zuidrand

A new urban mixed use center in Antwerp as a connection between city and periphery

Joey Schaasberg
1090402
Studio Urban Landscapes

16 januari 2009

mentor team:
Ir. Evelien Brandes
Ir. Willem Hermans
Ir. Rogier van der Berg
Dr. Olindo Caso (gecommiteerde)

TUDelft URBANISM

faculty:

Technische Universiteit Delft
Faculteit Bouwkunde
Julianalaan 134 / postbus 5043
2628 BL Delft

Internet:
www.bk.tudelft.nl

Email:
informatie@bk.tudelft.nl

Telephone:
015-27 91111

student:

Joey Schaasberg
Cornelis Trompstraat 54
2628 RS Delft

Email:
jschaasberg@gmail.com

Telephone:
06-47876052

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TU Delft URBANISM

Preface

This booklet is the result of my graduation project. This has been done during the Master semester 3 and 4 of the Urbanism track of the Faculty of Architecture in Delft. On the coming pages I will explain about the structure vision for Zuidrand.

I have had a lot of help along the way from people guiding in other design directions. Without them, the design would probably be completely different. I would like to thank the following people for their help:

Evelien Brandes, Willem Hermans, Rogier van de Berg, Frank van der Hoeven, Machiel van Dorst , Laura Hakvoort, Vera van der Broek, Redmar van Leeuwen, Bouwe Besseling and all my house maties.

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chapter 1

introduction

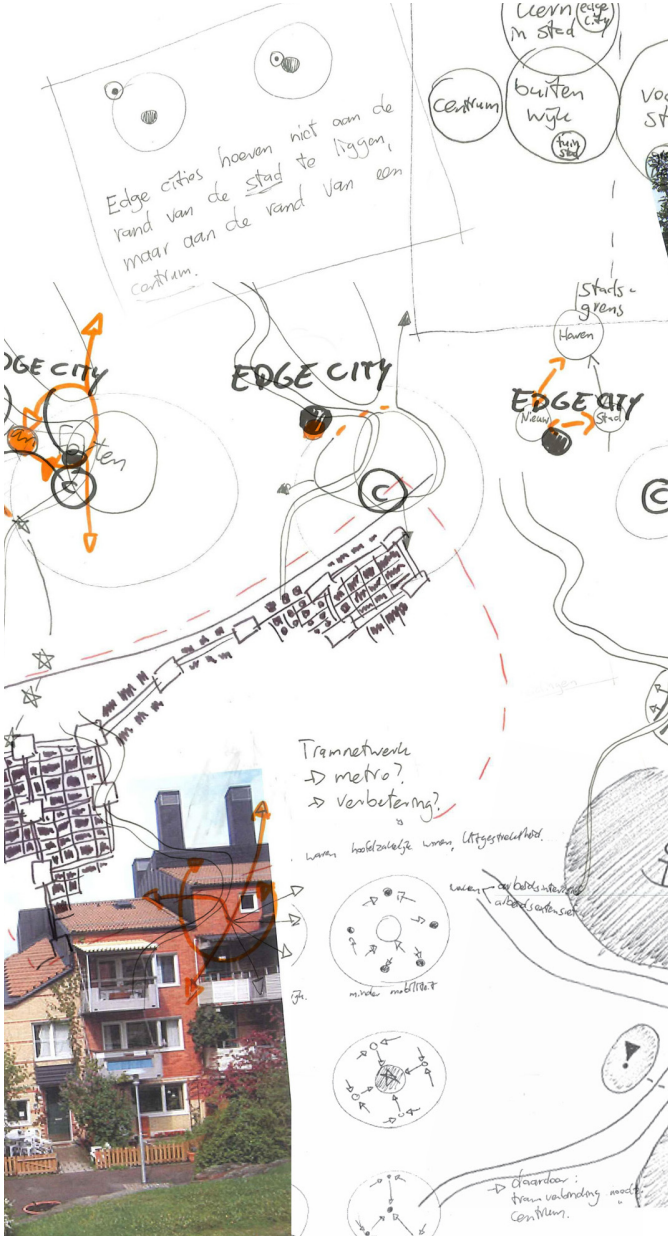
birds eye view of Antwerp harbour

Introduction

The most important reason harbour cities of the past florished is trade. The goods that went over the world by ship were loaded and unloaded in the harbours, which meant employment for the citizen. This resulted in growth and wealth for the city. The cities knew that ships brought welfare, and so they always competed for getting the ships to come to their harbour. The location of the city in relation to the shipping routes over the world was a very important aspect in this competition. The fact that cities all over the world developed along coastlines, rivers or in deltas onlu illustrates this.

Nowadays, cities still benefit because of trade when they are located on transport axes. The concept is the same, but the ingredients are different. Transport means have been modernized, travel times have decreased and communication has been automated in many ways. The upcoming of railways, highways, airplanes has increased the reach and capacity transport, making the harbour now one of many transport means.

The new ways of trade create new environments to work in, but as it shows now in many former trading places, also to live in. Cultural heritage and modern living environments can be combined. The combination of these two can lead to an inspiring location to live, work and recreate in.



Borders of cities as fascination

The populations of European cities have grown enormously in the last few hundred years. Logically the cities where these people live in have expanded as well. The way they have grown differ greatly which all have created other ways of how the landscape is experienced.

Cities are never an evenly spread spot along a certain area. There are countless structures and systems laid on top of eachother connected in even more ways. Cities have busy areas, open areas, green areas, or areas that are hard to define what exactly happens there. They seem to work in some way, but how precisely is hard to define. Their infinite complexitity poses many questions. How are the different parts connected? How have they become what they are now? Does a certain area have more potential than it is used for now? How does it relate to its underlying landscape?

The border between the city and outside it plays a large role in experiencing the landscape. This border can be strict or vague. Questions that came up at the start of the graduation process were: Is one kind of border better than the other? How can that border be designed? Can that border mean something for the city? When zooming further into the problem, other questions arise. Are small key areas responsible for larger parts of the city? Is it possible to change a whole city by just changing a certain area?

To read more about the research of the metropolitan regions of Stockholm and the Ruhr area, coming from the Urban Landscapes booklet, go to the appendices.

This combination of structures in a city, and how smaller interventions can play a part in this, has fascinated me in my graduation project. The urban landscapes studio fitted this fascination by focussing on these transition areas.

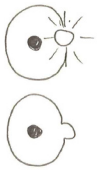
Transport hub as basis of a new urban center

As a start of the Urban Landscapes studio, the first quarter of Master 3 was dedicated to doing a research of four European metropolitan areas. The goal of this research, as written in the preface, was: "... to get a feeling with different European metropolitan regions and to get acquainted with the urban tissue of the regions." (Urban Landscapes, 2007) In this research every student has tried to analyze and derive conditions of an urban element. An urban element is a certain spatial element that has a certain role in the urban fabric. Examples are islands, highways, lakes and the space between water and building. That element served as a starting point for defining the subject of graduation.

One of the conclusions of analysis of the urban element "transport hub" was that the edge areas of a city can be very attractive places for situating new program. Possible reasons for this were the large amounts of available space and the proximity of large distance infrastructure. It is important for a hub like this to have a very good connection with the primary city core, often also the historical core of a city. These connections for people to move efficiently in a city or urban area can have consequences for the entire city. A succesful hub of slow, short distance travels and fast, long distance travels can bind the city together. The area a city takes in may be too large to travel by foot, but by creating efficient connections for the entire city, it still can be experienced as one coherent structure.

Problem field

There are different kinds of expansions of cities, which are all hard to distinguish and name. The characteristics of the expansions overlap. To try to give an insight in the relations of them, brief questions have been asked about the different expansions. They create a field of terms, which makes the terminology easier to understand.



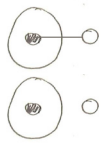
Is it planned, or grown by demand?

Some kinds of expansions are planned by the government to accomodate city growth and therefore given a name. Other ones have "grown" by themselves, initiated by collaboration s of different parties. The level of design describes the composition of the area.

What is the relative size of the expansion?

The size shows the "weight" or the bearing force of the expansion in relation to the center. Both the amount of people that live in the expansion and the center, and the size of both are aspects that need to be taken into consideration.

The distance between the expansion and the city center is a factor for the strength of the relationship. A larger travel time makes it less attractive to travel between the locations. Also, is it inside or outside the city's official boundaries?

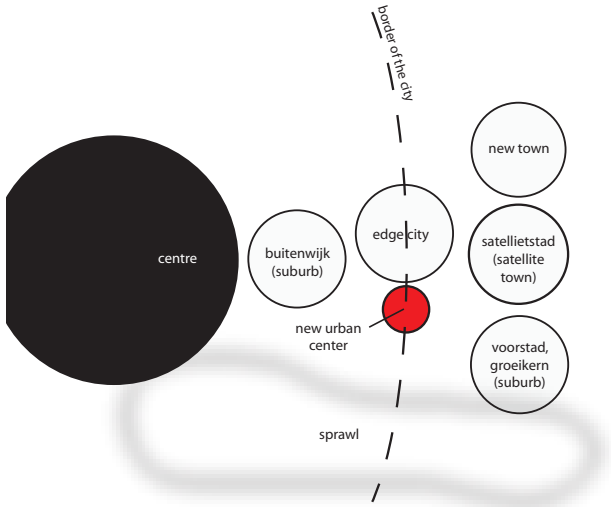


How is it connected to the primary center?

The quality and quantity of connections by road, train, plane, internet, also describe the strength of the relationship. The difficulty for people and goods to travel between the cores can in- or decrease distances.

In the diagram of city expansions, the spatial features for different kinds of city expansions have been set out(see figure). First of all, most expansions that have been named are planned. Satellite towns and new towns all are planned, independent towns outside the city boundary to accomodate growth of the primary center in different ways. Edge cities have started to grow in the USA. They are independent cities, although heavily connected to a host city by infrastructure (Garreau, 1991). Other kinds of expansions are more closely situated to the center of the city. The groeikern, which can only be translated by suburb, derives from the first Nota Ruimtelijke Ordening (Ministerie van VROM, 1960) to guide the urbanization.

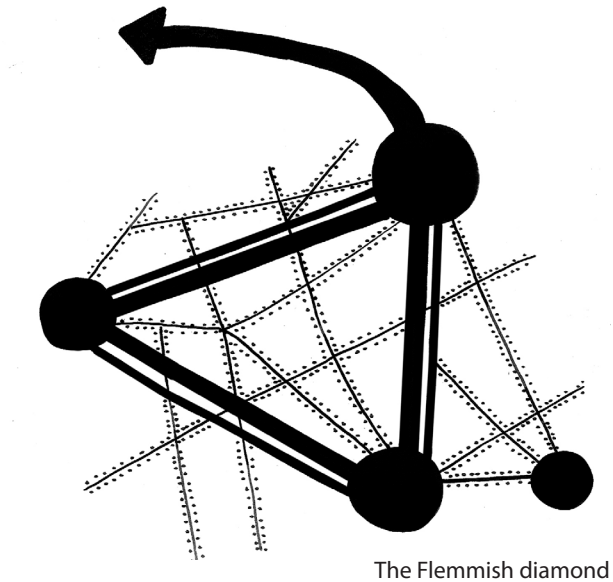
Especially city expansions with sprawl conditions play an interesting role on the border of city and landscape. Bruegmann calls it "low-density, scattered, urban development without systematic large-scale or regional public land-use planning (2005). These developments take place at the edges of cities, protruding the landscape and taking in large areas. All these characteristics make the transition area between city and landscape unclear. Just as Ingersoll describes sprawl as "repetition without context" (2006), sprawl conditions do not match the landscape it is situated in. As will be explained later, the Flemmish Diamond has many areas of sprawl.



Spatial relations between city expansions

Translations

The different kinds of city expansions are hard to describe and name precisely. Their characteristics are not always easy to see and are always personal. Therefore, definitions of expansions overlap in several ways, or it is not precisely stated what they are. Not only are they hard to state, also most definitions differ when translated in other languages. Translating a certain kind of expansion can have slightly different meanings of the word. Therefore in this report, the Dutch intention of the words is meant.



The Flemmish diamond
Studio Urban Landscapes

Typical Steenweg between Brussel and Gent

The Flemmish Diamond as design location

After the research of metropolitan areas, our subject had toe be further defined and a design location had to be chosen. Using the conclusions of this research, I tried to look for a design location in Western Europe that had the potential for developments described in the urban landscapes booklet.

The Flemmish Diamond immediately turned up as an interesting design location, as it has many potentials but does not seem to function as it could. It also drew my attention on a personal level, because I was interested in researching and designing a situation in a foreign European country. I found it interesting to see how the Delft way of designing would work out in another country. Also, a country with a similar culture would be understood quicker. Because it is nearby the Netherlands, it can easily be visited.

In Belgium, a different kind of decentralization has taken place in the past. The government of Flanders has stimulated a movement of the population the countryside, only in a non-planned way. The invention of the car and the train has helped enormously in this movement. A network of so called steenwegen were constructed between the four cities of the Flemmish Diamond, captivated by rows of houses. The cities themselves, and especially their periferies became very widespread, with vague transitions from city to landscape. They make up a large area with sprawl conditions, or a big polynucleair network of urbanized roads, coming together in four big knots and many smaller ones.
Because the connections have always been so important, all new development has always been located near these roads. Therefore it is hard to experience the landscape at all, because the buildings along the roads obstruct the view. For an overview of Belgian Planning History, please go to chapter 2.

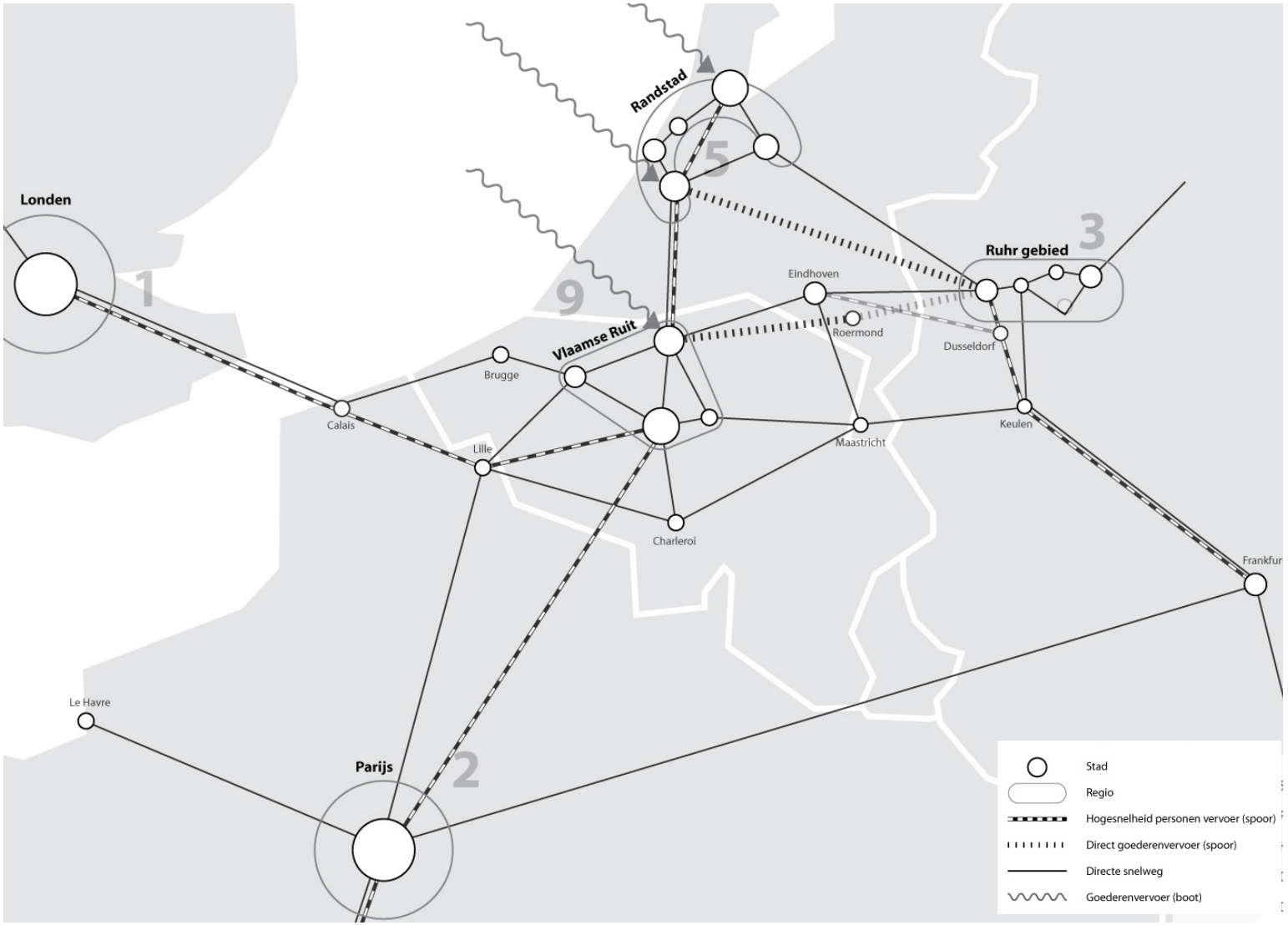
The four cities of the Flemmish Diamond all are knots of transport of different kinds. They offer enough context and traffic for an interesting design.

Position in Europe

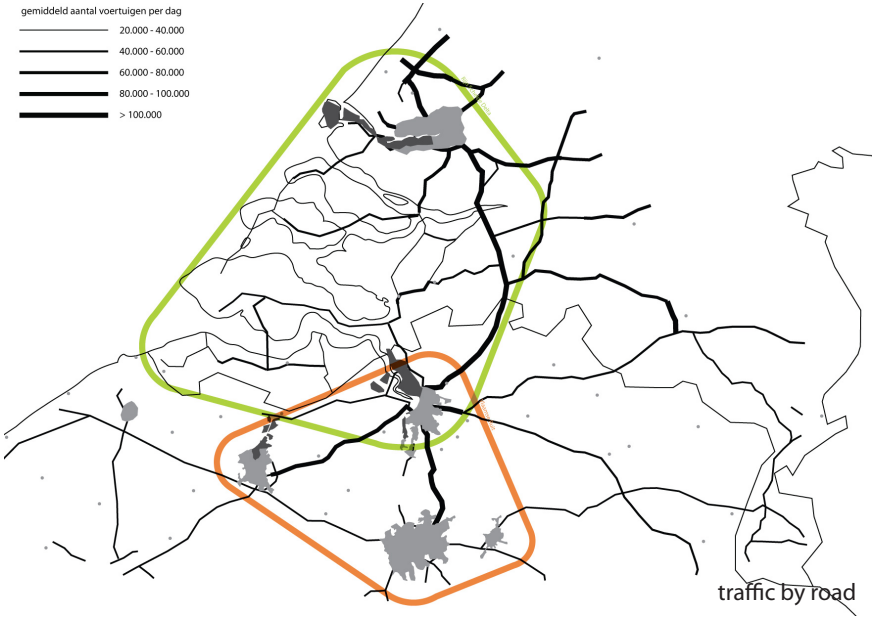
The Flemmish Diamond is located in a group of metropolitan regions which are relatively close together. The Flemmish Diamond is together with the Randstad of the Netherlands, the Ruhr area in Germany, and at a larger distance Paris and London, the most densely populated regions of the West of Europe. Because so many people live and work in these places, there is a large economical bearing force. The importance of the regions can clearly be seen when you look at the connections that are made to and between the regions. Antwerp takes in a very central location in the direct network of highways.

Innovation in transport systems still takes place and bring the metropolitan regions closer together.The biggest recent innovations were made in railway technology. The high speed train has proved to be a very efficient way of transporting both passengers and goods. For passengers, the network now connects Belgium with the Netherlands, Paris and the south of France and Spain. The Betuwelijn and maybe in the future, the Ijzeren Rijn transport only goods further inland.

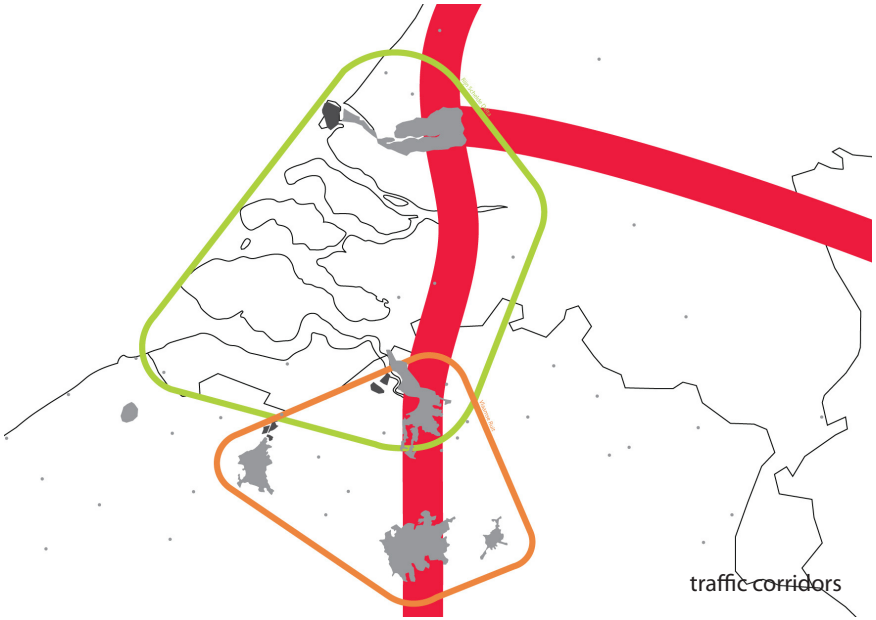
The transport of goods comes for a large part by sea. The ports of Rotterdam and Antwerp are the larger players in the world in trans-shipment of goods from boats to other



The Flemmish Diamond between other metropolises of Europe



traffic by road



traffic corridors

transport methods. They are the number one and two biggest ports of Europe and together trans-ship 550 million tons of goods before it is transported by other means. Therefore, a large part of the economy of Antwerp consists of the harbour. It has good connections over land with Belgium and France by train.

Looking at these three transport means, Antwerp is very centrally located and can be considered a knot of transport and has much potential for a transportation hub, which could bring solutions to the city.

Flemmish Diamond and the Rijn Schelde Delta

Besides the Flemmish Diamond, Antwerp is also part of the Rijn Schelde Delta. This region is consists of Antwerp, Rotterdam and roughly the area in between, like the province of Zeeland. Like other deltas in the world, the Rijn Schelde Delta is a fertile area where a wide collection of flora and fauna can be found. The large transition area of sea, river and land is home of many birds, clams and waterplants. The Rijn and the delta meet in the Biesbosch, which is protected as a national park.

The flows of transport generated by the harbours of Antwerp and Rotterdam to the Randstad and the Flemmish Diamond, go aside and through this Delta. This, together with the sprawl conditions of Belgium and the growth of Dutch cities increases the pressure on the free spaces of the Rijn Schelde Delta. A fragmented delta can be a possible result which should be avoided, which threatens the ecological and spatial qualities of the delta.

For more information about flows of goods, please go to the appendices.

Paleis van Justitie

Onze-Lieve-Vrouwekathedraal

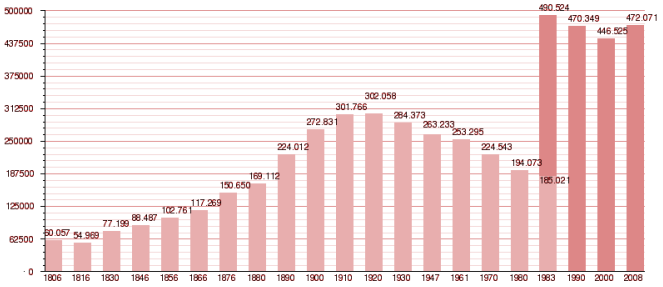
't Zuid

Antwerp

Antwerp is the second biggest town after Brussels and one of the four biggest agglomarations of the Flemmish Diamond. It is the capital of the province Antwerp. It is located in the north of Belgium, along the Schelde river and near the Dutch border. The city is mostly known for its fashion design, the diamant industry and of course the harbour (see figure).

Typical of the Belgian landscape, Antwerp consists of multiple villages that grew together in time. Antwerp has more than once absorbed surrounding municipalities and its cities. The last fusion was in 1983, when the municipalities of Berchem, Borgerhout, Deurne, Hoboken, Merksem, Wilrijk and Ekeren joined Antwerp.

Antwerp is directly connected by highway to Brussel, Gent, Luik and Eindhoven, Bergen op Zoom and Breda in the Netherlands. A high speed train connects with the Dutch network. Antwerp is part of the fine grained train network of Flanders. For transport in Antwerp, a tram network is present. Part of it is underground, called the Pre metro.



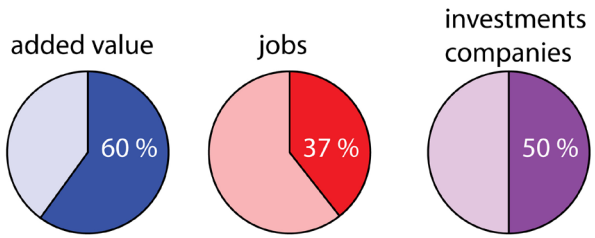
population of Antwerp

For tourists, the most visited place is the historic centre, where the Onze-Lieve-Vrouwen church, the Groenmarkt, de Grote Markt and the city hall are located. The new Paleis van Justitie by Richard Rogers is the best known piece of modern architecture.

The harbour of Antwerp is the fourth biggest in the world. In 2007, it has shipped almost 183 million tons of (bulk) goods. The harbour provides 37 % percent of the Antwerp citizens' jobs. (Port of Antwerp, 2008)

Inhabitants	461.500
Area	204,5 km²
Density	2.257 inh/km²
Average car possession	0,49 cars per person
Average size household	2,18 persons

Basic statistics municipality of Antwerpen
NIS Jan. 2006



figures of Antwerp harbour in relation to the city
Port of Antwerp


Linkeroever


Paleis van de Schone Kunsten


Kaaien


Kaaien


Linkeroever

Used methods

There are a lot of different ways to design. Students from the faculty of Architecture in Delft use them naturally, but most come from books about the subject. Many books have given design methods. The most important one is "Ways to study and design" by De Jong (2002), of which many methods have been used for this project as well. The following methods and techniques have been used for this project.

Doing literature research can be source of information in two ways. The first one is very direct and starts when you are researching a certain subject and you want to learn more about a certain project, term or theme. This literature research is a very direct one because it has a clear goal: you try to find out what something means. Secondly, literature research can also be more like a background information resource, which helps you relate your subject to others. It can set your subject in perspective and show how it fits in the total discipline. This information can be found in scientific articles and books on related subjects.

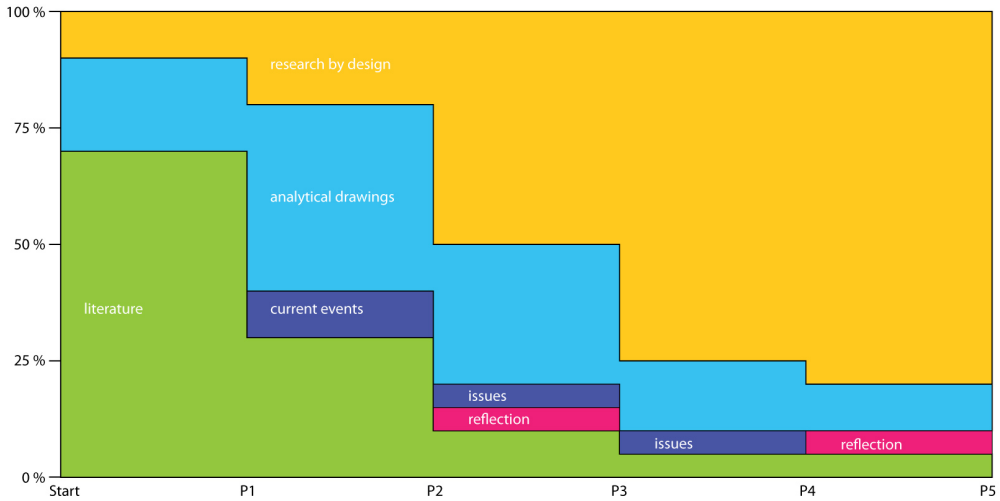
Research by design is a technique where you try to research a certain subject by trying to (re)design it. This sharp way of trying to learn about something is a far more active way of researching than the traditional way. By suggesting, drawing and visualizing interventions for a location in an intuitive way, you learn by trial and error the rules and boundaries of the design. (De Jong, 2002) A way of doing research by design is by cutting and pasting a certain known and similar urban area over the location of research you learn about the scale of the project. You can also try to copy the principal of a certain structure, like infrastructure, and apply that to the area of research. By copying the strengths, you can come to new ideas and insights.

When making analytical drawings of the location you are forced to make choices in what you see. Simply tracing one subject or layer of existing drawings or pictures forces you to make decisions about what is part of the structure and what is not. The drawer has to think about what the structure is like. Basically, you reduce the existing drawings to its essentials. (Leupen, 1993) (De Jong, 2002) The drawings can concern all kinds of themes like morfology, history or infrastructure.

Besides these established methods, there are more ways to keep the subject alive and be actively busy with the subject.

A lot can be learned of drawing and writing, but visiting the location is the only way to actually experience the spaces and environment of subject. While visiting the location, one should think about what happens at the location at other times, and how it works. This is an essential way in understanding the location and its issues.

It is essential to know how the city works to do a design project. You try to find this out by looking up current issues. You can find these on the internet, in magazines and books and by talking to people that are working with it every day. By interviewing professionals you can directly get answers to all your questions and you get the newest information. This is a very motivating way of checking your theory and design with reality.



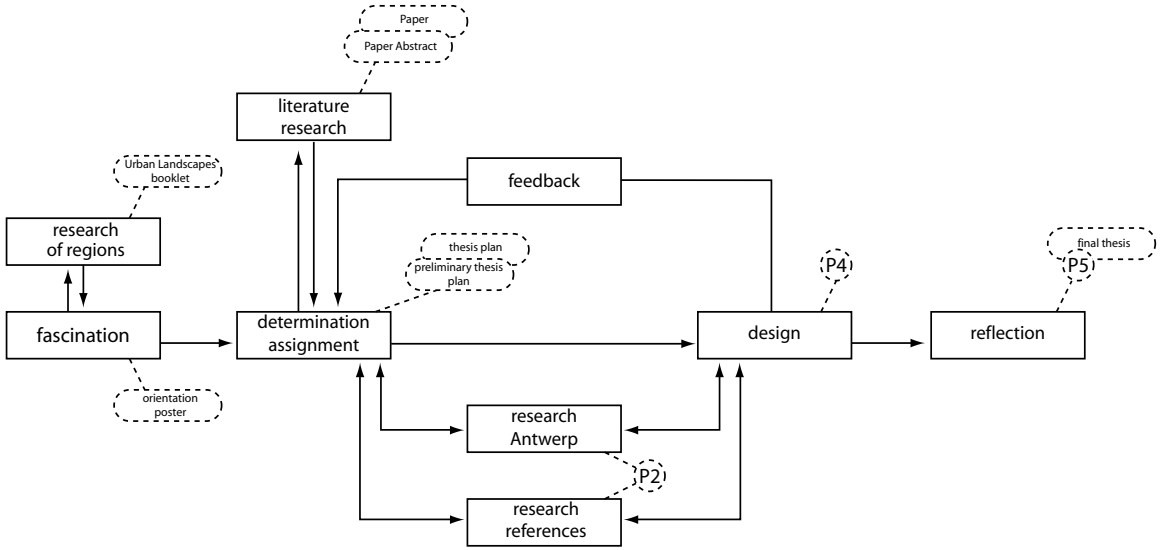
Used time per method

Diagrams of design processes

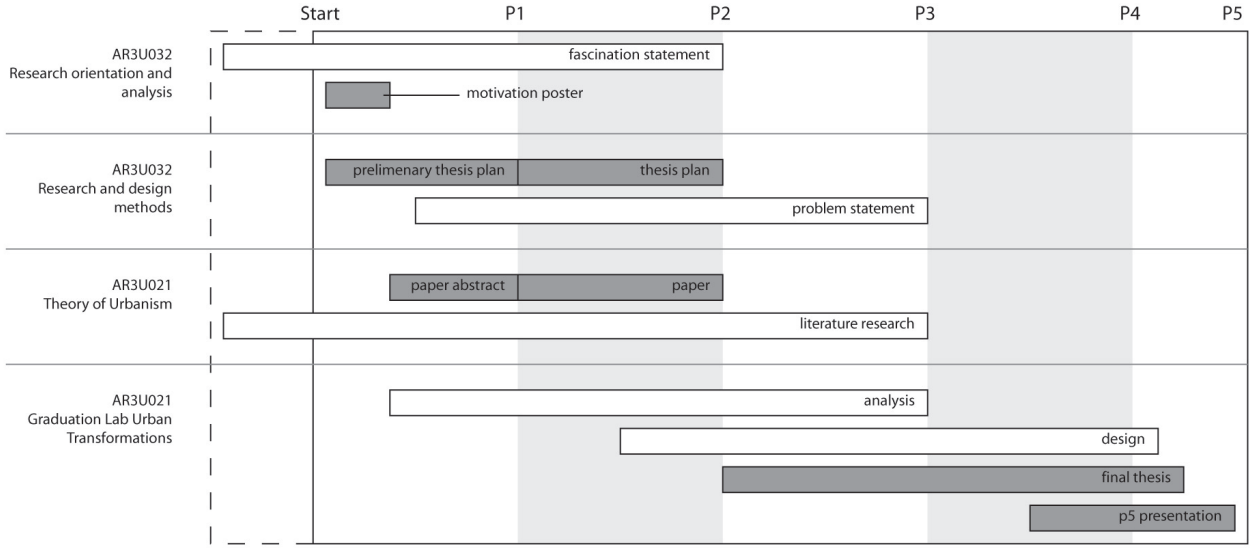
Designing is a complex process. Because there is so much freedom in designing, a lot of choices have to be made. For the graduation project this freedom does not only exist during but also before designing, because the assignment itself has to be "designed" as well. To reach a certain depth in your future problem solving, it is important to narrow down the assignment far enough so there is time to solve the problem thoroughly.

The fact that makes it even more complex, is that the problem you are researching cannot easily be defined. When looking at a certain problem or location, the true nature of the problem will not present itself easily. The problem can only be described and understood by researching and analyzing the case. This means that the phases of solving the problem and stating the problem largely overlap. This is coherent to the discipline of urbanism.

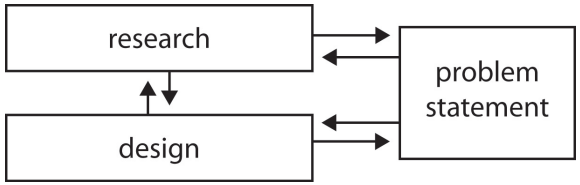
When this is put into a conceptual diagram, this process of feedback must be visible in a circling way. Research, design and problem statement all influence each other. In this diagram you can see that phases overlap and influence each other. The graduation year is started with a fascination, which is specified into a problem which is analyzed and solutions will be created for. While specifying the plan and problem, research will be started, which will lead to a start of the design.



Conceptual diagram of project phases



Time scheme. The products that have to be delivered in coloured in gray.



Conceptual diagram of a design process

chapter 2

assignment

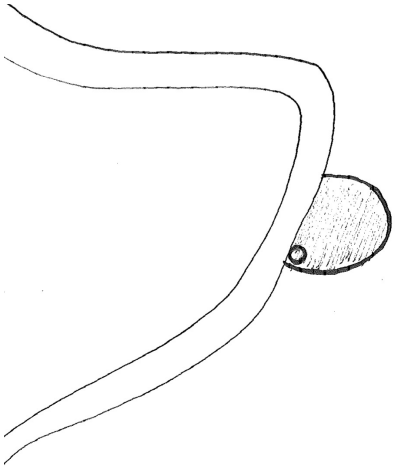
birds eye view of entrance of Kennedytunnel

Belgian planning history

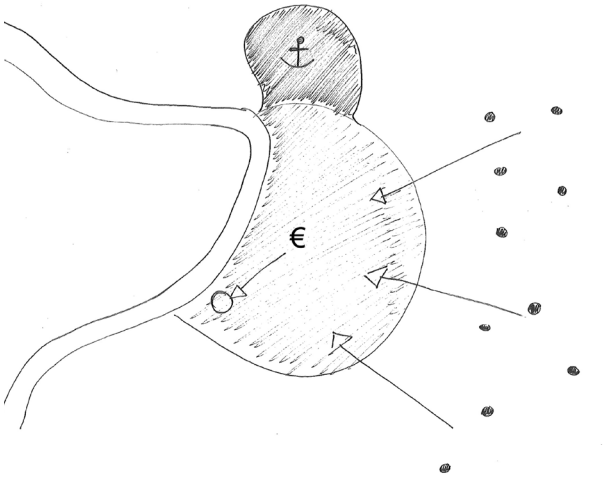
In the Netherlands, half of our country is artificially made (De Grote Bosatlas, 1996). The need for space in our country has always been big, so the Dutch learned a way to cultivate water areas. These ideas started to form from the year 1000 onwards. This way of altering the landscape is therefore embedded in our cultural history. This need for space still exists nowadays, and so our need for urbanism still is very relevant and important. We have a long history of planning our country and we have gained a lot of experience in this.

In Belgium however, there has not been a planning structure for the country since 1997, when the Ruimtelijke Structuurvisie Vlaanderen was published (Afdeling Ruimtelijke Planning, 1997). There were few rules for people to establish themselves in Belgium. Actually, the most important rule was that you have to build your house next to a road. This can clearly be seen in a nightly view of the Flemmish Diamond. You can clearly see that the landscape is split up by numerous lines of lights (roads) with maybe even more light spots (cities).

The way this landscape has been formed is also rooted in history. The first important steps for the state of the current Belgian country were taken from 1800 on. Transport of materials such as coal, steel and cotton was needed during the industrial revolution. An extensive railway network was laid down, which Belgium is still famous for. The industrial revolution also created more welfare for the Belgian citizens. Using the railway, they rich people of Antwerp could easily move from the full city to the open countryside. Also, their land and houses became more important for the citizens or even became a status symbol for them. Electrical appliances



1600



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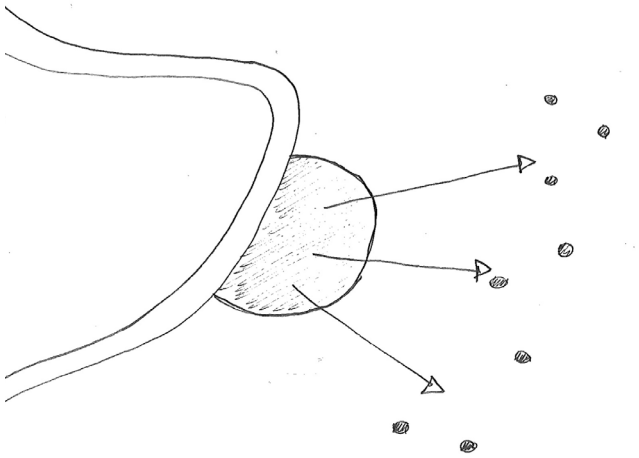
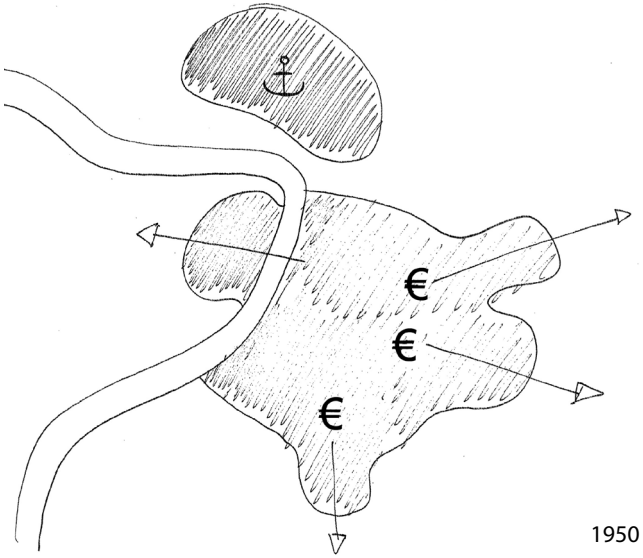


1800



1950

Growth of Antwerpen until 1950

became more and more popular and people became more proud of their belongings. (Körnig, 1990)

When the city walls were moved to where the ring road goes right now, new space was available. The Zuidkasteel was transformed in a new living area with large dwellings. A movement from the countryside to the south was the result. Also, trade by water and the harbour began to grow. (ibid)

This government introduced the Moyersoen law in 1922. This law was focused on simplifying the rules of private ownership and making it cheaper to borrow money. Later on, in 1936, a new instrument was created to guide citizens without a job back to the countryside, namely the NMKL (De Nationale Maatschappij voor het Kleine Landeigendom). This group had a task to connect land ownership to dwellings. The La Taeye law made it much easier to create their own free-standing home, which is very typical for Belgium. Connections by train or tram to the rural areas were still taken care of, but what really exploded the urbanization of the landscape was the introduction of the car in the 1960's. (ibid) All the measures for the return to "nature" were completed. The contrasting thing is, that although most of these initiatives are government based, still the process is not guided by any form of urban planning or similar disciplines (De Meulder et al, 1999).The grid of lines is formed out of straight lines only for economical and practical reasons (de Meulder, 1999). Short said, the only law for Belgian people to build a house, was that it was supposed to be built alongside a road. Belgian citizens started to buy ground, build roads, then houses, and than sell it again to make big profits. Because of this the roads were swallowed by dwellings, drawing lines in the landscape. The result is the current state of sprawl conditions in the Belgian landscape.

Future planning policy

The Flemmish government has recognized this development in the Flemmish Diamond. A protection of the existing open space and a new appreciation of the cities is called for (gemeente Vlaanderen, 2006). This is a remarkable opinion, because it was the government itself that stimulated the voyage to the countryside. This verdict actually seems like a movement towards the current Dutch way of how cities are planned, as we have been trying to do this for many years. From 1960 to 1988, the Dutch policy for the population growth was "concentrated decentralization". The goal of this policy was to give the people houses for rural living, but also to protect the landscape from being urbanized completely. (Ministerie van VROM, 1960). This new step in the history of planning can make a huge difference for the Flemmish landscape and the cities.

The Flemmish diamond by night. Antwerp is in the middle (www.lichthinder.be)

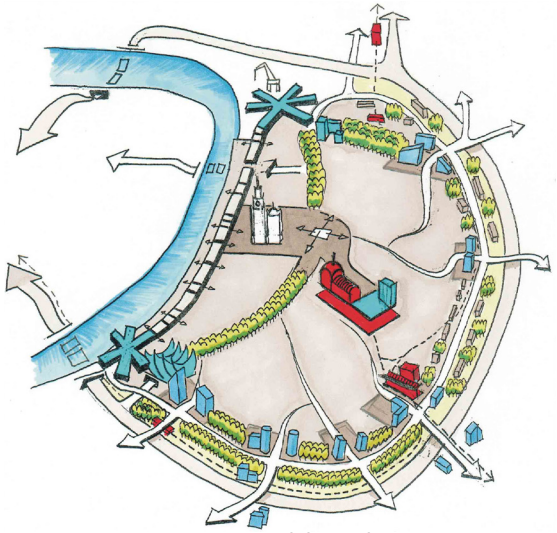
Vague borders

The many possible ways of travelling between city and rural areas (rooted in Belgian history) still have concequences for how the cities behaves today. The through going steenwegen mainly connected city centers with eachother. When the cities got bigger, this resulted in clogging of the centers.

In Antwerp, the Mobiliteitsplan of 2003 has tried to give a solution to this by following the policy of so called "uitdovende wegen". The through going roads slowly "fade out" when entering the area within the ring. This causes the automobilists to spread in the city instead of following one road. Also, people are tempted to switch to public transport just outside the ring. At these hubs safe car parks are planned, as well as an efficient way of using the tram system to reach the city center. These transfer points are mainly planned along the city ring.

The measures relieve most of the city within the ring of heavy car arteries. But, it also creates an unclear transition between the center and the periphery by car. The border between landscape and city becomes more vague. This already is the case today, as the steenwegen create an unclear transition in and out of the city.

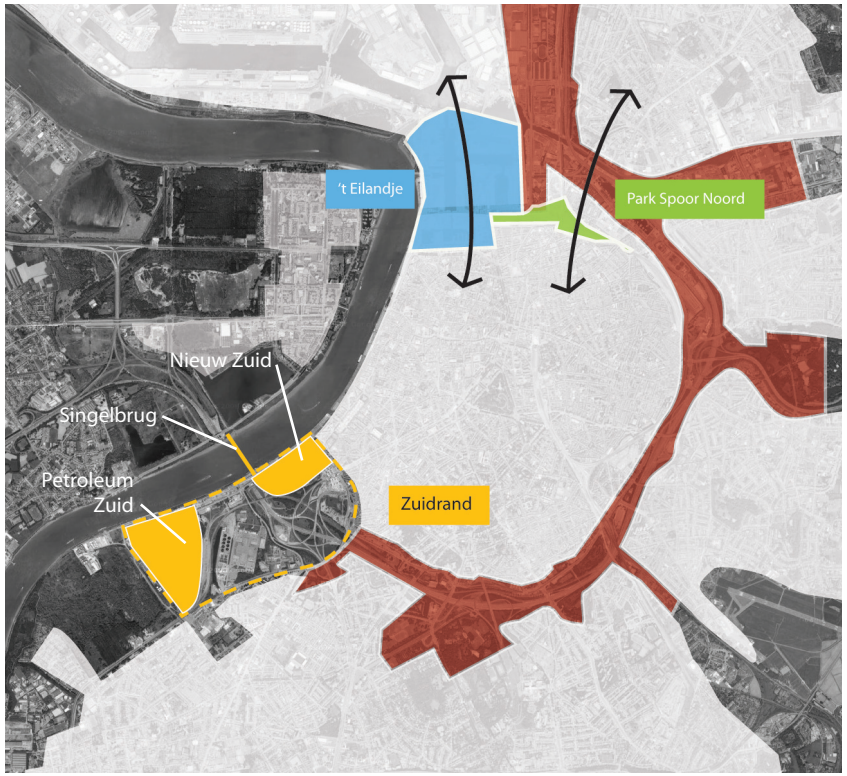
The Mobility plan tries to form a direct connection on a higher scale for transport between the city center and the periphery. But, on a lower scale they are not so well connected. The highway and Singel area form a strip of around 500 meters wide, dividing the city in two and creating a broad "canyon" Some of the transfer points are located in this strip, as well as other large public facilities.



Mobiliteitsplan Antwerpen, 2003


't Eilandje


Park Spoor Noord



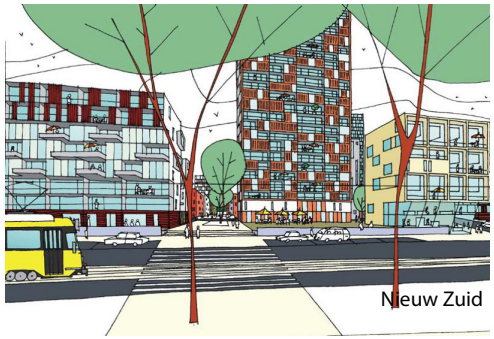
Improving border areas

Already efforts are being made to redevelop areas around the ring road. The largest are in the north. ´t Eilandje is former harbour area which became abandoned because of the moving of harbour activities to the north. Now, they are transforming it as a link between city and harbour, creating mostly dwellings and a large public museum. Much attention is given to public space, and it is supposed to make Antwerpen a harbour city again. Park Spoor Noord also is a redevelopment of a trading place. A former train station has been redeveloped as a great park. The goal is mainly to be an open and spatious place for recreation. The only buildings around will be a sports hall few heritage buildings.

In the south, also redevelopments plans have been made. As 't Eilandje is the center of development attention right now, Zuidrand will take over this position afterwards. Multiple plans exist for the Zuidrand. Petroleum Zuid will be a green business park that tries to seek a strong collaboration between ecology and business functions to strengthen both parties. The development of the area around Kaaien has not been researched yet. Nieuw Zuid is another big expansion plan for Antwerp. Inspired by the masterplan of Rogers (the designer of the Paleis van Justitie) Binst Crepain Architecture designed a residential area. It tries to be a closing element of the city in the south. It is encircled by a ring of office buildings. A cultural center has been planned, as well as a 75 meter tall building. Also the first bridge ever to cross the Schelde will touch land here. This gives 't Zuid the opportunity to make easy connection with Linkeroever.

Although the plans in this southern area show much ambition and strengths, the plans are not used to help the city in total. The Zuidrand can also be used to bind the center of the city and the periphery, and answer to the Mobiliteitsplan.

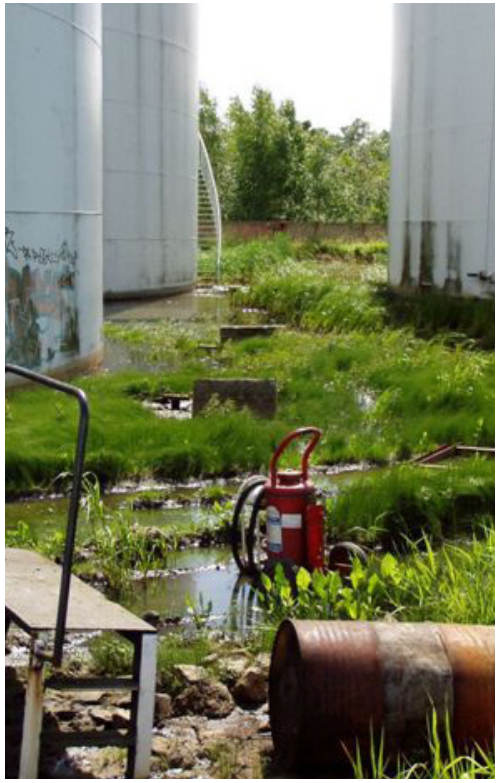

Petroleum Zuid


Nieuw Zuid

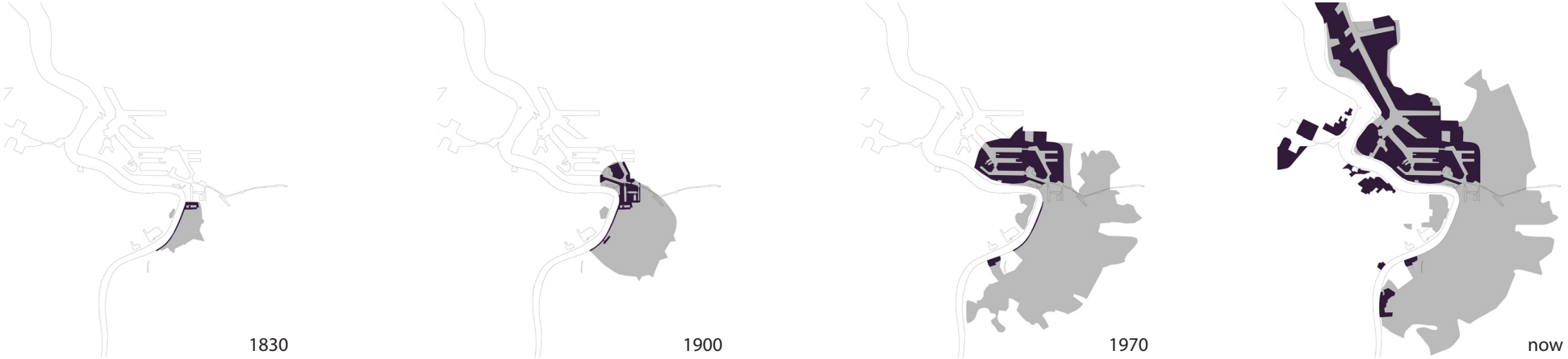
Opportunity: decrease of Zuidrand harbour activity

It is clear that Antwerpen has earned its existence as harbour city by trade, which started along the Kaaien. But as you can see in the development of the city and the harbours, the activities have started concentrating in the north in the last hundred years. The trade and trans-shipment of petrol is left as a dot along the Kaaien. But also these activities are moving to the north. Loading of petrol between boats and trains has already stopped, making the many railways connecting to the docks obsolete. Also the weighing and joining station of wagons has not been used for decades.

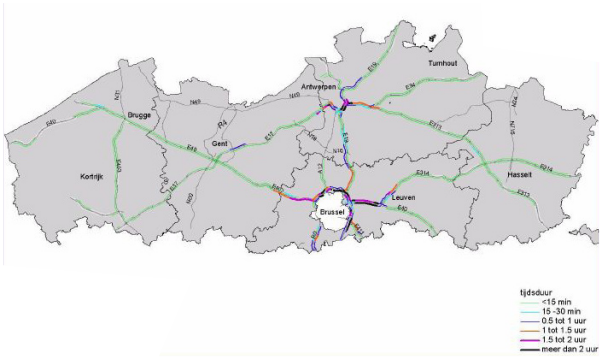
This large disused area is now being taken over by green. The lush greenery slowly invades in the industrial and partially polluted area. The post industrial area that has resulted from it already draws attention of citizens.
Nowadays only the strip along the Kaaien is used for temporary or long term storage of petrol. Put in large silos, it is waiting to be shipped on another boat to be shipped to a new location. When bundled in the north with the rest of the harbour, costs can be reduced because of sharing facilities with other parties. Also transport by other means is possible, making the trans shipment more flexible. The government of Antwerp has acknowledged this development. The official border between city and harbour, stated by the RSA still moves more north every year (2003). Also, plans have already been made for development of parts of the area.



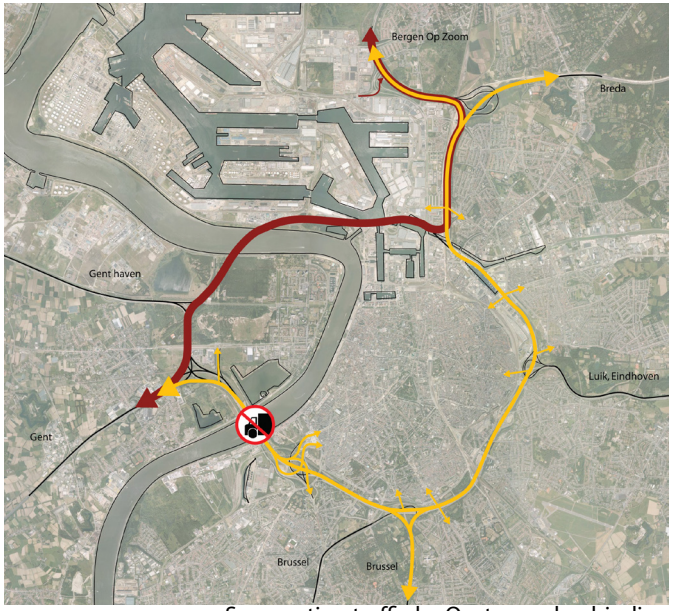
Green taking over the industrial landscape



Development of Antwerp and its harbour



Traffic congestion in Flanders
Vlaams verkeerscentrum, 2001



Segregating traffic by Oosterweelverbinding

Opportunity: The Oosterweelverbinding

The ring road of Antwerp goes from north to west around the city. Both international traffic as local traffic pass this road. The ring of Antwerp is located on the important traffic corridor between the harbours of Antwerp and Rotterdam and southern countries like Spain and France. After goods have been transported by sea to the harbours, transport by road still is the main transport means. The most direct route south is the highway to Gent. The combination of goods transport and private transport causes traffic jams every day on the ring road (see figure).

But plans have been created to give a solution to this problem. The ring road around the city is going to be completed, forming a full circle. The connection in the north west, called the Oosterweeldeverbinding, will be made by an extra tunnel under the Schelde and a large bridge called the Lange Wapperbrug, going over 't Eilandje (Oosterweelverbinding, 2007). This completement can be of big importance for Antwerp. Firstly, it offers a much faster connection to the west, laying down a good connection with Ghent and Brugues. Secondly, it will greatly improve the accessability of Antwerp as a whole. The Kennedytunnel will be off limits for trucks when the ring is completed. Local and international traffic will be segregated, the ring road will have a better flow through, and the south side of the ring will have better accessability for local traffic (see figure).

Opportunity: The Schelde river

A third opportunity concerns the whole city of Antwerp and needs some more explaining. Antwerp really started florishing and grow in the beginning of the sixteenth century, because it became a place for trading and commerce. Trading of spice and clothes mostly took place along the shores and in the north. The Schelde was the connection between the sea and the city. But nowadays they are not so closely connected anymore. When the amount of trade decreased because of the invasion of the Spanish and French in the sixteenth century and eighteenth century, the places of trade were abandoned. The Kaaien became a desolated area without much activity.

The changing activities on the Schelde also became less attractive for the citizens of Antwerp. The Kaaien stayed empty for centuries. In the nineteenth century, industrial revolutions brought with it the production of oil and machines. Also, more transport was needed to move this all, and transport by ship was a cheap way of doing this. These developments detoriated the views on the river, created disgusting fumes and a lot of noise. The general idea of the river was one of filth, noise and uglyness.

When the car became popular from the beginning of the nineteenth century on, space was needed to park the car when it was not in use. The former trading grounds were filled up with parking spaces and cars. And up till now, the Kaaien are still mainly used for cars.

But the gemeral idea of large water areas has changed and people accept and appreciate the presence of water in their surroundings much more than before. In the Netherlands, the demand for dwellings near water is high. Planners of new residential areas also try to answer this demand by creating dwellings near water. Examples are the planned dwellings in the Ijmeer near Almere and the water dwellings of Ypenburg.

A change of character of the water in a harbour city can be seen in Rotterdam, where the Maas changed from a "dirty river" to an opportunity for a nice view. The Park aan de Maas was designed by Jan David Zochner and finished around 1900. To shield the river from the park, dikes where placed around the edges of the park. It is hard to reach and experience the water. But plans have been made by project team Waterfront of Rotterdam, who want to enlarge the role of the water in Rotterdam. It proposes a new focus on the water for the Park aan de Maas.

The Schelde has much more potential then only being a nice sight for the people who park their cars. It has the potential to bear the identity and be a spatial icon for the city, just like the Maas is for Rotterdam, the Seine is for Paris or the Thames is for London.

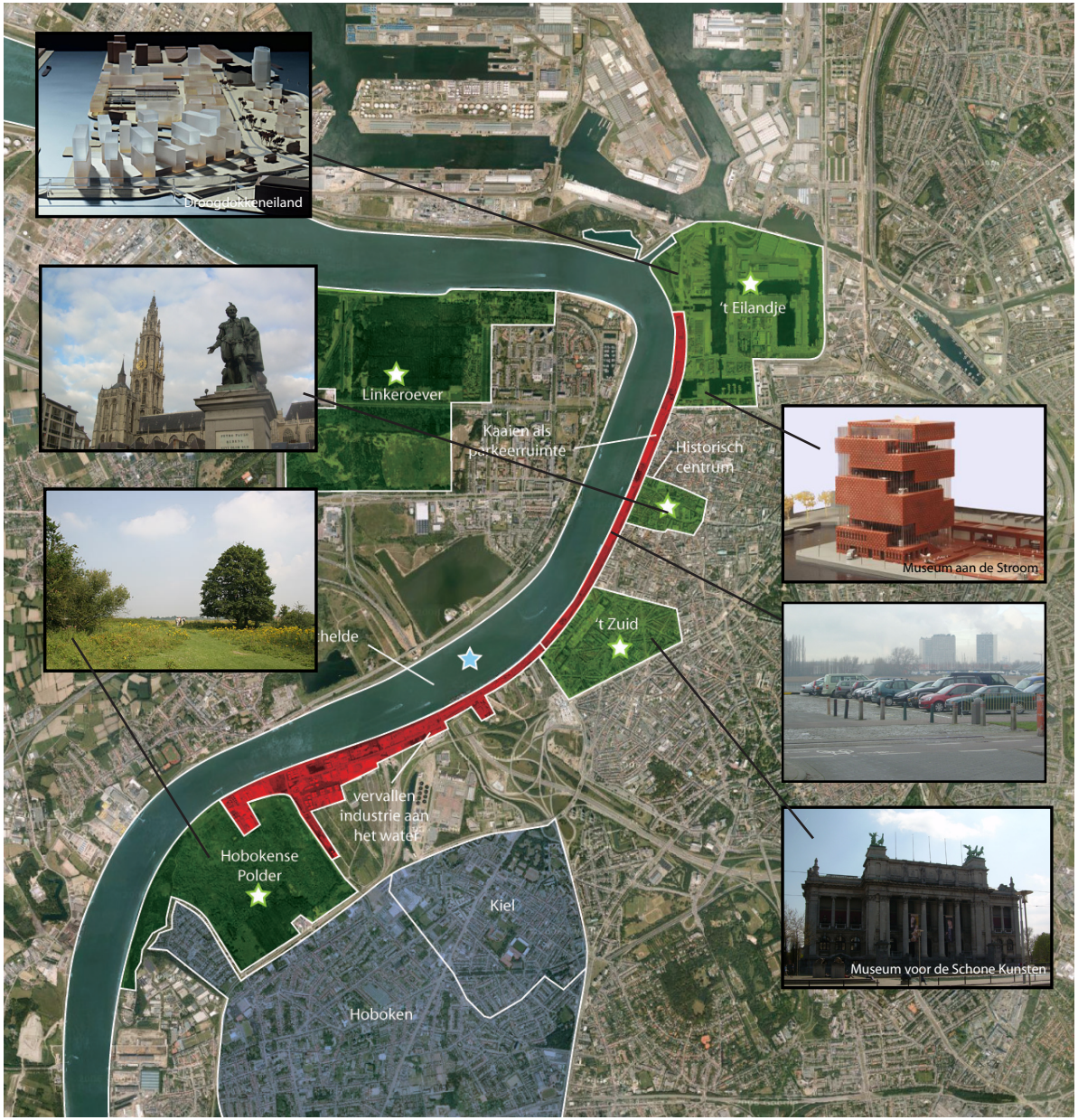
The Kaaien as attractive public space

Antwerpen has many locations with spatial qualities or the potential to offer this. Due to its history most of these areas are located along the Schelde.

´t Eilandje is former harbour area which became abandoned because of the moving of harbour activities to the north. Now, they are transforming it as a link between city and harbour, creating mostly dwellings and a large public museum. The area along the water is called Droogdokkenpark. This northern part of ´t Eilandje will be a green residential area, orientated on the Schelde. Much attention will be paid to public space. It will contain public functions like a hotel, a congress center and offices. The

Antwerp, 1525

Vision for Park aan de Maas
Projectteam Waterfront, 2003



Museum aan de Stroom, designed by Neutelings and Riedijk, will be a prestiguous and typically Antwerp museum. The surrounding public space will be renovated together with the museum.

The Historical center is the biggest tourist attraction, with one million visitors every year. The churches, small alleys and squares show the cultural history of Antwerp. The monumental streets of 't Zuid are the place to be for eating, drinking and designer shopping. Also the Museum voor de Schone Kunsten en the Paleis van Justitie are located here.

Hobokense Polder This relatively unknown park lies south west of the Spaghettiknooppunt. It is not well maintained, but has a rich diversity of animals and plants because of that.

However, also less attractive functions are located along the water. They do not have a strong relationship with the water and demotivate public use. What used to be harbour functions, now are transformed in parking spaces mostly used to park closely to the city center. Also more to the south, long term storage of goods take place. These functions take up precious space which have potential spatial quality.

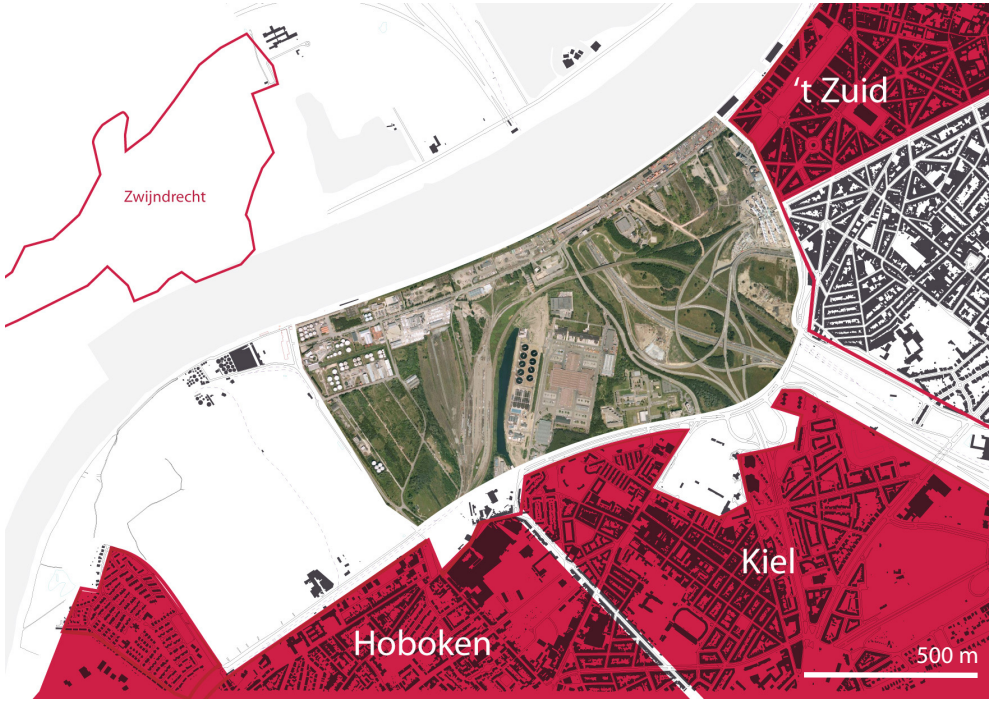
Even though the cities greatest attractions and public functions are located along the Kaaien and the Schelde, the city has turned its back to the water. The southern periphery of Antwerp are cut of from the water even more than the center, held away from the water by Zuidrand. But now the harbour activities are moving north, opportunities come up for Hoboken to gain a very prominent center near the water.

Design location

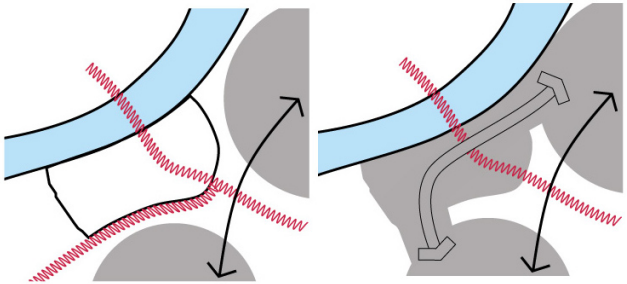
The history of Flanders and the city of Antwerp can still clearly be seen in its structure, and especially its infrastructure. Also the (lack of) policy in spatial planning still has clear concequences in how the city works today.

Two problems have been noted in this chapter. First of all, the uncontrolled development of the periphery of the city has led to a vague and unclear border of between city center and the periphery. Although there are enough connections for crossing this border on a larger scale, by car or tram, there is a broad canyon surrounding the nineteenth century belt. This canyon separates two city parts because unattractive functions for slow traffic are situated here, like the highway, parking space, large hangars or simply empty spaces.

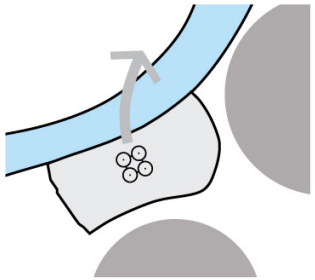
Two developments offer a design location which can offer a solution to this problem. The Zuidrand area is becoming less and less used as a trading area for petrol. Transshipment from boat to train has already stopped, leaving large areas unused. The development of the city and the harbour leads to the conclusion that harbour activities will concentrate in the north. This will give the area free. Its strategic location between city center and periphery can give solutions to bridging the gap. Furthermore, the accessability by highway will greatly increase because of the Oosterweelverbinding. The separating of freight traffic and personal traffic will improve flow through, making the western and southern parts of the ring quicker reachable. This also greatly improves strategic value of the Zuidrand area.



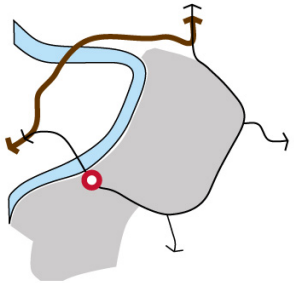
Zuidrand in its vicinity



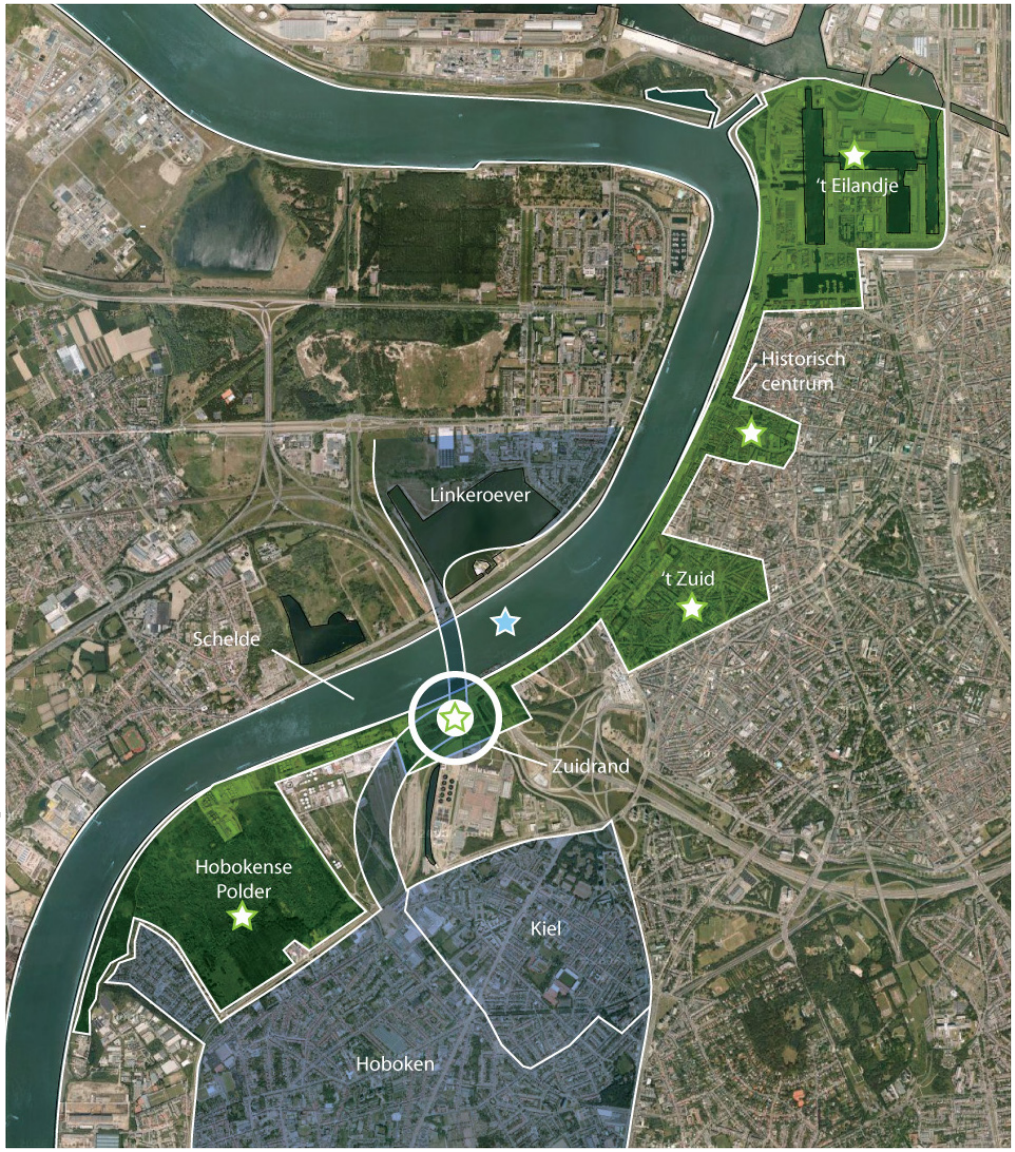
Problem The city is isolated from the periphery and lacks connection on the local scale.



Opportunity Industries in the Zuidrand are being abandoned and are concentrating in the north. The area becomes free for other kinds of development.



Opportunity The Oosterweelverbinding in the North will separate freight traffic and local traffic. Accesability will improve in the western and southern parts of the highway.

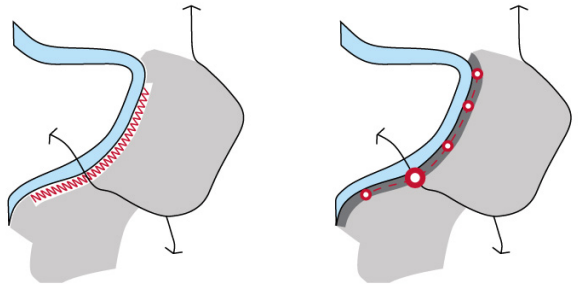


The Kaaien connecting the Schelde and the city

The second problem that has been stated is the way Antwerpen deals with the Schelde nowadays. The city owes its existence to the Schelde, and therefore the cities greatest attractions and public functions are located along the Kaaien and the Schelde. But still the city has turned its back to the river with many barriers like parking spaces.

While trying to be a connection on a local scale between city center and periphery, the qualities of the river can already be used. As explained earlier, the other interesting areas of the city are already lined up more or less along the Kaaien, without a clear connection on local scale is missing. But, when the area is orientated on the river, and especially when the local problem is solved, it can serve as an example for the rest of the city. The Kaaien as a public space can form a very strong link between the highlights of the city. The Schelde is an important element for the Kaaien, which can give a strong identity to the city again. Also the Singelbrug and Zuidrand can form the symbolic jump over the water, just as the Erasmus bridge in Rotterdam.

So, although the design tries to offer solutions for a small scale, it also creates chances for the larger scale. Starting small, it can have a possible effect for its surroundings (Roberts & Sykes, 2000), and be a good example and start for the entire city of Antwerp.



Problem Although the city has originated of the Schelde, it is now cut of because of the parking of cars and other boundaries along the Schelde.

Research questions and aims

The first goal is to develope a structure vision for the Zuidrand area that show the opportunities on local and city scale. This will be based on research of existing centralities and a brief feasibility studies.

The main research question will therefore be:

How can spatial qualities of a new urban center play a role in connecting the periphery and historical center of Antwerp?

Questions that follow are:

What is a new center?
How do the transport systems of Antwerp work?
How did Antwerp develop up till now?
What are spatial qualities of new urban centers in other cities?
How can such a relatively large development be started?

This structure vision should show how the Zuidrand:
can connect between the periphery of Antwerp and the historical center
can connect Zuidrand with the historical center of Antwerp
can be a beginning of bringing the city back to the Schelde

Keywords: *mixed use development, waterfront development, urban regeneration, strategic design, metropolitan design, public transport*

The second goal is to further design the area near the highway. There are two reasons for this: First, this area is crucial for the success of the Zuidrand area. Many kinds of transport systems of all scales come together here. Therefore it has potential to act like a pedestrian friendly knot between historical center, Zuidrand, the periphery and outside the city. Also it can form a symbolic step over the highway. Second, it can generate feedback to improve the structure vision. By further detailing the most complex but also important area, it can be researched if the human scale is present in the structure vision.

This area should:

- become part of the Kaaien and be orientated on the water.
- make full use of the accessability delivered by the infrastructure and creating a fitting living environment.
- be an example for the rest of the public spaces along the Kaaien

An exploring assignment

The pressure on space is not so big in Antwerp. Reasons for this are the steady amount of citizens throughout the last decades and a relatively small office climate. So although there are trends and developments in the city that could lead to a growth of the housing or office market (see appendix), there is no big demand for new dwellings or offices. But the Zuidrand area has much potential in the future when developed. The upcoming developments in the city, being the moving of harbour activities and the Oosterweelverbinding, will offer great possibilities for the local and the city scale.

This makes the assignment a special and ambiguous one. There is no programme of functions that has to be realized by demand. But, developing Zuidrand can give it a very significant role in the city. Therefore the assignment asks for a more abstract vision of Antwerp, showing the possibilities of the city and seducing people to believe in the existing beauty of the city and Zuidrand.

Also the situation the design is set in is less clear. A more flexible design, able to adapt to different developments in the future is therefore needed. Also a strong strategy is important to attract money and other means, especially at the beginning of the project.

For more information about trends and developments of Antwerp concerning market pressure, please go to the appendices.

chapter 3

analysis

birds eye view of Zuidas, Amsterdam

Results reference studies

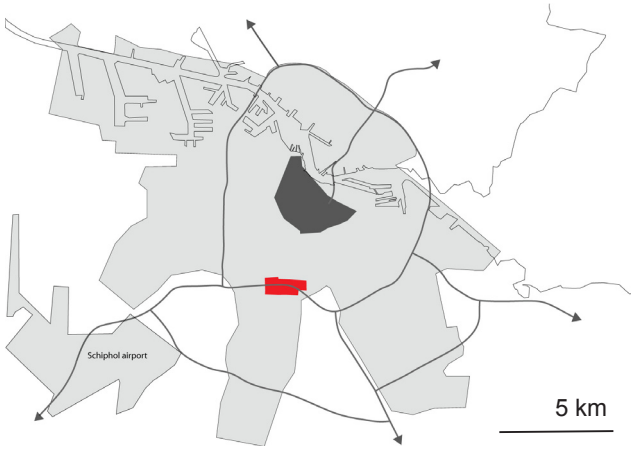
To understand the scale, the impact and the way centralities affect its surroundings in Antwerp, reference projects have been studied. These examples will be used to create the ingredients that are needed for the design. How are other new centralities built up and what distinguishes them?

The Zuidas in Amsterdam, and Diagonal Mar in Barcelona have been analysed to the themes of density, scale, functions and interweavement, which are chosen according to the research paper. Also the Zuidelijke Ij oever in Amsterdam has been researched to find out how the original city center and the Zuidelijke Ij oever function together. Both are included in the appendices.

Both projects are multi functional mixed knots near the edge of the city center. The Zuidas can be seen as Amsterdams most prestigious large urban project nowadays located on the south side of Amsterdam, on the A10 highway. Large office complexes are mixed with public functions and different kinds of dwellings. Its main strength is its accessability, as it is reachable by metro, train and highway. Also Schiphol airport is very closeby. Diagonal Mar is a transformed old harbour area of Barcelona. Nowadays it is the location of dwellings, offices, a mall and a park. It lies on the edge of the city, on the coast and is connected directly through the highway. Generally, Diagonal Mar is noted as a badly functioning area, as there are many vacancies among the units.

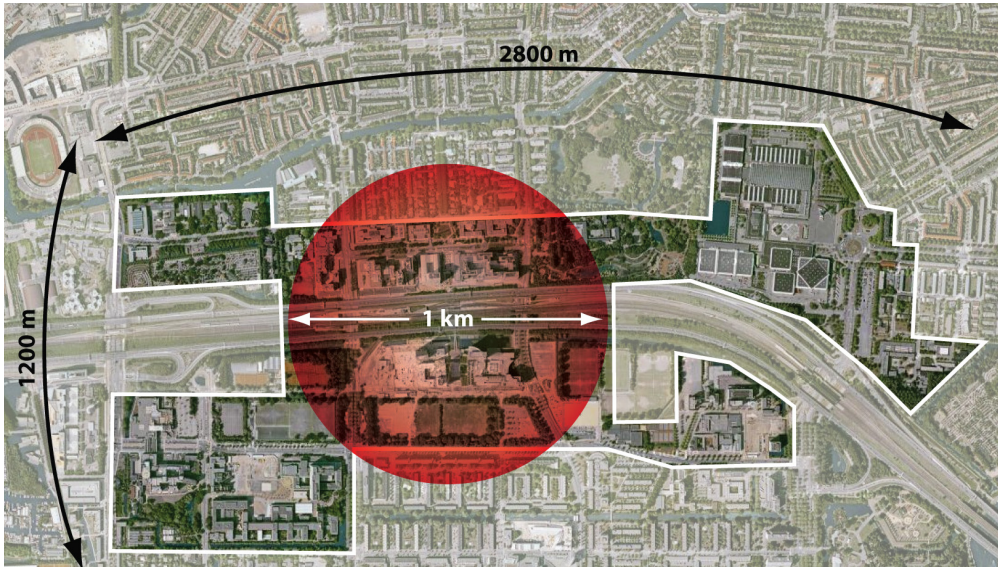
For a more detailed analysis of the new centralities, please go to the appendices.

Location Diagonal Mar, Barcelona



Location Zuidas, Amsterdam

Zuidas, Amsterdam



The new city center must be situated within one kilometer, which is the maximum voluntary walking distance.

Continueing city tissue connects two city parts and can ensure liveliness in the city center.

Disgonal Mar, Barcelona

A density of minimally 2 or 3 FSI is needed to create urban tissue and to suit slow traffic.

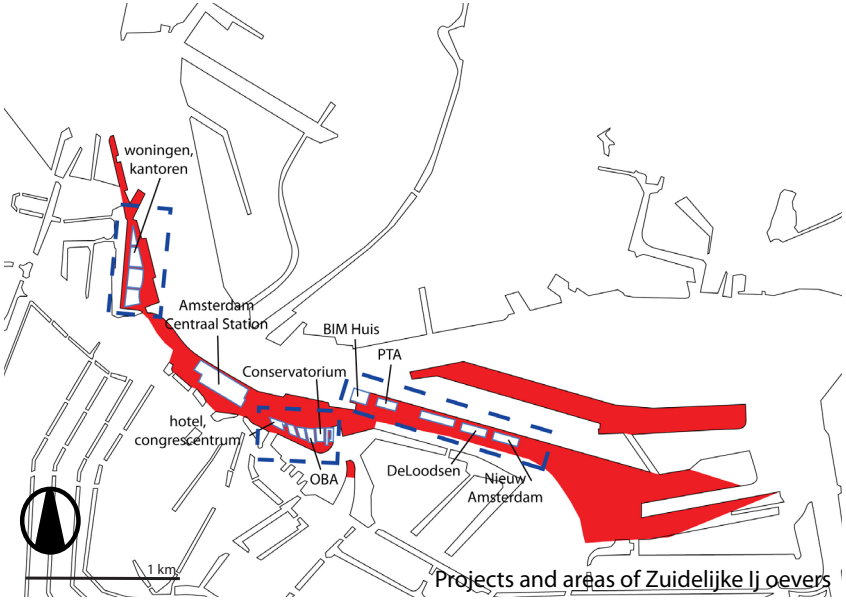
Functions need to be mixed on a small grain (building level) to ensure liveliness and social experiments.

Old center and new center

When a new center arises in a city, it is important thought is given to the target group. When the same people and functions are adressed to establish themselves as in the historic center, a competition between the two could have negative effects for the whole city. This could happen when the demand for programme is not as high as expected, and lots of effort is put into attracting programme.

The Zuidelijke Ij oevers have shown us a historical center and a new urban center can exist together, without competition. By addressing citizens of Amsterdam or people who want to live there (and not tourists) there is a larger pool of people to fill up the places. This is done by adding programme like living and public functions that are needed by the citizens, but not very interesting for tourists. Large public functions can be used for pulling attention to the area.

The fact that a new center is laid in a different part of the city creates a different context. By exploiting this in such a way, the new center obtain a stronger and different identity than the existing center. In this case, the waterfront is used to form a strong identity, which strongly contrasts with the historic center.



Projects and areas of Zuidelijke Ij oevers

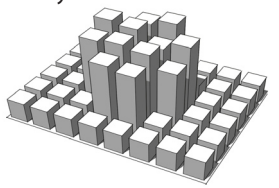
Competition between centralities in one city can be avoided by offering alternative functions and living environments which complement the old one.

Westerdokseiland

Oosterdokseiland

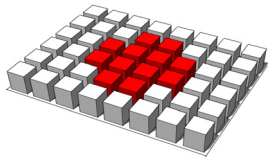
Demands new center

Density



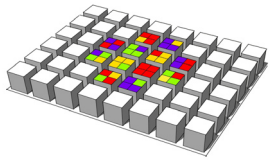
High density in center

Scale



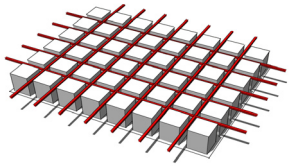
Center maximum of one kilometer wide. Spaces fit to human scale

Functions



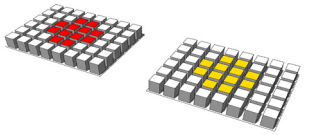
Wide variety of functions

Interweavement

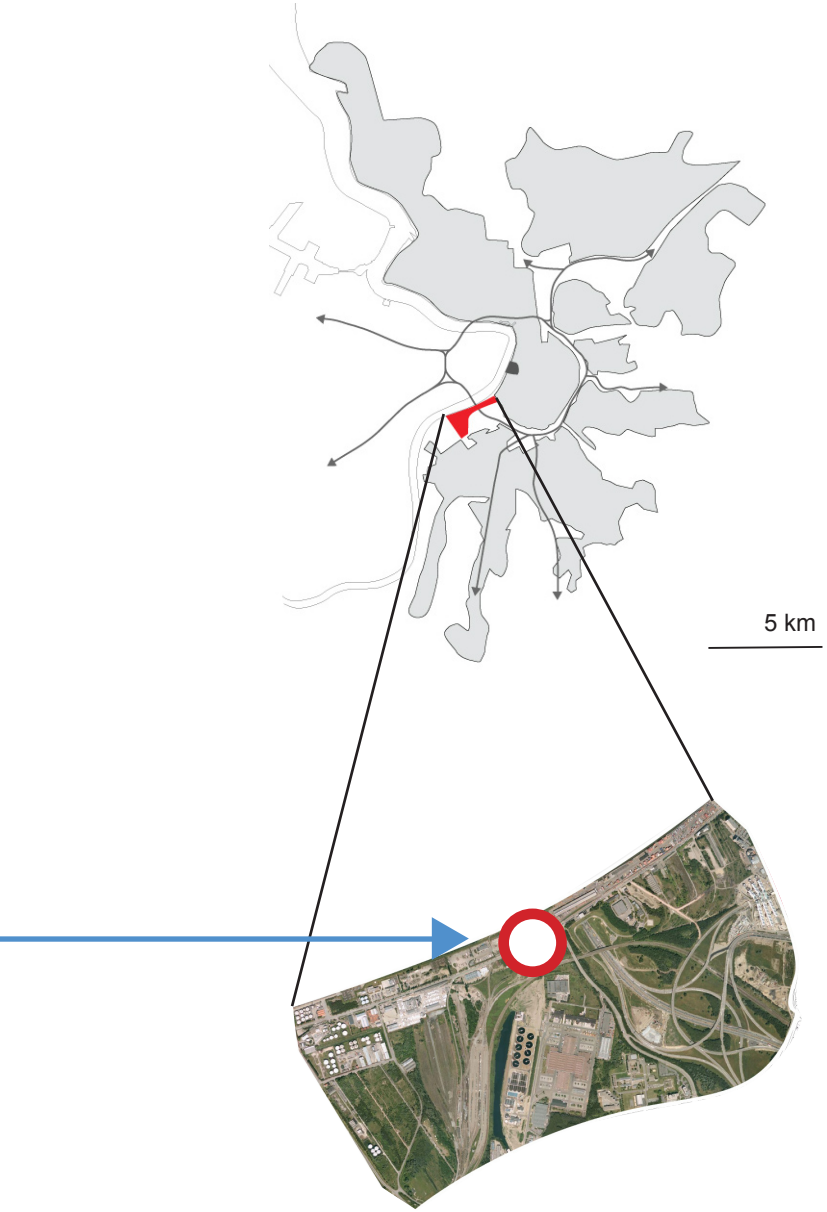


Continueing city structure through the area

Competition



Two different centers, adressing different target groups and not competing



Location Zuidrand, Antwerpen

Conclusions

A new urban center can be a way to connect to parts of a city on a local scale. Among many more goals, the Zuidas shows at best that it can succeed in this, especially when the dock model is realized. The activity it attracts by the many different kinds of functions, all as one compact whole, really extends the urban tissue.

It is hard to create an urban area like this artificially. It is however possible to filter out the characteristics and try to realize that. The following demands are in any case needed for a new succesful urban center. These demands will be implemented in the design.

Density

The density of functions of the new urban center should be higher than its surroundings. This ensures a larger amount of people and a larger amount of activity. Generally a density of 2 or 3 FSI is needed to create an urban environment and a human scale. Also this will create enough critical mass for the center itself, making it independent.

Scale

The center must not be larger than the maximum distance an average pedestrian wants to walk, being one kilometer. This is one prerequisite needed to make sure the location is experienced as one cohesive area.

Functions

There has to be a wide variety of programme, ranging from dwellings to jobs to public functions. These functions have to be mixed on a small scale. First of all this will create a lively place where people are tempted to access the functions by foot or bicycle, as all is closeby. Easy access by larger scale transport, which is present in Zuidrand, gives advantages to the functions and willingness to live there.

Interweavement

The structure of the city has to continue and go through the center. This is necessary for the area to be part of the city. It makes it easier for people to come to the center and contribute to the liveliness when infrastructure and public spaces connect.

Old and new center

To avoid competition between city centers, an alternative environment should be created. This can be achieved by exploiting the qualities of the location of the new center, and trying to reach another target group of people.

For a comparison of the programme of Zuidas Amsterdam, Laakhaven Den Haag and Kop van Zuid, Rotterdam please see the appendices for more information.

The existing situation in Zuidrand

It has already been said that the Zuidrand is mainly an area for trade and storage of petrol. But much more is happenening in this area, of which most is unknown to the citizens of Antwerp.

Zuidrand is hidden behind the massive cluster of highway roads called the Spaghettiknot. The functions are owned by private companies or serve the city, so they do not attract people who do not have any business there.

Although the area is quite unknown, the area accomodates very important facilities. The public space that does exist only has to serve the facilities, and has no need to be attractive. Most of the programme is of large scale and importance for the city. They are purely needed for the city to function in a logistical way, and therefore they do not contribute much to urban liveliness.

In the middle of the Zuidrand, a large area with public facilities exists. The groothandelscentrum provides mostly food products for the entire city and attracts many trucks with goods. Also municipal facilities are located around the Groothandelsmarkt, like a recycle center and the city cleaning. Next to the Groothandelsmarkt is the water purification center. It is the only one in the city and takes care of clean water for the entire city. Because they both function well and are the onely ones for the city, there is no reason for them to be moved to another location. Therefore they will be kept in the plan.

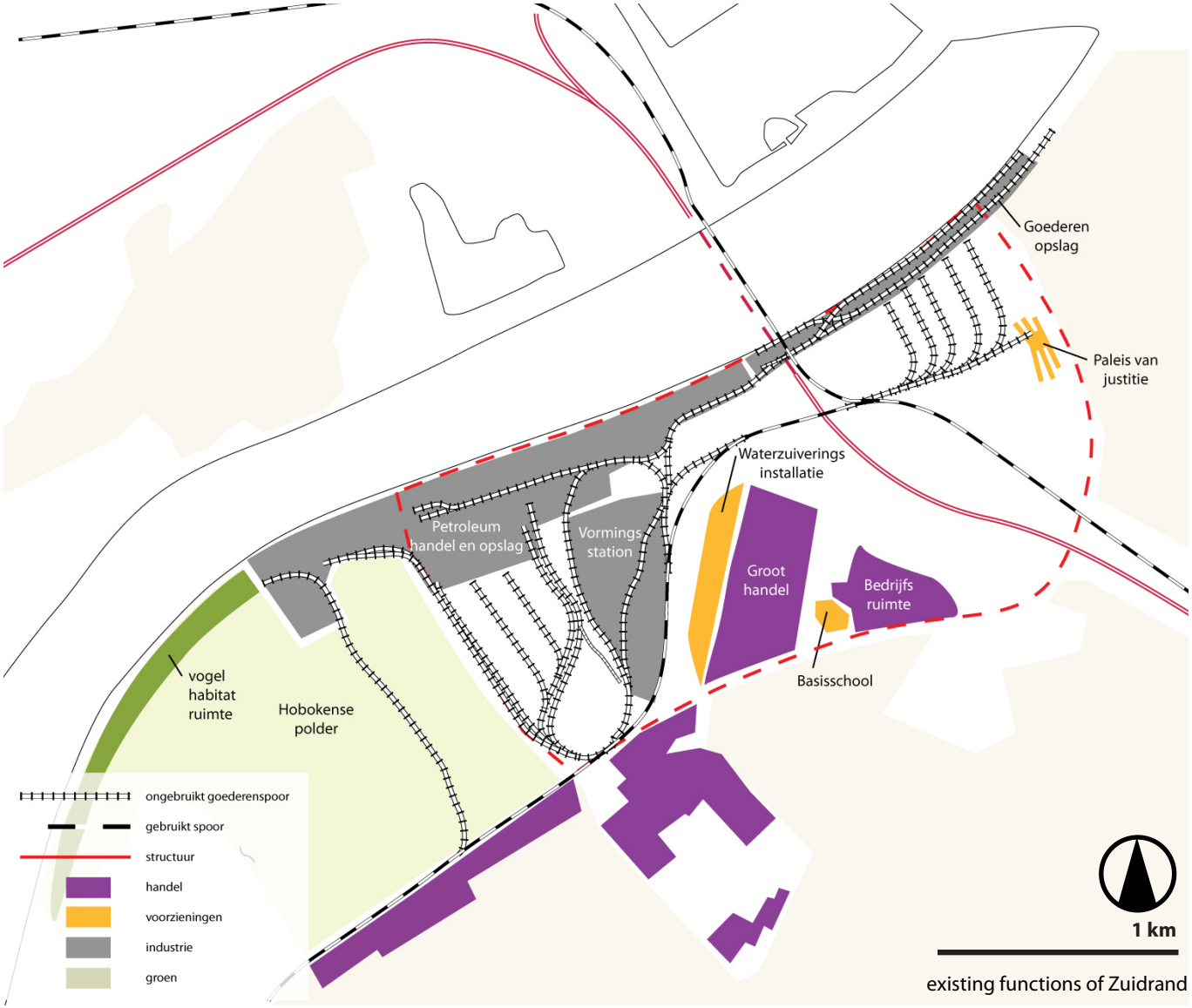
The small harbour functions alongside the Schelde banks are mostly concerned with petrol. From 1960, activities moved largely to the north. The train tracks, in the past used for transporting oil between boat and train, are not used anymore. Also the vormingsstaion for trains, west of the small Hollebeek water, became obsolete because of this. Here, wagons were weighed and connected for transport of goods. The soil has been polluted in course of the years. Petrol related activity nowadays consist of moving petrol between different boats, and short term storage of petrol, waiting for other boats to be picked up. Also the Kaaien are still used for long term storage of other goods, like broken cars.

West of the Zuidrand lies the Hobokense polder. This rough polder landscape has been formed by residues of the Schelde and has never been cultivated. This has resulted in a rich diversity of flora and fauna. Parts of it have been removed for industry activities, and it also has been heightened for Hobokem Polderstad to the west of it.

In the south east of the Zuidrand, a primary school and a small business area are located.

the "engine" of Antwerpen: water purification system and food trade center

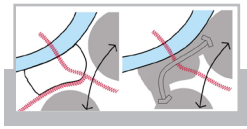
Mazoutweg: former railway track



existing functions of Zuidrand

Although they function properly, their location is quite isolated. They are completely surrounded by industries and infrastructure, making them quite unaccessable for transport means other than the car.

The many railway tracks in the area are very present in the landscape. They are the most important spatial components that form the structure of the area and therefore deserve extra attention. These many lines perpendicular to the shore are or were connected to the current passenger railways and the railway along the Kaaien. Petrol from the boats was loaded on the wagons using the pipelines along each railway (see picture).

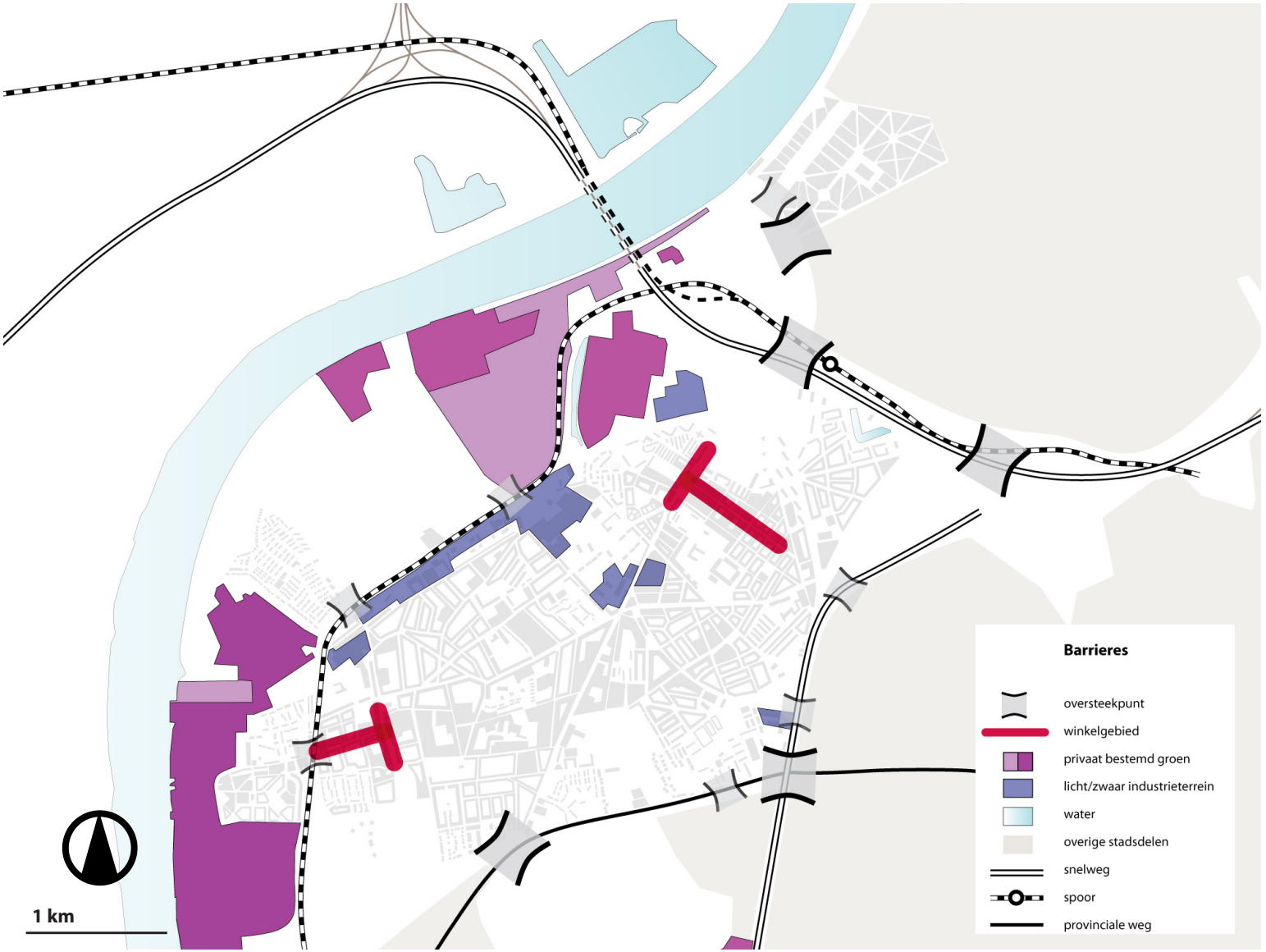


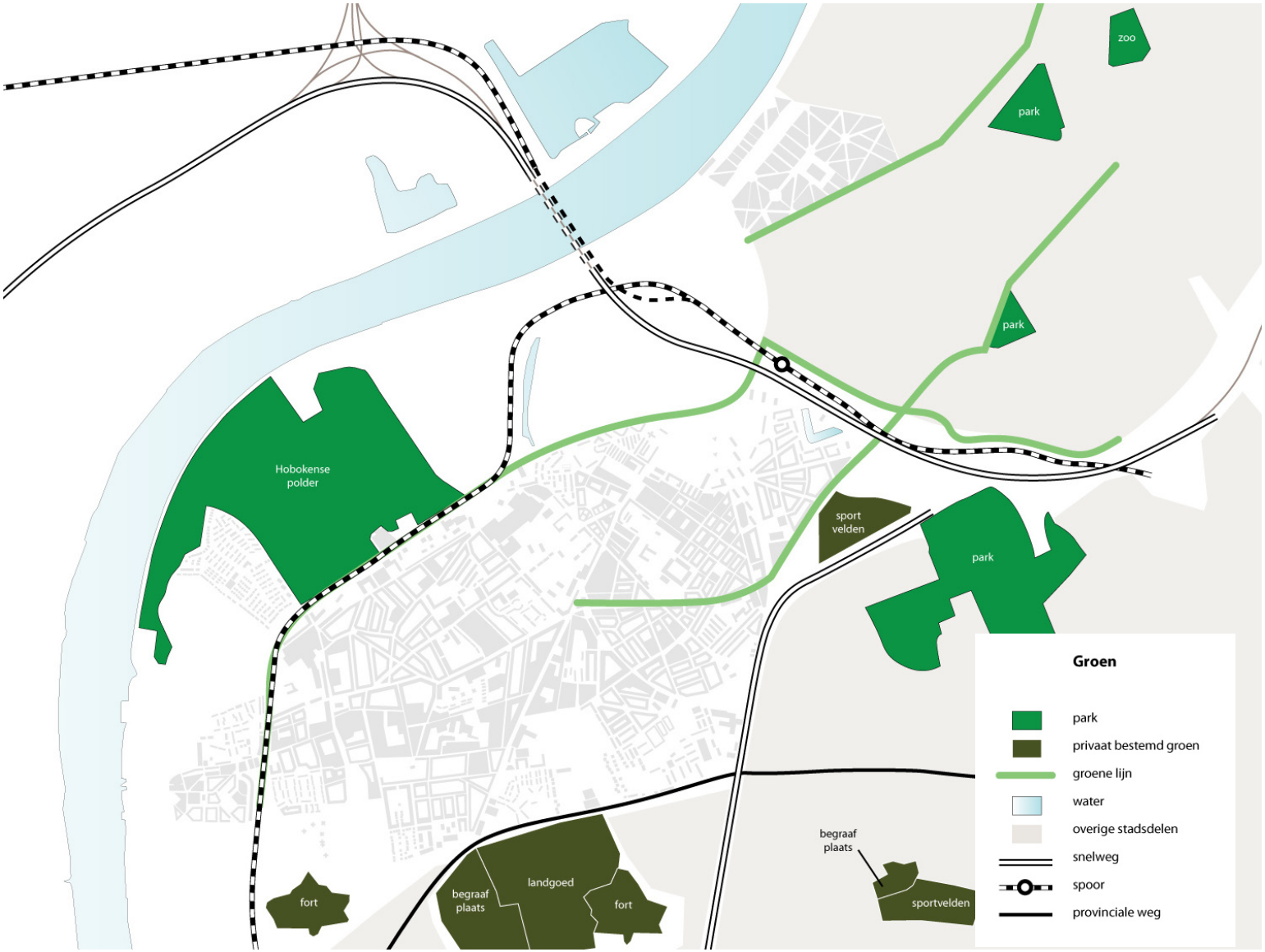
Problem The city is isolated from the periphery and lacks connection on the local scale.

Enclosed areas

The Hoboken area is surrounded by many barriers on local scale. Especially infrastructure cuts through the landscape creating enclosed areas. Highway roads going to the ring, railways and provincial roads cut out a certain area consisting partly of Hoboken and Kiel. Here mainly dwellings are situated in typical side by side dwellings and large social housing flats. The functions behind the barrier do not invite people to cross it either. Light kinds of industry, like storage of goods, or heavier ones, like Corus producing steel, make it a very unattractive place to visit.

But, on a higher scale the connection is quite efficient. These roads connect to other periphery areas, or they go in the direction of the historical center.

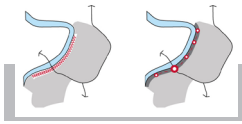




Inaccessable green

Within the infrastructural barriers, there are not many green facilities. Outside it, are several quite large green spaces. However, many of them are not accessable to the public. The forts surrounding the city, the sports fields and cemetary are not to be visited by stranger. There are two parks, one of which is the Hobokense polder. This park has a very interesting and diverse flora and fauna because of its lack of maintenance. This off course is also a very big disadvantage, as it is not easy to cross. Also the polder is very isolated because of the railway track and petrol industry surrounding it.

For more information about vacancy of Antwerp urban tissue or city center, please go to the appendices.



Problem Although the city has originated of the Schelde, it is now cut of because of the parking of cars and other boundaries along the Schelde.

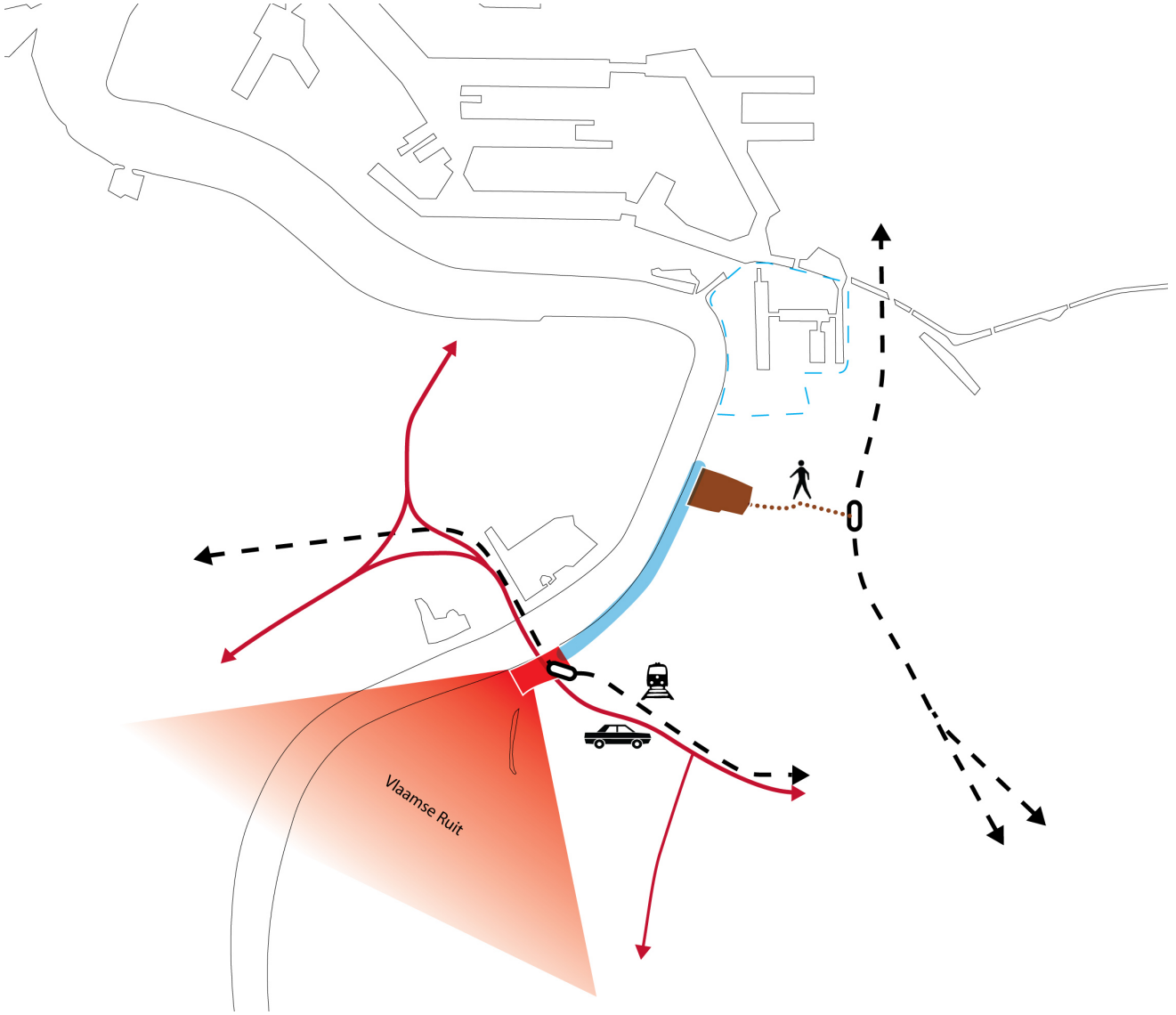
Two centers

The new urban center will not only have effect on its vicinity, but on the entire city. The opportunities of the location make it possible for large functions to be realized. This will change the mono nucleair state of Antwerp today.

The existing center is a historic one, which is best accessable by foot. People use car and train to become within walking distance of the center. Its impact on the city is therefore small. The new center has potential to work on a different scale. It is feeded by transport systems of a much larger scale, like highway and train. This makes it attractive for people to live or work from a much larger area. Its location along the ring has a clear orientation to the rest of the Flemmish Diamond.

So, two centers can be possible in the city when they adress two different target groups. This is to be promoted, as this creates two alternative centers,avoiding competition.

A second center in the city means that the epicenter of the city will also move southwards. The city will be more orientated to the south, attracting more new people than the northen parts in the future. This can be used to redevelop the Kaaien. By offering an attractive route of public space along the Kaaien between the two centers, the reorientation of Antwerp to the Schelde can be started.



Categorizing Antwerp center roads

A fragment of the Kaaien

Barriers along the Kaaien

Kaaien

When categorizing the city´s network of roads, the highway and the Singel pop up as the highest scale roads. Roads connect to the highway in a radial way. Within the ring, the Leien and the Kaaien are the secondary axes.

The Kaaien nowadays has three functions in traffic. Firstly, the Kaaien act as an important parking facility for the whole city. It has about 1500 parking spaces. They are mainly used to park the car before going in the historical city center, as it is the nearest one.

Secondly, it acts as a road to the historic center from outside the city. It is a straight ongoing road forming a direct connection from outside the city to the center. It acts as an important transport axis from north to south, just as the Leien, the Singel and the Ring. It is used for larger distance travel within the city. When the highway has traffic jams, the road alongside the Kaaien is used as a shortcut from the highway. When you take a closer look to the Kaaien, the amount of barriers you have to cross to reach the water becomes clear. First of all, the water is not visible at all from a large majority of the Kaaien. The historical hangars and the parked cars mainly block the view. Efforts have been made for a boulevard walk on top of a part of the hangars.

The amount of infrastructural barriers is large. A much used road and a bicycle trail divide the city and the water. They are guided by hedges and fences, which improve the experience for travellers, but hinder people wanting to go to the water. Only more or less every hundred meter there is a passageway going to the parkings, which are the only ways of going to the water on ground level.

Existing future plans

The detoriation and opportunities of the zuidrand area has already been noticed by other parties and transformation of the Zuidrand area has been taken up in structure plans. Here the existing future plans are discussed.

Conclusion

The plans for Nieuw Zuid and Petroleum Zuid are not fully finished yet, but both have delivered a strong plan, choosing the right functions for its location in the city. Also, on their own they have been connected to their surroundings in the right way. However, there is no integral plan which takes a look at the entire Zuidrand area, which connects the polder, Petroleum Zuid and Nieuw Zuid. Therefore, existing opportunities that would give benefits for Antwerpen itself are neglected. The Kaaien also is not given the power it could have.

In short, aspects that will be taken over in the new design are:

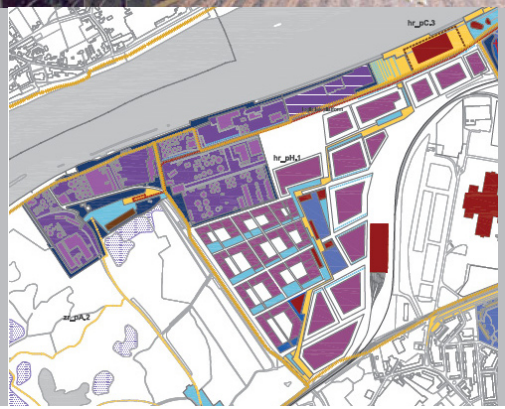
- Trying to end the Zuiderdokken correctly
- The continueing of mainly dwellings in Nieuw Zuid
- The opportunity of accessability for a business location
- The connections with the Hobokense polder and the overall ecological ambitions

Hobokense polder

The Hobokense polder is recognized as a rich ecological area, originating from accidental events. Therefore no plans have been made whatsoever for urban development.

Strangely, also no strong plans have been made for preserving this interesting park, and it is barely named in plans of surroundings. This is a missed chance: the park is being misused by polluters and vandalists, threatening the park.

Petroleum Zuid



This green business park will try to seek a strong collaboration between ecology and business functions to strengthen both parties. The development of the area around Kaaien has not been researched yet. After sanitizing the grounds, which has been polluted by its current functions, construction will probably start around 2010.

Nieuw Zuid

Nieuw Zuid is a big expansion plan for Antwerp. Inspired by the masterplan of Rogers (the designer of the Paleis van Justitie) Binst Crepain Architecture designed a residential area. It tries to be a closing element of the city in the south. It is encircled by a ring of office buildings. A cultural center has been planned, as well as a 75 meter tall building. Also the first bridge ever to cross the Schelde will touch land here.

chapter 4

Zuidrand

the historical center of Antwerp

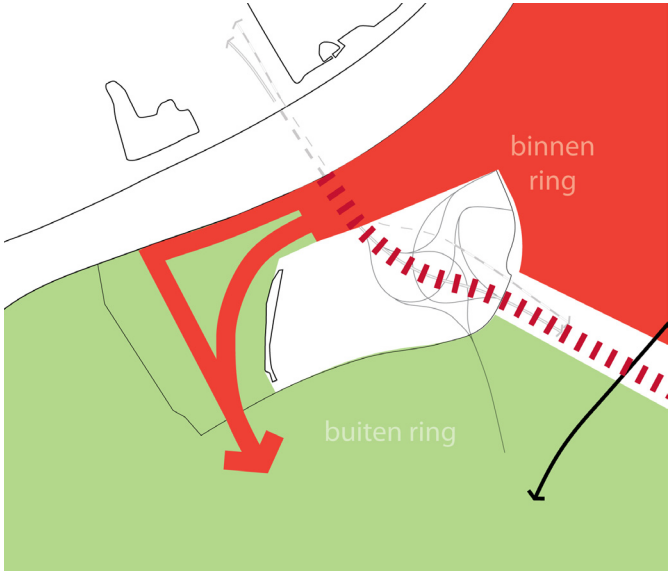
Design principles

The Zuidrand is a very large area. It takes decades and millions of euros to fully develop the area to the potential it has. An important question is how we can create a design that fulfills the wishes of today.

An even harder question comes up when we look at the future. It is hard for us to say what we want in 50 years from now. How do we make the design sustainable and fit our desires of the future, if we do not exactly know what we want then? Because of this, we can not make all the decisions right now and limit our possibilities. By realizing a rough framework we can keep our options open. In this way we create possibilities to develop in the future, but stay flexible to changes that may come up.

The structure vision consists of a rough framework, which will stimulate other developments in the area. Some of the locations are crucial for the development of the Zuidrand, have to be designed in more detail. These key projects can give feedback to the design of the whole area. This reflection can result in changes of the structure plan.

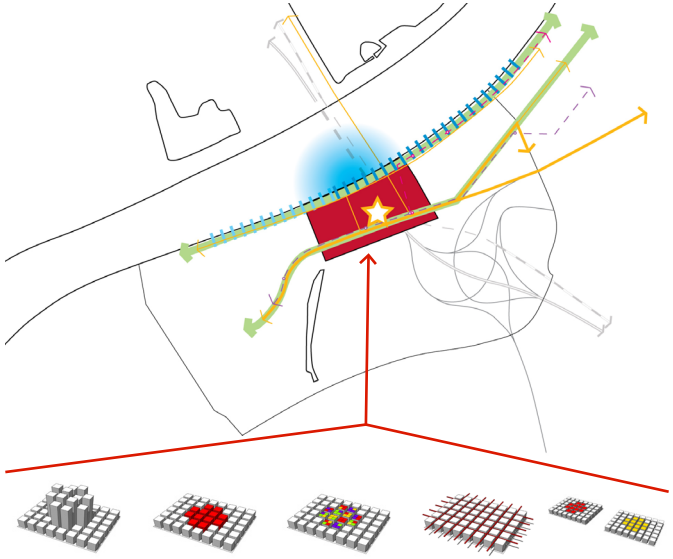
To bring a solution to the design assignment already several spatial demands have been named. But, there are other potentials of the site, that could help in realizing solutions. These design principles have lead to the structure vision, explained further on.



Connecting different scales

The ring road going through the city creates a huge barrier in the city. A local connection between these two city parts can also create a strong transfer point for traffic of all scales, while keeping the efficient large scale connection.

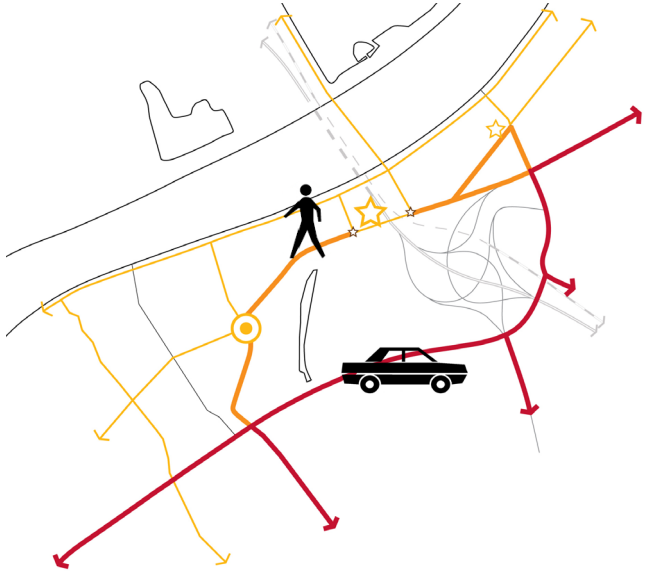
The border of the ring stays visible. It will be a symbolic step over the ring road, making clear where you are in the city. From there, buildings are bundled through the green landscape. This reminds of the Belgian steenwegen and keeps open the large spaces of green. This other way of building shows you are outside the ring.



Concentrating activity by bundling flows

The Zuidrand already has large infrastructure axes going through. But, the opportunities the area has would create more local traffic as well. Local traffic will be bundled around the Kennedytunnel, together with other flows like public transport, the new Singelbrug coming from over Linkeroever and green lines.

These flows will naturally bring together a number of people and therefore activity, which automatically makes this a very public place. Because it is also very accessable by the highway and railway, this can be used by placing large public functions in this knot. An orientation on the water can not only help in creating attractive spaces, but later on also help in bringing Antwerpen to the Schelde. The demands for the center itself have already been named, being the demands for density, scale, functions, interweavement and avoiding competition with the historic center.



Through going traffic

A local connection is looked for in Zuidrand. This asks for a pedestrian friendly environment. To create this, the already existing through going traffic along the Emiel Vloorstraat will be maintained and kept out of Zuidrand. So, the facilities will be pointed at destination traffic. This means that slow traffic will have more possibilities of moving through the area, will be placed centrally in the streets and are more attractive to follow.

In this case, the large scale connections even helps in creating pedestrian friendly environments. The pedestrian friendly environment in combination with high density functions creates a compact area, which is quickly accessable by car or train. Efficient use of the area is the result.

Structure vision Zuidrand

The design principles put together results in the structureplan for the Zuidrand area. The structureplan shows which essential areas and lines must be developed to meet the goals.

Connecting different scales

Local traffic lines are extended in Zuidrand, connecting to several knots in the area. The knot in the middle (sports cluster) than connects to larger scales: the highway and railway, connecting to the region and also international destinations, and new public transport lines, connecting to the city center.

Concentrating activity

The sports cluster is feeded by different directions and traffic flows. This has resulted in a large public functions on the crossing. This function can become a very prominent place along the Kaaien, orientated on the Schelde.

Using the Hobokense Polder

The polder will be used for drawing people in early phases and creating unique and new living environments. This is achieved by creating green gates to the polder, connected to the surrounding city (including Polderstad). These transfer points are bases to discover the interesting polder from.

Traffic flows

Within Zuidrand, slow traffic has more options to move through the area than fast traffic. Existing lines in the landscape, like old railway lines are used for these lines, to remember the old landscape.

Flexibility

One topic that has not yet been discussed is the need for flexibility in the plan. Zuidrand is quite a large area (200 ha) which has more than enough space for any kind of development that is wished for. However, this does not necessarily lead to attractive environments.

But although we maybe know what the city needs right now, and we can give solutions for those problems, we can not know what new programme is needed in the future. Also, new functions may not deliver the environments that were to be expected. To accomodate these fluctuations, we have to create flexibility in the plan that can bear with different kinds of uses of the area.

This flexibility is achieved by first creating a framework for the area of different kinds of traffic, and creating key projects that have a strategic value for the entire area. Only then when demand is high enough for extra functions , areas can be expanded. These expansions are only meant to give answer to the new pressure, but are not needed for the functioning of the whole area. Expansions have to be within certain boundaries to ensure enough space for green. Green lines and parks will connect to the surrounding green networks.

For more detailed information of the flexibility and planning, see the pages concerning phasing.

The most direct connection from a highway to a place in the city is by a direct highway exit. Is an extra highway exit needed for the stadium? And is it possible? See the appendices for more information.

For more information about the vision on the railway system of Flanders see the appendices for more information.


Structuurvisie
legenda
ontwikkelingszone
snelweg
spoorweg
verbindingsweg
nieuwe verbinding
bestaande verbinding
Stedelijke Kaaien
Hobokense Kaaien
landschapsstructuur
tram 4
tram 8
ingang Hobokense polder
belangrijke plek
grote parkeervoorziening
water
bestaand groen
groene as
motor van de stad
bestaande stad
Zwijndrecht
Galgenweel
Burchtse Weel
Scheldetunnel
Singelbrug
Kennedytunnel
Scheldt
Hobokense Polder

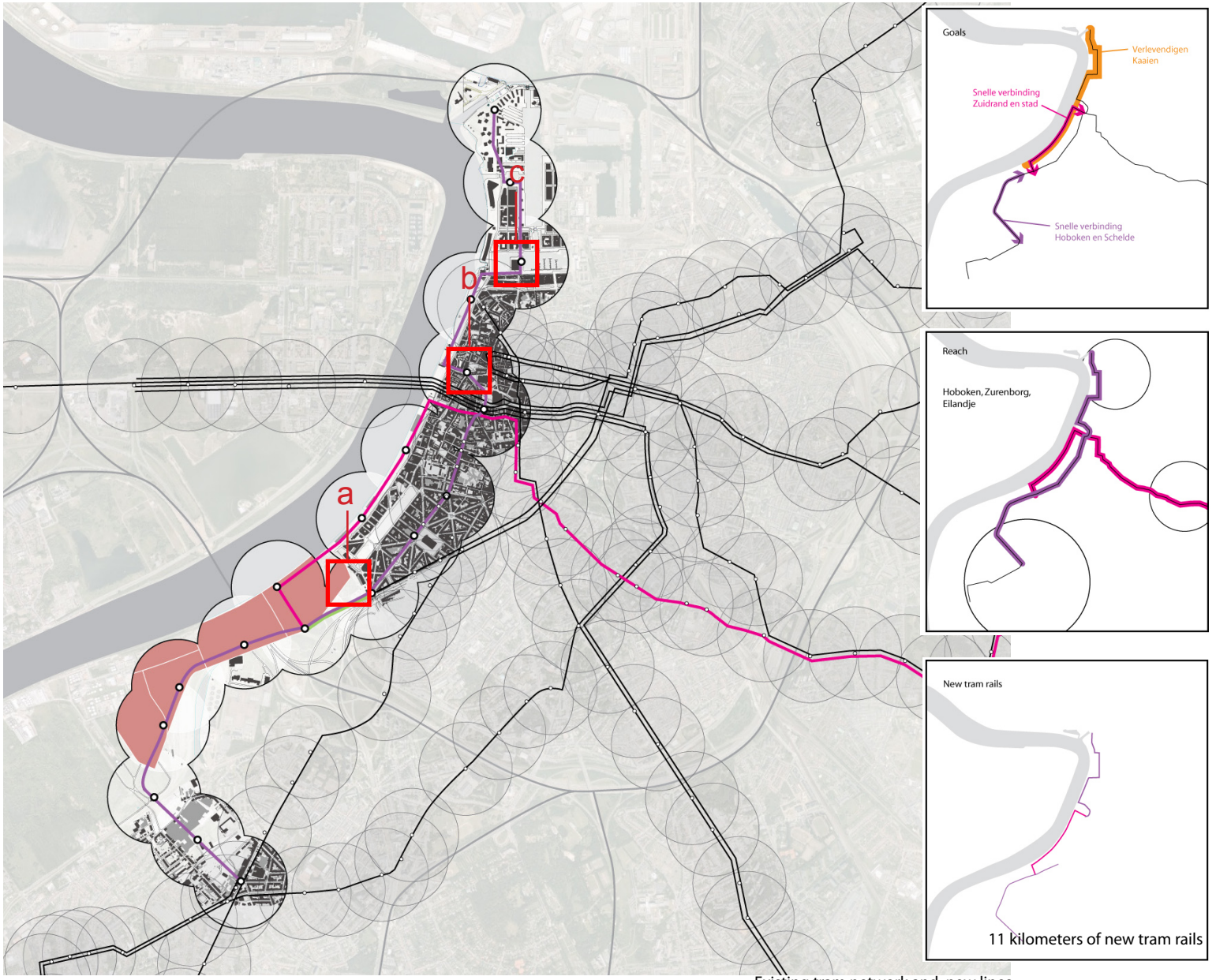
Goals of the new tram lines

In Antwerp, the tram system is most important public transport system. Twelve tramlines have transported 83.000.000 people in 2006, opposed to 36.000.000 people by bus (Cel Omgevingsinformatie, 2007). The tram also is the most important way of transport from the periphery to the city center. Reasons for this are the large areas the city is spread out on, and the lack of parking space in the city.

So, the tram is a popular way of moving in the city. This should be encouraged in the future because of obstipations that will occur when too much people will use the car, and of course for environment reasons. To efficiently form a connection with surrounding neighbourhoods, the tram therefore is the right means.

So, the first two goals of added tram lines are:
1) connect southern of Antwerp with Zuidrand
2) connect Zuidrand with the city center. But, the tram system has more potential than just bring people from a to b. As one of the goals of the assignment is to bring the city back to the Schelde, a new tram line could help in doing this. When functions along the Kaaien are so well connected to other parts of the city via the tram system, it becomes attractive to visit the Kaaien.

As earlier discussed, the Mobiliteitsplan Antwerpen argues for transfer points from car

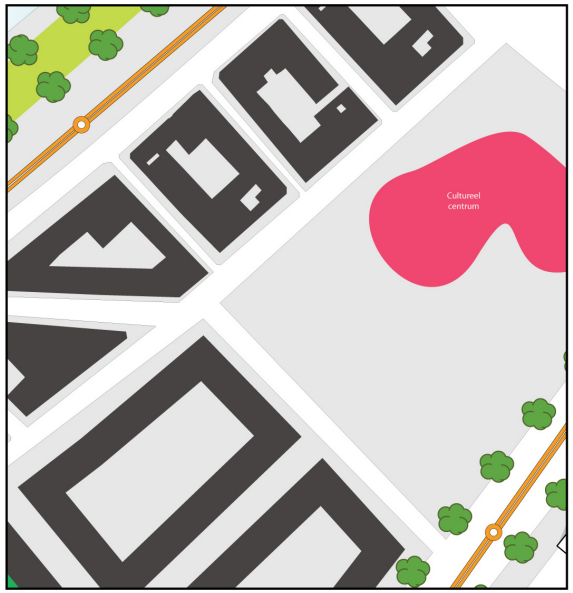


Existing tram network and new lines

to tram from the ringway on. Zuidrand has great potential to help in this goal. Not only is it located on the ring, making it easy accessable by car, it also has a lot of space for parked cars. Zuidrand can be used by people coming to Antwerp by car and switch to tram, and avoid searching for hard to find parking spaces. The opportunity for a transferium becomes even bigger when the train station of Antwerpen Zuid is moved and added to this transferium. Therefore, a third goal is to 3) promote use of the Kaaien. Extending the rails to ´t Eilandje, which has not been connected to the tram system yet, not only makes ´t Eilandje itself more accessable, it also helps in achieving the third goal.

Density within the reach of the stops is important to justify the existence of the trams. But, stops planned along the Kaaien do not reach as many people as stops in the city. Half of the reach, which is 400 meter for city trams (Vakgroep Planologie en Stedebouwkunde, 1995) literally falls in the water. Creating one line along the Kaaien from ´t Eilandje to Zuidrand would therefore become more of a tourist line, connecting the city´s attractions, but not reaching many citizens´ functions. Therefore, instead two existing lines will use different routes, both using part of the new rails. In this way, tram 8 will also go to Zurenborg and Berchem, reaching more potential daily users.

The tram line connects attractions of the city that are not yet reachable by tram. It connects not only new functions of Zuidrand, like the cultural center at the new Zuiderdokken, it also goes past the Grote Markt, and the new Museum Aan de Stroom in ´t Eilandje. As a free extra, the tramline can therefore become a very handy means for tourists to see the highlights of the city, as most attractions are lined up in the region of the Kaaien.

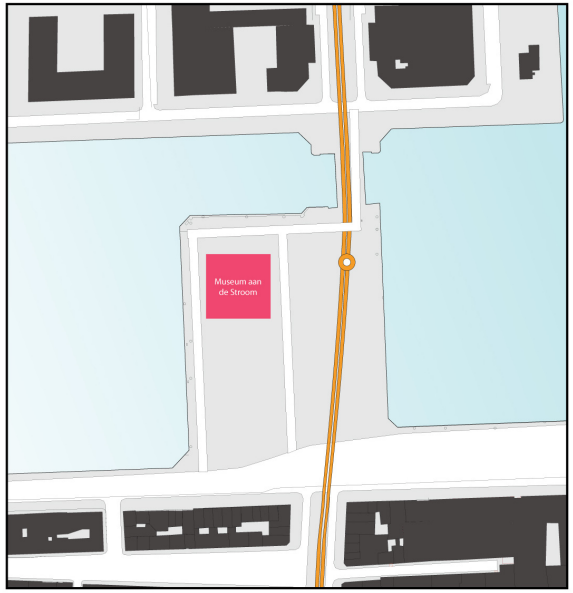


a: Cultureel centrum

100 m

b: Grote markt

100 m



c: Museum aan de Stroom

100 m

Building rules and envelopes

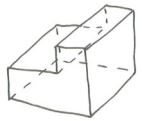
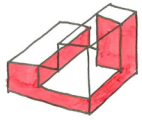
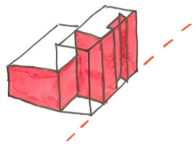
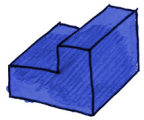
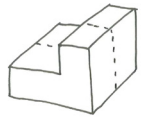
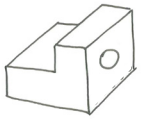
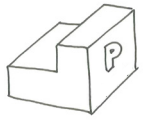
Flexibility must not only be reached on scale of the entire plan, but also in terms of the building blocks themselves. As an urbanist always the question exists up to what scale you have to design. From where does the architect take over the job? The answer lies in creating a plan that ensures the qualities the urbanist wants to realize, but leaving as much as possible free to the architect.

One way of doing this is by stating a set of rules that the architects have to follow when they further design to an architectural level. In this way they have all the freedom to design what they want, but the vision of the urbanist and the qualities of the plan stay intact. (Meyer, 2008)

The structure vision has been translated in a plan with building envelopes. The building volume has to be within this volume to ensure proper lighting and building alignment. No building at all also is possible. Further on, type of function, typology of building units and certain facade demands are determined as well. They are to ensure the type and amount of social activity per area.

Typologies and public spaces

The building envelopes already determine the typologies of the buildings and the public spaces around them. Roughly Zuidrand can be divided in three areas. The eastern area, west of the center, is inspired by the plan of Crepain and is an urban extension of 't Zuid. The center is a highly urban area with large public functions. The western area shows you are outside the ring, offering much larger public spaces and more green. For more detailed designs, please go to chapter 5.

	Demand	Why?
	Maximum building mass Building has to be within volume	To create flexibility within boundaries for the architects
	Building height Maximum height of building in meters Proposed amount of floors	To garantee liveable spaces with enough light
	Building line Boundaries of building	To create enough public space between buildings
	Function Type of function in building	To secure type of use of public space
	Segments Can be crossed by foot	To create extra choices for pedestrians to move freely through the area
	Entrances Facade with entrance(s)	To ensure social activity in the right places
	Entrance parking garage Facade with entrances for cars if applicable (communal or private)	To not to disturb social life

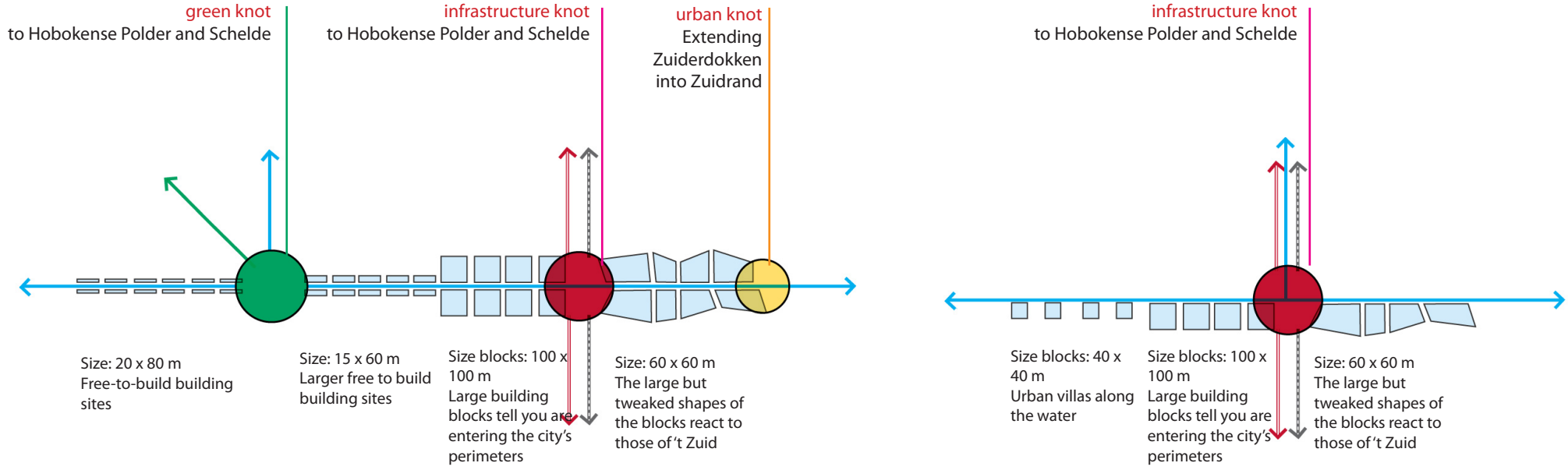
Building envelopes Zuidrand

It is all about the public space

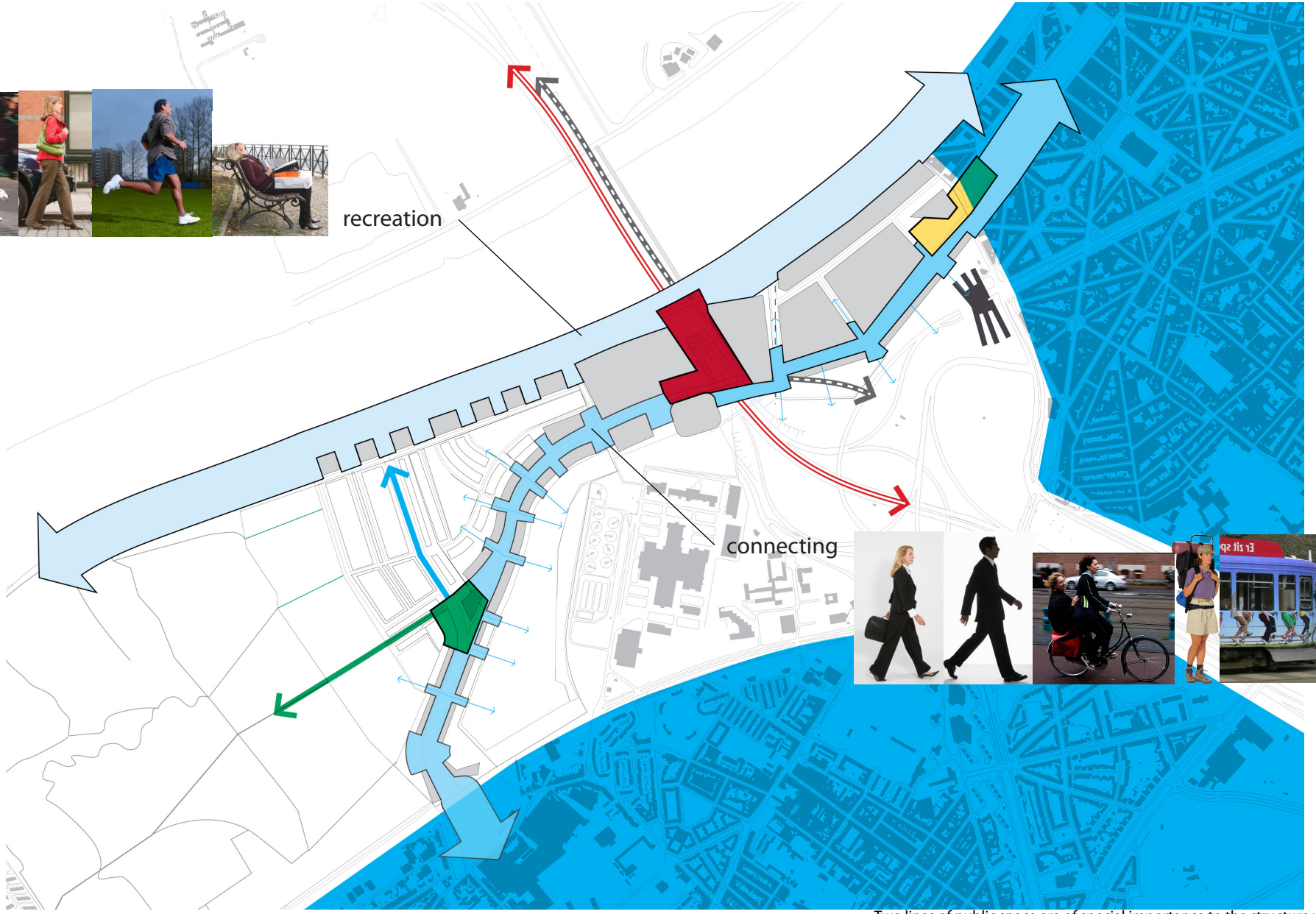
To achieve the goal of connecting periphery and the city, two axes will be given extra attention. On these axes, public space will be extra important to create an attractive environment for slow traffic to move through. They have to be attractive to use.

The two axes have different characters and they will also be used in this way. Actually, one already exists: the potentially strong public space of the Kaaien is extended to the south west. This axis will mostly be used for recreation and leisure. The green space along the water will be attractive to use for people who want to work out, take a stroll or relax. The facade of the existing Kaaien will be extended as well, creating one broad and strong reaction to the water. This will strengthen the identity of Antwerp near the water as well.

The second axis is a more functional one and mostly meant for transportation. This route can be used to go from southern Antwerp to the new urban center, or to transfer to another transport means like tram or train and go to the city center, or somewhere else. It will be easy to recognize as a route for slow traffic between center and periphery as cars have use a detour to pass the center. The building blocks along the route play a big role, as they show you where you are in the city.The facades along the route will have higher demands for the design. They will have to have more surface to the route, creating a clear line.



Schemes of public boulevards



Two lines of public space are of special importance to the structure vision

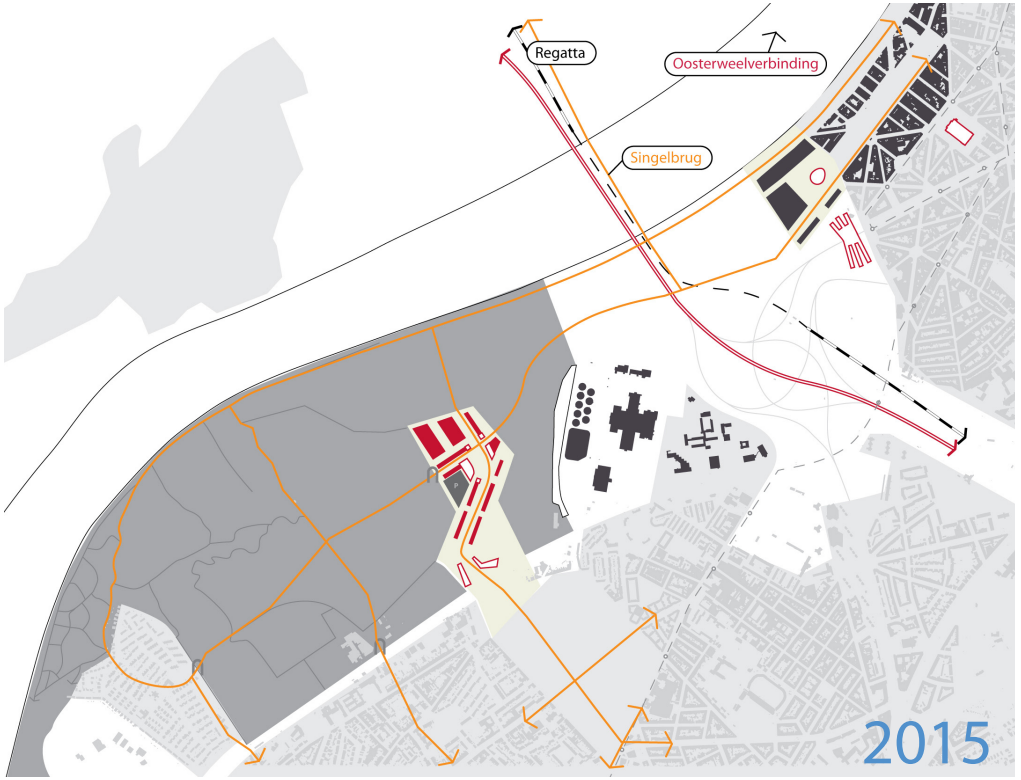
Phasing

There are more than enough pointers that make clear the plan needs strategy to be realized. The size of the area is too large for one development (200 ha), the amount of money needed exceeds any party, making coorporation of many parties necessary. Therefore the amount of time needed to realize this also covers many successors in boards of directors. However, some developments have already been started, of which Zuidrand can benefit. They give guidance in planning the Zuidrand development.

It is important to keep flexibility in the plan. Chances exist that developments do not work the way they were planned. Therefore it is important that, when development stops for any reason, the area can still function independently and preferably maintain value for its surroundings. To make this happen, seven phases have been pointed out. Stopping development is only possible between two phases, to make sure areas are delivered as a working whole.

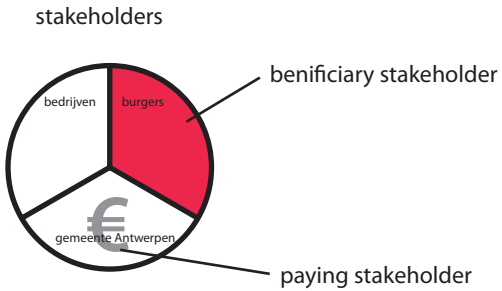
One existing Belgian building tradition is used to create a matching market of demand and supply. Dwellings along steenwegen, that have always been developed by citizens themselves. Only when demand is present, people buy an empty site and build their own house.

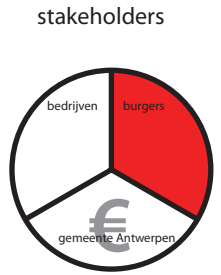
Now Less activities in trade and storage of petrol take place in Zuidrand. Because of this, large spaces have become in disuse and the lush greens of the polder are taking over. Interesting post industrial landscapes already attract visitors. The ring endures many traffic jams.

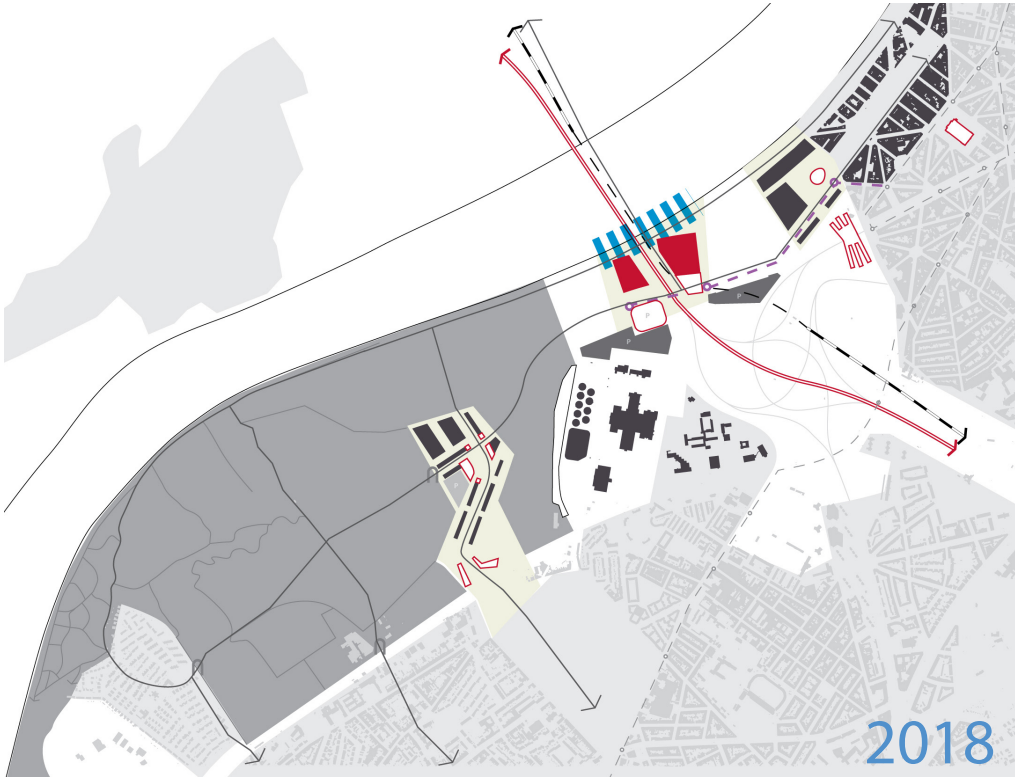


2012 The main goal in the early stage is to bring the Zuidrand area in the consciousness of the citizens, as it is an unknown area. The rich and attractive polder can get out of its isolation by removing the barrier of the railway and making green entrances where you can park the car. Old existing buildings can functions as interesting new locations for small, creative industries. The Zuiderdokken of 't Zuid are given a proper ending, by creating a mondern high quality extensions of the Zuiderdokken with dwellings and a cultural center.

2015 While conscience of the new area already exists, the network of informal routes will get many new impulses. The Singelbrug creates a more attractive way of going to the city center for people of new residential neighboorhood Regatta. Meanwhile, the gate near the polder offers new and uniquely green living environments for Antwerp.

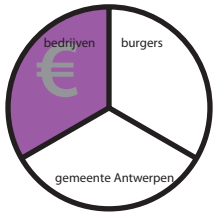


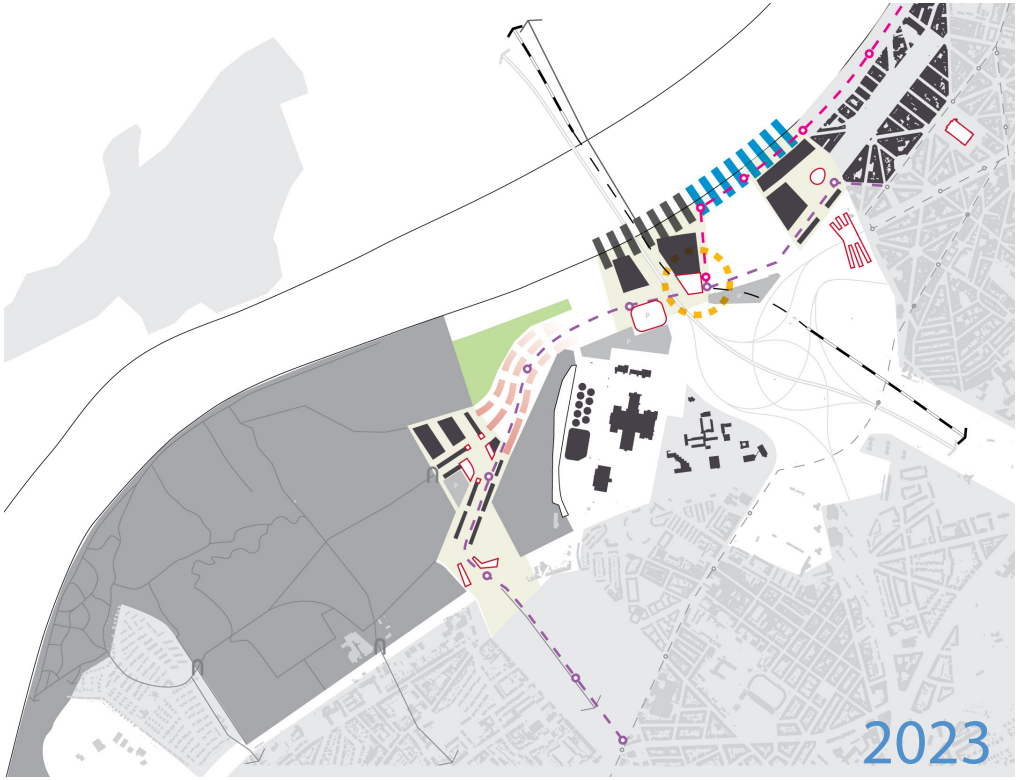




2018 The knot of slow and fast traffic is also very easy to reach. Large public functions and offices can make use of this. When the World Championship Football does come to the Benelux, this means an extra impulse for development and a bigger stadium. Tramline 12 is extended and connects to Central Station. Also the Kaaien area will become high quality public space and show the connection of the area to the water. When demand is present, already dwellings can be built along the new Steenwegen.

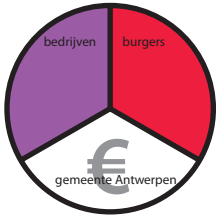
stakeholders

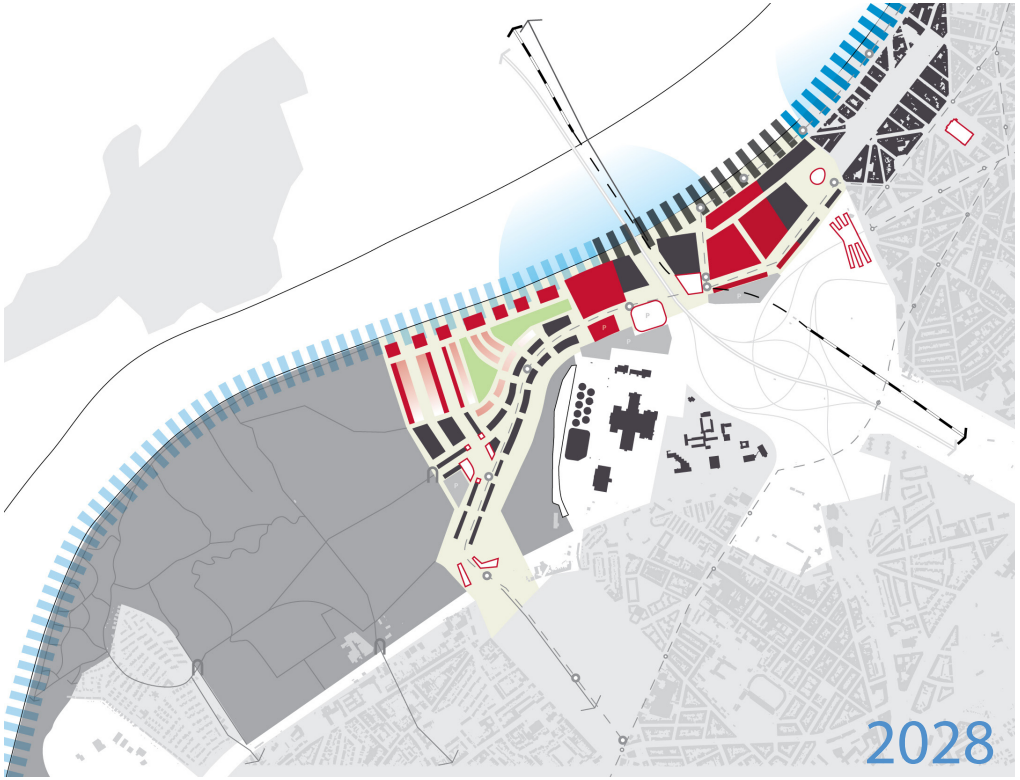




2023 Tramline 4 and 8 are being redirected and the train station of Zuid is moved. Offering easy transfer between train, tram, car and local traffic, a transfer point between city center, periphery and a larger region arises. Steenwegen start to grow by people buying a piece of land and building a house.

stakeholders

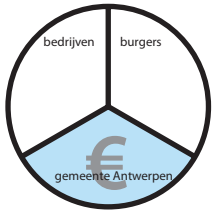




2028 The transferium attracts people that want to live close by public transport. The steenwegen are filled up, as well as the Hobokense Oever. Growth is possible within boundaries, keeping enough green space like parks. The Kaaien are connected to the existing Kaaien, creating a long line of high quality public space.

2030 A local connection is made between city center and periphery, by having an efficient transfer point and large public facilities in a pedestrian friendly environment. The different neighbourhoods fit the location in the city. Maybe, when the municipal industries do not function properly any more, they can be transformed into living environments.

stakeholders



chapter 5

areas

The monumental streets of 't Zuid

The structure vision of the Zuidrand can be subdivided in five areas. These areas have similar functions, typologies or the same character of public space. The following information guides the structure vision and makes it more tangible.

Some areas are more important than others. Where one area only has the possibility to take up pressure of any kind of function, other areas have strategic value for more than only their own. The last area, of the station area, even is important for the whole structure vision. Its large public functions and its identity will be characteristic for the whole plan and plays a big role in connecting city and periphery. Therefore it is extra important that this area, among others, is designed in extra detail. This design of a lower scale is also used as a feedback to the designs of the other areas. It is seen as a test for a correct human scale and if it is possible to create a pedestrian friendly environment.

Petroleumboulevard

Petroleumboulevard offers new and uniquely living environments for Antwerpen. The petroleum boulevard is situated between the polder, the Schelde, the petroleum park area and Hoboken. The goals of this area are 1) to act as a gate to the Hobokense Polder 2) to give a compact center for the citizens of Hoboken 3) to be a lively ribbon from Hoboken to the Schelde.

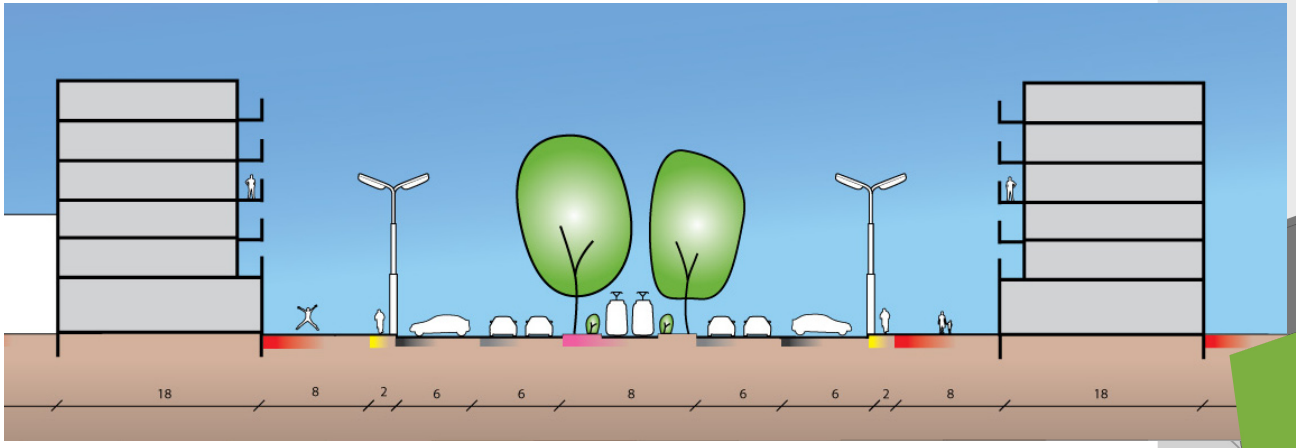
The crossing plays a big role in meeting all goals. Here, two important flows of traffic meet, making it an interesting location for local shops and offices. It also functions as a gate to the Hobokense polder, and as a transfer point by taking the tram to the city center. There is a large parking lot of around 650 parking spaces for visitors of the Polder, the shops or people using the tram.

The tradition of the Belgian steenwegen will be continued by creating sites that can be developed by citizens themselves. The area behind those houses will still be accessable by leaving slices open. The borders of the area react to their large green surroundings by placing larger appartment blocks. The petroleum boulevard is opened by the two entrance buildings which give a first impression to visitors as well as passers by on the Emile Vloorstraat.

Thorbeckelaan, Den Haag
Wide, through going traffic, pedestrian friendly

Groot haven eiland, Amsterdam
mixed typologies in one building block

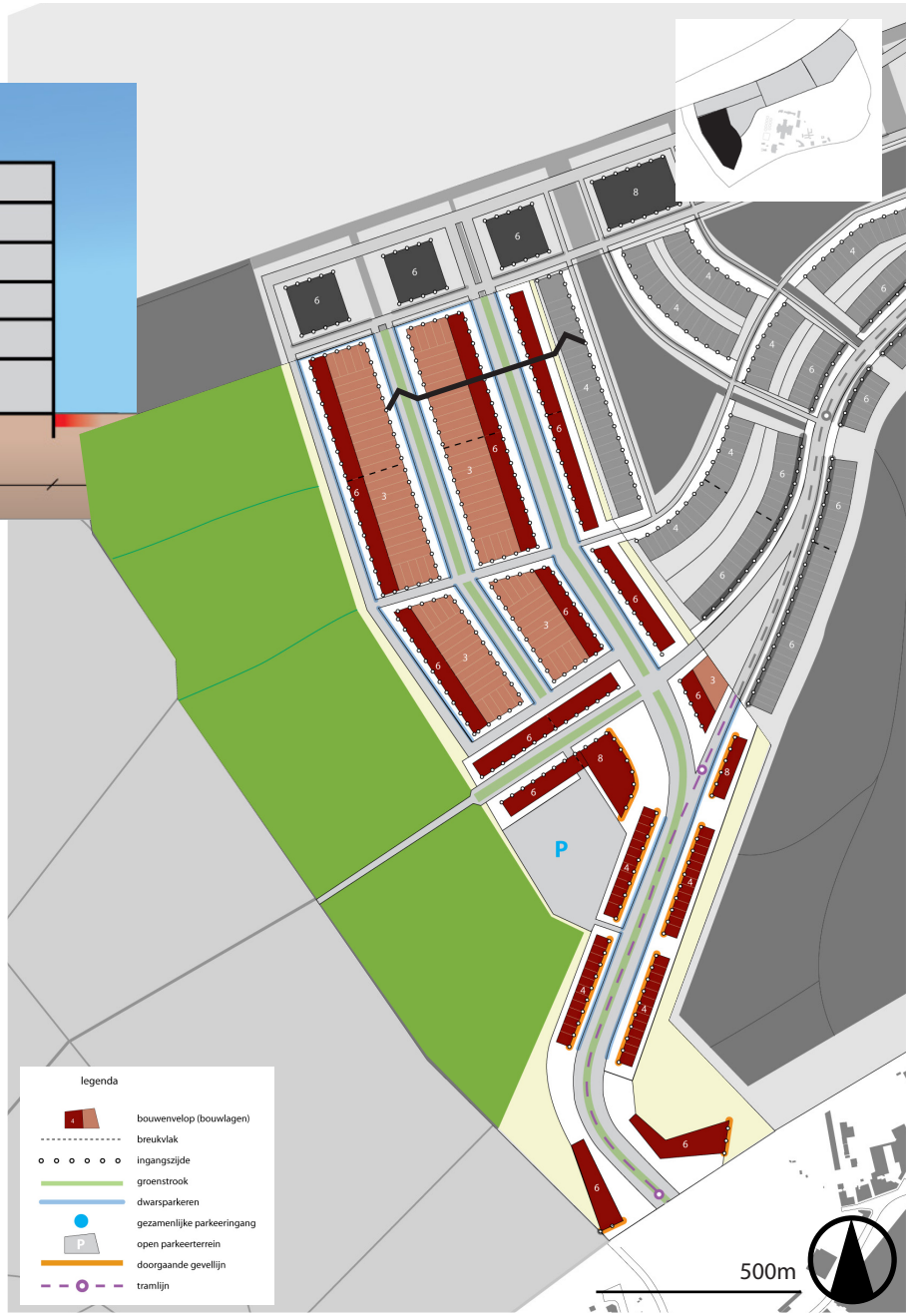
Leyweg, Den Haag
Local center, pedestrian friendly, shopping islands



Facts

Appartments	800
Side-to-side	300
dwellings	30.000 m2
Offices	5.000 m2
Shops	
Needed:	1700
Street parking	1200
Parking lot	650
Total parking spots	1850

Steenweg, between Gent & Brussel
Building collage, typically Belgian



Hobokense oever

The Hobokense Oever is located along the Schelde between the Polder and the Sports cluster. It will hav e a local atmosphere, giving a place to recreate and enjoy the Schelde for the local inhabitants and Hoboken. The main goals is to give opportunity to local citizens to experience Schelde.

Appartment blocks offer a unique place to live, looking out over the green Kaaien and the Schelde. They also offer the opportunity for the park, laid behind, to come between the blocks and connect to the Kaaien. The blocks also have a front towards this park. Here cars can be parked as well, offering free view along the water.

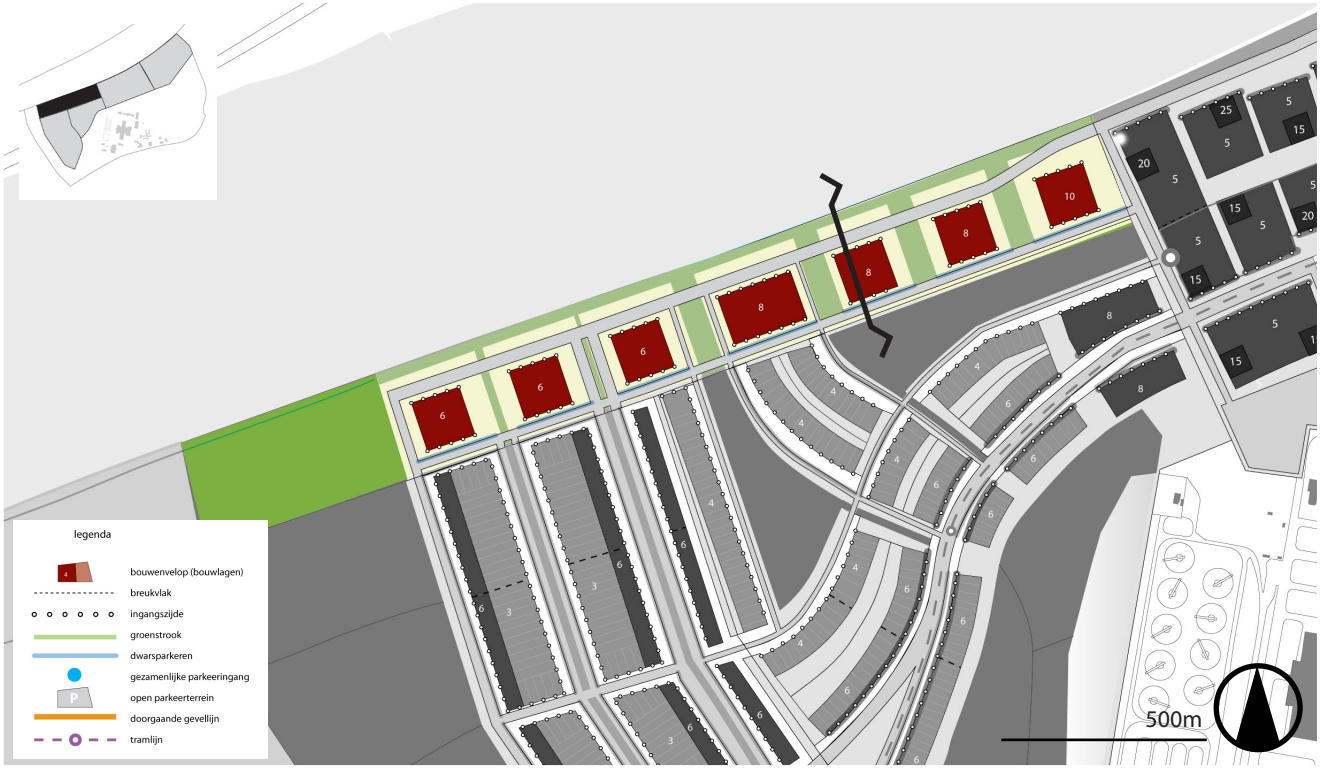
Proosdijpad, Delft
Appartment blocks, water, green, local

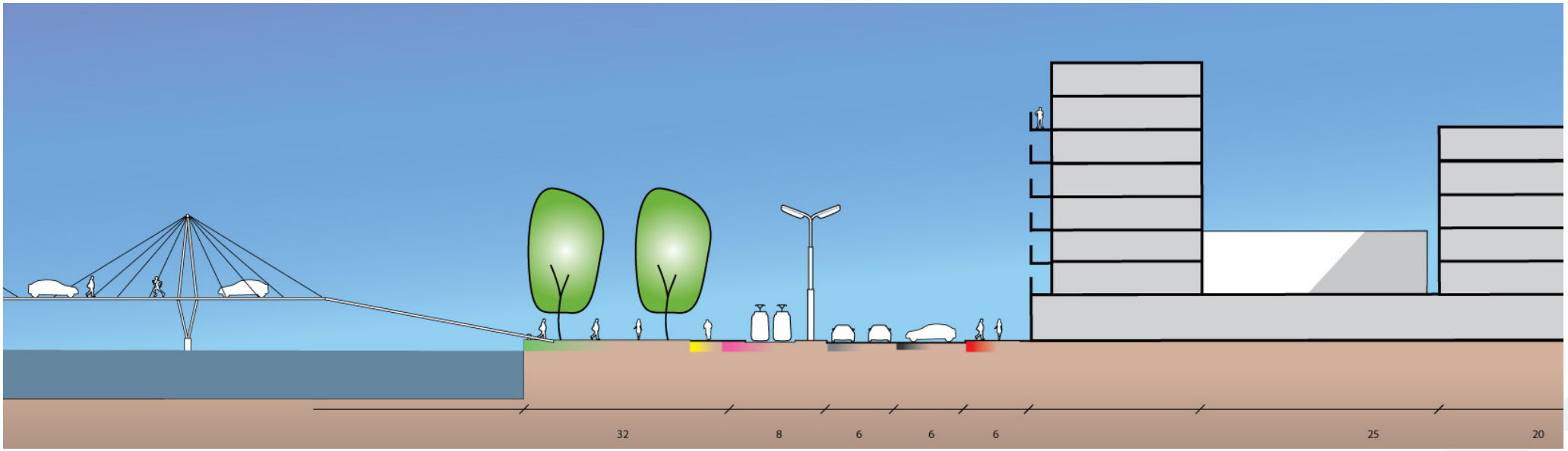
KNSM Eiland, Amsterdam
Dwellings, quays, local atmosphere, appartments

Pontonniersweg, Papendrecht
Urban villa's, water, appartments, separate building blocks

Facts

Appartments	520
Side-to-side	0
dwellings	0 m2
Offices	0 m2
Shops	0 m2
Needed:	600
Street parking	700
Parking lot	0
Total parking spots	700



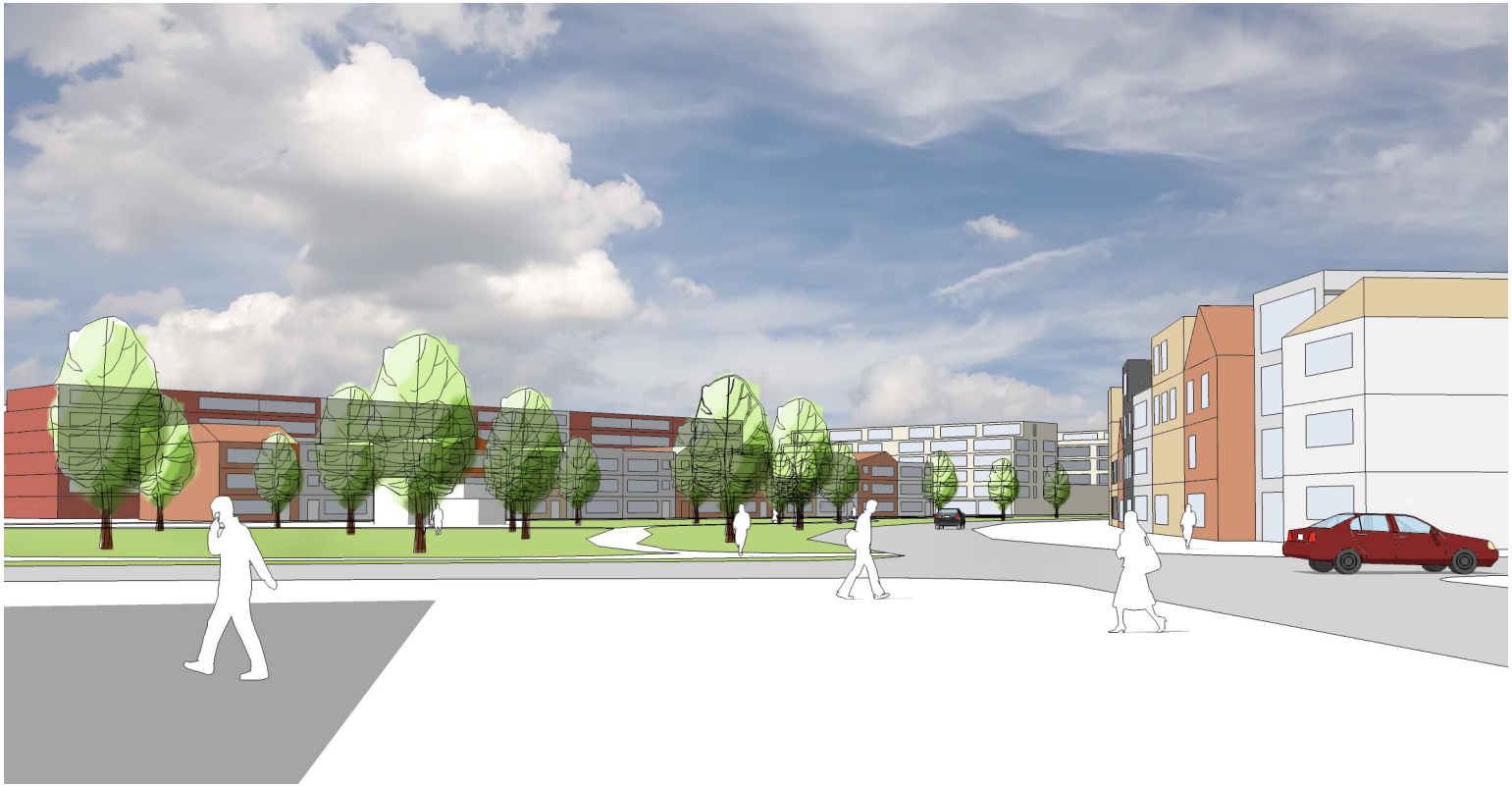


Petroleum Park

This large green patch is very centrally located between Sports cluster, the water purification system, petroleum boulevard and the Hobokense oever. Its goals are to 1) be a park to the surrounding areas 2) offer dwellings in the green 3) make clear you are outside the ringway

The principle of the Belgian steenwegen is proposed here as well. Sites have been set out, which people can buy and develop themselves within the boundaries. The sites along the route to sportscluster will be sold first, offering a good connection to surroundings. The park can than be slowly divided in more patches, creating the Belgian landscape environment. The dwellings all have their entrances facing the park, creating social control. Enough space is available for private home expansions, which is typical of Belgian steenwegen.

The waters next to the water purification area expands and retracts in time. Therefore, the grounds are kept less maintained, and more lush than the park. The water can expands when needed, and it is accessable for interested people.



Roombeek, Enschede
Side to side dwellings, park

Steenweg, between Gent & Brussel
Building collage, typically Belgian

Steenweg, between Gent & Brussel
steenweg, private home expansions, free building

Breda, Waterdonken
green living, side-to-side dwellings

Facts

Appartments	240
Side-to-side	0
dwellings	0 m2
Offices	0 m2
Shops	
Needed:	288
Street parking	370
Parking lot	0
Total parking spots	370

Nieuwe Kaaien

One of the most characteristic features of the existing Kaaien is the long facade of buildings. Positioned in one long and very large curve, the relatively narrow but high building facades create a very strong public space along the water. This powerful feature is continued along the Zuidrand towards the sportscluster by creating diverse appartment blocks with offices in the plint. For the visitors of the sportscluster, the Kaaien becomes an attractive walking space to venture into 't Zuid. Slices are made in the blocks for acces of the water.

The Zuiderdokken, already a successful public space used for parking, small festivities and daily recreation, is given a proper ending by closing it with apartments and a cultural center, which was already planned by Binst Crepain. Behind the Kaaien large building blocks with appartments are placed. The appartments are placed around semi public courtyards. The shape and size continues the existing building blocks of 't Zuid. On the south side is an urban boulevard pathway going the station. High office buildings create a strong axis, keeping away noise from cars from the Spaghettiknooppunt.

Three new tramlines go through the area to connect to the periphery, the city center and central station. Antwerpen Zuid train station is moved a few hundred meters to this much denser area and can function as a transferium.

Parking is possible behind the Kaaien blocks, so the Kaaien are parking free. The central building block has a parking garage. A large parking lot south of around 1.000 parking spaces supports the station and stadium.

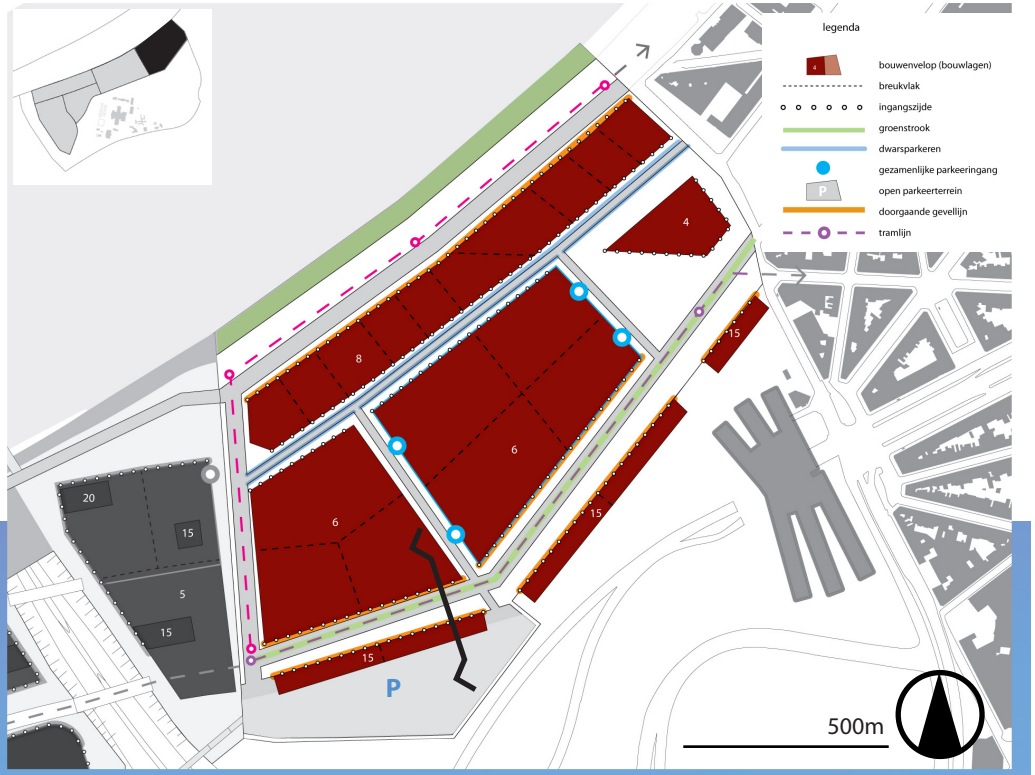
Kaaien, Antwerpen
Oversized grachtenpanden,
powerful facade

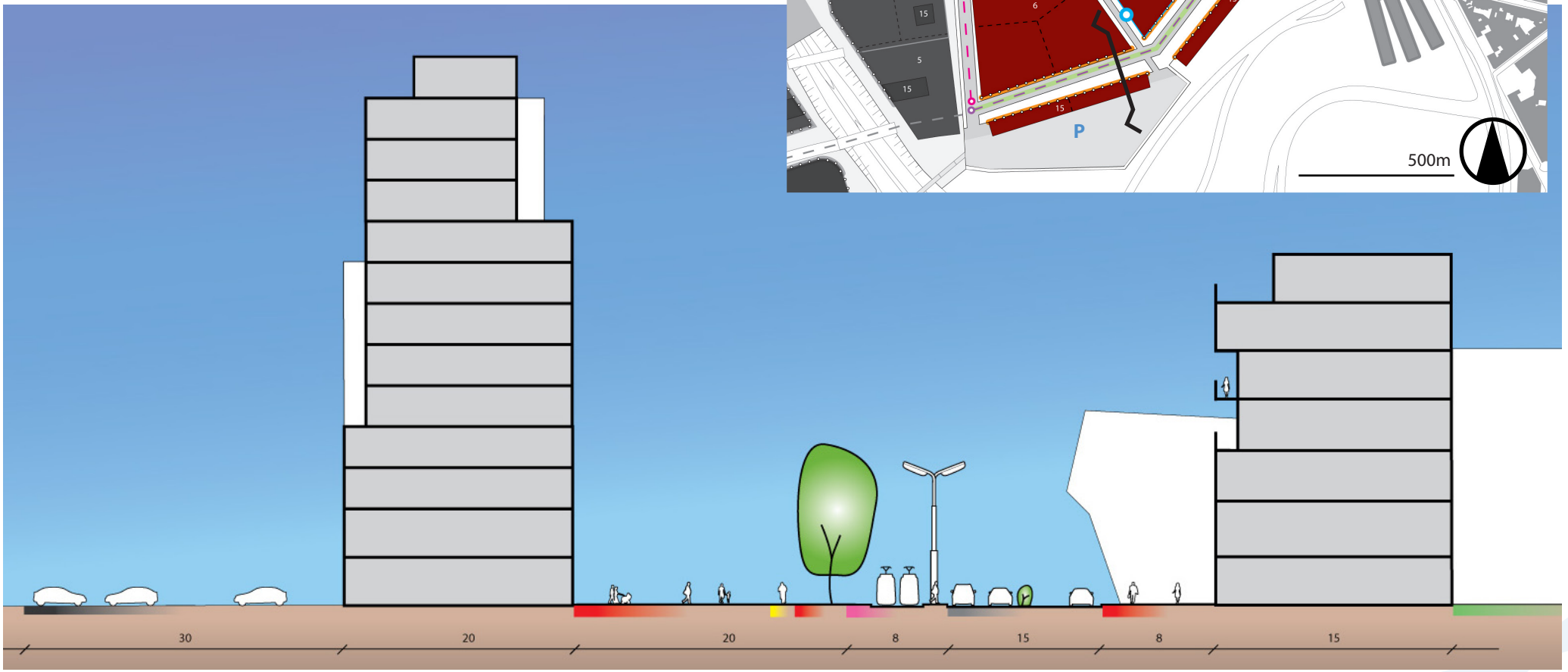
Rotterdam, central station
direct road to station

KNSM Eiland, Amsterdam
Large public space in dwelling blocks

Facts

Appartments	
Side-to-side	1600
dwellings	0
Offices	120.000 m2
Shops	1000 m2
Station	2.000
Stadium (part.)	1.000
Needed:	6.000
Street parking	500
Parking lot	2.000
Inside parking	3.500
Total parking spots	6.000





Station area

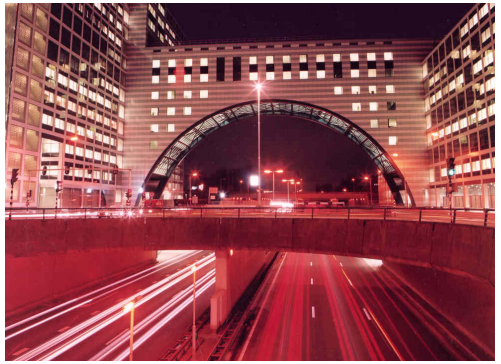
The great accessability of the Zuidrand offered by the railway and highway offer possibilities for development of large public functions. The station area connects the local and the regional scale in one high density knot, creating a very urban and lively center for both citizens as well as visitors.

The south of Antwerp has the imago of a sports neighbourhood since the Olympic games of 1924. The two sports stadiums of Antwerp also were finished then and have capacities of 20.000 and 16.000 visitors. A new stadium can replace both old ones and bring new life in the motivated but small football spirit of Flanders. Also, Belgium and the Netherlands are candidates for organizing the world championship soccer in 2018. Would this become true, the stadium should minimally contain 40.000 visitors.

The sports cluster plays an important role in the assignment. To make a connection between outside and inside the ring, the barrier of the highway itself has to be crossed. Also, the goal is to create a compact and pedestrian friendly environment. Lastly, the sports cluster has to have a clear orientation on the water, showing the rest of Antwerp what is possible.

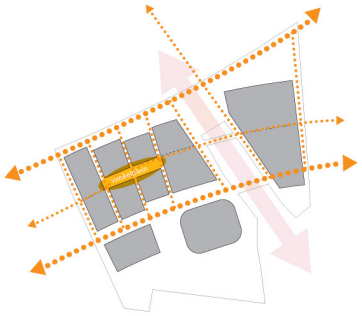
The highway has to be crossed to literally make

Parc des Princes, Paris
Stadium in highway area, Boulevard de Péripherique, Paris



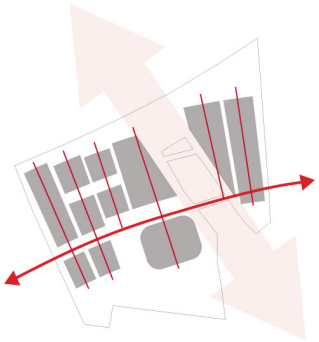
Utrechtsebaan, Den Haag
experiencing fast traffic, gate to the city, close encounter

Battery Park, New york
Large buildings to large water, face, welcome



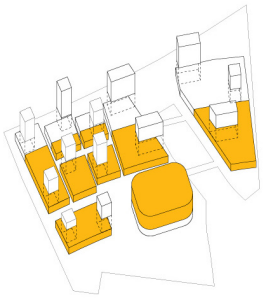
Movement as a ladder

The two strongest lines, the Kaaien and the axis crossing the highway, bring structure to the area. Several smaller connections go perpendicularly, which are meant for pedestrians. Also the small patio which gives access to the surrounding blocks is for slow traffic only.



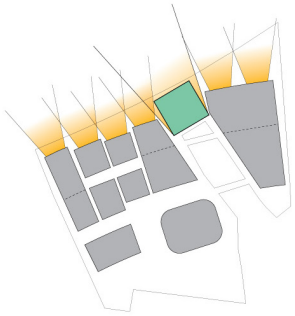
Morfology

The connection going from the Zuiderdokken to Hoboken directs the blocks next to it. The blocks are placed perpendicularly to it. This creates a face rotated towards the historic city near the water. The highway cuts through the blocks, so passengers see the border between city and landscape.



Public facilities in plinth

The lower floors mainly have public functions to make it attractive for slow traffic to move through or live in the area. On top of it a collection of diverse higher building volumes are placed.



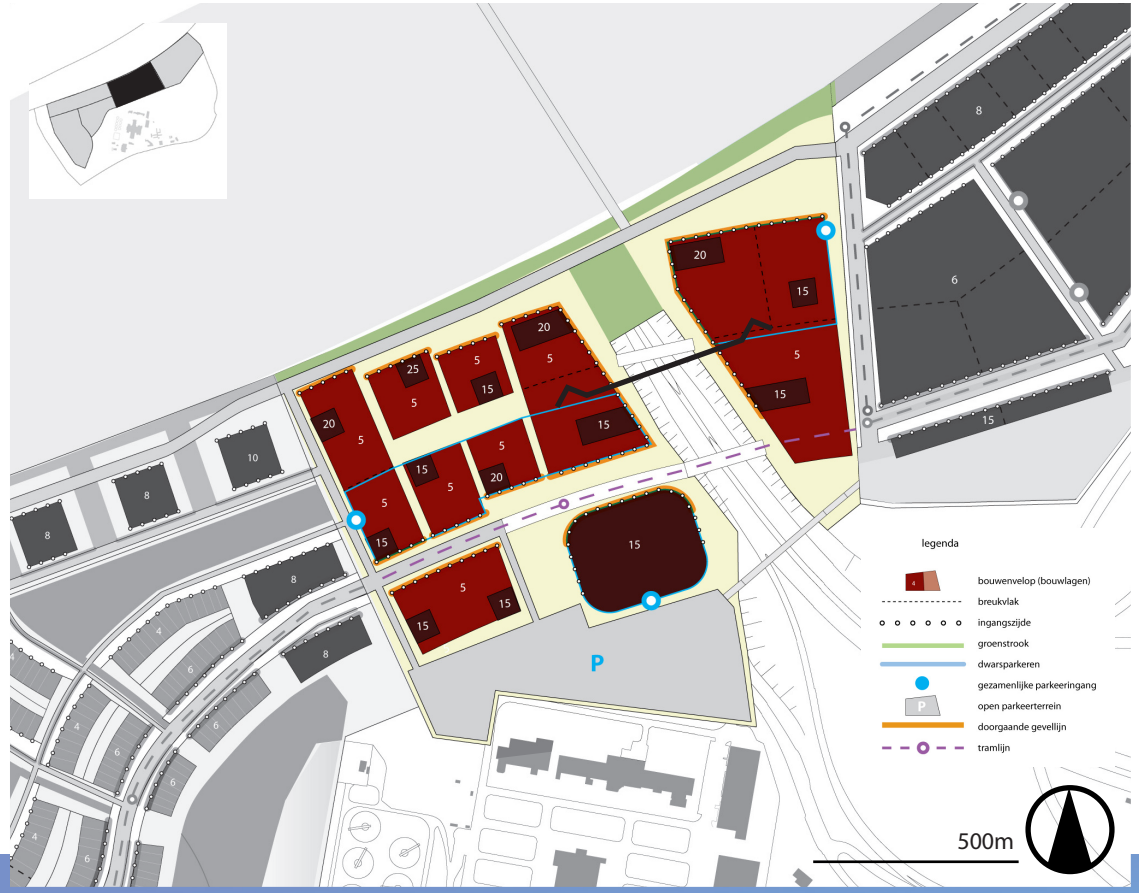
A face to the Schelde

The lower floors mainly have public functions to make it attractive for slow traffic to move through or live in the area. On top of it a collection of diverse higher building volumes are placed.

the connection. The strongest way is to embrace the highway with several functions. In this way, the knot comes together in a very exciting traffic square, where both low and high scale traffic can be experienced. It is a symbolic step over the highway.

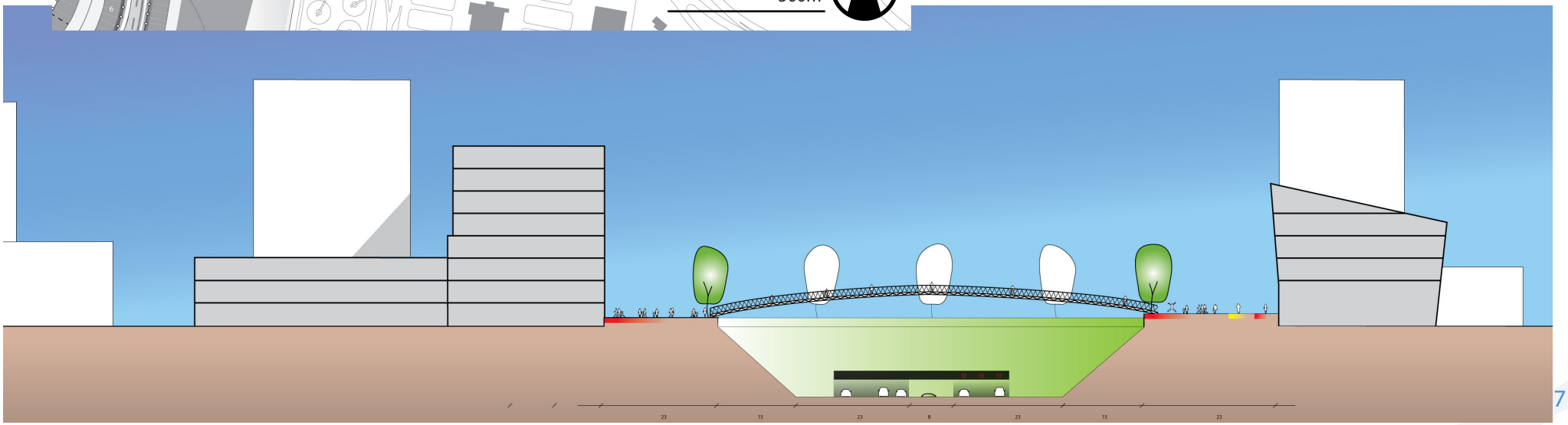
The train station will be east of the highway. The building blocks around it consist of appartments and other offices.They are organized in towers, creating a face towards the water. The different functions are connected by the plint of facilties and shops on the lower floors. They help in creating a fitting scale for the passengers of the area.

Not only the functions ask many parking spaces, also the stadium and station do. Parking is possible on the two large parking lots and under the stadium itself.



Facts

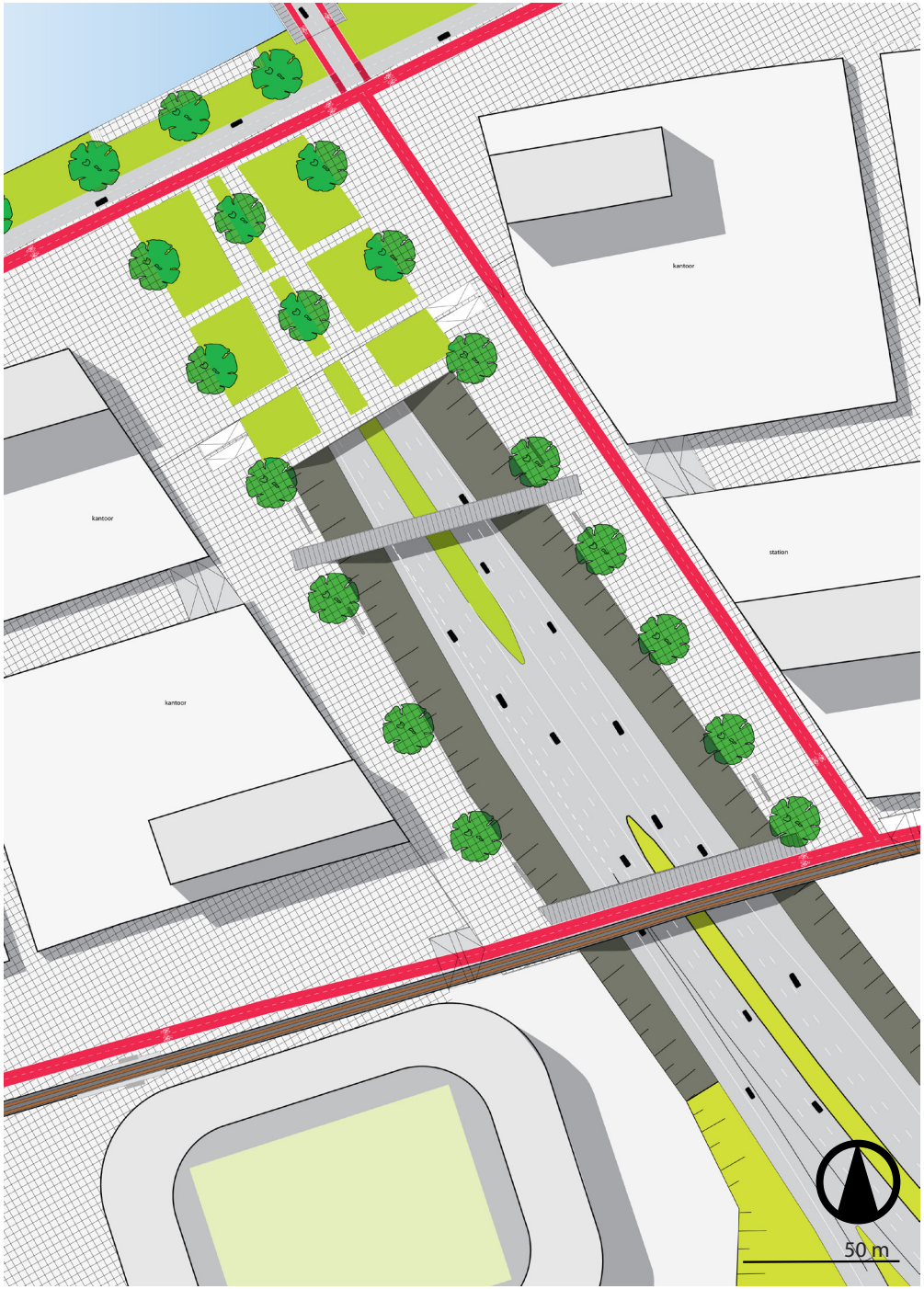
Appartments	600
Side-to-side dwellings	0
Offices	250.000 m2
Shops	40.000 m2
Stadium (part.)	2.000
Needed:	6.000
Street parking	0
Parking lot	2.700
Inside parking	3.400
Total parking spots	6.100



Station area

In the structure vision for Zuidrand, through going traffic was directed around the area. Than, by offering spatial qualities for slow traffic, a pedestrian and bicycle friendly area is proposed. Public space that fits the human scale is very important for this to be achieved. In the design for the highway area, this has been tested.

The area around the highway will become a very exciting traffic area. Traffic from all scales, from pedestrians to speeding cars can be experienced. The walking bridges, the dimensions between the buildings fit the pedestrian scale. It is an attractive place to switch transport means, as train, tram, a highway exit and a place to park your car exist here. The public functions in the plinth support this. Although the highway produces much less noise and stench because trucks will not longer be allowed to drive here, it still produces enough to not be there all day. The area is meant as an exciting passing through area, and not as a staying area.



The large towers, stadium and highway fit the larger scale, so also when driving on the highway, seen from the water or from Linkeroever, the area will be noted as a new center of Antwerp. Seen from the highway, especially the stadium has a prominent location, looking out over the Spaghettiknooppunt.

chapter 6

Conclusions

Lange Wapperbrug over 't Eilandje

Reflection of interventions

When looking back at the assignment, what exactly has been proposed, and what does it mean for the city? The design acts on multiple levels of scale but also in detail and flexibility. Therefore they all have different goals and different levels of importance. The designs connect to eachother in the way that the smaller design is based on principles of the former one. The situation proposed on a larger scale is designed more in detail on a lower scale. Also, multiple solutions can exist for the same question. The more zoomed in the assignment is, the more design options exist to give an answer to that question. Therefore the need for these designs have to be realized in exactly this way decreases when zooming in. As an example, the stadium area has many other options in spatial composition to achieve the greater goals. But this is just a way of showing what one option is, and how the area can help in fullfilling the structure vision.

Scale of Antwerp: Solving problems

The largest interventions take place on the scale of the city. For the whole city of Antwerp, the design tries to create solutions for upcoming problems. The fact that the city is losing its contact with its periphery creates an unclear boundary of the city, which affects its identity and strength. This problem occurs on all sides of the city. The abstract design offers a solution for this by creating transfer points along the ring. In this way a better connection between city and periphery parts is created. Not only the goals of the problem statement or achieved, also this solutions fits within the plans of the city government. The creation of a second urban center also changes the mononucleair setup of the city. This change of the historic construction of Antwerp and most other Flemmish cities can be one of the largest up till now.

Scale of Zuidrand, exploration of opportunities

Secondly, there is the scale of the Zuidrand area, which has had a different kind of character of assignment. The Zuidrand area offers the chance to create such a transfer point between city and periphery because of its moving industrial functions. So, on a lower scale, the solution for the city can be researched. But, the complexity of the assignment (traffic, laws, character), the lack of pressure on the market, and the very small history of the area with few ingredients ask for a very flexible, multi faced, open kind of approach and design. The plan shows the possibilities of the area and acts as an exploration of the chances Zuidrand. Zuidrand has become a

strong area near the water, and the goal of giving the city back its identity of the Schelde has been achieved.This can be a motivating plan for the ambitious government of Antwerp.

Details of Zuidrand, a means for the structuurvisie

The structure vision is a flexible and therefore more abstract design. To show how this works in detail and for example how the pedestrian friendly environment can be realized, a third, more detailed design was necessary. This third design ultimately acts as a means and a test for achieving the structure vision. Also, the needed pressure has been taken for granted. Of course there are many options for realizing these goals. Therefore, my design only is a way of showing how it is possible, and what it means on a small scale. It can only exist in coorporation with the structure vision.

So what is this design mainly about?

Overall speaking, when distilling the most important elements of the design, creating attractive public space and with that liveliness, is what this assignment and design is all about. An attractive public space is very important for slow kinds of traffic. Besides the demand of being attractive, the purpose of the different public spaces differs per scale. On the largest scale, attention is given to creating a lively public space. The connecting knot than must be functional and efficient in transferring between different modes of transport. Thirdly, the public space around the highway must form an iconic knot of different kinds of transport and the border between city and periphery. These three most important goals support eachother.

Recommendations further design

Of course, the assignment can be researched much further due to its size and complexicity. Realizing Zuidrand will ask not only ask more designing but also research in practical issues.

First of all, as the assignment mainly is about connecting, especially the connecting axes have to be designed more in detail. This also means that more research has to be done in the Belgian way of planning and building.

Secondly, safety and regulations have to be found out. Many functions exist in Zuidrand today that keep Zuidrand from becoming a healthy and safe living environment. Examples are the train rails, silos, water purification system, pipe systems. It is expected that most of these functions will move, increasing chances for liveable environments. But still, it is important safety regulations are checked from an early stage to ensure safety.

Thirdly, the large ambition of the government of Antwerp for changes has to be reflected on other parties.There is not much pressure on the housing or office market, which is needed for redevelopments. It is important thought is given how to create enough critical mass. Marketing experts have to analyse more deeply how this can be achieved.

Antwerp has lost contact not only with its southern periphery, but also with the other sides of the city. Can this same strategy of connecting be applied to the other sides, or maybe to other Belgian cities? The strengths of the Zuidrand, being the Schelde, the orientation of the Flemmish Diamond and the proximity of the historic center are less present in the western parts of the periphery. So, a strategy like Zuidrand can only be possible when other strengths for those areas can be found. They have to be used to create connections like in Zuidrand.

Reflection methods

The assignment was not given on a paper to be worked out. Part of the graduation is to develop the assignment yourself. Research by design is a very good way of doing this and necessary to determine what is needed for the city. By having determined the assignment totally by yourself, it has been shown how important it is what the question is and why you are doing certain things. This capability is very important for quicker understanding of design assignments.

Naturally, this creates a very open but vague working environment without many boundaries. The human mind works more efficient when a certain goal is stated, sometimes time was lost because of too much unfocussed drawings and researches. However, graduating actually gives you enough time and chances for exploring many directions, something you will probably not have when working for a company.

Reflection education

As a start up of the graduation, we made a research of four metropolitan region in Western Europe. This introductory assignment was a informative way which made me think about cities, the landscape and the border between them. The meaning and need of the studio Urban Landscapes, or what it meant for me has been made clear. It also helped in choosing a subject for the graduation. But, although it was very informative in a general way, it created delay for my personal assignment. Up until the P1 presentation too much time was put in creating the booklet instead of forming your design statement. It felt like graduation did not start before P1.

Doing so much on your own sometimes was a hard task. I noticed I did not always ask help quick enough when I needed it, continueing work and thinking I could work it out for myself. More than ever I realized I perform much better when working in groups. Then you are forced to discuss subjects, asking certain questions much earlier in the process than working alone. I am looking forward to working in groups again.
As a recommendation of education, I would suggest providing more chances for students to interact with eachother (like in workshops or brainstorms) and creating more but smaller deadlines. Also I recommend looking at design methods of the faculty of Industrial Design. Not only more attention is given to the cyclical side of designing (feedback and recommendations), also their way of exploring options in the broadest sense by using brainstorms and alternatives is something architects and urbanists can learn from a lot.

Zuidrand seen from Linkeroever

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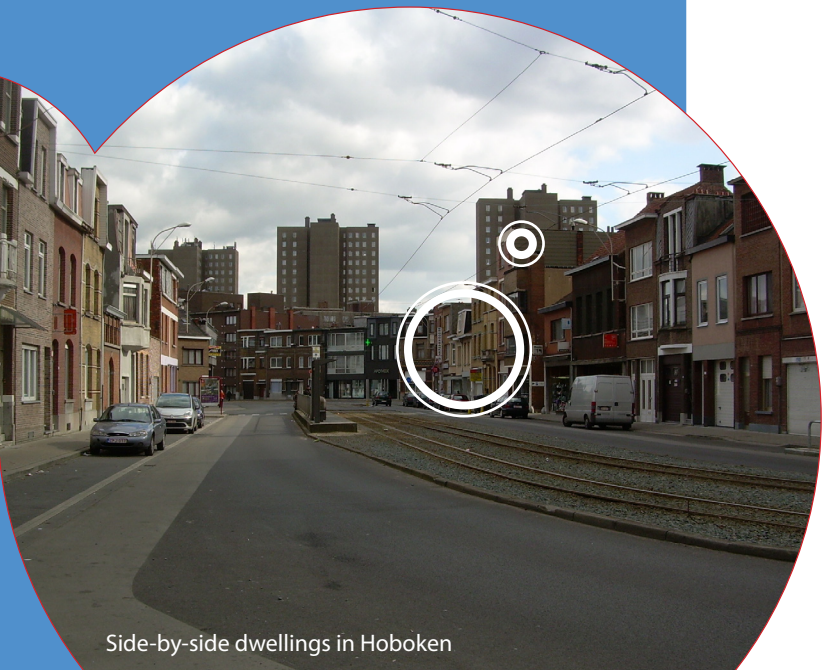
chapter 7

appendices



Side-by-side dwellings in Hoboken

Research paper:

The role of infrastructure in the functioning of new urban centers

15 february 2008

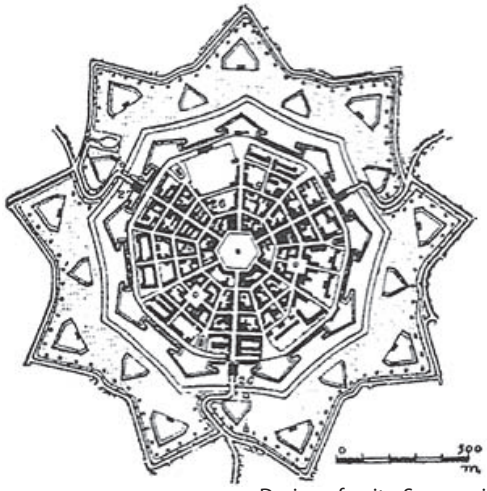
Introduction

In Europe, the traditional historical city centers is a concentric one. As described by Burtenshaw and Bateman (1981) this idea of the European city is derived from the authoritarian tradition. The perfect geometry of the city plan, usually a circle, was a good combination with the fortification technologies of Alberti. The defensive walls positioned in the circle created a system that was easy to defend. When the amount of citizens grew, expansions came in rings around the centers, or in urban fingers originating from the city core. The city centers then was an attractive place for commercial and social reasons. Because the church took a very central place in the lives of the majority of the people, it also tended to be located in the center (ibid). Nowadays, city centers still are the most important places of a city. Still for commercial and social reasons, but also for charismatic reasons. An historic city centers now can bear the identity of the whole city because of its cultural value. This cultural value can consist of ancient architecture, or simply the buzzing and diverse city life. This attracts not only tourists, but also people who plan to stay there more permanent. New citizens, entrepreneurs or other people who are interested try to participate in the vitality of the city life in their kind of way. The buildings there were probably not made for the new functions, and they maybe are of poor quality, but for them that usually is no big threshold.

But, since this century, the centers of gravity seems to be moving outwards in Europe at a growing pace by suburban or exurban developments (Bruegmann, 2005). New urban cores arise outside the original centers of the city. They try to duplicate the vitality of the centers by mixing functions and raising density. This weakens the dominance of the city centers which existed up to now. Besides of that, the urbanization that is taking place nowadays in Europe causes a growing demand for settlements in the city. Because of the growing attractiveness of the city's edges, the urban centers loses its economical dominancy and the pressure increases in the periphery. Without a strategy or way of structuring the settlement of the people, a chaotic and unstructured settlement pattern may be the result.

The main research question of this essay will be: What is the role of infrastructure in the functioning of suburban centers? In this essay reasons will be given for settlements near the edge of the city by giving examples of existing centers. Afterwards, there will be ingredients that are needed for these settlements. This will be a more theoretical overview. This broad review on the subject will be given by comparing opinions of existing and former urban planners. Than finally conclusions will be given and a link to the graduation project.

(Dis)Orientation in the city



Design of a city, Scamozzi

Champs Elysées, Paris

We can orientate ourselves in the city using our surroundings. Borders between different areas are very strong in telling us we are entering a new area. If these borders are strong and clear, it is easier for us to experience this. According to Bruegmann, this used to be no problem in the past: "One of the most important facts about cities from the beginning of recorded history until the fairly recent past was the sharp distinction between urban and rural ways of life" (2005). But, the borders between city and landscape are fading (Shane, 2006). In the arisal of this urban landscape it still has to be clear where you are: In the city core, in the landscape, or maybe in some in between situation? Everything what surrounds you, from large structures to small urban details, gives you hints in determining your location. In downtown Tokyo, you can tell you are in the city center by the advertisements, the pavement and the high buildings. And, you can tell you are in a Dutch Vinexwijk situated outside the city center by the amount of space around you, green patches that surround you and the silence.

So, the structure of the city and its elements are a powerful way of orientation in the city. Urban planners and architects therefore have to carefully model the spaces of the landscape to help orientating. The landscape can be a helpful and logical help in shaping this space. The need for spatial developments to react to its context is stressed by Inge Bobbink (2004): "De interpretatie van de plek, de genius loci en de ruimtelijke, landschappelijke vertaling van het programma vormen samen de inspiratiebron voor het ontwerp".

When developments in space do not reflect the landscape in the right way, they can mislead us. When you would for example recognize a certain place and its environment "the historic centers of the city", but actually it is not, something probably is wrong in the structure of the city. This can also happen the other way around, which is a more unnatural situation. However, misplaced environments in the areas between city and landscape are more common. The suburban areas are harder to define and therefore harder to model and materialize. These areas have a greater risk for having out of place functions. They result in incoherent environments, where landscape and program do not match.

Ingersoll (2006) describes how these incoherent environments can lead to so called sprawl conditions. In In his book "Sprawltown" he describes sprawl also as "repetition without syntax". The repetition of urban elements here is seen as an extension of a certain environment. By repeating a certain object you suggest the same environment is present. Take for example the same types of houses in a typical suburban district in the USA, which tells you these houses belong together and they form a district together. Or, as a more linear example, a double row of trees along an avenue to accentuate the road and its direction, like on the Champs Elysées. But, the addition "without syntax" tells you sprawl lacks the connection with the context. The repetition is continued, but autonomous of its context. Areas are formed and defined, but they do not fit the landscape. According to Ingersoll, a devastation of the landscape is the result.

Bruegmann gives a more practical description of the term. Sprawl has been defined by Bruegmann

"in the most basic and objective way as possible", as . Although it seems like a rather new trend in urbanism, sprawl existing longer than we generally think it did. The only difference is that nowadays, it is a mass phenomenon. (ibid)

Suburban Centers

Bruegmann describes the several measures that have been taken in the past to transform sprawl conditions in his book (2005). For example, in the USA in the 1950's, the use of the car was attacked for reasons such as pollution and the depletion of energy resources. Besides these measures, suburban centers have also been used to counter act sprawl. Filion describes these centers as suburban mixed-use centers, which try to stimulate transport by foot by creating a high density of functions and offering good public transport systems (2000). A pedestrian friendly environment is created. They are meant to blend retail, employment and housing.

Project examples

In his article, Filion describes how suburban centers have been used in Toronto. He concludes that the centers of research, being North York Centers, Scarborough Centers and Mississauga Centers (all in Toronto), still reproduce the many traits that define suburbia (Filion, 2000). He quotes Alexander et. al (1987) by saying:"The more pedestrian friendly a district is, the more people walk", and this is exactly where he thinks the centers have failed in reproducing an alternative for the city centers. "Land use specialization, the amount of space taken by the automobile, buildings that do not relate to the street, and long distances between the activities, all contribute to discourage pedestrian movement within these centers" (Filion, 2000). He concludes however, that when these requirements had been met, pedestrian friendly environments had been created. This would have resulted in much better alternatives for the city centers of Toronto to work and live in. They could have been strong examples outside Europe of suburban centers within the city boundaries.

Urban cores in the periphery of the city have also been developed for other kinds of reasons in Europe and the USA. They have resulted in different kinds of settlements. Using existing projects, two more reasons will be pointed out to settle in the periphery, being the availability of space, and as a tool to create solutions for the whole city.

In the United States, settlements in the periphery have been a trend which has been named by Joel Garreau as "edge cities". They are independent cities, connected to a primary city by infrastructure. Among the five demands to be called an edge city, the most important one is that it is mostly a place where people work (Garreau, 1988). Also the state of the place has to be new: the transformation of the place must have taken place within a relatively short time span, being 40 years (ibid).

Edge cities have started as an American movement, as it has first been described by Joel Garreau, who is from Virginia, USA. But, you could say Europe has developed its own kind of edge cities. A big difference with the typical American edge city is however that in Europe they are located next to or in the city, near the edge. In the USA, they are located a few kilometers along the road. This can partially be explained by the fact that the car is much more a part of the Americans lifestyle, than it is of the European one. In this case, maybe the term "edge city" is more applicable to the European ones.

On the west side of Paris lays an example of a European edge city. A business district has arisen when you extend the Champs d'Elysées beyond the Arc the Triomphe. A broad and long promenade leads you to the climax, being La Grande Arche. You are guided in this walk by the large skyscrapers of large companies. Especially on the square in front of the CNIT congress building you are struck by how much space there is.

This is in big contrast with historic city centers, which usually have a lot of programme on a small surface. Because of that, dwellings, shops and other facilities have small premises, maybe

Suburban sprawl

in bad condition, but for relatively high prices. The attractivity of the center makes up for these disadvantages. The periphery does not have such a rich cultural history. But because there is so much more space, the spaces where the functions take place can be bigger for a lower price. Especially functions that need a lot of space can gain from this. The large availability of space is the first reason for settlement outside of the center.

The result of a center being away from the primary center is that there is a distance to be travelled to get there, which probably cannot be easily done by foot or bicycle. To form an attractive alternative for the primary city center, the problem of the distance has to be reduced by offering fast and efficient infrastructure. In this way the center on the edge of the city can compete with the culturally rich historic centers, by offering high quality, easily reachable attractive spaces outside the city.

To show the third reason, namely how a suburban center can help in solving problems of the city, I want to use the Kop van Zuid project in Rotterdam. It is situated right in between the north and south bank of the city, so it is enclosed by urbanization. The south bank was originally a place where mainly workers of the Rotterdam harbor lived. They were isolated by the Maas, and by kinds of activity that took place. When the south bank was taken over by the city of Rotterdam, a connection had to be made to make the city one whole.

Although the Kop van Zuid lies on the south bank, it lays next to the primary and triangular shaped city center. What makes this an interesting example is that it tries to extend the historic city to the southern half of the city. To connect the inferior south bank with the primary north bank also was the main purpose this area has been developed. The connection was made by facilitating all kinds of program. Dwellings, jobs and facilities attract both residents, workers as visitors which makes it a center of attention for a large group of people. This attracts both people from the north as the south bank, which brings them into contact. This connection of two different parts can give interesting living environments for new dwellers, because liveliness is ensured by the streams of people through the area (Jacobs, 1961). The prestigious Erasmus Bridge (which has become like an icon of Rotterdam) only accentuates this position. Here, a center, next to the primary center, can connect an inferior part of a city to the main part, and reduce the isolation of the south bank of Rotterdam.

Infrastructure plays a vital part in connecting the new areas to there primary cities. Edge cities rely on infrastructure of a large scale. Because they have by definition more jobs than beds, people go there in the morning and leave at 6 o'clock. (Garreau, 1991) Large scale transport, mostly highways, makes sure people can come and go to these places, and are crucial for the existence of edge cities.

In Rotterdam however, this connection had to be made mainly on local level. The distance between the north and south bank was possible to bridge with slow transportation means like the bicycle or by foot. The connection was made by road, and also the metro connects on this local level. Larger scale transportation, like train and highway, connect on a higher level, but do not help in the local connection between north and south.

Features

Now I have given some examples of centers in the periphery of the city, I will try to define and describe the necessary features for these areas in West Europe. What is probably necessary for them to connect to the city, to maintain vitality and to form a pleasant living environment?

Mixed Use Development

In the early twentieth century, the invention of new transport means mobilized the people. This had a lot of influence on the location of people's house and work, because it greatly increased the possibilities for choosing this. Besides of that, it also inspired urbanists to use these possibilities to think about the city of the future. The idea of separating residential zones, which were very attractive spaces full of green, and working zones, which were thought of to be unattractive, maybe loud and smelly places appealed to Le Corbusier and Ebenezer Howard, from which the latter was the inventor of the garden cities. Le Corbusier mainly was inspired by the upcoming of the car. He was always looking for a new kind of architecture, and he thought the car was the mobile counterpart of architecture: "The static controlled environment is called architecture, mobile controlled environment is called a car" (Bayley, 1987) In his urban designs the car always was a very important element. The car gave him the possibility to separate traffic and dwellings. (Mellegers, 1992) His dream of arriving in your house from the back with your car, using separate

roads than pedestrians, was for example demonstrated in the plan for La Ville Radieuse. He also approached the producers of Michelin, Peugeot, Citroën and Voisin cars to support him in his design for "Une ville contemporaine de 3 millions d'habitants" (Le Corbusier, 1935).

But, times have changed drastically. The public judged the designs of the huge buildings out of human scale and horrific (Mellegers, 1992) Nowadays, the most general conviction has turned around in one that pleads for the mixing of different kinds of activities and functions. The most famous person to talk about these things is Jane Jacobs. In her book, "The death and life of great American cities", she explains her vision on the four conditions that are needed to create diversity in a city. Her most important condition is put first, being "a district must serve more than one primary function" (Jacobs, 1962). She continues to stress the need for mixed primary functions: "The district must serve more than one, preferably two functions. They must ensure the coming and going of people on different times of day, but use the same facilities." (ibid) This trend of mixed functions shows in contemporary large urban projects, like the Zuidas in Amsterdam. By creating diversity in activities, they try to avoid empty and quiet office areas, which are very vulnerable to unwanted guests and activities.

Density

Another one of the four conditions Jane Jacobs thinks is necessary for vitality is concentration of people, or density. "People gathered in concentrations... can be considered a positive good" (Jacobs, 1962). She believes in the natural vitality people on the streets can bring. "...they are the source of immense vitality, and because they do represent, ..., a great exuberant richness of differences and possibilities, many of these differences unique and unpredictable and all the more valuables because they are." (ibid) She wants to remove the bad name of concentration of activities, like high density dwellings. The reason for this is that she thinks high densities are often confused with overcrowding: "Overcrowding means too many people in a dwelling for the number of rooms it contains. This has nothing to do with the number of dwellings." (ibid)

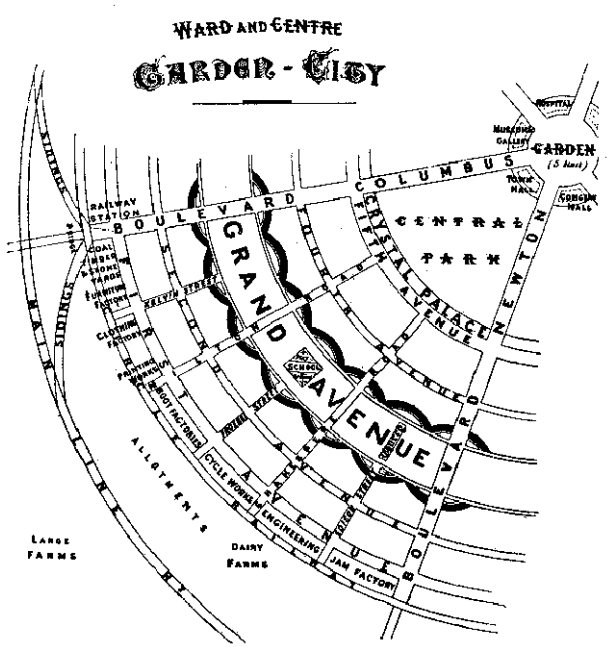
This can be seen as a reaction to orthodox urban planners, who idealised the rural lifestyle, where people lived in the green. One of these orthodox planners was Ebenezer Howard. By separating work and living functions, the workers came to live in rural areas, which he called "garden cities". He romanticises the garden cities mostly by accentuating the amount of space outside the city, that can be used to create very widely set up urban plans. His city plan is traversed by "six magnificent boulevards--each 120 feet wide-" and there is a "Grand Avenue", which is fully entitled to the name it bears, for it is 420 feet wide, and, forming a belt of green upwards of three miles long (Howard, 1946).

The idealistic visions humanity has of living in the green and on the land has been fed by urban planners like him. The prejudice has also been created that living in the country is healthy because you are surrounded with nature. Therefore, the stereotype of the opposite, namely living in high density cities, is a very unattractive one. Living in high densities lead to "crime, filth, and a host of other problems" (Project for Public Spaces).

Still in this time, the large majority of the people choose to live in a suburban or exurban environment more than in an urban one, when asked where they want to live (Rietdijk & Boelhouwer, 1999).

Scale

This brings me to the dimensions and the scale of a suburban center. According to Filion (2000), "creating a high density of functions and offering good public transport systems a pedestrian friendly environment can easily be realized". An environment like this can be created using arcades and canopies. Streets that are lined up with shops and where buildings are lined up along the street also help in creating the small scale, and they seduce the public for impulse shopping (Francis, 1984). So, small entrepreneurship is stimulated by this small scale, and vice versa.



Design of a city, Ebenezer Howard


Ville Contemporaine
Le Corbusier, 1922

Jane Jacobs would agree with this opinion. She promotes short building blocks to stimulate people to explore the city, and generate activity "Long blocks, in their nature, thwart the potential advantages that cities offer to incubation, experimentation, and many small or special enterprises" (Jacobs, 1961). Frequent possibilities for change of direction help in cross fertilization. For example, it stimulates people to eat and drink on the corner of street, or to do things they would normally not do: "frequent streets and short blocks are valuable because of the fabric of intricate cross-use" (ibid).

To further enhance the small scale environment, only one type of characteristics that shape the surroundings is not enough, according to Lynch. To create a sense of place or the certainty that you are in a certain place and not another one, a strong image or character of the neighborhood is needed. "A certain reinforcement of clues is needed to produce a strong image." (Lynch, 1960). Later on he states what further can make shape such an image: "The physical characteristics that determine districts are thematic continuities which may consist of an endless variety of components, texture, space, form, detail, …" (ibid).

A pedestrian friendly environment has to bring fitting infrastructure. Attractive spaces to walk or ride your bike can be used for moving on a small scale. Because of the independency of mixed use centers, these kinds of movements will cover most of daily needs in the city. Also, the high density will shorten distances to travel. But, it also has the consequence of taking care of infrastructure that brings people and goods to and from the center. The high density of activity can only be realized when there is a steady flow of people and goods that can come and go when they want to.

Infrastructure

Infrastructure plays an important role in the functioning of suburban centers of different scales and locations. Cars are still the most important way of transport nowadays: In the Netherlands, 48 % of human movements were made by car. (Centraal Bureau Statistiek, 2007) In Belgium this number is 61,9 % (Nationaal Instituut van de Statistiek, 1999) But, city centers tend to become congested pretty quickly, because historic centers are not built for heavy flows of traffic. They were built for pedestrians and maybe a small amount of cars or other kinds of automated transport. New urban areas however are built for this kind of transport. There is more space for cars and districts are more widely set up. And, also high ways that go to other areas are easily accessed in these districts. . Also, the chance of proximity of entrances to highways is higher.

Although people mostly still tend to use private transport, public transport systems have become more attractive to use. They are faster, less energy consuming, easier in use and quieter than ever before. It can be used for a quick transport from the periphery to the city centers. Also the distance people want to travel between home and work grows, because it does not take them more time to get there. Because of these developments, it becomes much more attractive to work in other places than you live.

There is one more example in the Netherlands of suburban mixed use center which demonstrates the role of infrastructure best in the Netherlands. The Zuidas project in Amsterdam is the best known large urban project nowadays in the Netherlands. This mixed use, high density project is still developing right now and will be an independent working and living center in the periphery of the city. The Zuidas is placed on an important infrastructure axis, which is probably the main reason why this is a favorite new location for companies. A highway is going right through the heart of the district, together with a high speed train railway. Also, the new metro line, the Noord Zuid Lijn, will offer fast transport to the central station of Amsterdam.

Not only tangible infrastructure like road and rail, but also digital infrastructure has been improved. Especially thanks to the digital telecommunications revolution our mobility has grown. Using laptops, internet and mobile phones, and other electronic appliances we have become far less dependent of location where we do our work. We can take our work with us or download it from the internet. Mitchel (1995) says "I no longer had to go to work. Not that I suddenly became idle; it's just that the work now came to me". He also finds that "the instruments of human interaction … were being miniaturized, dematerialized and cut loose from fixed locations" which only accentuates our grown mobility. This means other aspects become more important when choosing the location of business. Although Mitchel asks himself if this is the life we want to lead and what kind of communities we will get from this, you can not stop questioning the need for personal communication.

One might ask why we still gather around in communities, when our developments in technology, allow us more and more to work wherever we want to? Well, fortunately we still have a feeling of community when we choose our location for work. Garreau states that we still need the team spirit and synergy between people to maintain the corporate feeling between people. Without this, the trust of people in the greater cause fades, which is vital for every job in a company. (Garreau, 1991) So, although society has mobilized and the need for social interaction is decreasing, the social value still is very important in our jobs.

Conclusion

Defence and trade have been the primary reasons for people to live together in a city. Where one important thing for defence was the shape of the city, the most important variable for trade was the location. Trade needs transport to and from the city to take place. "Cities are always created around whatever the state-of-the-art transportation device is at the time. Where Antwerp and Amsterdam are the results of ocean going sail and carriages, edge cities are the result of the car, the plane and the computer" (Garreau, 1991). May it be a pebble path, a river, a road, or a high speed train rails, they all have made trade of goods or services possible and were crucial for the existence of the cities in their glory days.

But the role of infrastructure has become more complex with the coming of suburban centers. The combination of the three aspects of suburban centers, which are high density, a small scale environment and mixed use of the ground, has given infrastructure an ambiguous role. On the one hand, the distances that have to be traveled to go different functions are decreased, which gives infrastructure the task to create a small scale environment, suitable to slow types of traffic. But on the other hand, the high density of functions asks for reliable means for the fast and efficient supply and removal of goods and people. Large scale and fast transport are therefore needed to ensure this. The improvement of technologies in making faster and better transport means have helped in creating this ambiguous character.

Design Project

Now that reasons have been given for developments outside city centers and showed what further is necessary, a test case can be started. In Antwerp, sprawl conditions and can be seen. Also, the landscape is not used to its full potential, as harbors are lined up along the coast of the Schelde, which are not used anymore. The attractive historic center of Antwerp is surrounded by interesting areas that can function together in a network or ribbon. But, outside this coastal area repetitive, low density housing developments without much regional planning takes over. These areas than slowly morph in the typical ribbon developments of Belgian towards the other cities of Belgium. Besides of that, holes start to form in the fabric of the city in different ways. This "porosity" (Gemeente Antwerpen, 2006) consists of out of proportion large open areas within building blocks and abandoned industrial areas in the 19th century ring, and abandoned parts of building blocks in the center.

Because the ring road is closed, an interesting location comes up to develop a site that counter acts urban dispersion, and can be an example for other places in the city. Together with the already interesting locations along the Scheldekaaien, they can form a route to bring the city back to the water.

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A snippet from the Urban Landscapes booklet

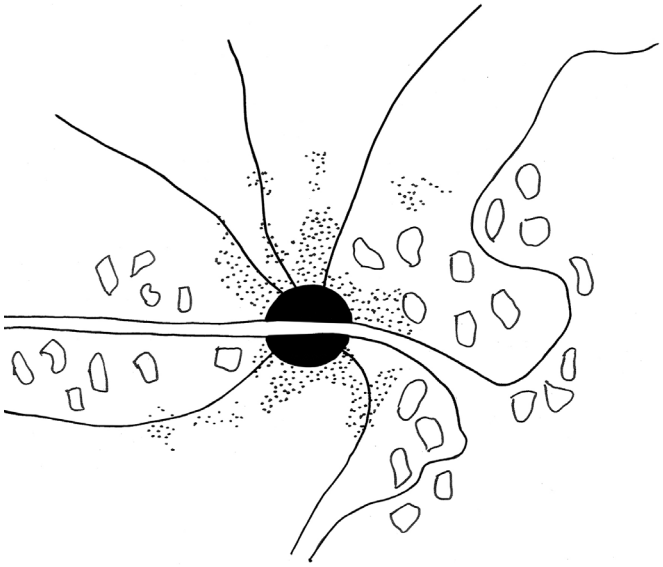
Stockholm

As illustrated by the diagram, the main part of Stockholm consists of one strong city core. This core was started on the island of Gamla Stan up till 1500. In the second half of the 19th century the population grew explosively. To keep the city from clogging up in the center, plans were made to decentralize the city. This was supported by the government. (Vlassenroo) Smaller cores were designed around the city of Stockholm, connected to the city by a strong public transport network, being the metro system. The suburb of Vallingby is a known example. As a result, traffic is more dispersed, which prevents clogging. But, the metrosystem provides a quick way of moving to the city center, bringing together the city core and the suburbs.

Taken from the conclusion...

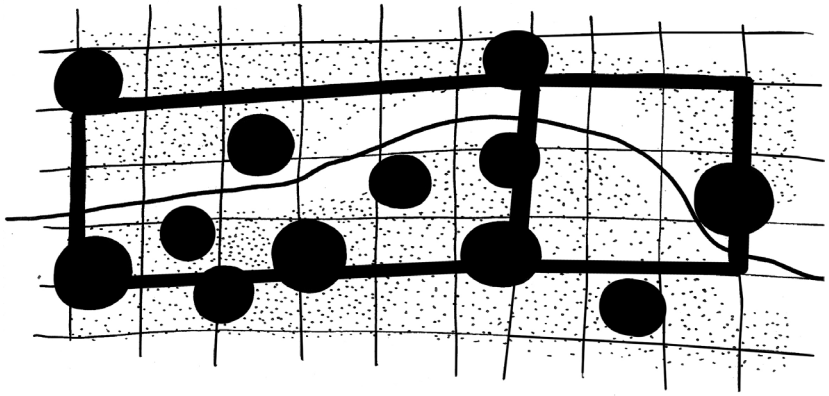
`When traveling through the Ruhr area, it is hard to distinguish the different cities that make up the Ruhr area. Actually, the Ruhr area is in multiple ways a massive block of urbanization where boundaries have faded into large transition areas. This urban mass forms the region, but needs a specification. The identity of the entire region is blurred into one gray area. It is a very large area without many clear subdivisions. The boundaries between areas are not easily identified, which takes away orientation and points of excitement.

The EBA Emscher park is a strategy for a regional binding structure which can bring little space and hierarchy in the urban field. The Ruhr area can more easily be seen as a whole. A (spatial) element that connects the region is introduced. The different qualities of the area have to be experienced more easily. The Emscher park is built up from many projects. A lot of them are already developed and they form the park in a mental way already. The Emscher is actually a small waterway and it needs more projects to carry the weight of a regional structure. By improving the spatial quality of the surroundings of the river and connecting it to the adjacent urban tissue it can act as a spatial binder. The Emscher park can be seen as a large public space going through the entire area. Perpendicular connections to the Emscher interweave with the urban field and will create a hierarchy in it.`



The Stockholm region in diagram as a result of our research
Studio Urban Landscapes

Traffic bundling in front of Gamla Stan, Stockholm



The Stockholm region in diagram as a result of our research
Studio Urban Landscapes

Essen, Germany

Flemmish Diamond and the Rijn Schelde Delta

Brussels, Gent, Leuven and Antwerp are the corners of the urban sprawl area the Flemmish diamond. The history Belgium has gone through has shaped not only the cities, but also the connections between these cities. A highly densed train and road network has been laid down to stimulate living in the countryside.

Rijn Schelde Delta

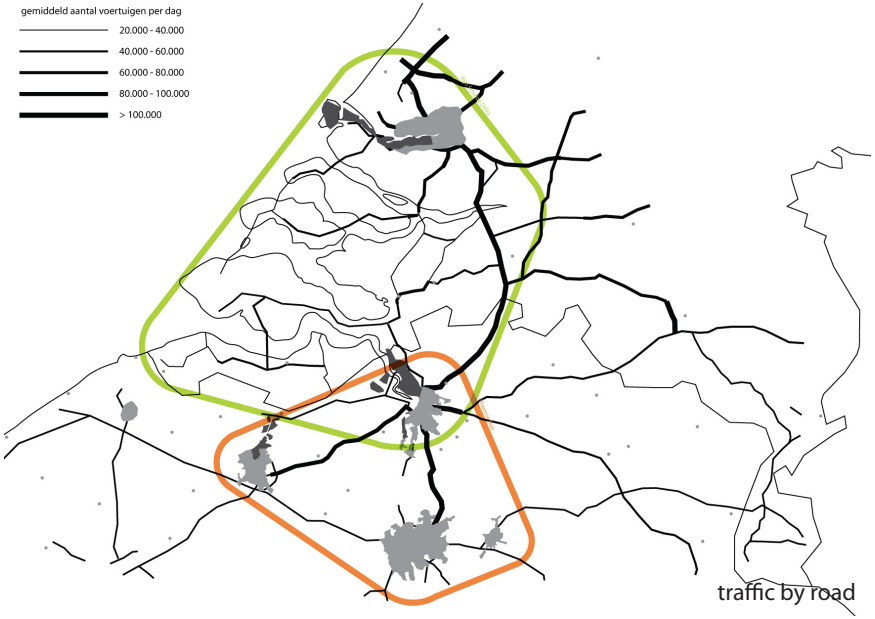
Besides the Flemmish Diamond, Antwerp is also part of the Rijn Schelde Delta. This region is consists of Antwerp, Rotterdam and roughly the area in between, like the province of Zeeland. Like other deltas in the world, the Rijn Schelde Delta is a fertile area where a wide collection of flora and fauna can be found. The large transition area of sea, river and land is home of many birds, clams and waterplants. The end of the delta is the Biesbosch, protected as a national park.

Besides the existing ecological richness, the Rijn Schelde Delta also is the home of two of the largest harbours in the world, namely Rotterdam and Antwerp. The flows of transport generated by these harbours, the Randstad and the Flemmish Diamond, go aside and through this Delta. This, together with the sprawl conditions of Belgium and the growth of Dutch cities increases the pressure on the free spaces of the Rijn Schelde Delta. A fragmented delta can be a possible result, which threatens the ecological and spatial qualities of the delta.

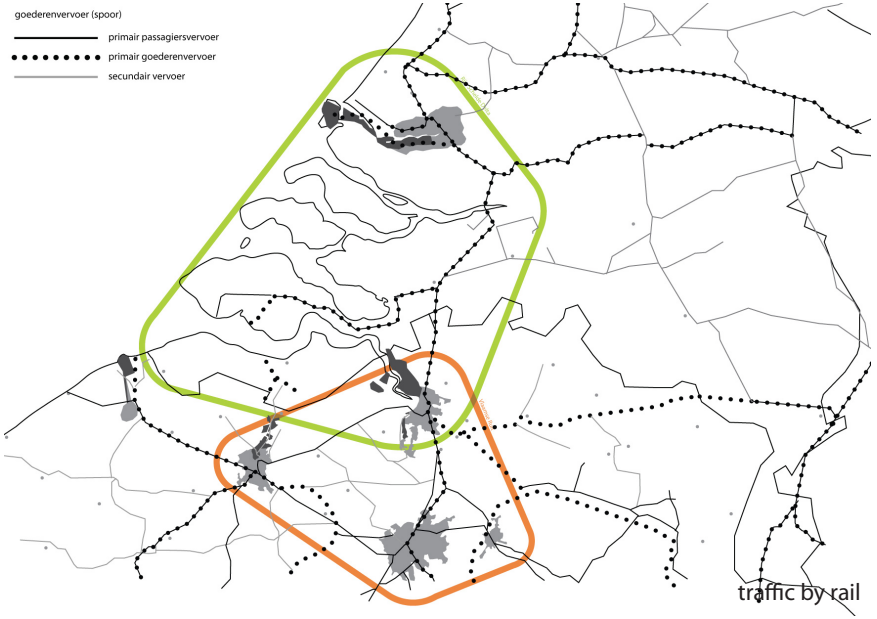
Highway Especially Gent, Brussels and Antwerp are directly connected by highway. Antwerp forms the gate to the Randstad. When looking at the amount of traffic, a dense line of traffic can be noted between The Hague, Rotterdam, Antwerp and Brussels and Gent.

Railway Such a traffic line can also be seen in the railway network. But, two other corridors can be noted going east, consisting of a flow of goods. The Betuwelijn and Ijzeren Rijn go from Rotterdam and Antwerp to the Ruhr area. Also it can be seen Belgium has a dense network of railways.

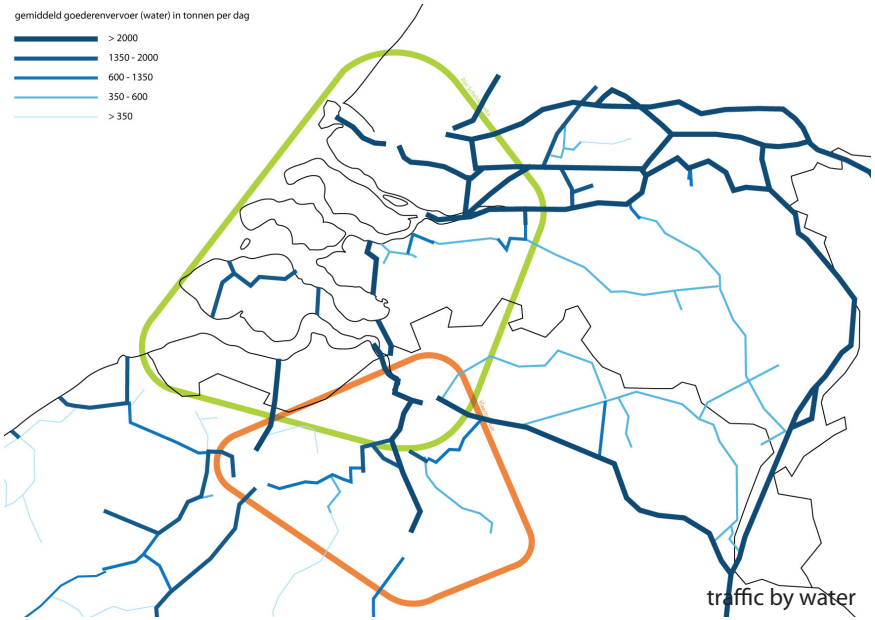
Waterways The two large harbours generate a large flow of ships towards them. The Nieuwe Waterweg and the Schelde feed those harbours. But also between the harbours there is many traffic by water, using the smaller canals and rivers. From there, two corridors can be noted going east from both Rotterdam as Antwerp.



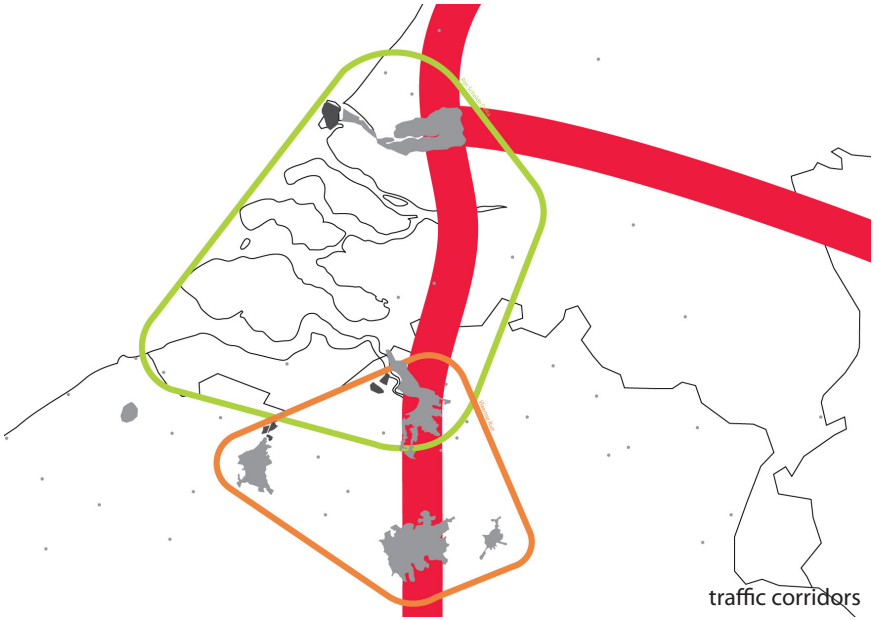
traffic by road



traffic by rail



traffic by water



traffic corridors

Density

A succesful center of a city is mainly characterized by its liveliness. According to Jane Jacobs (1961), to achieve this you have to have concentration of functions, or density of people and activities. This leads to the assumption that a for a new urban center to be succesful, a higher density of living, working and supporting functions has to be realized. A higher density than its surroundings makes for a higher level of activity.

Zuidas

Average dwelling density Amsterdam: 75 dw/ha
Average dwelling density Zuidas: 100 dw/ha
Average office density Zuidas: 11.000 m2/ha
FSI: 4

Diagonal Mar

Average dwelling density Barcelona: 60 dw/ha
Average dwelling density Diagonal Mar: 50 dw/ha
Average office density Diagonal Mar: 900 m2/ha
FSI: 1

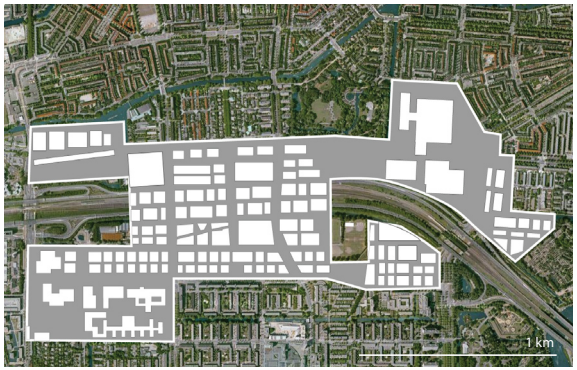
Scale

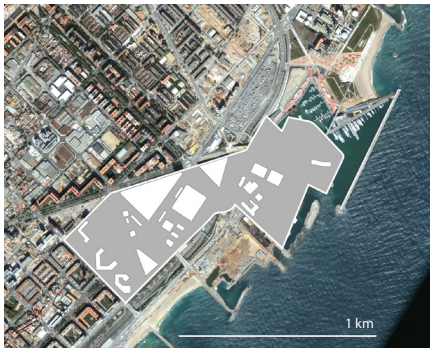
As explained in the research paper, a high density of program and a high diversity of functions decreases the need to move inside that area. Therefore an opportunity lies here to create a pedestrian friendly environment, where small scale prevails over large scale and slow kinds of traffic (walking and bicycling) over fast kinds (car and train).

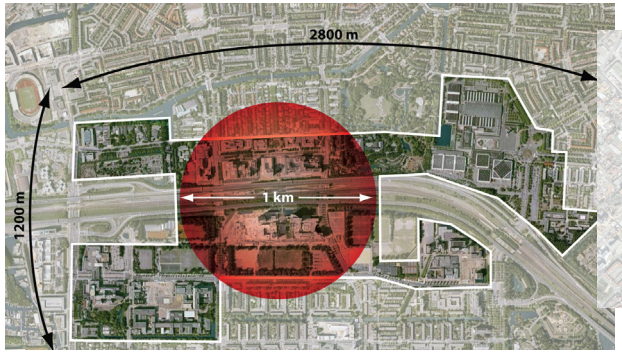
According to Jacobs (1992), people need this small scale environment, because it stimulates experimentation and cross fertilization. David Lynch (1960) tries to specify what is "one place": "The physical characteristics that determine districts are thematic continuities which may consist of an endless variety of components, texture, space, form, detail, …" To create the sense of "being in a place", a part of these components have to be similar or consistent in your area. Because pedestrians preferably wish to walk no more than 1 kilometer, it is a logical step to create this consisty for an area of around 1 kilometer in diameter. In this way, a feeling of 'being in one place" is created for pedestrians and people alike.

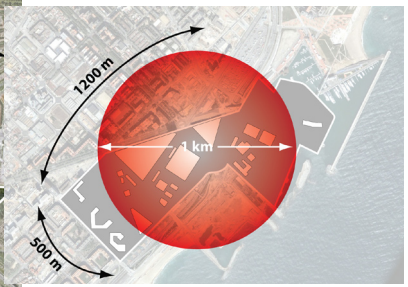
The Zuidas is wider than 1 kilometer. According to the theory, this would mean people experience Zuidas not as one place, which may be true: although the overall name is Zuidas, there are subdivisions. The eastern part is called Kop Zuidas, the University area is in the west, and the most prominent area is Mahler 4, where the multinationals are located.

Diagonal Mar however is small enough to fit in the circle of one kilometer. The functions are split into living and working/shopping, the area can easily be traversed on foot.









Functions

Certain functions bring certain activity. A dance club brings suppliers during the day and people going out at night. An office area brings large flows of workers during the early morning and the late afternoon.

Both in the Zuidas and Diagonal Mar, a variety of functions have been used. Looking at the total area, this brings people in the public areas at all times of day.

However in Diagonal Mar, the functions are within the area separated from eachother. In Zuidas, they are mixed much more, aside from several public functions areas like the Vrije Universiteit and the RAI area. The chances of social experiments to happen are much larger here because people will far quicker meet other kinds of people.

Interweavement

For a district to contribute to the city itself, it has to be part of the city. This means it has to be well connected to the surrounding building tissue. Open spaces must carry through the area and the structure must continue in a logical way. For both areas, the built structure and its surrounding open space is shown.

The Zuidas is surrounded by the grid like structure of the garden city expansions Rivierenbuurt and Buitenveldert. They were laid down together with the Western garden city expansions, all in the 1960's. Although these areas do have harder to reach, labyrinth like spaces, they are connected by on going avenues and streets. These main streets continue through the area. The structure of the open spaces between the building blocks also is continued into Zuidas, and even gradually densified in the middle of Zuidas, forming a dense link between Amsterdam and Amstelveen.

In Diagonal mar, this continuity is less easy to discover. The area is surrounded by a harsh grid structure of the large building blocks of Barcelona. This is in few ways continued in Diagonal Mar. The area has only three entrances. Also, the highway makes for an efficient way of entering the area, but nothing more than that. The building blocks do not react to the shape or size of the old city.

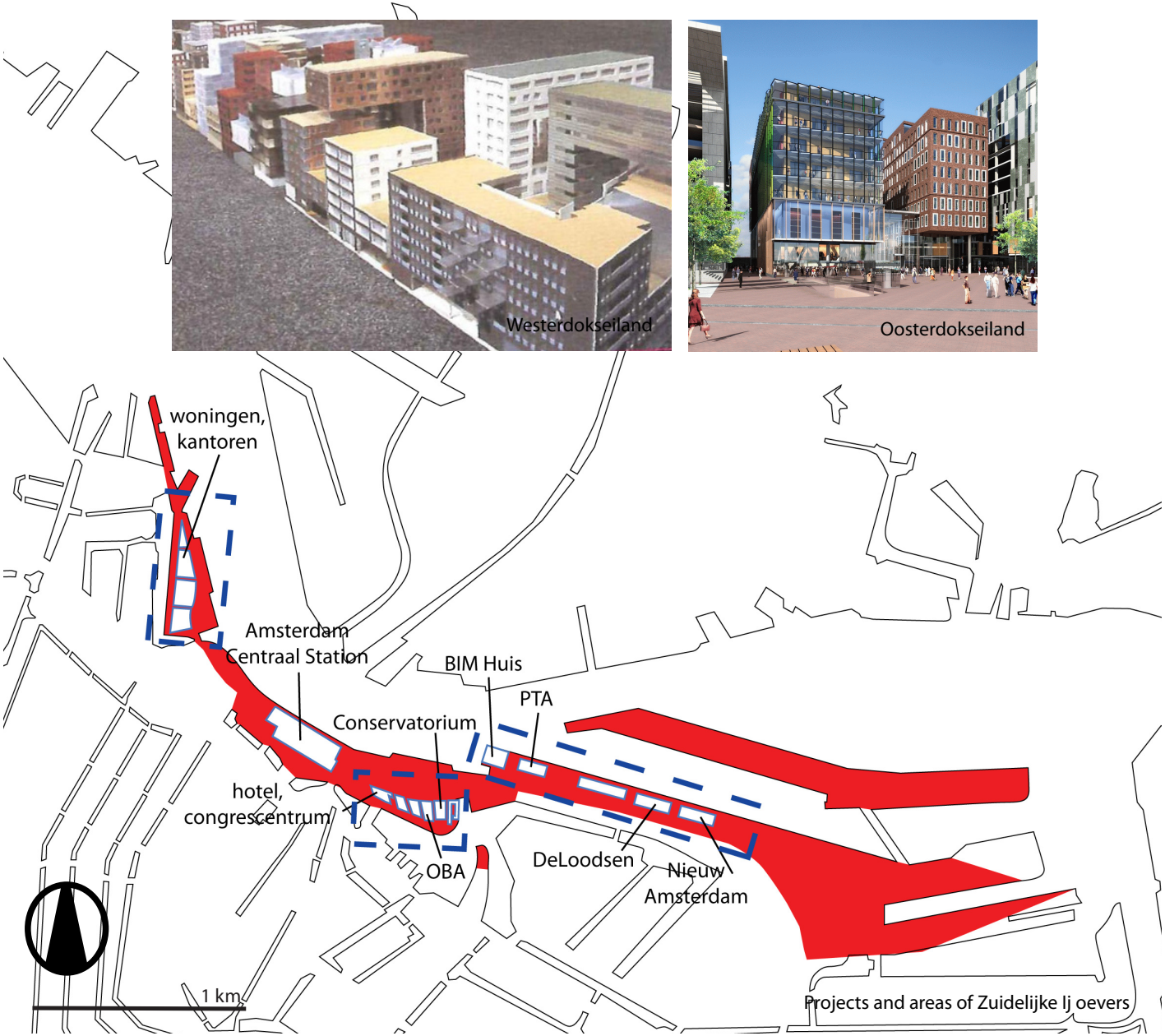
Old center and new center

When a new center arises in a city, it is important thought is given to the target group. When the same people and functions are adressed to establish themselves as in the historic center, a competition between the two could have negative effects for the whole city. This could happen when the demand for programme is not as high as expected, and lots of effort is put into attracting programme.

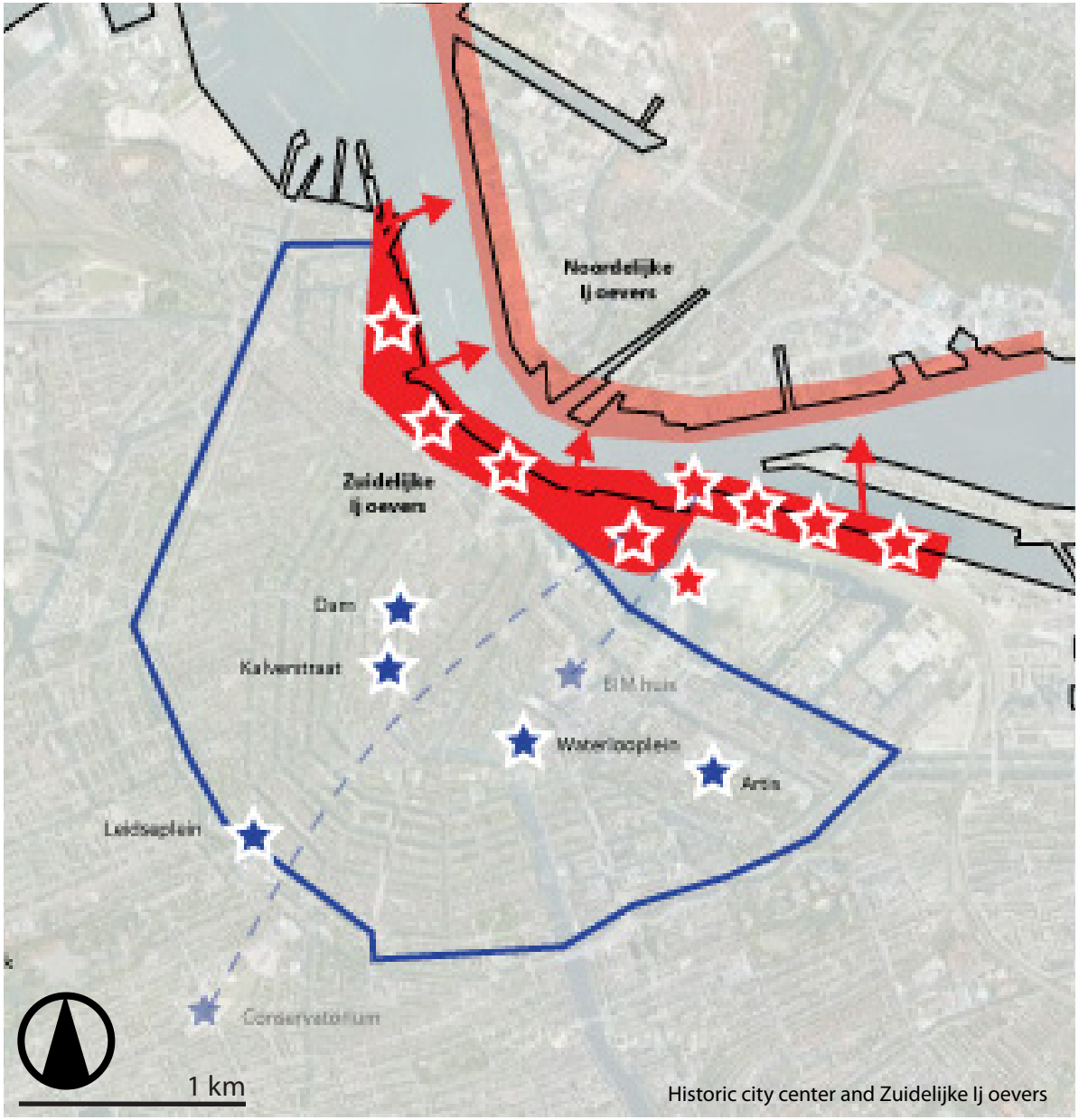
The Zuidelijke Ij oevers have shown us a historical center and a new urban center can exist together, without competition. By addressing citizens of Amsterdam or people who want to live there (and not tourists) there is a larger pool of people to fill up the places. This is done by adding programme like living and public functions that are needed by the citizens, but not very interesting for tourists. Large public functions can be used for pulling attention to the area.

The fact that a new center is laid in a different part of the city creates a different context. By exploiting this in such a way, the new center obtain a stronger and different identity than the existing center. In this case, the waterfront is used to form a strong identity, which strongly contrasts with the historic center.

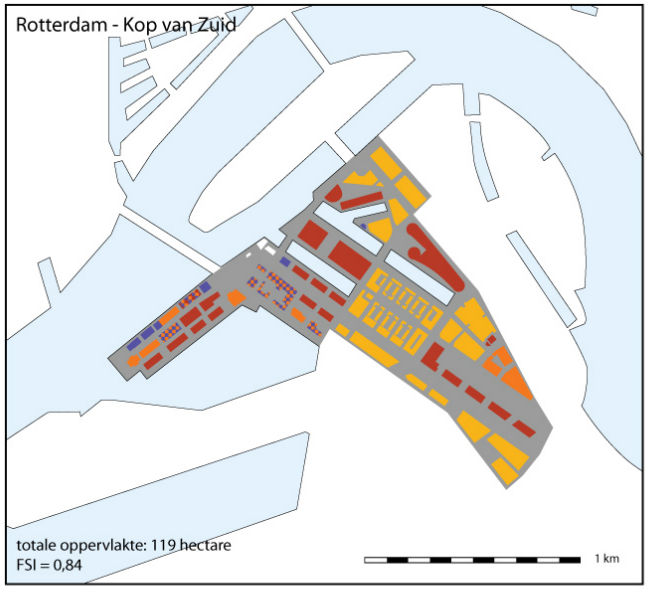
So, using the characteristics of the area can help in strengthening the identity of the area and eventually can help in creating a more diverse city.

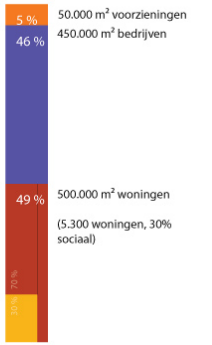


Projects and areas of Zuidelijke Ij oevers



Historic city center and Zuidelijke Ij oevers

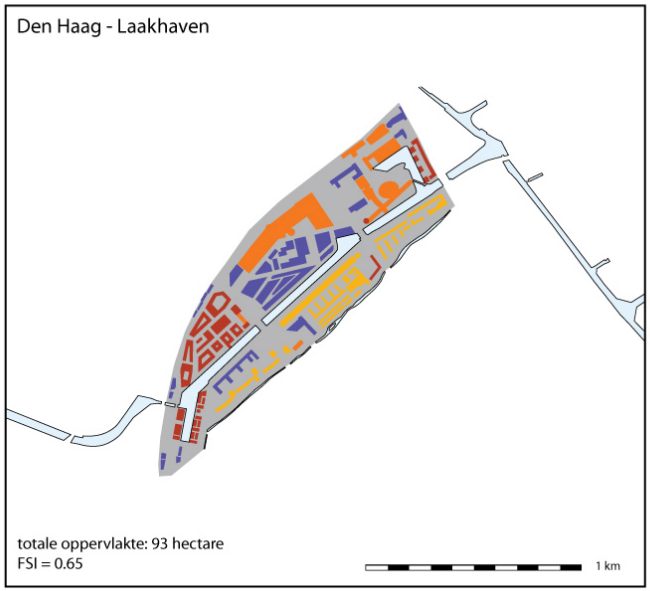


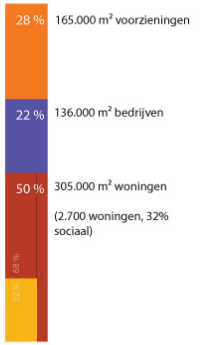


publieke functies en voorzieningen:
hotels
congrescentrum
bioscopen
discotheek
spa
Hogeschool
(Justitie, douane, belastingkantoor)

Programme of other centers

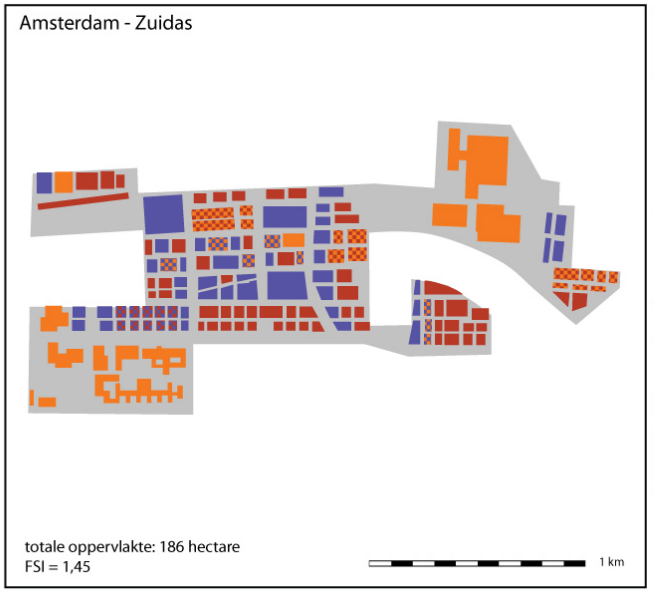
To get an idea how much programme is present in centers, an objective comparison was made. First the total area was researched, and afterwards only the core of that area. When looking at the total area, dwellings, offices and facilities are present in quite similar ratios. But when you only look at the core, the ratios differ. Facilities, offices and more luxury dwellings are more present in the core. Higher prices have to be paid to live here. Social dwellings and large public functions are more located outside the core.

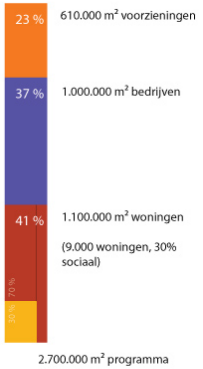




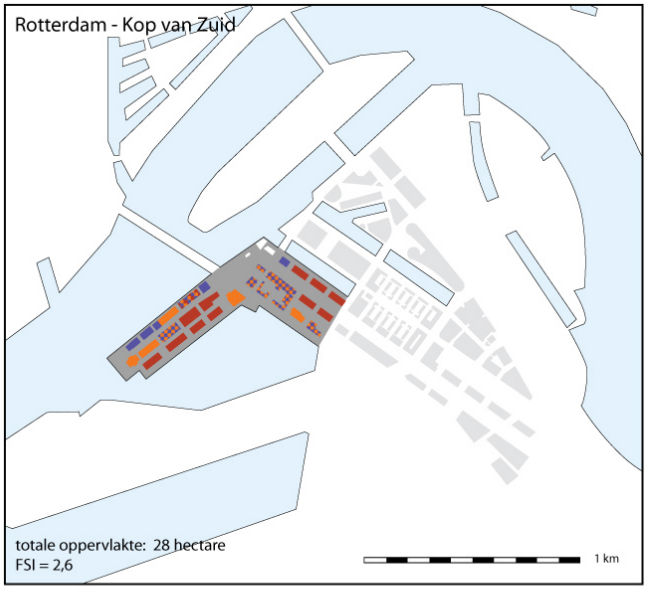
publieke functies en voorzieningen:
cultureel centrum
Hogeschool
Woonwinkelcentrum
station

en:



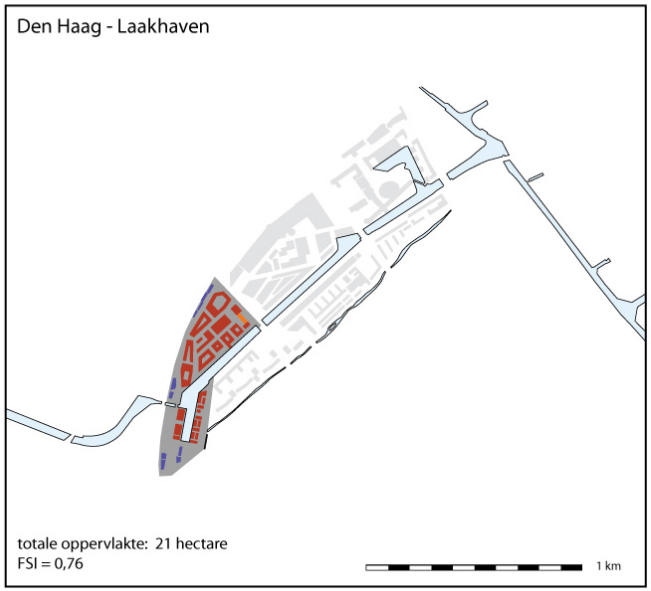


publieke functies en voorzieningen:
hotel
museum
parkeergarage
cultuurcentrum
kunstacademie
universiteit



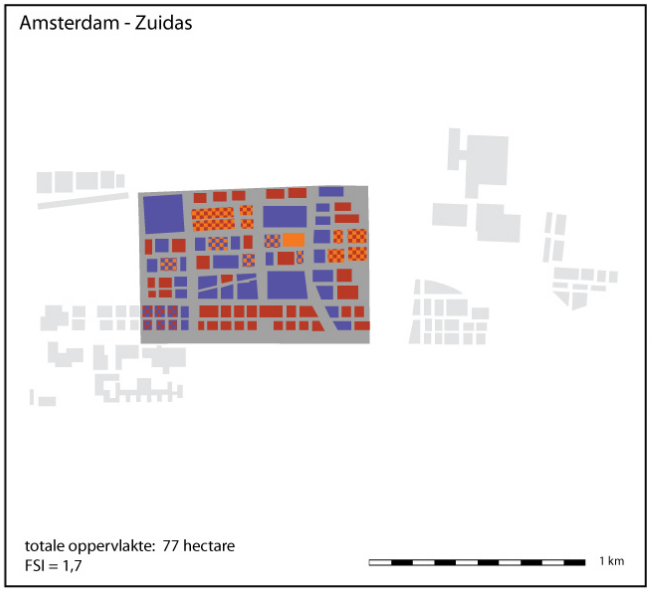
12 % 90.000 m² voorzieningen
54 % 400.000 m² bedrijven
34 % 250.000 m² woningen
(2.000 woningen)
740.000 m² programma

publieke functies en voorzieningen:
hotels
congrescentrum
bioscopen
discotheek



6 % 10.000 m² voorzieningen
6 % 10.000 m² bedrijven
88 % 140.000 m² woningen
160.000 m² programma

publieke functies en voorzieningen:
cultureel centrum



15 % 188.000 m² voorzieningen
51 % 665.000 m² bedrijven
34 % 441.000 m² woningen
3.200 woningen, 10% sociaal)
1.300.000 m² programma

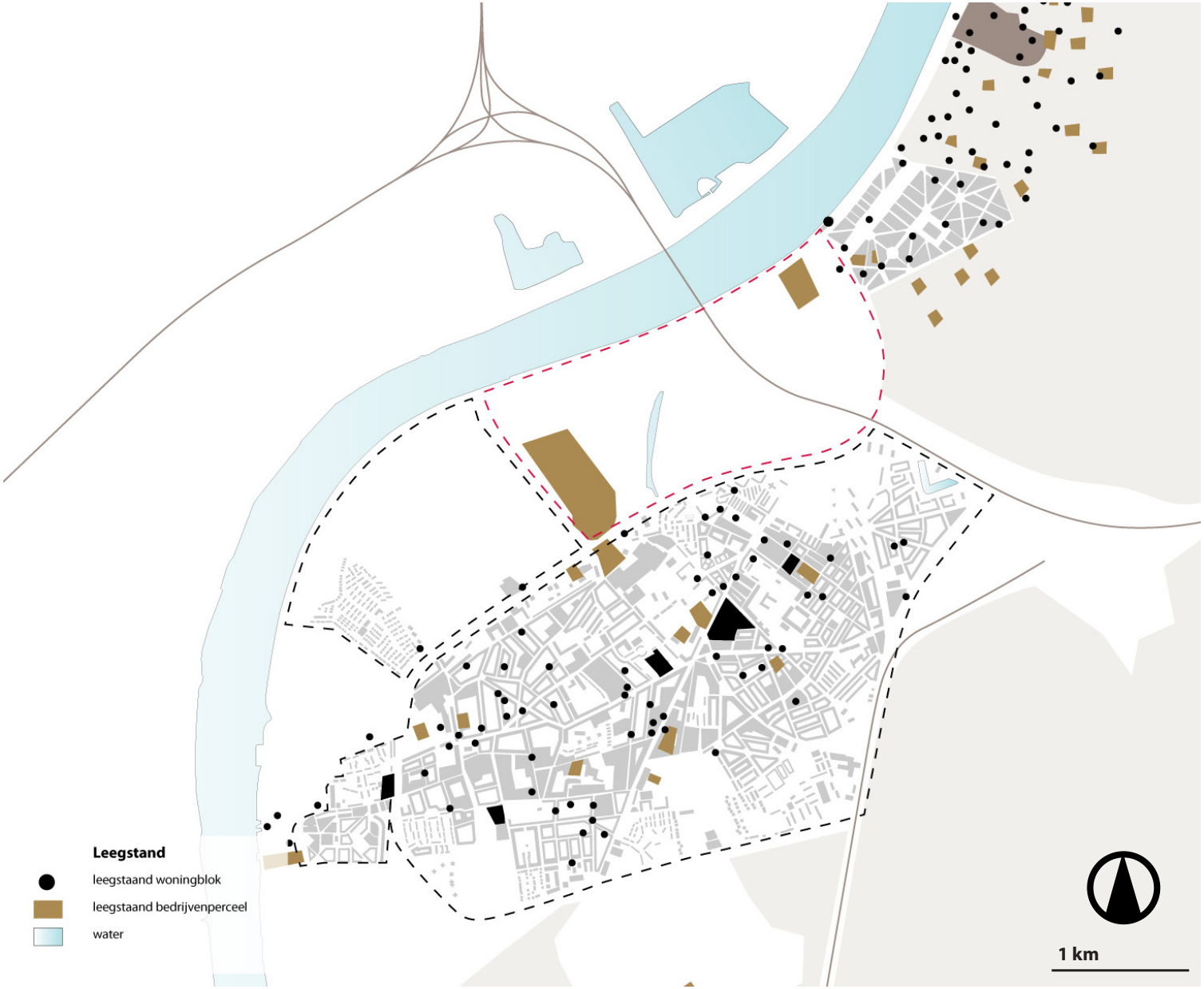
publieke functies en voorzieningen:
hotel
parkeergarage
cultuurcentrum

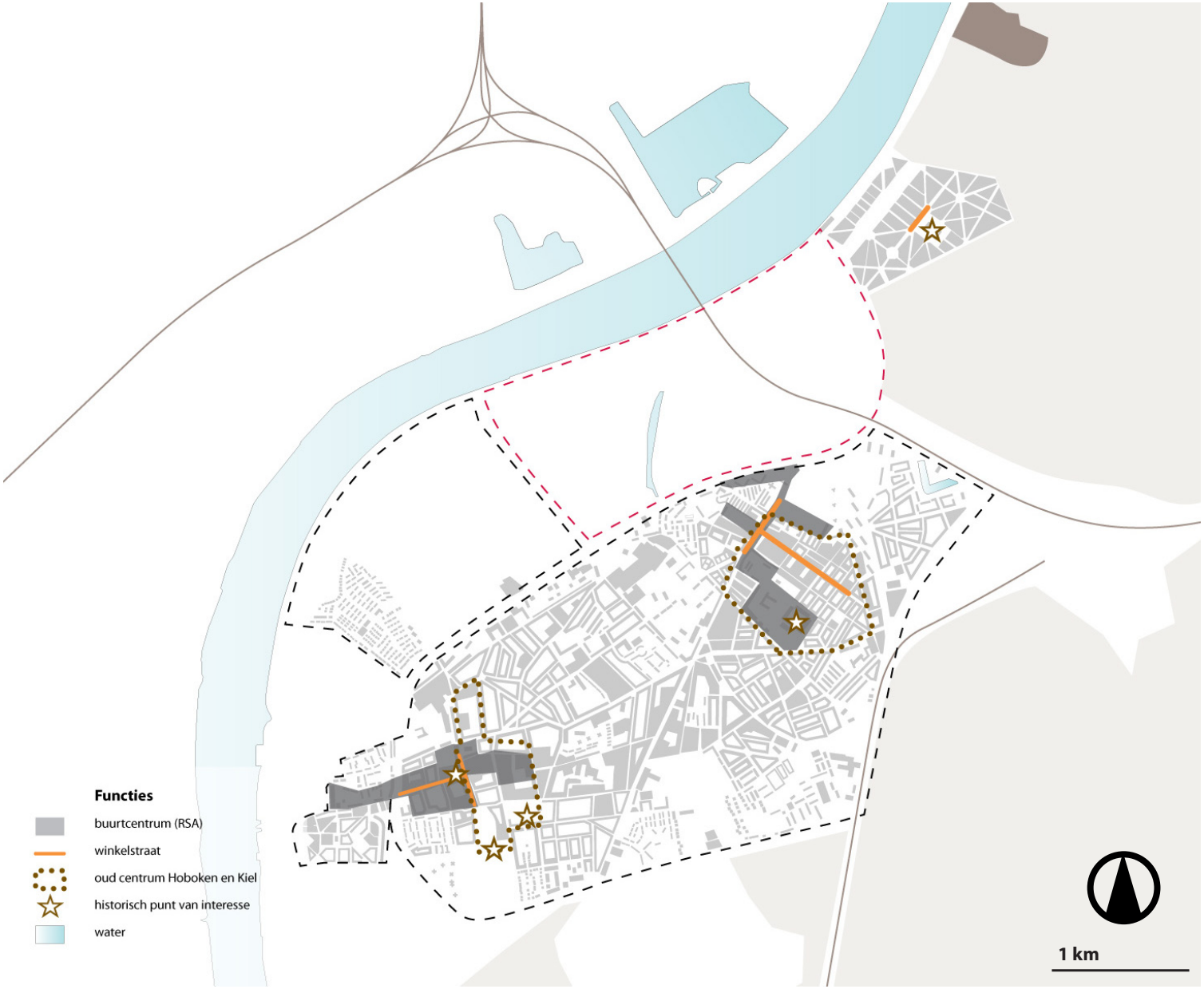
local assignment

Porositeit

In the Structuurplan, three kinds of porosity are called in the city of Antwerp. Different kinds of holes in the city tissue are noted. These holes consist of areas which have become abandoned. Within the Leien, the holes are smallest and are mainly empty dwellings or shops or parts of building blocks. Within the ringway, these holes have got the size of complete blocks or other large buildings. In the periphery of Antwerp, these holes consist of large areas, which do not coorporate in the city life. The harbour, although functioning fine, is a good example of a hole like this. But also the Zuidrand area is one, as it does not contribute to city liveliness.

This can be seen when looking at the abandoned functions in the city. The holes in the periphery are bigger and are mostly empty industrieterreinen, as the holes in the city are smaller.





local assignment

Centers

Just as most of Flemmish cities, the periphery of Antwerp used to be small villages of their own. In course of time, when the city of Antwerp grew, the villages were absorbed in the city. Hoboken and Kiel also were small villages. This is illustrated by the historical points of interests which still mark these places. The old ??? church in Hoboken and the Olympic stadium in Kiel of 1924 remind the old villages.
The local centers still are located in these old neighbourhoods. In both cases, they consist of a shopping street with simpel shops, only catering to their direct surroundings. The existing "centers", pointed out by the Ruimtelijk Structuurplan Antwerpen (2003), are spread out over an area of more than one kilometer. These distances are too large for pedestrians and other slow kinds of traffic to be called a center. There is also no compact center which serves the whole area.

Downgrading of a railway line

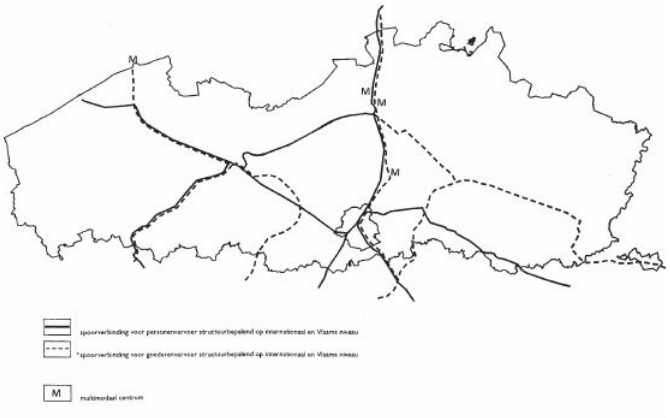
As with almost the entire existing infrastructure system of Flanders, also the railway system originates from the time in Belgian spatial planning history when the government stimulated rural movements. The extensive railway network was laid down to transport goods to and from the harbour of Antwerp, but were also used for an easy exit of the city. The laid down network also strengthened the connections of the Flemmish diamond. The amount of railways within the diamond is quite high, which eventually connected the small villages of Flanders with the bigger cities. This helped in growing of the villages, and also in the way of urbanizing the landscape.

When the invention of the car made in it even easier to explore the landscape, railway was less used by passengers. At the same time goods transport by train bundled to several lines. The result is a huge extensive network of rails, of which a considerable part is not used enough to justify its existence.

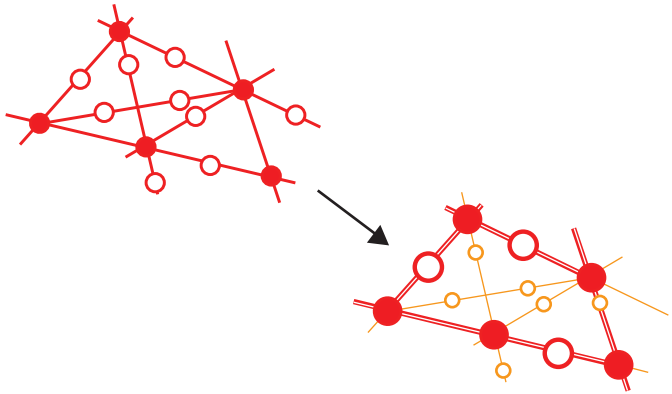
From Antwerp, direct railways go to Breda, Roosendaal, Brussel and Ghent. More railway lines make the mesh width smaller, creating many crossings. Of course, these crossings are located near settlements. However, the amount of crossings is quite large, and there not enough settlements for the railway to be fully used.

The line between Antwerp and the small city of Kalfort (which has around 3.000 inhabitants) only passes small villages. Smaller or lighter kinds of public transport would be sufficient nowadays. After Kalfort, the lines connect to the ones going to Brussel and Ghent again, which already were serviced by railways. The railway network does not match the transport needs of today: a homogenous network covers all kinds of settlements, never completely fitting to the situation. Separating the network in several smaller ones, would better fit the needs of certain situations. Using different kinds of public transport, like trams, busses and trains, the network would be used more efficiently.

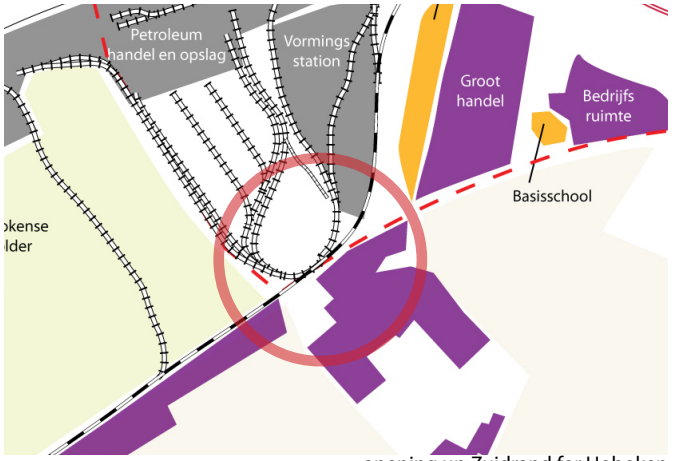
On the scale of Zuidrand, this means that one large barrier is removed, breaking open the enclosed area of Hoboken and Kiel. This can offer a chance for southern Antwerp to make contact with the water again.



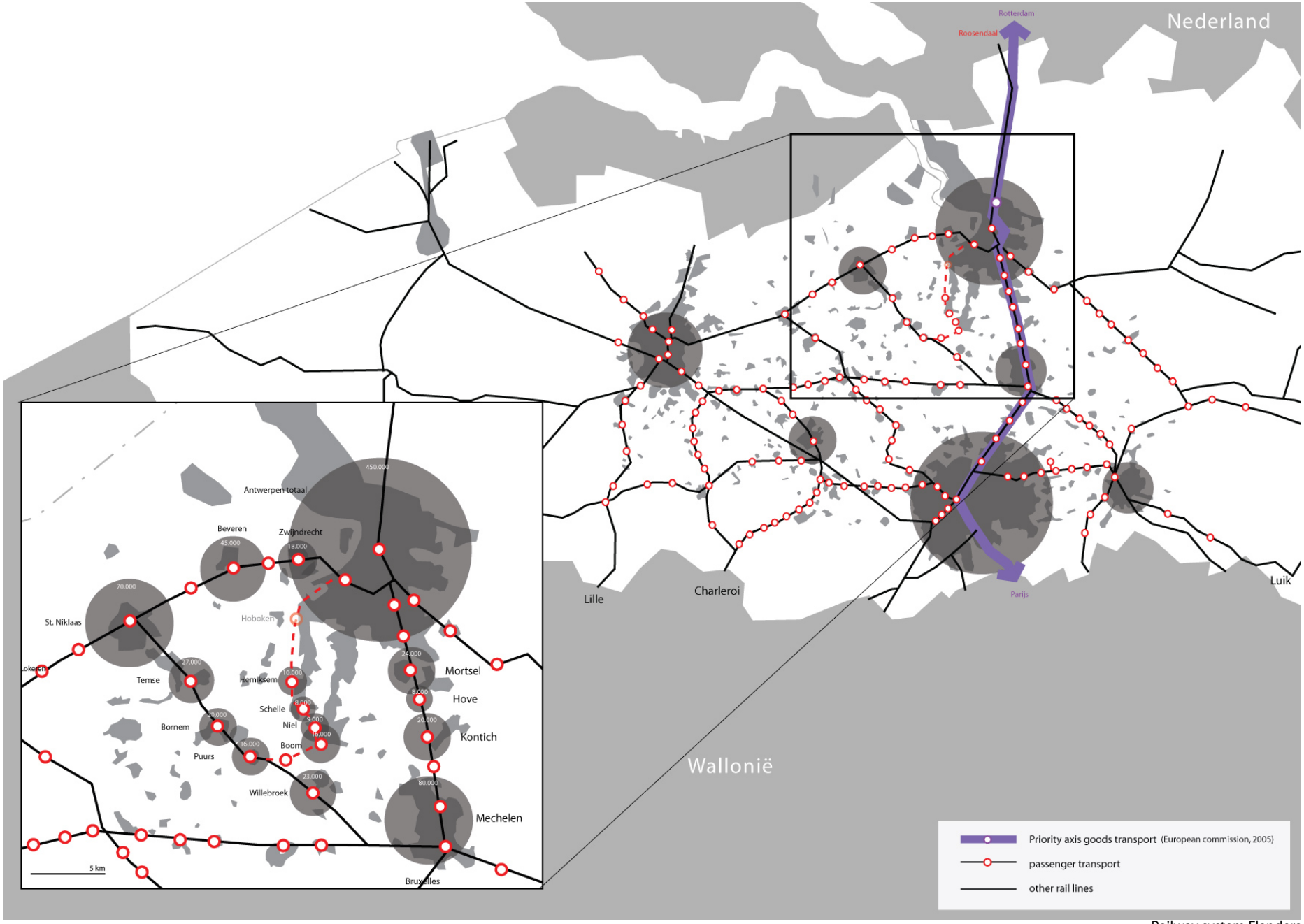
Primary railway connections (AROHM, 2004)



Bringing hierarchy in public transport networks



opening up Zuidrand for Hoboken



Railway system Flanders

A new highway exit

The most direct connection from a highway to a place in the city is by a direct highway exit. The stadium will attract many people on playing days. Is an extra highway exit for the stadium needed to create a fast and efficient flow of cars? And is it possible?

A new highway exit leading directly to the sports cluster is possible in terms of space and technical issues. This is illustrated by using the formulas of design of highways and exits. Both at the current maximum speed in the Kennedy tunnel, 70 km/h , as the usual limit, 100 km/h an exit is possible

But, the exit would make the already quite unsafe area even more unsafe. Two functional issues are the problem. First of all, the existing complexity of the knot is already creating problems. It is not only a exit and entrance of the highway, it is also a knot of three through going traffic axes. Also the Kennedytunnel does not improve visibility and clearness for the drivers. Already the maximum speed in the tunnel has been temporarily decreased to 70 km/h to avoid accidents. An extra exit would create more unclearness in where to go, possibly resulting in more accidents.

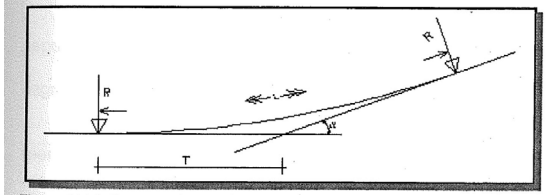
The complexity of the knot also makes it hard for both directions to exit to the west. Traffic coming from the east would have to go over or under the other lanes to safely get to the west side of the highway. Because lanes are already going above eachother, this would create very steep descents or ascents.

This means that other roads have to take up the task of transporting many people in short time spans. The quickest way is using the eastern entrance. This road has to be broad enough to take the many cars to their destination.

en de tangentlengte uit:

$$T = R\,tg\,\tfrac{1}{2}\alpha \qquad (4.5)$$

waarin:
- L : lengte langs de boog [m];
- T : afstand tussen snijpunt tangentlijnen en tangentpunt [m];
- R : straal van de boog [m];
- α : hoekverdraaiing [centesimale graden].



Figuur 4.7-1: Boog- en tangentlengte

De benodigde lengte voor de deceleratie wordt berekend met de formule:

$$L_d = \frac{v_d^2 - v_a^2}{26\,(d + 0{,}1i)} \qquad (5.2)$$

waarin:
- L_d : deceleratielengte [m]
- v_d : ontwerpsnelheid van de doorgaande rijbaan [km/h];
- v_a : ontwerpsnelheid van de afbuigende rijbaan [km/h];
- d : remvertraging [m/s^2];
- i : langshelling van de deceleratiezone [%], negatief bij daling.

Als comfortabele vertraging d wordt 1,5 m/s^2 aangehouden.

With the following parameters:

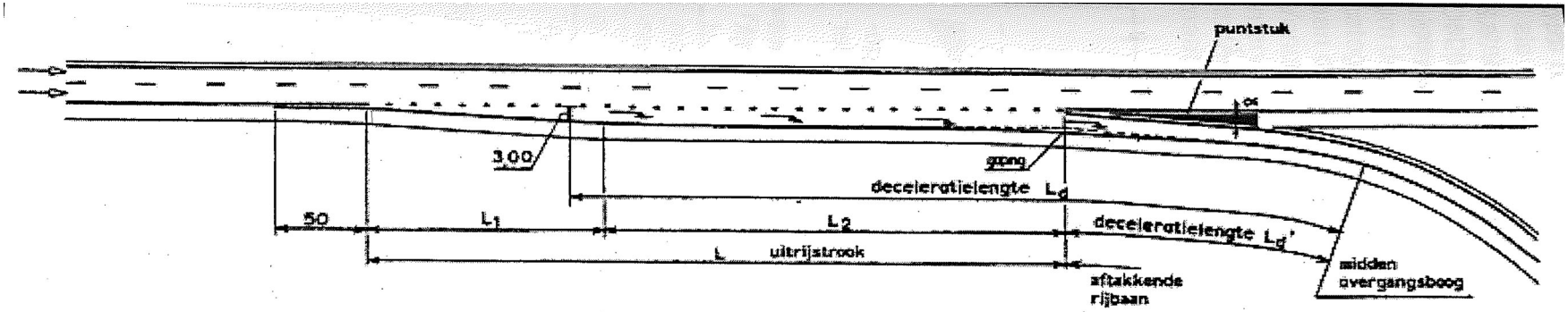
Vd = 70/100

Va = 40

d = 1,5

i = 100

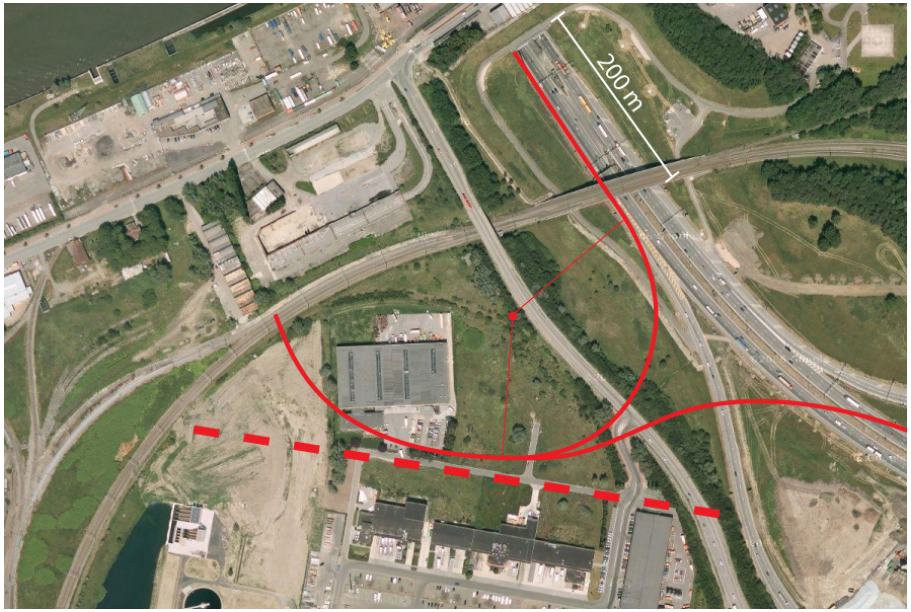
the needed deceleration distance is 80 or 200 meters before the exit begins. From the end of the Kennedy tunnel, 250 meter is left before the turn would be made at 40 km/h.



V_0 = 120 km/h
L_1 = 100
L_2 = 150
L = 250
$tg\alpha_{min}$ = 5 %
$tg\alpha_{max}$ = 8 %

V_0 = 90 km/h
L_1 = 75
L_2 = 110
L = 185
$tg\alpha_{min}$ = 5 %
$tg\alpha_{max}$ = 10 %

V_0 = 70 km/h
L_1 = 60
L_2 = 90
L = 150
$tg\alpha_{min}$ = 5 %
$tg\alpha_{max}$ = 12 %



R [m] / v [km/h]	1500	1100	900	750	600	550	500	450	400	350	300	250
120	2,5	3,8	4,5	5								
110		2,5	3,5	4,3	5							
100				2	3,5	4	4,5	5				
90					2,5	3	3,5	4	4,5	5	7	
80									2	3	4	5

R [m]/ v [km/h]	300	250	185	170	150	130	100	85	80	75	50	40	30
70	2,5	3,6	5	7									
60			2	3	4	5							
50						2,5	4,2	5	6,5	8			
40										2	5		
30												2	5

Tabel 4.7-1: Samenhang tussen snelheid, straalgrootte en verkanting [%]

Trends

Antwerp has had quite a steady amount of citizens. After the fusion of Antwerp and the municipalities of Berchem, Borgerhout, Deurne, Hoboken, Merksem, Wilrijk and Ekeren in 1983, Antwerpen has decreased in increased in population up till its current height of around 470.000 people. Therefore in general, the pressure on the housing market for new dwellings is not very high.

The office market has always been very steady in Antwerp. Its market is small in comparison the Brussel (see table) , where the large majority of office space in Belgium is located. The office market of Brussel, is becoming less stable. Prices are rising and a growing number of offices are vacant (Gemeente Antwerpen, 2006). Offices in Antwerp are located along the Leien and near the Spaghettiknooppunt. Only relatively small retail business and main offices of regional companies are located here. But, almost no national or international company have their main office in Antwerp. The balance in office space can be restored by attracting companies from Brussel to Antwerp.

So, there is not much pressure on the housing or office market in Antwerp. A large project being in construction right now in Antwerp, 't Eilandje, illustrates this. Although the project offers large opportunities for the city, and bring back the harbour to the city, the sale of dwellings in 't Eilandje is not a booming one.

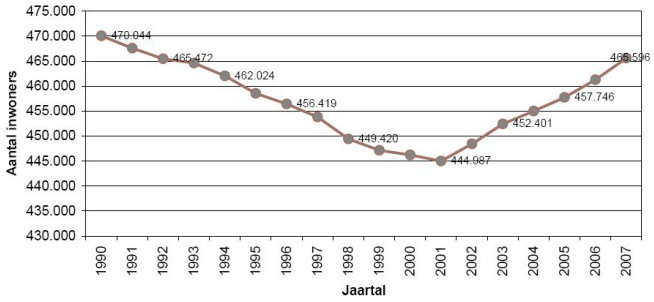
The steady character of Antwerp will not change very soon. But there are several leads that could trigger growth or ask for building or renewing of dwellings and offices. One reason is the decreasing size of households. This means that less people inhabit the same house as before, and more houses are needed (see table). More dwellings are needed to house the same number of people.

The Flemmish government is also trying to pull people to the city. Since 2000 some new regulations have been introduced, which stimulates urbanization (the moving of people back to the city). One example of this are the introduction of the "Positieve grootstedelijke zones" (Positive metropolitan areas) (Reynders & Picque, 2003). The minister of metropolitan policies, Christian Dupont, has defined some zones. In these zones, also situated in Antwerp, it will be possible up to 2009 to ask a degradation of taxes, when costs are being made for dwelling renovation or development.

By creating a more attractive location than its competitors, a new succesful centrality for economic activity can act as a magnet for supporting facilities. This clustering effects creates more bearing force for itself, so that a positive spiral effect will occur. (Roberts & Sykes, 2000) An example can be found in Rotterdam, where the Court buildings on the Kop van Zuid has generated lots of spinoff functions, supporting the court. The tax department, customs and house of justice are located here.

	1981	1991	2001	2003
Belgium	368	401	413	462
Flanders	350	394	415	471
Netherlands	343	390	417	419
Germany	412	412	459	472
France	436	465	503	503

Amount of dwellings per 1.000 inhabitants
Studiedienst Vlaamse Regering, 2003



Population of Antwerp
Nationaal Instituut voor de Statistiek (NIS) 2007

Commercial activity in Antwerp
(RSA, 2003)

Brussel	10,65
Antwerpen	1,65
Gent	0,8
Mechelen	0,5
Leuven	0,4
Hasselt/Genk	0,25
Brugge	0,15
Kortrijk	0,15
Aalst	0,11
St. Niklaas	0,1

Amount of office space in million m^2
AROHM, Gent, 2000

Colofon

Thesis plan of Joey Schaasberg
Technical University Delft, Faculty of Architecture