THE ISLAND IN BETWEEN

CREATING A SUSTAINABLE DISTRICT BY USING ITS LOCAL GREEN QUALITIES AS BACKBONE FOR THE DEVELOPMENT

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Master Thesis Report
Sustainable Urban Design
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This thesis is for my family; for their endless love, support and encouragement.

I'm here because of you and I will be forever grateful for having you as my foundation system.

CONTENT

00.

PREFACE

00.1 MASTER THESIS ABSTRACT

From a reputation of an industrial and trading city, Aalborg has changed into a contemporary university city, with a strong development of creative clusters in knowledge-based industries. Nowadays the Vækstaksen, an urban growth axis set by the municipality, has become the driving force in the city's development to avoid further sprawl. A great part of East Aalborg belongs to this axis and is currently undergoing a rapid transformation with investments that include a new university hospital, a bus rapid transit (BRT) line and the expansion of the university and the local industrial harbor, among others.

The area was designed with a very clear differentiation between functions and a highly efficient traffic infrastructure in the early 1960's which lead to a neighborhood that has many physical and mental barriers for its residents and an urban structure that seems to work as individual islands with unclear connections but non the less very special qualities.

One of these islands, where the villages of Øster Sundby and Nørre Tranders lie, has yet to be included in the Municipality's strategy to enhance East Aalborg and has a great potential to become a sustainable district by using its local green qualities as backbone for the development. The project 'The island in between Creating a Sustainable District by using its local green qualities as backbone for the development' intends to create synergy between the site and the ongoing investments in the surrounding areas using nature as the main driver; the landscape ties everything together through a careful use of the topography, respect of the existing built form, integration of functions, densification and mobility.

00.2 STATEMENT OF INTENT

Cities worldwide are facing an increasing percentage of population living in urban areas; Every year more and more people living in the countryside settle in the cities and municipalities have the challenge to keep up with this demand while at the same time planning a development that will avoid further sprawl towards the open landscape. The aim of this project is to reflect on the possibilities to transform isolated and monofunctional areas in the cities by using their unique local qualities as a sustainable solution to deal with this challenge; the ideas were implemented on a specific area of the city of Aalborg in Denmark.

The vision is to create a sustainable district by using the area's topography and landscape qualities as the key elements of the development. The project creates a strong synergy between its immediate surroundings and the city in general because it uses the Aalborg Municipality's Sustainability Flower and the main principles of Vandkunsten Architects's 'Landscape in Between' strategy for the development of East Aalborg as guidelines for the design. The research and site-specific analysis helped plan a long-term phasing and are used as a basis for the implementation of the design proposal.

Overall thesis research questions

- How can the city of Aalborg accommodate the growing population and shifting demographics without encouraging further sprawl by maintaining their proposed "green ring"?
- How can monofunctional areas be transformed in order to be reconnected to the urban fabric?
- How can the local qualities of an area be used as the drivers for development?

The master thesis booklet is divided into several chapters. The research part consists on Introduction, Understanding the city and Zooming in on East Aalborg where the goal was to grasp the region's identity, understand fully the Municipality's plans for the development of the city and exploring specific ongoing projects in the area but that aren't being implemented on the design site. The design part of the booklet consists of the Island's transformation, with the strategy of the time perspective, master plan and design specifics.

01.

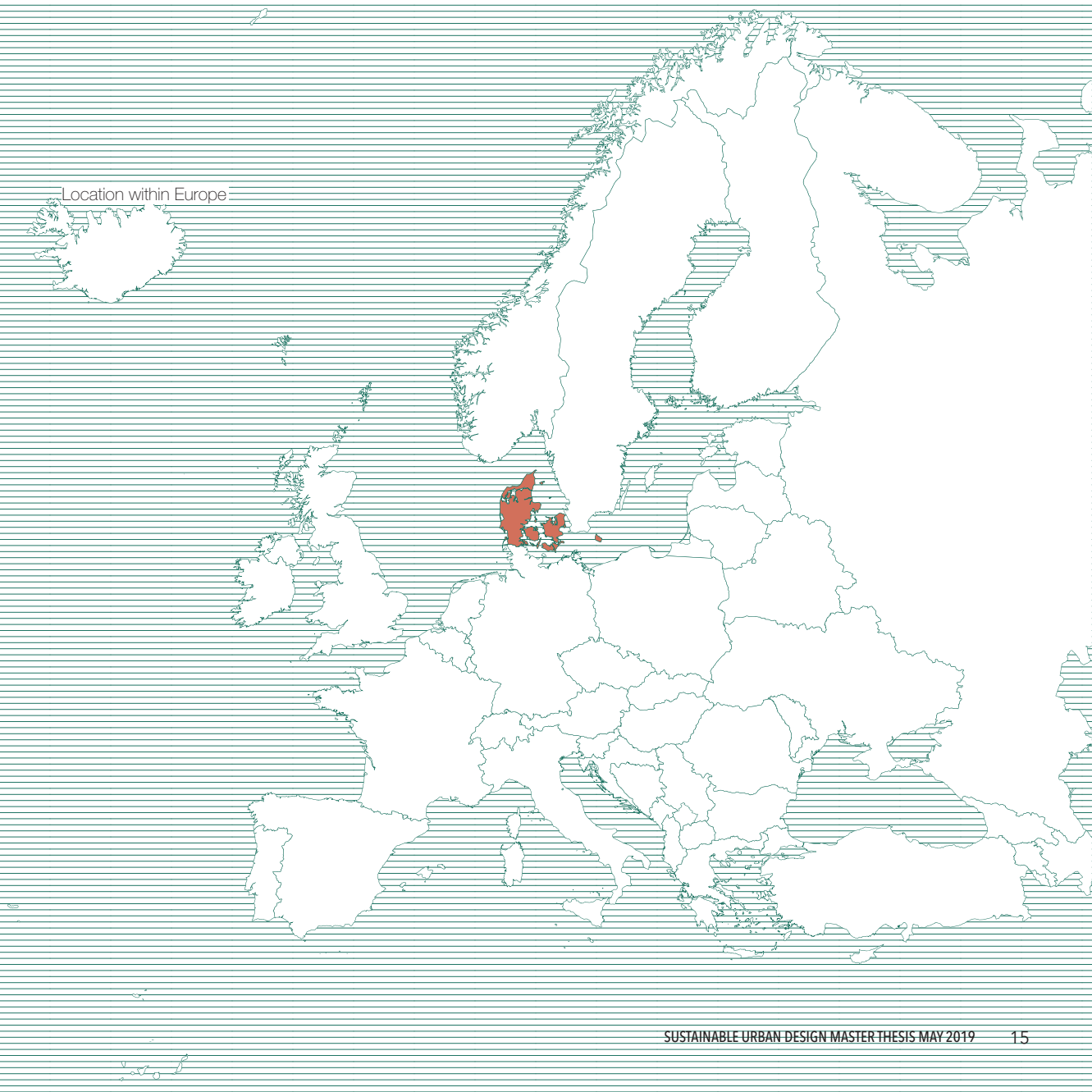
INTRODUCTION

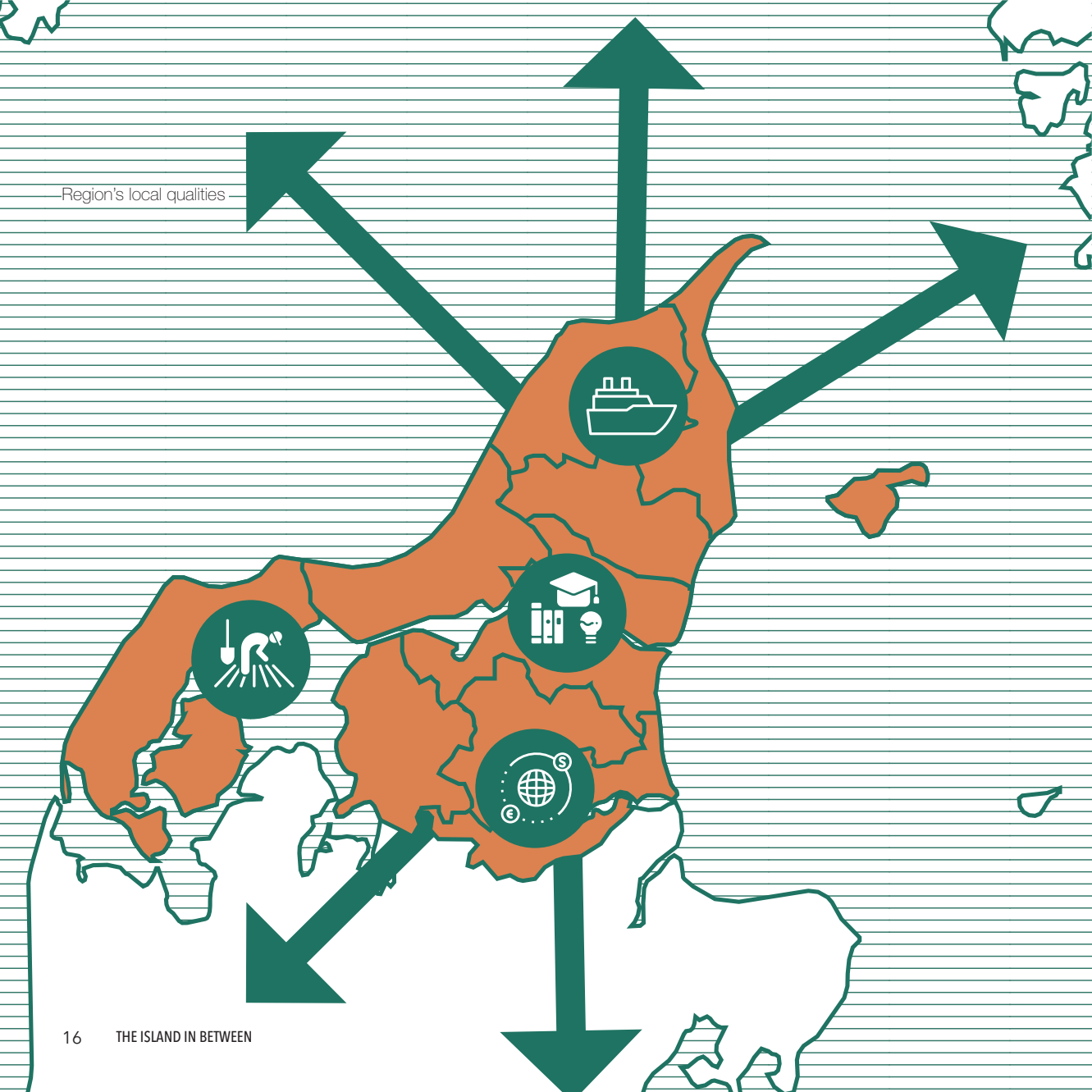
01.1 DENMARK

With a population of little over five and a half million inhabitants, Denmark has the second largest population in the Scandinavian region after Sweden. The population density is 135 persons per km2; a low number when compared to the most densely populated countries in Europe, for example the the Netherlands, where the density is 503 persons per km2 but a relatively high population density when compared to the other countries belonging to Scandinavia; In Norway, Finland and Sweden the population density is as low as 20 persons per km2. It is a small country compared to its closest neighbours; Sweden is ten times and Germany eight times larger than Denmark.

Denmark has been an agricultural country for thousands of years and, to a wide extent, this has left its mark on Danish landscapes, and almost two thirds of the landscape consist of man-made agricultural areas. Danish land cover is made up of 61% agricultural areas, 13% forest,11% open habitats, lakes and streams and 14% of build-up areas, roads and railways.

The country is a pioneer in promoting sustainability with a holistic approach that includes renewable energy, water management, waste recycling, and green transportation including the bicycling culture. It is pursuing the 2030 targets set out in the Sustainable Development Goals of the UN which emphasizes sustainable environmental development and it will strategically focus on the specific goals that reflect Danish values and capabilities: sustainable inclusive growth, education, equality, and peaceful societies.


Location within Europe


Region's local qualities

01.2 NORTH DENMARK REGION

Denmark is a country made up of five regions Nordjylland, Midtjylland, Syddanmark, Sjælland and Hovedstaden; Nordjylland or North Jutland region had a population of 587,335 people in 2017, making it the smallest region population wise. The region covers an area of 7,883 km² (Statistics Denmark, 2018) and is placed in the most northern part of Denmark, in the north of Jutland. The largest city in the region is Aalborg (also the capital) with a population of more than 210,000 people in the municipal area. With its position as the northernmost tip of Denmark, North Denmark is an important destination and transit point for shipping and tourism to and from several countries, such as Norway, Sweden, the Faroe Islands, and Greenland.

North Denmark is composed of different regional parts, each with their individual identities and characteristics. The growth potential of the peripheral regions lies in the further development of industrial sectors already present each area, for example the food, tourism, energy, medical and maritime industries alongside the advertising of special local recreational values like the North Sea, the Kattegat, the Limfjord, Thy National Park and the Laesoe Saltworks. The ports are also place-based resources with fine potentials of development of both the traditional activities of ports and interaction and synergy with their hinterland.

Business Region North Denmark is unique collaboration between the 11 municipalities of North Denmark that started in 2015 that aims to pursue a common agenda for growth and development in the region in unison. By finding common ground between the municipalities, businesses, and the region, it's possible to place North Denmark in the national and international spotlight. The specific areas of mutual effort are industrial development, tourism, qualified labor, infrastructure and international collaboration.

01.3 AALBORG KOMMUNE, THE REGION'S GROWTH DYNAMO

The cities of North Denmark are the centers of culture, innovation, industry and urban life. Aalborg municipality, the third largest one in Denmark with 212,000 citizens, and the university city of Aalborg have a special role as the heart of the region; In the municipality there are many business opportunities in the sectors of ICT, life sciences, energy, transport, intelligent logistics, and sustainability. There is a strong tradition of partnerships among businesses, research institutions and local authorities which provide access to cutting-edge research, strong networks, highly qualified employees and leads to significant knowledge and experience sharing.

With one third of the region's citizens and a substantial part of North Denmark's industry concentrated in and around Aalborg, the town is a catalyst in the business development of the region. Close relations and collaborations between the industry, the institutions and authorities of Aalborg along with all the municipalities of the region must be ensured to continue growing.

Facts about Aalborg
Denmark's 3rd largest municipality
Citizens of the municipality: 213,000
Denmark's 4th largest city
Citizens in Aalborg: 137,000
Population growth in Aalborg since 2010: 8.2%
National population growth since 2010: 4.5%

The region's growth dynamo

02.

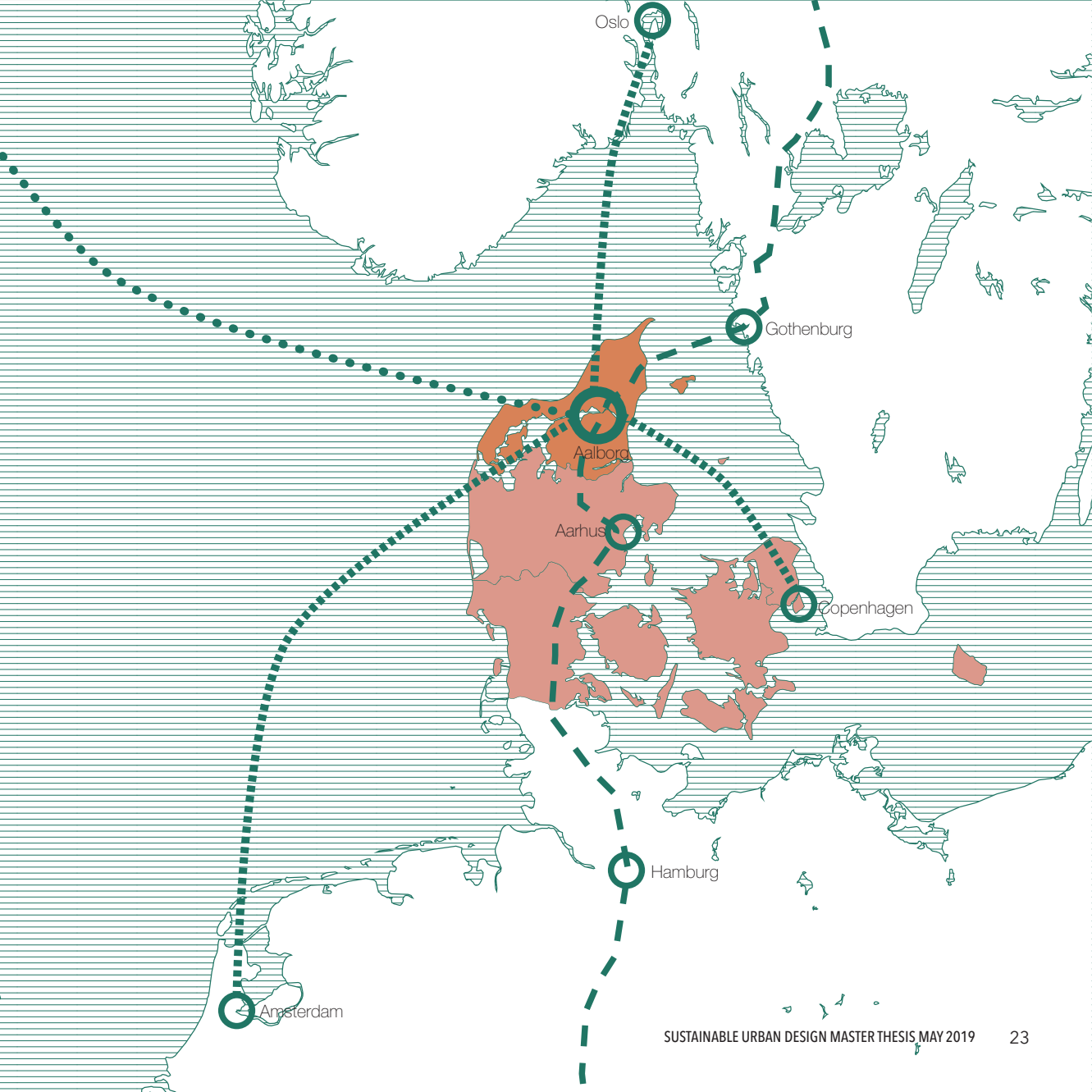
PROJECT BACKGROUND, UNDERSTANDING THE CITY

02.1 AALBORG, THE THOUGH LITTLE BIG CITY

Aalborg has an ideal location for access to Scandinavia and the rest of the European Union. Situated in North Denmark, the city has an international airport and port and is located on the E45 motorway network; it is also the gateway to Greenland through its port. Aalborg is close to the Scandinavian cities of Oslo and Gothenburg, a 35-minute flight away from Copenhagen with 30 daily connections, and an hour's flight from Amsterdam with 6 daily connections.

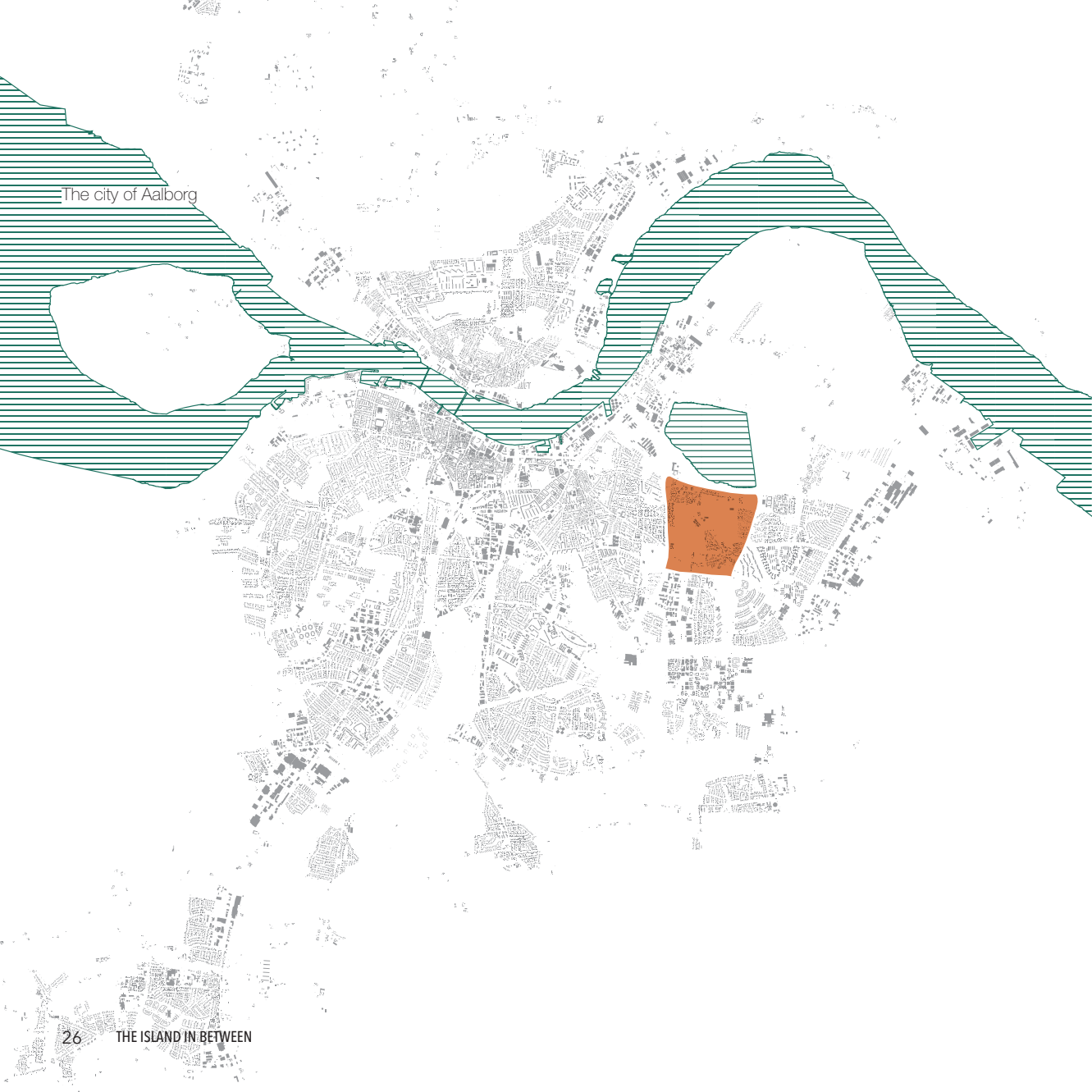
It is the fourth largest city in Denmark and is located close to the North Sea and Kattegat, the second largest forest in Denmark and adjacent the Limfjord, which allows the city to be surrounded by amazing landscapes; and offers its residents and visitors many opportunities for cultural and recreational activities.

The city competes with other medium-sized cities such as Aarhus and Odense, but to a large extent also with international cities, to attract labour, businesses and financial resources but a strong growth potential would be to enhance the collaboration between these cities. Aalborg already has several large globally oriented companies that, in addition to creating value and jobs, also generate revenue and jobs for a large number of local subcontractors and service companies. Aalborg's educational institutions also operate on the global market, and Aalborg University is a member of the world elite in a large number of research areas.


Oslo
Gothenburg
Aalborg
Aarhus
Copenhagen
Hamburg
Amsterdam

THE CITY'S IDENTITIES


AAU


The city of Aalborg

TRADING CITY

Aalborg is famous for its efficient transport connections to other North European countries, Scandinavia, Iceland, Greenland, the Faroe Islands, etc. The Port of Aalborg is for example a part of the significant Gothenburg-Aalborg-Rotterdam feeder route.

INDUSTRY CITY

The Danish production of cement started in the second half of the 19th century, when Aktieselskabet Aalborg Portland-Cement-Fabrik was founded on October 16, 1889. The Rørdal factory excelled in having easy access to the raw materials chalk and clay - and at an ideal location regarding national and international ship transport.

Nowadays Aalborg Portland is the world's largest producer and exporter of white cement with production units in Denmark, China, Egypt, Malaysia and USA. It is Denmark's only cement producer with production at the Rørdal factory, approximately 4km northeast of Aalborg.

UNIVERSITY CITY

The University of Aalborg (AAU) is the largest university in the region, internationally recognized for its results in engineering and it is considered an institution that contributes to the supply of well-prepared work force for the industrial sector. It focuses on research in the areas of ICT, renewable energy, life sciences and intelligent logistics.

General data:
21,000 full-time and part-time Danish students
2,600 international students
1,100 PhD students
2,900 researchers
No. 334 in the QS ranking
No. 41 in the QS ranking of universities less than 50 years old

University College North Denmark (UCN) each year creates thousands of new Danish and international professional bachelor graduates.

KNOWLEDGE CITY

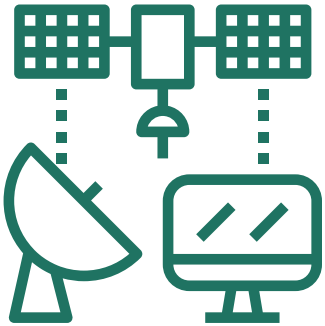
Aalborg's identity as "The tough little big city" has roots in a traditional working culture, but nowadays has become an international knowledge and network society.

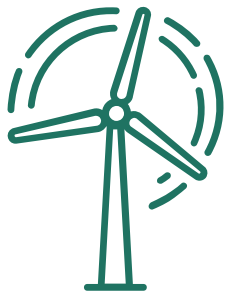
There is a special interest in expanding further the following knowledge-based sectors:

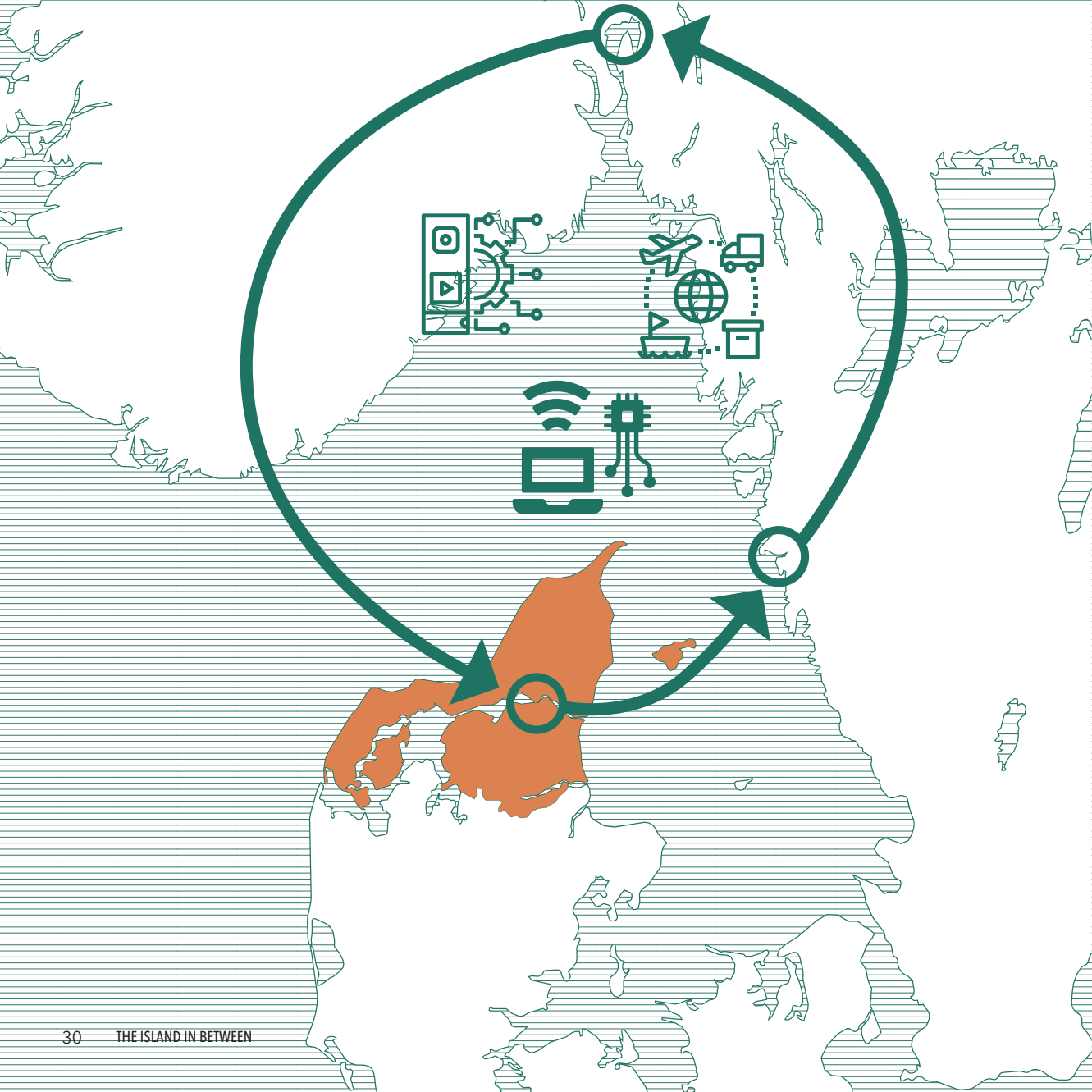
-Information and Communication Technologies (ICT)
The most important competitive advantage for many global ICT companies is innovation based on world-class knowledge ; Aalborg University has the largest number of students in ICT-related study programs in Denmark and it invests more in ICT research than any other Danish research institution and is a front runner when it comes to ICT-focused PhD students.

-Renewable Energy
The region is a research and development hub for sustainable energy sources such as wind power, solar power, biomass, etc. It has the goal of lowering CO2 emissions and, as of 2050, it should be free of fossil energy sources. House of Energy is a cluster of sustainable energy technologies and production in the Northern region of Denmark with 400 researchers from Aalborg University and 400 companies. The cluster connects businesses with knowledge institution and is a strong platform to give access to energy skills and resources.

-Transportation and Logistics
Unique access to knowledge, know-how and a business structure with a strong focus on globalization and optimization of internal and external supply chains are allowing a high growth in the transport and logistics sector in the region. Aalborg University has a unique position within transport and intelligent logistics due to its Center for Logistics (CELOG).







TECHNORDIC - JOINT ICT REGION

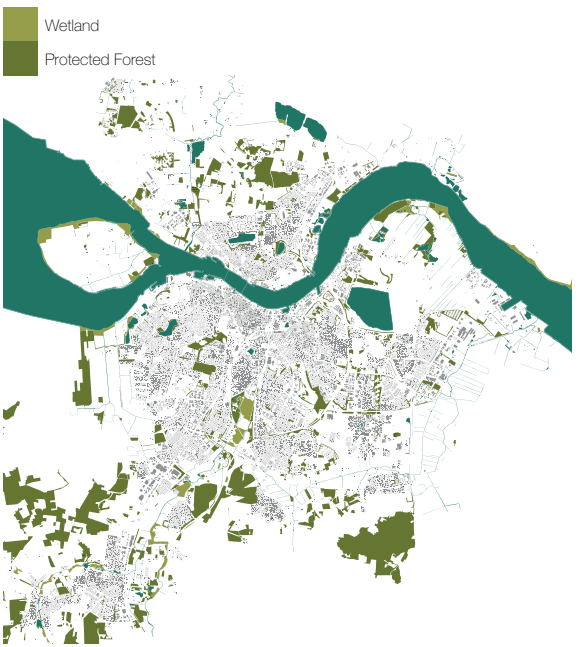
TechNordic is a new Scandinavian organization for collaboration in the field of communication technology and the information technology industry (ICT) that aims to improve collaboration across the Skagerrak and create more visibility and larger markets for the ICT industry, looking to benefit both business and research while increasing the many potential areas of cooperation; for example getting better at commercializing research and creating more start-ups within the ICT area.

The partners are:
•BrainsBusiness, the North Jutland ICT cluster with 150 member companies and Aalborg University, Denmark's largest ICT university
•Business Region Göteborg, a cluster responsible for business development in 13 west Sweden municipalities
•IKT Norway, which represents the total Norwegian ICT industry.

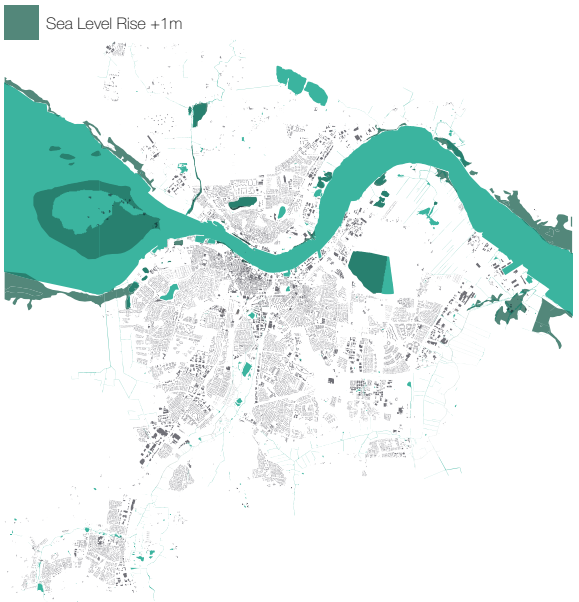
It is be one of the largest ICT regions in Europe: Almost 9,000 companies, 120,000 employees, 6,000 students and 1,000 researchers are represented together. The region already has some of the world's most prominent researchers in, among other things, the internet, telecommunications and wireless systems, and houses companies such as Gomspace, Telenor, Astek and Ericsson. As a cooperation organization, TechNordic is rooted in Gothenburg, Oslo and Aalborg.

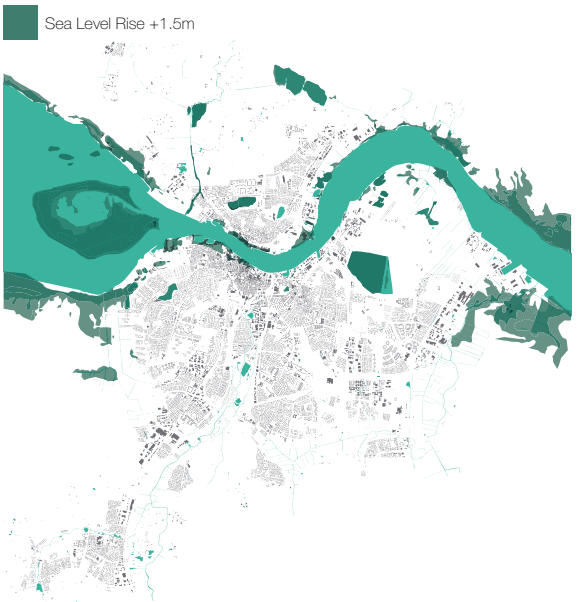
TechNordic
BUSINESS REGION GÖTEBORG
IKT NORGE
BRAINS X BUSINESS ICT NORTH DENMARK

02.2 CHARACTERISTICS
LANDSCAPE



FLOODING RISK

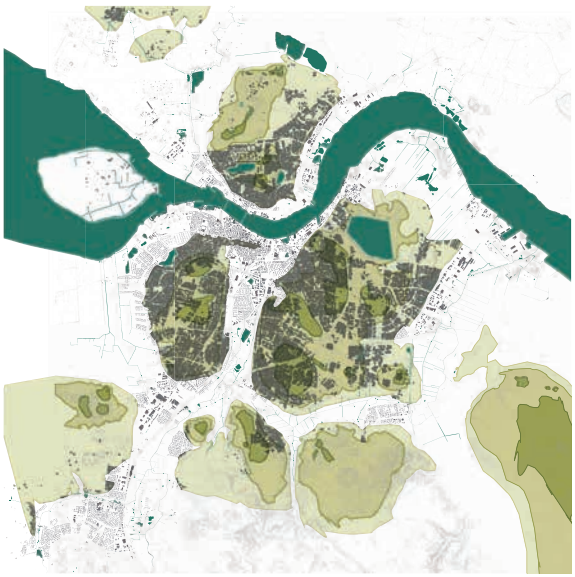




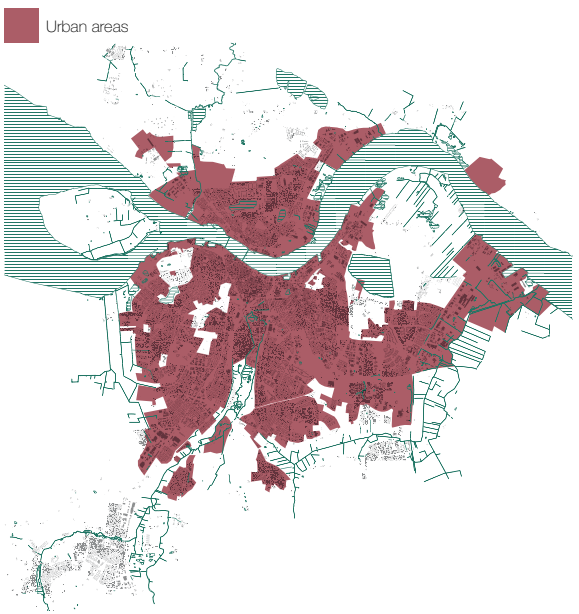
TOPOGRAPHY

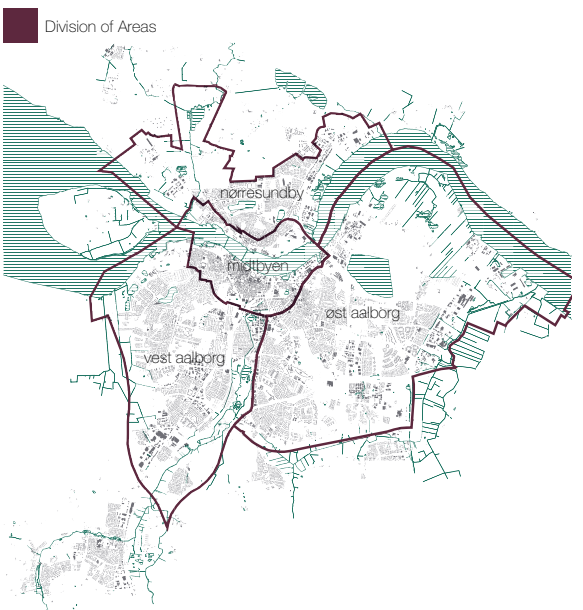
+40m Level
+20m Level
+5m Level

Topography + Built Structure



URBAN FORM


Urban areas


Division of Areas
nørresundby
midtbyen
øst aalborg
vest aalborg

FUNCTIONS


Rail
Industry and business areas
Housing areas- more than three stories high
Housing areas- less than three stories high
Airport
City Center
Mining areas
Recreational areas

Aalborg Municipality's Green and Blue Structure 2.0 Diagram

02.3 URBAN DEVELOPMENT PRINCIPLES

Aalborg city has been under the greatest urban transformation and development in the last decade, from being primarily one industrial and port city to a greater extent be based on other types of businesses, where the university plays a very important role in becoming a knowledge city. The fjord has been given back to the city as a completely unique urban environment that strengthens the city as an attractive place to locate knowledge companies and educational institutions; the campus area in Aalborg East must be developed as a Regional Lighthouse for knowledge.

The city has experienced good growth in recent years despite the financial crisis. Part of the explanation is in today's global trend, where there is a marked migration from countryside to the city; Nowadays more and more people are settling in the cities. In Denmark, 85% of the population lives in cities and its predicted to continue happening in the years to come; Aalborg Municipality's population forecast 2012-24 shows an increase of approx. 7,000 citizens in the city. With continued declining households and population growth, the need for new housing is about 6-7,000. Within planned areas, the plan is to create just over 8,000 homes, primarily through the transformation of existing urban areas, for example the Eternite, the Godsban area and the Østre Havn.

In the past, the city's needs have been covered in a monofunctional way; Infrastructure is better utilized if it is designed to cover mixed functions, to help create new synergies and communities. Flexibility is also one of the key concepts of the future, as challenges in the form of changed demographics, migration patterns, new family forms, changing needs, new offers, etc. presupposes that the urban buildings and urban spaces must be able to be converted over a very short time.

Aalborg has large areas of urban transformation, but it is important to also focus on new smaller densification potentials in the existing urban and residential areas to focus on urban densification rather than urban sprawl. For a sustainable development, the city should be densified and transformed within the existing boundaries, focusing on the growth axis. Densifying will improve the quality of the urban life, solve transportation needs and protect the existing landscape and wetlands; The local resources must be considered - the built form, urban space, cultural values, nature, landscape- to create a strong urban identity in the areas to be developed.

GREEN AND BLUE STRUCTURE

The Green-blue structure designates a network of important overall green and blue wedges, bands and connections. It helps create coherence between existing larger natural areas and connections from the open land to the urban green areas. Recreational functions are larger in the urban areas, while the interests of protection are greatest in the open country, all with the idea of helping create large buffer zones to mitigate the damaging effects caused by floods due to increased rainfall and rising sea levels.

The Limfjord is the unifying blue element that will drive the urban development and outdoor life experiences. A blue ring must be re-established around Aalborg in low-lying areas connected to rivers, streams and lakes, while promoting biodiversity and increasing the value of urban spaces by implementing a recreational use to rainwater in the city. The lakes that were created due to quarry activities have recreational qualities and give historical identity in their surrounding area.

Biodiversity is important as it provides society with a range of ecosystem services that have significant economic and societal value, such as clean water, pollination and flood protection; The decline in biodiversity must be halted and reversed- The most vulnerable and the scarcest nature must be protected first and whenever its possible, the forests, parks and municipality owned areas of the city must change to a function that promotes biodiversity via nature restoration.

New nature must be established so it can improve and support a coherent network of ecological connections in the municipality; A green ring around the city for outdoor life, nature and agriculture is a priority, especially placed in the flat and lowest areas. On the hills, along the fjord and in Østerådalen, green connections must provide access to the open land, water and recreational opportunities; the hilltops must appear as wooded landmarks.
Establishment of urban forests- Forests bind CO2 and protect the groundwater from pollution while also promoting plant and animal life and increasing recreational opportunities. Byzantine forests and natural areas also increase the settlement value and help to emphasize an identity for a local area. The City of Aalborg will expand the landscape connections through nature restoration and afforestation; The extent of the forest must be increased from 7 to 12%.

The Fjord and the hills

The valleys and the water edge

The green hills

The green ring, the city's edge

Diagram showing the location of the Growth Axis

VÆKSTAKSEN, THE GROWTH AXIS

The driving force in Aalborg's development with public and private investments is an urban growth band from the airport in the northwest to the south east harbor. The end points in the west and east are established as attractive traffic-based business areas with optimal connection to the whole world and the city center.

The light rail route, the pedestrian paths (nature corridors) and the bicycle network are the backbone of the area and they are a priority in the development. Public spaces are created when two or more modes of transportation overlap and the areas around the node should be densified with workplaces, educational institutions, sports facilities, cultural services and housing. When car traffic overlaps with public transportation stations, a park and ride facility should be placed, to generate an increased accessibility to the area. The overall idea is to densify, transform the identity and create a coherent development to avoid further sprawl of the city outside the city's green ring.

MOBILITY

On a greater scale mobility must support Aalborg's role as the region's growth dynamo. The focus is on optimizing the infrastructure that binds the city with the rest of the world: Aalborg Airport, the East Harbor, the motorway and rail network.

-The motorway network is to be expanded with a third limfjord connection.
-North Jutland rail connections must be supported and expanded.
-The East port will continue being developed with areas have already being planned for continued expansion of the quays.
-Shorter travel times for train connections to Aarhus, Odense and Copenhagen to increase labor force growth.
-Continued development of important business areas must be ensured good connection to the motorway network and freight rail service.

In the city, high availability between the city center and regional and international connections must be ensured, the University, the University Hospital, the East Harbor and the airport; and therefore, the light rail route is the traffic backbone on the growth axis.

Particular focus is placed on ensuring the possibility of combination trips, where several modes of transport are used during the journey and the stations between different modes of transportation have a potential to become meeting places.

Aalborg must be a cycling city, so there has to be a continued improvement on the conditions for cyclists with the establishment of high-quality bicycle commuter routes with particular focus on accessibility, safety and service / visibility for the cyclists.

URBAN ENVIRONMENT

The industry had a very clear role in the planning of the city, businesses needed to be isolated and placed in areas on the outskirts of the cities to not bother the citizens. New types of business can be combined with other city functions that can result in a more varied city life. Areas such as the Airport, Bouet, the University, the new hospital, Østhavnen and Svenstrup's are very important for the city and they will continue growing in the upcoming years; The common feature of these areas is that their functionality is closely linked to the city's infrastructure and the main challenge is that they are placed in some of the lowest areas of the topography, and therefore they must be developed in close interaction with the fjord, the recreational connections and the watercourses to address climate protection.

Aalborg University has a leading role in creating knowledge, innovation and jobs for highly educated people. It is the center of a diverse range of programs in the region that attract more and more local, national and international students and in order to attract and retain innovative companies, skilled labor, students, and visitors, both national and international, the city most offer new ways of living, innovative experiences and different meeting places. Formal and informal meeting places should be flexible, offer different functions and provide opportunities for relaxation, physical activity, social interaction and cultural exchange.

The suburbs must be developed with their own local identity, structure and potentials, with the landscape, views, light and air as special qualities to be highlighted. New ways of living must be developed, the core family's traditional detached house has to be rethought and developed into a new densified housing form with greater flexibility, that creates community and offers amenities. These new housing typologies must take into account the changed demographic development in Denmark with more elderly and fewer young people and have a focus on climate change and sustainability.

Proper meeting places, improved infrastructure and new housing typologies should be placed close to the existing developments and the new buildings must emphasize the landscape and give nature space to thrive.

SUSTAINABILITY FLOWER

The starting point for Aalborg Municipality's spatial planning is a broad approach to sustainability based on an overall assessment of the environment, economy, nature, social conditions and local values and its graphically illustrated with the sustainability flower. In all projects and at all levels - from the planning strategy, the municipal plan and the local plan – the sustainability profile most be taken into consideration.

In the next page, a few of the many principles that are related to the flower will be mentioned because they were taken into consideration during the design process. of The island in Between.


ECONOMY
LOCAL VALUES
SUSTAINABILITY
SOCIAL
NATURE
ENVIRONMENT

LOCAL VALUES

- The soul of the place - cultural and natural heritage
- Green-blue structure- Urban landscapes
- Conservation of heritage buildings and infrastructure

NATURE

- More trees and more forest (native species)
- Preserve existing plantings
- Access to coast, forest, parks and recreational areas
- Climate Adaptation- handling Flooding and risk minimization

ENVIRO

- Minimize the nee
- Coherent supp modes of transp
- Promote the bi transport
- Alternative energ biogas, solar ce
- Local Use of Ra
- More green in th green roofs, faca

NMENT

ed for cars
ply of sustainable
ort
cycle's share of total

gy supply (wind, soil,
ls)
inwater (LAR)
e city (green spaces,
ades etc.)

SOCIAL

- Mixed accommodation in all districts
- Multifunctionality in neighbourhoods, urban spaces and buildings
- Informal spaces for recreation, socializing, exercise, nature experience etc.
- Water as a recreational element in the city
- Accessibility and closeness to recreational areas
- Possibility of physical activity in public spaces
- Continuous structure - both recreational paths and cycle paths
- Easy access to work, school, shopping, etc.

ECONOMY

- More education places
- Support the knowledge industry
- Develop local business potential
- Prioritize densification and sustainable transport
- Time perspective
- Avoid construction on areas that are expected to be affected by climate change
- Flexible, multifunctional solutions

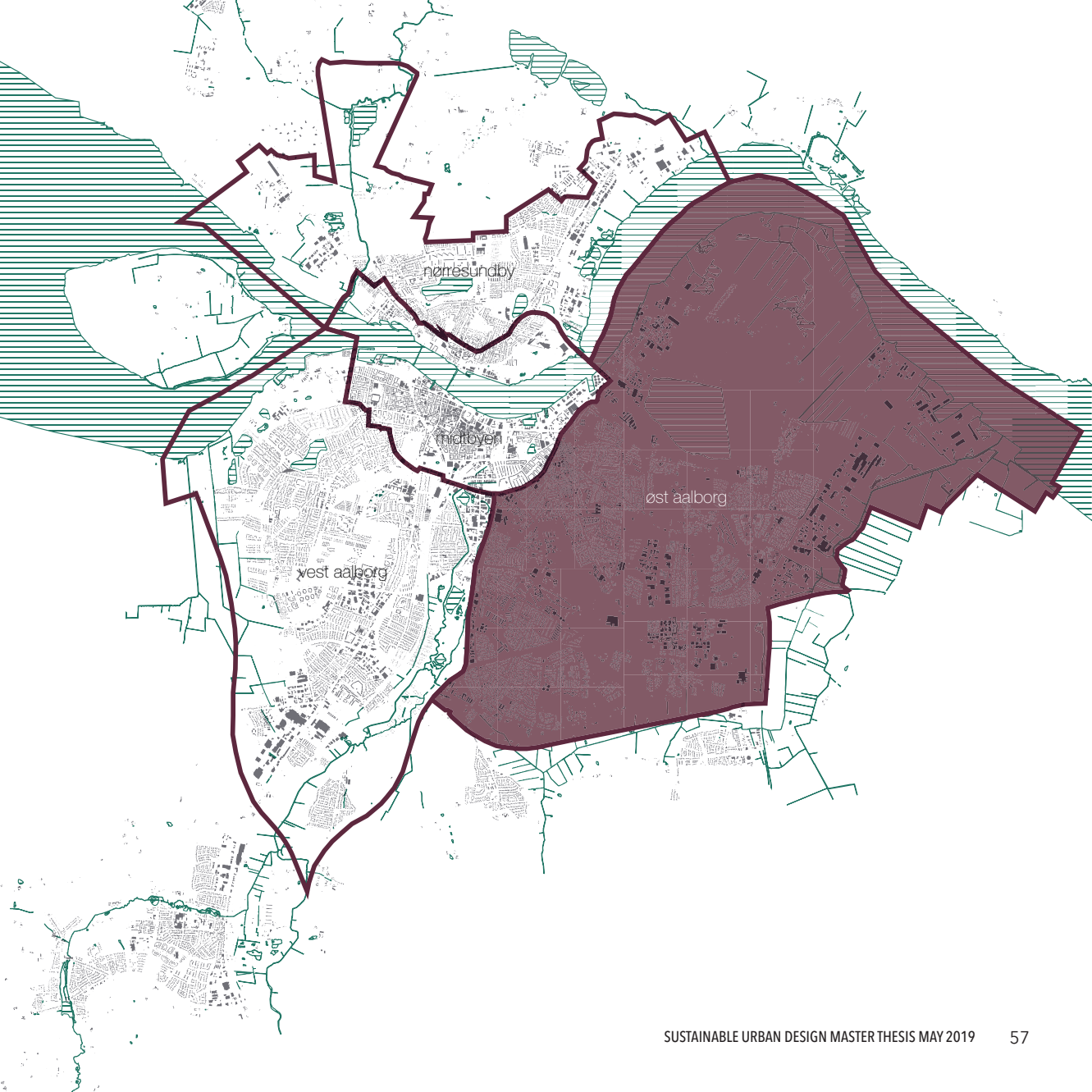
03.

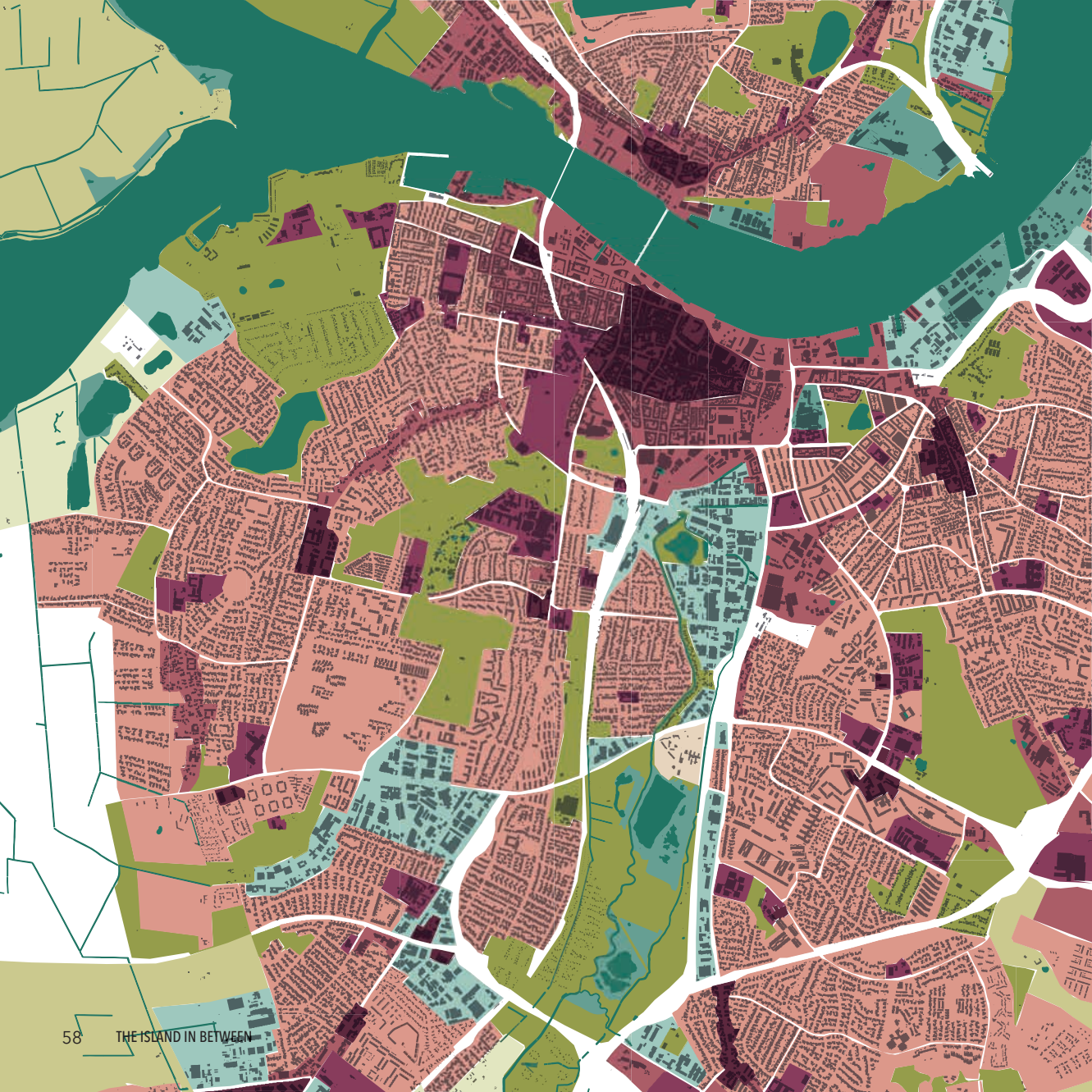
PROJECT CONTEXT, ZOOMING IN ON EAST AALBORG

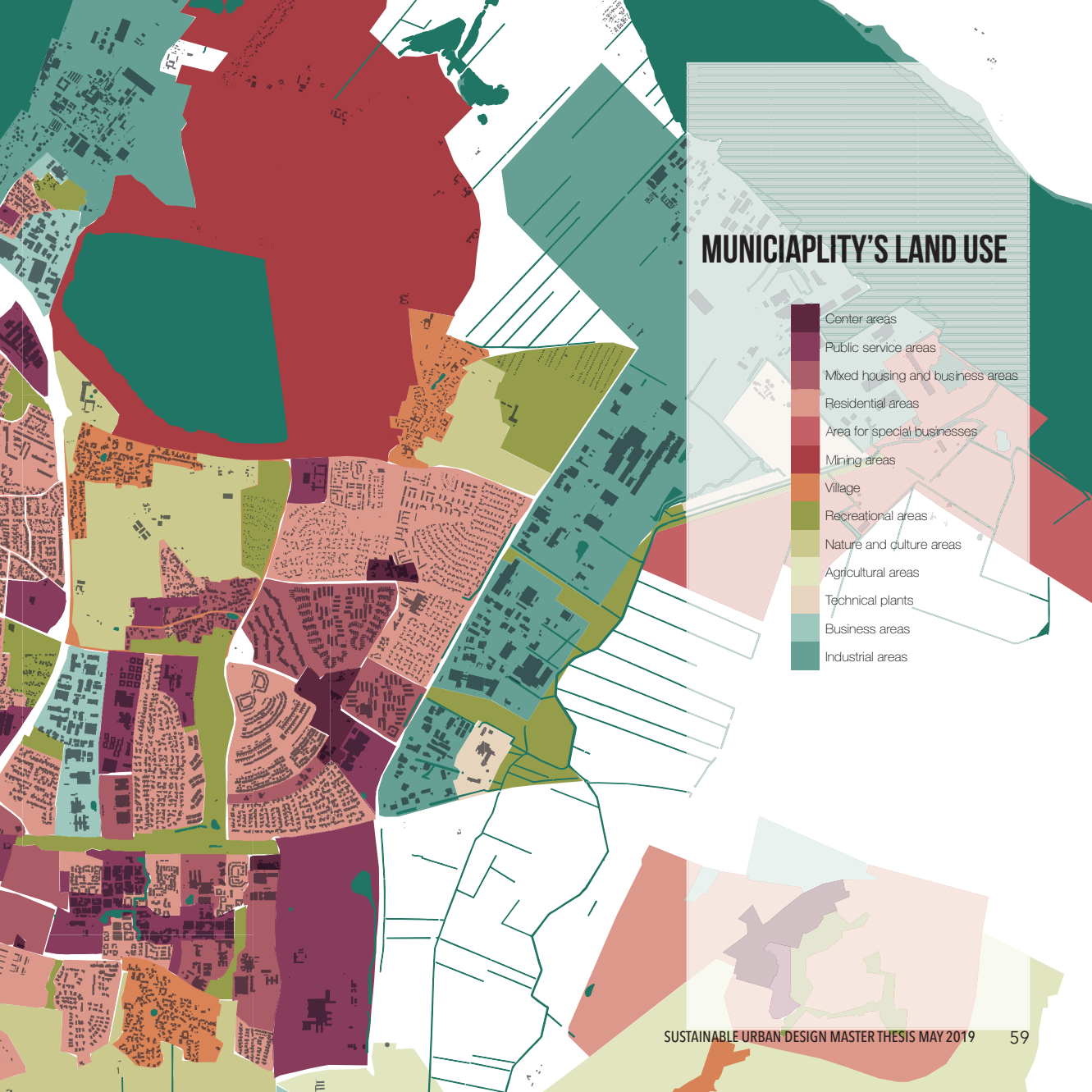
03.1 EAST AALBORG CHARACTERISTICS

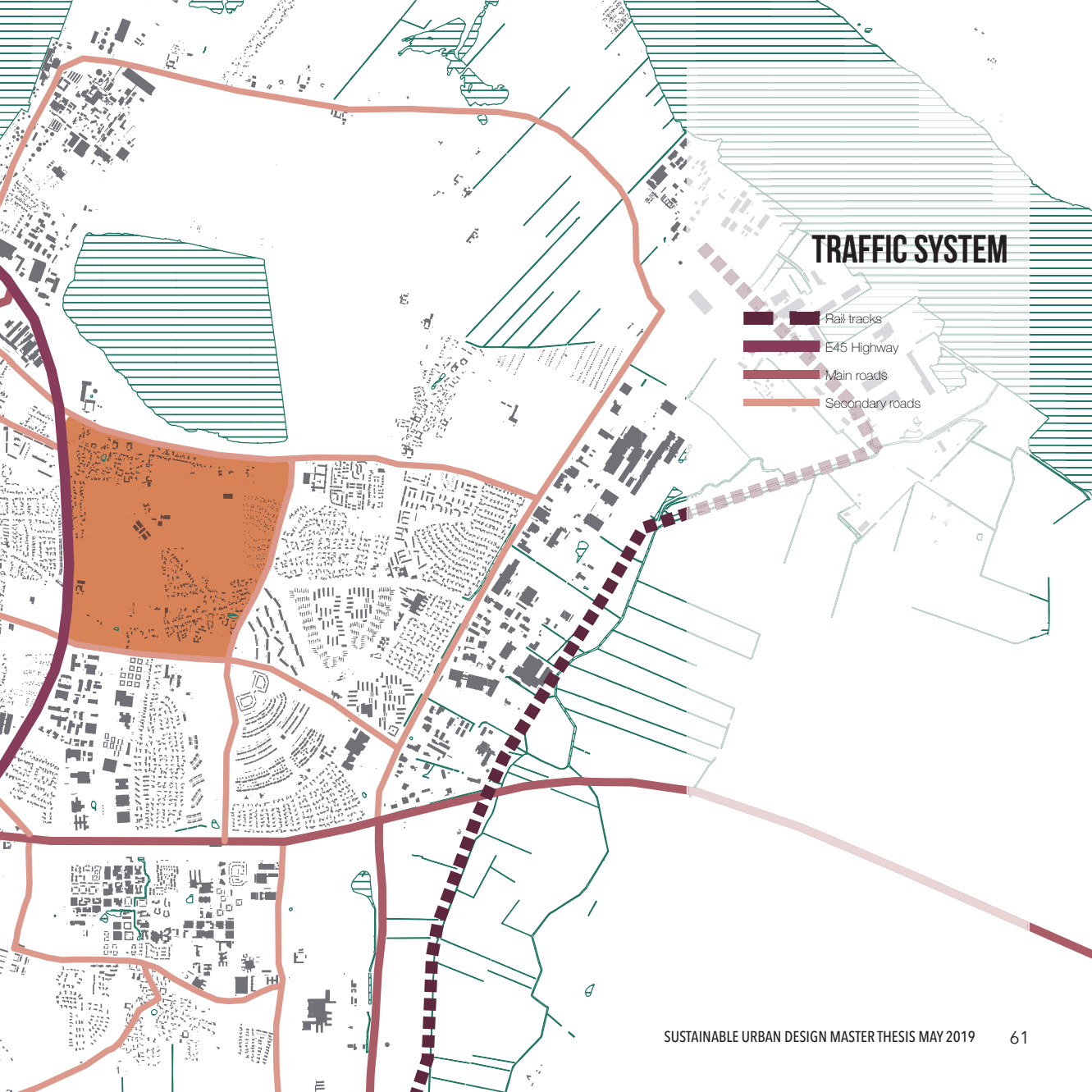
One of Aalborg's largest suburban developments occurred massively and rather quickly in the latter half of the 20th century in East Aalborg. The area was designed with a very clear differentiation between functions – detached houses, multistory housing, businesses- and a highly efficient traffic infrastructure in the early 1960's which lead to a neighborhood that has many physical and mental barriers for its residents and an urban structure that seems to work as individual islands with unclear connections. Nowadays is a neighborhood undergoing rapid change, with related investments amounting to more than 10 trillion DKK until 2020. The many projects constitute the ongoing transformation of the residential area into a sustainable district, characterized by diversity with lively meeting places, shops and and active urban life with many different types of housing and residents.

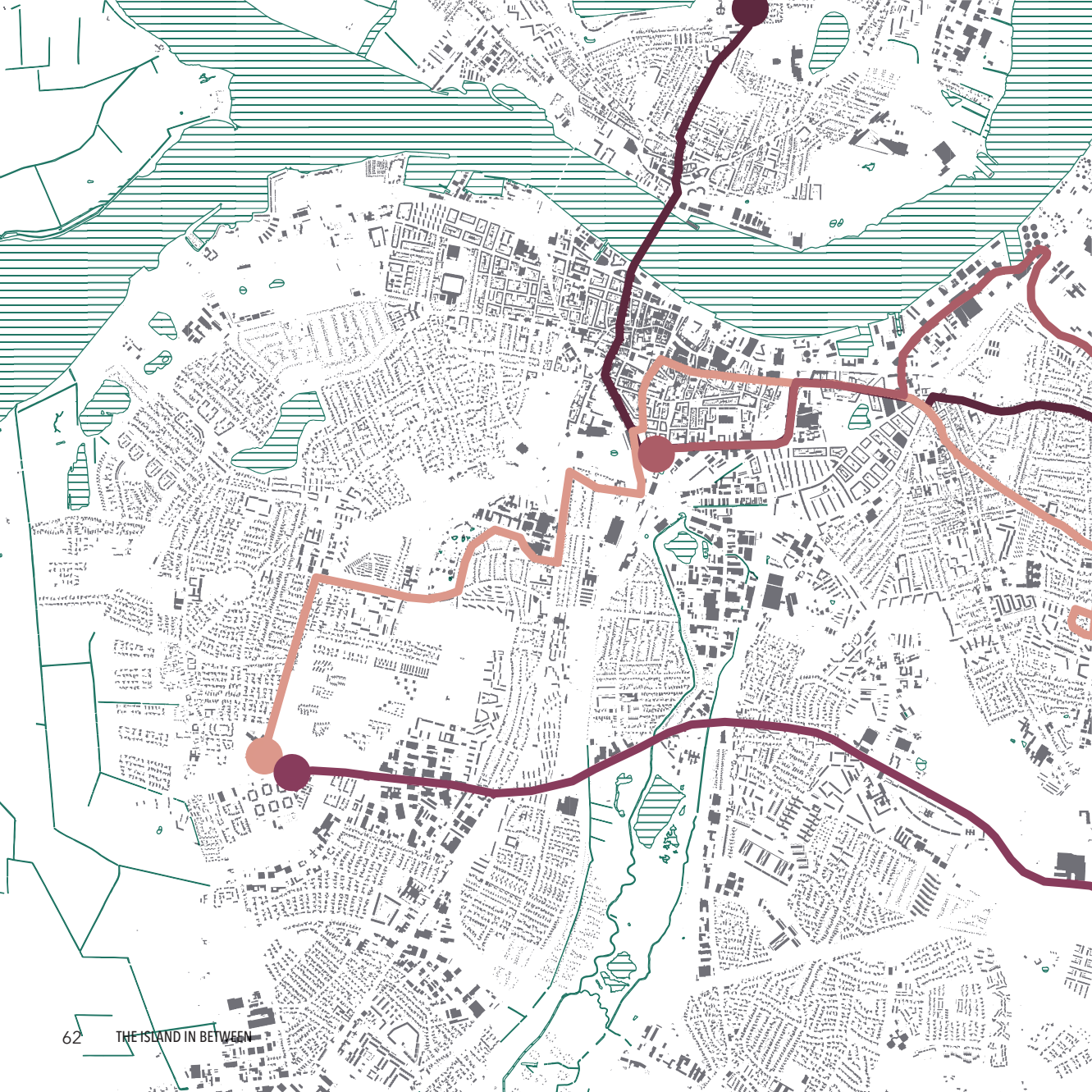
Overall goals:
-Multifunctional meeting places, densities and new living spaces must be promoted in residential areas.
-New connections must be created between the University, Aalborg University Hospital and Aalborg East.
-Traditional villages must be preserved as identity-bearing communities.
-The green connections and hills must be reinforced.

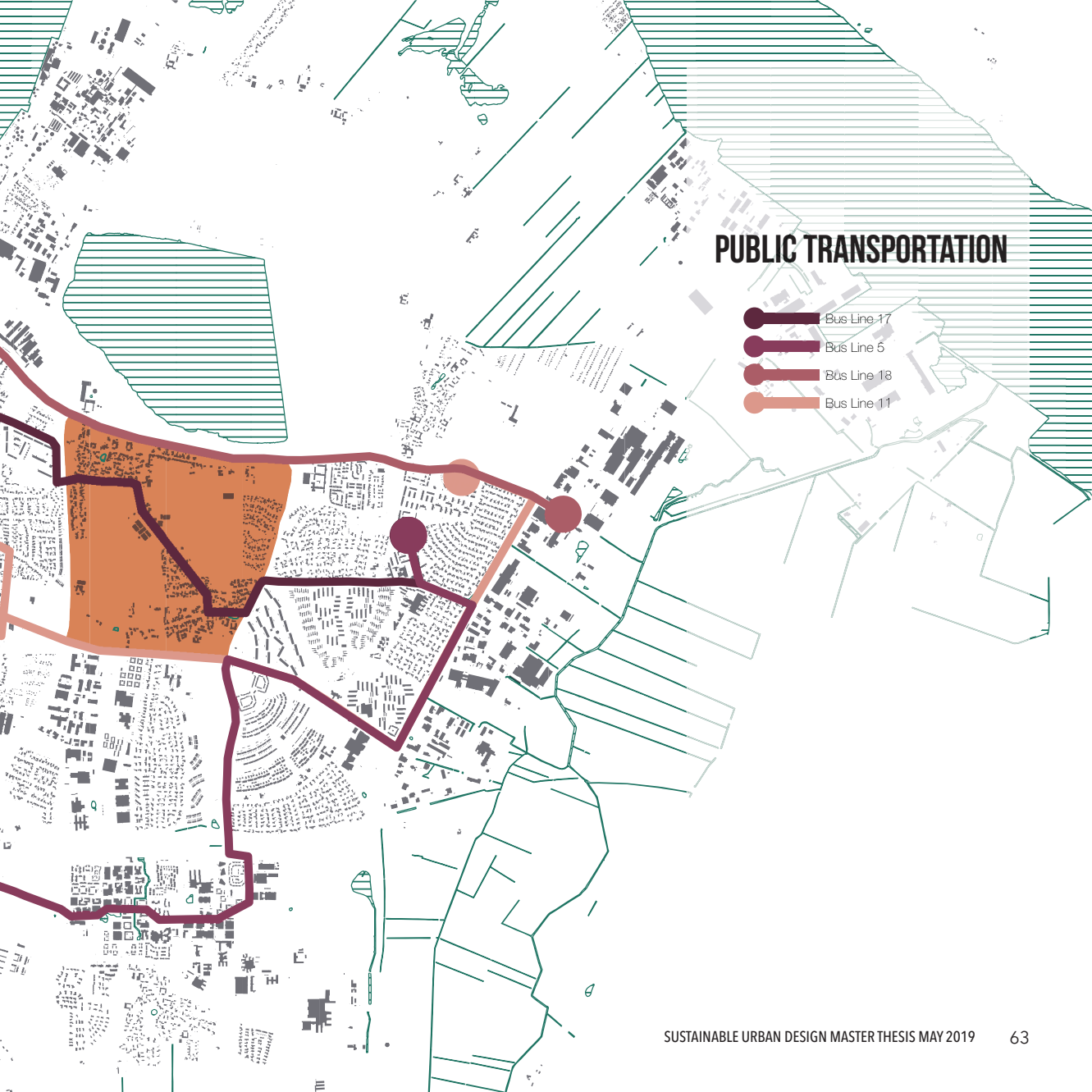

nørresundby
midtbyen
øst aalborg
vest aalborg




MUNICIAPLITY'S LAND USE
Center areas
Public service areas
Mixed housing and business areas
Residential areas
Area for special businesses
Mining areas
Village
Recreational areas
Nature and culture areas
Agricultural areas
Technical plants
Business areas
Industrial areas


TRAFFIC SYSTEM
Rail tracks
E45 Highway
Main roads
Secondary roads



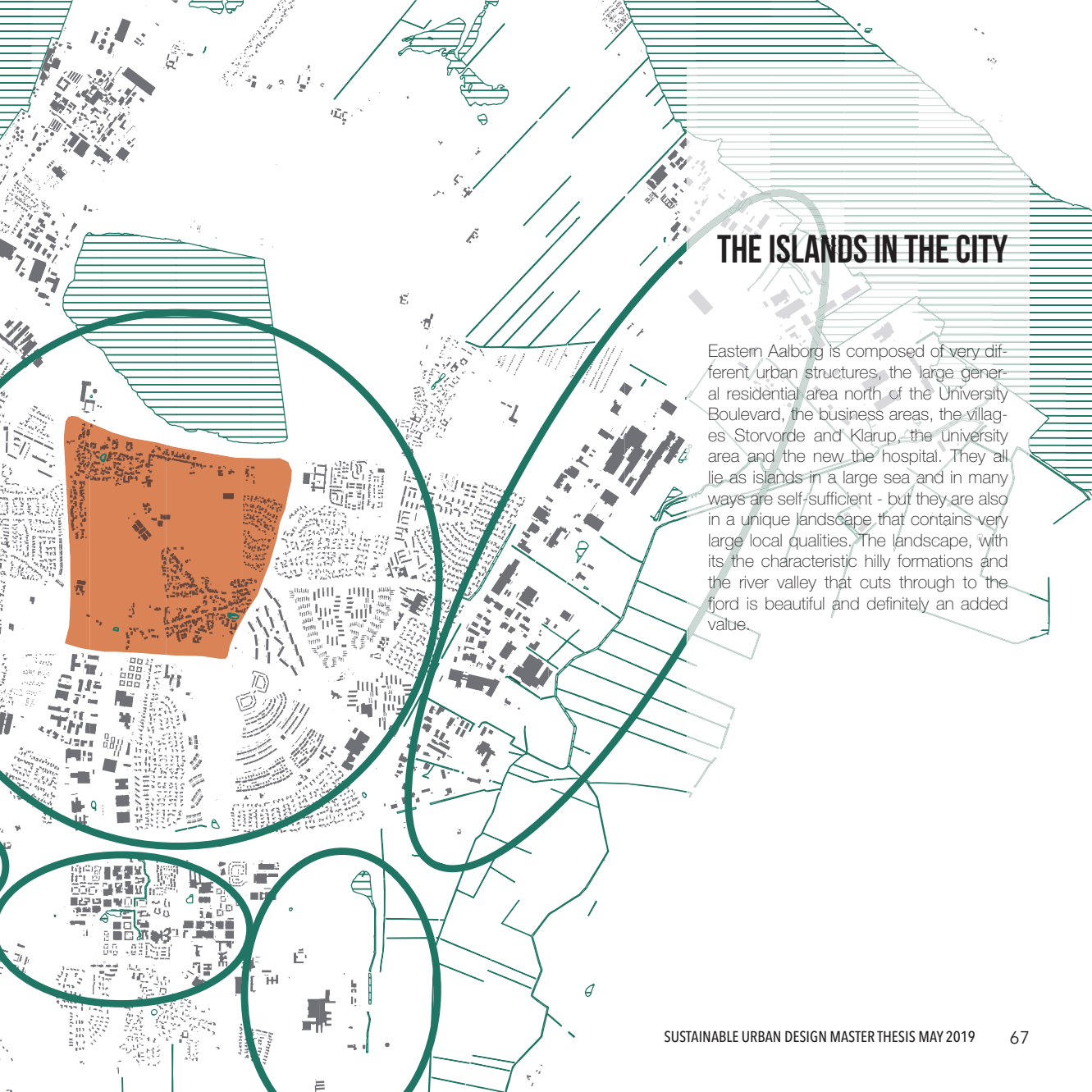

PUBLIC TRANSPORTATION
Bus Line 17
Bus Line 5
Bus Line 18
Bus Line 11

03.2 EXPLORING THE SPECIFICS, A LANDSCAPE IN BETWEEN

Master Plan " Landscape in Between" by Vandkunsten Architects

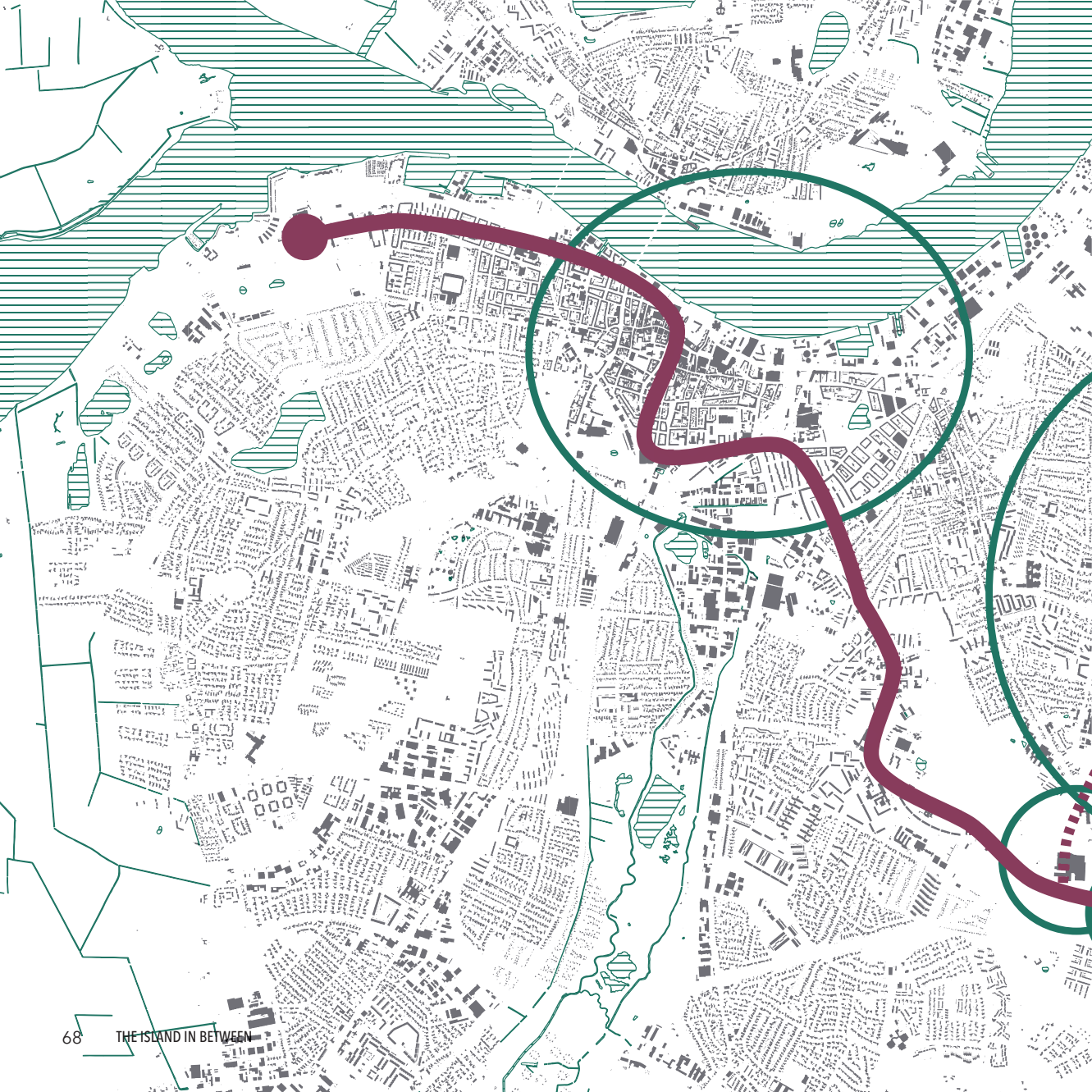
In 2012, Aalborg Municipality cooperated with Realdania suburb competition 'City in Between', as part of the campaign 'Suburbs of the future'. The urban planning competition focused on a larger area in eastern Aalborg, and the goal was to get ideas on how to promote the urban area's cohesion, both in terms of the physical and the social /organizational level and creating the greatest possible synergy between the area's many current investments. One of the goals of the competition was to create new meeting places and connections across the suburban major access roads; the most important themes were housing, mobility, multifunctional meeting places and local resources.

Vandkunsten Architects wont the competition with the comprehensive proposal "A landscape in between", which became an extensive strategic analysis of the area's challenges and the potentials of systematic utilization of the landscape and the existing context during a period of almost 20 years. Vandkunsten's work includes a strategic plan, a structural plan, a local plan, user involvement, programming, and designing a tunnel.



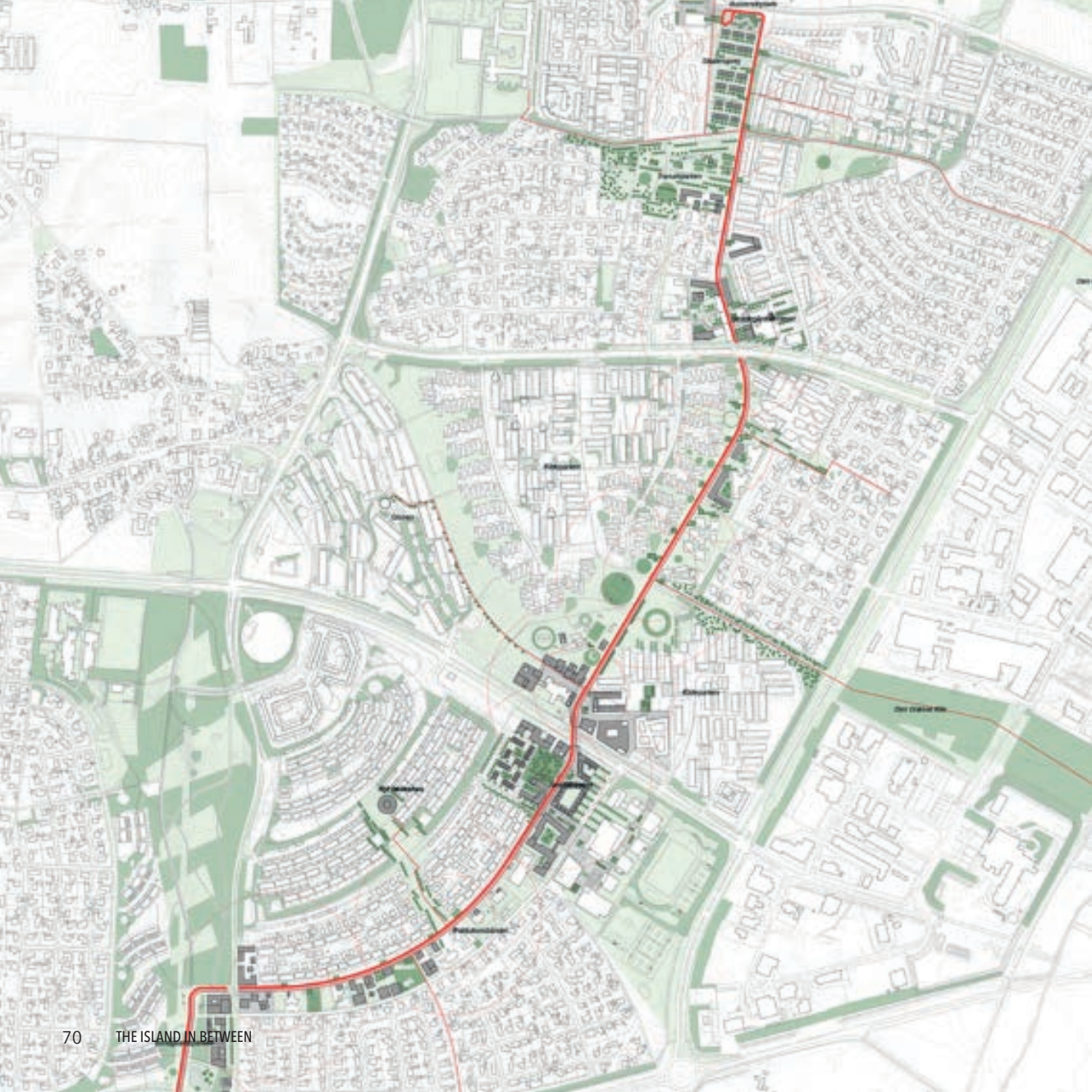
THE ISLANDS IN THE CITY

Eastern Aalborg is composed of very different urban structures, the large general residential area north of the University Boulevard, the business areas, the villages Storvorde and Klarup, the university area and the new the hospital. They all lie as islands in a large sea and in many ways are self-sufficient - but they are also in a unique landscape that contains very large local qualities. The landscape, with its the characteristic hilly formations and the river valley that cuts through to the fjord is beautiful and definitely an added value.



GROW CLOSER TOGETHER

The idea was to build on these qualities, support, reinforce, expand, renew and in every way point to physical initiatives that create new values and thus potentially new ways of living and learning in eastern Aalborg. There will not be a new big city, the existing 'islands' will grow and create new borders, be it the university, the business district, the villages or the large residential areas, and they will gather around a new landscaping structure with unique qualities - and then tie it all together with infrastructure measures that enables new travel in the city and landscape.



THROUGH THE LANDSCAPE

The name of the project 'Landscape in between' refers to the need of maintaing the place's great landscape qualities and prove that diversity can be enhanced and generate new qualities. The landscape is designated as the central theme that binds the many "islands" together. Not only in the form of a new performative landscaping, which handles a wide range of sustainable initiatives and unfolds new applications, but so much in the vast framework where the landscape is treated at all levels.

The Astrup connection is a key element in creating coherence in the area. The future course of the path extends all the way from Øster Uttrup to the north, through Aalborg East and on to the university to the south; It is intended to become the main artery that ties the area together.

8 PRINCIPLES USED FOR THE MASTER PLAN

01-Densify: Densification must be created around the existing city centers linked to the public infrastructure. In principle, the existing 'island formations' are preserved, they are densified and clarified in relation to the surrounding landscape.

02-Mobility: New connections must be created between the separate "islands" so that the landscape and urban islands become a network. The BRT is introduced and connects from the center to the hospital; a low-tech electric bus is proposed to run in a loop between the university and East Aalborg (north-south connection). The "Park Bridge" is a unique opportunity to create a landscaped and traffic-flowing connection for the soft road users. New cycle routes are established throughout the area, based on the philosophy of building "roadways" for the bicycles: think bus - drive bike.

03-Meeting places: A number of meeting places are established centrally and in connection with the intersections of the proposed mobility improvements; They must help to create exchanges and new synergies across the "islands". The improved square at Tornhøjcentret is the most important public space in the area.

04-Local resources: The new connections allow for a more compact and integrated concentration around the BRT associated functions. The University, hospital and knowledge industries are given new opportunities to create new synergies.

05-Landscape: Restoration of the entire river landscape to create a natural habitat. The three primary measures are Ådalens recovery, reforestation on the "hills" and establishing a wetland landscape.

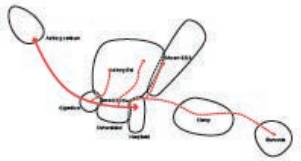
06-International: The entire university area's identity must be kept as an international meeting place, so new auditoriums, eating places and residential towers must generate distinct urban qualities that create a basis for an "international" settlement in the area with both education and businesses.

07-Knowledge: The relationship between the business area and the university can be enhanced by placing knowledge working spaces in the transition to Aalborg East, along the university boulevard. In the villages, an upgrade of the local city centers and a little bit of business will help to improve the community. Housing in the university area and a bazaar in Aalborg East will be necessary function for a greater diversity to be established locally.

08-Sustainability: The proposal provides space for everyone and ensures local values that are both identity-creating, urban and rural. Sustainable transport is implemented and the area's biodiversity and adaptation to climate change for a long time is secured. Economically, basic added value and long-term development are created that initially do not require too much investment.

02 // Mobilitet - Forbind

03 // Mødesteder - Overlap



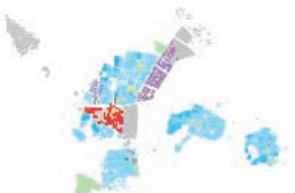
04 // Lokale ressourcer - Integrér

01 // Boformer - Fortæt

8 principper til bæredygtig udvikling
af det østlige Aalborg.

05 // Landskabet - Genopret

08 // Bæredygtighed - Bæredygtig byudvikling



07 // Viden/Erhverv - Blandt

06 // Det internationale - Forstærk

03.3 ON GOING PROJECTS

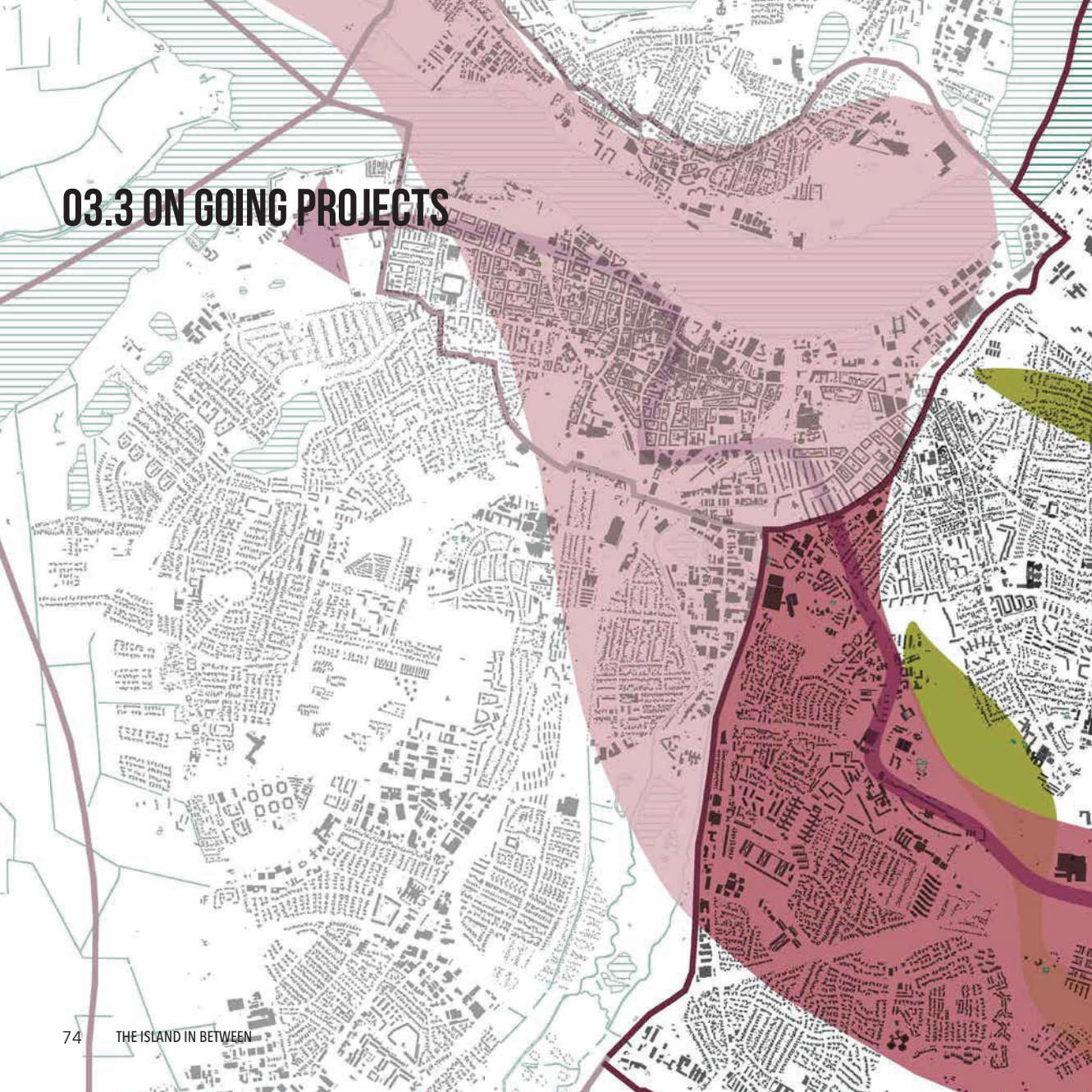
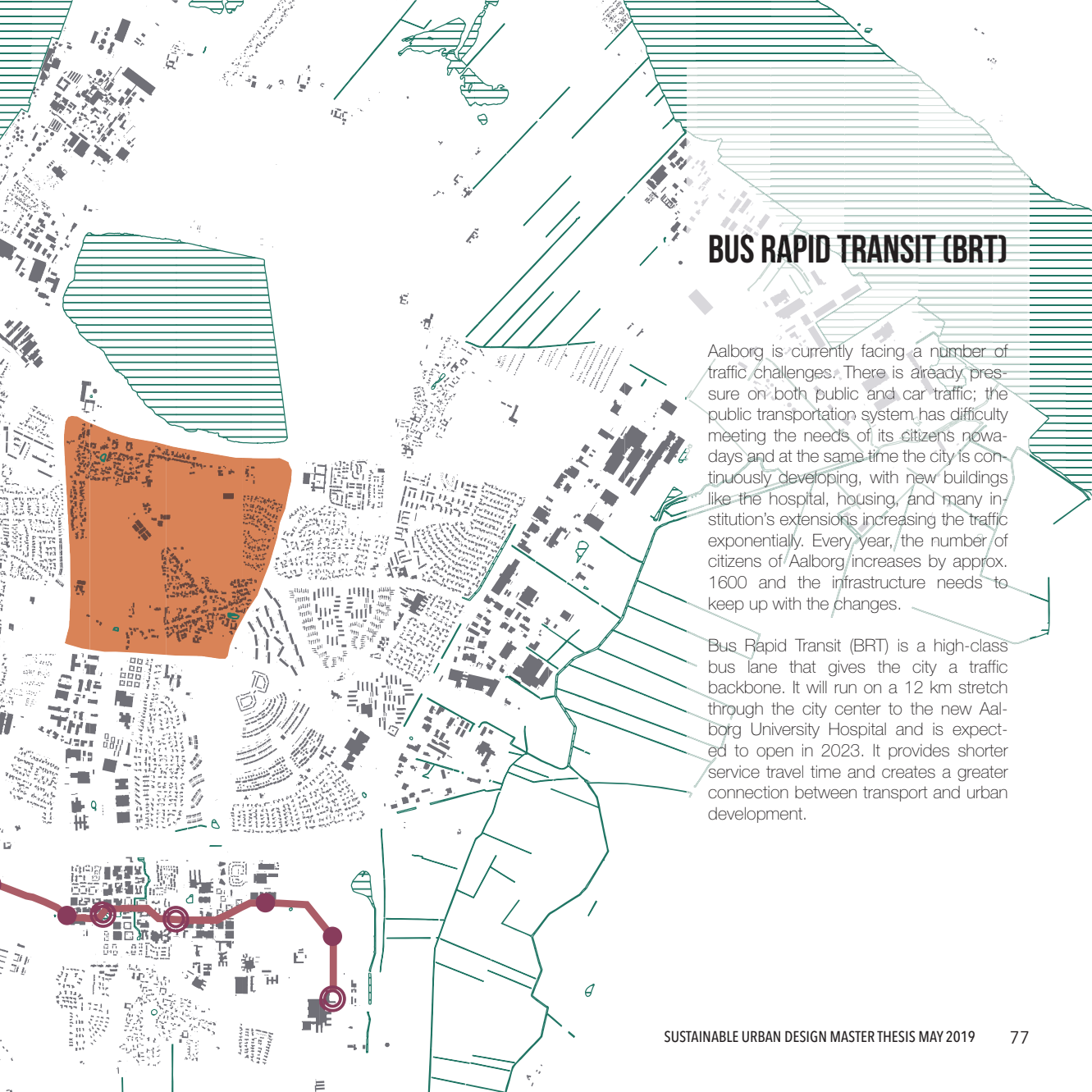


Diagram representing the Municipality's goals for the area



BUS RAPID TRANSIT (BRT)

Aalborg is currently facing a number of traffic challenges. There is already pressure on both public and car traffic; the public transportation system has difficulty meeting the needs of its citizens nowadays and at the same time the city is continuously developing, with new buildings like the hospital, housing, and many institution's extensions increasing the traffic exponentially. Every year, the number of citizens of Aalborg increases by approx. 1600 and the infrastructure needs to keep up with the changes.

Bus Rapid Transit (BRT) is a high-class bus lane that gives the city a traffic backbone. It will run on a 12 km stretch through the city center to the new Aalborg University Hospital and is expected to open in 2023. It provides shorter service travel time and creates a greater connection between transport and urban development.

ASTRUPSTIFORBINDELSEN

The Astrupstiforbindelsen is the future north-southbound backbone in the district - a new main street that can connect the housing area in the north with the BRT, the University area and the new University Hospital to the south. It was identified as a high priority focus area, where the overall objective is to promote modernization and a more sustainable urban development in Aalborg East.

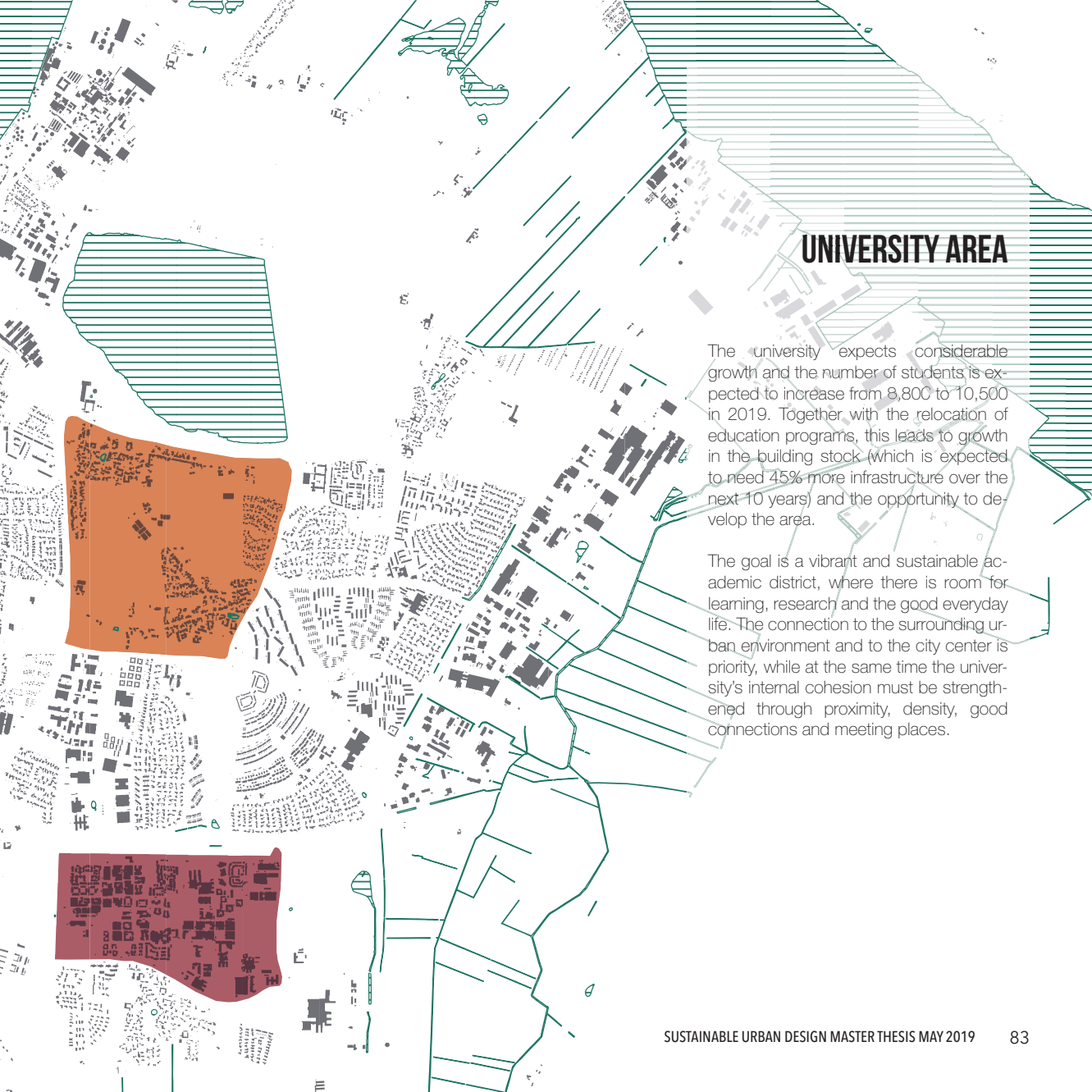
New connections and central meeting places must ensure good links, both internally, between the district's various buildings, and externally in relation to the rest of the city, where a direct link to a future BRT will ensure a better accessible to nearby city functions and attractions. It unfolds around specific urban spaces at the nodes of Tornhøjcenter and Smedegårdscenteret and is a combination of bicycle paths and bus lane. A park bridge is proposed over the University Boulevard, which ensures optimal connection between Aalborg East via the Bundgårdsparken and the University area.

In the master plan there is a proposal for the creation of a new public transport connection by adding a smaller bus which could be driverless. The project has been designated as a lighthouse project in the Smart Aalborg project and its close to be fully functioning.

NEW UNIVERSITY HOSPITAL

Aalborg University Hospital is the largest in the region and plays a key role in the co-operative North Denmark healthcare system, and also internationally. Its newest extension is located close to Aalborg University and is a project that is part of the Danish Government's healthcare quality reform. The design includes 17,000 m² of floor space for the Aalborg University Faculty of Medicine and approx. 330,000 m² of floor space, including construction of Aalborg Psychiatric Hospital, an oncology building and a patient hotel, and expansion to the out patient building.

It's currently under construction and expected to open around the year 2021/2022. It will employ 6,500 people and get 2,200 outpatients, admissions and visitors.



UNIVERSITY AREA

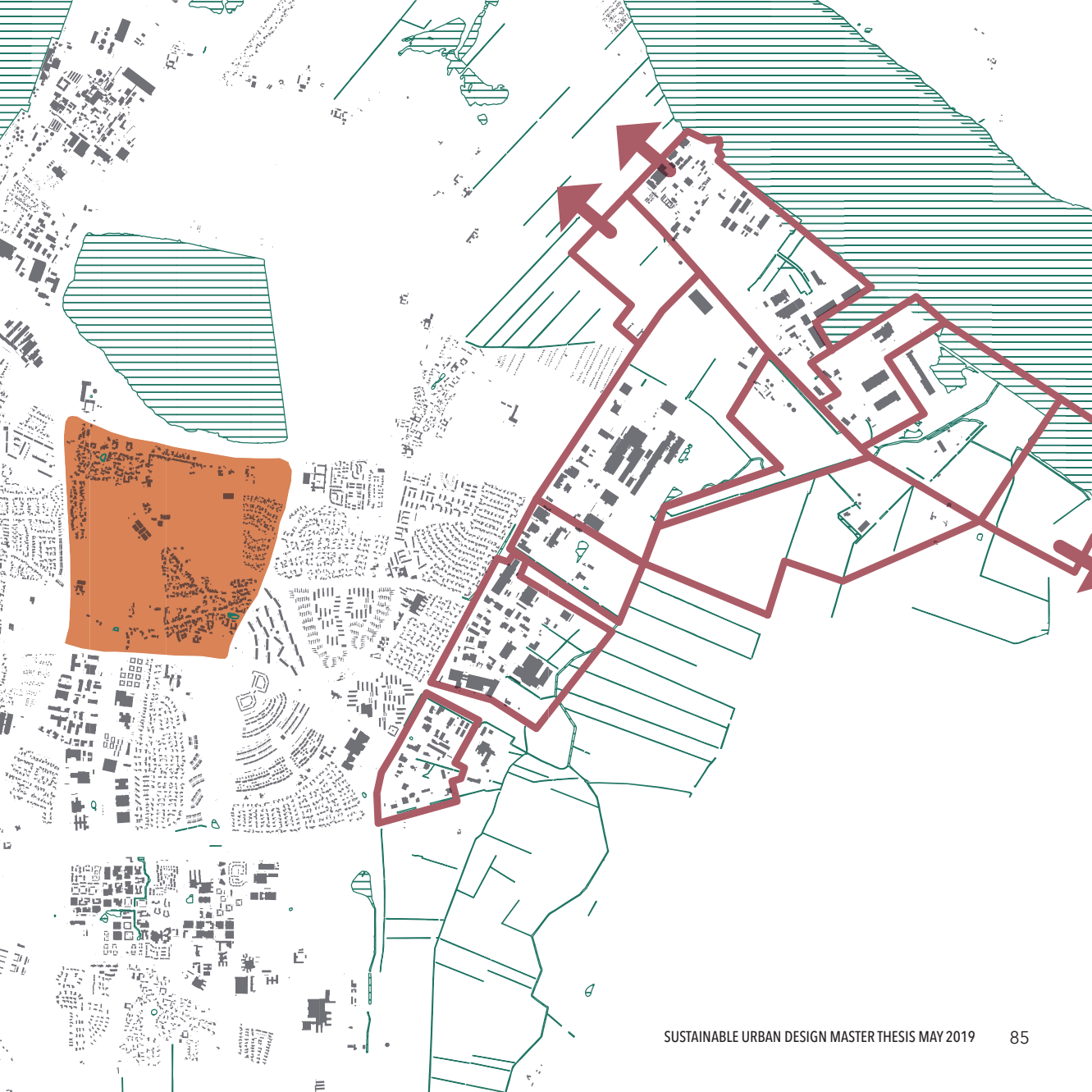
The university expects considerable growth and the number of students is expected to increase from 8,800 to 10,500 in 2019. Together with the relocation of education programs, this leads to growth in the building stock (which is expected to need 45% more infrastructure over the next 10 years) and the opportunity to develop the area.

The goal is a vibrant and sustainable academic district, where there is room for learning, research and the good everyday life. The connection to the surrounding urban environment and to the city center is priority, while at the same time the university's internal cohesion must be strengthened through proximity, density, good connections and meeting places.

EAST HARBOR

The port in Aalborg East is the result of a targeted relocation of the business harbor from the city center due to area needs and environmental considerations that started in the early 1970s. Østhavnen is an important focus area for business expansion of the commercial harbor and the industrial area, so it must be developed as an attractive traffic-based business area with optimal connection to the outside world.

There is an interest in protecting Hesteskoen, an essential nature and recreational area while still encouraging the further development of the existing business activities at the harbor, like the Rørdal landfill site, the power pylons, windmills, Aalborg Portland cement factory and the power station Nordjyllandsværket.



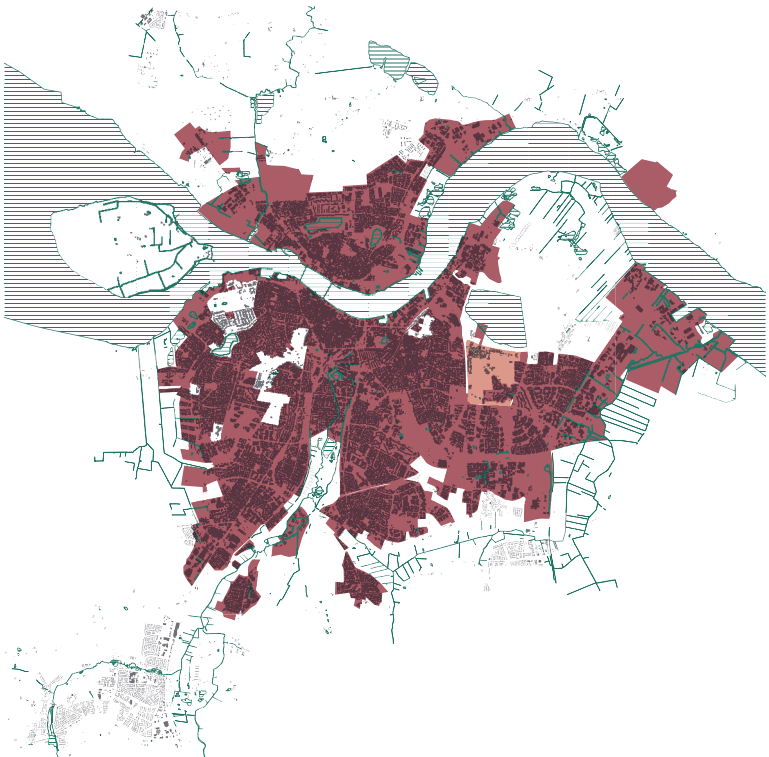
04.

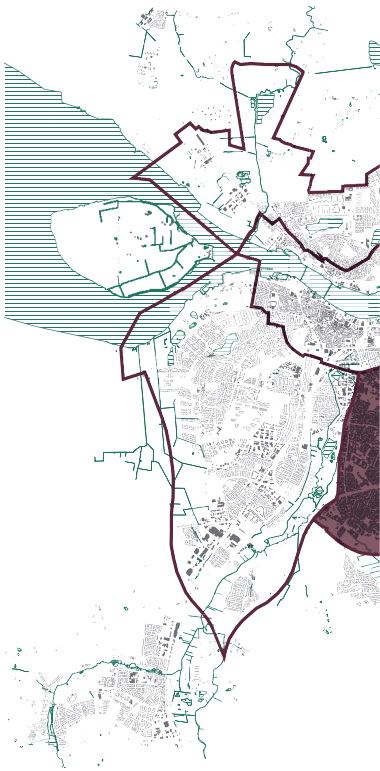
PROJECT SITE, THE ISLAND IN BETWEEN

LOOKING BACK

While taking a look back to some of the diagrams show in the Project Background chapter but with the specific location of the site for the design, there are several things that caught my attention.

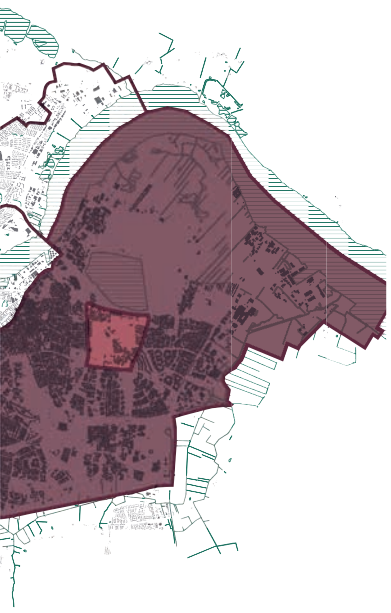
First of all, in the Urban Form with the urban areas vs. rural areas, the great majority of the site is considered rural area even though its right in the middle of the city, as seen in the division of areas diagram; but most importantly, only one of the two villages located on site is considered urban even though when I visited the site they seemed very similar in their structure.





The biggest difference I could notice was that the northern village Øster Sundby doesn't have sidewalks, while Nørre Tranders does.

With the Growth Axis, it's quite clear that the municipality is focusing all their efforts on this area, but leaving the surroundings as somewhat leftover spaces that might benefit from it but in an indirect way; the site is the area in East Aalborg that is the farthest away from the axis and thus has had no initiative to improve its connections to the axis in itself and to the rest of the city.



04.1 HISTORICAL DEVELOPMENT


Nre Uttrup
HVORUP S
Nre SUNDBY
Rørdal
Hennedal
ALBORG
Slot
Exercerplads
Gl. Sundby
Nre Tranners
Flyvestation Aalborg

AALBORG CITY AND THE VILLAGES AROUND IT

The villages located on the eastern part of Aalborg, Øster Sundby, Øster Uttrup and Nørre Tranders, are settlements that started growing on the outskirts of the city since the early 1800, at the same time that Aalborg was becoming once again an important port and industrial city producing cement, spirts and tobacco.

At the turn of the century, these villages were still considered part of the peripheries of the city.

1880

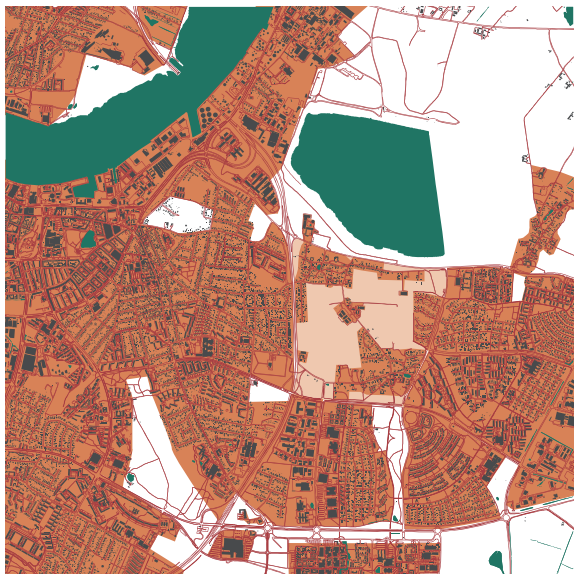
1940

Aalborg city continued to develop in a way that by 1965 it had completely surrounded these villages, except on the northern part because of the location of Aalborg Portland and the area designated for mining chalk and clay.

To this date, the site is mainly occupied with two of the villages, a big allotment garden on the east and an Agricultural Tech College that benefited from a prime location, close to the city center but with open land that was used for agricultural purposes.

1985

2018

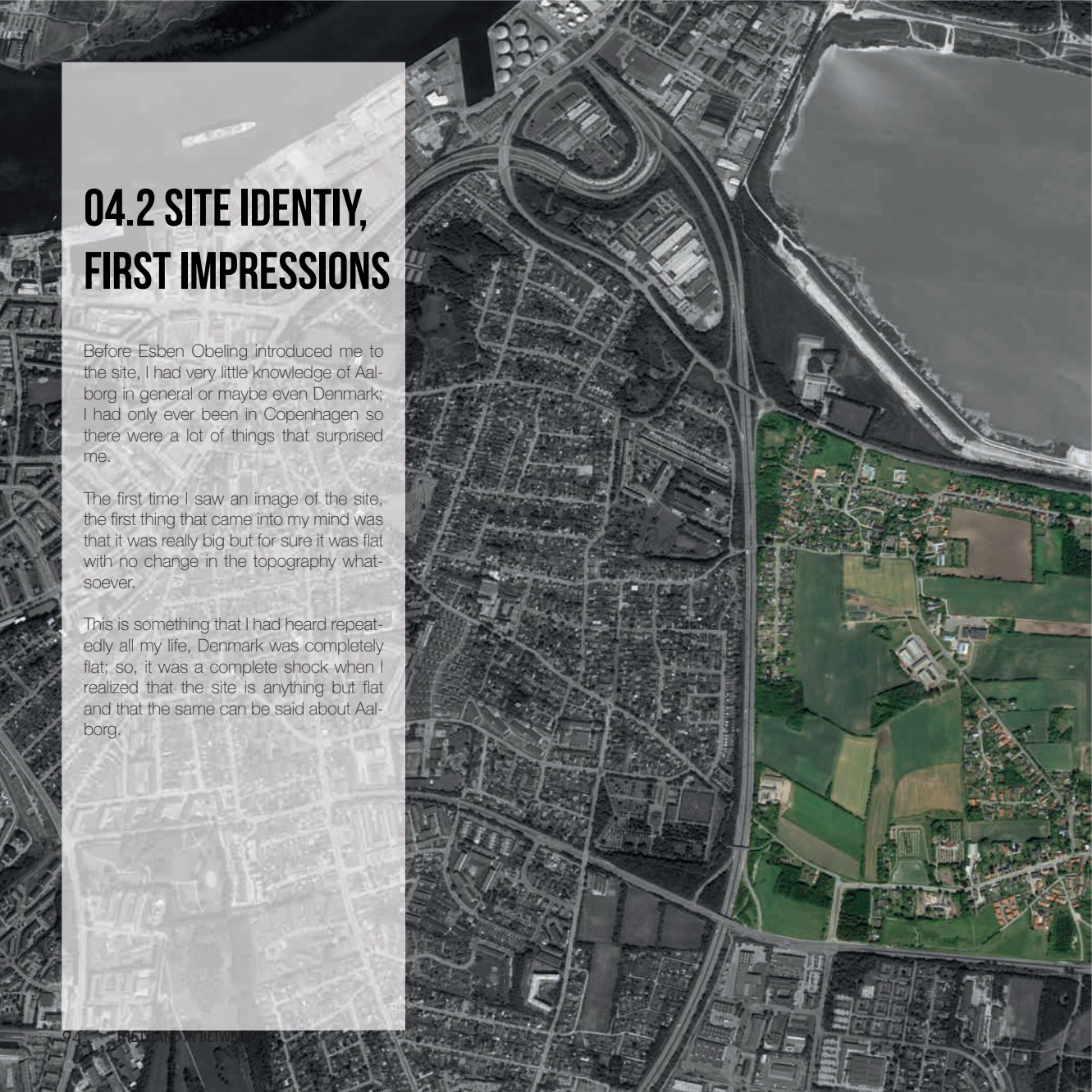


04.2 SITE IDENTIY, FIRST IMPRESSIONS

Before Esben Obeling introduced me to the site, I had very little knowledge of Aalborg in general or maybe even Denmark; I had only ever been in Copenhagen so there were a lot of things that surprised me.

The first time I saw an image of the site, the first thing that came into my mind was that it was really big but for sure it was flat with no change in the topography whatsoever.

This is something that I had heard repeatedly all my life, Denmark was completely flat; so, it was a complete shock when I realized that the site is anything but flat and that the same can be said about Aalborg.




SIZE COMPARISON

The site has a somewhat square shape with approximately 162 hectares, measuring almost 1.3 km both horizontally and vertically. The area of the site is the biggest I have ever work with, especially compared to the other projects we did during the master and it helped me understand what I would be dealing with when I compared it with the size of the city center in Aalborg, Copenhagen and Lund; it's also important to mention that the quarry lake on the northern part of the site is almost as big and will continue to grow in size during the next decades.

Aalborg city center

Copenhagen city center

Aalborg Portland Quarry Lake

Lund city center

THE ISLAND IN BETWEEN, CHARACTERISTICS

To reach the site you have to take bus number 17 from the central station; it is approximately 4 kilometers away from the city center. This bus line is the only one that passes through the site and it is easy to notice the exact moment you have arrived.

The landscape changes the minute the bus crosses the passage under the E45 highway, leaving behind public and private multistory housing to go into a very serene landscape.

It feels like you are no longer in the city and you are on your way to the open landscape; the villages are very well preserved and the fact that there are no sidewalks help to build this illusion and its hard to imagine that four bus stops ahead you will encounter more housing areas, the east harbor and the university's main campus only two kilometers to the south.

LANDMARKS

Nørre Tranders Kirke

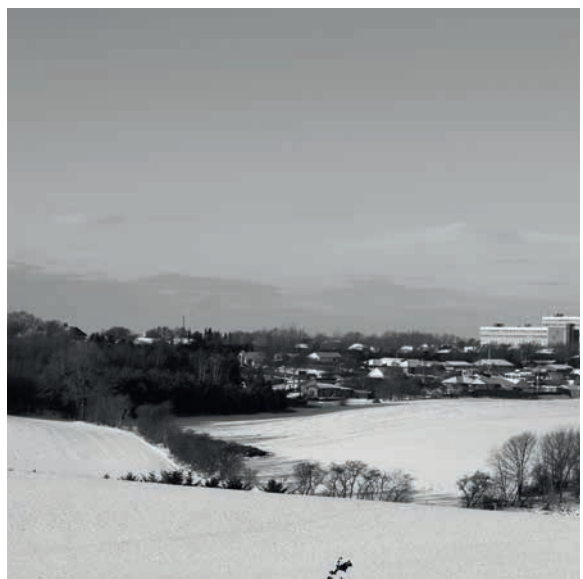
Øster Sundby Mølle

Aalborg Portland, a part of the skyline wherever you are

TOPOGRAPHY

I couldn't fully grasp how the topography worked until I visited the site and made the model.

There are some areas on site that have a more notorious change in levels compared to others; the area with the lowest level is located on the northeastern part and nowadays is a dog park and the highest is the hill where the Nørre Tranders church is. From there you have an amazing viewpoint that allows you to see clearly the topography and the surroundings.



+50m Level
+40m Level
+30m Level
+20m Level
+10m Level
+1m Level
Quarry lake and ponds

LANDSCAPE

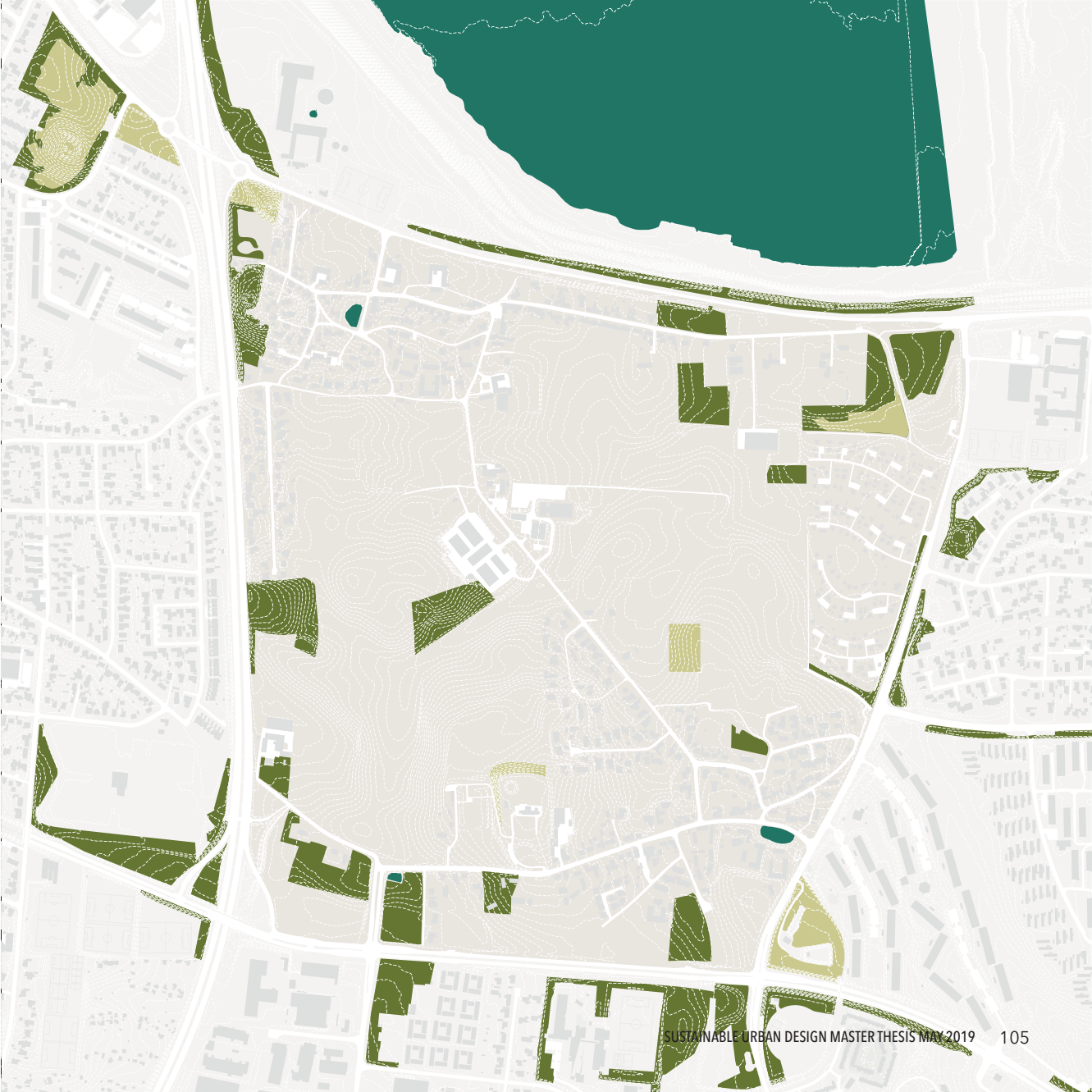
The landscape consists mainly of agricultural fields used by the Agricultural Tech College and a few farms.

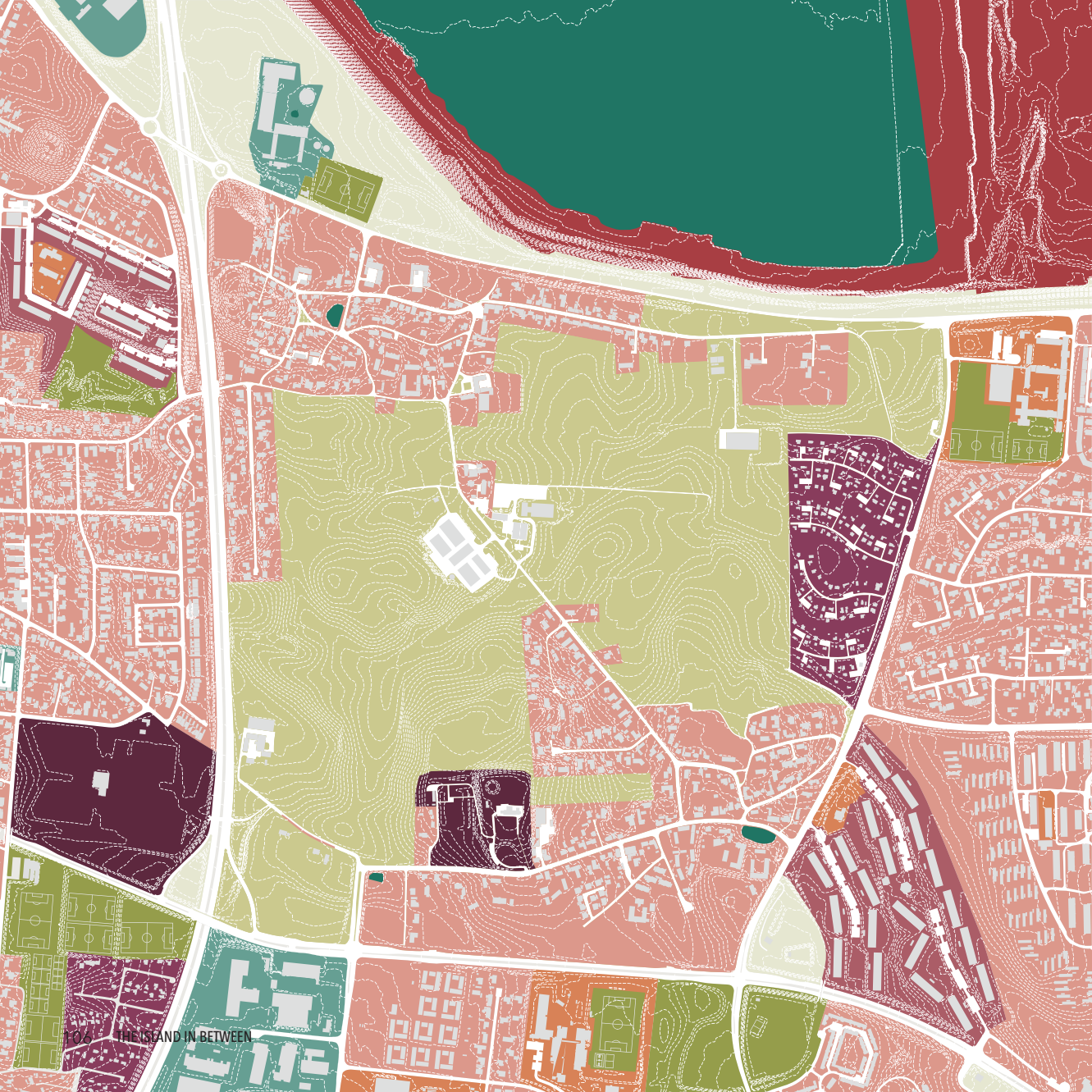
There are several areas throughout the site with forest and grassland that are protected by the municipality and the quarry lake, even though is not considered part of the site, it is located in the immediate surroundings and can become a very important point of interest once its open for recreation.

Protected Grassland

Protected Forest

Quarry Lake and ponds





FUNCTIONS

Nowadays the function of both Øster Sundby and Nørre Tranders villages is mainly residential, with buildings that have less than three stories. In Nørre Tranders the church and the graveyard are the other main functions and on the northeastern side of the site there is an allotment garden with very clear edges. Within the site the rest of the areas and functions are related to agriculture, with the farms and Agricultural Tech College.

The areas surrounding the site are also mainly residential, with a mix of single-family housing and multistory buildings; on the south is where functions start to vary, with some recreational areas, sports facilities, schools and industrial areas. The municipality has allocated more hectares for Aalborg Portland to continue mining, so the quarry lake is expected to continue growing.

- Church and graveyard
- Allotment gardens
- Residential areas - More than 3 stories buildings
- Residential areas - Less than 3 stories buildings
- Mining areas
- Schools and daycares
- Recreational areas
- Agriculture related areas and facilites
- Industry and business areas

TRAFFIC SYSTEM

One of the main arteries in the whole city goes right next to the site, on the western side; the E45 highway is an European route that goes all the way from the north of Norway to the south of Italy and in North Denmark it represents the connection to the rest of the country.

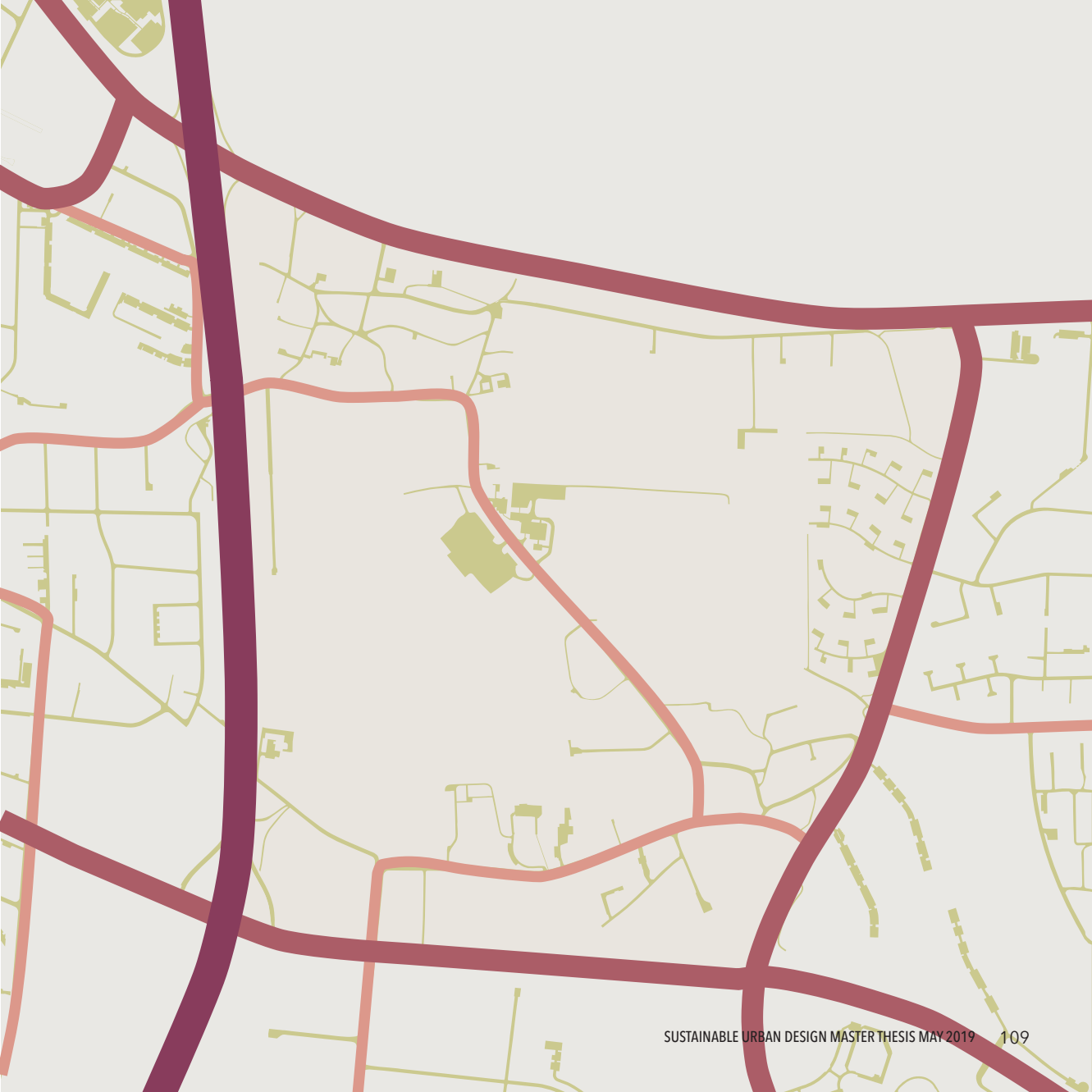
Humlebakken and Øster Uttrup vej represent the other main roads that connect the city from west to east and Budumvej connects East Aalborg from north to south towards Aalborg University.

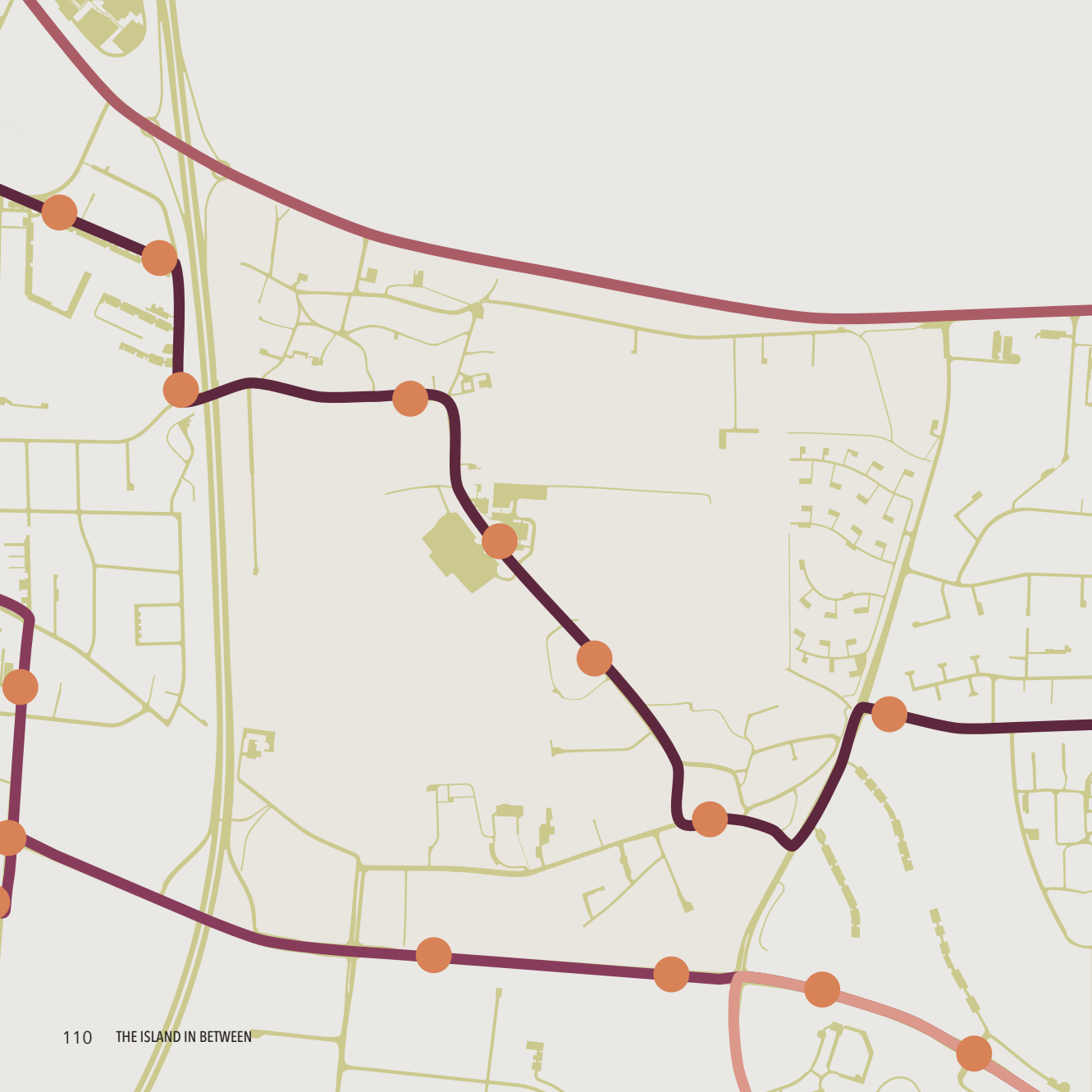
Within the site, the secondary roads are the ones that connect the area with its surroundings, Aftenvej from west to east, Struervej crossing right in the middle and Lemvigvej connecting to Humlebakken and Budumvej. The rest of the infrastructure is completely for local users.

E45 Highway

Main roads

Secondary roads





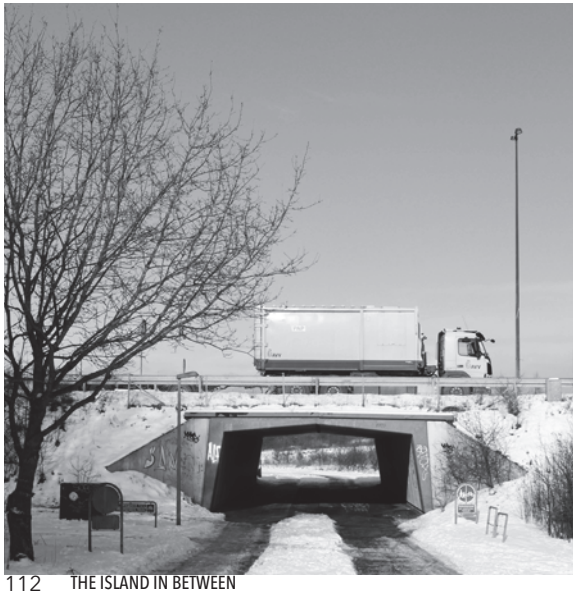
PUBLIC TRANSPORTATION

There are four public transportation bus routes that either go through the site or close to it, number 5, 11, 17 and 18. But only bus number 17 has four bus stops on site, while bus line number 11 has two bus stops on Humlebakken, right on the southern edge of the site.

Even though the route 17 goes every 10 min during the weekdays and it takes less than 30 minutes to go from the city center to the site, it still makes it harder for people to commute when there is only one option to take you there.

Due to the lack of proper sidewalks the bus stops are also very basic and not easy to locate within the area if it's the first time you are there.

Bus Line 17
Bus Line 11
Bus Line 18
Bus Line 5
Bus Stops



PEDESTRIAN ROUTES AND CONNECTIONS

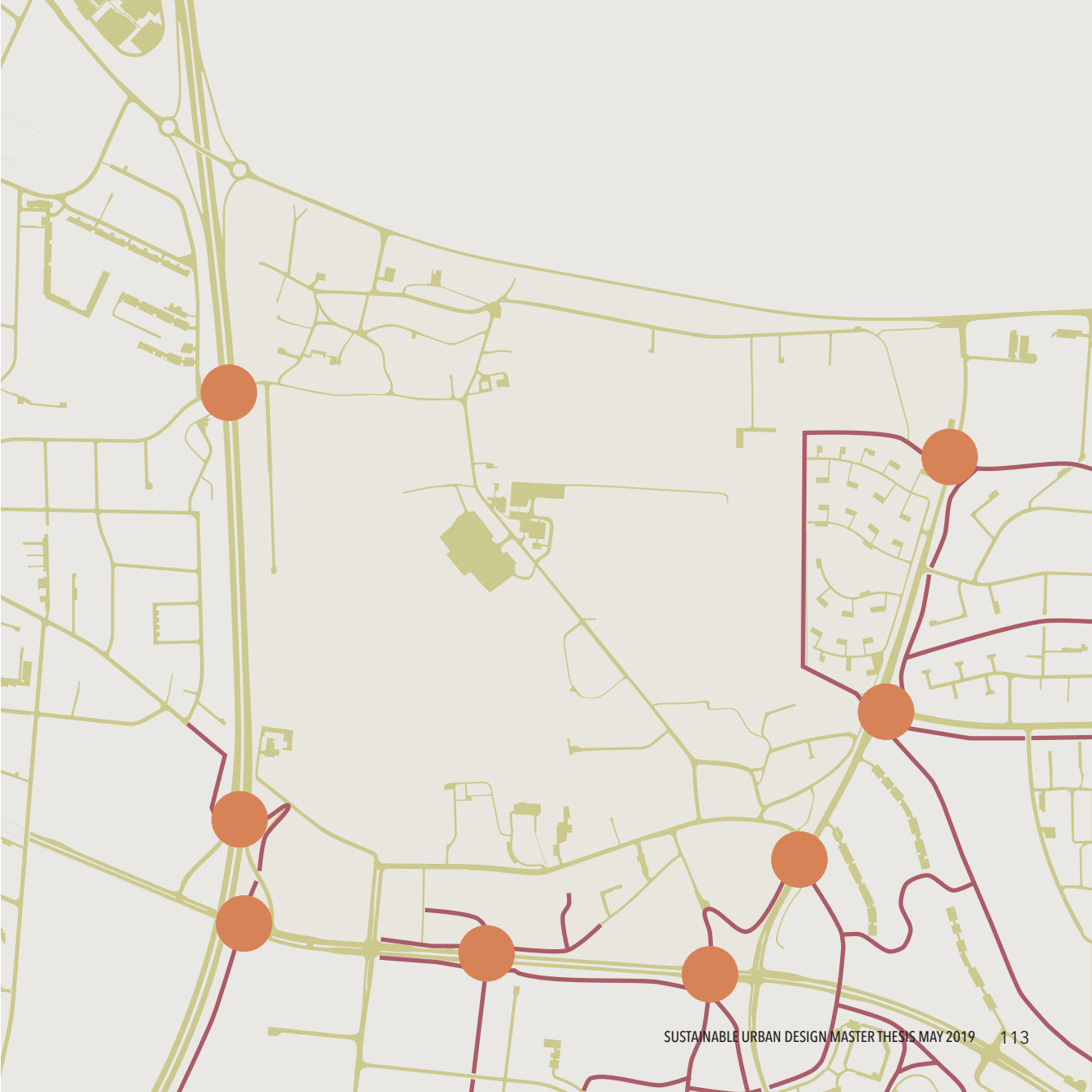
Due to the way Eastern Aalborg was planned, with a clear and efficient traffic infrastructure, there is also a great number of routes only for pedestrian and bicycles that are not connected to the traffic.

As it's possible to see on the map, this situation happens specially on the east and southern part of the site, with six under passages for pedestrians and cyclists to go underneath the main roads, highlighting how each level is for different users.

This can be very beneficial for safety reasons, but due to the topography it also makes it very hard to orientate yourself once you have crossed one of those under passages; you never really know exactly where you are.

Bike and pedestrians only routes

Bike and pedestrians only underpassages and bridges



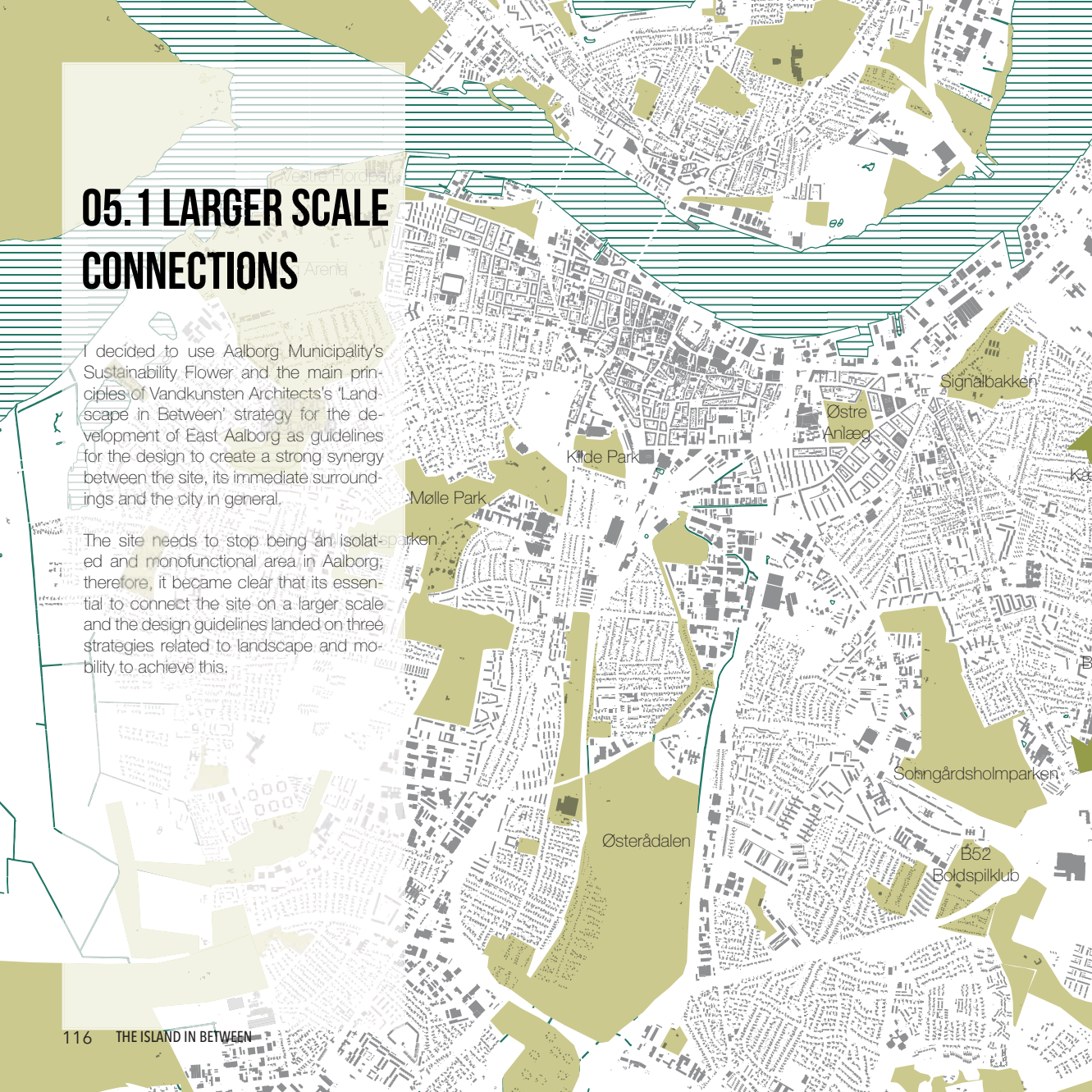
05.

PROJECT DESIGN, THE ISLAND'S TRANSFORMATION

05.1 LARGER SCALE CONNECTIONS

I decided to use Aalborg Municipality's Sustainability Flower and the main principles of Vandkunsten Architects's 'Landscape in Between' strategy for the development of East Aalborg as guidelines for the design to create a strong synergy between the site, its immediate surroundings and the city in general.

The site needs to stop being an isolated and monofunctional area in Aalborg; therefore, it became clear that its essential to connect the site on a larger scale and the design guidelines landed on three strategies related to landscape and mobility to achieve this.



LANDSCAPE STRATEGY
THE GREEN SPINE

As shown in the chapter Project Background, Understanding the city, Aalborg has a very special landscape with strong ties in the direction of the Fjord, the hills and the green areas surrounding the built from. The municipality is already working towards a more cohesive Green and Blue structure and the main concept of Vandkunsten Architects's project is based, as its name says it, on the landscape. When looking into the municipality's land use, there are already plenty recreational areas in the city, some are parks like Mølle Park and others are related to sports facilities like Aalborg Boldspilklub; a really big part of the site falls under the category of nature and culture areas and I wanted respect this as much as possible.

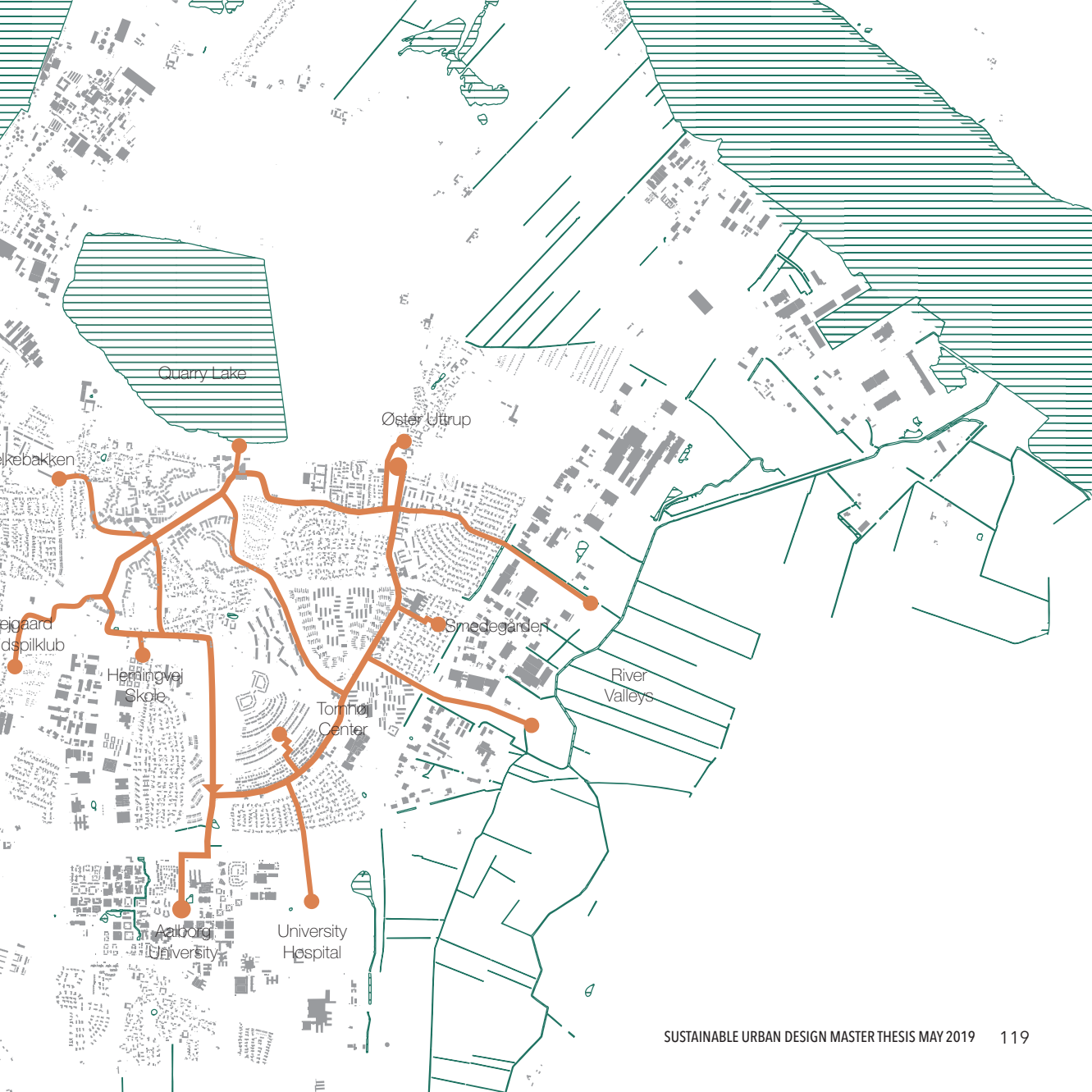
By using the protected forest areas and taking advantage of the topography I placed a green spine on a northeast to southwest direction that will connect the whole city to the quarry lake when this opens for recreation in 2052 and the housing areas of East Aalborg with Sohngårdsholmparken and the city center. The spine also follows the existing pedestrian and bike passages to extend the green towards Signalbakken on the west, the River Valleys to the east and the City Park to the south, both of which are part of 'Landscape in Between'.

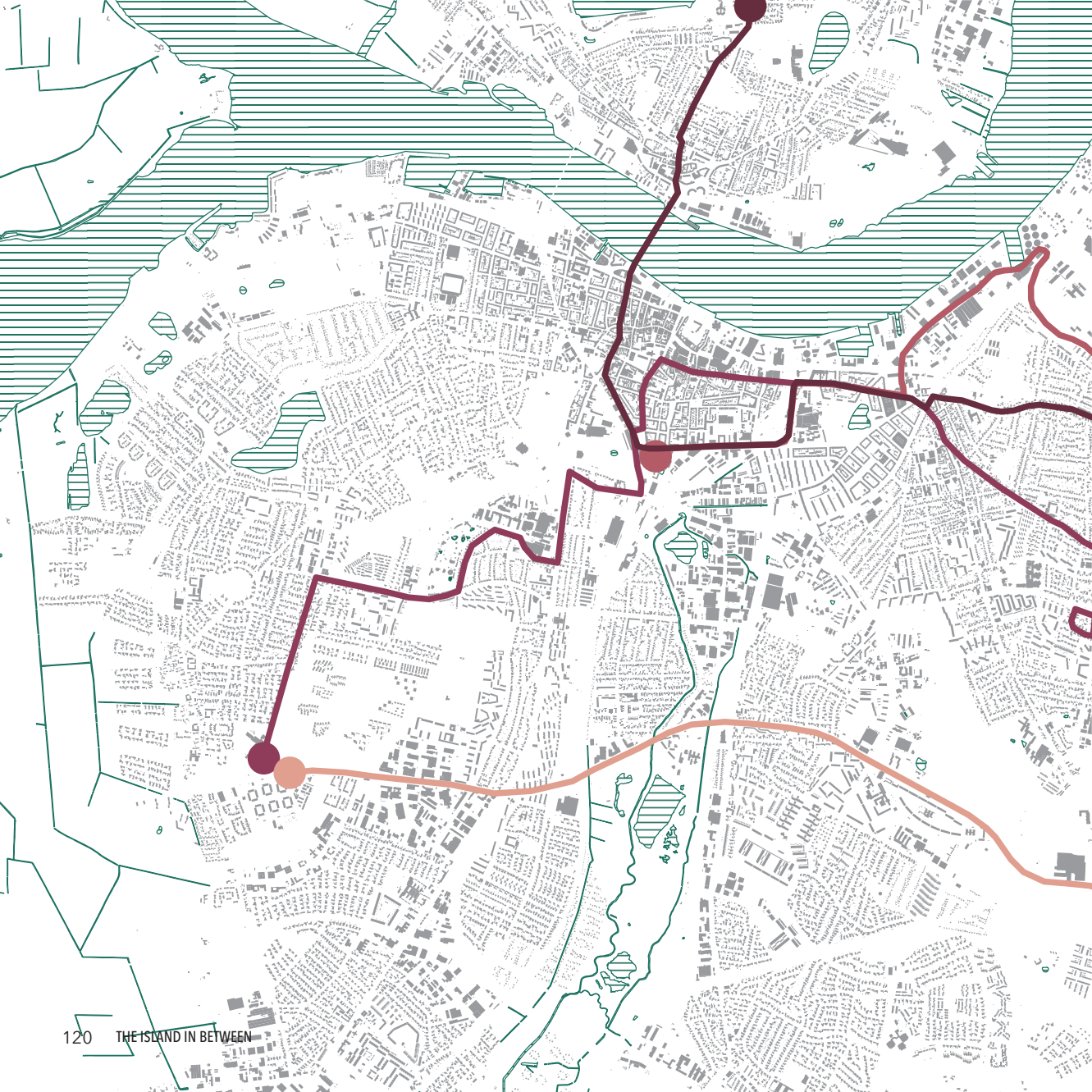
MOBILITY STRATEGY
ASTRUPSTIFORBINDELSEN LOOP

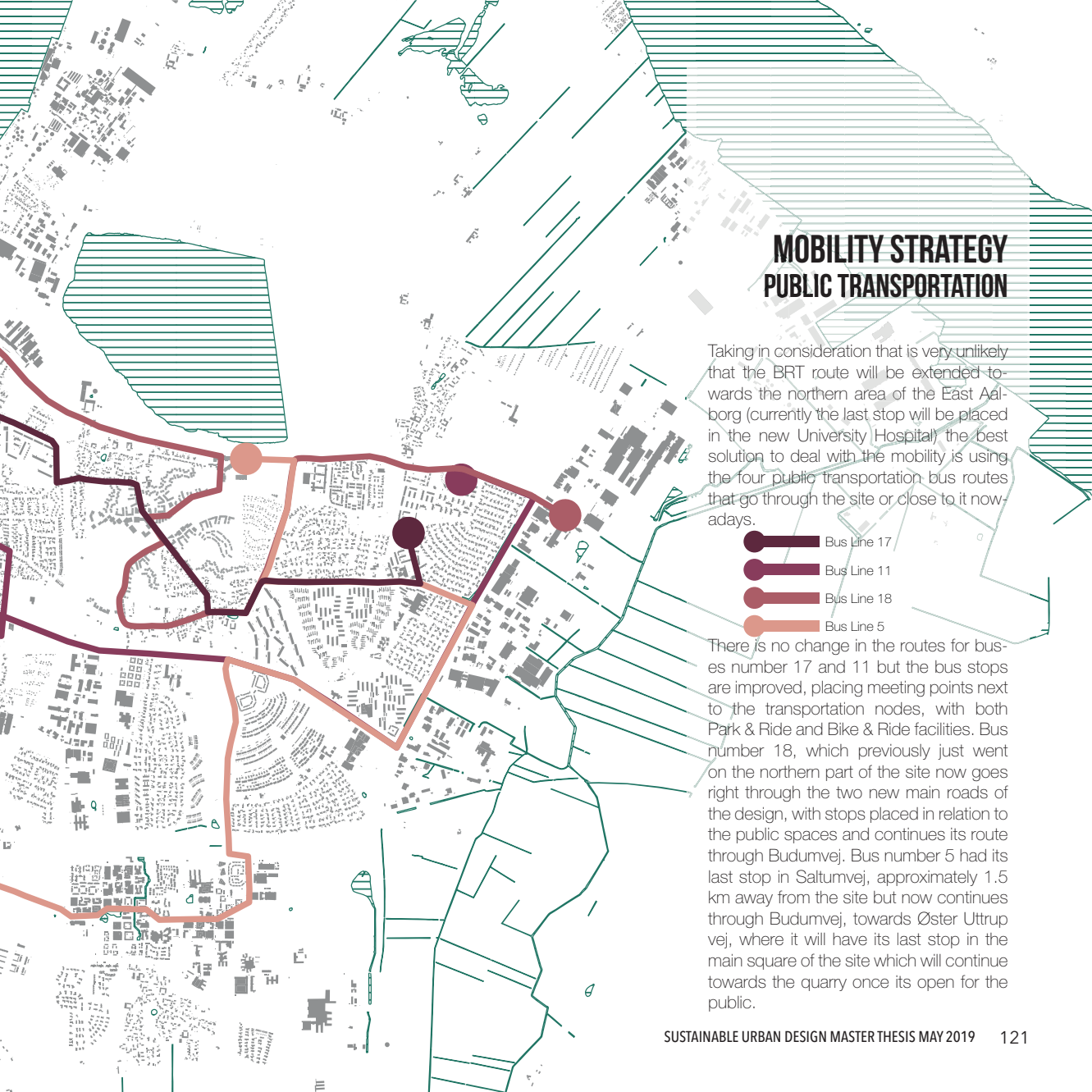
As it was previously mentioned, the Astrupstiforbindelsen or Astrup Connection was identified as a high priority focus area for East Aalborg and it will become the future north-southbound backbone in the district - a new main street that can connect the housing area in the north with the BRT, the University area and the new University Hospital to the south.

Of all the ongoing projects in the area, this is the one closest to the site but once again it doesn't seem to have a clear intention to bring this island closer to the rest of the district. The idea is to continue the Astrup connection (in the nodes where the project stops nowadays) to create a loop that goes through the Green Spine and then back south through the Central Park towards the south, especially the BRT, because it means a direct link the rest of the city.

The loop also ensures the connection with functions located on the surroundings of the site, like the Kælkebakken park, Vejgaard Boldspilklub, several schools in the area and the quarry lake.


Quarry Lake
Øster Uttrup
lkebakken
eigaard
dspilklub
Hemingvej
Skole
Tornhøj
Center
Smedegården
River
Valleys
Aalborg
University
University
Hospital





MOBILITY STRATEGY
PUBLIC TRANSPORTATION

Taking in consideration that is very unlikely that the BRT route will be extended towards the northern area of the East Aalborg (currently the last stop will be placed in the new University Hospital) the best solution to deal with the mobility is using the four public transportation bus routes that go through the site or close to it nowadays.

Bus Line 17
Bus Line 11
Bus Line 18
Bus Line 5

There is no change in the routes for buses number 17 and 11 but the bus stops are improved, placing meeting points next to the transportation nodes, with both Park & Ride and Bike & Ride facilities. Bus number 18, which previously just went on the northern part of the site now goes right through the two new main roads of the design, with stops placed in relation to the public spaces and continues its route through Budumvej. Bus number 5 had its last stop in Saltumvej, approximately 1.5 km away from the site but now continues through Budumvej, towards Øster Uttrup vej, where it will have its last stop in the main square of the site which will continue towards the quarry once its open for the public.

05.2 MASTER PLAN

East Aalborg has practically everything a modern city needs, with the university, knowledge workplaces, industry, public services and large residential areas but it is characterized by social segregation, many green leftover spaces and large distances that create mental and physical barriers, highlighting the lack of unity in the area. The Municipality is already trying to change this relationship by promoting the many ongoing investments, like the new university hospital, upgrading the public transport connections with the BRT line and renovating the large residential areas; the fact is that the area will see a lot of growth in the years to come and offers plenty of opportunities for development.

The vision is to pull the city closer together and transform an isolated and monofunctional area into an attractive knowledge and nature-driven district based on the premise that the site has a very strategic location. It has several knowledge based institutions like Aalborg University, University College of North Denmark and the University Hospital close by that offer many opportunities for new synergies between education and businesses and once the quarry lake that lies right next to the site is open for recreational purposes in 2052, it will open up possibilities for the development of an attraction on an international scale.

Part of the strategies from the municipality include densifying within the green ring to avoid further sprawl and taking in consideration that out of the 162 hectares, more than half of the site is an agriculture related area with the Agricultural Tech College, there is a great potential to work with the open land that nowadays is right in the middle of the city. Tech College has plans of changing its location, which allows the land where their facilities are located to be used for a new project that will respect the cultural heritage of the existing villages, enhancing the identity of the place while working towards eliminating the idea that the site is an island in between the city center and East Aalborg.

With the unique local green qualities of the site, its location within East Aalborg and the quarry lake closeness in mind, the master plan proposes to create a sustainable district using the area's topography and landscape as the key elements of the development; The landscape ties everything together through a careful use of the topography when densifying, respecting the existing built form but integrating new functions and working with mobility; the design creates new meeting points and recreational possibilities with nature as the main driver through a Green spine.


N
QUARRY LAKE PARK
GREEN SQUARE
COMMUNITY CENTER
INNOVATION CLUSTER
GREEN SPINE
MOBILITY SQUARE

05.3 DESIGN STRATEGIES

I wanted to avoid designing a third village within the area so trying to keep a cohesive urban fabric was a priority. Proper meeting places, improved infrastructure, public services and new housing typologies are placed close to the existing developments and the new buildings emphasize the landscape and give nature space to thrive.

The Green spine is intended to become a unifying feature, creating a direct access to nature and recreational activities to both the existing villages, the new functions as well as the surrounding neighborhoods. An Innovation cluster is placed where the Tech College facilities used to be, to work in collaboration with the research, knowledge and creativity clusters existing close to the Aalborg University campus.

The new infrastructure in the project ensures short distances to public transportation nodes that will allow a rapid connection to the city center, prioritizing pedestrians and cyclists. It looks into the future of mobility by promoting the use of alternative modes of transportation besides the car and offering more options to decrease the car ownership numbers. The principle for the new meeting places is to develop a series of public spaces that are directly linked to public transport; Wherever there is a bus stop, a square is designed to create a more urban and spatially strong connection in the neighborhood.

Rethinking and reinterpreting the existing housing typologies to offer variety but still have coherence with Øster Sundby and Nørre Tranders built form: It was important to meet the area's expected demographic development with relatively more elderly people and addressing the ongoing differentiation of family structures from households with many members at one end of the spectrum and pure single-households in the other - both at the expense of the traditional family housing.

In the following pages the diagrams that explain the project will be shown individually with different layers that try to illustrate the complexity of the site and the design in the easiest way possible.

Existing Protected Forest

A PROTECTED FOREST AREAS ON SITE

EXTENDING THE FOREST

The municipality has several protected forest areas around the city, and some are located on the site. I decided to expand the forest areas through afforestation to create a cohesive network when it was possible and to help the municipality reach its goal of extending the forest from 7 to 12% in the next years. On the southwest part of the site it was also used as noise protection strategy, due to its closeness to the highway; which made it very unlikely to be possible to built anything close to those areas.

New Forest

Existing Protected Forest

B EXPANDIG THE FOREST AREAS THROUGH AFFORESTATION, CREATING A COHESIVE NETOWRK WHEN POSSIBLE

GREEN STRUCTURE

Forest
Green Spine

B FOREST AND GREEN SPINE

Forest

A FOREST

D GREEN SPINE EXPANDING TOWARDS THE NEW AND OLD BUILT STRUCTURE

C FOREST, GREEN SPINE, AND BUITL STRUCTURE

Forest

Green Spine

Semi-public green areas

For the green structure, the new forest was the first step and afterwards came the Green Spine, that was strategically placed where the topography was at its lowest points in a north-east to southwest direction, aiming to connect the whole area with the quarry on the north and the site with the university in the south, and the city center through a larger scale green link. The intention is that the Green Spine expands towards the new infrastructure in a way that creates semi-public green areas in between the new and the old built structure. To allow continuity in the spine, I used the topography changes close to Struervej, the main road on site, to create a under passage.

E GREEN SPINE EXPANDING TO CREATE SEMI- PUBLIC GREEN AREAS

INFRASTRUCTURE

B EXTENDING THE EXISTING INFRASTRUCTURE TO CONNECT

A EXISTING INFRASTRUCTURE

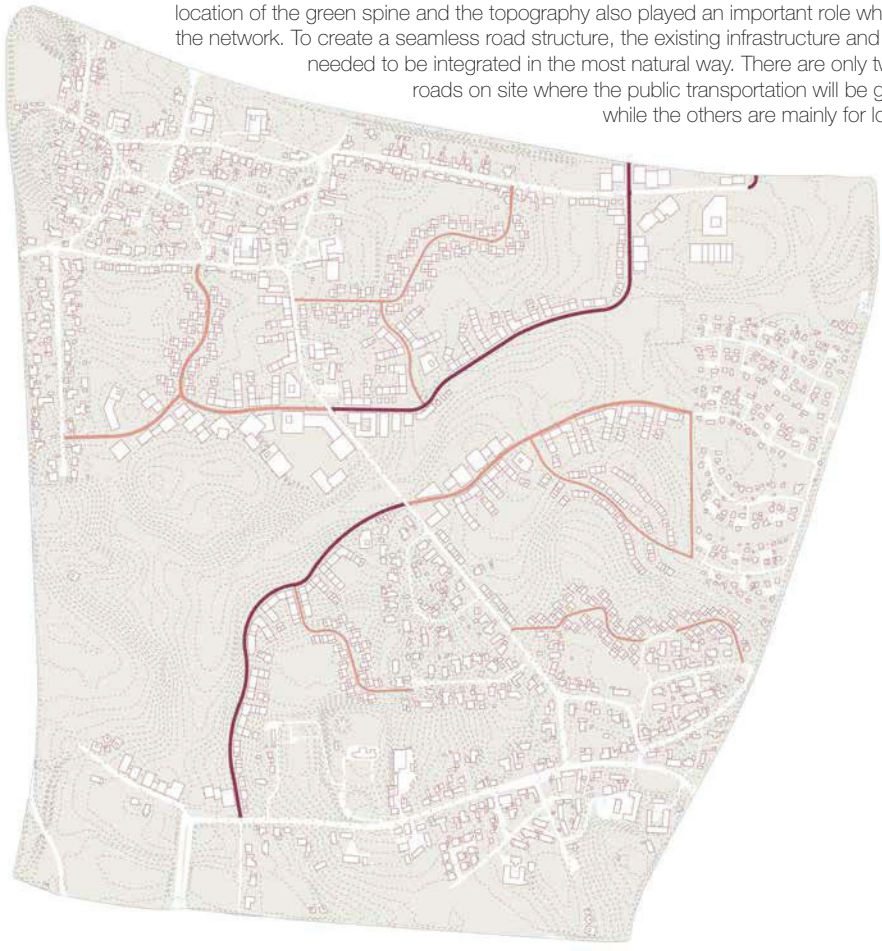
D A SEAMLESS DESIGN

C UNIFYING THE CONTEXT - NEW AND EXISTING INFRASTRUCTURE

Main road for public transportation

Road for local resdients and users

Because it was so important to work with the existing infrastructure, I located the key roads that could be used as a base to either extend or connect to when placing the new layout; The location of the green spine and the topography also played an important role when designing the network. To create a seamless road structure, the existing infrastructure and the new one needed to be integrated in the most natural way. There are only two new main roads on site where the public transportation will be going through while the others are mainly for local use only.



E ONLY TWO MAIN ROADS ON SITE, OTHERS ARE A NETWORK FOR LOCAL USERS

PUBLIC SPACES

Based on the idea from the 'Landscape in Between' that the public space should be presented as an open and predominantly green arena, which can be taken, designed and utilized by the locals for both small projects or complex initiatives, the project offers new meeting points and recreational possibilities using nature as the main driver. The green has to offer opportunities for recreation, movement, communities, cultivation, sports, exercise and contemplation.

The forest and the Green spine are accessible for everyone and become part of a network of active promenades along the whole district, with the Astrup paths completing the loop with the surrounding areas. One of the most important things that was lacking on the site was a public space, so in connection to both ends of the Green spine and in the middle of the district, new meeting points were placed, playing different roles depending on the functions surrounding them.

New pavilions were designed to provide orientation in the whole area and are located right next to the under passages that connect the site with the rest of East Aalborg.

Forest

Green Spine

A THE GREEN SPINE AND THE FOREST ACCESSIBLE FOR EVERYONE

Public Spaces

B NEW MEETING POINTS IN CONNECTION TO THE GREEN SPINE

Astrup Paths

C COMPLETING THE LOOP -ASTRUP PATHS TOWARDS THE SURROUNDINGS

D CREATING NEW MEETING POINTS AND RECREATIONAL POSSILBITIES WITH THE LANDSCAPE

The district needs to integrate new functions in the area in order to stop being considered only residential.

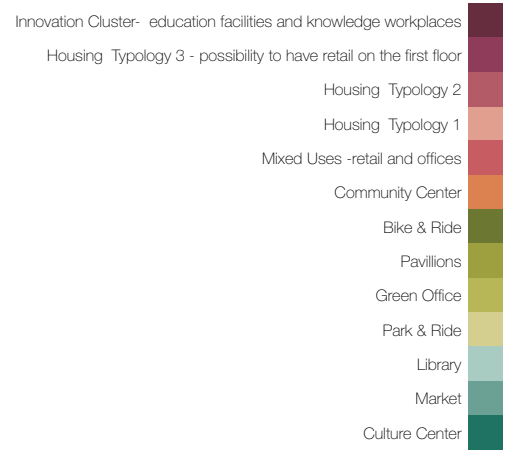
An Innovation cluster is placed where the Tech College facilities used to be, offering education facilities and knowledge workplaces that can relate to the institutions in the area to strengthen the idea of Aalborg as a “Knowledge city”.

There are several possibilities for entrepreneurship within knowledge areas aimed at the hospital, based on its closeness to Aalborg University with its many supporting functions and longstanding tradition of business startups. Proper infrastructure is a crucial prerequisite, and the need ranges from simple office spaces to the good facilities; In connection to the Green spine and the public spaces designed at both ends and in the middle of the district, several mixed use buildings for offices, retail or other services and facilities for Bike & Ride or Drive & Ride are placed, the last in relation to new bus stops.

FUNCTIONS

The new housing typologies reflect and respond to current demography by focusing on avoiding segregation, softening the already existing segregation and encouraging diversity. There is an equal focus on an increasing number of elderly people and an increasing number of young people - including an overall focus on an increasing number of homes for individuals. The four neighborhoods are designed to be a combination of the existing housing with the new typologies, both placed in direct contact with nature but with have different degrees of community and hierarchy in the transition between private and public spaces; a community center is placed in close relationship with the more public functions of the district and provides a public meeting point for each neighborhood.

In Vandkunsten Architects’s project they suggest the establishment of a “Green Office”, which main task is to involve citizens and local actors in the development of Aalborg East by coordinating and communicating small and large projects in the green spaces. It will become a communication center with ongoing exhibitions on the area’s development, holding dialogue and inspiration meetings and perhaps a café, becoming a crucial attraction in the area. I proposed to place the Green Office in the public space closest to the quarry lake, which could eventually lead to the expansion of this public space as a continuation of the green spine; in this meeting point a market, a library and a culture center are also placed to frame the space and to be a new node for public transportation.



DENSITY

A HOUSING TYPOLOGY 1 AND PAVILLIONS - 1 TO 2 STORIES HIGH

B HOUSING TYPOLOGY 2 AND PUBLIC FUNCTIONS - 2 TO 3 STORIES HIGH

C HOUSING TYPOLOGY 3 AND PUBLIC FUNCTIONS - 3 TO 5 STORIES HIGH

In order to maintain the existing scale of the villages as much as possible, there is a gradual transition from the built form of Øster Sundby and Nørre Tranders towards the green spine. The housing typology 1, placed closest to the villages and the pavilions next to the under passages have one to two stories high, while the housing typology 2, positioned on the edge of the roads and certain public functions have two to three stories high. The housing typology 3, located mainly next to the green spine and other functions like the Innovation cluster have three to five stories high.

3 to 5 stories high
2 to 3 stories high
1 to 2 stories high

D MAINTAINING THE LOCAL SCALE - A GRADUAL TRANSITION FROM THE EXISTING VILLAGES TOWARDS THE GREEN SPINE

05.4 TIME PERSPECTIVE

It wasn't until the last few years that the current landowners started showing real interest in developing the area and the municipality now has the task of creating a long-term strategic planning process that will benefit all the players involved. Considering the amount of investments happening in East Aalborg one of the main concerns of the municipality is how to know whether there will be an actual demand for new housing in the area.

The project aims to have an overall development strategy that embraces social, financial and environmental sustainability as well as climate adaption though a careful distribution of functions, typologies and resources; it takes into consideration the importance of having a phasing strategy that will help embrace the changes that happen along the way.

Phase 0 (2019) - The idea is that the first interventions of the project could begin even before the Agricultural Tech College move out of their premises. The afforestation of the areas next to the protected forests and the improvement of the sidewalk infrastructure would be the initial schemes.

Phase 1 (2022) – Once the college changes location, the facilities of all agriculture related functions will be removed from the site and the area meant to be for the Green spine becomes a protected landscape; this will ensure that in case of the rest of the phases not being developed, the larger scale strategy to create a green network in the area is insured, avoiding unwanted densification strategies.
New functions are placed; The pavilions that will help people find their way in the area, the public spaces for the existing bus stops, the Green office and culture facilities along with mix-use buildings. The Green spine is now framed with public functions.

Phase 2 (2030)- The three new housing typologies start appearing, especially the ones in direct relation to the existing villages and roads on the northeast side of the site. The first part of the Innovation cluster is built along with more mix-use buildings close to the Green spine. The strategy is to start filling the gaps between the old and the new.

Phase 3 (2045)- It isn't until this phase that the Green spine is fully framed both with the new road structure and the housing typology 3; the Astrup path starts going into the new areas from the Green Spine and the forest. The second part of the Innovation cluster is completed, and all community centers are now functioning for the four neighborhoods. A third stage of mix-use buildings is placed, and all Bike & Ride and Drive & Ride facilities are now connected to the new nodes of transportation.

Phase 4 (2050)- In this phase the last gaps are filled with two different housing typologies and the last part of mix-use buildings is placed. The design is completed once the Astrup paths connect the island with its surroundings and the whole district becomes one with the landscape being the link that ties everything together.

Phase 5 (2052)- This is the date in which the quarry lake will be open for recreation and with it the first intervention in it carried out, with the continuation from the Green office public space towards the lake and its new harbor.

In the next pages the diagrams of the phasing strategy will be shown individually; it's important to note that they are meant to show the process in which the built form changes, but the other interventions (related to the landscape) are not illustrated.


PHASE 0-2019

PHASE 1-2022

PHASE 2-2030

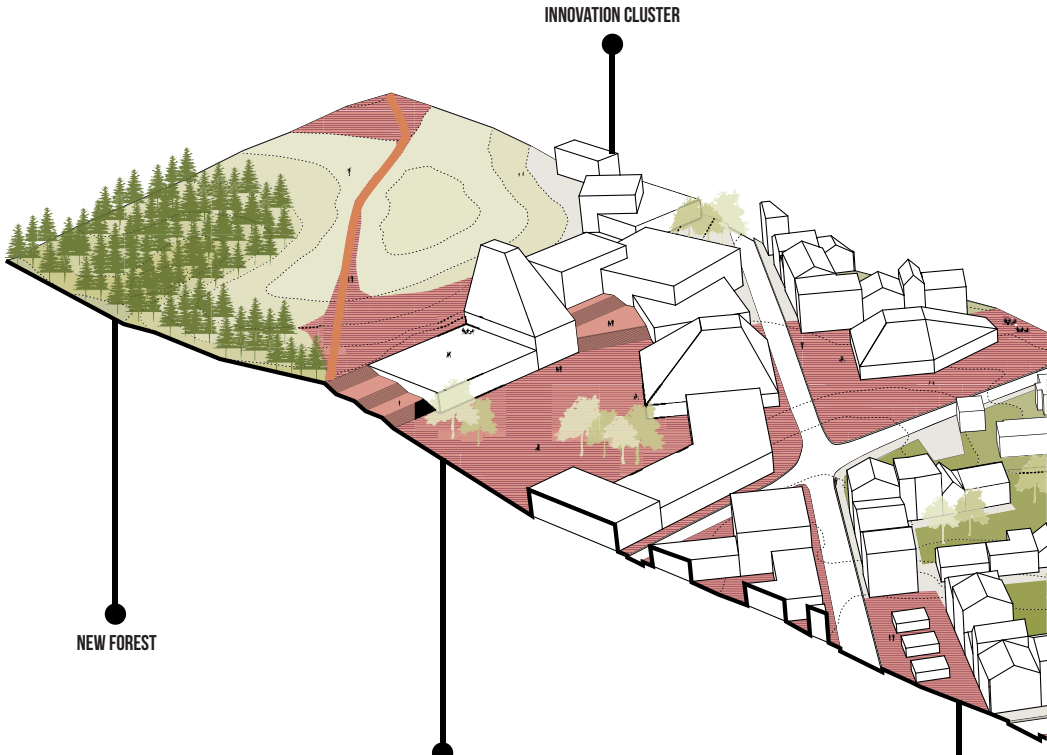
PHASE 3-2045

PHASE 4-2050

PHASE 5-2052

05.5 DESIGN SPECIFICS

PERSPECTIVE VIEW AT PUBLIC SPACE FROM THE GREEN OFFICE TOWARDS THE GREEN SPINE

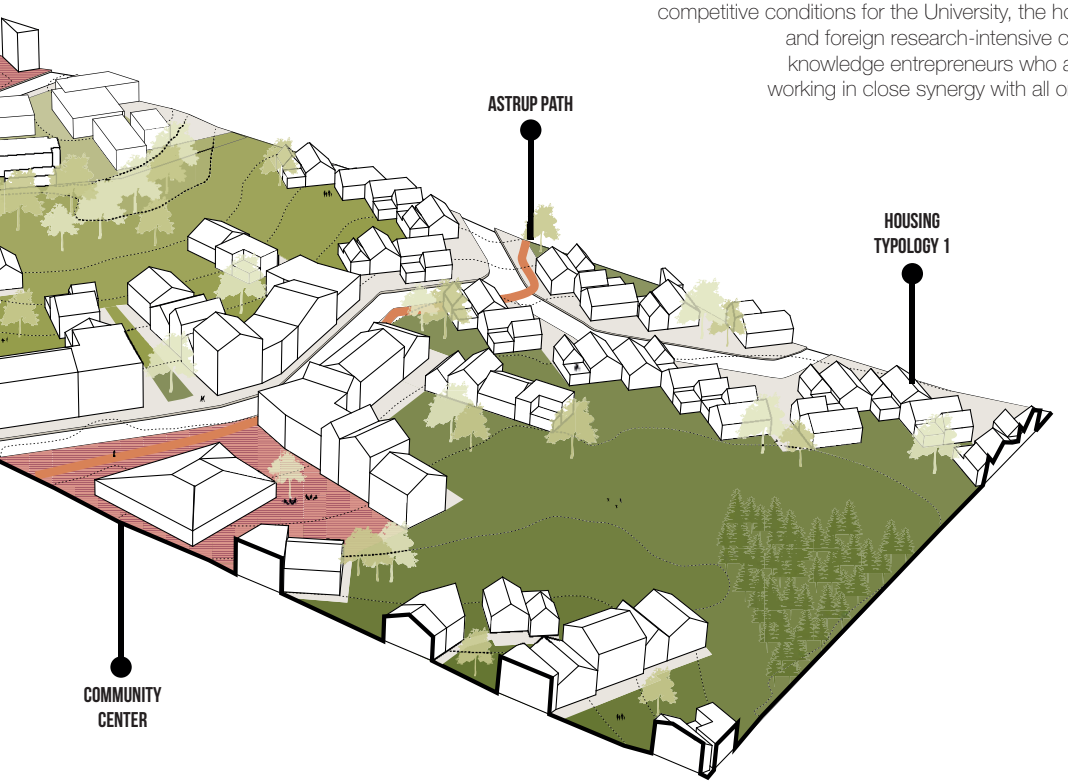

INNOVATION CLUSTER
NEW FOREST
INNOVATION CLUSTER
HOUSING
TYPOLOGY 3

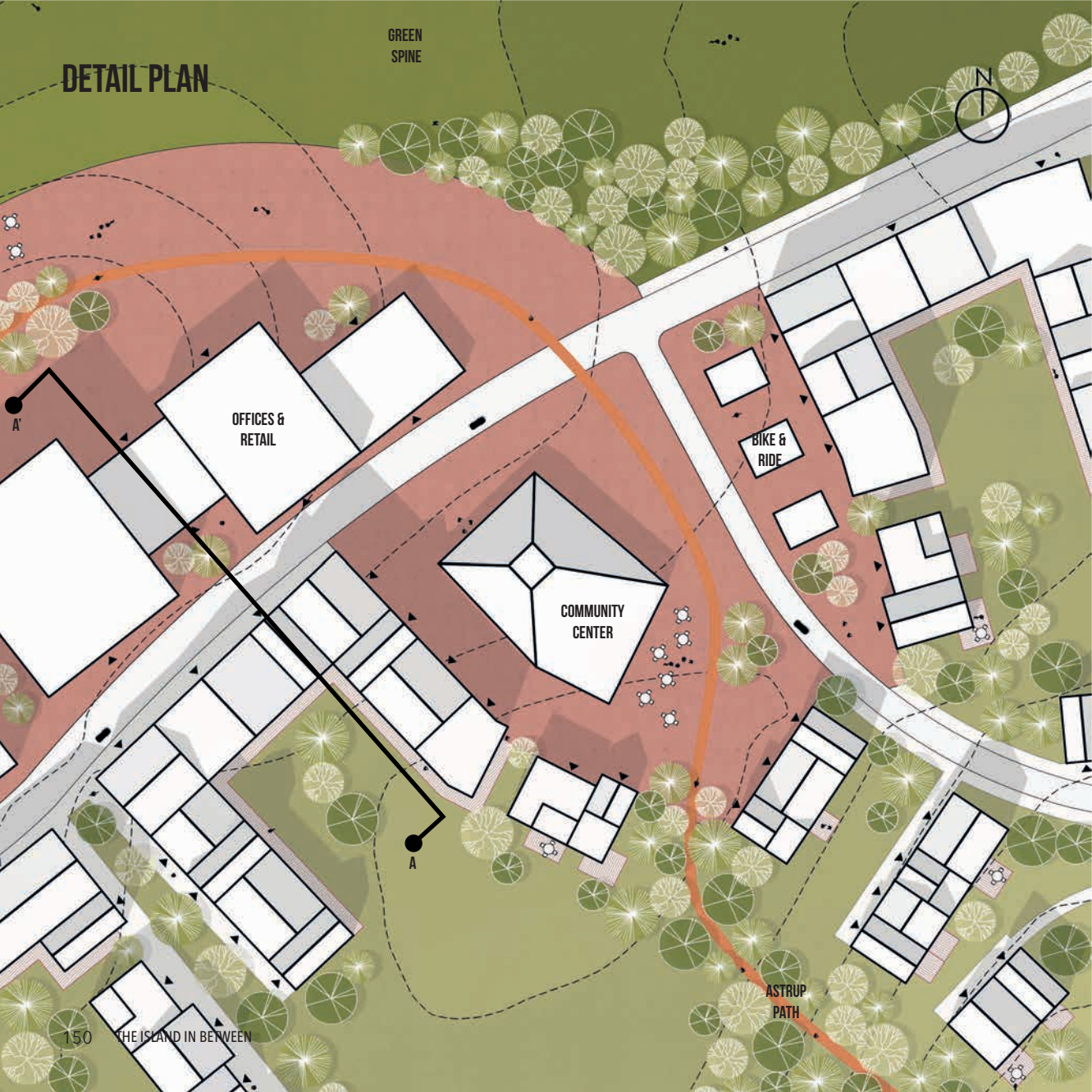
INNOVATION CLUSTER

North Jutland in general and Aalborg in particular have been a national leader in terms of the interaction between business, education and the public in general. Nowadays, targeted and well-functioning organizations exist to handle the central tasks concerning the interaction between state, municipality and region, the universities' researchers and students, and the business community, including entrepreneurs. Promising knowledge-intensive companies and startups thrive in this environment.

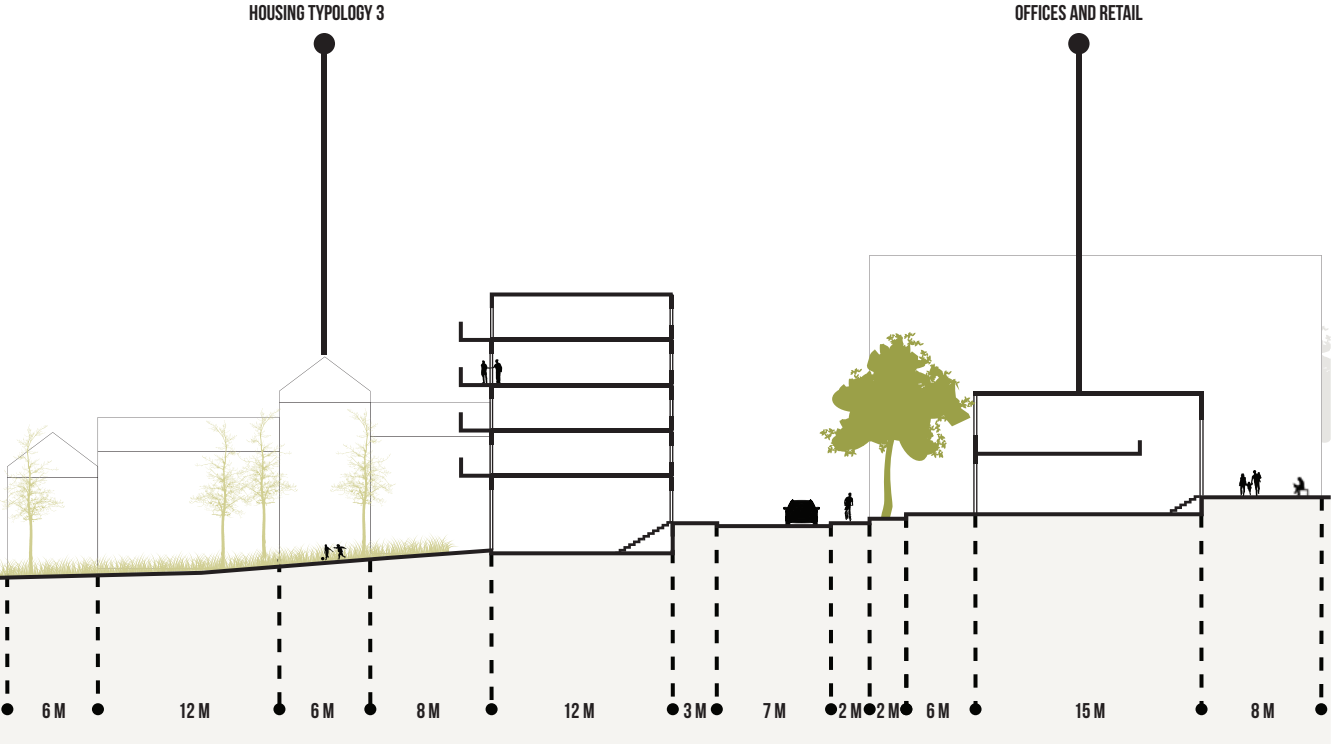
The area's production and use of advanced knowledge and its strong international contact and exposure are of vital importance for the whole of North Jutland's future and positioning.

The Innovation cluster aims to secure this growth dynamics through competitive conditions for the University, the hospital and for Danish and foreign research-intensive companies, as well as knowledge entrepreneurs who are associated with it, working in close synergy with all organizations involved.

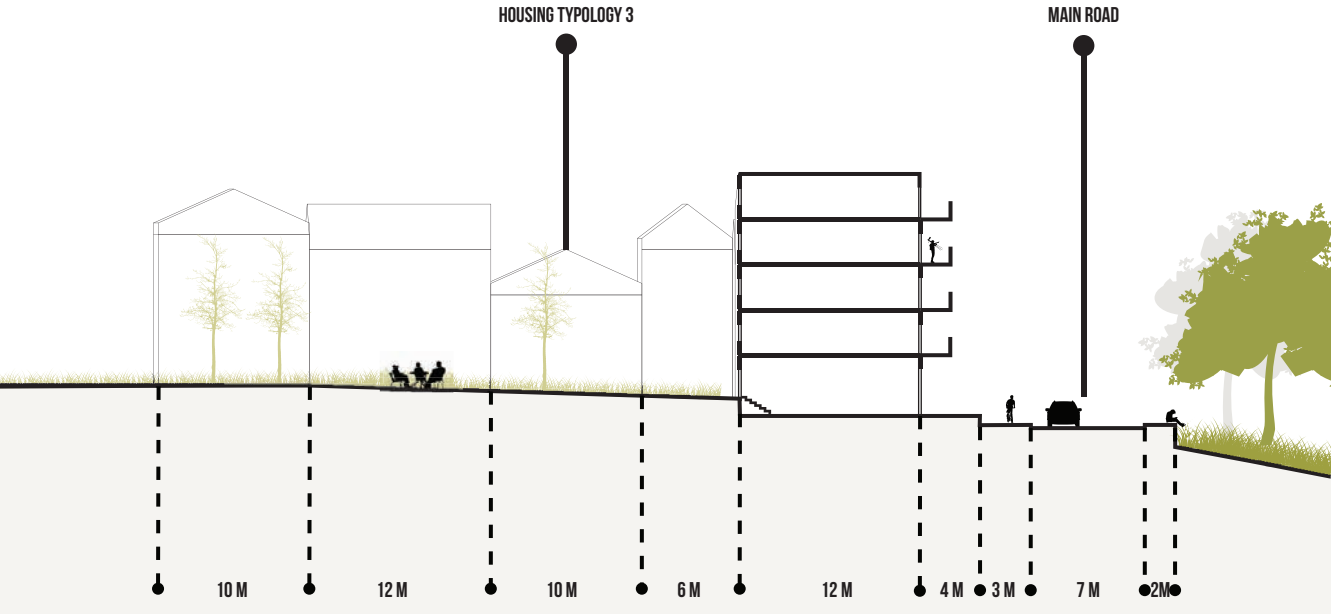


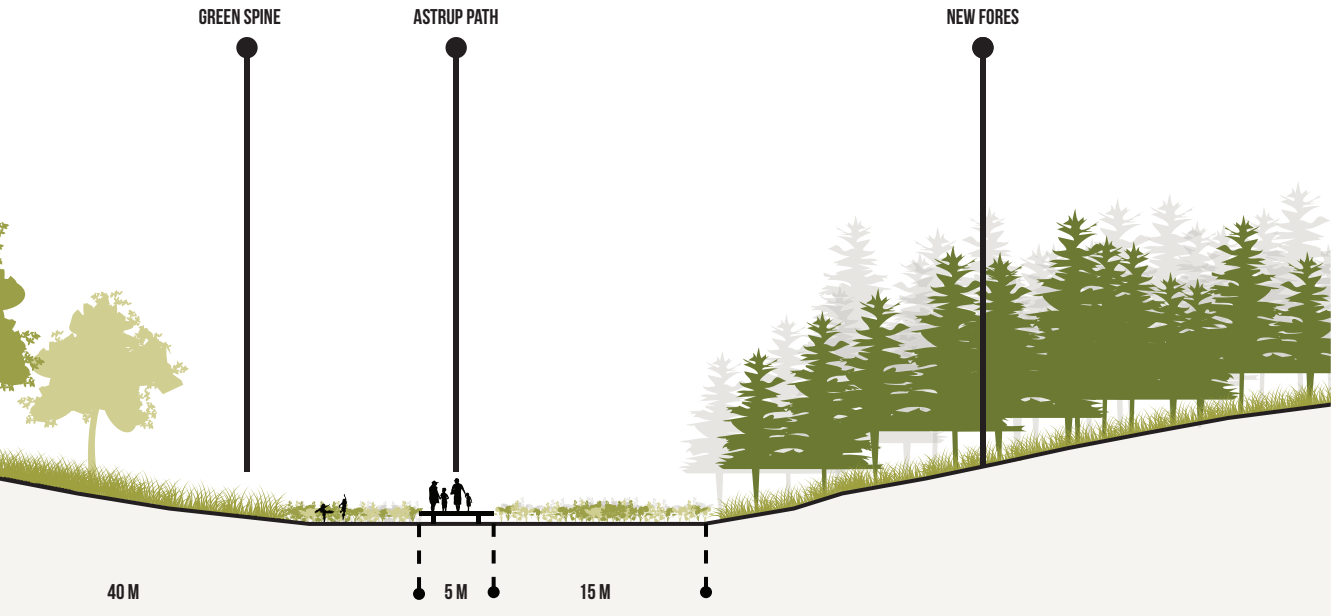

DETAIL PLAN
GREEN
SPINE
N
A'
OFFICES &
RETAIL
BIKE &
RIDE
COMMUNITY
CENTER
A
ASTRUP
PATH

SECTION A-A' SCALE 1:500

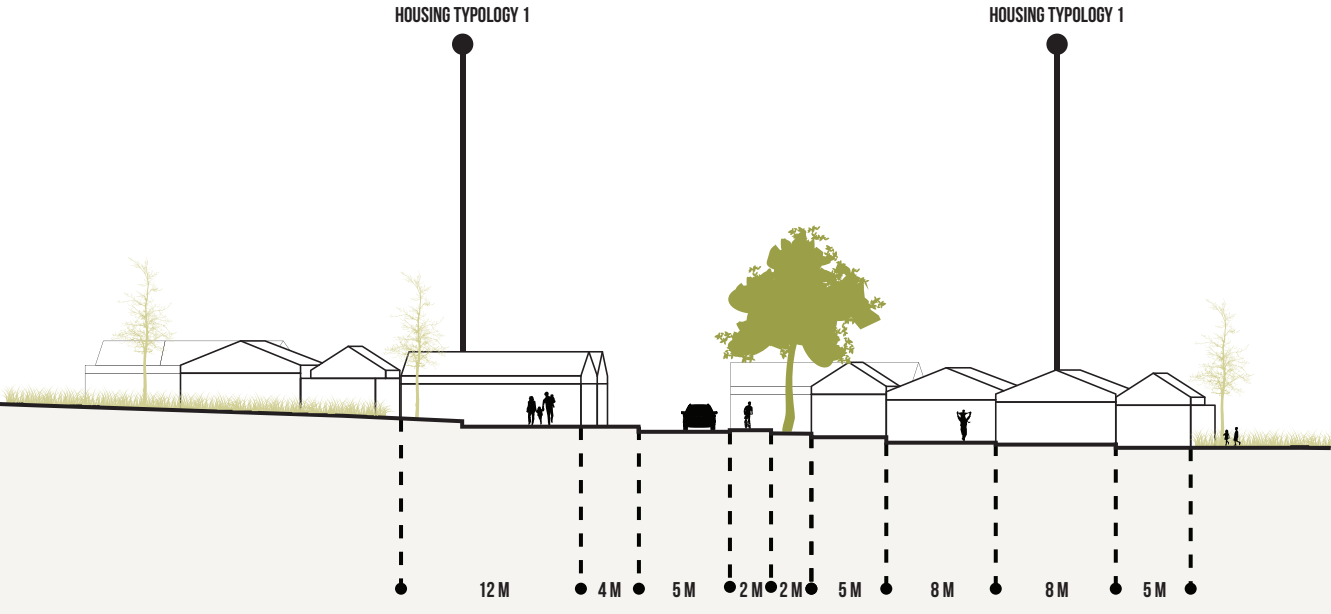


SECTION B-B' SCALE 1:500

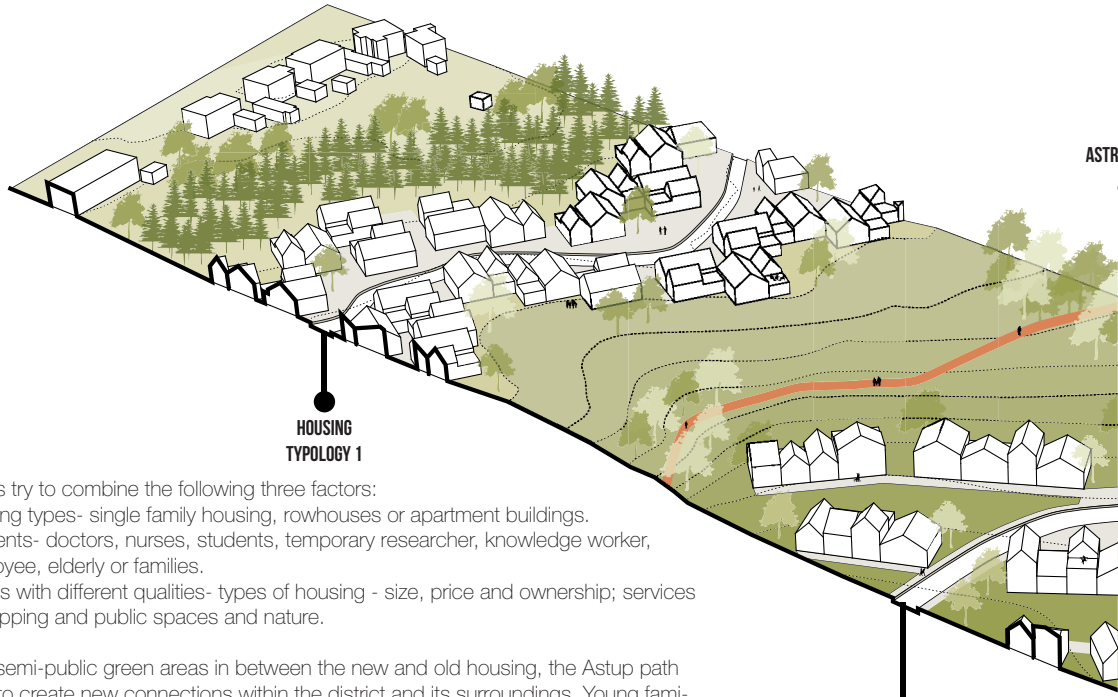



GREEN SPINE
ASTRUP PATH
NEW FORES
40 M
5 M
15 M

SECTION C-C' SCALE 1:500



PERSPECTIVE VIEW IN BETWEEN HOUSING TYPOLOGIES AND THE ASTRUP PATH



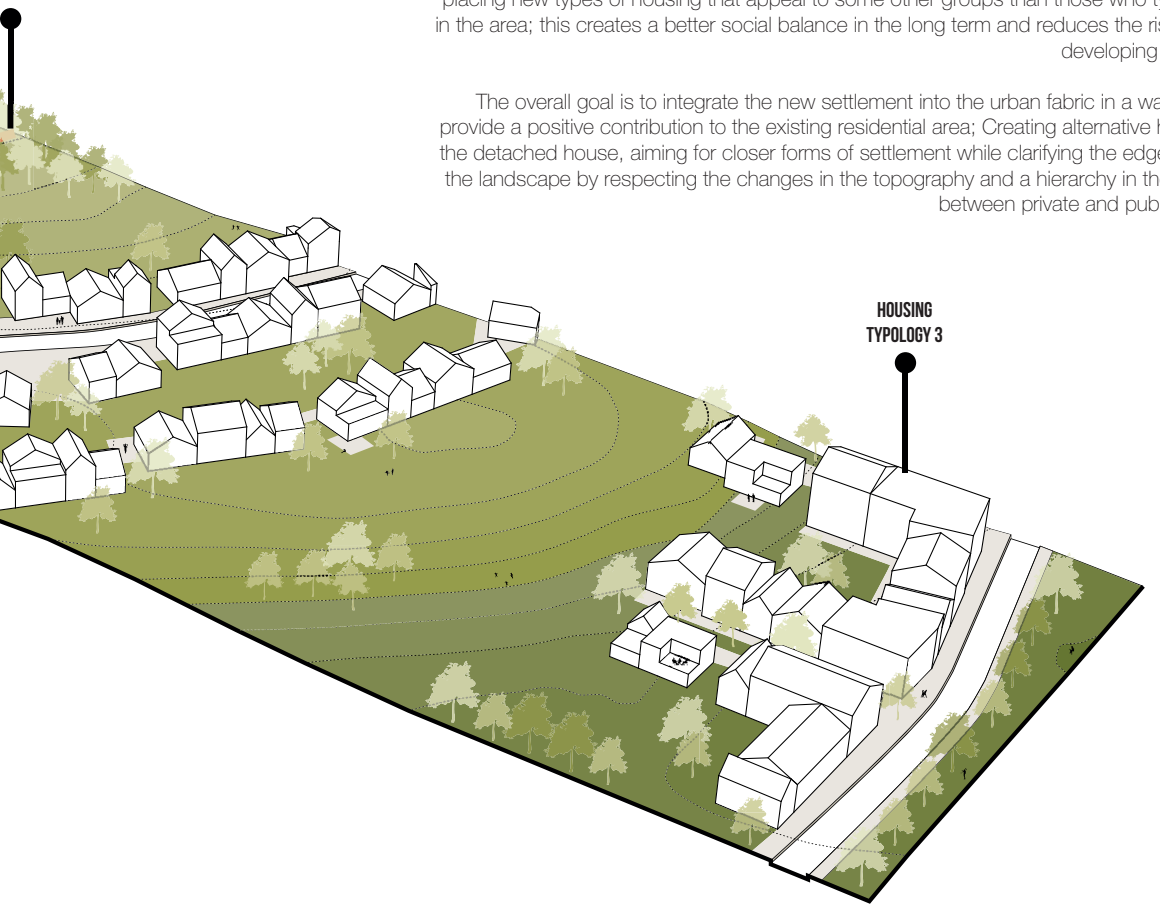
The new homes try to combine the following three factors:
•Different housing types- single family housing, rowhouses or apartment buildings.
•Different residents- doctors, nurses, students, temporary researcher, knowledge worker, university employee, elderly or families.
•Different places with different qualities- types of housing - size, price and ownership; services - transport, shopping and public spaces and nature.

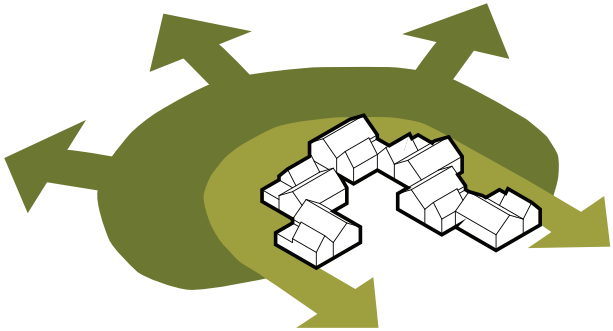
In some of the semi-public green areas in between the new and old housing, the Astup path will go through to create new connections within the district and its surroundings. Young families will be able to commute without a car thanks to the many options in public transportation.

HOUSING TYPOLOGIES

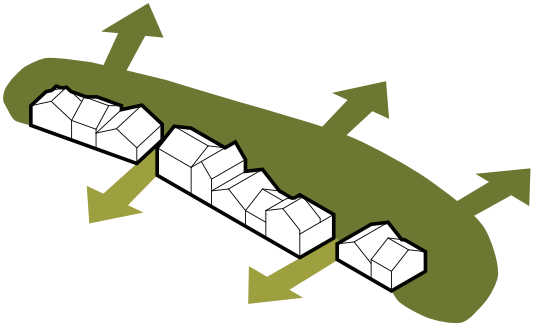
As part of the 'Landscape in Between' strategy, is necessary to incorporate social sustainability in connection with the rethinking of housing typologies. Nowadays the area is divided into different urban areas with different profiles. The university area as the urban and commercial, Aalborg East as the general residential area and the villages as the suburbs with a similar social division. There are clear differences in income, number of immigrants, forms of ownership and age in the three areas. The ability to attract new residents can break this pattern by placing new types of housing that appeal to some other groups than those who typically live in the area; this creates a better social balance in the long term and reduces the risk of areas developing negatively.

The overall goal is to integrate the new settlement into the urban fabric in a way that they provide a positive contribution to the existing residential area; Creating alternative housing for the detached house, aiming for closer forms of settlement while clarifying the edges towards the landscape by respecting the changes in the topography and a hierarchy in the transition between private and public spaces.

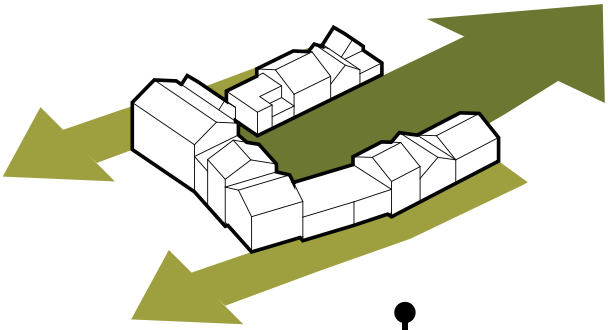




HOUSING TYPOLOGY 2



HOUSING TYPOLOGY 3

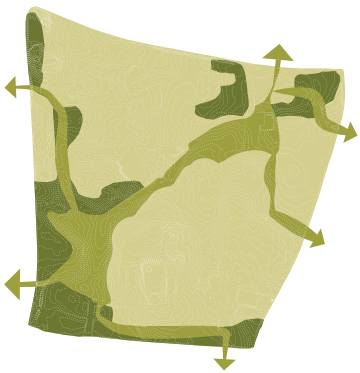


PERSPECTIVE VIEW AT THE GREEN SPINE

SUSTAINABILITY FLOWER AND THE ISLAND IN BETWEEN

- Cultural and natural heritage- The existing urban fabric and the protected forest areas are respected.

- The protected forest areas are expanded.
- Climate Adaptation- The Green spine can become a buffer that could help minimize risk of flooding.
- Access to quarry lake, forest and recreational areas through the Green spine.



- New infrastructu
need for cars by
nection to differ
portation.
- The Astrup path
cycle route is the
ings with the dis
- Nature comes fi

re that minimizes the
y providing good con-
rent modes of trans-

, a pedestrian and bi-
e link of the surround-
trict
rst

ABILITY
NMENT

- New housing typologies that offer diversity
- Integration of new functions in the area - no longer monofunctional
- New meeting places that allow recreation, socializing and exercise close to nature
- Continuous structure - both recreational paths and cycle paths
-

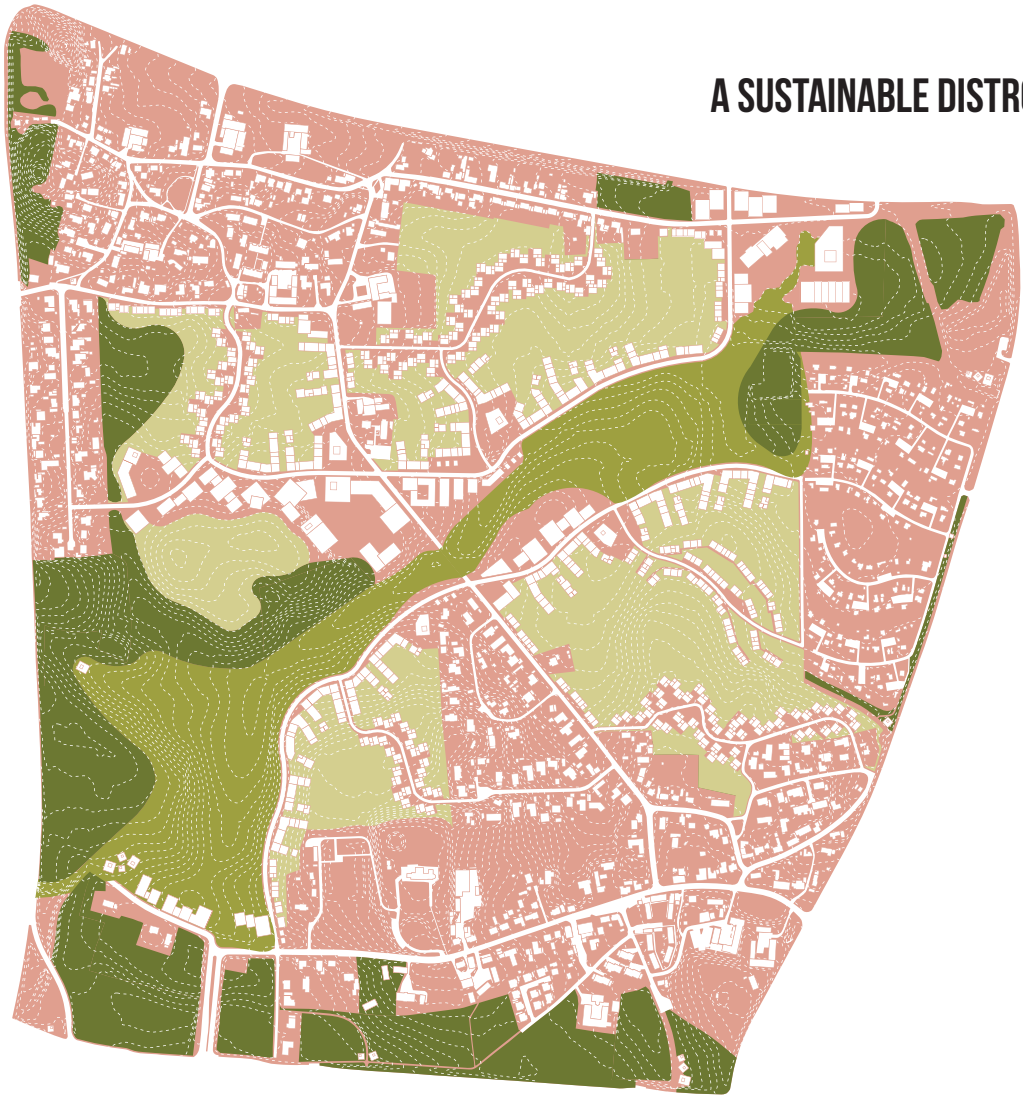
SOCIAL
SUSTAINABILITY

- Innovation cluster- new education facilities and knowledge workplaces
- Prioritize densification and sustainable transport
- Time perspective – phasing is an important part of design strategy
- Avoid construction on areas that are expected to be affected by climate change- Green spine

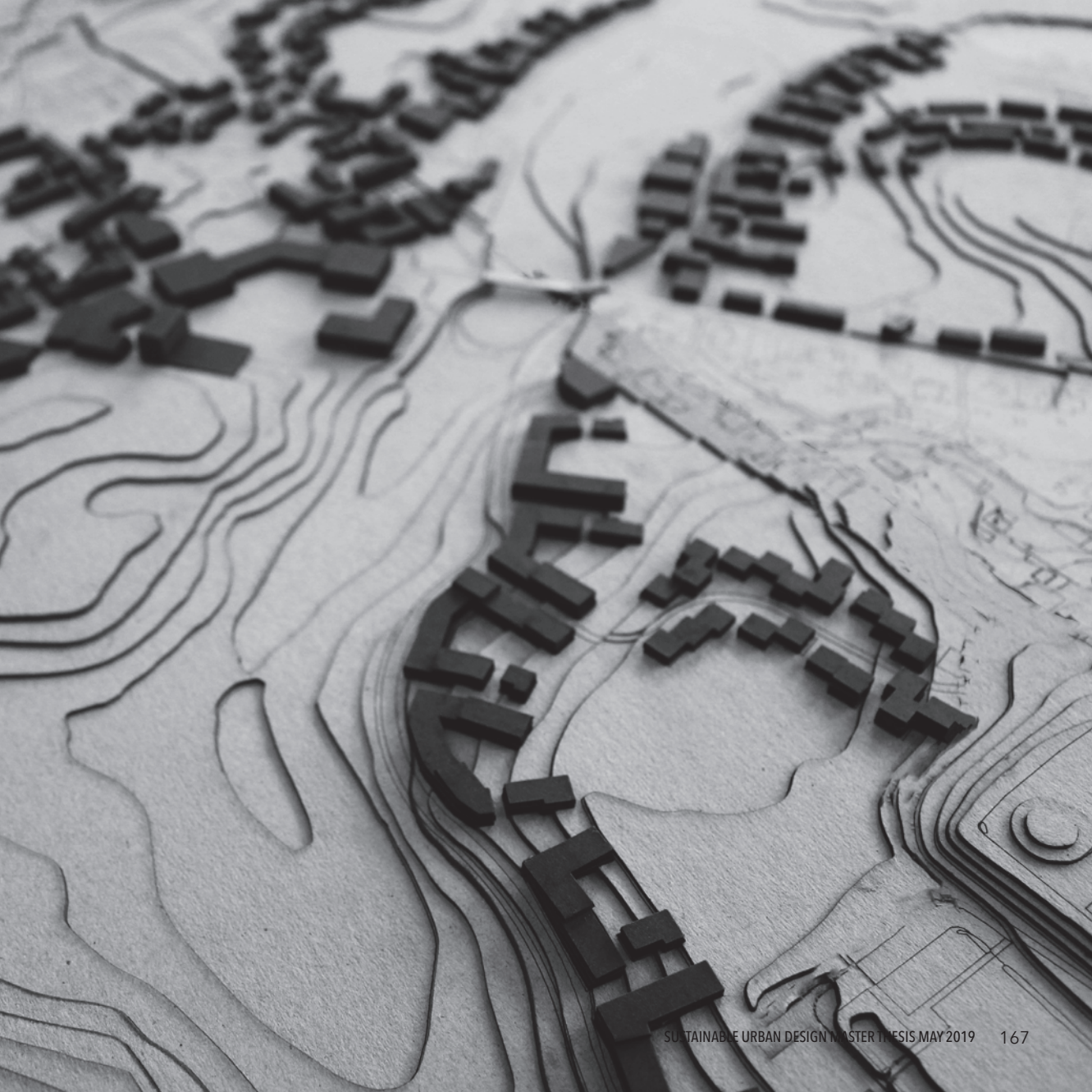
ECONOMY
SUSTAINABILITY


ECONOMY
LOCAL VALUES
SUSTAINABILITY
SOCIAL
NATURE
ENVIRONMENT

A SUSTAINABLE DISTRCIT




MODEL SCALE 1:2000



06.

REFLECTIONS

ESTIMATED NUMBER OF INHABITANTS

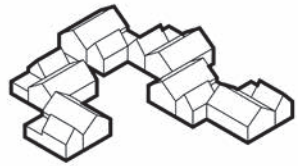
In Denmark:
Average Dwelling size: 112.1 m2
Average Dwelling size per person: 52.2 m2
Average Persons per dwelling: 2.1

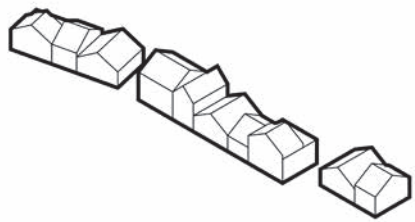
Statistics considering national Danish housing in 2017 according to Denmark in Figures 2018 from Statistics Denmark.

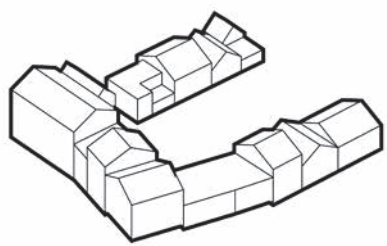
The design generates almost 200, 000 m2 of housing, considering the three different housing typologies proposed.

When using the Danish average dwelling size (112.1 m2), the project creates 1,780 new dwellings; with an average dwelling size per person of 52.2 m2, this generates 3, 821 new inhabitants on the site.

According to these statistics, the site would create:
Number of dwellings: **1,780**
Number of inhabitants: **3,821**







A GREEN OASIS

'The Island in between, Creating a Sustainable District by using its local green qualities as backbone for the development' is an attempt to provide Aalborg Municipality with a vision of how this amazing site could be transformed into a thriving area of East Aalborg, applying some of the strategies being applied in some of the ongoing projects in its immediate context but also landing in very specific design guidelines that are firmly rooted in the site's assets; both in terms of cultural heritage and landscape. It continues with the plans to bring the isolated residential developments closer together through an integration of functions and densification but with nature being the priority.

Therefore when looking into the estimated number of inhabitants, maybe the new number of dwellings and inhabitants is not necessarily very high when compared to the total area of the site; but for me the main reasoning behind the design was to find a way to balance the new functions with the existing context through the landscape, which nowadays is one of the most important assets of the site.

The project aims improve the connections of the site with the East Aalborg and the city in general and I think the large-scale mobility and landscape strategy manages to do exactly that. Offering sustainable transportation is about offering attractive alternatives all the time and in this case the design accomplishes that by prioritizing public transportation and maximizing pedestrian and cyclist traffic. The Green spine acts as the pillar of the proposal to link all the existing green structures in the city but within the site it has the possibility to continue being a green oasis, which is what it is today.

Right after my first conversation with Esben Obeling I knew that this thesis project was going to be a challenge. Due to the dimensions of the site and the time constraint of the semester, it was not possible for me to dig in into as many details as I would have like to, especially in detailing the way the landscape could change within the Green spine and the possibility to make some small-scale interventions in the existing villages to densify further.

The connection of the site to the quarry lake and in general all the new interventions that will happen on the lake once its open for recreation are also something I wish I could have had more time to work with but then again, I also have the feeling that it could become a whole new thesis project on its own.

07.

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Danish Map supply - https://kortforsyningen.dk/indhold/english
https://drift.kortinfo.net/Map.aspx?page=kortHjemmeside&Site=Aalborg
https://www.google.com/maps

Image Sources

Pages 16, 28-29, 30, 33-34, 37-38, 64-65, 70,73,90-91, 171 contain images from the following sources
https://drift.kortinfo.net/Map.aspx?page=kortHjemmeside&Site=Aalborg
https://vandkunsten.com/en/projects/a-landscape-in-between
https://thenounproject.com/

THE ISLAND IN BETWEEN

CREATING A SUSTAINABLE DISTRICT BY USING ITS LOCAL GREEN QUALITIES AS BACKBONE FOR THE DEVELOPMENT

Master Thesis Report
Sustainable Urban Design
School Of Architecture, Lund University
May 2019

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