RE:GENERATION

Building common ground

Bram Franken

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Abstract

Throughout the years, the environment surrounding us has undergone rapid changes. Many of the places we once knew only live on in our memories. The significant challenges that are confronting the world today are demanding even more drastic transformations. The pressing question is how we can navigate these changes without relinquishing our connection to our past. Change is an inherent aspect of human existence, and as we look at the generations before us, we can draw inspiration by the resilience they showed. It is the art of evolving while maintaining an awareness of our identity and environment.

The genesis of the project lies in a childhood memory. A place so transformed over the years, that it is scarcely recognizable. Going back to the area where my grandparents once had a horticultural farm, I encountered a landscape drastically altered by large-scale developments. Divided by railroads and highways, the land that once was rich in cultural landscape and rural heritage now hosts generic industrial structures, erasing much of our predecessors' existence. The land, once teeming with forests, arable land and pastoral scenes, now merely consists of asphalt and anonymous boxes. The social and ecological fabric of the area are profoundly disrupted. How can we build on common ground with respect to local culture and nature?

The project unfolds in two distinct phases. First, the area's transformation is reconstructed, charting the shifts in the landscape and the evolution of rural architecture over time. Through this process, the underlying structures and shared values of the former countryside emerge, showing a strong relationship with the environment and a highly developed ecological awareness.

Following the metaphorical clean slate, these valuable characteristics have mainly vanished, fracturing the bond between humanity and its local surroundings.

The second phase of the project pivots towards regenerating these forgotten values, endeavoring to strengthen social, cultural, and ecological ties. At the plot where my grandparents' lost farm once was, a regenerative urban farm takes root, blending traditional and contemporary functionality. This multifunctional structure encompasses residences for future farmers, production facilities such as a workshop and bakery, educational spaces for teaching and sharing knowledge, and recreational areas such as a tasting room and atelier. It uses the unused vacant pieces of land, considering them as common ground, for reintroducing cultural landscape elements. As the farm gradually grows into the area, it shares a holistic philosophy based on an environmental consciousness. Grounded in vernacular, repurposed and contemporary materials and techniques, the urban farm serves as a beacon of change fostering communal reconnection, and nurturing the revival of local culture and ecology.

de contente mens
the satisfied man

He is not against the new,
not against progress,
not against earthly pleasures
but is at the same time life-wise.
Life as well as his nature made him
him somewhat philosophically resigned.
He does not let himself be fooled,
does not expect too much,
but rejoices in the good things around him
and all this forms his contentment in life.

A statue that symbolises the mentality of the former rural people of Brabant.
It was given to someone after a long life of hard work, without complaining
and with embracing the small things in life. It stands for adaptability
without loss of identity and local power in a globalising world.

Foreword

In the past few years, I have worked on various assignments within the built environment, both at the academy and with different architectural firms. Here, I encountered a number of challenges that have since occupied my thoughts. The following document is my graduation project for the Academy of Architecture. It encompasses my fascinations, builds upon challenges, and further develops my vision within this realm.

The graduation project can be seen as a cornerstone of the foundation of my future career. The themes discussed in this document continue to captivate me and will evolve over time. Running through it is my desire for a nature-inclusive architecture, serving as a common thread. I believe in a symbiosis between nature and architecture, viewing the world as one ecological system. This will lead to a sustainable built environment where there is room for everyone.

After working on this assignment for over a year, I would like to express my gratitude to those who supported and guided me. Firstly, my mentor Estelle, who always made me feel welcome and, with her critical perspective, consistently challenged and propelled the project forward. She was always there for me, even during more challenging phases. It was a collaborative and enriching experience from which I learned a great deal. Thanks a lot also to Hinke for organizing and, above all, for the trust and support, even during moments when the project faced obstacles. Finally, I would like to thank Joost and Jan for reviewing and attending the presentations, providing constructive critiques that both challenged and inspired me.

It was a long and sometimes challenging process, by trial and error, but above all, it was very educational. I carry the lessons learned with me, and I look back with a sense of fulfillment. I feel that the project has brought me a great deal, and I will carry this forward into the future.
I hope that the book can also serve as an inspiration for others, and I wish the reader much enjoyment in exploring this document.

Graduationproject

Academy of Architecture Rotterdam
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Content

arcadian

civilized

cultivated

modernised

citycentric

generic

Transformation of the landscape

Introduction

Every generation adds a chapter to the story of this world. It is hard to be understood without having a notion of the chapters before. Many lifetimes have shaped the world as we know it today. Every generation continues in a contemporary way, adding its own chapter to the storyline.

The project starts to look at the local environment I grew up in, two chapters ago, into the generation of my grandparents. My childhood memory of this place is very warm but the world they created has already disappeared for a big part and only little traces are still left. Due to the radical changes, it becomes hard to find their hand in our existence.

I'm interested into the world of my grandparents, and I want to get a better understanding of the forces that made it change. I want to look for traces of the past and see what former values are still to be found. I'm intrigued by the rural environment that I can remember from my childhood. The way the people lived with the landscape fascinates me and this relationship can be directly seen in the world they shaped. They were constantly adapting to sustain their own future using only resources that could be found in their direct surroundings. This resulted in a unique functional aesthetic which represented their local culture. A built expression of the life they lived with a deep consciousness of the dependency and inclusion of nature.

After the turn of the century the rural area in this place changed radically. Big developments swept away the built environment that was and divided the area into an industrial, residential, and recreational site. A generic place with little sense of time, nature, and culture. The city has grown into the countryside and has changed it unrecognisable.
After the fast disappearance of the rural area people started to feel lost and nostalgia grew. We are living in a world which is constantly changing, and we outlive places grew up in. This can cause people to deal with a lost identity.

Things always change, but it doesn't mean we have to start from scratch every time. What can we learn from our grandparents to regenerate local culture, strengthen our bond with the environment, and reconnect with the values we need to sustain our future?

Conception

There are many different conceptions arising with similar terms. Terms that will be used quite often during this project. The purpose of this list is to explain the meaning of words and therefore create clarity.

Change	When something becomes different or undergoes a transformation. It can happen in various aspects of life. Change can bring both positive and negative effects, and it often requires us to adjust and adapt to the new situation.
Culture	Created by human.
Ecology	The relationships between living organisms and their environment.
Evolution	The gradual process of change and development through successive generations.
Farm	Rural building.
Generation	All of the people born and living at about the same time, regarded collectively. Every generation is made up of a 15-year period.
Generic	Something that is general, without specific characteristics or attributes.
Genius loci	The unique and characteristic essence of a specific place or environment.
Hollistic	A philosophy that emphasizes understanding systems as a whole, rather than just the individual parts, and the interrelationships between those parts.
Identity	Who we are as individuals, including our beliefs, and values. It's shaped by our experiences and choices, and it affects how we think and behave.
Land	Earth and atmosphere surrounding us.
Landscape	Composition of elements on the horizon.
Nature	Born without human intervention.
Nostalgia	The sentimental longing or affectionate remembrance of the past.
Permaculture	A merging of the words permanent agriculture and permanent culture. In a permaculture people work with rather than against nature.
Reconstruct	Build or form something after it has been damaged or destroyed.
Reconstruct	A significant change that happens in a relatively short period of time.
Rural	Areas that are located in the countryside or outside of cities. Fewer people live in these areas and they are known for their natural landscapes, farms, and open spaces.
Vernacular	The architecture that is specific to a particular region.
Yard	Terrain surrounding a building.

Project

Fascination

The cultural landscape of Brabant

Layered composition of the build environement

The intriguing rural heritage


Co-existence of time and culture

Motivation

The starting point of the project is my remembrance of the lost farm of my grandparents which has been demolished, around the turn of the century, to make place for some large-scale area developments. Due to these interventions a big part of the former cultural landscape, including its rural heritage, has disappeared. I'm wondering what forces have shaped the landscape of today and like an archaeologist I'm interested in the sequence of moments that created the place to the way it is now.

Problem

The project questions the radical interventions in the former rural landscape that swept away big parts of the local culture and have led to generic places with little sense of time, nature, and culture. Places where there is almost no room for interpretation and the unexpected.

Rapid changes are hard to keep up with for human beings. People constantly have to adapt and can no longer recognise themselves in their own environment.
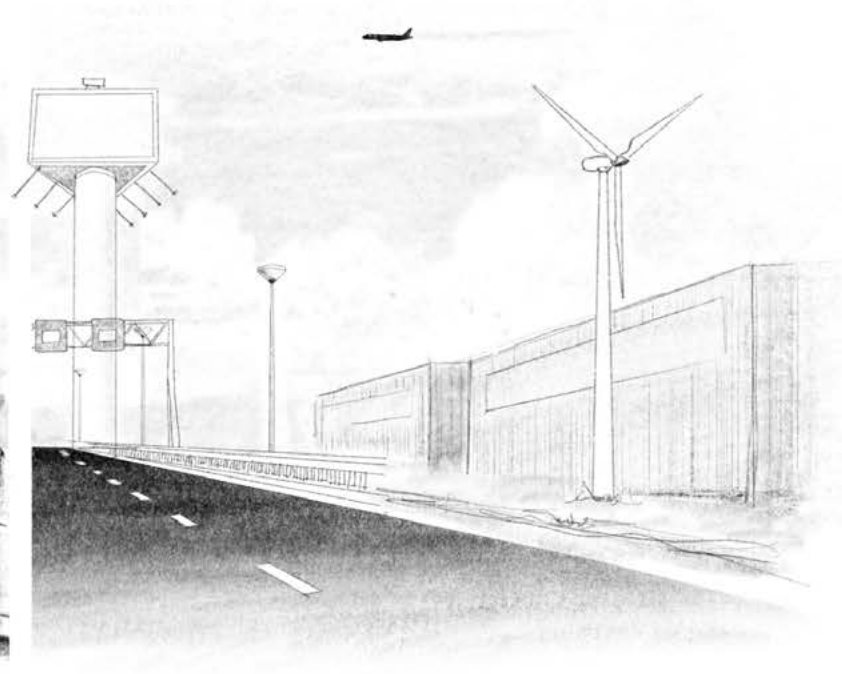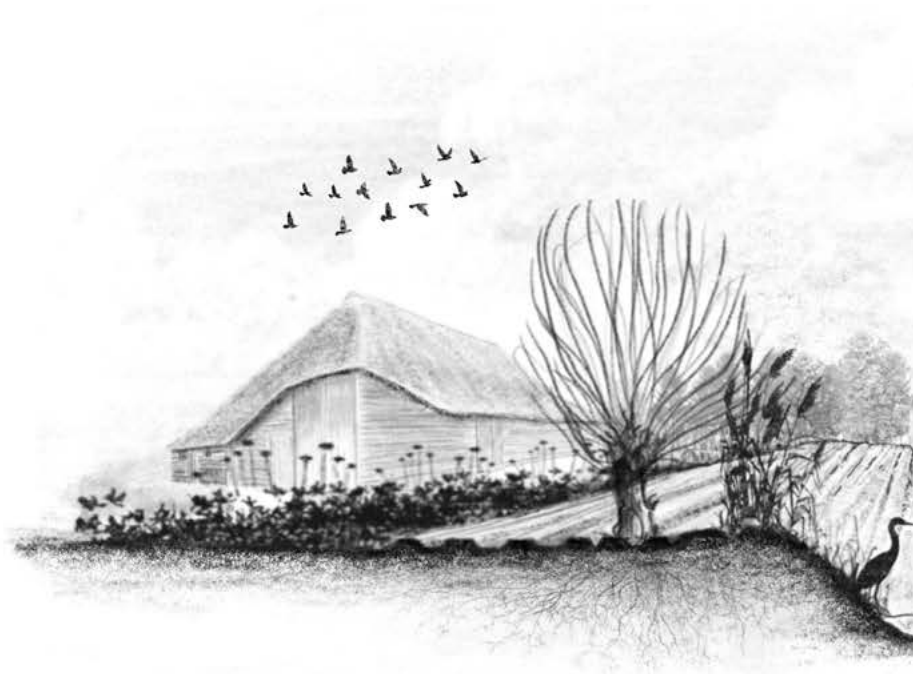
Question

How can we build on common ground in respect of nature, and local culture?

Assignment

Gain insight into the revolutionary interventions in the built environment and continue to work with a design that has emerged from evolution. This involves forming a vision and sketching a prospective for a desirable future for this area.
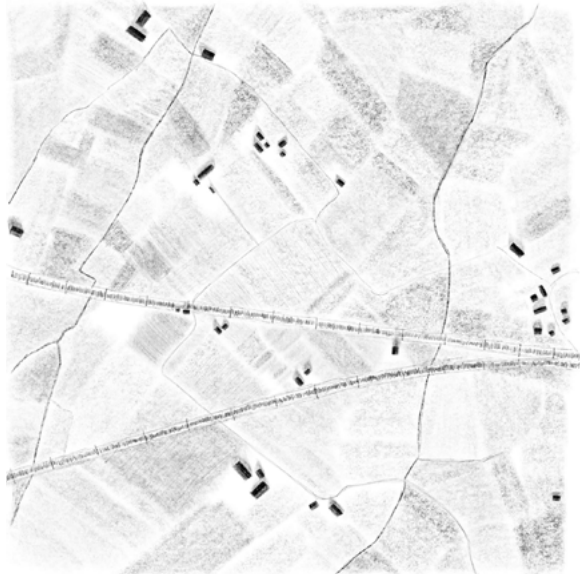
1980

2024

Location

51°35′36.0″N 4°44′36.2″E

The centre of the project will be the plot where the farm of my grandparents once stood. This place is now a suburban wanderspace cut off by buildings and infrastructures. The project will look at the built environment directly surrounding this spot. This will include the stadium area, business area, residential area and the left-over pieces of land cut off by roads.

Method

Relate
Comparing the past and the present, assuming there is a difference, looking at those differences and finding common ground.

Redraw
Working in an artisanal way with today's tools, to really get to the bottom of something. Drawing buildings and landscapes to learn at every scale.

Reflect
Taking time to look back on the work and learn at every step.

Relevance
Taking a critical look at the relevance of the project and see what it contributes to the local environment and whether it solves the problem.

Regenerate
Incorporating the identified similarities, exploring synergy opportunities, and thereby creating added value.

Criteria

Relevance project
The project holds a certain relevance today in the light of todays challenges.

Structure
The overall project is coherent, the structure and storyline are easy to understand.

Research
The research has been extensive and thorough.
The conclusion is appropriate and evident for the research.

Method
The method achieves the set goal.

Vision
The vision has been thoroughly developed and possesses sufficient profoundness.

Elaboration
The research has been translated into a clear design that demonstrates competence.

Reflection
Critical view of own action.

RE:CONSTRUCT

Past

Present
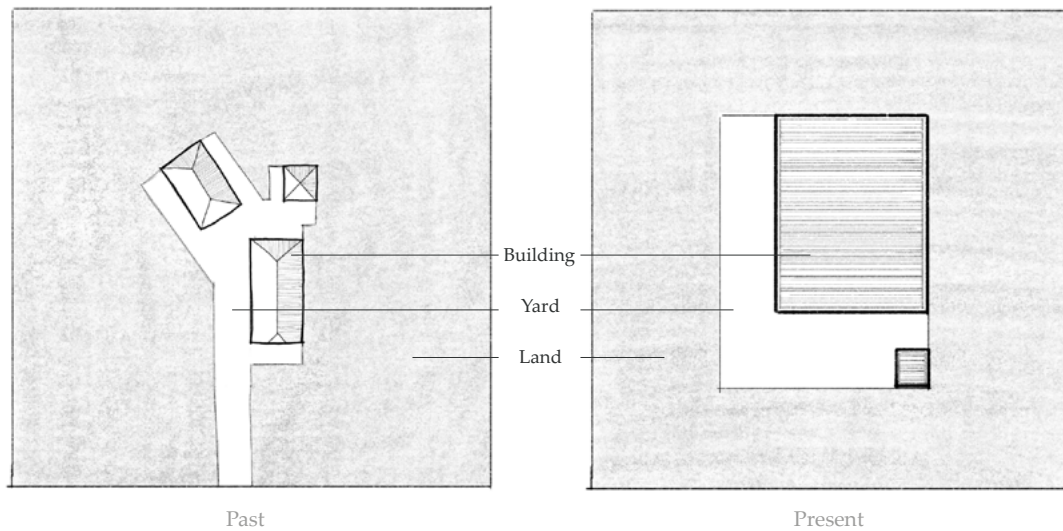
Reconstruct

With this research I would like to get a better understanding of the way we shaped our current environment. I want to look at a specific part of Brabant called the Baronie, the rural place where my grandparents once lived and also the place I grew up in. I would like to look at our different generations and see how our lives and the objects that derived from it developed over time. By reconstructing the past and the present I would like to get a better notion of this rural evolution handed over by multiple generations.

Building
The maps below show the location sixty years after each other. Next to the number of buildings the scale also changed explosively. In the decade starting in the year 2000 the environment changed radically. Vanishing away most of the farms that once were. Buildings that resembled the life's of many generations that had lived there, but which had to make place for big industrial buildings. This rapid change in the built environment had a big impact on the place. Only few elements remember us of the life that was. The reconstruction will look into the buildings of both periods. Investigating the way, they were developed and how they are part of their social and geographical environment.

Yard
The yard is the direct environment surrounding the building, enclosed by the land. This area is most of the times facilitating the use of the building as well as the cultivation of the land. Although the appearances are very different you can still recognize a lot of similarities or parallels in there functioning. The yard is a serving space providing in the needs of the environment.

Land
The land enclosing the yard and the buildings in it are gradually cultivated over time. There are no authentic elements to be found anymore. At first the land was used to produce food and a place for the cattle, but this rapidly shifted to a more logistical function changing the soil into asphalt. The environment is paved and is domesticated by human life. Where the seasons and sun once dictated the rhythm, life now continues without stopping.
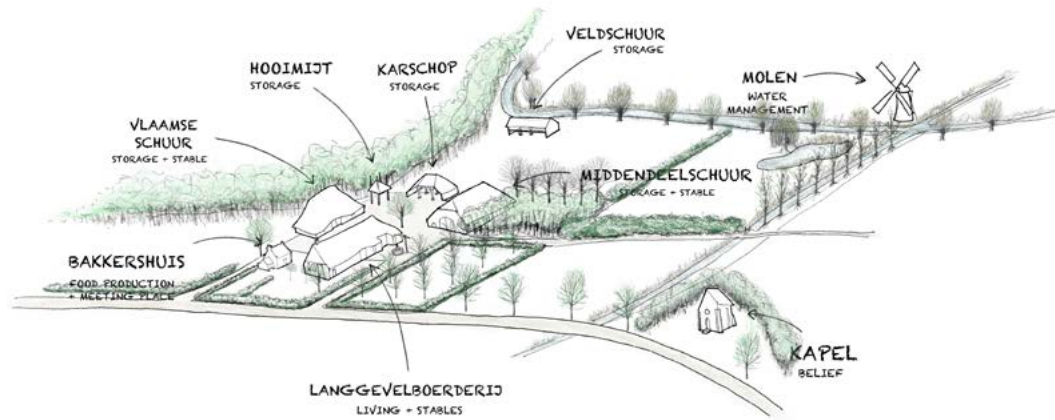
Reconstruct

Past

Reconstruct

Past
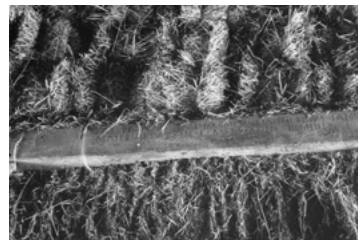
Elements

The following pages review the associated elements of what a rural place formerly consisted of.

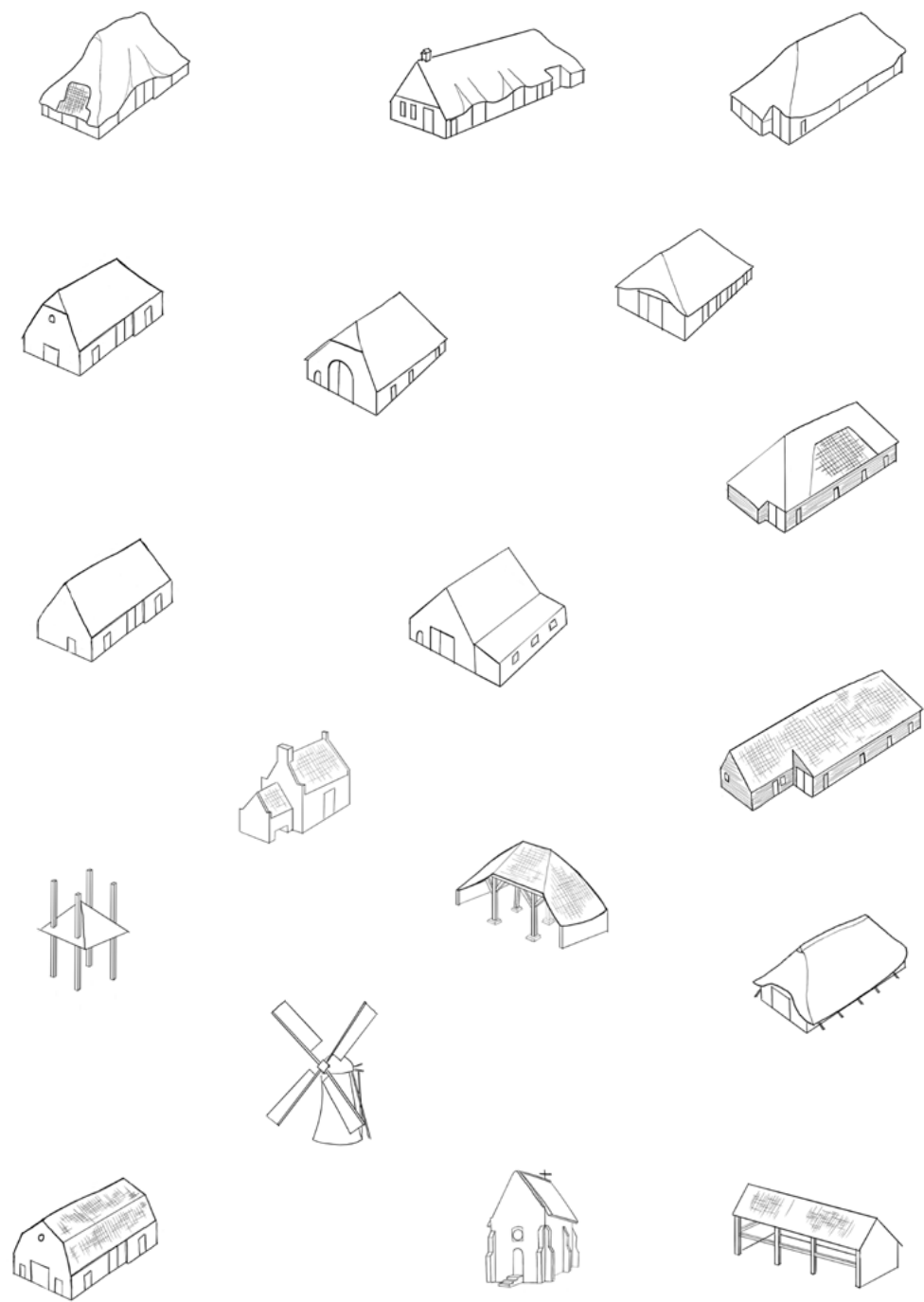| Building	Yard	Land
'Langsdeelschuur'	Well	Field
'Dwarsdeelschuur'	Kitchen garden	Brook
'Zijlangsdeelschuur'	Orchard	Trees
Haystack	Ornamental garden	Hedge
Bakery	Solitary trees	Roads
'Karschop'	Fence	Lighting
Sheepfold	Drinking reservoir	
'Mansardeschuur'	Pavement	
Field barn		
Mill		
Chapel		

Building

Traditional Brabant farmhouses come in three typologies: 'langsdeelschuur', 'dwarsdeelschuur' and 'zijlangsdeelschuur'. The difference is in the orientation relative to the parcel. For example, the 'langsdeelschuur' is parallel to the long side, providing an expansive space for storage and agricultural activities. The 'dwarsdeelschuur', on the other hand, is perpendicular to the long side of the land. This makes it ideal for storing hay and livestock, among other things. Finally, the 'zijlangsdeelschuur' that combines both elements.

Additionally, these properties often feature other buildings with unique functionality and purposes, such as chapels and baker's houses.

Hallehuis
archetype
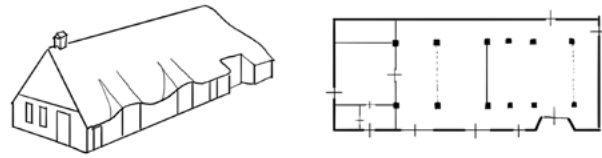
Primitive form typical for this region. Longitudinal building with a separated living- and workspace structurally divided into 3 partitions. The part in the middle and stables alongside.

Oldest form
1650-1850
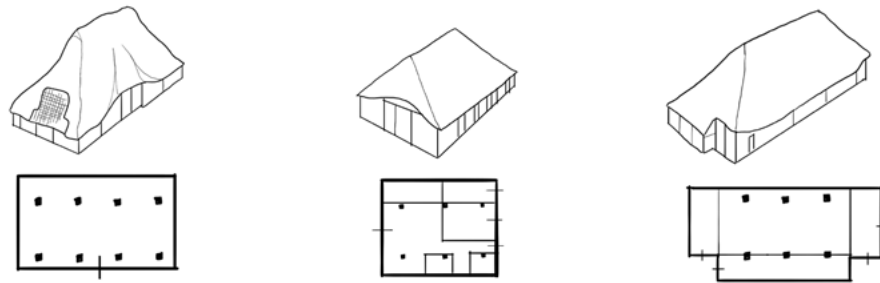
Characteristic of the oldest form are the low facades mainly made of local, natural materials. The organic (shield)roof following the openings of the building. Structure of 3 partitions.

Latest traditional form
1800-1900
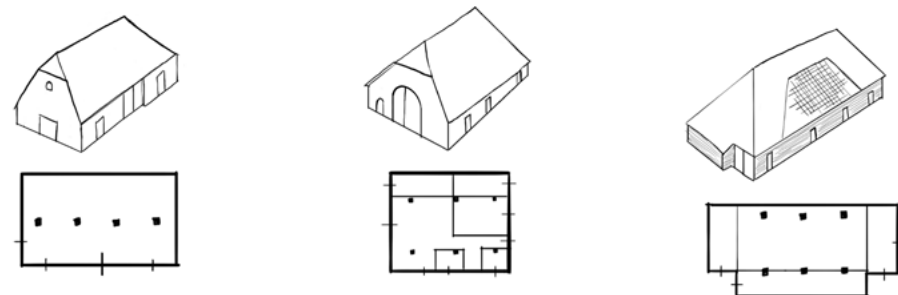
Characteristic of this form is changing the structure of the 'gebint' into two partitions. The shieldroof makes place for 'wolfseinden' and the walls become as high as the door heights.

Latest stadium
1850-1940
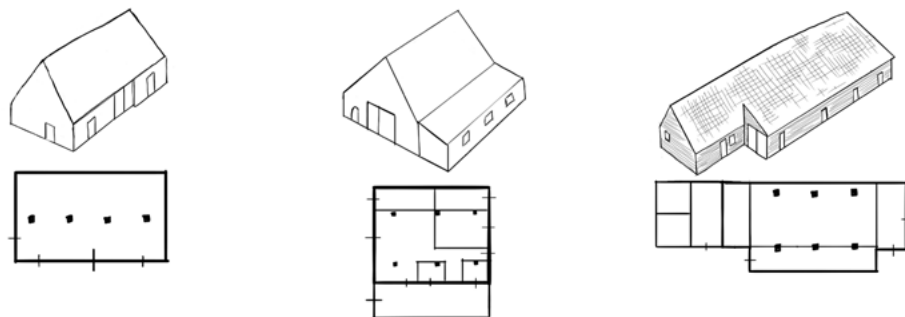
The latest stadium shows a further architectonical decline. The form becomes more rational and gets rid of the 'wolfseind'. The walls are again higher and replaced by brick which are structural replacing the 'gebint'. The thatched roof makes place for standard rooftiles.

Evolution of building

For ages men have been building many types of rural buildings which are all reflecting a specific function. They have been updated over time to provide in their current needs. Because of little money and resources, the local people developed the buildings themselves with the knowledge they inherited from their ancestors. The buildings evolved to sustain their future expressing a historical continuity. In general, most farms derive from the archetypical Hallehuis. A typology almost as old as mankind itself. It was one of the first forms to provide humans in their basic needs; shelter and storage. A mixed-used building under one roof. Its basic form and structure grew bigger over time but still look a lot like the archaic form that once was. It contained its uniformity building and use. However, the relationship between land, yard and building changed considerable. An increase in storage space was needed because of the increasing population and the demand of food. The functions of the buildings stayed the same since the traditional way of farming remained. Unfortunately, nowadays the original function of the rural buildings makes place for a residential one. The traditional way of farming is getting outdated which can be directly seen in the fast incline and bad maintenance of the old buildings.

When we look into the history of the rural landscape there are a couple of crucial moments in time that had a big impact in the way people build:

- Geographical factors determined location, structure, and use. Domestication of animals using their faeces as fertilizer: mixed-use means the end of the nomadic life. The earliest farmers had to live and store all of their belongings, equipment, tools, animals and harvest safely under one roof.
- Middle Ages: economical welfare of the growing cities makes the demand of food rise.
- Dutch Golden Age: further rise of welfare, demand, and export.
- End of the 19th century: latest traditional period; local carpenter is replaced by a schooled craftsman.
- Industrial era: efficiency and standardisation. Diversity in farms due to specialization and mass production made possible by science.
- WW2: 'ruilverkaveling' and modernisation; Limited space for expansion of the old existing farms makes new modern farms arise. Bigger and more efficient.
- 1960's: repurposing creates a decline in farms.
- 2000: Big parts of the rural landscape demolished and transformed by large scale area developments.
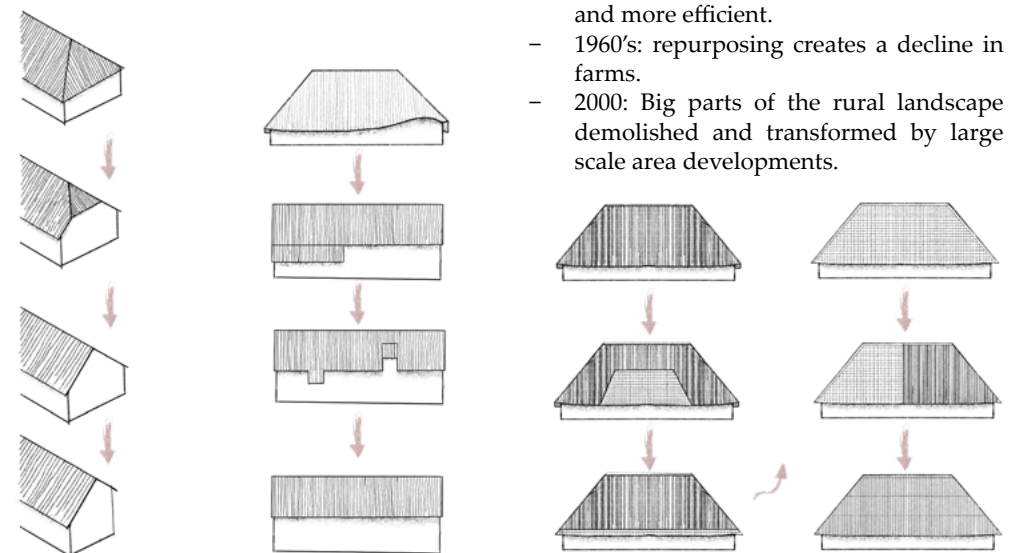
The evolution of form, material, and appearance due to the process of standardisation. From organic to rationalised.
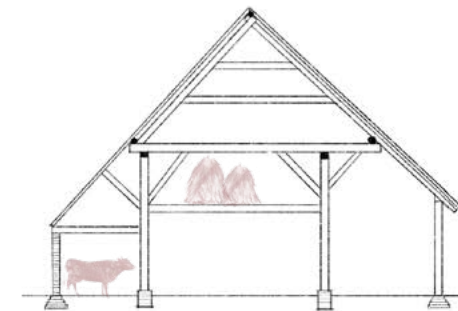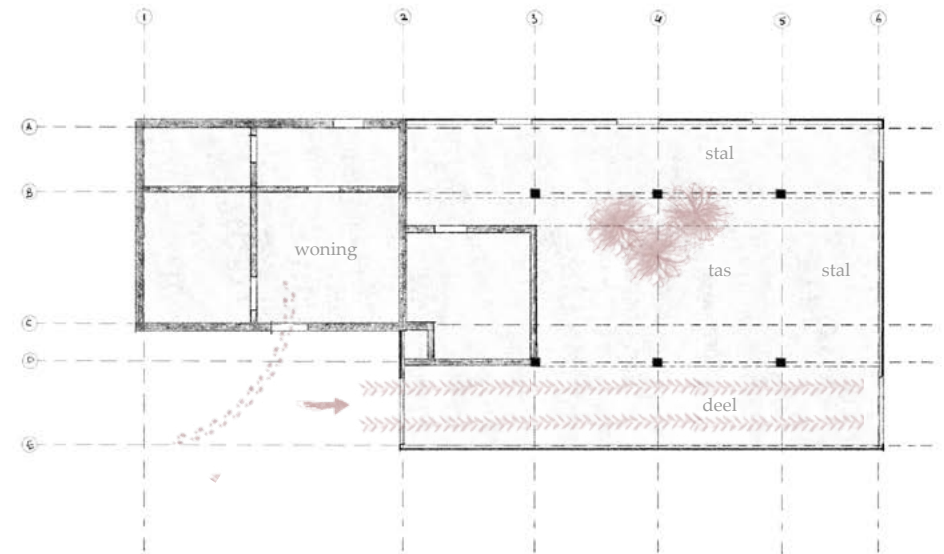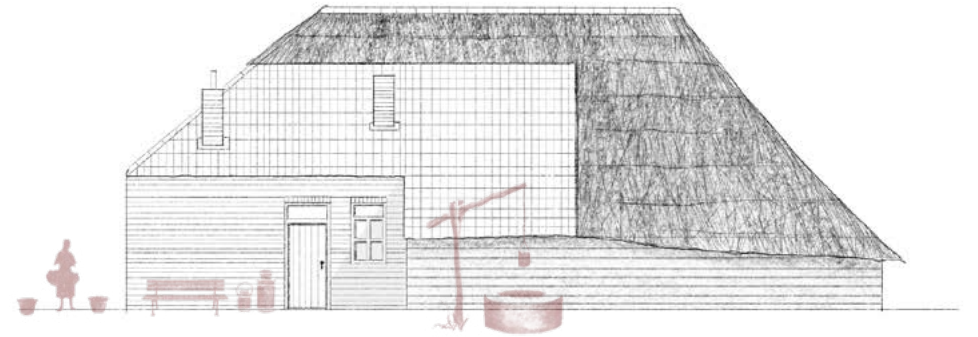
Langgevelboerderij
Zijlangsdeelschuur

The name 'Langgevelboerderij' refers to the characteristic elongated façade at the front of the farmhouse. This facade is often made of brick and is usually built symmetrically. The farms often have a gabled roof with thatched or tiled covering. It is an elongated building with the longest side, the gable, parallel to the road. 'Long-gabled farms' were originally built between the 17th and 19th centuries.

The special feature of 'Langgevelboerderijen' is that they offer a combination of living and workspace. The front half of the farmhouse was used as living quarters for the farming family, while the rear part served as stables and storage space for livestock, farm tools and crops.
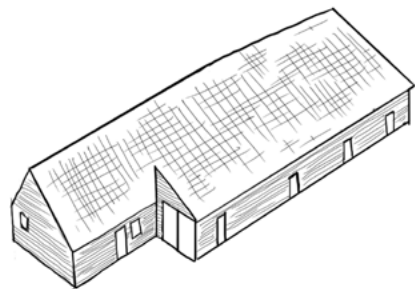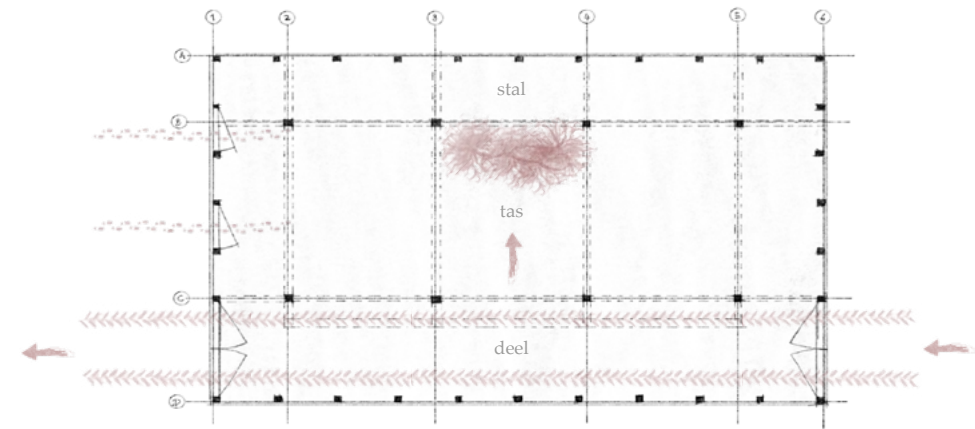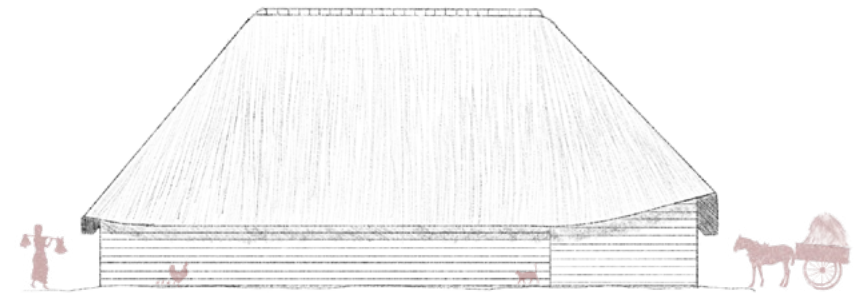
Vlaamse schuur
Langsdeelschuur

The 'Vlaamse schuur' is an iconic building for the rural area of Noord-Brabant. It has a very mysterious appearance almost like a sculpture due to its organically forms and closed, black facades. The typology is the same, but they are all custom built. The structure was originally demountable so the barn could be moved to another site more fertile. The building is organised as a storage space for harvest and animals. On the side it has a drive-through with a higher and a lower door. The higher one is the entrance for the loaded carriage. At the highest point of the roof there is often also a storage space on the attic. The form of the building follows its specific function as a draped cloth. The wavy roofline is often caused by the sinking of the foundation by its use.

Reconstruct

Past
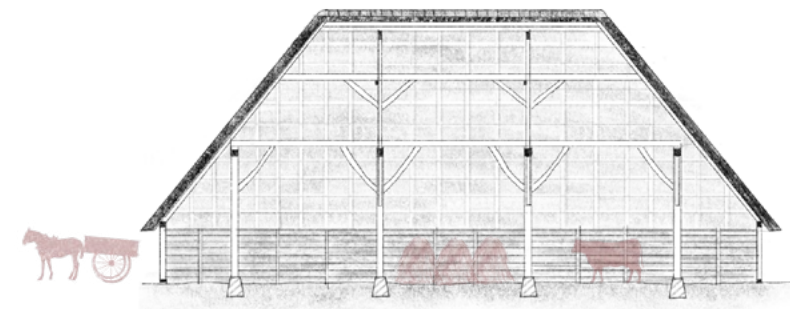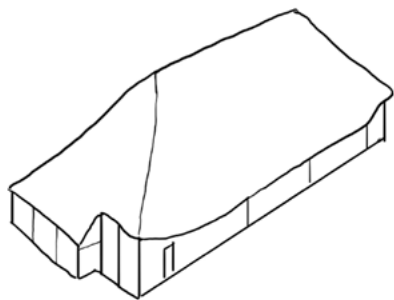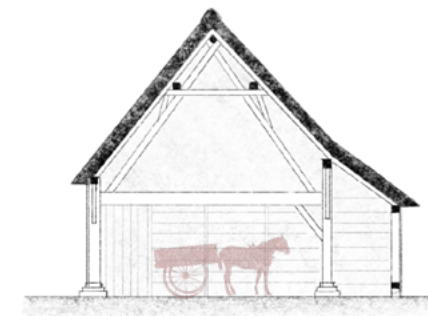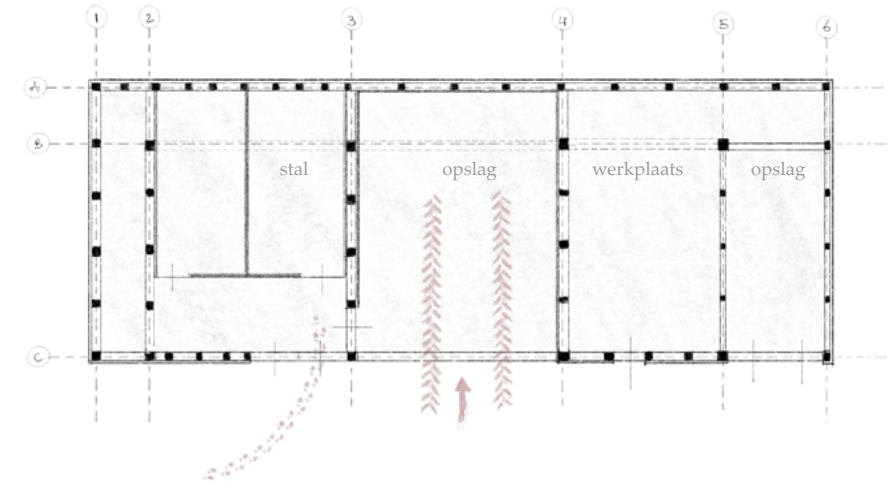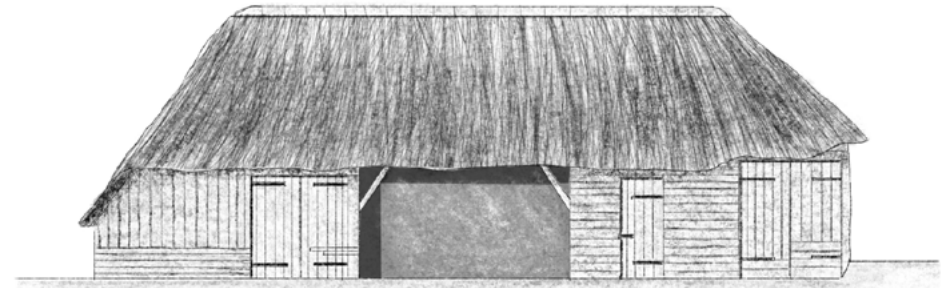
Karkooi
Dwarsdeelschuur

The cross-part barn, also known as 'karkooi' in old Brabant farmhouses, is a specific type of barn often built on the side or back of the farmhouse. The barn is placed at right angles to the house, with its longest side at right angles to the façade of the farmhouse. This creates a kind of courtyard between the house and the barn, which is characteristic of this architectural style.

It was a multifunctional space: it housed livestock, agricultural tools, storage space for crops and hay, and sometimes a blacksmith shop or other craft activities. The construction of transverse barns was mainly characterised using traditional materials such as wood and brick. They usually had a gabled roof, covered with thatch or tiles, and large doors at the front to let livestock in and out.

stal   opslag   werkplaats   opslag
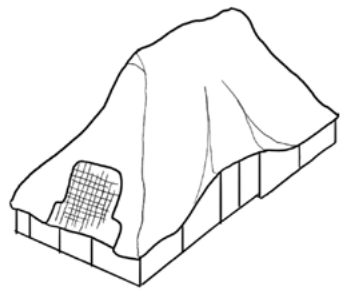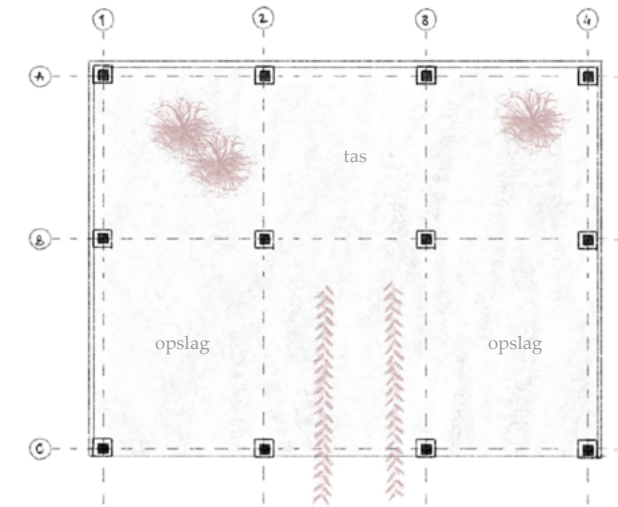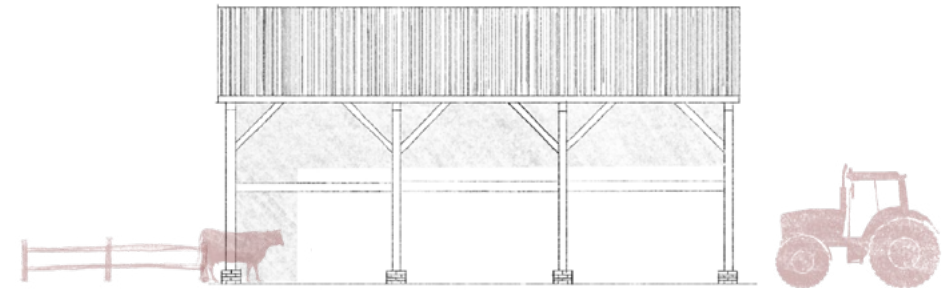
Field barn
Dwarsdeelschuur
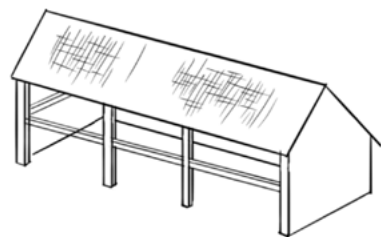
The Field barn is another characteristic element of traditional Brabant farms. This barn is placed in the field or on the land, usually slightly removed from the farm itself. It served as storage space for agricultural tools, materials, crops, and other supplies needed for work in the fields.
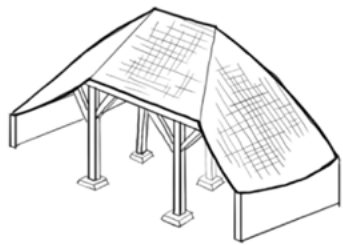
The field barn was often a simple structure, built with wooden posts and beams, and covered with thatch or roof tiles. It usually had an open or semi-open structure, with one or more sides left open to provide easy access to the stored goods.
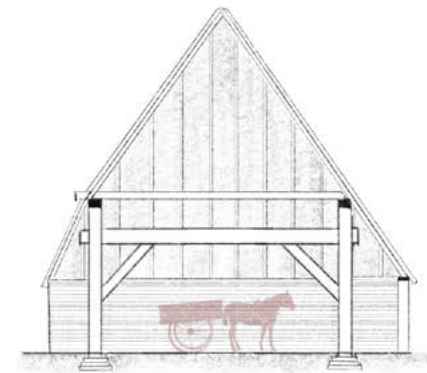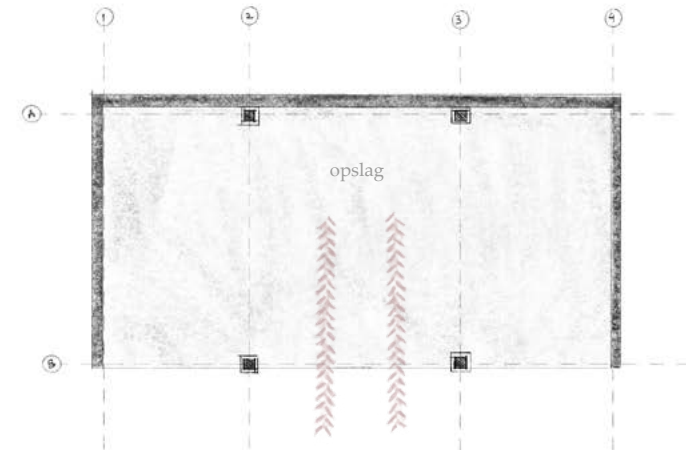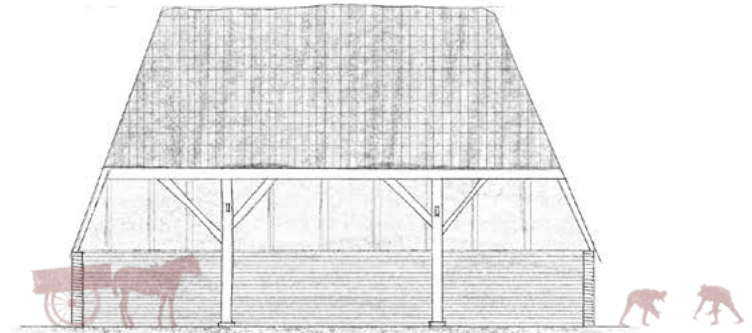
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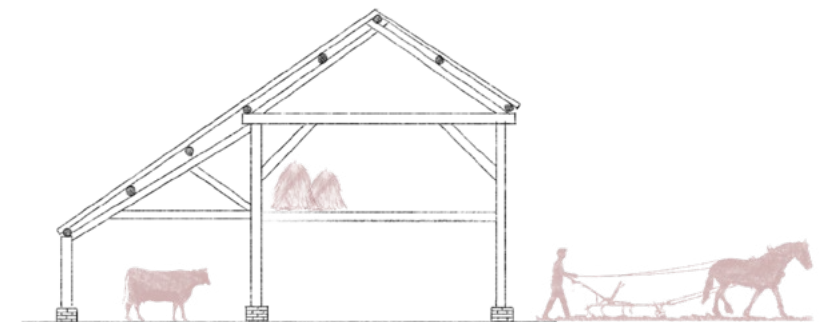
Karschop
Dwarsdeelschuur

The so-called 'karschop' is the place on the farm where carts are stored. The carts and later tractors could stand here sheltered from the rain. Often, firewood was also stored here. The 'karschop' consisted of a shelter resting on poles.

opslag
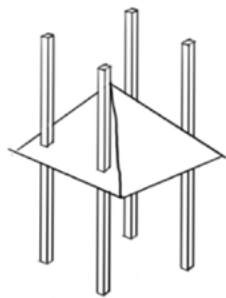
Haystack

This is a structure that was used specifically for storing and drying hay. The haystack itself consisted of a frame of wooden beams covered with thatch or straw, which provided protection from rain and moisture. Haystacks were often striking structures and formed a distinctive part of the landscape around farms.

The hay stored in the haystack was essential food for livestock, such as cows and horses, during the winter months when fresh grass was not available.
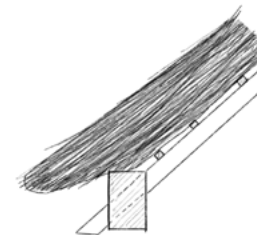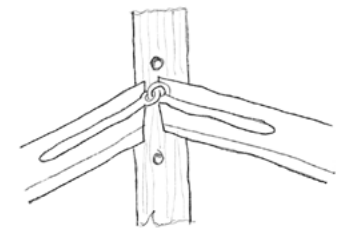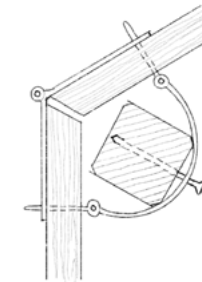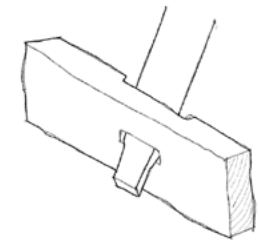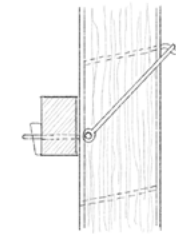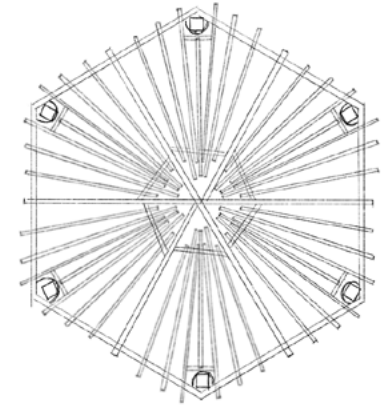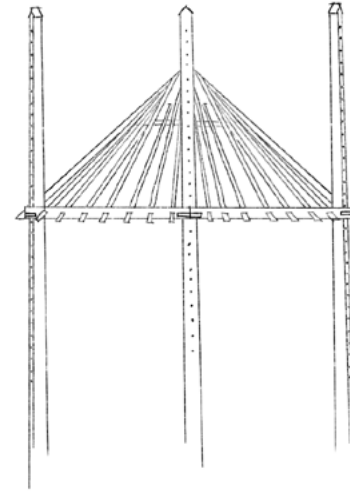
Baker's cottage
Functional outbuilding
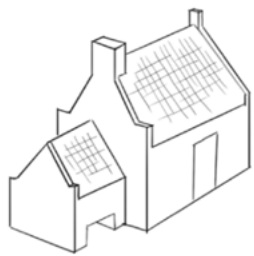
The baker's cottage was usually detached from the main farm building, just like the above elements. It had a compact structure, often made of brick or loam, with a small baking oven and working space. The roof of the cottage was usually covered with thatch or tiles.

Bread baking was a traditional craft that was often passed down from generation to generation. The cottage provided the necessary space and facilities to bake bread in an efficient and controlled manner.
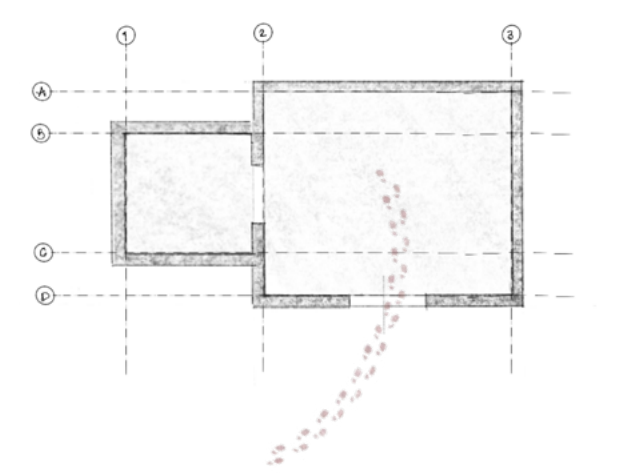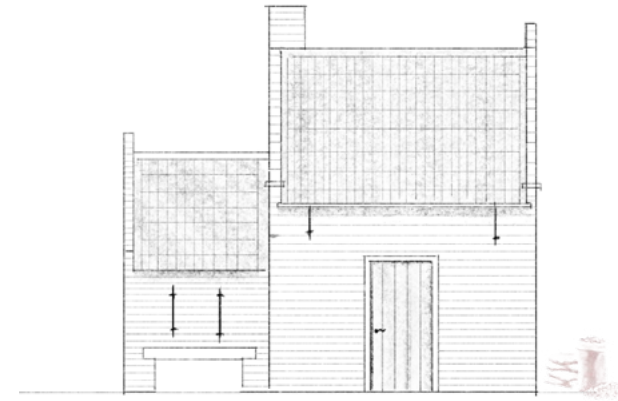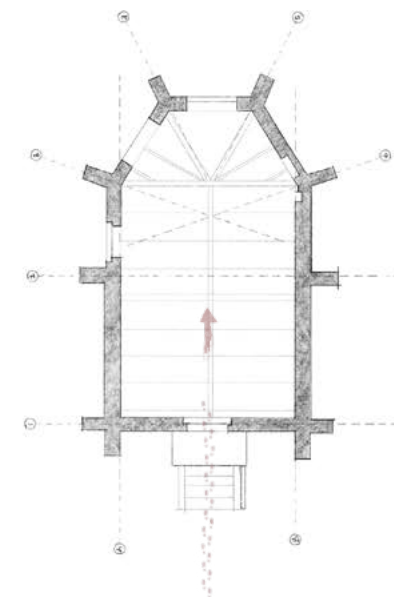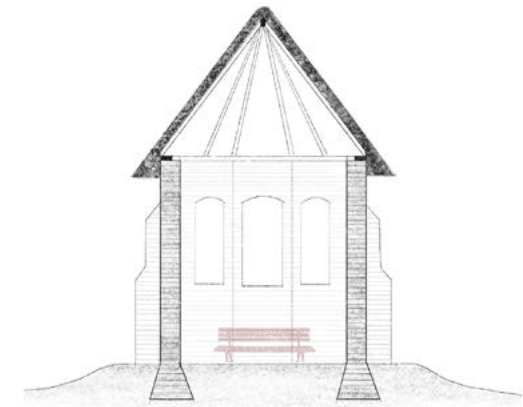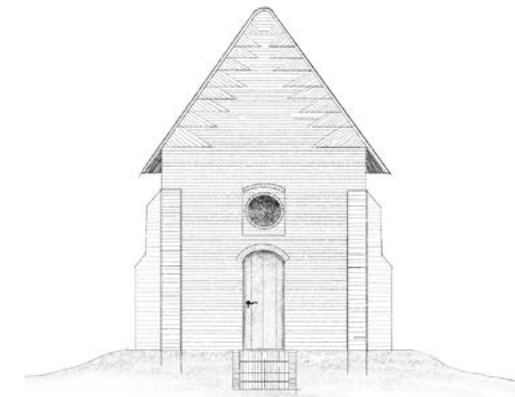
Chapel
Religious building

In old Brabant farms, it was often common to have a chapel. These buildings were often small and were an important part of the farmyard. The chapel was often used for small wedding celebrations, baptismal ceremonies, and other religious events within the farming community.

The chapel above, is the chapel of Gageldonk, known as one of the oldest farm chapels in the region. The Gageldonk chapel is built in a simple architectural style, with traditional materials such as brick and roof tiles. It has a modest interior with a few religious statues and an altar.
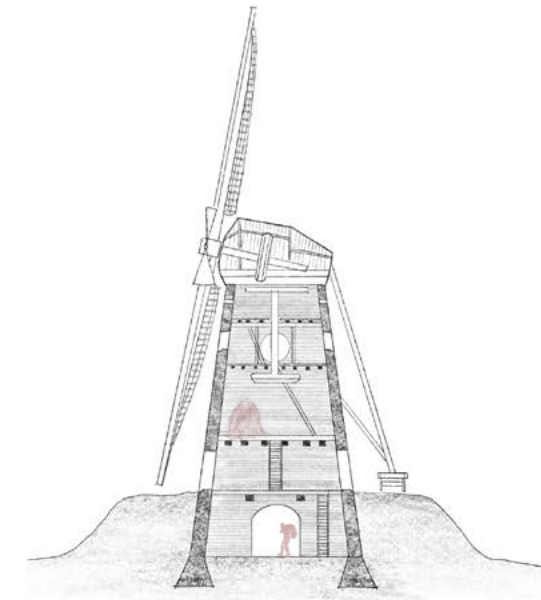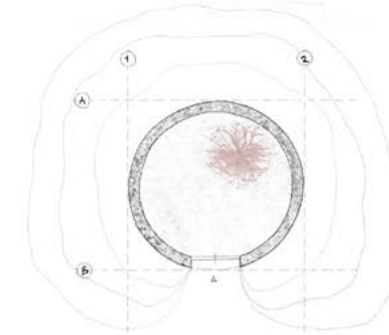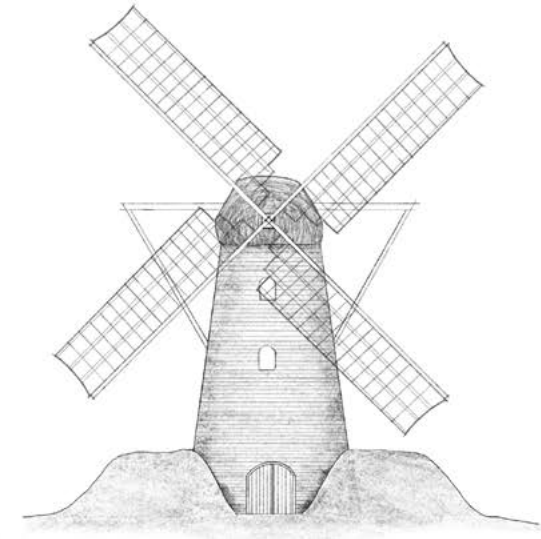
Beltmolen
Windmill

The 'Beltmolen' is a specific type of mill often found near old Brabant farms. It is a windmill built on an elevated hill, also called a "belt". The mill served as an important tool for farmers to grind grain and perform other milling activities. It had a characteristic construction with a round stone body and often a thatched or tiled roof. This imposing structure often towered high above the surrounding farmland. The mill was powered by the wind and had large sails that turned to generate energy for grinding grain.
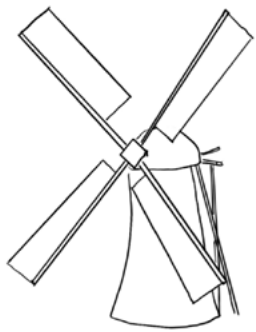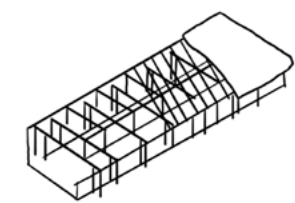
Type Wijster A
Roman era; 100-200
All columns fixed in two directions
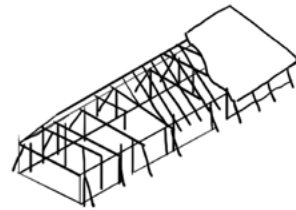
Type Peelo A
Roman era; 300-400
one partition at the end
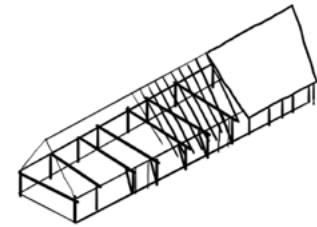
Type Peelo B
"Volksverhuizingstijd"
300-400

Type Odoorn A
ca 500-700
Double columns ensure
a single partition
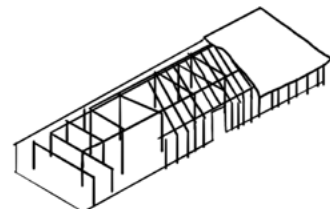
Type Odoorn B
ca 700-800
single partition is carried by only
one row of columns
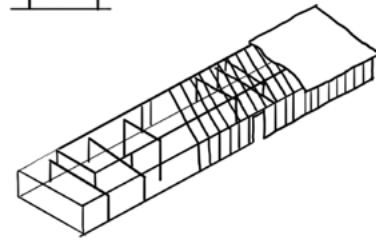
Type Gasselte A
Ottomaans 800-1300
Diagonals on the side make one
central space like a ship

Dekbalk
*horizontal connecting
bar of a 'gebint'*

Ankerbalk

Columns in the ground

Columns on a beam

Columns on a wall

Columns on a foot

Structure

Almost all old farms were built with a carrying wooden structure called a 'gebint' made of local wood. The 'gebint' carried the roof and the walls only functioned as a protective skin around it. The need for bigger spaces can be directly seen in the evolution of the structure. The first forms had to be able to move but when the buildings settled on a fixed place the structures' size grew quickly. The way of building dictated not only the structural span of the 'gebint' but also the lifespan. By elevating the columns from the ground, the wood doesn't rot and could be used longer. From the second half of the 13th century the structure of the farm was placed on top of individual stone basements which could be made through a stronger connection of the wood. The introduction of the 'ankerbalk' made the wooden structure more rigid and stable on itself.

In the latest form of farms, the wooden structure is replaced by brick or concrete walls carrying the whole. The outer walls have become structural.

Thatched roof
Rooftiles
Pine battens
Rafter
Beam

Brace
Wall plate
Gutter

Brick wall
Oak column
Door
Basement
Rammed earth floor
Foundation

Thatched roof
Steel wiring
Batten
Rafter

Timber frame

Clay wall

Willow wickerwork

Concrete floor

Brick foundation

Thatched roof

Rafter

Beam
Timber frame

Cladding
Window frame

Pavement

Foundation
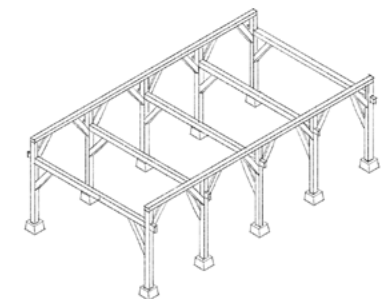
Materials

A typical Brabant farmhouse consisted of various materials, which were mainly gathered by the farmers from their immediate surroundings. The materials that were eventually chosen depended on the availability and economic possibilities of the farming family.

The framework, including the supporting structure, was made by means of wooden beams and planks. Oak was often chosen for its strength and durability. Wood was also used for interior elements, doors, and windows.

A variety of materials were used for exterior walls, including bricks, loam, and timber framing. Bricks were popular in more wealthy areas, where brickmaking was an established industry. Clay and willow wickerwork were used in other areas. Timber framing consisted of wooden beams with twigs woven between them, which were then filled with clay. The roof was usually covered with thatch.

This use of local materials gave Brabant farmhouses their characteristic appearance, which contributes to their historical charm.

'Kruispan'
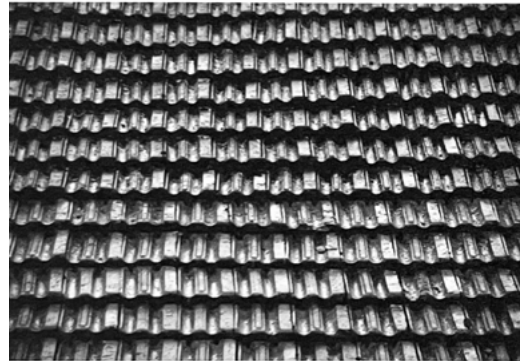
'Muldenpan'

'Oud-Hollandse pan'
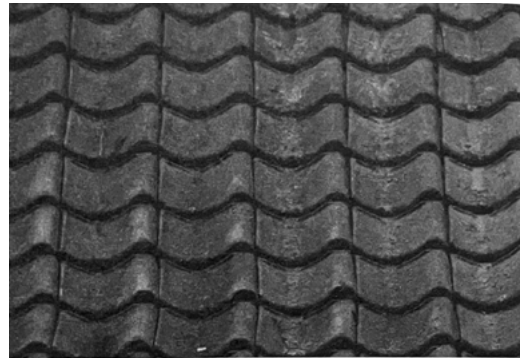
'Verbeterde oud-Hollandse pan'
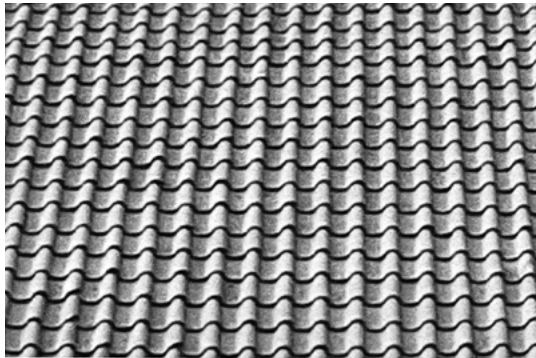
'Opnieuw verbeterde Hollandse pan'
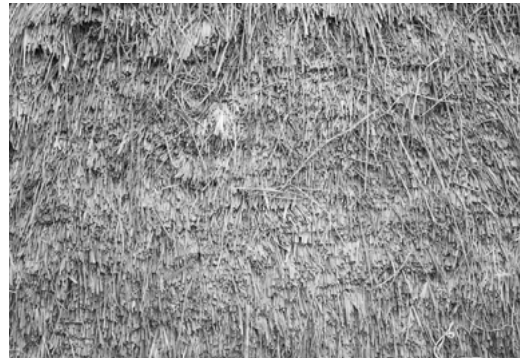
Thatched roofing

Corrugated plate

Asbestos
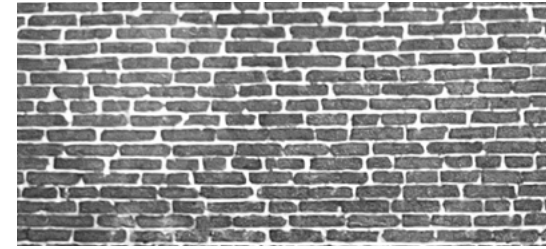
'Wildverband'
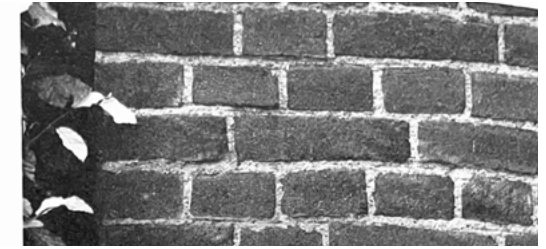
'Drieklezoren in strekkenlagen'
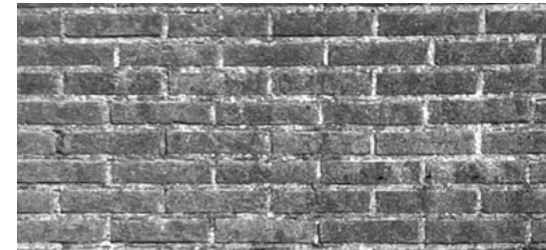
'Halfsteensverband'

'Kruisverband'

'Klezoren in koppenlagen'
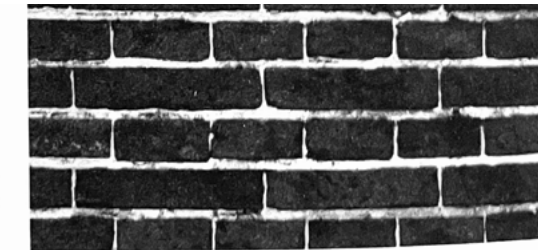
'Staand verband'

'Noors verband'

'Klezoorverband'

Brick basement

Stone basement

Kloosterkozijn
about 1500
leaded glass

Kruiskozijn
16th and begin 17th century
leaded glass

Kruiskozijn
2nd half 17th century
glass between houten roeden

Schuifraamkozijn
end 17th century
without middle vertical

Schuifraamkozijn
1st half 17th century
endform

Schuifraamkozijn
about 1750

Schuifraamkozijn
after 1785

Empire schuifraam
beginning 19th century

Schuifraamkozijn
2nd half 19th century

Schuifraamkozijn
end of 19th century

Schuifraamkozijn
beginning 20th century

Schuifraamkozijn
1st half 20th century

Zesruits schuifraam
1st half 20th century

T-venster
20th century

Modern raam
20th century

Windows

The diagram on the left shows the gradual evolution of window frames. In ancient times the windows of a building where just openings without any protection against animals or the outside environment. Sometimes the openings were closed by a pig's bladder which was transparent and kept the wind outside. The oldest windows could be closed by shutters blocking the openings but also the light from entering the interior. The first form of translucent windows could be found in the monasteries. The 'Kloosterkozijn' was made of small pieces of leaded glass. The windows were still fixed but in the 17th century the sliding window was introduced. After a while the lead was replaced by wooden 'roedes' which divided the window in partitions holding the glass together. The division or ratio of a single window is different in almost every region of Holland. It expresses the local culture through the measuring system that was used in that certain period. It is also known as the 'roede'. This determined the size and composition of the window. The development of knowledge, craft and materials made sure the windows could become bigger and the frame and glass lighter. Over time you see the openings in the facades growing ensuring more light to enter the building and a better view to the outside.

In general, the form and appearance of the farm weren't influenced by prevailing style or movement. Only the windows followed the transition in style and characteristics deriving from the city. Typical for the farms that were built in the 19th and 20th century are the gothic windows. These windows have a specific 'roedeverdeling' that expresses the local environment. Often these windows have monumental value.

WOODED BANK
Hydrologie + ecology + production

WILLOW TREES
STRENGTHENING BANKS + production

SOLITARY TREE

GERIEFBOS
coppice + ecology

ELZENSINGEL
BORDER + FIREWOOD

ORCHARD
FRUIT + ENERGY + ecology

LIME TREE
ORNAMENTAL TREES
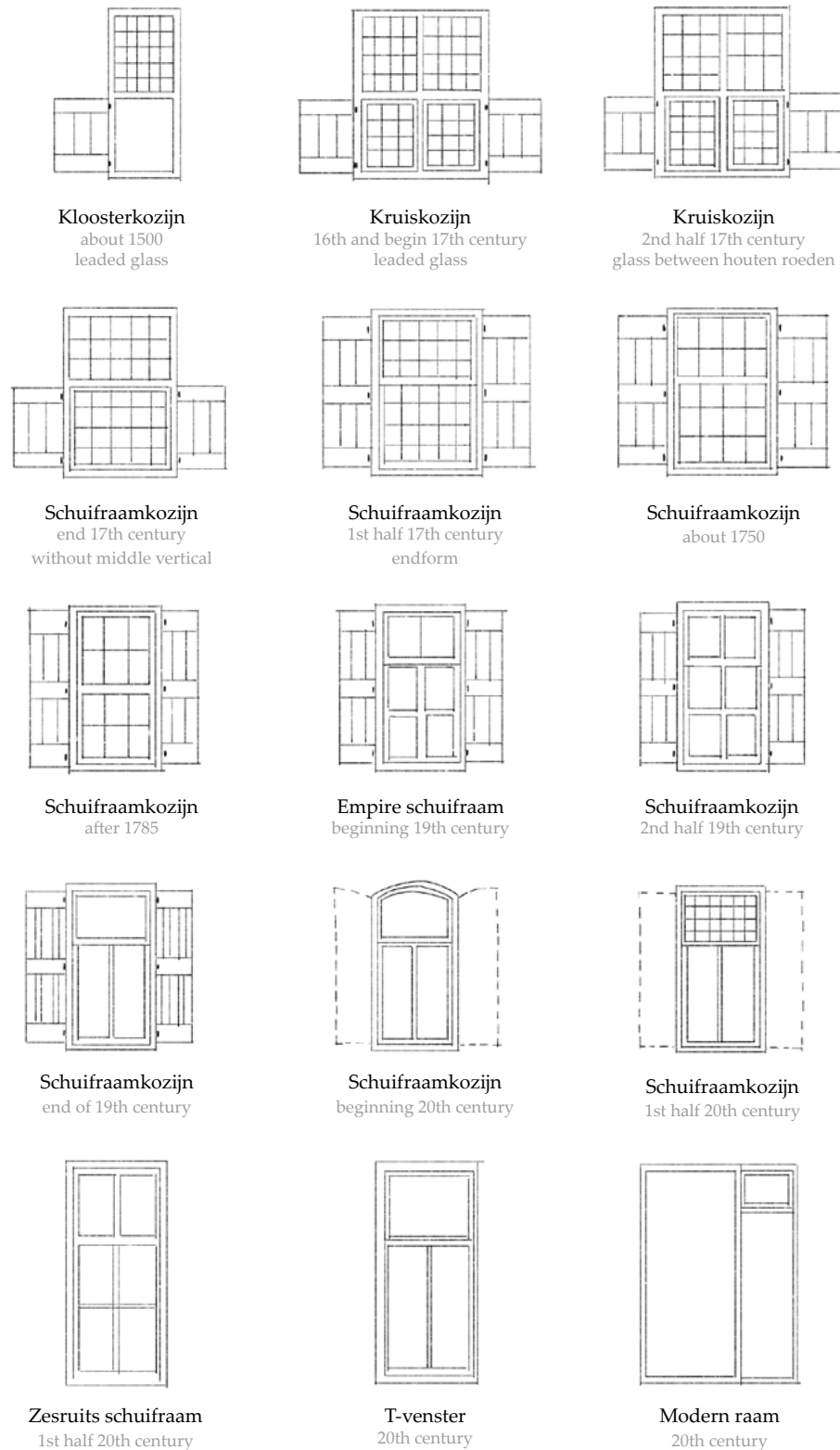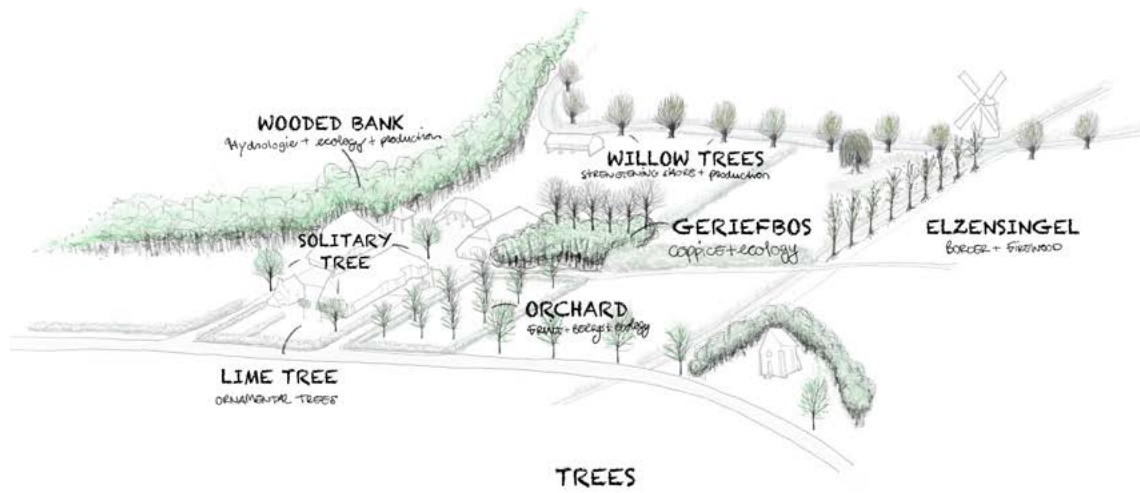
TREES

Resources

Trees around an old Brabant farmhouse served both functional and aesthetic purposes. It created a pleasant living environment for residents, provided food and wood, and contributed to the area's biodiversity.

For instance, fruit trees, such as apple, pear and plum trees, were planted as a source of food and were also used for making jams, for example.

An '*elzensingel*' was a row of trees, usually alder, that served as a windbreak, boundary and firewood. Alder trees were suitable for this function because of their fast growth and dense foliage.

In addition, a '*geriefbos* was often established, in which different types of trees were planted for various wood supplies. It served as a sustainable source of wood for building and repairing fences, furniture and firewood, among others. This forest provided the farm with needed materials.

Also common were willow trees around the farm. These were often used for basket weaving, fencing and other crafts.

Finally, there was often a wooded bank. This consisted of a row of trees and shrubs laid out to provide shelter and privacy. It served as a kind of fence or boundary marker, had a hydrological function and also had ecological value by contributing to the biodiversity and ecosystem around the farm.
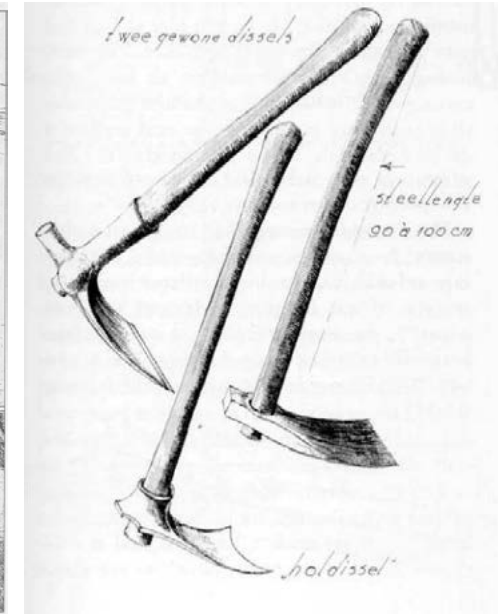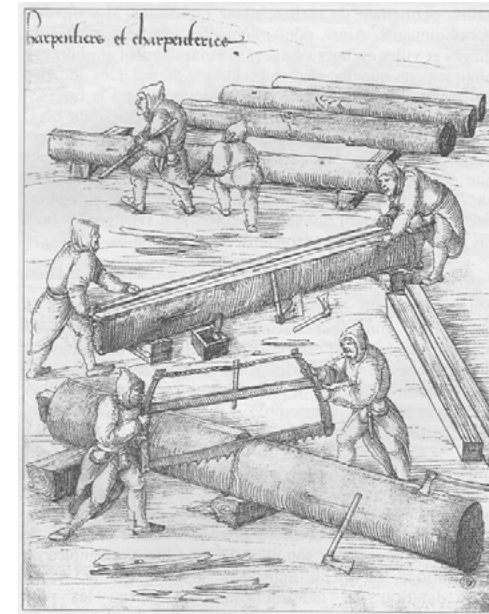
Craft

Building old Brabant farmhouses was an artisanal process that required different skills and techniques. Traditional crafts such as carpentry, masonry and thatching played a crucial role in the construction of these farms.

Wood was an important building material. Carpenters were responsible for accurately cutting and crafting wooden beams, planks, and other structural components. They built the skeleton of the farmhouse, including the load-bearing structure, roof trusses and floor construction. The carpenters applied traditional techniques, such as mortise-and-tenon joints and dovetail joints, to securely connect the wooden elements.

SOBER   PRAGMATIC

WORK   PRODUCTION   INFORMAL   MALE

BACK

FRONT

REPRESENTATIVE   FORMAL   AESTHETIC   FEMALE

MAINTAINED   LIVING
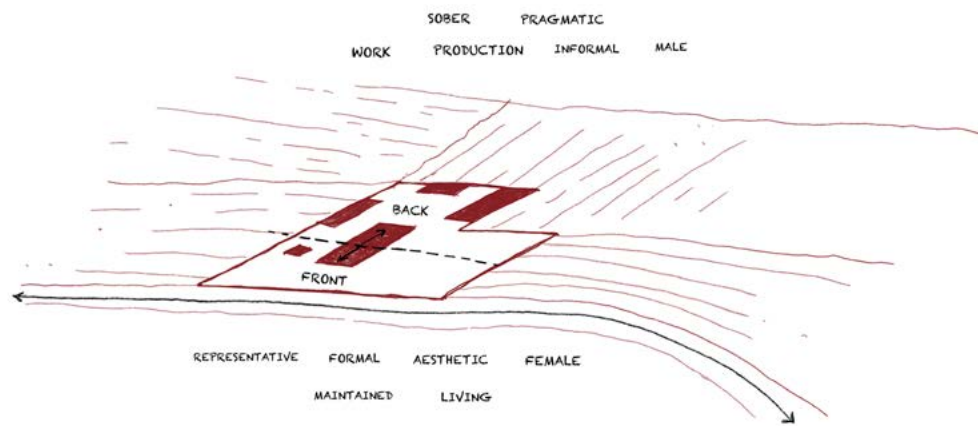
Yard

In the past and even today, a farmyard serves both practical and decorative purposes. At first, farms were mainly about practical use. It was only when farmers became more prosperous that they could think about making things look nice. They clearly divided the space into 'front' and 'back.' The area in front of the farmhouse, near the house, was typically managed by the woman of the house. It had a pretty garden with flowers, a vegetable garden, a place to dry things, and an orchard. The back part of the yard was where the farmer did the harder farm work.
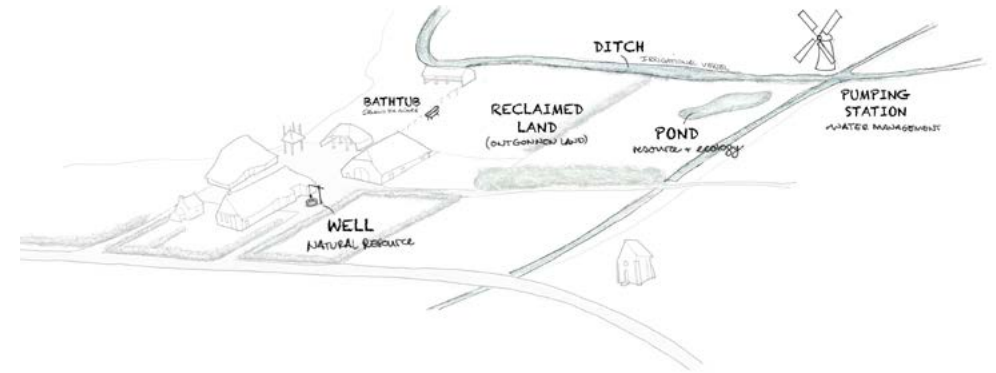
Well

Natural resource

The well was usually dug near the farm, in a place where the groundwater level was high enough. It was often a deep well, dug by hand or using simple tools. The well was then lined with stones, bricks or wooden planks to prevent collapse.

It provided an essential water supply for the farming family and livestock. The water was used for daily activities such as drinking, cooking, washing and watering the animals. It was also important for irrigation of crops and watering the gardens around the farm.

Kitchen garden
Food consumption

On traditional farms, the kitchen garden has always played a central role. These gardens are usually colorful and varied, with a variety of vegetables, fruits, herbs and sometimes even flowers. They are often located adjacent to the farm, giving farmers easy access to the fresh produce they need for their daily meals.

In addition to their practical value, vegetable gardens at traditional farms also have symbolic significance. The vegetable garden is not only a source of food, but also of pride, tradition and sustainability.

Orchards
Fruit consumption and shade

These orchards are often carefully maintained and consist of a diverse collection of fruit trees, such as apple, pear, cherry and plum trees. They not only provide an abundant harvest of delicious fruit, but also serve as a shady refuge and a place for relaxation on hot summer days.

Often the orchards were located on the side of the farm next to the kitchen garden. This location close to the farm had a great advantage, since the young cattle were walking on the grass of the orchard. Thus, mainly the wife could keep a close eye on these cattle while picking the fruit.

Ornamental garden

Aesthetics

Ornamental gardens on farms are landscaped gardens on agricultural sites that are intended primarily for aesthetic purposes. These gardens counterbalance the functional and productive aspects of the farm and are often laid out for recreation, relaxation and decoration.

Solitary trees

Shadow and entrance marking

Solitary trees were planted for shade on the southwest side of the farmhouse, while a walnut was planted at the edge of a terrace as protection from flies. Solitary trees can also be used to mark the entrance to the yard.

Besides having a certain ornamental value, such trees also have a functional support for nature. For example, there are trees that attract a wide variety of birds.
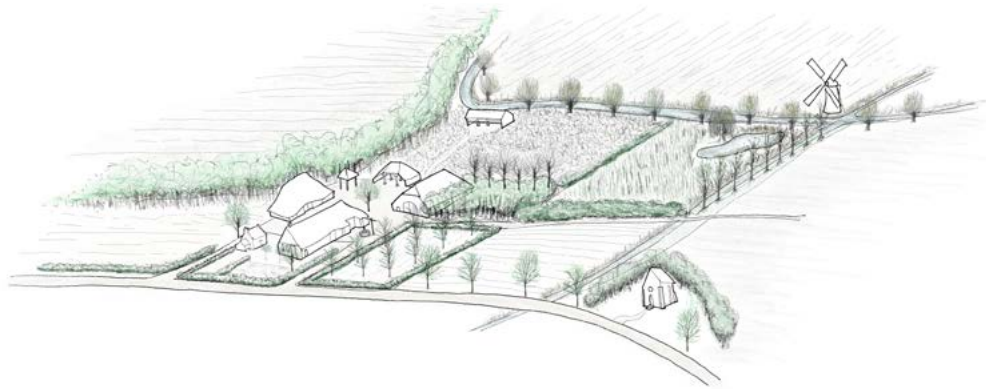
Land

The land encloses the yard and the buildings in it. The characteristic elements such as the ditch, wooded bank and field play a crucial role in shaping the traditional rural image. These distinctive elements not only reflect the practical needs of agriculture, but also contribute to the charming aesthetic of the region.

Ditch
Irrigation system

The ditch at old Brabant farms served several purposes. These ditches helped remove extra water from farms when it rained a lot. They stopped floods and soil from getting too wet, which was good for the crops. People also used the ditches to water their fields when it didn't rain enough. They could control the water with the ditches and help their crops grow better.

Ditches were often narrow and shallow, and ran in a pattern through the landscape, often running parallel to fields. They were dug by hand and required regular maintenance to prevent blockages and promote water flow.

Besides their functional role, ditches also had ecological value. They provided habitat for aquatic plants, fish and other aquatic organisms, and promoted biodiversity around the farms.

Houtwal en houtsingel
Protection and privacy

A 'houtwal' (wooded bank) was a row of trees or shrubs that served several purposes. The wooded bank consisted of a diverse mix of tree species such as poplar, oak, beech, willow, and alder. The trees were planted close together, creating a natural and dense vegetation. This provided protection for the farm and surrounding farmland from strong winds and extreme weather conditions. The wooded banks also provided shade and it marked the boundaries of the land and offered privacy to farming families. Another important aspect of a wooded belt was the promotion of biodiversity.

The big difference between a 'houtwal' and a 'houtsingel' is that a 'houtsingel' is not on an earthen embankment and often consists of one or more rows of trees. Sometimes a 'houtwal' is relegated to a 'houtsingel' by the disappearance of the earthen wall. The functions are the same.

Field, field edge and braid hedge
Cultivated land

The field was the cultivated piece of land where crops such as grain, potatoes and vegetables were grown. Farmers worked the fields using ploughs and other agricultural implements. The field was the heart of agricultural activities and provided the food needs of the farm.

The field edge was a narrow strip of land along the edge of the field that was often left to nature.

The braid hedge was a traditional form of natural property boundary often planted along the edges of fields and farms. It consisted of rows of living trees and shrubs, such as hawthorn, blackthorn, hazel and elder, interwoven together. The combination of the field, field edge and braid hedge formed a harmonious and sustainable agricultural system. It supported food production, protected the land from erosion and soil degradation, promoted biodiversity and contributed to the aesthetic value of the landscape.

Reconstruct
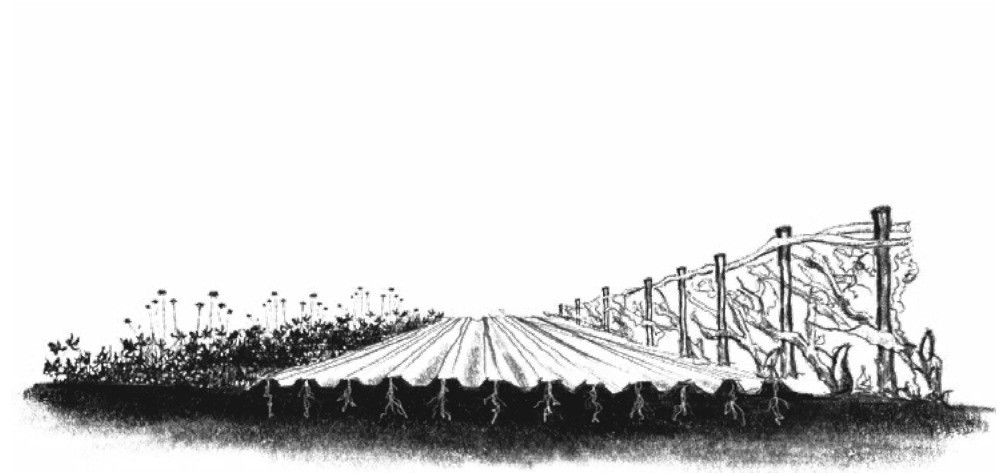
Present

Reconstruct

Reconstruct

Elements

The following pages give an overview of the elements that represent an industrial area.
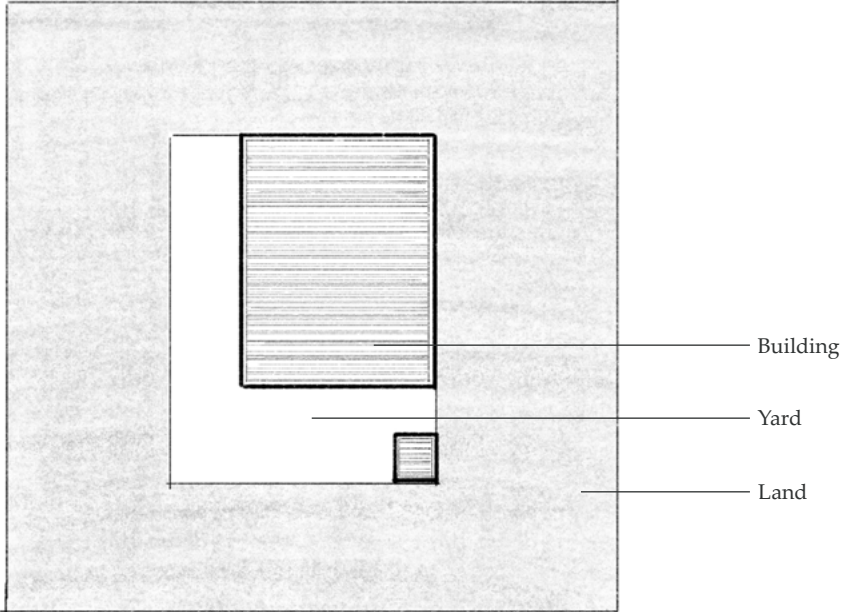
— Building

— Yard

— Land

Building	Yard	Land
'Loods'	Fence	Highway
	Facilities	Roads
	Border	Railroad
	Pavement	Electricity pylon
	Signs	Lightning
		Solar panel park

Building
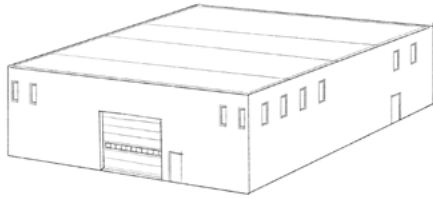
A large building used as storage space or a workshop, typically
constructed quickly and with cost-effective materials.
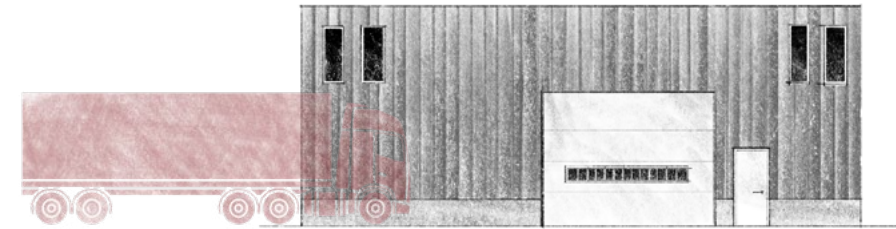
Loods
Storage and/or workshop

An industrial hall is usually a large, spacious, and functional structure designed to meet the specific needs of industry. It can be built using different materials, such as steel, concrete, or a combination, to ensure durability and flexibility. The interior of an industrial hall is often characterised by an open layout with high ceilings and few internal structural barriers. In addition, office spaces, meeting rooms and facility facilities can be integrated to meet staff needs.

Industrial halls are often clustered near each other, offering benefits such as shared infrastructure, easy access to transport routes and efficient logistics. This location on industrial estates promotes cooperation, resource exchange and business synergy between different companies.
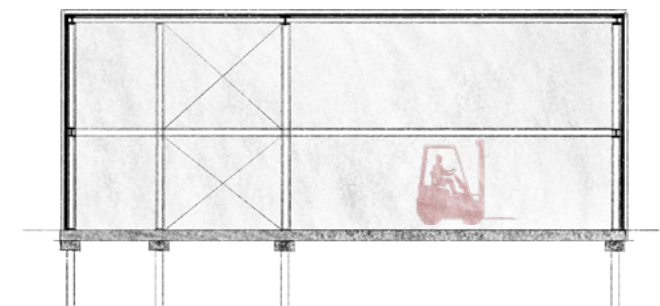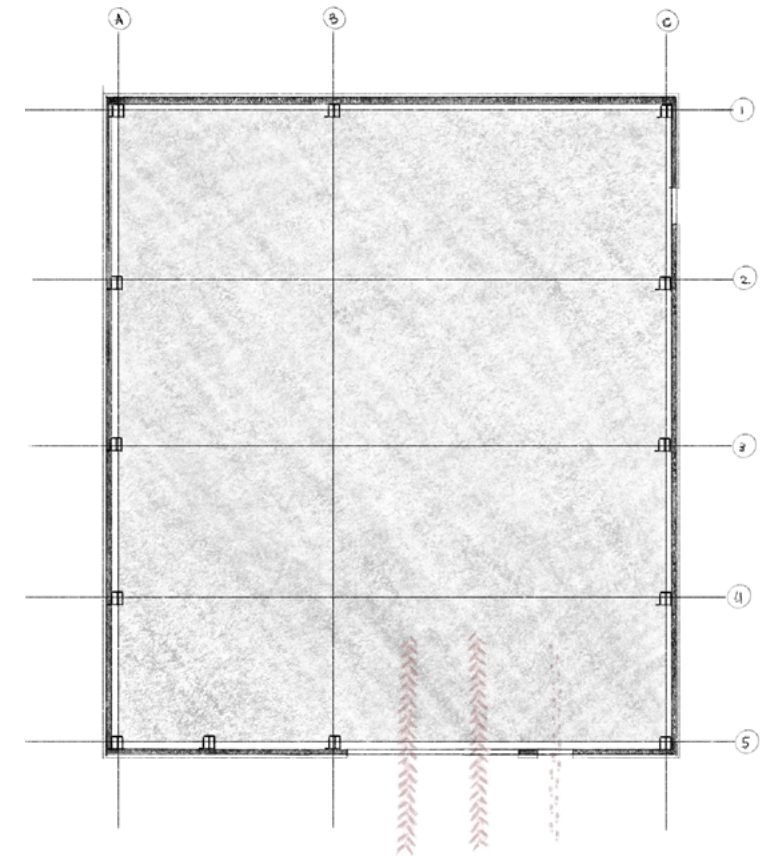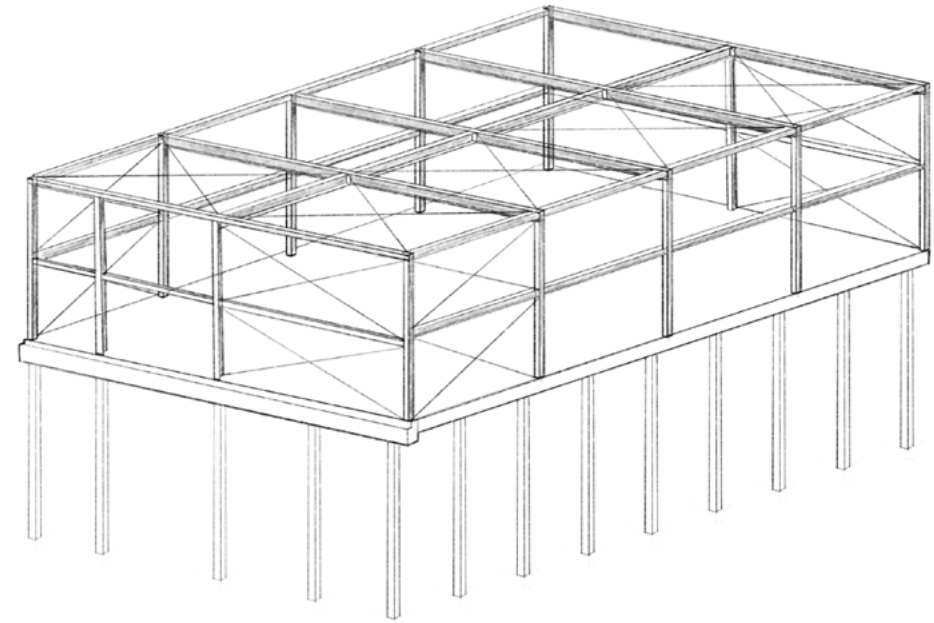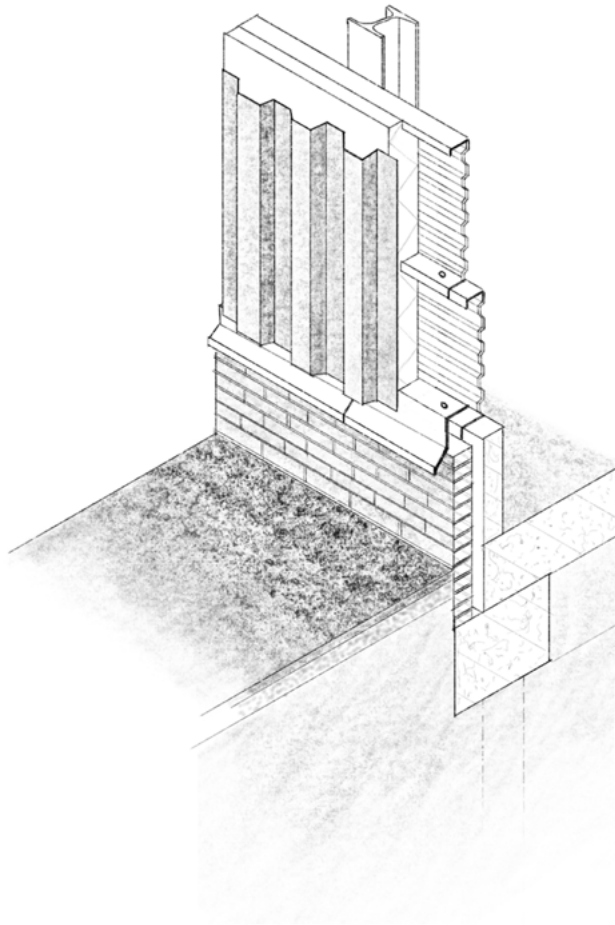
Structure

In general, the aim is an efficient and well-thought-out construction that meets the specific needs of the industry and the company that will use the hall. The construction is aimed at providing a safe, durable, and functional space for industrial activities.

A solid foundation is essential for the stability and durability of an industrial hall. This can consist of concrete slabs, strips or piles placed in the ground to support the weight of the structure.
The roof is often designed to provide weather protection and promote energy efficiency. Common roofing materials include metal panels, bitumen, PVC, or fibre cement sheets. The roof can also be fitted with insulation material to minimise heat loss.

The internal layout of an industrial hall can be adapted to the specific needs of the company. This includes installing load-bearing columns and beams to support the structure, as well as creating spaces for offices, production areas, storage areas and facilities such as toilets and changing rooms.
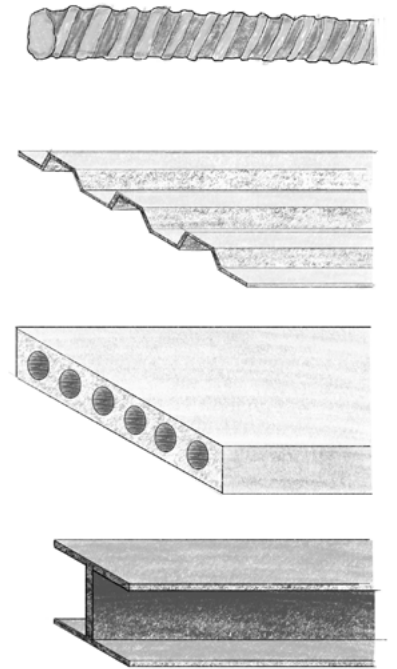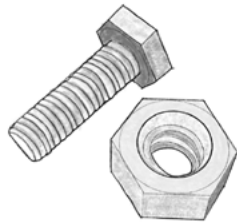
Materials

The materials used in the construction of an industrial hall vary, but common choices are steel, concrete and masonry. Steel is often used for the main structure because of its strength and flexibility. Steel frames and columns are used to support the structure and provide a solid foundation for the building. Steel structures are relatively quick to build and can enable large spans without the need for internal support columns.

Concrete is used for various components of industrial halls, including foundations, floors, walls, and columns. Reinforced concrete is often used because of the combination of concrete strength and the tensile strength of the reinforcing steel.

Metal panels, usually made of steel or aluminium, are used for roofing and wall cladding in industrial halls. These panels are lightweight, easy to install and offer good weather protection. They can be prefabricated and come in different colours and profiles, making them suitable for both functional and aesthetic purposes.

Glass is often used for windows and facades of industrial halls to let in natural light and provide a visual connection to the outdoor environment. It can also be used for internal partitions to define spaces and create an open and bright working environment.

Various insulation materials can be used for thermal and acoustic insulation, such as fibreglass, mineral wool or expanded polystyrene (EPS). These materials reduce heat loss or gain and help reduce sound transmission, improving energy efficiency and comfort levels in the industrial hall

The use of these materials can vary according to factors such as budget, local building regulations, insulation requirements and specific industry needs.
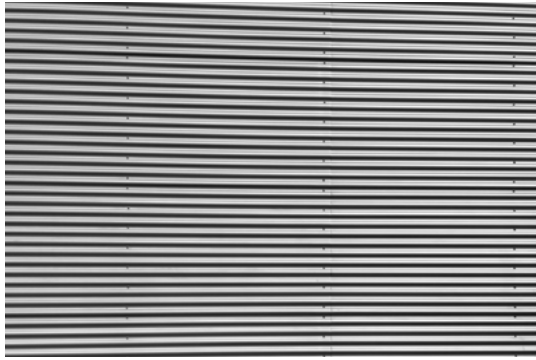
Steel profile plate

Steel profile plate
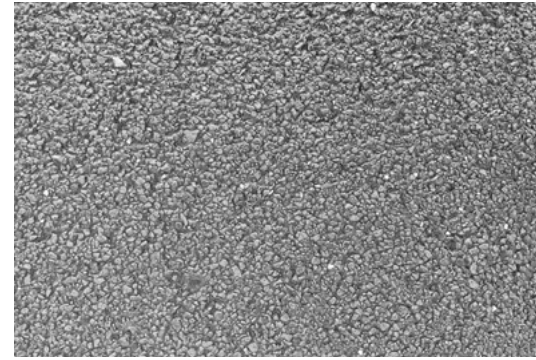
Paved road

Pavement tiles

Access door

'Harmonicagaas'

Rainwater gutter

Steel footplate with bolts

Byfolding doors

Fence

Concrete 'lego' element

'Betonnen varkensrug'

Steel rail track
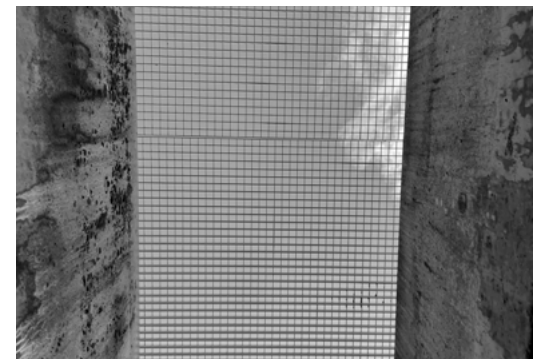
Steel walkway

Resources

The materials needed for the construction of industrial halls, such as the one at Steenakker, mostly come from large companies outside Breda. The materials are mainly standardised and are no longer produced locally. This way, although costs are often reduced, logistics still must be taken into account. Because the supply of materials has become simpler and more international, the best price-quality ratio can always be chosen, and local producers are side-lined as they often cannot compete with the big international players where work is also often done at lower wages, for example. As a result, industrial estates basically always look the same and function and quality are usually considered more important than aesthetic and ecological value.

Craft

When building warehouses, planning, time, and efficiency are crucial. That's why standardized building elements, like pre-fabricated wall panels and roof parts, are often used. These elements are usually made in factories and designed for easy assembly on-site. This significantly shortens construction time and reduces labor costs.

A steel skeleton structure is another important part of most warehouses. Steel is an excellent material because it's strong, durable, and flexible. The steel beams and columns create the framework of the building, providing the necessary structural support. Using steel allows for large open spaces without the need for many internal support pillars, maximizing the internal space and providing flexibility for various uses
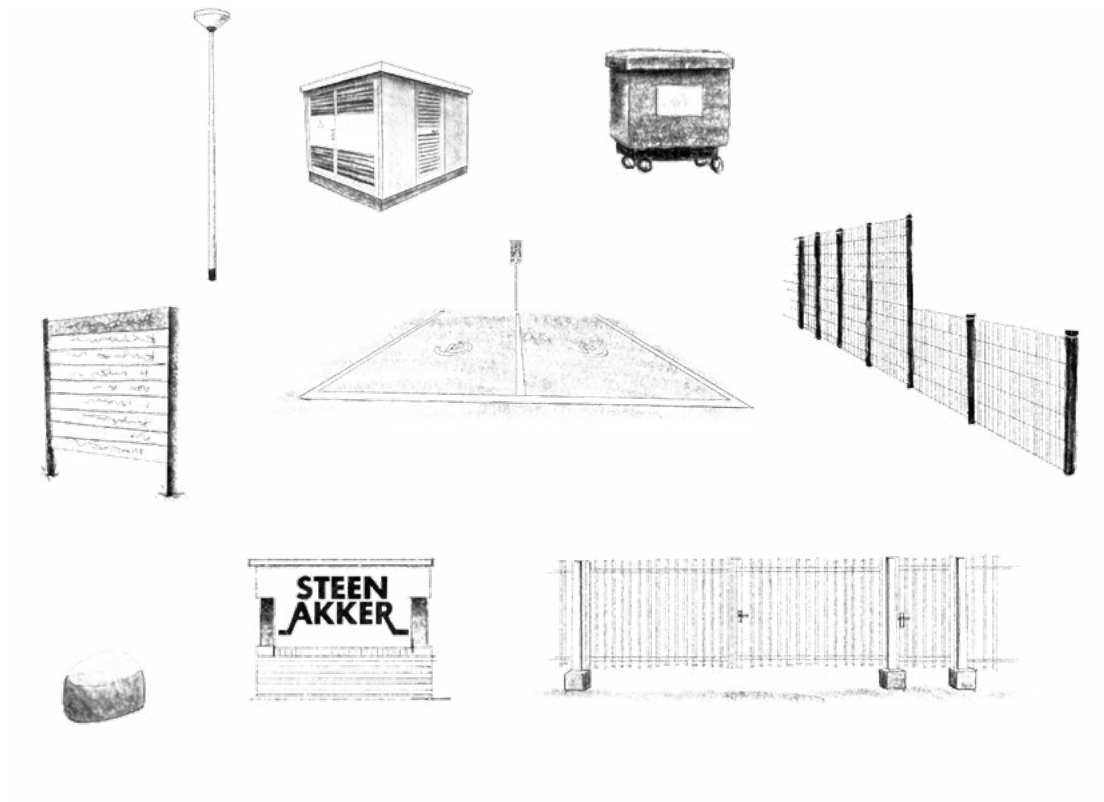
Yard

Almost every industrial estate is characterised by the same elements that define its character. For example, iron fences, gates, signs, containers and pavement.

STEEN
AKKER

Fences and gates
Property demarcation
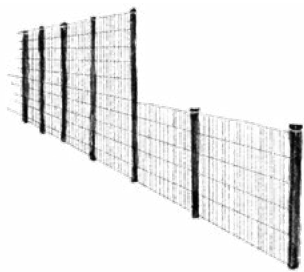
There are many iron fences and gates to ensure security and to show the boundaries between individual businesses. These are often imposing gates and sturdy, iron fencing. They also create a clear dividing line between the industrial estate and the outside world, often restricting access to authorised people and vehicles.

Parking spaces

Extensive, paved area

An industrial estate also often features vast, paved areas, which serve as parking areas for employees, visitors, and trucks. These parking areas are often spacious and provide ample space for parking vehicles of various sizes.

These parking lots are often where you'll also find the trash containers. Sometimes in an extra hutch, but usually visible in the open space.
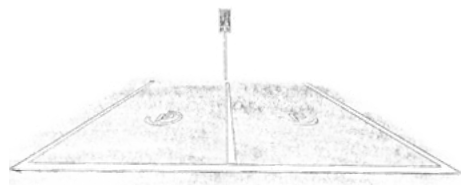
Signs
Signage and advertising

Infrastructure is an important element in an industrial estate, which is why there are multiple signage and advertising boards at several, strategic points. This is especially necessary as all buildings are pretty much alike.
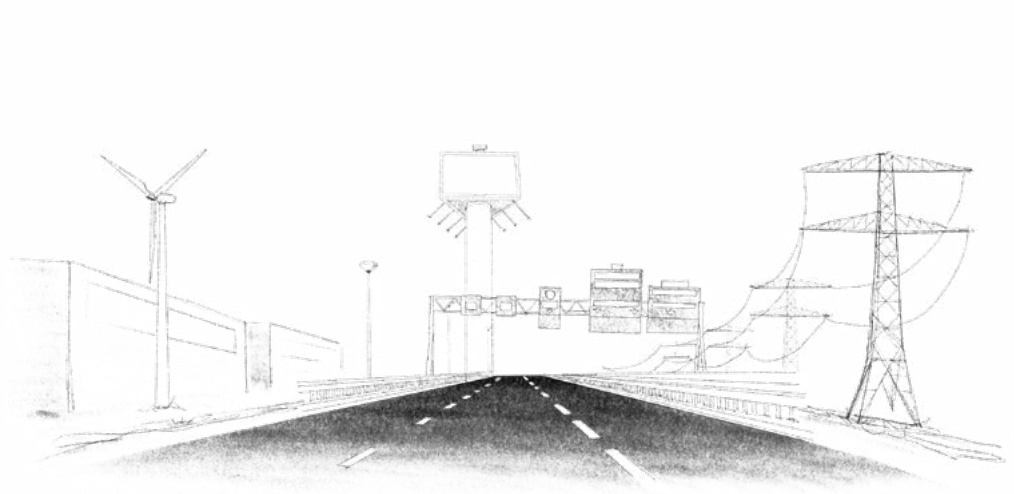
Land

Just outside the industrial estate, several elements and features can be observed that affect the immediate surroundings. For example, highways and road infrastructure are almost adjacent to the industrial estate. The same applies to the train track for this location. Besides, you see a lot of tactically placed billboards and advertising columns and, for example, wind turbines.

Road and cycle path

Infrastructure

Suburban areas are usually placed in locations with good access to transportation infrastructure, such as highways and the city centre. This ensures a good commute. There are parking spaces everywhere, not only for residents, but also because there are many businesses. Its location in relation to infrastructure is also convenient for businesses. The accessibility facilitates the transportation of raw materials and finished products, which is essential for the efficient operation of industrial plants.

Besides a highway, there are also a lot of continuous cycle paths around this area. This is because, like most Dutch cities, a lot of people travel by bike.

Traintrack

Infrastructure

Train tracks near industrial sites offer a significant logistical advantage, resulting in cost savings and improved efficiency. This makes the location of industrial facilities near train infrastructure an attractive option for many companies in a variety of industries.

ZonneWIJde
Solar panel farm

There are not only many (rail) roads, car parks and buildings to be seen, but also a vast solar panel park, called 'ZonneWIJde'. This stretch is completely fenced off with fences. The fencing not only provides protection against unauthorised access, but it can also serve as a barrier against animals, for instance.

Resume

Past

evolutionair
the way of building emerged from that which was already

vernacular
the architecture that is specific to a particular region

local
related to things found in a particular place or community

custom
a traditional practice, behavior, or ritual often passed down
from generation to generation

(bio)diverse
a variety of biological characteristics in a particular
environment

mixed use
the use of a place or building for different things,
like living, business, and shopping

holism
a philosophy that emphasizes understanding systems as a
whole, rather than just the individual parts,
and the interrelationships between those parts

The history of agriculture shows how it changed over time in North Brabant, blending local ways and a strong bond with the land. They embraced change while staying true to their identity. They focused on diversity, mixed uses, and working with nature, which made farming better, more sustainable, and friendlier to the environment. The agricultural tradition in North Brabant was characterised by continuous dedication, 24/7 commitment and a strong sense of cultural identity.

Present

revolutionar
something that brings about a major change or innovation

generic
a common version of something without specific attributes

global
related to the entire world or worldwide in scope

standard
a commonly accepted or established level
of quality or expectation

monofunctional
created and used for a single
specific purpose

seperated
places or buildings are used for a specific purpose,
divided from one another

reductionism
a philosophical and scientific approach that seeks to understand
complex phenomena by breaking them down into their
individual components to gain better insight

The suburban area promotes a generic and standardized approach that focuses on global interest rather than what's best for the local community. It separates different functions and leaves aside what the community and the environment really need. It also misses out on the many different parts of a thriving rural area, which values (self-)sustainability, cultural heritage, and a harmonious relationship with nature.

Analysis

Location

Area

The area used to be called the Huifakker, named after the farm 'The Huifakker' that stood there then. Now, after this green area was transformed into a mostly built-up, asphalted place, this area consists of 2 neighbourhoods: Steenakker and Westerpark.

The transformation of the former Huifakker into the Steenakker district is not only reflected in its name. This neighbourhood is now a built-up and asphalted, mainly business area in the west of Breda. Relatively few residential houses can be found here, but instead very many businesses and (residential) shops have settled here. Part of this area is the Stadiongebied. As the name suggests, the NAC Breda football stadium occupies a prominent place here. Next to it is a shopping centre called Stada. With its accompanying many parking spaces.

Steenakker and Westerpark are separated by the railway tracks and by a stretch of undeveloped land, vacant land.

Westerpark is a typical Vinex area, located on the western side of Breda. This neighbourhood was developed in the 2000s. Like most Vinex areas, this is a typical living quarter with not many other facilities. Working, studying and recreation mostly take place outside the neighbourhood. As a result, a lot of traffic happens out of the neighbourhood. In addition, this area mostly consists of uniform architecture and a lack of diversity in building styles. As a result, the neighbourhood feels monotonous and characterless, with little variation in appearance and design.

Braakliggend terrein
Vacant land

In and around industrial areas and Vinex districts, it is common to come across undeveloped land, vacant land. These pieces of land are often closed off and not accessible for recreational activities. This can be a loss for local residents, as there are limited opportunities to relax and enjoy green spaces.

Vacant land are usually temporary places that have not yet been designated. They can be caused, for example, due to construction projects that have not yet started or the demolition of old buildings with no immediate plans for redevelopment.

The lack of access to these pieces of green space can have a negative impact on the liveability of the area. Residents may have limited opportunities for outdoor recreation, walking or enjoying nature.
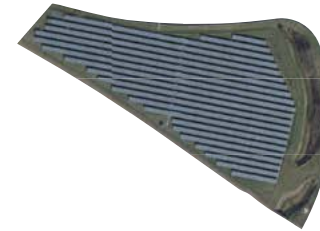
This place is called 'ZonneWIJde', referring to the 6.904 solar panels that have been here since 2017. Why it was chosen to use this piece of land, instead of roofs of, say, the many offices or houses, is not clarified, but it does mean that this 'patch of green' is not available for recreational use by the population.

2,75 hectares
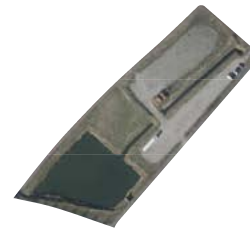
This is a piece of undeveloped land that is also used as additional parking when, for example, NAC Breda plays. There is mainly grass and gravel on this site. There is also a puddle of water on this terrain.

1,7 hectares

This patch of green is cut off from the rest on both sides by the railway. In addition, the Westerparklaan road runs right through this area. And there is no possibility of entering this piece of land because it is fenced off.

1,9 hectares

This Vacant land is also intersected by Westerparklaan and also surrouned by fences.

2,4 hectares

This is another piece of Vacant land. Fenced off and the smallest of the five areas.

1 hectares

1

2

3

4

	activity	size	location	intensity	accesibility	elements/ structures
1	Left over wanderspaces	15 hectares	inbetween zones non-places seperating the areas buffer zones	Minimal care no visits pruning and mowing once every while	poor next to or cutt of by (rail)roads	Electricity transformer cables and piping Infrastructure minimal green solar park temporary parking
2	Residential Vines housing area	14 hectares	close to the city center and other facilities. Only living in this area.	"Sleeping" area lots of movement after working hours	Good	housing blocks appartementblock playground parkinglots
3	Shopping/Retail	8 hectares	Close to residential area or main roads.	Daily visited during openinghours shops. Empty afterwards	Very good for cars but bad for cyclist and walking people. big parkinglots in front of the shops. Near to highway. In service of customers	Big shopping hall parkinglot with car chargers surrounded. Fences with gate; close. flags and signs
4	Office	6 hectares	Close to main roads / highway. Edges of city	Daily visited during weekdays on opening hours. During evening empty.	Very good for cars but bad for cyclist and walking people. Big parkinglots, empty at night. focussed on commuters.	office blocks parkinglot with car chargers surrounded. Fences with gate; close. Signs / advertisement.
5	Industrial	20 hectare	On the outeredge of the city near to highway. Seperated from other areas.	Daily visited during weekdays on opening hours. During evening empty.	Very good for cars and trucks. Optimized logistics. bad for cycling walking. focussed on transportation.	industrial halls loadingdocks and parkinglots. Fences with gate; close. flags and signs.
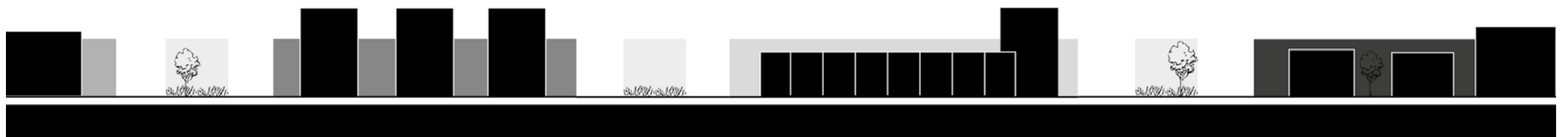
Lost farm of my grandparents

Present situation
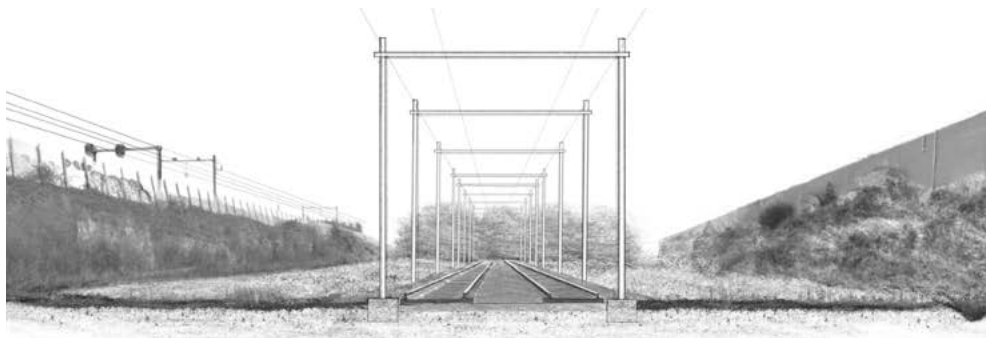
Former railway

Choice of plot

The choice of a vacant piece of land is due to its availability and potential for transformation. The specifically chosen site has a central location. It is located on the border of Westerpark and Steenakker. In addition, this is also where my grandparents' farm used to be next to the former railway track.

The plot is a strategic location, adding depth and meaning by my personal history.

Reconstruct

Location

1. Fence
The plot is now inaccessible. All vacant pieces of land are seperated by fences and borders.

2. Entrance
Easily accessible via a wide bicycle lane.

3. Infrastructure
The road and railway form a dividing line; the bike lane serves as a connector.

4. Houses and green sloped wall
Actually, this takes over the function of the wooded bank, protecting the area from wind, among other things. The houses have no windows at the back.

5. Vegetation
The area is rich in many different species of plants and trees.

Building site

The plot where the design will be, is on the largest piece of vacant land. Next to that, it is easily accessible and is located between the residential houses and the offices and warehouses.

Program

Zones

For the design of the farm, I'll be using the theory of The Basics of Permaculture Design. This concept makes use of a holistic design approach of zoning. Zoning is based on the principle that elements in a system should be placed according to their frequency of use and their specific needs. The goal is to minimize energy and resource inputs while maximizing efficiency and productivity. Permaculture typically divides a site into different zones based on the intensity of human use and the needs of different elements. The exact number and layout of zones may vary depending on the specific design and site conditions, but a common approach is to use five zones. When organizing elements within each zone, various factors are considered, such as water availability, sun exposure, microclimates, soil fertility, and the relationships between different elements.

Since I'll be implementing the farm into a suburban area, also other factors will be taken in account. These factors are specific for the area where the zone will land. The different areas are all used in specific way at specific moments. The aim is to look for stimulating combinations creating a symbiosis between both.
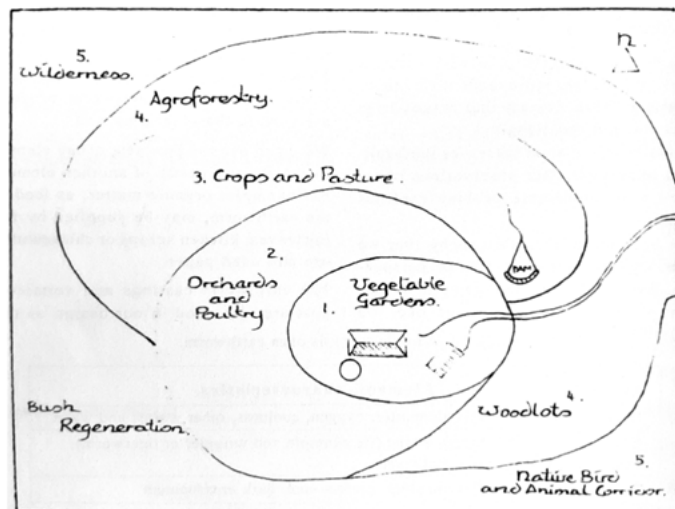
Zone 0: Home or Living Space
This zone represents the central living area, such as the house or dwelling, where most daily activities occur. It includes indoor spaces, gardens, and immediate surroundings directly connected to human habitation.

Zone 1: Intensive Production
Zone 1 is the area closest to Zone 0 and typically includes high-maintenance and frequently visited areas. It may consist of small-scale intensive vegetable gardens, culinary herbs, or frequently accessed plants or structures.

Zone 2: Mixed Production
Zone 2 extends further from the house and includes larger-scale food production, such as orchards, larger vegetable gardens, small livestock areas, or ponds. It requires less frequent attention than Zone 1.

Zone 3: Extensive Production
Zone 3 contains less intensive agricultural systems, including larger livestock areas, grain crops, or larger-scale orchards. This zone requires periodic visits for management and harvesting.

Zone 4: Semi-Wilderness
Zone 4 represents areas of the property that require minimal maintenance and may include managed forests, wildlife habitats, or areas for foraging. It allows nature to largely self-regulate with limited human intervention.

Zone 5: Wilderness
Zone 5 is the least managed area and aims to preserve and protect natural ecosystems. It serves as a reference point for observing natural processes and conserving biodiversity.

	activity	size	location	intensity	accesibility	elements/ structures
0	Nexus of human activity; production and processing of food, waste, watercollection, repairs and education. Living / housing	Medium size building / group accomodation or an assemble of multiple smaller buildings	Epicenter of the regenerative farm	High intensity: daily use and care	Very good	Settlement or dwelling; Selfsustaining Farmbuilding
1	Intensive garden beds Vegetable garden flower garden Micro climate local community	1/4 hectare	as close to zone 0 as possible	High intensity: frequently visited area needed regular observation, tending and harvesting. Intensive weeding and mulching, dense planting, espalier	Very good	greenhouse barn water storage/tank compost greywater toolshed workshop beestation
2	Food production Market crops Small orchard animals needing daily attention	1-2 hectare	near to zone 0	Semi-intensely cultivated spot mulch, cover crops and seasonal pruning	Good	greenhouse barn compost toolshed workshop well/pond
3	Large fruit trees nut trees livestock pasture forage system	2 - 20 hectares	moderate distance to zone 0	Occasionaly visited cover crops, little pruning and moveable fences	Good	feed storage animal feeders field shelters
4	Agroforestry Wild food gathering/ foraging Wood cutting building materials	Any size	surrounding zones 0-3 creating shelter	Minimal care pasturing and selective forestry	Poor	Shelters
5	Wilderness meditation, preservation, observation/learning semi-public, protected areas	Any size	On the outer edges of the farm creating natrual refuge and buffer	unmanaged / self-sustaining	Very poor	shelter bird hide observatory watchtower
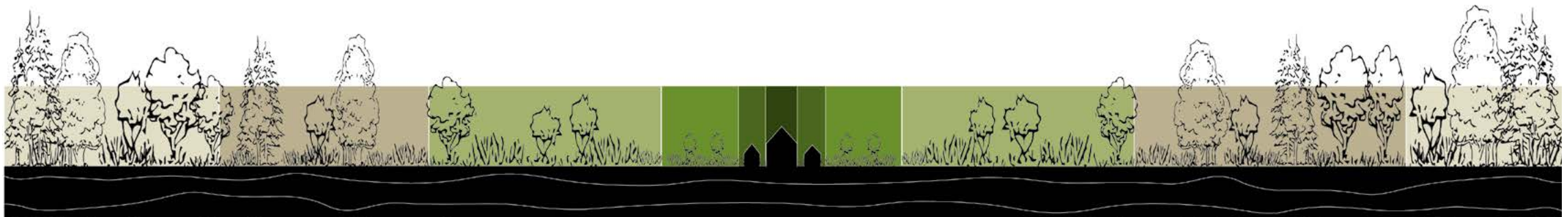
Zone 0 | Epicenter
Home or living space

Zone 0 refers to the core living space or immediate surroundings of human activity. It includes indoor areas like sleeping rooms, living rooms, kitchens, bathrooms, and home offices. The focus of Zone 0 is on meeting the immediate needs of the residents and creating a comfortable, functional, and efficient living space.

Elements in Zone 0 may include resource management systems like rainwater harvesting, greywater recycling, and waste composting. It can also involve indoor food production methods like container or winter gardens.

Zone 0 emphasizes skills development, self-sufficiency practices, and the aim for a sustainable lifestyle.

Maintenance and attention to the design principles in this zone are crucial for creating a harmonious and productive living environment.

The term "Zone 0" is not officially part of the permaculture zoning system, it is sometimes informally used to refer to this core living space and its immediate surroundings.

Examples of flora and fauna in zone 0

Ornamental plants Roses, tulips, daffodils, and hydrangeas.

Potted plants spider plants, peace lilies, succulents, and herbs like basil, rosemary and mint.

Vertical garden climbing plants, trailling vines, and ferns.

Domesticated animals cats, and dogs.

Small mammals Mice, rats, and squirrels.

Birds Pigeons, sparros, starlings, blackbirds, and robins.

Insects beets, butterflies. ladybugs and beetles.

Zone 1 | 0,9 hectares
Intensive production

Zone 1 is the zone closest to the living space or dwelling and typically receives the most frequent attention and intensive management. It is characterized by the inclusion of elements that require regular interaction and are highly accessible for daily use. Here are some elements that can be found in Zone 1:

Kitchen Garden
A small, intensively managed kitchen garden located near the house. This garden is designed to provide fresh and easily accessible herbs, vegetables, and fruits for daily consumption.

Culinary Herbs
A variety of culinary herbs are commonly grown in Zone 1, as they are frequently used in cooking and readily accessible near the kitchen. Examples include basil, parsley, thyme, rosemary, and mint.

Medicinal Herbs
A selection of medicinal herbs for home remedies and health maintenance. These herbs may include chamomile and lavender.

Salad Greens and Quick-growing Vegetables
Fast-growing vegetables and salad greens that can be harvested frequently, such as lettuce, spinach, radishes, and microgreens, are often included in Zone 1 for regular harvest and consumption.

Compost System
A small-scale composting system, such as a compost bin or worm composting, may be located in Zone 1 to manage kitchen scraps and produce nutrient-rich compost for the nearby garden beds.

Rainwater Harvesting
Zone 1 can incorporate rainwater harvesting systems, such as rain barrels or small tanks, to collect and store water for use in the nearby garden beds or containers.

Garden Tools and Supplies
Tools and supplies used for gardening, such as hand tools, watering cans, and pots or containers, are typically stored in or near Zone 1 for easy access.

Examples of flora and fauna in zone 1

Salad greens and vegetables Lettuce, spinach, radishes, carrots, beets and parsnips.

Culinary herbs Basil, parsley, rosemary and mint.

Medicinal herbs chamomile, lavender, and thyme.

Domesticated animals cats, and dogs.

Small mammals Mice, voles, and shrews.

Birds Chickadees, sparrows, finches, and birds of prey like owls and hawks.

Insects ladybugs, beetles, bees, and butterflies.

Zone 2 | 0,9 hectares

Mixed production

Zone 2 is the area beyond Zone 1 and represents a zone of mixed production and less intensive management. It is characterized by elements that require periodic attention and serve as a transition between the highly managed Zone 1 and the more extensive Zones 3 and beyond. Some common elements that can be found:

Fruit Trees and Orchards
Zone 2 often includes fruit trees, such as apple, pear, cherry, or plum trees. These trees require less frequent care compared to Zone 1, but still benefit from occasional pruning, fertilizing, and harvest.

Perennial Vegetables
Zone 2 can include perennial vegetables that require less maintenance and provide a steady yield over several years. Examples include asparagus, rhubarb, artichokes, or perennial herbs like thyme or sage.

Berries and Cane Fruits
Various berries and cane fruits, such as raspberries, blackberries, gooseberries, or currants, are commonly planted in Zone 2. These plants may require pruning, trellising, and occasional care.

Small-Scale Livestock
Zone 2 can accommodate small-scale livestock, such as ducks, rabbits, or small flocks of chickens. These animals can graze, forage, or be housed in mobile structures like chicken tractors.

Beehives
Zone 2 may include beehives for honey production and pollination purposes. Beekeeping requires periodic monitoring and management of the hives.

Nut Trees
Zone 2 can incorporate nut trees, such as walnut, hazelnut, or chestnut trees. These trees require less maintenance and provide a long-term food source.

Composting and Mulch Production
Larger composting areas or compost bins to process manure, or other organic materials.

Examples of flora and fauna in zone 2

Fruit trees and Orchards Apples, pear, cherry, and plum trees.

Nut trees Hazelnut, walnut and chestnust.

Perennial vegetables Aspergus, rhubarb, artichokes, and herbs like thyme and sage.

Berries and cane fruits Raspberries, blackberries, gooseberries, and currants.

Small-scale livestock Chickens, ducks, and rabbits.

Mammals Mice, rabbits, hares and voles.

Birds Sparrows, finches, blackbirds, and starlings.

Insects Bees and butterflies.

Zone 3 | 1,5 hectares

Intensive production

Zone 3 is the area that extends beyond Zone 2 and represents an extensive production zone. It is characterized by elements that require minimal maintenance and are managed on a less frequent basis. Zone 3 focuses on larger-scale production and activities that support self-sufficiency and sustainability. Some common elements that can be found in Zone 3:

Field Crops
Zone 3 often includes larger areas for growing field crops such as grains, legumes, or oilseeds. These crops require minimal maintenance once established and are typically harvested at a larger scale.

Livestock Grazing
Zone 3 can accommodate larger livestock such as cows, sheep, or goats for grazing purposes. The animals have access to larger pasture areas and may be rotated to prevent overgrazing and maintain soil health.

Agroforestry Systems
Zone 3 may incorporate agroforestry systems, which combine tree crops with agricultural or livestock production. This could include alley cropping, where rows of trees are integrated with annual crops, or silvopasture, where trees are combined with grazing animals.

Windbreaks and Shelterbelts
Zone 3 can include strategically planted trees, hedges, or windbreaks to provide protection from strong winds and create microclimates for more sensitive crops or livestock.

Wildlife Habitats and Conservation Areas
Zone 3 can incorporate areas of land set aside for wildlife habitats, biodiversity conservation, or natural ecosystem regeneration. These areas contribute to the overall ecological balance of the permaculture system.

Firewood Production
Zone 3 can include designated areas for growing trees or shrubs specifically for firewood production. These resources provide a renewable source of energy for heating or cooking.

Examples of flora and fauna in zone 3

Winter crops Winter wheat, rye, barley and winter oats.

Forage grasses Timothy, fescue, and ryegrass are often used as forage for livestock.

Legumes Red clover, white clover, and alfalfa.

Hedgerow Hawthorn, blackthorn, elderberry, and dogwood.

Grazing livestock Cattle, sheep, and goats.

Mammals Mices, voles, and shrews.

Birds Sparrows, finches, pheasants, partridges and raptors such as owls and hawks.

Insects Ladybugs, lacewings, wasps, bees, and butterflies.

Zone 4 | 3,75 hectares
Semi-wilderness

Zone 4 represents a transition between the cultivated areas closer to human settlements and the more wild or natural areas further away. It is a zone where some human intervention occurs, but in a limited and selective manner.

Here are the characteristics and elements typically associated with Zone 4 in permaculture design:

Agroforestry Systems
Zone 4 often includes areas dedicated to agroforestry, which combine trees with crops or livestock. This can involve the integration of tree crops, such as timber or fruit trees, with grazing animals or understory crops.

Selective Harvesting
Zone 4 may allow for the selective harvesting of resources from natural systems, such as timber, non-timber forest products, wild foods, or medicinal plants. Harvesting is done in a sustainable and ecologically sensitive manner.

Wildlife Habitat
Zone 4 provides habitat for native wildlife species and allows for the protection and enhancement of biodiversity. It supports the natural ecological processes that contribute to a healthy and resilient ecosystem.

Watershed Managemend
Zone 4 may involve practices that aim to protect and improve the quality of water sources within the permaculture site. This can include measures like riparian restoration, erosion control, and the conservation of water catchment areas.

Natural Succession
Zone 4 allows for natural ecological succession to take place, providing opportunities for ecosystems to evolve and regenerate over time without human interference.

Conservation and Restoration Efforts
Zone 4 can include areas dedicated to the conservation and restoration of native plant species, habitats, or ecosystems that have been degraded or disturbed.

Examples of flora and fauna in zone 4

Fruit trees Apple, pear, cherry and plum.

Nut trees Walnut, hazelnut, and chestnut.

Berry bushes Raspberry, blackberry, currant, and gooseberry.

Medicinal and herbaceaous plants Chamomile, lavender, and echinacea.

Mammals Mice, shrews, voles, and hedgehogs.

Birds Sparrows, woodpeckers, thrushers, owls and birds of prey like hawks and kestrels.

Insects Bees, butterflies, ladybugs, lacewings and predatory wasps.

Zone 5 | 1,9 hectare
Wilderness

Zone 5 is designated as a zone of unmanaged or wild nature. It is the outermost zone and represents a space where human intervention is kept to an absolute minimum or eliminated entirely. Zone 5 is intended to be a sanctuary for wildlife, a place for ecological restoration, and a reference point for observing natural processes. It is characterized by the following principles:

Wilderness
Zone 5 is allowed to evolve and develop as a self-regulating ecosystem, free from human manipulation. It can include areas of untouched or minimally disturbed natural habitat.

Biodiversity Conservation
Zone 5 is dedicated to the preservation and enhancement of biodiversity. It provides a refuge for native plant and animal species, including those that may be rare, endangered, or have specific habitat requirements.

Ecological Restoration
Zone 5 may involve active efforts to restore damaged or degraded ecosystems to a more natural state. This can include habitat restoration, or reintroduction of native species.

Observation and Learning
Zone 5 serves as an educational and research resource, allowing for the study of natural ecological processes and the observation of wildlife behavior. It provides valuable insights into ecological dynamics and serves as a reference for ecological benchmarking.

Limited or No Human Access
In Zone 5, human access and intervention are strictly limited or eliminated altogether. This minimizes disturbances and allows for the preservation of natural processes and ecological integrity.

Landscape Connectivity
Zone 5 can function as a link between different natural areas, serving as a wildlife corridor or stepping stone for species movement and genetic exchange.

Ecosystem Services
Zone 5 contributes to the provision of ecosystem services such as pollination, water filtration, soil conservation, and carbon sequestration.

Examples of flora and fauna in zone 5

Trees Oak, beech, birch, maple, and pine.

Shrubs Hawthorn, elderberry, blackberry, and dogwood.

Wildflowers Daisies (Bellis perennis), foxgloves (Digitalis spp.), poppies (Papaver spp.), and meadowsweet (Filipendula ulmaria).

Grasses Fescue, ryegrass, and reed grass.

Mammals Rabbits, hedgehogs, red foxes, and occasionally a deer.

Birds Blackbirds, blue tits, sparrows, and various waterfowl like ducks and geese.

Insects Butterflies, bees and dragonflies.

Building

To integrate the regenerative farm into the suburban area based on the principles of permaculture design a multifunctional building is added. The farm consists of residences for future farmers, production facilities such as a workshop and bakery, educational spaces for teaching and sharing knowledge, and recreational areas such as a tasting room and atelier. All functions are related to and connected by the surrounding cultural landscape. The design emphasizes on creating a strong relationship with the earth and working together with nature. The design of the building–makes use of a holistic approach. Regenerating the soil and creating a healthy, productive and sustainable area with a strong biodiversity. The building will be part of the landscape. The farmhouse will focus on climate and help growing plants and vegetables. The barn stores tools and equipment and takes care of the animals and biodiversity. The workshop fosters craftsmanship and will focus on biobased reused materials. The makery is a hub for the community and local people creating handcrafted goods and food. The concept of the farm stimulates awareness, ecology and promotes community engagement. It envisions a future where nature, humans and the built environment are in harmony.

Residence
Dwelling for 8 (future) farmers

The farmhouse on a regenerative farm serves as the residence for the farmers. It is a central hub where various activities related to the farm management and daily living take place.

Living Spaces
The farmhouse includes bedrooms, bathrooms, a kitchen, dining area, living room, and possibly additional rooms such as a home office, study, nor utility room.

Kitchen
The kitchen is equipped with cooking appliances, cookware, utensils, and kitchen tools for meal preparation. It may also have a pantry or storage area for food supplies.

Dining Area
The farmhouse has a designated space for dining, such as a dining room or an area within the kitchen.

Hallways
The entrance hall is the place for welcoming guests, the place for muddy boots, and a central point for accessing various parts of the home. Next to that there are hallways efficiently guiding traffic throughout the home, ensuring a smooth flow between different rooms and areas.

Heating and Cooling Systems
The farmhouse needs heating systems like for instance a furnace, fireplace, or wood-burning stove, as well as cooling systems such as air conditioning or fans. Aiming to achieve this in a sustainable, natural of passive way.

Storage Areas
The farmhouse includes storage spaces such as closets, cabinets, and shelves for personal belongings, clothing, and household supplies.

Outdoor Spaces
The farmhouse can include a winter garden, terrace, container garden or green house. This can help regulate the indoor climate and make use of the building for growing vegetables and plants.

Entrance hall
with storage space for clothes and shoes

Kitchen
equipped with appliances, countertops, and storage for cooking utensils and ingredients

Pantry
food storage and washing machine

Dining room
table(s) for 8 people

Sleeping rooms
bed, personal space and personal storage

Livingroom
place to relax and recreate with the group

Sanitary space
bathroom for 8 people

Toilet
seperate rooms

Storage
for equipment, food and vehicles

In the storage spaces of a regenerative farm various items and equipment can be found related to the operations and activities of the farm. The different elements to be stored are:

Feed
The farm has storage space for animal feed. This can include silos, or other containers to store hay, grains, or other livestock feed.

Milking equipment
If the farm has dairy animals, the barn includes milking equipment, such as milkers, milk storage tanks for milk handling.

Tools and equipment
The barn will contain a range of tools and equipment used for farm operations. Items such as shovels, pitchforks, wheelbarrows, buckets, hoses, and other tools needed for animal care, feeding, and general maintenance.

Vehicles
Depending on the size the barn has storage space for farm vehicles, such as tractors, utility vehicles, or trailers, used for various tasks.

Veterinary supplies
The barn may have a designated area or storage space for veterinary supplies, including medicines and vaccines.

Waste management systems
Farms often have systems in place to manage animal waste effectively. For example: the composting systems.

Farm inputs
The barn may also store various farm inputs such as seeds, fertilizers.

Food/crop storage dry
storing agricultural products in a dry place

Food/crop storage cool
storing fruit, vegetables and diary products in a cool place

Farm input
storing of seeds and fertilizers

Tools and equipment
storage for range of tools in different sizes

Vehicles
storage for (large) vehicles, such as tractors

Routing/hallway

Water storage

Shelter

Animal housing for wool, milk, honey and manure

The choice of animals for a regenerative farm depends on various factors, including specific goals, resources, climate, and size. The most common animals found on a regenerative farm, along with their needs and purposes:

Cows

Cows have various purposes, including meat production, milk production, and soil regeneration through rotational grazing. They require grazing land, access to clean water and shelter from extreme weather.

Sheep and Goats

Sheep and goats produce milk, wool, and vegetation management. They are well-suited for grazing on diverse vegetation and can help control weeds and pasture. They need grazing areas, shelter and fresh water.

Poultry (Chickens, Ducks)

Poultry can provide eggs, pest control, and manure. They require suitable housing, access to outdoor areas for foraging, protection from predators and clean water.

Pigs

Pigs are efficient at converting organic waste. They require housing with proper ventilation and access to outdoor areas for rooting and foraging.

Bees

Beekeeping is an essential component for supporting pollination and contribute to the ecosystem's health. Bees need beehives that provide protection from the elements and access to floral resources.

Indigenous or Native Animals

Including indigenous or native animals in the regenerative farm to support biodiversity and ecosystem restoration.

Cows
open shelter for pasture access

Shelter for chicken
mobile chicken tractors

Shelter for ducks

Shelter for goats

Shelter for sheep

Shelter for pig

Beehive

Storage for:
feeding and bedding
veterinary supplies
compost
fencing and safety system

Workshop

Place for processing and working on natural and circular materials

A workshop consists of several areas that are designed to facilitate various crafts. This workshop will work on clay, wood, stone, reed, straw, and chalk hemp all sourced locally.

Workbenches

Fundamental for the workshop. They provide a flat surface for performing woodworking tasks such as cutting, shaping, and assembling wood. Workbenches may have built-in vices, clamps, and storage compartments for tools.

Power Tools Area

This area is dedicated to the use of power tools, such as table saws, band saws, planers, jointers, and routers. The area may also have dust collection systems.

Hand Tools Area

This area includes tool racks or cabinets to store and organize various hand tools like chisels, hand planes, saws, hammers, and screwdrivers.

Assembly Area

This is where wood pieces are joined together, and final assembly of projects takes place. It should have ample space to lay out and assemble larger pieces of furniture or projects.

Material Storage

A wood workshop requires space for storing lumber, plywood, and other raw materials. This area may include racks, shelves, or a designated storage room to keep the materials organized and accessible.

Docking area materials
receiving/unloading and organizing materials and supplies before moving to other sections

Workbenches
with tools nearby for working

Power tools area
place to use and store electrical/pneumatic tools

Hand tools area
place to use manual tools

Assembly area

Material storage / drying area
with racks and shelves to organize materials

Tools storage
with racks and shelves to organize tools

Canteen with pantry

Toilets

Makery
Collective place for processing local products

A makery for food is a makerspace with food-related activities. It refers to the space where individuals or communities can engage in various food-related activities, education, and innovation. The makery for food stimulates hands-on learning of food production and processing of local vegetables, fruits, mushrooms, grains herbs, mushrooms, and milk to make bread, cheese, and other food.

Kitchen facilities
The kitchen is a fundamental component of the food makery. It includes cooking stations, appliances, and tools necessary for food preparation, cooking, and baking. The kitchen has equipment for food processing, such as juicers, dehydrators, and fermenting vessels.

Workspaces
These spaces can be flexible and adaptable to accommodate different types of projects. Workspaces may have storage areas for ingredients, equipment, and access to sinks and water sources.

Food storage
The makery has provisions for storing food. This includes refrigeration units, freezers, dry storage areas and pantry space.

Education and training
A makery serves as a hub for learning and skill development. It may offer workshops, classes, or training sessions.

Community engagement
The makery aims involves the local community. It organizes events and food related initiatives stimulating participation and awareness.

Additional structures
Secondary functions

In addition to the main buildings and structures, there are several small functions and features that are used for operations and sustainability of a regenerative farm. Some examples are:

Rainwater catchment systems
This helps capture rainwater from various surfaces such as roofs, sheds, and pathways. This water can be directed to gardens, livestock or other areas requiring irrigation.

Infrastructure
Elements and roads for moving and managing the logistical functioning of the farm. Elements like trails, roads, trespasses, and crossings.

Pollinator habitats
Creating areas with native plants, wildflowers, and flowering shrubs can attract pollinators like bees, butterflies, and birds.

Wildlife-friendly corridors
Establishing wildlife-friendly corridors or planting hedgerows provide habitat and shelter for insects, birds, and other wildlife. These corridors can also serve as windbreaks.

Renewable energy infrastructure
Besides solar panels the farm can make use of wind turbines, small-scale hydroelectric systems, or biogas digesters. These energy sources can power farm operations, reduce reliance on fossil fuels, and contribute to a more sustainable energy mix.

Nursery
Area where young plants are nurtured before they are transplanted to their permanent growing locations.

Kitchen
multiple workstations and countertops

Food storage dry
storing food in a dry place

Food storage cool
storing food in a cool place, including a space for aging cheese

Food reception area
loading dock and storage tanks

Equipment and tool storage

Baking equipments
oven, refrigerations and other baking equipments

Ventilation and exhaust systems

Washing / cleaning area

Dining/tasting room
entrance, wardrobe, outside terrace

Toilets

Rainwater catchment systems

Infrastructure
roads and trails

Pollinator habitats

Wildlife-friendly corridors
giving shelter and a habitat for wildlife

Renewable energy infrastructures
solar panels, wind turbines and so on

Nursery
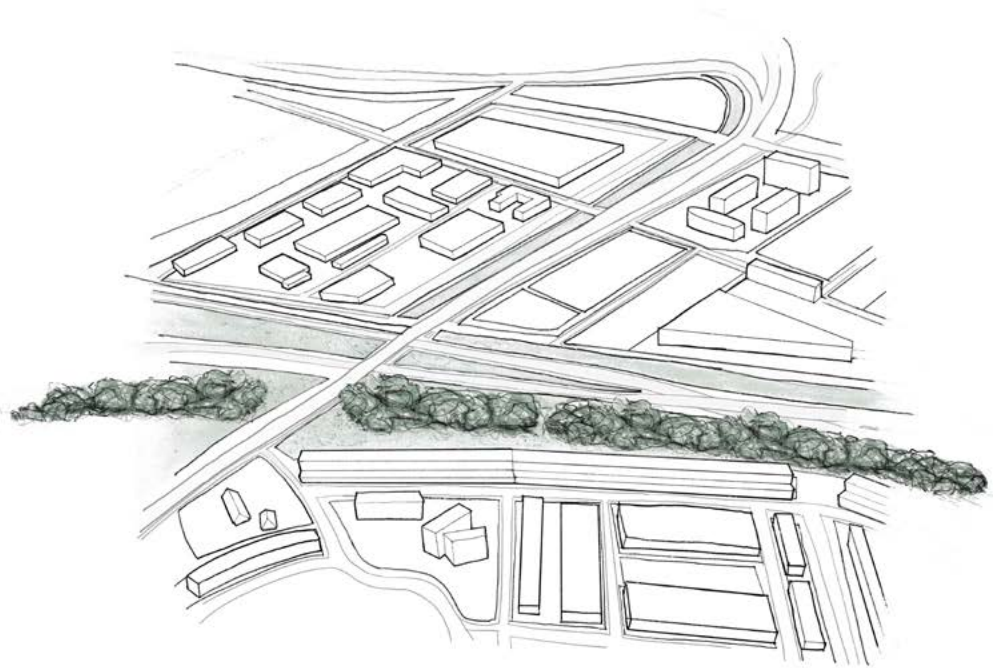for young plants

RE:GENERATE

Regenerate

The second phase of the project pivots towards regenerating these forgotten values, endeavoring to strengthen social, cultural, and ecological ties. The design expresses my vision for the area and translates the outcomes of the research in the following chapter.

Concept

Concept

At the plot where my grandparents' lost farm once was, a regenerative urban farm takes root, blending traditional and contemporary functionality. This multifunctional structure encompasses residences for future farmers, production facilities such as a workshop and bakery, educational spaces for teaching and sharing knowledge, and recreational areas such as a tasting room and atelier. It uses the unused vacant pieces of land, considering them as common ground, for reintroducing cultural landscape elements. As the farm gradually grows into the area, it shares a holistic philosophy based on an environmental consciousness. Grounded in vernacular, repurposed and contemporary materials and techniques, the urban farm serves as a beacon of change fostering communal reconnection and nurturing the revival of local culture and ecology.

Making use of vacant land, using the limited amount of space efficiently, to grow into the existing built environment.
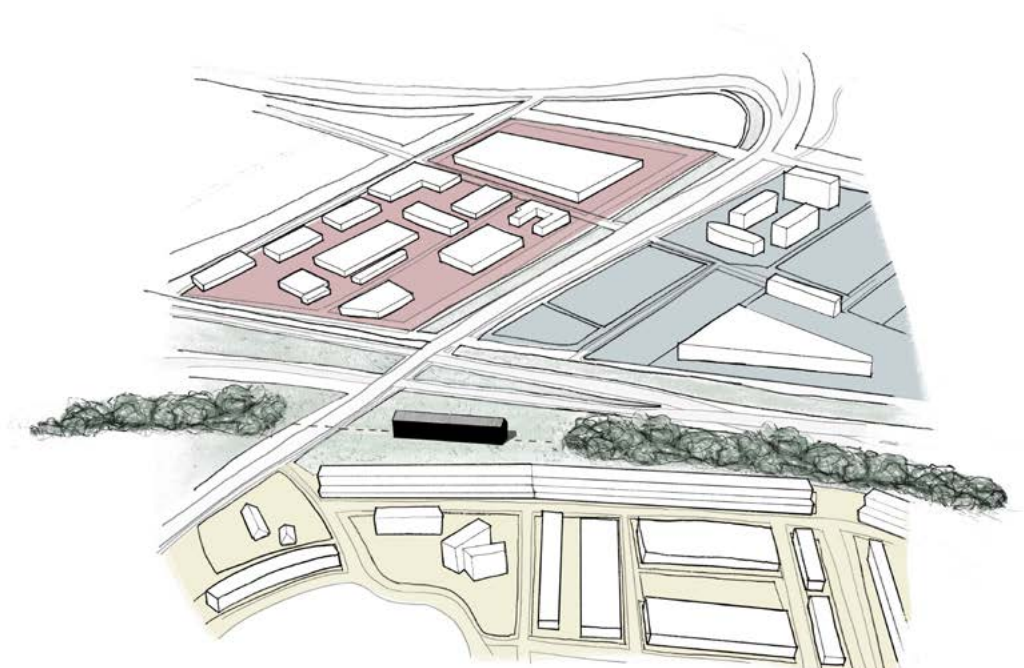
Building a regenerative urban farm in between of the divided areas.
Creating a place where the areas meet, on the plot where the farm of my grandparents once was.
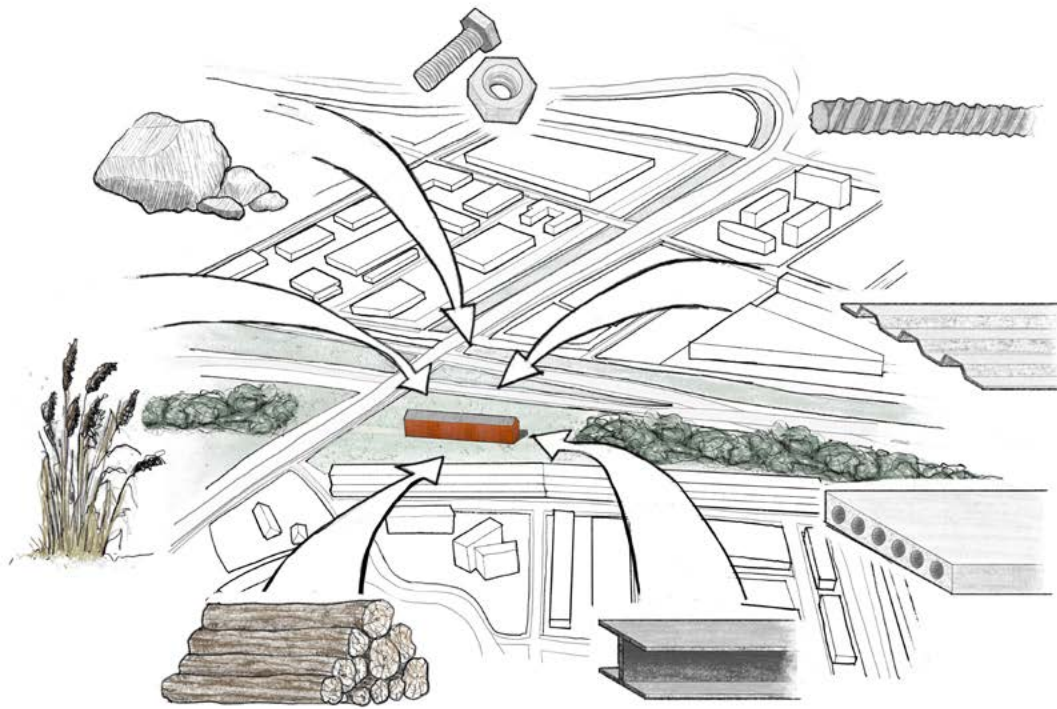
Building with local materials; biobased and circular. In cooperation with the local community using traditional craft in a contemporary way creating hybrid building methods.
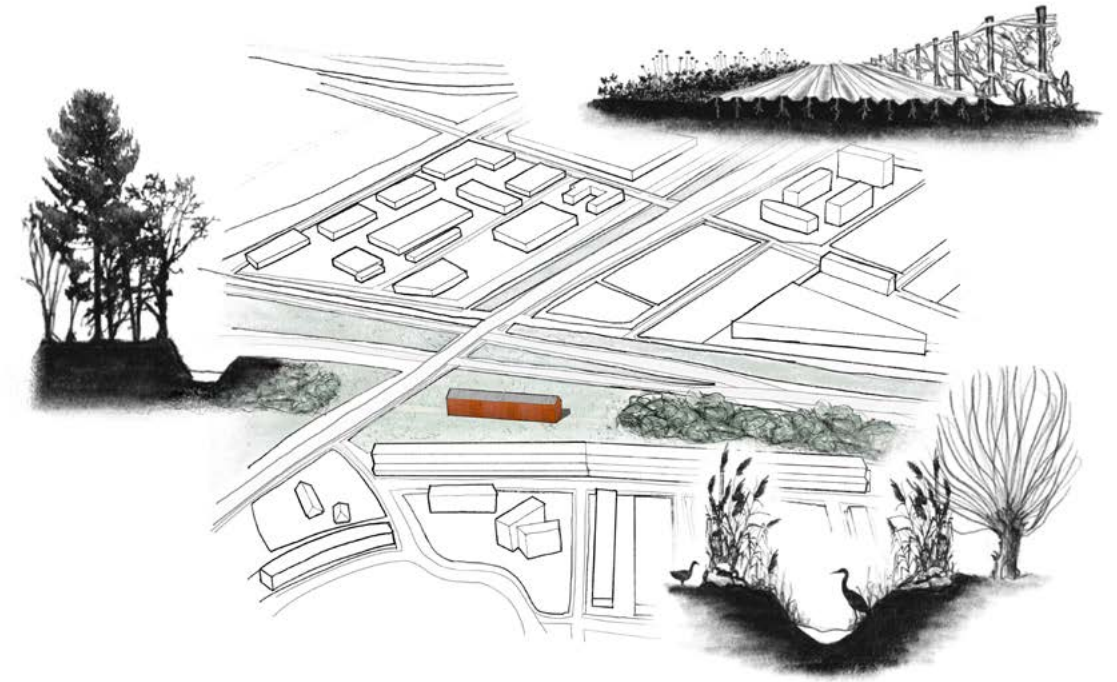
Reintroducing cultural landscape elements according to the traditional principles of the former farmers of the area. Adding wooded banks and creecks with reed. Making use of their functional abilities and stimulating ecology. Reconnecting the divided areas and the people to eachother and the land.
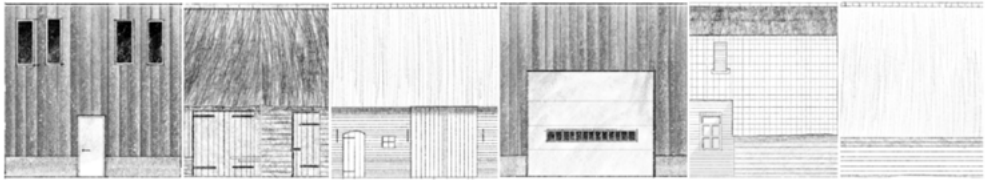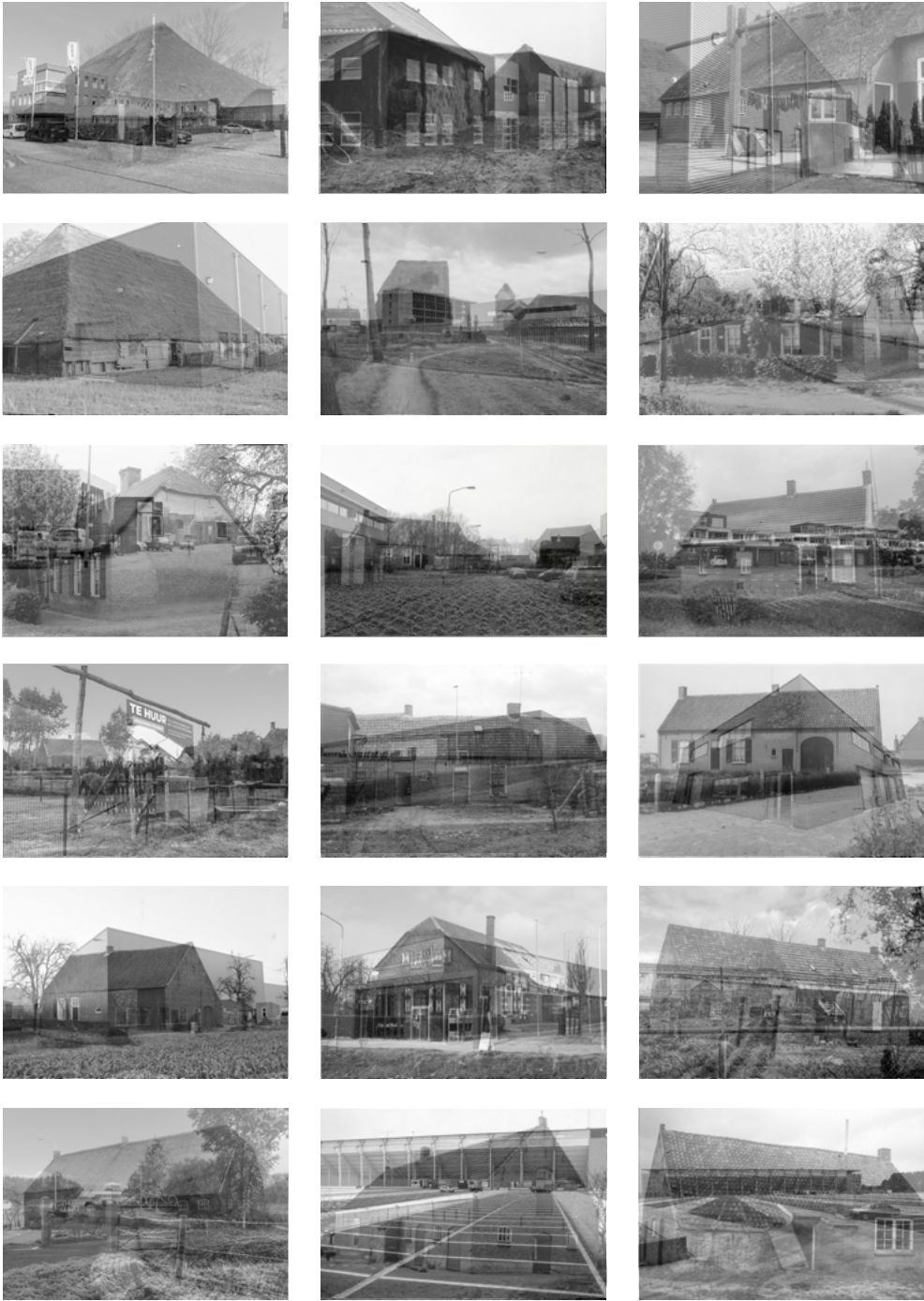
Principles
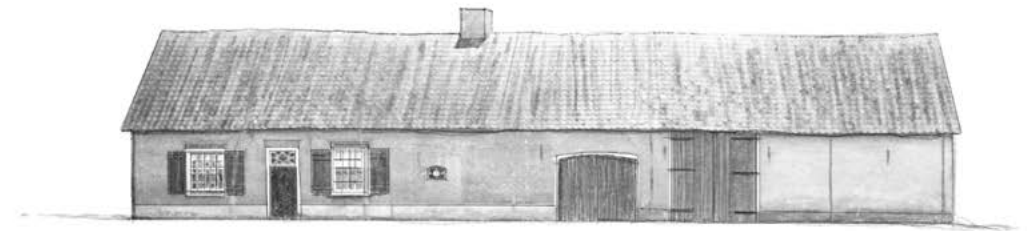
'Langgevelboerderij'

Building in phases based on the availablity
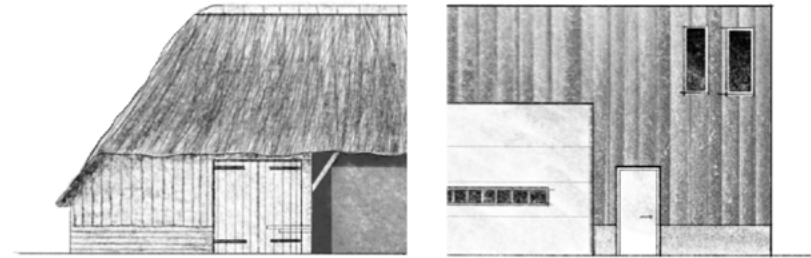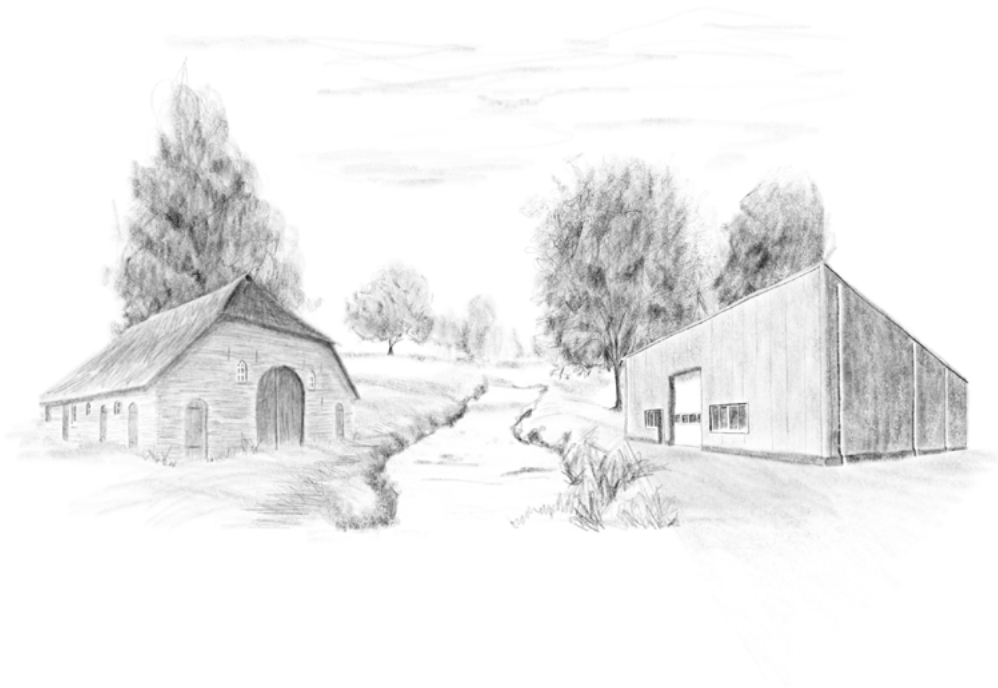of demand and materials.

Coot's nest

Taking inspiration from a coots nest, using found objects in the environment. A structure that resembles its surrounding.
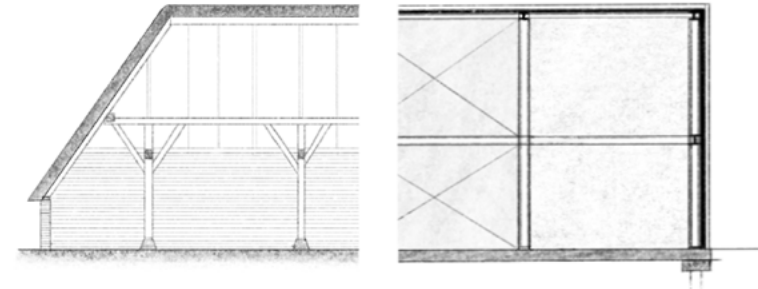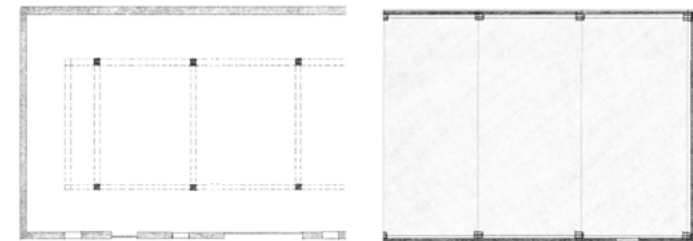
Genius Loci

Looking at the distinctive atmosphere of the place, embodying its unique essence by using the natural and cultural elements that define it.
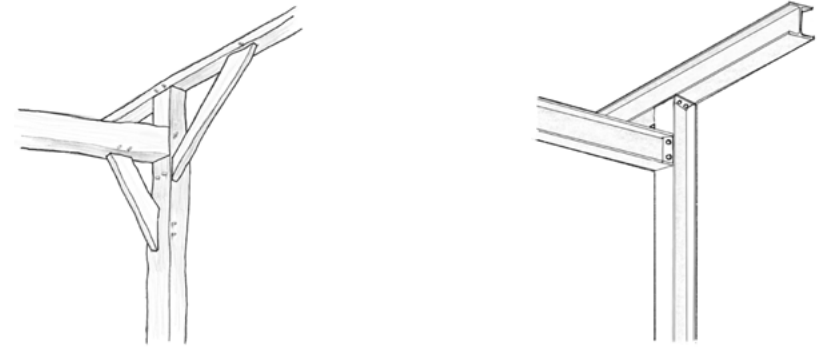
Symbiosis between rural and industrial.

Build on a functional grid in which multiple
activities can take place structure organises
lay-out and routing.
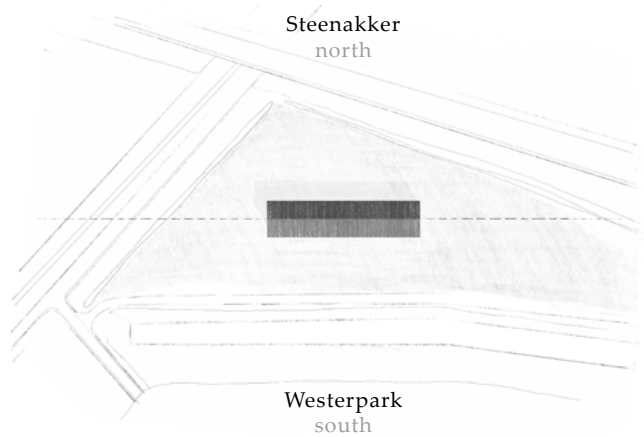

Based on an open plan in which multiple
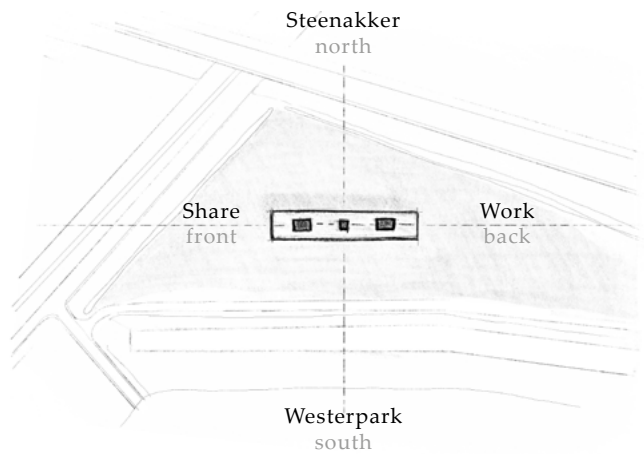functions can take place, addaptable and
flexible.

Adaptable and demountable elements
that carry the floors and roof.
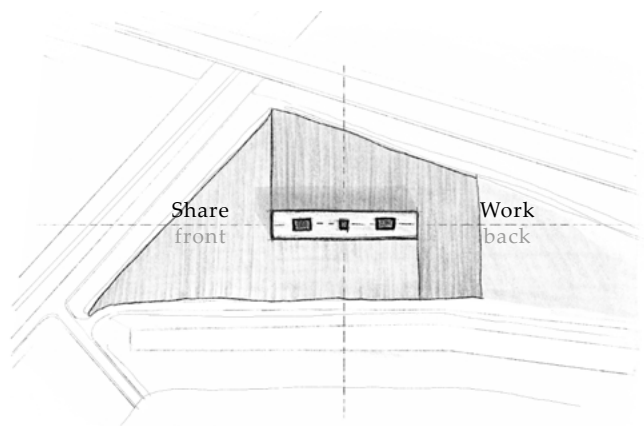Building as a communal act, sharing
knowledge and conserving craft.

Design

Steenakker
north

orientation

Westerpark
south

Steenakker
north

Share   Work
front   back

structure

Westerpark
south

Share   Work
front   back

land

Building orientation

The orientation of the building follows the direction of the old train tracks. These tracks formed the boundary between Westerpark and Steenakker. The elongated building is situated at this location alligned with the surrounding without being a boundary.

The building is oriented north-south and is divided into two parts, with the hearth in the center. The front of the building is the formal side for gathering and sharing. While the back is more informal, for production and creation.

The landscaping follows the same division. Here too, the front is the formal side, which has a focus on aesthics by ornamental elements. The back of the land is pragmatic and can be seen as a productional landscape.
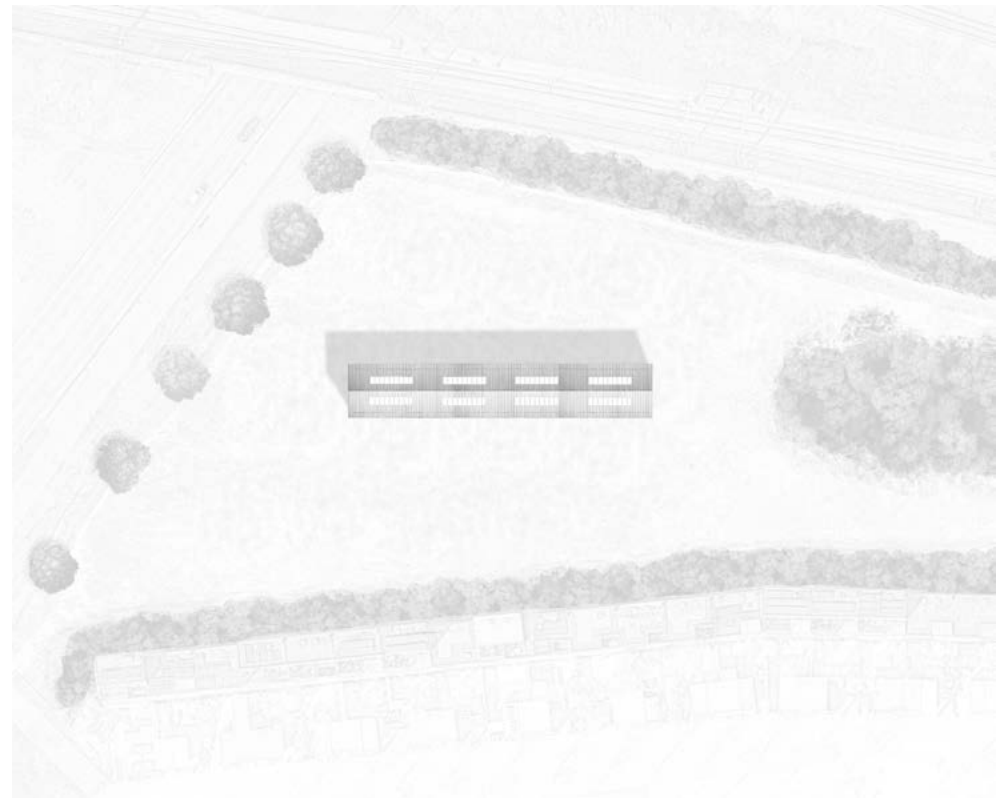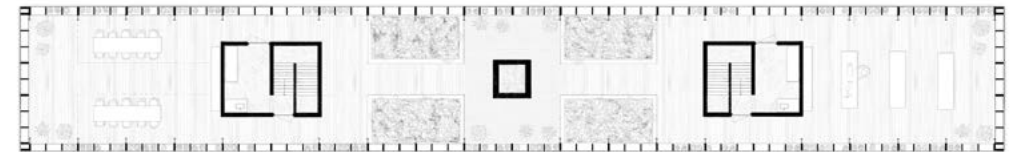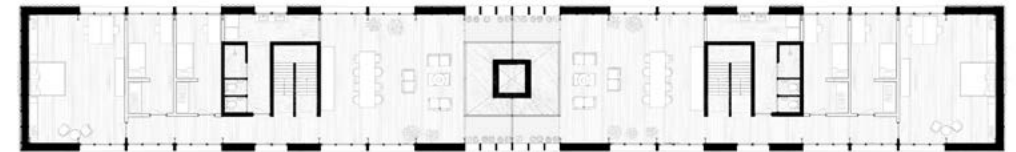
Building

The farmhouse consists of 3 floors.

On the ground floor, there's a 'makery' where products from the land and animals are processed. This floor is divided into two sections. On the left side of the building, you'll find the bakery, kitchen, a tastery and shop. This is the place for processing local products and a place that welcomes people who do not live on the farm. On the right side of the building is a workshop for processing materials from the local land and a barn for storing crops, materials and food for the animals. These areas are divided and connected by a large oven positioned in the center of the building.

The first floor serves as the 'residence', featuring bedrooms, livingrooms and bathrooms. In total there are six bedrooms, two double rooms and four single rooms, accommodating a total of eight people. On the right side of the building, the 'permanent' residents live. On the left is the guest accommodation, which will be primarily used during the most labor-intensive periods, as there is then more work to be done, particularly on the land. These two areas are divide by a void.

On the attic floor, there's a covered veranda on the left, a refreshing winter garden in the middle, and a creative atelier on the right. This creative studio is a space for artistic endeavors, the winter garden offers a peaceful escape with lush greenery, and the covered veranda provides a charming outdoor spot protected from the elements. It's a well-balanced space that caters to creativity and relaxation.

Attic

First floor
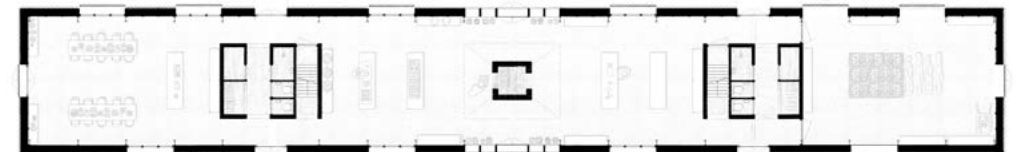
Ground floor

Plan & section
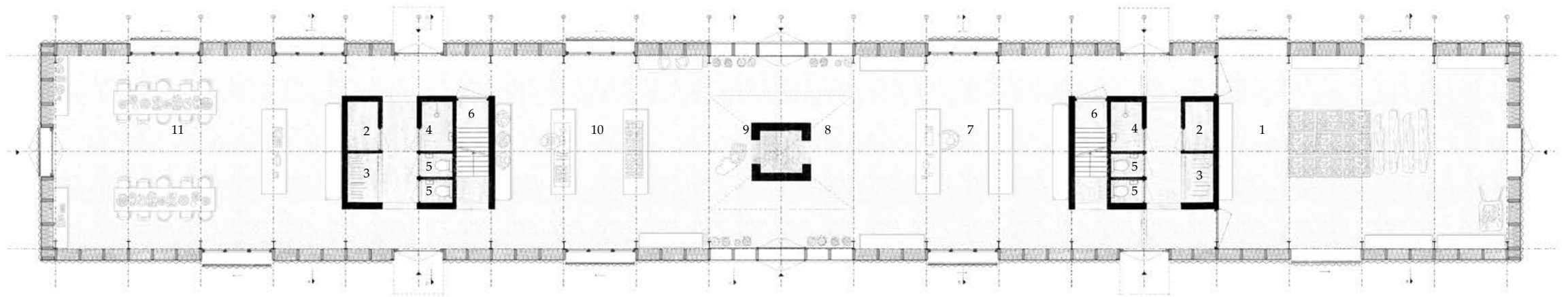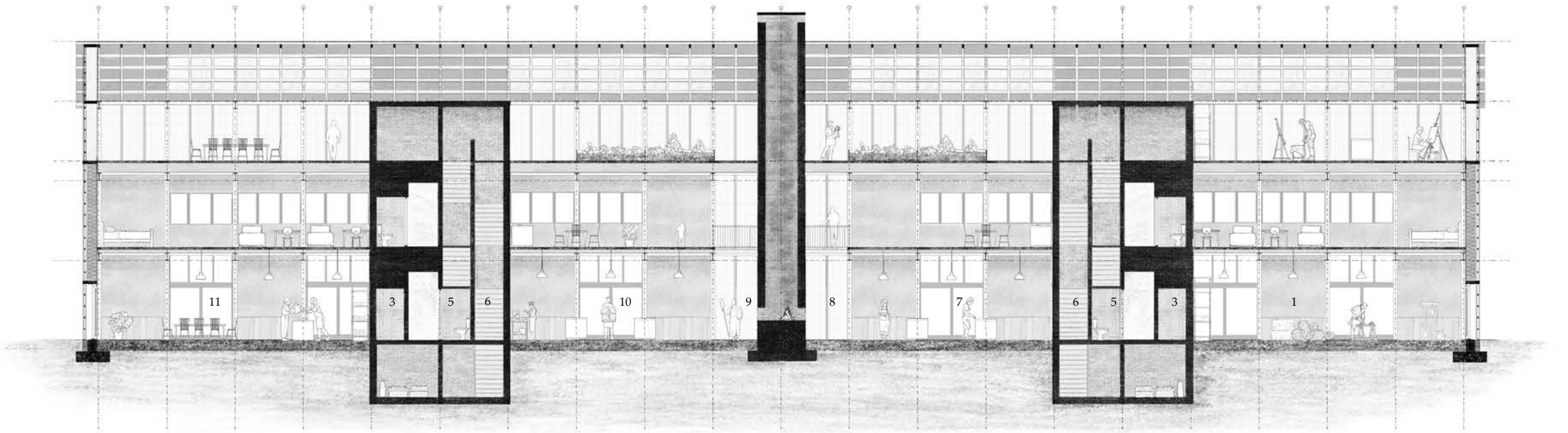
1 Barn
2 Wardrobe
3 Storage & installations
4 Shower & changing room
5 Toilet
6 Staircase
7 Workshop
8 Hearth
9 Oven
10 Bakery & kitchen
11 Tastery & shop
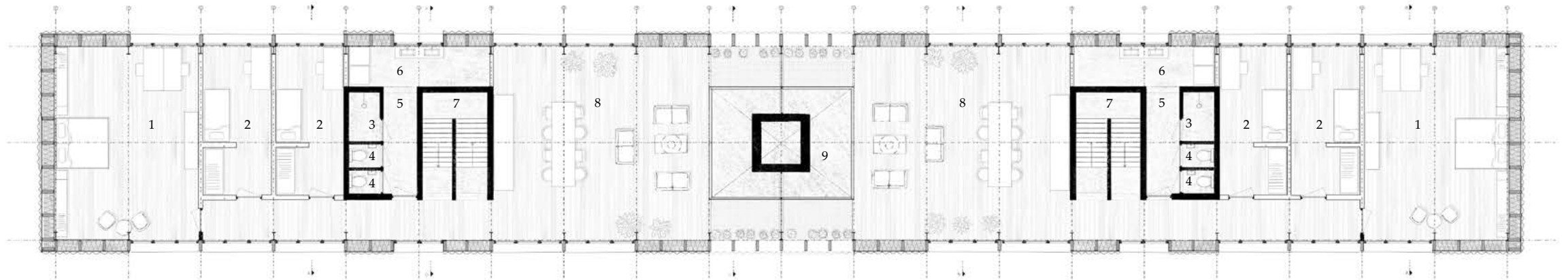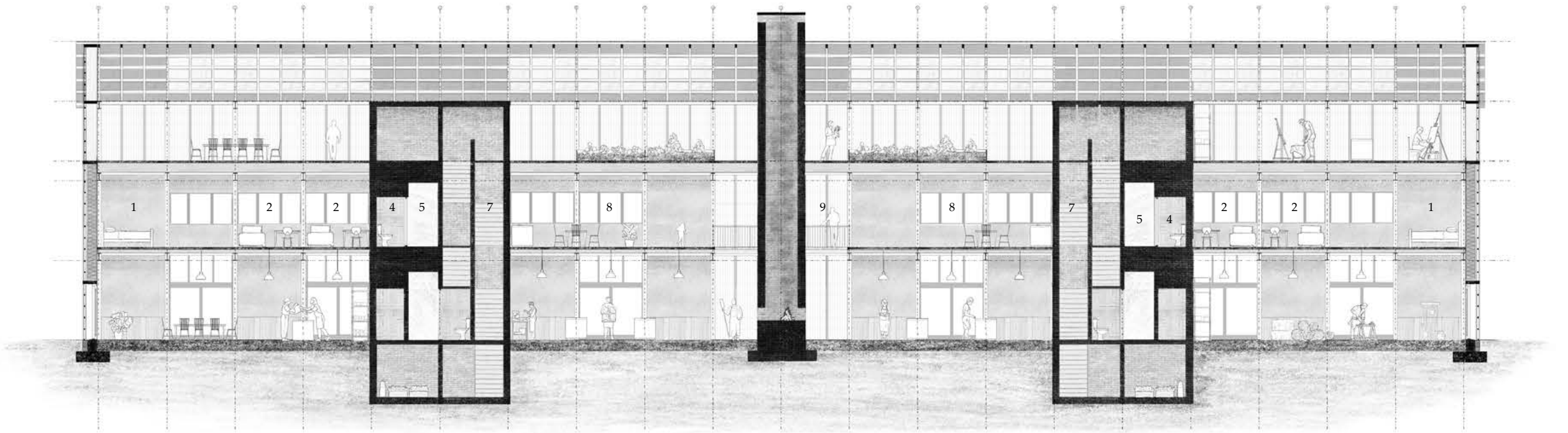
1   Double room   6   Washbins
2   Single room   7   Staircase
3   Shower   8   Livingroom
4   Toilet   9   Vide
5   Hall
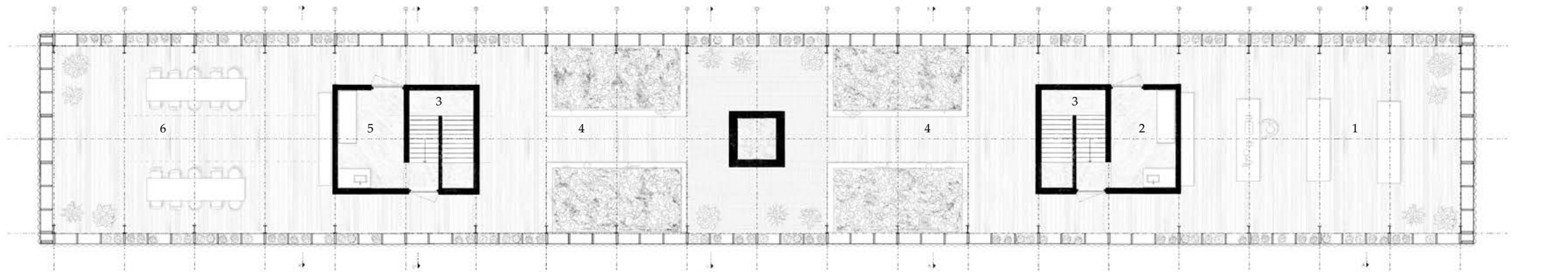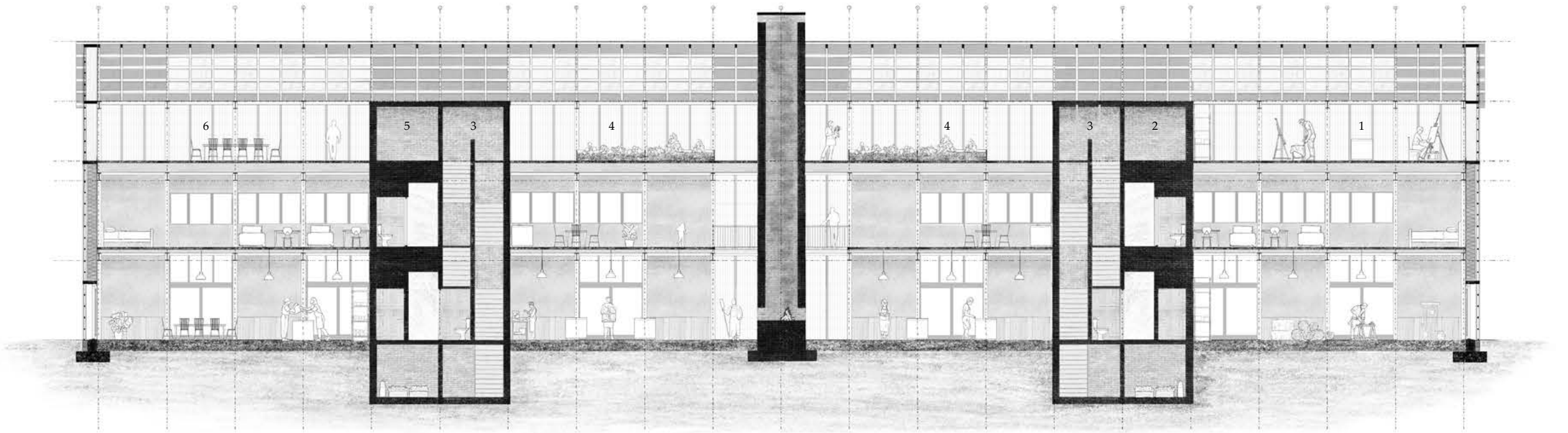
1   Atelier   4   Wintergarden
2   Storage with pantry   5   Gardening shed
3   Staircase   6   Covered veranda
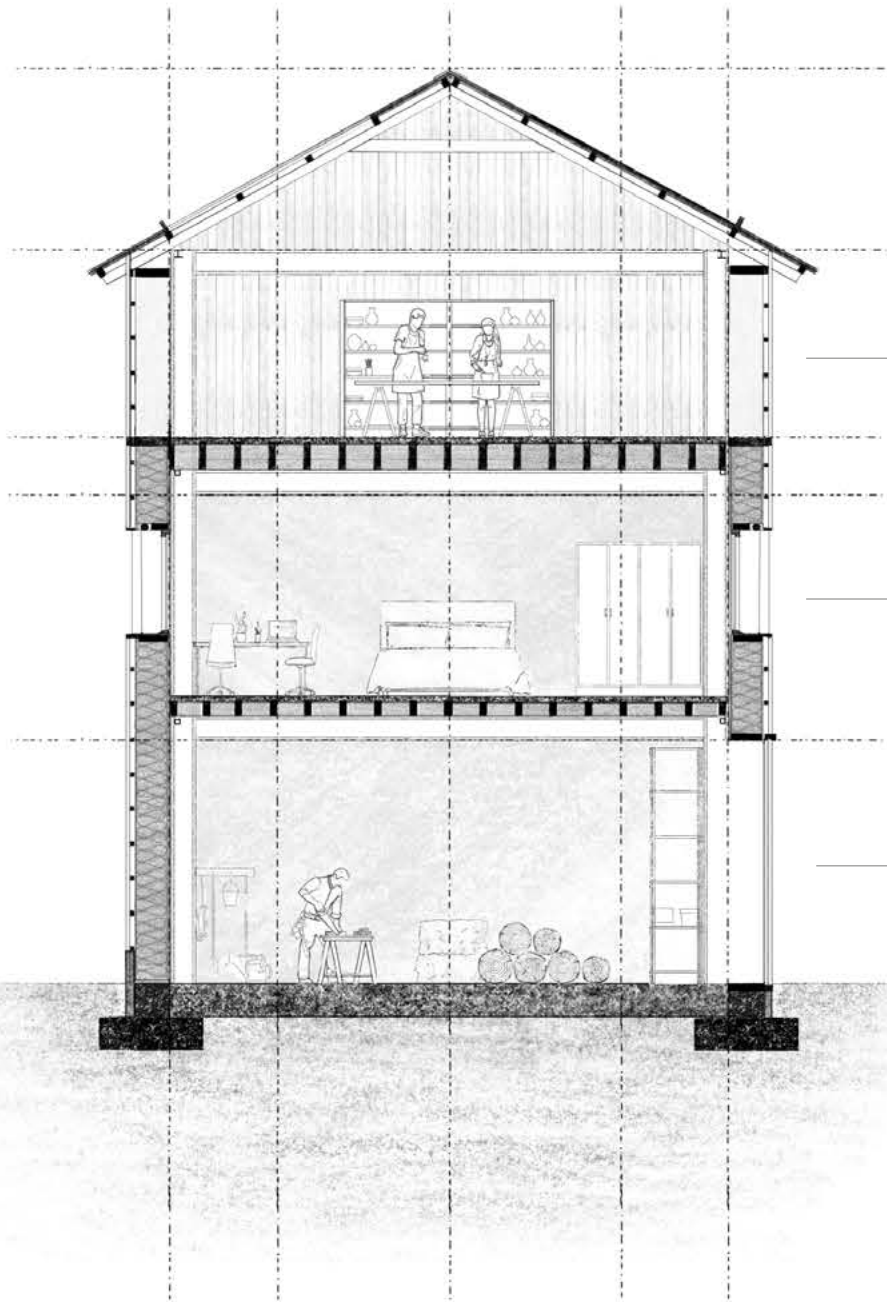
atelier

creative studio to be artistically engaged

residence

double room for permanent residence

barn

the place for storing crops, materials and food for the animals.
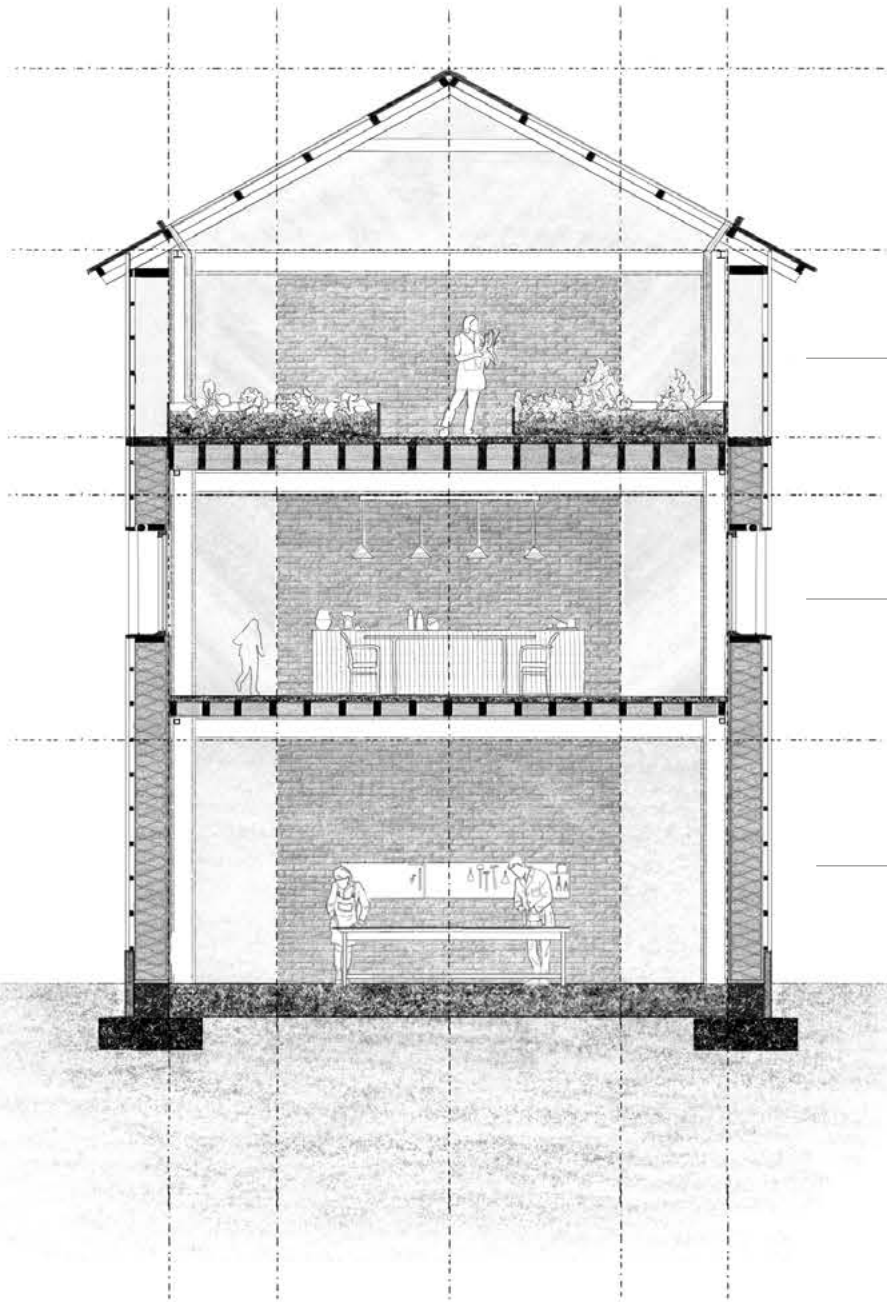
winter garden

a place where you can enjoy greenery and
nature even in the cold months of the year

living room

the place to come together, eat and relax
for the permanent residence

workshop

for processing materials from the local
land
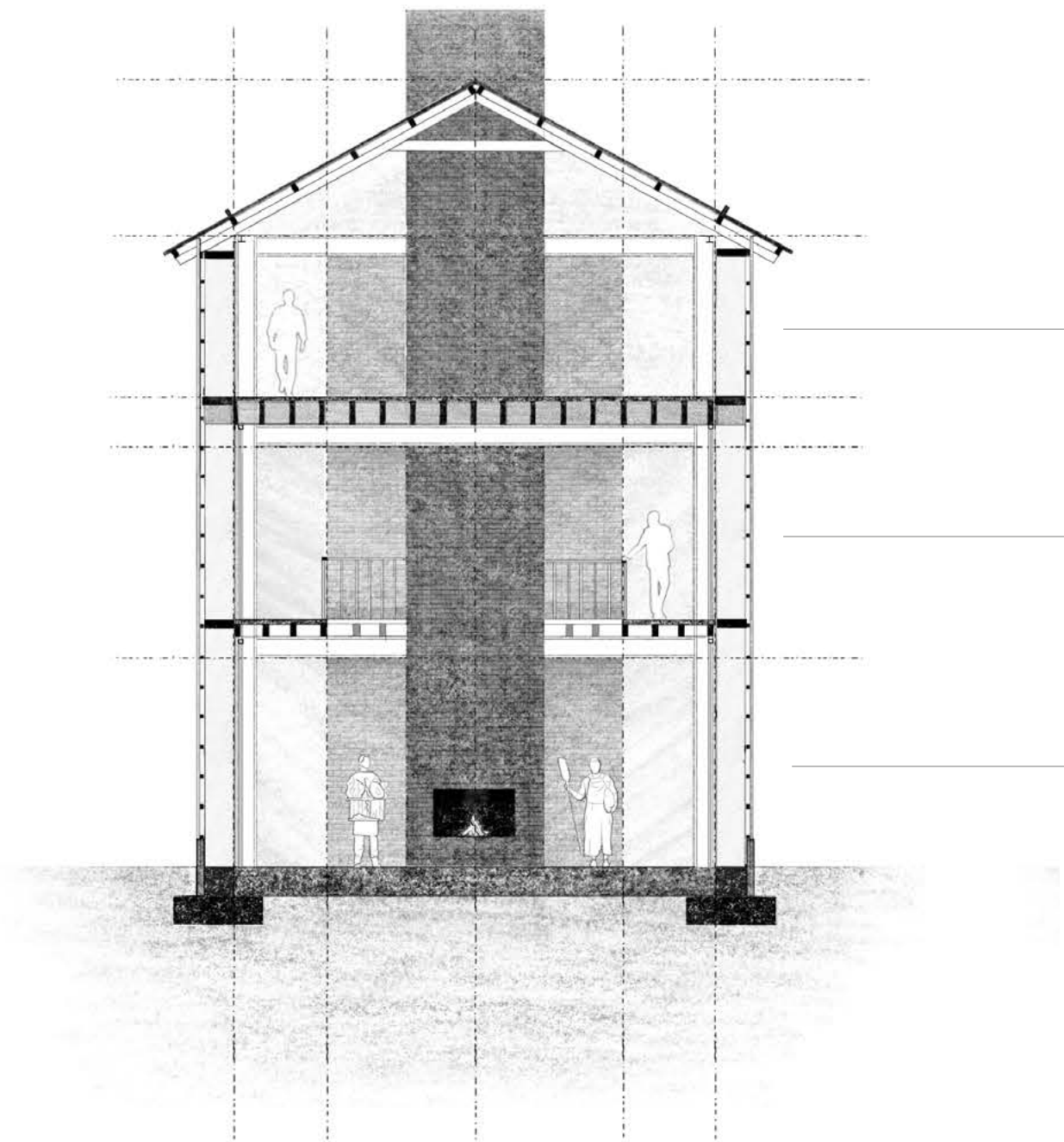
core

the functional hearth of the building

vide

on the first floor you look down from the vide, creating a visible connection between the two floors

oven

for preparing food from the land using local wood
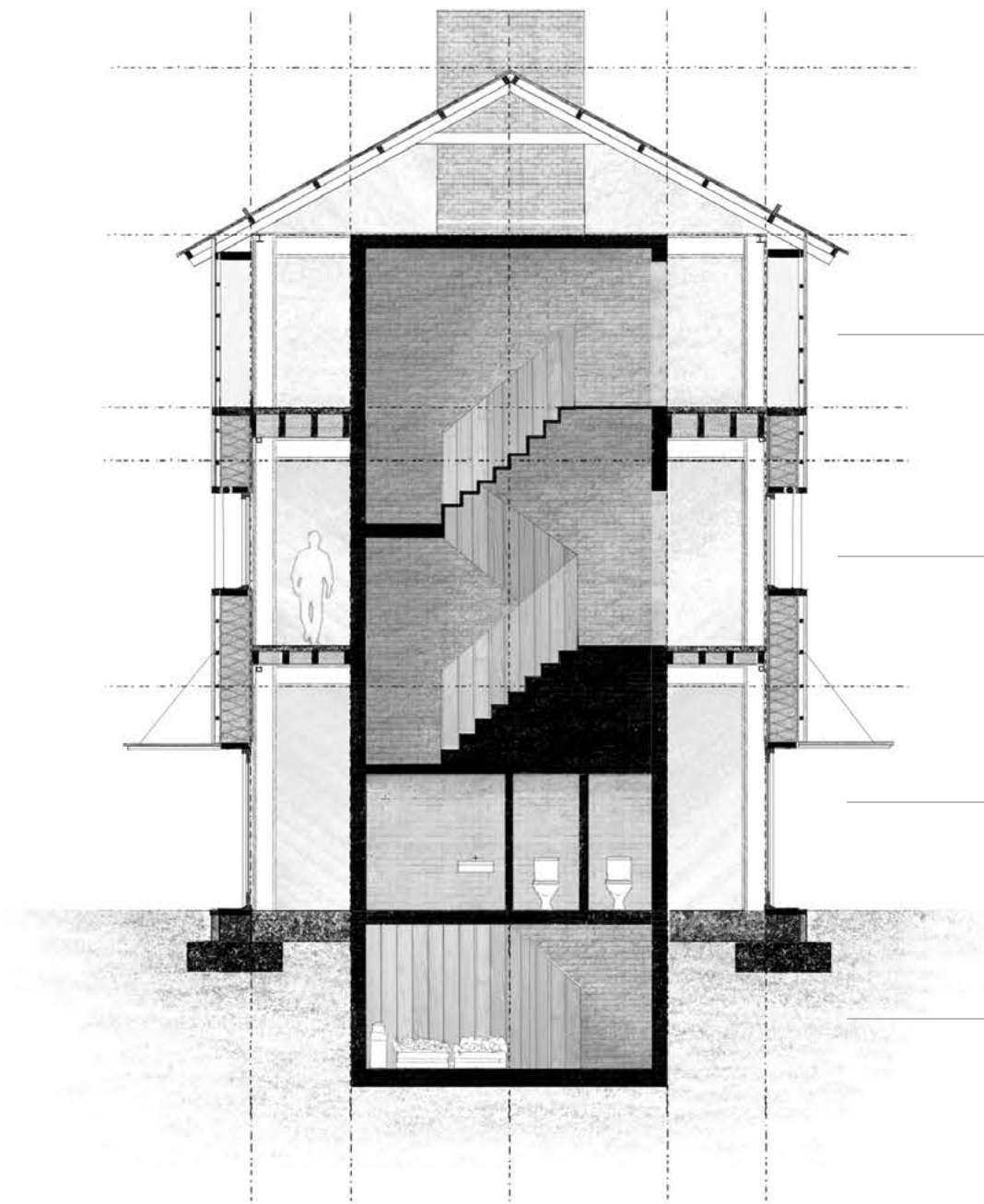
shed & staircase

storing area for materials; the right side is designated for atelier supplies, while the left side is reserved for gardening tools and materials

hall & staircase

gateway to the other levels

shower, changing room & toilet

place to freshen up after a day of working on the land

basement

a practical storage area for food, providing a cool and dark environment ideal for preserving goods
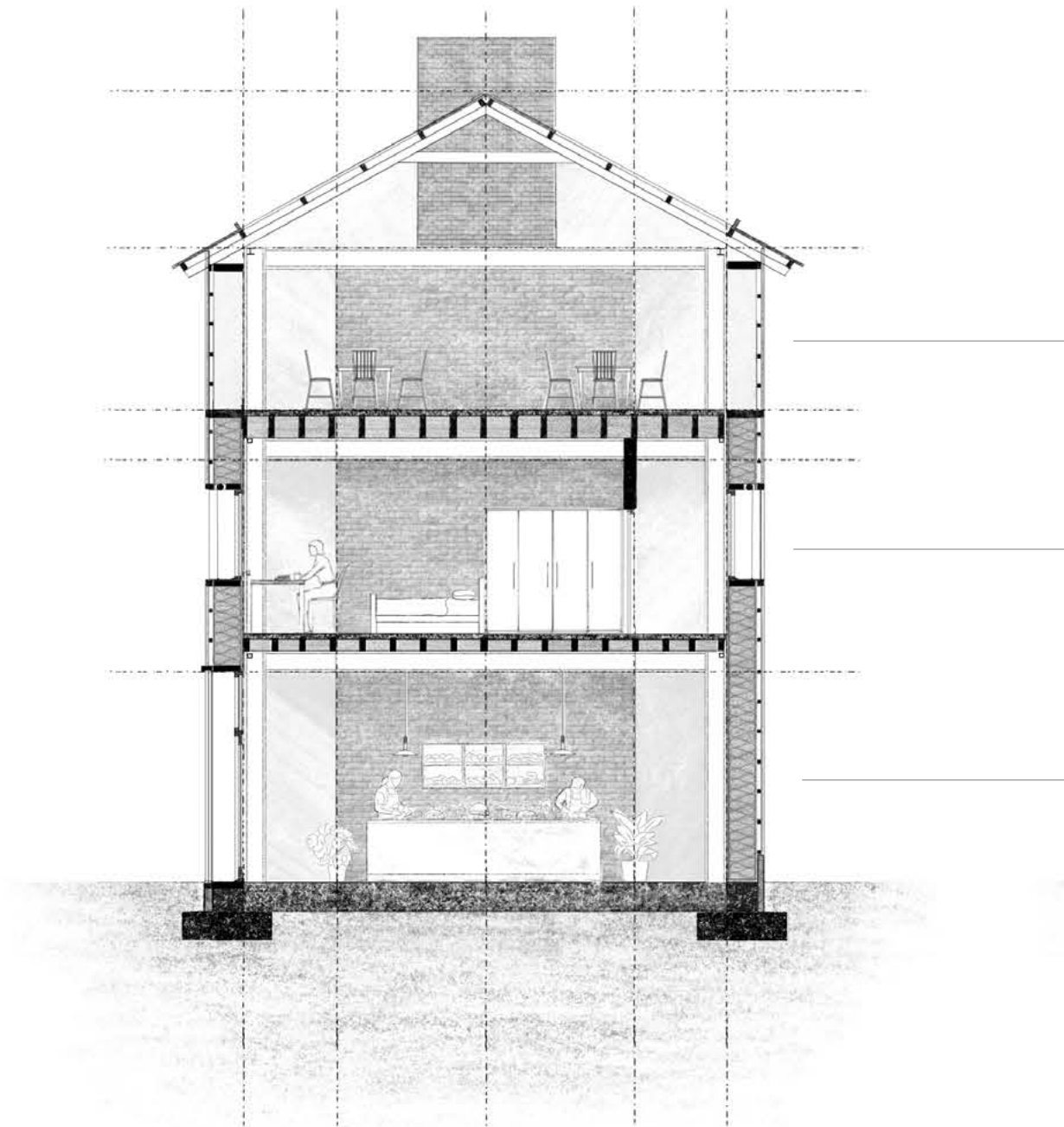
covered veranda

outdoor spot for relaxing and having a panoramic view over the area

guest residence

single room for guests who mainly work on the farm during the most labor-intensive periods

bakery & kitchen

this is the place for processing local products and a place that welcomes visitors

Facades

facade east & west
present

facade east & west
future

The building, which originally began as a collage of steel plates with a patina of various paint colours, evolves through the effects of weathering until it radiates more and more unity. In addition, the landscape around the building continues to grow and develop. This and the weathering of the facade make the building increasingly blend into its surroundings.

facade south
present

facade south
future

Regenerate

Design

facade north
present

facade north
future

facade north
present

facade south
future

Structure

The structure of the building will be made of reused steel that comes from an empty warehouse nearby. The structure was offered for sale on an auction. The dimensions and numbers match the specifications for the regenerative urban farm. With minor modifications, this second-hand steel structure can be reused.

VERMEULEN & ZONEN
SLOOPWERKEN BREDA B.V.

Stolwerk
METAAL B.V.

SNELLEN
tweedehandsmaterialen
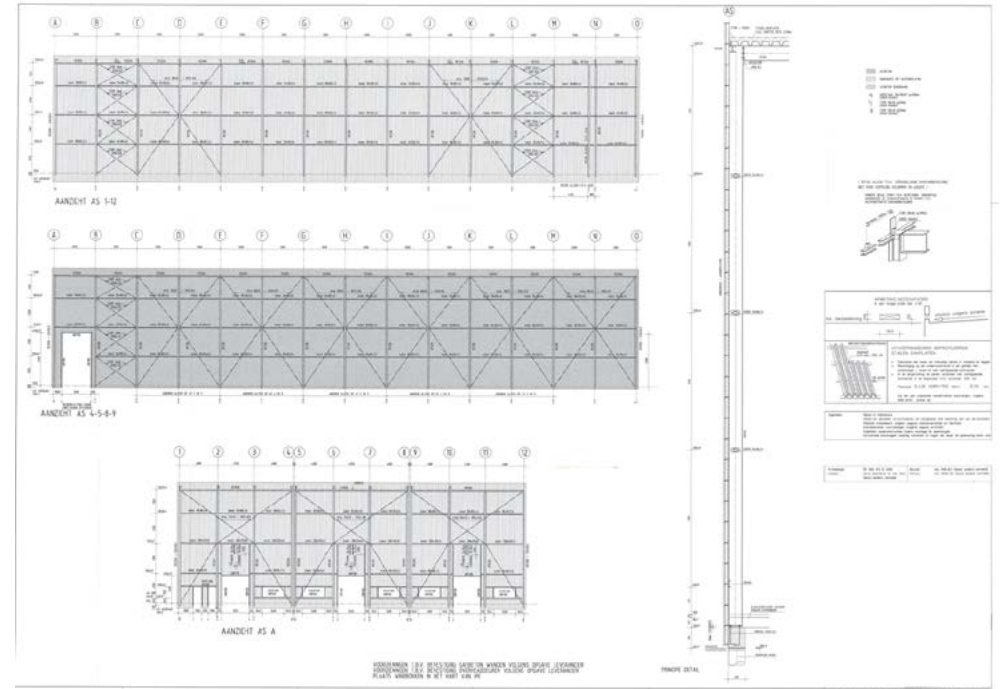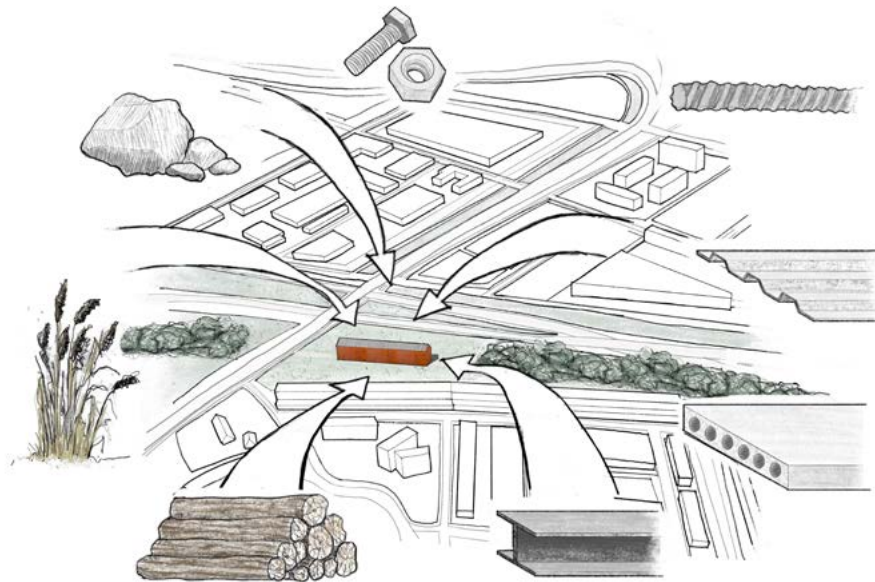
Materials & resources

A range of local, bio-based and recycled materials has been carefully chosen. This is done with respect for nature and local culture.

Materials were chosen that were also used in the past, as well as contemporary materials that can be found in the region. Efforts are made to work with materials that are bio-based or recycled as much as possible. Often found on local auction or second-hand shops in the area.
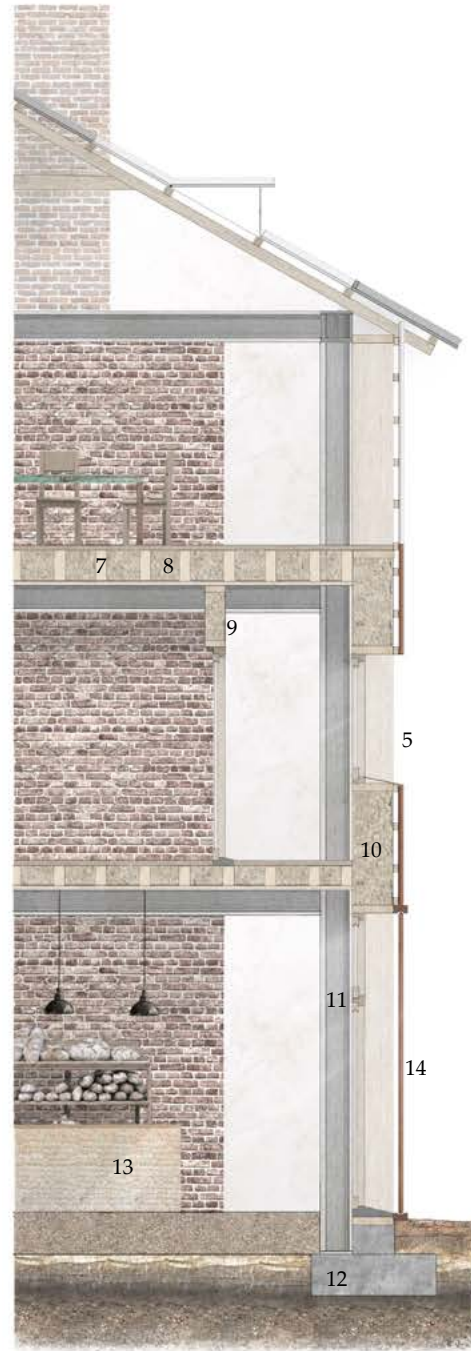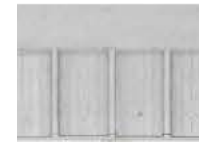
1 steel box with metal ridge cap

2 transparant roof sheeting

3 polycarbonate corrugated sheet mounted on a timber frame

4 metal corrugated sheeting

5 oak window frame

6 concrete plinth

7 wooden floor beam

8 flax isolation

9 recycled bricks

10 straw insulation

11 steel structure

14 foundation; concrete block

13 rammed earth

12 steel sliding door
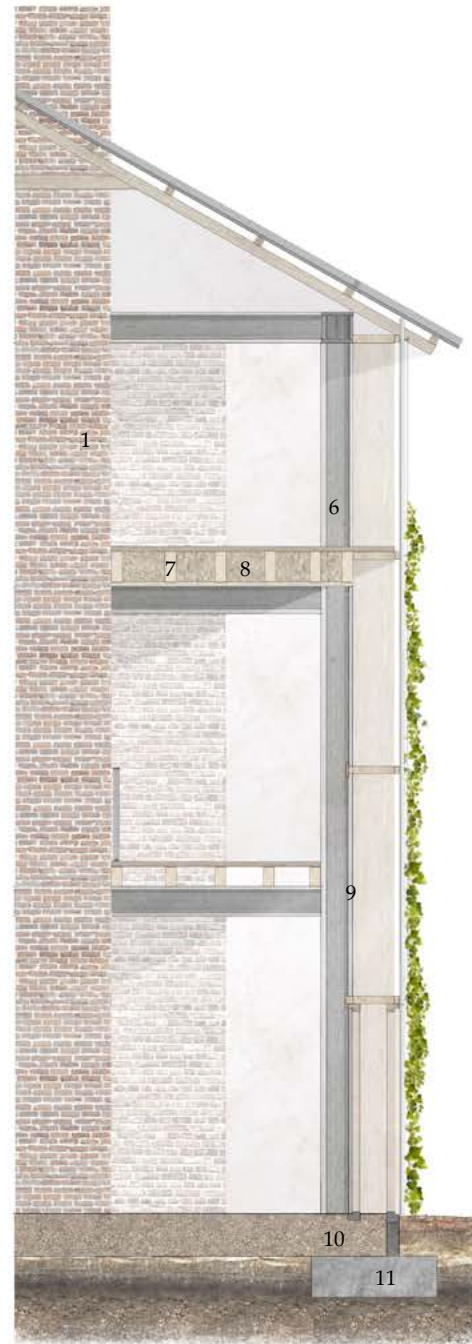
1 recycled bricks
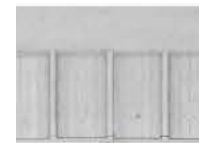
2 steel box with metal ridge cap

3 polycarbonate corrugated sheet with steel wires for ivy

4 ivy

5 timber frame cladded with sheeting

6 steel structure

7 wooden floor beam

8 flax insulation

9 reused greenhouse windows

10 stamp clay floor

11 foundation; concrete block
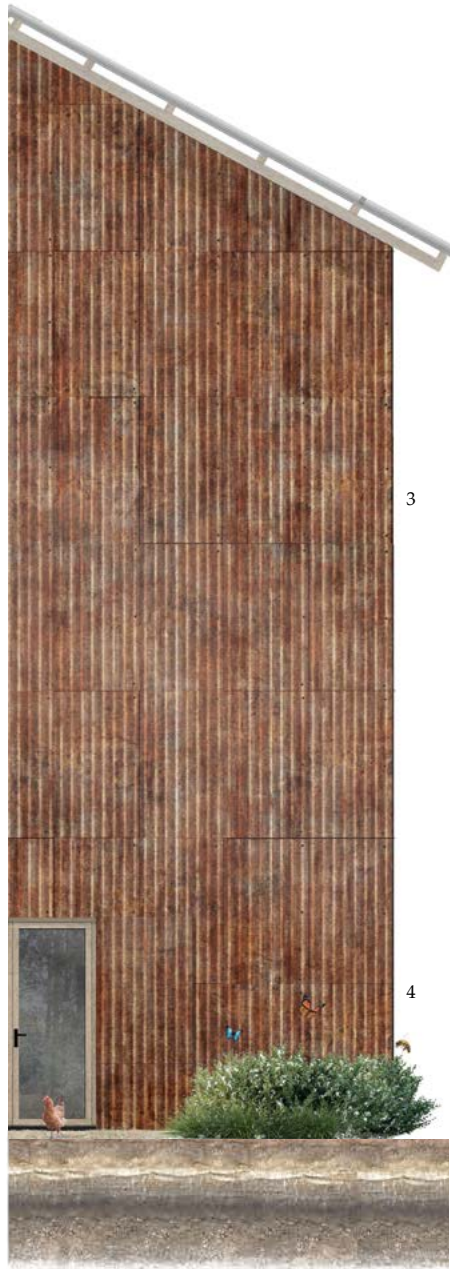
1   steel box with metal ridge cap

2   oak roof trusses

3   metal corrugated sheeting

4   oak door frame

5   transparant roof sheeting

6   steel structure

7   polycarbonate corrugated sheet mounted on a timber frame

8   straw isolation

9   lime plaster

10   wood panelling

11   foundation; concrete block
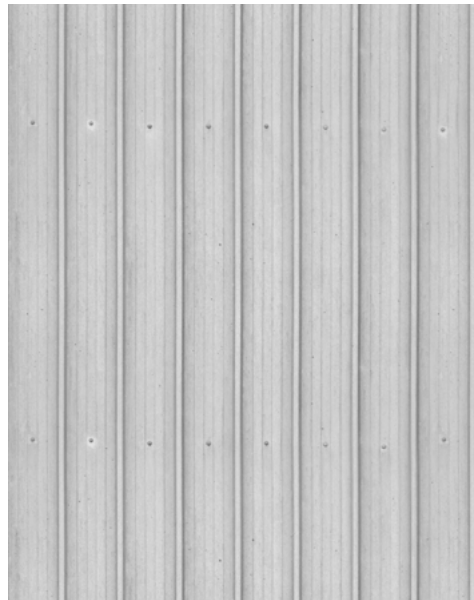
Steel box profile

A steel box profile is strong, durable and weather resistant. For this, and because they are maintenance-free, it makes them a commonly used material on an industrial site. Finally, it is also reusable making it fairly easy to get second-hand for roof use.

Quantity: 504 m²
Source: 30 km

Transparant roof sheeting

These sheets are very strong and flexible, making them perfect for the roof windows. They used to be part of storage sheds. It is made of polycarbonate, which is of better quality than PVC. A Breda demolition company, located 5 km from the site, has these sheets in stock.

Quantity: 216 m²
Source: 10 km
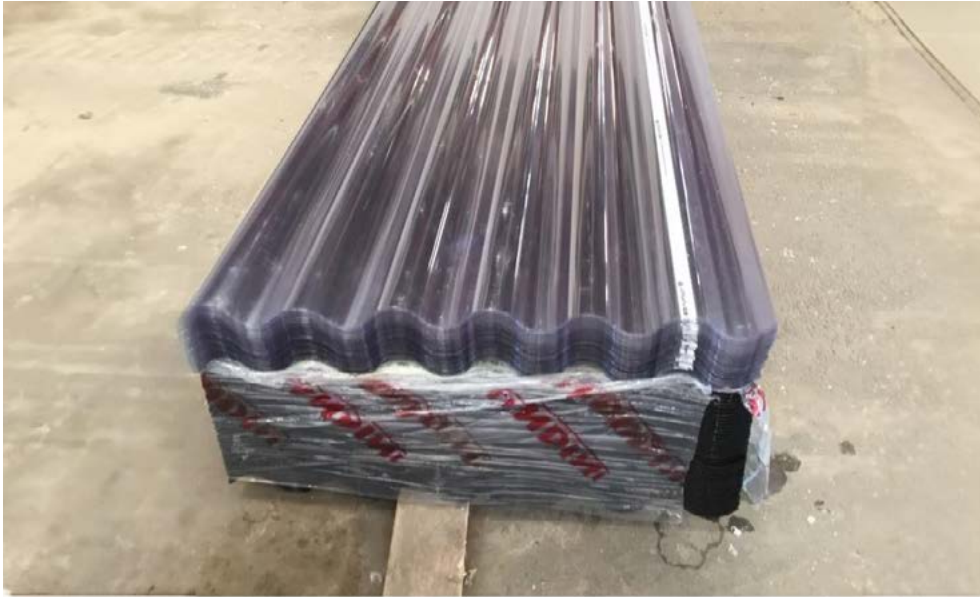
Polycarbonate corrugated sheet

Utilized as a wall covering, polycarbonate corrugated sheets mounted on a timber frame provide a resilient and visually appealing solution. This configuration ensures both structural strength and aesthetic versatility, offering a durable barrier while allowing the diffusion of natural light.

The timber frame is made of reused wood. These sheets were first used to build animal enclosures and are now offered for sale second-hand.

Quantity: 300 m²
Source: 5 km

Metal corrugated sheet

This material used to be commonly used on farms when the straw roof needed replacing. It is also a commonly seen product on today's industrial estates.

Quantity: 1170 m²
Source: 25 km

Timber frame

The wooden structure serves as a solid and durable base, to which the translucent polycarbonate panels are attached. This combination makes it possible to provide interior spaces with plenty of natural light, creating a bright and open atmosphere. At the same time, the wood retains warmth. As these are reclaimed wooden beams, they already come with a distinct character.

Quantity: 1200 m¹
Source: 50 km

Oak window and door frame

Oak is chosen as the window and door frames, as it is a durable material and known for its hardness. It is resistant to rot, insects and weathering, which makes it an excellent choice to use as a material. In addition, oak also has aesthetic appeal.

Quantity: 173 m²
Source: 25 km

Concrete plinth

Choosing concrete skirting is all about durability, weather resistance, aesthetics and structural benefits.

Quantity: 48 m¹
Source: 15 km

Recycled bricks

The bricks are for sale on second-hand website / websites of demolition companies. Because the bricks have been used before, they are no longer completely smooth which gives it even more character. This is important because it is not only visible on the outside, as a chimney, but also forms the core in the building.

Quantity: 70 m³
Source: 30 km

Roof trusses

Constructed from recycled wood, the roof trusses showcase both strength and eco-friendly design. Their reuse not only imparts a timeless charm but also reflects a sustainable approach to building materials.

Quantity: 720 m^1
Source: 50 km

Ivy

The ivy (*Hedera*) grows up along the metal wires and provides natural cover and shade in the building behind the polycarbonate sheets. The growth of ivy on the building gives it a special, green, look, while also providing extra insulation. In addition, these plants capture rainwater and are good for biodiversity.

Finally, Ivy is known for its fast growth, which is also advantageous to quickly provide the property with this green strucure.

Steel wire

To keep the ivy growing properly, these stainless steel cables are a perfect tool. In effect, the ivy grows around them.

Quantity: 120 m^1
Source: 5 km

Eye bolts

Used to connect the steel wires along which the ivy can grow.

Straw

Compressed straw in timber frame. These straw walls have good thermal properties and sound insulation properties. It comes from the surrounding area.

Quantity: 281,4 m³
Source: 5 km

Flax insulation

Flax insulation slabs are crafted from flax fibers held together with a polyester binder and treated to resist fire. They are commonly used in breathable walls, ventilated pitched roofs, and for ceilings and floors.

Quantity: 205 m³
Source: 15 km

Wooden floor beam

These wooden floor frames are made of spruce wood. This is known for its good strength-to-weight ratio. It is a light material, but is certainly capable of supporting the weight of the floor. Between the studs come flax insulation.

Quantity: 1836 m¹
Source: 50 km

Steel structure

The building's framework is derived from a steel hall construction acquired through an online auction. The dimensions and quantities align precisely with the requirements for the regenerative urban farm. With slight adjustments, this pre-owned steel structure proves to be an ideal fit for the project.

Quantity: 940 m¹
Source: 25 km

Corrugated roofing screws

Corrugated roofing screws are specially designed fasteners used for fixing corrugated sheets. These screws have some distinctive properties, including the fact that they seal well, making them waterproof

Steel sliding door

The choice of a steel sliding door has to do with, on the one hand, that it fits well with the rest of the building, but certainly also that it is a tangible link between the past and contemporary efforts on a farm. It is available from nearby demolition companies, who obtained it from demolished sheds and storage areas. The sliding doors will function as sunscreens, keeping the sun out and keeping the spaces cool during summer.

Rammed earth

The kitchen island, constructed from rammed earth, serves as a central hub where a diverse array of local products is skillfully processed on a daily basis. This sustainable and sturdy material not only contributes to the island's robust structure but also aligns seamlessly with the commitment to utilizing locally sourced resources.

Loamed floor

Loam floors are an old-school building method that's becoming popular in modern architecture. They're created by mixing loam, sand, straw, and water, and these floors have special qualities that make them great for buildings.

Quantity: 270 m³
Source: 45 km

Lime plaster

This is used to naturally paint the smooth walls in the building. It is a mixture between slaked lime and pigments. Lime plaster radiates, even indoors, a connection to the earth.

Wood panelling

Scaffold wood panelling not only creates a visually appealing interior, but also emphasises the importance of upcycling and reducing construction waste, making it a valuable addition to the building's interior design.

Concrete block

Used for the foundation of the building. These blocks can be found in the nearby area, but also on construction sites.

Quantity: 276 blokken
Source: 15 km
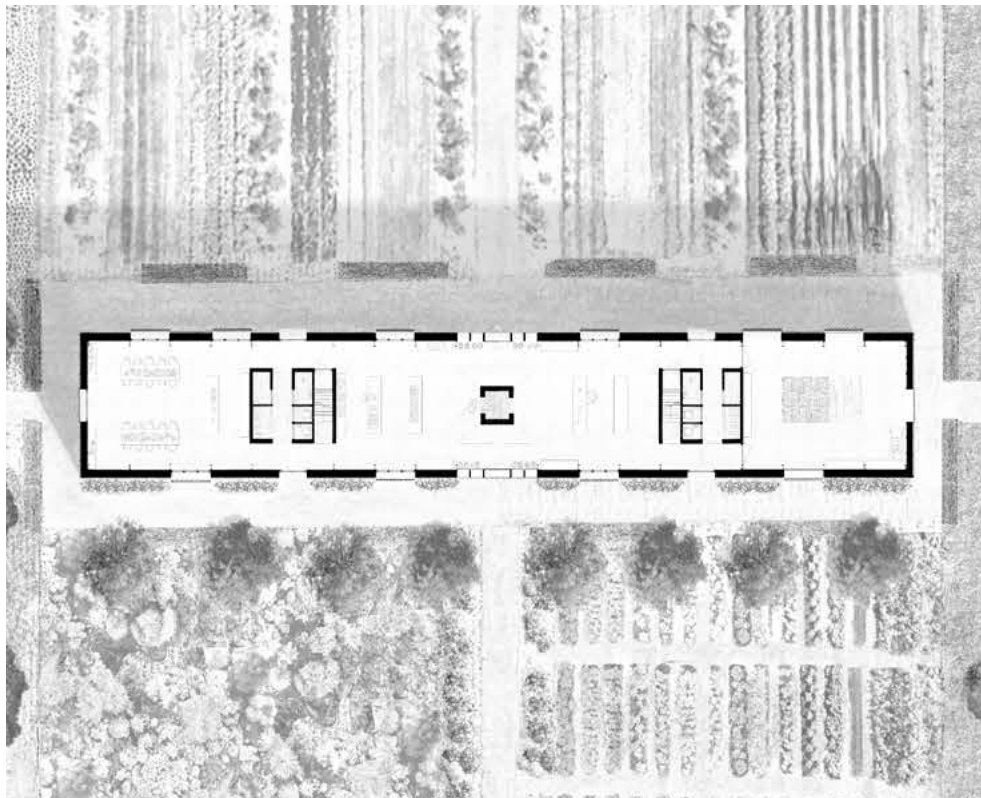
Yard

The building is located in the center, with the entrance on the south side. A partially paved path (*hansegrand*) surrounds the building. On the south side, there are trees providing shade, and ornamental flowers have been added. Gabion baskets are alternately placed around the building as a boundary between the garden and the land. They serve not only as a barrier against blowing dust from the land but also function as a habitat for insects.
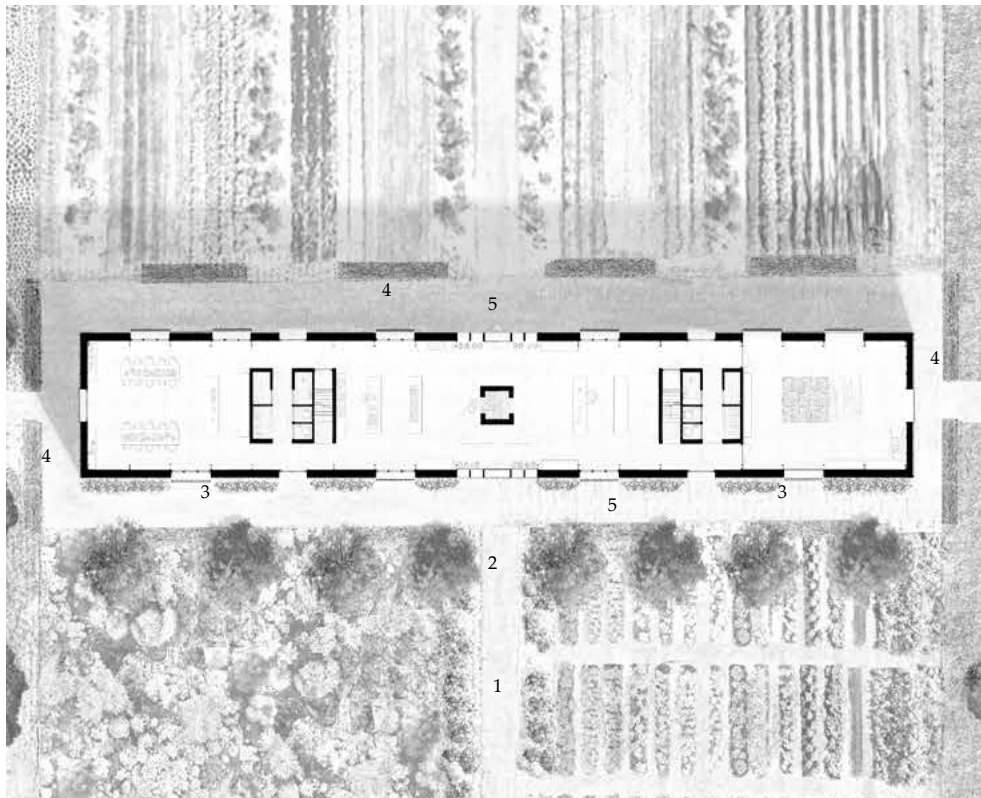
1   entrance path
2   lime trees
3   ornamental flowers
4   gabion
5   *hansegrand*
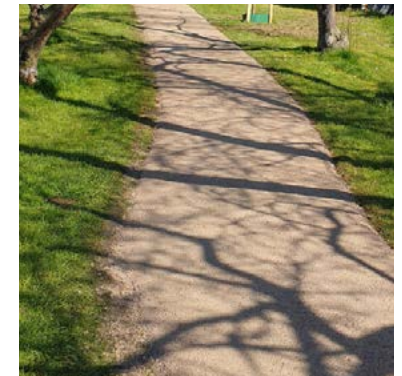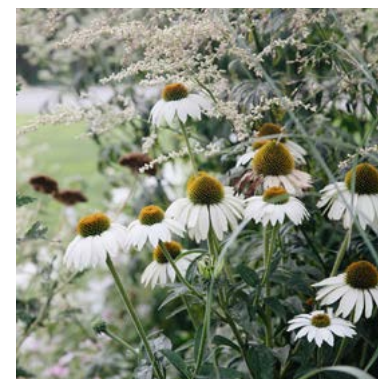
1   *hansegrand* (partially paved ground)
2   gabion
3   lime trees
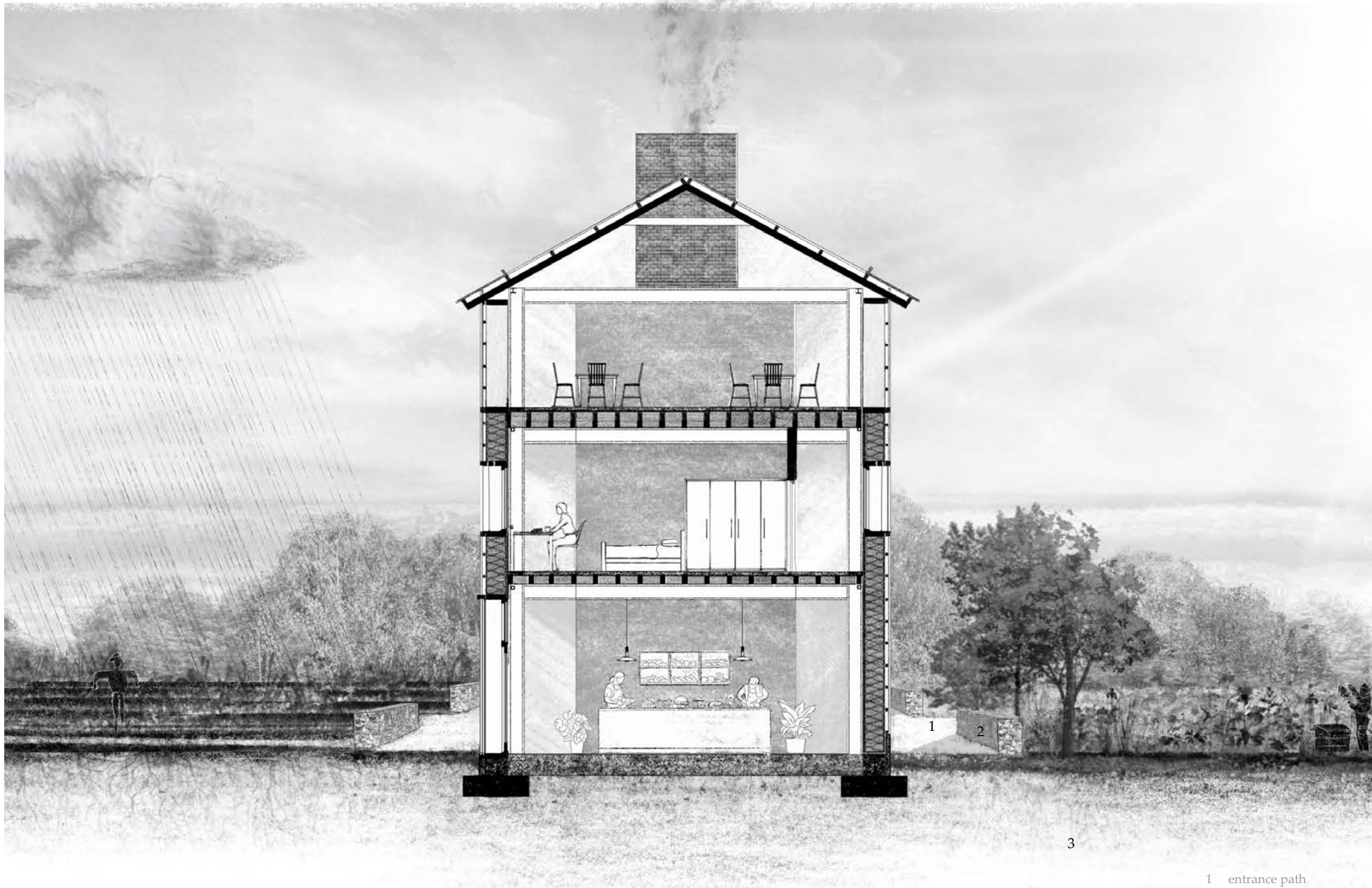
1   entrance path
2   gabion
3   lime trees
4   *hansegrand* (partially
     paved ground)

Land

The landscape draws inspiration from both traditional farming practices and the principles of regenerative agriculture with designated zones. On the southwest side, facing the formal aspect towards Westerpark, you approach the building. This area features the herbal garden, flower garden, and orchard.

On the northeast side lies the informal aspect, housing the production landscape. The essence of regenerative agriculture involves the rotation of crops, creating a dynamic landscape that evolves with the seasons. The entire area is enclosed on all sides. Along the road, it is bordered by a line of alder trees. The slopes on both sides are flanked by hedgerows that not only serve as windbreaks but also contribute to the supply of wood, thanks to the presence of a copse. On the right side, the landscape transitions into agroforestry. Nature is allowed to take its course here, with only essential interventions.

1   woodland edge
2   bicycle path
3   herbal garden
4   ornamental garden
5   orchard
6   wooded bank *(houtsingel)*
7   bicycle road
8   road

9   tunnel
10   railroad
11   ditch
12   crop strips
13   perennial plants
14   herbal-rich pasture
15   agroforestry
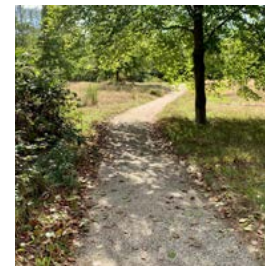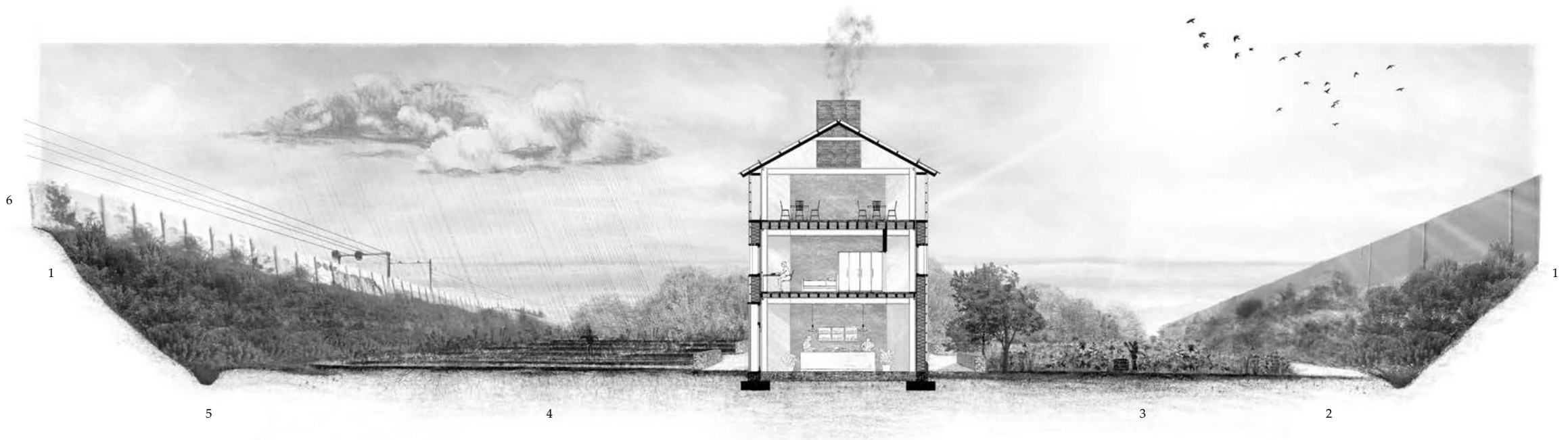
1   woodland edge   4   crop strips
2   bicycle path   5   ditch
3   ornamental garden   6   railroad

Retrospective

Retrospective

Process

It was a detailed research, thorough, comprehensive and extensive. This was mainly because of my own interest. Certainly, striving for a good result also played a role in this. This striving for achievement had both positive and negative effects on the entire process. My interest and drive for quality gave the project profoundness and meaning, but also made the project long and seemingly endless. To my mind, it was (and still is) never fully complete.

The choice of this subject was based on my fascination and personal history. Despite the personal involvement, however, it is important not to make the project too personal and maintain a professional distance to the subject.

Due to the extensive research, the translation into a design took more time than expected. It took quite some time before I got a clear notion on the direction of the design. My ambitions, interests and assumptions distracted my focus. There are many paths, but the question is: which one is the right one? Finding the answer demanded time

The task of designing a farm seemed straightforward, but the combination of various factors made it more challenging than expected. Beyond being a farm, it also serves as a communal building for the urban setting, based on the principles of regenerative farming. Integrating these elements proved fascinating but also turned out to be a study in itself. At times, making decisions and distinguishing between essentials and details proved challenging.

By exploring different directions, I gradually discovered how to bring all factors together into a cohesive whole. Gradually, I found out more and more what the direction should be. It evolved as it does with farms.

This thinking and creative process took time, and my indecisiveness did not help speed up the process. In the end I am happy with the result, but the process for me was the most valuable. It involved trial and error, but the lessons learned will accompany me into the future. I encountered myself multiple times and identified my strengths and weaknesses. The project has brought me significant growth, both personally and professionally.

Project

Nostalgia plays a big role for me in this project. The longing for how something once was is triggered by the fascination and interest I have for old Brabant farms. This naturally explains the choice of this subject. However, today's challenges also play a major role in my project. This is where I saw and see a great linking opportunity for the farm. Regenerative agriculture can certainly play a role in what the world needs right now.

I notice a clear change of vision in myself. Indeed, my initial idea was to create a kind of echo of the past, with a completely ecological, bio-based farm. Moreover, I always looked at the industrial area with all those sheds with a critical eye. However, the function of the building requires a very different approach than a modern interpretation of an old farmhouse. We're building for the future and can learn lessons from the past, without trying to repeat the past.

Through a pragmatic approach, a new shape emerged that eventually led to a design. I came to the conclusion that industrial sheds bear many similarities to farmhouses.

My aim was to design a building that, compared to sheds, still has a strong local and individual character. Although it is still a large building, the materials used are largely locally sourced, bio-based or recycled. This gives the building a unique look. This does make the construction process more expensive, both in terms of cost and manpower. Nevertheless, the function of this building requires more than just a quickly constructed shed or a pragmatic, traditional farmhouse. In my design, I have paid a lot of attention to human and animal welfare. The quality of this building certainly also lies in its meaning.

Future

I will take the loosening of personal preconceptions with me to future projects. In addition, I will continue to apply the working methodology I developed during this graduation year. Throughout this year, I have gained more and more insight into my own identity and work preferences.

The graduation project required this level of dedication from me as a designer. In the future, I definitely want to continue working in this way. Of course, there are always project deadlines that bring a certain amount of pressure, and this can be helpful in moving forward. Nevertheless, time pressure should not take over. On the contrary, I find that, in a world where everything is already going very fast and has to go very fast, I like to take time to really get to the bottom of something.

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Appendix

The Basics of Permaculture Design
Ross Mars

Permaculture design is a holistic approach to sustainable and regenerative living that seeks to create harmonious and resilient systems that mimic the patterns and processes found in nature. It offers a framework for designing and managing our environments, whether it's a garden, a farm, a community, or even our own lives, in a way that maximizes ecological health, social well-being, and resource efficiency. The basics of permaculture design encompass several key principles and concepts that can be learned and applied to create more sustainable and regenerative designs.

Observation and Interaction
Permaculture emphasizes the importance of careful observation and understanding of the natural patterns, cycles, and interconnections in a given system before making any interventions. By observing and interacting with the landscape, we can identify its unique characteristics, needs, and potentials.

Multiple Functions and Elements
Permaculture design seeks to maximize the benefits and functions that each element in a system can provide. Each component, whether it's a plant, animal, structure, or natural feature, is carefully selected and placed to fulfill multiple purposes and create mutually beneficial relationships.

Zones and Sector Analysis
Permaculture design utilizes the concept of zoning to organize elements based on their frequency of use, maintenance requirements, and energy inputs. Zones are typically arranged from high-intensity, frequently visited areas (Zone 0 or the home) to low-intensity, less frequently accessed areas (Zone 5 or the wilderness).

Stacking and Vertical Integration
Permaculture encourages the efficient use of space by stacking elements vertically. This involves utilizing vertical layers, such as ground cover plants, shrubs, trees, and even buildings, to maximize productivity and minimize resource use.

Energy Cycling and Nutrient Flow
Permaculture design aims to close the energy and nutrient loops within a system by incorporating elements that recycle and reuse resources. This can involve practices such as composting, mulching, water harvesting, and using renewable energy sources.

Diversity and Resilience
Permaculture recognizes the importance of biodiversity and encourages the incorporation of diverse species and ecosystems. By fostering biodiversity, systems become more resilient to pests, diseases, and climatic changes.

Edge Effect
Permaculture utilizes the concept of the edge effect, where the interaction between two different ecosystems or elements creates a unique and productive zone. By maximizing and enhancing edge areas, permaculture designs increase diversity, productivity, and habitat opportunities.

Slow and Small Solutions
Permaculture advocates for starting small and scaling up gradually. It emphasizes the importance of making incremental changes, observing their effects, and adapting designs accordingly. This approach minimizes the risk of failure and allows for continuous learning and improvement.

By learning and applying the basics of permaculture design, individuals can create regenerative and sustainable systems that provide food, energy, shelter, and other needs while preserving and enhancing the natural environment. Permaculture design principles can be employed in various contexts, from backyard gardens and urban landscapes to large-scale farms and community projects.
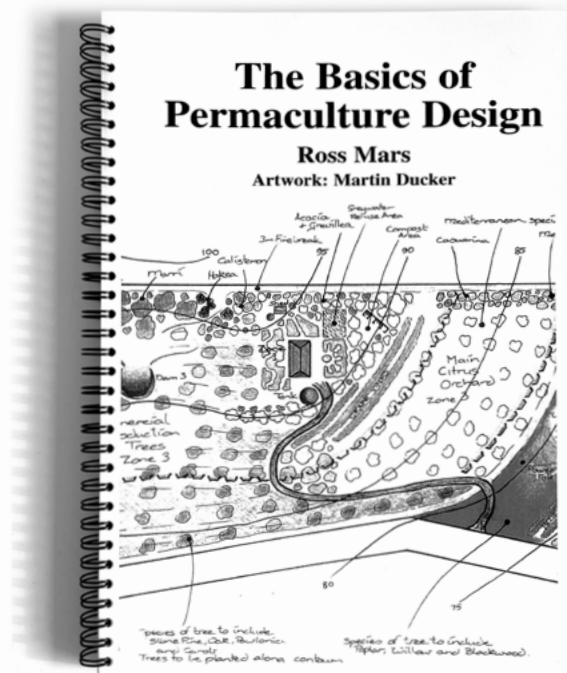
As a theoretical background I used the book of Ross Mars, The Basics of Permaculture Design. The knowledge I gained will function as the guiding principles for my design of the permacultural farm.
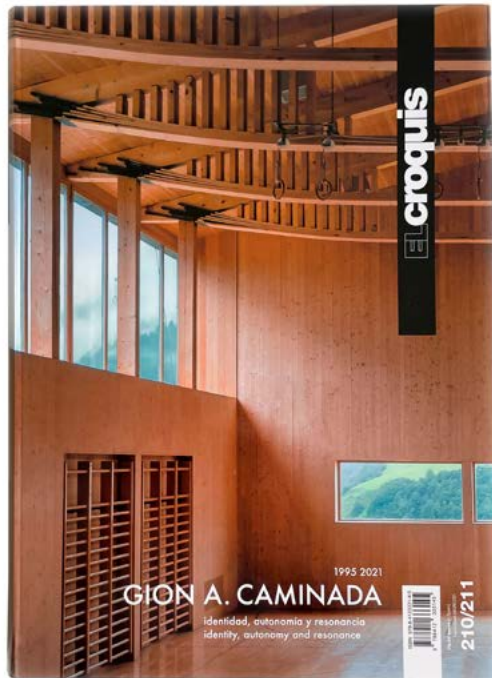
As a reference I looked into the work of an architect who inspires me with his work and philosophy. The knowledge I gained from this will function as the guiding principles for my design of the program and the buildings.

Gion Caminada
Vrin

Gion Caminada is a Swiss architect known for his work in the village of Vrin, located in the Surselva region of Switzerland. His concept for the Village of Vrin is centered around preserving and revitalizing the local architectural heritage and promoting sustainable development. Caminada's approach to design in Vrin offers several valuable lessons and insights that can be learned and applied to create sustainalbe architecture. Caminada's concepts are very inspiring and I've studied his work to get a better insight on the way he approaches his designs. In his designs he makes use of the following principles.

Vernacular Architecture
Caminada's concept embraces the use of vernacular architecture, which makes use of the traditional building techniques, materials, and styles that are specific to the local culture and context. By using and preserving these architectural traditions, Caminada creates a strong sense of place and cultural identity within the village.

Adaptive Reuse
Caminada emphasizes the importance of adaptive reuse in his designs. He repurposes existing buildings and materials, breathing new life into them while retaining their historical and cultural significance. This approach reduces waste, preserves embodied energy, and maintains a connection to the village's history.

Community Involvement
Caminada's design approach actively involves the local community in decision-making processes. He collaborates closely with residents to understand their needs, aspirations, and cultural values, ensuring that the design solutions are truly tailored to the community's requirements.

Social Sustainability
 The Village of Vrin concept focuses on fostering social sustainability by creating spaces that promote social interaction, connectivity, and a sense of belonging. Caminada's designs incorporate communal spaces, gathering areas, and public amenities that encourage community engagement and enhance the social fabric of the village.

Ecological Design
Caminada's approach emphasizes ecological design principles. He integrates sustainable materials, passive design strategies, and renewable energy systems to minimize the ecological footprint of the village. Additionally, he prioritizes the use of local resources and building techniques that have a low environmental impact.

Holistic Planning
Caminada takes a holistic approach to planning and design, considering the entire village as an interconnected system. His designs incorporate elements such as efficient transportation networks, integrated infrastructure, and mixed land uses to create a balanced and resilient community.

Long-Term Vision
Caminada's concept for the Village of Vrin is rooted in long-term thinking. His designs aim to create lasting structures and systems that will stand the test of time, both functionally and aesthetically. This long-term vision aligns with the principles of sustainability and promotes the durability and adaptability of the built environment.

The Village of Vrin serves as a good example of how sustainable architecture can be approached with sensitivity to local culture, heritage, and the environment.