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Connective Meetings
IN THE STATION

Master Thesis | MSc04 | URB16

TITLE PAGE

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Abstract
This thesis has its point of departure in the network city and its physical structures of infrastructural connections. In order to meet the needs of modern society where urbanization is intensifying, infrastructure appears as the backbone onto which the cities develop. As such growing prominence, the infrastructures enclose, it should not be considered as a large object in isolation from its surroundings. Urban design strategies can evolve the development of infrastructural networks in relation to the landscape and social rationalities, giving the public realm a new terrain of investigations. Nodes, interchanges and relations become important necessities to both transportation and to public life. Through a study of a new station in Brabrand, East Jutland of Denmark, the thesis focuses on how the station can be used as a planning tool to contribute to reforming the car-inclined infrastructure of the suburb and enhance the quality of public life, thereby bringing the suburb a pedestrian-friendly environment and cultural and social value. The project deals with the transformation of a specific site in Brabrand, where the infrastructure have become critical barriers, dividing the city. The thesis addresses the different mobilities and barriers together with the future development of the suburb due to the coming light rail and the need of social life along with it. Thus, the thesis explores the connective effect of the station and how this connectivity can enhance the social relations in the transit space, where the phrase 'bridging the gap' is used. From the study of Brabrand the thesis aims to create a concept of using the contribution of the station as a planning tool to have the infrastructure adapt multiple uses to a specific local context, both on spatial and socio-cultural terms. Combining analyses with design parameters this project uses a theoretical background with case studies to conceptualize the connective meetings in the station.

Signe Annika Haulrich

READING GUIDE

The thesis is built upon a structure I have allowed myself to call 'the candy structure'. It begins at the wide end of the wrapping paper with the introduction of the thesis where the objective of the project is explained and a problem formulation is presented. The thesis structure then narrows down along the paper with the theoretical background specifying the objectives, where a quick research into design cases will tie the structure together by summarizing the inspirations from the theory which have been used into the further design.

Then we get to the candy, the biggest part. The theoretical foundation will here be used in practice, applied to a specific case where analysis, mappings and research will result in a physical design of a station. The focus will be upon design parameters used in consonance with the larger problem presented in the introduction, where they will demonstrate how to answer the problem formulation onto a specific design case. The result will be a design proposal of a station where connective meetings have been conceptualized according to the given context.

From here, the candy will be wrapped tight together with a storytelling of three different design cases that each contains criterion the design of the station has used in combination to create the concept of connective meetings. The cases illustrate the authenticity of the criteria in practice, demonstrating the choices of reason in using them together to create the concept and what the results can be on the city-wide scale. The last chapter shortly widens out in the wrapping paper, analyzing the concept pursuant to the station in general, where it revolves around a conclusion to a general strategy sprouted from the work from the design case.

Every time a new chapter begins, it will be marked by a black spread. Each chapter has sub-divisions, which will be marked by an orange page, shortly summarizing what is to come.

CONTENT

DON’T MIND THE GAP, BRIDGE IT

MOTIVATION

I never forget. In the beginning of my 9 month travel in Australia year 2011-2012, I travel as a backpacker by train from Sydney to Melbourne in Victoria. I step into Melbourne Central Station, a station buzzing with life of travellers and shoppers both and I just love the excitement of the feeling the station brings to me: the feeling of traveling and experiencing, and the feeling that it keeps back a surprise to what comes as soon as I leave to take my first step into a new city. What I find when stepping outside is a city buzzing with hundreds of people that without worries criss-crosses between the beautiful and iconic trams of Melbourne. Right across the street, there is the impressive State Library of Victoria with massive stairs to overlook the city street life and a short distance away is Federation Square, a public space serving Melbourne all year round. Here the square was so occupied by people it was almost impossible to find a place to sit. All around the station the city seemed too boom with culture, life, people, events and entertainment.

For two weeks in Melbourne I visited the places surrounding the central station almost every day: I sat in the sun at the stairs of the library together with hundreds of other people and visited Federation Square, because it was certain something was happening, from street performances to music to movies played at a big screen at the square. It was never a problem to get to this buzzing city node; the trams running through the entire city were an experience themselves and made sure, that even though Melbourne is a huge city with wide streets, the city is lovely to walk around in. I loved how all these qualities connected to the station, ensuring access no matter from where you came, be it in the city or outside it. The influence of connections in city planning and their ability to 'bridge the gap', as I call it, just keeps fascinating me. The words of John Urry rings to my ears when experiencing such contacts: that transportation is never only a technology to move people from one destination to another, it is a system that is mediated through existing social worlds that gives rise to particular types of society (Urry, 2007). Which have made me look into several stations I pass on my travels, to see what type of society that revolves around them. Some stations contribute with slightly the same mix of public and cultural life and pedestrian-friendly environments as the one in Melbourne, some not. Which has come to my inspiration of this thesis: to look into the possibilities of the station as a contributing planning tool to those cities experiencing detrimental development.

We have to understand, the station is not an unaccompanied solution to such a complex goal. As every urban designer probably can argue, city development and qualities is linked to immense amounts of factors, from economy and ecology, to city interaction and engagement, just to mention a few. It has been important for me to be faithful to the complexity of the city which has been the main challenge of this thesis. While I research the station as a contributing planning tool and use it myself to a particular site, it will be with the knowledge that many components should be applied accordingly.

1

THESIS PREAMBLE
INTRODUCTION

This chapter introduces the point of departure in the thesis, where the objective of the project is explained and a problem formulation is presented. A timeline of thesis process is explaining the journey of which this thesis has gone through.

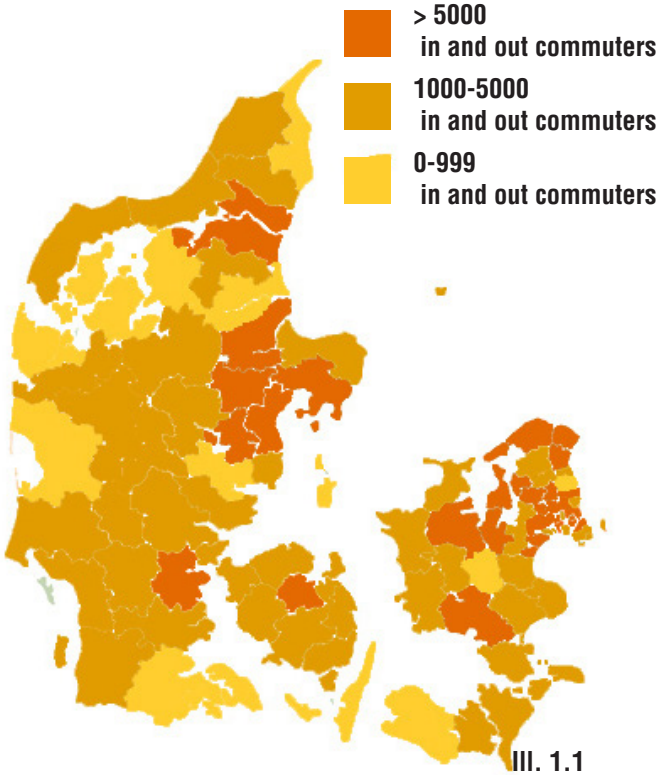
Contents:

- Thesis introduction
- Research and methodological foundation
- Timeline Process

THESIS
INTRODUCTION

The urban infrastructure
The modern web of roads, highways and railroads, enmesh the world with little regard to the surrounding geography and environment. In general, they have been designed by engineers according to the criteria of safety, performance and stability, where infrastructure often is discussed in the field of traffic management rather than of urbanism. The demand for transportation infrastructure has been amplified by extensive urbanization and suburbanization, transforming ever larger landscape – by many seen as go-to public space (Shannon and Smets, 2010, pp. 54-55) – into tracks and tarmac: go-through spaces. We are in need of transportation nonetheless, while we seek livable public spaces in our cities, rendering the decision making process of implementing new infrastructure somewhat difficult. Copenhagen for instance, with its 'Finger Plan', the green structure plan, is one city to manage a control of urban sprawl by controlling the urban development. The plan ensures that people are always able to have access to open space, parks and undeveloped, natural areas, where the public transportation follows the "finger" development axes only. The suburbs develop on the fingers like pearls on a string, connecting them to the city. In my knowledgem, the urban design profession should, when planning for future development, not see the city as a single standing entity but rather a comprehensive environment where the built fabric is part of the infrastructure, with the suburb as an important part of the urban environment.

The city in between
All suburbs are different with a diverse range of activities. Nevertheless, they usually have common features: they have relatively low density, a high content of single family homes, large housing developments and a clear division in building typology. Furthermore, they have strict separation of different functions; they are physically separated by buffer zones, infrastructure and have a large emphasis on car traffic. With a later applied interest in sustainable cities focusing upon resources and climate, the suburbs stand out because of their extensive land-use, functional segregation and heavy reliance on car traffic and thereby exhibit high per capita energy transport consumption (Forstædernes Tænketank, 2012). For those working in major western urban regions – as it is the case of in Denmark as well - it is applied that they live, work, shop and have chores many different places within the region, which only intensifies



Ill. 1.1

commuting between the suburbs and the city (See ill-???). Our daily lifestyle and the way we use our cities is a big challenge because of the dependence on the car. We need to go from destination to destination after all. Here, the overall issue of 'sustainability' has different associated problems concerning the suburbs: it should be addressed according to adapt sustainable thinking with respect of the environmental, social and economic sustainability. To change the routine. After all, it is the direct impact of the spatially fragmented daily routine that makes public space seem monotone and confined to some parts of the day (Jane Jacobs, 1961).

Project scope

To reduce the total traffic in the suburbs a shift from the road to more environmentally and climate-friendly and high capacity transport means, such as public transportation, cycling and walking, is needed, demanding a different scenery of the urban planning than that of the car, a scenrey common in the suburbs. It demands new urban design strategies evolving the development of landscape infrastructure networks related to the social rationalities, where public environments effectively engage with urbanism. The infrastructure should adapt multiple uses to a specific local context, both on spatial and socio-cultural terms. Nodes, interchanges and relations become necessities that can be viewed as a part of a larger operation of urban development, both according to transportation and to public life. The urban designer has the tools to seek out context-sensitive solutions in the network city during planning and design urban thoroughfares for walkable communities.

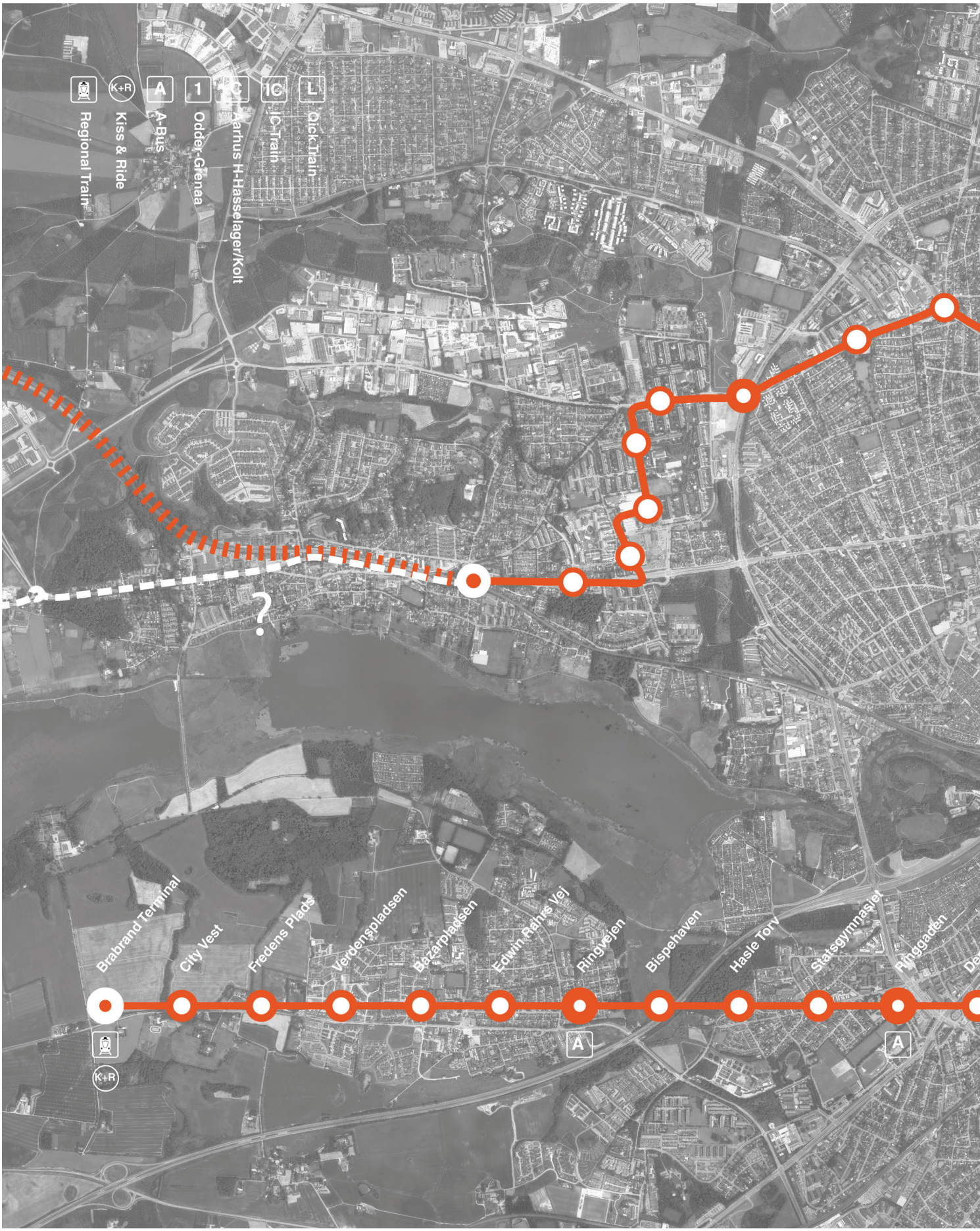
It is in the interest of this thesis to seek out the context-sensitive solutions using one particular kind of transit space: the station.

The design of traffic terminals and stations has often been about integrating technical requirements and optimal conditions for passengers, and with appropriate architectural appearance. As an important infrastructural node in the transfer spaces, the station has the potential to expand the creation of infrastructure to the field of urbanism: the synergy of engineering, landscape and urban competences.

This thesis researches the possibilities to use the station as a planning tool to enhance the quality of city development. Relying on solid theoretical framework, references and case studies, the goal is to take on the subject of the detrimental development of one particular suburb: Brabrand. The thesis seek out the potentials of using a station in Brabrand both as an environment-friendly transport hub and a locus of public activity. It is the intention to use the station as a connective architectural entity that can escalate urban development and cultivate public life in the suburb. Analysis, mappings and public local debates will be conducted, where the research of Brabrand will result in a conceptual design proposal for such a station, thus supporting the theoretical framework. Hence, the outcome of the thesis will be a combination of a concrete proposal for a design problem in Brabrand and a comprehensive design strategy to create a visionary development plan for future station areas supported by case studies. It is a story of a particular design and a story about a more universal set of conditions and cultural practices developed through the daily urban mobilities.

PROBLEM

How can a new transport hub station in Brabrand contribute to reform the car-inclined infrastructure of the suburb and enhance the quality of public life?


Regional Train
Kiss & Ride
A-Bus
Odder-Grenaa
Aarhus H-Hasselager/Kolt
IC-Train
QickTrain
?
Brabrand Terminal
City Vest
Fredens Plads
Verdenspladsen
Bazarpladsen
Edwin Rahrs Vej
Ringvejen
Bispehaven
Hasle Torv
Statsgymnasiet
Ringgaden
K+R
A
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AARHUS LIGHT RAIL
TO BRABRAND

A plan is developing in Aarhus according to a growing demand in travel. This is one of the main reason for the city to include the light rail and thereby build a transit foundation. One of two planned future light rail stages is from Aarhus Ø to Brabrand, where a station is planned to be placed, serving interchange between the light rail and regional train (Aarhus letbane, n.d.)

Three focus area are discussed between Aarhus Municipality and the citizens of Brabrand according to the new station: What should the station contribute to the suburb, what should the station contain and where should it be placed. To enhance the quality of city development in Brabrand through the use of the station, these questions have been vital for the following research.

Gamle By
Cereskrydset
Aboulevarden
Rådhuset
Aarhus H
Rutebilstationen
Dokk1
Skolebakken
Navitas
Bernhard Jensens Boulevard
Aarhus Ø

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RESEARCH AND METHODOLOGICAL FOUNDATION

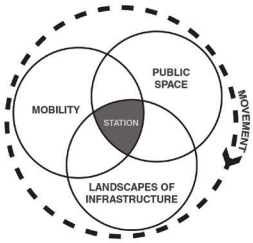
The following gives a look into the urban design theories and research that were used to develop knowledge about the theme, as well as a look into the methods used to translate theories and analyses into a design proposal.

Theory
The theory is a base for the research, where mobility is used as a term that covers and relates to different theories and will be used to describe and design mobile situations in the context of Brabrand. Concepts that have been used to describe and design Brabrand Station are Staging Mobilities containing both Critical Point of Contact and Mobilities in Situ. These are combined with theories of landscapes of infrastructure, using infrastructure as aesthetic expressiveness, and theories of public space. The research of theories is supported by illustrations of Aalborg Station to demonstrate the described general mobility patterns in a station.

Case studies are supporting the theories as a way to evaluate different complexities in an urban context. The cases presented in the thesis are used as tools to highlight approaches to city development through the use of infrastructure and mobilities according to stations, hence they are to clarify the conceptual process.

Public debate
Together with both theoretical reflections and case-based interventions the participation of the citizens of Brabrand is influencing this thesis. They contribute with discussions of key issues and given propositions with the objective of developing and qualify strategic and methodological considerations. Having participated in public debate and meetings with the residents, the thesis is influence by their local knowledge and the idea that they cover competences such as strong motivation, reflexivity, goal-orientation, dialogue-orientation and are action-oriented. The production of a city is a production and reproduction of human beings rather than a production of objects (Lefebvre, 2008). The intervention in a given context affects the people, and the public debate and correspondence with some of the residents is used as a way to look into this specific context.

Design process
The process of design is problem based with an iterative phasing from problem formulation to mappings, analysis, sketching to a technical and design proposal. The working method is built upon the integrated design process merging the values of design and engineer oriented thinking. To build on the skills of the urbanist, design references illustrating the different disciplines of connections in infrastructure engineering and architectural social programming is studied and applied in order to get a more concise picture of the complex mobilities design. These are conducted to get both technical as well as phenomenological insights in designing urban spaces together with different mobilities. Furthermore, personal perception through the phenomenological method is conducted on Brabrand itself to understand the sense of place, were the use of photos from different scenarios have been used to illustrate visual experiences.



Theory

Station proximity case study

CONCEPTUALISATION

BRABRAND STATION

DESIGN

Site analysis and mappings

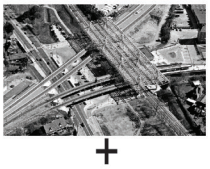
Design parameters

Design refferences

Station design

DEBATING

Discussion of propositions



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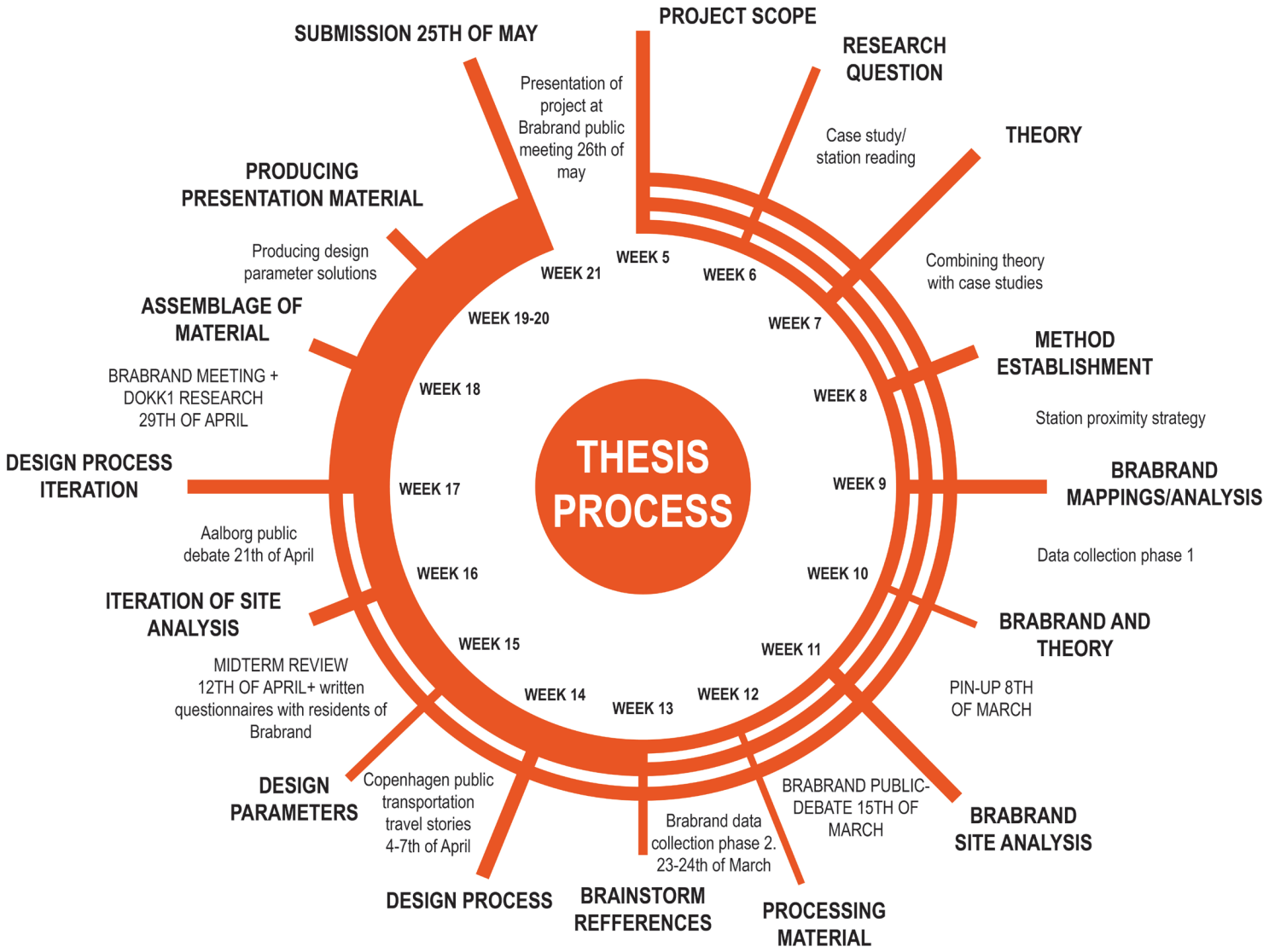
TIMELINE
PROCESS

Welcome to my steering wheel of thesis process; a wheel that has been turned back and forth during my four months of thesis project. While the wheel shows a process continuing along the weeks, each task has always turned to the other, and I have used the iterative process to resolve the thesis and repeated some operations of the different tasks.

While the theoretical field has delivered inspiration and knowledge of different situations in the urban context, supported by case studies and site analysis of Brabrand, the discussion of propositions from different actors have had me turn the wheel more than once. Along a discussion of an entire new station comes a lot of ideas, wishes, suggestions and proposals from which a critical mind of the urban designer and planner should consider and analyse. Through a process involving the affected public while taking into consideration the desires and registrations from the Municipality, I have come to terms with that some potential proposals has to be discarded in advantage for some other. The iteration process has as such been applied in extension of public hearings and private meetings. The decisions are based upon the knowledge gained from theoretical reflections, the case-based interventions and critical analysis of potentials and problems the different proposals offer in relation to chosen design parameters.


THESIS PROCESS
PROJECT SCOPE
RESEARCH QUESTION
THEORY
METHOD ESTABLISHMENT
BRABRAND MAPPINGS/ANALYSIS
BRABRAND AND THEORY
BRABRAND SITE ANALYSIS
PROCESSING MATERIAL
BRAINSTORM REFFERENCES
DESIGN PROCESS
DESIGN PARAMETERS
ITERATION OF SITE ANALYSIS
DESIGN PROCESS ITERATION
ASSEMBLAGE OF MATERIAL
PRODUCING PRESENTATION MATERIAL
SUBMISSION 25TH OF MAY
WEEK 5
WEEK 6
WEEK 7
WEEK 8
WEEK 9
WEEK 10
WEEK 11
WEEK 12
WEEK 13
WEEK 14
WEEK 15
WEEK 16
WEEK 17
WEEK 18
WEEK 19-20
WEEK 21
Case study/ station reading
Combining theory with case studies
Station proximity strategy
Data collection phase 1
PIN-UP 8TH OF MARCH
BRABRAND PUBLIC-DEBATE 15TH OF MARCH
Brabrand data collection phase 2. 23-24th of March
Copenhagen public transportation travel stories 4-7th of April
MIDTERM REVIEW 12TH OF APRIL+ written questionnaires with residents of Brabrand
Aalborg public debate 21th of April
BRABRAND MEETING + DOKK1 RESEARCH 29TH OF APRIL
Producing design parameter solutions
Presentation of project at Brabrand public meeting 26th of may

2

THEORETICAL FOUNDATION
RESEARCH

In this chapter the theoretical background will be explained, from which the thesis has been influenced by and used in practice in the further process. A short introduction of three design cases are introduced from the level of subjectivity, each containing a design element from which the thesis has used to develop the concept presented in next chapter.

Contents:

THEORY OF MOBILITY

The main thesis question can be broken down into two parts. The first one is about traffic and infrastructure: the people on the road; the other is about social relationships: the people living in the city. They are seemingly two different, incoherent stories, but the parts are indeed strongly related, and if there is to be found a solution to this problem formulation, then the issue of traffic congestion needs to contemplate the potential of public life, and the other way around. This is the turn from traffic engineering to the design of mobilities, as discussed by Urry, Lynch, and Jensen. The thought of Jensen on mobilities design strongly orient an interest on the human perception in the design of transfer places, whereas the works of Hajer and Reijndrop and Jan Gehl amongst others gives understanding of one particular place: the public domain. The work of Elisabeth Mossop is an inspirational tool in dealing with the surroundings on a conceptual foundation. All of which have had influence in the understanding and design of a new station in Brabrand.

Mobilities design

As described in the introduction to this thesis, we are experiencing increased traffic demands, and a transformation of our infrastructure in accordance with an environmentally and socially sustainable environment. Along the growing cities, we travel more from destination to destination, from A to B, in the all-connecting network. We are interested in having this network getting us from A to B in the most efficient way possible, and consequently the well-connected network takes up a lot of area in our physical world, where interaction and meeting are unavoidable. The engagement with the environment 'makes mobility' (Jensen, 2009). As of this reason new mobilities research adds the sociological perspective to the transport research and generates the paradigm 'mobilities turn' (Urry, 2007). John Urry describes this 'turn' as a call to expand motion from being the subject of a single-purpose and restrictive transportation engineering, towards an interdisciplinary description and design of mobilities (Urry, 2007). Every day on our daily travels, everyday mobile situations and spaces form our 'stage':

"The new mobility research is relevant. Its motto is that "mobility is more than from A to B" and it asks interdisciplinary into how mobility will define who we are, how we treat others and how we perceive the physical world."
(Jensen, Wind and Lanng, 2015).

Unlike transportation research, mobility research has an interest in the social and cultural consequences of motion. Situations of mobility become performing stages, where flows and behavior of people can be studied (Jensen, Wind and Lanng, 2015). Mobility becomes a performance, where the body is in interaction with its socio-spatial environment: mobile situations are respectively staged by design of cities, infrastructure and the physical environment, and they are performed by the participants who are the ones to use them (Jensen, 2013) (See ill II). Uncovering the problems and potentials of specific mobile situations, and proposing interventions to reconfigure them is the process of designing mobilities (Jensen, Wind and Lanng, 2015).

The use of the concepts of the words from Shane, 'armature' (urban assemblages, spaces of connection and flow) and the 'enclave' (specific districts or units) are important urban categories when deliberating urban theory (Shane, 2005). As a designer it

can be asked how mobilities design can be applied to these armatures? Armatures can be understood as places and systems that goes beyond 'non-places' (anthropological spaces) (Augé, 1995), and produce meaningful and interactive networks. They need nevertheless to be understood in their relational geographical theory. We need to assert 'critical mobility thinking': that our lives are not just what happen in static enclaves, but also in all the intermediaries and circulation in-between places' (Jensen, 2009).

Meeting in motion

"Beyond the bodily movement through the city and thus the sensory experience of urban mobility the armature also carried the potential for interaction and culture…"
(Jensen, 2009)

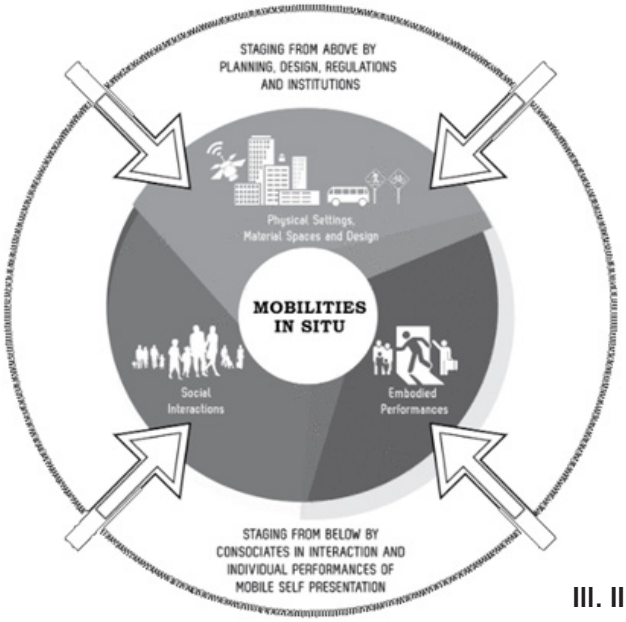
The impacts of mobility have importance according to our experiences and our life. Therefore, our 'identity-production' relates to the environment in both motion and standstill (Jensen, 2009). How can these individual movements of identity-production be understood? According to Jensen (2009) and Massey (2005) we should think of 'identities as relational in ways that are spatio-temporal. We are affected by our relations to the environment, as well as to the ones we meet and interact with.

It is essential to investigate how people in motion experience mobilities. How much attention are they paying to their surroundings, how are the social interactions of the people? Mobilities are influenced by how the 'mobilities in situ', the mobile situation, is staged from above. In the Australian Outback, Crocodile Dundee greets everyone and is greeted by everyone. When he comes to New York, he greets – or at least tries to greet – everyone, only to get the most astonished and incredulous looks back, if getting any response at all. In the environment of New York there is a significant increase in social interactions compared to the Outback Australia. This forces people to prioritize and the interactions on the streets of New York become less meaningful: There is too much interaction to comprehend. The way individuals navigate and interact on their way through the city and their environment differentiates, and when facing obstacles, they negotiate, may it be by road structure or other embodied mobilities. Multiple 'temporary congregations' are made by the individuals as they are slipping in and out of 'mobile widths' (Jensen, 2010), situations often seen for example in the case of travelers at transfer places when they move around each other because of multiple encounterings. It is useful to describe such situations with the terms of the 'river' and the interaction of the 'ballet', two complex dimensions out of a complex transit space (Jensen, 2010):

"Seeing the mobility practices as a "river" means then to aggregate and "look down" at the mobile urbanites from above and thus create more abstract and generalized understandings and interpretations."
(Jensen, 2010).

Critical Points of Contact

The most important places of these interactions are the Critical Points of Contact (CPC) (Jensen and Morelli, 2011). The CPCs are domains of different networks, where significant change is happening. Of this reason, these points are sensitive in the mobile networks, where interaction between different embodiments can happen; hence intervention upon



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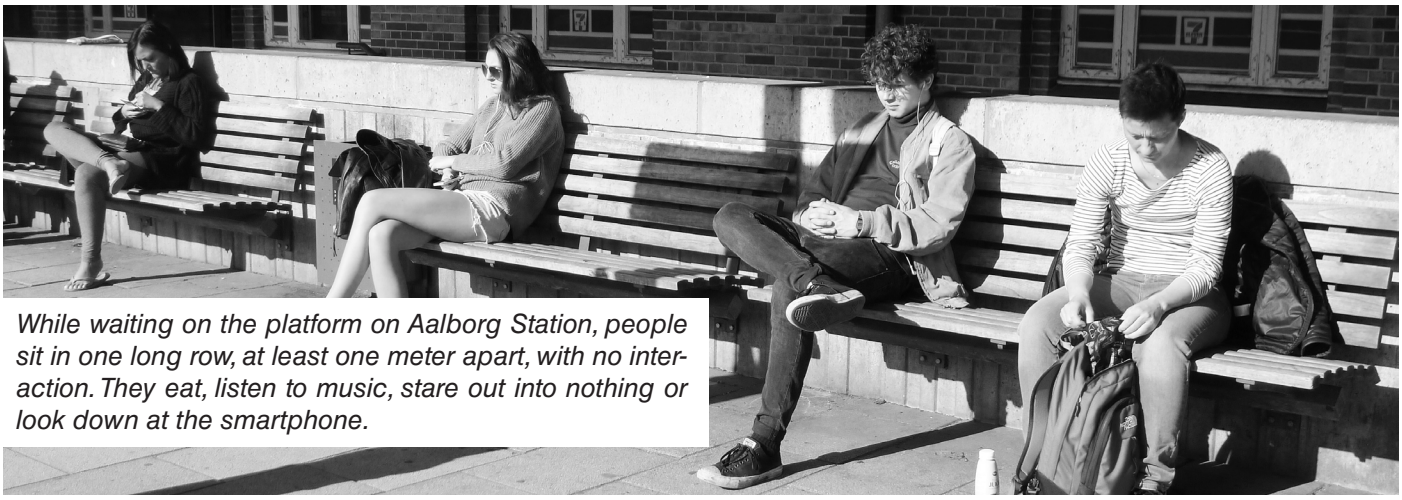


While waiting on the platform on Aalborg Station, people sit in one long row, at least one meter apart, with no interaction. They eat, listen to music, stare out into nothing or look down at the smartphone.

them has relatively high impact on the network. They define the clashes between different people in motion, and they start to be critical when these clashes changes and affects each other when assemblages of multiple networks, nodes and interactions intervene and overlap (Jensen and Morelli, 2011). Furthermore real-life networks, that have many clusters with many internal connections and a few vertices connecting to other different clusters, are the networks that are resistant to random failures, but sensitive to intended interventions, for example design (Albert & Barabási, 2002). Altogether, the CPC concerns the physical elements, as well as the more abstract characters as anthropological and sociological factors.

"The idea behind the notion of CPC is therefore to use this concept as an analytical tool pointing at the 'hot spots' or the nodes that are 'critical' in the sense that they make a difference to either the interacting systems or the interacting user."
(Jensen and Morelli, 2011)

In the perspective of a designer, the main objective is to identify, analyze and re-design a CPC to illustrate the potentials and aspects of mobilities design and can find solutions justified by network. In the case of a station, a place undeniably rich with urban life, and several CPCs, is where 'life take place in armatures and between nodes' (Jensen, 2009). Jensen argues that such places with the quality of interaction-potential, have otherwise been underestimated, both as a social environment of meaningful interaction, but also as a new public domain creating cultures of movement. This cannot be stressed enough in this thesis as it is a main focus to look into the station as an urban planning tool:

"In the city of flows armatures may have potential as 'public domains' and thereby sites of meaningful interaction. The challenge is to understand armatures as potential supporters of civil society, and politically to re-valorise armatures as sites of social interaction."
(Jensen, 2009)

Through this theoretical approach, the thesis aims to see the station area as a site where cars, pedestrians, public transportations, and bikes on a regular basis negotiate, interact and express flows of interaction in motion – and not only as an armature with the sole purpose of directing people from one place to another. It aims to design a station as something more than 'just an in-between place', where people in their enclosed enclaves can be more than 'standstills' between destinations, not caring to interact or meet.

THEORY OF PUBLIC SPACE

Infrastructure as public space

With shortage of space and a growing intermodal character of transport solutions comes the task – and challenge – of designing spaces where traffic is not to be dominated by grey surfaces. Thinking of the infrastructure more than simply large grey conduits of transporting from A to B is the consequence of thinking mobilities – as discussed previously. Can they for example enhance the quality of public life? Shannon and Smets (2010) argue why infrastructure may be seen as the ultimate public space: Infrastructure is generally paid for by public authorities. It is accessible to almost everyone. It marks a common itinerary or a collective place (Shannon and Smets, 2010, p. 184). Infrastructure combines different enclaves, different areas, and investing in infrastructure is thus not only a way of investing in getting from one destination to another, but it allows for a public management in its urban transformation. The station not the least is a transit space that through infrastructure becomes a key node where people meet and is of this reason a central transportation node to afford public space. However, what makes a public space? This thesis will use the interpretation of Hajer and Reindrop (2001), discussing the general understanding of public space in the sense of fixed and permanent physical spaces. They state the notion of 'public domain' as:

"Places where exchange between different social groups is possible and also occurs."
(Hajer & Reijndorp, 2001, p. 11).

To extent this further, the discussion from Jensen (2009) of transit spaces adds knew thoughts to the clarification of public domains. He discusses transit spaces as one with the quality of interaction that has otherwise been underestimated, both as social environments full with meaningful interaction – and as a new public domain creating cultures and movement. Hence, the public space is in this thesis interpreted according to the combination of where exchanges and meetings happen, with the focus of social environments within transit spaces. This is in coherence with the theoretical thoughts from the last chapter: using the thoughts of the social and cultural consequences of mobility research to the matter of urban mobilities design. With this understanding of the public domain, one can argue it is lost in the stations: they are directed towards the practical purposes of getting people from one place to another. In some cases however, they are merged with huge complex service areas, like in the case of Bruuns Galleri in Aarhus, to satisfy the traveller's consumption needs, filled with public amenities. When assessing a station in relation to urban design it is thus vital to look at how to assess them: what kind of atmosphere do they have, what kind of appeal? This is a difficult challenge, since the matter of 'appeal' is different from person to person. While the station in general is a building with the affordances of connecting across multiple networks, other factors must be applied to have people 'exchange between different social groups'. Gehl introduces the notion of gathering or spreading activities and people through his work 'Livet mellem husene' ('Life between buildings') (2007), where he states that by gathering people, events and artefacts will be able to stimulate each other: while some contestants are participating in some events, others will have that possibility elsewhere and experience something new (Gehl, 2007, p. 77). In this setting, Jan Gehl is interesting because of his discussion of the three scales, where gathering or spreading of people can occur: the regional

and citywide scale, the planning development, and finally the small human scale. All three scales of which the station has an impact on. The small scale is especially in the interest of Gehl who argues this is the scale where people are moving, meeting and experiencing the results of urban planning. It is here, the 'ballet' can truly be observed, to see the negotiations of different embodied social practices. This scale, particularly in operating the public domain linked to the station, is consequently important in the process of design, while also not forgetting that all three scales have to be connected to create 'a city for the people'. A city for the people is a city that is sustainable, and to Jan Gehl, a sustainable city is not only to lower the use of $C0_2$, it is about the social environment as well:

"To me, a sustainable city would be a very people-friendly city. It would be a city with good public spaces and a city that is rather compact. It would be a city that really invites people to walk and bicycle as much as possible. A good walking and cycling environment with a good public realm is also a good environment for public transport, so there is an important connection here as well. Strengthening public transportation will be essential in the future, in order to become less dependent on private cars and also in order for the city to become more people-friendly."
(Jan Gehl in Dac&Cities, 2014)

This thesis will explore the declaration through the station: if a station by design is to reform the car-inclined infrastructure and enhance the quality of public life in suburbs, it will have an influence on the development of the suburb into an environmentally as well as a socially sustainable city, where the public domain has a vast part to play. Stations are of course to maintain their practical purpose above all. However, to use their potential to transform them to socially active environments is what this thesis argues for. Environments affording public domains bring forward cultures and interaction. It is the belief that the station can enhance the quality of public life in the city development if designed not only to connect city to city but also to connect the meetings in-between.

My favorite element in the to me aesthetical appealing Aalborg station is the beautiful big model of a train driving through a landscape. I love watching the kids scream of joy when the train begins to run after having put some money in the slot, I was once one of those kids myself. That is the only interesting part for me at this station though. There is one place from where it is possible to sit and watch the train and the flow of people in the main hall, a little bench snugged into a niche. Even though the sun for one rare occasion is burning hot outside, a girl sits here and wait in her privacy, deeply engrossed with her smartphone.

THEORY OF
LANDSCAPES OF INFRASTRUCTURE

The physical environments of infrastructure

"Landscape and infrastructure merge and movement corridors are (re)worked as new ways of collective life. An entire new spectrum of the public realm becomes a terrain for investigation. In order to function, fit and be acceptable, infrastructure needs to enhance the quality of the landscape."
(Shannon and Smets, 2010, p. 9).

Shannon and Smets argue that infrastructure should be a mixture of the architecture, the landscape, the urban settings and the environment: one should not be designed without the other. The thought of the infrastructure as an integrated part of the physical environment together with the thoughts of mobilities design results in new interesting ways of thinking 'transfer spaces' of which this thesis explore the station as one particular transfer space. The awareness of working with the traffic space as part of the physical environment is a process of incorporation this thesis defends. When using the word 'physical environment' instead of 'landscape' as one might come to think of, it is of importance that it is the landscape as well as the built environment; the architecture. When discussing the problem of the dominance of the car in the article 'Mobilitetsforskning' (2015), Jensen, Wind and Lanng mentions the separation of the traffic domain from the architectural domain to be one of the problems. Thus, it is the design of mobility from which the station, as an architectural element, can effect by design if incorporated to its physical environment. The landscape as a part of the physical environment is understood as the representation of the dynamic systems of the city and is perceived as the significant medium for 'citymaking' (Mossop, 2006, pp. 165-166), where Mossop, as Shannon and Smets, argues to develop urban infrastructures that conserve and enhance the natural landscape, and to use landscape urbanism as a planning tool in the process. The implementation of natural processes, when designing the infrastructure, is not to be forgotten, on the contrary, they should be used as a planning tool to enhance the ecology and quality of the city (Mossop, 2006, p. 167). With an acceptance of these natures of landscapes as tools, the design strategies will enhance new hybrid ecological systems:

"It is clearly not about making approximations of pristine natural environments, but rather making functioning ecologically based systems that deal with human activity and natural processes in the urban environment."
(Mossop, 2006, pp. 170-171)

Instead of evaluating urban environments solely on technical criteria, they should function socially, aesthetically and ecologically. It involves all types of spaces, not just traditional parks and squares, but also the 'mundane' parking facilities, elevated roads, complex transit interchanges and waste spaces in the infrastructural landscape. There is a need to create networks of open space to serve the social needs that should not be overlooked through design (Mossop, 2006, p 172). Mossop thus only agrees to the ideas of mobilities design: we should redefine the mundane nature of transit spaces. We should use them to engage urban systems of public transit, pedestrian movement, water management, economic development, public facilities and ecological systems.

The station

Incorporating infrastructure into the physical environment and staging the mobilities is nevertheless a challenge. The physical infrastructure establishes connections, however within the urbanized settings, infrastructure often creates barriers. With the infrastructure, heavy traffic vehicles come along, and in the natural environments this can often destroy its beauty with the noise and pollution. This is the major challenge of an integrated design of infrastructure and physical environment, where the discipline of urbanism has authority over implementing the station. The stakes are high, and there is no excuse not to evolve urban design to ecological systems design (Shannon and Smets, 2010):

"A thoughtful synthesis of transport infrastructure's civil engineering requirements needs to be reasserted as a language of aesthetic expressiveness – where public works effectively engage urbanism."

(Shannon and Smets, 2010, p. 55)

Through the theoretical foundation the thesis will seek to think the station as more than just a transport facility: the station is not to be designed as a single-standing object, only affecting the people who pass through it, it affects the entire city it is placed within. By design the urbanist is to use the potentials of the station and transform the surrounding environment together with it.

At the platforms, the tracks of the trains stretch out into the landscape, making me want to go on a travel. I can't help but feel that this beautiful station is not part of the journey though, just an object making transfer possible.

THEORETICAL FRAME OF THE STATION

When making transit possible through infrastructure, the nodes in the network are often appearing, where these nodes can have the outcome of becoming places of public interaction. The station is as such a node with the potential of creating meetings while connecting. They provide accessibility to the wider environment and act as interfaces between various people, and thus are an important source of interchange. They should be designed not to create barriers in the cities, or 'edge cities' but instead to create connections and thereby be used to enhance the city quality around their settlements. Stations afford new quality of interaction and potential, both as social interactions and as public domains creating cultures of movement. Where the research of mobility by design can intervene in the mobile situations and look into what happens 'in-between', these 'in-between' places, the transit spaces, have the quality of interaction, of social environments, of new public domains. Places with the potential of creating connections, cultures and movement enhance the quality of the landscape and the public life. An urban designer through here has the tools to redefine the mundane nature of the transit spaces. Through a theoretical frame, these tools should not stand alone but should be implemented together (see Fig. 2.1).

Stations should respond to the value of their location and act as a catalyst for development. They should 'bridge the gap'. When implementing a station, or re-designing an existing one, it should not only be thought of as an object that serves a transit between modalities, but as an opportunity to enhance the public environment by providing a mixture of activities, open spaces and facilities, where the very nature of transit spaces can enhance the quality of public life. Instead of studying the station as a solitaire architectural object, it should consider the surrounding environment and what it affords to the context. Hereby its territorial impacts in transforming the perception of a whole city widens.

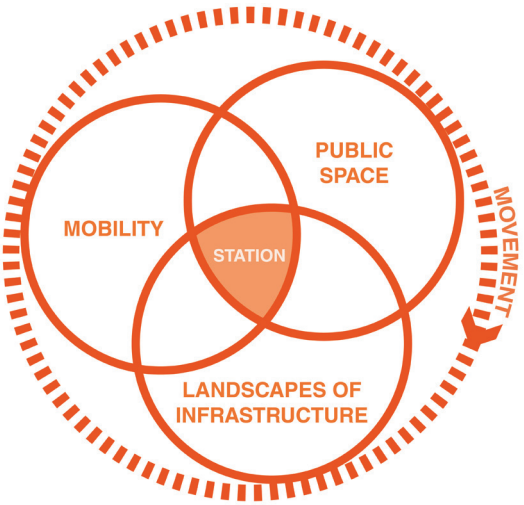


Fig. 2.1

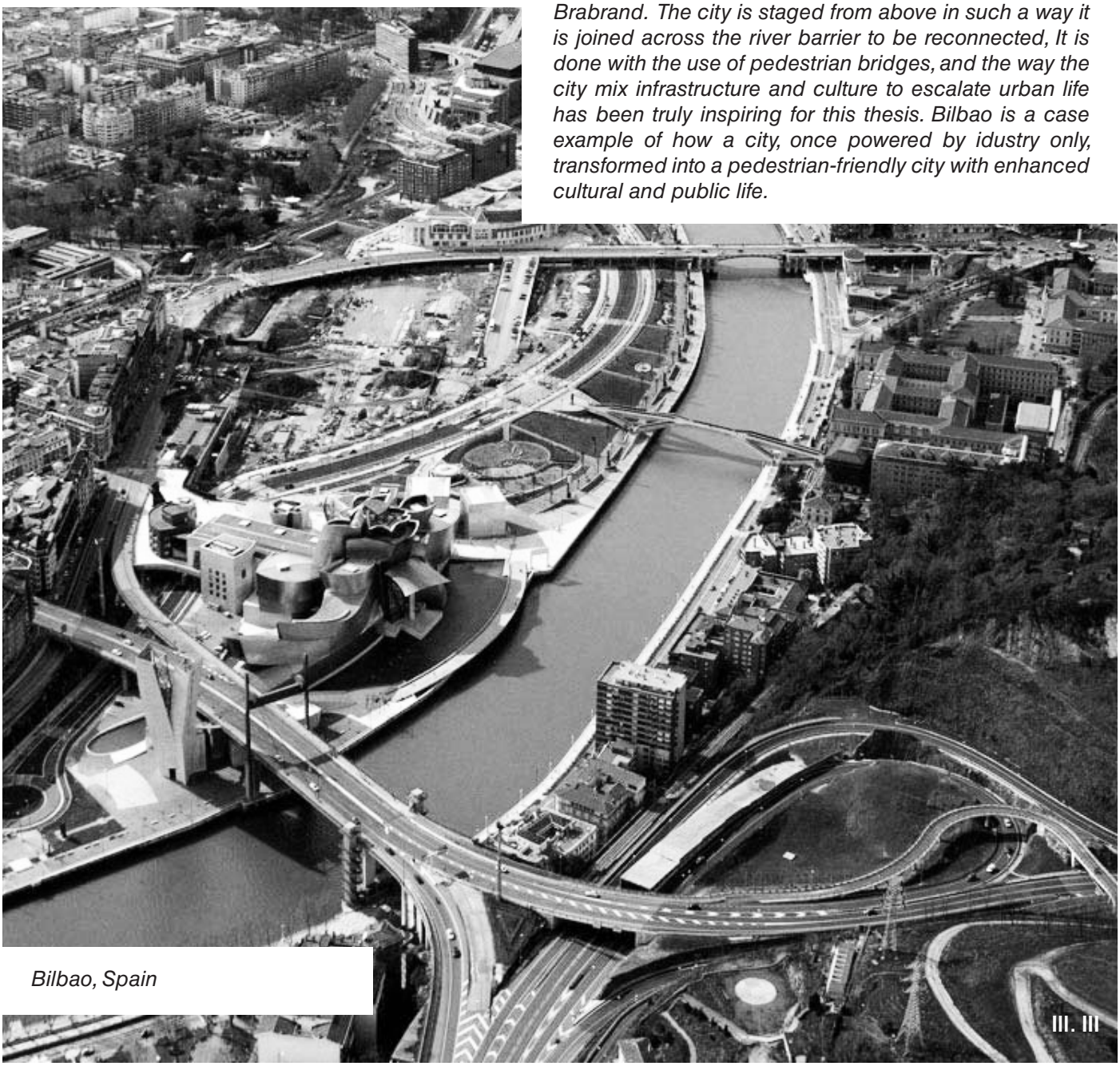
CONNECTIVITY AND MEETINGS IN PRACTICE

Before opening up to Brabrand, three cases are presented shortly in accordance with my own personal interpretations. The first case is chosen as it is a city illustrating infrastructure and city transformation in practice. The second case is chosen of the reason that it illustrates connection through a station in practice. The third is selected because of programming illustrating meetings in practice.

All of which, if coupled together, have the opportunity to create connective meetings and escalating urban development, supporting the theoretical background. The three cases are to have in mind as they are used as inspirational tools in the further thesis. In chapter 4 they will be discussed more thoroughly according to their influences on the urban context to demonstrate the concept of the design proposal in Brabrand in relation to urban development.

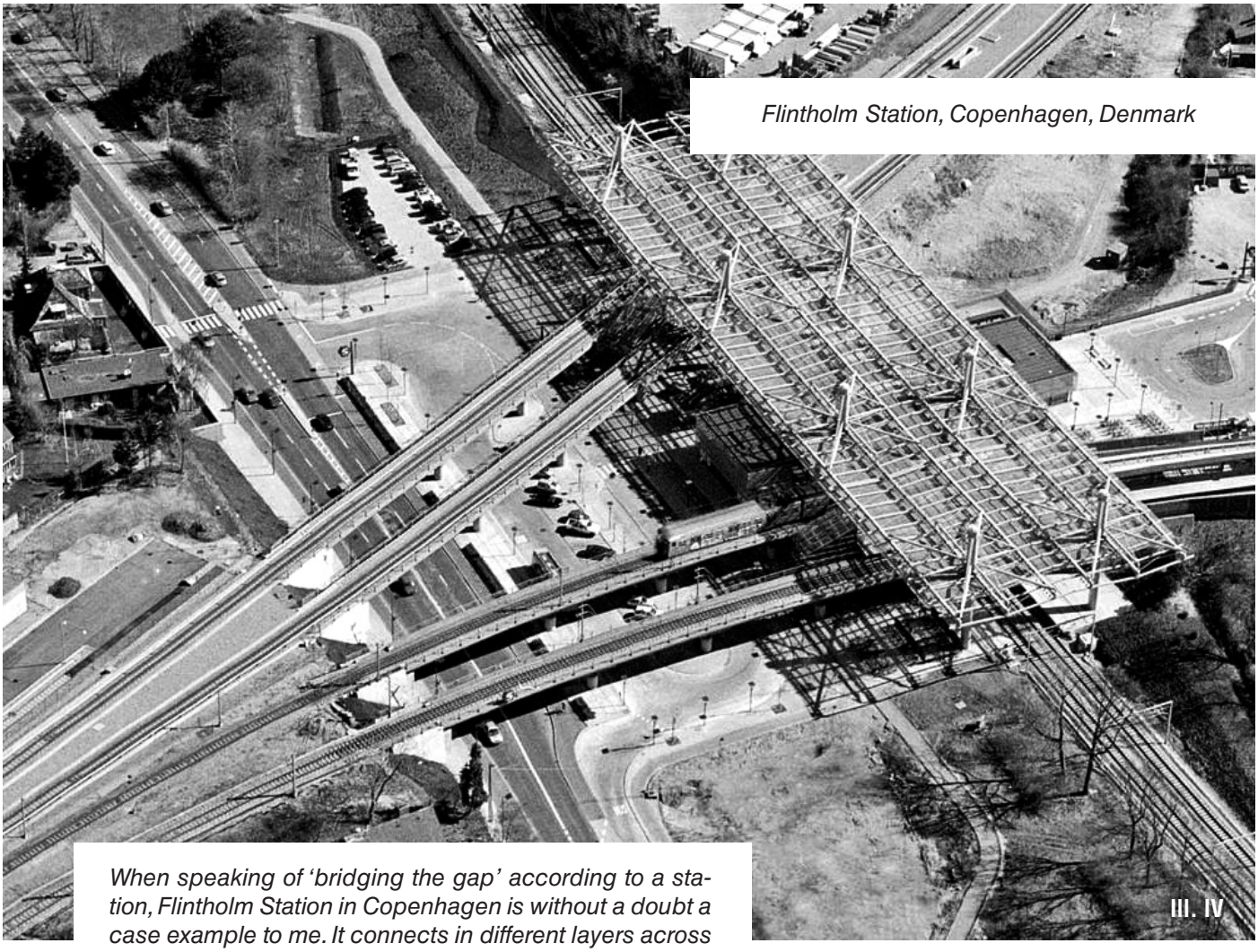
CITY TRANSFORMATION
IN PRACTICE

The river across Abandoibarra, the former industrial center in Bilbao, is an example of 'bridging the gap'. Looking into the case, the city development of Bilbao became an important motivation for me according to the case of Brabrand. The city is staged from above in such a way it is joined across the river barrier to be reconnected, It is done with the use of pedestrian bridges, and the way the city mix infrastructure and culture to escalate urban life has been truly inspiring for this thesis. Bilbao is a case example of how a city, once powered by idustry only, transformed into a pedestrian-friendly city with enhanced cultural and public life.



Bilbao, Spain

III. III



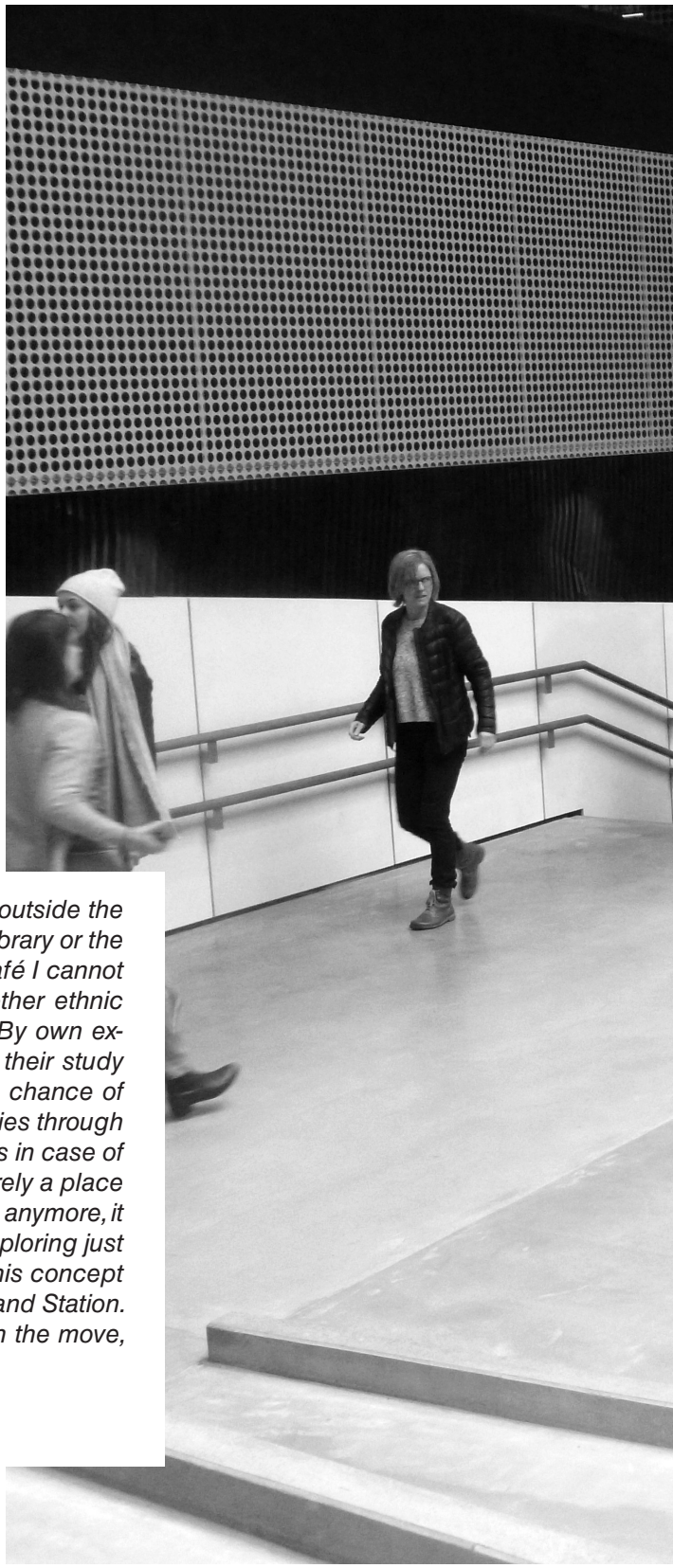
Flintholm Station, Copenhagen, Denmark

When speaking of 'bridging the gap' according to a station, Flintholm Station in Copenhagen is without a doubt a case example to me. It connects in different layers across heavy traffic, ensuring not to damage the flow from the necessary car traffic, and yet still containing space for them to park so as to ensure them tthe offer to leave the car to take the public transportation instead. When walking there myself during my stay in Copenhagen the fall 2015, it was a delight to see the people negotiate easily through their movements: the levels are linked together in such a way, that efficient flow, despite the many people, is running like a steady river.

III. IV

CONNECTIVITY IN PRACTICE

MEETINGS
IN PRACTICE



I have often wondered why the only places to work and study outside the personal home or outside the job and school seems to be the library or the cafés, at least from my point of view. And when I look at the café I cannot help but to notice, that I almost never see any groups with other ethnic backgrounds, as if the café environment has excluded them. By own experience I have seen a lot of students gather and meet up in their study groups at the library, it simply affords necessary space and a chance of environment. And it is a place for everyone. I love how the libraries through design seem to use the concept of more multi-purpose uses, as in case of Dokk1 in Aarhus, the same illustrated on this page. It is not merely a place of silence where you read with a strict librarian at your shoulder anymore, it is a place of arrangements, cultures, exhibitions, playing and exploring just alongside programs such as reading, studying and working. This concept of meeting through multi-purpose uses I want to apply to Brabrand Station. The station, as the important node from where people meet on the move, certainly has the potential to create connective meetings.

Dokk1, Aarhus, Denmark

3

INTRODUCING BRABRAND

In this chapter the case of which the physical design of a station is developed onto is presented. The chapter has three main sub-chapters. The first clarifies the case by the public debate surrounding it, mappings and analyses and the chosen design parameters the thesis will focus upon. The second summaries what the thesis will focus upon to the design of the station through the chosen design parameters. The third will present the design itself.

Contents:

Brabrand is to be a railway city again

Århus Stiftstidende, 2015

Traffic is the commuter town's major Achilles heel of East Jutland

Århus Stiftstidende, 2013

Aarhus is being divided into rich and poor

Århus Stiftstidende, 2015

Brabrand Council has in 2015-2016 made Brabrand appear on the map of the Municipality

Brabrand Fællesråd, 2016

Critique: Light rail does not solve the problem

TV2, 2015

Unambitious to let the light rail stop at Brabrand Station

Århus Stiftstidende, 2015

Alderman wish to reopen Brabrand Station

- Lokalavisen Aarhus, 2015

Suburbs as Brabrand is built to commute by car rather than by bike - but does it need to be so?

Brabrand Fællesråd, 2016

Traffic problem in Brabrand

Jyllands-Posten, 2012

Heatet dreams: Brabrand Station perhaps resurrected

Newsbreak, 2015

Fantasy meetings about the light rail

Jyllands-Posten, 2016

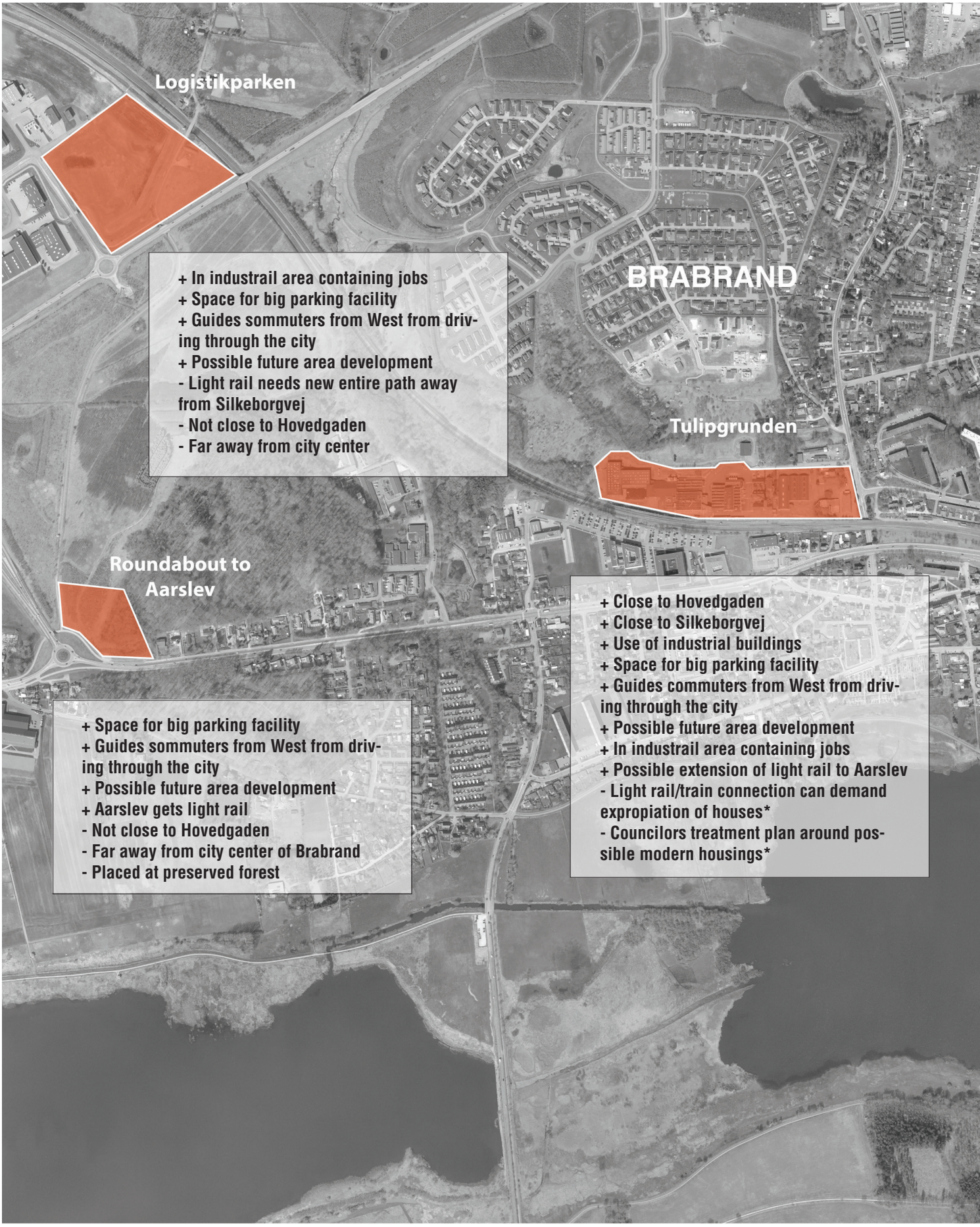
THE LIGHT RAIL IN BRABRAND

The light rail as universal problem solver?
The first stage of Aarhus light rail is to be finished by the year of 2017, with an already now planned expansion in a second stage that is expected to be completed in 2025 (MedieHus Danmark, 2015). This is according to fear of the prognosis stating that car traffic will increase by 60% in Aarhus in 2030, if not the transport patterns change (Aarhus Kommune, 2016). One of the planned stretches to be implemented in the second stage is from Aarhus Ø to Brabrand. Here, there thought is to establish a transit terminal with a possibility for a 'Park and Ride' facility, which is to be a central place of interchange, affording transport shifts from car, bus and bicycle to regional and national trains and to the light rail (Midttrafik 2016). Hence, this is to be a focal point of national traffic in East Jutland and for regional trains and light rail traffic. The new terminal in Brabrand forms the basis for the densification of the city. Left over lands can be transformed into a part of the city, and the light rail will allow many new residents of Brabrand to have easy and quick access to the rest of the region (Aarhus Kommune, 2016). Furthermore, the state expects to consider the project for a new regional stretch to Silkeborg at the year of 2024, enhancing the network between Aarhus region and the West of Denmark.

Traffic chaos
Brabrand will experience a rapid change due to the light rail. The planning process is now in development, where an environmental impact assessment (EIA) is being carried out according to an implementation of a new terminal station in Brabrand (Århus Stiftstidende, 2016). The station is suggested by the municipality to be placed where the old Brabrand Station was, Banevænget, where traffic interchange between the light rail and regional train is possible (Aarhus Kommune 2015a), (see map next page). However, while Aarhus is to be the metropolis of the commuters of East Jutland, that escalate city growth, 130.000 commuters everyday are driving through the borders of the municipality (Århus Stiftstidende, 2013a). Along the commuting, long lines of car traffic is existing outside the borders of the city and its only getting worse, Brabrand included. Because of the massive traffic chaos, a large scale planning in the infrastructure is required, what can be challenging since the Aarhus is reaching towards the live cord of Denmark, the highway E45 (Århus Stiftstidende, 2013b) with Brabrand at the end of this core. To improve the traffic chaos, Tom Nielsen argues for the implementation of the station in combination with the light rail:

> "It will be very hard to serve the area with public transport, because the city's units are so scattered. If the mode of transportation must be attractive, then every residential development or commercial enclave must have its own station"
> (Tom Nielsen, Århus Stiftstidende, 2013b)

Others are more sceptic according to the question of the light rail as a solution to traffic congestion. Lars Boje Mathiesen states the light rail in itself is not enough. He argues, that while in the cities the light rail creates a more flexible public transport, it does nothing to solve the existing problems of getting the cars in and out of the city (TV2 Østjylland, 2013). Anker Lohmann-Hansen supplies by explaining it is because there are few who changes their travel behavior and the new travelers largely will be travelers who use the existing transport infrastructure (TV2 Østjylland, 2013). The question here is whether a station can reform this car-inclined infrastructure, where Brabrand at his moment is in such a debate.


Logistikparken
+ In industrail area containing jobs
+ Space for big parking facility
+ Guides sommuters from West from driving through the city
+ Possible future area development
- Light rail needs new entire path away from Silkeborgvej
- Not close to Hovedgaden
- Far away from city center
BRABRAND
Tulipgrunden
Roundabout to Aarslev
+ Close to Hovedgaden
+ Close to Silkeborgvej
+ Use of industrial buildings
+ Space for big parking facility
+ Guides commuters from West from driving through the city
+ Possible future area development
+ In industrail area containing jobs
+ Possible extension of light rail to Aarslev
- Light rail/train connection can demand expropiation of houses*
- Councilors treatment plan around possible modern housings*
+ Space for big parking facility
+ Guides sommuters from West from driving through the city
+ Possible future area development
+ Aarslev gets light rail
- Not close to Hovedgaden
- Far away from city center of Brabrand
- Placed at preserved forest

STATION PLACEMENT DEBATE

Several placements for a new station were discussed at the public meeting, four with a great deal of potentials following. As seen by this map, one particular site stands out: Tulipgrunden. Unlike the site proposed by the Municipality, Banevænget where the previous Brabrand Station were placed, this has a great deal of potential in becoming an area of development. However, Tulipgrunden is a project in the interest of the firm A. Enggaard A/S, which want to transform the old historical buildings on the site to modern housing, where a local plan proposal is in act (Jyllands-Posten Aarhus, 2016). However, the plan has been met by much criticism from the residents (Jyllands-Posten Aarhus, 2016; see Appendix C3). The new 235 housings are feared to be too tall and create more traffic chaos, discussed later in this chaper. Furthermore, between the train tracks and the light rail all the existing area is in use, occupied by offices, work places, a soon-to-be-built 3000m^2 office building and housings, which make challenges for interchange. All through the city, the train tracks and Silkeborgvej cuts through the city, complicating connections.

+ Ligt rail/train connection
+ Close to Hovedgaden
+ Connection to Silkeborgvej
+ Use of old industrial buildings
- No space for big park facility
- Possibility of increased traffic because of commuters
- Restricted area: no possible future area development

1:10.000

THE STATION
A PUBLIC DEBATE

Concern of placement
The news of a light rail and a new station in Brabrand varies in the acceptance between the residents of Brabrand. A new station is argued by some to create more traffic in a suburb like Brabrand, because to have the station placed at the proposed site from the Municipality, in the middle of the city, is thought to create more traffic chaos. There is no place for large amount of commuters to park, and the roads around Silkeborgvej is not built to handle large amounts of traffic, especially according to Langdalsvej/Truevej, which by the residents are called 'Ring Road 3'. Here a Brabrand citizen on the website Rethink Traffic suggests moving the station to the West and is not alone. (Rethink Traffic, 2016). As another article in TV2 Østjylland (2016) writes, it states that by moving the station to the West, the light rail will reach the industrial area, where amongst others Jysk is placed with 250 workers, where this is backed up by other residents of Brabrand (see Appendix A1 and A2).

I experienced this discussion hand-on to a public debate in the school Engdalskolen the 15th of March. The purpose of the public meeting was to clarify the visions, challenges and opportunities in the light rail project for the citizens of Brabrand and to collect information to the municipality to ensure the best possible solutions for the Brabrand stage. The newspaper writing of the meeting afterwards wrote this:

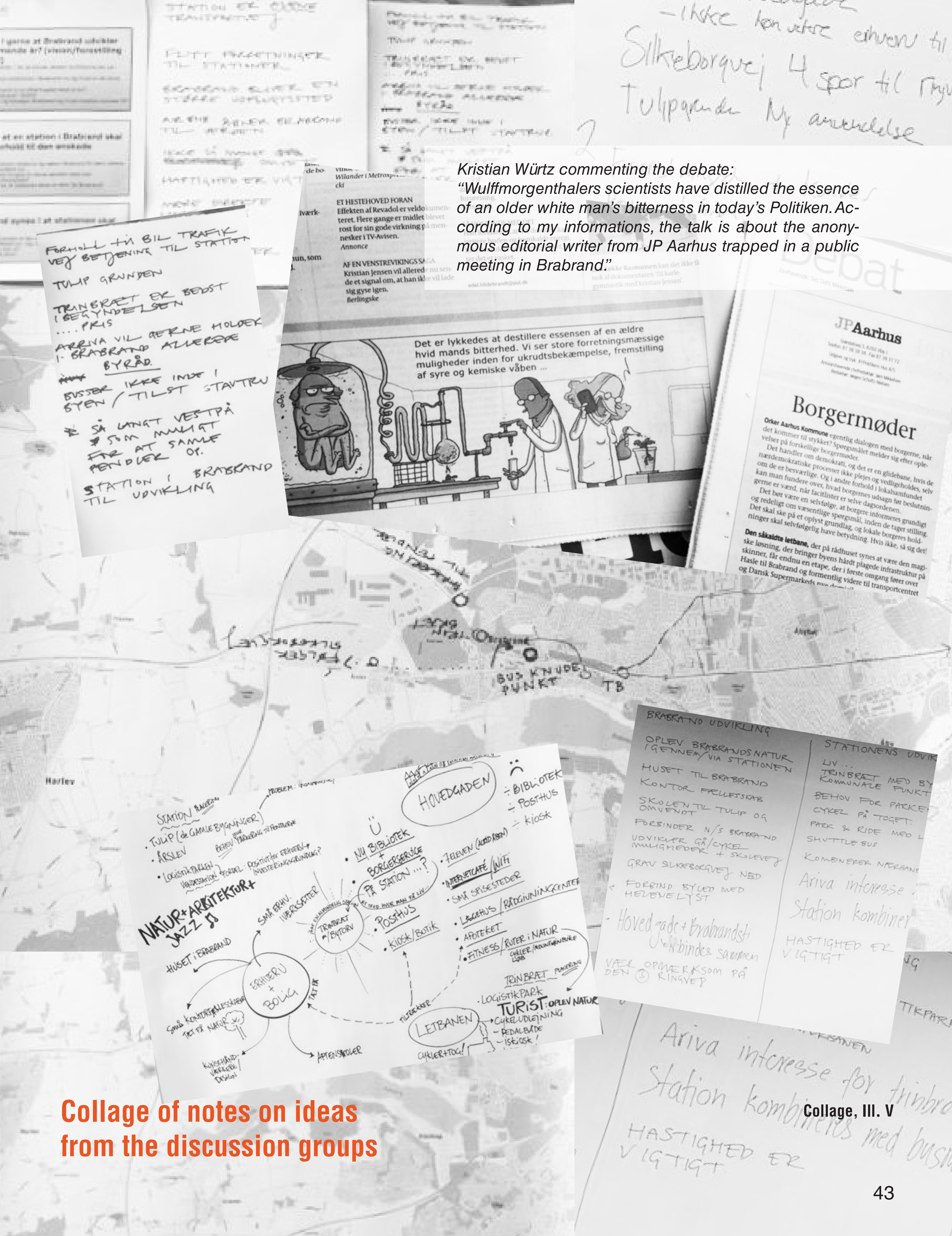
"In the uninspiring surroundings with rooms that resemble shelters from World War 2, citizens were given an orientation that were of some perceived as scarce. At least the participants interrupted perpetually technique alderman Kristian Würtz with questions and comments."
(Jyllandsposten, 2016)

As one of the participants myself, I agree with the renewable interruptions from the citizens. As the plan of the station only is in the planning process there yet are not a lot of information of the station that can be called secure, and the uncertain information seemed to annoy a lot the citizens. And a lot of citizens wanted to state their opinions before Kristian Würtz had said more than three sentences, and they did: move the station to the West out of the city. The reason was as written before: the traffic on Silkeborgvej is heavy, and with the station, there is a fear of even more traffic.

A development discussion
However, while the placement of the station indeed was one of three main subjects of the almost three hour long meeting, two other subjects were in focus as well. Two that stated a wish and belief in a new development of Brabrand, a development made possible by the station. The citizens took these to heart and discussed wildly when we were distributed into discussing groups. These three subjects were as follows:

-The development of Brabrand
-The activities at the station according to development
-The placement of station

Thus, I together with the citizens of Brabrand could discuss what the city needed, what kind of station they wanted, and where it should be. (The entire sample of notes, personal as well as from Brabrand Fællesråd, can be seen in Appendix A1 and A2). I immediately realized during the process, that the residents were very engaged in the matter, and they had valuable knowledge of the situation in Brabrand, that



Kristian Würtz commenting the debate:
"Wulffmorgenthalers scientists have distilled the essence of an older white man's bitterness in today's Politiken. According to my informations, the talk is about the anonymous editorial writer from JP Aarhus trapped in a public meeting in Brabrand."

Collage of notes on ideas from the discussion groups

Collage, Ill. V

became valuable not only for the municipality, but for this thesis as well. It came to have huge impacts, not only to see, what the resident would want – and certainly, not everything can probably be granted – but to hear of the problems in their infrastructure, the municipality were not aware of (at least to my knowledge). Kristian Würtz himself, a man born and raised in Brabrand, was in a strong belief that the light rail and station came with the opportunity to foster social life. As he in his humor said: "I was in a rush on my way here, so I had no time for dinner and wanted to grap something from the main street. I discovered, that the only place I could get some was at the small pizzeria", from where the citizens nods without any surprise. Everyone agreed that it was a shame, that the main street of their city was dead of commercial life.

However, one clear yell came from one of the citizens: "We are not interested in getting loads of traffic from outside the city through Brabrand." This sentence sums up the very worries of the citizens: with a terminal in Brabrand, commuters will park in the middle of the city and bring even more traffic with them, what makes an unsafe environment, especially for the kids. That is why, the discussion of placement became essential.

The question of what type of station they wanted was another – rather confusing – matter. In general, the wish was a platform that could serve the interchange, and move the commuter parking to the West. Nonetheless, they wished strongly for more services and commercial life in the city, especially public activities. They wanted more than 'just a transport center'. Furthermore, connection between the north and south side of Brabrand is something all groups had stated as a wanted potential, with better possibilities for the pedestrians and bicycles. Connections in general was something they felt were missing, from the northern part of Helenlyst to the southern Brabrand Lake (see page 52). Maybe more surprising, all were to agree that they did not want more industry turned into housing. Their missing public life became clear to me: they wanted public life in the city, however would not have a station to bring in more traffic. It comes down to the question: what sort of station could Brabrand benefit from, and where should it be placed according to its services to enhance the infrastructure and innovate public life?

I see a lot of what they wanted (Appendix A1 and A2) as factors made possible by implementing the station as an urban planning tool. While the citizens themselves wished for a safer community, they did not want the station to create problems for the cars however. After all, they also need to drive as they say. Here my part of the problem formulation kicks in: to use the station to reform the car-inclined infrastructure. Not with the focus on developing more efficient car traffic, but on the use of the station as a tool to improve the infrastructure in the city itself, and make sure, 'good' infrastructure for the traveler or the commuter will be by the public transportation. The next chapters in the thesis will look into the physical analysis, focusing on the design parameters to the right developed according to this meeting. After all, the urban designer needs to listen to the public as well as the Municipality and be an important link between the two, where the Municipality, despite their good intentions in incorporating the public in a debate, are seen to be ignoring the citizens of Brabrand in their opinion:

"It is as if the municipality of Aarhus has an interest in the development of Gellerup only as the most western part."
Quote, Holger Lyngklip Strøm

Due to the high level of transitional traffic in Brabrand, which is vital to the city's infrastructure, it is staged from above in such a way, that it deprives the city of important factors needed for a vibrant public space. Having studied and analysed the urban environment in Brabrand it has become clear the city has a huge potential as a suburb bustling with city quality if it is to be reconnected and the traffic is to be rethought. The concept idea thus revolves around following points:

1: The divided suburb
Two main barriers exist in Brabrand: the train tracks and the 20 meter wide Silkeborgvej, where the light rail is going to run, both crossing from east to west through the city, splitting the new Brabrand in north from the old Brabrand in south. A new station, from where connection between trains and light rail is necessary, has an opportunity to create a new north/south connection.

2: Traffic interchange
The traffic through the city is a problem for the pedestrian life, and as such for the public life. The new station together with the light rail can reform the infrastructure, where the traffic interchange is efficient for the commuters, escalating less car traffic and thus a better pedestrian-oriented environment.

3: The safe environment
Families and children are the main demographic group in Brabrand, however the children do not travel safe to and from school in the heavy traffic environment. As a tool that can escalate urban quality, the station should look toward promoting safe passages.

4: City and nature
Brabrand has a huge lack of cultural and commercial life in the main street that has been cut due to Silkeborgvej. On the other hand the city contains much of hidden rural areas as a quality. It will be an objective to use the station to directly, by design, ensure access and visibility to the main street and the nature.

5: Parking
Parking is a main factor to have commuters, who drive to Aarhus through Brabrand, have the opportunity to park their car at parking areas, the so called 'park and ride' facilities. As such this should be connected to the station.

6: Biking
Biking is another important factor in the issue of reshaping a car-inclined infrastructure. Promoting better options for the bike through the station is as such a goal.

7: Social meetings
As the important node in the infrastructure, the station can afford social meetings, both for the residents and for the travellers, becoming a central point from where people on their move and people living in the city can meet. Per se it is a goal to by design contribute to create meetings from where different social groups can benefit from.

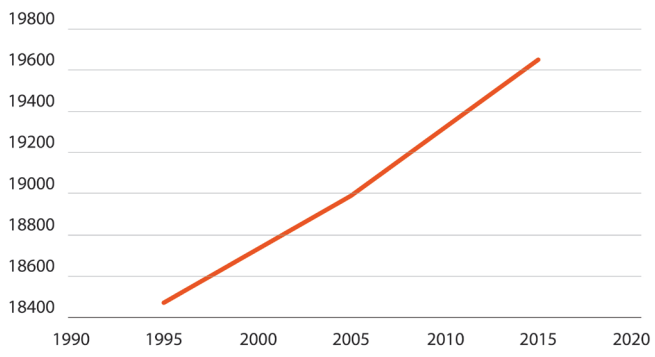
DESIGN PARAMETER 1
THE DIVIDED SUBURB

History of traffic
Brabrand had until 1978 a station (Århus Stiftstidende, 2015) and is now a big suburb with 19.000 inhabitants (Visit Brabrand, 2012). Brabrand has a large natural area to respectively north and south, where the big Brabrand Lake is placed just south of the old Brabrand city. Brabrand got its railroad connection in 1862 which escalated an increase in the building- and population trend (Stilling, p. 159), (see ill. ???). Brabrand got to be a suburb of Aarhus, resulted mainly by the increase of commuting from Brabrand-Aarslev municipality to the city: 35% of the inhabitants where commuting in 1951 and 45% in 1958 (Tjørnehøj, 1960). However, while Brabrand is a suburb from where commuters from the highway E45 can drive through along Silkeborgvej to Aarhus, Silkeborgvej has divided Brabrand between north and south. The 10 meter wide road where people are allowed to drive 70km/hour is infrastructure built to afford efficient velocity, but has destroyed the city life of Brabrand. Hovedgaden (the main street) was once a street bustling with life during the 60's, until the implementation of Silkeborgvej came and overtook Hovedgaden (Brabrand public debate, see Appendix A1 and A2 and krak historical maps). Of this reason the citizens of Brabrand is interested in a new station, but a station that incorporates new planning of traffic in the city, not only one to serve the commuters.

Tulipgrunden
Brabrand Fællesråd have comments to the possible preparation of the draft of a local plan for the area at Tulipgrunden. One is the children: A future plan for another school should be incorporated in the plans, because the existing, Engdalsskolen, cannot accommodate any more, hence a reason to either expand or change school districts. The other is traffic: they strongly point out the need for new bike paths and pedestrian walks, for children especially, nearby Tulipgrunden prior to the construction of the area (Strøm, 2015, see Appendix C3). The need for pedestrian-friendly infrastructure is obvious. Brabrand Fællesråd writes as such:

"The Council expects the traffic problems in the area to be recognized and remedied, rather than being exacerbated by the new buildings on Tulipgrunden. Alongside the plans for Tulipgrunden there should be incorporated solutions for the vulnerable road users, including the hundreds of children that daily route at their way to school."
(Strøm, 2015, see Appendix???)

Population, Brabrand-Gellerup



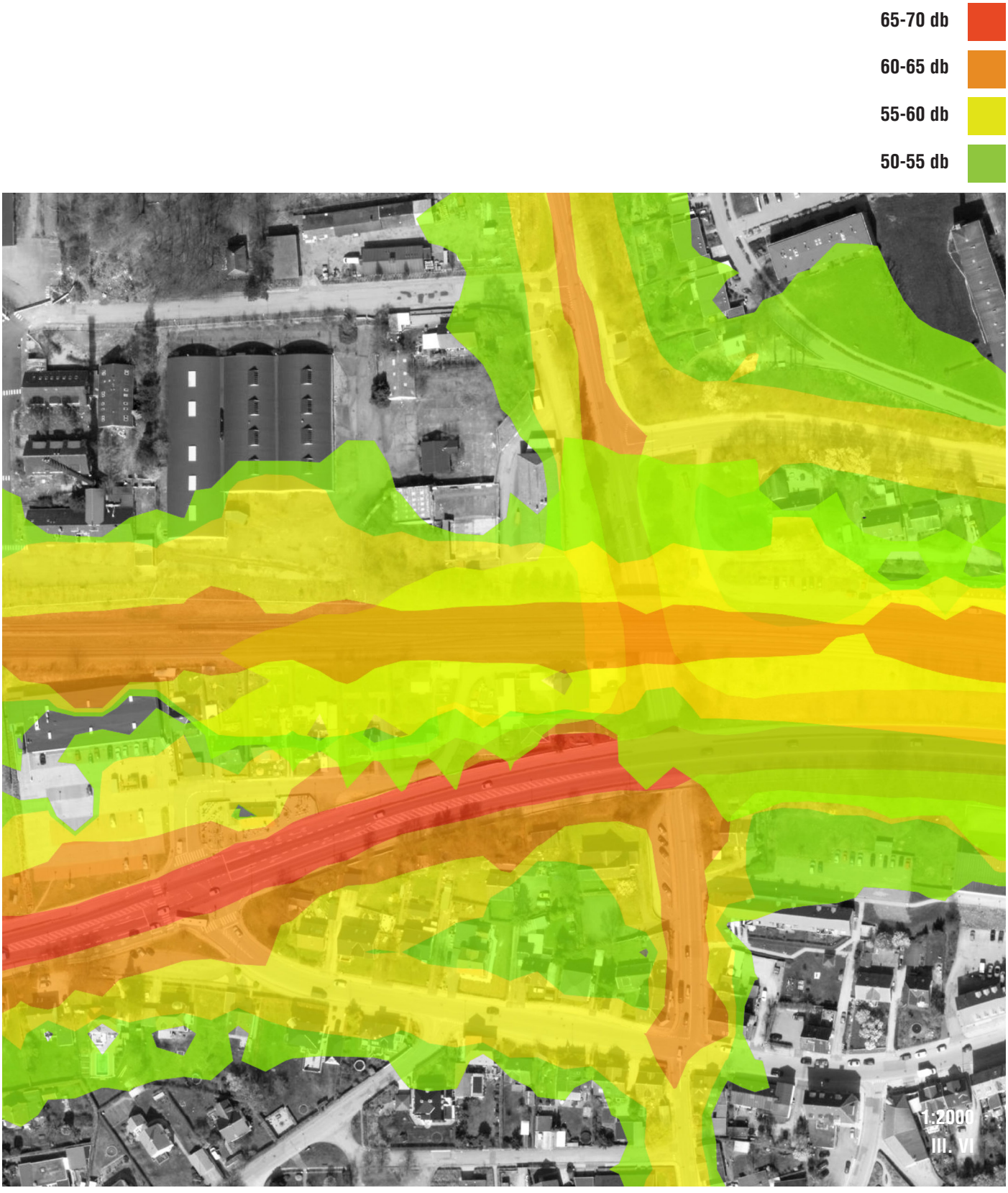
(Statistics from Kristian Würtz, see Appendix D)


BRABRAND
Silkeborgvej
Tulipgrunden
1:2000
III . XVII
1:5000

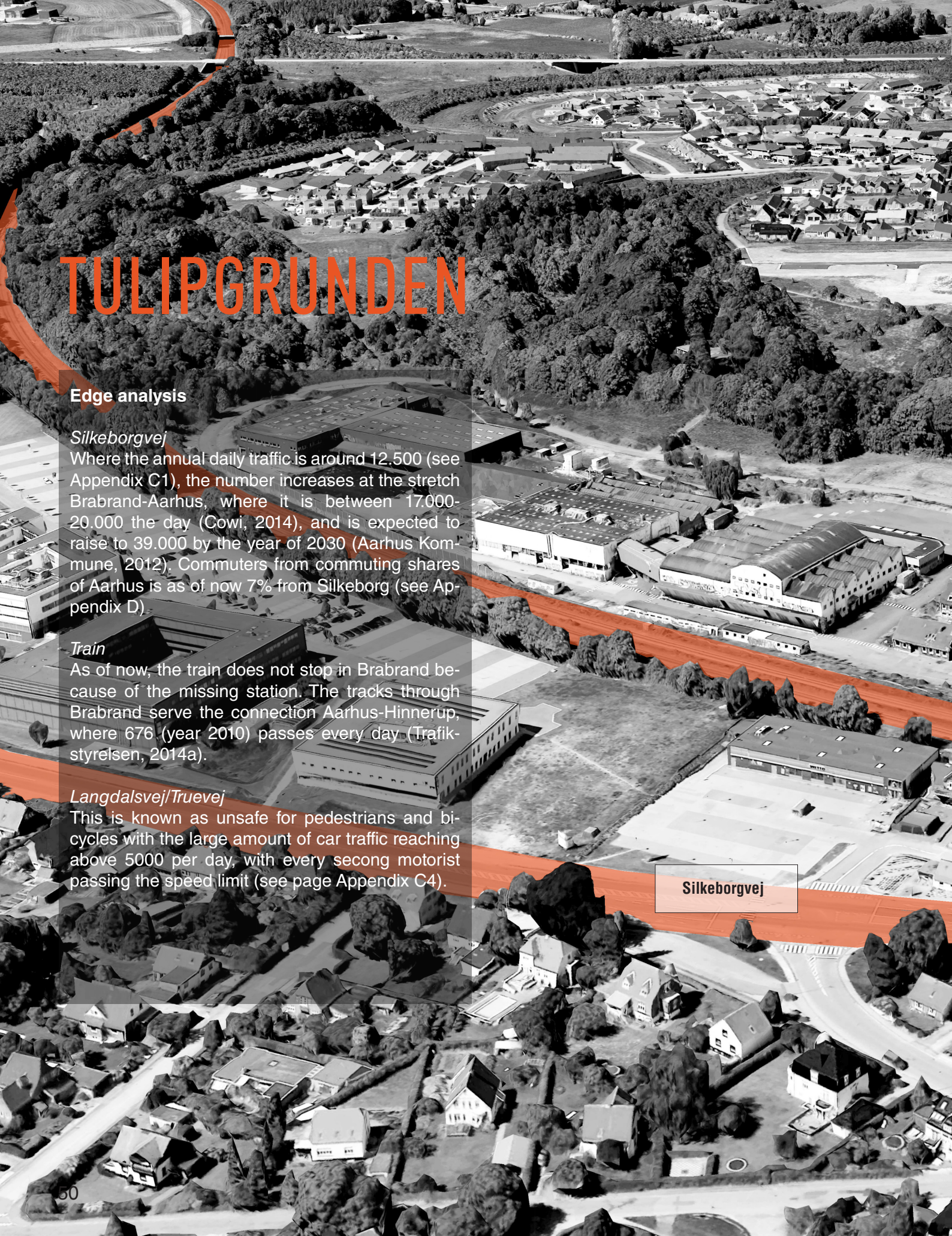
A third comment is of the commercial and services in Brabrand: They proposes themselves to place the station for the light rail and regional trains at Tulipgrunden and to use the old preserved historical JAKA (Jydske Andelsslagteriers Konservesfabrik) buildings and factory. They argue the area to be of great value to Brabrand along with the argument that the collective infrastructure in the city is not connected to the municipality's wishes of densifying the city. They refer to the Municipality Plan 2013 by the Danish Nature Preservation stating that as a rule Tulipgrunden is not appropriate for densification which basically breaks with the existing urban character and city profile and its nature value, and as such housing more than 9-12 meters in height should not be allowed, where some of the houses proposed by Enggaard A/S is 22 meters high (Strøm, 2015, see Appendix C3). They state several important factors of why a station should be placed at Tulipgrunden in combination with small housing, amongst others their promise of local cooperation with the builder company and the possibility of north/south connection through a new tunnel underneath Silkeborgvej, connecting the area to Hovedgaden.

Traffic noise

Today there is a considerable nuisance from traffic noise in Brabrand, not least at the road alongside Tulipgrunden. At many areas measured traffic noise up to 75dB could be in 2011-12 (see illustration to the right). According to the Environmental Protection Agency's recommendations, housing, day care centers and outdoor areas among others should not have noise pressure greater than 58dB (Miljøministeriet, 2007). It is here pointed out that noise can cause headaches, sleep disorders and difficulty concentrating if exposed to noise for a long time see also Appendix C3).


65-70 db
60-65 db
55-60 db
50-55 db
1:2000
III. VI

TULIPGRUNDEN



Edge analysis

Silkeborgvej
Where the annual daily traffic is around 12.500 (see Appendix C1), the number increases at the stretch Brabrand-Aarhus, where it is between 17.000-20.000 the day (Cowi, 2014), and is expected to raise to 39.000 by the year of 2030 (Aarhus Kommune, 2012). Commuters from commuting shares of Aarhus is as of now 7% from Silkeborg (see Appendix D)

Train
As of now, the train does not stop in Brabrand because of the missing station. The tracks through Brabrand serve the connection Aarhus-Hinnerup, where 676 (year 2010) passes every day (Trafikstyrelsen, 2014a).

Langdalsvej/Truevej
This is known as unsafe for pedestrians and bicycles with the large amount of car traffic reaching above 5000 per day, with every secong motorist passing the speed limit (see page Appendix C4).


5.200
4.500
12.700
12.700
5.400
12.000
2.500
1.200
1:2000
III. XX
Langdalsvej/
Truevej
Train tracks

DESIGN PARAMETER 2
TRAFFIC INTERCHANGE

An important and big challenge in the development of the station is how the transit interchange between bicycle, train, light rail and bus can be executed, so as it is experienced effective for the individual as well as to become a part of a spatial whole that is understandable, readable and beautiful, thus displaying care for a connective city. This according to the residents as well as the travelers.

The intersection where Silkeborgvej meets the end of Hovedgaden is an important node if Tulipgrunden is to be connected to Silkeborgvej and further to the main street. This point can be an important connection between the north and south part of Brabrand and further enhance the travel experience. As the traveler passes this node, there is no guidance to the northern part where the new Brabrand is, or to the southern where Brabrand Lake is placed, no travel experience because of the lack of connections, despite short travel distances.


TILST
5min.
02 Ring road
Brabrand Nord
Helenelyst
10min.
GELLERUP
AARHUS
Tulip grunden
5min.
Engdal skolen
Brabrand Hallen
Brabrand Sø
5min.
Sø
STAVTRUP
1:20 000

MUNICIPAL STRATEGY

Future urban changes in Brabrand is to be carried out. This analysis was made according to collected information to gain an understanding of a possible future situation where new approaches to a design development can be realized. The gathered information is made from predicted and calculated investigations from the municipality and the Danish consultancy company Cowi.

Light rail
A future connection between the light rail and the train to and from Silkeborg is expected to come. The light rail is likely to be located along the north side of Silkeborgvej in Brabrand when coming from Aarhus Centre (Aarhus Kommune, 2015a). The aim is to establish a double-track light rail lane throughout the entire stage. The track of the light rail may be extended to Harlev and Aarslev (Cowi, 2014).

Train
The government plans to include a new direct and regional track of the stretch Aarhus-Galten-Silkeborg, which will be a big improvement to the public transport across the Central Denmark Region (Midttrafik, 2016) (see page 14). The new terminal in Brabrand is to give an opportunity in the interchange with the mainline to Randers and Aalborg as well (Aarhus Kommune, 2016). With the new connection the travel time between Silkeborg-Aarhus is estimated to be halved from 45 minutes to about 22-24 minutes, where quick-trains will run without stop. Trains serving the 6 stations in-between will run half-hourly in both directions (Trafikstyrelsen, 2014). From Brabrand Station to Aarhus Hovedbanegård, the estimated travel time is 7 minutes (Kristian Würtz, see Appendix A1).

Bicycles and pedestrians
The bicycle paths and sidewalks at Silkeborgvej are planned to be maintained in both directions. In addition, the implementation of the light rail can create possibilities for new urban spaces and pedestrian friendly pathways (Cowi, 2014).

Cars
The number and width of lanes for car traffic on Silkeborgvej will be maintained. Possible new traffic lights and left-turns can be installed to ensure easy passage for the light rail (Cowi, 2014).

Busses
Four bus lines are driving through the site. The lines are expected to be remained, with a reduction of frequency of line 11 to three times the day (Midttrafik, 2014).

Personal travel experience
At the public meeting in Brabrand, the residents were optimistic in having a station for one important reason: it will take 7 minutes to get to Aarhus Center with the regional train. In general at the meeting, people said they used 15 minutes to get to the center by car during rush hours. One assertion was it took 40 minutes, with some sceptical laughter however from the crowd. I decided to experience the travel by myself. I drove from the first Ring Road at the cross-section of Silkeborgvej to the intersection of Stenbækvej in Brabrand at 07:50[1]. It took exactly 7,13 minutes, the same it would by train. However, noticing the long line of traffic on the other side of the road, I turned around to experience the travel from Brabrand to Aarhus Center during the morning

1 Documented in video, see https://youtu.be/n13fD8iwi7U

traffic.[2] In 10,07 minutes I was at the same crossing at the first Ring Road. To Aros in the city center near Central Station however, it took 14,22 minutes, the distance that would have taken 7 minutes by train.

With that in mind, I did not reach directly to the Central Station because of traffic confusion: according to google maps it is an extra 6 minutes from Aros to the station by car, a distance of merely 650 m. The traffic in Aarhus is not favouring the cars. Not only is time and troubles saved by train, the nearly impossible challenge of finding parking space in the city is of no worries. A station in Brabrand making it possible to take the train can have a positive influence in affecting the residents to leave the car in favour of public transportation.

2 Documented in video, see https://youtu.be/6Z1nXEPLVeI

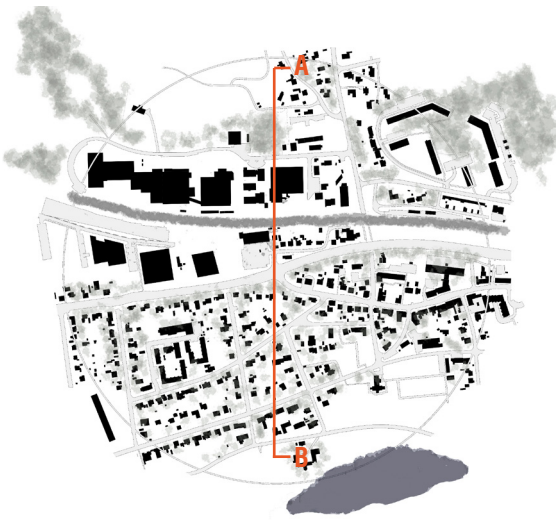
Placement of light rail track, North side of Silkeborgvej

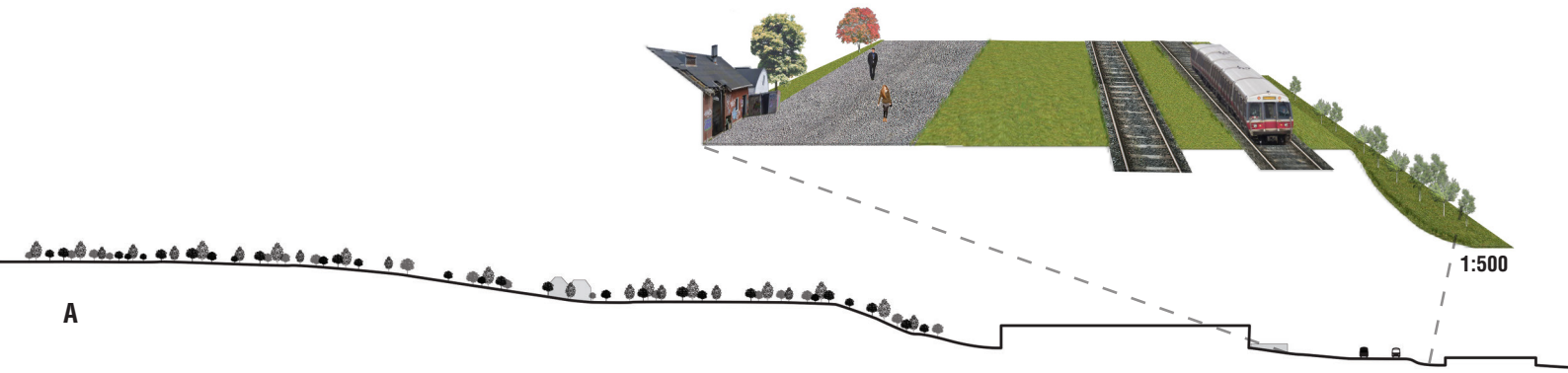
TOPOGRAPHY

Layers of landscape

Besides Silkeborgvej and the train tracks being dominant barriers, making it impossible to cross from the north side of Brabrand to the south part, the landscape has vast influence as well. From north to south, the terrain is sloping with an overall decrease of 25 meter and it is a direct 4 meter drop from the train tracks to the southern part of the landscape. This is a challenge according to the traffic interchange between the trains and light rail. The theory of Elizabeth Mossop, stating that landscape must be integrated in the urban environment and create public spaces, especially in the mundane transit areas (Mossop, 2006), comes in important in this case. The layers of landscape should interweave and connect with the station so as it will become possible to travel between the different transport means.

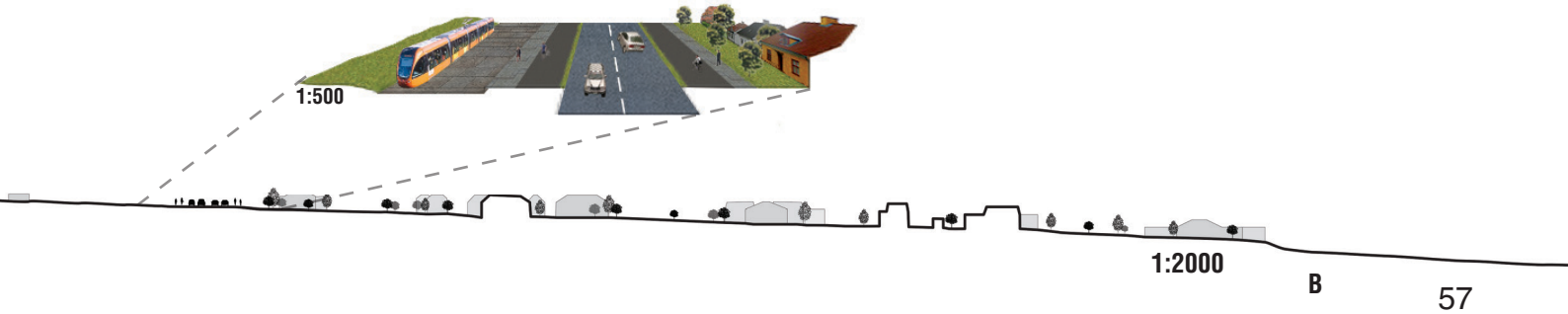
Meanwhile, on the top of the slope, the beautiful nature and Brabrand Lake can be spotted, and the layers of the landscape provides a view of the qualities of the city. A view that the resident living to the northern side will want to keep, and a tall station disrupting the view is not reasonable, another reason for letting it be worked together with the landscape.





Topography, north to south. While it is impossible for me to cross the tracks of the train, the view to the idyllic houses and the vast nature makes me want to be a daredevil and jump over anyway. I cannot help but to want to go just a bit higher, to really see the view.

Topography, south to north. Looking at the old historical building, I feel sad by thinking of it to be demolished. I start to climb up the hill to reach to it until I realize that the tracks of the train will not let me pass.

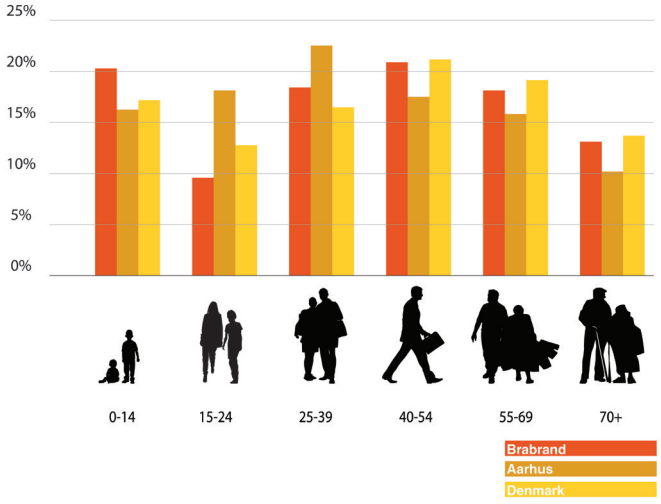


DESIGN PARAMETER 3
THE SAFE ENVIRONMENT

Langdalsvej/Truevej is an important public road between the two roads Silkeborgvej and Edwin Rahrs Vej, and this is not to be changed (Aarhus Municipality, 2012, see Appendix C1). In connection with the preparation of the traffic plan for Brabrand and Gellerup, Brabrand Fællesråd entered Langdalsvej as the biggest problem, especially according to the road being a secondary traffic route where a large amount on children are cycling (see Appendix B and C4) and is is a part of the way to school for the majority of the pupils at the school Engdalsskolen (Strøm, 2016, see Appendix C2). Aarhus Municipality find traditional bumps to lower the velocity excluded as busses are using the road, and furthermore they see it as necessary to not hold back the traffic (Aarhus Municipality, 2012, see Appendix C1). This creates traffic problems, because in the municipality speed measurements in June 2015 (see 'Langdalsvej Hastighedsmåling 2015', Appendix C5) where it is illustrated that more than every second motorist drives above the speed limit. Furthermore, it is noted from chairman of Brabrand Fællesråd, Holger Strøm, that with the establishment of the residential areas, Helenelyst and Laskedalen, traffic at Langdalsvej/Truevej has increased significantly during the peak periods, and with the development of residential housing at Tulipgrunden, the traffic will only increase more at the road, onless changes are made (Strøm, 2016, see Appendix C2).

The initiative the municipality has taken to solve these problems are to suggest another road for the children to take so as not to disrupt the car traffic: a road through a tunnel underneath Silkeborgvej and the train tracks. This road together with Langdalsvej/Truevej are the only north/south connections nearby from the school, however the children uses mainly Langdalsvej/Truevej as the natural and quickest route, not the tunnel (Strøm and Sølvhøj, 2016, see appendix C4). As Strøm mentions, the proposal will not affect the speed of the vehicles, and the walks and bicycle road is very narrow (See Appendix C2 and Photo 3.1) and will create dangerous situations when crossing the road for the children. An environment and infrastructure with respect of the children is of great importance, since children are the main demographic group as seen on Ill. 3.2.

Demographic, Brabrand



Ill. 3.2

Children playing at Engdalskolen

Mother with stroller at Langdalsvej/Truevej

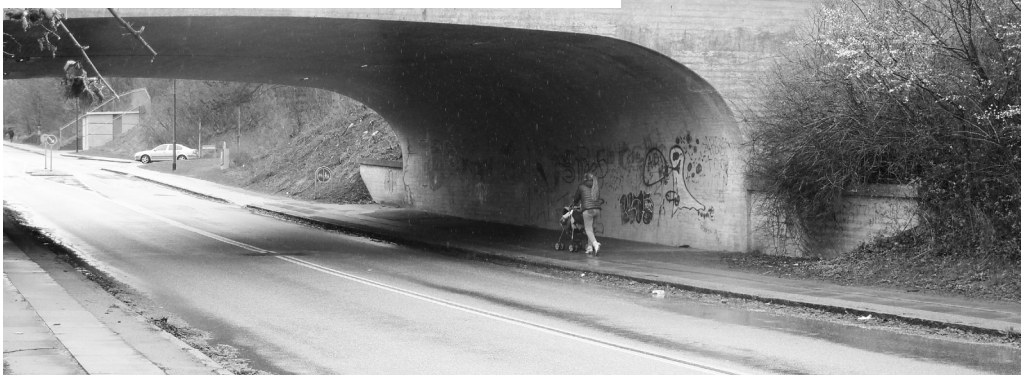
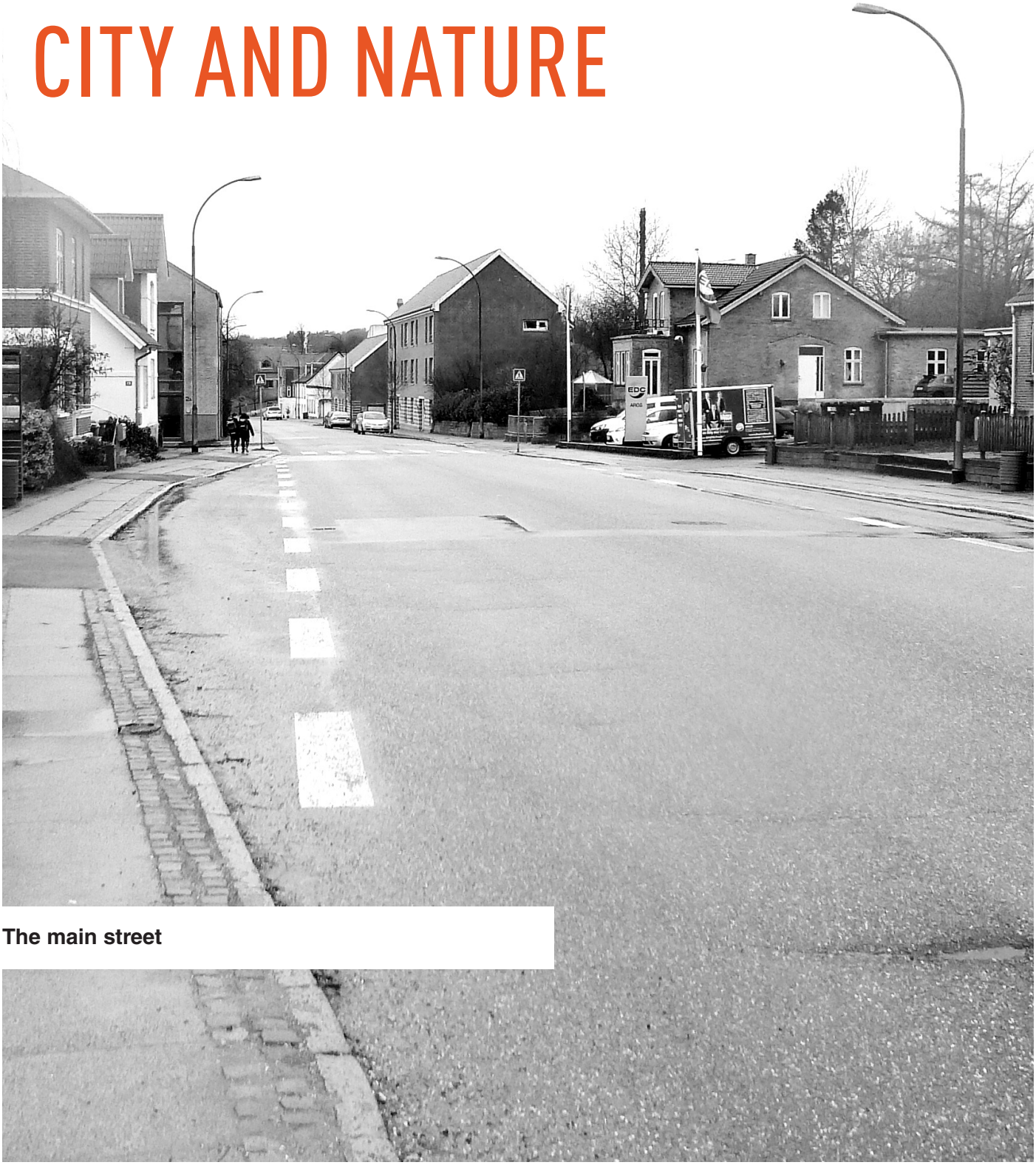


Photo. 3.1

Langdalsvej/Truevej

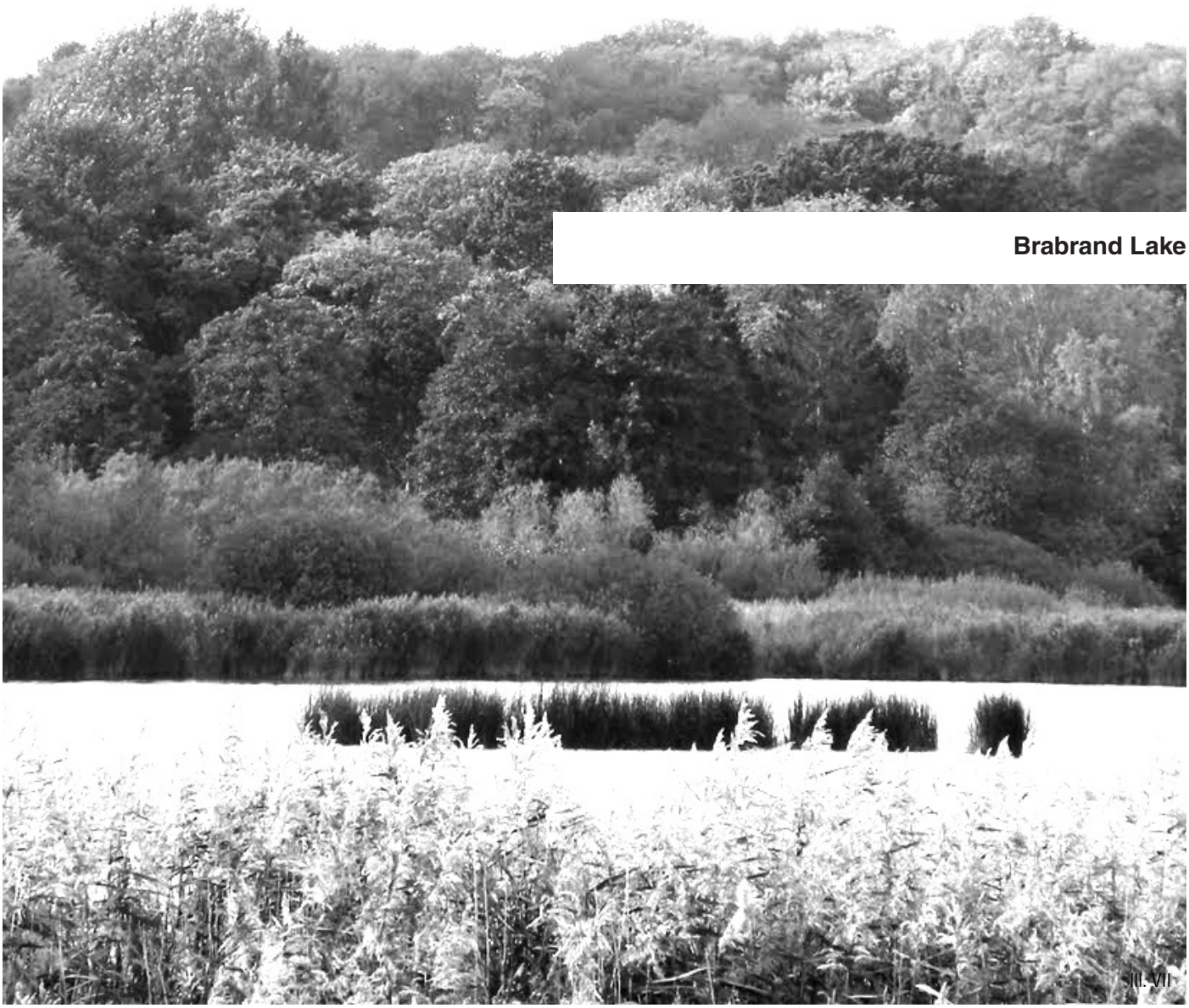
Mother following kids to school

DESIGN PARAMETER 4
CITY AND NATURE



The main street

The only hint to that I am about to walk down the main street of Brabrand is a small broken sign with the clarifying 'Hovedgaden' (Main street) written on it. No cars, no people. I tell myself, that I am walking down the street at noon, that must be it. But moving down the streets, the only two stores that are open are the pizzeria and the bakery. A second hand store lies in a dilapidated little building, next to two empty ones and one for sale. I feel no discomfort walking in the middle of the road, because there are neither people nor vehicles to be seen. Finally, from a twisted road from Hovedgaden I find a passage down south, scattered with idyllic housing, to the beautiful Brabrand Lake, only encountering a runner and a dog walker. From feeling that I would not want to live in this city I go to the feeling that I should look into houses for sale.



Brabrand Lake

Ill. VII

House for sale at Dysselhøjvej

The eight houses at Dysselhøjvej are placed in disadvantage for the owners. They are completely enclosed with the train tracks at north, Silkeborvej at south Netto to west and Langdalsvej/Truevej to east, making the area an undesirable environment. A resident finds it unbearable after the coming of Silkeborgvej and Netto and wants himself to be expropriated, as he cannot sell the house himself (quote from Pernille Sølvhøj Roelsgaard)

The abandoned JAKA factory

Apartment blocks, Hoffmannsvej

House at Donsvej, South of Silkeborgvej

Housing

Apartments

Previous JAKA

Housing at Dysselhøjvej

Netto

Jysk

FuturePantheon offices

Brabrand stone masonry

Lægerne Brabrand hus

HK Østjylland

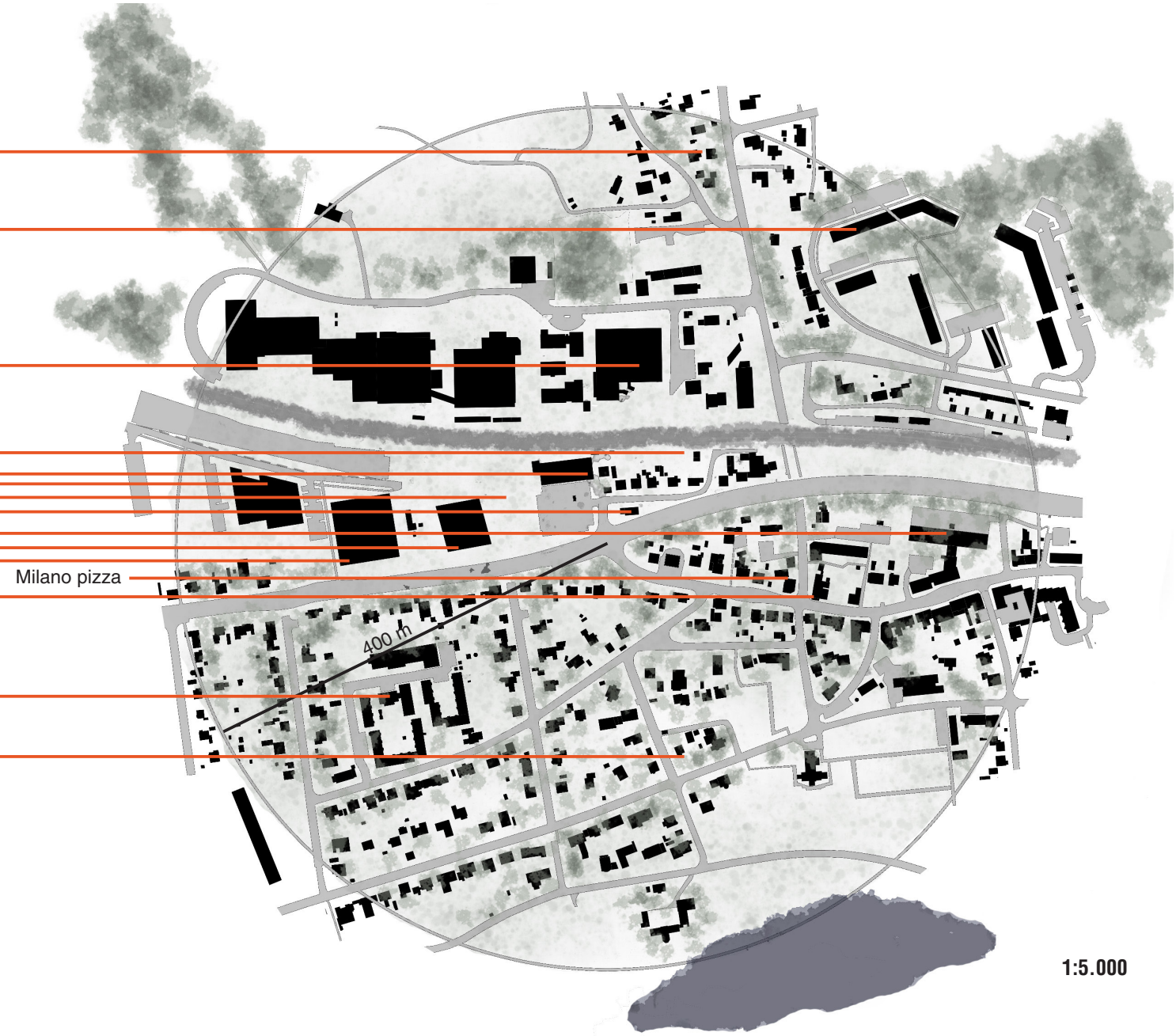
Navy Operational Command

Guldbageren

Lokalcenter Brabrand

Housing

BUILDING TYPOLOGIES AND NODES



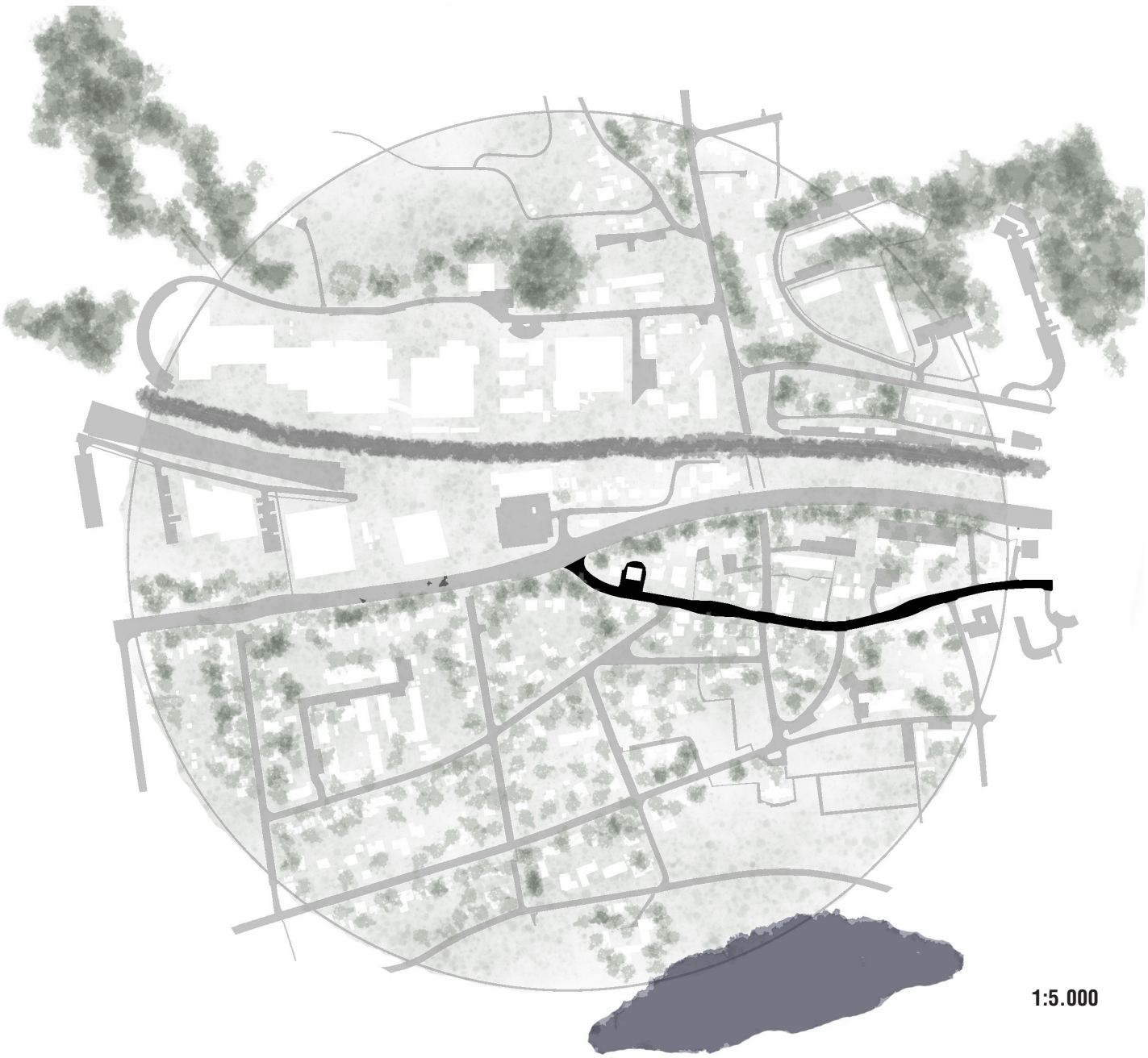
Offbeat sign to entrance of Hovedgaden

Unused crosswalk

One of many stores for rent

At the center of Hovedgaden

CITY COMMERCIAL LIFE



1:5.000

DESIGN PARAMETER 5
PARKING

Tulipgrunden is just north of Sødalsparken, place of industry. Here is the 7.300 m^2 main office of Jysk with 250 employees, which has bought the neighbouring site beside it to expand with another 3.700 m^2 (TV2, 2016). Forsvaret Sødalsparken is placed here as well together with HK Østjylland Brabrand. Furthermore, 3.000 m^2 new offices are to be placed as well where a yearly rent is possible (Colliers International, n.d). 388 parking spaces is as of now provided this area, and with the new development and offices it can only be assumed that this parking will be fully used. This area is thus not to be used for the use of the station. In light of the fact that many people will move through the station area in the future, a 'Park and Ride' opportunity is a potential central piece of the station area's urban role and for Brabrand city's development. Here Park and ride facilities at stations can help to make it attractive to change journey from a purely the car road trip to combining car trips with public transportation (Cowi, 2015). The placement of the parking is of major importance in this context because it decides where the commuters drives through to park the car.

The number of estimated needed car spaces will in the future be for at least 132 cars after the implementation of the light rail, demanding an area of 2648 m^2 (see Appendix E1), where it has to be looked upon with the critical mind, as it is in the future and based on predictions, where the argument of whether or not a big 'kiss-and-ride' structure is effective is widely discussed (see Appendix A1 and E2). However, taking into mind the station will be a terminal providing future development, the parking is a huge necessity.

At Tulipgrunden, the historical industrial buildings of JAKA can deliver the necessary amount of parking space where the opportunity to enclosed and secure parking is present. The building to the very left is already 4.000 m^2, thus having the essential amount of square meters. Opportunity to expand parking, either to the buildings to the right or to the outside, is possible if needed.

Total area: 14.417 m^2

PARKING SPACES

DESIGN PARAMETER 6
BIKING

The Danish urban structure affects cycling and how big a role the bicycle plays in the overall transport: Both the daily total transportation and the daily driving in the car grows linearly with the dwelling distance to the city region center and to the station. Cyclists play the greatest role in inner city areas; when office jobs and other jobs are located in the city center many employees live within biking distance. (Transportministeriet, 2013), (see also photo 3.3 and 3.4 and Appendix F: Station proximity). Establishment of main bicycle routes can furthermore help increase the number of cyclists (see Appendix E1). This has importance for Brabrand as well. If the city is to develop with more jobs, culture and activities to come, providing the city with quality biking paths are beneficial for a pedestrian-friendly oriented environment. As it is now however, Brabrand is far from a suburb to be called a city of biking because of the unsafe environment. This stated by certain facts:

- The city is missing biking paths

This can be seen at photo 3.3 and 3.4 where the main street itself does not afford biking paths.

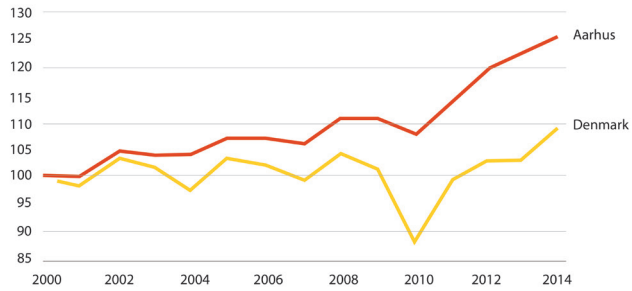
- The existing biking paths are very narrow, forcing bikers to bike on the pedestrian walks

This is i llustrated at photo 3.5, see also appendix C2

- The two above points makes the city unsafe for especially children to bike through.

Very few uses the car-free passage (see photo 3.5 and Appendix C4) because biking through it is not an easy task, and the heavy trafficked Langdalsvej/ Truvej is a shorter distance for many (see Appendix C4)

Development in bicycle transport



Kristian Würtx, see appendix D

East end of Hovedgaden

Photo. 3.3

Photo. 3.4

West end of Hovedgaden

Photo. 3.5

Langdalsvej/Truevej

Tunnel at Skovbakkevej

Photo. 3.6

DESIGN PARAMETER 7
SOCIAL MEETINGS

When looking along the network of Brabrand, the loss of different facilities and programs are clear. They have one communal house arranging the occasional meeting, from bingo and soup dinner to chess and zumba. The arrangements vary, showing enthusiasm amongst the residents. However, as discovered at the public meeting, they sigh for a community or cultural house with the possibility to go whenever needed, not only for the scheduled specific arrangement. Here were suggested facilities like library, fitness, shopping, and dance/music house to mention a few. A meeting place for different layers of society to interact as a backbone of city quality is what the station can contribute with.

The different layers of society are another important factor in creating meeting places. Brabrand is known for its social divisions: in its residential neighboorhood 10% of the richest in Denmark is living. At the same time, Gellerup blocks just beside have the 10% poorest living here (Århus Stiftstidende, 2016).

Cultural programming is furthermore consistent with the plan of Aarhus Municipality: of Tulipgrunden is written it is a place that is categorized as a potential cultural environment (Center for byudvikling og mobilitet, 2016), thus the plan of using the site as a place of cultural development is in line with the plan from the municipality.

House at Ligustervej, left of Hejredalsvej

III. VIII

Bingo arrangement

Gellerupparken, right of Hejredalsvej

III. IX

AND THE TRAVELERS?

When thinking in programs in a station, programs useful for the ones traveling from destination to destination as well should be incorporated in the thinking of design.

"Travel can be a pleasure, if we pay attention to the human experience: the visual sequences, the opportunities to learn or to meet other people."
(Lynch, 1984, p. 274).

The travel is more than just from A to B, we are experiencing while we are on the move. Watching train passengers in Copenhagen during my stay from the 4th to 7th of April with that in mind, my own attention to the human experience has widened. My observation of what general happens are that people have their own atmospheric 'bubbles' where they only interact with the ones they know. It was a direct insult to them when I tried to take pictures of them and thereby breaking their private bubbles (more pictures are places in Appendix E1). When alone, they listen to music, read or watch at their digital media (smartphones, tablets), and I caught many working on their tablets and computers, making their final work before and after their meetings. What came to be more of a challenge the further into Nørreport, center of Copenhagen, we got, when more and more people got squeezed together. People were still defiantly sitting with their laptops on their knees. We are online during a lot of time, bringing our private bubbles of digital media with us.

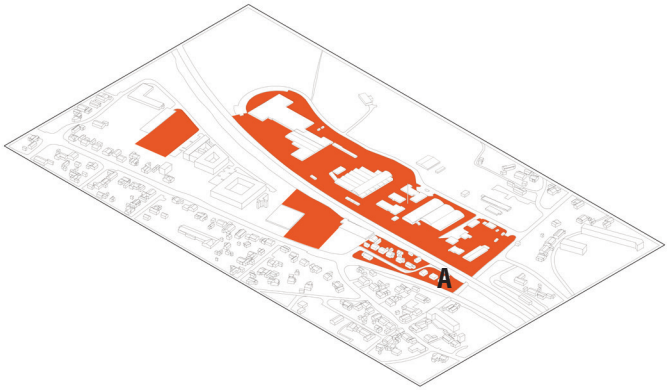
The station as the connective node in the network of transit spaces contains potentials for new services and new experiences that can help organize the travel in new ways. The saving of time is also one of the factors from where travelers finds important for them to take the public transportation instead of the car (Cowi, 2015), see also personal main correspondence with a commuter met in the train from Skævinge to Nørreport in Appendix E2.

Commuters in s-train from Hillerød to center of Copenhagen. It is Tuesday the 5th of April 08:40. I am yet far from Nørreport and there are a lot of seatings to choose from. I have space to take some pictures without people noticing me, and they are so deeply engrossed at their work on their laptops that I probably did not even have to be careful not to be noticed. The travel time is fully used to finish before meeting at their destination.

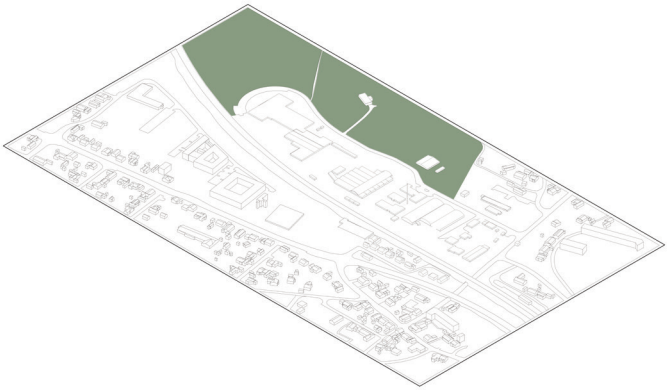
BRABRAND DEVELOPMENT
SUMMARY

Now we move from the design parameters to a short summary explained through diagrams and illustrations. The 7 design parameters are concluded in this thesis to be the vital guiding lines according to develop Brabrand into a suburb with less car-inclined infrastructure and a suburb with enhanced quality of public life. The following illustrations on the next pages ask the question ‘what if’ to demonstrate the thoughts on how the station, as a planning tool, can contribute to the development of Brabrand through the 7 design parameters.

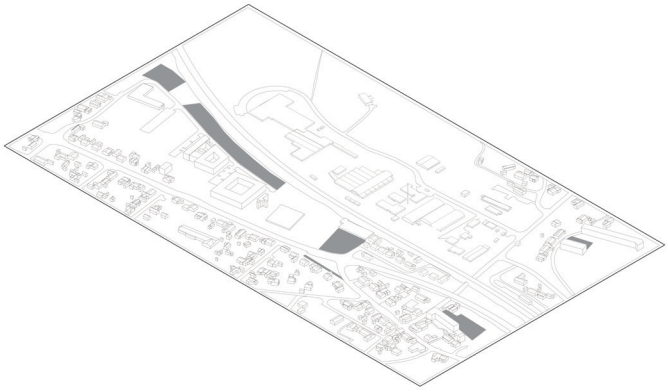
EXISTING URBAN PARAMETERS
CONTEXT



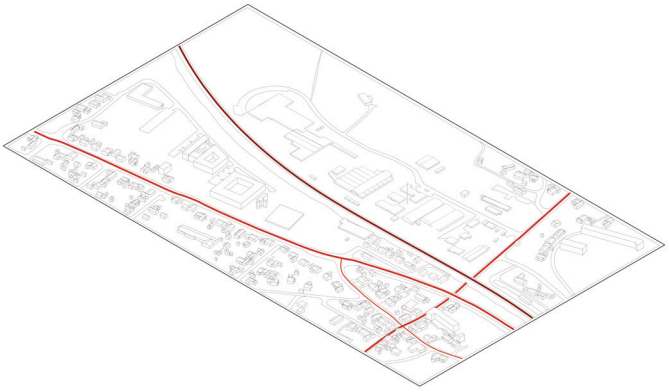
Areas in development
Tulipgrunden and the surrounding area are together large areas discovering future development. The eight houses in area 'A', the place of Dysselhøjvej, is percieved to be expropiated in the best interest of station interchange and of the owners of the houses.



Green area
North of Tulipgrunden a vast area of preserved forest is existing. This area is as such to be maintained and untouched according to a new station.

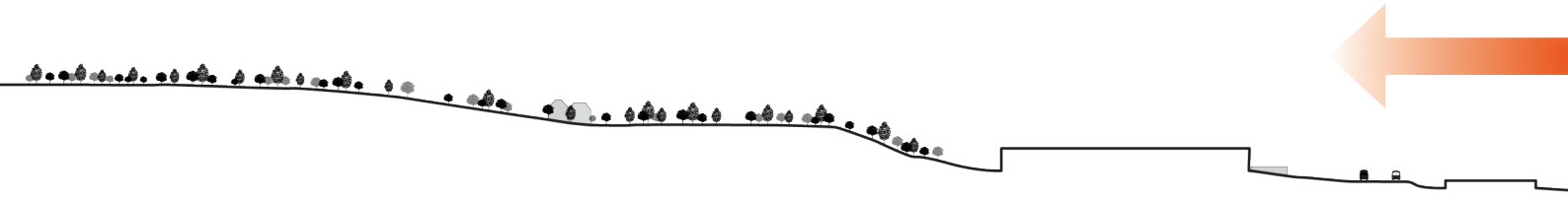


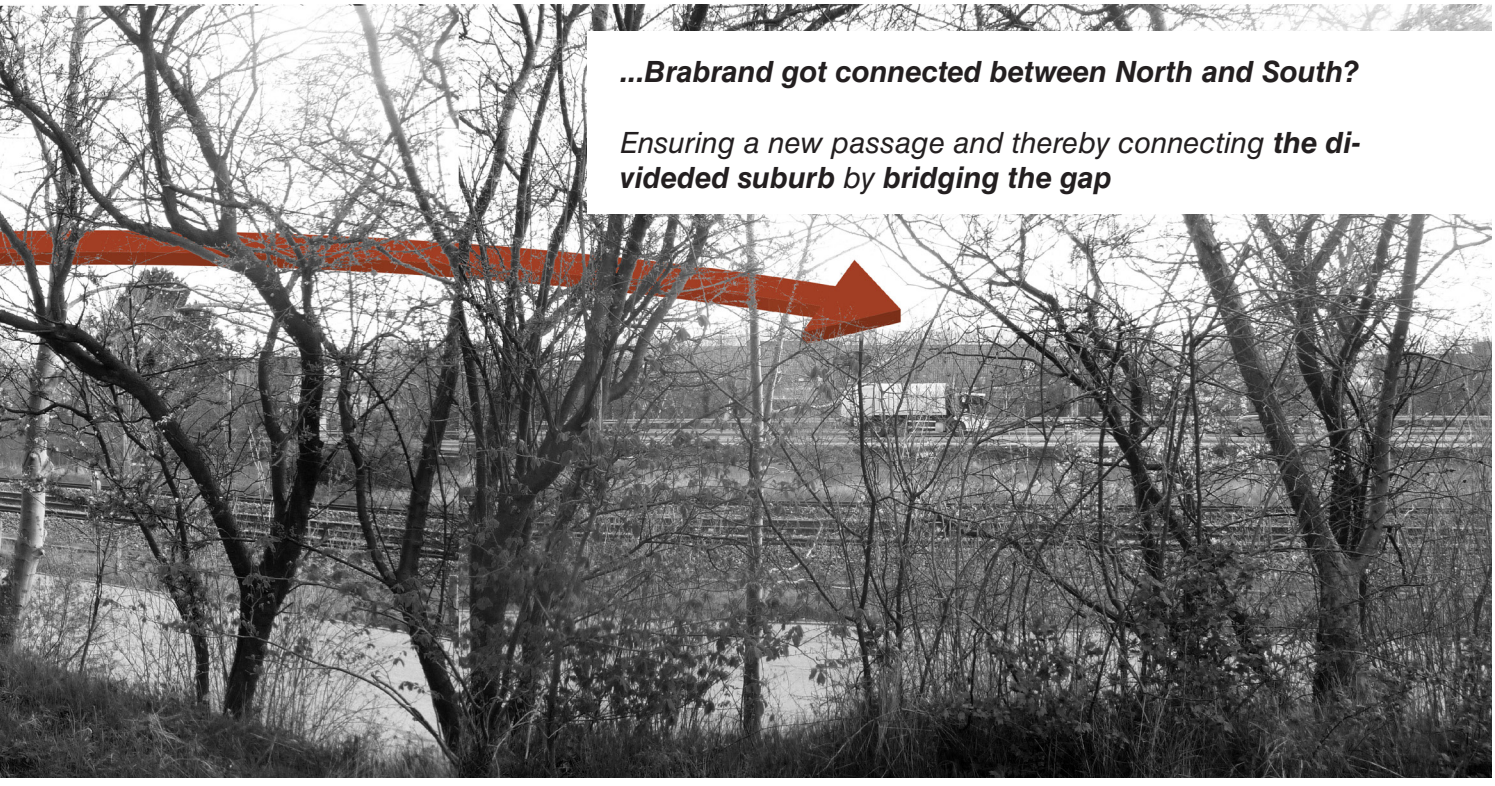
Parking areas
Existing parking are in big numbers, however with a new station, parking reserved for this in particular is needed.



Traffic flows
The main flows of traffic are following straight east-west along Silkeborgvej and the train tracks, with one north-south connection along Langdalsvej/ Truevej, a road overused by its ability as only north-south connection to traffic.

BRABRAND DEVELOPMENT
WHAT IF...



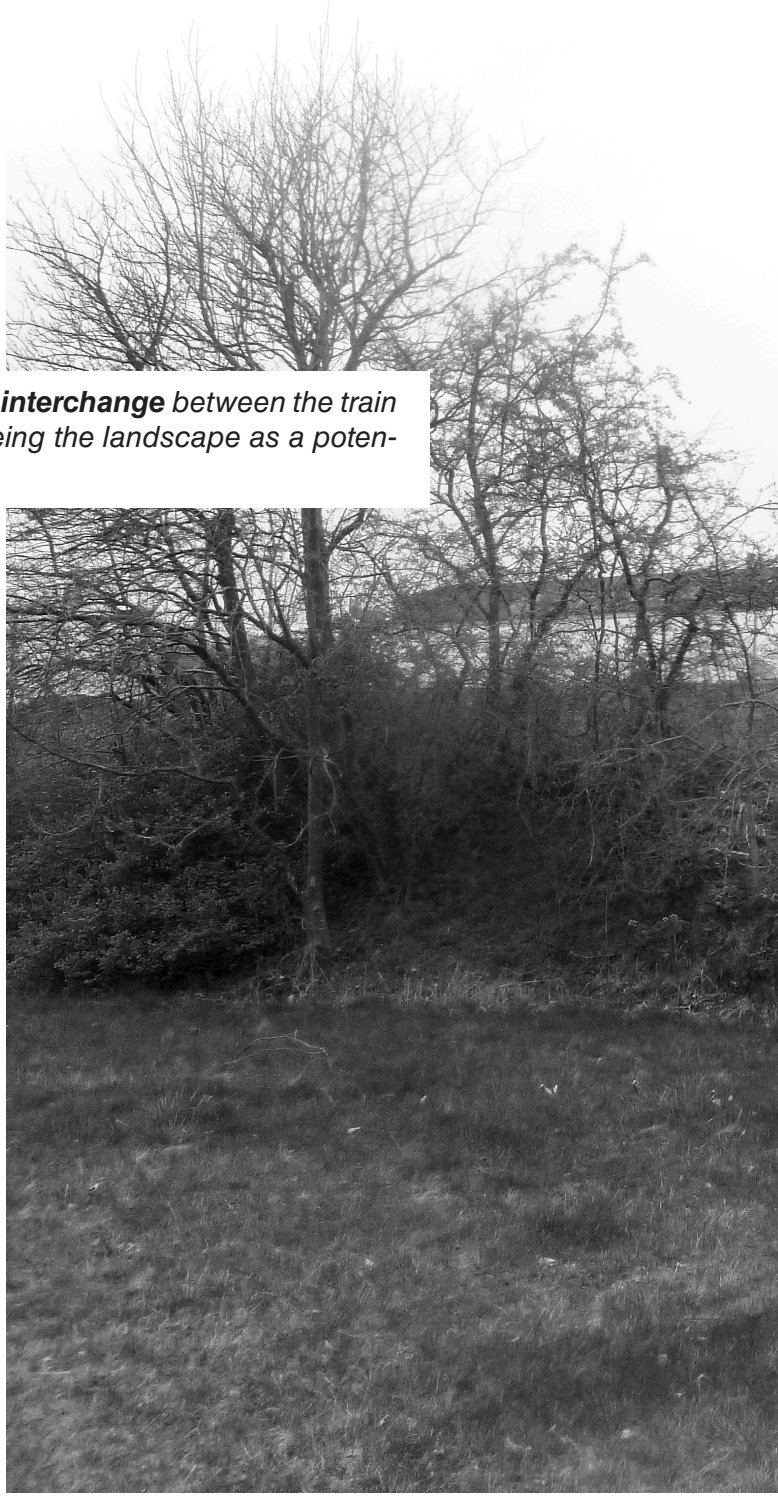


...Brabrand got connected between North and South?

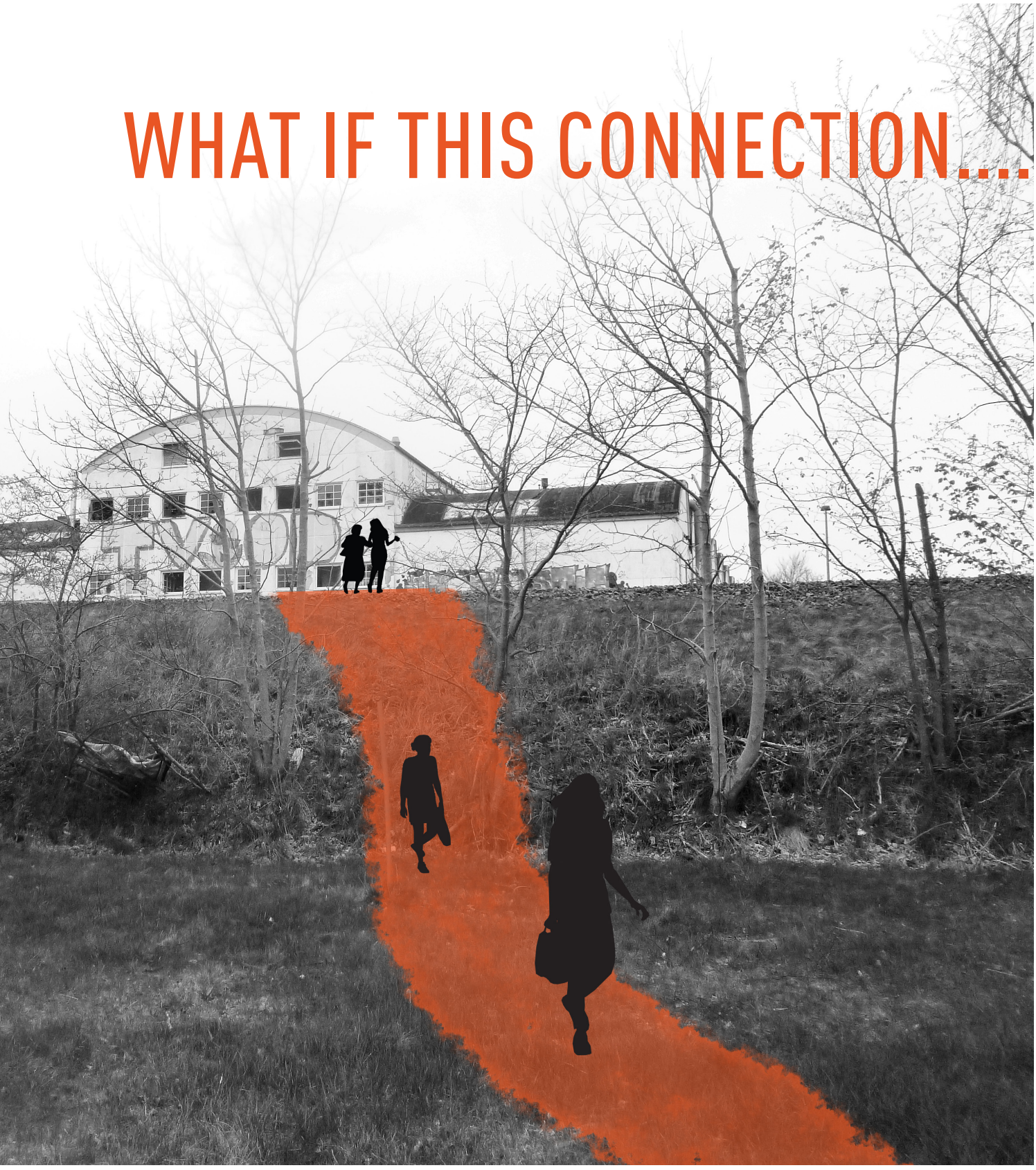
Ensuring a new passage and thereby connecting ***the divideded suburb*** *by* ***bridging the gap***

1:2000

*...afforded easy **traffic interchange** between the train and light rail, while seeing the landscape as a potential and not a barrier?*



WHAT IF THIS CONNECTION...



WHAT IF THIS CONNECTION....

*...afforded **safe passage** for the children and encouraged a pedestrian-friendly enironment, a city for the people?*

...and that this passage could afford everyone, residents as travelers, to see the beauty of ***the nature*** *of Brabrand?*

*...escalated **life** in Hovedgaden and made the main street of Brabrand a street with commercial life, activity and growth?*

WHAT IF THIS CONNECTION....

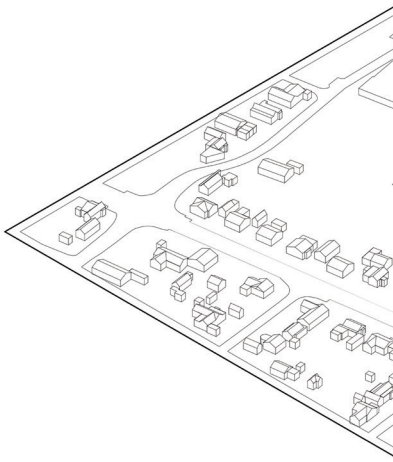
*... gave new **life** to the old historical and industrial buildings of JAKA and made them a place of assembly and entertainment?*

WHAT IF THIS CONNECTION....

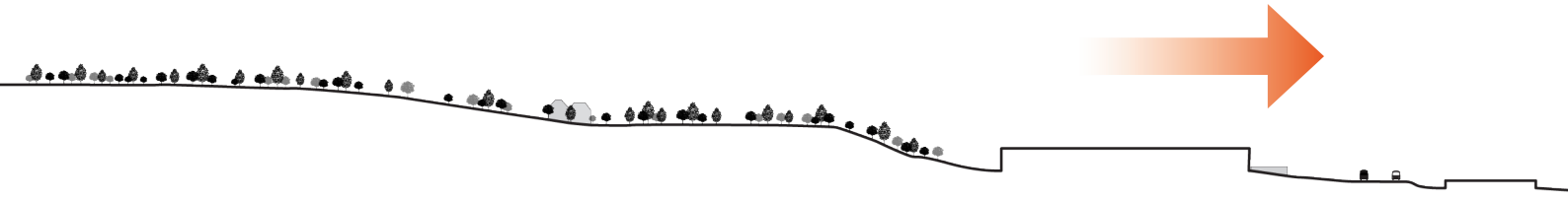
... made sure the commuters from west to Aarhus could travel easier and more efficient, ***parking*** *without driving through Brabrand - and still discover the beauty and quality of the city?*

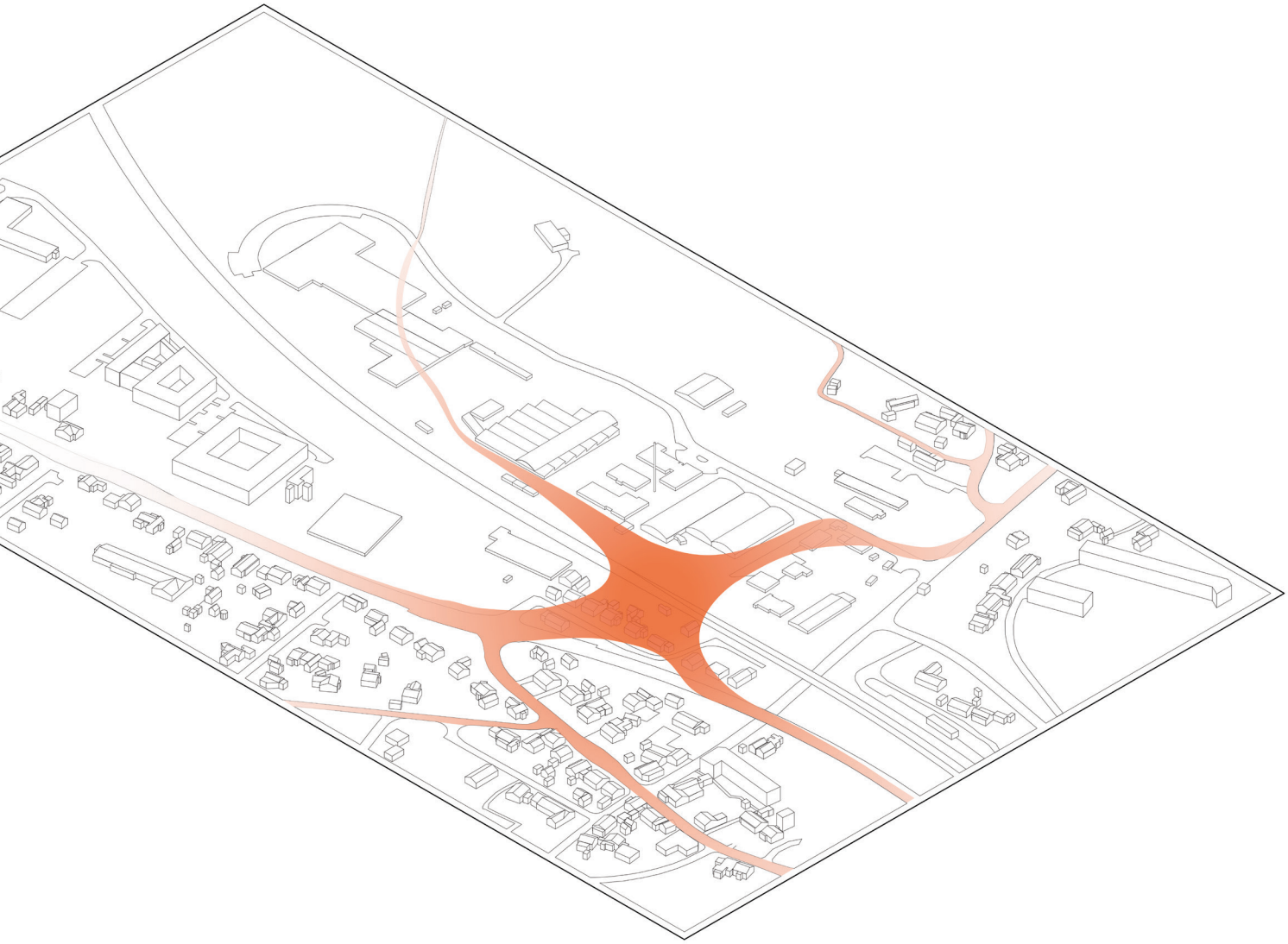
*... branded Brabrand as a city of **biking** and enhanced the opportunity to travel more easy around in the suburb?*

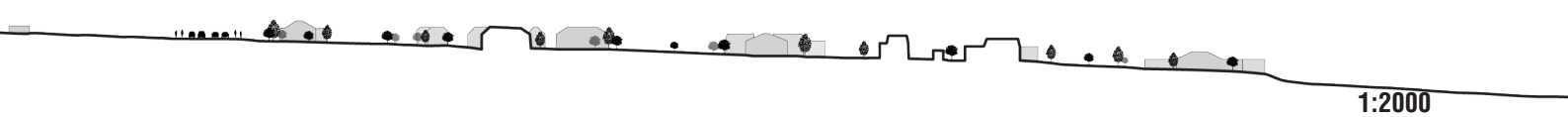
WHAT IF THIS CONNECTION....



... created ***connective meetings*** *for the residents and travelers both? Where all of the 7 design parameters comes together and with a future development escalates throughout Brabrand, reforming the car-inclined infrastructure and enhancing the quality of the public life?*







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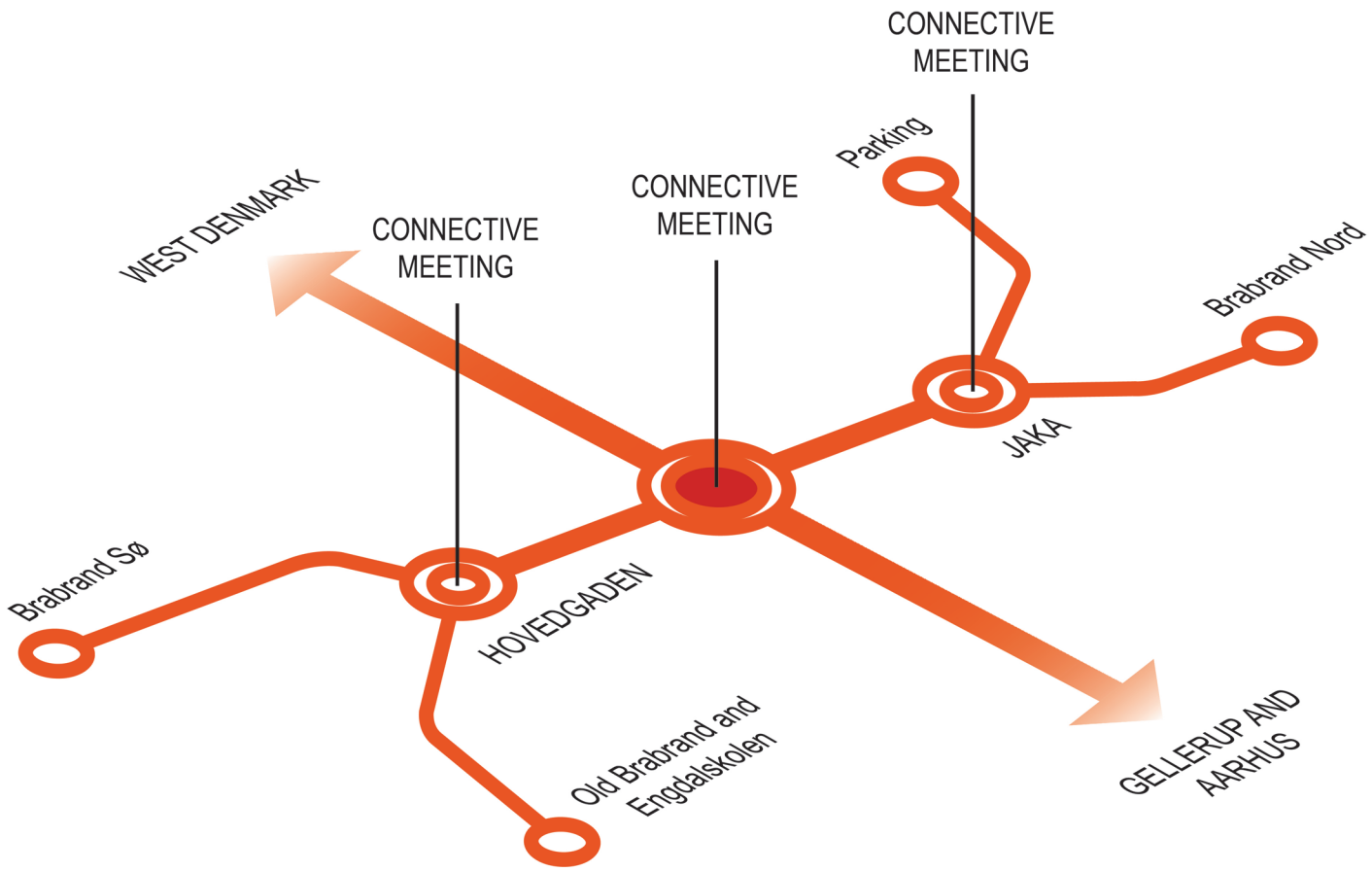
BRABRAND DEVELOPMENT
VISION

With connective meetings created by a new Brabrand Station through design, new city connections can be catalyzed. The thesis intends to create a station hub with connections that brings along new points of contacts, new meetings, and contributes in the transformation to the city of Brabrand. It intends to mix the infrastructure with new meetings. With all of the 7 design parameters as guiding lines incorporated into the station, the station hub can contribute with a pedestrian-friendly environment and public space and life.



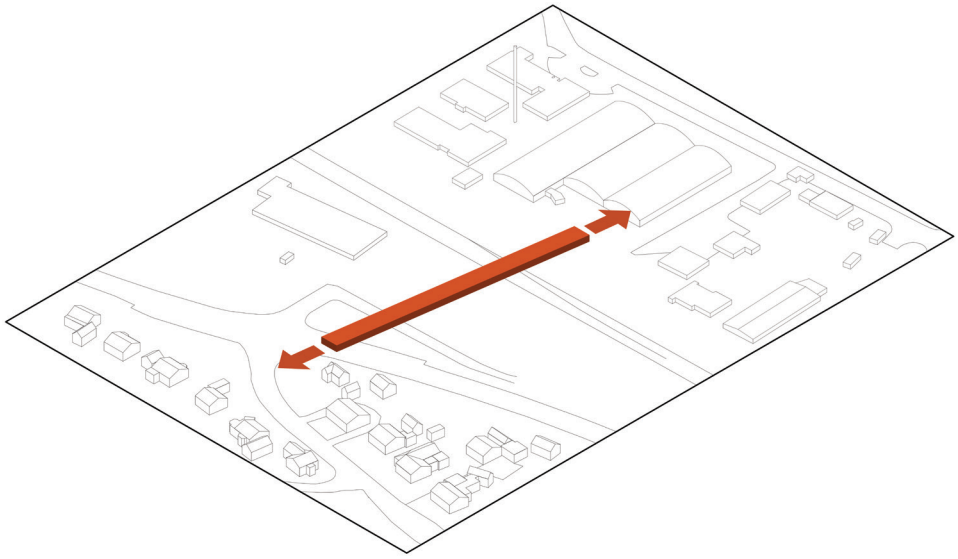
CREATING THE NEW STATION
DESIGN PRESENTATION

From here onwards to the end of this chapter, we move to the design of the station. The design will propose a how the new Brabrand Station can create connective meetings. Thus, the solution to the problem formulation is demonstrated through the use of connective meetings in the specific design of Brabrand Station, and how the station conceptually interacts with its context. The design proposal has gone through a design process which can be seen in Appendix: 'Connective Meetings Design Process'. The active design proposal of the station is accompanied by new traffic access and placement of parking, it is not of the city, as this task, however much wanted, is too great and complex for this thesis. It is a specific design based upon the conceptual approach to city development.

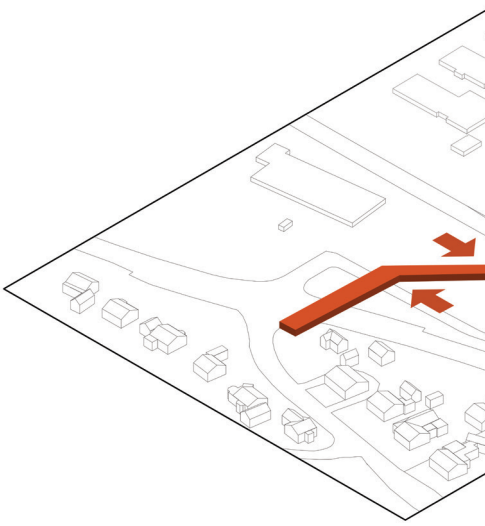
In the following chapter it will be demonstrated through case studies, how the connective meetings in a station can work in reality on city level to reform the car-inclined infrastructure of the suburb and enhance the quality of public life.

CONNECTIVE MEETINGS IN BRABRAND

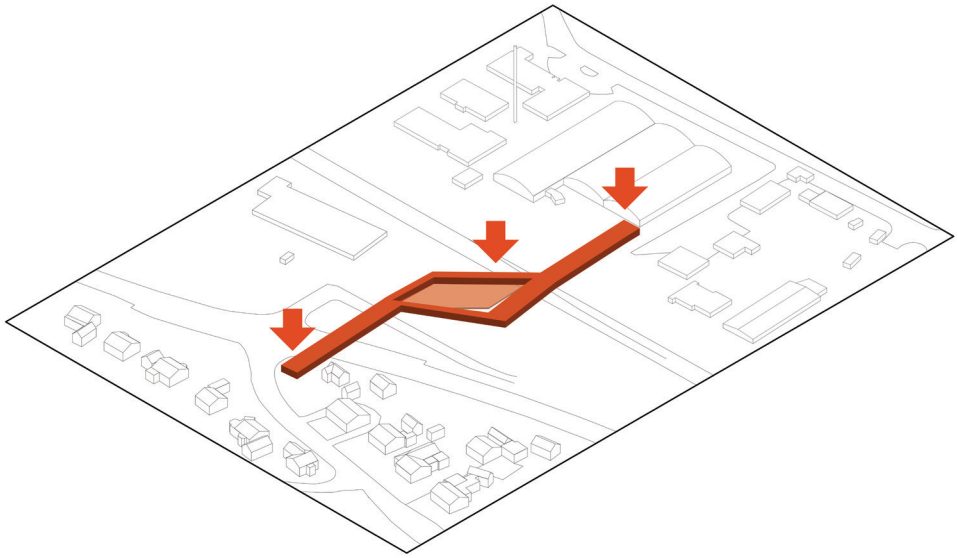
CONCEPT



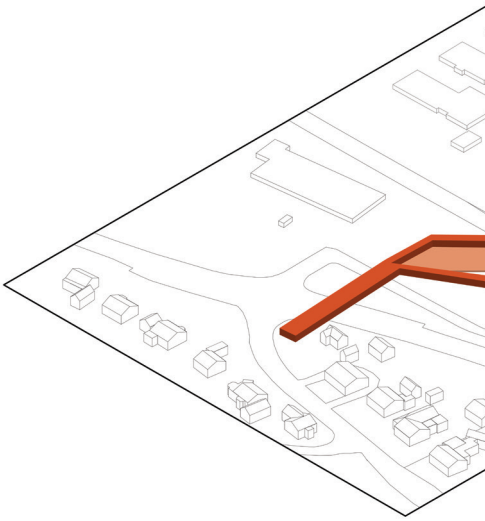
1. Connect
Bridging the gap between north and south, creating a new connection for both pedestrians and bikes. North end connects to JAKA, south to Hovedgaden.



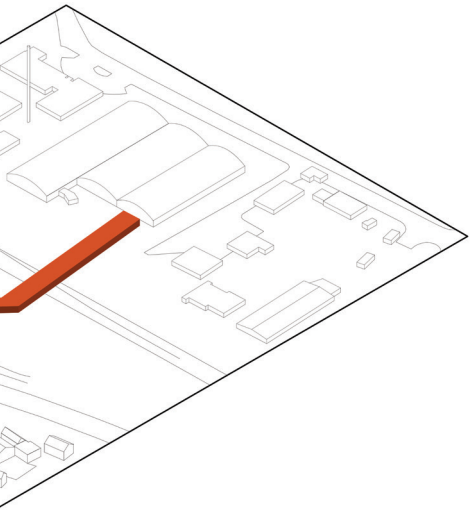
2. Twisting the shape
Keeping direct flows while ensuring a place for meetings.

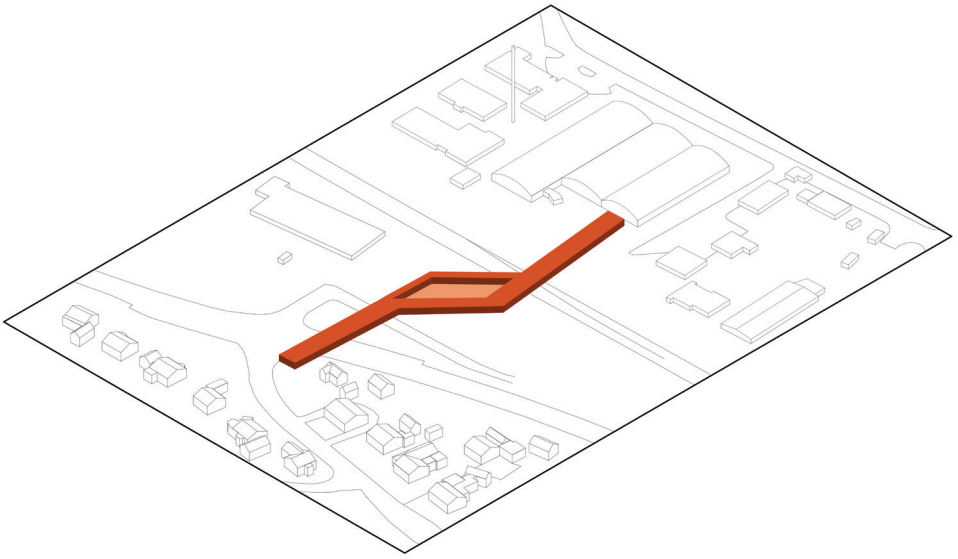


4. Vertical connection
Ensuring access while not disrupting the flow of car and light rail traffic on Silkeborgvej or train traffic at the train tracks.

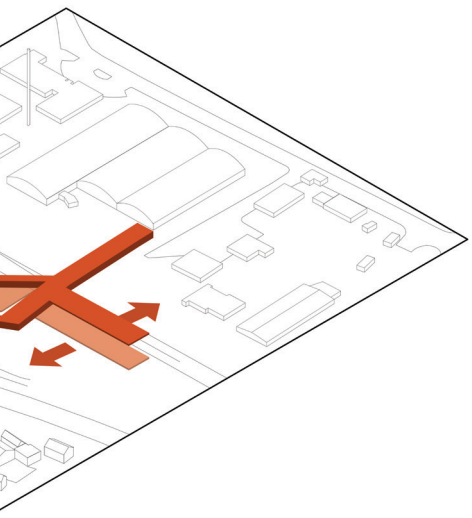


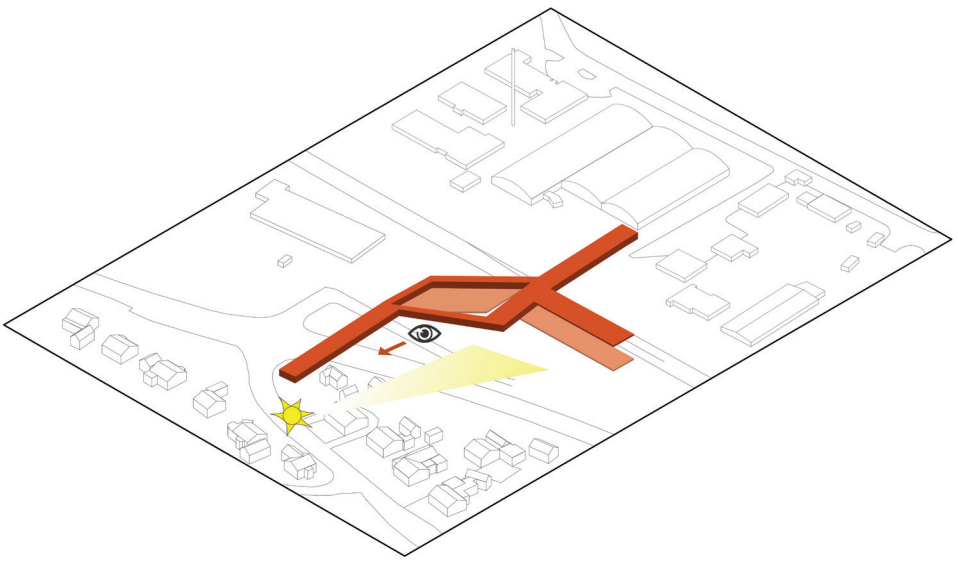
5. Platforms
Ensuring access from the light rail to the train and the other way around, while providing cover during waiting.





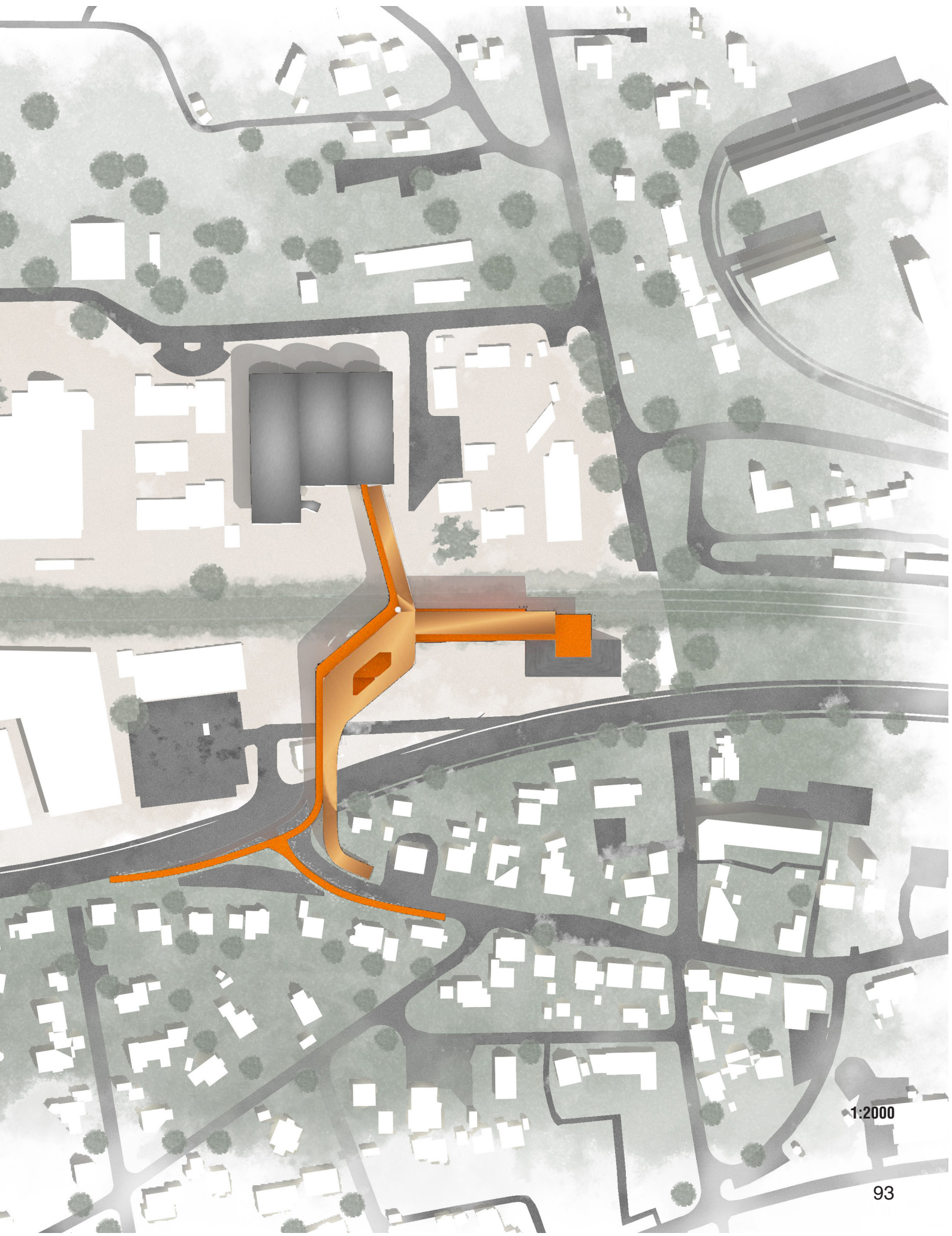
3. Meet
A meeting point where interchange between north, south, east and west is possible for both pedestrians and bicycles.





6. Sun and view
The shape is open to sun from south and provides view to the green nature and lake.

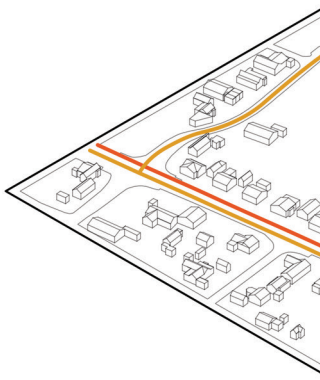
PLAN


1:2000

CREATING THE NEW STATION
TRAFFIC AND PARKING

Reformning the infrastructure
With a new station, new and increased flows of people will appear at the area. The already heavy trafficked Langdalsvej/Truevej is not seen fit to afford any more traffic, and another access road is needed. The existing road west of the industrial area is continued in a tunnel underneath the tracks of the train. The rise in the landscape is here used as a potential, as the train already has an existing rise of 4 meters to the south side, where the terrain is sloping upwards. The tunnel can as such be lead in a direct line. The road continues to the Park and Ride facility, where space for 200 cars is available (see Appendix E1).

The flow of car traffic tfrom west hus moves onto Tulipgrunden before reaching to the center of Brabrand. The possibility for letting a new road from Tulipgrunden go north to the new housing area Helenelyst is available as well, relieving the traffic on Langdalsvej/ Truevej further.



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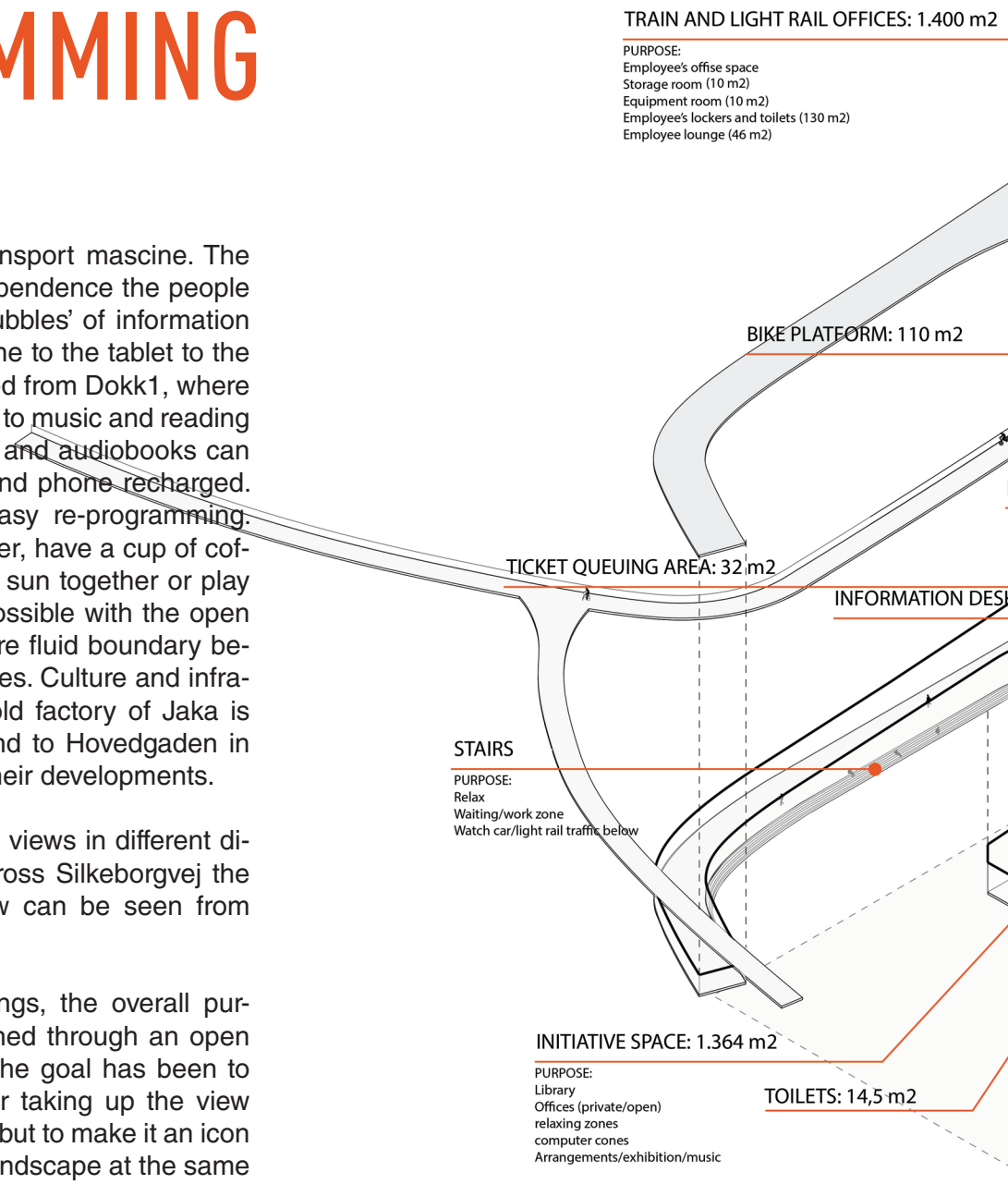
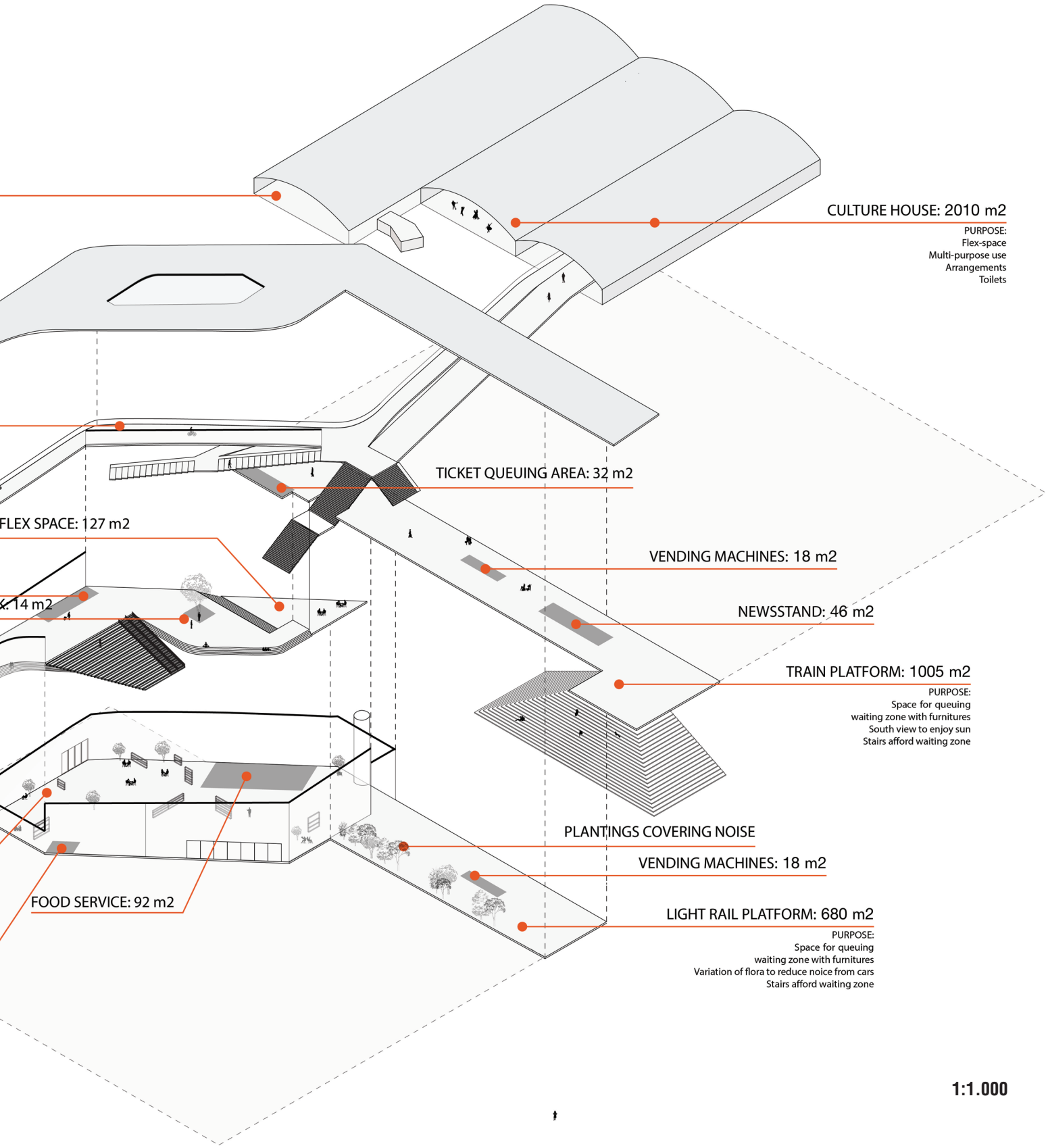
CREATING THE NEW STATION
PROGRAMMING

More than A to B
The structure is not just a transport mascine. The programming is fitting the independence the people have when containing their 'bubbles' of information with them, from the smart phone to the tablet to the computer. Programs are inspired from Dokk1, where initiative spaces for work, listen to music and reading is possible. New music, books and audiobooks can be picked and the computer and phone recharged. The floors are flexible with easy re-programming. When you need to work together, have a cup of coffee together, enjoy the outside sun together or play a board game together, it is possible with the open meeting places, creating a more fluid boundary between private and public spheres. Culture and infrastructure becomes one. The old factory of Jaka is connected in the north end and to Hovedgaden in the south end, opening up to their developments.

The structure is open affording views in different directions and on the bridge across Silkeborgvej the view down to the traffic below can be seen from stairs affording places to sit.

Even though it creates meetings, the overall purpose of connecting is maintained through an open and slender structure, where the goal has been to not make it either dominant or taking up the view from the housing further north, but to make it an icon merged with the surrounding landscape at the same time.




CULTURE HOUSE: 2010 m2
PURPOSE:
Flex-space
Multi-purpose use
Arrangements
Toilets
TICKET QUEUING AREA: 32 m2
FLEX SPACE: 127 m2
VENDING MACHINES: 18 m2
NEWSSTAND: 46 m2
TRAIN PLATFORM: 1005 m2
PURPOSE:
Space for queuing
waiting zone with furnitures
South view to enjoy sun
Stairs afford waiting zone
PLANTINGS COVERING NOISE
VENDING MACHINES: 18 m2
FOOD SERVICE: 92 m2
LIGHT RAIL PLATFORM: 680 m2
PURPOSE:
Space for queuing
waiting zone with furnitures
Variation of flora to reduce noice from cars
Stairs afford waiting zone

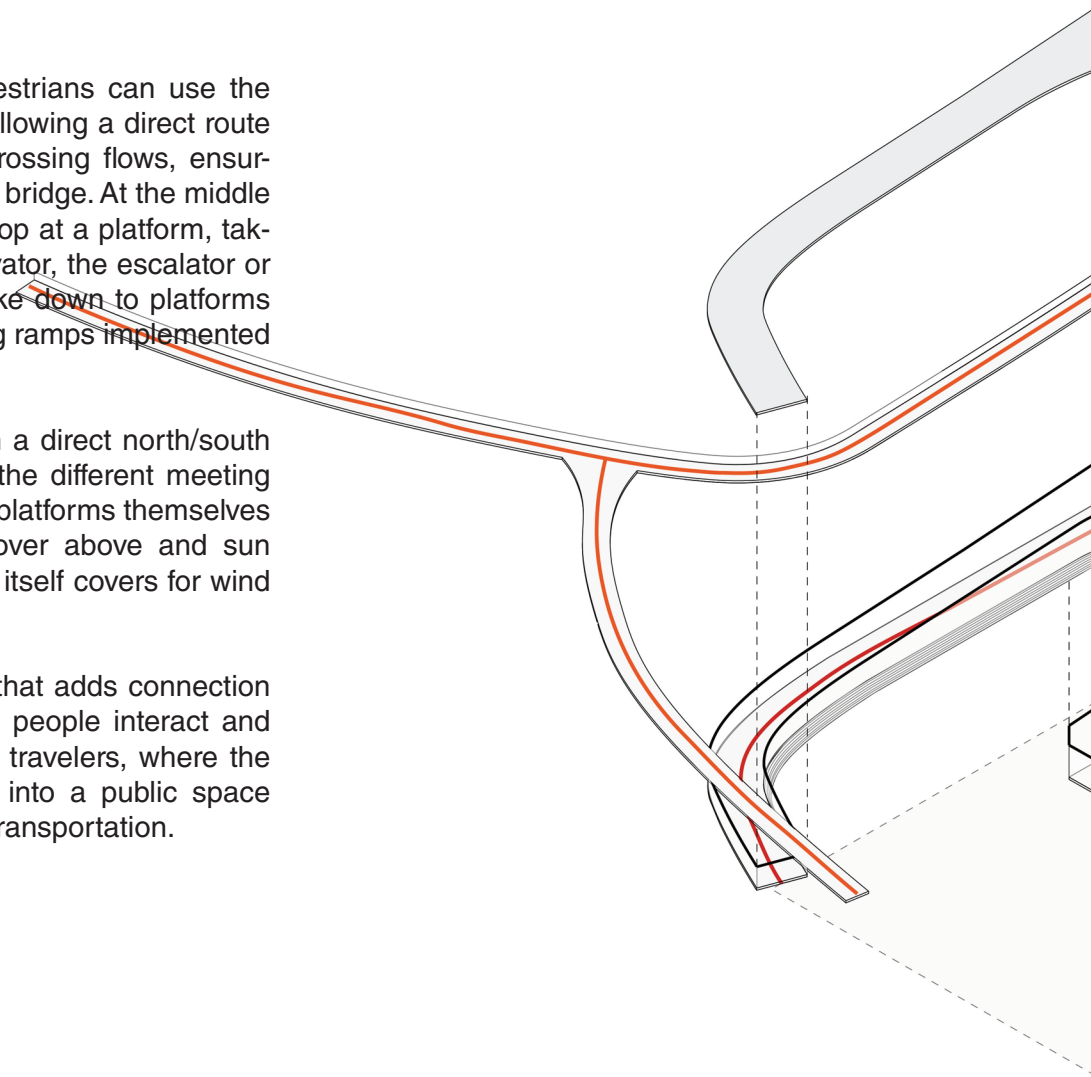
1:1.000

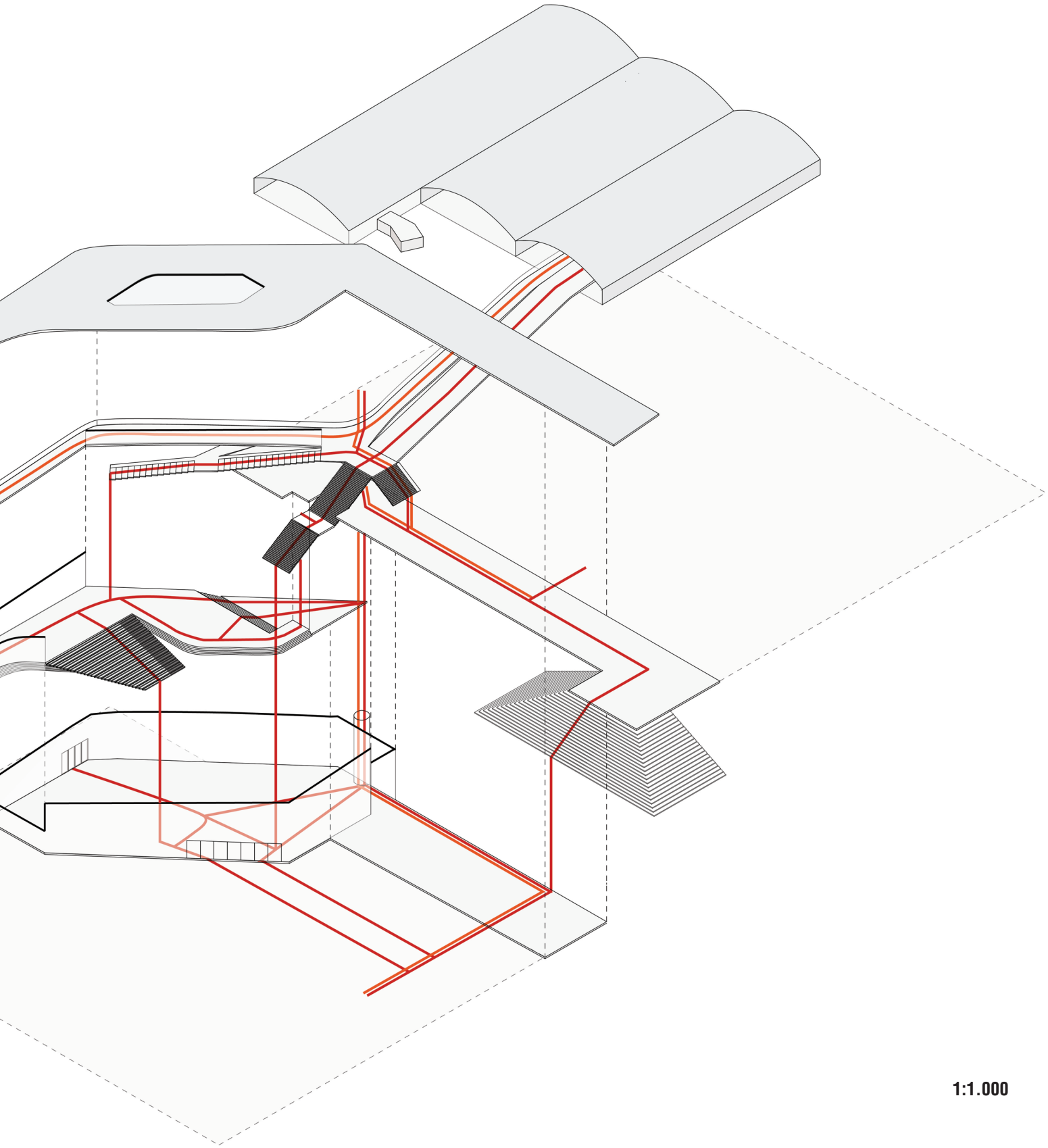
CREATING THE NEW STATION
FLOWS

Meeting in motion
Both bicycles as well as pedestrians can use the connection. The bike path is following a direct route without interruption of other crossing flows, ensuring residents a new safe biking bridge. At the middle they have the opportunity to stop at a platform, taking the bike down with the elevator, the escalator or into the station, leading the bike down to platforms of the light rail or the train along ramps implemented into the stairs.

The flows of people have both a direct north/south route and routes leading into the different meeting places or to the platforms. The platforms themselves provide waiting zones with cover above and sun from south, where the building itself covers for wind from west.

The station becomes a place that adds connection to the city, where the flows of people interact and meet, including the flows from travelers, where the transportation networks turns into a public space that helps prioritize the public transportation.





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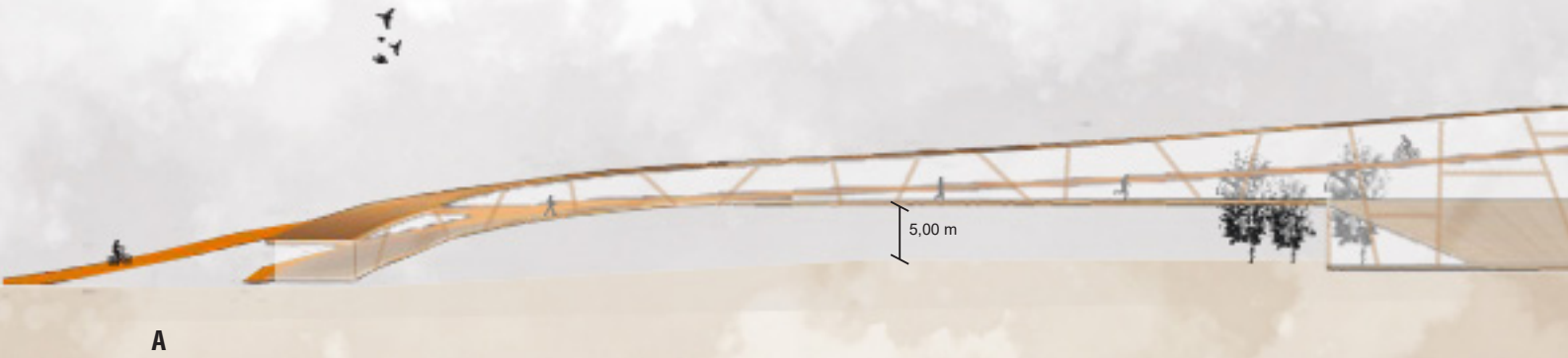
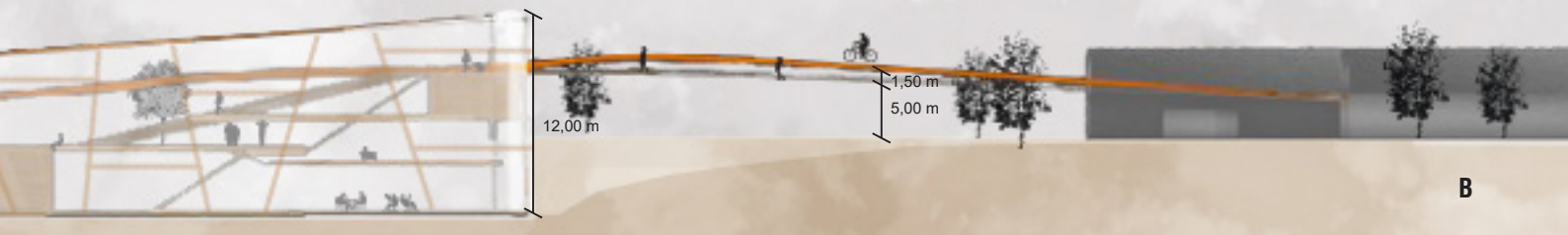
ELEVATION



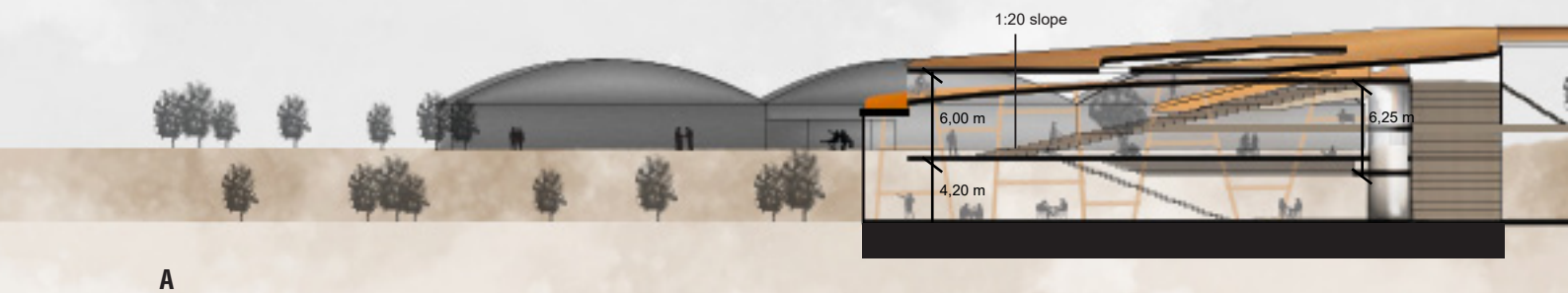
A



B

1:500

SECTION

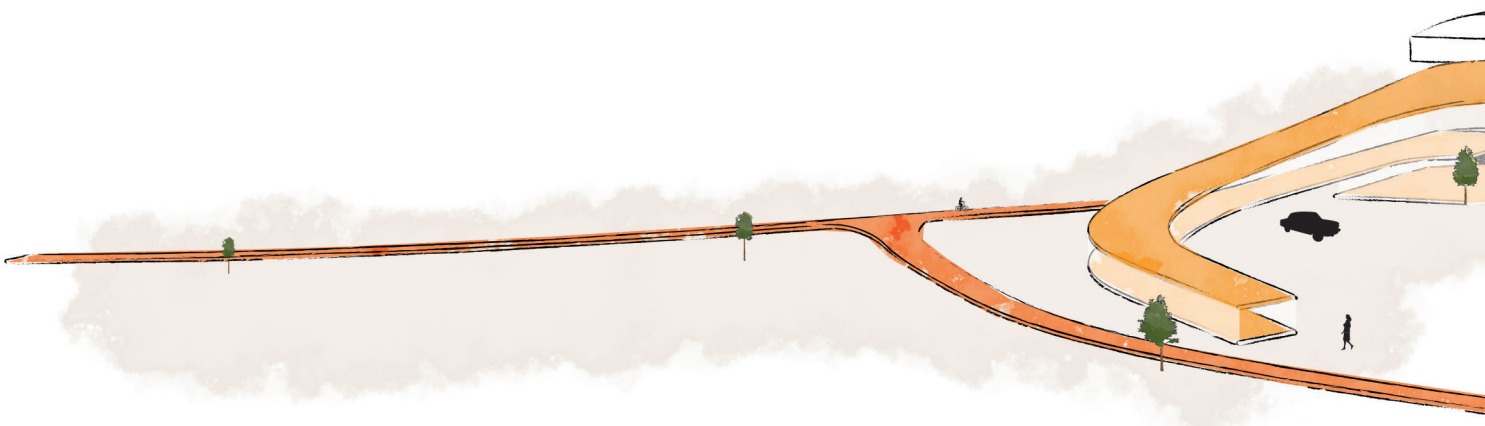


A

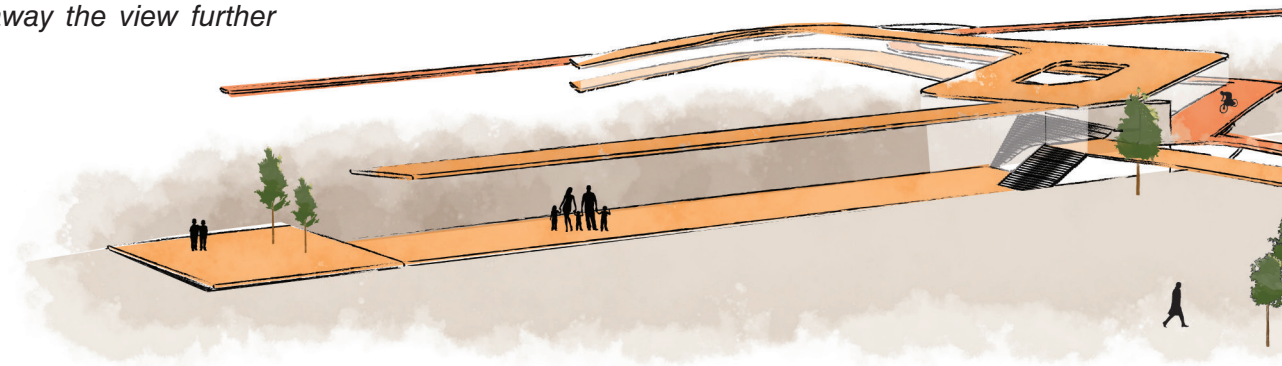
B

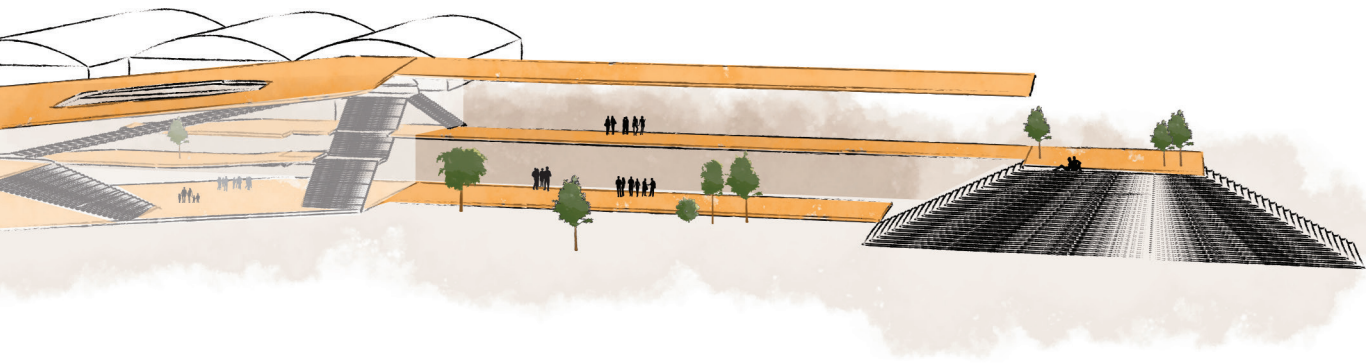
1:500

A VIEW EXPERIENCE

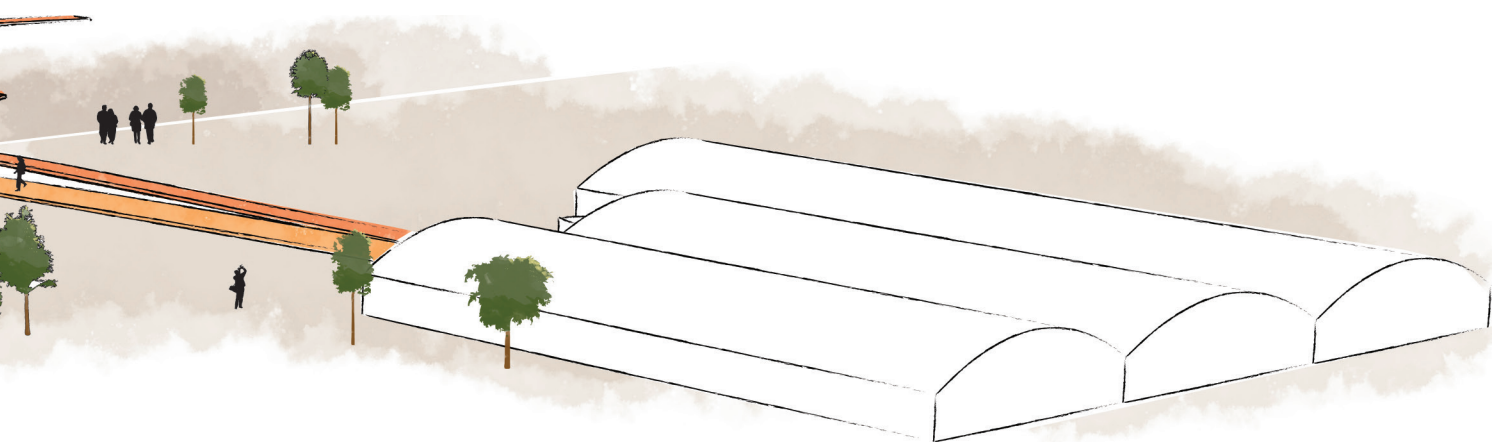


Coming north, the structure is half hidden in the landscape, looking smaller than it is, while not taken away the view further south.



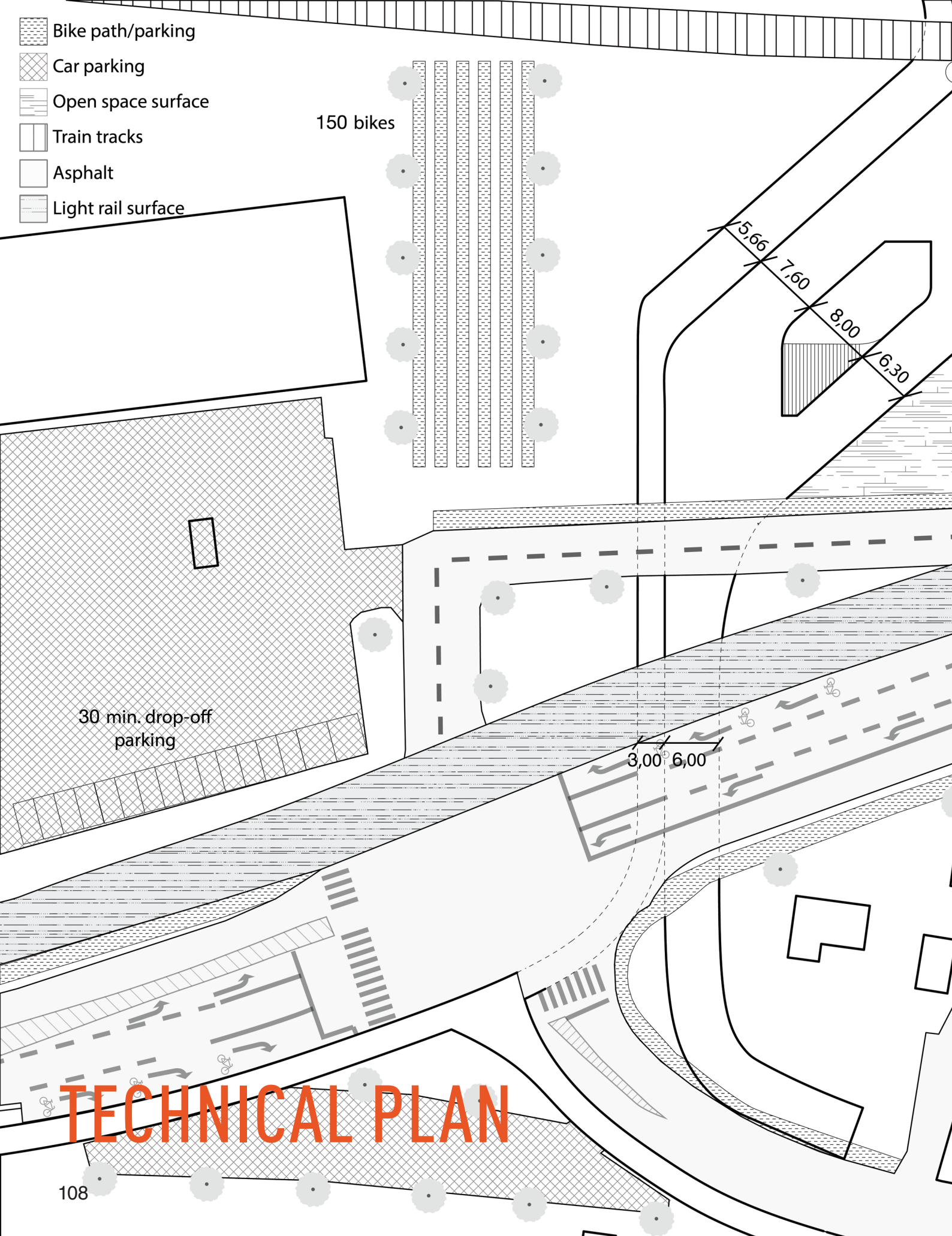


Coming from south, the structure seems open and light, inviting one in

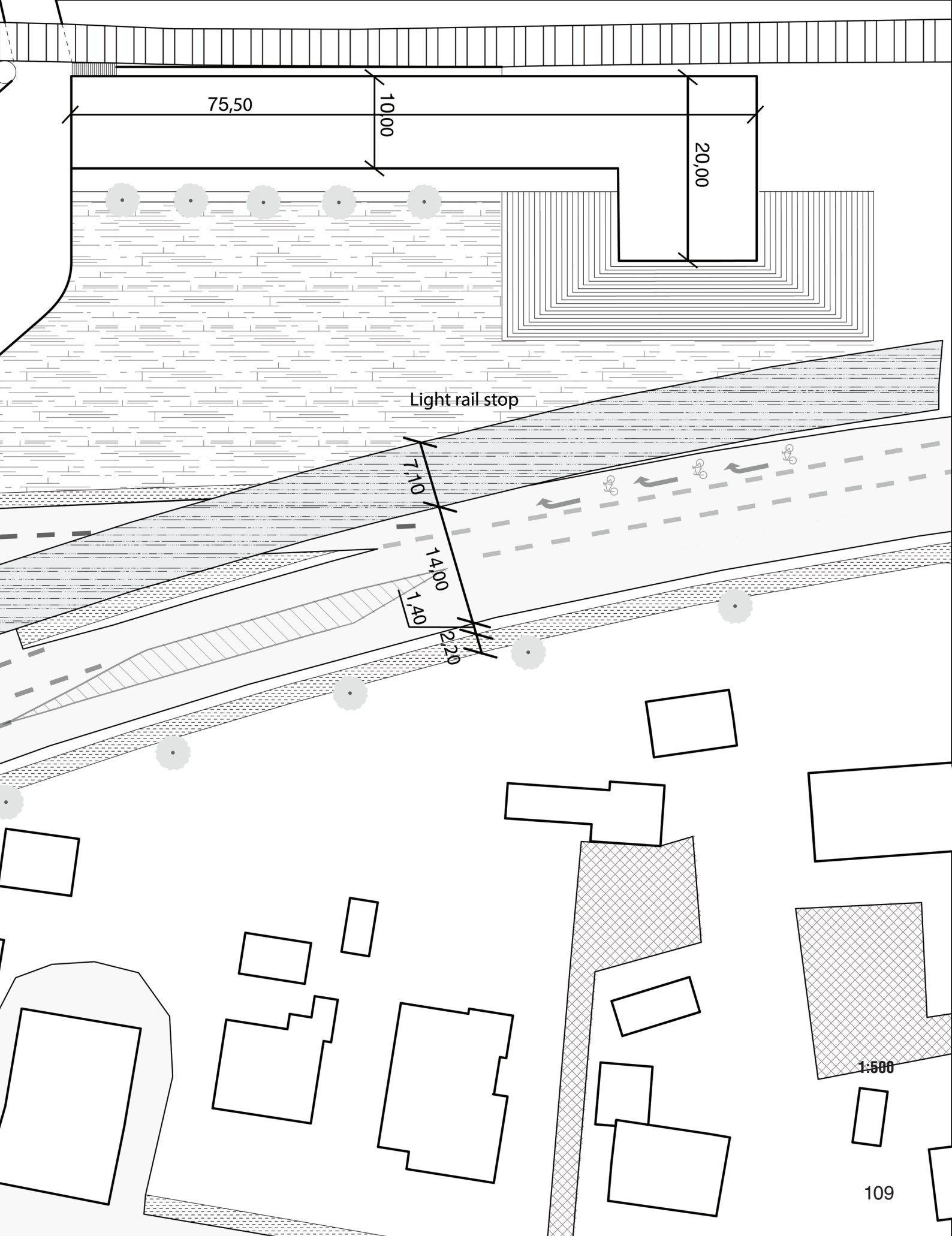


A VIEW FROM ABOVE

From above, the structure appears with clear connections in the divided city



TECHNICAL PLAN

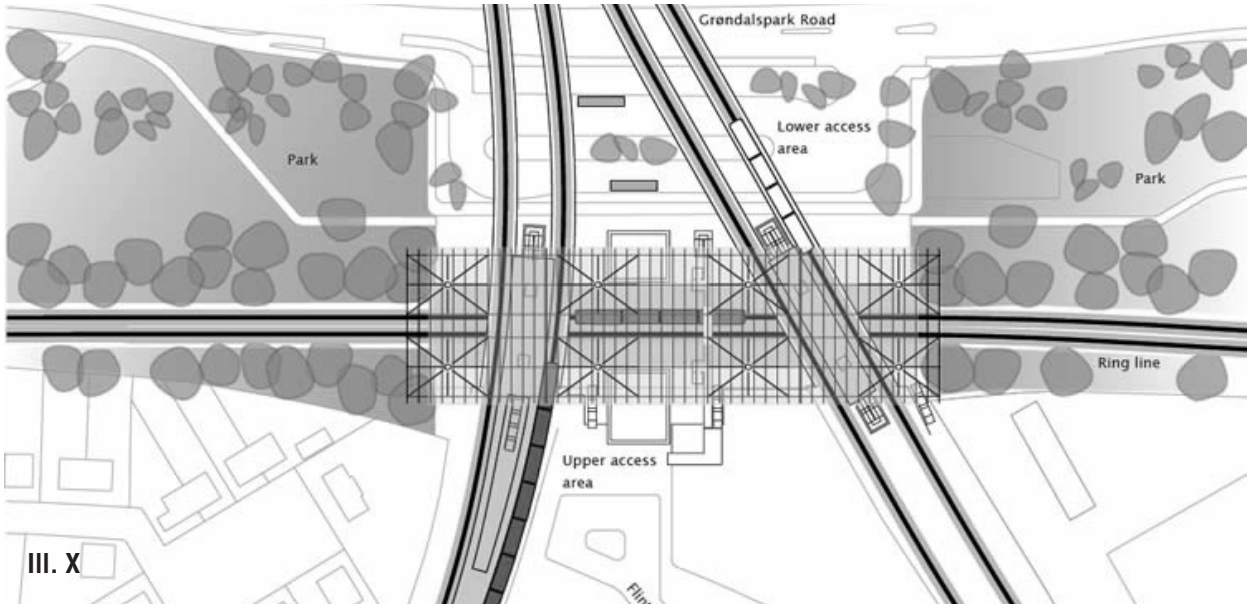

75,50
10,00
20,00
Light rail stop
7,10
14,00
1,40
2,20
1:500

4

FROM ABOVE TO BELOW
CASE STUDIES

It is now time to zoom a bit out. A station in Brabrand that bridges the gap and creates connective meetings has been designed. In the context of Brabrand, these meetings become major points of contacts from where new connections turn out to be possible. The goal in this next chapter is to demonstrate, that the concept of connective meetings in a station can be applied to other stations. Proving the station to be a contributing planning tool on the city-wide scale is more challenging to prove however. The design of the station has gone through the strategy of connect, to meet and to mix the urban environment with infrastructure to create connective meetings, inspired by the three cases: Flintholm Station, Dokk1 and Bilbao. Through the two first cases connectivity and meetings will be illustrated separately, followed by the case of Bilbao which will demonstrate how such a combination can work in reality on the city level to reform the car-inclined infrastructure and enhance the quality of public life.

Contents:



III. X

III. XI

III. XII

CONNECTIONS IN FLINTHOLM STATION

Where efficient connection and interchange is made
A station to appear light, bright and open, together with efficiency, is with not doubt Flintholm Station, Copenhagen, Denmark. Much like in the case of the light rail coming to Brabrand, the metro made Flintholm Station an important node in 2002, when the station became a place of traffic interchange between the metro and two s-train lines (Gottlieb Paludan Architects, n.d). Other clear similarities exists between the area of Flintholm Station and Brabrand: The landform of Flintholm Station is concave, with steep slopes on both sides and with a gentler upgoing slope, making accessibility impossible between the bottom and the front square of Flintholm (Wikiarquitectura, 2013). Here, the concept of the station has been the use of the terrain and to design a view from the slope towards the nearby station, and all together was the objective of Flintholm Station to convert the site into a combined location that efficiently could serve the inputs from pedestrians, bicycles and vehicles (Wikiarquitectura, 2013). The location of the station became a perfect opportunity to start a new development of the area together with the station (Neimann, 2015).

The design of the site is open to visitors, where a path winds through the Central Valley landscape, guiding visitors both visually and physically, up and down (Wikiarquitectura, 2013).They use the landscape to create experience, both for the people on the move, and the people who want to use the area for recreation, followed musch by the theoretical work of mobilities design, as has the design of Brabrand Station. The structure itself, having an expansive glass roof supported by steel columns (Gottlieb Paludan Architects, n.d) is balancing the relationship between the scale and the surrounding area (Wikiarquitectura, 2013). The space is described:

“Appearance of light construction, with simplicity and transparency as keywords.”
(Wikiarquitectura, 2013).

The three train lines passes through the area on different levels and in different directions, so 'wrapping' these lines in a building was neither appropriate nor to appear efficient (Neimann, 2015). Thus, the station is built on two levels, which causes a lot of movement between different routes, where several stairs and a small bridge aid the levels (Wikiarquitectura, 2013). This afford a possibility for a smooth and undisrupted flow for traveling people. This solution helps to create good visibility conditions from all around the station (Neimann, 2015). As Mette Neimann (2015) states:

“Flintholm Station is largely an effective 'Traffic Machine', focusing on the combination of different modes, new connections between two districts and the physical integration of complex topographical conditions.”
(Neimann, 2015)

Flintholm is creating effective connections, thus demonstrating step one: Connect. The next case will look beyond the notion ‘Traffic Machine’. The purpose of Dokk1 is not to transfer people, on the contrary, but it is a building where big amounts of flows are existing between inspiring programs and activities.

MEETINGS IN DOKK1

Meet

More than a library

The new Dokk1 by Schmidt Hammer Lassen Architects at Aarhus harbor is in the large perspective a library. However, this building is a perfect example on a building that knows how to incorporate and connect multiple programs and activities. When visiting their official website to look for their vision, this sentence is announced:

"Dokk1 is to be a flexible and dynamic sanctuary for all who desire knowledge, inspiration and personal growth. An open and accessible learning environment that promotes democracy and community. Dokk1 makes room for both activity and contemplation."
(Dokk1, n.d.)

This is the reason why I went to explore the library myself, most of all to study the flows of people and to see, how they negotiate with each other inside the building, how they meet, and how all the programs of the building are connected. To see if this could be implemented into the design of Brabrand Station as well, to be the programming link to the meetings in motion. Dokk1 may not be a station or used as transporting people from one place to another, on the contrary: it is designed to offer people an opportunity to stay, to meet and to interact. This is the exact reason, why Dokk1 has been an inspiration to this thesis.

The structure is a building, where the possibilities for work, reading, playing, interacting and meetings appear. The flows and activities are connected in such a way it creates programs where people can choose whether to sit in silence, in contemplation, or to engage in various activities. The plentiful of different zones affords different activities: enclosed locked rooms (see illustrations next page) affords reservation, other enclosed rooms affords private meetings and works. Countless zones are nevertheless open: from zones, where children happily yell and play, to zones made for presentations, to zones where students just next to a hallway of flows are sitting and working. The bookshelves stand in the open hallways and atrium, creating a 'riverbed' when seen from above, where they shape the flows. Sometimes the bookshelves become temporary obstacles in the flow of the 'river', sometimes they shape zones for long time stay and affords meetings. In the perspective of the 'ballet', the embodied negotiations and interactions becomes more clear: It is clear, that people interact according to their zones shaped by the bookshelves or shifting floor levels. People are sitting calmly discussing presentations right next to a wide stair, where it is the quick and direct pattern of people handling the space. Plentiful of furniture are giving of the purpose of their respective zones when placed against each other affording work even in an open room, and comfortable chairs facing the panoramic windows, where people of all ages sit and work while enjoying the cinematic view of Aarhus harbour front (see photo to the right). Computers are placed all around, managing the knowledge one should seek together with big tablets on the walls.

In addition to this, the building is used to conferences, exhibitions, explorations and several arrangements. The library has become a great inspiration to other libraries, where Dokk1 is known for its use of human centered design to accelerate innovation in libraries. With its design and activities, Dokk1 in itself is the example of architecture that adapts itself to the need of the user, filled with innovation where people can meet between connected levels. As such, the conceptual idea of how the programs are used at the library has been applied to Brabrand Station.

Workinng in Dokk1 to the view of Aarhus Harbourfront

COLLAGE OF PROGRAMS

Borrow music, audiobooks or books

Open room meeting

Open flexible workspace

Private and open space

Outdoor playground

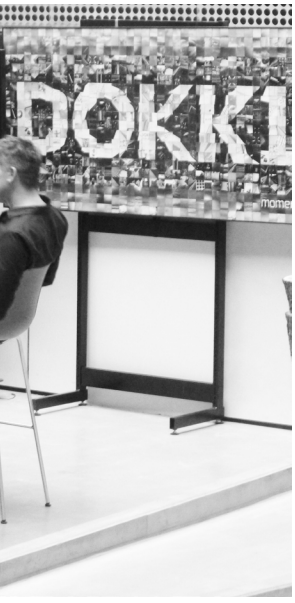
Place for fun

Litterature on the way

Independent delivery system

Exhibitions

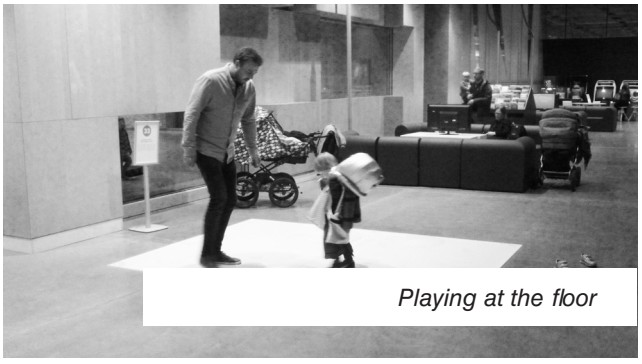
Enc



Searching for knowledge

Students studying along the hall

Reading room



Playing at the floor

Fun at hall

losed locked rooms

Study space between the bookshelves

Open flexible space

III. XIII

Mix

DEVELOPMENT PLAN IN BILBAO

Why Bilbao?

I sit in a public meeting in the main library in Aalborg on a Thursday evening the 20th of April, listening to what the alternative is to the canceled light rail project. 'Aalborg without light rail – what now?' is the booming title on the first slide of a power-point show. An interesting dialogue is running between invited politicians from different parties and the residents, including myself, who have met to hear about different versions of how to use the public transportation in the most efficient, environmentally-and economically friendly way possible – and what the benefits are. When the Deputy Mayor of Aalborg, Daniel Nyboe Andersen, starts to speak, he talks about Bilbao and says: "It is astonishing to think about, what good infrastructure in combination with a good culture system can do to a city" and goes on to tell of that this combination can bring people to the city. My interest was caught: Bilbao was a perfect example of a good transit oriented development, where it was not only about efficient infrastructure, but of what this infrastructure in combination with city quality could do for the people to escalate and enhance public life. Bilbao was a prime example of designing mobility. Thus, I will tell from what I have learned from the research about Bilbao.

These couple of pages is to demonstrate the potential in using the mix of infrastructural connection and cultural programs on a city-wide scale. If it is to be accomplished, the thesis finds it necessary to acknowledge the complexity of the city environment. If Brabrand, and any other suburb, are to experience a transformation in the car-inclined infrastructure and quality of public life, strategies and cases illustrating the potential of the station can help clarifying the sincerity. The focus in using the station as a planning tool follows the strategy of 'Station subsidiarity Strategy': to plan urban development around stations to escalate urban quality, showing the impact of the station (see Appendix F and G for more information). The quality is enhanced by the use of densification, where with dense city centers, the car has limited access, and the bike suddenly proves to be more efficient (Hartoft-Nielsen, 2015). By strengthening the coherence and integrate of public meetings better and quicker options than the car can be provided. In accomplishing this, the station cannot stand alone. It needs well-working traffic-systems, with a well-connected network, for buses, bicycles, pedestrians and cars, with a well-working interchange between the different traffic means. This is illustrated in the case of Bilbao.

A city transformation

"Already on the way into the city of Bilbao one gets the impression of a city in transformation because of the many construction sites, cranes, the sound of drills and the feel of high activity"
(Gladsaxe Kommune, 2008).

Quoted, is the beginning of a report issued by the Municipality of Gladsaxe.[1] This report writes about the causes for the transformation of Bilbao – and why the city was in need of this transformation. Since 1992 the residents of Bilbao has witnessed the city in a unique development that has transformed the city completely. From being a medieval metropolis until 1511 and a mercantile town until 1850, Bilbao became an industrial city where it had its lack of diversification. The economy was based almost purely on iron, steel and shipbuilding during the industrial revolution, which lead to the industrial crisis in 1975, bringing 30% unemployment along with it (Bilbao International, 2010). The city authorities had to stimulate business and promote job creation. With a strong political will, a masterplan got set in motion, and as a result, the transformation of Bilbao has become a reference point for other cities (The Edge Property, 2012), and for this thesis as well. What were the beneficial tools used for developing Bilbao? In other words, what needs to enhance the quality of city life? Today, Bilbao is a metropolis of cultural industry merged into a cross-cultural city of business and tourism. Four basic points in the masterplan changed Bilbao to become this present metropolis:

1) Improving the exterior accessibility.
2) Improving the interior mobility.
3) Regeneration of environment quality.
4) Regeneration of urban quality.
(Bilbao International, 2010).

These four points are indeed interesting in this project, where they gives precedent to infrastructure driven enhancement of the quality of city life. The points talk of integration and city quality, points that could transform a city like Bilbao with a high rate of unemployment to a city of great culture and a city with enhanced quality life.

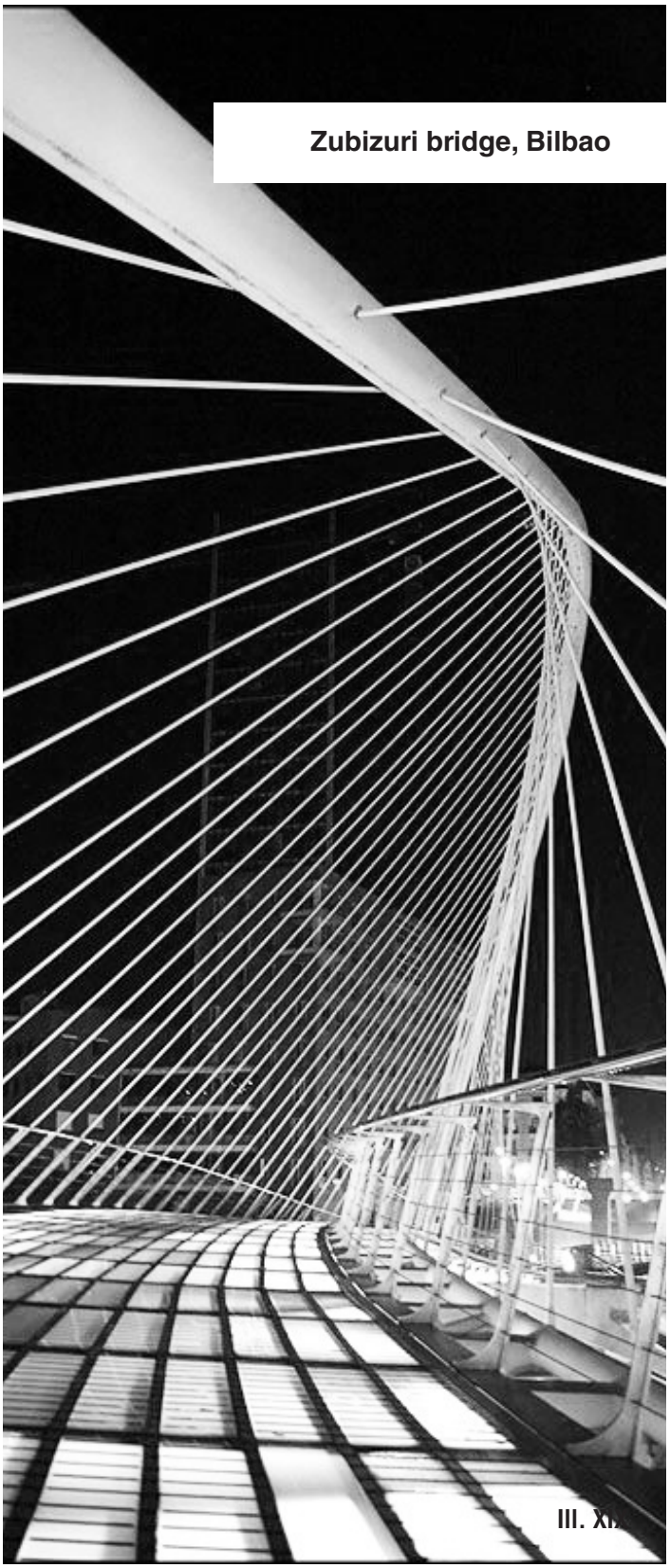
Improving the exterior accessibility and the interior mobility

It has for sure not been an easy task to transform Bilbao. The exterior accessibility got improved with enlarging the Port of Bilbao as well as the Airport, connecting Bilbao to the rest of the country and the world. The interior mobility got improved by new metro lines and by a new tramway, all connected in nodes in form of stations. With these infrastructural connections, new avenues and promenades were added (Bilbao International, 2010). However, Bilbao is surrounded by mountains, and the city cannot of this reason expand in horizontally, and some solution was needed. This solution was to build the infrastructure underground. A choice definitely not cheap, but it had its advantages. Railways, car parks and metros

1 The Municipality of Gladsaxe describes a study trip traveled by the Deputy Mayor of Aalborg together with Cultural Affairs and officials from Children and Culture of Aalborg to be inspired themselves in the development of Gladsaxe municipality.

moved underground which released huge amounts of land to invest in green areas and squares, art on every street corner, culture and activity centers. With this well-working infrastructure system together with cheap public transport use, the use of the private car has reduced. (Gladsaxe Kommune, 2008). The relief from traffic congestion and the creation of public life in its place is inspiring. Furthermore, more than half of the stations to the metro are underground, thus not taking up place away to public life above ground. The costs of the now two existing lines are respectively 601 million € and 655 million €. According to the authorities of Bilbao, this money was well spent, as the metro lines reduce car traffic in the center and is an efficient transport facility (Gladsaxe Kommune, 2008). In continuation to this, the design of Brabrand Station uses the same concept, just by building the infrastructure above ground instead of under, in much smaller and humble way however.

The contract for the underground metro design in Bilbao was awarded to Sir Norman Foster and Partners in 1988. With the metro lines, 48 stations came along. All the stations of Bilbao Metro includes glass structures, where large caverns are dug for the stations creating open spaces. Over the tracks, structures of steel and concrete are built while lifts and escalators provide access to the trains (Railway-technology, n.d.). The structures of the different stations have become icons for the connecting infrastructure in Bilbao as in the case of the bridges at the harbor. One important station to mention is Moyua underneath Moyua Square, the station closest to the Guggenheim Museum, which serves as the interchange between the two metro lines (Omics International, 2014). The station is linked to Plaza de Federico Moyúa above, which the Bilbao residents consider as one of their favorite meeting places with its English and French-style flowerbeds, incorporated modern steel lampposts and functional street furniture (Bilbao Bizkaia, 2016). Linked to Moyua Station and close to Guggenheim museum, the square affords a place of social meetings. What again can be transferred to the link between the old historical buildings of JAKA in Brabrand and the station, which works along the same line.



Zubizuri bridge, Bilbao

Ill. XI

1850-1950
Growing iron and steel industry.

1875-1900
Socio-economic crisis. Languishing industry, environmental problems and high unemployment rate. At the same a new mindset is developed: "Culture is not an expense but an economic investment in the future". Growing democracy after Franco's death and new regional strength.

1900

1981
Nervion river cleaned

1985

1991
The organization 'Bilbao Metropoli-30' is ended. New thoughts on Bilbao's development and the first revitalization plan is planned. Focus on strategies and in particular to promote public-private partnerships.

Revitalization plan is approved.

1990

1992
The organization 'Bilbao Ria 2000' is created. A collaboration between public authorities. Focus on coordinating and performing projects.

1999
Euskalduna Concert and congress by Federico Soriano and Dolores Palacio.

The strategy document 'Bilbao 2010: Strategic Reflections'.

1995

2000
Expansion and modernization of Bilbao airport terminal by Santiago Calatrava.

2001
The strategy document: 'Bilbao 2010: The Strategy'.

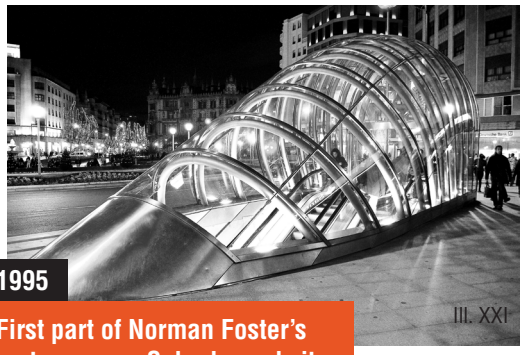
2000

2010
Bilbao sports Arena of ACXT Architects.

2011
The strategy document: 'Strategic Reflection 2030: The age of professionals.

2010

1992
Relocation of industrial port and shipyards



1995
First part of Norman Foster's metro opens. Suburbs and city center are tied together.

1998
Guggenheim Museum by Frank Gehry

1998
'Zubizurin' bridge by Calatrava. The city gets connected.

(Timeline from Jensen and Bøcker, 2011)

III. XXIV

Pedestrian bridge over the Ria Abandoibarra

Regeneration of the environment and urban quality

In regenerating the environment, the water conditions in the river Ibaizabal–Nervión were improved by arranging both banks. This river was the main artery for the city's economic activity, but with its waters it was furthermore working like a wall between the residential areas. Now, promenades line along singular buildings and along the transportation systems (Bilbao International, 2010). The city could now lean against the river 'Ria', and it escalated the urban quality. The architecture of the new Bilbao was significantly influenced, with the previously mentioned Guggenheim Museum as a main example. The museum is a case, which proves that a buildings can lift culture and become a catalyst in changing a city. Guggenheim Museum with its activities had direct and indirect effects on the economy of Bilbao (Bilbao International, 2010). Just as important: Guggenheim also met expectations to generate prosperity to the region (Gladsaxe Kommune, 2008). As Gladsaxe Kommune (2008) describes of the study trip, the old industrial harbor Abandoibarra is now the designed nerve of the city. This new harbor front with its masterplan designed by Cesar Pelli has, besides the famous Guggenheim Museum, a commercial center, a concert and conference center, a university, a library, green parks and open squares. Here at the harbor many bridges crosses and have become icons along the water. To the residents of Bilbao the bridges symbolizes integration along the two riverbeds. From being an edge used only for transportation during the industrial age, the river came to be merged with crossing iconic bridges, creating integration across the city (Gladsaxe Kommune, 2008). Integration, that have affording a city of connective networks, combining people, activities and life. To say alongside the project of Brabrand Station, they were 'bridging the gap'.

Enhancing the life of city quality

When the attention of the politicians during the industrial age were directed towards poor planning, the lack of differentiation among industries, the poor environmental conditions and the great social discontent and marginalization, Bilbao transformed. In 2008 (before the financial crisis) the service was 75.5% of the city's activities, and the average of the GDP in Bilbao increased and was in the year 2000 20,000 € per. inhabitant (Gladsaxe Kommune, 2008). By investing in human resources together with technology, in culture together with infrastructure, the city changed. Bilbao was branded as a metropolis that supported activity through a competitive and environment-friendly industry (Bilbao International, 2010). A quote from 'Kulturudvalgets studietur til Bilbao' emphasizes this:

"It is clear that the process down by the river is conceived to be a place that invites stay and activities. There are interesting art works that are marking places of transitions and urban spaces. This idea continues to the center of the town, which together with exciting light and traffic solutions reveals a thoughtful plan for how the city squares are to act as social meeting places."
(Gladsaxe Kommune, 2008).

Bilbao is a role model to demonstrate what the same could happen to a suburbs as Brabrand, when implementing the connective meetings in the station and bridging the gap. Bilbaox inspires in the case of what enhances city life and contributes to environmental friendly traffic. However, to copy a principle

where all traffic is to be underground, with wide-open squares above is not necessarily always the right solution, depending of course on place, context and environment – and not the least the people. The conditions always vary, and a such expensive solution as building the infrastructure underground has to be justified. Usually, in the case of the suburb with a lot of land use like Brabrand this is a challenge to justify. However, taking inspiration in Bilbao, traffic and cultural city life can if mixed together accomplish great results.

The process of transformation

As in the case of Brabrand, the public and private forces have had their influences in Bilbao as well. The process of transformation needed joint public and private effort. As written in the Bilbao International (2010):

"We can attribute the success of such a magnificent urban operation to the multidisciplinary character of all this pushing on to carry out the project….. Even more remarkable was synergy declared amongst public administration competent in different fields. "

(The Edge Property, 2012)

One of such spoken persons in this quote is Bilbao's First Deputy Mayor Ibon Areso. To solve the problem of unemployment he stated:

"Our first objective was to look for employment and we had been told that in the future, employment would be in the tertiary and services sector. So we had to be ready to receive employment in those areas "

(The Edge Property, 2012)

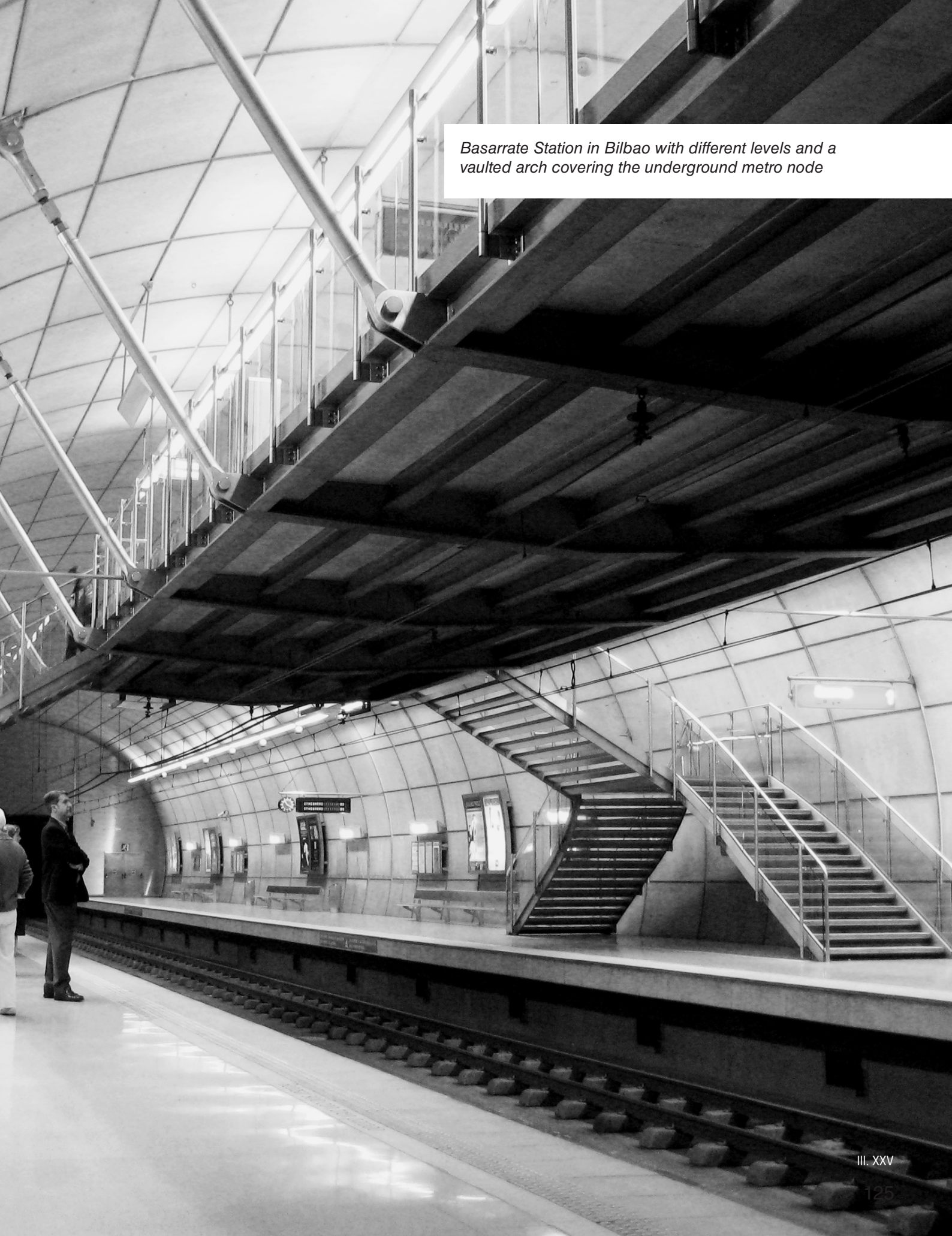
It was not just about making a masterplan, it was about thinking of the well-being of the citizens. This demanded cooperation as an important method. As Gladsaxe Kommune states, describing an introduction in Kulturpolitikken: 'There are specifically four requirements for the art and culture to develop:

- Inspiration must be used from the prevailing trends.
- Necessary visions are to be defined for long-term development.
- Necessary changes and reprioritization must take place.
- A strong and flexible cooperation at various levels and among several different parties must be ensured.

These requirements are some I will argue I have followed though this thesis: Inspiration in the just presented cases, the vision stated through the seven design parameters, the station as the necessary change and cooperation with the residents of Brabrand. The station should as such have accomplished to fit this quote:

"The culture and art does not belong to the buildings - but to the people who engage in the activities. Therefore, there may be something to be gained by pulling activities out of their familiar surroundings and present them in new and different ways, to both achieve visible cultural offers and an expansion of the activity "

(Gladsaxe Kommune, 2008).



Basarrate Station in Bilbao with different levels and a vaulted arch covering the underground metro node

III. XXV

5

FINAL THOUGHTS
THE FUTURE STATION

This last chapter will shortly summarize how connective meetings can be applied to not only Brabrand Station, but to other stations in the suburbs as well through the strategy: Connect; Meet and Mix, to clarify the station as a contributing planning tool. This is closely followed by a conclusion to the thesis and a reflection.

Contents:
Design strategies
Conclusion
Reflection

DESIGN
STRATEGIES

Bilbao demonstrates how the combination of connectivity, like the ones created by Flintholm Station, and meetings, like the ones provided by Dokk1, can work in reality taking place on city scale to reform the car-inclined infrastructure and to enhance the quality of public life. The station, as the important point of contact in the infrastructural network, can be an important tool to accomplish just that in the suburb. When interchange between the different means of transport is made, the city-wide connection should be incorporated, so as the station can connect to vital nodes, that again can connect to new nodes.

Suburbs have different criteria nonetheless, with different environments and different needs conferring to a possible station. The design concept applied to Brabrand Station is developed to the given context, with the two barriers of Silkeborgvej and the train cutting through, with a space in-between and visible differences in the terrain. The design concept still have three main strategies in creating connective meetings nonetheless: Connect; Meet and Mix. To apply the concept of connective meetings to other suburban stations, these three steps are the vital ingredients: A station can thereby break existing barriers by connection, afford interaction and create public life by meetings, and those two can in combination, by mixing, create the connective meetings, where infrastructure and architecture comes together. Brabrand is not the only suburb that can benefit from this combination, other suburbs has debates surrounding the problems of traffic as well (see Appendix H2). The strategy from the connective meetings can - and should - be applied to stations. Let the flows of connections and the points of meetings come together. In Brabrand, if looking to what got accomplished in Bilbao, the connective meetings has the potential to reach better traffic, development at Tulipgrunden, a better environment for the school and a city for the people. The same could be applied for other suburbs.

The importance of incorporating the public, the residents, is of major importance as well. To me, they provided me with information I felt I had to consider, since it is them that in reality will be affected by such a design, and their opinion matters the most, despite how plentiful and diverse they can be. With the critical mind of what can and should be provided to their city, solutions should be based on theoretical foundation, analysis and mappings, research and calculations together with the knowledge from the citizens.

CONCLUSION

The design is both a specific solution in the context of Brabrand, shaped according to the physical surroundings and to benefit the specific community in the suburb, as well as it is a conceptual solution that can be transferred to other stations by the perception of creating connective meetings.

The concept of creating a new connection and new meetings and mix infrastructure with programming and activities emerges from the vision of escalating city development together with the infrastructural networks. With the coming of the light rail, new opportunities arises, were a car-inclined infrastructure can be transformed to a safe pedestrian-friendly environment. It emerges from the idea, that infrastructure can not only bring solutions to problems, but enhance the qualities as well. Connecting the north and south of Brabrand at the important nodes of JAKA buildings at Tulipgrunden and Hovedgaden can give way to new connections in the city, from Brabrand Lake in south to the new Brabrand in north. It is a connection for the pedestrians and bicycles, enhancing a sustainable environment for the people, where parking and easy traffic interchange ensures a better travel for the commuters. The structure of the station itself is slender and follows the slope of the landscape, with platforms connecting to the landscapes of infrastructure. The structure affords both direct flows and flows of different interactions with the contribution of a rich and varied sensory experience by open views to the city and the nature and to the speed of traffic below. The station is designed to add focus to the different modes of mobility, and by adding functions the station hub is turned into a place of interchange focusing on connections, transfers and social interaction.

The vision of using the station hub as a contributing planning tool to break barriers and create meetings can answer many of the questions that the common network city is facing. While the infrastructure expands, it becomes relevant to attempt to consider the barriers the infrastructure can make and whether the infrastructure could hold other functions than merely the intention of transporting people from A to B. The design proposal of Brabrand station presents through design parameters an example of how barriers not only can be broken but also combine mobility and functions instead of separating them. It takes activities out of their usual boundaries end presents them in combination with the infrastructure, transforming both, thereby achieving knew conspicuousness and extension of the activities. The station as an important node in the transfer space can through the three steps: connect; meet and mix have the ability to contribute in reforming the car-inclined infrastructure and to a safe environment, where the quality of public life is enhanced. By letting the station turning the infrastructure into a public space, the public transportation can be prioritized together with public life. With the proper planning of the important nodes in the network of traffic, opportunity for a more green and sustainable urban development can arise. It can give optimal conditions for travelers, the bicycles, for parking, for accessibility to attractive urban spaces, which all together can help stimulate the use of sustainable modes of transportation. With the contribution of a station creating connective meetings, it can give the city back to the people, invite to stay and public quality and to new cultural activities.

REFLECTION

Starting from my motivation of discovering the potential of the station as a contributing planning tool in urban development was what sent me out on my journey of exploring the station and city development together. While knowing that to focus on an entire city and its possible transformation was too great a task, I used the carefully chosen 7 design parameters in the case of Brabrand in my attempt to restrain myself. The parameters came to be challenging in themselves however, because however much I wanted to be true to the complexity of the city, I had to realize along the process how complex the station as a planning tool truly can be. While a station can enhance the city quality by for example implementing a direct route for bicycles, the city itself does not at once become a branded bicycle city. It needs multiple other well-adjusted elements and factors in the planning process as well, like new bicycle paths together with strong political will, carefully calculated technical requirements, environmentally examinations, economic assessments and socio-spatial influences. This is the reason why I have insisted on defining the station as a contributing element in the thesis, not a single standing solution. Just as the implementation of a light rail is not a single solution to traffic congestion or a new biking path is a single solution to a pedestrian-friendly environment. Of such, it was important to me to use the cases of examples to demonstrate what the concept had of potential according to the city-wide scale so as to be genuine to the complexity of the city. Furthermore, the physical design of Brabrand Station has solitary been revolving around the structure of the station itself in combination with traffic access and parking areas to illustrate the conceptual approach in practice. To truly enhance the design of Tulipgrunden, the station and mobility design together with urban space and landscape design could bring forth the potential quality of the area itself; this with detailed programming of furniture, lightning, materials, pavements and vegetation. As the design has focused on the conceptual development however, these important criteria are ones not studied, though they positively should when realizing such a project.

Another limitation of this study lies in the oversight in the digital layer that is both a tool for network optimization and a factor to the human experience and interaction. The station is a place in the infrastructural network where it would be reasonable to investigate people as mobile digital-physical entities and their comprehension of the physical world and the patterns of their social interaction.

In addition, Brabrand is a case from where a new station is to be built entirely 'from scratch', making it possible to incorporate entirely new programs more free according to for example shape. However, the existing stations are not to be forgotten. After having studied the importance of the station I find it important to look into existing stations and their surrounding context and see how infrastructure and architecture work together, and how they in combination can break barriers and enhance city quality.

A final remark would be that I am aware that the impact of future transportation designs, such as self-driving cars, have or will have impacts on the design of mobilities. However, I have preferred to address the present problems and potentials of the development of the cities through the station in the belief that there will exist – in the future included –a value in having 'connective meetings'.

REFFERENCES

Books

Augé, M. 1995. Non-places. Introduction to an anthropology of supermodernity. London: Verso

Gehl, J. 2007. Livet mellem husene, The Danish Architectural Press, Copenhagen, Denmark

Jacobs, J., 1961. The death and life of great American cities. New York: Random House

Jensen, O. B., 2013. Staging Mobilities. London: Routledge

Lefebvre, H., 2008. Writings on Cities. New Jersey: Blackwell Publishing.

Lynch, K., 1984. Good City Form. Cambridge and London: The MIT Press

Massey, D., 2005. For Space. London: Sage

Mossop, E., 2006. Landscapes of infrastructures. From book: The Landscape Urbanism Reader. New York: Princeton Architectural Press.

Shane, D. G., 2005. Recombinant Urbanism. Conceptual Modelling in Architecture, Urban Design, and City Theory. Chichester: Wiley

Shannon, K. and Smets, M., 2010. The landscape of contemporary infrastructure. Rotterdam: NAi Publishers.

Stilling, N. P., 1987. De nye byer. Stationsbyernes befolkningsforhold og funktion 1840-194. København: Selskabet for Stationsbyforskning

Urry, J., 2007. Mobilities. Cambridge: Polity

PDF'S

Aarhus Kommune, 2016. Aarhus letbane etape 2 kører nu. [pdf] Available at: http://www.aarhus.dk/vvmletbane [Accessed 23 February 2016]

Aarhus Kommune, 2012. Trafik I Aarhus 2030. [pdf]. Available at: https://www.aarhus.dk/da/borger/Trafik/Visioner/Trafikplaner/~/media/Dokumenter/Teknik-og-Miljoe/Trafik-og-Veje/Planlaegning/Trafik-i-Aarhus-2030/Trafikplan-2012-06-12-WEB.pdf

Albert, R. and Barabási, A, 2002. Statistical mechanics of complex networks. [pdf] Available at: http://www.barabasilab.com/pubs/CCNR-ALB_Publications/200201-30_RevModernPhys-StatisticalMech/200201-30_RevModernPhys-StatisticalMech.pdf [Accessed 15 April 2016]

Center for byudvikling og mobilitet, 2016. Lokalplan 1029. [pdf] Available at: http://www.aarhus.dk/~/media/eDoc/2/5/4/2540416-3992423-1-pdf.pdf. [Accessed 18 May 2016]

Cowi, 2015. Analyse af potentialer i Parkér og Rejs anlæg ved stationer. [pdf] Available at: http://www.trm.dk/~/media/files/publication/2015/parker-og-rejs-maj-15/parker-og-rejsanalysen.pdf.
[Accessed 03 May 2016]

Cowi, 2014. Forundersøgelse Letbaneetape Brbrand-Aarhus Ø. [pdf]. Avaliable at: http://www.letbanen.dk/media/146086/a039858_002_01_forundersoegelse-aarhus-h-brabrand_60.pdf [Accessed 16 February 2016]

Cowi, 2014b. Trafik og parkering ved Slagelse Campus og station. [pdf]. Available at: https://www.slagelse.dk/media/4671296/Notat-vedr-parkeringsnormer-Cowi.pdf [Accessed 17 April 2016]

Forstædernes Tænketank, 2012. Bæredygtige Forstæder. [pdf] Available at: https://erhvervsstyrelsen.dk/sites/default/files/Forstaedernes_Taenketank_Rapport_WEB_140912.pdf [Accessed 09 May 2016]

Gladsaxe Kommune, 2008. Kulturudvalgets studietur til Bilbao 27. – 30. oktober 2008. [pdf] Available at: file:///C:/Users/danie/Downloads/Bilbao_2008.pdf [Accessed 30 April 2016]

Letbanesekretariatet, 2011. Letbaneudbygning I Aarhusområdet. [pdf]. Available at: http://www.letbanen.dk/media/97976/fase_1-rapport_letbanens_udbygningsetaper.pdf. [Accessed 12 April 2016]

MedieHus Danmark, 2015. Letbanen – Danmarks første letbane. [pdf]. Available at: http://www.letbanen.dk/om-letbanen/arkiv/ [Accessed 22 February 2016].

Midttrafik, 2014. Forslag til trafikplan Aarhus 2017. [pdf] Available at: https://www.aarhus.dk/~/media/eDoc/2/2/1/2219020-3417930-1-pdf.pdf [Accessed 22 February 2016]

Miljøministeriet, 2007. Støj fra veje. [pdf]. Available at: http://mst.dk/media/mst/Attachments/Vejstjvejledning3.pdf [Accessed 12 March, 2016]

Naturstyrelsen, 2014. Gevinster ved investeringer i byliv og bykvalitet. [pdf]. Available at: https://erhvervsstyrelsen.dk/sites/default/files/pjece_gevinster_ved_byliv_bolig-og-erhverv_141114_web.pdf [Accessed 01 May 2016]

Naturstyrelsen, 2013. Byliv der betaler sig. [pdf] Available at: https://erhvervsstyrelsen.dk/sites/default/files/Byliv_der_betaler_sig_opsamling.pdf [Accessed 01 May 2016]

Trafikplan, 2012. Trafik I Aarhus 2030. [pdf] Available at:https://www.aarhus.dk/da/borger/Trafik/Visioner/Trafikplaner/~/media/Dokumenter/Teknik-og-Miljoe/Trafik-og-Veje/Planlaegning/Trafik-i-Aarhus-2030/Trafikplan-2012-06-12-WEB.pdf. [Accessed 12 April 2016]

Trafikstyrelsen, 2014a. Optimering af stationsstrukturen. [pdf] Available at: https://www.trafikstyrelsen.dk/~/media/Dokumenter/04%20Kollektiv%20trafik/05%20Trafikale%20analyser/Publikationer/Optimering%20af%20stationsstrukturen%20marts%202014.ashx [Accessed 06 March 2016]

Trafikstyrelsen, 2014b. Bilag 1. Ny bane Aarhus-Galten-Silkeborg. Linjeføring og anlægsoverslag, fase 1. [pdf] Available at: https://www.udbud.dk/Handlers/File.ashx?fileid=28133. [Accessed 17 February 2016]

Trafikstyrelsen, DSB, Movia and Banedanmark, 2008. Masterplan for trafikterminaler i Østdanmark. [pdf] Available at: http://projects.cowiportal.com/ps/a052147/Documents/3 Project documents/Parkeringstællinger/Notat vedr. parkeringsnormer01.docx [Accessed 14 April 2016]

Transportministeriet, 2013. Cyklen og den kollektive traffic. [pdf] Available at: http://www.trm.dk/~/media/files/publication/2013/cykelstrategi-2013/arbejdspapir-4---cyklen-og-den-kollektive-trafik.pdf. [Accessed 18 April 2016]

Trængselskommissionen, 2013. Mobilitet og fremkommelighed I Hovedstaden. [pdf] Available at: http://bit.ly/1W0njbB [Accessed 01 May 2016]

WEBSITES

Aarhus Kommune, 2015a. Indkaldelse af idéer og forslag til planlægning af letbane fra Aarhus Ø til Brabrand. [pdf] Available at: https://webcache.googleusercontent.com/search?q=cache:k-64szHJBFUJ:https://www.aarhus.dk/da/borger/bolig-og-byggeri/VVM-oversigt/Igangvaerende-VVMer/~/media/Dokumenter/Teknik-og-Miljoe/Byudvikling-og-Mobilitet/Planafdelingen/VVM/Letbanens-etape-2/Ideer-og-forslag-Letbane-Aarhus-Oe-Brabrand.pdf+&cd=1&hl=da&ct=clnk&gl=dk [accessed 23 February 2016]

Aarhus Lokalavisen, 2015. Rådmand vil genåbne Brabrand station. [Online] Available at: http://aarhus.lokalavisen.dk/raadmand-vil-genaabne-brabrand-station-/20150618/artikler/706168990/1449 [Accessed 19 April 2016]

Bilbao Bizkaia, 2016. MOYÚA SQUARE. [Online]. Available at: http://www.bilbaoturismo.net/BilbaoTurismo/en/plazas/-moyua-plaza [Accessed 30 April 2016].

Bilbao International, 2010. Reasons for and elements of the transformation. [Online]. Available at: http://www.bilbaointernational.com/en/1-motivos-y-elementos-de-la-transformacion/ [Accessed 30 April 2016]

Dac&Cities, 2014. Sustainable Cities. [Online]. Available at: http://www.dac.dk/en/dac-cities/sustainable-cities/experts/jan-gehl-making-healthy-cities/ [Accessed 08 May 2016]

Dokk1, n.d. Vision & Værdigrundlag. [Online]. Available at: https://dokk1.dk/om-dokk1/vision-vaerdigrundlag [Accessed 07 May 2016]

Gottlieb Paludan Architects, n.d. Flintholm Station. [Online]. Available at: http://www.gottliebpaludan.com/en/project/flintholm-station [Accessed 02 May 2016]

Jyllands-Posten Aarhus, 2016. Ny plan_ Tulip-Boliger bliver to etager lavere. [Online]. Available at: http://jyllands-posten.dk/aarhus/ECE8539457/ny-plan-tulipboliger-bliver-to-etager-lavere/ [Accessed 28 April 2016]
Jyllandsposten, 2016. Borgermøder. [Online] Available at http://jyllands-posten.dk/aarhus/meninger/leder/ECE8524548/borgermoeder/ [Accessed 20 May 2016]

MacKechine, C., 2015. The last mile problem. [Online]. Available at: http://publictransport.about.com/od/Transit_Planning/a/The-Last-Mile-Problem.htm [Accessed 03 May 2016]

Midttrafik, 2016. Samspil 2025 - Vision for en sammenhængende og bæredygtig mobilitet i Østjylland. [Online]. Available at: https://www.midttrafik.dk/letbanen/hvor-og-hvornaar-kan-man-koere-med-den/udbygningsetaper.aspx [Accessed 22 February 2016].

Newbreak. Hed drøm: Brabrand station genopstår – måske. [Online]. Available at: http://newsbreak.dk/hed-droem-brabrand-station-genopstaar-maaske/

Omics International, 2014. Moyua (Metro Bilbao). [Online]. Available at: http://research.omicsgroup.org/index.php/Moyua_%28Metro_Bilbao%29 [Accessed 30 April 2016]

Railway-technology, n.d. Bilbao Metro, Spain. [Online]. Available at: http://www.railway-technology.com/projects/bilbao-metro/ [Accessed 30 April 2016]

Rethink Traffic, 2016. Rethink Brabrand Station. [Online]. Available at: http://www.rethinktrafik.dk/brabrand_station.htm [Accessed 19 April 2016].

The Edge Property, 2012. Bilbao's inspiring transformation. [Online]. Available at: http://www.theedgeproperty.com.my/content/bilbaos-inspiring-transformation [Accessed 30 April 2016]

TV2, 2016. Lars Larsen udvider I Danmark – bruger millioner på at bygge nyt. [Online]. Available at: http://nyheder.tv2.dk/business/2016-04-14-lars-larsen-udvider-i-danmark-bruger-millioner-paa-at-bygge-nyt [Accessed 19 April, 2016]

TV2 Østjylland, 2016. Uambiøst at lade letbanen stoppe på Brabrand Station. [Online]. Available at: http://stiften.dk/aarhus/uambitioest-at-lade-letbanen-stoppe-paa-brabrand-station [Accessed 09 April 2016]

TV2 Østjylland, 2015. Kritik: Letbane løser ikke problem. [Online]. Available at: http://www.tv2oj.dk/artikel/261149:Aarhus--Kritik--Letbane-lOeser-ikke-problem [Accessed 17 March 2016]

Visit Brabrand, 2012. Visit Brabrand Midtjylland Øst. [Online]. Available at: http://smilingdanmark.dk/Visit.aspx?City=Brabrand&Go=Central_Denmark&area=Midtjylland_EAST [Accessed 13 March 2016]

Wikiarquitectura, 2013. Flintholm Station. [Online]. Available at: https://en.wikiarquitectura.com/index.php/Flintholm_Station [Accessed 02 May 2016]
Århus Stiftstidende, 2016. TV-serie går tæt på uligheden I Brabrand. [Online]. Available at: http://stiften.dk/kultur/tv-serie-gaar-taet-paa-uligheden-i-brabrand [Accessed 20 May 2016]

Journals

Hartoft-Nielsen, P., 2015. 5 byudviklingsstrategier til grøn omstilling af mobilitet. Byplan | 4/15. Dansk Byplanlaboratorium. [e-journal] 67. Available through: http://www.byplanlab.dk/sites/default/files2/Byplan2015_4_web.pdf [Accessed 01 May 2016].

Jensen. E. h., and Bøcker, S., 2011. Byer under forvandling. Byplan | 4/15. Dansk Byplanlaboratorium. [e-journal] Tema. Available through: http://www.byplanlab.dk/sites/default/files1/BaggundByplanNyt4-11ByerUnderForandring.pdf [Accessed 01 May 2016].

Jensen, O.B. and Morelli, N., 2011. Critical Points of Contact - exploring networked relations in urban Mobility and service design. Danish Journal of Geoinformatics and Land Management. [e-journal] 46. Available through: https://journals.aau.dk/index.php/tka/article/download/591/454.

Jensen, O. B., 2010. Negotiation in Motion: Unpacking a Geography of Mobility. Space and Culture. Sage Publications. [e-journal] 13:389. Availble through: http://sac.sagepub.com/content/13/4/389

Jensen, O.B. and Wind, S. and Lanng, D.B. 2015. Mobilitetsfor¬skning – By, bevægelse og planlægning. Byplan | 4/5. Dansk Byplanlaboratorium, [e-journal] 67. Available through: http://www.byplanlab.dk/sites/default/files2/Byplan2015_4_web.pdf [Accessed 02 May 2016].

Jensen, O. B., 2009. Flows of Meaning, Cultures of Movements – Urban Mobility as Meaningful Everyday Life Practice, Mobilities, 4:1, 139-158, DOI: 10.1080/17450100802658002. Available through: http://dx.doi.org/10.1080/17450100802658002 [Accessed 02 May 2016]

Jyllandsposten Aarhus, 2016. Fantasimøder om letbanen. [Online] Available at: http://jyllands-posten.dk/aarhus/meninger/breve/ECE8536766/fantasimoeder-om-letbanen/ [Accessed 10 April 2016]

Jyllandsposten Aarhus, 2012. Problemtrafikken I Brabrand. [Online] Available at: http://jyllands-posten.dk/aarhus/meninger/breve/article4682608.ece [Accessed 19 April 2016]

Neimann, M., 2015. Fremtidens Stationer. Byplan | 4/15. Dansk Byplanlaboratorium. [e-journal] 67. Available through: http://www.byplanlab.dk/sites/default/files2/Byplan2015_4_web.pdf [Accessed 01 May 2016].

Tjørnehøj, E. Aarhus, een by – syv kommuner. Kulturgeografi. 67
Århus Stiftstidende, 2016. Aarhus er ved at blive delt op i rig og fattig. [Online] Available at: http://stiften.dk/

aarhus/aarhus-er-ved-at-blive-delt-op-i-rig-og-fattig [Accessed 19 April 2016]

Århus Stiftstidense, 2015. Brabrand skal igen være stationsby. [Online] Available at: http://stiften.dk/aarhus/brabrand-skal-igen-vaere-stationsby

Århus Stiftstidende, 2013a. Den store Østjyske Pendlerby. [Online] Available at: http://stiften.dk/aarhus/den-store-oestjyske-pendlerby [Accessed 04 March 2016]

Århus Stiftstidende, 2013b. Trafikken er den store østjyske bys store akilleshæl. [Online] Available at: http://stiften.dk/aarhus/trafikken-er-den-oestjyske-pendlerbys-store-akilleshael [Accessed 04 March 2016]

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ILLUSTRATIONS

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