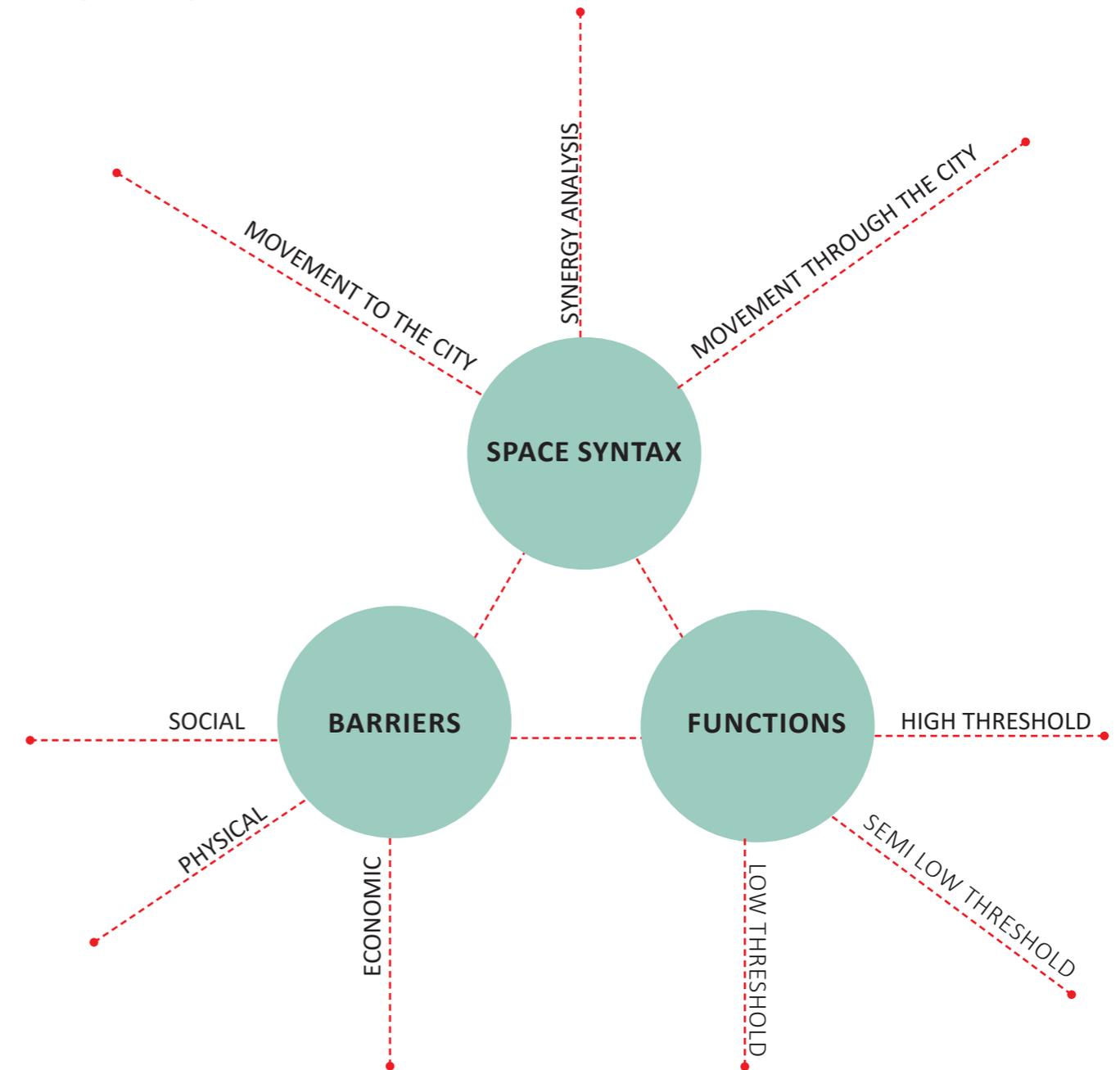
SUMMARY

The different methods used have been able to give a better insight in how the different parts of the networks all form a coherence in the city. The different barriers, movement networks and functions have been part of creating the new vibrant district of Gothenburg. The different barriers have aided in painting a picture of assets and how they need to be bridged or generators to a complete strong new district. They have recognised the challenges but also addressed the opportunities concretely. The movement networks have aided in the process of connecting the existing with the new but it has also demonstrated visually the social capital that will arise. The functions have further aided in creating a coherent city, where both the micro and the macro can co-exist. All of the methods have over all aided in the process of understanding how the new will be mended with the old, both on site and in the city as a whole. They have together set the very foundation in forming a linking strategy turning the site into an atmospheric marine site with departure point in the worth of social capital, economic capital in combination with the built environment.

HOW ALL THE NETWORKS
FORM A COHERENCE IN THE
CITY

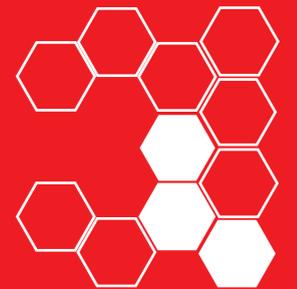
A LINKING STRATEGY

THE LINKING METHOD



DESIGN PROPOSAL

Here the final result of all previous chapters will be put into an architectural design. The methods will be translated into derived design principles in order to give guidance when shaping the masterplan. The plan will further demonstrate different physical and mental qualities generated from the linking strategy.



DERIVED DESIGN PRINCIPLES

THE PRINCIPLES

Certain methods and approaches can be developed in steps towards a solution to all of the issues stated in the RiverCity Gothenburg vision. The thesis have aimed to shed light upon the issues, understanding them though different methods of approach, further giving suggestion on how to proceeded the urban planning. This have resulted in various principles within the following fields.

-  **THE LANDFILLS**
-  **THE PHYSICAL NETWORK**
-  **THE BUILT ENVIRONMENT**
-  **THE GREEN AND BLUE ENVIRONMENT**

CONCEPT OF DESIGN



LANDFILLS

More Gothenburg is created where the physical distance between the banks will be decreased

THE SOUTHERN SIDE IS THE DEPARTURE POINT

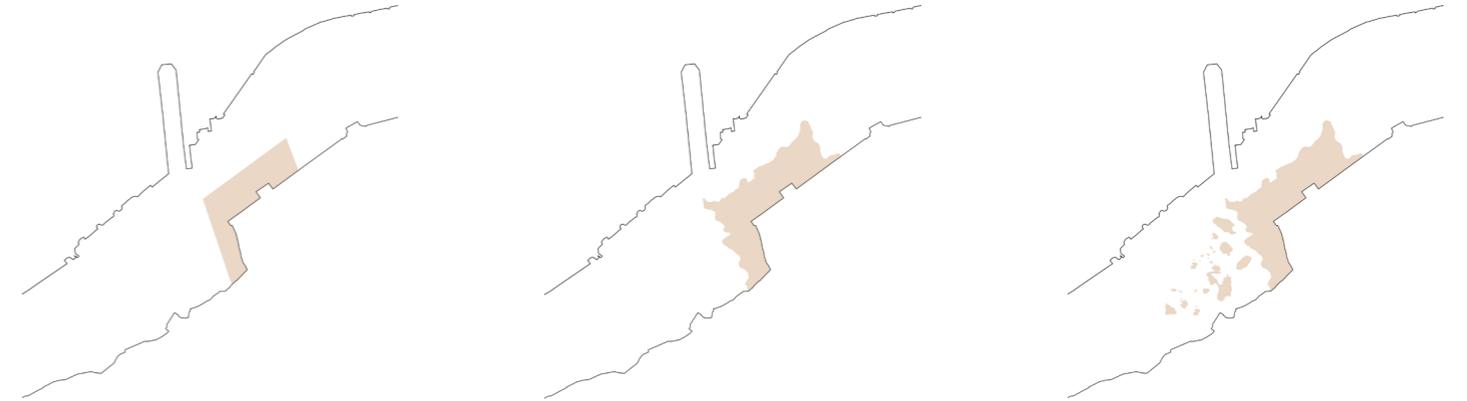
The southern riverbank will be used as site due to its empty vast post-industrial character. The site has been identified as a hole and part of a periphery in the urban fabric and have therefore become of great interest for this project. It has further allowed for exploration of the complete process from nothing to something. The southern side have also shown greater response beyond its geographical limits in the space syntax analysis, and have therefore been determined as the physical departure point for the project. The general aim is to lessen the physical distance between the two riverbanks but also create protection where people crossing are not as vulnerable for weather and wind.

THE SEA BORDER WILL PROVIDE SAFETY FROM FLOODING

The surrounding area of the network developed from space syntax will make sure to provide enough space in case of downpour and flooding. The borders of the landfills will be further addressed in the light of report Hydromodell Göteborg (2015) on how to further construct the riverbanks. The riverbanks will aid in demonstrate a complete solution for the river front.

USING ISLANDS FOR A BETTER WATER ENVIRONMENT

Island will be added for the reason of providing help in cleaning the water through the roots of plants and providing space for a more integrated wildlife. Due to the boat traffic passing though, the island can help in order to calm the waters and the creation of waves. The island have a cultural connotation where the design allows the archipelago to enter the city, becoming more accessible.



THE PHYSICAL NETWORK

The calm and the vibrant can co-exist

BRIDGING WATER

Several links between the two riverbanks will decrease the distance and facilitate movement in between. These will be formed through space syntax analysis further generating a street network. The bridges will be around 100 m long, based on the fact of visual limitation from Jan Gehl. The distance have further been confirmed by the measured passing further upstream, where the minimum distance for boat traffic can pass through in a two way direction is a 100 m.

FLEXIBLE ENVIRONMENT

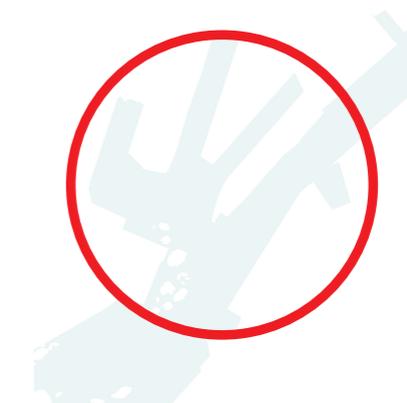
The physical street network will be formed on the recommendation of 50-150 m* between crossroads. The network will be addressed according to the idea of a mixed use traffic. It is easy to walk and bike along the waterside, as well as finding other ways during windy days. Götaleden/Oscarsleden will in this case remain yet the speed will be lowered allowing for more crossings and easier access for both pedestrians and cars. Within the district, the usage of cars will be limited, rather focusing on easy access for the public transport.

DIFFERENT INTENSITY

Neighbourhoods with different types of intensity will be created and supported by the different discovered networks of movement. The different districts created will be further assessed by an implementation of attractors and functions. Here, there micro and macro can co-exist generating different types of intensity, all with their different perks.

THE CLOSE RELATIONSHIP

The physical network will promote and have the aim to strengthen a growth of the inner city around the river. The different districts beyond will still aim to have a close relationship to the water and to each other. Even though neighbourhood is placed far away, it should always have easy access to public transport, generating a mental secureness of being close to centre and the resources it can offer. The physical street network is an extension of the existing street network, allowing the city to be perceived as a unit.



* Recommended value from Indikatorer för statskvalitet, 2017.

THE BUILT ENVIRONMENT

A mixed function city providing both macro and micro spaces

THE FUNCTIONS

The red and green functions will be placed according to the recommendations of up to 75%* facility area along main paths. In each area, the recommendation 30-70%* per district will be further followed. The grey functions consisting of residential parts will make out the backdrop, allowing for living in the city becoming of a high and low intensity.

THE EXISTING

The existing buildings on site should be assessed and kept in the new plan to a great extent as possible in order to create many of the beneficial outcomes mentioned in this thesis. It will aid in the process of creating a mixed use city where the already social character is preserved and reinforced.

THE NEW

Each property will be design according to recommendation of up to 2 000 sq. m* amount per property. The built environment aims to keep a distance between façade entries not less than a 15 m*, according to recommendations.

THE MICRO

Each property will be design according to recommendation of up to 1 500 sq. m* courtyard space. The courtyard will play an important role in providing both private and public micro spaces.



* Recommended value from Indikatorer för statskvalitet, 2017.

THE GREEN AND BLUE ENVIRONMENT

The green corridor and its rooms

A RESOURCE

The green and blue environment should become a resource in cleaning the water. The green environment can also become spaces where flooding is allowed, retaining water, and thereby protect other important structures from harsh weather conditions.

A RECREATIONAL ASSET

The green and blue environment should become a recreational place where both wildlife and humans can exist. It should both be formed on a macro and micro level, allowing nature to be collective as well as a private experience. The water will be invited in to the city by the formation of canals, both used in a recreational manner and practical retaining water during flooding. The district is a site for locals and non-locals to gather and form a diversity of the area.

A NEARBY PARK

*The green and blue environment will be design according to recommendation of up to 1km to 2 m³ * park. Here the water is counted as a recreational areas just as the green spaces. The green and blue environment will also be design according to recommendation of up to 30%* green public space in the area. This will consist of both green public squares, parks and water features.*

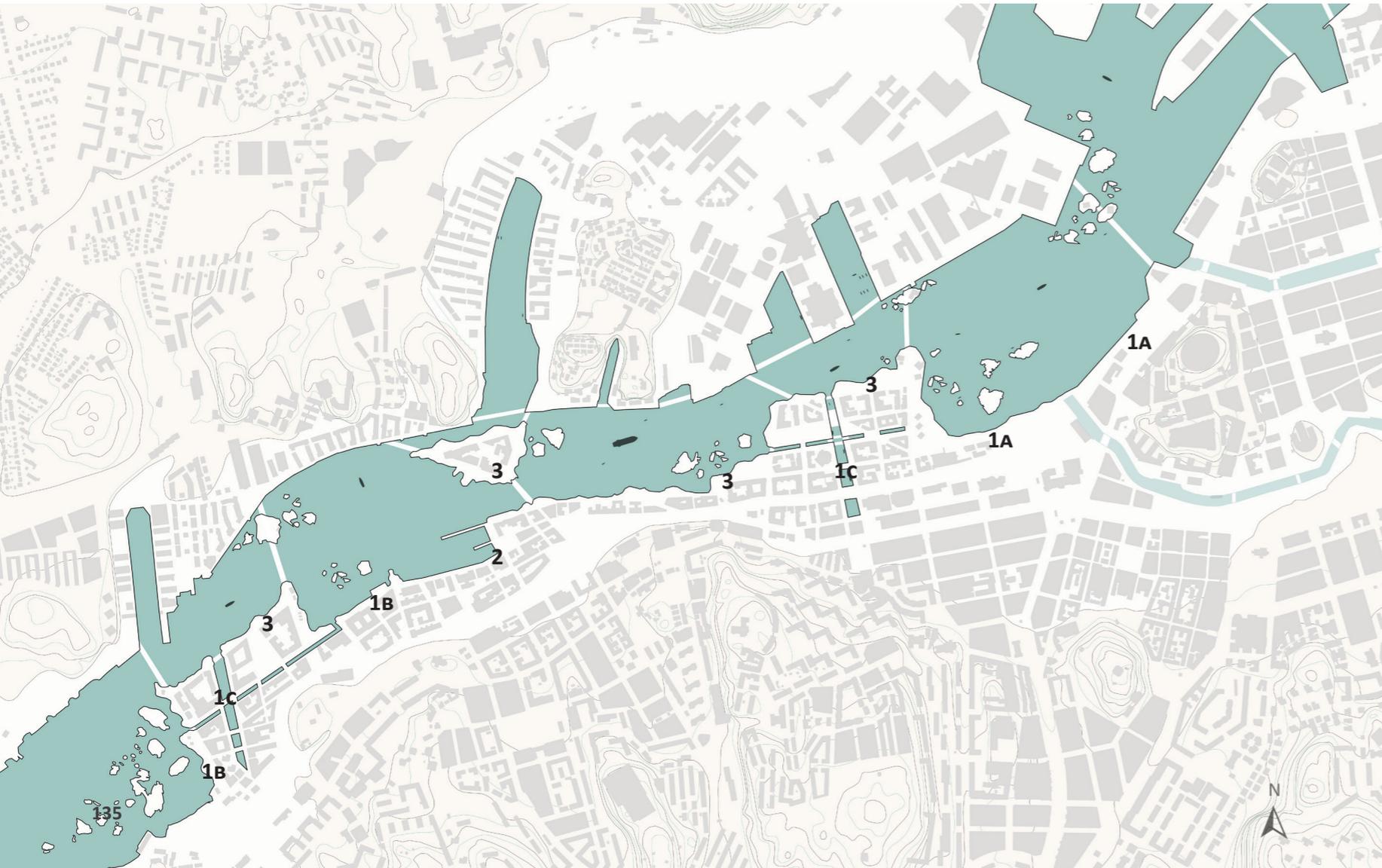
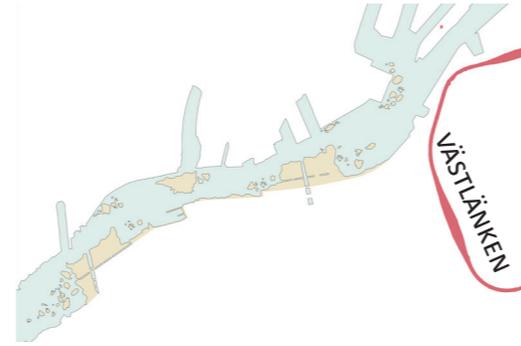


** Recommended value from Indikatorer för statskvalitet, 2017.*

THE DESIGN OF THE LINKING STRATEGY

ADDING 5 GLOBEN TO GOTHENBURG

Land have been added in the total amount of 2 937 240 m³, almost as much as 5 Globen. During the excavation of the underground railway system Västlänken, a total amount of 3 800 000 m³ will be surfaced and reused, according to Trafikverket (2017). This makes the landfills great candidates for the reusing of the surfaced earth and mud.

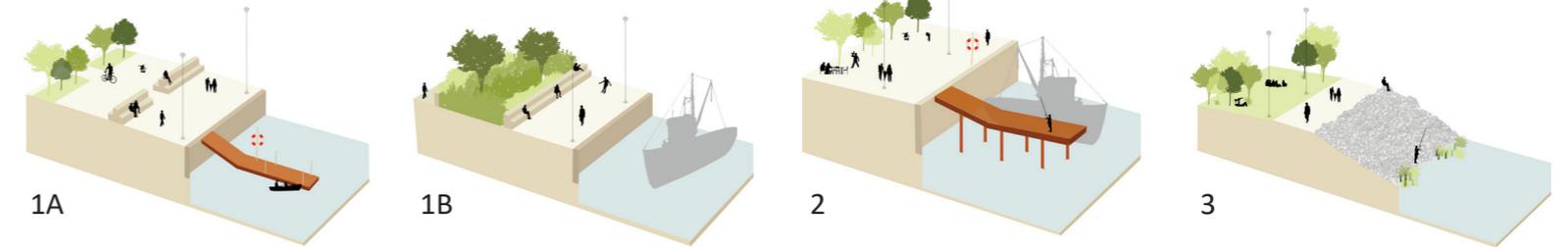


RETAINING AND RESTRAINING

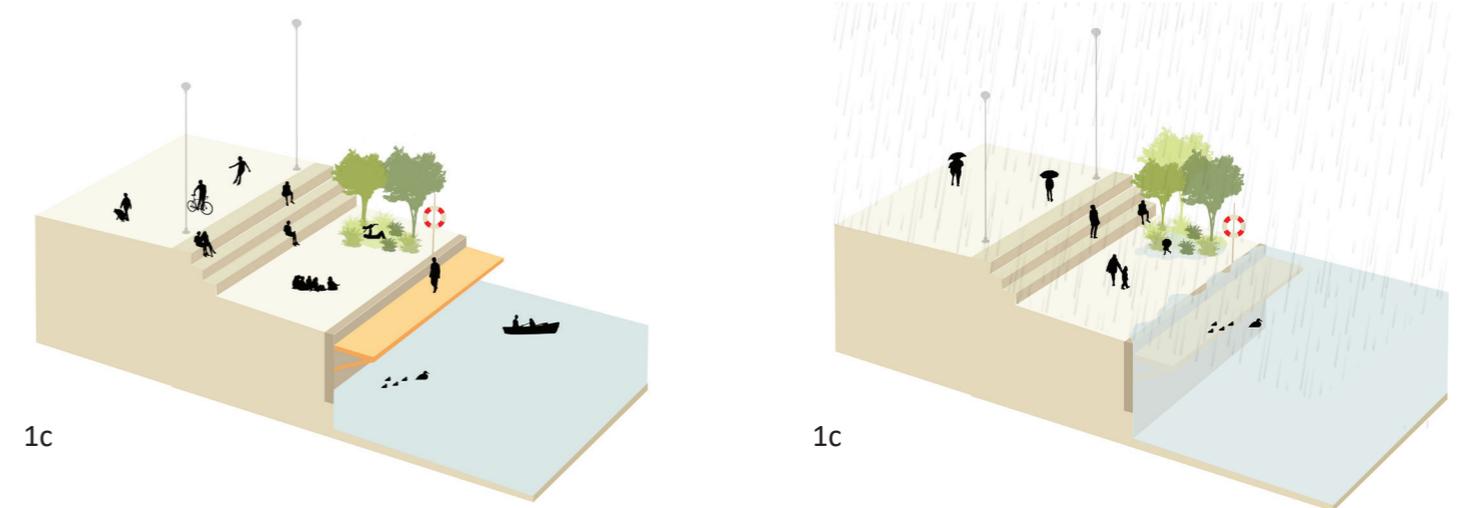
The riverside have been further developed upon the suggestions made in the Hydromodel Göteborg (2014). The riversides have been approached by creating complete solutions where the new landfills will create a far-reaching support for the entire southern riverside. The different models have been further explored through an atmospheric concept and what they could offer in terms of a solution for flooding but also as recreational space.

- 1A-C** SUPPORT PLACED ON QUAY AND FURTHER
- 2** SUPPORT PLACED ON THE EDGE OF THE QUAY
- 3** MOUND ALONGSIDE SLOPE

HYDROMODELS



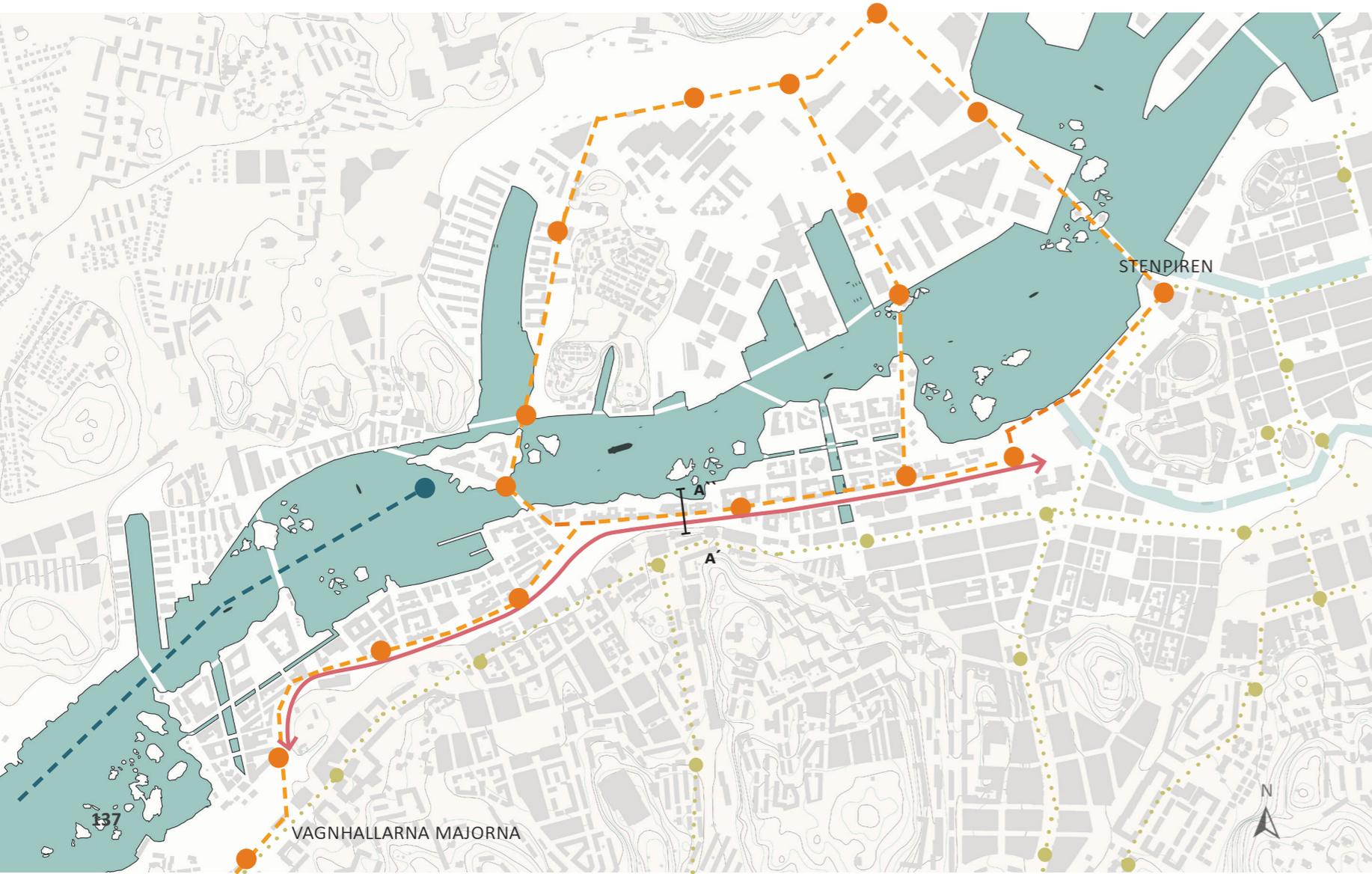
SCENARIO WITH FLOODING



CREATING FLEXIBILITY AND ACCESSIBILITY

The different modes of transportation can co-exist allowing the city to be perceived as flexible and accessible. The port of the passenger ferry have been placed in the middle of the river, where they no longer blocks the view to the water nor benefits heavy traffic. Due to its placement, both the northern and southern side have the chance to attract visitors. A new tramline have relived the existing overloaded network, yet connecting to vital nodes such as Stenpiren and Vagnhallarna in Majorna. The main road for the cars runs outside the districts, creating more valuable places within for pedestrians and similar slow modes of transport.

-  MAIN ROAD FOR CARS
-  PROPOSAL FOR NEW TRAM LINE
-  EXISTING TRAM LINE
-  PROPOSAL FOR NEW FERRY AND TERMINAL

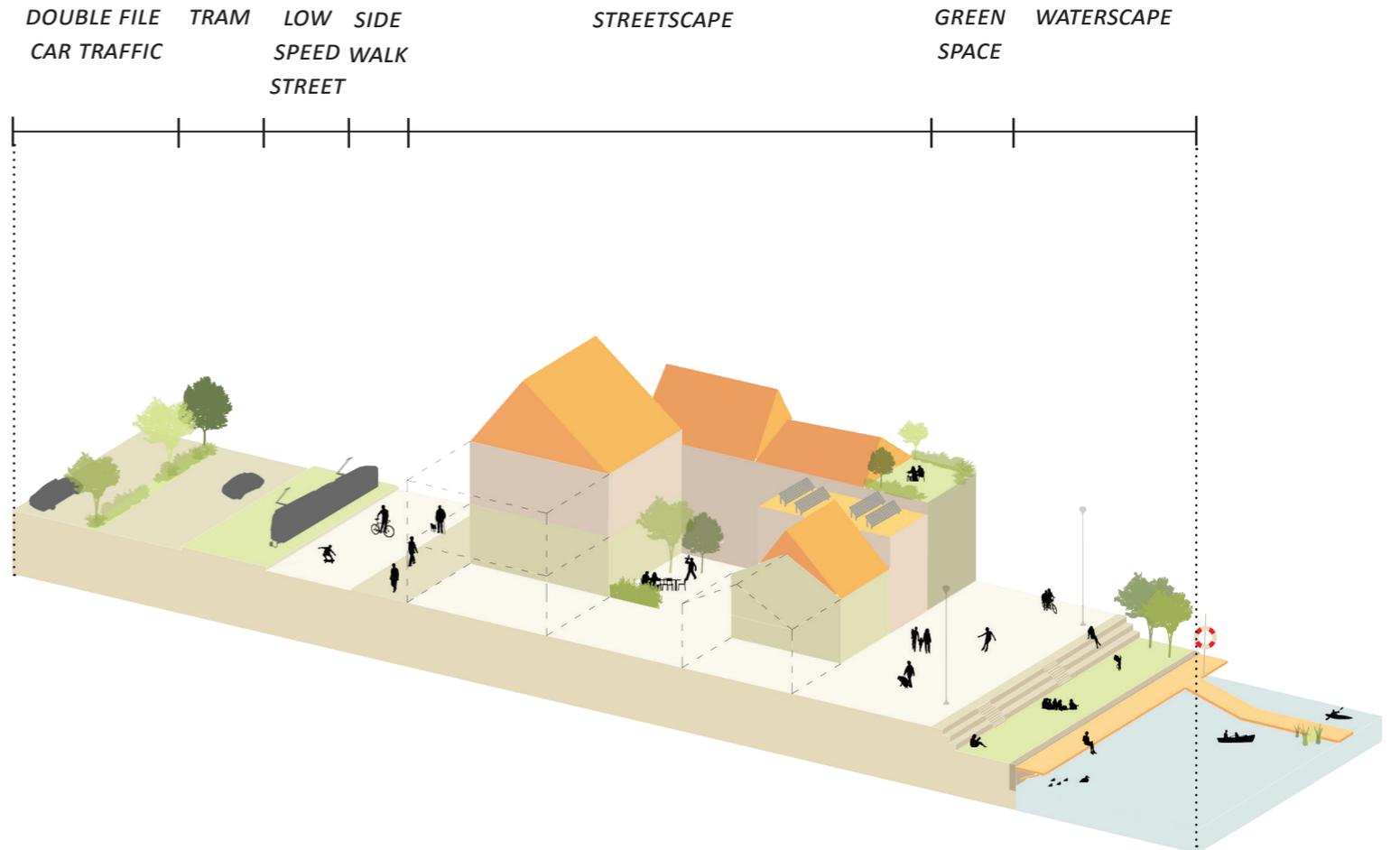


MIXING AND SEPERATING

The heavy traffic have been separated from the pedestrian yet trying to create a mixed street as possible. The different roads are used for different purposes, further enabling different type of mixed functions. The incision, even though a small part of the entire districts, tries to portray how different types of traffic could be arranged.

-  COMMERCIAL
-  RESIDENTIAL
-  INTSITUTIONS

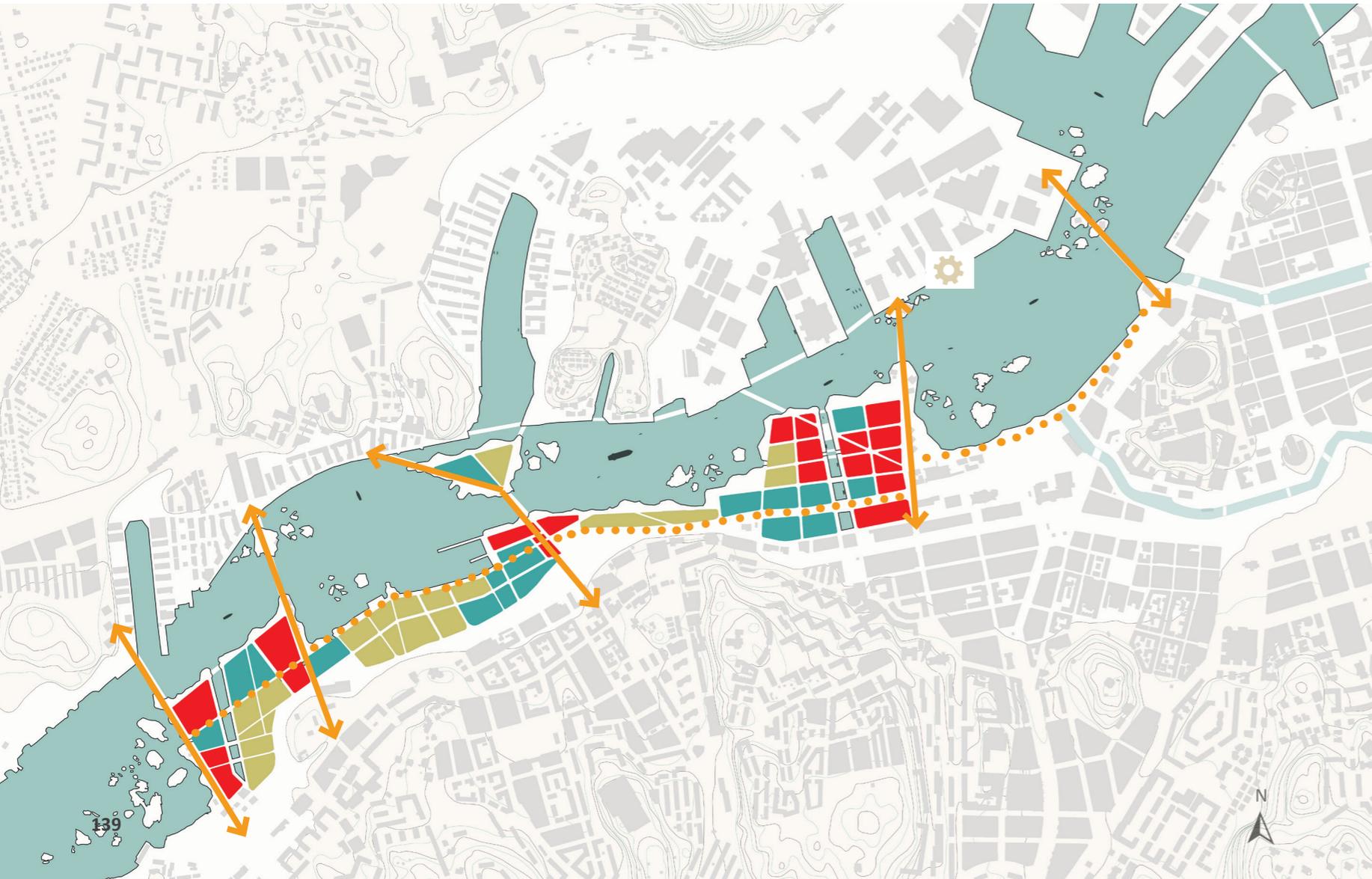
100 M INCISION A'-A''



PEDESTRIAN NETWORK

The neighbourhoods with the different intensities have been created based upon analysis made in space syntax, both through- and to the city movement have been used at global overlapped scales. Some veins becomes important in order to connect the existing network with the new, meanwhile a new main pedestrian road is created within the districts themselves. The main road along allows people to both walk along the banks as well as in the protective built environment.

-  BUSY AREA
-  SEMI BUSY AREA
-  CALM AREA
-  MAIN PEDESTRIAN ROAD OVER
-  MAIN PEDESTRIAN ROAD ALONG



PEDESTRIAN FLUX

The urban environment can offer many different types of configurations in order to meet general goals from the city. Gothenburg wishes to become a more included city and as this thesis have tried to demonstrate, the physical environment need to support these social intensions. The urban environment aims to become a place for locals and non-locals, where the river and its remaining industry is part of a smart and flexible system. Many different types of events can be housed within and on the outskirts of the built environment.

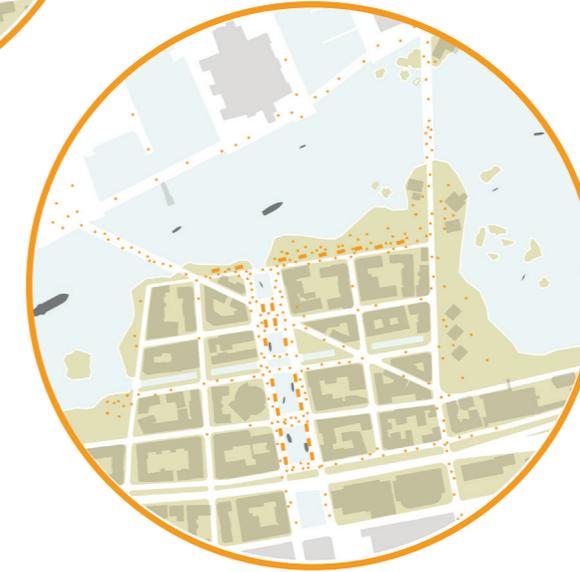
SUMMER FESTIVAL



BRIDGE OPENING



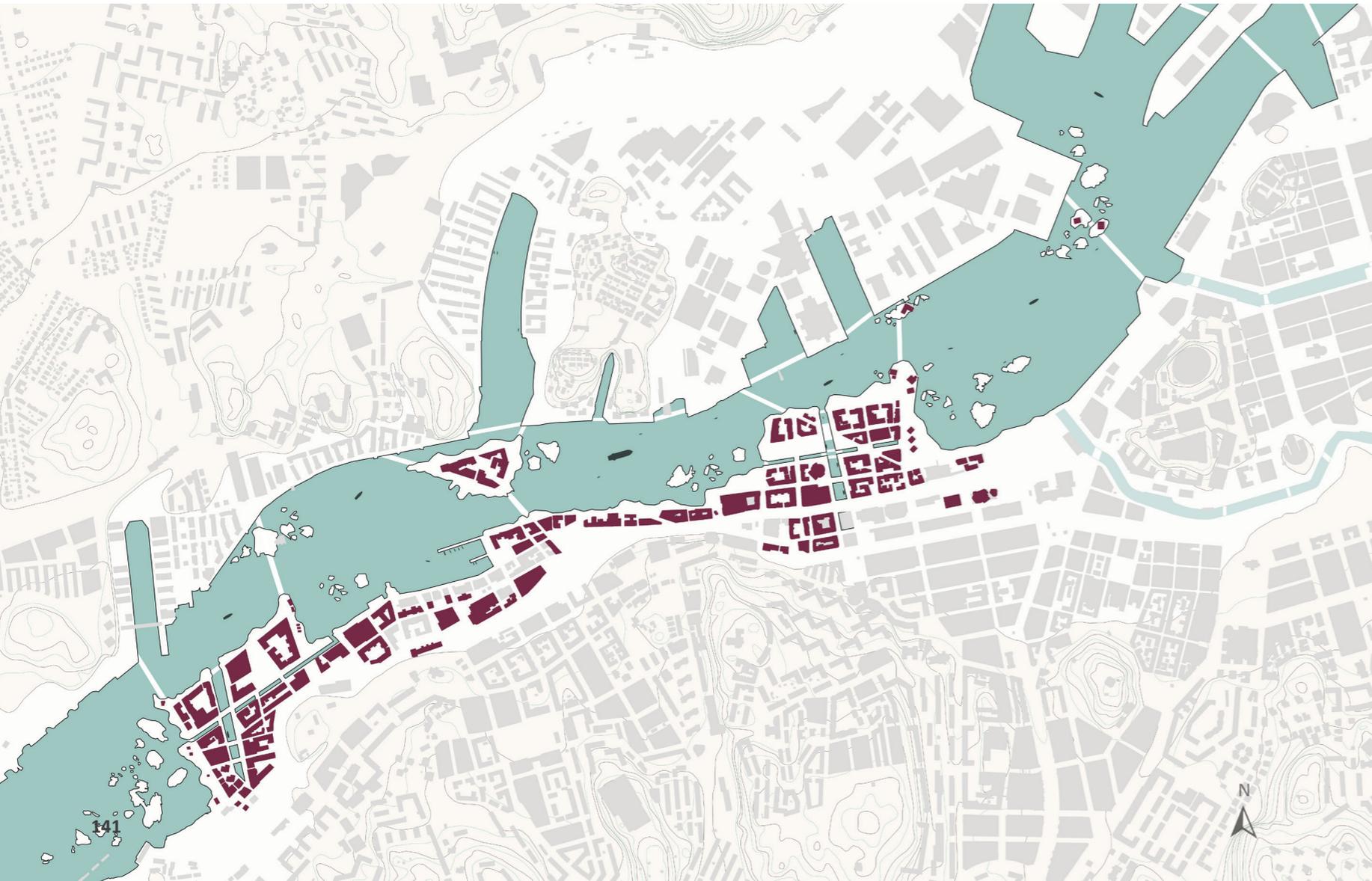
AUTUMN FISH MARKET



THE NEW AND EXISTING BUILT ENVIRONMENT

In order to allow existing building on site to further promote different value patterns, it is important that they remain to a greater extent as possible. However, the building are part of a barrier creating process where the access to the water is limited. The existing buildings at site have been briefly assessed in what potential they could bring to the area, creating the foundation for the masterplan.

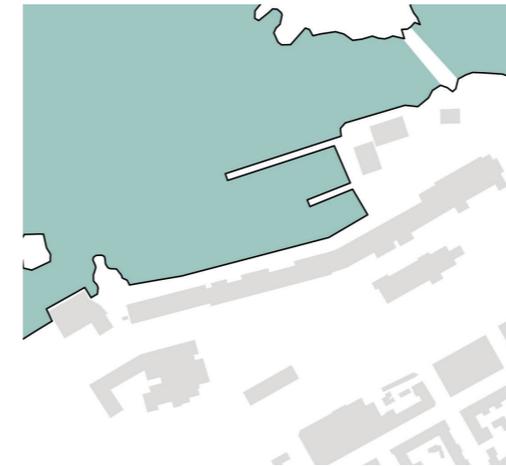
-  THE NEW
-  THE EXISTING



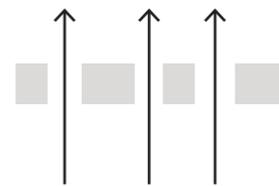
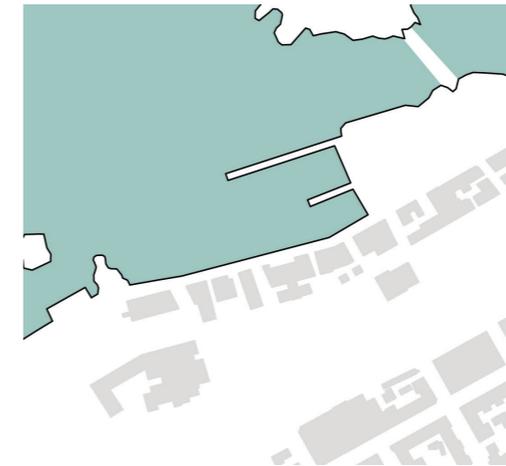
CUTTING THROUGH

Important sightlines have been created on beforehand, later being compared with the existing built environment. A proposal has been developed where the remaining building could be remodelled to a smaller extent in order to promote the new district. Here, also new buildings could be attached to the old ones in order to respond to the different function needs within the area, not being prohibited by the size of the existing structures.

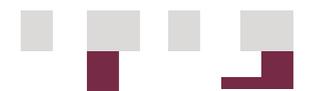
BUILDING APPROACH



EXISTING BUILDINGS ARE
BLOCKING SIGHTLINES AND THE
CONNECTIONS TO THE WATER



BY ALLOWING SPACE IN-
BETWEEN THE RIVER IS SEEN
AND BECOMES PRESENT IN THE
DISTRICT



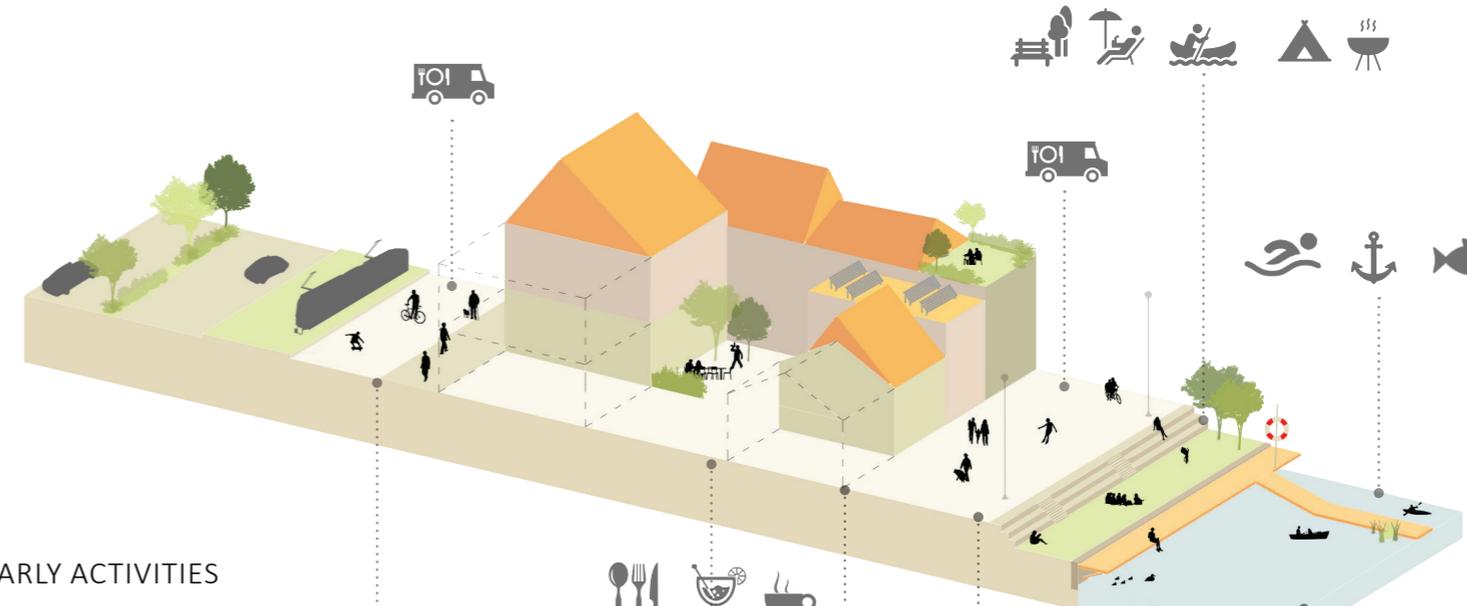
ADDING NEW BUILDINGS BUT
KEEPING THE OLD ALLOWS THE
DISTRICT TO STILL MAINTAIN ITS
HISTORIC CHARACTER

GREEN AND BLUE ENVIRONMENT

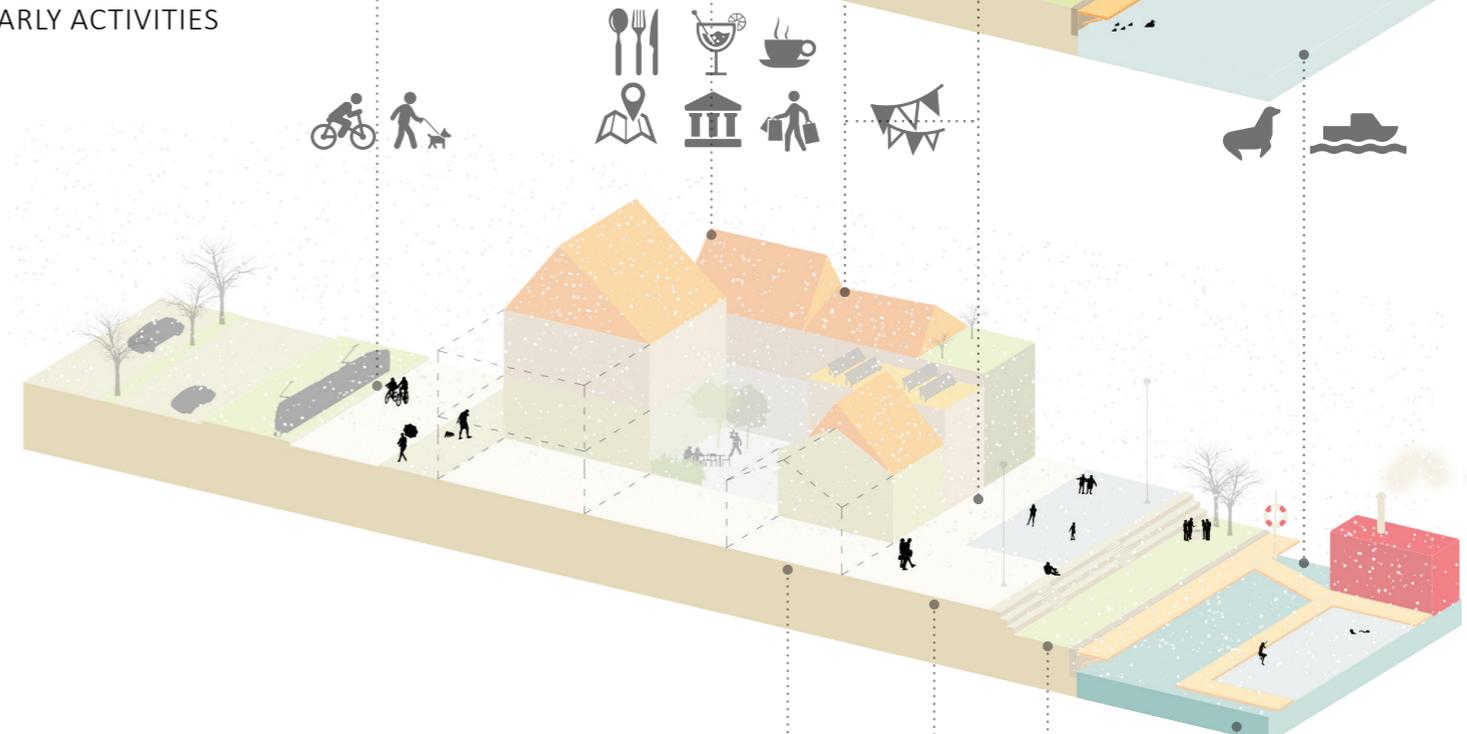
The green and blue creates a corridor where people can experience it moving through the city. Within the built environment, parks and smaller micro spaces have further contributed to a flourishing city. The micro spaces and courtyards can be used for both private and public functions. The exterior as well as the interior environments both create and supports recreational spaces, during any time of the season.



SUMMER ACTIVITIES



YEARLY ACTIVITIES



WINTER ACTIVITIES



THE PERSPECTIVE

SUMMARY

The design principles have been developed from a theoretical and methodological approach where they have tried to turn a broad and faceted perspective into concrete ideas of execution in the masterplan. The overall aim has been to create a coherent city addressing different social, economic and physical attributes that all contribute to painting the picture of the vibrant city. The final result is of a diagrammatic character in order to visualize the final result in best way possible.

The design proposal is one out of several suggestion that probably will be developed along the RiverCity Gothenburg Vision. Its aim has been to push connotation beyond, creating a provoking statement in the realm of urbanism.



**THE ANSWER TO THE QUESTION
AND THE CONTRIBUTION**

HOW DO WE SYSTEMATICALLY BRIDGE THE GREATEST BARRIER IN GOTHENBURG CITY?

ALONG, OVER AND BEYOND

The effect along the riverbanks were created by mending the existing vast spaces, generating a physical environment and street network, fusing the existing with the new. By identification of strong glocal streets on each side of the river, the street networks reached out over the river and connected the two sides together. The linking strategy have decreased the physical distance by a 100 meter between the two sides adding landfills. It has created physically more Gothenburg for its citizens, generating further mental aspects of a united city. The design anchors to existing networks, further allowing for a seamless movement from the existing city over the water. Here, Gothenburg becomes a city with a strong relationship to its water.

All the links form a flexible network where it is easy to travel over the river and beyond. The network have revealed the potential for a new city center, where the water is the core. The riverbanks and the new links have now become both a place to travel through but also a place to visit. The linking strategy is structured and related to a physical network that further enables movement of different resources and people. Different modes of transportation have been further assessed in order to support the new neighborhoods. The different district have been formed in order to promote the mixed used city with different levels of intensity. The proposal has provided neighborhoods where the locally quite areas still remains connected to the glocal structure, making sure that the area doesn't become segregated.

The linking strategy aims to understand the bigger picture and what effects it could have beyond the site of implementation. During the process of bridging the river, the northern side showed little response beyond the site of implementation. The southern side was more affected by the changes in the complete network, but didn't show more important changes beyond it vicinity. This further demonstrates that in order to allow a district to physically change areas beyond the site of implementation, physical changes needs to be made to in the areas beyond as well. With this conclusion, this project have instead tried to push the mental connotations by creating a riverbank for everyone in the city, where the difference

GOTHENBURG BECOMES A CITY WITH A STRONG RELATIONSHIP TO ITS WATER

ITS EASY TO TRAVEL OVER THE RIVER

PUSHING THE MENTAL EFFECTS

SEAMLESS MOVEMENT THROUGH THE CITY

EXPERIMENTAL APPROACH

BARRIERS HAS ACKNOWLEDGE THE COMPLEXITY

in intensity offers many types of spaces for both locals and non-locals. Here, the seamless movement between old and new is further reinforced by using the mapping and implementation of functions in both the added and existing urban fabric. The riverbanks do not only host, but they also support and generate different social processes occurring alongside the functions further beyond the site. The river banks promotes a mixed city with various intensities, complementing physical and mental networks all over the city. In order to allow different modes of transportation to promote the area, the area will to some extent become physically accessible throughout the city but foremost facilitate travel between the two riverbanks and their vicinity.

MASTERPLANNING PREVENTING THE EFFECTS OF THE GREATEST BARRIER
This thesis could be seen as an experiment demonstrating how an alternative development of the future in the city of Gothenburg might look like. Here, the large scale plans show more concretely how theory and method have affected the final design of the physical and mental environment. The trying and testing with the different approaches have revealed diverse potentials and has allowed the design process to become experimental in reaching its principles. It has further allowed it to be well anchored in its own approach. The planning within the city today seems to be of a more cautious process, where the current debate seem to go around in circles. It is therefore suggested that the debate need to form a proper underlay allowing it to become more concrete and thereby valuable. What this thesis have tried to demonstrate is that the creation of an underlay based on research and from there experiments, is vital in order to allow the debate to become concrete. This would both be beneficial for the city office as well as the city's inhabitants where they both could meet at similar terms.

The final design proposal of bridging the river might be seen as provocative, spending a lot of money on merely potential movement further putting the shipping industry at risk. However, as the dependence on the existing harbour is turning its interest to a more social recreational character, the physical environment need to adjust accordingly. The thesis therefore explores how the ships and boats themselves could be turned into parts of the city image, just as the banana boat ones was. The river hinders movement between the sides but becomes an enabler when allowing the marine character to be reinforced. This issue of barriers has generated a deeper understanding of the complexity in each single structure approached in this thesis. The identification of the positive characteristics in the barriers have further aided in forming an architectural program, reinforcing mental and physical aspects. The river is still allowing ships to pass through in order to reach

their destination further upstream enabling transport of goods to the rest of Sweden. Yet, Gothenburg as a city can redistribute its local heavy goods in order to allow other positive urban qualities to rise. The heavy traffic is removed to the outer harbour meanwhile the smaller passenger ferries are allowing for a less prominent, yet vital, placement within the city scape.

THE LINKING METHOD

The thesis has gained from its academic context allowing it to push the vision to a full extent where the economical profit is not the only capital concerned with. It is rather painting a picture where the social, built and the economic capital co-exist and thrive of each other. The space syntax tool offers a combination of reading the social and the built environment together, where the economic patterns as functions have been understood through its social thresholds. This have created a linking method where the different attributes can be read on similar terms.

Through space syntax, the issue of social capital in the city is highlighted. The tool has been vital in order to develop the proposal, implying new physical structures further generating and reinforcing other patterns and networks. It has been able to demonstrate that the process of sharing space with others becomes an essential part in experiencing the diverse city. Here, different functions becomes available depending on configuration of space, further adding to the experience of the city. The approach of space syntax become valuable since it can express this journey in a conceptualized way. The theory of the subject further recognises the need in understanding the city by its interlinked parts forming larger networks overlapping each other simultaneously. The tool allows for investigation of the social and spatial city through a configurative morphological approach, focused on a structural level of form. It allows us to understand the aim through a relationship between objects rather than the specific object itself. Instead of analysing people statistically distributed over large areas, space syntax can paint a picture how people are integrated through public space glocally.

Even though space syntax contains both its own theory and methodology it also seems to be applicable together with other subjects. Issues such as traffic can be understood through the eyes of the pedestrians where space syntax would form the terms. Spaces that are highly integrated would not be suggested to be cut through by a highway, but would instead be suggested to form a square were co-presence can occur, enforcing the diverse social context in the city. As this thesis have demonstrated, space syntax have further supported the idea of separating heavy traffic with pedestrians, but it has also allowed

THE UNDERSTANDING OF SOCIAL CAPITAL

SPACE SYNTAX CAN INFLICT OTHER SUBJECTS

THE GLOCAL SCALE

TO SHOW A MORE COMPLETE PICTURE OF THE CITY

THE CITY IS UNITED BY THE RIVER

for a theoretic understanding where mixed traffic could be applied. This way of working implements basic human aspects, such as movement, that further can be integrated with theory and institutional aspects such a traffic. This is a vital approach in the change from a traffic planed oriented city, into a city planed Gothenburg.

LAST WORDS

By addressing several networks in different ways, both theoretically and methodological, they in turn revealed different patterns and barriers. The project have shed light upon understanding the city as a network based, where complex mental and physical configurations occur. Here, a new development is seen as a physical and mental compliment, generator of nodes in different networks, further enforcing mental and physical patterns. It insinuates that a building is not great on its own, but it revels its true potential when it is part of a system. At the site, the built environment forms a protection as much as a contribution to and for the river. The network further works on a glocal scale, where the interest of this project has been situated.

The overall aim of this thesis has been to see how we strategically and systematically can overcome mental and physical barriers in order to create life and movement in public spaces by the river in the city of Gothenburg. It further aimed to establish important links, that before not could have been overseen due to a rational and single-minded design, further causing qualities and values to be forsaken. This thesis have further demonstrated that any type of bridging must be understood at its glocal scale, creating impacts along, over and beyond. The linking method and strategy has allowed the river to become a more activated site than it is today. Here, the architectural program belongs to a bigger context that adds further value to already existing structures in the urban fabric of the built, social and economic environments. This thesis have aimed to show a more complete picture of the district within the city, where different thresholds of participation takes place at different levels of intensity. The riversides have been investigated both atmospherically and architecturally, understanding what people can gain living 154 days under the rain and the harsh western wind. This thesis has provided one answer out of many on how a network approach can become more thoroughly understood and further demonstrate how architecture becomes a vital part in lessen social exclusion, enforcing culture and create valuable places within the city of Gothenburg. Rather than divided by it, the city have now become united along, over and beyond the river.

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IMAGES

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Image 1. Lejonbron Gustav Adolfs Torg 1820

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Image 2. Masthuggskajen 1912

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Image 3. Connecting the city

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Image 4. Embracing the water

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Image 5. Reinforcing the center

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Image 6. Development plan for RiverCity Gothenburg vision

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Image 7. Facing challenges and their opportunities

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Image 8. Collage made for the Frihamnen area

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Image 9. Analysis based on Hydromodell Göteborg 2014

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Image 10. International guest nights in Gothenburg 2016

URL: goteborgco.se/fakta-statistik/besoksnaringens-utveckling/
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Image 11. Vehicle distribution for residents in Gothenburg per reason to travel in 2014

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Image 12. After Barton et al., 2010 and Indikatorer stadskvalitet, 2017

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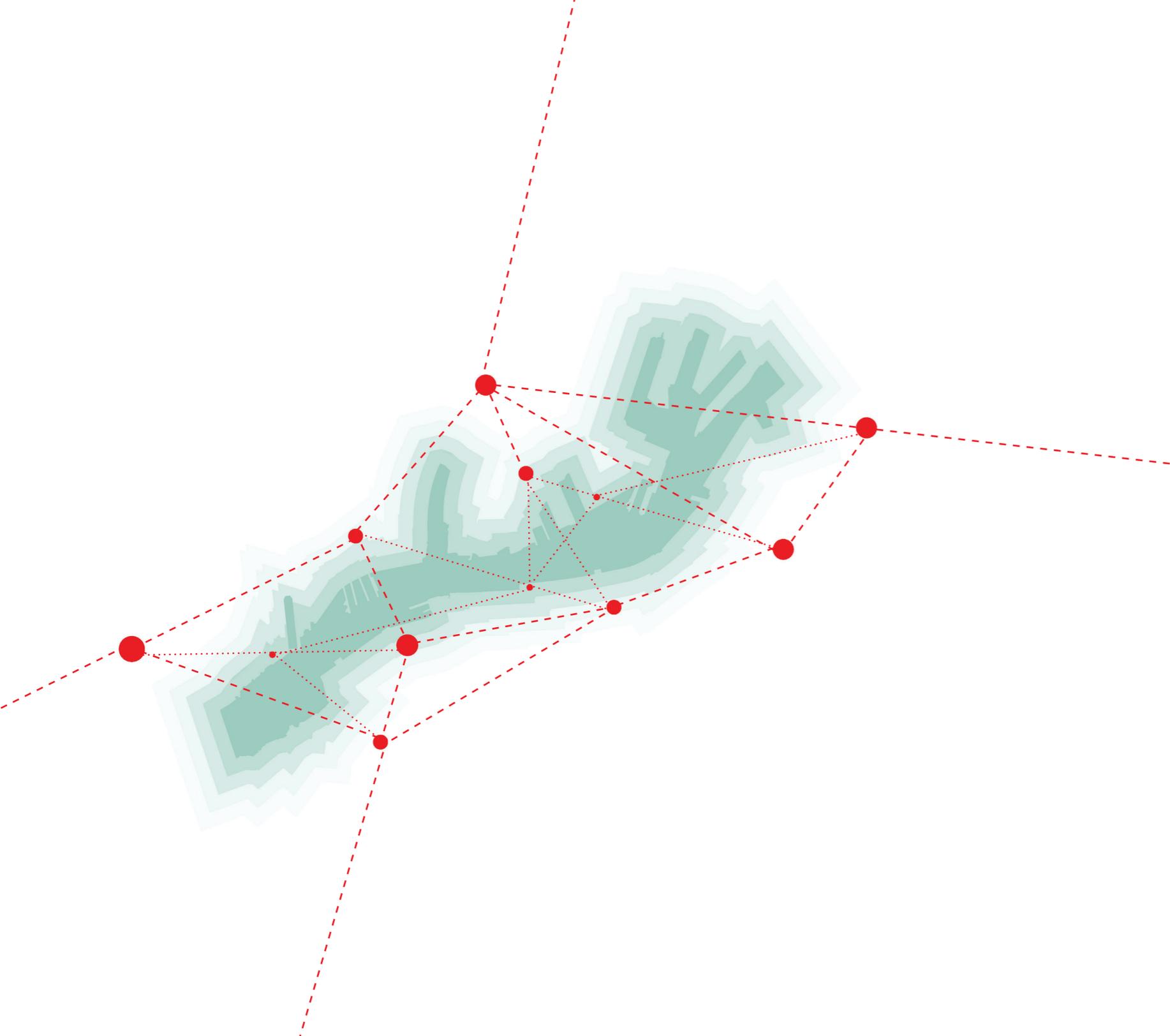
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