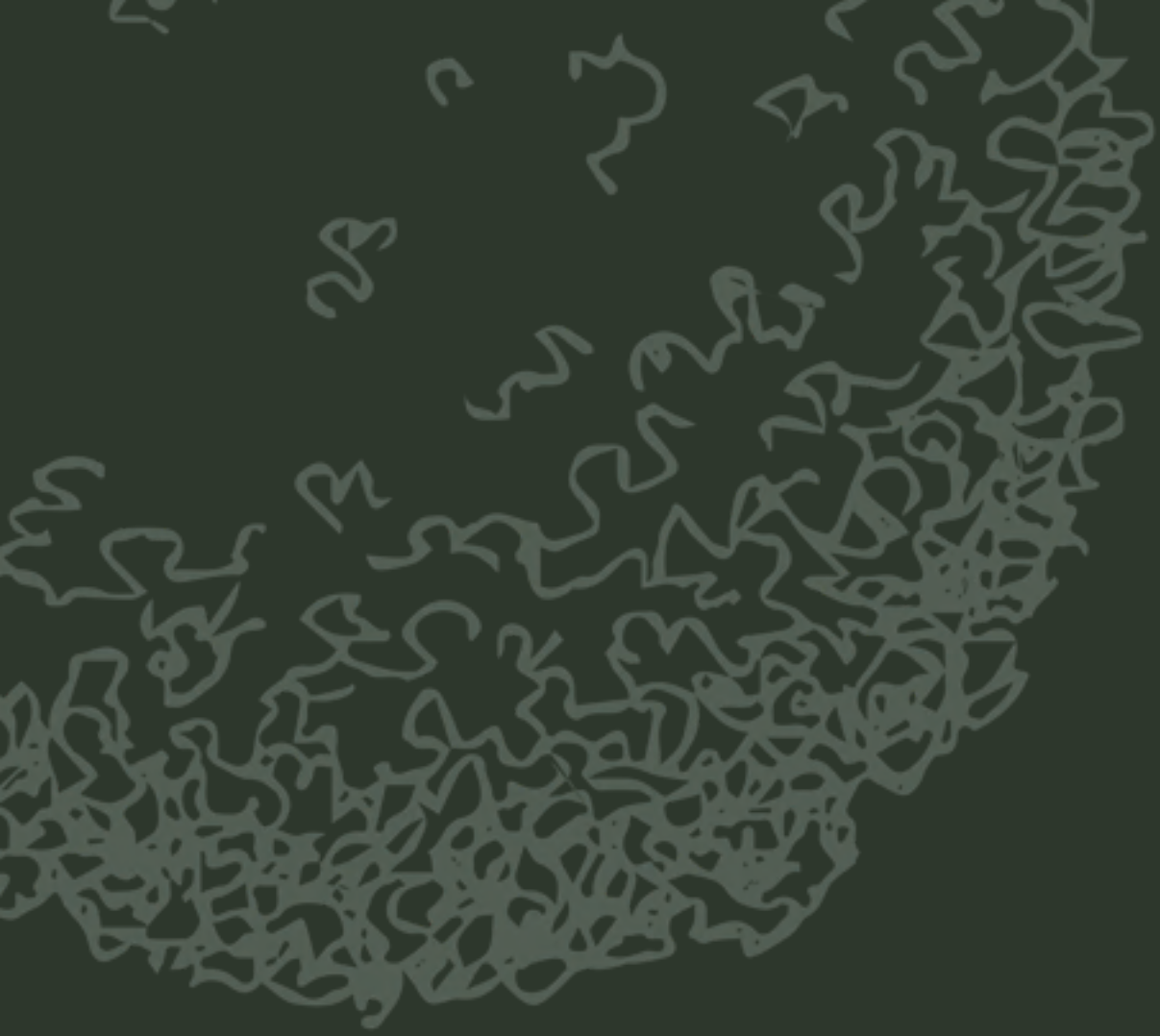


A Better, Greener Tomorrow

Master Thesis in Urban Architecture
2022

In the cold Scandinavian waters of Limfjorden a small island rose from underneath the waves in the Stone Age. During its time in the sun's warming rays of light it has been influenced by many different forces, from giving and eroding natural forces to the influence of man.

It has been in the hands of Church and King for sanctuary and leisurely hunting. Over time the old Danish name of the island, *Æggiæholm,* tells the story of an island previously known for its egg production and the agricultural story on the island is rich. From eggs to cattle and now to an entirely ecological one.

Being isolated in the fjord, the story of *Egholm,* as it is known today, is a mix between man's cultivation of land and the unique nature, home to some critically endangered animals and rare plant life.

Thesis title A Better, Greener Tomorrow
Challenging the Contemporary Mindset of Urban Development

Thesis Period Febuary 1st to June 13th, 2022

Institution MSc04 Urban Architecture
Urban Design at Aalborg University
Technical Faculty of IT and Design
Department of Architecture, Design and Media Technology, (CREATE)
Section for Architecture and Design

Supervisor Hanna Mattila
Associate Professor in Urban Design
Aalborg University

Authors Emmely Urth Staghøj

Signe Kjær Jensen

Submission Date May 25th, 2022
Examination Date June 13th, 2022

Number of Pages 152
Appendices 5 appendices, 103 pages

Thanks to *Hanna Mattila for her time and support during the process of developing this master thesis.*
Aalborg Luftfoto for providing photo material for this thesis report.

Abstract

This master thesis takes its point of departure through a frustration with the contemporary way and mindset of urban development with an ambition to challenge these. With a vision of exemplifying better development with a new use of and respect for nature the design proposal presented in this thesis has been formed. *A Better, Greener Tomorrow* challenges this mindset through a development proposal for the island, Egholm, located in Limfjorden between Aalborg and Nørresundby in Northern Jutland, as an alternative to the suggested highway plans across the island.

The framework of utopian thinking has been the main approach in the initial work of the project which has allowed a critical step back from the current state of affairs on Egholm and a look at the potentials of the island with a neutral eye. As a result, nature has been identified as one of the main potentials of the island and therefore has been fixed at the first priority and determining factor throughout the iterative design development.

The design proposal has been developed in two scales presenting respectively Egholm Naturpark and Øbyen, working from the overall concept of intertwining and rebalancing human and nature. This design proposal for Egholm states an example on how to challenge the mindset of contemporary development, prioritising nature and sustainability as core values in order to secure an alternative way of living and a better future.

00

ill. 01
Reeds in the winds on the shore of Egholm.

Prologue

Motivation

There is a gap. A gap when discussing the future of the world and how to move forward with the urgent climate challenge rising upon us, drawing closer as a dark sky that the sun cannot break through. On one hand, we have never had more knowledge nor science than we have today. On the other hand, the action taken towards reversing the crisis of the modern world is minimal.

This gap or disconnect between knowledge and action can be found echoed in scientific writings where prominent scientists acknowledge that their previous calls for action seems to have fallen on deaf ears (Boonstra, 2021; Steffen, 2021). We, humankind, are the dominating force in the Anthropocene development, which pushes the resilience of the biosphere to the limit. Most worrisome about this, is the concept of time lacks or mismatched time scales, a phenomenon where Planet Earth's response to the stresses enforced upon it by man is delayed compared to the rate of man's decision making (Steffen et al. 2007). Consequently this could translate to the worrying consideration, that the extent of the climate crisis and stress on the biosphere we currently experience, is a delayed response to the spike in resource consumption from the Industrialisation and not our expenditure. Regardless, even if this is not the case, a sea of questions arises.

Why is there this lack of actions taken to develop towards sustainability?
Why do we keep developing grey concrete jungles as the standard for urban development?
Why, as urban designers, are we or the drawing offices, not pushing to provide more, to develop differently with the emphasis on greener cities?
Why do we keep insisting to make room for e.g. cars in our cities, when we very well know that they are not necessarily good for the environment?

Ultimately and unfortunately, it seems that it all boils down to two things. The general mindset and status of "business as usual" and economy. The sad truth seems to be that we live in a capitalistic world where money has the final word. As long as those in charge of funding urban development keep insisting on making the biggest profit, making room for cars and placing greenery for the urban environment last, the change towards sustainable future might be a long and hard uphill battle.

A frustration, a feeling of overwhelming responsibility mixed together with these critical questions and the urgent need to take action is the point of departure for this thesis. The aim for this thesis is for two young upcoming urban designers to find our place in this agenda and try to state an example for how we ought to prioritise and develop cities and urban environments towards a brighter tomorrow.

Methodology

Utopia as a method

The project has been inspired by utopian thinking providing the opportunity to develop potentials with an adequate regard for the future plans of Egholm that may or may not happen. Utopia as a method is able; *"...to provide us with the distance from the existing state of affairs which allows us to judge what we are doing in the light of what we could or should do"* (Levitas, 2014;xvii). Also, the utopian method is characterised by presenting a contrast to the present to which it stands as critique (Levitas, 2014:xiv).

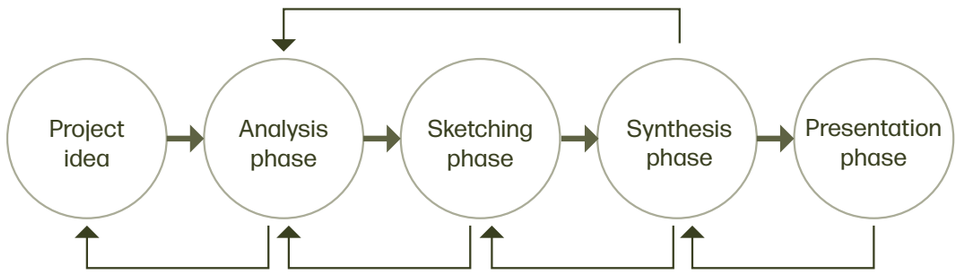
Given the site location and the political context it is placed within, the project has taken its distance to the plans of the potential 3rd connection across the Limfjord (Appendix B01.a - The 3rd connection across the Fjord) as well as working within an ideology of presenting the best potential future within the framework of the project; nature. The full feasibility of the project might therefore be questionable, since it is based upon principles, theoretical framework and ideologies that does not account fully for economics and politics attached to the site and near context.

This project is motivated by a critique of society and current urban development which is found to neglect the urgent need for a sustainable, green transition where this project is to offer an alternative way to develop in contrast to the one seen today. The utopian method has therefore initially provided the framework for a project where certain aspects the current state of affairs has been disregarded in order to explore other potentials. The final design proposal is a mix between the utopian way of thinking and the interdisciplinary competencies of project development from the school of Urban Design.

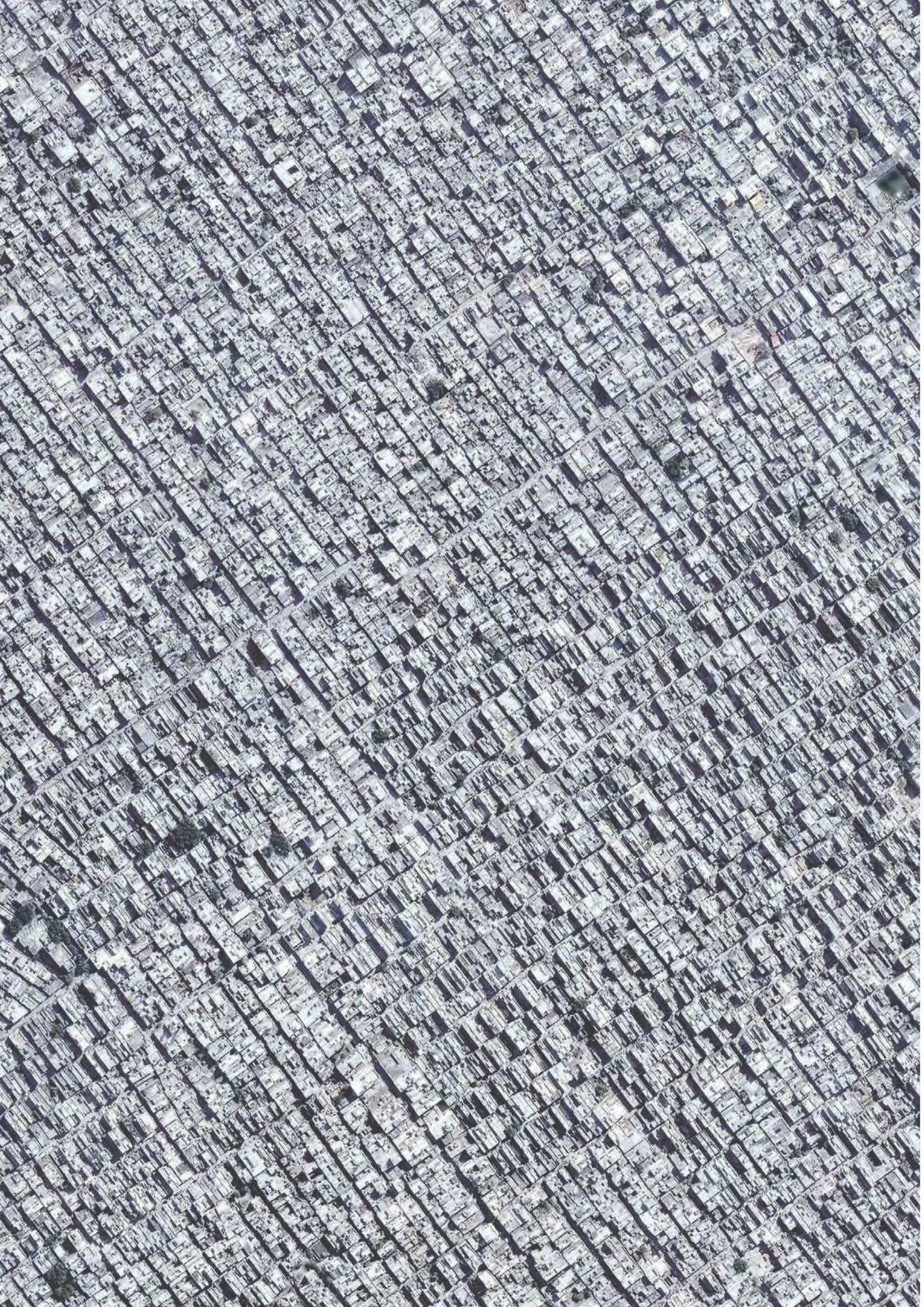
The Integrated Design Process and Problem-Based Learning

This master thesis has been developed through the utopian thinking with the mix of two approaches, The Integrated Design Process, IDP, and Problem-Based Learning, PBL. By working in the approach of PBL the project is based on a problem put forward and asked as a question which should be answered during the project. The Integrated Design Process is a method that seeks to explain and simplify the complex, iterative process that lies behind the development of a design when moving from question towards a solution in the project. (Knudstrup, 2004). The IDP represents the work of this project in an overall manner as well as it being represented in smaller phases such as the design development.

In spite of the diagram of IDP showcasing a linear process, the process behind this project has been highly iterative where the project has been moving back and forth between the different phases. As the project group obtained a higher level of knowledge which could impact the different phases in a positive manner evaluation and new iterations of previous analysis, concepts or design was carried out. This established the framework for the best possible design solution and answer to the overall problem for the project.



ill. 02
Diagrammatic interpretation of the iterative design process as presented by Mary-Ann Knudstrup in 2004



The Contradictions in Current Urbanisation

Urbanisation or urban growth is a planetary phenomenon, with more than 55 % of the world's population now living in urban areas. Planet Earth has become an urban planet. Urbanisation is a complex process encapsulating socio-economic development with a series of consequences and benefits. It transforms Planet Earth, altering spatial distributions of cities, lifestyles, cultures and behaviours while increasing the number and size of urban areas and greatly diminishes the natural biosphere. (UN, 2019). This places cities at the heart of the Anthropocene development in which stresses of human activities have reached a planetary impact. (Crutzen, 2002; Seitzinger et al., 2012; Steffen et al., 2007). As a concept, planetary urbanisation seemingly condenses urbanisation under one interpretation, but actually considers the fact that urbanisation reaches all corners of the world with a wide range of outcomes. As such, it requires an understanding of the underlying complexities and development of cities and the fringes of cities in relation to rural areas (UN, 2018; Schmid et al., 2018).

Long term understanding of urbanisation and population trends have the potential to utilise the density of urban settlements to minimise the environmental degradation of Planet Earth (UN, 2019). The primary, and most commonly acknowledged, morphology of urbanisation as sustainable development from the early 1990's and onwards, have been the compact city. It is favoured for several environmental, societal and economic benefits, such as more efficient public transportation and lesser car dependency resulting in lesser energy consumption and most prominently, it is favoured for lesser impact on the surrounding environment (Madureira & Monteiro, 2021). Yet, compact cities are not without consequences. The shift in demographics and ways of living manifested by the rapid urbanisation has caused widespread concern for the general mental health of urbanites. Both historical and recent long-term studies have found that, in high-income countries there is a higher prevalence of mental illnesses and struggles with loneliness among urbanites compared to those of rural residents. The many interactions and opportunities of urban centres and increasing number of single-households means that individuals find it harder to establish and maintain meaningful relationships (Okkels et al., 2018). Furthermore, the current way of developing compact cities conflicts with another increasingly acknowledged approach to sustainable development: Urban nature, which provides essential environmental functions within the cities such as ecosystem services for human well-being (Madureira & Monteiro, 2021).

ill. 03
Delhi, India
Overview of most built-up, densely populated areas, and home to the poorest people, of the city. Studies have shown a correlation between the wealth of a residential area and the number of trees. Photo by Benjamin Grant.

From studying nature in cities an array of benefits from nature have been found, from regulating climate and effects of global warming within the city to have great impact on both human well-being and social cohesion in cities (Coutts & Hahn., 2015). Specifically greenspaces and nature have shown to alleviate feelings of loneliness and make community space-users feel more supported by the community. It is, by some believed, that this is a result of an innate biophilic affiliation within humans. As a result, contact with nature will enhance the quality of social and community interactions as exposure to nature fosters empathy for others, increases public and social interactions, a general sense of well-being and environmentally friendly behaviours (Weinstein et al., 2015).

It has been acknowledged that to curb unsustainable development within urbanisation, urban designers and planners could play a crucial role in pushing urban development in the right direction both regarding sustainability and for human well-being within cities. Yet, there are no internationally recognised general guidelines for what planners should consider in their development plans (Okkels et al., 2018). An interesting connection to make, would be to suggest that planners and designers would let themselves guide by "weak" and "strong" sustainability.

In short, sustainability was introduced as a concept by the Brundtland report from 1987, stating that sustainability is *"... development that meets the needs of the present without compromising the ability of future generations to meet their own needs"*, (WCED 1987, cited in Kuhlman & Farrington 2010, p. 3438). Furthermore, weak and strong sustainability considers two overall focus areas: The happiness and well-being of humankind and the environment and its resources for both present and future human population. In general, weak and strong sustainability is an evaluation of these based on "can or can not" questions. An example of this could be "Can future generations be guaranteed a resilient biosphere and biodiversity, if the present allows species to go extinct, or can it not?" If science cannot recover lost species and not ensure a resilient biosphere, then the present must be obliged to maintain the current level of biodiversity and halt the rapid loss of species. It becomes a threshold of strong sustainability. However, if the answer to that question is that science is able to reestablish extinct species, a resilient biosphere becomes a threshold of weak sustainability due to the fact that extinct species can artificially be reestablished to ensure resilience in the biosphere. (Kuhlman & Farrington, 2010; Ang & van Passel, 2012).

"Strong sustainability has two principal arguments, which we may call ecosystem services and stewardship. According to the former, human life exists only by the grace of nature, which provides a number of essential services termed ecosystem services. [...] The second argument is an ethical one, namely that we do not have the right to destroy the right of life of other species..."

Kuhlman and Farrington 2010, p. 3444

With ethical arguments for strong sustainability and a potentially gloomy future awaiting in the Anthropocene era if humankind of the present continues with "business as usual", there is a desperate need to reset the balance in a sustainable way between humankind and nature. With the increasing acknowledgement of the beneficial impact of nature and ecosystem services on human health, and the world's growing urban centres, there seems to be an increasing potential in human-nature interfaces within cities and suburban areas.

Initial Problem Statement

“How can working with nature turn the ‘business as usual’-mindset towards shaping a better, sustainable future with a higher quality of life?”

01

ill. 04
Aerial photo of Egholm on the horizon flyving over Aalborg and Nørresundby.
Photo by Steen Lee Christensen, Aalborg Luftfoto

Theory & Implementation

“What is Nature?”

This is an appropriate question to clarify before studying the qualities of nature on human health and the environment. Nature is an often-used word and associated with an instinctive, yet subjective definition. Searches across dictionaries show apprehension in defining the word which maintains the elusive character. Most prominently, defining it becomes a balancing act between what is naturally occurring and man made nature (Ducarme, 2021), especially in an increasingly urbanising world. One dictionary defines nature as “all living organisms and features, forces and processes that exist or happen independently of humans” (Cambridge University Press, nd.). This leaves a broad spectrum of the biosphere to be considered as nature, but also raises the never-ending discussion of distinction between natural and manmade. From the steep mountains created from natural, geological forces to the increasing amount of controlled, urbanised metropolitan parks there is a clear graduation of human influence. Somewhere on this spectrum are cultivated, agricultural landscapes. Despite being hands-on with crops and livestock, the traces left on the landscape after agricultural uses have passed are large structures alongside flattened and manicured fields. Both strong indicators of human influence. Some of these however, might also bear the potential of being restored back to a natural appearing landscape, given time and understanding. Hence why a definition for the nature in this project, and what it is desired to achieve, have been formed;

“Nature is the network of blue and green infrastructures, cultivated or not. Desired nature is wild in appearance and should be achieved through minimal human intervention and support ecosystem services such as habitat and biodiversity, climate regulations and human well-being.”

In research nature, regardless of definition, have been found to have a series of benefits to human beings and climate, especially in urban settlement (Coutts & Hahn., 2015; Kotera et al., 2021; Shanahan et al., 2015; Tzoulas et al., 2007; Weinstein et al., 2015). Outside research the notion that nature in cities is good for health and climate has gained traction, especially after COVID-19 lockdowns have increased urban dwellers’ appreciation for nature. There is a need to ride this conquering high of nature in cities to create marked change towards sustainable urban and anthropogenic development (Levinger et al., 2021).

Understanding Landscapes and Nature

Nature-based solutions have emerged as a way to operationalise and integrate practical solutions with ecological dimensions into traditional planning concerns. The simplest definition of nature-based solutions is "... actions which are inspired by, supported by or copied from nature". This definition comes from the European Commission and is meant as an overall umbrella for solutions bringing nature into cities (Scott et al., 2016; Kabisch et al., 2016). Four general goals for nature-based solutions have been formulated, shifting from site-based conservations to holistic ecosystems approach which recognises ecological landscapes characterised by multifunctionality and connectivity.

Green Infrastructure

One of the more acknowledged methods under the nature-based solutions umbrella is the holistic approach of understanding and working with green infrastructure (Scott et al., 2016). Green Infrastructure goes back to the 1990's where the first definitions of the concept can be attributed to the Environmental Protection Agency in the States and England's Community Forest Network. Initially it specialised in a system of ecological networks and its aim was the enhancement of ecosystem services. Later, it developed to become a tool for mitigating the negative effects of climate change in spatial planning (Cioci et al., 2020). In this paper the definition adopted, is the most cited definition of green infrastructure. As such, green infrastructure is interpreted as *".. an interconnected network of greenspaces that conserves natural ecosystem values and functions and provides associated benefits to human health"* (Benedict and McMahon, cited in Coutts & Hahn., 2015, p. 9770).

Sometime between the earliest and more recent definitions of green infrastructure, it has become intertwined with the terminology from landscape ecology. Landscape ecology in combination with green infrastructure provides the simplest possible theoretical perspective in understanding the complex and diverse nature of landscapes, including urban environments. Additionally, landscape ecology also provides the so-called mosaic model, as both a structural and spatial model as well as analytical tools to interpret and design for landscape and ecosystem services (Ahern, 2007). The key ideas from landscape ecology that intertwines with green infrastructure is an emphasis on two main aspects: A multi-scale approach in understanding the landscape and an emphasis on physical and functional connectivity across landscape elements.

The importance of a multiscale approach comes from hierarchy theory, addressing the structure and behaviour of systems that function at different scales simultaneously. Landscapes, as larger motlied areas of land, interact in interdependence with systems of different scales. An appropriate range of scale for understanding this hierarchy in an urban context would range from the metropolitan region or city, to the district and individual site. Connectivity in general refers to the degree a landscape facilitates or impedes flow of energy, materials, nutrients, species and people across land. This connectivity of resources is important to the quality of ecosystems services, which means it is especially sensitive to disruptive patterns. Landscape, and especially urban environments have been modified to such an extent that it becomes fragmented creating separations and isolation between landscape elements and hinders connectivity. (Ahern, 2007).

The Mosaic of Green Infrastructure

As a model for describing and understanding the spatial configurations and elements of a landscape in a simple way the mosaic model is the most universally accepted within landscape ecology. The mosaic consists of three elements, which lends themselves particularly well to green infrastructure. The elements are patches and corridors which make up the last element called a matrix. There are different layouts, dynamics and causes to both patches and corridors (Forman and Godron, 1981; Ahern, 2007).

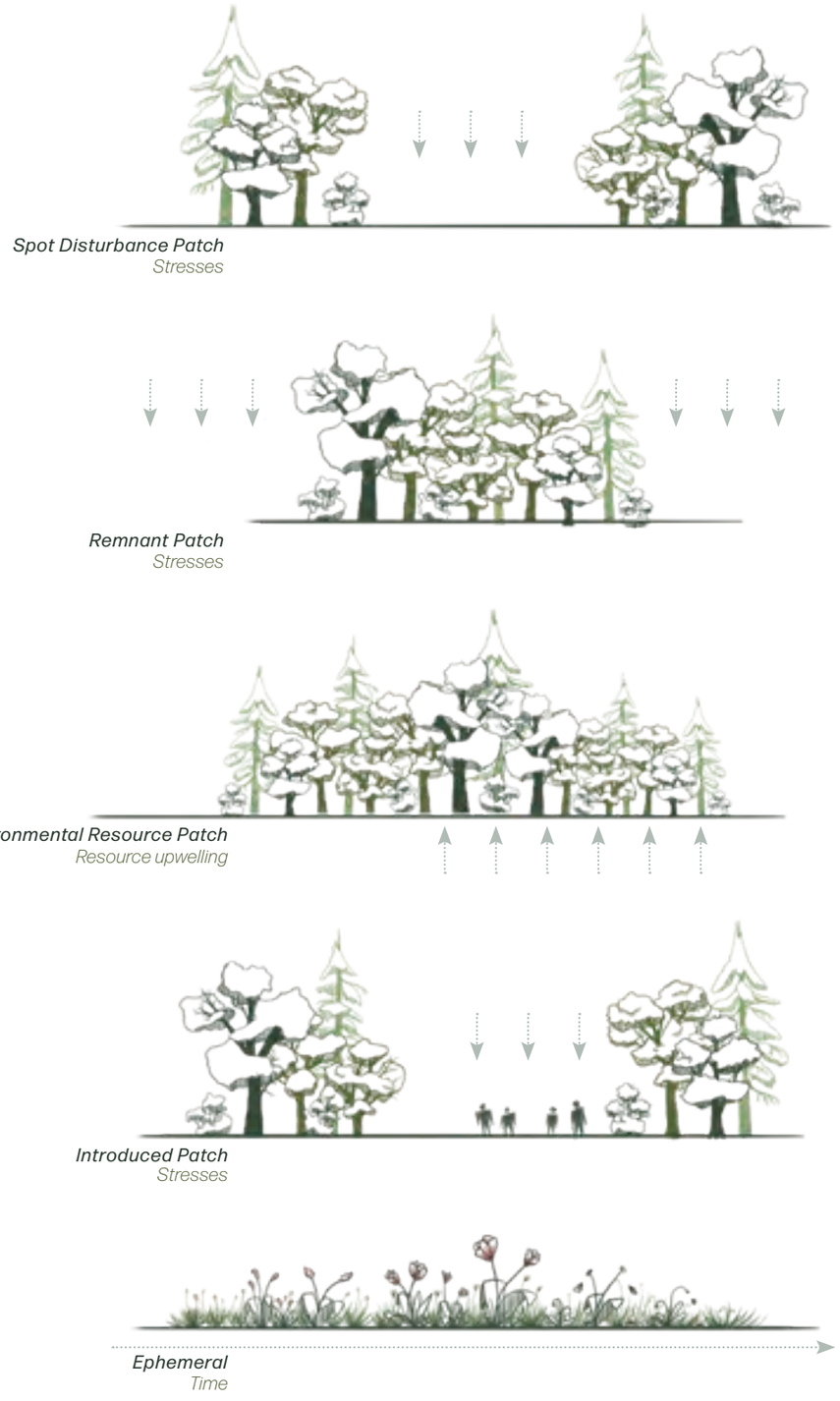
Matrices

Matrices are the most dominant type of land cover in regards to area covered. It is a big patchwork made up of patches and corridors of various characteristics. Furthermore matrices are the most prominent type when it comes to ensuring connectivity and continuity. With size also comes a considerable amount of control that this type of landscape exerts on the surrounding landscape (Ahern, 2007; Forman and Godron, 1981).

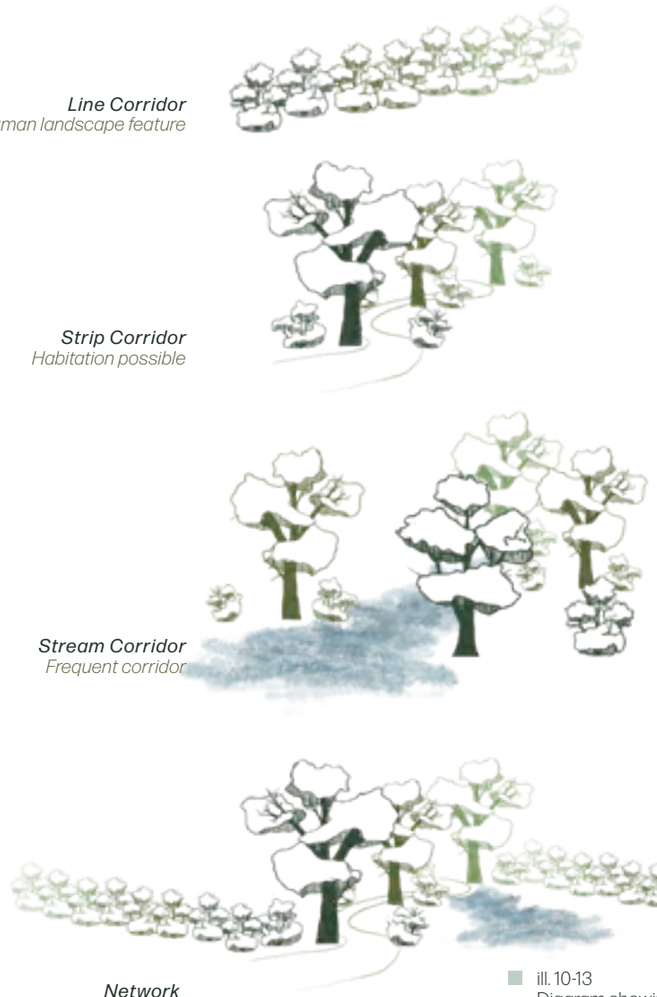
Patches

A patch is an area of landscape or nature of relatively uniform vegetation or characteristics and is non-linear in shape. It differs from the surroundings. Most often, patches can be considered wildlife habitats, catchment and water retention areas, as well as a source for different species and sinks for nutrients (Ahern, 2007). Forman and Godron, two of the first to present the mosaic elements, identified five different causes to patch formation in a landscape (Forman and Godron, 1981).

A ***spot disturbance patch***, is a patch occuring due to a spot-like stress on the landscape. It could be fire on the grassland or human-caused forest clearing or overgrazing. The regrowth of the patch is either influenced by the surrounding matrix to such an extent that the patch slowly takes the same characteristics as the matrix or the intensity of the disturbance is so severe, it causes a semi-stable state of the patch that differs completely from the matrix. A ***remnant patch***, is what is left after a widespread disturbance. This kind of patch could be a cluster of woodlands on higher ground after a flood. In this instance, if the disturbance was temporary the surrounding matrix will settle at a state similar to the patch. However, with chronic disturbance the patch will remain a remnant, and a net loss in species is to be expected. An environmental resource patch differs from the previous two by not being dependent on disturbances. An ***environmental resource patch*** occurs due to the presence of an environmental resource, e.g. patches of pollinators in a moist alpine gully. The resources present have caused species specialisation and the patches become permanent. An ***introduced patch*** is predominantly introduced into the matrix by human activities. Examples of introduced patches could be agricultural fields or pine plantations. These patches will remain, as long as the human disturbance continues. An ***ephemeral patch,*** is a very short-lived patch, which is caused by a brief spike in available resources, in turn this causes a fleeting aggregation of species. Ephemeral patches could be a localised bloom of cacti in the desert or savannah feeding and drinking patterns. These patches are however most likely to appear at a finer scale. (Forman and Godron 1981, Italic emphasis from original)



ill. 05-09
Diagram showing the different types of patches occuring in and across a landscape, as they are named by Ahern (2007).



ill. 10-13
Diagram showing the different types of corridors occuring in and across a landscape, as they are named by Ahern (2007).

Corridors

Corridors is another landscape characteristic that presents as a linear area of land of a particular type different in content and physical structure to its context. Like patches, corridors can act as habitats but most often corridors act as pathways or conduits for species movement and reversely, it can act as a barrier to these as well (Ahern, 2007).

Forman and Godron have identified four different dynamics in corridors. Firstly there is a ***line corridor***, which presents as narrow landscape elements, such as paths, roads, drainage ditches, irrigation channels etc. Line corridors are overly present in human dominated landscapes, and are often characterised by hardy species as there is little protection due to the narrow spatial configuration of the corridor. Secondly, ***strip corridors*** are simply a wider version of the line corridor with a protected interior, which makes these corridors more suited for both habitat and species movement. Hence, why a wider range of species can be found in strip corridors. ***Stream corridors*** are found on the borders of water courses and vary in width according to the waterways. They provide regulating services e.g. by controlling water and nutrient runoffs and minimising flooding. Stream corridors are the most common type of corridors and have optimal functionality when they double as strip or line corridors for species movement. ***Networks*** are the last type of corridors and are made up of intersecting or anastomosing corridors that form loops. Networks bear imprints of human activity and are a widespread prominent feature in larger landscapes. They are functionally important not only for their movement links but also from their impact on matrices and patches. (Forman and Godron 1981, Italic emphasis from original).

Practising Green Infrastructure In Spatial Design

To successfully implement the mosaic model from landscape ecology into the practice of green infrastructure, Ahern proposes five guidelines for planning and designing green infrastructure. The first guideline is to form a spatial concept. By forming a concept or spatial metaphor for the planning intention, like the “green heart” of the city, it becomes highly inspirational and makes for easy translation to the general public. Secondly, the next guideline highlights the need for strategic thinking. The sooner a strategic approach, which will be elaborated later, is settled the better a contextually holistic approach and methods can be transferred across different scales. Thirdly, actual greening of infrastructure is needed. This needs a genuine belief, that creatively and innovatively green solutions to e.g. stormwater management along infrastructures can improve and contribute to sustainability while supporting ecosystem services. The fourth guideline is to design and implement green infrastructure solutions for multiple uses, so that the next neighbourhood park also acts as retention ponds during a storm surge or could freeze over during winter for yet another function. The last guideline by Ahern is learning by doing. Despite sounding straightforward this poses significant difficulty. Most often green infrastructure such as fauna corridors have specific, contextually dependent conditions which makes sharing information across countries and locations difficult. Through evaluating adaptive and strategic aspects of projects more general best practices should emerge (Ahern 2007).

Ahern specifies four different strategic approaches. A protective, defensive, offensive and opportunistic approach. When a given landscape already supports sustainable processes and patterns or is endangered from increasing urban fabric, strategies could be to identify and protect patches and corridors to prevent further fragmentation of urban green infrastructure. In an already fragmented landscape a defensive strategy is the best option to implement to control and halt urbanisation by limiting further negative development at the cost of nature in cities and landscape. An offensive strategy differs from the previous two strategies by actively implementing restorative, reconstructive or rebuilding initiatives to reconnect fragmented parts of green infrastructure. A downside to the offensive strategy is the eventual need for displacing highly intensive land uses such as industry or residential urban fabric. The last strategy is one that focuses on the unique or special opportunities a landscape or urban environment might present for sustainable development and implements protective and enhancing strategies for the landscape potentials. (Ahern, 2007).

ill. 14
1 : 300.000
The maps shows the bigger forest patches in Northern Jutland and how these deminish towards the urban centre around Aalborg.

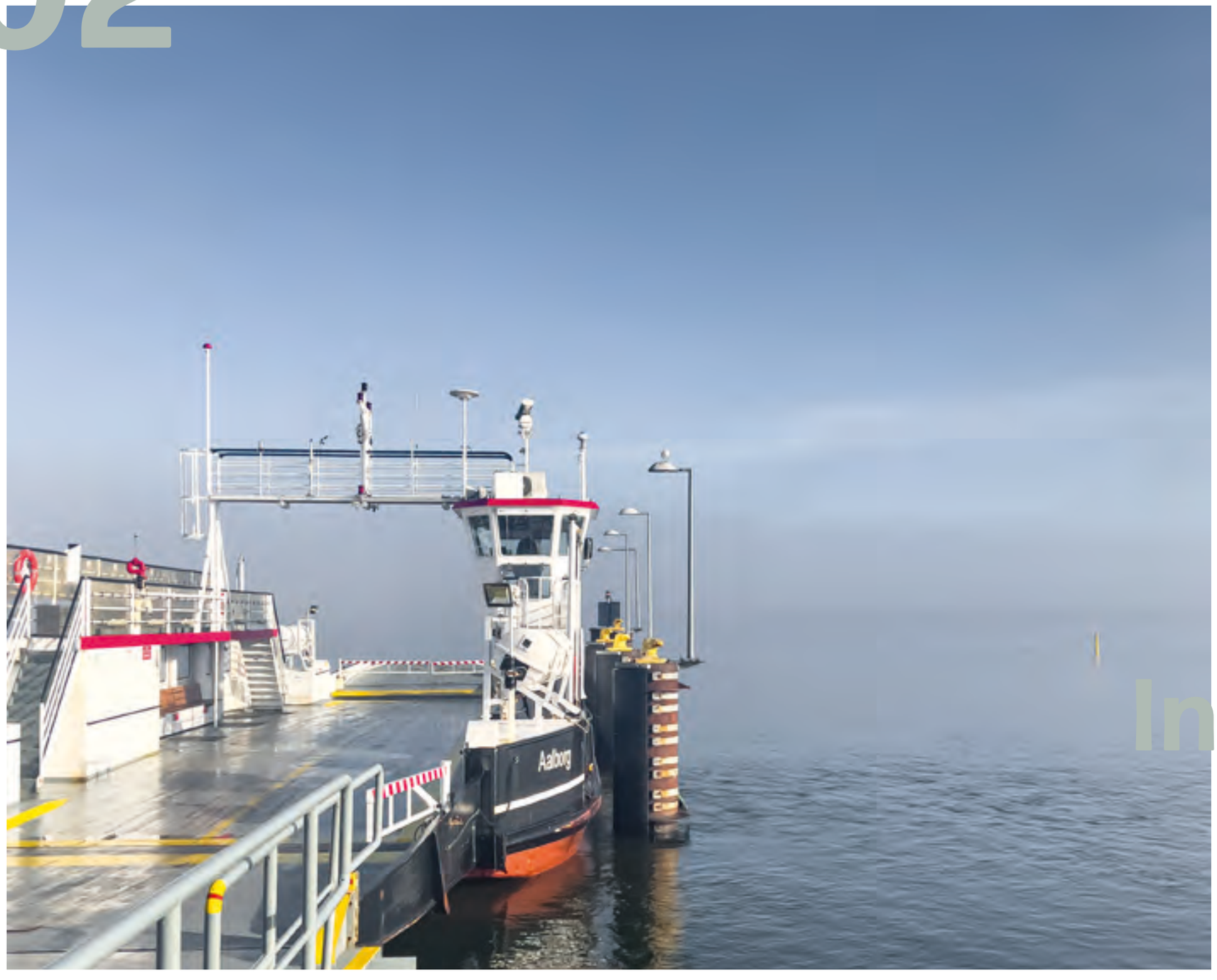
Egholm in the Bigger Landscape

In trying to understand Egholm in the landscape of Northern Jutland some key features appear. Firstly, large patches of forest are spread across the wider landscape creating a fragmented characteristic. What further accentuates this fragmentation is the observation that these patches, and the intricate supporting network of corridors and smaller patches, become less and less significant closer to urban environments. Secondly, Limfjorden is a significant element to highlight in the landscape. In this context it acts as a three-in-one stream corridor. It is a big habitational stream corridor home to many different species and a transitional corridor acting as a shortcut between Kattegat and Vesterhavet. Additionally, Limfjorden acts as an isolating corridor surrounding the islands within the fjord, creating unique ecosystems and species compositions which adapt to island-living. One such island is Egholm.

The map shows that there are relatively many landscape elements on Egholm and with the central location in an urban context between Nørresundby and Aalborg, the island represents a unique potential being a part of a greener band within the city structures of Aalborg and Nørresundby. Yet, the qualities of these is challenged by the matrices of urban development which causes fragmentation and loss of connectivity from single-purpose infrastructure for human habitation.

The potential of Egholm lies within the characteristics and qualities of nature on the island and the proximity to the many urban dwellers, for reestablishing connectedness to nature and empathy for other living beings. This uniqueness lends itself to both defensive, offensive and opportunistic strategic approaches, as mentioned by Ahern. A defensive strategy would protect and value the nature currently on the island and question the suggested highway initiatives, which intends to build a four-laned highway across the island, though it is currently on hold from political dismissal (Borgerbevægelsen mod en motorvej i Egholmlinjen(a), 2022). An offensive strategy would be reestablishing nature in addition to protecting the current nature on Egholm. An opportunistic strategy would be able to encompass the two aforementioned strategies into one, by looking into the potential of the island as an entirely ecological island to be developed as an example of developing with nature towards sustainable landscapes and urban settlements.

02



ill. 15
Egholm II
The larger of the two ferries servicing the connection between Aalborg and the small island og Egholm in Limfjorden.

Introducing Egholm

The Urban Context of Egholm

Aalborg is widely perceived as the capital of Northern Jutland, a smaller metropolis with a rich atmosphere and all to offer from ancient history and culture in a wide range of museums to architecture and culinary experiences of the best kind (Enjoy Nordjylland, nd.). In more recent times the identity of Aalborg has been through rapid change from an industrial city to one of knowledge, education and culture. In 2019 the projected growth of residents within Aalborg Municipality was expected to grow with approx. 12.000 new residents distributed between many different ages and life situations (Aalborg Kommune, 2019).

On the other side of Limfjorden lies Nørresundby, an independent city with a strong sense of self, but mostly considered a suburb to Aalborg. The two are connected by two bridges for soft mobilities plus trains and hard mobilities respectively as well as a highway tunnel. Nørresundby, just as Aalborg, has changed from an industrial harbourfront to one with many residential semi-tall high rises to support the many residents and newcomers to Aalborg (Jensen & Christiansen, 2017).

Egholm By

EGHOLM

4 km

3 km

2 km

1 km

ferry landing

NØRRESUNDBY

AALBORG CENTRE

The Urban Context of Egholm

Green, recreational areas

City Structures

Agricultural fields

Salt Meadows

Lakes

Old Forest Reserve

New Forest Reserve

ill. 16
This maps shows the close proximity of Egholm to both Aalborg and Nørresundby - Unique qualities for both island and urban centers.

Experiencing Egholm

Today Egholm, as an island on the periphery of Aalborg city centre, is widely used by both locals and tourists as a refuge from the hustle of everyday life in the city. The ferry landing is approx. a 10 min drive by car and 40 min walk from the city centre, and still the only connection to the mainland from the island. A round-trip ticket for the ferry ranges from 20-90DKK for pedestrian adults to vehicles larger than 6m respectively (Aalborg Kommune(a), nd.). The quiet and isolated vibe of the island along with a wide range of wildlife and shelters, a couple of restaurants and small beaches is what draws people to the island.

During the past few years the island has been developed with several routes for walking as well as the installation of one of the well known trolls made by Thomas Dambo. Egholm's troll, "Pil Tusindtunge" has not been marked on any maps, so visitors needs to investigate the island in order to find him (Brix, 2021). Aalborg Municipality tries to activate Egholm for the citizens by planning tours with nature guides to tell about the island and its diverse ecosystems. According to the nature guides the visitors tell that the island is a refuge and provides some calmness and distance to the city, despite its proximity to both Aalborg and Nørresundby. Yet, they also say that the nature of Egholm lacks character and does not provide much of an experience aside from the usual (See Appendix B01.d - Meeting with Nature Guide, 2022).

ill. 17
Mapping of the prominent activities on Egholm today

50
permanent residents

605
hectares

100.000
visitors annually

5 min.
traveltime
departure every 30 min.

Trails

When exploring Egholm there is a network of trails today that leads the visitors around. The trails are mainly for pedestrians but can also be accessed by bike. The trails have the same overall structure, leading one along the southern coastline, where there is a beautiful view towards Aalborg, then splitting up in a variety of lengths before meeting on the main road leading to the ferry landing. The trails showcase the nature, calmness and installations of Egholm but might yet lack a bit of experiencing value.

Coast

One of Egholm's characteristics is the wide open landscape with long vistas, especially seen along the coastlines, where all of the trails are established. When walking here, the sound waves lapping against stones and pebbles, a variety of calling birds, and the wind sweeping through the reeds accompanies the trip. It is along these stretches of coast that there is a good chance at spotting the many migratory birds and other animals visiting the island.

Agriculture

The many agricultural fields on the island reinforce and dominate the flat open landscape and the vistas over the island. Agriculture on the island and the human interventions behind it has been one of the dominating factors in shaping the present landscape of Egholm and along with the long, more or less straight trails along the coastline, the experience of walking on Egholm can at times become monotonous.

Forests

As a dramatic contrast to the flat landscape small patches of forest appear here and there on the island all of varying character and experiences. The remnant patches of forest on the island offer both a light airy atmosphere from tall slender trees with clearings where shelters and bonfire pits enable overnight stays under the open sky. In the old oak forest, where ivy has climbed and enveloped the trunks in green blankets, an almost magical atmosphere settles over the forest. An atmosphere that could bring out the troll of the island, if you are lucky enough to find him.



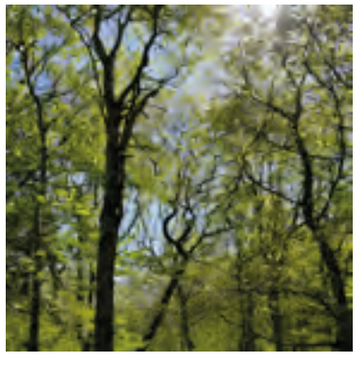
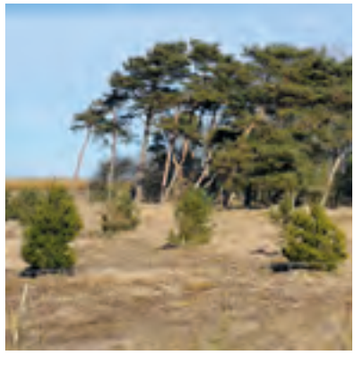











ill. 18-32
Collection of photos that are representative for the experienced qualities on Egholm.

Nature on Egholm

The Historical Landscape of Egholm

The most recent development of Egholm can be traced in the historic maps going back to the 19th century. A development that sees the island going from a mainly forested and nature dominated island to one mainly represented by agricultural fields.

The 19th Century *[1842-1899]*
The island can be divided into two over all patches of landscape. One being the natural landscape of forests and wetlands on the southern coast of the island and the rest of the island periphery. This patch is run through by the historic stream known as Laaen, a stream corridor dividing the island itself into smaller islands. The central patch on the island was, prior to this map, introduced by man with agricultural fields.

The 20th century *[1901-1971]*
The agricultural fields in this next step starts to slowly expand the introduced patch further out on the island. Furthermore a network of drainage ditches becomes more and more evident as well as the controlled infill of Laaen reducing the stream o a small line corridor in the landscape. On the northeastern coastline a permanent ferry connection across the Fjord was established around 1918 (Wikipedia, 2021).

The late 20th century *[1953-1976]*
During this period the landscape on Egholm saw dramatic changes with the agricultural patches encroaching drastically on the natural landscape of the island, overtaking it as the most dominant characteristic. The complete infill of Laaen has caused it to disappear from the landscape, forests and wetland are now more characteristic of remnant patches along the coast and an additional ferry connection at the most eastern point of the island to Aalborg has been established.

The 21st century *[1980-2001]*
Today the landscape is heavily dominated by the flat agricultural fields on the island. Interests and ambitions for the island vary from following traditional urban development with a highway connection (Vejdirektoratet(a), 2022) across the island to shifting this mindset and redeveloping the island as a nature park (Egholm Park(a), nd.).

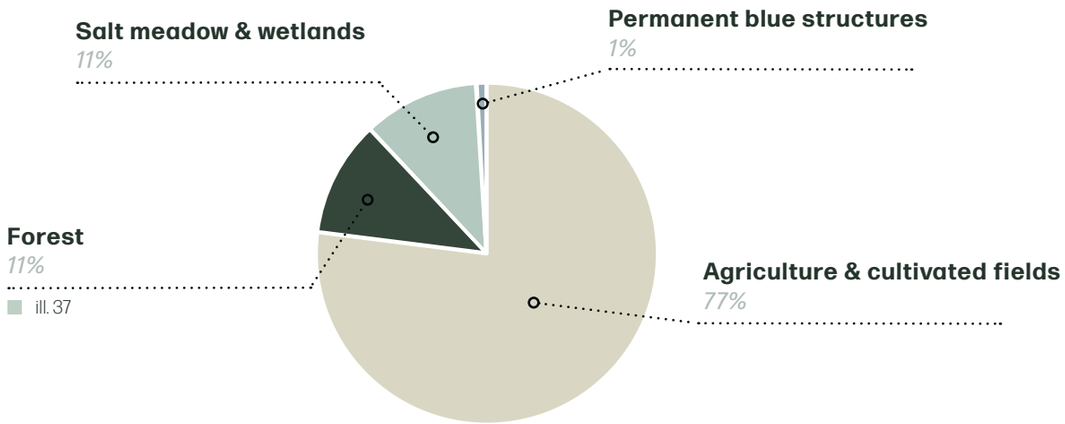
ill. 33-35
1 : 30.000
Historical maps of Egholm
When these maps are shown together it becomes clear across the maps how significant the human influence has been on the landscape.

Nature on Egholm Today

Nature is the essence of Egholm, with many different types of nature being identified on the island and protected by Danish and international legislation (See Appendix B02.b - Ecosystems on Egholm). The most characteristic types of nature, which have also been included in the screening for assigning some of the island as Nature 2000, are the salt meadows, small pastures, forests (Naturstyrelsen, Miljø- og Fødevareministeriet, 2016.). Also characteristic on the island is the many agricultural fields. The protective legislation of nature ensures initiatives to keep nature stable and protect it from harmful human interventions, especially Nature 2000 areas. The Danish Nature Protection Act, also known as §3-Nature Habitats (See Appendix B02.a - Regulatory Plans), sets some regulations such as protective borders along the coast line or around lakes and watercourses (Miljøstyrelsen, nd.).

Being an island the wind and weather can sometimes pose a challenge. South-westerly winds are most often sweeping over the island, pressing salt and saline water inland, this phenomenon along with flooding from tidal waters give the optimal conditions for the salt meadows surrounding the island. Egholms low lying terrain causes both several areas flooding during heavier rain events and also the northern coast line to be prone to flooding from sea level rise (See Appendix B04 - Microclimatic Conditions).

ill. 36



ill. 37

Biodiversity

With different types of nature comes different types of ecosystems and species within these (See Appendix B02.e - Biodiversity). Egholm is home to both rare and critically endangered wildlife and plants. The Short-eared Owl is known to visit the island as a very small national breeding population (Dansk Ornitologisk Forening(a), 2017), living off of the many common voles. Around dusk in the salt meadows north west of Statsbroen is an ideal location for spotting these small nightly hunters (Aalborg Kommune(b), nd.). Other endangered or critically endangered species found in the salt meadows on Egholm is the Natterjack Toad (Fog, 2019), which can be heard calling in the darker hours of the day in May and June or the Eurasion Wigeon (Aalborg Kommune(b), nd.), which just like the Short-eared Owl have a critically endangered national breeding population but the migratory population is steady and strong (Dansk Ornitologisk Forening(b), 2017; Sterup, 2019).

The Whitewoolly Rose is one of the old original wild Danish roses and red listed as an endangered species. It is known to be found in the grassland and pastures of Egholm, but has also been registered in a couple of other places, the total population in Denmark is estimated to be no more than a 100 plants (Wind, 2016). Another rare plant on the upper parts of the salt meadow is the Seaside Centaury (Wind, 2018), a small and light purple flower formerly used as a medical remedy, since the bitterness of the flowers meant it was left alone by grazing cattle (Aalborg Kommune(c), nd). Other plants that are characteristic for the salt meadows are Sea Thrift and Media Sandspurry and especially good for biodiversity is the Field Scabiosa.

One of the biggest challenges to biodiversity on Egholm, must be the dominance of agricultural fields (See Appendix B02.c - amount of nature types). Here, it is of great importance to mention that the active agriculture on the island is practised from ecological principles. This allows for nature to be present on the island, increases the grass fields and species diversity and prohibits the use of artificial fertilisers and pesticides (Samson, 2019; Lundsgaard, nd.). Considering the low topography of Egholm and the blue spot analysis of the island it is plausible, that the many fields on the island is what is called "low-lying soil" or fields, a type of agricultural fields that only represent seven percent of Danish agriculture, but is reversely responsible for approx. 50% of al national carbon emission stemming from agriculture (See Appendix B02.d - Conventional and Ecological Agriculture vs. Grazing). The landscape and ecosystems on the island could greatly benefit from converting these waterlogged fields to more wild nature with grazing to keep the landscape open (Nygaard, nd.).


Whitewoolly Rose [Rosa tomentosa]


Eurasion Wigeon [Mareca penelope]


Field Scabiosa [Knautia arvensis]


Sea thrift [Armeria maritima]


Short-eared Owl [Asio flammeus]


Sea thrift [Armeria maritima]


Seaside Centaury [Centaurium littorale]


Natterjack Toad [Epidalea calamita]

ill. 38-45
Species diversity on Egholm.

ill. 46

Built structures on Egholm today

Preservational value 7

Preservational value 6

Preservational value 5

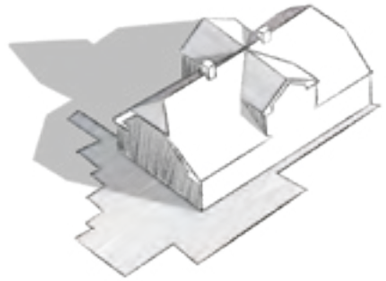
ill. 47
1 : 15.000
The structure above is extracted from the map of Egholm to show the main arterie of the built environment on the island.

The Built Environment

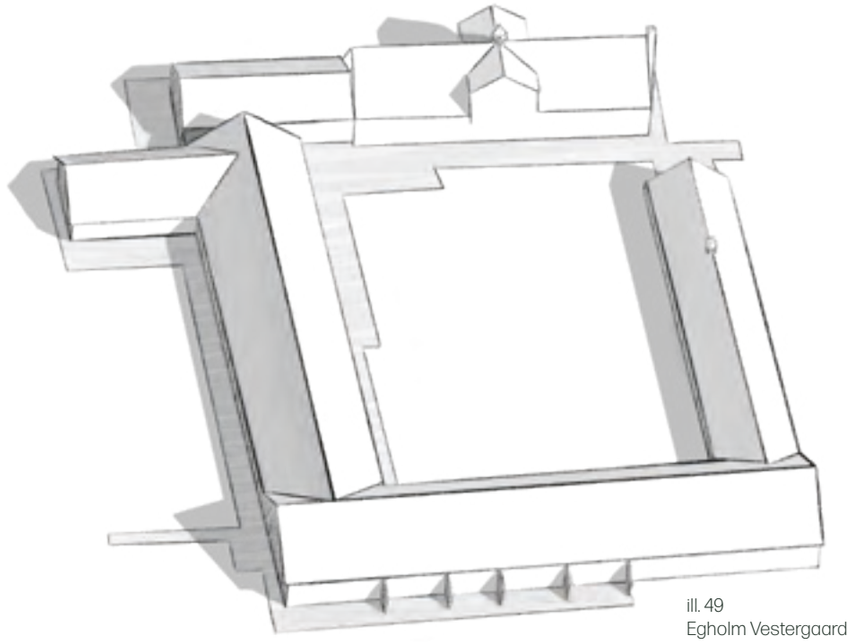
The built environment on Egholm is mainly old farmsteads to accompany the many agricultural fields and extends outwards from one central gravel road. The farmsteads are laid out as a traditional old Danish farm typology, with two to four buildings built around a square. As typology it appeared with the development of agricultural practices, the increase in machinery and new methods. The buildings showed varying characteristics for different regions. In Northern Jutland the farm house itself was detached from the other buildings around the square and the square was the centre of activities in daily life on the farm (Bygningskultur2015, 2015.).

Additionally, a few and smaller buildings stand as singular farm houses. These are characterised by their half gabled roofs, which changes the character of the buildings dramatically compared to the regular and straight shapes of the many farms on Egholm.

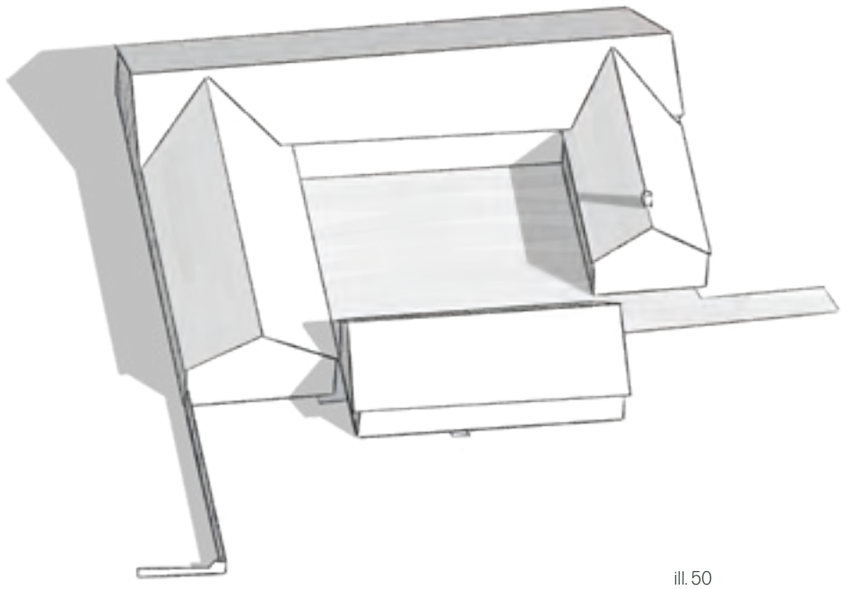
Egholm By is a small gathering of houses and farms, contributing to a historic atmosphere when walking along the road. However, several of the buildings that originate from agriculture on the island are large in volume and footprint. The village has qualities that can be developed, but the unused agricultural buildings might serve a better purpose.



ill. 48
Small homestead



ill. 49
Egholm Vestergaard



ill. 50
Toftegaard

Arriving at Egholm

Coming from the mainland across the Fjord with the ferry the built environment on the island appears first as smaller specs on the coastline against a backdrop of greenery. The buildings appear with varying characteristics. Some catch and brightly reflect the sunlight on their white facade as a warm welcome to the island, while others appear like small clusters of black individuals nestled further back in the reeds.

Within the Landscape

Walking around on the flat island the many farmsteads dotted across the island become somewhat a part of the landscape. Trees and shrubbery situated on and around the outside of the houses, stables and barns creates the illusion of patches in the landscape for the farmsteads to sit in. The white, reddish and yellowish colouring of the facades either highlights their presence in the landscape or subtle blend with the colours of the seasons in the landscape.

Egholm By

When entering Egholm By one gets immediately catched by the vibe of a small village and gets drawn back in time. When walking through the village the main road is paved with gravel, creating a peaceful vibe and forcing the few cars that enter to drive at low speed. The houses are mainly places a bit away from the road which is surrounded by trees, bushes and stretches of grass and flowerbeds where small streams of water gather.

Up Close

Coming up close to the buildings of the island the purpose for many of the buildings becomes clear. Small windows, most likely for more circulation than daylight, are evenly spread across the long sides of the buildings and large barn doors accompany them for machinery to access shelter. The once sturdy materials are now starting to crumble from disuse. Plaster is cracking and coming off the facades, windows are cracked or glass panes are entirely missing and algae are settling on the paint of the facades.
















ill. 51-65
Collection of photos to give an impression of the experience of the built environment on Egholm.

Conflicts on Egholm

The future of Egholm is a subject to much debate. With three main stakeholders, the residents of Egholm, the highway project and Egholm Park, each with widely different visions and ambitions, there is conflicting interests in the future development of Egholm (See Appendix B01 - Stakeholders).

Aalborg Municipality has established that there is a need for a third connection across Limfjorden and has gained financial funding from the Government to carry out such a project. The new connection is needed to support a continued growth of Aalborg and Denmark north of the Fjord (Aalborg Kommune, 2013; Aalborg Alliancen, nd). Currently, this new connection is located over Egholm, but the suggestion has met strong criticism from both Aalborg and Egholm residents, stating that this solution has only a few advantages. It is risking valuable nature and wildlife. The highway will disturb natural ecosystems and create noise pollution, CO_2-emissions and put more micro plastics in the air. Furthermore, it is likely that it will create an induced demand for more privately owned cars (Trafikalt Folkeparti, 2020.; Borgerbevægelsen mod en motorvej i Egholmlinjen(b), 2022.).

Egholm Park is a private initiative, by an Egholm-family, with the ambition to convert their half of the island into a nature park with a small modern eco-village (Egholm Park(b), nd.; Egholm Park(c), nd.). Visions like these are echoed and supported by the other Egholm residents (Højbjerg, 2019; Anderson, 2019). The ecological nature on Egholm, the ambition to cut the amount of agriculture back to the historic approx. 10% and reestablishing more grazing (Egholm Park(b), nd.), on the island have great potential to form a new Nature or Nature-National Park (See Appendix E02 - Nature Parks in Denmark). However, the future of a nature park and living conditions on Egholm are not promising if the highway will be realised in the future.

ill. 66
Mapping the forces of man that influences Egholm today and going into the future.

Summary

Egholm is located close to Aalborg with a ferry line that offers a rich possibility to get from one to the other during the day, resulting in many visitors to the island as well as good conditions for the residents. Egholm has a lot of natural qualities such as patches of forest and salt meadow and other potentials like the historic stream Laaen which could be restored. These natural patches as well as the Fjord provide good conditions to several endangered species of animals and vegetation. Yet, almost 80% of the island is agricultural land which, in spite of being ecological, limits the biodiversity as well as being unattractive nature which is a shame considering the possibility for the island to be a pearl of nature in the middle of the Fjord.

The island has been activated with a network of trails as well as the installation of the troll, "Pil Tusindtunge", in the forest central on Egholm. The experience of the trails are monotonous due to the fact that the surroundings are not changing during the trips. Also, all the trails use the main road which is a gravel road that leads from Egholm By to the ferry landing, leading one through uninspiring fields most of the way.

Due to its low terrain there is a flooding risk surrounding almost the entire island, especially the northern half. This in spite of the fact that the island has a dike all the way around which therefore might need to be renewed or other initiatives has to be taken if the areas should be accessible.

The built environment on Egholm mostly consists of older, traditional or agricultural buildings without much value. The northern half of Egholm By is dominated by vacated, large-scale agricultural buildings owned by Egholm Park where a new village development could take place.

Analysis summary

ill. 67
Mapping of Egholm summarising the conclusions and focus points from the analysis.

Main road
Forest
Pastures
Salt meadow & wetland
Potential blue structures
Agriculture
Risk of flooding

0m 200m 500m

03

ill. 68
Cattle grazing on Egholm and relaxing under the beaming sun.

Strategic Development on Egholm

ill. 69

Concept

Vision

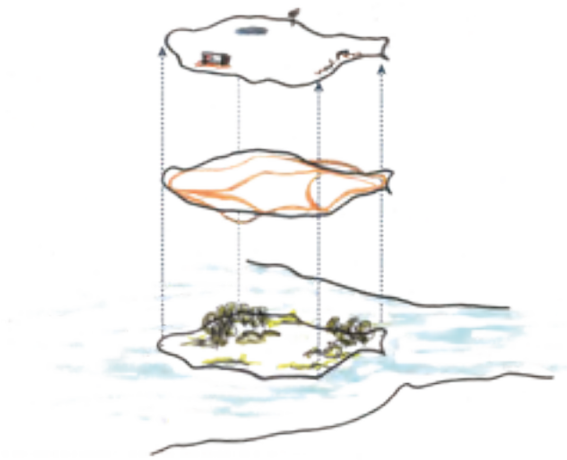
The vision of this project is to stage an example of how to re-balance the human and nature relationship into one of symbiosis. By placing value on the potentials of the existing places, landscape and facilities to strengthen and multiply the opportunities to interact with nature this plants the seeds for a new, greener way to develop with nature in mind.

The design of Egholm considers and respects nature while it offers a range of experiences for visitors, residents and urban dwellers in order to bring human and nature closer.

The aim is to develop the island two-sided as a natural landscape as it once was, offering rich experiences for visitors and setting the framework for an alternative way of creating human dwelling. Here, the relationship between human and nature have been reprioritised to put nature first in developing settlements going into the 21st century.

Problem Statement

“How can Egholms’ potentials be developed to enhance its’ original, natural qualities and exemplify a reprioritisation in urban development, where a varying landscape, peaceful refuge and human dwelling intertwine in a balanced relationship?”

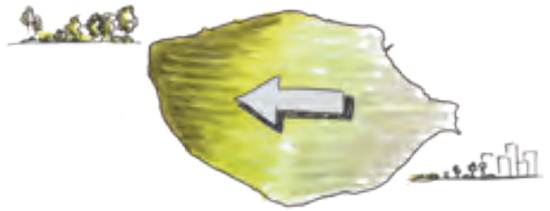


Design Principles

Layering

To better approach the development of this project a layering concept has been used in order to prioritise the different elements to the project. Firstly, as a backbone to the project nature is laid out across the island, and only hereafter trails, paths and activities are placed with respect to this.

ill. 70



Graduation

To design for as many as possible a principle of graduating the initiatives from east to west across the island has been adopted. This principle ensures that there will be something, activities or long views, for everyone and placed where different users will appreciate them.

ill. 71

Built Corridor

Maintaining and developing the built environment on the island within and from the existing built corridor helps minimise further impact and loss of nature on the island from human involvement.

ill. 72

For Whom?

Visitors

The visitors to the island can be divided into two categories (See Appendix B01.d - Meeting with Nature Guide). These categories are for instance nature enthusiasts and citizens seeking refuge and a break from the business of Aalborg . The enthusiasts might bring binoculars and trek around the entire island in order to appreciate the open landscape and hope to catch a glimpse of the uncommon and rarer birds of the island. Whereas the citizens are asumed to use the island as a refuge, perhaps more often for shorter treks just to create a break from the everyday routines of city life.

Consequently it can be said that the types of visitors creates a graduation across the island regarding both appreciation for nature and wildlife as well as in the way installations and activities are implemented and to what degree.

Residents

The intention with a new alternative urban development on Egholm is to attract a diverse range of residents. These new residents are first and foremost drawn to the opportunity to live close to nature while also benefiting from the many cultural and spare time activities the city offers. The values of new residents are focused around social awareness and responsibilities both for fellow citizens and environmental sustainability and awareness. These values are to some extent similar to those of the community-oriented and modern community-oriented segment, as presented in the Gallop Compass. Across these segments the predominant age-range is 20-69 years old, a good range in educational background and there is a widespread interest in ecology, the environment and social commitments within the society. (Kantar Gallup, nd.).

The intended new residents on Egholm will be a diverse group of social statuses and life situations which will mix and could potentially benefit from one another in a community. In other words, they are seeking to find an alternative way of living, to the present urban way of life, that is more in line with their key values.

Design Actions

Extending the Salt Meadows

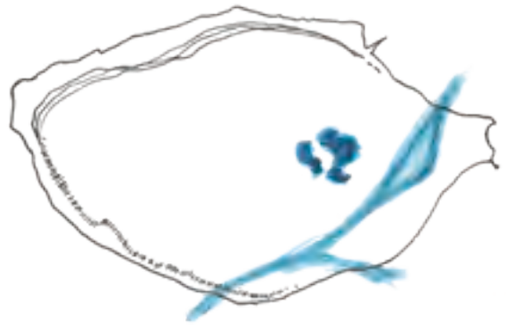
Extending the narrow salt meadows on Egholm will bring about more of the characteristic coastal landscape to Egholm and open up for the full potential of multiple zones across the salt meadows.

ill. 73

Connecting Forest patches

By connecting forest patches across the island the connectivity increases and allows for more flow of wildlife and sheltered walking experiences across the island.

ill. 74



Design with Water

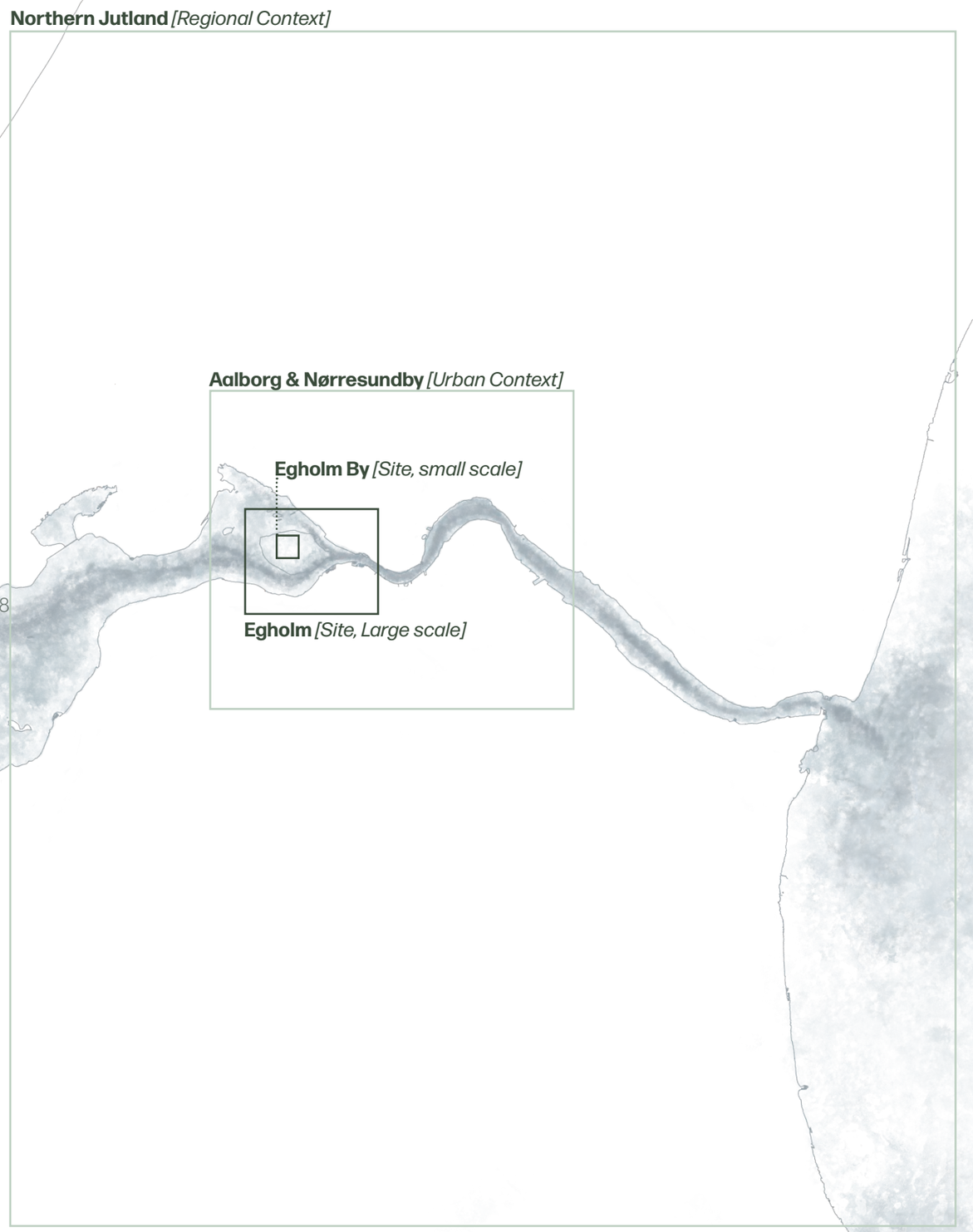
As an island, water is tied to the identity of Egholm. Designing with it allows for historical traces to be reestablished, such as Laaen, creating new experiences and atmospheres on the island with boardwalks and lakes for surface run-off but also to protect the island from it.

ill. 75

Village Development

With the principles in mind, a village development on the island can showcase an alternative way of living that is more in sync and balance with nature. This also ensures future interest in the island.

ill. 76



ill. 77
The physical outcome of the multi-scale approach within this project

Multi-scaled Approach

From the theoretical framework there has been an emphasis on the need to understand a given landscape site within different contexts as it continuously and simultaneously will interact with networks at different scales (Ahern, 2007). Based on this the previous analysis has been focused on understanding Egholm in a regional, urban and district context (See ill. 77). This multi-scalar approach and the suggestion to take on a strategic approach (Ahern, 2007) has greatly influenced the design development of this project and is evident in both the design principles and actions on the previous pages.

Overall an offensive combined with an opportunistic approach have been the main strategy to this project. These strategic approaches play off of the existing potentials on Egholm and develop the green infrastructure and island from that perspective.

With great potentials and existing awareness to the qualities of nature on Egholm today the offensive strategy says to expand on these green infrastructures on the island, especially with stakeholders that are interested in developing such an approach, such as Egholm Park. The principles of putting nature first by layering and actions regarding the expansion of the biosphere, e.g. salt meadows, forests and water, on Egholm are enabling this strategy in the development of the project. Secondly, one of the main stakeholders, Egholm Park, shows interest in developing an alternative modern village. This is where the opportunistic approach meets with utopian and multi scalar thinking. By allowing the built corridor into the nature park and assigning an area within to establish a new village development, a need arises to ensure that the village development happens in compliance with the offensive strategy applied to the larger scale landscape.

Therefore, the project has been developed through an iterative design process going back and forth in design development between island and village scale to ensure that principles and action worked for designing in both scales. As a result, a design proposal has been developed for both the strategic island scale and for the village development. However, the multi-scalar approach has to some extent hampered the detailed development to a level of principles and intentions.

04

ill. 78
A small viewing platform for spotting birds nestled in the many reeds of the salt meadows on Egholm today.

Egholm Naturpark

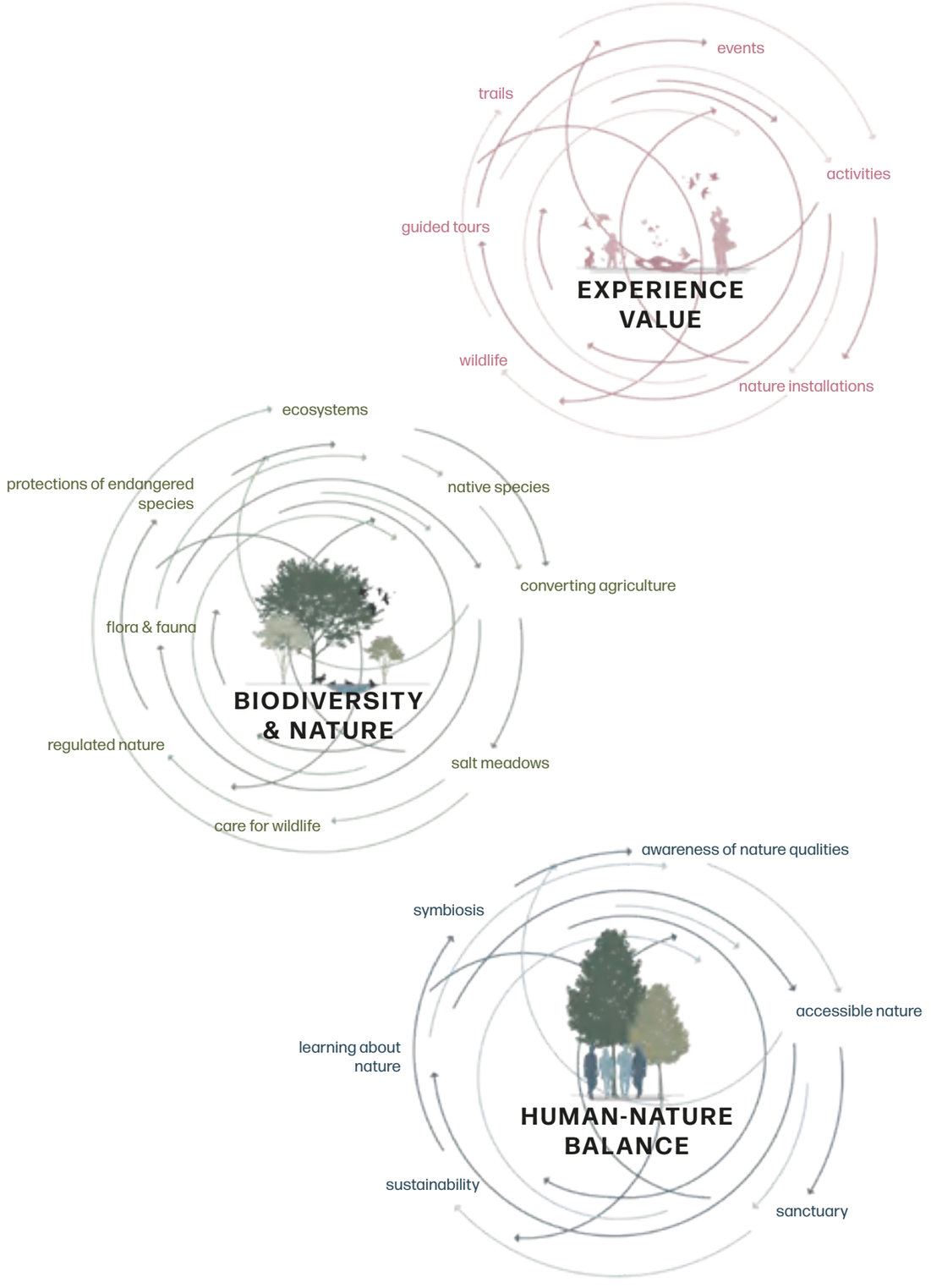
Envisioning Egholm Naturpark

Egholm Naturpark is a result of the ambitions to prioritise and utilise nature on Egholm as well as bring back the historical landscape and natural structures to the island. This vision is shared with the major stakeholder of the land of Egholm, Egholm Park. The nature park is just one of several types of parks in Danish regulations (See Appendix E02, Nature Parks in Denmark), where the nature park is a park that needs to be appointed by the Danish Outdoor Recreation Federation and mostly consists of protected nature types and areas with a local or regional importance. This type of park is not regulated by additional laws and is managed and maintained by local landowners.

In the development of Egholm Naturpark three main focus areas have had an essential role; Biodiversity & nature, Human-nature balance and experience value. The overall vision with these three focus areas is in line with the problem statement and vision of the entire project, where a rebalanced relationship between human and nature are strived for in order to create a better and greener future. Therefore, the nature park works with extension of the existing nature types that are found on Egholm which are proven to provide good conditions for biodiversity and the various animals and vegetation species found on the island. The strategic development plan of Egholm Naturpark expands the nature of Egholm by converting all of the agricultural fields into salt meadows, forests and pastures interwoven with a suggested village development, called Øbyen. Furthermore the plan also allows for more built development, should the need arise.

By expanding the existing salt meadows new and rich experiences are unfolded along with the potential of the ecosystems. The forest patches have been connected to create new trails across the island with different atmospheres and activities. Laaen, the reestablished historical stream, will contribute to plenty more and a new kind of biodiversity on the island as well as new experiences.

Egholm Naturpark strives to create a nature-based sanctuary in the immediate vicinity of the city, where visitors and citizens can come and relax within nature and experience the calmness that such can bring. The experience value has been an important focus in order to make Egholm a place worth visiting with elements that compliments and strengthens nature and the awareness of its values. The design is made from a layering principle, where trails and installations are placed carefully within nature, and therefore compliments it on the natures premises instead of forcing its way in. The installations are graduated according to the expected visitors across the island. (See Appendix C - Design process).



ill. 79
Diagrams showing the complexity and many aspects that influences the focus points of the strategic development.

Egholm Naturpark

Strategic Development Plan

Egholm Naturpark offers an array of different experiences to all of the senses. A walk along the coast with a brisk breeze through the hair and the smell of salt from the sea. The forest canopy shelters from wind and rain on the harsher Danish days or shades the sun rays penetrating the leaves in lush green colours, creating an almost magical world, where those imaginative enough will find Egholms very own troll. Wildlife and everyday life intertwines in a new found balance with respect for one another.

A separate drawing of the Strategic plan can be found in the back of the report.

Nørresti
[Northern Trail]

"Sibirien"

Statsbroen

Øbyen
Newly developed village, pp. 94

Kærlighedstien
[Lovers Path]

Troldesti
[The Troll Path]

Nørredyb

Western View Point

Laaen Ruten
[Laaen Path]

Genvejen
[The Shortcut]

Skovstien
[The Forest Trail]

Søndersti
[Southern Trail]

Laaen

Egholm Hage

Sønderdyb

Strategic Development Plan
1 : 15.000

- Dike
- Forests
- Pastures
- Salt Meadows
- Boardwalks
- Øbyen
- Urban Development
- Lakes
- Laaen

ill. 80

Forest
The foresst on the island creates variation, shelter and shade for wildlife and visitors. Shelters, campsites and playgrounds appear when exploring the forests.

Pastures
The open flat landscape that settles around the forests offers grazing for animals that replaces the many cultivated fields and changes colour and appearance with the seasons.

Dike
A new dike is a precautionary measure to protect the island from the rising sea levels of the future, which would otherwise swallow most of the northern coastline.

Lakes
The lakes are formed where surface water and rainwater naturally pool to create a rich new patch in the landscape while also offering an opportunity for swimming.

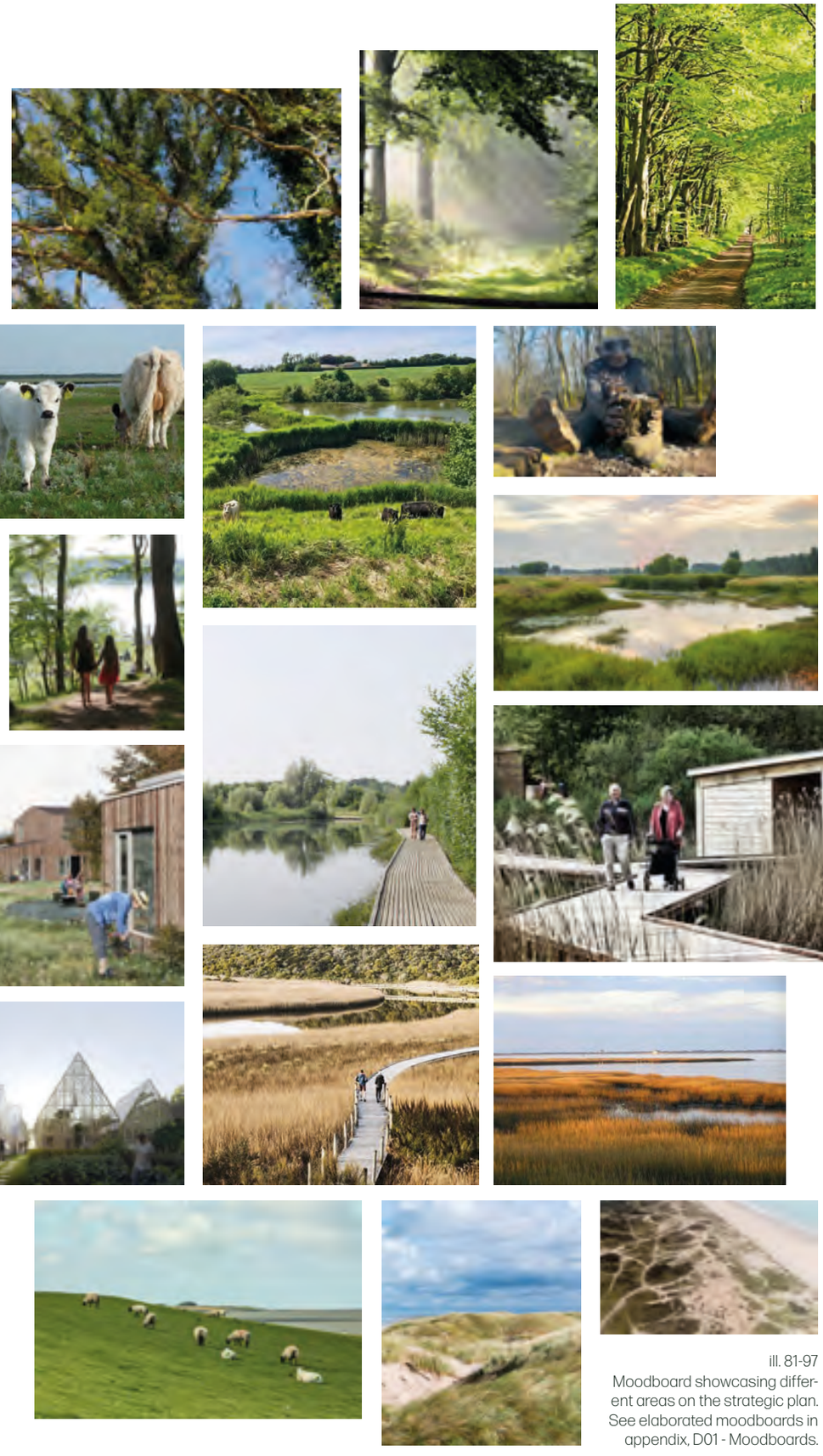
Lagen
The reestablished stream Laaen takes the experience of the island back to a historic reference as well as adding plenty of opportunities for more biodiversity to develop.

Village
A small extension of the existing village will be able to show an alternative way of living in balance with nature and create new interests on the island.

Salt Meadows
By converting the island into a nature park, the island's characteristic salt meadows can be expanded to better accompany the biodiversity of the different zones of the salt meadows.

Boardwalks
Wandering and raised boardwalks ensures that nature is also accessible in wet conditions and fits subtly into the landscape..

Trails
The trails around the island have been reshaped with the new landscape and are now meandering across the ecosystems of the island and creats varied experiences ranging from close contact to the water and views of Aalborg to sheltered forest trails.



ill. 81-97
Moodboard showcasing different areas on the strategic plan. See elaborated moodboards in appendix, D01 - Moodboards.

ill. 98

The trail along the southern coast of Egholm reaches out towards Limfjorden with a platform where great views towards the Aalborg-Nørresundby skyline appear. Here, visitors get just a little bit closer to the many birds of the sandbars and the lazy sound of Limfjorden washing up against Egholm quietly rises from underneath the platform. Activities and life on and in the water becomes the focus point along this stretch of trail.

Activities

New activities are implemented to a varying degree across the island to complement both expected visitors and the existing activities. Closest to the city, installations and activities are found closer together and carries the influence of being on the more urban side of the island. Here shelters, nature playgrounds, monoculars, information stands and a potential visitor centre greets the visitor. On the western side of the island, in the protected nature, the activities and installations are spaced out less frequently to be less invasive yet still offer education and opportunities to experience and stay overnight in nature.

Aalborg Municipality recently acquired the Egholm Gamle Skole [the Old School on Egholm], and would like to develop this location into a small visitor centre or school camp with a focus on biodiversity and nature on Egholm (See Appendix B01.d, meeting with Nature Guide). The school camp would primarily be oriented towards the younger school audience for overnight stays and experience nature and encounter wildlife. Should the need arise, another separate addition to the visitor centre could be located by the ferry landing to catch and educate more visitors.

Activities on Egholm

- New Village
- Bonfire and Camp
- Information
- Monoculars
- Nature Playground
- Shelters
- Stepping Stones
- Swimming
- Trails
- Visitors Centre
- Benches and Rest

ill. 99
1 : 15.000
Map of new activities on Egholm with the new strategic development plan for Egholm in the context of exisiting activities.

ill. 100

Swimming

The new lakes formed on the island to help with surface runoff during heavier rain events are also open for swimming. However, there are no specific installations to pin-point a location. Rather the intention is that swimming occurs where the banks of the lakes naturally allow it.

ill. 101

Shelters

Both old and new shelters are placed across the island to allow for overnight stays under the vast expanse of the starlit sky within the landscape.

ill. 102

Nature Playgrounds

Nature playgrounds are made from natural materials and placed within nature. Often laid out as an obstacle course or jungle gyms, these are intended for the younger audience visiting Egholm and are good for both a physical challenge and enhancing motor and coordination skills.

ill. 103

Monoculars

One of the main attractions of Egholm is the rich birdlife visiting the sandbars and shallow waters surrounding the island. By placing a few monoculars around the island, watching birds becomes more accessible for those visiting Egholm. Furthermore, the monoculars can be strategically placed to also allow for finding landmarks in the Aalborg and Nørresundby skyline.

ill. 104

Boardwalk & Trails

The previous trails have been adjusted to better suit the new landscape in Egholm Naturpark and a few new detours have been added. The trails are meandering across the landscape through different ecosystems to create a multifaceted experience of walking on Egholm. In ecosystems prone to flooding, sensitive and weaving boardwalks extend the trails.

ill. 105

Village

The new village development on the edge of Egholm By has created a new focal point with many different opportunities for the resident community. A small farm shop at the community centre and collaborative events encourage a buzzing atmosphere for both visitors to the shop and events and residents alike.

ill. 106

Stepping Stones

Similar to the nature playgrounds the stepping stones across Laaen, are oriented to the younger audience. Kids can invent games themselves jumping from stone to stone or use the stones to get a closer look at or interact with the water ecosystems of the island.

ill. 107

Benches and Rest

Spread out evenly along the trails and boardwalks are small pockets for rest, with a few benches facing a view of the different landscapes. Here, there is room for a rest of tired feet or to sit back and enjoy the sun's warming rays on the face or let thoughts wander with the eyes across the landscape.

ill. 108
A conceptual cross section through the nature, illustrating the development of the nature through the seasons.

Seasons

Being in a northern, temperate climate the seasons are quite explicit and come and go with many changes to the environment in both flora and fauna composition. In spring the flora changes dramatically, as new colours and smells ripples across the landscape and come summer, generally a deeper green has settled and there is a spike in insects and pollinators. Fall comes around with another dramatic change in colour to warm reds, yellows, oranges and browns and the deciduous trees lose their leaves. Over fall and winter another change comes with the many migratory birds that stay on the island over winter and most trees are standing tall but bare. Only the evergreen adds colour to the landscape.

Extended Biodiversity on Egholm

With some of the island assigned as a valuable Nature 2000 bird and habitat area working with the nature and biodiversity on the island becomes very important.What further pushes the importance of this and working carefully and sensitively with it, is that the area for the suggested urban development on the island, aligns with the edges of the Nature 2000 protected nature. Therefore two strategies have been applied in working with nature on Egholm: One for the bigger scale in the planning of the overall strategy for the island and another, just as sensitive, in the suggested development of Øbyen.

Overall the focus has been to restore and reestablish a plentiful biodiversity. On the island scale this was sought to be achieved through reestablishing the historical landscape on the island with more lush forest, the historic Laaen and extending especially the narrow salt meadows inwards. The intended implementation of tools were replantning local and natives trees to connect the fragmented forest patches on the island, and allow for the eco-agricultural fields to be converted to salt meadows and pastures with seed mixtures and the rare, native flowering plants in order to give pollinators and other wildlife more access to food sources.

The main concept behind working with nature in the village was to create a way of living that is in balance with nature, which meant that the main structures of the village had been determined by the nature laid out in the strategic plan intertwining nature and human habitation. The nature was laid out to allow for as many passages for the wildlife in the village development as possible, allowing for a new kind of nature awareness, as the new residents will live with the local fauna in their "back-forest". Furthermore, the area of private gardens has been reduced to a minimum to allow for as much wild growing grasses and local, native nature to infiltrate the masterplan and communities as possible. The intention for the nature intertwined in the masterplan was to keep it as low-maintenance and without interventions as possible, meaning that e.g. the deadwood and debris in the forest is to be left alone for the smaller, more unseen wildlife of the ecosystems (General Directorate for Environment, 2011).

These initiatives fall in line with some of the targets in a new Nature Restoration Plan by the European Commission, as a part of the Biodiversity Strategy 2030. The main focus and aim of this strategy, is to reverse the degradation and loss of biodiversity and ecosystems in Europe by 2030 (European Commission(a), nd.). Five of the ten targets within the EU Nature Restoration Plan are to a varying degree worked towards in this new planning of Egholm. Ranging from general nature restoration, ensuring forest quality, health and resilience to rewilding agricultural land, greening peri-urban landscape and reestablishing more water ecosystems. (European Commission(b), nd.).

Trees

Black Alder
Alnus glutinosa

Common Beech
Fagus sylvatica

Common Oak
Quercus robur

European White Birch
Betula pendula

Norway Maple
Acer Platanoides

Scots Pine
Pinus sylvestri

The selections of trees shown above is a suggestion for some of the afforestation on the strategic development plan. The trees are native species, already found on Egholm. The variation in trees are due to the wet soil conditions found on the island and to make sure there are both deciduous and evergreen, fast and slow growing trees in the mix and some that offer food sources for the wildlife on the island.

Bushes

Blackthorn
Prunus spinosa

Canadian Serviceberry
Amelanchier canadensis

Elderberry
Sambucus nigra

European Spindle-tree
Euonymus europaeus

Sea Buckthorn
Hippophae rhamnoides

White Willow
Salix alba 'Sibirica'

To create a softer transition between forest and open grassland a suggestion for bushes have been made and are presented above. These are likewise native species to Danish flora and present on Egholm. These have been chosen with salty, windy and wet conditions in mind. Furthermore, it has been important to create colourful pops of interest in the landscape as well as make sure that the bushes supply food for wildlife and support biodiversity.

Perennials

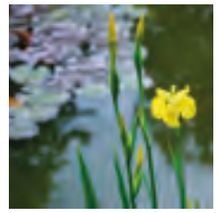
Common Scurvygrass
Cochlearia officinalis

Field Scabiosa
Knautia arvensis

Joe Pye Weed
Eupatorium macalatum

Seaside Centaury
Centaurium littorale

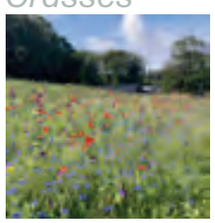
Sea Thrift
Armeria maritima



Yellow Flag
Iris Pseudacorus

The perennials are mostly flowering plants that will create interest in the landscape and are used to support the biodiversity in an insect and pollinator scale. The plants shown above are either already characteristic to Egholm or are known to attract many insects for pollination. The plants will be more frequent in relation to the built environment on the island than the open landscape.

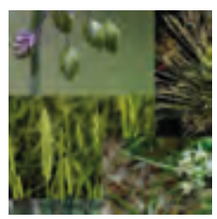
Grasses



Danish Wildflowers
19 species

Danish Meadow
28 species

Ecological Fields
All-round for Open fields



Ornamental grasses
9 species

Salt tolerant flowers
18 species

Year-round deer mix
11 species

On the fields converted to pastures an array of different grass and flower mixes can be spread to increase biodiversity and ensure a wide range of food sources and cover for the smaller wildlife. The mixes presented above is a suggestion that keeps with the salty conditions, an ecological approach on the island as well plenty of flowers mixed in with the grasses to benefit the pollinators.

ill. 109-132

ill. 133

The Micro-biodiversity of Laaen

Adding water to the landscape is an easy way to ensure more biodiversity, as water is essential to all life. By reestablishing Laaen to a size where it becomes a stream corridor, it allows for a new ecosystem to develop within the stream itself. This increases the general biodiversity on the island, as the stream previously was filled in. Presumably, the water in Laaen would be of brackish character with a mixture of salt water from the fjord, groundwater welling up from the ground and water draining from the surrounding pastures.

ill. 134

Forests

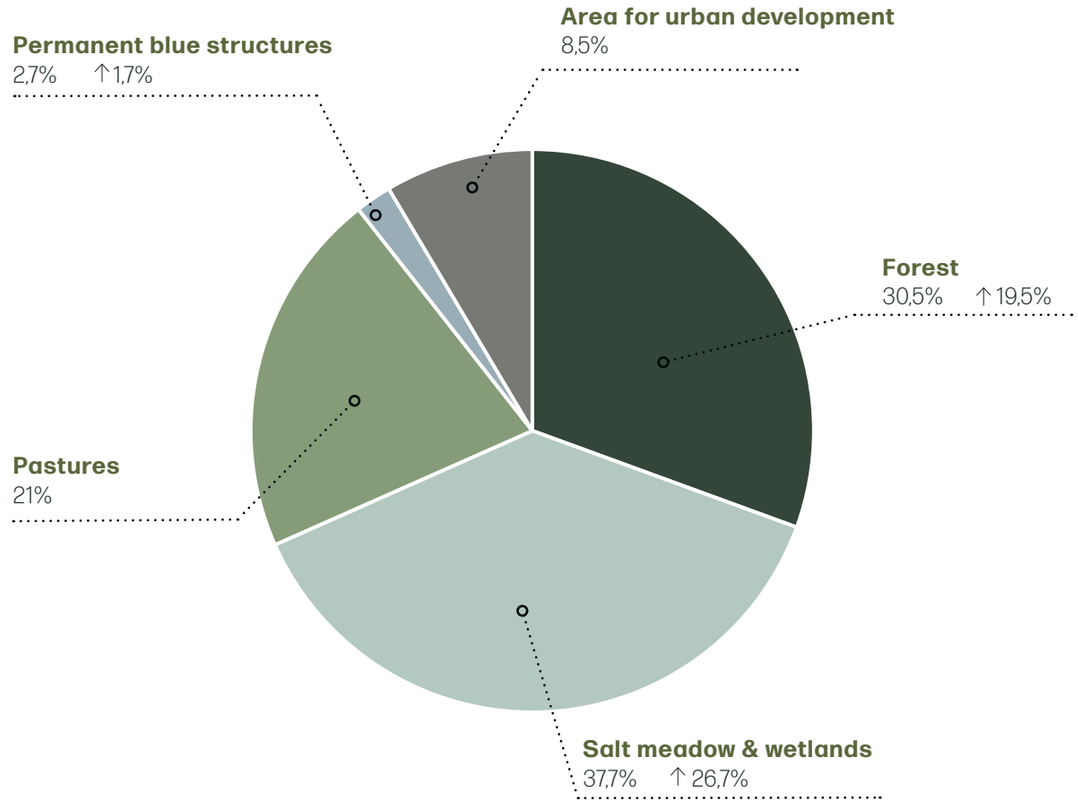
The trails in the forests are like small tunnels under the dense canopy, where chipped bark crunches under one's foot when walking. Wildlife darts around the forests in multiple layers. Some to be seen while others are more elusive and are heard as a rustle of leaves, a chirping filtering down from the canopy or the quiet snap of a twig on the forest floor.

The main focus has been to create afforestation similar to the already existing forests by implementing local native species in a mix of fast and slow growing trees. The fast growing trees like scots pine and white willow would act as nursing trees that shelter the slower growing trees from the harsh winds.

Summarising Egholm Nature Park

The strategic design proposal for Egholm Naturpark sets an example for how to reestablish a landscape matrix that also responds to the tendencies of the larger surrounding green network. It establishes rich nature based on the strongest existing qualities, the salt meadows, pastures and forests, and expands on those. The suggested built development is the seed to rebalancing the human-nature relationship, as residents live within nature. To ensure that a built human development does not fragment the suggested landscape in Egholm Naturpark it is of utmost importance that the developments on the island are guided by the same 'nature first' principles applied in the larger scale.

Forest:	1.83km2
Salt meadow & wetlands	2,26km2
Pastures:	1,26km2
Two new lakes:	0,09km2
Laaen:	0,04km2
Area for urban development:	0,51km2
Paths:	
Nørresti	9,4km
Troldesti	9,15km
Genvejen	6,7km
Skovstien	5,3km
Laaenruten	2,5km



ill. 135
The new strategic development summarised by the amount of different nature types compared to the already existing amount.

05

Developing Øbyen

ill. 136
An aerial photograph of Eghom By as it is today. The site for the development of Øbyen is marked on the photo.
Photo by Steen Lee Christensen, Aalborg Luftfoto

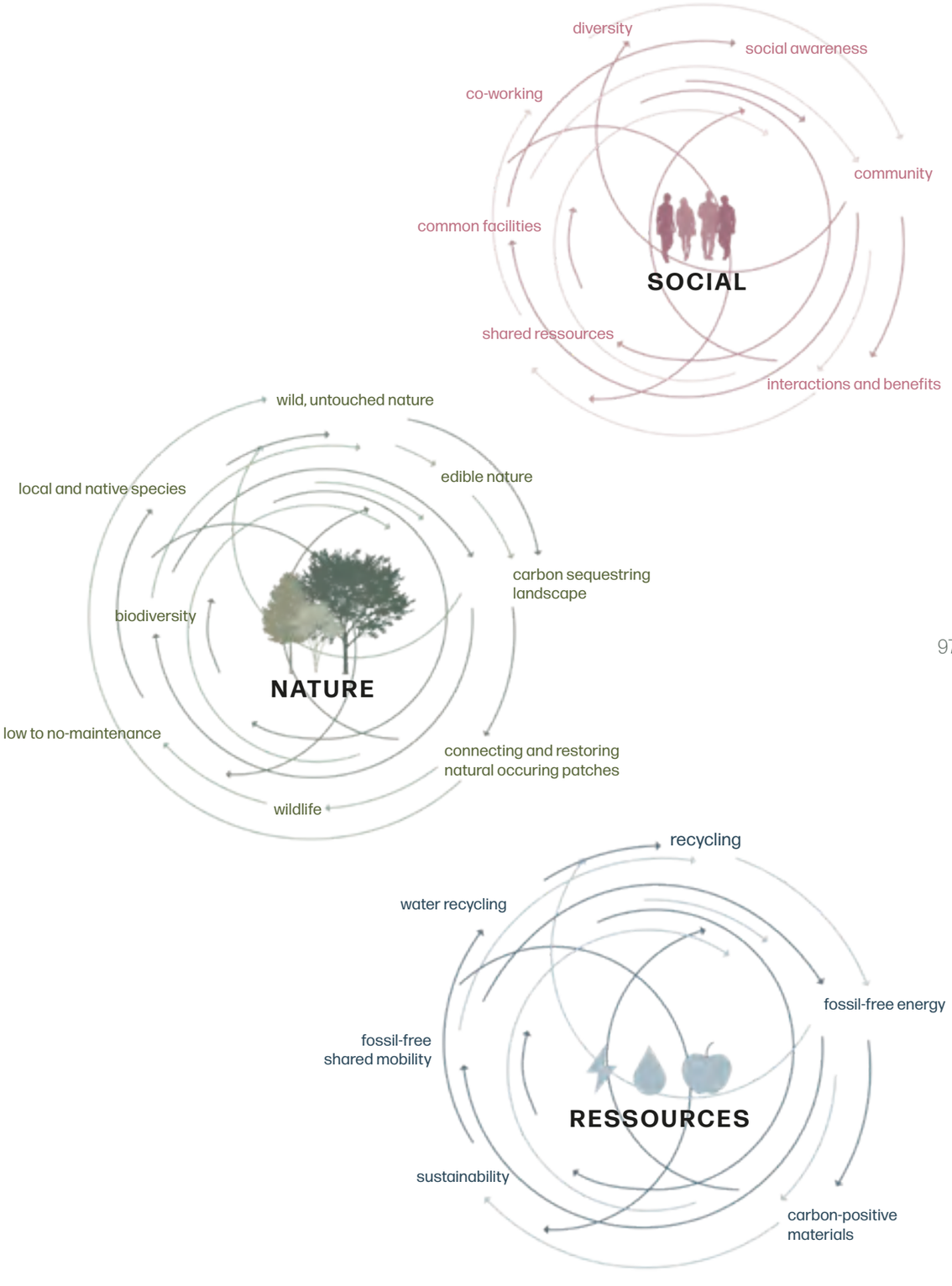
Envisioning Øbyen

Øbyen is an example of modern, alternative development of cities where sustainability, environmental as well as social, are in focus. In the creation of Øbyen three focus areas have been a central part of the development; Social, Nature and Resources. In order to reestablish a balanced human-nature relationship, nature has been central in the general development of the masterplan and the overall composition of buildings and the surroundings. In Øbyen nature and building melt together in a relationship where the closeness of nature should not only reestablish a respect of nature, but also bring several qualities to life in Øbyen.

A core value and focus area in the development of Øbyen has been the social sustainability and the creation of a society that offers a variety of social activities, connections and interactions. Therefore, the masterplan of the village is built around a centre, or a heart, containing the so-called Community cluster where several common facilities are placed. Since the island is more or less isolated, with only the ferry line to connect to main land, the society in Øbyen has the potential of being unique and alternative as well as a suggestion on how to create a tight-knit community in newly built areas in order to minimise loneliness in urban environments.

In line with the reestablished relation to nature, the project works with resources in an aim for a circular system where recycling and low-consumption are central in order to create an environmentally sustainable village. The village is furthermore based on shared resources, such as shared, fossil-free mobility and initiatives such as communal eating, child care etc..
The choice of materials in Øbyen are based on sustainable, natural and carbon-positive materials, resulting in all built structures being in wood except the community cluster in the centre of the masterplan. Also fossil-free energy is a topic which is important, where energy sources such as sun and wind energy should be investigated further in the development of the project.

The placement of Øbyen is a result of the central stakeholder, Egholm Park, who owns the land and has a vision of developing a new residential area on Egholm. The location is optimal due to terrain, being one of the highest points of the island, resulting in no immediate risk of flooding. The site has formerly been a large farm with large-scaled buildings that has been out of use for a while. These structures have been removed to develop Øbyen, but materials that can be recycled such as bricks, wood etc. should be used wherever it makes sense in line with the vision of Øbyen as a sustainable village.



ill. 137
Diagrams showing the different focus areas that has been a part of the development of Øbyen and their complexity and interrelations.

ill. 138
1 : 1.500

Masterplan

By intertwining village and nature, the changing of seasons ,colours, smells and tastes becomes the frame around life in the village enabling a reconnection between humans and nature. A life where a single step outside the front door leads to leaves rustling in the wind, a deep breath of fresh air that carries the scent of spring's new flowers and when quiet, wild animals cautiously reveal themselves and their otherwise hidden ways of life.

A separate drawing of the masterplan can be found in the back of the report.

In summer, when the trees are heavy with a lush and deep green canopy it is almost magical to take a stroll along the winding forest trails weaving in and out amongst the clusters of Øbyen. Bird song, children laughing and thuds from kicking a ball back and forth filter through the air accompanied perhaps by a subtle rustle of the leaves over head, either from a bird or a mild breeze. Living in Øbyen becomes like living directly within and on the premises of nature, but with the comforts of modern living.

ill. 139

Characteristics of Nature

In Øbyen there are three characteristics to the nature intertwined with the village: one type of patch and two types of corridors. The patches are the small clearings in between the clusters of the masterplan where the vegetation is thinning out. Here, nature is receding and bears the mark of a strong human influence and activities in these patches, such as picnics or children playing ball and is primarily characterised by different kinds of grasses that are kept somewhat under control by occasional mowing. The first type of corridor is the main paths that act as the primary circulation system in Øbyen. These are a mix between human influence and nature. The paths are paving the way for easy human circulation but are enveloped in relatable nature that services both humans and wildlife. The second type of corridor is the forest trails that connect the village to the larger network of forest patches and experiences across the island. Here, nature is the most present while humans are to take a step back and appreciate nature.

ill. 140
The Clearings

ill. 141
The Main Paths

ill. 142
The Forest Trails

ill. 143
A conceptual crposs section of the main paths

Main paths

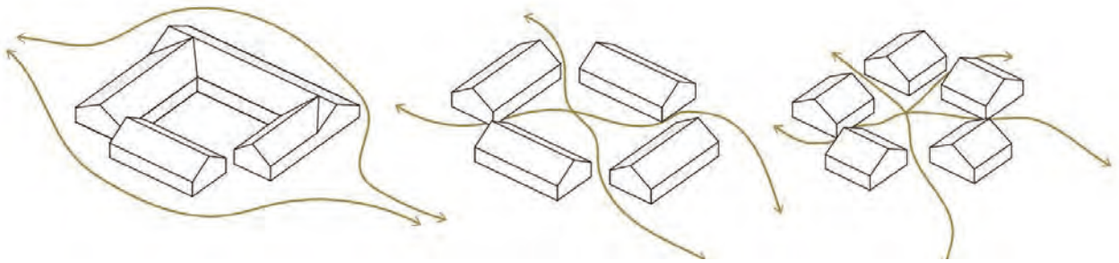
The two layers of vegetation along the main paths the canopy and the ground cover are both planted after the same principle. That being the vegetation is tallest around the path and levelling down towards the houses on either side of the paths. Secondly, there is a principle of density in the vegetation, that it is the most dense around the path to create privacy and more openness closer to the houses to create longer views into the landscape (See Appendix C04.g - Meeting the Nature).

Furthermore, the trees, grasses and bushes are selected to create variation, interesting colours and some edible features to the vegetation. These are another influence and choice that balances the relationship between human and nature and slightly pushes it in favour of the human experience of nature.

Development of Øbyen

Typology

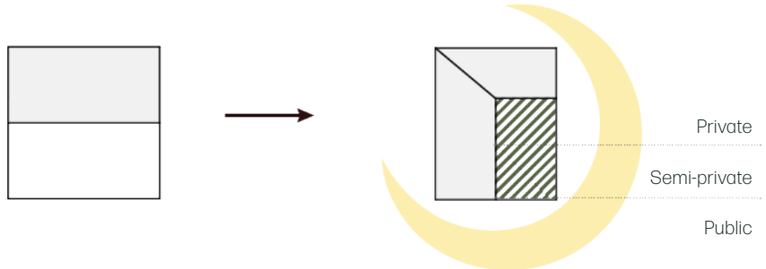
The clusters that make up the masterplan have been formed with inspiration from the old "buildings around a square"-typology found on Egholm today. The clusters have the same principles but in a more modern form with room for more varied flow through the cluster than the traditional closed shape (See elaborated design process in Appendix C04, Detailing Øbyen).



ill. 144

Orientation and privacy

To create private courtyards for the housing units the plan solution of the houses has been transformed to an L-shape, creating a private yard for each house where the building actively embraces and shelters the private area outside the house. This outdoor area graduates from most private in the inner corner of the L to more public when creating distance to the building where the house either meets a courtyard or the landscape. All buildings are furthermore oriented according to the sun, resulting in all houses orienting the outdoor area either towards south-east or south-west.



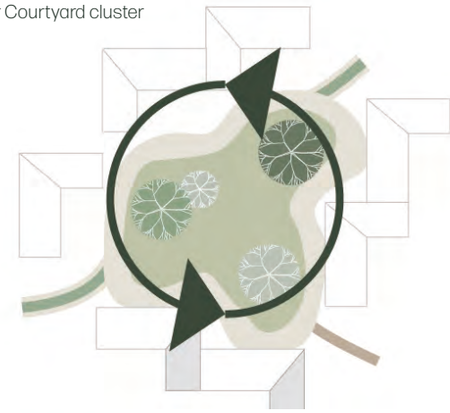
ill. 145

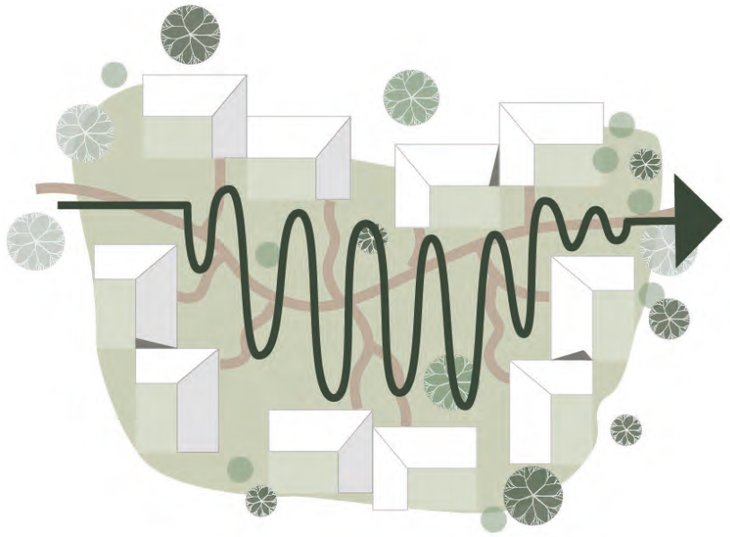
Courtyard and Landscape clusters

The masterplan consists of several individual clusters, all creating smaller more local societies within the larger village. The clusters are divided into two types; Courtyard clusters and Landscape clusters. The two types have been developed through thorough studies in physical models, investigating spatialities, relations, distances as well as their placement in the landscape and context in order to create the best possible constellation of the clusters

Principle for Courtyard cluster

ill. 146





Principle for Landscape cluster

ill. 147

Clusters

To create a diverse community in Øbyen the clusters are suggested to consist of a mix between different types of ownership. A smaller part of the housing units can be assigned as student housing and have two units within a single building. Additionally the rest of the houses would consist of a mix between social housing rental units and privately owned houses.

The clusters are divided among the masterplan by a principle of placing the Courtyard clusters near the active, social centre and the landscape clusters more peripherally close by the surrounding nature. In spite of the two different principles behind the clusters, the housing units are the same in both. The housing unit is 125m^2 and therefore relatively small for a family house. This is to encourage the residents to use the shared facilities and nature as the spare room. The aim is to challenge the perception that to live a good life, the regular family needs every facility within their own four walls and to exemplify how the extra bedroom, the office etc. can be facilitated elsewhere in order to save space. Furthermore, the need to venture out into the community for these facilities has the potential to establish a strong social environment.

As a part of the development of Øbyen a new local development plan would have to be prepared. This would regulate what is fixed from the development of the project, such as plots, functions of the different areas of the masterplan and the materials of the houses. The intention is that both facades and roofs of the houses are made from sustainably sourced wood. On the roofs solar cells might be added in order to create fossil-free energy or green roofs might be implemented to help biodiversity and water recycling. Yet, the local development plan cannot regulate what for instance is placed in the courtyards, which leaves this as a great opportunity for the residents to claim these as their own and decide what these spaces should be used for e.g. greenhouses, playgrounds or picnic areas.

Courtyard clusters

The clusters shaped by the Courtyard principle are clusters that close around themselves, creating a relatively intimate courtyard in the centre. These clusters typically contain fewer houses than landscape clusters, since the aim for the courtyard is to create a green social centre where a smaller community can be created among the neighbours in the shared courtyard, where one can find an almost urban atmosphere.

Landscape clusters

The Landscape clusters are larger and placed in the periphery of the village with close connections to the surrounding nature. The Landscape clusters are created from an linear principle where they are placed in the pockets of the landscape creating not only a significant view for most houses, but also establishes an unique nearness to nature, where the neighbours are connected and can meet within the landscape in the centre of each cluster, but nature and landscape are dominating in these types of clusters.

ill. 148
The Courtyard Clusters
These clusters are mostly determined elders, students and younger couples or singles who wish for a strong social society in the village as well as with the neighbours.

ill. 149
The Landscape Clusters
The Landscape clusters are directed for the families and couples who love nature, community and a close neighbourhood, but also appreciate privacy when wished for.

In spring, when the green colours return to nature, trees, bushes and perennials start to flower and the warmth of the sun begins to gain in strength, there is a rush of activity and life that flows into the courtyards from the houses. Children play and laughter echoes between the buildings. Green thumbs are rushing out to get the first dirt under their nails and students appreciate another scenario to study in from the greenhouses.

ill. 150

ill. 151
1 : 200
Elevation of a Landscape cluster, showing the suggested facades and landscape streching through it.

The landscape flowing through these clusters sparks curiosity. Children leave no stone unturned in their search for critters in the grasses, grown ups sit on their terrace and peacefully enjoy the view of their children immersed in another world while the landscape acts as a backdrop that allows the stresses from work to fade away. In the quiet hours of dusk and dawn Egholms wildlife wanders in between the buildings to take a sip from the small lakes forming in the low lying pockets.

The Community Cluster

The community cluster is the centre of the village, the trunk where the paths function as branches that bifurcate out in the village, connecting each cluster and the nature to one another. The community cluster is the heart of the social community of the village where several shared facilities are placed and it serves as the meeting place, or landmark, in the village. In the cluster facilities such as a community house, shared offices, workshops, a small farm shop, guest houses and more are located, resulting it in being the extension of all of the private housing units where one can work from home or having guests stay which releases space in the private houses where those facilities otherwise would be needed.

The main buildings in the community cluster are the southern-oriented three connected buildings where the community house is located. The buildings consist of orangeries as well as a regular building and contain facilities such as kitchen, play room etc. where activities such as communal dining and diverse common activities can take place. This building is two-faced, meaning that it on the northern side faces the common square which acts as an important node in the mobility aspect of the village as well as a multifunctional square. On the southern side it faces a communal park that stretches in a curved landscape where residents and visitors can take a rest, play games or enjoy the sun.

ill. 152
1 : 500
Section of the masterplan showing the materiality and landscape of the park around the Community Cluster in Øbyen.

The Community cluster is the pulsing heart of Øbyen. The long tables on the terrace become the centre for the weekly communal dining and long evenings during summer, and with the orangeries and vegetable patch there is not far from farm to table. Here and elsewhere in the community cluster generations meet and interact to learn from one another. Elders take care of the children or show them how to take care of the vegetable patch while older students help the younger ones with their homework in the community house.

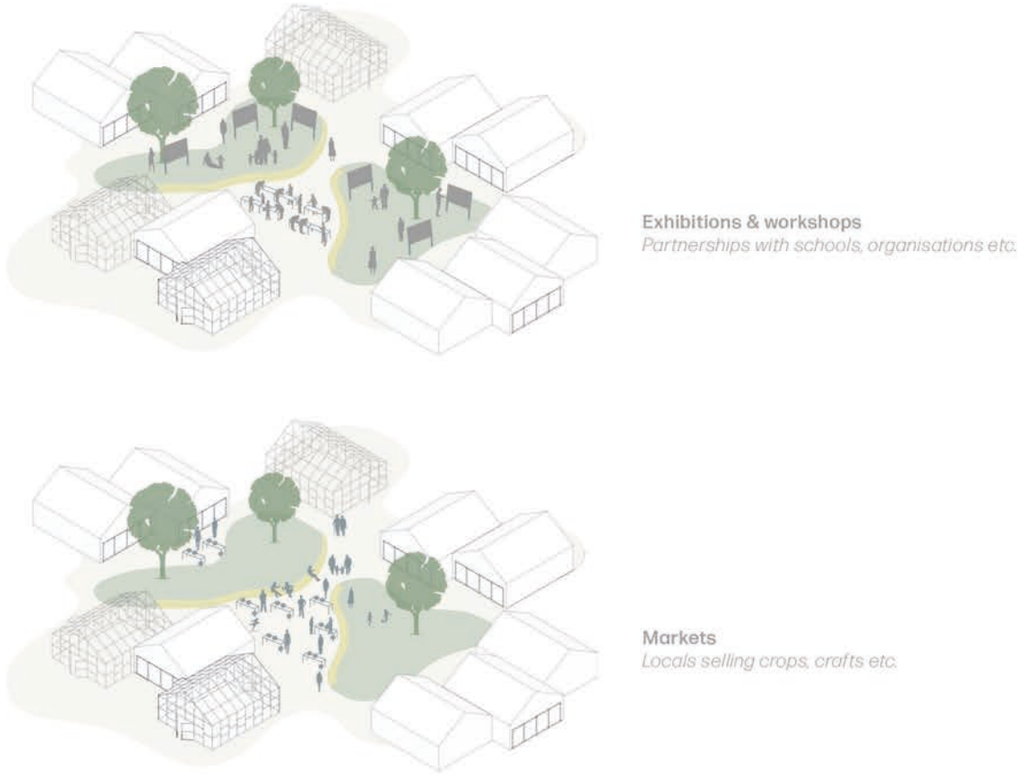
ill. 153

ill. 154
1 : 500
Section through the Community cluster. In the section the views through the orangeries from the courtyard becomes more visible.

With the forest as a backdrop, the green corridors of the forest trails are seen to be weaving through the community cluster. The orangeries that dominate the built structure between park and square allows for visibility and connectivity through the buildings. The open programming of both park and square allows for both the bustling of bigger events, shouting over the chatting of people on market days, music playing and dancing in echo between the buildings and the quiet laziness of warm summer days.

The town square

The town square is the space between the 11 buildings that constitutes the community cluster, and due to the infrastructure it will be the main area for arrivals and therefore the initial meeting with Øbyen. The programming of the square is open, encouraging for several activities and therefore it serves as a quite multifunctional square. The square is a node for all the major paths that form the village, and therefore there will be transit and circulation across the square as well as a variation of activities. These activities can vary from concerts, open air cinema to markets, communal dining etc. and can with advantage be planned with different local institutions etc.. The town square creates the facilities for community and the society that Øbyen aims for, where the social aspect of living is prioritised and citizenship can be utilised.



ill. 155
A diagram illustrating examples on how to use the flexible square in the centre of the Community Cluster

Summarising Øbyen

Øbyen is a design proposal for new village development with nature as the first priority in planning. The village is expected to offer housing to 194 new residents, calculated from an average of 2 residents per house.

By allowing the bigger patches and corridors of Egholm to determine the layout of Øbyen, the village has been developed, so that it does not cause severe fragmentation to the landscape of the island and reversely the many benefits of living with nature is no further away than a step outside the front door. The close relation between nature and the built environment results in frequent interactions between human and nature, which means that the secrets of nature are slowly being revealed to the residents and an attachment is formed to nature that hopefully gives rise to a deep appreciation for nature. Furthermore, the visitors' experience of the island has gained tremendous value regarding the value of the varied nature experienced along the new trails on the island, causing the connectedness to nature to slowly ripple through the mindsets of visitors and urban dwellers.

The community cluster is the centre and beating heart of the village. Here, the larger cluster with shared facilities is at the root of developing a strong and connected community within the village. Interactions between generations and in general along with social support has been the cornerstone in developing the community cluster. For instance, having the elder residents in charge of the child care in the community cluster and plenty of opportunity for home work support across different school levels, communal dining and shared offices etc. which are all initiatives intended for the daily routine of the community cluster, in order to remedy the loneliness and loss of social network.

Due to the location on an island with only one ferry connection to the mainland, several practical questions may come to mind when considering Øbyen as a whole. Øbyen is located centrally on the island, with the main road maintained during the development to connect Øbyen to the ferry landing on the eastern tip of Egholm. Combined with a new, more direct trail through Egholm Naturpark to the ferry landing for soft mobilities these ensure an easy connection to Aalborg and Nørresundby.

How to go to work?
Work from home in Shared offices
Groundsman of the Village
Aalborg & Nørresundby
Region Northen Jutland

How to go to school?
Aalborg for
Primary, High school & university
Online classes
Home schooling

How to get groceries?
Online Ordering
Common Delivery
Shooping in Aalborg
Farm Shop
Grow your own
Foraging

How to get around?
Green, shared mobility
Walking & Soft mobility e.g. bikes, scooters, cargo bikes, electrical bikes
Ferry to Aalborg

How to create community?
Workshops & Markets
Childcare & Neighbourhood watch
Homework assistance
Community gardens & dinners
Events

How to exercise?
Indoor & Outdoor fitness
Runs & Walks in Nature
Bikes routes

ill. 156

06

ill. 157

Photograph of one of the roads creating the infrastructure on Egholm. The Main Path have been inspired from this type of road where the green dominates except from the two tracks.

Technical work

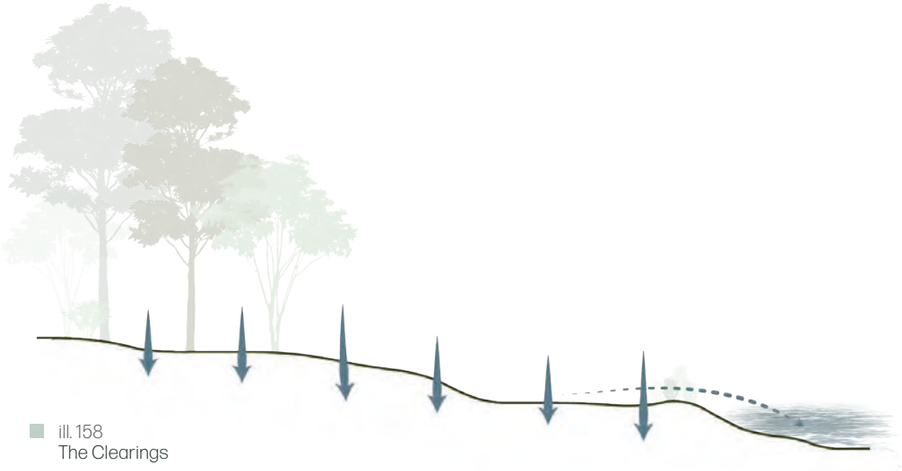
Water Management

The water handling on Egholm has been touched upon in three principles that can be applied to Egholm as a whole as well as in Øbyen, where they originated from during the design process. The water are assumed to be handled in three different ways, illustrated on the facing page.

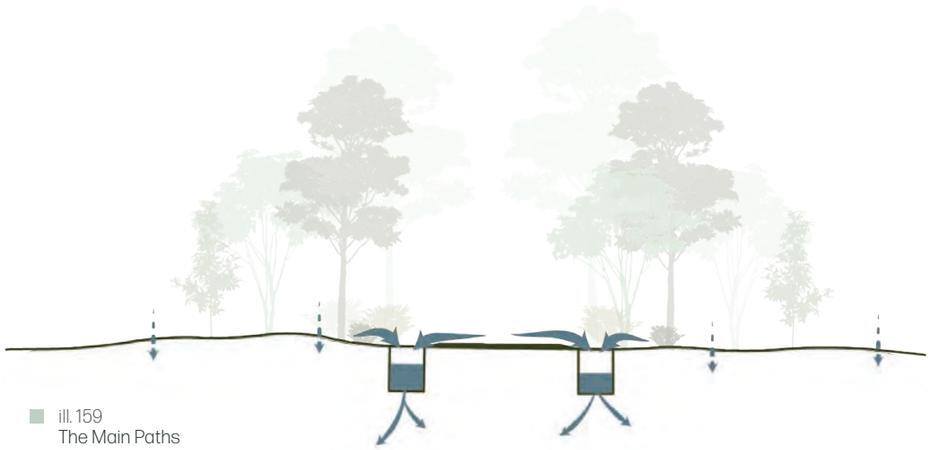
1) *In larger green areas water is assumed to percolate into the ground.*

2) *Where roads and impervious areas have been layed out in the designroposal, it could be beneficial to gather and store water in water tanks on each side of the road structures. This water could advantageously be stored and used in case of a fire, due to the fact that the fire brigade will have to move from the mainland to the island in such emergency. With stored water and volunteer residents the fire could be maintained under control until the fire brigade arrives.*

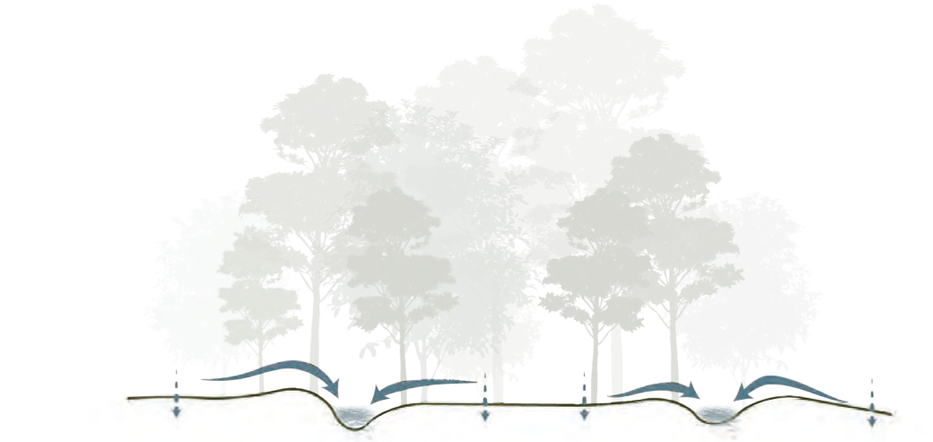
3) *Where trails and paths have been layed out in the strategic plan as well as the masterplan, the proposal is to have small ditches on each side to store water and at the same time act as a green or blue element in nature. These ditches will also be able to offer great conditions for biodiversity for instance insects and amphibians if thw ditches keeps a consistent level of water.*



ill. 158
The Clearings



ill. 159
The Main Paths



ill. 160
The Forest Trails

Infrastructure

Fire regulations have been a central part of the overall development of the masterplan for Øbyen. The types of road and the dimensions are made to comply with the Danish regulations (Bygningsreglementet BR18, n.d.) which has been a parameter to fulfill when developing the infrastructure system. The plan has been determined by two essential factors;

A turning area has to be made if;
- The length of the access road exceed 200 metres or
- The access road is complicated, meaning the total of angles of turns on the access road exceed 185° (Trafik-, Bygge- og Boligstyrelsen, 2021, pp. 9-10)

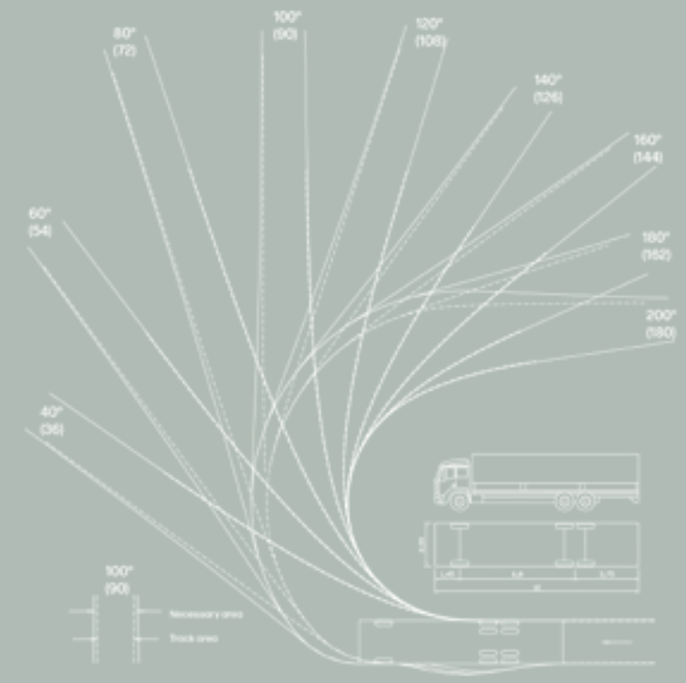
The concept of the road structures in Øbyen are based upon the idea of having a circular network that encapsulates all clusters and a more complex system that ties all housing clusters and the community cluster to the larger network of trails on the island, to secure easy access all around the village for soft mobility. The goal for the plan has been to create easy access for the fire trucks while still securing a good network of paths by using the fire roads as main paths through the plan. The fire roads are made in a circular system almost all the way around, only with exception of a few Courtyard Clusters where the access road is short and therefore do not call for a turn area (see ill. 162).

The paths have afterwards been verified in a CAD-program with turning curves, provided from Vejdirektoratet (Vejdirektoratet(b), 2022). The check has been made for a truck of the type "Typekøretøj LV - Lastvogn op til 12m", driving configuration B (Trafik-, Bygge- og Boligstyrelsen, 2021, pp. 10).

With the sustainable ambitions in mind, the plan strives for a low amount of cars on the island in general as well as keeping the village car-free with soft mobility as the main transportation. Therefore, so called "Mobility nodes" have been placed in two locations on the masterplan close by the community cluster where transportation shifts can be made from car to bike, or pedestrians can grab a bike to reach the ferry line. The plan builds upon shared, green mobility and electrical cars, cargo bikes etc. are therefore encouraged to use in the shared system (See appendix C04.d - Mobility Nodes).

ill. 161

Concepts derived from initial sketches from the development of the infrastructure in the plan. To the left, the concept of an overall circular system and the networks from the green structures that cut through the village from the diagonal corners. Tp the right, the plan where the internal system of paths connects each cluster to one another while still complying with the fire regulations.



ill. 162
1 : 2.000

Turning curves from Vejdirektoratet to the truck type LV which is the one used for fire brigades.

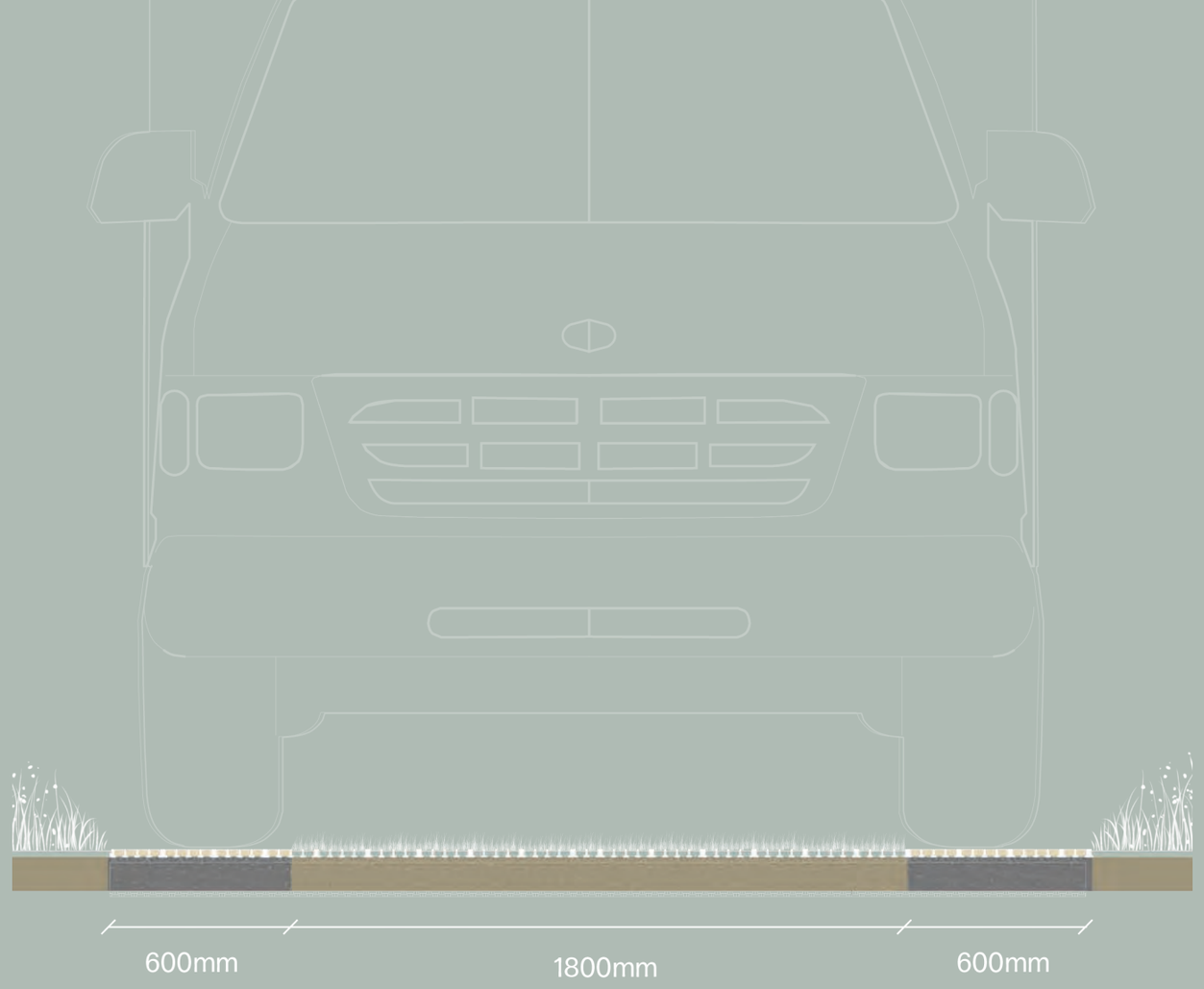
Recreational trails
Continuing on the trailss in the nature park where activities, attractions and trails of varying lengths provide a nature experience.

Technical plan
1:1.500
ill. 163

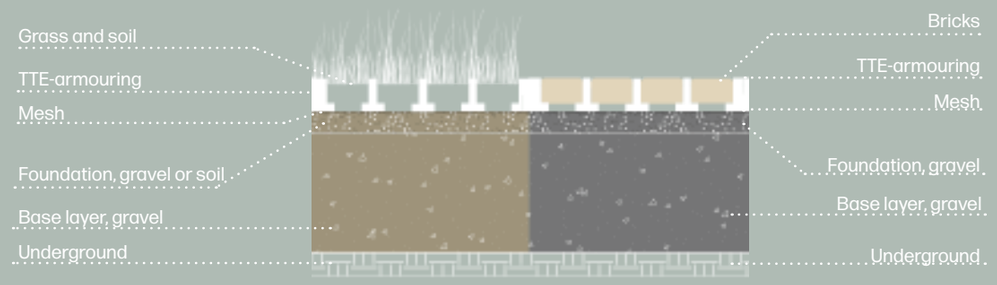
- Existing trees
- New planted trees
- Paved surface, *yellow bricks*
- Main Paths, *TTEMultiDrain PLUS with bricks and grass 3m*
- Forest trails, *chipped bark 1m*
- Paths for residents, *quartzmould 1.5m*
- Privat paths, *quartzmould 1m*
- Main road, *gravel 4.5m*
- Secondary road, *gravel 3.5m*

Mobility Nodes
Parking area for cars as well as a seperate parking area for bikes, cargo bikes, scooters etc. (See Appendix C04.e - Parking).
Cars have no acces further into the area, but visitors as well as residents can switch to a soft mobility transportation in order to continue into the residential area. From here the main paths offers a connected network suited for bikes etc. to get around within the area.

Ferry line to Aalborg
25 min. walk • 8 min. bikeride • 5 min. by car
Additional 5 minutes service across the fjord.
Parking for soft mobility at Egholm side of ferry line.
Large, free parking lot at Aalborg side for car parking



ill. 164
1 : 20



ill. 165
1 : 10

Detailing the Main Paths

The Main Paths function in the plan as the network that leads the residents around the village as well as serving as a part of the major trail-system in Egholm Naturpark. The Main Paths secures accessibility to all clusters, connects to all of the context and have been designed to function as fire roads as well. Therefore the construction of these paths needs to follow the regulations for fire roads while still securing good everyday transport for residents and visitors and be a part of the major concept of the development of Egholm where sustainable choices and nature are core values.

A proposal for such a solution could be the use of climate aware products, for instance TTE permeable pavement (TTE Plast, n.d,). TTE MultiDrain PLUS are a sustainable solution for pavement of roads etc. which is permeable and secures the life of animals in the top 30 centimetres of the ground where the traditional impermeable pavement usually occupies the space. This solution has the capacity of heavy vehicles such as fire trucks (TTE Plast, n.d:p. 5).

The project proposal searches for a natural development where distance has been taken to the traditional, grey urban development. Therefore, the paths are made with a mix of tiles on the driving tracks, but with grass in the centre of the path for a greener path (See ill. 164).

07

ill. 166
An aerial photograph of Eghom from the west with Aalborg and Nørresundby in the background.
Photo by Steen Lee Christensen, Aalborg Luftfoto.

Epilogue

Conclusion

Coming from a motivational standpoint of frustration towards the contemporary tendencies of urban development and the neglect of sustainable development in spite of the achieved knowledge of the field, this master thesis aims to state an example on how to challenge urban development and how to bring back nature into the prioritisation of planning. To support this aim of the project a theoretical standpoint with the primary focus on understanding the benefits and structures of nature has been the backbone for a visionary approach to the design development of respectively Egholm Naturpark and Øbyen.

Through working with Egholm in this project both challenges and potentials of the island have been revealed and the thorough analysis have shown them to be closely related to one another. The challenges are primarily characterised by actually being untapped potentials. Nature and the trails already established on the island are there but lack quality in the experiences offered along the trails. The orginal ature has been almost evicted from the island by the many agricultural fields which tends to have a bad influence on biodiversity, but is more so challenged by the highway plans that will carve the island in two halves and create significant disturbances to both human life as well as wildlife on the island. This project has therefore been focusing on how to develop the potentials and qualities of Egholm to their fullest as a counterbalance to the suggested highway plans.

The agriculture on the island balances somewhere between a challenge and potential for the island. It covers most of the surface area, and is today cultivated as ecological agriculture, which to some extent allows for more biodiversity compared to a conventional approach. Approximately, half of the island and the agricultural fields are owned by Egholm Park, one of the main stakeholders on the island. It is their ambition to work towards developing a nature park and alternative village on Egholm and are willing to convert their land. Other potentials are found in the fact that despite the bland experience of nature on the island it is already perceived as a peaceful sanctuary by the many annual visitors and urban dwellers in Aalborg and Nørresundby. This proximity to an urban centre gives the island the potential of a larger visitor-nature interaction. Interactions which could help push the awareness of the benefits of nature and living with nature. In summary, nature is the strongest potential on Egholm, for the diversity on the islands as well as historical traces, such as Laaen, that could benefit the experiences and overall biodiversity on the island, if it was to be reestablished.

As this project developed the following became the main question to ask and answer in order to push towards a positive development of Egholm forward:

“How can Egholms’ potentials be developed to enhance its’ original, natural qualities and exemplify a reprioritisation in urban development, where a varying landscape, peaceful refuge and human dwelling intertwine in a balanced relationship?”

The competencies gained during this education as urban designers have provided important tools in order to take new principles into developing good and beautiful spaces, through spatial investigation and an understanding of what makes good spaces for human habitation and interaction.

Egholm Naturpark sets an example of how to redevelop a landscape with its natural qualities as the first priority and how to implement historic traces to create a new varied landscape matrix embedded in a peaceful refuge. With the utopian thinking in mind, this is a provocation and an example at the same time. By showing the full potential of the landscape on Egholm with Egholm Naturparks salt meadows, forests and pastures that would go unseen, should the highway project be realised, the project directs a criticism to the “more cars”-mindset that is proven to be dominant in society. Furthermore, it shows a restrictive approach to gaining more footprint for human habitation and development by restricting the potential built corridor on the island to only form around the areas, where built structure and infrastructure is already present. The uniqueness of Egholm is the urban context surrounding especially the eastern tip of the island. This proximity gives rise to the opportunity for the development of Egholm to increase nature awareness amongst the urban visitors to the island.

As the project unfolded it became clear that the answer to the problem statement would have to be two-folded which is why two different scales of Egholm have been explored. The design of Øbyen on Egholm has been determined by the landscape of Egholm Naturpark and has been developed as a challenge to the usual way of conducting urban development. Nature has been placed as the first priority and human settlement has been situated within, without taking anything away from nature. The main focus areas, aside from putting nature first, has been to foster sustainability as well as resource and social awareness within the village. As guiding principles these will stand out as an alternative to current urban development and seek to challenge the ‘business-as-usual’ mindset that seems to be stuck.

The Framework

The combination of methods and theories implemented in this project have been crucial to the outcome. The utopian thinking framework has been instrumental in unlocking the opportunistic approach from the theoretical framework by allowing the disregard for the highway project, which would have otherwise conflicted greatly with both the potential for developing more nature and a village on the island. The iterative work from Integrated Design Process has ensured several stages of design and evaluating, without which there would not have been a multi-scaled design to present at all. This approach has ensured many reflections upon what was of utmost importance for the future development of Egholm.

In hindsight it could be said that the strong focus on nature and landscapes in the theoretical framework of this project might have coloured the approach and interpretation of the potentials on Egholm, yet the theoretical tools and concepts encountered have also been strong guides in designing both the strategic island and village scale, giving strong arguments to the design decisions made under way. When it comes to the methods chosen and hinderings that follows this selection, it could likewise be said that the utopian thinking which has been at the root of this project might also have influenced the feasibility of the project. The aim of utopian thinking is to distance oneself from the reality of the current state of affairs, which only naturally means that the feasibility will suffer as a consequence. Nevertheless, due to the experiences gained during the authors internships, some degree of feasibility has still been maintained within the project, and perhaps the biggest threat to feasibility is the highway project and lack of funding for Egholm Naturpark and Øbyen.

Looking forward

The next steps of the project itself would primarily be focused around further development and for that to be successful the first step would be to share the design proposal with some of the main stakeholders to get their feedback. Egholm Park would be a good candidate for this kind of response and collaboration in the development process as they already have some initial ideas about the whole of the island ranging from a nature park to a small village development. This kind of feedback would also be able to bring in more feasibility for what would be realistic to develop and which stages the further development would have to go through from here on out. In a theoretical sense, it would be valuable to further develop the framework and principles found in this project and develop those into more general principles that might be able to guide the future of urban development.

Reflection

The design developed in this project have been developed by the use of principles and actions as presented in the chapter "Strategic Development on Egholm" these have been formed to support and underline the design decisions and development on Egholm. As stated previously it might be valuable to condense the lessons learned from using these into overall principles supported by the theoretical framework of the mosaic model, green infrastructure and a strategic approach.

First and foremost this project is about placing nature as the first priority in any landscape and especially in any urban development area. Looking back at the process of this project there seems to have been three stages to working with nature. Firstly, to thoroughly *understand the landscape* structures. Both as isolated matrices and in the bigger network of the landscape. For this the mosaic model and working with a multiscaled approach, have been useful tools. Secondly, based on the understanding of the landscape and potentials in nature *a strategic approach* should be developed. In the current context of the Anthropocene with severe stresses on the biosphere and the resilience of biodiversity, protective, offensive and opportunist strategies should be the most frequently used strategies. Thirdly, when a strategy for nature has been selected and nature developed accordingly, *nature becomes the determinant* for other built structures and developments, so that fragmentation of the landscape is kept to a minimum. From here on out planning should follow an iterative process going back and forth between designing and evaluating, where nature is seen as the most constant parameter of the development. The last two steps should only be deviated from, if the appraisal of nature overall, suggests that changing strategic approach and determining layout, would benefit the green development even more than the previous decisions.

The validity of this approach is only conceptual and based on the work done in this project and would have to be tested in a real life setting over a longer period to allow for the evaluation of the projects realised with this methodological approach. Despite the small scale of Øbyen and Egholm Naturpark, developing an approach, even if it is for a trial and error basis, that revolves around planning with nature in landscape and urban settlements is important on a much bigger scale. The smaller projects are easier to develop and as such could serve as an exploratorium for how to shape the guiding principles for greener and more sustainable urban development. Therefore, it sits as an attempt to answer the initial problem statement in this project:

"How can working with nature turn the 'business as usual'-mindset towards shaping a better, sustainable future with a higher quality of life?"

There is an almost desperate need to take a stand and ask for something other than what we have been used to, if we want to see brighter tomorrow. The "business-as-usual"-mindset puts more people into more compact cities to minimise the footprint of our cities, while still wanting the benefits of the compact city to come naturally. When the concept of compact cities first made its way forward, the intent was for lesser car-dependency and energy consumption along with better public transportation. Contradictory to this, somewhere along the way the "business-as-usual"-mindset decided to develop compact cities with an ever increasing amount of space for cars, and are now wondering why loneliness and other health issues follow this development instead.

A better, greener tomorrow

Living with nature and bringing nature into cities have been found, both in studies conducted as a part of this thesis, (See Appendix A01 - studying the Benefits of Nature), and more internationally acknowledged journals, to improve climate and the quality of life. As such shaping new or reshaping principles to develop small as well as urban settlements with nature at the heart of the process and development is a direct confrontation with the "business-as-usual" tendency to develop grey cities where accessibility for cars is at the high seat. The confrontation is to say that, if we want to live in well-functioning cities in the future, nature has to become a priority and a fixed part of our cities, as this is our biggest defence against the challenges the Planet is throwing at us. With nature as a measure of strong sustainability we are obliged to ensure the resilience and biodiversity of the biosphere, halt our incessant resource and fossil-fuel consumption, so that nature might actually have a chance to regulate the damages we have already done.

Working with nature in this project has fostered a fondness for nature. The burden that has befallen us has led to many discussions about what role we have in the future that awaits all of us. As urban designers, and especially as new urban designers, we have an important role to play in how the future looks and how we choose to develop the landscape of urban centres for the world of the unknown tomorrow. There seems to be two opportunities, both which entails being a voice for nature in cities, and that is to either tackle the struggles from a top-down or bottom-up approach. The bottom-up approach would be to influence the office of employment towards only taking assignments and projects with a sustainable agenda. However, this might be difficult seeing as the offices has to be able to pay their bills. A top-down approach would be to involve oneself as an urban planner at a higher level, perhaps politically with local or municipal development plans or in offices tasked with the development framework for new projects and competition briefs.

Nevertheless, as this project seems to have shown, urban designers and planners working with and guided by nature as some kind of measure for sustainability, could prove to be a very reasonable direction towards a better, and more sustainable future and living the good life in the 21st century.

The storyline and forces influencing Egholm is now changing. Man's dominion over the landscape is crumbling under changing times. Times, and ideas, based on an innate affiliation for nature and its qualities. Changes based on ancient, but perhaps re-emerging, memories of our relationship to the land.

A relationship where man and nature are equals in a symbiosis. Values that perhaps will gain traction from developments such as Øbyen within Egholm Naturpark. A community deeply intertwined in nature, where control is exercised on man's habitat rather than the surrounding landscape.

As dusk fades and darkness settles over village and landscape the voiceless are suddenly heard and the previously overlooked is felt intensely: Croaking from the reeds, hooting in the shadows and the chill of the night air nipping at the skin. Quiet thuds of hoofs walking over the moist salt meadows and the scent of freshly fallen dew mixes with salty breeze from Limfjorden and lingers in the air.

As the dawn breaks and the sun rises over the horizon, warmth and light moves across the landscape and brings with it a new hope. A hope for a promise. The promise of a better tomorrow.

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ill. 151 Elevation through a landscape cluster. *Own illustration.*

ill. 152 Plan section of the community cluster. *Own illustration.*

ill. 153 Render of the terrace in front of the Community cluster. *Own illustration*

ill. 154 Section through the community cluster. *Own illustration.*

ill. 155 Diagrams of different activities taking place in the courtyard of the community cluster. *Own illustration.*

ill. 156 Diagrams of solutions to the practical questions. *Own illustrations.*

ill. 157 Path on Egholm. *Own photo.*

ill. 158-160 Principle diagrams for water management. *Own illustrations.*

ill. 161 Diagrams for the infrastructural principle. *Own illustrations.*

ill. 162 Turning curves for vehicle type LV. *[Online]. [Retrieved on 18.05.2022]. Available from.: https://www.vejdirektoratet.dk/side/koerekurver*

ill. 163 Technical masterplan of Øbyen. *Own illustration.*

ill. 164 Technincal section through a main path. *Own illustration. Based on the materials from materials by TTE Plast. [Online]. [Retrieved on 18.05.2022]. Available from.: https://tteplast.dk/wp-content/uploads/2021/03/TTE-permeabel-belaegning-Hovedbrochure.pdf*

ill. 165 Technical section through transition between permeable and non-permeable surfaces. *Own illustration. Based on the materials from materials by TTE Plast. [Online]. [Retrieved on 18.05.2022]. Available from.: https://tteplast.dk/wp-content/uploads/2021/03/TTE-permeabel-belaegning-Hovedbrochure.pdf*

ill. 166 Aerial photo from above Egholm towards Aalborg and Nørresundby. *Photo by Steen Lee Christensen, Aalborg Luftfoto.*

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