



RICHES OF THE COAST

Exploring the design of a recreational path in an arctic landscape as a tool for conscious land use and in the shaping of people's connection to nature

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Swedish University of Agricultural Sciences, SLU

Department of Landscape Architecture, Planning and Management

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PREFACE

To be able to conduct our thesis project in a mesmerising Norwegian landscape has been special to us. We met while pursuing our bachelor's in landscape planning in the fjords of Norway, and we've both been enthusiastic in designing in more wild landscapes.

Doing the project on Kvalnes, Andøya was particularly personal for Tuva because of her familiar relations to the place. Being able to work with this boggy landscape in the north, has been a dream come through for the both of us.



Figure 1: Photo by B. I. Karlsen



THANK YOU!

First, we want to thank Caroline Dahl and Christine Haaland for their support and feedback through this project. For all their help and guidance.

We also need to thank Stig Pettersen from Andfjord Salmon for a positive dialogue and open discussions about the development along the coastline. We appreciate your positivity towards our project. Without the kind efforts of Bjørn Inge Karlsen, we would not be able to visualise the project as well as we have. Thank you for all the photos and informative conversations about Andøya.

We also need to thank all our friends and family who have supported us while writing this thesis. It has been an important supportive system. Thank you to the 'aquarium' for positive spirits and for going through the final process with us.

Lastly, we want to thank each other for great teamwork and constant support through highs and lows.

ABSTRACT

This master's thesis is a conceptual design project that explores how landscape architecture can support more conscious land use in Arctic coastal landscapes with existing industrial use through recreational design. The study focuses on Andøya in Norway, where increasing industrial development and tourism are putting pressure on ecologically sensitive yet sometimes forgotten coastal landscapes.

Utilising a research-by-design approach, the project combines theoretical frameworks, ecological and spatial analyses, and an iterative design process, culminating in a conceptual design proposal. The thesis investigates how a continuous coastal recreational trail can be used as a tool for conscious land use and in the shaping of people's connection to nature

The design proposal introduces a conceptual masterplan for a recreational network that concentrates human movement along carefully chosen paths, aiming to minimise ecological disturbance while facilitating experiential qualities and awareness. Ecologically based design approaches are applied to decrease the effect zone between built and natural landscapes.

The project demonstrates how recreational infrastructure can serve as a landscape architectural clean frame for creating cultural context and direct pro-biodiversity focus to a forgotten landscape.

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Chapter one:

INTRODUCTION



Figure 2: Photo by B. I. Karlsen



Chapter one: Introduction

Background
Problem Definition
Method
Delimitation
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Chapter two: Theory

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Chapter one: INTRODUCTION

BACKGROUND

More green areas are being lost to development (Støstad et al. 2025). This report on Europe's land areas shifting from green to grey and found that the transition was occurring faster than anticipated. Although Norway has far less habitat loss than other countries, it ranked among the top in the loss of nature per inhabitant. In Norway wilderness is classified as a natural, intact area at least 5 kilometres away from larger technical interventions such as roads or powerlines (Lundberg & Halleraker 2025). In 2023, only 11.2% of Norway's land area was classified as wilderness (figure 4), which is a 50% decrease from the 1900s (Miljødirektoratet 2024). On Andøya, this transition especially along the coast. There is an ongoing increase in development projects on the island, and the threat of unconscious land use is looming due to the expansion of established and new industries.

While single occurrences of nature being lost for development may not seem of great concern, the combined effect leads to greater overall loss and landscape fragmentation (Støstad et al. 2025). Altogether, it makes the ecosystem more vulnerable to stressors such as climate change (UNEP 2022). Andøya is largely covered in peat bogs. Due to the extent of the bogs, these areas are the ones being set aside in favour of development. The loss of bogs can have significant ripple effects on the ecosystem and the climate (ibid).

HABITAT LOSS

The areas we humans occupy and inhabit are becoming less welcoming to other species (Støstad et al. 2025).

The Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) assessment (2019) reported a rapid increase in habitat loss worldwide. As larger connected green areas are fragmented, so do the species that live there. Different species need different conditions to survive and thrive. There are many small conditions that bring together an ecosystem. With the fragmentation and development many species are forced out (ibid.). The threat to Andøya's large, interconnected nature is a example of habitat fragmentation. With continued development, similar habitats on the island will remain, but their quality will likely be fragmented and reduced.

SUSTAINING SOCIETY

That said, we cannot neglect reality. Population growth often demands places to live, land for food production, and other vital infrastructures (King et al. 2025). The conversation about preserving habitats and economic growth has become polarised and created conflicts around the world. The question is how to develop sustainable societies while ensuring functional, resilient ecosystems. It is crucial to ensure that human land use aligns with ecological health to achieve sustainable development (ibid). Human infrastructure has various impacts on surrounding ecosystems that extend beyond the infrastructure itself. They can be summarised into chemical pollution, physical disturbances, biological agents, and indirect effects on populations and ecosystems. (Seiler, A., Guinard, E., & Mot, R 2023) . Development on Andøya does not



Figure 3: The UN sustainability goals are a good way to ensure to contribute to the wanted development of the united earth.



have to cease, but it should take into account its environment and landscape.

This project is grounded in the growing awareness of habitat loss and the need for cautionary land use, in line with the UN Sustainable Development Goals (figure 3). Working with goals 9, 13 and 15, to ensure resilient and sustainable development that prioritises local, continued resilient ecosystems. While ensuring that the finished result will contribute to goal 3, improving public health.

The Norwegian government has taken special considerations regarding development within 100 m from the shore along the entire coast of Norway (Kommunal- og distriktsdepartementet 2021). The law mandates that special regard should be given to the UN sustainability goals to ensure an accessible shoreline for everyone in a radius of 100m from the shore. The shoreline

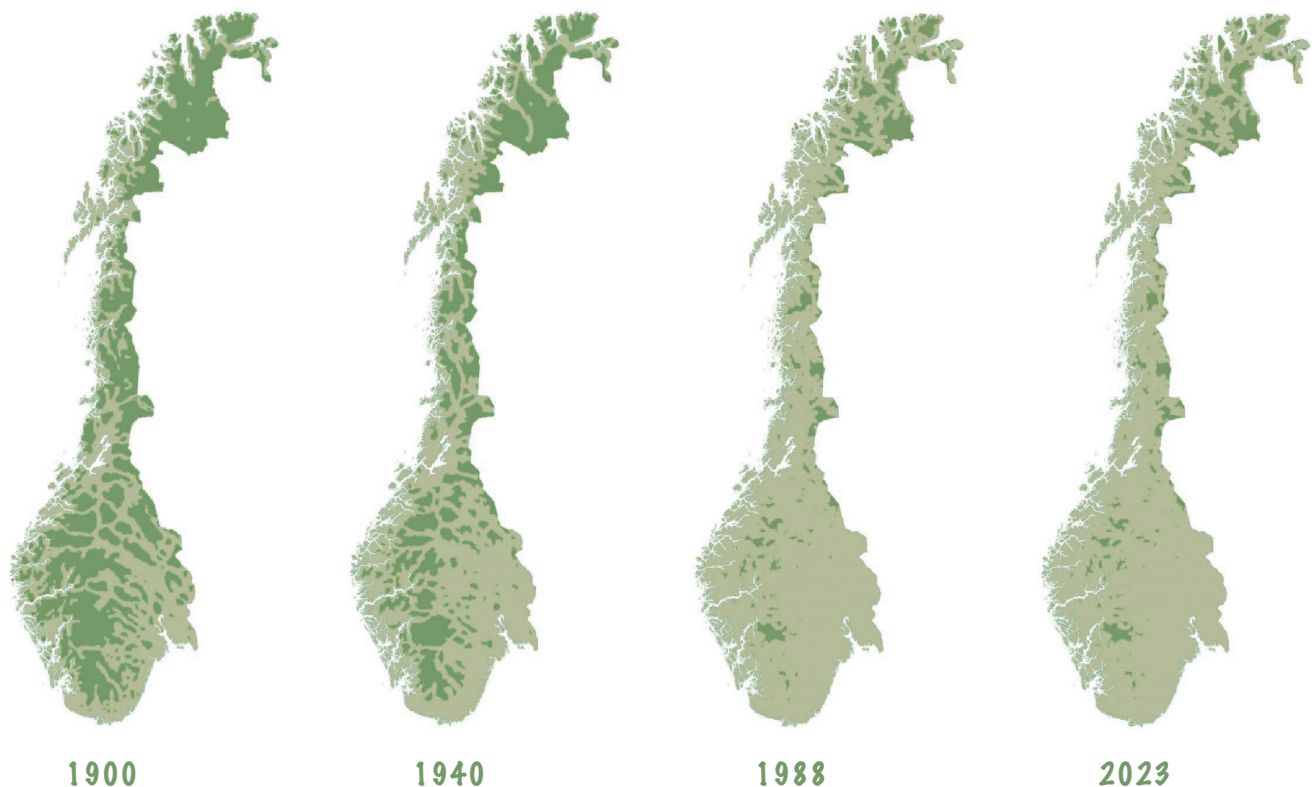
should prioritise nature, culture, history, recreation, landscape, and other shared interests. Unnecessary obstacles of access to the shore should be avoided (ibid.).

COOLCATION

Other factors to consider in the cautionary land-use approach for this project include the increase in tourism. In the Arctic, tourism has increased over the past years, partly due to rising demand for nature and experience-based recreation (Øian & Kaltenborn 2020). The increasing temperatures have led travellers to cooler climates during the summer to escape the heat elsewhere, a trend that has lately been described as coolcation (Straumsnes 2025). This has had a positive effect on local communities by contributing to economic growth and creating jobs in often more remote places (ibid).

In Norway, the right to roam is enshrined in law. The Norwegian

Outdoor Recreation Act (Lov om friluftslivet (friluftsløven) 1957) is intended to preserve the basis of outdoor recreation and ensure the right to roam for all. This is to protect recreational health and well-being, and to support environmentally conscious recreational activities. However, this can also lead to complications. The increase in tourism has additionally had adverse impacts, including vegetation wear, soil compaction, and wildlife disturbance (Syverhuset 2020). Leaving its mark on the landscape and local communities. Arctic ecosystems are already under pressure from a rapidly changing climate, making them especially susceptible to change and disturbances (ibid). Municipalities in Norway's Arctic regions are often ill-equipped to handle the increased tourism pressures due to limited infrastructure and resources (Kommunal- og distriktsdepartementet 2025).



Wilderness

Figure 4: The map illustrates how wilderness has decreased over 123 years. The differences are largest from 1940 to 1988. It is a good indication of the increased presence of human infrastructure in Norway. Map based on: (miljødirektoratet 2023)



PROBLEM DEFINITION

Based on the challenges, trends, and situations outlined in the background, this thesis aims to explore how recreational design can address these issues. It will do this by answering the following research question and sub-questions. The thesis will also be done in accordance with the following purpose and goal.

We seek to invite locals and tourists into a landscape with spectacular nature and increased land-use pressures. Important ecosystems and beautiful yet modest landscapes can be forgotten and become more vulnerable to development. By providing recreational opportunities in these areas, we hope to encourage people to value and care for them.

Research question

How can a recreational network reduce the negative impacts of increased arctic tourism, while also promoting more cautious land use in response to rising land-use pressures on Andøya?

Sub questions

1. How can recreational infrastructure be designed to adapt to its local ecosystems in an open coastal landscape?
2. How can landscape architecture strengthen the relationship between visitors and nature in a recreational network, fostering environmental awareness, cultural appreciation and historical understanding?
3. What measures can contribute to industrial development and natural landscapes to better coexist and reduce spatial conflicts?

Purpose

Contribute to the preservation of nature and its habitats by inviting people to understand and experience the landscapes around them.

Goal

To complete a master's thesis in landscape architecture that can serve as a resource for cautionary land-use development that considers different visitors and the possible affected ecosystems on Andøya.

METHOD

This thesis is a conceptual design proposal; it is not about creating a final design proposal. Instead, the design process itself is used to learn and explore ideas that can answer the research question. Throughout the project, different design ideas were tested, questioned, and improved. To make the work more reliable, the project uses several methods together. This is called a triangulated approach (Noble & Heale, 2019). It combines theory, environmental and spatial analysis, and an iterative design process. This approach is known as research by design, in which design is used both to study a problem and to explore possible solutions (Nijhuis & Vries, 2019). Overall, the project aims to create a design that respects ecological limits while exploring how to better facilitate recreational use. By linking theory, analysis, and design, it develops a concept that is mindful of land use, environmentally responsible, and supports a stronger relationship between people and nature.

The project was done collaboratively between two landscape architecture students with backgrounds in both landscape planning and architecture. One of the authors has a personal connection to the site. This provided access to local knowledge and everyday perspectives. Which resulted in a more layered understanding of the landscape, while also demanding continuous reflections on how it might influence design choices.

SITE AND CONTEXT

The study will look at the island of Andøya in Northern Norway. One of the reasons this area was selected is its seemingly vast, “untouched”

character. Landscapes perceived as abundant and resilient are often overlooked in discussions of habitat loss. However, small, incremental interventions can accumulate over time, culminating in significant fragmentation. The decision to focus on the north-eastern coast was motivated by its ongoing industrial development, particularly land-based fish farms. This provided an appropriate context for exploring how new land-use pressures interfere with local ecosystems.

The eastern coastline has distinct spatial and ecological characteristics. It is different from the more exposed, mountainous western coastline of Andøya. The eastern side has wide, flat plains dominated by peat bogs, intertidal flats, and a variety of habitats. These conditions form a landscape that appears resilient yet remains sensitive to increased disturbance. The open spatiality, with undisturbed sightlines and limited natural barriers, creates a broad rather than enclosed spatial experience. This makes human-made barriers and infrastructure more visible in the landscape. Therefore, chose we to focus our project on the eastern coast, where expanding recreational opportunities could potentially help protect the landscape from further industrial expansion.

Rather than focusing on the conflict between industrial development and recreational land use, this project investigates how different land uses can coexist and how landscape architecture can mediate between them. By locating the project in an area where industrial activity, recreational potential, and vulnerable ecosystems overlap, the site offers an opportunity to explore how landscape architecture may

contribute to more conscious land-use strategies. We chose to include the existing local initiatives we felt were relevant, spanning from the culture path at Kvalnes in the south to the whale watch tower in the north. This includes the areas we felt were relevant to connect to a larger recreational network surrounding the fish farms along the eastern coast. The surrounding area outside the site bears the same characteristics and stretches along long coastlines, across vast bog plains, and out into the wild Andfjord.

THEORETICAL PERSPECTIVE AND LITERATURE STUDY

The theoretical foundation of the project is grounded in its background, and the authors’ shared interest in understanding the relationship between people and nature. The increasing pressure on natural landscapes, combined with the growing distance between humans and the natural environment in everyday life, invites questions about how landscape architecture can help reconnect people with nature. While also ensuring and preserving the site’s ecological processes and historical continuity.

During the writing process, it became evident that even defining concepts such as “nature” is not easy. This ambiguity further informed the theoretical approach, highlighting the importance of critically reflecting on how such terms are used and understood within landscape architecture.

The literature review was conducted using academic databases, reports, and landscape architecture platforms such as Landzine. This provided access to contemporary landscape architectural discourse, as well as relevant projects and theories.

From this initial exploration, key themes were identified, including habitat loss, ecosystem services, arctic tourism, conscious land use, conservation psychology, and ecological design approaches. It also helped explore the relationship between humans and nature. The focus on anthropocentric vs. non-anthropocentric perspectives was used to explore different theories and our relationship to nature.

Theories addressing the human-nature relationship became particularly central. We observed that in both everyday language and planning discourse, humans are often positioned as separate from nature, rather than as part of it. This perceived divide influenced the direction of this project's theoretical framework. It became relevant to explore this separation and how landscape architectural design can mediate and aid in reconnecting these relationships.

The chosen theories were selected for their ability to inform both analytical and design-related aspects of the project, primarily in understanding how spatial design can influence perception, behaviour, and ecological awareness. Nassauer (1995) discusses how our use of positive or negative terms affects our view of an ecosystem. Even though the study is over 30 years old and our view of messy ecosystems as a society has, to some degree, shifted since then, it is still relevant to understand how our language affects our view of the relevant ecosystem. How our insight of different terms can affect the choices we make was also explored through Uggle (2010). The article discusses how terms such as "natural" and the distinction between nature and culture are understood across disciplines and

in everyday language. Using the selected peer-reviewed articles, we developed our theoretical foundation and supported it with other relevant sources, including web sources. The literature study, therefore, works as both a conceptual framework and a lens through which the site and design interventions are interpreted.

SITE-BASED ANALYSIS

The empirical analysis is grounded in direct engagement with the site. A total of seven field visits were conducted during a one-month stay on Andøya in November. This extended presence enabled an embodied understanding of the landscape, including its spatial structure, climatic conditions, and patterns of use. It also aided the authors' insight into the site's sense of place.

The site was explored both on established paths and in less accessible terrain, on foot and on skis. Experiencing the landscape in different ways revealed physical constraints, such as the difficulty of moving through boggy areas, and highlighted how accessibility shapes human movement and potential ecological impacts. It also allowed for walking through the landscape, delivering a more layered experience. This formed how the final concept was constructed.

Fieldwork included observing vegetation, wildlife, and landscape structures, as well as photographic documentation and spatial registration. The analysis was structured across several thematic perspectives, including landscape structure, hydrology, vegetation and habitats, landscape sensitivity, human use and movement, and cultural-historical layers. These perspectives were chosen to capture

both ecological processes and human interactions, providing a basis for identifying spatial relationships, conflicts, and opportunities throughout the site.

Due to time limitations, the project did not include a formal interview study. However, several informal and semi-structured interactions contributed to the site's contextual comprehension. This included two visits to Andfjord Salmon, during which a meeting with the Head of Public Affairs provided insight into the company's perspective on environmental impact, sustainability strategies, site selection, and potential recreational development and joint efforts. Through the communication with the firm, we were able to understand their point of view as well as align ourselves in regard to incorporating the network into the fish farms.

Conversations with local residents, facilitated by the authors' personal connections and encounters during site visits, gave insights into the island's history and everyday life. It also indicated the locals' attitudes towards industrial development, increased accessibility through a recreational network, and tourism. These interactions ranged from more structured discussions to spontaneous conversations with people encountered on site.

The information gathered through these interactions was not treated as formal data, but as contextual input that supported reflection and interpretation throughout the project. This approach allowed the inclusion of multiple perspectives while admitting the limitations stemming from a lack of systematic data collection and potential bias. A more systematic collection of

interviews would have been an additional strength of the project but was excluded due to delimitations and time constraints.

Seasonal limitations influenced the analysis. Snow cover and weather conditions restricted access to certain areas and reduced the visibility of ecological processes. To compensate for this, the analysis was supplemented with existing data sources, including topographic maps, municipal plans, reports, and online material. The analysis is therefore based on a blend of direct observation and secondary information.

The collected material was synthesised through mapping and comparative analysis and further structured using a SWOT analysis to identify key opportunities, constraints, and conflicts within the landscape. The mapping process focused on both biophysical conditions (such as terrain, hydrology, and habitats) and human-related patterns (such as access, infrastructure, and movement). This dual perspective enabled the identification of areas of vulnerability and zones with potential for increased use or intervention. This was later used in the design chapter to understand the connections within the landscape and served as the basis for the design concept.

RESEARCH BY DESIGN

The project adopts a research-by-design approach, in which design acts as an exploratory and analytical tool. The process was iterative and non-linear, characterized by continuous movement between analysis, theory, and design.

Sketching, conceptual diagrams, mapping, and the development of principles were central methods in

the design process. These tools were not only used to represent ideas, but to test and question them. Through drawing and spatial exploration, relationships between different landscape elements, user groups, and ecological conditions became more visible.

The process involved repeated cycles of development and reflection. Initial design ideas were tested against site conditions and theoretical perspectives, often revealing new challenges or contradictions. This led to a return to earlier phases of analysis or theory, which in turn informed further design iterations. In this way, the project evolved through a continuous cycle, where each phase influenced the next.

Through this iterative process, design functioned as a method for asking questions, rather than presenting immediate solutions. In particular, the design process explored how the concentration and direction of movement through a recreational path network could influence patterns of use, ecological disturbance, and user perception of the landscape.

DESIGN DEVELOPMENT AND KNOWLEDGE PRODUCTION

The design is developed at the conceptual and feasibility levels, based on insights from both the theoretical framework and the site analysis. Initially, the project aimed to explore how industrial development could be better integrated into the surrounding landscape. However, through the iterative design process, this focus shifted.

The recreational network emerged as a central structuring element within the project. Rather instead of concentrating solely on mitigating

industry's impact, the design began to explore how a network of paths could serve as a connective layer within the landscape. This includes connecting different landscape types, guiding human movement, and mediating between competing land uses.

This shift illustrates how the design process contributed to knowledge production. Through testing different approaches, it became evident that concentrating movement along defined routes could reduce ecological disturbance while boosting accessibility and experience. The process also revealed how the spatial openness of the coastline influences the spread of disturbances across the landscape, strengthening the importance of directing movement in such environments.

The design also revealed how recreational infrastructure can function as a framework that makes ecological values more visible and legible to users.

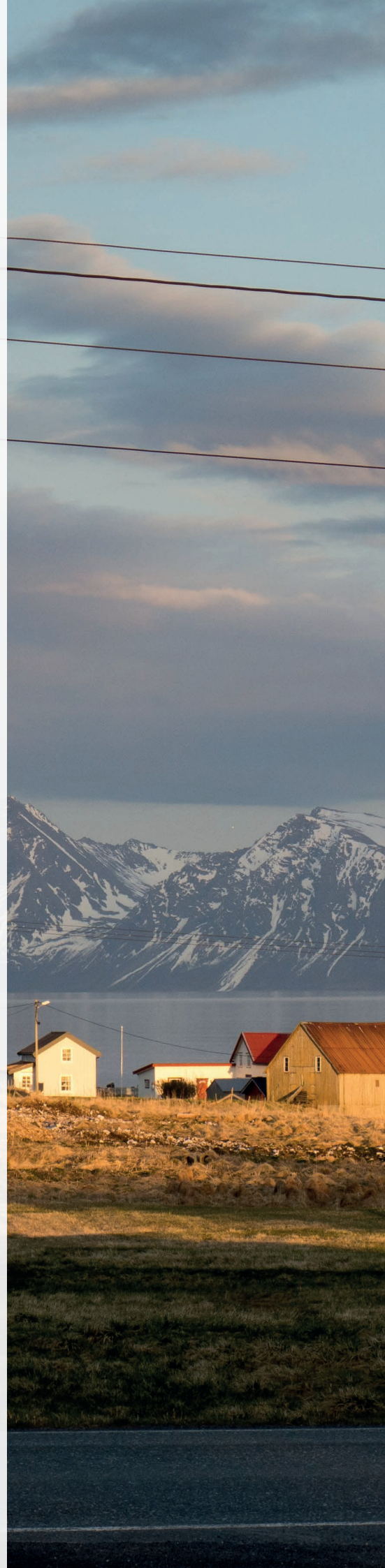
Furthermore, the process revealed the potential of landscape architecture to operate across different interests, not only by resolving conflicts but also by creating new relationships among them. In this context, the recreational network can be understood as both a spatial and conceptual connector.

Through this research-by-design approach, the project demonstrates how design is able to foster a more conscious land-use approach, where ecological considerations, human experience, and existing land uses are addressed in relation to one another.

DELIMITATION

To conduct this thesis within the given timeframe, it has been crucial to create delimitations. There are many possibilities and considerations that are interesting and relevant when working with conscious land use in the Arctic coastline. Even within landscape architecture and the development of a recreational network, there are many angles, themes and methods that can contribute to good results.

- » The project is limited to specific themes of arctic tourism and conscious land use, as well as the scope of the problem definition. This is due to the world's current situation, our academic background, and interests.
- » The project is limited to the design of the physical environment along the coastline. It aims to present ideas for the future design and development of a recreational network, rather than being a finished design of its own.
- » Political considerations are not included as a significant factor. Such as ownership of land or current land-use registrations.
- » Ecological considerations are limited to existing knowledge of the area and similar areas. The site analysis was conducted in November, so a more detailed analysis was not possible. The season made the use of existing pictures and experiences crucial to carry out the project.
- » The project is aligned with the Municipal Plan Societal Part (2018-2030). It does not, however, align totally with the Areal Part (2023-2034). Which indicates that the current land-use registrations are not reflected in the conceptual design proposal.





STRUCTURE

The Project is composed of an introductory chapter (1), a theoretical chapter (2), an analytical chapter (3), a design chapter (4) and a final remark chapter (5).

Chapter one:

- » The introductory part includes background on why this project is relevant, methodology, project definition, and an introduction to Andøy and the site.

Chapter two:

- » A short walk through of relevant literature and theories that ground the project in academic relevance.

Chapter three:

- » The project area is analysed across different themes. It is the backbone for the design.

Chapter four:

- » The design first identifies the different landscape characters, and which areas are relevant to protect, transform, and connect. To then propose a path network and conceptual principles with complementing strategies. It concludes with examples of the concept proposed within the site's landscape.

Chapter five:

- » The thesis concludes with a discussion on the thesis, a reflection on the outcome of the project and a conclusion of the findings.

ANDØY

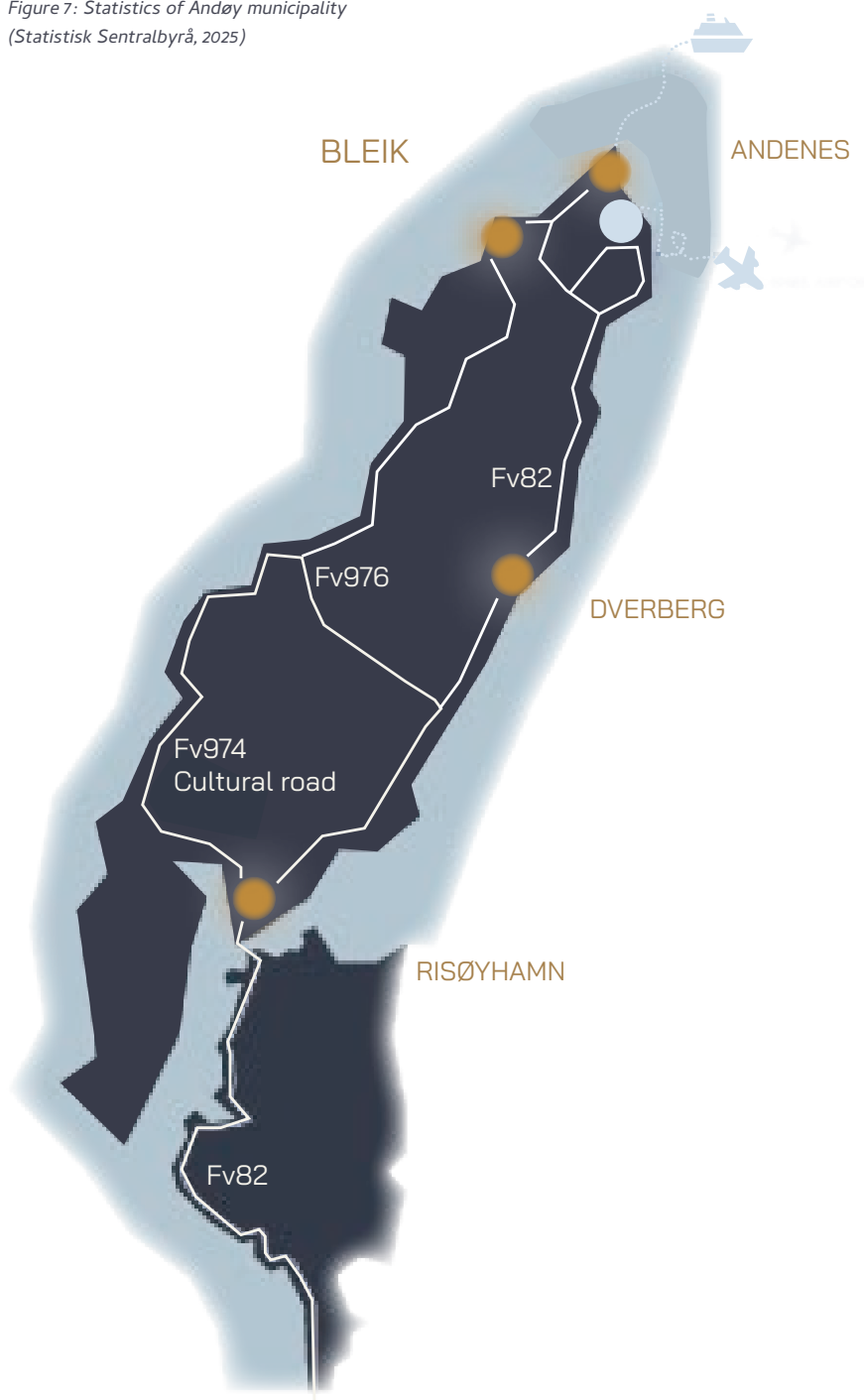
Andøya is an island at 69 degrees north, exposed to the northern sea. It is part of Andøy municipality in the Vesterålen region of Nordland County, Norway.

The municipality is small and has few inhabitants. It consists of the island of Andøya and parts of Hinnøya. The total population is 4,562 as of 2025 (Statistisk Sentralbyrå, 2025). The municipality had its highest population in 1971, at 8,060 inhabitants (Thorsnæs & Engerengen, 2025). The population density today is seven people per square kilometre, where only 65% of the population live in settlements (Statistisk Sentralbyrå, 2025) (figure 7). Statistics Norway defines a settlement as an area with approximately 200 people living within a specific geographical area, where the distance between houses is less than 50 metres. Along with a small population, a large percentage is of an older generation (ibid.).



Figure 6: Photo by B. I. Karlsen

Figure 7: Statistics of Andøy municipality
(Statistisk Sentralbyrå, 2025)



TOTAL AREA

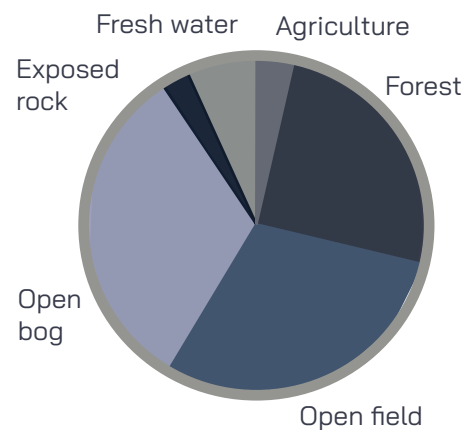
656,18 km²

AREA COVERED BY BUILDING

1 km²

AREA COVERED BY ROAD

2,4 km²



TYPES OF BUILDINGS ALONG THE COAST

House	670
Garage	640
Fishery and agriculture	106
Other industry	78
Recreational house	73
Smaller agricultural	11
Other	109
Total	1687

Residential population **4562**



Population density 2025

7 inhabitants per km²



Nr. residential buildings 2025

295,1



New residential buildings 2025

3



Recreational buildings 2025

662

SITE DEFINITION

The site spans from Kvalnes to Skarstein on Andøya. Encapsulating Kvalnes, Ramså, Breidvik and Skarstein (figure 8). The western border follows FV82 and RV982. The eastern border follows the coast and includes the shallow ground along it.

Figure 8: Map illustrating the site and showcasing the different placenames within the site.



LENGTH: 12.4km

AREAL: 12.4km²

7673473.05 N

543297.59 E



Figure 9: Photo by B. I. Karlsen

Chapter TWO:

THEORY



Figure 10. Photo by B. I. Karlsen



Chapter one: Introduction

Chapter two: Theory

Relationship Between People And Nature

What Makes People Care For Nature?

How Do We Design To Foster Connection And Ensure The Continuity Of Nature?

Chapter three: Analysis

Chapter four: Design

Chapter five: Final remarks

Chapter two: THEORY

RELATIONSHIP BETWEEN PEOPLE AND NATURE

The way one speaks about nature today often conveys an underlying sense that humans and the natural world are separated, often referred to as the nature-culture divide (Uggla 2010). One commonly refers to “people” and “nature” as if they were in two separate categories. Nature is described as something out there, something one visits, protects, uses, or impacts, rather than something one is fully part of. This way of speaking can create a sense of distance between humans and the natural world, rather than presenting humans as part of the ecosystem (ibid). Whether one talks about humans as a part of nature or not, people are still deeply connected through biology, how one is affected by the environment and vice versa (Kellert 2008).

This nature-culture divide can be related to an anthropocentric view (figure 12). An anthropocentric view is based on the idea that humans are at the top of everything and that one judges or interprets everything else from this perspective (Stabell, 2025). That implies that other species or elements of nature are not considered to have intrinsic value (ibid.). This separation can make it easier to disregard environmental issues. The

distinction between humans and the rest of nature in anthropocentrism can be linked to the phenomenon ‘The imagined wall’ (Morgan et al., 2023). A barrier that one seems to believe exists between humans and nature. Morgan et al.’s means this could be the reason for the human-centred ecological crises humans are currently facing.

Throughout time, humans have tried to understand nature (figure 11). In ancient Greek mythology, the world was personified as the goddess Gaia, mother of earth and nature (Endsjø, 2024). Which may have been a way to try to make sense of the entwined nature in which humans live. During the 1970s, James Lovelock and Lynn Margulis developed a theory, known as the Gaia hypothesis, based on the goddess (Latour & Lenton 2019). The theory states that the Earth is a self-regulating system in which living organisms and non-living elements coexist, maintaining conditions suitable for life. Disturbing this balance can trigger environmental crises. This understanding of nature encompasses humans and all elements as part of a connected system (ibid).

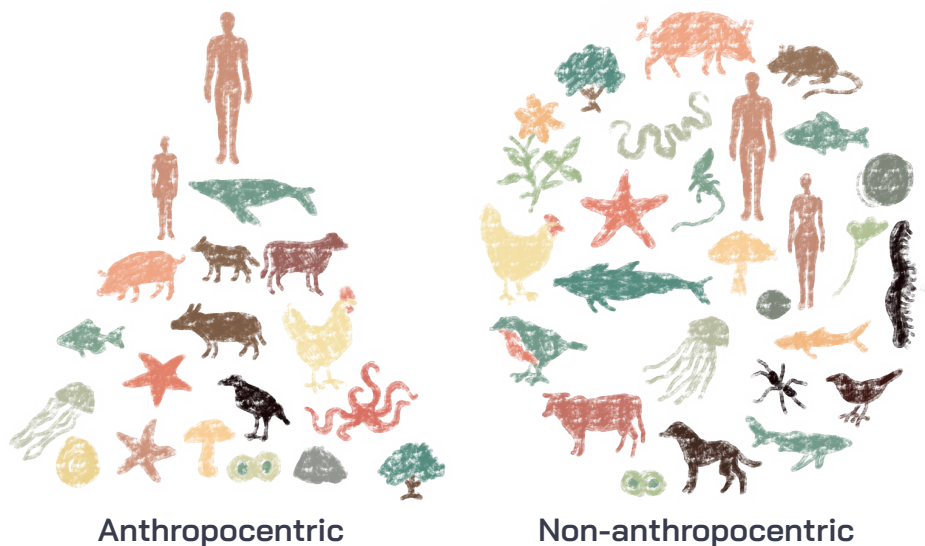


Figure 11: We humans like to understand our surroundings

Figure 12: The anthropocentric and non anthropocentric placement of human in relation to nature.



In response to environmental crises, the term 'ecosystem services' has emerged as a set of conceptual tools for the preservation of ecosystems (figure 17). Ecosystem services are services from nature that benefit humans and can support long-term economic growth (Hermes et al. 2018). The term relates to an anthropocentric view that treats nature as a servant, something to benefit humans. Still, it promotes the preservation of ecosystems by showing how the ecosystems can directly or economically benefit humans. It can therefore be used as a tool for arguing for the preservation of ecosystems with someone who does not see their intrinsic value.

Ecologically valuable landscapes often have a messier appearance than traditional landscape architectural designs (Nassauer 1995). The dilemma that arises when we focus on the ecological aspect of a landscape architectural project is the risk of negative public feedback. People often do care about preserving nature and its ecosystems, especially aspects they value, such as bird song and clean air. Contrary to this, they normally do not wish to see it go at the expense of the familiar or expected appearance of their landscape. Nassauer explores this in her essay on the need for an orderly framework for the messy ecosystems. Based on studies of understanding and appreciation of different ecosystem structures, people tend to value what they perceive as intentional and requiring constant human stewardship. Even though they might be ecologically valuable landscapes. The different terms people use to describe landscapes are grouped into correlations with attractive and non-attractive landscapes (figure 13). However, words that are negatively correlated with ecosystems can often be beneficial, such as messy, weedy, dead, or rotten. It is possible that these negative terms could become more attractively correlated if the general understanding of their ecological benefactor were greater (ibid.).

Some examples of attractive descriptive terms are:

Cared for, mown, trees, no erosion, pasture, contour ploughing, native vegetation, conservation, wildlife, natural, neat, no junk, lawn ornaments, or architectural details.

While terms that have an unattractive correlation are:

Dead or rotten, lack of yard care, no flowers, no shade, messy, cluttered, ongoing construction, neglected, weedy, poor conservation, erodible land, overgrazed, runoff, slimy-looking water, too formal, too much, monotonous and no trees.

Figure 13: Descriptive terms of nature (Nassauer 1995).

What makes people care for nature?

A conservation psychology study explored how people's perceptions and descriptions of their connection with nature (CN) influence their pro-biodiversity behaviours (PBB) (Hatty et al. 2022) (figure 15). The study examined how people describe nature and grouped these descriptions into four categories: **descriptive, normative, experiential, and complex** (ibid) (figure 14).

The study found that people with an **experiential** or **normative** view of nature had higher CN scores, while those with a **descriptive** descriptions had the lowest (Hatty et al. 2022). Connecting this up to people's conservation actions and levels of participation, one of the most notable findings was that people with an **experiential** understanding of nature had the highest PBB (figure 14) (ibid). This implies that being in nature

makes people more environmentally cautious, but why and how can being in nature affect our behaviour?

Throughout evolutionary history, humans have coexisted closely with nature, and the human body has biologically evolved to respond to natural environments (Kellert 2008) (figure 16). Being in nature can actually help reduce stress and anxiety by lowering cortisol levels and heart rate (Ewert & Chang 2018). This was explored in the psychological study by Ewert & Chang tested stress responses across different environments. The sites ranged from natural to urban or built areas. The result was that people spending time in a more natural environment experienced a greater reduction in stress than those in an urban setting (ibid.). In a similar study, they examined the effectiveness of nature-based walking (Ma et al. 2023). They also found that

Descriptive descriptions focused on objects and facts. **Normative** ones highlighted balance, responsibility, and conservation. While **Experiential** emphasised calmness, happiness, beauty, and presence. **Complex** descriptions were understood on both physical and emotional levels, and they recognised nature's self-worth.

Figure 14: The different groups of descriptions of nature (Hatty et al., 2022)



Figure 15: Our pro-biodiversity behaviours can be a reflection on our relationship to nature.



Figure 16: How people perceive nature can have an affect on their relationship to it. Based on photo by Tuva A. N. Indrevoll.

being active in a green environment, in this case, walking in nature, was more efficient than in urban surroundings. The findings were consistent with the previously mentioned study by Ewert and Chang (2018), showing similar health benefits, including reduced stress and anxiety, as well as improvements in mood and mindfulness. In addition, the participants experienced a stronger sense of optimism, mental well-being and nature connectedness (ibid).

Looking at a societal scale, keeping people healthy can help reduce pressure on the healthcare system, support workforce participation, and potentially lower health-related costs, according to national projections (Strøm et al. 2016). Recognising the value of nature and emphasising ecosystem services can indirectly enhance the conservation of natural habitats and wildlife populations, simultaneously benefiting human needs (IPBES 2019).

How do we design to foster connection and ensure the continuity of nature?

Ian McHarg was one of the first to introduce ecology-based design theories into landscape architecture through his book 'Design with Nature' (1969), and it has since become a cornerstone of ecological planning. He thought that traditional design ignored nature's factors and that an interest in understanding how a place's natural elements can ensure a design that lasts. By understanding soil, vegetation, fauna, and other components, and implementing appropriate infrastructure or activities accordingly, one can minimise natural risks such as biodiversity and habitat loss (ibid.). Standard analyses for landscape architecture design projects often rely on this theory.

Denise Hoffman Brandt, however, criticises the renowned McHarg theory and points out that the practice makes a vital mistake by suggesting that humans are suited to determine the design of everything (Urška Škerl 2024). Even though a design focuses on ecological elements, it will almost

always favour the human experience. Still, it is unavoidable to make a design or planning decision that is not from a human perspective. It is therefore the acknowledgement that a design will benefit humans either way and that extra considerations for the rest of nature are essential to be able to create an ecological cautious design (ibid).

As earlier mentioned the intent of human stewardship helps people appreciate a landscape more than without the apparent intention. Nassauer underlines that if many do not notice, value, understand, or appreciate an ecosystem, then it is at greater risk of harm. If the human intention is not apparent in either new designs or remnant landscapes, then it will probably not be appreciated for its ecological qualities. Landscape design can, by using cultural cues that correlate to attractive descriptive terms, create a context for ecological functions. Otherwise, these landscapes can be mistaken for unvaluable land, awaiting development (Nassauer 1995). The use of 'orderly frames' can therefore be employed in landscape architecture to meet both nature's needs and human expectations. In the wilderness, it is

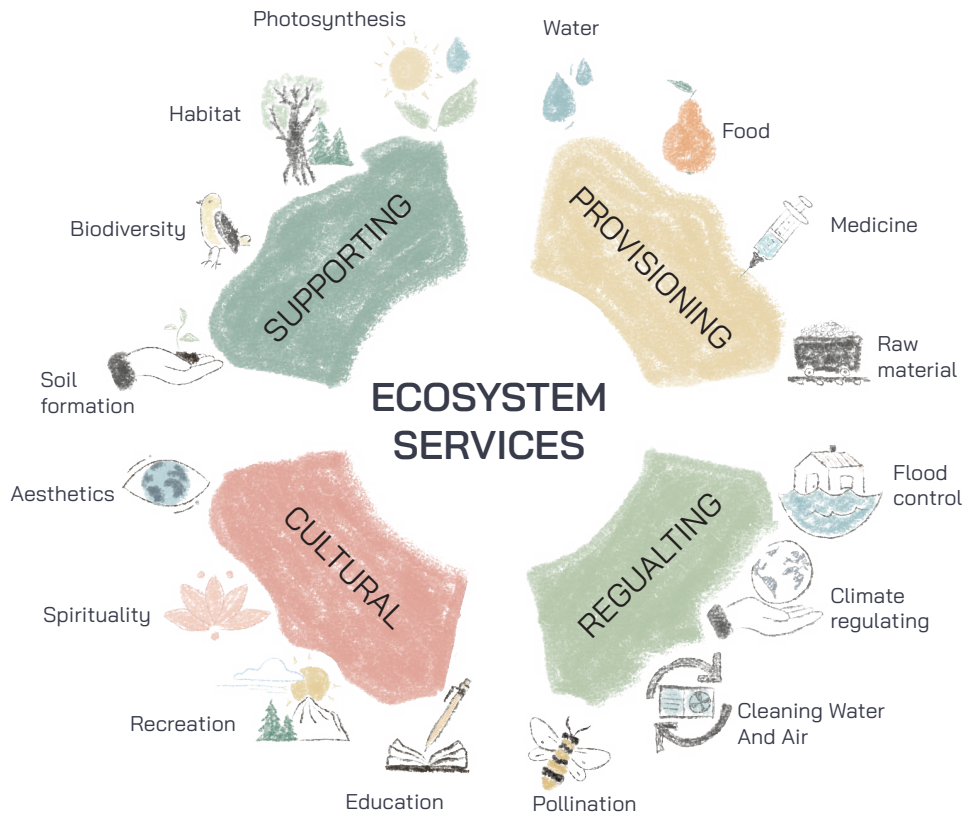


Figure 17: Ecosystem services is a systematic way to explain the benefits of the ecosystems around.

less necessary to create these cultural contexts for messy ecosystems, as they are expected by visitors.

To create a sustainable design, Meyer (2008) argues that it is not sufficient to focus only on the technical and ecological aspects, but also on beauty. For people to care for a place, they need to feel connected to it. A landscape is not only a physical place but also a bodily and emotional experience. When people move through a landscape, they experience space, material, light, sound and the passing of time. This experience of beauty can lead to increased empathy, respect, and a sense of responsibility in people for the landscape. While it is important to note that sustainable beauty does not necessarily need to be harmonic or idyllic in a traditional sense. Nature is dynamic, in constant change, disturbances and adaptations; it is therefore necessary for the sense of beauty to follow this change. Beauty can, however, lie in the robust, resilient and messy landscapes if we learn to see

it. By deliberately creating landscape designs that harbour the intent of fostering a connection with people, it will more likely be a sustainable design, in accordance with Meyer's study (ibid.).

How we create the cultural context is important to how we want people to understand the messy ecosystems behind the clean frame (Nassauer 1995). Biophilic design views nature as an inspirational force, drawing on it by mimicking it to be able to create comforting designs (Kellert 2008). It encourages organic forms, continuous shapes, and natural materials. As well as arguing that people are more accustomed to reading natural structures. This design approach is most often used in urban areas lacking natural features (ibid.).

Utilising the inspiration from nature in the biophilic design approach, one can also minimise the distance between the frame and the landscape in less urban areas. The use of biophilic design in a more natural setting can potentially

reduce the separation between human infrastructure and nature, as it uses the same elements.

Chapter three:

ANALYSIS



Figure 18: Photo by B. I. Karlsen



Chapter one: Introduction

Chapter two: Theory

Chapter three: Analysis

Landscape Structure

Landform And Geology

Ecological Framework

Landscape Sensitivity And Capacity

Human Landscape: Use, Access, And Perception

Cultural And Historical Layers Identity And Landscape Character

Contemporary Pressures And Conflicts

Governance, Vision, And Economic Reality

S. W. O. T.

Chapter four: Design

Chapter five: Final remarks

Chapter three: ANALYSIS

LANDSCAPE STRUCTURE

The island Andøya is long, measuring 57 km from north to south. The surrounding fjord has a deep and steep seascapes reaching a depth of 1000 meters, making it one of the deepest fjords in Europe (Husa et al. 2025). The landscape is characterised by large flat land areas and four central steep mountain ranges (figure 23). The island consists of both fjord and coastal plain landscapes along the coastline, and inland valley, plain, ridge, and mountain landscapes (Artsdatabanken & Miljødirektoratet 2023). The combination of both flat and steep terrain is unusual for this region. A more typical landscape is steep mountains that go straight down to the fjord (ibid.).

LANDFORM AND GEOLOGY

Andøya's geology is varied (figure 24). The site has many different superficial deposits (Norges geologiske undersøkelser 2023). There is a continuous layer of marine beach deposits, moraine material, wind deposits, organic matter from bogs, and exposed rock under the water surface (ibid.). The bedrock itself also varies,



LEGEND:

- SITE
- COASTLINE
- CONTOUR LINES (10m)

Figure 23: Map showing the topography of Andøya and Hinnøya.



Figure 19: Sand dunes similar to the ones on Ramså. Photo by Tuva A. N. Indrevoll



Figure 20: The rocky coastline meets the harsh wind on an autumn day on Kvalnes. Photo by B.I. Karlsen

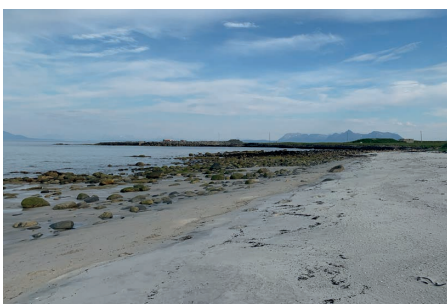


Figure 21: The sandbeaches at Ramså, looking south. Photo by Tuva A. N. Indrevoll



Figure 22: The flat bogland meets the steep mountain ranges of Andøya during midnightsun. Photo by B.I.Karlsen

GEOLOGY

mostly consisting of silt and claystone, with instances of other igneous and metamorphic bedrocks (Norges geologiske undersøkelser 2021).

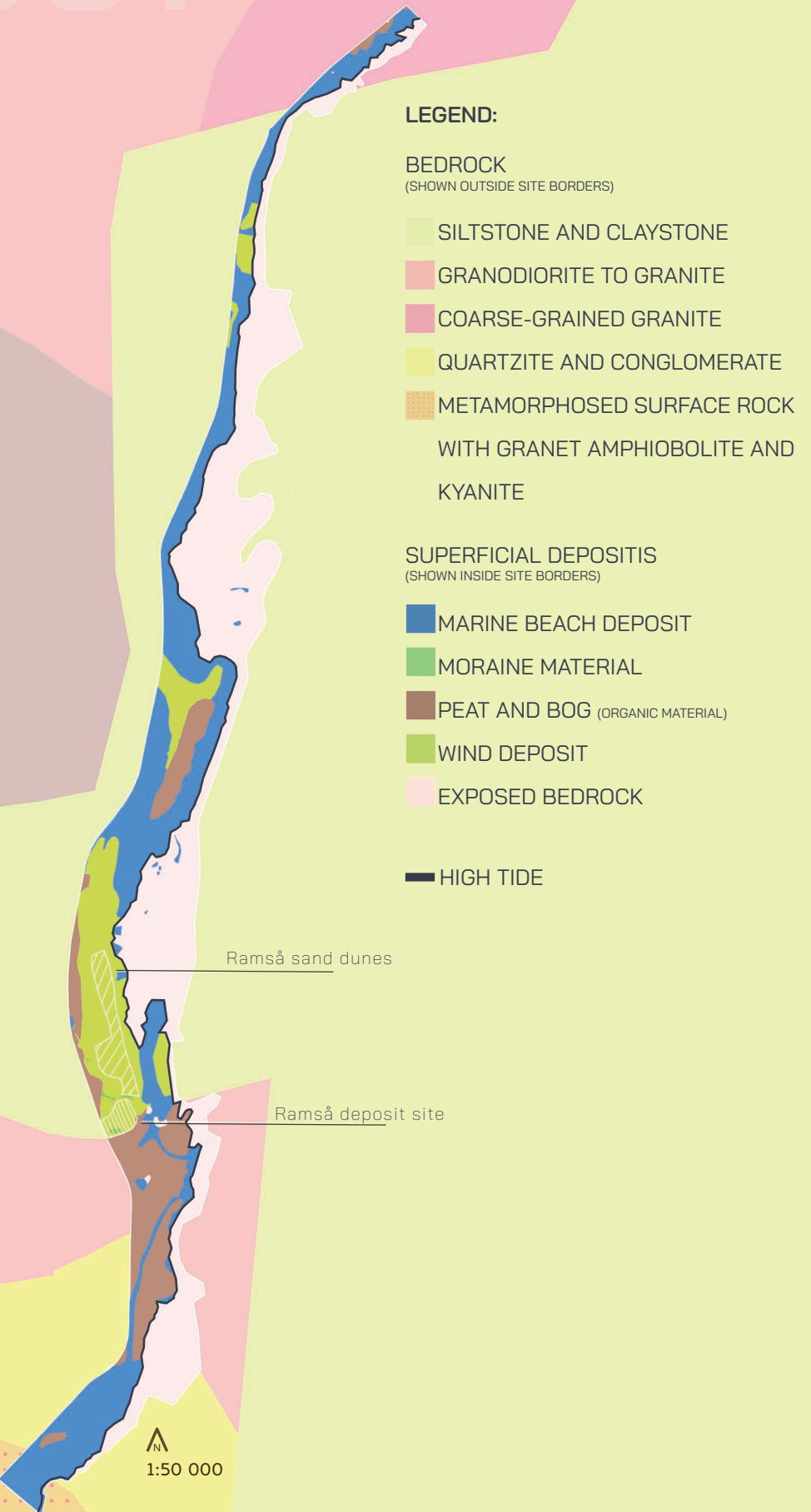
One area in Ramså has a distinct geological and paleontological interest not found elsewhere in Norway, except Svalbard (Askheim & Thorsnæs 2024). The area consists of coal, oil shale and interesting fossil deposits (ibid). In addition to the unique ground, sand dunes are also found in Ramså and are estimated to be 6000 years old (figure 19) (Norges geologiske undersøkelser 2016). The dunes act as a natural barrier against the sea (Strodt 2023) (figure 19).

The climate on Andøya allows larger areas to be covered by bogs, giving it a distinct character (Bjerke 2005) (figure 22). The bogs are of various types, but most are peat bogs. The bogs are quite wet and have layers of turf underneath, while vegetation grows on top in clusters, making the areas soft and giving (ibid.). This can make it challenging to move around. Bogs are an important ecosystem type because they retain water, capture and store large amounts of CO₂, while also preserving historical elements for future generations (Rydgren 2023).

Along Andøya's coastline, there are several long sand beaches (figure 21). They contrast with the otherwise rugged rocky coastline (figure 20). Along some of the beaches, there are also large areas uncovered during low tide, called intertidal flats (Egga utvikling n.d.).

HYDROLOGY AND GROUND CONDITIONS

The site lies within several different catchment zones. Many different creeks and rivers pass through the site. The largest ones are Littleelva, Storelva, Nordelva and Gårdselva. There are several registered flood precaution areas along the rivers and in some bog areas around the site. Most of the site is



also registered as a possible quick-clay landslide area. (Norges vassdrags- og energidirektorat, 2025).

Figure 24: The geological overview of the site, showcase both the bedrock (Norges geologiske undersøkelser 2021) and superficial deposits (Norges geologiske undersøkelser 2023).

CLIMATE

Andøya is known for its varying weather (Norsk klimaservicesenter n.d.). It is classified as a temperate climate, warmer than the inland climates in the same region (Støstad 2020). This is due to the passing Gulfstream along the western coast of Andøya, keeping temperatures on Andøya and generally in Norway livable (Grønnestad 2020). Had it not been for the Gulf Stream, the weather in Norway would have been 10 to 15 degrees colder (Bjerknes Centre for Climate Research 2025)

The island experiences much wind, mostly from the southeast and east, but the harshest from the north (Norsk klimaservicesenter 2025) (figure 26). The downpour comes in all forms, including snow, hail, rain, and fog (figure 25). There are approximately 87 days with more than 20 cm of snow on the ground in the lowlands of Andøya (Støstad 2020). The tides are of a larger significance at this latitude, with it generally varying with 1,5-2,0 m throughout the day (Kartverket 2026b).

Winters at Andøya are long, and the summers are short, with almost 2 months of darkness and 3 months of constant sunlight (Norges metrologiske institutt n.d.). This gives us weather phenomena such as the midnight sun, polar night, and an often clear view of the northern lights.

Climate change will affect Andøy, as the rest of the world (Støstad 2020). With the implementation of mid-level climate adaptation measures, it is predicted that Andøy municipality will have a 2,8 °C higher temperature in 2100 than in 2000. The summers will become a month longer. There will be a 3% increase in rainfall. This will result in approximately 23 more days of downpour by the end of the century. The strength will also increase, resulting in 50% harder downpours than before, ultimately increasing the risk of mudslides, rockfalls, and landslides (ibid.).

With these predictions, the ocean level will also increase by 25 cm at Andøy (Støstad 2020). The Government warns

that we should also be ready for a 65 cm increase. With climate change, a 'normal' storm surge on Andøy will be an ocean rise of 208 cm. This would affect most of the island's current infrastructure. These surges are predicted to occur annually by the end of the century. The rivers and creeks will also bring more sediment into the fjords, creating darker water. The effect is uncertain, but it is likely to affect marine life (ibid.).

The number of snow days will likely decrease to 19 days (Støstad 2020). That is a three-quarters decrease. The amount of snow will also have an effect, as it will generally be 58 cm less snow on the ground (ibid.). Which will affect both flora and fauna and overall temperature (NASA 2024). Due to the albedo effect, snow reflects heat back into the atmosphere, while bare ground retains it. With fresh snow being able to reflect 85% of sunlight. If the snow disappears, the heating effect from the sun on Earth will increase even more (ibid.).

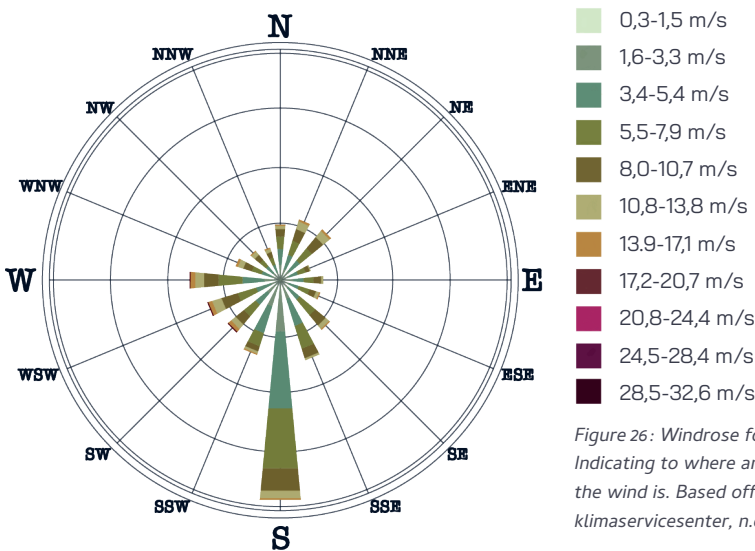


Figure 26: Windrose for Andøya, Indicating to where and how strong the wind is. Based off data from (Norsk klimaservicesenter, n.d.)



Figure 27: The weather can cause unforeseen problems, such as road signs being unreadable. Here we are uncovering a place name. Photo by Tuva A. N. Indrevoll

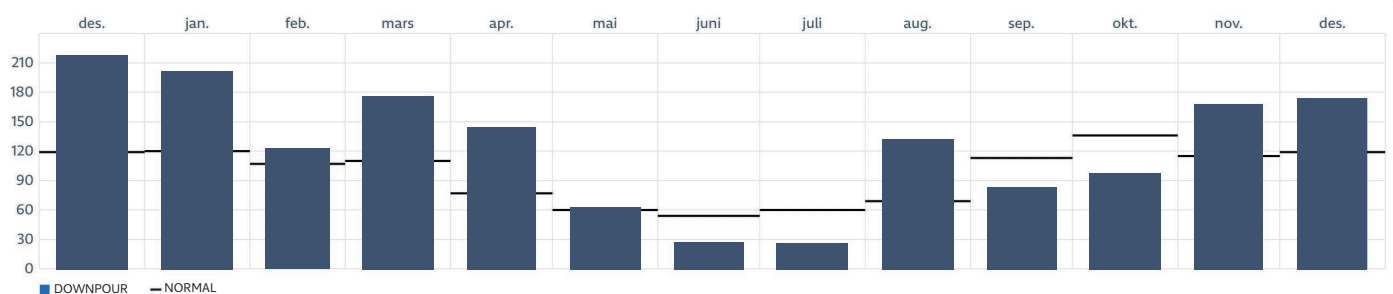


Figure 25: Downpour model for 2025, Andøya. Based off of data from (Norsk klimaservicesenter, n.d.)

ECOLOGICAL FRAMEWORK

VEGETATION STRUCTURES

Due to the frequently harsh and rapidly changing weather, there are many hardy plants on Andøya. These include, for example, pioneers and species specialised for subarctic conditions. Such as rosebay willowherb (*Chamaenerion angustifolium*) and mountain birch (*Betula pubescens var. pumila*) (figure 28-30).

For long, bogs have been thought to be so-called 'dead fields' as they are of little use for cultivation (Rydgren 2023). In more recent decades, the importance of bogs and their services has come to be better understood. In the boglands, the native plants are specifically adapted to tolerate extensive waterlogging (ibid.). One of the more well-known plants on the bogland is the cloudberry (*Rubus chamaemorus*). This plant has a long cultural tradition on Andøya (Lov om friluftslivet (friluftsløven) 1957). Some of the bogs on site have been drained

by ditching, to enable land cultivation (figure 38). Along the ditches, the ground is drier, allowing trees and other species less tolerant of wet soil to grow.

Trees naturally grow as solitary trees or clusters of smaller woodlands on Andøya. Common trees include the mountain birch, goat willow (*Salix caprea*) and rowan (*Sorbus aucuparia*). Natural occurrences of pine (*Pinus sylvestris*) and spruce (*Picea*) are rare, but archaeological evidence indicates that they have been present here since before the end of the last ice age (Spongsveen 2021).

In the grasslands, various grasses and herbs grow (figure 31-34). Cow parsley (*Anthriscus sylvestris*) is a common plant found in greater numbers in meadows and pastures on the site. It is natural to Norway's flora, but it is often unwanted in an agricultural context (Sunding 2025). During summer, larger continuous

fields of rosebay willowherb carpet the landscape. The different herbs flowers throughout the site, often between July and August.

Agricultural fields are located on drained turf bogs, and there has been a struggle to cultivate them. The edges of the fields are, however, abundant with the same vegetation as in the grasslands.

On the sand dunes, there are species that prefer drier sand-dominated soil. The dunes on Ramså are more vegetated than many others. The species that grow here are often in critical condition (Artsdatabanken 2018). The plant's roots contribute to the dunes structure and keep the dunes from eroding.

Invasive species can threaten local flora by outcompeting native species (Auestad 2024). Persian Hogweed (*Heracleum persicum*) is today a common sight at Andøya (Mæhlum 2025). Even though



Figure 32: Photos by Eva R. N. Indrevoll



Figure 31: Collage of flowers, moss and lichen along the coast of Andøya. Taken from 2015 to 2025. Photos by Tuva A. N. Indrevoll



Figure 33: Photo by Kato Indrevoll

Figure 34: Photo by Kato Indrevoll



it is invasive, it has become part of the current landscape character. Lupin (*Lupinus polyphyllus* Lindl.) is another invasive species, found, for example, in sand dunes (Artsdatabanken 2018). It has commonly been used in roadside plantings in Norway (Nordahl 2024). Today, lupin is a widely recognised invasive species, following the discovery that it poses a significant threat to native species (ibid).

FAUNA AND HABITAT

The animals on Andøya are abundant in the landscape. The climate significantly impacts the life cycle of the species living here (Condé et al. 2001). To survive through the winter, different species

have developed various adaptations. Since winter is so long and spring and fall are very short, the animals need to make the most of the few summer months, both to store enough energy for the long winter and to reproduce. Compared with a more tropical environment, species diversity is lower north of the Arctic Circle (ibid).

However, that does not mean the place feels lifeless and dull. The variation in habitats still fosters an abundant in life (figure 37). The Gulf Stream and the deep fjord attract a diverse marine life (figure 36) (Husa et al. 2025). Travelling through the sky, a considerable number of birds live and pass through Andøya (Birdlife Norge n.d.) (figure 35). There

are also many different mammals on land to be seen on the vast flat plains.

Andøya is known for its marine wildlife, especially whales. Sperm whale (*Physeter macrocephalus*), orca (*Orcinus orca*), humpback whale (*Megaptera novaeangliae*) and many other whales can often be seen along the coast either from a boat or from land (Artsdataanken 2026). Harbour seal (*Phoca vitulina*) can be seen near the shore (Artsdataanken 2026).

The site's variety of habitats attracts a wide range of birds. At Kvalnes, a colony of great cormorants (*Phalacrocoracidae carbo*) can often be seen (Artsdataanken 2026). They frequently reside on skerries and the old peat pier (ibid.).

Black-legged kittiwake (*Rissa tridactyla*) has also been observed successfully nesting at the same pier (Norconsult 2023a). The Barnacle Goose (*Branta leucopsis*), often graze on the fields of Andøya on their way to Svalbard (Norway) (Jensen et al. 2018).

The elk (*Alces alces*) is a present figure on Andøya (Artsdataanken 2026). It can most often be found at the edges of smaller woodlands. Hare (*Lepus timidus*) and ermine (*Mustela erminea*) can be found on the site. The hare can be found in gardens and even on construction sites, while the ermine lives close to the coastline (ibid.).

The bogs along the northeastern

coastline also attract many different bird species each year, and serve as substantial nesting and feeding grounds (World Wildlife Fund for Nature 2020). The Norwegian Environment Agency (2015) stated that there should be no further disturbance or development of these areas, and that human presence during the birds' nesting season should be especially minimised. This relates to their claim that the bog areas on large parts of central Andøya are the most valueable in Northern Norway (ibid.).

Not all species currently found on Andøya have been present there for long. Elk were first observed on Hinnøya in 1949 and have since become common

a sight on Andøya (Aurora Borealis Multimedia AS 2021). Their population has grown rapidly, making them a familiar sight for locals and tourists (ibid.). The American mink (*Neovison vison*) is considered a threat to the island's fauna, especially nesting birds (Folkehelseinstituttet 2023). In 1974, a bridge was built between Hinnøya and Andøya (Miljødirektoratet 2021). Since then, red foxes (*Vulpes vulpes*) have naturalised themselves on the island and are posing a threat to the birdlife (ibid.).

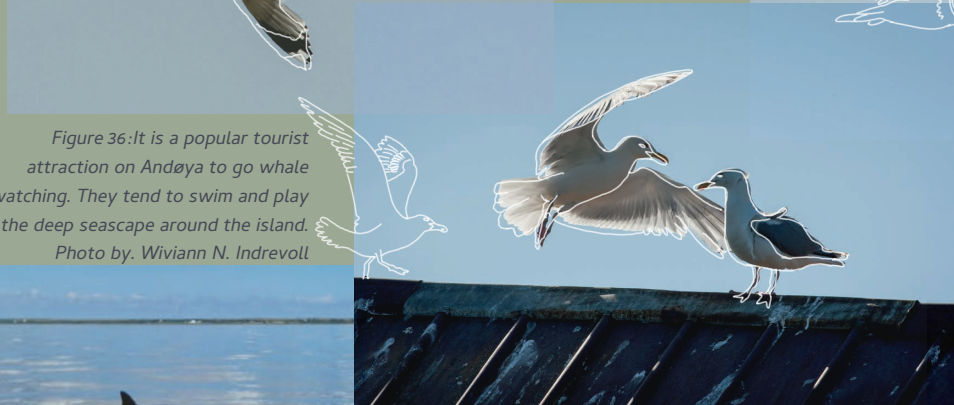
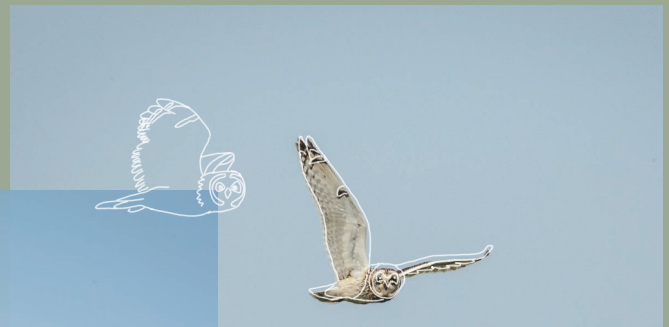
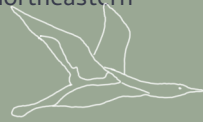


Figure 36: It is a popular tourist attraction on Andøya to go whale watching. They tend to swim and play in the deep seascape around the island. Photo by. Wiviann N. Indrevoll



Figure 35: The wildlife on Andøya varies between the seasons, but one is almost certain to see elk and seagull. All photos by B. I. Karlsen.

HABITATS



Figure 37: The map showcase different habitats and give examples of which species that live there.



LANDSCAPE SENSITIVITY AND CAPACITY

Although there is an abundant wildlife on Andøya, there are still factors threatening many vulnerable species and ecosystems. Bogs are vulnerable to human activity, especially draining or building on bogs (Rydgren 2023) (figure 38). The result is habitat disturbance, ultimately leading to loss or fragmentation. By draining a bog, the water level in the ground descends, this dries out the bogs. Bogs that have been drained are not as effective at mitigating floods or carbon (ibid.).

The sand dunes in Norway have experienced a general >50% decrease in the last 50 years, likely due to physical

disturbance, cultivation, afforestation and recreational wear and tear they face (Artsdatabanken 2018).

Invasive species can threaten local flora by outcompeting native species across all vegetation types on the site (Auestad 2024). Invasive species are correlated with human introductions.

Due to climate change, many species face changes in their populations (Støstad 2020). The hare will likely become a vulnerable species, as it will still have its winter coat when spring arrives early. The Snowy Owl (*Bubo scandiacus*) could lose all its habitats in Norway by the end of the century

due to environmental changes. Other animals will move further north and thrive in Andøya's new climate, maybe outcompeting local species (ibid.).



Figure 38: Bogs shaped by human activity, here at Kvalnes. Photo by Rebecca K. Larsen

HUMAN LANDSCAPE: USE, ACCESS, AND PERCEPTION SETTLEMENT AND INFRASTRUCTURE PATTERNS

The site is registered by the national organisation Artsdatabanken (2026) as having low to medium land-use intensity, but varies in the infrastructural presence. The County Road 82 follows the western border and is the most continuous infrastructure on site (figure 7). Houses, both inhabited and not, are scattered throughout (figure 40). The street light network is inconsistent. There has been a plan to upgrade the network, but due to the economic instability, it has been postponed (Haug 2025).

Throughout the sites, there are several breakwaters (figure 39). They contrast with the otherwise natural coast. Boathouses are located near the marinas within the breakwaters. The peat industry pier at Kvalnes without a breakwater is today out of function and deteriorating.

The industrial presence is strong on the site. The most prominent is the land-based fish farm, Andfjord Salmon AS, on Kvalnes (Norconsult 2023a). It is intended to create 11 large basins, approximately 20 meters deep into the ground (ibid.). 2 of the 11 basins are in production, and the others are at various stages of construction. Large

embankments and fences surround the area today. The area is well lit, a contrast to the otherwise dark landscape. There are also plans to build another fish farm on Breidvik (Jordell 2022). This farm is planned to be smaller in size but will likely still be prominent in the landscape.

There are other industrial presences on the site. For over 100 years, there has been an industrial interest in the geological phenomenon at Ramså (Nilssen 2005). It began with the first discovery of coal in the bedrock in 1867, which led to the extraction of oil shale and the discovery of fossils. In contrast to the long history, there has never been a sustained, economically successful extraction here (ibid.).

The still ongoing peat extraction on Kvalnes is another industrial site,

situated right along the fish farm. It started in the 1980s, with peat extraction for garden soil (Guldberg 2023). The peat industry is beginning to decline amid renewed interest in protecting bogs. There will be no more peat resources for the peat extraction at Kvalnes in 10-15 years, as they will not be allowed to expand their extraction area (ibid.).



Figure 39: The wave breakers make it possible to have docks along the windy coast, here at Skarstein. Photo by Tuva A. N. Indrevoll



Figure 40: Overview of the Fish farm at Kvalnes in present time, looking north towards Ramså. Photo By: Andfjord Salmon / GeoNord

LAND COVERS



Figure 41: The map illustrate existing land covers.



MOVEMENT NETWORKS

Walkability is limited due to a lack of infrastructure and a boggy landscape. It is possible to walk along the beaches, but this is quite challenging for wheelchair users (figure 42). Along the main road most people tend to walk (figure 1). There are no sidewalks or significant road shoulders for walking. The sides of the road have steep ditches to ensure a stable ground in the bog landscape, but create an even more unsafe pedestrian zone. There are access roads leading down to the coast, but few along it.

Recreational pathways on site are heavily fragmented (figure 45) (Hals 2022). There are two larger paths, one in the north and one in the south of the site. On Skarstein, there is a path following the coastline. It starts at the Whale Tower, through Skarstein marina and runs along the fields, with several bridges spanning over rivers and creeks (figure 43). The grass is cut to create these pathways during the summer months. In the south, there is the cultural path on Kvalnes, which was constructed more recently (figure 42). It starts in the south, passes between ponds in the bog and along the rocky coast and ends at Kvalnes marina. Part of the path is covered by high tide, restricting access.

There are remnants of paths from earlier times, some dating as far back as to the Iron Age (Jacobsen 2003) (figure 44). They are reclaimed by nature and difficult to find today. The earlier paths inside the site stretch between Stikksåa and Nordelva. It follows the river on the eastern side.



Figure 42: The path at Kvalnes, south is often overgrown or under water during high tide. While areas without path are difficult to walk on. Pictures by Rebecca K. Larsen.



Figure 43: The path at Skarstein, north, is small, and passes creeks. The creeks have priority. Photo by Tuva A. N. Indrevoll

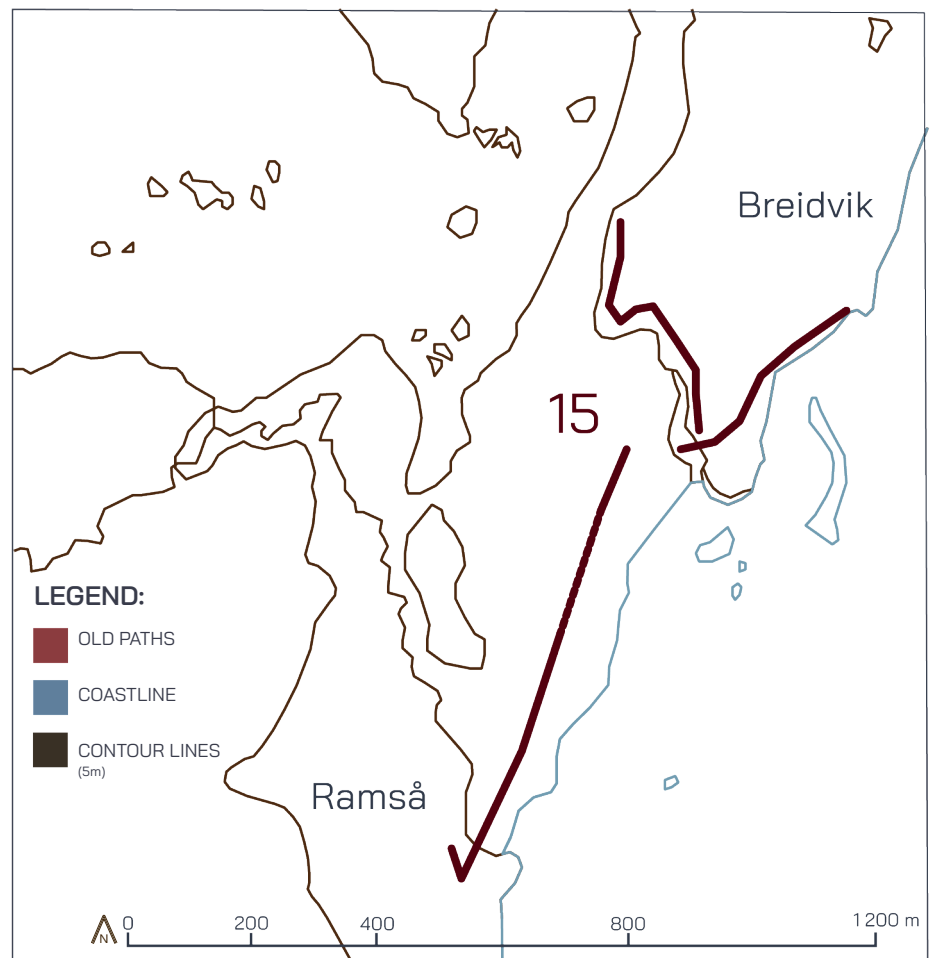
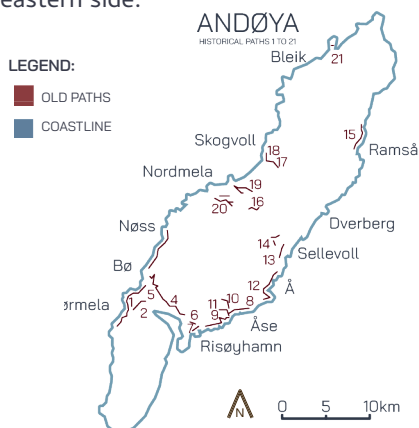


Figure 44: The earlier paths that run along Andøya were of poor quality and the bogs made it difficult to travel. The maps are based on (Jacobsen 2003)

MOVEMENT AND ACCESSIBILITY

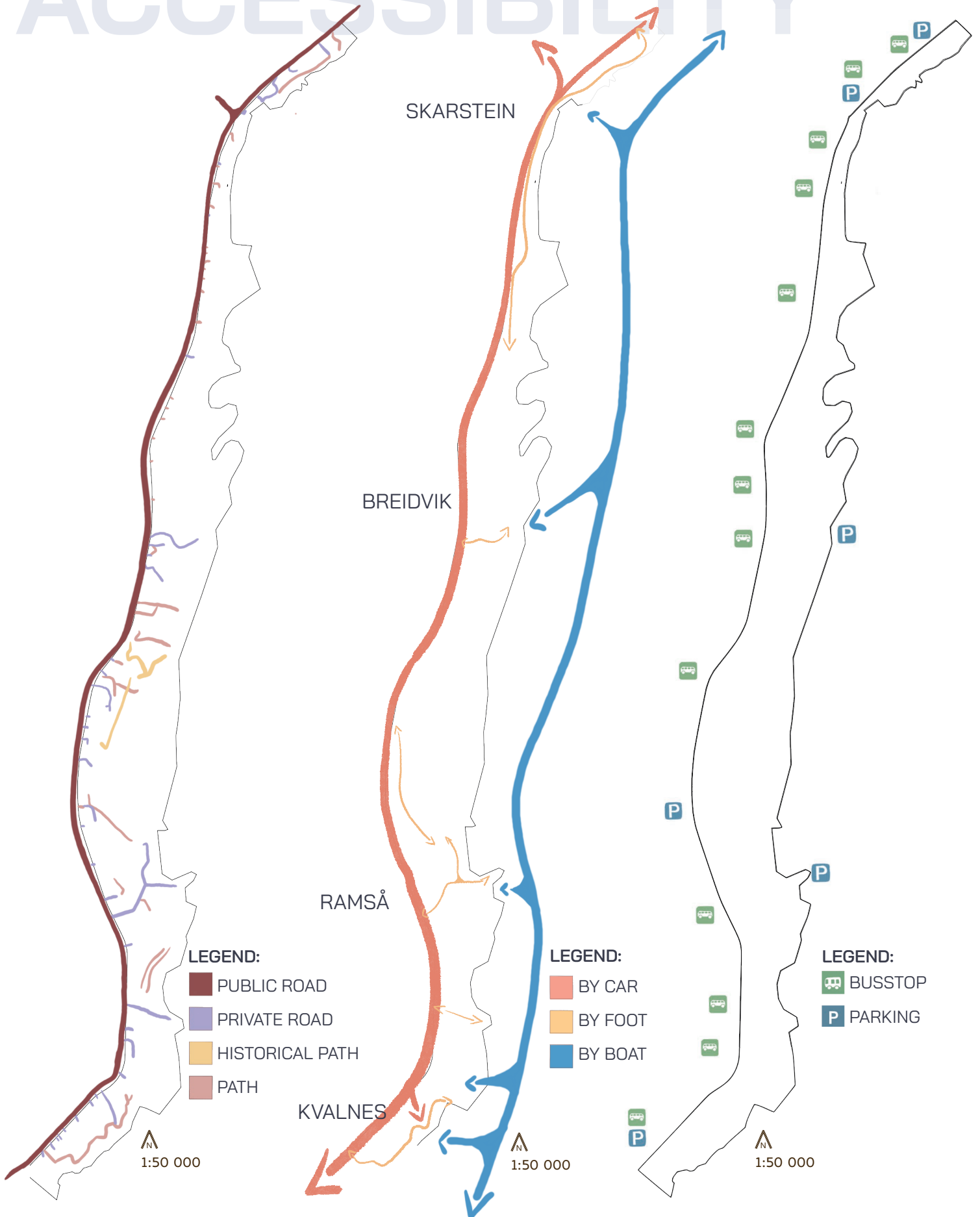


Figure 45: Based off of own data.

VISUAL STRUCTURE

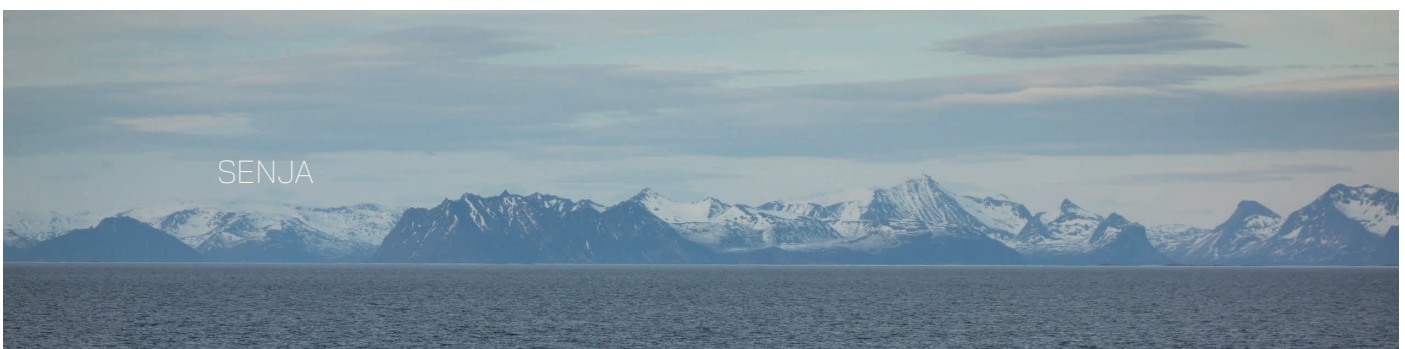
At the site, there are varying sightlines and several landmarks. Most of the sightlines are directed across the fjord towards Senja, Grytøya and Hinnøya (figure 46). There are also sightlines stretching across the vast bogs towards the mountain ranges and out into the Atlantic Ocean.

Important landmarks include the whale tower on Skarstein, the locally famous boat shed on Ramså, Andfjord Salmon,

the lighthouse, and Kvalnesbrygga (figure 47). The boat shed is renowned due to its previous owner's art installation on and around it (figure 62). However, it is no longer there. Smaller landmarks also stand out prominently in the landscape due to the overall flat topography. Such can be local art installations, marinas, or houses. One of the more distinct landmarks, a windmill on Kvalnes, has been removed (Hoff-

Elimari 2019). It stood where the fish farm on Kvalnes stands today.

Figure 46: The first sightline looks over to Hinnøya. The second looks toward Grytøya, with the midnightsun outlining the mountain silhouette. Looking to the last one can see toward Senja. Photos by B. I. Karlsen



LANDMARKS AND DESTINATIONS



Figure 47: Map showcasing existing landmarks in the site.



CULTURAL AND HISTORICAL LAYERS

Andøya has been harbouring life for thousands of years (Riksantikvaren 2026). Archaeological findings indicate settlements dating back to the Stone Age, suggesting that human activity has been present for more than 11,000 years (ibid.) (Figure 49). There are also traces of the Sami people living on Andøya. Some of the settlements found on the island are believed to have belonged to the Coastal Sami (Borgos 1999). In Finnvika, a larger area with remains of an old Sami settlement has been discovered, dating back to the Pre-Reformation period, before 1536. The change from a nomadic lifestyle was a result of the Norwegization. The first registered Sami tenant farmer on Andøya was Nils Mortensen, active between 1617 and 1621. Coastal Sami lived quite similarly to the other locals at the time and kept the same kinds of animals, though sometimes had 2 to 3 reindeer instead of horses (ibid.).

A local fisherman from Kvalnes Andøya, Helmer Vollan Saura, wrote nine diaries in total, spanning the period from 1931 to 1964 (Saura 1981). His descriptions paint a picture of everyday life. Most of the population on Andøya were common fish farmers, spending most of their days either at sea or in the fields

(figure 50-53). He often describes harsh weather and stormy seas, as well as the richness the sea had to offer.

Peat extraction was another way to optimise nature's resources (Johansen 2005). It was primarily used as a heating source and was practised for a long time in Norway. After the 1950s, the shift to electrical and petroleum-based heating led to the phasing out of this type of peat extraction (ibid.). However, it resumed in the 1980s to be used in garden soil supplements (Guldberg 2023). In the fields, farmers had to drain the bogs to be able to cultivate them. Today, however, we see the loss of ability and value that comes with overuse of natural bogs in this way (Rydgren 2023). This has shaped how the bogs look today. Though the bogs were thought to be dead fields, there were some known benefits to keeping them back then, such as cloudberryes. They were more valuable than other berries, and Andøya was an excellent cloudberry habitat. People of Andøya owned turfs with cloudberryes. This was later on protected by law under the Norwegian Outdoor Recreation Act §5 (Lov om friluftslivet (friluftsløven) 1957). Which usually allows all to gather berries in nature, but gives an exception

to the cloudberryes in specific areas. Cloudberryes prefer less wet soil, and the drainage may have been a reason for the large amounts of cloudberryes on the island.

The more recent history is connected to the industries that have contributed to shaping the island as it is today. The military facility on Andenes, Andøya, has a long history dating back to the Cold War and was established to ensure safety and NATO's presence in northern Norway (Maaø 2026). During the 90s, however, the activity was reduced. The base was to be closed in 2023, and all activity was to be moved to the neighbouring airport, Evenes in Harstad. Today there is again significant military activity on Andøya due to recent changes in the geopolitical situation (ibid.).

In 1962, Andøya Space was established, previously called Andøya Rocket Range (Andøya Space, 2025). Since then, they have observed and studied the northern lights and the arctic atmosphere to gain greater knowledge and understanding of the sky, working with over 100 different universities and international research organisations. It is the only rocket launch on European soil (ibid.).



Figure 48: The recreational fishing is an important aspect of the activities present at Andøya. Photos by Tuva A. N. Indrevoll.

ARCHEOLOGICAL FINDINGS



Figure 49: The map points out archeological findings in the site. The settlement on Kvalnes fish farm is planned to be dug up and removed (Riksantikvarämbetet 2026)



Figure 50: The life at Andøya was hard and it revolved around the landscape. Here showing workers and lovers on the bog and in the shoreline. Photos owned by Ann Elise Indrevoll



Figure 51: Many people lived at Andøya through the years. It is in more recent time we see a decrease. Photos owned by Ann Elise Indrevoll



Figure 52: The breakwater around the harbours came later on. Therefore strategic placement of harbours were crucial in the rough sea. Photo owned by: B. I. Karlsen



Figure 53: These photos give a glimpse into the past at Kvalnes. Showing both summer and winter. Photos owned by Ann Elise Indrevoll

IDENTITY AND LANDSCAPE CHARACTER

Several aspects contribute to Andøya's identity. The most central, however, seems to be the island's nature and its varying industries. This has become a large part of tourist attraction and everyday life for locals. Fishing and related work have long been a central part of the local identity on Andøya, rooted in a long history and forming the foundation for settlement and livelihoods on the island (figure 48). In the past, fishing was one of the main drivers of the local economy. Today other sectors have become increasingly important, both economically and culturally (figure 60-63). Space research and military operations now play significant roles in supporting the local economy and shaping the community.

Nature and Outdoor Life

The contrasting landscape of Andøya, with steep mountains rising from the flat boglands and the surrounding

crystal-blue ocean washing up on the long white beaches, has become a tourist destination (figure 64-67). The varied landscape and distinct character attract many hikers, especially during the summer months (figure 54&56).

The flora and fauna are breathtaking during the short summer months (figure 58-60). In comparison, winter illustrates the persistence of arctic wildlife (figure 61&63). Through the seasons, one can see many different birds, from the mountaintop, in the bogs, and out at sea. Marine mammals, like seals and whales, are present figures along the coast. On the shore and further inland, otters (*Lutra lutra*) play around in the seaweed and hares jump between houses and bushes. While out at sea, the whales seem to favour the deep fjords and the coast of Andøya, bringing in wildlife enthusiasts from all over (Thorsnæs & Engerengen 2025).

During summer, the midnight sun over the Atlantic Ocean has become a must-see for visitors. In winter, the large, open sky offers a great view of the northern lights (figure 57). This is of interest not only to tourists but also to scientists on Andøya, making it a centre of local identity (Andøya Space 2025).

Natural phenomena's

The natural phenomena are an important part of Andøya's place identity. The phenomena encapsulate the landscape due to the clear, unobstructed view of the skies (figure 55). The midnight sun keeps people in constant sunlight, while the polar nights are almost completely dark. It dictates the day for those who live there. The northern lights are impressive and beautiful, showcasing the sun's immense power.



Figure 54: Recreation can be in the form of camping. Photo by Eva R. N. Indrevoll

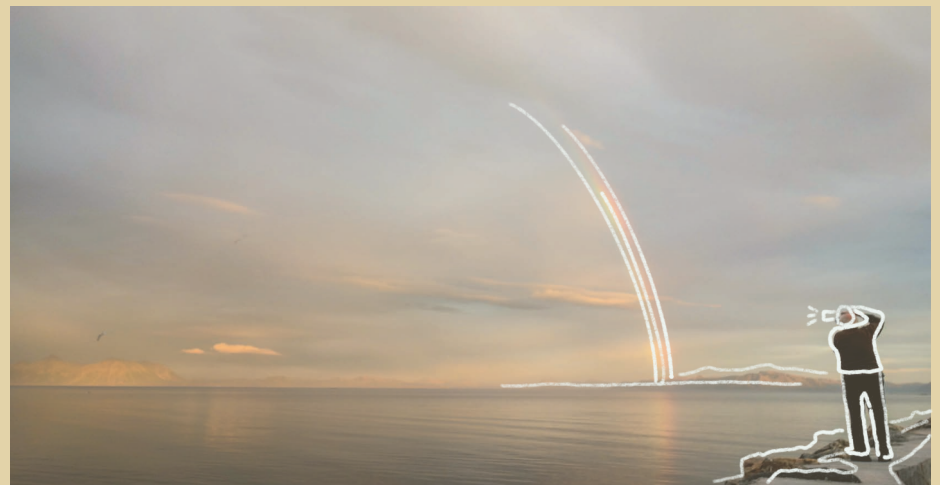


Figure 55: Recreation can also be in a creative sense, here photography. A common activity on Andøya. Photo by Kato Indrevoll.



Figure 56: There are many breathtaking hikes on mountains at Andøya, here at over 700masl. Photo by Tuva A. N. Indrevoll



Figure 57: The northern lights shine over Kvalnes, with the glow from the fish farm lighting up the buildings. Photo by Tuva A. N. Indrevoll



Figure 58: The art installatiosn of maritime trash can be found throughout Andøya, here at Høyvika on the west coast. Photo by Kato Indrevoll.



Figure 59: Boats can not only be found in the water but can also be found on land. Photo by Rebecca K. Larsen.



Figure 60: Here one can see old structures of accessible sea access that ones was at Andøya. Photo by Kato Indrevoll.



Figure 61: Many of the houses still have a older character to them. Photo by Rebecca K. Larsen.



Figure 62: The art installation at Breidvik used to be a landmark on site. Today the resued marine trash is removed. Photo by B. I. Karlsen



Figure 63: The local initiative can also be seen on the bus stops, here at Skarstein. Photo by Rebecca K. Larsen

Fishing and farming

Fishing has deep cultural roots in Andøya and characterises the landscape and the local identity (figure 48). This becomes clear when walking along the shore, where there are remains of old fishing gear, such as nets, floats, and anchors. Old fishboats lie peacefully in the landscape, telling a story of what used to be and, to some extent, still is. With Andfjord Salmon's new development, it will likely remain an essential source of income and livelihood, alongside more traditional fishing.

However, fishing is not only an economic aspect of Andøya but also an important recreational activity. Some of the tourists travelling to Andøya also come for the spectacle fishing opportunity.

So, to say, fishing seems to be an essential part of Andøya's identity and is deeply connected to its local history, the present, and the future.

Industry

The need for cornerstone industries is important in a place with few inhabitants and limited economic safety. The industry has therefore become a strong part of the identity. Throughout history, it has been about fishing, but today it has moved to other aspects as well (Thorsnæs & Engerengen 2025).

Andøya Space and the military presence are deeply entwined with the locals' place identity. When it was decided in 2016 to close the military base (Forsvarsdepartementet 2016). This sparked widespread protests in the

local community. It was later backed on this decision, once again ensuring the military presence on Andøya.

As mentioned, Andøya has become quite popular among tourists. As a result, the island has started to invest more in tourism. A new visitor centre, The Whale, dedicated to the stories and lives of whales, is currently being built in Andenes (Reiulf Ramstad Arkitekter 2026).



Figure 66: Photo by Kato Indrevoll

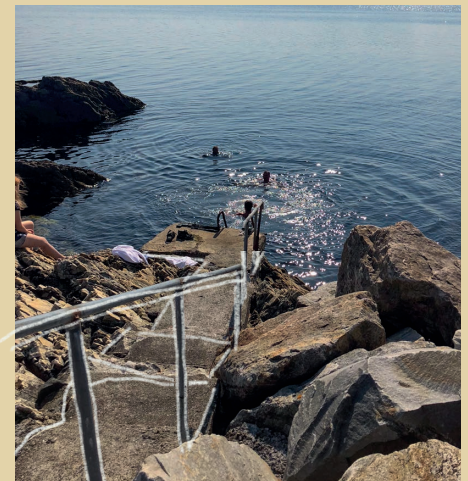


Figure 67: Photo by Kato Indrevoll



Figure 65: Photo by Kato Indrevoll

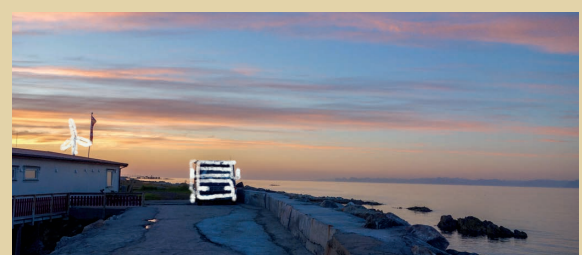


Figure 64: The character of the place is heavily influenced by the activities that are possibilities on Andøya. Photos by Tuva A. N. Indrevoll

CONTEMPORARY PRESSURES AND CONFLICTS

Andøya experience a lot of tourism. It has become an important part of the local economy (Andøy kommune 2018). This places additional strain on the natural environment of Vesterålen and Lofoten. Common tourist activities on Andøya include camping, hiking, water sports, and most popular, nature and wildlife experiences (figure 68). Paths and vegetation are worn down by the larger recreational traffic along popular hiking spots (figure 69). The increase leads to greater human interference and presence in nature. The municipality wishes to expand on this opportunity (Andøy kommune 2018).

The increased presence in nature affects and disturbs wildlife (Laurance et al. 2007). It can cause unnatural behaviours, such as a change in migration and breeding habits. Birds are among those

known to be easily disturbed by human proximity. This can threaten the birds' population if they are disturbed during crucial nesting periods in their habitats (ibid.).

The recreational opportunity on Andøya is significant. It is, however, situated mainly in the mountains, where both paths and topography make it impractical for some (figure 70). Recreational opportunities for everyday use that are easier to access are scarcer. On the site, there are some local initiative paths, but they are quite short and offer little variation. The paths are also of somewhat varying quality.

The expansion of industry is becoming a reality on Andøya, especially on the site. The presence of industry can lead people to use nature less frequently around

its edges, underlining the effect zone. When areas lack personal significance to people, they are more likely to be lost to industrial regulation.

Figure 69: Most paths are not as accessible for all. Photo by Tuva A. N. Indrevoll



Figure 68: The landscape is covered in a thick morning fog. Houses and cranes stick up throughout. The increased amount of arctic tourism is leaving its footprint on the nature. Paths are not dimensioned to meet the amount of visitors. A result of this is a hiking multi-lane motorway. Though not a scientific description, it encapsulates what happens. This highway is from the path up to Måtind, the most popular hike on Andøya. Photo by B. I. Karlsen

GOVERNANCE, VISION, AND ECONOMIC REALITY

One of Andøy municipality's main visions is to increase the population from 4,562 back to its previous 8,000 (Andøy kommune 2018). They intend to do this by creating an attractive place to live that enables growth and development. To achieve this, they plan to focus on, for example, culture, recreation and community. To reach this goal, they wish to create new, well-designed meeting places for children, youth, and elders (ibid.).

Andøy municipality is on the ROBEK-list (the Register for Governmental Approval of Financial Obligations), which means it is in financial deficit and has limited resources (regionaldepartementet 2025). This means that the municipality's economic autonomy is limited, and the County Governor must approve all significant financial decisions. To get off this list can take years, often with strict economic cuts and priorities (ibid.). The municipality's future plan was written before the expansion of space research, the military's comeback after a brief shutdown, and the start of Andfjord Salmon. Therefore, the current priorities for economic development might differ somewhat from those in the 2014 plan (Andøy kommune 2018) (figure 71).

Andfjord Salmon believes that by moving its fish farms to land, it can create a more environmentally conscious form of fish farming (Andfjord Salmon AS

2026). Minimising negative effects on the ecosystem. Building on that notion, they focus on circular mass handling. When possible, they have used material extracted from the site. When needed, they have brought in new material. To adapt to the surrounding character, they are planning to design the fish farm to blend in with the existing landscape (Norconsult 2023b). They also wish to provide recreational opportunities by establishing a visitor centre within the industrial site (ibid.).

LEGEND:

- COMMERCIAL BUILDINGS
- HARBOUR AREAS
- RECREATIONAL BUILDINGS
- RECREATIONAL AND TOURISM PURPOSE
- GRAVEYARD
- FISHERIES
- USE AND PROTECTION OF WATERCOURSE
- OTHER TYPES OF FACILITIES
- RESIDENTIAL
- AGRICULTURAL, NATURE AND OUTDOOR

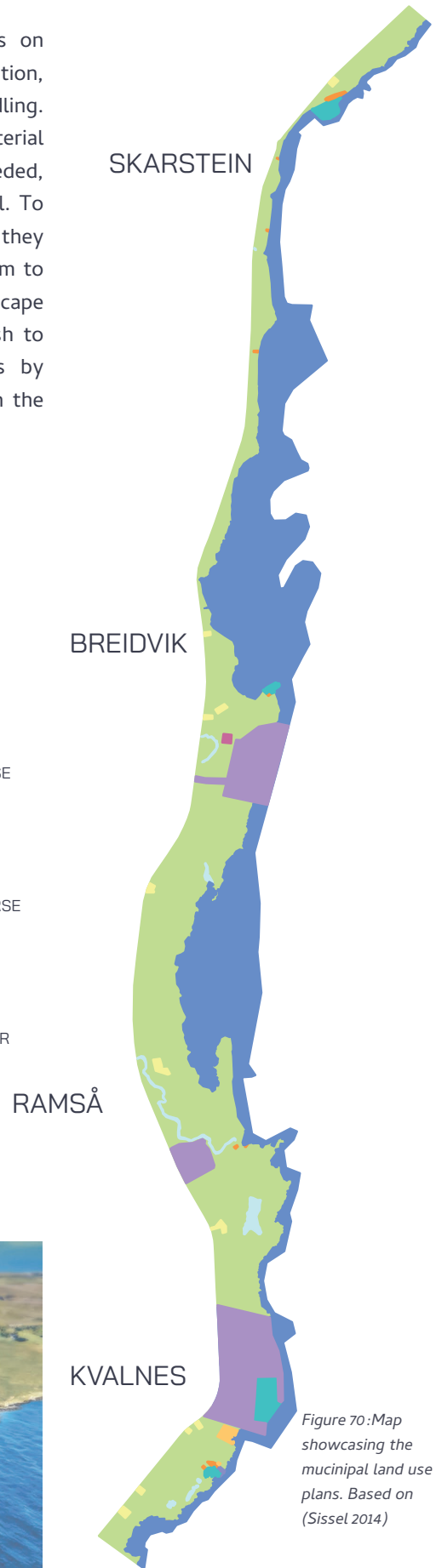


Figure 70: Map showcasing the municipal land use plans. Based on (Sissel 2014)



Figure 71: Illustration of future fish farm at Kvalnes. Andfjord salmon AS / Norconsult

- » Andøya's spectacular nature has made it a popular tourist destination.
- » Historic landmarks and cultural connections to nature contribute to the place's identity.
- » Local engagement, such as transforming waste into art and decorating public facilities, indicates active community participation and stewardship.
- » New economic growth related to local industries strengthens Andøy's economy.
- » Rich arctic habitats with diverse flora and fauna, resulting in high biodiversity.
- » Scenic sightlines and varied natural features create visual appeal.

S TRENGTHS

- » Existing paths are in varying conditions, and the recreational network is fragmented, limiting accessibility and usability on site.
- » Existing recreational infrastructure is not designed to handle anticipated increase in tourism.
- » Existing recreational infrastructure lacks adaptation to natural systems, compromising ecological processes and long-term sustainability.
- » The differences in land use create a fragmented landscape.

W EAKNESSES

- » A recreational network can be designed to foster PBB for local ecosystems.
- » Existing recreational facilities, such as lookout towers and barbecue areas, can be incorporated into the new network, creating a cohesive, connected system utilising local initiatives.
- » Integrating recreational activities to industries can reduce the effects zones of industries and illustrate the potential for sustainable land-use management in more rural settings.
- » Opportunity for designing a space that allows visitors to create a stronger affiliation with the place.
- » The ongoing development of Andfjord Salmon presents an opportunity to reuse locally sourced surplus materials to sustainably support the expansion and upgrading of recreational paths and infrastructure.
- » Utilize the economic growth to ensure infrastructure that meets tourists' and locals' recreational needs.

O PPORTUNITY

- » An increase in tourism can disturb wildlife, possibly degrade habitats, and disrupt the ecological balance in sensitive areas.
- » Climate-related pressures, including rising water levels, more frequent extreme weather events, and the spread of alien species.
- » Due to increasing land-use demands, such as industrial developments, forgotten landscapes on Andøya are at risk of degradation. This could lead to further habitat fragmentation and a change in existing qualities.
- » Peat bogs, sand dunes and other vulnerable natural types are particularly at risk of development. Altering these can have substantial ecological and climatic consequences.
- » The municipality's current limited resources challenge the upkeep, expansion, and enhancement of the recreational network in Andøy.

T HREATS

Chapter four:

DESIGN



Figure 72: Photo by B. I. Karlsen



Chapter one: Introduction

Chapter two: Theory

Chapter three: Analysis

Chapter four: Design

Landscape Characters

Areas To Protect

Areas To Transform

Areas To Connect

All Areas

Principles And Strategies

Inspirational Material

Network

Examples Of Concept

Chapter five: Final remarks

Chapter four: DESIGN

The following chapter is based on the background, theoretical framework and site analysis. This has provided a good foundation for the design and has helped shape this chapter. The proposal aims to facilitate recreational opportunities within the site, enabling stronger connections between people and nature, while bridging the gap between ecosystems and human infrastructure.

In our conceptual proposal, we first focus on identifying specific areas that share the same character. We then provide an overview to ensure that the different areas are addressed as we see fit. For example, this ensures that the qualities in the landscape are preserved and that those with potential for transformation are also used to their full potential. Based on the areas we found that could be transformed,

connected and protected, we created three principles with three allocated strategies. These are directly connected to answering each of the sub questions, which in turn help to answer the research question. By creating sub-questions and principles, we are better able to address the aspects of the research question we consider most relevant to the site. This is closely connected to the insights we gained from the analysis. The inspirational material for this concept is then specified. All the elements of the design chapter are then tied together by a recreational network. The network consists of paths, informational structures, activities, and meeting places. Lastly, we show conceptual examples from the site to better visualise the concept.



Figure 73: Nature infiltrating the industrial. Here during the construction of Kvalnes fish farm. Photo by B. I. Karlsen

When dividing the site into characteristics, we found four categories that differed from one another. These are determined by land use, landscape forms, and landscape spatiality. By creating these categories, we are better able to design for the specific landscape type and spatiality.

The first category of characteristics is the bog, which are areas where larger connected bogs are found. The spatiality is open, and the vegetation is in bloom throughout the summer months. These areas, however, are difficult to walk on. They also require protection from human intervention due to being important habitats for various flora and fauna.

The second characteristic is the coastal. It is found in areas with open spatiality and includes coast-related landscape features such as sand dunes, intertidal flats, and beaches. Here, one is more likely to see birds and marine animals, such as seals. There is little cover from the weather. Some sections along the beachfront are accessible on foot, but would be challenging, for example, in a wheelchair.

The marine characteristics include three marinas and two planned fish farms at the site. This links traditional fishing methods with modern fish farming. These areas feature extensive human infrastructure and act as meeting spots for both recreational and commercial activities. They are more restricted environments for shy animals like elk, but hares and birds are often seen here.

When dividing into characteristics, one was unlike the rest. The undulating area is found in the far north of the site. Here, the landscape has a more varied topography, and the spatiality differs from the rest of the site. It is also where species that prefer more cover can be found. For example foxes can be seen here. The whale watch tower is also located in this area.



BOG



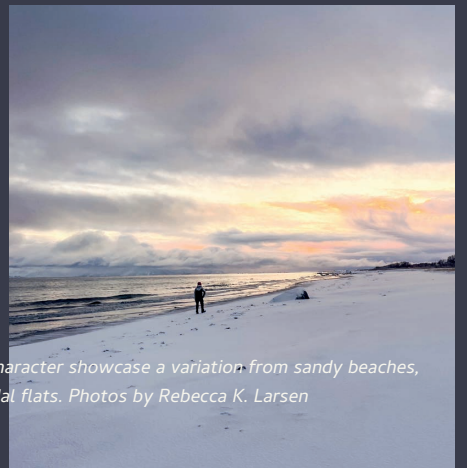
Figure 74: The bog character consist of both cultivated and not cultivated bog, with a varying species composition. Photos by Tuva A. N. Indrevoll



COASTAL



Figure 75: The coastal character showcase a variation from sandy beaches, rocky shores to intertidal flats. Photos by Rebecca K. Larsen



MARINE

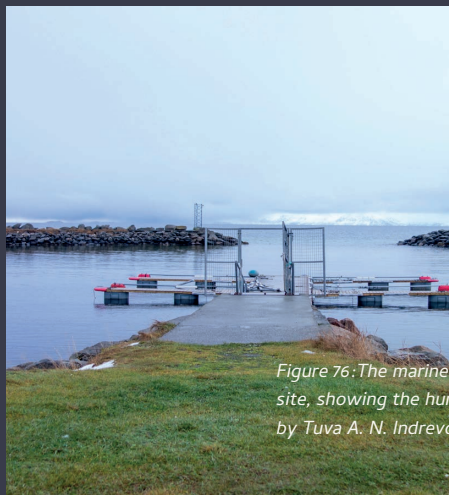
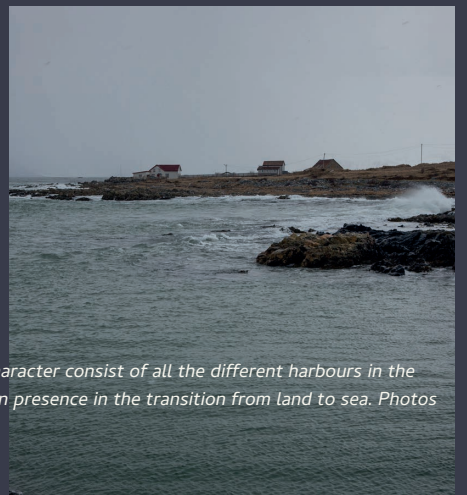


Figure 76: The marine character consist of all the different harbours in the site, showing the human presence in the transition from land to sea. Photos by Tuva A. N. Indrevoll



UNDULATING



Figure 77: The undulating character show an area with a varying topography. different from other places in thr site. Photos by Tuva A. N. Indrevoll

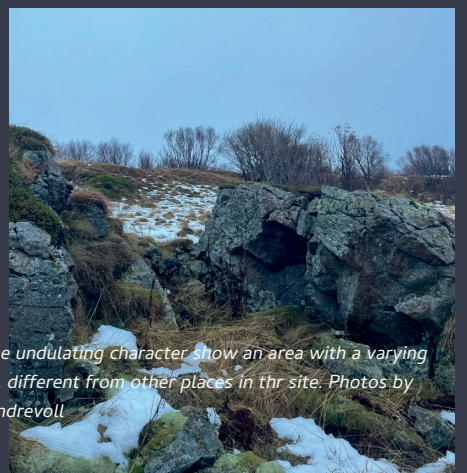


Figure 78: Characters of the landscape.

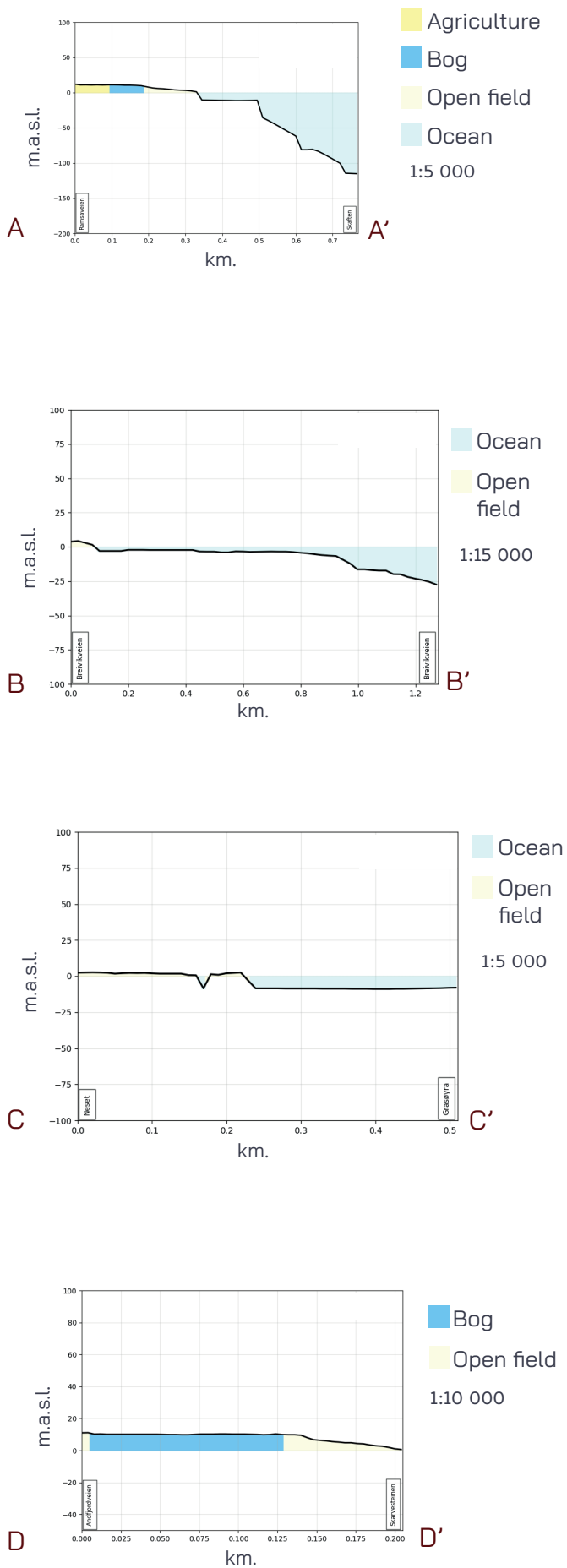


Figure 79: Sections from each character of the landscape. (Kartverket 1)



As mentioned, we wanted to ensure we understand the site and utilise its existing qualities and possibilities. When we did this, we identified areas to protect, transform and connect. The different aspects within each of these categories were then grouped by whether they were natural, historical or cultural.

The nature-related aspects in the areas we wish to protect are associated with various landscape forms, vegetation structures, and key habitats. We focused on protecting vulnerable vegetation structures such as bogs, sand dunes, and intertidal flats. We also considered it relevant to protect the larger forest to ensure that allocated habitats were protected, as forests are less common in this coastal landscape.

Historical aspects we consider relevant to protect are the existing and future archaeological findings. They help tell the story of the lives lived at Andøya. There are many findings, ranging from small objects to entire settlements.

The cultural aspects that require protection are local initiatives. These range from art installations, especially in Skarstein and Breidvik, to community gathering spots, such as the marina at Kvalnes. It is a strength if the project can strengthen local recreational opportunities and align with the municipality's goal of creating good meeting places for different age groups (figure 80).

PROTECTED

Figure 80: Areas of value to project



Whale watch tower
Forest
Archiological finding

SKARSTEIN

Art installation

Intertidal flat

BREIDVIK

Archiological finding

Larger bog

Archiological finding

Intertidal flat

Larger bog

RAMSÅ

Sand dunes
Art installation
Archiological finding

Archiological finding

Larger bog

KVALNES

Archiological finding

Forest

LEGEND:
NATURE
HISTORY
CULTURE

PROTECT

1:50 000 61

As well as the areas we saw as relevant to protect, we also saw the opportunity to further develop the site's existing qualities. By transforming these areas, they can better support the thesis's goal and be a greater strength for those either visiting or living there.

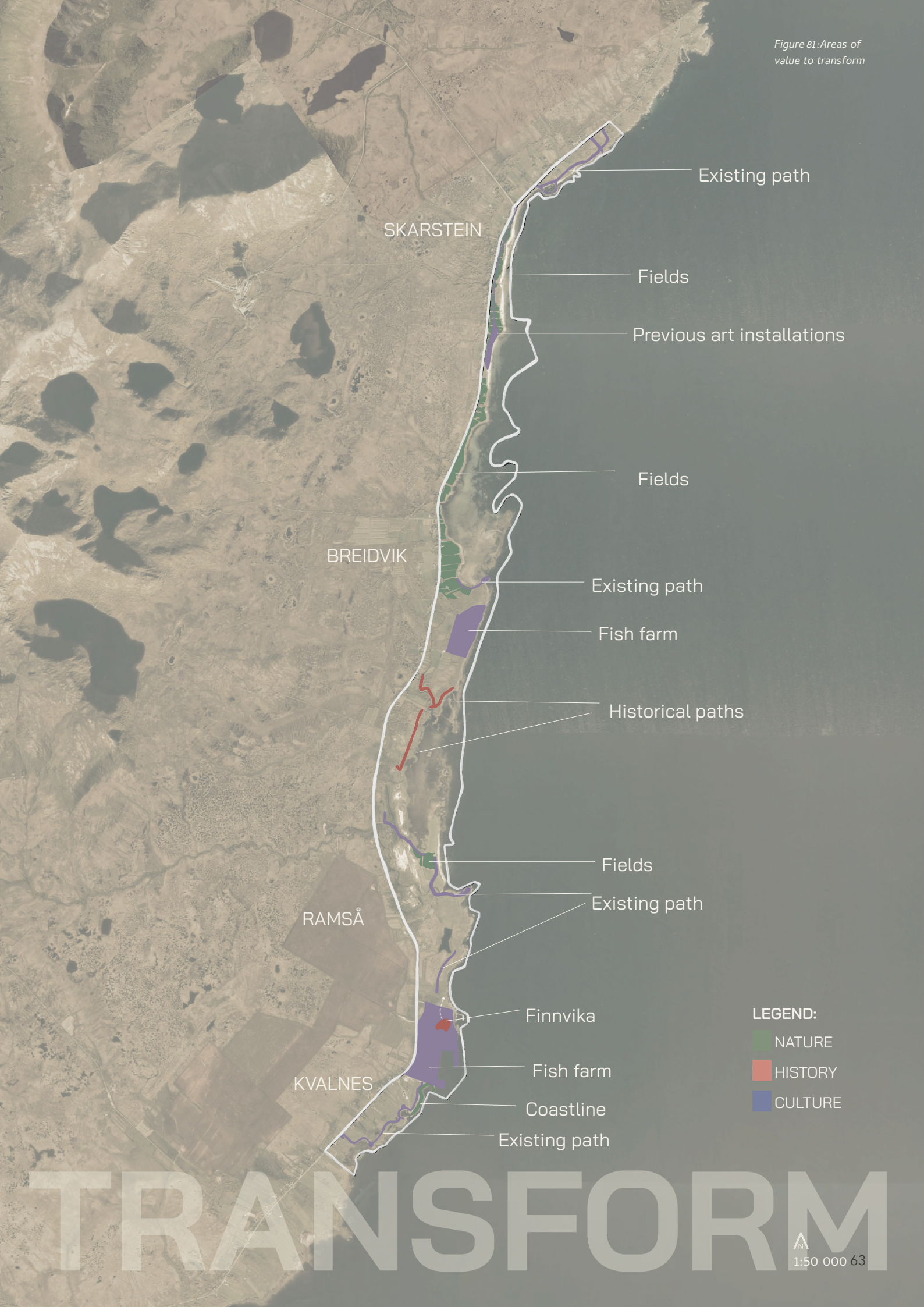
The natural aspects we considered relevant to transform in this project were the fragmented grasslands on farms, which have the potential to better reflect cultural stewardship and to establish paths through species-rich grasslands. We want to use them to tell the story of agriculture and to ensure the continuity of agriculture on site.

The historical aspects that could benefit from transformation are the earlier-registered paths on Breidvik and Finnvika. They are dated to likely be from the Stone Age. These paths are not visible today, but by including them in the project, they have the potential to reveal how the first people on Andøya travelled through the landscape.

The cultural aspects we saw relevant to be transformed in a recreational project are the fish farms and existing roads on the site. Fish farms are more restricted areas that do not accommodate any land uses other than industry. By incorporating recreational facilities and networks, they can aid in reducing the gap between locals and industry (figure 81).

TRANSFORM

Figure 81: Areas of value to transform



Existing path

SKARSTEIN

Fields

Previous art installations

Fields

BREIDVIK

Existing path

Fish farm

Historical paths

Fields

RAMSÅ

Existing path

Finnvika

Fish farm

KVALNES

Coastline

Existing path

LEGEND:

- NATURE
- HISTORY
- CULTURE

TRANSFORM

1:50 000 63

To ensure the site develops into a connected recreational network that can act as a pathway among similar areas, it is vital to identify which areas need to be linked. The outpointed areas can strengthen the project by being more connected.

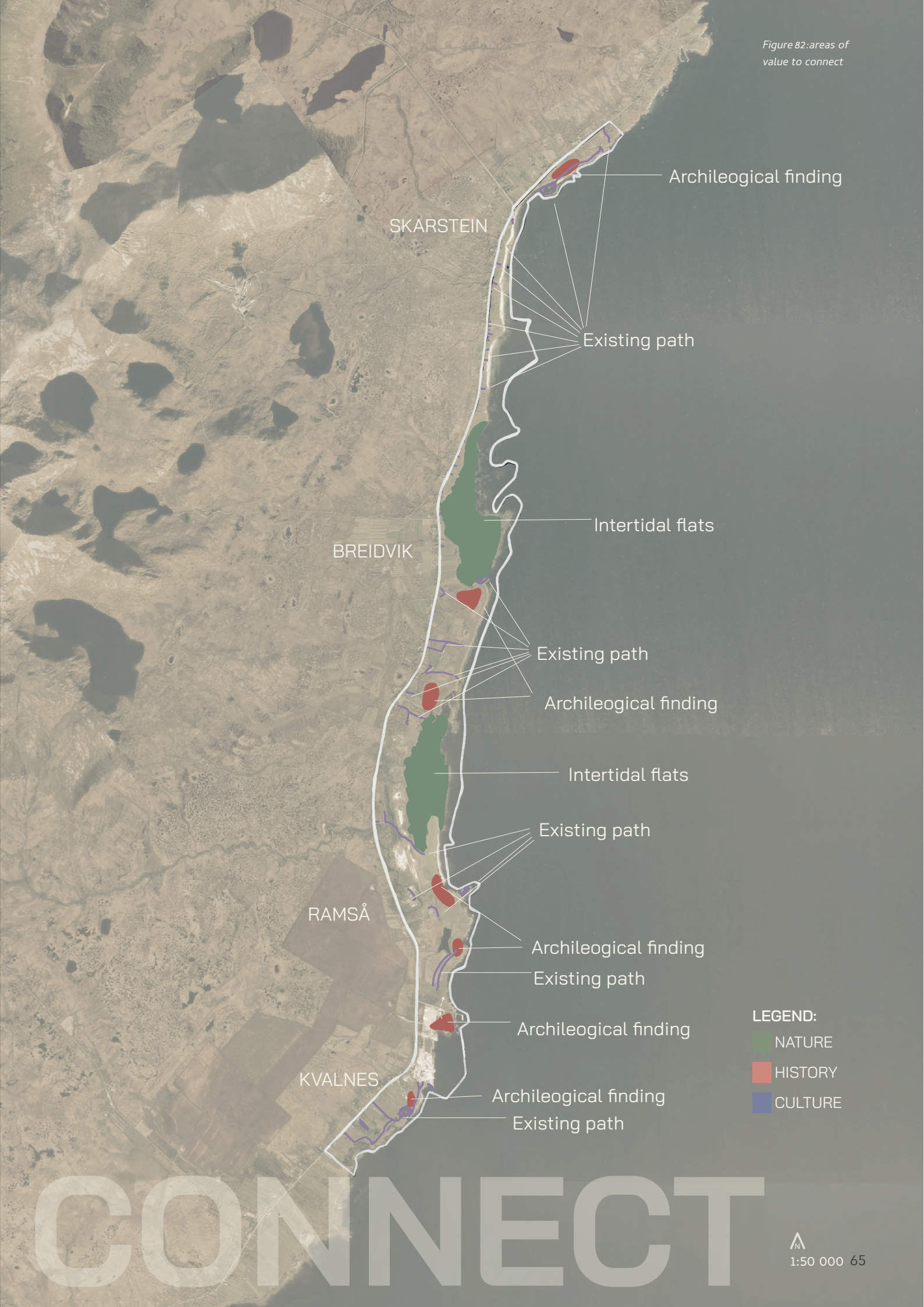
Looking at natural aspects, we saw that through access and information, the intertidal flats can be linked to highlight their importance as habitats and to provide better recreational experiences. The environment changes throughout the day as large water masses move in and out with the tides, giving it a unique character.

While the historical layers that could benefit from greater connectivity are all the archaeological findings. By creating a continuous narrative through them, one can better communicate the early life on Andøya and illustrate the history connected to fishing and the Sami culture.

The cultural aspects that we believe should be linked are the different access points to the coast. These places are used independently from each other, and by connecting the areas along the coast and at the end of the access roads, we can better highlight the continuous beauty and use of the coastline (figure 82).

CONNECTED

Figure 82: areas of value to connect



Archileological finding

SKARSTEIN

Existing path

Intertidal flats

BREIDVIK

Existing path

Archileological finding

Intertidal flats

Existing path

RAMSÅ

Archileological finding

Existing path

Archileological finding

KVALNES

Archileological finding

Existing path

LEGEND:

NATURE

HISTORY

CULTURE

CONNECT

By protecting, transforming, and connecting the site's layers and elements, we believe the use of a recreational trail can strengthen the relationship between visitors and nature. It will allow industrial development and natural landscapes to coexist, making the landscape varied in use. By connecting the site, protecting important existing qualities, and linking similar elements, one can foster environmental awareness and strengthen the character of the eastern coastline (figure 83).

ALL AREAS

Figure 83: all areas of destination



ALL AREAS

PRINCIPLES & STRATEGIES

To create a conceptual design proposal for this site and guidelines for similar projects, we developed three principles with a total of nine strategies. The principles outline the main aims of the project, while the strategies are more specific and can be applied directly in this and similar designs. Together, the principles and strategies guide more conscious land use, considering existing flora and fauna while seeking to connect cultural, industrial, and historical layers in the landscape. The principles are based on site-specific considerations but can be applied to similar projects. With these principles and strategies, we aim to create a more detailed design that supports conscious land use in a recreational project that puts ecosystems in focus.



Figure 84: Photo by B. I. Karlsen

PRINCIPLE ONE

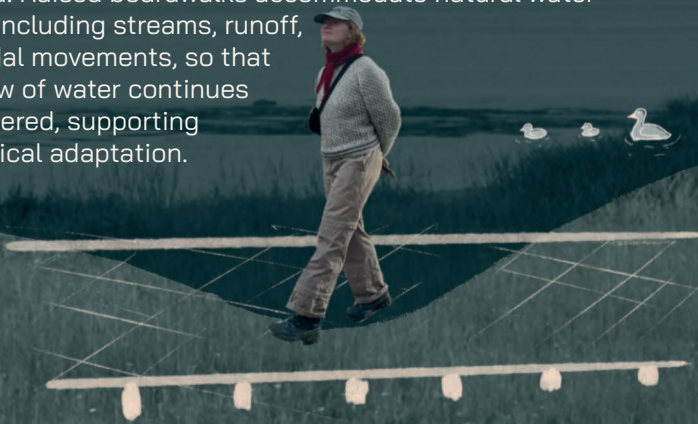
ONE

LET NATURE LEAD

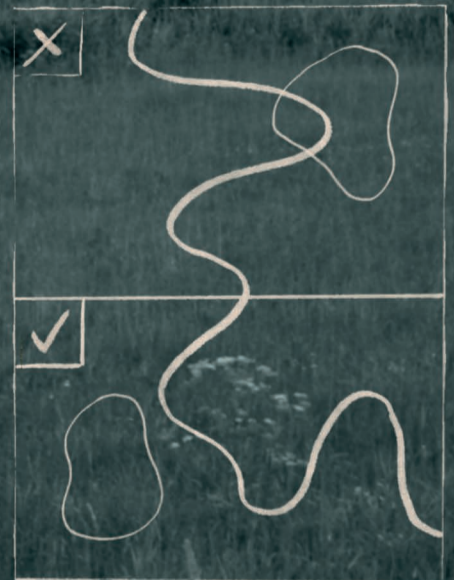
Design and interventions should align with ecological systems, promoting recreation that enhances rather than disrupts the natural environment.

S T R A T E G I E S

a. Raised boardwalks accommodate natural water flows, including streams, runoff, and tidal movements, so that the flow of water continues unhindered, supporting ecological adaptation.



b. Use raised boardwalks over particularly vulnerable areas to protect vegetation and other sensitive features, while allowing small animals to pass underneath.



c. Establish clearly designated trails in areas where the terrain can withstand foot traffic, concentrating visitor movement along these routes to reduce habitat fragmentation, while avoiding wetlands, sand dunes, bird habitats, and other sensitive environments.

Figure 85: Collage of principle one.

PRINCIPLE TWO

CONNECTION AS A TOOL FOR CONSERVATION

Recreational networks should create experiences that deepen people's connection to nature, culture and local history, fostering understanding and long-term engagement.

S T R A T E G I E S



a. Informational signage to communicate the site's history, culture and ecological significance, fostering both learning and meaningful experiences.



b. Use art and community engagement to deepen experiential understanding of the landscape through local identity.



c. Create a variety of spatial experiences through thoughtful design to enhance exploration, discovery, and engagement with the landscape.

Figure 86: Collage of principle two.

PRINCIPLE THREE

INDUSTRY AND LANDSCAPE IN DIALOGUE

Industrial development should not oppose nature but be guided by the rhythms and character of the landscape, demonstrating how industrial activity and nature conservation can coexist with a minimal overall footprint.

S T R A T E G I E S

a. Integrate recreation with the industrial area to create transparency and understanding along the outer edge of the industrial area, reducing the effect zones.



b. Reuse surplus materials from industrial activities for the construction and maintenance of recreational networks.



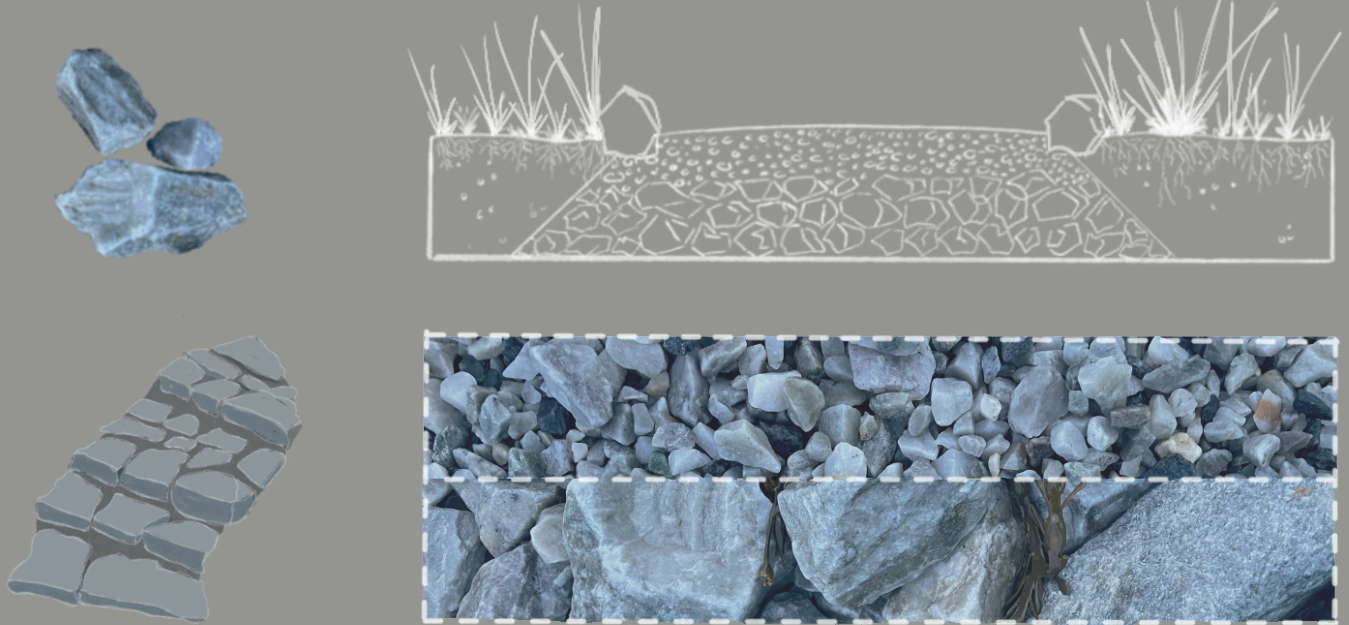
c. Incorporate access points and facilities together with planned and existing industry



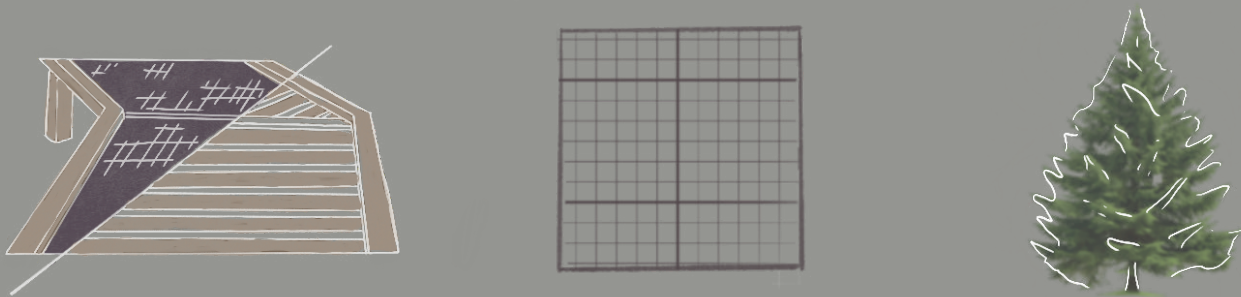
Figure 87: Collage of principle three.

INSPIRATION

When choosing the material, we think it should align with a biophilic approach, drawing inspiration from the surrounding nature and biophilic design principles. It was also important that the design take special consideration of Andøya's identity and cultural heritage, and that this be visible through the use of local materials. Maritime waste and the industry's surplus materials are to be



Larger blocks can be used for the staircase to blend in with the natural rocks in the shoreline. Surplus gravel and cobble from the construction at Andfjord Salmons different locations can be repurposed for the site's pathways. This material is the negative material from the excavation of the basins and is therefore locally sourced stone.



The raised boardwalk close to the sea is made of recycled fiberglass with wood edges. The fiberglass is essentially durable under these conditions. The material is also commonly used on boats. Further inland they are made of wood.



Figure 88: Collage of materials part 1.

AL MATERIAL

reused and repurposed. This also connects to earlier local art installations, such as those seen at Skarstein and Breidvik. We believe that combining these two principles when choosing material will blend well with the surrounding nature, minimising the inevitable barrier that the network will create while simultaneously strengthening the place identity.



Ecological and historical information signage is made of corten steel, inspired by old fishing gear found



along the shoreline. Similar rusty colours, like those of the corten steel, can be found in the vegetation in the landscape.



Recycled boat ropes can be used for the fencing, connecting to the cultural identity and the history of the site.



Spruce is a recurring tree on Andøya and is therefore a good choice for benches and other furniture.

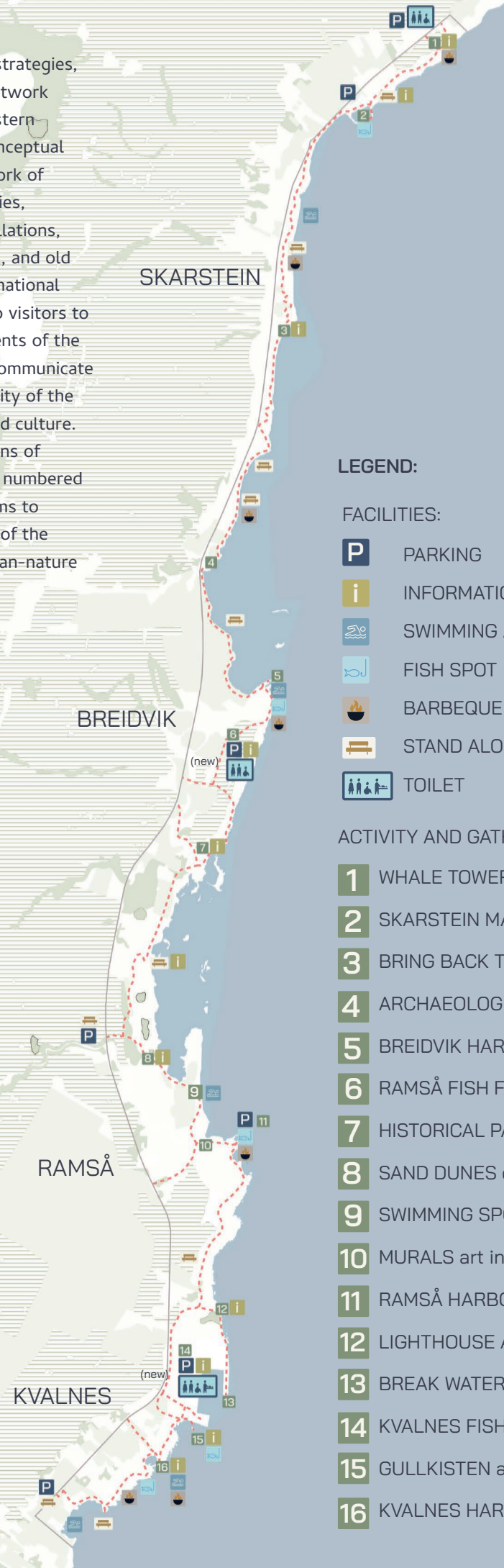


Figure 89: Collage for materials part 2.

By using the principles and strategies, we created a recreational network that runs along the northeastern coastline of Andøya. The conceptual proposal consists of a network of paths, meeting areas, activities, viewpoints, and varied installations, utilising both new, reformed, and old installations. Through informational signage, the project can help visitors to better understand the elements of the landscape. It should try to communicate the importance and complexity of the local ecosystems, history and culture. Larger additions and redesigns of elements along the path are numbered on the map. The network aims to connect the different layers of the landscape and enabling human-nature relationship at Andøya.

Figure 90: Map showing proposed additions to the site.

OR
W
E
N



LEGEND:

FACILITIES:

- P** PARKING
- i** INFORMATION
- SWIMMING AREA
- FISH SPOT
- BARBEQUE AREA
- STAND ALONE BENCH
- TOILET

ACTIVITY AND GATHERING AREAS:

- 1** WHALE TOWER viewpoint
- 2** SKARSTEIN MARINA meeting area
- 3** BRING BACK THE ART art installation
- 4** ARCHAEOLOGICAL educational installation (new)
- 5** BREIDVIK HARBOUR meeting area
- 6** RAMSÅ FISH FARM access point (new)
- 7** HISTORICAL PATHS educational installation (new)
- 8** SAND DUNES educational installation (new)
- 9** SWIMMING SPOT activity
- 10** MURALS art installation
- 11** RAMSÅ HARBOUR meeting area
- 12** LIGHTHOUSE AND PIER landmark
- 13** BREAK WATER viewpoint (new)
- 14** KVALNES FISH FARM access point (new)
- 15** GULLKISTEN activity (new)
- 16** KVALNES HARBOUR meeting area

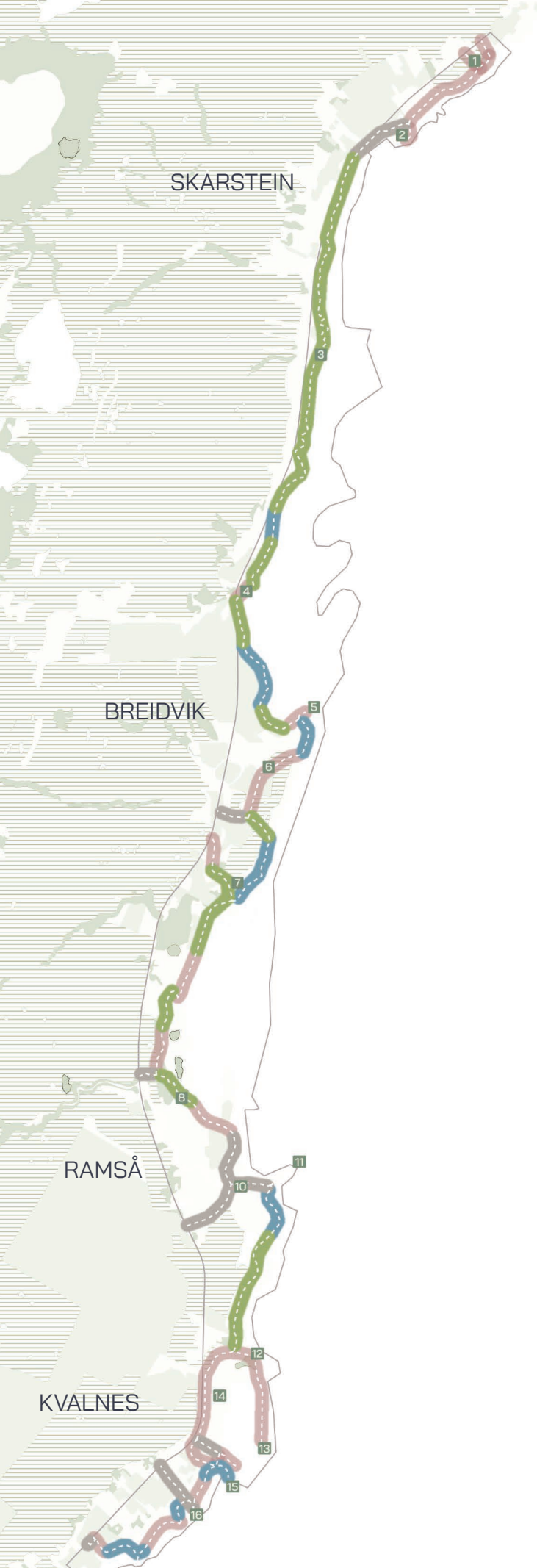
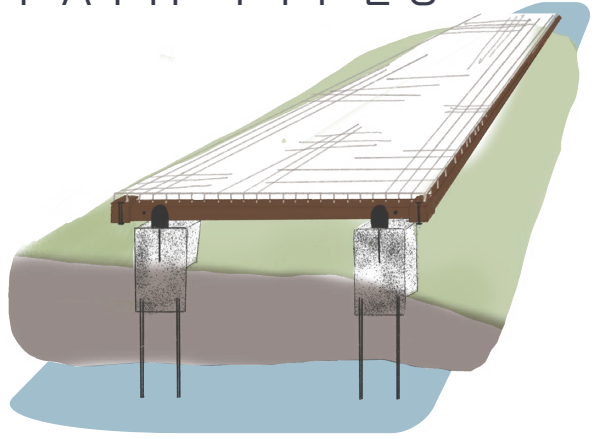
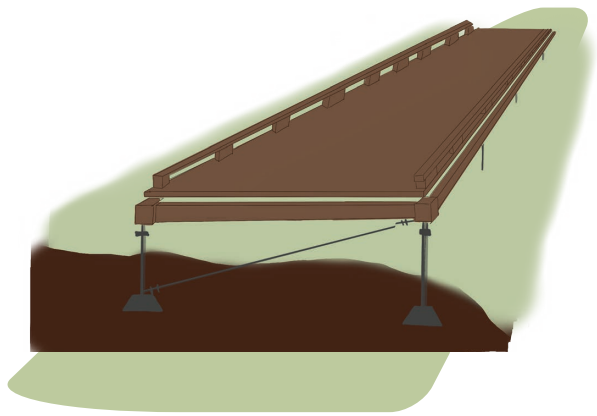


Figure 91: Proposed path types in the conceptual design, with path types.

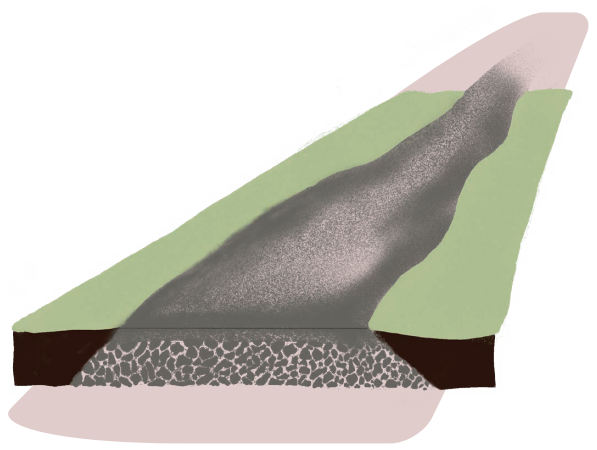
PATH TYPES



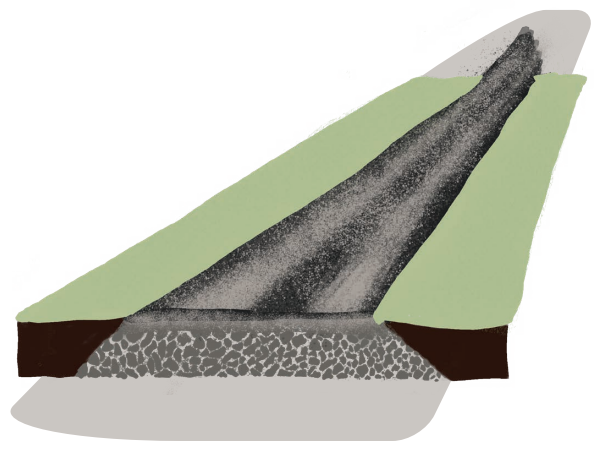
RAISED PATH ADAPTED TO TIDES



RAISED PATH CAUTIOUS OF VEGETATION



GRAVEL PATH



GRAVEL ROAD

To better showcase how this conceptual design proposal can be implemented in the landscape of northeastern Andøya, we have created perspectives using simple sketches to illustrate how the proposal's spatiality could be realized. The perspectives are shown from different locations on the site and combine different path types, principles, and strategies. They are based on actual photos of the landscape. The principles can be actualized in many different ways, this is our proposal for a solution.

EXAMPLES OF CONCEPT



SKARSTEIN

LET THE GRASS GROW

BRING BACK THE ART

BREIDVIK

OBSERVE DON'T DISTURB

ACCESS TO THE UNACCESSABLE

RAMSÅ

FINNVIKA MEMORIAL

KVALNES

GULLKISTEN, WHERE THE FISHES LIE

ACCESS TO THE SEA

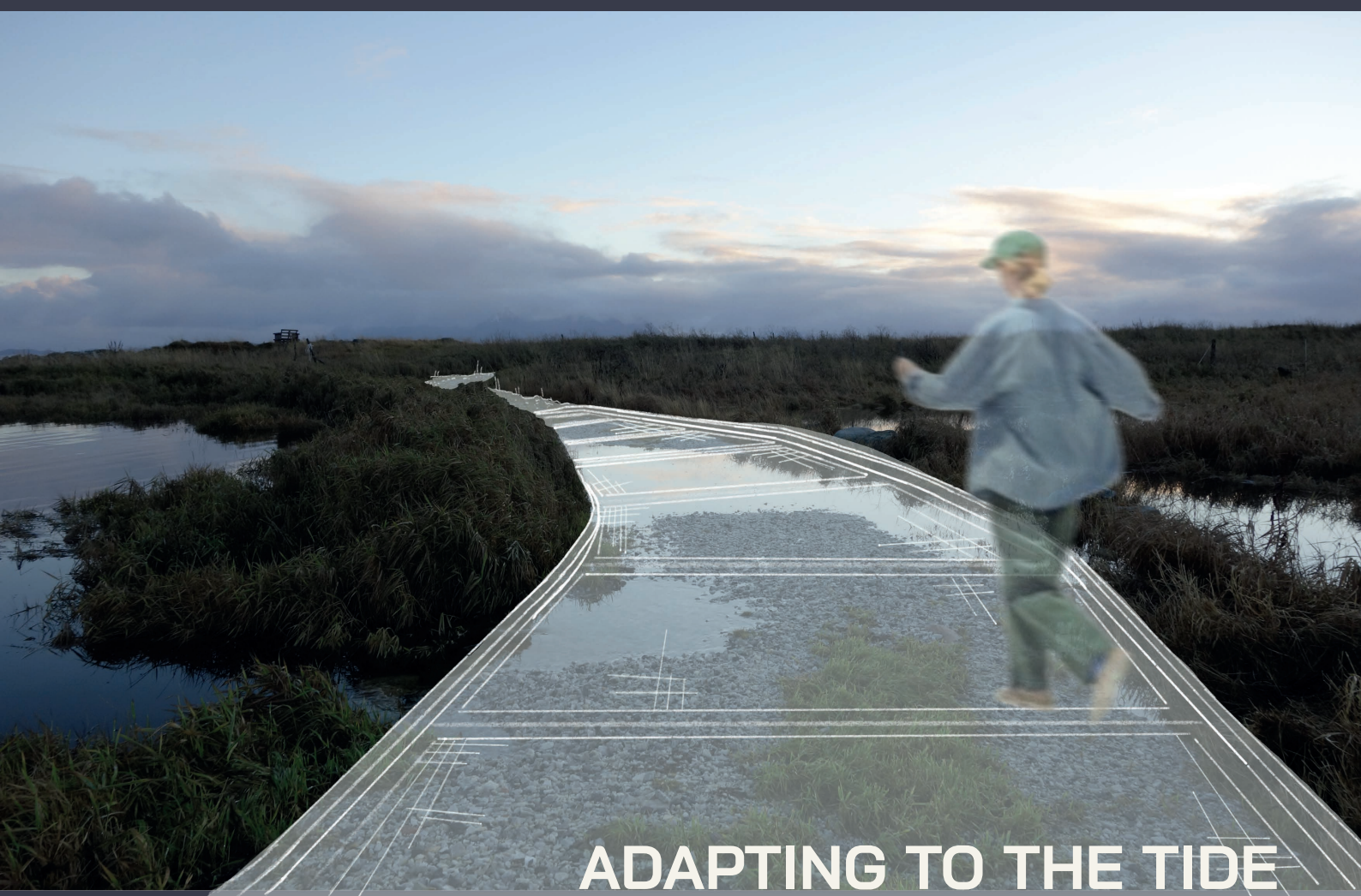
ADAPTING TO THE TIDE

Figure 92: Placement of examples of concept on site.



ACCESS TO THE INACCESSABLE

Figure 93: Based on photo by B. I. Karlsen



ADAPTING TO THE TIDE

Figure 94: Based on photo by B. I. Karlsen



STRATEGIES:

1c. Establish clearly designated trails in areas where the terrain can withstand foot traffic, concentrating visitor movement along these routes to reduce habitat fragmentation, while avoiding wetland, sand dunes, bird habitats, and other sensitive environments.

3b. Reuse surplus materials from industrial activities for the construction and maintenance of recreational networks.

EXAMPLE:

A simple but important part of the concept plan is the general access to the inaccessible. Many of the areas are hard to reach and are therefore not a place most visit. This photo is from Skarstein. Creating paths to previously inaccessible places will allow more people to connect to the landscape.



Figure 95: Spatial section of the access to the inaccessible.



STRATEGIES:

1a. A Infrastructure accommodates natural water flows, including streams, runoff, and tidal movements, so that ecological processes continue unhindered.

1b. Use raised boardwalks over particularly vulnerable areas to protect vegetation and other sensitive features, while allowing small animals to pass underneath.

2c. Create a variety of spatial experiences through thoughtful design to enhance exploration, discovery, and engagement with the landscape.

3b. Reuse surplus materials from industrial activities for the construction and maintenance of recreational networks.

EXAMPLE:

The tides fluctuate, and there's not much that can be done about it. The simplest approach might be to avoid creating paths in areas affected by tides; however, since this path at Kvalnes is already in place, it presents an ideal opportunity to extend it into the seascape. With climate change, tides will gradually rise. Incorporating tide-resistant paths closer to the coast from the outset will help the path endure longer and adapt to changing conditions.



Figure 96: Spatial section of adapting to the tide.



LET THE GRASS GROW

Figure 97: Based on photo by B. I. Karlsen



OBSERVE, DON'T DISTURB

Figure 98: Based on photo by B. I. Karlsen



STRATEGIES:

1a. Raised boardwalks accommodate natural water flows, including streams, runoff, and tidal movements, so that the flow of water continues unhindered, supporting ecological adaptation.

1b. Use raised boardwalks over particularly vulnerable areas to protect vegetation and other sensitive features, while allowing small animals to pass underneath.

2a. Informational signage to communicate the site's history, culture and ecological significance, fostering both learning and meaningful experiences.

2c. Create a variety of spatial experiences through thoughtful design to enhance exploration, discovery, and engagement with the landscape.

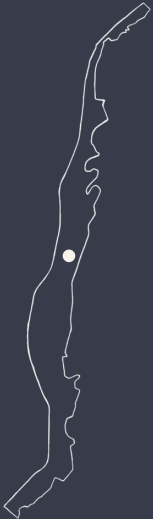
3b. Reuse surplus materials from industrial activities for the construction and maintenance of recreational networks.

EXAMPLE:

The path will pass through important vegetation types that need to be protected, here on the bogs at Skarstein. By using a raised path, it becomes easier to allow nature to take its course. Plants underneath the path can continue to grow, creating space for species that prefer less light or more protection. Smaller animals such as hares and otters might still pass through their natural habitat and won't be affected by the path, which also provides shelter. Larger animals like elk can still walk over it.



Figure 99: Spatial section of let the grass grow.



STRATEGIES:

1c. Establish clearly designated trails in areas where the terrain can withstand foot traffic, concentrating visitor movement along these routes to reduce habitat fragmentation, while avoiding wetland, sand dunes, bird habitats, and other sensitive environments.

2c. Create a variety of spatial experiences through thoughtful design to enhance exploration, discovery, and engagement with the landscape.

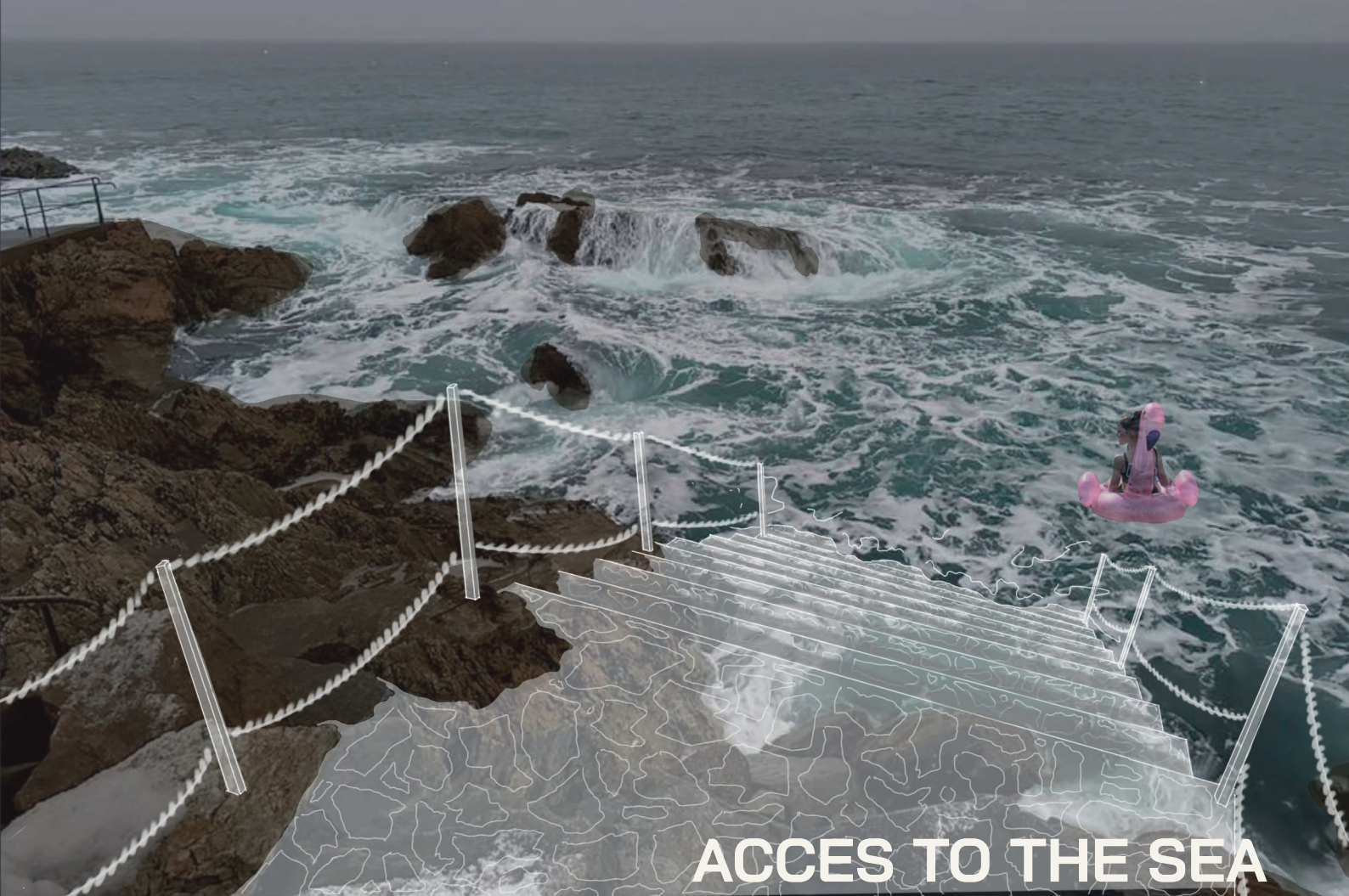
3b. Reuse surplus materials from industrial activities for the construction and maintenance of recreational networks.

EXAMPLE:

By inviting more visitors and increasing human presence in the landscape along the coast, it is important to be considerate of existing habitats. Here at Ramså along a larger forest area. By avoiding known preferred habitats for human-shy species, such as elk, one can better ensure coexistence with wildlife rather than conflict.



Figure 100: Spatial section of observe, don't disturb.



ACCES TO THE SEA

Figure 101: Based on photo by B. I. Karlsen



GULLKISTEN, WHERE THE FISHES LIE

Figure 102: Based on photo by B. I. Karlsen



STRATEGIES:

1c. Establish clearly designated trails in areas where the terrain can withstand foot traffic, concentrating visitor movement along these routes to reduce habitat fragmentation, while avoiding wetland, sand dunes, bird habitats, and other sensitive environments.

2c. *Create a variety of spatial experiences through thoughtful design to enhance exploration, discovery, and engagement with the landscape.*

3b. *Reuse surplus materials from industrial activities for the construction and maintenance of recreational networks.*

EXAMPLE:

This example is from Kvalnes. By establishing an access point to the sea, one allows visitors to feel more connected to the sea and its elements. The sea's tides vary, so the access point needs to be designed to function during both low and high tide. The water's character changes from low to high tide, with high tide featuring deep, clear water, while low tide exposes the kelp to the surface. The example shown is adapted to the rocky shore and is situated in a popular existing swimming spot that currently lacks appropriate infrastructure.

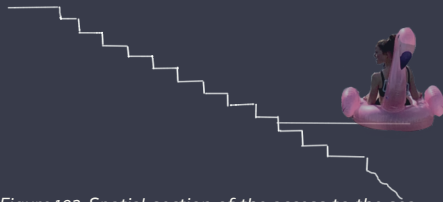


Figure 103: Spatial section of the access to the sea.

STRATEGIES:

2b. *Use art and community engagement to deepen experiential understanding of the landscape through local identity.*

2c. *Create a variety of spatial experiences through thoughtful design to enhance exploration, discovery, and engagement with the landscape.*

3a. *Integrate recreation with the industrial area to create transparency and understanding along the outer edge of the industrial area, reducing the effect zones.*

3b. *Reuse surplus materials from industrial activities for the construction and maintenance of recreational networks.*

3c. *Incorporate access points and facilities together with planned and existing industry*

EXAMPLE:

The development of the popular fishing spot Gullkisten was part of the locals' conditions for the development of a fish farm at Kvalnes. It has been a well-liked fishing spot because of its good prospects. As the fishing spot is now separated from the shore, it requires some extra structure to keep its appeal. Establishing a public on-land fishing area will allow more people to enjoy the sea's riches. The structure must be sturdy and not a copy of the dock used by the peat industry. By using surplus material from Andfjord, it is possible to benefit not only from their wave breaker but also from their durable material choices. It will also connect the recreational experience with the industrial production.

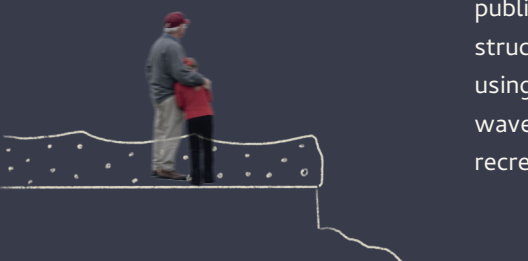


Figure 104: Spatial section of gullkisten.



Figure 105: Based on photo by B. I. Karlsen



Figure 106: Based on photo by B. I. Karlsen



STRATEGIES:

2a. *Informational signage to communicate the site's history, culture and ecological significance, fostering both learning and meaningful experiences.*

2b. *Use art and community engagement to deepen experiential understanding of the landscape through local identity.*

2c. *Create a variety of spatial experiences through thoughtful design to enhance exploration, discovery, and engagement with the landscape.*

3a. *Integrate the recreation with the industrial area to create transparency and understanding along the outer edge of the industrial area, reducing the effect zones.*

3b. *Reuse surplus materials from industrial activities for the construction and maintenance of recreational networks.*

EXAMPLE:

Finnvika was a larger settlement, with archaeological evidence of both earlier Norwegian and Sami settlements. It has played an important role in understanding how people lived. As the cove is being lost to fish farms development, it's now a good opportunity to communicate the history more clearly within the same landscape. Even though the cove will be gone, we will likely learn more when it is excavated completely before it is lost.



Figure 107: Spatial section of Finnvika memorial.



STRATEGIES:

2b. *Use art and community engagement to deepen experiential understanding of the landscape through local identity.*

2c. *Create a variety of spatial experiences through thoughtful design to enhance exploration, discovery, and engagement with the landscape.*

EXAMPLE:

There are many local initiative art installations throughout the site. The most well-known, however, is at Skarstein and has been lost. It was a landmark and bringing it back could restore the initiative's continuity. It could inspire more people to collect trash washed ashore and use it to strengthen the character of a fishing settlement, both historically and currently.



Figure 108: Spatial section of the bring back the art.





This chapter has been about translating understanding into a proposal. Working with the landscape has required a constant balancing act between what should be protected and what can benefit from careful reinterpretation. Rather than imposing a design on the site, we have aimed to let the place's character guide the decisions and the design. The resulting proposal is not a fixed design but a framework that respects the site's ecological systems, cultural memory, and industrial presence, while opening space for new experiences and connections. It is both a response to the place and an exploration of how design can foster a deeper relationship between people and the landscape.

“The enjoyment of scenery employs the mind without fatigue and yet exercises it.”

- Frederick Law Olmsted (1971)

Figure 109: Illustration showing the concepts proposals possible character.

Chapter five:

FINAL REMARK



Figure 110: Photo by B. I. Karlsen

S



Chapter five: FINAL REMARKS

DISCUSSION

In the theory chapter, we explored the importance of what encourages people to care for nature and how we can design to foster connection and ensure the continuity of nature. This served as a key starting point for designing a recreational network along the northeastern coastline of Andøya. Our background research focused on habitat loss and increasing land-use pressures, emphasising the importance of cautious land use, especially with growing industrial presence and arctic tourism. By combining theoretical insights with analysis, we highlighted the importance of both encouraging people to engage with and understand these landscapes while protecting the ecosystems. This laid the foundation for the design.

The conceptual design proposal offers an alternative recreational option that respects and adapts to local ecosystems as well as historical and cultural layers, while being more accessible. The focus is on new industrial development within a forgotten landscape. Therefore, it does not exclude other land uses, such as industry, but rather connects all the layers of the landscape.

The theoretical exploration of the divide between nature and culture provided insight into how humans often perceive themselves as separate from the rest of nature (Uggla 2010). Gaia theory says the opposite, emphasizing that all living and non-living elements coexist within interconnected systems (Latour & Lenton 2019). From this perspective, humans and human-made elements inevitably influence the ecosystems they are a part of (ibid). The design proposal responds to these oppositions by inviting people into the landscape through a recreational network. The goal is to reduce the feeling that nature and culture are separate. By encouraging visitors to experience the landscape directly, the recreational network can

function as a bridge across this imagined wall.

Connected to the divide between nature and culture is how humans position themselves relative to nature. Our worldview can influence how we perceive nature in design, impacting the choices we make regarding other species (Urška Škerl 2024). Whether deriving from an anthropocentric or a non-anthropocentric perspective, the act of trying to preserve nature remains the most vital. Many valuable theories, understandings, and tools stem from a non-anthropocentric view, such as ecosystem services and design with nature. This distance that follows an anthropocentric view can, however, lead to the disregard of nature. The distancing of humans from nature in anthropocentric views may also have actually helped people step back and understand nature from a different angle. However, it is important to recognise that all human interventions are derived from a human perspective, even when aimed at conserving the habitats of other species. The proposed design principles and strategies aim to protect these habitats. Nonetheless, designing a network to increase visitor numbers still prioritises human interest first by accommodating tourism. Therefore, restricting human access through the choice of path types and placements is a good protective precaution when the decision to allow increased disturbance has been made. Although creating a recreational network may initially stem from a human-centred perspective, the design decisions regarding path placement and type prioritise ecological habitats over human convenience. A potential secondary benefit of the recreational network is that visitors may develop a stronger connection with the ecosystem and engage in pro-biodiversity behaviours (PBB), as

explored in the study by Hatty et al. (2022). Such behavioural changes could contribute to stronger habitat protection by reducing further degradation of nature.

The theoretical background examined ecosystem services and how they serve as a tool for understanding the value ecosystems have for humans (IPBES 2019). It can be used as a strong argument for conserving ecosystems. The analysis made it clear that supporting, provisioning, and regulating services are already present at the site, with habitats, biodiversity, carbon storage, and flood control being especially significant. The design therefore explores how a recreational network can enhance the cultural ecosystem services of the area. Specifically, the proposal focuses on improving recreational services that build on the landscape's existing qualities. Additionally, the network could boost the educational service of the site by communicating ecological values through signs and inviting visitors to directly experience the ecosystems.

By protecting and highlighting these existing ecosystem services, the design not only contributes to safeguarding the area from excessive development but may also strengthen people's PBB through an increased sense of connection to the landscape (Hatty et al. 2022). This strengthened relationship could ultimately support stronger preservation efforts. Humans depend on nature, and many of today's threatened species and ecosystems depend on humans recognising and appreciating the services and intrinsic value of these environments (IPBES 2019).

As mentioned in the theory, people wish to protect ecosystems, but not at the expense of what is expected (Nassauer 1995). In this project, the expected outcome may initially seem unappealing, particularly if the site were lost to further development, resulting in the loss of its natural character. In contrast, the proposed design offers a more welcoming alternative by creating

a larger recreational network that connects both natural and human-made elements of the landscape. Recognising the industrial elements already present on the site, the design approach seeks to work with existing conditions by emphasising the landscape's natural qualities while constructively integrating the industrial features.

While this approach enhances access and engagement, the experience of visiting the site may still differ from some visitors' expectations, as it emphasises a continued understanding of the landscape rather than purely conventional recreational attractions. Tourist destinations on Andøya usually showcase scenic and mesmerising experiences. This design aims to frame messy ecosystems alongside often less appealing elements in the landscape, such as industries. It seeks to ensure the continuity of ecosystems that may have been overlooked because of their proximity to other land cover types. By utilising the design's recreational network, one can, in relation to the theory by Nassauer (1995), create a cultural frame of something expected, a designed structure that frames the messy ecosystems in forgotten landscapes.

By creating a clean frame, the design seeks to influence how people describe the landscape. As mentioned in the theory, some terms are correlated to attractive qualities, while others are associated with less attractive aspects of nature (Nassauer 1995). The frame has the potential to shape people's perceptions and descriptions of landscapes without altering the ecosystems themselves (ibid.).

The site has many good existing qualities. They are, however, disconnected and could benefit from a stronger framework and easier access. From nature's side, the site is filled with beautiful landscapes, sightlines, rich habitats, and lush vegetation. There are many local initiatives for communal meeting spaces, art, and recreation.

They, however, bear the clear mark of not being fully optimised. The site holds clear cultural significance for fishing, as it has been essential to the livelihood throughout history. By connecting and expanding on the existing natural, cultural, and historical elements, one can strengthen the experiential qualities and cultural understanding. Linking the historical layers of fishing with the current industry can illustrate the changes over time. Going from traditional fishing to more industrial scale fish farms. Additionally, expanding local artistic initiatives and restoring well-known landmarks can help highlight the more abstract aspects of the fish industry and demonstrate how it connects to nature through waste management and the shaping of local communities.

People care for nature when they spend time in it and create strong connections to it (Hatty et al. 2022). The relationship between people and nature affect PBBs. Those with a more experiential understanding of nature were more likely to have PBB (ibid). Designing to enhance connection to nature can therefore make people care for nature, by, for example, framing it with a cultural context such as explained by Nassauer (1995). Being active in a natural environment is beneficial to people's overall health (Ma et al. 2023). This can explain why people care more about nature when they are in it, as it makes them feel better both physically and emotionally. People being in nature can also influence on a societal level by contributing to economic factors through improving public health (Strøm et al. 2016).

As explained in the theory, people's CN scores can influence their PBB (Hatty et al. 2022). The use of a cultural context or a clear frame can serve as a tool for those with lower PBBs to create a stronger personal connection to nature. If this project can serve as a cultural context or a clear framework to help people strengthen their PBB, then it would succeed in addressing and aiding the

current global nature crises we face, as outlined in the background. This is why the design concept includes principles of communicating the ecological values found throughout the site. It also features a varied path designed to create areas with a stronger 'clean frame' and others with less cultural context, highlighting the contrast between the wild and the expected.

It is not given that the implementation of the network will affect people's connection to the landscape. The network will affect the character, but it will not make the landscape look tamed. To say that one has affected everyone's connection to the landscape is too grand a claim. It is, however, possible that the project can affect someone's connection, either by creating access to it or by framing its beauty.

However, it is not only the ecological aspects that we wish visitors to create a stronger affiliation to. It is also the cultural and historical layers. Throughout history, humans have shaped their surroundings, and without this, they would not look the same as they do today (Rydgren 2023). The cultural connections are tied to how we use the landscape. For example, the shore's connection to fishing or the agricultural practices shaping the vegetation. By also communicating and framing these layers, the network is able to communicate a broader understanding of its surroundings.

Communicating this is not easy. Our historical perspective only paints a picture of how life was lived on Andøya. It cannot, based on the available information, present a certain depiction of history. Culture is ever-changing, just like nature; it can't be synthesised in its entirety to be communicated through signs. It is something shared by those who have lived there and still do. However, through the experience of walking in nature as mentioned by Ma et al. (2023) combined with framing infrastructure explained by Nassauer (1995), it is possible to give a broader

understanding and connection to the landscape, by combining both information and experience. This understanding and appreciation are especially important in a forgotten landscape with many different land uses, as they help communicate its intrinsic value.

Through a design that emphasises a broader understanding and connection to the landscape and its natural environment, one can engage a wider range of people with varied interests. In this way, the project might help strengthen the connection to nature among those who initially lack an interest to explore nature.

In the theoretical chapter, the importance of movement in nature was highlighted (Ma et al. 2023). It effectively reduces stress as Ewert & Chang (2018) has researched. By designing a network that improves people's mental well-being, can also strengthen their connection to the landscape, creating opportunities for positive experiences. The study by Ma et al. (Ma et al. 2023) showed that walking in nature enhances people's connectedness to nature. Connecting this to the fact that humans evolved in more natural environments helps us understand why this occurs (Kellert 2008). Recognizing and appreciating the various benefits of being in nature can help people feel more connected, fostering a sense of understanding and care for the environment, which may lead to a even more cautious land use.

As mentioned in earlier chapters, the national predictions indicate that spending time in nature can help reduce healthcare costs (Strøm et al. 2016). This is linked to the mental and physical health benefits of walking in natural settings, which can improve mental capacity, enable people to stay in work, and promote overall better health (Ma et al. 2023). Designing recreational opportunities that target not only tourists, but also local, everyday recreation can strengthen this national prediction.

The pressures on the coastline lead to disagreements over land-use priorities. The 100m rule, however, is a national example of the desired development of Norway's shoreline (Kommunal- og distriktsdepartementet 2021). The law aims to prevent the privatisation of the coastline (ibid.). While this is not relevant to most of Andøya, as it is not developed to that extent, it can serve as a good argument for improving general accessibility to the coastline and for including the breakwaters within the industrial sites to the recreational network. Access to and use of the coast have been important aspects of Norwegian history. The accessibility to the coast and the recreational benefits one can experience here are therefore important. The coast of Andøya is inaccessible in other ways besides privatisation, but rather due to difficult terrain, as revealed in the analysis. The coastline is often a species-rich habitat, but it is also a significant part of human recreation in nature, as made clear through the intent of the national regulations in the 100m rule. This project has therefore prioritised providing access to the coastline while also being considerate of existing natural features and important habitats.

By designing with nature, allowing decisions to prioritise ecosystems and ensuring beauty as understood by Meyer (2008), we foster connection and ensure the continuity of nature in this conceptual proposal. The design combines anthropocentric and non-anthropocentric perspectives, creating a recreational network that responds to increased tourism and land use pressures while respecting the intrinsic value of the landscape's ecosystems.

As mentioned in the project's theory, the 'design with nature' approach was among the first to focus on ecological factors (Mcharg 1969). Many of today's challenges related to land use stem from a limited understanding of ecosystem processes. Nature is dynamic and largely self-regulating, yet it is often treated as something that needs to be controlled.

To meet human needs and support long-term sustainability, designing with nature can create spaces that benefit both people and healthy, functioning ecosystems (ibid.). The interest in designing with ecosystems can be seen as a response to the planet's natural systems and the climate crisis.

Through analysis, the design can be based on the site's specific ecological characteristics, ensuring more sustainable development. However, it is a development that could increase human presence in vulnerable ecosystems, potentially leading to unconscious land use. This is an important factor to consider in any project. Passing through sensitive ecosystems, including sand dunes and bogs, complicates efforts to support truly conscious land use, especially given that recreational activities present a considerable risk to these environments. It is not the individual passing through the ecosystems that poses the threat, but rather a steady flow of foot traffic eroding them. This project has considered these contradictions and aims to create paths and supporting infrastructure that minimise potential human-caused stress despite the increased human presence. Through paths that are raised above vulnerable vegetation types, and by concentrating foot traffic. By concentrating frequent human recreation in already occupied areas can help reduce disturbance to species elsewhere on Andøya.

It is still important to recognise that none of the proposed strategies can guarantee the protection of these ecosystems. However, by establishing clear pathways and providing information on the importance and fragility of these areas, this proposal seeks to balance restricted access with conservation.

The 'design with nature' by McHarg (1969) approach stems from an anthropocentric view. This means that design decisions derive from a human perspective, since we humans generally

make them. Therefore, it is especially important that, when designing, the interests of other species are also prioritised as highlighted by Hoffman (Urška Škerl 2024). In this design, it was crucial to limit human access to especially vulnerable areas to ensure minimal disturbance to flora and fauna. With the background highlighting the increasing tourism in Arctic regions (Øian & Kaltenborn 2020), it becomes even more crucial to prevent high visitor numbers from causing deterioration to nature. Maintaining the intrinsic value of the landscape and its significance to both nature and humans remain essential.

Referencing back to Meyer (2008) in the theory chapter, it is not sufficient to focus only on the technical and ecological aspects, but also on beauty. On this site, the beauty is already present in the natural environment. However, due to its proximity to industrial development, it can be overlooked. Through the recreational network, we aim to highlight the site's beauty to strengthen people's connection. By focusing on showcasing the beauty in the dynamic, changing, disturbing and adapting landscape as Meyer (2008) highlights is important. The proposed design should not only be viewed as a technical and ecological intervention but also for the bodily and emotional experiences it accommodates.

Habitats are vulnerable to the impacts of human presence (Støstad et al. 2025). The growing tourism in arctic areas has not only taken a toll on local communities by overburdening existing facilities and infrastructure but also left a clear mark on the landscape, showing signs of wear and tear from excessive use (Øian & Kaltenborn 2020). This poses another threat to already fragile ecosystems that are also impacted by climate change (ibid). Tourists often seek to experience the landscape's untouched character and the beauty it offers. Given current trends, it is possible that the iconic features of the arctic landscapes will be altered or

lost. To safeguard the continuity and preservation of these landscapes, it is vital that infrastructure supports the ecosystems and limits harmful activities. This project aims to provide recreational experiences and opportunities while ensuring the ecological, technical, and beautiful integrity of the site.

Biophilic design is a design approach used in urban areas to create evolutionary familiar affiliations and reconnect people to nature (Kellert 2008). This project, however, is done in a rural environment. The natural structure, colours and materials are already a present part of the site. This proposal uses biophilic design elements not to reconnect nature in urban places, but to balance out the edges between human structures and natural environments. Minimising the effect some, by lowering the contrasts. This might not be a biophilic design approach, but rather an adaptation to the surrounding environments. Still, it uses the same tools to create a design project that aims to create a stronger connection between people and nature.

The project implements recreational infrastructure in a landscape where the existing paths and elements are of a demure character. It has been important not to implement design features that would break the overall character, considering ecological, historical, and cultural aspects. This has been done through taking inspiration from nature and maritime elements. It was essential that the materials were resilient to long-term exposure to the elements and weathered gracefully. In some cases, that meant more durable materials were required to handle the harsh conditions of the salty sea or strong storms.

Fibreglass has commonly been used in boats due to its durability. That makes it not only a durable material but also one that connects to the culture. In areas more protected from the sea, corten steel and wood are used. They blend into the surrounding environments and weather gracefully, honouring the ever-changing seasons. The use of local gravel, cobble,

and blocks ensures a robust design that showcase the sites raw materials. The implementation of a nature-based design cannot counterbalance the implementation of a human-made structure. The infrastructure will still be a contrast to the natural vegetation. Still, the choice to use these materials is made to foster connection and ensure the continuity of nature.

Interpretation of main findings

Principle one

The first principle emphasises aligning design with ecological systems, promoting recreation that supports rather than disturbs the natural environment. Ensuring infrastructure accommodates natural water flows, protecting vegetation, and preserving habitats in relation to findings from the analyses. Through site visits, it became clear that one cannot work against the elements, as seen with the old peat pier. The sea always prevails.

The design has focused on allowing the natural processes of the landscape to go unhindered. Paths have therefore been designed to allow the creeks, rivers, and tides to pass underneath were deemed necessary. Existing paths that have not taken tides into consideration have become inaccessible during high tide, as seen on Kvalnes. However, it is hard to design around the possible and predicted extreme weather, such as sea rise and floods. So even if the design has considered the flood scenarios, it can still be affected by more extreme flooding.

To protect the landscape's varied vegetation, the paths have been raised where necessary. This was done to allow vegetation to retain most of its habitat, such as on bogs and sand dunes. With the raised path, the microclimate underneath will be altered. It will become more shaded and could therefore vary in temperature and moisture. This could, however, open up for other species to grow that are otherwise outcompeted.

Another effect is that it can also become shelter for smaller animals such as hares and otters.

Frequent human activity should be concentrated along coastal routes and edges of residential and industrial areas to reduce disturbance further inland. Clear paths and infrastructure help to focus recreational activity in areas that can accommodate it. Establishing clearly designated trails in terrain that can withstand foot traffic concentrates visitor movement. It is also important to acknowledge that implementing a more present recreational network can pose a barrier to wildlife movement. By either making it difficult for larger animals like elk to pass or causing wildlife to avoid the elements due to increased human presence. In response to this concern, we have placed the path types that might act as the most significant barrier in locations where they will hopefully be less of an inconvenience to wildlife. As seen in the photos from Andøya, the elk does not view the existing roads as a major hindrance, but raising the paths could make them more restrictive. By also placing the paths closer to the shore, they will more likely steer away from passing directly through the elk's favourite leisure places.

Principle two

The Second principle focuses on creating experiences that deepen people's connection to nature. The recreational network aims to offer tourists a place to reconnect with and better understand nature while providing the local population with nearby recreational opportunities. As the analysis makes clear, there are few recreational opportunities, so people tend to walk along the dangerous main road.

Visitors are guided through landscapes with storytelling elements. This approach is implemented to strengthen experiential understanding of the landscape and to support learning, engagement, and stewardship. The information available throughout the network, however, cannot suffice

for the actual historical, cultural, and ecological elements it communicates. For example, the removal of Finnvika and the implementation of a memorial will not yield the same learning opportunities. On the other hand, the knowledge will become more accessible to more people.

The project focuses on making scenic views more accessible by providing lookout points and paths that wind through the landscape. The opportunity to view and experience both the landscape and the wildlife can deepen experiential understanding. This will hopefully engage people in a pro-biodiversity desire for these landscapes that lie between nature and industry. It is not possible to say it will. Implementing the recreational network cannot force visitors to care for the landscape, but it can frame it.

Connecting new and existing recreational infrastructure with the surrounding natural environment can encourage visitors to engage with the surroundings, creating memorable experiences. Such as paths for walking, access to the sea for both swimming and fishing. The climate of Andøya can minimise the window for when such activities are relevant. During the winter, it is less attractive to go swimming, and the paths are covered in snow. Restricting the recreational network to appropriate seasons.

Principle three

Principle three is all about allowing the development to be guided by the rhythms and character of the landscape it lies in. It focuses on minimising the effect zone between industry and nature. Today, the industrial fish farm is closed off from the rest of the site due to construction. Andfjord's final plans aim to blend the industry into the surrounding landscape while also incorporating a visitor centre. The proposal of a recreational network can further strengthen the connection to the landscape, creating a more continuous experience. In addition to encouraging

open dialogue, aiming towards more sustainable coexistence between industry and nature.

The project demonstrates how recreational infrastructure can coexist with industrial development. By integrating trails with industrial areas, transparency is created, the effect zone can be reduced, and several land uses are accommodated within the same landscape with less conflict. It is not a given that this will succeed, as there are many conflicting interests. The industries need to continue production in line with regulations, and visitors expect a sense of safety and beauty. It is, however, the mix of the two activities that makes this recreational path different from others at Andøya.

Due to industrial construction, there is a surplus of materials. Surplus materials are assets that may be going to waste. By ensuring on site use, it can ensure that local raw materials are not exported or go to waste. Utilising the extraction of local raw material to its full worth. In nature, waste does not exist, every by-product becomes a resource within a continuous cycle of reuse. However, the amount of material can be limited. It is only when the reuse of surplus materials does not suffice that the project should add on with other materials. This will ensure a more sustainable development.

By utilising the existing or planned access points and facilities of the industries, the recreational network can be more closely connected to local industries, and the threshold for exploring and understanding these industries can be minimised. This can again have difficulties due to differing priorities. The presence of visitors can be distracting to industrial production, and it is necessary to have clear instructions on where visitors are welcome.

REFLECTION

Reflection on methodology

Our project evolved over the months we worked on it. The starting point was more focused on the industry and the transition from industry to nature in the landscape picture. However, as we went through analysis and the research-by-design process explained by Nijhuis & Vries (2019), we developed an understanding of the possibilities and strengths of using recreation over a larger area to consider a broader scale and explore wider themes. This shift was partly due to seasonal restrictions on site visits and to the exploration of the importance of recreation and the connection between people and nature on Andøya.

Using methods that switch between reflecting and creating, as well as between disciplines as in a triangulated methodology (Noble & Heale 2019), has been shown to be time-consuming. The work could have been more time-efficient with a more direct and singular approach. The chosen approach did, however, provide the opportunity to evolve the project in line with the direction we wanted. Doing the project in a duo allowed us to undertake more time-consuming processes and discuss matters together.

Reflection on personal learning process

At the start of the project, we did not take as much consideration to the island's arctic location. This became evident during our reflections on the site visits and in our analysis, where we recognised its significance. It then opened up new perspectives for the design.

The use of ecological design in more rural and natural settings has been a learning curve. Biophilic design is more rooted in urban environments; it was interesting to apply this to our own understanding in a natural environment. It gave us the opportunity to explore what biophilic in nature meant to us.

The connection between humans and nature was something we saw as relevant to bring into the theory, as it was a concept we kept reflecting on throughout our site visits and the design process. Our research question and sub questions guided us through this process.

Reflection on design development

A key turning point for us was the first backtrack in the design process, where we explored the initial outcome and shifted to a larger scale, enabling us to connect similar land uses and develop a more impactful concept proposal. The iterative design process was crucial, as it allowed us to reshape our design and better integrate our two distinct thought processes and design priorities.

Reflection on scope and delimitations

Through the design process, we had to prioritise different aspects to create a final product within the given timeframe. This forced us to move further away from the industrial presence than we would have initially preferred.

The prioritisation of completing the project within the predicted time also forced us to forgo the desire to conduct a more thorough site analysis in the field. The season did not allow for it.

Limitations and uncertainties

The process involved a triangulated methodology, which combines different disciplines (Noble & Heale 2019). This can be both an advantage and a disadvantage. For this project, however, we saw it as an advantage because it allowed the design to relate to nature.

The seasonal constraints were a disadvantage from the beginning, restricting site visits and data collection. This forced the project to rely on existing registrations and information, which, in many cases, is based on public registrations. As a result, data such as species collection and more recent photographic analyses were not possible. Snow was one of the biggest obstacles in this regard. The project

then had to focus on less comprehensive information, which could result in a less optimal foundation for the design.

The absence of technical drawings reflects the conceptual scale at which the project was undertaken. This was done out of necessity due to the large site. If the project had been focused on a smaller area, then technical drawings might have been more appropriate. The scale relevant to creating a continuous recreational network capable of connecting various ecological, historical, cultural and industrial elements did not allow for this. The conceptual level enabled a focus on issues such as conscious land use, people's relationships with nature, and resource management in the expanding arctic tourism sector.

Reflections on teamwork

Executing the master's thesis together has been both an advantage and a challenging experience. Throughout the process, we mainly worked and lived together, making clear communication more important. We noticed that our communication improved throughout the process. The work was divided by individual strengths, allowing each person to contribute where they were most effective while also complementing one another to create a cohesive thesis.

In chapter one Rebecca has worked with the transition from green to grey, habitat loss and coolcation. While Tuva has worked on sustaining society, methodology, delimitation, and information about Andøy municipality. In chapter two, Rebecca has explored how humans react to nature and their environments. Simultaneously, Tuva has explored more of the abstract world views and how to design. In chapter three, Rebecca has analysed the ecological frameworks and historical layers. Tuva has analysed the landscape structures, climate, landscape sensitivity, the human landscape, contemporary pressure and governance. While the culture and identity of the site have been a result of thorough

teamwork. In chapter four, Rebecca has developed the principles and strategies that guide the proposal as well as the material choices. Tuva has focused on the characteristics of the landscape, which areas to protect, transform, and connect. Proposed the path network and developed examples of the concept in the site. In the final chapter, the content is the result of teamwork, in which we have together formed the discussion, reflection, and conclusion of the thesis. In this process, Tuva has worked on shaping the reflections, while Rebecca has ensured the flow and the red thread tying the theory, analysis, and design proposal together. The different visualisations and maps have been created for the most part by the person who worked the most on the theme.

Though some tasks were mainly executed by one person, the opportunity for shared reflections and ideas created each element. It is the collected shaping of each element that has made it to the final product, so that each voice is present in all elements throughout the thesis. This always kept both parties in the loop of all aspects of the thesis. Through this experience, we have gained a deeper understanding of the importance of teamwork and communication, which we will apply in future projects.

CONCLUSION

This thesis is derived from the research question:

How can a coastal recreational trail help strengthen the relationship between visitors and nature while also ensuring a more cautious land use in an arctic landscape facing increasing land-use pressures on Andøya?

The proposal for a recreational path in the coastal landscape of northeastern Andøya aims to strengthen the relationship between visitors and nature by strengthening their affiliation with the landscape and thereby their PBB. Applying this approach in a forgotten landscape near industrial development can highlight these areas' value to visitors and, in doing so, promote their preservation while mitigating the risk of future fragmentation of habitats and support a continuous landscape.

To support the research question and ensure a desired direction of the design, we asked three related sub-questions:

- 1. How can recreational infrastructure be designed to adapt to its local ecosystems in an open coastal landscape?*
- 2. How can landscape architecture strengthen the relationship between visitors and nature in a recreational network, fostering environmental awareness, cultural appreciation and historical understanding?*
- 3. What measures can contribute to industrial development and natural landscapes to better coexist and reduce spatial conflicts?*

The three principles, along with related strategies, aim to answer these questions. By allowing nature to lead, one can better ensure that the implementation of a recreational infrastructure adapts to the ecosystems. While using connection as a tool for conservation, the project is better able to strengthen the relationship between visitors and nature, fostering environmental awareness, cultural appreciation, and historical understanding. Ensuring that

the industry and nature are in dialogue is relevant to reducing spatial conflicts and ensuring the coexistence of the different land uses.

Implications for future planning, design and research

In future development plans for the coastline on Andøya, this thesis can serve as a guide to strengthen the bond between visitors and nature while promoting more cautious land use. It has established a foundation for a development approach that accounts for natural elements. It does not oppose industrial growth but encourages using it as a resource rather than an obstacle. Therefore, it is essential that the development not become a traditional industrial centre. Otherwise, opportunities for locals and visitors may be missed, and habitats and landscape features could be lost. The loss of the natural landscape will increase vulnerability to climate change, and the historic significance and ongoing story of communities living off the sea's riches may be diminished.

Researching the effect of using recreation to minimise the effect zones on industrial presences in natural landscapes is an area that could be further explored. It is an interesting approach to rural planning and design that combines land uses not normally paired. Further research into the growing impact of arctic tourism on landscapes should also be undertaken. Different tourist activities affect ecosystems, and it is important that tourists visiting beautiful landscapes consider the preservation of these ecosystems for future generations. The further development of a recreational network in northeastern Andøya should also be completed to assess the potential impact on the site and how it can meet rising tourism projections. Additionally, a more detailed analysis of the fauna and flora, not limited by season, highlighting their abundance in this Arctic landscape, would be beneficial.

Transferability and relevance

The project examines how to develop an accessible coastline where possibility, rather than privatisation, takes precedence. It considers an Arctic landscape where elements, seasons, and durability are vital. Many aspects of the project can be applied to other landscape architectural initiatives in arctic regions. The selection of materials, principles, and strategies can be adapted to projects that aim to preserve a continuous coastal landscape, encourage cautious development, and connect local communities, industries, and ecosystems. Having a conceptual framework is beneficial for others wanting to apply it in similar areas with comparable goals. It does not need to conform to all principles, strategies, and choices, but should focus on site-specific adjustments necessary for a cautious approach. Priority should be given to vegetation structure and habitats, as the Arctic is vulnerable to change due to climate change, increasing tourism, and political interests.

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