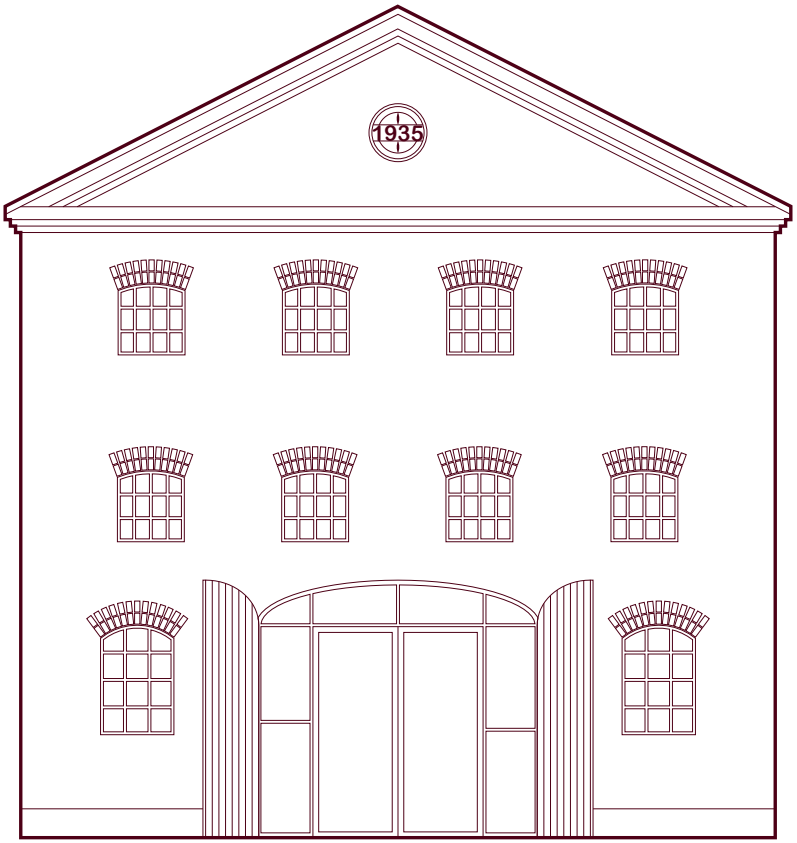

Reinventing Hæstrupgård

Preserving the cultural heritage in the countryside

MSc04 - ARCH 15 - Spring 2025

Malene Mann Christiansen & Mia Andersen Harder

Reinventing Hæstrupgård

Master thesis 2025

Title page

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Malene Mann Christiansen

Mia Andersen Harder

Abstract

This thesis presents the transformation of Hæstrupgård, an old manor of high architectural quality, located in northern Jutland, south of Hjørring. As a part of the master's degree in architecture at Aalborg University, this thesis is written in the interdisciplinary field of architecture and engineering. Through the Integrated Design Process (IDP), iterative investigations and analyses are conducted to elevate the interdisciplinarity in the design. Sustainability is a significant factor in contemporary architecture, and with the building sector being one of the largest contributors to emissions (Concito 2022), this project wishes to challenge the current building practices by thinking in new directions, where old buildings and materials are reused to a larger degree. Transforming a building as Hæstrupgård requires a comprehensive examination and understanding of the existing building volume, its context and its qualities. Accordingly, most of the analyses revolve around examining Hæstrupgård, evaluating and understanding the history, details and soul embedded in the buildings. This thesis aims to create a retreat that revitalises Hæstrupgård and retells its embedded history, through new functionalities that embrace the past, the present and the future.

Reading guide

This thesis consists of two physical reports, a design report and a supporting appendix. Based on the Integrated Design Process, the design report is divided into six sections: preliminary, theory, SAVE assessment, analysis, design development and presentation. The integrated Design Process is an iterative method, where theory, research, design ideas and technical assessments are used throughout all the phases. For understanding, the process is presented in a structured and chronological manner, rather than its highly iterative and at times confusing entirety.

The report layout is structured to be read as spreads, where contiguous text and illustrations present the various iterations and examinations. Throughout the report, sub-conclusions will state the obtained knowledge and the purpose of the above-mentioned section, while a general conclusion and reflection will recapitulate the project in its entirety and reflect upon the process and the design. When reading the thesis report, references to the appendix will be indicated in the text, stating that supportive or additional materials can be found in this section. The rights of illustrations and images are primarily owned by the authors. In cases where this does not apply, credit to the rightful owner will be stated in the image caption, with an elaborated list to be found in the back of the report.

Foreword

Sustainability is a topic of relevance for today and the future. Since 1987, when the Brundtland report put sustainability in focus, humanity has kept developing new methods and approaches to lower the impact of our current way of living, without compromising the ability of future generations to meet their needs. (The Venice Charter 1964) The building sector is one of the largest contributors to emissions (Concito 2022), and new methods and practices have been introduced to this sector, but more needs to be done. One of the methods that is gaining a footing is the transformation and reuse of existing materials, a method that also preserves architectural history and value in old buildings.

Due to new agricultural practices, many associated buildings are left empty and functionless, this thesis therefore aims to propose a revitalisation and reinvention of these buildings, seeking to preserve the historical value of Danish agriculture and increase the appreciation of the rural areas.

This thesis aims to transform Hæstrupgård by introducing new functions, with a technical focus on ensuring a pleasant indoor climate and optimising the energy demand of the building, obtained through different assessments and simulations. Thus, the technical aspects will be limited to these main topics.

A special appreciation to the owners of Hæstrupgård, whose open doors and collaboration enabled a thorough examination and understanding of their historical and beautiful manor.

Table of contents

Introduction

In Northern Jutland, near the city of Hjørring, lies the old manor Hæstrupgård, surrounded by rural landscape and nature. With a long history and influence on the local community, Hæstrupgård holds a large cultural and architectural heritage. Due to changes in agriculture and economy, the old manor has been functionless and abandoned for the last decades, left to decay. The cultural and architectural heritage of Hæstrupgård makes it important to preserve and reuse as much of the buildings as possible. This approach fits into the rising focus of sustainability, reuse and transformation, enabling a low global warming potential and energy optimisations in the project.

Hæstrupgårds location in the natural and hilly landscape of Vendsyssel makes it an ideal place for a refugium, with a close connection to nature and room for quiet and relaxing stays. With functions that include the local community and manufacturers, the project aims to revive the local area and focus on local produce to help increase development and income, as well as give the locals a new cultural meeting place with activities and space to relax.

Illustration 1 - Location in Northern Jutland

Motivation

Denmark is an agricultural society with proud traditions. Agriculture still occupies two-thirds of the country, but structural changes and new reforms since the 1950s have altered the agrarian culture and our perception of it. Today, farms have merged into large companies, leaving unused buildings to decay or demolition. Over the past half-century, the holdings have gone from 200.000 to around 20.000 (RealDania 2010). This leaves more than 100,000 agricultural buildings empty and without function (Effektivt Landbrug 2010), equivalent to 60 million sqm, of which half is considered worth preserving (RealDania 2010). All of the empty buildings are, however, a part of telling the Danish agricultural history and culture.

In Denmark, the building sector is responsible for approximately 30% of the total CO^2 emissions (Concito 2022). This opened the debate about building sustainably, where new ways have to be found to lower emissions and utilise the resources we already have. The empty building mass from agriculture is a large unused resource that could be reused and revitalised by transforming the buildings and providing new functionality. This could bring new life to the farms, enhance economic growth and positively develop the countryside, making it more attractive to live in these beautiful, natural areas. Furthermore, the cultural heritage is preserved as well as the rural districts' distinctive character, telling the story of Danish agriculture. (RealDania 2010)

This chapter introduces the project and site to frame the preliminary investigations conducted in this thesis. Designing a project in the interdisciplinary field of architecture and engineering is a complex process, and certain methods and processes are required. This chapter also presents these methods and outlines the processes used throughout the project.

01 Preliminary

Methodology
Approach
Concept
Danish agricultural history
Hæstrupgård

Methodology

Preliminary

When designing a project in the interdisciplinary field of architecture and engineering, the process becomes complex and requires sufficient structure through different processes, techniques and tools. Using these in combination with each other should make a clarified and qualified evaluation of different design choices and proposals, to make decisions on a thoroughly examined foundation.

As this thesis investigates the transformation of Hæstrupgård, the methodology and processes will be adjusted to suit this purpose. Theory and principles of transformation require a great understanding of the existing structures obtained through evaluation and analysis, to make decisions that strengthen the architectural expression of the existing rather than deteriorate it (Andersen 2015b).

The Integrated Design Process

A methodology commonly used at Aalborg University is the Integrated Design Process (IDP), favoured due to its ability to incorporate architecture and engineering through an iterative process, where knowledge is integrated to solve complicated problems when designing sustainable building projects. Using this process enables the architect and designer to control the many processes and parameters in an integrated project, to ensure a more holistic design proposal with improved sustainable solutions. The process facilitates working with architecture, design, functional aspects, energy consumption, indoor environment, technology and construction at the same time, obtained through the five phases: problem, analysis, sketching, synthesis and presentation. Each phase requires the use of various tools to elaborate on the project and gain insight into the different aspects. (Hansen & Knudsen 2005) In this thesis, the IDP method will be used as a guideline for the design process, utilising applicable tools, knowledge and approaches obtained through the education at Aalborg University.

Phases

Problem phase
Identifying problems or areas of curiosity and defining project ideas, leading to the final problem formulation and direction of the project.

Analysis phase
Gathering the information that needs to be procured for the project to continue. This includes site analysis, user analysis, special qualities of a place and technical principles. Furthermore, a comprehensive analysis of the existing structures and their architectural value will be conducted in this thesis.

Sketching phase
Knowledge and gathered information are combined to meet the requirements and desires of the building. Creative ideas and solutions are explored in a mutual collaboration between aesthetic and technical parameters.

Synthesis phase
Demands, aims, and the programme are met through the final form and expression of the building, found through iterations between different proposals and assessments. All parameters from the sketching phase are combined and interact in an optimised design proposal with high-quality solutions.

Presentation phase
Presenting the final design proposal, showing its qualities and how it fulfils the objective of the building.
(Hansen & Knudstrup 2005)

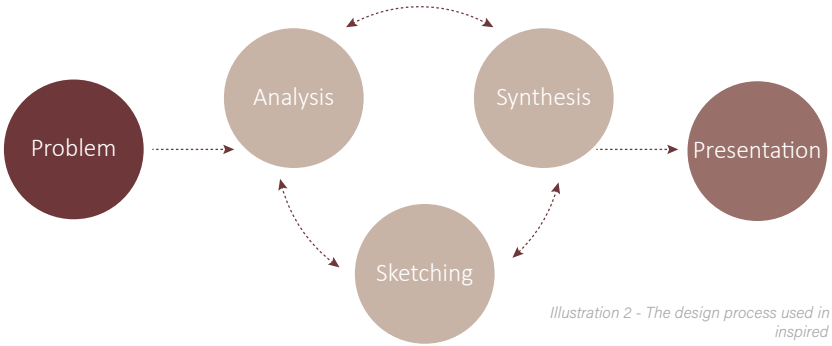


Illustration 2 - The design process used in this thesis, inspired by the IDP

Problem Phase

Finding inspiration and exploring the field of interest; transformation

Tools:
Articles, Literature, case studies, statistical data

Research
Investigating the field of transformation to gain insight into current practices and competitions helped to gain the overall scope of the project. Researching for data, statistics, and projects of relevance was a large factor when determining the problem, vision and idea for this thesis. It was also utilised to elaborate on the problem and to ensure the right foundation for the problem and project was outlined and sufficient. The competition 'Det er dejligt på landet' has been an inspiration for the thesis, as it has formed part of the basis of the foundation for the project.

Analysis Phase

Gather information and knowledge of the site and the existing structures

Tools:
Research articles, literature, Statistical data, QGis, on-site observations, measuring, photographs, Site visits, SAVE Assessment

Theoretical studies
Studies of theoretical positions, philosophies and methods have laid the foundation for the approach in the project and gained perspective on the field of transformation. This method enables a greater understanding of the building and project, and the framework that needs to be set for the elaboration of the transformation project. Using theoretical approaches helps to generate ideas and strategies while setting the right constraints. Investigating a transformation project also requires sufficient knowledge of history and architectural value, obtained through literature and research.

Statistical Data
To ensure the project is based on the right foundation and the functions and users of the project are relevant, statistical and empirical data, along with studies, are examined. This provides an overview of users, desired functions and behaviour applicable to the project.

Case studies
As an addition to theoretical studies, studying existing cases provides knowledge of the practice used and its efficiency, which forms the basis for decision making and elaborates on design iterations. With a focus on certain subjects, the case studies ensure thorough examination covering the areas of e.g. functionalities, transformation, materials and sustainable practice. Setting the perspective and aim of a case study is important to frame the analysis and refrain from irrelevant information.

Mapping
Gaining information and understanding of the site and its surroundings is important to utilise the information in the design and create a project specifically for the chosen site. Using mapping on different scales and with different purposes identifies qualities and challenges of a place that need to be taken into consideration. Infrastructure, sections, existing surroundings and functions are all some of the aspects that are enlightened through mappings.

Registration
As this thesis revolves around the transformation of Hæstrupgård, comprehensive information regarding the existing building, its structures, materials, location, patina, etc., needs to be examined. As there is no existing drawing material on Hæstrupgård, the extensive work of measuring and mapping the buildings will be a part of this thesis and its process. To get realistic drawing material, thorough measurements, detailed photography, and use of governmental maps are utilised, as well as creating a 3D model for further use. Additionally, an extensive SAVE analysis provides an overview of the architectural, cultural, historical, and environmental value, along with the originality and condition of Hæstrupgård.

In correlation to measuring the buildings, Hæstrupgårds phenomenological aspects are deduced through a Genius Loci analysis. This analysis identifies the site-specific qualities and sensory impressions of Hæstrupgård, told through the experience of the place and the soul it holds. This information can help to fortify the special feeling of a place and enhance the architectural impact.

Sketching phase

Knowledge are combined with creative ideas into various design proposals

Tools:
Sketching, mood boards, photography, InDesign, Illustrator, Revit, Enscape

Sketching
Based on analyses, case studies, and different mappings, ideas are generated and put on paper to communicate and visualise an idea or detail. The sketching phase is iterative, and ideas can include the entire project or smaller parts. Sketching is an essential part of the design process, where different proposals are evaluated against different criteria.

Mood boards
In combination with case studies, mood boards help to find inspiration and direction for the project. Ideas are collected in collages or folders and can consist of proposals regarding materials, expressions, moods, details and existing cases. This method is efficient when communicating ideas to other parties and can be helpful when making the final design.

Model making
As an addition to sketching, the use of 3D models can help elaborate on an idea or design proposal and create a spatial model to investigate. This can identify potentials and challenges of an idea and help assess different details concerning the overall design and its spatial qualities. This method is used throughout the process in combination with 2D sketches and helps to elaborate on the project, providing a larger overview and comprehension.

Synthesis Phase

The design proposal is optimised through iterations, aesthetic decisions and technical simulations

Tools:
Microsoft Excel, BE18, BSim, Revit, LA/R Revit daylight analysis, Enscape

Simulations
In addition to calculations, different simulation tools help to investigate ideas and assess the indoor climate, daylight and energy performance. This can help to choose between ideas and elevate the design, providing knowledge and awareness of the performance, climate and atmosphere. Simulation tools are used throughout the process, particularly in the sketching and synthesis phases.

Visualisations
Quick visualisations are used to help elaborate on material combinations, certain atmospheres and spatial qualities. This gains a deeper understanding of the design and can be essential when making design or material choices. This method is used in both the sketching and synthesis phases to enhance the aesthetic qualities of the design proposal.

Presentation Phase

The final design proposal is presented through various illustrations and visualisations

Tools:
Illustrator, Photoshop, InDesign, Revit, Enscape, Word, Excel

Visualisations
Final visualisations help to visualise and communicate the project based on 3D models, material studies and mood boards , presenting the expression, atmosphere and architectural quality of the project. The focus is to create realistic views that could spark the interest of a client or investor.

Illustrations
Illustrations are used to communicate and visualise ideas, concepts and investigations throughout the process. Illustrations should communicate the essence and are often made in a way where all illustrations have the same expression and style. Illustrations are used during all phases of the process and are an essential part of the report.

Report
The report is essential to communicate the entire design process systematically and comprehensively. It presents all the different phases of the project, from the initial motivation and problem, to the analysis, sketching and synthesis phases. The report elaborates on the final design and presents the different ideas, potentials and challenges obtained through the process. This ensures the reader gains a deep understanding of the process and final design.

Approach

Vision

The vision of this thesis is to transform Hæstrupgård into a modern retreat that blends architectural heritage with contemporary design, creating a sanctuary where guests can escape and connect with nature. This thesis aims to preserve the architectural features of Hæstrupgård and create an architectural transformation that integrates with the existing buildings, offering an attractive and interesting place with a connection to nature.

By presenting an approach to revitalise and repurpose these historic buildings, the hope is to inspire a broader perspective, preventing the demolition and abandonment of old estates and farmhouses. This approach encourages sustainable practices and a deeper appreciation and connection with the cultural heritage embedded in these buildings. The new functions should draw attention to the rural areas and the surrounding region, working closely with local farmers and producers. Through interactive activities, the aim is to inspire visitors to explore the potential of local products and discover new creative ways to utilise them.

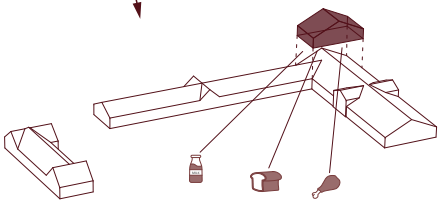
The retreat will become a catalyst for economic and cultural revitalisation of Hæstrupgård, fostering connections between visitors and the local community. Furthermore, the project will help ensure that the architectural heritage of Hæstrupgård is recognised and preserved for future generations, celebrating the past, the present and the future.

Problem formulation

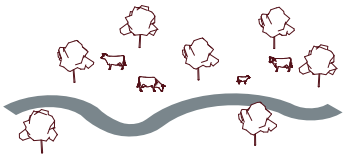
How can Hæstrupgård be transformed into a modern retreat that preserves its architectural heritage and contributes to the economic and cultural revitalisation of the manor, while serving as an inspiration for sustainable practices, where principles could be applied nationwide to inspire the preservation of historic buildings?

Concept

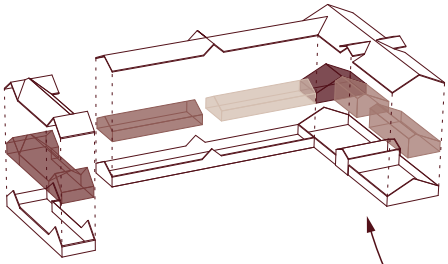
Creating a cultural space that invite visitors and guest to experience the cultural heritage, giving the manor a new purpose.



Collaborating with nearby farms to facilitate the sale of various farm products, offering visitors and guests the opportunity to purchase locally produced goods.



Making active use of the surrounding nature, allowing access to the stream and space for animals to roam.



Adding new functions in the existing buildings, allowing for new ways to use the manor.

Illustration 3 - Transformation koncept of Hæstrupgård

Danish agricultural history

Preliminary

The Danish villages in the countryside have experienced a large decrease in residents, leading to empty buildings without function or purpose that fall into decay or are demolished. The Danish farms, especially, have a large cultural heritage that will disappear if they are not repurposed and given a new life. With architectural characterisations from different historical periods, these farms tell the history of the Danish agricultural society and are important to preserve to tell the history in the future. (Arkitektforeningen 2024)

1800 - 1850

In the late 1700s, new land reforms were enacted. This meant that the large manors, owned by the nobility, were divided into smaller farms where peasants managed smaller pieces of land, and the villages were slowly dissolving as the peasants moved to their land. The ideal was a quadrangle made from reused timber frames, disassembled from the villages, as new timber in Denmark was exhausted. The buildings were characterised by local building traditions and have large local, historical and aesthetic value today. (RealDania 2016)

1850 - 1900

America started exporting large amounts of grain to Denmark, and the Danish peasants had to change from plant production to animal production to maintain their income. Therefore, they gathered in business associations, forming the co-operation movement. Bricks were dominating, and the farms often consisted of three wings built together and an isolated main house. The historicism influenced the choice of materials and decorative façade details, which were characteristic of this period, and new gardens around the main house were established. (RealDania 2016)

1900 - 1950

The co-operative movement continued to influence the agricultural society, but the world wars brought change to agriculture. The farms experienced mechanisation and rationing, which led to spacious buildings with fewer details and local characteristics. The need for employees at the farms decreased, and people moved to the larger cities concurrently with industrialisation. The main house became simpler and symmetrical with fewer details, inspired by the Bedre Byggeskik movement. (RealDania 2016)

1950 - 1965

This period is characterised by adjustments and additions to the existing building, due to the new methods and continued industrialisation. This also meant the addition of buildings for the new machines. Experimentations were made with new building methods and ways to place the buildings, why the quadrangle placement was being phased out. Additions were made as modular elements, and the practical approach was maintained. Some farms were combined in co-operative societies with shared buildings. (RealDania 2016)

Today

Since the 1950s, agricultural society has been going through a structural development, leading to fewer but larger farms in Denmark. This means that the number of farms has fallen from 200.000 in 1950 to 29.000 in 2015, and the number is still diminishing. The farms are today more specialised and industrialised and are merged into large farms, why many older buildings are left empty and redundant. (RealDania 2010)

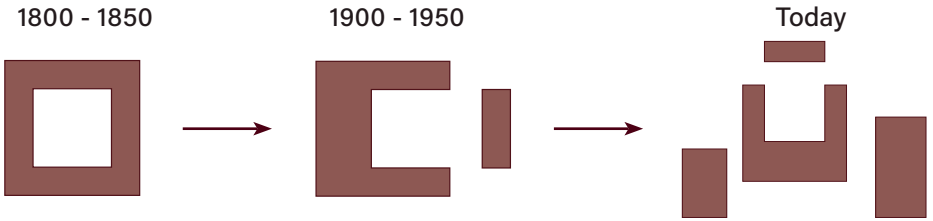


Illustration 4 - The change in appearance on Danish farms over time

Hæstrupgård

A historical overview

Hæstrupgård has a long and complex history, much of which remains undocumented, making it challenging to trace all the changes it has undergone over time. Even to this day, no current plans exist over the recent changes. The manor was first mentioned in 1424, though details about its original size and layout are unknown. However, by 1662, records indicate that Hæstrupgård consisted of three timber-framed buildings with thatched roofs (Roussell, 1966).

In 1748, parts of the manor were rebuilt using brick construction (Roussell, 1966), and some of this brickwork remains in sections of the main building today, according to the current owner.
In 1934, a large fire necessitated rebuilding large parts of the manor, updating it to a more modern brick construction. (Roussell, 1966) During a roof renovation in 2018, one of the two stables was removed.

Historically, Hæstrupgård played a significant role in the local community, with surrounding farms once being part of the estate. According to the current owner, the manor both produced and received corn from these neighbouring farms, storing it in a barn to the west. Additionally, it housed cows in two stables located to the north and south.

The historical significance of Hæstrupgård is reflected in the nearby town of Hæstrup, which consists of Mølleby ('Miller Town') and Mejeriby ('Dairy Town'), likely named after the trades that once existed there.

1424 – Hæstrupgård was first mentioned.

1662 – The manor was comprised of three buildings, made from timber frames and a thatched roof.

1748 – The main building and stable towards the north were built of bricks.

1934

After a large fire, large parts of the buildings were rebuilt using modern brick construction.

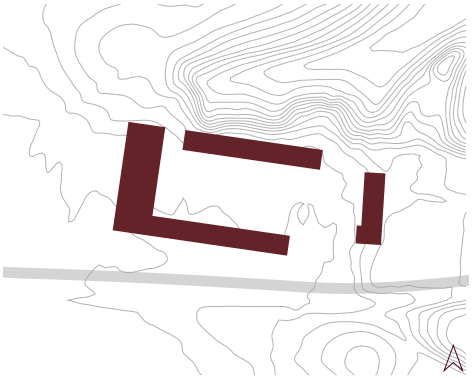


Illustration 5 - Hæstrupgård prior to 2018 (Klimadatastyrelsen 2024a)

2018

Roof renovation started on the south stable while the north stable was removed.

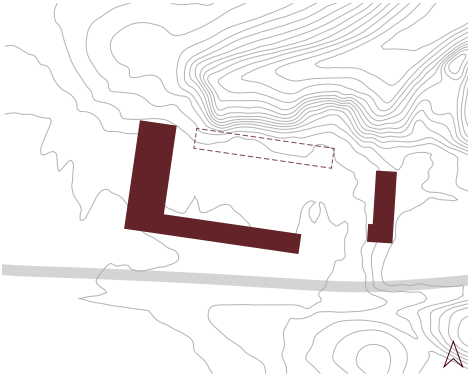


Illustration 6 - Hæstrupgård in 2018 (Klimadatastyrelsen 2024b)

In this chapter, different theories have been investigated to determine and clarify positions and approaches, and to define the strategies towards transformation and nature that have been obtained in this project. Case studies are used to outline the overall principles of the theories and provide an understanding of the effect the different theories can have on a project. Each theory is summarised with a sub-conclusion, stating the approach chosen in this project.

02 Theory

Transformation
Subconclusion transformation
Conditions of transformation
Positive impact of nature
Subconclusion natures impact

Transformation

A theoretical study

This theoretical chapter explores different approaches to renovation and transformation in architecture. From historical to more contemporary theories, transformation has been a subject of much discussion, with ever-changing ideals. Exploring the different approaches should provide a direction for this project's transformational expression.

For many years, it has been common practice to transform with a clear distinction between old and new. Interventions should be visible and readable, and history should be left to tell the building's original substance . Towards the end of the 20th century and beginning of the 21st century, arguments began to lean more towards a both/and approach, rather than either/or , creating a more nuanced perspective on architecture and history, changing the ideal from old versus new, to good versus bad. This puts the transformation architect in a new position, where they are not only an interpreter of a historical object but an active provider to a new entity (Andersen 2015a). With a rising focus on sustainability, the art of transformation is as relevant as ever. Using existing materials, structures, and buildings is turning out to be one of the more important approaches in the debate (Køhler 2020). This makes the sustainable transformation a question of ensuring value for current and future generations, connecting the past, the present and the future. (Andersen 2015a)

In the middle of the 19th century, when architects began to develop an interest in how to restore old buildings, Eugéne Viollet-le-Duc (1814-1879) and John Ruskin (1819-1900) comprised the two opposites in restoration theories, representing a maximal and minimal approach to interventions and transformation. Viollet-le-Duc was a proponent of restoring buildings to their original appearance and architectural style, not taking into consideration whether the buildings had ever had a complete architectural expression . Ruskin was more critical of this approach, stating that the original material and the patina of these were the most important, not the style. For Ruskin, time was an important factor, claiming

that the decay showed the influence of time, leaving character, patina, and original substance to be maintained at all costs. (Andersen 2015a)

For modern architecture and restoration practice, the Venice Charter from 1964 has been of importance for the approaches practised in contemporary transformation projects. The charter states that 'Replacements of missing parts must integrate harmoniously with the whole, but at the same time must be distinguishable from the original so that restoration does not falsify the artistic or historic evidence' (The Venice Charter 1964). This approach has been the foundation for Johannes Exner 's (1026-2015) philosophy, making him one of history's leading restoration architects in Denmark. Exner sees buildings as living creatures that are born, live and die. His approach makes it important to maintain and reveal all parts of a building's life, showing its history through different means, while still giving the building a new life with purpose. Exner also introduced the term reversibility, based on a status quo principle, where all interventions should be reversible, so the building could be left as intact as before the intervention (Exner 2007).

Case study - Koldinghus

Architect: Inger & Johannes Exner
Year: 1994
Location: Kolding, Denmark

According to Exner,

> *'Buildings are like living beings. They are born, fall ill, recover, grow old and die. […] So the building's historical identity is not merely that which was given to them at 'birth' by the architects, artists and craftsmen who made them, it is also created by the subsequent influences of life, by changes and additions.'*
> – Johannes Exner 2007 (Exner 2007).

An example of Exner's transformation philosophy is the restoration of Koldinghus. The ruin of the medieval castle is kept as a strong historical monument, where new architectural additions and interventions underline its history and architectural value. With the principle of reversibility, Exner made a transformation project where the ruin is handled gently and the new architecture encases and protects it, ensuring its heritage. A lever principle allows for added wall pieces to be suspended from the roof

construction, leaving the intervention to slightly touch the ruin without compromising it. Materials are intentionally chosen to make a clear distinction between new and old, as seen in illustration 7, using timber and steel in the new construction, leaving the original materials. Making the clear distinguishment in materiality enters the building into a new period in its life, still allowing visitors to understand and read all the aspects of the building's history. (Kongernes Samling NA)

Illustration 7 - Added material creating a contract between old and new (Olav Sejerøe)

This approach does, in many cases, have its entitlement and value, but it can also be a hindrance where the building ends up as a museum with a strong distinction between old and new, and no actual correlation between the two. According to architects Pérez de Arce (1917-2010) and Fred Scott (1939-), architectural interventions and transformations should have a state of equilibrium between preservation and development (Pérez de Arce 2015). Scott introduced the term 'incomplete perfection', stating how the ideal is completion and incompletion at the same time, where interventions should refer to a building's ideal and original form while being a part of a continuous development for future purposes (Scott 2008). To obtain this, a more nuanced perspective on buildings, history, and the building culture is needed, with a focus on the experiential, cultural, and social aspects of the building and its heritage. Thus, creating projects where the line between new and old is obliterated, and the atmosphere and experience of a building and room can be the integrative element. (Andersen 2015a)

Case study - Børglum Kloster

Architect: Søren Kibsgaard
Year: 2013
Location: Løkken, Denmark

As an opposite to Exner's contrasted transformation of Koldinghus is the transformation of Børglum Kloster's stable buildings. This transformation is also done with great respect for the original building and its appearance, but instead of using materials with a clear distinction from the existing, additions have been made in similar materials, leaving it simpler and harder to distinguish. This choice creates an interplay between similarity and difference, where the different materials from a distance seem similar, but when examined closer, the patina gives away the old bricks, establishing a significant, yet delicate, difference (see illustration 8). The addition seems almost invisible, and many people wouldn't notice it, but the subtle distinction between materiality creates a synthesis with a high architectural value. Furthermore, leaving the building easy to read and understand allows the building to tell its history and original functionality as a stable. (RealDania 2018)

Transformation and restoration are therefore not only about historical aspects or bringing a building back to its former glory. It is about creating additions that support the building's life as a dynamic element that is in constant change, becoming something new or more. Contrary to Exner's philosophy, a building does not only have one life but lives multiple lives throughout its time (Andersen 2015a). Making interventions in one of the lives of a building requires knowledge of what has been and what needs to be, to ensure a balance of change and permanence, new and old, with a certain experience and atmosphere, that brings the building and intervention into a new entirety.

Illustration 8 - Meeting between new and old at Børglum Kloster (Bjørn Pierri Enevoldsen for Realdania)

Subconclusion transformation

Approach to transformation

The challenges when conducting a transformation project are to handle the history and the future in one, allowing the building to tell its story while making room for new functionalities and purposes. The theories presented in this chapter take on two different approaches to transformation. One where additions must be distinguished and easy to read in a material of a different character from the original, and one where the addition can be similar to or imitate the original appearance and material. Both approaches have their advantages and can bring new architectural value to Hæstrupgård, why practices from both approaches can be of quality to the transformation in this thesis.

As Hæstrupgård encompass historical details and appearances, a gentle approach is needed to preserve and restore these in their original appearance and material, while new materials are introduced to make room for the functions and create a distinction between old and new, providing the interventions with a different character. This approach embraces the positive aspects of the two presented theoretical approaches on transformation and relies on the analysis conducted on the existing building volumes. Replacing windows and gates is of higher value for the transformation, but the appearance should still be preserved, and similar materials used. Larger interventions of completely new character, such as the holiday apartments, mark a new chapter for Hæstrupgård and should be defined accordingly. New additions of this sort should be easy to distinguish, and materials of modern character and appearance can be introduced as a factor to accomplish this.

Illustration 9 - Old window in the barn

Illustration 10 - Leftover bricks from demolition

Conditions of transformation

Transformation Vs. New

Production of new building materials constitutes one-third of the emissions from the Danish building sector. Awareness of the transformation and reuse of existing buildings and materials is rising, but this practice requires great knowledge of the building, site and history to utilise its existing qualities and (re)make the building with consideration to its embedded soul. If the building process can be changed and rethought, transformation and renovation can bring new qualities and value to the building. Redefining functions and typography, examining and finding new creative architectural solutions and utilising historical and cultural references are all some of the gains of transforming an old building. (Abrahams & Sand 2022) But transformation does have other requirements and conditions, compared to building new.

If the knowledge and understanding of the existing structures are misinterpreted, the transformation will lose its quality and the architectural qualities will be lost, rather than enhanced through new interventions. There is always something existing in transformation and renovation cases, whether it is the context, construction, or historical traces, and they often hide unexpected elements that can help shape the direction of the transformation. When entering the buildings as an architect, spontaneous ideas and images can come to mind, based on the first impressions and the history of a site. These existing factors can both act as an inspiration but also aggravate and constrain a project, as they need to be taken into consideration. Common for both transformation projects and new builds is that the buildings appear as they do, not despite, but because of the existing structures, whether it is an old building or an existing context. (Andersen 2015b)

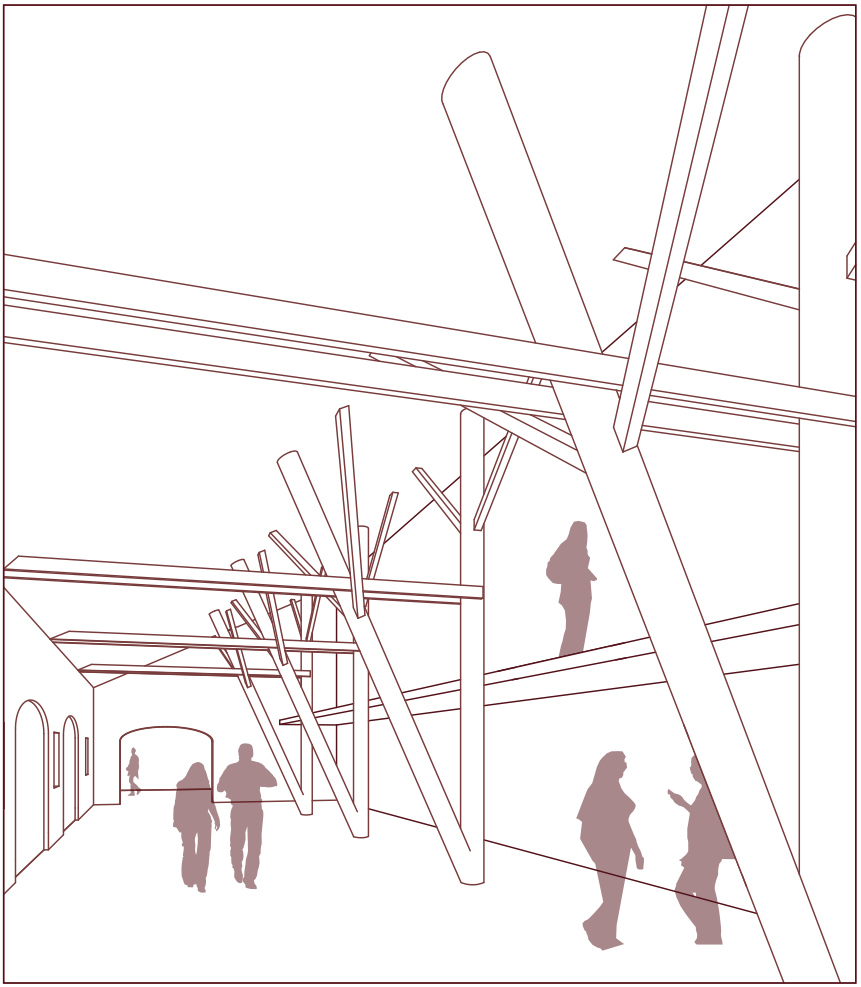


Illustration 11 - First idea that came to mind when visiting Hæstrupgård

Positive impact of nature

A theoretical study

As humans, we have always had a positive association with nature, and it is nothing new that we consider it to have healing benefits on our mental state. This belief can be traced back to ancient Roman texts where it was suggested that nature could provide many health benefits, and it can be seen used in monasteries, where their gardens were not only for growing food but also for aiding in the recovery of the sick and providing mental clarity. For many decades, an anthropocentric approach to nature has therefore been the focus, using nature as a resource for human wealth and benefits. In contrast to nature's positive impact, it has at some point been suggested that the manmade environment can have a negative effect on humans and can be mitigated through exposure to pleasant scenery. (Franco et al., 2017)

Some research suggests that nature not only provides tranquillity through the scenery alone, but also through our other senses. A study compared the effects of a natural environment against a simulated natural environment, both instances provided a positive effect on the participants' mood and relaxation. Even though the simulated environment provides benefits, it was not as effective as the natural environment, it lacked some of the sensory elements, the scent of plants or the feeling of a breeze, which may also be a large contributor to gaining the full benefits of the natural environment. (Kjellgren & Buhrkall, 2010)

The positive aspects of nature are related to the experience it provides. This experience is heavily influenced by sight, while all senses play a role in our perception of nature, the visual aspect is the most researched and has proven that the visual appeal of nature plays a role in enhancing mood, reducing stress and restoring cognitive function. Noise pollution has become a growing public concern in the urban environment, and excessive noise can negatively affect health, whereas natural sounds, such as birds, winds and water, are preferred and provide positive effects. Another factor in the urban environment is the smell from traffic emissions and industrial

processes, which can contribute to sensory overloads. In contrast, we often find most natural smells to be pleasant, and people often tend to escape to the natural environment for more refreshing smells. Taste is a sense closely tied to food, which is essential for our survival and health, but is also connecting us to nature and reminding us that, regardless of urbanisation, we still have to rely on nature to provide us with food. Research indicates that growing your own food can have a positive effect on our mental health and that organic food is perceived to taste better. It also helps foster a deeper understanding of the environment and seasonality in produce. (Franco et al., 2017)

Case study - Graasten Slot

Architect: Tanguy Laviolette
Year: 1935, reestablished 2020
Location: Graasten, Denmark

An example of the anthropocentric approach to nature is the vegetable garden. With its structured and often strict pattern, the vegetable garden is a useful tool for growing produce. At Graasten Slot, the vegetable garden was once for the royal family and closed off to visitors. In 2020, it was reestablished and converted into an open attraction, inviting visitors in. Graasten's vegetable garden is still delivering fresh produce to the royal family, but also works as a place for inspiration. The garden is characteristic and regular, with a central axis and four large cultivation areas to the sides. Each area is divided into minor plant beds containing vegetables, herbs, berries and fruit trees. (Tvedt 2024)

Illustration 12 - Graasten vegetable garden (Thomas Rahbek for Slots- og Kulturstyrelsen 2020)

Approach to nature

Mankind has a great influence on nature, and our perception of nature is crucial for the way we act and how we feel connected to nature. Historically, the perspective of nature has changed drastically, placing humans under, above and equal to nature. (Ducarme & Couvet 2020) But the term 'nature' Is complex and can be seen as an opposite to the human world, as well as something that surrounds it, but in many ways, nature and human culture are interrelated. Since the age of enlightenment, nature has been below humans in an anthropocentric approach, where nature was meant as a resource for humans to harness. Lately, the approach has been changing, focusing on preserving nature and leaving it in its wildness . Defining nature in a Danish context can be inspired by Hans Finks seven perspectives of nature: the untouched, the wild, the rural, the green, the physical, the earthly, and the whole. The first six perspectives put humans or aspects of humanity outside of or in opposition to nature, while the seventh surrounds the whole and acknowledges that humans are nature too. The different perspectives are woven together, supplementing and contradicting each other in a highly complex definition, a definition that is crucial to establish to act and move in the right direction. (Fink 2020)

There are no completely untouched lands or nature in Denmark, everything is in different ways controlled and regulated by humans, but more areas are being protected and restored to preserve endangered species and historic landscapes. This can provide the opportunity to experience certain animals or plants in their natural environment and preserve biodiversity. But it is also important to protect areas without a certain purpose and leave them up to nature and the wilderness. Nature management can in many ways be contradictory, as our well-intentioned curiosity and search for nature experiences can be just as intrusive as other approaches and utilisations. It is important to remember that nature is not separated from humans, or for humans to take more or less consideration of, nature is also a part of humans and everything humanity holds. (Fink 2020)

Case study - Rewilding Mols Bjerge

Year: 2016
Location: Ebeltoft, Denmark

Rewilding projects are established in the Danish landscape, letting the natural processes dictate. These projects aim to leave large natural habitats to their own, intervening as little as possible, only reintroducing large wild animals into the ecosystem. One of these projects is located at Mols Bjerge, where experiments with natural administration have been conducted since the 1960s. In 2016, a new project was established, where cattle and wild horses were released, but otherwise nature was left on its own. They stopped interfering and let nature evolve on its own to preserve the unique Danish natural habitats. (Naturhistorisk Museum Aarhus NA)

Illustration 13 - Rewilding at Nationalpark Mols Bjerge (Susanne Mejlgaard, for Nationalpark Mols Bjerge)

Subconclusion natures impact

Balancing nature

Nature's proven impact on the human mind is a significant factor when creating a refugium, as a place for relaxation and recharging. The theory presented in this chapter states the importance of activating the senses to get the full experience and benefits from nature. This theory is important to consider when placing and designing the holiday apartments, as the aim of these is to relax and gain the full experience of nature and the rural landscape. This includes pleasant views just as much as activities, natural pathways and places for stays in natural environments. Implementing interactive activities where visitors can engage in the production and tending of vegetables provides a larger understanding of agriculture and its aspects. Offering the opportunity to be a part of the daily chores also strengthens the affiliation with the products while bringing new perspectives and discussions regarding food, agriculture and the Danish culture.

New perspectives on nature and the related desire to preserve 'untouched' nature also need to be taken into consideration, and approaches need to be modified to meet the new requirements and desires for the natural environment. In Denmark, 'untouched' nature is non-existent, as all natural areas have been influenced by mankind to a certain degree. This makes it impossible to completely preserve untouched nature, but approaches to restore natural habitats and create 'new' areas where nature is left on its own are possible to implement, especially at a site like Hæstrupgård. The balance between nature and human culture will in this project be found through the principles of leaving some areas of nature to be wild in their premises, while a structured anthropocentric approach will make other areas accessible for visitors, allowing them to experience nature in its true form. These principles attempt to ensure the symbiosis of humans and nature.

Examining the existing building volumes is important to understand the site, buildings and their heritage. The SAVE assessment is used as a method to do this, examining the different buildings individually and determining the value of each. This chapter presents investigations through photography and a façade study, along with sections of the existing construction.

03 SAVE Assessment

SAVE Assessment
The main house
The stable
The barn
Construction
Facades
Building elements
Insulation principles

SAVE Assessment

Preliminary

SAVE values

1-3 High preservation value

4-6 Medium preservation value

7-9 Low preservation value

SAVE (Survey of Architectural Values in the Environment) is a method developed by the Danish government to guide in registering and assessing buildings' conservation value. When the method was first introduced, the goal was to register any buildings from before 1940, but it has, in many cases, today been expanded to include buildings from 1970. The conservation value of a building is assessed by considering five different categories and based on these, making a collective assessment of the building. These five categories are: Architectural Value, Cultural Value, Environmental Value, Originality & Condition. The assessment will always be based on the specific location, meaning a building worth preserving in one place may not have been worth preserving if it had been located somewhere else. (Kulturarvsstyrelsen 2011)

Categories

Architectural Value
The architectural value of a building is, among others, determined by its proportions, facades, details, and overall appearance, as well as the interaction between form, materials and functionality.

Cultural-historical value
The cultural-historical value assesses the manifestation of local buildings' traditions and architectural style, whether the building is an example of a style from a certain period and expresses a special craftsmanship.

Environmental value
The environmental value determines the building's value and influence on the surrounding buildings. Placement and adjustment to the landscape or the surrounding environment are of importance in this category.

Originality
The assessment of the building's originality examines to which degree the building's expression and overall impression are maintained. Modifications and alterations, and their relation to the surrounding buildings, are all assessed under this point.

Condition
When assessing the condition of a building, it is important to determine if the building has been maintained correctly, ensuring a healthy building without substantial damage. (Kulturarvsstyrelsen 2011)

The assessment in this thesis will be made individually on the three different buildings: the main house to the east, the stable to the south, and the barn to the west.

Illustration 15 - The stable facing south

Illustration 14 - View from Hæstrupgård

The main house

Architectural Value

The main house is characterised by architectural details, formed in a mix between historicism and national romanticism. Above the windows are the bricks arched, and a window ledge is attached to the bottom. A detailed cornice is placed under the roof and at the crenellations , giving the building a particularly exclusive appearance, characteristic of a manor like Hæstrupgård. The eastern façade is very symmetrical, with windows placed in a rhythm. The western façade is more varied with a bay window and front door placed asymmetrically to the remaining façade. The windows are made with mullions, expressing the rural architecture. The building is in yellow bricks as a contrast to the surrounding buildings, putting focus on the elegant main house.

Cultural-historical value

Being a stately home, Hæstrupgård holds a certain architectural style, expressing elegance and wealth. The details of the main house are made with knowledge and competencies from craftsmen, resulting in high quality. The materials are characteristic of rural building traditions, and the details draw lines to historicism.

Environmental Value

The main house is located to the east, detached from the remaining buildings. A park area is located around the house, characteristic of farms established in the 1850s-1900s, providing a view over the rural landscape with fields and hills (RealDania 2016). Hæstrupgård was once the main building of the surrounding agriculture and farms, employing the local citizens to maintain the fields, keeping the economy flowing in the area (Roussell 1966). This makes Hæstrupgård an important part of the environment of the local community, which can still be seen in the nearby cities of Hæstrup Mejeriby and Hæstrup Mølleby.

Originality

Through the years, Hæstrupgård has been impacted by numerous fires, why the original buildings have been rebuilt (Roussell 1966). The majority of the main house is from the 1930s, with the southernmost wing being from the 1700s. This reconstruction introduced new details to the main house, while keeping the original style of the old house, however, as the building stands today, the distinction between the two parts is however quite clear.

Condition

The main house has been left empty since 1998 and is showing significant signs of decay. There are holes in the roof, the windows are broken or missing, and the inside is showing signs of vandalism and graffiti. However, the brickwork is in a reusable condition, and the architectural quality of the building makes it worth preserving, keeping the details and history.

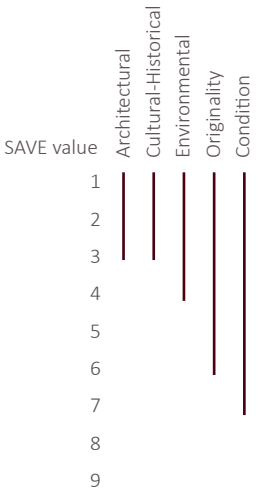







Illustration 16 - Main house of Hæstrupgård (Hæstrupgaard 2024)

The stable

Architectural Value

The narrow and long stable is characteristic of the 1900s and the 'Bedre byggeskik' movement, with windows of cast iron that only sparsely allow light into the building (RealDania 2016). The ceiling inside the building is made up of arches in bricks with steel construction on the lower floor and wooden construction on the upper floor. A large front dormer divides the stable with a gate, while two smaller dormers with hatches are placed to the north. Small decorations in the brick bond add details to the building, and a sculptured cattle head hangs above the passage.

Cultural-historical value

The stable is typical of the late 1800s to early 1900s stable building, where they traditionally are seen as narrow and long wings to the farm (RealDania 2016). The stable is decorated sparsely with a focus on functionality and a construction that testifies to its previous function. The craftsmanship and style of building are shown through the monier arches, wooden construction and concrete flooring, which was typical for the latter part of the period.

Environmental Value

Placed to the south, the stable is a barrier towards the road, creating a sense of privacy. Previously, this made it easy to access produce and livestock. The stables were once a large economic part of Hæstrupgård and are of importance for the surrounding buildings and their functionality.

Originality

Alterations and renovations have changed the appearance of the building, where dormers have been removed and windows bricked up. The roof has changed colour, and the building has been replastered with new white mortar.

Condition

The stable recently underwent a renovation, putting parts of the roof up to standard , leaving the windows, floor and some of the construction in its original but decent condition.

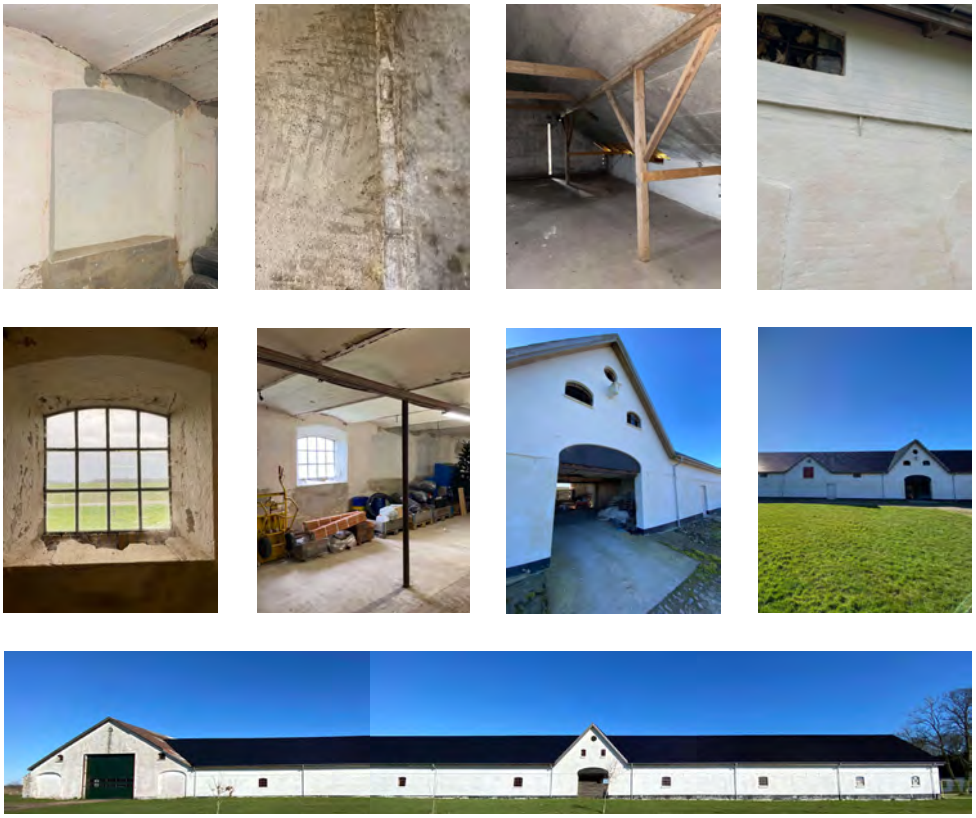


Illustration 17 - The stable at Hæstrupgård

The barn

Architectural Value

The barn is the largest and most significant building of Hæstrupgård. The rustic and complex wooden construction creates large rooms for storing produce and machinery. The barn is symmetrical with large gates and a front dormer with decorations in the brick bond. The size and shape of the barn were highly influenced by its function and flow, and the construction was adjusted accordingly with a rational approach to the building.

Cultural-historical value

With its significant wooden construction, the barn shows signs of distinctive craftsmanship and features that are typical for these buildings around the 1900s (RealDania 2016). The building is a manifestation of the functionality it holds and is a characteristic part of Hæstrupgård.

Environmental Value

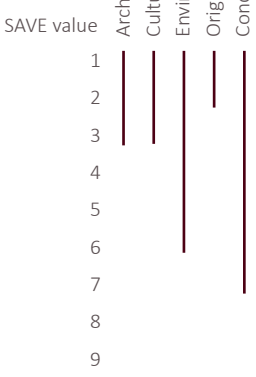
The barn has been an important factor in storing produce, tools and machinery. It is very significant for the appearance of Hæstrupgård and its placement across from the main house makes it central. Its placement to the west blocks the wind and gives it easy access to the surrounding fields.

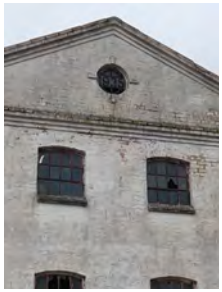
Originality

Original windows, constructions, internal functions and woodwork leave the barn in its original state from 1935. Small renovations and alterations have been made, where a few gates were bricked up. In addition, a new large gate in the southern façade has been implemented, likely as a consequence of industrialisation to fit new machinery.

Condition

Being in an original state without extensive renovations leaves the barn in bad condition. The windows are broken, the mortar is falling off, the roof is leaking, and the barn doors need to be restored. The inside has algae incrustations, and the floor is damaged. The bricks are, however, of a good quality and in a condition worth reusing.





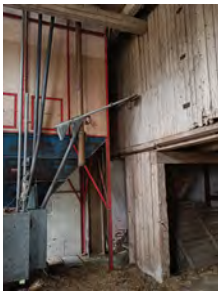


Illustration 18 - The barn at Hæstrupgård

Construction

Constructional Value

The construction of the stable and barn showcases some of the cultural history of the farm and is therefore an important element to preserve and showcase. An isometric view and sections provide an understanding and examination of the construction, used as a tool to define focus points when choosing how to preserve and utilise the existing construction in an interesting and appealing way.

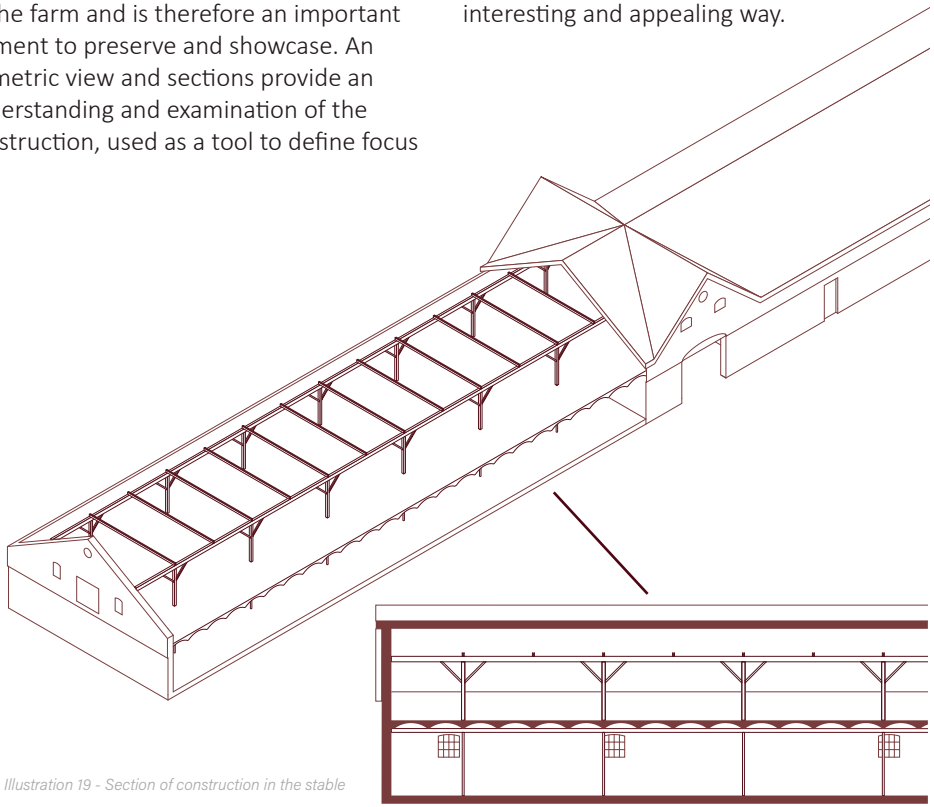


Illustration 19 - Section of construction in the stable

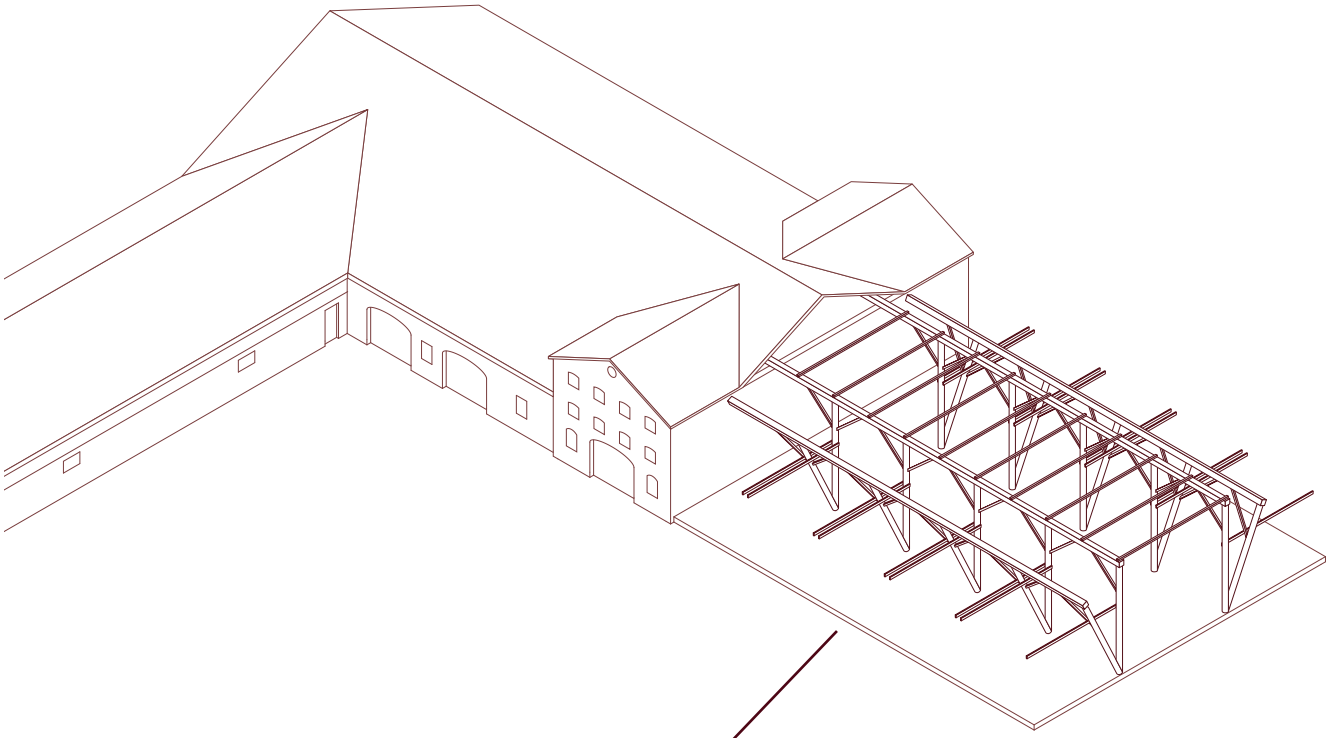


Illustration 21 - Isometric view of the construction in the stable and the barn at Hæstrupgård

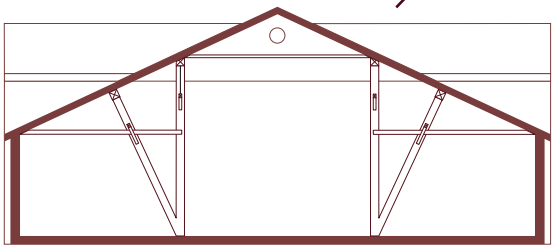


Illustration 20 - Section of construction in the barn

Main house structure

The main house is divided into two parts, as the southern wing is from the original building from the 1700s, and the remaining part is from 1936, after the latest fire. An isometric view of the main house reveals an almost symmetrical building volume, where the newest parts have been made in a similar style as the old. Preserving the appearance of the main house seems essential to preserve the expression and history as a manor.

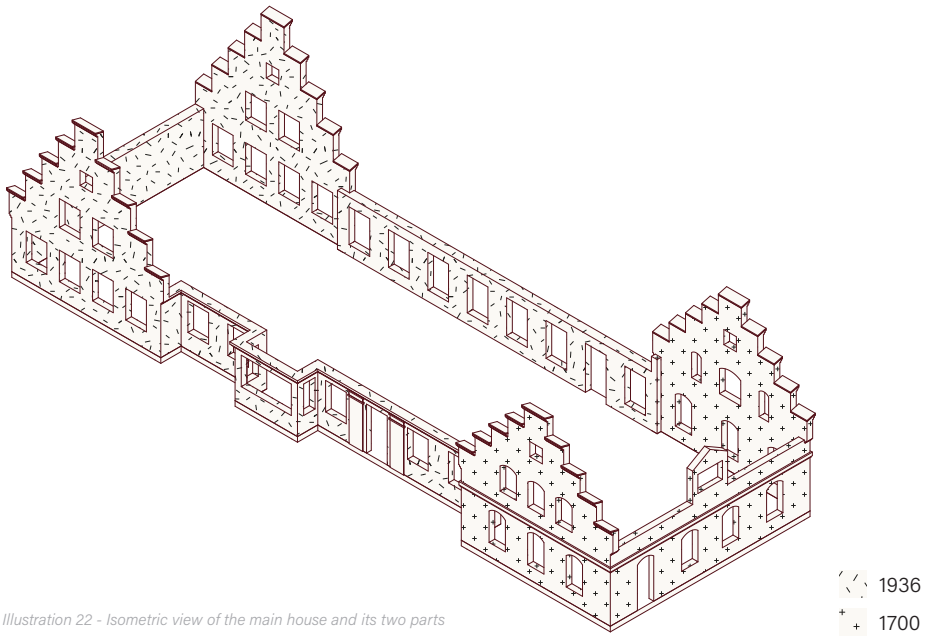


Illustration 22 - Isometric view of the main house and its two parts

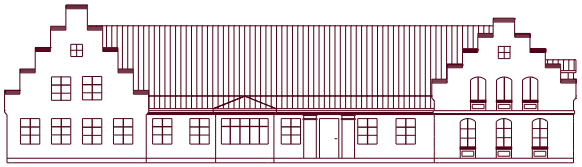
Facades

Facade & window study

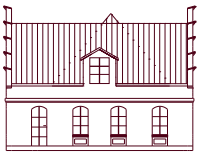
The facades of the stable and barn are characterised by a mix of old and new, as the stable has been renovated recently and the barn is left mainly original. Multiple windows and some gates have been bricked up during renovations, changing the appearance of the stable and barn. The stable is a narrow and long building with a passage to the internal courtyard, while the barn is larger with a front dormer and multiple gates. Both buildings are sparsely decorated, indicating functionality was the main focus of these buildings.

The main house is characteristic with its crenellated wings and large windows, providing an extravagant atmosphere. The appearance of the windows differs between the two parts of the building and makes it easy to distinguish between the two.

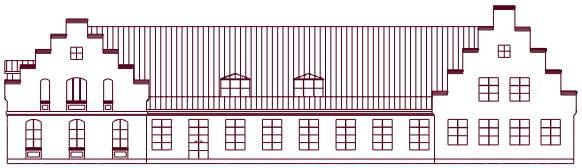
Main house facades



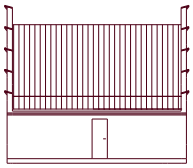
Facade West
Scale 1:500



Facade South
Scale 1:500



Facade East
Scale 1:500



Facade North
Scale 1:500

Windows & gates

Previous openings

Stable & barn facades

Facade East
Scale 1:500

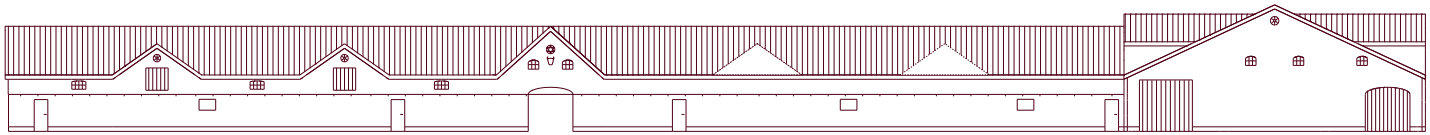
Facade West
Scale 1:500

3 pcs.

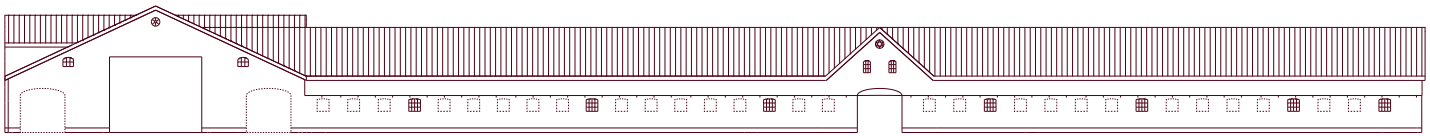
12 pcs.

4 pcs.

1 pc.



Facade North
Scale 1:500



Facade South
Scale 1:500

Building elements

Approach

Based on the SAVE analysis, an approach for preserving building elements or details has been obtained. Assessing and evaluating different elements and details provides an understanding of the buildings and the value that can be found in the building elements, making them worth preserving or recreating. The following section aims to determine the condition, approach and final appearance of the renovation.

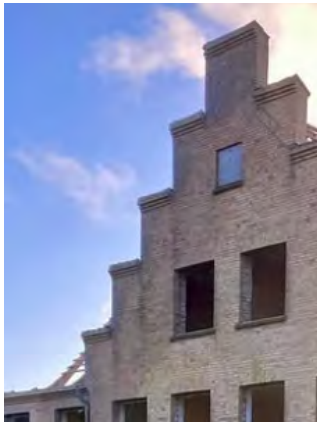
The main house

1. The northern wing from 1935 is similar to the southern, although with fewer details. This part is in better state than the southern, and should be preserved.

2. Southern wing from the 18th century has windows with an arched top and niche below. Details divide the old building from the new. Should be preserved or replicated.

3. Brickwork is in a bad state, but can and should be preserved as much as possible. If new bricks are needed, they should appear as close to the old as possible, or a new material should be introduced.

4. Details in bricks and cornices show the history and culture of the manor and should be preserved. Similar details could be implemented in the transformation.



5. Windows are in a bad condition and are not energy efficient. New windows should be installed, with an appearance similar to the old or original windows.

6. The roof in the main house is in a bad state with holes. Should not be preserved. The new appearance should differ from the remaining buildings as the original roof.

The stable

1. Roof is from renovation in 2018 and is in good condition. Should be preserved.

2. Passage, gate and details are part of the stables' history and architectural value. Should be preserved and utilised in the transformation as an attraction point.

3. The monier arches and construction of the stable are typical for the period and are in an overall good condition. Should be preserved to tell the story.

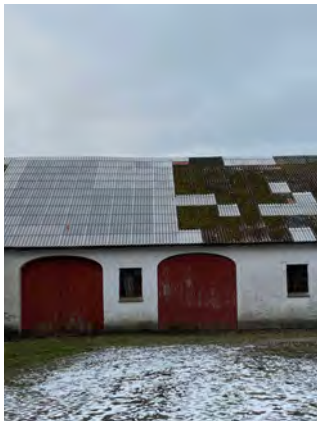
4. The old windows with mullions are typical for stables in the period but are not energy efficient. Should be replaced with new windows with a similar appearance.

5. Some of the old windows have been blocked in an early renovation. Could be reopened with the advantage of improved lighting conditions and indoor climate.

6. Old traces from the original function as a cowshed are preserved in the floor. Should be preserved if possible as they are part of the history.

The barn

1. The roof of the barn is in a bad condition with leaks and assorted roof tiles. Should be changed into a roof similar to the remaining buildings for a uniform appearance.



2. The old gates are in a bad state and cannot be preserved. New gates with similar appearance should be installed. The red color should be maintained.

3. Windows are broken and in a bad condition. Should be changed into new energy-efficient windows with a similar appearance.

4. The brickwork shows signs of wear and tear but is in a reasonable condition. As much as possible should be preserved and restored.

5. Details and cornice in the barn are in reasonable condition and should be preserved or recreated with a similar appearance.

6. The old construction shows great craftsmanship and is in good condition. Should be preserved and presented as part of the transformation.

7. Cobblestones in the courtyard reveal the old functionality at Hæstrupgård as a working farm. Could be preserved and restored to keep history intact.

8. Previous gate openings have been blocked in the southern façade. Could be reopened for improved daylight conditions. The existing gate should be changed into an appropriate and coherent material.

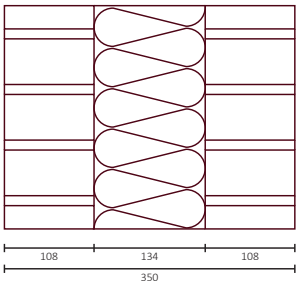
9. Old silo shows the functionality of the barn and is part of the history. Could be preserved or reused in the transformation.

Insulation principles

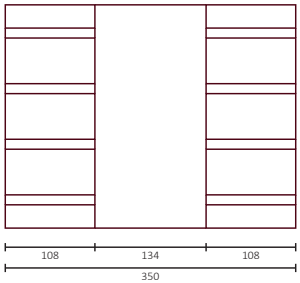
A large challenge when transforming old buildings lies in their larger energy use and less satisfactory thermal comfort that do not comply with the standards of today, the key strategies are then to prioritise energy optimisation, improving the insulation and integrating passive design strategies, while preserving the original character and history of the buildings.

Existing walls

The existing exterior walls consist of a brick cavity wall with insulation in the main house and a brick cavity wall without insulation in the barn and stable, both with a thickness of 350 mm. The current U-value is too high to comply with the current regulations and needs to be post-insulated. There are three methods of post-insulating being considered, each with its pros and cons; the correct method will depend on the function of the spaces and will vary throughout the project.



The main house
U-value: 0,325 W/m²K



The barn & stable
U-value: 1,498 W/m²K

External post insulation

Insulating externally has a lot of technical advantages; it helps to reduce thermal bridges and the risk of condensation in the construction, and one also avoids losing any square meters. The main disadvantage is the sacrifice of the existing building facade, which will be hidden by the new insulation. This method for post-insulation should only be used if the facade isn't worth preserving, either because it has no cultural/historical value or is in a bad state.

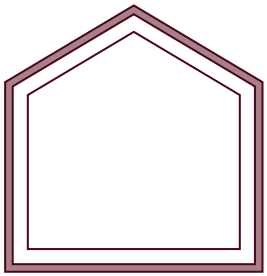


Illustration 23 - Principe of external insulation

Internal post insulation

Insulating internally ensures that the building maintains its original character, preserving the historical and cultural value of the building and is the preferred method for this kind of transformation, however, it does present several technical challenges. Insulating internally runs a high risk of thermal bridges and condensation in the construction, and the insulation will also use up some of the available square meters.

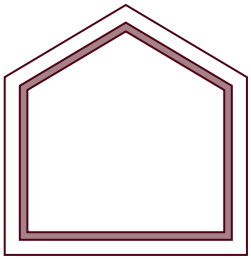


Illustration 24 - Principe of internal insulation

Insulated boxes

An alternative method for post-insulating is to create insulated boxes within the building, establishing different thermal zones. This method allows for the preservation of the original facades and minimises the risk of thermal bridges. It also reduces the amount of material needed and allows for being more selective when choosing materials. The disadvantages of this method are its limitations; not all parts of the building will be usable all year, and it is also heavily dependent on the volume of the building.

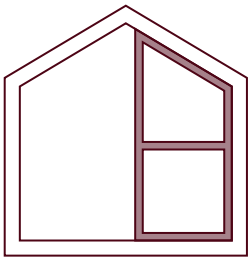


Illustration 25 - Principe of insulated boxes

The following chapter includes analyses of Hæstrupgård and its surroundings. These analyses provide an understanding of the area that is utilised during the design development as a framework. This chapter also includes an investigation into Danish tourism to determine the foundation for the project and the potential users.

04 Analysis

Illustration 26 - The barn at Hæstrupgård

Genius Loci

Preliminary

The Danish building culture is one of the most important elements of our cultural heritage. It tells our history, both through its physical appearance, but also through the immaterial and atmospheric understanding. If this history is lost, it will be an irreversible loss of cultural values.

Understanding the immaterial value of a place is therefore important to see a place with new eyes and recognise the value of preserving a place. This immaterial value is found through Genius Loci – the spirit and sense of the place. (Vadstrup 2018)

Phenomenological assessment

As you drive down Hæstrupvej towards Hæstrupgård, the hilly landscape provides ever-changing pleasant views. The area is characterised by fields, seeded with crops for the local farmers to harvest when summer arrives. Green spots of woodland and meadow surround you as you approach Hæstrupgård, standing in its former glory at the top of a hill, peeking out from behind the ubiquitous nature. As you arrive at the driveway, the surrounding buildings surface. A partly renovated stable reveals that Hæstrupgård is not completely abandoned, although the empty or broken windows, decayed bricks and leaky roof of the main house and barn tell another story. A subtle, almost invisible mark in the green area to the north indicates where a third wing once was located, now demolished, with the only other sign left behind being large piles of boulders from the foundation of the building that once was. This place tells its history. A history of days of glory that turned into decay. Renovations and alterations through the years have changed the appearance of the buildings, but the constructions, materials and form unveil the craftsmanship that once characterised this place and the local building practice. The atmosphere and feeling of this place need to be preserved and shared, for people to experience and understand the cultural heritage, and bring Hæstrupgård into its new golden age.




Illustration 27 - Atmospheric photographs from Hæstrupgård

Infrastructure

Illustration 28 - Mappin of infrastructure

The site is located south of Hjørring, down a small dead-end road with two other farms, meaning a minimal amount of daily traffic passes Hæstrupgård. A larger main road connects the site with Hjørring, and further to the east, the roads connect with the motorway for easy access to larger cities. Mapping the infrastructure provides a perspective of possible access roads and connections to the surroundings. The site's location makes it easy for visitors to access and ensures a wide range of activities within a manageable distance.

Nature

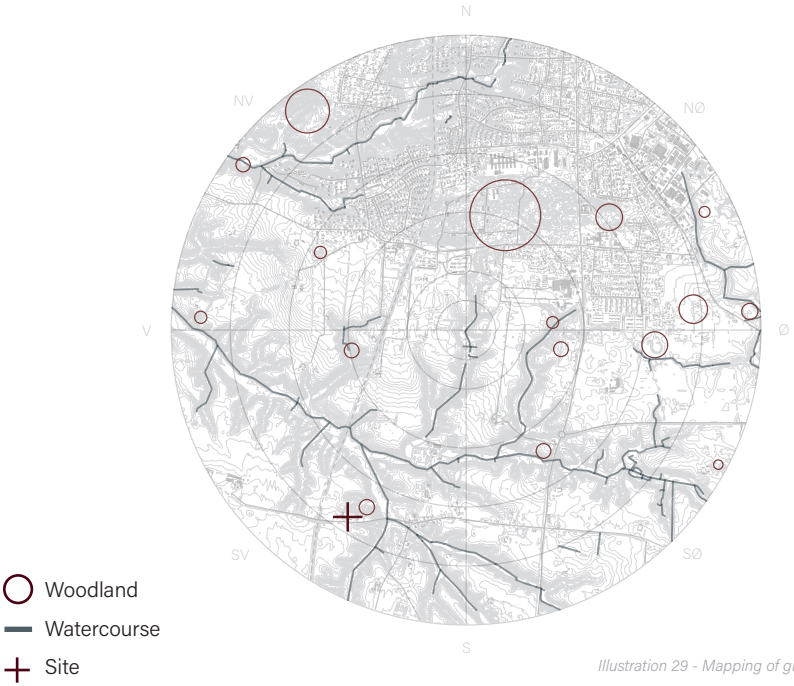


Illustration 29 - Mapping of green areas and woodlands

Hæstrupgård is surrounded by a rural landscape with fields and woodland, providing rich possibilities for activities and experiences in nature. The area is very hilly, creating a visible connection over the landscape, enabling scenic and calming views. A park and forest are located as part of Hæstrupgård, bringing nature close to the buildings.

Built structure

With inspiration from the SAVE methods' analysis of the built structure of an area, this map outlines the current structure of Hæstrupgård (Kulturarvsstyrelsen 2012). A dominating main house and barn, with a stable that shapes the internal courtyard, make up the built structures of the manor. A line of sight creates a visual connection between the two dominating buildings, while a passage through the stable creates a line of sight between the internal and external space. Pleasant landscape views are exposed from different points, letting nature into the buildings. The terrain around Hæstrupgård is hilly, which emphasises the landscape and its variation. Hæstrupgård is located in the middle of the rural landscape, with occasional woodlands scattered in the area and Hæstrup Møllebæk that cuts into the terrain. The outside areas provide room for activities and experiences in nature, which is reasonable to incorporate in the functionality of the future Hæstrupgård.

The location creates a relation to the fields that once belonged to Hæstrupgård, and of which the manor had its primary income. Hæstrupgårds close connection to Hjørring gives the opportunity to attract visitors, but also for guests to visit the city, for alternative activities and attractions.

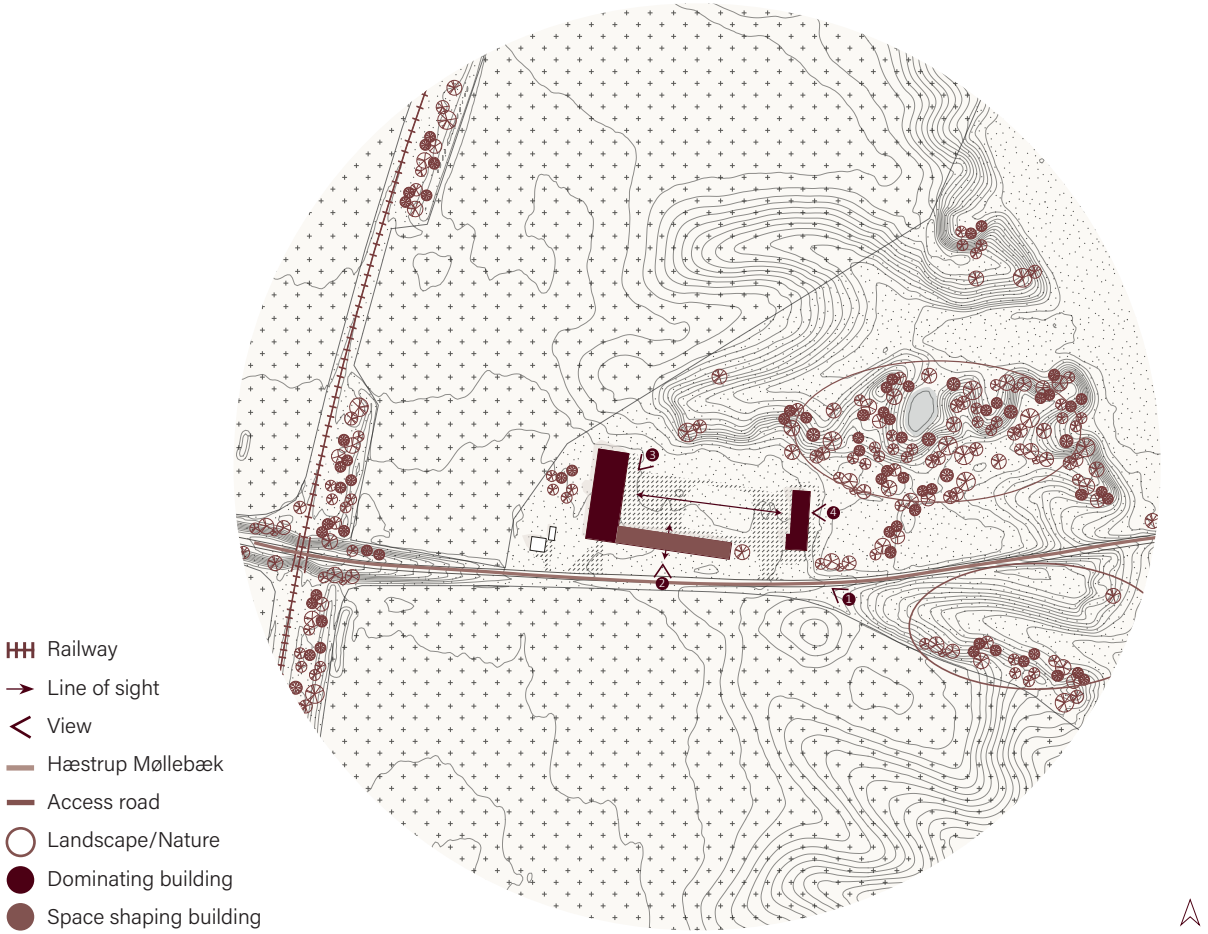


Illustration 30 - SAVE inspired analysis of Hæstrupgård and its surroundings

Illustration 31 - Mapping of terrain and structure

Views

1

View towards hilly terrain

2

View over rural landscape

3

View over Hæstrupgårds fields and natural area

4

View from main house into forest and park

Tourism in Denmark

Preliminary

Tourism in Denmark is of great importance for the Danish economy and is especially of economic significance for the smaller villages in the rural part of the country. This makes tourism important for the development of these areas, as well as an important factor for Danish employment (VisitDenmark 2024). Tourists in Denmark are divided into three main target groups: Coastal and nature tourism, city tourism and business tourism. Among these are coastal and nature tourism, defined by stays outside of the four largest Danish cities, the largest both in revenue and number of overnight stays. These tourists intend to relax, recharge and enjoy nature and the coastal areas. Furthermore, 25% of Danish tourists and 33% of foreign tourists request food and cooking experiences, but also the fields of culture, art, history, and architecture are of great importance to the tourists. (VisitDenmark 2023a)

Tourists in Denmark often travel in groups of friends or as couples. 51% of Danish tourists travel with a partner or friends, whereas the number is 45% for foreign tourists. With an average length of stay of 4,8 nights, coastal- and nature tourists stayed for a total of 45,3 Mio. Nights in 2022, almost equally divided between Danish and foreign tourists. The most popular accommodation type is holiday homes, with around half of all stays being held, while camping is second with 26% of the stays. (VisitDenmark 2023a)

Gastro- & agrotourism

Gastro and agrotourism are becoming popular in the tourism sector. A gastro tourist is defined by the World Food Travel Association as *'the act of travelling for a taste of a place in order to get a sense of place'* (Wolf 2024), while agrotourism is the definition of one who stays at a farm, vineyard or the like, where you can follow the production and everyday life of the place, and gain insight in local products (The National Agricultural Law Center NA). In 2022, 4 Mio Gastrotourists visited Denmark, of which 2,6 Mio. visited the coastal and natural areas of Denmark. 50%

of these visitors travel as couples or in smaller groups of friends, and besides food experiences, they enjoy relaxing, nature and cultural experiences amongst others. 81% of foreign tourists and 68% of Danish tourists are also interested in local food experiences, including lectures and cooking classes. (VisitDenmark 2023b)

A trend in gastro tourism is the interest in getting out into the rural areas and locations, where the tourists want to experience the local culinary heritage, rather than a universal taste. This also applies to the design and setting of a place, where the local history and architectural appearance are of great importance. Hyperlocal experiences are at the top, where the focus is on purchasing local food with a meaningful impact on the local community. Gastro tourists want something unknown, undiscovered and different, creating the ability of diversity in gastronomy, highlighting historically underrepresented cuisines. This can be done through markets, local food festivals, tour planning and cooking classes, where the local produce and cuisine are essential. (Wolf 2024)

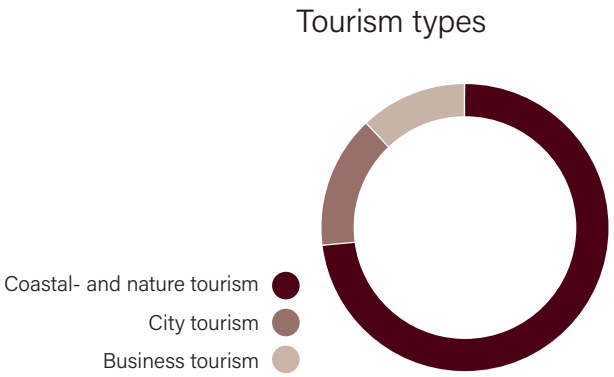


Illustration 32 - Distribution of tourists divided by type of visit

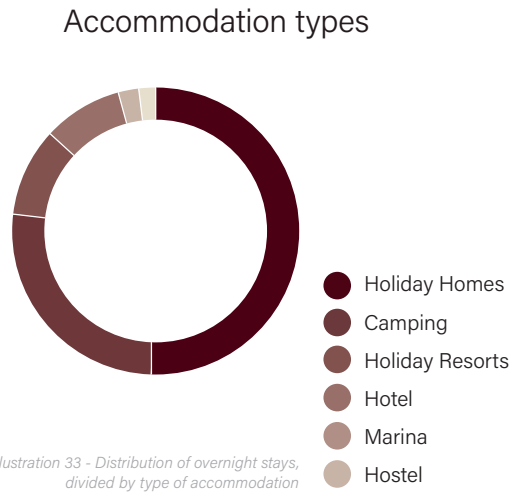


Illustration 33 - Distribution of overnight stays, divided by type of accommodation

Users

Preliminary

Studies show endorsement from the Danish people when it comes to revitalising old farms and bringing new life and functionality to otherwise empty and functionless buildings. 82% of the Danish population finds it important to reuse old agricultural buildings, indicating a large interest from potential users. New functions could create new life in the buildings and provide a significant economic contribution to the farm and local community, helping maintain the building and its history. 73% of those surveyed could see themselves spending holidays on a renovated farm, while 84% could participate in meetings or conferences. With a large source of local produce and products, a farm shop could benefit the small suppliers and create awareness of the importance of buying local. This function seems suitable, as 86% would want to buy groceries from a local farm shop. (RealDania 2010)

The functions are defined with inspiration from these studies, and user groups will be determined based on functionality, concepts, desired atmosphere and experiences at Hæstrupgård.

Day visitors

Demands: Farm shop, event facilities, café, outdoor activities

These visitors come to experience Hæstrupgård as a cultural centre and will use the open functions and focus on interactive activities , as well as local products from the farm shop. Flow from parking to café, shop and outdoor areas is important to consider, also to inspire these guests to wander the area. During weekends and holidays, Hæstrupgård will be well-attended by this type of visitor.

Illustration 34 -

Gastro- & nature visitors

Demands: Apartments, course kitchen, café, outdoor activities, farm shop

These visitors come to attend gastronomical experiences and enjoy the surrounding nature. These guests are narrowed down to couples and small groups of friends, enjoying a stay in nature with a focus on local produce and inspiring activities. The course kitchen, outdoor kitchen area, vegetable garden and orchard will be their focus, but also the café and farm shop will be of interest to them. These guests will stay for everything from a couple of hours to an entire week, and the flow between apartments, the course kitchen, outdoor areas, and the café needs to be considered for these visitors.

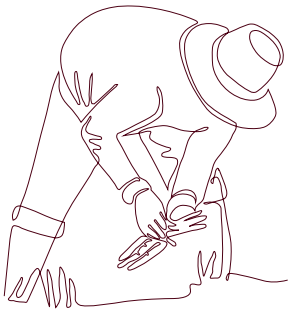


Illustration 35 -

Event visitors

Demands: Apartments, café, event room

Event visitors attend gatherings, seminars, lectures, concerts, etc. These guests stay for shorter periods, either just for the duration of the event or one to two nights, and focus on the event and café area. The flow from the apartments to the multi-room and café is important to consider for this group of visitors.

Illustration 36 -

Staff

Demands: Office, break room, storage, industrial kitchen

Staff includes administrative workers, kitchen staff, cleaning staff, gardeners, lecturers, etc. They all ensure that activities run smoothly and keep the visitors happy and interested. Different behind-the-scenes functions are required for this group of users, including an industrial kitchen, storage, office spaces, a meeting room, and a break room with accompanying changing rooms . Of great importance is a break room, allowing staff to relax and have pleasant breaks in a private place.

Illustration 37 -

'Fremtidens Herregård'

A recapitulation

Realdania's campaign 'Fremtidens Herregård' has since 2008 put focus on Danish manors and the development and realisation of projects that aim to reinvent their area of business, buildings and cultural environment. The manors were previously the local catalyst and a large employer in the local community. Even though the manors are challenged today, they do still carry an important historical role in Danish society, with a great potential of accommodating new functions that influence the local communities around the manors. These functions include cultural activities, local associations and new trades that strengthen the position and importance of the manor. Many have succeeded in attracting local life and creating new opportunities, but the way to success seems very diverse, nevertheless, some conjunctions appear across the projects. (RealDania 2018)

Case Study - Søllestedgård

Architect: Claus Sivager
Year: 2017
Location: Nakskov, Denmark

Instead of tearing down an old stable at Søllestedgård, it has been renovated and given a new functionality to accommodate different activities and events, including a farm shop with homegrown and local produce, along with a restaurant. Preserving the stable keeps the atmosphere and intention of Søllestedgård, telling the history of the previous agricultural functions at the place. With simple interventions, the stable has been opened up to invite visitors in and ensure sufficient daylight for pleasurable stays. With a focus on using local products, the restaurant inspires its guests to continue this mindset at home, an idea that is achieved by having a farm shop located next door. This is also an economic factor for the local manufacturers and their development. (RealDania 2018)

Case Study - Gram Slot

Architect: Jørgen Overbys Tegnestue
Year: 2015
Location: Haderslev, Denmark

Gram Slot is living proof of the revitalisation of an abandoned and functionless manor into a local cultural beacon. Establishing facilities for fairs and receptions in the old stable, along with a café area and a farm shop, has brought new life to the building and allowed local manufacturers to sell their products and gain economic stability. The architectural transformation is kept simple and honest, to maintain the rural qualities of the buildings and tell the history of their previous function. Inviting the local community to partake in the project has given them a strong affiliation with Gram Slot but has also proven to be important for the revival of the place, just as Gram Slot is important for the development of the surrounding communities. Furthermore, Gram Slot invites institutions to come and visit and teach children about their native country and its history. The local community and Gram Slot are a symbiosis, where both benefit from each other, and Gram Slot works as the historical beacon it was meant to be. (RealDania 2018)

Illustration 39 - Brasserie at Søllestedgård with appertaining vegetable garden

Illustration 38 - Farm shop at Gram Slot (Bjørn Pierri Enevoldsen for Realdania)

Finding common ground

Common to the projects is the implementation of new functionalities that have created more and stronger connections and relations with the local community, strengthening the affiliation. One of the largest challenges has been to create economic sustainability in the new businesses. In the long run, this might, however, change, as the new functions keep contributing to the economic development, where new collaborations and competencies are brought to the manors. New experiences and activities, that invite visitors and locals inside the manors and provide a cultural attraction, are also creating new employment opportunities. Five approaches that are characteristic of the transformations are: the expansion of the core business, creating a cultural beacon, implementing new businesses, providing exclusive stays and creating a meeting place for the local community. The best way to preserve the beautiful old manors is to use them. (RealDania 2018)

Case Study - Kornets hus

Architect: Reiulf Ramstad Arkitekter
Year: 2020
Location: Hjørring, Denmark

Kornets Hus is a new attraction where knowledge, inspiration and activities revolve around grain and its history. With a large course kitchen, café, exhibition, shop and garden with different sorts of grain, Kornets Hus aims to communicate fascinating information about the crop and its importance for Danish agriculture. Offering different classes for families, companies and private events, Kornets Hus tries to teach their knowledge through interactive experiences.

The open plan allows for multiple activities to take place at once, to provide insight for both course participants and spectators. With room for both institutions and seminars, the functions cover a wide field, and with the café and shop, life and activity are ensured all day. (Kornets Hus 2025) The materials are kept simple with wooden panels covering the walls and roof, while large terrazzo tiles, kept in grey nuances, cover the floor. The contrast between the two is polite, and both materials seem to be

done justice, complementing each other. A gradual perforation of the wooden panels ensures an efficient and pleasant acoustic design, where many people can gather at once. Outside is an outdoor cooking area with an accompanying seating area for open-air cooking classes and events. Large fields are seeded with a variety of grain sorts, used for learning activities, and to inspire visitors to use local sorts and buy products from the shop.

Illustration 40 - Shop area at Kornets hus

Illustration 41 - Facade of Kornets Hus

Illustration 42 - Kitchens at Kornets hus (Bjørn Larsen for Realdania)

Functions

Functional diagram

The functions should be placed in the existing buildings with a focus on their interconnection and requirements, as well as the user's needs. Open facilities and the café are placed in the stable to ensure a good connection to the access road and between functions. This placement makes the open facilities visible to attract visitors and display the activities that take place.

The holiday apartments are located at the old barn to the west, providing a pleasant view over the rural areas and ensuring a more private atmosphere, while maintaining the connection with the remaining facilities. The opening in the southern wing creates a visual and physical connection to the internal courtyard, inviting visitors into the area.

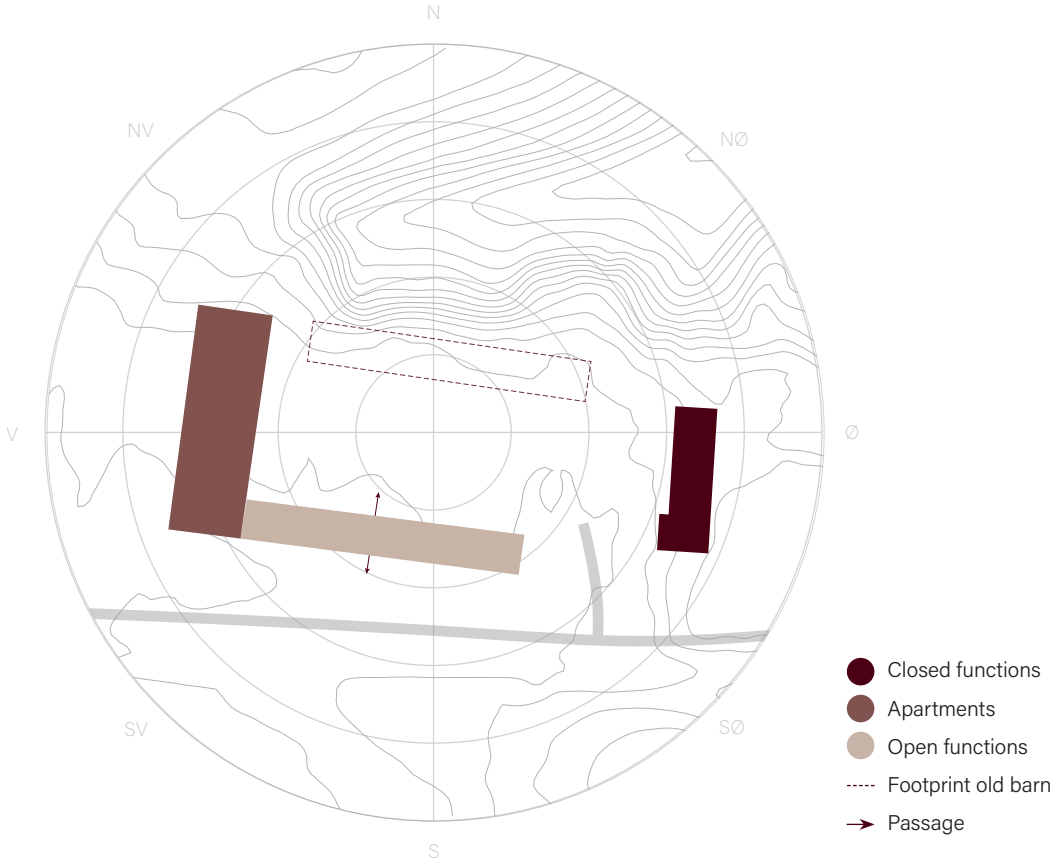


Illustration 43 - Map of functions

Function demands

Preliminary

The different functions require different demands to fulfil their purpose and obtain the intended atmosphere. The new functions at Hæstrupgård will vary in their degree of publicness, whether their placement is prominent to the visitors or more secluded, and whether their view is towards nature and scenery or activity. Furthermore, important relations between certain functions will be highlighted. These demands are a significant factor when placing the functions and will be considered during the design process.

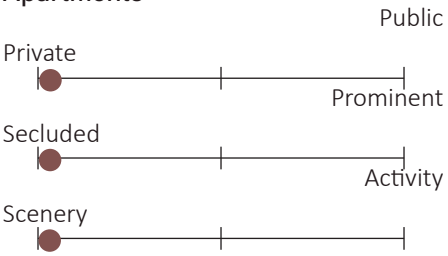
Criteria

Private/public
Defines whether the use of the function is of a private or public character.

Secluded/prominent
Defining whether the function should have a more prominent placement and be visible from the entrance area, or be more secluded.

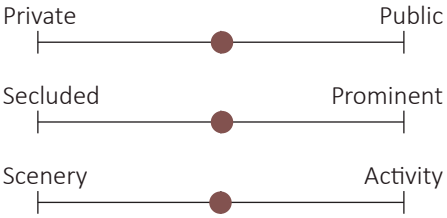
Scenery/activity
Defining whether the function should have views towards the landscape, or views towards activity and the courtyard.

Apartments



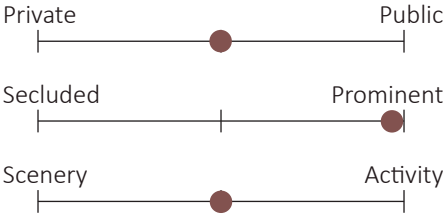
Relation to: course kitchens, lounge area

Lounge area



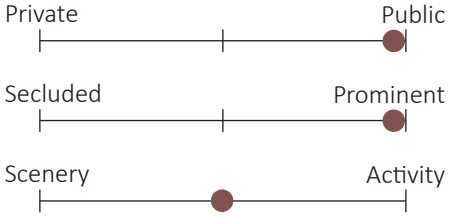
Relation to: Apartments

Course kitchens



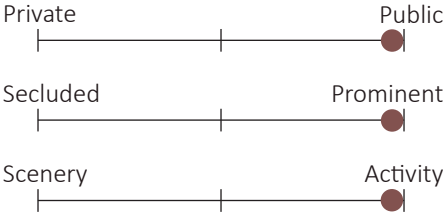
Relation to: Café, outdoor areas, apartments, farm shop

Café



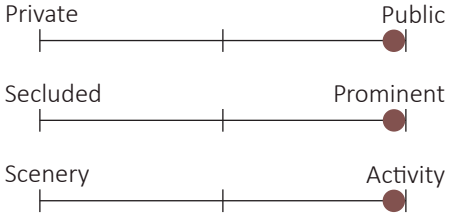
Relation to: farm shop, course kitchens, outdoor areas

Farm shop



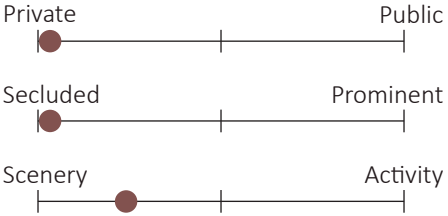
Relation to: course kitchens, café

Multiroom



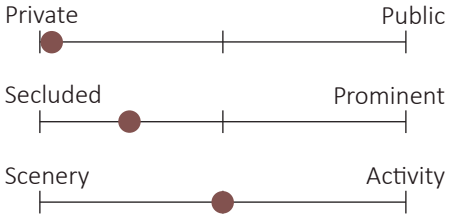
Relation to: farm shop, café

Private apartments



Relation to: NA

Office & staff room



Relation to: NA

Room programme

	Designation	Area m²	Quantity	Temperature °C
Apartments	Type A	48	6	22
	Type B	76	2	22
	Type C	44	2	22
	Type D	38	8	22
	Lounge Area	63	1	18
	Hallways	479	1	15
	Rental apartments	77	2	22
	Private apartment	170	1	22
Open functions	Shop	163	1	18
	Course kitchens	92	1	18
	Restrooms	3	2	18
	Multiroom	120	1	18
	Café	163	1	18
	Industrial kitchen	82	1	18
	Restrooms	4	3	18
Closed functions	Office	79	1	20
	Staff room	90	1	20
	Front desk	15	1	20
	Cleaning storage	13	1	15
	Technical	22	1	15
	Storage	68	1	15
	Net area	2.629 m²		

	Ventilation Mechanical/Natural*	Lighting Natural/Artificial	Daylight factor %	Notes
	N	N/A	2	
	N	N/A	2	
	N	N/A	2	Includes loft bed
	N	N/A	2	Includes loft bed
	N	N/A	2	
	N	N/A	-	Visible construction
	N	N/A	-	Can vary in size
	N	N/A	-	Owners' apartment
	M/N	N/A	2	Combined with café
	M/N	N/A	2	Multiple kitchens
	M	A	-	
	M/N	N/A	2	Lectures, activities etc.
	M/N	N/A	2	Combined with farm shop
	M/N	N/A	-	
	M	A	-	Including accessible restroom
	M/N	N/A	-	
	M/N	N/A	-	
	M/N	N/A	2	
	M	A	-	Can be multiple rooms
	M	A	-	Can be multiple rooms
	M	A	-	Can be multiple rooms

*Exhaust from kitchen and bathroom not included in definition

Design Criteria

Aesthetic criteria

The expression of the existing buildings should be restored and preserved to maintain the original details and historical appearance.

The existing construction should be preserved, kept visible, and used as a normative factor when designing new additions.

The choice of new materials should differ from and complement the existing to create a gentle transition, without becoming a strong contrast.

Functional criteria

The apartments should have access to outdoor spaces and pleasant rural landscape views.

Functions should strengthen the connection to the local community and help to promote development in the area.

Open functions should be visible and accessible for visitors, and should be placed with relation to the road, while private functions should be placed with relation and access to nature.

The transformation should provide different ways to interact with the surroundings and new functions, to give the experience of staying at a farm and put focus on local produce and manufacturers.

The footprint of the demolished stable should be reactivated as an outdoor space with room for interaction and stays.

Technical criteria

Different approaches to insulation principles should ensure a variety of temperature zones, based on the functional demands, providing a good indoor climate for the different functions.

Daylight simulations should help optimise the placement of windows, to ensure an optimal daylight factor of 2% in living and activity areas.

Energy consumption should be lowered through the use of passive strategies and an optimised building envelope, and thereby reach the energy performance required of renovation class 1.

A variety of natural ventilation strategies should ensure a pleasant indoor climate with sufficient ventilation, where the thermal demands from the building regulation are met and ventilation principles for all seasons are presented.

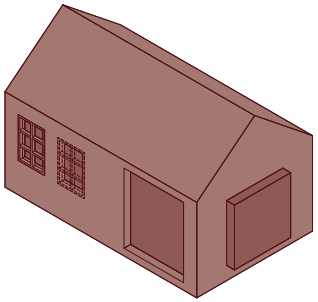
Subconclusion

The essence

These analyses focus on the approach of transforming and reusing the existing buildings and resources, more precisely the transformation of agricultural buildings. Transformation will not only utilise existing resources and bring new functions to the buildings but also generate new development opportunities for the local communities, of benefit to both parties.

Through assessments of the existing buildings, a historical and architectural value was found in preserving the buildings and reestablishing some of the characteristic appearances of the buildings, inspired by the theory presented by Viollet-le-Duc. Adding functions to existing buildings often requires the use of new materials. These materials should be a contrast to the existing and easy to distinguish, as inspired by Ruskin's transformation theory. Combining the two theories creates a larger entirety and makes it easy to understand the building's previous use and history, while adjusting the building to suit the current and future demands, as presented in Andersen's transformation theory.

Being located in the rural landscape creates the opportunity of a retreat with a close connection to nature and room for interactive activities with food in focus. With a growing industry of gastro- and agrotourism, a new destination for food experiences and activities seems relevant, creating a bond and correlation to agriculture. Furthermore, statistics show that 86% of the Danish population would like to buy groceries from a local farm shop, while 73% would consider spending holidays at an old farm. Being located in the rural landscape creates the opportunity of a retreat with a close connection to nature and room for interactive activities with food in focus.



The design development is based on the previous analyses, examinations and theoretical studies. Studies and investigations are continuously conducted through this process to keep gaining information and knowledge. The design process is presented in a structured manner for understanding, but the process is more complex with several iterations.

05 Design development

Function placement
The stable
The barn
Fire technical considerations
Main house
Outdoor areas

Function placement

Defining flow

Placing the different functions in the existing building volumes requires an understanding of the users and the flow they follow through the building and the functions. Various compositions of the functions have been examined and weighed according to different criteria and the flow, leading to an optimised function placement (see appendix 5 for flow examinations). During the process, it was difficult to determine the area needed to ensure sufficient space for the desired functions, without being too generous and demanding. This challenge led to a choice of not using the 1st floor of the stable, leaving it for potential future functions.

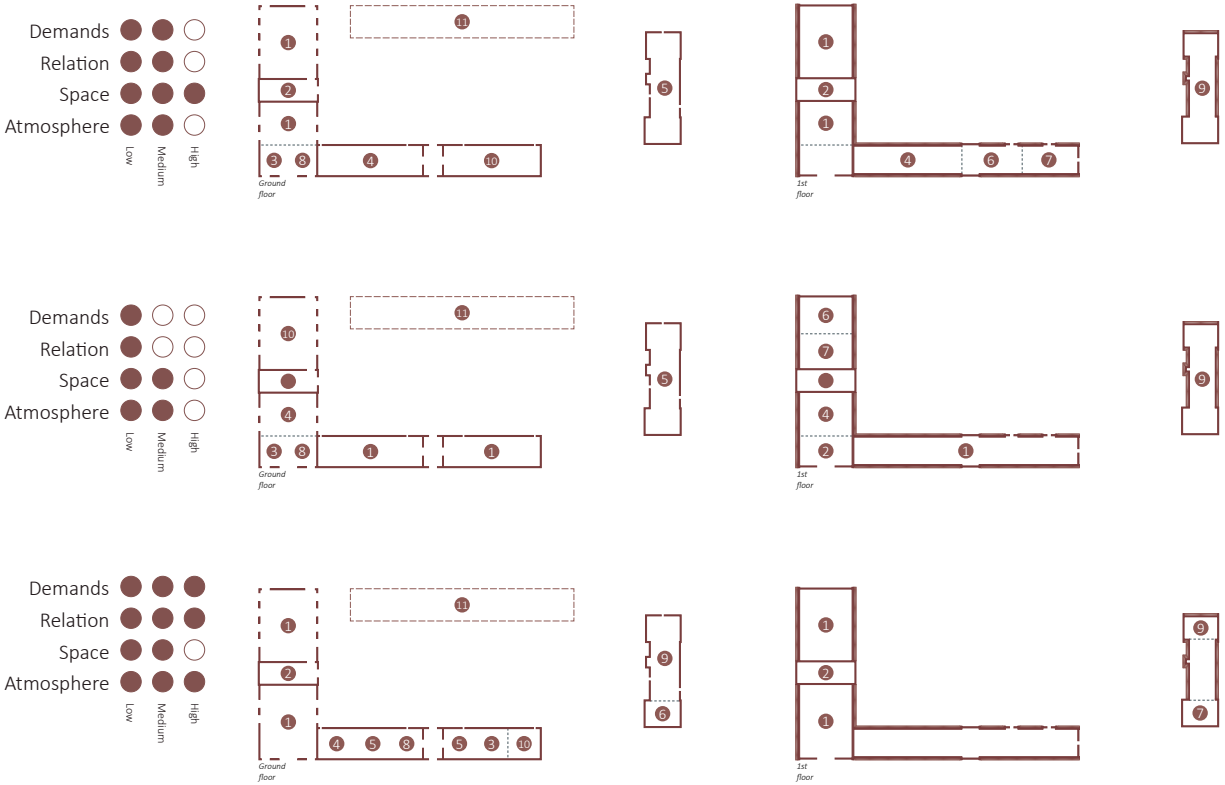
Criteria

Fulfilment of function demands
Placing the functions according to their stated demands (see function demands) is of great importance to ensure an efficient flow and meet the requirements of the functions and users.

Relation between functions
Fulfilling the relation between functions ensures coherence between these and provides the users with the ability to easily move around in comfort. Furthermore, it ensures a sufficient workflow for the staff members.

Space for functions
Certain restraints are present when placing new functions into an existing volume. The existing envelope determines the space available, why functions need to be placed according to their spatial requirements and the space available in a certain part of the building.

Atmospheric experience
Preserving as much of the buildings as possible provides a certain atmosphere in the rooms. Utilising these potentials and placing functions accordingly leaves the visitor with a lasting impact and a great experience of architectural qualities. For example, leaving the construction visible and including it as a part of the new experience.



1 Apartments
2 Lounge
3 Shop
4 Course kitchen
5 Café
6 Staff room
7 Office
8 Reception
9 Home of owner
10 Multipurpose room
11 Herb and vegetable garden

Illustration 44 -

The stable

This section presents the design process behind the stable, based on the analyses and theoretical approach. As the stable is the main public area, architectural expression and atmospheric experiences are particularly important for this building. Investigations regarding materiality and daylight are therefore crucial, while principles for natural ventilation ensure a pleasant indoor climate for the visitors.

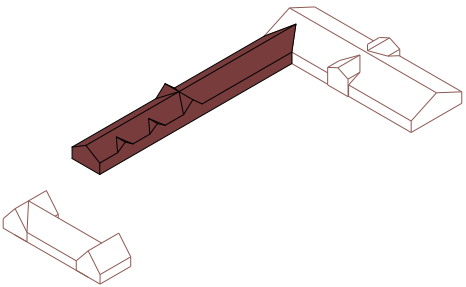


Illustration 45 -

1. Course kitchen
2. Utility kitchen
3. Café
4. Farm shop
5. Industrial kitchen
6. Multi room
7. Restrooms
8. Storage
9. Reception/Cash register

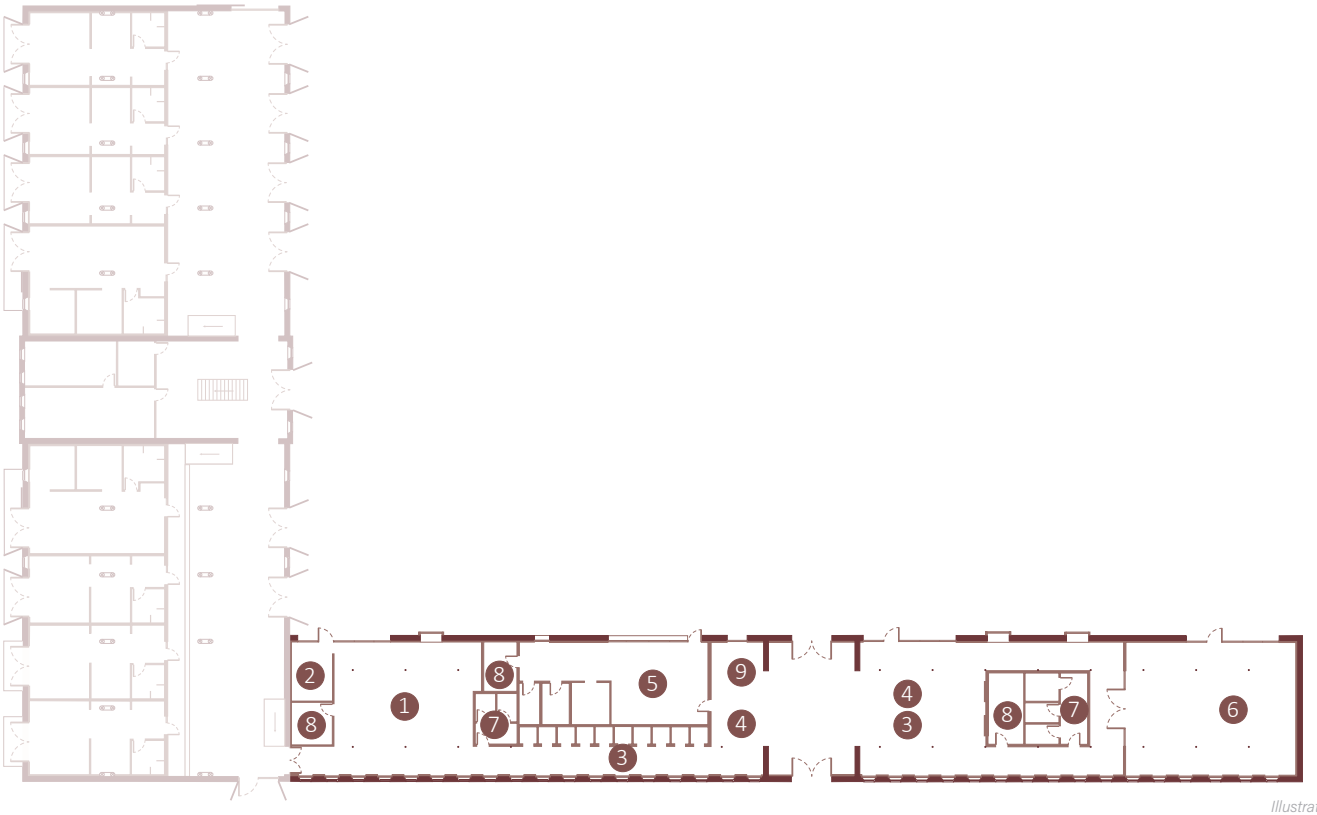


Illustration 46 -

Main concepts

The main passage

The desire is to reintroduce the gate in the stable as a main passage for visitors. Closing it off with a glass door leaves the impression of a passage, while allowing the area to be a part of the new functionality.

Illustration 47 -

Perforating the ceiling

Preserving the arched ceiling in the stable is important. Perforating the concrete along the façade leaves the I-beams visible and makes room for internal insulation, while lifting the architectural and atmospheric quality. Furthermore, this principle enables a light shaft to be introduced.

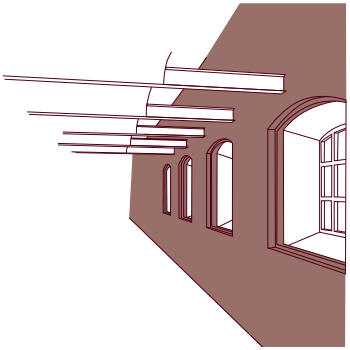


Illustration 48 -

Placing windows

To ensure sufficient daylight, new window holes are placed along the northern façade of the stable, creating a more playful expression. With the box concept for internal insulation, the new windows are placed in the internal part, maintaining the box and making it easy to distinguish the new windows from the old.

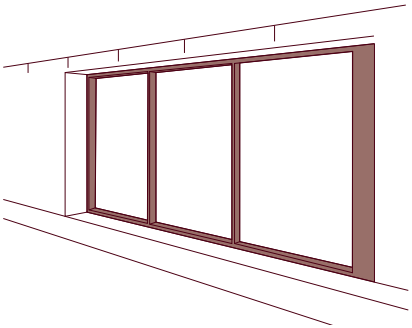


Illustration 49 -

Extracted window box

Implementing a box concept for the internal re-insulation maintains the distinction between new and old while enhancing the building's thermal qualities. To accommodate new windows with space for seating, a concept where windows are 'growing out' of the existing volume is introduced. This way, the box concept is upheld.

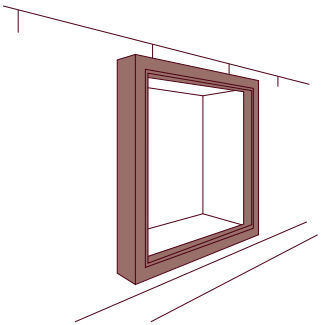


Illustration 50 -

Light shafts

A light shaft is introduced along the facades to bring more light into the stable. This concept should allow light to reflect into the building and create a unique atmosphere.

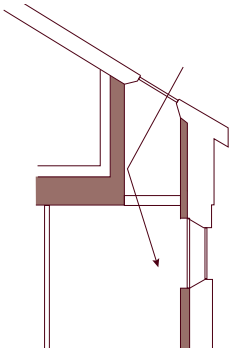


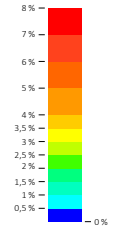
Illustration 51 -

Daylight

To ensure proper daylight conditions in the activity areas of the stable, daylight simulations have been conducted to ascertain the current average daylight factor and the improved average daylight factor after the addition of new windows towards the north. Furthermore, the closed-off windows towards the south have been reopened. An addition of a light shaft, added by perforating the old arched ceilings, helps to provide more light to the space. The placement of the windows was investigated, both for its contribution to the daylight and also for the influence and expression on the original facades.

Average Daylight Factor

Cource kitchen, Cafe & Shop: 0,5 %
Multi: 0,3 %



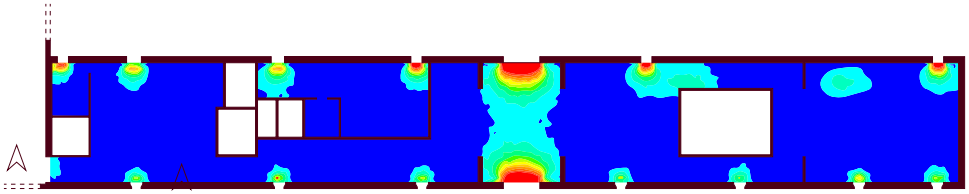


Illustration 52 -

Cource kitchen, Cafe & Shop: 2,7 %
Multi: 2,5 %

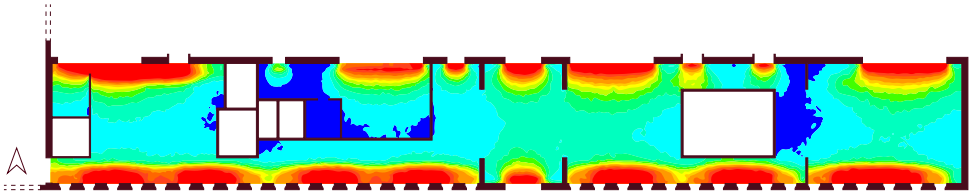


Illustration 53 -

Light shaft

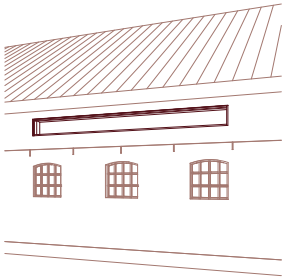


Illustration 54 -

The original idea was to introduce new facade windows to create a light shaft. However, the placement only provided an Average Daylight Factor of 1,5 %, and the expression affected the façade and original windows unfavourably.

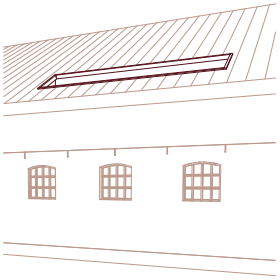


Illustration 55 -

By placing the windows as skylights instead, it provided an Average Daylight Factor of 2,7 % and also allowed the original windows to become more prominent in the facade.

Windows-North

Illustration 56 -

Windows-South

Illustration 57 -

Natural Ventilation

The principle for the natural ventilation in the stable is utilising stack ventilation by using the skylights. Stack ventilation uses the principle of thermal buoyancy, which is caused by the difference in air density between warm and cold air . The fresh air for the building will be provided by the new windows towards the north.

As the stable will not be in use during the night, the skylights can also be opened at night to help cool down the building during the warmer months.

Ventilation principle

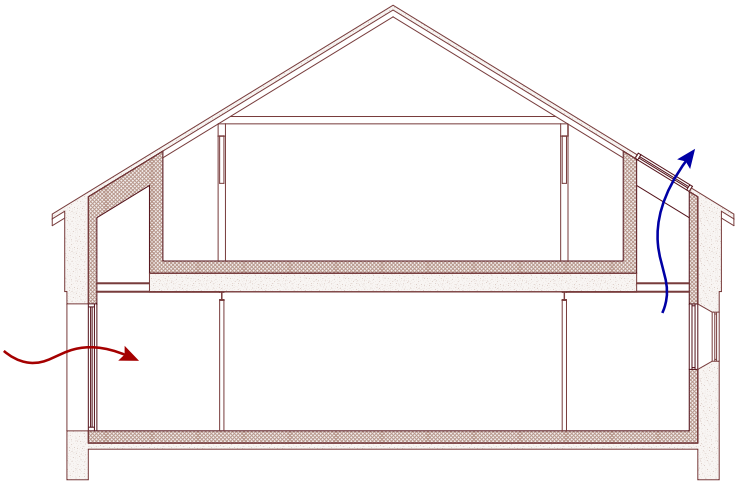


Illustration 58 -

Materiality

Preliminary

Materiality contributes to the experience and atmosphere of a building, engaging the user's senses. Various materiality studies have been conducted using visualisation tools, helping to determine materials and their effect on the room. Materials are chosen based on their interplay with the existing materials, their appearance, and the atmosphere.

Window frames

The external window frames have been examined to determine their materiality and the interplay with the outer wall. The materials that have been examined are wooden and black frames, with a secondary material for the extruded window box. The external window frame is chosen to be black, with the box being of wood, as these materials complement each other, while being a contrast to the existing exterior materials. Furthermore, this clarifies the placement and expression of the new windows versus the old.

Illustration 59 -

Chosen exterior window frame

Illustration 60 -

Secondary glazing

Material study of the internal window frames was also conducted, as frames for the secondary glazing affect the materiality of the room. The frames for the secondary glazing will be placed in the new internal insulation and will frame the existing windows, creating a unique experience and interplay between the old and the new. White internal frames are chosen, as these have a gentle expression against the old windows.

Chosen for secondary glazing

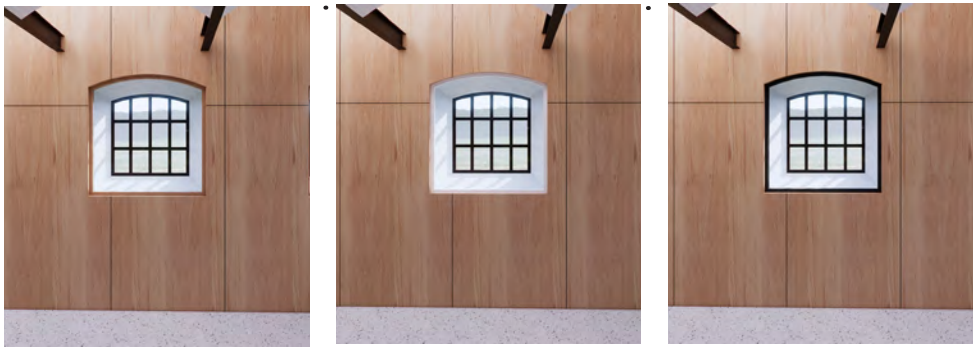


Illustration 61 -

Internal materials

The internal materials have been examined to determine the atmosphere of the internal spaces. Furthermore, the material will indicate where the principle of internal insulation is used, through the concept of 'the box'. The materials chosen for examination are white plaster walls, wooden panel walls, terrazzo flooring and linoleum flooring with occasional red tiles. Wooden walls and terrazzo floor are chosen for the stable, as the wooden panels indicate where new insulation has been added. The terrazzo floor has been chosen due to its gentle distinction from the old concrete floor, while complementing the arched ceiling.

White plaster

Illustration 62 -

Chosen interior materials

Wood panels

Illustration 63 -

White plaster & wood panels

Illustration 64 -

Construction

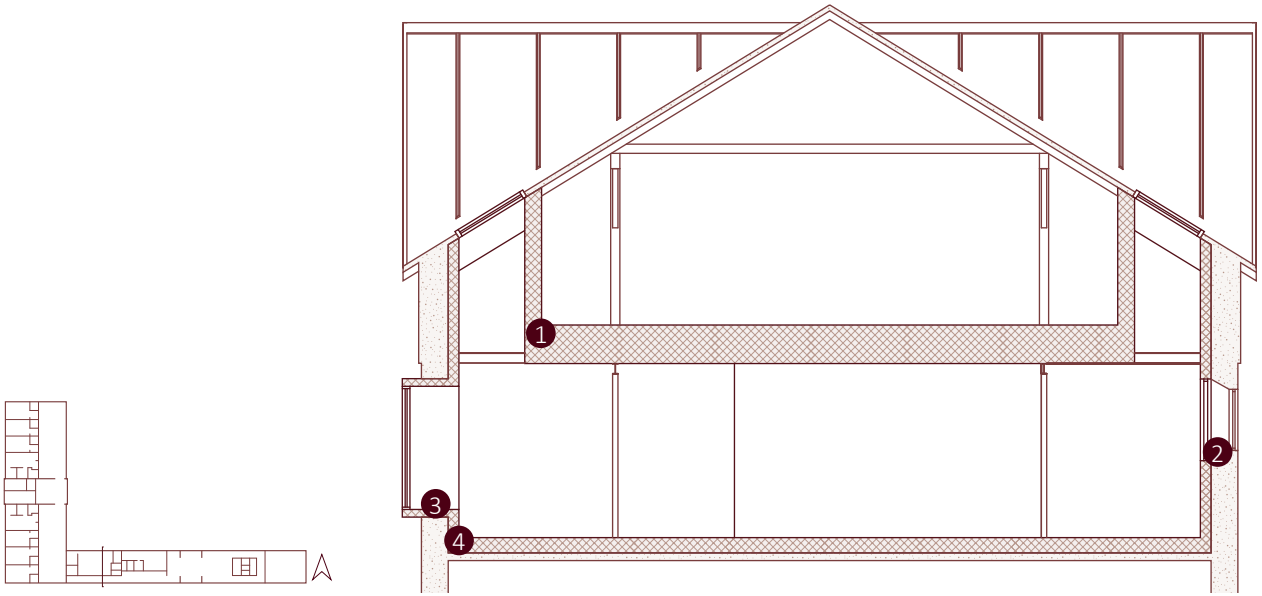
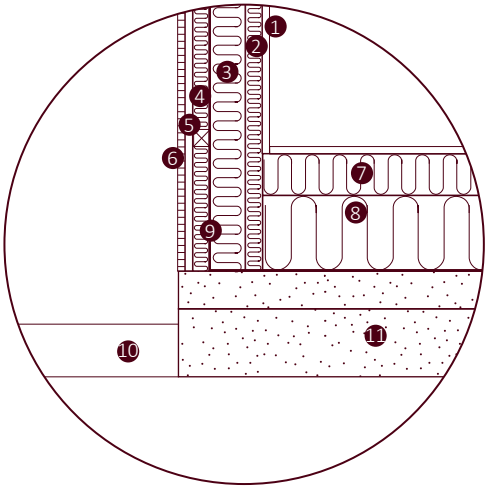
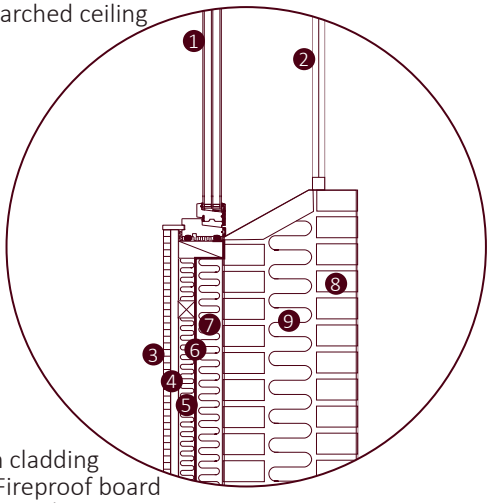


Illustration 65 - Section in stable 1:100



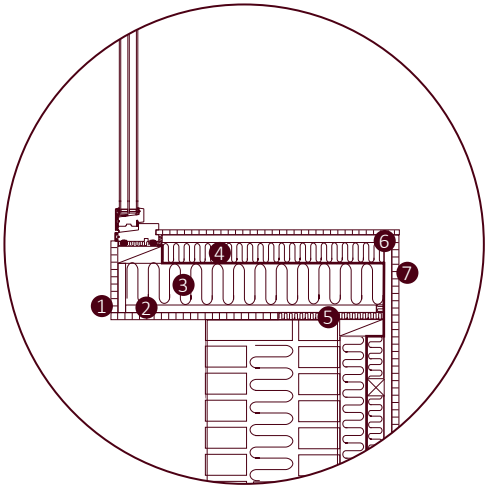
1. 15 mm Fireproof board
2. 45 mm Insulation
3. 95 mm Insulation
4. 45 mm Insulation
5. 15 mm Fireproof board
6. Wooden cladding
7. 110 mm Insulation
8. 200 mm Insulation
9. Vapor retarder
10. Existing i-beam
11. Existing arched ceiling

1 Arched ceiling detail 1:20



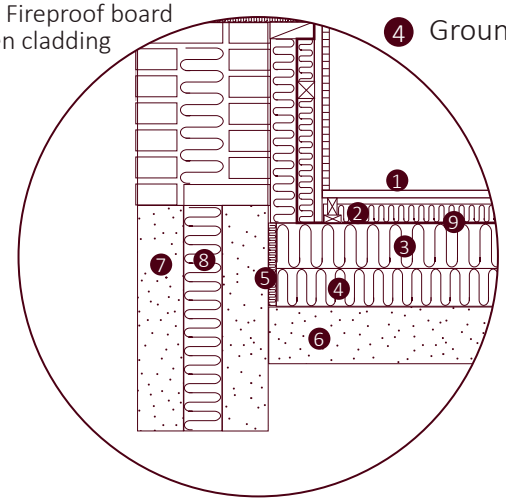
2 Secondary glazing detail 1:20

1. Secondary glazing
2. Existing windows
3. Wooden cladding
4. 15 mm Fireproof board
5. 45 mm Insulation
6. Vapor retarder
7. 95 mm Insulation
8. Existing brick facade
9. 134 mm New insulation



1. Wooden cladding
2. 15 mm Fireproof board
3. 110 mm Insulation
4. 50 mm Insulation
5. Edge Insulation
6. 15 mm Fireproof board
7. Wooden cladding

3 Window box detail 1:20

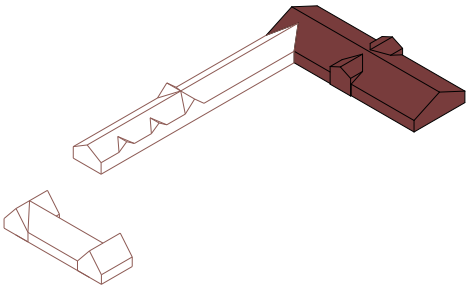


4 Ground deck detail 1:20

1. Linoleum floor
2. 30 mm Insulation
3. 120 mm Insulation
4. 100 mm Insulation
5. Edge insulation
6. 150 mm Concrete
7. New improved footing
8. Footing insulation
9. Vapor retarder

The barn

The barn is the main area for overnight guests and contains all holiday apartments. It is important to ensure a pleasant indoor climate with sufficient natural ventilation and daylight in the apartments. As the concept of 'the box' is utilised, parts of the barn will be unheated, enabling the storage of produce and products for the farm shop, as well as containing a technical room. The unheated barn area will be left open for the visitors to experience the construction and history of the barn, while also facilitating room for seasonal events. This makes the materiality of 'the box' important to investigate, as the expression towards the existing should follow the principles, as stated in the transformation theory.



1. Apartment Type A
2. Apartment Type B
3. Technical
4. Storage
5. Cleaning storage
6. Open barn room
7. Apartment Type C
8. Apartment Type D
9. Lounge

Illustration 66 -

Illustration 67 -

Main concepts

The box concept

With a design criteria stating that the expression of the existing building needs to be preserved, new internal insulation is preferred. Introducing a box concept in the barn keeps the existing building intact and allows for an interaction between old and new, as determined in the transformation theory. Furthermore, this concept allows for a lower use of new materials, making it more sustainable.

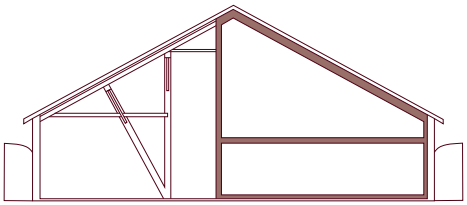


Illustration 68 -

Reusing gates

Reusing the existing gate openings through the implementation of glass doors and panels preserves the expression of the barn, while allowing visitors pleasant views of the area and sufficient lighting conditions. Furthermore, this principle provides each apartment with access to an outdoor area and is defining for the layout and number of apartments.

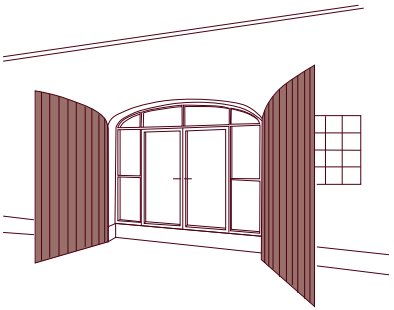


Illustration 69 -

Introducing loft beds

Loft beds are introduced in the upper apartments to make use of the ceiling height and procure more space. Furthermore, these loft beds provide views over the existing construction, leaving an enhanced understanding and atmosphere.

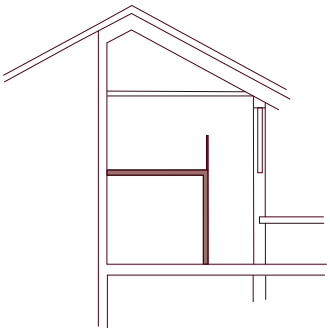


Illustration 70 -

Placing balconies

To ensure all overnight visitors can enjoy nature, terraces are introduced at ground level and balconies on the 1st floor. To preserve the exterior expression, these balconies are cut into the roof, ensuring the strict lines of the building are kept while allowing visitors a private outdoor space shielded from the western wind.

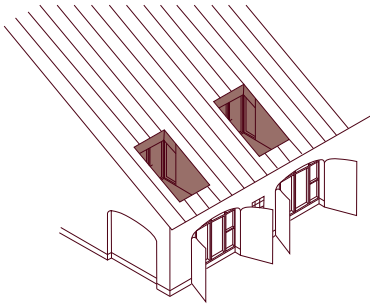


Illustration 71 -

The passage

The passage on the upper floor in the barn is perforated to allow light into the lower apartments. An additional light shaft located above the perforations ensures optimised light conditions and provides a certain experience with the existing construction, where light and shadow play on the surfaces.

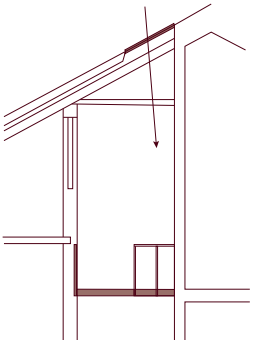


Illustration 72 -

Daylight

The holiday apartments are deep, with a depth of 10 meters, meaning the entrance area became quite dark. To provide more daylight, the unheated barn space is utilised, providing light from the old barn doors as well as new skylights. Lights can then be provided to the entrance area of the ground floor apartments, but also provide the opportunity to offer daylight to the bathrooms.

The first-floor apartment was designed with a skylight to ensure sufficient daylight in the living areas. On the loft bed, a window is placed to bring in more light on this level, while providing pleasant views of the barn and its construction.

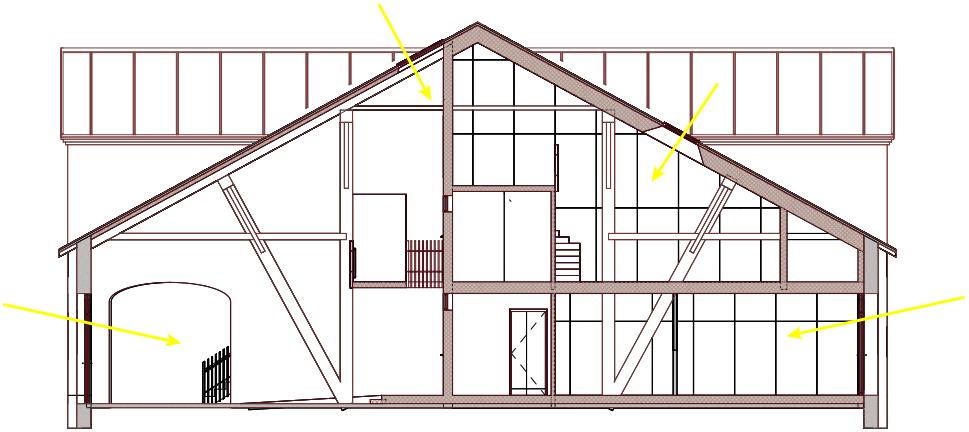


Illustration 73 -

Facades

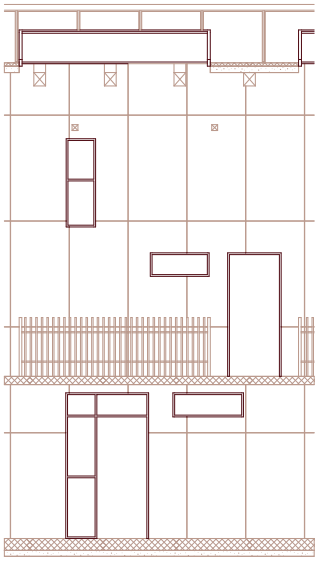


Illustration 74 -

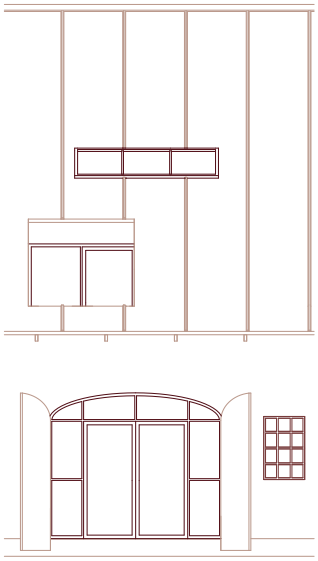
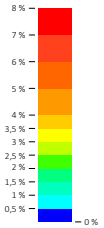


Illustration 75 -

Average Daylight Factor



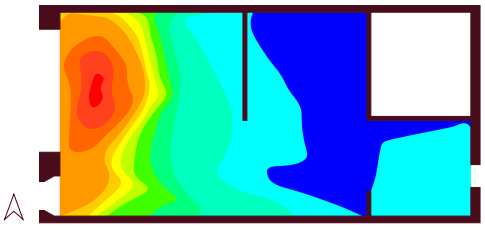


Illustration 76 -

Apartment Type A: 2 %

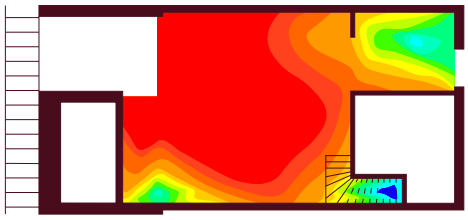


Illustration 77 -

Apartment Type D: 5,7 %

Natural ventilation

Due to the depth of the apartments, the unheated barn is utilised as a source for natural ventilation. As the apartments are placed towards the west and the primary wind direction (see appendix 1), the barn can act as the exhaust area from the apartments, enabling cross ventilation in both apartment levels due to the difference in air pressure. Furthermore, stack ventilation is applied in the upper-floor apartment, enabled by the skylight and the principle of thermal buoyancy.

Ventilation principle

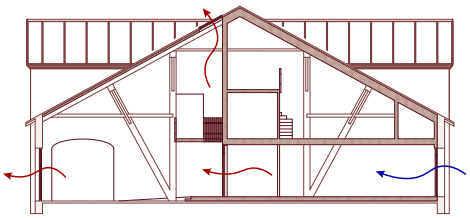


Illustration 78 -

BSim results
H > 21° = 1.520
H > 26° = 50
H > 27° = 14

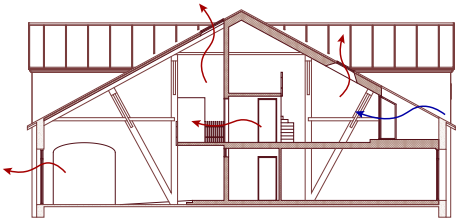


Illustration 79 -

BSim results
H > 21° = 2.004
H > 26° = 116
H > 27° = 53

BSim

BSim have been used for examining the temperature in the apartments. The results show that the apartments comply with the building regulations when adding the chosen principles for natural ventilation.

The 1st floor apartment is more exposed to over heating, due to the skylight, but this also enables for a more sufficient ventilation. (See additional BSim results in appendix 3)

Summer

During the warm summer months, the primary ventilation strategy is cross-ventilation during the day, using the large openings, and thermal buoyancy during the night, using the smaller openings above the doors. The medium-sized windows can also be used during the day to have a more controlled air flow through the apartments. The primary ventilation principle in the 1st floor apartments is thermal buoyancy, obtained with the skylight and window at the loft bed. Furthermore, a smaller window in the bathroom and the front door enable cross ventilation.

Illustration 80 -

Winter

During the colder months, the small windows above the door can be opened, utilising thermal buoyancy and minimising the risk of draught in the apartment. At the 1st floor apartments, the skylight can be opened to let out the used air , while the window at the loft bed and bathroom can be used for a light air flow when needed.

Illustration 81 -

Materiality

Preliminary

In the barn, the materials must supplement the existing construction while creating a subtle distinction between old and new, as determined in the transformation theory. Materials are chosen mainly on this parameter, as well as their tactile appearance and atmosphere. The façade material of the apartment box is chosen to be wood panels, to continue the concept from the stable and clarify all places where the insulated box concept is used. The materials chosen for examination in the barn are therefore concentrated on the new floor and railings. Glass and wooden railings will be investigated, while the materials for the ground level floor are terrazzo, linoleum with occasional red tiles and an all-red linoleum floor to display the flow areas. On the first floor, the chosen material is wood, to fit into the box concept.

Internal materials

Internal materials in the apartments are kept to the same principles as the external materials. The floors are chosen to be of wood, to utilise its warmth and comfort. The materials investigated on the walls are white plaster and wooden panels, giving the apartments a coherence with the box concept utilised in both the stable and the barn.

Chosen internal materials

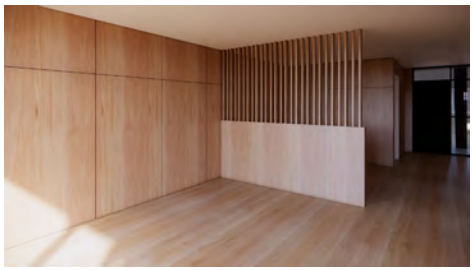


Illustration 82 -

White plaster

Illustration 83 -

Wood panels

Illustration 84 -

Chosen materials for the box

White plaster & wood panels

Illustration 85 -

Construction

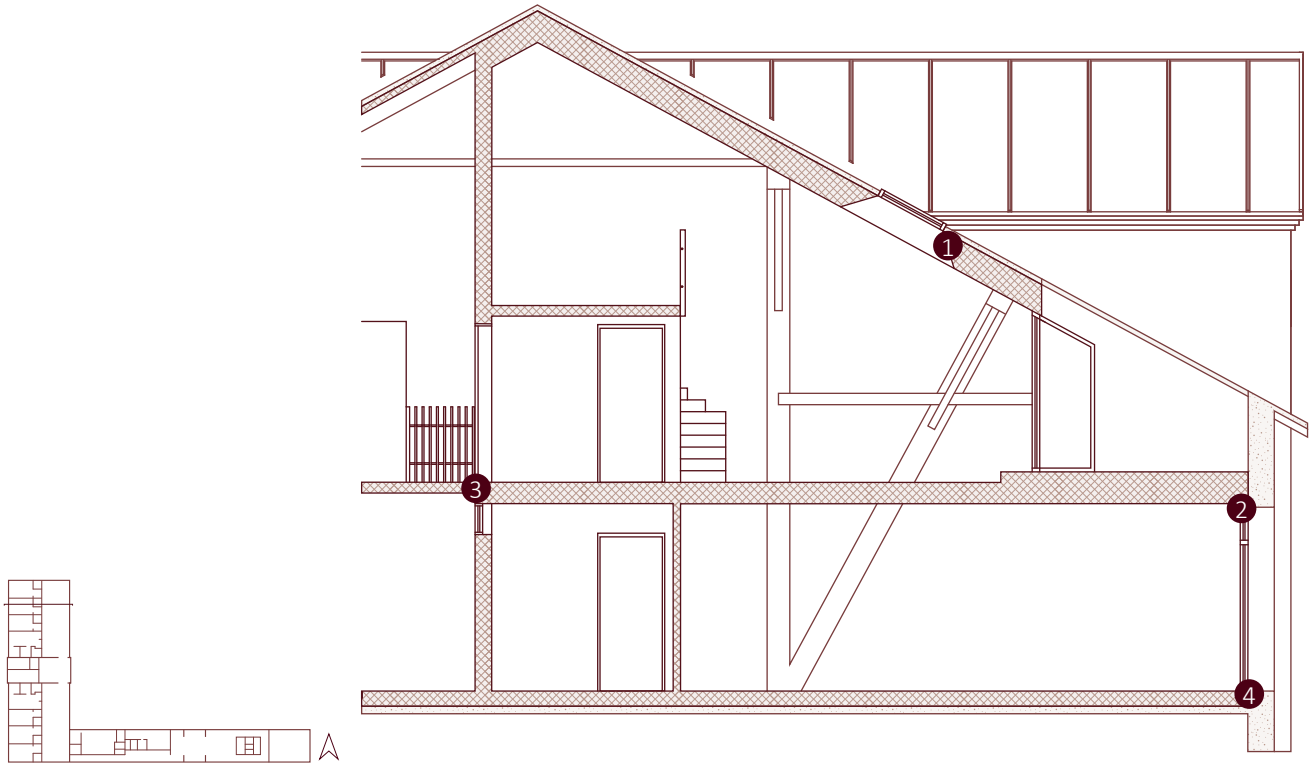
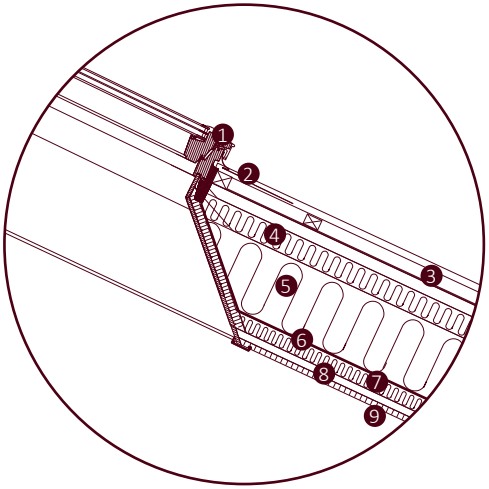
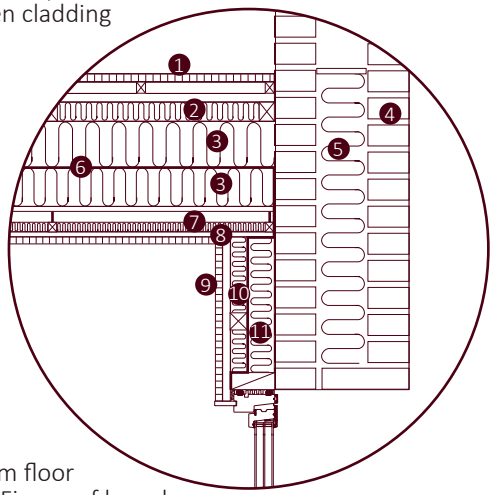


Illustration 86 - Section in barn 1:100



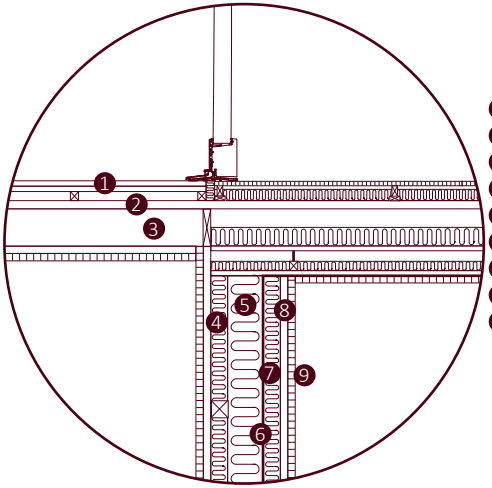
1. Window frame insulation
2. Galvanized tile roof
3. Ventilated layer
4. 65 mm Insulation
5. 200 mm Insulation
6. Vapor retarder
7. 45 mm Insulation
8. 15 mm Fireproof board
9. Wooden cladding

1 Skylight detail 1:20



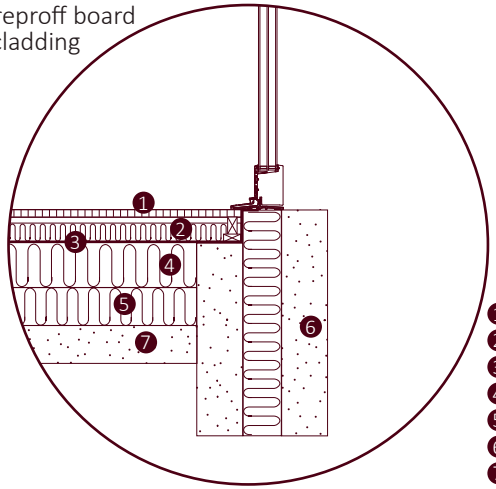
2 Insulated box detail 1:20

1. Wood terrace floor
2. 30 mm Insulation
3. 50 mm Insulation
4. Existing brick facade
5. 134 mm New insulation
6. Vapor retarder
7. 30 mm Insulation
8. 15 mm Fireproff board
9. Wooden cladding
10. 45 mm Insulation
11. 95 mm Insulation



1. Linoleum floor
2. 15 mm Fireproof board
3. Wood beam
4. 45 mm Insulation
5. 95 mm Insulation
6. Vapor retarder
7. 45 mm Insulation
8. 15 mm Fireproff board
9. Wooden cladding

3 Floor structure detail 1:20



4 Ground deck detail 1:20

1. Wooden floor
2. 30 mm Insulation
3. Vapor retarder
4. 120 mm Insulation
5. 100 mm Insulation
6. New improved footing
7. Existing foundation

Fire technical considerations

Preliminary

The transformation of Hæstrupgård introduces new functions, and the use of the buildings is changed compared to the current situation. This brings new requirements to the buildings, and fire technical considerations need to be accounted for to comply with the Danish building regulations.

As the building is of mixed use, different regulations are in force. The barn with holiday apartments is considered in the class of apartment buildings (Bygningsreglementet 2021a), while the stable is considered in the class of gatherings and shops (Bygningsreglementet 2021b). In both regulations, the buildings are appertaining to fire class 2, risk class 2. These regulations demand that all apartments should be individual fire compartments to minimise the risk of fire spreading between apartments. This is also the case for rooms with a heightened fire risk or rooms of importance for the evacuation of the buildings, e.g. technical rooms, storage rooms, kitchens and staircases. The constructions facing these fire compartments need to comply with fire class EL-60 in the European fire classes, meaning the carrying capacity and integrity of the construction should stand at least 60 minutes during a fire. This requirement can be obtained by adding a layer of fire-protected plasterboard on each side of the construction and using insulation (minimum class A2-s1,d0) and construction wood that is fireproofed or impregnated.

Escape routes should be established in a way that is easy to reach and use, and have a minimum width of 1,3 m. Every apartment should have at least one door leading to free terrain or an escape route. In the lower apartments, this is obtained through the terrace doors and front door, while the upper apartments have a door to a balcony, from where the fire department can rescue the residents, or towards the gallery where the residents can evacuate themselves through the escape route. In the stable, a variety of doors placed along the building ensure efficient evacuation from the different rooms and functions.

Illustration 87 - Fire plan of barn and stable

Main house

The main house has not been a large focus point in this thesis, the primary focus has been on the functionality and energy demand of the building. The main house is for more private functions, encompassing the staff break area, office, a private apartment for the owner of Hæstrupgård and two rental apartments for long-term rent. It is important to ensure a calm and relaxing area for the staff members as well as an office for focused work. The main focus of the main house has been to optimise the building envelope and lower the energy demand, why BE18 examinations have been conducted.

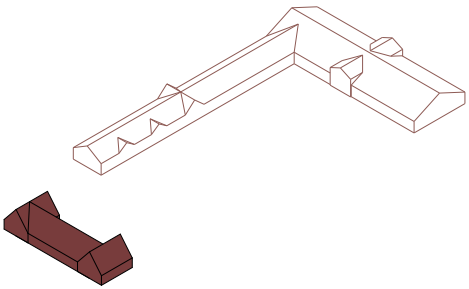
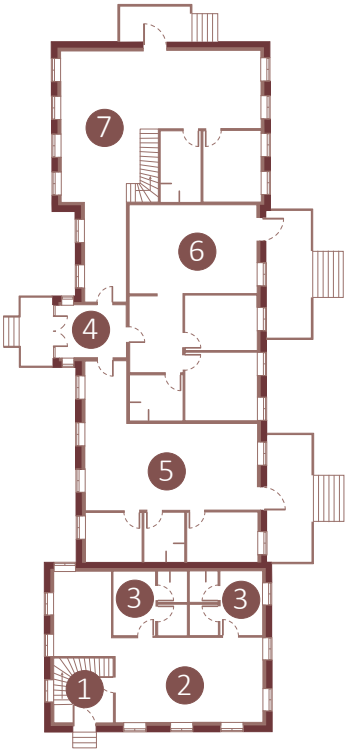


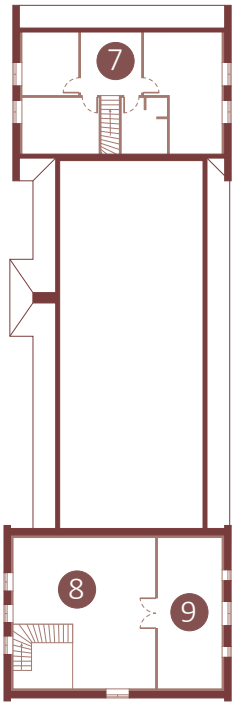
Illustration 88 -

1. Staff entrance
2. Staff break room
3. Changing rooms
4. Entrance apartments
5. Apartment 1
6. Apartment 2
7. Owners apartment
8. Office
9. Meeting room



Ground floor

Illustration 89 -



1. floor

Illustration 90 -

Energy consumption

To ensure that the buildings comply with the Danish Building Regulations requirement for energy consumption , has an energy calculation been made through Be18. Each of the three buildings has been calculated separately, with the barn and main house calculated as apartments and the stable as other.

It was decided to aim for the Renovation class 1, which was achieved by the optimisation of the building's envelopes, post-insulating internally, as well as creating an unheated space in the barn, changing the old windows and replacing the roofs.

The main house and stable reached the requirements for renovation class 1 with ease, ending with an energy demand far below the requirements. The barn also meets the requirements, likely due to its large volume, but is not as low as the stable and main house. (See additional Be18 results in appendix 4) The average energy consumption of all three buildings is 46,9 kWh/m2 per year.

Be18 results

Main House: 38,5 kWh/m² per year
The Stable: 46,9 kWh/m² per year
The Barn: 51,8 kWh/m² per year

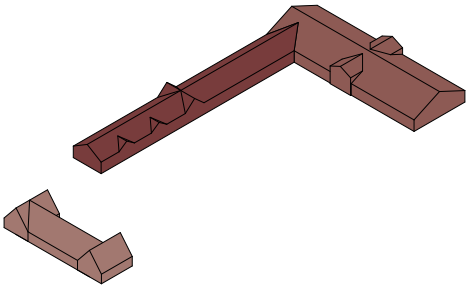
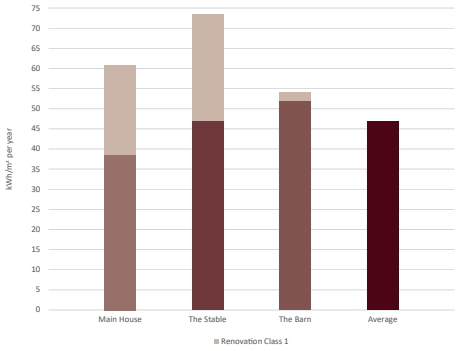
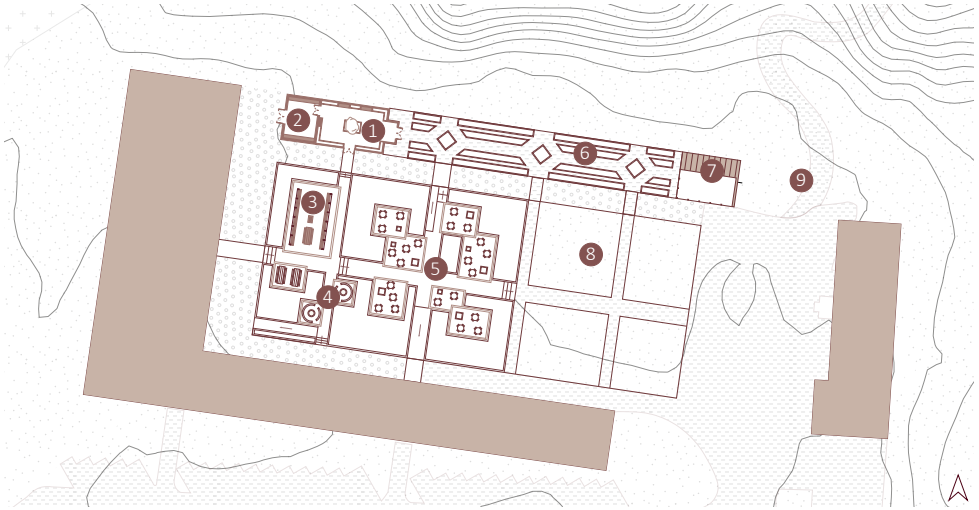


Illustration 91 -



Outdoor areas

The desire to create a retreat with nature, relaxation and local produce in focus is highly influenced by the rural area Hæstrupgård is located in. Utilising the area that belongs to Hæstrupgård to create outdoor activities and relaxing outdoor areas is reasonable, as well as placing supporting functions as an outdoor serving area and outdoor kitchen. The plan for the outdoor areas is inspired by the theories presented earlier, as well as case studies.



1. Orangery
2. Shed
3. Outdoor kitchen
4. fireplace
5. Outdoor seating
6. Vegetable garden
7. Chicken yard
8. Orchard
9. Path to wild nature

Illustration 92 -

Lowered areas

The courtyard's location in the centre creates a strong connection to the new functions and makes it suitable for supporting outdoor functions, such as an Outdoor serving area and outdoor kitchen. With a desire to create a connection to nature, some areas are lowered, putting the visitors at eye level with nature itself. Surrounding the lowered areas will be an orchard and herb garden.

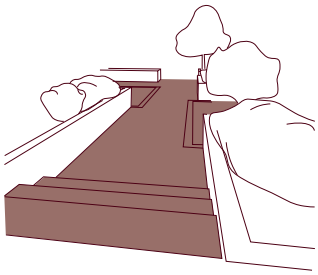


Illustration 93 -

Reusing the footprint

Analysis and site visits unveiled traces from a demolished stable, located in the northern part of the site. Reusing this area for a vegetable garden and other supporting functions, following the footprint and expression of the previous building, would allow the history to be preserved without rebuilding the stable.

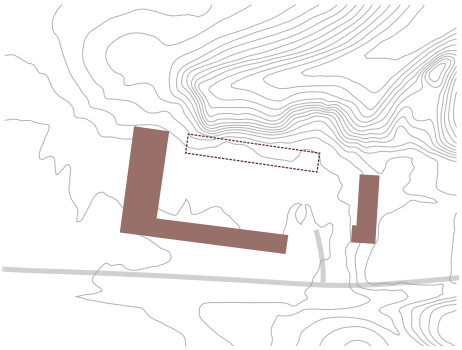


Illustration 94 -

The wild vs. the controlled

Hæstrupgård have 8 hectares of natural areas at its disposal. This surrounding area is divided into two main principles, the wild and the controlled. In the wild, nature is left on its own to revitalise the area, following principles from rewilding projects in Denmark. In the controlled area, an anthropocentric approach is defined, where the areas are used for vegetable gardens, orchards and outdoor areas connected to the new functions at Hæstrupgård.

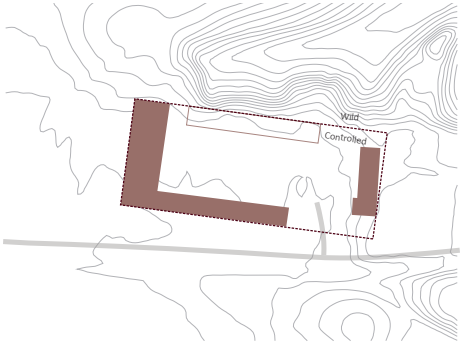


Illustration 95 -

Layout

Outdoor seating

An outdoor seating area supplements the café and provides the visitors with the opportunity to sit outside while enjoying nature during the warm summer months. Furthermore, this area ensures a larger number of guests visit the café, increasing the income. These areas are lowered for the visitors to be at eye level with nature, as part of the experience. Surrounding the lowered areas are berry bushes and other useful plants, that is utilised in the kitchens and sold in the farm shop. Changes in the pavement divide the area into zones, determining where the flow and seating areas are located.

Illustration 96 -

Orangery & shed

Placing an orangery with an appertaining shed provides the possibility of growing produce that is not adjusted to the Danish climate. Furthermore, the orangery provides a seating area in a relaxed atmosphere surrounded by plants, making it possible to enjoy nature on a rainy or colder day. Tables for replanting and other chores enable the staff to prepare small plants in the orangery, while the shed provides space for the storage of tools and machinery.

Illustration 97 -

Outdoor kitchen

An outdoor kitchen is established as a supporting function to the course kitchen, working as a scullery and additional course kitchen during the summer months. This provides more flexibility to the area and enables more visitors to attend lectures in the kitchens. The outdoor kitchen provides the visitors with a different experience, cooking in nature over an open fire. The outdoor kitchen has a strong connection to the vegetable garden and orchard, enabling visitors and staff to harvest produce on site.

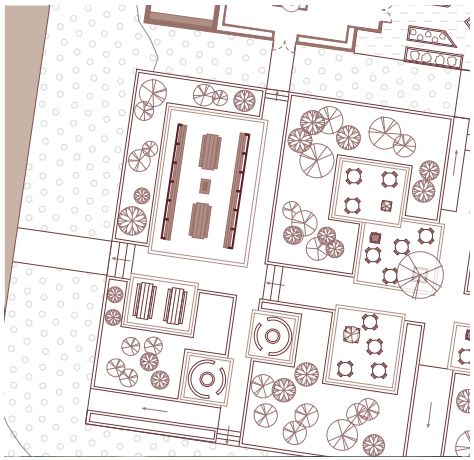


Illustration 98 -

Vegetable garden

The vegetable garden is what provides Hæstrupgårds functions with local produce. The vegetable garden can be used for the café, farm shop and course kitchen, and allows the visitors to partake in harvesting and care-taking of the produce as part of events or courses. This provides a deeper understanding and perception of growing produce, giving the visitor an interactive experience for learning. The chickens in the chicken yard eat the natural waste from the kitchens and produce food for the visitors, as well as fertiliser for the vegetable garden and orchard.

Illustration 99 -

Orchard

An orchard is located towards the main house, providing Hæstrupgård with fruit, berries and other useful produce, utilised in the kitchen and for cooking classes, as well as a product for sale in the farm shop. Having an on-site orchard allows the visitors to partake in harvesting the produce, enhancing the experience and understanding.

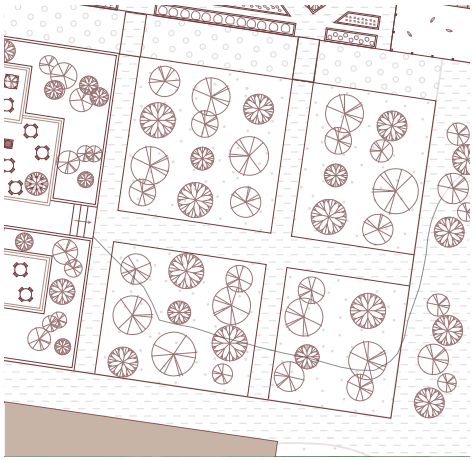


Illustration 100 -

The wild

A path in the northeastern part of the courtyard leads into the forest and meadow area of Hæstrupgård, providing a path for a pleasant and relaxing walk in the wild nature. The area outside the courtyard is planned as a rewilding project, where nature is left on its own, enhancing biodiversity and the experience of wild nature.

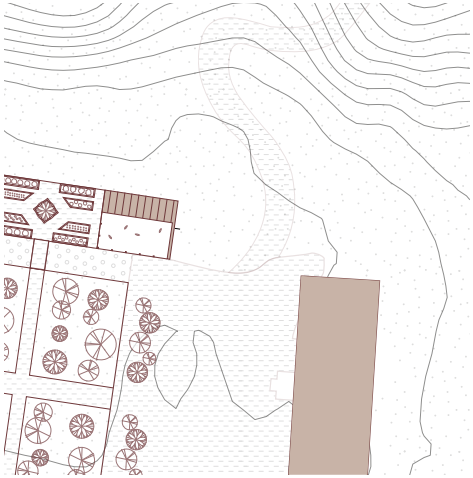


Illustration 101 -

06 Presentation

Introduction
Methodology

Illustration 102 -

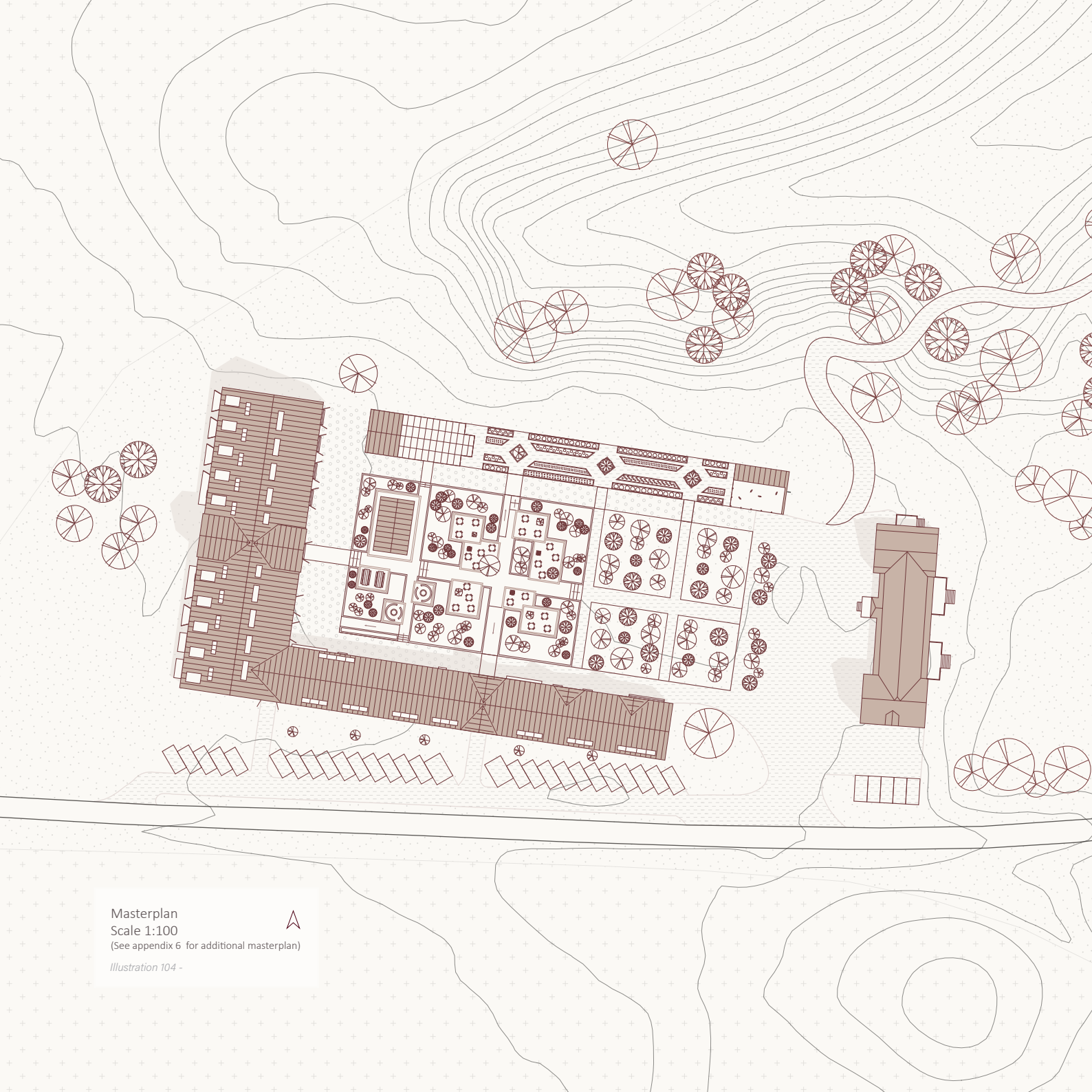
Visualisation of the main entrance in the stable

Illustration 103 -

Visualisation of outdoor areas towards the barn and the stable

Hæstrupgård

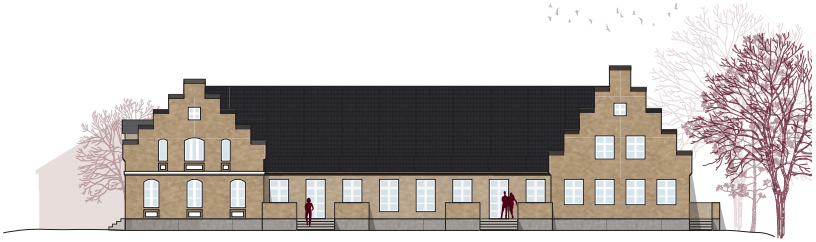
In a rural landscape where the hills and forests surround you, where you find yourself immersed in nature and all its qualities, where the wind gently moves the leaves of the trees, birds chirp, and the atmosphere makes you calm, lies Hæstrupgård. As a newly transformed manor, Hæstrupgård strives to reuse the existing buildings and bring a new purpose to the manor. Preserving the expression and introducing a new principle of an insulated box, makes Hæstrupgård an inspiration, combining the old with new in a symbiosis that embraces the past, the present and the future.



Masterplan
Scale 1:100
(See appendix 6 for additional masterplan)

Illustration 104 -

Illustration 105 -
Visualisation of the outdoor area towards the main house and vegetable garden



Main house facade East
Scale 1:500

Illustration 108 -

Main house facade North
Scale 1:500

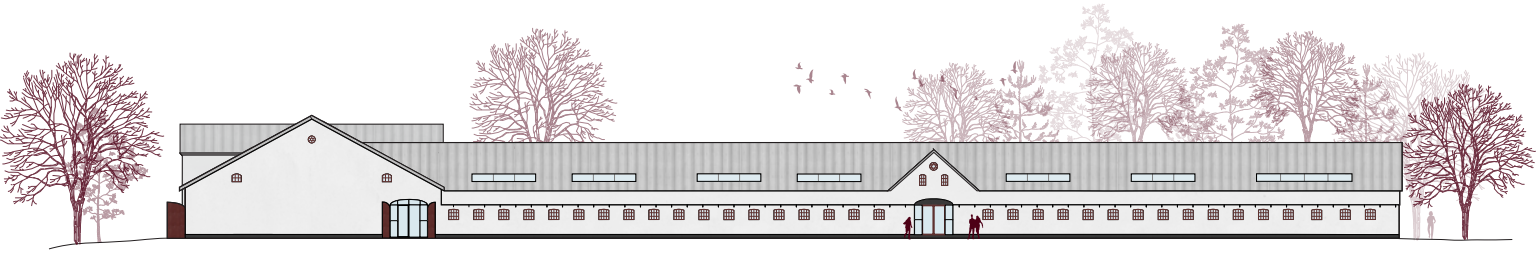
Illustration 106 -

Main house facade West
Scale 1:500

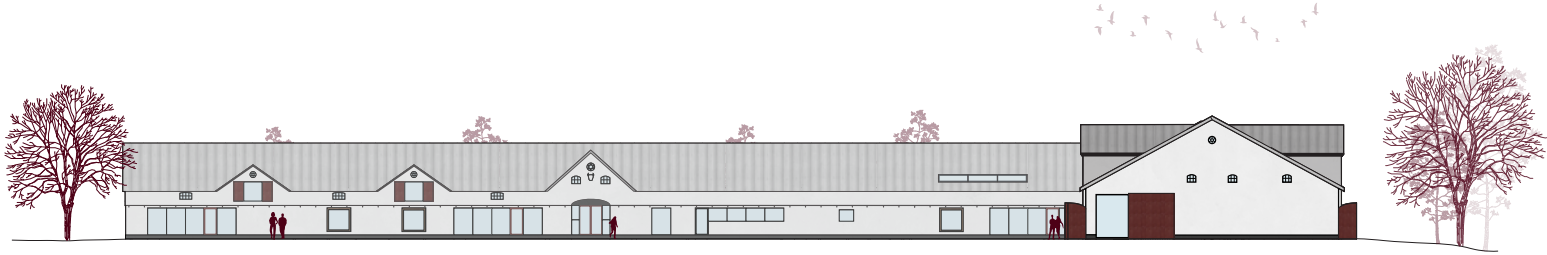
Illustration 109 -

Main house facade South
Scale 1:500

Illustration 107 -



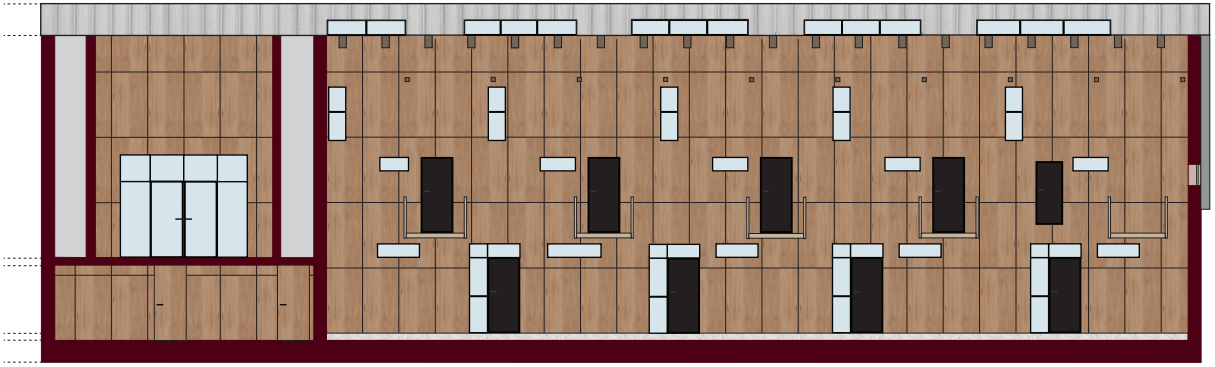
Facade South
Scale 1:500
Illustration 110 -



Facade North
Scale 1:500
Illustration 111 -

Illustration 112 -

Visualisation of the open barn space with visible construction



Apartment facade East
Scale 1:200

Illustration 113 -

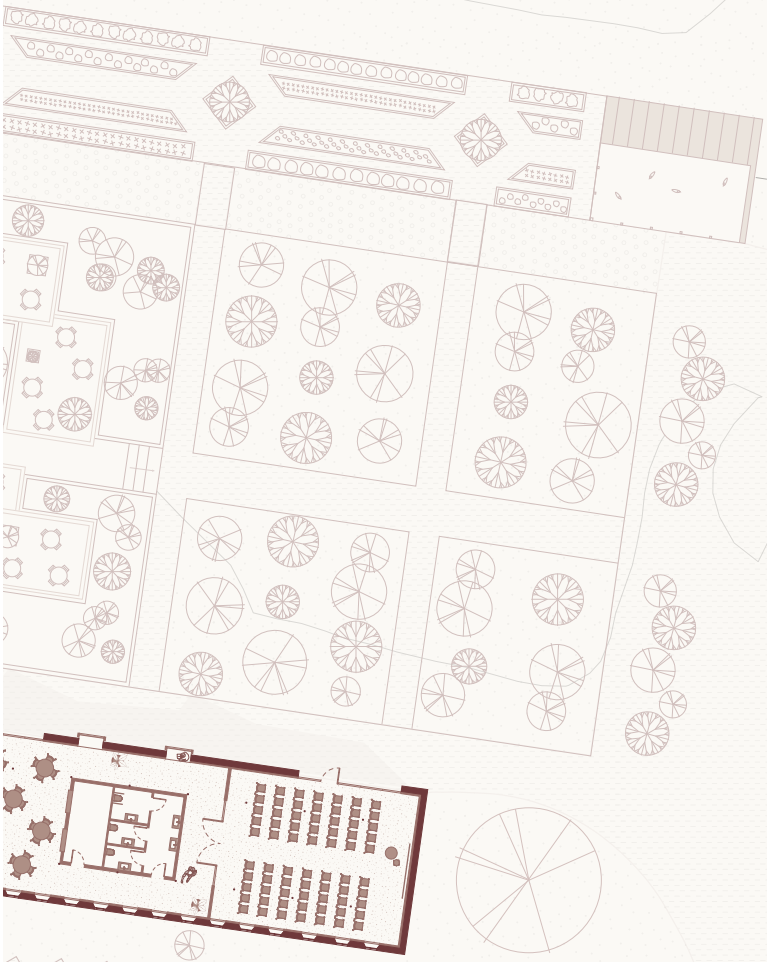
Illustration 114 -

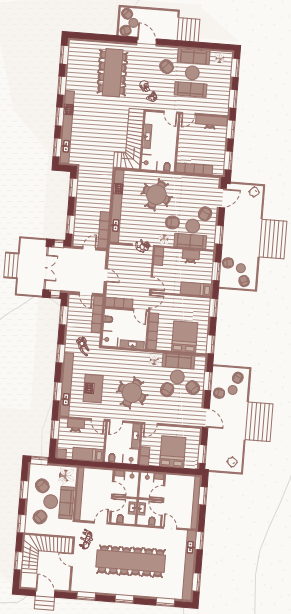
Visualisation of the balcony in the open barn area

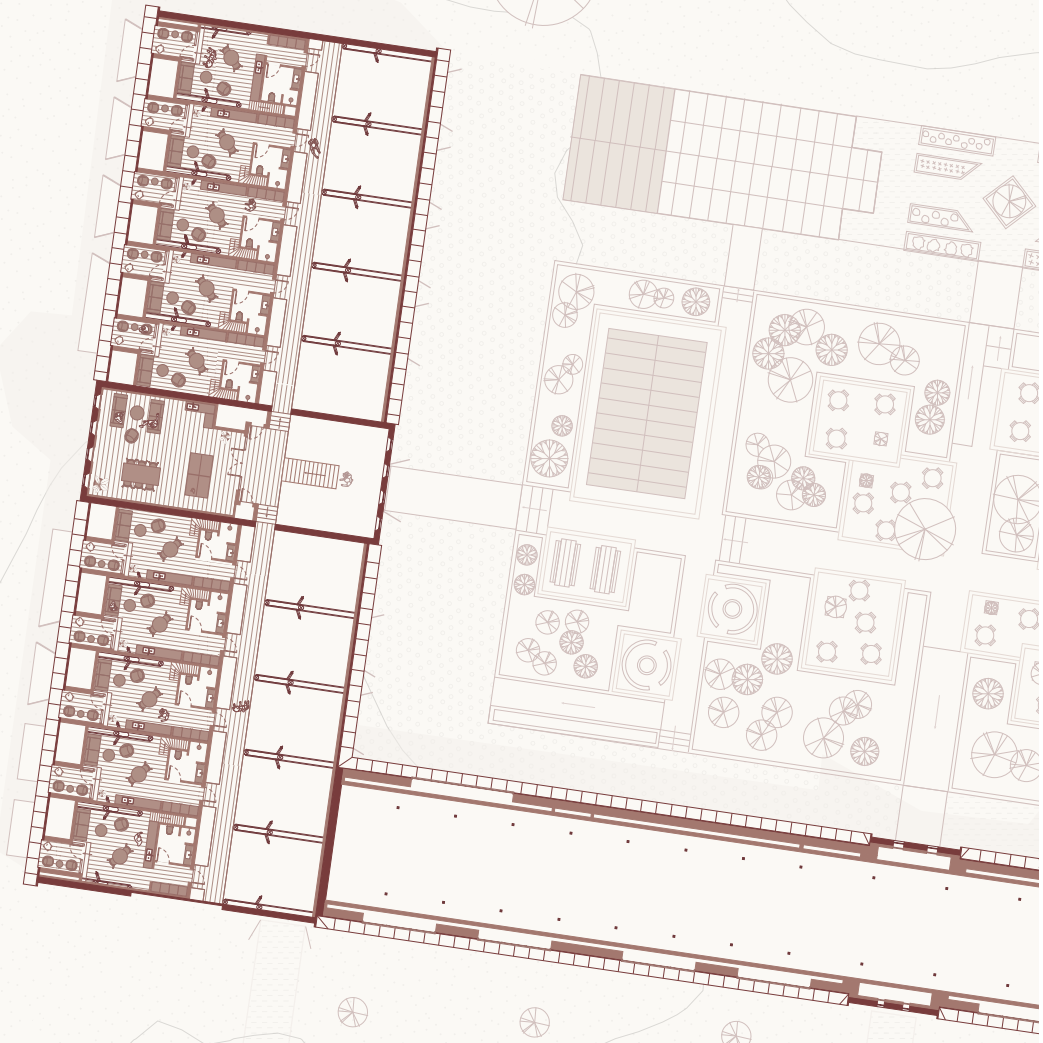
Facade West
Scale 1:500
Illustration 115 -

Facade East
Scale 1:500
Illustration 116 -

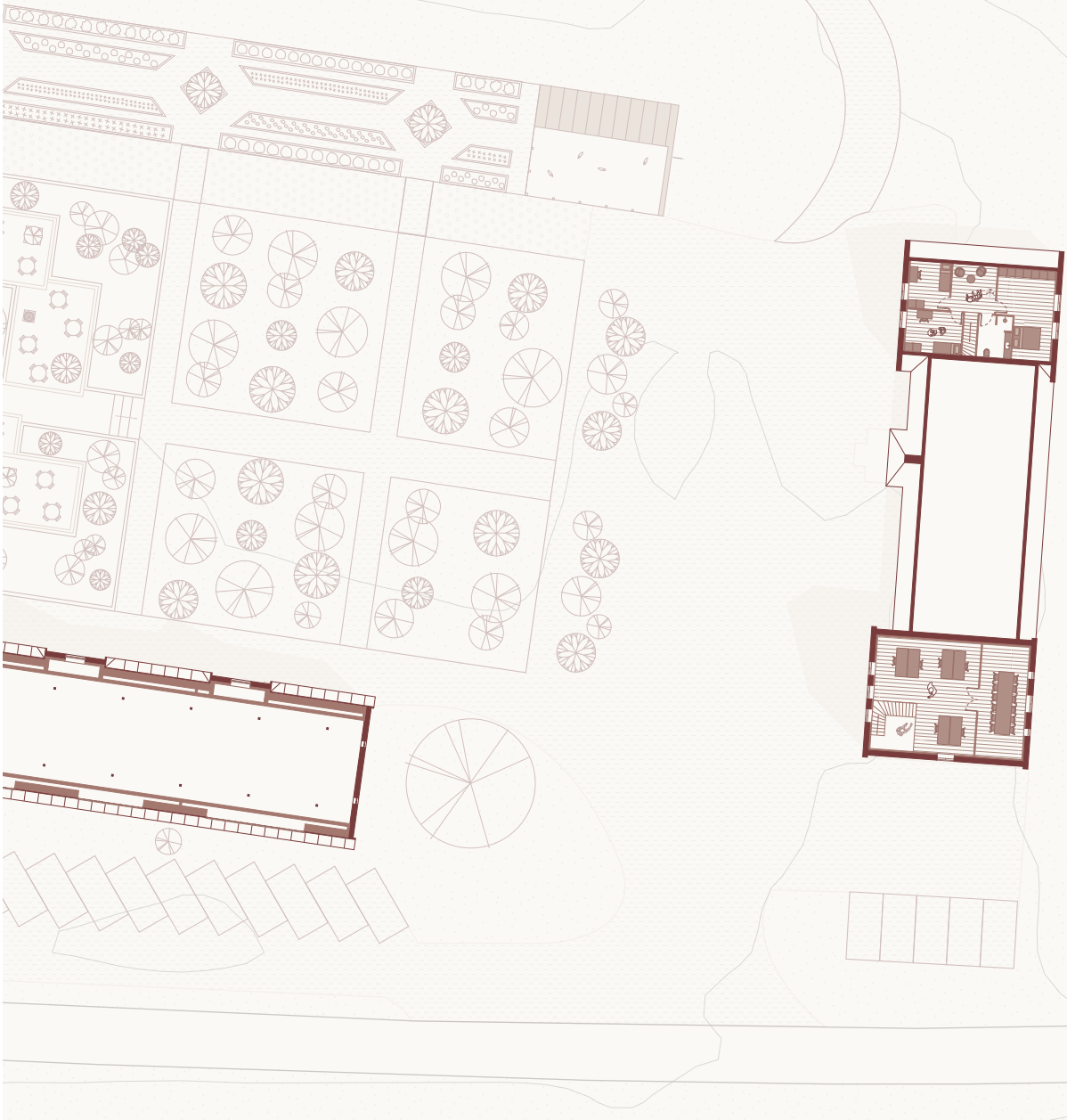
Ground floor plans
Scale 1:500
(See appendix 7 for additional ground floor plan)
Illustration 117 -

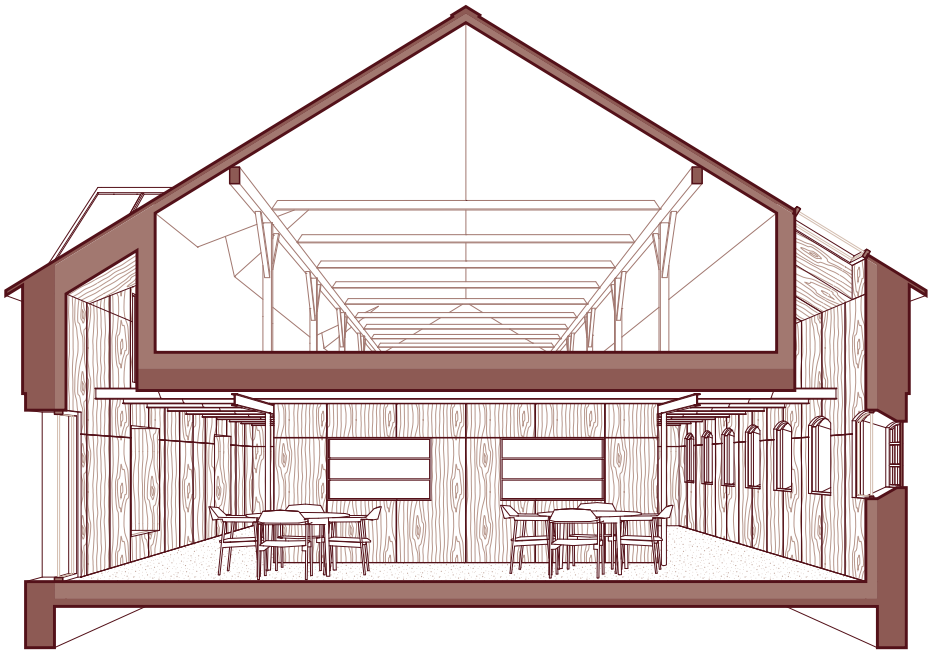


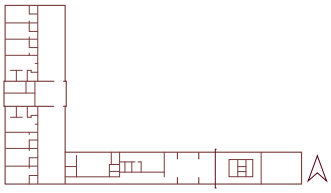




First floor plans
Scale 1:500
(See appendix 8 for additional first floor plan)
Illustration 118 -







Section stable
Scale 1:100
Illustration 119 -

Illustration 121 -

Visualisation of the café area in combination with the farm shop

Illustration 120 -

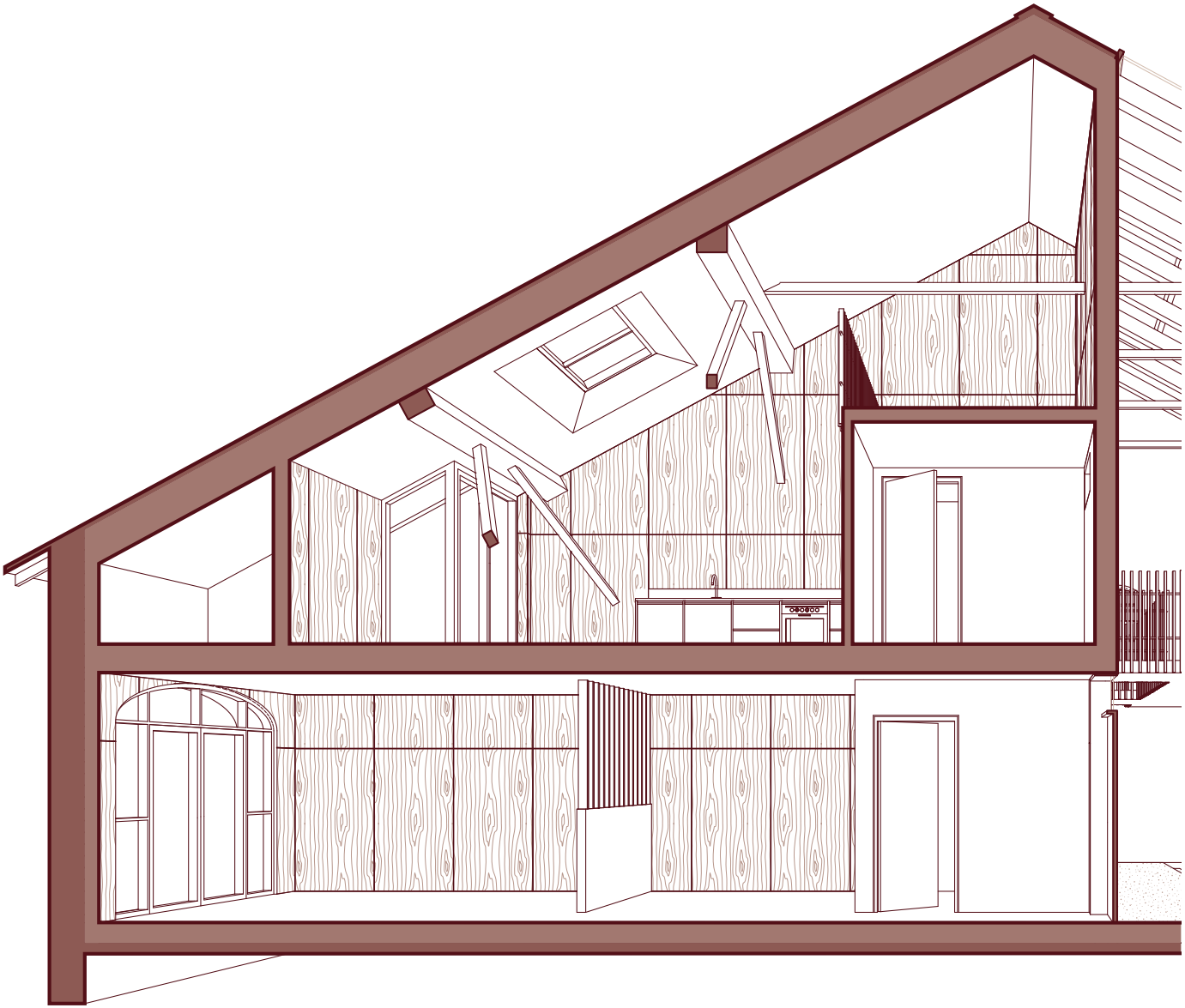
Visualisation of the integrated seating places in the café area

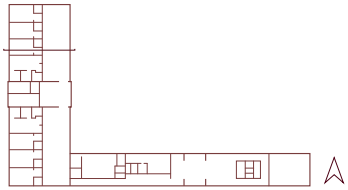
Course kitchen

One of the main attraction points of Hæstrupgård is the course kitchen and the supporting functions that embrace the 'from farm to table' principle. The visitors can partake in the entire process, from harvesting the produce, to preparing it in the course kitchen, and enjoying the final result. This provides the visitor with a deeper knowledge and appreciation of the produce and process, hoping to inspire the visitor to take home a new perception of food. With a visible construction and arched ceiling, where perforations let in light from the light shafts, the course kitchen is an atmospheric place where light and shadow play on the surfaces, creating an experience beyond the ordinary.

Illustration 122 -

Visualisation of the course kitchen in the western part of the stable





Section barn
Scale 1:150

Illustration 123 -

Illustration 124 -
Visualisation of an ground floor apartment

Ground floor apartment

With views towards woodlands and the rural landscape is the ground floor apartment a great escape, offering a relaxed atmosphere with architectural quality and an interesting meeting between old and new. With a private terrace, nature can be enjoyed, and a large window in the former gate opening brings the pleasant views all the way into the apartment. An open floor plan provides an intimate atmosphere and makes room for a pleasant stay in a historical place with nature and experiences in focus.

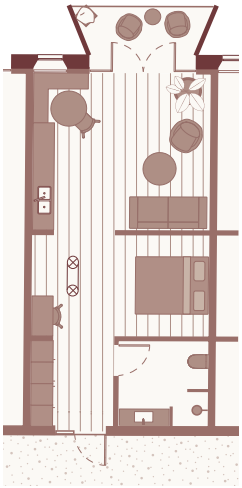


Illustration 125 -

Illustration 126 -

Visualisation of apartment on the first floor

First floor apartment

Entering the first-floor apartment, one is met by an abundance of light from the skylight, and pleasant views over the tree tops meet the eye through the window and balcony. A special atmosphere lies in the apartment, with the old construction crossing the room in a fine balance against the new and lighter wooden panels. A loft bed with a window provides interesting views over the barn room and constructi-on, and creates a deeper understanding of the building. The views through the skylight and window bring the atmosphere of being close to nature, granting a relaxing feeling to the visitor.

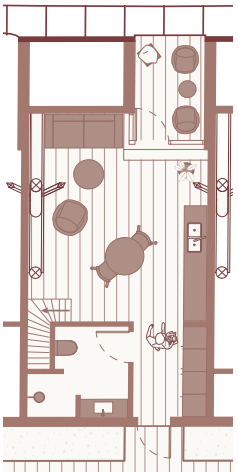


Illustration 127 -

This chapter concludes with the final project and the process behind. Contemplations on the project are conducted through a reflection, where different aspects are summarised and reflected upon.

07 Prologue

Conclusion
Reflection
References

Conclusion

The transformation of Hæstrupgård aims to change the current building practice and inspire the use of existing resources. Reusing and reinventing existing buildings is inevitable to meet the demands for sustainable solutions. Reusing the existing building volumes at Hæstrupgård also creates a connection to the history and soul embedded in these, bringing a unique opportunity to experience and understand the culture, the buildings and practices of the rural areas. Mixed in with new functions and architectural interventions, new life is brought to the buildings, and the contrast between new and old finds a gentle balance where new qualities are unveiled.

An extensive assessment of the buildings was conducted as a tool to understand and define the architectural qualities in the buildings, enabling a larger perspective on handling the transformation. Hæstrupgård roots in an old history of the agricultural community with details, materials and constructions showing the craftsmanship of the time. Preserving the original expression enables these qualities to be maintained, but this strategy is not without challenges. As the desire was to leave the envelope as intact as possible, the new functions needed to fill out the existing defined spaces. This resulted in the concept of inserting new 'boxes', contributing to the architecture, embracing the old, the new and the future. Furthermore, energy optimisations and simulations were conducted, leading to a new and improved building volume with a pleasant indoor climate and without needing excessive amounts of new materials.

Located in the rural landscape, Hæstrupgård invites to communicate the qualities of nature and our connection to it. The reinvention of Hæstrupgård inspires visitors to use and enjoy nature, experiencing the impact this brings. Reclaiming the footprint of an old stable not only tells the history of the manor but also enables the establishment of vegetable gardens, acting as an interactive learning place and source for local produce. The reinvention of Hæstrupgård provides a unique experience in the rural landscape.

Reflection

Designing a project based on the Integrated Design Process (IDP) requires extensive research, analyses, and evaluations to obtain a sufficient integration of architectural and engineering aspects. Combining these two, often conflicting, fields can be a challenge for the process, as iterations need to be examined with both aesthetic and technical qualities in mind. The greatest challenge has been to combine analyses, design proposals and simulations, to ensure decisions were made on a fully enlightened basis and the best possible proposal was obtained. The benefits of working in this interdisciplinary field are the knowledge and understanding of multiple perspectives that are gained through the process, resulting in design proposals of a higher quality. This thesis has concluded in a design proposal for a transformation project where the interdisciplinary field between these two professions has been thoroughly worked through, leading to a project of high architectural and technical quality.

Transforming a building is demanding, as the existing buildings and their historical value have to be considered during the process, and design decisions need to be made on a well-made foundation, obtained through extensive preparatory work. Some of the work required is the mapping and understanding of the building volumes. In many cases, as in the case with Hæstrupgård, there might not be any existing technical drawings in the archives, as these can be lost over time, and many modifications could have been made in the lifetime of the building. This necessitates the architect to be able to measure out, determine and evaluate the existing, with consideration to details, constructions, materials and so forth . This part was very challenging, but if a part of this process is misinterpreted, the architectural quality is lost. It is therefore important to take the time and map out the buildings thoroughly, to ensure the history and embedded soul are preserved and passed on to future generations. The models, technical drawings and analyses in this thesis are therefore based on the comprehensive preparatory work and measurement of Hæstrupgård, obtained through

multiple visits, images, aerial and historical photographs.

With sustainability as a primary focus in the building sector, transformation projects have become as relevant as ever, but all parts of the building sector, from the architect to the craftsmen, need to improve and be aware of the qualities that lie at hand. The challenge needs to be met, and the building principles changed. Existing materials are often of a high quality from a time when craftsmanship was a virtue and time was secondary . These materials can be reused or repurposed in a variety of ways, leaving only the imagination to uncover new methods. This thesis presents one way of revitalising empty and functionless buildings through gently adding new functions to old buildings, but the principles are applicable to various projects and can be used in a variety of constellations.

Building into an existing context and history has been one of the primary focus areas in this thesis. Quoting Johannes Exner 'Buildings are like living beings' (Exner 2007), the life that has been lived in the buildings and the subsequent influences of these lives are a part of the buildings and their history, a history that provides a unique beauty and feeling. Preserving the embedded soul in a building is a challenging task, and many considerations regarding this have gone into the transformation of Hæstrupgård. Visiting the manor for the first time gave an introductory impression and understanding of the buildings, and ideas started to form. With the desire to preserve the outer expression as far as possible, the box concept allowed putting in new functions, while ensuring a harmony and balance between new and old. The transformation theories presented in this thesis formed the foundation for the expression and principles of the box, and extensive material studies assisted in finding the right balance, where the new didn't disregard the existing but rather elevated the atmosphere and experience. This balance is challenging to find, and despite many efforts, it can still be a subject for discussion, as opinions are many. Obtaining a successful transformation will, however, bring aspects and atmospheres into a project that cannot be obtained in new builds.

Creating a project of this size and complexity requires extensive economic funding. Reflecting on this, the division of the project

into stages could ensure a healthy approach to the economy and help accomplish the project. The following is a proposal to this division, stating the purpose and influence of the different stages (see fig. 128). The most beneficial division, however, relies on multiple external aspects. The first stage could be to transform the stable to generate interest and income, ensuring a healthy economy and visitor flow. This part of the transformation is also less intervening, why the economic contribution is manageable. When the first stage has been implemented, the outdoor areas could be established through a second stage, supporting the newly added functions and helping to define the area. This stage will also help increase the appreciation of nature and Danish agriculture, as visitors are invited to partake in the processes behind growing produce. The third and final stage could include the transformation of the barn, as this part is more extensive and relies on a stable income. The establishment of this part would invite new types of visitors to Hæstrupgård and facilitate longer stays, offering a variety of activities and experiences.

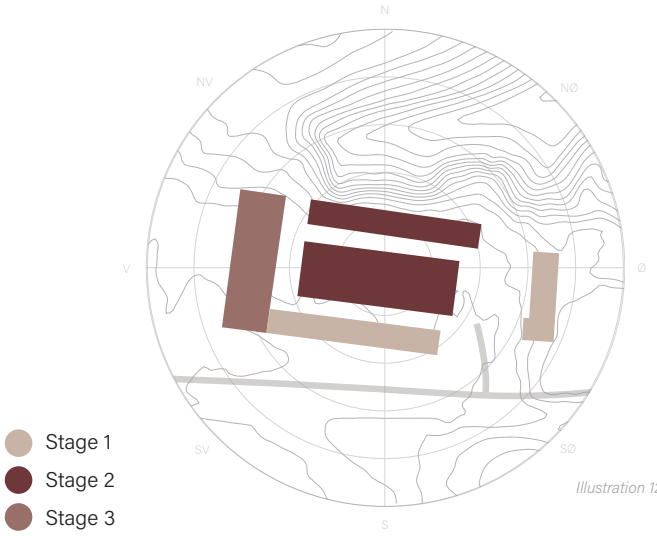


Illustration 128 - The three stages the project could be divided into

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Illustration 8 Enevoldsen, Bjørn Pierri for Realdania (2018) 'Børglum Kloster genskabt som lokalt kulturcentrum' in 'Fremtidens Herregårde' by Realdania, p. 131, Available https://realdania.dk/publikationer/faglige-publikationer/fremtidensherregaarde [Accessed 12.03.2025]

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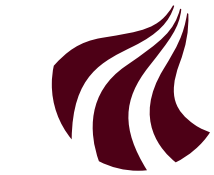

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Appendix

Reinventing Hæstrupgård

Preserving the cultural heritage in the countryside

MSc04 - ARCH 15 - Spring 2025

Malene Mann Christiansen & Mia Andersen Harder

Appendix

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THESIS TITLE PAGE

This form must be submitted for all theses written in programs under the Study Board of Architecture and Design, and it should be placed at the beginning of the appendix section of the assignment.

A printed copy of the form must be submitted along with the printed copy of the thesis.

The information given in this form must also be available in PURE.

(All fields must be filled out)

Program: **Architecture** ☒ **Industrial Design** ☐ **Urban Design** ☐
This thesis was written by (full name): Malene Mann Christiansen
Mia Andersen Harder
Title of the thesis: Reinventing Hæstrupgård – Preserving the cultural heritage in the countryside
Supervisor´s name: Michael Lauring
Submission date/year: 2nd of June 2025
Is the project confidential? **Yes** ☐ **No** ☒
External collaboration* **Yes** ☐ **No** ☒
External collaboration partner (name of company/organization): **-**
Contact at external collaboration partner (title, name og email): **-**

Wind

Wind exposure

Denmark is located in the zone of prevailing westerlies, resulting in strong winds primarily from the west, but with frequent changes in wind direction. The local surroundings can influence the wind where open areas with flat fields are more exposed to the strong winds (Bjerg 2012). These factors make it relevant to consider the wind conditions and ensure areas with shelter, to ensure a pleasant environment for outdoor stays. Furthermore, the wind can have a large influence on the building's energy consumption and sustainability, why it should be utilised through design strategies. Weather data has been used from Tylstrup, as there is no data from Hjørring (Betti et al. 2023).

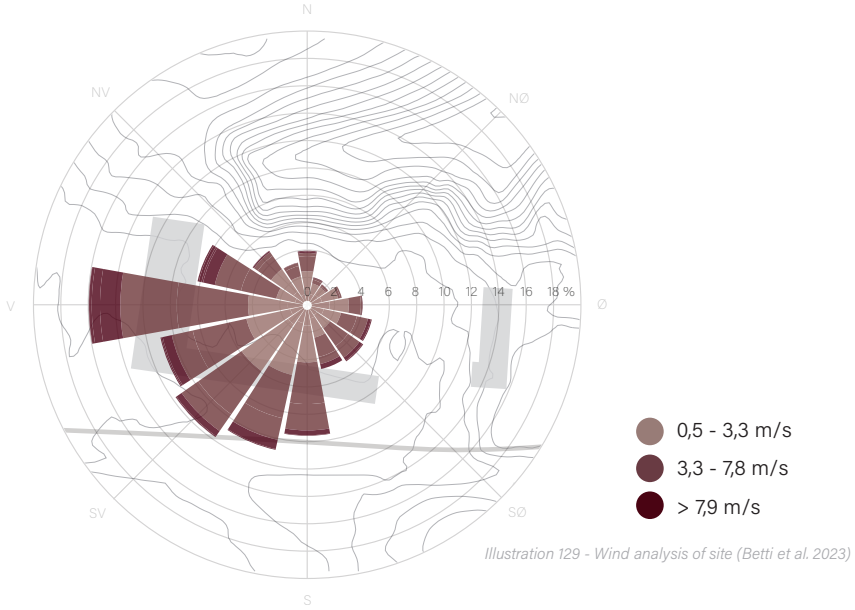


Illustration 129 - Wind analysis of site (Betti et al. 2023)

Sun

Shadow study

A solar analysis can provide insights regarding the sun's path and areas exposed to sun or shadow. These insights can be used when utilising the outdoor areas, to ensure a pleasurable outdoor environment with options for sun during winter and shadow in the warmer summer. The analysis of Hæstrupgård shows large areas in the internal courtyard with possibilities for sun during summer, but not sufficient areas with shadows to seek shelter from the sun. During winter the buildings shade the sun, leaving the courtyard without a lot of sunlight.

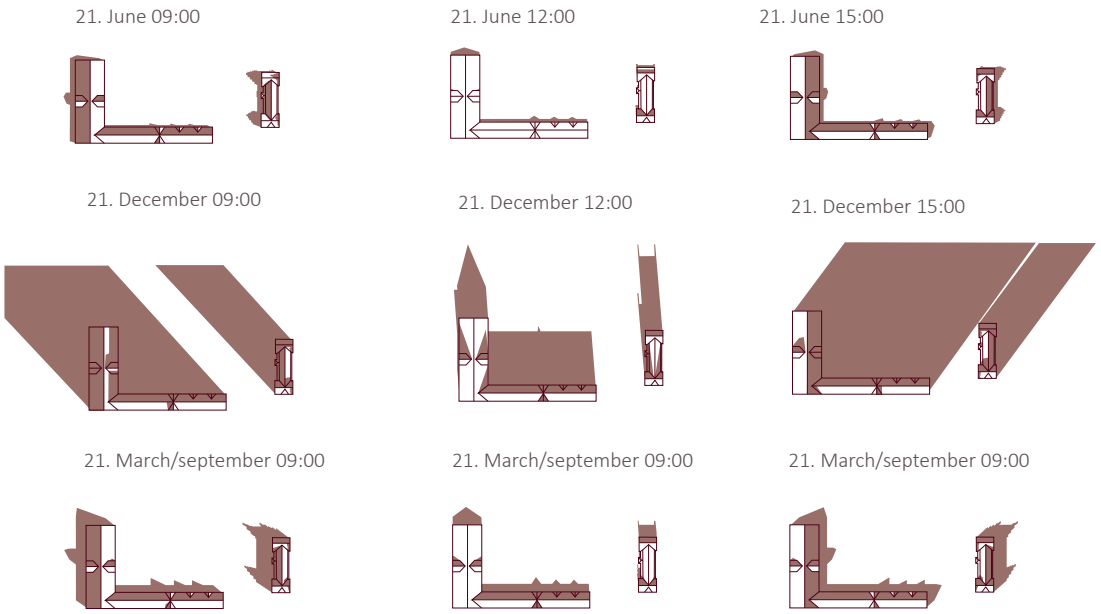
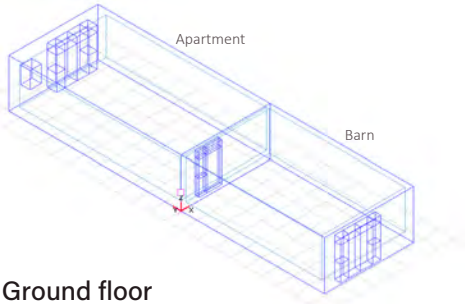


Illustration 130 - Solar analysis conducted in Revit

BSim results

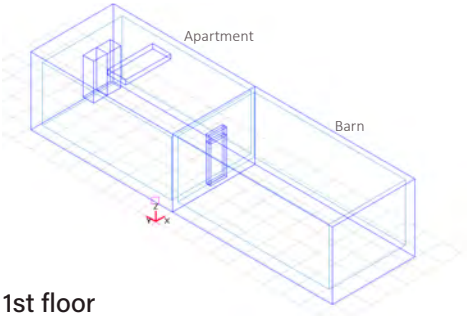
Indoor climate simulations

Using BSim, different investigations and simulations were conducted to strive towards a pleasant indoor climate in the new apartments in the barn. This approach helps to integrate aesthetic and technical aspects, as well as the process of decision making. As the barn had an existing envelope, the new apartments would only need sufficient re-insulation to ensure an optimised envelope. Defining the right amount of insulation and the structure of the new walls was helped along with BSim, ensuring the chosen construction was sufficient regarding the indoor climate and excess temperature. Furthermore, simulations supported decisions regarding natural ventilation and the placement of windows in the apartments. In the case of this thesis, the interesting values and parameters are therefore regarding temperature, why these values are extracted from BSim. The aim was to comply with the Danish building regulations, which require a maximum of 100 hours above 27 degrees and 25 hours above 28 degrees in accommodations. (Bygningsreglementet 2021)



Ground floor

The apartment is modelled as a heated room and the barn as an unheated room.



1st floor

Model is based on the same principle as the ground-floor apartment. As this apartment has a vaulted ceiling, an average of the room height has been used to determine an estimate of the total volume.

Ground floor results

With windows facing west, the solar gain has a minor impact. Furthermore, the established window openings facilitate sufficient natural cross ventilation.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Days	31	28	31	30	31	30	31	31	30	31	30	31	365
Hours	744	672	744	720	744	720	744	744	720	744	720	744	8.760
H > 21°	0	0	0	114	189	282	426	372	137	0	0	0	1.520
H > 26°	0	0	0	0	0	6	24	17	3	0	0	0	50
H > 27°	0	0	0	0	0	2	7	5	0	0	0	0	14
H < 18°	0	0	0	0	0	0	0	0	0	0	0	0	0

1st floor results

Located at the topmost part of the barn, with large skylights, these apartments are at a higher risk of excess temperature. The simulations show an average higher temperature, but the sufficient cross and stack ventilation ensures the temperature stays below the requirements.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Days	31	28	31	30	31	30	31	31	30	31	30	31	365
Hours	744	672	744	720	744	720	744	744	720	744	720	744	8.760
H > 21°	0	0	0	156	217	487	512	443	189	0	0	0	2.004
H > 26°	0	0	0	0	0	36	47	29	4	0	0	0	116
H > 27°	0	0	0	0	0	12	24	17	0	0	0	0	53
H < 18°	0	0	0	0	0	0	0	0	0	0	0	0	0

BE18 results

Investigations into the three buildings' energy demands have been conducted to ensure that the buildings comply with the Danish Building Regulation. The following presents the key numbers extracted from the calculations made using the program Be18. As stated in the design criteria, the goal was to lower the energy consumption to below Renovation Class 1, which was accomplished by optimising the building's envelope.

The energy demands for the buildings could potentially have been lowered further by adding photovoltaics, as the Danish Building Regulations allow for lowering the energy consumption if some of the energy is gained from a renewable energy source.

The barn

Renovation Class 2

Energy demand	72,2 kWh/m² year
Calculated Energy demand	51,8 kWh/m² year

Contribution to energy demands

Heat	60,3 kWh/m² year
Electricity	0,3 kWh/m² year

Renovation Class 1

Energy demand	54,2 kWh/m² year
Calculated Energy demand	51,8 kWh/m² year

Net need

Room heating	43,7 kWh/m² year
Warm water	13,7 kWh/m² year
Cooling	0,0 kWh/m2 year

BR 2018

Energy demand	31,0 kWh/m² year
Calculated Energy demand	51,8 kWh/m2 year

Heat loss from instalations

Room heating	2,9 kWh/m² year
Warm water	0,6 kWh/m² year

The stable

Renovation Class 2

Energy demand	97,8 kWh/m² year
Calculated Energy demand	46,9 kWh/m² year

Contribution to energy demands

Heat	48,4 kWh/m² year
Electricity	3,0 kWh/m² year

Renovation Class 1

Energy demand	73,4 kWh/m² year
Calculated Energy demand	46,9 kWh/m² year

Net need

Room heating	39,8 kWh/m² year
Warm water	5,9 kWh/m² year
Cooling	0,0 kWh/m2 year

BR 2018

Energy demand	42,3 kWh/m² year
Calculated Energy demand	46,9 kWh/m2 year

Heat loss from instalations

Room heating	2,7 kWh/m² year
Warm water	0,7 kWh/m² year

Main house

Renovation Class 2

Energy demand	81,1 kWh/m² year
Calculated Energy demand	38,5 kWh/m² year

Contribution to energy demands

Heat	44,8 kWh/m² year
Electricity	0,2 kWh/m² year

Renovation Class 1

Energy demand	60,8 kWh/m² year
Calculated Energy demand	38,5 kWh/m² year

Net need

Room heating	27,2 kWh/m² year
Warm water	14,0 kWh/m² year
Cooling	0,0 kWh/m2 year

BR 2018

Energy demand	35,1 kWh/m² year
Calculated Energy demand	38,5 kWh/m2 year

Heat loss from instalations

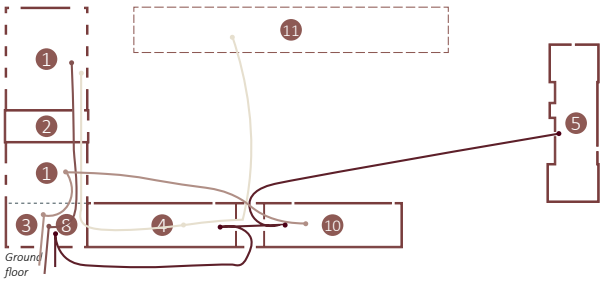
Room heating	3,6 kWh/m² year
Warm water	0,9 kWh/m² year

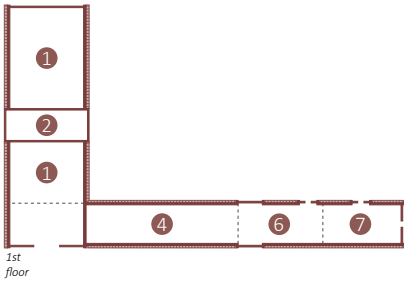
Functions placement - flow

1. Apartments
2. Lounge
3. Shop
4. Course kitchen
5. Café
6. Staff room
7. Office
8. Reception
9. Home of owner
10. Multipurpose room
11. Herb and vegetable garden

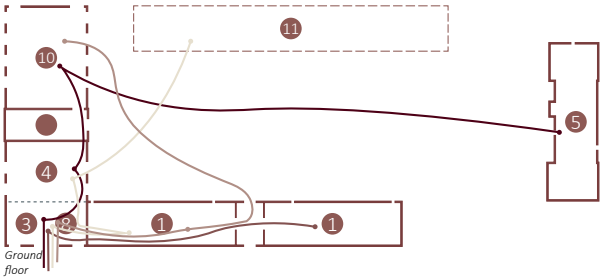
Course visitors
Check-in process
Day visitors
Event visitors

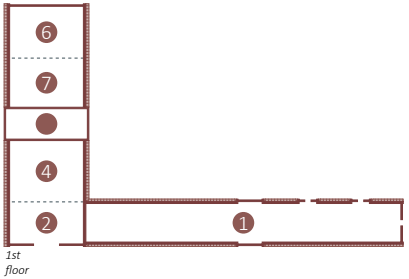
Iteration 1



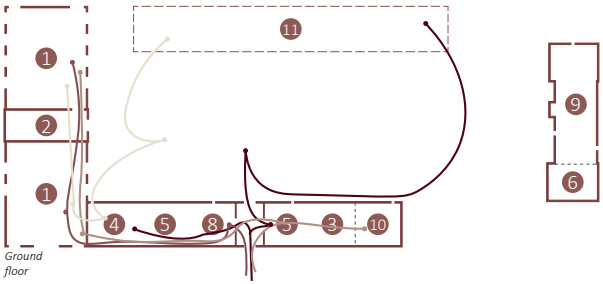


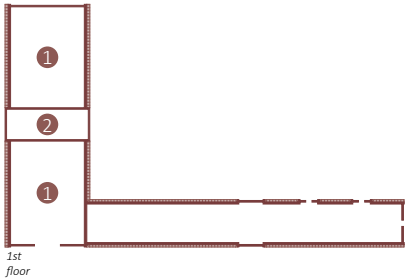
Iteration 2

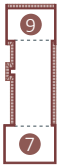




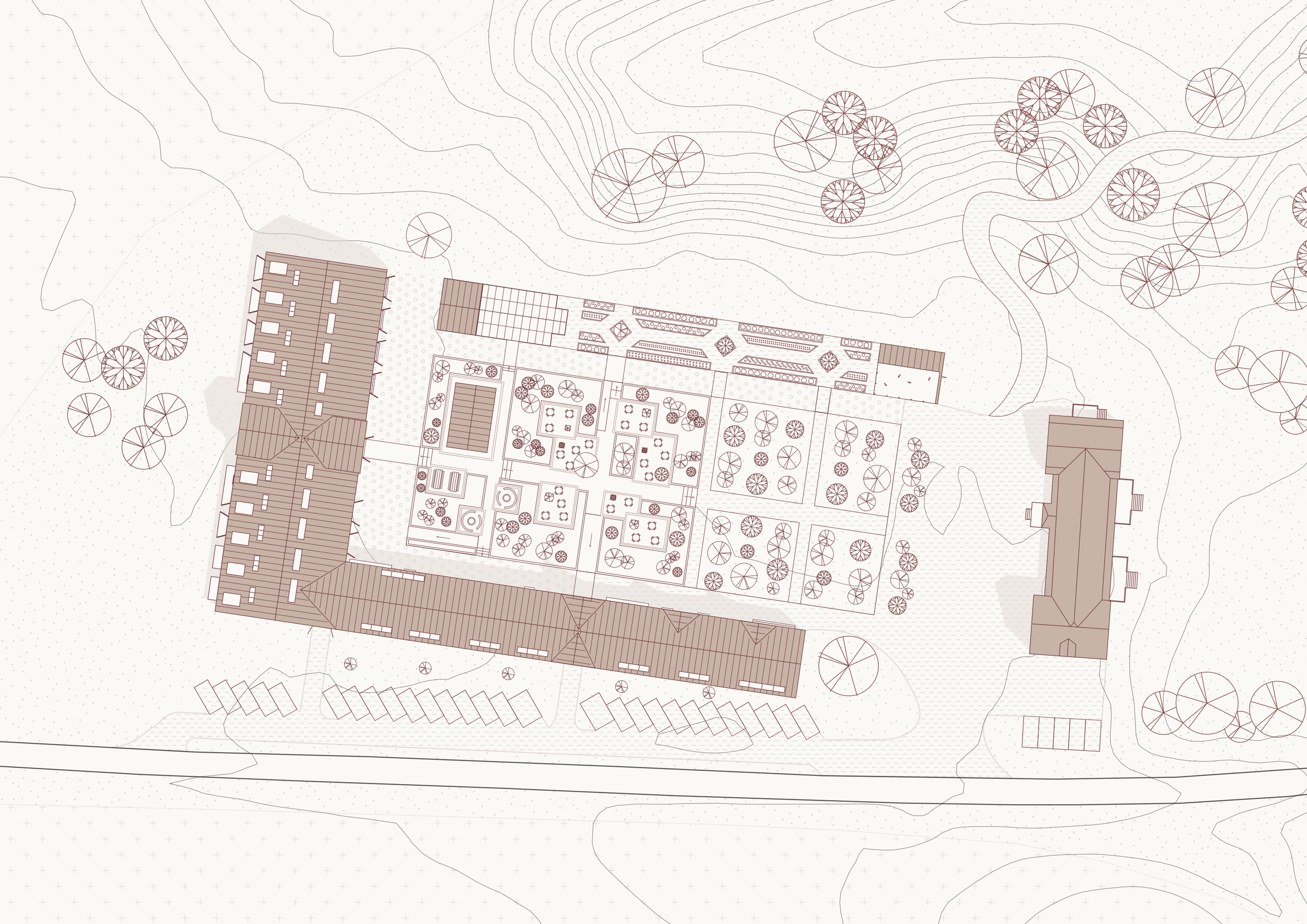
Final proposal



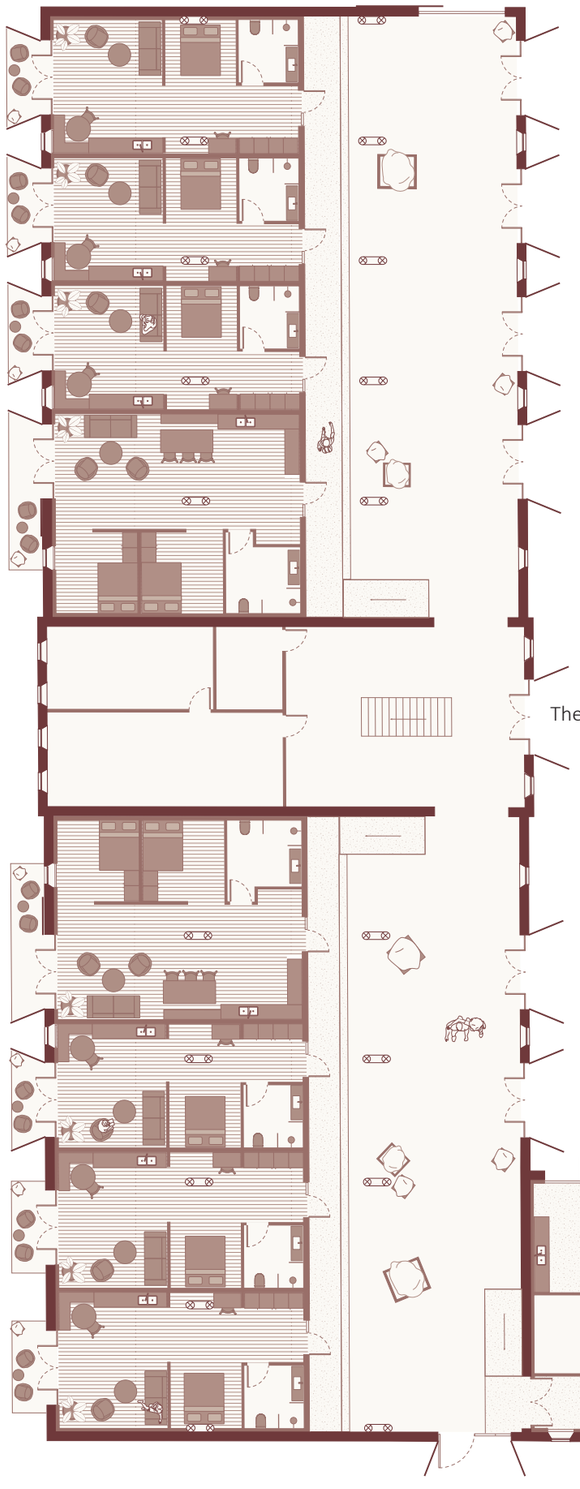




Masterplan 1:500

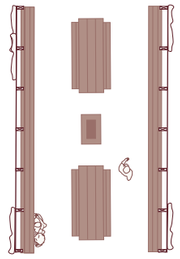


Ground floor plan 1:250

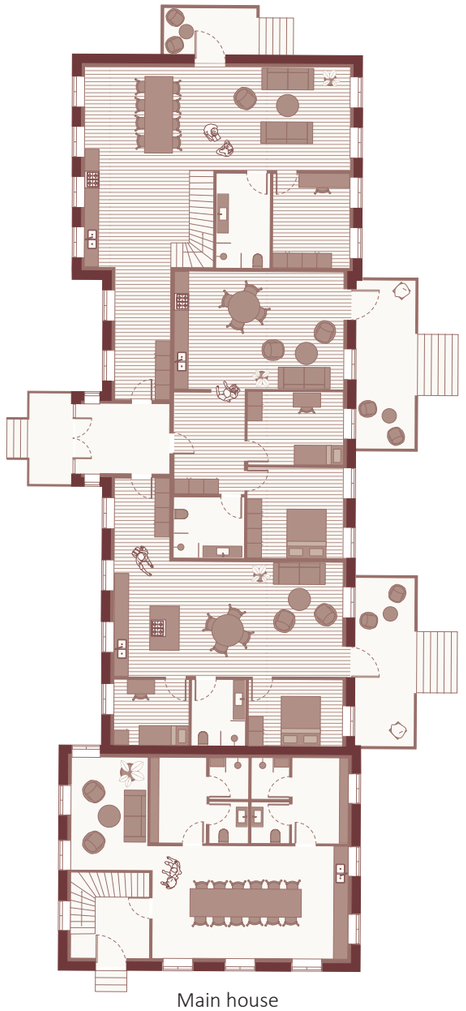


The barn

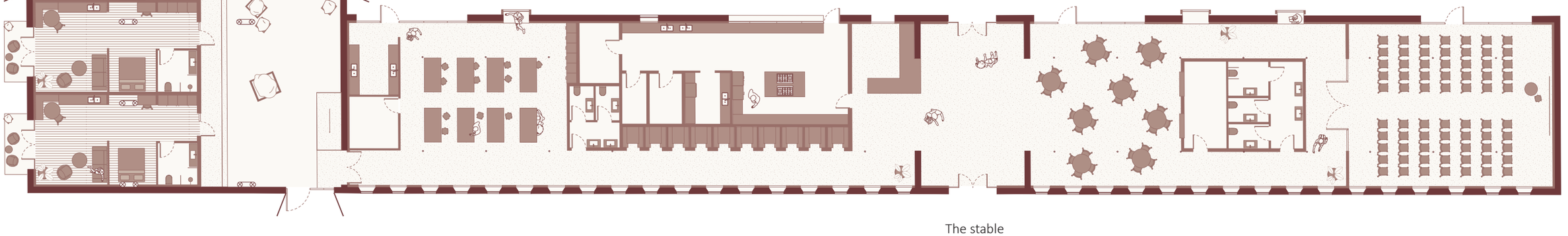
Orangery



Outdoor kitchen



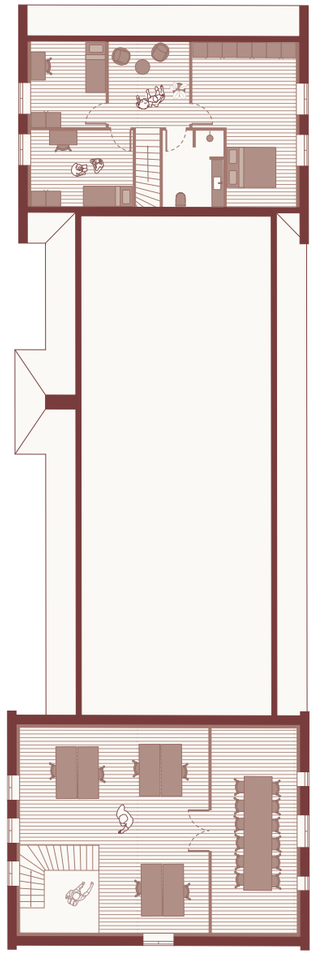
Main house



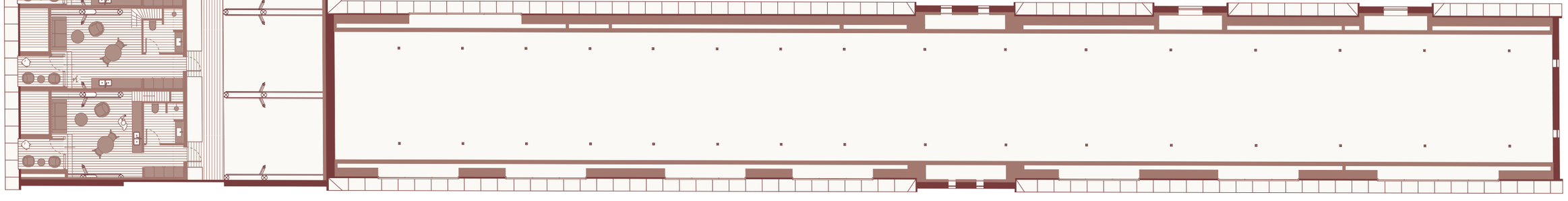
The stable

First floor plan 1:250

The barn



Main house



The stable